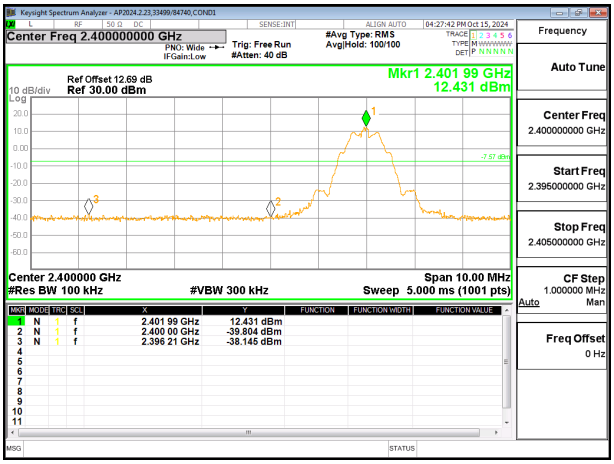
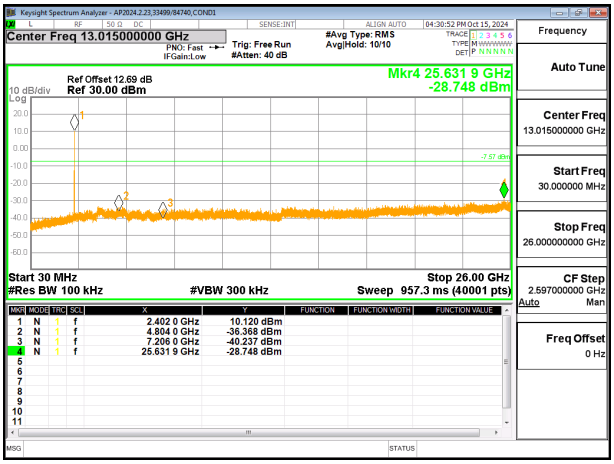
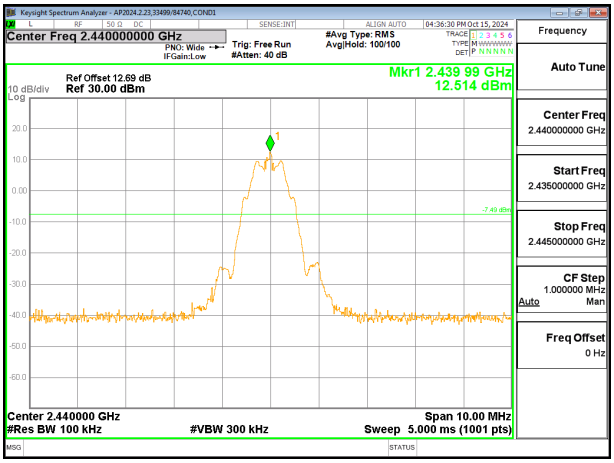
Chain 1



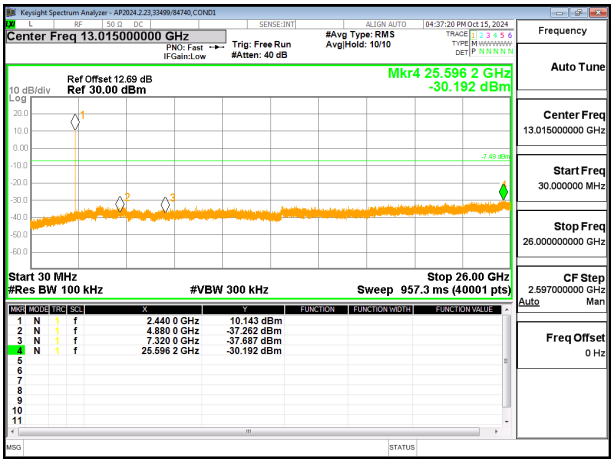
LOW CHANNEL BANDEDGE



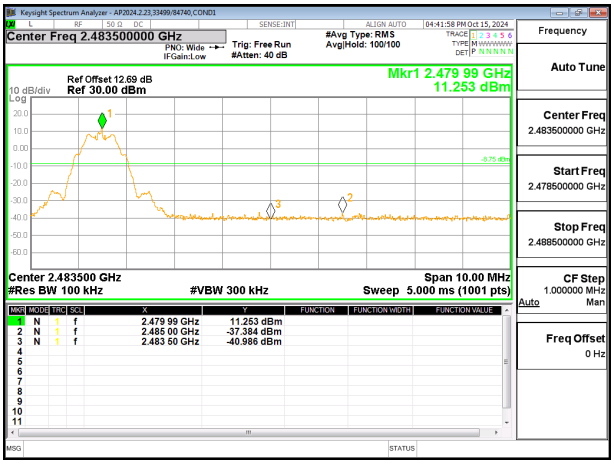
OUT-OF-BAND LOW CHANNEL



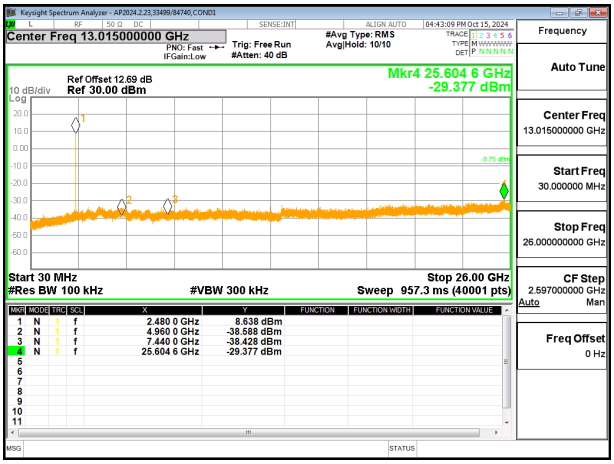
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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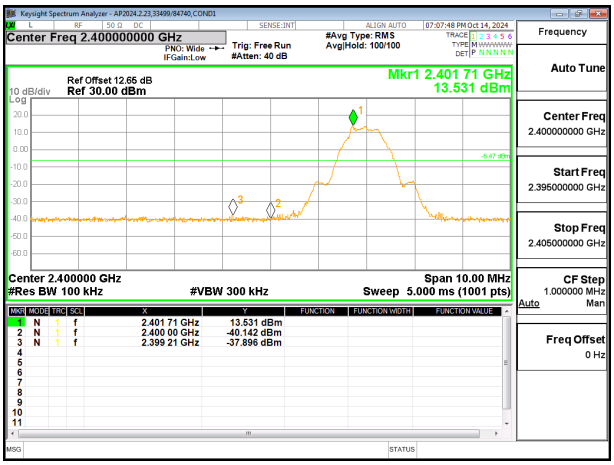
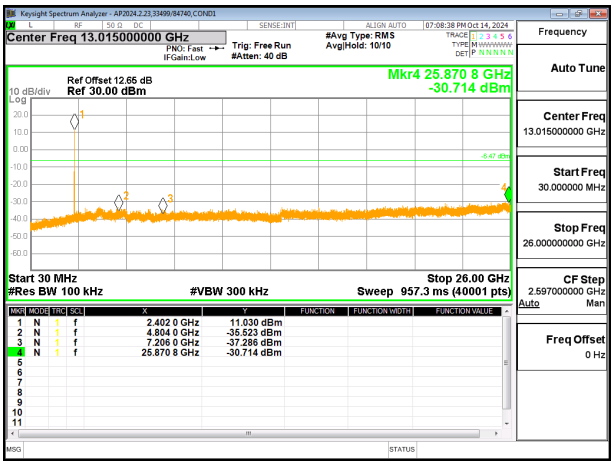
9.7.4. BLE (500Kbps)

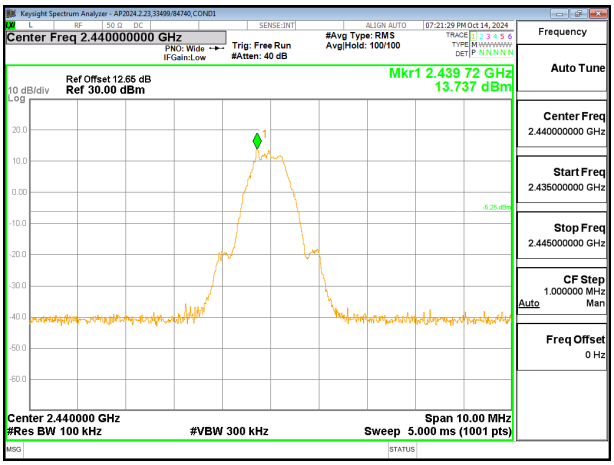
Chain 0



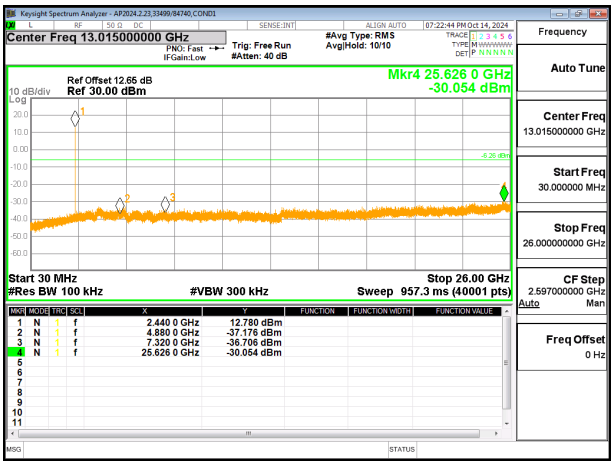
LOW CHANNEL BANDEDGE



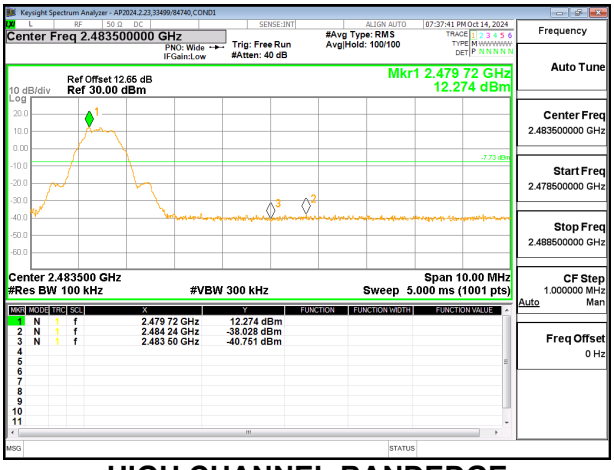
OUT-OF-BAND LOW CHANNEL



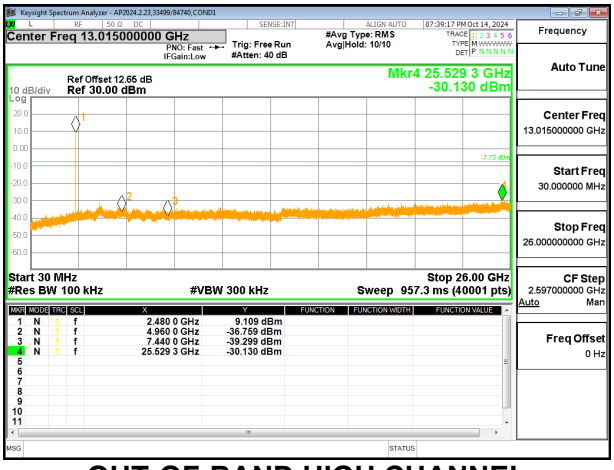
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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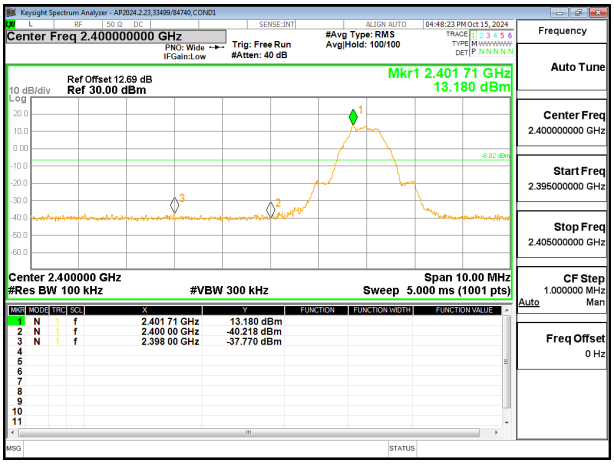
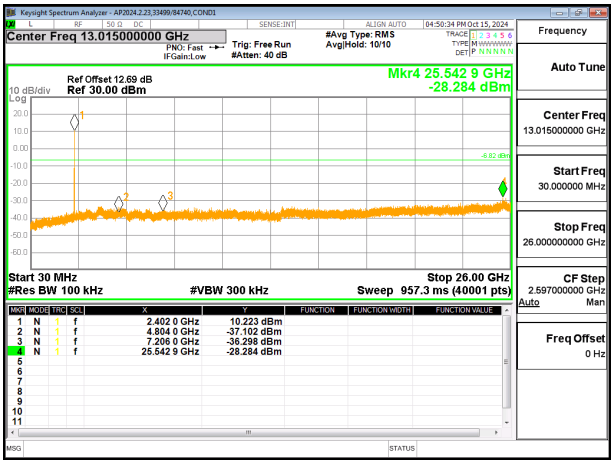
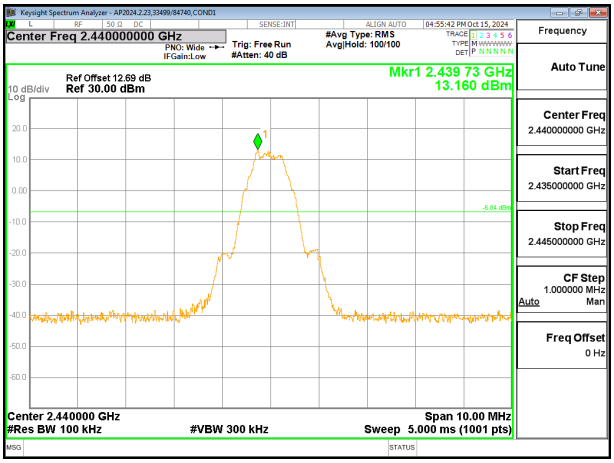
Chain 1



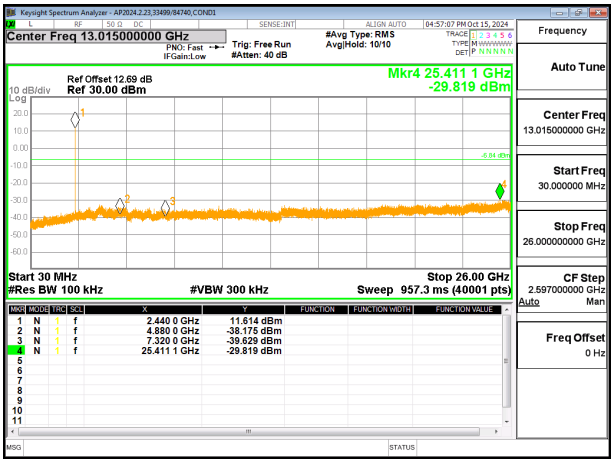
LOW CHANNEL BANDEDGE



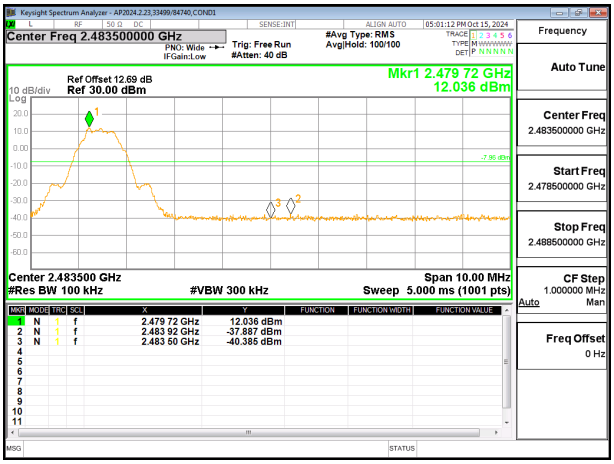
OUT-OF-BAND LOW CHANNEL



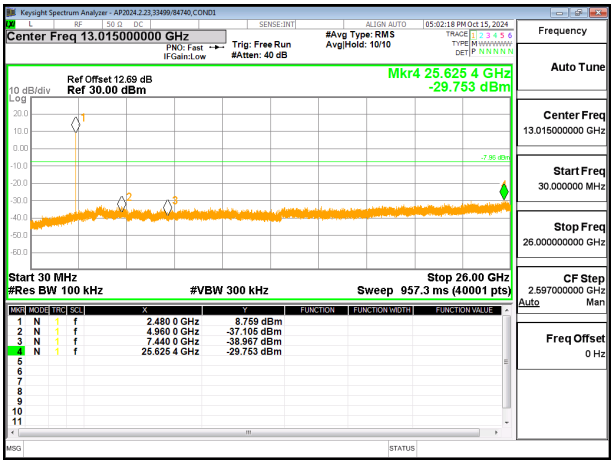
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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9.8. CONDUCTED SPURIOUS EMISSIONS – RESTRICTED BAND

LIMITS

FCC §15.205 and §15.209
RSS-GEN, Section 8.9 and 8.10.

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

TEST PROCEDURE

Conducted measurements were made for this test.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz

Band edge was performed with the EUT set to transmit at the highest power on low and high channels. Testing was performed using a conducted restricted band edge setup as described in section 6.5.

Summed bandedge plots are included for all measurements. Only one representative of the per chain bandedge measurement was included per mode to be representative for the other measurements.

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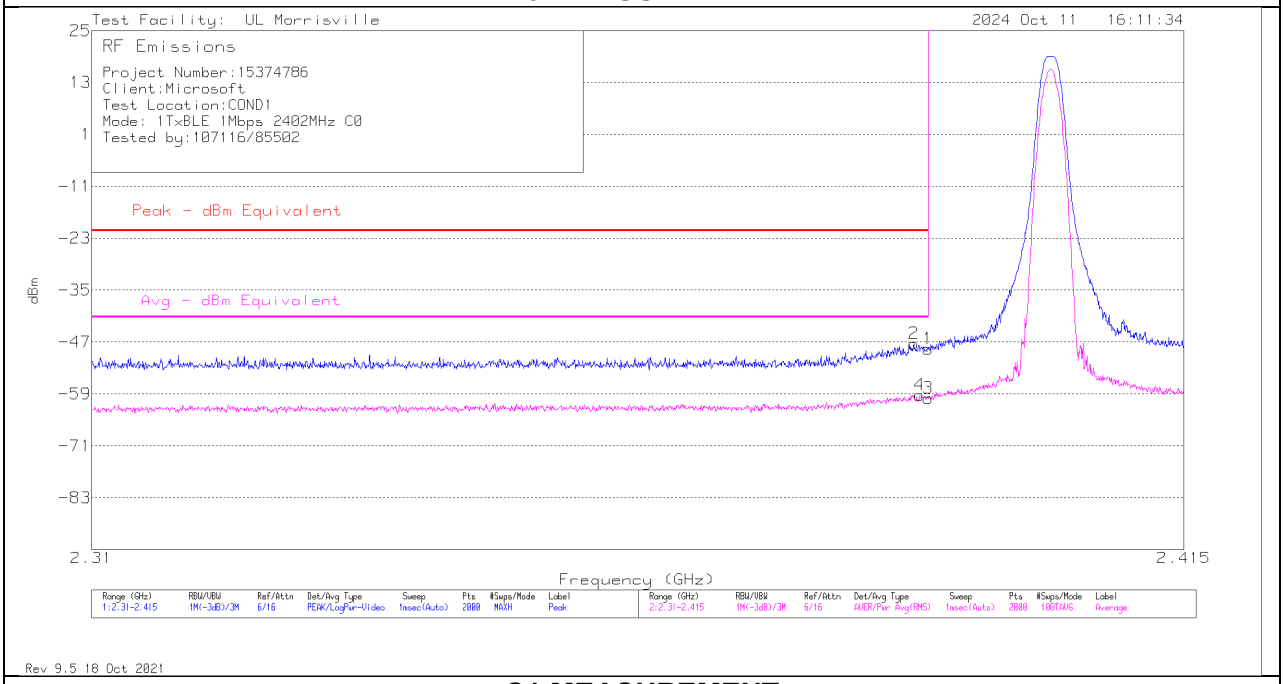
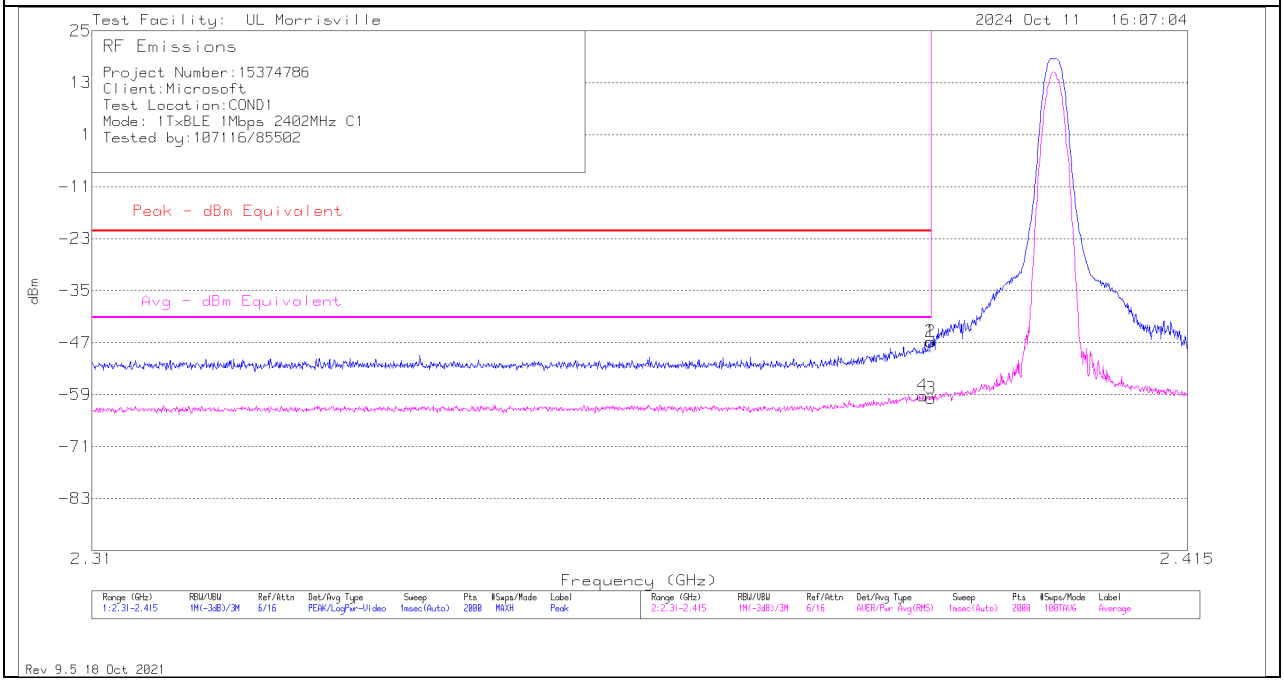
9.8.1. BLE (1Mbps)

BANDEDGE (LOW CHANNEL)

C0 MEASUREMENT



C1 MEASUREMENT



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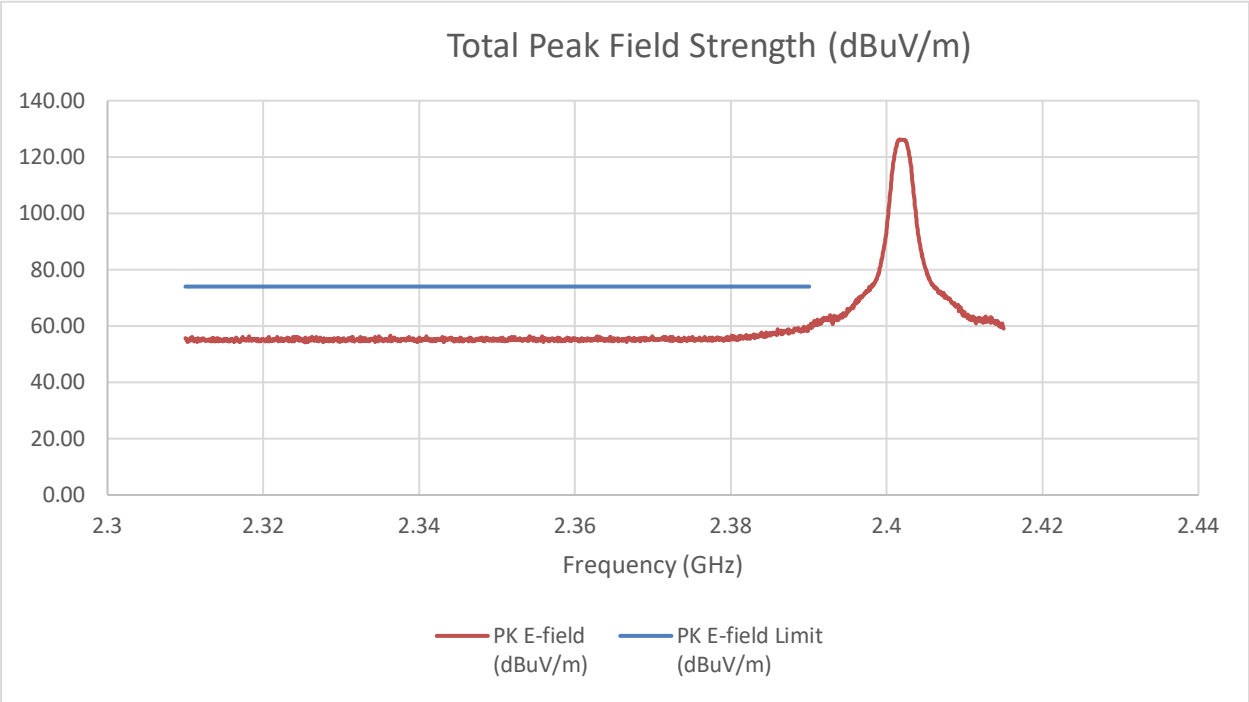
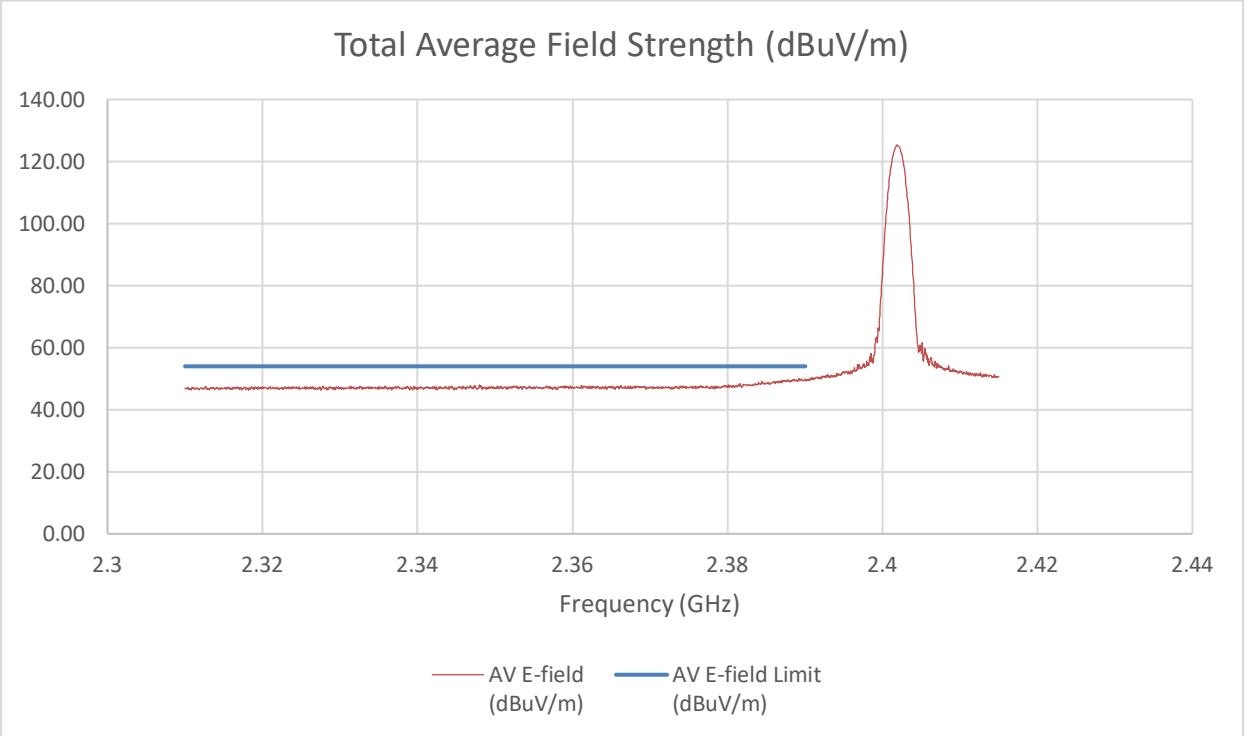
SUMMED BANDEDGE DATA (Pk)



SUMMED BANDEDGE DATA (Av)



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Summed Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	Meter PK Reading Chain 1 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.390	-48.26	-47.82	-35.91	59.34	74	-14.66

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	Meter AV Reading Chain 1 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.390	-59.58	-59.61	-45.41	49.85	54	-4.15

A duty cycle correction factor of 2.06 dB and an array gain of 9.11 dBi was used in the calculation of the summed data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 107116/85502
Date: 2024-10-11

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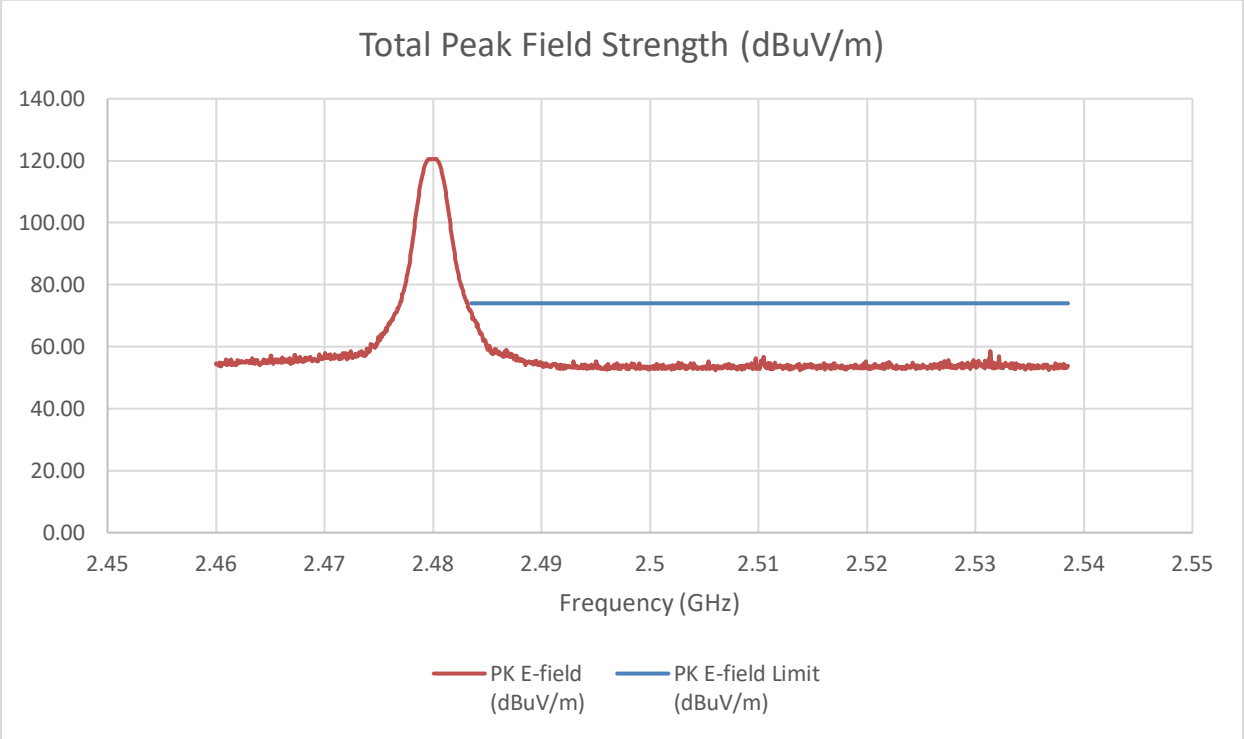
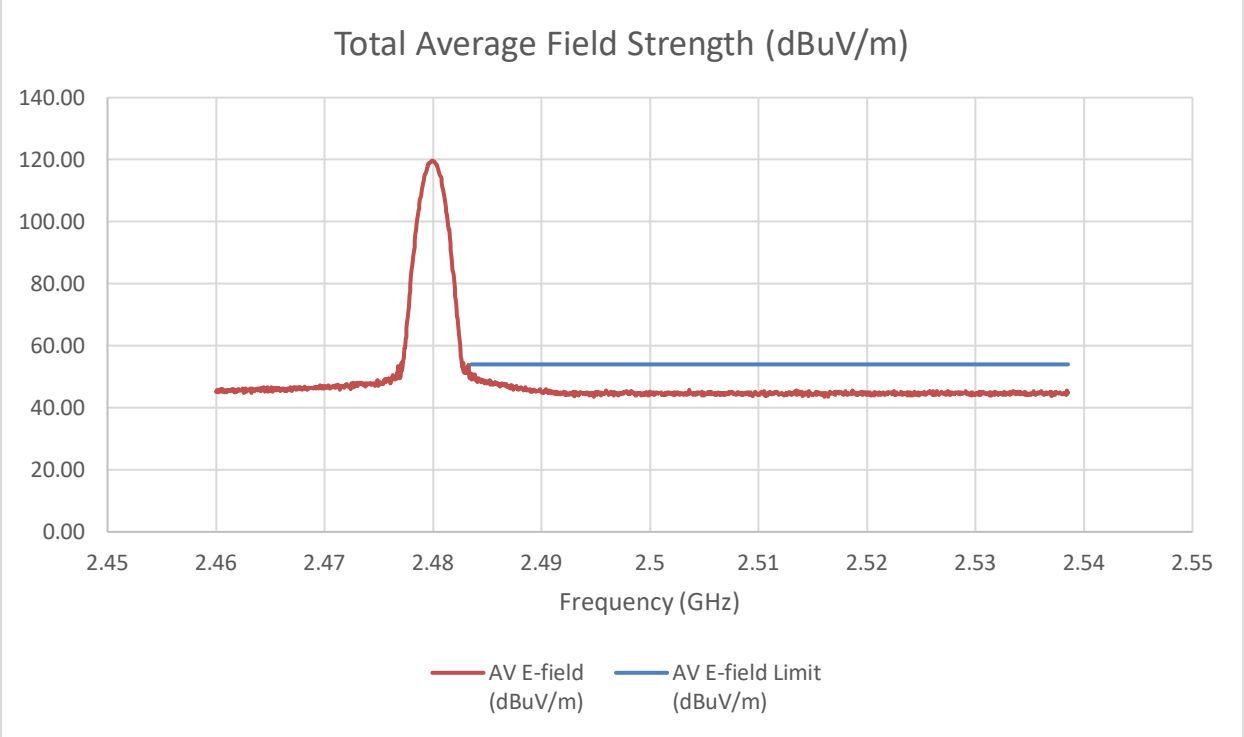
BANDEDGE (HIGH CHANNEL)

C0 Bandedge Data (Pk)



C0 Bandedge Data (Av)



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C0 Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.4835	-30.16	-24.06	71.20	74	-2.80

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.4835	-52.64	-44.48	50.78	54	-3.22

A duty cycle correction factor of 2.06 dB and a C0 gain of 6.1 dBi was used in the calculation of the summed data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 85502
Date: 2024-10-25

NOTE: BLE 1Mbps, 2480 MHz was tested in a SISO C0, C1 mode as well as at 2Tx MIMO power setting to show bandedge compliance in all transmit configurations.

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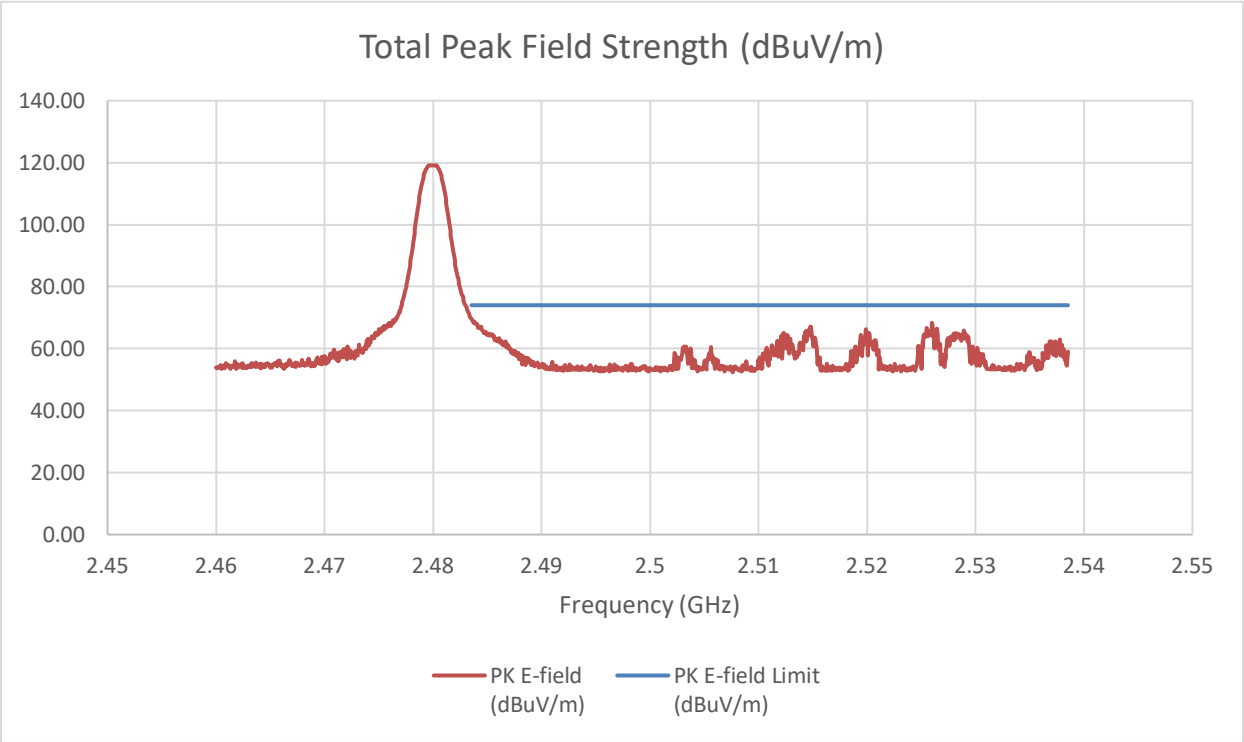
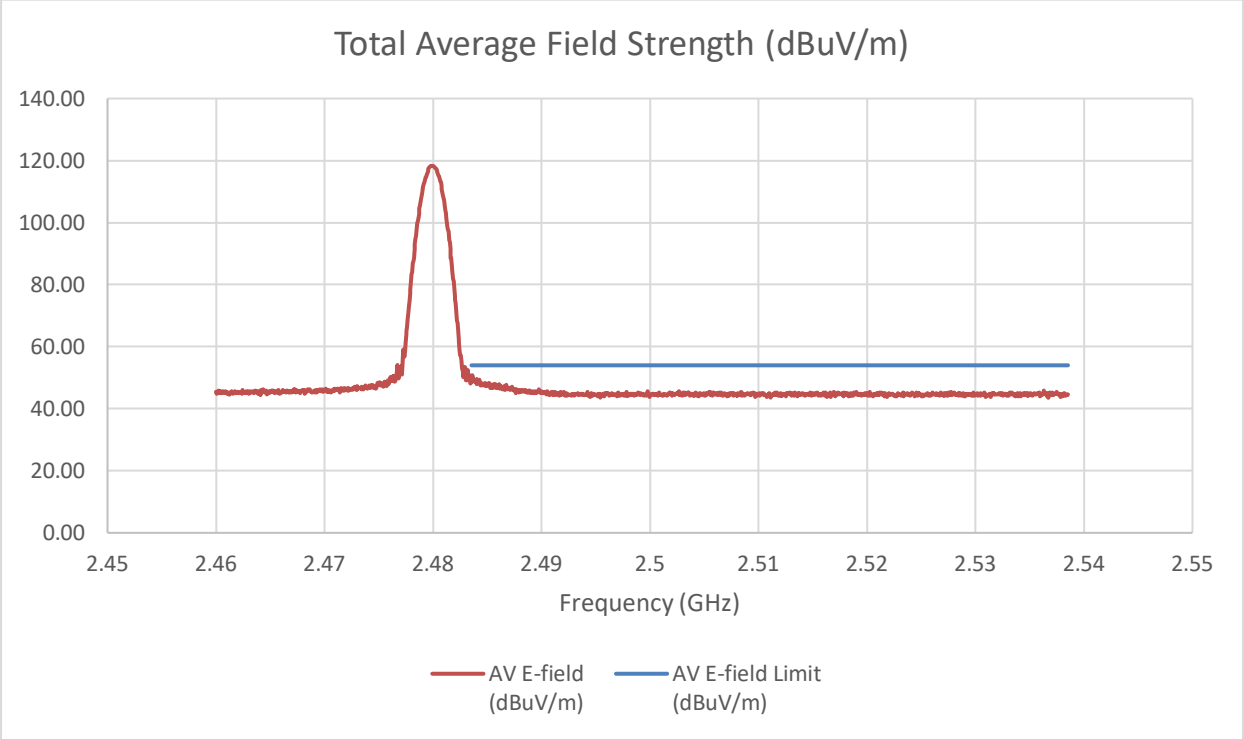
C1 Bandedge Data (Pk)



C1 Bandedge Data (Av)



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C1 Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.4835	-31.66	-25.56	69.70	74	-4.30

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.4835	-52.64	-44.48	50.78	54	-3.22

A duty cycle correction factor of 2.06 dB and a C1 gain of 6.1 dBi was used in the calculation of the summed data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 85502
Date: 2024-10-25

NOTE: BLE 1Mbps, 2480 MHz was tested in a SISO C0, C1 mode as well as at 2Tx MIMO power setting to show bandedge compliance in all transmit configurations.

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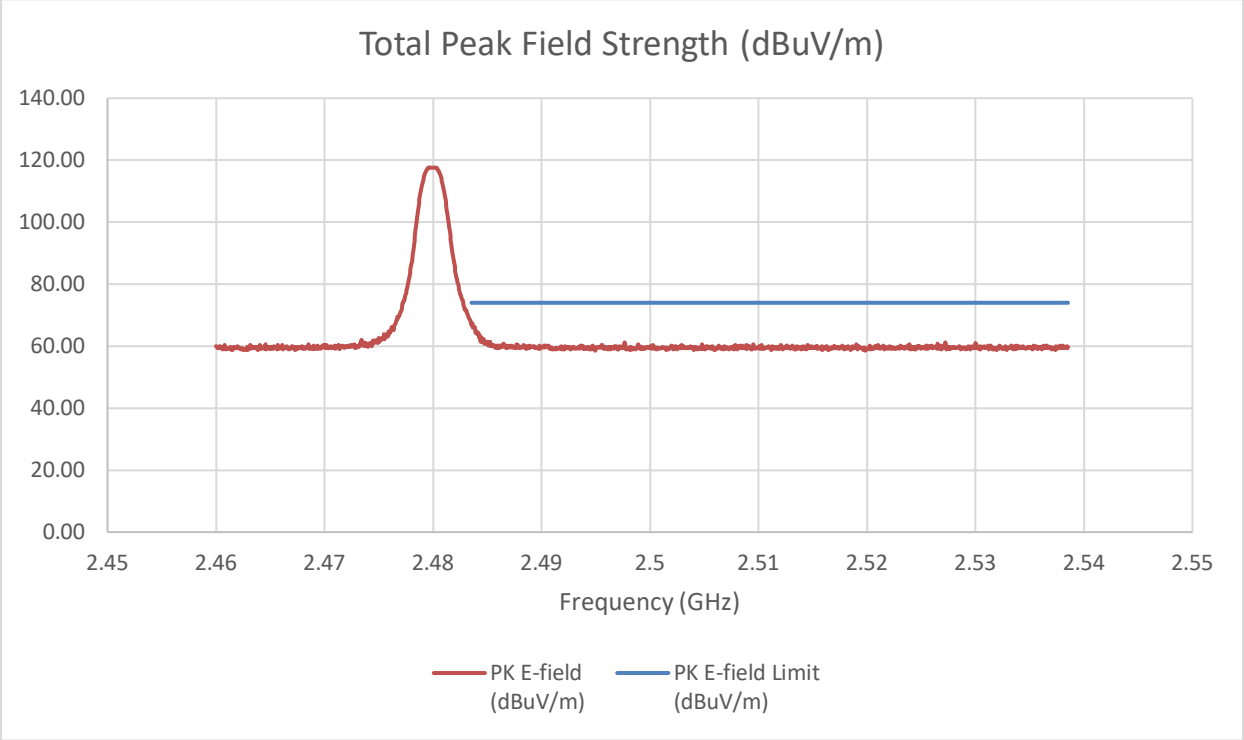
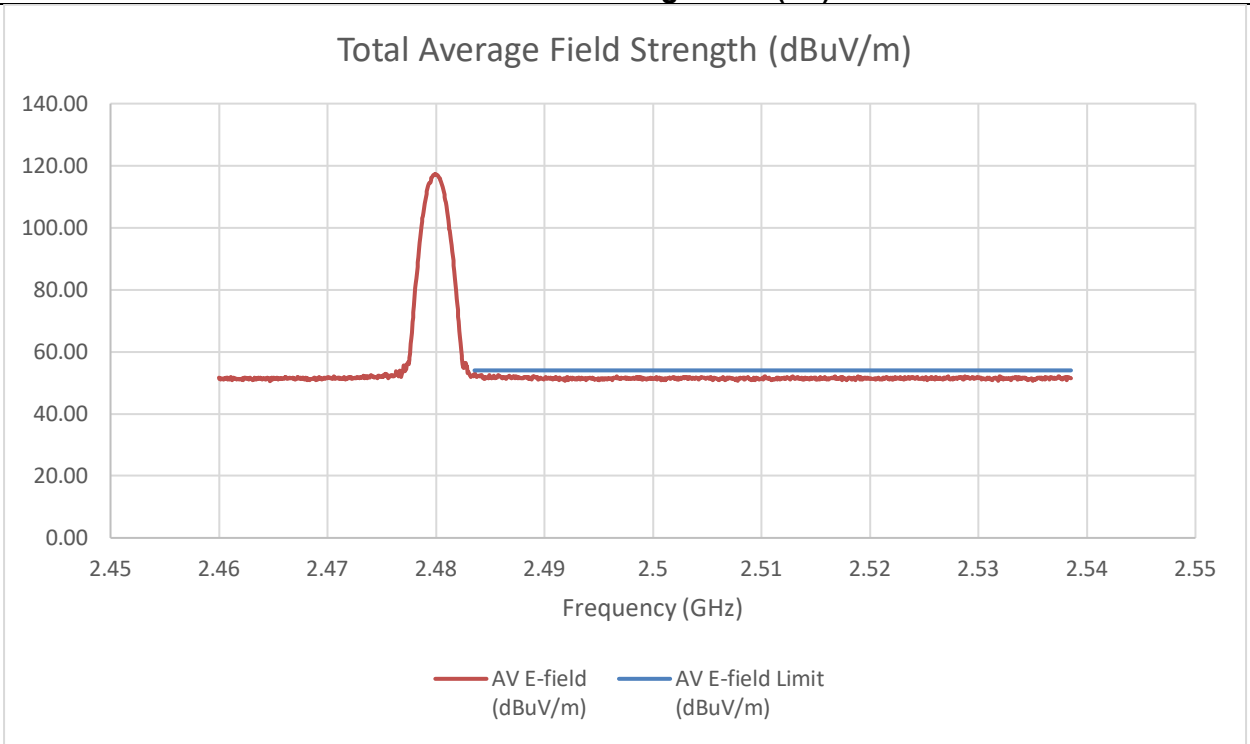
Summed Bandedge Data (Pk)



Summed Bandedge Data (Av)



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Summed Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	Meter PK Reading Chain 1 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.4835	-37.43	-48.27	-27.98	67.28	74	-6.72

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	Meter AV Reading Chain 1 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.483547	-55.71	-57.68	-42.40	52.86	54	-1.14

A duty cycle correction factor of 2.06 dB and an array gain of 9.11 dBi was used in the calculation of the summed data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 85502
Date: 2024-10-25

NOTE: BLE 1Mbps, 2480 MHz was tested in a SISO C0, C1 mode as well as at 2Tx MIMO power setting to show bandedge compliance in all transmit configurations.

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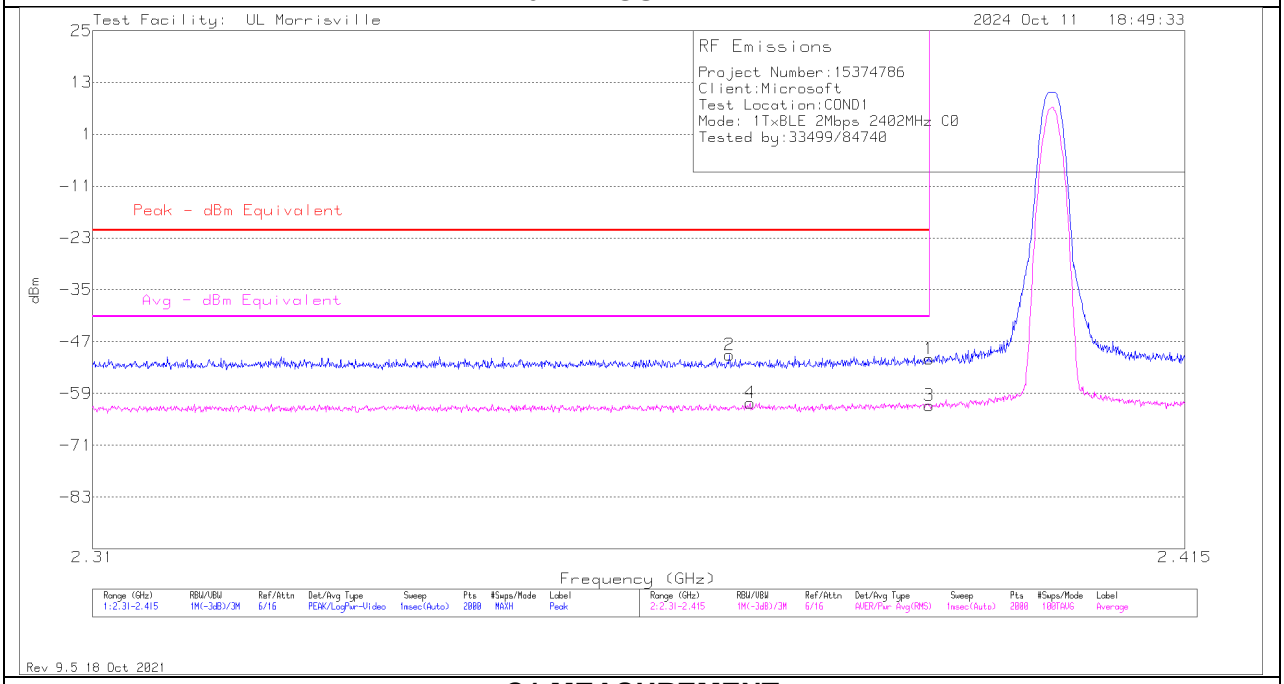
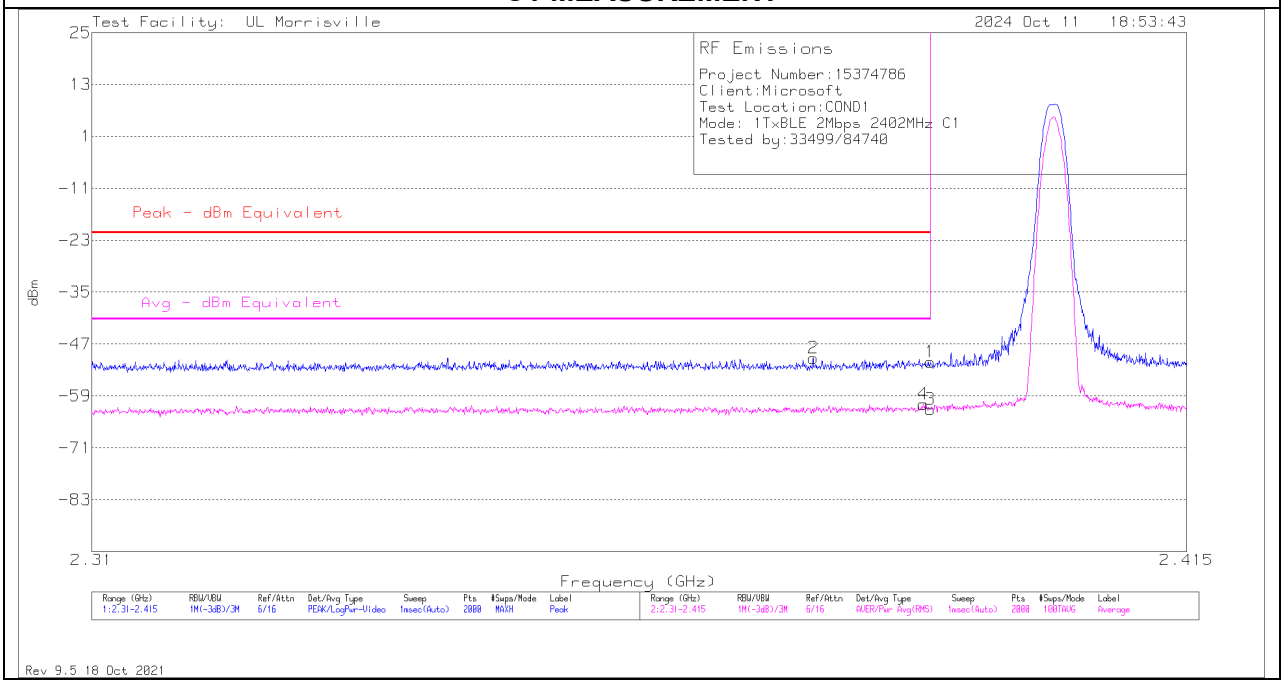
9.8.2. BLE (2Mbps)

BANDEDGE (LOW CHANNEL)

C0 MEASUREMENT



C1 MEASUREMENT



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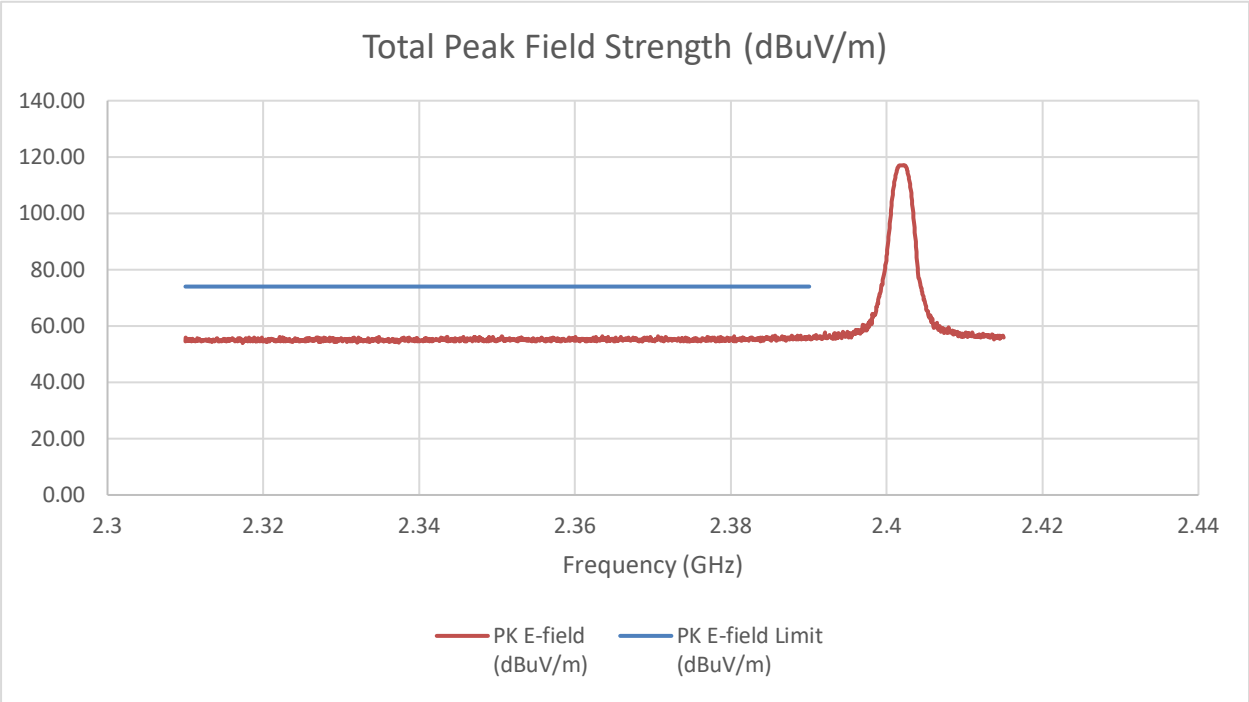
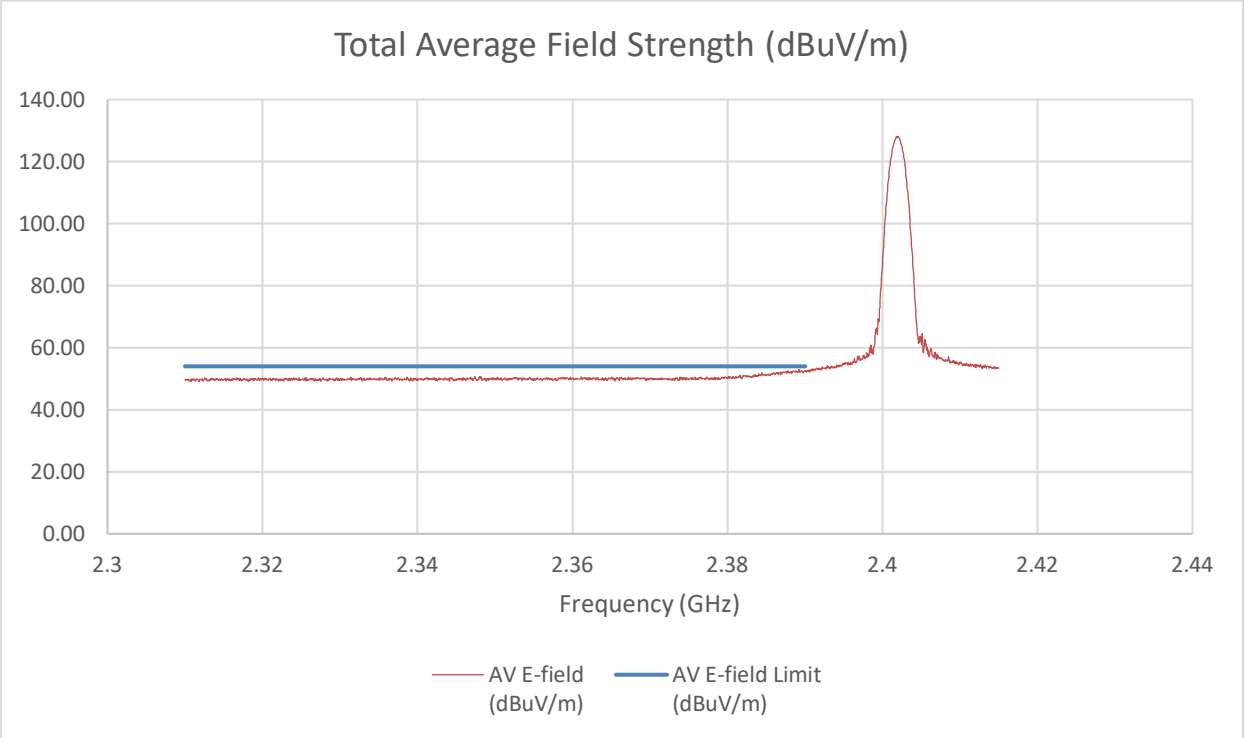
SUMMED BANDEDGE DATA (Pk)



SUMMED BANDEDGE DATA (Av)



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Summed Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	Meter PK Reading Chain 1 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.390	-51.75	-51.81	-39.66	55.60	74	-18.40

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	Meter AV Reading Chain 1 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.39005	-59.58	-59.61	-42.60	52.65	54	-1.35

A duty cycle correction factor of 4.87 dB and an array gain of 9.11 dBi was used in the calculation of the summed data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 33499/84740
Date: 2024-10-11

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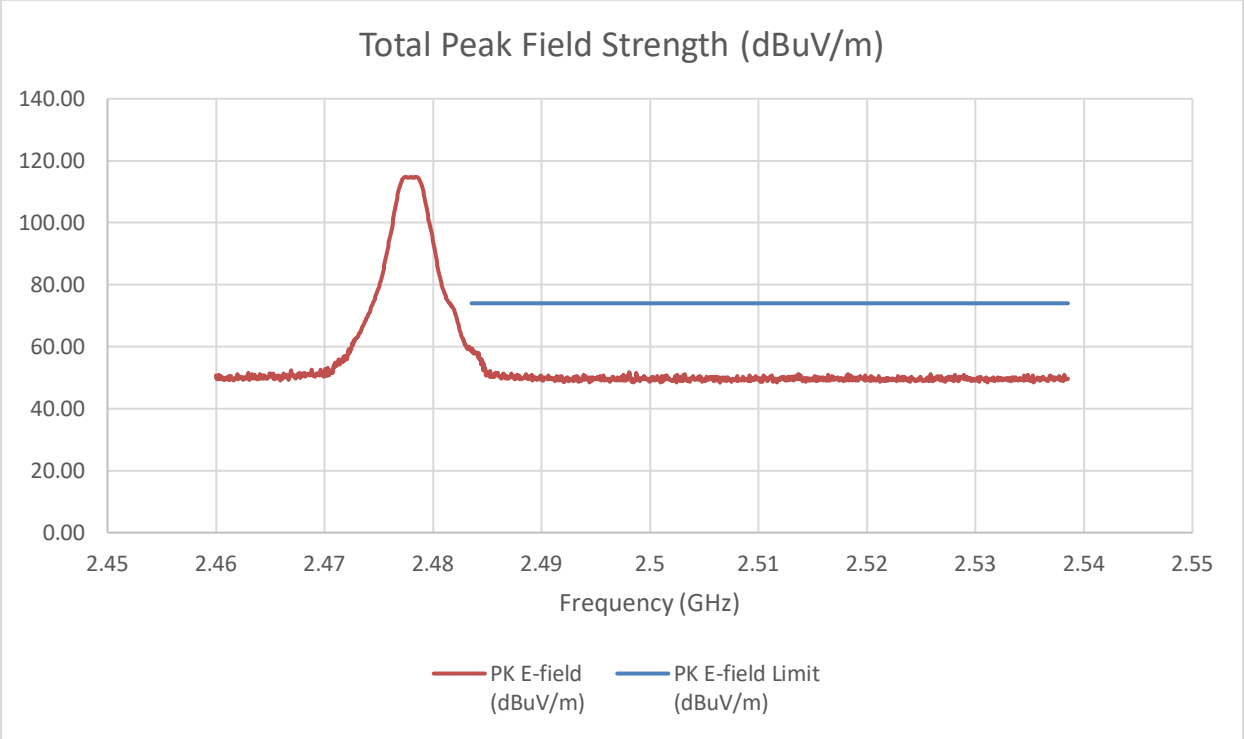
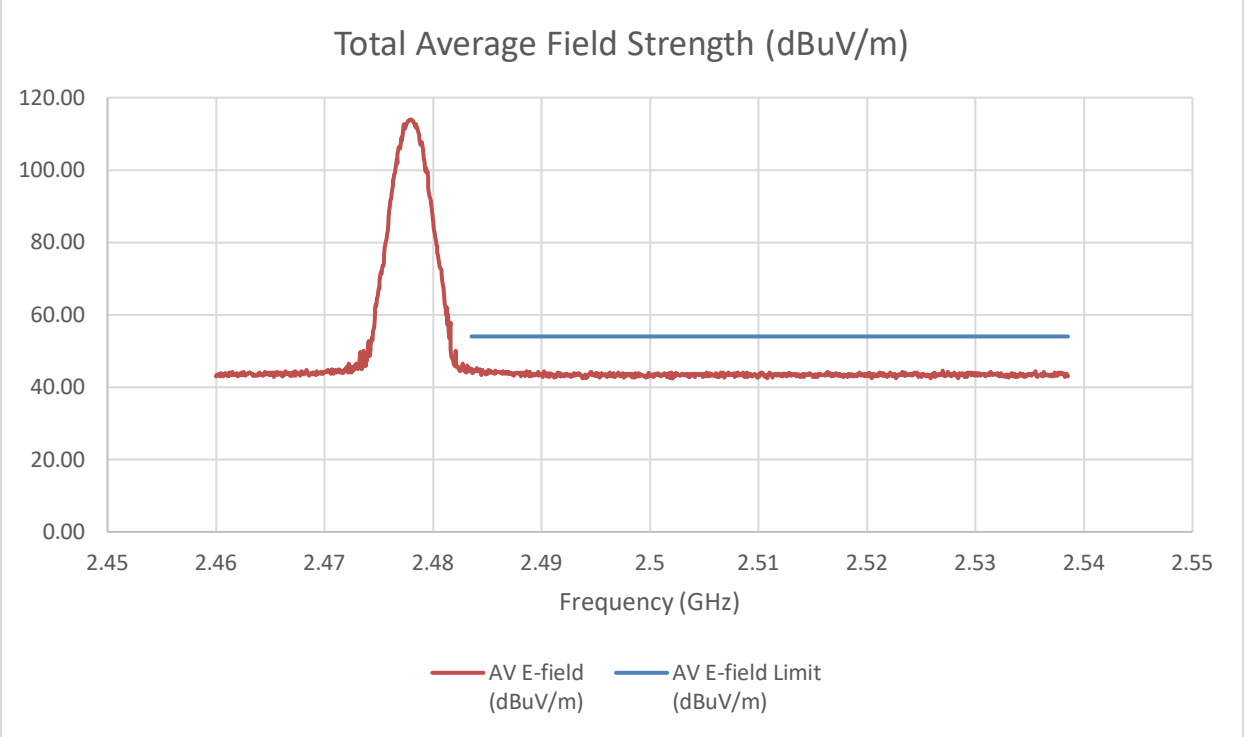
BANDEDGE (HIGH CHANNEL)

C0 Bandedge Data (Pk)



C0 Bandedge Data (Av)



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C0 Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.4835	-42.81	-36.71	58.55	74	-15.45

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.483547	-61.06	-50.09	45.17	54	-8.83

A duty cycle correction factor of 4.87 dB and a C0 gain of 6.1 dBi was used in the calculation of the data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 85502
Date: 2024-10-29

NOTE: BLE 2Mbps was tested in a SISO C0, C1 mode as well as at 2Tx MIMO power setting to show bandedge compliance in all transmit configurations.

NOTE 2: 2478 MHz was tested as the high channel for 2Mbps based on 2478 MHz being the highest supported channel for this data rate.

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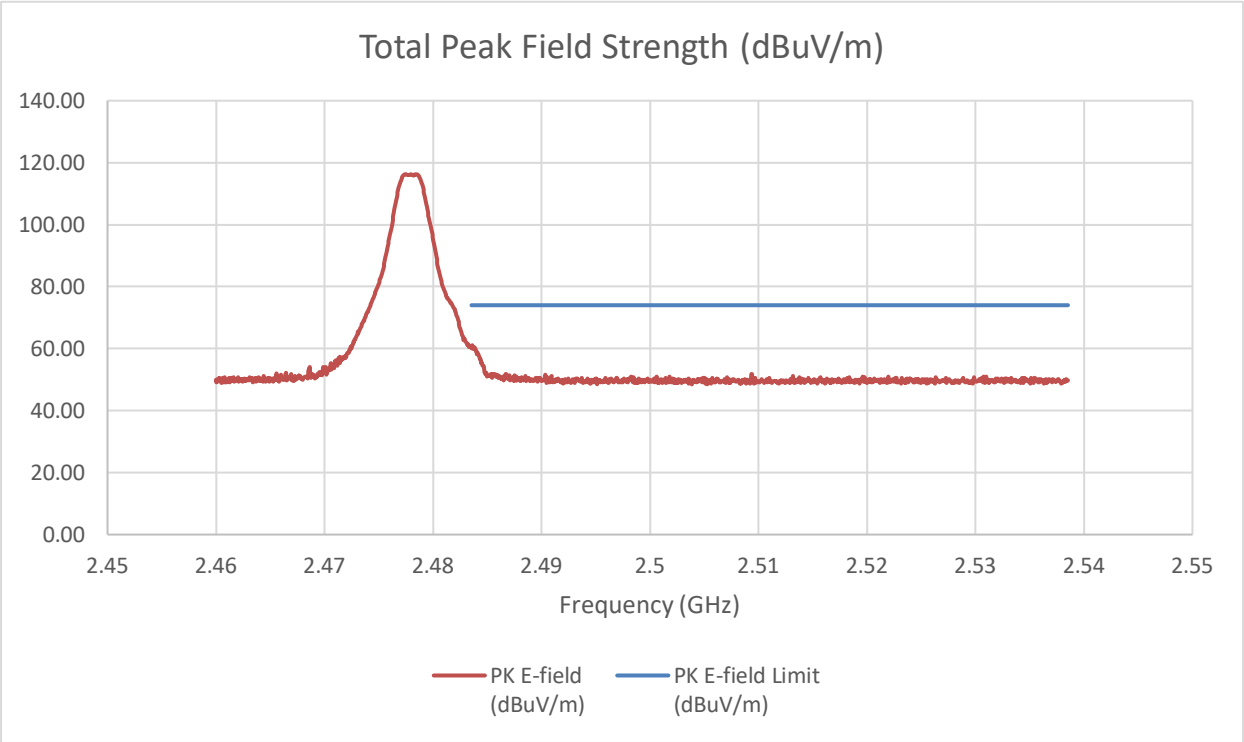
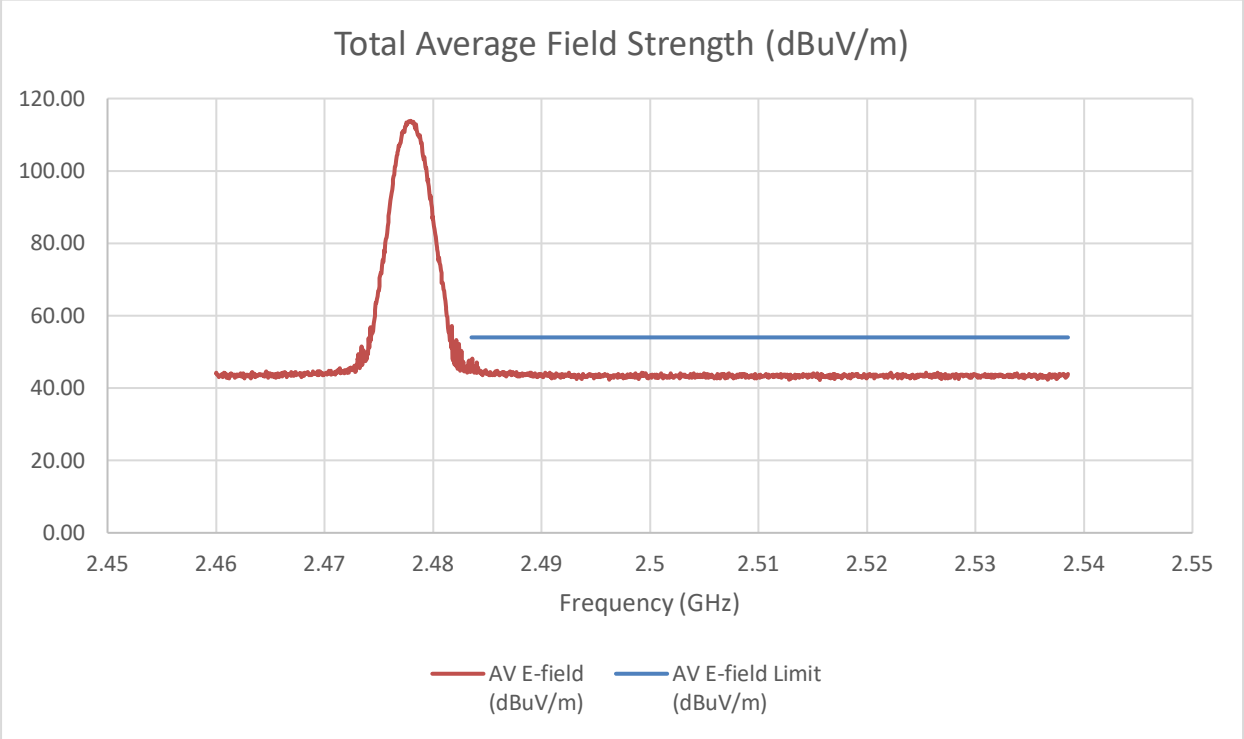
C1 Bandedge Data (Pk)



C1 Bandedge Data (Av)



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C1 Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.4835	-40.92	-34.82	60.44	74	-13.56

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.4835	-58.16	-47.19	48.07	54	-5.93

A duty cycle correction factor of 4.87 dB and a C0 gain of 6.1 dBi was used in the calculation of the data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 85502
Date: 2024-10-29

NOTE: BLE 2Mbps was tested in a SISO C0, C1 mode as well as at 2Tx MIMO power setting to show bandedge compliance in all transmit configurations.

NOTE 2: 2478 MHz was tested as the high channel for 2Mbps based on 2478 MHz being the highest supported channel for this data rate.

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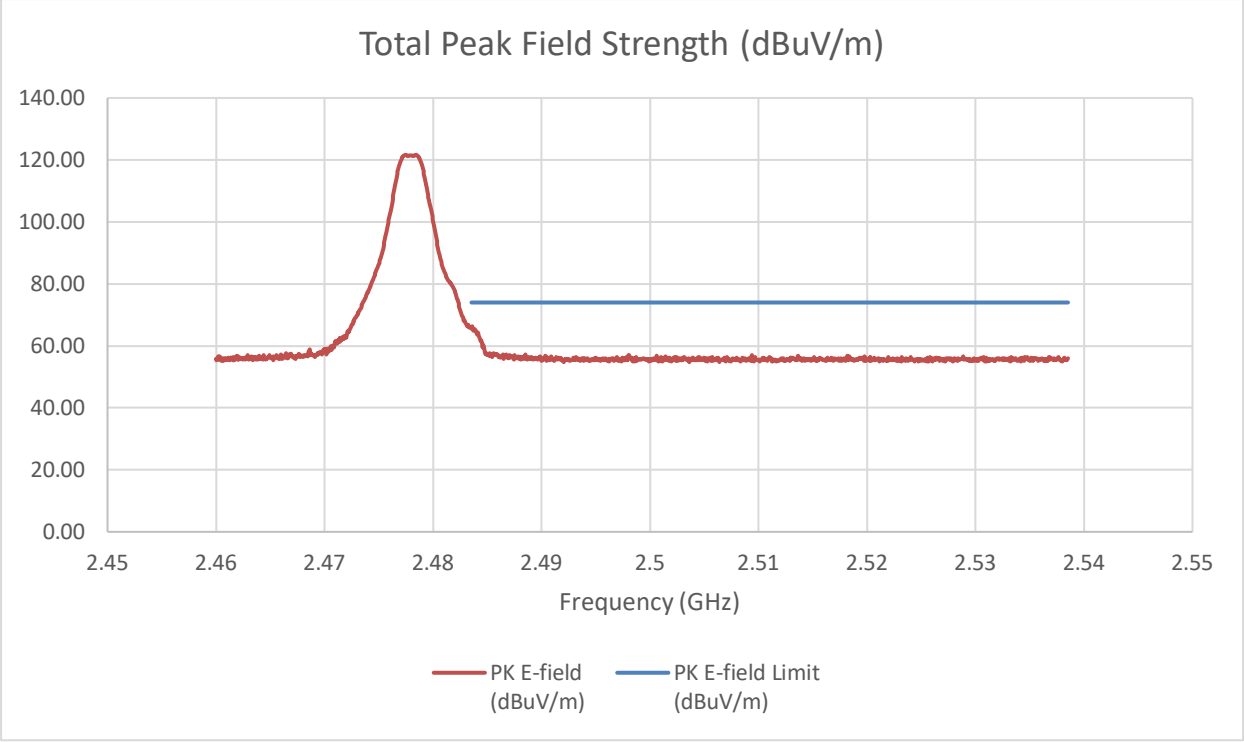
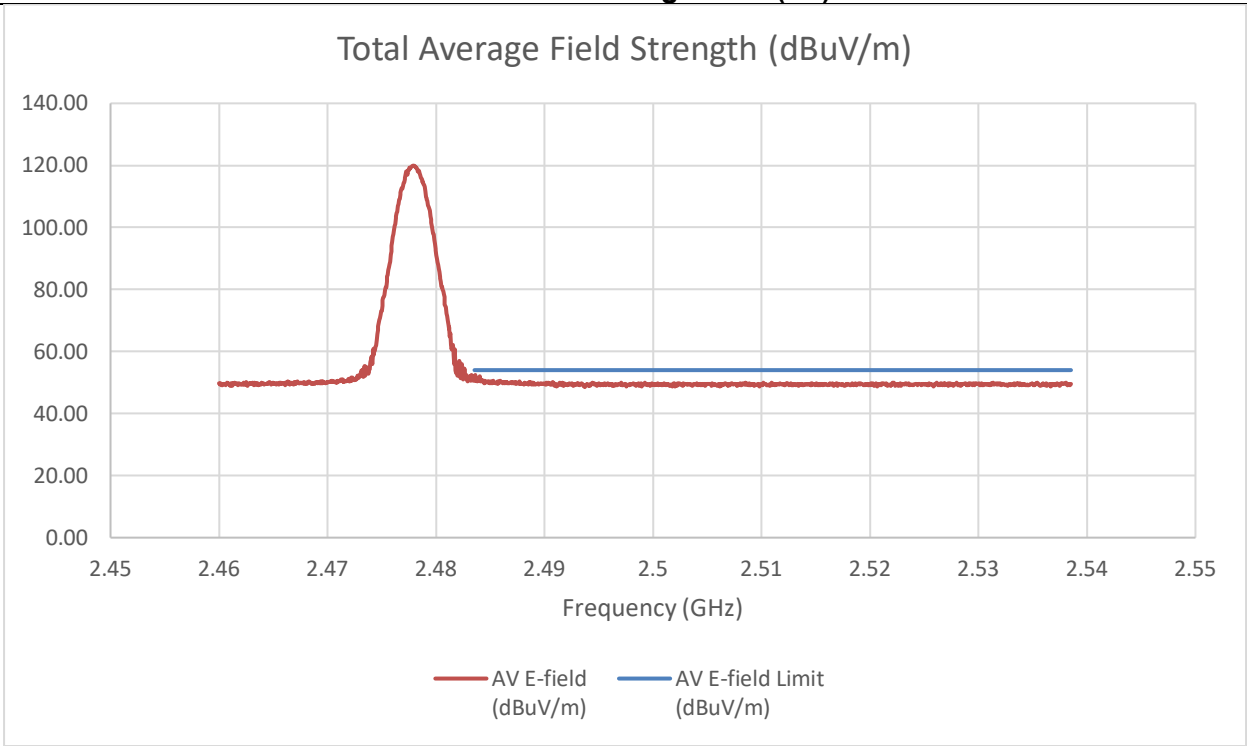
Summed Bandedge Data (Pk)



Summed Bandedge Data (Av)



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Summed Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	Meter PK Reading Chain 1 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.4835	-42	-40.92	-29.31	65.95	74	-8.05

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	Meter AV Reading Chain 1 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.483599	-62.42	-58.16	-42.80	52.46	54	-1.54

A duty cycle correction factor of 4.87 dB and an array gain of 9.11 dBi was used in the calculation of the summed data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 85502
Date: 2024-10-29

NOTE: BLE 2Mbps was tested in a SISO C0, C1 mode as well as at 2Tx MIMO power setting to show bandedge compliance in all transmit configurations.

NOTE 2: 2478 MHz was tested as the high channel for 2Mbps based on 2478 MHz being the highest supported channel for this data rate.

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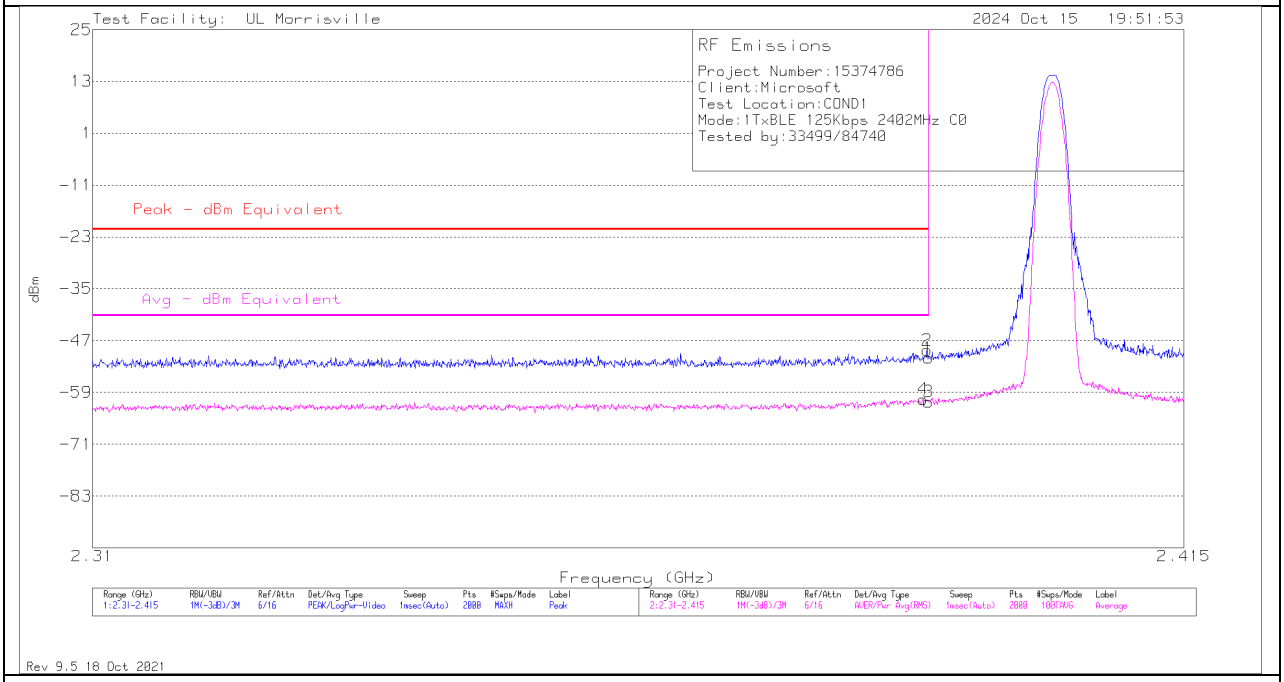
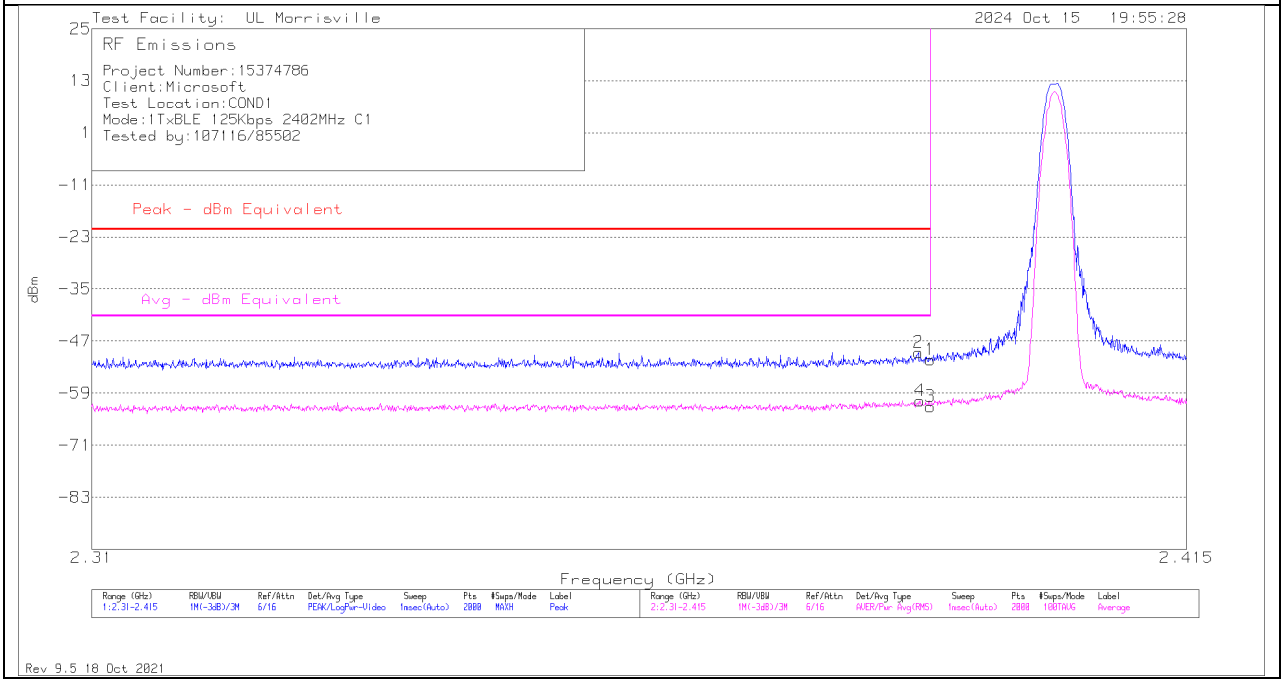
9.8.3. BLE (125Kbps)

BANDEDGE (LOW CHANNEL)

C0 MEASUREMENT



C1 MEASUREMENT



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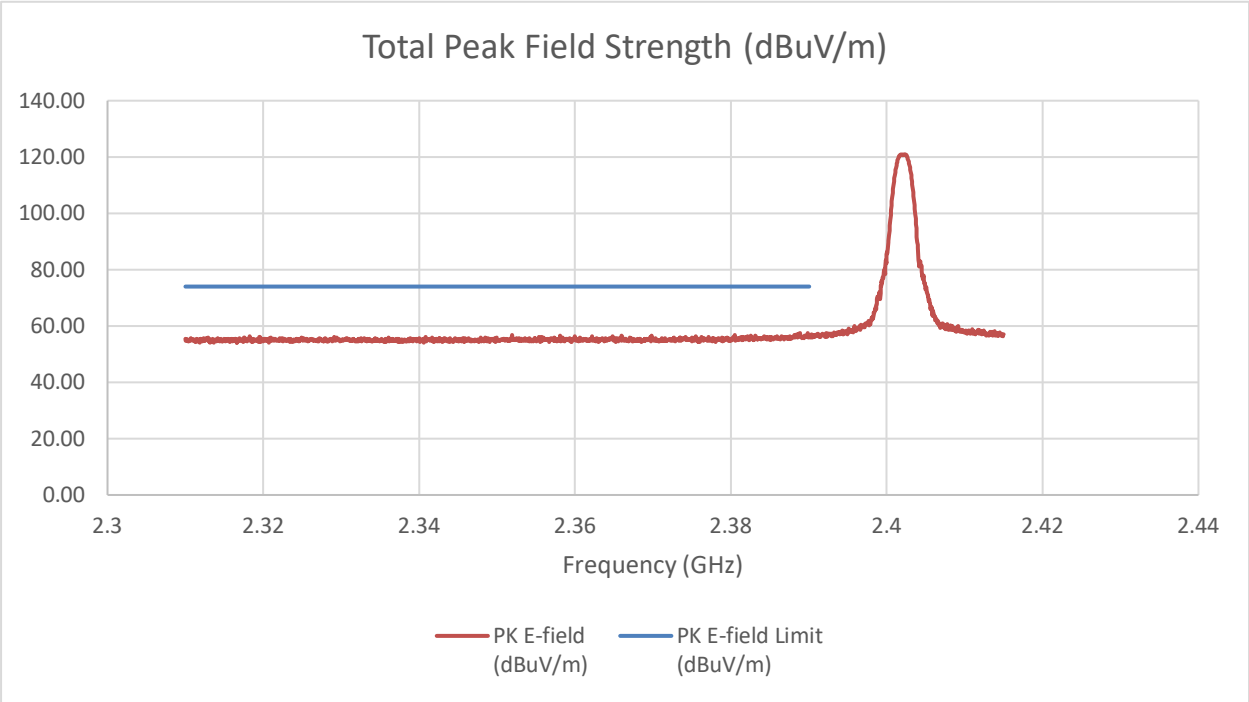
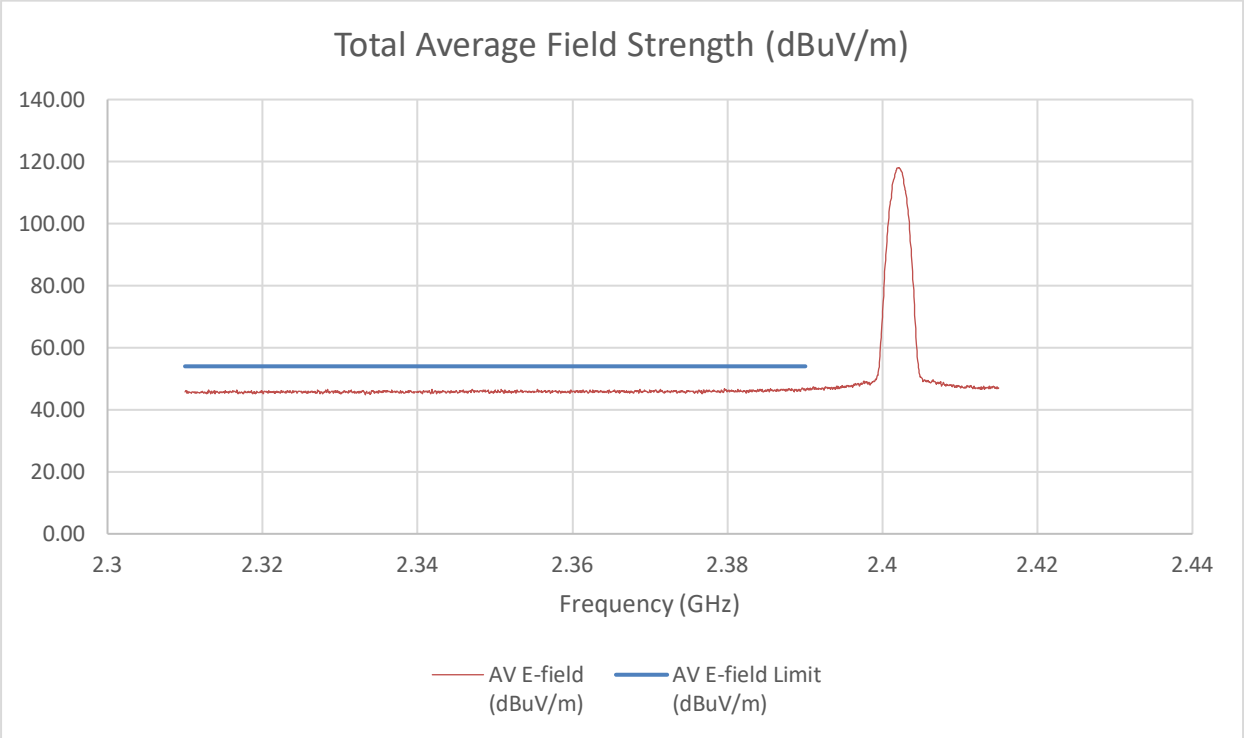
SUMMED BANDEDGE DATA (Pk)



SUMMED BANDEDGE DATA (Av)



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Summed Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	Meter PK Reading Chain 1 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.390	-50.78	-50.94	-38.74	56.52	74	-17.48

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	Meter AV Reading Chain 1 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.390	-61.47	-62.56	-49.04	46.22	54	-7.78

A duty cycle correction factor of 0.82 dB and an array gain of 9.11 dBi was used in the calculation of the summed data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 33499/84740
Date: 2024-10-15

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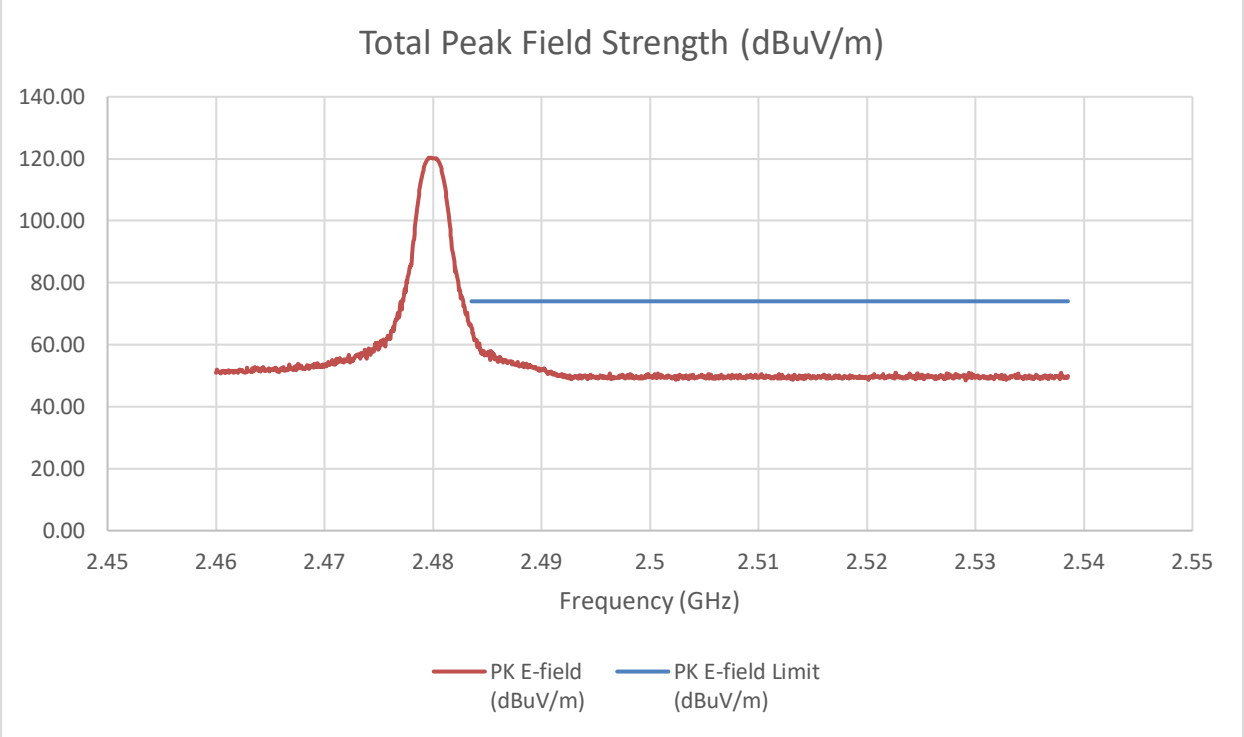
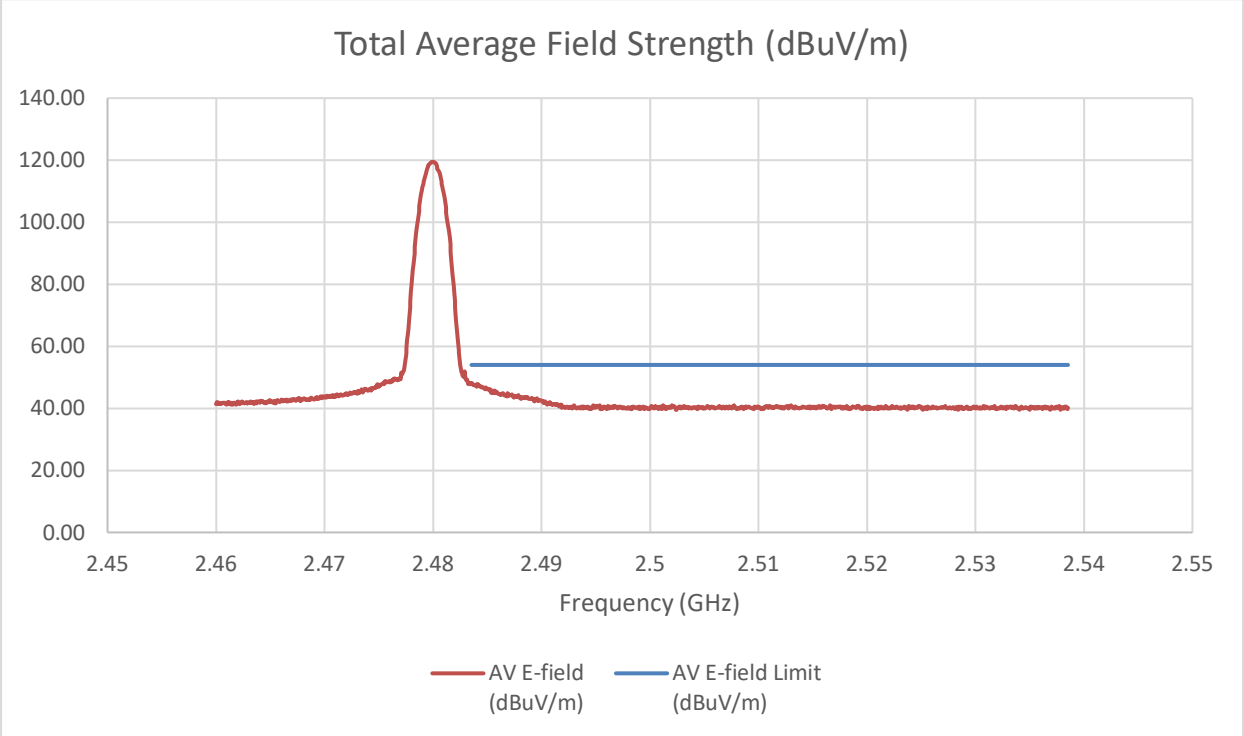
BANDEDGE (HIGH CHANNEL)

Summed Bandedge Data (Pk)



Summed Bandedge Data (Av)



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Summed Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	Meter PK Reading Chain 1 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.4835	-40.72	-41.61	-29.02	66.24	74	-7.76

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	Meter AV Reading Chain 1 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.483547	-61.05	-59.22	-47.10	48.16	54	-5.84

A duty cycle correction factor of 0.82 dB and an array gain of 9.11 dBi was used in the calculation of the summed data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 33499/84740
Date: 2024-10-15

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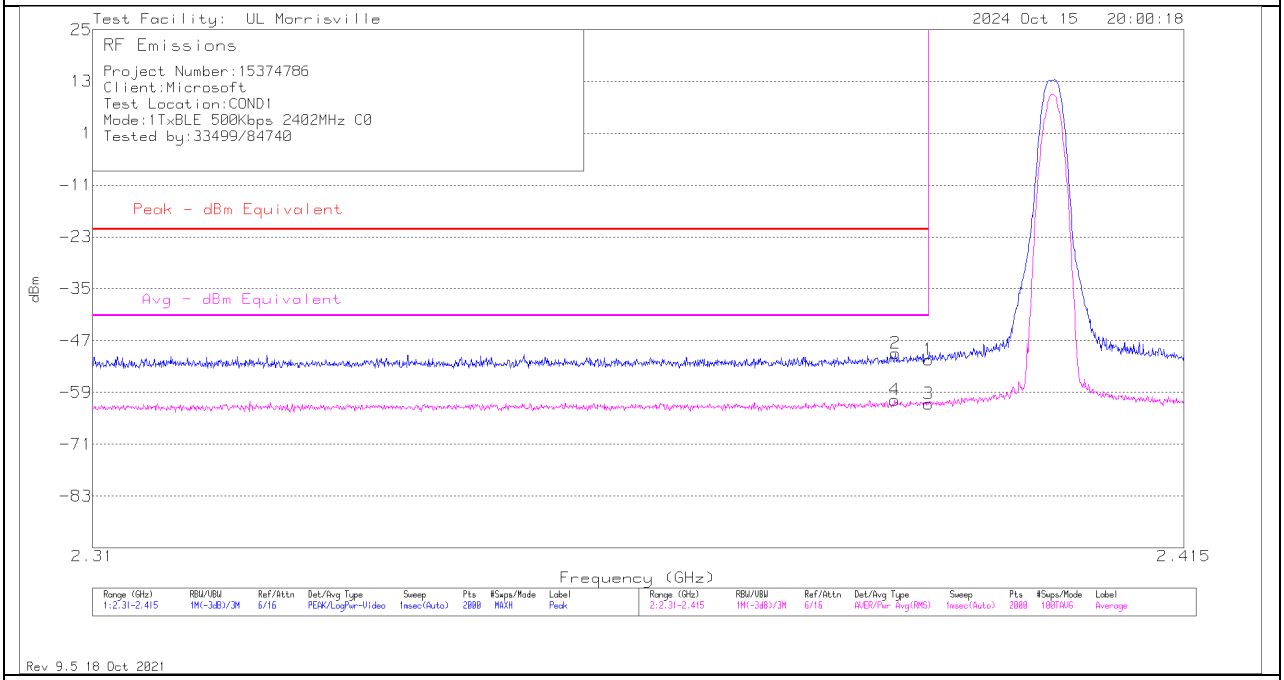
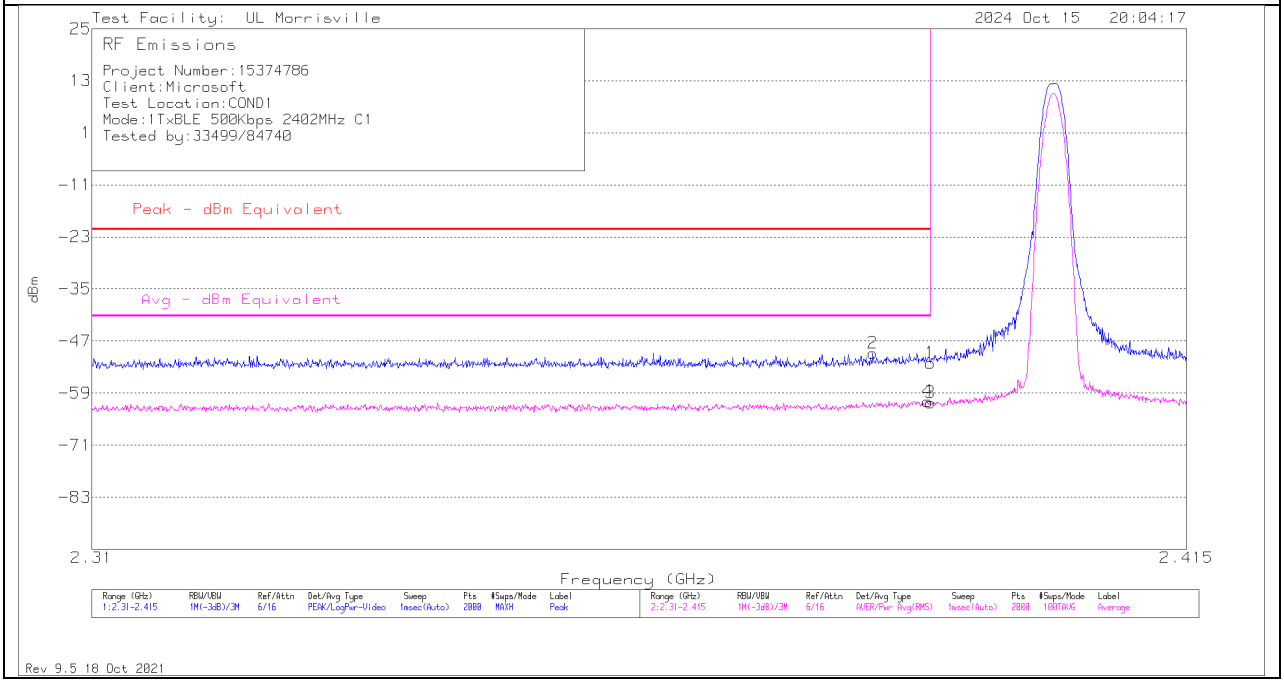
9.8.4. BLE (500Kbps)

BANDEDGE (LOW CHANNEL)

C0 MEASUREMENT



C1 MEASUREMENT



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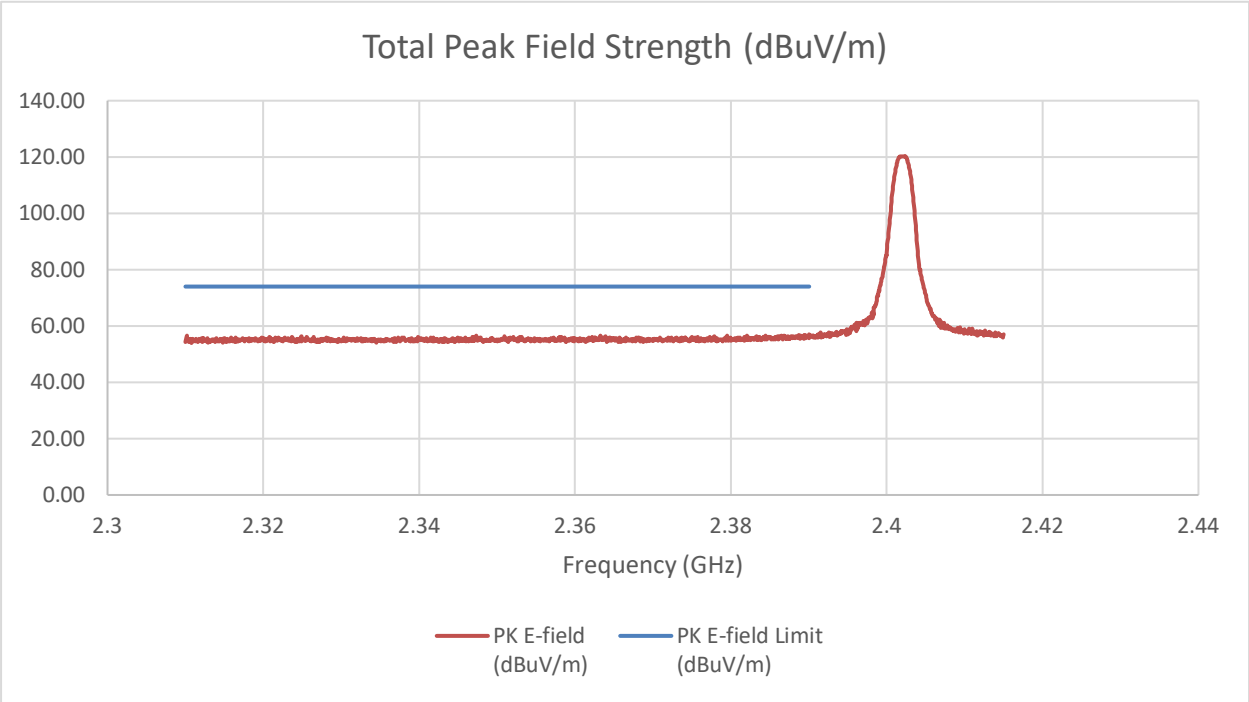
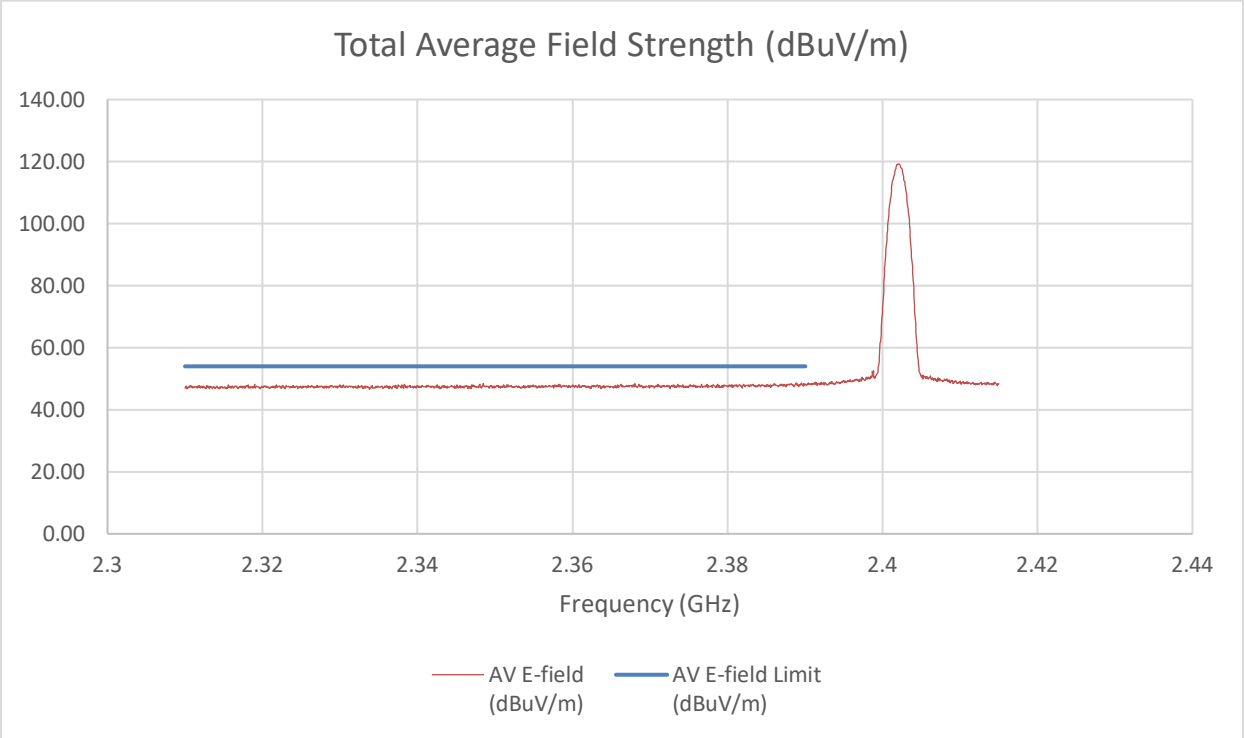
SUMMED BANDEDGE DATA (Pk)



SUMMED BANDEDGE DATA (Av)



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Summed Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	Meter PK Reading Chain 1 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.390	-49.64	-51.07	-38.18	57.08	74	-16.92

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	Meter AV Reading Chain 1 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.390	-61.15	-62.03	-47.00	48.26	54	-5.74

A duty cycle correction factor of 2.45 dB and an array gain of 9.11 dBi was used in the calculation of the summed data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 33499/84740
Date: 2024-10-15

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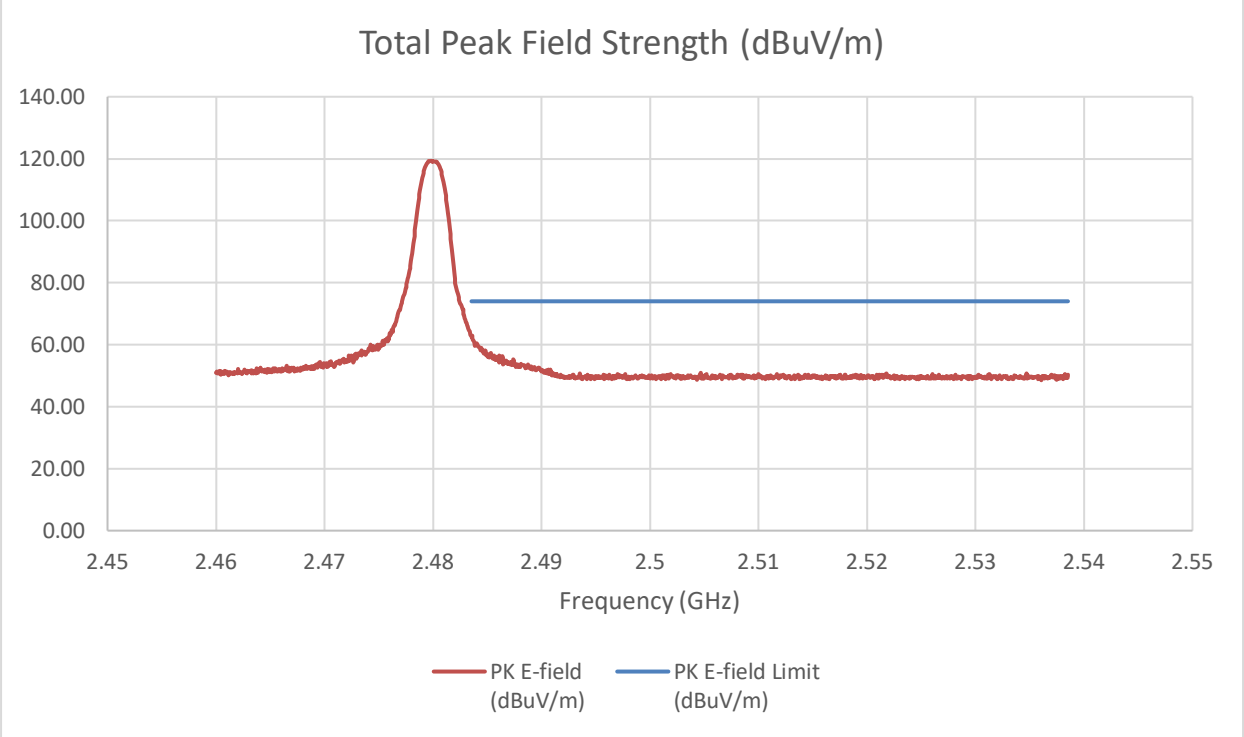
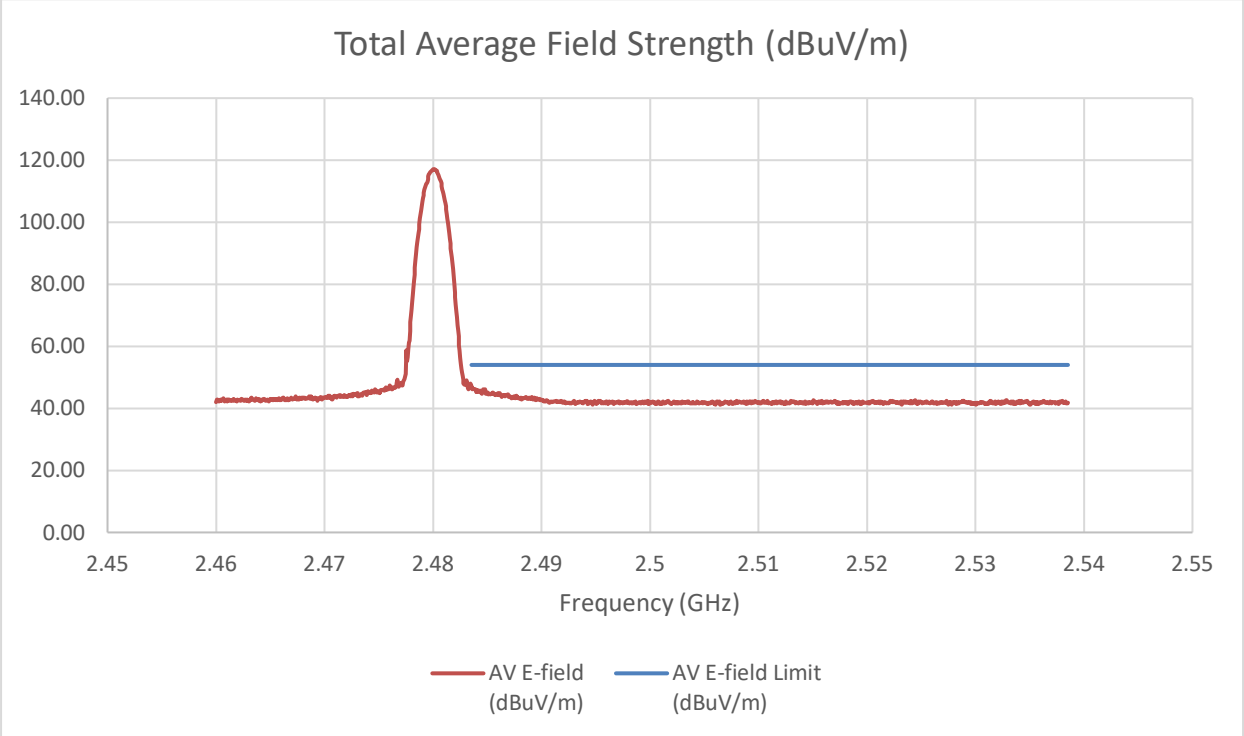
BANDEDGE (HIGH CHANNEL)

Summed Bandedge Data (Pk)



Summed Bandedge Data (Av)



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Summed Pk and Average Data at Restricted Band

Frequency (GHz)	Meter PK Reading Chain 0 (dBm)	Meter PK Reading Chain 1 (dBm)	PK EIRP (dBm)	PK E-field (dBuV/m)	PK E-field Limit (dBuV/m)	Margin (dB)
2.4835	-43.92	-45.22	-32.40	62.86	74	-11.14

Frequency (GHz)	Meter AV Reading Chain 0 (dBm)	Meter AV Reading Chain 1 (dBm)	AV EIRP (dBm)	AV E-field (dBuV/m)	AV E-field Limit (dBuV/m)	Margin (dB)
2.4835	-59.89	-67.52	-47.64	47.62	54	-6.38

A duty cycle correction factor of 2.45 dB and an array gain of 9.11 dBi was used in the calculation of the summed data.

Duty cycle correction factor only used in the average measurement calculations.

Tester ID: 33499/84740
Date: 2024-10-15

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10. UNWANTED EMISSIONS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

RSS-GEN, Section 8.9 and 8.10.

Frequency Range (kHz)	Field Strength Limit (uA/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	6.37/F(kHz) @ 300 m	-
0.490-1.705	63.7/F(kHz) @ 30 m	-
1.705 - 30	0.08 @ 30m	-
Frequency Range (MHz)	**Field Strength Limit (uV/m) at 3 m**	**Field Strength Limit (dBuV/m) at 3 m**
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

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

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

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

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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.

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 average output power for MIMO and highest power spectral density for SISO 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.

Restricted Bandedge testing was performed conducted and can be found in section 9.8.

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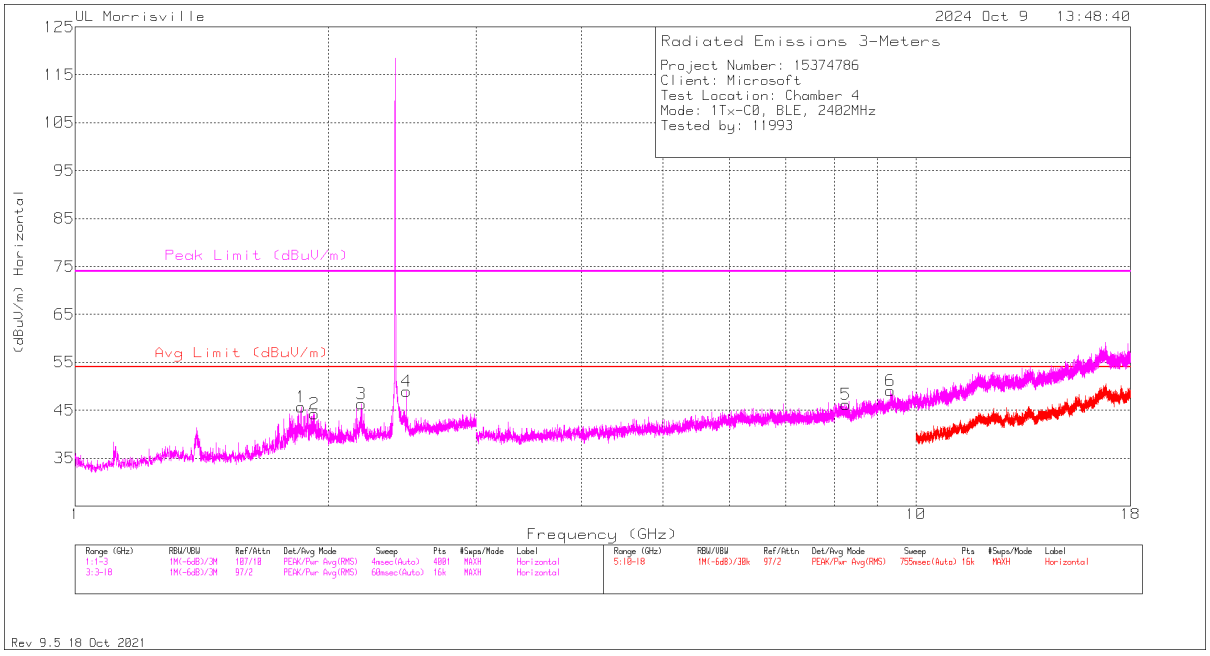
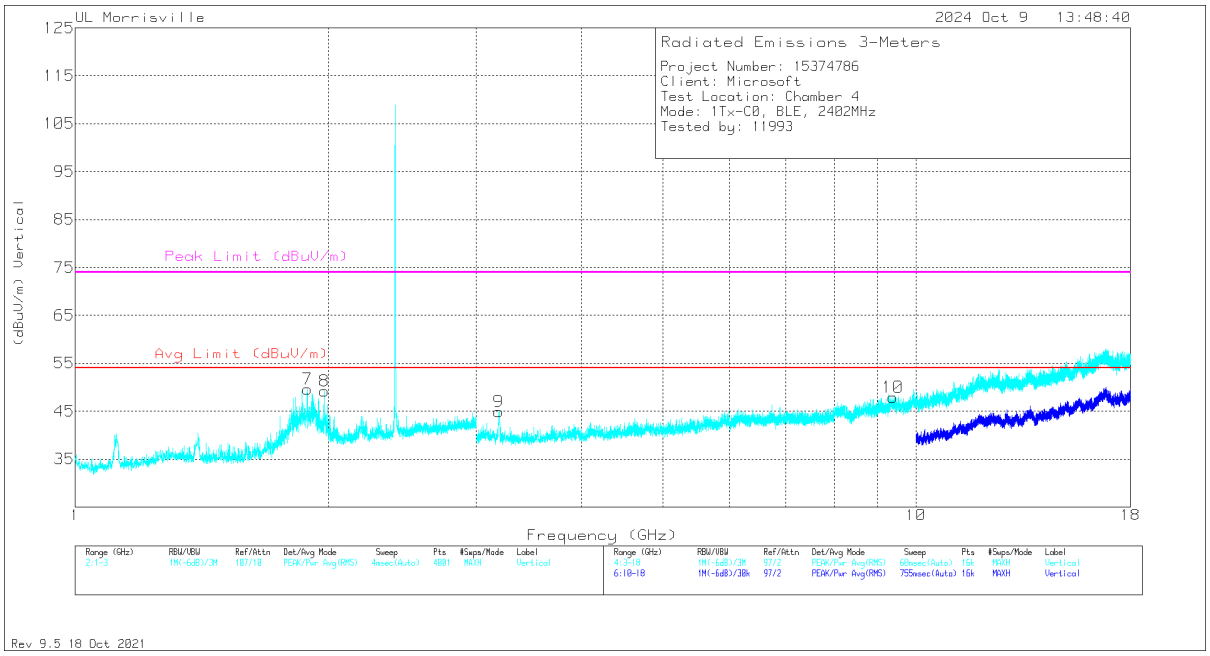
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. BLE (1Mbps)

HARMONICS AND SPURIOUS EMISSIONS (Chain 0)
LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	** 1.856	38.96	Pk	30.6	-23.9	0	45.66	54	-8.34	74	-28.34	0-360	100	H
2	** 1.9255	37.05	Pk	30.7	-23.5	0	44.25	54	-9.75	74	-29.75	0-360	100	H
7	** 1.88933	47.42	PK2	30.7	-23.6	0	54.52	-	-	74	-19.48	229	329	V
	** 1.88679	23.77	ADV	30.7	-23.6	4.11	34.98	54	-19.02	-	-	229	329	V
8	** 1.98078	44.21	PK2	30.9	-23.4	0	51.71	-	-	74	-22.29	227	155	V
	** 1.97912	23.05	ADV	30.9	-23.4	4.11	34.66	54	-19.34	-	-	227	155	V
5	* ** 8.26219	36.77	Pk	35.8	-26.4	0	46.17	54	-7.83	74	-27.83	0-360	100	H
6	* ** 9.3238	37.09	PK2	36.4	-24.4	0	49.09	-	-	74	-24.91	7	261	H
	* ** 9.32313	24.76	ADV	36.4	-24.4	4.11	40.87	54	-13.13	-	-	7	261	H
10	* ** 9.39375	36.01	Pk	36.6	-24.7	0	47.91	54	-6.09	74	-26.09	0-360	200	V
3	2.1895	37.97	Pk	31.6	-23.2	0	46.37	-	-	-	-	0-360	100	H
4	2.479	39.43	Pk	32.3	-22.8	0	48.93	-	-	-	-	0-360	100	H
9	3.18938	46.24	Pk	32.8	-34.1	0	44.94	-	-	-	-	0-360	200	V

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

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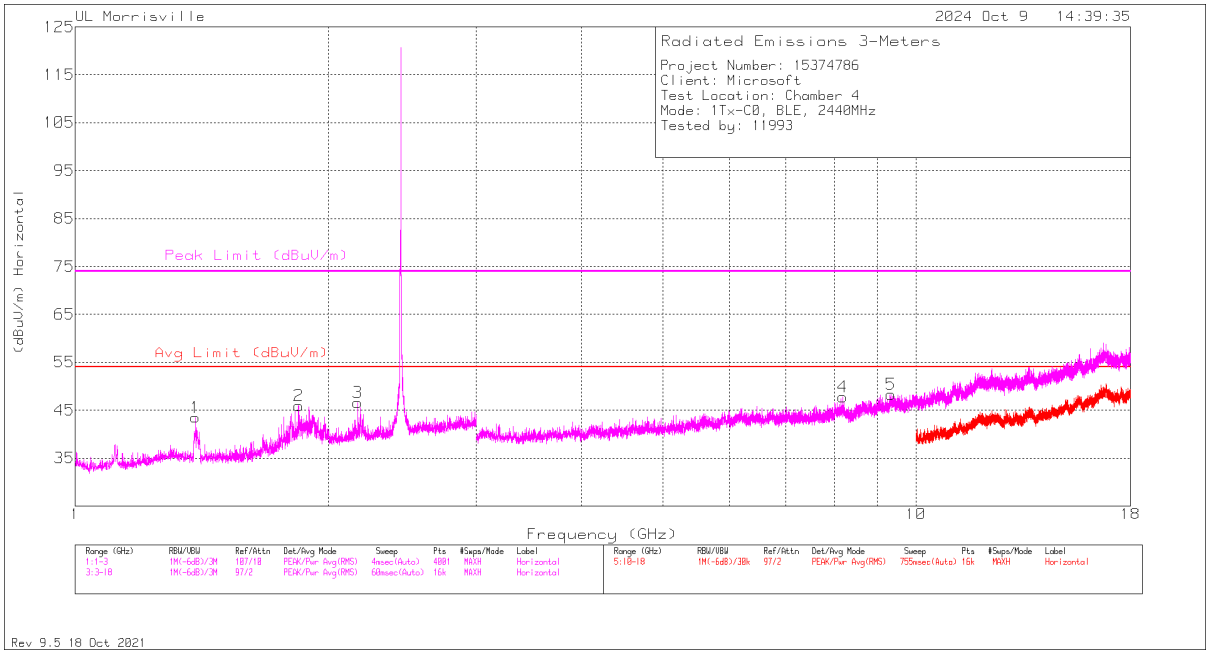
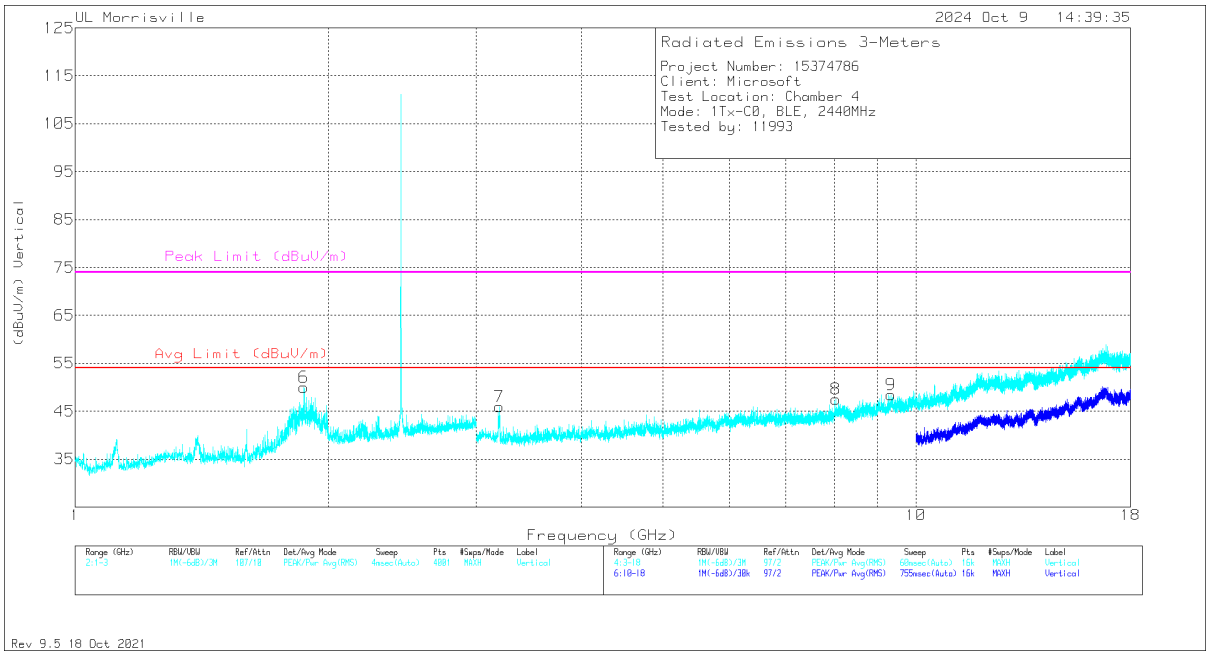
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	* ** 1.3905	40.01	Pk	28.2	-24.7	0	43.51	54	-10.49	74	-30.49	0-360	100	H
2	** 1.8435	39.39	Pk	30.4	-23.8	0	45.99	54	-8.01	74	-28.01	0-360	100	H
3	** 2.168	38.41	Pk	31.6	-23.4	0	46.61	54	-7.39	74	-27.39	0-360	100	H
6	** 1.87082	46.17	PK2	30.7	-23.8	0	53.07	-	-	74	-20.93	225	176	V
	** 1.87163	24.21	ADV	30.7	-23.8	4.11	35.22	54	-18.78	-	-	225	176	V
4	* ** 8.17969	38.3	Pk	35.8	-26.3	0	47.8	54	-6.2	74	-26.2	0-360	100	H
5	* ** 9.3347	36.61	PK2	36.5	-24.2	0	48.91	-	-	74	-25.09	115	230	H
	* ** 9.33745	24.5	ADV	36.5	-24.2	4.11	40.91	54	-13.09	-	-	115	230	H
8	* ** 8.02688	38.83	Pk	35.8	-27.1	0	47.53	54	-6.47	74	-26.47	0-360	200	V
9	* ** 9.342	37	PK2	36.5	-24.2	0	49.3	-	-	74	-24.7	302	343	V
	* ** 9.34056	24.57	ADV	36.5	-24.2	4.11	40.98	54	-13.02	-	-	302	343	V
7	3.19594	47.25	Pk	32.8	-34.1	0	45.95	-	-	-	-	0-360	200	V

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

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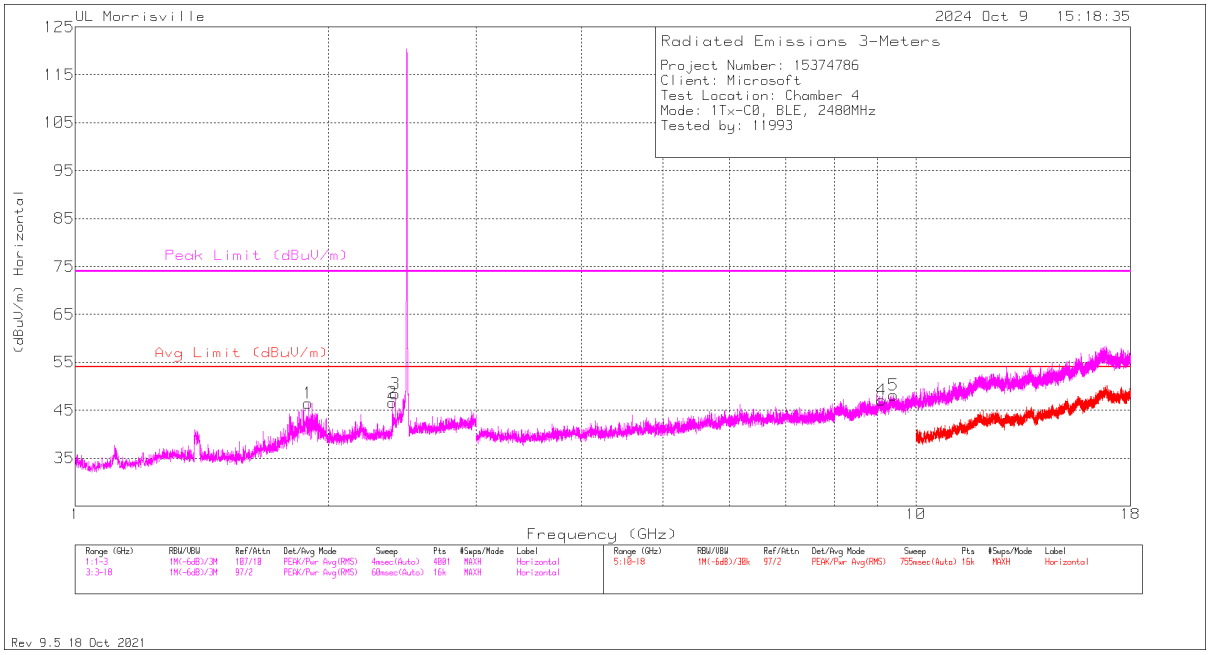
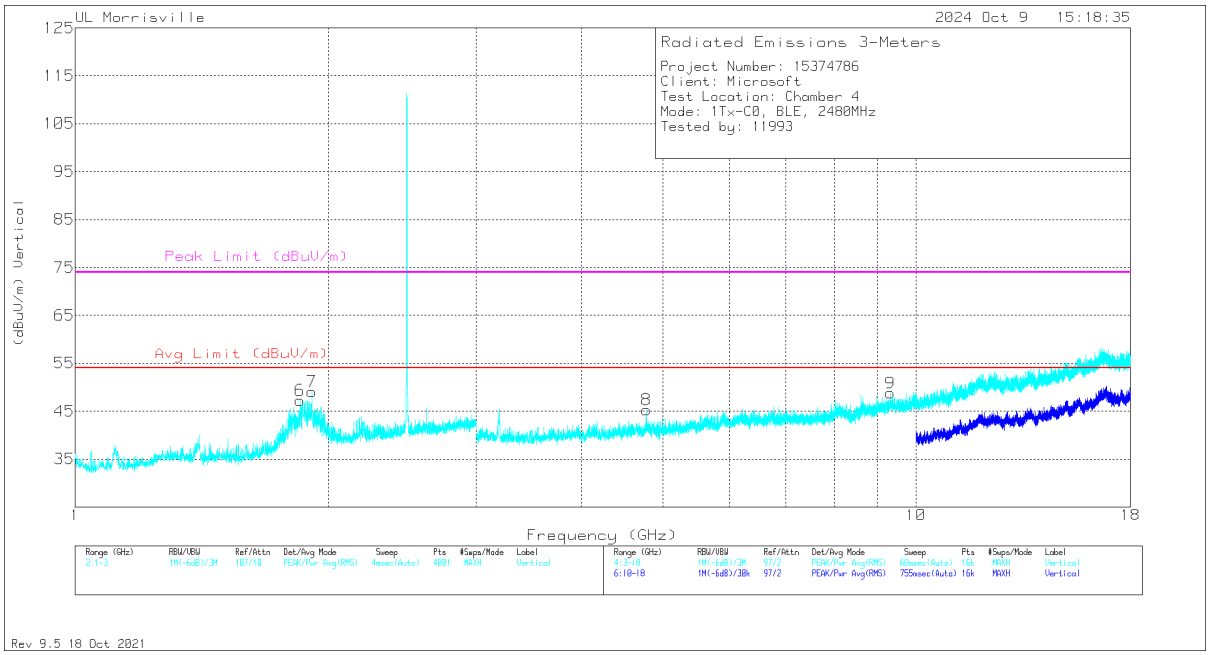
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	** 1.894	39.47	Pk	30.7	-23.7	-	46.47	54	-7.53	74	-27.53	0-360	100	H
2	* ** 2.3845	37.76	Pk	32	-23.2	-	46.56	54	-7.44	74	-27.44	0-360	100	H
6	** 1.8515	40.63	Pk	30.5	-23.9	-	47.23	54	-6.77	74	-26.77	0-360	200	V
7	** 1.91293	48.29	PK2	30.7	-23.6	-	55.39	-	-	74	-18.61	343	348	V
	** 1.9137	24.6	ADV	30.7	-23.6	4.11	35.81	54	-18.19	-	-	343	348	V
4	* ** 9.10969	35.37	Pk	36.3	-24.5	-	47.17	54	-6.83	74	-26.83	0-360	100	H
5	* ** 9.39956	37.69	PK2	36.6	-25	-	49.29	-	-	74	-24.71	6	152	H
	* ** 9.39982	24.75	ADV	36.6	-25	4.11	40.46	54	-13.54	-	-	6	152	H
8	* ** 4.78031	42.34	Pk	34.1	-31.2	-	45.24	54	-8.76	74	-28.76	0-360	200	V
9	* ** 9.32403	36.78	PK2	36.4	-24.4	-	48.78	-	-	74	-25.22	232	231	V
	* ** 9.32424	24.78	ADV	36.4	-24.4	4.11	40.89	54	-13.11	-	-	232	231	V
3	2.4035	39.5	Pk	31.9	-23	-	48.4	-	-	-	-	0-360	100	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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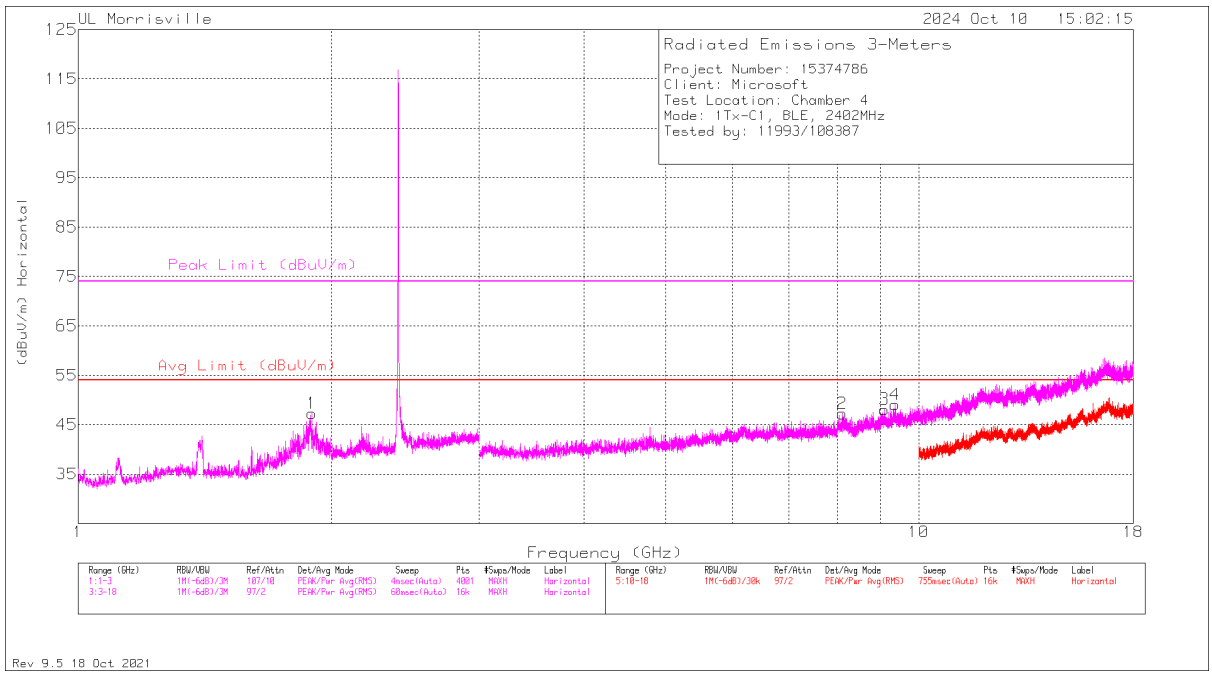
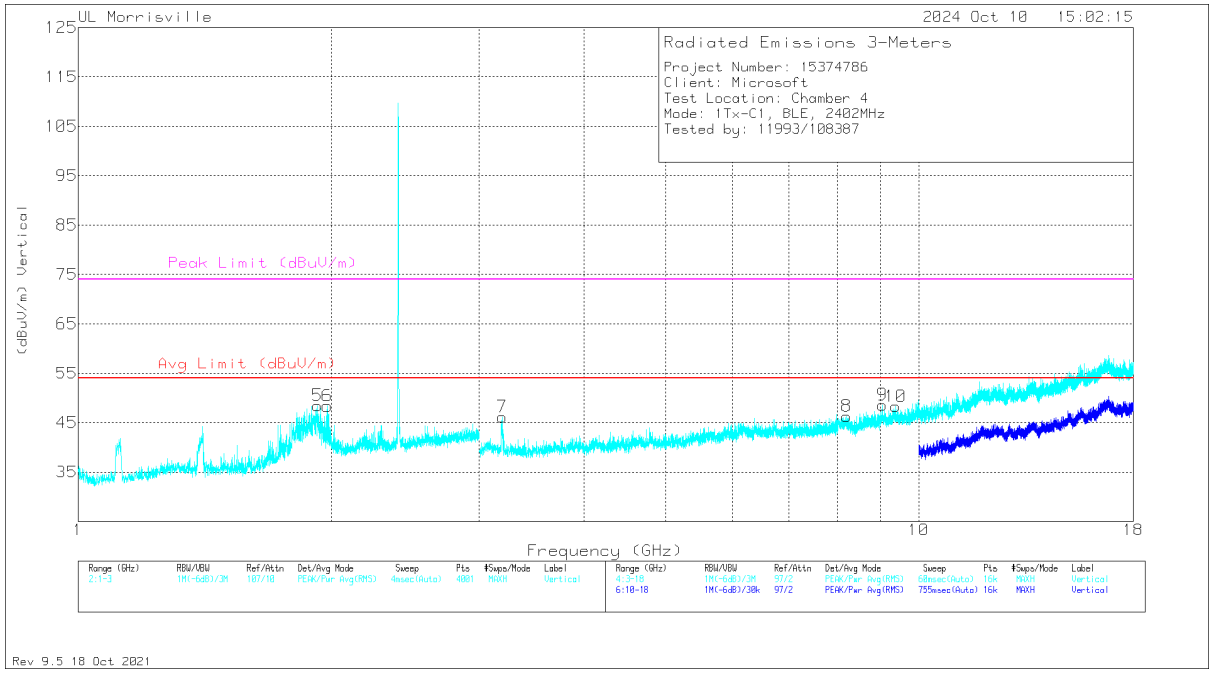
10.2.2. BLE (2Mbps)

HARMONICS AND SPURIOUS EMISSIONS (Chain 1)

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	** 1.8975	40.16	Pk	30.8	-23.7	0	47.26	54	-6.74	74	-26.74	0-360	100	H
5	** 1.92643	47.97	PK2	30.7	-23.5	0	55.17	-	-	74	-18.83	338	351	V
	** 1.92487	24.13	ADV	30.6	-23.5	9.74	40.97	54	-13.03	-	-	338	351	V
6	** 1.97771	43.78	PK2	30.9	-23.4	0	51.28	-	-	74	-22.72	327	369	V
	** 1.97743	22.79	ADV	30.9	-23.4	9.74	40.03	54	-13.97	-	-	327	369	V
2	* ** 8.10656	38.45	Pk	35.8	-27	0	47.25	54	-6.75	74	-26.75	0-360	100	H
3	* ** 9.10398	36.75	PK2	36.3	-24.5	0	48.55	-	-	74	-25.45	124	247	H
	* ** 9.10547	23.97	ADV	36.3	-24.5	9.74	45.51	54	-8.49	-	-	124	247	H
4	* ** 9.37296	36.58	PK2	36.5	-24.7	0	48.38	-	-	74	-25.62	140	248	H
	* ** 9.37538	24.2	ADV	36.6	-24.8	9.74	45.74	54	-8.26	-	-	140	248	H
8	* ** 8.21156	36.81	Pk	35.8	-26.3	0	46.31	54	-7.69	74	-27.69	0-360	200	V
9	* ** 9.05916	36.18	PK2	36.2	-24.3	0	48.08	-	-	74	-25.92	19	155	V
	* ** 9.05992	23.57	ADV	36.2	-24.3	9.74	45.21	54	-8.79	-	-	19	155	V
10	* ** 9.39048	37.09	PK2	36.6	-24.8	0	48.89	-	-	74	-25.11	305	180	V
	* ** 9.39028	24.42	ADV	36.6	-24.8	9.74	45.96	54	-8.04	-	-	305	180	V
7	3.19406	47.46	Pk	32.8	-34.1	0	46.16	54	-7.84	74	-27.84	0-360	200	V

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

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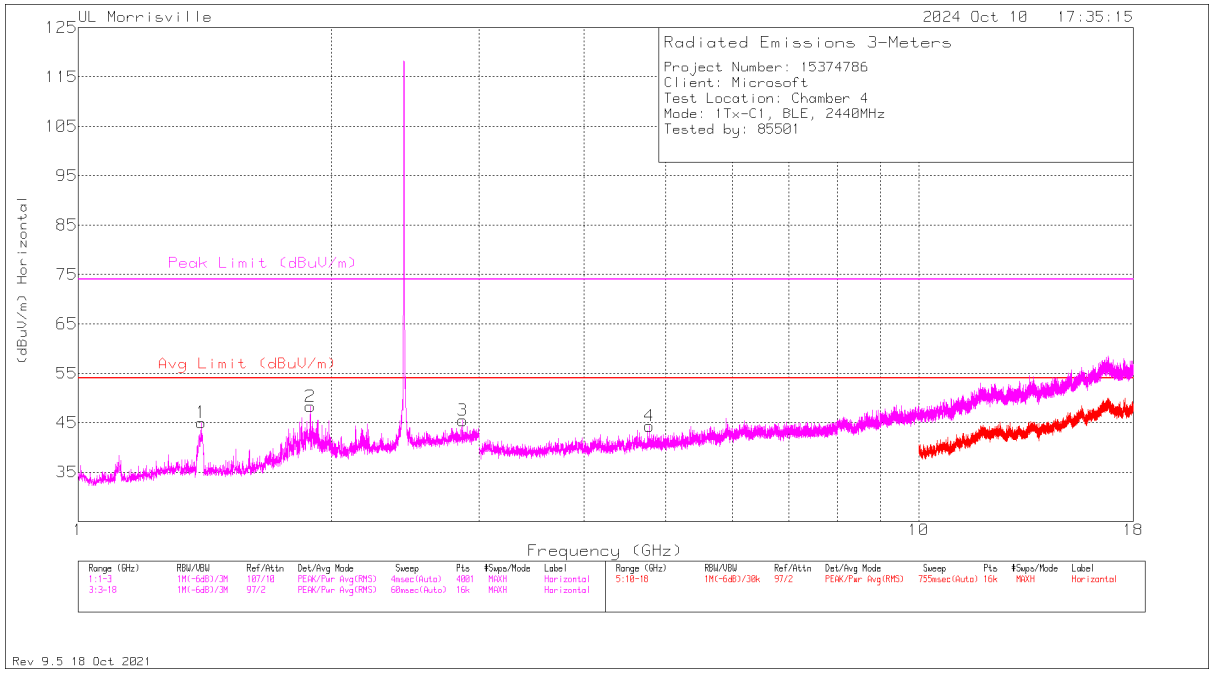
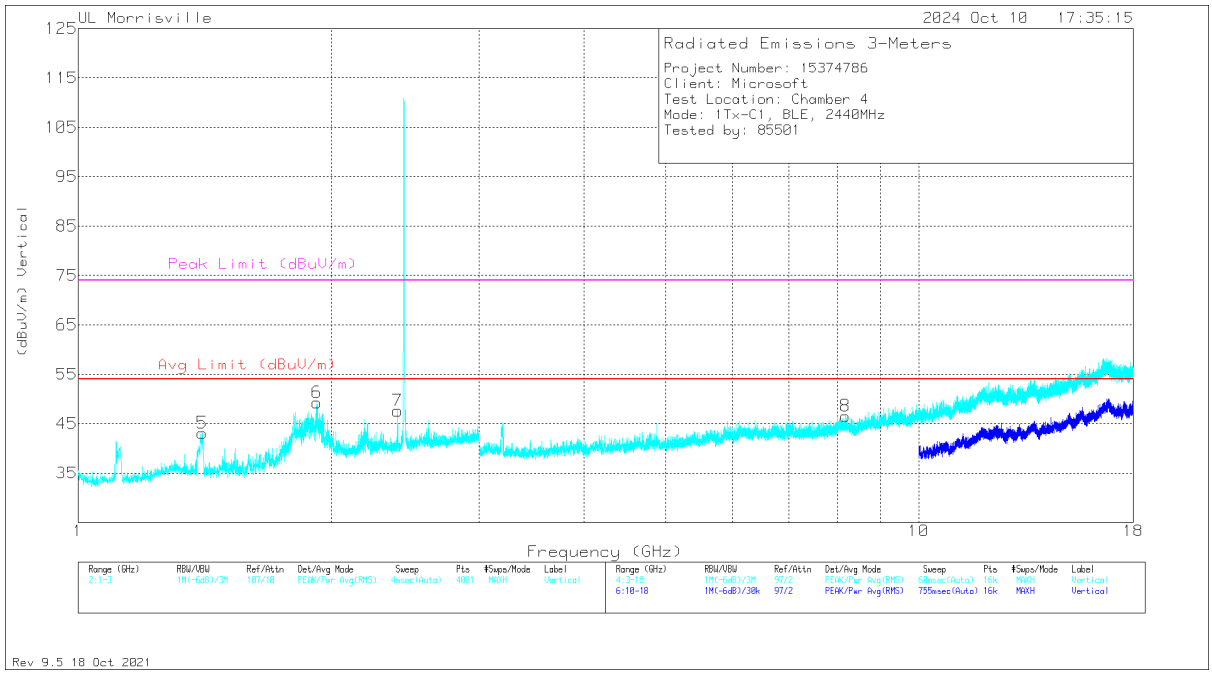
MID CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	* ** 1.401	41.53	Pk	28.2	-24.7	0	45.03	54	-8.97	74	-28.97	0-360	100	H
2	** 1.88878	45.6	PK2	30.7	-23.6	0	52.7	-	-	74	-21.3	189	226	H
	** 1.8878	22.67	ADV	30.7	-23.6	9.74	39.51	54	-14.49	-	-	189	226	H
3	* ** 2.8675	34.95	Pk	32.4	-21.9	0	45.45	54	-8.55	74	-28.55	0-360	100	H
5	* ** 1.4045	39.6	Pk	28.2	-24.7	0	43.1	54	-10.9	74	-30.9	0-360	200	V
6	** 1.92192	48.17	PK2	30.6	-23.5	0	55.27	-	-	74	-18.73	316	332	V
	** 1.92328	24.81	ADV	30.6	-23.5	9.74	41.65	54	-12.35	-	-	316	332	V
4	* ** 4.78125	41.42	Pk	34.1	-31.2	0	44.32	54	-9.68	74	-29.68	0-360	100	H
8	* ** 8.17594	37.14	Pk	35.8	-26.4	0	46.54	54	-7.46	74	-27.46	0-360	200	V
7	2.399	38.62	Pk	31.9	-22.9	0	47.62	-	-	-	-	0-360	200	V

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

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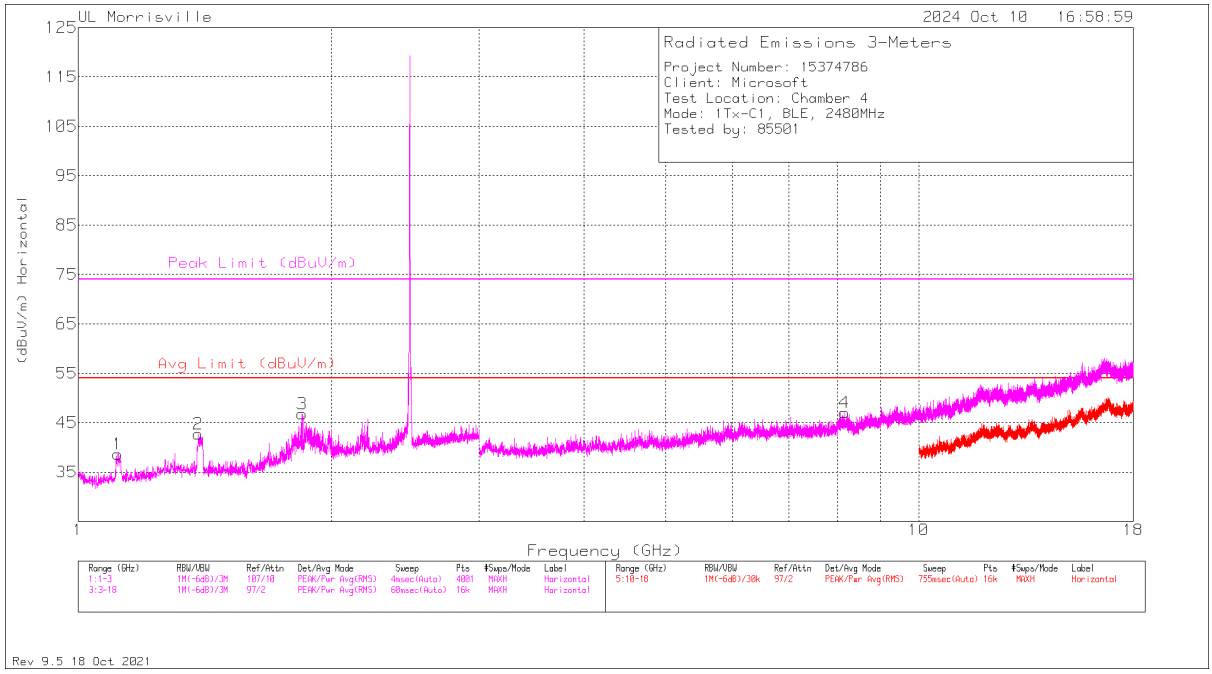
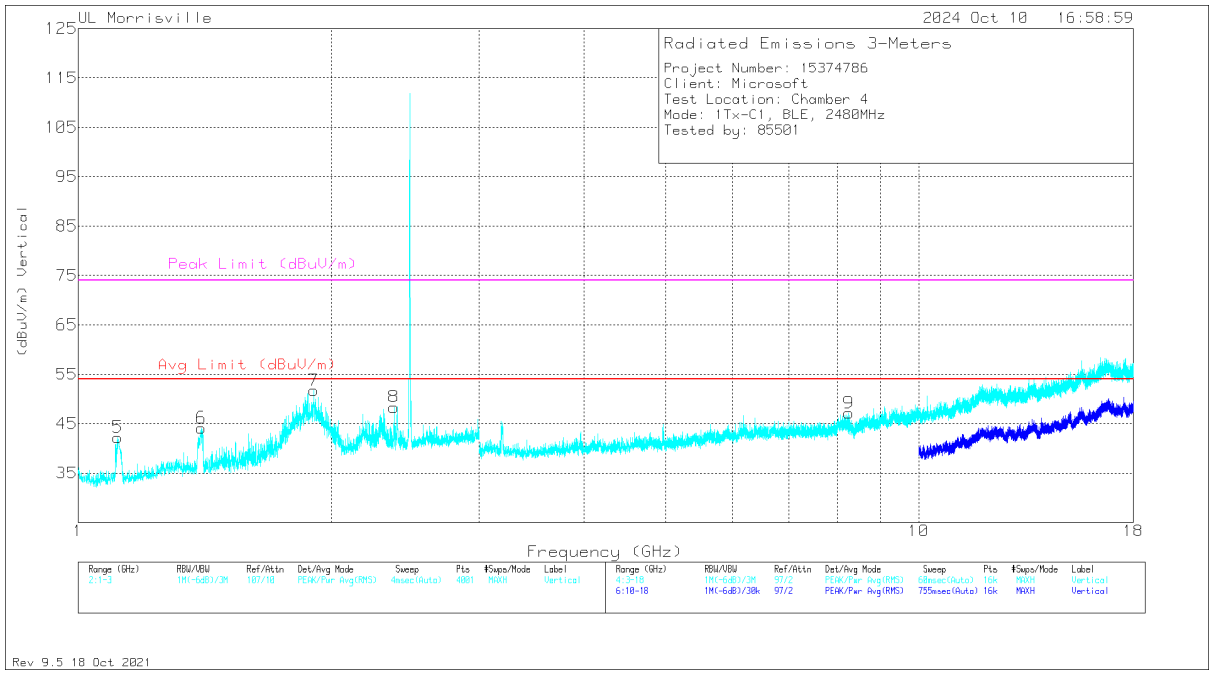
HIGH CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	* ** 1.114	36.2	Pk	27.5	-25.1	0	38.6	54	-15.4	74	-35.4	0-360	100	H
2	* ** 1.3895	39.18	Pk	28.2	-24.7	0	42.68	54	-11.32	74	-31.32	0-360	100	H
3	** 1.847	40.16	Pk	30.5	-23.9	0	46.76	54	-7.24	74	-27.24	0-360	100	H
5	* ** 1.11375	39.83	Pk	27.5	-25.1	0	42.23	54	-11.77	74	-31.77	0-360	200	V
6	* ** 1.401	40.61	Pk	28.2	-24.7	0	44.11	54	-9.89	74	-29.89	0-360	200	V
7	** 1.90594	48.4	PK2	30.7	-23.7	0	55.4	-	-	74	-18.6	319	358	V
	** 1.90649	23.74	ADV	30.7	-23.7	9.74	40.48	54	-13.52	-	-	319	358	V
8	* ** 2.37565	37.49	PK2	32	-22.9	0	46.59	-	-	74	-27.41	212	282	V
	* ** 2.37524	21.71	ADV	32	-22.9	9.74	40.55	54	-13.45	-	-	212	282	V
4	* ** 8.16	37.8	Pk	35.8	-26.6	0	47	54	-7	74	-27	0-360	100	H
9	* ** 8.2575	37.75	Pk	35.8	-26.4	0	47.15	54	-6.85	74	-26.85	0-360	200	V

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

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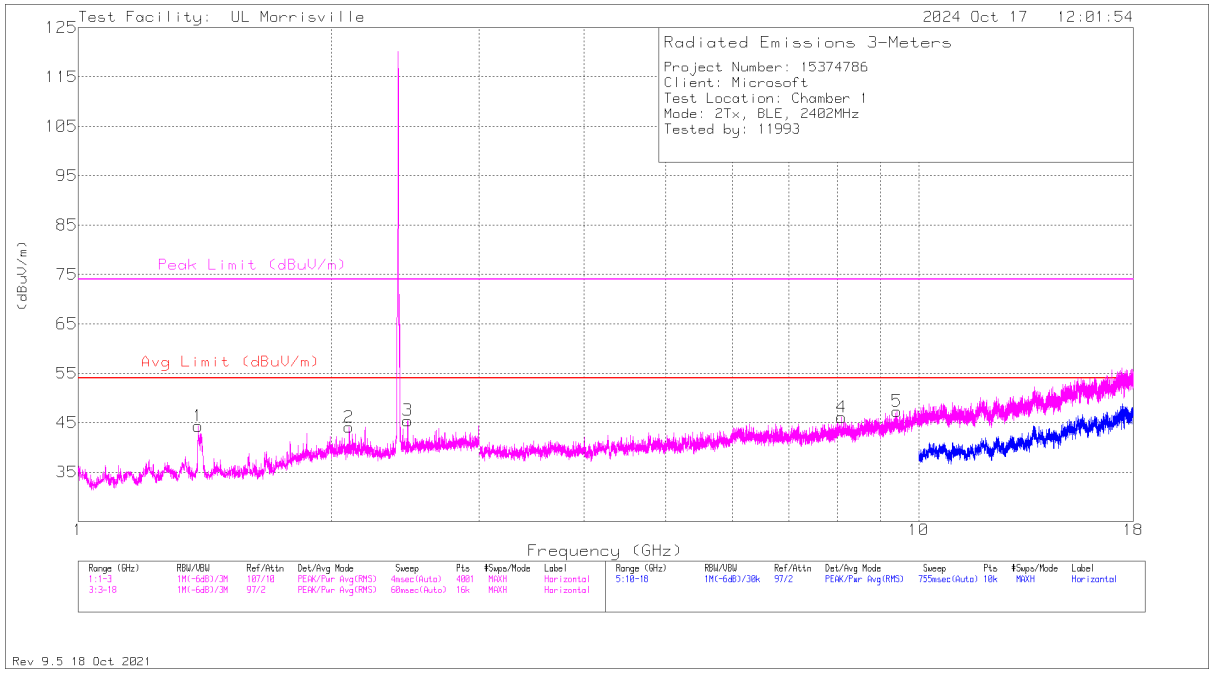
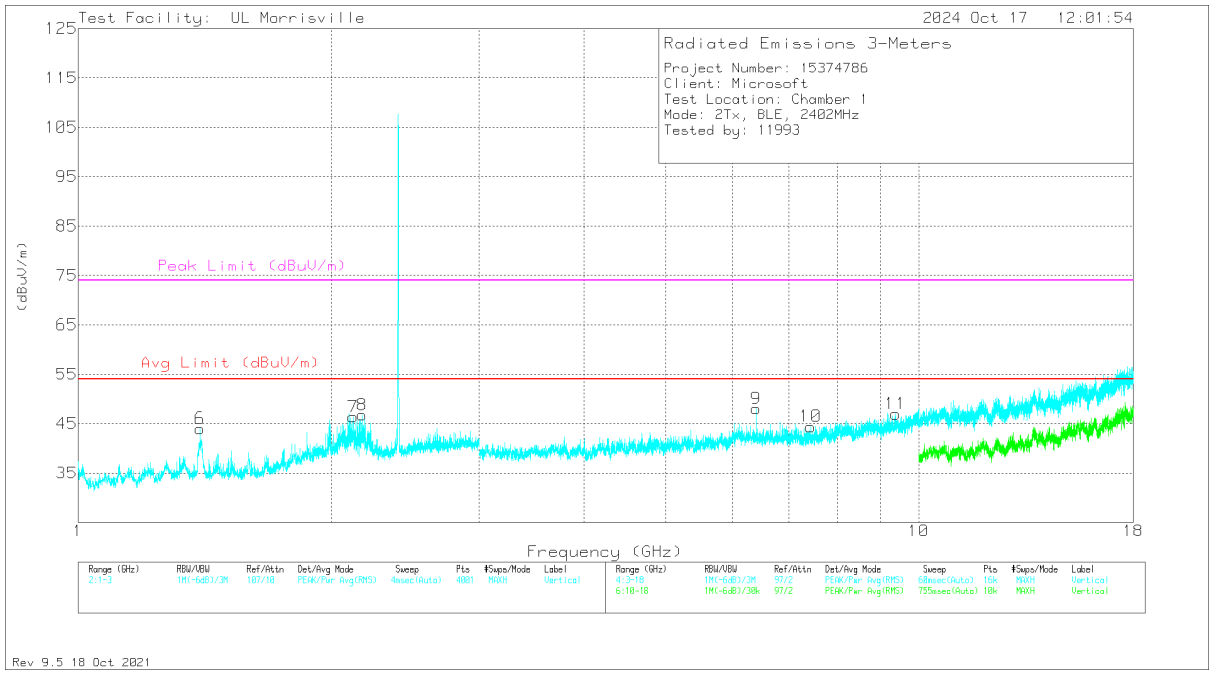
HARMONICS AND SPURIOUS EMISSIONS (MIMO)

LOW CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (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	* ** 1.3895	40.52	Pk	28.8	-25	44.32	54	-9.68	74	-29.68	0-360	101	H
6	* ** 1.396	40.18	Pk	28.7	-24.9	43.98	54	-10.02	74	-30.02	0-360	200	V
7	** 2.1235	38.79	Pk	31.7	-24.1	46.39	54	-7.61	74	-27.61	0-360	200	V
4	* ** 8.09906	51.6	Pk	35.9	-41.4	46.1	54	-7.9	74	-27.9	0-360	200	H
5	* ** 9.41719	50.71	Pk	36.3	-39.7	47.31	54	-6.69	74	-26.69	0-360	200	H
10	* ** 7.43531	50.01	Pk	35.4	-41	44.41	54	-9.59	74	-29.59	0-360	101	V
11	* ** 9.38719	51.08	Pk	36.2	-40.3	46.98	54	-7.02	74	-27.02	0-360	200	V
2	2.099	36.6	Pk	31.7	-24.2	44.1	-	-	-	-	0-360	199	H
8	2.177	39.48	Pk	31.5	-24.2	46.78	-	-	-	-	0-360	101	V
3	2.4665	37.43	Pk	32.2	-24.2	45.43	-	-	-	-	0-360	199	H
9	6.40594	54.93	Pk	35.7	-42.6	48.03	-	-	-	-	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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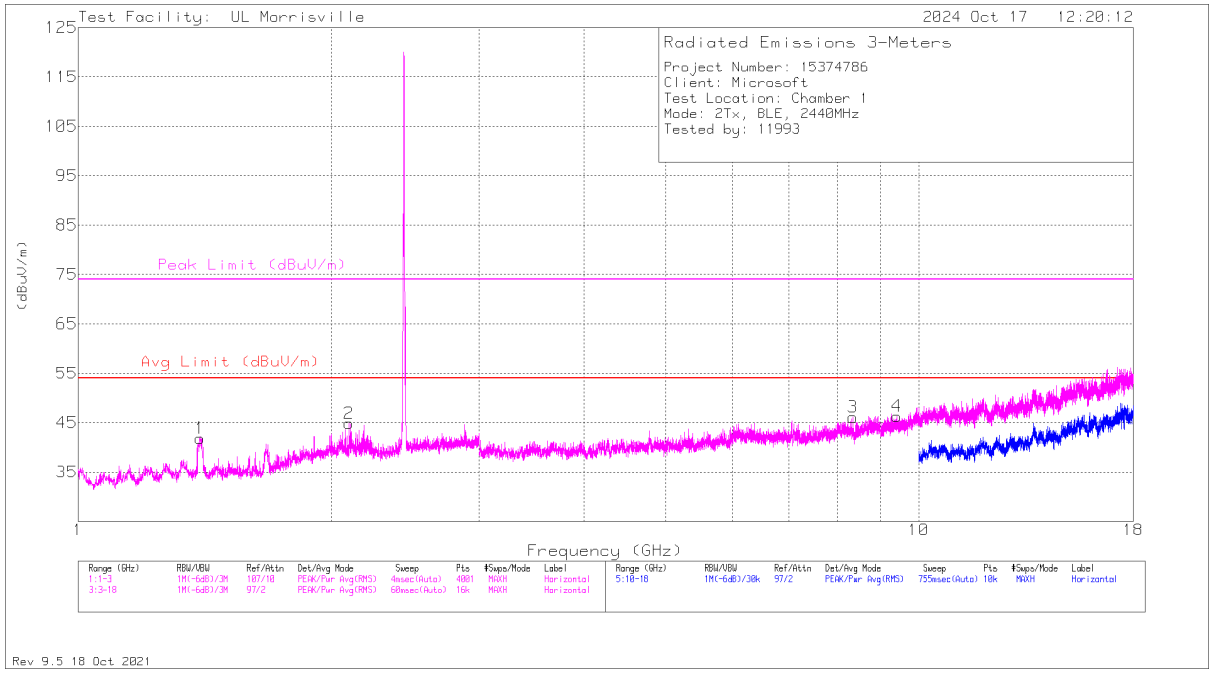
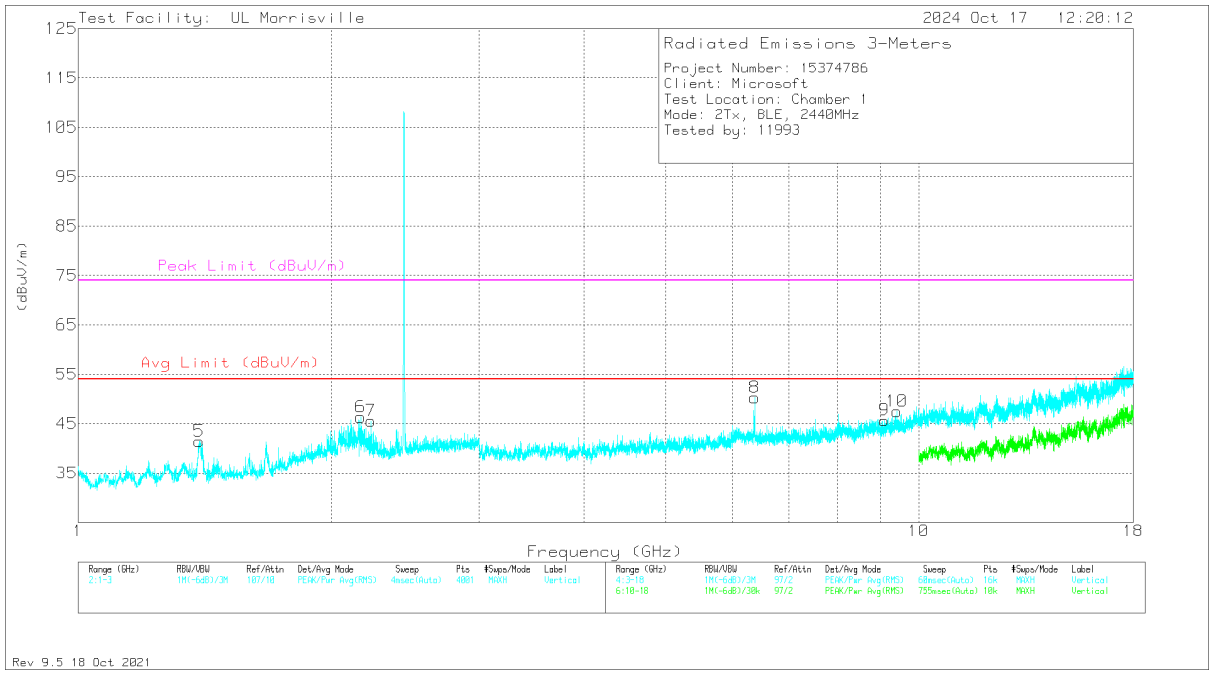
MID CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (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	* ** 1.39625	38.02	Pk	28.7	-24.9	41.82	54	-12.18	74	-32.18	0-360	200	H
5	* ** 1.3925	37.64	Pk	28.8	-25	41.44	54	-12.56	74	-32.56	0-360	200	V
6	** 2.1675	38.84	Pk	31.5	-24	46.34	54	-7.66	74	-27.66	0-360	200	V
7	* ** 2.2305	37.97	Pk	31.6	-24	45.57	54	-8.43	74	-28.43	0-360	200	V
3	* ** 8.34938	51.29	Pk	35.8	-41	46.09	54	-7.91	74	-27.91	0-360	199	H
4	* ** 9.41813	49.8	Pk	36.3	-39.8	46.3	54	-7.7	74	-27.7	0-360	101	H
9	* ** 9.105	49.99	Pk	35.9	-40.2	45.69	54	-8.31	74	-28.31	0-360	200	V
10	* ** 9.42	51.09	Pk	36.3	-39.9	47.49	54	-6.51	74	-26.51	0-360	101	V
2	2.1005	37.35	Pk	31.7	-24.2	44.85	-	-	-	-	0-360	200	H
8	6.37969	57.29	Pk	35.7	-42.7	50.29	-	-	-	-	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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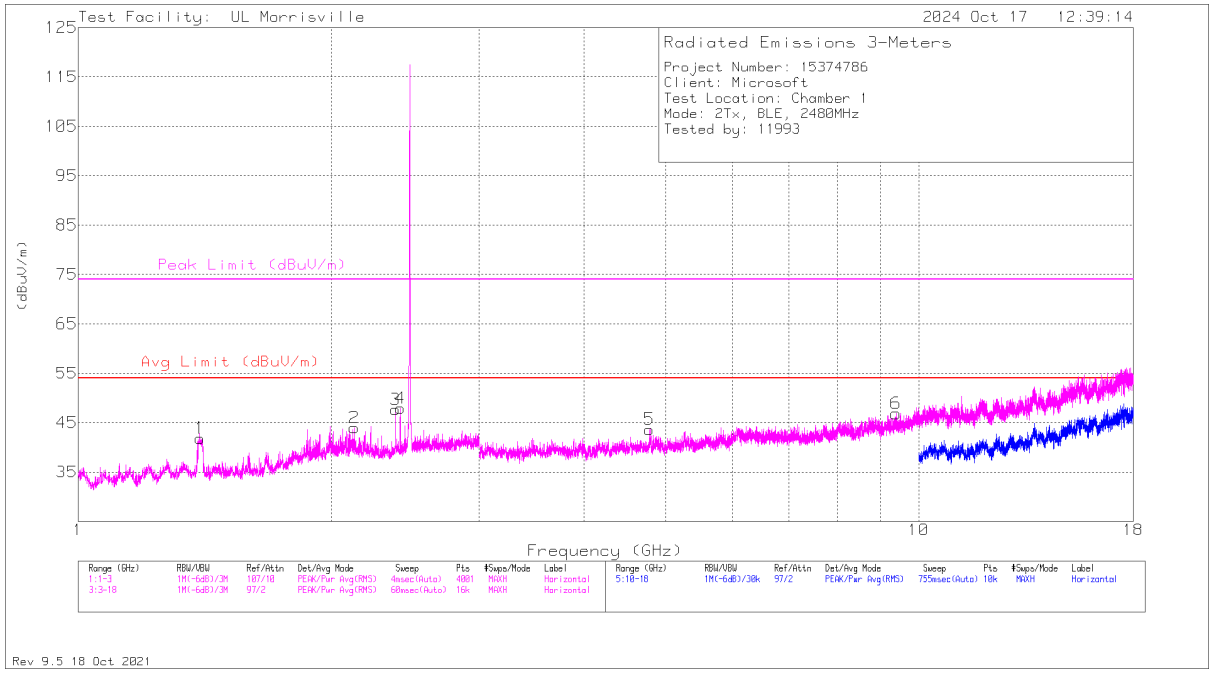
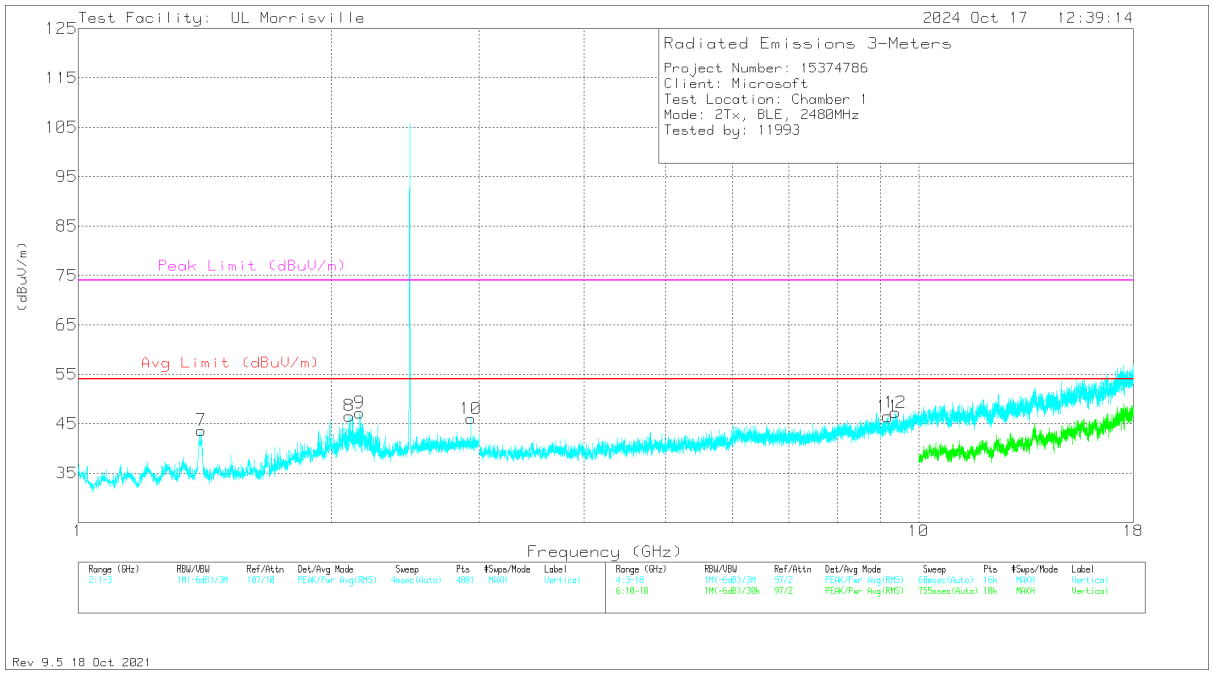
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (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	* ** 1.396	38.05	Pk	28.7	-24.9	41.85	54	-12.15	74	-32.15	0-360	101	H
2	** 2.1305	36.36	Pk	31.7	-24.1	43.96	54	-10.04	74	-30.04	0-360	200	H
3	* ** 2.3845	39.77	Pk	31.9	-24	47.67	54	-6.33	74	-26.33	0-360	101	H
7	* ** 1.401	39.6	Pk	28.7	-24.7	43.6	54	-10.4	74	-30.4	0-360	200	V
9	** 2.163	39.6	Pk	31.5	-23.9	47.2	54	-6.8	74	-26.8	0-360	200	V
5	* ** 4.77938	54.83	Pk	33.8	-45	43.63	54	-10.37	74	-30.37	0-360	200	H
6	* ** 9.3975	50.75	Pk	36.3	-40.2	46.85	54	-7.15	74	-27.15	0-360	101	H
11	* ** 9.18938	50.07	Pk	36	-39.6	46.47	54	-7.53	74	-27.53	0-360	200	V
12	* ** 9.37875	51.36	Pk	36.2	-40.3	47.26	54	-6.74	74	-26.74	0-360	101	V
8	2.101	39.08	Pk	31.7	-24.2	46.58	-	-	-	-	0-360	200	V
4	2.4165	39.99	Pk	32	-24.1	47.89	-	-	-	-	0-360	200	H
10	2.9325	37.01	Pk	32.4	-23.4	46.01	-	-	-	-	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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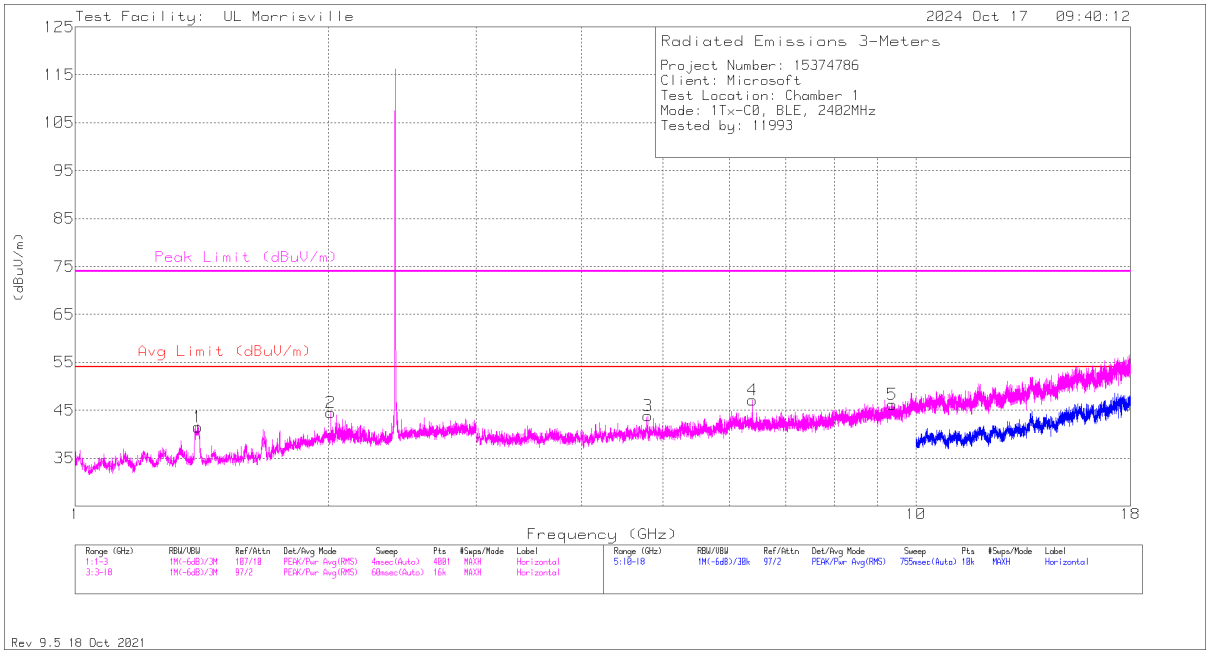
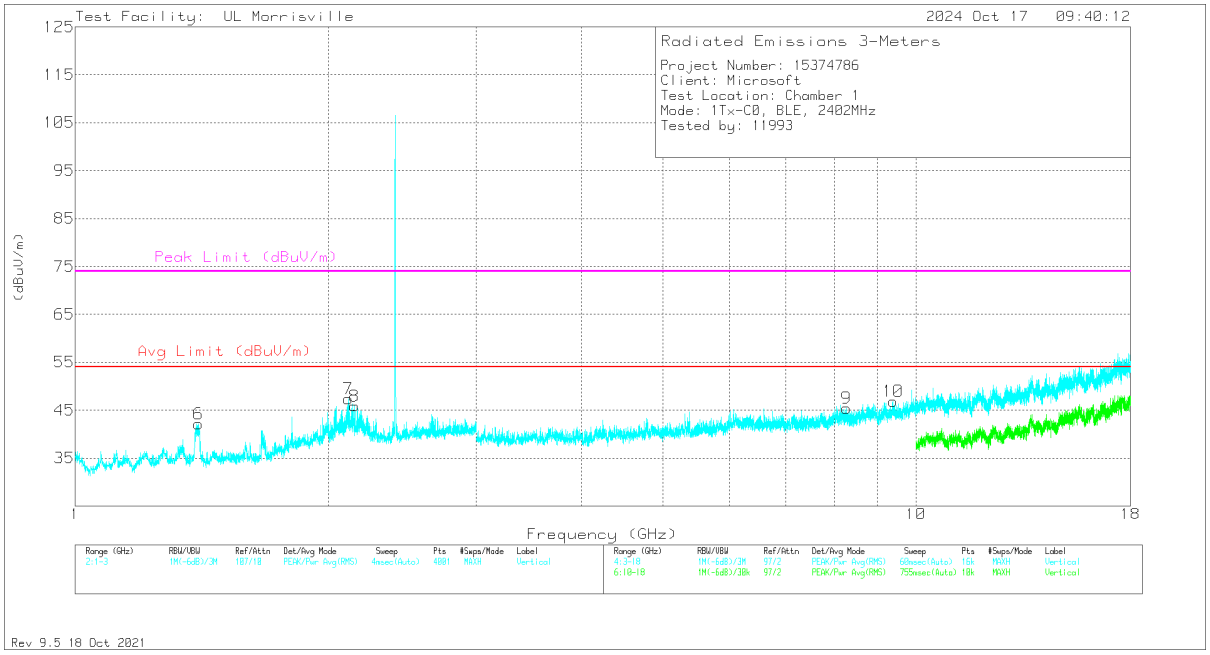
10.2.3. BLE (125Kbps)

HARMONICS AND SPURIOUS EMISSIONS (Chain 0)

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (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	* ** 1.4005	37.63	Pk	28.7	-24.8	41.53	54	-12.47	74	-32.47	0-360	101	H
2	** 2.014	36.92	Pk	31.7	-24.1	44.52	54	-9.48	74	-29.48	0-360	200	H
6	* ** 1.4015	38.14	Pk	28.7	-24.7	42.14	54	-11.86	74	-31.86	0-360	200	V
7	** 2.1115	39.79	Pk	31.7	-24.1	47.39	54	-6.61	74	-26.61	0-360	200	V
8	** 2.1505	38.47	Pk	31.6	-24.2	45.87	54	-8.13	74	-28.13	0-360	200	V
3	* ** 4.79719	55.38	Pk	33.9	-45.4	43.88	54	-10.12	74	-30.12	0-360	200	H
5	* ** 9.37688	50.27	Pk	36.2	-40.3	46.17	54	-7.83	74	-27.83	0-360	200	H
9	* ** 8.265	49.99	Pk	35.9	-40.5	45.39	54	-8.61	74	-28.61	0-360	200	V
10	* ** 9.39844	50.85	Pk	36.3	-40.3	46.85	54	-7.15	74	-27.15	0-360	101	V
4	6.39375	53.99	Pk	35.7	-42.6	47.09	-	-	-	-	0-360	200	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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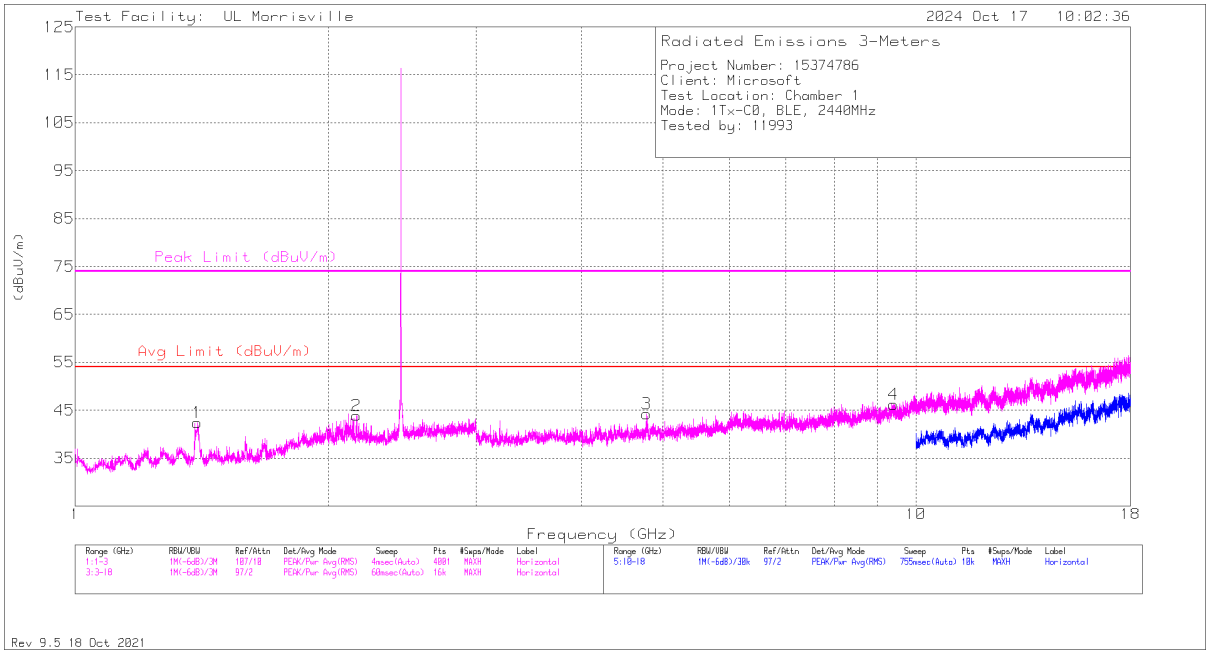
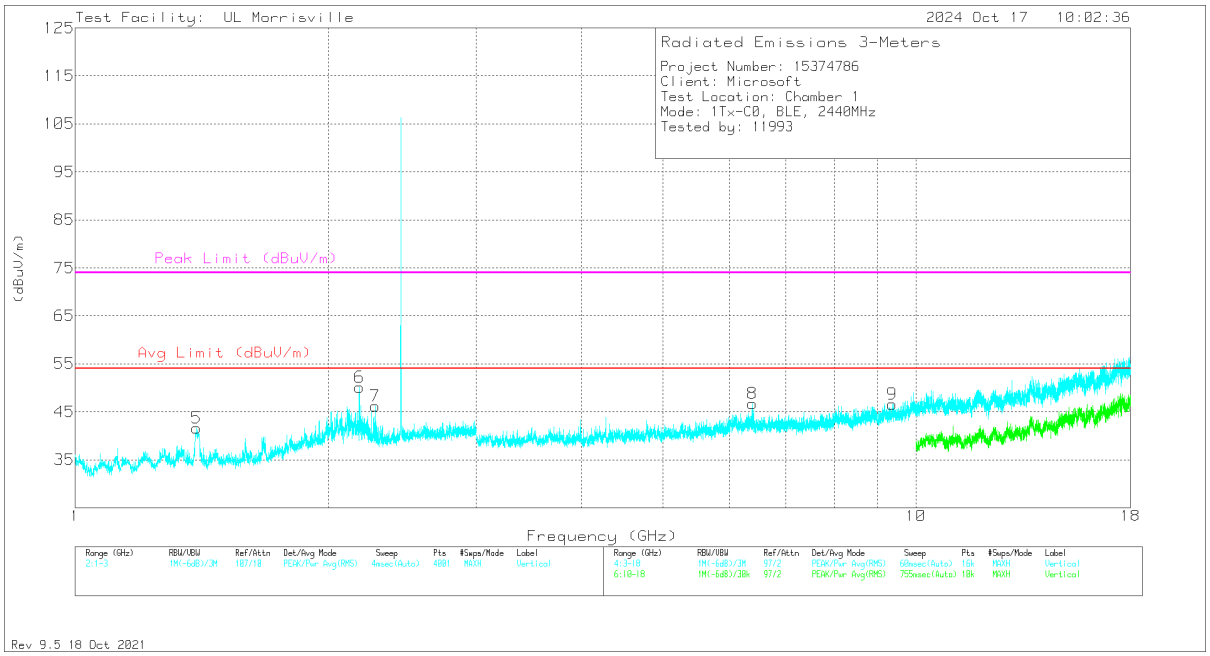
MID CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (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	* ** 1.397	38.63	Pk	28.7	-24.9	42.43	54	-11.57	74	-31.57	0-360	101	H
2	** 2.161	36.4	Pk	31.5	-24	43.9	54	-10.1	74	-30.1	0-360	101	H
5	* ** 1.3955	37.95	Pk	28.7	-25	41.65	54	-12.35	74	-32.35	0-360	200	V
7	* ** 2.2735	38.84	Pk	31.6	-24.2	46.24	54	-7.76	74	-27.76	0-360	200	V
3	* ** 4.78125	55.31	Pk	33.8	-44.9	44.21	54	-9.79	74	-29.79	0-360	200	H
4	* ** 9.41344	49.85	Pk	36.3	-40	46.15	54	-7.85	74	-27.85	0-360	200	H
9	* ** 9.37688	50.71	Pk	36.2	-40.3	46.61	54	-7.39	74	-27.39	0-360	101	V
6	2.1775	42.83	Pk	31.5	-24.2	50.13	-	-	-	-	0-360	200	V
8	6.39094	53.63	Pk	35.7	-42.6	46.73	-	-	-	-	0-360	200	V

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

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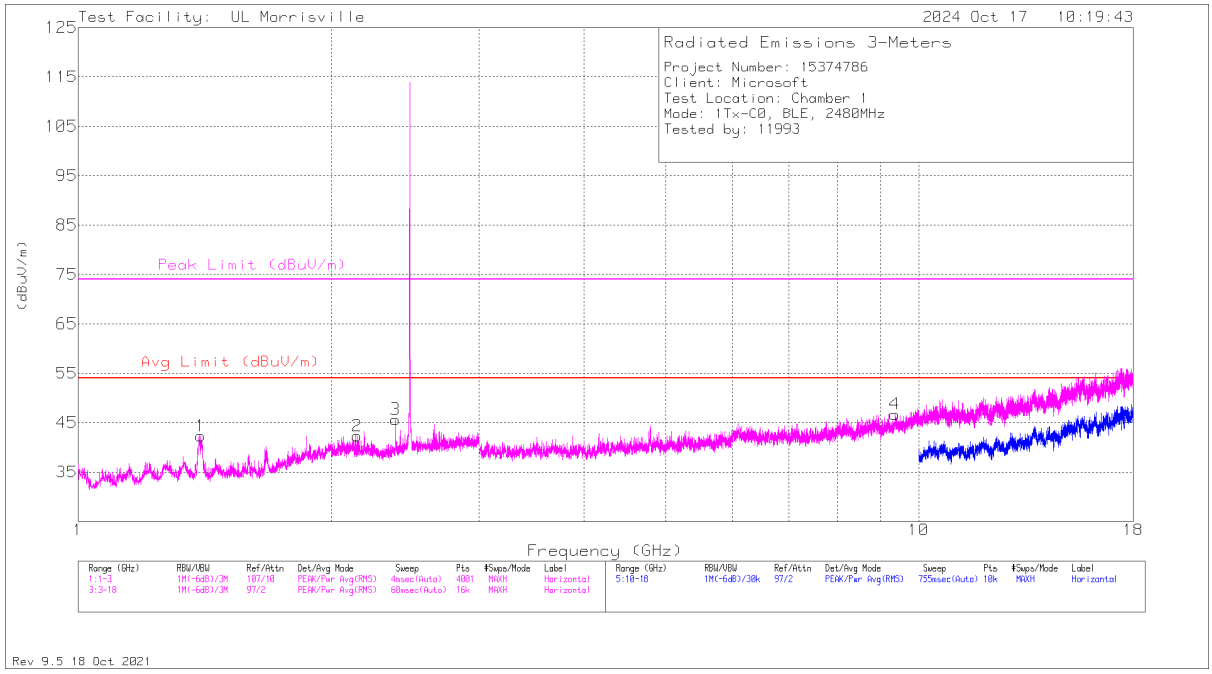
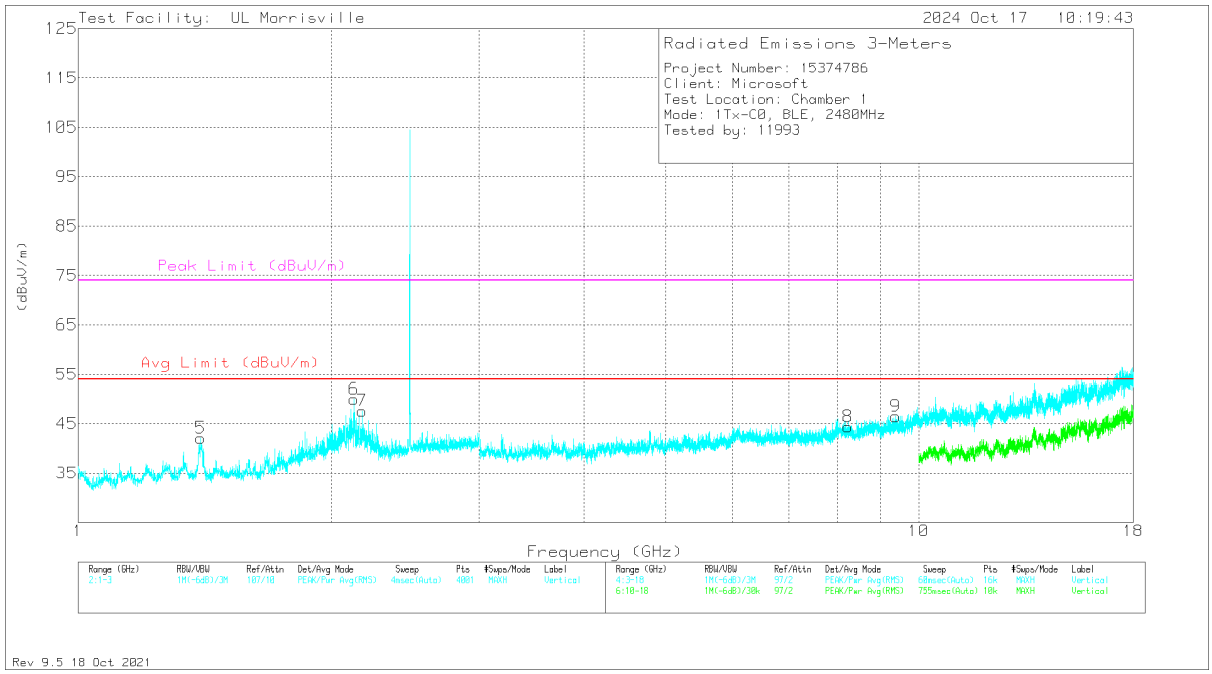
HIGH CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (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	* ** 1.399	38.39	Pk	28.7	-24.8	0	42.29	54	-11.71	74	-31.71	0-360	200	H
2	** 2.148	34.89	Pk	31.6	-24.2	0	42.29	54	-11.71	74	-31.71	0-360	101	H
3	* ** 2.3845	37.74	Pk	31.9	-24	0	45.64	54	-8.36	74	-28.36	0-360	200	H
5	* ** 1.3985	38.17	Pk	28.7	-24.8	0	42.07	54	-11.93	74	-31.93	0-360	101	V
6	** 2.1269	45.61	PK2	31.7	-24.1	0	53.21	-	-	74	-20.79	257	347	V
	** 2.12625	23.78	ADV	31.7	-24.1	1.64	33.02	54	-20.98	-	-	257	347	V
4	* ** 9.36563	51.11	Pk	36.2	-40.6	0	46.71	54	-7.29	74	-27.29	0-360	101	H
8	* ** 8.23313	49.48	Pk	35.9	-41	0	44.38	54	-9.62	74	-29.62	0-360	101	V
9	* ** 9.38813	50.57	Pk	36.2	-40.3	0	46.47	54	-7.53	74	-27.53	0-360	200	V
7	2.1755	40.3	Pk	31.5	-24.2	0	47.6	-	-	-	-	0-360	200	V

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

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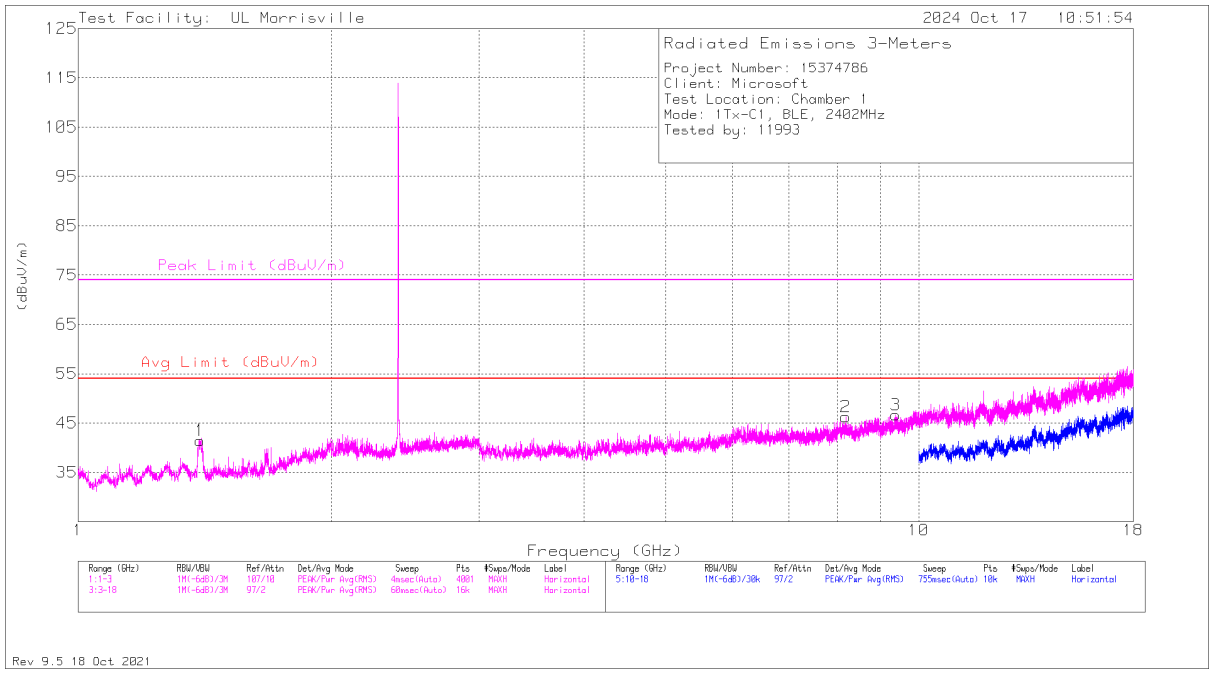
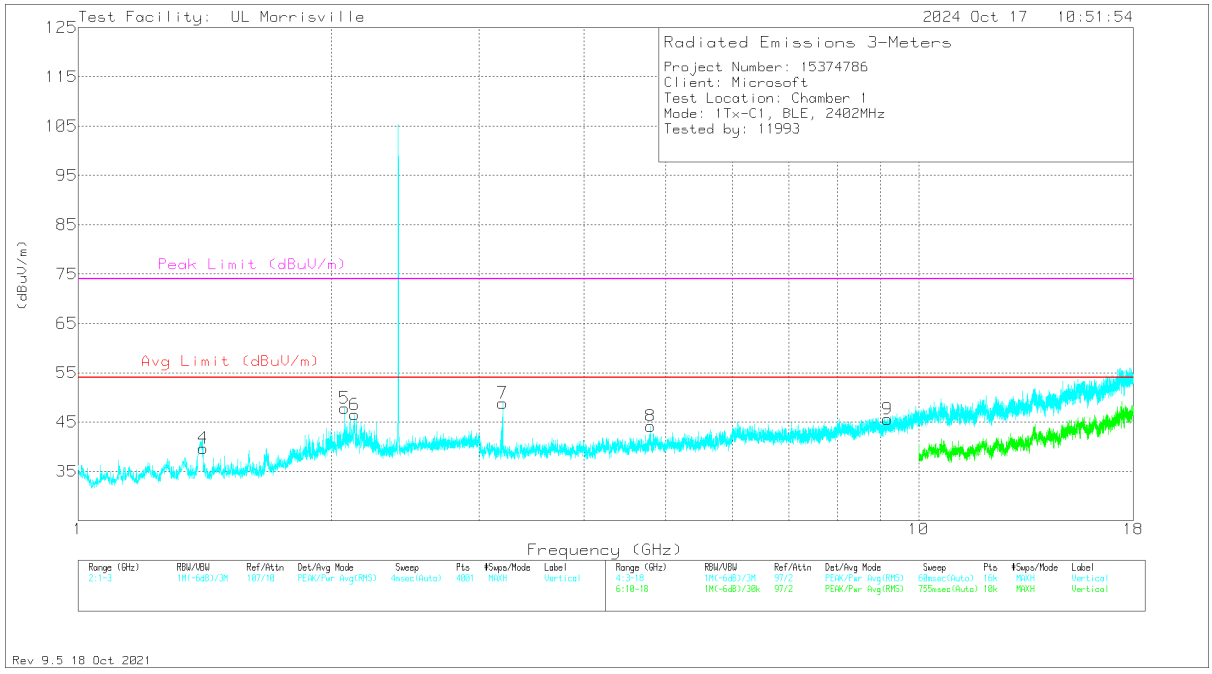
10.2.4.BLE (500Kbps)
HARMONICS AND SPURIOUS EMISSIONS (Chain 1)

LOW CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (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	* ** 1.397	37.64	Pk	28.7	-24.9	41.44	54	-12.56	74	-32.56	0-360	199	H
4	* ** 1.408	35.48	Pk	28.7	-24.5	39.68	54	-14.32	74	-34.32	0-360	200	V
6	** 2.133	38.92	Pk	31.7	-24.1	46.52	54	-7.48	74	-27.48	0-360	101	V
2	* ** 8.18719	51.14	Pk	35.9	-40.8	46.24	54	-7.76	74	-27.76	0-360	101	H
3	* ** 9.39188	50.43	Pk	36.3	-40.1	46.63	54	-7.37	74	-27.37	0-360	101	H
8	* ** 4.79719	55.67	Pk	33.9	-45.4	44.17	54	-9.83	74	-29.83	0-360	200	V
9	* ** 9.18094	49.38	Pk	36	-39.8	45.58	54	-8.42	74	-28.42	0-360	101	V
5	2.075	40.41	Pk	31.7	-24.3	47.81	-	-	-	-	0-360	200	V
7	3.19875	60.63	Pk	32.6	-44.4	48.83	-	-	-	-	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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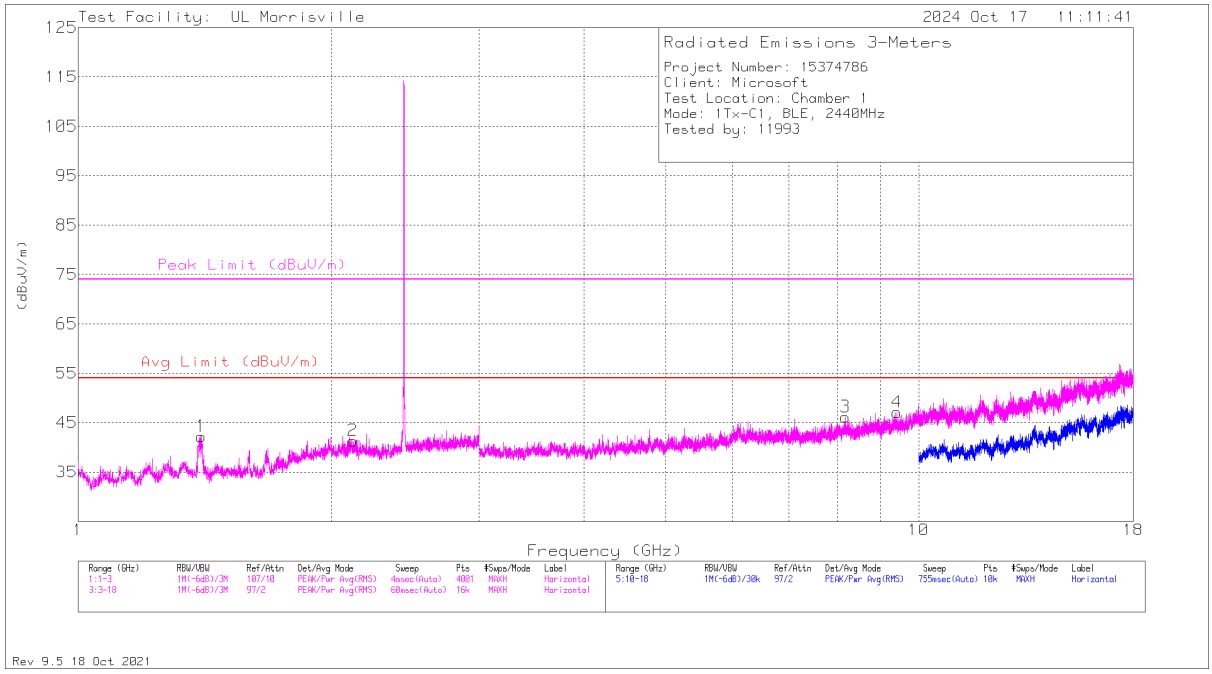
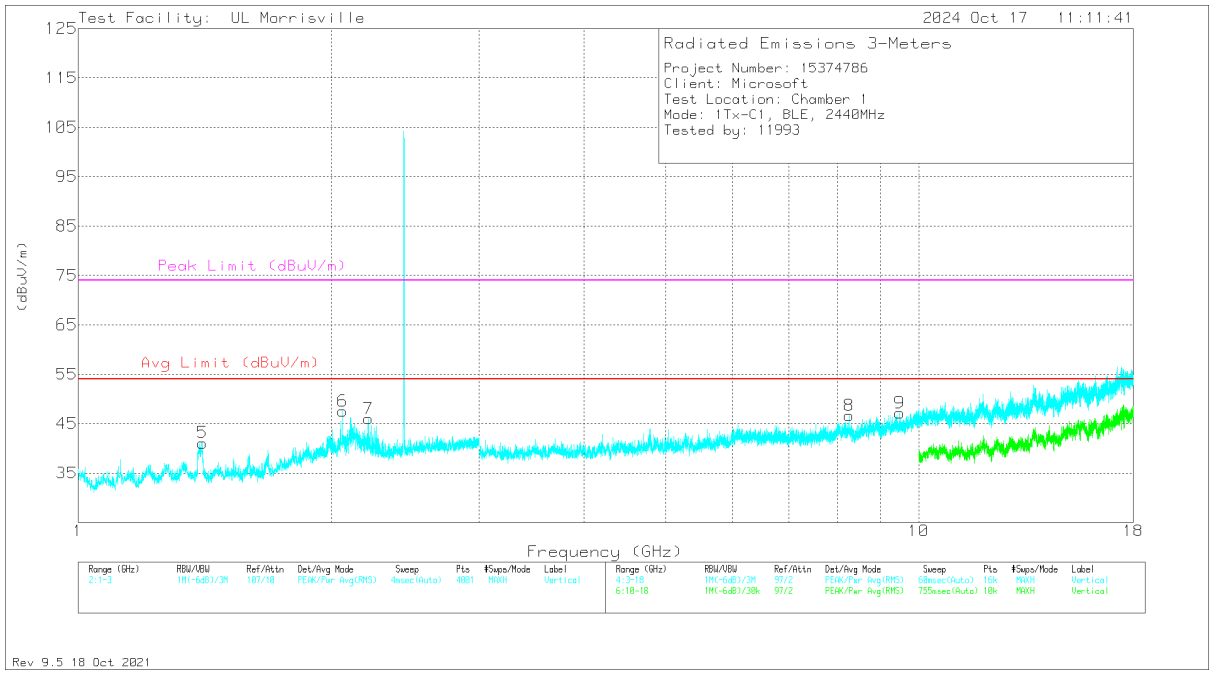
MID CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (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	* ** 1.401	38.24	Pk	28.7	-24.7	42.24	54	-11.76	74	-31.76	0-360	200	H
2	** 2.1215	33.86	Pk	31.7	-24.2	41.36	54	-12.64	74	-32.64	0-360	101	H
5	* ** 1.406	36.9	Pk	28.7	-24.5	41.1	54	-12.9	74	-32.9	0-360	200	V
7	* ** 2.215	38.28	Pk	31.6	-23.9	45.98	54	-8.02	74	-28.02	0-360	200	V
3	* ** 8.17875	51.28	Pk	35.9	-41	46.18	54	-7.82	74	-27.82	0-360	101	H
4	* ** 9.41719	50.5	Pk	36.3	-39.7	47.1	54	-6.9	74	-26.9	0-360	101	H
8	* ** 8.26406	51.23	Pk	35.9	-40.5	46.63	54	-7.37	74	-27.37	0-360	200	V
9	* ** 9.49313	51.13	Pk	36.4	-40.4	47.13	54	-6.87	74	-26.87	0-360	200	V
6	2.064	40.12	Pk	31.6	-24.2	47.52	-	-	-	-	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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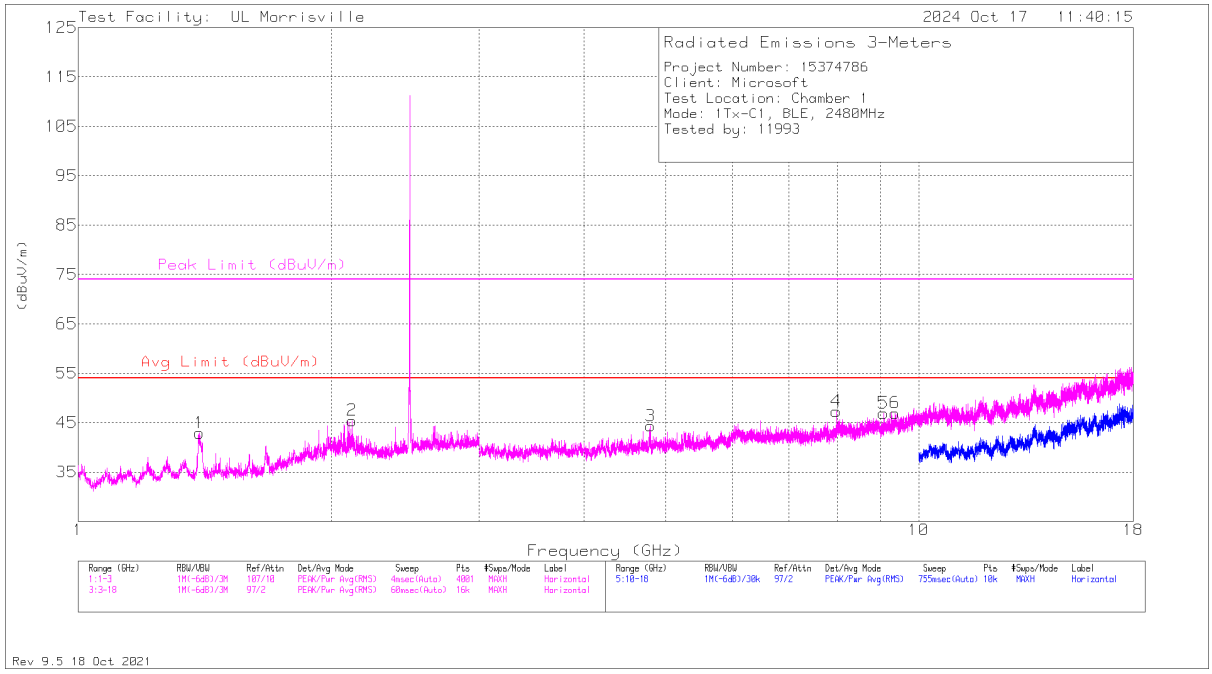
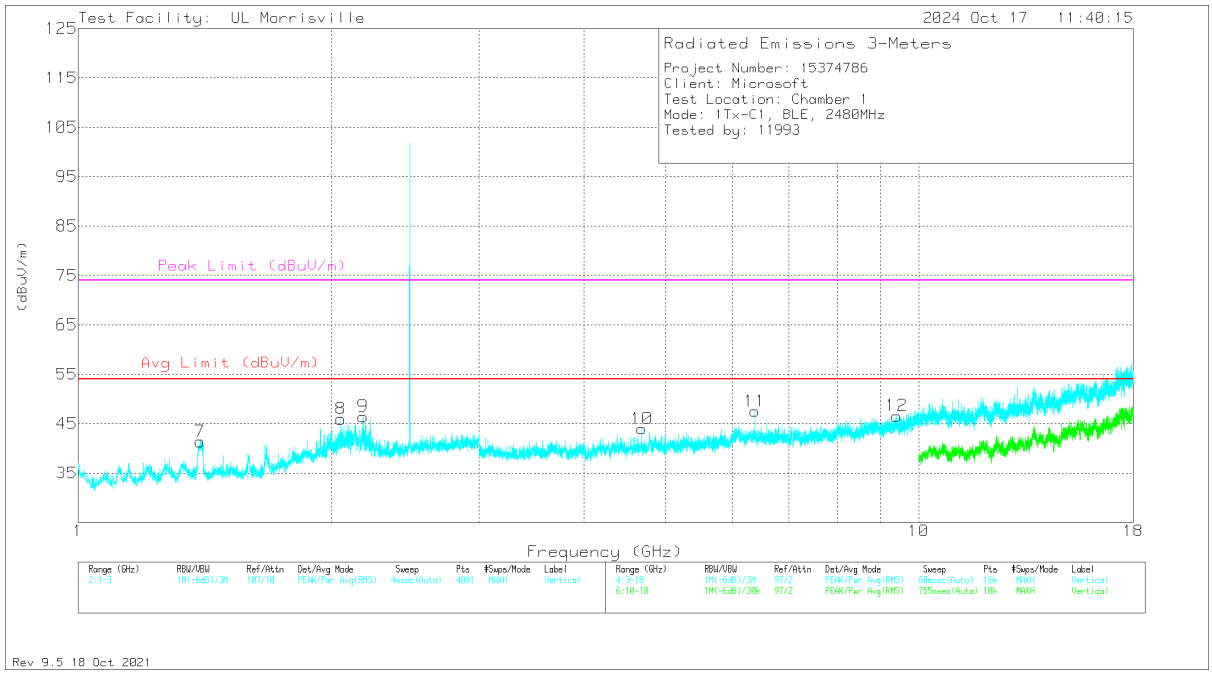
HIGH CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (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	* ** 1.3935	39.12	Pk	28.8	-25	42.92	54	-11.08	74	-31.08	0-360	101	H
2	** 2.119	37.84	Pk	31.7	-24.1	45.44	54	-8.56	74	-28.56	0-360	199	H
7	* ** 1.3965	37.59	Pk	28.7	-24.9	41.39	54	-12.61	74	-32.61	0-360	200	V
3	* ** 4.79719	55.84	Pk	33.9	-45.4	44.34	54	-9.66	74	-29.66	0-360	199	H
5	* ** 9.07781	51.93	Pk	35.8	-40.8	46.93	54	-7.07	74	-27.07	0-360	101	H
6	* ** 9.36938	51.17	Pk	36.2	-40.4	46.97	54	-7.03	74	-27.03	0-360	199	H
10	* ** 4.68469	55.46	Pk	33.8	-45.3	43.96	54	-10.04	74	-30.04	0-360	101	V
12	* ** 9.41156	50.48	Pk	36.3	-40.2	46.58	54	-7.42	74	-27.42	0-360	101	V
8	2.054	38.76	Pk	31.6	-24.4	45.96	-	-	-	-	0-360	200	V
9	2.1825	39.14	Pk	31.5	-24.2	46.44	-	-	-	-	0-360	200	V
11	6.38531	54.51	Pk	35.7	-42.7	47.51	-	-	-	-	0-360	101	V
4	7.97906	52.4	Pk	35.9	-41	47.3	-	-	-	-	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

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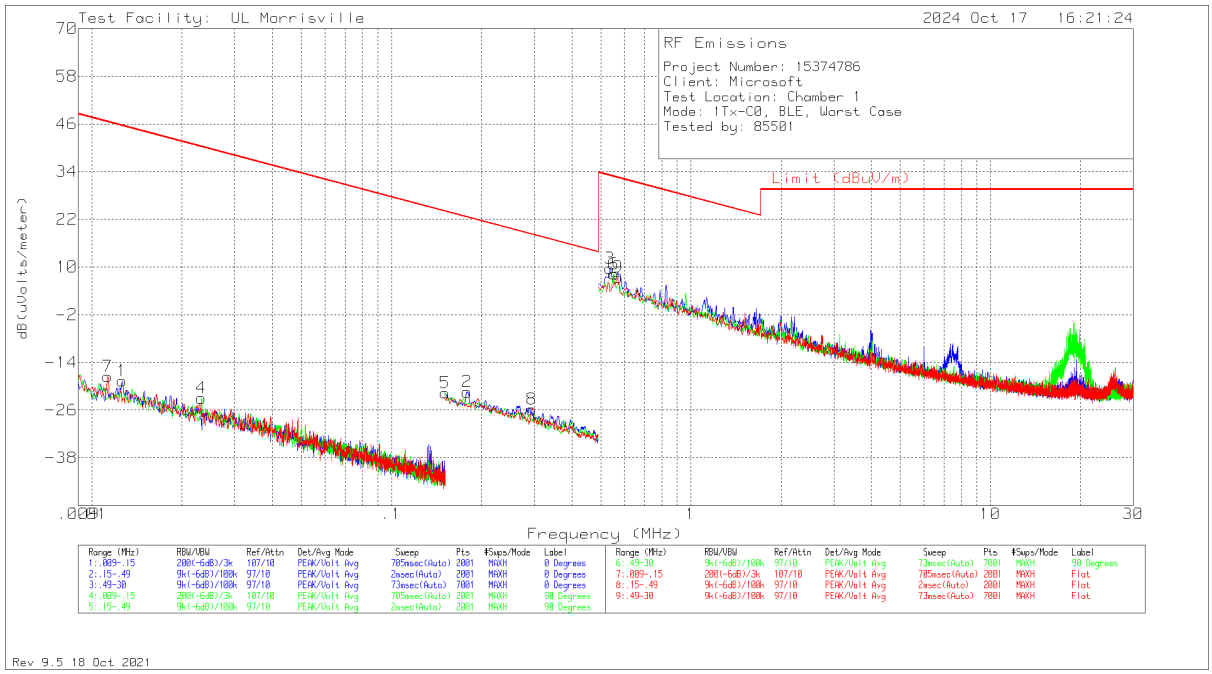
10.3. WORST CASE BELOW 30MHZ

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).

10.3.1. CHAIN 0



ANTENNA- THREE ORIENTATIONS – E FIELD

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (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
7	.01127	44.62	Pk	17.7	.1	-80	-17.58	46.56	66.56	-64.14	0-360	Flat
1	.01262	44.16	Pk	17.1	.1	-80	-18.64	45.58	65.58	-64.22	0-360	0 degs
4	.0232	43.31	Pk	13.6	.1	-80	-22.99	40.29	60.29	-63.28	0-360	90 degs
5	.15102	47.21	Pk	11	.1	-80	-21.69	24.02	44.02	-45.71	0-360	90 degs
2	.17916	47.49	Pk	11	.1	-80	-21.41	22.54	42.54	-43.95	0-360	0 degs
8	.29382	43.18	Pk	10.9	.1	-80	-25.82	18.24	38.24	-44.06	0-360	Flat
3	.53638	38.58	Pk	11	.1	-40	9.68	33.01	-	-23.33	0-360	0 degs
6	.55324	37.12	Pk	11	.1	-40	8.22	32.75	-	-24.53	0-360	90 degs
9	.5701	36.28	Pk	11	.1	-40	7.38	32.48	-	-25.1	0-360	Flat

Pk - Peak detector

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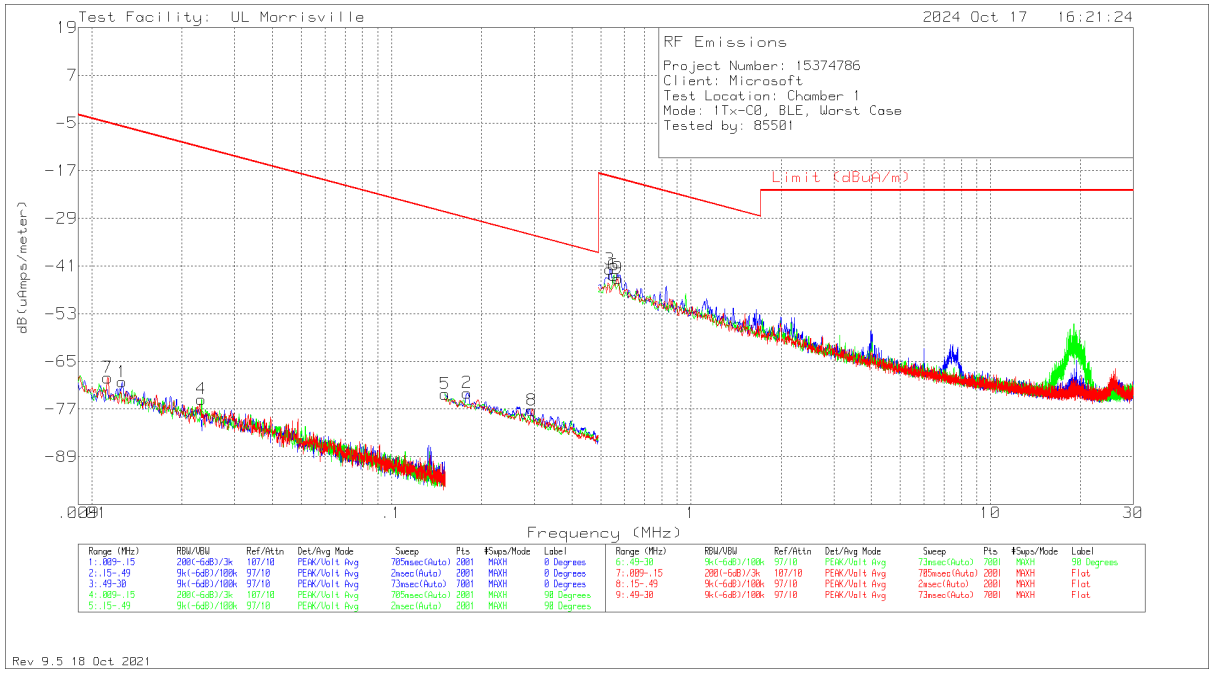

ANTENNA- THREE ORIENTATIONS – H FIELD

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uAmps/meter)	QP Limit (dBuA/m)	PK Limit (dBuA/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
7	.01127	44.62	Pk	-33.8	.1	-80	-69.08	-4.94	15.06	-64.14	0-360	Flat
1	.01262	44.16	Pk	-34.4	.1	-80	-70.14	-5.92	14.08	-64.22	0-360	0 degs
4	.0232	43.31	Pk	-37.9	.1	-80	-74.49	-11.21	9.79	-63.28	0-360	90 degs
5	.15102	47.21	Pk	-40.5	.1	-80	-73.19	-27.48	-7.48	-45.71	0-360	90 degs
2	.17916	47.49	Pk	-40.5	.1	-80	-72.91	-28.96	-8.96	-43.95	0-360	0 degs
8	.29382	43.18	Pk	-40.6	.1	-80	-77.32	-33.26	-13.26	-44.06	0-360	Flat
3	.53638	38.58	Pk	-40.5	.1	-40	-41.82	-18.49	-	-23.33	0-360	0 degs
6	.55324	37.12	Pk	-40.5	.1	-40	-43.28	-18.75	-	-24.53	0-360	90 degs
9	.5701	36.28	Pk	-40.5	.1	-40	-44.12	-19.02	-	-25.1	0-360	Flat

Pk - Peak detector

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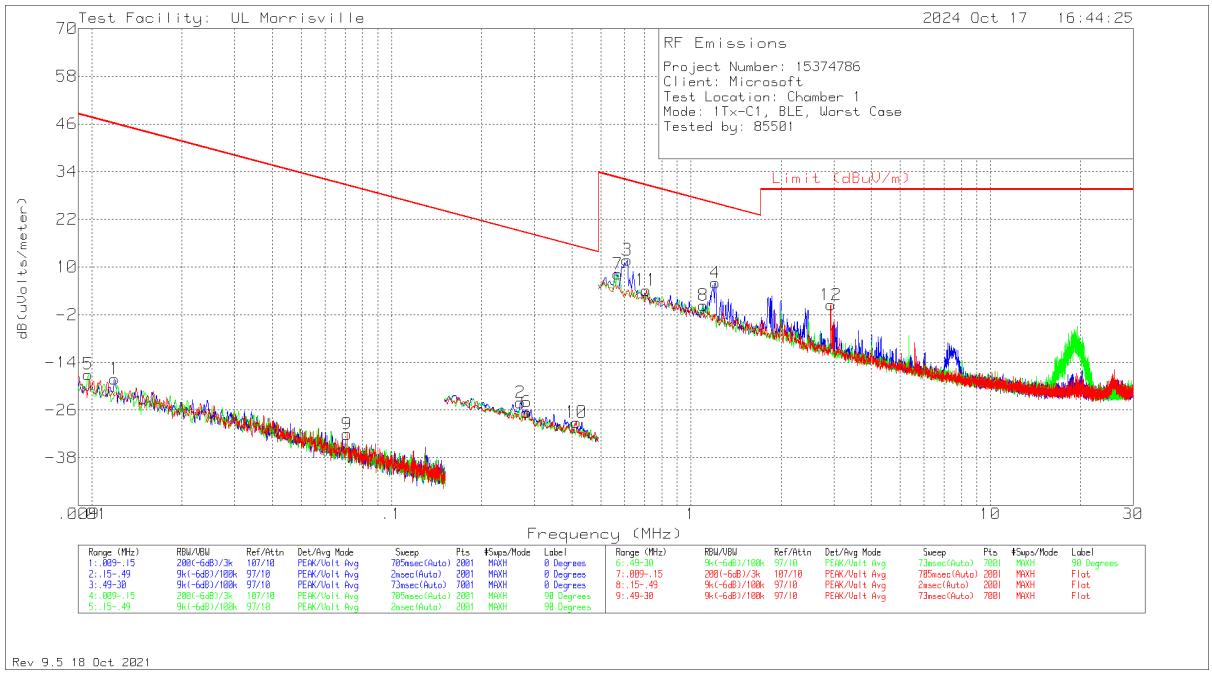
10.3.2. CHAIN 1



ANTENNA- THREE ORIENTATIONS – E FIELD

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (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
5	.00971	44.41	Pk	18.5	.1	-80	-16.99	47.86	67.86	-64.85	0-360	90 degs
1	.01191	44.37	Pk	17.4	.1	-80	-18.13	46.09	66.09	-64.22	0-360	0 degs
9	.07113	36.7	Pk	11.2	.1	-80	-32	30.56	50.56	-62.56	0-360	Flat
2	.27002	44.91	Pk	10.9	.1	-80	-24.09	18.98	38.98	-43.07	0-360	0 degs
6	.28354	42.51	Pk	10.9	.1	-80	-26.49	18.55	38.55	-45.04	0-360	90 degs
10	.41469	39.83	Pk	11	.1	-80	-29.07	15.25	35.25	-44.32	0-360	Flat
7	.5701	37.15	Pk	11	.1	-40	8.25	32.48	-	-24.23	0-360	90 degs
3	.61226	40.67	Pk	11	.1	-40	11.77	31.87	-	-20.1	0-360	0 degs
11	.70923	33.07	Pk	11	.1	-40	4.17	30.59	-	-26.42	0-360	Flat
8	1.10132	29.25	Pk	11	.1	-40	.35	26.77	-	-26.42	0-360	90 degs
4	1.20672	34.84	Pk	11	.2	-40	6.04	25.97	-	-19.93	0-360	0 degs
12	2.93106	29.16	Pk	11.1	.2	-40	.46	29.54	-	-29.08	0-360	Flat

Pk - Peak detector

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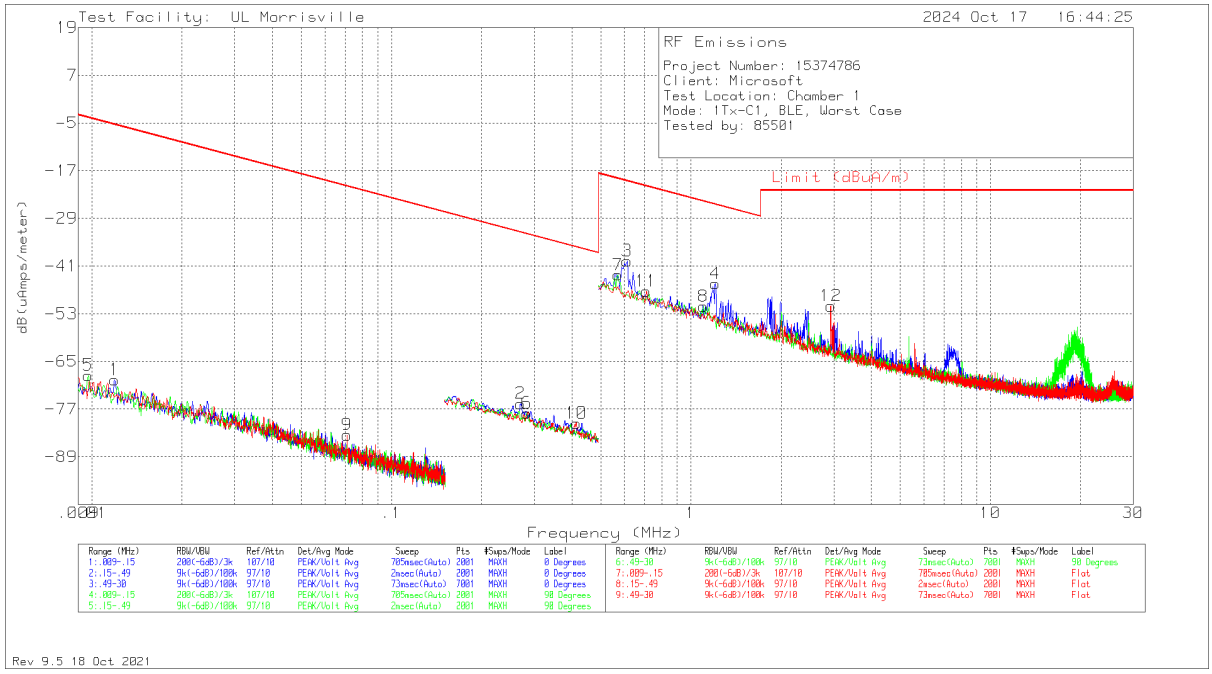

ANTENNA- THREE ORIENTATIONS – H FIELD

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (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
5	.00971	44.41	Pk	-33	.1	-80	-68.49	-3.64	16.36	-64.85	0-360	90 degs
1	.01191	44.37	Pk	-34.1	.1	-80	-69.63	-5.41	14.59	-64.22	0-360	0 degs
9	.07113	36.7	Pk	-40.3	.1	-80	-83.5	-20.94	-0.94	-62.56	0-360	Flat
2	.27002	44.91	Pk	-40.6	.1	-80	-75.59	-32.52	-12.52	-43.07	0-360	0 degs
6	.28354	42.51	Pk	-40.6	.1	-80	-77.99	-32.95	-12.95	-45.04	0-360	90 degs
10	.41469	39.83	Pk	-40.5	.1	-80	-80.57	-36.25	-16.25	-44.32	0-360	Flat
7	.5701	37.15	Pk	-40.5	.1	-40	-43.25	-19.02	-	-24.23	0-360	90 degs
3	.61226	40.67	Pk	-40.5	.1	-40	-39.73	-19.63	-	-20.1	0-360	0 degs
11	.70923	33.07	Pk	-40.5	.1	-40	-47.33	-20.91	-	-26.42	0-360	Flat
8	1.10132	29.25	Pk	-40.5	.1	-40	-51.15	-24.73	-	-26.42	0-360	90 degs
4	1.20672	34.84	Pk	-40.5	.2	-40	-45.46	-25.53	-	-19.93	0-360	0 degs
12	2.93106	29.16	Pk	-40.4	.2	-40	-51.04	-21.96	-	-29.08	0-360	Flat

Pk - Peak detector

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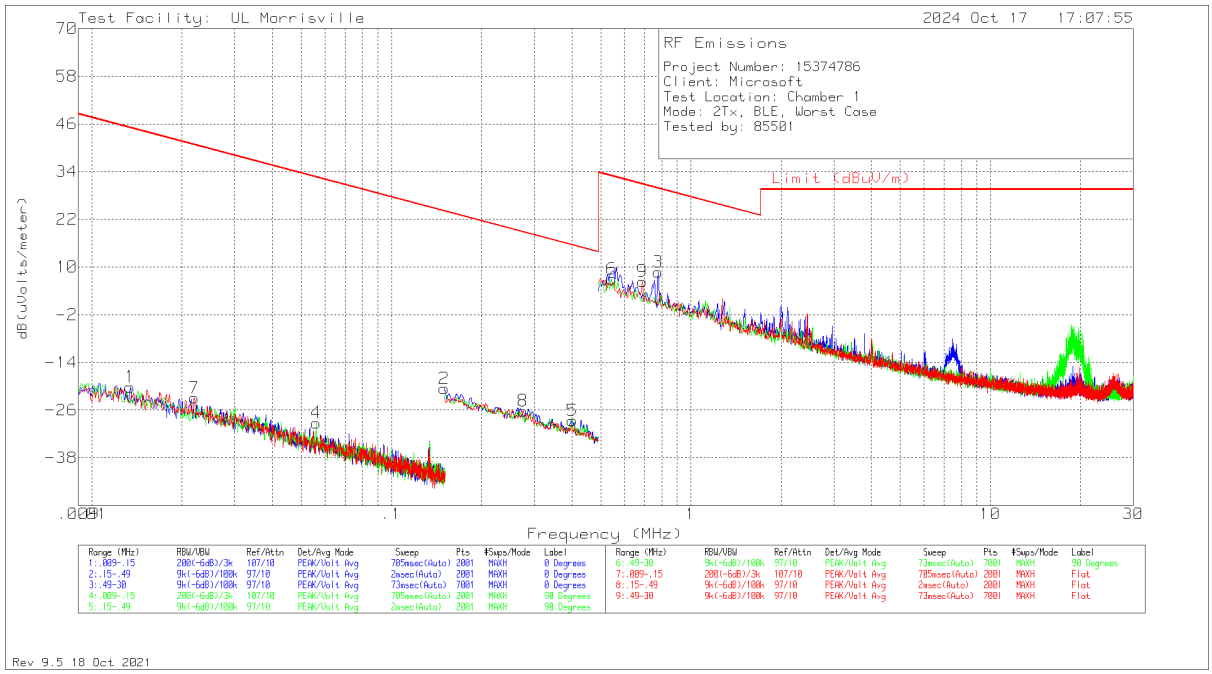
10.3.3. 2TX MIMO



ANTENNA- THREE ORIENTATIONS – E FIELD

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (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	.0134	43	Pk	16.7	.1	-80	-20.2	45.06	65.06	-65.26	0-360	0 degs
7	.02199	43.26	Pk	13.7	.1	-80	-22.94	40.76	60.76	-63.7	0-360	Flat
4	.05607	39.28	Pk	11.4	.1	-80	-29.22	32.63	52.63	-61.85	0-360	90 degs
2	.15	48.34	Pk	11	.1	-80	-20.56	24.08	44.08	-44.64	0-360	0 degs
8	.27521	42.76	Pk	10.9	.1	-80	-26.24	18.81	38.81	-45.05	0-360	Flat
5	.40211	40.24	Pk	11	.1	-80	-28.66	15.52	35.52	-44.18	0-360	90 degs
6	.54481	35.88	Pk	11	.1	-40	6.98	32.88	-	-25.9	0-360	90 degs
9	.68815	35.28	Pk	11	.1	-40	6.38	30.85	-	-24.47	0-360	Flat
3	.77669	37.6	Pk	11	.1	-40	8.7	29.8	-	-21.1	0-360	0 degs

Pk - Peak detector

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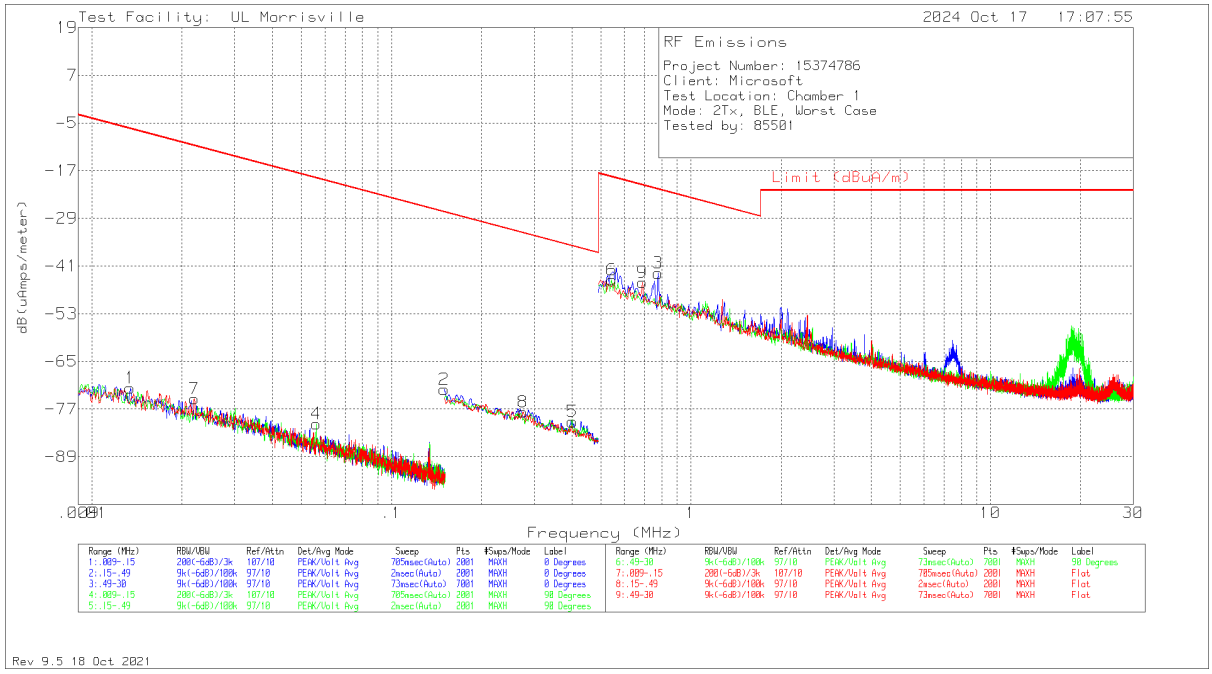

ANTENNA- THREE ORIENTATIONS – H FIELD

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	135144 (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	.0134	43	Pk	-34.8	.1	-80	-71.7	-6.44	13.56	-65.26	0-360	0 degs
7	.02199	43.26	Pk	-37.8	.1	-80	-74.44	-10.74	9.26	-63.7	0-360	Flat
4	.05607	39.28	Pk	-40.1	.1	-80	-80.72	-18.87	1.13	-61.85	0-360	90 degs
2	.15	48.34	Pk	-40.5	.1	-80	-72.06	-27.42	-7.42	-44.64	0-360	0 degs
8	.27521	42.76	Pk	-40.6	.1	-80	-77.74	-32.69	-12.69	-45.05	0-360	Flat
5	.40211	40.24	Pk	-40.5	.1	-80	-80.16	-35.98	-15.98	-44.18	0-360	90 degs
6	.54481	35.88	Pk	-40.5	.1	-40	-44.52	-18.62	-	-25.9	0-360	90 degs
9	.68815	35.28	Pk	-40.5	.1	-40	-45.12	-20.65	-	-24.47	0-360	Flat
3	.77669	37.6	Pk	-40.5	.1	-40	-42.8	-21.7	-	-21.1	0-360	0 degs

Pk - Peak detector

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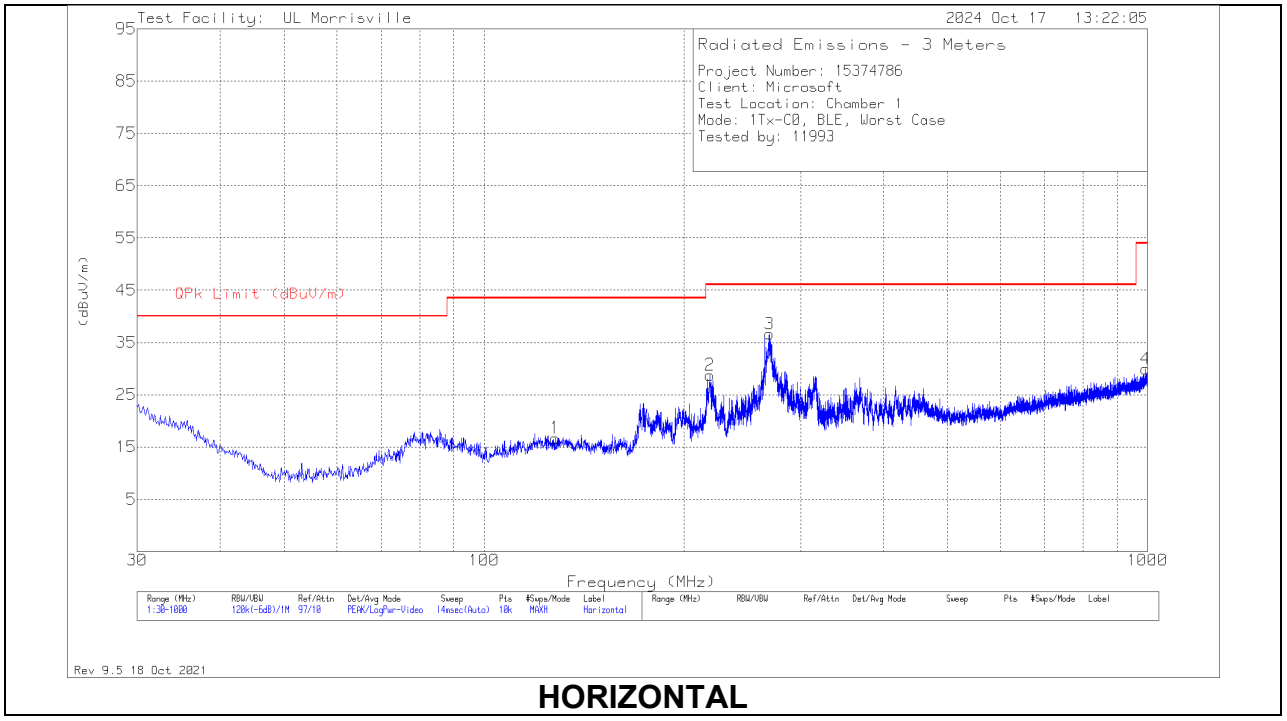
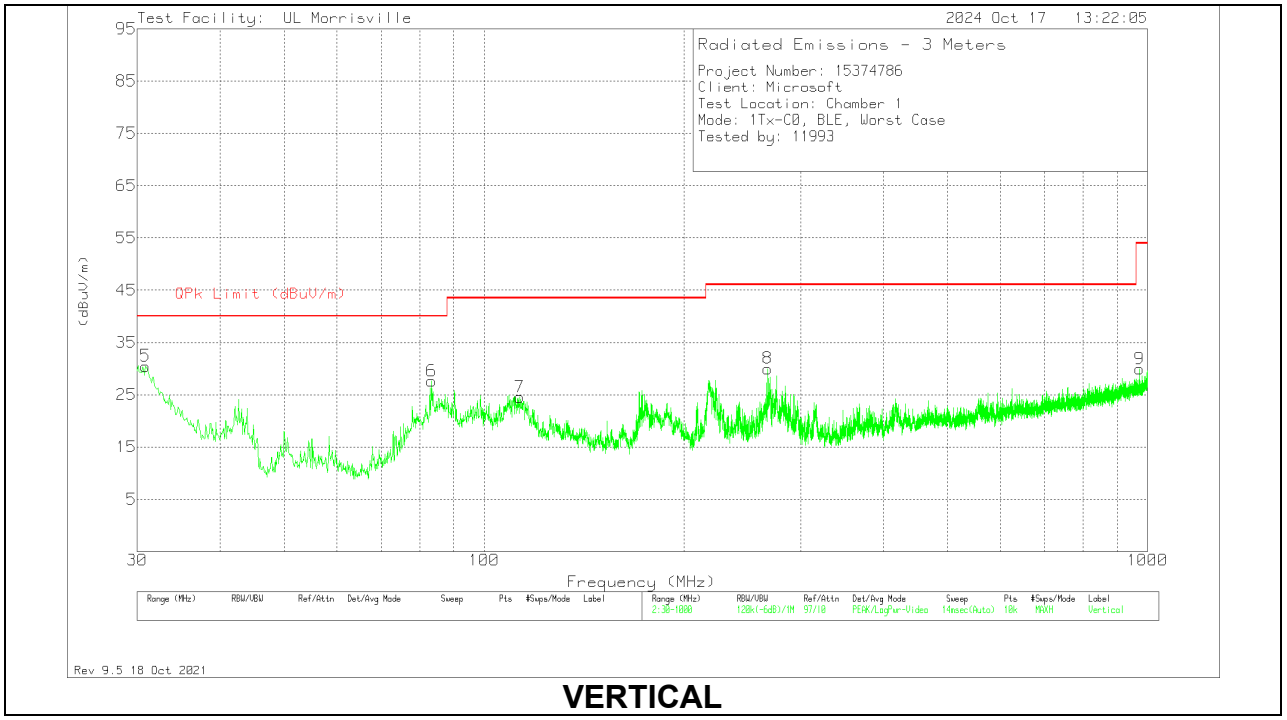
10.4. WORST CASE BELOW 1 GHZ

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

10.4.1. CHAIN 0



HORIZONTAL



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Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90629 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 127.97	27.69	Pk	20.1	-31.1	16.69	43.52	-26.83	0-360	400	H
3	* ** 269.202	46.71	Pk	19.2	-29.3	36.61	46.02	-9.41	0-360	200	H
4	* ** 993.307	25.84	Pk	29.6	-25.5	29.94	53.97	-24.03	0-360	400	H
7	* ** 113.129	36.05	Pk	19.2	-30.7	24.55	43.52	-18.97	0-360	100	V
8	* ** 267.844	40.3	Pk	19.1	-29.4	30	46.02	-16.02	0-360	100	V
9	* ** 972.937	26.61	Pk	29	-25.7	29.91	53.97	-24.06	0-360	100	V
5	30.873	36.06	Pk	26.2	-31.8	30.46	-	-	0-360	100	V
6	83.35	45.02	Pk	13.6	-31	27.62	-	-	0-360	100	V
2	219.053	41.93	Pk	16.8	-30	28.73	-	-	0-360	100	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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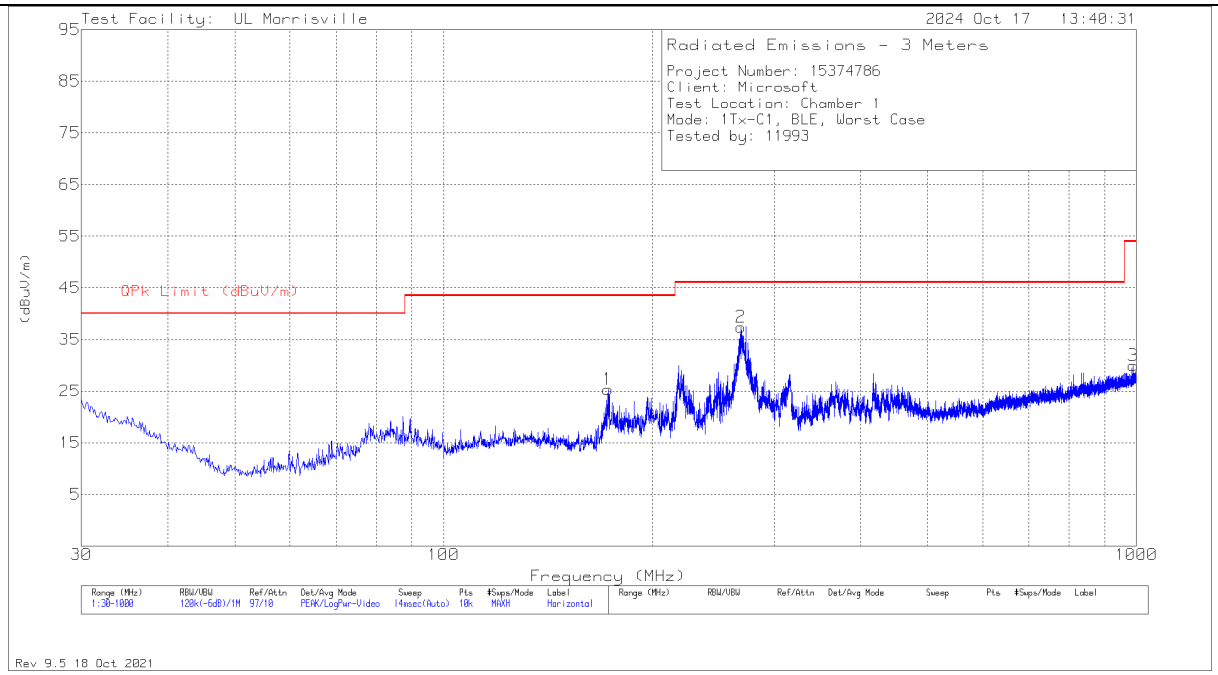
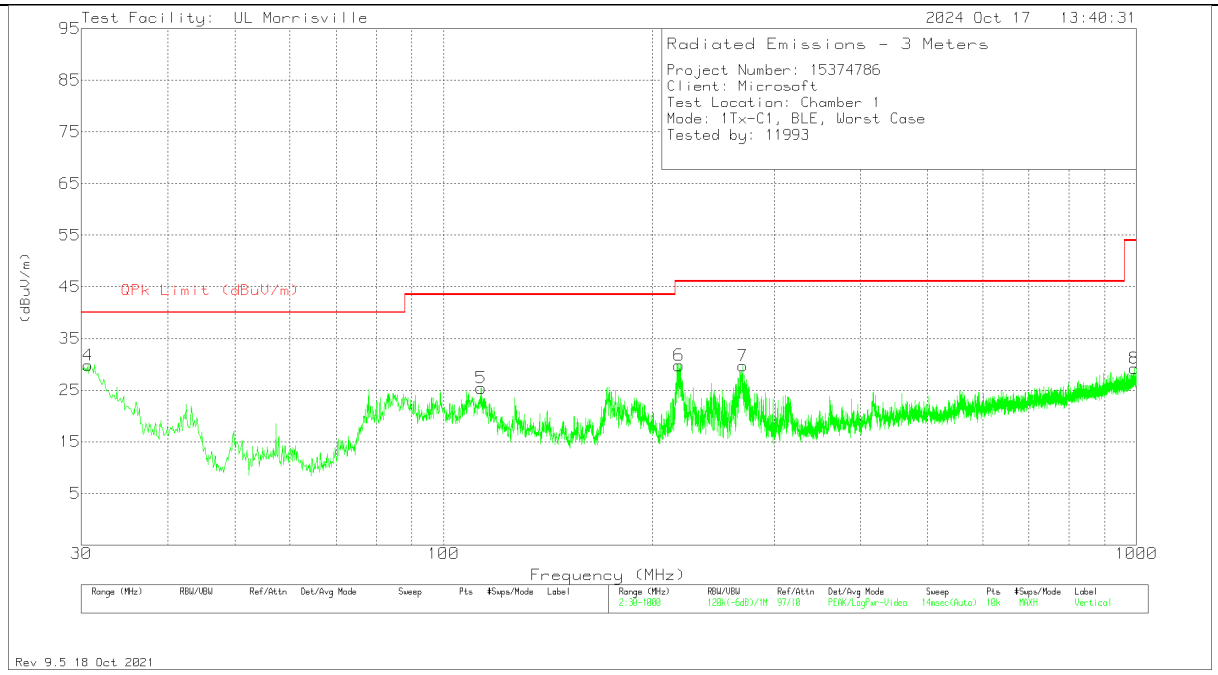
10.4.2. CHAIN 1



HORIZONTAL



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Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90629 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 172.784	37.96	Pk	17.9	-30.5	25.36	43.52	-18.16	0-360	199	H
2	* ** 268.717	47.41	Pk	19.2	-29.2	37.41	46.02	-8.61	0-360	199	H
3	* ** 990.203	26.15	Pk	29.5	-25.7	29.95	53.97	-24.02	0-360	400	H
5	* ** 113.323	37	Pk	19.2	-30.8	25.4	43.52	-18.12	0-360	100	V
7	* ** 270.463	39.98	Pk	19.3	-29.6	29.68	46.02	-16.34	0-360	100	V
8	* ** 992.822	25.09	Pk	29.6	-25.5	29.19	53.97	-24.78	0-360	100	V
4	30.679	35.21	Pk	26.4	-31.8	29.81	40	-10.19	0-360	100	V
6	218.762	42.98	Pk	16.8	-30	29.78	46.02	-16.24	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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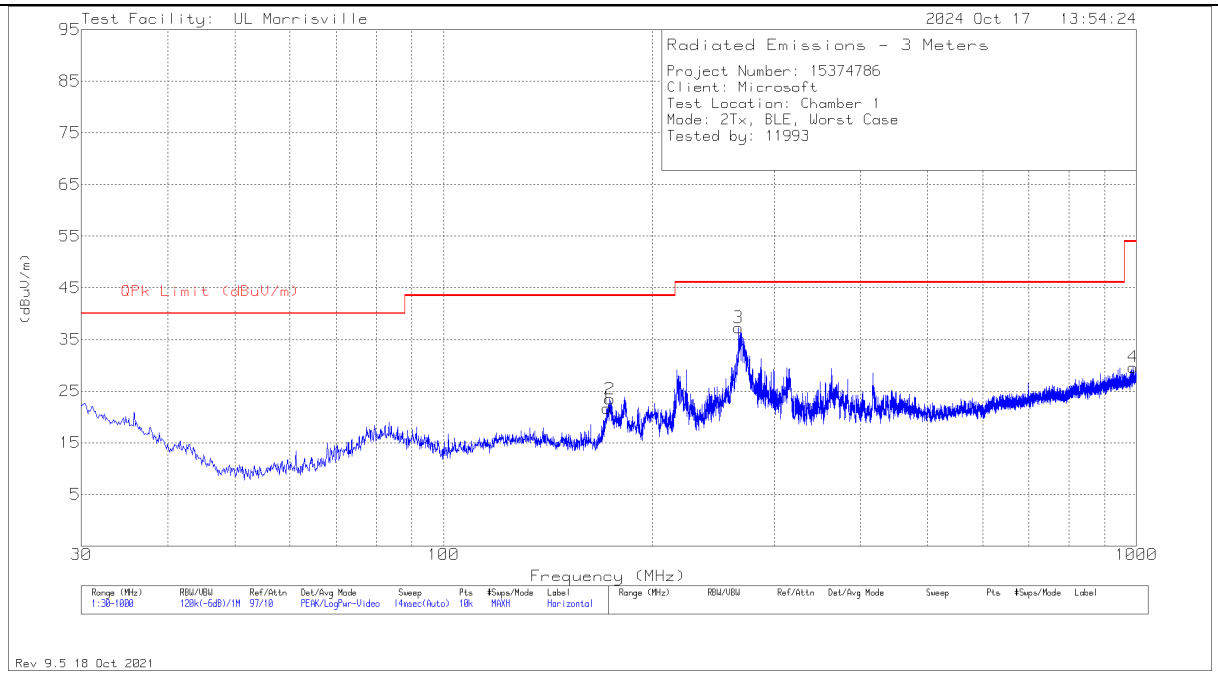
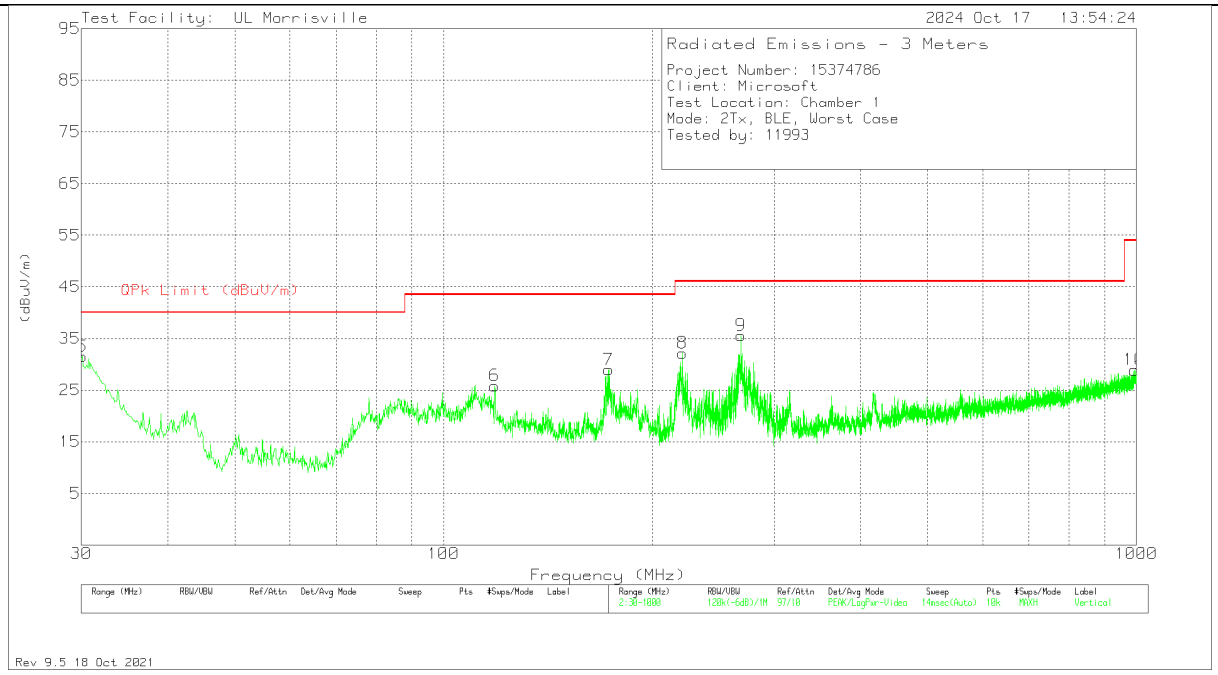
10.4.3. 2TX MIMO



HORIZONTAL



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Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90629 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 172.202	34.52	Pk	17.9	-30.7	21.72	43.52	-21.8	0-360	100	H
3	* ** 266.68	47.97	Pk	19	-29.7	37.27	46.02	-8.75	0-360	200	H
4	* ** 988.748	25.83	Pk	29.5	-25.7	29.63	53.97	-24.34	0-360	100	H
6	* ** 118.561	36.55	Pk	19.8	-30.5	25.85	43.52	-17.67	0-360	100	V
7	* ** 173.172	41.44	Pk	17.9	-30.4	28.94	43.52	-14.58	0-360	100	V
9	* ** 268.911	45.56	Pk	19.2	-29.2	35.56	46.02	-10.46	0-360	100	V
10	* ** 993.307	24.81	Pk	29.6	-25.5	28.91	53.97	-25.06	0-360	100	V
5	30.097	36.4	Pk	26.8	-31.7	31.5	-	-	0-360	100	V
2	173.851	35.97	Pk	17.8	-30.3	23.47	-	-	0-360	200	H
8	221.187	45.47	Pk	16.9	-30.2	32.17	-	-	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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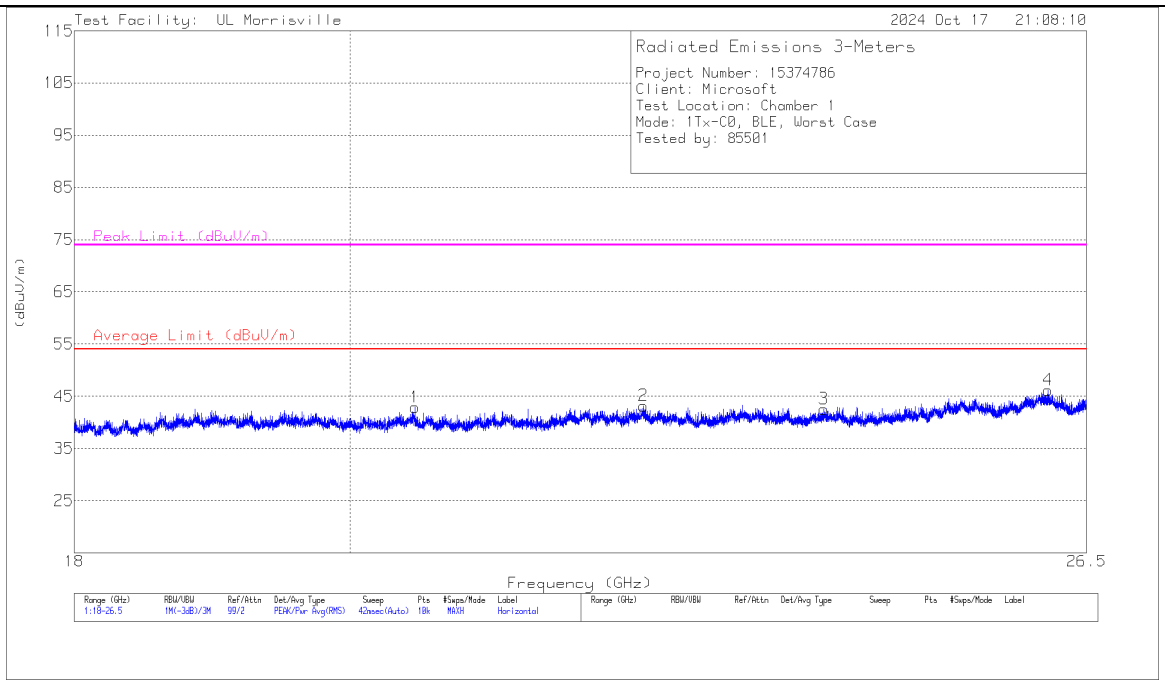
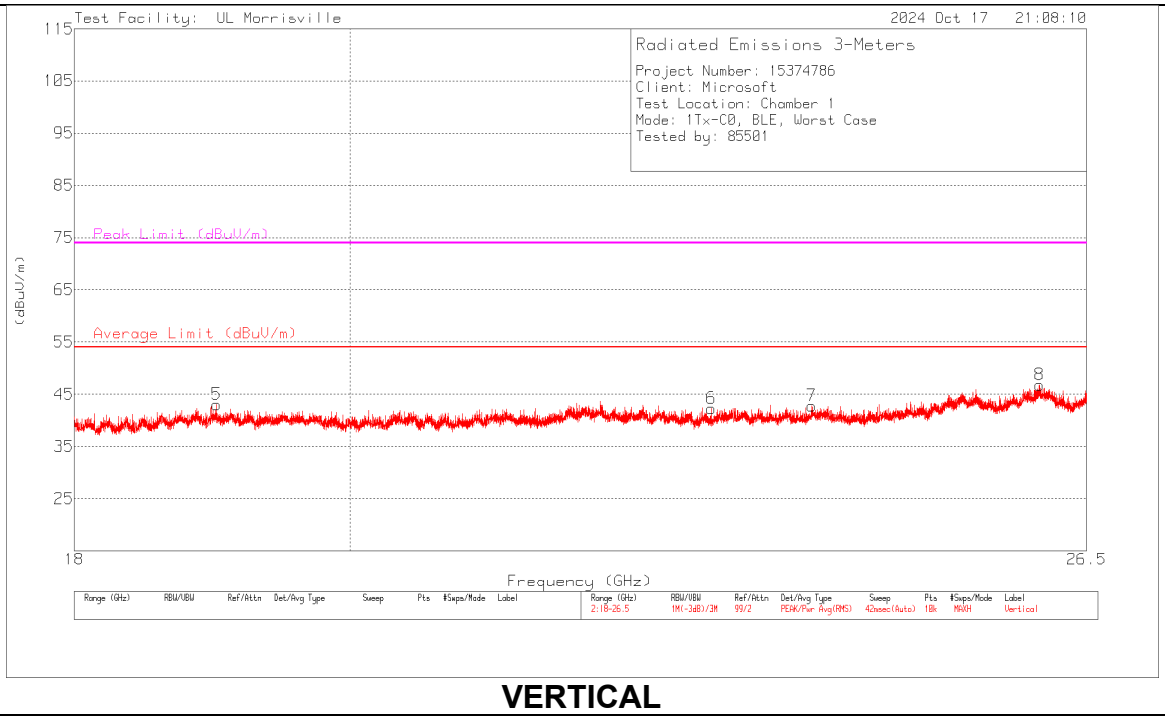
10.5. WORST CASE 18-26 GHZ

10.5.1. CHAIN 0

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



HORIZONTAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	204704 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 20.503	49.25	Pk	33.7	-40.1	42.85	54	-11.15	74	-31.15	0-360	200	H
2	* ** 22.37451	49.24	Pk	34.1	-40.2	43.14	54	-10.86	74	-30.86	0-360	101	H
3	* ** 23.97065	47.88	Pk	34.5	-39.8	42.58	54	-11.42	74	-31.42	0-360	101	H
5	* ** 19.00715	49.56	Pk	33.6	-40.1	43.06	54	-10.94	74	-30.94	0-360	300	V
6	* ** 22.9618	48.52	Pk	34	-40.2	42.32	54	-11.68	74	-31.68	0-360	150	V
7	* ** 23.86016	48.24	Pk	34.4	-39.9	42.74	54	-11.26	74	-31.26	0-360	101	V
8	26.0283	50.07	Pk	35.3	-38.6	46.77	-	-	74	-27.23	0-360	300	V
4	26.11499	49.42	Pk	35.2	-38.5	46.12	-	-	74	-27.88	0-360	250	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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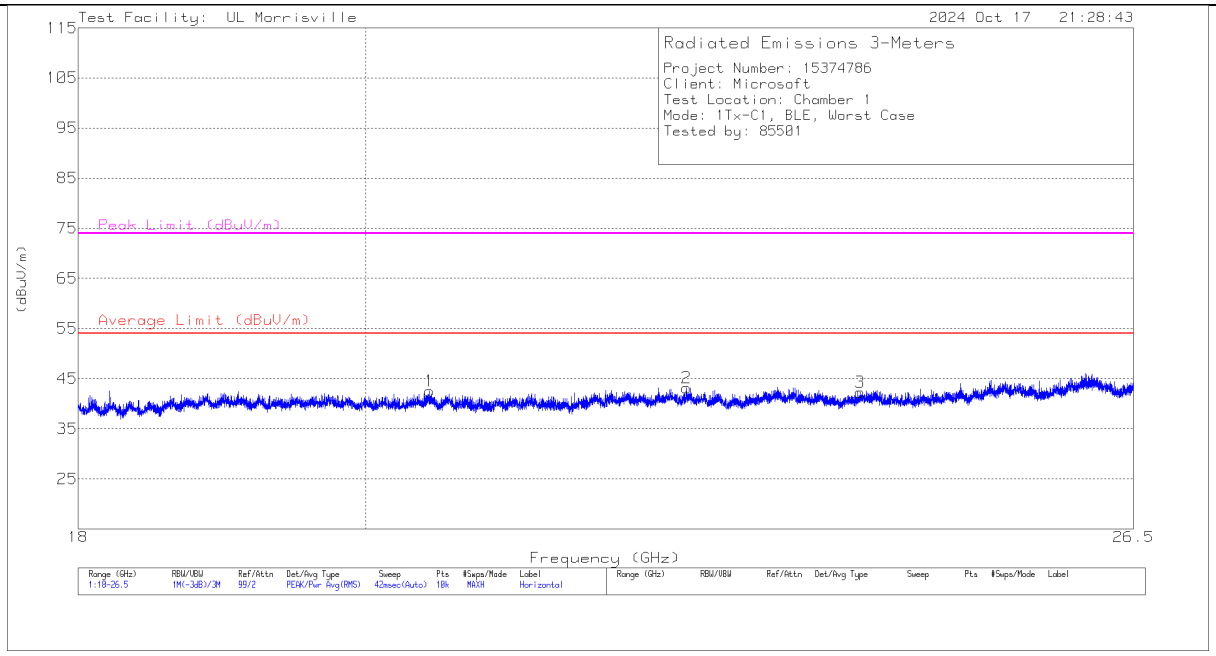
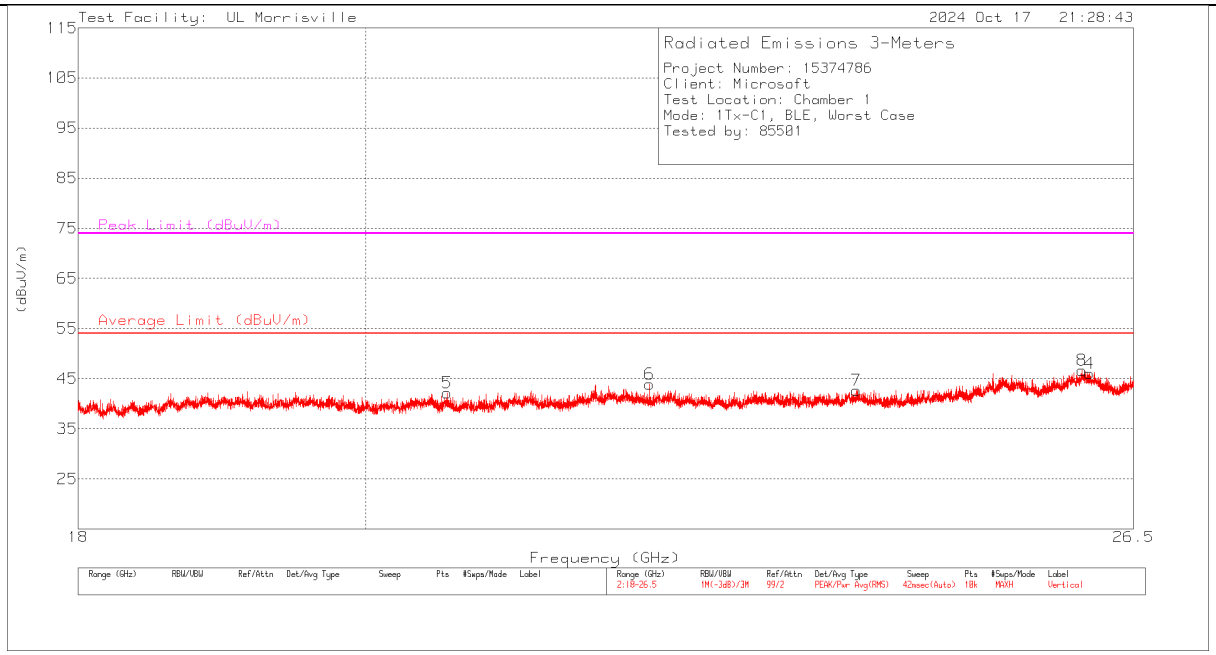
10.5.2. CHAIN 1

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



HORIZONTAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	204704 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 20.4741	48.89	Pk	33.7	-40.1	42.49	54	-11.51	74	-31.51	0-360	200	H
2	* ** 22.4986	49.18	Pk	34.2	-40.2	43.18	54	-10.82	74	-30.82	0-360	150	H
3	* ** 23.97235	47.6	Pk	34.5	-39.8	42.3	54	-11.7	74	-31.7	0-360	200	H
5	* ** 20.60584	48.59	Pk	33.7	-40.1	42.19	54	-11.81	74	-31.81	0-360	250	V
6	* ** 22.19433	49.8	Pk	34.3	-40.2	43.9	54	-10.1	74	-30.1	0-360	101	V
7	* ** 23.94176	48.08	Pk	34.4	-39.8	42.68	54	-11.32	74	-31.32	0-360	151	V
8	26.00535	49.97	Pk	35.3	-38.6	46.67	-	-	74	-27.33	0-360	151	V
4	26.07589	49.4	Pk	35.2	-38.6	46	-	-	74	-28	0-360	300	V

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

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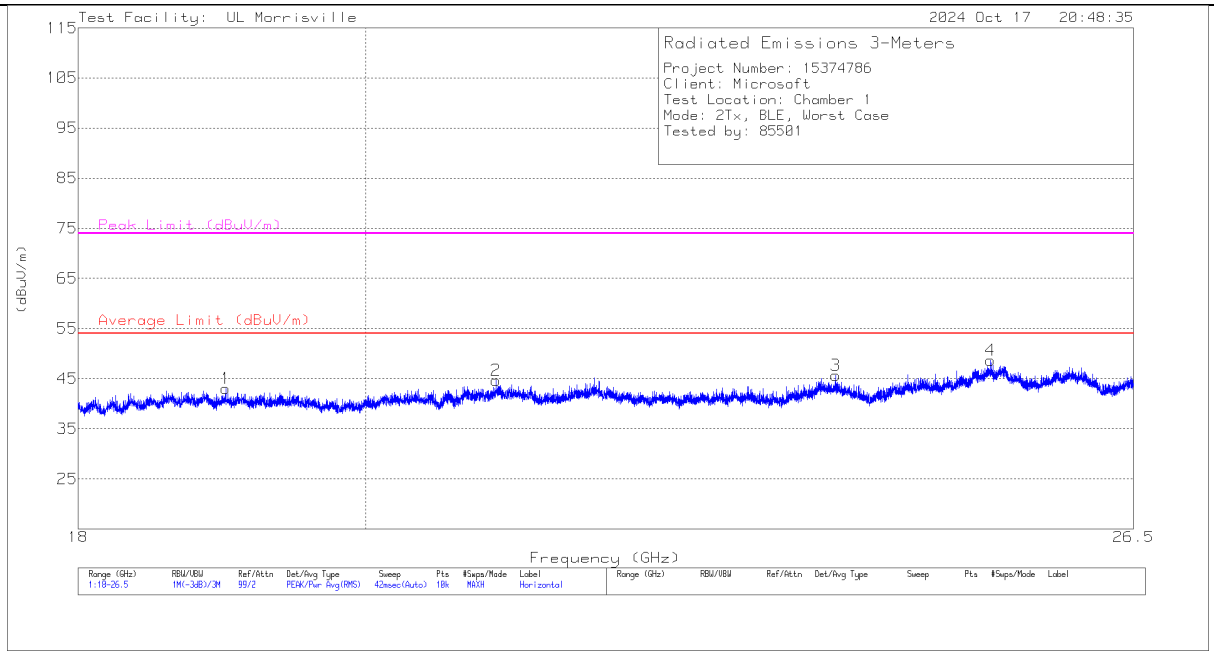
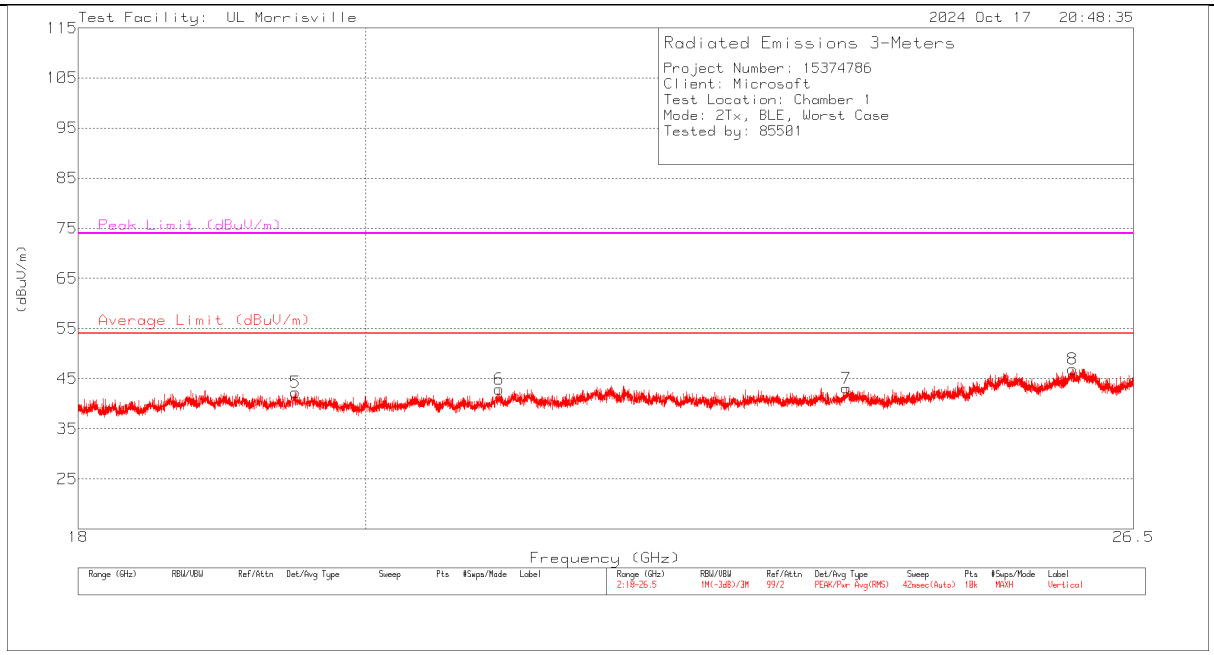
10.5.3. 2TX MIMO

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



HORIZONTAL



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	204704 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 18.9995	49.55	Pk	33.6	-40.1	43.05	54	-10.95	74	-30.95	0-360	300	H
2	* ** 20.98065	51.03	Pk	33.6	-40	44.63	54	-9.37	74	-29.37	0-360	150	H
3	* ** 23.75817	51.21	Pk	34.4	-39.9	45.71	54	-8.29	74	-28.29	0-360	101	H
5	* ** 19.49075	49.05	Pk	33.3	-40.1	42.25	54	-11.75	74	-31.75	0-360	101	V
6	* ** 21.0036	49.33	Pk	33.6	-40	42.93	54	-11.07	74	-31.07	0-360	300	V
7	* ** 23.85336	48.59	Pk	34.4	-39.9	43.09	54	-10.91	74	-30.91	0-360	300	V
4	25.14694	52.16	Pk	35.6	-39.1	48.66	-	-	74	-25.34	0-360	150	H
8	25.91781	50.36	Pk	35.3	-38.7	46.96	-	-	74	-27.04	0-360	300	V

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

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11. SETUP PHOTOS

Please refer to R15374786-EP1 for setup photos

END OF TEST REPORT

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