



TEST REPORT

Report Number. : R13547611-E1

Applicant : Lutron Electronics CO Inc.
7200 Suter Rd.
Coopersburg, PA, 18036-1249, USA

Model : DDM1

FCC ID : JPZ0134

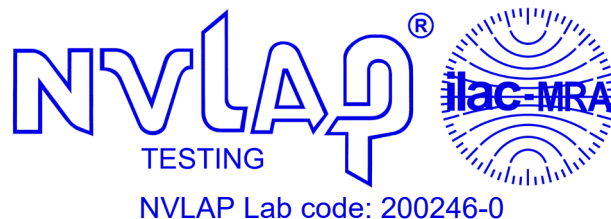
IC : 2851A-JPZ0134

EUT Description : RF Light Dimmer

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C: 2021
ISED RSS-247 ISSUE 2: 2017
ISED RSS-GEN ISSUE 5 + A1: 2019

Date Of Issue:
2021-03-04

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REPORT REVISION HISTORY

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
<u>V1</u>	<u>2021-02-24</u>	<u>Initial Issue</u>	<u>Cristian Melara</u>
<u>2</u>	<u>2021-03-04</u>	<u>Revised model number</u>	<u>Brian T. Kiewra</u>

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Lutron Electronics CO. Inc.
7200 Suter Rd.
Coopersburg, PA, 18036-1249, USA

EUT DESCRIPTION: RF light dimmer

MODEL: DDM1

SERIAL NUMBER: Radiated Sample: D1
Conducted Sample: DC1

SAMPLE RECEIPT DATE: 2021-02-12

DATE TESTED: 2021-02-15 to 2021-02-17

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 + Amendment 1: 2019	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. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. government.

Approved & Released For
UL LLC. By:



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Consumer Technology Division
UL LLC.

Prepared By:



Cristian Melara
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: 2020, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5+ Amendment 1: 2019, and RSS-247 Issue 2: 2017.

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 12 Laboratory Drive, Research Triangle Park, North Carolina, USA and 2800 Perimeter Park Dr., Suite B, Morrisville, North Carolina, USA. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

12 Laboratory Dr.	2800 Suite Perimeter Park Dr.
ISED Site Code: 2180C	
<input type="checkbox"/> Chamber A RTP	<input checked="" type="checkbox"/> North Chamber
<input type="checkbox"/> Chamber C RTP	<input type="checkbox"/> South Chamber

The above test sites and facilities are covered under FCC Test Firm Registration # 703469. Chambers above are covered under Industry Canada company address and respective code.

UL LLC (RTP), CABID US00067, is accredited by NVLAP, Laboratory Code 200246-0

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)
RF output power, radiated (SAC) < 180 MHz	6.18 dB
RF output power, radiated (SAC) >=180 MHz	3.23 dB
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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

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.

$$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$$

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is an RF light dimmer that supports BLE and 802.15.4. This report only covers BLE.

6.2. MAXIMUM OUTPUT POWER

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

BLE 1Mbps Mode

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	18.75	74.99

BLE 2Mbps Mode

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2404 - 2480	BLE	18.79	75.68

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a monopole antenna with a maximum gain of 1 dBi.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 0799307

The test utility software used during testing was Docklight V2.3.26.

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 and PSD 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 at both 1 and 2Mbps data rate.

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

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	HP	Stream 14	5CG016B3DL	NA
AC adapter	HP	L25296-00	NA	NA
Wireless adapter	National Control Devices	NA	NA	OUR-XBEEPRO
5ohm/10A/500W Load	NA	TRS033	NA	NA
25ohm/5A/500W Load	NA	TRS033	NA	NA

I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	1	1	Wire to screws	Power cables	<3m	Cables connected to the loads
2	1	1	Quick connect	Single conductor	<1m	Connects to AC Power.

SETUP DIAGRAMS

Please refer to R13547611-EP1 for setup diagrams

7. MEASUREMENT METHOD

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)

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

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

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

KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3

8. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment Used – AC Mains Conducted Emissions Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
Conducted Room 1					
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2020-03-26	2021-03-26
HI0091	Environmental Meter	Fisher Scientific	14-650-118	2020-06-26	2021-06-26
LISN003	LISN, 50-ohm/50-uH, 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50-25-2-01-550V	2020-08-18	2021-08-18
75141	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2020-08-18	2021-08-18
PS214	AC Power Source	Elgar	CW2501M (s/n 1523A02396)	NA	NA
ATA222	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2020-03-26	2021-03-26
SOFTEMI	EMI Software	UL	Version 9.5 2015-08-20	NA	NA
Miscellaneous					
HPF017	100kHz High-pass Filter	Solar Electronics Co.	7801-100	2020-02-19	2021-02-19
ATTEN007	10dB Pad	Mini Circuit	NA	2020-02-19	2021-02-19
LISN008	LISN, 50-ohm/50-uH, 2-conductor, 25A (For support gear only.)	Solar Electronics	8012-50-R-24-BNC	2020-08-08	2021-08-08

Note - HPF and 10dB pad in calibration at time of testing

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
Conducted Room 2					
SA0027 (PRE0126407)	Spectrum Analyzer	Keysight Technologies	N9030A	2020-06-10	2021-06-10
SOFTEMI	Antenna Port Software	UL	Version AP2021.2.2	NA	NA
PWS001 (PRE013734)	Peak and Avg Power Sensor, 50MHz to 18GHz	Keysight Technologies	N1921A	2020-05-27	2021-05-27
PWM001 (MY55136012)	RF Power Meter	Keysight Technologies	N1911A	2020-07-17	2021-07-17
HI0091	Environmental Meter	Fisher Scientific	14-650-118	2020-06-26	2021-06-26
	Miscellaneous				
A-20-702145	Isolation Transformer	ACME Transformer	NA	A-20-702145	Isolation Transformer

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

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	0.009-30MHz	(Loop Ant.)			
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2020-08-20	2021-08-20
	30-1000 MHz				
AT0074	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2020-07-27	2021-07-27
	1-18 GHz				
AT0072	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2020-04-27	2021-04-27
	18-40 GHz				
AT0063	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2020-10-30	2021-10-30
	Gain-Loss Chains				
N-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2020-08-07	2021-08-07
N-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2020-08-07	2021-08-07
N-SAC03	Gain-loss string: 1-18GHz	Various	Various	2020-08-07	2021-08-07
N-SAC04	Gain-loss string: 18-40GHz	Various	Various	2020-08-07	2021-08-07
	Receiver & Software				
SA0026	Spectrum Analyzer	Agilent	N9030A	2020-07-16	2021-07-16
SOFTEMI	EMI Software	UL	Version 2020-08-19	NA	NA
	Additional Equipment Used				
HI0094	Environmental Meter	Fisher Scientific	06-662-4 11725843	2020-01-21	2022-01-21

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.

9.1.1. BLE (1Mbps)

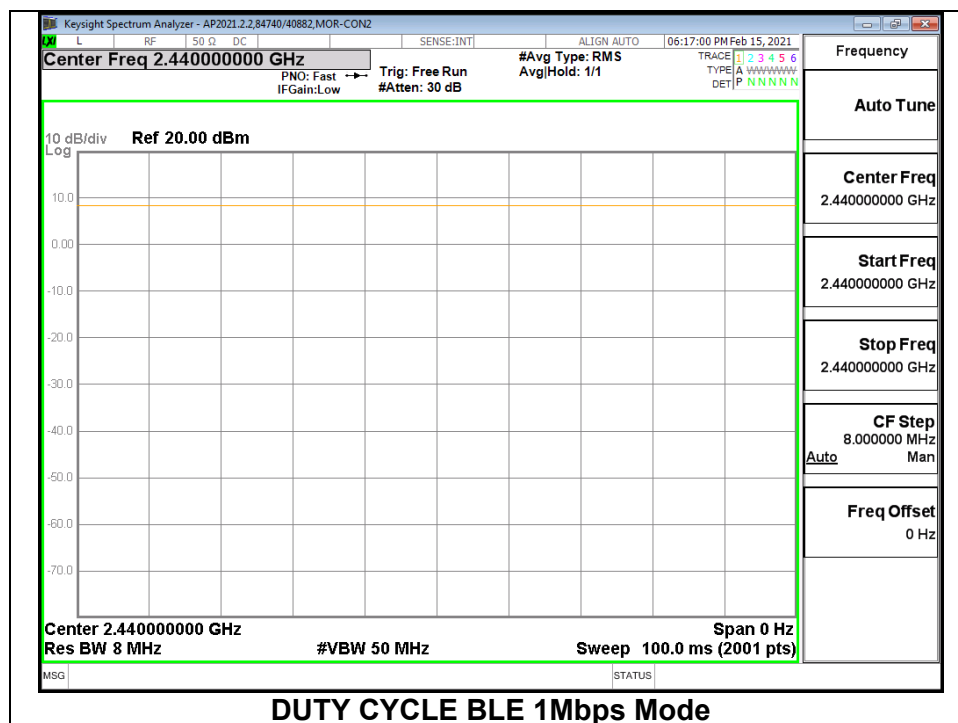
ON TIME AND DUTY CYCLE RESULTS

	B (msec)	(msec)	x (linear)	Cycle (%)	Correction Factor (dB)	Minimum VBW (kHz)
2.4GHz Band						
BLE	100.000	100.000	1.000	100.00%	0.00	0.010

**Note - The “real world” duty cycle of the EUT is 40% 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 -7.96dB was applied to all radiated average data. See calculation below.

Duty Cycle Correction Factor = $20 \cdot \log(0.40) = 20 \cdot \log(0.40) = -7.96\text{dB}$

DUTY CYCLE PLOTS



9.1.2.BLE (2Mbps)

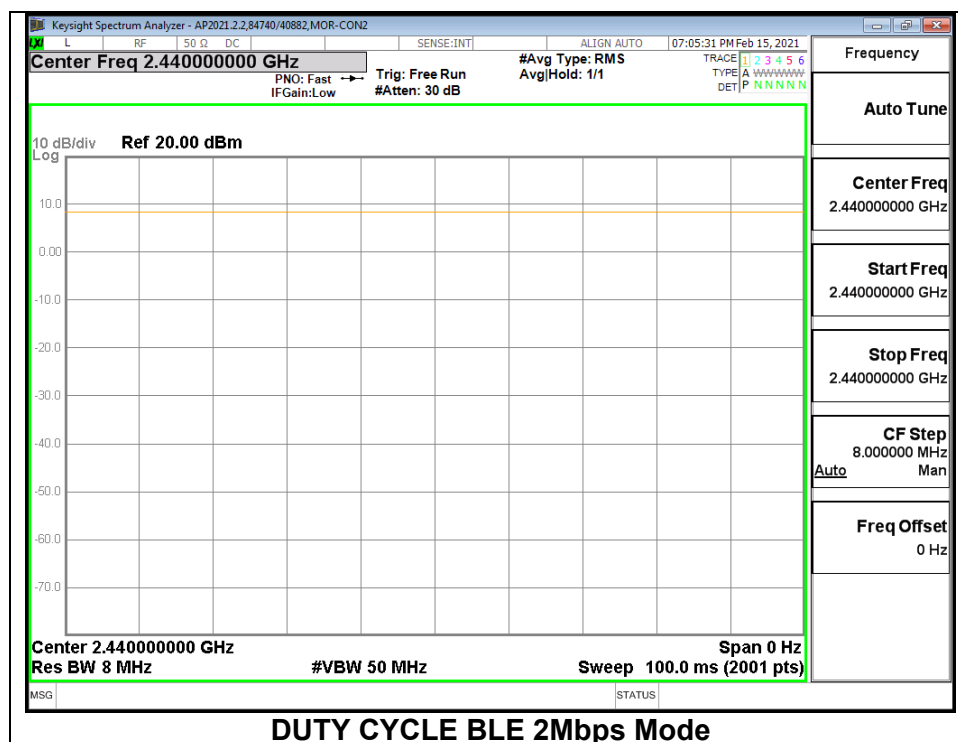
ON TIME AND DUTY CYCLE RESULTS

	B (msec)	(msec)	x (linear)	Cycle (%)	Correction Factor (dB)	Minimum VBW (kHz)
2.4GHz Band						
BLE	100.000	100.000	1.000	100.00%	0.00	0.010

**Note - The “real world” duty cycle of the EUT is 40% 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 -7.96dB was applied to all radiated average data. See calculation below.

Duty Cycle Correction Factor = $20 \cdot \log(0.40) = 20 \cdot \log(0.40) = -7.96\text{dB}$

DUTY CYCLE PLOTS



9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

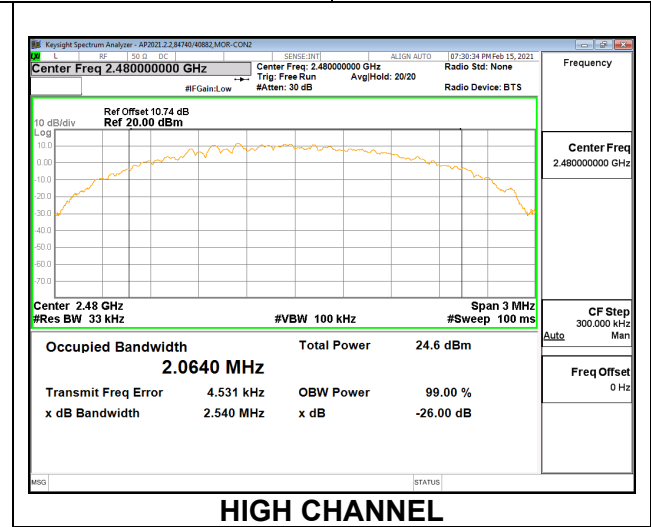
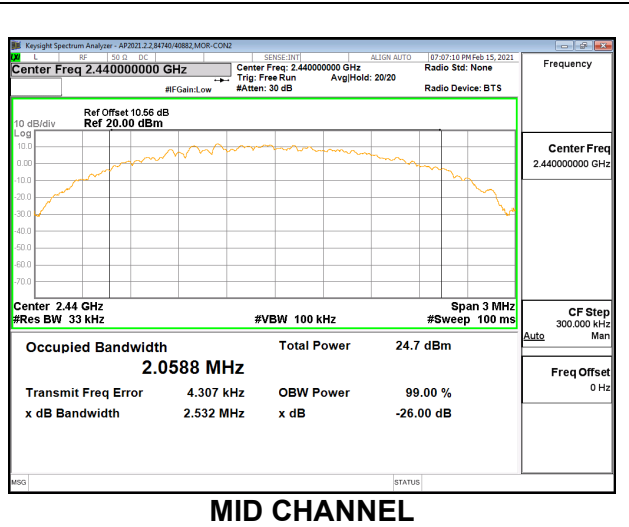
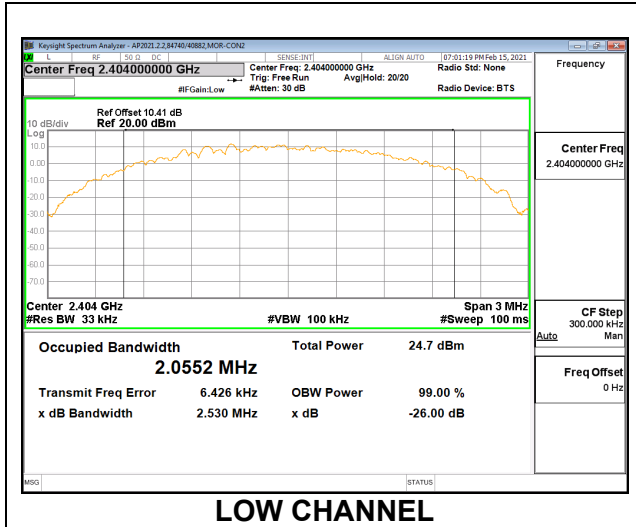
9.2.1. BLE (1Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0384
Middle	2440	1.0395
High	2480	1.0389



9.2.2. BLE (2Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2404	2.0552
Middle	2440	2.0588
High	2480	2.064



9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

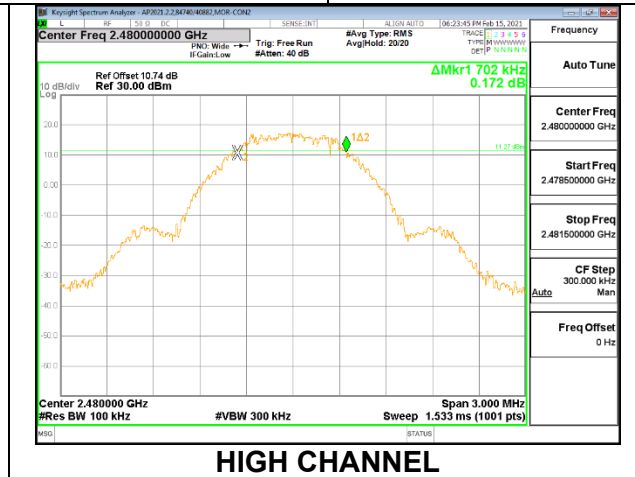
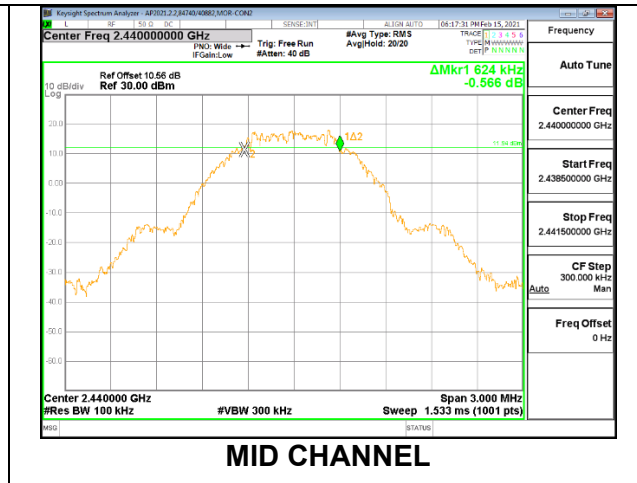
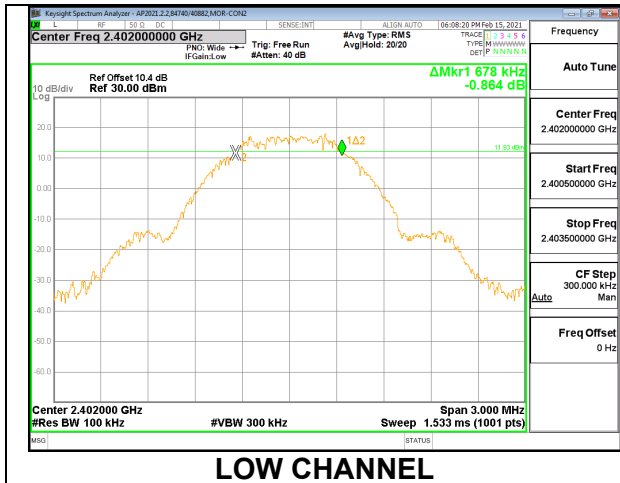
RSS-247 5.2 (a)

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

RESULTS

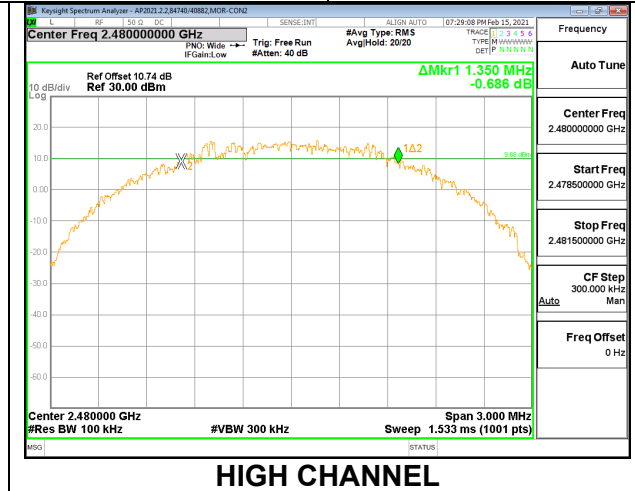
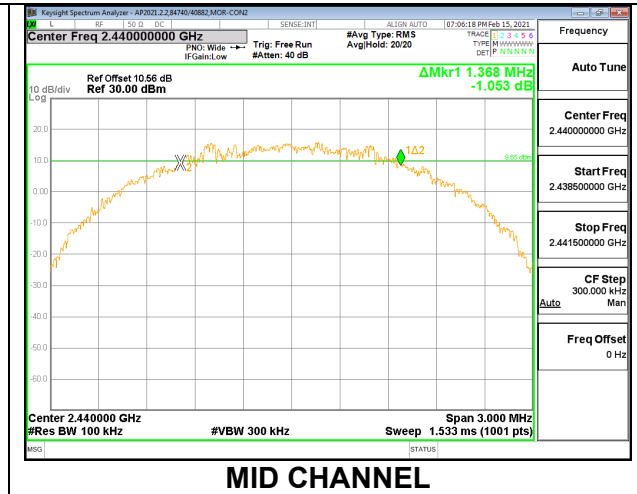
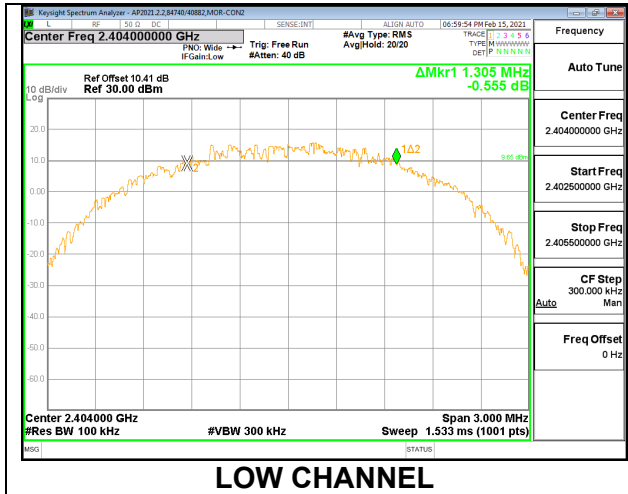
9.3.1. BLE (1Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.678	0.5
Middle	2440	0.624	0.5
High	2480	0.702	0.5



9.3.2. BLE (2Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2404	1.305	0.5
Middle	2440	1.368	0.5
High	2480	1.350	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 10.39 dB (including 10.28 dB pad and 0.11 dB cable) was entered as an offset in the power meter.

RESULTS

9.4.1. BLE (1Mbps)

Tested By:	84740/40882
Date:	2021-02-15

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.75	30	-11.250
Middle	2440	18.55	30	-11.450
High	2480	18.39	30	-11.610

9.4.2. BLE (2Mbps)

Tested By:	84740/40882
Date:	2021-02-15

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2404	18.79	30	-11.210
Middle	2440	18.78	30	-11.220
High	2480	18.37	30	-11.630

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 10.39 dB (including 10.28 dB pad and 0.11 dB cable) was entered as an offset in the power meter.

RESULTS

9.5.1. BLE (1Mbps)

Tested By:	84740/40882
Date:	2021-02-15

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	18.66
Middle	2440	18.45
High	2480	18.28

9.5.2. BLE (2Mbps)

Tested By:	84740/40882
Date:	2021-02-15

Channel	Frequency (MHz)	AV power (dBm)
Low	2404	18.70
Middle	2440	18.69
High	2480	18.27

9.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

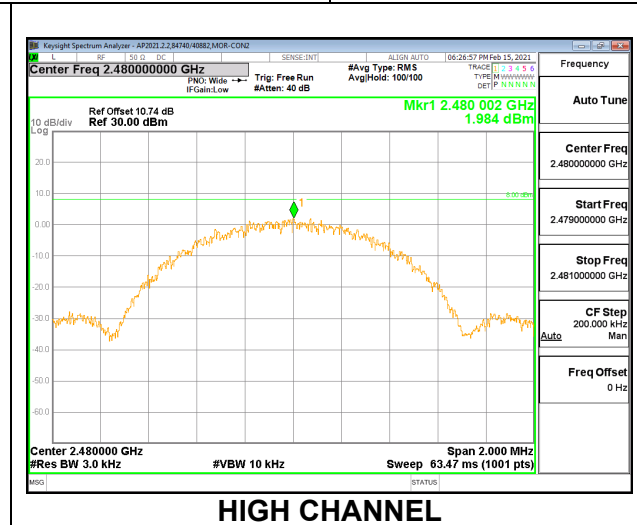
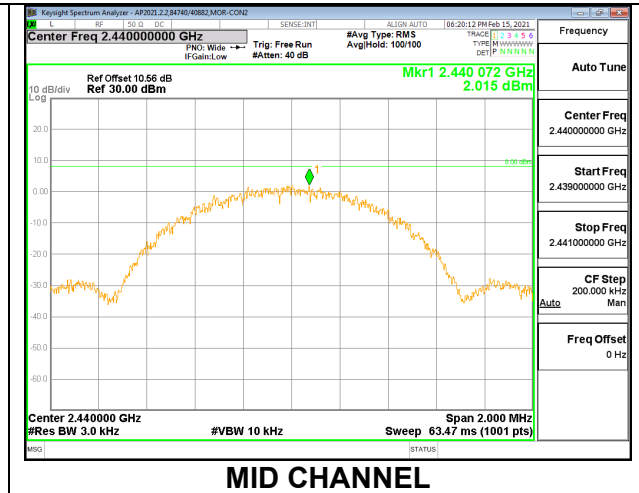
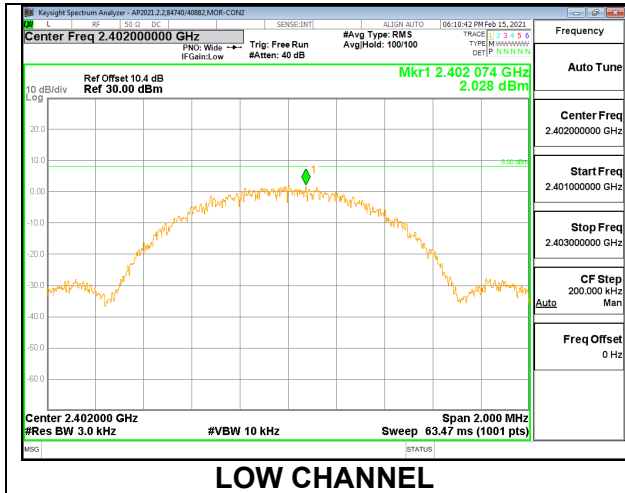
RSS-247 (5.2) (b)

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

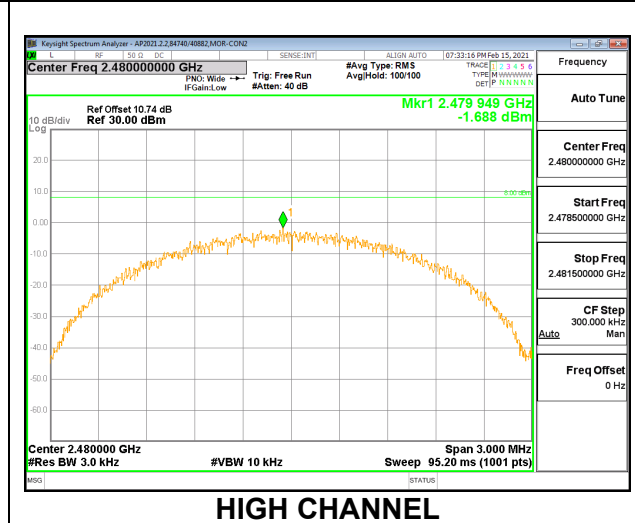
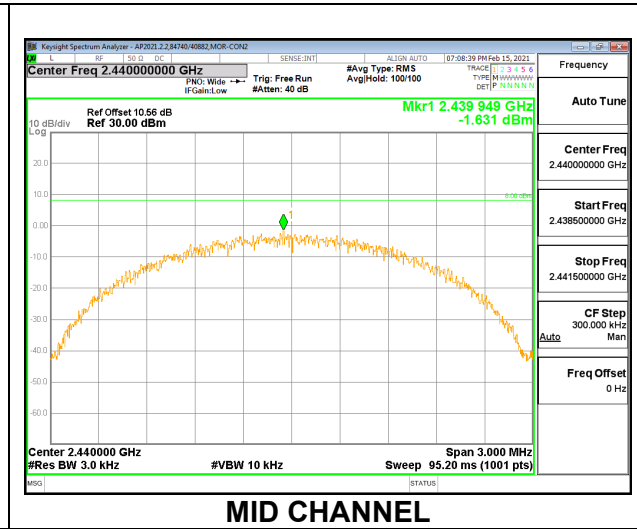
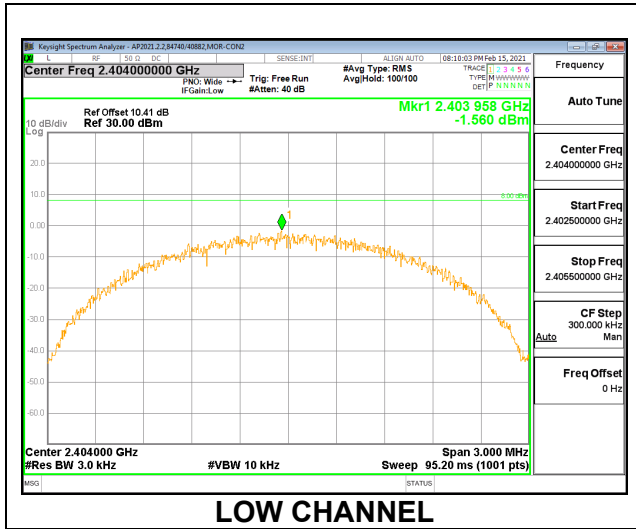
9.6.1. BLE (1Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	2.028	8	-5.97
Middle	2440	2.015	8	-5.99
High	2480	1.984	8	-6.02



9.6.2. BLE (2Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2404	-1.560	8	-9.56
Middle	2440	-1.631	8	-9.63
High	2480	-1.688	8	-9.69



9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

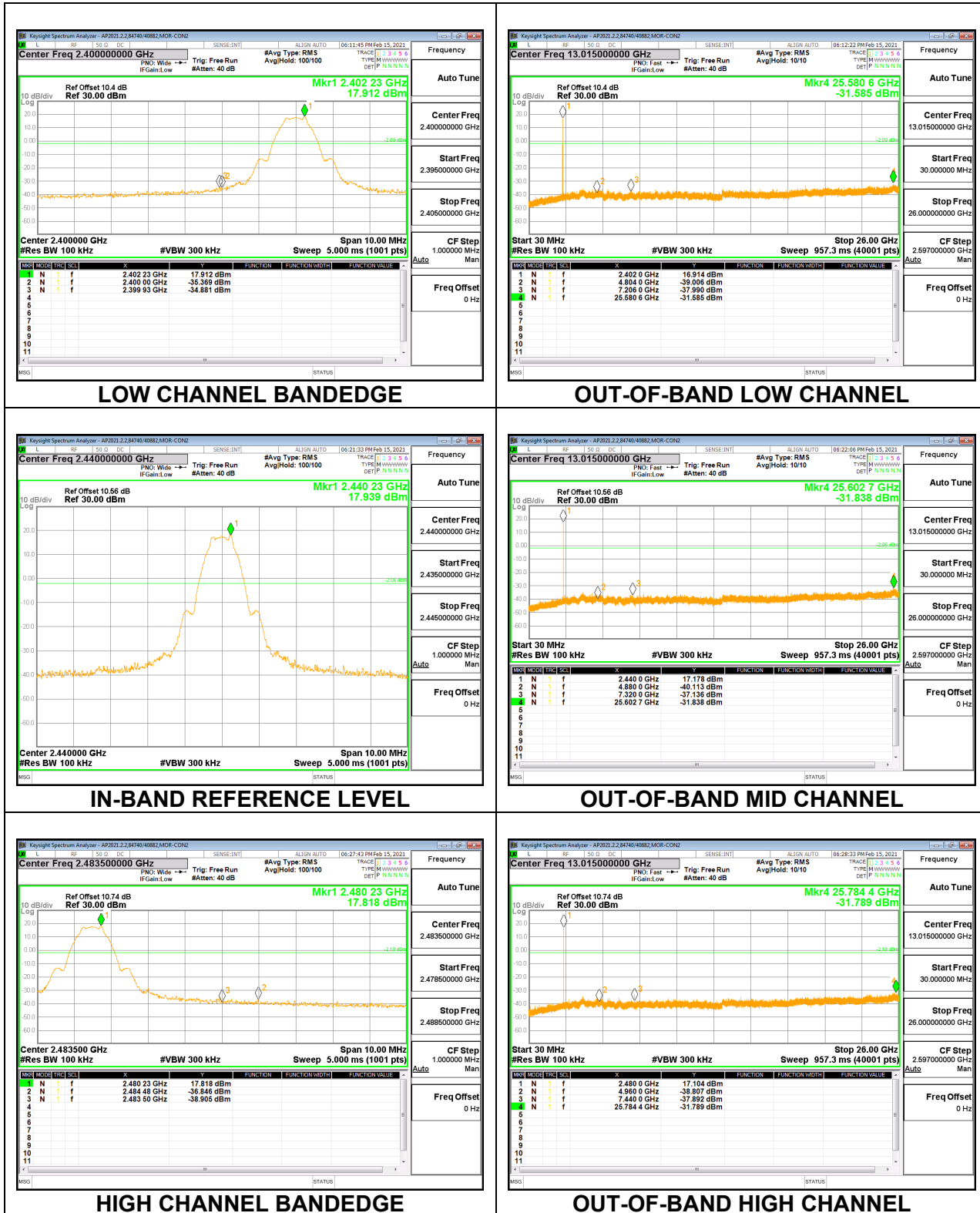
FCC §15.247 (d)

RSS-247 5.5

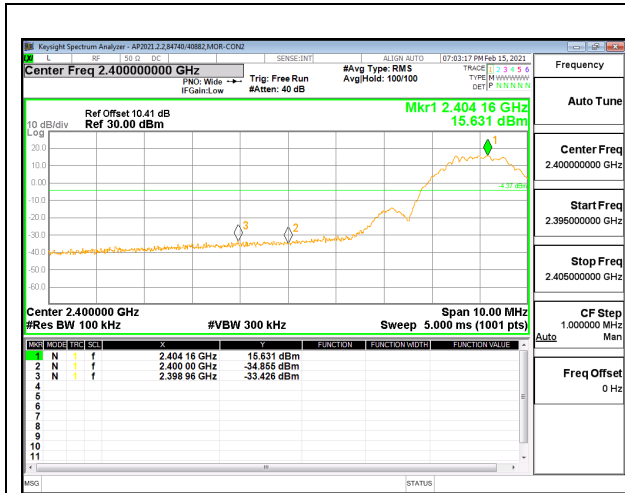
Output power was measured based on the use of a peak measurement, therefore the required attenuation is -20 dBc.

RESULTS

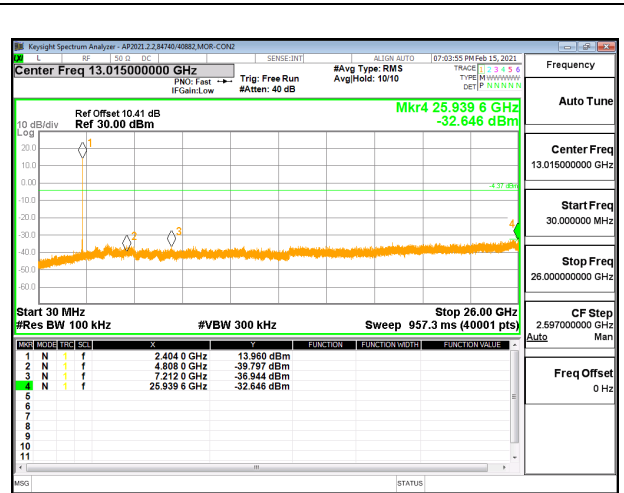
9.7.1. BLE (1Mbps)



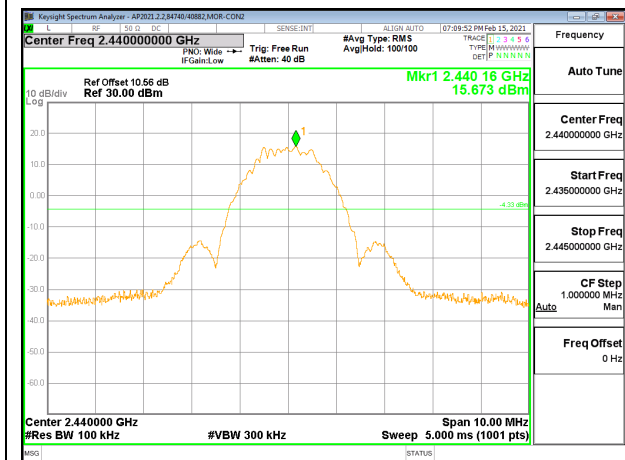
9.7.2. BLE (2Mbps)



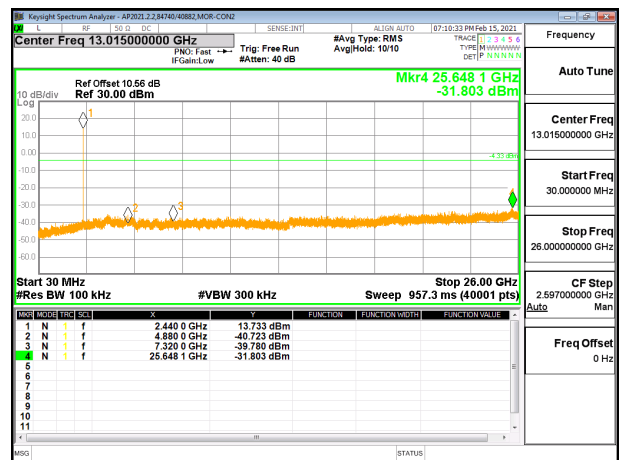
LOW CHANNEL BANDEDGE



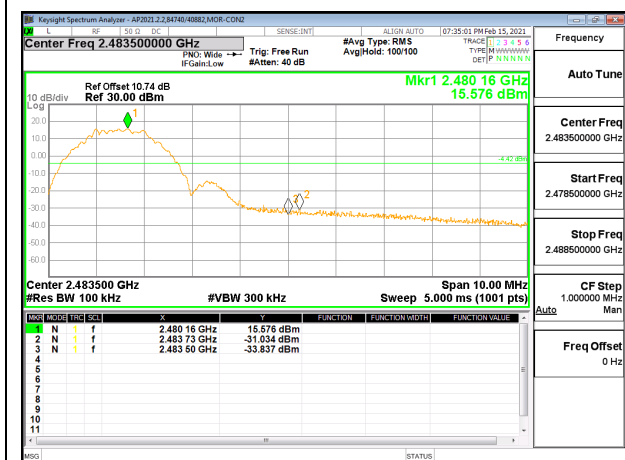
OUT-OF-BAND LOW CHANNEL



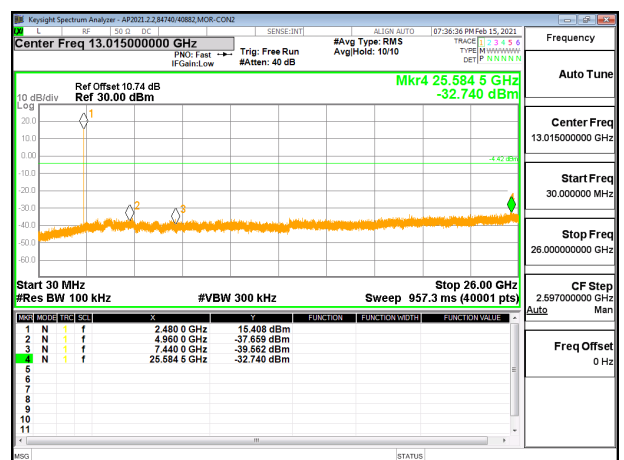
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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 (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	-

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 30 KHz 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.

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.

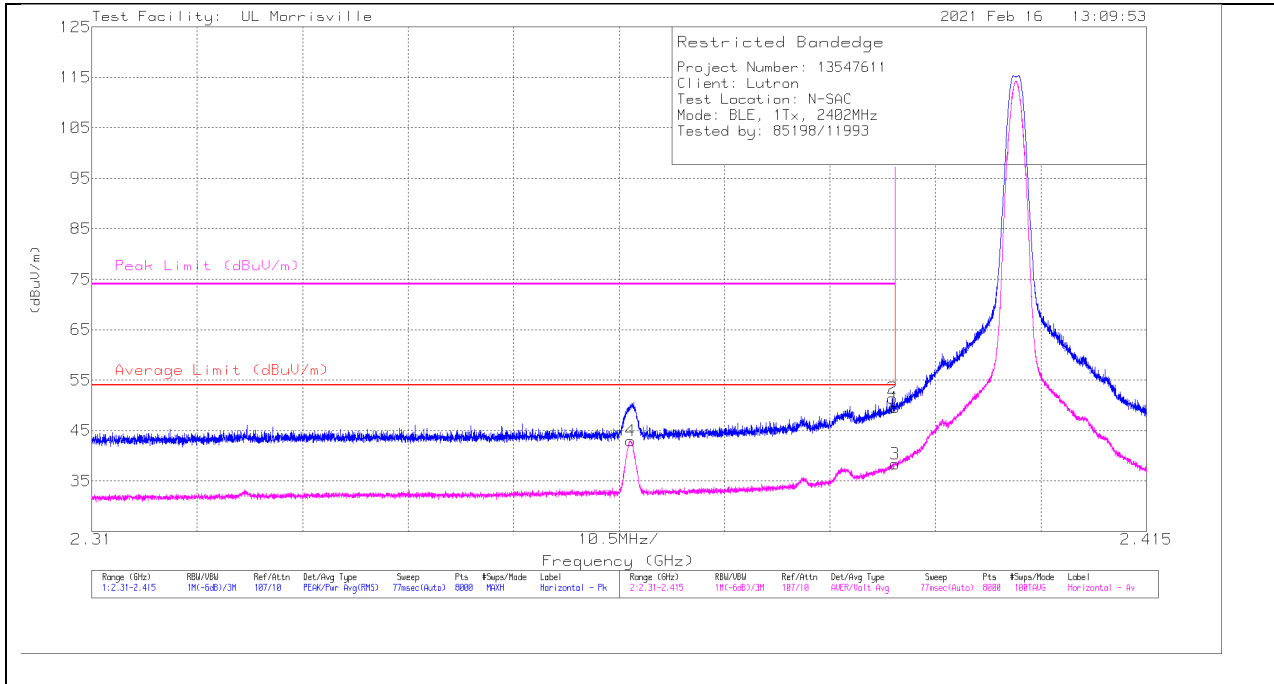
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. BLE (1Mbps)

Antenna 1

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Real Life Duty Cycle Correction	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	42.2	Pk	31.8	-24.4	0	49.6	-	-	74	-24.4	7	100	H
3	*** 2.39	31.01	ADV	31.8	-24.4	-7.96	30.45	54	-23.55	-	-	7	100	H
2	*** 2.38971	44.06	Pk	31.8	-24.4	0	51.46	-	-	74	-22.54	7	100	H
4	*** 2.36368	35.72	ADV	31.7	-24.4	-7.96	35.06	54	-18.94	-	-	7	100	H

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

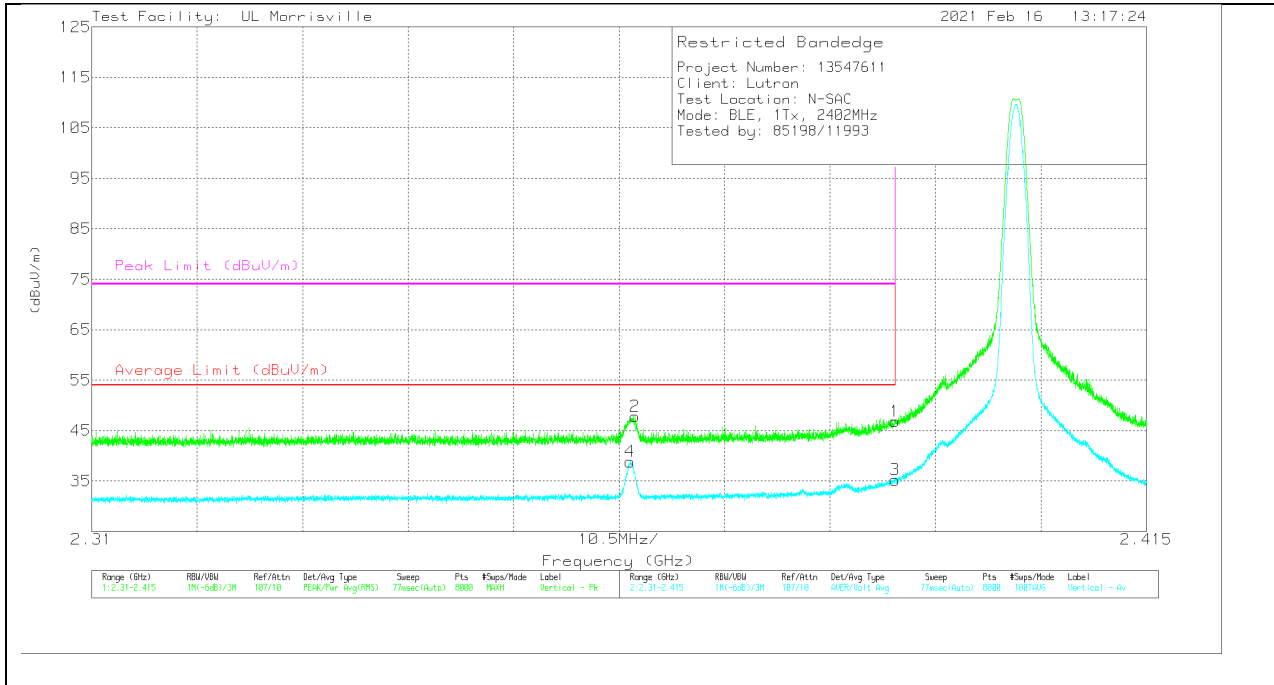
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

VERTICAL RESULT



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Real Life Duty Cycle Correction	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	39.41	Pk	31.8	-24.4	0	46.81	-	-	74	-27.19	239	174	V
3	*** 2.39	27.81	ADV	31.8	-24.4	-7.96	27.25	54	-26.75	-	-	239	174	V
2	*** 2.36411	40.52	Pk	31.7	-24.4	0	47.82	-	-	74	-26.18	239	174	V
4	** 2.3636	31.51	ADV	31.7	-24.4	-7.96	30.85	54	-23.15	-	-	239	174	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

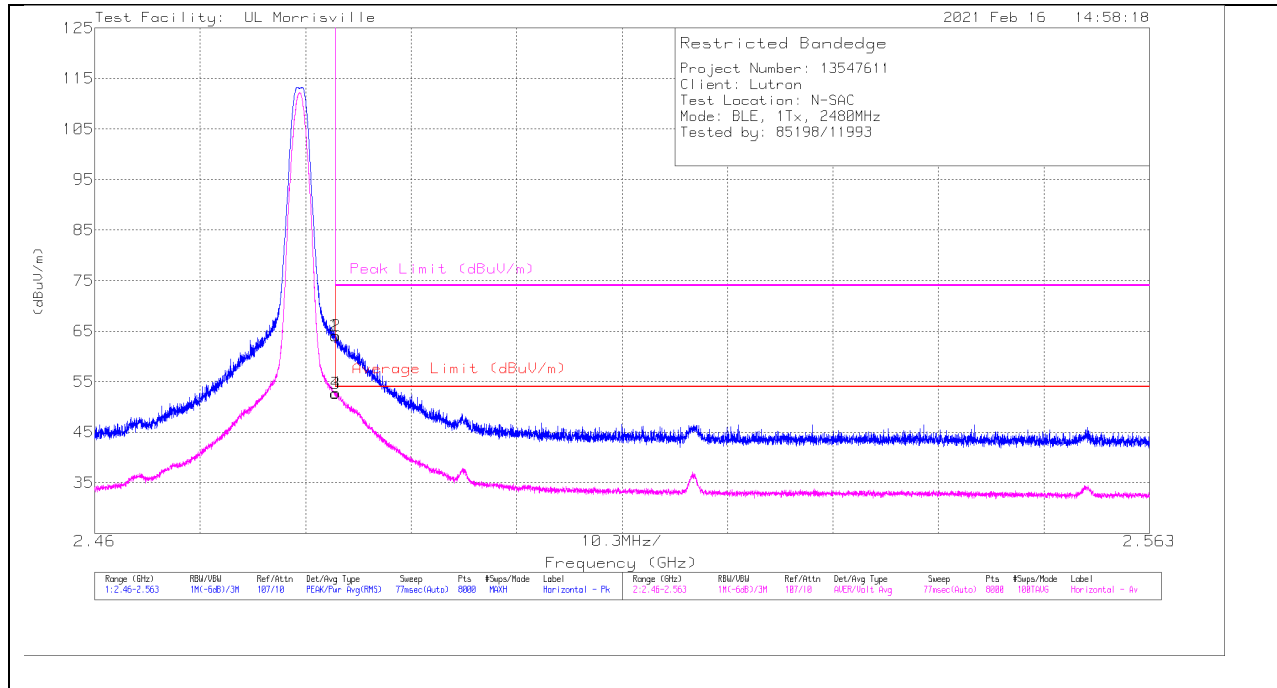
Pk - Peak detector

ADV - Linear Voltage Average

Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Real Life Duty Cycle Correction	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.4835	56.02	Pk	32.4	-24.3	0	64.12	-	-	74	-9.88	14	113	H
3	*** 2.4835	44.6	ADV	32.4	-24.3	-7.96	44.74	54	-9.26	-	-	14	113	H
2	*** 2.48353	56	Pk	32.4	-24.3	0	64.10	-	-	74	-9.9	14	113	H
4	*** 2.48356	44.63	ADV	32.4	-24.3	-7.96	44.77	54	-9.23	-	-	14	113	H

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

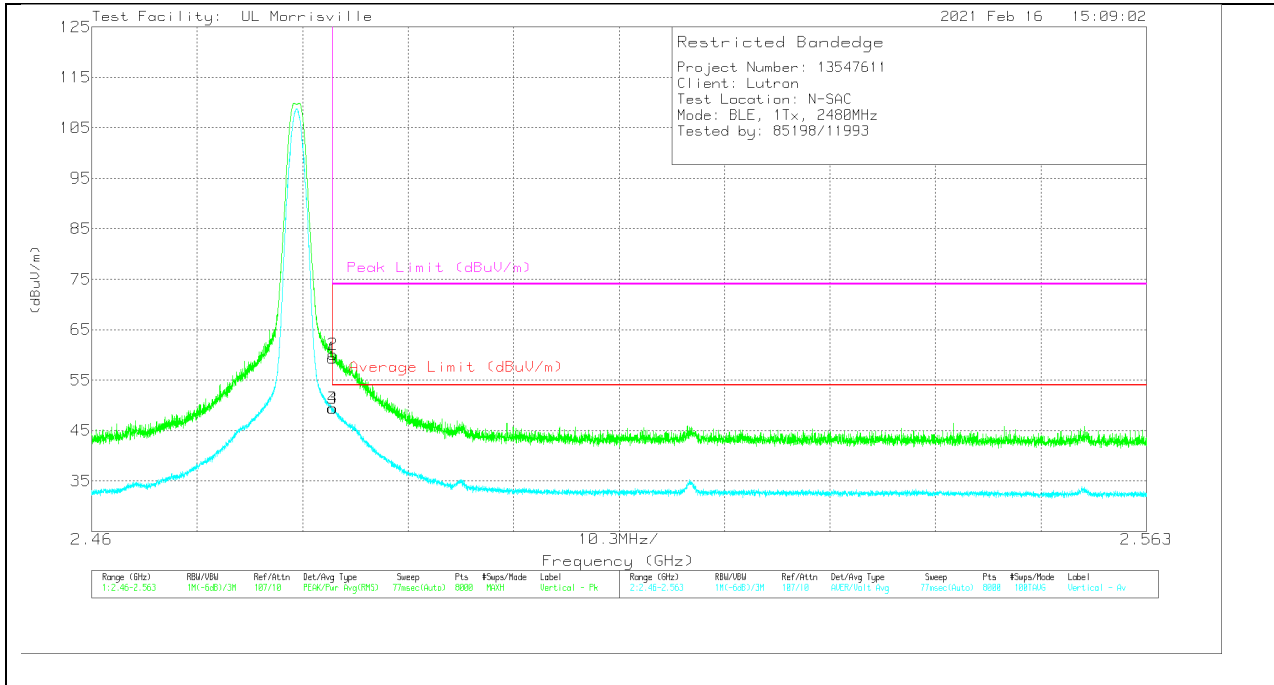
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

VERTICAL RESULT



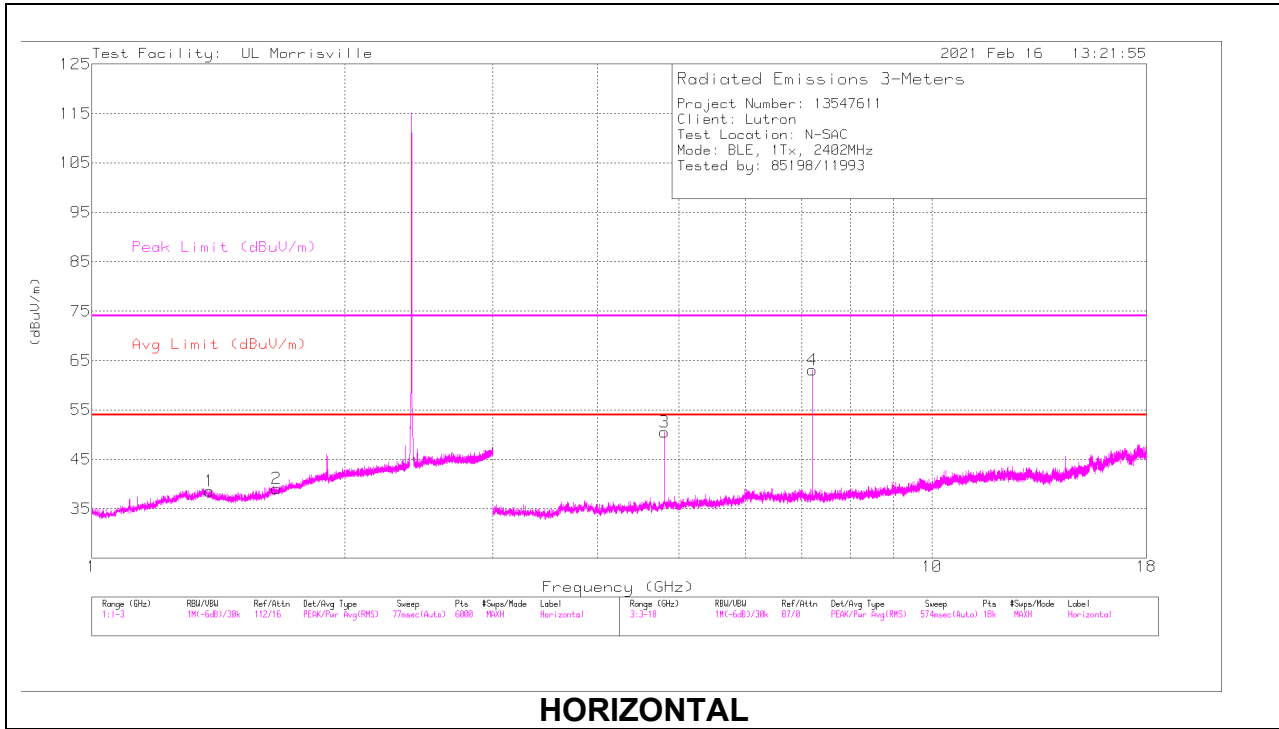
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Real Life Duty Cycle Correction	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.4835	51.29	Pk	32.4	-24.3	0	59.39	-	-	74	-14.61	244	138	V
3	*** 2.4835	41.29	ADV	32.4	-24.3	-7.96	41.43	54	-12.57	-	-	244	138	V
2	*** 2.48358	52.04	Pk	32.4	-24.3	0	60.14	-	-	74	-13.86	244	138	V
4	*** 2.48355	41.33	ADV	32.4	-24.3	-7.96	41.47	54	-12.53	-	-	244	138	V

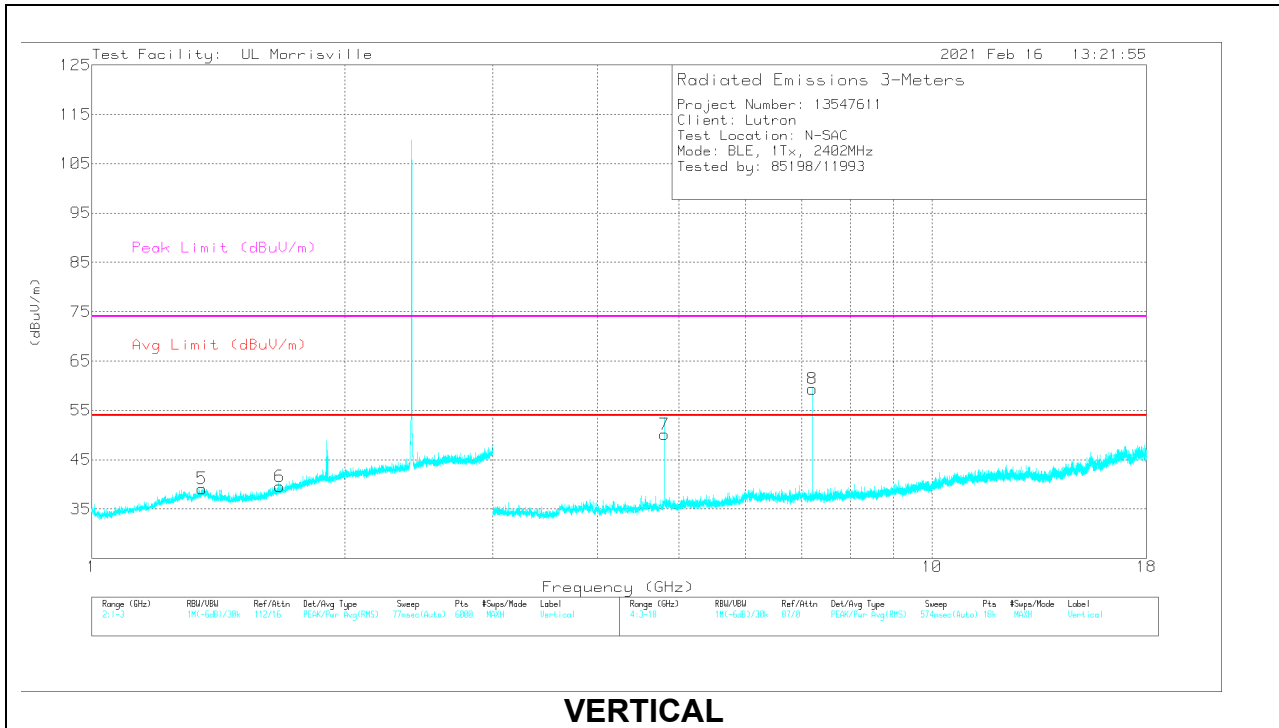
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 ADV - Linear Voltage Average
 Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Real Life Duty Cycle Correction	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 1.38273	40.83	PK2	29.3	-25.3	0	44.83	-	-	74	-29.17	24	396	H
	*** 1.38018	27.84	ADV	29.2	-25.3	-7.96	23.78	54	-30.22	-	-	24	396	H
2	*** 1.66149	41.31	PK2	28.5	-24.4	0	45.41	-	-	74	-28.59	267	213	H
	*** 1.66204	28.1	ADV	28.5	-24.4	-7.96	24.24	54	-29.76	-	-	267	213	H
5	*** 1.35353	40.96	PK2	29.5	-25.3	0	45.16	-	-	74	-28.84	31	237	V
	*** 1.35166	27.96	ADV	29.5	-25.3	-7.96	24.20	54	-29.80	-	-	31	237	V
6	*** 1.67191	41.33	PK2	28.6	-24.5	0	45.43	-	-	74	-28.57	360	399	V
	*** 1.67252	28.11	ADV	28.6	-24.5	-7.96	24.25	54	-29.75	-	-	360	399	V
3	*** 4.80346	51.68	PK2	34.3	-31.5	0	54.48	-	-	74	-19.52	286	104	H
	*** 4.80406	44.95	ADV	34.3	-31.5	-7.96	39.79	54	-14.21	-	-	286	104	H
7	*** 4.80353	54.61	PK2	34.3	-31.5	0	57.41	-	-	74	-16.59	245	284	V
	*** 4.80401	49.06	ADV	34.3	-31.5	-7.96	43.90	54	-10.10	-	-	245	284	V
8	7.20607	53.65	Pk	35.6	-29.9	0	59.35	-	-	-	-	0-360	101	V
	7.2069	57.34	Pk	35.6	-29.9	0	63.04	-	-	-	-	0-360	101	H

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

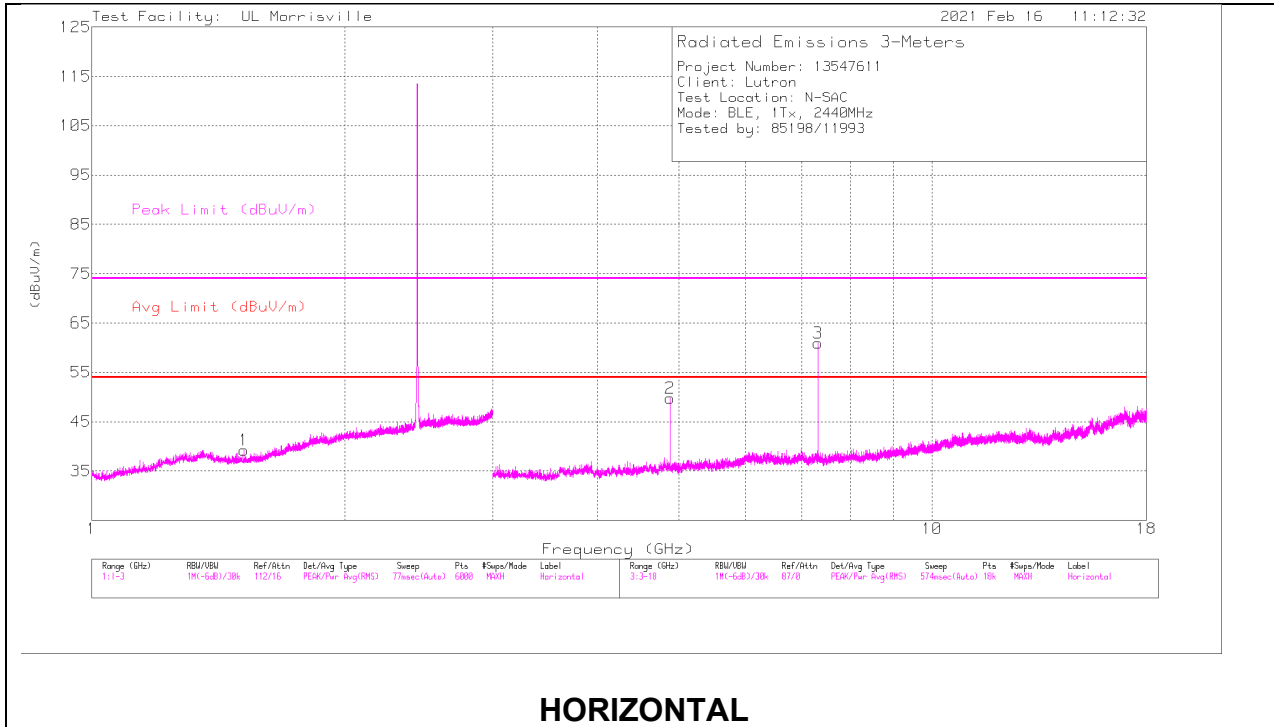
Pk - Peak detector

PK2 - Maximum Peak

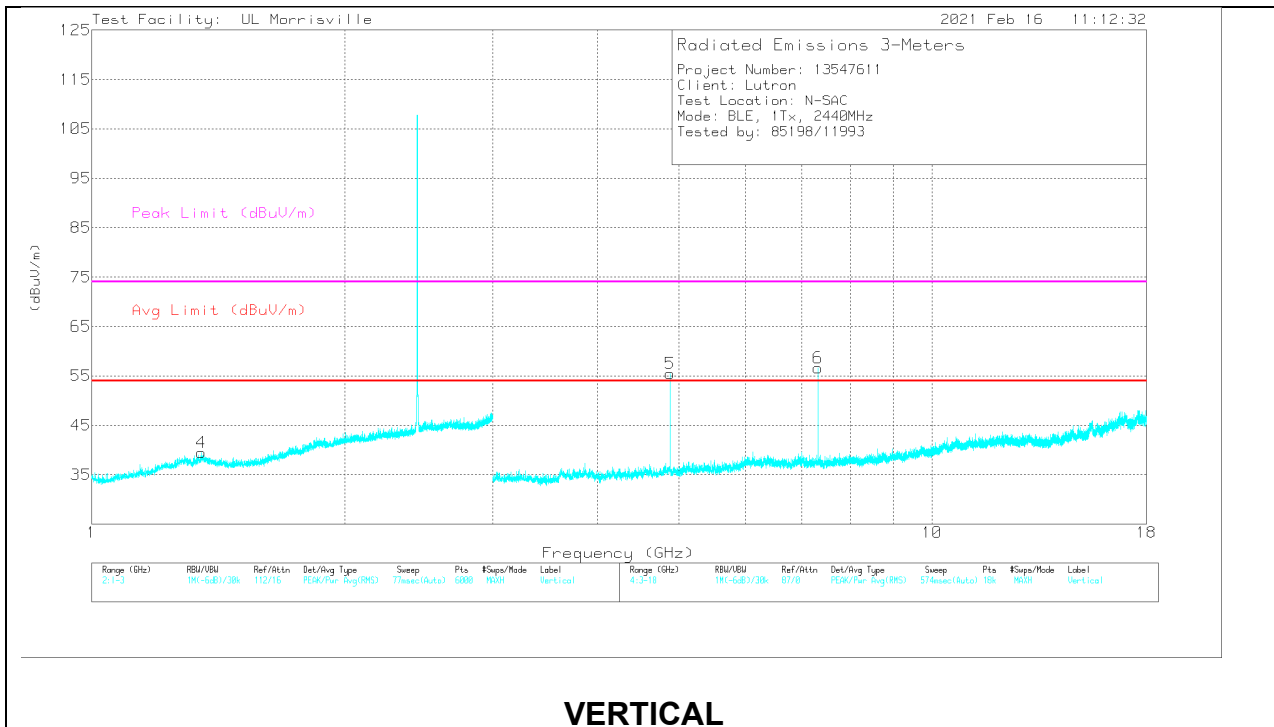
ADV - Linear Voltage Average

Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr/ Pad (dB)	Real Life Duty Cycle Correction	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 1.51707	41.05	PK2	27.8	-24.8	0	44.05	-	-	74	-29.95	78	283	H
	*** 1.51861	28.07	ADV	27.8	-24.8	-7.96	23.11	54	-30.89	-	-	78	283	H
4	*** 1.34736	40.81	PK2	29.4	-25.3	0	44.91	-	-	74	-29.09	93	393	V
	*** 1.35098	27.92	ADV	29.5	-25.3	-7.96	24.16	54	-29.84	-	-	93	393	V
2	*** 4.88047	53.45	PK2	34.1	-31.4	0	56.15	-	-	74	-17.85	292	116	H
	*** 4.88002	46.22	ADV	34.1	-31.4	-7.96	40.96	54	-13.04	-	-	292	116	H
3	*** 7.32068	59.13	PK2	35.6	-29.2	0	65.53	-	-	74	-8.47	251	107	H
	*** 7.32067	53.04	ADV	35.6	-29.2	-7.96	51.48	54	-2.52	-	-	251	107	H
5	*** 4.88049	56.27	PK2	34.1	-31.4	0	58.97	-	-	74	-15.03	240	102	V
	*** 4.87993	47.71	ADV	34.1	-31.4	-7.96	42.45	54	-11.55	-	-	240	102	V
6	*** 7.3207	54.66	PK2	35.6	-29.2	0	61.06	-	-	74	-12.94	229	386	V
	*** 7.32063	48.12	ADV	35.6	-29.2	-7.96	46.56	54	-7.44	-	-	229	386	V

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

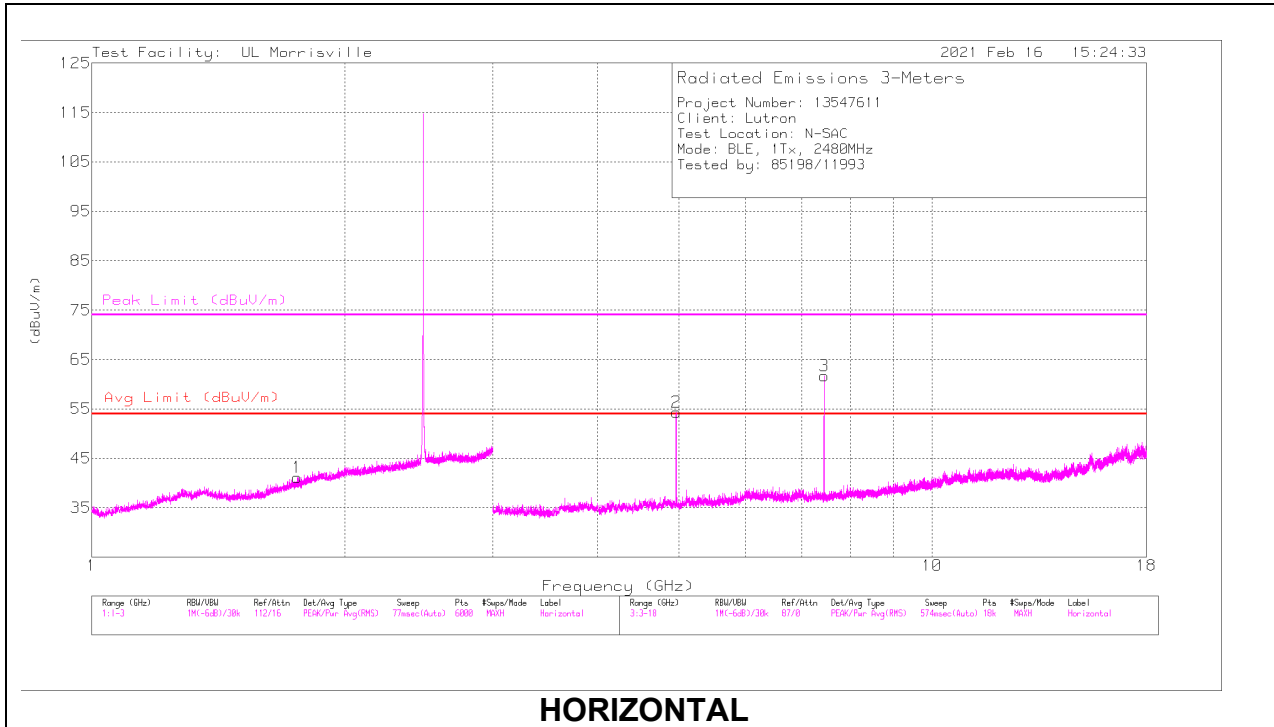
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

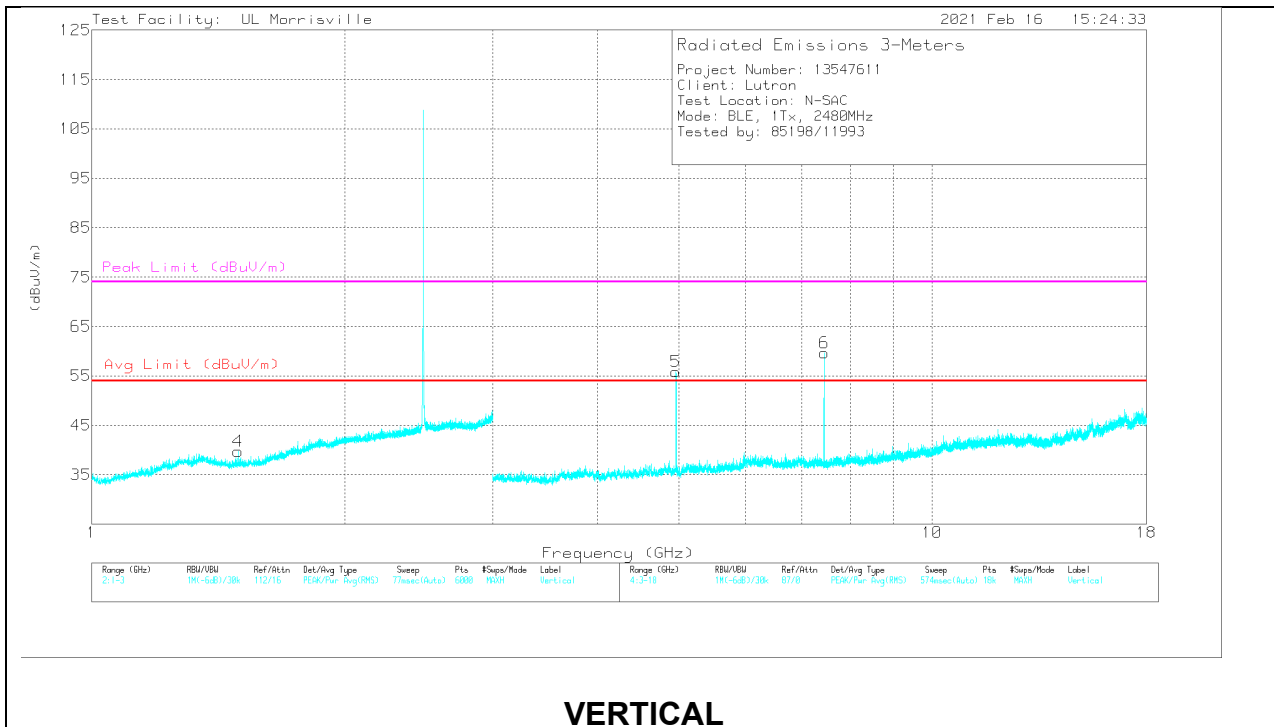
ADV - Linear Voltage Average

Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Real Life Duty Cycle Correction	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	** 1.75579	35.89	Pk	29.6	-24.4	0	41.09	-	-	-	-	0-360	101	H
4	*** 1.49367	40.79	PK2	27.8	-24.8	0	43.79	-	-	74	-30.21	268	353	V
	*** 1.4932	28.06	ADV	27.8	-24.8	-7.96	23.10	54	-30.90	-	-	268	353	V
2	*** 4.96054	56.46	PK2	34.1	-32.4	0	58.16	-	-	74	-15.84	322	110	H
	*** 4.96013	48.14	ADV	34.1	-32.4	-7.96	41.88	54	-12.12	-	-	322	110	H
3	*** 7.44071	58.55	PK2	35.7	-29.3	0	64.95	-	-	74	-9.05	254	101	H
	*** 7.43947	52.53	ADV	35.7	-29.3	-7.96	50.97	54	-3.03	-	-	254	101	H
5	*** 4.96058	56.04	PK2	34.1	-32.4	0	57.74	-	-	74	-16.26	227	211	V
	*** 4.96004	47.27	ADV	34.1	-32.4	-7.96	41.01	54	-12.99	-	-	227	211	V
6	*** 7.43917	54.64	PK2	35.8	-29.3	0	61.14	-	-	74	-12.86	286	102	V
	*** 7.43944	48.36	ADV	35.7	-29.3	-7.96	46.80	54	-7.20	-	-	286	102	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

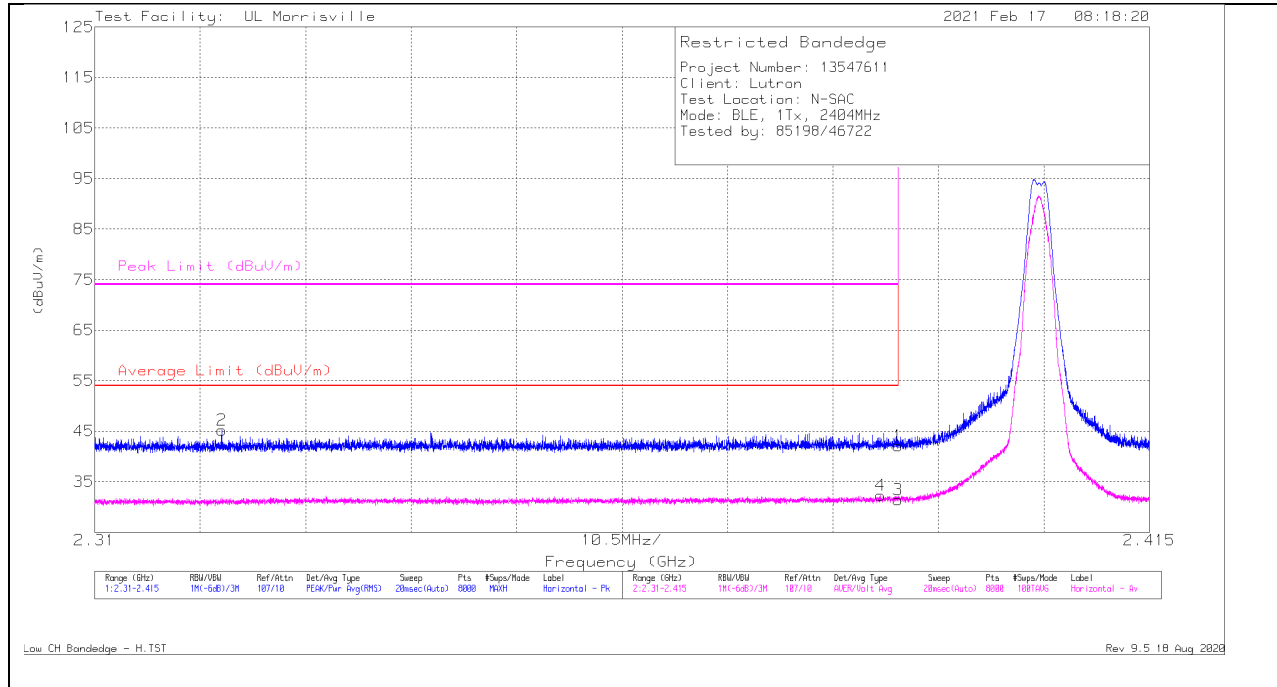
Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

10.2.2. BLE (2Mbps)

Antenna 1

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr/ Pad (dB)	Real Life Duty Cycle Correction	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	34.66	Pk	31.8	-24.4	0	42.06	-	-	74	-31.94	248	269	H
3	*** 2.39	24.06	ADV	31.8	-24.4	-7.96	23.50	54	-30.50	-	-	248	269	H
2	*** 2.32263	37.92	Pk	31.7	-24.4	0	45.22	-	-	74	-28.78	248	269	H
4	*** 2.38824	24.87	ADV	31.8	-24.4	-7.96	24.31	54	-29.69	-	-	248	269	H

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

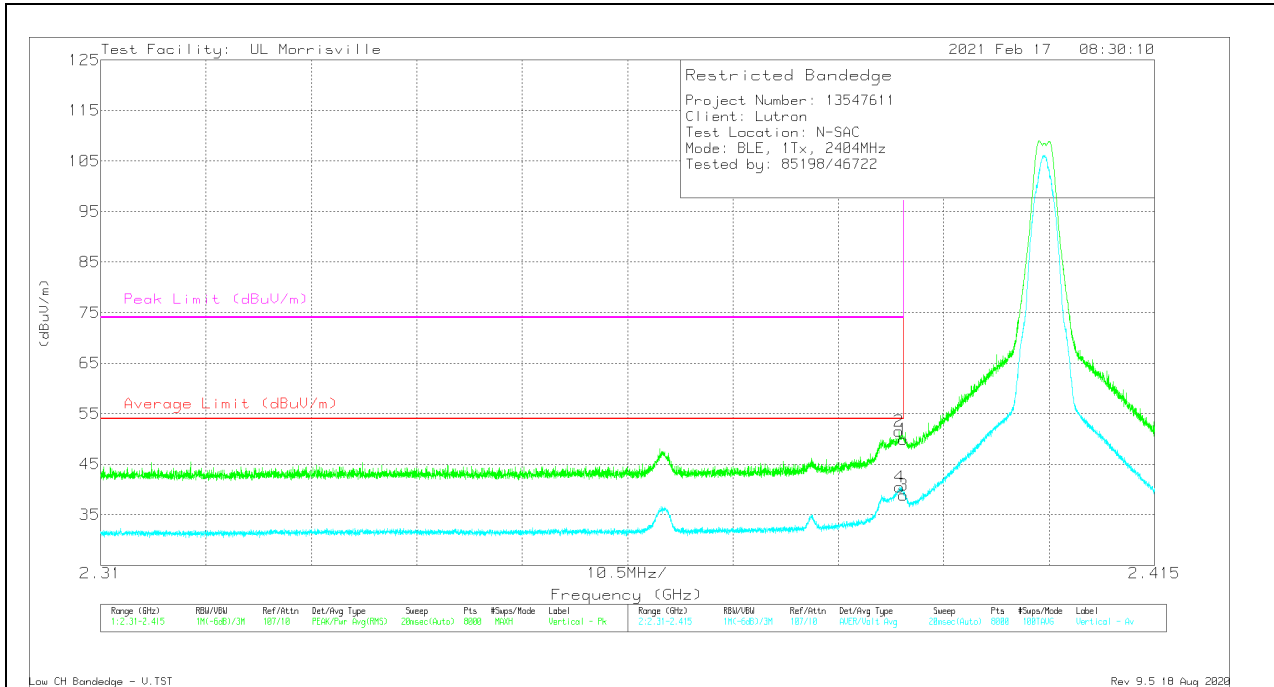
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

Note - A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

VERTICAL RESULT



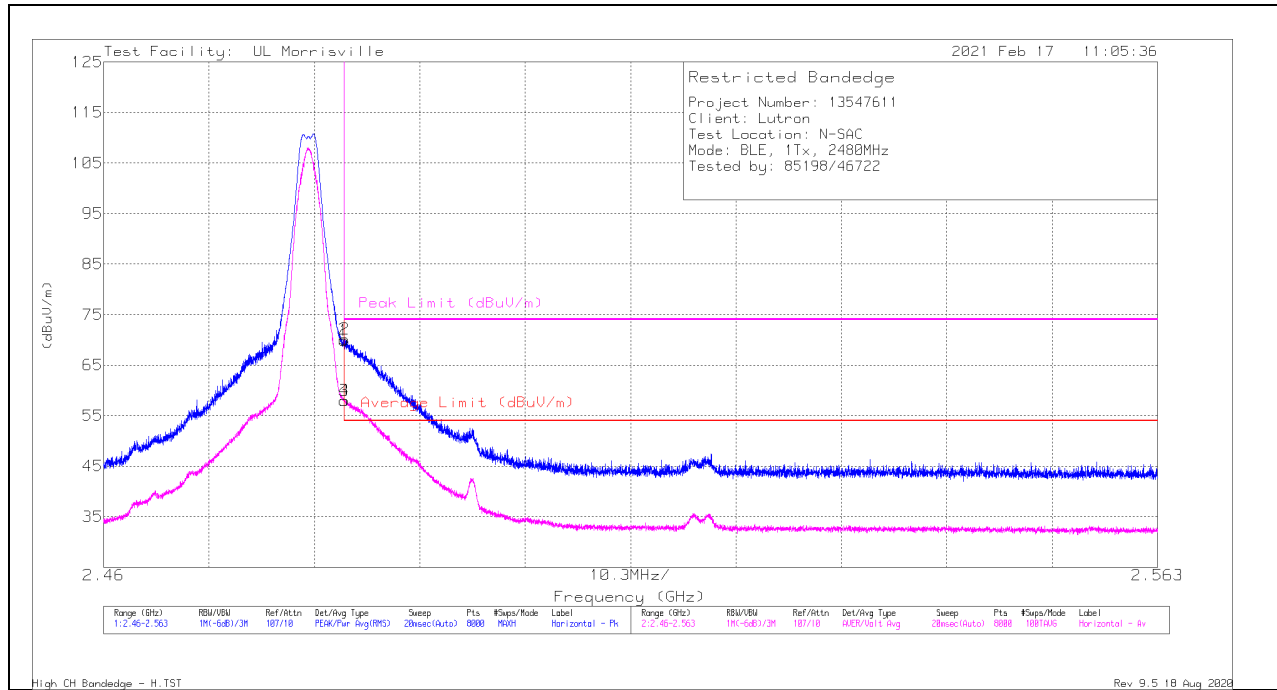
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Real Life Duty Cycle Correction	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	42.48	Pk	31.8	-24.4	0	49.88	-	-	74	-24.12	229	105	V
3	*** 2.39	31.46	ADV	31.8	-24.4	-7.96	30.90	54	-23.10	-	-	229	105	V
2	** 2.38956	44.09	Pk	31.8	-24.4	0	51.49	-	-	74	-22.51	229	105	V
4	** 2.3896	33.09	ADV	31.8	-24.4	-7.96	32.53	54	-21.47	-	-	229	105	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 – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Real Life Duty Cycle Correction	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.4835	61.83	Pk	32.4	-24.3	0	69.93	-	-	74	-4.07	343	256	H
3	* ** 2.4835	49.86	ADV	32.4	-24.3	-7.96	50.00	54	-4.00	-	-	343	256	H
2	* ** 2.48353	62.03	Pk	32.4	-24.3	0	70.13	-	-	74	-3.87	343	256	H
4	* ** 2.48353	49.93	ADV	32.4	-24.3	-7.96	50.07	54	-3.93	-	-	343	256	H

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

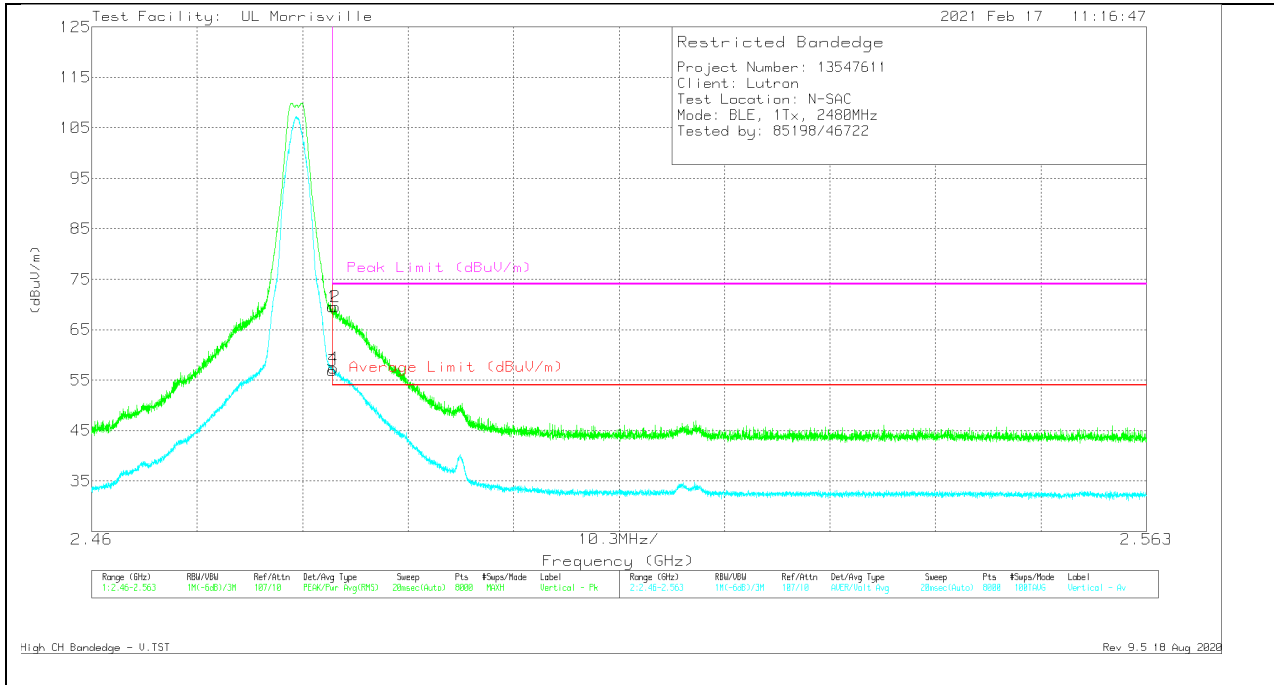
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

VERTICAL RESULT



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Real Life Duty Cycle Correction	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.4835	61.42	Pk	32.4	-24.3	0	69.52	-	-	74	-4.48	52	364	V
3	*** 2.4835	48.82	ADV	32.4	-24.3	-7.96	48.96	54	-5.04	-	-	52	363	V
2	*** 2.48382	61.44	Pk	32.4	-24.3	0	69.54	-	-	74	-4.46	52	364	V
4	*** 2.48359	49.22	ADV	32.4	-24.3	-7.96	49.36	54	-4.64	-	-	52	363	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

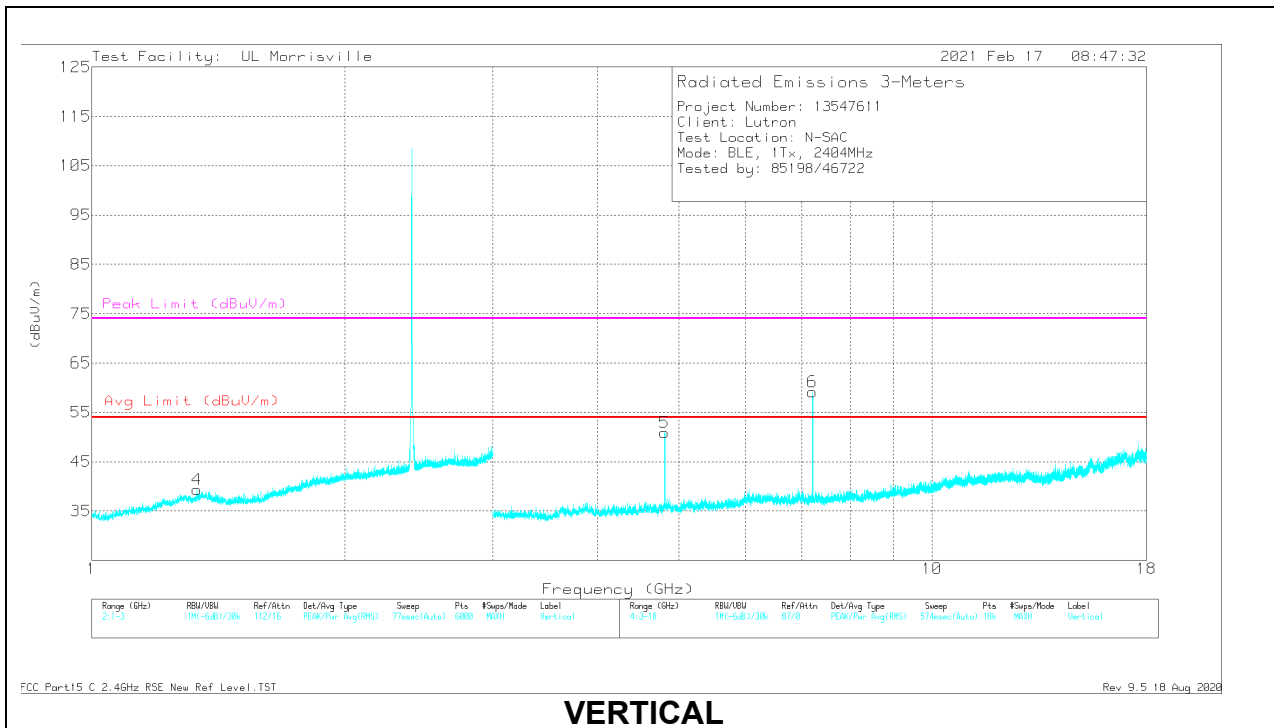
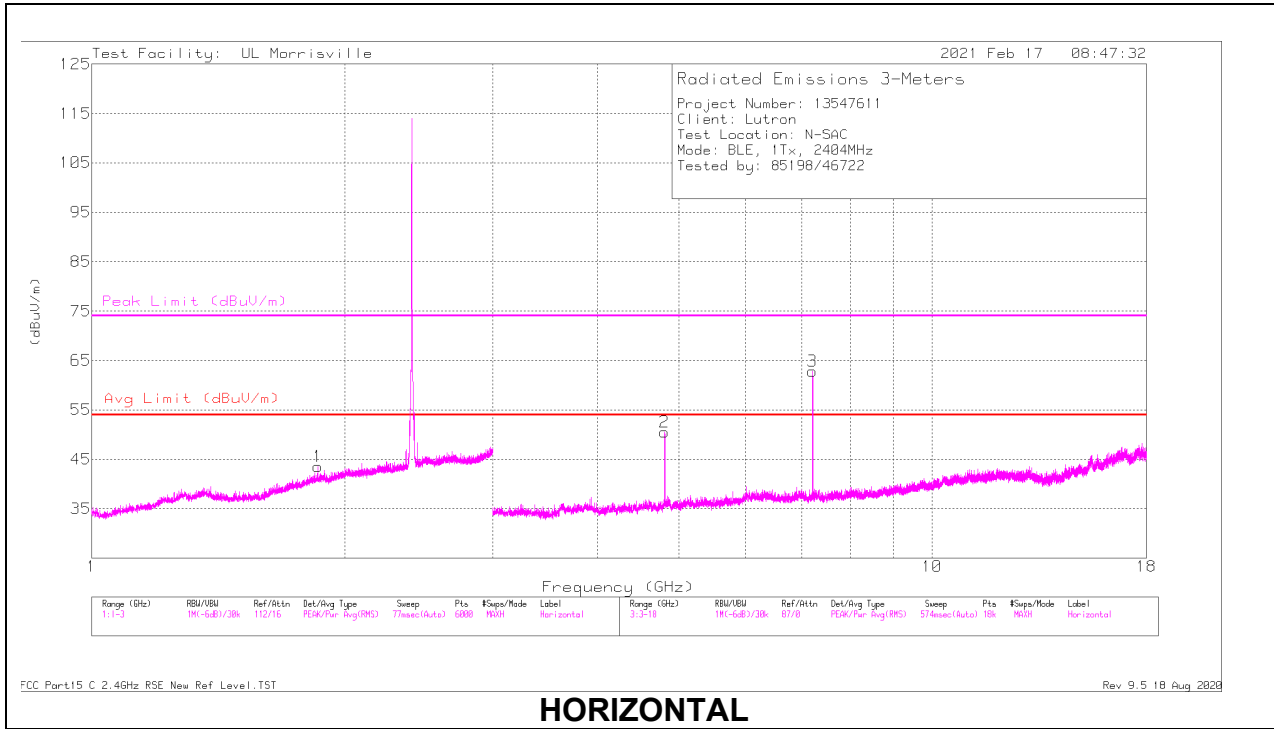
Pk - Peak detector

ADV - Linear Voltage Average

Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr/ Pad (dB)	Real Life Duty Cycle Correction	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	** 1.85848	36.94	Pk	30.9	-24.3	0	43.54	-	-	-	-	0-360	200	H
4	* ** 1.33401	40.68	PK2	29.2	-25.4	0	44.48	-	-	74	-29.52	307	333	V
	* ** 1.33665	27.63	ADV	29.3	-25.4	-7.96	23.57	54	-30.43	-	-	307	333	V
2	* ** 4.8089	51.85	PK2	34.2	-31.5	0	54.55	-	-	74	-19.45	298	119	H
	* ** 4.80888	42.22	ADV	34.2	-31.5	-7.96	36.96	54	-17.04	-	-	298	119	H
5	* ** 4.80896	53.98	PK2	34.2	-31.5	0	56.68	-	-	74	-17.32	243	251	V
	* ** 4.8089	45.83	ADV	34.2	-31.5	-7.96	40.57	54	-13.43	-	-	243	251	V
3	7.21024	57.04	Pk	35.7	-29.9	0	62.84	-	-	-	-	0-360	101	H
6	7.21024	53.36	Pk	35.7	-29.9	0	59.16	-	-	-	-	0-360	101	V

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

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

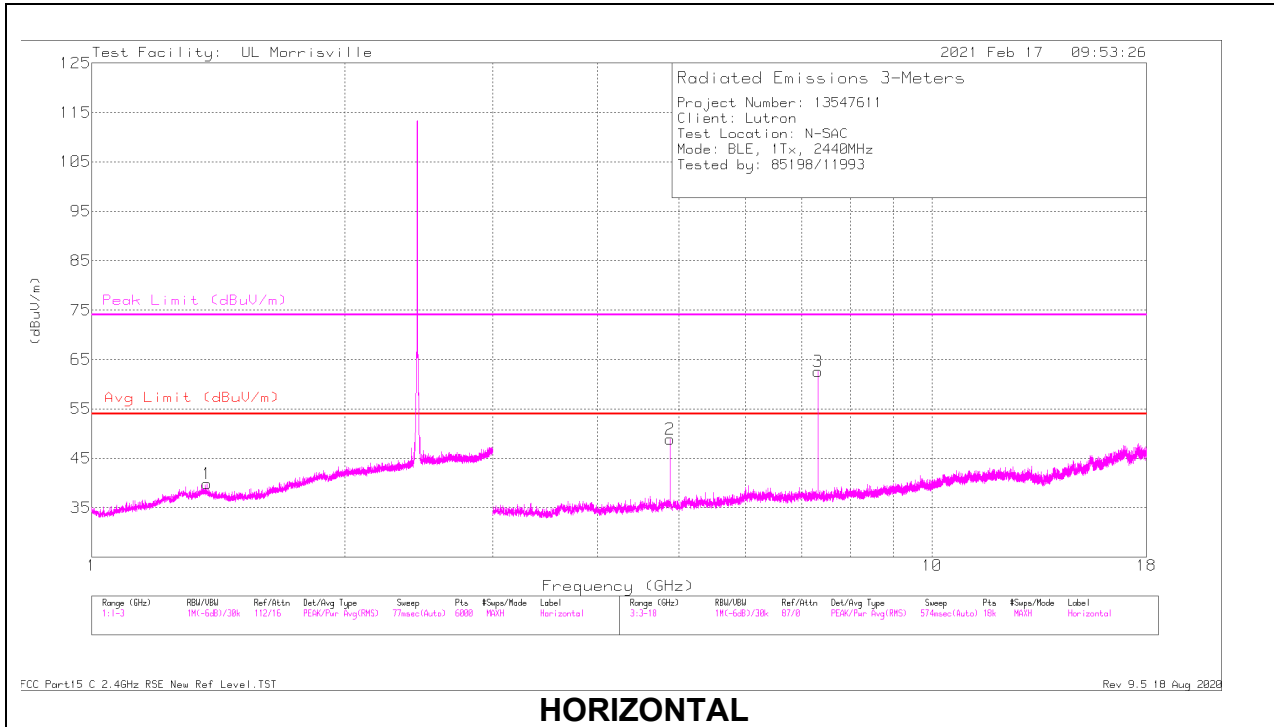
Pk - Peak detector

PK2 - Maximum Peak

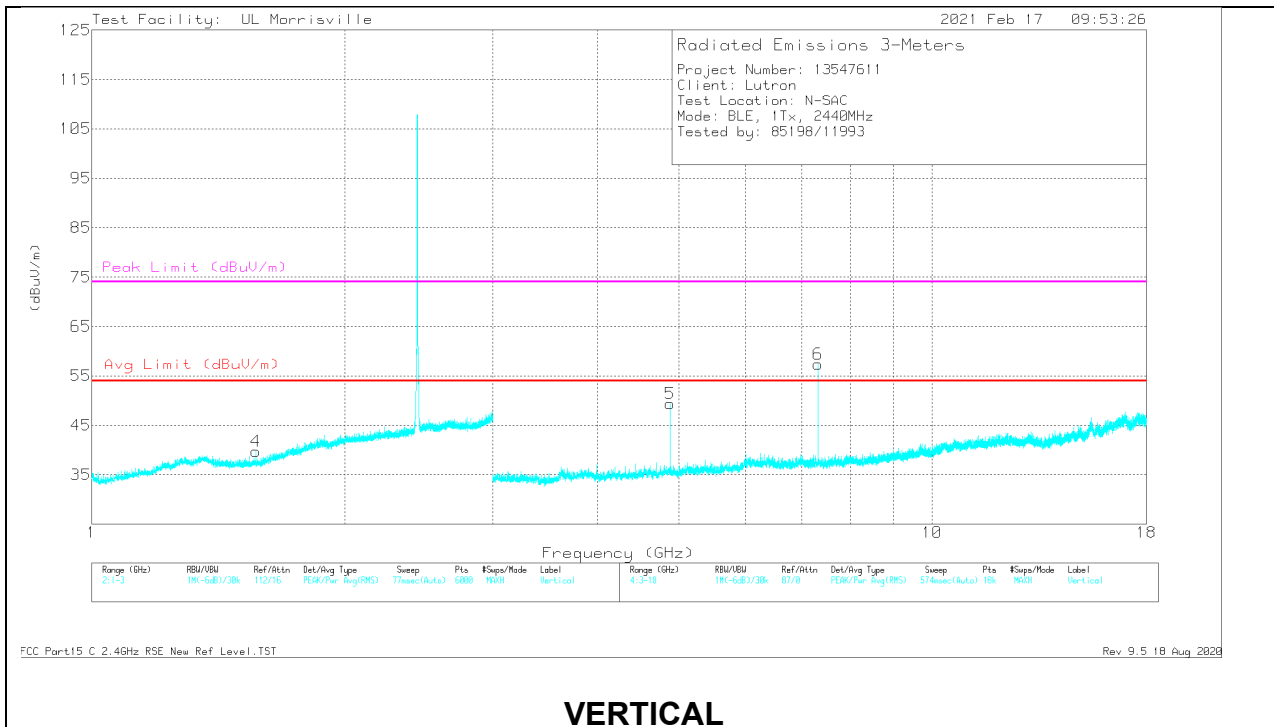
ADV - Linear Voltage Average

Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Filtr/P ad (dB)	Real Life Duty Cycle Correction	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 1.37364	40.77	PK2	29.3	-25.4	0	44.67	-	-	74	-29.33	12	166	H
	*** 1.36737	27.97	ADV	29.5	-25.3	-7.96	24.21	54	-29.79	-	-	12	166	H
4	*** 1.56971	41.13	PK2	27.7	-24.6	0	44.23	-	-	74	-29.77	200	267	V
	*** 1.56873	28.04	ADV	27.7	-24.6	-7.96	23.18	54	-30.82	-	-	200	267	V
2	*** 4.87907	52.8	PK2	34.1	-31.4	0	55.50	-	-	74	-18.5	295	105	H
	*** 4.88092	43.12	ADV	34.1	-31.4	-7.96	37.86	54	-16.14	-	-	295	105	H
3	*** 7.31855	58.67	PK2	35.6	-29.3	0	64.97	-	-	74	-9.03	249	101	H
	*** 7.31885	51.61	ADV	35.6	-29.3	-7.96	49.95	54	-4.05	-	-	249	101	H
5	*** 4.87905	54.14	PK2	34.1	-31.4	0	56.84	-	-	74	-17.16	239	102	V
	*** 4.88089	42.96	ADV	34.1	-31.4	-7.96	37.70	54	-16.30	-	-	239	102	V
6	*** 7.31846	54.43	PK2	35.6	-29.3	0	60.73	-	-	74	-13.27	235	381	V
	*** 7.3188	47.06	ADV	35.6	-29.3	-7.96	45.40	54	-8.60	-	-	235	381	V

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

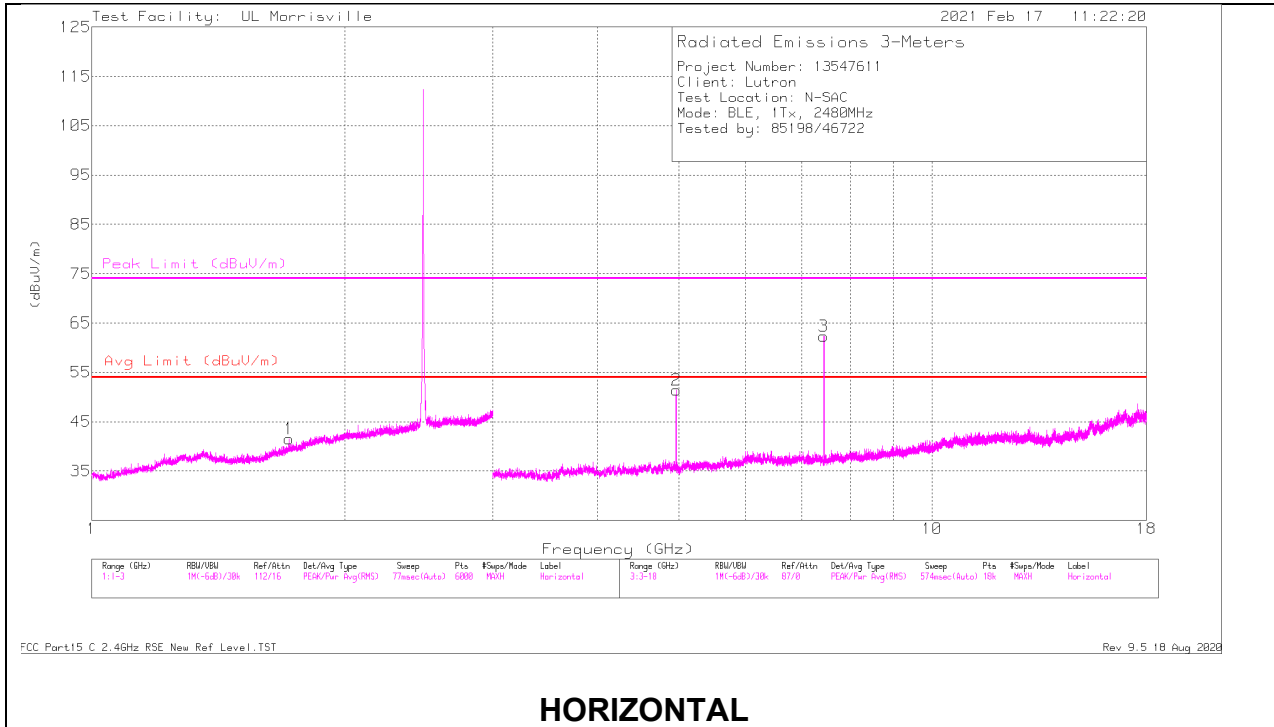
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

PK2 - Maximum Peak

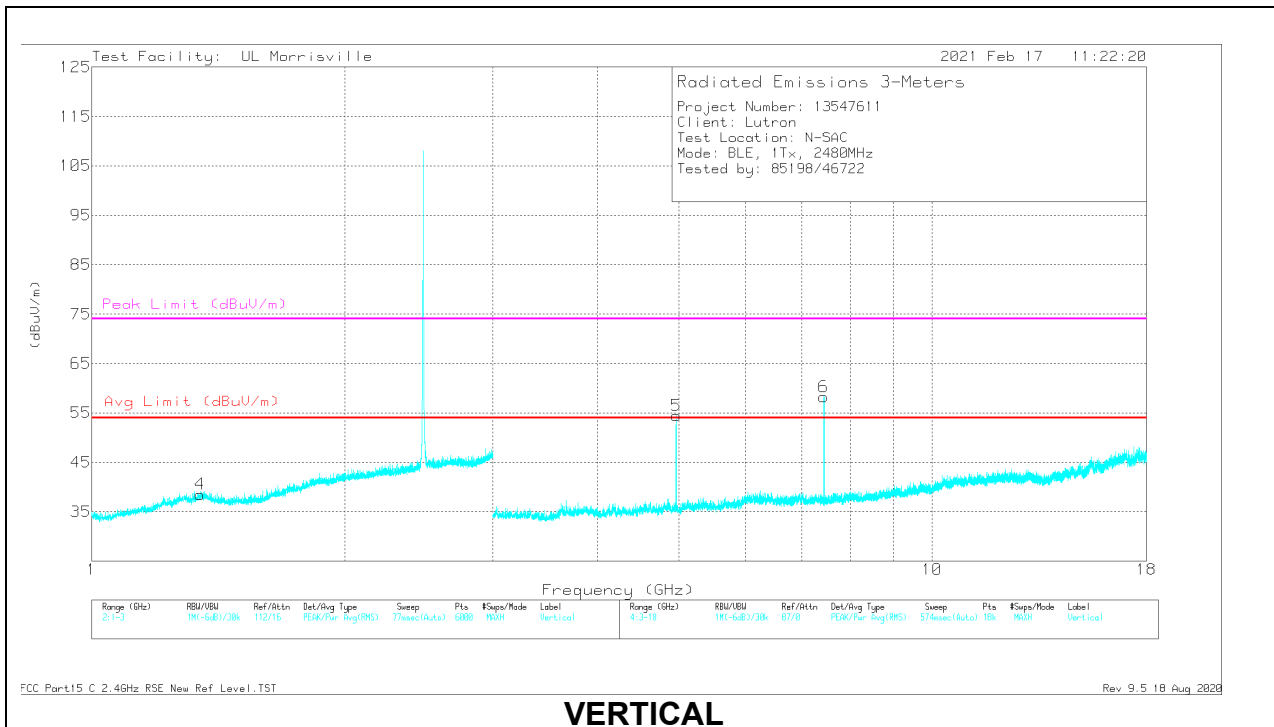
ADV - Linear Voltage Average

Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Real Life Duty Cycle Correction	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	** 1.71612	36.38	Pk	29.4	-24.3	0	41.48	-	-	-	-	0-360	200	H
4	* ** 1.34722	41.05	PK2	29.4	-25.3	0	45.15	-	-	74	-28.85	71	325	V
	* ** 1.348	27.86	ADV	29.4	-25.3	-7.96	24.00	54	-30.00	-	-	71	325	V
2	* ** 4.95911	56.19	PK2	34.1	-32.3	0	57.99	-	-	74	-16.01	314	103	H
	* ** 4.961	46.3	ADV	34.1	-32.4	-7.96	40.04	54	-13.96	-	-	314	103	H
3	* ** 7.4386	58.14	PK2	35.7	-29.3	0	64.54	-	-	74	-9.46	250	102	H
	* ** 7.44124	51.14	ADV	35.7	-29.3	-7.96	49.58	54	-4.42	-	-	250	102	H
5	* ** 4.95903	58.5	PK2	34.1	-32.3	0	60.30	-	-	74	-13.7	259	108	V
	* ** 4.96099	46.96	ADV	34.1	-32.4	-7.96	40.70	54	-13.30	-	-	259	108	V
6	* ** 7.43856	53.84	PK2	35.7	-29.3	0	60.24	-	-	74	-13.76	251	102	V
	* ** 7.44126	46.61	ADV	35.7	-29.3	-7.96	45.05	54	-8.95	-	-	251	102	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

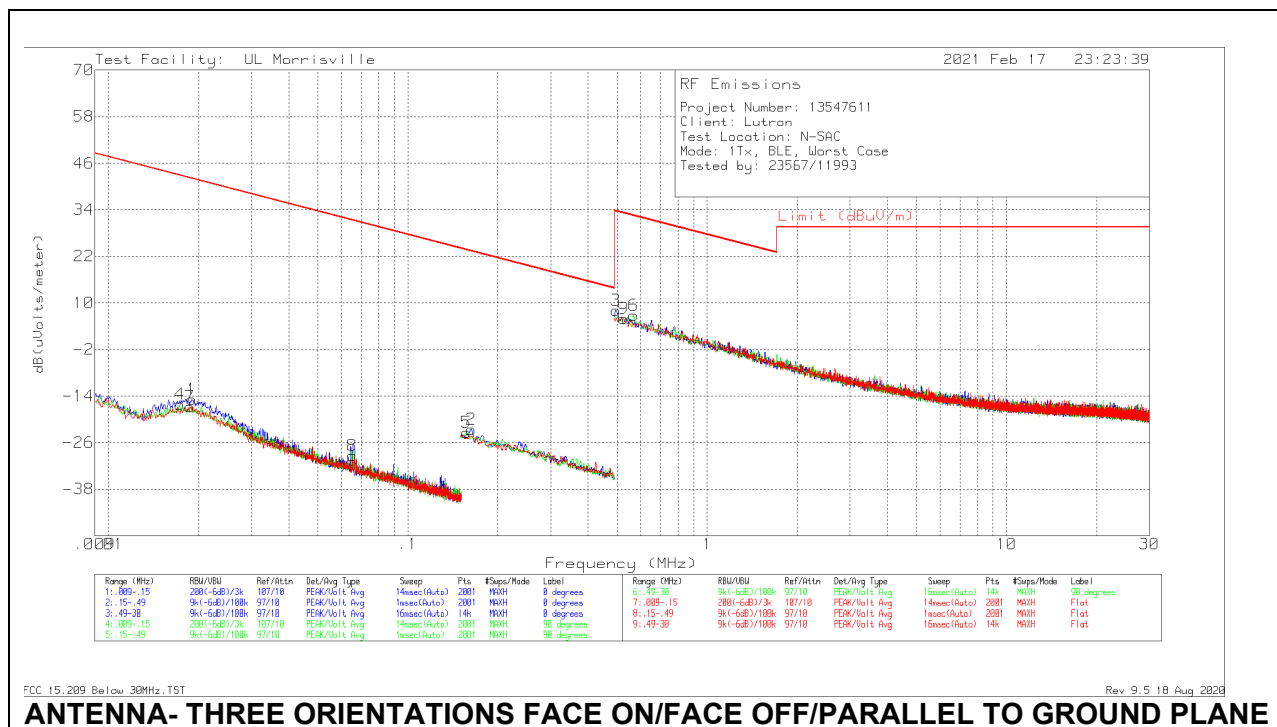
Note – A DCCF of -7.96 was applied to the average measurement based on KDB 558074 D01 15.247 Meas Guidance v05r02 FAQ #3. See note in section 9.1

10.3. WORST CASE BELOW 30MHZ

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 $40 \cdot \log(\text{test distance} / \text{specification distance})$.

The below 30 MHz limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω . For example, the measurement frequency 17.31 kHz resulted in a level of -16.18 dBuV/m, which is equivalent to $-16.18 - 51.5 = -67.68$ dBuA/m, which has the same margin, -59.02 dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)



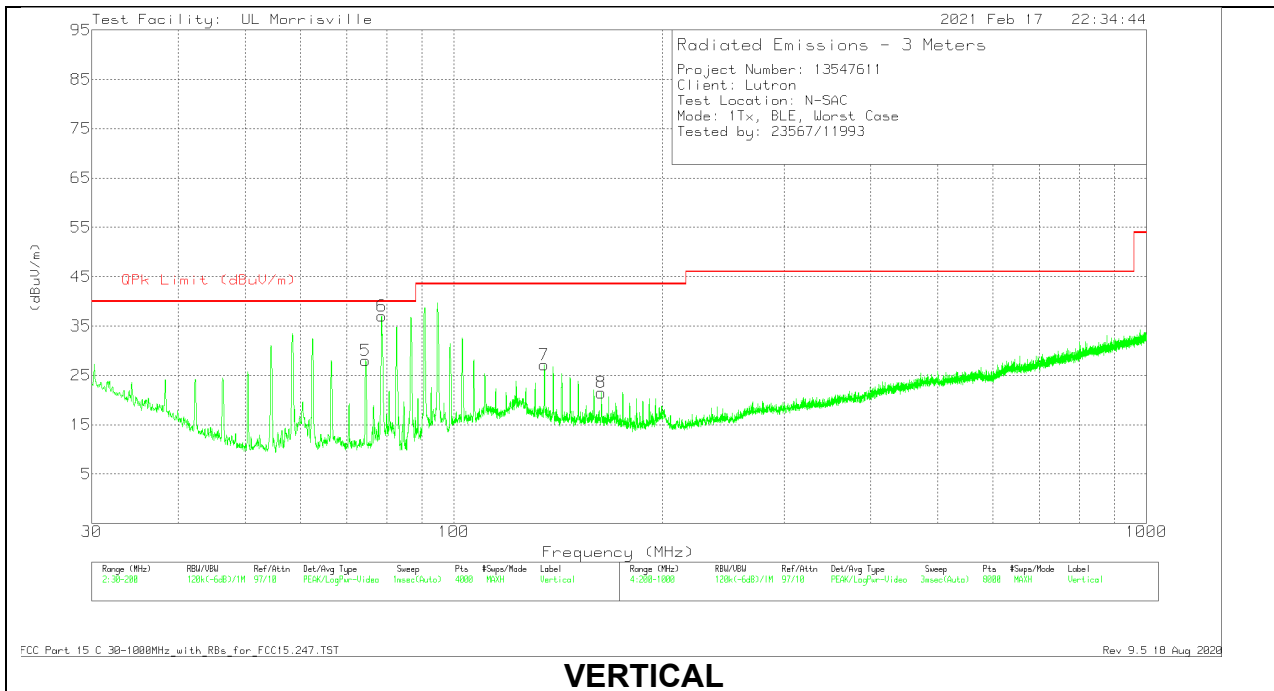
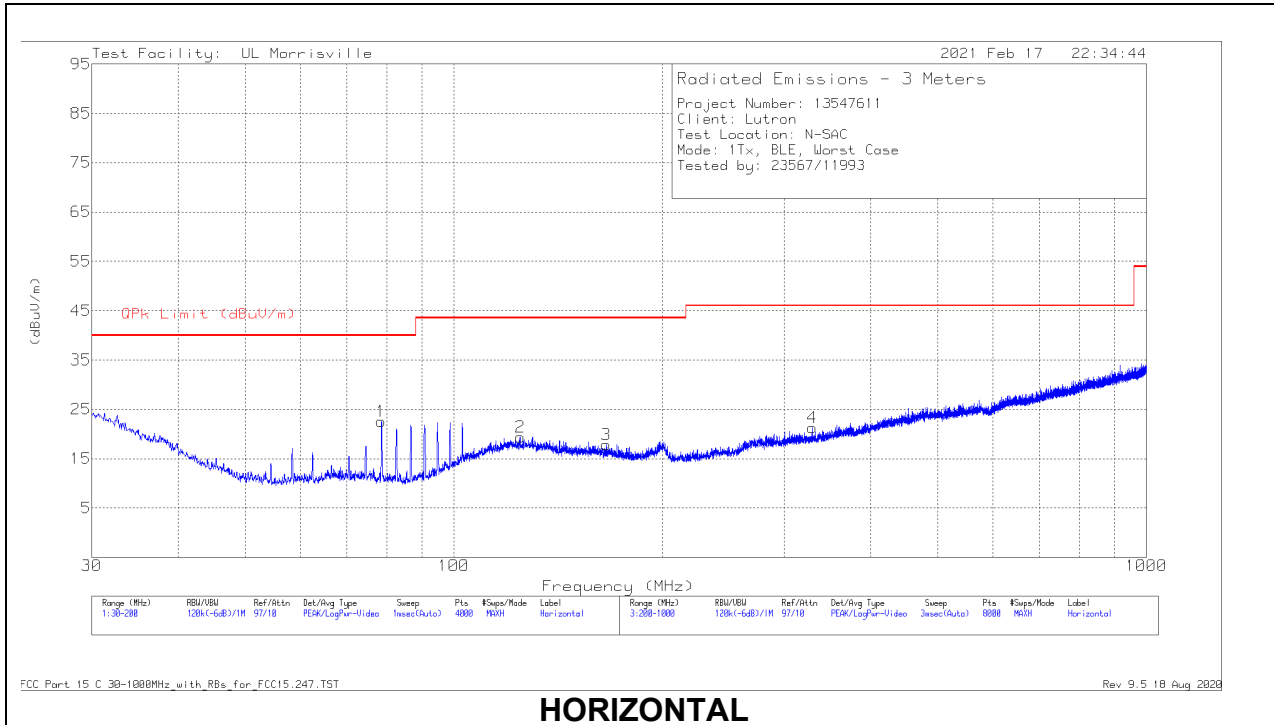
Below 30MHz Data

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/Avg Limit (dBuV/m)	FCC 15.209 Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Antenna Position
4	.01731	48.92	Pk	14.8	.1	-80	-16.18	42.84	62.84	-59.02	0-360	Face Off
7	.01873	48.93	Pk	14.2	.1	-80	-16.77	42.16	62.16	-58.93	0-360	Flat
1	.01901	50.96	Pk	14.1	.1	-80	-14.84	42.02	62.02	-56.86	0-360	Face On
8	.0653	39.28	Pk	11.3	.1	-80	-29.32	31.31	51.31	-60.63	0-360	Flat
5	.15706	45.65	Pk	10.8	.1	-80	-23.45	23.68	53.68	-47.13	0-360	Face Off
2	.16267	46.51	Pk	10.8	.1	-80	-22.59	23.38	53.38	-45.97	0-360	Face On
3	.49632	37.15	Pk	10.8	.2	-40	8.15	33.69	-	-25.54	0-360	Face On
9	.52584	35.02	Pk	10.8	.2	-40	6.02	33.19	-	-27.17	0-360	Flat
6	.56694	35.75	Pk	10.8	.2	-40	6.75	32.53	-	-25.78	0-360	Flat Off

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	AT0074 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	*** 124.6295	29.45	Pk	20	-30.1	19.35	43.52	-24.17	0-360	300	H
3	*** 165.8652	29.33	Pk	18.2	-29.7	17.83	43.52	-25.69	0-360	99	H
5	*** 74.594	44.8	Pk	14	-30.8	28	40	-12	0-360	101	V
7	*** 135.0872	37.65	Pk	19.5	-30	27.15	43.52	-16.37	0-360	101	V
8	*** 163.272	32.88	Pk	18.4	-29.8	21.48	43.52	-22.04	0-360	101	V
4	*** 329.0168	29.46	Pk	20.1	-28.3	21.26	46.02	-24.76	0-360	400	H
1	78.5901	39.6	Pk	13.7	-30.7	22.6	-	-	0-360	300	H
6	78.6326	54.01	Pk	13.7	-30.7	37.01	-	-	0-360	101	V

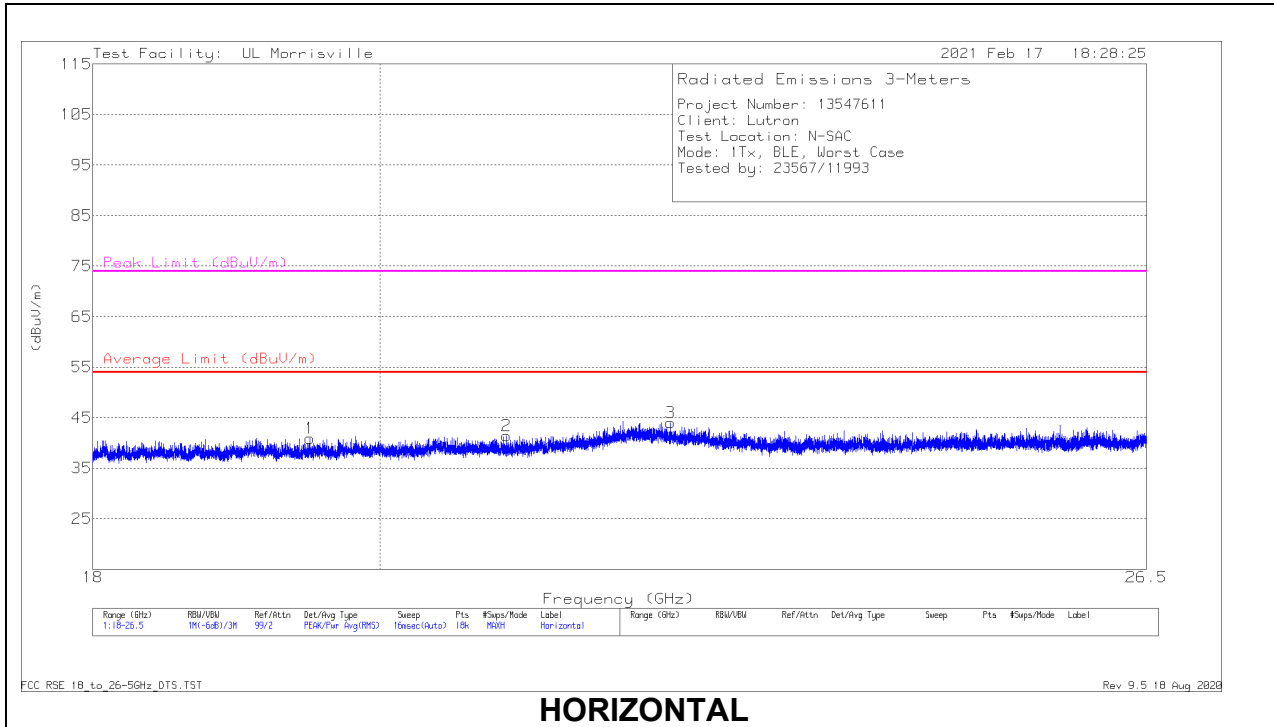
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

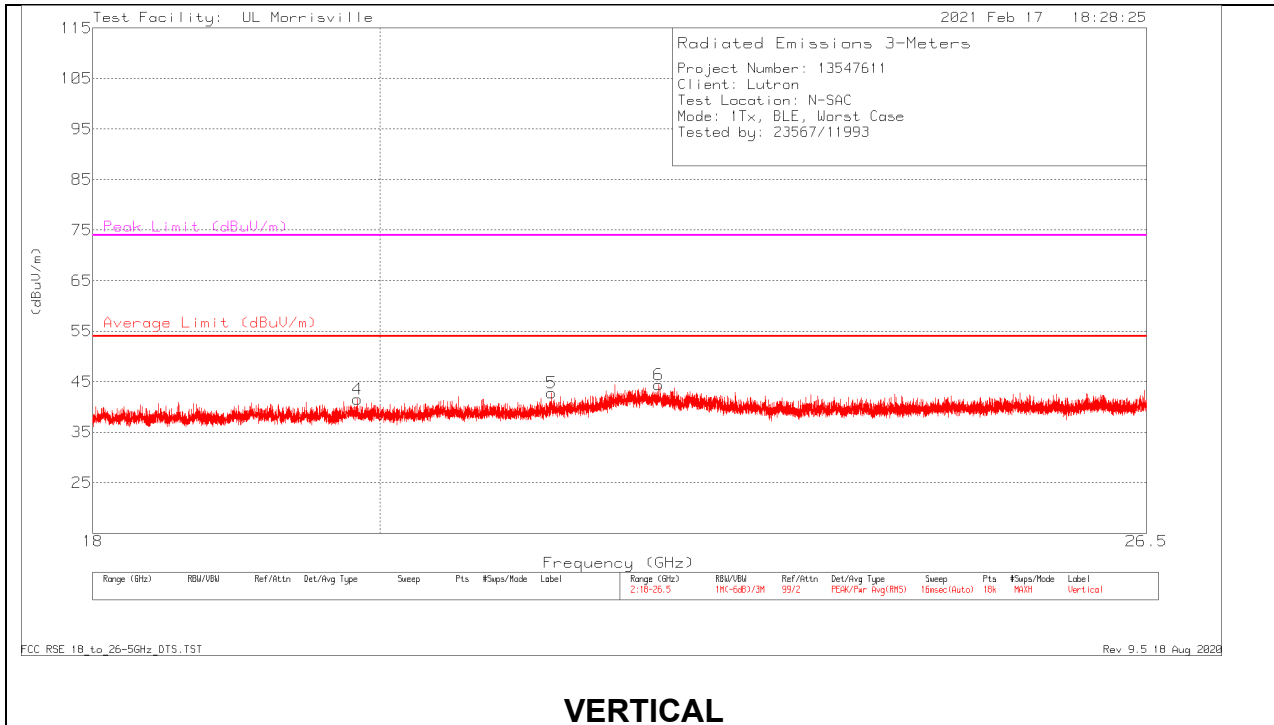
Pk - Peak detector

10.5. WORST CASE 18-26 GHZ

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



HORIZONTAL



VERTICAL

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	* ** 19.49278	48.26	Pk	33.5	-40.8	40.96	54	-13.04	74	-33.04	0-360	150	H
2	* ** 20.95249	48.2	Pk	34.2	-41	41.4	54	-12.6	74	-32.6	0-360	101	H
3	* ** 22.25448	48.38	Pk	36.6	-41	43.98	54	-10.02	74	-30.02	0-360	250	H
4	* ** 19.83846	48.54	Pk	33.6	-40.6	41.54	54	-12.46	74	-32.46	0-360	101	V
5	* ** 21.30149	49.33	Pk	34.5	-41	42.83	54	-11.17	74	-31.17	0-360	250	V
6	* ** 22.1572	48.48	Pk	36.7	-40.8	44.38	54	-9.62	74	-29.62	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

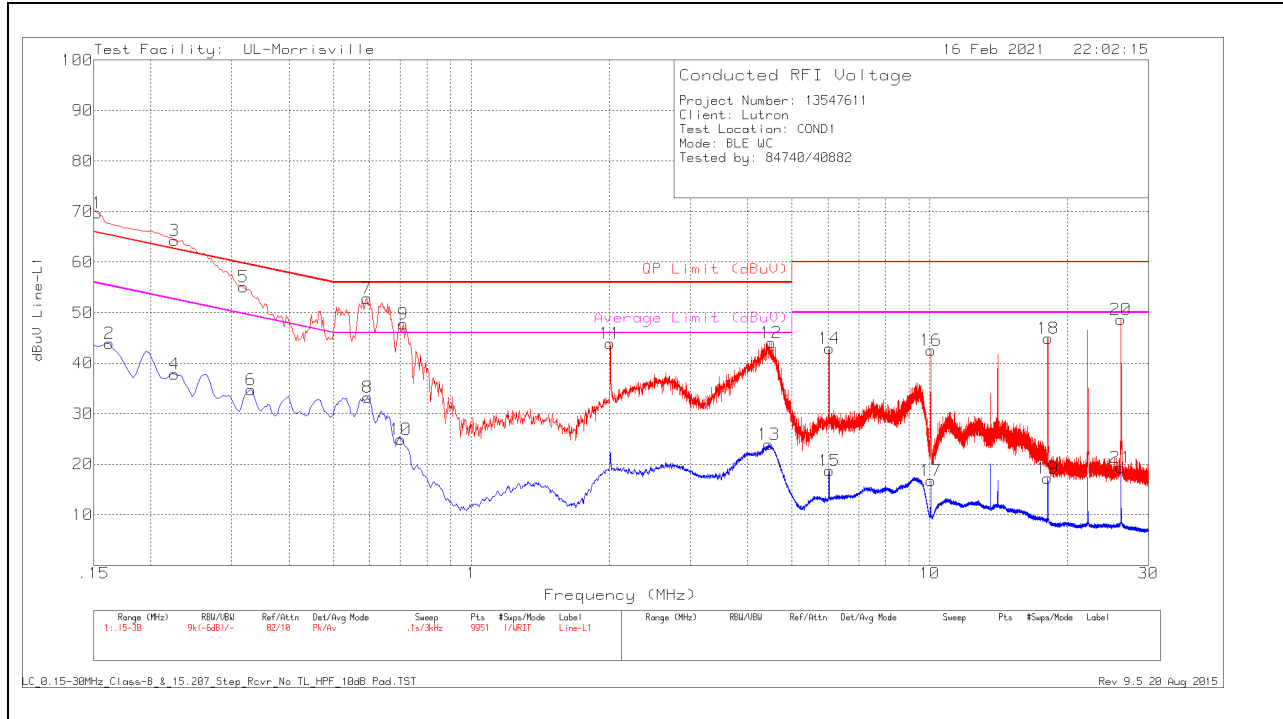
Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 [*]	56 to 46 [*]
0.5-5	56	46
5-30	60	50

^{*} Decreases with the logarithm of the frequency.

RESULTS

11.1. AC Power Line Host

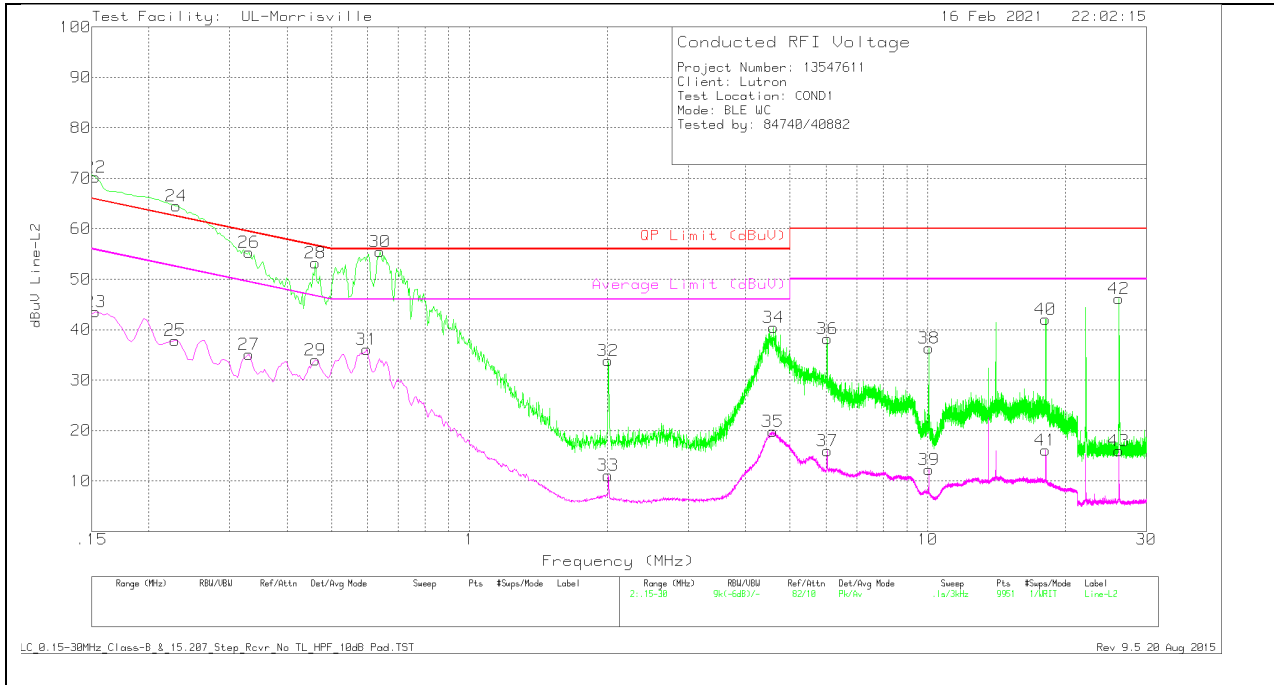
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Filter (dB)	Pad (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.15632	51.67	Qp	.2	1	9.9	62.77	65.66	-2.89	-	-
2	.162	32.88	Av	.2	.9	9.9	43.88	-	-	55.36	-11.48
3	.21132	47.96	Qp	.1	.7	9.9	58.66	63.15	-4.49	-	-
4	.225	27.15	Av	.1	.7	9.9	37.85	-	-	52.63	-14.78
5	.31762	37.73	Qp	.1	.5	9.9	48.23	59.77	-11.54	-	-
6	.33	24.33	Av	.1	.4	9.9	34.73	-	-	49.45	-14.72
7	.60061	37.13	Qp	0	.3	9.9	47.33	56	-8.67	-	-
8	.594	23.09	Av	0	.3	9.9	33.29	-	-	46	-12.71
9	.711	37.62	Pk	0	.2	9.9	47.72	56	-8.28	-	-
10	.702	14.78	Av	0	.2	9.9	24.88	-	-	46	-21.12
11	2.01	33.91	Pk	0	.1	9.9	43.91	56	-12.09	-	-
12	4.512	34.07	Pk	0	.1	9.9	44.07	56	-11.93	-	-
13	4.458	13.94	Av	0	.1	9.9	23.94	-	-	46	-22.06
14	6.033	32.8	Pk	.1	.1	9.9	42.9	60	-17.1	-	-
15	6.033	8.57	Av	.1	.1	9.9	18.67	-	-	50	-31.33
16	10.056	32.42	Pk	.1	.1	9.9	42.52	60	-17.48	-	-
17	10.056	6.67	Av	.1	.1	9.9	16.77	-	-	50	-33.23
18	18.102	34.72	Pk	.1	.2	9.9	44.92	60	-15.08	-	-
19	18.096	7.01	Av	.1	.2	9.9	17.21	-	-	50	-32.79
20	26.145	38.27	Pk	.3	.2	9.9	48.67	60	-11.33	-	-
21	26.139	8.89	Av	.3	.2	9.9	19.29	-	-	50	-30.71

Pk - Peak detector
 Av - Average detection
 Qp - Quasi-Peak detector

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Filter (dB)	Pad (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
22	.15558	52.04	Qp	.2	1	9.9	63.14	65.7	-2.56	-	-
23	.153	32.43	Av	.2	1	9.9	43.53	-	-	55.84	-12.31
24	.22529	47.49	Qp	.1	.7	9.9	58.19	62.62	-4.43	-	-
25	.228	27.29	Av	.1	.6	9.9	37.89	-	-	52.52	-14.63
26	.31952	38.17	Qp	.1	.5	9.9	48.67	59.72	-11.05	-	-
27	.33	24.72	Av	.1	.4	9.9	35.12	-	-	49.45	-14.33
28	.46204	35.03	Qp	.1	.3	9.9	45.33	56.66	-11.33	-	-
29	.462	23.66	Av	.1	.3	9.9	33.96	-	-	46.66	-12.7
30	.63313	39.47	Qp	0	.2	9.9	49.57	56	-6.43	-	-
31	.597	25.9	Av	0	.3	9.9	36.1	-	-	46	-9.9
32	2.01	23.91	Pk	0	.1	9.9	33.91	56	-22.09	-	-
33	2.01	1.08	Av	0	.1	9.9	11.08	-	-	46	-34.92
34	4.611	30.37	Pk	.1	.1	9.9	40.47	56	-15.53	-	-
35	4.587	9.72	Av	.1	.1	9.9	19.82	-	-	46	-26.18
36	6.036	28.16	Pk	.1	.1	9.9	38.26	60	-21.74	-	-
37	6.033	5.83	Av	.1	.1	9.9	15.93	-	-	50	-34.07
38	10.056	26.26	Pk	.1	.1	9.9	36.36	60	-23.64	-	-
39	10.056	2.14	Av	.1	.1	9.9	12.24	-	-	50	-37.76
40	18.093	31.9	Pk	.1	.2	9.9	42.1	60	-17.9	-	-
41	18.093	5.85	Av	.1	.2	9.9	16.05	-	-	50	-33.95
42	26.142	35.83	Pk	.2	.2	9.9	46.13	60	-13.87	-	-
43	26.139	5.65	Av	.2	.2	9.9	15.95	-	-	50	-34.05

Pk - Peak detector
 Av - Average detection
 Qp - Quasi-Peak detector

12. SETUP PHOTOS

Please refer to R13547611-EP1 for setup photos

END OF TEST REPORT