

TEST REPORT

Report Number: R15984115-E1

Applicant : Abbott Diabetes Care Inc.
1360 South Loop Rd
Alameda, CA 94502, United States

Model : FreeStyle Libre 2 Sensor / FreeStyle Libre 2 Plus Sensor

FCC ID : QXS-LIB02S2

IC : 12106A-LIB02S2

EUT Description : FreeStyle Libre 2 (Plus) Sensor

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C: 2025
ISED RSS-247 ISSUE 4
ISED RSS-GEN ISSUE 5 + A1 + A2

Date Of Issue:
2026-02-18

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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2025-09-19	Initial Issue	Manish Baral
V2	2026-02-18	Updated C63.10 References	Charles Moody

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Abbott Diabetes Care Inc.
1360 South Loop Rd
Alameda, CA 94502, United States

EUT DESCRIPTION: FreeStyle Libre 2 (Plus) Sensor

MODEL: Freestyle Libre 2 Sensor / Freestyle Libre 2 Plus Sensor

SERIAL NUMBER: E07A00730DB71419, E07A00730DB71415

SAMPLE RECEIPT DATE: 2025-09-09

DATE TESTED: 2025-09-10 TO 2025-09-18

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C: 2025	Refer to Section 2
ISED RSS-247 Issue 4	
ISED RSS-GEN Issue 5 + A1 + A2	

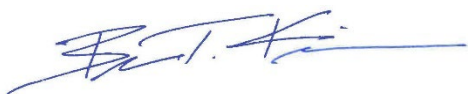
UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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

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

Approved & Released
For UL LLC By:

Prepared By:



Brian Kiewra
Project Engineer
Consumer, Medical and IT Segment
UL LLC



Manish Baral
Engineer
Consumer, Medical and IT Segment
UL LLC

2. TEST RESULTS SUMMARY

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

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

- 1) Antenna gain and type (see section 6.3)
- 2) Worst-case data rates (see section 6.5)

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
-	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.3.
15.247 (a) (2)	RSS-247 6.3.1 (a)	6dB BW	Compliant	None
15.247 (b) (3)	RSS-247 6.3.2	Output Power		
See Comment		Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	RSS-247 6.3.1 (b)	PSD	Compliant	None
15.247 (d)	RSS-247 6.6	Conducted Spurious Emissions		
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions		
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Non-Applicable	EUT is battery powered.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC 47 CFR Part 2, FCC 47 CFR Part 15: 2025, ANSI C63.10-2020+A1:2023+Corr:2024, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5 + A1 + A2, and RSS-247 Issue 4.

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 Durham, NC 27713, U.S.A	US0067	2180C	825374
☒	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A		27265	

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

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

5.2. DECISION RULES

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

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Channel Bandwidth	1.22%
RF output power, conducted	1.3 dB (PK) 0.45 dB (AV)
Power Spectral Density, conducted	2.47 dB
Unwanted Emissions, conducted	1.94 dB
All emissions, radiated	6.01 dB
Conducted Emissions (0.150-30MHz) - LISN	3.40 dB
Temperature	0.57°C
Humidity	3.39%
DC Supply voltages	1.70%
Time	3.39%

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

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
 $36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
 $36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is an automatic glucose sensor, taking readings every minute. This report covers the full emissions testing of the BLE radio. Both models are electrically identical. The FreeStyle Libre 2 Sensor was used for testing, as this was declared by the client to be worst case.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE 1Mbps	0.72	1.18

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

The radio utilizes a PIFA antenna, with a maximum gain of -1.59 dBi.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 3.6.10.0.

The test utility software used during testing was PTUGen4

6.5. WORST-CASE CONFIGURATION AND MODE

The BLE radio only supports 1Mbps. Therefore, all testing was performed in this data rate only.

Radiated emissions below 1GHz and above 18GHz, were performed with the EUT set to transmit at the channel with highest power spectral density as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low and high channels as well as mid channel for radiated spurious emissions.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	HP	14-dq1039wm	5CD941FN5J	-
EVM Board	Texas Instruments	TRF7960	-	-

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 A Extension Cord	Shielded	< 1m	Used from Laptop to EVM board.

TEST SETUP

The EUT is placed on the EVM board in order to configure the radio with a laptop prior to testing. For radiated testing, the EUT is removed from the board and laptop and tested without the use of any additional support equipment. The radiated sample has its own internal battery and therefore was tested on its own.

SETUP DIAGRAMS

Please refer to R15984115-EP1 for setup diagrams

7. TEST AND MEASUREMENT EQUIPMENT

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

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

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
88761	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-10-05	2025-10-05
	Gain-Loss Chains				
91977	Gain-loss string: 1-18GHz	Various	Various	2025-05-31	2026-05-31
	Receiver & Software				
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2025-07-29	2026-07-29
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
239540	Environmental Meter	Fisher Scientific	15-077-963	2025-08-05	2027-08-05

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

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	0.009-30MHz				
135144	Active Loop Antenna	ETS-Lindgren	6502	2024-10-02	2025-10-02
	30-1000 MHz				
90628	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-01-02	2026-01-02
	1-18 GHz				
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2024-04-09	2026-04-09
	18-40 GHz				
91186	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2024-05-16	2026-05-16
	Gain-Loss Chains				
207638	Gain-loss string: 0.009-30MHz	Various	Various	2025-06-13	2026-06-13
207639	Gain-loss string: 25-1000MHz	Various	Various	2025-06-13	2026-06-13
207640	Gain-loss string: 1-18GHz	Various	Various	2025-06-13	2026-06-13
225795	Gain-loss string: 18-40GHz	Various	Various	2025-06-13	2026-06-13
	Receiver & Software				
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2025-04-21	2026-04-21

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
90411	Spectrum Analyzer	Keysight	N9030A	2025-07-30	2026-07-30
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
241204	Environmental Meter	Fisher Scientific	15-077-963	2025-08-05	2027-08-05

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Conducted Room 1				
248881	Environmental Meter 240303668	Control Company	06-662-4	2024-04-10	2026-04-10
211056	Real-Time Peak Power Sensor 50MHz to 8GHz 12001	Boonton	RTP5000	2025-07-30	2026-07-30
90410	Spectrum Analyzer MY54410168	Keysight Technologies	N9030A	2025-07-10	2026-07-10
-	DC Power Supply MY58426145	Keysight Technologies	E3633A	-	-
91212	True RMS Multimeter MY54140026	Agilent	U1232A	2025-07-30	2026-07-30
Power Software	Boonton Power Analyzer	Boonton	Version 3.0.13.0		
SOFTEMI	Antenna Port Software	UL	Version 2024.2.23		

8. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10-2020 Section 11.6

6 dB BW: ANSI C63.10-2020 Subclause -11.8.2

Occupied BW (99%): ANSI C63.10-2020 Section 6.9.3

Output Power: ANSI C63.10-2020 Subclause -11.9.1.2 Method PKPM1 Peak-reading power meter
ANSI C63.10-2020 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

PSD: ANSI C63.10-2020 Subclause -11.10.2 Method PKPSD (peak PSD)

Conducted emissions non-restricted frequency bands: ANSI C63.10-2020 Subclause -11.11 and 6.10.4

Radiated emissions restricted frequency bands: ANSI C63.10-2020 Subclause -11.12.1 and 6.10.5

General radiated emissions: ANSI C63.10 Subclause - 6.3-6.6

AC Power-line conducted emissions: ANSI C63.10-2020, Section 6.2.

9. ANTENNA PORT TEST RESULTS

Note: To reduce file size of report, only representative plots are included for some conducted test data in section 9.

9.1. ON TIME AND DUTY CYCLE

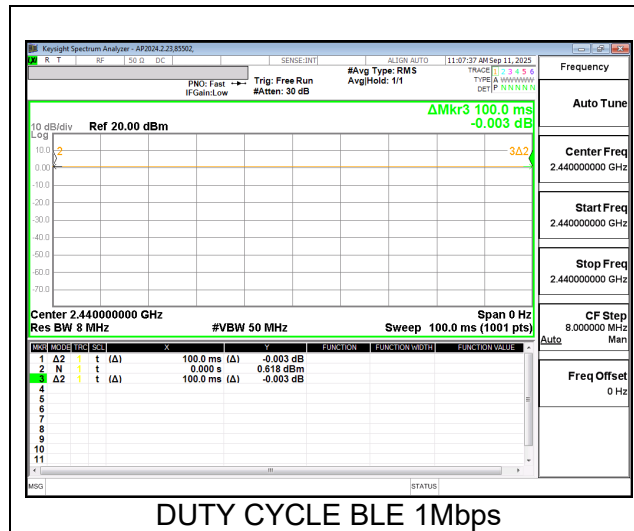
LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
BLE 1 Mbps	100.000	100.000	1.000	100.00%	0.00	0.010



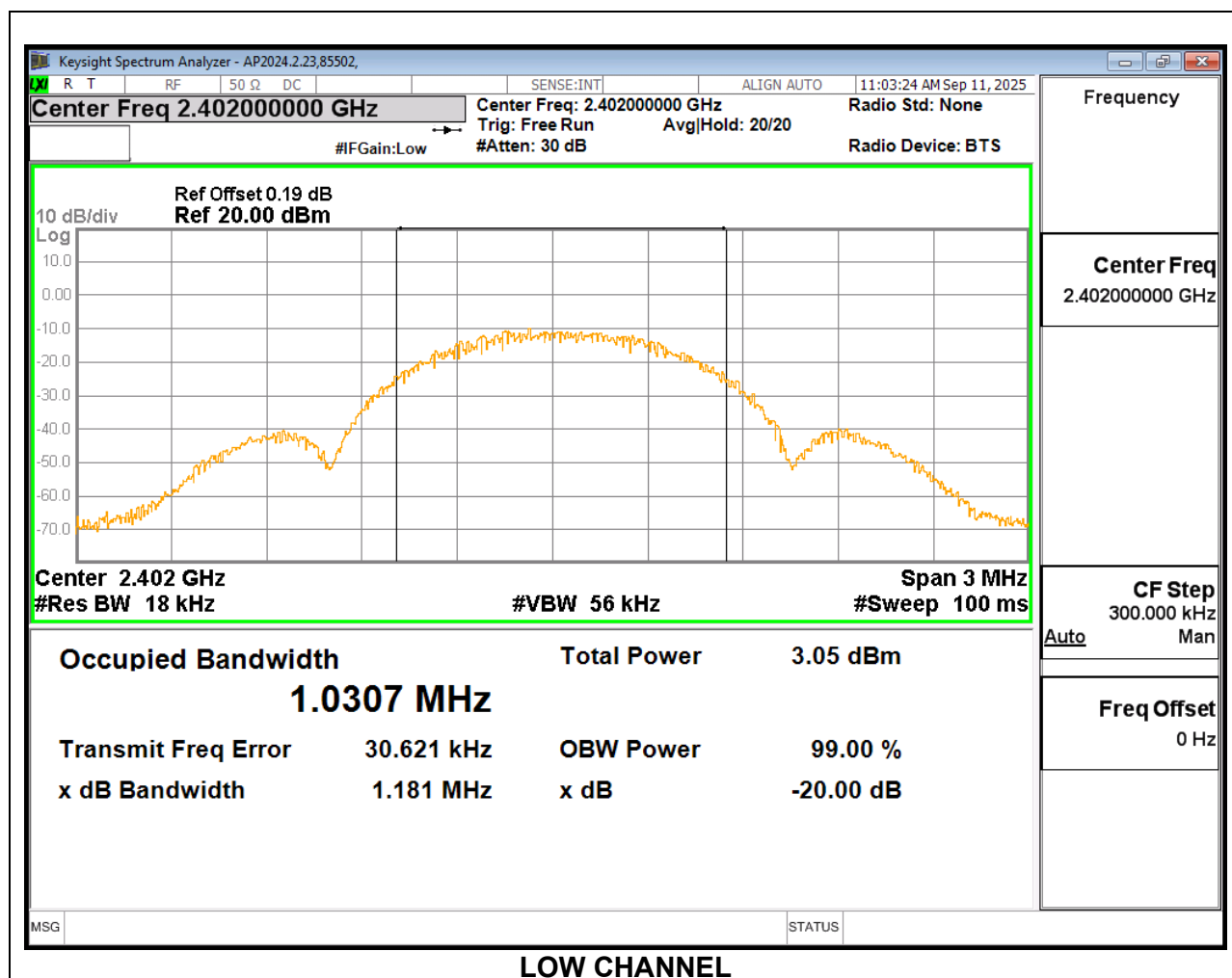
9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

9.2.1. BLE 1Mbps MODE

Frequency (MHz)	99% Bandwidth Chain 0 (MHz)
2402	1.0307
2440	1.0206
2480	1.0264



9.3. 6 dB BANDWIDTH

LIMITS

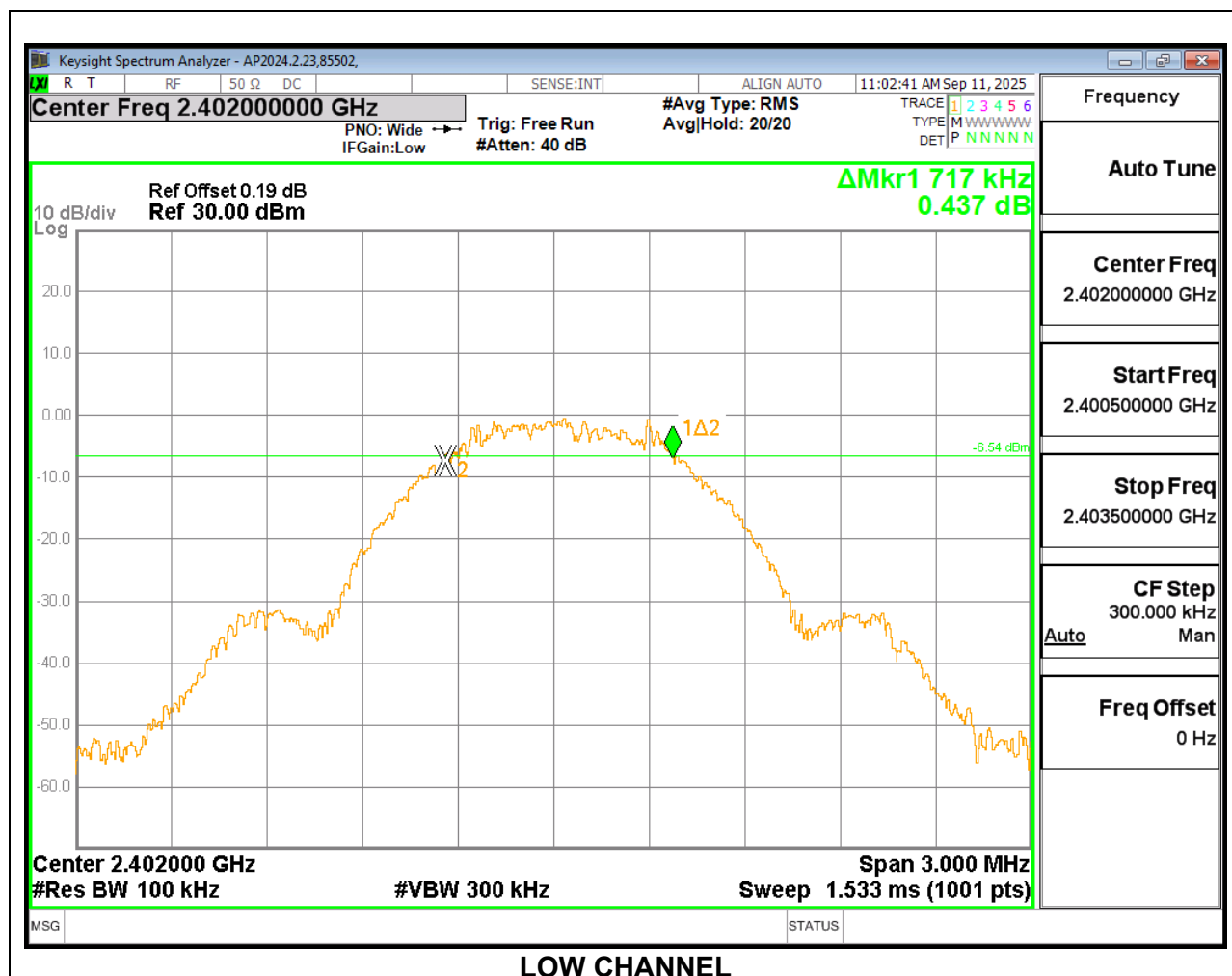
FCC §15.247 (a) (2)

RSS-247 6.3.1 (a)

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

9.3.1. BLE 1Mbps MODE

Frequency (MHz)	6 dB Bandwidth Chain 0 (MHz)	Minimum Limit (MHz)
2402	0.717	0.5
2440	0.669	0.5
2480	0.702	0.5



9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)
RSS-247 6.3.2

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 12.68 dB (0.44 EUT cable loss, 1.94 cable loss, 10.30 cable loss) was entered as an offset in the power meter.

The power output was measured on the EUT antenna port using SMA cable connected to a power meter via wideband power sensor. Peak output power was read directly from power meter.

RESULTS

9.4.1. BLE 1Mbps MODE

Test Engineer:	85502
Test Date:	2025-09-11

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 37	2402	0.63	30.00	-29.37
Mid 17	2440	0.67	30.00	-29.33
High 39	2480	0.72	30.00	-29.28

9.5. AVERAGE POWER

LIMITS

None; for reporting purposes only

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 12.68 dB (0.44 EUT cable loss, 1.94 cable loss, 10.30 cable loss) was entered as an offset in the power meter.

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband power sensor. Gated average output power was read directly from power meter.

9.5.1. BLE 1Mbps Mode

Test Engineer:	85502
Test Date:	2025-08-08

Frequency (MHz)	Chain 0 Meas Power (dBm)
2402	0.42
2440	0.45
2480	0.46

9.6. POWER SPECTRAL DENSITY

LIMITS

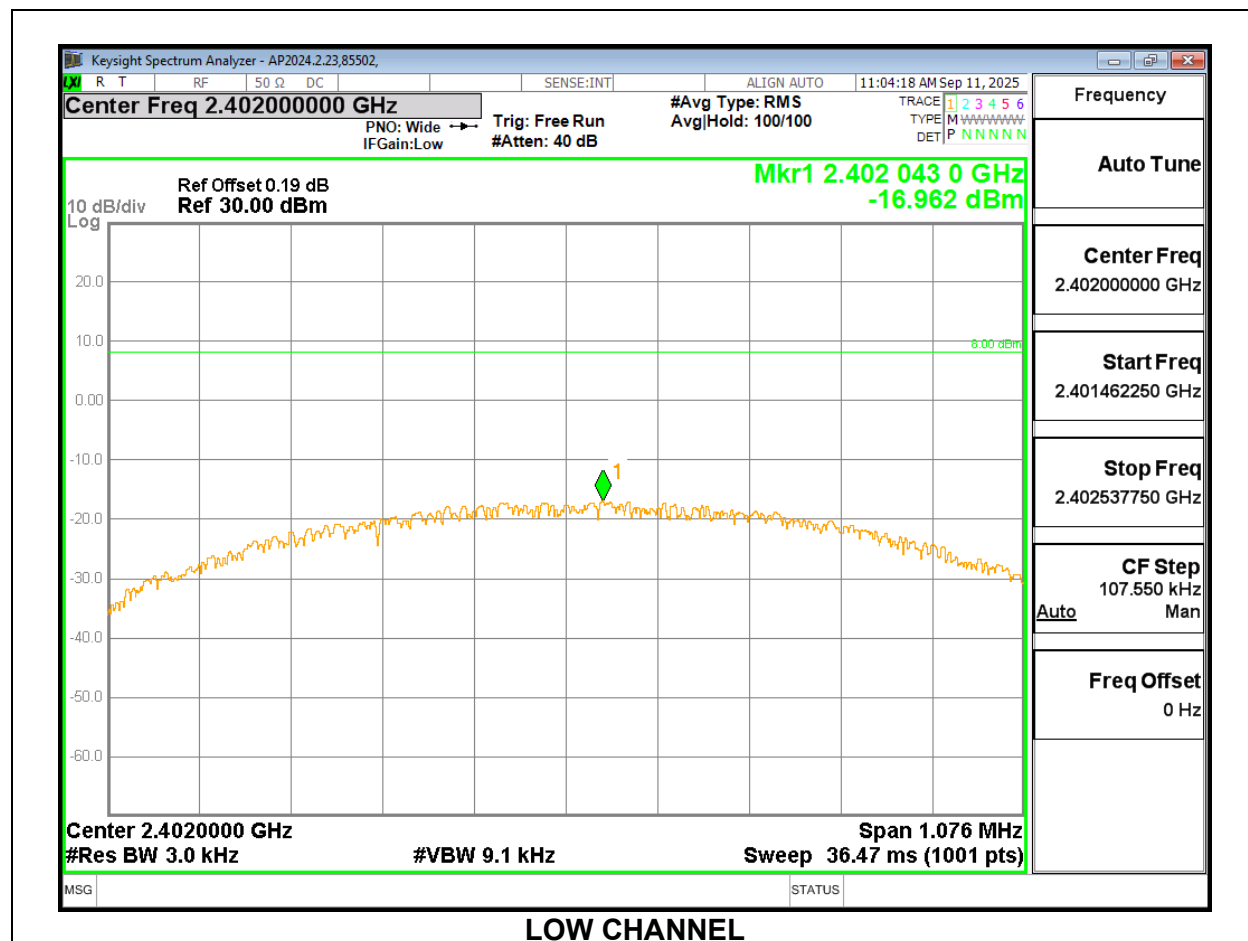
FCC §15.247 (e)
RSS-247 6.3.1 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

9.6.1. BLE 1Mbps MODE

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 37	2402	-16.96	8.0	-25.0
Mid 17	2440	-16.66	8.0	-24.7
High 39	2480	-16.70	8.0	-24.7



9.7. CONDUCTED SPURIOUS EMISSIONS

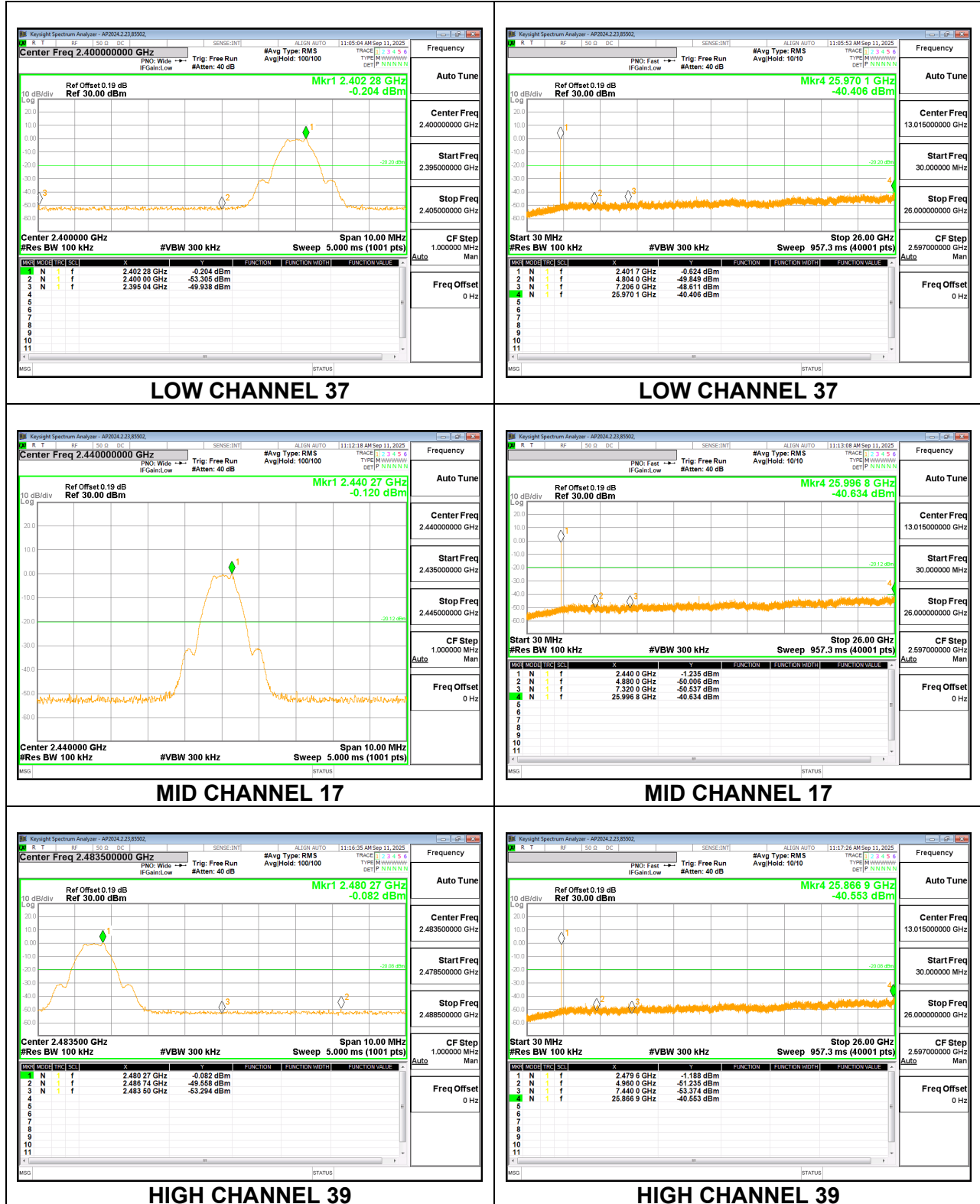
LIMITS

FCC §15.247 (d)
RSS-247 6.6

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

RESULTS

9.7.1. BLE 1Mbps MODE



10. RADIATED TEST RESULTS

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

IC RSS-GEN Clause 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.

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 power spectral density was tested.

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

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

Based 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

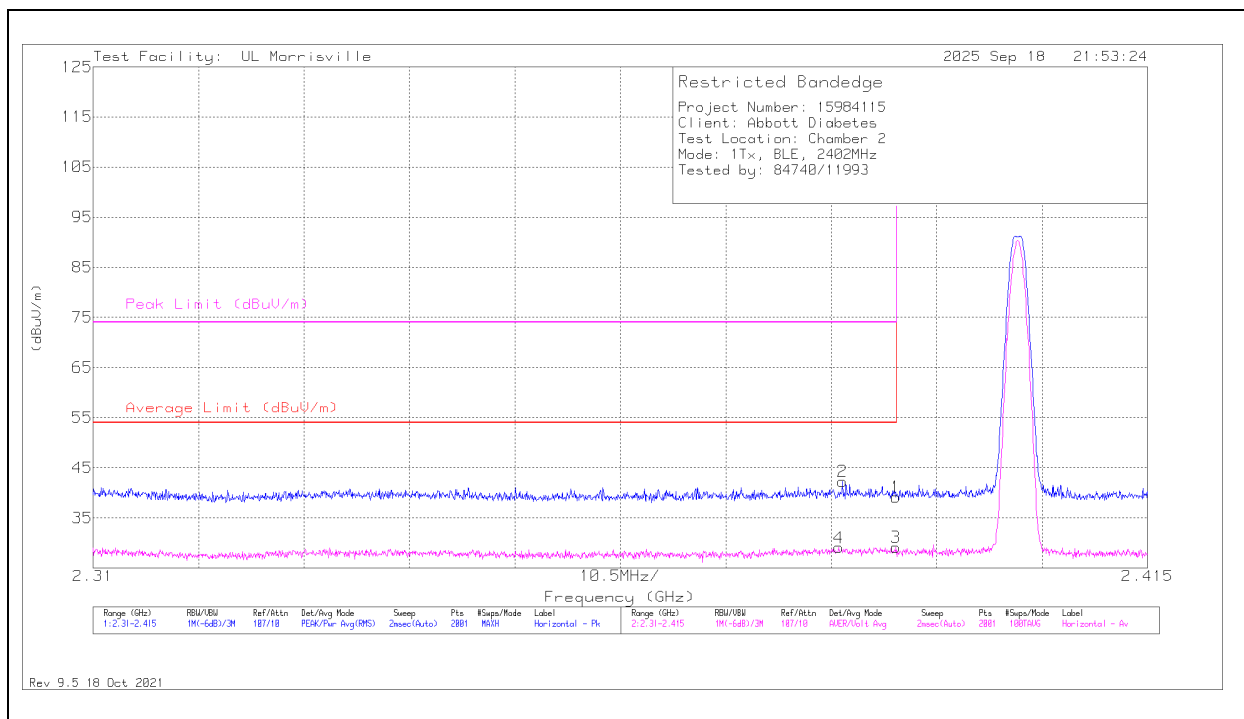
OFS and chamber correlation testing had been performed and chamber measured test result is the worst-case test result.

10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. TX ABOVE 1 GHz BLE 1Mbps MODE IN THE 2.4 GHz BAND

BANDEDGE (LOW CHANNEL, 2402MHz)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	88761 (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	*** 2.38996	32.47	Pk	31.8	-25.1	39.17	-	-	74	-34.83	155	137	H
2	*** 2.38466	35.37	Pk	31.8	-24.9	42.27	-	-	74	-31.73	155	137	H
3	*** 2.38996	22.38	ADV	31.8	-25.1	29.08	54	-24.92	-	-	155	137	H
4	*** 2.38424	22.26	ADV	31.8	-25	29.06	54	-24.94	-	-	155	137	H

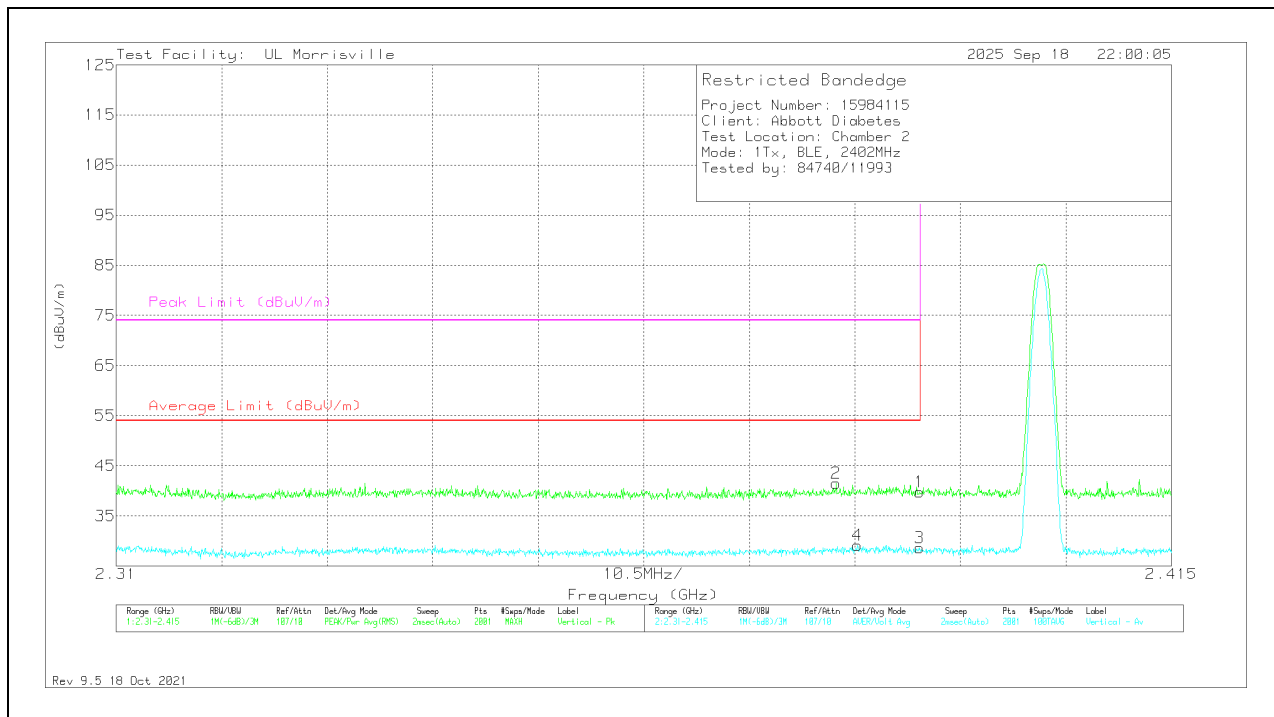
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	88761 (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	*** 2.38996	33.07	Pk	31.8	-25.1	39.77	-	-	74	-34.23	227	381	V
2	*** 2.38166	34.86	Pk	31.8	-25.1	41.56	-	-	74	-32.44	227	381	V
3	*** 2.38996	21.9	ADV	31.8	-25.1	28.6	54	-25.4	-	-	227	381	V
4	*** 2.38376	22.34	ADV	31.8	-25	29.14	54	-24.86	-	-	227	381	V

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

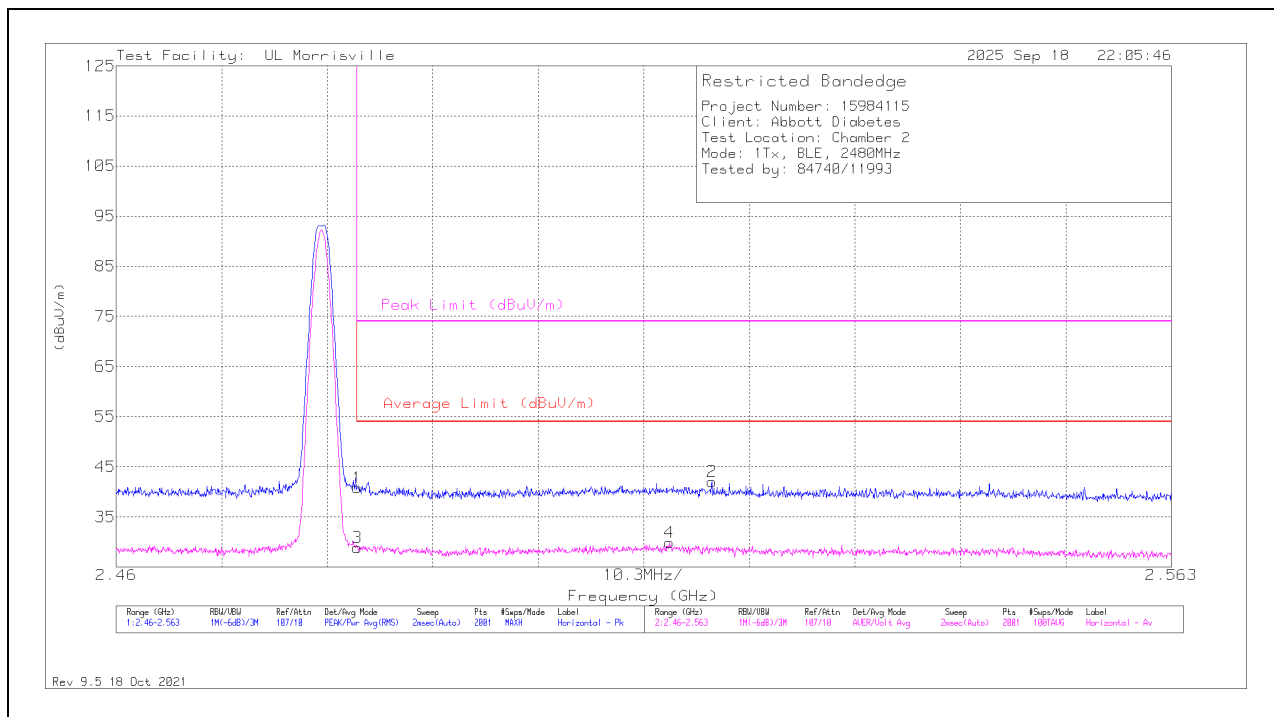
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

BANEDGE (HIGH CHANNEL, 2480MHz)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	88761 (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	34.13	Pk	32.2	-25.5	40.83	-	-	74	-33.17	191	132	H
2	** 2.51814	35.44	Pk	32.4	-25.8	42.04	-	-	74	-31.96	191	132	H
3	*** 2.48354	22.13	ADV	32.2	-25.5	28.83	54	-25.17	-	-	191	132	H
4	** 2.51397	22.95	ADV	32.4	-25.5	29.85	54	-24.15	-	-	191	132	H

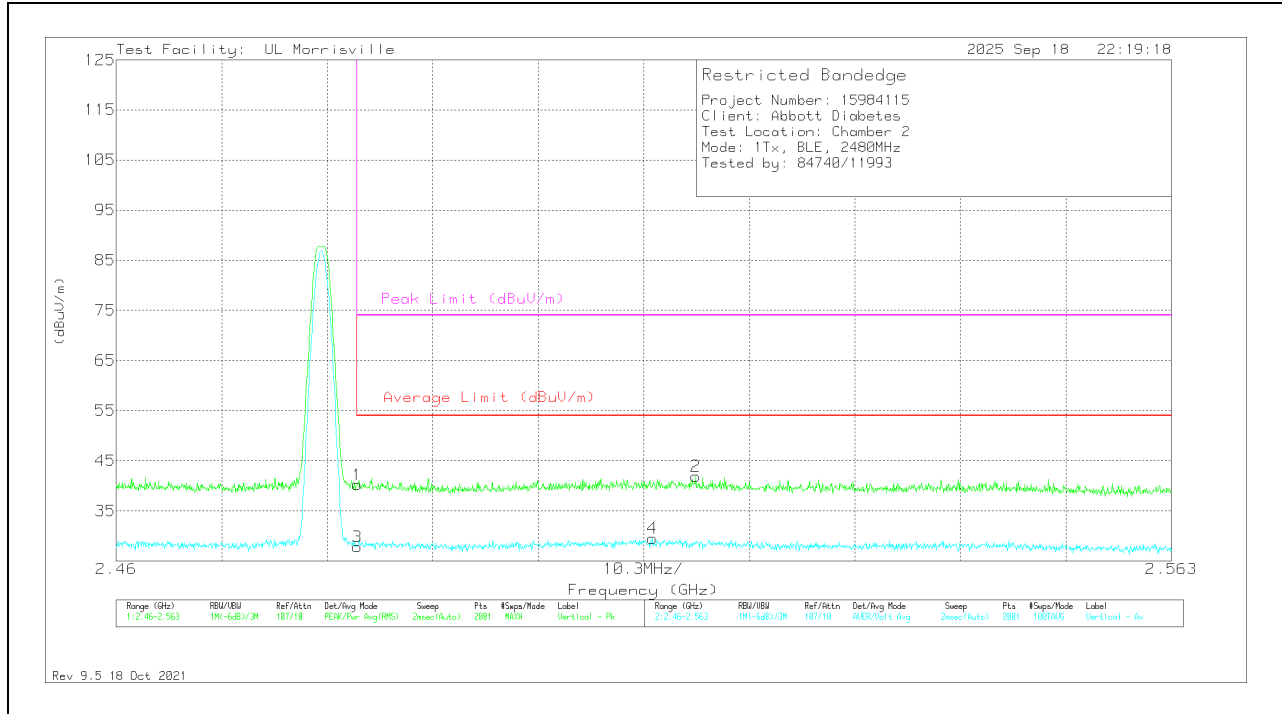
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	88761 (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	33.51	Pk	32.2	-25.5	40.21	-	-	74	-33.79	141	358	V
2	** 2.51655	35.2	Pk	32.4	-25.7	41.9	-	-	74	-32.1	141	358	V
3	*** 2.48354	21.11	ADV	32.2	-25.5	27.81	54	-26.19	-	-	141	358	V
4	** 2.51232	22.64	ADV	32.4	-25.5	29.54	54	-24.46	-	-	141	358	V

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

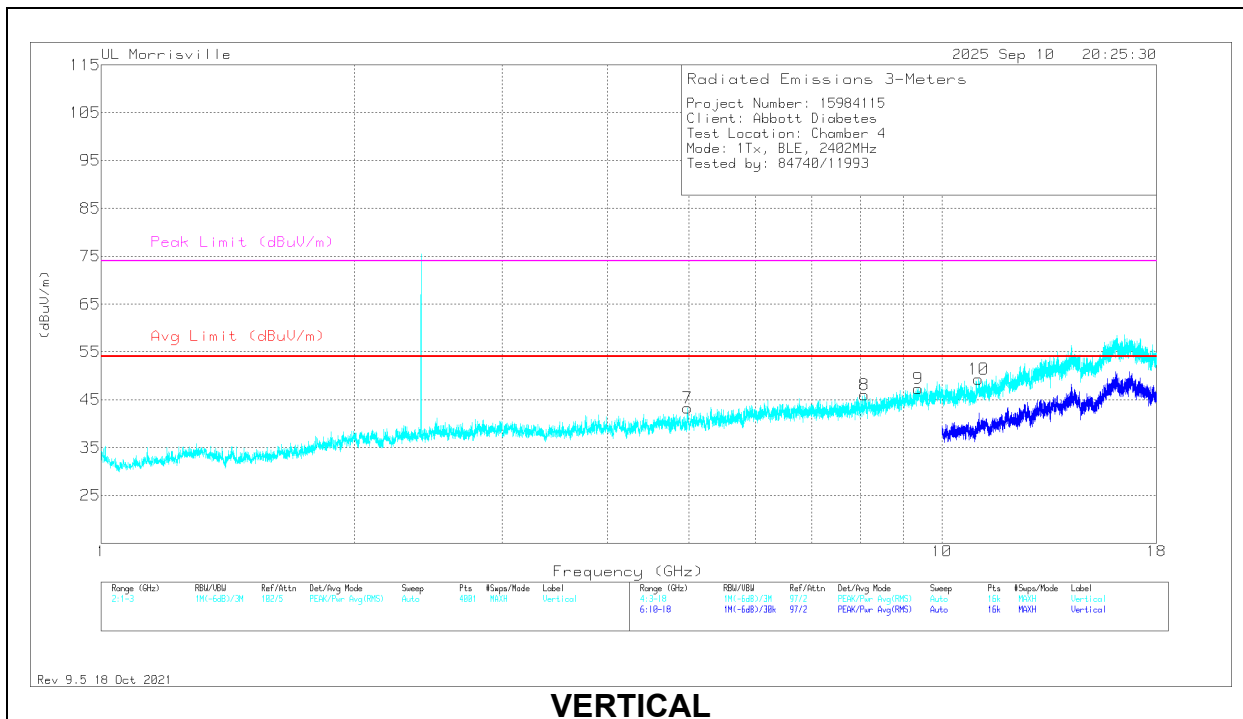
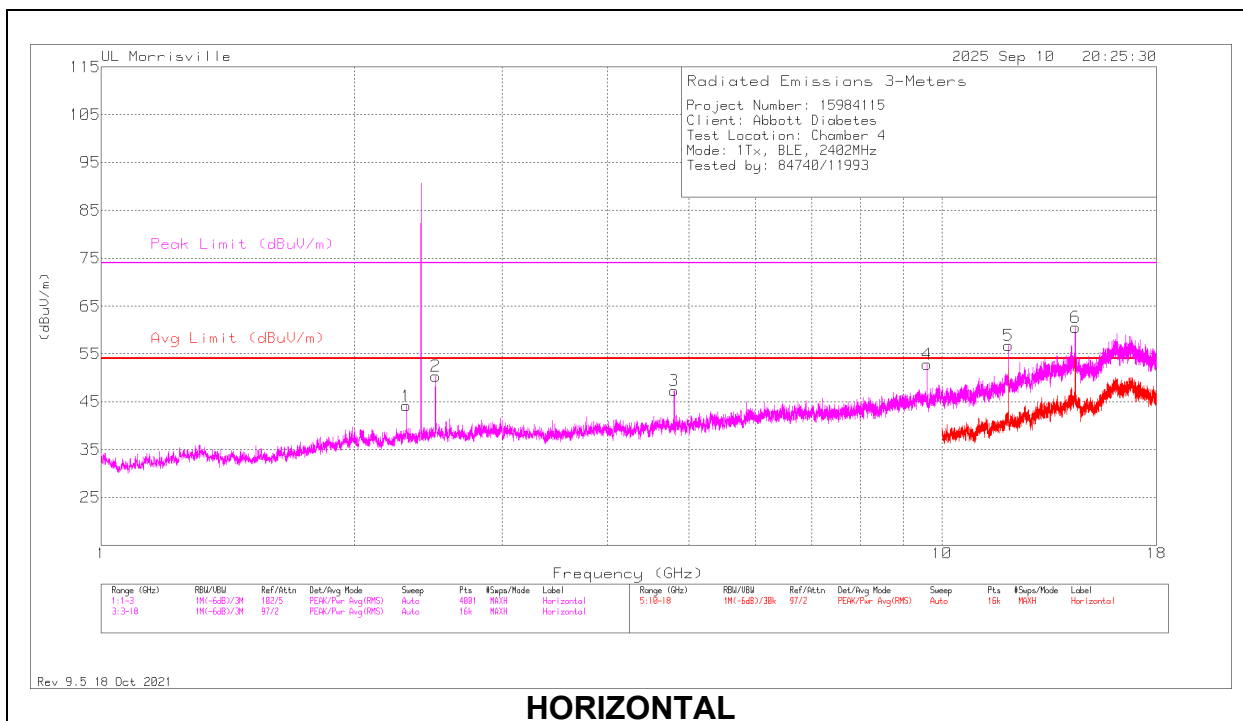
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (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
2	*** 2.49829	41.19	PK2	32.4	-22.9	50.69	-	-	74	-23.31	106	106	H
	*** 2.49767	20.1	ADV	32.4	-23	29.5	54	-24.5	-	-	106	106	H
3	*** 4.80375	45.89	Pk	33.9	-32.5	47.29	54	-6.71	74	-26.71	0-360	100	H
5	*** 12.01137	45.09	PK2	38.6	-23.1	60.59	-	-	74	-13.41	24	101	H
	*** 12.01121	37.36	ADV	38.6	-23.1	52.86	54	-1.14	-	-	24	101	H
7	*** 4.98281	40.3	Pk	33.9	-30.9	43.3	54	-10.7	74	-30.7	0-360	200	V
8	*** 8.09156	37.48	Pk	35.6	-27.1	45.98	54	-8.02	74	-28.02	0-360	200	V
9	*** 9.37875	35.46	Pk	36.5	-24.6	47.36	54	-6.64	74	-26.64	0-360	200	V
10	*** 11.0621	34.24	PK2	37.8	-21.9	50.14	-	-	74	-23.86	9	287	V
	*** 11.06309	22.05	ADV	37.8	-21.8	38.05	54	-15.95	-	-	9	287	V
1	2.3065	35.02	Pk	31.9	-22.8	44.12	-	-	-	-	0-360	100	H
4	9.6075	40.9	Pk	36.6	-24.7	52.8	-	-	-	-	0-360	100	H
6	14.41406	39.77	Pk	39	-18.2	60.57	-	-	-	-	0-360	100	H

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

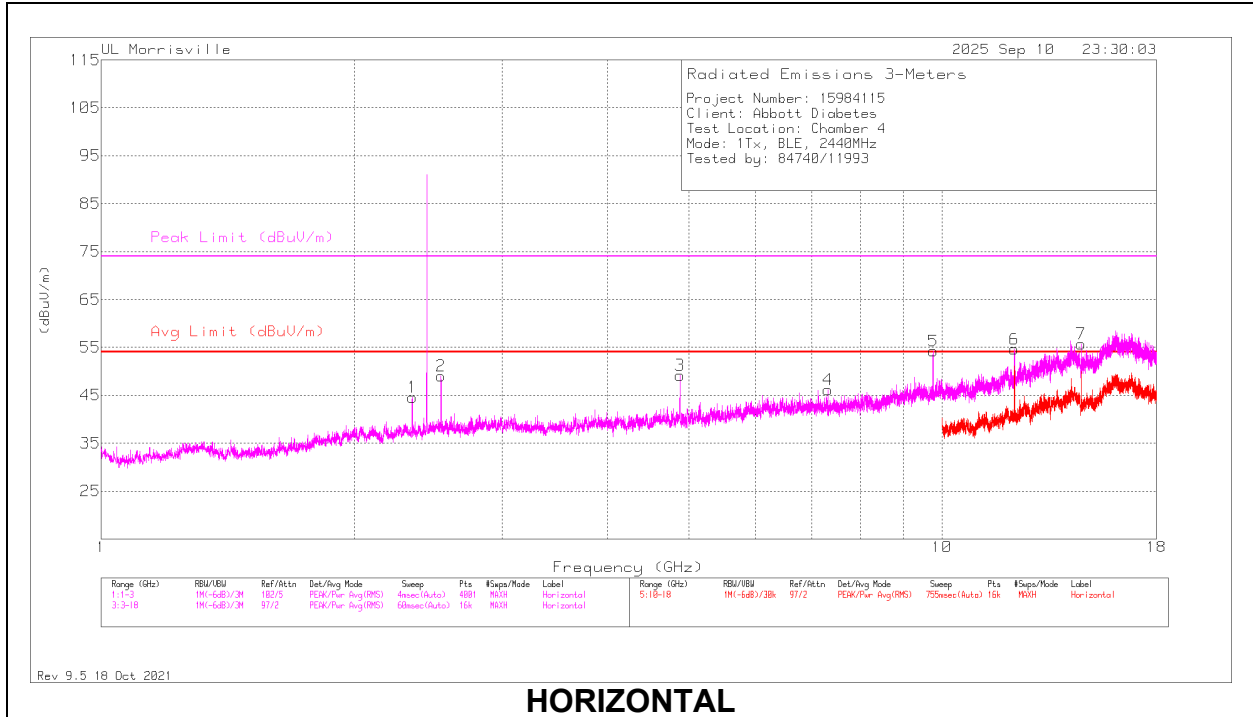
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

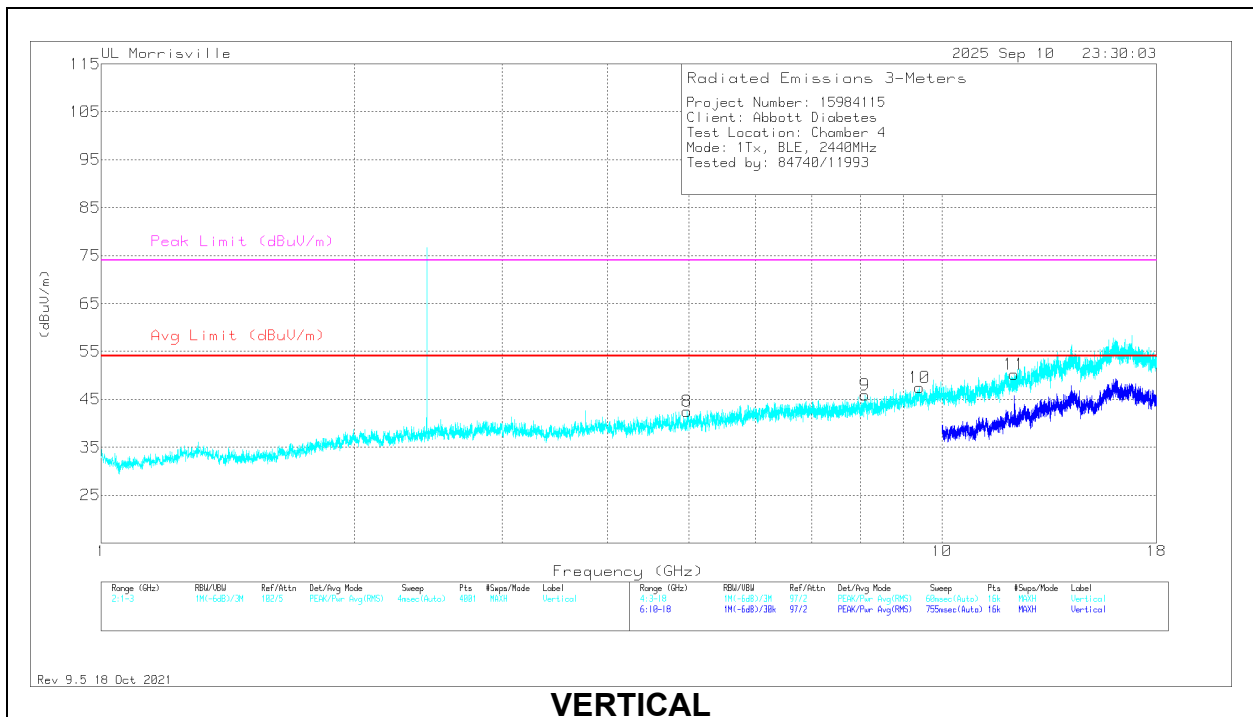
PK2 - Maximum Peak

ADV - Linear Voltage Average

MID CHANNEL



HORIZONTAL



VERTICAL

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (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	*** 2.3445	36.15	Pk	31.9	-23.5	44.55	54	-9.45	74	-29.45	0-360	100	H
2	** 2.53581	43.12	PK2	32.5	-23.3	52.32	-	-	74	-21.68	64	172	H
	** 2.53582	20.03	ADV	32.5	-23.3	29.23	54	-24.77	-	-	64	172	H
3	*** 4.88065	49.29	PK2	33.9	-31.6	51.59	-	-	74	-22.41	116	103	H
	*** 4.8803	43.35	ADV	33.9	-31.5	45.75	54	-8.25	-	-	116	103	H
4	*** 7.32094	39.11	Pk	35.5	-28.5	46.11	54	-7.89	74	-27.89	0-360	100	H
6	*** 12.20133	42.67	PK2	38.7	-22.3	59.07	-	-	74	-14.93	208	101	H
	*** 12.2012	34.12	ADV	38.7	-22.3	50.52	54	-3.48	-	-	208	101	H
8	*** 4.97719	40.33	Pk	33.9	-31.7	42.53	54	-11.47	74	-31.47	0-360	200	V
9	*** 8.09906	36.99	Pk	35.6	-26.7	45.89	54	-8.11	74	-28.11	0-360	200	V
10	*** 9.41156	35.71	Pk	36.5	-24.7	47.51	54	-6.49	74	-26.49	0-360	200	V
11	*** 12.19889	37.28	PK2	38.7	-22.3	53.68	-	-	74	-20.32	200	120	V
	*** 12.19929	24.72	ADV	38.7	-22.3	41.12	54	-12.88	-	-	200	120	V
5	9.76125	43.11	Pk	36.8	-25.7	54.21	-	-	-	-	0-360	100	H
7	14.64188	35.97	Pk	39.3	-19.6	55.67	-	-	-	-	0-360	100	H

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

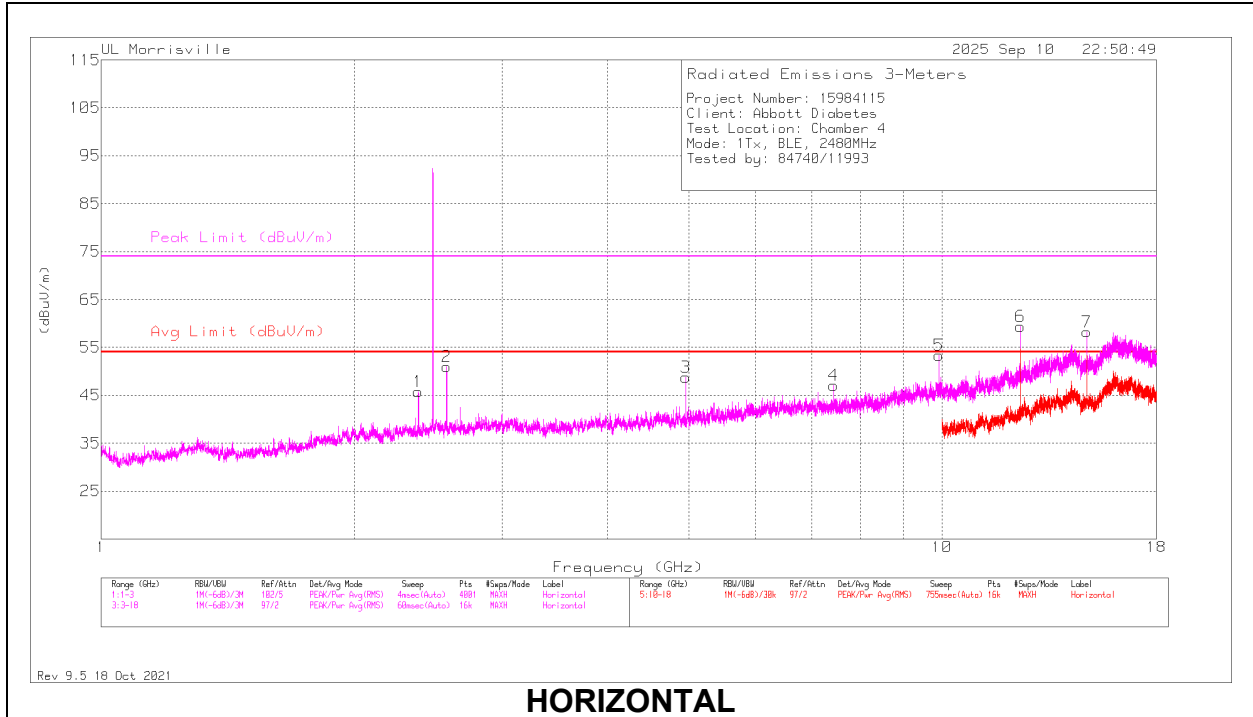
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

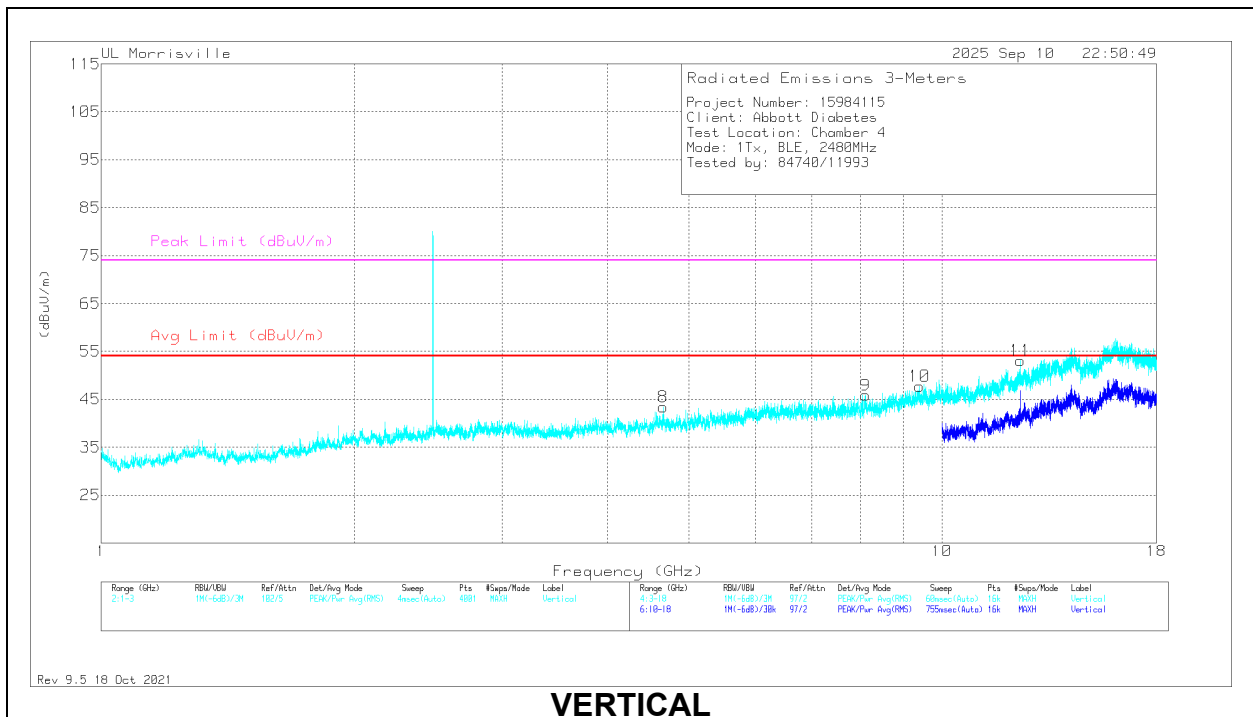
PK2 - Maximum Peak

ADV - Linear Voltage Average

HIGH CHANNEL



HORIZONTAL



VERTICAL

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (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	*** 2.384	36.79	Pk	32	-23	45.79	54	-8.21	74	-28.21	0-360	100	H
2	** 2.57612	45.18	PK2	32.3	-22.9	54.58	-	-	74	-19.42	167	116	H
	** 2.57529	20.68	ADV	32.3	-22.9	30.08	54	-23.92	-	-	167	116	H
3	*** 4.9606	49.32	PK2	33.8	-31.7	51.42	-	-	74	-22.58	246	109	H
	*** 4.96011	43.64	ADV	33.8	-31.8	45.64	54	-8.36	-	-	246	109	H
4	*** 7.43906	39.56	Pk	35.6	-28.1	47.06	54	-6.94	74	-26.94	0-360	100	H
6	*** 12.39903	44.27	PK2	38.8	-21.7	61.37	-	-	74	-12.63	118	101	H
	*** 12.40119	36.82	ADV	38.8	-21.9	53.72	54	-.28	-	-	118	101	H
8	*** 4.66406	41.01	Pk	34.2	-31.8	43.41	54	-10.59	74	-30.59	0-360	200	V
9	*** 8.10938	36.83	Pk	35.6	-26.6	45.83	54	-8.17	74	-28.17	0-360	200	V
10	*** 9.40406	35.3	Pk	36.5	-24.1	47.7	54	-6.3	74	-26.3	0-360	200	V
11	*** 12.40142	38.96	PK2	38.8	-21.9	55.86	-	-	74	-18.14	181	393	V
	*** 12.40123	29.18	ADV	38.8	-21.9	46.08	54	-7.92	-	-	181	393	V
5	9.92156	42	Pk	37	-25.6	53.4	-	-	-	-	0-360	100	H
7	14.88188	37.75	Pk	39.5	-19	58.25	-	-	-	-	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

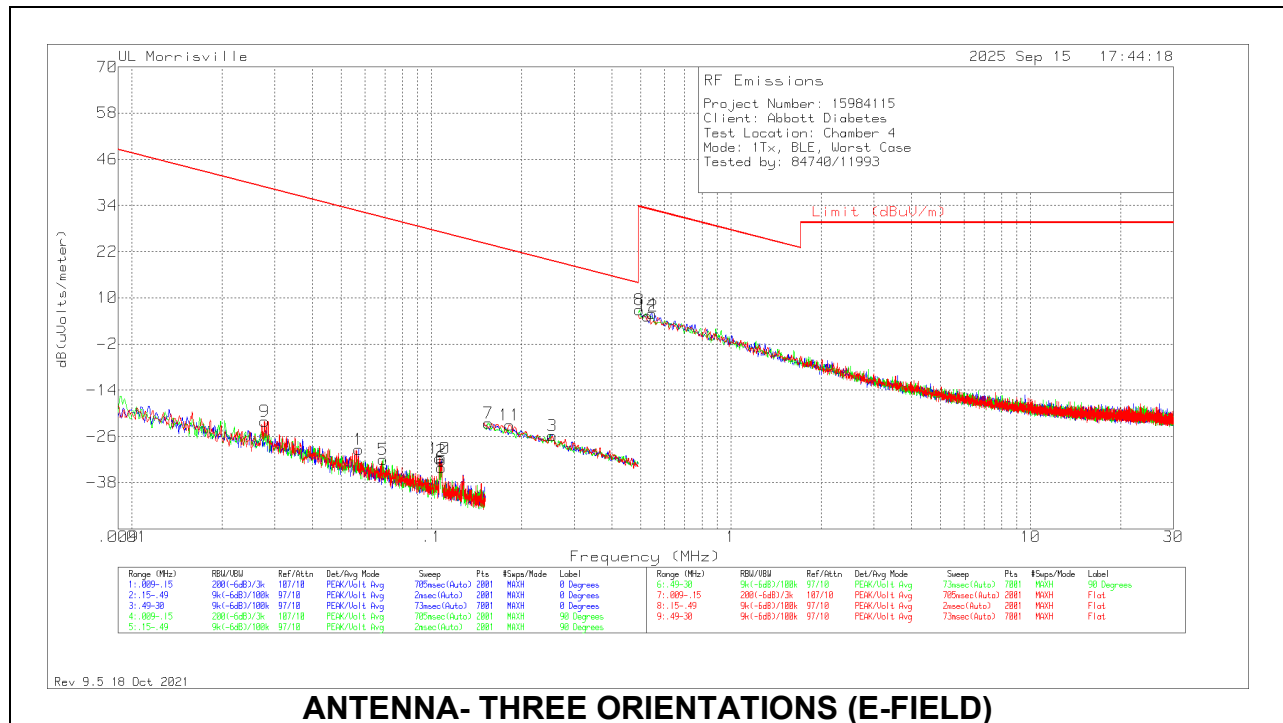
PK2 - Maximum Peak

ADV - Linear Voltage Average

10.2. WORST CASE SPURIOUS BELOW 30MHZ

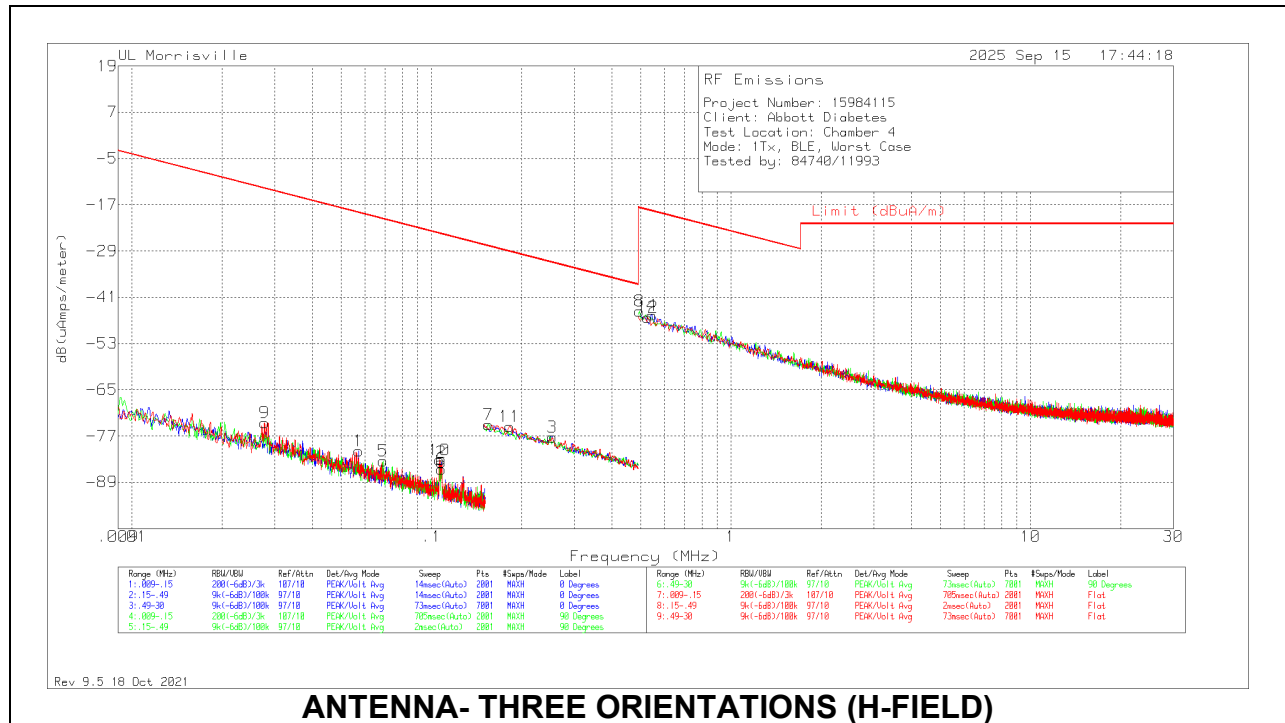
Note: All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz – 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance 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).

10.2.1. BLE



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	ANT (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
9	.02774	44.65	Pk	13.3	0	-80	-22.05	38.74	58.74	-60.79	0-360	Flat
1	.05714	39.28	Pk	11.4	0	-80	-29.32	32.47	52.47	-61.79	0-360	0 degs
5	.06885	36.7	Pk	11.3	0	-80	-32	30.85	50.85	-62.85	0-360	90 degs
10	.10627	37.17	Pk	11.1	0	-80	-31.73	27.08	-	-58.81	0-360	Flat
6	.10783	34.85	Pk	11.1	0	-80	-34.05	26.95	-	-61	0-360	90 degs
2	.10812	36.66	Pk	11.1	0	-80	-32.24	26.93	-	-59.17	0-360	0 degs
7	.15476	46.5	Pk	11	0	-80	-22.5	23.81	43.81	-46.31	0-360	90 degs
11	.1829	45.99	Pk	11	0	-80	-23.01	22.36	42.36	-45.37	0-360	Flat
3	.25353	43.19	Pk	10.9	.1	-80	-25.81	19.52	39.52	-45.33	0-360	0 degs
8	.49422	35.81	Pk	11	.1	-40	6.91	33.73	-	-26.82	0-360	90 degs
12	.52794	34.23	Pk	11	.1	-40	5.33	33.15	-	-27.82	0-360	Flat
4	.54481	34.74	Pk	11	.1	-40	5.84	32.88	-	-27.04	0-360	0 degs

Pk - Peak detector



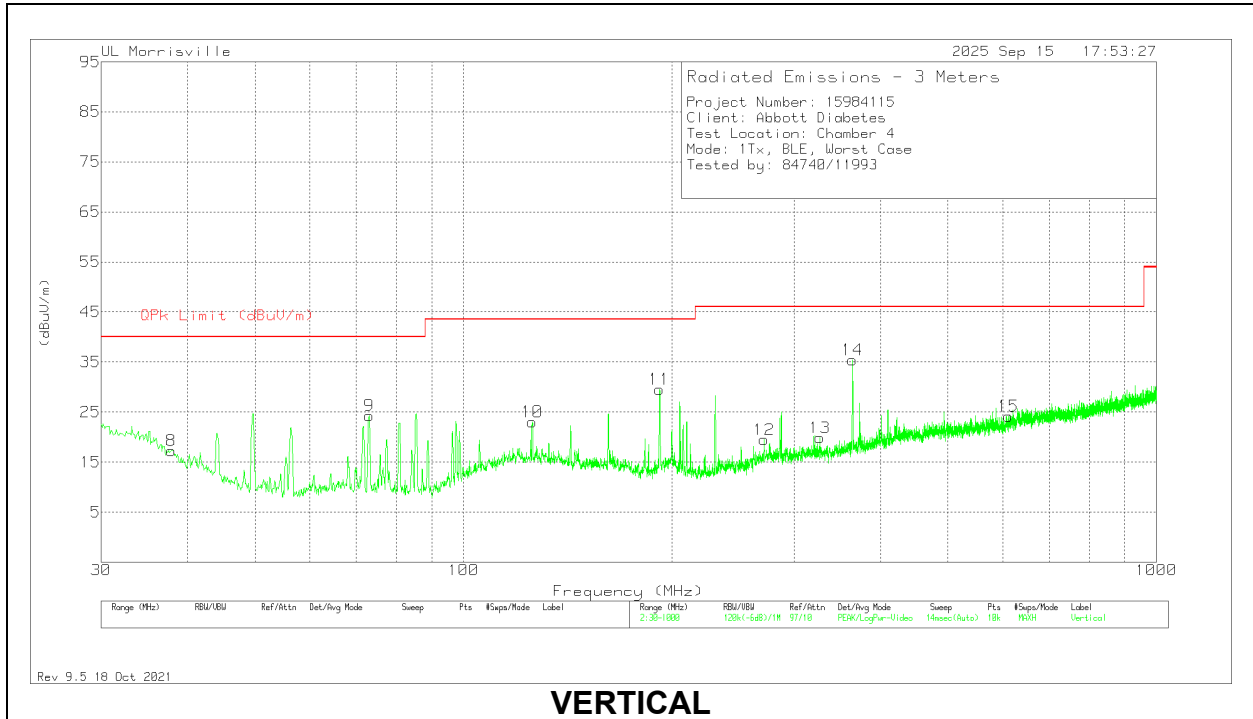
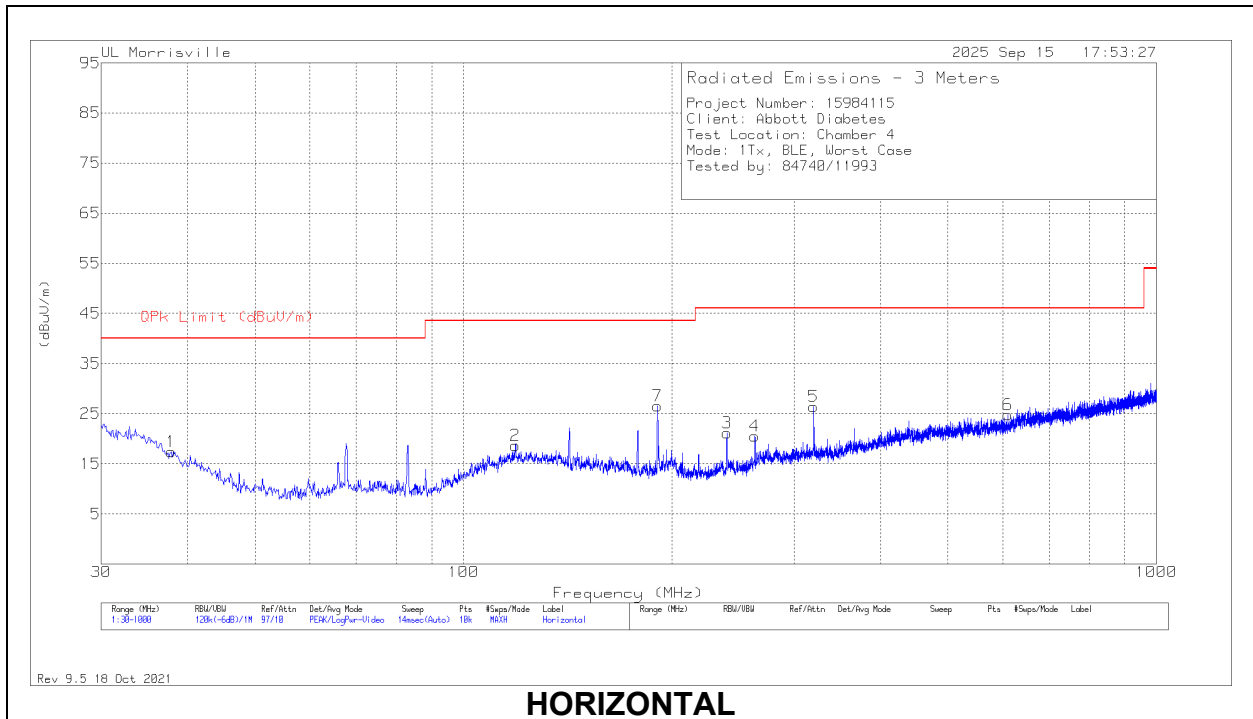
ANTENNA- THREE ORIENTATIONS (H-FIELD)

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	ANT (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
9	.02774	44.65	Pk	-38.2	0	-80	-73.55	-12.76	7.24	-60.79	0-360	Flat
1	.05714	39.28	Pk	-40.1	0	-80	-80.82	-19.03	0.97	-61.79	0-360	0 degs
5	.06885	36.7	Pk	-40.2	0	-80	-83.5	-20.65	-0.65	-62.85	0-360	90 degs
10	.10627	37.17	Pk	-40.4	0	-80	-83.23	-24.42	-	-58.81	0-360	Flat
6	.10783	34.85	Pk	-40.4	0	-80	-85.55	-24.55	-	-61	0-360	90 degs
2	.10812	36.66	Pk	-40.4	0	-80	-83.74	-24.57	-	-59.17	0-360	0 degs
7	.15476	46.5	Pk	-40.5	0	-80	-74	-27.69	-7.69	-46.31	0-360	90 degs
11	.1829	45.99	Pk	-40.5	0	-80	-74.51	-29.14	-9.14	-45.37	0-360	Flat
3	.25353	43.19	Pk	-40.6	.1	-80	-77.31	-31.98	-11.98	-45.33	0-360	0 degs
8	.49422	35.81	Pk	-40.5	.1	-40	-44.59	-17.77	-	-26.82	0-360	90 degs
12	.52794	34.23	Pk	-40.5	.1	-40	-46.17	-18.35	-	-27.82	0-360	Flat
4	.54481	34.74	Pk	-40.5	.1	-40	-45.66	-18.62	-	-27.04	0-360	0 degs

Pk - Peak detector

10.3. WORST CASE SPURIOUS BELOW 1 GHZ

10.3.1. BLE



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90628 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degr)	Height (cm)	Polarity
1	* ** 37.857	27.49	Pk	21.6	-31.7	17.39	40	-22.61	0-360	100	H
2	* ** 118.755	30.2	Pk	20	-31.5	18.7	43.52	-24.82	0-360	200	H
4	* ** 263.382	32.06	Pk	18.7	-30.2	20.56	46.02	-25.46	0-360	100	H
6	* ** 610.642	27.26	Pk	25	-27.5	24.76	46.02	-21.26	0-360	300	H
8	* ** 37.857	27.37	Pk	21.6	-31.7	17.27	40	-22.73	0-360	200	V
9	* 73.068	40.84	Pk	14.3	-30.9	24.24	40	-15.76	0-360	200	V
10	* ** 125.739	33.94	Pk	20.1	-31	23.04	43.52	-20.48	0-360	100	V
12	* ** 271.53	29.87	Pk	19.4	-29.8	19.47	46.02	-26.55	0-360	100	V
13	* ** 327.014	29.25	Pk	20.1	-29.5	19.85	46.02	-26.17	0-360	200	V
15	* ** 611.03	26.81	Pk	25	-27.6	24.21	46.02	-21.81	0-360	200	V
7	190.535	39.1	Pk	17.4	-30	26.5	43.52	-17.02	0-360	300	H
11	191.893	42.31	Pk	17.5	-30.3	29.51	43.52	-14.01	0-360	100	V
3	239.908	33.09	Pk	17.6	-29.5	21.19	46.02	-24.83	0-360	300	H
5	320.127	35	Pk	20.1	-28.7	26.4	46.02	-19.62	0-360	100	H
14	364.262	43.78	Pk	21	-29.4	35.38	46.02	-10.64	0-360	100	V

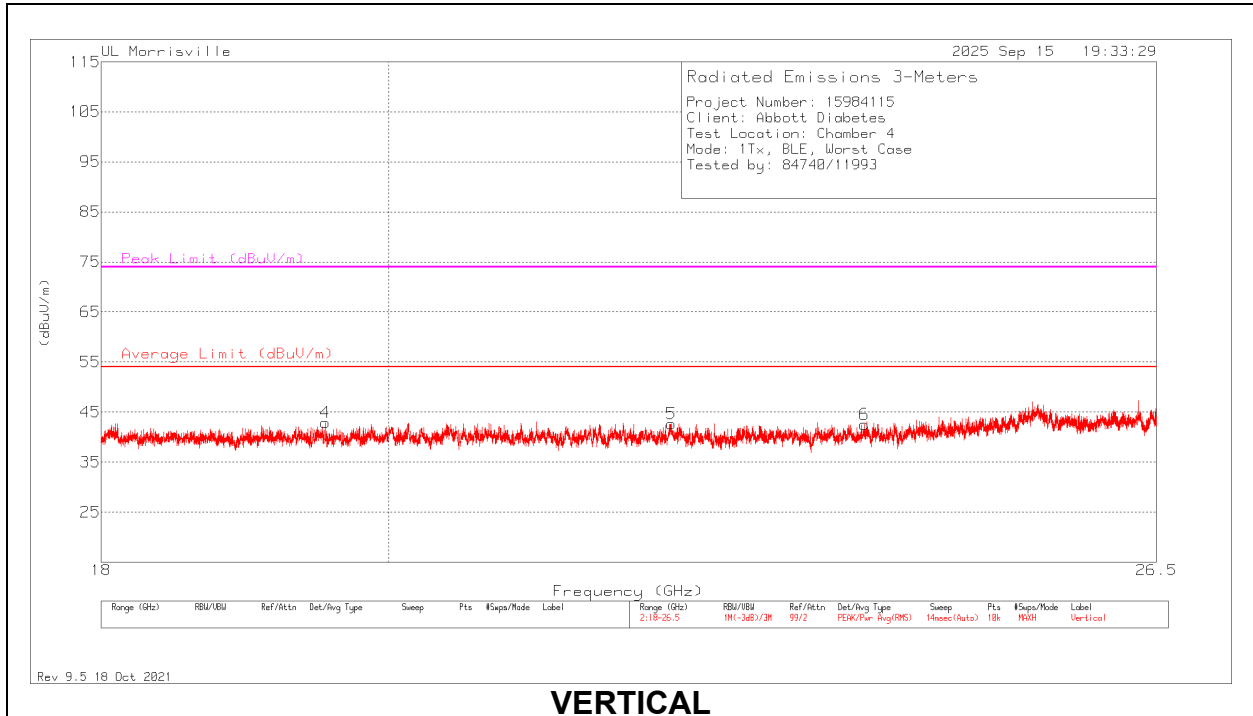
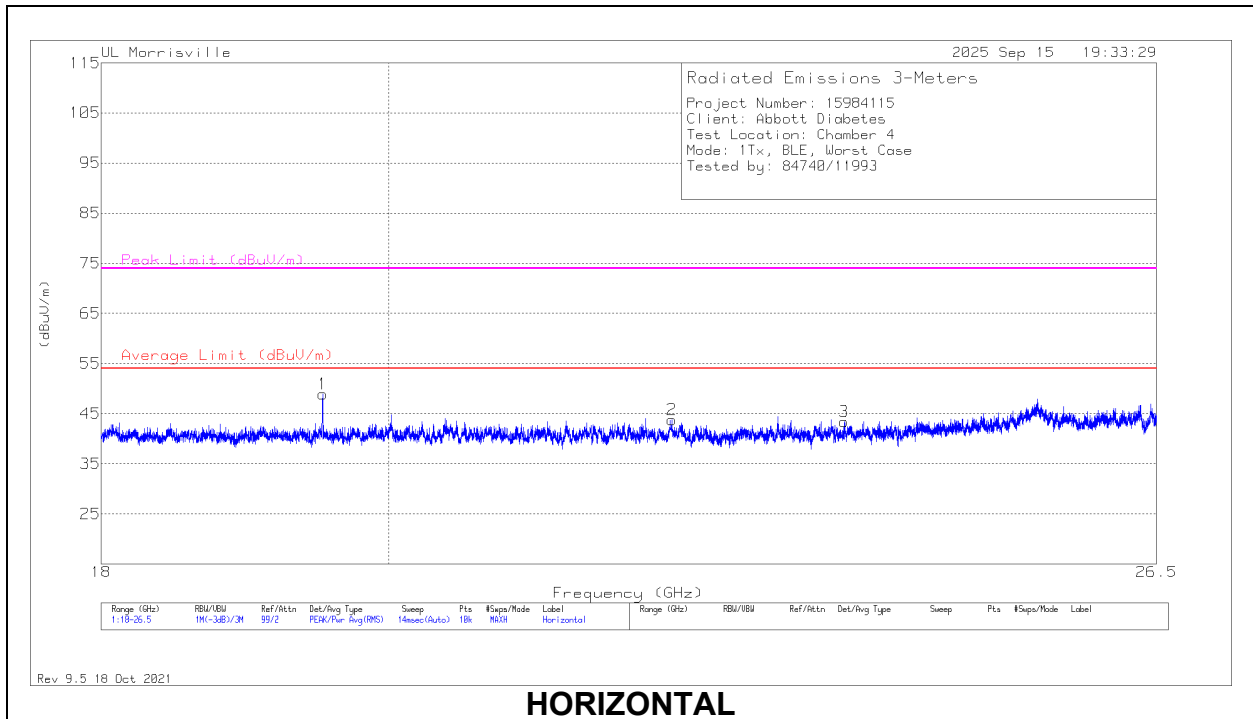
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

10.4. WORST CASE SPURIOUS 18-26 GHZ

10.4.1. BLE



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	91186 (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	*** 19.52226	58.51	PK2	32.6	-39.8	51.31	-	-	74	-22.69	28	103	H
	*** 19.5221	49.74	ADV	32.6	-39.8	42.54	54	-11.46	-	-	28	103	H
2	*** 22.18667	48.59	Pk	33.4	-38.2	43.79	54	-10.21	74	-30.21	0-360	100	H
3	*** 23.63266	47.81	Pk	33.8	-38.2	43.41	54	-10.59	74	-30.59	0-360	100	H
4	*** 19.54035	50.2	Pk	32.6	-39.9	42.9	54	-11.1	74	-31.1	0-360	200	V
5	*** 22.18242	47.12	Pk	33.4	-37.9	42.62	54	-11.38	74	-31.38	0-360	150	V
6	*** 23.81033	46.49	Pk	34	-38	42.49	54	-11.51	74	-31.51	0-360	250	V

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

11. SETUP PHOTOS

Please refer to R15984115-EP1 for setup photos

END OF TEST REPORT