TEST REPORT

Report Number : R14259992-E1

Applicant	:	Lutron Electronics Co. Inc. 7200 Suter Road Coopersburg, PA 18036-1249, USA
Model	:	PKP1
FCC ID	:	JPZ0141
IC	:	2851A-JPZ0141
EUT Description	:	Dimmer
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C:2022 ISED RSS-247 ISSUE 2:2017 ISED RSS-GEN ISSUE 5 + A2:2021

Date Of Issue:
2022-05-10

Prepared by:
UL LLC
12 Laboratory Dr.
Research Triangle Park, NC 27709 U.S.A.
TEL: (919) 549-1400

ACCREDITED
CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
1	2022-05-06	Initial Issue	B. Kiewra
2	2022-05-10	Revised OBW data to match plots in section 9.3 Corrected title blocks on plots in Section 11.1.2 Updated model number	B. Kiewra

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	Lutron Electronics Co. Inc. 7200 Suter Road Coopersburg, PA 18036-1249
EUT DESCRIPTION:	Dimmer
MODEL:	PKP1
SERIAL NUMBER:	Non-Serialized
SAMPLE RECEIPT DATE:	2022-04-15
DATE TESTED:	2022-04-28 to 2022-05-05

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	See Section 2
ISED RSS-247 Issue 2	See Section 2
ISED RSS-GEN Issue 5 + A2	See Section 2

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 a2La, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released
For UL LLC By:

Mike Antola
Staff Engineer
Consumer Technology Division
UL LLC

Prepared By:

B. Kiewra
Project Engineer
Consumer Technology Division
UL LLC

2. TEST RESULTS SUMMARY

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

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
-	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.3.
15.247 (a) (2)	RSS-247 5.2 (a)	6dB BW	Compliant	None
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power		
See Comment		Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	RSS-247 5.2 (b)	PSD	Compliant	None
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions		
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions		
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions		

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5 + A1, and RSS-247 Issue 2.

4. FACILITIES AND ACCREDITATION

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

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

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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a dimmer.

6.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	13.55	22.65
2405 - 2480	802.15.4	18.12	64.86

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:
The radio utilizes an monopole antenna, with a maximum gain of -2dBi.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was v0799905
The test utility software used during testing was "LutronRadioCertificationGUIv1.1.2"

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 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. Harmonics and spurious performed on BLE at 1Mbps only as worst-case based on power/PSD.

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.

Note: Bulb(load) is off as a dimmer is considered and incidental radiator.

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

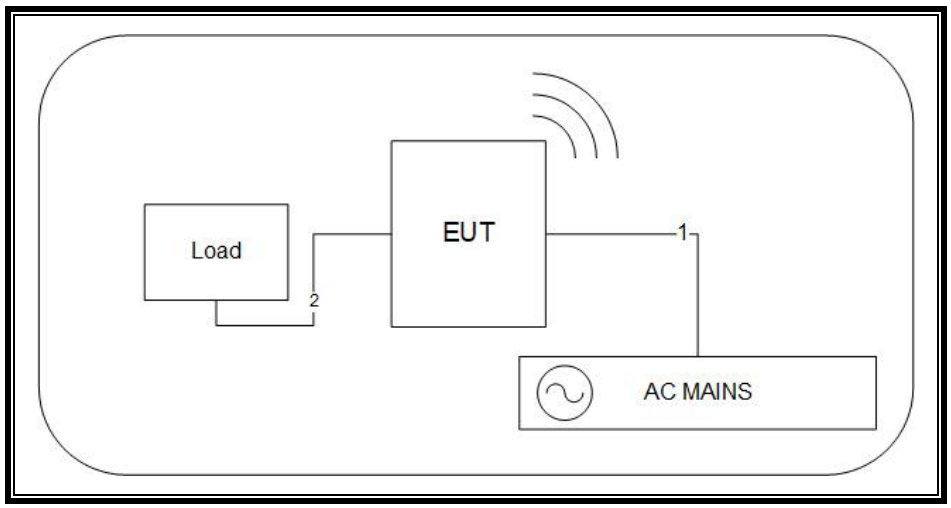
Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	HP	11-ah112dx	5CD8294MZY	TX2-RTL8822BE
Power Supply	HP	HSTNN-DA40	WFTLD0CM146SN1	NA

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	1	1	Quick connect	Single conductor	<1m	Connects to AC Power
2	1	1	Quick connect	Single conductor	<1m	Connects to Load

SETUP DIAGRAMS

Please refer to R14259992-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
ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

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

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

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

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

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

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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.
SA0026	Spectrum Analyzer	Keysight Technologies	N9030A	2021-07-26	2022-07-26
PWM002 (PRE0137344)	RF Power Meter	Keysight Technologies	N1911A	2021-06-17	2022-06-17
PWS005	Peak and Avg Power Sensor, 50MHz to 6GHz	Keysight Technologies	N1921A	2021-05-27	2022-05-27
HI0090	Environmental Meter	Fisher Scientific	15-077-963	2021-07-12	2022-07-12
SOFTEMI	Antenna Port Software	UL	Version 2022.4.22	NA	NA

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

Equipment ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
1-18 GHz					
AT0069	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2021-06-29	2022-06-29
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	2022-02-15	2023-02-15
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
s/n 210701941	Environmental Meter	Fisher Scientific	15-077-963	2021-8-16	2023-08-16

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

Equipment ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
0.009-30MHz					
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2021-08-19	2022-08-19
30-1000 MHz					
AT0073	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2021-08-30	2022-08-30
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	2021-11-04	2021-11-04	2022-11-04
Gain-Loss Chains					
C2-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2021-07-09	2022-07-09
C2-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2021-07-09	2022-07-09
C2-SAC03	Gain-loss string: 1-18GHz	Various	Various	2021-07-09	2022-07-09
C2-SAC04	Gain-loss string: 18-40GHz	Various	Various	2021-07-09	2022-07-09
Receiver & Software					
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2022-03-08	2023-03-08
SA0020	Spectrum Analyzer	Agilent	E4446A	2021-05-25	2022-05-25
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
s/n 181474409	Environmental Meter	Fisher Scientific	15-077-963	2021-09-27	2022-09-27

Note: All equipment in calibration at time of use.

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	2022-04-05	2023-04-05
HI0091	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
PS216	AC Power Source	Elgar	CW2501M (s/n 1045A04231)	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
HPF017	100kHz High-pass Filter	Solar Electronics Co.	7801-100	2022-04-05	2023-04-05
ATTEN007	DC-18GHz 10dB Pad	Mini Circuits Labs	BW-N10W5+	2022-04-05	2023-04-05

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

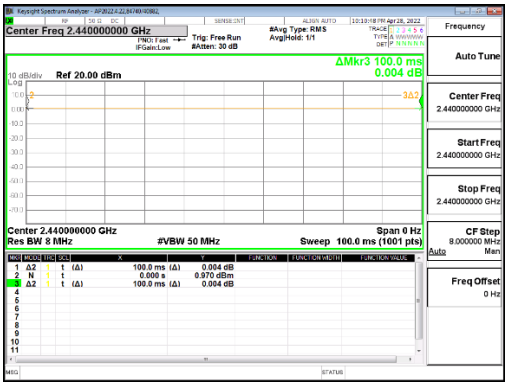
LIMITS

None; for reporting purposes only.

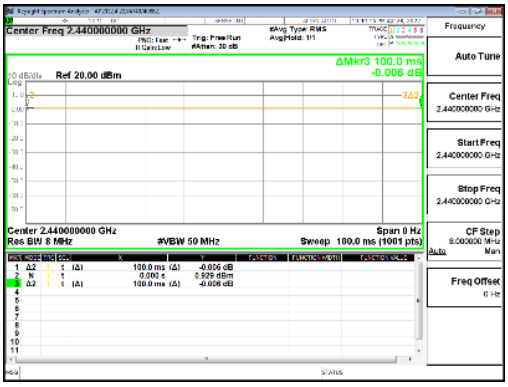
PROCEDURE

ANSI C63.10 Section 11.6

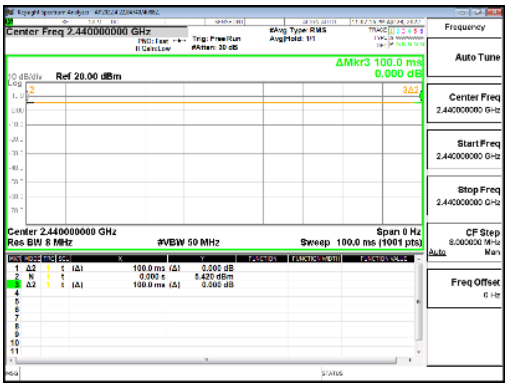
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
BLE - 1Mbps	100	100	1.00	100.0%	0.00	0.010
BLE - 2Mbps	100	100	1.00	100.0%	0.00	0.010
802.15.4	100	100	1.00	100.0%	0.00	0.010



DUTY CYCLE BLE 1Mbps



DUTY CYCLE BLE 2Mbps



DUTY CYCLE 802.15.4

Note: Manufacturer has declared operational duty cycles of 25% for BLE and 30% for 802.15.4. Therefore, duty cycle correction factors of -12.04dB and -10.46dB will be applied to BLE and 802.15.4 respectively per KDB558074 v05r02 11.A3(C).

9.2. 99% BANDWIDTH

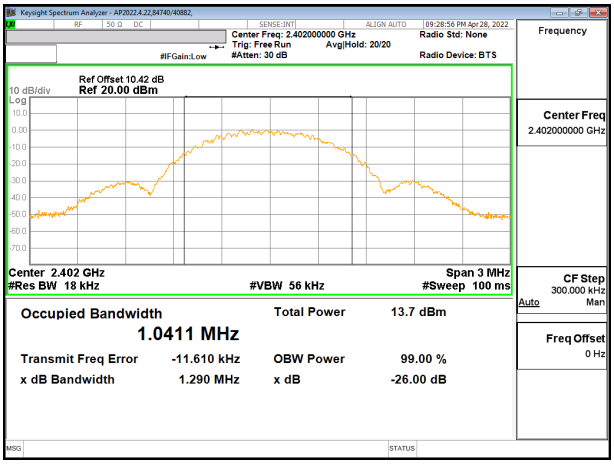
LIMITS

None; for reporting purposes only.

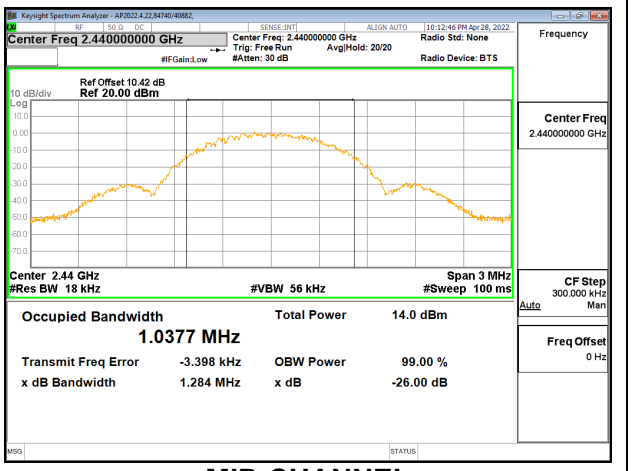
RESULTS

9.2.1. BLE (1Mbps)

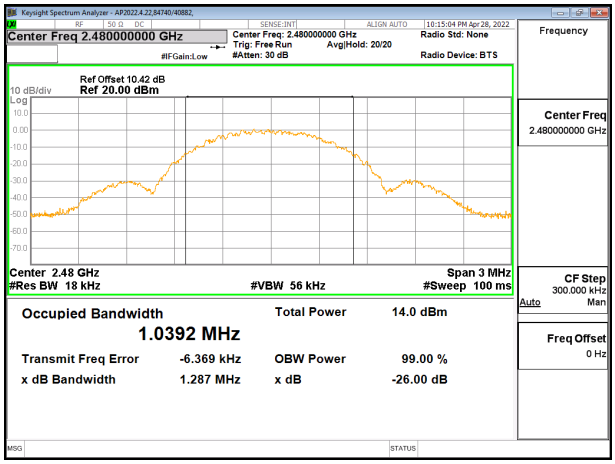
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0411
Middle	2440	1.0377
High	2480	1.0392



LOW CHANNEL



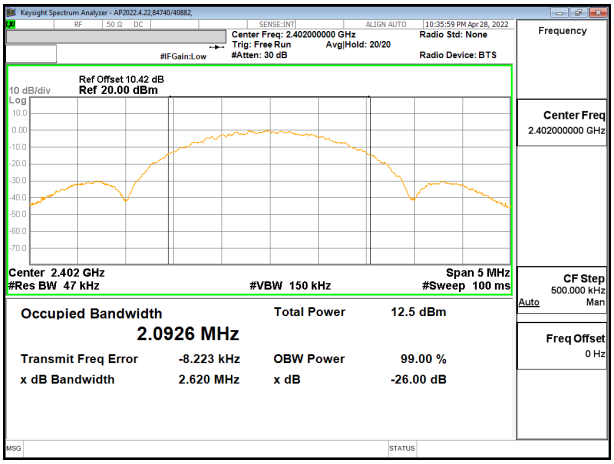
MID CHANNEL



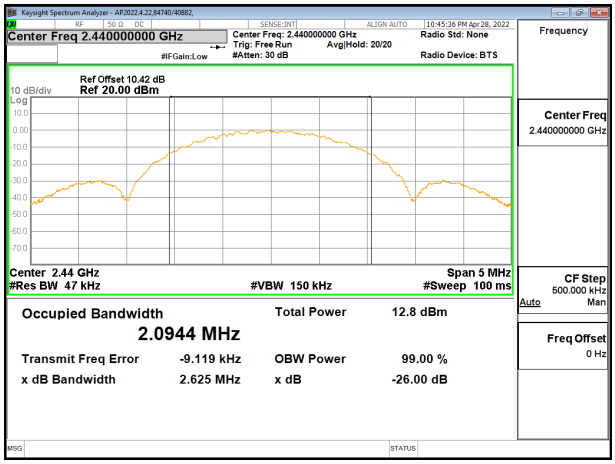
HIGH CHANNEL

9.2.2. BLE (2Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	2.0926
Middle	2440	2.0944
High	2480	2.0871



LOW CHANNEL



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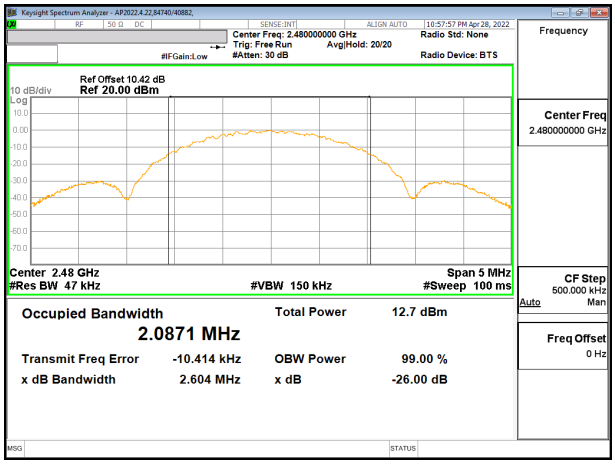
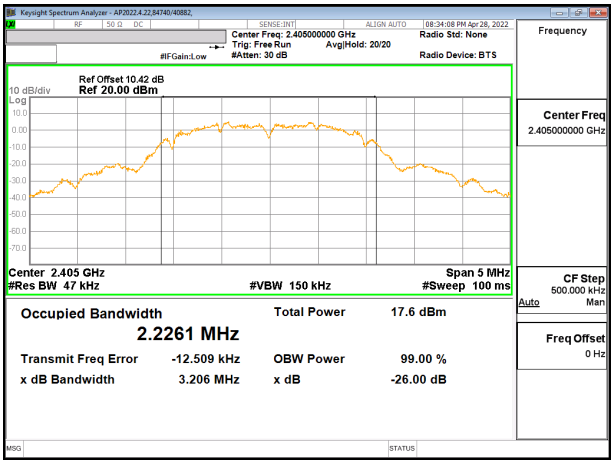


HIGH CHANNEL

9.2.3. 802.15.4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2405	2.2261
Middle	2440	2.2323
High	2480	2.2358



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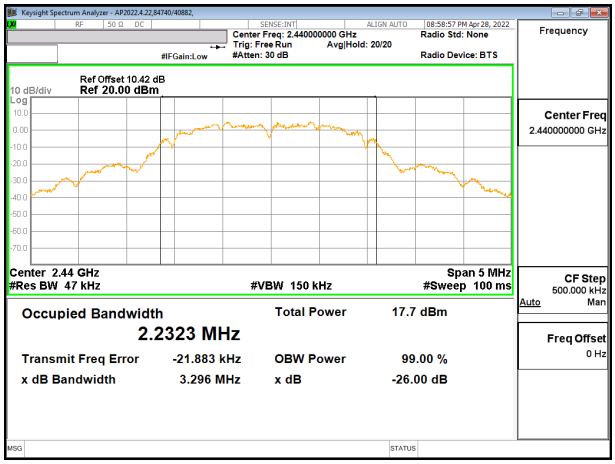

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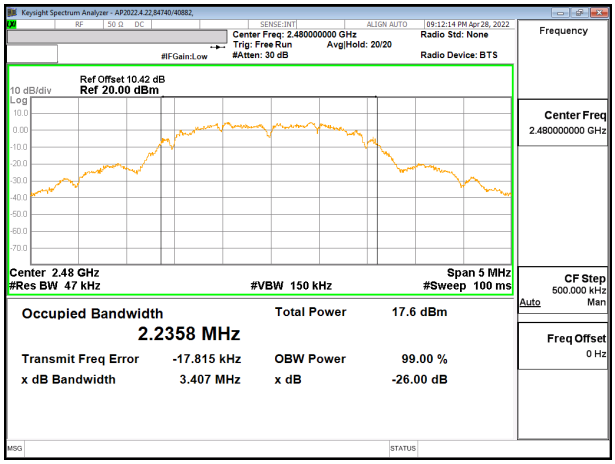


HIGH CHANNEL

9.3. 6 dB BANDWIDTH

LIMITS

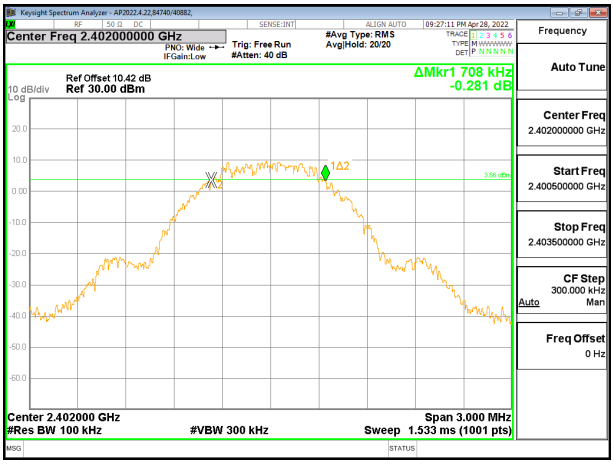
FCC §15.247 (a) (2)
RSS-247 5.2 (a)

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

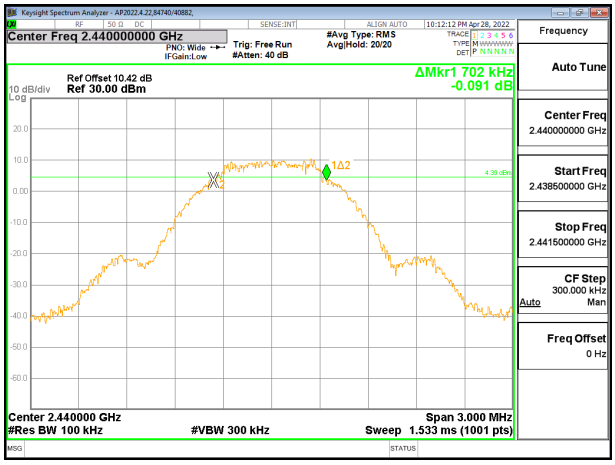
RESULTS

9.3.1. BLE (1Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.708	0.5
Middle	2440	0.702	0.5
High	2480	0.648	0.5



LOW CHANNEL



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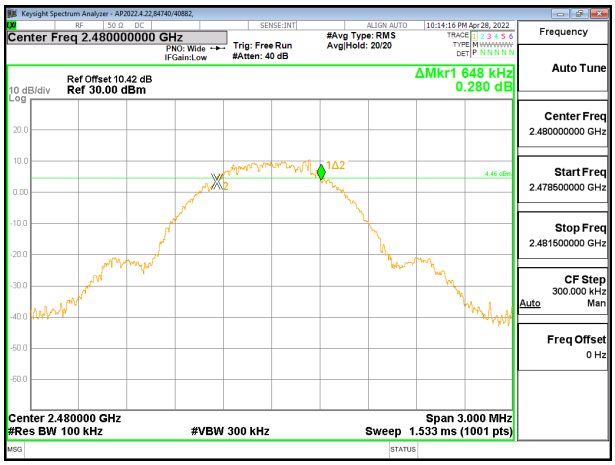
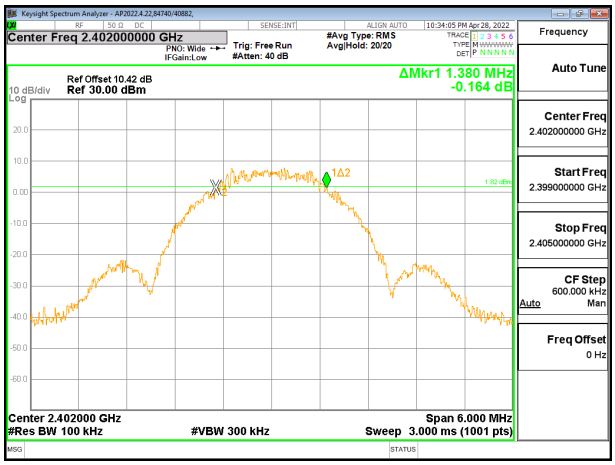


HIGH CHANNEL

9.3.2. BLE (2Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	1.380	0.5
Middle	2440	1.362	0.5
High	2480	1.350	0.5



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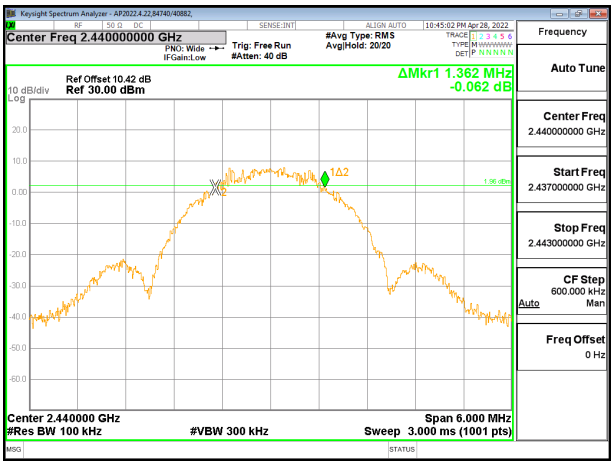

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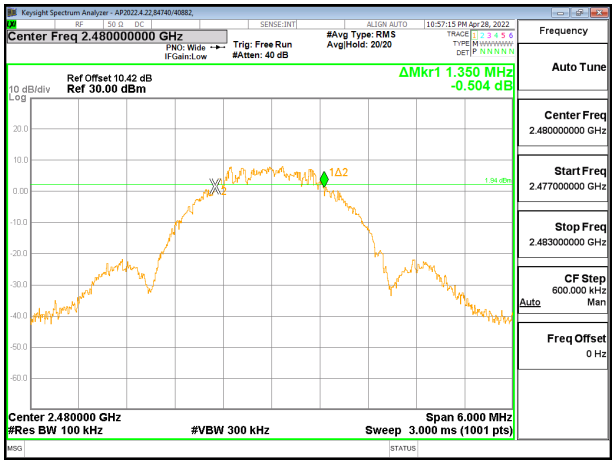
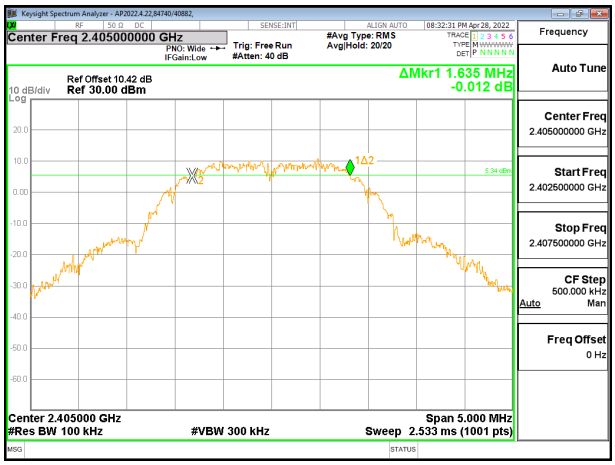


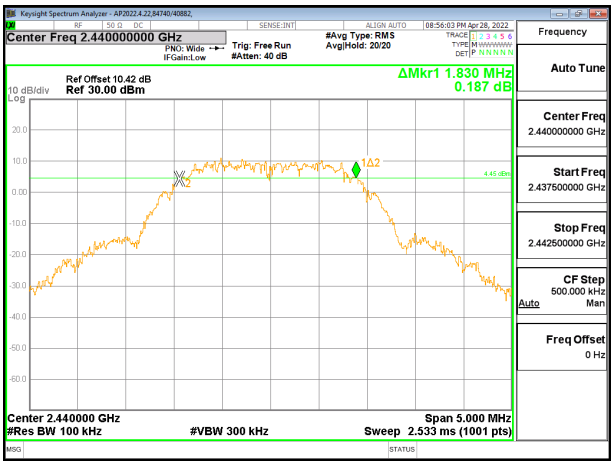
HIGH CHANNEL

9.3.3. 802.15.4

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2405	1.635	0.5
Middle	2440	1.830	0.5
High	2480	1.650	0.5



LOW CHANNEL



MID CHANNEL

HIGH CHANNEL

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 10.17 dB (including 9.77 dB pad and 0.4 dB cable) was entered as an offset in the power meter to allow for a peak reading of power.

RESULTS

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9.4.1. BLE (1Mbps)

Tested By:	84740/40882
Date:	2022-04-28

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	13.55	30	-16.45
Middle	2440	13.44	30	-16.56
High	2480	13.36	30	-16.64

9.4.2. BLE (2Mbps)

Tested By:	84740/40882
Date:	2022-04-28

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	13.53	30	-16.47
Middle	2440	13.42	30	-16.58
High	2480	13.39	30	-16.61

9.4.3. 802.15.4

Tested By:	84740/40882
Date:	2022-04-28

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2405	18.12	30	-11.88
Middle	2440	17.92	30	-12.08
High	2480	17.84	30	-12.16

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 10.17 dB (including 9.77 dB pad and 0.4 dB cable) was entered as an offset in the power meter to allow for a gated average reading of power.

RESULTS

UL LLC
12 Laboratory Dr., RTP, NC 27709; USA TEL:(919) 549-1400

9.5.1. BLE (1Mbps)

Tested By:	84740/40882
Date:	2022-04-28

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	13.35
Middle	2440	13.24
High	2480	13.16

9.5.2. BLE (2Mbps)

Tested By:	84740/40882
Date:	2022-04-28

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	13.33
Middle	2440	13.23
High	2480	13.18

9.5.3. 802.15.4

Tested By:	84740/40882
Date:	2022-04-28

Channel	Frequency (MHz)	AV power (dBm)
Low	2405	18.00
Middle	2440	17.80
High	2480	17.71

9.6. POWER SPECTRAL DENSITY

LIMITS

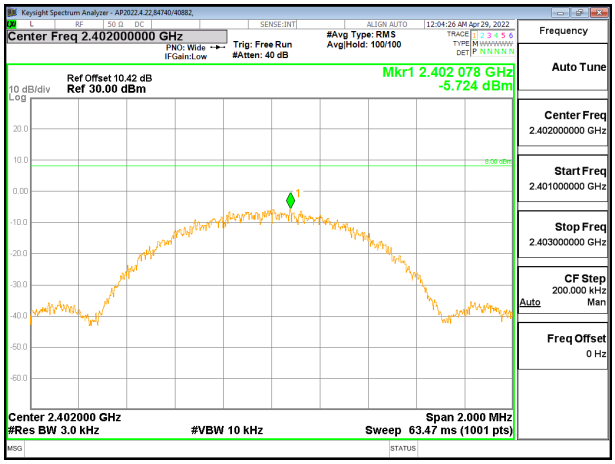
FCC §15.247 (e)
RSS-247 (5.2) (b)

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.

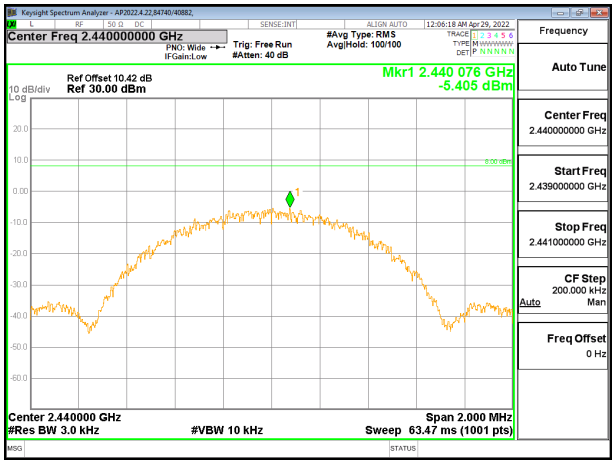
RESULTS

9.6.1. BLE (1Mbps)

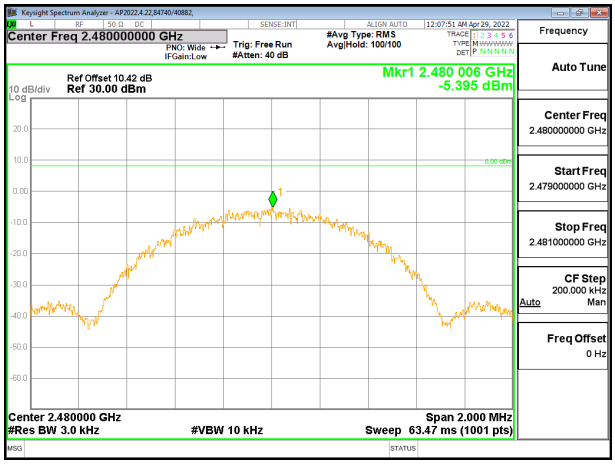
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-5.724	8	-13.72
Middle	2440	-5.405	8	-13.41
High	2480	-5.395	8	-13.40



LOW CHANNEL



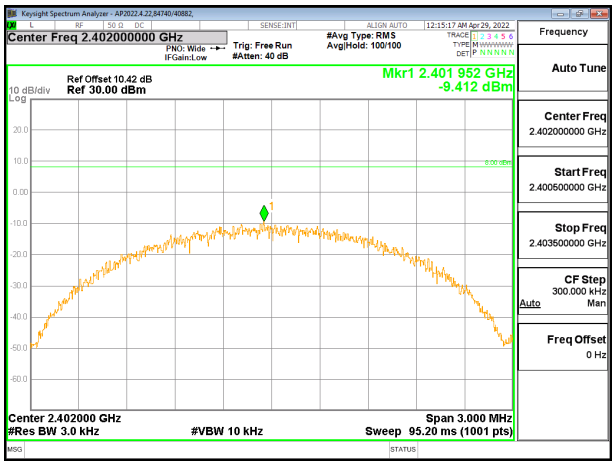
MID CHANNEL



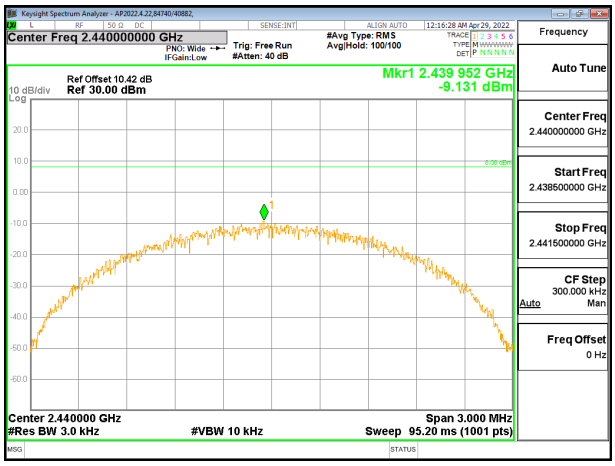
HIGH CHANNEL

9.6.2. BLE (2Mbps)

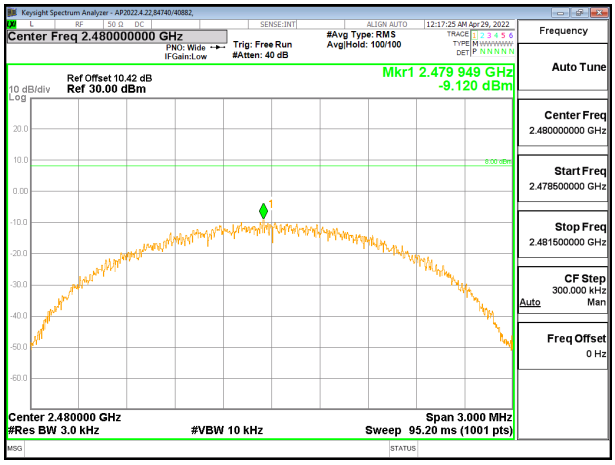
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-9.412	8	-17.41
Middle	2440	-9.131	8	-17.13
High	2480	-9.120	8	-17.12



LOW CHANNEL



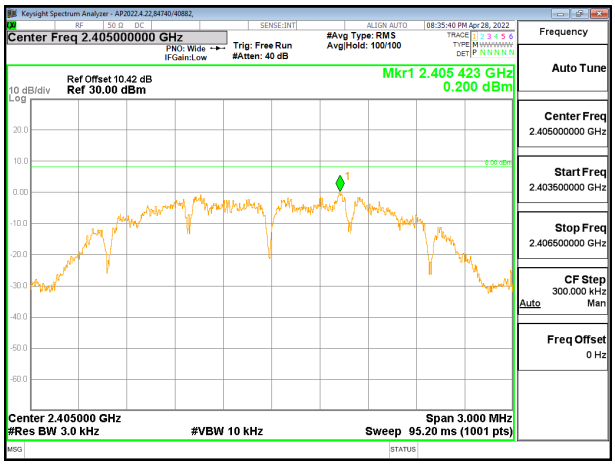
MID CHANNEL



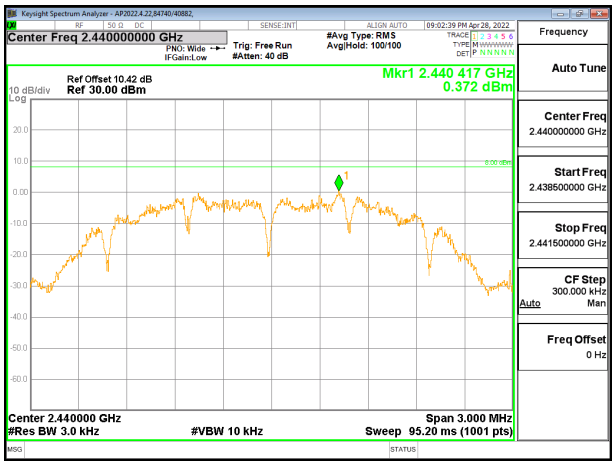
HIGH CHANNEL

9.6.3. 802.15.4

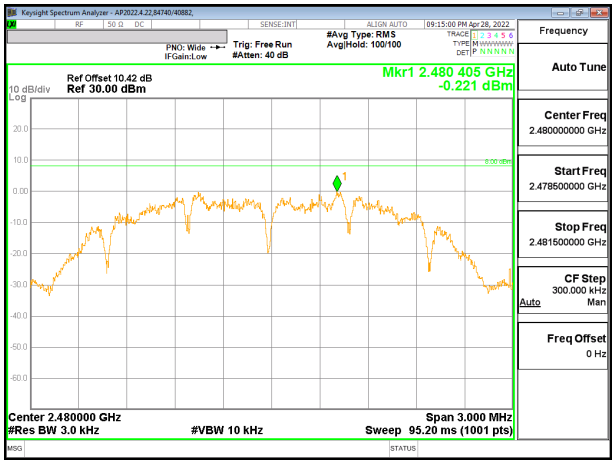
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2405	0.200	8	-7.80
Middle	2440	0.372	8	-7.63
High	2480	-0.221	8	-8.22



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

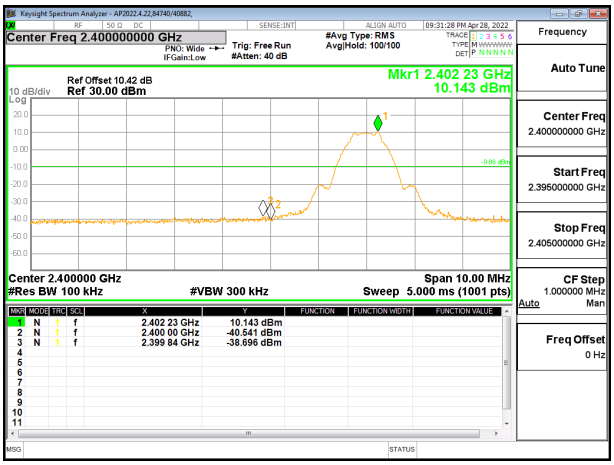
RSS-247 5.5

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

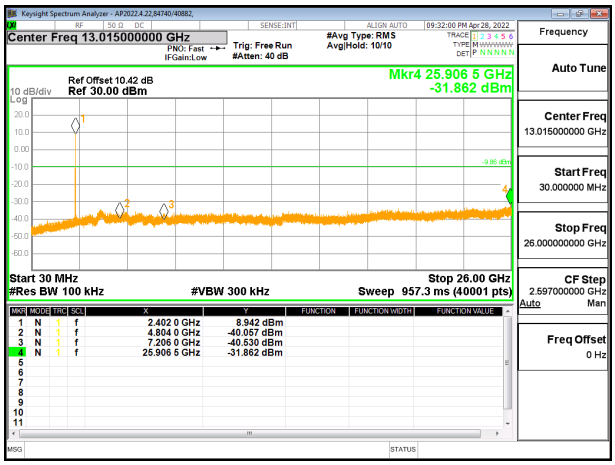
RESULTS

UL LLC
12 Laboratory Dr., RTP, NC 27709; USA TEL:(919) 549-1400

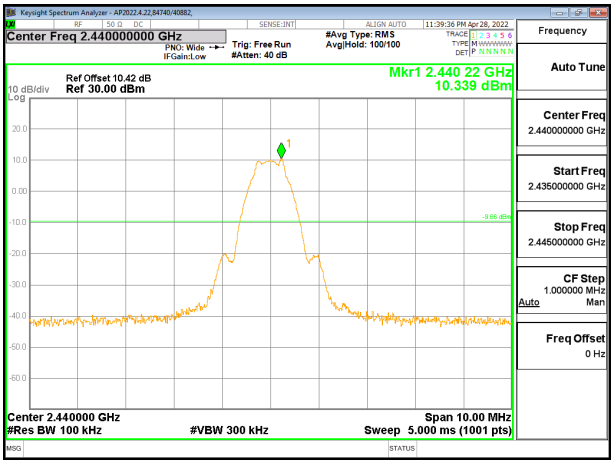
9.7.1. BLE (1Mbps)



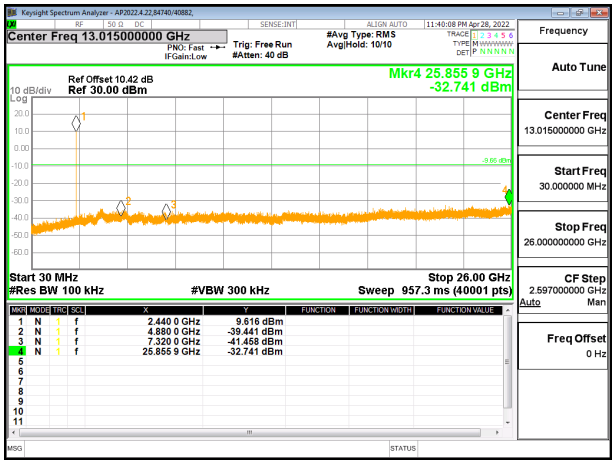
LOW CHANNEL BANDEDGE



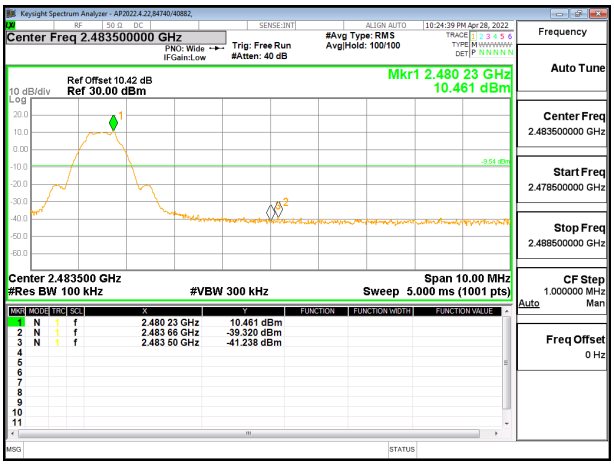
OUT-OF-BAND LOW CHANNEL



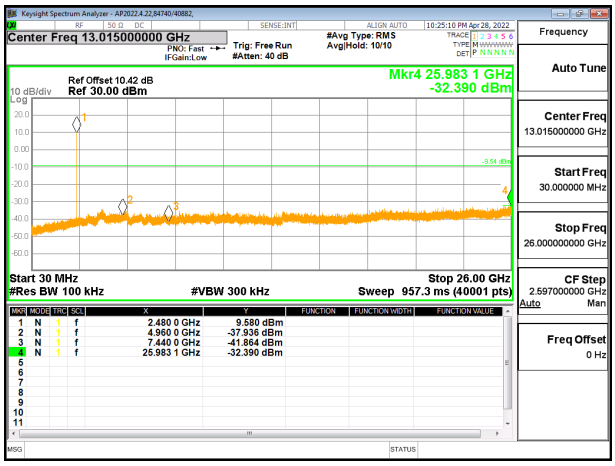
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

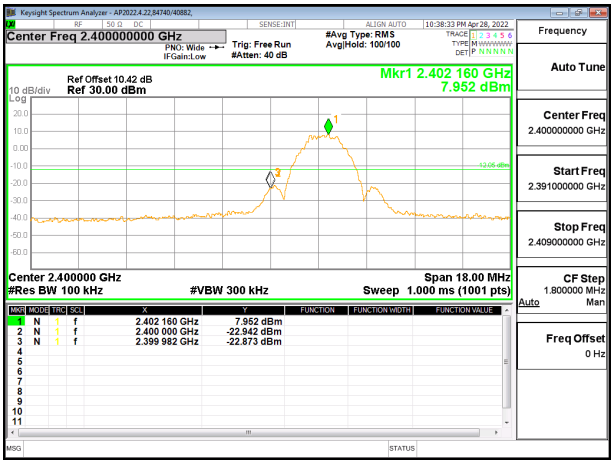


HIGH CHANNEL BANDEDGE

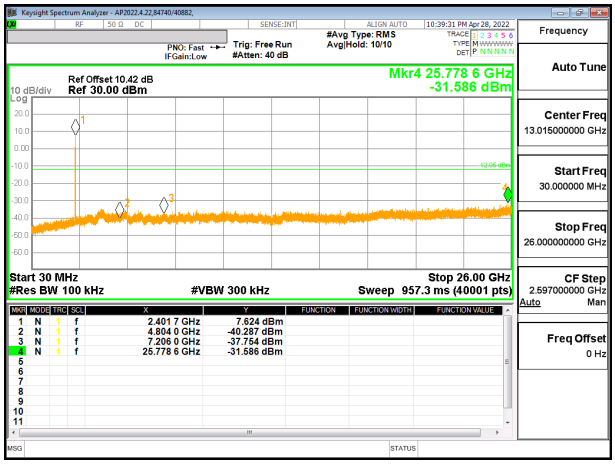


OUT-OF-BAND HIGH CHANNEL

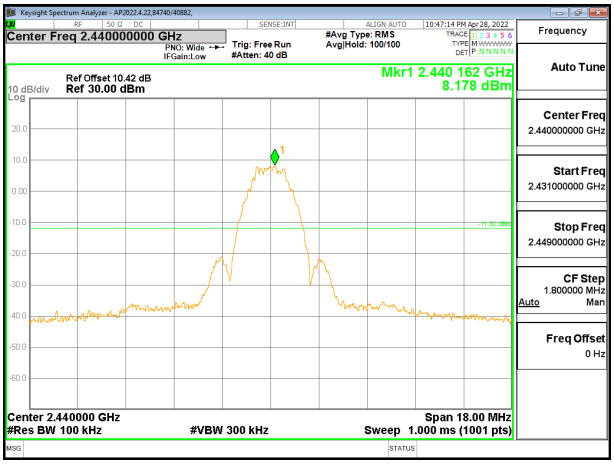
9.7.2. BLE (2Mbps)



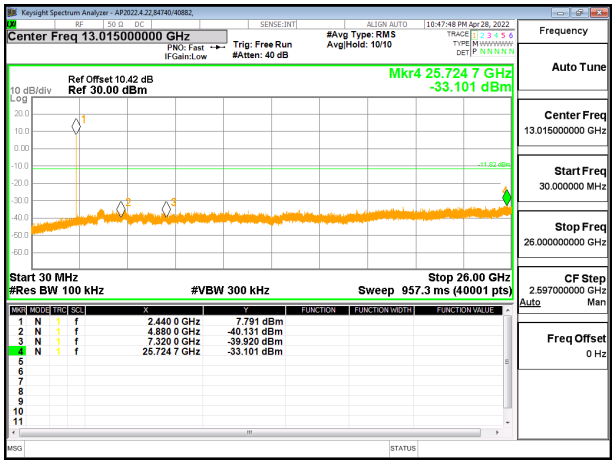
LOW CHANNEL BANDEDGE



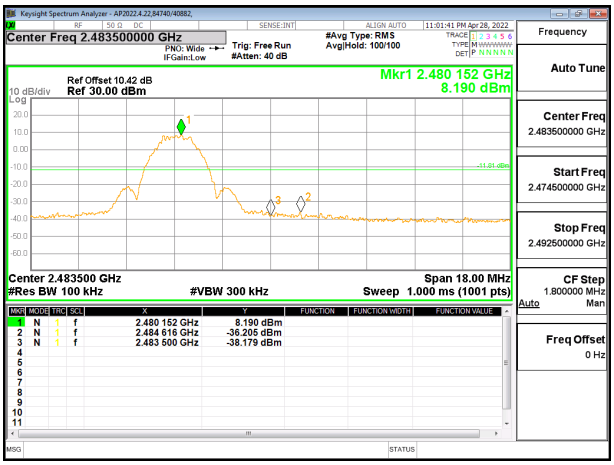
OUT-OF-BAND LOW CHANNEL



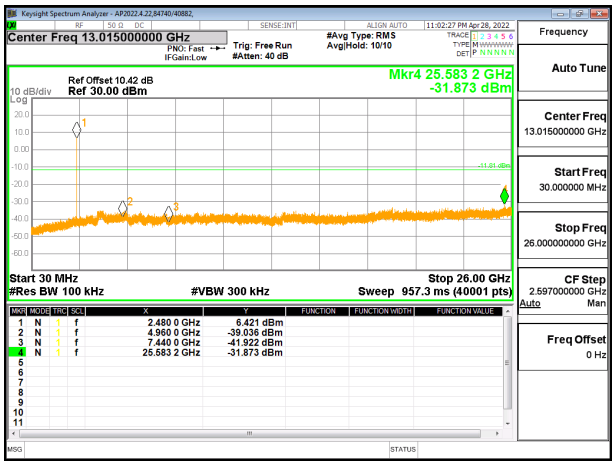
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

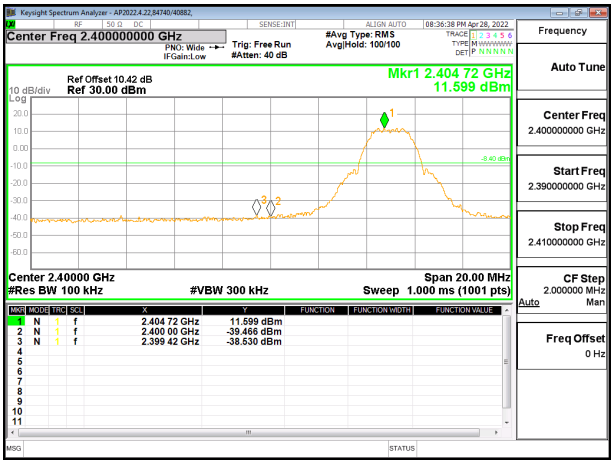


HIGH CHANNEL BANDEDGE

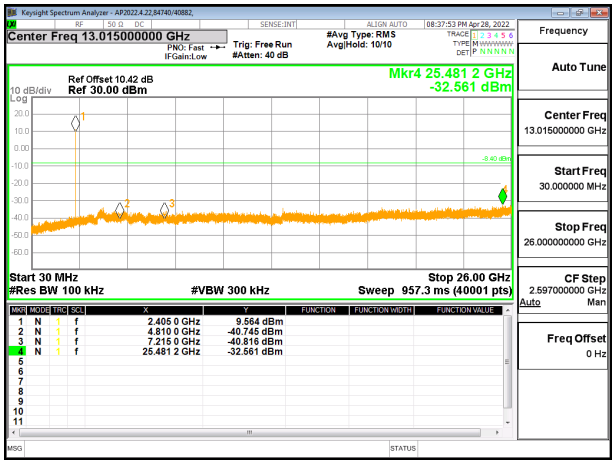


OUT-OF-BAND HIGH CHANNEL

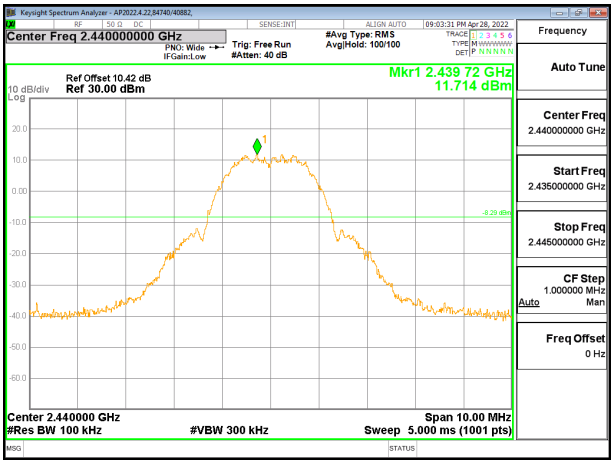
9.7.3. 802.15.4



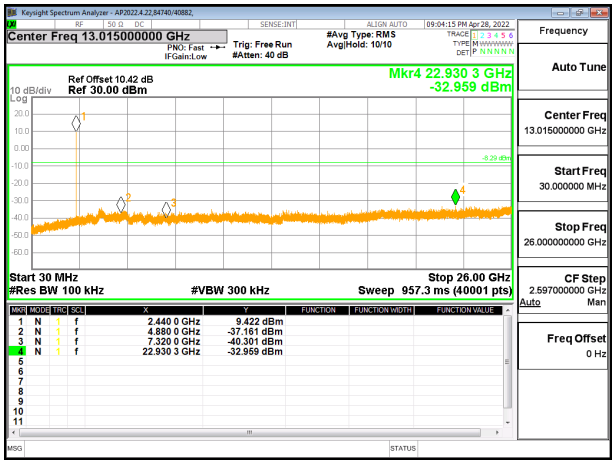
LOW CHANNEL BANDEDGE



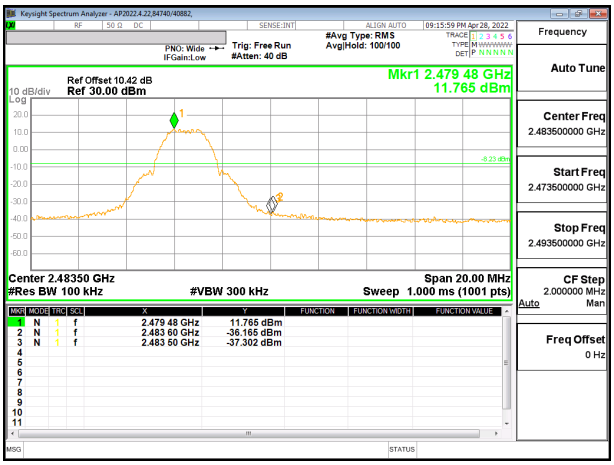
OUT-OF-BAND LOW CHANNEL



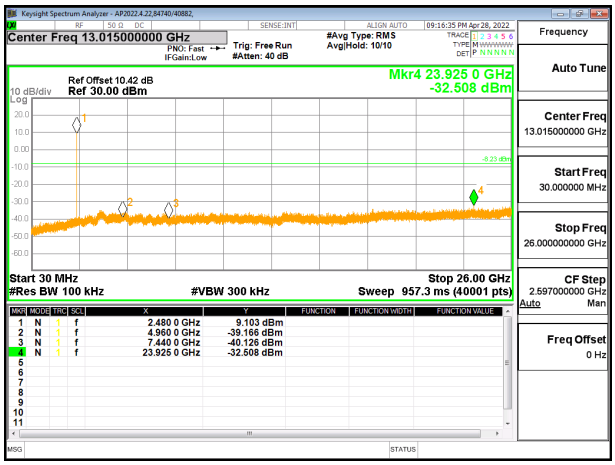
IN-BAND REFERENCE LEVEL



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 (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 3MHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements, in this case linear voltage averaging.

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.

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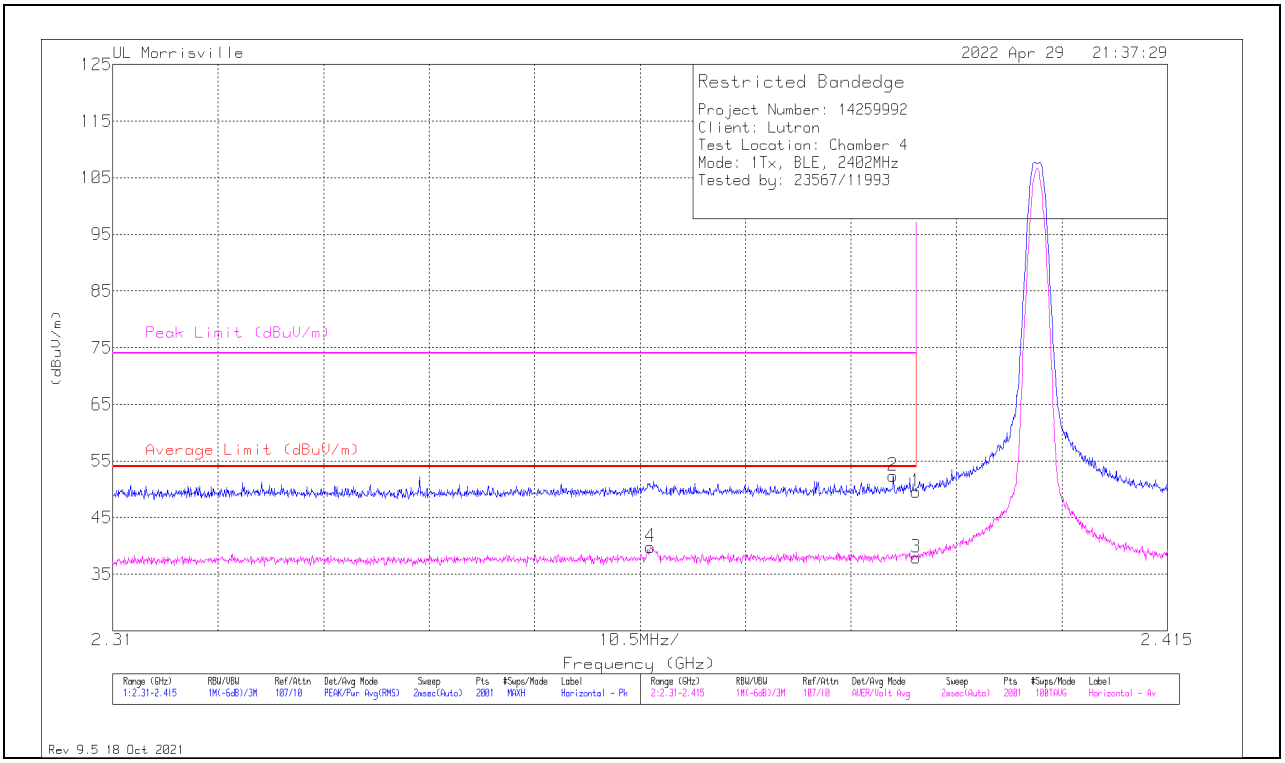
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. BLE (1Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

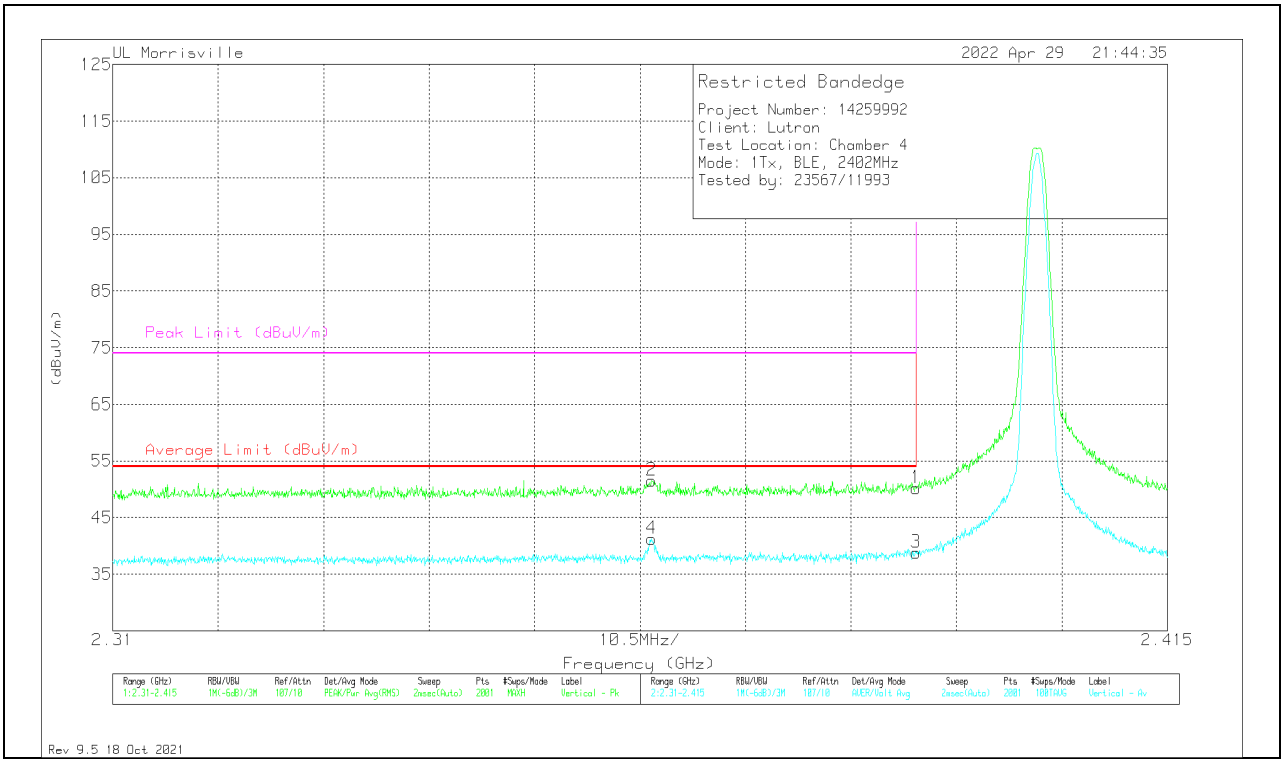


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	31.45	Pk	31.9	-13.8	0	49.55	-	-	74	-24.45	358	100	H
2	* ** 2.3877	34.28	Pk	31.9	-13.8	0	52.38	-	-	74	-21.62	358	100	H
3	* ** 2.38996	19.86	ADV	31.9	-13.8	-12.04	25.92	54	-28.08	-	-	358	100	H
4	* ** 2.36355	21.95	ADV	31.8	-13.9	-12.04	27.81	54	-26.19	-	-	358	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: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

VERTICAL RESULT



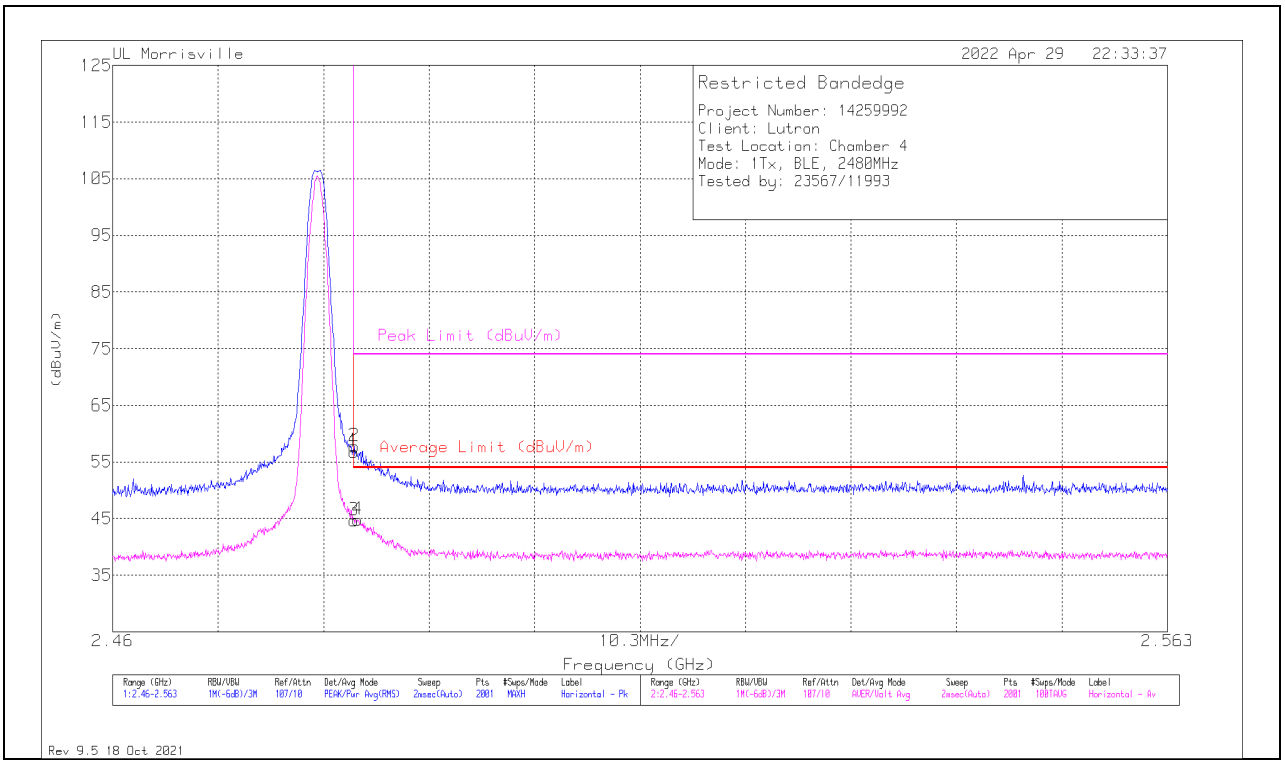
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	32.13	Pk	31.9	-13.8	0	50.23	-	-	74	-23.77	139	100	V
2	* ** 2.36366	33.68	Pk	31.8	-13.9	0	51.58	-	-	74	-22.42	139	100	V
3	* ** 2.38996	20.73	ADV	31.9	-13.8	-12.04	26.79	54	-27.21	-	-	139	100	V
4	* ** 2.36366	23.32	ADV	31.8	-13.9	-12.04	29.18	54	-24.82	-	-	139	100	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: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

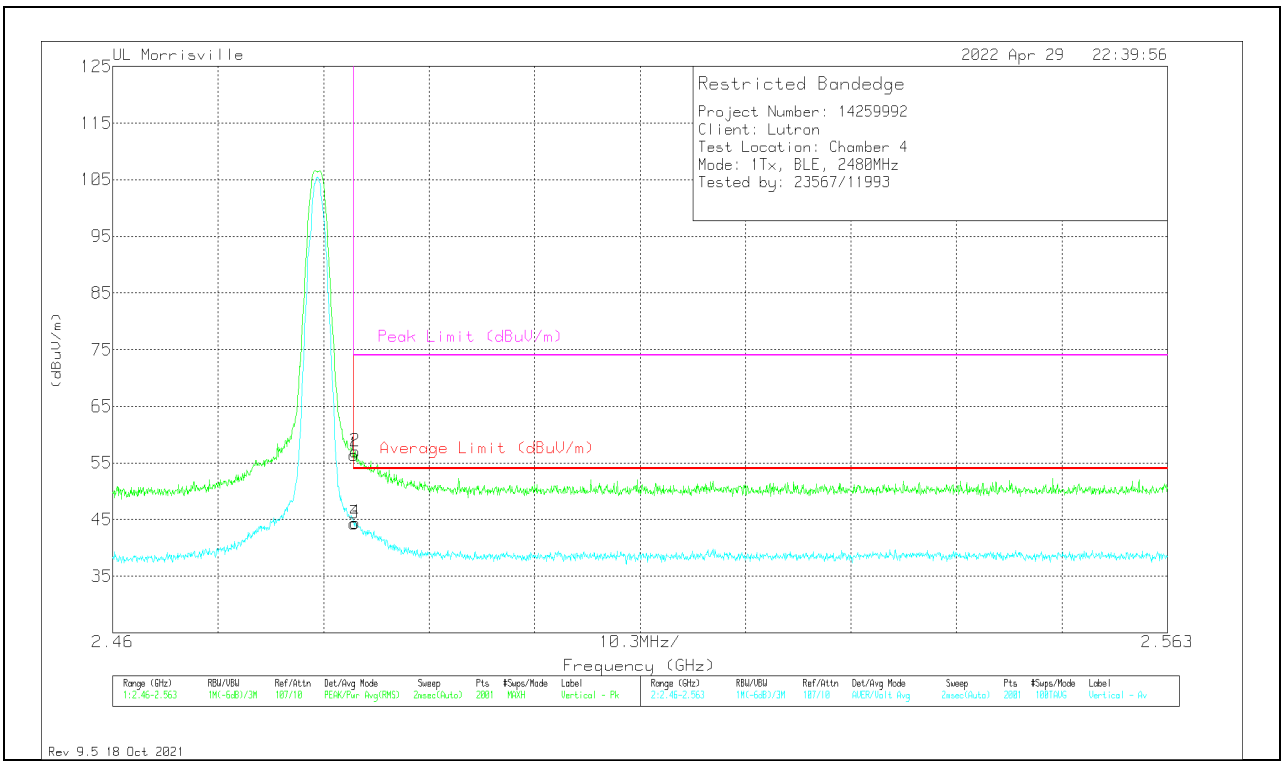


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.48354	38.35	Pk	32.2	-13.7	0	56.85	-	-	74	-17.15	359	129	H
2	* ** 2.48359	39.29	Pk	32.2	-13.7	0	57.79	-	-	74	-16.21	359	129	H
3	* ** 2.48354	26.23	ADV	32.2	-13.7	-12.04	32.69	54	-21.31	-	-	359	129	H
4	* ** 2.48395	26.3	ADV	32.2	-13.7	-12.04	32.76	54	-21.24	-	-	359	129	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: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 (dB/m)	Amp/Cbl/Fltr/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	37.97	Pk	32.2	-13.7	0	56.47	-	-	74	-17.53	107	150	V
2	* ** 2.48369	38.52	Pk	32.2	-13.7	0	57.02	-	-	74	-16.98	107	150	V
3	* ** 2.48354	25.87	ADV	32.2	-13.7	-12.04	32.33	54	-21.67	-	-	107	150	V
4	* ** 2.48369	25.98	ADV	32.2	-13.7	-12.04	32.44	54	-21.56	-	-	107	150	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: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

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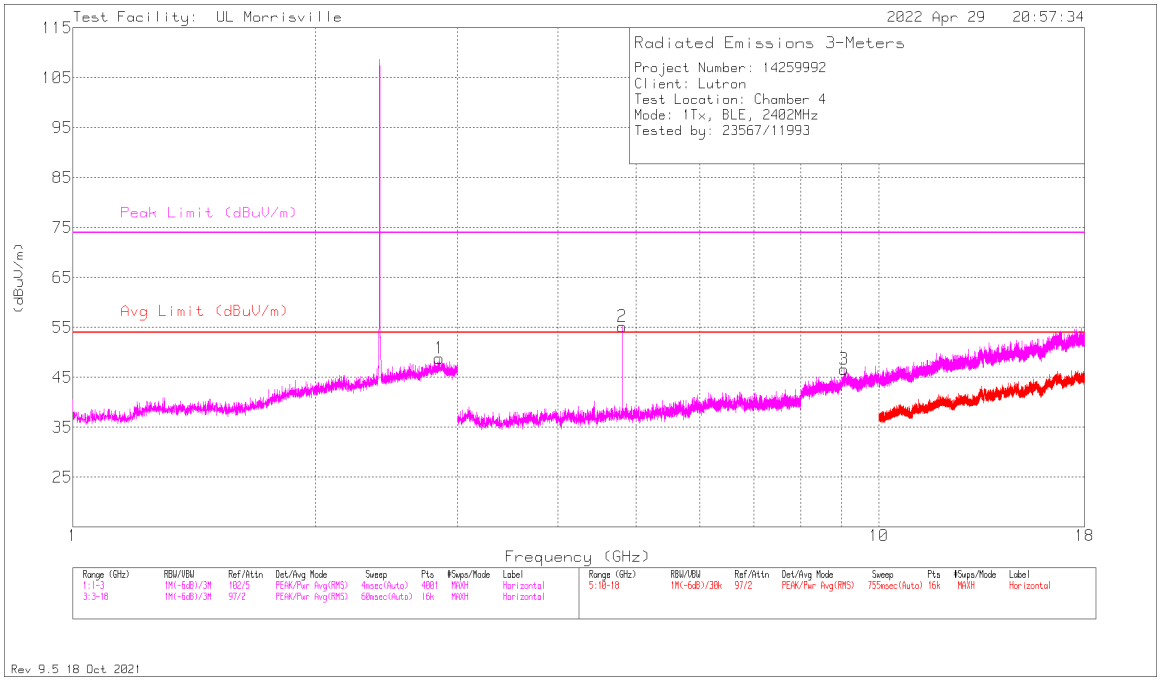
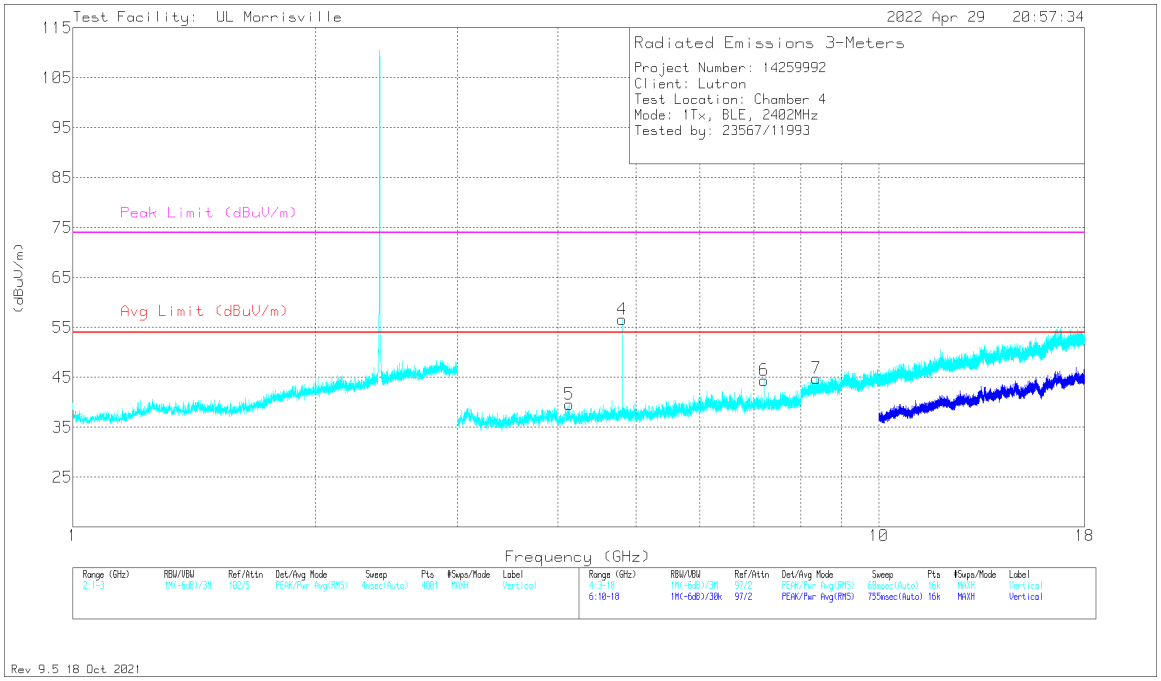
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 (dB/m)	Amp/Cbl/Fltr/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	* ** 2.84893	29.25	PK2	32.5	-13	0	48.75	-	-	74	-25.25	197	157	H
	* ** 2.84723	16.92	ADV	32.5	-13	-12.04	24.38	54	-29.62	-	-	197	157	H
2	* ** 4.80352	56.95	PK2	34	-32.5	0	58.45	-	-	74	-15.55	258	140	H
	* ** 4.80423	52.44	ADV	34	-32.5	-12.04	41.9	54	-12.1	-	-	258	140	H
3	* ** 9.05156	36.04	Pk	36.1	-25.5	0	46.64	54	-7.36	74	-27.36	0-360	100	H
4	* ** 4.80442	56.54	PK2	34	-32.5	0	58.04	-	-	74	-15.96	253	132	V
	* ** 4.8038	52.31	ADV	34	-32.5	-12.04	41.77	54	-12.23	-	-	253	132	V
5	* ** 4.12969	38.9	Pk	33.4	-32.7	0	39.6	54	-14.4	74	-34.4	0-360	200	V
7	* ** 8.36063	36.85	Pk	35.7	-27.8	0	44.75	54	-9.25	74	-29.25	0-360	200	V
6	7.20656	38.16	Pk	35.5	-29.2	0	44.46	54	-9.54	74	-29.54	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: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

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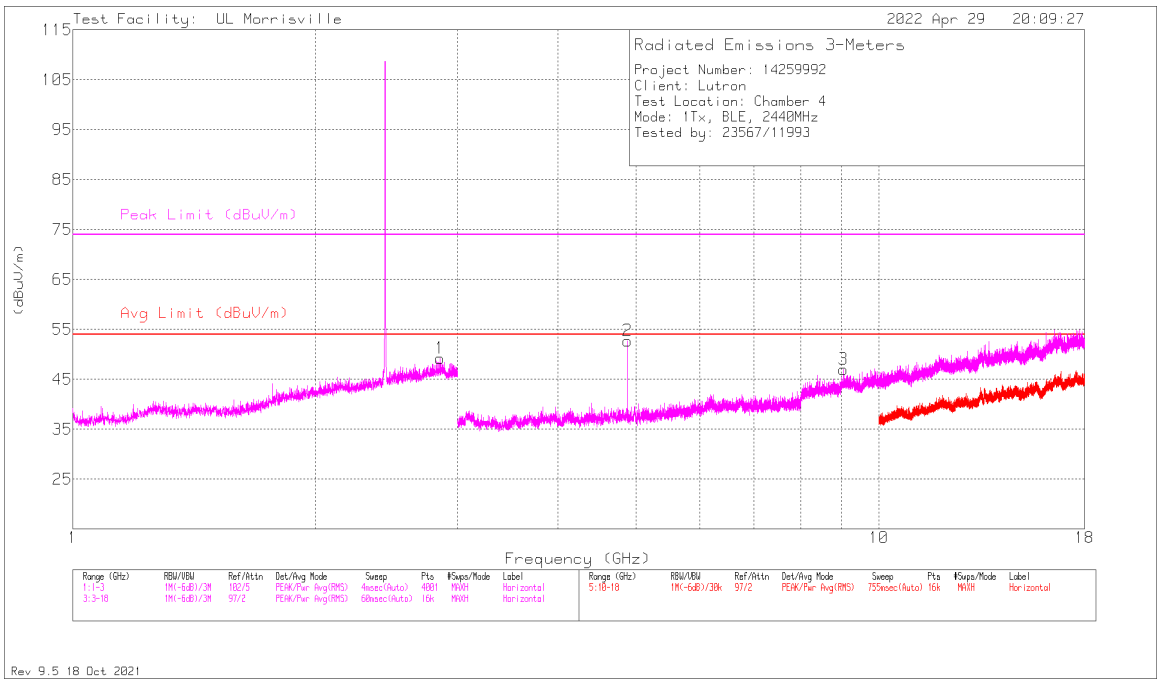
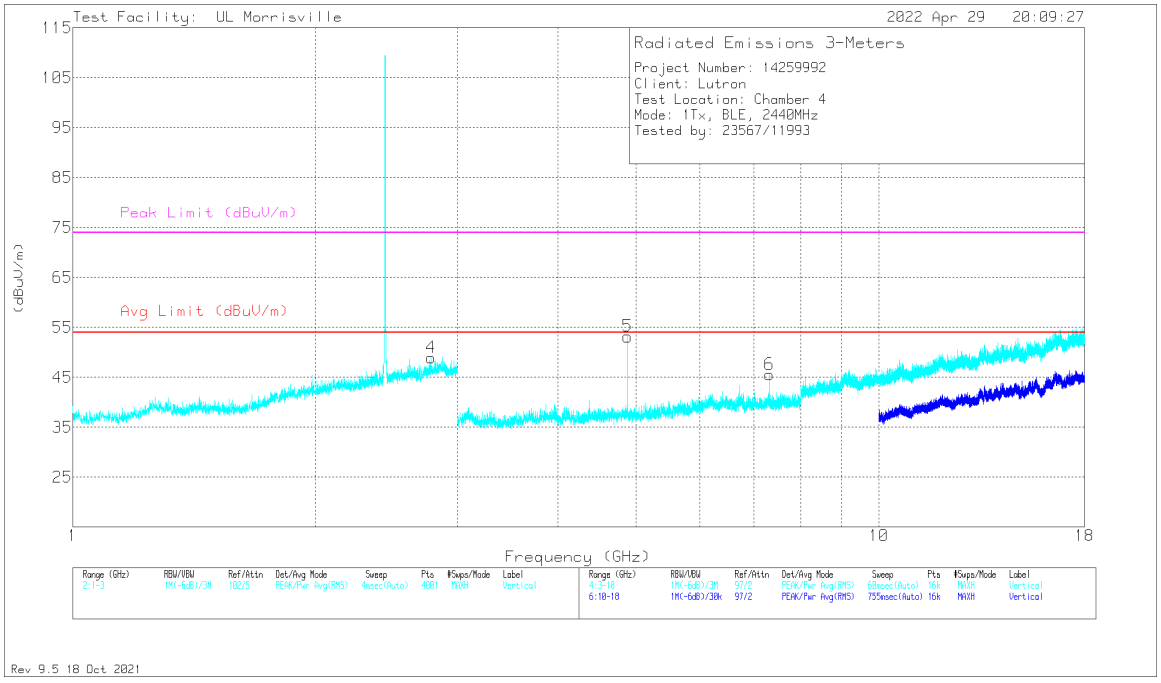
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 (dB/m)	Amp/Cbl/Fltr/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	* ** 2.85795	29.64	PK2	32.5	-12.9	0	49.24	-	-	74	-24.76	128	103	H
	* ** 2.85759	16.83	ADV	32.5	-12.9	-12.04	24.39	54	-29.61	-	-	128	103	H
4	* ** 2.78513	29.73	PK2	32.3	-13.1	0	48.93	-	-	74	-25.07	273	234	V
	* ** 2.78631	16.9	ADV	32.4	-13.1	-12.04	24.16	54	-29.84	-	-	273	234	V
2	* ** 4.87951	54.97	PK2	34	-32.2	0	56.77	-	-	74	-17.23	262	180	H
	* ** 4.8799	50.2	ADV	34	-32.2	-12.04	39.96	54	-14.04	-	-	262	180	H
5	* ** 4.87947	54.71	PK2	34	-32.2	0	56.51	-	-	74	-17.49	325	227	V
	* ** 4.87994	50.05	ADV	34	-32.2	-12.04	39.81	54	-14.19	-	-	325	227	V
3	* ** 9.04688	36.35	Pk	36.1	-25.5	0	46.95	54	-7.05	74	-27.05	0-360	100	H
6	* ** 7.32094	38.88	Pk	35.5	-28.8	0	45.58	54	-8.42	74	-28.42	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: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

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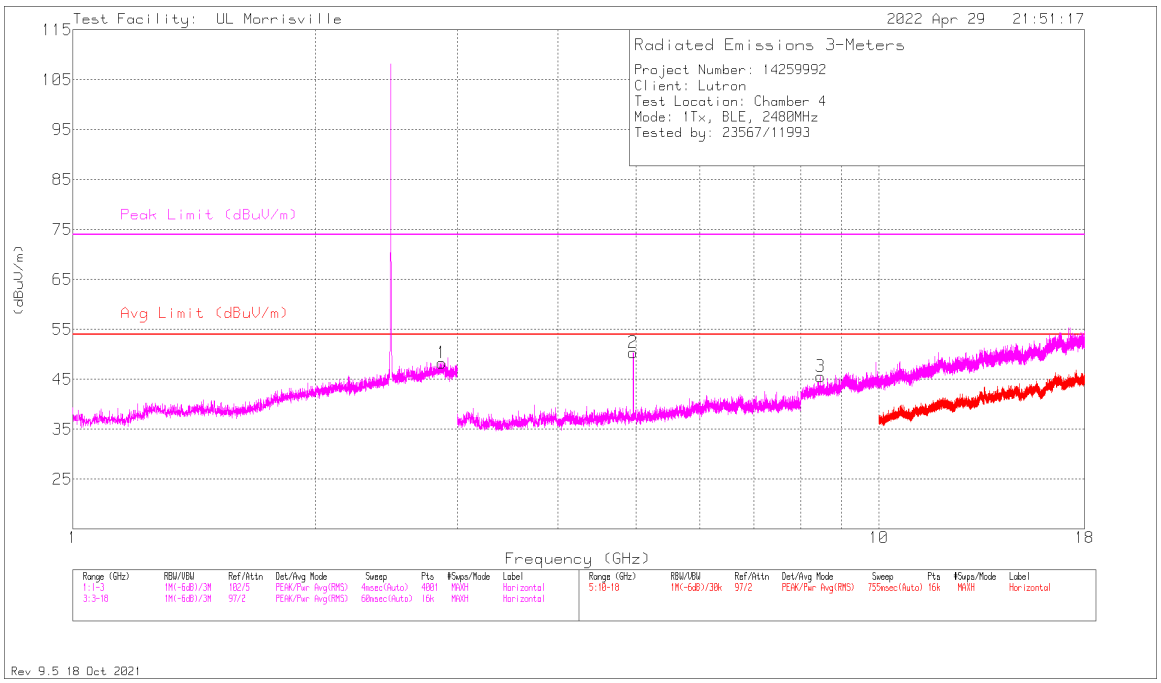
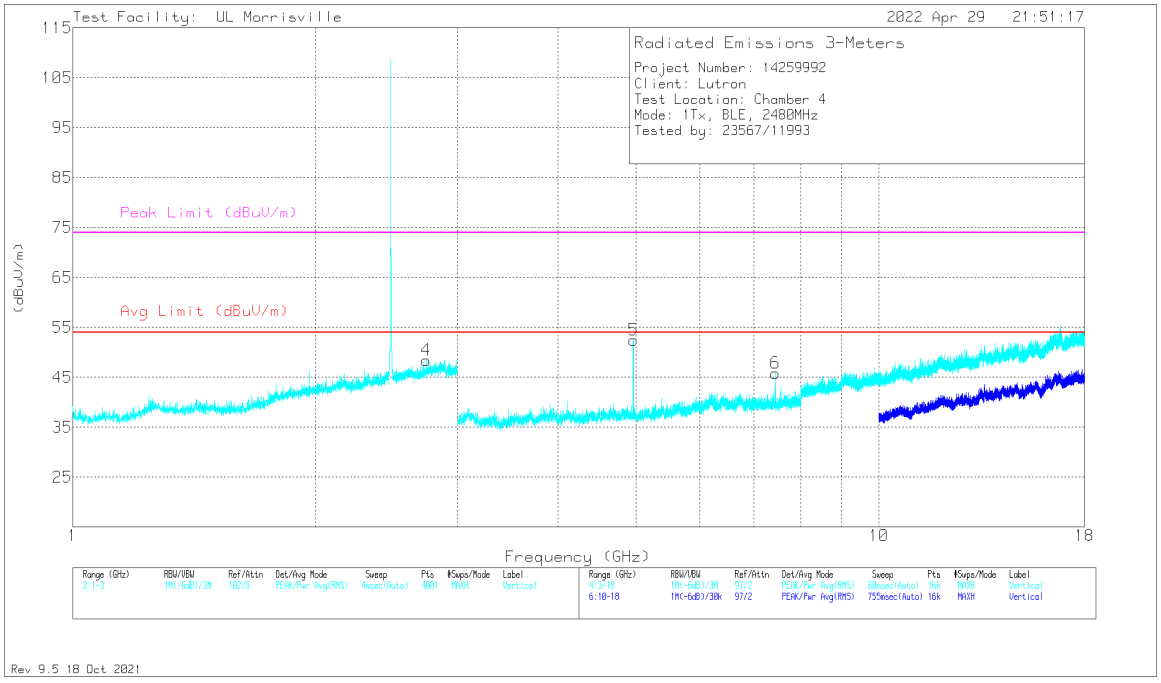
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0069 (dB/m)	Amp/Cbl/Fltr/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	* ** 2.87087	29.29	PK2	32.4	-12.8	0	48.89	-	-	74	-25.11	101	372	H
	* ** 2.8743	17	ADV	32.4	-12.8	-12.04	24.56	54	-29.44	-	-	101	372	H
4	* ** 2.74388	30.12	PK2	32.1	-13.2	0	49.02	-	-	74	-24.98	289	210	V
	* ** 2.74585	17.1	ADV	32.1	-13.2	-12.04	23.96	54	-30.04	-	-	289	210	V
2	* ** 4.95944	51.26	PK2	34	-32	0	53.26	-	-	74	-20.74	302	100	H
	* ** 4.95987	46.06	ADV	34	-32	-12.04	36.02	54	-17.98	-	-	302	100	H
5	* ** 4.96044	51.9	PK2	34	-32	0	53.9	-	-	74	-20.1	293	257	V
	* ** 4.95996	46.87	ADV	34	-32	-12.04	36.83	54	-17.17	-	-	293	257	V
3	* ** 8.4675	37.08	Pk	35.7	-27.2	0	45.58	54	-8.42	74	-28.42	0-360	100	H
6	* ** 7.44094	39.44	Pk	35.4	-29	0	45.84	54	-8.16	74	-28.16	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

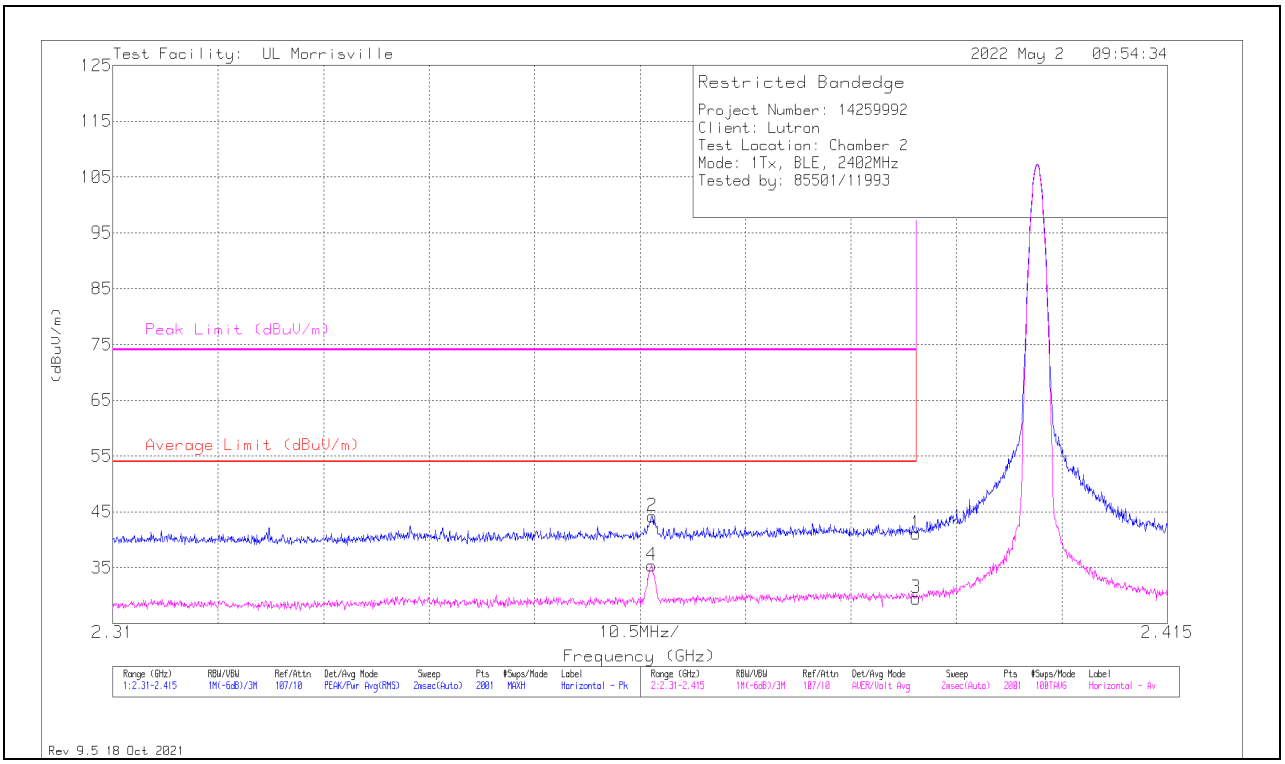
Note: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

10.2.2. BLE (2Mbps)

Antenna 1

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

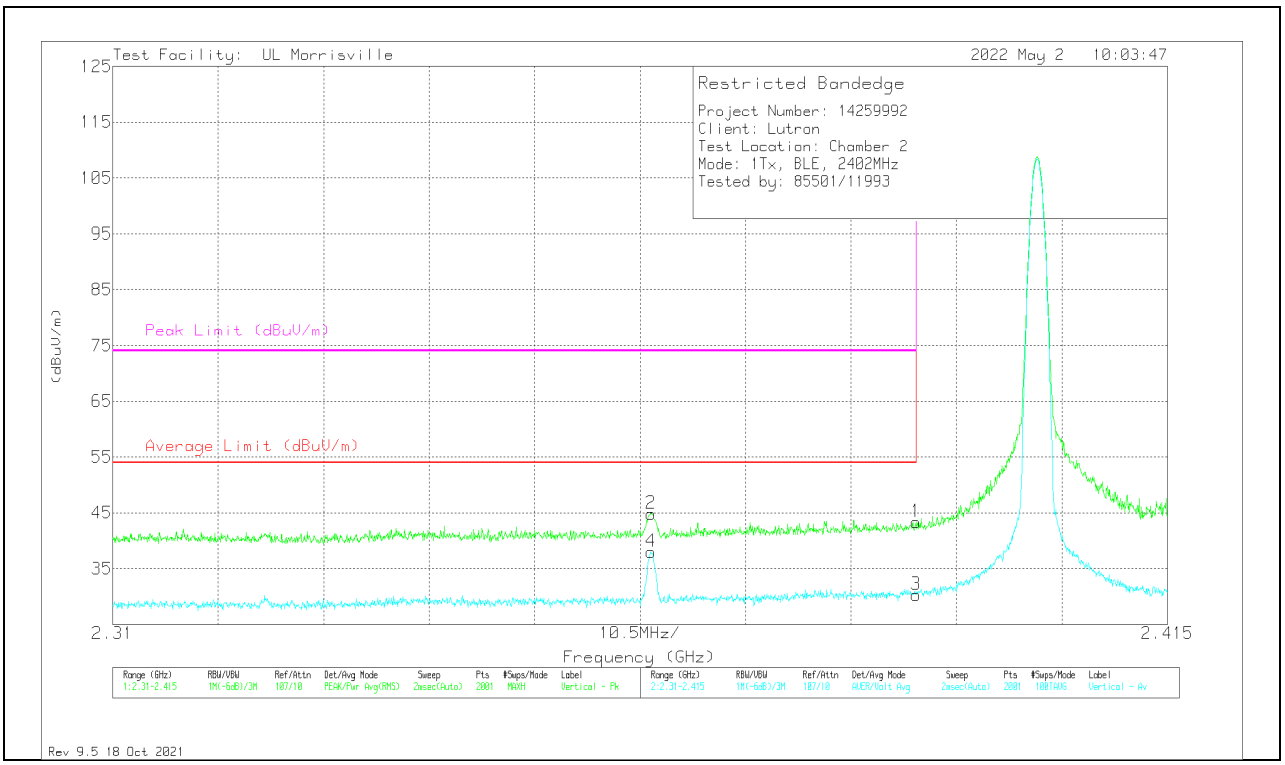


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	33.25	Pk	31.9	-24.1	0	41.05	-	-	74	-32.95	292	181	H
2	* ** 2.36371	36.31	Pk	32.2	-24.3	0	44.21	-	-	74	-29.79	292	181	H
3	* ** 2.38996	21.7	ADV	31.9	-24.1	-12.04	17.46	54	-36.54	-	-	292	181	H
4	* ** 2.36366	27.49	ADV	32.2	-24.3	-12.04	23.35	54	-30.65	-	-	292	181	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: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

VERTICAL RESULT



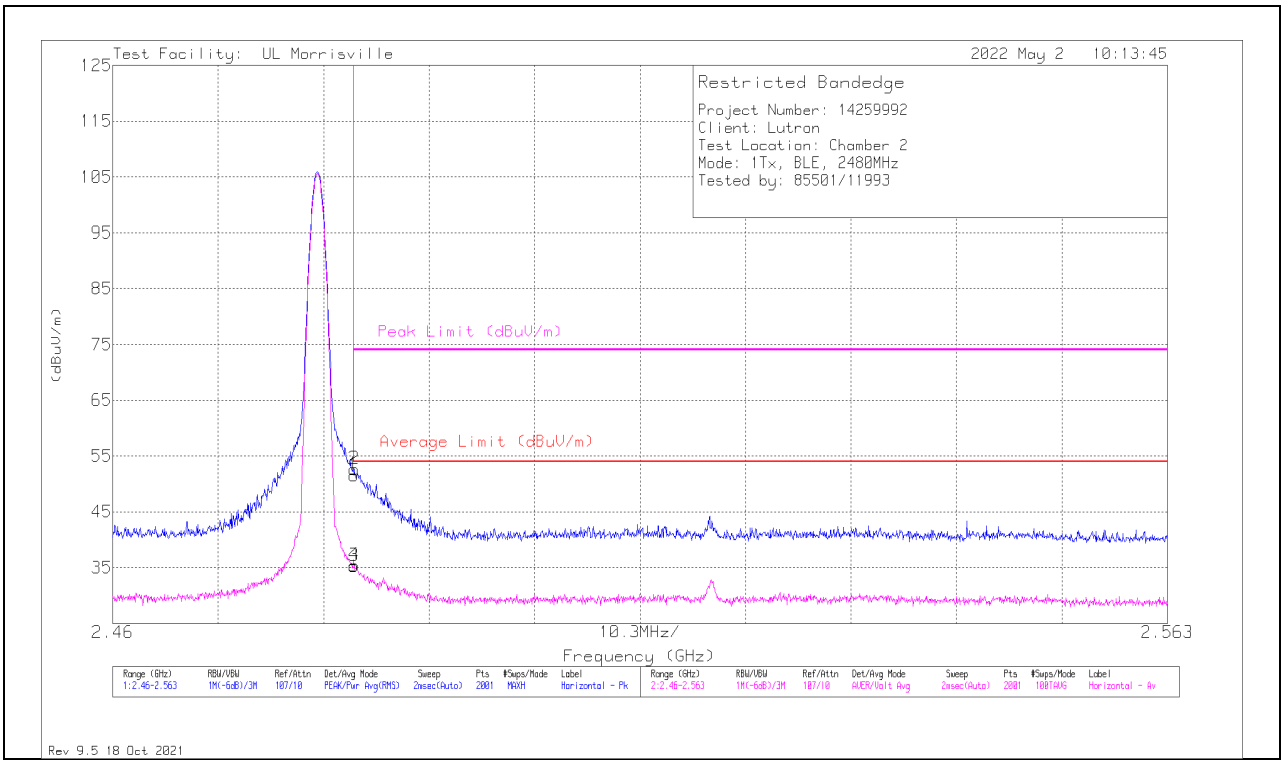
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	35.57	Pk	31.9	-24.1	0	43.37	-	-	74	-30.63	111	156	V
2	* ** 2.3636	36.95	Pk	32.2	-24.3	0	44.85	-	-	74	-29.15	111	156	V
3	* ** 2.38996	22.53	ADV	31.9	-24.1	-12.04	18.29	54	-35.71	-	-	111	156	V
4	* ** 2.3636	30.07	ADV	32.2	-24.3	-12.04	25.93	54	-28.07	-	-	111	156	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: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

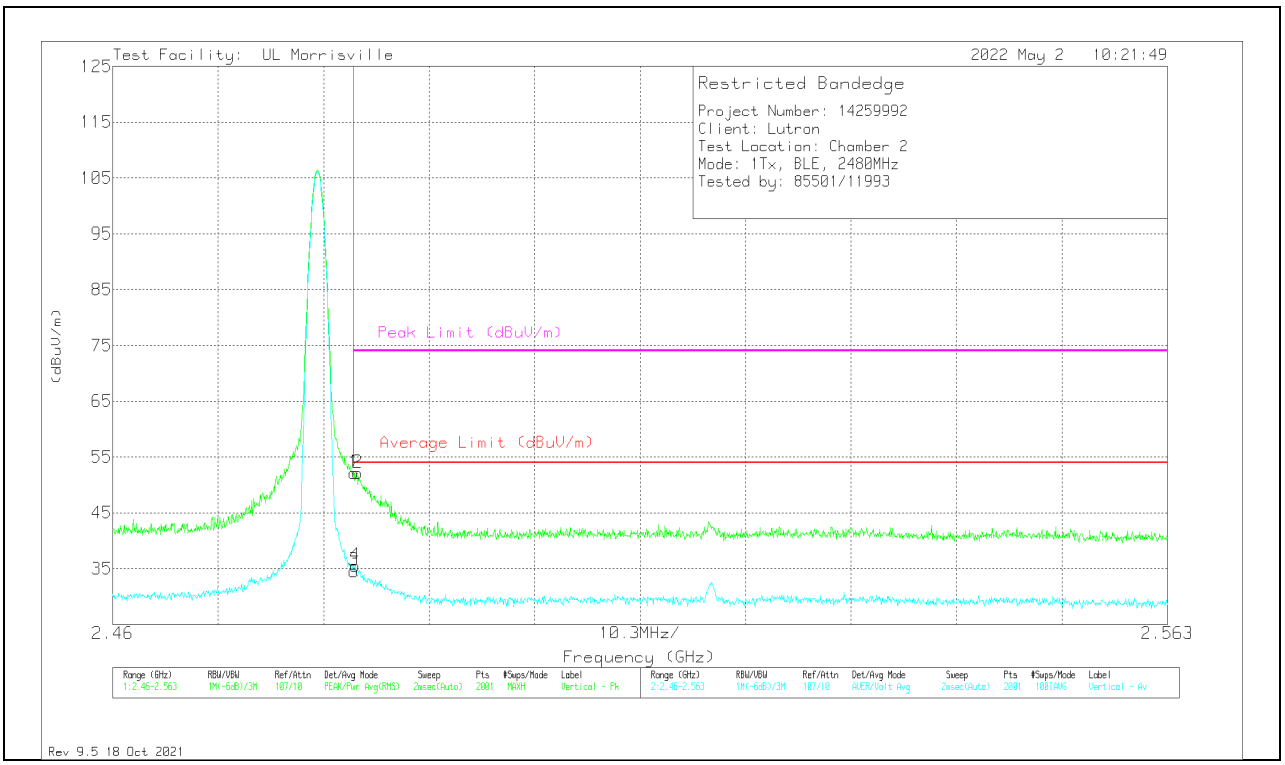


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.48354	43.69	Pk	32.5	-24.6	0	51.59	-	-	74	-22.41	191	125	H
2	* ** 2.48359	44.79	Pk	32.5	-24.6	0	52.69	-	-	74	-21.31	191	125	H
3	* ** 2.48354	27.37	ADV	32.5	-24.6	-12.04	23.23	54	-30.77	-	-	191	125	H
4	* ** 2.48359	27.46	ADV	32.5	-24.6	-12.04	23.32	54	-30.68	-	-	191	125	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: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

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	44.27	Pk	32.5	-24.6	0	52.17	-	-	74	-21.83	119	150	V
2	* ** 2.4839	44.36	Pk	32.5	-24.7	0	52.16	-	-	74	-21.84	119	150	V
3	* ** 2.48354	26.69	ADV	32.5	-24.6	-12.04	22.55	54	-31.45	-	-	119	150	V
4	* ** 2.48369	27.66	ADV	32.5	-24.6	-12.04	23.52	54	-30.48	-	-	119	150	V

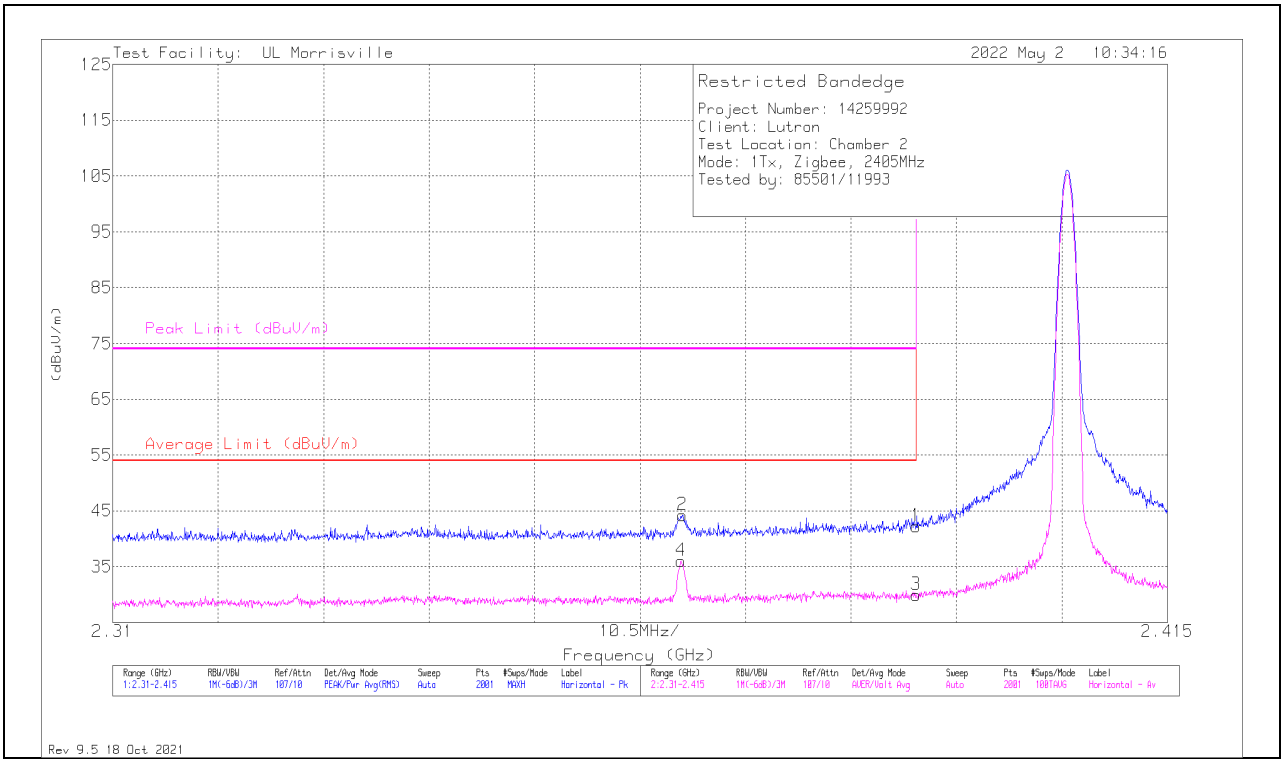
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
ADV - Linear Voltage Average

Note: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

10.2.3. 802.15.4

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

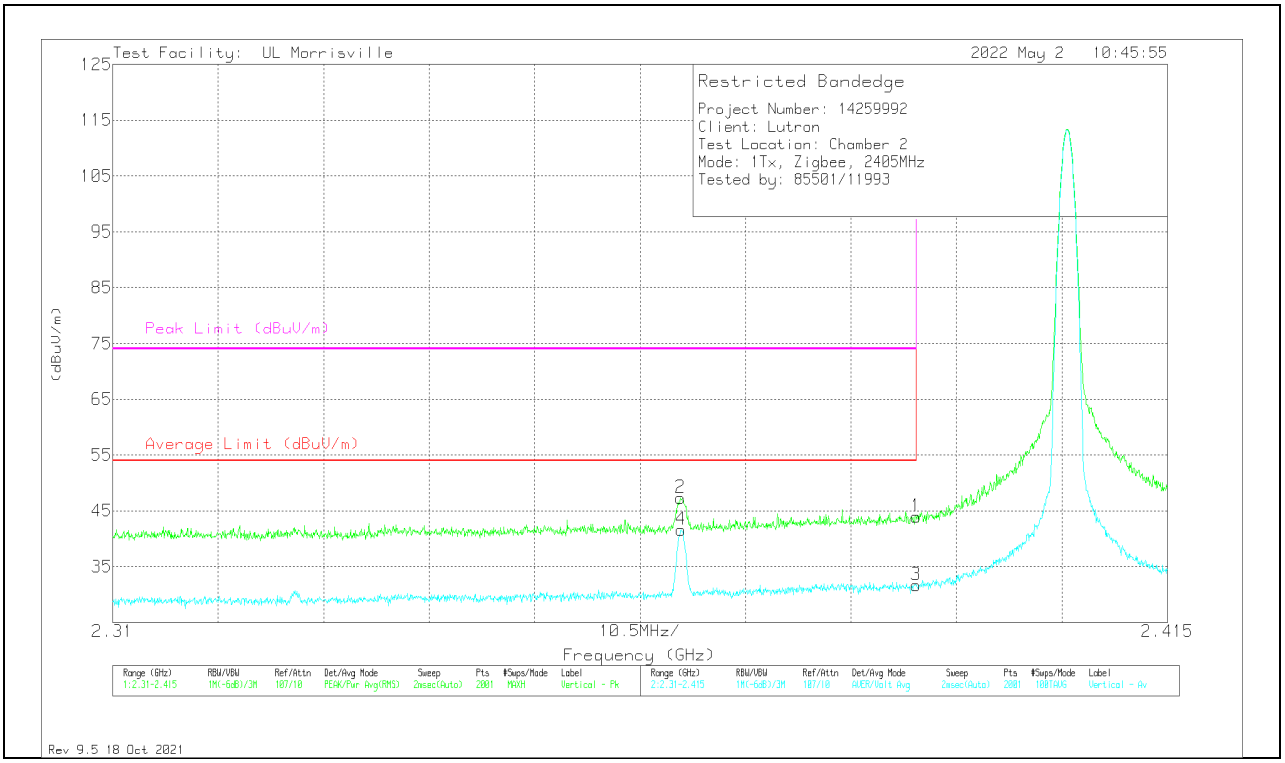


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	34.43	Pk	31.9	-24.1	0	42.23	-	-	74	-31.77	78	125	H
2	* ** 2.3667	36.07	Pk	32.2	-24.1	0	44.17	-	-	74	-29.83	78	125	H
3	* ** 2.38996	22.17	ADV	31.9	-24.1	-10.46	19.51	54	-34.49	-	-	78	125	H
4	* ** 2.3666	27.94	ADV	32.2	-24.1	-10.46	25.58	54	-28.42	-	-	78	125	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: Manufacturer has declared operational duty cycles of 30% for 802.15.4. Therefore, duty cycle correction factor of -10.46dB (20log(0.30)) will be applied to 802.15.4 average measurement per KDB558074 v05r02 11.A3(C).

VERTICAL RESULT



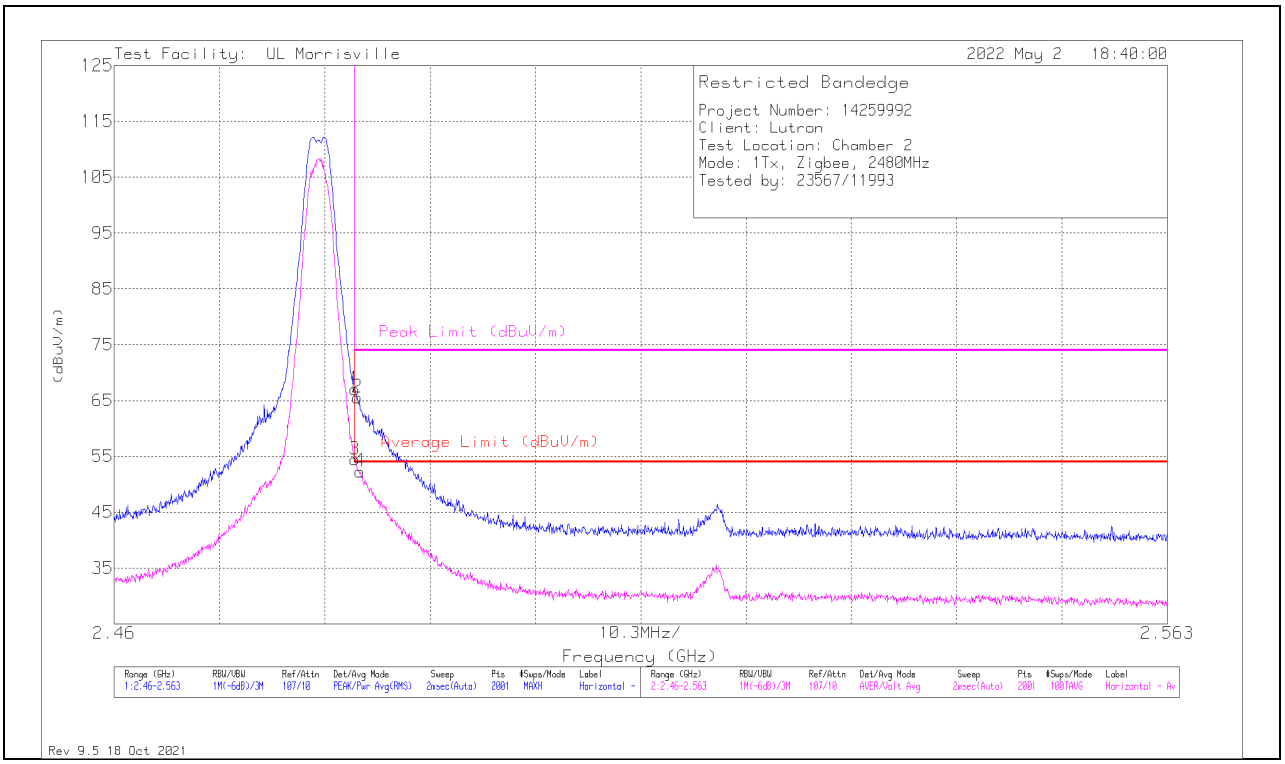
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	36.21	Pk	31.9	-24.1	0	44.01	-	-	74	-29.99	105	153	V
2	* ** 2.36654	39.25	Pk	32.2	-24.1	0	47.35	-	-	74	-26.65	105	153	V
3	* ** 2.38996	23.89	ADV	31.9	-24.1	-10.46	21.23	54	-32.77	-	-	105	153	V
4	* ** 2.3666	33.5	ADV	32.2	-24.1	-10.46	31.14	54	-22.86	-	-	105	153	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: Manufacturer has declared operational duty cycles of 30% for 802.15.4. Therefore, duty cycle correction factor of -10.46dB (20log(0.30)) will be applied to 802.15.4 average measurement per KDB558074 v05r02 11.A3(C).

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

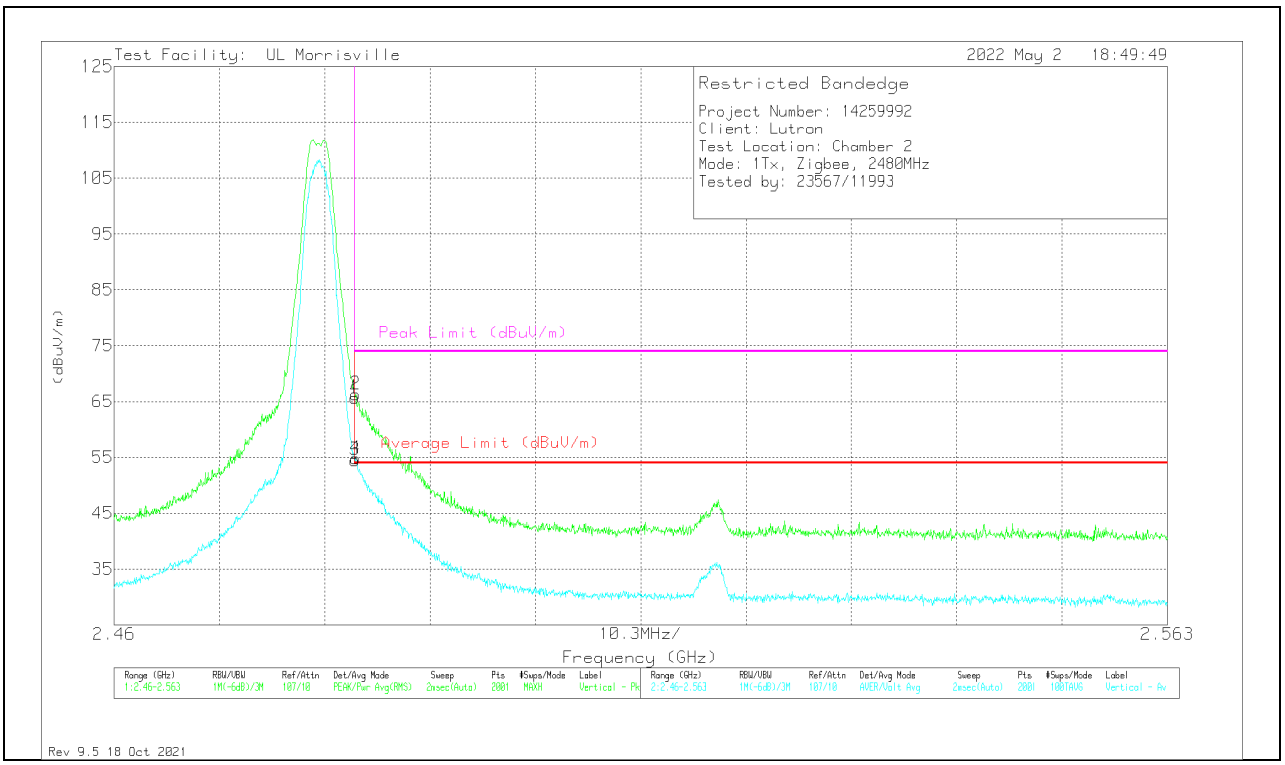


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.48354	59.14	Pk	32.5	-24.6	0	67.04	-	-	74	-6.96	288	180	H
2	* ** 2.48379	57.66	Pk	32.5	-24.6	0	65.56	-	-	74	-8.44	288	180	H
3	* ** 2.48354	46.55	ADV	32.5	-24.6	-10.46	43.99	54	-10.01	-	-	288	180	H
4	* ** 2.48405	44.5	ADV	32.5	-24.7	-10.46	41.84	54	-12.16	-	-	288	180	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: Manufacturer has declared operational duty cycles of 30% for 802.15.4. Therefore, duty cycle correction factor of -10.46dB (20log(0.30)) will be applied to 802.15.4 average measurement per KDB558074 v05r02 11.A3(C).

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	57.78	Pk	32.5	-24.6	0	65.68	-	-	74	-8.32	110	145	V
2	* ** 2.48359	58.38	Pk	32.5	-24.6	0	66.28	-	-	74	-7.72	110	145	V
3	* ** 2.48354	46.63	ADV	32.5	-24.6	-10.46	44.07	54	-9.93	-	-	110	145	V
4	* ** 2.48359	46.9	ADV	32.5	-24.6	-10.46	44.34	54	-9.66	-	-	110	145	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: Manufacturer has declared operational duty cycles of 30% for 802.15.4. Therefore, duty cycle correction factor of -10.46dB (20log(0.30)) will be applied to 802.15.4 average measurement per KDB558074 v05r02 11.A3(C).

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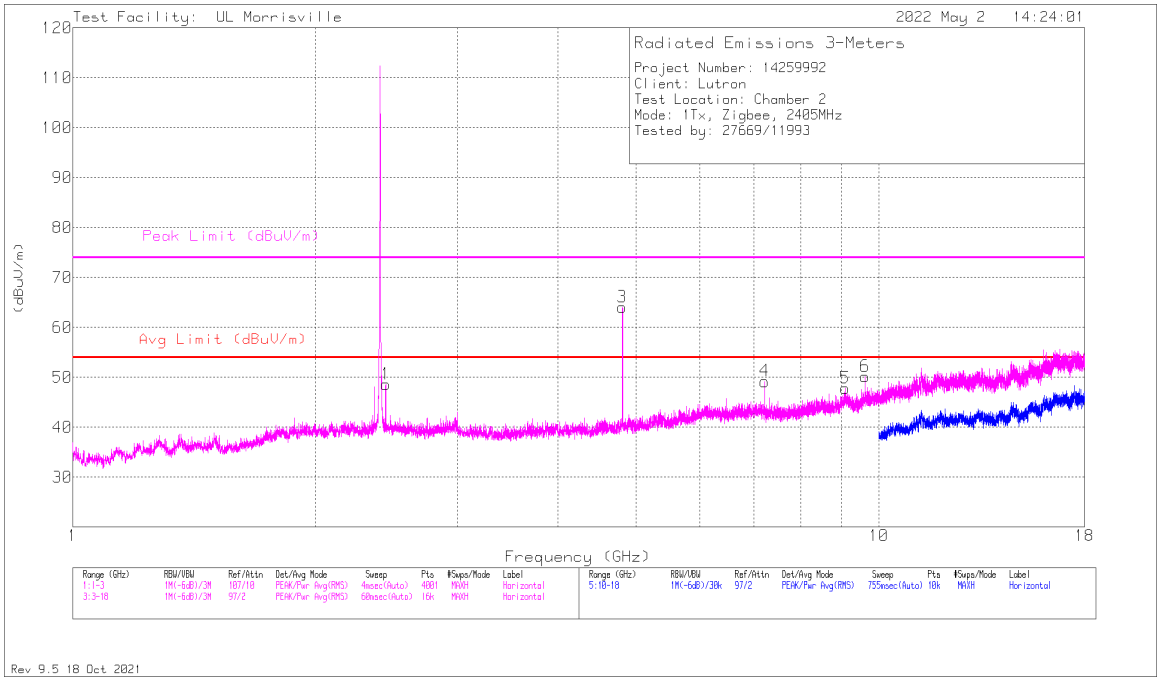
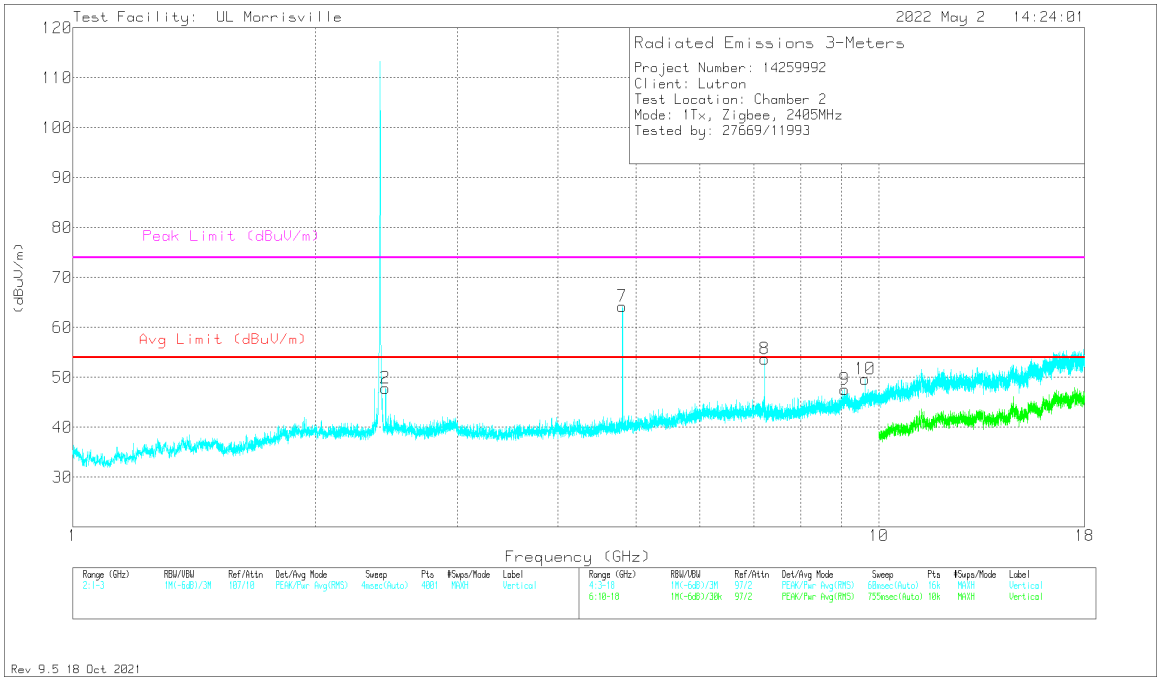
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Fltr (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	2.444	39.91	Pk	32.3	-24.4	0	47.81	-	-	-	-	0-360	101	V
1	2.4445	40.77	Pk	32.3	-24.5	0	48.57	-	-	-	-	0-360	199	H
3	* ** 4.80876	61	PK2	34.1	-30.2	0	64.9	-	-	74	-9.1	353	101	H
	* ** 4.80886	54.83	ADV	34.1	-30.2	-10.46	48.27	54	-5.73	-	-	353	101	H
7	* ** 4.8089	61.24	PK2	34.1	-30.2	0	65.14	-	-	74	-8.86	286	119	V
	* ** 4.80891	55.05	ADV	34.1	-30.2	-10.46	48.49	54	-5.51	-	-	286	119	V
9	* ** 9.07125	36.83	Pk	36.3	-25.6	0	47.53	54	-6.47	74	-26.47	0-360	199	V
5	* ** 9.0825	36.97	Pk	36.3	-25.4	0	47.87	54	-6.13	74	-26.13	0-360	199	H
8	7.21313	45.44	Pk	35.7	-27.5	0	53.64	-	-	-	-	0-360	101	V
4	7.21688	40.51	Pk	35.7	-27	0	49.21	-	-	-	-	0-360	101	H
6	9.61781	39.04	Pk	36.9	-25.7	0	50.24	-	-	-	-	0-360	101	H
10	9.61781	38.49	Pk	36.9	-25.7	0	49.69	-	-	-	-	0-360	199	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: Manufacturer has declared operational duty cycles of 30% for 802.15.4. Therefore, duty cycle correction factor of -10.46dB (20log(0.30)) will be applied to 802.15.4 average measurement per KDB558074 v05r02 11.A3(C).

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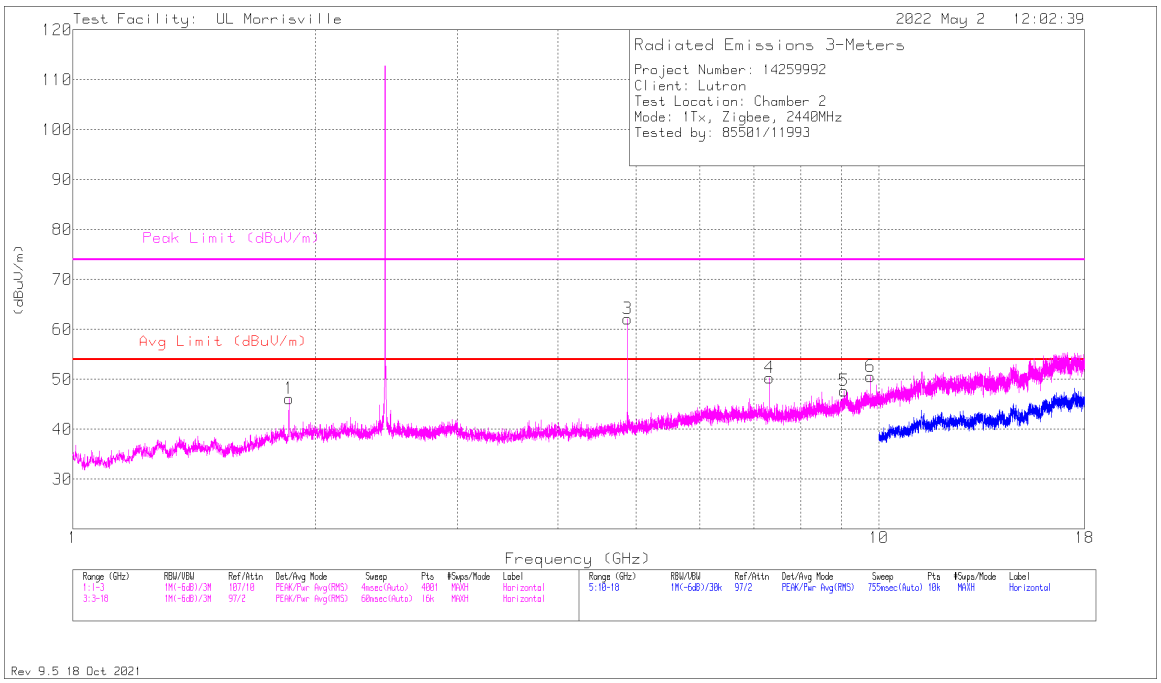
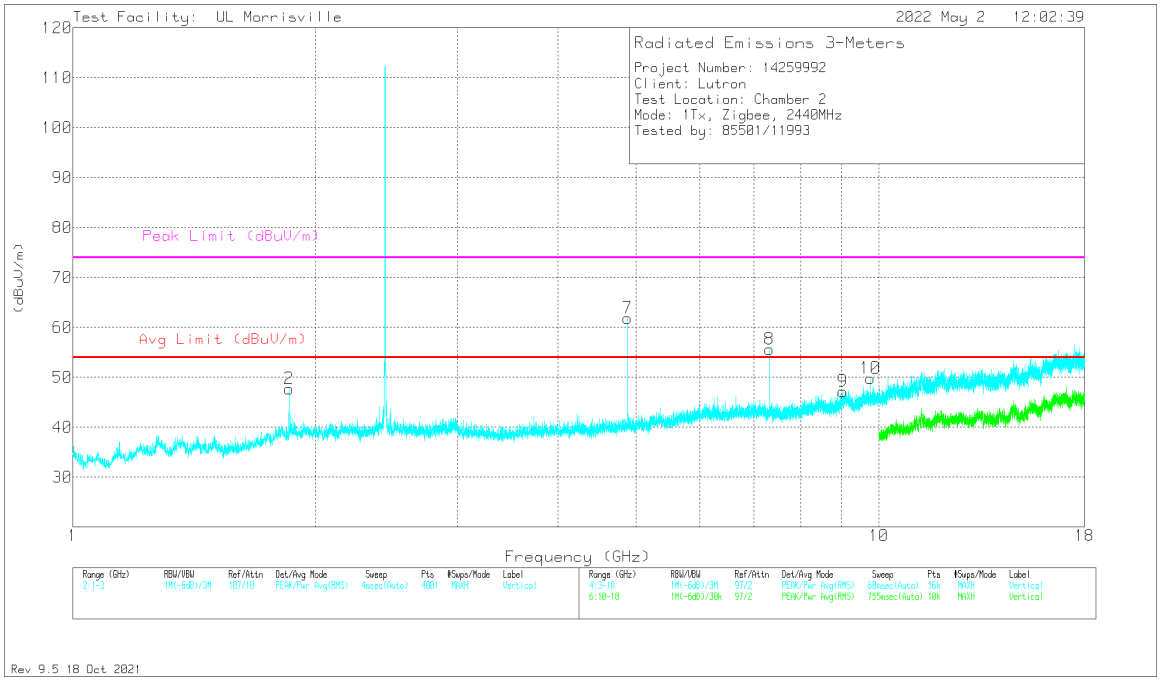
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

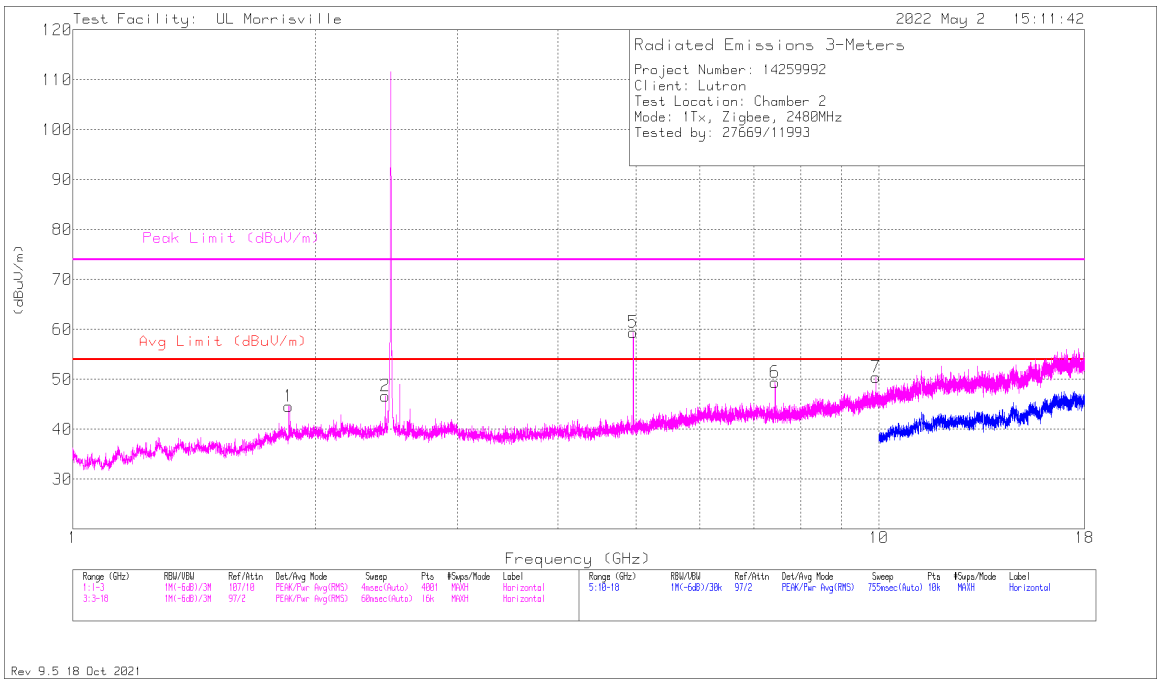
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/Fltr (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	** 1.8555	38.2	Pk	30.5	-22.5	0	46.2	54	-7.8	74	-27.8	0-360	101	H
2	** 1.8545	39.7	Pk	30.4	-22.4	0	47.7	54	-6.3	74	-26.3	0-360	200	V
3	* ** 4.87999	58.78	PK2	34.2	-30.3	0	62.68	-	-	74	-11.32	353	101	H
	* ** 4.87998	57.71	ADV	34.2	-30.3	-10.46	51.15	54	-2.85	-	-	353	101	H
7	* ** 4.87998	58.81	PK2	34.2	-30.3	0	62.71	-	-	74	-11.29	295	101	V
	* ** 4.87997	57.82	ADV	34.2	-30.3	-10.46	51.26	54	-2.74	-	-	295	101	V
4	* ** 7.31996	44	PK2	35.7	-26.8	0	52.9	-	-	74	-21.1	265	120	H
	* ** 7.31994	39.93	ADV	35.7	-26.8	-10.46	38.37	54	-15.63	-	-	265	120	H
8	* ** 7.32	48.34	PK2	35.7	-26.8	0	57.24	-	-	74	-16.76	349	106	V
	* ** 7.31998	46.16	ADV	35.7	-26.8	-10.46	44.6	54	-9.4	-	-	349	106	V
9	* ** 9.0225	37.63	Pk	36.2	-26.6	0	47.23	54	-6.77	74	-26.77	0-360	200	V
5	* ** 9.05719	37.16	Pk	36.2	-25.7	0	47.66	54	-6.34	74	-26.34	0-360	101	H
6	9.75938	39.61	Pk	36.9	-25.9	0	50.61	-	-	-	-	0-360	101	H
10	9.76031	38.85	Pk	36.9	-25.9	0	49.85	-	-	-	-	0-360	200	V

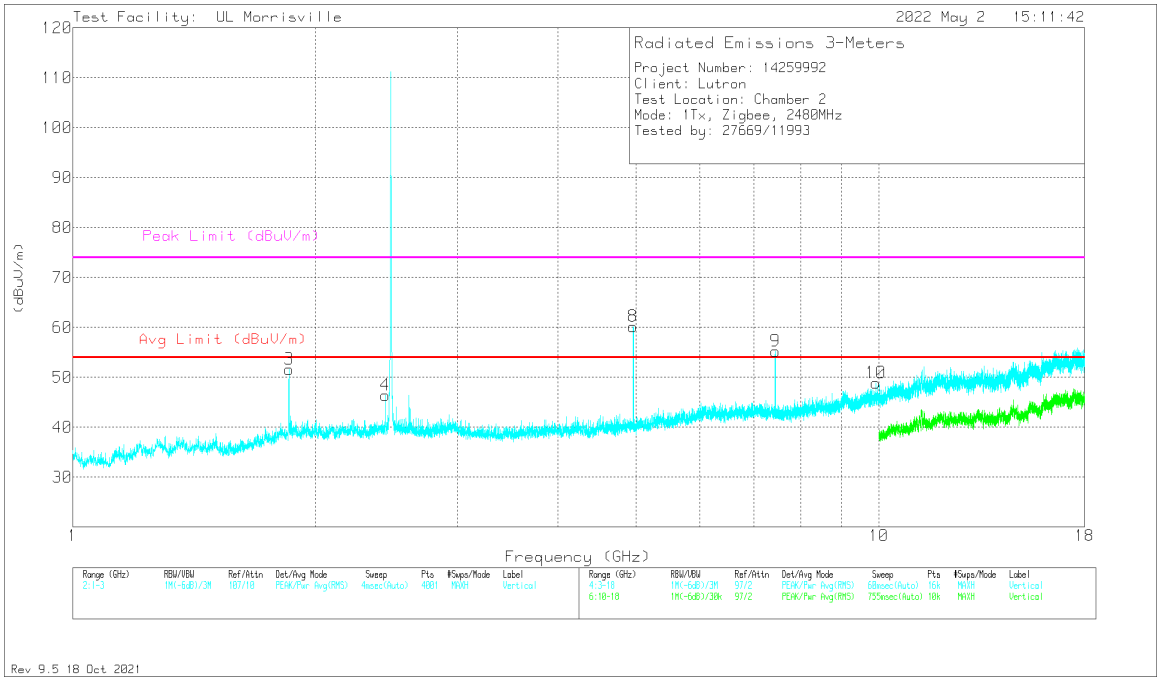
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
PK2 - Maximum Peak
ADV - Linear Voltage Average

Note: Manufacturer has declared operational duty cycles of 30% for 802.15.4. Therefore, duty cycle correction factor of -10.46dB (20log(0.30)) will be applied to 802.15.4 average measurement per KDB558074 v05r02 11.A3(C).

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Amp/Cbl/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	** 1.852	37.14	Pk	30.2	-22.7	0	44.64	54	-9.36	74	-29.36	0-360	199	H
3	** 1.8542	37.13	PK2	30.4	-22.4	0	45.13	-	-	74	-28.87	99	152	V
	** 1.85619	21.32	ADV	30.6	-22.6	-10.46	18.86	54	-35.14	-	-	99	152	V
5	* ** 4.95897	56.4	PK2	34	-30.5	0	59.9	-	-	74	-14.1	339	101	H
	* ** 4.95885	49.89	ADV	34	-30.5	-10.46	42.93	54	-11.07	-	-	339	101	H
8	* ** 4.95897	57.85	PK2	34	-30.5	0	61.35	-	-	74	-12.65	282	108	V
	* ** 4.95886	51.97	ADV	34	-30.5	-10.46	45.01	54	-8.99	-	-	282	108	V
6	* ** 7.43816	45.03	PK2	35.6	-27.4	0	53.23	-	-	74	-20.77	263	131	H
	* ** 7.43838	36.34	ADV	35.6	-27.5	-10.46	33.98	54	-20.02	-	-	263	131	H
9	* ** 7.44152	49.02	PK2	35.6	-27.2	0	57.42	-	-	74	-16.58	352	105	V
	* ** 7.4416	41.07	ADV	35.6	-27.2	-10.46	39.01	54	-14.99	-	-	352	105	V
7	9.91781	38.82	Pk	36.9	-25.3	0	50.42	-	-	-	-	0-360	101	H
10	9.9225	37.43	Pk	36.9	-25.4	0	48.93	-	-	-	-	0-360	101	V
2	2.442	38.62	Pk	32.2	-24.2	0	46.62	-	-	-	-	0-360	101	H
4	2.4425	38.46	Pk	32.2	-24.3	0	46.36	-	-	-	-	0-360	199	V

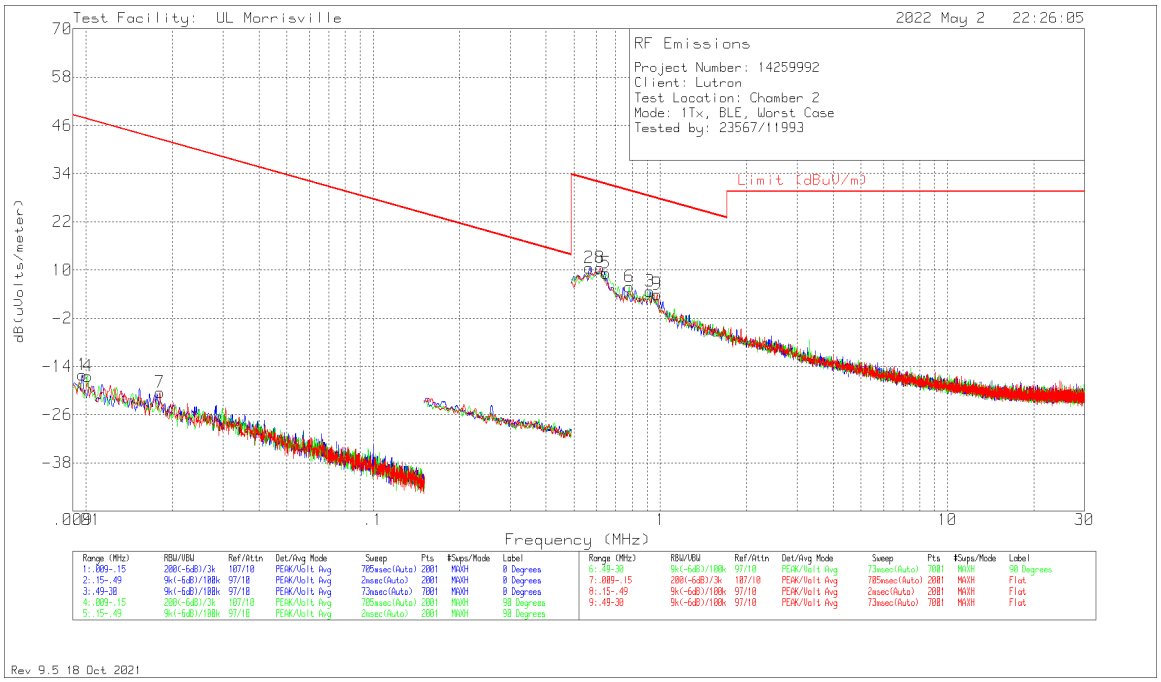
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
PK2 - Maximum Peak
ADV - Linear Voltage Average

Note: Manufacturer has declared operational duty cycles of 30% for 802.15.4. Therefore, duty cycle correction factor of -10.46dB (20log(0.30)) will be applied to 802.15.4 average measurement per KDB558074 v05r02 11.A3(C).

10.3. WORST CASE BELOW 0.009-30MHZ

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*Log (test distance / specification distance).

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

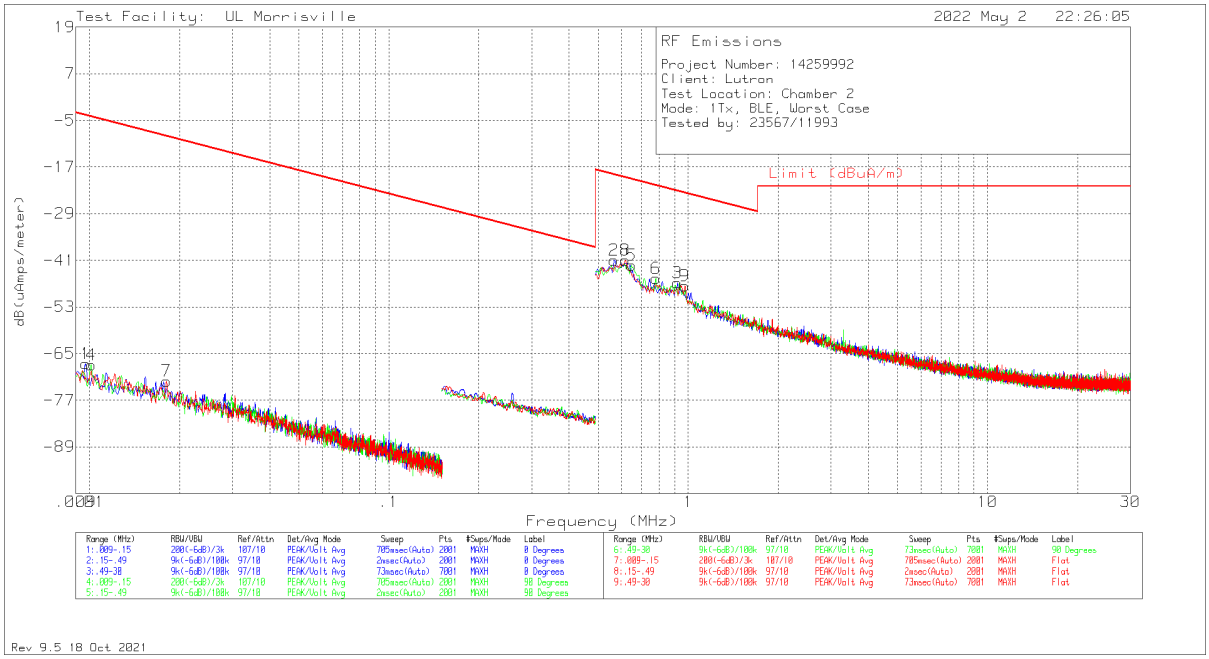


ANTENNA- THREE ORIENTATIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Cbl (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	QP/AV Limit (dBuV/m)	PK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
1	.00971	45.08	Pk	18.7	.1	-80	-16.12	47.86	67.86	-63.98	0-360	0 degs
4	.01014	45.11	Pk	18.3	.1	-80	-16.49	47.49	67.49	-63.98	0-360	90 degs
7	.01809	44.46	Pk	14.9	.1	-80	-20.54	42.46	62.46	-63	0-360	Flat
2	.56589	39.09	Pk	11.2	.2	-40	10.49	32.55	-	-22.06	0-360	0 degs
8	.61648	39.15	Pk	11.2	.2	-40	10.55	31.81	-	-21.26	0-360	Flat
5	.64599	37.74	Pk	11.3	.2	-40	9.24	31.4	-	-22.16	0-360	90 degs
6	.7809	34.34	Pk	11.3	.2	-40	5.84	29.75	-	-23.91	0-360	90 degs
3	.92003	33.2	Pk	11.3	.2	-40	4.7	28.33	-	-23.63	0-360	0 degs
9	.97484	32.47	Pk	11.3	.2	-40	3.97	27.83	-	-23.86	0-360	Flat

Pk - Peak detector

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

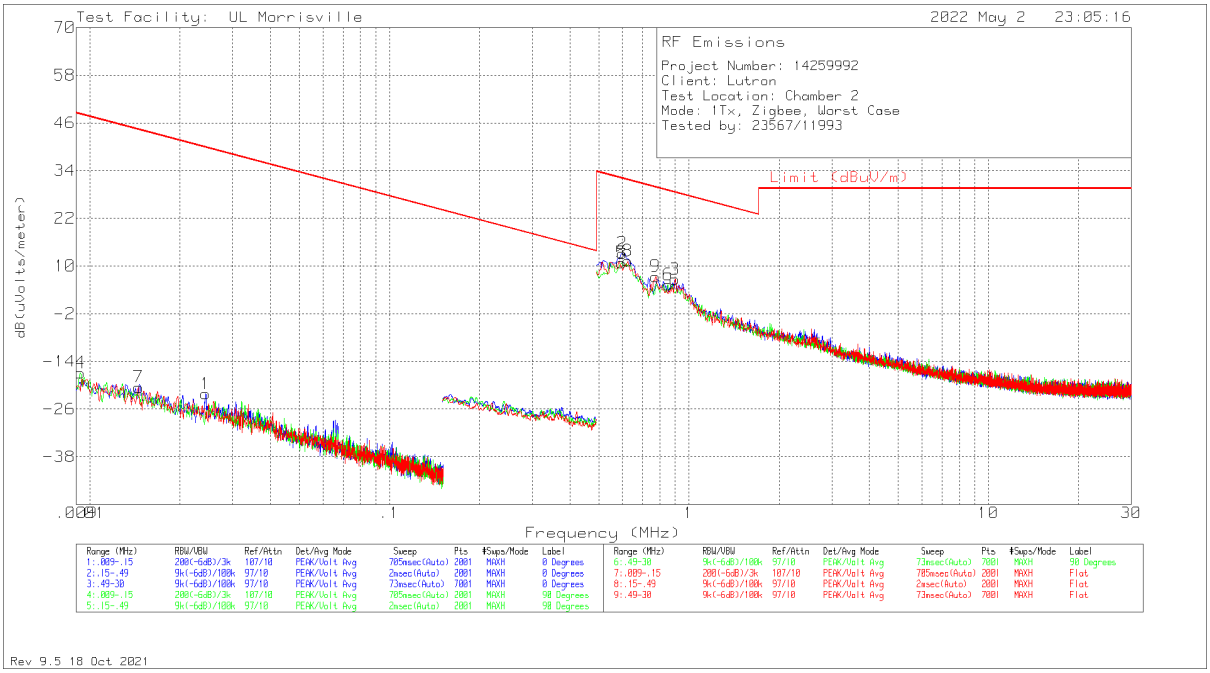


ANTENNA- THREE ORIENTATIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Cbl (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uAmps/meter)	QP/AV Limit (dBuA/m)	PK Limit (dBuA/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
1	.00971	45.08	Pk	-32.8	.1	-80	-67.62	-3.64	16.36	-63.98	0-360	0 degs
4	.01014	45.11	Pk	-33.2	.1	-80	-67.99	-4.01	15.99	-63.98	0-360	90 degs
7	.01809	44.46	Pk	-36.6	.1	-80	-72.04	-9.04	10.96	-63	0-360	Flat
2	.56589	39.09	Pk	-40.3	.2	-40	-41.01	-18.95		-22.06	0-360	0 degs
8	.61648	39.15	Pk	-40.3	.2	-40	-40.95	-19.69		-21.26	0-360	Flat
5	.64599	37.74	Pk	-40.2	.2	-40	-42.26	-20.1		-22.16	0-360	90 degs
6	.7809	34.34	Pk	-40.2	.2	-40	-45.66	-21.75		-23.91	0-360	90 degs
3	.92003	33.2	Pk	-40.2	.2	-40	-46.8	-23.17		-23.63	0-360	0 degs
9	.97484	32.47	Pk	-40.2	.2	-40	-47.53	-23.67		-23.86	0-360	Flat

Pk - Peak detector

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION – 802.15.4 E-FIELD)

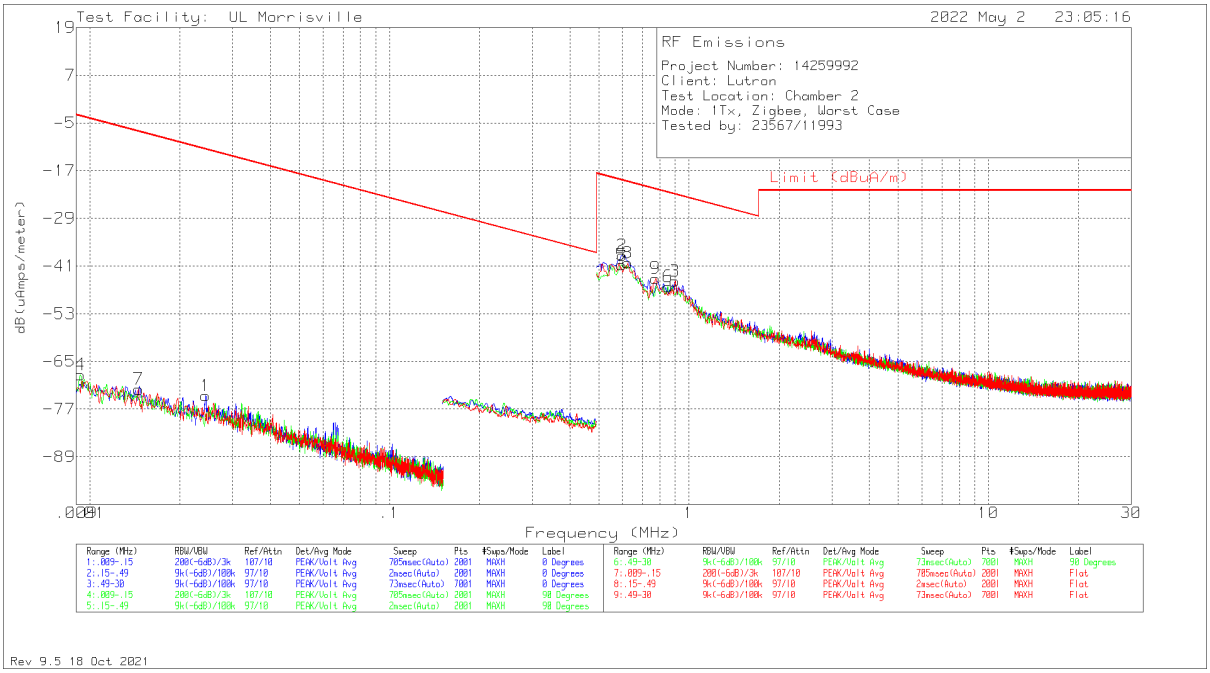


ANTENNA- THREE ORIENTATIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Cbl (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	QP/AV Limit (dBuV/m)	PK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
4	.00928	44.04	Pk	19	.1	-80	-16.86	48.25	68.25	-65.11	0-360	90 degs
7	.01454	43.02	Pk	16.4	.1	-80	-20.48	44.35	64.35	-64.83	0-360	Flat
1	.02434	43.95	Pk	13.8	.1	-80	-22.15	39.88	59.88	-62.03	0-360	0 degs
5	.5954	39.41	Pk	11.2	.2	-40	10.81	32.11		-21.3	0-360	90 degs
2	.59962	41.78	Pk	11.2	.2	-40	13.18	32.05		-18.87	0-360	0 degs
8	.62491	39.87	Pk	11.2	.2	-40	11.27	31.69		-20.42	0-360	Flat
9	.77247	35.86	Pk	11.3	.2	-40	7.36	29.85		-22.49	0-360	Flat
6	.85258	33.78	Pk	11.3	.2	-40	5.28	28.99		-23.71	0-360	90 degs
3	.89895	35.17	Pk	11.3	.2	-40	6.67	28.53		-21.86	0-360	0 degs

Pk - Peak detector

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION – 802.15.4 H-FIELD)



ANTENNA- THREE ORIENTATIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Cbl (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uAmps/meter)	QP/AV Limit (dBuA/m)	PK Limit (dBuA/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
4	.00928	44.04	Pk	-32.5	.1	-80	-68.36	-3.25	16.75	-65.11	0-360	90 degs
7	.01454	43.02	Pk	-35.1	.1	-80	-71.98	-7.15	12.85	-64.83	0-360	Flat
1	.02434	43.95	Pk	-37.7	.1	-80	-73.65	-11.62	8.38	-62.03	0-360	0 degs
5	.5954	39.41	Pk	-40.3	.2	-40	-40.69	-19.39	-	-21.3	0-360	90 degs
2	.59962	41.78	Pk	-40.3	.2	-40	-38.32	-19.45	-	-18.87	0-360	0 degs
8	.62491	39.87	Pk	-40.3	.2	-40	-40.23	-19.81	-	-20.42	0-360	Flat
9	.77247	35.86	Pk	-40.2	.2	-40	-44.14	-21.65	-	-22.49	0-360	Flat
6	.85258	33.78	Pk	-40.2	.2	-40	-46.22	-22.51	-	-23.71	0-360	90 degs
3	.89895	35.17	Pk	-40.2	.2	-40	-44.83	-22.97	-	-21.86	0-360	0 degs

Pk - Peak detector

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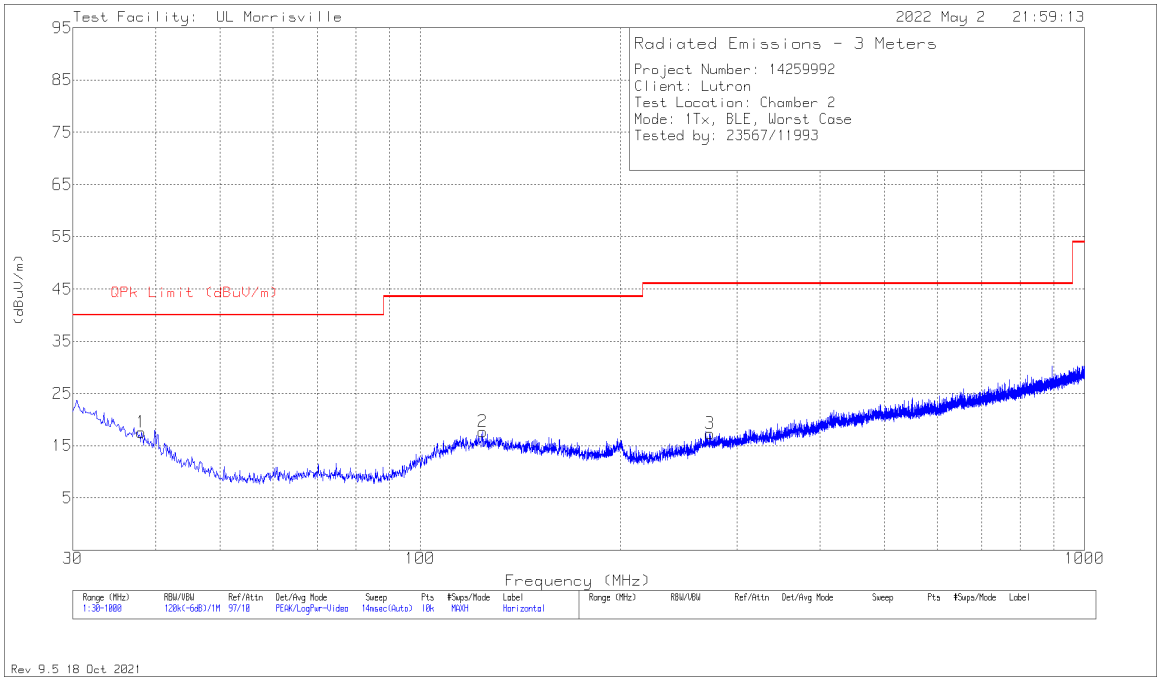
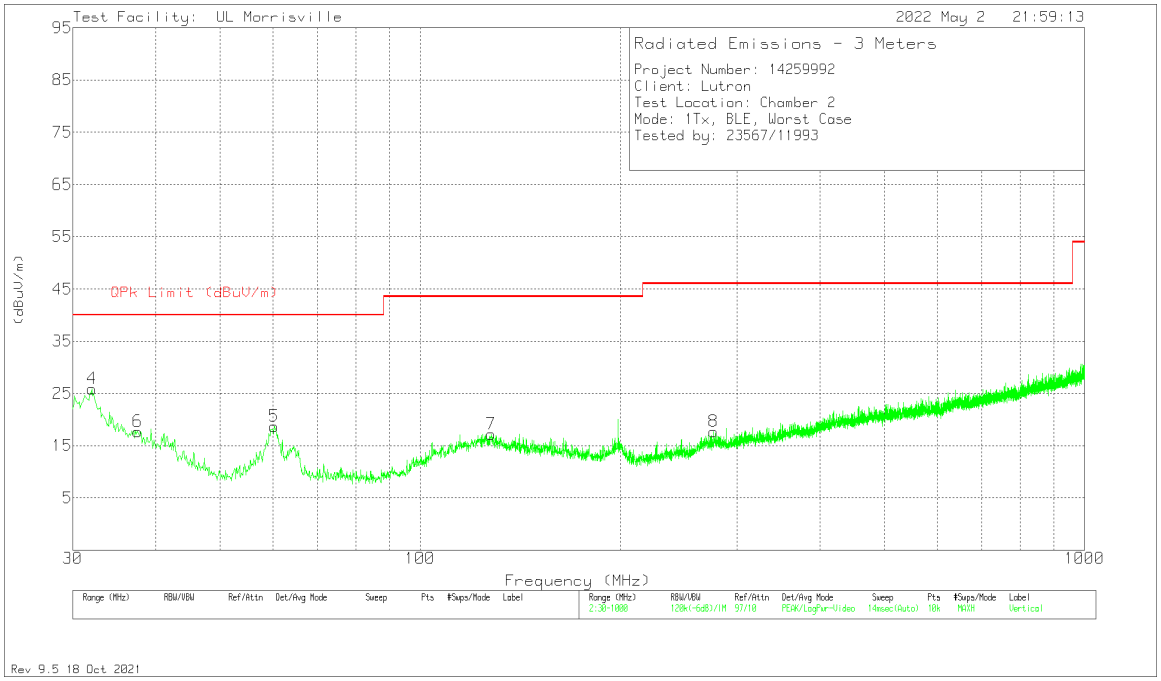
10.4. WORST CASE 30-1000 MHZ

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



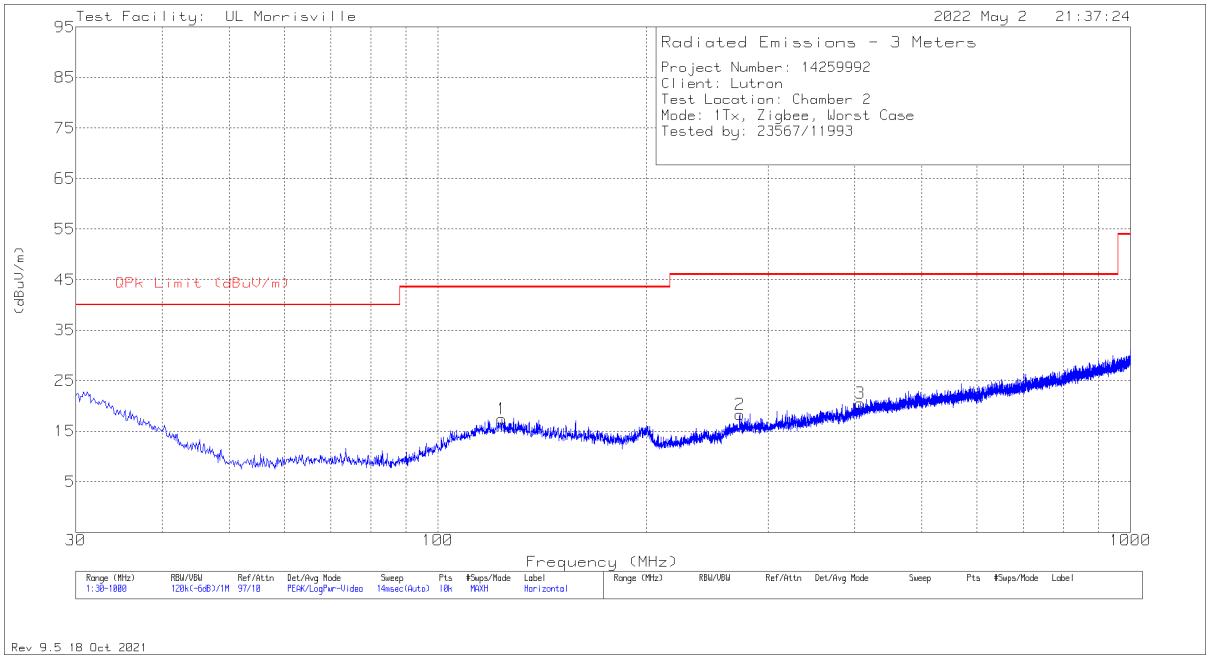
HORIZONTAL



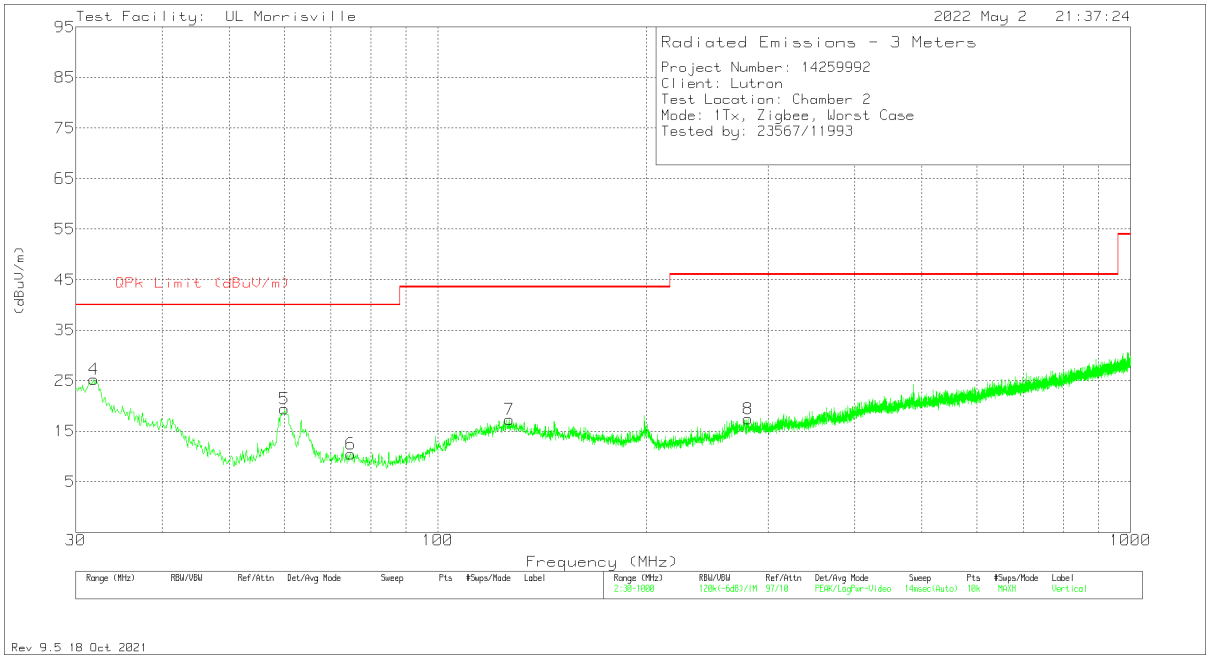
VERTICAL

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0073 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 38.051	27.61	Pk	21.3	-31.3	17.61	40	-22.39	0-360	101	H
2	* ** 124.09	27.9	Pk	20	-30.2	17.7	43.52	-25.82	0-360	299	H
3	* ** 272.791	26.93	Pk	19.4	-29	17.33	46.02	-28.69	0-360	199	H
6	* ** 37.566	27.51	Pk	21.6	-31.4	17.71	40	-22.29	0-360	199	V
7	* ** 127.873	27.38	Pk	19.9	-30.1	17.18	43.52	-26.34	0-360	101	V
8	* ** 276.477	27.15	Pk	19.4	-28.9	17.65	46.02	-28.37	0-360	101	V
4	32.037	31.92	Pk	25.5	-31.5	25.92	-	-	0-360	101	V
5	60.264	36.38	Pk	13.5	-31.2	18.68	-	-	0-360	101	V

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION – 802.15.4)



HORIZONTAL



VERTICAL

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0073 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 123.702	27.38	Pk	20	-30	17.38	43.52	-26.14	0-360	399	H
2	* ** 273.179	27.88	Pk	19.4	-29	18.28	46.02	-27.74	0-360	199	H
3	* ** 407.33	26.5	Pk	22	-28	20.5	46.02	-25.52	0-360	101	H
6	* ** 74.814	27.29	Pk	14	-30.8	10.49	40	-29.51	0-360	299	V
7	* ** 126.709	27.62	Pk	19.9	-30.2	17.32	43.52	-26.2	0-360	101	V
8	* ** 280.26	26.89	Pk	19.4	-28.8	17.49	46.02	-28.53	0-360	101	V
4	31.843	30.97	Pk	25.6	-31.3	25.27	-	-	0-360	101	V
5	60.07	37.07	Pk	13.5	-31.1	19.47	-	-	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

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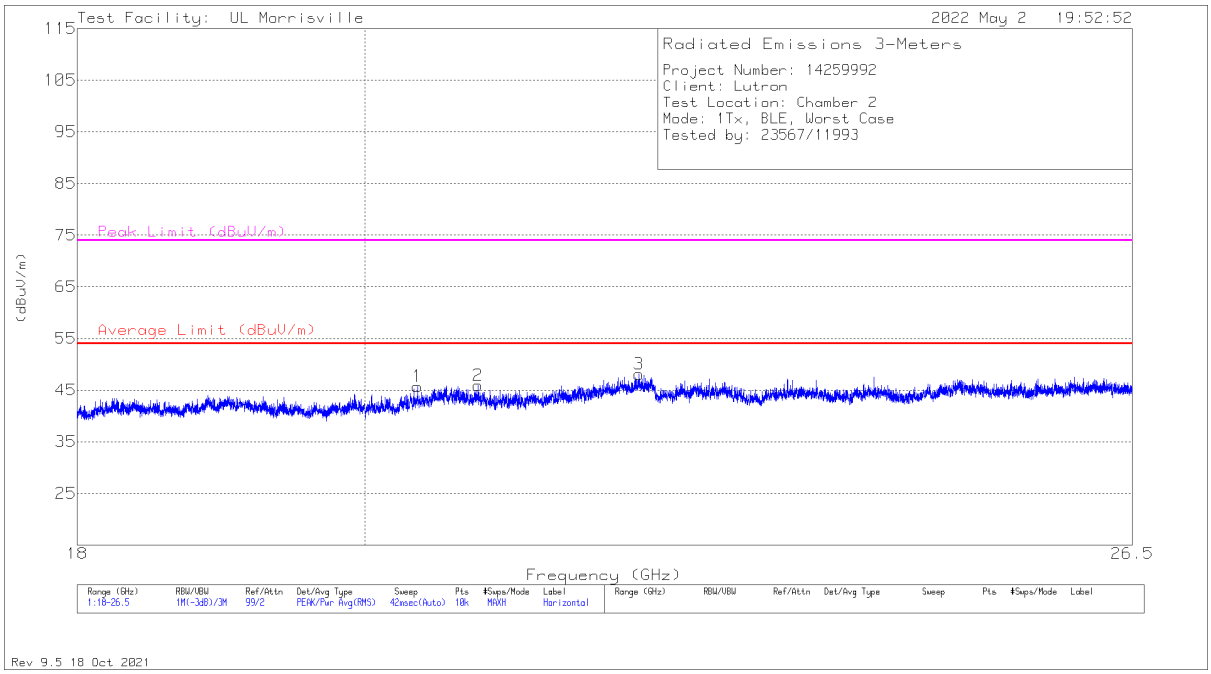
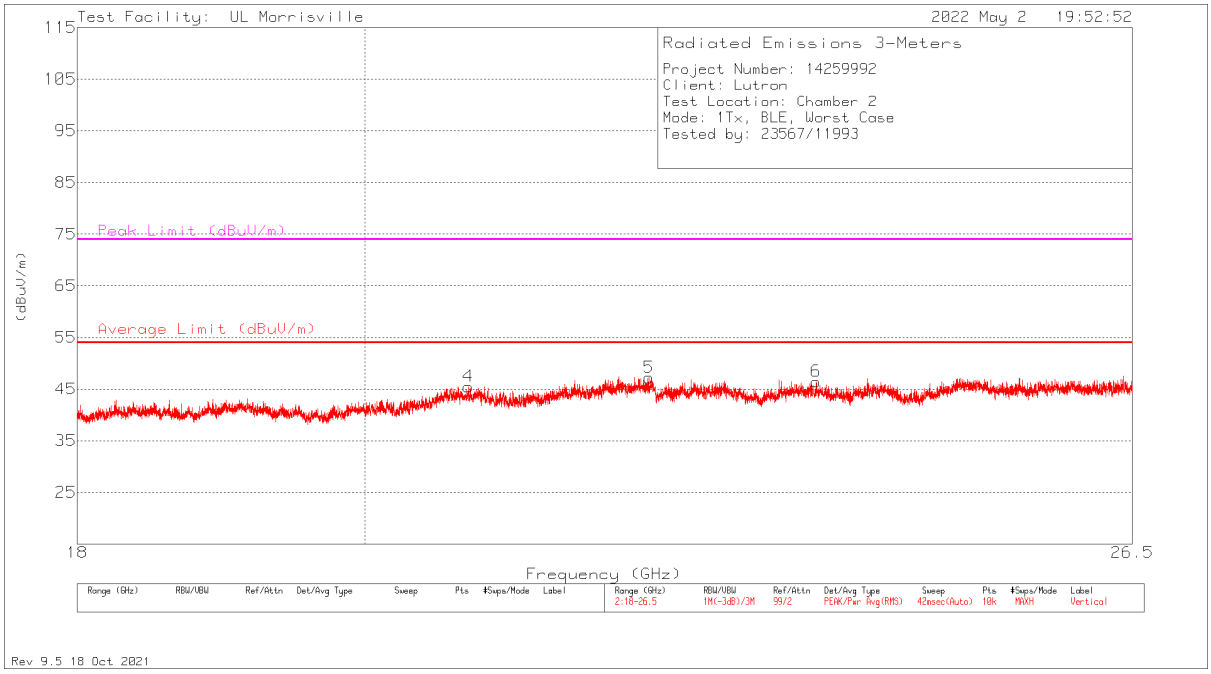
10.5. WORST CASE 18-26GHZ

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



HORIZONTAL



VERTICAL

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0063 (dB/m)	Amp/Cbl (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 20.39081	49.7	Pk	33.9	-37.9	0	45.7	54	-8.3	74	-28.3	0-360	300	H
2	* ** 20.85061	50.01	Pk	34.1	-38.2	0	45.91	54	-8.09	74	-28.09	0-360	300	H
3	* ** 22.1169	49.07	PK2	37	-37.9	0	48.17	-	-	74	-25.83	192	233	H
	* ** 22.11759	35.51	ADV	37	-37.8	-12.04	22.67	54	-31.33	-	-	192	233	H
4	* ** 20.77497	49.49	Pk	34	-38	0	45.49	54	-8.51	74	-28.51	0-360	250	V
5	* ** 22.19858	48.53	Pk	36.9	-38.2	0	47.23	54	-6.77	74	-26.77	0-360	300	V
6	* ** 23.60179	48.97	Pk	34.9	-37.4	0	46.47	54	-7.53	74	-27.53	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: Manufacturer has declared operational duty cycles of 25% for BLE. Therefore, duty cycle correction factor of -12.04dB (20log(0.25)) will be applied to BLE average measurement per KDB558074 v05r02 11.A3(C).

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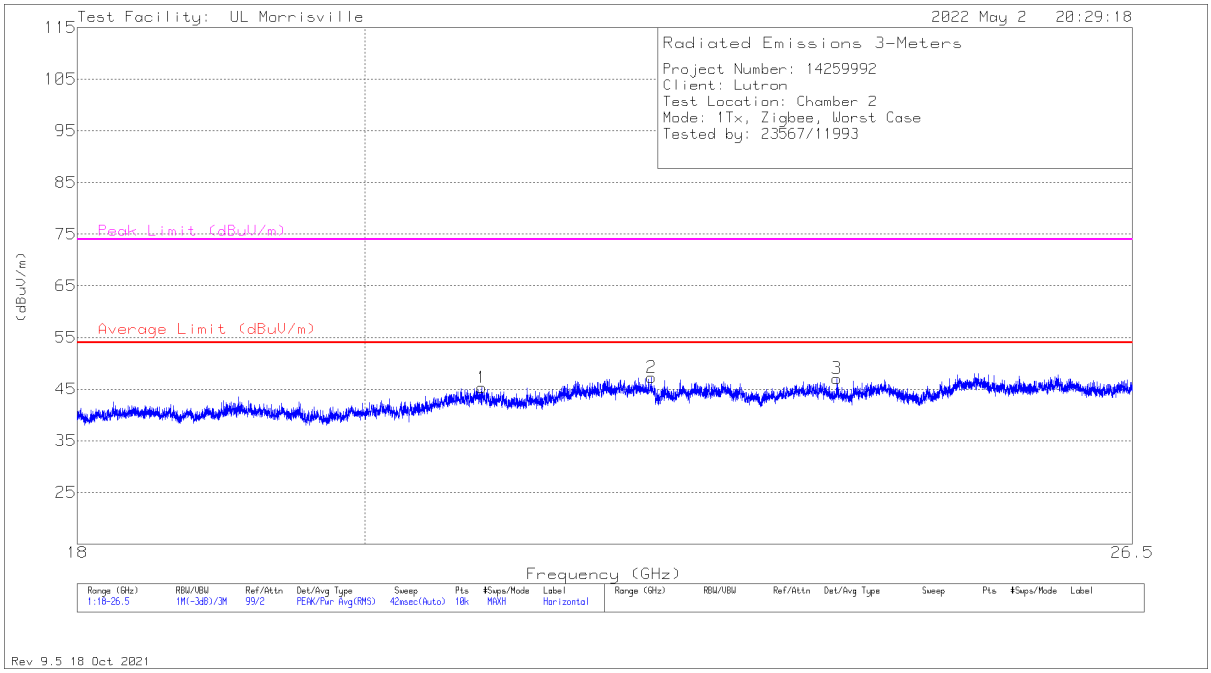
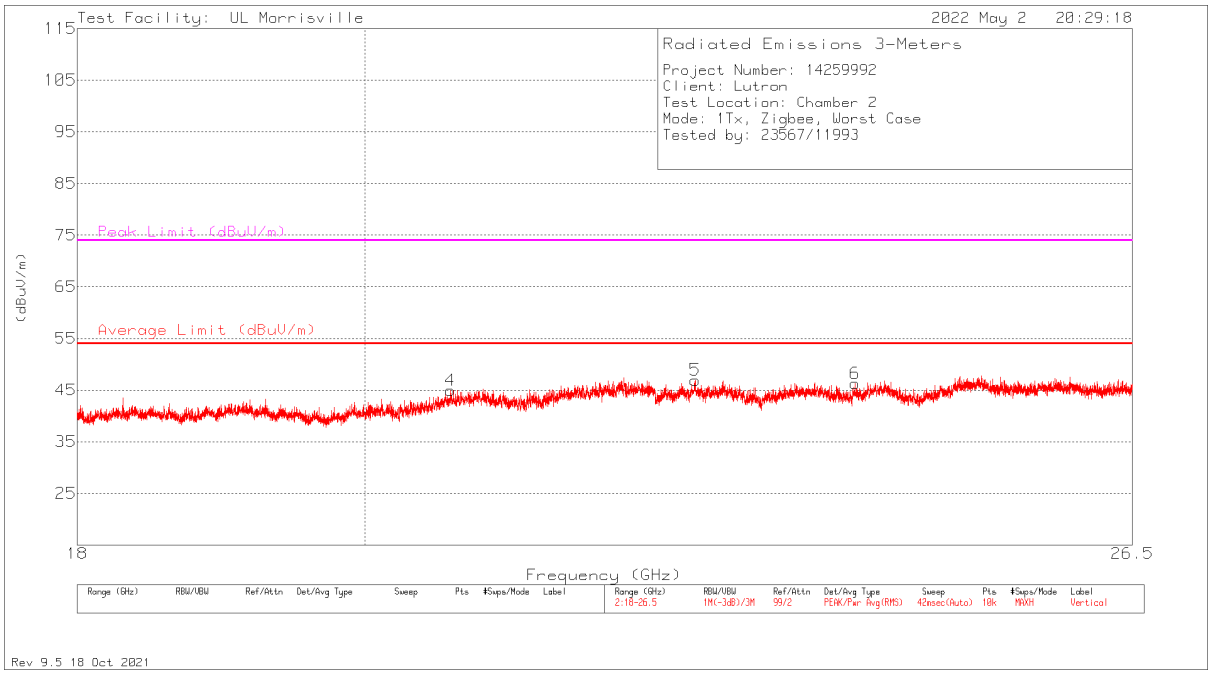
SPURIOUS EMISSIONS 18-26GHz (WORST-CASE CONFIGURATION – 802.15.4)



HORIZONTAL



VERTICAL

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0063 (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	* ** 20.87611	49.9	Pk	34.1	-38.7	45.3	54	-8.7	74	-28.7	0-360	150	H
2	* ** 22.21643	48.17	Pk	36.8	-37.7	47.27	54	-6.73	74	-26.73	0-360	101	H
3	* ** 23.78197	48.85	Pk	34.9	-36.7	47.05	54	-6.95	74	-26.95	0-360	300	H
4	* ** 20.63984	48.62	Pk	33.9	-37.6	44.92	54	-9.08	74	-29.08	0-360	250	V
5	* ** 22.57679	48.04	Pk	36.3	-37.4	46.94	54	-7.06	74	-27.06	0-360	101	V
6	* ** 23.94091	48.27	Pk	34.9	-36.9	46.27	54	-7.73	74	-27.73	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

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11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

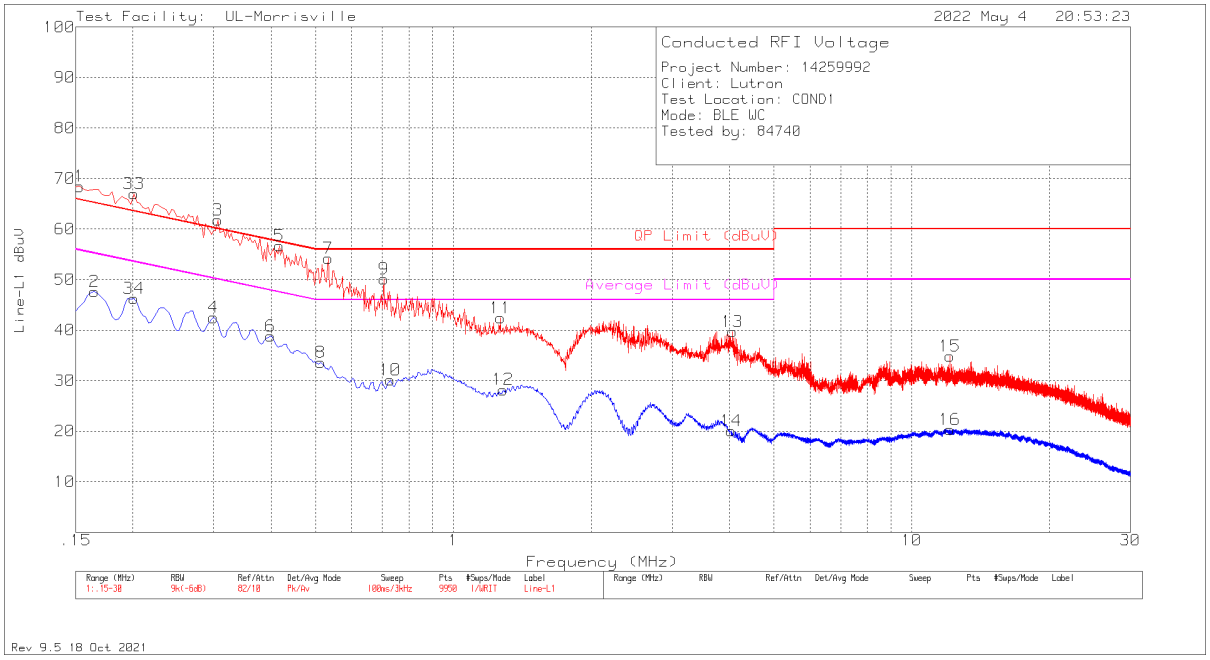
Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

RESULTS

11.1.1. AC POWER LINE - BLE

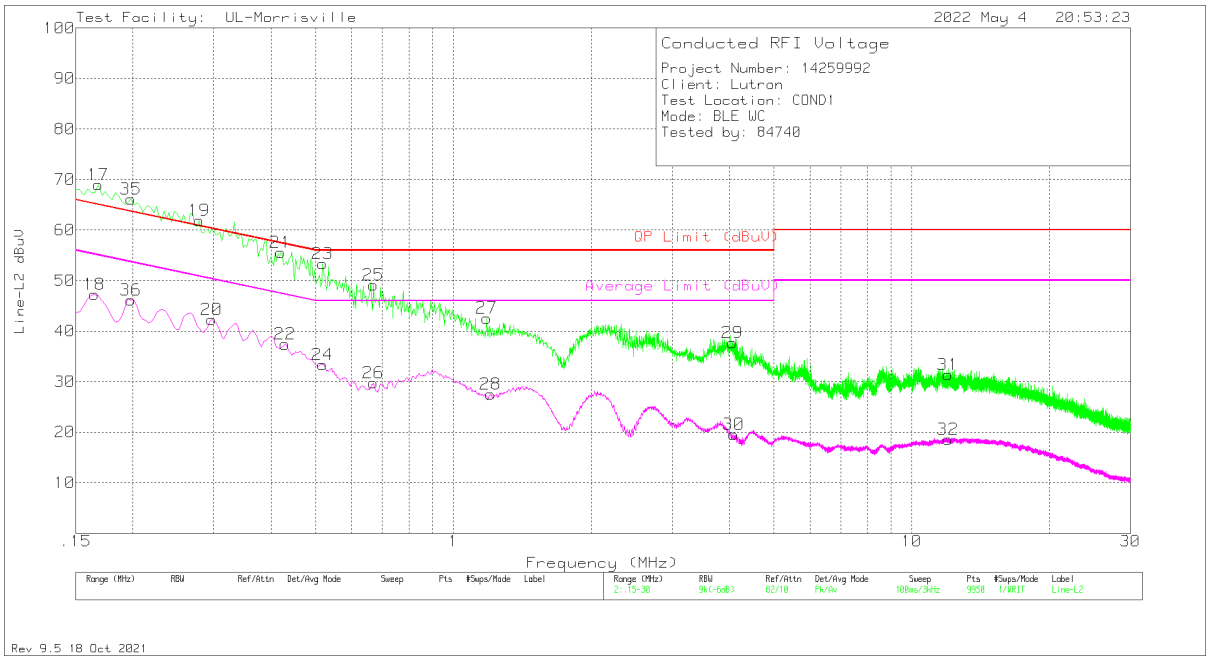
LINE 1 RESULTS



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	.15372	48.96	Qp	.2	1	9.9	60.06	65.8	-5.74	-	-
2	.165	36.68	Av	.2	.9	9.9	47.68	-	-	55.21	-7.53
33	.18365	45.33	Qp	.2	.8	9.9	56.23	64.32	-8.09	-	-
34	.201	35.47	Av	.1	.8	9.9	46.27	-	-	53.57	-7.3
4	.3	31.99	Av	.1	.5	9.9	42.49	-	-	50.24	-7.75
3	.30584	40.18	Qp	.1	.5	9.9	50.68	60.08	-9.4	-	-
6	.399	28.38	Av	.1	.4	9.9	38.78	-	-	47.87	-9.09
5	.41755	35.06	Qp	.1	.4	9.9	45.46	57.5	-12.04	-	-
8	.513	23.36	Av	0	.3	9.9	33.56	-	-	46	-12.44
7	.53402	30.68	Qp	0	.3	9.9	40.88	56	-15.12	-	-
9	.70502	27.57	Qp	0	.2	9.9	37.67	56	-18.33	-	-
10	.729	20.01	Av	0	.2	9.9	30.11	-	-	46	-15.89
11	1.266	32.48	Pk	0	.1	9.9	42.48	56	-13.52	-	-
12	1.284	18.21	Av	0	.1	9.9	28.21	-	-	46	-17.79
14	4.032	10.11	Av	0	.1	9.9	20.11	-	-	46	-25.89
13	4.062	29.7	Pk	0	.1	9.9	39.7	56	-16.3	-	-
16	12.108	10.19	Av	.1	.1	9.9	20.29	-	-	50	-29.71
15	12.117	24.78	Pk	.1	.1	9.9	34.88	60	-25.12	-	-

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

LINE 2 RESULTS

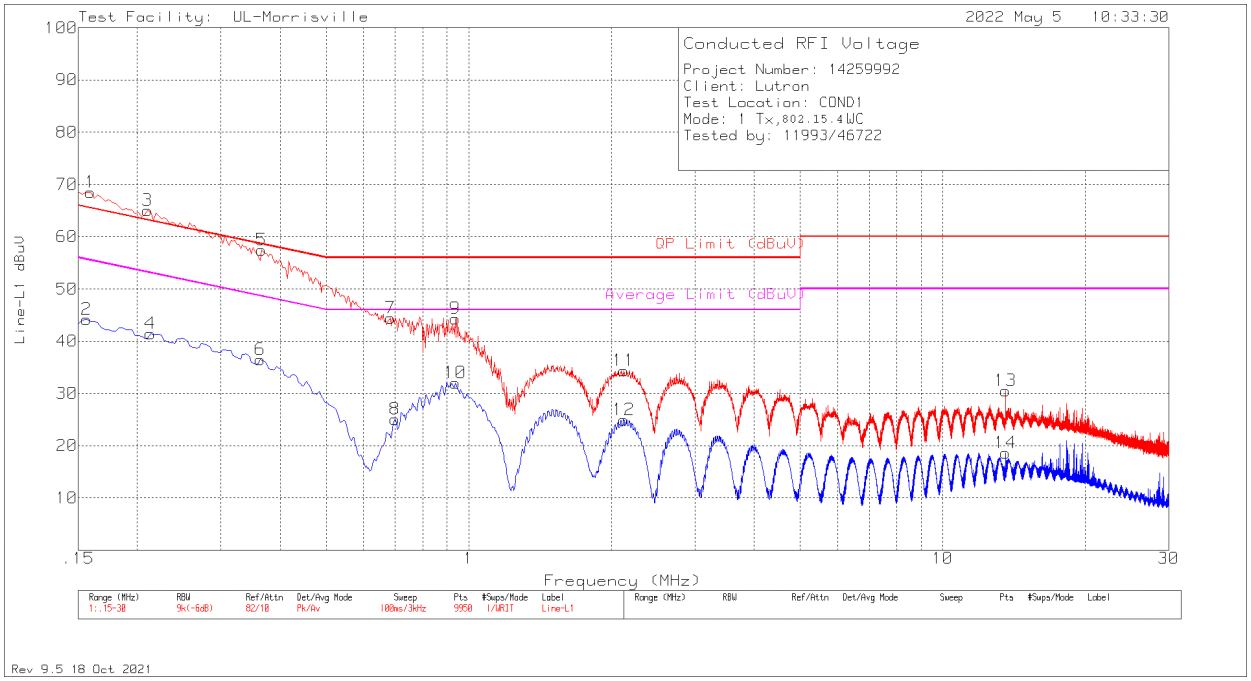


Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Filter (dB)	Pad (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
18	.165	36.28	Av	.2	.9	9.9	47.28	-	-	55.21	-7.93
17	.16873	47.79	Qp	.2	.9	9.9	58.79	65.02	-6.23	-	-
35	.19544	46.31	Qp	.2	.8	9.9	57.21	63.8	-6.59	-	-
36	.198	35.26	Av	.2	.8	9.9	46.16	-	-	53.69	-7.53
19	.2796	41.24	Qp	.1	.5	9.9	51.74	60.83	-9.09	-	-
20	.297	31.78	Av	.1	.5	9.9	42.28	-	-	50.33	-8.05
21	.42067	35.29	Qp	.1	.3	9.9	45.59	57.43	-11.84	-	-
22	.429	27.1	Av	.1	.3	9.9	37.4	-	-	47.27	-9.87
23	.51934	30.95	Qp	0	.3	9.9	41.15	56	-14.85	-	-
24	.519	23.18	Av	0	.3	9.9	33.38	-	-	46	-12.62
25	.669	39.03	Pk	0	.2	9.9	49.13	56	-6.87	-	-
26	.669	19.62	Av	0	.2	9.9	29.72	-	-	46	-16.28
27	1.182	32.51	Pk	0	.2	9.9	42.61	56	-13.39	-	-
28	1.206	17.37	Av	0	.2	9.9	27.47	-	-	46	-18.53
29	4.062	27.75	Pk	0	.1	9.9	37.75	56	-18.25	-	-
30	4.089	9.61	Av	0	.1	9.9	19.61	-	-	46	-26.39
31	11.991	21.29	Pk	.1	.1	9.9	31.39	60	-28.61	-	-
32	11.991	8.46	Av	.1	.1	9.9	18.56	-	-	50	-31.44

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

11.1.2. AC POWER LINE – 802.15.4

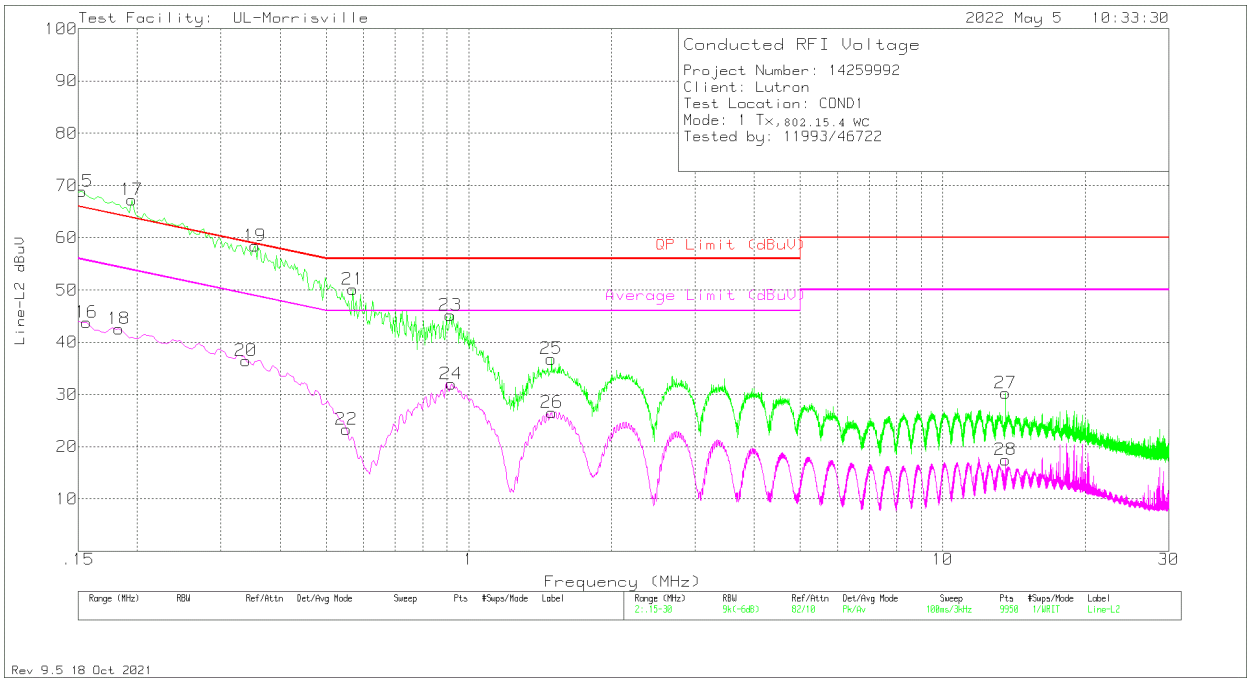
LINE 1 RESULTS



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)
2	.156	33.02	Av	.2	1	9.9	44.12	-	-	55.67	-11.55
1	.15459	48.48	Qp	.2	1	9.9	59.58	65.75	-6.17	-	-
3	.19528	45.41	Qp	.2	.8	9.9	56.31	63.81	-7.5	-	-
4	.213	30.68	Av	.1	.7	9.9	41.38	-	-	53.09	-11.71
6	.363	26.09	Av	.1	.4	9.9	36.49	-	-	48.66	-12.17
5	.35815	37.17	Qp	.1	.4	9.9	47.57	58.77	-11.2	-	-
7	.684	34.34	Pk	0	.2	9.9	44.44	56	-11.56	-	-
8	.699	14.92	Av	0	.2	9.9	25.02	-	-	46	-20.98
9	.936	34.23	Pk	0	.2	9.9	44.33	56	-11.67	-	-
10	.936	21.85	Av	0	.2	9.9	31.95	-	-	46	-14.05
11	2.124	24.35	Pk	0	.1	9.9	34.35	56	-21.65	-	-
12	2.127	14.95	Av	0	.1	9.9	24.95	-	-	46	-21.05
13	13.56	20.4	Pk	.1	.1	9.9	30.5	60	-29.5	-	-
14	13.56	8.44	Av	.1	.1	9.9	18.54	-	-	50	-31.46

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)
15	.153	48.78	Qp	.2	1	9.9	59.88	65.84	-5.96	-	-
16	.156	32.72	Av	.2	1	9.9	43.82	-	-	55.67	-11.85
18	.183	31.65	Av	.2	.8	9.9	42.55	-	-	54.35	-11.8
17	.18794	45.8	Qp	.2	.8	9.9	56.7	64.13	-7.43	-	-
20	.339	26.11	Av	.1	.4	9.9	36.51	-	-	49.23	-12.72
19	.33884	38.14	Qp	.1	.4	9.9	48.54	59.23	-10.69	-	-
22	.552	13.1	Av	0	.3	9.9	23.3	-	-	46	-22.7
21	.55416	26.8	Qp	0	.3	9.9	37	56	-19	-	-
23	.915	35.11	Pk	0	.2	9.9	45.21	56	-10.79	-	-
24	.918	21.89	Av	0	.2	9.9	31.99	-	-	46	-14.01
25	1.494	26.78	Pk	0	.1	9.9	36.78	56	-19.22	-	-
26	1.497	16.53	Av	0	.1	9.9	26.53	-	-	46	-19.47
27	13.56	20.2	Pk	.1	.1	9.9	30.3	60	-29.7	-	-
28	13.56	7.39	Av	.1	.1	9.9	17.49	-	-	50	-32.51

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