

# TEST REPORT

**Report Number:** R14932101-E12a

**Applicant :** Microsoft Corporation  
1 Microsoft Way  
Redmond, WA 98052-8300

**Model :** 2036

**FCC ID :** C3K2036

**IC :** 3048A-2036

**EUT Description :** Portable Computing Device

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C: 2024  
FCC 47 CFR PART 15 SUBPART E: 2024  
ISED RSS-247 ISSUE 3: 2023  
ISED RSS-248 ISSUE 2: 2022  
ISED RSS-GEN ISSUE 5 + A1 + A2: 2021

**Date Of Issue:**

2024-03-28

**Prepared by:**

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## REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2024-02-28	Initial Review	Charles Moody
V2	2024-03-28	Revised Test Methodology section 3	B. Kiewra

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Microsoft Corporation  
1 Microsoft Way  
Redmond, WA 98052-8300, USA

**EUT DESCRIPTION:** Portable Computing Device

**MODEL:** 2036

**SERIAL NUMBER:** A81245020002335A, 2399649100000116, A81235010007335S,  
0F3BV3G23383HH

**SAMPLE RECEIPT DATE:** 2023-10-10 TO 2023-12-08

**DATE TESTED:** 2023-10-11 TO 2024-01-23

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C: 2024	See Section 2
CFR 47 Part 15 Subpart E: 2024	See Section 2
ISED RSS-247 Issue 3: 2023	See Section 2
ISED RSS-248 Issue 2: 2022	See Section 2
ISED RSS-GEN Issue 5 + A1 + A2: 2021	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, or any agency of the U.S. government.

Approved & Released  
For UL LLC By:

Prepared By:



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Michael Antola  
Staff Engineer  
Consumer, Medical and IT Segment  
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Electrical Engineer  
Consumer, Medical and IT Segment  
UL LLC

## 2. TEST RESULTS SUMMARY

This report contains data provided by the customer 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.

Below is a list of the data provided by the customer:

1. Antenna gain and type (see section 6.3)

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
15.209, 15.205, 15.407 (b)	RSS-GEN 8.9, 8.10, RSS-247 6.2, RSS-248 4.6	Radiated Emissions	See Comment	Refer to Note.

Note: The purpose of this report is to show compliance of radios while simultaneously transmitting. These scans were found to be compliant.

## 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC 47 CFR Part 2, FCC 47 CFR Part 15, ANSI C63.10-2013, KDB 558074 D01, KDB 662911 D01 v02r01, KDB 789033 D02 v02r01, KDB 987594 D01 v02r02, RSS-GEN Issue 5 + A1 + A2, RSS-247 Issue 3, RSS-248 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
<input type="checkbox"/>	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
<input checked="" type="checkbox"/>	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
All emissions, radiated	6.01 dB
Temperature	0.57°C
Humidity	3.39%
DC Supply voltages	1.70%
Time	3.39%

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

### 5.4. SAMPLE CALCULATION

#### **RADIATED EMISSIONS**

Where relevant, the following sample calculation is provided:

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

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

## 6. EQUIPMENT UNDER TEST

### 6.1. DESCRIPTION OF EUT

The EUT is a Portable Computing Device. This report covers the simultaneous transmission of the 2.4 WLAN, BT/BLE, 5 WLAN, and 6 WLAN radios.

### 6.2. MAXIMUM OUTPUT POWER

The purpose of this report is to show compliance of radios while simultaneously transmitting. Therefore, power measurements are not covered in this report. For the samples used for this test program, it's the responsibility of the applicant to ensure that the EUT yields the same or higher power levels as recorded in the certification reports of each radio. The power levels of the 2.4/5/6 WLAN radio and BLE radio were measured by the lab and maximum power levels can be found in the following UL reports:

- R14932101-E1a FCC ISED BLE REPORT 2036
- R14932101-E2a FCC ISED BT REPORT 2036
- R14932101-E6a FCC ISED 2.4 WLAN REPORT 2036
- R14932101-E7a FCC ISED 5.2-5.9 WLAN REPORT 2036
- R14932101-E10a FCC ISED 6GHz WLAN REPORT 2036

### 6.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

Chain	Frequency (MHz)	Gain (dBi)	Type
0	2400-2483.5	4.92	PIFA
	5150-5250	7.72	
	5250-5350	8.05	
	5470-5725	6.35	
	5725-5850	7.27	
	5850-5895	7.27	
	5925-6425	7.27	
	6425-6525	7.42	
	6525-6875	7.60	
6875-7125	6.54		
1	2400-2483.5	4.68	
	5150-5250	6.74	
	5250-5350	6.74	
	5470-5725	5.22	
	5725-5850	5.73	
	5850-5895	5.73	
	5925-6425	5.75	
	6425-6525	5.56	
	6525-6875	5.56	
6875-7125	4.80		



## 6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 1.0.3808.9500.

## 6.5. WORST-CASE CONFIGURATION AND MODE

The EUT is intended to operate in only one orientation; therefore, all final radiated testing was performed with the EUT in this intended orientation of operation.

The following scans was performed for simultaneous transmission based on the worst-case data from the manufacturer's report:

### 1-18 GHz Harmonics and Spurious Emissions:

Mode	Mode	Mode	Scan Number
2.4 WLAN, 11be EHT20 26T, RU8, 2462 MHz, Pset19 MIMO	5 WLAN, 11be EHT20 26T, RU0, 5745 MHz, Pset20, MIMO	N/A	1
2.4 WLAN, 11be EHT20 26T, RU0, 2437 MHz, Pset19 MIMO	6 WLAN, 11be EHT20 26T, RU0, 6095 MHz, Pset9, MIMO	N/A	2
5 WLAN, 11be EHT20 26T, RU0, 5745 MHz, Pset20, MIMO	BLE, 125kBps, 2462 MHz, Pset10 C0	2.4 WLAN, 11be EHT20 26T, RU8, 2462 MHz, Pset19 C1	3
6 WLAN, 11be EHT20 26T, RU0, 6095 MHz, Pset9, MIMO	BLE, 125kBps, 2438 MHz, Pset10 C0	2.4 WLAN, 11be EHT20 26T, RU0, 2437 MHz, Pset19 C1	4
5 WLAN, 11be EHT20 26T, RU0, 5745 MHz, Pset20, MIMO	2.4 WLAN, 11be EHT20 26T, RU8, 2462 MHz, Pset19 C0	BLE, 125kBps, 2462 MHz, Pset10 C1	5
6 WLAN, 11be EHT20 26T, RU0, 6095 MHz, Pset9, MIMO	2.4 WLAN, 11be EHT20 26T, RU0, 2437 MHz, Pset19 C0	BLE, 125kBps, 2438 MHz, Pset10 C1	6
5 WLAN, 11be EHT20 26T, RU0, 5745 MHz, Pset20, MIMO	BLE, 1Mbps, 2462 MHz, Pset11, MIMO	N/A	7
6 WLAN, 11be EHT20 26T, RU0, 6095 MHz, Pset9, MIMO	BLE, 1Mbps, 2438 MHz, Pset11, MIMO	N/A	8

### Band Edge:

Mode	Mode	Mode	Scan Number
5 WLAN, 11be EHT20 26T, RU0, 5745 MHz, Pset20, MIMO	BLE, 2Mbps, 2478 MHz, Pset11 C0	2.4 WLAN, 11be EHT20 52T, RU40, 2462 MHz, Pset19 C1	9

## 6.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Power Supply	Microsoft	PN: M1140030-007	0C130Z08EV337	NA
USB Drive	PNY	16GB	NA	NA
Headphones	Sony	NA	NA	NA
USB C to Ethernet	TP-link	UE300C	2234082002838	NA
Switch	Linksys	EFAH05WVER.3	RA13048005308 EH1040 MA	NA

### I/O CABLES

I/O Cable List						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB-C	2	USB-C	Shielded	>3m	EUT to Power Supply
2	Aux	1	Aux	Shielded	<3m	Headphones
3	USB-A	1	USB-A	Shielded	<3m	EUT to USB Drive
4	USB-C	2	USB-C	Shielded	>3m	USB to Ethernet adapter Ethernet is unshielded

### TEST SETUP

Test software exercised the radio card.

### SETUP DIAGRAM

For all setup diagrams and setup photos, refer to UL report R14932101-EP1a

## 7. TEST AND MEASUREMENT EQUIPMENT

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

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

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	<b>1-18 GHz</b>				
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-04-06	2024-04-06
	<b>Gain-Loss Chains</b>				
91979	Gain-loss string: 1-18GHz	Various	Various	2023-05-16	2024-05-16
	<b>Receiver &amp; Software</b>				
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2023-03-24	2024-03-24
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	<b>Additional Equipment used</b>				
241205	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05
77414 (BRF003)	2.4GHz notch filter, 2W, Fhigh =18GHz	Micro-Tronics	BRM50702	2023-02-15	2024-02-29
77837 (BRF004)	5.5GHz notch filter, 2W, Fhigh =18GHz	Micro-Tronics	BRM50716-01	2023-02-15	2024-02-29
216159 (HPF019)	7GHz high-pass filter, 2W, Fhigh =18GHz	Micro-Tronics	HPM50107	2023-02-15	2024-02-29

## 8. DUTY CYCLE

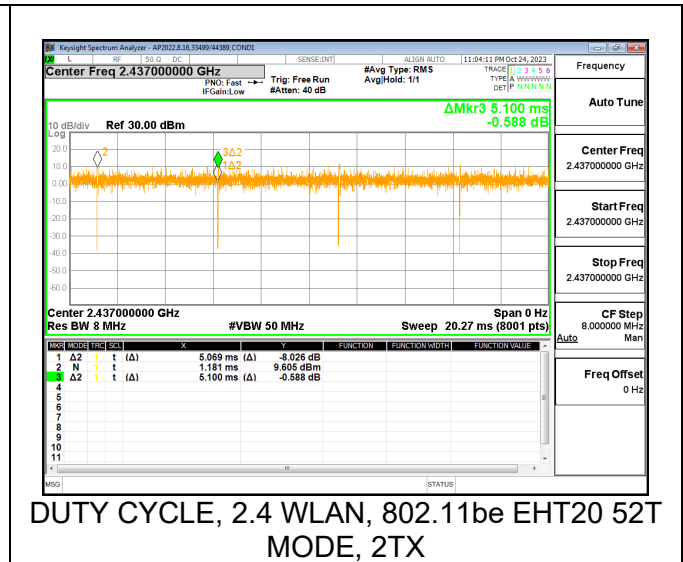
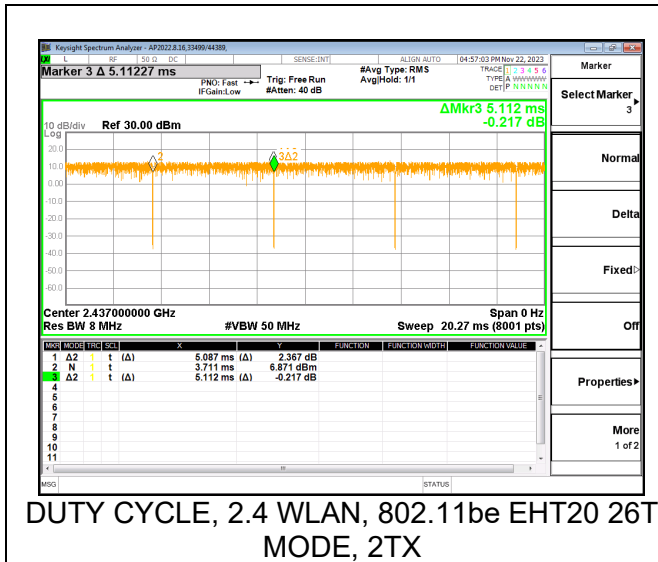
### LIMITS

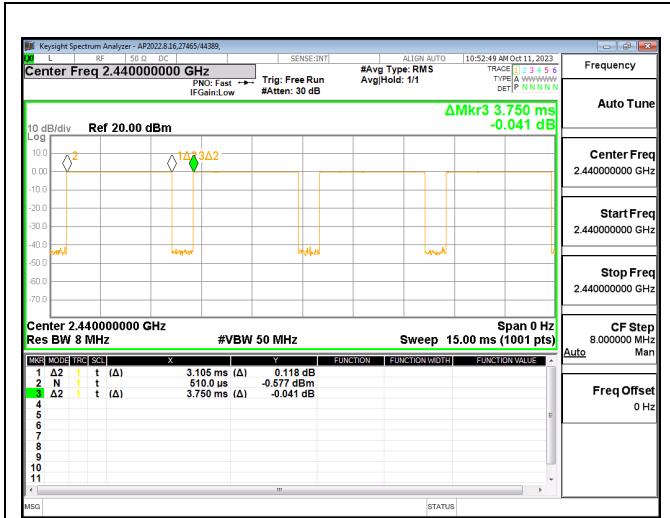
None; for reporting purposes only.

### PROCEDURE

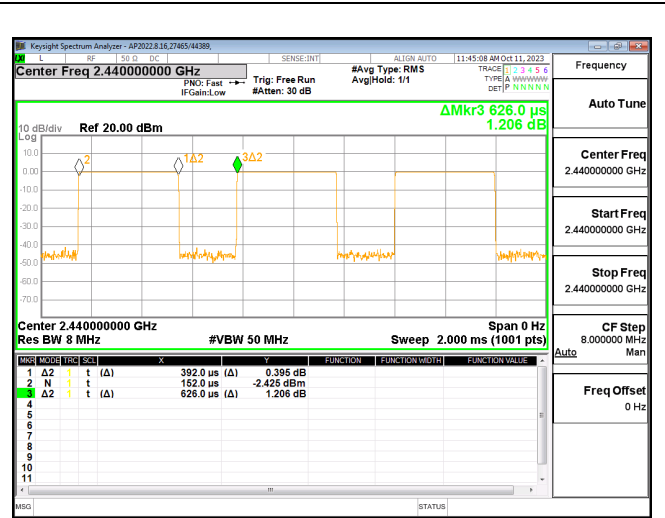
ANSI C63.10 Section 11.6

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor RMS (dB)	Duty Cycle Correction Factor Linear (dB)	1/B Minimum VBW (kHz)
2.4 WLAN 26T	5.087	5.112	0.9951	99.51%	0.00	0.00	0.010
2.4 WLAN 52T	5.069	5.100	0.9939	99.39%	0.00	0.00	0.010
BLE 125kBps	3.105	3.750	0.8280	82.80%	0.82	1.64	0.322
BLE 1Mbps	0.392	0.626	0.6262	62.62%	2.03	4.07	2.551
BLE 2Mbps	0.204	0.626	0.3259	32.59%	4.87	9.74	4.902
5/6 WLAN 26T	5.087	5.107	0.9961	99.61%	0.00	0.00	0.010

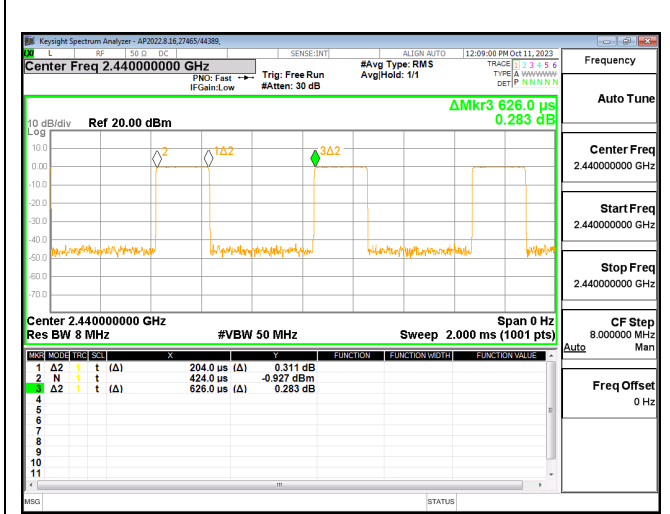




DUTY CYCLE BLE 125 kbps



DUTY CYCLE BLE 1Mbps



DUTY CYCLE BLE 2Mbps



DUTY CYCLE, 5/ WLAN, 802.11be EHT20 26T MODE, 2TX

## 9. RADIATED TEST RESULTS

### LIMITS

FCC §15.205 and §15.209  
FCC §15.407 (b)(1-6)  
RSS-GEN, Section 8.9 and 8.10  
RSS-248 4.6.2 (a)  
RSS-247 Issue 2 Sections:  
6.2.1.2 (for 5150-5250 MHz band)  
6.2.2.2 (for 5250-5350 MHz band)  
6.2.3.2 (for 5470-5600 MHz and 5650-5725 MHz bands)  
6.2.4.2 (for 5725-5850 MHz bands)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
Above 960	500	54

### TEST PROCEDURE

The EUT is placed on a non-conducting table 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 pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements.

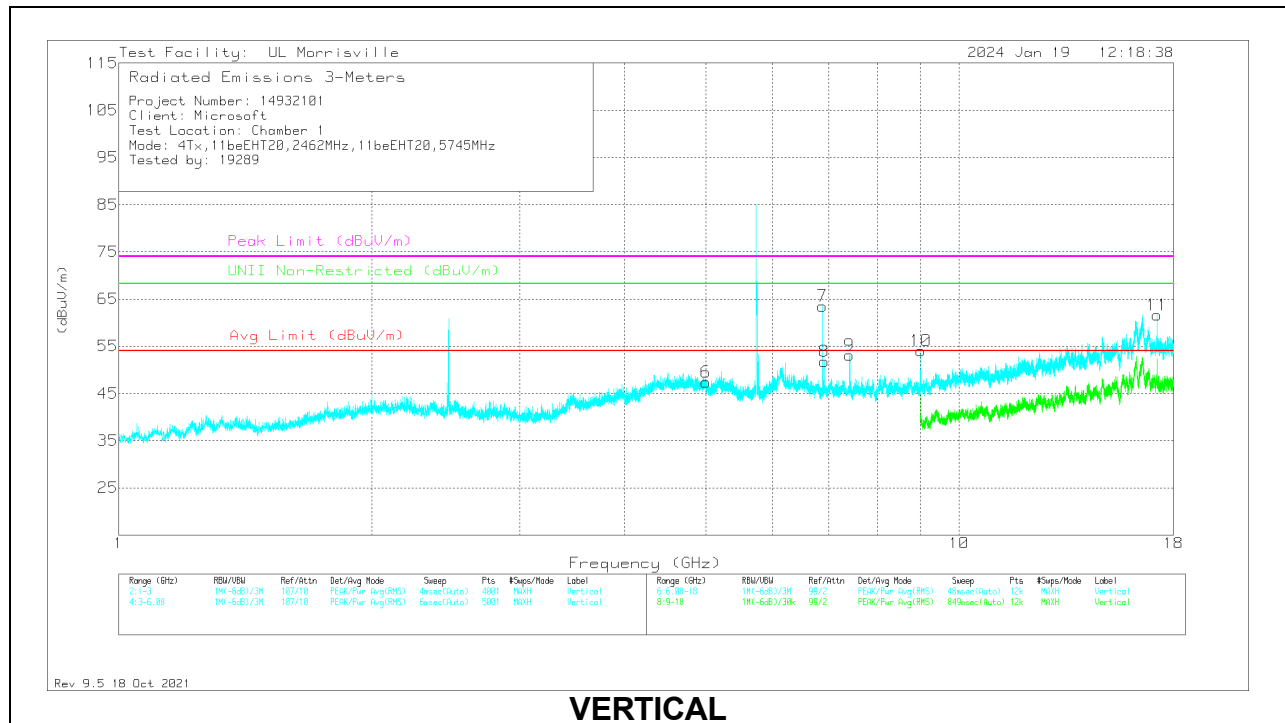
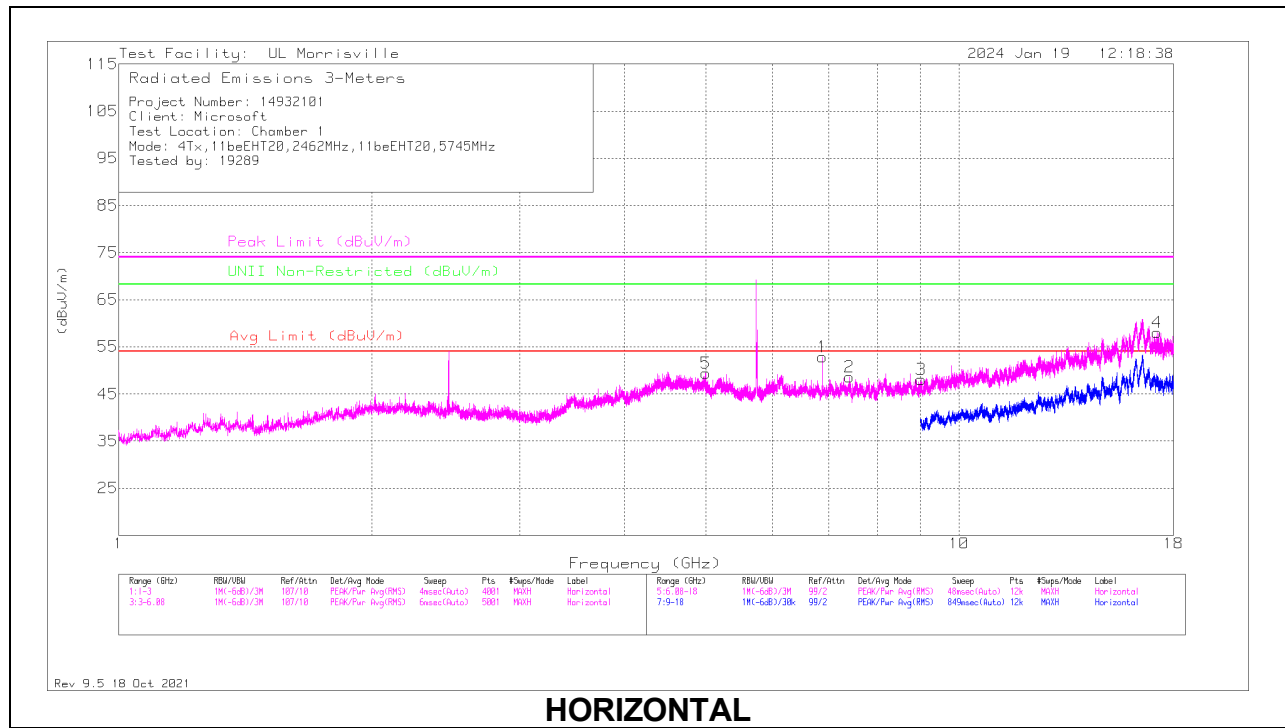
For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements. When 6GHz WLAN is in the testing scan configuration, RMS averaging was used. In every other case in which 6GHz WLAN was not included, linear voltage averaging was used.

The spectrum from 1 GHz to 18 GHz is investigated with the various radios set to their worst-case operational modes. The scans performed were detailed in section 6.5.

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.

## 9.1. TRANSMITTER ABOVE 1 GHz

### 9.1.1. HARMONICS AND SPURIOUS EMISSIONS (Scan 1)



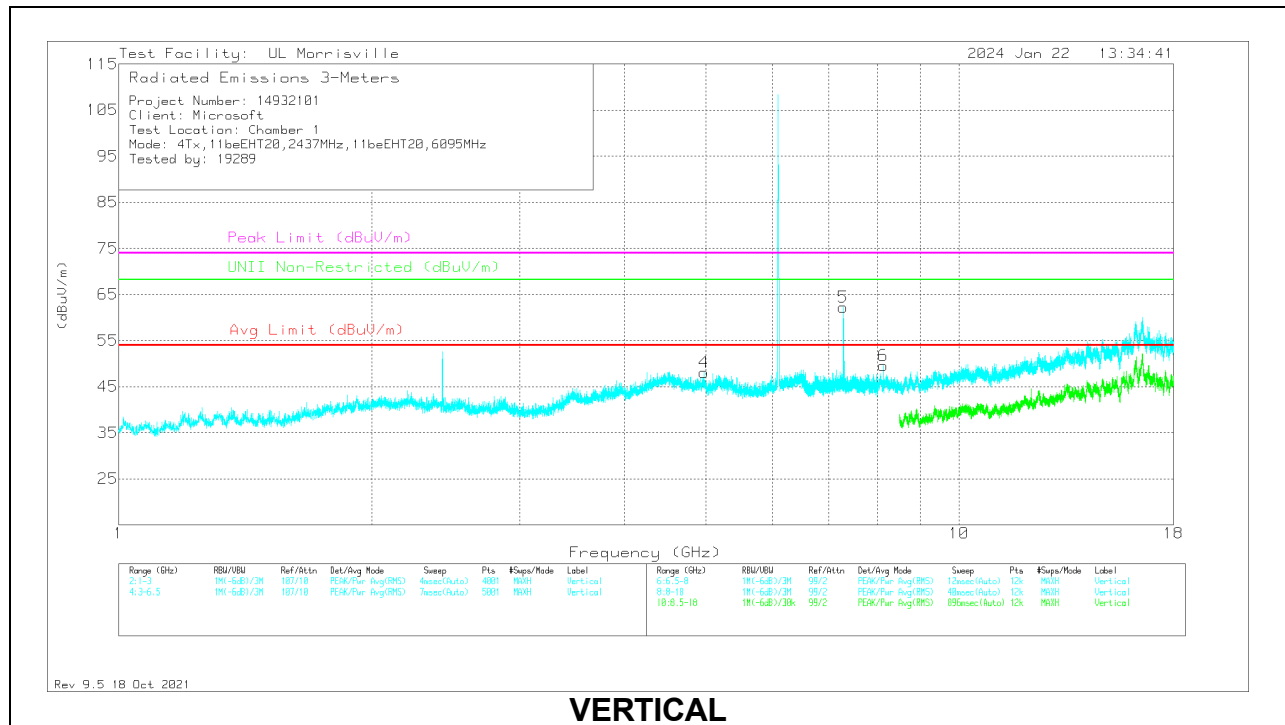
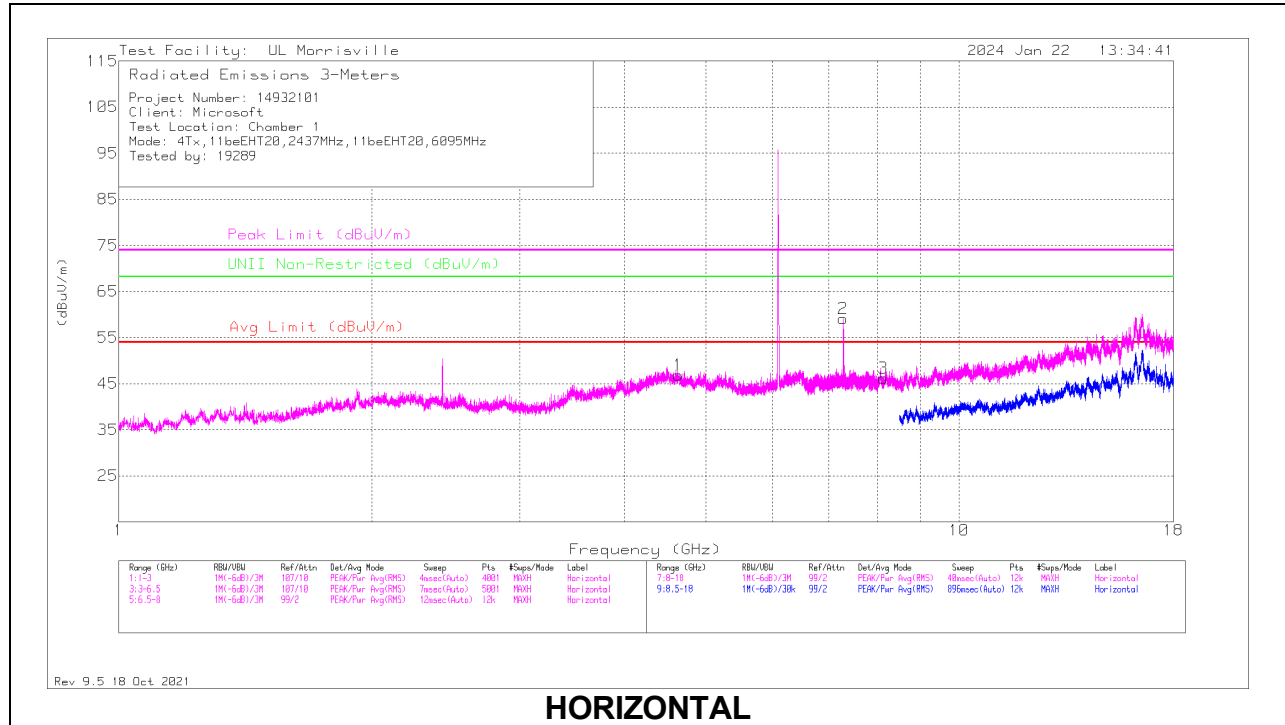
**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Filter (dB)	Filter (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	*** 4.99646	35.68	PK-U	34.1	-21.9	.3	1.7	49.88	-	-	74	-24.12	-	-	16	334	H
	*** 4.99616	23.37	ADV	34.1	-21.9	.3	1.7	37.57	54	-16.43	-	-	-	-	16	334	H
6	*** 4.99522	33.25	Pk	34.1	-21.9	.3	1.7	47.45	54	-6.55	74	-26.55	-	-	0-360	200	V
2	*** 7.40992	47.28	PK-U	35.7	-27.3	.5	.7	56.88	-	-	74	-17.12	-	-	256	364	H
	*** 7.41095	31.34	ADV	35.7	-27.3	.5	.7	40.94	54	-13.06	-	-	-	-	256	364	H
3	*** 9.01629	37.01	Pk	35.9	-26.2	.5	.8	48.01	54	-5.99	74	-25.99	-	-	0-360	200	H
9	*** 7.41233	49.03	PK-U	35.7	-27.3	.6	.7	58.73	-	-	74	-15.27	-	-	322	383	V
	*** 7.41142	34.1	ADV	35.7	-27.3	.5	.7	43.7	54	-10.3	-	-	-	-	322	383	V
10	*** 9.00346	41.44	PK-U	35.9	-26.3	.5	.8	52.34	-	-	74	-21.66	-	-	291	307	V
	*** 9.00282	27.31	ADV	35.9	-26.4	.5	.8	38.11	54	-15.89	-	-	-	-	291	307	V
7	6.87819	55.99	PK-U	35.6	-28	.3	.8	64.69	-	-	-	-	68.2	-3.51	289	347	V
1	6.87765	44.14	Pk	35.6	-28	.3	.8	52.84	-	-	-	-	68.2	-15.36	0-360	101	H
8	6.91043	42.94	Pk	35.6	-27.9	.4	.8	51.84	-	-	-	-	68.2	-16.36	0-360	200	V
11	17.2103	39.47	Pk	41.3	-20.9	.8	.9	61.57	-	-	-	-	68.2	-6.63	0-360	200	V
4	17.21725	36.51	Pk	41.3	-21.3	.7	.8	58.01	-	-	-	-	68.2	-10.19	0-360	101	H

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



### 9.1.2. HARMONICS AND SPURIOUS EMISSIONS (Scan 2)

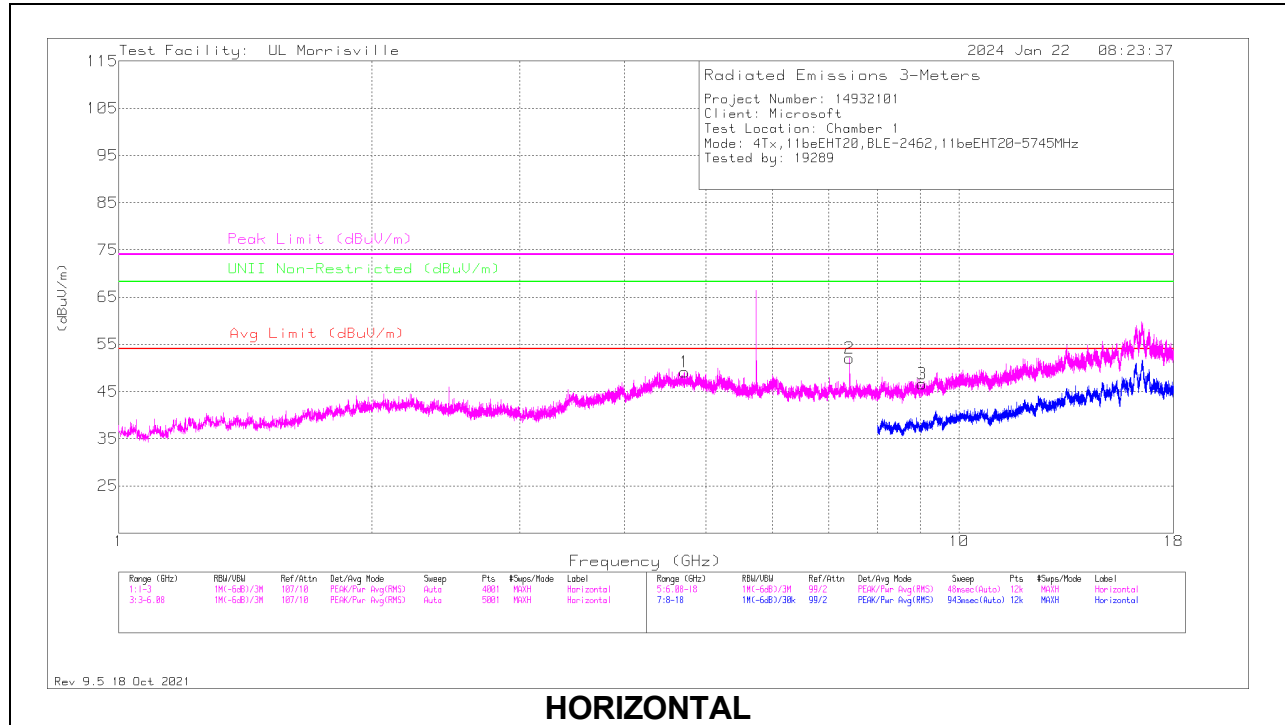


**RADIATED EMISSIONS**

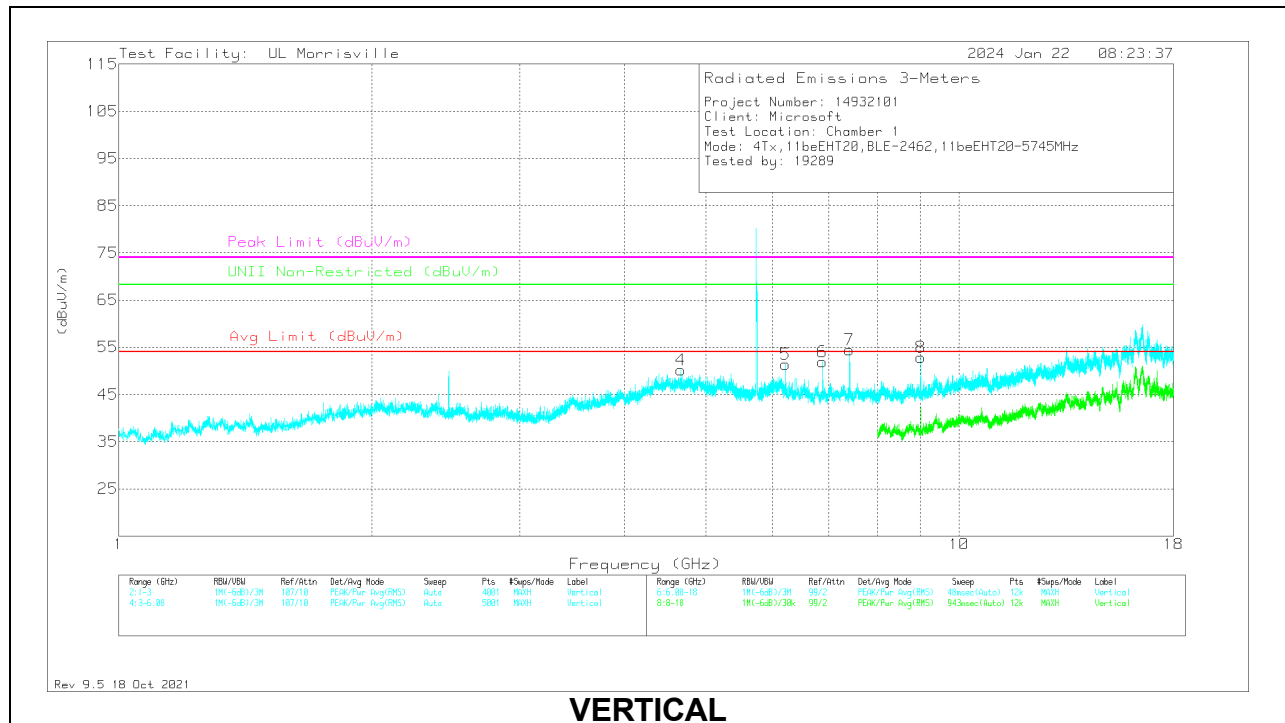
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Filter (dB)	Filter (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 4.6345	32.69	Pk	34.2	-20.5	.5	0	46.89	54	-7.11	74	-27.11	-	-	0-360	200	H
4	*** 4.9707	35.59	PK-U	34	-21.5	.2	0	48.29	-	-	74	-25.71	-	-	258	135	V
	*** 4.9705	24.15	ADR	34	-21.5	.2	0	36.85	54	-17.15	-	-	-	-	258	135	V
2	*** 7.28718	54	PK-U	35.6	-27.1	.5	0	63	-	-	74	-11	-	-	359	105	H
	*** 7.28575	37.79	ADR	35.6	-27.1	.5	0	46.79	54	-7.21	-	-	-	-	359	105	H
5	*** 7.28706	55.4	PK-U	35.6	-27.1	.5	0	64.4	-	-	74	-9.6	-	-	141	104	V
	*** 7.28591	39.19	ADR	35.6	-27.1	.5	0	48.19	54	-5.81	-	-	-	-	141	104	V
3	*** 8.12583	36.47	Pk	35.8	-26.8	0	.7	46.17	54	-7.83	74	-27.83	-	-	0-360	199	H
6	*** 8.12656	42.06	PK-U	35.8	-26.7	0	.7	51.86	-	-	74	-22.14	-	-	116	133	V
	*** 8.12659	35.45	ADR	35.8	-26.7	0	.7	45.25	54	-8.75	-	-	-	-	116	133	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 PK-U - Maximum Peak  
 ADR - RMS average

### 9.1.3. HARMONICS AND SPURIOUS EMISSIONS (Scan 3)



**HORIZONTAL**



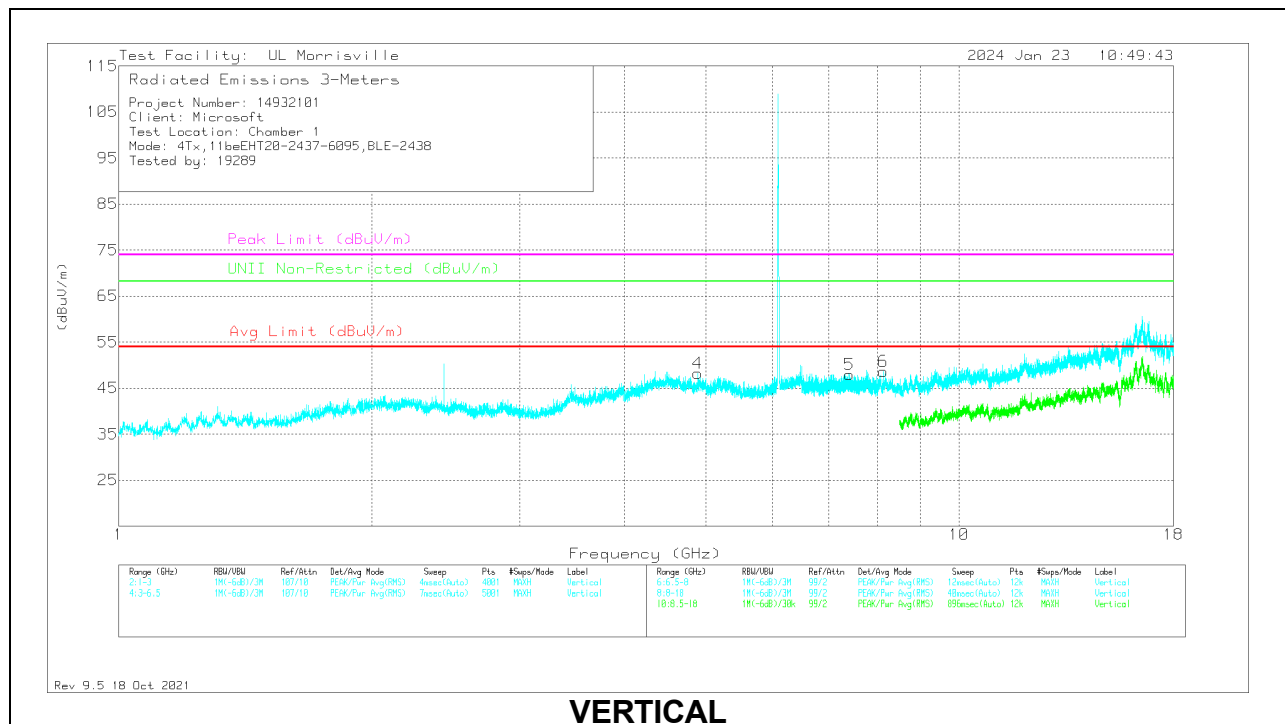
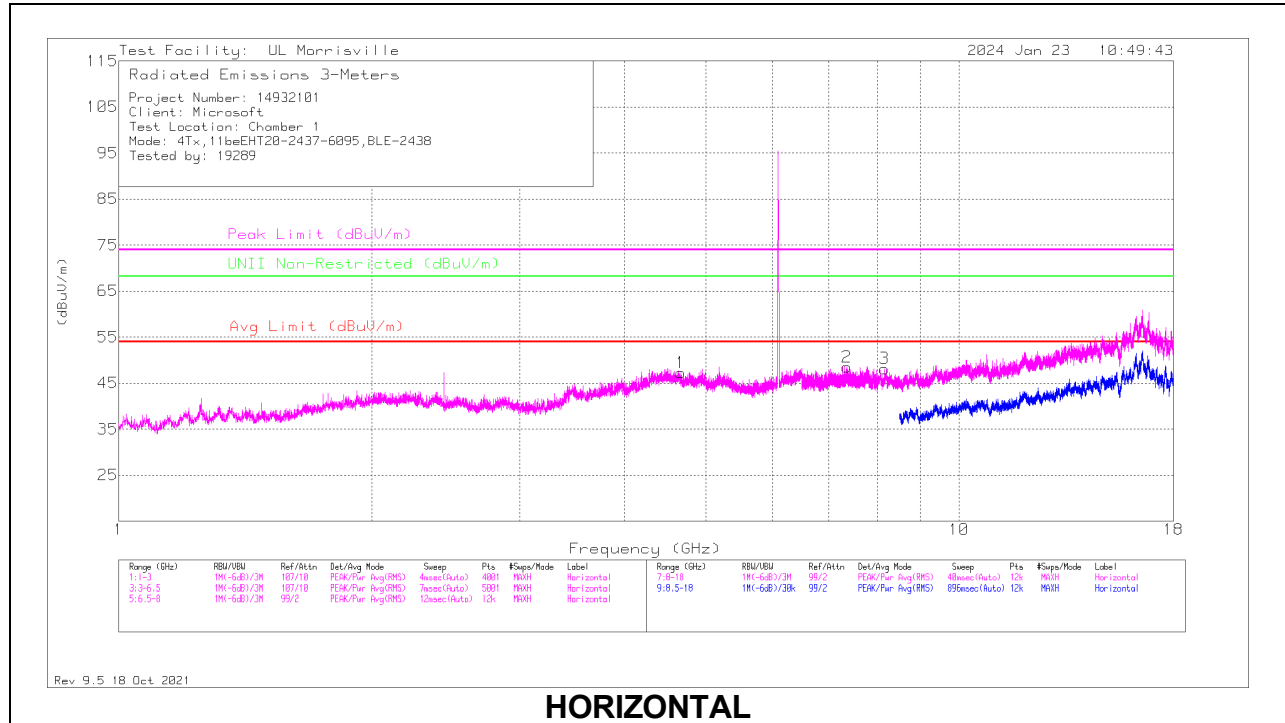
**VERTICAL**

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Filter (dB)	Filter (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 4.71845	34.57	PK-U	34.1	-20.5	.2	1.7	0	50.07	-	-	74	-23.93	-	-	74	273	H
	*** 4.71816	21.73	ADV	34.1	-20.6	.2	1.7	1.64	38.77	54	-15.23	-	-	-	-	74	273	H
4	*** 4.67069	34.97	PK-U	34.2	-20.9	.4	1.5	0	50.17	-	-	74	-23.83	-	-	73	276	V
	*** 4.66979	21.99	ADV	34.2	-20.9	.4	1.5	1.64	38.83	54	-15.17	-	-	-	-	73	276	V
2	*** 7.41037	47.07	PK-U	35.7	-27.3	0	0	0	55.47	-	-	74	-18.53	-	-	86	256	H
	*** 7.41107	30.83	ADV	35.7	-27.3	0	0	1.64	40.87	54	-13.13	-	-	-	-	86	256	H
7	*** 7.41145	35.29	ADV	35.7	-27.3	0	0	1.64	45.33	54	-8.67	-	-	-	-	292	227	V
	*** 7.41221	52.61	PK-U	35.7	-27.3	0	0	0	61.01	-	-	74	-12.99	-	-	292	227	V
8	*** 9.00192	49.96	PK-U	35.9	-26.4	0	0	0	59.46	-	-	74	-14.54	-	-	289	226	V
	*** 9.00239	33.06	ADV	35.9	-26.4	0	0	1.64	44.2	54	-9.8	-	-	-	-	289	226	V
3	*** 9.04311	37.21	PK	35.9	-26.5	0	0	0	46.61	54	-7.39	74	-27.39	68.2	-21.59	0-360	101	H
5	6.21609	44.62	PK	35.4	-28.6	0	0	0	51.42	-	-	-	-	68.2	-16.78	0-360	200	V
6	6.87566	44.16	PK	35.6	-27.9	0	0	0	51.86	-	-	-	-	68.2	-16.34	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  
 PK-U - Maximum Peak  
 ADV - Linear Voltage Average

### 9.1.4. HARMONICS AND SPURIOUS EMISSIONS (Scan 4)

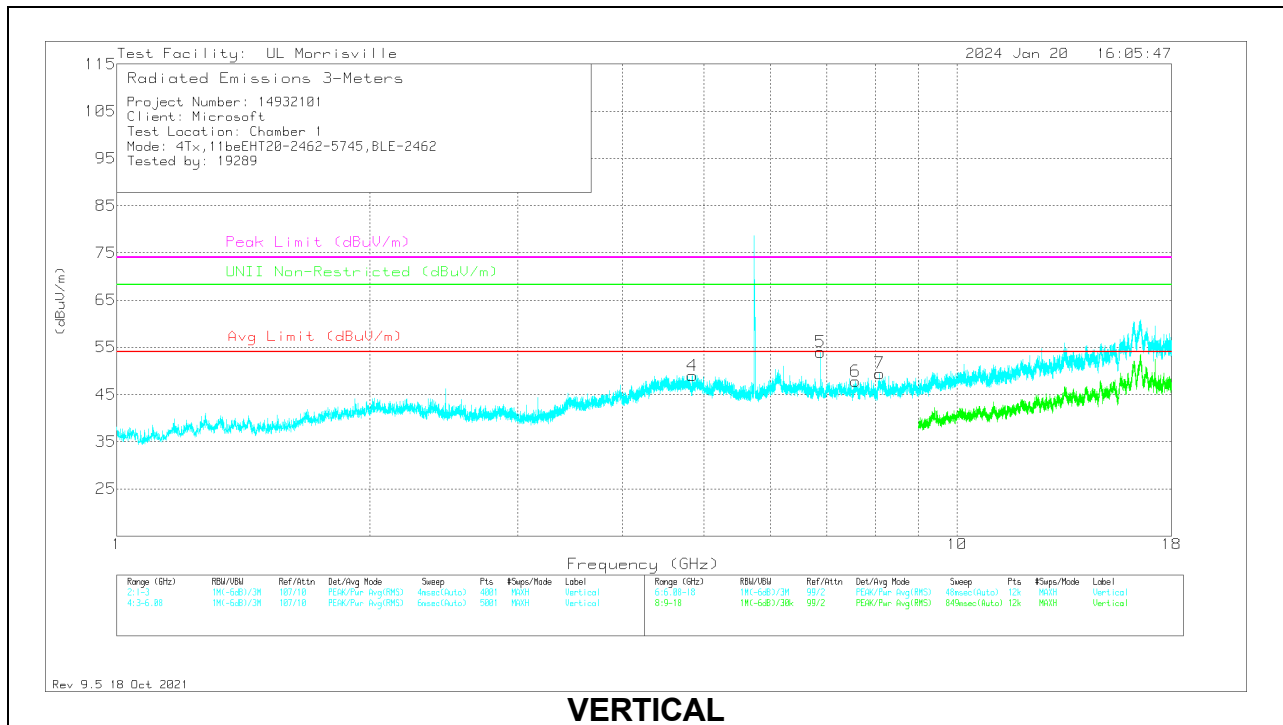
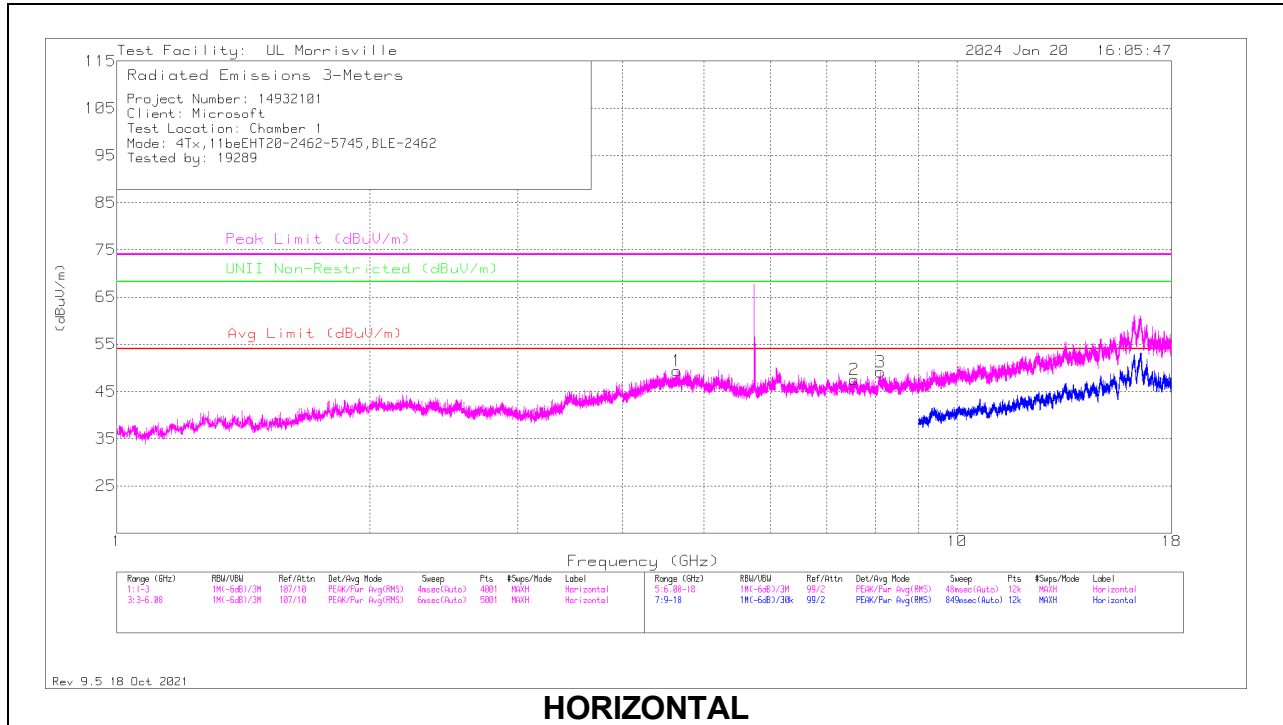


**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Filter (dB)	Filter (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 4.6674	33.57	Pk	34.2	-20.9	.4	0	0	47.27	54	-6.73	74	-26.73	-	-	0-360	200	H
4	*** 4.88928	23.43	ADR	34	-21.2	.4	0	0.82	37.45	54	-16.55	-	-	-	-	217	214	V
	*** 4.89117	35.08	PK-U	34	-21.2	.5	0	0	48.38	-	-	74	-25.62	-	-	217	214	V
2	*** 7.35197	27.45	ADR	35.6	-26.4	.6	0	0.82	38.07	54	-15.93	-	-	-	-	29	287	H
	*** 7.35246	39.32	PK-U	35.6	-26.4	.6	0	0	49.12	-	-	74	-24.88	-	-	29	287	H
5	*** 7.41013	38.41	Pk	35.7	-26.7	.5	0	0	47.91	54	-6.09	74	-26.09	-	-	0-360	200	V
3	*** 8.16093	38.69	PK-U	35.8	-27.1	0	.9	0	48.29	-	-	74	-25.71	-	-	260	177	H
	*** 8.15908	27.46	ADR	35.8	-27.1	0	.9	0.82	37.88	54	-16.12	-	-	-	-	260	177	H
6	*** 8.12585	38.96	PK-U	35.8	-27	0	.7	0	48.46	-	-	74	-25.54	-	-	333	185	V
	*** 8.12603	27.71	ADR	35.8	-27	0	.7	0.82	38.03	54	-15.97	-	-	-	-	333	185	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 PK-U - Maximum Peak  
 ADR - RMS average

### 9.1.5. HARMONICS AND SPURIOUS EMISSIONS (Scan 5)



**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Filter (dB)	Filter (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 4.64425	35.59	PK-U	34.2	-20.5	.5	1	0	50.79	-	-	74	-23.21	-	-	160	350	H
	*** 4.64453	22.09	ADV	34.2	-20.5	.5	1	1.64	38.93	54	-15.07	-	-	-	-	160	350	H
4	*** 4.84094	34.85	PK-U	34	-21.5	.2	1.7	0	49.25	-	-	74	-24.75	-	-	184	288	V
	*** 4.84311	21.99	ADV	34	-21.4	.2	1.7	1.64	38.13	54	-15.87	-	-	-	-	184	288	V
2	*** 7.54914	37.23	PK	35.6	-26.6	.6	.7	0	47.53	54	-6.47	74	-26.47	-	-	0-360	200	H
3	*** 8.10702	40.07	PK-U	35.8	-26.6	.4	.8	0	50.47	-	-	74	-23.53	-	-	86	234	H
	*** 8.10731	27.14	ADV	35.8	-26.7	.4	.8	1.64	39.08	54	-14.92	-	-	-	-	86	234	H
6	*** 7.57397	37.49	PK	35.7	-26.6	.5	.7	0	47.79	54	-6.21	74	-26.21	-	-	0-360	200	V
7	*** 8.091	39.42	PK-U	35.8	-27.1	.5	.7	0	49.32	-	-	74	-24.68	-	-	39	147	V
	*** 8.09016	27.32	ADV	35.8	-27	.4	.7	1.64	38.86	54	-15.14	-	-	-	-	39	147	V
5	6.87665	45.18	PK	35.6	-27.9	.3	.8	0	53.98	-	-	-	-	68.2	-14.22	0-360	200	V

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

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

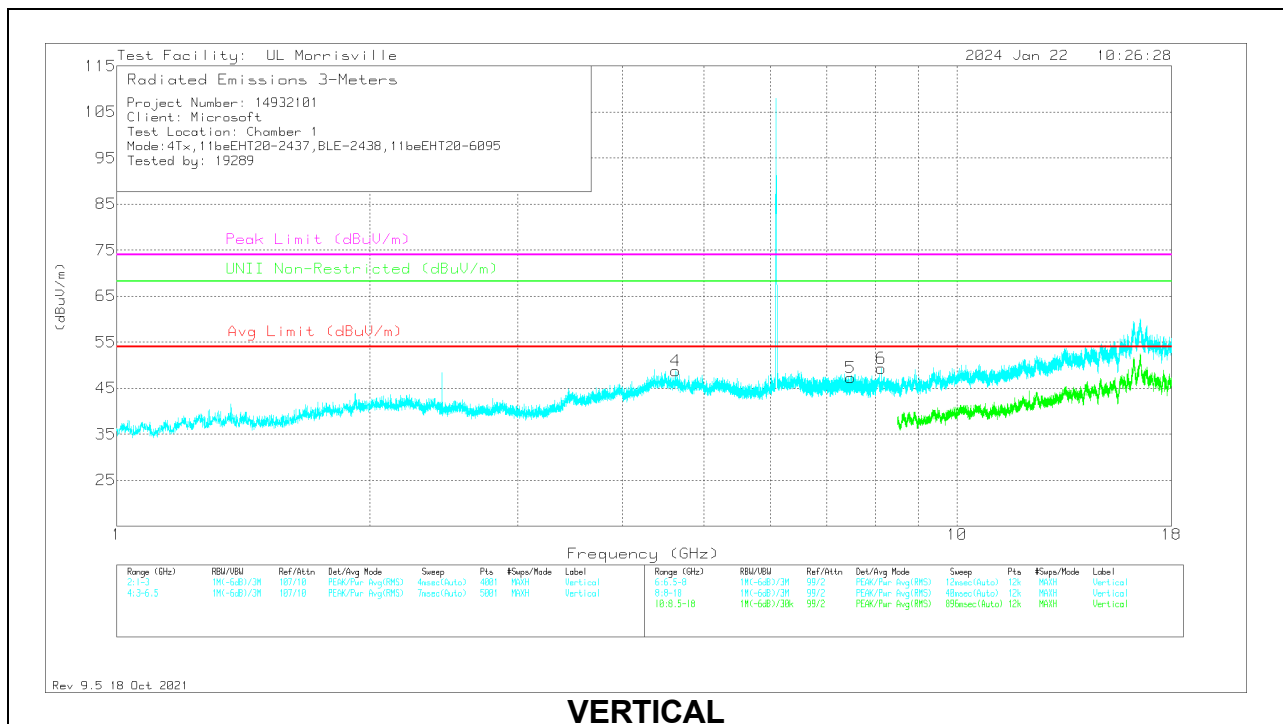
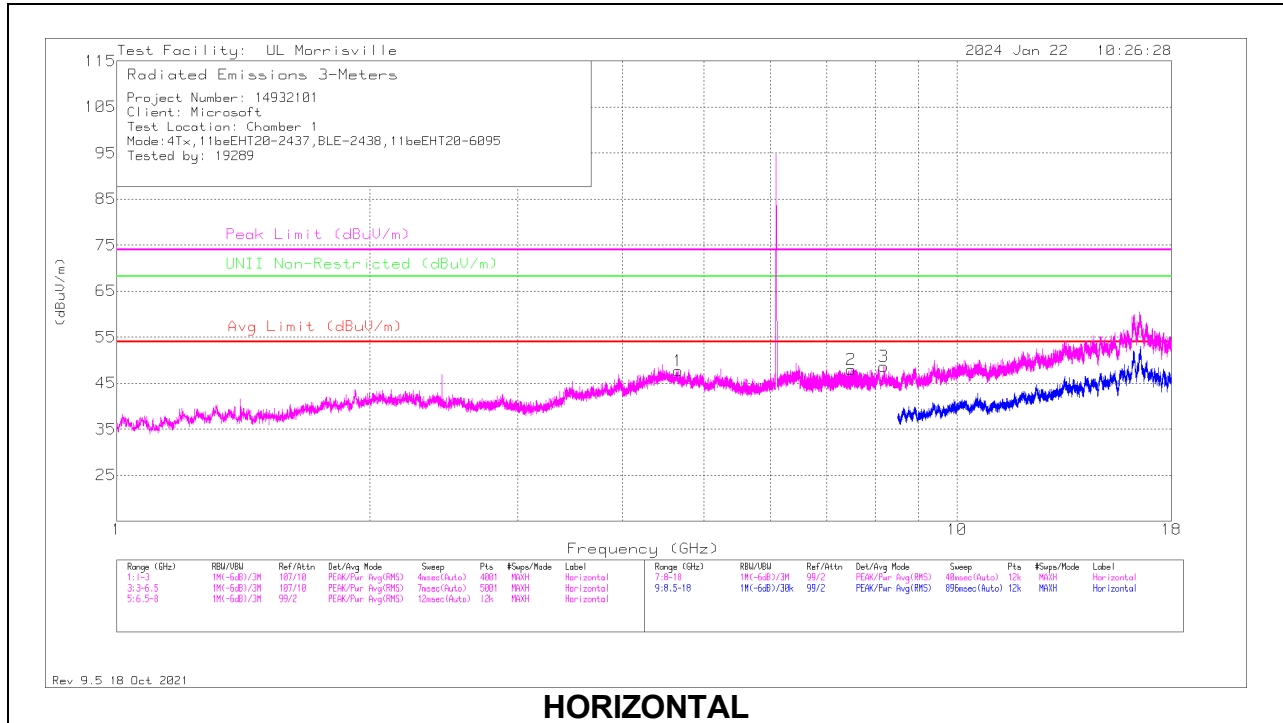
PK - Peak detector

PK-U - Maximum Peak

ADV - Linear Voltage Average



### 9.1.6. HARMONICS AND SPURIOUS EMISSIONS (Scan 6)

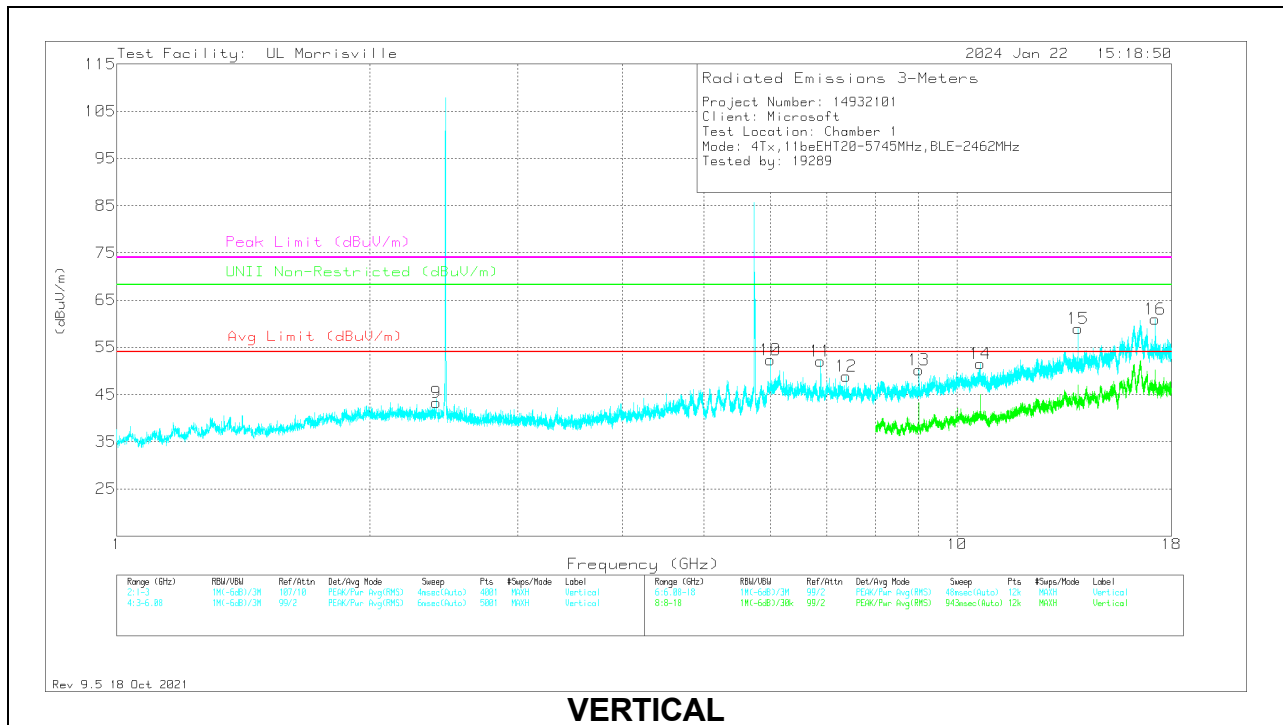
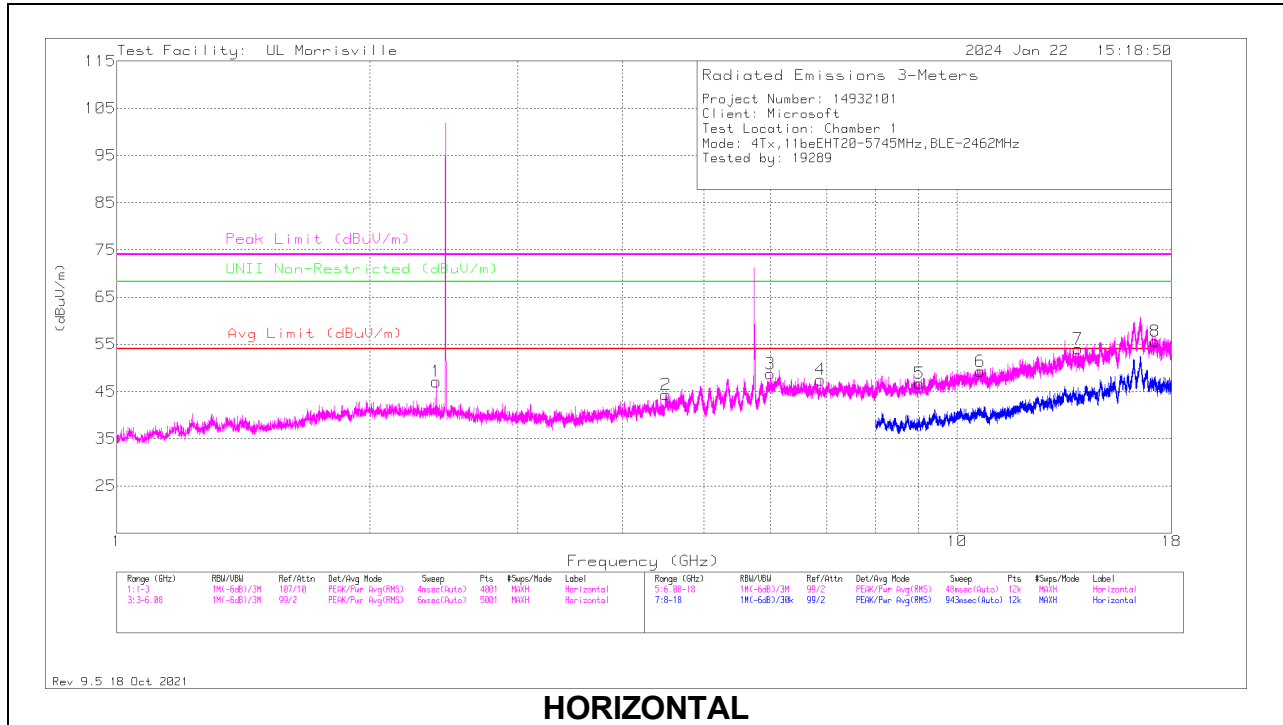


**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Filter (dB)	Filter (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	*** 4.62257	23.21	ADR	34.2	-20.8	.4	0	0.82	37.83	54	-16.17	-	-	-	-	270	323	V
	*** 4.62301	34.84	PK-U	34.2	-20.8	.4	0	0	48.64	-	-	74	-25.36	-	-	270	323	V
1	*** 4.6562	34.01	PK	34.2	-21	.5	0	0	47.71	54	-6.29	74	-26.29	-	-	0-360	200	H
5	*** 7.47325	37.95	PK	35.7	-27	.6	0	0	47.25	54	-6.75	74	-26.75	-	-	0-360	101	V
2	*** 7.489	38.23	PK	35.6	-26.5	.6	0	0	47.93	54	-6.07	74	-26.07	-	-	0-360	101	H
3	*** 8.1804	39.22	PK-U	35.8	-26.8	0	.9	0	49.12	-	-	74	-24.88	-	-	122	181	H
	*** 8.18152	27.76	ADR	35.8	-26.8	0	.9	0.82	38.48	54	-15.52	-	-	-	-	122	181	H
6	*** 8.12656	42.36	PK-U	35.8	-26.7	0	.7	0	52.16	-	-	74	-21.84	-	-	116	119	V
	*** 8.12655	35.8	ADR	35.8	-26.7	0	.7	0.82	46.42	54	-7.58	-	-	-	-	116	119	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 PK-U - U-NII: Maximum Peak  
 ADR - RMS average

### 9.1.7. HARMONICS AND SPURIOUS EMISSIONS (Scan 7)



**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Filter (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarit y
2	*** 4.50489	40.08	Pk	34	-30.6	.9	0	44.38	54	-9.62	74	-29.62	-	-	0-360	101	H
5	*** 9.01729	36.3	Pk	35.9	-26.3	.8	0	46.7	54	-7.3	74	-27.3	-	-	0-360	101	H
6	*** 10.6677	37.32	PK-U	37.9	-24.6	.7	0	51.32	-	-	74	-22.68	-	-	113	144	H
	*** 10.6633	23.94	ADV	37.9	-24.4	.8	4.07	42.31	54	-11.69	-	-	-	-	113	144	H
12	*** 7.38527	44.42	PK-U	35.7	-27.5	.7	0	53.32	-	-	74	-20.68	-	-	297	197	V
	*** 7.38538	30.96	ADV	35.7	-27.5	.6	4.07	43.83	54	-10.17	-	-	-	-	297	197	V
13	*** 9.011	46.23	PK-U	35.9	-26.2	.8	0	56.73	-	-	74	-17.27	-	-	296	214	V
	*** 9.01093	29.07	ADV	35.9	-26.2	.8	4.07	43.64	54	-10.36	-	-	-	-	296	214	V
14	*** 10.66132	42.39	PK-U	37.9	-24.4	.9	0	56.79	-	-	74	-17.21	-	-	267	212	V
	*** 10.66058	26.65	ADV	37.9	-24.4	1	4.07	45.22	54	-8.78	-	-	-	-	267	212	V
1	2.4	38.57	Pk	32.1	-24.3	.7	0	47.07	-	-	-	-	68.2	-21.13	0-360	101	H
9	2.4	34.82	Pk	32.1	-24.3	.7	0	43.32	-	-	-	-	68.2	-24.88	0-360	101	V
10	5.99253	42.88	Pk	35.2	-27.5	1.7	0	52.28	-	-	-	-	68.2	-15.92	0-360	200	V
3	5.99499	39.32	Pk	35.2	-27.5	1.7	0	48.72	-	-	-	-	68.2	-19.48	0-360	199	H
11	6.87566	43.57	Pk	35.6	-27.9	.8	0	52.07	-	-	-	-	68.2	-16.13	0-360	200	V
4	6.87665	38.97	Pk	35.6	-27.9	.8	0	47.47	-	-	-	-	68.2	-20.73	0-360	101	H
7	13.93528	38.67	Pk	38.9	-24	.5	0	54.07	-	-	-	-	68.2	-14.13	0-360	101	H
15	13.93627	43.6	Pk	38.9	-24	.5	0	59	-	-	-	-	68.2	-9.2	0-360	101	V
16	17.2093	39.61	Pk	41.3	-20.9	.9	0	60.91	-	-	-	-	68.2	-7.29	0-360	101	V
8	17.21129	34.34	Pk	41.3	-20.9	.9	0	55.64	-	-	-	-	68.2	-12.56	0-360	101	H

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

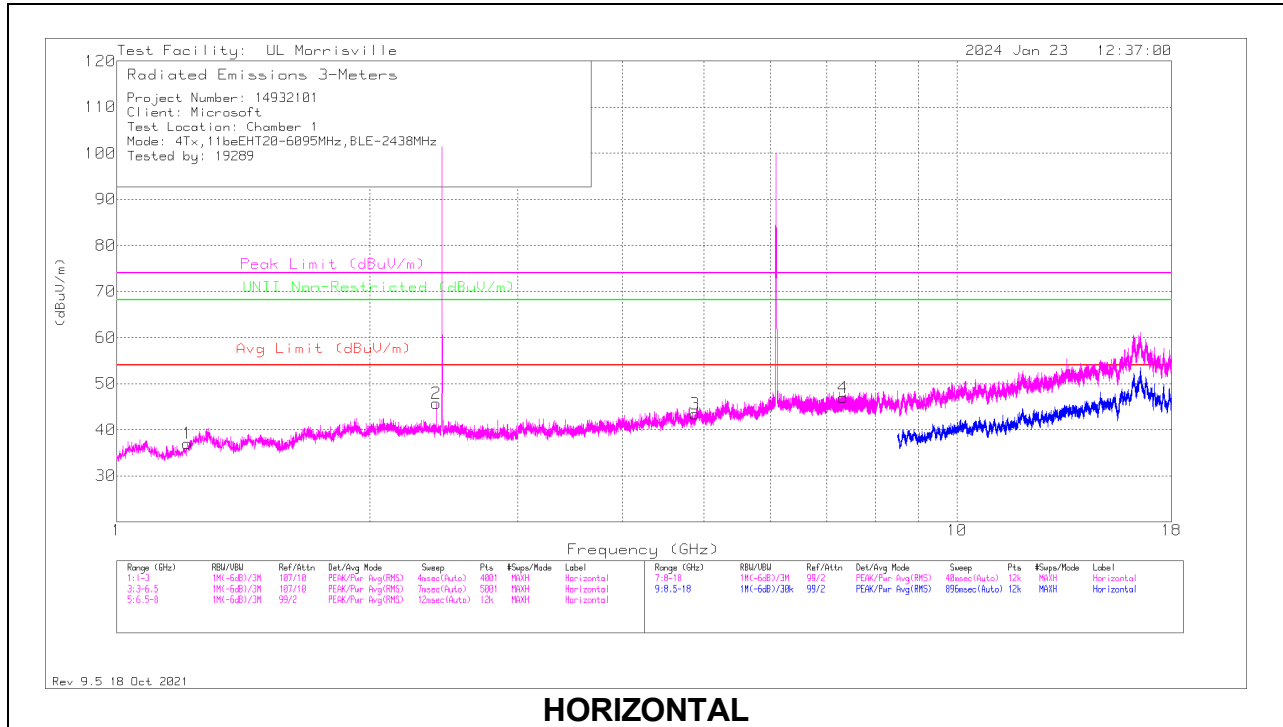
\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

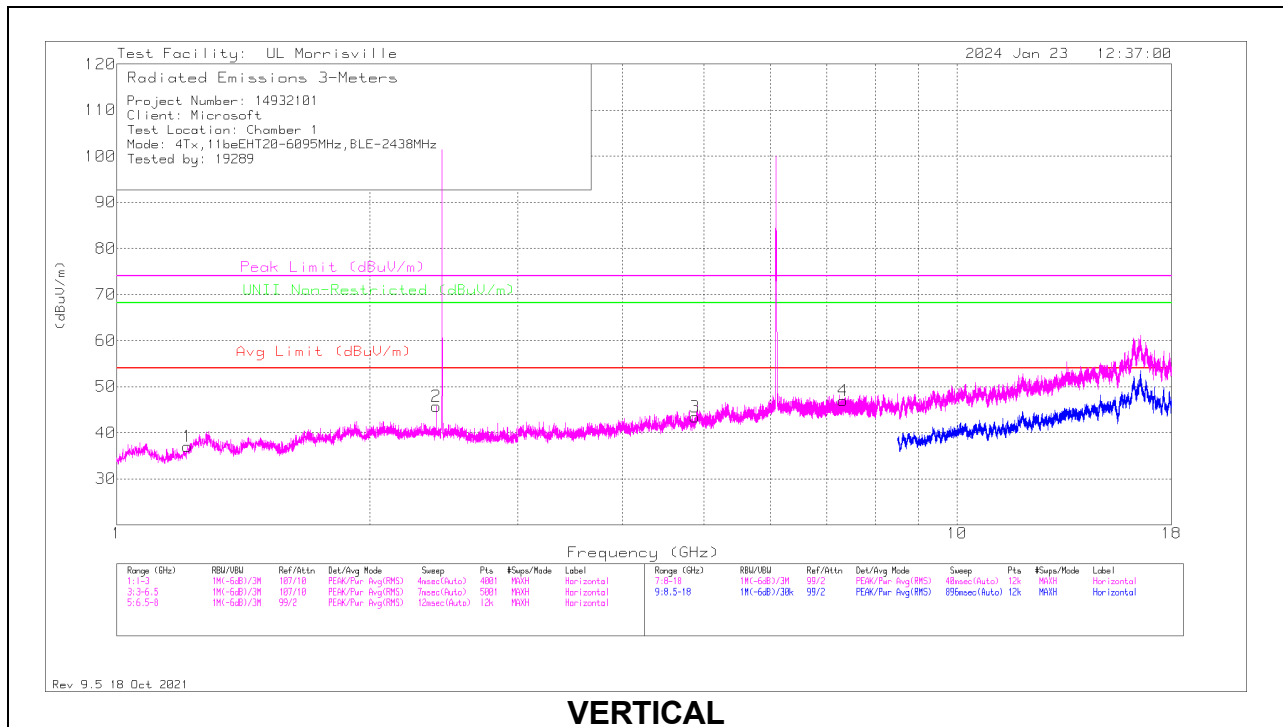
PK-U - Maximum Peak

ADV - Linear Voltage Average

### 9.1.8. HARMONICS AND SPURIOUS EMISSIONS (Scan 8)



**HORIZONTAL**



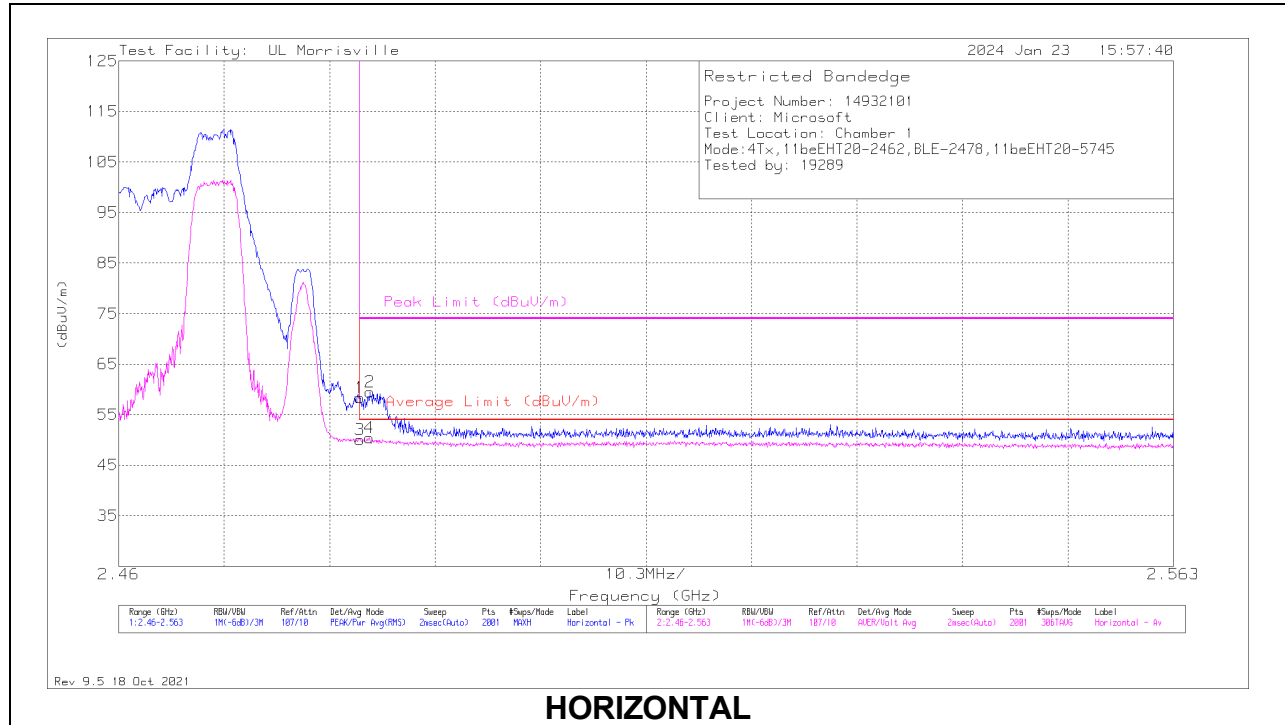
**VERTICAL**

**RADIATED EMISSIONS**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Filter (dB)	Filter (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7	*** 4.87552	51.08	PK-U	34	-30.4	.4	0	0	55.08	-	-	74	-13.12	-	-	312	257	V
	*** 4.87575	44.05	ADR	34	-30.4	.4	0	2.03	50.35	54	-3.65	-	-	-	-	312	257	V
3	*** 4.8795	39.39	Pk	34	-30.4	.4	0	0	43.39	54	-10.61	74	-30.61	-	-	0-360	200	H
8	*** 7.31328	42.65	PK-U	35.6	-26.7	.5	0	0	52.05	-	-	74	-16.15	-	-	334	255	V
	*** 7.31345	32.41	ADR	35.6	-26.7	.5	0	2.03	44.11	54	-9.89	-	-	-	-	334	255	V
4	*** 7.31875	37.56	Pk	35.6	-26.7	.5	0	0	46.96	54	-7.04	74	-27.04	-	-	0-360	101	H
1	*** 1.2135	32.58	Pk	28.5	-24.1	0	0	0	36.98	54	-17.02	74	-37.02	-	-	0-360	101	H
5	*** 1.212	42.51	Pk	28.5	-24.1	0	0	0	46.91	54	-7.09	74	-27.09	-	-	0-360	200	V
2	2.4005	37.99	Pk	32.1	-24.3	0	0	0	45.79	-	-	-	-	68.2	-22.41	0-360	200	H
6	2.4005	36.28	Pk	32.1	-24.3	0	0	0	44.08	-	-	-	-	68.2	-24.12	0-360	101	V

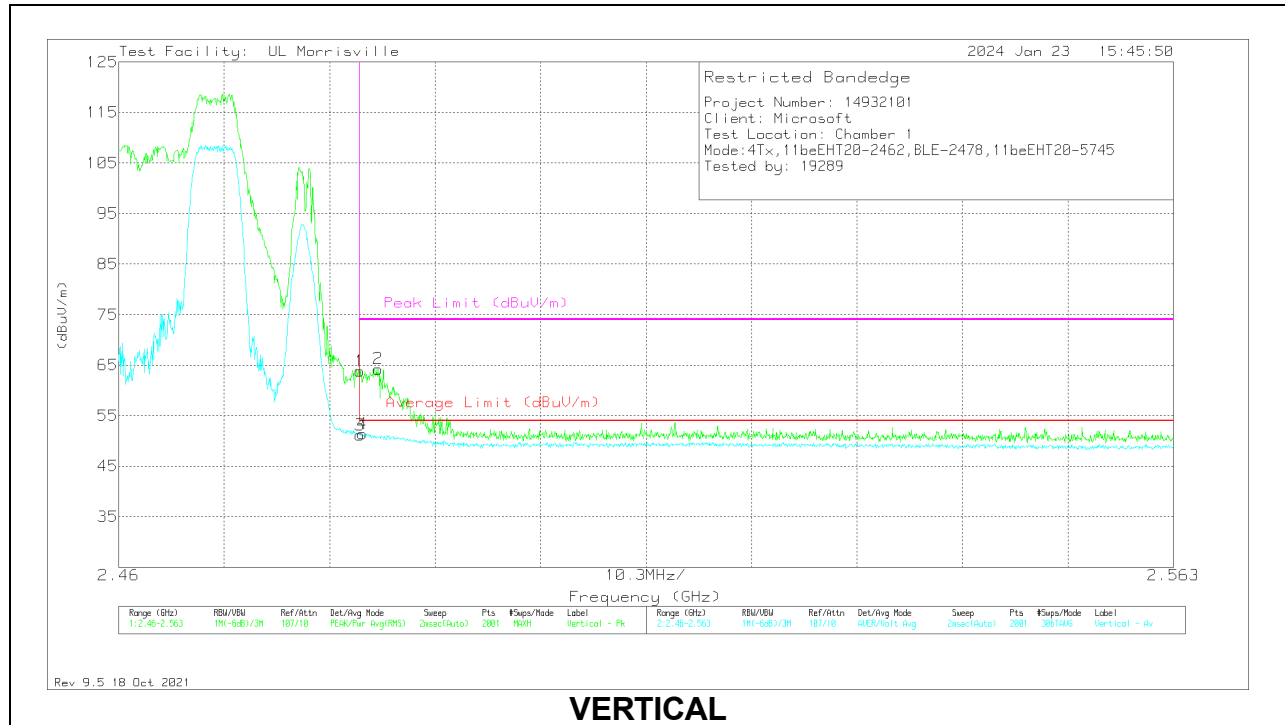
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 \*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band  
 Pk - Peak detector  
 PK-U - Maximum Peak  
 ADR - RMS average

### 9.1.9. BAND EDGE EMISSIONS (Scan 9)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.48354	40.59	Pk	32.3	-24.5	10	0	58.39	-	-	74	-15.61	267	335	H
2	* ** 2.48451	41.68	Pk	32.3	-24.5	10	0	59.48	-	-	74	-14.52	267	335	H
3	* ** 2.48354	22.49	ADV	32.3	-24.5	10	9.74	50.03	54	-3.97	-	-	267	335	H
4	* ** 2.48446	22.86	ADV	32.3	-24.5	10	9.74	50.4	54	-3.6	-	-	267	335	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



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.48354	46.07	Pk	32.3	-24.5	10	0	63.87	-	-	74	-10.13	316	270	V
2	* ** 2.48534	46.46	Pk	32.3	-24.5	10	0	64.26	-	-	74	-9.74	316	270	V
3	* ** 2.48354	23.62	ADV	32.3	-24.5	10	9.74	51.16	54	-2.84	-	-	316	270	V
4	* ** 2.48379	23.9	ADV	32.3	-24.5	10	9.74	51.44	54	-2.56	-	-	316	270	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



## 10. SETUP PHOTOS

For all setup diagrams and setup photos, refer to UL report R14932101-EP1a

**END OF REPORT**