



TEST REPORT

Report Number. : R14275554-E2

Applicant : InfoBionic, Inc
400 Totten Pond Rd STE 315
Waltham, MA, 02451, U.S.A

Model : MoMe ARC K3 Sensor

FCC ID : 2AHLC01857

EUT Description : Sensor

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C: 2022
ISED RSS-247 ISSUE 2: 2017
ISED RSS-GEN ISSUE 5 + A2: 2021

Date Of Issue:
2022-10-10

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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2022-10-10	Initial Issue	Charles Moody

TABLE OF CONTENTS

REPORT REVISION HISTORY	2
TABLE OF CONTENTS	3
1. ATTESTATION OF TEST RESULTS	5
2. TEST RESULTS SUMMARY	6
3. TEST METHODOLOGY	6
4. FACILITIES AND ACCREDITATION	6
5. DECISION RULES AND MEASUREMENT UNCERTAINTY	7
5.1. METROLOGICAL TRACEABILITY	7
5.2. DECISION RULES.....	7
5.3. MEASUREMENT UNCERTAINTY.....	7
5.4. SAMPLE CALCULATION	7
6. EQUIPMENT UNDER TEST	8
6.1. EUT DESCRIPTION	8
6.2. MAXIMUM OUTPUT POWER.....	8
6.3. DESCRIPTION OF AVAILABLE ANTENNAS	8
6.4. SOFTWARE AND FIRMWARE.....	8
6.5. WORST-CASE CONFIGURATION AND MODE.....	8
6.6. DESCRIPTION OF TEST SETUP.....	9
7. MEASUREMENT METHOD.....	10
8. TEST AND MEASUREMENT EQUIPMENT	11
9. ANTENNA PORT TEST RESULTS.....	13
9.1. ON TIME AND DUTY CYCLE.....	13
9.2. 99% BANDWIDTH.....	15
9.2.1. BLE (1Mbps).....	15
9.2.1. BLE (2Mbps).....	16
9.3. 6 dB BANDWIDTH.....	17
9.3.1. BLE (1Mbps).....	17
9.3.1. BLE (2Mbps).....	18
9.4. OUTPUT POWER.....	19
9.4.1. BLE (1Mbps).....	19
9.4.1. BLE (2Mbps).....	19
9.5. AVERAGE POWER.....	20

9.5.1.	BLE (1Mbps).....	20
9.5.2.	BLE (2Mbps).....	20
9.6.	<i>POWER SPECTRAL DENSITY</i>	21
9.6.1.	BLE (1Mbps).....	21
9.6.1.	BLE (2Mbps).....	22
9.7.	<i>CONDUCTED SPURIOUS EMISSIONS</i>	23
9.7.1.	BLE (1Mbps).....	24
9.7.1.	BLE (2Mbps).....	25
10.	RADIATED TEST RESULTS	26
10.1.	<i>LIMITS AND PROCEDURE</i>	26
10.2.	<i>TRANSMITTER ABOVE 1 GHz</i>	28
10.2.1.	BLE (1Mbps)	28
10.2.1.	BLE (2Mbps)	38
10.3.	<i>WORST CASE BELOW 30MHZ</i>	48
10.4.	<i>WORST CASE BELOW 1 GHZ</i>	49
10.5.	<i>WORST CASE 18-26 GHZ</i>	51
11.	SETUP PHOTOS	53

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: InfoBionic, Inc
400 Totten Pond Rd STE 315
Waltham, MA 02451, U.S.A

EUT DESCRIPTION: Sensor

MODEL: MoMe ARC K3 Sensor

SERIAL NUMBER: SIA2008, MIB1033

SAMPLE RECEIPT DATE: 2022-08-15

DATE TESTED: 2022-08-15 TO 2022-08-25

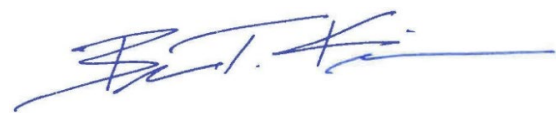
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C: 2022	Complies
ISED RSS-247 Issue 2: 2017	Complies
ISED RSS-GEN Issue 5 + A2: 2021	Complies

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

Approved & Released For
UL LLC By:



Brian Kiewra
Project Engineer
Consumer, Medical, and IT Segment
UL LLC

Prepared By:



Charles Moody
Electrical Engineer
Consumer, Medical, and IT Segment
UL LLC

2. TEST RESULTS SUMMARY

This report contains data provided by the applicant which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
-	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.3.
15.247 (a) (2)	RSS-247 5.2 (a)	6dB BW	Compliant	None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power	Compliant	None.
See Comment		Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	RSS-247 5.2 (b)	PSD	Compliant	None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Compliant	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Compliant	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Not performed.	Device is battery powered.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5 + A2, and RSS-247 Issue 2.

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, Certificate Number 0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
☒	Building 2800 Suite Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A	US0067	27265	825374

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U _{LAB}
Radio Frequency	141.2Hz
Occupied Bandwidth, conducted	1.22%
RF output power, conducted	1.3 dB (PK) 0.45 dB (AV)
Unwanted emissions, conducted	±1.94 dB
Power Spectral Density, conducted	±2.466 dB
All emissions, radiated	6.01 dB
Conducted Emissions (0.150-30MHz) - LISN	±3.40 dB
Humidity	±3.39 % RH
Temperature	±0.57°C
Time	±3.39 %

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB + 10.1 dB + 0 dB = 46.6 dBuV

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is the sensor portion of a three component ambulatory electrocardiogram that contains a BLE radio. This report covers full emissions testing for the BLE radio.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	3.29	2.13

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:

The radio utilizes an 26 mm long, 26 AWG wire antenna, with a maximum gain of -4.5 dBi.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was Sensor Bootloader + App: V00.1355.

The test utility software used during testing was Sensor Bootloader + App: V00.1355.

6.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz were performed with the EUT set to transmit at the channel and data rate with the worst-case power spectral density.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low and high channels. Additionally, the EUT was set to transmit at its highest power on mid channel for spurious emissions as well.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in X orientation.

The EUT was also capable of transmitting in two data rates (1Mbps and 2Mbps).

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Terminated Lead Set	N/A	N/A	N/A	N/A

I/O CABLES

I/O Cable List						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	N/A	3	Leads	Shielded	<3m	Lead Cables

TEST SETUP

Prior to testing, the transmitting channel and data rate were set by using built-in buttons on the EUT to control the BLE radio. The terminated lead set was also connected to the built-in leads that are part of the EUT.

SETUP DIAGRAMS

Please refer to 14275554-EP2 for setup diagrams

7. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10 Subclause -11.6

6 dB BW: ANSI C63.10 Subclause -11.8.1

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

Output Power: ANSI C63.10 Subclause -11.9.1.3 Method PKPM1 Peak-reading power meter

Output Power: ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

PSD: ANSI C63.10 Subclause -11.10.2 Method PKPSD (peak PSD)

Radiated emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11 and 6.10.4

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1 and 6.10.5

General Radiated Spurious Emissions: ANSI C63.10-2013, Section 6.3 to 6.6.

8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
Conducted 1					
SA0025	Spectrum Analyzer	Keysight Technologies	N9030A	2022-05-02	2023-05-02
PWM003	Power Meter	Keysight Technologies	N1911A	2021-08-30	2022-08-30
HI0091	Environmental Meter	Fisher Scientific	15-077-963	2022-07-20	2023-07-20
PWS006	Power Sensor	Keysight Technologies	N1921A	2021-12-17	2022-12-17
208720	Callbox	Rohde & Schwarz	CMW 500	2022-05-02	2023-05-02
SOFTEMI	Antenna Port Software	UL	Version 2022.5.4		
Conducted 2					
SA0027	Spectrum Analyzer	Keysight Technologies	N9030A	2022-05-24	2023-05-24
HI0090	Environmental Meter	Fisher Scientific	15-077-963	2022-07-20	2023-07-20
PWM004	RF Power Meter	Keysight Technologies	N1911A	2021-08-17	2022-08-31
PWS007	Peak and Avg Power Sensor, 50MHz – 18GHz	Keysight Technologies	N1921A	2022-03-22	2023-03-22
SOFTEMI	Antenna Port Software	UL	Version 2022.5.4		

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 2)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	0.009-30MHz				
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2021-08-19	2022-08-31
	30-1000 MHz				
AT0073	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2021-08-30	2022-08-30
	1-18 GHz				
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2022-03-21	2023-03-21
	18-26 GHz				
AT0063	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2021-11-04	2022-11-04
	Gain-Loss Chains				
C2-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2022-05-10	2023-05-10
C2-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2022-05-10	2023-05-10
C2-SAC03	Gain-loss string: 1-18GHz	Various	Various	2022-05-10	2023-05-10
C2-SAC04	Gain-loss string: 18-40GHz	Various	Various	2022-05-10	2023-05-10
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2022-03-08	2023-03-08
SA0020	Spectrum Analyzer	Agilent	E4446A	2022-06-08	2023-06-08
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
200540	Environmental Meter	Fisher Scientific	15-077-963 (s/n 181474409)	2021-09-27	2022-09-27

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

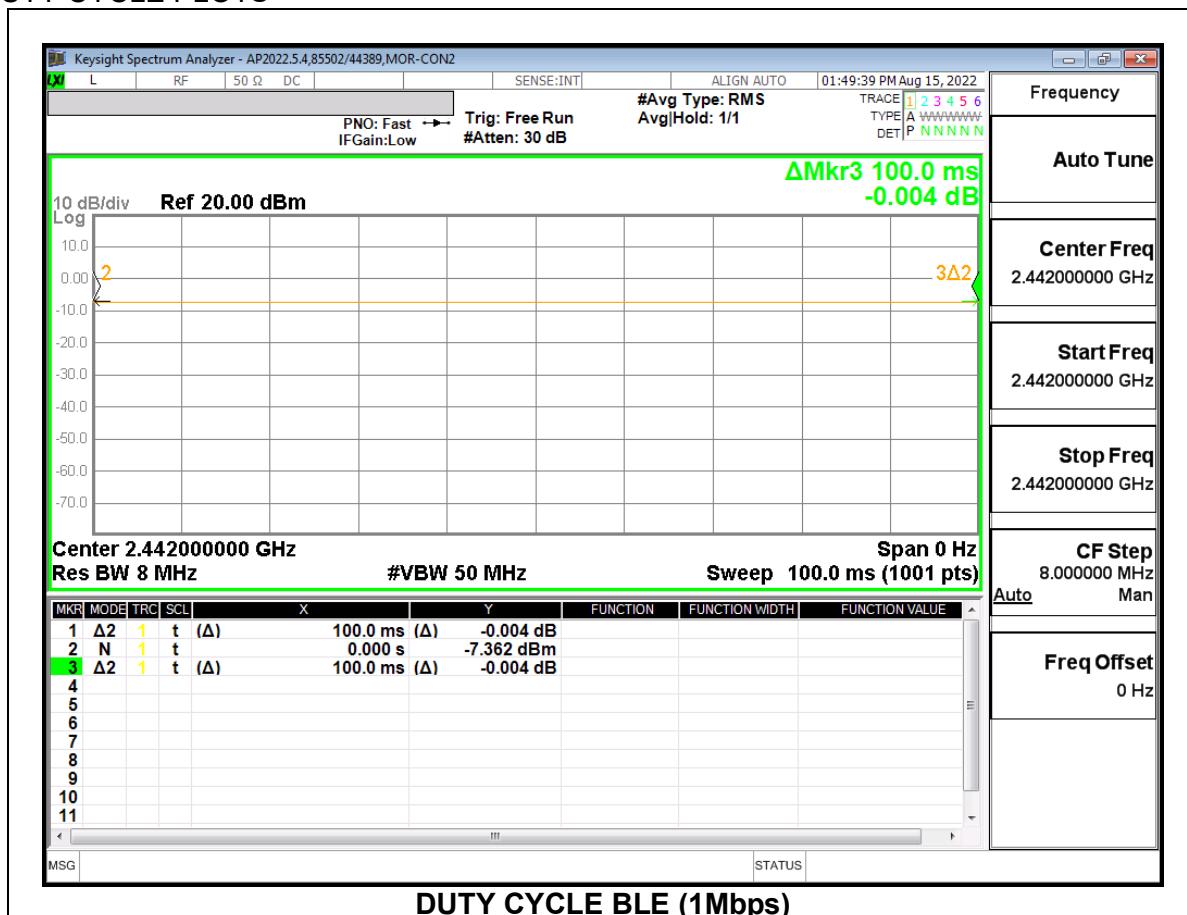
PROCEDURE

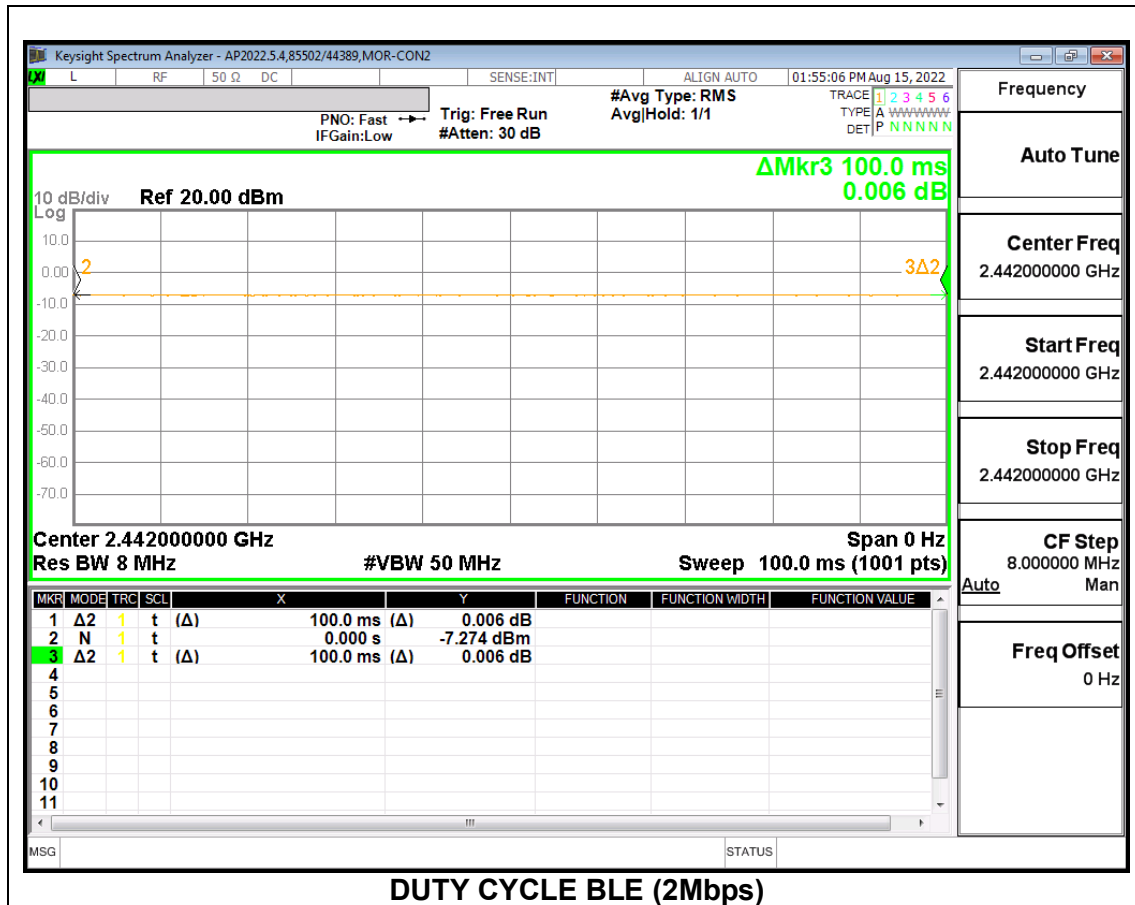
KDB 558074 Zero-Span Spectrum Analyzer Method.
ANSI C63.10 – Subclause 11.6

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
BLE (1Mbps)	100.000	100.000	1.000	100.00	0.00	0.010
BLE (2Mbps)	100.000	100.000	1.000	100.00	0.00	0.010

DUTY CYCLE PLOTS





9.2. 99% BANDWIDTH

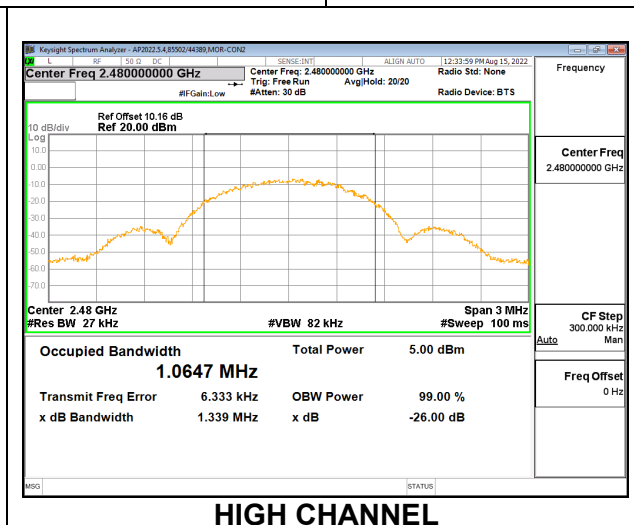
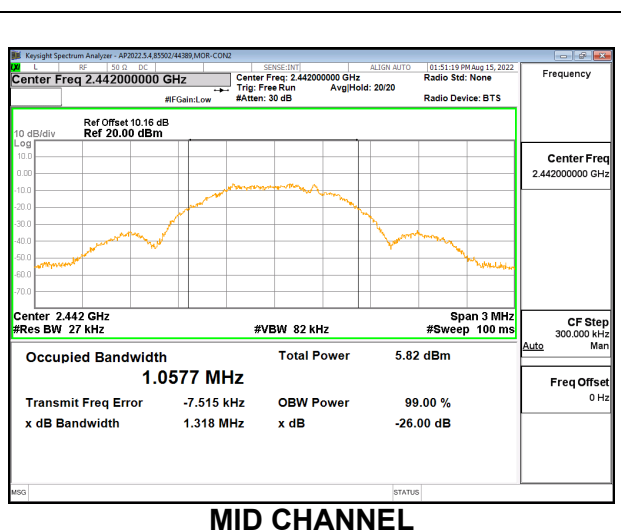
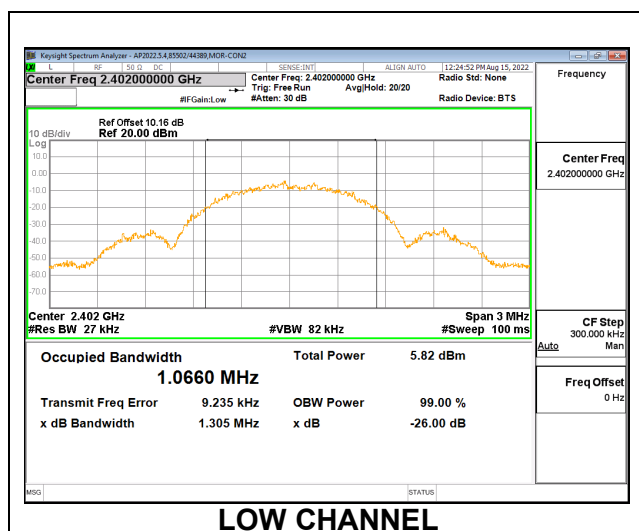
LIMITS

None; for reporting purposes only.

RESULTS

9.2.1. BLE (1Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0660
Middle	2442	1.0577
High	2480	1.0647



9.2.1. BLE (2Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	2.0609
Middle	2442	2.0801
High	2480	2.0712



9.3. 6 dB BANDWIDTH

LIMITS

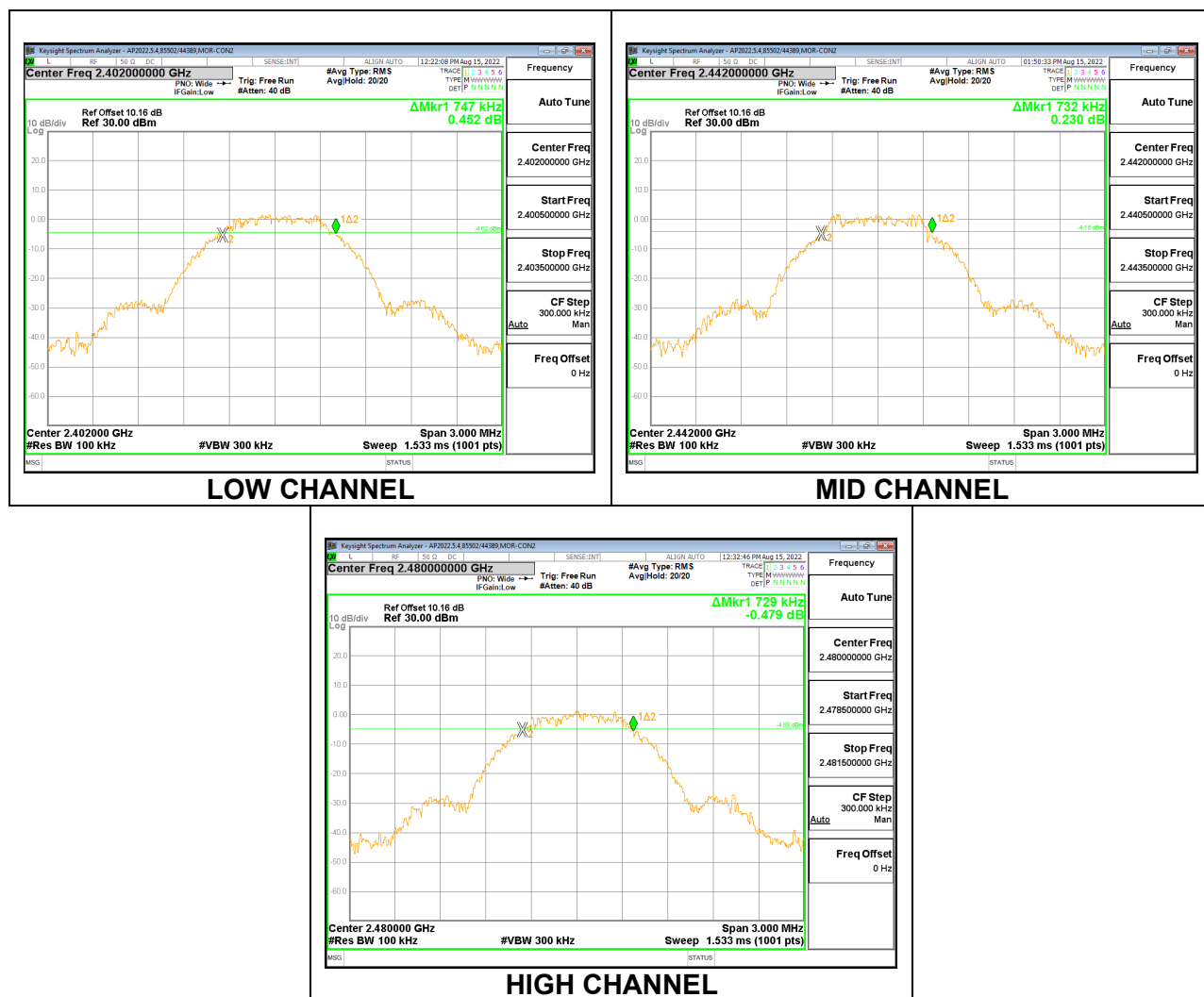
FCC §15.247 (a) (2)
RSS-247 5.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

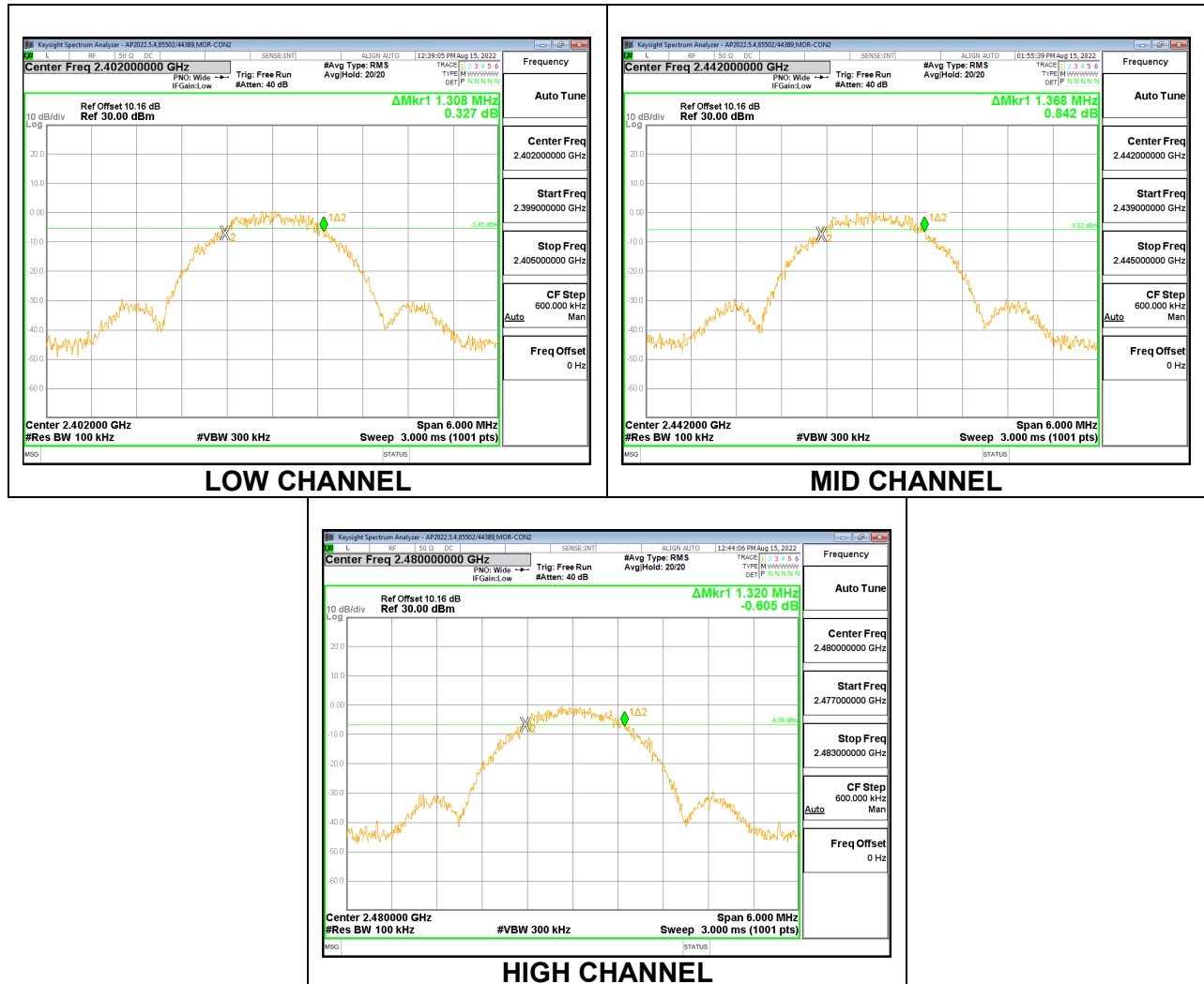
9.3.1. BLE (1Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.747	0.5
Middle	2442	0.732	0.5
High	2480	0.729	0.5



9.3.1. BLE (2Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	1.308	0.5
Middle	2442	1.368	0.5
High	2480	1.320	0.5



9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)
RSS-247 5.4 (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 0.51 dB was entered as an offset in the power meter.

9.4.1. BLE (1Mbps)

Tested By:	27465/44389
Date:	8/15/2022

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	3.29	30	-26.71
Middle	2442	2.87	30	-27.13
High	2480	2.43	30	-27.57

9.4.1. BLE (2Mbps)

Tested By:	27465/44389
Date:	8/15/2022

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	3.27	30	-26.73
Middle	2442	2.86	30	-27.14
High	2480	2.32	30	-27.68

9.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a gated average power meter.

The cable assembly insertion loss of 0.51 dB was entered as an offset in the power meter.

RESULTS

9.5.1. BLE (1Mbps)

Tested By:	27465/44389
Date:	8/15/2022

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	3.10
Middle	2442	2.60
High	2480	2.20

9.5.2. BLE (2Mbps)

Tested By:	27465/44389
Date:	8/15/2022

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	3.00
Middle	2442	2.60
High	2480	2.10

9.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

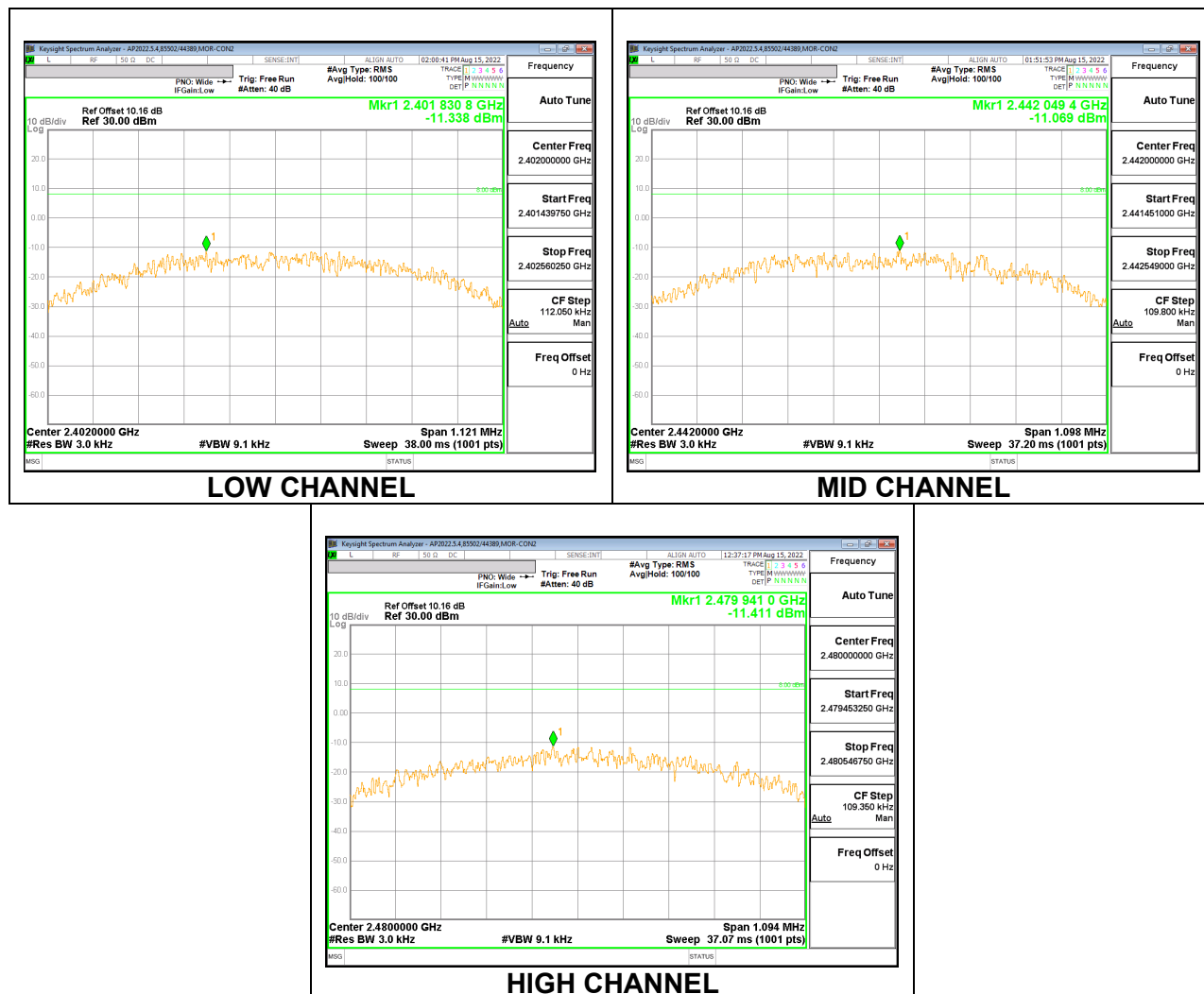
RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

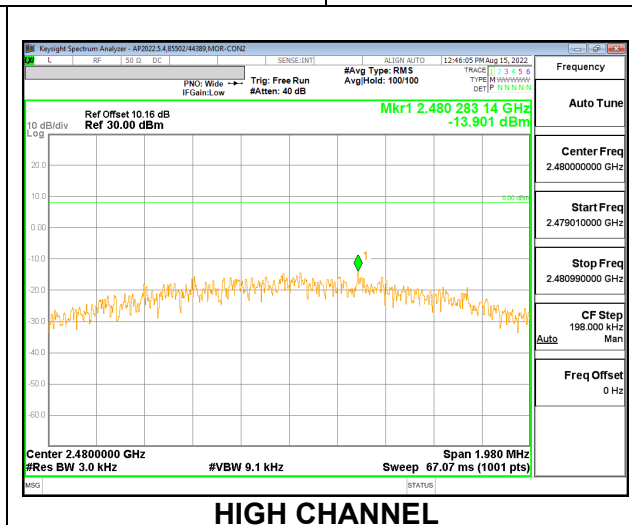
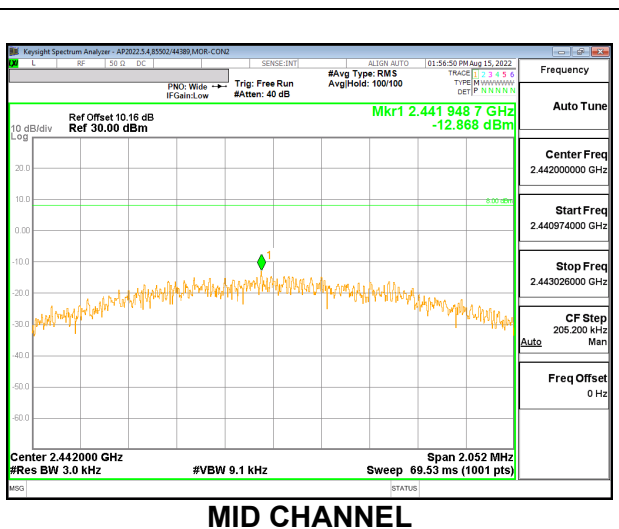
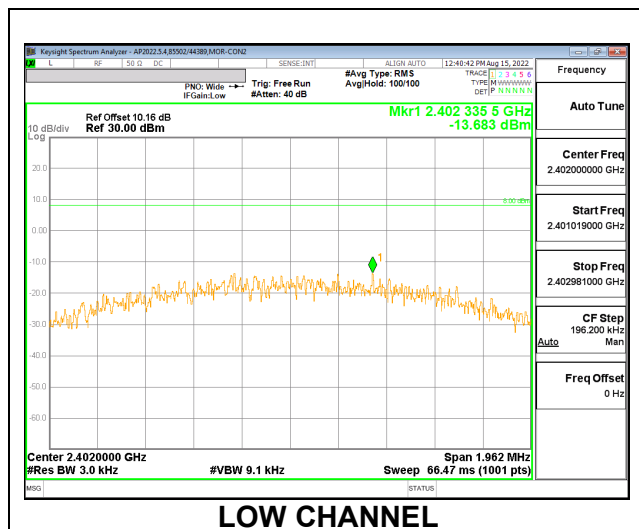
9.6.1. BLE (1Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-11.338	8	-19.338
Middle	2442	-11.069	8	-19.069
High	2480	-11.411	8	-19.411



9.6.1. BLE (2Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-13.683	8	-21.683
Middle	2442	-12.868	8	-20.868
High	2480	-13.901	8	-21.901



9.7. CONDUCTED SPURIOUS EMISSIONS

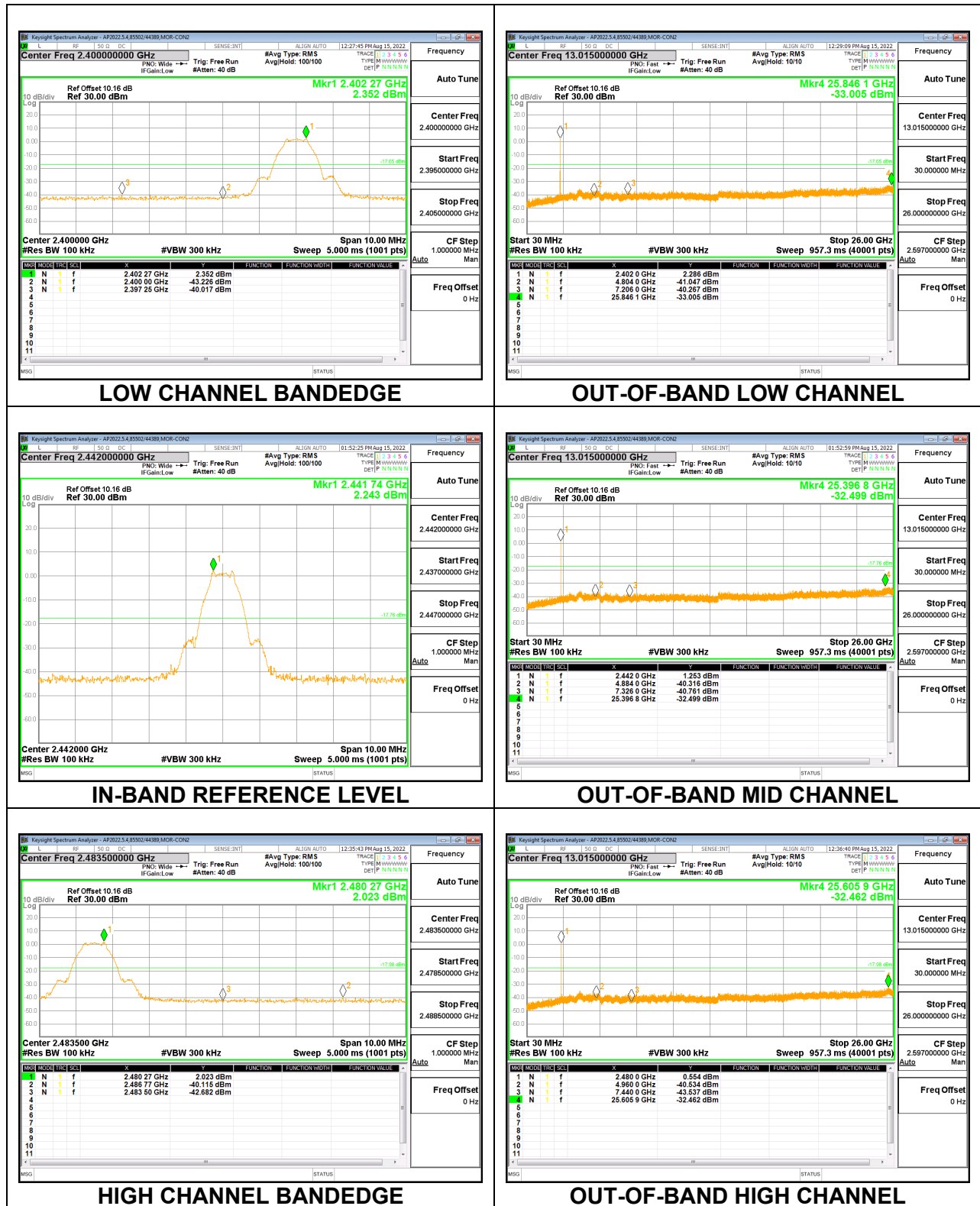
LIMITS

FCC §15.247 (d)
RSS-247 5.5

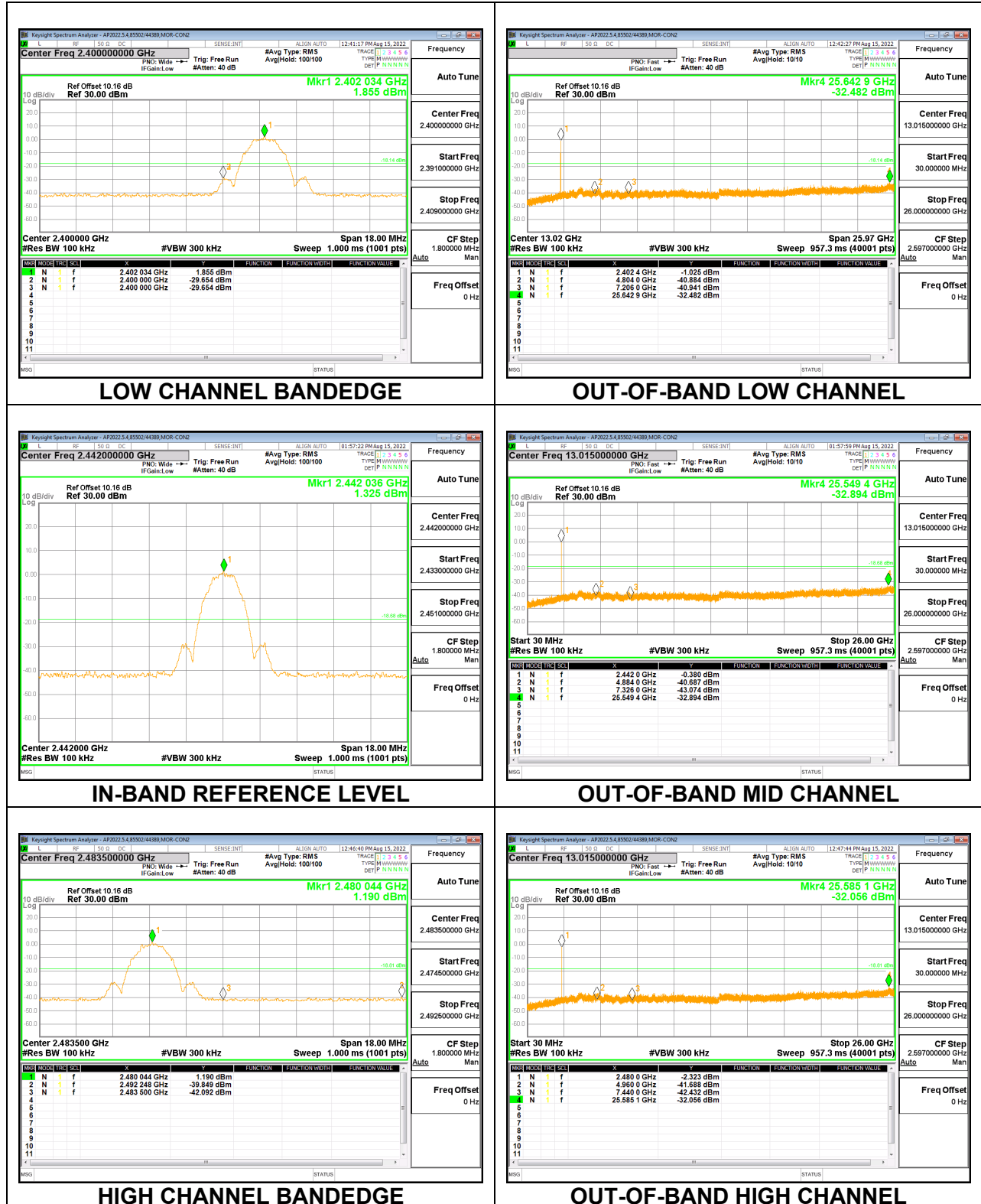
Output power was measured based on the use of a peak measurement; therefore, the required attenuation is -20 dBc.

RESULTS

9.7.1. BLE (1Mbps)



9.7.1. BLE (2Mbps)



10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

RSS-GEN, Section 8.9 and 8.10.

Frequency Range (MHz)	Field Strength Limit (uA/m) at 3 m	Field Strength Limit (dBuA/m) at 3 m
0.009-0.490	6.37/F(kHz) @ 300 m	-
0.490-1.705	6.37/F(kHz) @ 30 m	-
1.705 - 30	.08 @ 30m	-
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements in the 30-1000MHz range, 9kHz for peak and/or quasi-peak detection measurements in the 0.15-30MHz range and 200Hz for peak and/or quasi-peak detection measurements in the 9 to 150kHz range. Peak detection is used unless otherwise noted as quasi-peak or average (9-90kHz and 110-490kHz).

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements. Linear Voltage Averaging was used.

For below 1GHz and above 18GHz emissions, the channel and data rate with the highest power spectral density, was tested.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

3D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel).

Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

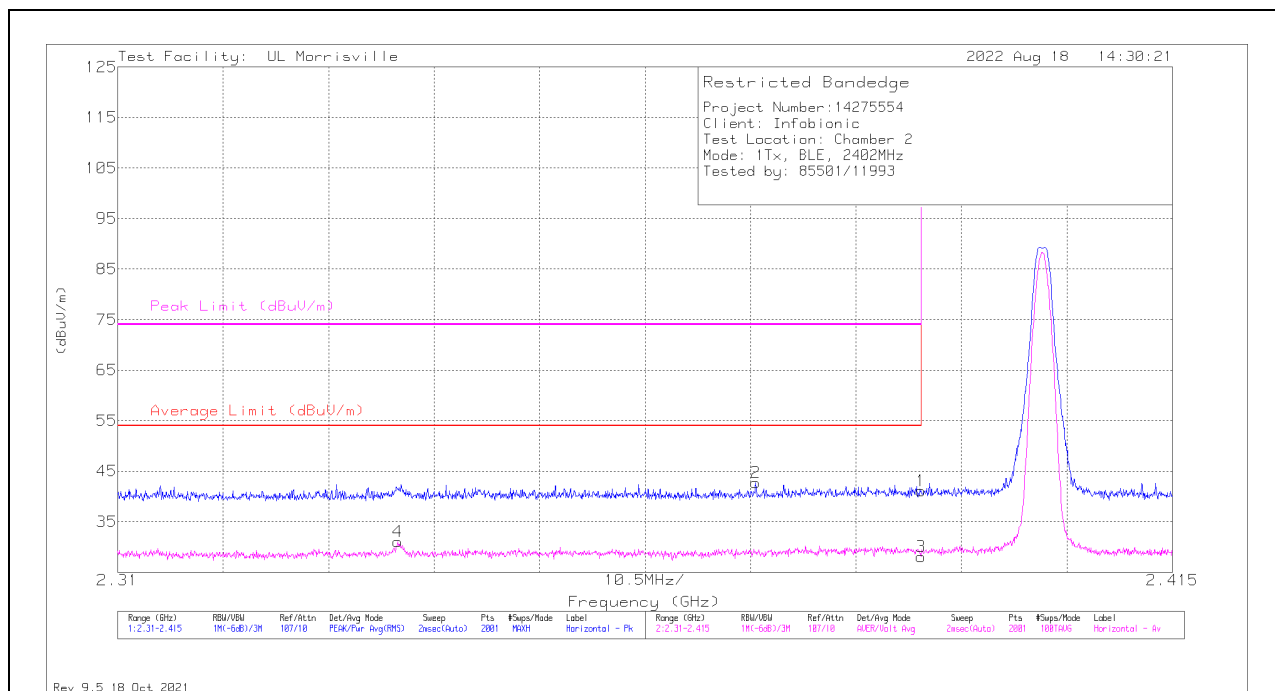
OFS and chamber correlation testing had been performed and chamber measured test result is the worst-case test result.

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. BLE (1Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	32.86	Pk	32	-23.8	41.06	-	-	74	-32.94	87	396	H
2	* ** 2.37353	34.73	Pk	32	-24	42.73	-	-	74	-31.27	87	396	H
3	* ** 2.38996	19.86	ADV	32	-23.8	28.06	54	-25.94	-	-	87	396	H
4	* ** 2.33788	23.13	ADV	31.9	-24	31.03	54	-22.97	-	-	87	396	H

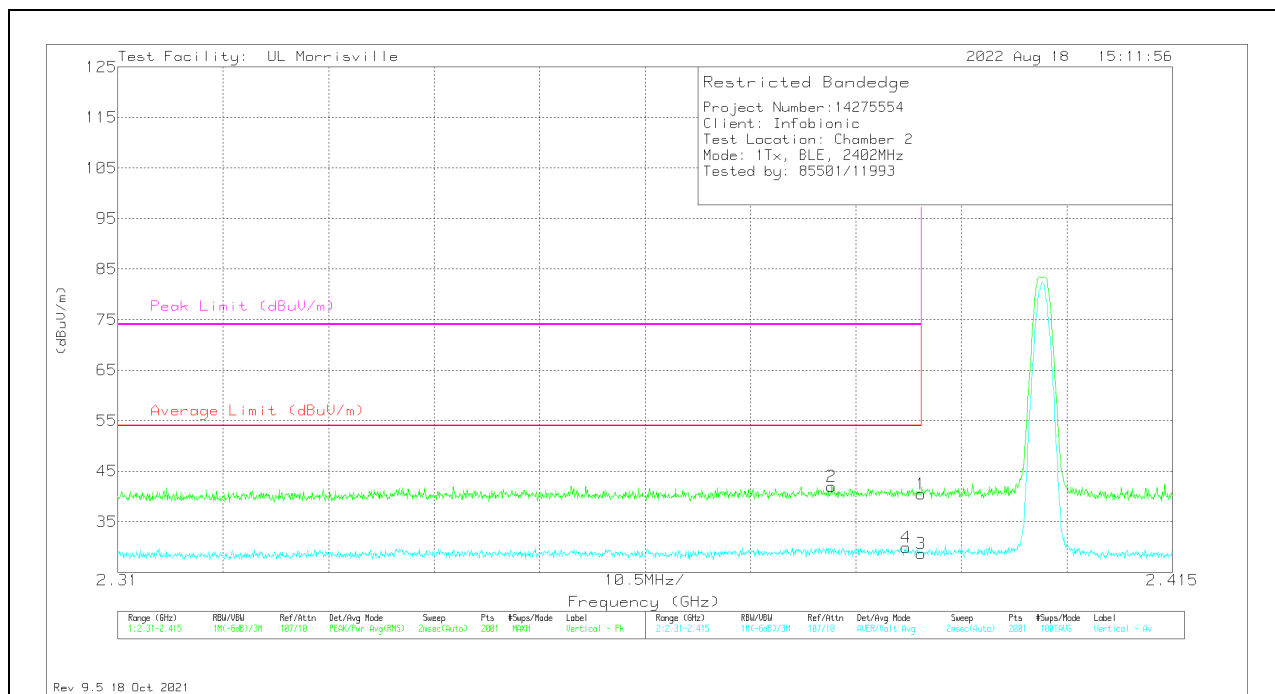
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	32.24	Pk	32	-23.8	40.44	-	-	74	-33.56	102	257	V
2	* ** 2.38109	33.82	Pk	32.1	-23.9	42.02	-	-	74	-31.98	102	257	V
3	* ** 2.38996	20.51	ADV	32	-23.8	28.71	54	-25.29	-	-	102	257	V
4	* ** 2.38849	21.74	ADV	32	-23.8	29.94	54	-24.06	-	-	102	257	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

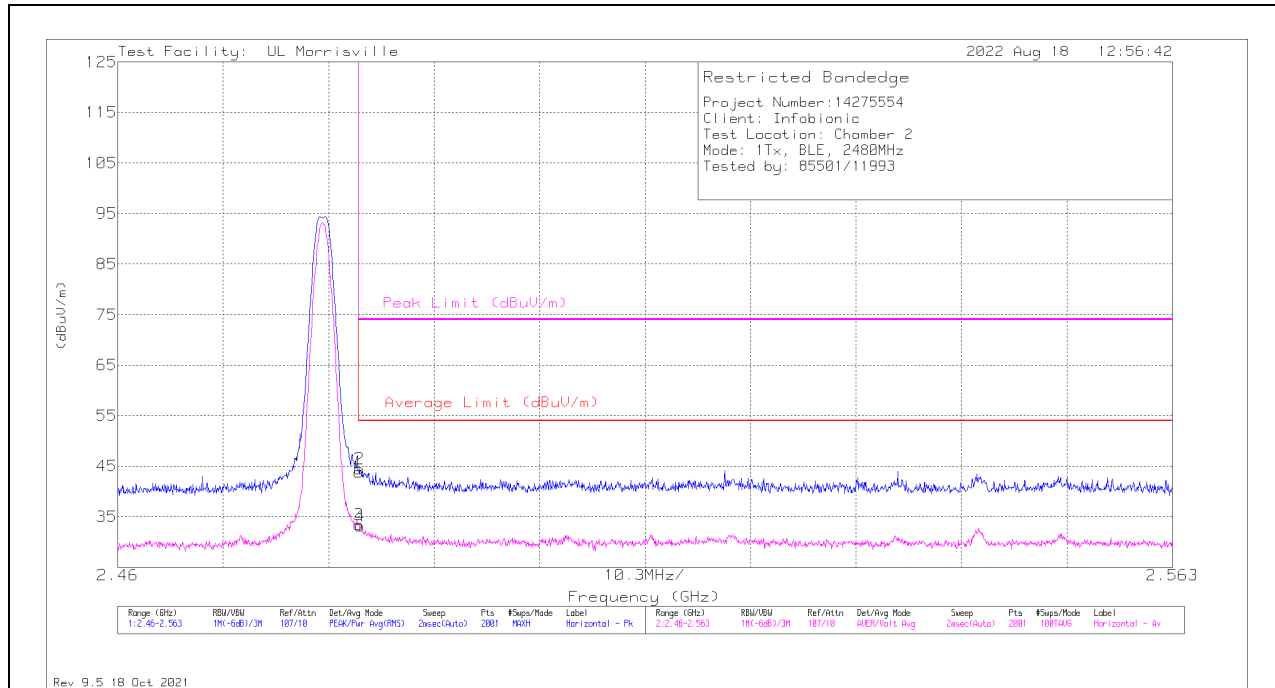
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.48354	35.82	Pk	32.3	-24.3	43.82	-	-	74	-30.18	99	333	H
2	* ** 2.48364	36.48	Pk	32.3	-24.3	44.48	-	-	74	-29.52	99	333	H
3	* ** 2.48354	25.36	ADV	32.3	-24.3	33.36	54	-20.64	-	-	99	333	H
4	* ** 2.48369	25.13	ADV	32.3	-24.3	33.13	54	-20.87	-	-	99	333	H

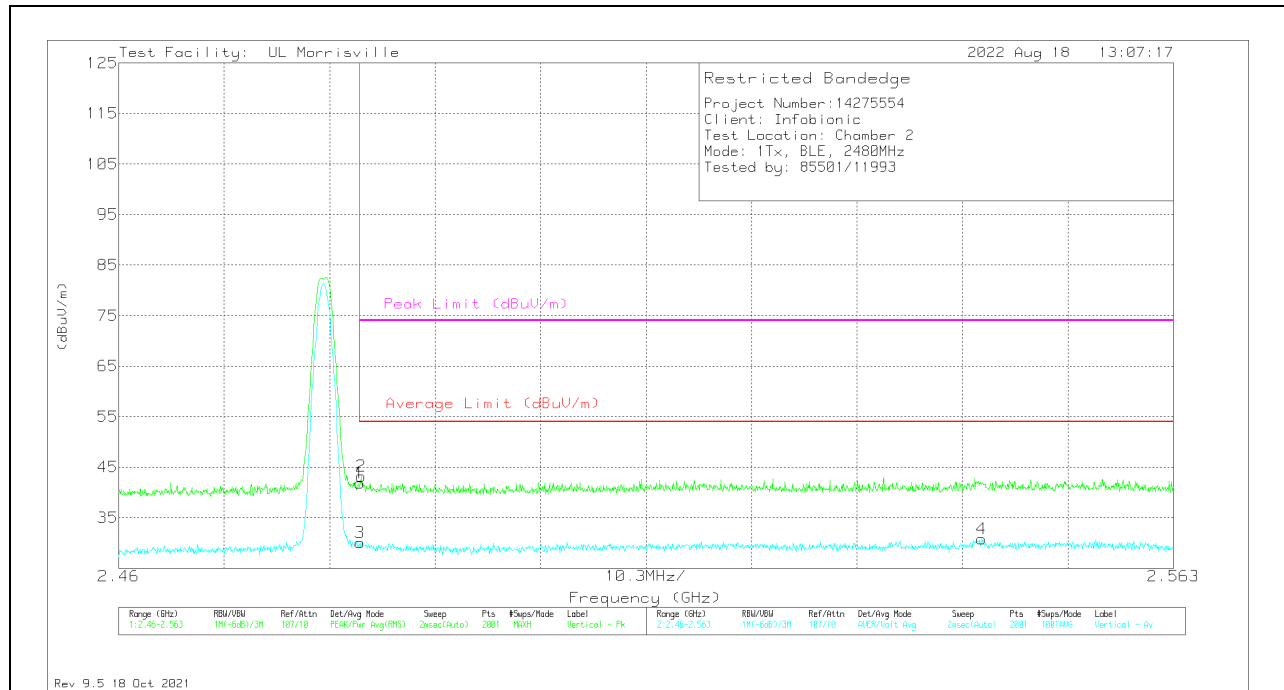
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.48354	33.9	Pk	32.3	-24.3	41.9	-	-	74	-32.1	213	278	V
2	* ** 2.48369	35.2	Pk	32.3	-24.3	43.2	-	-	74	-30.8	213	278	V
3	* ** 2.48354	22.07	ADV	32.3	-24.3	30.07	54	-23.93	-	-	213	278	V
4	** 2.54425	23.01	ADV	32.5	-24.7	30.81	54	-23.19	-	-	213	278	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

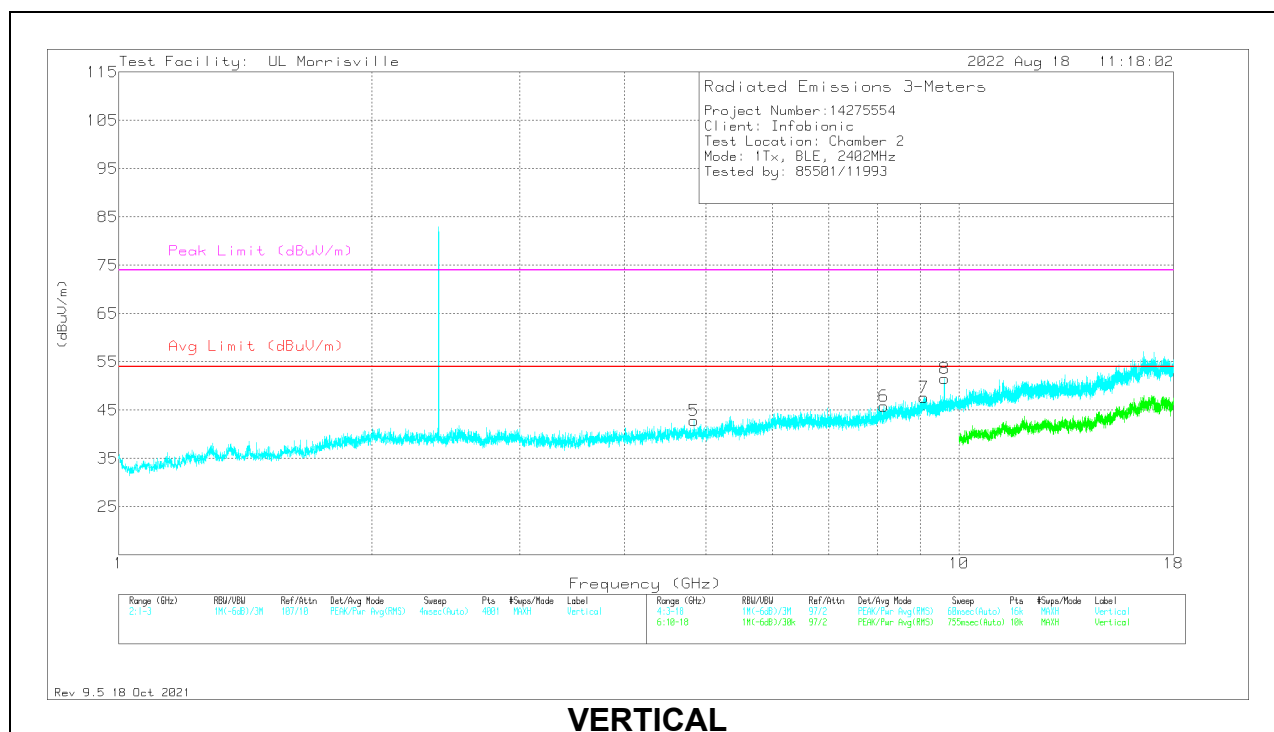
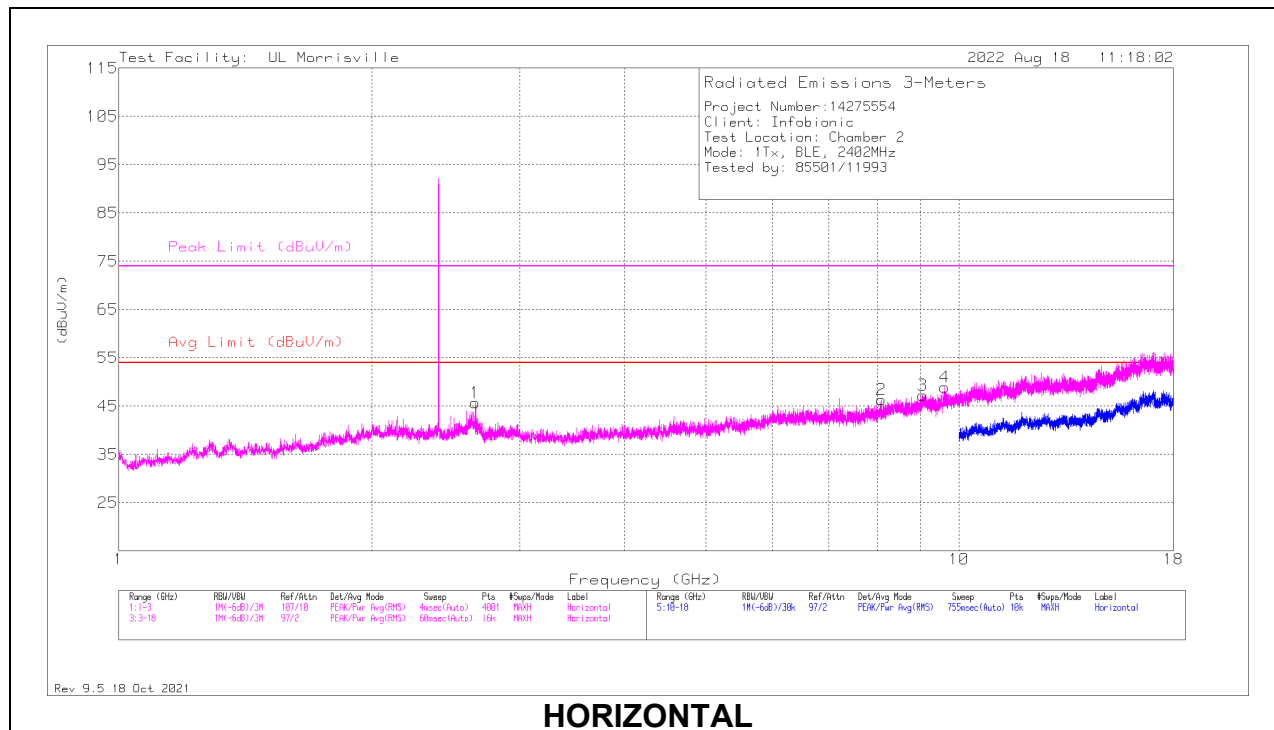
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

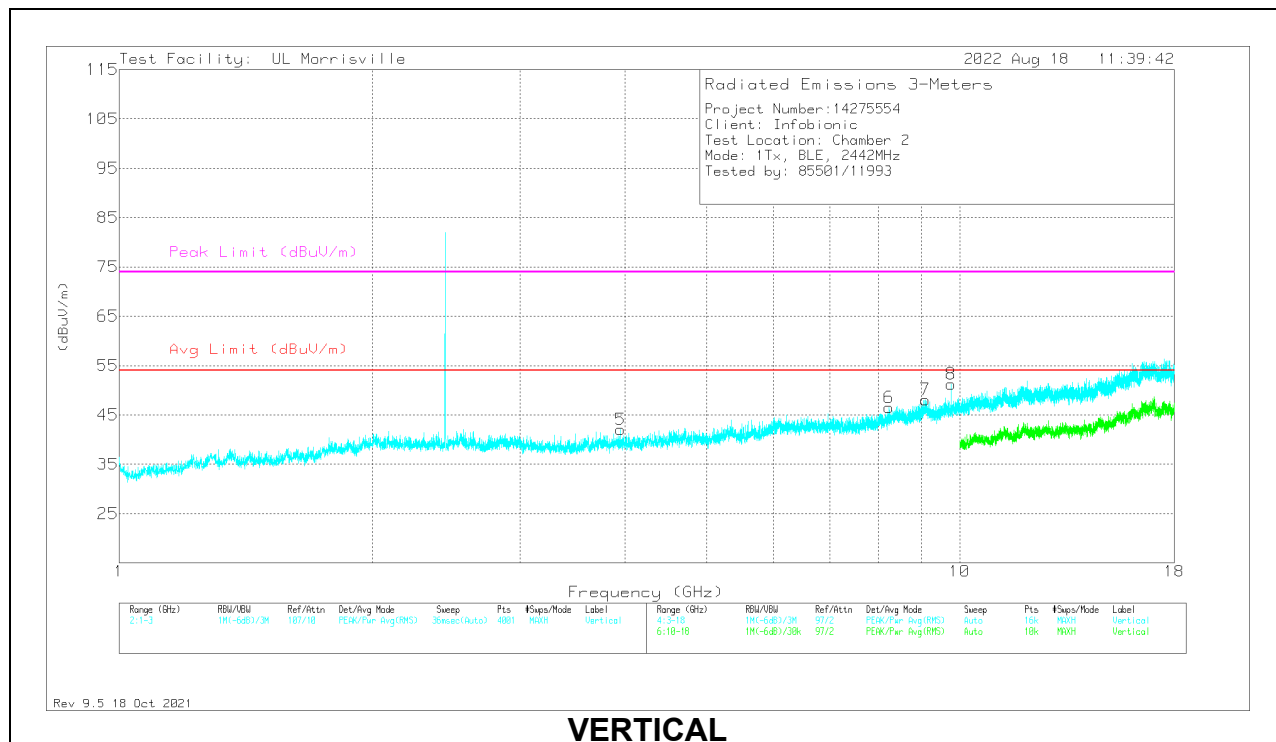
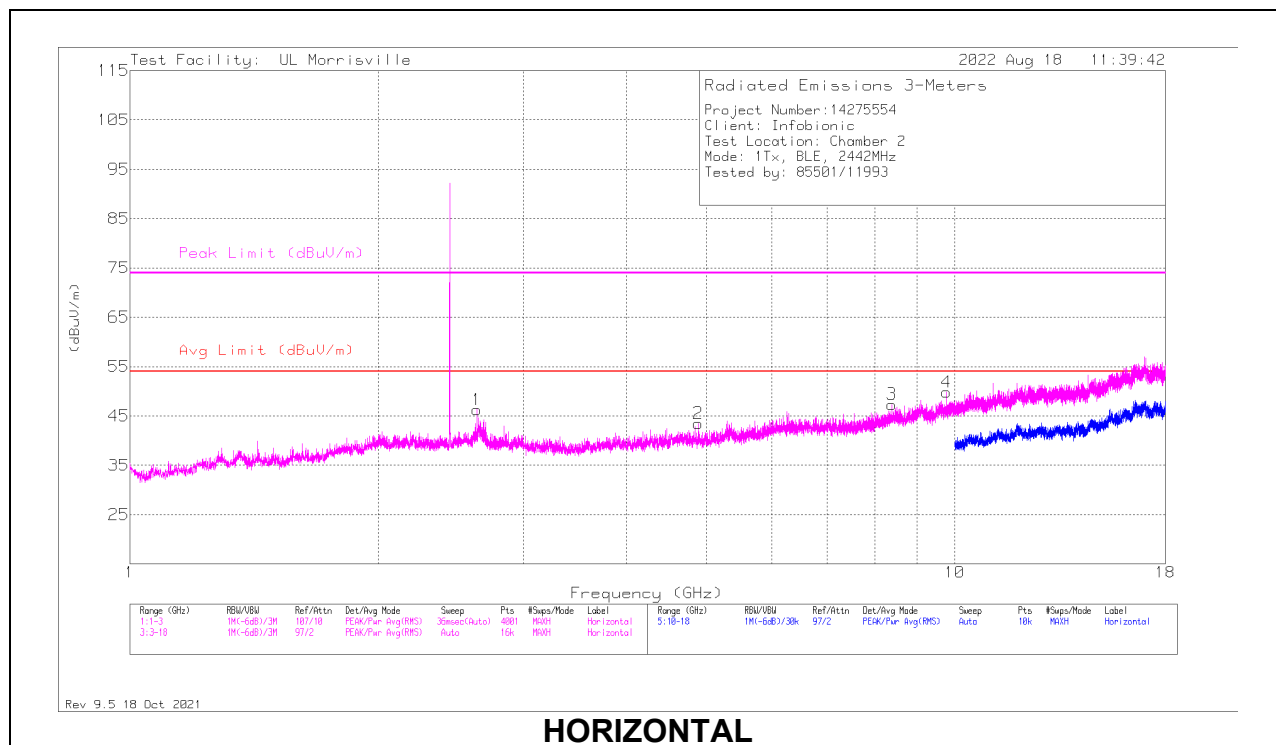
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.6585	39.06	Pk	32.1	-25.5	45.66	54	-8.34	74	-28.34	0-360	101	H
2	* ** 8.07938	37.4	Pk	35.8	-26.8	46.4	54	-7.6	74	-27.6	0-360	101	H
3	* ** 9.05719	36.62	Pk	36.1	-25.5	47.22	54	-6.78	74	-26.78	0-360	200	H
5	* ** 4.8375	39.44	Pk	34	-30.6	42.84	54	-11.16	74	-31.16	0-360	101	V
6	* ** 8.14406	36.75	Pk	35.7	-26.6	45.85	54	-8.15	74	-28.15	0-360	200	V
7	* ** 9.09094	36.87	Pk	36.1	-25.3	47.67	54	-6.33	74	-26.33	0-360	200	V
4	9.60938	37.37	Pk	36.7	-25.1	48.97	-	-	-	-	0-360	101	H
8	9.60938	39.92	Pk	36.7	-25.1	51.52	-	-	-	-	0-360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

MID CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	** 2.634	39.66	Pk	32.1	-25.5	46.26	54	-7.74	74	-27.74	0-360	101	H
2	*** 4.88344	40.27	Pk	33.9	-30.7	43.47	54	-10.53	74	-30.53	0-360	101	H
3	*** 8.39063	38.23	Pk	35.8	-26.7	47.33	54	-6.67	74	-26.67	0-360	200	H
5	*** 3.95063	39.93	Pk	33.4	-31.3	42.03	54	-11.97	74	-31.97	0-360	101	V
6	*** 8.23688	37.81	Pk	35.8	-27.1	46.51	54	-7.49	74	-27.49	0-360	200	V
7	*** 9.10117	39.35	PK2	36.2	-25.4	50.15	-	-	74	-23.85	203	241	V
	*** 9.09894	25.7	ADV	36.2	-25.4	36.5	54	-17.5	-	-	203	241	V
4	9.76688	38.03	Pk	36.8	-25	49.83	-	-	-	-	0-360	101	H
8	9.76688	39.44	Pk	36.8	-25	51.24	-	-	-	-	0-360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

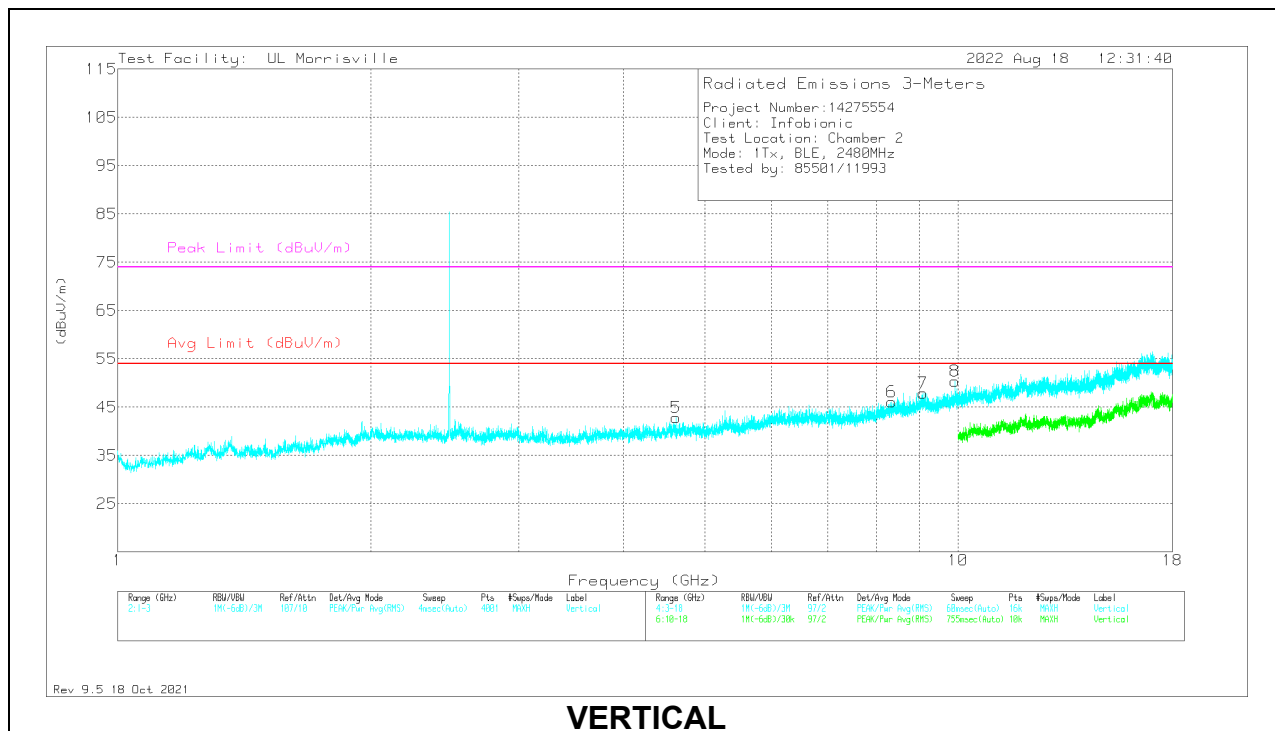
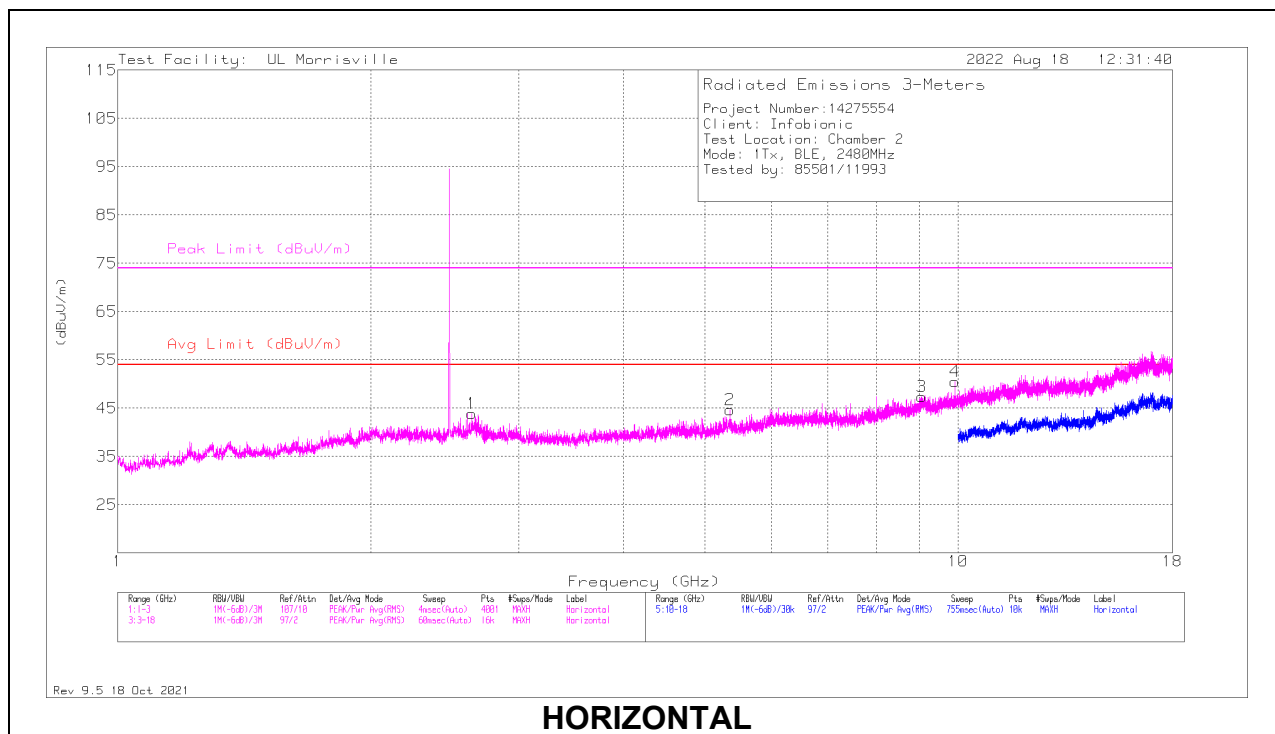
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

PK2 - Maximum Peak

ADV - Linear Voltage Average

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	** 2.64	37.07	Pk	32.1	-25.3	43.87	54	-10.13	74	-30.13	0-360	101	H
2	** 5.35125	38.62	Pk	34.6	-28.6	44.62	54	-9.38	74	-29.38	0-360	200	H
3	** 9.04969	36.85	Pk	36.1	-25.6	47.35	54	-6.65	74	-26.65	0-360	200	H
5	** 4.62	39.99	Pk	34.2	-31.3	42.89	54	-11.11	74	-31.11	0-360	101	V
6	** 8.34469	36.84	Pk	35.8	-26.5	46.14	54	-7.86	74	-27.86	0-360	101	V
7	** 9.07969	37.53	Pk	36.1	-25.7	47.93	54	-6.07	74	-26.07	0-360	200	V
4	9.92156	38.45	Pk	37	-25	50.45	-	-	-	-	0-360	101	H
8	9.92156	38.42	Pk	37	-25	50.42	-	-	-	-	0-360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

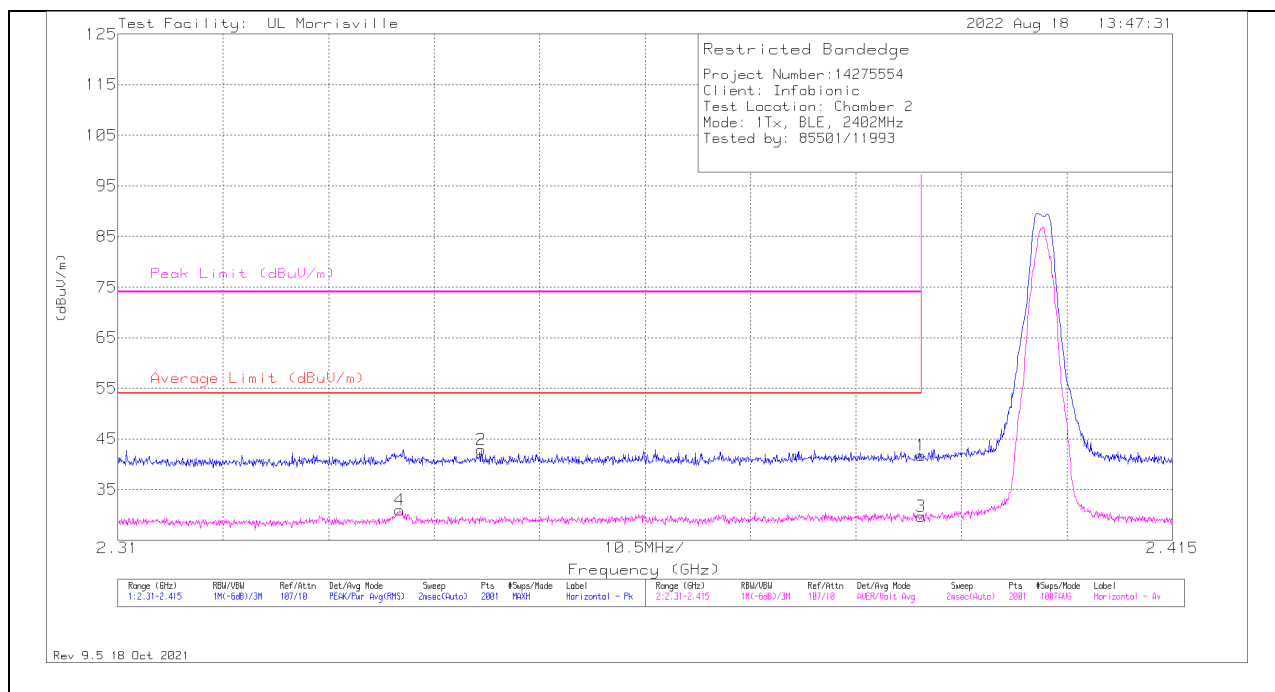
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

10.2.1. BLE (2Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	33.58	Pk	32	-23.8	41.78	-	-	74	-32.22	74	191	H
2	* ** 2.34617	34.86	Pk	31.9	-23.9	42.86	-	-	74	-31.14	74	191	H
3	* ** 2.38996	21.53	ADV	32	-23.8	29.73	54	-24.27	-	-	74	191	H
4	* ** 2.33809	23.03	ADV	31.9	-24	30.93	54	-23.07	-	-	74	191	H

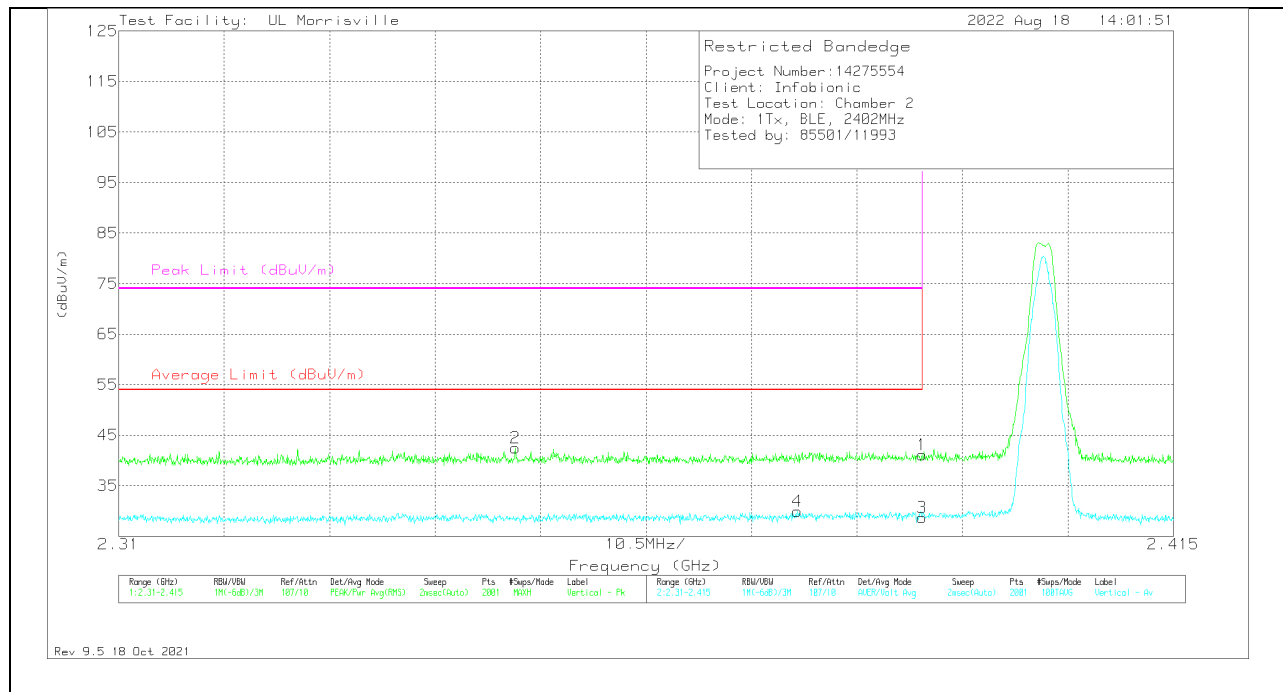
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	32.93	Pk	32	-23.8	41.13	-	-	74	-32.87	87	309	V
2	* ** 2.34948	34.42	Pk	31.9	-23.9	42.42	-	-	74	-31.58	87	309	V
3	* ** 2.38996	20.53	ADV	32	-23.8	28.73	54	-25.27	-	-	87	309	V
4	* ** 2.37757	21.78	ADV	32.1	-23.9	29.98	54	-24.02	-	-	87	309	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

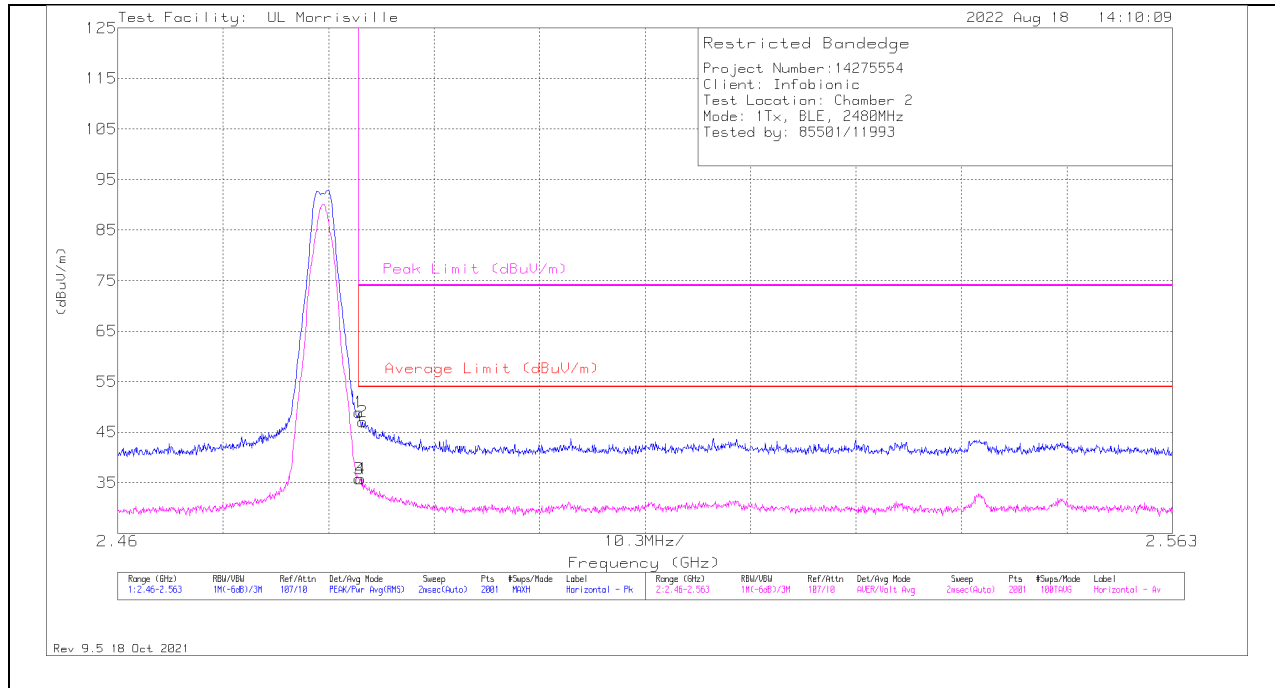
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.48354	40.92	Pk	32.3	-24.3	48.92	-	-	74	-25.08	85	116	H
2	* ** 2.4839	39.17	Pk	32.3	-24.4	47.07	-	-	74	-26.93	85	116	H
3	* ** 2.48354	27.74	ADV	32.3	-24.3	35.74	54	-18.26	-	-	85	116	H
4	* ** 2.48374	27.73	ADV	32.3	-24.3	35.73	54	-18.27	-	-	85	116	H

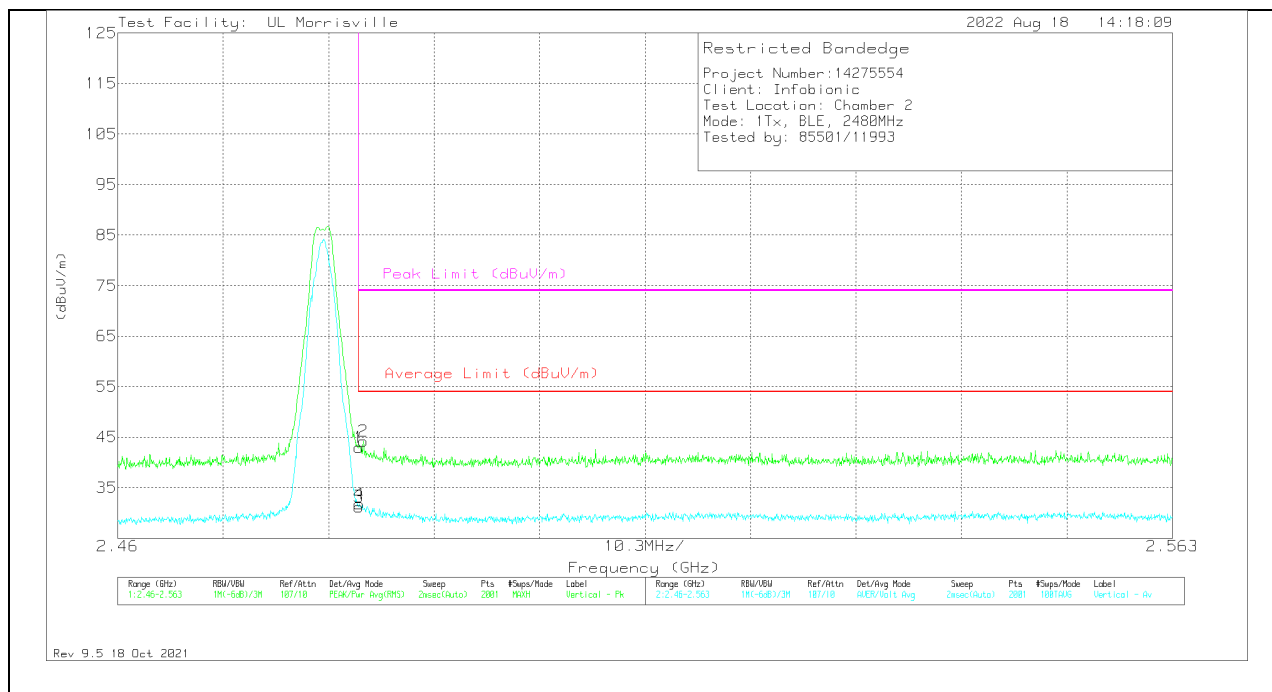
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.48354	35.01	Pk	32.3	-24.3	43.01	-	-	74	-30.99	77	331	V
2	* ** 2.484	36.32	Pk	32.3	-24.4	44.22	-	-	74	-29.78	77	331	V
3	* ** 2.48354	23.23	ADV	32.3	-24.3	31.23	54	-22.77	-	-	77	330	V
4	* ** 2.48359	23.82	ADV	32.3	-24.3	31.82	54	-22.18	-	-	77	330	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

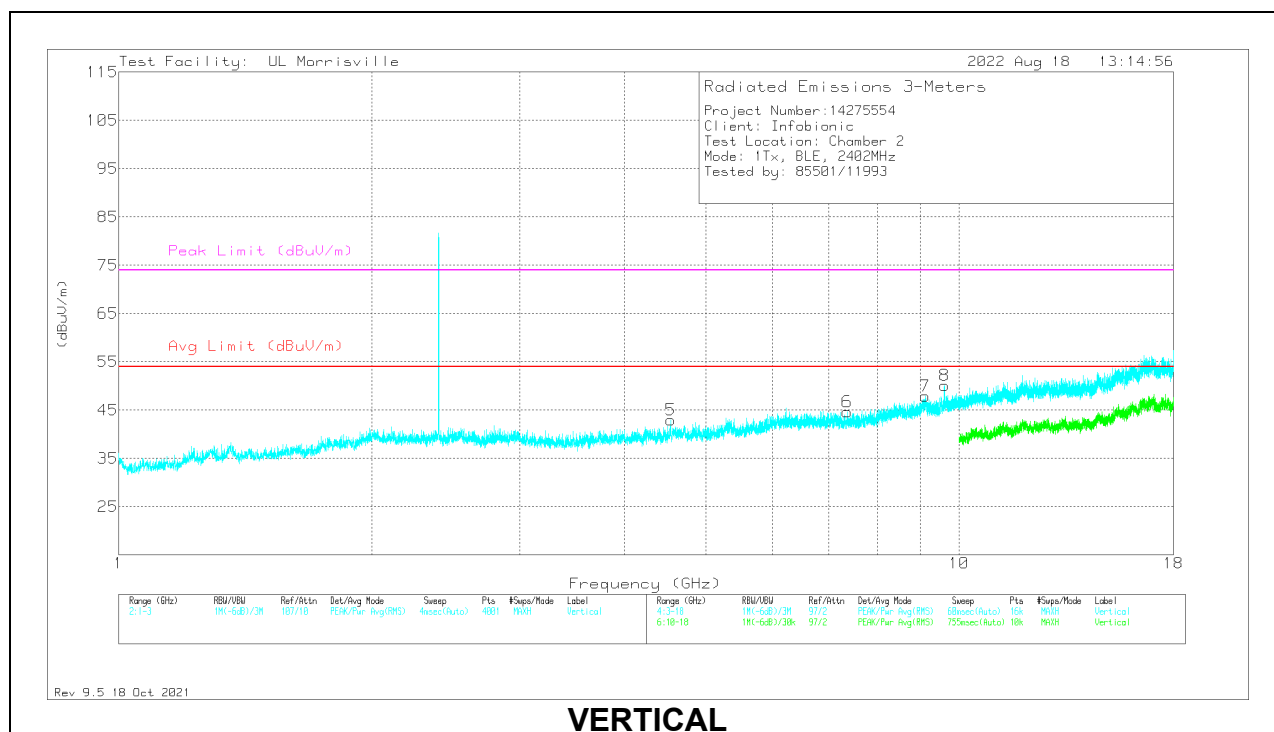
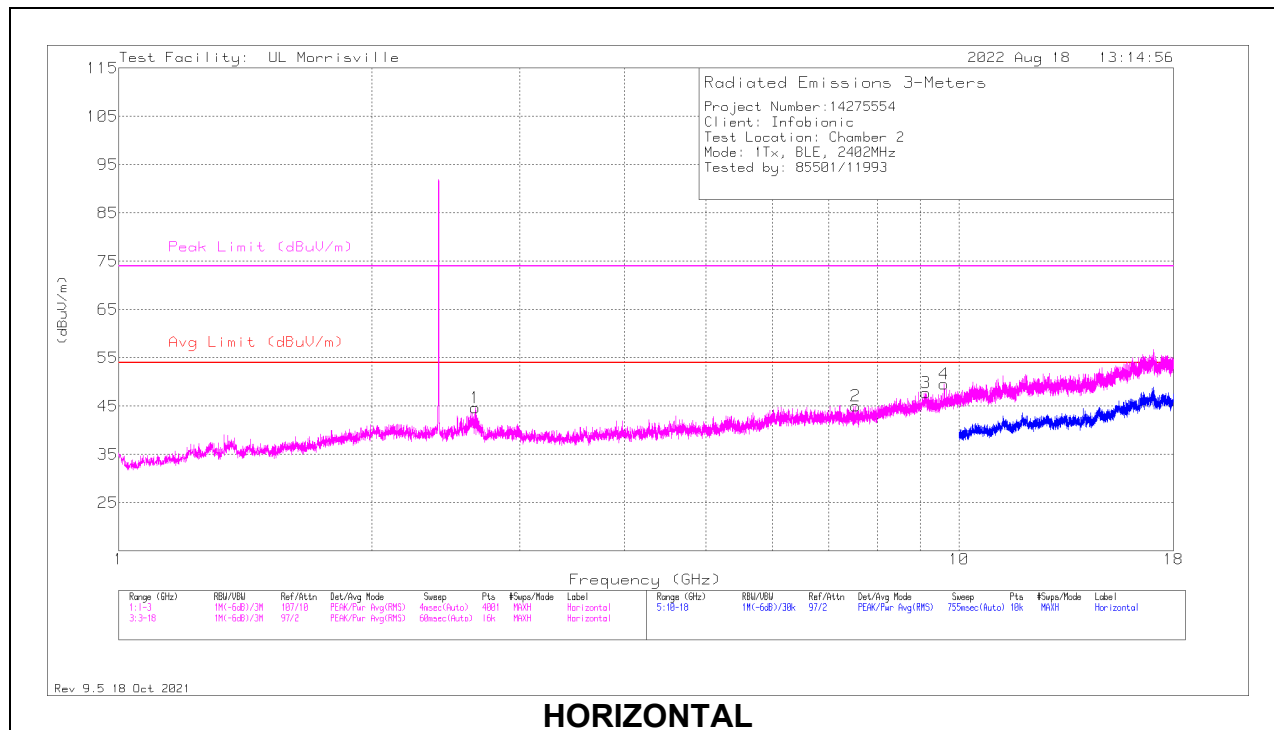
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

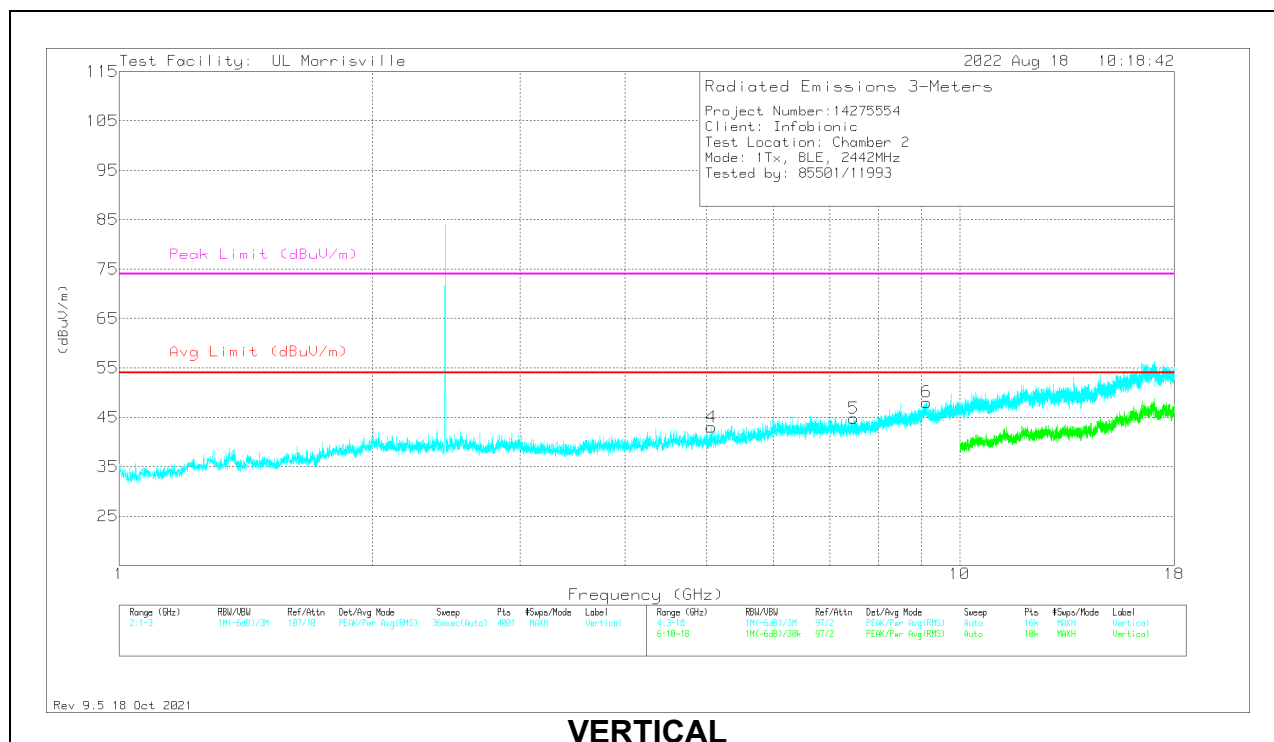
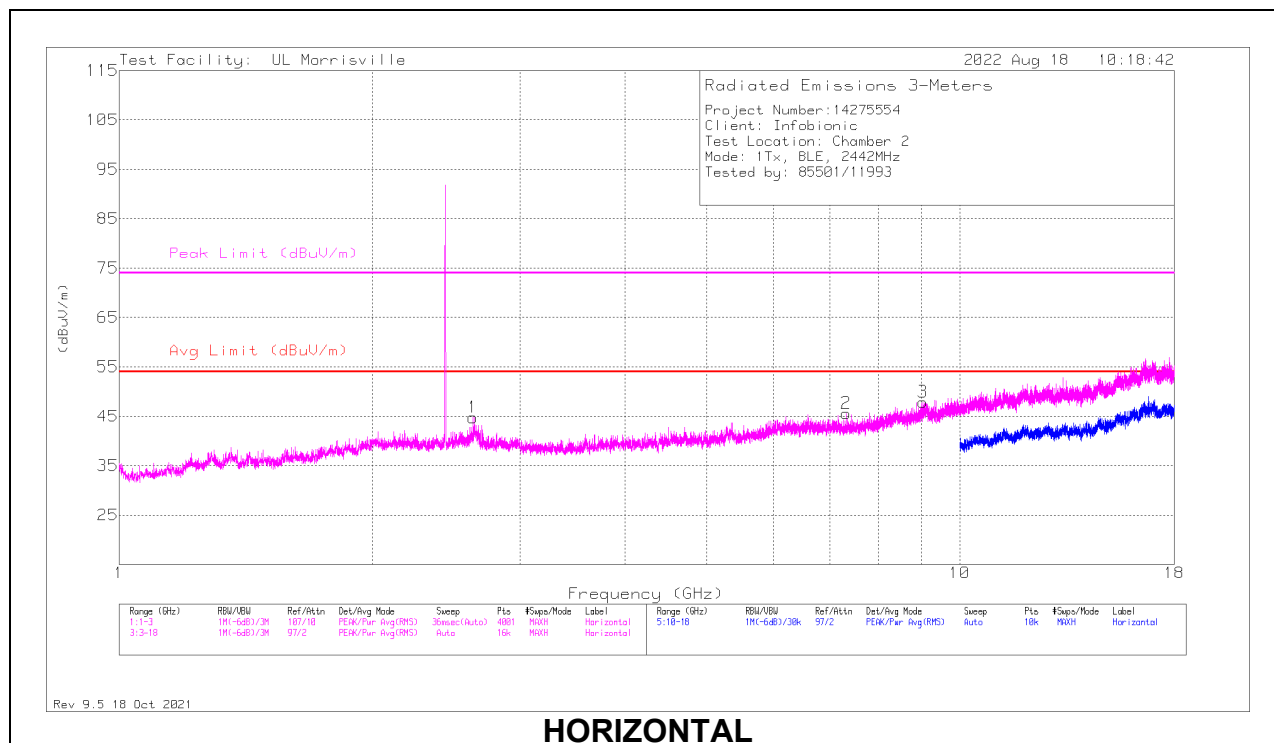
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.6585	38.08	Pk	32.1	-25.5	44.68	54	-9.32	74	-29.32	0-360	200	H
2	* ** 7.53844	37.2	Pk	35.7	-27.8	45.1	54	-8.9	74	-28.9	0-360	101	H
3	* ** 9.13969	36.57	Pk	36.2	-25	47.77	54	-6.23	74	-26.23	0-360	199	H
5	* ** 4.53844	39.31	Pk	34.1	-30.4	43.01	54	-10.99	74	-30.99	0-360	199	V
6	* ** 7.36219	36.03	Pk	35.6	-27	44.63	54	-9.37	74	-29.37	0-360	199	V
7	* ** 9.12281	36.89	Pk	36.2	-25.2	47.89	54	-6.11	74	-26.11	0-360	101	V
4	9.60563	38.07	Pk	36.7	-25.2	49.57	-	-	-	-	0-360	101	H
8	9.60938	38.5	Pk	36.7	-25.1	50.1	-	-	-	-	0-360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

MID CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	** 2.6345	38.15	Pk	32.1	-25.5	44.75	54	-9.25	74	-29.25	0-360	101	H
2	* ** 7.3275	37.11	Pk	35.6	-27.1	45.61	54	-8.39	74	-28.39	0-360	101	H
3	*** 9.04219	37.6	Pk	36	-25.7	47.9	54	-6.1	74	-26.1	0-360	101	H
4	*** 5.06531	39.72	Pk	34.1	-30.8	43.02	54	-10.98	74	-30.98	0-360	101	V
5	*** 7.47938	36.57	Pk	35.7	-27.5	44.77	54	-9.23	74	-29.23	0-360	101	V
6	*** 9.13123	38.03	PK2	36.2	-25.1	49.13	-	-	74	-24.87	90	194	V
	*** 9.13221	25.61	ADV	36.2	-25	36.81	54	-17.19	-	-	90	194	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

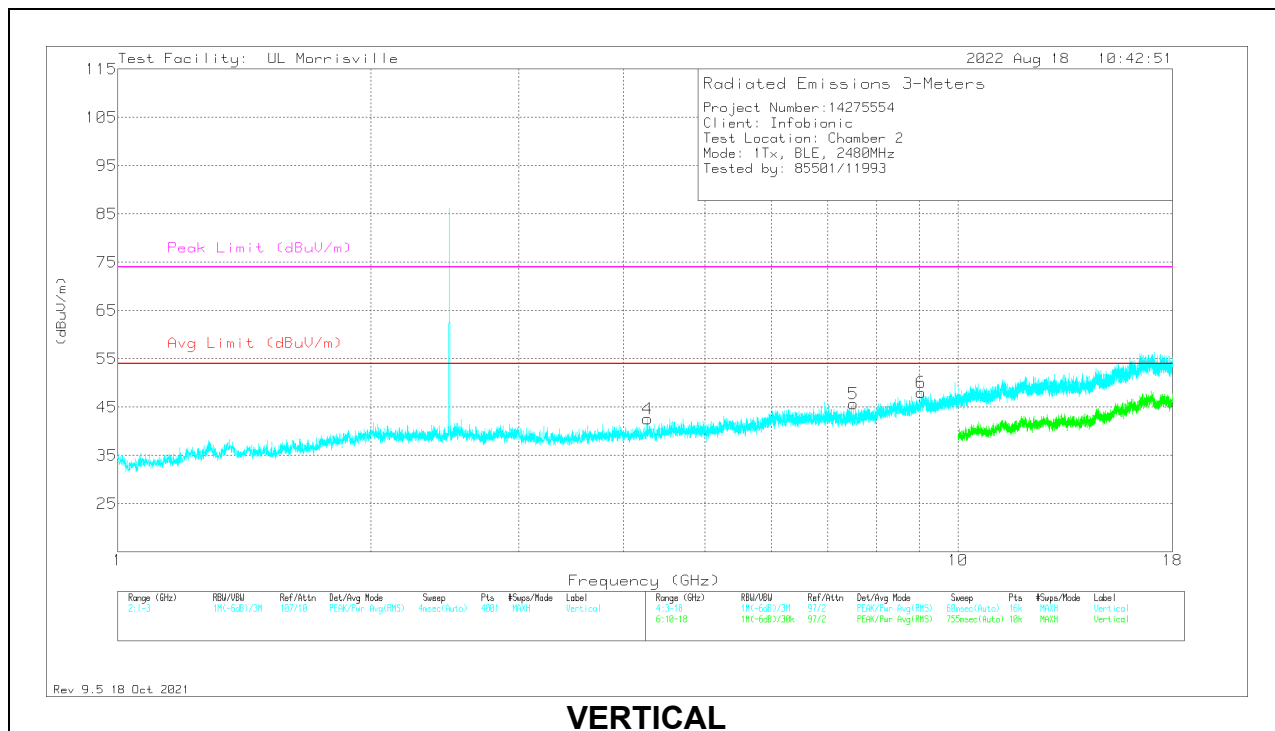
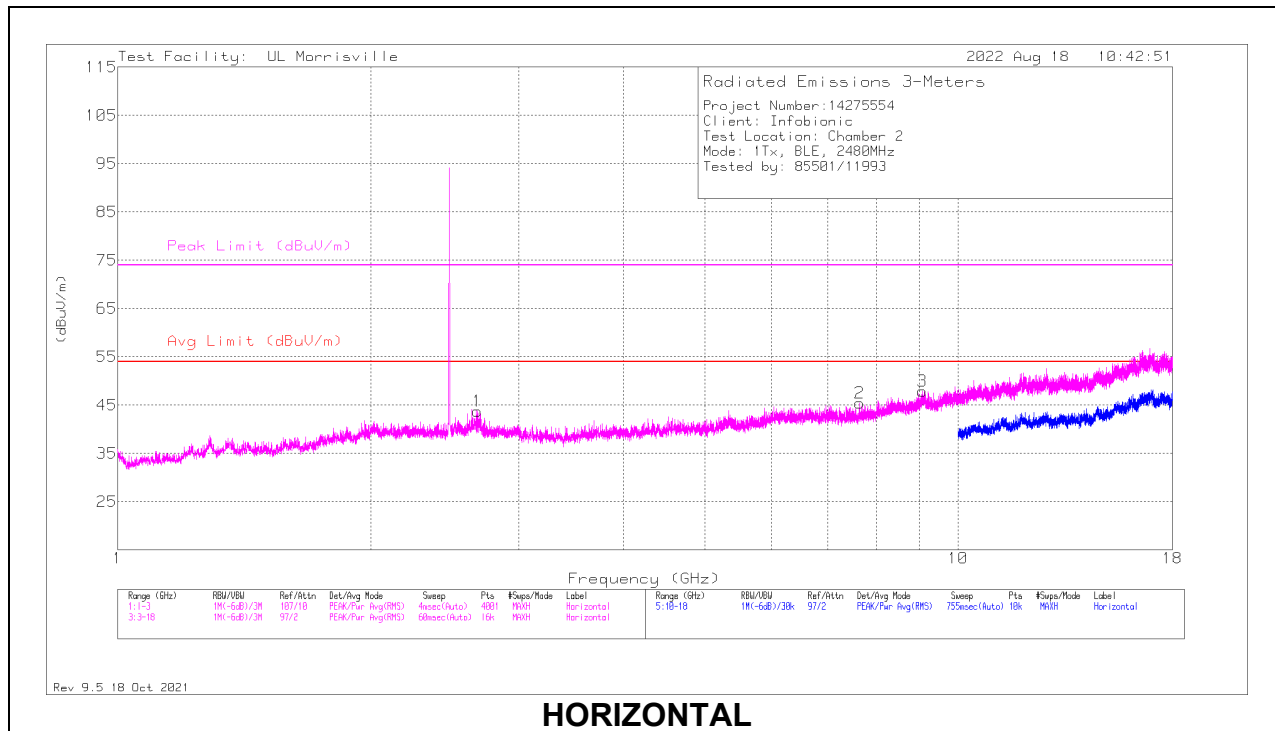
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

PK2 - Maximum Peak

ADV - Linear Voltage Average

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.6795	37.37	Pk	31.9	-25.5	43.77	54	-10.23	74	-30.23	0-360	101	H
2	* ** 7.64063	37	Pk	35.7	-27.2	45.5	54	-8.5	74	-28.5	0-360	101	H
3	* ** 9.06656	37.12	Pk	36.1	-25.3	47.92	54	-6.08	74	-26.08	0-360	101	H
4	* ** 4.27125	40.17	Pk	33.3	-30.9	42.57	54	-11.43	74	-31.43	0-360	200	V
5	* ** 7.50656	37.55	Pk	35.7	-27.5	45.75	54	-8.25	74	-28.25	0-360	200	V
6	* ** 9.04397	38.09	PK2	36	-25.6	48.49	-	-	74	-25.51	136	171	V
	* ** 9.04616	25.71	ADV	36	-25.6	36.11	54	-17.89	-	-	136	171	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

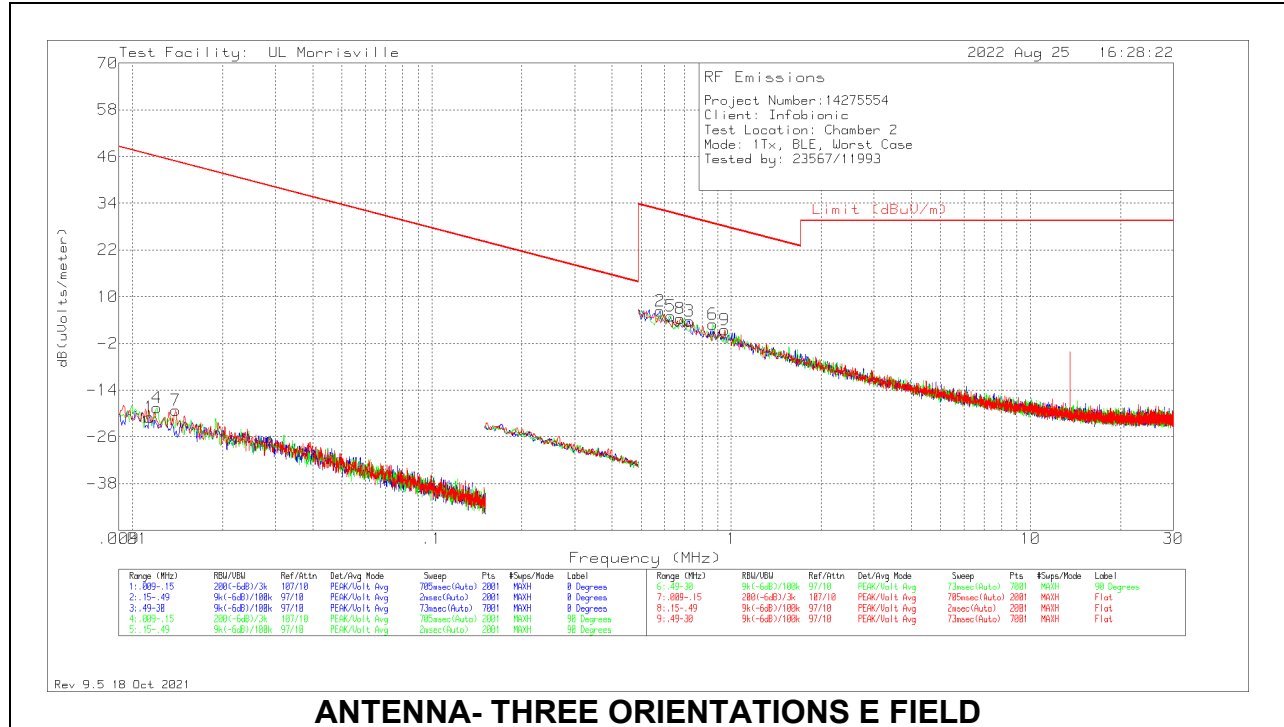
PK2 - Maximum Peak

ADV - Linear Voltage Average

10.3. WORST CASE BELOW 30MHZ

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)

Note: All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz – 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were 40*Log (test distance / specification distance).



ANTENNA- THREE ORIENTATIONS E FIELD

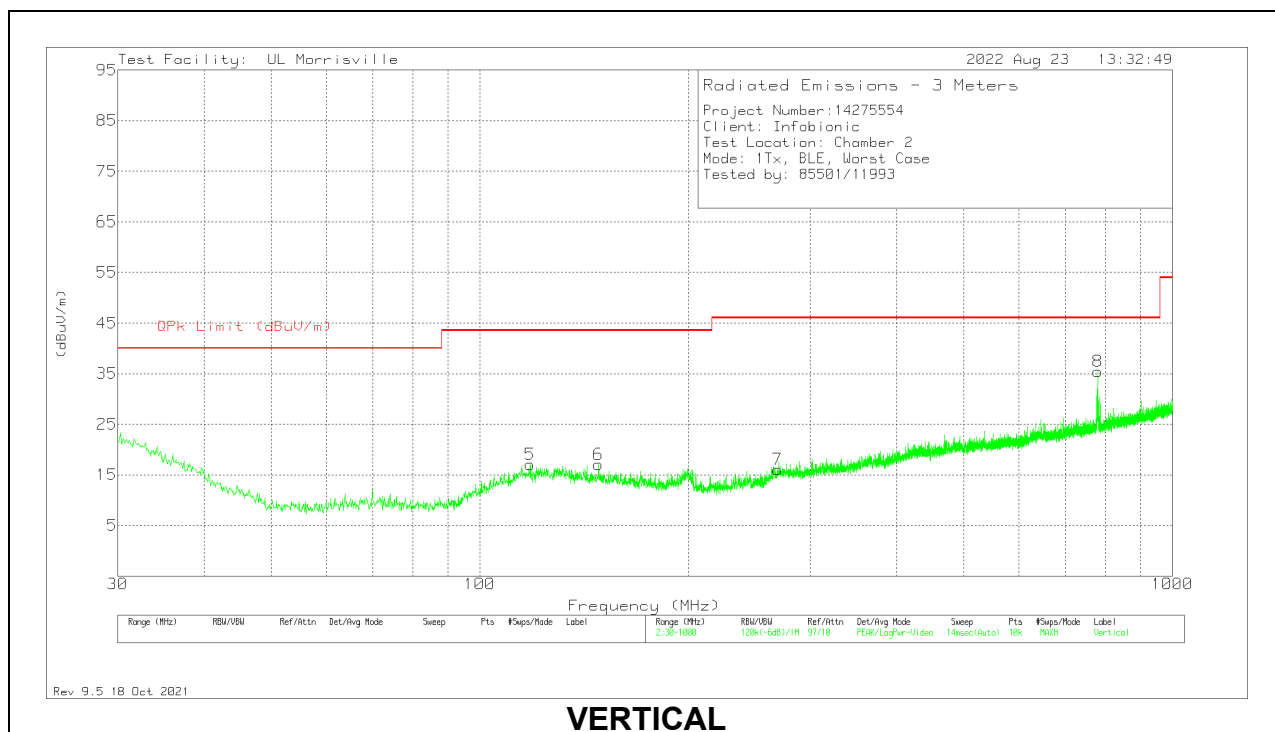
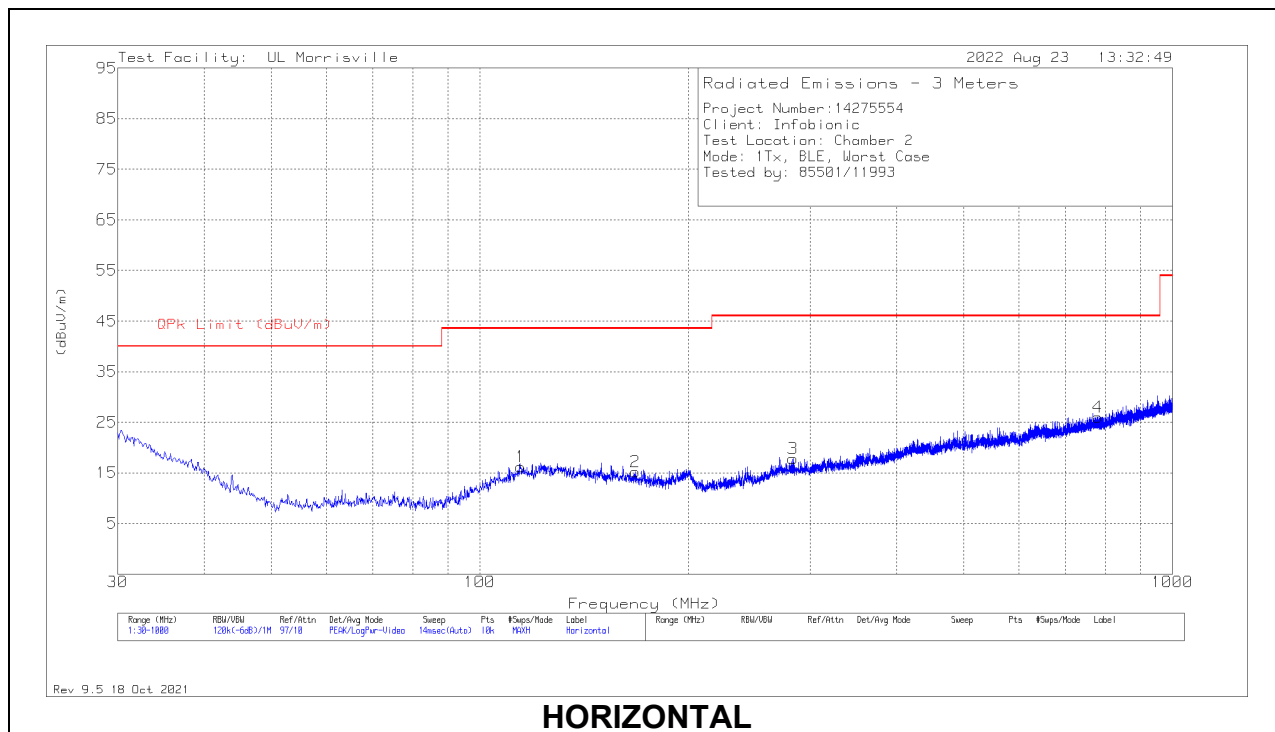
Below 30MHz Data E FIELD

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	QP/AV Limit (dBuV/m)	PK Limit (dBuV/M)	Margin (dB)	Azimuth (Degs)	Height (cm)	Loop Angle
1	.01141	41.16	Pk	17.8	.1	-80	-20.94	46.46	66.46	-67.4	0-360	401	0 degs
4	.01205	43.81	Pk	17.5	.1	-80	-18.59	45.98	65.98	-64.57	0-360	401	90 degs
7	.01397	44	Pk	16.7	.1	-80	-19.2	44.7	64.7	-63.9	0-360	401	Flat
2	.57854	34.96	Pk	11.2	.2	-40	6.36	32.36	-	-26	0-360	401	0 degs
5	.62913	33.51	Pk	11.3	.2	-40	5.01	31.63	-	-26.62	0-360	401	90 degs
8	.6755	32.91	Pk	11.3	.2	-40	4.41	31.01	-	-26.6	0-360	401	Flat
3	.7261	32.27	Pk	11.3	.2	-40	3.77	30.38	-	-26.61	0-360	401	0 degs
6	.86944	31.36	Pk	11.3	.2	-40	2.86	28.82	-	-25.96	0-360	401	90 degs
9	.94954	29.95	Pk	11.3	.2	-40	1.45	28.05	-	-26.6	0-360	401	Flat

Pk - Peak detector

10.4. WORST CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)



Below 1GHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0073 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 114.584	26.98	Pk	19.5	-30.3	16.18	43.52	-27.34	0-360	399	H
2	* ** 167.837	27	Pk	18	-29.8	15.2	43.52	-28.32	0-360	299	H
3	* ** 283.17	27.28	Pk	19.3	-28.8	17.78	46.02	-28.24	0-360	299	H
4	** 780.004	25.42	Pk	27.3	-26.7	26.02	46.02	-20	0-360	299	H
5	* ** 118.27	27.88	Pk	19.8	-30.6	17.08	43.52	-26.44	0-360	299	V
7	* ** 268.814	25.91	Pk	19.3	-29.1	16.11	46.02	-29.91	0-360	299	V
8	** 780.877	34.87	Pk	27.2	-26.6	35.47	46.02	-10.55	0-360	299	V
6	148.243	28.42	Pk	18.7	-30	17.12	43.52	-26.4	0-360	101	V

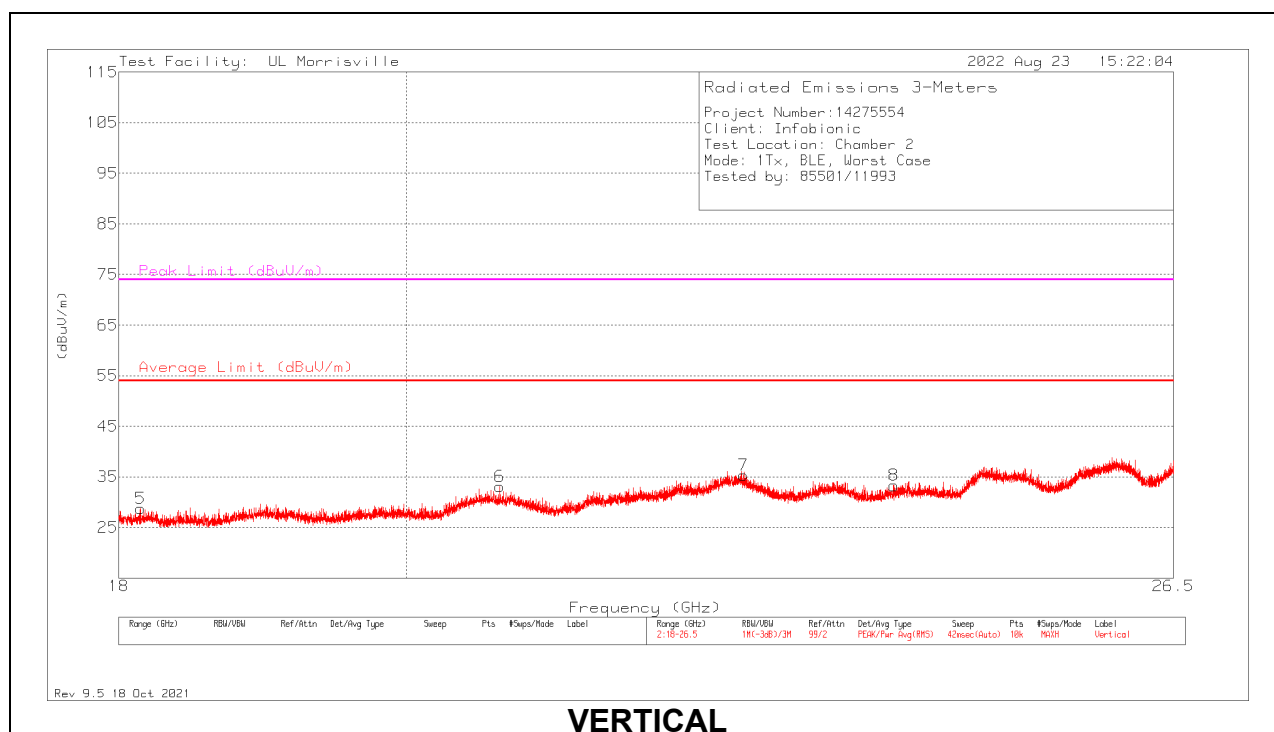
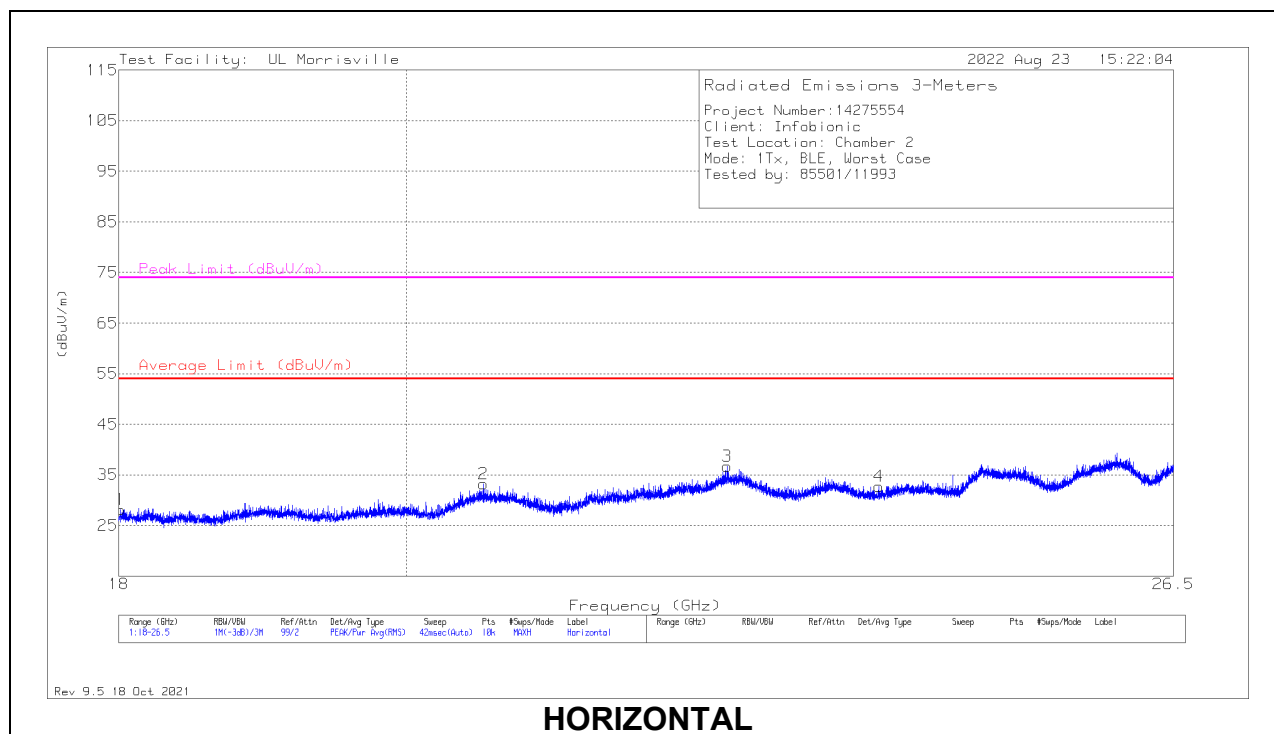
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

10.5. WORST CASE 18-26 GHZ

SPURIOUS EMISSIONS 18-26 GHz (WORST-CASE CONFIGURATION)



18 – 26GHz Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0063 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 18.01105	33.68	Pk	33.2	-38.7	28.18	54	-25.82	74	-45.82	0-360	101	H
2	* ** 20.57354	37.73	Pk	33.9	-38.4	33.23	54	-20.77	74	-40.77	0-360	150	H
3	* ** 22.502	38.34	Pk	36.4	-38.1	36.64	54	-17.36	74	-37.36	0-360	250	H
4	* ** 23.78452	35.4	Pk	34.9	-37.6	32.7	54	-21.3	74	-41.3	0-360	101	H
5	* ** 18.14534	34.46	Pk	33.1	-38.8	28.76	54	-25.24	74	-45.24	0-360	299	V
6	* ** 20.69933	37.67	Pk	33.9	-38.5	33.07	54	-20.93	74	-40.93	0-360	101	V
7	* ** 22.63629	37.07	Pk	36.2	-38	35.27	54	-18.73	74	-38.73	0-360	101	V
8	* ** 23.91711	35.88	Pk	34.9	-37.5	33.28	54	-20.72	74	-40.72	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

11. SETUP PHOTOS

Please refer to 14275554-EP2 for setup photos

END OF TEST REPORT