TEST REPORT

Report Number: R15175160-E3

Applicant : Sony Corporation
1-7-1 Konan Minato-ku
Tokyo, 108-0075, Japan

FCC ID : PY7-27433F

EUT Description : GSM/WCDMA/LTE/5G Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC

Test Standard(s) : FCC 47 CFR Part 15 Subpart C and E

Date Of Issue:

2024-04-11

Prepared by:

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

ACCREDITED
CERT #0751.06

REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2024-04-11	Initial Issue	Charles Moody

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Sony Corporation
1-7-1 Konan Minato-ku
Tokyo, 108-0075, Japan

EUT DESCRIPTION: GSM/WCDMA/LTE/5G Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC

SERIAL NUMBER: QV7700E3LD, QV7700HRLD, QV7700AQLD

SAMPLE RECEIPT DATE: 2024-02-19

DATE TESTED: 2024-02-23 TO 2024-04-09

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C and E	Refer to 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.

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Approved & Released
For UL LLC By:

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

Prepared By:

Charles Moody
Engineer
Consumer, Medical and IT Segment
UL LLC

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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	Requirement	Result	Comment
See Comment	Duty Cycle	Not performed	Radiated spot checks performed to justify data reuse.
See Comment	20/26dB BW		
15.247 (a) (2) 15.407 (e)	6dB BW		
15.247 (a)(1)	Hopping Frequency Separation		
15.225 (e)	Frequency Stability		
15.247 (a)(1)(iii)	Number of Hopping Channels		
15.247 (a)(1)(iii)	Average Time of Occupancy		
See Comment	Average Power		
15.247 (d)	Conducted Spurious Emissions		
15.247 (b) (1,3) 15.407(a)(1-3)(h)(1)	Output Power		
15.247 (e) 15.407 (a) (1-3)	PSD		
15.207	AC Mains Conducted Emissions		
15.209, 15.205, 15.225 (d), 15.407(b)	Radiated Emissions	See Comment	Radiated spot checks performed on worst-case channels only to justify data reuse.

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 C63.10-2020 and KDB 484596 D01 Referencing Test Data v02r03.

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	

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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}
All emissions, radiated	6.01 dB

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

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6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE 5G PHONE with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC.

6.2. WORST-CASE CONFIGURATION AND MODE

For WLAN, BT, and BLE, Band edge and radiated emissions between 1GHz and 18 GHz were performed with the EUT set to transmit at the worst-case channels and data rates based on the reports of an electrically identical model (see section 7 for data reuse information).

The antenna of the EUT was investigated in three orthogonal orientations X/Y/Z. See the table below for WC Orientations.

Technology	Orientation
2.4 WLAN	X
5.0 WLAN	Z
BT/BLE Chain 0/1	X
WPT	X
NFC	Z

The Worst-Case scenarios for 1-18GHz are as follows:

Technology	Test Type	Frequency (MHz)	Mode	Data Rate	Chain
2.4 WLAN (DTS)	Band Edge	2462	11g	6Mbps	MIMO
	RSE	2412	11b	1Mbps	MIMO
5 WLAN (UNII)	5.2 Band Edge	5250	HE160 2x996T/RU68 Low Edge	MCS0	MIMO
	5.3 Band Edge	5250	HE160 2x996T/RU68 High Edge	MCS0	MIMO
	5.6 Band Edge	5570	HE160 2x996T/RU68 High Edge	MCS0	MIMO
	5.8 Band Edge	5775	HE80 996T/RU67 High Edge	MCS0	MIMO
	RSE	5300	HE20 52T/RU38	MCS0	MIMO
BLE	Band Edge	2480	BLE (GFSK)	2 Mbps	0
	RSE	2402	BLE (GFSK)	125 kbps	1
BT	Band Edge	2480	GFSK/DH5	1 Mbps	0
	RSE	2480	GFSK/DH5	1 Mbps	0

The worst-case scenario for WPT is as follows:

The EUT emissions should be measured from 9kHz to 30MHz in its X orientation. The two devices shall be perpendicular, with coils off centered, and no separation distance between the two devices. Additionally, a state of 5% charged was the worst-case mode of operation and testing was therefore performed with the battery at 5%.

The worst-case scenario for NFC is as follows:

The EUT emissions should be measured from 9kHz to 1000MHz in its Z orientation. The device shall be in Type V mode at 26Kbps to serve as a worst-case orientation.

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6.3. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Power Adapter	Sony	Type: AC-0540-JP	3223W0920247	NA
Headphones	Sony	-	-	-
Support Laptop	Lenovo	Yoga 7 16IAP7	PF49WDF9	-

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	USB	1	USB-C	Shielded	<3m	Connects EUT to Power Adapter
2	3.5mm	1	Aux	Non-Shielded	<3m	Headphones – Used for port population

TEST SETUP

The EUT is connected to a support laptop prior to testing to configure the radio. Test software exercised the radio card. For testing, the EUT was connected to the power adapter.

SETUP DIAGRAM

Refer to R15175160-EP2 for setup diagrams.

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7. REUSE OF TEST DATA

7.1. INTRODUCTION

According to the manufacturer, FCC ID: PY7-13187R and FCC ID: PY7-27433F unlicensed radios (WLAN/BT/BLE/WPT/NFC) are electrically identical. The FCC ID: PY7-13187R test data shall remain representative of FCC ID: PY7-27433F so, FCC ID: PY7-27433F leverages test data from FCC ID: PY7-13187R.

The applicant takes full responsibility that the test data as referenced in this section represents compliance for this FCC ID.

7.2. DEVICES DIFFERENCES

Difference between PY7-13187R and PY7-27433F:

Sony Corporation hereby declares that the hardware of WLAN 2.4GHz, WLAN 5GHz, Bluetooth, GPS, WPT, and NFC is identical among PY7-13187R and PY7-27433F. The change is related to the cellular radio. Therefore, the following report/data of PY7-13187R may represent for PY7-27433F.

7.3. REFERENCE DETAIL

Equipment Class	Reference FCC ID	Report Title/Section
DTS (BLE)	PY7-13187R	R15110020-E6 FCC BLE REPORT / All sections
DSS (BT)	PY7-13187R	R15110020-E8 FCC BT REPORT / All sections
DTS (WLAN)	PY7-13187R	R15110020-E7 FCC 2.4 WLAN REPORT / All sections
NII (WLAN)	PY7-13187R	R15110020-E5 FCC 5.2-5.8GHz WLAN REPORT / All sections
DCD (WPT)	PY7-13187R	R15110020-E2 FCC WPT REPORT / All sections
DXX (NFC)	PY7-13187R	R15110020-E3 FCC NFC REPORT / All sections

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7.4. SPOT CHECK VERIFICATION RESULTS SUMMARY

Spot check verification has been done on device PY7-27433F for radiated spurious. The data from the application has been verified through appropriate spot checks to demonstrate compliance for this device as shown in the summary.

PY7-27433F SPOT CHECK RESULTS									
Technology	Test Item	Channel	Measured Frequency (MHz)	PY7-13187R		PY7-27433F		Delta (dB) <3dB	
				PK Reading (dBuV/m)	AV Reading (dBuV/m)	PK Reading (dBuV/m)	AV Reading (dBuV/m)	PK	AV
BT (GFSK)	RBE	79	2483.5	54.9	40.3	51.9	37.8	-3.0	-2.5
BT (GFSK)	RSE	79	9377	48.8	34.7	48.9	34.7	0.1	0.0
BLE (GFSK)	RBE	39	2483.5	60.2	36.7	59.5	37.1	-0.7	0.4
	RSE	37	11300	50.9	38.6	50.6	38.1	-0.3	-0.5
2.4GHz WLAN (11g)	RBE	11	2483.5	53.3	38.2	53.9	37.6	0.6	-0.6
2.4GHz WLAN (11b)	RSE	1	*2783.5	47.9	-	48.2	-	0.3	-
			*Note: No AV remeasurement was taken, as no markers were within 6dB of avg limit on PY7-13187R						
5GHz WLAN (HE160)	RBE	50	5150	54.0	36.9	54.9	36.6	0.9	-0.3
	RBE	50	5420	50.9	36.9	52.4	36.7	1.5	-0.2
	RBE	114	**5733	51.0	-	52.7	-	1.7	-
			**Note: No AV limit for above scan, therefore no AV measurements, just PK.						
5GHz WLAN (HE80)	RBE	155	***5967	-46.4 (EIRP)	-	-47.9 (EIRP)	-	-1.5	-
			***Note: No AV limit for above scan, therefore no AV measurements just PK.						
5GHz WLAN (HE20)	RSE	60	7415	51.8	39.8	50.9	39.2	-0.9	-0.6
WPT	RSE	115.6 kHz	5.575	4.3	-	-0.9	-	-5.2	-
NFC	RSE	13.56	5.735	-1.4	-	-7.1	-	-6.7	-
			108.085	33.2	-	24.5	-	-8.7	-

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8. TEST AND MEASUREMENT EQUIPMENT

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Common Equipment				
	Conducted Room 1				
90416	Spectrum Analyzer	Keysight Technologies	N9030A	2023-06-09	2024-06-30
179892	Environmental Meter	Fisher Scientific	15-077-963	2023-07-26	2024-06-31
-	DC Power Supply	Keysight Technologies	EA-PSI 9040-60 T	-	-
-	DC Power Supply	Elektro Automatik	D41717	-	-
SOFTEMI	Antenna Port Software	UL	Version 2023.2.16	NA	NA
	Attenuators				
226559	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2024-02-29	2025-02-29
	Cables				
CBL028	SMA Cable	Sucoflex	104PEA	2024-02-16	2025-02-16
CBL029	SMA Cable	Sucoflex	104PEA	2024-02-16	2025-02-16

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

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
89509	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-05-23	2025-05-23
	Gain-Loss Chains				
207640	Gain-loss string: 1-18GHz	Various	Various	2023-05-17	2024-05-17
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2023-04-10	2024-04-10
	Additional Equipment used				
241204	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05

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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.
	0.009-30MHz				
135144	Active Loop Antenna	ETS-Lindgren	6502	2024-01-24	2025-01-24
	30-1000 MHz				
159203	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-03-05	2026-03-05
	1-18 GHz				
86408	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-06-19	2025-06-19
	Gain-Loss Chains				
91975	Gain-loss string: 0.009-30MHz	Various	Various	2023-06-06	2024-06-06
91978	Gain-loss string: 25-1000MHz	Various	Various	2023-06-06	2024-06-06
91977	Gain-loss string: 1-18GHz	Various	Various	2023-06-06	2024-06-06
	Receiver & Software				
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-03-05	2025-03-05
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
200540	Environmental Meter	Fisher Scientific	15-077-963	2023-07-19	2025-07-19

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9. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.
KDB 789033 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)
2.4 WLAN DTS						
802.11b 1Mbps	12.39	12.41	0.998	99.84%	0.00	0.010
802.11g 6Mbps	5.426	5.447	0.996	99.61%	0.00	0.010
5 WLAN UNII						
802.11ax HE20, 52T/RU38	5.074	5.095	0.996	99.59%	0.00	0.010
802.11ax HE80, 996T/RU67	0.667	0.686	0.973	97.30%	0.24	1.499
802.11ax HE160, 2x996T/RU68	5.449	5.469	0.996	99.63%	0.00	0.010
BLE						
GFSK 125Kbps	17.050	17.500	0.974	97.43%	0.23	0.059
GFSK 2Mbps	1.075	1.875	0.573	57.33%	4.83	0.930
BT						
GFSK (DH5) 1Mbps	2.880	3.750	0.768	76.80%	2.29	0.347

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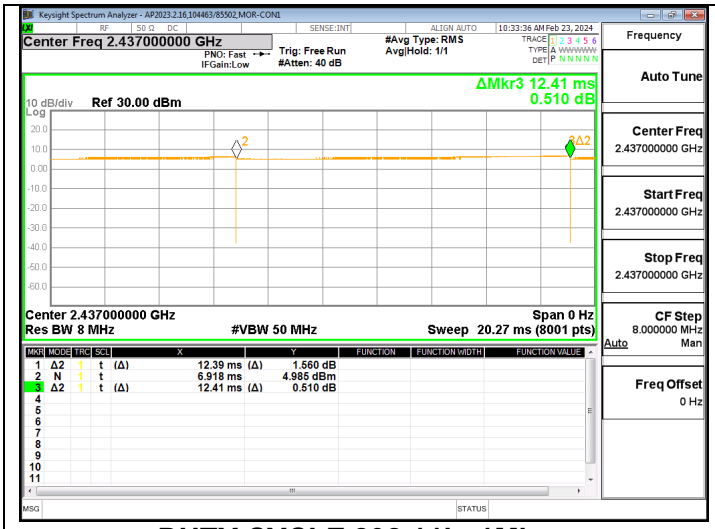
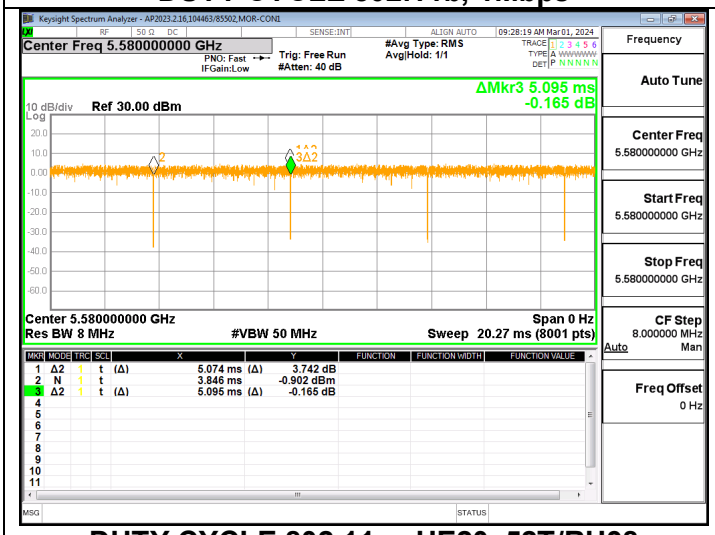
DUTY CYCLE PLOTS

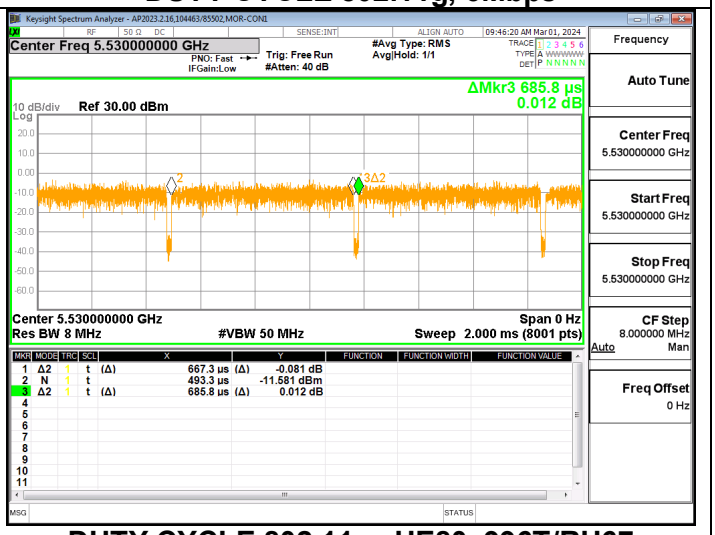


DUTY CYCLE 802.11b, 1Mbps

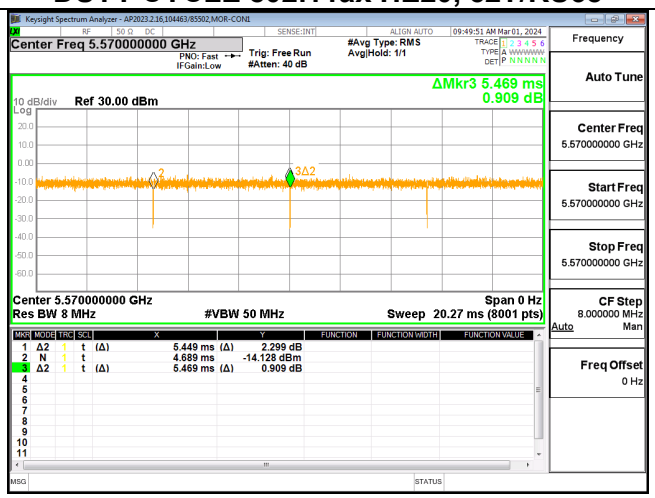
DUTY CYCLE 802.11g, 6Mbps



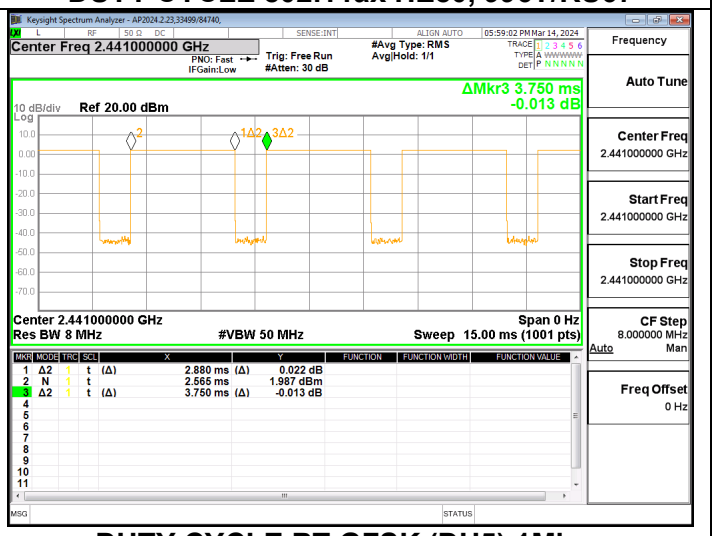
DUTY CYCLE 802.11ax HE20, 52T/RU38



DUTY CYCLE 802.11ax HE80, 996T/RU67



DUTY CYCLE 802.11ax HE160, 2x996T/RU68



DUTY CYCLE BT GFSK (DH5) 1Mbps

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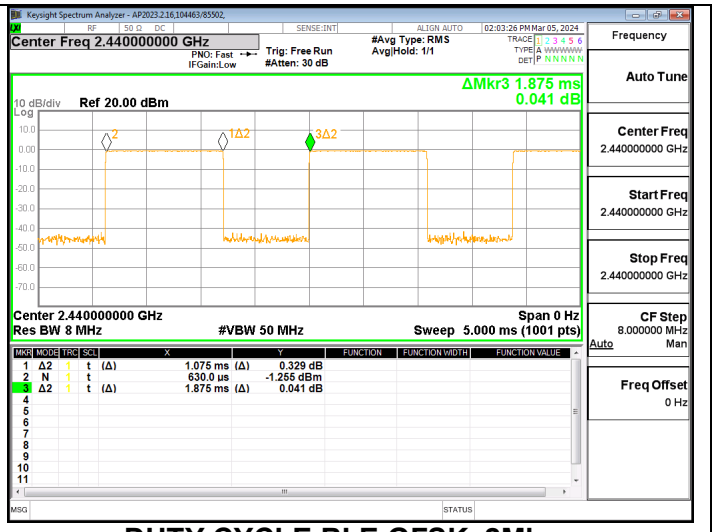
DUTY CYCLE BLE GFSK, 125Kbps



DUTY CYCLE BLE GFSK, 2Mbps

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10. SPOT CHECK DATA

LIMITS

FCC §15.205, §15.225, §15.209, and §15.407

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 1.5 m above the ground plane for measurement above 1GHz and at 80 cm above the ground plane for measurements below 1 GHz. 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 measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with a minimum of 1/T video bandwidth with peak detector for BT average measurements, linear voltage averaging for BLE measurements, and linear voltage average detection for WLAN measurements.

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

The spectrum from 9kHz to 30 MHz for WPT/NFC, 30 MHz to 1000 MHz for NFC and 1 GHz to 18 GHz for WLAN/BT/BLE is investigated with the transmitter set to worst case modes.

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.

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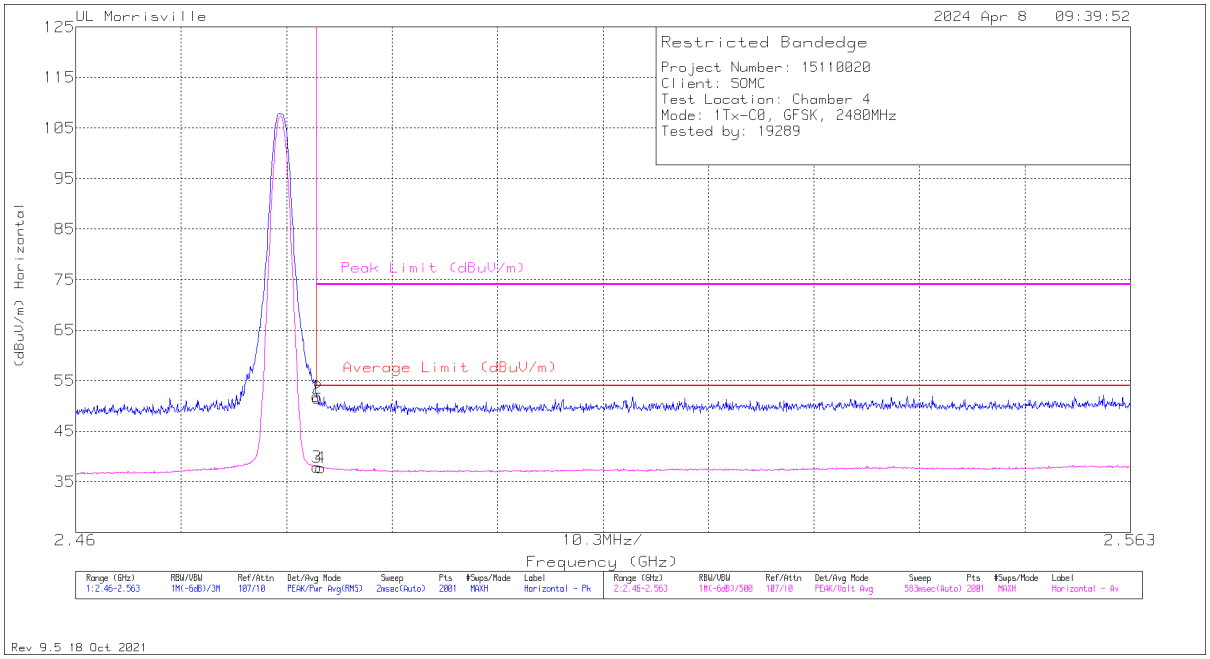
10.1. BLUETOOTH

10.1.1. BANDEDGE (HIGH CHANNEL - CHAIN 0, GFSK)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (dB/m)	Gain/Loss (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	32.48	Pk	32.3	-12.9	51.88	-	-	74	-22.12	154	101	H
2	* ** 2.48364	32.18	Pk	32.3	-12.9	51.58	-	-	74	-22.42	154	101	H
3	* ** 2.48354	18.44	V1TV	32.3	-12.9	37.84	54	-16.16	-	-	154	100	H
4	* ** 2.4839	18.34	V1TV	32.3	-12.9	37.74	54	-16.26	-	-	154	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration

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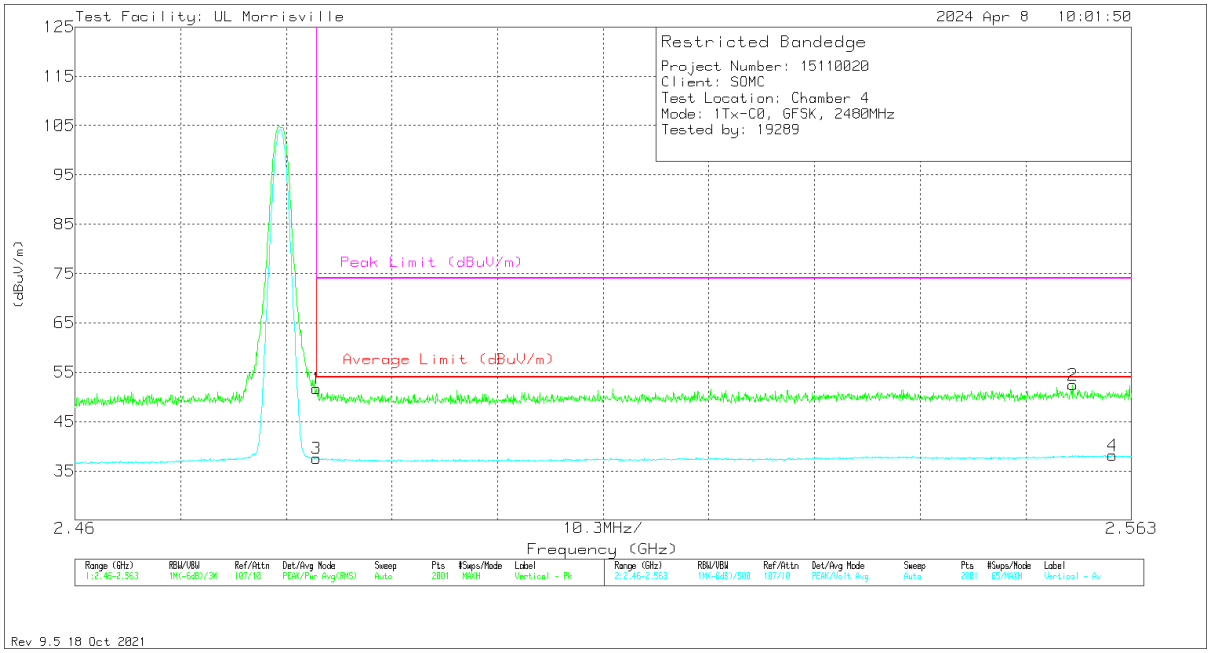
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (dB/m)	Gain/Loss (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	32.28	Pk	32.3	-12.9	51.68	-	-	74	-22.32	227	385	V
2	** 2.55728	32.64	Pk	32.5	-12.7	52.44	-	-	74	-21.56	227	385	V
3	* ** 2.48354	18.18	V1TV	32.3	-12.9	37.58	54	-16.42	-	-	227	385	V
4	** 2.56115	18.42	V1TV	32.5	-12.8	38.12	54	-15.88	-	-	227	385	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration

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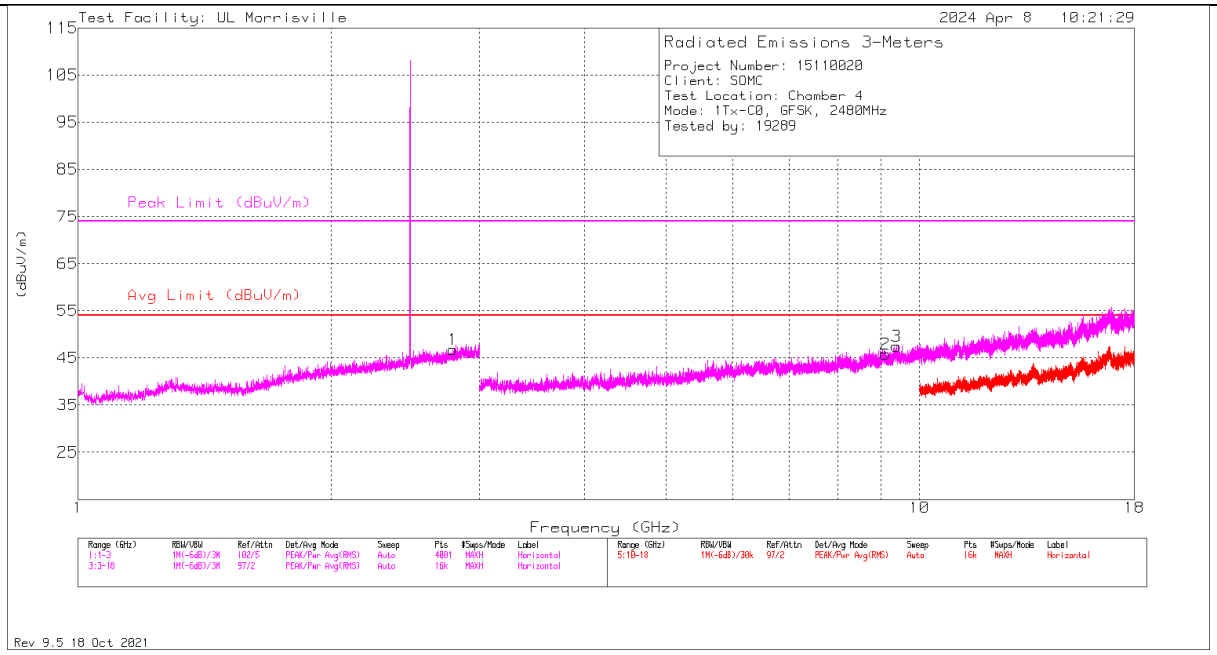
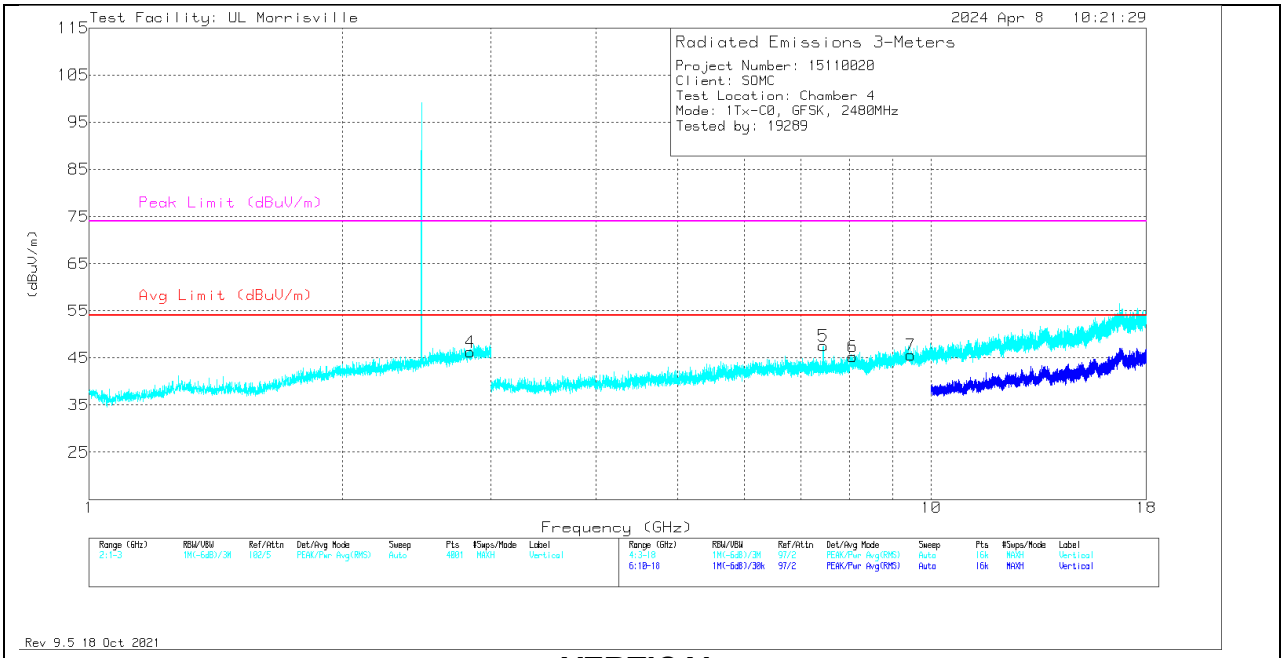
10.1.2. HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL – CHAIN 0, GFSK)



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	* ** 2.7885	26.6	Pk	32.6	-12.4	46.8	54	-7.2	74	-27.2	0-360	100	H
4	* ** 2.8345	26.13	Pk	32.4	-12.3	46.23	54	-7.77	74	-27.77	0-360	200	V
2	* ** 9.10406	34.43	Pk	36.3	-24.9	45.83	54	-8.17	74	-28.17	0-360	100	H
3	* ** 9.37722	37.32	PK-U	36.6	-25	48.92	-	-	74	-25.08	354	170	H
	* ** 9.37741	23.05	V1TV	36.6	-25	34.65	54	-19.35	-	-	354	170	H
5	* ** 7.44	39.86	Pk	35.7	-28	47.56	54	-6.44	74	-26.44	0-360	200	V
6	* ** 8.06719	36.97	Pk	35.8	-27.5	45.27	54	-8.73	74	-28.73	0-360	200	V
7	* ** 9.45281	34.69	Pk	36.7	-25.8	45.59	54	-8.41	74	-28.41	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
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration

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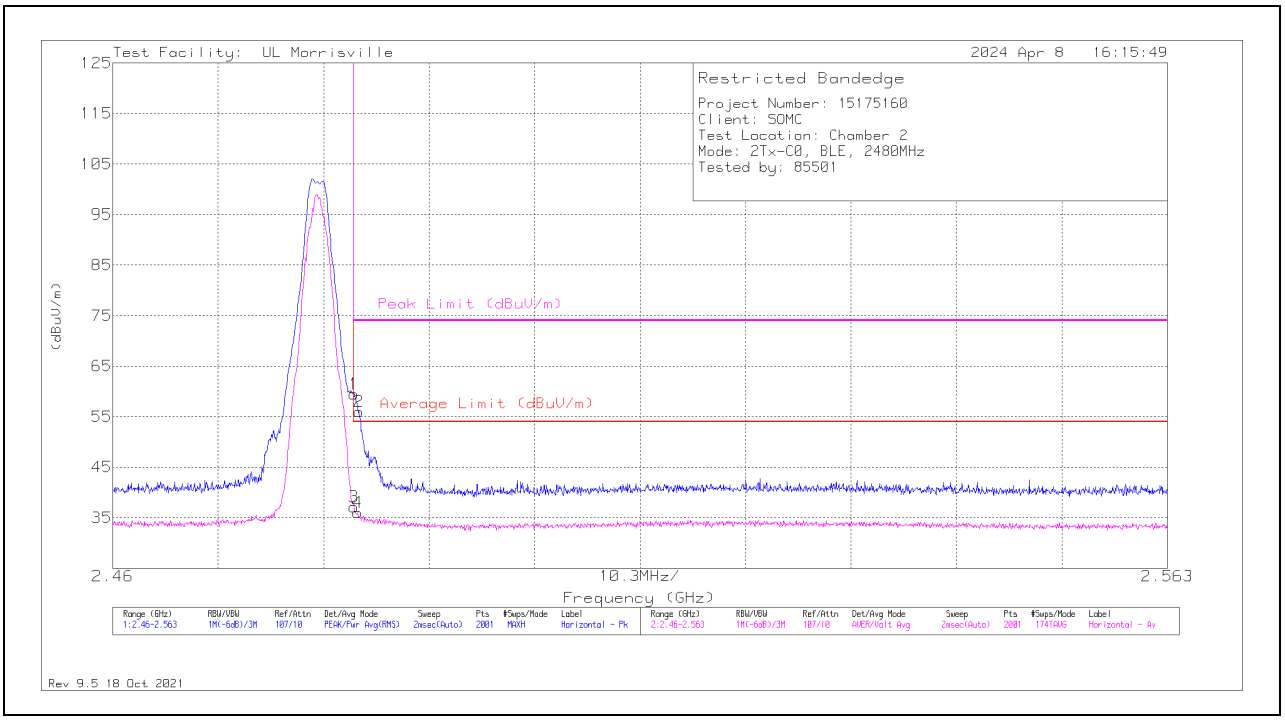
10.2. BLE

10.2.1. BANDEDGE (HIGH CHANNEL – CHAIN 0, 2Mbps)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (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	51.46	Pk	32.5	-24.5	0	59.46	-	-	74	-14.54	163	110	H
2	* ** 2.48405	48.04	Pk	32.5	-24.5	0	56.04	-	-	74	-17.96	163	110	H
3	* ** 2.48354	24.28	ADV	32.5	-24.5	4.83	37.11	54	-16.89	-	-	163	110	H
4	* ** 2.48395	23.25	ADV	32.5	-24.5	4.83	36.08	54	-17.92	-	-	163	110	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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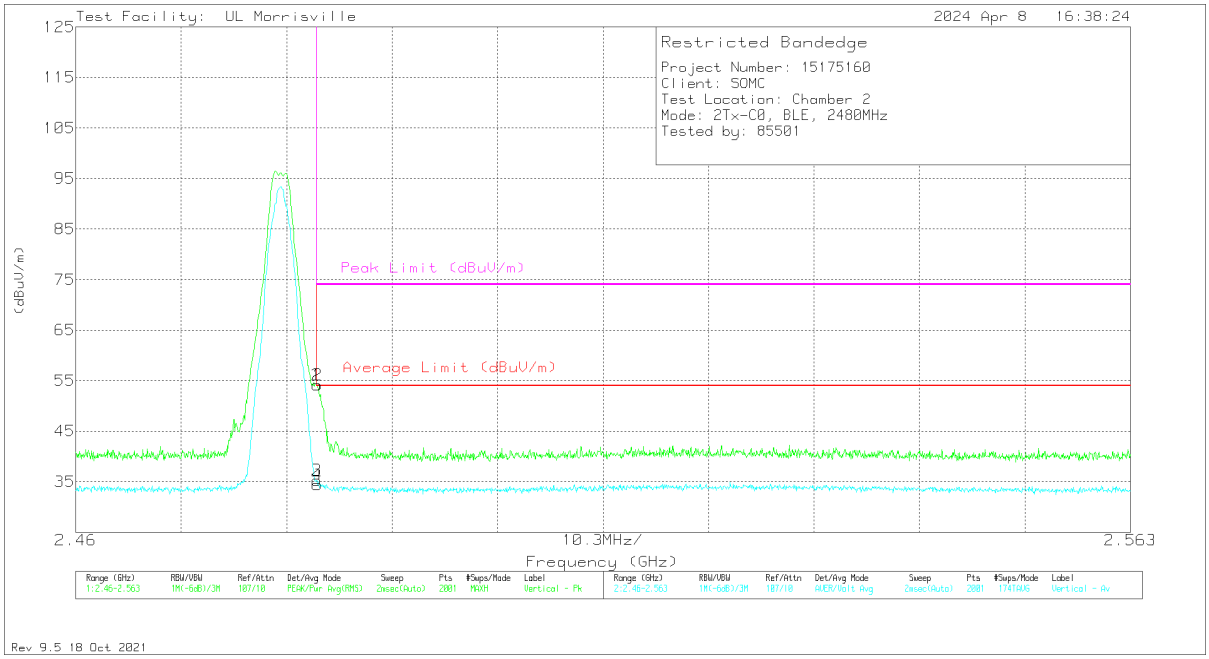
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (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	46.16	Pk	32.5	-24.5	0	54.16	-	-	74	-19.84	258	383	V
2	* ** 2.48359	46.18	Pk	32.5	-24.5	0	54.18	-	-	74	-19.82	258	383	V
3	* ** 2.48354	22.41	ADV	32.5	-24.5	4.83	35.24	54	-18.76	-	-	258	383	V
4	* ** 2.48359	21.61	ADV	32.5	-24.5	4.83	34.44	54	-19.56	-	-	258	383	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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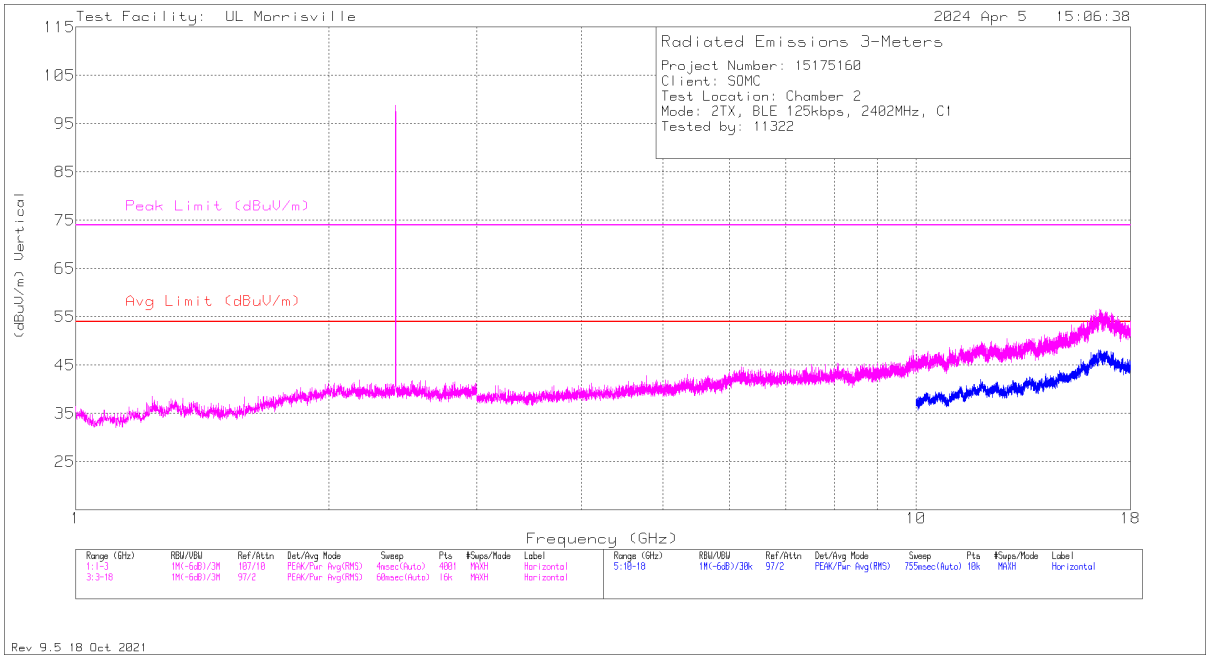
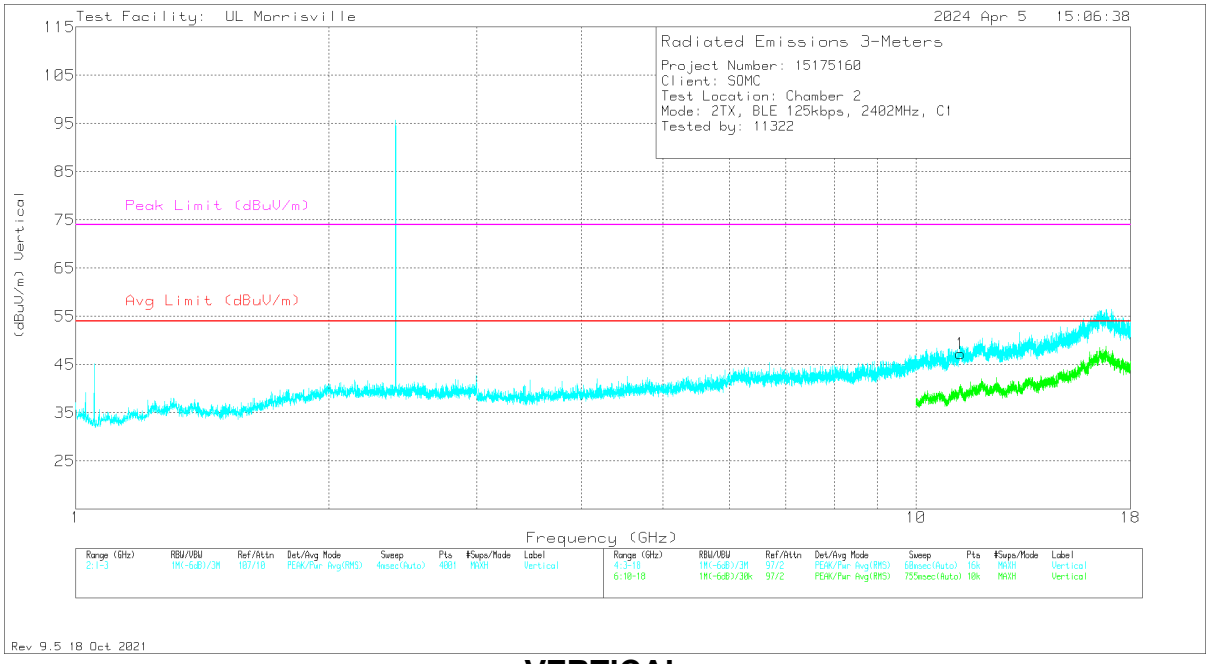
10.2.2. HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL – CHAIN 1, 125Kbps



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (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
4	* ** 1.2305	31.34	Pk	29.1	-24	0	36.44	54	-17.56	74	-37.56	0-360	101	H
2	* ** 1.027	36.96	Pk	27.7	-25.4	0	39.26	54	-14.74	74	-34.74	0-360	200	V
3	* ** 1.052	42.74	Pk	27.5	-25.1	0	45.14	54	-8.86	74	-28.86	0-360	200	V
1	* ** 11.30029	34.9	PK2	37.8	-22.1	0	50.6	54	-	-	-23.4	98	257	V
	* ** 11.30215	22.17	ADV	37.8	-22.1	.23	38.10	54	-15.9	-	-	98	257	V
5	3.46406	39.4	Pk	32.7	-32.7	0	39.4	54	-14.6	74	-34.6	0-360	101	H
6	8.64563	35.29	Pk	35.8	-26.4	0	44.69	54	-9.31	74	-29.31	0-360	101	H

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

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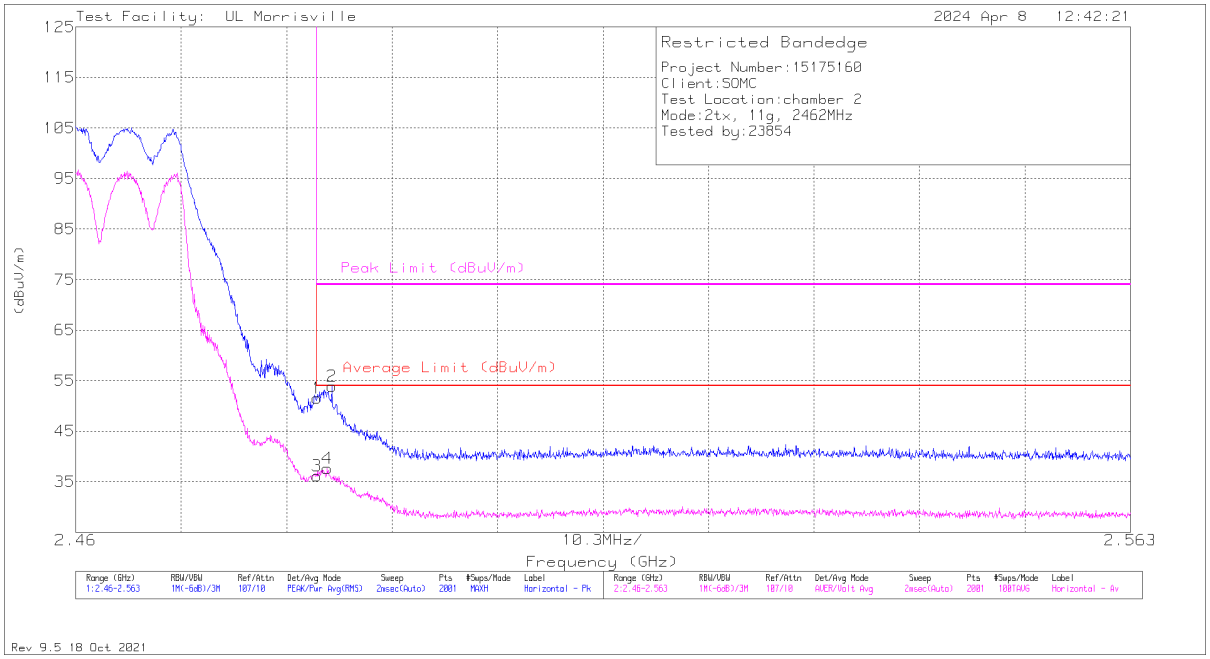
10.3. 2.4GHz WLAN

10.3.1. BANDEDGE (HIGH CHANNEL – 2TX, 802.11g)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (dB/m)	Gain/Loss (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	43.5	Pk	32.5	-24.5	51.5	-	-	74	-22.5	212	143	H
2	* ** 2.48503	45.86	Pk	32.5	-24.5	53.86	-	-	74	-20.14	212	143	H
3	* ** 2.48354	28.1	ADV	32.5	-24.5	36.1	54	-17.9	-	-	212	143	H
4	* ** 2.48457	29.63	ADV	32.5	-24.5	37.63	54	-16.37	-	-	212	143	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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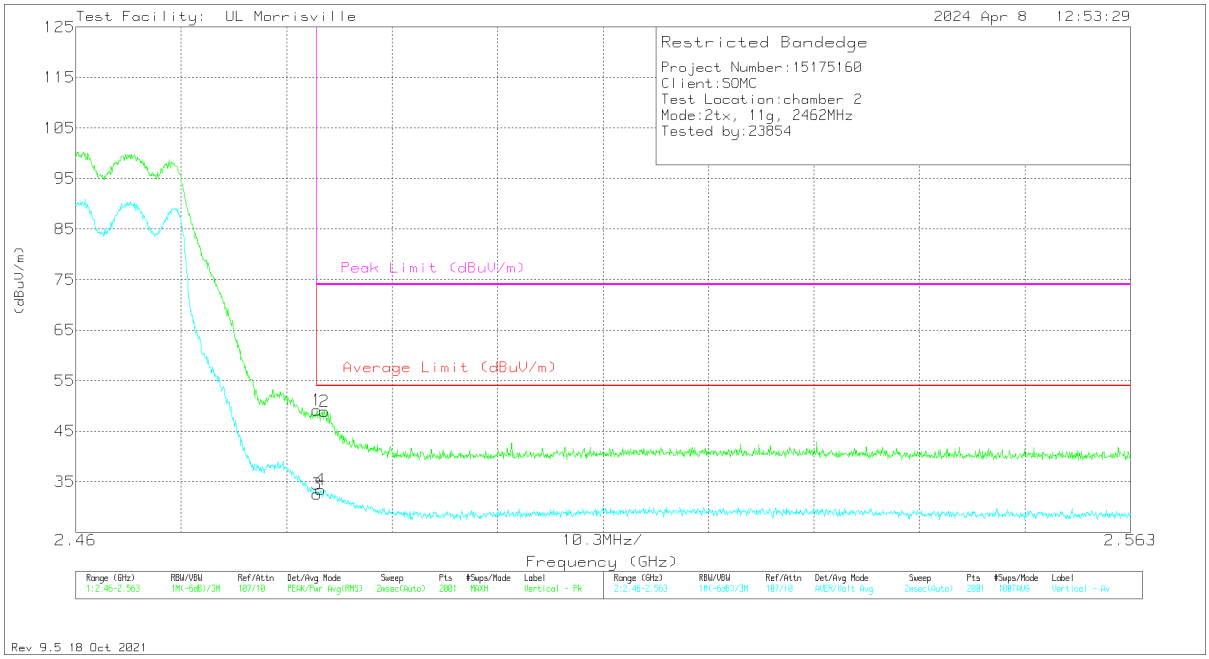
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (dB/m)	Gain/Loss (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	41.17	Pk	32.5	-24.5	49.17	-	-	74	-24.83	149	141	V
2	* ** 2.48431	40.92	Pk	32.5	-24.5	48.92	-	-	74	-25.08	149	141	V
3	* ** 2.48354	24.58	ADV	32.5	-24.5	32.58	54	-21.42	-	-	149	140	V
4	* ** 2.48395	25.41	ADV	32.5	-24.5	33.41	54	-20.59	-	-	149	140	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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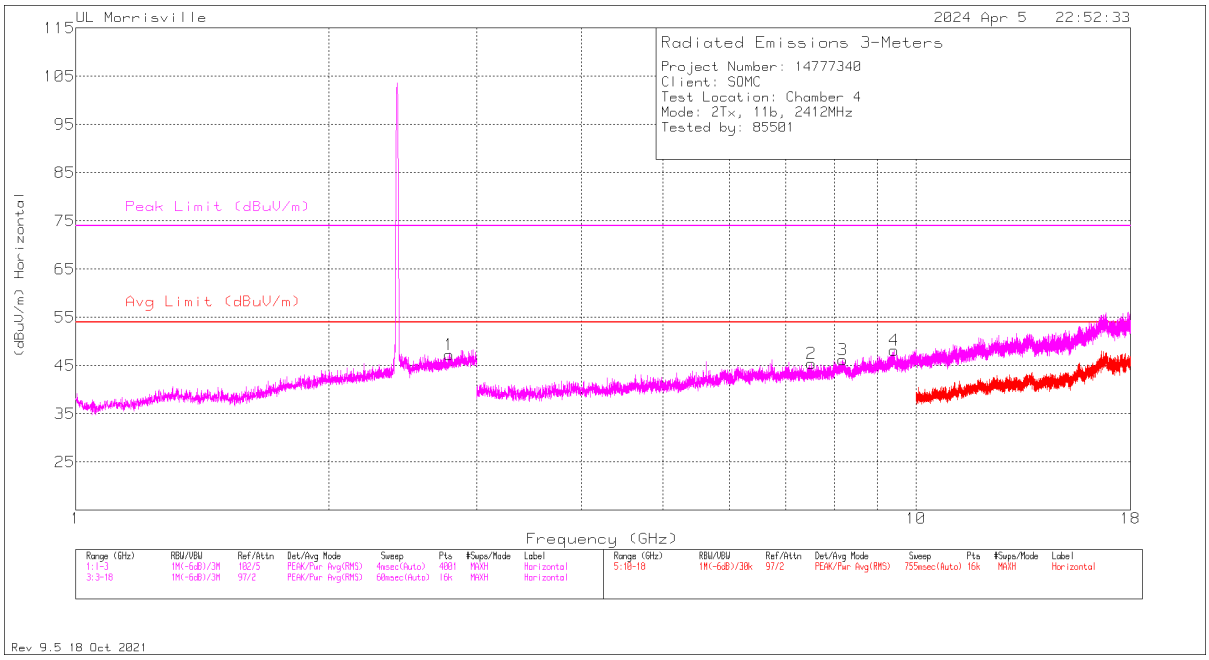
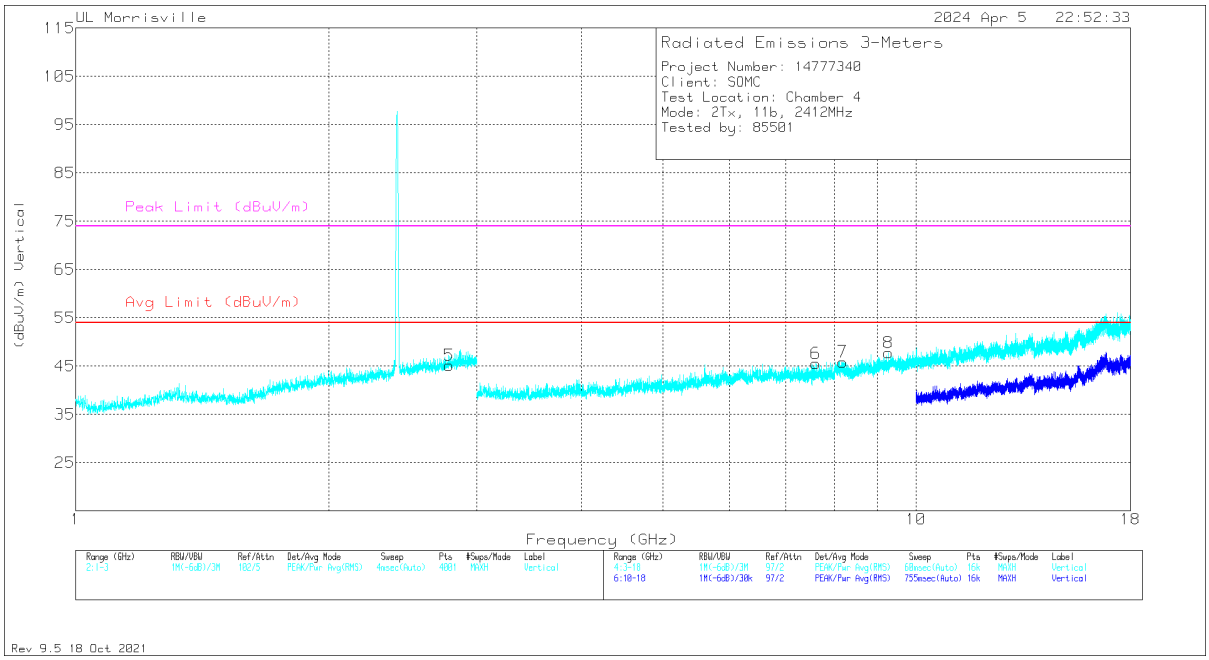
10.3.2. HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL 2TX, 802.11b, 1Mbps)



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	* ** 2.78285	27.88	PK-U	32.6	-12.5	47.98	-	-	74	-26.02	71	192	H
	* ** 2.78205	15.49	ADV	32.6	-12.5	35.59	54	-18.41	-	-	71	192	H
5	* ** 2.78534	28.14	PK-U	32.6	-12.5	48.24	-	-	74	-25.76	12	339	V
	* ** 2.78283	15.62	ADV	32.6	-12.5	35.72	54	-18.28	-	-	12	339	V
2	* ** 7.5075	37.99	Pk	35.6	-28.2	45.39	54	-8.61	74	-28.61	0-360	100	H
3	* ** 8.18344	37.27	Pk	35.8	-26.9	46.17	54	-7.83	74	-27.83	0-360	100	H
4	* ** 9.42012	36.88	PK-U	36.6	-25.7	47.78	-	-	74	-26.22	209	265	H
	* ** 9.42051	24.84	ADV	36.6	-25.7	35.74	54	-18.26	-	-	209	265	H
6	* ** 7.60406	37.5	Pk	35.7	-27.6	45.6	54	-8.4	74	-28.4	0-360	200	V
7	* ** 8.18625	37.09	Pk	35.8	-27	45.89	54	-8.11	74	-28.11	0-360	200	V
8	9.27938	36.93	Pk	36.4	-25.5	47.83	54	-6.17	74	-26.17	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
PK-U - Maximum Peak
ADV - Linear Voltage Average

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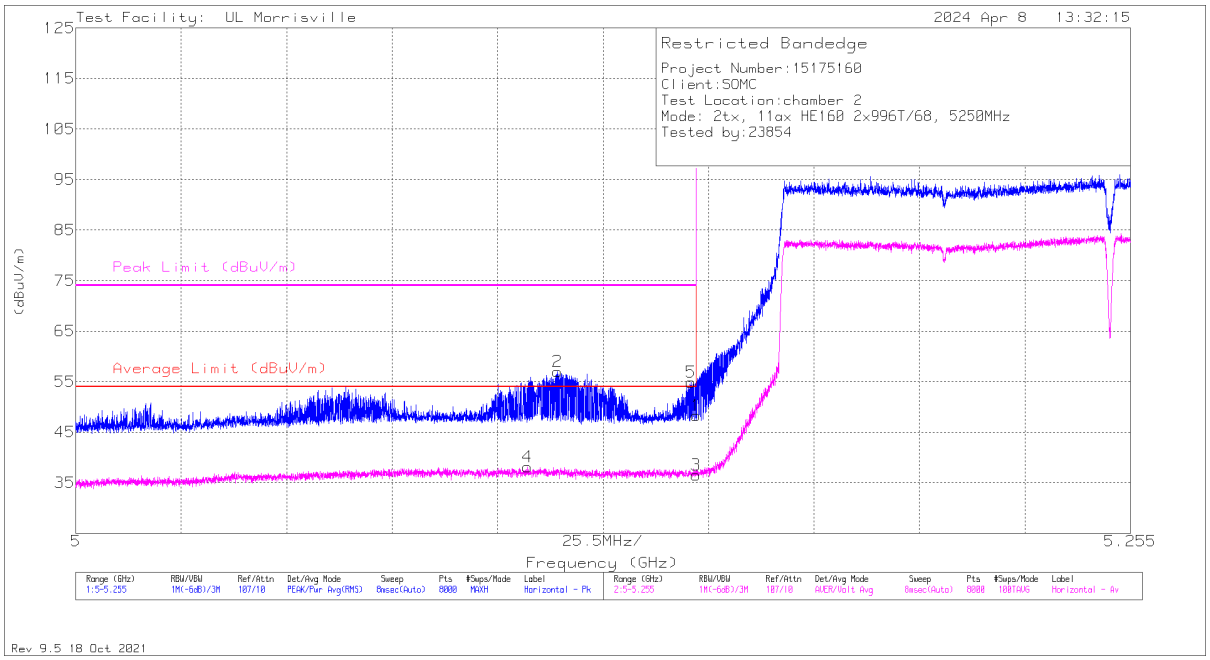
10.4. 5GHz WLAN

10.4.1. BANDEDGE (5.2 BAND LOW CHANNEL – 2TX, 802.11ax HE160, 2x996T/RU68)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14999	36.15	Pk	34.1	-22	48.25	-	-	74	-25.75	53	208	H
2	* ** 5.11645	45.08	Pk	34.1	-22.2	56.98	-	-	74	-17.02	53	208	H
5	* ** 5.14878	42.82	Pk	34.1	-22	54.92	-	-	74	-19.08	53	208	H
3	* ** 5.14999	24.46	ADV	34.1	-22	36.56	54	-17.44	-	-	53	208	H
4	* ** 5.10928	26.11	ADV	34.1	-22.1	38.11	54	-15.89	-	-	53	208	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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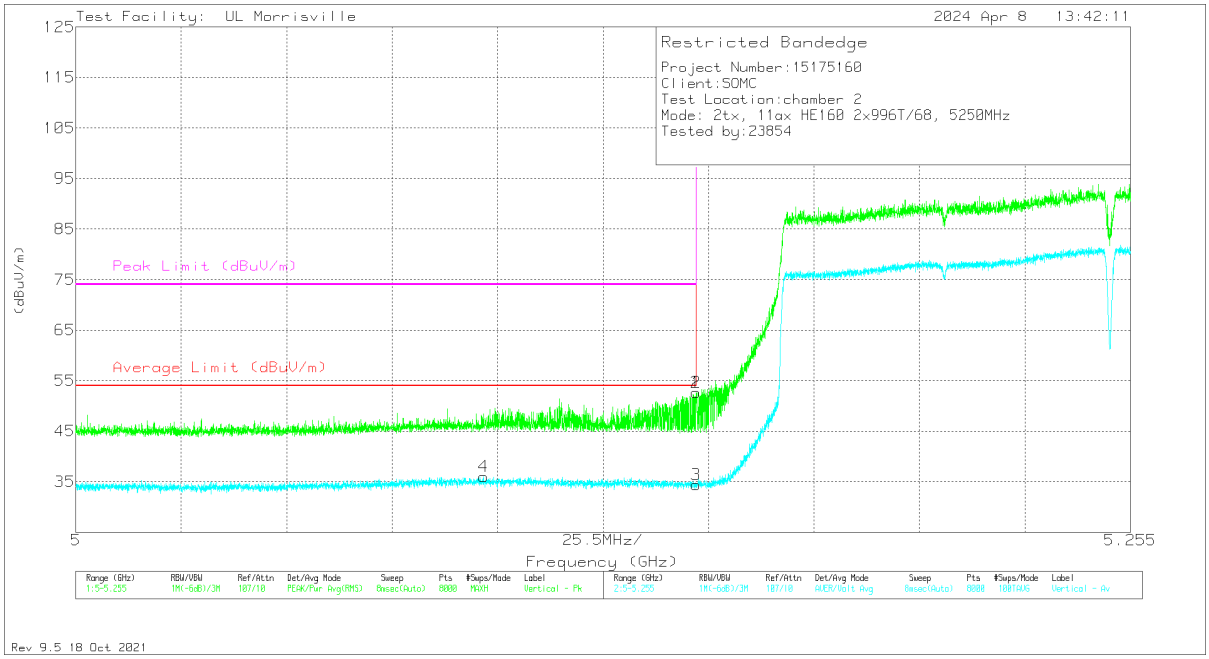
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.14999	40.54	Pk	34.1	-22	52.64	-	-	74	-21.36	141	339	V
2	* ** 5.14996	40.58	Pk	34.1	-22	52.68	-	-	74	-21.32	141	339	V
3	* ** 5.14999	22.34	ADV	34.1	-22	34.44	54	-19.56	-	-	141	339	V
4	* ** 5.09857	23.97	ADV	34.1	-22.1	35.97	54	-18.03	-	-	141	339	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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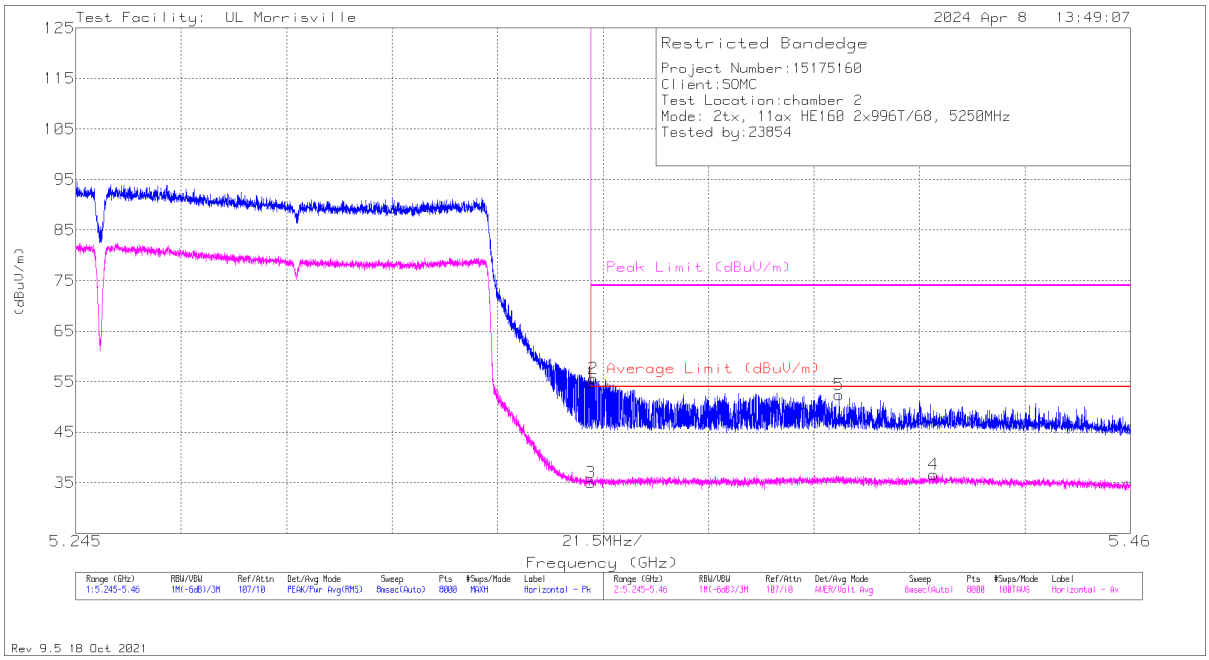
10.4.2. BANDEDGE (5.3 BAND HIGH CHANNEL – 2TX, 802.11ax HE160, 2x996T/RU68)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	43.03	Pk	34.4	-22.7	54.73	-	-	74	-19.27	55	105	H
2	* ** 5.3505	43.95	Pk	34.4	-22.7	55.65	-	-	74	-18.35	55	105	H
5	* ** 5.40057	40.91	Pk	34.4	-22.9	52.41	-	-	74	-21.59	55	105	H
3	* ** 5.35001	23.3	ADV	34.4	-22.7	35	54	-19	-	-	55	105	H
4	* ** 5.41984	25.26	ADV	34.4	-23	36.66	54	-17.34	-	-	55	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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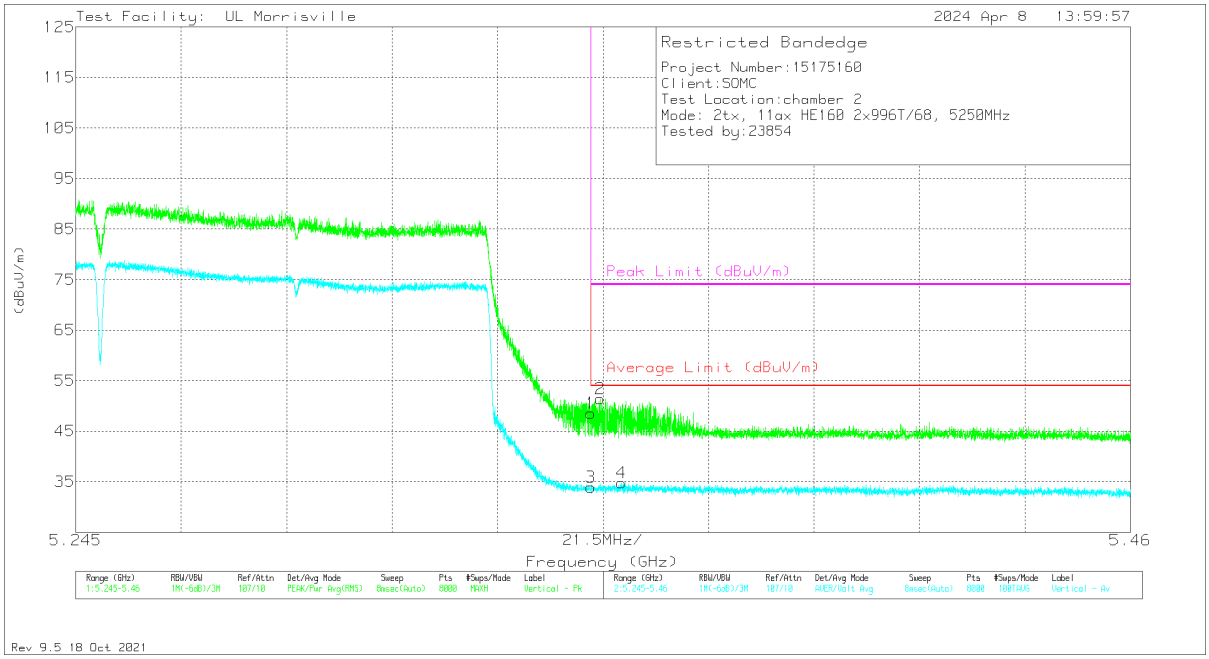
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 5.35001	36.91	Pk	34.4	-22.7	48.61	-	-	74	-25.39	234	120	V
2	* ** 5.35192	39.74	Pk	34.4	-22.7	51.44	-	-	74	-22.56	234	120	V
3	* ** 5.35001	22.18	ADV	34.4	-22.7	33.88	54	-20.12	-	-	234	120	V
4	* ** 5.3563	23.08	ADV	34.4	-22.7	34.78	54	-19.22	-	-	234	120	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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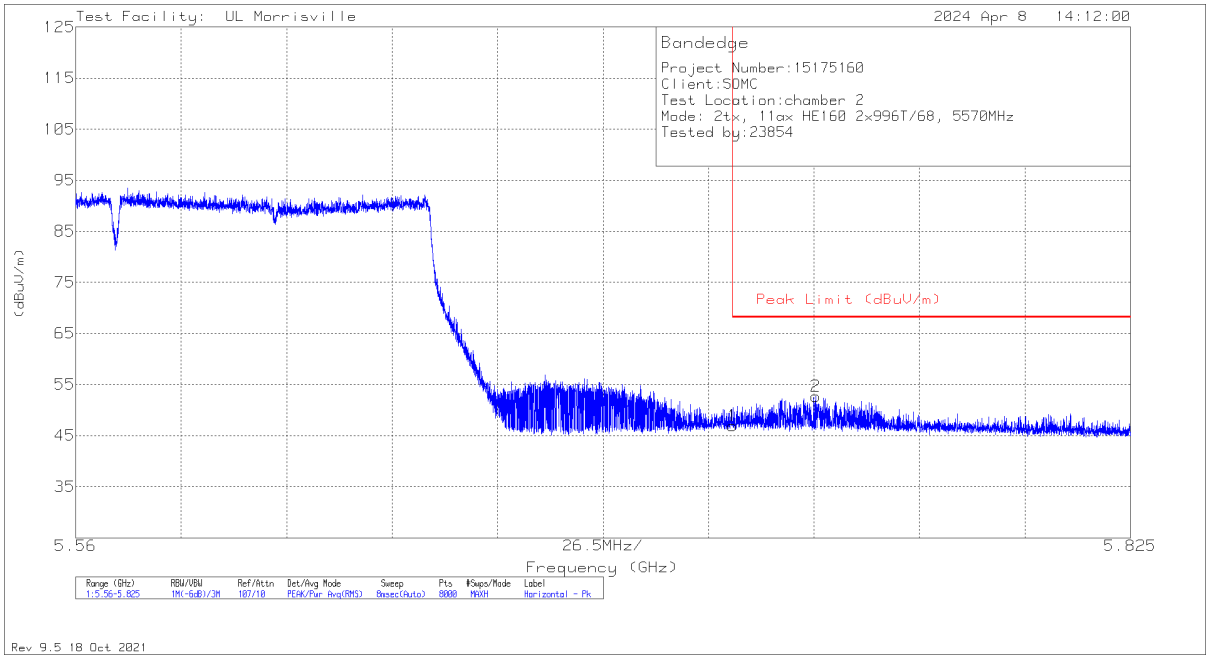
10.4.3. BANDEDGE (5.6 BAND HIGH CHANNEL – 2TX, 802.11ax HE160 2x996T/RU68)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.72502	35.18	Pk	34.7	-23	46.88	68.2	-21.32	342	117	H
2	5.74602	41.16	Pk	34.7	-23.2	52.66	68.2	-15.54	342	117	H

Pk - Peak detector

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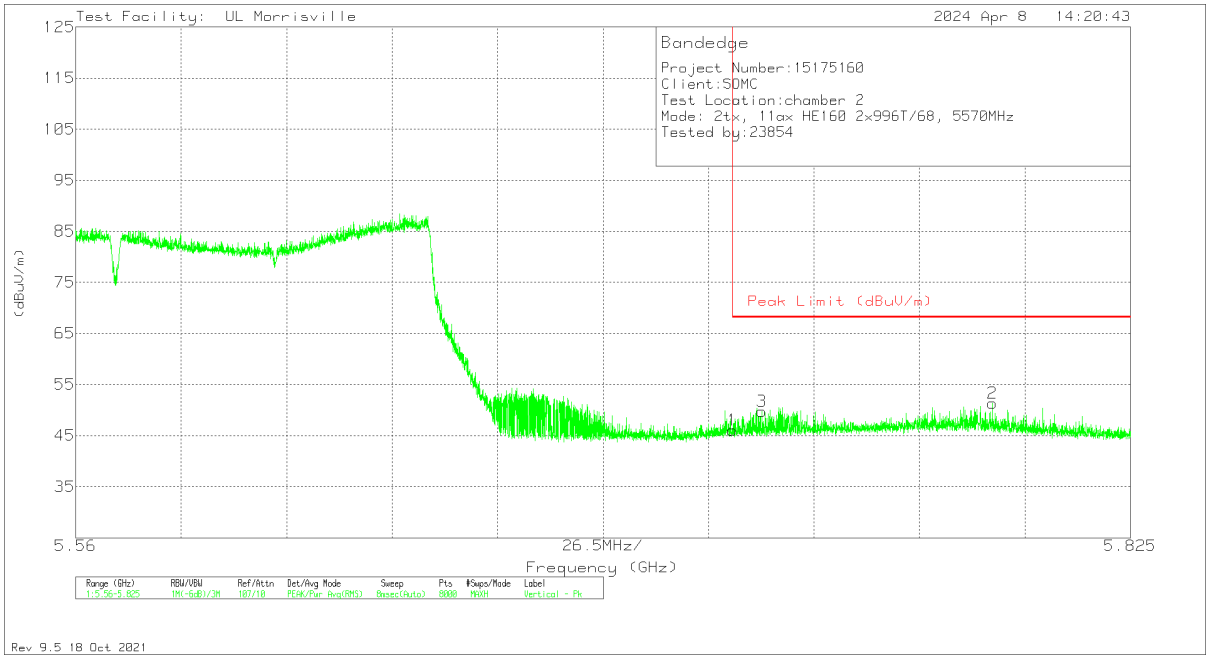
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	86408 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.72502	34.34	Pk	34.7	-23	46.04	68.2	-22.16	70	347	V
3	5.7324	37.92	Pk	34.7	-22.9	49.72	68.2	-18.48	70	347	V
2	5.79031	39.52	Pk	34.8	-23	51.32	68.2	-16.88	70	347	V

Pk - Peak detector

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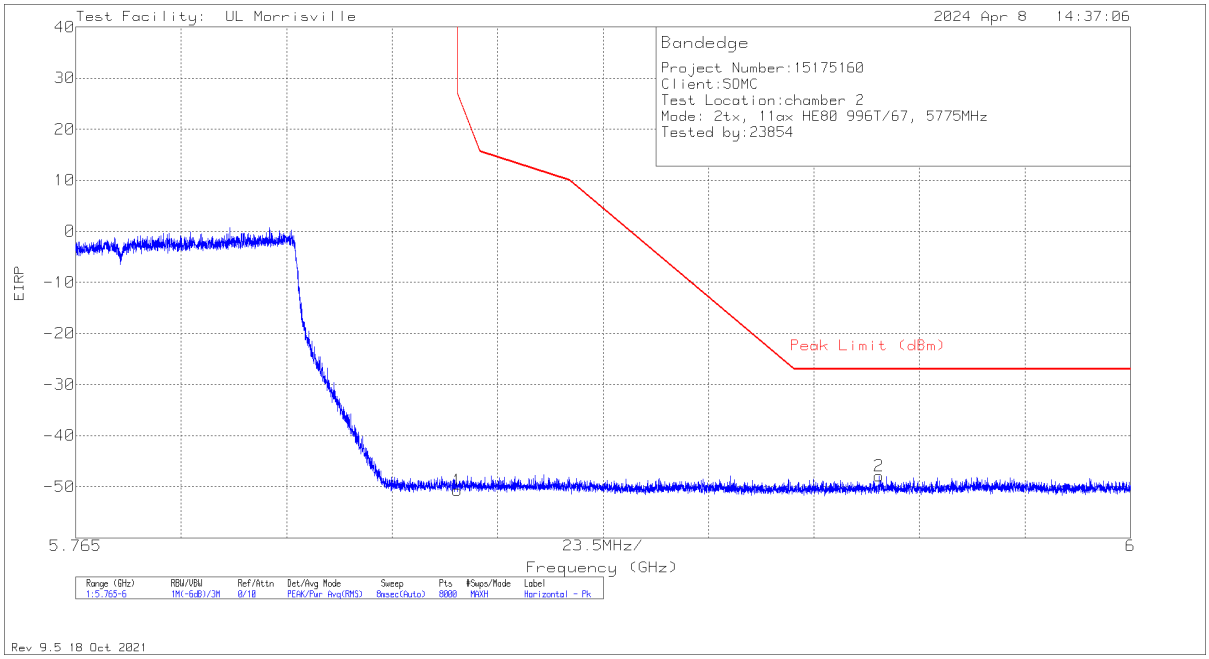
10.4.4. BANDEDGE (5.8 BAND HIGH CHANNEL – 2TX, 802.11ax HE80 996T/RU67)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	86408 (dB/m)	Gain/Loss (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85002	-74.53	Pk	34.9	-22.9	11.8	-50.73	26.95	-77.68	345	182	H
2	5.94401	-72.43	Pk	35.1	-22.4	11.8	-47.93	-27	-20.93	345	182	H

Pk - Peak detector

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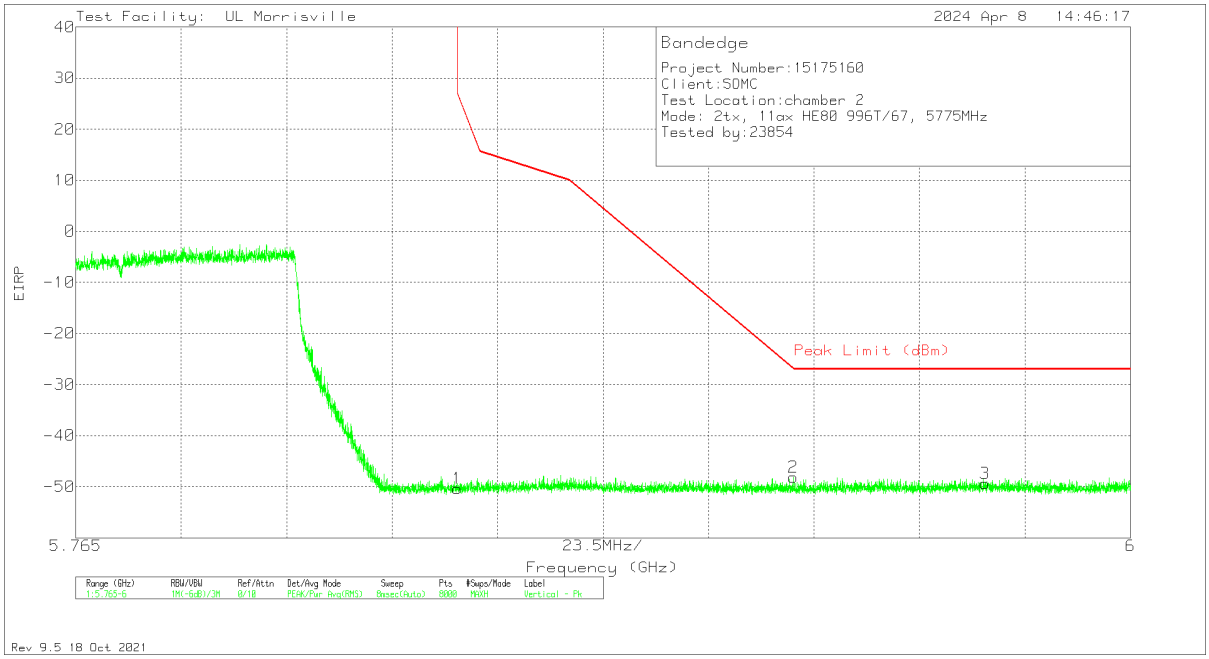
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	86408 (dB/m)	Gain/Loss (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85002	-74.15	Pk	34.9	-22.9	11.8	-50.35	26.95	-77.3	343	253	V
2	5.92488	-72.32	Pk	35	-22.6	11.8	-48.12	-26.91	-21.21	343	253	V
3	5.96757	-73.92	Pk	35.1	-22.3	11.8	-49.32	-27	-22.32	343	253	V

Pk - Peak detector

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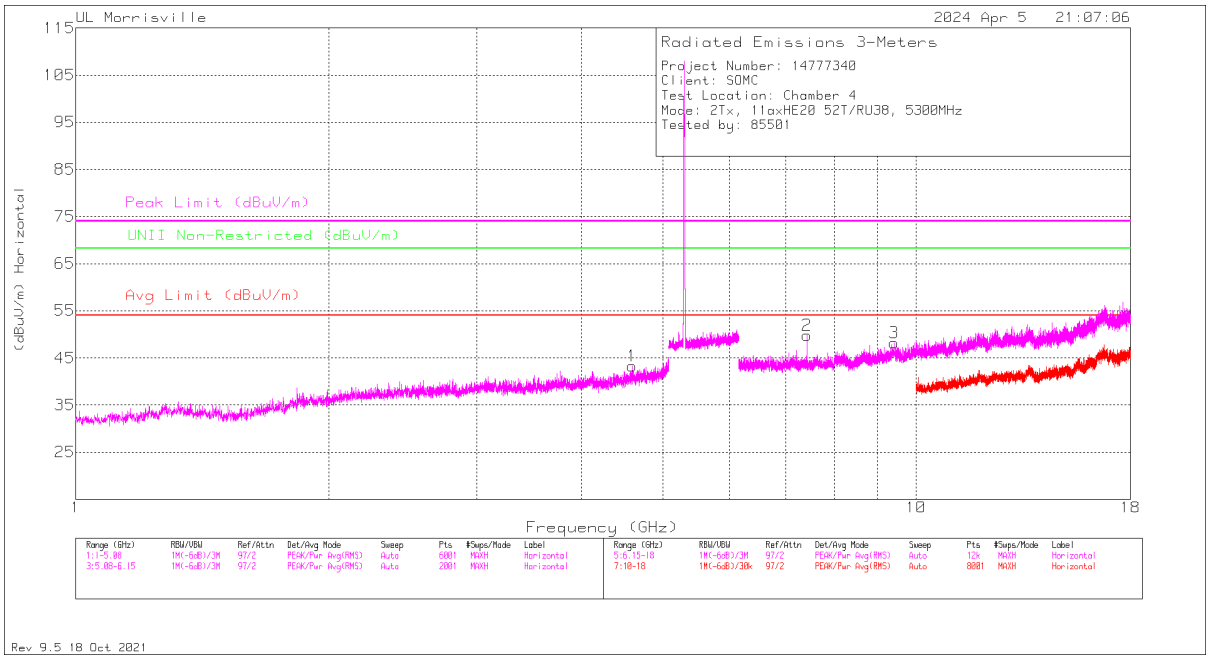
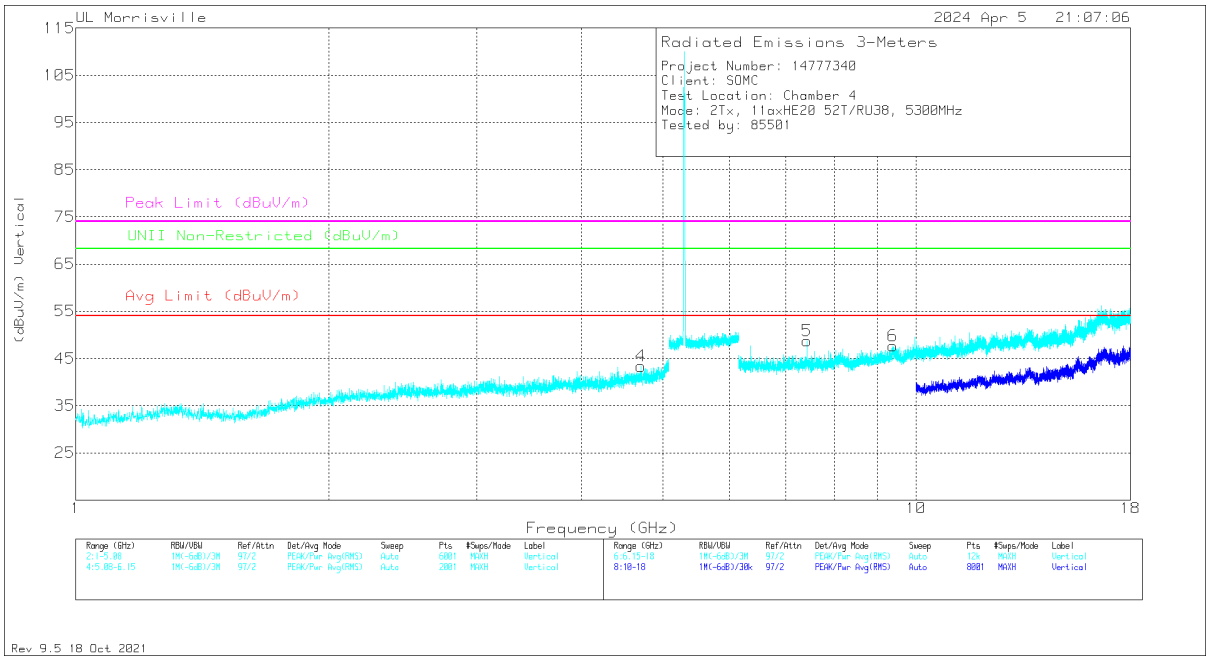
10.4.5. HARMONICS AND SPURIOUS EMISSIONS (5.3 BAND MID CHANNEL 2TX, 802.11ax HE20 52T/RU38)



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	* ** 4.59788	40.38	Pk	34.1	-31.2	43.28	54	-10.72	74	-30.72	0-360	100	H
4	* ** 4.7094	40.75	Pk	34.1	-31.5	43.35	54	-10.65	74	-30.65	0-360	200	V
2	* ** 7.41529	42.94	PK-U	35.6	-27.6	50.94	-	-	74	-23.06	29	106	H
	* ** 7.41555	31.22	ADV	35.6	-27.6	39.22	54	-14.78	-	-	29	106	H
3	* ** 9.42517	37.05	PK-U	36.7	-25.3	48.45	-	-	74	-25.55	92	357	H
	* ** 9.42524	24.47	ADV	36.7	-25.3	35.87	54	-18.13	-	-	92	357	H
5	* ** 7.41739	46.95	PK-U	35.6	-27.7	54.85	-	-	74	-19.15	7	196	V
	* ** 7.41556	35.71	ADV	35.6	-27.6	43.71	54	-10.29	-	-	7	196	V
6	* ** 9.38207	37.21	PK-U	36.6	-25.1	48.71	-	-	74	-25.29	348	191	V
	* ** 9.38292	24.93	ADV	36.6	-25.1	36.43	54	-17.57	-	-	348	191	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

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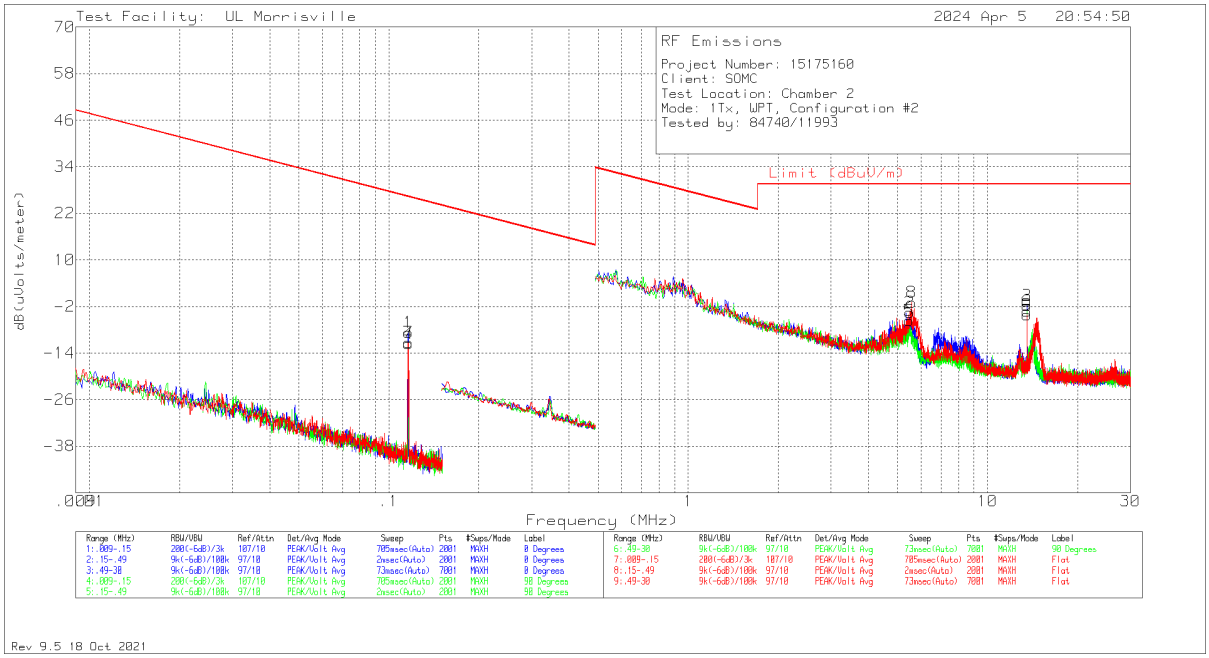
10.5. WPT

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).

10.5.1. HARMONICS AND SPURIOUS EMISSIONS – CONFIG 1

0.009 to 30MHz



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dBuV/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	.11607	60.08	Pk	11.1	.1	-80	-8.72	26.31	46.31	-35.03	0-360	0 degs
7	.11607	57.48	Pk	11.1	.1	-80	-11.32	26.31	46.31	-37.63	0-360	Flat
4	.11635	57.13	Pk	11.1	.1	-80	-11.67	26.29	46.29	-37.96	0-360	90 degs
5	5.46488	22.72	Pk	11.3	.4	-40	-5.58	29.54	-	-35.12	0-360	90 degs
2	5.50704	24.82	Pk	11.3	.4	-40	-3.48	29.54	-	-33.02	0-360	0 degs
8	5.5745	27.37	Pk	11.3	.4	-40	-.93	29.54	-	-30.47	0-360	Flat
3	13.5596	26.9	Pk	10.7	.6	-40	-1.8	29.54	-	-31.34	0-360	0 degs
6	13.5596	25.49	Pk	10.7	.6	-40	-3.21	29.54	-	-32.75	0-360	90 degs
9	13.5596	24.47	Pk	10.7	.6	-40	-4.23	29.54	-	-33.77	0-360	Flat

Pk - Peak detector

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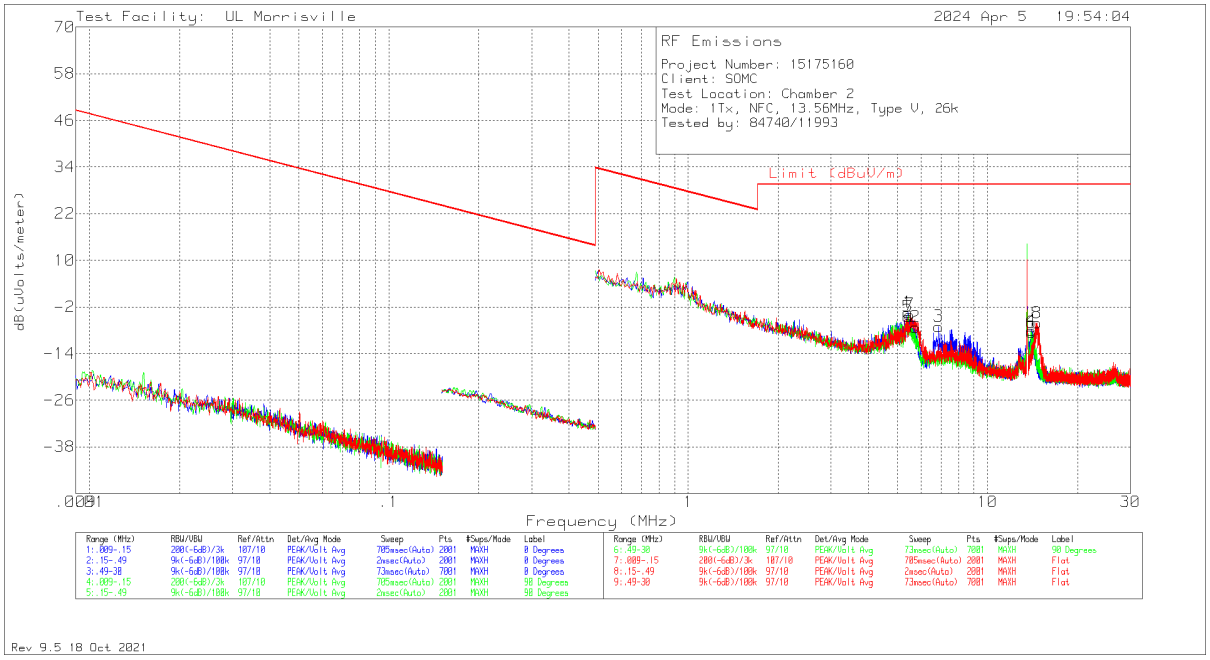
10.6. NFC

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).

10.6.1. HARMONICS AND SPURIOUS EMISSIONS – TYPE B, 106Kbps

<u>0.009 to 30MHz</u>



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dBuV/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
5	5.41429	23.8	Pk	11.3	.4	-40	-4.5	29.54	-	-34.04	0-360	90 degs
1	5.4185	24.93	Pk	11.3	.4	-40	-3.37	29.54	-	-32.91	0-360	0 degs
7	5.50704	24.36	Pk	11.3	.4	-40	-3.94	29.54	-	-33.48	0-360	Flat
2	5.7347	21.24	Pk	11.2	.4	-40	-7.16	29.54	-	-36.7	0-360	0 degs
3	6.85616	21.4	Pk	11.1	.5	-40	-7	29.54	-	-36.54	0-360	0 degs
4	14.02336	20.57	Pk	10.7	.7	-40	-8.03	29.54	-	-37.57	0-360	0 degs
6	14.02758	20.11	Pk	10.7	.7	-40	-8.49	29.54	-	-38.03	0-360	90 degs
8	14.62203	22.53	Pk	10.7	.7	-40	-6.07	29.54	-	-35.61	0-360	Flat

Pk - Peak detector

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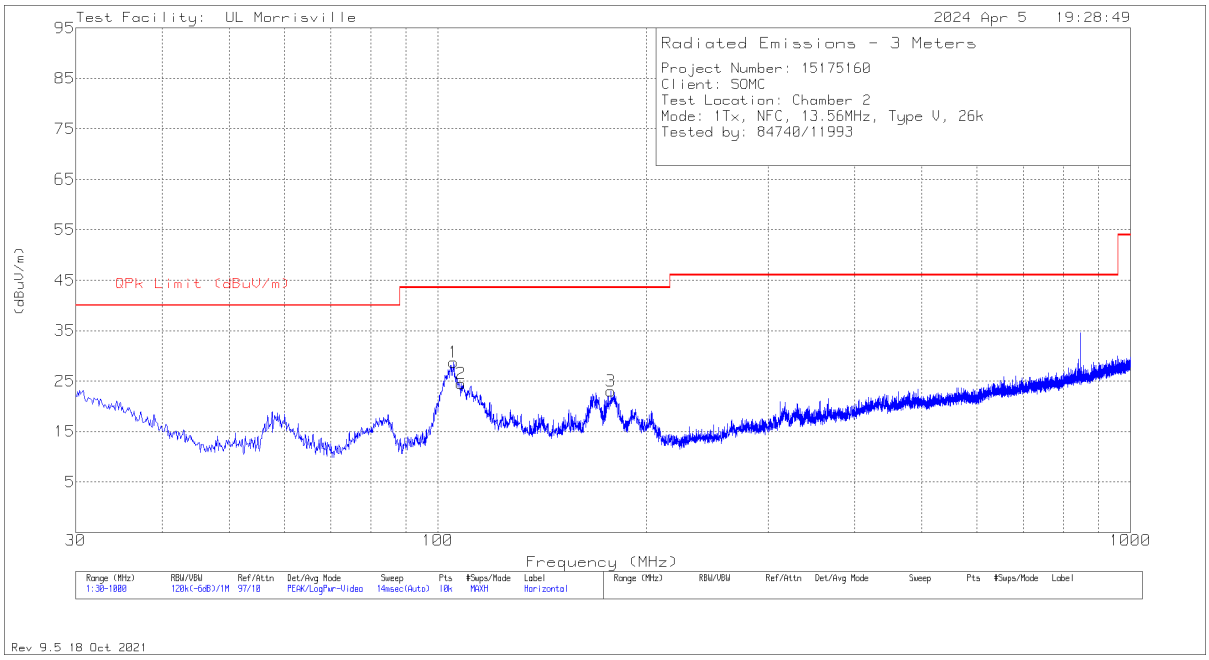
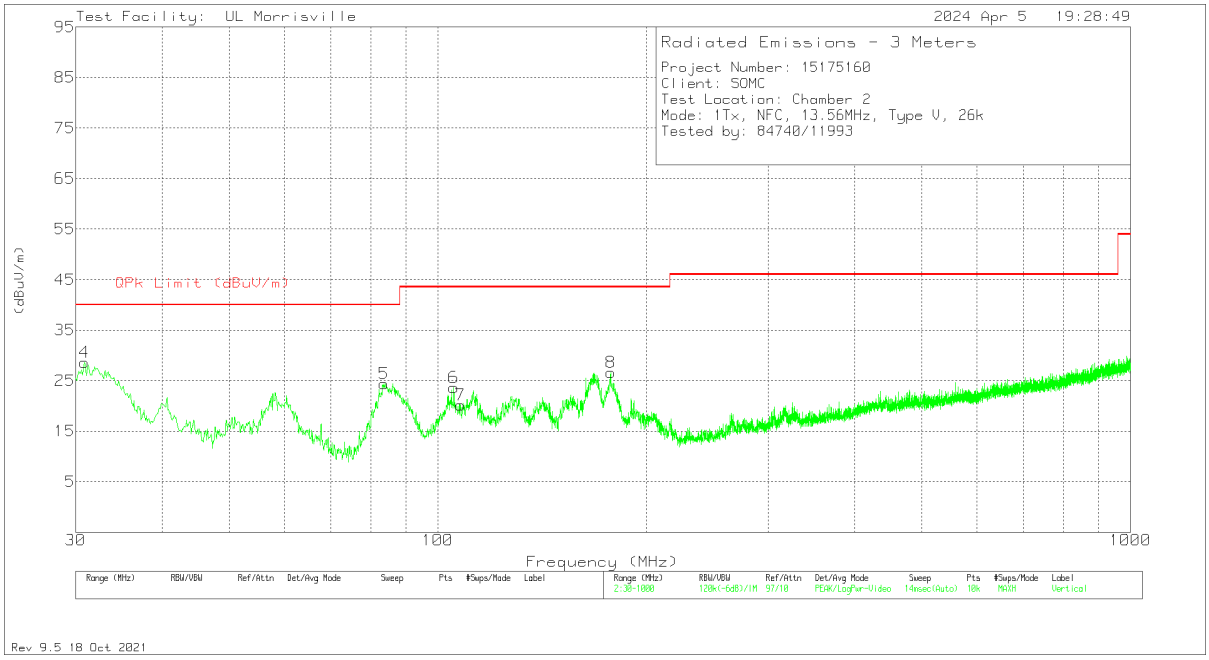
30 to 1000MHz



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	159203 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* ** 108.085	36.69	Pk	18.7	-30.9	24.49	43.52	-19.03	0-360	299	H
4	30.873	33.5	Pk	26.8	-31.7	28.6	40	-11.4	0-360	101	V
5	83.544	41.71	Pk	13.8	-31.1	24.41	40	-15.59	0-360	101	V
1	105.369	41.38	Pk	18.2	-30.8	28.78	43.52	-14.74	0-360	299	H
6	105.466	36.12	Pk	18.2	-30.7	23.62	43.52	-19.9	0-360	101	V
7	107.697	32.32	Pk	18.6	-30.8	20.12	43.52	-23.4	0-360	101	V
8	177.634	39.08	Pk	17.8	-30.3	26.58	43.52	-16.94	0-360	101	V
3	177.828	35.55	Pk	17.8	-30.3	23.05	43.52	-20.47	0-360	199	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. SETUP PHOTOS

Refer to R15175160-EP2 for setup photos.

END OF REPORT

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