TEST REPORT

Report Number. : R14559969-E2

Applicant	:	Ademco Inc. 1985 Douglas Drive Golden Valley, MN 55422-3922, USA
Model	:	TH6320WF2003
FCC ID	:	HS9-TH6220WF01
IC	:	573R-TH6220WF01
EUT Description	:	Wi-Fi/BLE Enabled Wall-Mounted Thermostat
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:
2022-12-16

Prepared by:
UL LLC
12 Laboratory Dr.
Research Triangle Park, NC 27709 U.S.A.
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CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2022-11-30	Initial Issue	Charles Moody
V2	2022-12-01	Updated Antenna Type Information	Charles Moody
V3	2022-12-15	Revised applicant address	Brian Kiewra
V4	2022-12-16	Updated Measuring Equipment List	Charles Moody

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Ademco Inc.
1985 Douglas Drive
Golden Valley, MN 55422-3922, USA

EUT DESCRIPTION: Wi-Fi/BLE Enabled Wall-Mounted Thermostat

MODEL: TH6320WF2003

SERIAL NUMBER: 001749, 001750

SAMPLE RECEIPT DATE: 2022-11-03

DATE TESTED: 2022-11-07 TO 2022-11-17

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

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

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

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

Approved & Released For
UL LLC By:

Mike Antola
Staff Engineer
Consumer, Medical, and IT Segment
UL LLC

Prepared By:

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Electrical Engineer
Consumer, Medical, and IT Segment
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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	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.

3. TEST METHODOLOGY

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

4. FACILITIES AND ACCREDITATION

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

	Address	ISED CABID	ISED Company Number	FCC Registration
☒	Building 2800 Suite Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A	US0067	27265	825374

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5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

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

5.2. DECISION RULES

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

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U_{Lab}
Radio Frequency (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%

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 wall-mounted thermostat integrated with a 2.4 WLAN and BLE radio. This report covers full emissions testing of the BLE radio.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

2.4GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
1Tx			
2402-2480	BLE (GFSK)	8.87	7.71

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

Antenna 1: The radio utilizes a PIFA antenna, with a maximum gain of 1.86 dBi.

Antenna 2: The radio utilizes a PIFA antenna, with a maximum gain of 2.78 dBi.

The two antennas have diversity and the WLAN and BLE radios can transmit on either of the antennas. For antenna port conducted testing the SMA cable is connected directly after the output and before the RF SPDT switch so only one port needs to be tested. However, for radiated emissions both antennas are tested.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was RFT 1.8.10.1.

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 power spectal density 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.

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The EUT is only meant to operate in one orientation. Therefore, all testing was done in this orientation.

Worst-case data rates as found by power measurements recorded by the lab are:

BLE (GFSK): 1Mbps

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Power Supply	TRIAD	WAU24-1000	N/A	N/A
PC Controller	HP	14-dk1003dx	5CGO16B4XM	TX2-RTL8821CE

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	Main	1	3.5mm Audio Jack	Serial Cable	1.8m	USB to 3.5mm Audio Jack used for radio control only population not needed for radiated

TEST SETUP

The EUT is connected to a support laptop to configure the radio prior to emissions testings. However, for final emissions scans, the EUT was disconnected from the support laptop.

SETUP DIAGRAM

Please refer to R14559969-EP1 for setup diagrams

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7. MEASUREMENT METHOD

On time and Duty Cycle: ANSI C63.10 subclause 11.6

6 dB BW: ANSI C63.10 Subclause -11.8.1 RBW ≥ DTS BW

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

Output Power: ANSI C63.10 Subclause -11.9.1.3 Method PKPM1 Peak-reading power meter
Output Power: ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

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

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

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

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

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.
	Common Equipment				
	Conducted Room 1				
SA0026	Spectrum Analyzer	Keysight Technologies	N9030A	2022-08-02	2023-08-02
PWM005	RF Power Meter	Keysight Technologies	N1912A	2022-09-02	2024-09-02
PWS005	Peak and Avg Power Sensor, 50MHz to 18GHz	Keysight Technologies	N1921A	2022-09-27	2023-09-27
HI0091	Environmental Meter	Fisher Scientific	15-077-963	2022-07-20	2023-07-20
SOFTEMI	Antenna Port Software	UL	Version 2022.8.16	NA	NA
	Additional Equipment used				
CBL099	Micro-Coax UTiFLEX Cable Assembly, Low Loss,40Ghz, 39.3", Connectors 2	Carlisle Interconnect Technologies	UFA147A-0-0180-200200	2022-01-24	2023-01-24
226560	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2022-05-03	2023-05-03

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	2022-07-20	2023-07-20
LISN003	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2022-08-01	2023-08-01
75141	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2022-08-03	2023-08-03
ATA222	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2022-04-05	2023-04-05
PS215	AC Power Source	Elgar	CW2501M (s/n 1523A02397)	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Miscellaneous (if needed)				
CDECABLE001	ANSI C63.4 1m extension cable.	UL	Per Annex B of ANSI C63.4	2022-09-12	2023-09-12

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Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 1)

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	0.009-30MHz				
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2022-09-12	2023-09-12
	30-1000 MHz				
AT0066	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB1	2022-03-01	2023-03-01
	1-18 GHz				
AT0072	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2022-05-11	2023-05-11
	18-40 GHz				
204704	Horn Antenna, 18-26.5GHz	Com-Power	AH-626	2022-07-11	2023-07-11
	Gain-Loss Chains				
C1-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2022-05-05	2023-05-05
C1-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2022-05-05	2023-05-05
C1-SAC03	Gain-loss string: 1-18GHz	Various	Various	2022-05-05	2023-05-05
C1-SAC04	Gain-loss string: 18-40GHz	Various	Various	2022-05-05	2023-05-05
	Receiver & Software				
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2022-04-14	2023-04-14
SA0026	Spectrum Analyzer	Agilent	N9030A	2022-08-02	2023-08-02
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
220929	Environmental Meter	Fisher Scientific	15-077-963 s/n 18474341	2022-10-05	2023-10-05

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

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2022-03-21	2023-03-21
	Gain-Loss Chains				
C2-SAC03	Gain-loss string: 1-18GHz	Various	Various	2022-05-10	2023-05-10
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2022-03-08	2023-03-08
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
200540	Environmental Meter	Fisher Scientific	15-077-963 s/n 181474409	2022-10-05	2023-10-05

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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.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
BLE (GFSK)	0.390	0.626	0.623	62.30	4.11	2.564

DUTY CYCLE PLOTS

DUTY CYCLE BLE (GFSK)

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9.2. 99% BANDWIDTH

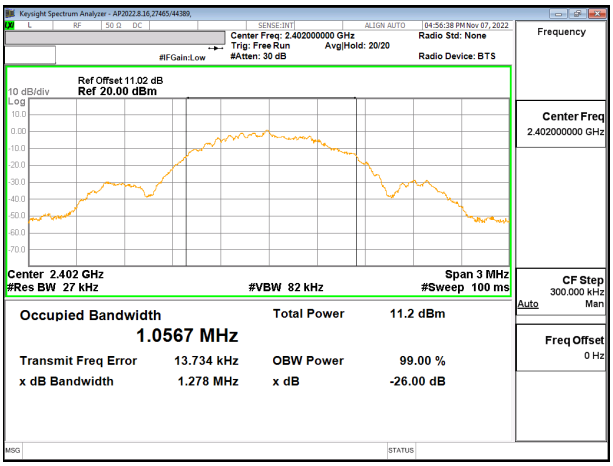
LIMITS

None; for reporting purposes only.

RESULTS

9.2.1. BLE (GFSK) MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0567
Middle	2440	1.0580
High	2480	1.0581



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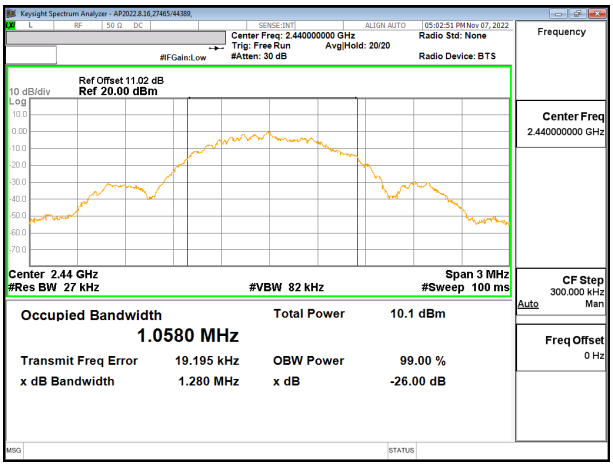
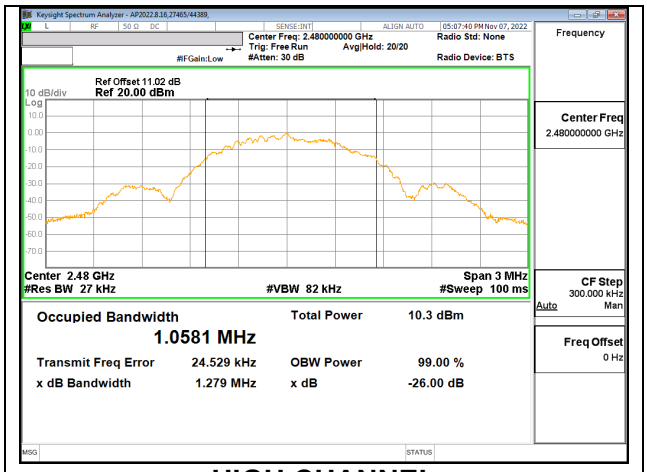


MID CHANNEL



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9.3. 6 dB BANDWIDTH

LIMITS

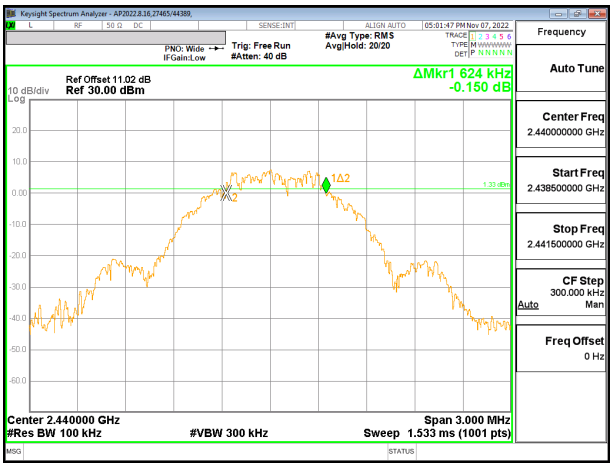
FCC §15.247 (a) (2)
RSS-247 5.2 (a)
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

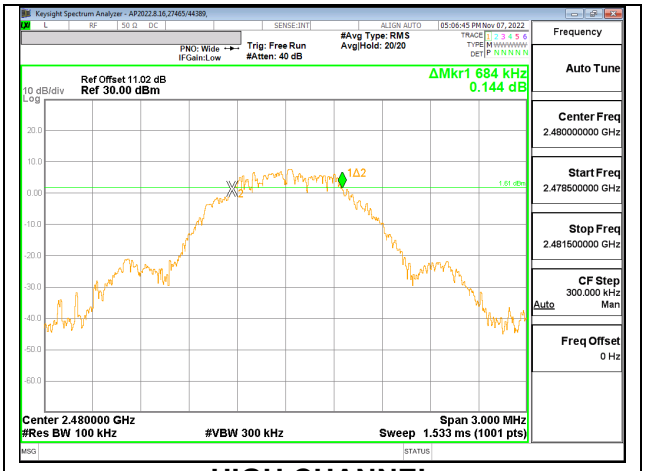
9.3.1. BLE (GFSK) MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.675	0.5
Mid	2440	0.624	0.5
High	2480	0.684	0.5

LOW CHANNEL



MID CHANNEL



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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 6dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.685 dB (including 9.685 dB pad and 1 dB cable) was entered as an offset in the power meter.

The peak output power was read directly from a power meter via a connection to a wideband power sensor.

RESULTS

9.4.1. BLE (GFSK) MODE

Tested By:	27465/44389
Date:	2022-11-07

Limits

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.87	30	-21.13
Mid	2440	8.87	30	-21.13
High	2480	8.78	30	-21.22

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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 10.685 dB (including 9.685 dB pad and 1 dB cable) was entered as an offset in the power meter.

The gated average output power was read directly from a power meter via a connection to a wideband power sensor.

RESULTS

9.5.1. BLE (GFSK) MODE

Test Engineer:	27465/44389
Test Date:	2022-11-07

Channel	Frequency (MHz)	AV Power (dBm)
Low	2402	8.58
Mid	2440	8.50
High	2480	8.26

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9.6. POWER SPECTRAL DENSITY

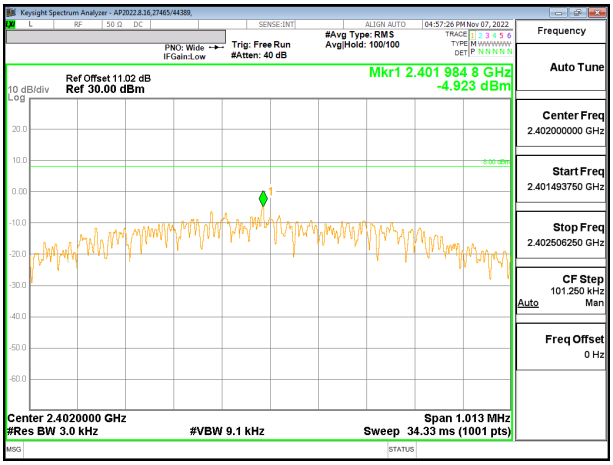
LIMITS

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.

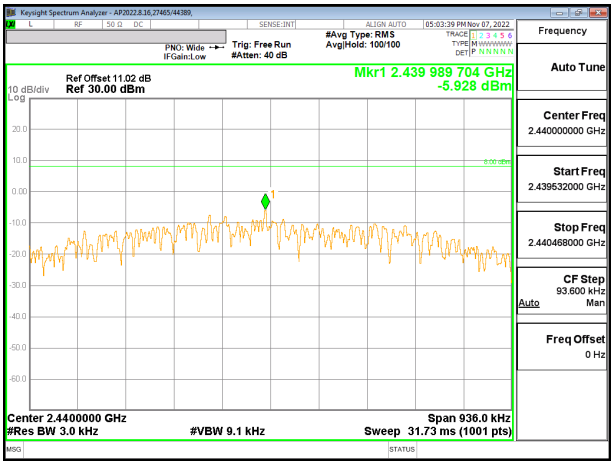
RESULTS

9.6.1. BLE (GFSK) MODE

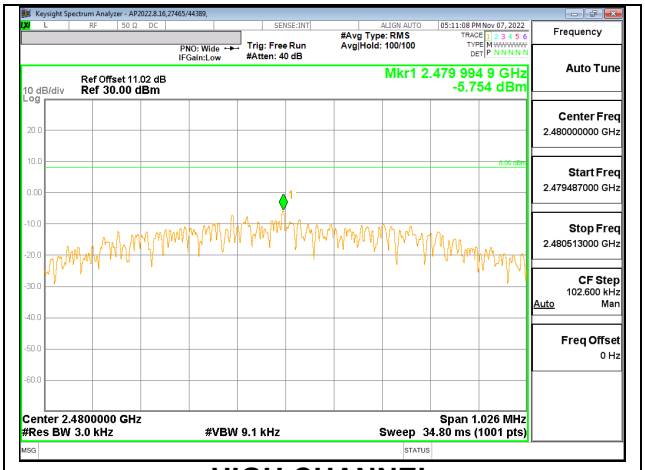
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-4.923	8	-12.92
Middle	2440	-5.928	8	-13.93
High	2480	-5.754	8	-13.75



LOW CHANNEL



MID CHANNEL



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9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)
RSS-247 5.5

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

RESULTS

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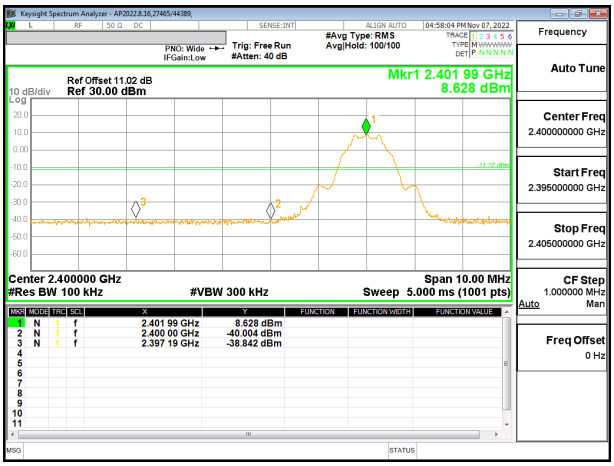
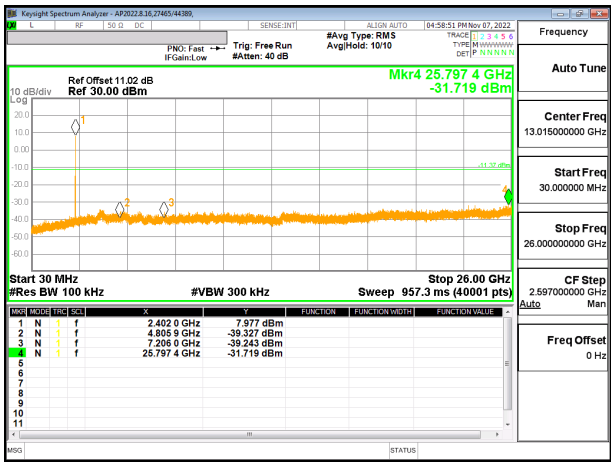
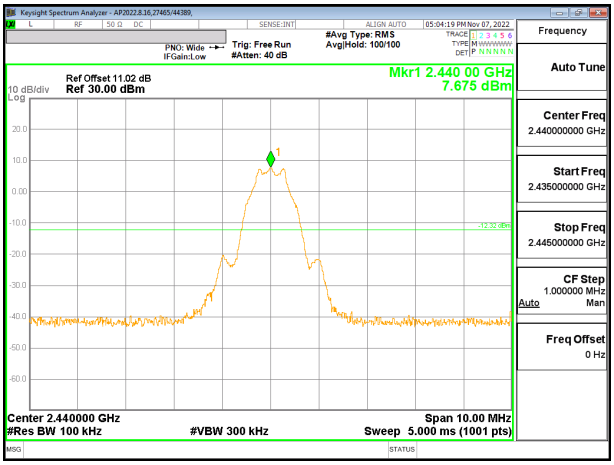
9.7.1. BLE (GFSK) MODE



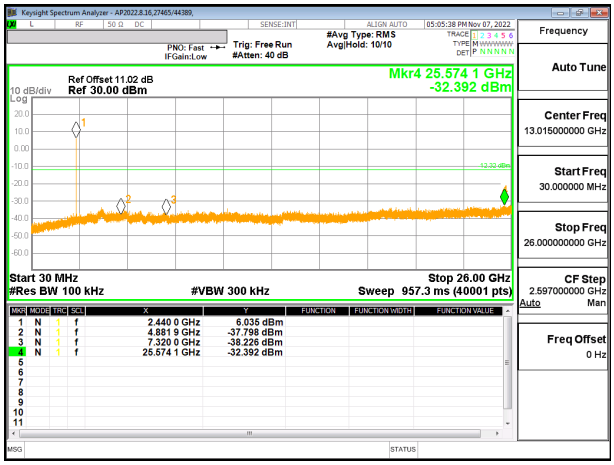
LOW CHANNEL BANDEDGE



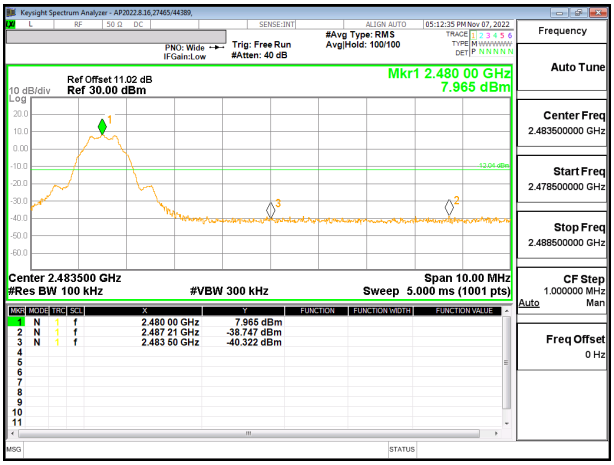
OUT-OF-BAND LOW CHANNEL



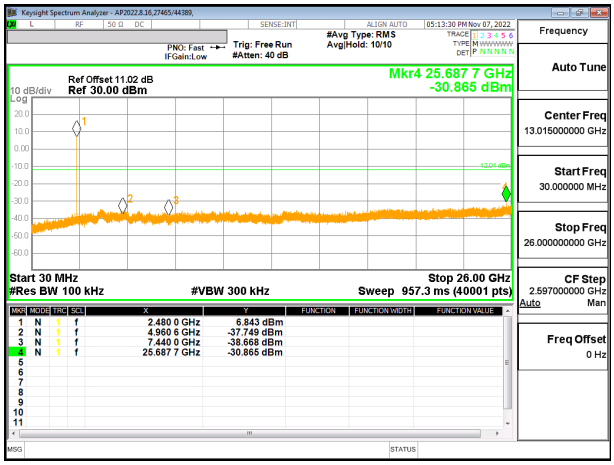
IN-BAND REFERNCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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10. RADIATED TEST RESULTS

10.1. LIMITS

FCC §15.205 and §15.209

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

RSS-GEN, Section 8.9 and 8.10

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

TEST PROCEDURE

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

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

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

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

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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 power spectral density was tested.

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

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

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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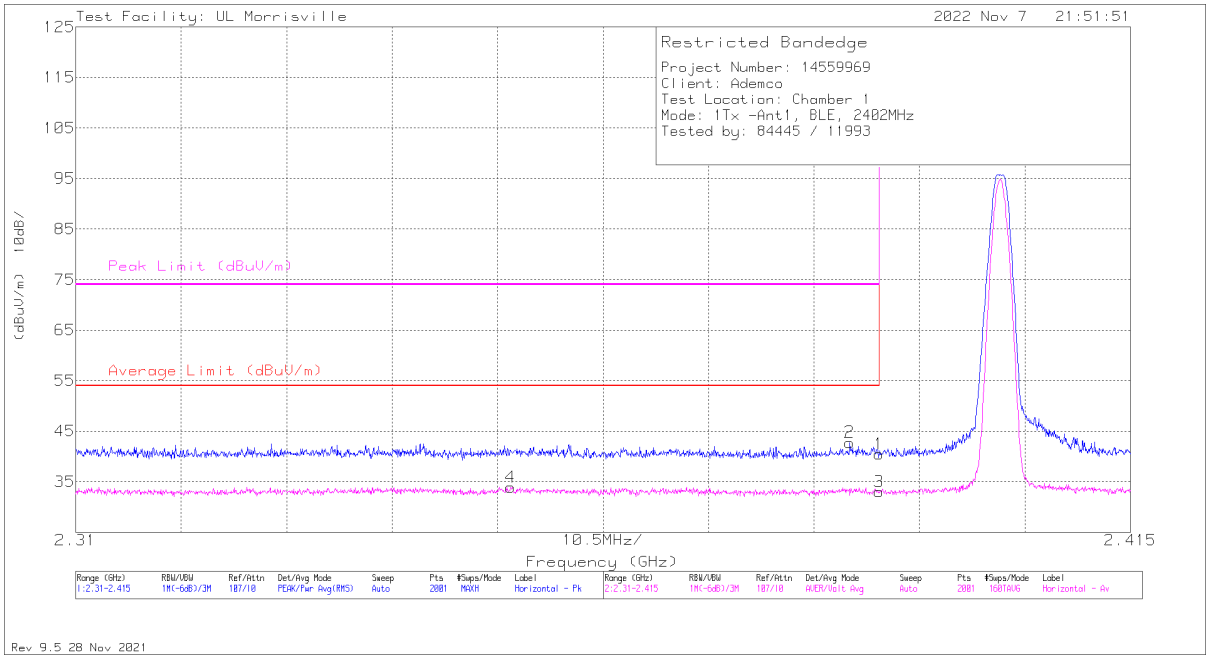
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. TX ABOVE 1 GHz BLE (GFSK) MODE IN THE 2.4 GHz BAND

Antenna 1

BANDEDGE (LOW CHANNEL, 2402MHz)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (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	* ** 2.389958	33.28	Pk	32	-24.8	0	40.48	-	-	74	-33.52	111	182	H
2	* ** 2.38707	35.28	Pk	32	-24.5	0	42.78	-	-	74	-31.22	111	182	H
3	* ** 2.389958	21.67	ADV	32	-24.8	4.11	32.98	54	-21.02	-	-	111	182	H
4	* ** 2.353313	22.42	ADV	31.9	-24.5	4.11	33.93	54	-20.07	-	-	111	182	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

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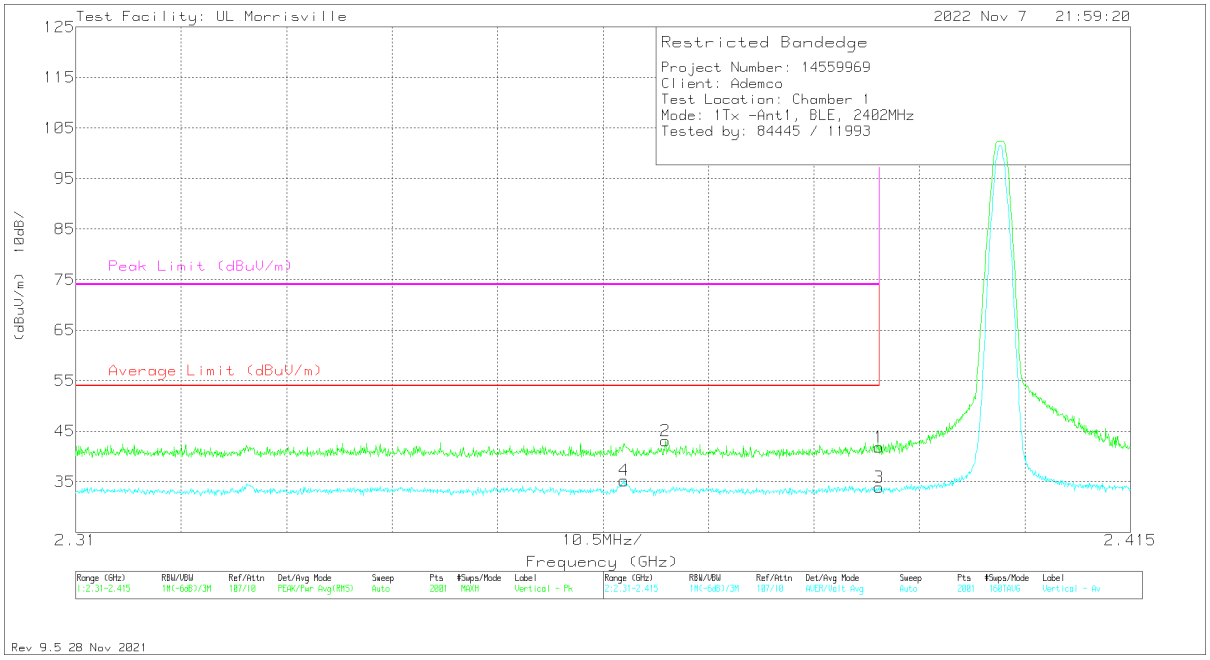
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (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	* ** 2.389958	34.6	Pk	32	-24.8	0	41.8	-	-	74	-32.2	124	161	V
2	* ** 2.368695	35.75	Pk	32	-24.7	0	43.05	-	-	74	-30.95	124	161	V
3	* ** 2.389958	22.55	ADV	32	-24.8	4.11	33.86	54	-20.14	-	-	124	161	V
4	* ** 2.3646	24	ADV	32	-24.9	4.11	35.21	54	-18.79	-	-	124	161	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

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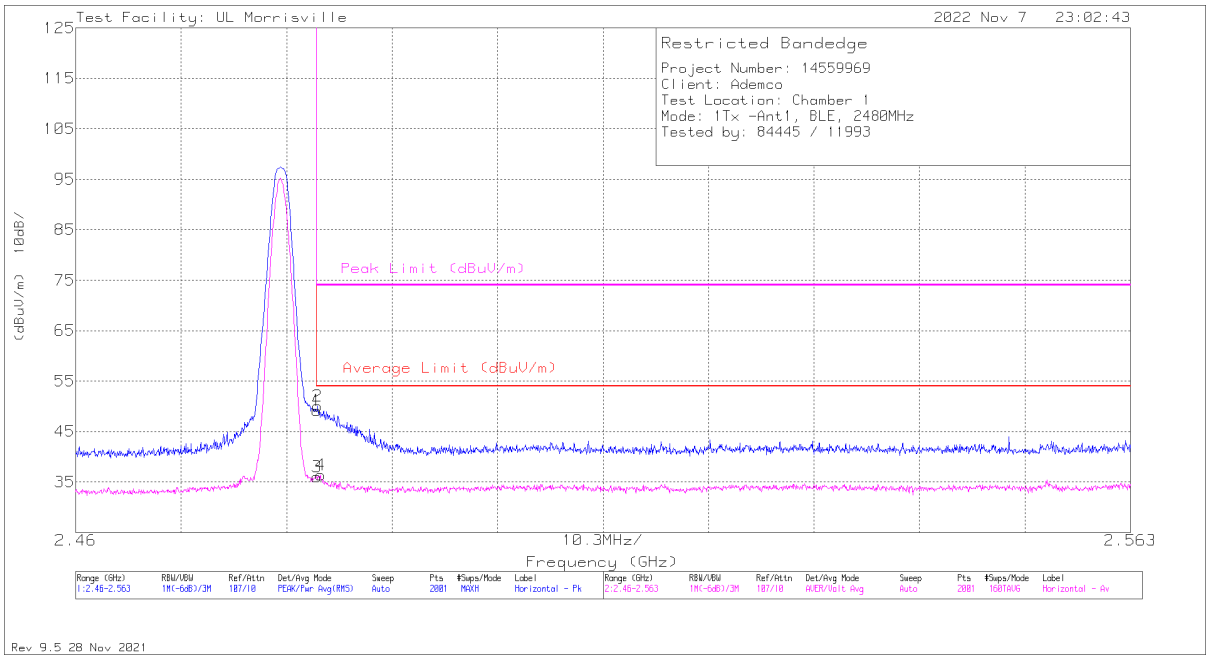
BANDEDGE (HIGH CHANNEL, 2480MHz)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (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	* ** 2.483536	41.03	Pk	32.5	-24.4	0	49.13	-	-	74	-24.87	191	276	H
2	* ** 2.483639	41.95	Pk	32.5	-24.4	0	50.05	-	-	74	-23.95	191	276	H
3	* ** 2.483536	23.85	ADV	32.5	-24.4	4.11	36.06	54	-17.94	-	-	191	276	H
4	* ** 2.483896	24.13	ADV	32.5	-24.4	4.11	36.34	54	-17.66	-	-	191	276	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

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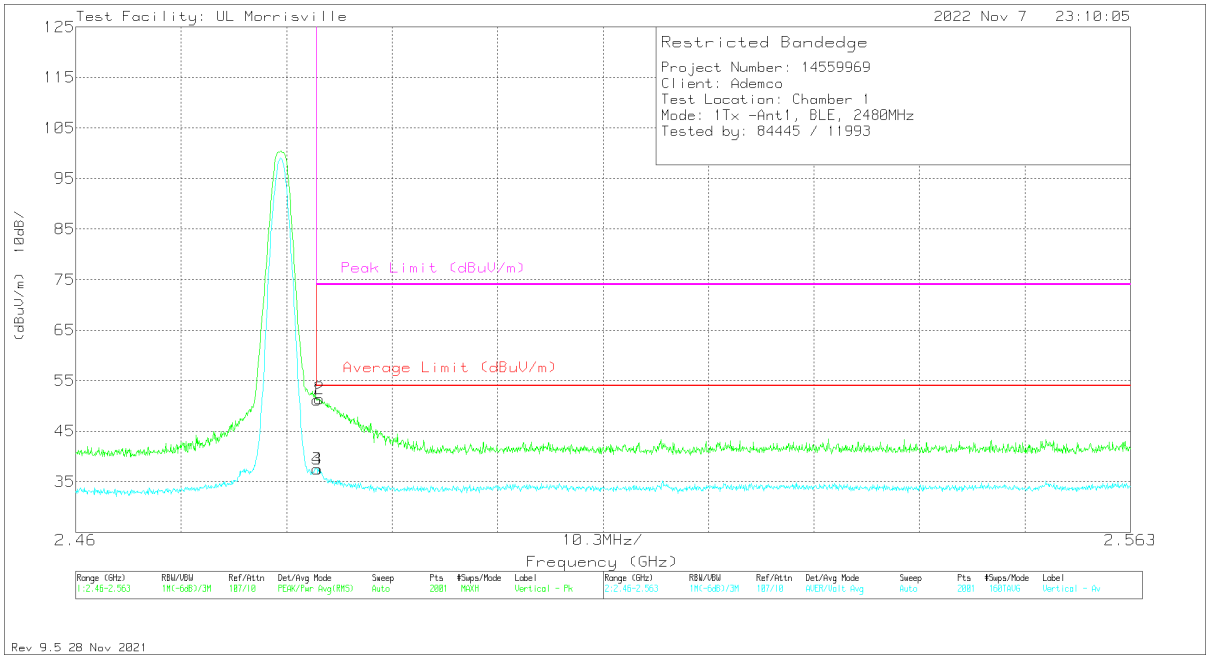
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (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	* ** 2.483536	43.04	Pk	32.5	-24.4	0	51.14	-	-	74	-22.86	117	163	V
2	* ** 2.483793	43.37	Pk	32.5	-24.4	0	51.47	-	-	74	-22.53	117	163	V
3	* ** 2.483536	25.27	ADV	32.5	-24.4	4.11	37.48	54	-16.52	-	-	117	163	V
4	* ** 2.483587	25.27	ADV	32.5	-24.4	4.11	37.48	54	-16.52	-	-	117	163	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

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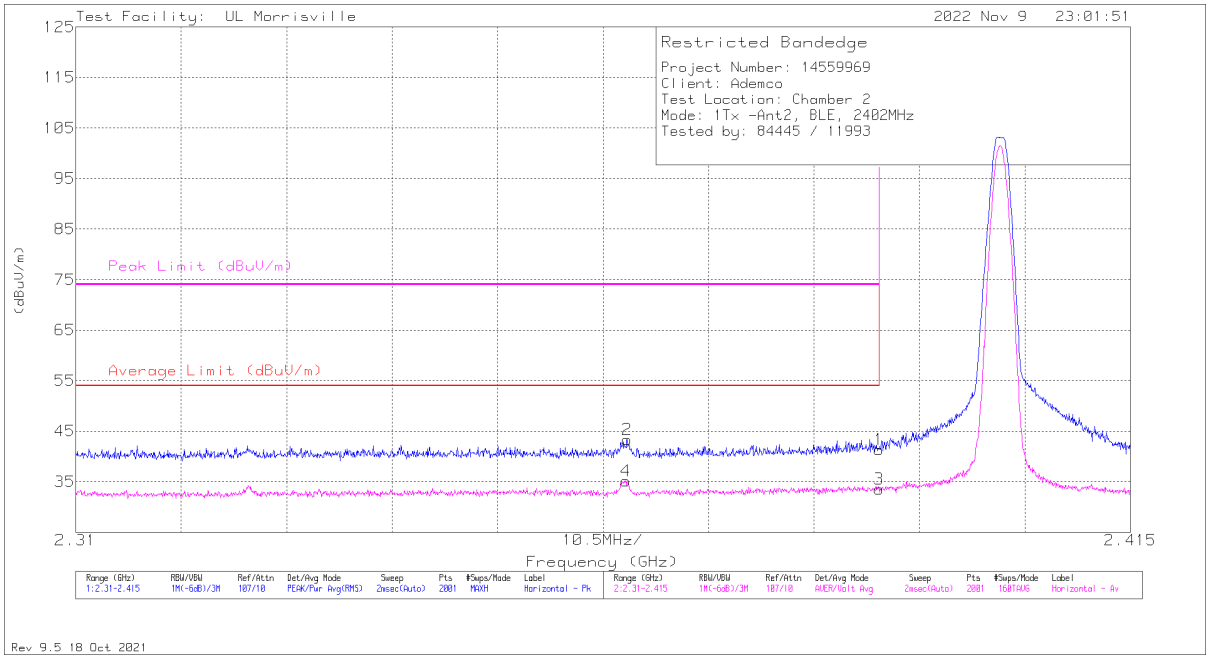
Antenna 2

BANDEDGE (LOW CHANNEL, 2402MHz)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (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	33.14	Pk	32	-23.8	0	41.34	-	-	74	-32.66	212	126	H
2	* ** 2.36492	35.43	Pk	32	-24.1	0	43.33	-	-	74	-30.67	212	126	H
3	* ** 2.38996	21.22	ADV	32	-23.8	4.11	33.53	54	-20.47	-	-	212	126	H
4	* ** 2.36476	23.19	ADV	32	-24.1	4.11	35.2	54	-18.8	-	-	212	126	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

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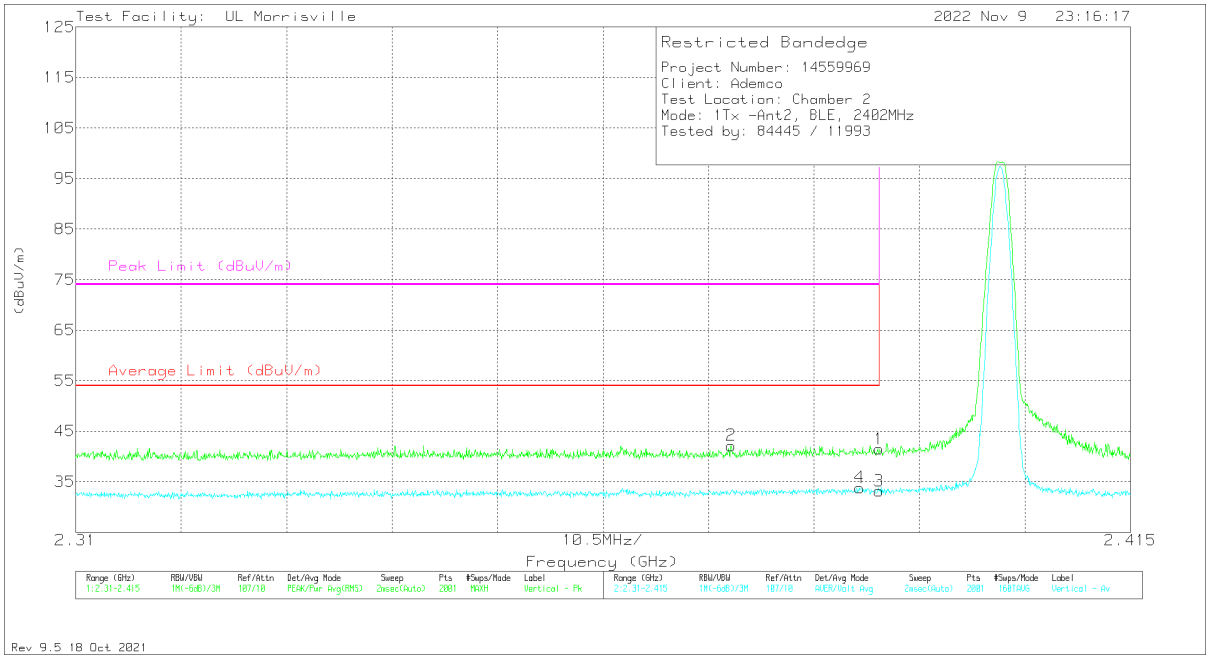
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (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	33.22	Pk	32	-23.8	0	41.42	-	-	74	-32.58	293	115	V
2	* ** 2.37526	34.16	Pk	32	-24	0	42.16	-	-	74	-31.84	293	115	V
3	* ** 2.38996	20.86	ADV	32	-23.8	4.11	33.17	54	-20.83	-	-	293	115	V
4	* ** 2.38802	21.53	ADV	32	-23.8	4.11	33.84	54	-20.16	-	-	293	115	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

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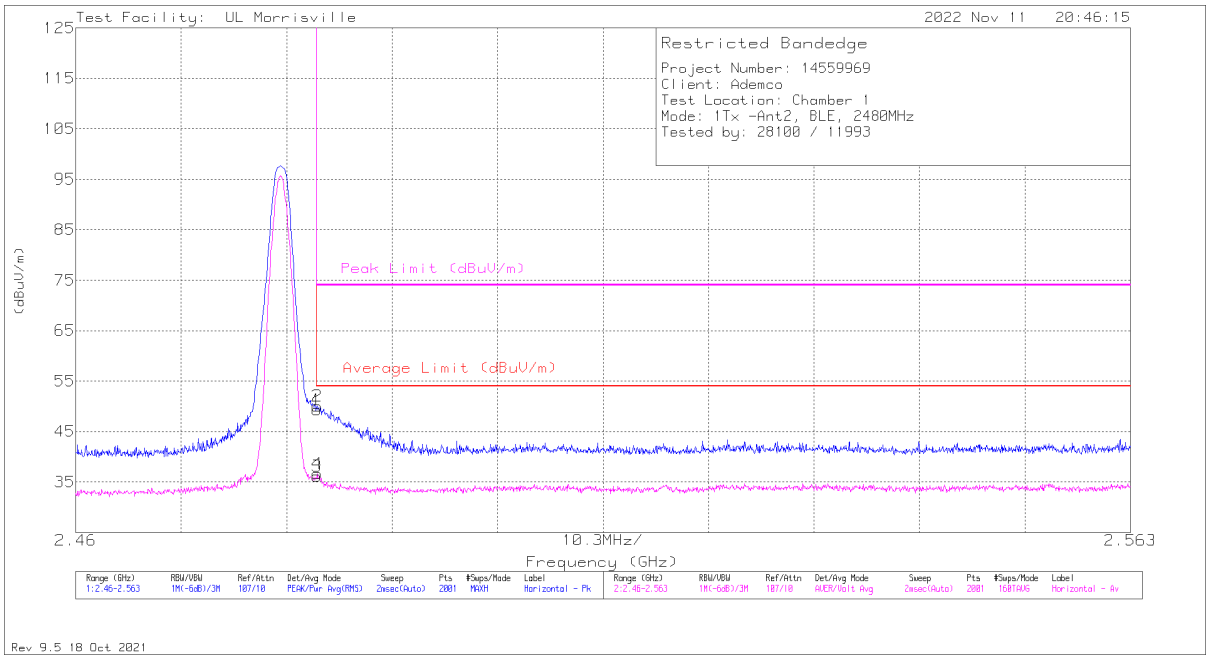
BANDEDGE (HIGH CHANNEL, 2480MHz)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (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	41.23	Pk	32.5	-24.4	0	49.33	-	-	74	-24.67	299	105	H
2	* ** 2.48359	41.92	Pk	32.5	-24.4	0	50.02	-	-	74	-23.98	299	105	H
3	* ** 2.48354	23.98	ADV	32.5	-24.4	4.11	36.19	54	-17.81	-	-	299	105	H
4	* ** 2.48359	24.39	ADV	32.5	-24.4	4.11	36.6	54	-17.4	-	-	299	105	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

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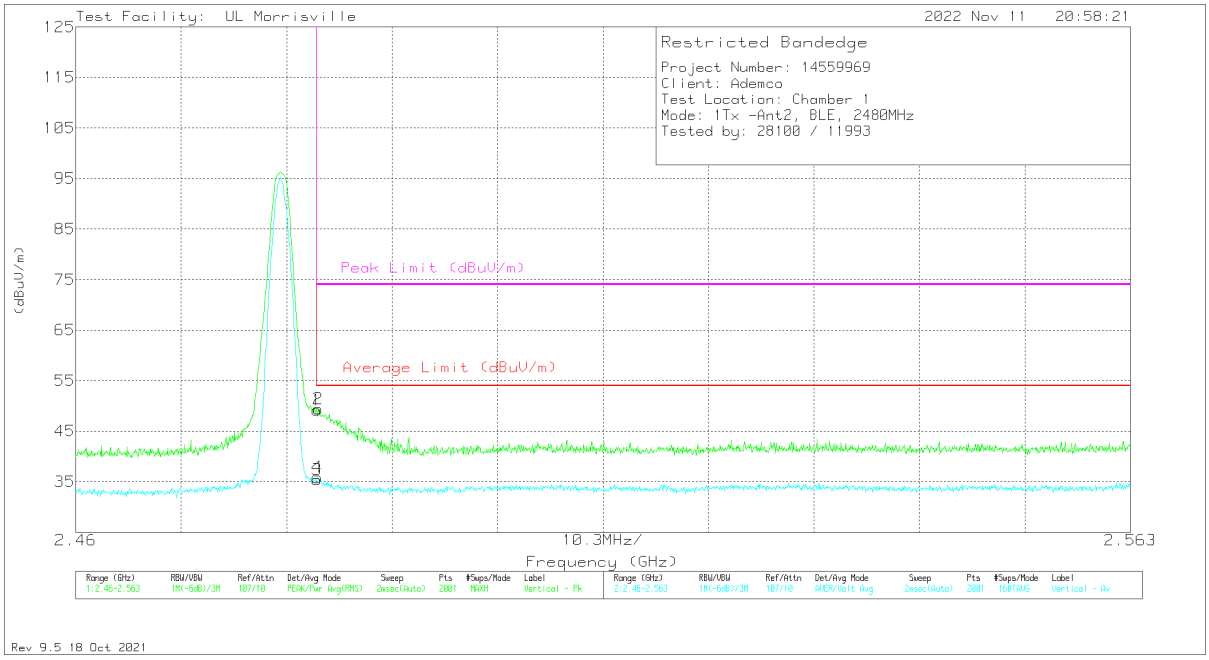
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (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	41.05	Pk	32.5	-24.4	0	49.15	-	-	74	-24.85	133	141	V
2	* ** 2.48369	41.29	Pk	32.5	-24.4	0	49.39	-	-	74	-24.61	133	141	V
3	* ** 2.48354	23.2	ADV	32.5	-24.4	4.11	35.41	54	-18.59	-	-	133	141	V
4	* ** 2.48359	23.62	ADV	32.5	-24.4	4.11	35.83	54	-18.17	-	-	133	141	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

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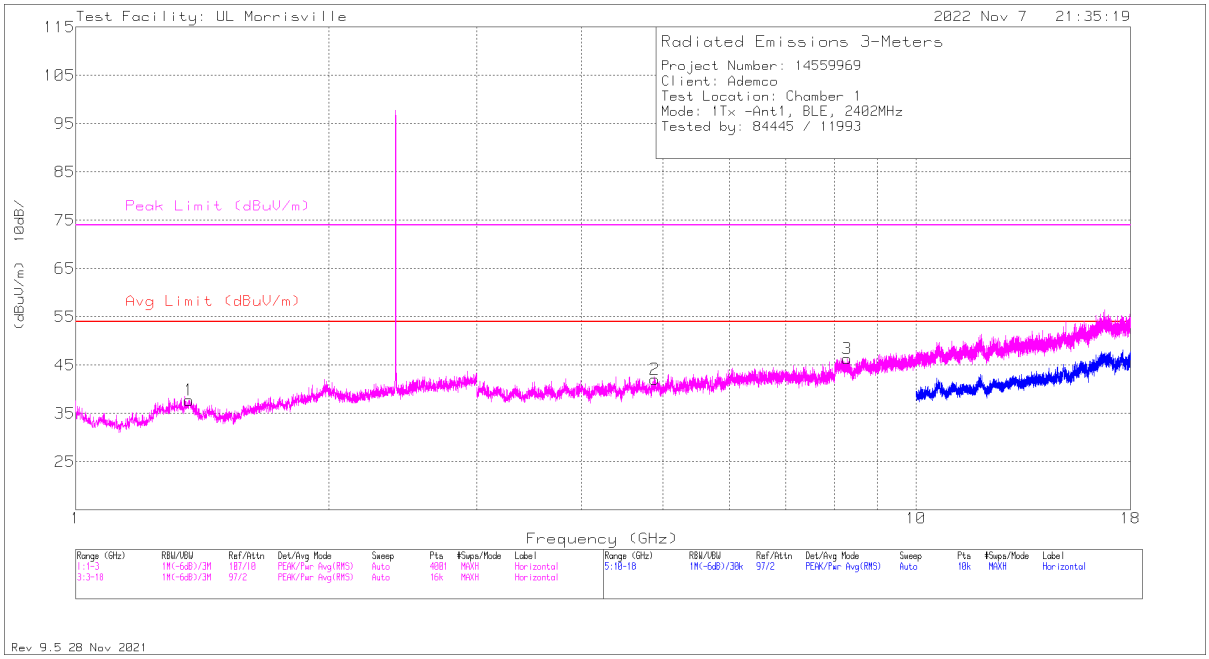
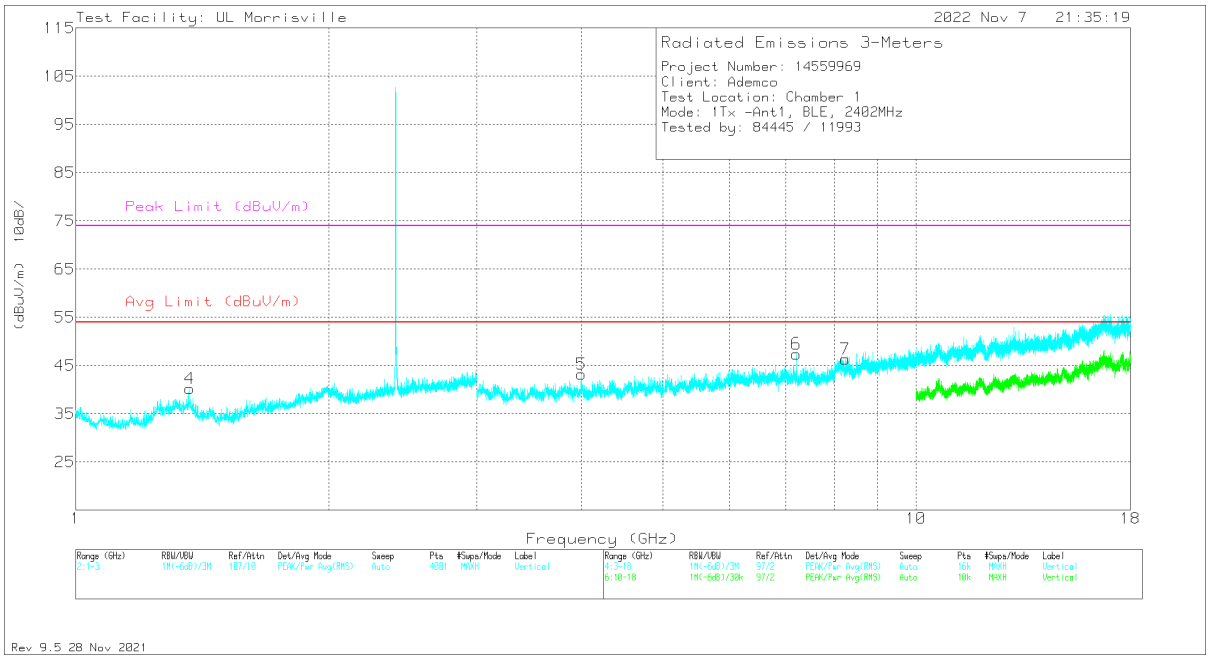
Antenna 1

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, 2402MHz RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (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	* ** 1.3645	33.52	Pk	29.5	-25.3	0	37.72	54	-16.28	74	-36.28	0-360	101	H
4	* ** 1.367	36.39	Pk	29.4	-25.5	0	40.29	54	-13.71	74	-33.71	0-360	101	V
2	* ** 4.887188	39.99	Pk	34	-31.9	0	42.09	54	-11.91	74	-31.91	0-360	101	H
3	* ** 8.28	39.76	Pk	35.8	-29.2	0	46.36	54	-7.64	74	-27.64	0-360	199	H
5	* ** 3.995625	42.08	Pk	33.4	-32.3	0	43.18	54	-10.82	74	-30.82	0-360	200	V
7	* ** 8.234063	39.77	Pk	35.8	-29.2	0	46.37	54	-7.63	74	-27.63	0-360	200	V
6	7.205625	42.05	Pk	35.7	-30.3	0	47.45	-	-	-	-	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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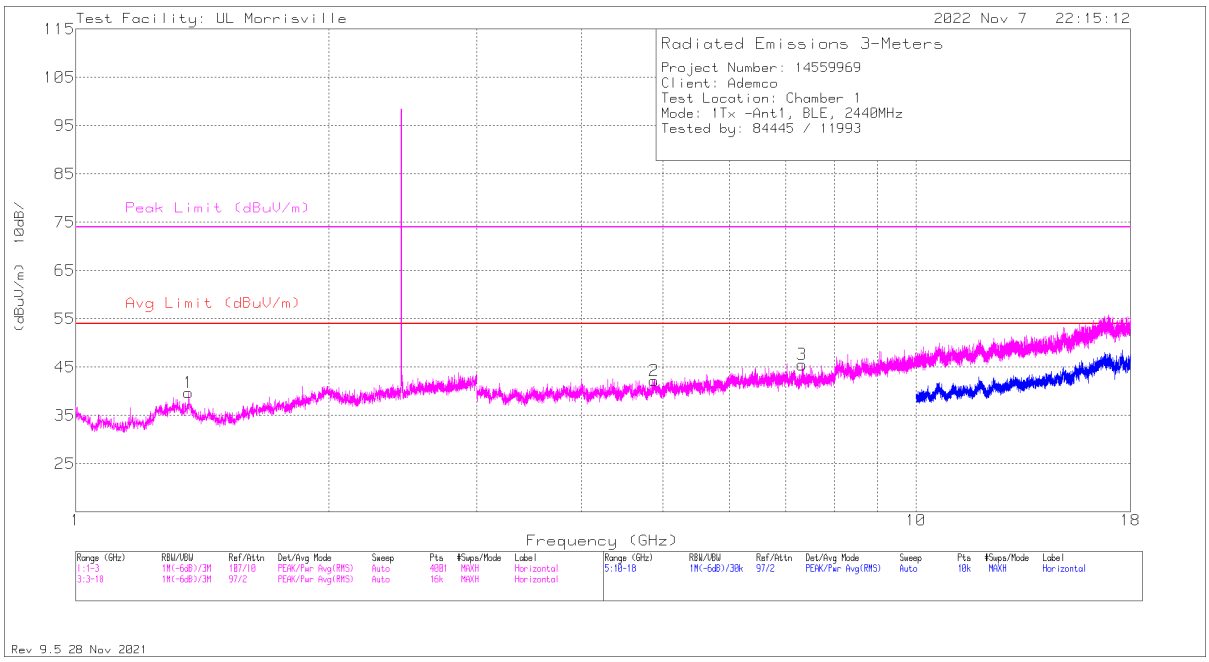
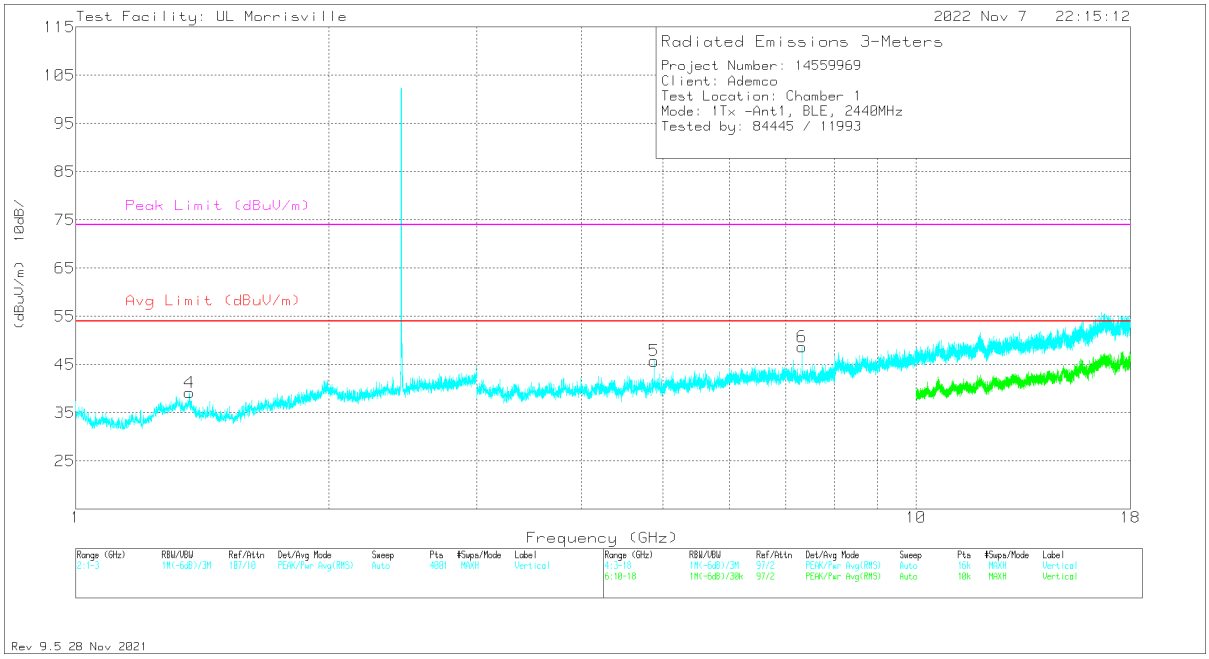
MID CHANNEL, 2440MHz RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (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	* ** 1.363	35.77	Pk	29.5	-25.5	0	39.77	54	-14.23	74	-34.23	0-360	200	H
4	* ** 1.3655	35.08	Pk	29.5	-25.4	0	39.18	54	-14.82	74	-34.82	0-360	101	V
2	* ** 4.87875	39.65	Pk	34	-31.4	0	42.25	54	-11.75	74	-31.75	0-360	200	H
3	* ** 7.320938	39.41	Pk	35.6	-29.5	0	45.51	54	-8.49	74	-28.49	0-360	200	H
5	* ** 4.879688	43.17	Pk	34	-31.4	0	45.77	54	-8.23	74	-28.23	0-360	200	V
6	* ** 7.320757	45.31	PK2	35.6	-29.5	0	51.41	-	-	74	-22.59	19	191	V
	* ** 7.319334	34.38	ADV	35.6	-29.5	4.11	44.59	54	-9.41	-	-	19	191	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

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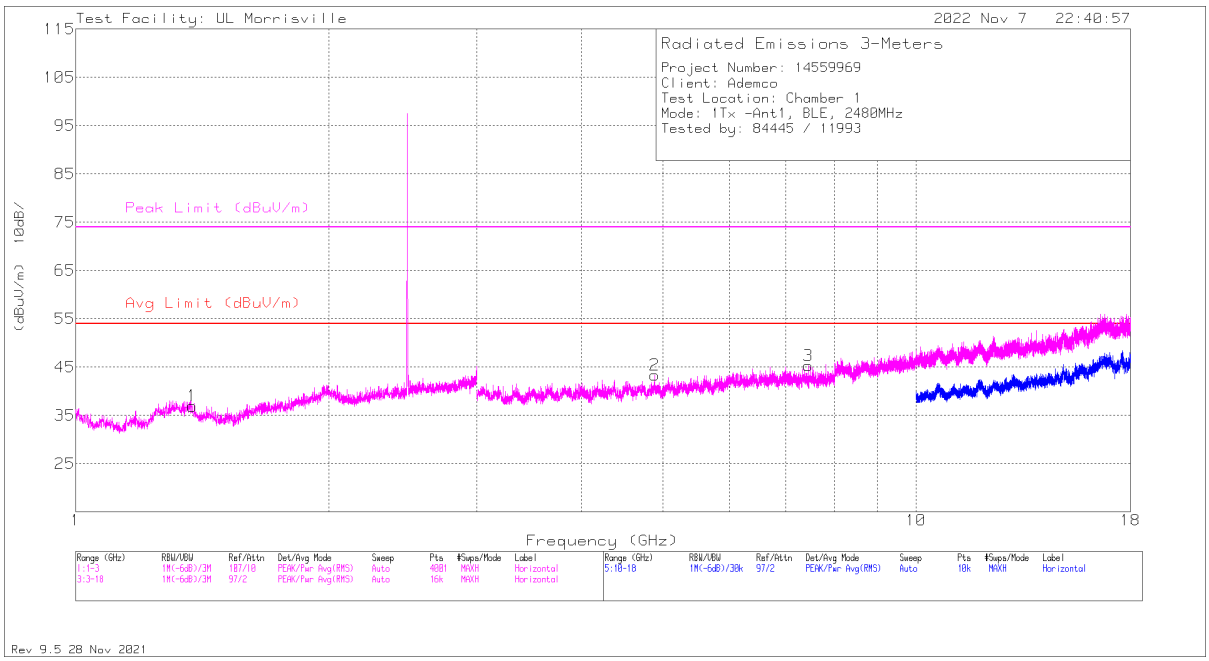
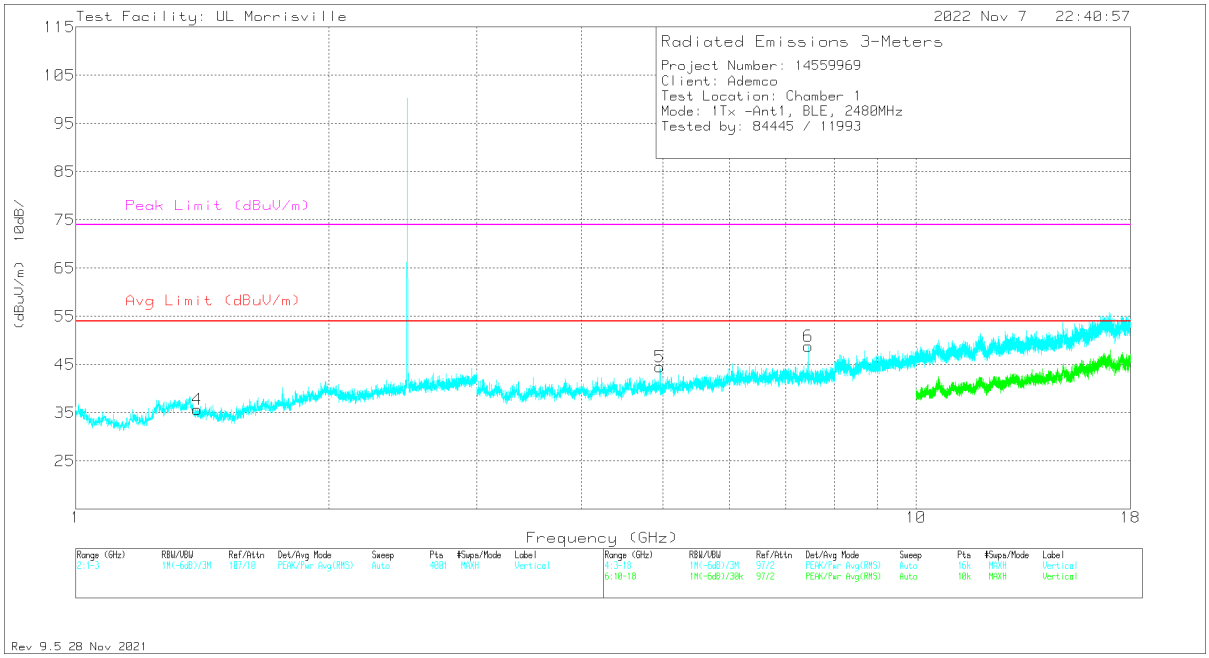
HIGH CHANNEL, 2480MHz RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (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	* ** 1.376	33.64	Pk	29.2	-25.9	0	36.94	54	-17.06	74	-37.06	0-360	200	H
4	* ** 1.3955	32.74	Pk	28.8	-25.8	0	35.74	54	-18.26	74	-38.26	0-360	101	V
2	* ** 4.88625	41.14	Pk	34	-31.8	0	43.34	54	-10.66	74	-30.66	0-360	101	H
3	* ** 7.440938	39.25	Pk	35.6	-29.5	0	45.35	54	-8.65	74	-28.65	0-360	101	H
5	* ** 4.959375	43.3	Pk	34	-32.8	0	44.5	54	-9.5	74	-29.5	0-360	200	V
6	* ** 7.440874	45.13	PK2	35.6	-29.5	0	51.23	-	-	74	-22.77	11	190	V
	* ** 7.439503	34.81	ADV	35.6	-29.5	4.11	45.02	54	-8.98	-	-	11	190	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

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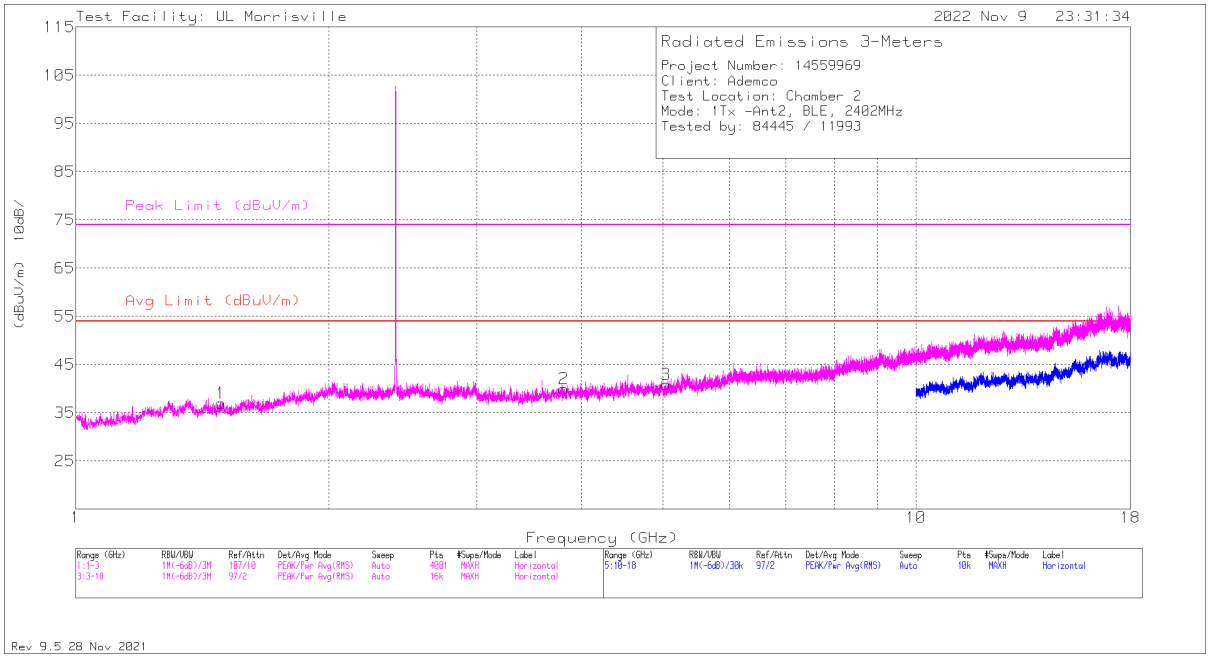
Antenna 2

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, 2402MHz RESULTS



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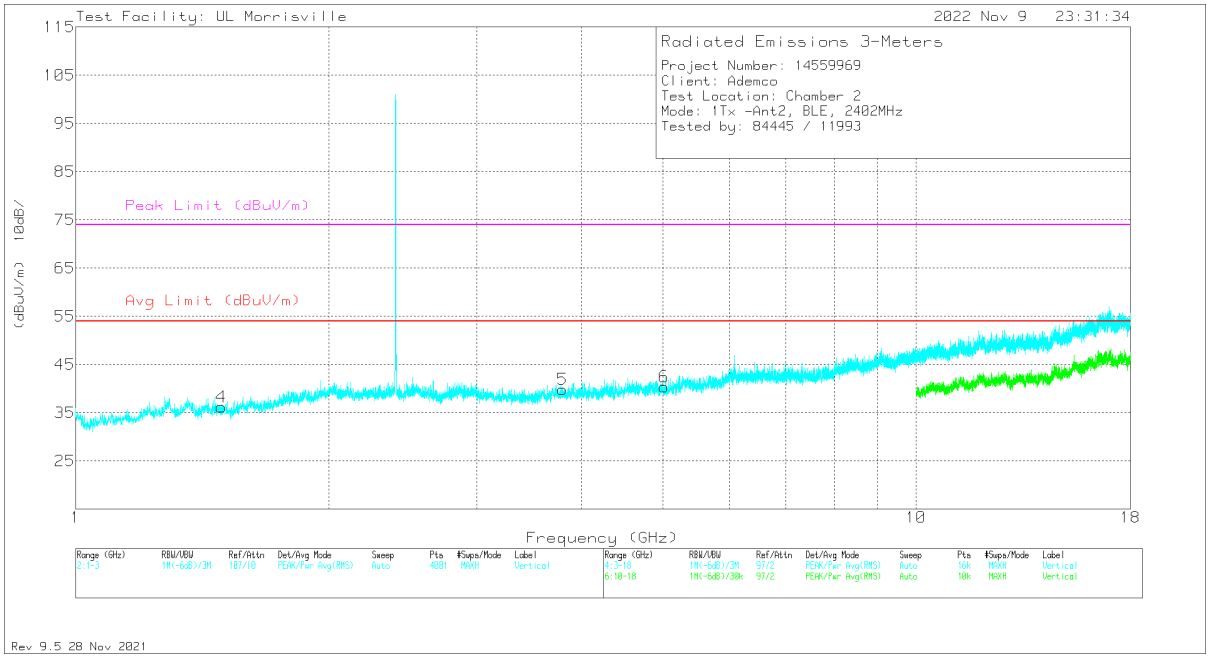

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (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	* ** 1.4895	31.76	Pk	28	-22.7	0	37.06	54	-16.94	74	-36.94	0-360	101	H
4	* ** 1.4905	30.92	Pk	28	-22.7	0	36.22	54	-17.78	74	-37.78	0-360	199	V
2	* ** 3.810938	38.44	Pk	33.5	-31.9	0	40.04	54	-13.96	74	-33.96	0-360	101	H
3	* ** 5.037188	37.77	Pk	34.1	-31	0	40.87	54	-13.13	74	-33.13	0-360	200	H
5	* ** 3.799688	38.47	Pk	33.5	-32.1	0	39.87	54	-14.13	74	-34.13	0-360	200	V
6	* ** 5.014688	37.72	Pk	34	-31.3	0	40.42	54	-13.58	74	-33.58	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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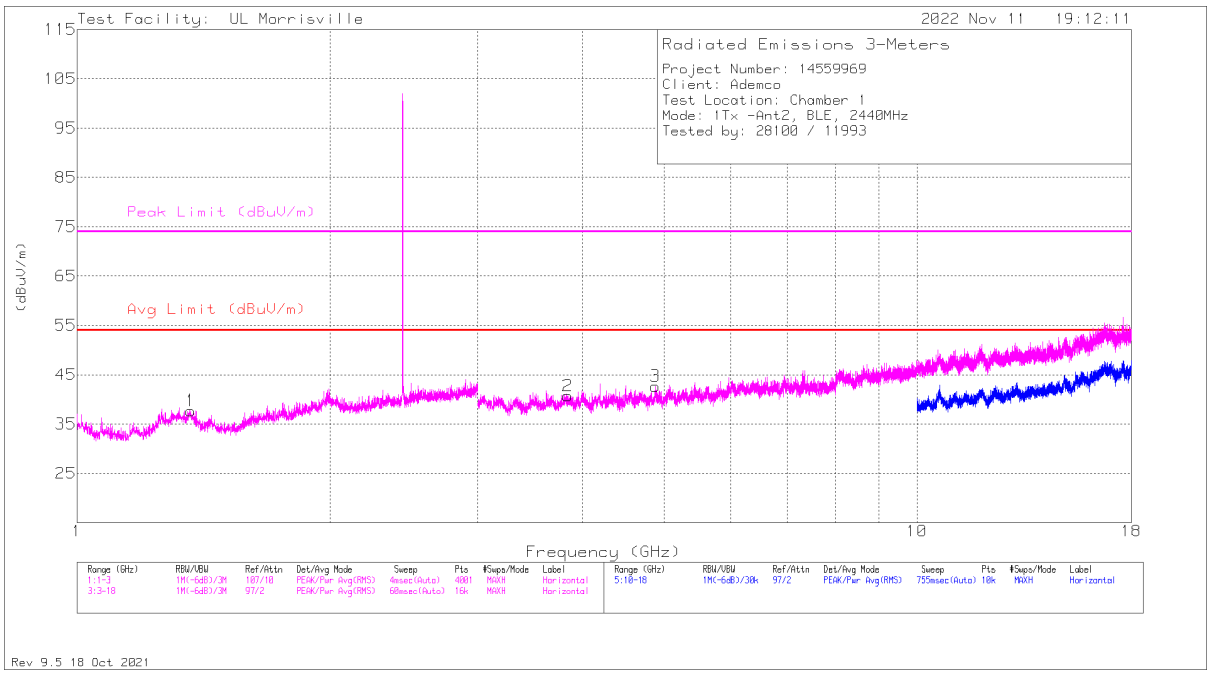
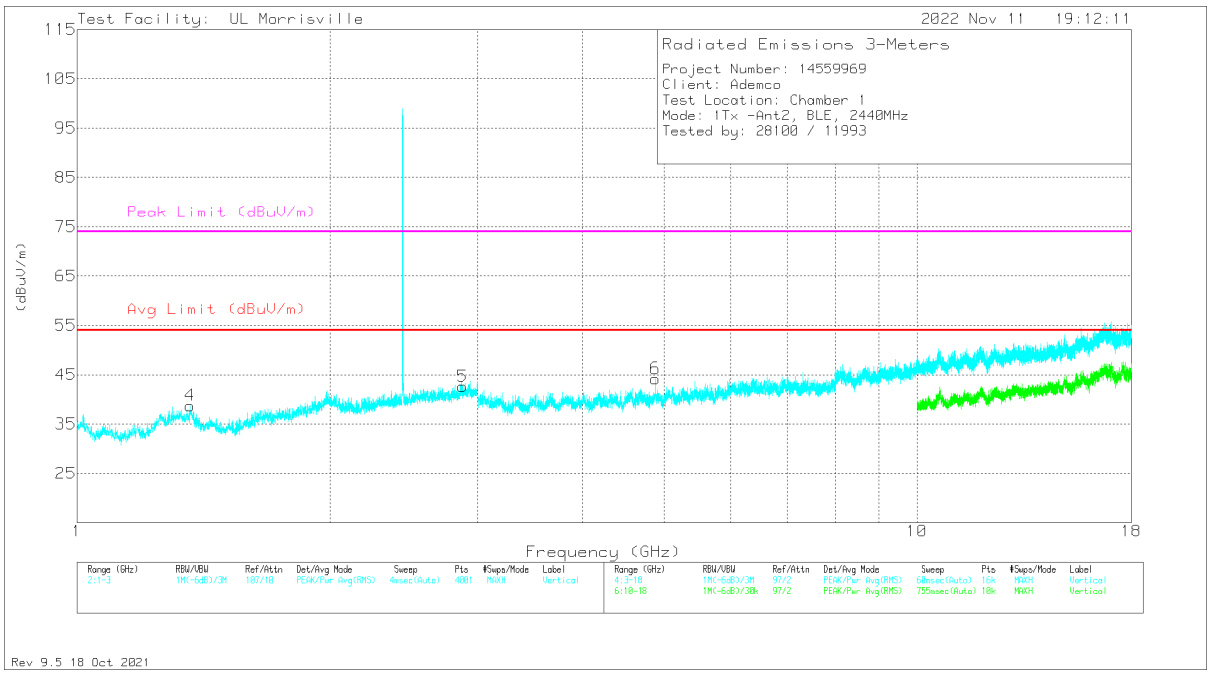
MID CHANNEL, 2440MHz RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 1.365	33.48	Pk	29.5	-25.3	37.68	54	-16.32	74	-36.32	0-360	101	H
4	* ** 1.363	34.74	Pk	29.5	-25.5	38.74	54	-15.26	74	-35.26	0-360	101	V
5	* ** 2.8785	33.91	Pk	32.7	-24	42.61	54	-11.39	74	-31.39	0-360	200	V
2	* ** 3.83906	39.62	Pk	33.4	-32.3	40.72	54	-13.28	74	-33.28	0-360	101	H
3	* ** 4.87969	40.08	Pk	34	-31.4	42.68	54	-11.32	74	-31.32	0-360	200	H
6	* ** 4.87969	41.59	Pk	34	-31.4	44.19	54	-9.81	74	-29.81	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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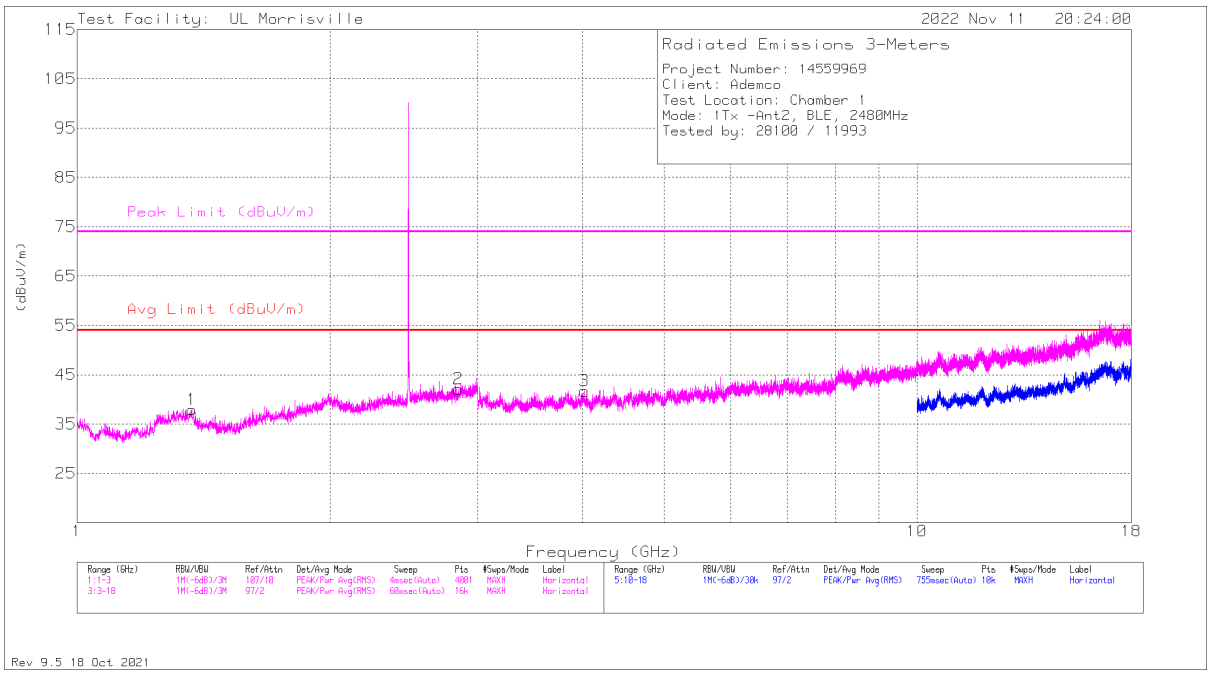
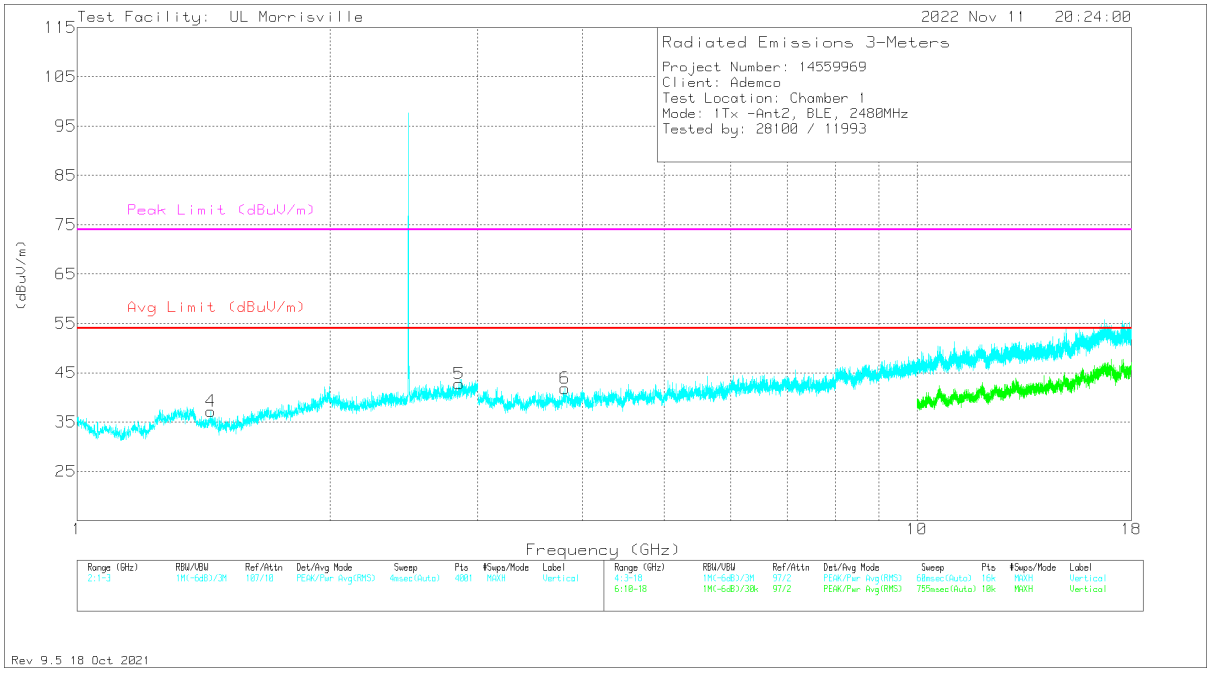
HIGH CHANNEL, 2480MHz RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0072 (dB/m)	Gain/Loss (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	* ** 1.3695	34.22	Pk	29.4	-25.7	0	37.92	54	-16.08	74	-36.08	0-360	200	H
2	* ** 2.8435	33.48	Pk	32.5	-23.9	0	42.08	54	-11.92	74	-31.92	0-360	101	H
4	* ** 1.4425	33.97	Pk	28.6	-25.4	0	37.17	54	-16.83	74	-36.83	0-360	200	V
5	* ** 2.8495	34.44	Pk	32.5	-24.2	0	42.74	54	-11.26	74	-31.26	0-360	200	V
3	* ** 4.01813	40.8	Pk	33.4	-32.5	0	41.7	54	-12.3	74	-32.3	0-360	200	H
6	* ** 3.80719	41.23	Pk	33.4	-32.8	0	41.83	54	-12.17	74	-32.17	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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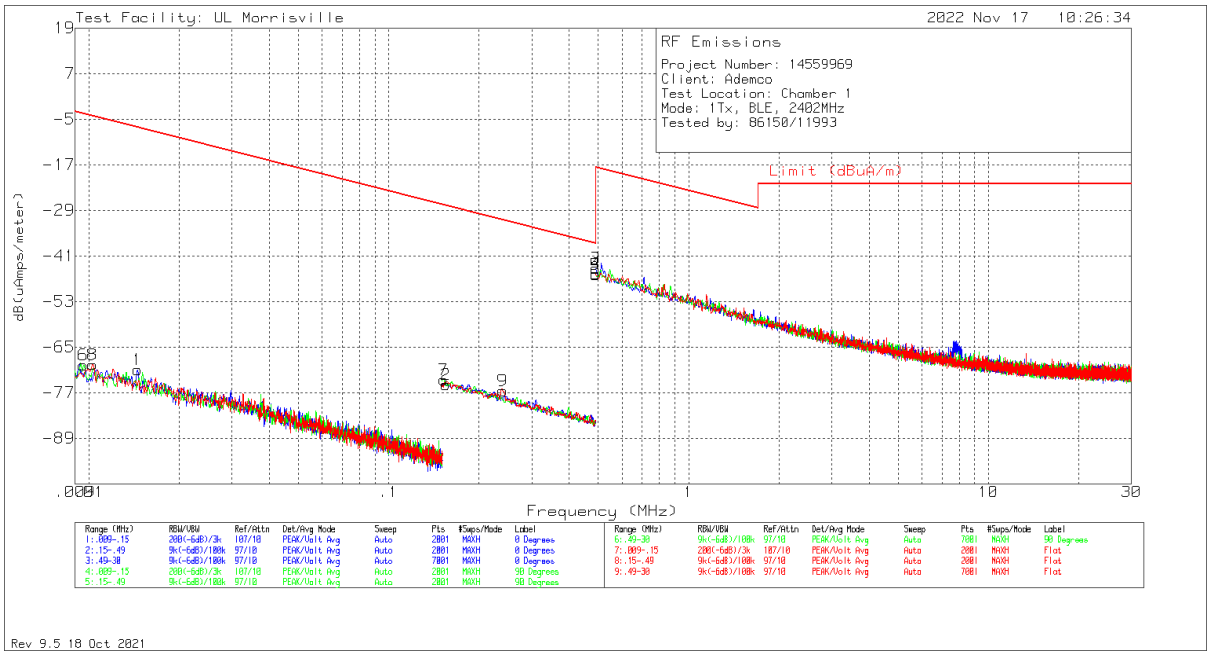
10.3. WORST CASE BELOW 30MHZ

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)

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

Antenna 1



ANTENNA- THREE ORIENTATIONS H FIELD

Below 30MHz Data H FIELD

Marker	Frequency (MHz)	Meter Reading (dBuA)	Det	AT0079 (dB/m)	Gain/Loss (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
6	.00957	43.03	Pk	-32.9	.1	-80	-69.77	-3.51	16.49	-66.26	0-360	90 degs
8	.01028	43.45	Pk	-33.2	.1	-80	-69.65	-4.13	15.87	-65.52	0-360	Flat
1	.01454	44.01	Pk	-35.1	.1	-80	-70.99	-7.15	12.85	-63.84	0-360	0 degs
7	.15255	46.7	Pk	-40.4	.1	-80	-73.6	-27.56	-7.56	-46.04	0-360	90 degs
2	.15527	45.37	Pk	-40.4	.1	-80	-74.93	-27.72	-7.72	-47.21	0-360	0 degs
9	.23993	43.9	Pk	-40.5	.1	-80	-76.5	-31.5	-11.5	-45	0-360	Flat
3	.49	35.92	Pk	-40.5	.2	-40	-44.38	-37.7	-17.7	-6.68	0-360	0 degs
4	.49	34.64	Pk	-40.5	.2	-40	-45.66	-37.7	-17.7	-7.96	0-360	90 degs
5	.49	34.41	Pk	-40.5	.2	-40	-45.89	-37.7	-17.7	-8.19	0-360	Flat

Pk - Peak detector

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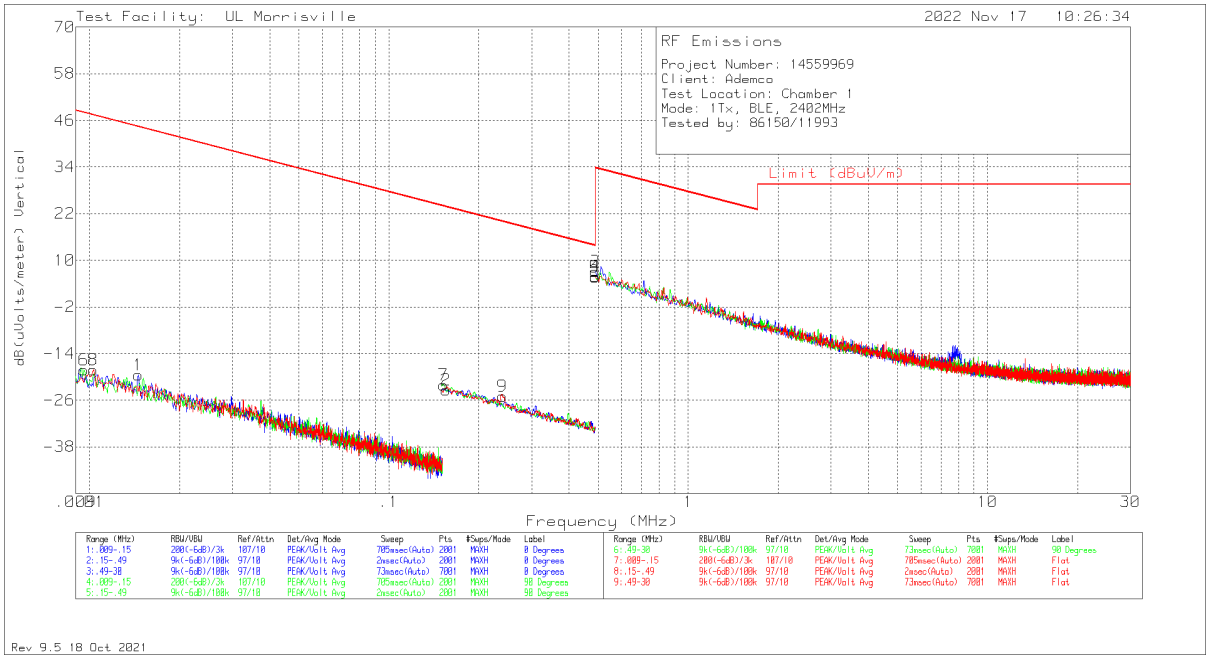

ANTENNA- THREE ORIENTATIONS E FIELD

Below 30MHz Data E FIELD

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	QP/AV Limit (dBuV/m)	PK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
6	.00957	43.03	Pk	18.6	.1	-80	-18.27	47.99	67.99	-66.26	0-360	90 degs
8	.01028	43.45	Pk	18.3	.1	-80	-18.15	47.37	67.37	-65.52	0-360	Flat
1	.01454	44.01	Pk	16.4	.1	-80	-19.49	44.35	64.35	-63.84	0-360	0 degs
7	.15255	46.7	Pk	11.1	.1	-80	-22.1	23.94	43.94	-46.04	0-360	90 degs
2	.15527	45.37	Pk	11.1	.1	-80	-23.43	23.78	43.78	-47.21	0-360	0 degs
9	.23993	43.9	Pk	11	.1	-80	-25	20	40	-45	0-360	Flat
3	.49	35.92	Pk	11	.2	-40	7.12	13.8	33.8	-6.68	0-360	0 degs
4	.49	34.64	Pk	11	.2	-40	5.84	13.8	33.8	-7.96	0-360	90 degs
5	.49	34.41	Pk	11	.2	-40	5.61	13.8	33.7	-8.19	0-360	Flat

Pk - Peak detector

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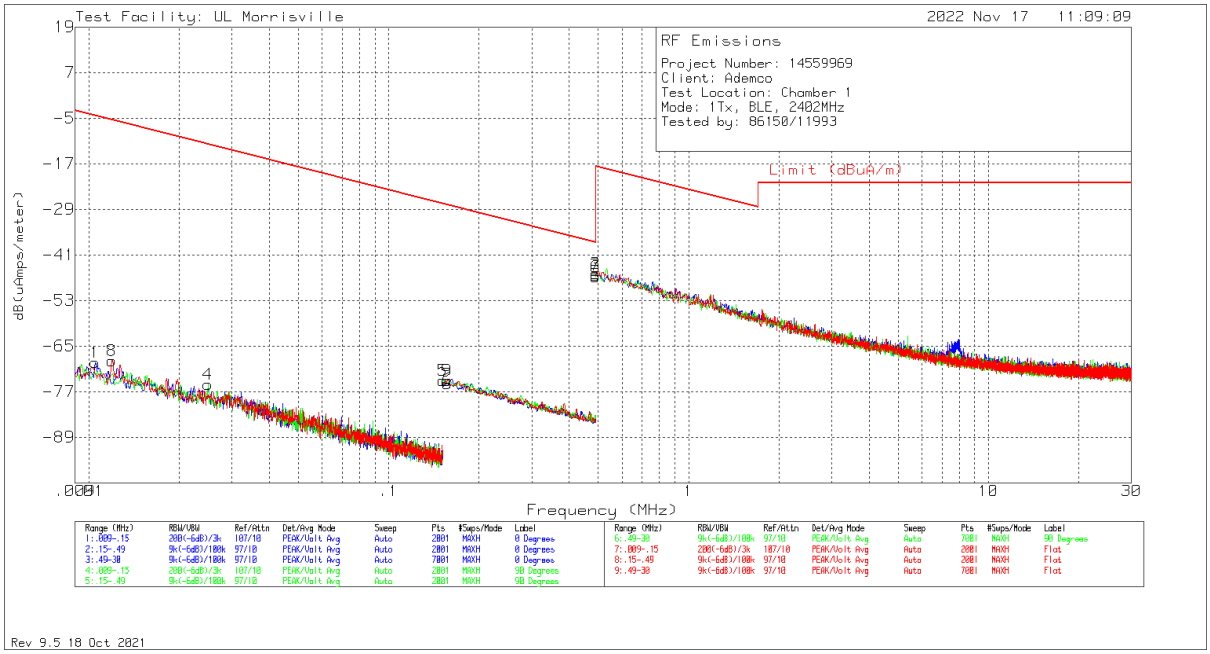
Antenna 2



ANTENNA- THREE ORIENTATIONS H FIELD

Below 30MHz Data H FIELD

Marker	Frequency (MHz)	Meter Reading (dBuA)	Det	AT0079 (dB/m)	Gain/Loss (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	.01049	43.87	Pk	-33.3	.1	-80	-69.33	-4.31	15.69	-65.02	0-360	0 degs
8	.01191	45.06	Pk	-34	.1	-80	-68.84	-5.41	14.59	-63.43	0-360	Flat
4	.02498	42.59	Pk	-37.8	.1	-80	-75.11	-11.85	-8.15	-63.26	0-360	90 degs
5	.15136	46.27	Pk	-40.4	.1	-80	-74.03	-27.5	-7.5	-46.53	0-360	90 degs
9	.15629	46.12	Pk	-40.4	.1	-80	-74.18	-27.77	-7.77	-46.41	0-360	Flat
2	.1568	45.27	Pk	-40.4	.1	-80	-75.03	-27.8	-7.8	-47.23	0-360	0 degs
3	.49	34.31	Pk	-40.5	.2	-40	-45.99	-37.7	-17.7	-8.29	0-360	0 degs
6	.49	33.52	Pk	-40.5	.2	-40	-46.78	-37.7	-17.7	-9.08	0-360	90 degs
7	.49	33.97	Pk	-40.5	.2	-40	-46.33	-37.7	-17.7	-8.63	0-360	Flat

Pk - Peak detector

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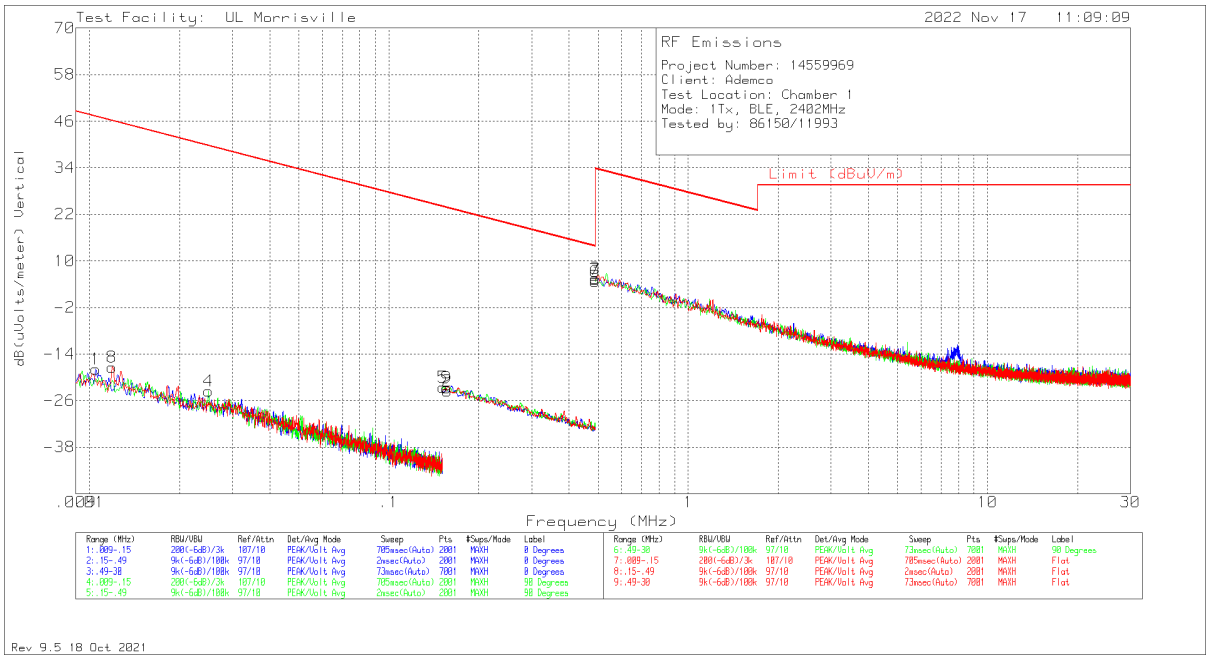

ANTENNA- THREE ORIENTATIONS E FIELD

Below 30MHz Data E FIELD

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	QP/AV Limit (dBuV/m)	PK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
1	.01049	43.87	Pk	18.2	.1	-80	-17.83	47.19	67.19	-65.02	0-360	0 degs
8	.01191	45.06	Pk	17.5	.1	-80	-17.34	46.09	66.09	-63.43	0-360	Flat
4	.02498	42.59	Pk	13.7	.1	-80	-23.61	39.65	59.65	-63.26	0-360	90 degs
5	.15136	46.27	Pk	11.1	.1	-80	-22.53	24	44	-46.53	0-360	90 degs
9	.15629	46.12	Pk	11.1	.1	-80	-22.68	23.73	43.73	-46.41	0-360	Flat
2	.1568	45.27	Pk	11.1	.1	-80	-23.53	23.7	43.7	-47.23	0-360	0 degs
3	.49	34.31	Pk	11	.2	-40	5.51	13.8	33.8	-8.29	0-360	0 degs
6	.49	33.52	Pk	11	.2	-40	4.72	13.8	33.8	-9.08	0-360	90 degs
7	.49	33.97	Pk	11	.2	-40	5.17	13.8	33.8	-8.63	0-360	Flat

Pk - Peak detector

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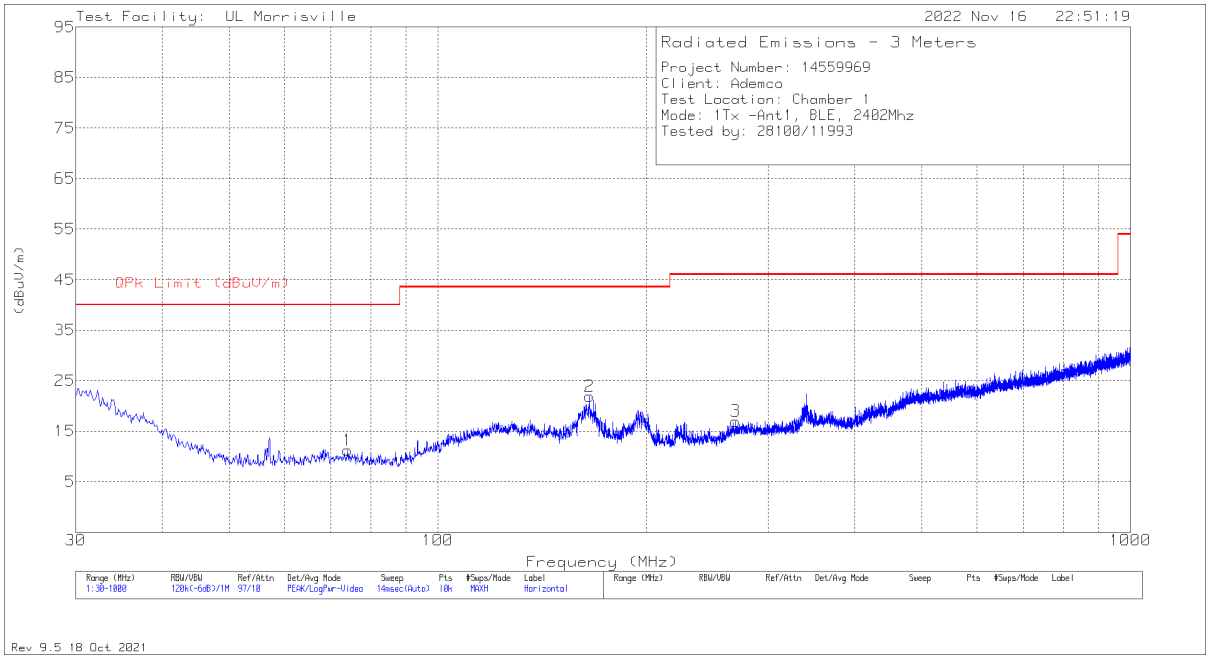
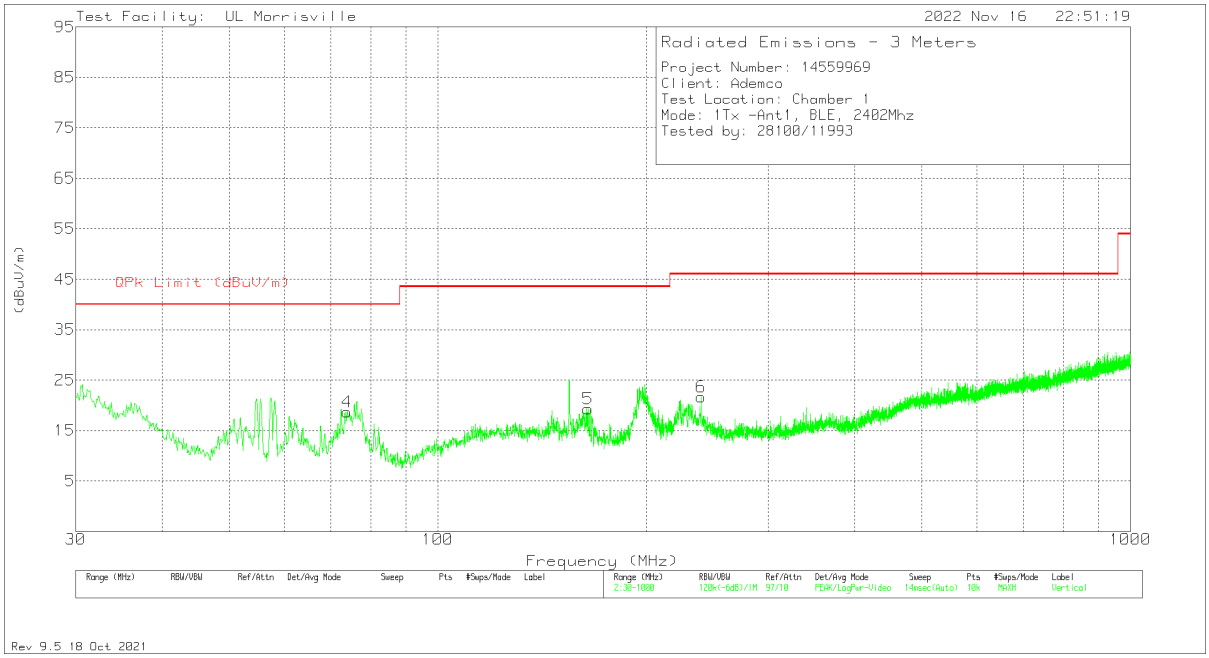
10.4. WORST CASE BELOW 1 GHZ

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

Antenna 1



HORIZONTAL



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Below 1GHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0066 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 74.135	28.08	Pk	14.1	-30.9	11.28	40	-28.72	0-360	399	H
2	* ** 165.606	33.8	Pk	17.7	-29.6	21.9	43.52	-21.62	0-360	199	H
3	* ** 269.202	27	Pk	18.9	-28.9	17	46.02	-29.02	0-360	299	H
4	* ** 73.941	35.48	Pk	14.1	-30.9	18.68	40	-21.32	0-360	100	V
5	* ** 164.733	31.23	Pk	17.7	-29.6	19.33	43.52	-24.19	0-360	100	V
6	* ** 240.005	33.24	Pk	17.3	-28.9	21.64	46.02	-24.38	0-360	100	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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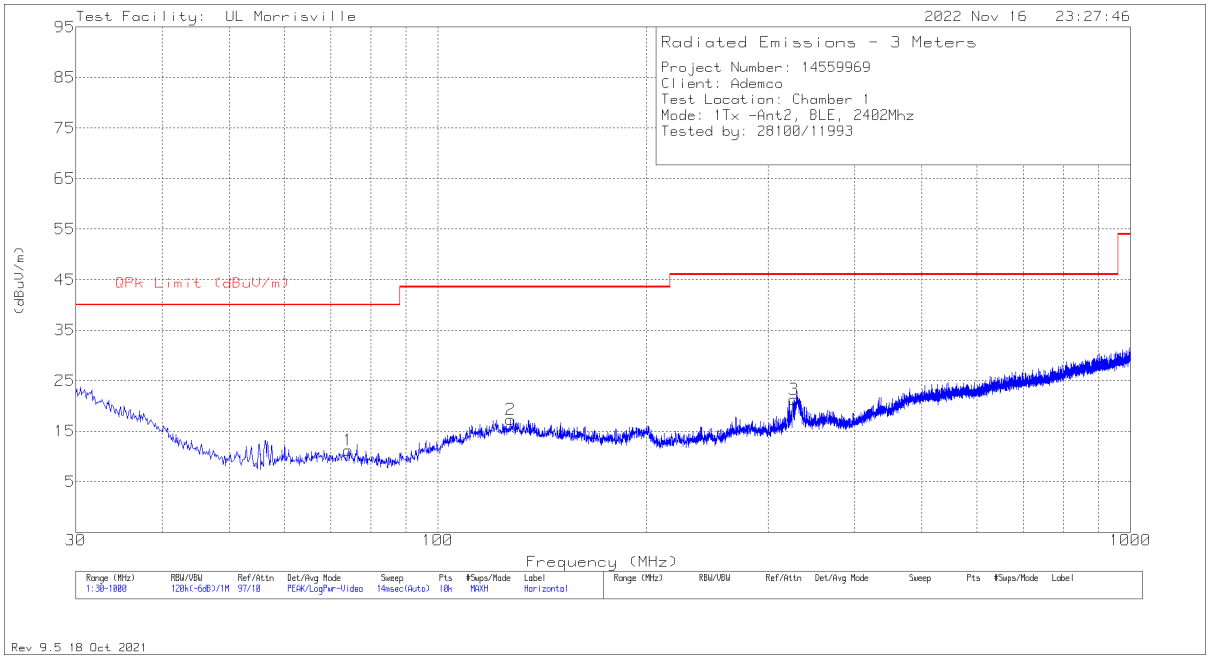
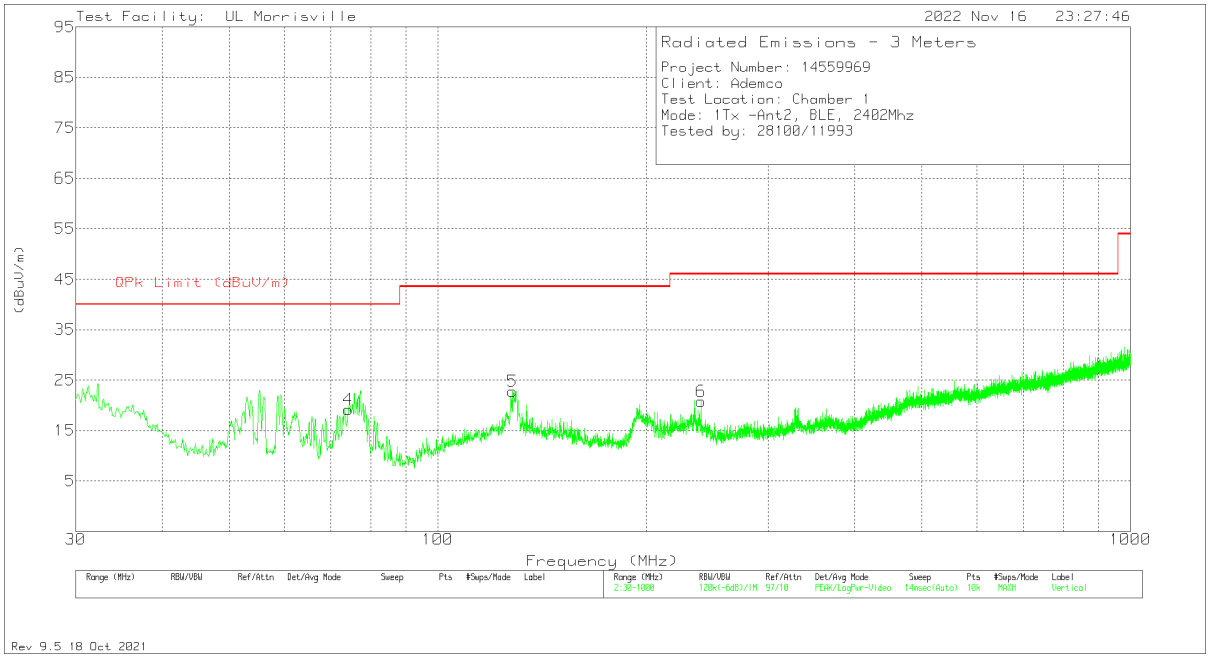
Antenna 2



HORIZONTAL



VERTICAL

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Below 1GHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0066 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 74.232	28.01	Pk	14.1	-30.9	11.21	40	-28.79	0-360	100	H
2	* ** 127.388	27.86	Pk	19.6	-30.1	17.36	43.52	-26.16	0-360	399	H
3	* ** 326.917	30.02	Pk	19.7	-28.4	21.32	46.02	-24.7	0-360	100	H
4	* ** 74.232	36.01	Pk	14.1	-30.9	19.21	40	-20.79	0-360	101	V
5	* ** 128.261	33.17	Pk	19.7	-30.1	22.77	43.52	-20.75	0-360	101	V
6	* ** 240.005	32.35	Pk	17.3	-28.9	20.75	46.02	-25.27	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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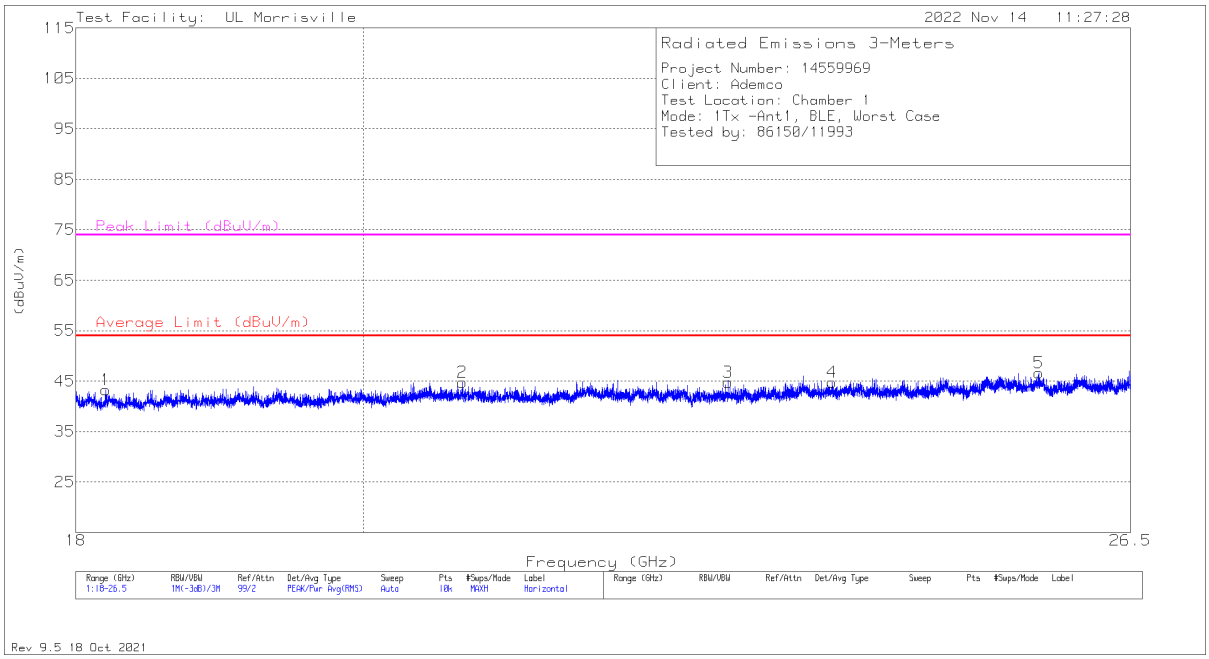
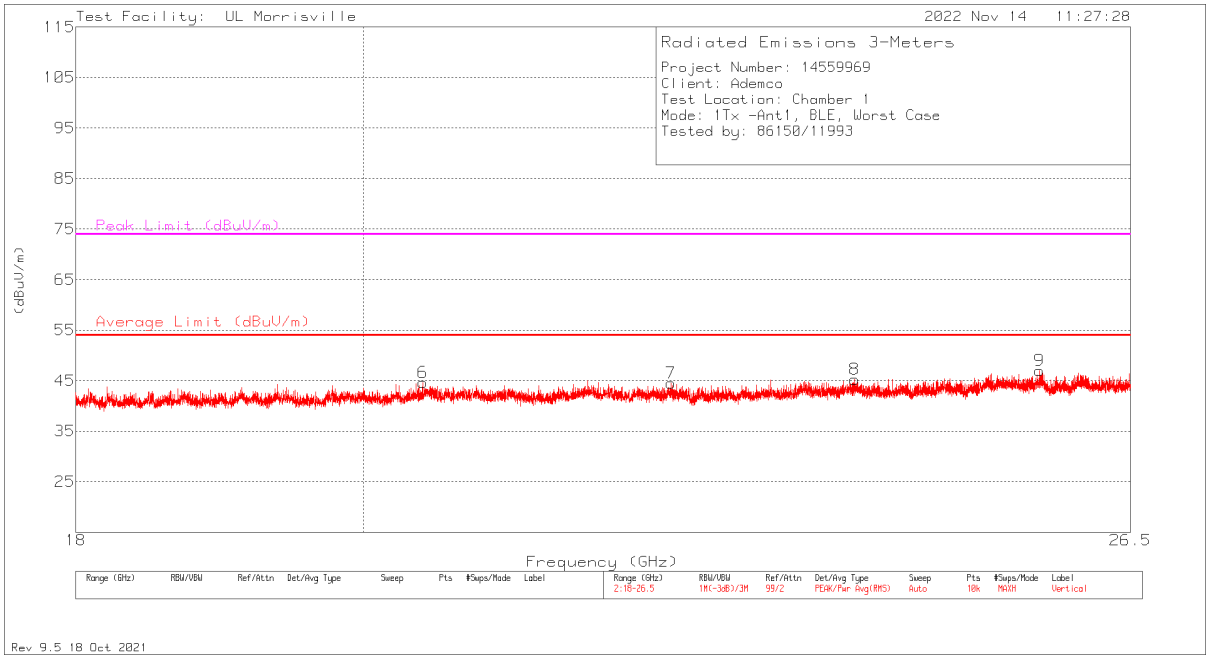
10.5. WORST CASE 18-26 GHZ

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

Antenna 1



HORIZONTAL



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18 – 26GHz Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	204704 (dB/m)	Gain/Loss (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	* ** 18.19807	48.94	Pk	33.2	-38.9	0	43.24	54	-10.76	74	-30.76	0-360	101	H
2	* ** 20.74322	49.91	Pk	34	-39.1	0	44.81	54	-9.19	74	-29.19	0-360	149	H
3	* ** 22.86249	49.66	Pk	34.4	-39.3	0	44.76	54	-9.24	74	-29.24	0-360	149	H
4	* ** 23.75508	48.71	Pk	35.1	-39	0	44.81	54	-9.19	74	-29.19	0-360	200	H
6	* ** 20.44144	49.54	Pk	34.2	-39.1	0	44.64	54	-9.36	74	-29.36	0-360	101	V
7	* ** 22.39154	49.17	Pk	34.5	-39.2	0	44.47	54	-9.53	74	-29.53	0-360	101	V
8	* ** 23.94889	48.78	Pk	35.1	-38.6	0	45.28	54	-8.72	74	-28.72	0-360	299	V
5	25.62526	48.32	Pk	36	-37.7	0	46.62	-	-	-	-	0-360	250	H
9	25.63121	48.72	Pk	36	-37.7	0	47.02	-	-	-	-	0-360	150	V

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

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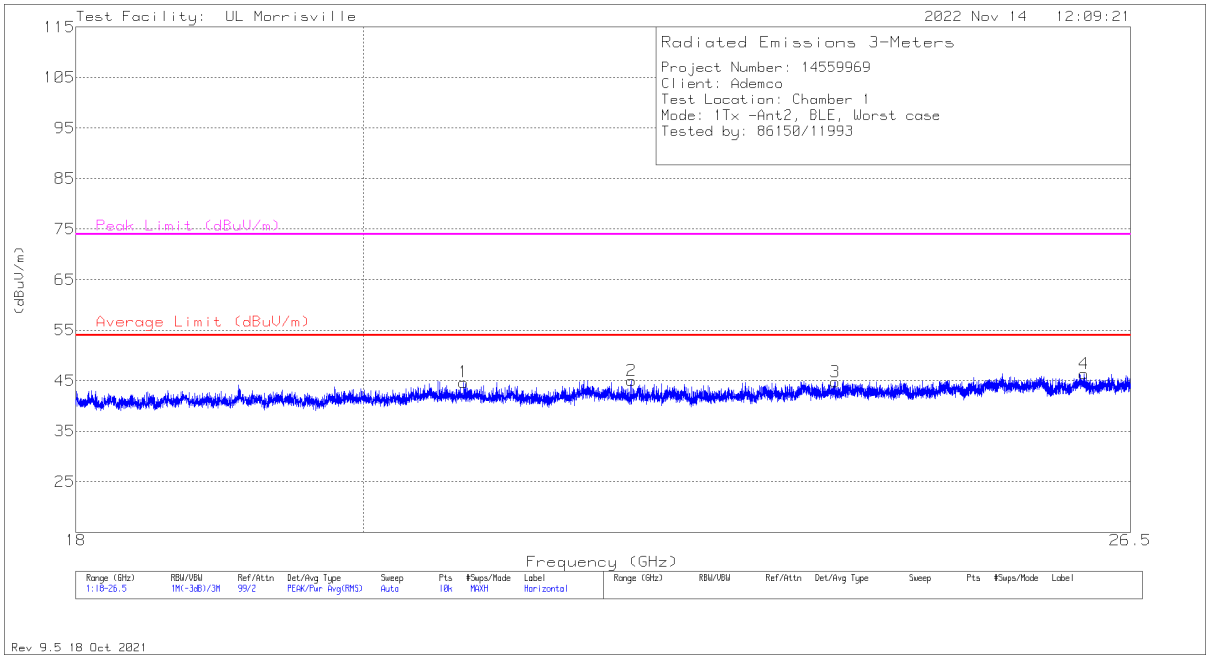
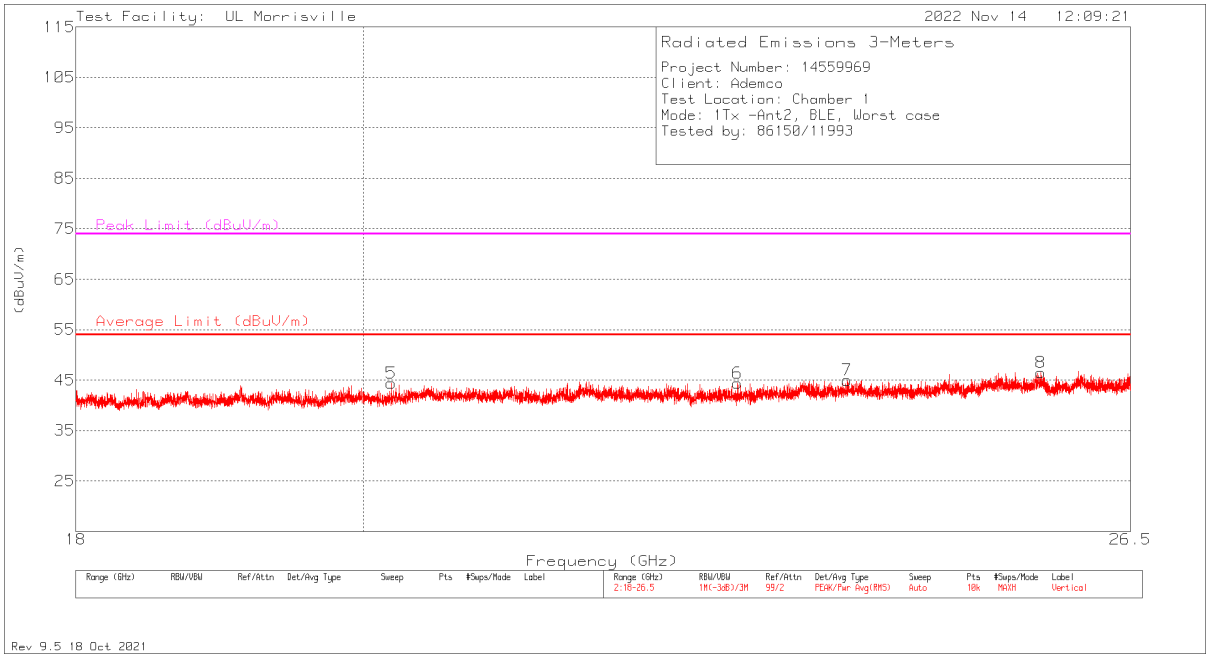
Antenna 2



HORIZONTAL



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18 – 26GHz Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	204704 (dB/m)	Gain/Loss (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	* ** 20.75173	49.8	Pk	34	-39.1	0	44.7	54	-9.3	74	-29.3	0-360	200	H
2	* ** 22.06851	49.97	Pk	34.5	-39.5	0	44.97	54	-9.03	74	-29.03	0-360	149	H
3	* ** 23.77845	48.67	Pk	35.1	-39	0	44.77	54	-9.23	74	-29.23	0-360	249	H
5	* ** 20.20767	49.74	Pk	33.7	-39.1	0	44.34	54	-9.66	74	-29.66	0-360	150	V
6	* ** 22.94324	49.28	Pk	34.5	-39.4	0	44.38	54	-9.62	74	-29.62	0-360	200	V
7	* ** 23.88599	48.65	Pk	35	-38.7	0	44.95	54	-9.05	74	-29.05	0-360	200	V
8	25.64481	48.06	Pk	36	-37.6	0	46.46	-	-	-	-	0-360	101	V
4	26.05456	47.71	Pk	36	-37.3	0	46.41	-	-	-	-	0-360	149	H

* - 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.

TEST PROCEDURE

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

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

Line conducted data is recorded for both lines.

RESULTS

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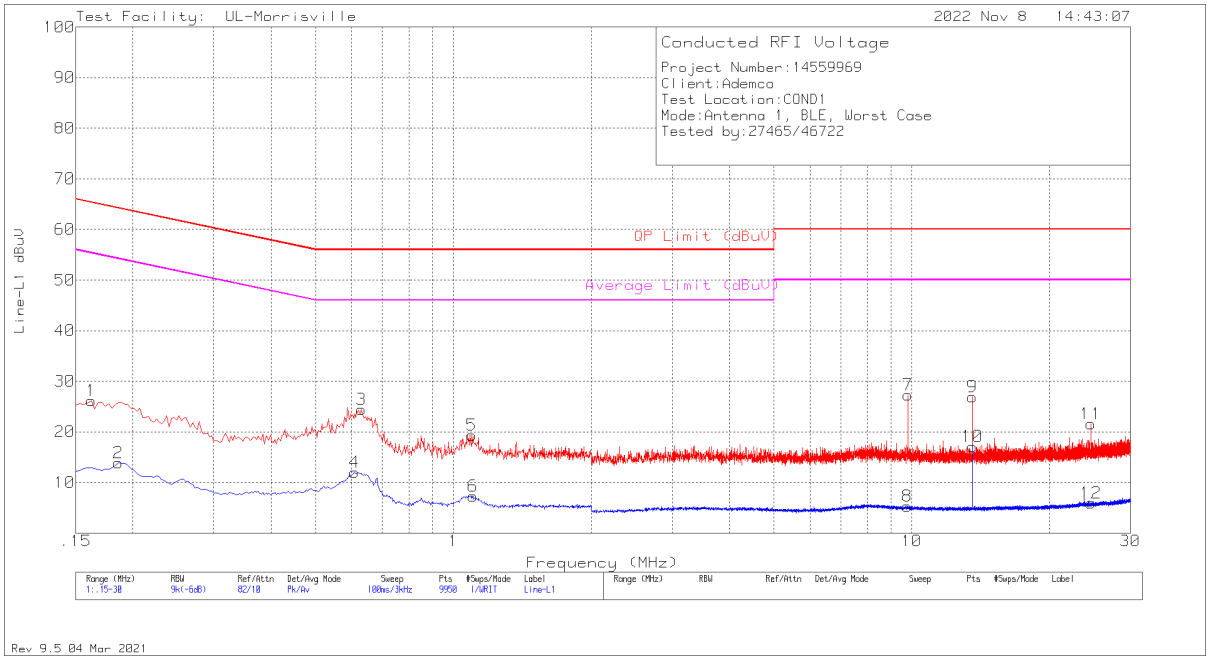
Antenna 1

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.162	16.13	Pk	.2	9.8	26.13	65.36	-39.23	-	-
2	.186	3.9	Av	.2	9.8	13.9	-	-	54.21	-40.31
3	.63	14.59	Pk	0	9.8	24.39	56	-31.61	-	-
4	.609	2.15	Av	0	9.8	11.95	-	-	46	-34.05
5	1.098	9.54	Pk	0	9.8	19.34	56	-36.66	-	-
6	1.104	-2.49	Av	0	9.8	7.31	-	-	46	-38.69
7	9.798	17.14	Pk	.1	10	27.24	60	-32.76	-	-
8	9.78	-4.82	Av	.1	10	5.28	-	-	50	-44.72
9	13.563	16.8	Pk	.1	10	26.9	60	-33.1	-	-
10	13.56	6.98	Av	.1	10	17.08	-	-	50	-32.92
11	24.564	11.15	Pk	.2	10.2	21.55	60	-38.45	-	-
12	24.588	-4.51	Av	.2	10.2	5.89	-	-	50	-44.11

Pk - Peak detector
Av - Average detection

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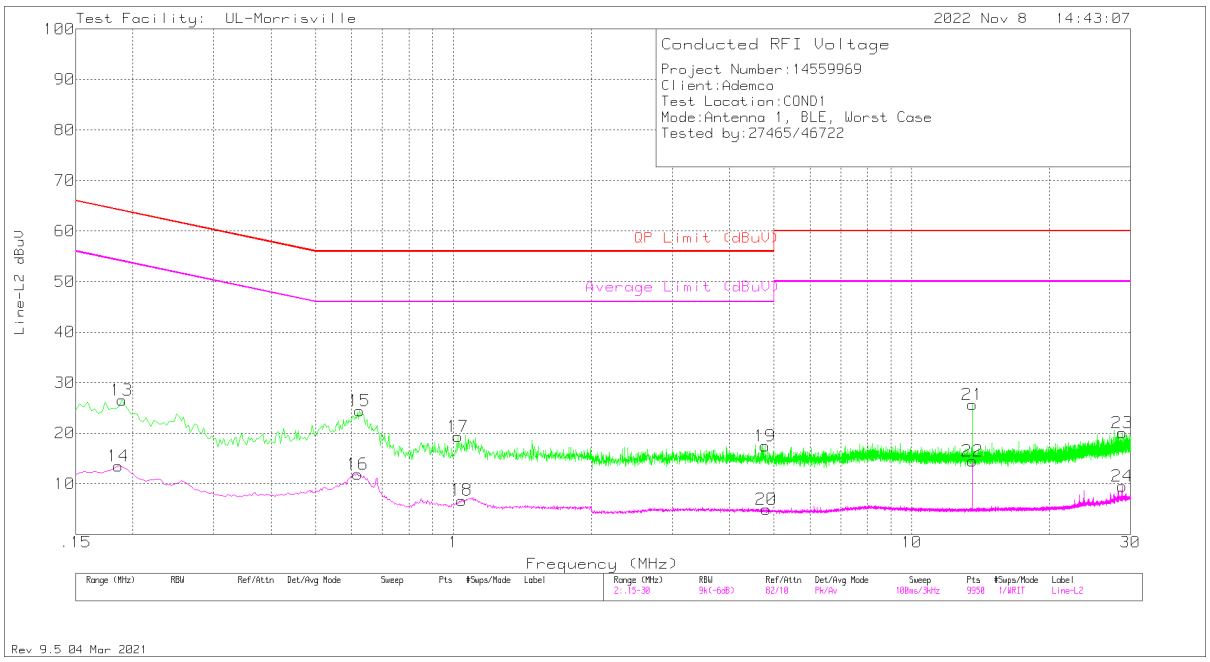
LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
13	.189	16.53	Pk	.2	9.8	26.53	64.08	-37.55	-	-
14	.186	3.51	Av	.2	9.8	13.51	-	-	54.21	-40.7
15	.624	14.64	Pk	0	9.8	24.44	56	-31.56	-	-
16	.618	2.1	Av	0	9.8	11.9	-	-	46	-34.1
17	1.023	9.56	Pk	0	9.8	19.36	56	-36.64	-	-
18	1.044	-3.07	Av	0	9.8	6.73	-	-	46	-39.27
19	4.785	7.59	Pk	0	9.9	17.49	56	-38.51	-	-
20	4.812	-5	Av	0	9.9	4.9	-	-	46	-41.1
21	13.56	15.54	Pk	.1	10	25.64	60	-34.36	-	-
22	13.56	4.4	Av	.1	10	14.5	-	-	50	-35.5
23	28.767	9.52	Pk	.3	10.2	20.02	60	-39.98	-	-
24	28.764	-.93	Av	.3	10.2	9.57	-	-	50	-40.43

Pk - Peak detector
Av - Average detection

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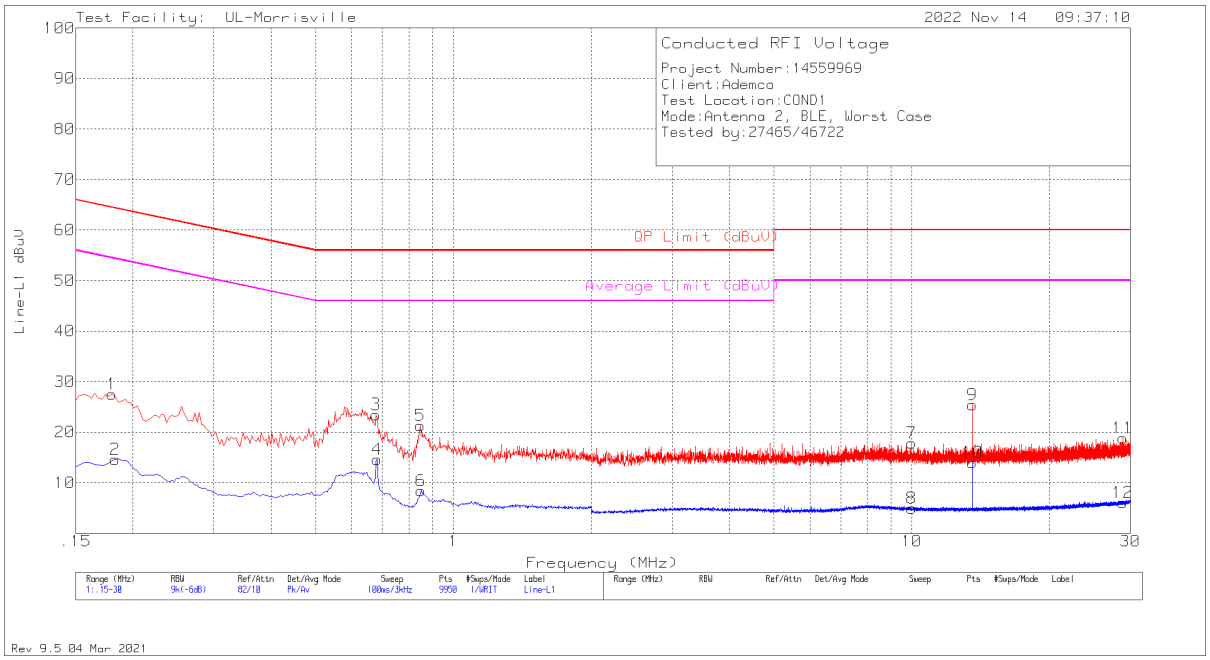
Antenna 2

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.18	17.52	Pk	.2	9.8	27.52	64.49	-36.97	-	-
2	.183	4.59	Av	.2	9.8	14.59	-	-	54.35	-39.76
3	.678	13.69	Pk	0	9.8	23.49	56	-32.51	-	-
4	.681	4.82	Av	0	9.8	14.62	-	-	46	-31.38
5	.846	11.54	Pk	0	9.8	21.34	56	-34.66	-	-
6	.8505	-1.4	Av	0	9.8	8.4	-	-	46	-37.6
7	10.002	7.69	Pk	.1	10	17.79	60	-42.21	-	-
8	10.008	-5.16	Av	.1	10	4.94	-	-	50	-45.06
9	13.56	15.34	Pk	.1	10	25.44	60	-34.56	-	-
10	13.56	3.92	Av	.1	10	14.02	-	-	50	-35.98
11	28.842	8.3	Pk	.3	10.2	18.8	60	-41.2	-	-
12	28.842	-4.42	Av	.3	10.2	6.08	-	-	50	-43.92

Pk - Peak detector
Av - Average detection

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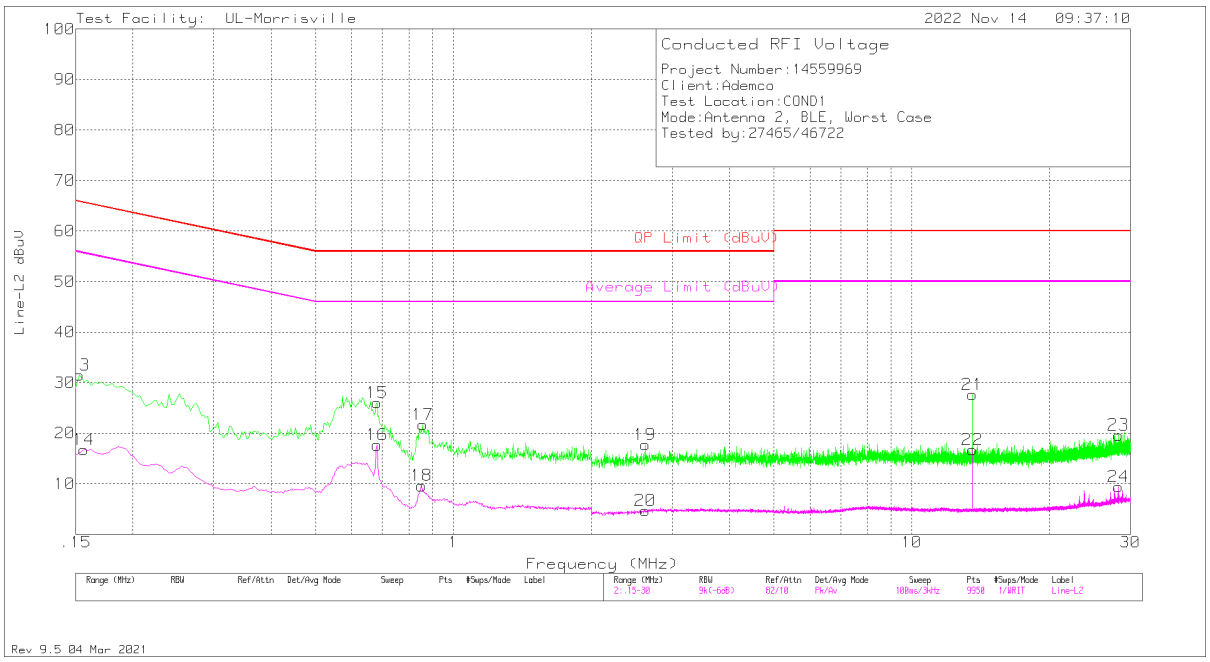
LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VCF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
13	.153	21.45	Pk	.2	9.8	31.45	65.84	-34.39	-	-
14	.156	6.71	Av	.2	9.8	16.71	-	-	55.67	-38.96
15	.681	16.24	Pk	0	9.8	26.04	56	-29.96	-	-
16	.681	7.86	Av	0	9.8	17.66	-	-	46	-28.34
17	.858	11.89	Pk	0	9.8	21.69	56	-34.31	-	-
18	.852	-.21	Av	0	9.8	9.59	-	-	46	-36.41
19	2.619	7.96	Pk	0	9.8	17.76	56	-38.24	-	-
20	2.622	-5.1	Av	0	9.8	4.7	-	-	46	-41.3
21	13.56	17.57	Pk	.1	10	27.67	60	-32.33	-	-
22	13.56	6.6	Av	.1	10	16.7	-	-	50	-33.3
23	28.221	9.14	Pk	.3	10.2	19.64	60	-40.36	-	-
24	28.221	-1.08	Av	.3	10.2	9.42	-	-	50	-40.58

Pk - Peak detector
Av - Average detection

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12. SETUP PHOTOS

Please refer to R14559969-EP1 for setup photos

END OF TEST REPORT

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