

CERTIFICATION TEST REPORT

Report Number. : U-4791481740-FR1V4

Applicant : ADT Co., Ltd.

Model : C1-OPT-LCD

FCC ID : 2BK9T-C1-OPT-LCD

EUT Description : LCD Keypad

Test Standard(s) : FCC Part 15.247

Test Method used : KDB558074 D01v05r02, ANSI C63.10-2020

Date Of Issue:

2024-11-01

Prepared by:

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	Oct-11-2024	Initial issue	Jungi Shin
V2	Oct-31-2024	Updated to address TCB`s question	Jungi Shin
V3	Nov-01-2024	Updated to address TCB`s question	Jungi Shin
V4	Nov-01-2024	Updated to address TCB`s question	Jungi Shin

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: ADT Co., Ltd.
EUT DESCRIPTION: LCD Keypad
MODEL NUMBER: C1-OPT-LCD
SERIAL NUMBER: Identical prototype
DATE TESTED: 2024-09-09 ~ 2024-09-19

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
47 CFR Part 15 Subpart C	Pass

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL KOREA LTD. By:



Changmin Kim
Senior Laboratory Engineer
UL Korea, Ltd.

Tested By:



Jungi Shin
Laboratory Engineer Associate
UL Korea, Ltd.

2. TEST METHODOLOGY

1. FCC 47 CFR Part 2.
2. FCC 47 CFR Part 15.247.
3. KDB 558074 D01 15.247 Meas Guidance v05r02.
4. ANSI C63.10-2020.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 42, Obongsandan 1-ro, Uiwang-si, Gyeonggi-do, Republic of Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

42, Obongsandan 1-ro	
☒	Chamber 1
☒	Chamber 2

Used ISED Test Site Reg.(company number): 32001
CAB Identifier: KR0161

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4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. METROLOGICAL TRACEABILITY

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

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)

28.9 dBuV/m = 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB

AC Corrected Reading (dBuV) = Measured Voltage (dBuV) + Extension Cord
Loss (dB) + Cable Loss (dB)

44.72 dBuV = 34.72 dBuV + 9.9 dB + 0.1 dB

4.3. MEASUREMENT UNCERTAINTY

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

Chamber 1

PARAMETER	UNCERTAINTY
Radiated Disturbance, Above 18 GHz	6.23 dB

Uncertainty figures are valid to a confidence level of 95%, k=2

Chamber 2

PARAMETER	UNCERTAINTY
Radiated Disturbance, 9 kHz to 30 MHz	1.66 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.67 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.39 dB

Uncertainty figures are valid to a confidence level of 95%, k=2

4.4. DECISION RULES

Decision rule for statement(s) of conformity is based on Clause 4.3.3 in IEC Guide 115:2023. Measurement Uncertainty is not applied when providing statements of conformity in accordance with IEC Guide 115:2023, 4.3.3

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a BLE LCD Keypad.

Representative model	Difference	Derivative model
		FM3-OPT-LCD
C1-OPT-LCD	Hardware	Additional model for Marketing
	Software	

The model FM3-OPT-LCD was used for final testing and is representative of the test results in this report.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range[MHz]	Mode	Detector	Output Power [dBm]	Output Power [mW]
2 402 ~ 2 480	1 Mbps	Peak	-5.53	0.28

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

**The internal antenna was Permanently attached.
Therefore this E.U.T Complies with the requirement of §15.203.**

The radio utilizes a internal antenna, with a maximum gain of:

Frequency Band[MHz]	ANT Gain [dBi]
2400 – 2483.5	-1.79

5.4. WORST-CASE CONFIGURATION AND MODE

The fundamentals of the EUT were investigated in three orthogonal orientations X, Y and Z. It was determined that below table's orientation was the worst-case orientation.

Mode	Worst-case Axis		
	X	Y	Z
BLE 1 M	-	O	-

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

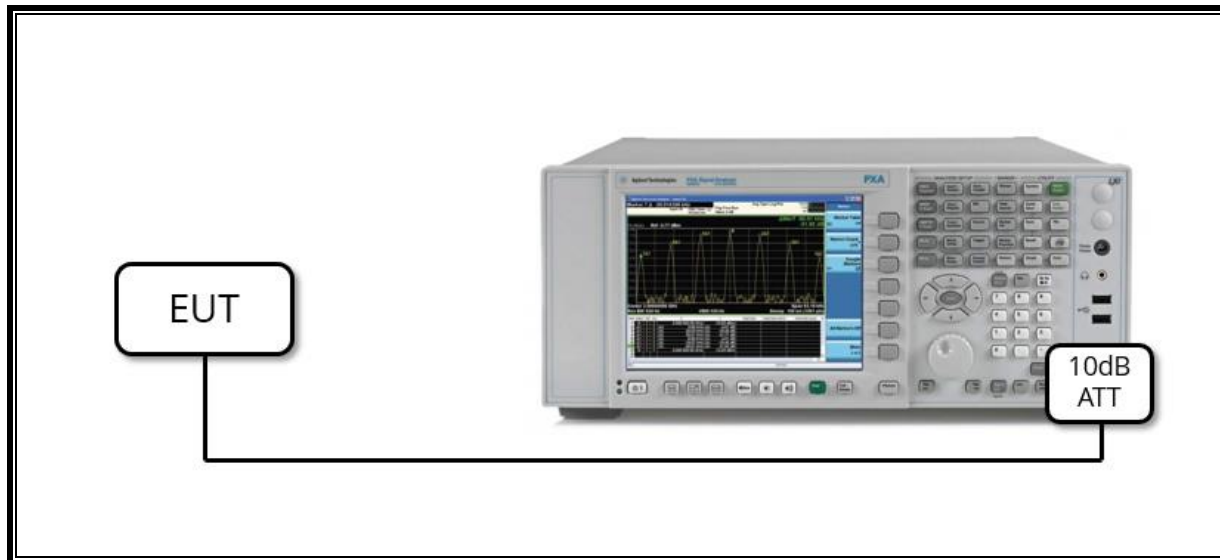
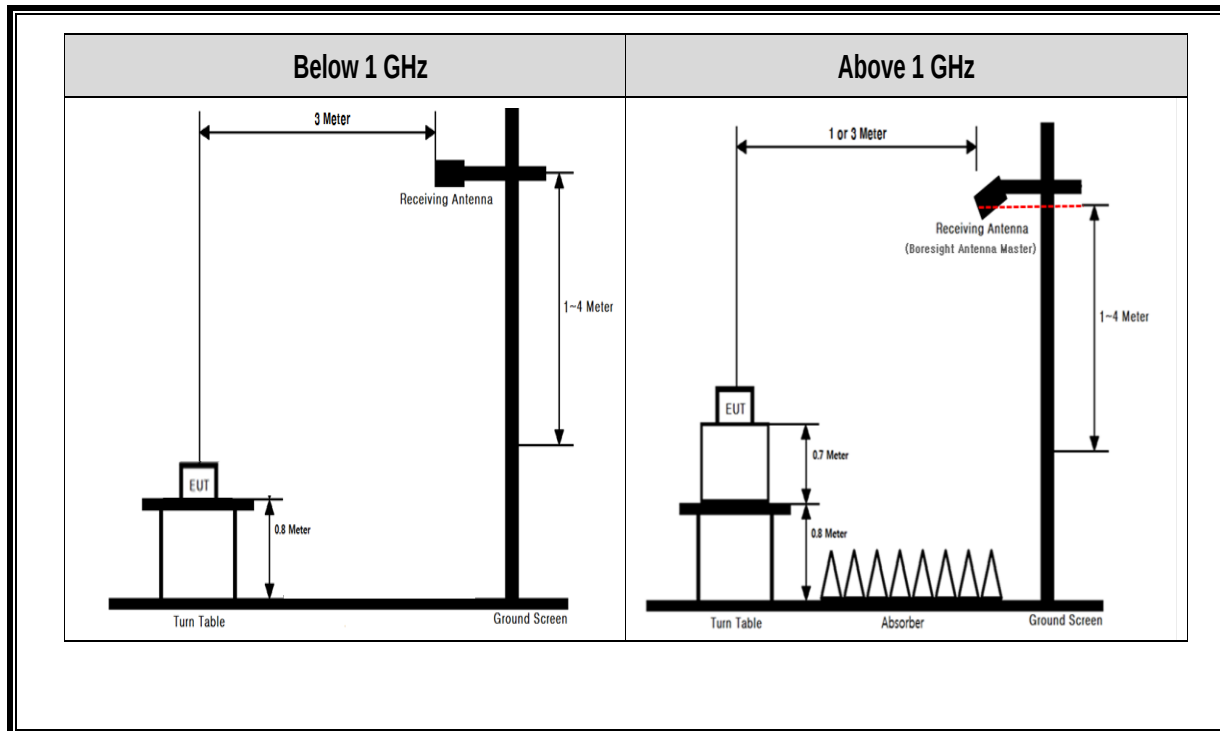
Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Test Jig	ADT CO.,Ltd.	N/A	-	-
Notebook PC	Lenovo	TP00136D	PF-WM6STB	-

I/O CABLE

I/O Cable List						
Cable No.	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	LAN	U/UTP CAT.6	0.2	N/A

TEST SETUP

The EUT is a stand-alone unit during the tests.
Test software in hidden menu exercised the EUT to enable BLE mode.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)**SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)**

6. MEASUREMENT METHOD

6 dB BW : ANSI C63.10-2020, Section 11.8.2 Option 2

OUTPUT POWER : ANSI C63.10-2020, Section 11.9.1.1 $RBW \geq$ DTS bandwidth

POWER SPECTRAL DENSITY : ANSI C63.10-2020, Section 11.10.2 Method PKPSD (peak PSD)

Out-of-band Emissions (Conducted) : ANSI C63.10-2020, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Non-restricted Bands: ANSI C63.10-2020, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Restricted Bands : ANSI C63.10-2020, Section 11.12 Emissions in restricted frequency bands

7. TEST AND MEASUREMENT EQUIPMENT

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

Description	Manufacturer	Model	Identifier	Cal. date	Cal. due date
EMI Test Receiver	Rohde & Schwarz	ESW44	103313	2024-01-29	2025-01-29
EMI Test Receiver	Rohde & Schwarz	ESW44	103297	2024-07-18	2025-07-18
Spectrum Analyzer	Rohde & Schwarz	FSW50	101567	2024-07-18	2025-07-18
DC Power Supply	KIKUSUI	PWR1201ML	DN002200	2024-07-18	2025-07-18
Signal Generator	Rohde & Schwarz	SMB100A	184060	2024-07-18	2025-07-18
Loop Antenna	TESEQ	HLA6121	65111	2024-08-01	2025-08-01
TRILOG BROADBAND ANTENNA	Schwarzbeck	VULB9163	01661	2024-03-18	2026-03-18
Double-Ridged Guide Antenna	ETS-Lindgren	3117	00261463	2023-10-04	2024-10-04
Signal Conditioning Unit	Rohde & Schwarz	SCU01F	100316	2024-03-22	2025-03-22
Amplifier	BNZ	BZR-01001800-231040-182020	28452	2024-04-08	2025-04-08
DOUBLE-RIDGED WAVEGUIDE HORN ANTENNA	ETS LINDGREN	3116C	00261440	2023-10-23	2024-10-23
Amplifier	ETS LINDGREN	3116C-PA	00261440	2023-10-16	2024-10-16
Attenuator	EXYNOD	RLAN-210-18G	10A001	2024-04-08	2025-04-08
High Pass Filter	Micro-Tronics	HPM17543	051	2024-04-08	2025-04-08
Humidity/Baro/Temp DATA RECORDER	Lutron	MHB-382SD	AL.92208	2024-07-23	2025-07-23
Humidity/Baro/Temp DATA RECORDER	Lutron	MHB-382SD	AM.00227	2024-01-11	2025-01-11
Humidity/Baro/Temp DATA RECORDER	Lutron	MHB-382SD	AM.00223	2024-01-11	2025-01-11
Digital Multimeter	Fluke Corporation	17B+	51260820WS	2024-07-18	2025-07-18
Attn Switch	Agilent	11713A	3748A09520	NA	NA

8. TEST RESULTS SUMMARY

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Status Note 1
15.247 (a)(2)	Occupied Bandwidth (6dB & 99 % BW)	> 500kHz	Conducted	C
2.1051, 15.247(d)	Band Edge / Conducted Spurious Emission	-20 dBc		C
15.247 (b)(3)	TX Conducted Output Power	< 30 dBm		C
15.247(e)	PSD	< 8 dBm/3kHz		C
15.207(a)	AC Power Line conducted emissions	Section 11	Power Line Conducted	NA ^{Note 4}
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m(AV)	Radiated	C
Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable Note 2: For radiated emission tests below 30 MHz were performed on semi-anechoic chamber which is correlated with OATS. Note 3: This test item was performed in three orthogonal EUT positions and the worst case data was reported. Note 4: This EUT use only DC power.				

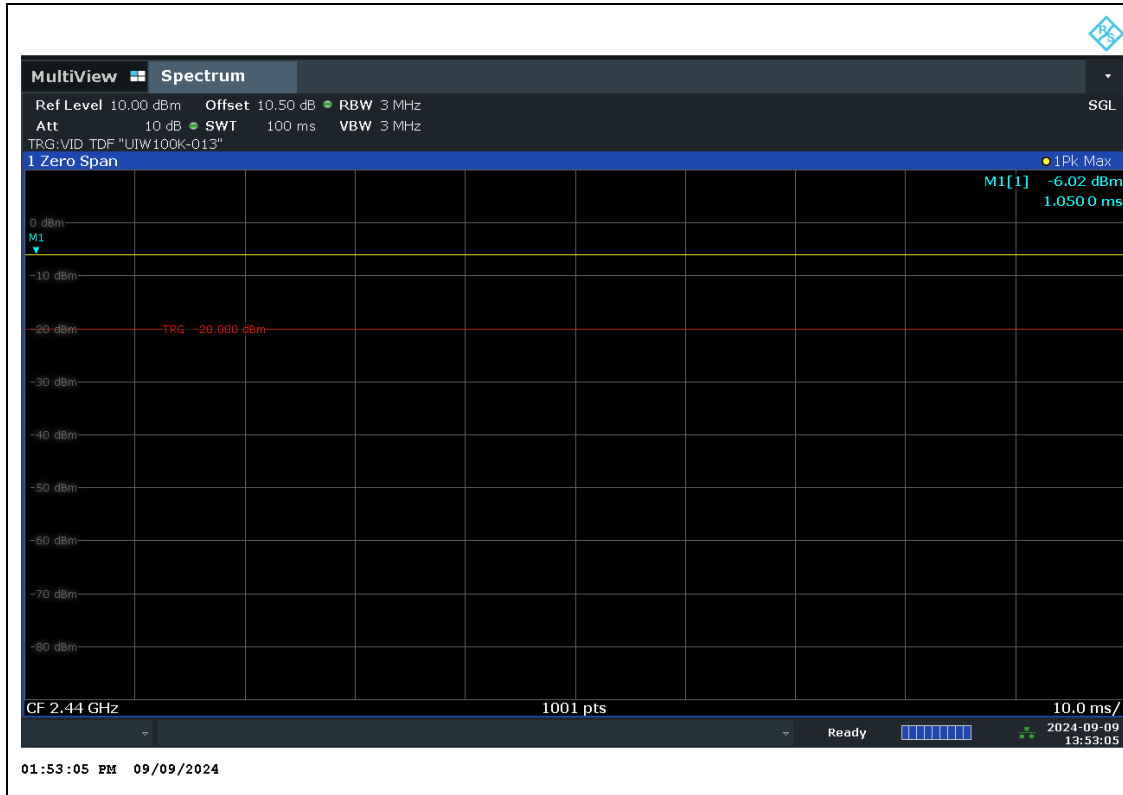
9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

Mode	On time [msec]	Period [msec]	Duty cycle x [Linear]	Duty Cycle [%]
1 Mbps	-	-	-	100



9.2. 6 dB BANDWIDTH & 99% BANDWIDTH

LIMITS

FCC §15.247 (a)(2)

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

Occupied Bandwidth:

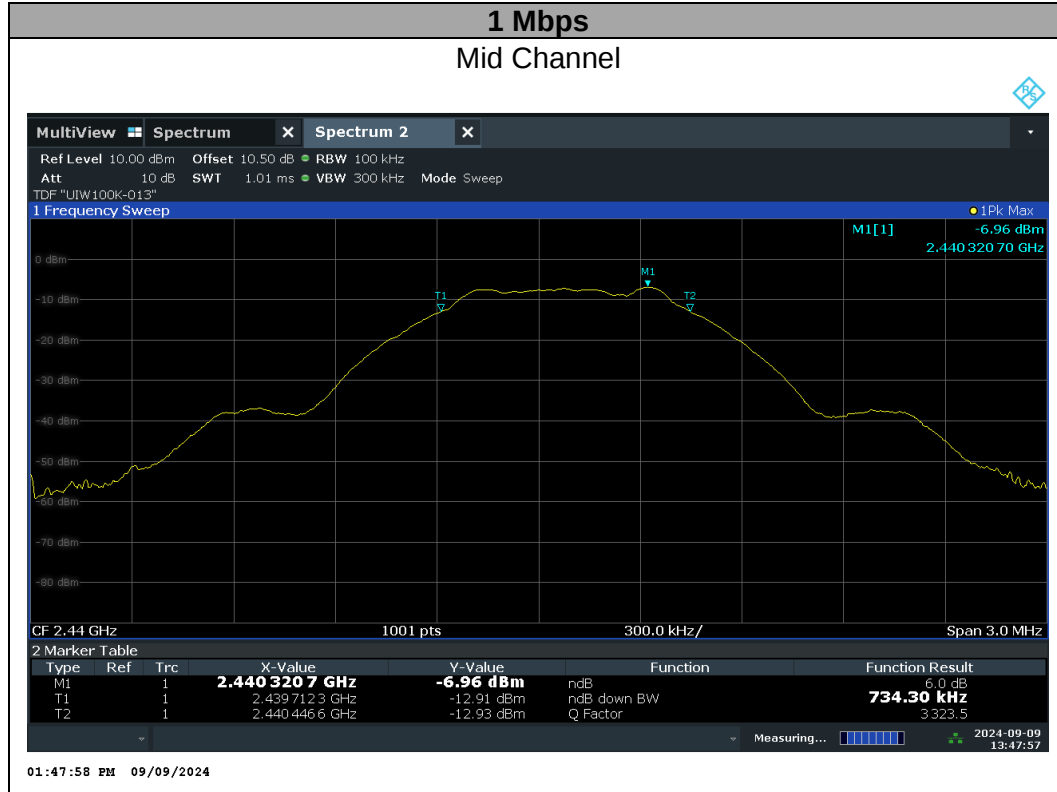
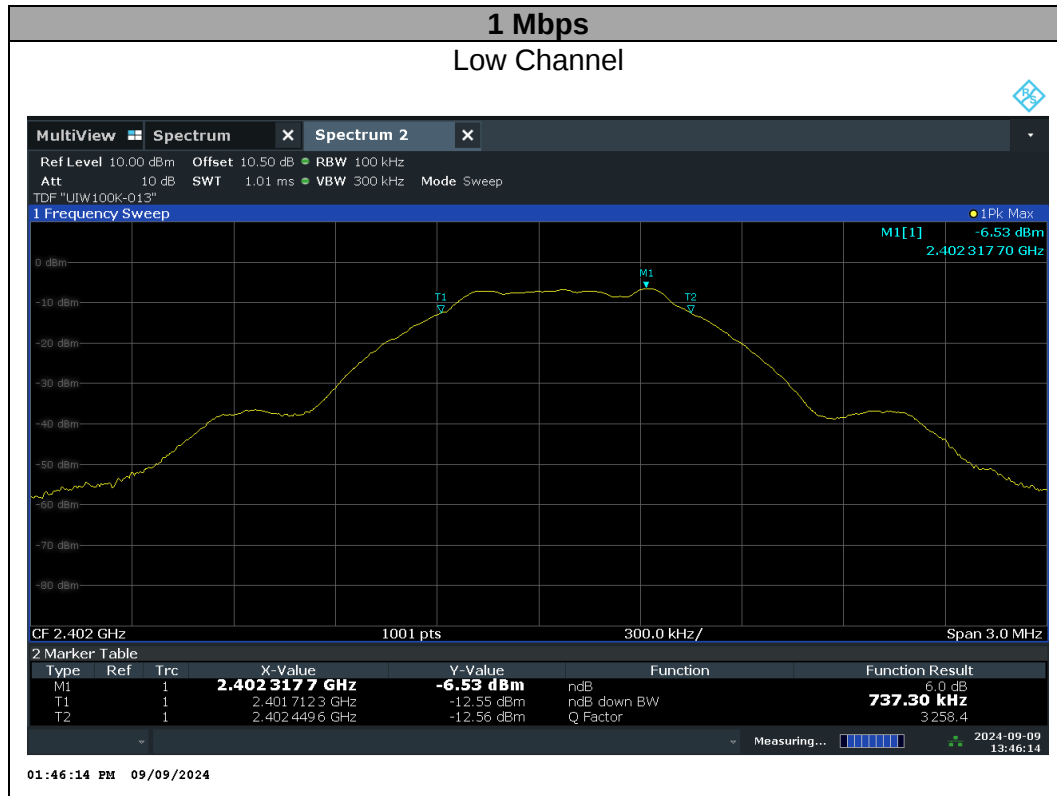
None; for reporting purposes only.

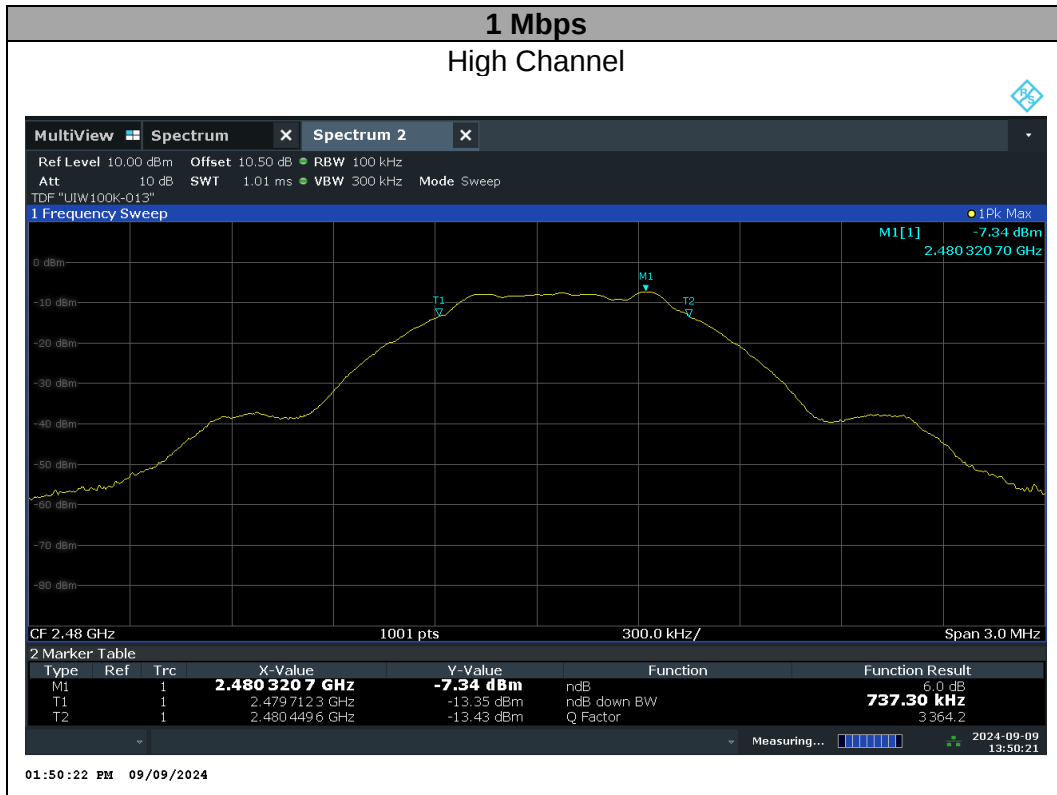
RESULTS

9.2.1. Test data

Mode	Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
1 Mbps	Low	2 402	737.3	500.0
	Mid	2 440	734.3	
	High	2 480	737.3	

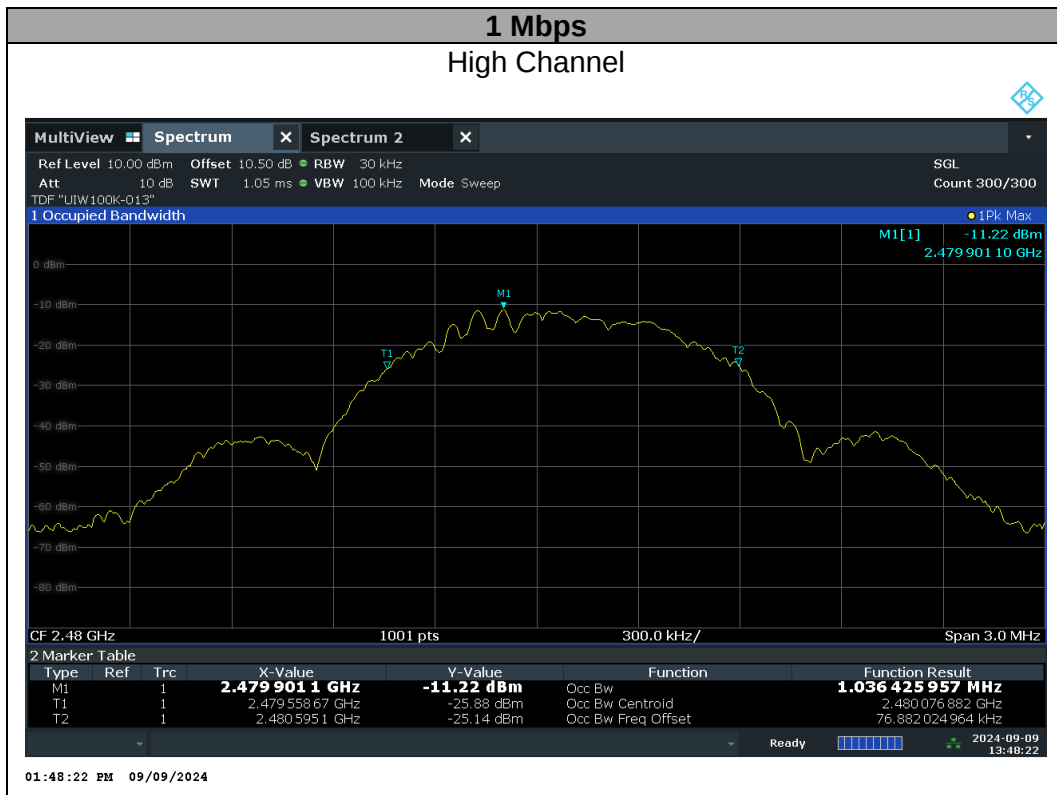
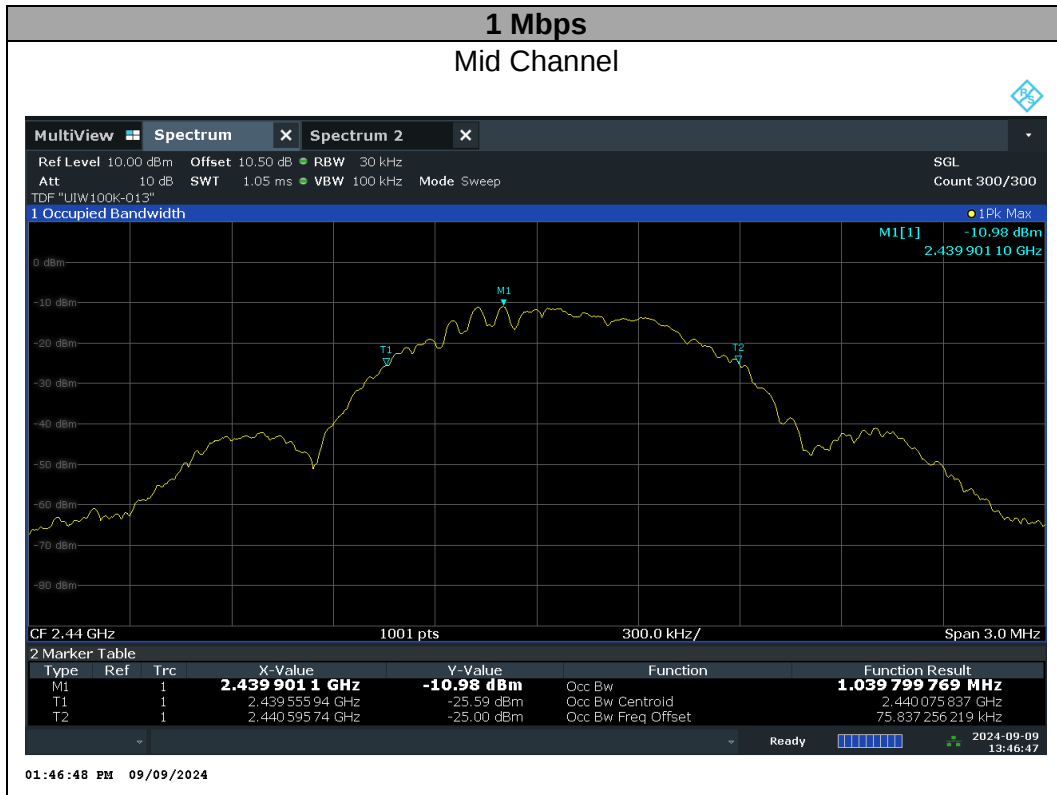
Mode	Channel	Frequency [MHz]	99% Bandwidth [kHz]	Minimum Limit [kHz]
1 Mbps	Low	2 402	1 037.5	N/A
	Mid	2 440	1 039.8	
	High	2 480	1 036.4	

9.2.2. 6 dB BANDWIDTH PLOTS



9.2.3 99% BANDWIDTH PLOTS





9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

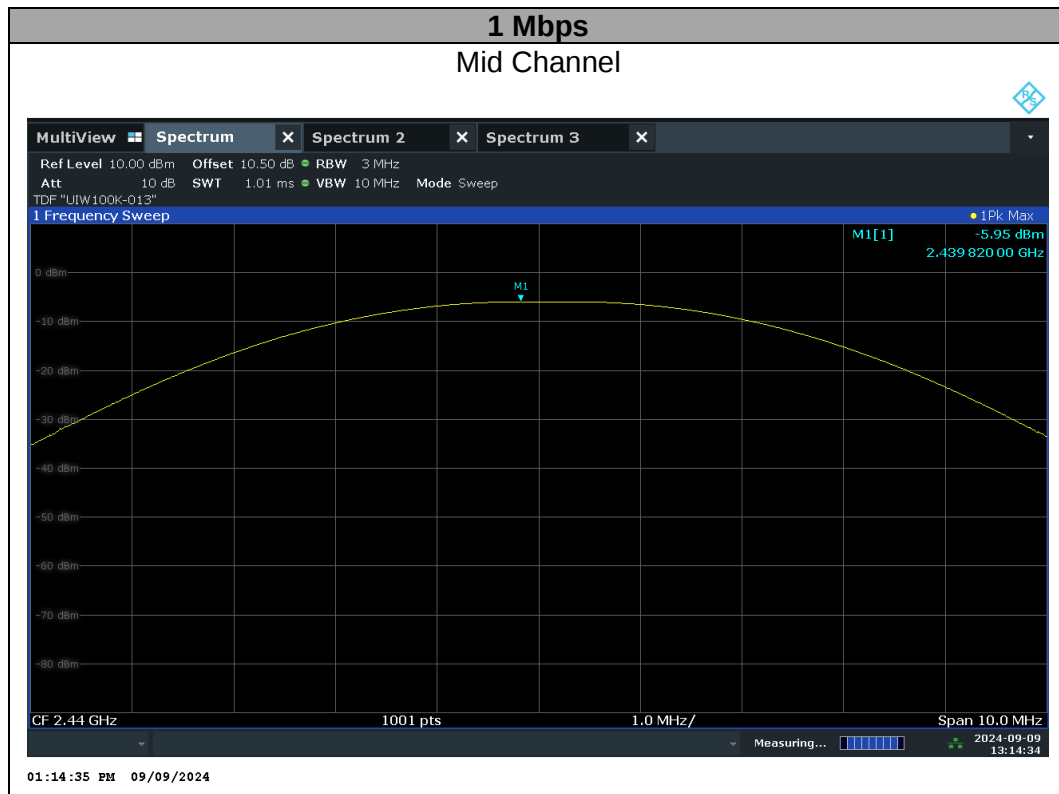
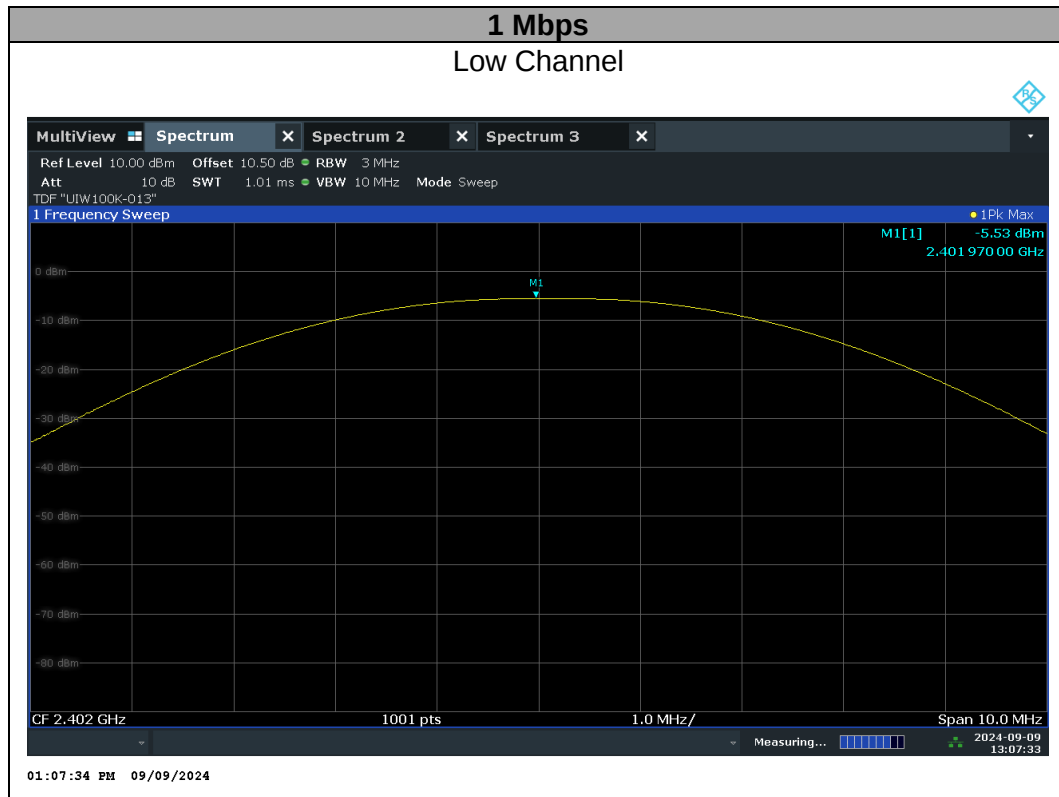
Peak power is measured using ANSI C63.10(2020) under section 11.9.1.1 utilizing spectrum analyzer(RBW $\geq$ DTS bandwidth).

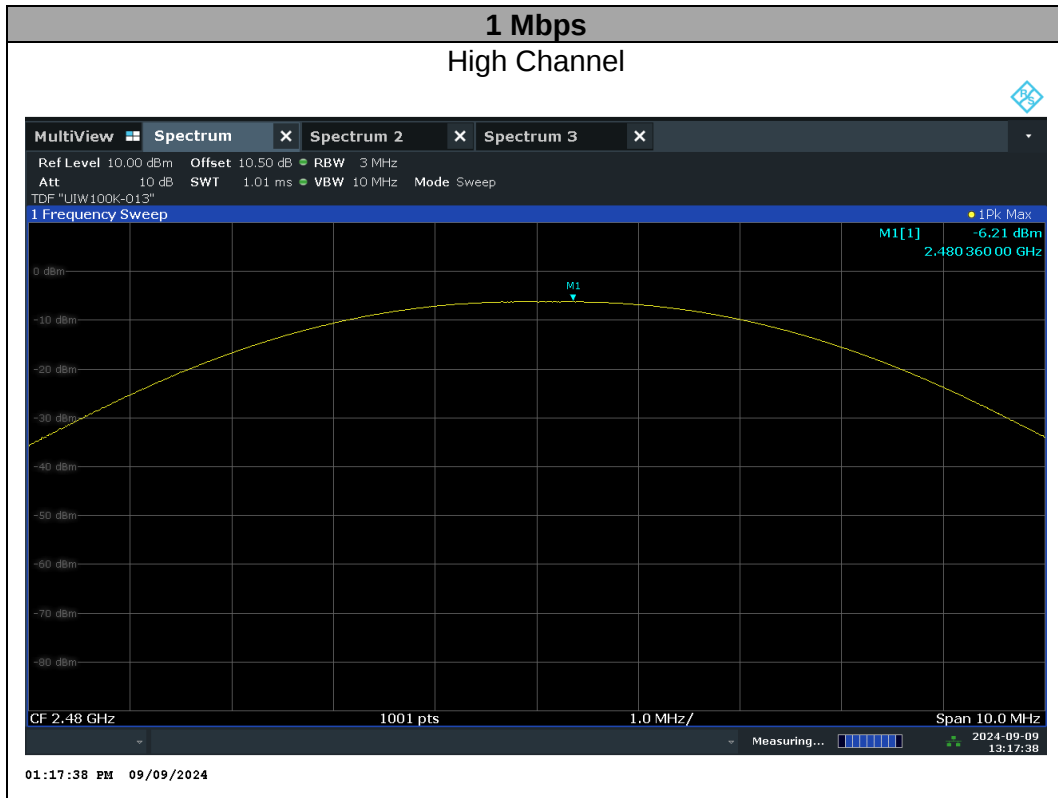
RESULTS

9.3.1. PEAK POWER TEST DATA

Mode	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
1 Mbps	Low	2 402	-5.53	30.00	35.53
	Mid	2 440	-5.95		35.95
	High	2 480	-6.21		36.21

9.3.2. PEAK POWER PLOTS





9.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

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.

TEST PROCEDURE

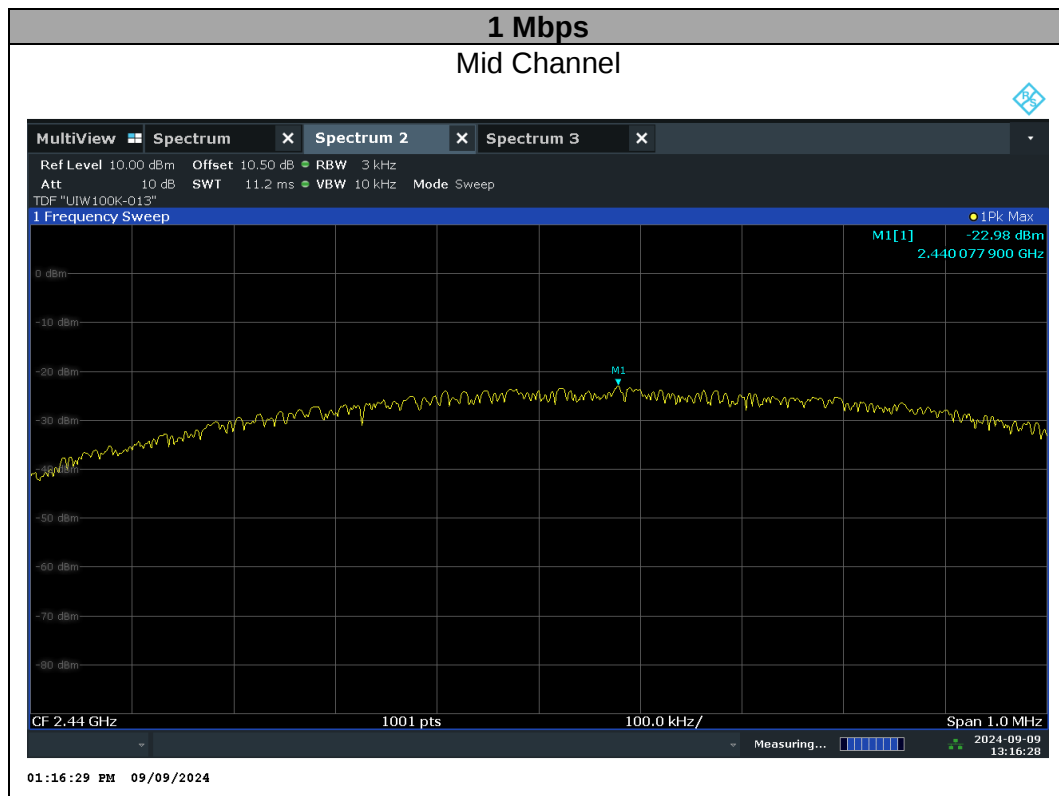
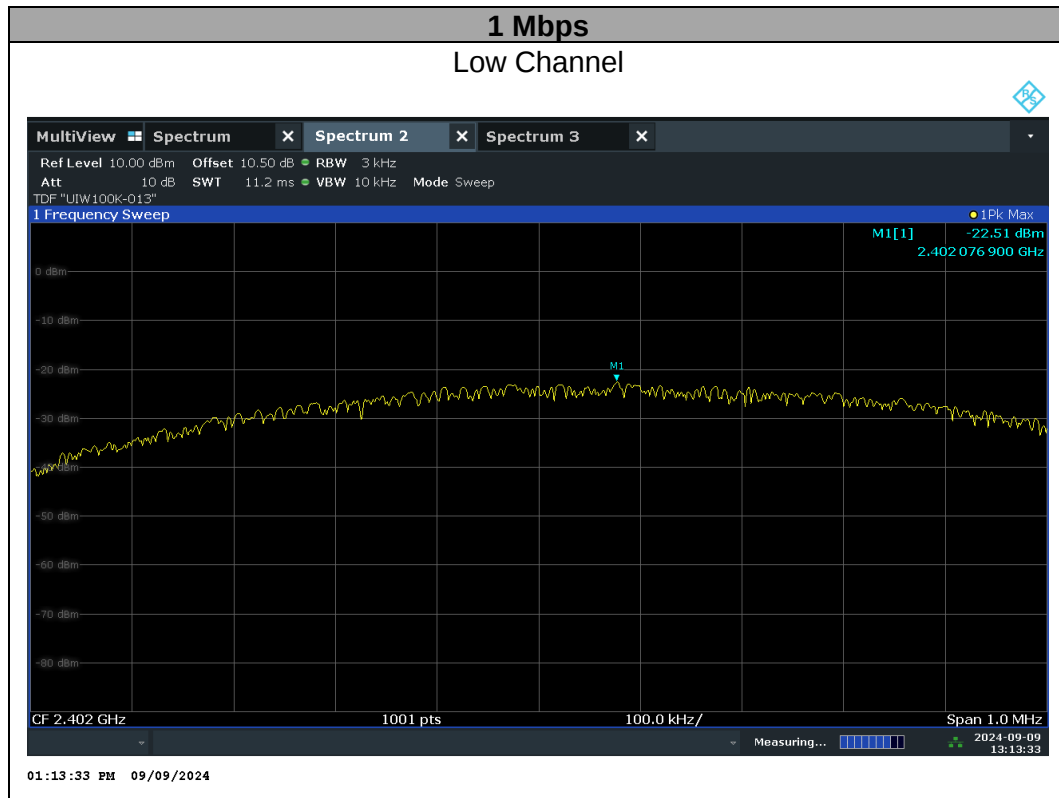
ANSI C63.10-2020, Section 11.10.2 Method PKPSD (peak PSD)

RESULTS

9.4.1. Test data

Mode	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
1 Mbps	Low	2 402	-22.51	8.00	30.51
	Mid	2 440	-22.98		30.98
	High	2 480	-23.45		31.45

9.4.2. PSD TEST PLOTS





9.5. CONDUCTED SPURIOUS EMISSIONS

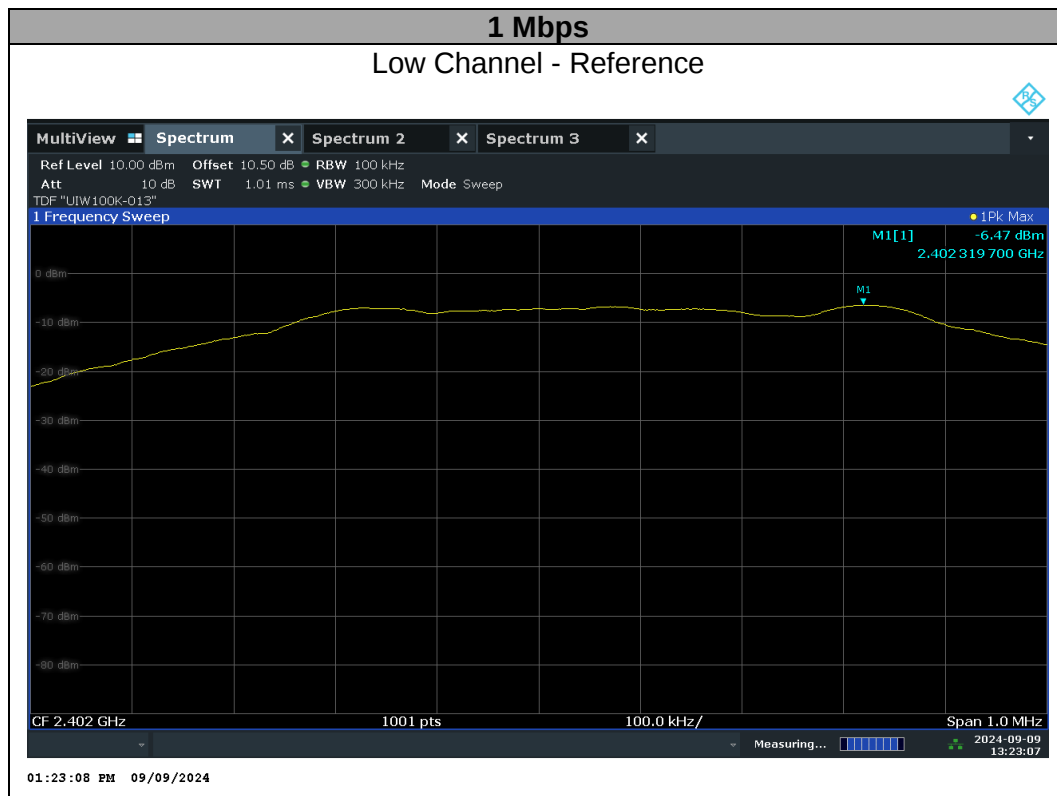
LIMITS

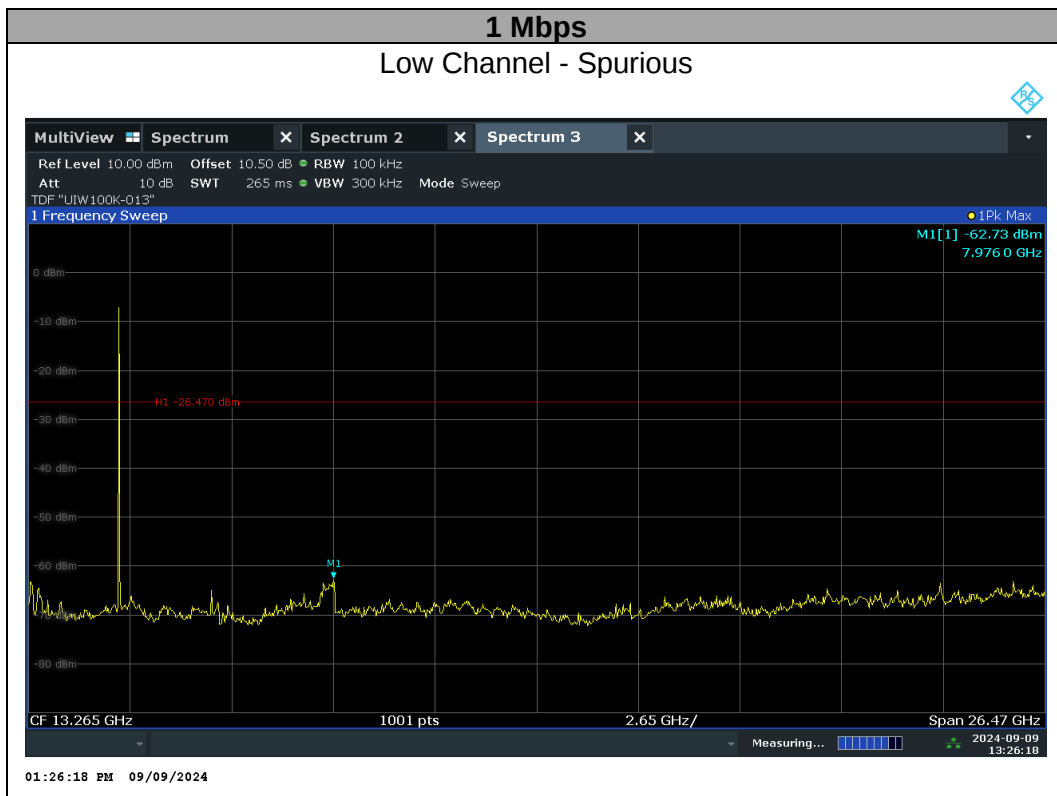
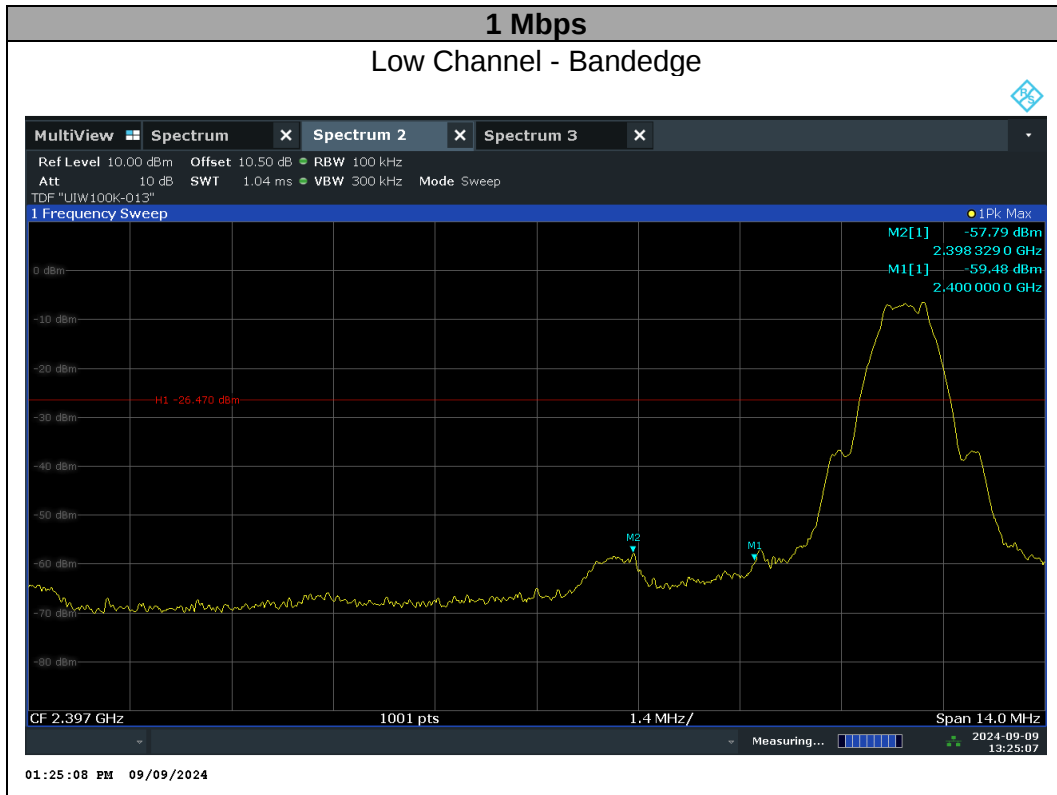
FCC §15.247 (d)

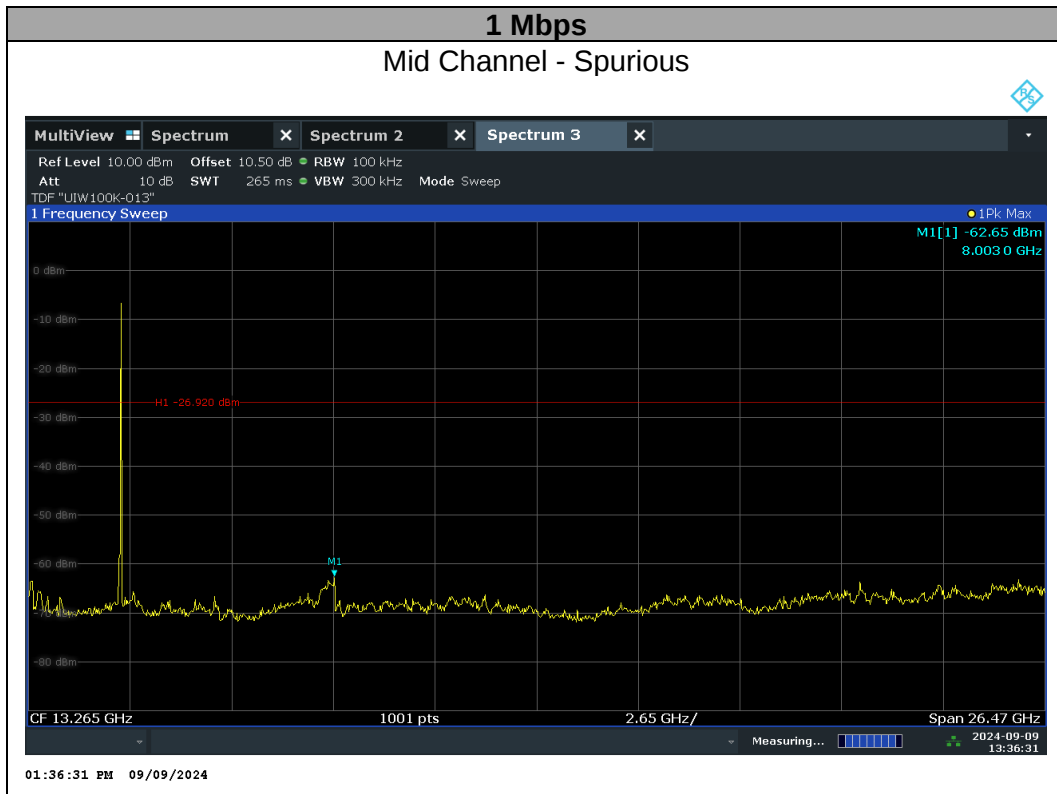
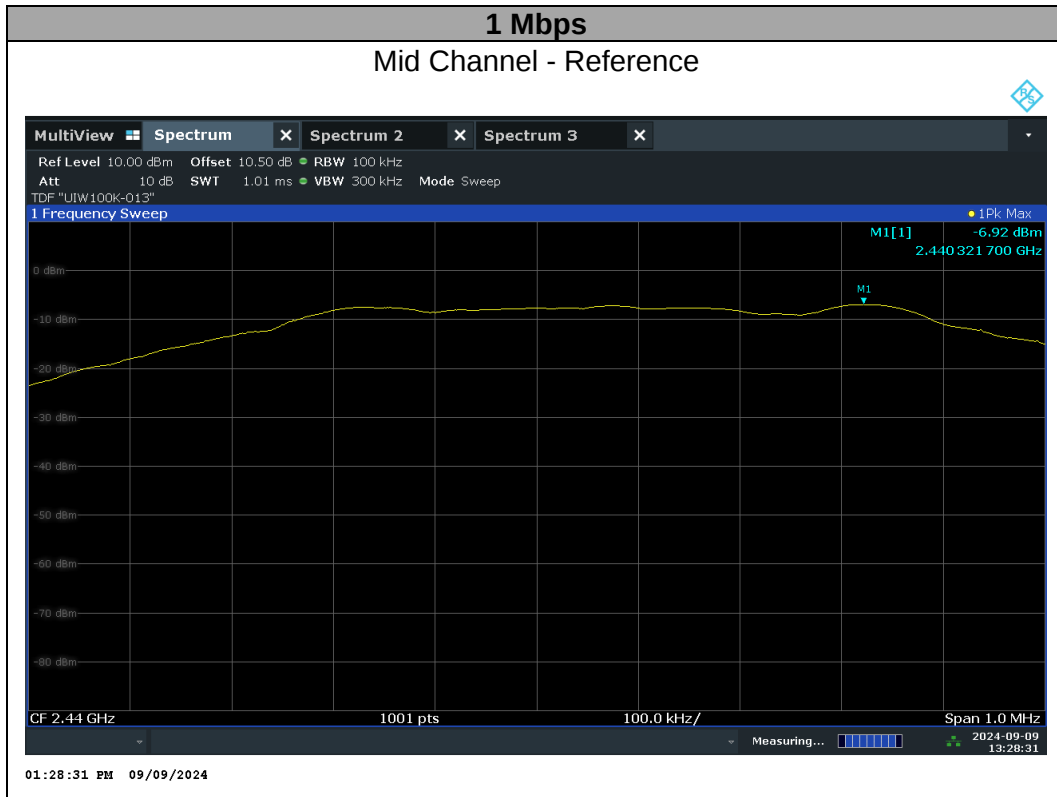
Output power was measured based on the use of a peak measurement.
Therefore, spurious emissions are required to be 20 dBc.

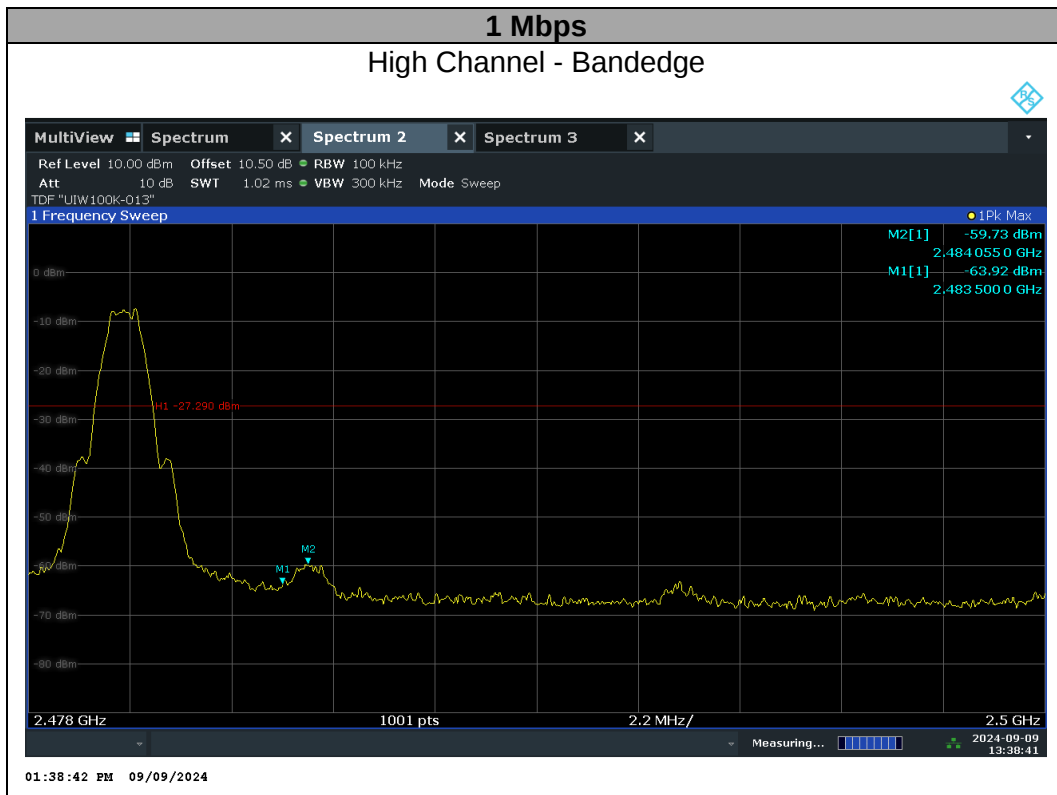
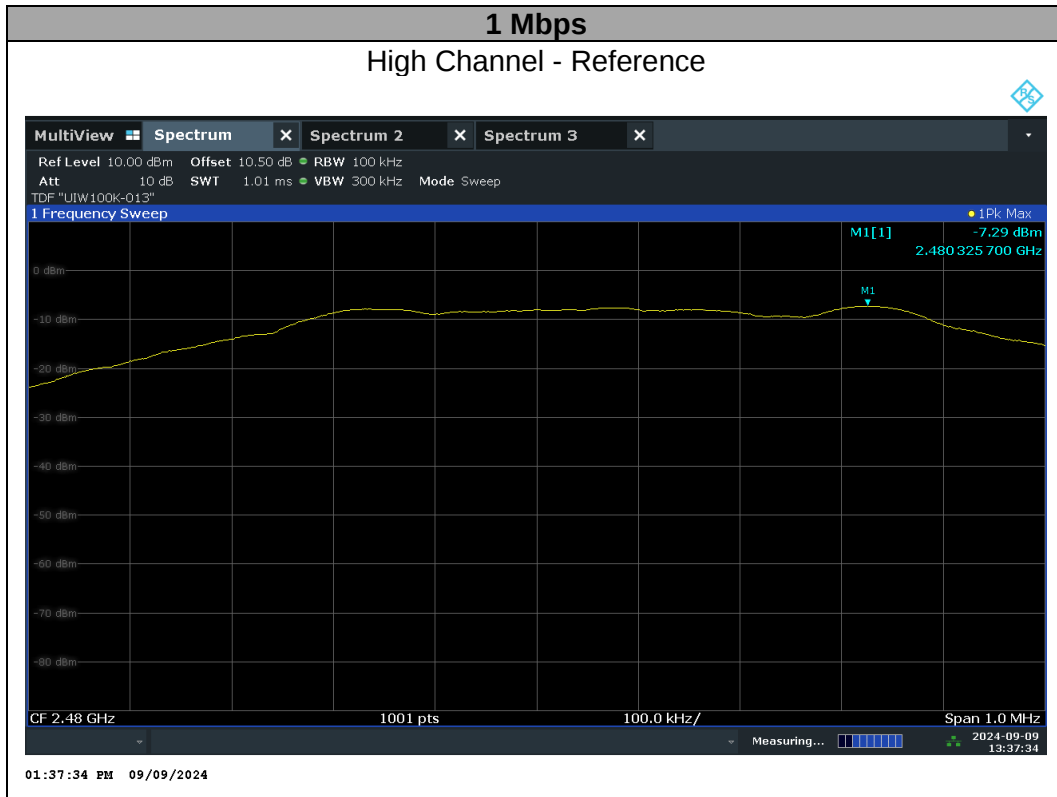
RESULTS

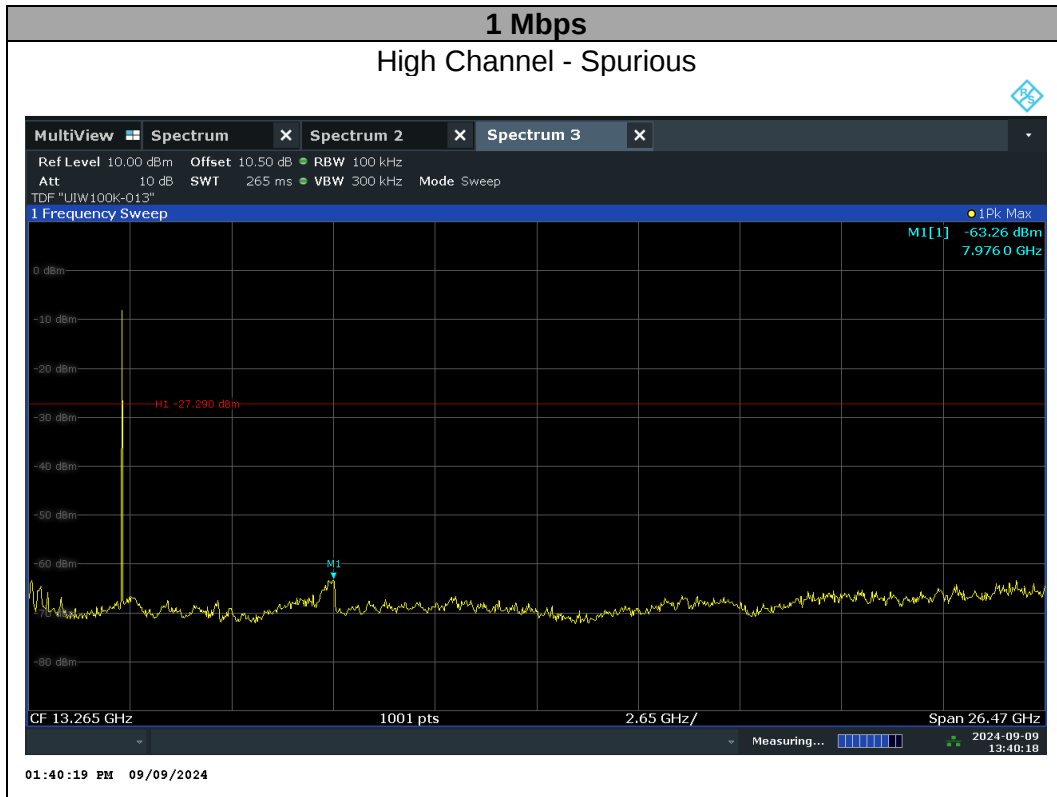
9.5.1. Test plot











10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

- Part 15.247(d), Part 15.205, Part 15.209

Frequency (MHz)	FCC Limit (uV/m)	IC Limit (uA/m)	Measurement Distance (m)
0.009 – 0.490	2 400 / F (kHz)	6.37/F (F in kHz)	300
0.490 – 1.705	24 000 / F (kHz)	63.7/F (F in kHz)	30
1.705 – 30.0	30	0.08	30

Frequency (MHz)	FCC Limit (uV/m)	IC Limit (uV/m)	Measurement Distance (m)
30 ~ 88	100 **	100	3
88 ~ 216	150 **	150	3
216 ~ 960	200 **	200	3
Above 960	500	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

- Part 15.205(a): Restricted band of operation

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	608 ~ 614	3345.8 ~ 3358		
		960 ~ 1240	3600 ~ 4400		

FCC Part 15.205(b) : The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for 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. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. (Restricted band-edge, Final detection of spurious harmonic emissions)
Duty cycle factor = $10 \log(1/x)$. For this sample: For 1 Mbps, DCF = $10\log(1/0.854)=0.686$ dB (Spectrum Analyzer round it up to 0.69 dB) and for 2 Mbps, DCF = $10\log(1/0.766)=1.160$ dB (Spectrum Analyzer round it up to 1.16 dB).

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.

The spectrum from 1 GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

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.

Note : Emission was pre-scanned from 9kHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

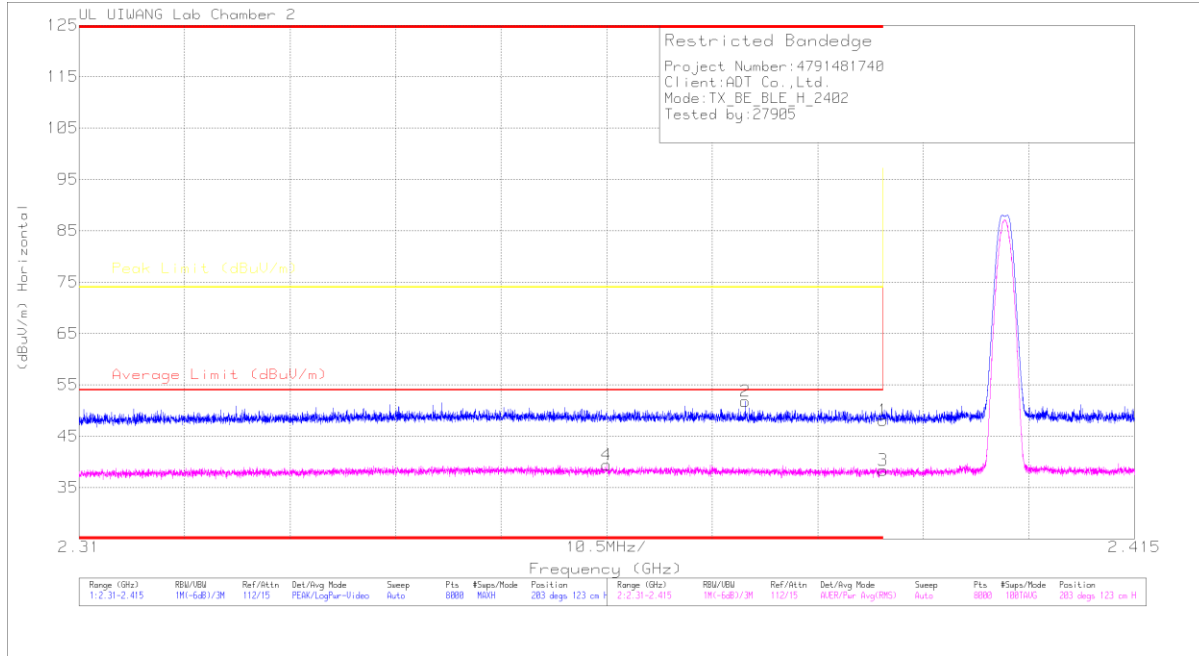
Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. TX ABOVE 1 GHz BLUETOOTH LE 1 Mbps

BANDEDGE (2 402 MHz)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	2Cham_3117 (dBm)	FB2_PL_1 18G_10dB_240409 (dB)	CH2_Ck_1 40G_Thru_240617 (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	43.71	PK	31.9	-34.1	6.6	48.11	-	-	74	-25.89	203	123	H
2	* 2.37629	47.19	PK	32	-34	6.6	51.79	-	-	74	-22.21	203	123	H
3	* 2.39	33.96	RMS	31.9	-34.1	6.6	38.36	54	-15.64	-	-	203	123	H
4	* 2.36251	34.71	RMS	32.1	-34	6.6	39.41	54	-14.59	-	-	203	123	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	2Cham_3117 (dBm)	F82_Pt_1_180_150B_240409 (dB)	CH2_C1_1_400_Thru_240617 (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
1	* 2.339	43.61	PK	31.9	-34.1	6.6	48.21	-	-	74	-25.79	65	138	V
2	* 2.34975	46.08	PK	32.2	-34	6.5	50.78	-	-	74	-23.22	65	138	V
3	* 2.339	34.56	RMS	31.9	-34.1	6.6	39.96	54	-15.04	-	-	65	138	V
4	* 2.34913	34.93	RMS	32.2	-34	6.5	39.63	54	-14.37	-	-	65	138	V

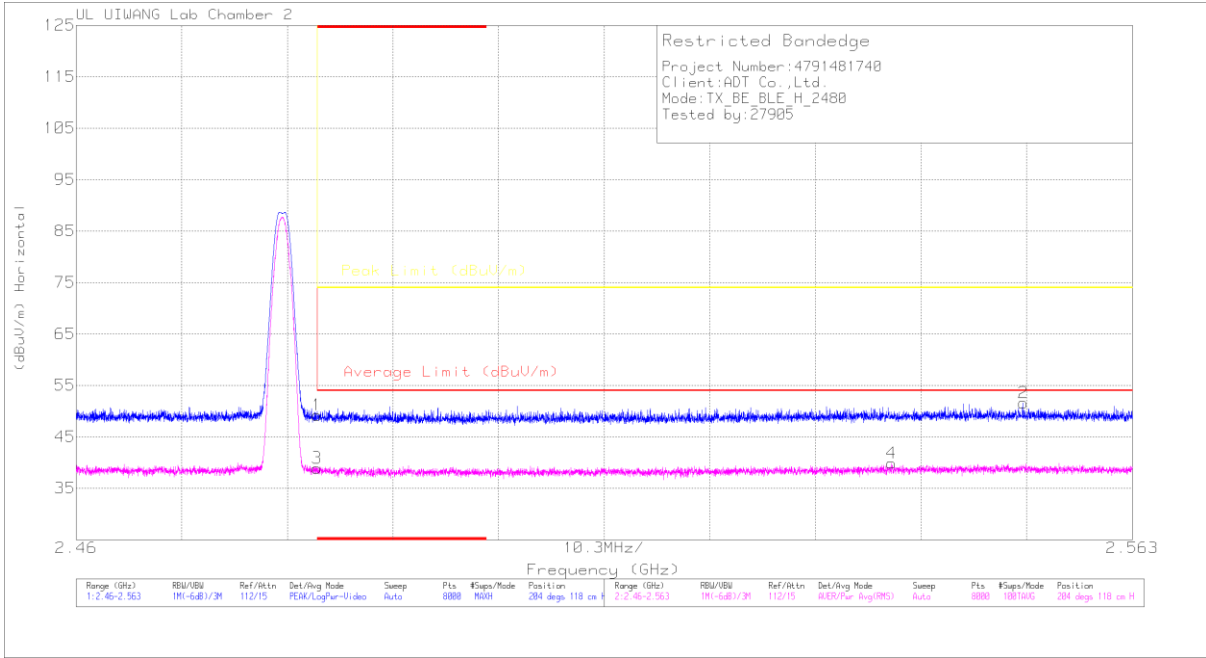
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

RMS - RMS detection

BANDEDGE (2 480 MHz)

HORIZONTAL RESULT

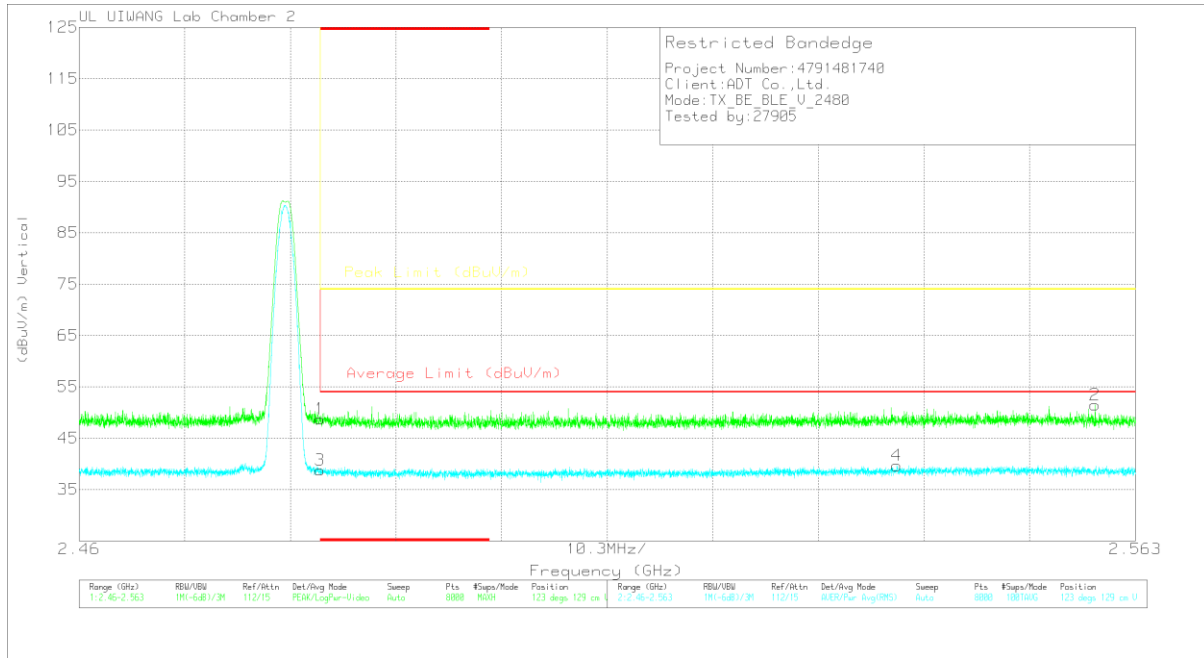


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117 50158724 (dBm)	10dB_ATT(dB)	DC Cor (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Acimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	44.52	Pk	32.1	-34.1	6.7	0	49.22	-	-	74	-24.78	204	118
2	2.55238	46.1	Pk	32.5	-33.9	6.9	0	51.6	-	-	74	-22.4	204	118
3	* 2.4835	34.2	RMS	32.1	-34.1	6.7	0	38.9	54	-15.1	-	-	204	118
4	2.53953	34.68	RMS	32.4	-34	6.8	0	39.88	54	-14.12	-	-	204	118

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meas Reading (dBuV)	Det	3117_00168724 (dBm)	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	44.02	Pk	32.1	-34.1	6.7	0	48.72	-	-	74	-25.28	123	129
2	2.59908	46.17	Pk	32.4	-34	6.9	0	51.47	-	-	74	-22.53	123	129
3	* 2.4835	34.08	RMS	32.1	-34.1	6.7	0	38.78	54	-15.22	-	-	123	129
4	2.53975	34.47	RMS	32.4	-34	6.8	0	39.67	54	-14.33	-	-	123	129

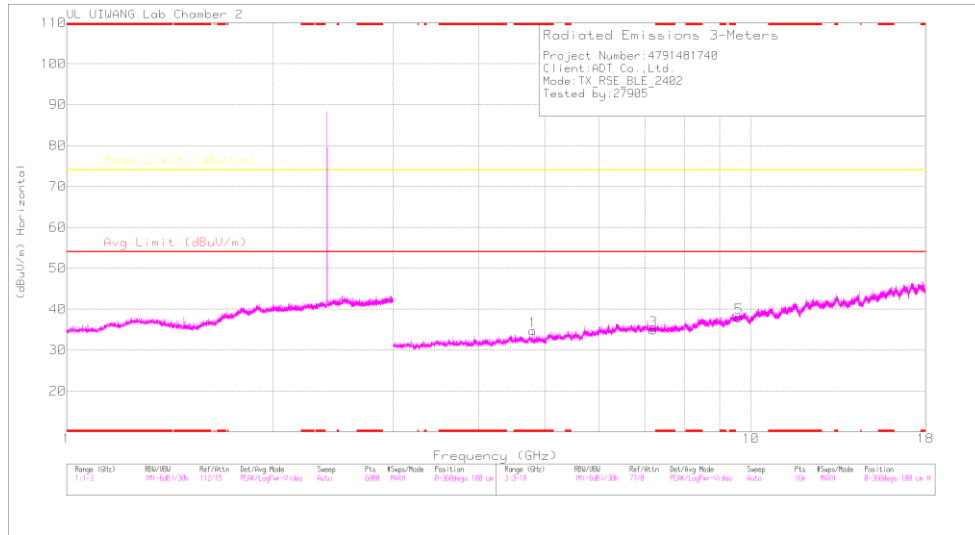
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

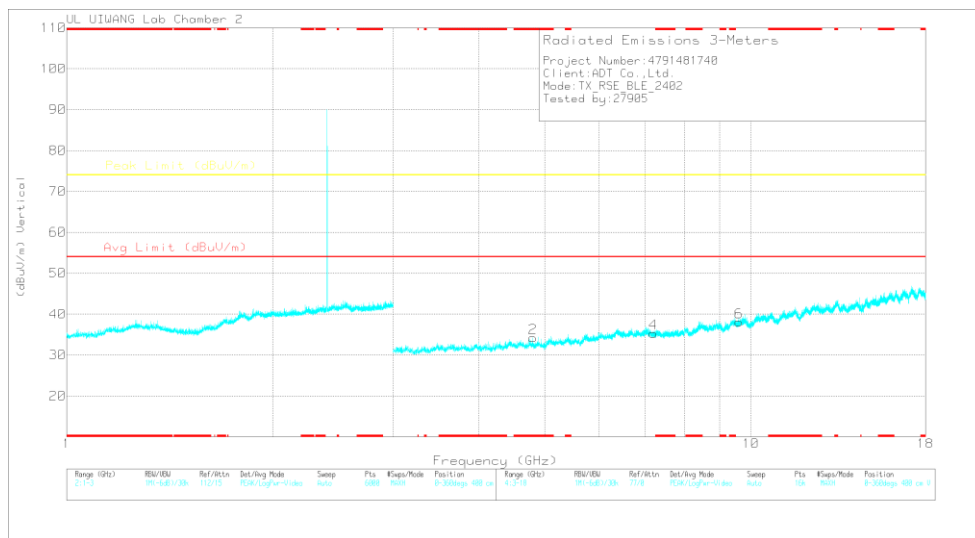
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

2402 MHz RESULTS



HORIZONTAL



VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

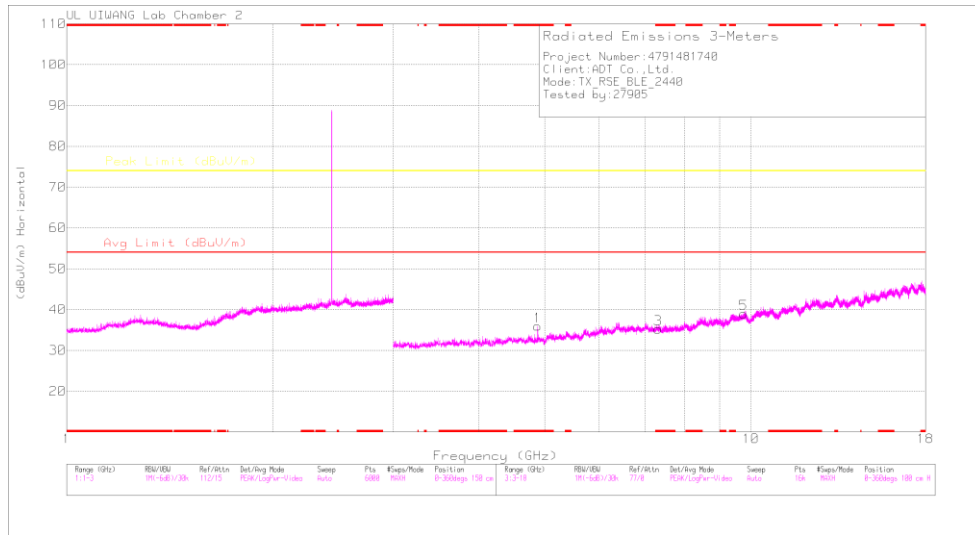
Frequency (GHz)	Meter Reading (dBuV)	Det	2Cham_3117 (dBm)	FB2_PL_1-18G_3GHP_24 0409 (dB)	GH2_CL_1-40G_Thru_240 617 (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80475	44.29	PK2	33.8	-42.6	9.7	45.19	-	-	74	-28.81	173	340	H
* 4.80436	35.35	MAV1	33.8	-42.6	9.7	36.25	54	-17.75	-	-	173	340	H
* 4.8037	43.51	PK2	33.8	-42.7	9.7	44.31	-	-	74	-29.69	202	154	V
* 4.80396	32.59	MAV1	33.8	-42.7	9.7	33.39	54	-20.61	-	-	202	154	V
7.20534	39.05	PK2	35.7	-40.9	11.6	45.45	-	-	74	-28.55	0	100	H
7.20715	39.14	PK2	35.7	-40.9	11.6	45.54	-	-	74	-28.46	0	100	V
9.60717	37.1	PK2	36.7	-39.3	13.6	48.1	-	-	74	-25.9	0	100	H
9.60717	37.28	PK2	36.7	-39.3	13.6	48.28	-	-	74	-25.72	0	100	V

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

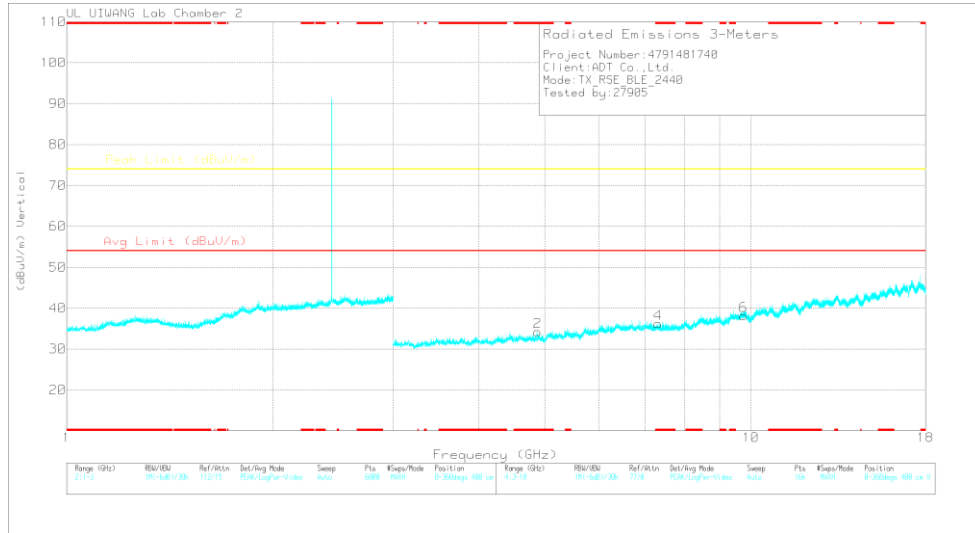
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

2440 MHz RESULTS



HORIZONTAL



VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

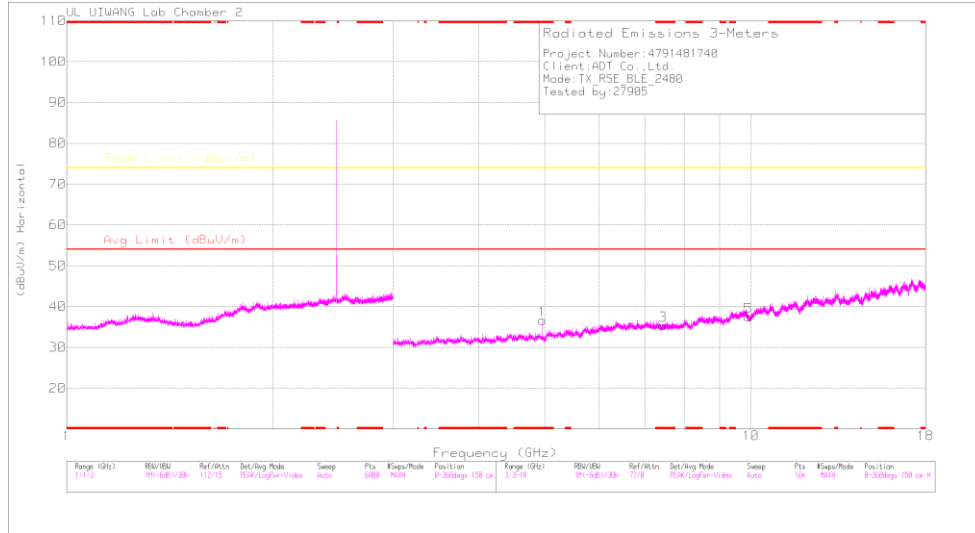
Frequency (GHz)	Meter Reading (dBuV)	Det	2Cham_3117 (dBm)	FB2_PL_1-18G_3GHP_24 0409 (dB)	GH2_CL_1-40G_Thru_240 617 (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88003	44.07	PK2	33.7	-42.4	9.7	45.07	-	-	74	-28.93	172	351	H
* 4.87978	33.82	MAV1	33.7	-42.4	9.7	34.82	54	-19.18	-	-	172	351	H
* 4.88038	42.78	PK2	33.7	-42.4	9.7	43.78	-	-	74	-30.22	200	151	V
* 4.87972	31.98	MAV1	33.7	-42.4	9.7	32.98	54	-21.02	-	-	200	151	V
* 7.31988	39.7	PK2	35.6	-40.4	11.7	46.6	-	-	74	-27.4	0	100	H
* 7.31959	38.67	PK2	35.6	-40.4	11.7	45.57	-	-	74	-28.43	0	100	V
9.75913	35.89	PK2	36.8	-38.2	13.6	48.09	-	-	74	-25.91	0	100	H
9.76407	35.87	PK2	36.8	-38.2	13.6	48.07	-	-	74	-25.93	0	100	V

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

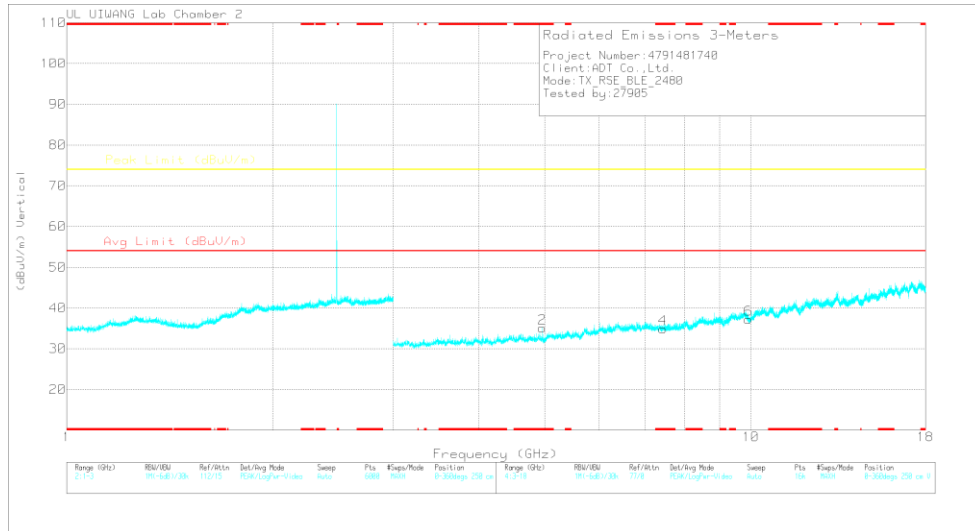
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

2480 MHz RESULTS



HORIZONTAL



VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	2Cham_3117 (dBm)	FB2_PL_1-18G_3GHP_24 0409 (dB)	CH2_CL_1-40G_Thru_240 617 (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.95951	43.42	PK2	33.7	-42.6	9.8	44.32	-	-	74	-29.68	169	390	H
* 4.95976	33.91	MAV1	33.7	-42.6	9.8	34.81	54	-19.19	-	-	169	390	H
* 4.95978	42.9	PK2	33.7	-42.6	9.8	43.8	-	-	74	-30.2	198	104	V
* 4.96049	31.91	MAV1	33.7	-42.6	9.8	32.81	54	-21.19	-	-	198	104	V
* 7.43983	38.24	PK2	35.6	-40.6	11.8	45.04	-	-	74	-28.96	0	100	H
* 7.43914	38.52	PK2	35.6	-40.6	11.8	45.32	-	-	74	-28.68	0	100	V
9.92092	35.51	PK2	36.9	-38.5	13.9	47.81	-	-	74	-26.19	0	100	H
9.92019	35.25	PK2	36.9	-38.5	13.9	47.55	-	-	74	-26.45	0	100	V

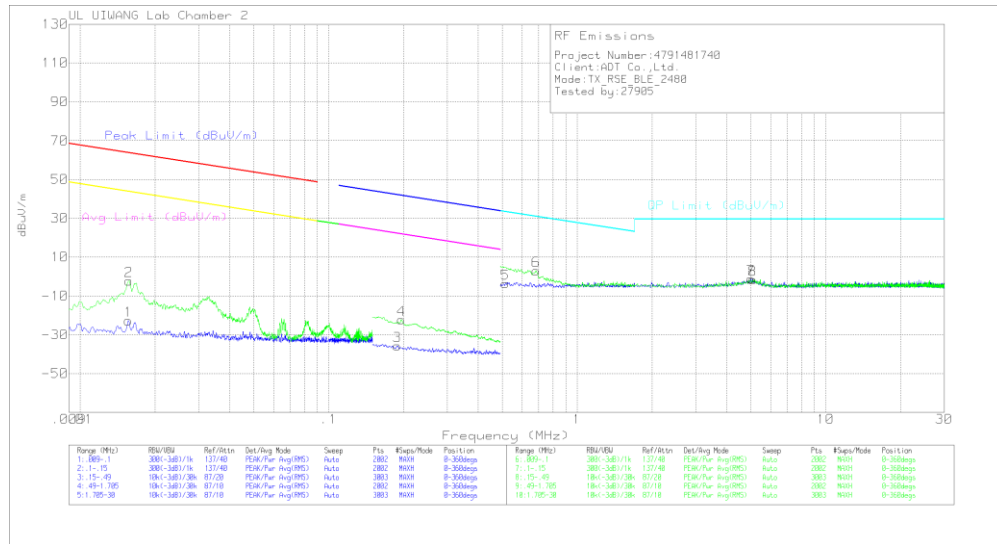
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

10.3. WORST CASE BELOW 1 GHz

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)



Trace Markers

[Face on]

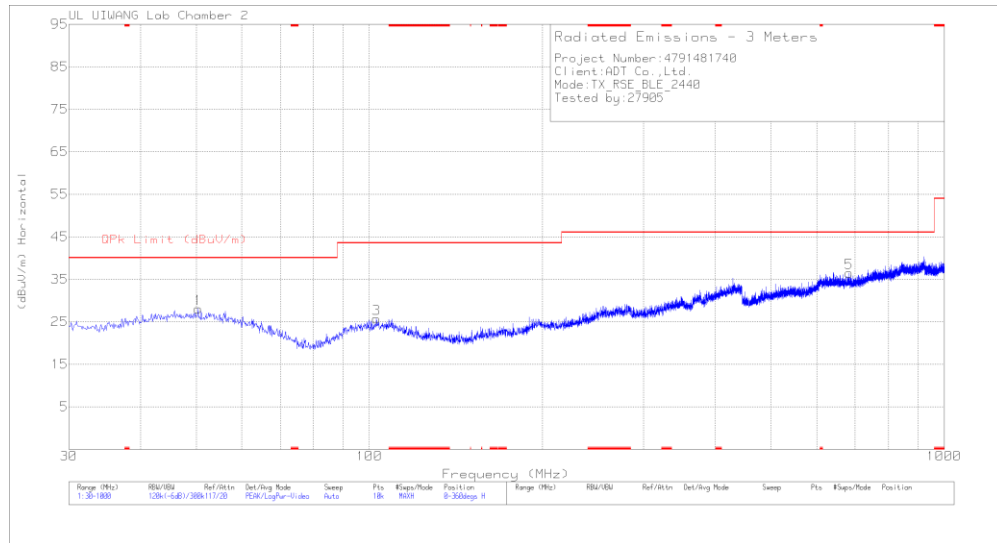
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF (dB/m)	CL (dB)	Dist Corr (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	QP Limit (dBuV/m)	Margin (dB)
1	.01562	37.11	Pk	20.1	.1	-80	-22.69	63.71	-86.4	43.71	-66.4		
3	.18904	23.51	Pk	20.7	.1	-80	-35.69	42.09	-77.78	22.09	-57.78		
5	.51428	15.43	Pk	20.9	.1	-40	-3.57					33.38	-36.95
7	5.00375	17.45	Pk	21	.4	-40	-1.15					29.5	-30.65

[Face off]

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF (dB/m)	CL (dB)	Dist Corr (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	QP Limit (dBuV/m)	Margin (dB)
2	.01571	57.59	Pk	20.1	.1	-80	-2.21	63.66	-65.87	43.66	-45.87		
4	.19622	36.99	Pk	20.7	.1	-80	-22.21	41.76	-63.97	21.76	-43.97		
6	.68363	22	Pk	20.9	.1	-40	3					30.92	-27.92
8	5.08858	16.99	Pk	21	.4	-40	-1.61					29.5	-31.11

Pk - Peak detector

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



HORIZONTAL



VERTICAL

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	2Cham_VULB9163 (dB/m)	CH2_PL_30-1000M_Amp(SCU 01F) (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	50.3721	35.46	Pk	20	-27.4	28.06	40	-11.94	0-360	300	H
2	32.1342	38.5	Pk	16	-27.4	27.1	40	-12.9	0-360	100	V
3	102.8545	35.31	PK	17.8	-27.4	25.71	43.52	-17.81	0-360	200	H
4	102.5635	36.09	Pk	17.8	-27.4	26.49	43.52	-17.03	0-360	200	V
5	683.2653	35.96	Pk	25.5	-25	36.46	46.02	-9.56	0-360	200	H
6	686.0796	36.37	Pk	25.5	-25	36.87	46.02	-9.15	0-360	100	V

Pk - Peak detector

END OF TEST REPORT