Dermal Photonics Corporation

TEST REPORT

SCOPE OF WORK
Emissions Testing on NIRA Temp EUA

REPORT NUMBER
104370255BOX-009

ISSUE DATE
July 20, 2020

[REVISED DATE]
Original Issue

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

EMISSIONS TEST REPORT

(FULL COMPLIANCE)

Report Number: 104370255BOX-009
Project Number: G104370255

Report Issue Date: 07/20/2020

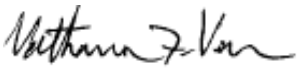
Model(s) Tested: NIRA Temp
Model(s) Partially Tested: None
Model(s) Not Tested but declared equivalent by the client: None

Standards: CFR47 FCC Part 15.247 Subpart C: 07/2020,
CFR47 FCC Part 15 Subpart B: 07/2020,
RSS-247 Issue 2 February 2017,
ICES-003 Issue 6 Published: January 2016 Updated: April 2019,
RSS-Gen Issue 5 April 2018 +Amendment 1 March 2019,
RSS-102 Issue 5 March 2015

Tested by:
Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719
USA

Client:
Dermal Photonics Corporation
100 Corporate Plaza
Ste 303
Peabody, MA 01960
USA

Report prepared by



Vathana Ven / EMC Staff Engineer

Report reviewed by

Michael Murphy / EMC Engineering Supervisor

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
3	Client Information	--
4	Description of Equipment Under Test and Variant Models	--
5	System Setup and Method	--
6	Maximum Peak Output Power and Human RF exposure CFR47 FCC Part 15 Subpart C:01/2020, Section 15.247 (b)(3) RSS-247 Issue 2 February 2017, RSS-102 Issue 5 March 2015	Pass
7	6 dB Bandwidth and Occupied Bandwidth CFR47 FCC Part 15 Subpart C: 01/2020, Section 15.247 (a)(2) RSS-247 Issue 2 February 2017	Pass
8	Maximum Power Spectral Density CFR47 FCC Part 15 Subpart C: 01/2020, Section 15.247 (e) RSS-247 Issue 2 February 2017	Pass
9	Band Edge Compliance CFR47 FCC Part 15 Subpart C: 01/2020, Section 15.247 (d) RSS-247 Issue 2: 02/2017)	Pass
10	Transmitter spurious emissions CFR47 FCC Part 15 Subpart C: 12/2019, Section 15.247 (d) RSS-247 Issue 2 February 2017	Pass
11	Digital Device and Receiver Radiated Spurious Emissions (CFR47 FCC Part 15 Subpart B 15.109: 12/2019, ICES-003 Issue 6 Published: January 2016 Updated: April 2019	Pass
12	AC Mains Conducted Emissions FCC 47CFR Part 15.107: 12/2019 ICES-003 Issue 6 Published: January 2016 Updated: April 2019	N/A*
13	Revision History	--

Note: *The device was battery powered.

3 Client Information

This EUT was tested at the request of:

Client: Dermal Photonics Corporation
200 Corporate Pl. Suite 2B
Peabody MA 01960
USA

Contact: Felix Feldchtein
Telephone: 781-451-1703
Email: ffeldchtein@dermalphotonics.com

4 Description of Equipment Under Test and Variant Models

Manufacturer: Dermal Photonics Corporation
200 Corporate Pl. Suite 2B
Peabody MA 01960
USA

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
NIRA Temp	Dermal Photonics	451-008	BOX2007141303-001 (Intertek Assigned)
NIRA Temp	Dermal Photonics	451-008	BOX2007141303-002 (Intertek Assigned)

Receive Date:	07/10/2020
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client)
NIRA temp is a wireless wearable thermometer for monitoring of body temperature, direct mode, armpit location

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
Lithium Coin Cell Battery	N/A	N/A	N/A

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	The EUT was set to transmit at Low, Mid, and High channel continuous with modulation at 100 % duty cycle.
2	The EUT was set to receive mode.

Software used by the EUT:

No.	Descriptions of EUT Exercising
1	Used HyperTerminal

Radio/Receiver Characteristics	
Frequency Band(s)	2402-2480 MHz
Modulation Type(s)	GFSK
Maximum Output Power	Low Channel (2402 MHz): +2.85 dBm Mid Channel (2442 MHz): +2.75 dBm High Channel (2480 MHz): +2.92 dBm
Test Channels	Low Channel (2402 MHz) Mid Channel (2442 MHz) High Channel (2480 MHz)
Occupied Bandwidth	Low Channel (2402 MHz): 1.04 MHz Mid Channel (2442 MHz): 1.04 MHz High Channel (2480 MHz): 1.04 MHz
6 dB Bandwidth	Low Channel (2402 MHz): 764.20 kHz Mid Channel (2442 MHz): 714.30 kHz High Channel (2480 MHz): 704.30 kHz
Frequency Hopper: Number of Hopping Channels	N/A
Frequency Hopper: Channel Dwell Time	N/A
Frequency Hopper: Max interval between two instances of use of the same channel	N/A
MIMO Information (# of Transmit and Receive antenna ports)	1
Equipment Type	Standalone
Antenna Type and Gain	Integrated, 5.05 dBi

Variant Models:

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

5 System Setup and Method

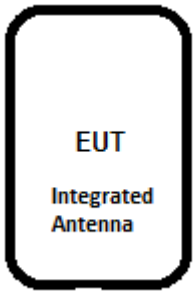
Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
--	None	--	--	--	--

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
USB Power Supply	Travel Charger	ES-KC15	Not Labelled

5.1 Method:

Configuration as required by Configuration as required by FCC Part 15 Subpart C 15.247: 01/2020, FCC Part 15 Subpart B: 01/2020, RSS 247 Issue 2: 02/2017, ICES 003 Issue 6: 01/2016 updated 06/2016, RSS-Gen Issue 5 April 2018 +Amendment 1 March 2019, RSS-102 Issue 5 March 2015, ANSI C 63.10: 2013, ANSI C 63.4: 2014, and 558074 D0115.247Meas Guidancev05r02.

5.2 EUT Block Diagram:



6 Maximum Peak Output Power and Human RF exposure

6.1 Method

Tests are performed in accordance with CFR47 FCC Part 15.247, RSS-247, RSS-102, ANSI C63.10, and KDB 558074 D0115.247Meas Guidancev05r02.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

6.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DS40'	Temp, humidity, pressure gauge	Digi Sense	68000-49	181717625	11/13/2019	11/13/2020
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	10/14/2019	10/14/2020
MEG002'	Cable,SMA-SMA,9KHz-40GHz, (Cable Kit 6)	Megaphase	TM40-K1K1-197	59006401001	09/19/2019	09/19/2020
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	01/22/2020	01/22/2021

Software Utilized:

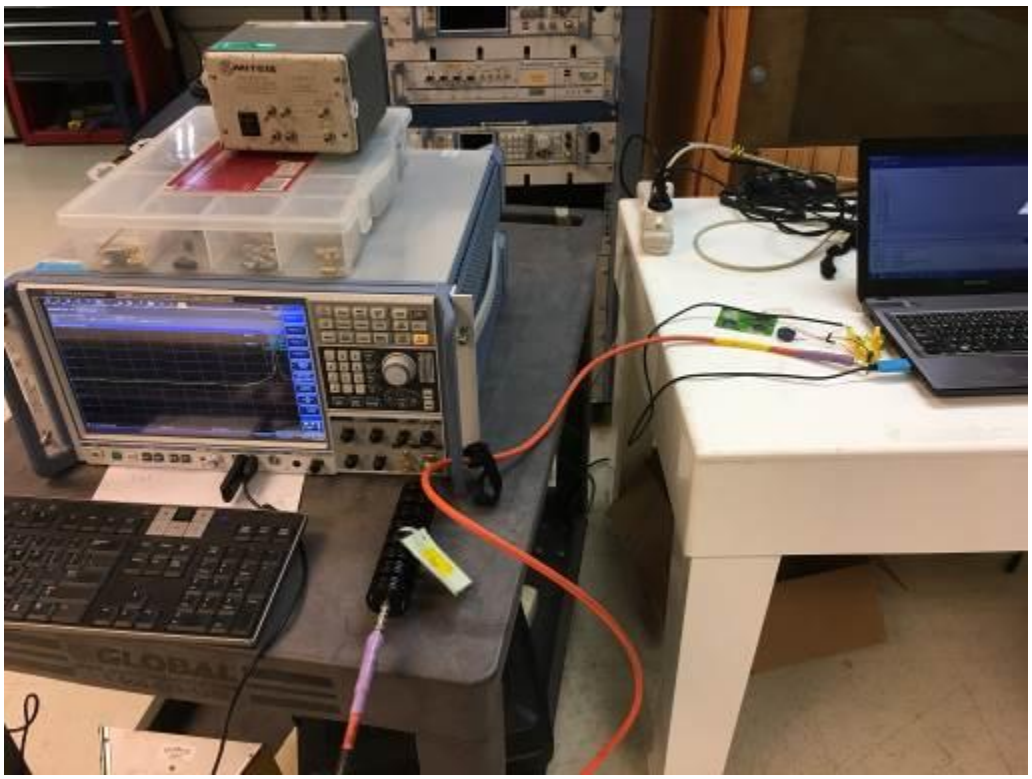
Name	Manufacturer	Version
None	---	---

6.3 Results:

The sample tested was found to Comply.

§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt or 30 dBm.

6.4 Setup Photograph:



6.5 Test Data:

Output power, Low Ch

17:21:35 10.07.2020

Output power, Mid Ch

17:43:52 10.07.2020

Output power, High Ch

Frequency (MHz)	Output Power (dBm)
2402	+2.85
2442	+2.75
2480	+2.92

RSS-102 Issue 5 Exposure Limits:

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance[4,5]

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

Human RF Exposure/SAR Exemption

Maximum measured output power is 1.958845 mW @ 2480 MHz

FCC SAR Exemption per KDB 447498

a) For 100 MHz to 6 GHz and *test separation distances* ≤ 50 mm, the 1-g and 10-g *SAR test exclusion thresholds* are determined by the following:

[(*max. power of channel, including tune-up tolerance, mW*) / (*min. test separation distance, mm*)] · [$\sqrt{f_{(GHz)}}$] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR,[30] where

- $f_{(GHz)}$ is the RF channel transmit frequency in GHz

= (1.958845/5)*(sqrt(2.480))

= 0.617 < 3.0 (below the limit, SAR Exempt per FCC)

RSS-102 Issue 5 Exposure Limit at 3.5GHz = 2 mW at separation distance of ≤5mm. Maximum output power is 1.958845 mW, therefore, the device met the exemption limit.

Test Personnel:	Vathana Ven VSV	Test Date:	07/10/2020
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	CFR47 FCC Part 15.247 RSS-247, RSS-102	Limit Applied:	See report section 6.3
Input Voltage:	Battery power	Ambient Temperature:	22 ºC
Pretest Verification w/ Ambient Signals or BB Source:	**N/A**	Relative Humidity:	12 %
		Atmospheric Pressure:	1017 mbars

Deviations, Additions, or Exclusions: None

7 6 dB Bandwidth and Occupied Bandwidth

7.1 Method

Tests are performed in accordance with CFR47 FCC Part 15.247, RSS-247, and ANSI C63.10 and KDB 558074 D0115.247Meas Guidancev05r02.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

7.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DS40'	Temp, humidity, pressure gauge	Digi Sense	68000-49	181717625	11/13/2019	11/13/2020
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	10/14/2019	10/14/2020
MEG002'	Cable,SMA-SMA,9KHz-40GHz, (Cable Kit 6)	Megaphase	TM40-K1K1-197	59006401001	09/19/2019	09/19/2020
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	01/22/2020	01/22/2021

Software Utilized:

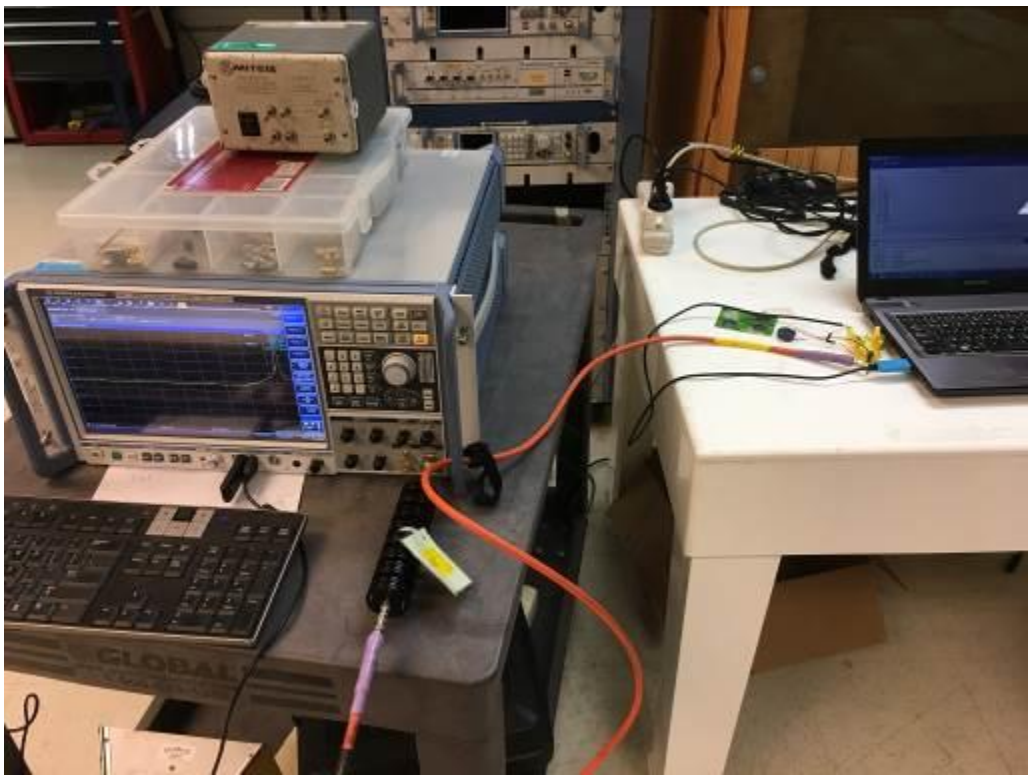
Name	Manufacturer	Version
None	--	--

7.3 Results:

The sample tested was found to Comply.

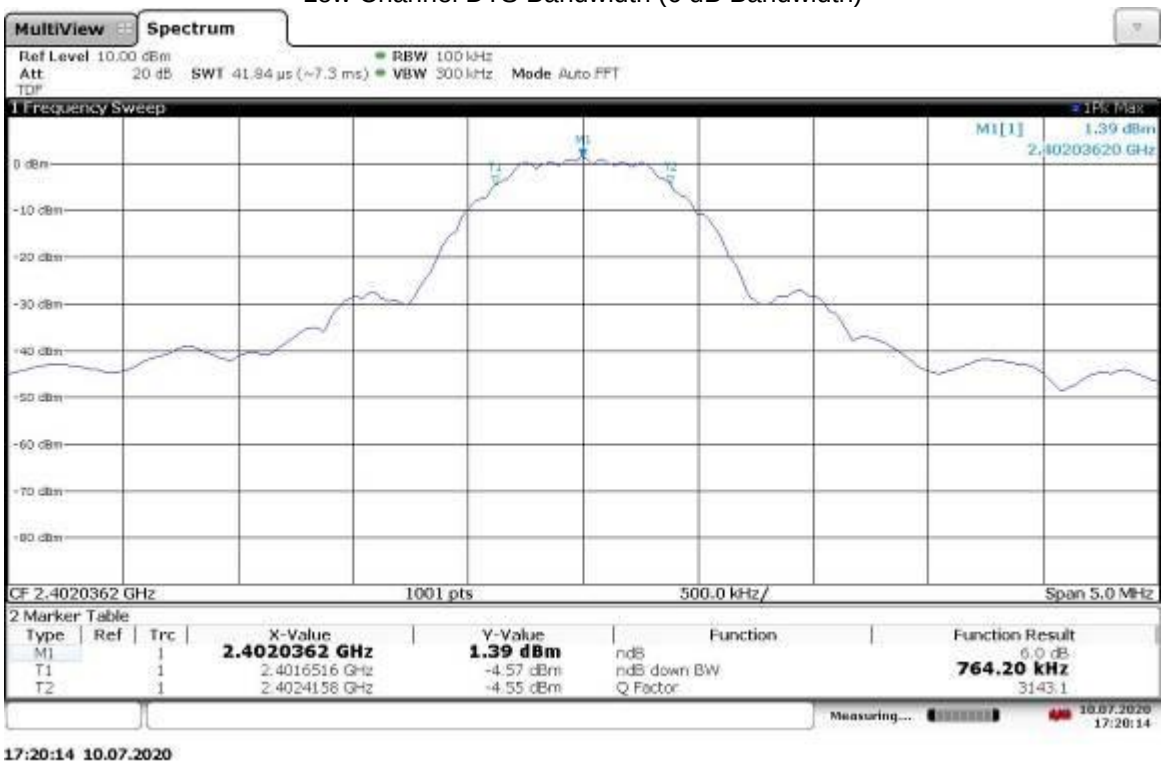
§15.247 (a) (2) Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

7.4 Setup Photographs:

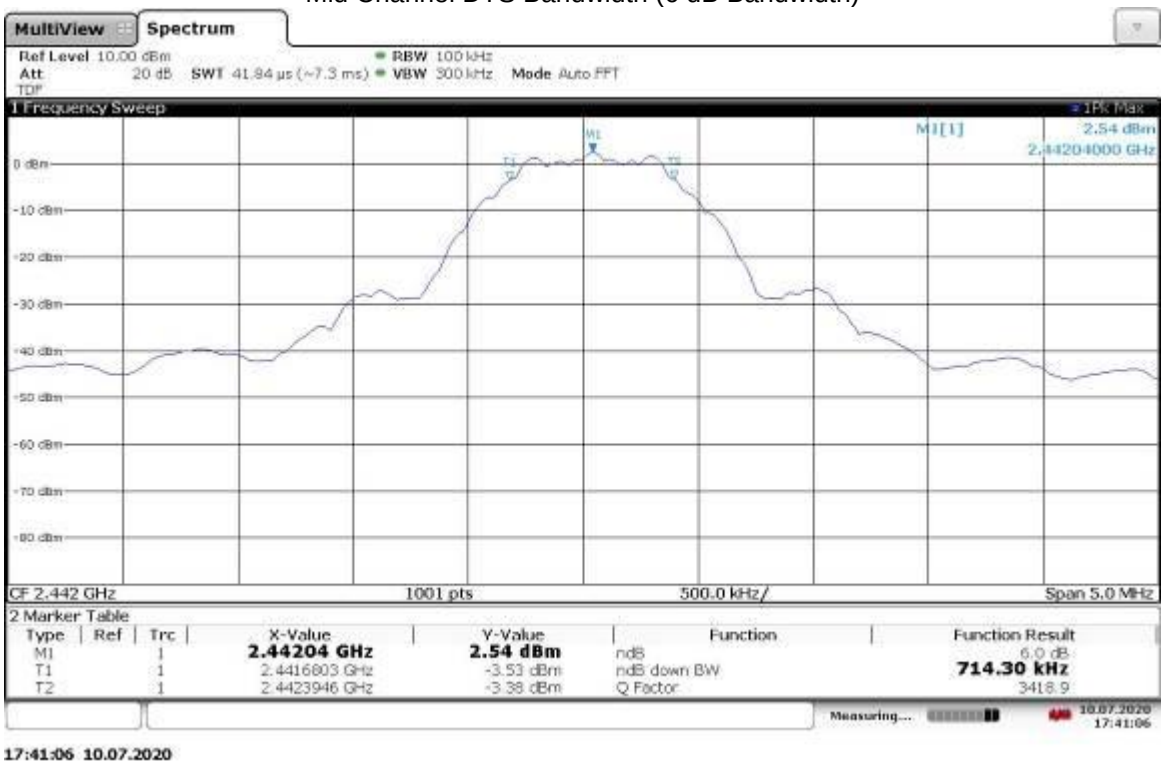


7.5 Plots/Data:

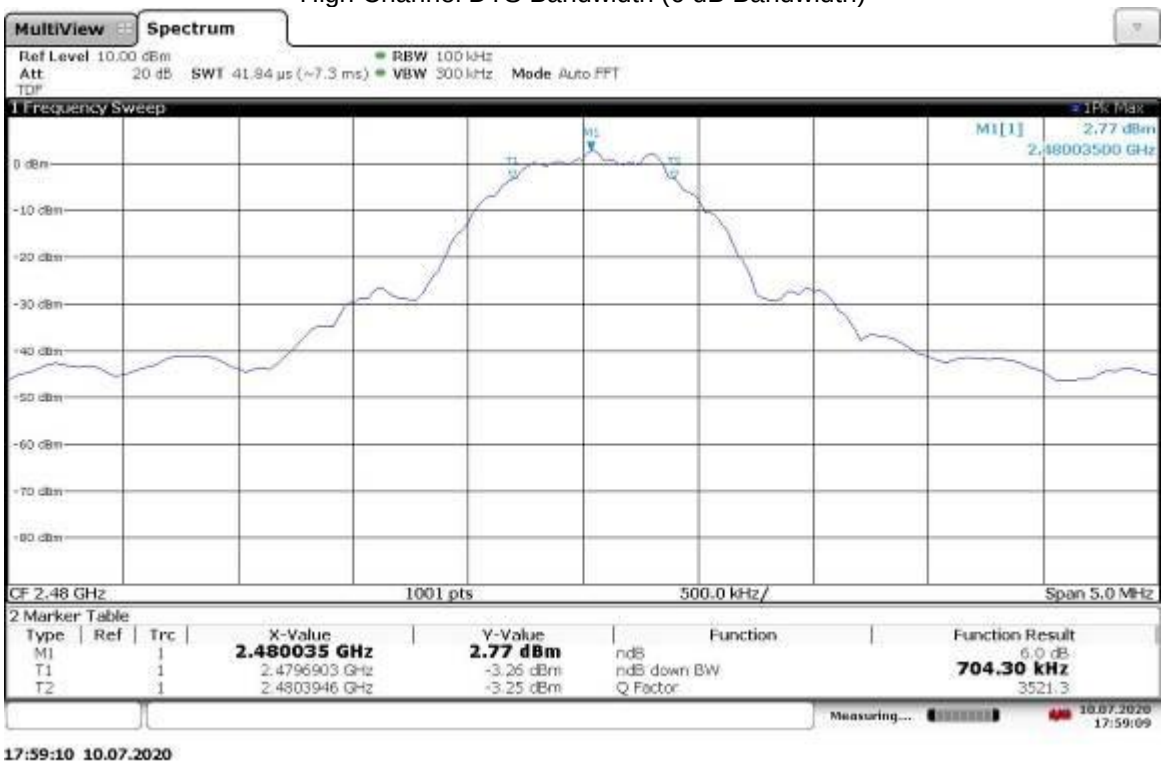
Low Channel DTS Bandwidth (6 dB Bandwidth)



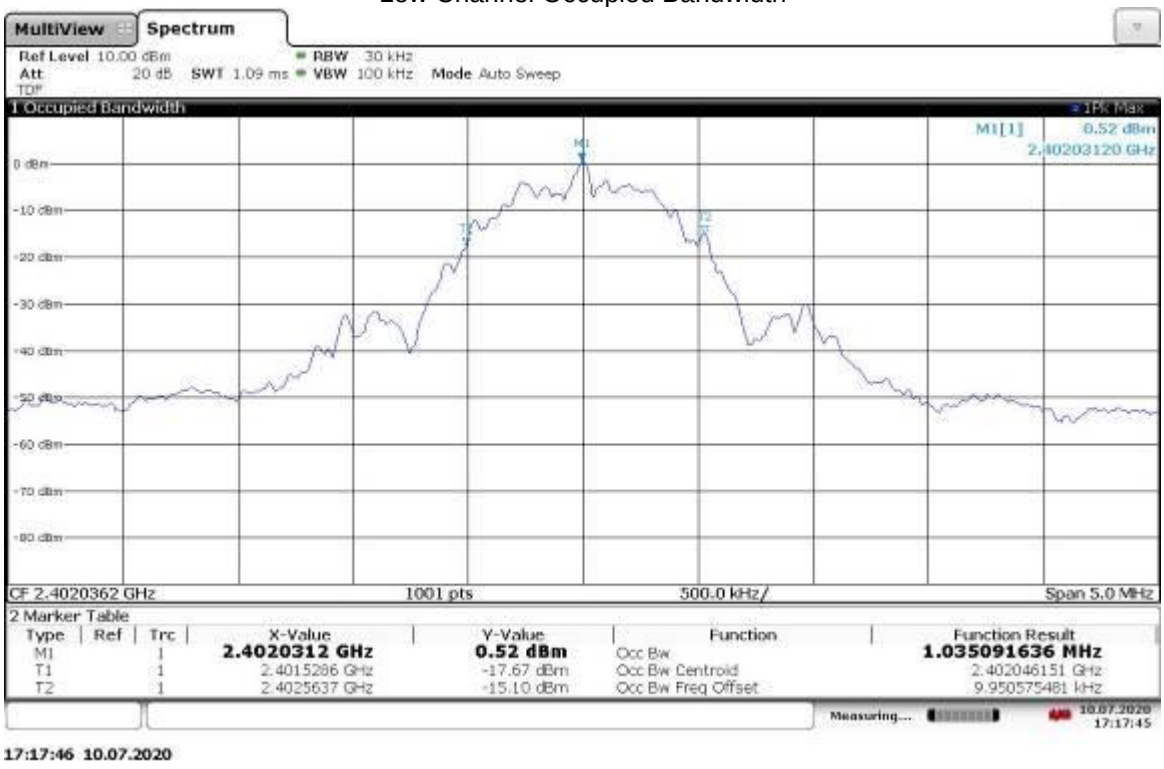
Mid Channel DTS Bandwidth (6 dB Bandwidth)



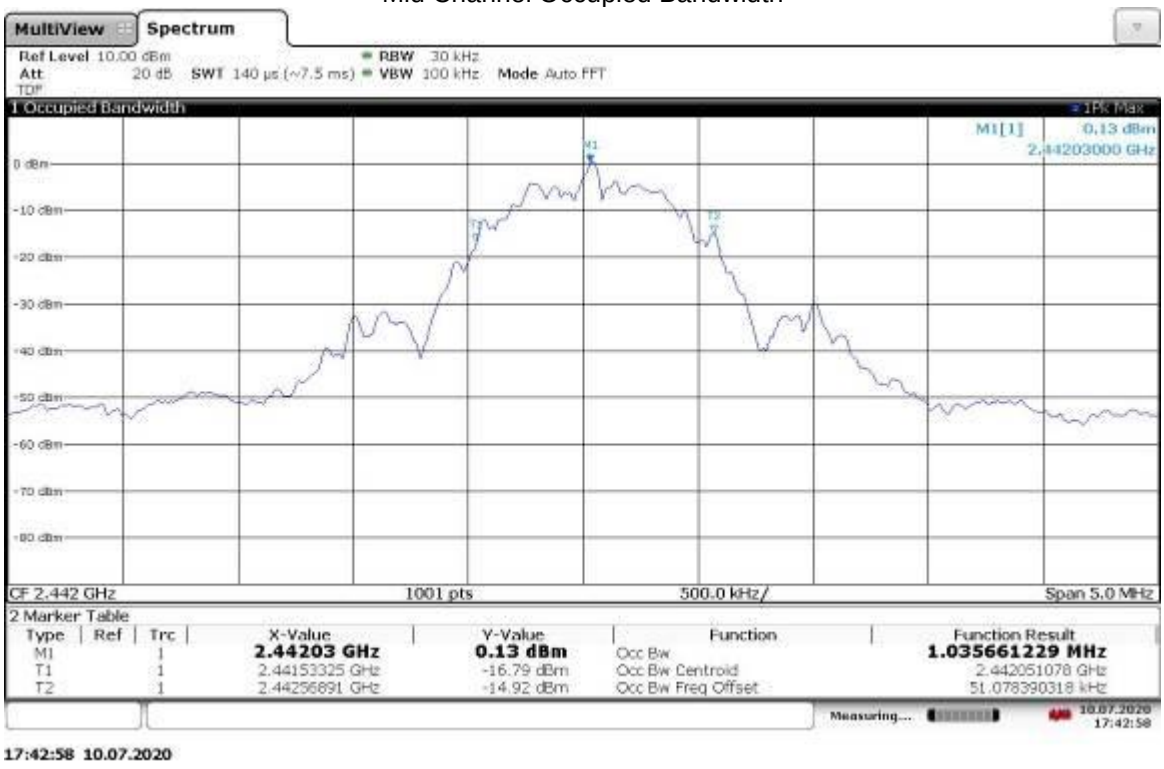
High Channel DTS Bandwidth (6 dB Bandwidth)



Low Channel Occupied Bandwidth



Mid Channel Occupied Bandwidth



17:42:58 10.07.2020

High Channel Occupied Bandwidth

Frequency	DTS Bandwidth (6 dB Bandwidth)	Occupied Bandwidth
(MHz)	(MHz)	(MHz)
2402	0.764	1.040
2442	0.714	1.040
2480	0.704	1.040

Test Personnel:	Vathana Ven VJV	Test Date:	07/10/2020
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	CFR47 FCC Part 15.247 RSS-247	Limit Applied:	See report section 7.3
Input Voltage:	Battery power	Ambient Temperature:	22 ºC
Pretest Verification w/ Ambient Signals or BB Source:	**N/A**	Relative Humidity:	12 %
		Atmospheric Pressure:	1017 mbars

Deviations, Additions, or Exclusions: None

8 Maximum Power Spectral Density

8.1 Method

Tests are performed in accordance with CFR47 FCC Part 15.247, RSS-247, and ANSI C63.10, and KDB 558074 D0115.247Meas Guidancev05r02.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DS40'	Temp, humidity, pressure gauge	Digi Sense	68000-49	181717625	11/13/2019	11/13/2020
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	10/14/2019	10/14/2020
MEG002'	Cable,SMA-SMA,9KHz-40GHz, (Cable Kit 6)	Megaphase	TM40-K1K1-197	59006401001	09/19/2019	09/19/2020
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	01/22/2020	01/22/2021

Software Utilized:

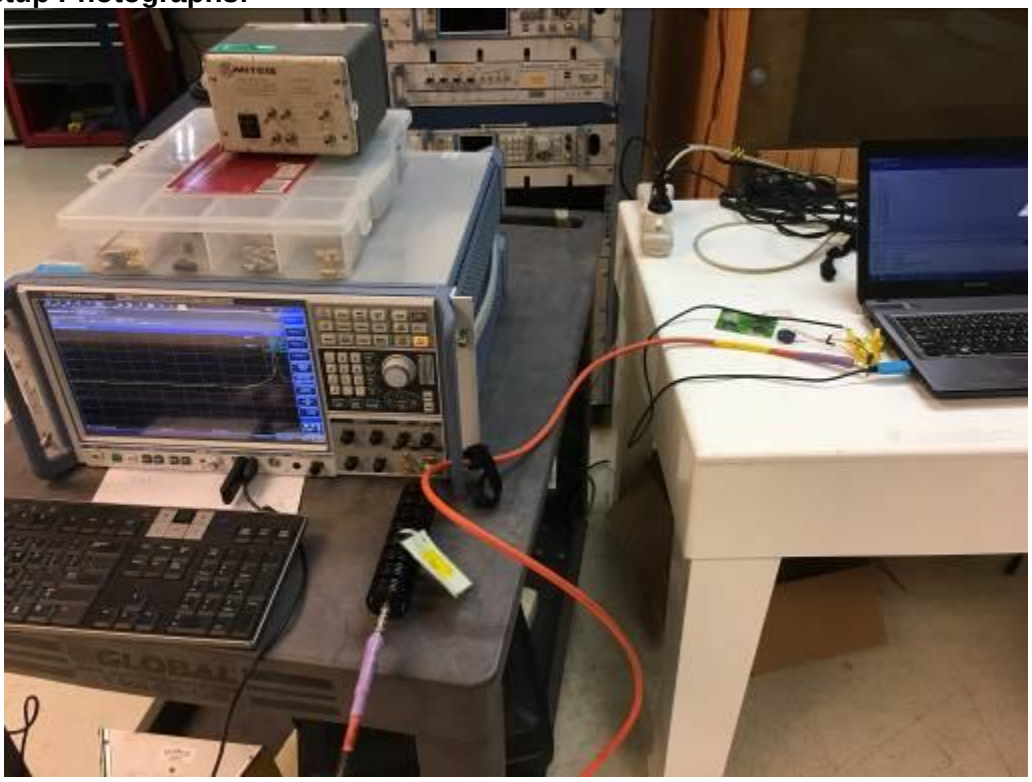
Name	Manufacturer	Version
None	--	--

8.3 Results:

The sample tested was found to Comply.

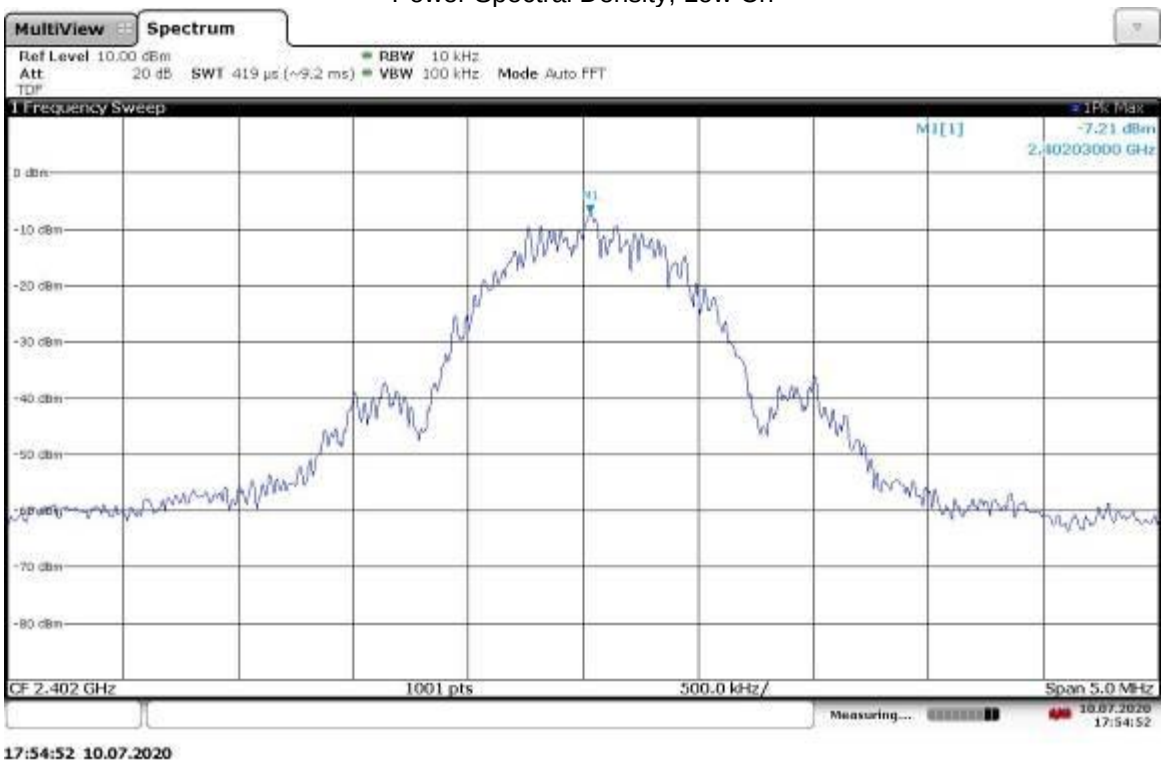
§15.247 (e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.4 Setup Photographs:

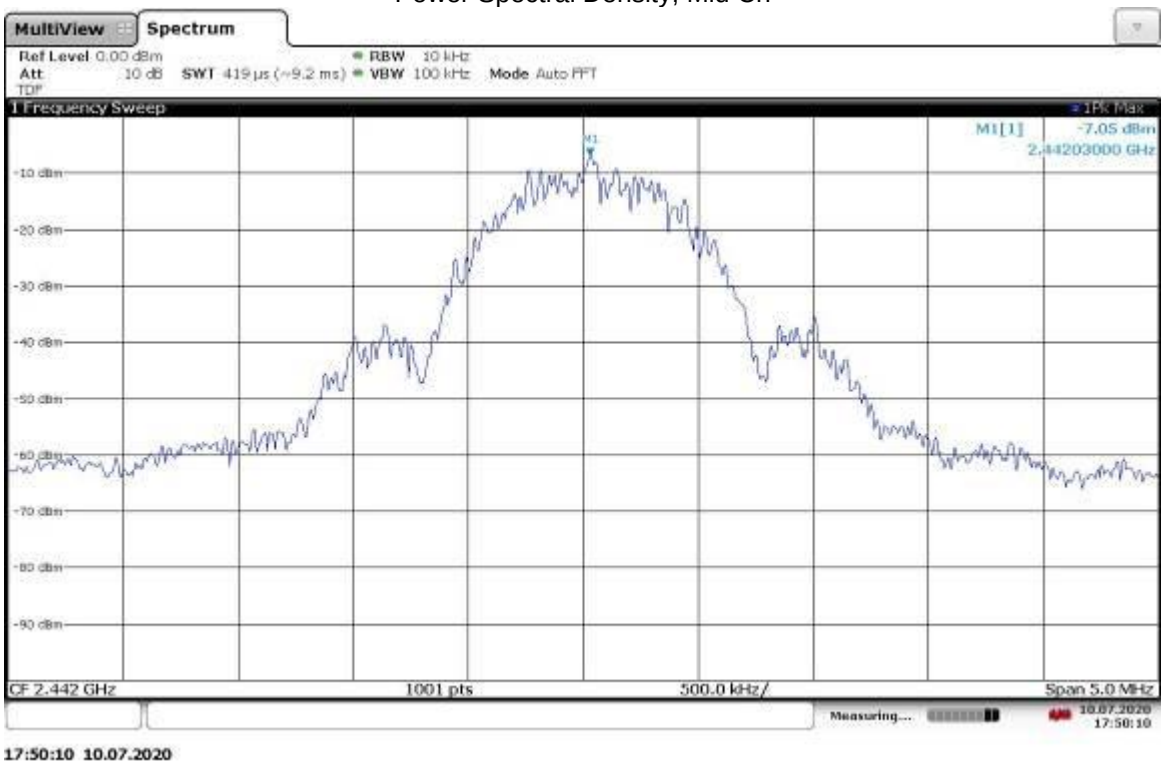


8.5 Test Data:

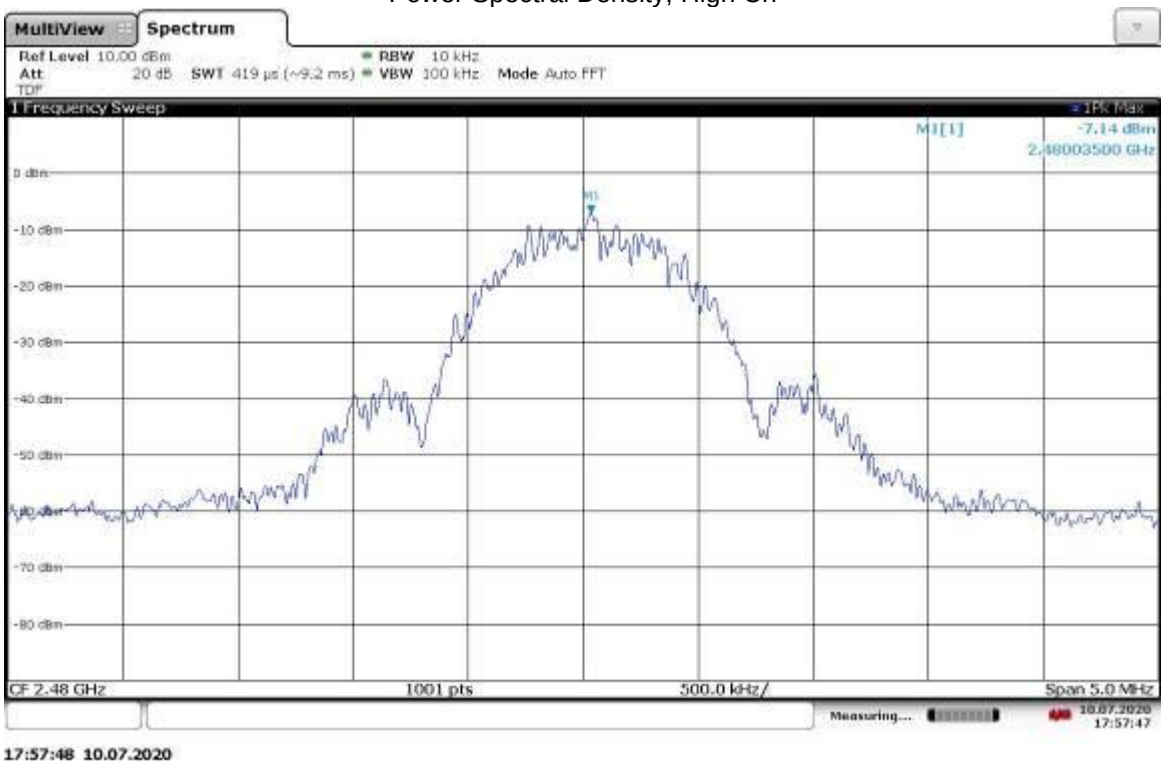
Power Spectral Density, Low Ch



Power Spectral Density, Mid Ch



Power Spectral Density, High Ch



Frequency	Power Spectral Density
(MHz)	(dBm)
2402	-7.21
2442	-7.05
2480	-7.14

Test Personnel:	Vathana Ven VSV	Test Date:	07/10/2020
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	CFR47 FCC Part 15.247 RSS-247	Limit Applied:	See report section 8.3
Input Voltage:	Battery power		
Pretest Verification w/ Ambient Signals or BB Source:	**N/A**	Ambient Temperature:	22 ºC
		Relative Humidity:	12 %
		Atmospheric Pressure:	1017 mbars

Deviations, Additions, or Exclusions: None

9 Band Edge Compliance

9.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C 15.247 RSS 247, ANSI C 63.10.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

9.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DS40'	Temp, humidity, pressure gauge	Digi Sense	68000-49	181717625	11/13/2019	11/13/2020
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	10/14/2019	10/14/2020
MEG002'	Cable,SMA-SMA,9KHz-40GHz, (Cable Kit 6)	Megaphase	TM40-K1K1-197	59006401001	09/19/2019	09/19/2020
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	01/22/2020	01/22/2021

Software Utilized:

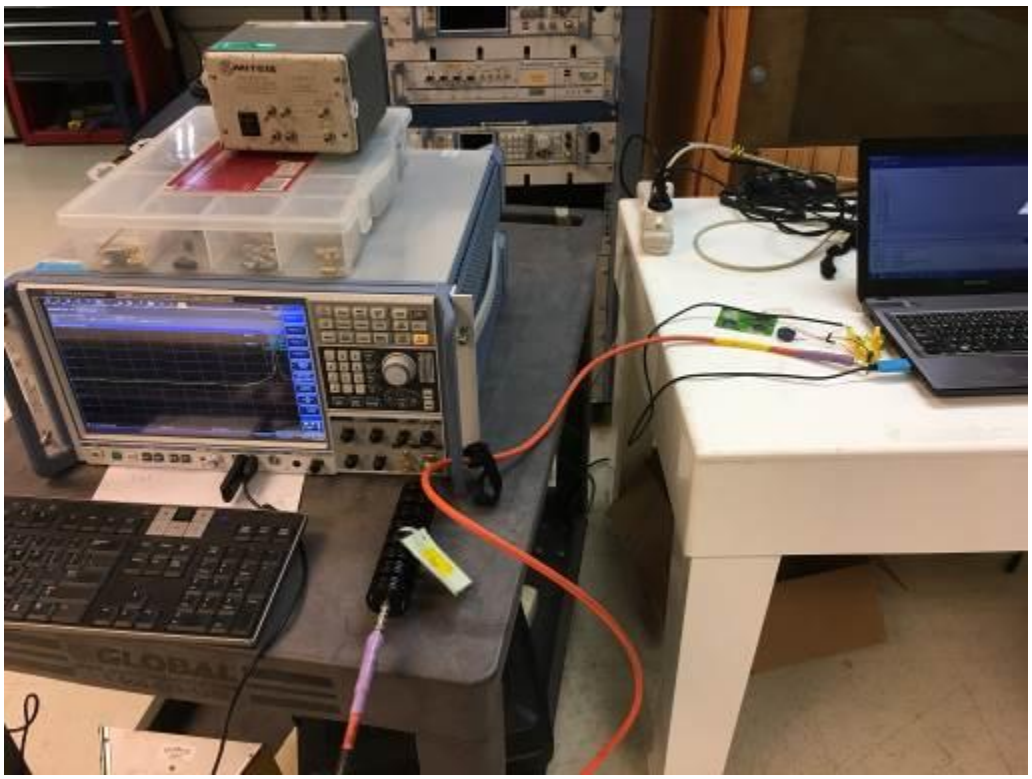
Name	Manufacturer	Version
None	--	--

9.3 Results:

The sample tested was found to Comply.

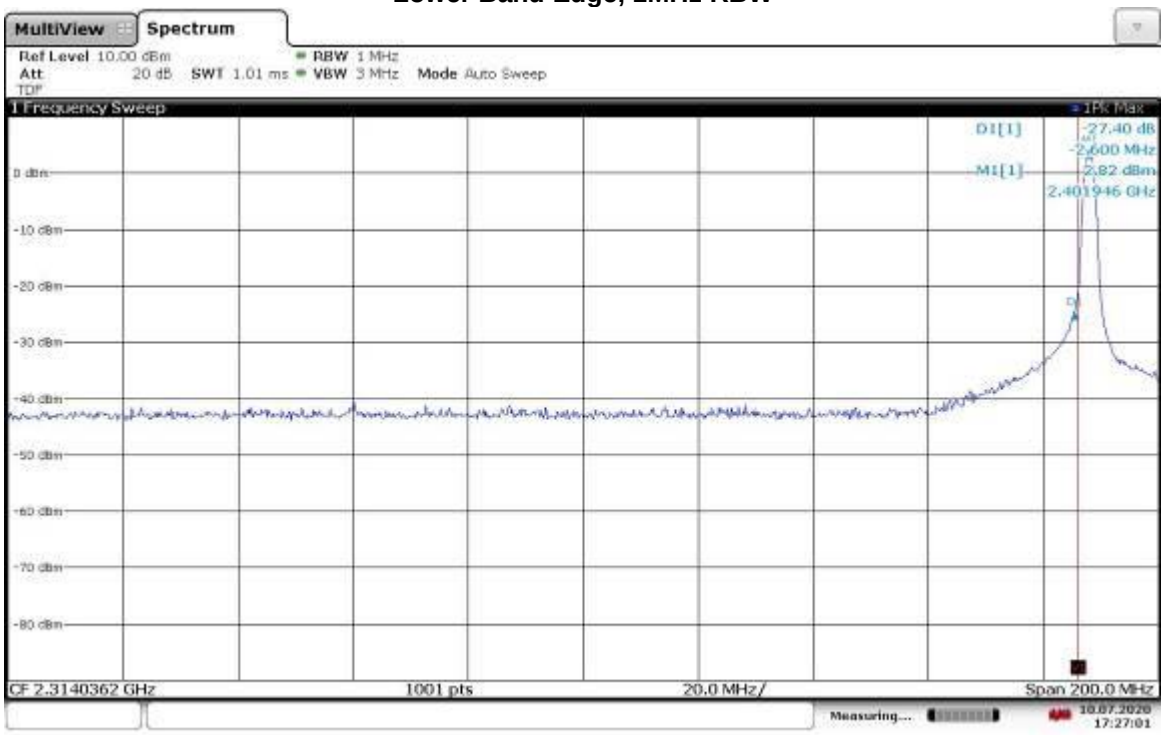
15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

9.4 Setup Photographs:



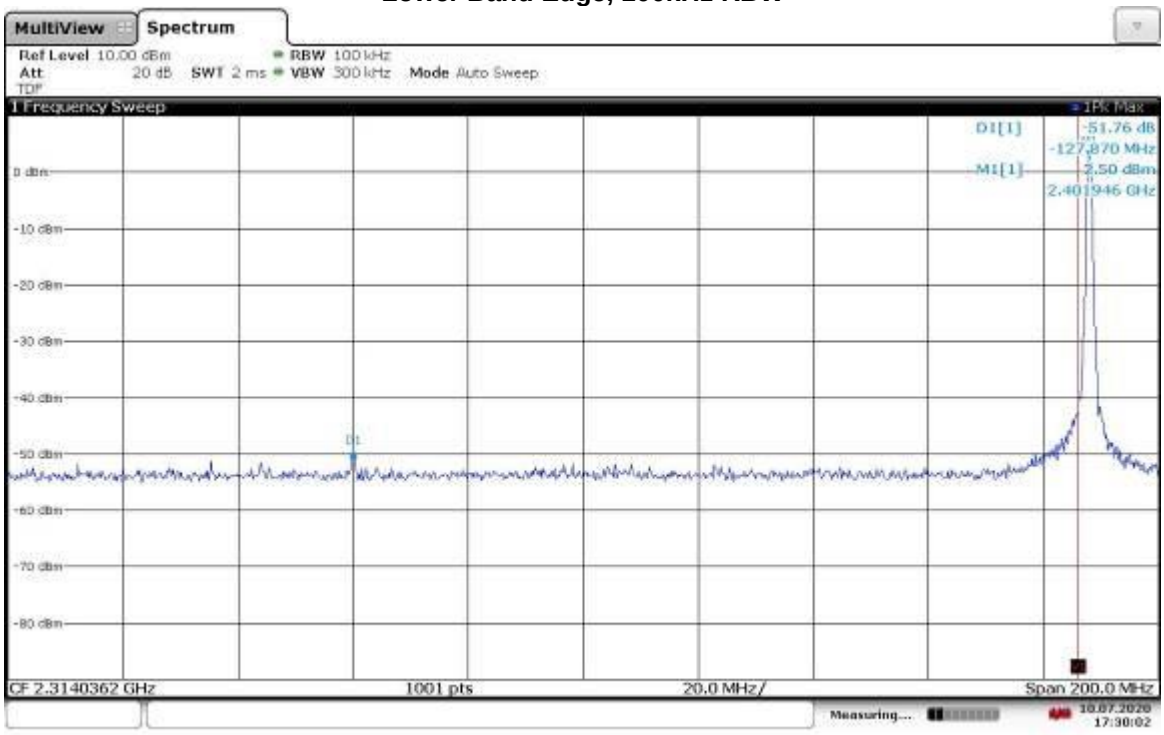
9.5 Test Data:

Lower Band Edge, 1MHz RBW



17:27:02 10.07.2020

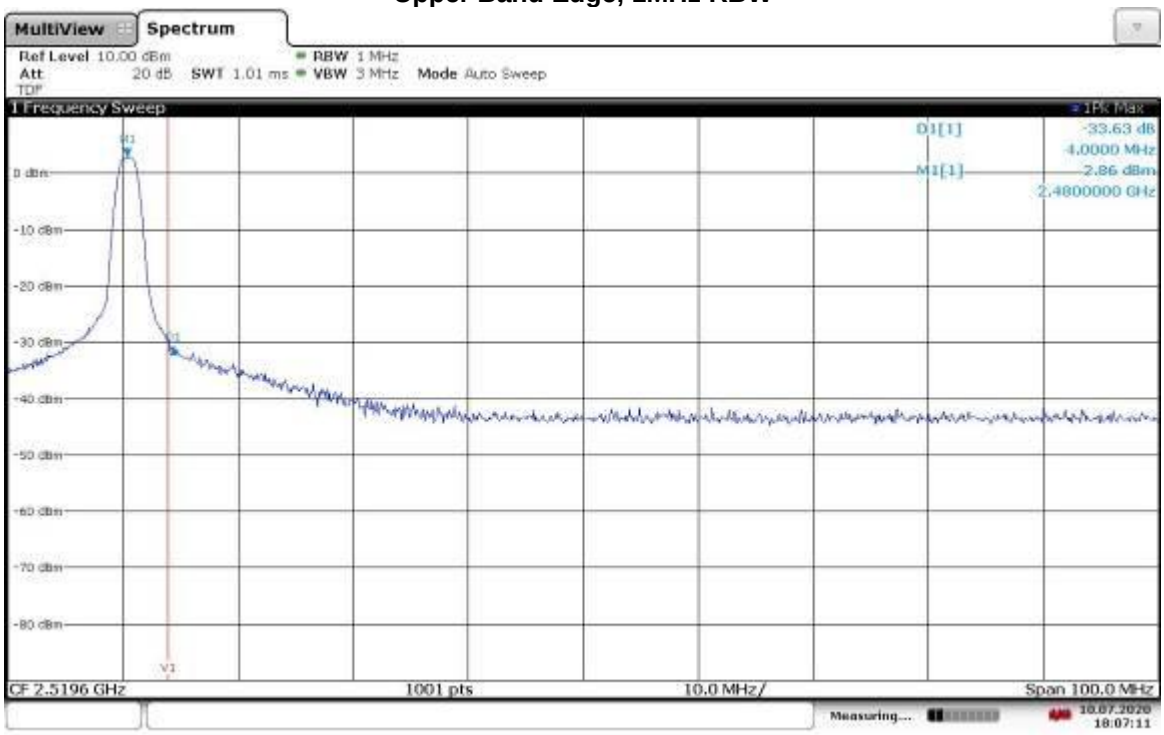
Lower Band Edge, 100kHz RBW



17:30:03 10.07.2020

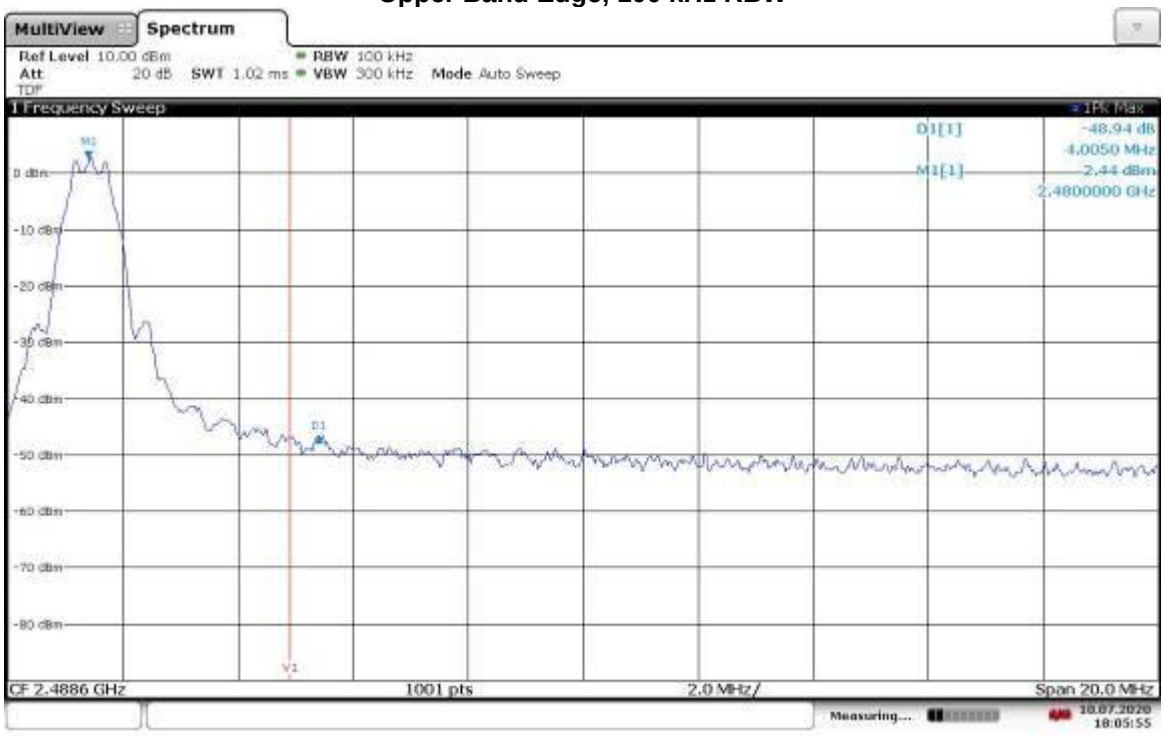
Notes: Cable loss and attenuator factors were internally compensated as transducer factor (TDF).

Upper Band Edge, 1MHz RBW



18:07:11 10.07.2020

Upper Band Edge, 100 kHz RBW



18:05:56 10.07.2020

Notes: Cable loss and attenuator factors were internally compensated as transducer factor (TDF).

Test Personnel:	Vathana Ven VSV	Test Date:	07/10/2020
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	CFR47 FCC Part 15.247 RSS-247	Limit Applied:	See report section 9.3
Input Voltage:	Battery power	Ambient Temperature:	22 ºC
Pretest Verification w/ Ambient Signals or BB Source:	**N/A**	Relative Humidity:	12 %
		Atmospheric Pressure:	1017 mbars

Notes: The antenna factor and cable loss were compensated in the EMI receiver as transducer factor.

Deviations, Additions, or Exclusions: None

10 Transmitter spurious emissions

10.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C 15.247, FCC Part 15 Subpart B, RSS 247 ICES 003, ANSI C 63.10, and ANSI C 63.4.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	4.6dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	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, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

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

Alternately, when BAT-EMC Emission Software is used, the “Level” includes all losses and gains and is compared directly in the “Margin” column to the “Limit”. The “Correction” includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the “Level” column.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

10.2 Test Equipment Used:

Conducted measurements

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DS40'	Temp, humidity, pressure gauge	Digi Sense	68000-49	181717625	11/13/2019	11/13/2020
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	10/14/2019	10/14/2020
MEG002'	Cable,SMA-SMA,9KHz-40GHz, (Cable Kit 6)	Megaphase	TM40-K1K1-197	59006401001	09/19/2019	09/19/2020
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	01/22/2020	01/22/2021

Radiated measurements

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV007'	Weather Station Vantage Vue	Davis	6250	MS191212003	03/12/2020	03/12/2021
145108'	EMI Test Receiver (20Hz - 40GHz)	Rohde & Schwarz	ESIB40	100209	06/08/2020	06/08/2021
PRE11'	50dB gain pre-amp	Pasternack	PRE11	PRE11	08/30/2019	08/30/2020
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	05/08/2020	05/08/2021
IW001'	2 meter cable	Insulated Wire	2801-NPS	001	10/08/2019	10/08/2020
145-406'	10m Track A In-floor Cable #1	Huber + Suhner	sucoflex 160-19220mm	001	12/10/2019	12/10/2020
HS001'	DC-18GHz cable 1.5m long	Huber & Suhner	SucoFlex 106A	HS001	11/19/2019	11/19/2020
IW003'	8.4 meter cable	Insulated Wire	2800-NPS	003	10/08/2019	10/08/2020
145-422'	10Amp Pre-amp to under floor	Utiflex	UFB311A-0-2756-70070	145-422	02/17/2020	02/17/2021
HS003'	10m under floor cable	Huber-Schuner	10m-1	HS003	04/29/2020	04/29/2021
ETS005'	1-18GHz horn antenna	ETS-Lindgren	3117	00218279	07/30/2019	07/30/2020
CBLHF2012-2M-1'	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252675001	02/17/2020	02/17/2021
REA004'	3GHz High Pass Filter	Reactel, Inc	7HSX-3G/18G-S11	06-1	02/25/2020	02/25/2021
REA006'	18GHz High Pass Filter	Reactel, Inc	7HS-18G/40G K11	(06)1	04/20/2020	04/20/2021
EMC04'	ANTENNA, RIDGED GUIDE, 18-40 GHZ	EMCO	3116	2090	12/10/2019	12/10/2020
MEG02'	Guided Ridged Horn (1 GHz to 18 GHz)	EMCO	EMCO 3115	5520	08/05/2019	08/05/2020
PRE9'	100MHz-40GHz Preamp	MITEQ	NSP4000-NFG	1260417	09/16/2019	09/16/2020
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	10/14/2019	10/14/2020

Software Utilized:

Name	Manufacturer	Version
EMI Boxborough.xls	Intertek	08/27/2010
BAT-EMC	Nexio	3.18.0.16

10.3 Results:

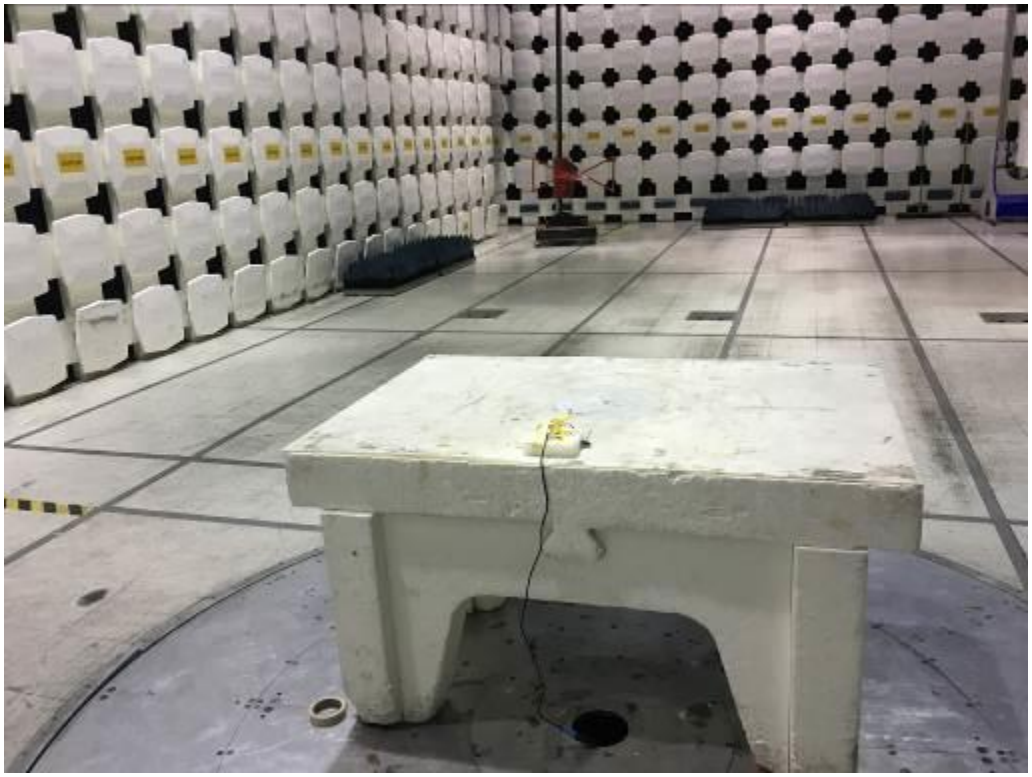
The sample tested was found to Comply.

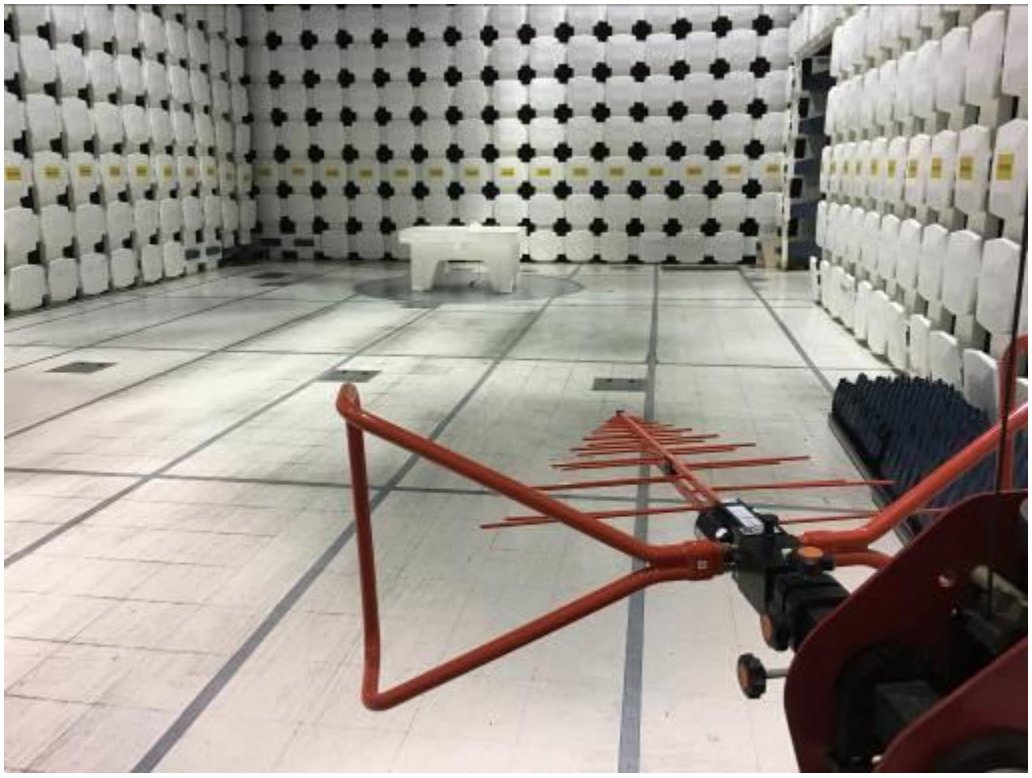
15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

10.4 Setup Photographs:

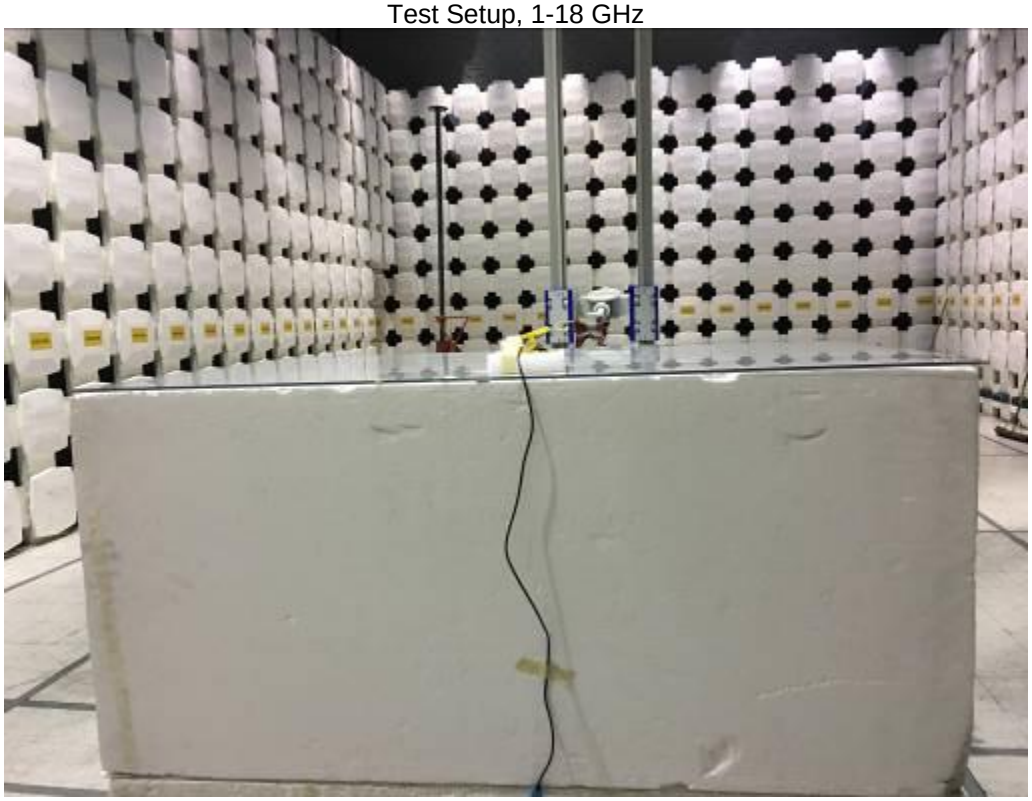
Conducted measurements

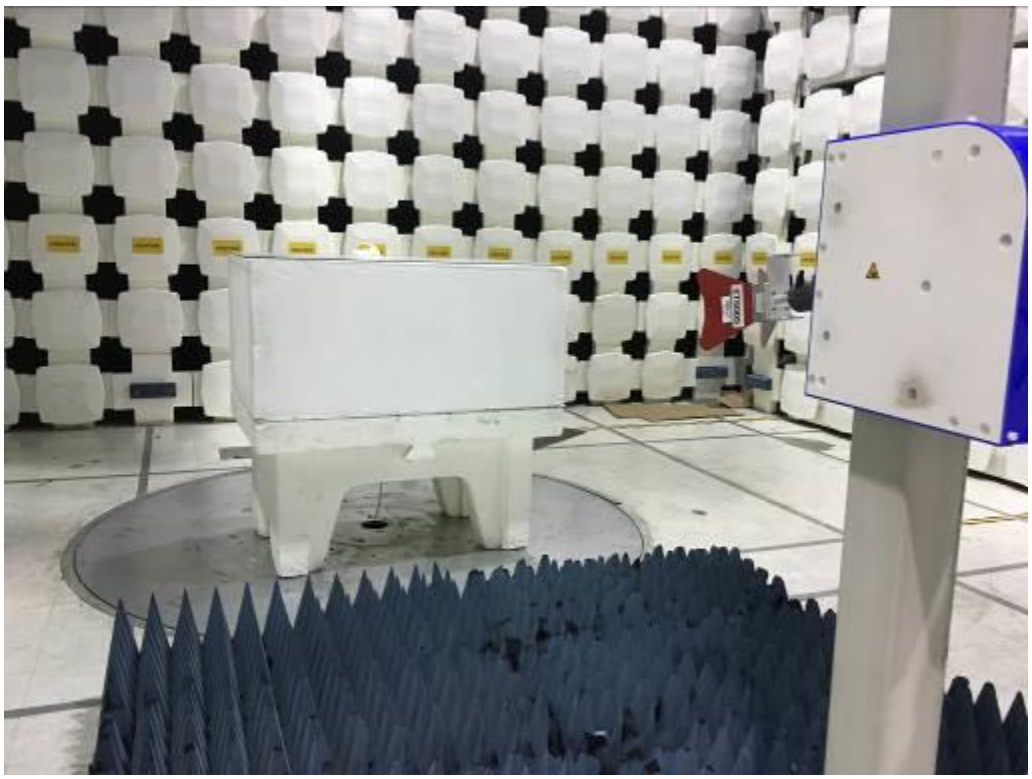
Test Setup, 30-1000 MHz





Test Setup, 1-18 GHz



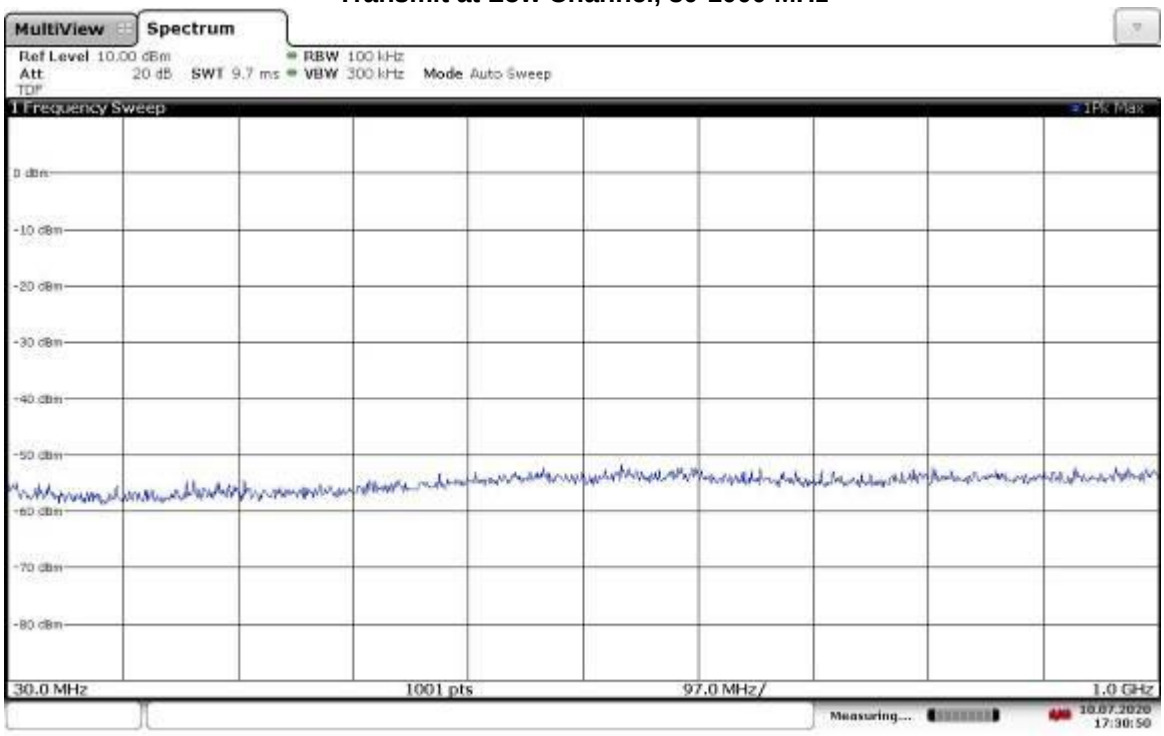


Manual scan at a distance of 10 cm, 18-25 GHz

10.5 Plots/Data:

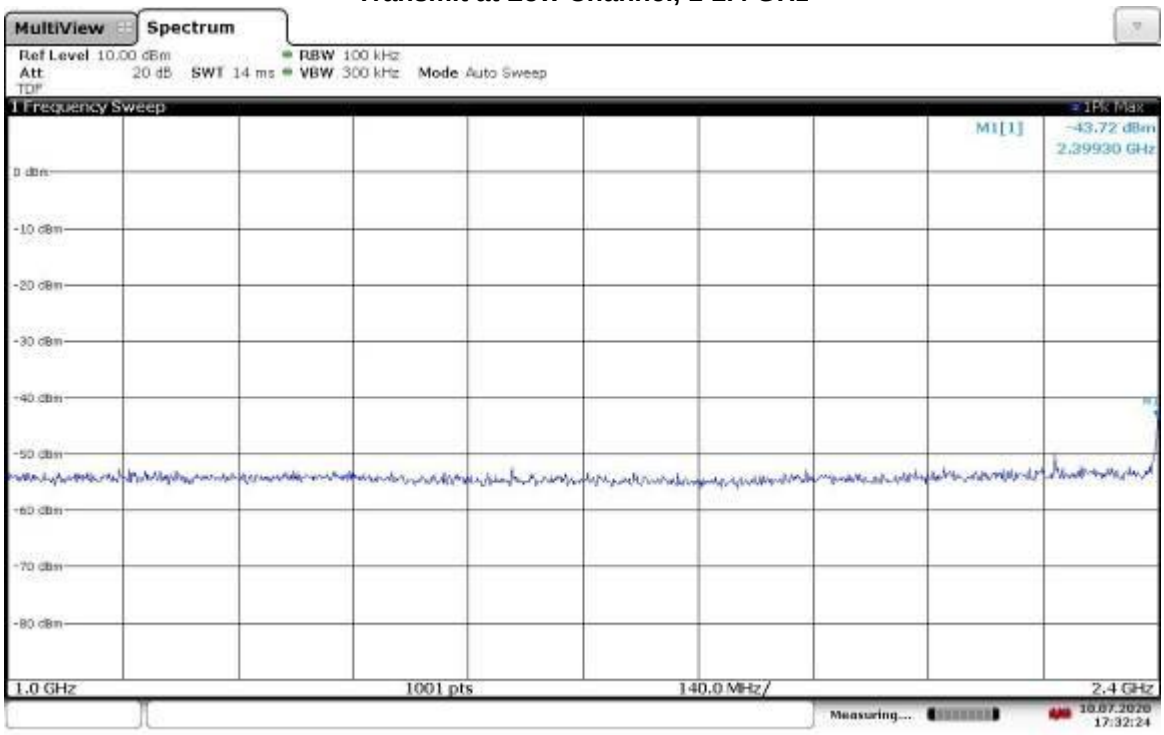
Conducted spurious emissions

Transmit at Low Channel, 30-1000 MHz



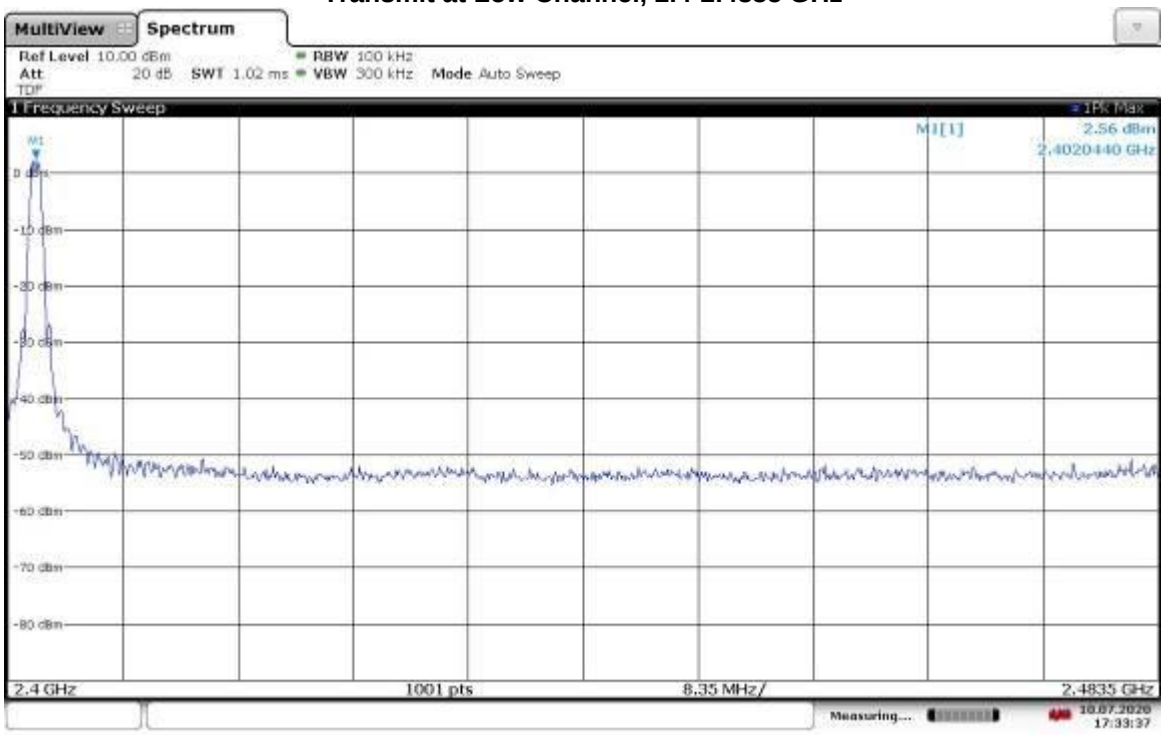
17:30:50 10.07.2020

Transmit at Low Channel, 1-2.4 GHz



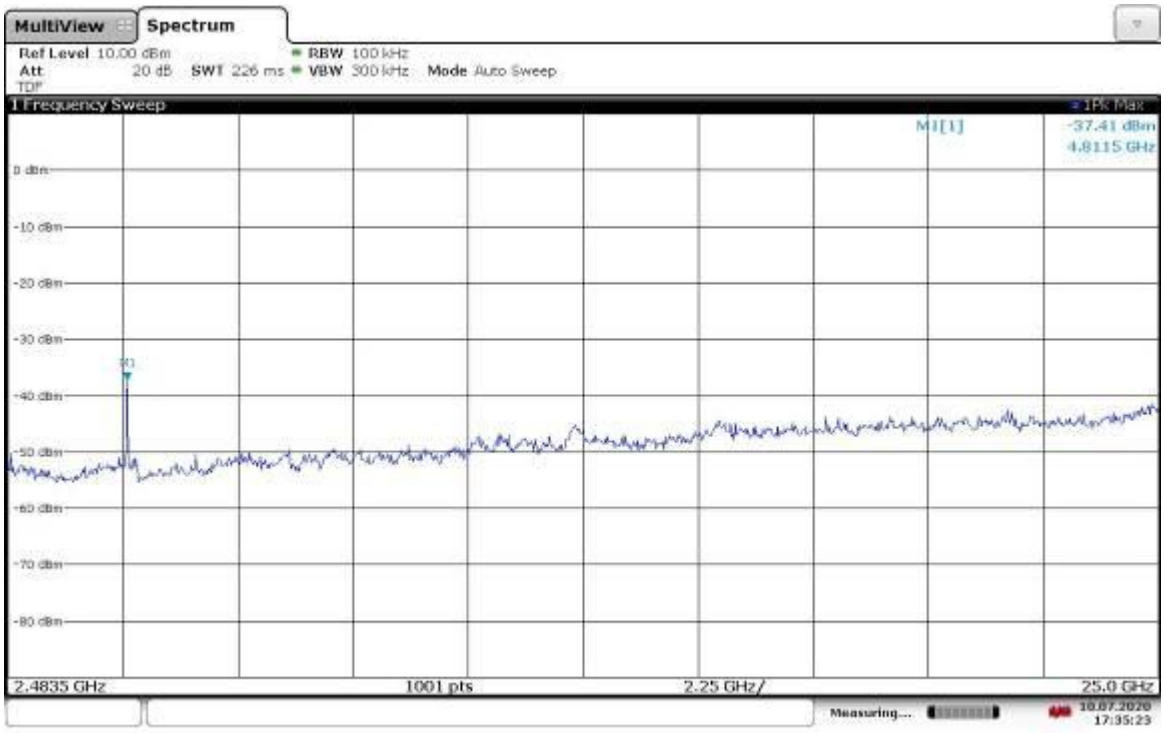
17:32:24 10.07.2020

Transmit at Low Channel, 2.4-2.4835 GHz



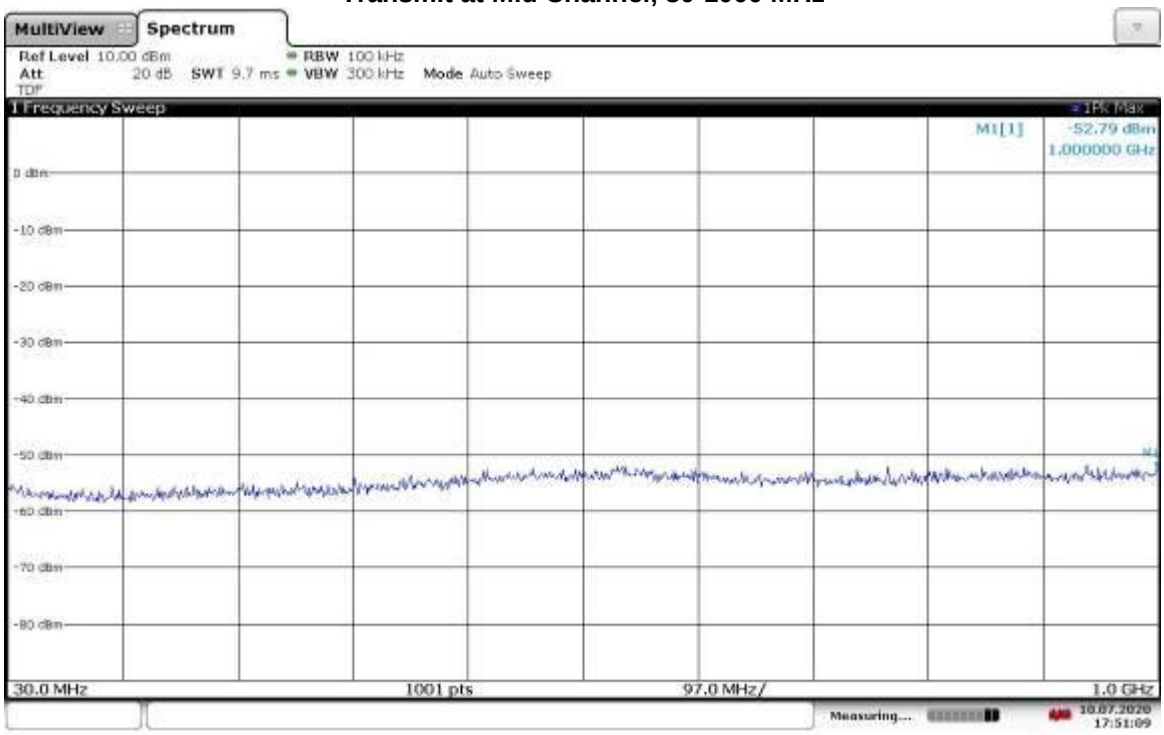
17:33:38 10.07.2020

Transmit at Low Channel, 2.4835-25 GHz



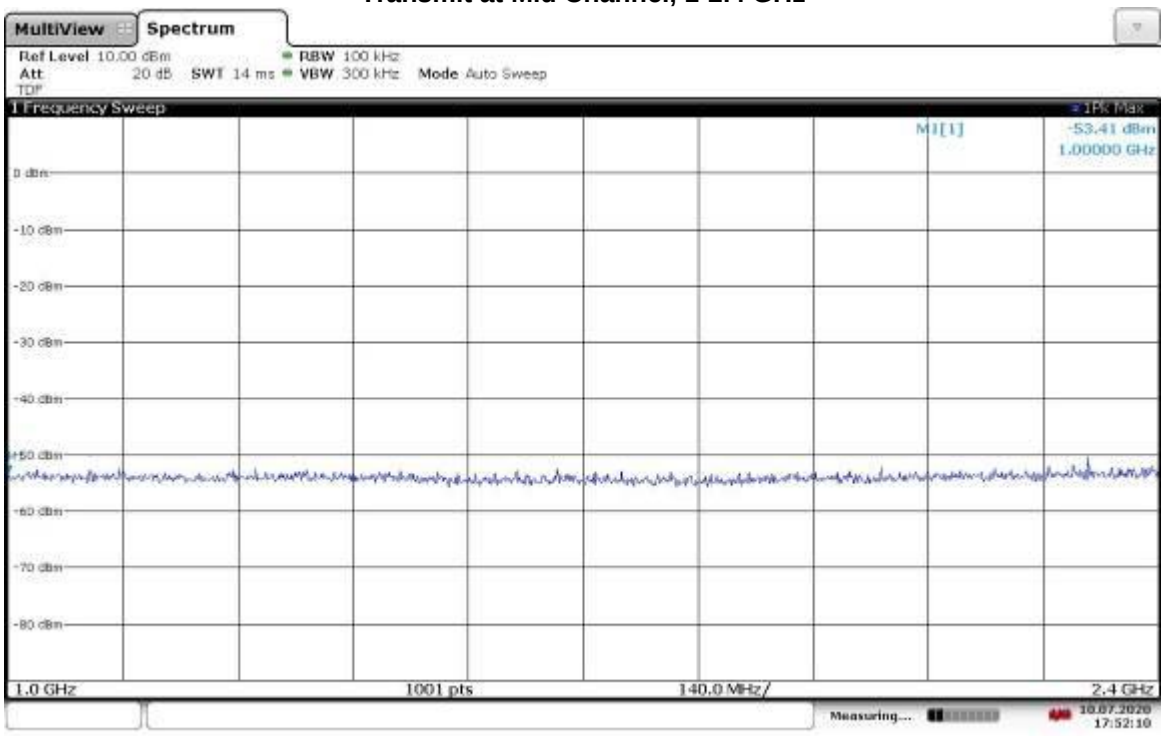
17:35:24 10.07.2020

Transmit at Mid Channel, 30-1000 MHz



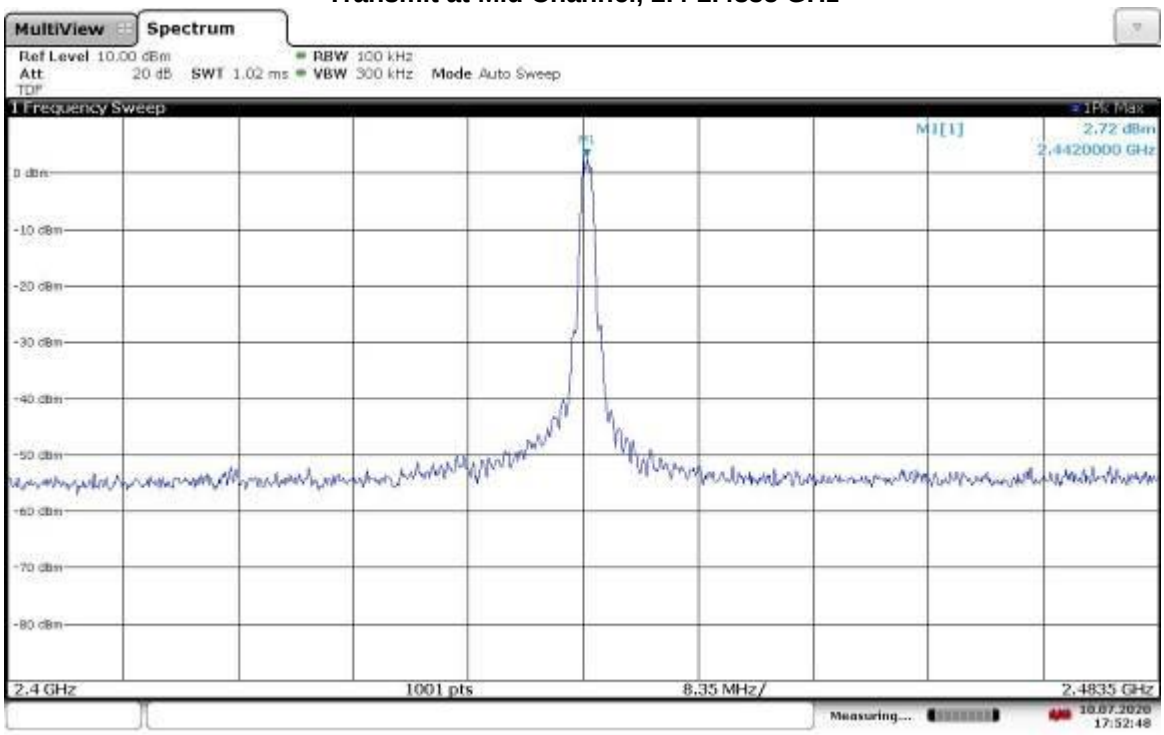
17:51:09 10.07.2020

Transmit at Mid Channel, 1-2.4 GHz



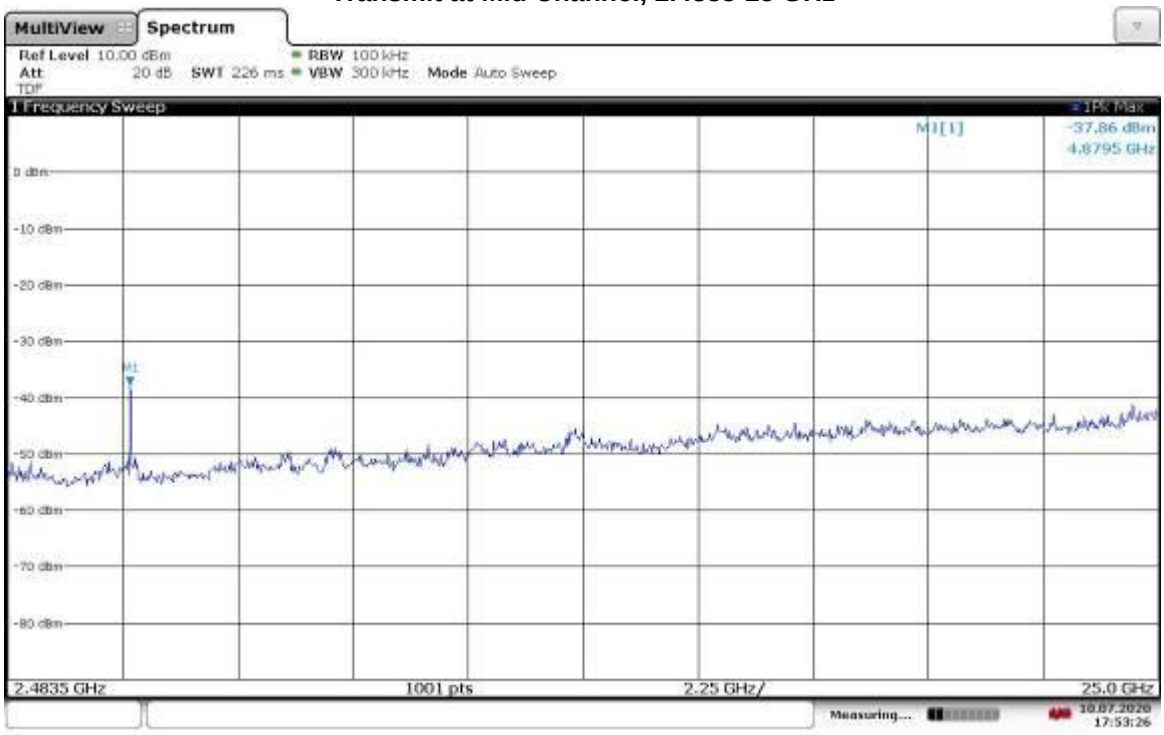
17:52:10 10.07.2020

Transmit at Mid Channel, 2.4-2.4835 GHz



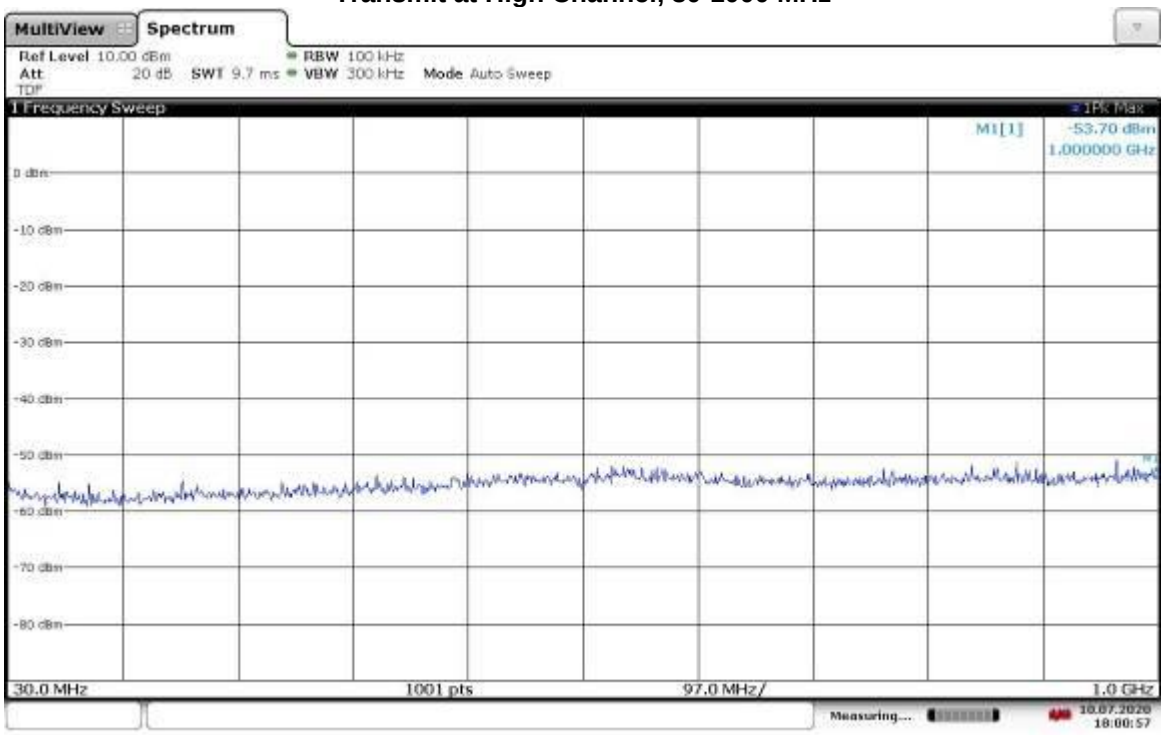
17:52:49 10.07.2020

Transmit at Mid Channel, 2.4835-25 GHz



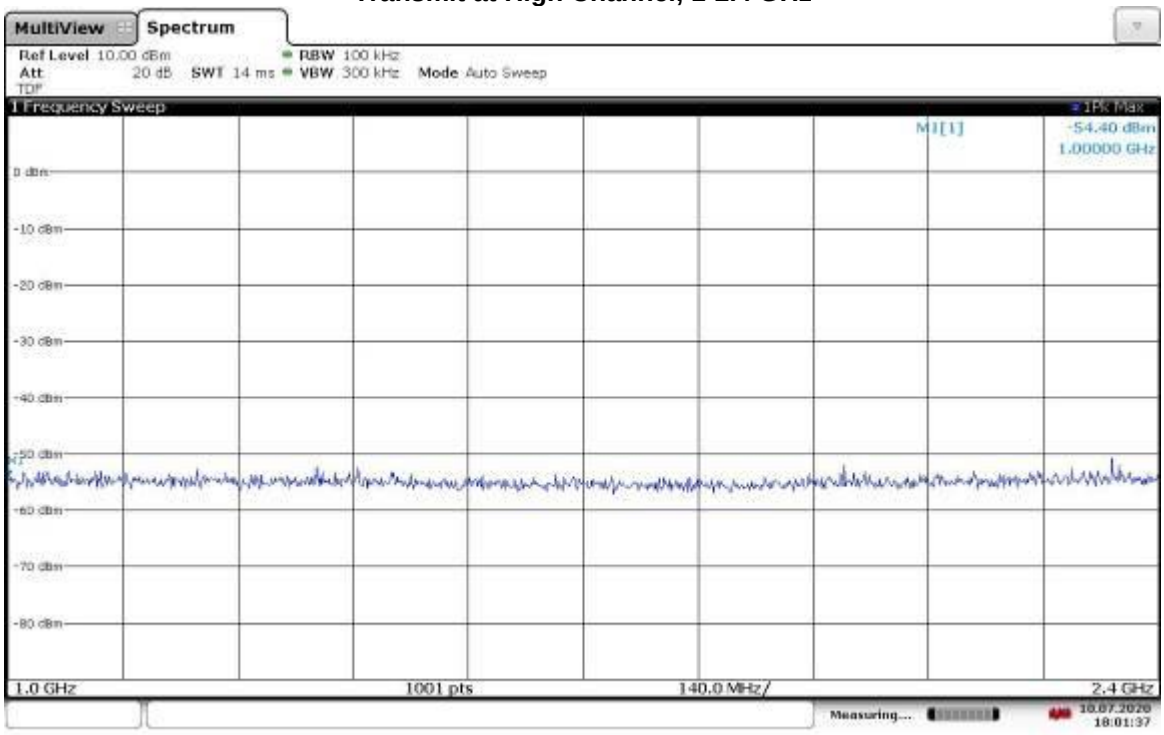
17:53:26 10.07.2020

Transmit at High Channel, 30-1000 MHz



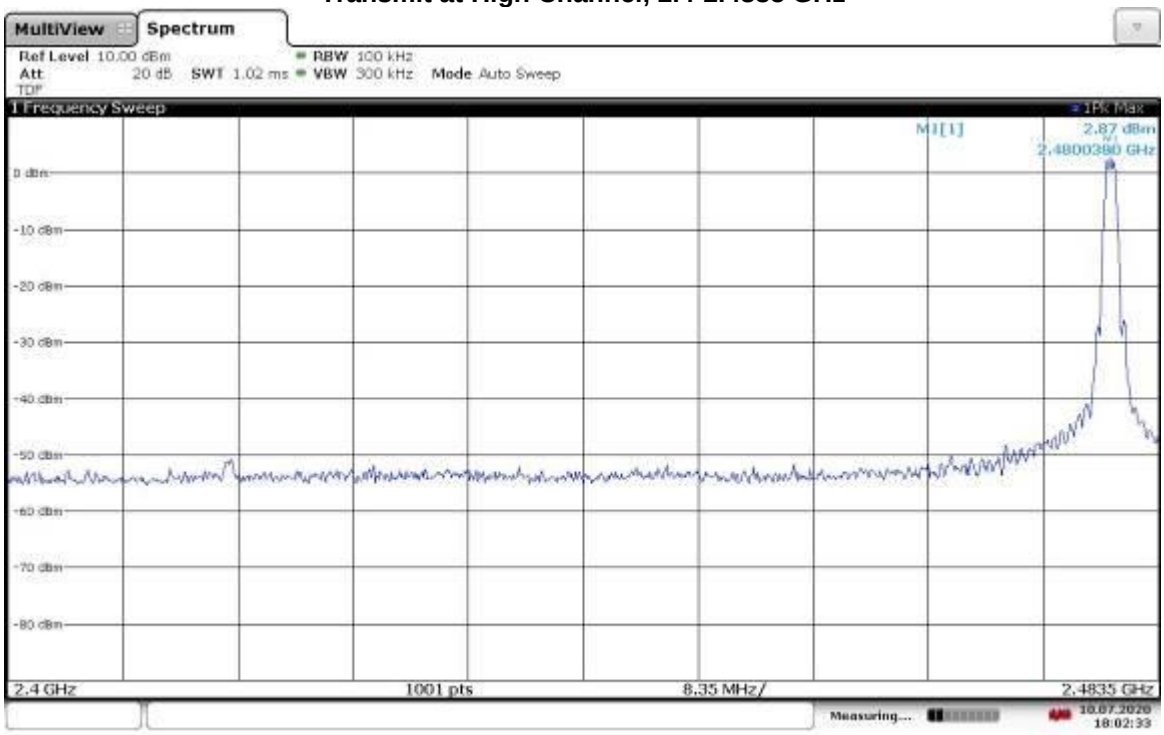
18:00:57 10.07.2020

Transmit at High Channel, 1-2.4 GHz



18:01:38 10.07.2020

Transmit at High Channel, 2.4-2.4835 GHz

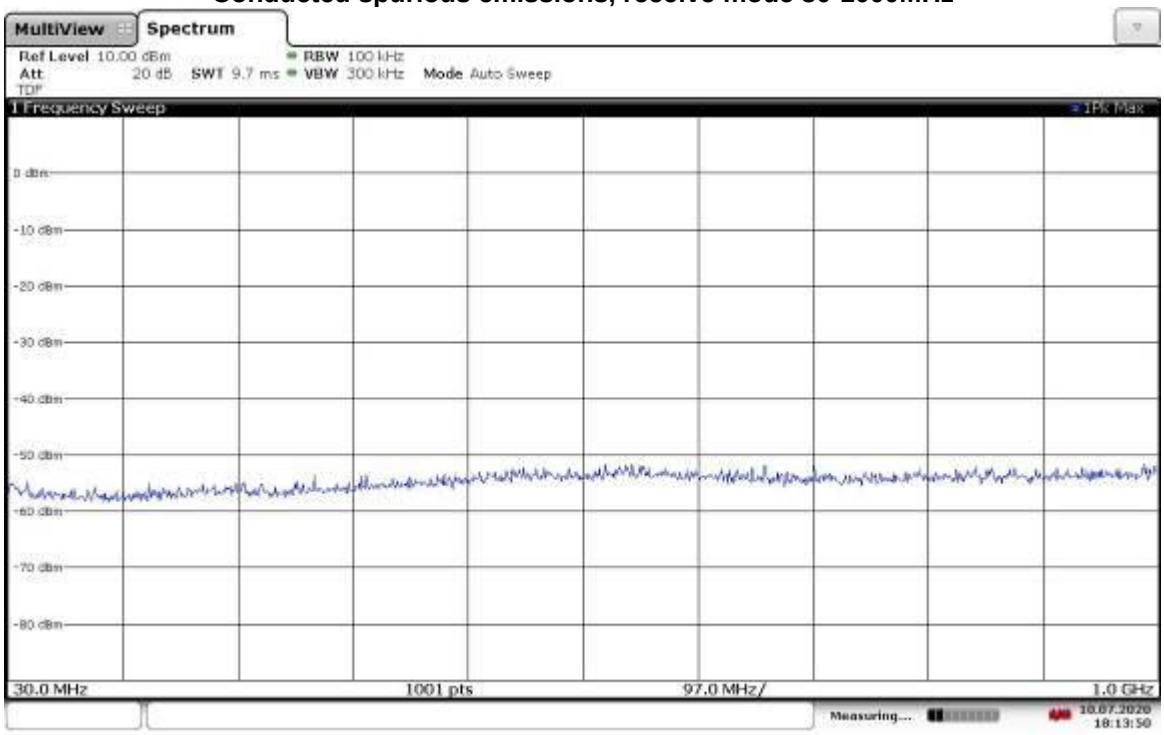


18:02:33 10.07.2020

Transmit at High Channel, 2.4835-25 GHz

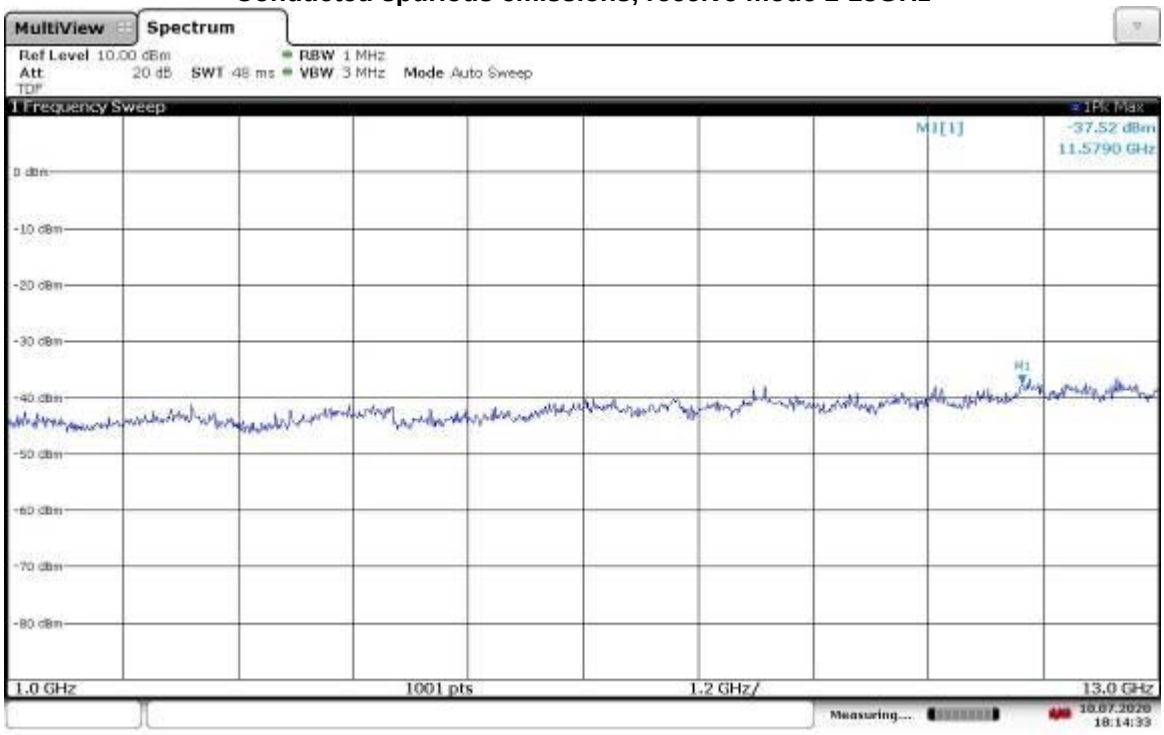
18:04:25 10.07.2020

Conducted spurious emissions, receive mode 30-1000MHz



18:13:50 10.07.2020

Conducted spurious emissions, receive mode 1-13GHz



18:14:34 10.07.2020

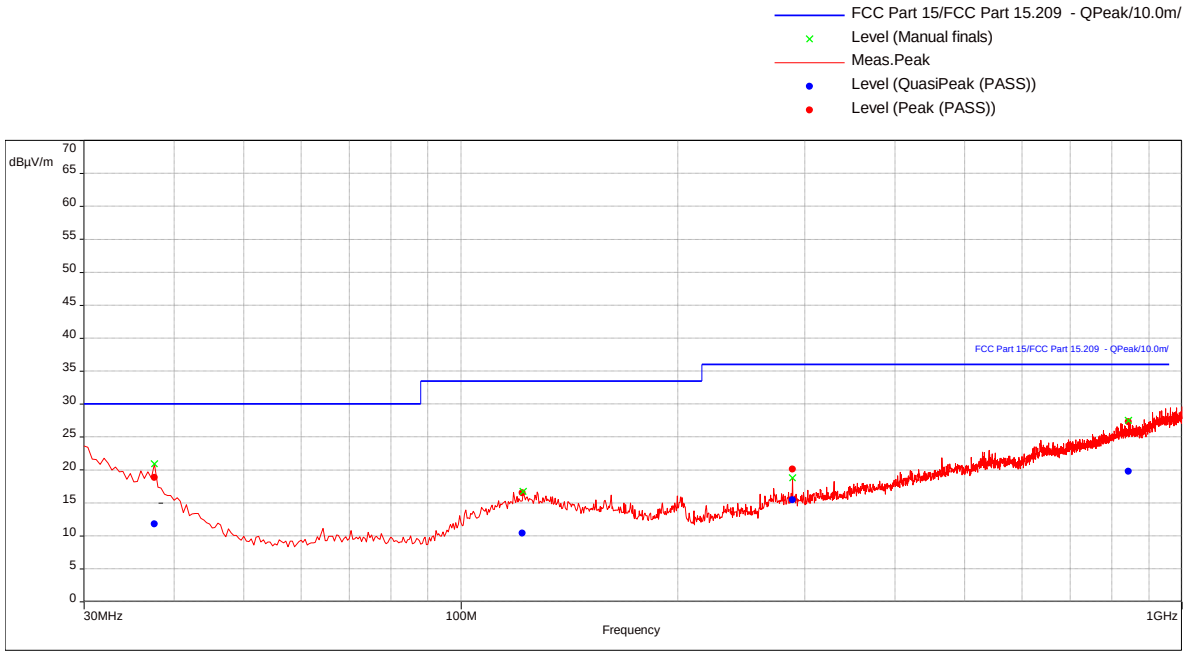
Radiated spurious emissions

Transmit at Low Channel (X-axis), 30-1000 MHz

Test Information:

Date and Time	7/10/2020 7:40:25 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 30-1000MHz_Battery power_Tx mode_Low CH_X-Axis

Graph:



Results:

QuasiPeak (PASS) (4)

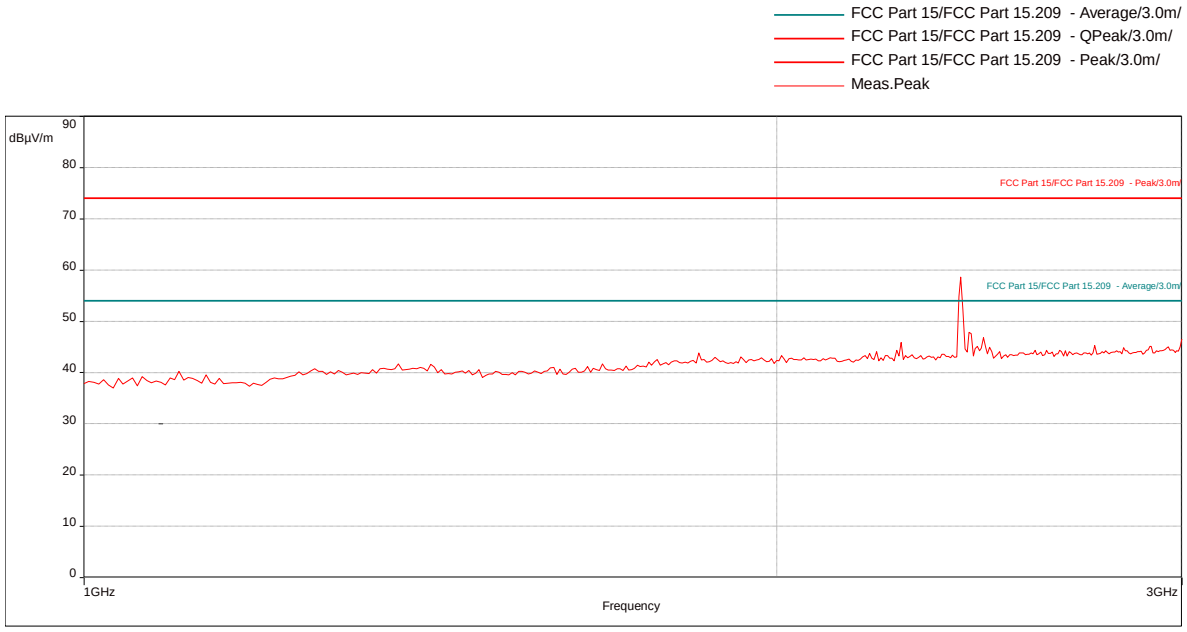
Frequency (MHz)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
37.66315789	30.00	-18.23	348.00	3.93	Vertical	120000.00	-17.47
121.6526316	33.50	-23.09	349.00	3.51	Horizontal	120000.00	-18.38
288.5578947	36.00	-20.53	359.00	1.00	Vertical	120000.00	-18.18
843.4421053	36.00	-16.26	63.00	3.96	Horizontal	120000.00	-6.84

Transmit at Low Channel (X-axis), 1-3 GHz

Test Information:

Date and Time	7/10/2020 10:48:26 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 1 to 3 GHz_Battery power_Tx mode_Low CH_X-Axis

Graph:



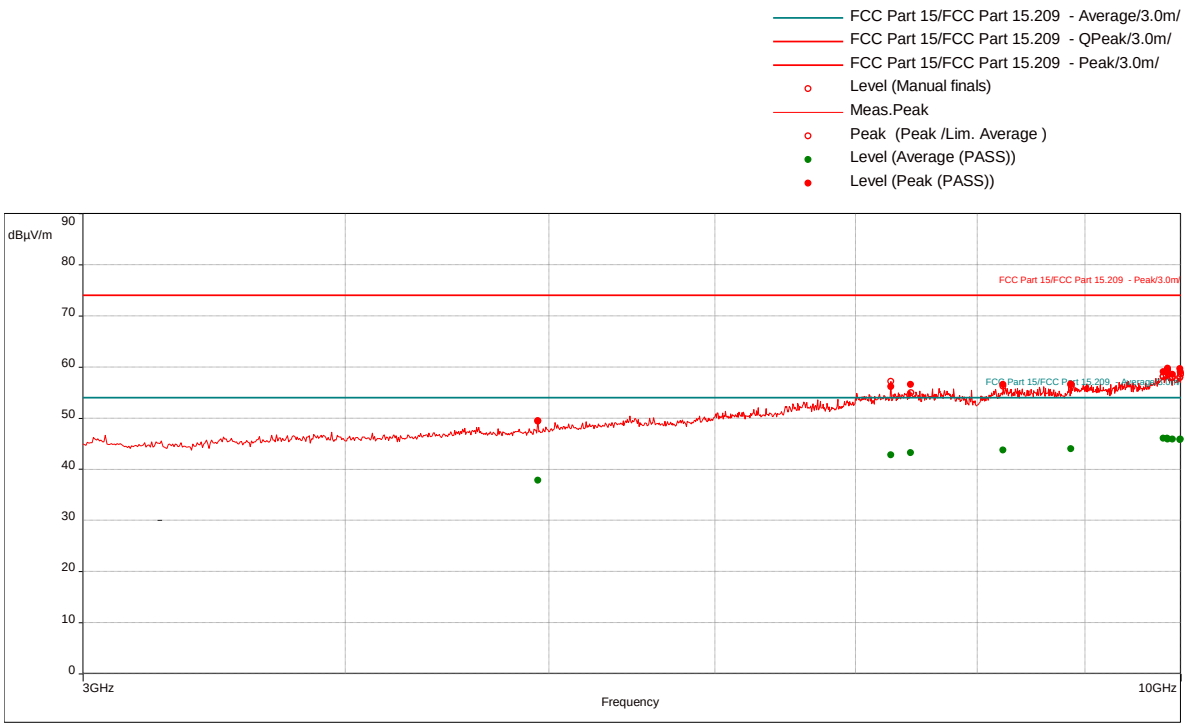
Results: Big peak is the emission of the fundamental frequency.

Transmit at Low Channel (X-axis), 3-10 GHz

Test Information:

Date and Time	7/12/2020 2:09:59 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 3 to 10 GHz_Battery power_Tx mode_High CH_X-Axis

Graph:



Results:

Peak (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4939.210526	49.39	74.00	-24.61	348.00	1.20	Horizontal	1000000.00	17.95
7273.421053	56.09	74.00	-17.91	320.00	2.45	Vertical	1000000.00	21.69
7437.368421	56.57	74.00	-17.43	299.00	2.85	Horizontal	1000000.00	21.90
8230	56.58	74.00	-17.42	201.00	1.65	Vertical	1000000.00	22.61
8864.210526	56.66	74.00	-17.34	197.00	3.10	Vertical	1000000.00	23.40
9809.473684	59.07	74.00	-14.93	0.00	1.45	Vertical	1000000.00	25.09
9847.894737	59.03	74.00	-14.97	106.00	3.54	Horizontal	1000000.00	25.16
9857.368421	59.72	74.00	-14.28	223.00	3.94	Vertical	1000000.00	25.18
9908.421053	58.56	74.00	-15.44	11.00	3.10	Horizontal	1000000.00	25.30
9988.684211	59.65	74.00	-14.35	216.00	1.80	Horizontal	1000000.00	25.53
9994.342105	59.05	74.00	-14.95	277.00	3.00	Vertical	1000000.00	25.55

Average (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4939.210526	37.80	54.00	-16.20	348.00	1.20	Horizontal	1000000.00	17.95
7273.421053	42.78	54.00	-11.22	320.00	2.45	Vertical	1000000.00	21.69
7437.368421	43.24	54.00	-10.76	299.00	2.85	Horizontal	1000000.00	21.90
8230	43.69	54.00	-10.31	201.00	1.65	Vertical	1000000.00	22.61
8864.210526	43.96	54.00	-10.04	197.00	3.10	Vertical	1000000.00	23.40

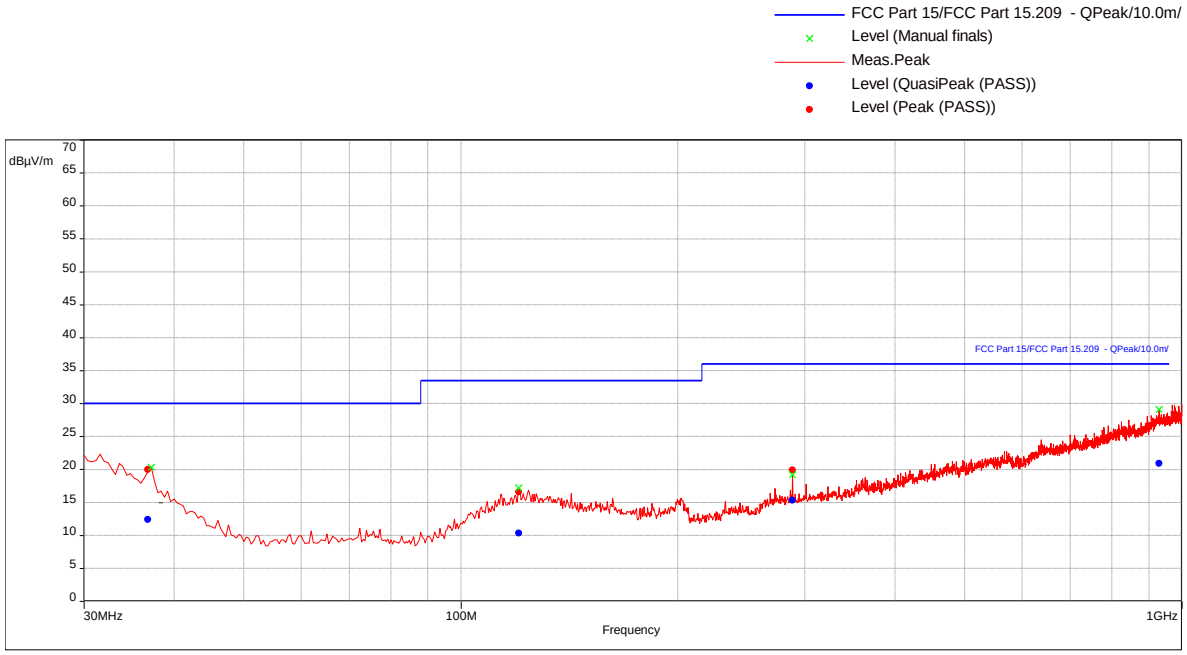
9809.473684	46.05	54.00	-7.95	0.00	1.45	Vertical	1000000.00	25.09
9847.894737	45.99	54.00	-8.01	106.00	3.54	Horizontal	1000000.00	25.16
9857.368421	45.88	54.00	-8.12	223.00	3.94	Vertical	1000000.00	25.18
9908.421053	45.86	54.00	-8.14	11.00	3.10	Horizontal	1000000.00	25.30
9988.684211	45.81	54.00	-8.19	216.00	1.80	Horizontal	1000000.00	25.53
9994.342105	45.83	54.00	-8.17	277.00	3.00	Vertical	1000000.00	25.55

Transmit at Low Channel (Y-axis), 30-1000 MHz

Test Information:

Date and Time	7/10/2020 7:59:12 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 30-1000MHz_Battery power_Tx mode_Low CH_Y-Axis

Graph:



Results:

QuasiPeak (PASS) (4)

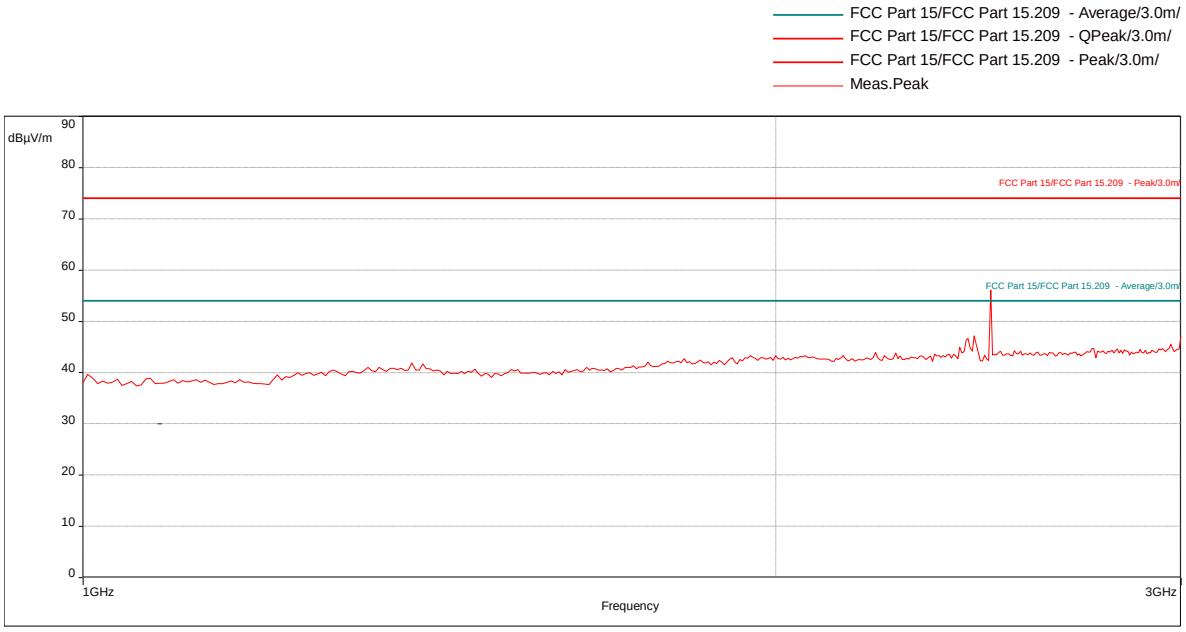
Frequency (MHz)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
36.85263158	30.00	-17.59	195.00	1.81	Vertical	120000.00	-16.84
120.3368421	33.50	-23.16	151.00	3.21	Vertical	120000.00	-18.45
288.5578947	36.00	-20.71	173.00	1.00	Vertical	120000.00	-18.18
930.5263158	36.00	-15.13	180.00	1.00	Horizontal	120000.00	-5.36

Transmit at Low Channel (Y-axis) 1-3 GHz

Test Information:

Date and Time	7/10/2020 11:00:12 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 1 to 3 GHz_Battery power_Tx mode_High CH_Y-Axis

Graph:



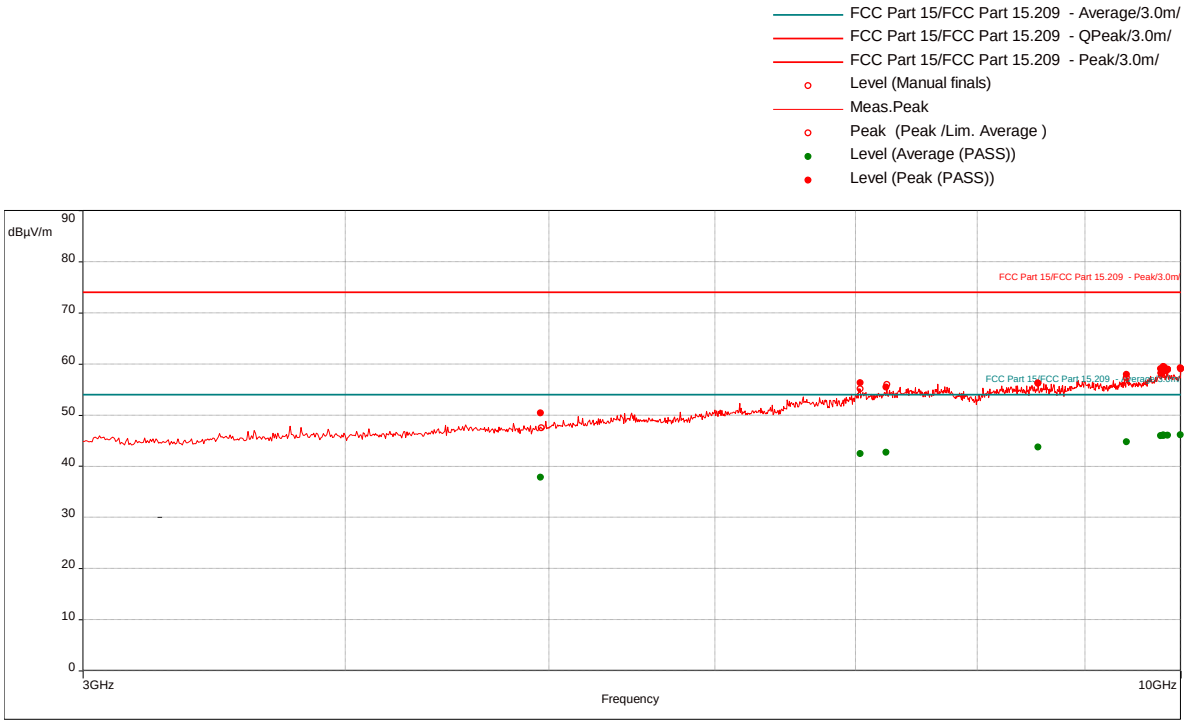
Results: Big peak is the emission of the fundamental frequency.

Transmit at Low Channel (Y-axis) 3-10 GHz

Test Information:

Date and Time	7/12/2020 2:54:25 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 3 to 10 GHz_Battery power_Tx mode_High CH_Y-Axis

Graph:



Results:

Peak (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4955.789474	50.39	74.00	-23.61	143.00	3.00	Horizontal	1000000.00	17.96
7032.894737	56.31	74.00	-17.69	357.00	2.25	Vertical	1000000.00	21.51
7241.578947	55.44	74.00	-18.56	172.00	1.65	Vertical	1000000.00	21.70
8548.421053	56.25	74.00	-17.75	209.00	1.50	Vertical	1000000.00	22.87
9418.947368	57.94	74.00	-16.06	188.00	1.60	Horizontal	1000000.00	24.32
9781.842105	59.00	74.00	-15.00	4.00	3.69	Horizontal	1000000.00	25.02
9802.631579	59.06	74.00	-14.94	313.00	1.00	Horizontal	1000000.00	25.08
9808.684211	59.49	74.00	-14.51	83.00	3.69	Vertical	1000000.00	25.09
9818.947368	59.37	74.00	-14.63	4.00	1.85	Horizontal	1000000.00	25.11
9856.842105	58.93	74.00	-15.07	9.00	1.15	Horizontal	1000000.00	25.18
9995.526316	59.17	74.00	-14.83	163.00	3.54	Horizontal	1000000.00	25.55

Average (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4955.789474	37.82	54.00	-16.18	143.00	3.00	Horizontal	1000000.00	17.96
7032.894737	42.46	54.00	-11.54	357.00	2.25	Vertical	1000000.00	21.51
7241.578947	42.66	54.00	-11.34	172.00	1.65	Vertical	1000000.00	21.70
8548.421053	43.70	54.00	-10.30	209.00	1.50	Vertical	1000000.00	22.87
9418.947368	44.74	54.00	-9.26	188.00	1.60	Horizontal	1000000.00	24.32

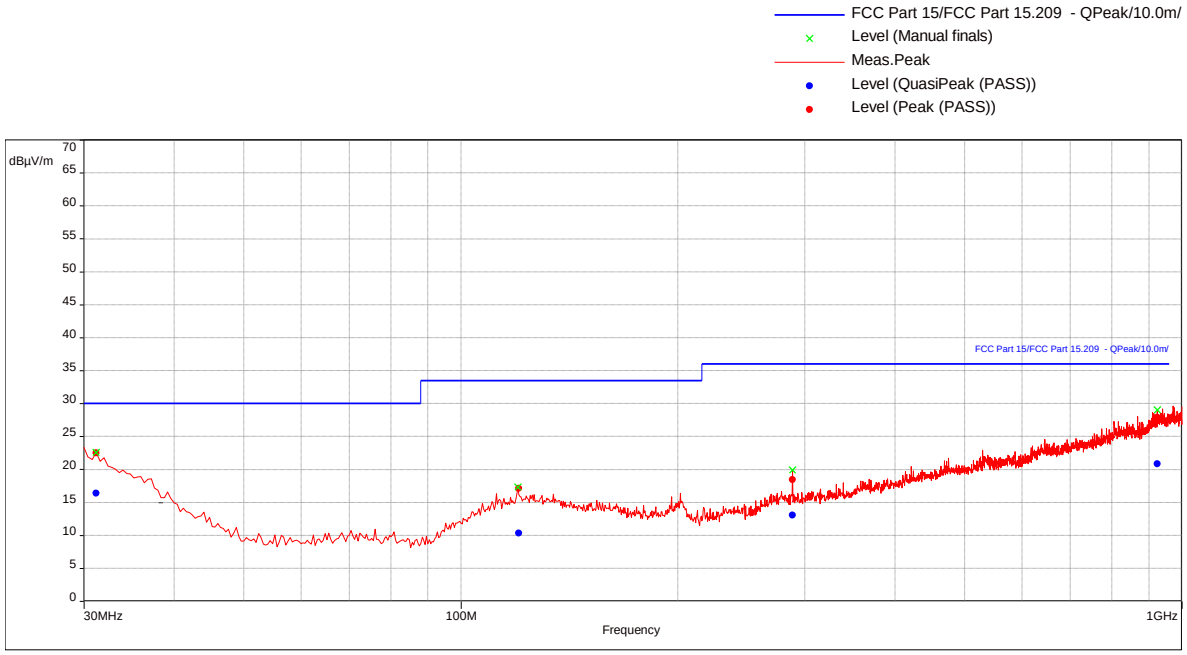
9781.842105	45.98	54.00	-8.02	4.00	3.69	Horizontal	1000000.00	25.02
9802.631579	46.04	54.00	-7.96	313.00	1.00	Horizontal	1000000.00	25.08
9808.684211	46.05	54.00	-7.95	83.00	3.69	Vertical	1000000.00	25.09
9818.947368	46.07	54.00	-7.93	4.00	1.85	Horizontal	1000000.00	25.11
9856.842105	46.01	54.00	-7.99	9.00	1.15	Horizontal	1000000.00	25.18
9995.526316	46.11	54.00	-7.89	163.00	3.54	Horizontal	1000000.00	25.55

Transmit at Low Channel (Z-axis), 30-1000 MHz

Test Information:

Date and Time	7/10/2020 8:18:25 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 30-1000MHz_Battery power_Tx mode_Low CH_Z-Axis

Graph:



Results:

QuasiPeak (PASS) (4)

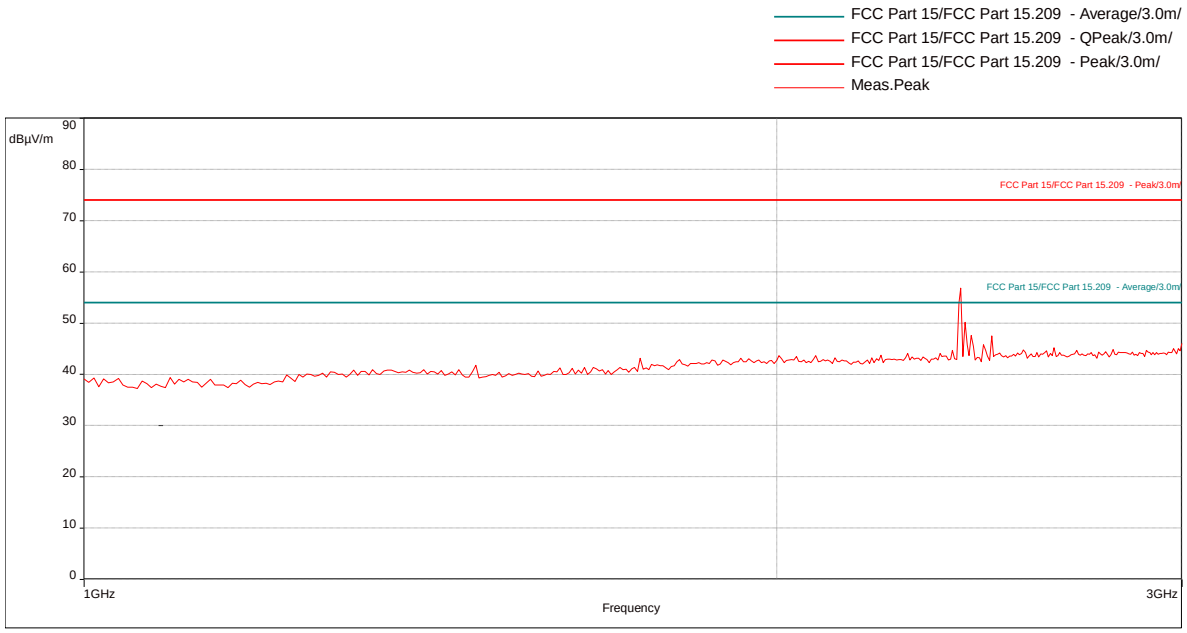
Frequency (MHz)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
31.38947368	30.00	-13.61	261.00	1.73	Vertical	120000.00	-13.06
120.3473684	33.50	-23.16	158.00	1.43	Vertical	120000.00	-18.45
288.5578947	36.00	-22.98	276.00	1.88	Vertical	120000.00	-18.18
924.6210526	36.00	-15.16	350.00	3.78	Vertical	120000.00	-5.54

Transmit at Low Channel (Z-axis) 1-3 GHz

Test Information:

Date and Time	7/10/2020 11:10:31 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 1 to 3 GHz_Battery power_Tx mode_Low CH Z-Axis

Graph:



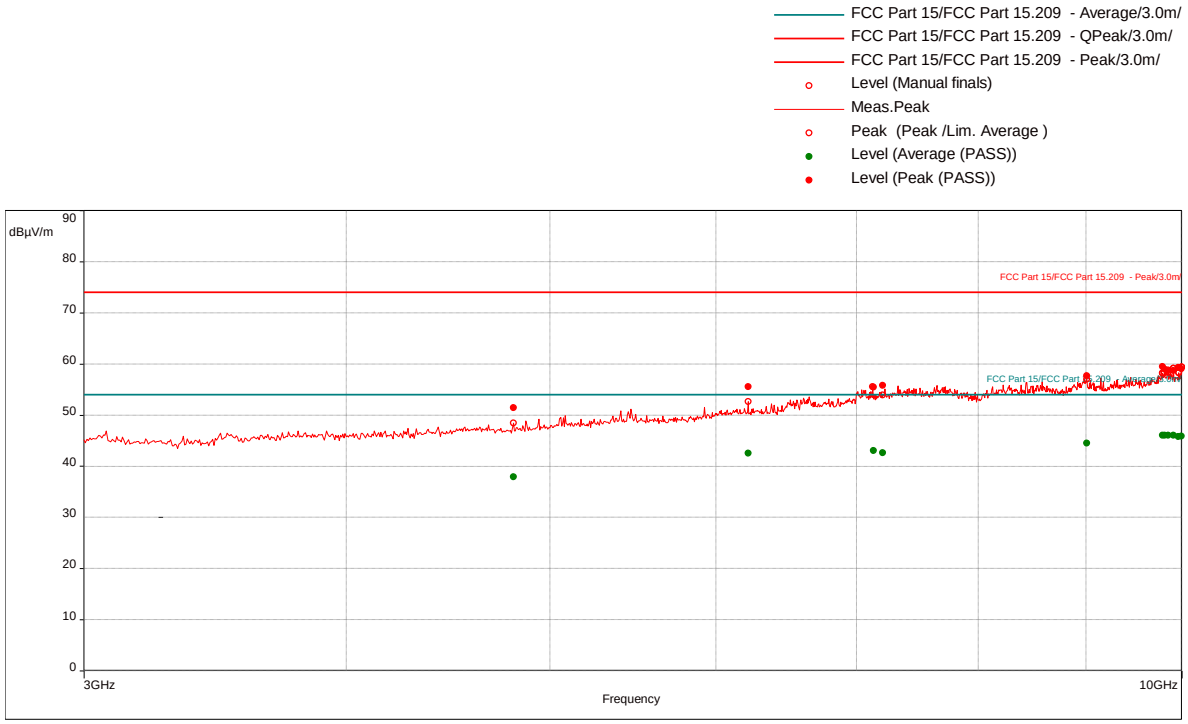
Results: Big peak is the emission of the fundamental frequency.

Transmit at Low Channel (Z-axis) 3-10 GHz

Test Information:

Date and Time	7/12/2020 5:00:32 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 3 to 10 GHz_Battery power_Tx mode_Low CH_Z-Axis

Graph:



Results:

Peak (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4804.473684	51.45	74.00	-22.55	3.00	2.40	Vertical	1000000.00	17.95
6216.052632	55.50	74.00	-18.50	269.00	3.59	Horizontal	1000000.00	20.70
7128.684211	55.42	74.00	-18.58	239.00	1.55	Horizontal	1000000.00	21.56
7202.631579	55.77	74.00	-18.23	186.00	3.10	Vertical	1000000.00	21.65
9010.789474	57.67	74.00	-16.33	32.00	1.00	Horizontal	1000000.00	23.69
9788.947368	59.44	74.00	-14.56	9.00	2.55	Horizontal	1000000.00	25.04
9813.947368	58.96	74.00	-15.04	89.00	1.20	Horizontal	1000000.00	25.10
9848.421053	58.79	74.00	-15.21	164.00	2.35	Vertical	1000000.00	25.17
9910	58.68	74.00	-15.32	342.00	3.54	Horizontal	1000000.00	25.31
9961.842105	59.32	74.00	-14.68	70.00	2.20	Vertical	1000000.00	25.46
9996.052632	59.05	74.00	-14.95	76.00	1.10	Vertical	1000000.00	25.55

Average (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4804.473684	37.95	54.00	-16.05	3.00	2.40	Vertical	1000000.00	17.95
6216.052632	42.52	54.00	-11.48	269.00	3.59	Horizontal	1000000.00	20.70
7128.684211	43.02	54.00	-10.98	239.00	1.55	Horizontal	1000000.00	21.56
7202.631579	42.60	54.00	-11.40	186.00	3.10	Vertical	1000000.00	21.65
9010.789474	44.51	54.00	-9.49	32.00	1.00	Horizontal	1000000.00	23.69

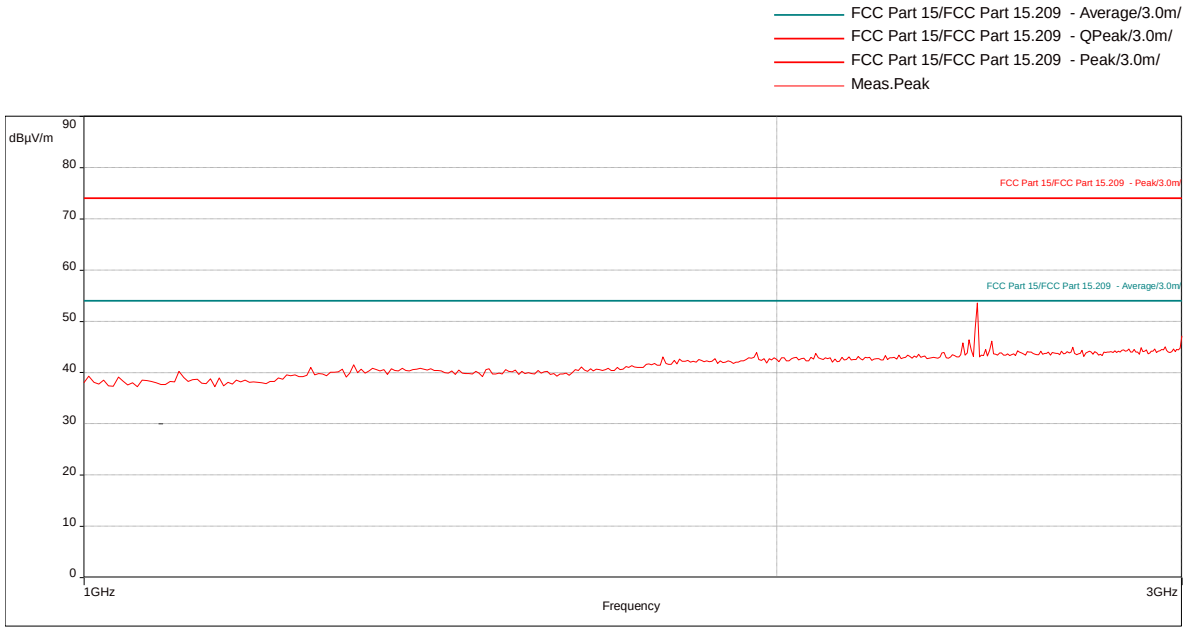
9788.947368	46.00	54.00	-8.00	9.00	2.55	Horizontal	1000000.00	25.04
9813.947368	46.06	54.00	-7.94	89.00	1.20	Horizontal	1000000.00	25.10
9848.421053	45.99	54.00	-8.01	164.00	2.35	Vertical	1000000.00	25.17
9910	46.00	54.00	-8.00	342.00	3.54	Horizontal	1000000.00	25.31
9961.842105	45.74	54.00	-8.26	70.00	2.20	Vertical	1000000.00	25.46
9996.052632	45.83	54.00	-8.17	76.00	1.10	Vertical	1000000.00	25.55

Transmit at Mid Channel (X-axis), 1-3 GHz

Test Information:

Date and Time	7/10/2020 10:52:47 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 1 to 3 GHz_Battery power_Tx mode_Mid CH_X-Axis

Graph:



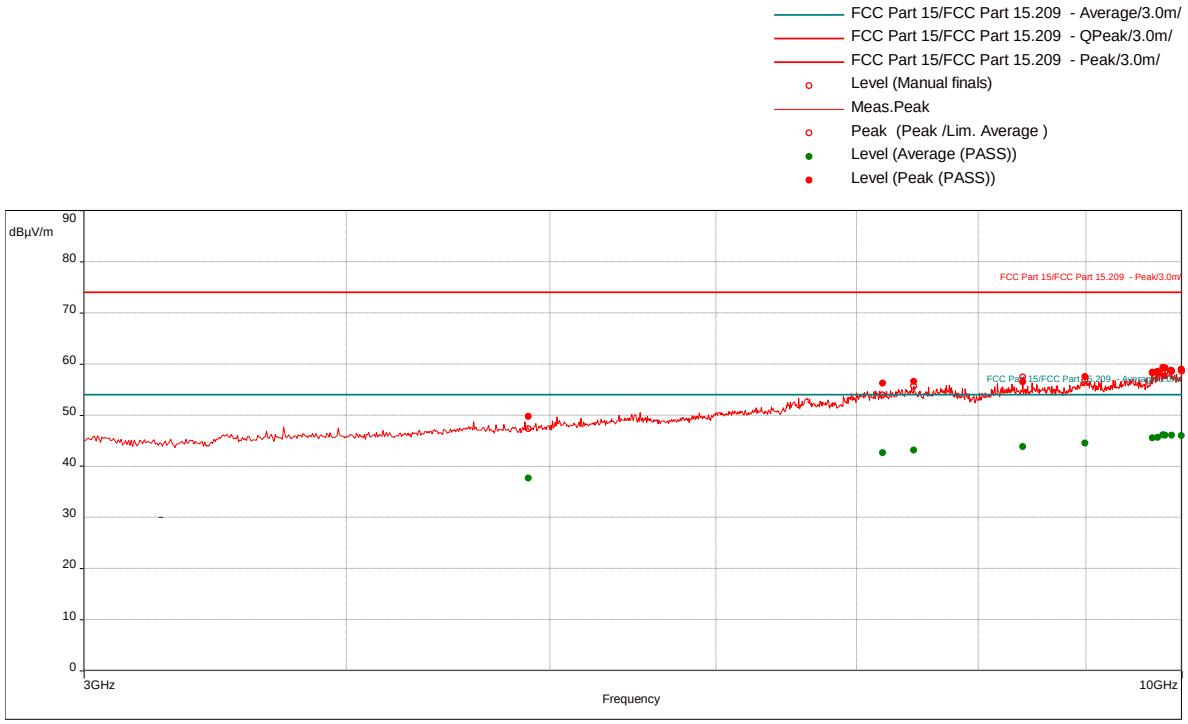
Results: Big peak is the emission of the fundamental frequency.

Transmit at Mid Channel (X-axis), 3-10 GHz

Test Information:

Date and Time	7/12/2020 2:08:35 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 3 to 10 GHz_Battery power_Tx mode_Mid CH_X-Axis

Graph:



Results:

Peak (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4884.736842	49.71	74.00	-24.29	261.00	3.74	Vertical	1000000.00	17.97
7203.947368	56.19	74.00	-17.81	356.00	1.85	Vertical	1000000.00	21.65
7453.157895	56.59	74.00	-17.41	210.00	1.75	Vertical	1000000.00	21.92
8397.894737	56.46	74.00	-17.54	358.00	1.10	Horizontal	1000000.00	22.83
8996.052632	57.52	74.00	-16.48	129.00	3.79	Vertical	1000000.00	23.66
9685.263158	58.31	74.00	-15.69	18.00	2.90	Vertical	1000000.00	24.81
9742.368421	58.54	74.00	-15.46	151.00	2.45	Vertical	1000000.00	24.91
9792.631579	59.32	74.00	-14.68	263.00	2.40	Horizontal	1000000.00	25.05
9817.631579	59.23	74.00	-14.77	10.00	1.15	Horizontal	1000000.00	25.11
9887.631579	58.50	74.00	-15.50	320.00	1.25	Vertical	1000000.00	25.25
9993.026316	58.92	74.00	-15.08	18.00	1.10	Vertical	1000000.00	25.54

Average (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4884.736842	37.67	54.00	-16.33	261.00	3.74	Vertical	1000000.00	17.97
7203.947368	42.61	54.00	-11.39	356.00	1.85	Vertical	1000000.00	21.65
7453.157895	43.13	54.00	-10.87	210.00	1.75	Vertical	1000000.00	21.92
8397.894737	43.79	54.00	-10.21	358.00	1.10	Horizontal	1000000.00	22.83
8996.052632	44.49	54.00	-9.51	129.00	3.79	Vertical	1000000.00	23.66

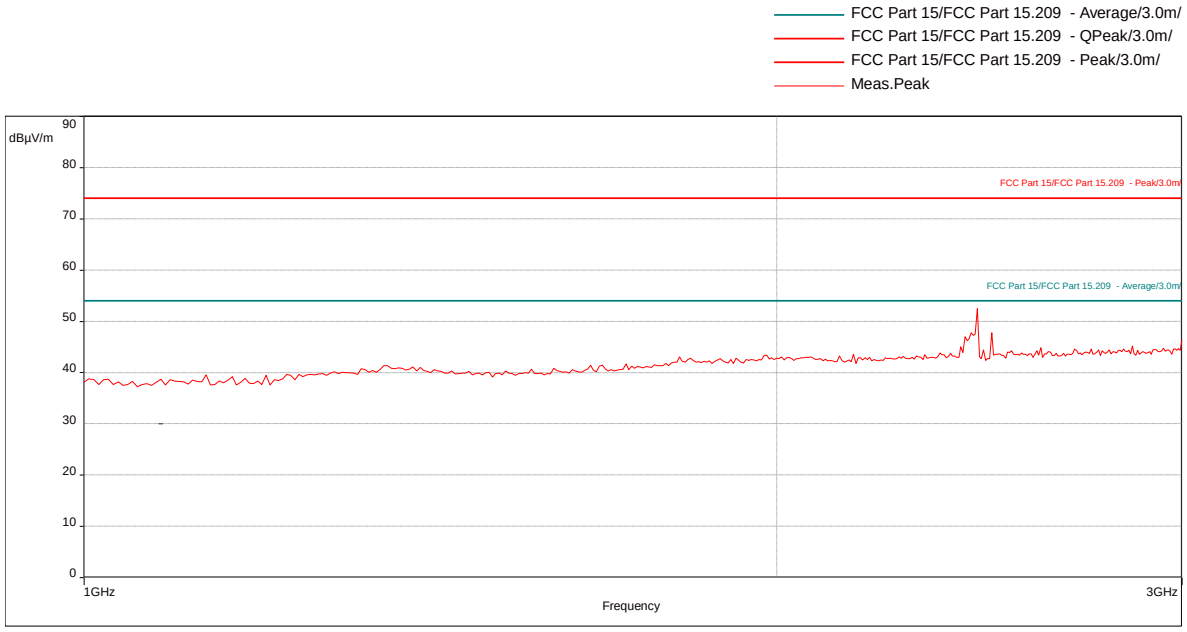
9685.263158	45.50	54.00	-8.50	18.00	2.90	Vertical	1000000.00	24.81
9742.368421	45.61	54.00	-8.39	151.00	2.45	Vertical	1000000.00	24.91
9792.631579	46.14	54.00	-7.86	263.00	2.40	Horizontal	1000000.00	25.05
9817.631579	46.06	54.00	-7.94	10.00	1.15	Horizontal	1000000.00	25.11
9887.631579	46.08	54.00	-7.92	320.00	1.25	Vertical	1000000.00	25.25
9993.026316	45.96	54.00	-8.04	18.00	1.10	Vertical	1000000.00	25.54

Transmit at Mid Channel (Y-axis), 1-3 GHz

Test Information:

Date and Time	7/10/2020 11:03:18 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 1 to 3 GHz_Battery power_Tx mode_Mid CH_Y-Axis

Graph:



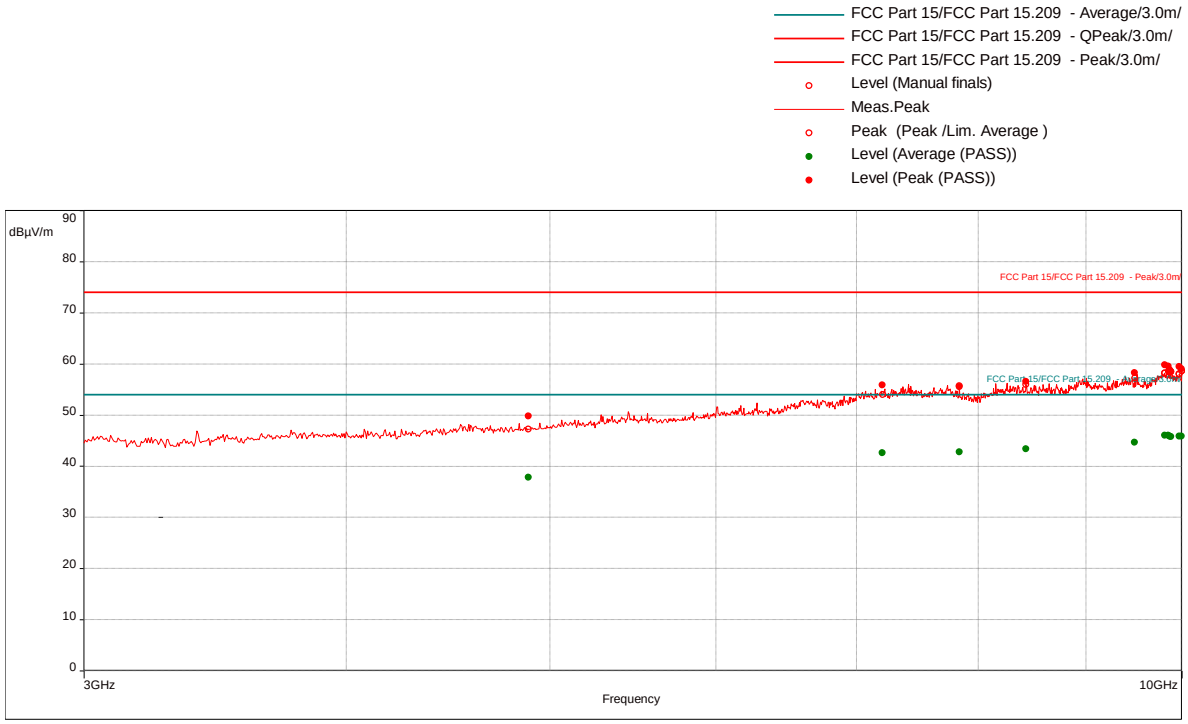
Results: Big peak is the emission of the fundamental frequency.

Transmit at Mid Channel (Y-axis), 3-10 GHz

Test Information:

Date and Time	7/12/2020 3:36:44 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 3 to 10 GHz_Battery power_Tx mode_Mid CH_Y-Axis

Graph:



Results:

Peak (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4883.684211	49.83	74.00	-24.17	98.00	1.00	Vertical	1000000.00	17.97
7201.052632	55.91	74.00	-18.09	33.00	1.40	Horizontal	1000000.00	21.65
7833.684211	55.49	74.00	-18.51	32.00	1.60	Vertical	1000000.00	21.99
8431.315789	56.57	74.00	-17.43	173.00	2.65	Horizontal	1000000.00	22.82
9497.368421	58.24	74.00	-15.76	349.00	3.59	Vertical	1000000.00	24.50
9815.789474	59.78	74.00	-14.22	10.00	3.05	Vertical	1000000.00	25.10
9852.105263	59.57	74.00	-14.43	173.00	1.55	Vertical	1000000.00	25.17
9866.052632	58.83	74.00	-15.17	150.00	2.70	Vertical	1000000.00	25.20
9881.578947	58.49	74.00	-15.51	201.00	3.39	Vertical	1000000.00	25.24
9969.210526	59.45	74.00	-14.55	76.00	1.70	Horizontal	1000000.00	25.48
9995.657895	59.05	74.00	-14.95	47.00	3.89	Horizontal	1000000.00	25.55

Average (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4883.684211	37.82	54.00	-16.18	98.00	1.00	Vertical	1000000.00	17.97
7201.052632	42.60	54.00	-11.40	33.00	1.40	Horizontal	1000000.00	21.65
7833.684211	42.82	54.00	-11.18	32.00	1.60	Vertical	1000000.00	21.99
8431.315789	43.38	54.00	-10.62	173.00	2.65	Horizontal	1000000.00	22.82
9497.368421	44.64	54.00	-9.36	349.00	3.59	Vertical	1000000.00	24.50

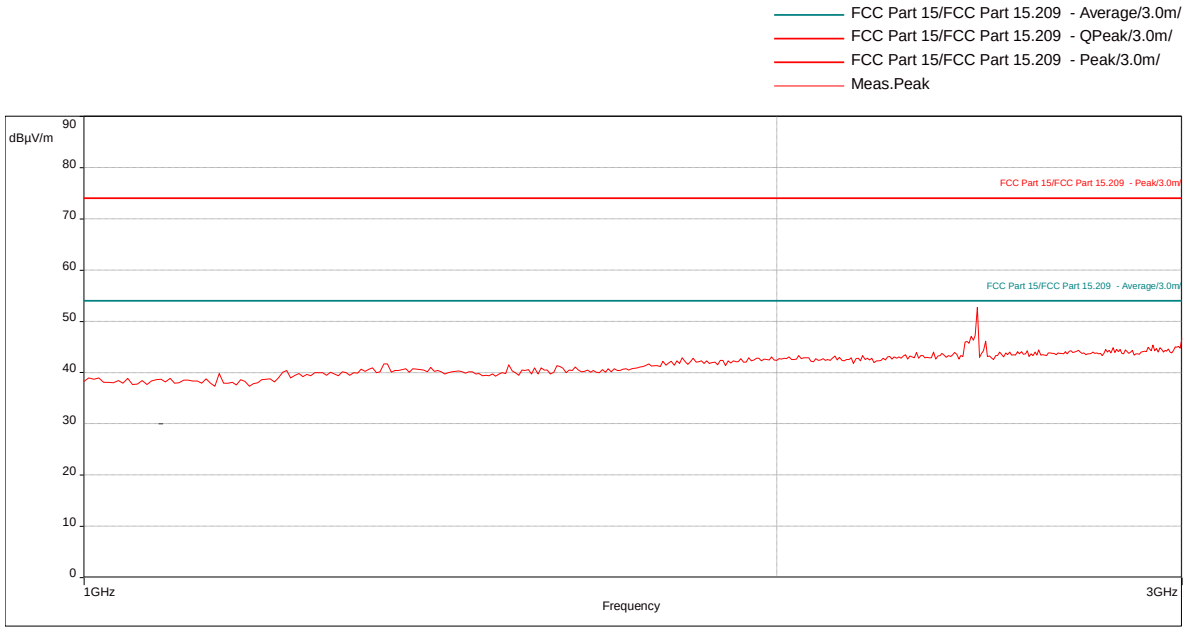
9815.789474	46.06	54.00	-7.94	10.00	3.05	Vertical	1000000.00	25.10
9852.105263	46.00	54.00	-8.00	173.00	1.55	Vertical	1000000.00	25.17
9866.052632	45.90	54.00	-8.10	150.00	2.70	Vertical	1000000.00	25.20
9881.578947	45.80	54.00	-8.20	201.00	3.39	Vertical	1000000.00	25.24
9969.210526	45.90	54.00	-8.10	76.00	1.70	Horizontal	1000000.00	25.48
9995.657895	45.83	54.00	-8.17	47.00	3.89	Horizontal	1000000.00	25.55

Transmit at Mid Channel (Z-axis), 1-3 GHz

Test Information:

Date and Time	7/10/2020 11:13:23 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 1 to 3 GHz_Battery power_Tx mode_Mid CH Z-Axis

Graph:



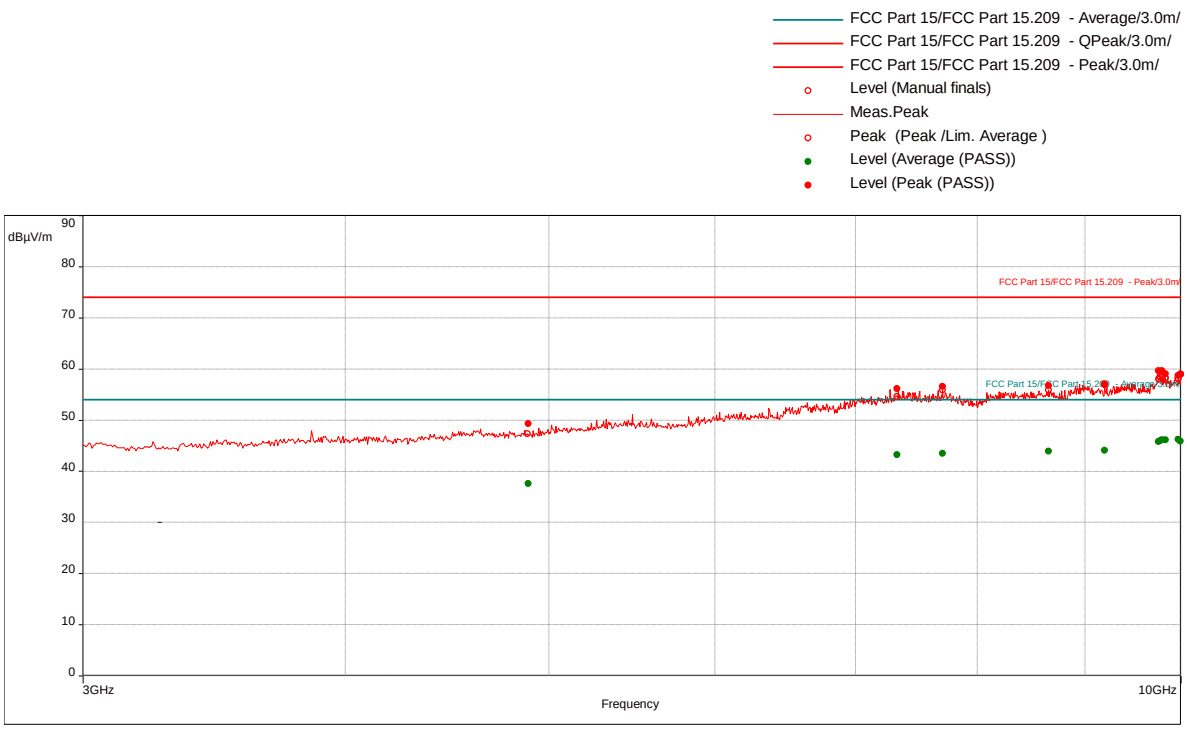
Results: Big peak is the emission of the fundamental frequency.

Transmit at Mid Channel (Z-axis), 3-10 GHz

Test Information:

Date and Time	7/12/2020 5:43:06 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 3 to 10 GHz_Battery power_Tx mode_Mid CH_Z-Axis

Graph:



Results:

Peak (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4888.157895	49.29	74.00	-24.71	202.00	2.30	Horizontal	1000000.00	17.97
7325.789474	56.12	74.00	-17.88	135.00	1.85	Horizontal	1000000.00	21.72
7701.052632	56.55	74.00	-17.45	18.00	1.40	Horizontal	1000000.00	22.29
8647.894737	56.72	74.00	-17.28	18.00	3.30	Vertical	1000000.00	23.10
9198.157895	56.89	74.00	-17.11	99.00	1.85	Horizontal	1000000.00	23.93
9762.105263	59.64	74.00	-14.36	121.00	2.05	Vertical	1000000.00	24.97
9777.105263	59.27	74.00	-14.73	135.00	3.84	Vertical	1000000.00	25.01
9796.842105	59.60	74.00	-14.40	298.00	2.50	Horizontal	1000000.00	25.07
9836.315789	59.00	74.00	-15.00	0.00	1.35	Vertical	1000000.00	25.14
9970.789474	58.73	74.00	-15.27	0.00	2.40	Horizontal	1000000.00	25.48
9994.868421	58.93	74.00	-15.07	278.00	3.00	Horizontal	1000000.00	25.55

Average (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4888.157895	37.52	54.00	-16.48	202.00	2.30	Horizontal	1000000.00	17.97
7325.789474	43.18	54.00	-10.82	135.00	1.85	Horizontal	1000000.00	21.72
7701.052632	43.50	54.00	-10.50	18.00	1.40	Horizontal	1000000.00	22.29
8647.894737	43.93	54.00	-10.07	18.00	3.30	Vertical	1000000.00	23.10
9198.157895	44.07	54.00	-9.93	99.00	1.85	Horizontal	1000000.00	23.93

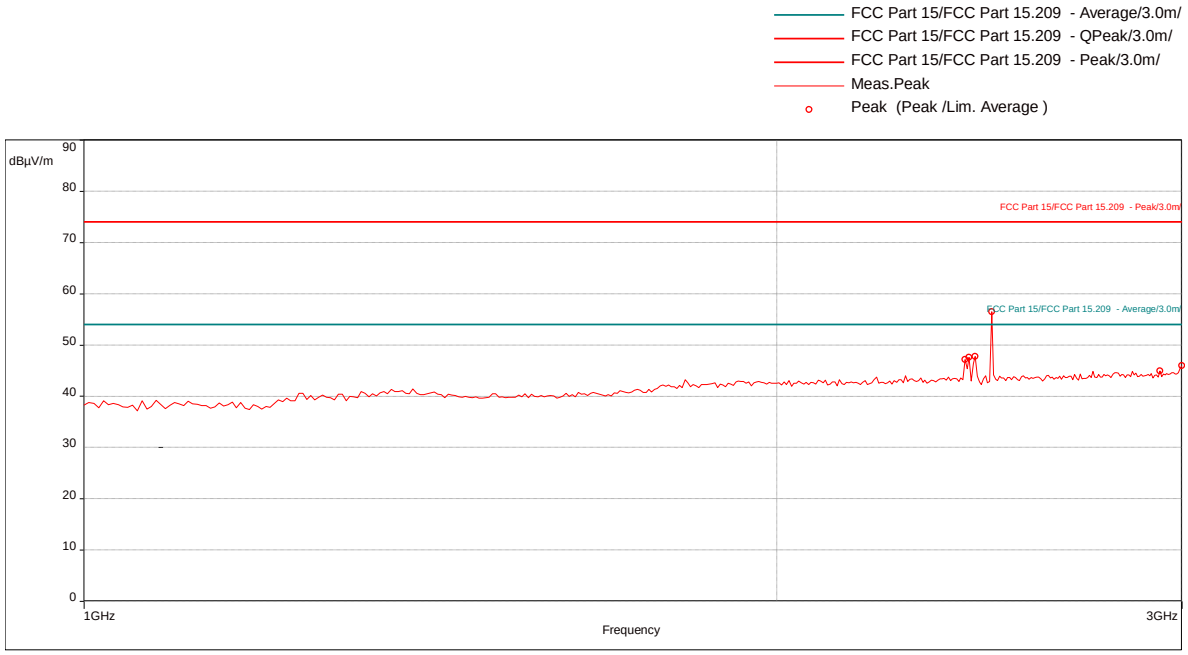
9762.105263	45.79	54.00	-8.21	121.00	2.05	Vertical	1000000.00	24.97
9777.105263	45.97	54.00	-8.03	135.00	3.84	Vertical	1000000.00	25.01
9796.842105	46.15	54.00	-7.85	298.00	2.50	Horizontal	1000000.00	25.07
9836.315789	46.10	54.00	-7.90	0.00	1.35	Vertical	1000000.00	25.14
9970.789474	46.17	54.00	-7.83	0.00	2.40	Horizontal	1000000.00	25.48
9994.868421	45.83	54.00	-8.17	278.00	3.00	Horizontal	1000000.00	25.55

Transmit at High Channel (X-axis), 1-3 GHz

Test Information:

Date and Time	7/10/2020 10:55:35 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 1 to 3 GHz_Battery power_Tx mode_High CH_X-Axis

Graph:



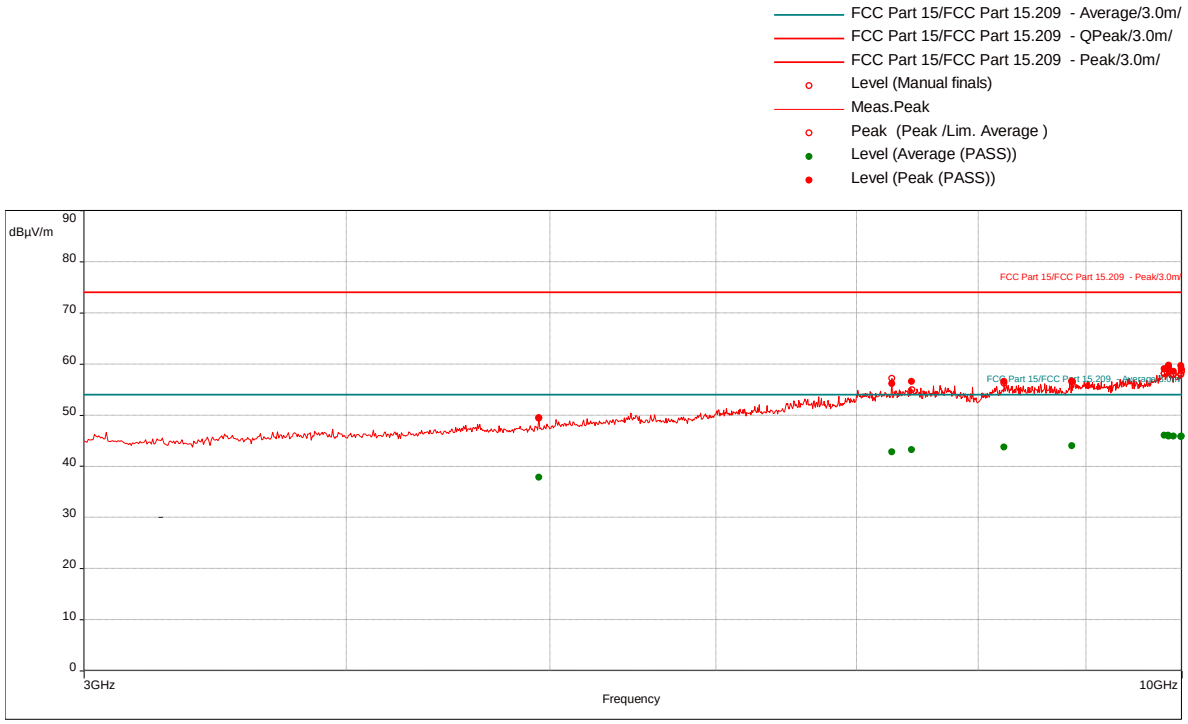
Results: Big peak is the emission of the fundamental frequency.

Transmit at High Channel (X-axis), 3-10 GHz

Test Information:

Date and Time	7/12/2020 2:09:59 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 3 to 10 GHz_Battery power_Tx mode_High CH_X-Axis

Graph:



Results:

Peak (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4939.210526	49.39	74.00	-24.61	348.00	1.20	Horizontal	1000000.00	17.95
7273.421053	56.09	74.00	-17.91	320.00	2.45	Vertical	1000000.00	21.69
7437.368421	56.57	74.00	-17.43	299.00	2.85	Horizontal	1000000.00	21.90
8230	56.58	74.00	-17.42	201.00	1.65	Vertical	1000000.00	22.61
8864.210526	56.66	74.00	-17.34	197.00	3.10	Vertical	1000000.00	23.40
9809.473684	59.07	74.00	-14.93	0.00	1.45	Vertical	1000000.00	25.09
9847.894737	59.03	74.00	-14.97	106.00	3.54	Horizontal	1000000.00	25.16
9857.368421	59.72	74.00	-14.28	223.00	3.94	Vertical	1000000.00	25.18
9908.421053	58.56	74.00	-15.44	11.00	3.10	Horizontal	1000000.00	25.30
9988.684211	59.65	74.00	-14.35	216.00	1.80	Horizontal	1000000.00	25.53
9994.342105	59.05	74.00	-14.95	277.00	3.00	Vertical	1000000.00	25.55

Average (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4939.210526	37.80	54.00	-16.20	348.00	1.20	Horizontal	1000000.00	17.95
7273.421053	42.78	54.00	-11.22	320.00	2.45	Vertical	1000000.00	21.69
7437.368421	43.24	54.00	-10.76	299.00	2.85	Horizontal	1000000.00	21.90
8230	43.69	54.00	-10.31	201.00	1.65	Vertical	1000000.00	22.61
8864.210526	43.96	54.00	-10.04	197.00	3.10	Vertical	1000000.00	23.40

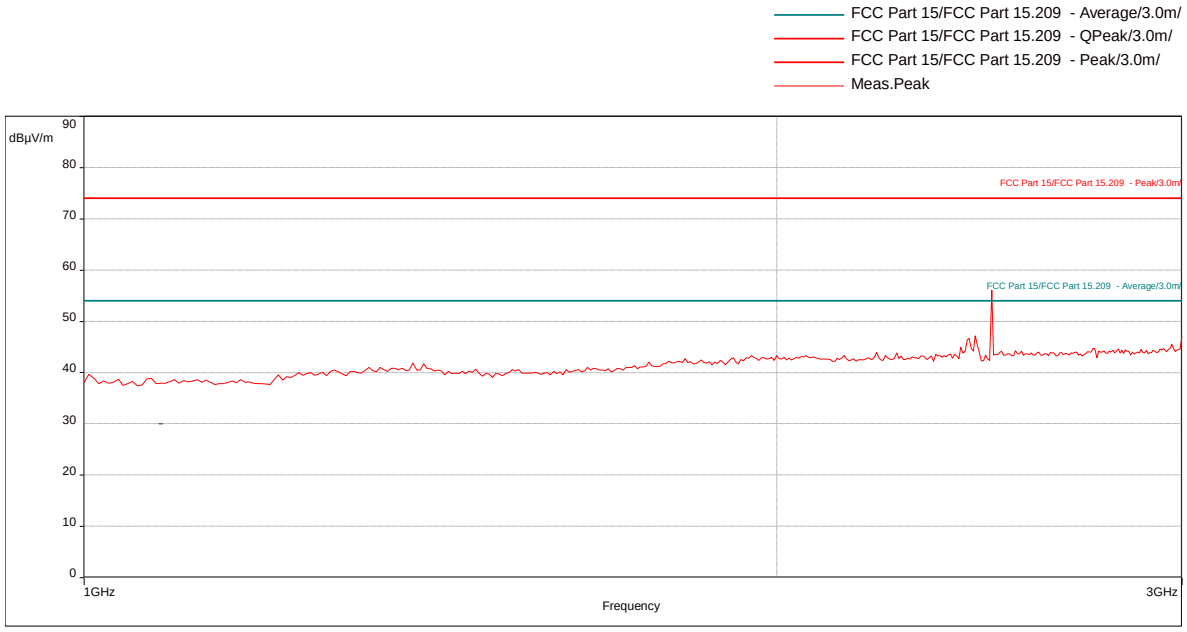
9809.473684	46.05	54.00	-7.95	0.00	1.45	Vertical	1000000.00	25.09
9847.894737	45.99	54.00	-8.01	106.00	3.54	Horizontal	1000000.00	25.16
9857.368421	45.88	54.00	-8.12	223.00	3.94	Vertical	1000000.00	25.18
9908.421053	45.86	54.00	-8.14	11.00	3.10	Horizontal	1000000.00	25.30
9988.684211	45.81	54.00	-8.19	216.00	1.80	Horizontal	1000000.00	25.53
9994.342105	45.83	54.00	-8.17	277.00	3.00	Vertical	1000000.00	25.55

Transmit at High Channel (Y-axis), 1-3 GHz

Test Information:

Date and Time	7/10/2020 11:00:12 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 1 to 3 GHz_Battery power_Tx mode_High CH_Y-Axis

Graph:



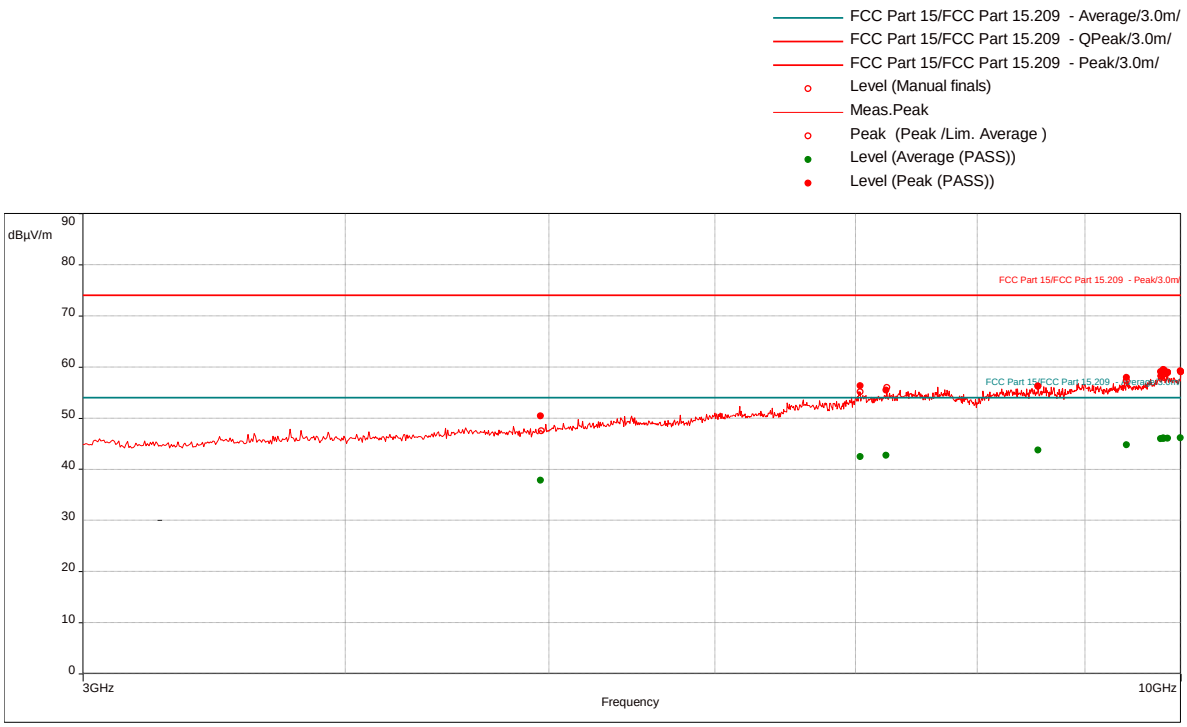
Results: Big peak is the emission of the fundamental frequency.

Transmit at High Channel (Y-axis), 3-10 GHz

Test Information:

Date and Time	7/12/2020 2:54:25 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 3 to 10 GHz_Battery power_Tx mode_High CH_Y-Axis

Graph:



Results:

Peak (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4955.789474	50.39	74.00	-23.61	143.00	3.00	Horizontal	1000000.00	17.96
7032.894737	56.31	74.00	-17.69	357.00	2.25	Vertical	1000000.00	21.51
7241.578947	55.44	74.00	-18.56	172.00	1.65	Vertical	1000000.00	21.70
8548.421053	56.25	74.00	-17.75	209.00	1.50	Vertical	1000000.00	22.87
9418.947368	57.94	74.00	-16.06	188.00	1.60	Horizontal	1000000.00	24.32
9781.842105	59.00	74.00	-15.00	4.00	3.69	Horizontal	1000000.00	25.02
9802.631579	59.06	74.00	-14.94	313.00	1.00	Horizontal	1000000.00	25.08
9808.684211	59.49	74.00	-14.51	83.00	3.69	Vertical	1000000.00	25.09
9818.947368	59.37	74.00	-14.63	4.00	1.85	Horizontal	1000000.00	25.11
9856.842105	58.93	74.00	-15.07	9.00	1.15	Horizontal	1000000.00	25.18
9995.526316	59.17	74.00	-14.83	163.00	3.54	Horizontal	1000000.00	25.55

Average (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4955.789474	37.82	54.00	-16.18	143.00	3.00	Horizontal	1000000.00	17.96
7032.894737	42.46	54.00	-11.54	357.00	2.25	Vertical	1000000.00	21.51
7241.578947	42.66	54.00	-11.34	172.00	1.65	Vertical	1000000.00	21.70
8548.421053	43.70	54.00	-10.30	209.00	1.50	Vertical	1000000.00	22.87
9418.947368	44.74	54.00	-9.26	188.00	1.60	Horizontal	1000000.00	24.32

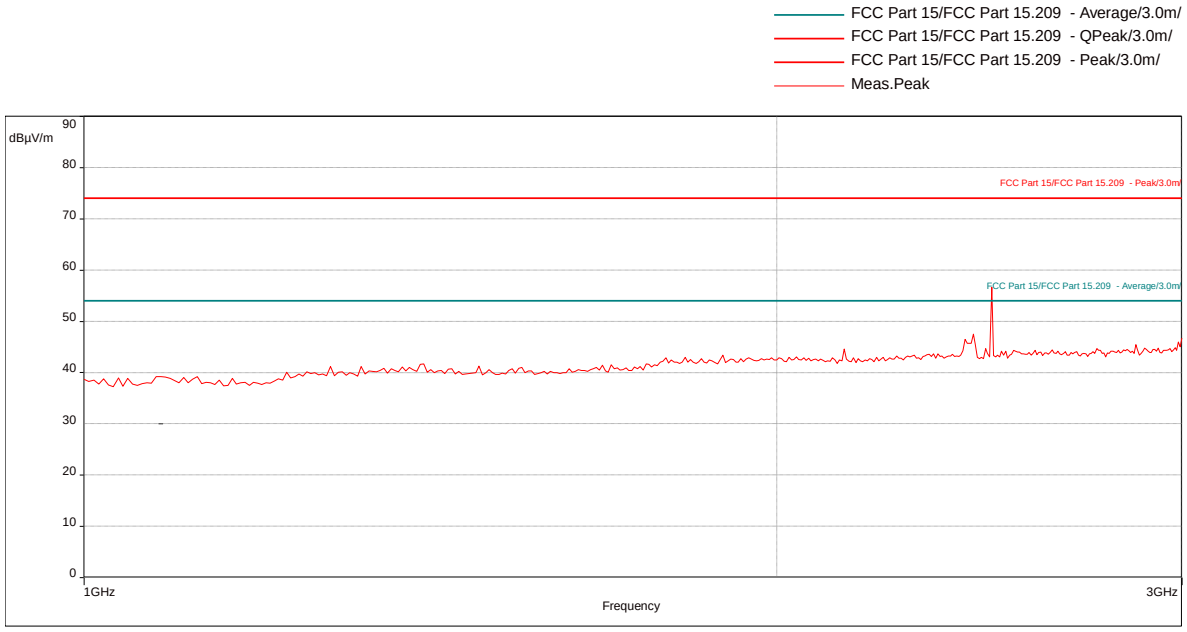
9781.842105	45.98	54.00	-8.02	4.00	3.69	Horizontal	1000000.00	25.02
9802.631579	46.04	54.00	-7.96	313.00	1.00	Horizontal	1000000.00	25.08
9808.684211	46.05	54.00	-7.95	83.00	3.69	Vertical	1000000.00	25.09
9818.947368	46.07	54.00	-7.93	4.00	1.85	Horizontal	1000000.00	25.11
9856.842105	46.01	54.00	-7.99	9.00	1.15	Horizontal	1000000.00	25.18
9995.526316	46.11	54.00	-7.89	163.00	3.54	Horizontal	1000000.00	25.55

Transmit at High Channel (Z-axis), 1-3 GHz

Test Information:

Date and Time	7/10/2020 11:16:10 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 1 to 3 GHz_Battery power_Tx mode_High CH Z-Axis

Graph:



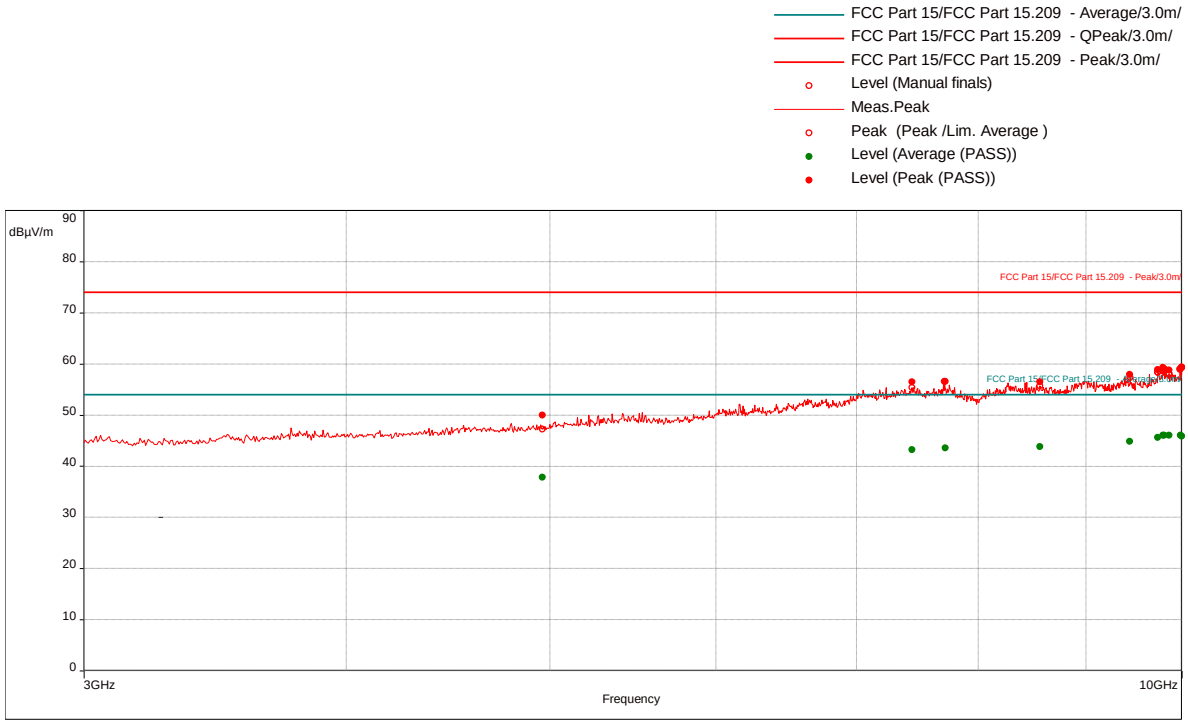
Results: Big peak is the emission of the fundamental frequency.

Transmit at High Channel (Z-axis), 3-10 GHz

Test Information:

Date and Time	7/12/2020 6:24:33 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 3 to 10 GHz_Battery power_Tx mode_High CH_Z-Axis

Graph:



Results:

Peak (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4960.526316	49.98	74.00	-24.02	336.00	2.85	Vertical	1000000.00	17.98
7438.684211	56.44	74.00	-17.56	84.00	1.20	Vertical	1000000.00	21.90
7713.157895	56.58	74.00	-17.42	283.00	2.65	Horizontal	1000000.00	22.31
8560.526316	56.51	74.00	-17.49	32.00	1.01	Vertical	1000000.00	22.89
9447.105263	57.89	74.00	-16.11	261.00	3.40	Horizontal	1000000.00	24.39
9740	58.88	74.00	-15.12	17.00	3.74	Vertical	1000000.00	24.91
9795.526316	59.32	74.00	-14.68	240.00	1.55	Horizontal	1000000.00	25.06
9812.105263	59.08	74.00	-14.92	70.00	1.35	Horizontal	1000000.00	25.10
9860	58.81	74.00	-15.19	247.00	2.05	Vertical	1000000.00	25.19
9982.631579	59.02	74.00	-14.98	202.00	2.70	Horizontal	1000000.00	25.51
9998.815789	59.42	74.00	-14.58	240.00	1.10	Vertical	1000000.00	25.56

Average (PASS) (11)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
4960.526316	37.83	54.00	-16.17	336.00	2.85	Vertical	1000000.00	17.98
7438.684211	43.24	54.00	-10.76	84.00	1.20	Vertical	1000000.00	21.90
7713.157895	43.53	54.00	-10.47	283.00	2.65	Horizontal	1000000.00	22.31
8560.526316	43.85	54.00	-10.15	32.00	1.01	Vertical	1000000.00	22.89
9447.105263	44.81	54.00	-9.19	261.00	3.40	Horizontal	1000000.00	24.39

9740	45.60	54.00	-8.40	17.00	3.74	Vertical	1000000.00	24.91
9795.526316	46.02	54.00	-7.98	240.00	1.55	Horizontal	1000000.00	25.06
9812.105263	46.05	54.00	-7.95	70.00	1.35	Horizontal	1000000.00	25.10
9860	46.02	54.00	-7.98	247.00	2.05	Vertical	1000000.00	25.19
9982.631579	46.07	54.00	-7.93	202.00	2.70	Horizontal	1000000.00	25.51
9998.815789	45.84	54.00	-8.16	240.00	1.10	Vertical	1000000.00	25.56

Transmit at Low, Mid, and High Channels on all three axis, 10-25 GHz

Radiated Emissions

Company: Dermal Photonics | Antenna & Cables: N | Bands: N, LF, HF, SHF
Model #: 451-008 | Antenna: ETS005 | EMC04
Serial #: BOX2007141303-001 (Intertek Assigned) | Cable(s): HS002, MEG002, 145-130 | IW006, IW001
Engineers: Vathana Ven | Location: 10M | Barometer: DAV007 | Filter: NONE
Project #: G104370255 | Date(s): 07/12/20
Standard: FCC Part 15 Subpart C 15.209 | Temp/Humidity/Pressure: 24 deg C 47% 1004 mB
Receiver: R&S ESI (145-128) 10-01-2014 | Limit Distance (m): 3
PreAmp: PRE9 | Test Distance (m): 1 & 3
PreAmp Used? (Y or N): Y | Voltage/Frequency: Battery power | Frequency Range: 10-25GHz

0.616958

Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC
No emissions were detected above the measuring equipment noise floor.													

Test Personnel: Vathana Ven VSV
Test Date: 07/10/2020 07/12/2020

Supervising/Reviewing Engineer: (Where Applicable) N/A

Product Standard: CFR47 FCC Part 15.247 RSS-247
Limit Applied: See report section 10.3

Input Voltage: Battery power
Ambient Temperature: 22, 24 ºC

Pretest Verification w/ Ambient Signals or BB Source: **N/A**
Relative Humidity: 12, 47 %

Atmospheric Pressure: 1017, 1004 mbars

Deviations, Additions, or Exclusions: None

11 Digital Device and Receiver Radiated Spurious Emissions

11.1 Method

Tests are performed in accordance with FCC Part 15 Subpart B, ISED ICES-003, and ANSI C 63.4.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	4.6dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	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, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

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

Alternately, when BAT-EMC Emission Software is used, the “Level” includes all losses and gains and is compared directly in the “Margin” column to the “Limit”. The “Correction” includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the “Level” column.

11.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV007'	Weather Station Vantage Vue	Davis	6250	MS191212003	03/12/2020	03/12/2021
145108'	EMI Test Receiver (20Hz - 40GHz)	Rohde & Schwarz	ESIB40	100209	06/08/2020	06/08/2021
PRE11'	50dB gain pre-amp	Pasternack	PRE11	PRE11	08/30/2019	08/30/2020
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	05/08/2020	05/08/2021
IW001'	2 meter cable	Insulated Wire	2801-NPS	001	10/08/2019	10/08/2020
145-406'	10m Track A In-floor Cable #1	Huber + Suhner	sucoflex 160-19220mm	001	12/10/2019	12/10/2020
HS001'	DC-18GHz cable 1.5m long	Huber & Suhner	SucoFlex 106A	HS001	11/19/2019	11/19/2020
IW003'	8.4 meter cable	Insulated Wire	2800-NPS	003	10/08/2019	10/08/2020
145-422'	10Amp Pre-amp to under floor	Utiflex	UFB311A-0-2756-70070	145-422	02/17/2020	02/17/2021
HS003'	10m under floor cable	Huber-Schuner	10m-1	HS003	04/29/2020	04/29/2021
ETS005'	1-18GHz horn antenna	ETS-Lindgren	3117	00218279	07/30/2019	07/30/2020
PRE9'	100MHz-40GHz Preamp	MITEQ	NSP4000-NFG	1260417	09/16/2019	09/16/2020

Software Utilized:

Name	Manufacturer	Version
BAT-EMC	Nexio	3.18.0.16

11.3 Results:

The sample tested was found to Comply.

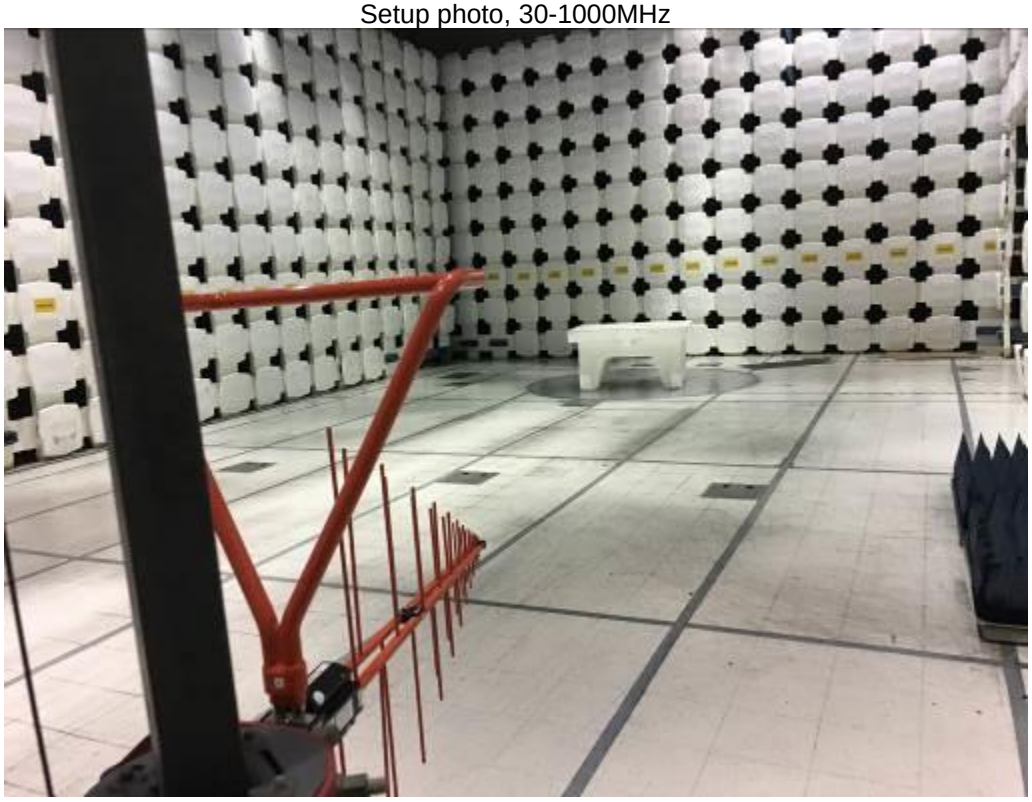
§15.109 Radiated emission limits.

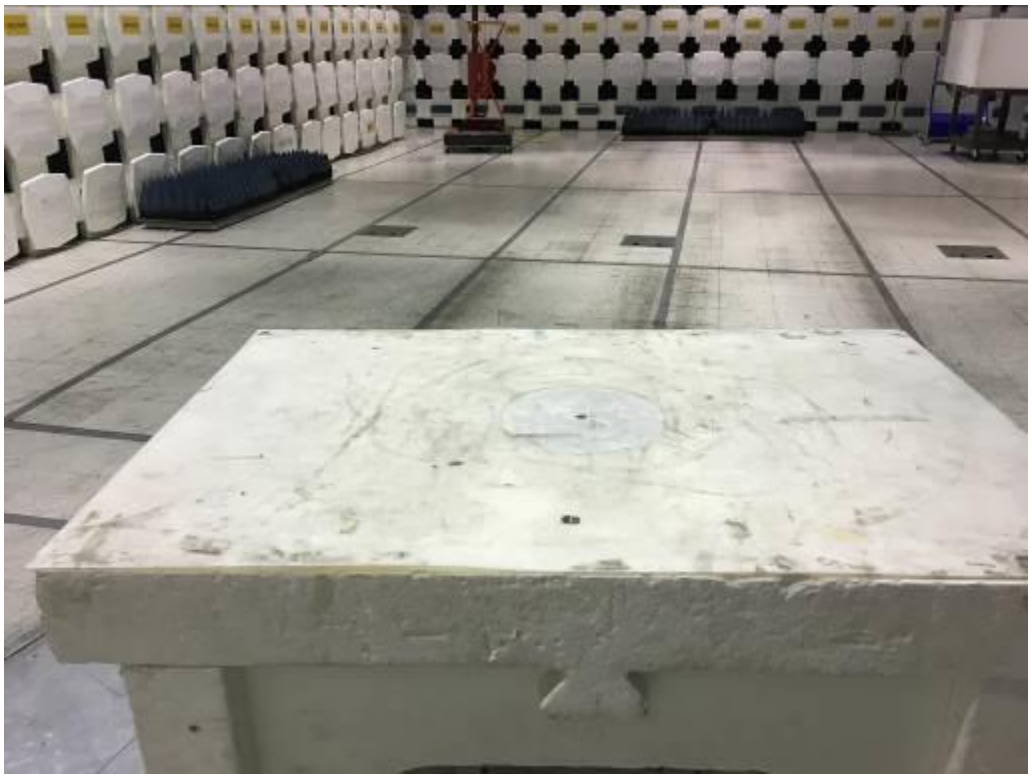
The field strength of radiated emissions form unintentional radiators at a distance of 3 meters shall not exceed the following values.

Frequency of emission (MHz)	Field strength (microvolts/meter)	Field strength (dBµV/m)
30-88	100	40.00
88-216	150	43.52
216-960	200	46.02
Above 960	500	54.00

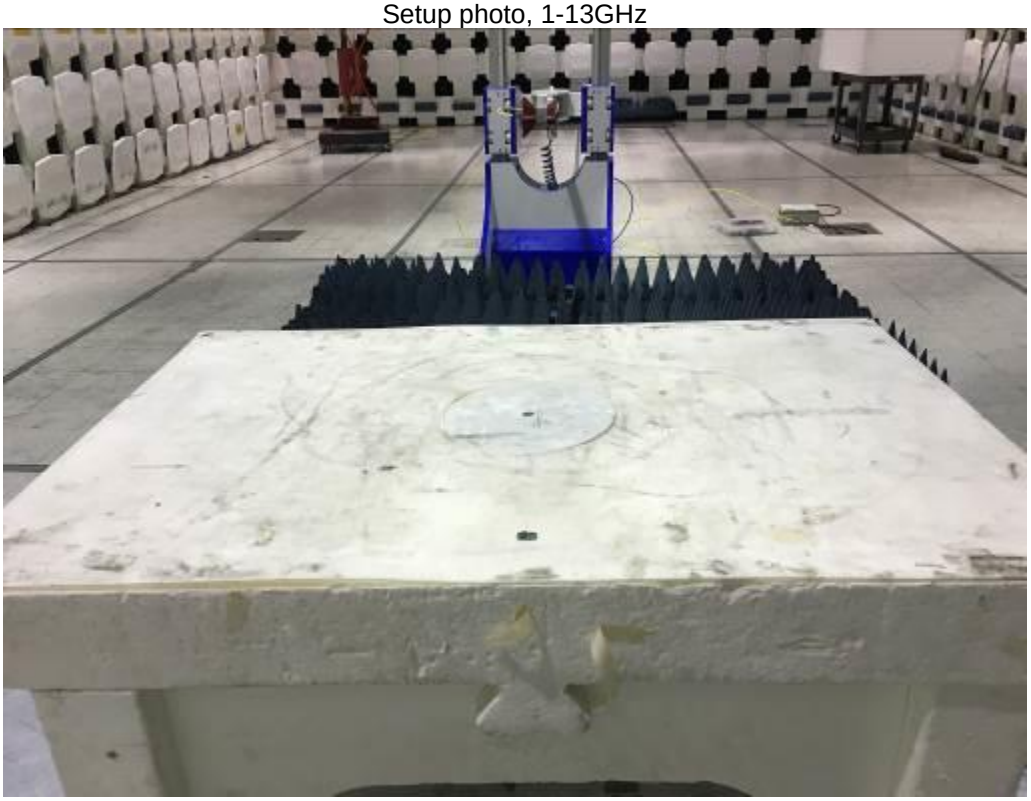
11.4 Setup Photographs:

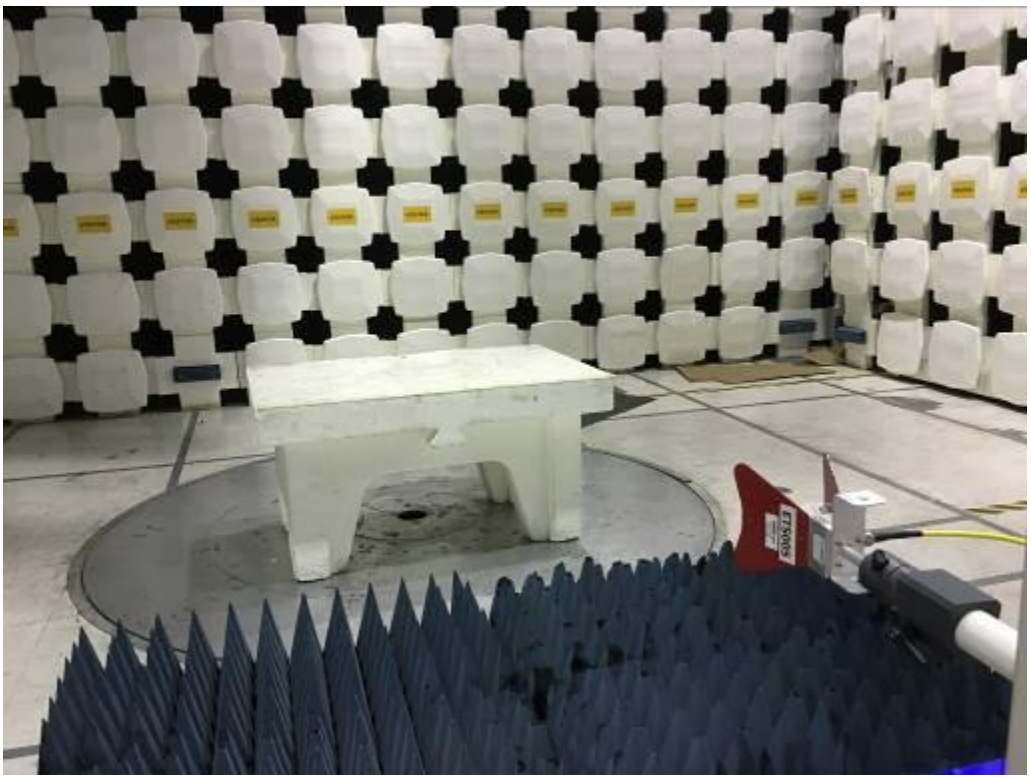
Setup photo, 30-1000MHz





Setup photo, 1-13GHz





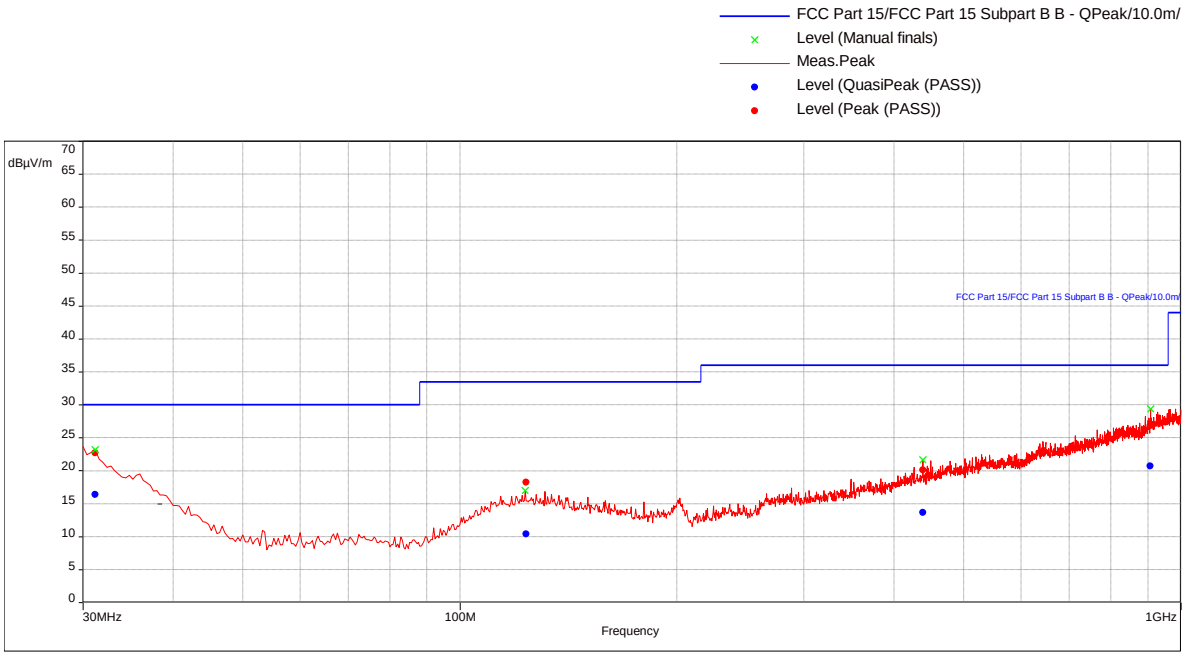
11.5 Plots/Data:

30-1000 MHz

Test Information:

Date and Time	7/10/2020 7:20:35 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 30-1000MHz_Battery power_normal operational mode

Graph:



Results:

QuasiPeak (PASS) (4)

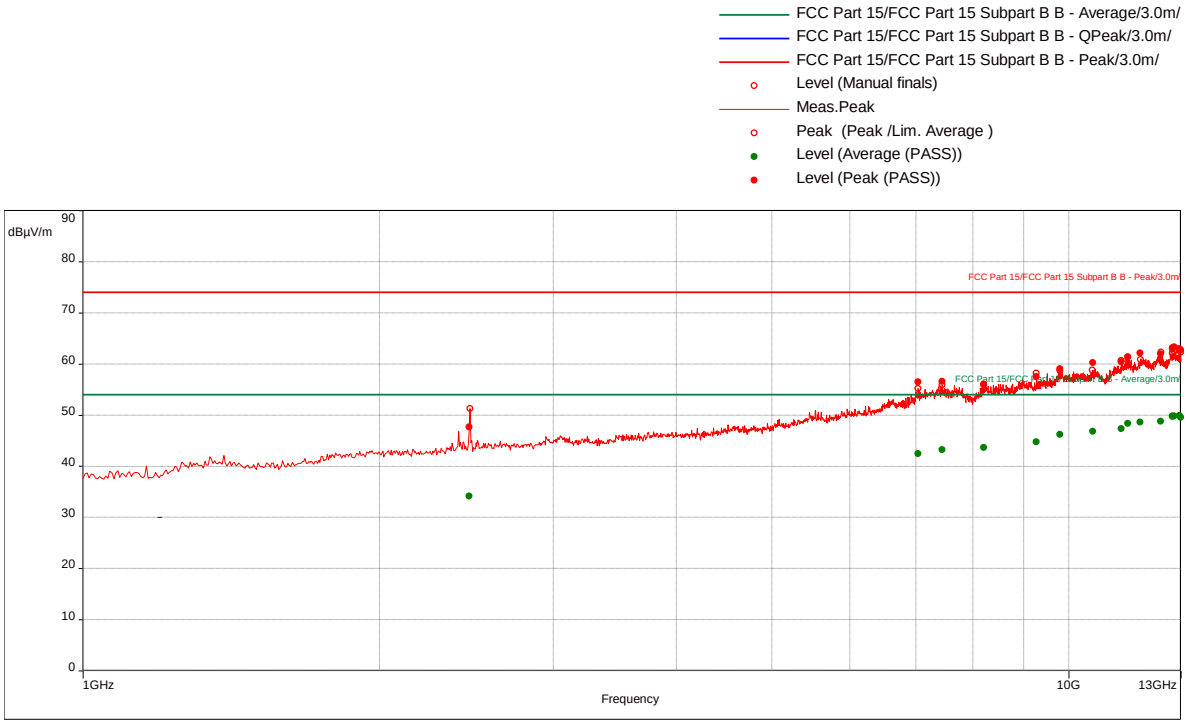
Frequency (MHz)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
31.29473684	30.00	-13.64	282.00	2.62	Vertical	120000.00	-13.03
123.5157895	33.50	-23.10	327.00	2.54	Vertical	120000.00	-18.28
438.8	36.00	-22.36	298.00	3.05	Vertical	120000.00	-14.31
907	36.00	-15.28	209.00	3.01	Vertical	120000.00	-5.86

1-13 GHz

Test Information:

Date and Time	7/10/2020 9:03:06 PM
Client and Project Number	Dermal Photonics_G104370255
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	47%
Atmospheric Pressure	1004 mB
Comments	RE 1 to 13 GHz_Battery power_normal operational mode

Graph:



Results:

Peak (PASS) (16)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
2467.105263	47.66	74.00	-26.34	342.00	2.90	Horizontal	1000000.00	14.16
7034.473684	56.47	74.00	-17.53	202.00	1.25	Horizontal	1000000.00	21.51
7444.736842	56.58	74.00	-17.42	32.00	3.15	Vertical	1000000.00	21.91
8206.315789	56.04	74.00	-17.96	217.00	1.00	Horizontal	1000000.00	22.41
9278.684211	57.46	74.00	-16.54	232.00	1.00	Horizontal	1000000.00	24.08
9803.421053	59.06	74.00	-14.94	165.00	3.59	Vertical	1000000.00	25.08
10577.89474	60.25	74.00	-13.75	143.00	2.65	Vertical	1000000.00	25.99
11311.57895	60.42	74.00	-13.58	107.00	2.70	Vertical	1000000.00	26.80
11490.52632	61.36	74.00	-12.64	179.00	1.70	Horizontal	1000000.00	27.10
11826.57895	62.08	74.00	-11.92	165.00	1.95	Horizontal	1000000.00	27.54
12405.52632	61.95	74.00	-12.05	10.00	3.45	Horizontal	1000000.00	27.83
12747.10526	63.13	74.00	-10.87	98.00	2.70	Vertical	1000000.00	28.17
12753.68421	62.85	74.00	-11.15	39.00	1.01	Vertical	1000000.00	28.18
12799.47368	63.34	74.00	-10.66	62.00	2.51	Vertical	1000000.00	28.25
12954.47368	62.97	74.00	-11.03	0.00	3.00	Horizontal	1000000.00	28.56
12996.44737	62.70	74.00	-11.30	99.00	1.95	Horizontal	1000000.00	28.58

Average (PASS) (16)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)

2467.105263	34.15	54.00	-19.85	342.00	2.90	Horizontal	1000000.00	14.16
7034.473684	42.46	54.00	-11.54	202.00	1.25	Horizontal	1000000.00	21.51
7444.736842	43.25	54.00	-10.75	32.00	3.15	Vertical	1000000.00	21.91
8206.315789	43.62	54.00	-10.38	217.00	1.00	Horizontal	1000000.00	22.41
9278.684211	44.77	54.00	-9.23	232.00	1.00	Horizontal	1000000.00	24.08
9803.421053	46.17	54.00	-7.83	165.00	3.59	Vertical	1000000.00	25.08
10577.89474	46.81	54.00	-7.19	143.00	2.65	Vertical	1000000.00	25.99
11311.57895	47.36	54.00	-6.64	107.00	2.70	Vertical	1000000.00	26.80
11490.52632	48.31	54.00	-5.69	179.00	1.70	Horizontal	1000000.00	27.10
11826.57895	48.62	54.00	-5.38	165.00	1.95	Horizontal	1000000.00	27.54
12405.52632	48.79	54.00	-5.21	10.00	3.45	Horizontal	1000000.00	27.83
12747.10526	49.75	54.00	-4.25	98.00	2.70	Vertical	1000000.00	28.17
12753.68421	49.76	54.00	-4.24	39.00	1.01	Vertical	1000000.00	28.18
12799.47368	49.83	54.00	-4.17	62.00	2.51	Vertical	1000000.00	28.25
12954.47368	49.90	54.00	-4.10	0.00	3.00	Horizontal	1000000.00	28.56
12996.44737	49.53	54.00	-4.47	99.00	1.95	Horizontal	1000000.00	28.58

Test Personnel:	Vathana F. Ven VFV	Test Date:	07/10/2020
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 15 Subpart B, ISED ICES-003	Limit Applied:	See report section 11.3
Input Voltage:	Battery power	Ambient Temperature:	24 ºC
Pretest Verification w/ Ambient Signals or BB Source:	BB Source	Relative Humidity:	47 %
		Atmospheric Pressure:	1004 mbars

Deviations, Additions, or Exclusions: None

12 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	07/20/2020	104370255BOX-009	VFV	MFM	Original Issue