



TEST REPORT

Report Number. : R13974365-E1

Applicant : Lutron Electronics Co Inc.
7200 Suter Rd.
Coopersburg, PA, 18036, U.S.A

Model : AFC1

FCC ID : JPZ0138

IC : 2851A-JPZ0138

EUT Description : Low Voltage Lighting Control Interface

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

Date Of Issue:
2021-11-12

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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2021-09-23	Initial Issue	Haley Ackun
V2	2021-10-28	Added new AC Line data.	Haley Ackun
V3	2021-11-12	Editorial revisions. Added references to KDB 558074 Section 11 Q#3c to section 7 and 10	Brian T. Kiewra

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Lutron Electronics Co Inc.
7200 Suter Rd.
Coopersburg, PA, 18036, U.S.A

EUT DESCRIPTION: Low Voltage Lighting Control Device

MODEL: AFC1

SERIAL NUMBER: 50017454b

SAMPLE RECEIPT DATE: 2021-08-24

DATE TESTED: 2021-08-24 TO 2021-09-22 & 2021-10-28

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C: 2021	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.

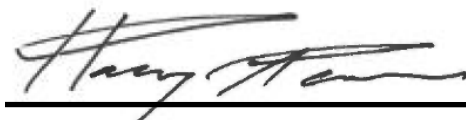
This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

Approved & Released For
UL LLC. By:



Brian Kiewra
Project Engineer
Consumer Technology Division
UL LLC.

Prepared By:



Haley Ackun
Laboratory Engineer
Consumer Technology Division
UL LLC.

2. TEST RESULTS SUMMARY

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	Complies	None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power	Complies	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	Complies	None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Complies	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Complies	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Complies	None.

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.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15: 2021, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5 + A2: 2021, and RSS-247 Issue 2: 2017.

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by a2La, cert. # 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
<input type="checkbox"/>	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	703469
<input checked="" type="checkbox"/>	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A	US0067	27265	703469

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	UNCERTAINTY
Radio Frequency (Spectrum Analyzer)	141.2 Hz
Occupied Channel Bandwidth	1.22%
RF output power, conducted	1.3 dB (PK) 0.45 dB (AV)
Power Spectral Density, conducted	2.47 dB
Unwanted Emissions, conducted	1.94 dB
All emissions, radiated	6.01 dB
Conducted Emissions (0.150-30MHz) - LISN	3.40 dB
Temperature	0.57°C
Humidity	3.39%
DC Supply voltages	1.70%
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:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable} \\ &\text{Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Final Voltage (dBuV)} &= \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor (dB)} + \\ &\text{LISN Insertion Loss.} \\ 36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} &= 46.6 \text{ dBuV} \end{aligned}$$

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a low voltage lighting control interface that supports BLE and 802.15.4. This report covers testing performed for BLE only.

6.2. MAXIMUM OUTPUT POWER

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

BLE 1 Mbps

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	9.91	9.79

BLE 2 Mbps

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	9.92	9.82

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a dipole antenna, with a maximum gain of 2.15 dBi.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 0799630.

The test utility software used during testing was Docklight v2.2.8.

6.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel and data rate with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

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

The EUT supports 1 Mbps and 2 Mbps; therefore all radiated emissions testing between 1 and 18 GHz was performed at both data rates. The worst-case data rate was found to be 1 Mbps based on Power and PSD data.

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Dell	P75F	HZGGLP2	-
Power Supply	Lutron	DFC-OEM-DBI	J211602702A1	-

I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	1	1	I/O	18 AWG	< 1m	Connects EUT to Power Supply

TEST SETUP

Test software exercised the radio card.

SETUP DIAGRAMS

Please refer to R13974365-EP1 for setup diagrams

7. MEASUREMENT METHOD

Duty Cycle: ANSI C63.10 Section 11.6

6 dB BW: ANSI C63.10 Subclause -11.8.2

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)

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

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

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

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

KDB 558074 D01 15.247 Meas Guidance v05r02 Section 11 Question #3 Answer 3(c)

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.
SA0027	Spectrum Analyzer	Keysight Technologies	N9030A	2021-06-25	2022-06-25
PWM001	RF Power Meter	Keysight Technologies	N1912A	2021-07-16	2022-07-16
PWS003	Peak and Avg Power Sensor, 50MHz to 6GHz	Keysight Technologies	E9323A	2021-05-27	2022-05-27
207726	Temp/Humid Chamber	Thermotron	SM-32-8200	2021-01-04	2022-01-04
HI0090	Environmental Meter	Fisher Scientific	15-077-963	2021-07-12	2022-07-12
SOFTEMI	Antenna Port Software	UL	Version 2021.08.11	NA	NA
Additional Equipment used					
MM0167 (PRE0126458)	True RMS Multimeter	Agilent	U1232A	2020-08-05	2021-08-31

Test Equipment Used - Line-Conducted Emissions – Voltage (Morrisville – Conducted 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2021-04-05	2022-04-05
HI0090	Environmental Meter	Fisher Scientific	15-077-963	2021-07-12	2022-07-12
LISN003	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2021-08-16	2022-08-16
75141	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2021-08-17	2022-08-17
ATA222	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2021-04-05	2022-04-05
PS214	AC Power Source	Elgar	CW2501M (s/n 1523A02396)	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 4)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2021-03-11	2022-03-11
	Gain-Loss Chains				
C4-SAC03	Gain-loss string: 1-18GHz	Various	Various	2021-05-07	2022-05-07
	Receiver & Software				
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2021-03-09	2022-03-09
s/n 200037635	Environmental Meter	Fisher Scientific	06-662-4	2020-01-21	2022-01-21
SOFTEMI	EMI Software	UL	Version 9.5 (28 Jun 2021 and 09 Aug 2021)		

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville - North Chamber)

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	0.009-30MHz				
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2021-08-19	2022-08-19
	30-1000 MHz				
AT0066	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB1	2021-02-19	2022-02-19
	1-18 GHz				
AT0072	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2021-05-03	2022-05-03
AT0078	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2020-11-19	2021-11-19
	Gain-Loss Chains				
N-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2021-07-20	2022-07-20
N-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2021-07-20	2022-07-20
N-SAC03	Gain-loss string: 1-18GHz	Various	Various	2021-07-20	2022-07-20
	Receiver & Software				
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2021-03-30	2022-03-30
SOFTEMI	EMI Software	UL	Version 9.5 (09 Aug 2021)		
	Additional Equipment used				
s/n 200037610	Environmental Meter	Fisher Scientific	06-662-4	2020-01-22	2022-01-22

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville - South Chamber)

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
AT0072	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2021-05-03	2022-05-03
	18-40 GHz				
AT0063	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2020-10-30	2021-10-30
	Gain-Loss Chains				
S-SAC03	Gain-loss string: 1-18GHz	Various	Various	2021-07-09	2022-07-09
S-SAC04	Gain-loss string: 18-40GHz	Various	Various	2021-07-09	2022-07-09
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2021-03-10	2022-03-10
SA0020	Spectrum Analyzer	Agilent	E4446A	2021-05-25	2022-05-25
SOFTEMI	EMI Software	UL	Version 9.5 (09 Aug 2021)		
	Additional Equipment used				
s/n 161016511	Environmental Meter	Fisher Scientific	15-077-963	2021-07-12	2022-07-12

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

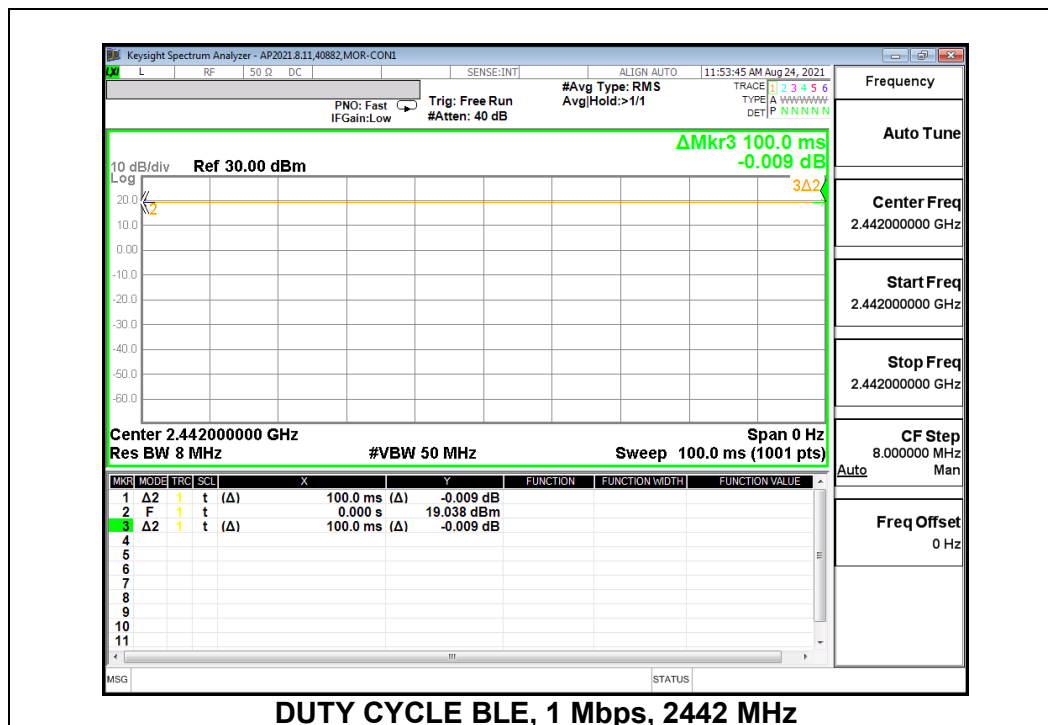
KDB 558074 Zero-Span Spectrum Analyzer Method.

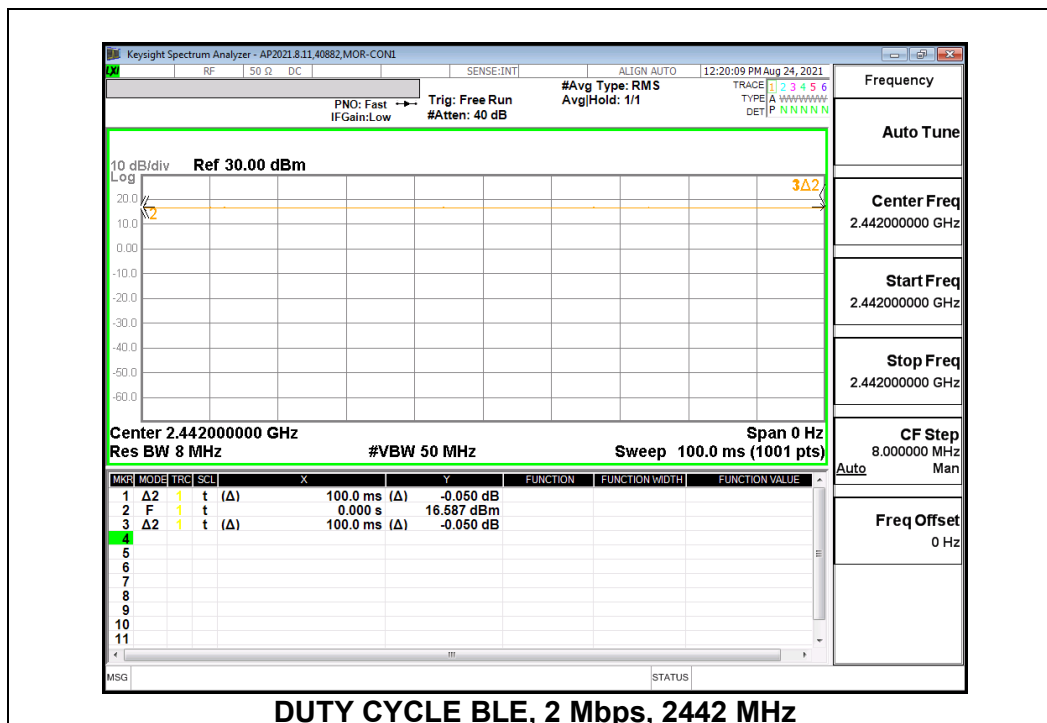
ANSI C63.10 Section 11.6

ON TIME AND DUTY CYCLE RESULTS

	B (msec)	(msec)	x (linear)	Cycle (%)	Correction Factor (dB)	Minimum VBW (kHz)
2.4GHz Band						
BLE 1 Mbps	100.00	100.00	1.000	100.00%	0.00	0.010
BLE 2 Mbps	100.00	100.00	1.000	100.00%	0.00	0.010

DUTY CYCLE PLOTS





*Note: The “real world” duty cycle of the EUT is 25% as declared by the manufacturer. This value is used to derive the duty cycle correction factor used in this report. A duty cycle correction factor of -12.04 was applied to all radiated average data. See calculation below.

$$\text{Duty Cycle Correction Factor} = 20 \cdot \log(\text{DC}) = 20 \cdot \log(0.25) = -12.04 \text{ dB}$$

The customer is responsible for providing justification of this declared duty cycle.

9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

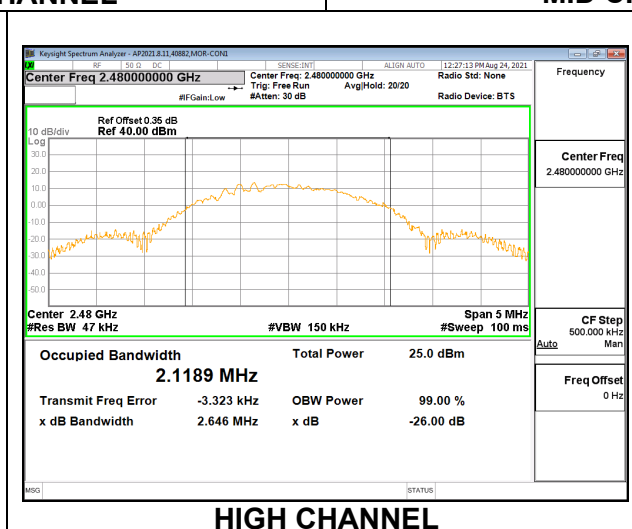
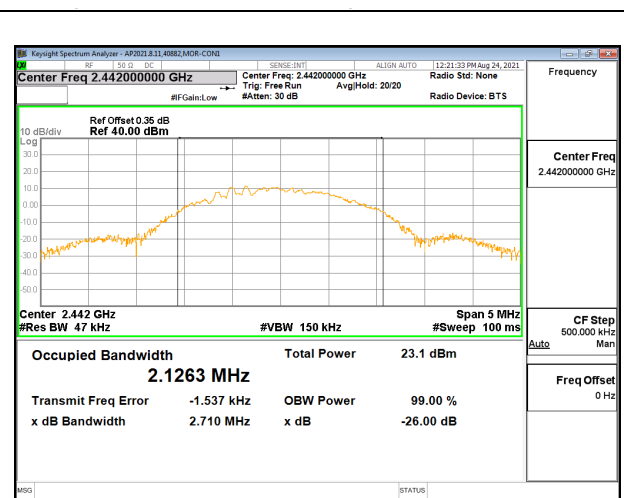
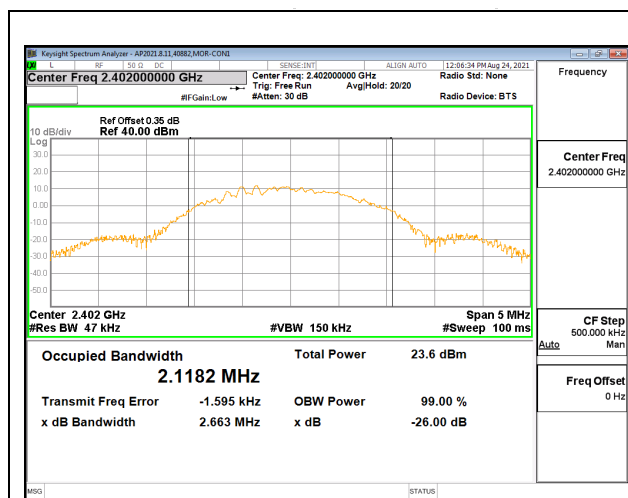
9.2.1. BLE (1Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0772
Middle	2442	1.0791
High	2480	1.0755



9.2.2. BLE (2Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	2.1182
Middle	2442	2.1263
High	2480	2.1189



9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

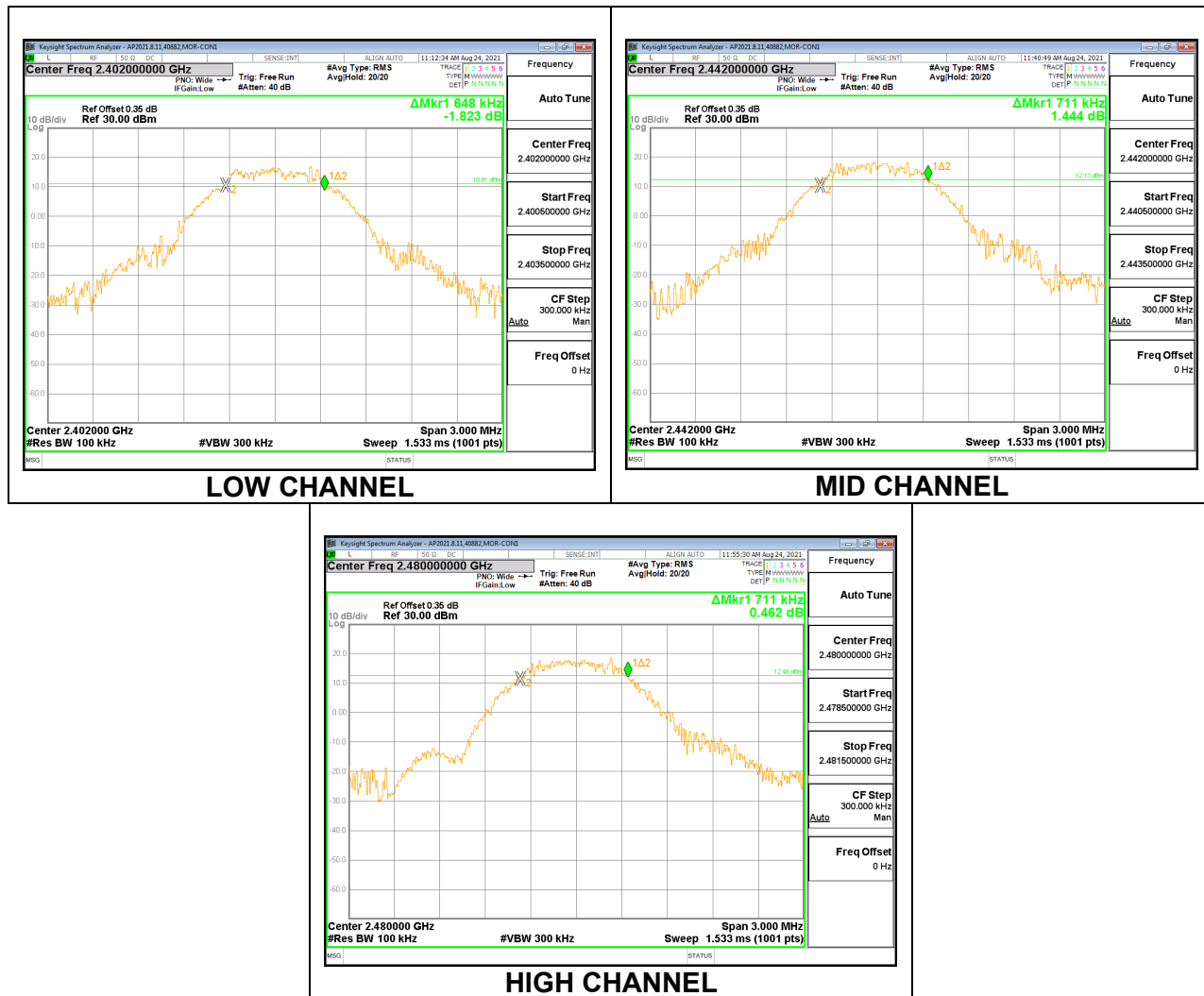
RSS-247 5.2 (a)

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

RESULTS

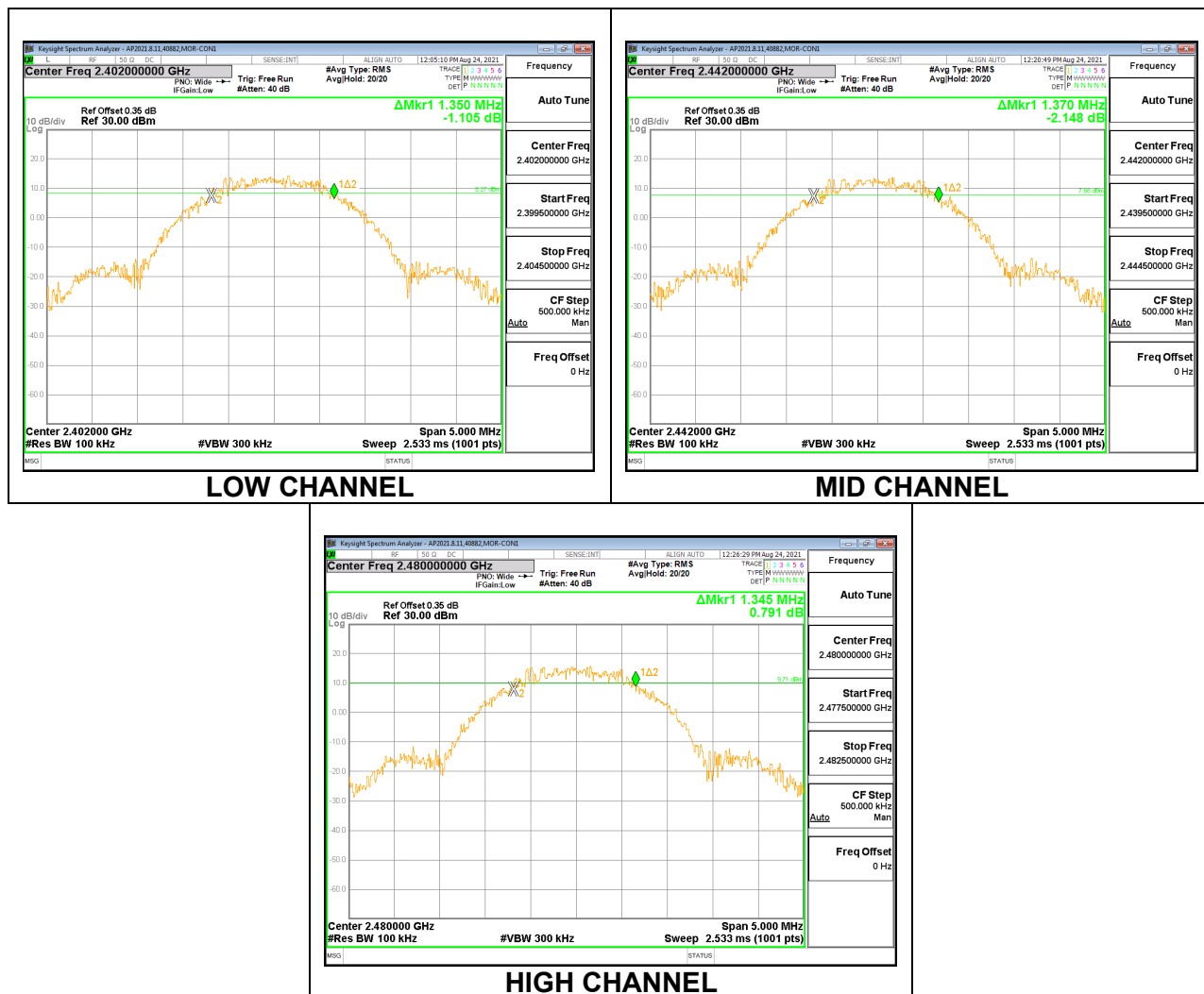
9.3.1. BLE (1Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6480	0.5
Middle	2442	0.7110	0.5
High	2480	0.7110	0.5



9.3.2. BLE (2Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	1.3500	0.5
Middle	2442	1.3700	0.5
High	2480	1.3450	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 peak power meter.

The cable assembly insertion loss of 0.35 dB (cable) was entered as an offset in the power meter.

RESULTS

9.4.1. BLE (1Mbps)

Tested By:	85502/40882
Date:	2021-09-21

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.91	30	-20.090
Middle	2442	9.82	30	-20.180
High	2480	9.63	30	-20.370

9.4.2. BLE (2Mbps)

Tested By:	85502/40882
Date:	2021-09-21

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.92	30	-20.080
Middle	2442	9.81	30	-20.190
High	2480	9.60	30	-20.400

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 0.35 dB (cable) was entered as an offset in the power meter.

RESULTS

9.5.1. BLE (1Mbps)

Tested By:	85502/40882
Date:	2021-09-21

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	9.88
Middle	2442	9.78
High	2480	9.59

9.5.2. BLE (2Mbps)

Tested By:	85502/40882
Date:	2021-09-21

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	9.89
Middle	2442	9.78
High	2480	9.57

9.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

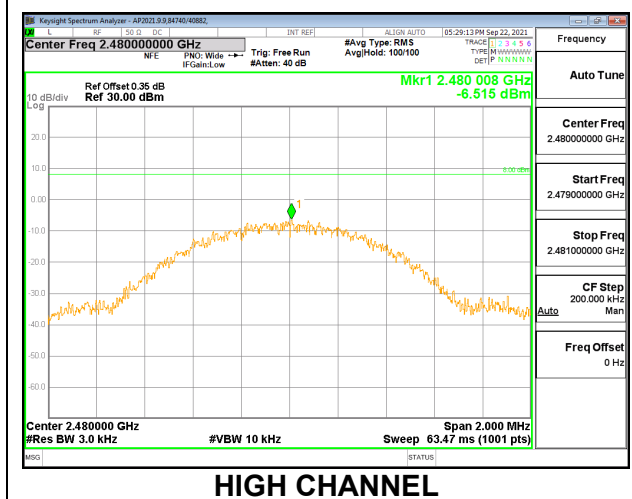
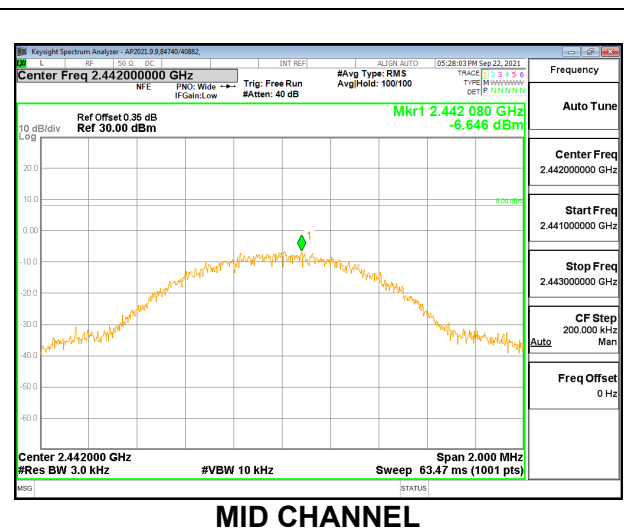
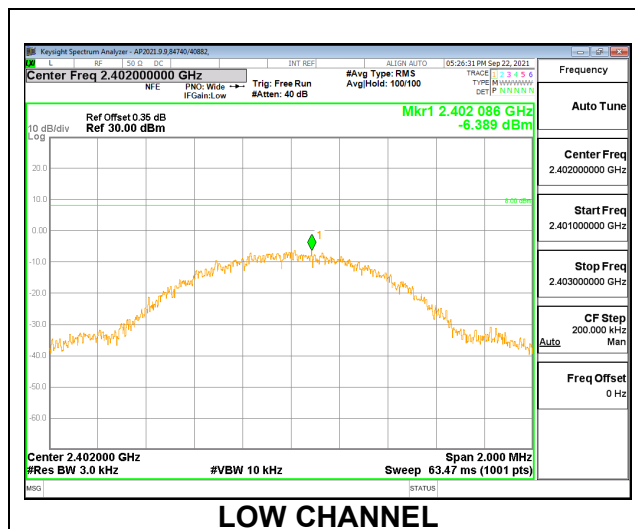
RSS-247 (5.2) (b)

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

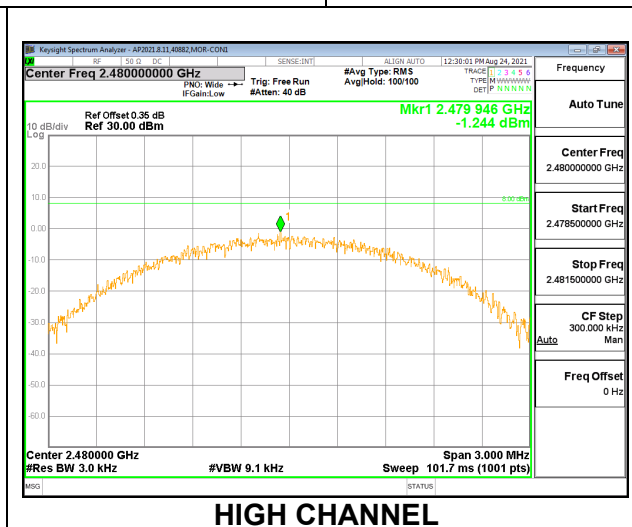
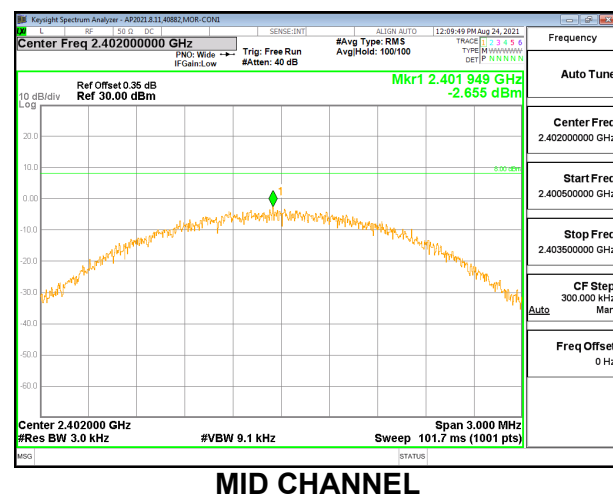
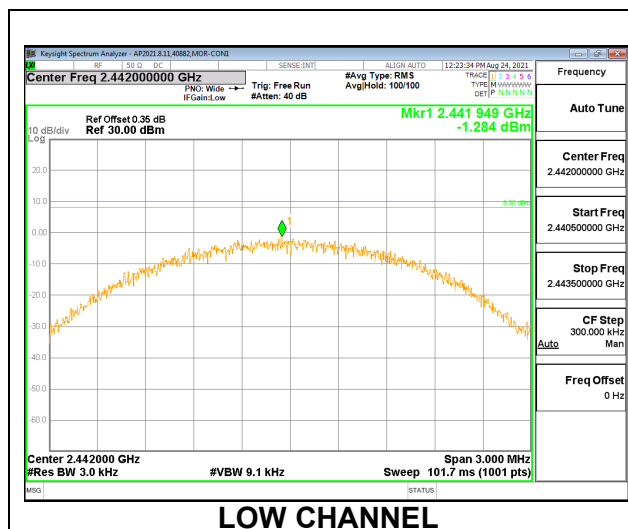
9.6.1. BLE (1Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-6.389	8	-14.39
Middle	2442	-6.646	8	-14.65
High	2480	-6.515	8	-14.52



9.6.2. BLE (2Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-1.284	8	-9.28
Middle	2442	-2.655	8	-10.66
High	2480	-1.244	8	-9.24



9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

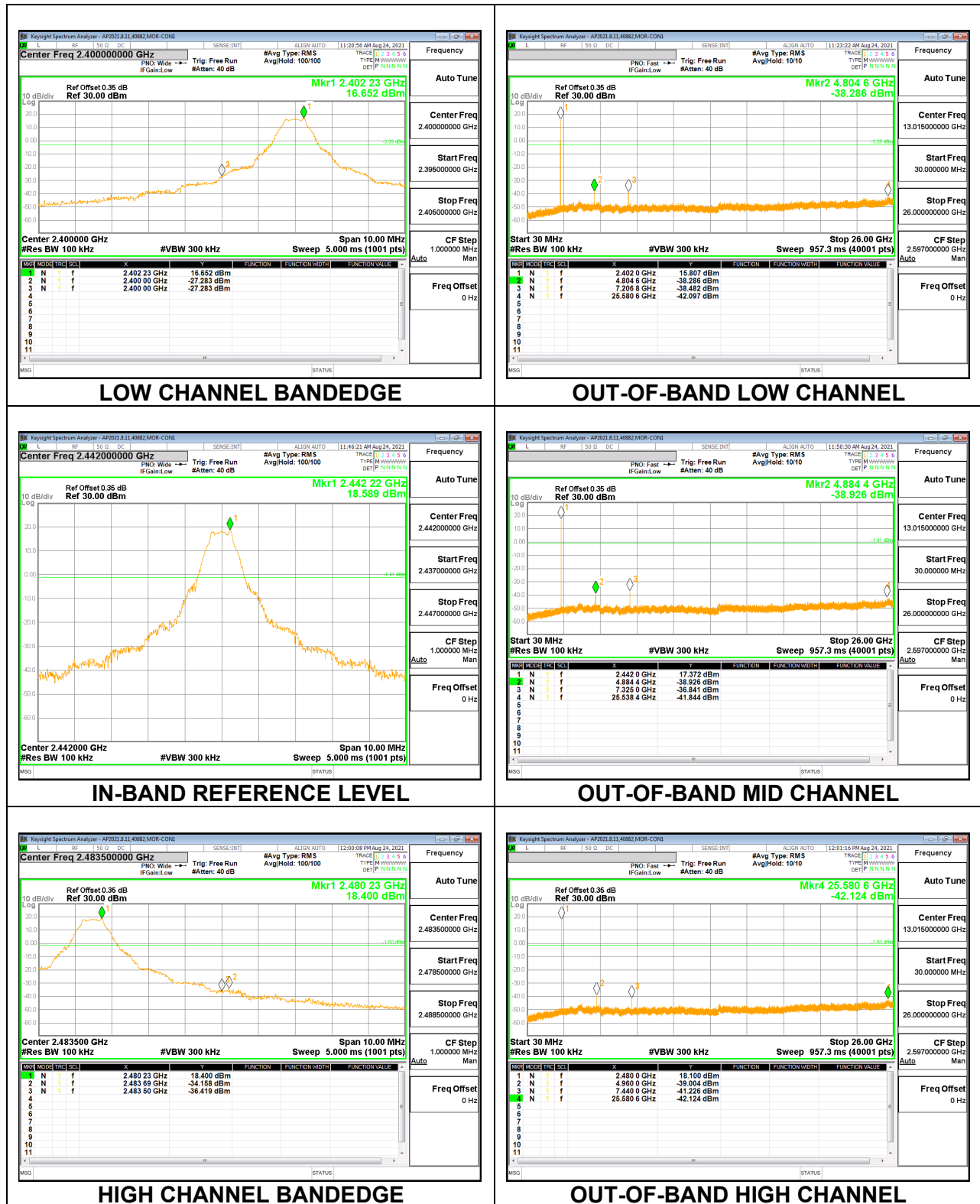
FCC §15.247 (d)

RSS-247 5.5

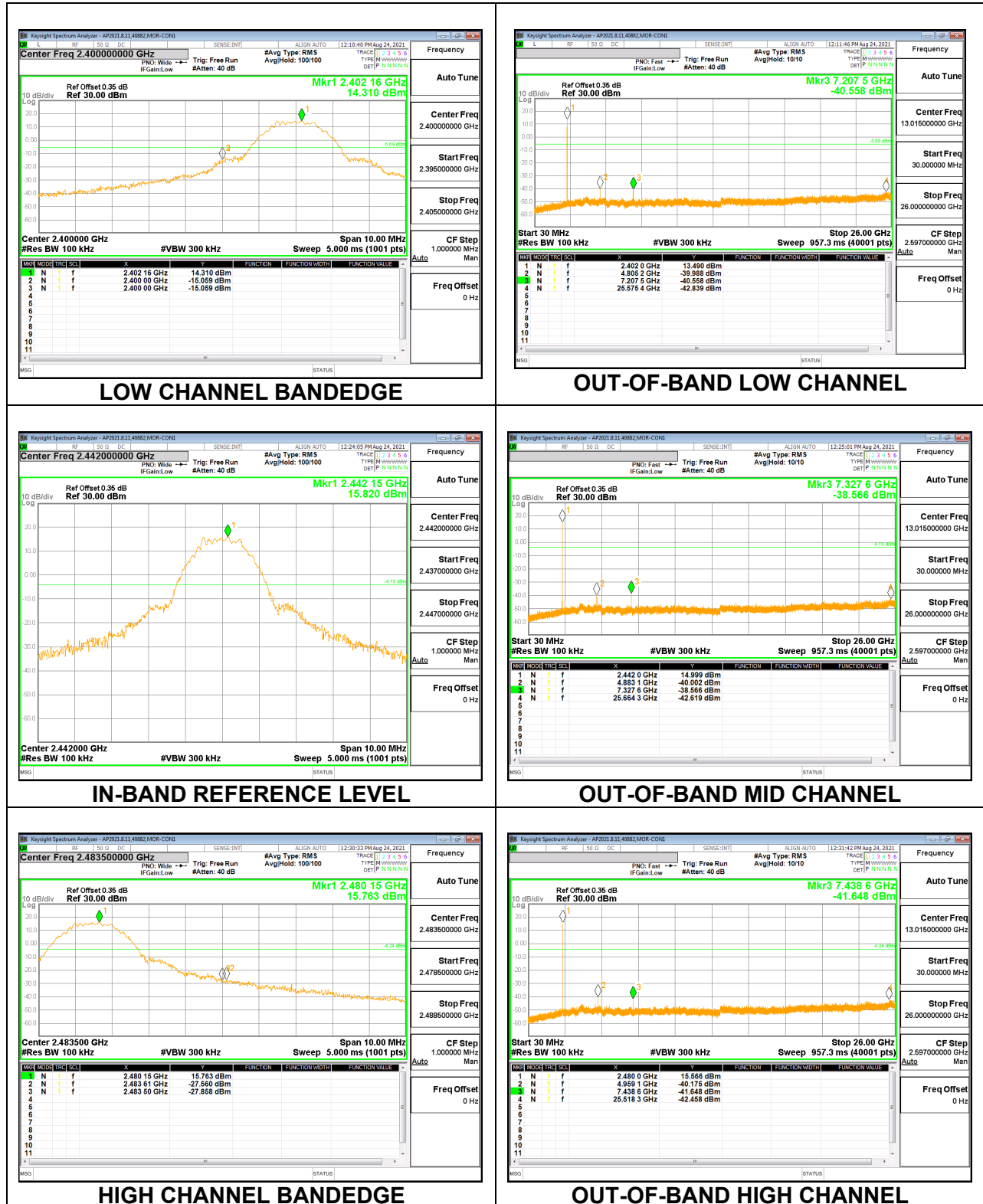
Output power was measured based on the use of a peak measurement, therefore the required attenuation is -20 dBc.

RESULTS

9.7.1. BLE (1Mbps)



9.7.2. 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	63.7/F(kHz) @ 30 m	-
1.705 - 30	0.08 @ 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 linear voltage averaging measurements. Based on KDB 558074 D01 15.247 Meas Guidance v05r02 Section 11 Question #3 Answer 3(c) a duty cycle correction factor (refer to section 9.1) was applied to the average measurement.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power 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).

Base 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.

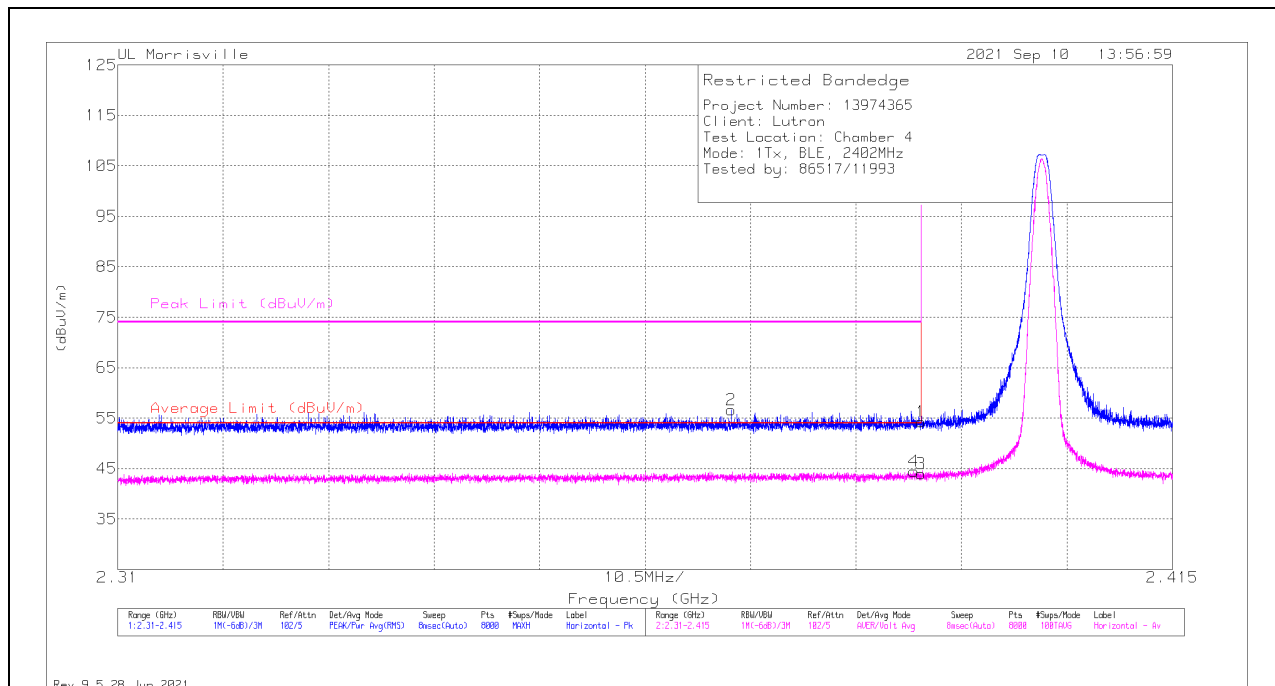
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. BLE (1Mbps)

Antenna 1

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.39	26.04	Pk	32	-13.8	10	0	54.24	-	-	74	-19.76	201	169	H
2	*** 2.37108	28.56	Pk	32	-13.9	10	0	56.66	-	-	74	-17.34	201	169	H
3	** 2.39	15.8	ADV	32	-13.8	10	-12.04	31.96	54	-22.04	-	-	201	169	H
4	** 2.38926	16.24	ADV	32	-13.8	10	-12.04	32.4	54	-21.6	-	-	201	169	H

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

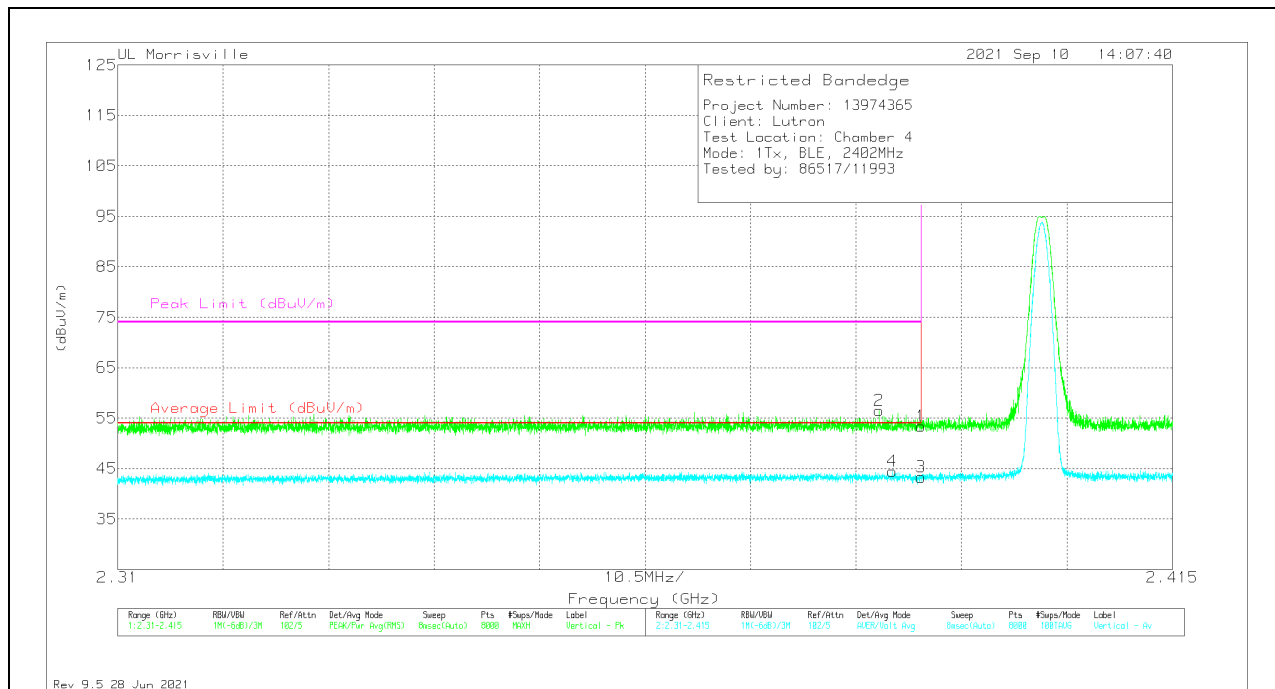
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	25.2	Pk	32	-13.8	10	0	53.4	-	-	74	-20.6	145	211	V
2	* ** 2.3858	28.27	Pk	32	-13.8	10	0	56.47	-	-	74	-17.53	145	211	V
3	* ** 2.39	15.08	ADV	32	-13.8	10	-12.04	31.24	54	-22.76	-	-	145	211	V
4	* ** 2.38711	16.23	ADV	32	-13.8	10	-12.04	32.39	54	-21.61	-	-	145	211	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

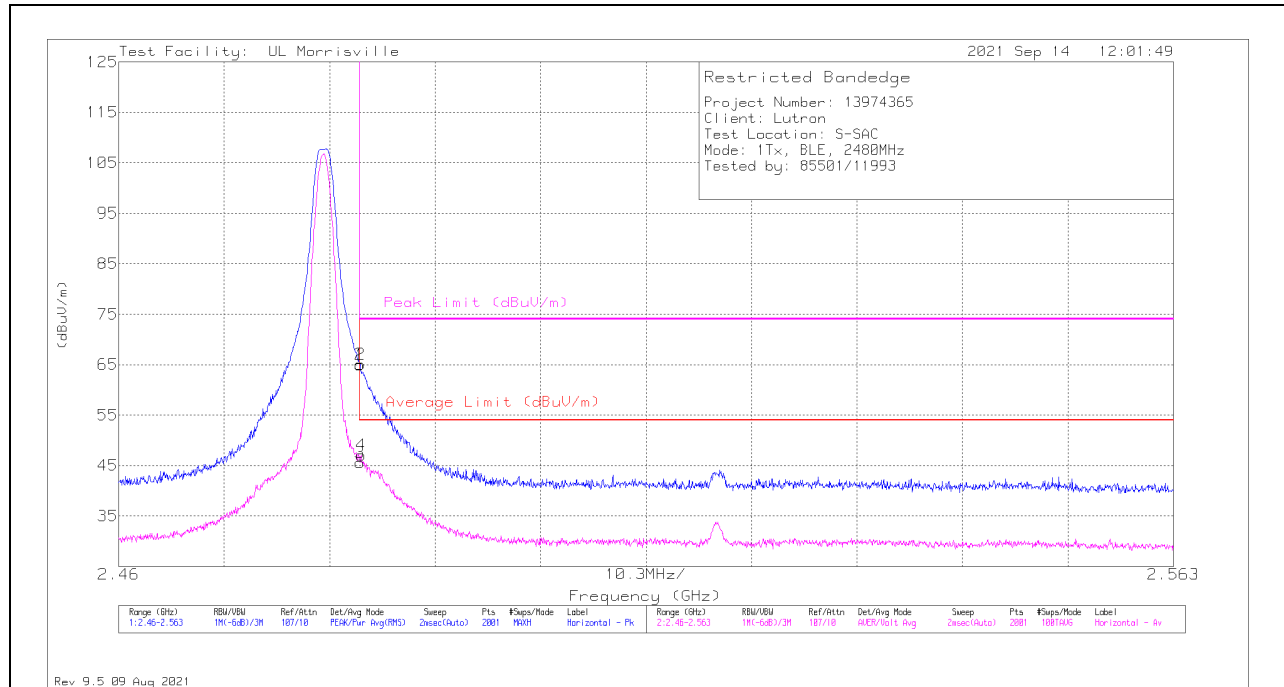
Pk - Peak detector

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	DC Corr (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	56.99	Pk	32.5	-24.6	0	64.89	-	-	74	-9.11	22	102	H
2	*** 2.48359	57.13	Pk	32.5	-24.6	0	65.03	-	-	74	-8.97	22	102	H
3	*** 2.48354	37.67	ADV	32.5	-24.6	-12.04	33.53	54	-20.47	-	-	22	102	H
4	*** 2.48369	39.22	ADV	32.5	-24.6	-12.04	35.08	54	-18.92	-	-	22	102	H

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

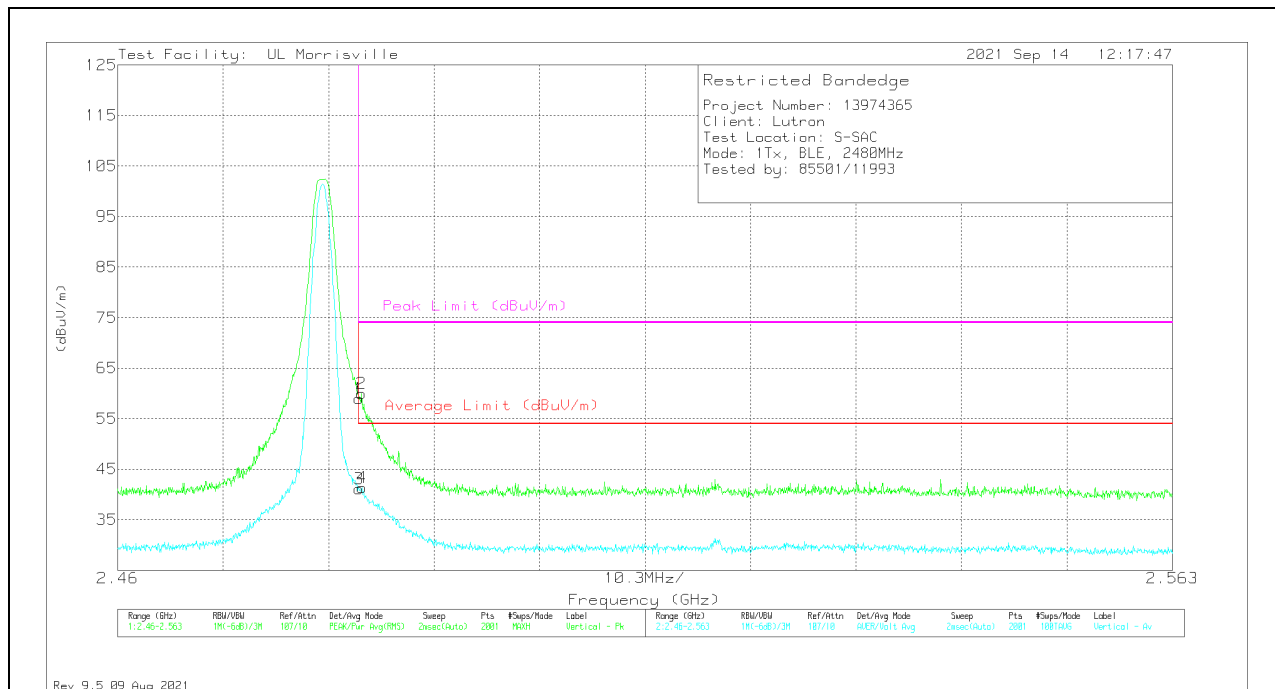
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	DC Corr (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	51.12	Pk	32.5	-24.6	0	59.02	-	-	74	-14.98	142	372	V
2	*** 2.48379	52.05	Pk	32.5	-24.6	0	59.95	-	-	74	-14.05	142	372	V
3	*** 2.48354	33.25	ADV	32.5	-24.6	-12.04	29.11	54	-24.89	-	-	142	372	V
4	*** 2.48384	33.44	ADV	32.5	-24.6	-12.04	29.3	54	-24.7	-	-	142	372	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

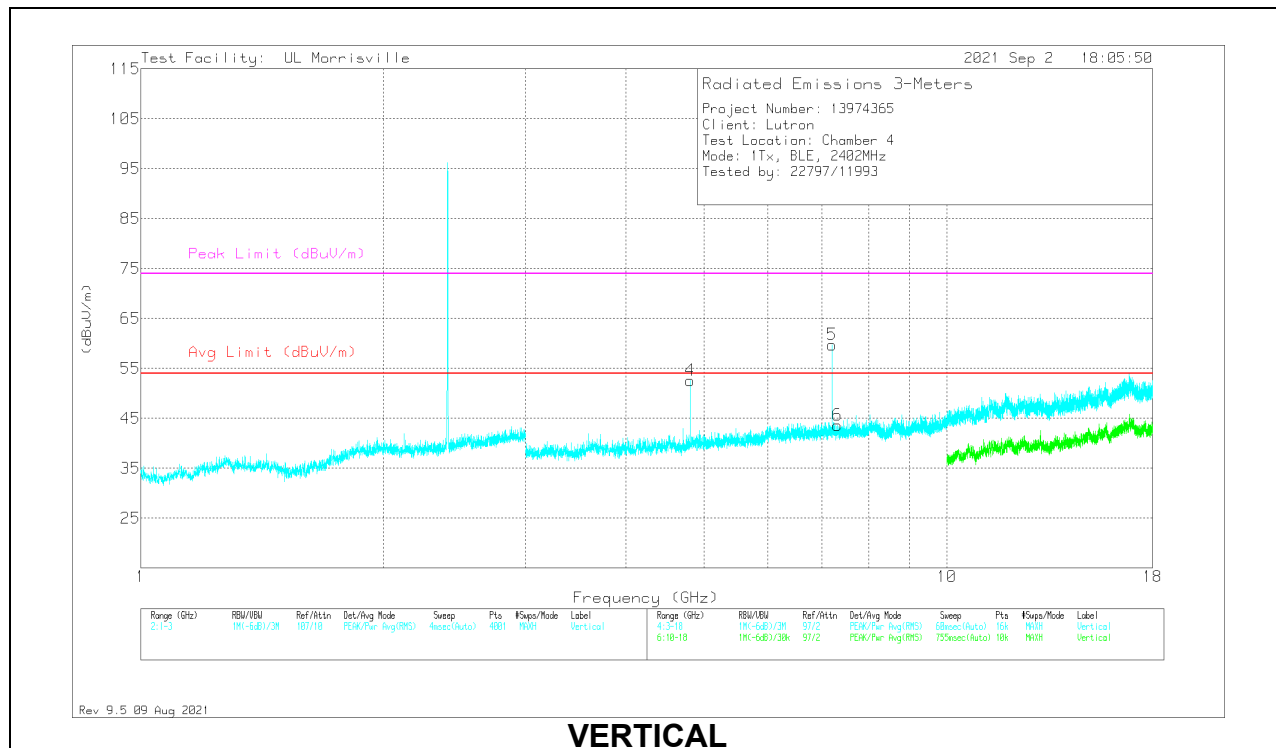
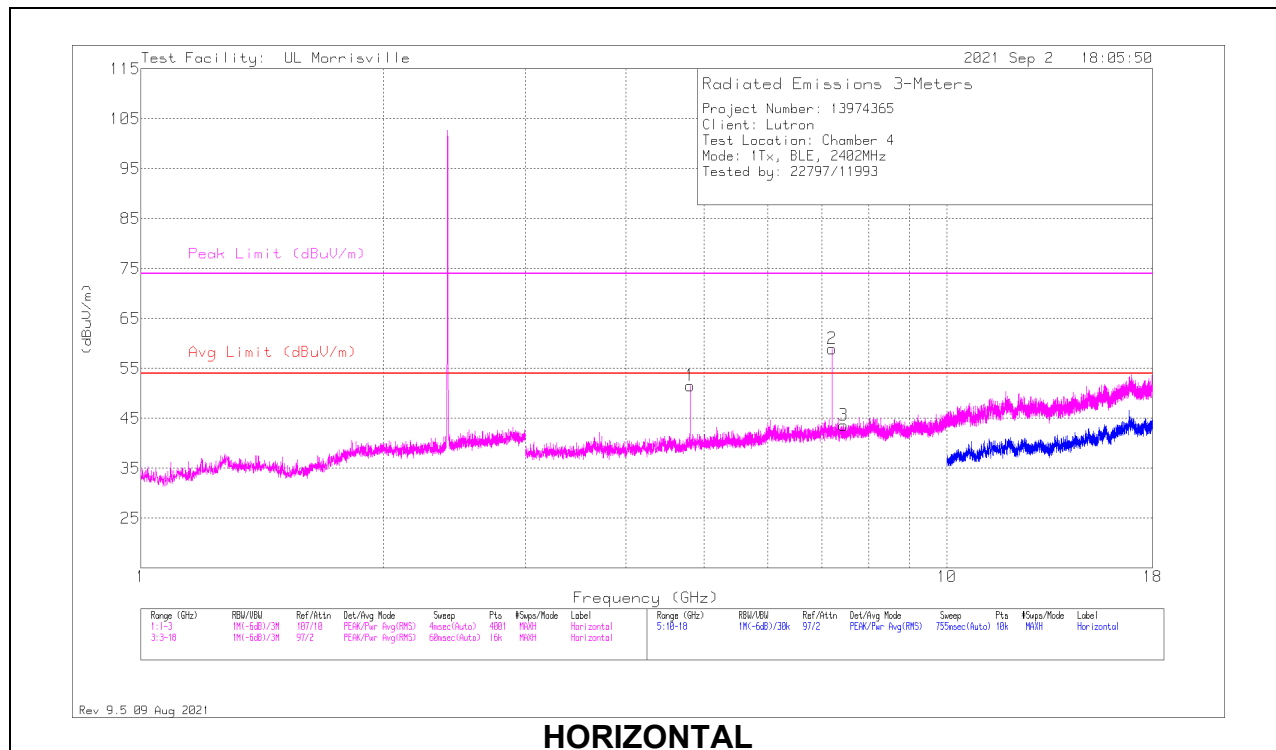
Pk - Peak detector

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0078 (db/m)	Amp/Cbl/Filtr (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.80344	51.52	PK2	34.1	-32	0	53.62	54		74	-20.38	193	391	H
	* ** 4.80402	46.18	ADV	34.1	-32	-12.04	36.24	54	-17.76	-	-	193	391	H
3	* ** 7.44094	36.81	Pk	35.7	-28.9	0	43.61	54	-10.39	74	-30.39	0-360	200	H
4	* ** 4.8035	52.32	PK2	34.1	-32	0	54.42			74	-19.58	35	102	V
	* ** 4.80389	47.08	ADV	34.1	-32	-12.04	37.14	54	-16.86	-	-	35	102	V
6	* ** 7.31813	36.65	Pk	35.6	-28.6	0	43.65	54	-10.35	74	-30.35	0-360	101	V
2	7.20563	53.19	Pk	35.7	-29.9	0	58.99	-	-	-	-	0-360	101	H
5	7.20563	53.95	Pk	35.7	-29.9	0	59.75	-	-	-	-	0-360	101	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

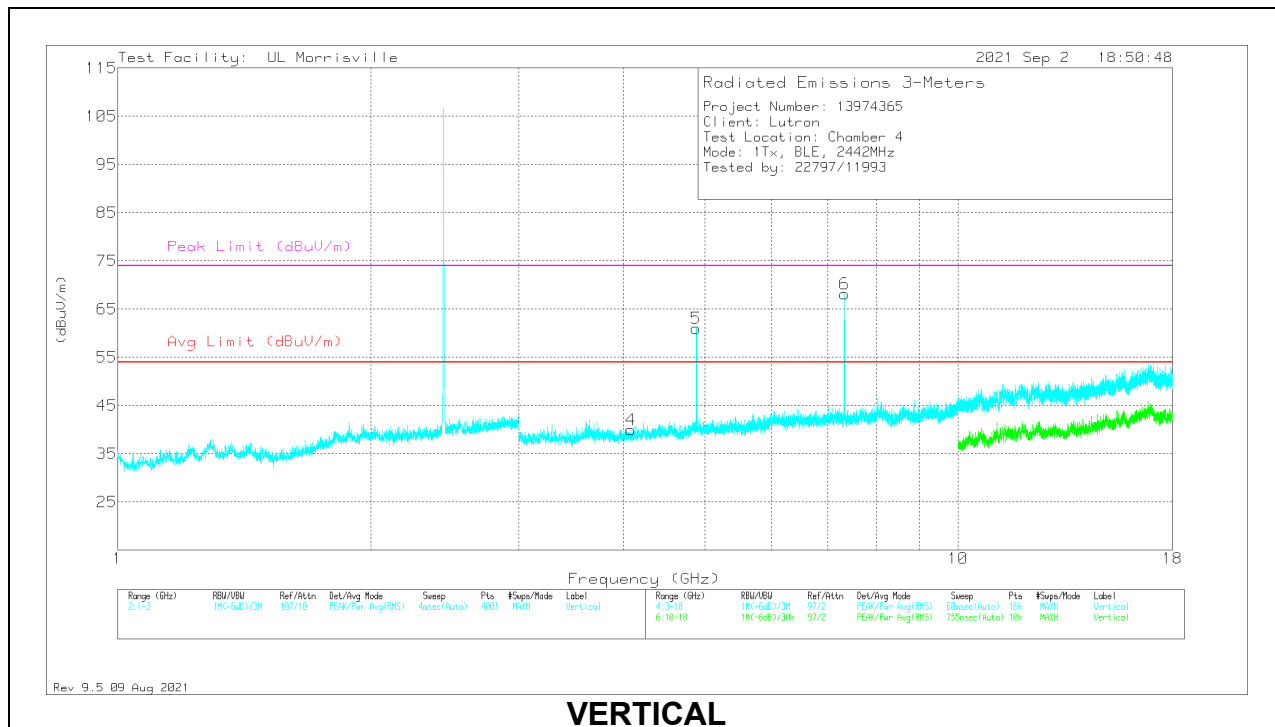
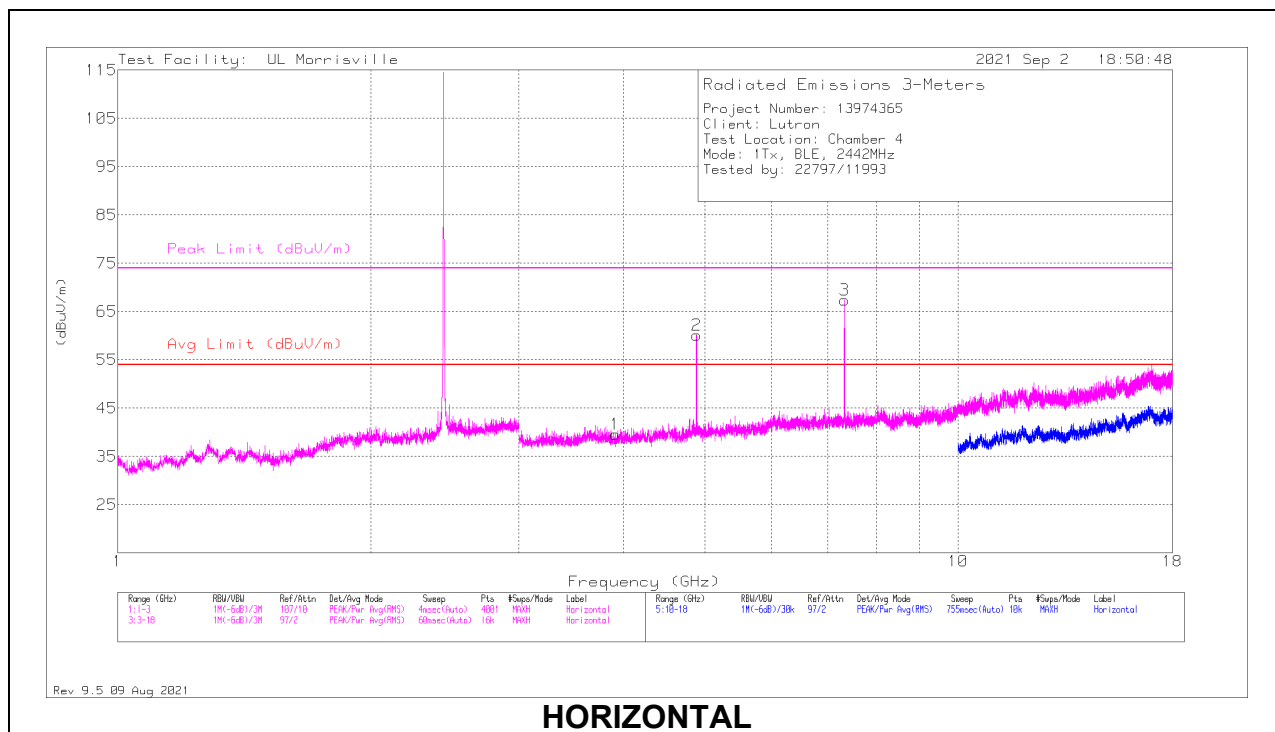
Pk - Peak detector

PK2 - Maximum Peak

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

MID CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0078 (db/m)	Amp/Cbl/Filtr (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 3.91219	38.51	Pk	33	-31.9	0	39.61	54	-14.39	74	-34.39	0-360	200	H
2	*** 4.88346	58.71	PK2	34.2	-31.8	0	61.11			74	-12.89	184	101	H
	*** 4.884	54.62	ADV	34.2	-31.9	-12.04	44.88	54	-9.12	-	-	184	101	H
3	*** 7.32518	61.32	PK2	35.6	-28.5	0	68.42			74	-5.58	180	110	H
	*** 7.32523	55.59	ADV	35.6	-28.5	-12.04	50.65	54	-3.35	-	-	180	110	H
4	*** 4.08094	39.84	Pk	33.2	-33	0	40.04	54	-13.96	74	-33.96	0-360	200	V
5	*** 4.8834	59.45	PK2	34.2	-31.8	0	61.85			74	-12.15	45	101	V
	*** 4.88391	55.34	ADV	34.2	-31.9	-12.04	45.6	54	-8.4	-	-	45	101	V
6	*** 7.32469	38.83	PK2	35.6	-28.4	0	46.03			74	-27.97	45	101	V
	*** 7.32514	25.82	ADV	35.6	-28.5	-12.04	20.88	54	-33.12	-	-	45	101	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

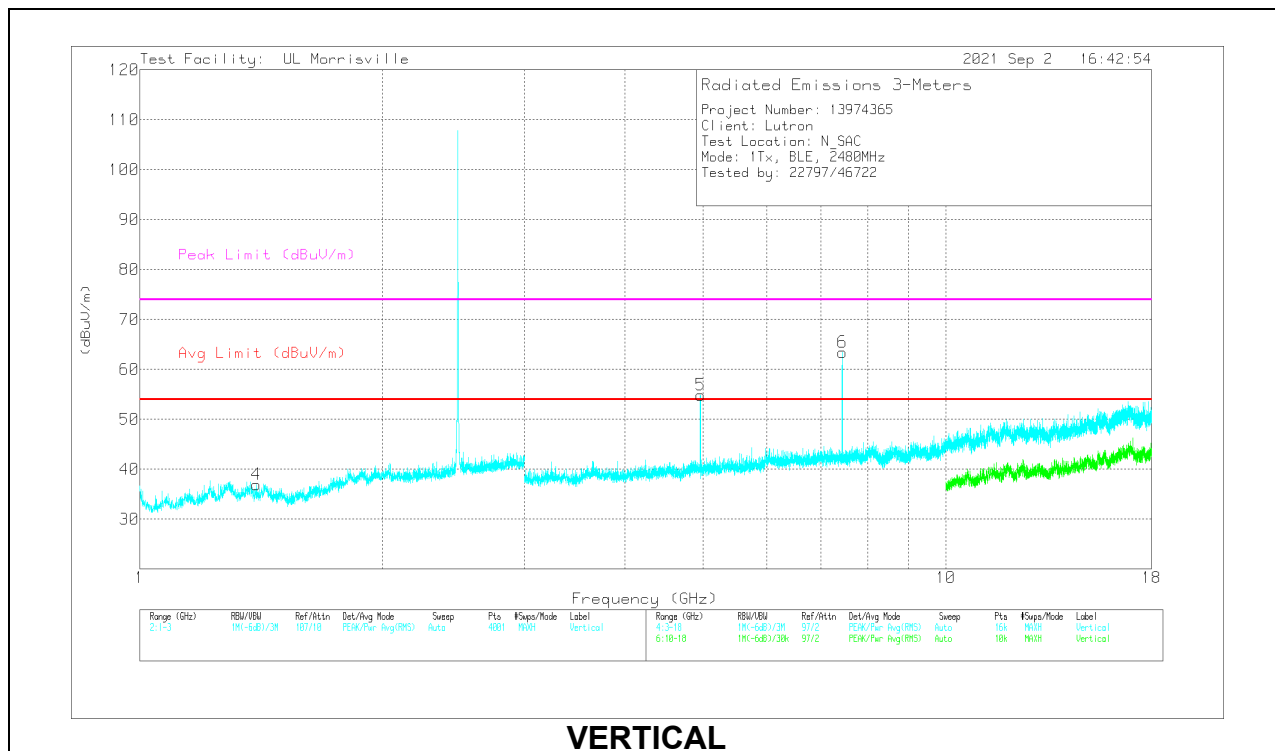
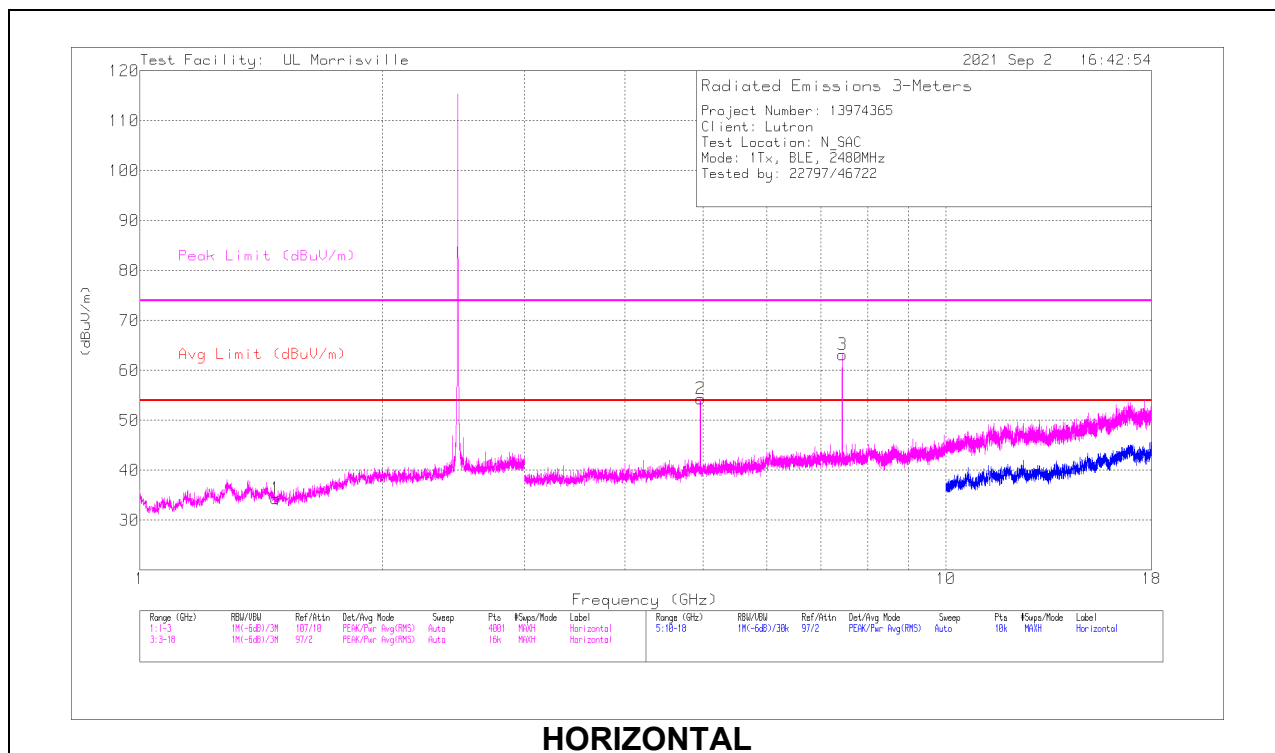
Pk - Peak detector

PK2 - Maximum Peak

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0078 (db/m)	Amp/Cbl/Filtr (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* ** 4.95948	54.81	PK2	34.3	-32.5	0	56.61			74	-17.39	186	133	H
	* ** 4.95991	50.08	ADV	34.3	-32.5	-12.04	39.84	54	-14.16	-	-	186	133	H
5	* ** 4.95949	54.59	PK2	34.3	-32.5	0	56.39			74	-17.61	47	150	V
	* ** 4.96001	49.7	ADV	34.3	-32.5	-12.04	39.46	54	-14.54	-	-	47	150	V
3	* ** 7.43917	56.88	PK2	35.7	-28.5	0	64.08			74	-9.92	176	107	H
	* ** 7.44051	50.89	ADV	35.7	-28.8	-12.04	45.75	54	-8.25	-	-	176	107	H
6	* ** 7.43917	56.9	PK2	35.7	-28.5	0	64.1			74	-9.9	268	104	V
	* ** 7.43943	50.88	ADV	35.7	-28.6	-12.04	45.94	54	-8.06	-	-	268	104	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

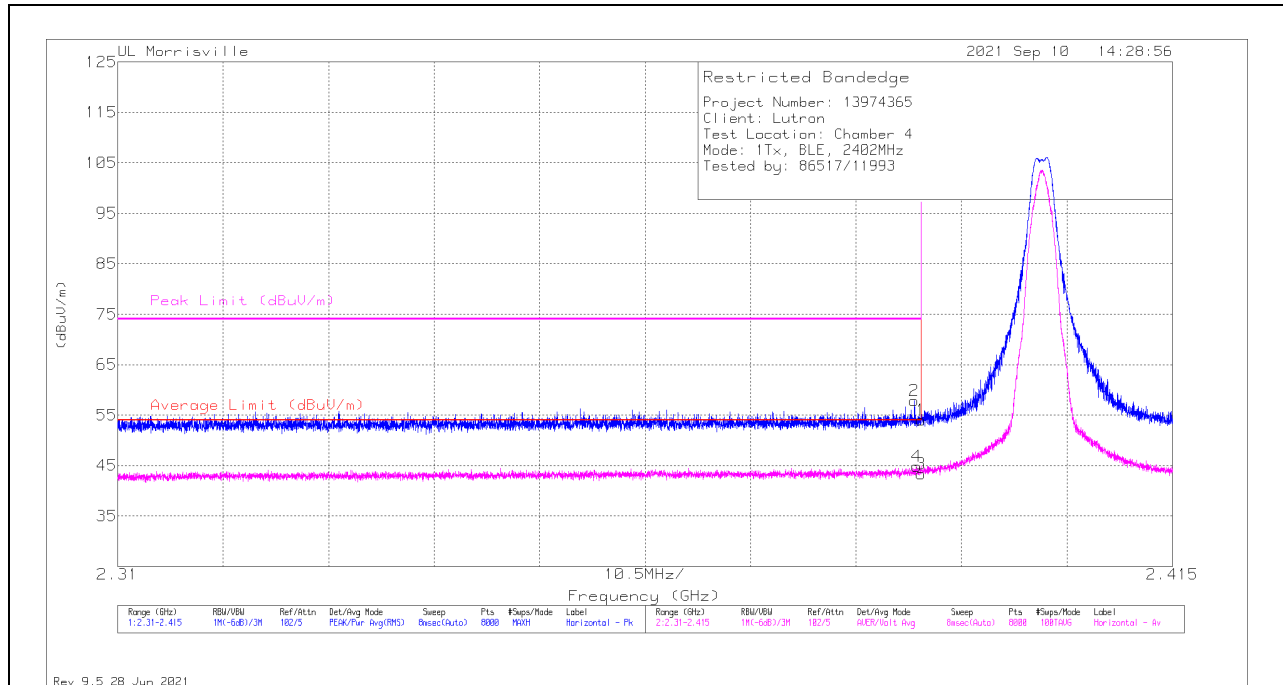
Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

10.2.2. BLE (2Mbps)

Antenna 1

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	25.76	Pk	32	-13.8	10	0	53.96	-	-	74	-20.04	198	397	H
2	** 2.38931	29.65	Pk	32	-13.8	10	0	57.85	-	-	74	-16.15	198	397	H
3	* ** 2.39	15.13	ADV	32	-13.8	10	-12.04	31.29	54	-22.71	-	-	198	397	H
4	* ** 2.38952	16.6	ADV	32	-13.8	10	-12.04	32.76	54	-21.24	-	-	198	397	H

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

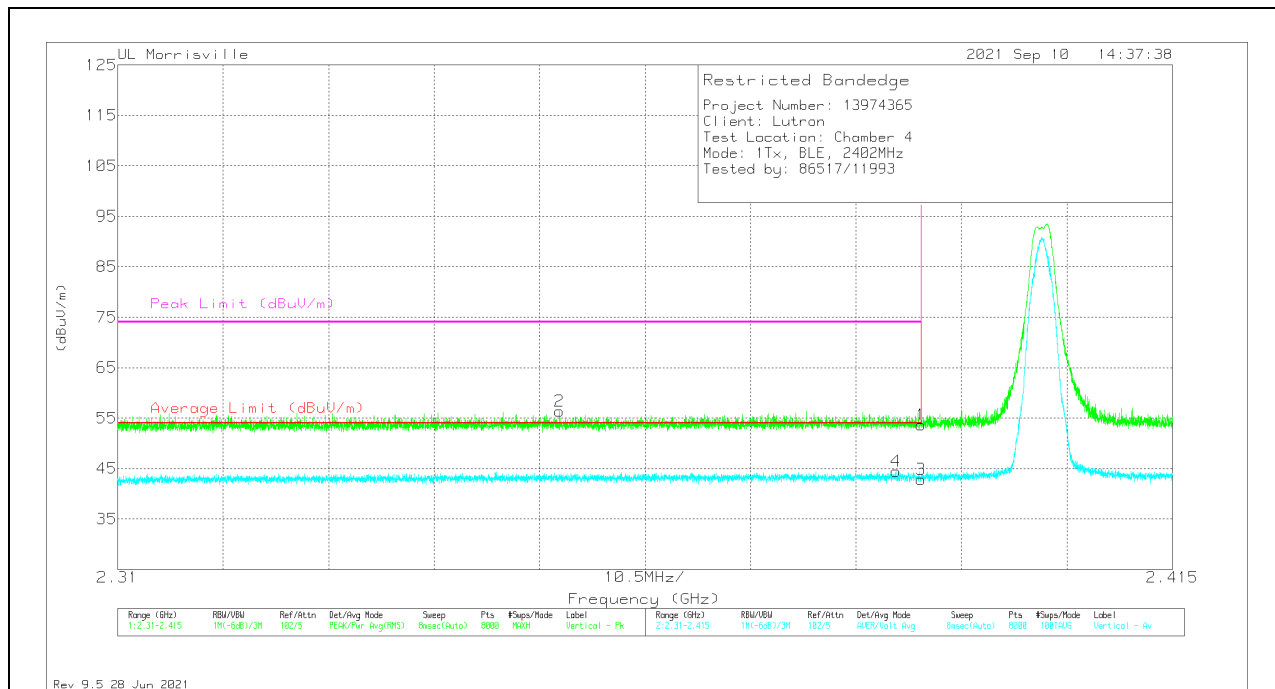
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	25.49	Pk	32	-13.8	10	0	53.69	-	-	74	-20.31	41	205	V
2	** 2.35396	28.36	Pk	31.9	-13.9	10	0	56.36	-	-	74	-17.64	41	205	V
3	* ** 2.39	14.68	ADV	32	-13.8	10	-12.04	30.84	54	-23.16	-	-	41	205	V
4	* ** 2.38746	16.3	ADV	32	-13.8	10	-12.04	32.46	54	-21.54	-	-	41	205	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

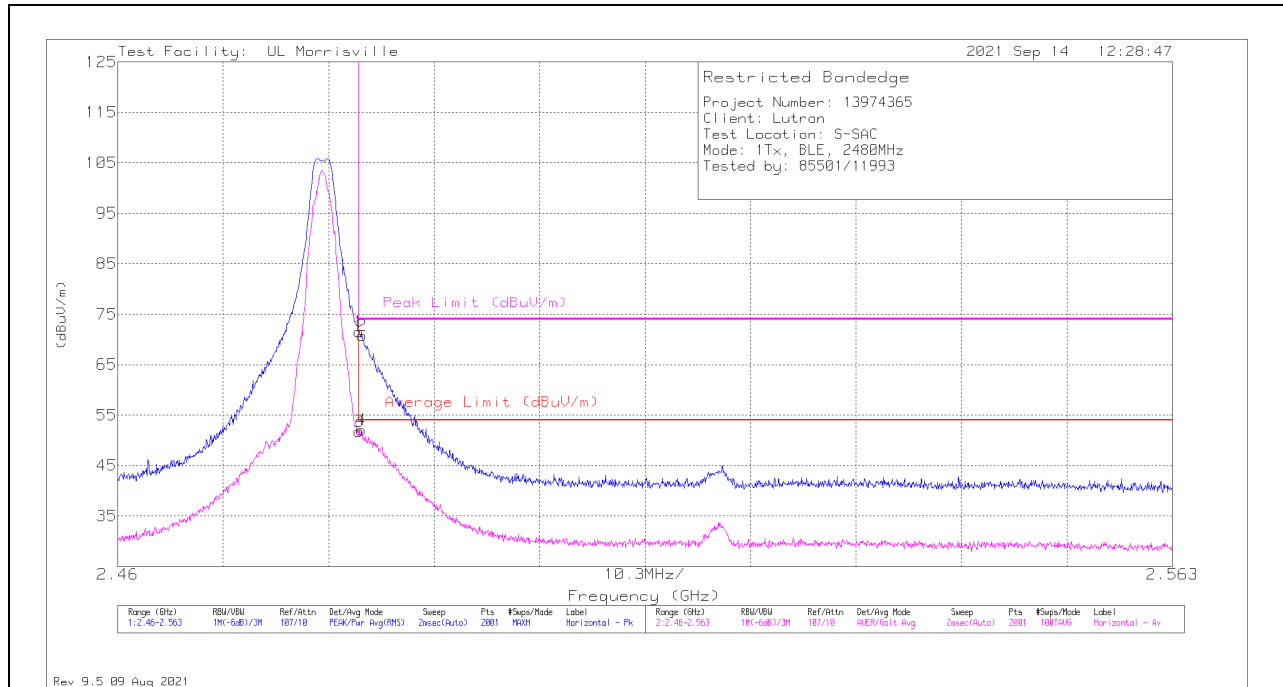
Pk - Peak detector

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	DC Corr (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	63.67	Pk	32.5	-24.6	0	71.57	-	-	74	-2.43	186	253	H
2	*** 2.48384	62.89	Pk	32.5	-24.6	0	70.79	-	-	74	-3.21	186	253	H
3	*** 2.48354	43.86	ADV	32.5	-24.6	-12.04	39.72	54	-14.28	-	-	186	253	H
4	*** 2.48379	44.14	ADV	32.5	-24.6	-12.04	40.0	54	-14.0	-	-	186	253	H

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

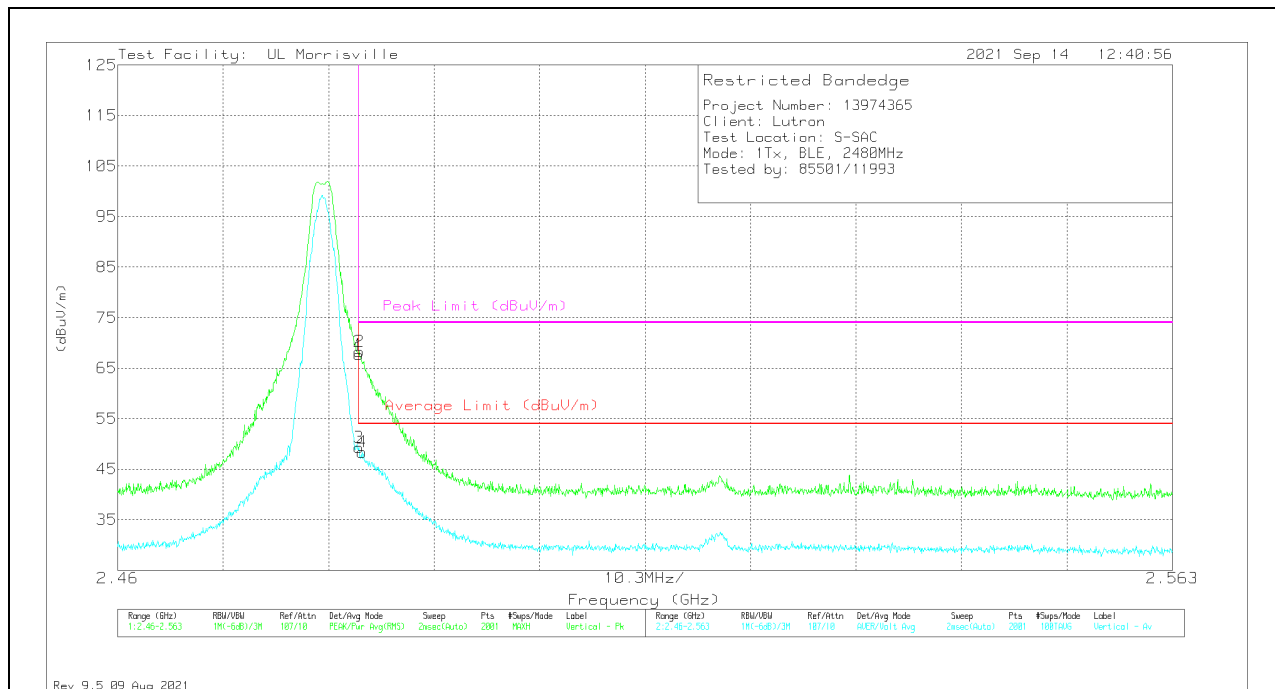
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	DC Corr (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	59.81	Pk	32.5	-24.6	0	67.71	-	-	74	-6.29	143	369	V
2	*** 2.48359	60.39	Pk	32.5	-24.6	0	68.29	-	-	74	-5.71	143	369	V
3	*** 2.48354	41.44	ADV	32.5	-24.6	-12.04	37.3	54	-16.7	-	-	143	369	V
4	*** 2.48384	40.47	ADV	32.5	-24.6	-12.04	36.33	54	-17.67	-	-	143	369	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

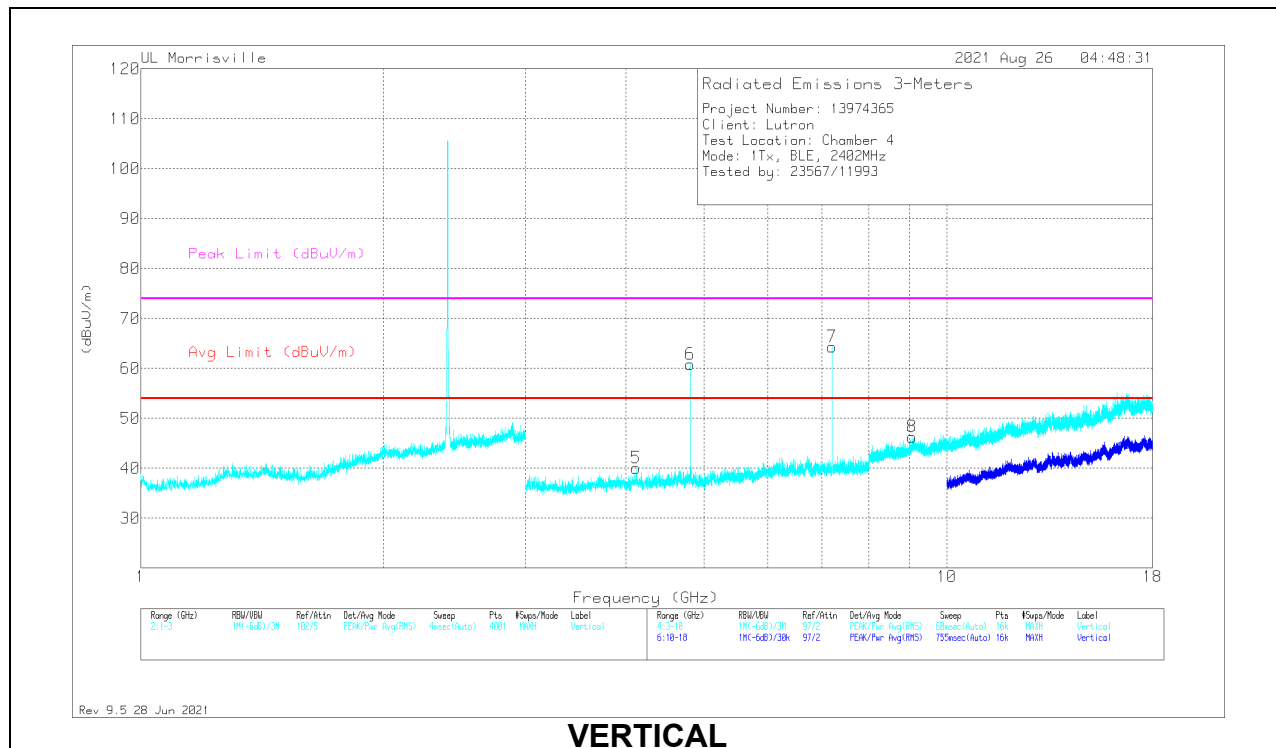
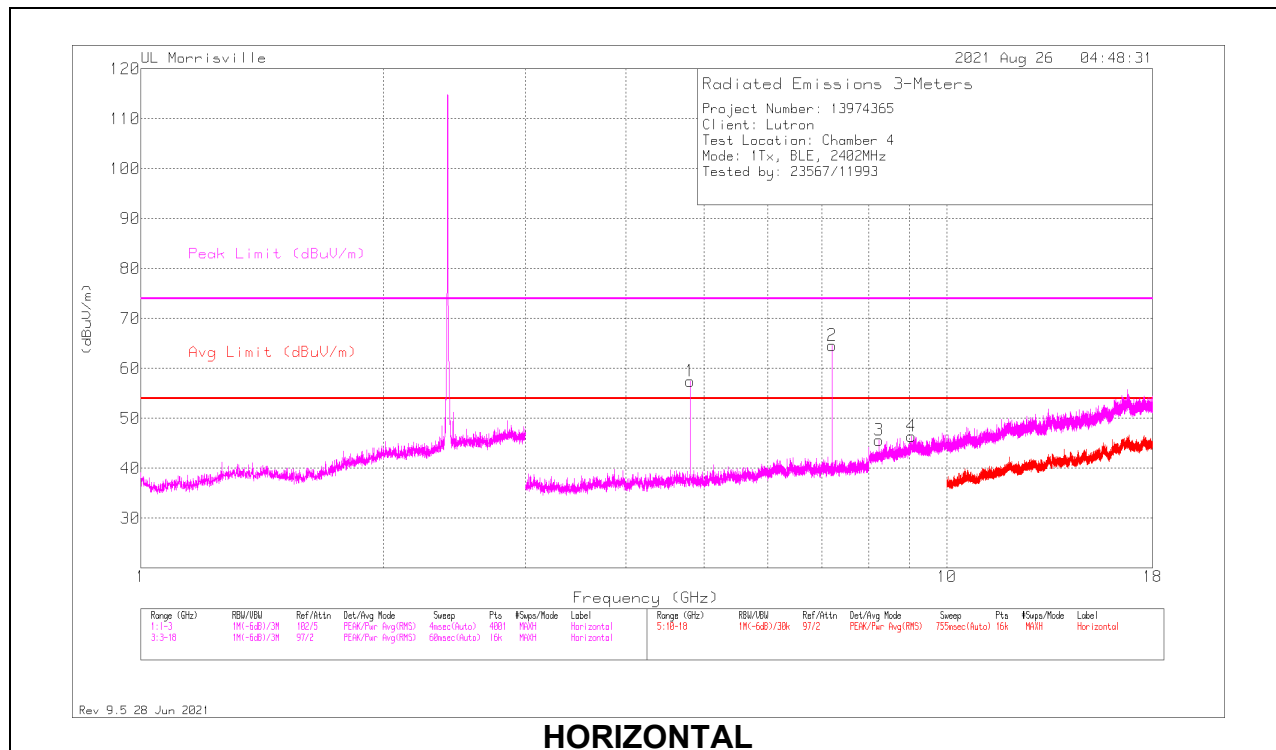
Pk - Peak detector

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.80297	58.47	PK2	34	-32.5	0	59.97	-	-	74	-14.03	238	138	H
	* ** 4.80306	52.05	ADV	34	-32.5	-12.04	41.51	54	-12.49	-	-	238	138	H
3	* ** 8.23688	37.75	Pk	35.7	-27.8	0	45.65	54	-8.35	74	-28.35	0-360	100	H
4	* ** 9.03844	36.12	Pk	35.9	-25.6	0	46.42	54	-7.58	74	-27.58	0-360	100	H
5	* ** 4.11375	39.61	Pk	33.4	-33	0	40.01	54	-13.99	74	-33.99	0-360	200	V
6	* ** 4.80494	59.65	PK2	34	-32.5	0	61.15	-	-	74	-12.85	132	103	V
	* ** 4.80484	53.58	ADV	34	-32.5	-12.04	43.04	54	-10.96	-	-	132	103	V
8	* ** 9.05906	35.8	Pk	36	-25.5	0	46.3	54	-7.7	74	-27.7	0-360	200	V
2	7.20469	58.27	Pk	35.5	-29.2	0	64.57					0-360	100	H
7	7.2075	57.97	Pk	35.5	-29.1	0	64.37					0-360	200	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

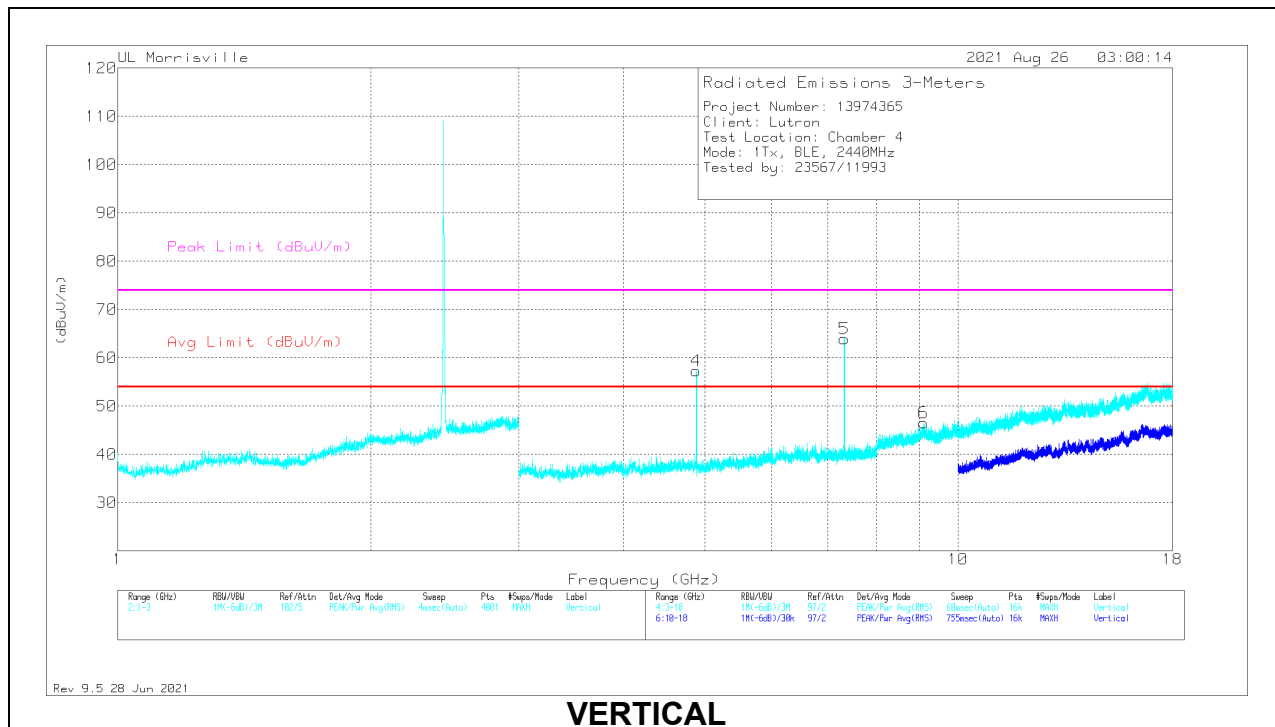
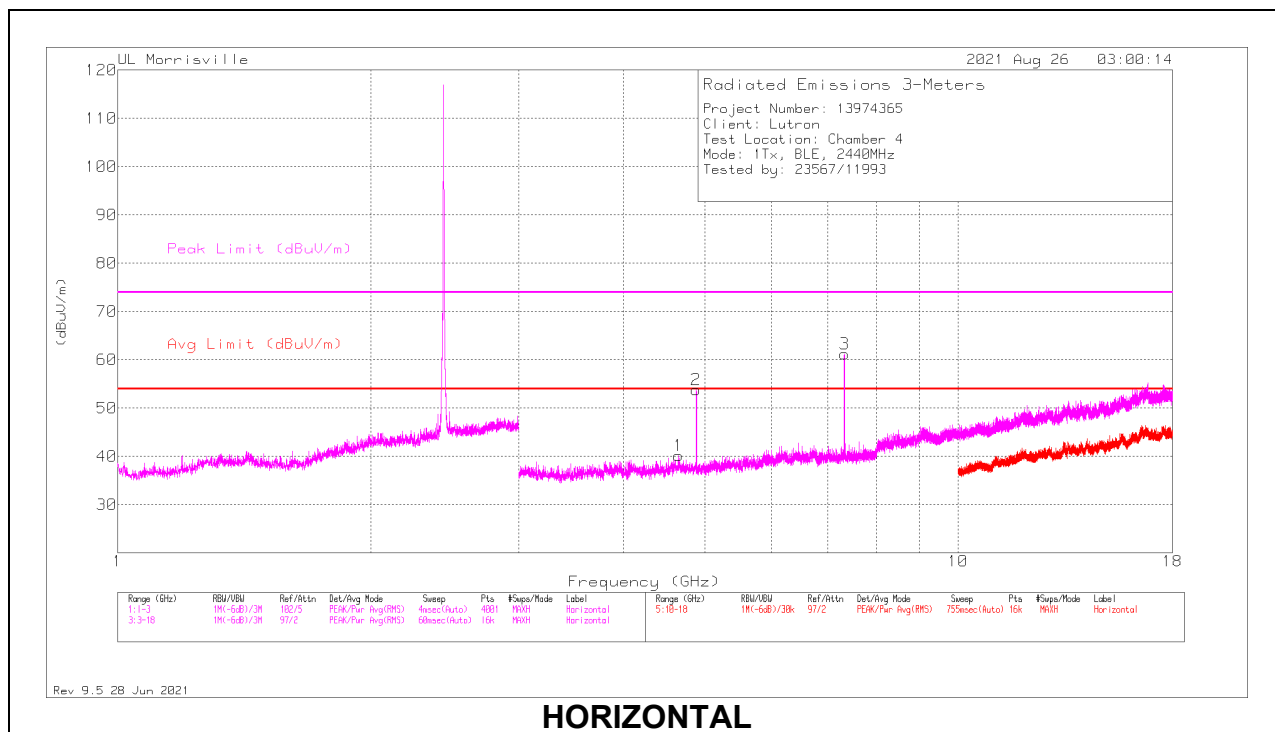
Pk - Peak detector

PK2 - Maximum Peak

ADV - Linear Voltage Average

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

MID CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* ** 4.88301	56.01	PK2	33.9	-32.2	0	57.71	-	-	74	-16.29	77	100	H
	* ** 4.8831	49.46	ADV	33.9	-32.2	-12.04	39.12	54	-14.88	-	-	77	100	H
3	* ** 7.32747	55.21	PK2	35.6	-28.8	0	62.01	-	-	74	-11.99	219	261	H
	* ** 7.32726	48.16	ADV	35.6	-28.8	-12.04	42.92	54	-11.08	-	-	219	261	H
4	* ** 4.88297	54.71	PK2	33.9	-32.2	0	56.41	-	-	74	-17.59	256	104	V
	* ** 4.88294	47.93	ADV	33.9	-32.2	-12.04	37.59	54	-16.41	-	-	256	104	V
5	* ** 7.32449	57.92	PK2	35.6	-28.8	0	64.72	-	-	74	-9.28	73	100	V
	* ** 7.32483	51.42	ADV	35.6	-28.8	-12.04	46.18	54	-7.82	-	-	73	100	V
1	* ** 4.64906	38.25	Pk	34.1	-32.2	0	40.15	54	-13.85	74	-33.85	0-360	100	H
6	* ** 9.10688	36.46	Pk	36.1	-26	0	46.56	54	-7.44	74	-27.44	0-360	200	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

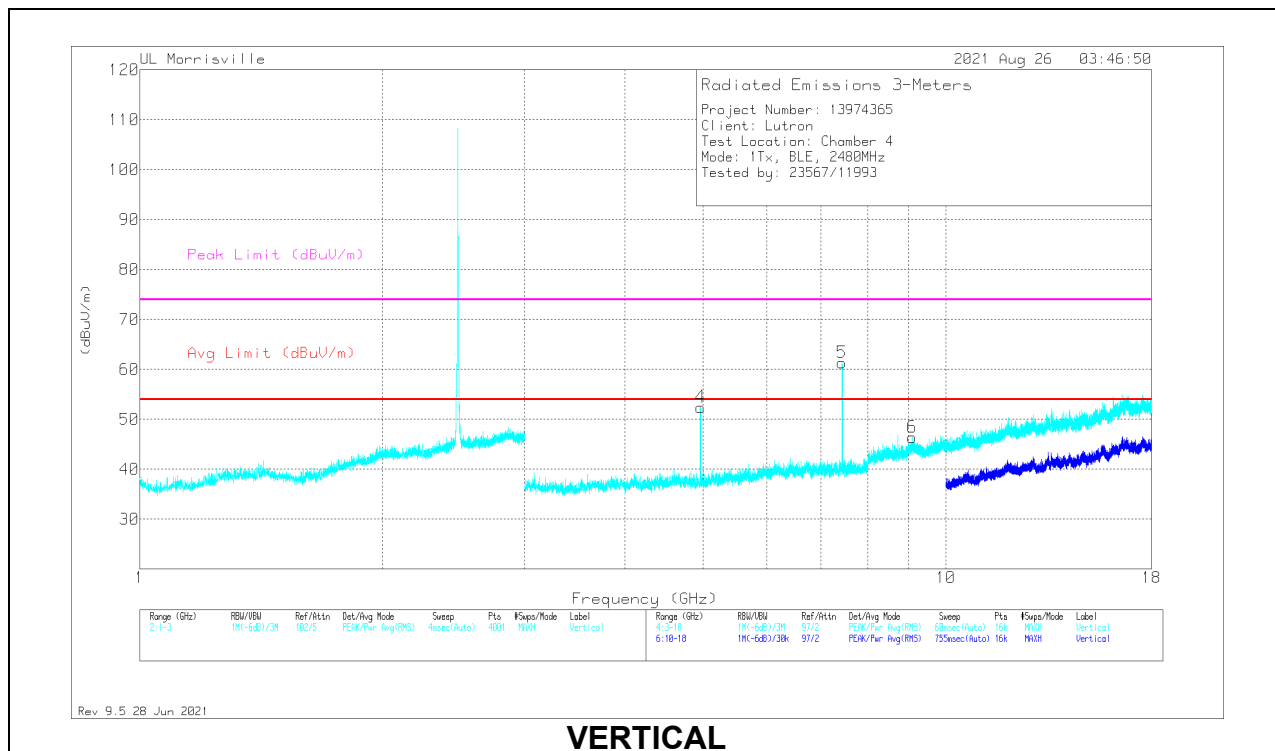
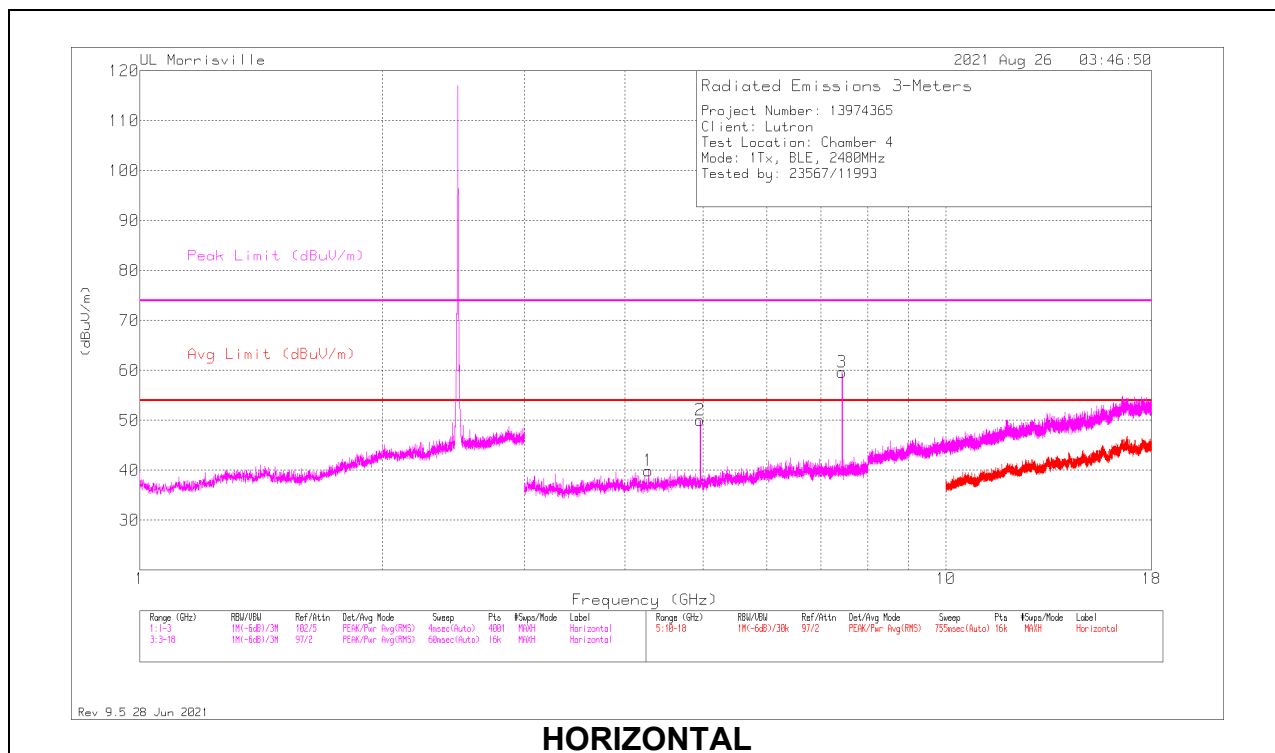
PK2 - Maximum Peak

ADV - Linear Voltage Average

Pk - Peak detector

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* ** 4.95915	48.03	PK2	33.9	-32	0	49.93	-	-	74	-24.07	240	324	H
	* ** 4.95902	39.85	ADV	33.9	-32	-12.04	29.71	54	-24.29	-	-	240	324	H
3	* ** 7.43849	54.27	PK2	35.6	-29	0	60.87	-	-	74	-13.13	237	169	H
	* ** 7.43867	47.59	ADV	35.6	-29	-12.04	42.15	54	-11.85	-	-	237	169	H
4	* ** 4.96094	52.83	PK2	33.9	-32	0	54.73	-	-	74	-19.27	258	143	V
	* ** 4.96094	45.55	ADV	33.9	-32	-12.04	35.41	54	-18.59	-	-	258	143	V
5	* ** 7.43846	57.29	PK2	35.6	-29	0	63.89	-	-	74	-10.11	341	100	V
	* ** 7.43868	50.88	ADV	35.6	-29	-12.04	45.44	54	-8.56	-	-	341	100	V
1	* ** 4.27688	38.86	Pk	33.4	-32.3	0	39.96	54	-14.04	74	-34.04	0-360	100	H
6	* ** 9.08156	35.99	Pk	36	-25.6	0	46.39	54	-7.61	74	-27.61	0-360	200	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

ADV - Linear Voltage Average

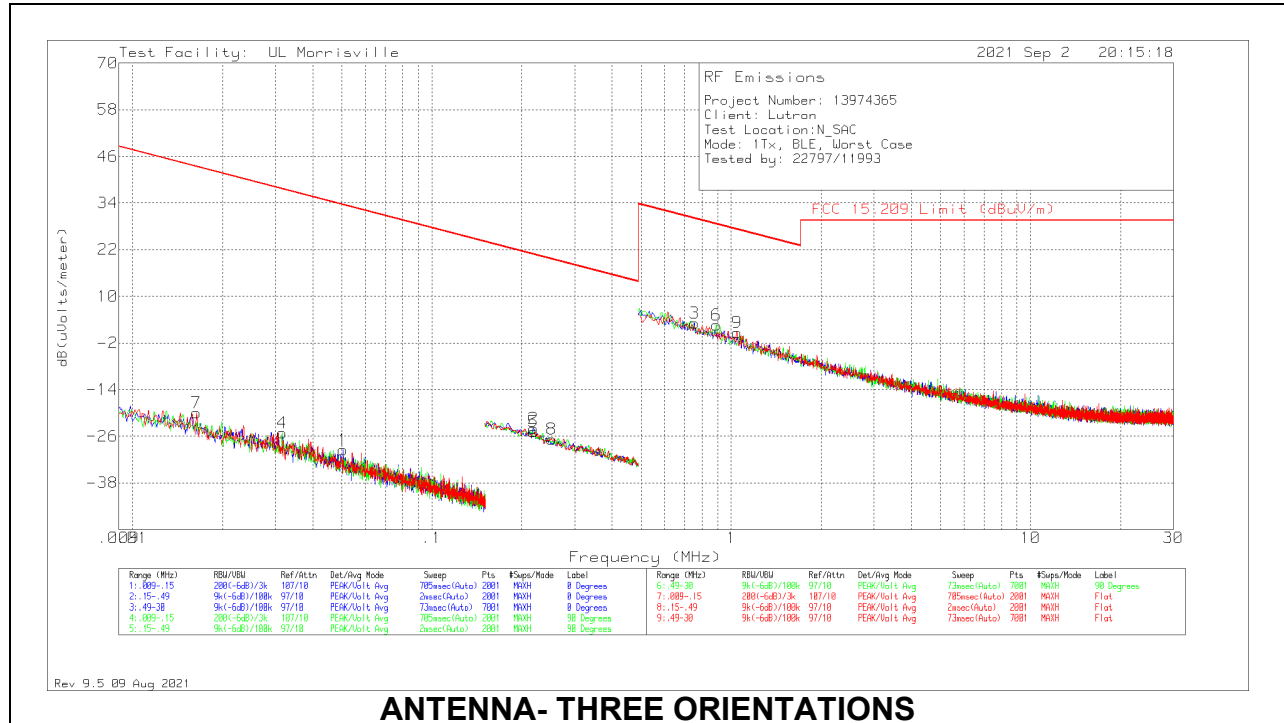
Pk - Peak detector

Note: DCCF of -12.04 is based on the real-world duty cycle. Refer to section 9.1.

10.3. WORST CASE BELOW 30MHZ

Note for below 30 MHz scans: 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 $40 \cdot \log(\text{test distance} / \text{specification distance})$.

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION E-FIELD)



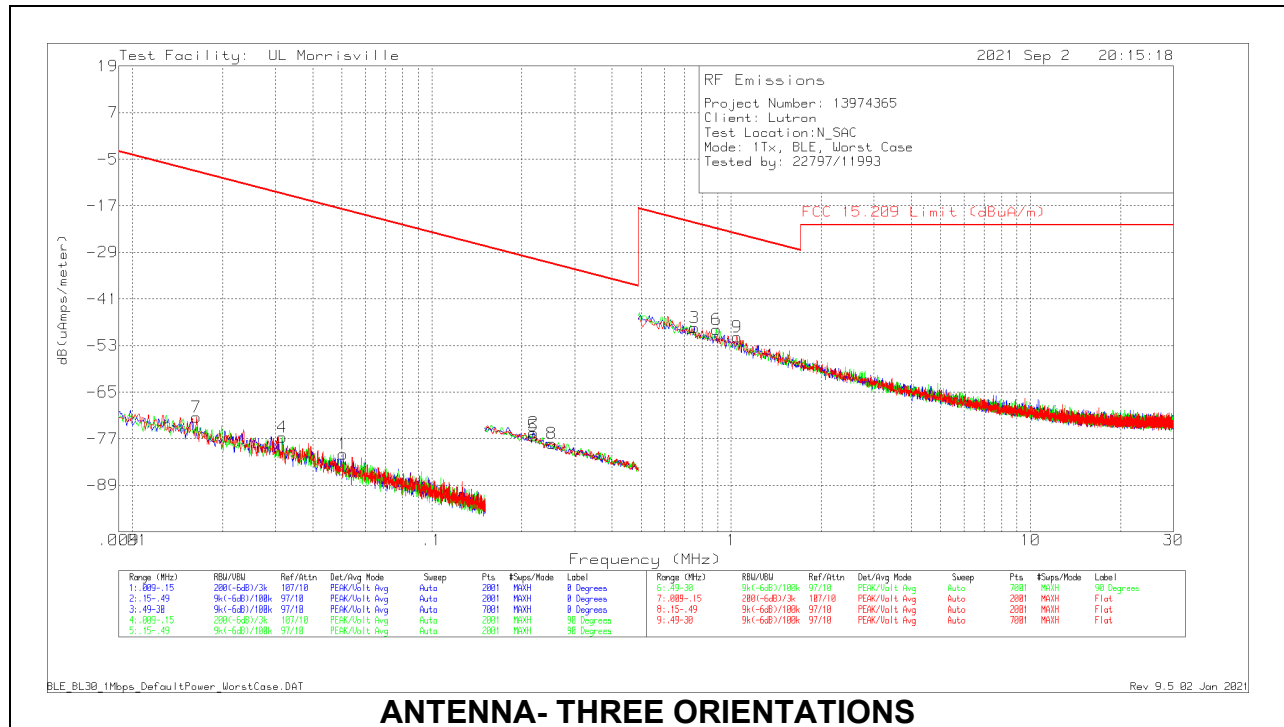
ANTENNA- THREE ORIENTATIONS

Below 30MHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Cbl (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	FCC 15.209 Qp/Av Limit (dBuV/m)	FCC 15.209 Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Loop Angle
7	.01638	44.24	Pk	15.7	.1	-80	-19.96	43.32	63.32	-63.28	0-360	101	Flat
4	.03158	41.55	Pk	13.2	.1	-80	-25.15	37.62	57.62	-62.77	0-360	101	90 degs
1	.05046	38.63	Pk	11.8	.1	-80	-29.47	33.54	53.54	-63.01	0-360	101	0 degs
2	.21817	44.68	Pk	11.2	.1	-80	-24.02	20.83	40.83	-44.85	0-360	101	0 degs
5	.21885	43.86	Pk	11.2	.1	-80	-24.84	20.8	40.8	-45.64	0-360	101	90 degs
8	.25132	41.95	Pk	11.2	.1	-80	-26.75	19.6	39.6	-46.35	0-360	101	Flat
3	.75561	31.63	Pk	11.3	.2	-40	3.13	30.04	-	-26.91	0-360	101	0 degs
6	.89474	31.13	Pk	11.3	.2	-40	2.63	28.57	-	-25.94	0-360	101	90 degs
9	1.04651	29.2	Pk	11.3	.2	-40	.7	27.21	-	-26.51	0-360	101	Flat

Pk - Peak detector

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION H-FIELD)



ANTENNA- THREE ORIENTATIONS

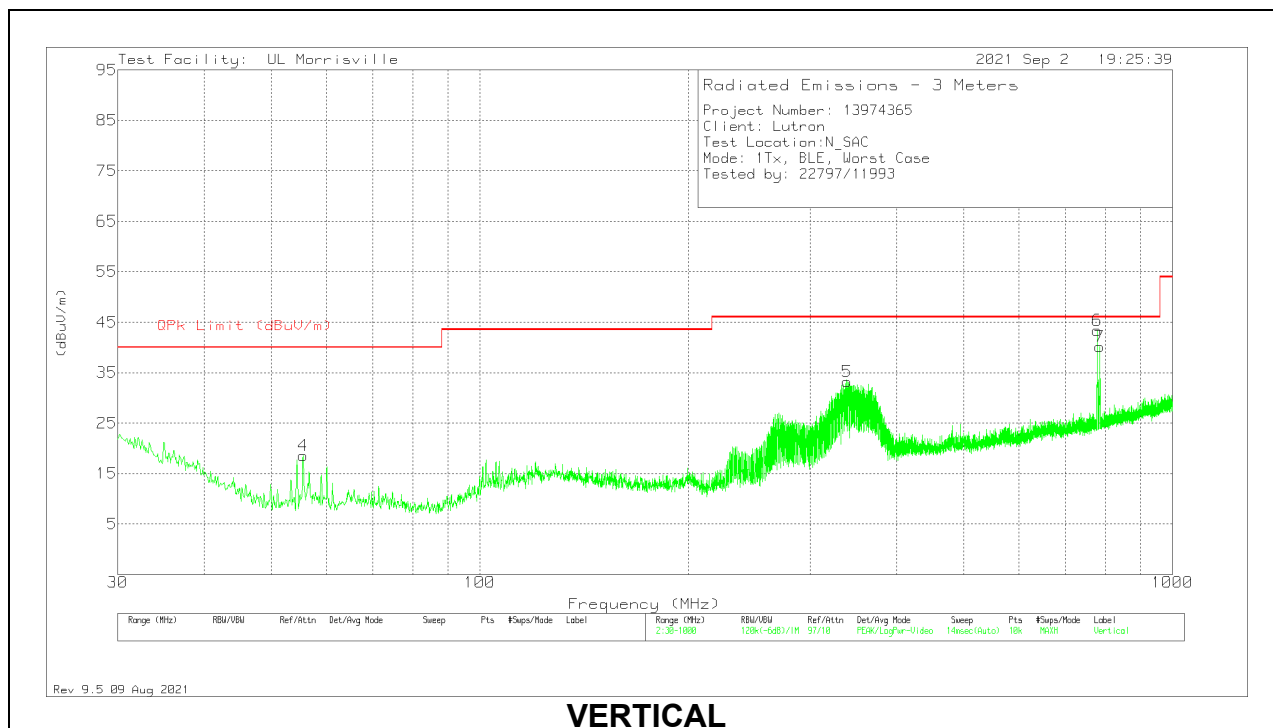
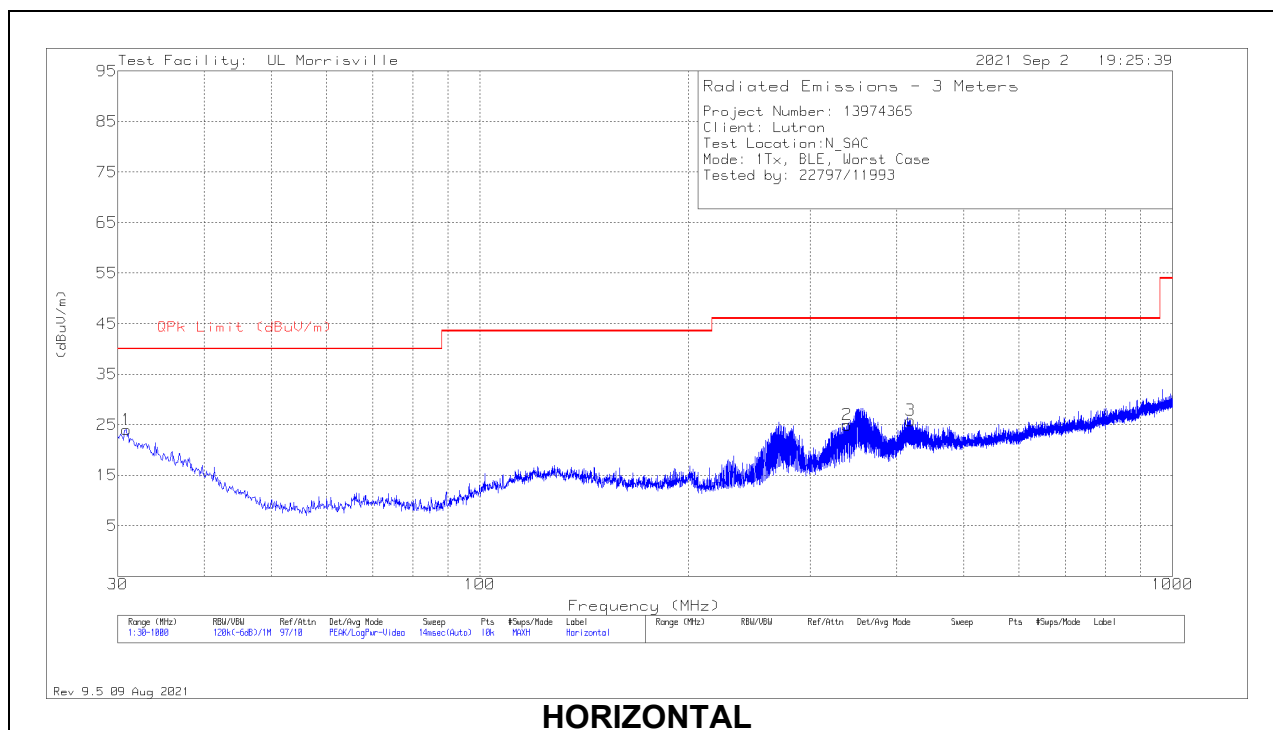
Below 30MHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Cbl (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uAmps/meter)	RSS-GEN Qp/Av Limit (dBuA/m)	RSS-GEN Pk Limit (dBuA/m)	Margin (dB)	Azimuth (Degs)
7	.01638	44.24	Pk	-35.8	.1	-80	-71.46	-8.18	11.82	-63.28	0-360
4	.03158	41.55	Pk	-38.3	.1	-80	-76.65	-13.88	6.12	-62.77	0-360
1	.05046	38.63	Pk	-39.7	.1	-80	-80.97	-17.96	2.04	-63.01	0-360
2	.21817	44.68	Pk	-40.3	.1	-80	-75.52	-30.67	-10.67	-44.85	0-360
5	.21885	43.86	Pk	-40.3	.1	-80	-76.34	-30.7	-10.7	-45.64	0-360
8	.25132	41.95	Pk	-40.3	.1	-80	-78.25	-31.9	-11.9	-46.35	0-360
3	.75561	31.63	Pk	-40.2	.2	-40	-48.37	-21.46	-	-26.91	0-360
6	.89474	31.13	Pk	-40.2	.2	-40	-48.87	-22.93	-	-25.94	0-360
9	1.04651	29.2	Pk	-40.2	.2	-40	-50.8	-24.29	-	-26.51	0-360

Pk - Peak detector

10.4. WORST CASE BELOW 1 GHZ

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



Below 1GHz Data

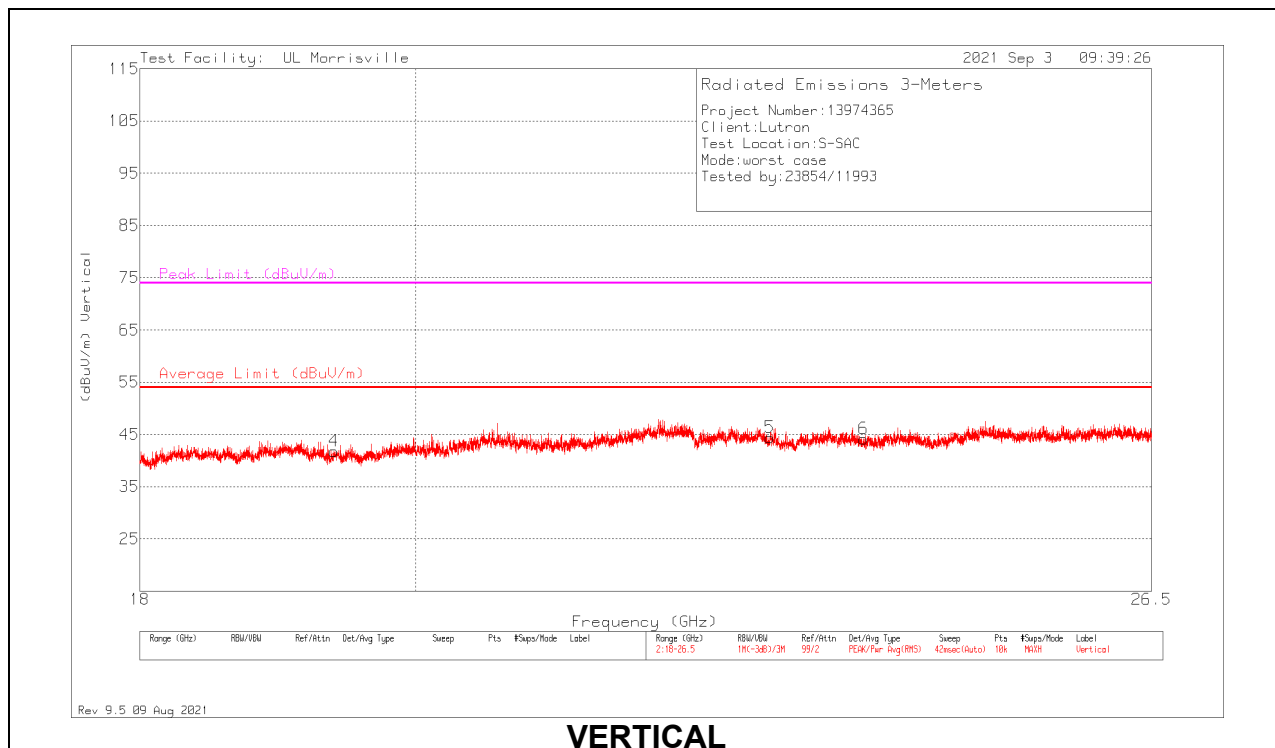
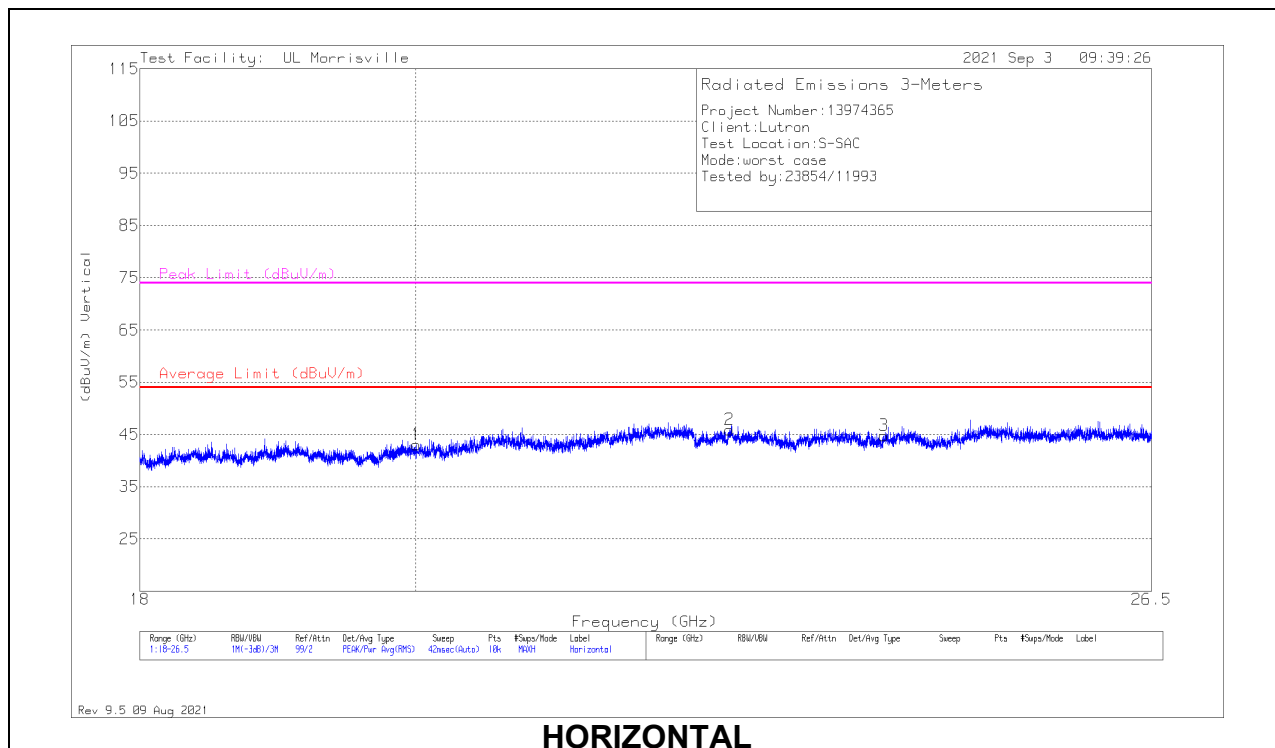
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0066 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.873	28.47	Pk	26.7	-31.2	23.97	40	-16.03	0-360	299	H
4	55.608	36.4	Pk	13.1	-31	18.5	40	-21.5	0-360	100	V
2	339.43	32.65	Pk	20.2	-27.9	24.95	46.02	-21.07	0-360	299	H
5	339.43	40.94	Pk	20.2	-27.9	33.24	46.02	-12.78	0-360	100	V
3	418.582	31.22	Pk	22.5	-27.9	25.82	46.02	-20.2	0-360	200	H
6	778.5454	40.98	Qp	27.8	-25.9	42.88	46.02	-3.14	247	247	V
7	785.0686	35.73	Qp	27.9	-25.8	37.83	46.02	-8.19	144	150	V

Pk - Peak detector

Qp - Quasi-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 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 20.0058	48.05	Pk	33.7	-38.7	43.05	54	-10.95	74	-30.95	0-360	299	H
2	* ** 22.55044	47.32	Pk	36.3	-37.7	45.92	54	-8.08	74	-28.08	0-360	299	H
3	* ** 23.92306	47	Pk	34.9	-37.1	44.8	54	-9.2	74	-29.2	0-360	200	H
4	* ** 19.38451	46.36	Pk	33.4	-38	41.76	54	-12.24	74	-32.24	0-360	250	V
5	* ** 22.90061	47.15	Pk	35.4	-38.2	44.35	54	-9.65	74	-29.65	0-360	150	V
6	* ** 23.73523	46.93	Pk	34.9	-37.7	44.13	54	-9.87	74	-29.87	0-360	300	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40cm from the vertical ground plane and 80cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

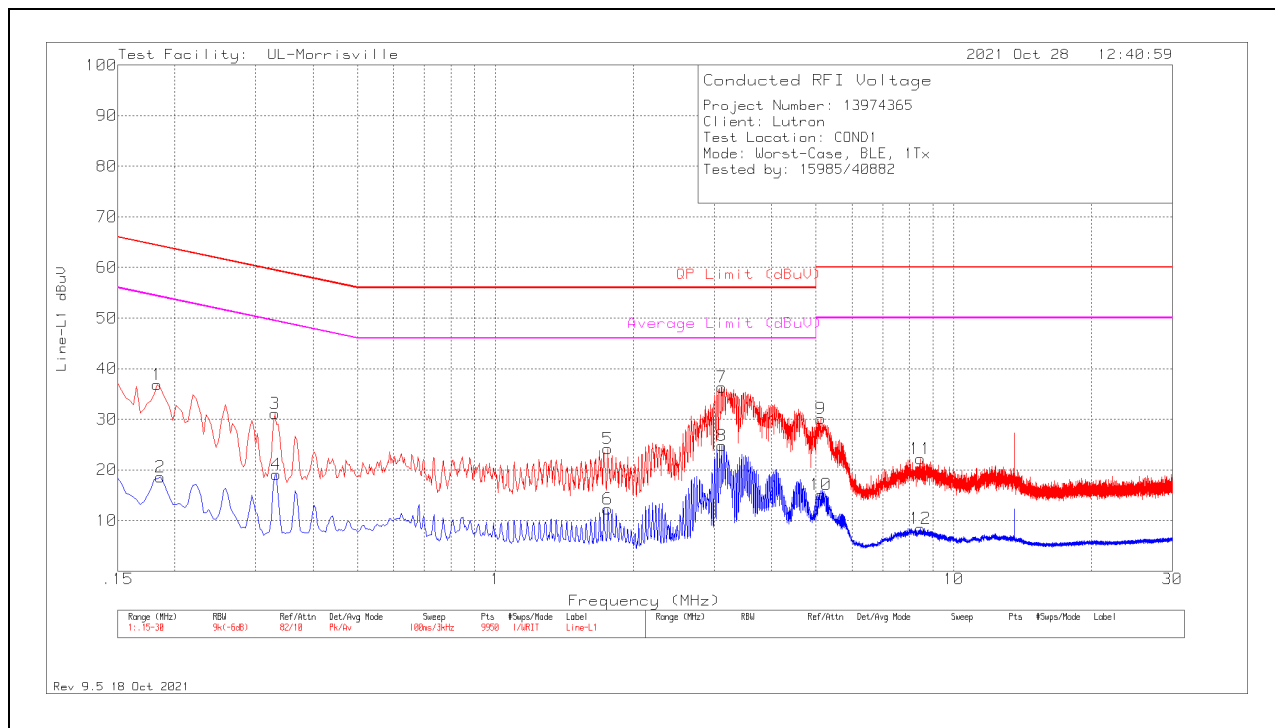
The receiver is set to a resolution bandwidth of 9kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

11.1.1. AC Power Line Norm

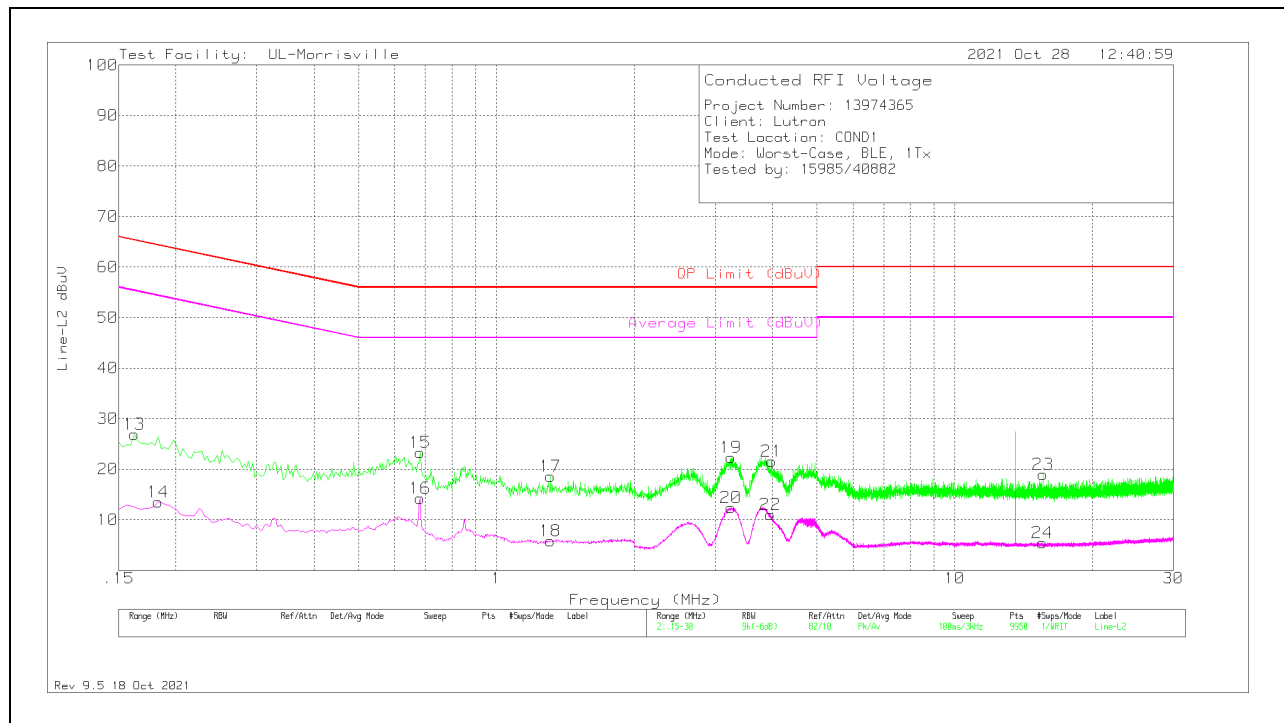
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.183	26.85	Pk	.2	9.8	36.85	64.35	-27.5	-	-
2	.186	8.62	Av	.2	9.8	18.62	-	-	54.21	-35.59
3	.33	21.18	Pk	.1	9.8	31.08	59.45	-28.37	-	-
4	.333	9.13	Av	.1	9.8	19.03	-	-	49.38	-30.35
5	1.758	14.38	Pk	0	9.8	24.18	56	-31.82	-	-
6	1.761	2.48	Av	0	9.8	12.28	-	-	46	-33.72
7	3.117	26.58	Pk	0	9.8	36.38	56	-19.62	-	-
8	3.117	14.95	Av	0	9.8	24.75	-	-	46	-21.25
9	5.124	20.29	Pk	0	9.9	30.19	60	-29.81	-	-
10	5.127	5.25	Av	0	9.9	15.15	-	-	50	-34.85
12	8.457	-1.69	Av	.1	10	8.41	-	-	50	-41.59
11	8.472	12.06	Pk	.1	10	22.16	60	-37.84	-	-

Pk - Peak detector
Av - Average detection

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
13	.162	16.88	Pk	.2	9.8	26.88	65.36	-38.48	-	-
14	.183	3.46	Av	.2	9.8	13.46	-	-	54.35	-40.89
15	.681	13.46	Pk	0	9.8	23.26	56	-32.74	-	-
16	.681	4.42	Av	0	9.8	14.22	-	-	46	-31.78
18	1.311	-4	Av	0	9.8	5.8	-	-	46	-40.2
17	1.314	8.83	Pk	0	9.8	18.63	56	-37.37	-	-
19	3.246	12.37	Pk	0	9.9	22.27	56	-33.73	-	-
20	3.246	2.49	Av	0	9.9	12.39	-	-	46	-33.61
22	3.96	1.06	Av	0	9.9	10.96	-	-	46	-35.04
21	3.987	11.66	Pk	0	9.9	21.56	56	-34.44	-	-
24	15.552	-4.79	Av	.1	10.1	5.41	-	-	50	-44.59
23	15.573	8.79	Pk	.1	10.1	18.99	60	-41.01	-	-

Pk - Peak detector

Av - Average detection

12. SETUP PHOTOS

Please refer to R13974365-EP1 for setup photos

END OF TEST REPORT