



427 West 12800 South
Draper, UT 84020

Test Report Certification

FCC ID	SWX-UMRU
IC ID	6545A-UMRU
Equipment Under Test	UMR-Ultra
Test Report Serial Number	TR9030_01
Date of Test(s)	20 – 24 May 2024
Report Issue Date	03 June 2024

Test Specification	Applicant
47 CFR FCC Part 15, Subpart C	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.



NVLAP LAB CODE 600241-0

Certification of Engineering Report

This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart C. This report may be reproduced in full. Partial reproduction of this report may only be made with the written consent of the laboratory. The results in this report apply only to the sample tested.

Applicant	Ubiquiti Inc.
Manufacturer	Ubiquiti Inc.
Brand Name	UBIQUITI
Model Number	UMR-Ultra
FCC ID	SWX-UMRU
IC ID	6545A-UMRU

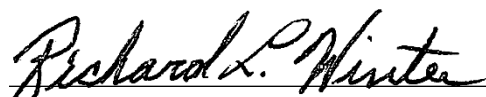
On this 3rd day of June 2024, I individually and for Unified Compliance Laboratory certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge and are made in good faith.

Although NVLAP has accredited the Unified Compliance Laboratory testing facilities, this report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. federal government.

Unified Compliance Laboratory



Written By: Joseph W. Jackson



Reviewed By: Richard L. Winter

Revision History		
Revision	Description	Date
01	Original Report Release	03 June 2024

Table of Contents

1	Client Information.....	5
1.1	Applicant.....	5
1.2	Manufacturer.....	5
2	Equipment Under Test (EUT).....	6
2.1	Identification of EUT	6
2.2	Description of EUT	6
2.3	EUT and Support Equipment.....	6
2.4	Interface Ports on EUT	6
2.5	Operating Environment.....	7
2.6	Operating Modes.....	7
2.7	EUT Exercise Software.....	7
2.8	Block Diagram of Test Configuration	8
2.9	Deviation, Opinions Additional Information or Interpretations from Test Standard.....	8
3	Test Specification, Method and Procedures.....	9
3.1	Test Specification.....	9
3.2	Methods & Procedures.....	9
3.3	FCC Part 15, Subpart C	9
3.4	Results.....	10
3.5	Test Location	10
4	Test Equipment.....	11
4.1	Conducted Emissions at Mains Ports.....	11
4.2	Direct Connect at the Antenna Port Tests.....	11
4.3	Radiated Emissions	12
4.4	Equipment Calibration	13
4.5	Measurement Uncertainty.....	13
5	Test Results.....	14
5.1	§15.203 Antenna Requirements.....	14
5.2	Conducted Emissions at Mains Ports Data	15
5.3	§15.247(a)(2) Emissions Bandwidth.....	17
5.4	§15.247(b)(3) Maximum Average Output Power.....	18
5.5	§15.247(d) Spurious Emissions	20
5.6	§15.247(e) Maximum Average Power Spectral Density	31

1 Client Information

1.1 Applicant

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Alex Macon
Title	Compliance

1.2 Manufacturer

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Alex Macon
Title	Compliance

2 Equipment Under Test (EUT)

2.1 Identification of EUT

Brand Name	UBIQUITI
Model Number	UMR-Ultra
Serial Number	942A6F1843F9
Dimensions (cm)	8.4 x 8.2 x 2.6

2.2 Description of EUT

The UMR-Ultra is a compact and robust LTE Gateway that provides 2.4 GHz WAN over LTE WiFi designed to provide fast and reliable internet in areas where the mobile network is the only option. The UMR-Ultra has two Ethernet port for data transfer. The UMR-Ultra provides a slot for a mobile network Nano SIM card. The UMR-Ultra is powered from an USB-C connector or 4-pin DC power socket.

This report covers the circuitry of the device subject to FCC Part 15, Subpart C. The circuitry of the device subject to FCC Part 15 Subpart B was found to be compliant and is covered under a separate Unified Compliance Laboratory test report.

2.3 EUT and Support Equipment

The EUT and support equipment used during the test are listed below.

Brand Name Model Number Serial Number	Description	Name of Interface Ports / Interface Cables
BN: UBIQUITI MN: UMR-Ultra (Note 1) SN: 942A6F1843F9	LTE Gateway	See Section 2.4
BN: UBIQUITI MN: GP-M015-QC SN: N/A	USB-C Power Adapter	See Section 2.4
BN: Dell MN: XPS 13 SN: N/A	Laptop Personal Computer	5e cable Ethernet/Unshielded Cat 5e cable (Note 2)

Notes: (1) EUT

(2) Interface port connected to EUT (See Section 2.4)

The support equipment listed above was not modified in order to achieve compliance with this standard.

2.4 Interface Ports on EUT

Name of Ports	No. of Ports Fitted to EUT	Cable Description/Length
AC (USB-C)	1	2 conductor/2 meters

Data	2	Shielded Cat 5e cable/8meters
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2.5 Operating Environment

Power Supply	120 Volts AC to USB-C Power
AC Mains Frequency	0 Hz
Temperature	21.1 – 21.9 °C
Humidity	10.6 – 23.8 %
Barometric Pressure	1021 mBar

2.6 Operating Modes

The UMR-Ultra was connected to a personal computer laptop and tested using test software in order to enable to constant duty cycle greater or equal to 98% of the WiFi transceiver. All emission modes of 802.11 b/g/n were investigated. All measurements are reported with the worst-case mode (802.11n) unless otherwise stated.

2.7 EUT Exercise Software

EUT firmware version 1.0 was used to operate the transmitter using a constant transmit mode.

2.8 Block Diagram of Test Configuration

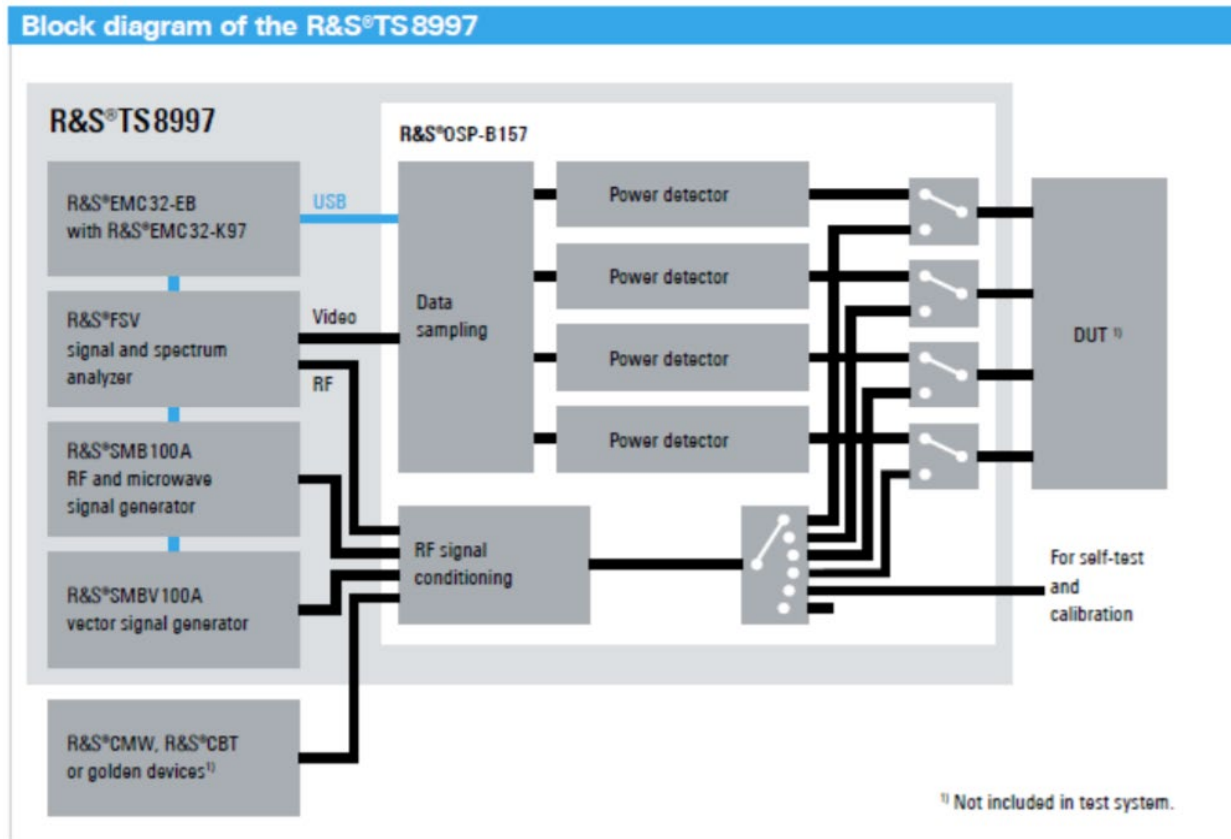


Diagram 1: Test Configuration Block Diagram

There were no modifications made to the EUT during testing to comply with the specification.

2.9 Deviation, Opinions Additional Information or Interpretations from Test Standard

There were no deviations, opinions, additional information or interpretations from the test specification.

3 Test Specification, Method and Procedures

3.1 Test Specification

Title	47 CFR FCC Part 15, Subpart C 15.203, 15.207 and 15.247 Limits and methods of measurement of radio interference characteristics of radio frequency devices.
Purpose of Test	The tests were performed to demonstrate initial compliance

3.2 Methods & Procedures

3.2.1 47 CFR FCC Part 15 Section 15.203

See test standard for details.

3.2.2 47 CFR FCC Part 15 Section 15.207

See test standard for details.

3.2.3 47 CFR FCC Part 15 Section 15.247

See test standard for details.

3.3 FCC Part 15, Subpart C

3.3.1 Summary of Tests

FCC Section	ISED Section	Environmental Phenomena	Frequency Range (MHZ)	Result
15.203	N/A	Antenna requirements	Structural Requirement	Compliant
15.207	RSS-Gen	Conducted Disturbance at Mains Port	0.15 to 30	Compliant
15.247(a)	RSS-247 § 5.2	Bandwidth Requirement	2412 to 2462	Compliant
15.247(b)	RSS-247 § 5.4	Peak Output Power	2412 to 2462	Compliant
15.247(d)	RSS-247 § 5.4	Antenna Conducted Spurious Emissions	0.009 to 40000	N/A
15.247(d)	RSS-247 § 5.4	Radiated Spurious Emissions	0.009 to 40000	Compliant
15.247(e)	RSS-247 § 5.2	Peak Power Spectral Density	2412 to 2462	Compliant
The testing was performed according to the procedures in ANSI C63.10-2013, KDB 558074 and 47 CFR Part 15. Where applicable, KDB 662911 was followed to sum required measurements.				

3.4 Results

In the configuration tested, the EUT complied with the requirements of the specification.

3.5 Test Location

Testing was performed at the Unified Compliance Laboratory 3-Meter and 10-Meter chambers located at 427 West 12800 South, Draper, UT 84020. Unified Compliance Laboratory is accredited by National Voluntary Laboratory Accreditation Program (NVLAP); NVLAP Code 600241-0 which is effective until 30 June 2025. This site has also been registered with Innovations, Science and Economic Development (ISED) department and was accepted under Appendix B, Phase 1 procedures of the APEC Tel MRA for Canadian recognition. ISED No.: 25346, effective until 30 June 2025.

Unified Compliance Laboratory has been assigned Designation Number US5037 by the FCC and Conformity Assessment Number US0223 by ISED.

4 Test Equipment

4.1 Conducted Emissions at Mains Ports

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
EMI Receiver	AFJ	FFT3010	UCL-2500	7/13/2023	7/13/2024
LISN	AFJ	LS16C/10	UCL-2512	5/26/2023	5/26/2024
ISN	Teseq	ISN T800	UCL-2974	6/27/2023	6/27/2024
LISN	AFJ	LS16C\10	UCL-6749	1/29/2024	1/29/2025
AC Power Source	Laplace Instruments	AC1000A	UCL-2857	N/A	N/A
Test Software	UCL	Revision 1	UCL-3107	N/A	N/A

Table 1: List of equipment used for Conducted Emissions Testing at Mains Port

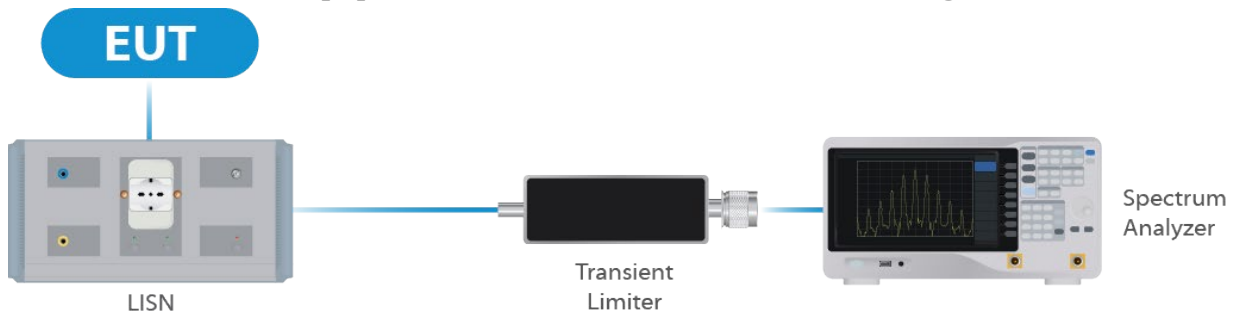


Figure 1: Conducted Emissions Test

4.2 Direct Connect at the Antenna Port Tests

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
Spectrum Analyzer	R&S	FSV40	UCL-2861	11/27/2023	11/27/2024
Signal Generator	R&S	SMB100A	UCL-2864	N/A	N/A
Vector Signal Generator	R&S	SMBV100A	UCL-2873	N/A	N/A
Switch Extension	R&S	OSP-B157WX	UCL-2867	4/12/2024	4/19/2025
Switch Extension	R&S	OSP-150W	UCL-2870	4/12/2024	4/19/2025

Table 2: List of equipment used for Direct Connect at the Antenna Port

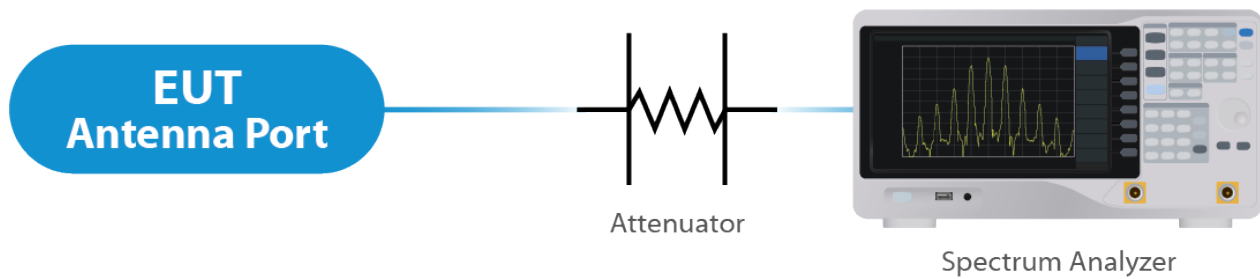


Figure 2: Direct Connect at the Antenna Port Test

4.3 Radiated Emissions

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
EMI Receiver	Keysight	N9038A	UCL-2778	1/25/2024	1/29/2025
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	1/19/2024	1/19/2026
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3062	2/22/2023	2/22/2025
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3071	1/11/2023	1/11/2025
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	9/22/2022	9/22/2024
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	1/27/2023	1/27/2025
15 - 40 GHz Horn Antenna	Scwarzbeck	BBHA 9170	UCL-2487	6/09/2022	6/09/2024
1 – 18 GHz Amplifier	Com-Power	PAM 118A	UCL-3833	1/19/2024	1/19/2026
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 3: List of equipment used for Radiated Emissions

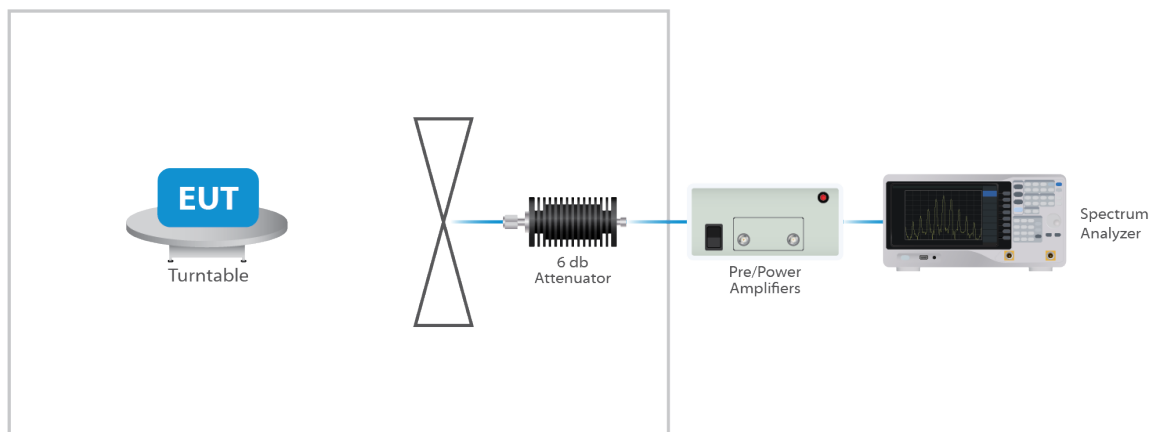


Figure 3: Radiated Emissions Test

4.4 Equipment Calibration

All applicable equipment is calibrated using either an independent calibration laboratory or Unified Compliance Laboratory personnel at intervals defined in ANSI C63.4:2014 following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request.

4.5 Measurement Uncertainty

Test	Uncertainty ($\pm$ dB)	Confidence (%)
Conducted Emissions	1.44	95
Radiated Emissions (9 kHz to 30 MHz)	2.50	95
Radiated Emissions (30 MHz to 1 GHz)	4.38	95
Radiated Emissions (1 GHz to 18 GHz)	4.37	95
Radiated Emissions (18 GHz to 40 GHz)	3.93	95
Direct Connect Tests	K Factor	Value
Emissions Bandwidth	2	2.0%
Output Power	2	1.0 dB
Peak Power Spectral Density	2	1.3 dB
Band Edge	2	0.8 dB
Transmitter Spurious Emissions	2	1.8 dB

5 Test Results

5.1 §15.203 Antenna Requirements

The EUT uses an external Monopol Antenna. Per the manufacturer, the Maximum gain of the antenna per chain is 4.0 dBi. This is an 802.11 device and utilizes CDD as described in KDB 662911 D01. The antenna is user replaceable. The UMR-Ultra is a single chain transmitter.

For CDD transmissions, directional gain is calculated as follows.

Array Gain = $10 \log(\text{NANT}/\text{NSS})$ dB

NANT = number of transmit antennas and

NSS = number of spatial streams. NSS = 1 considered worst case.

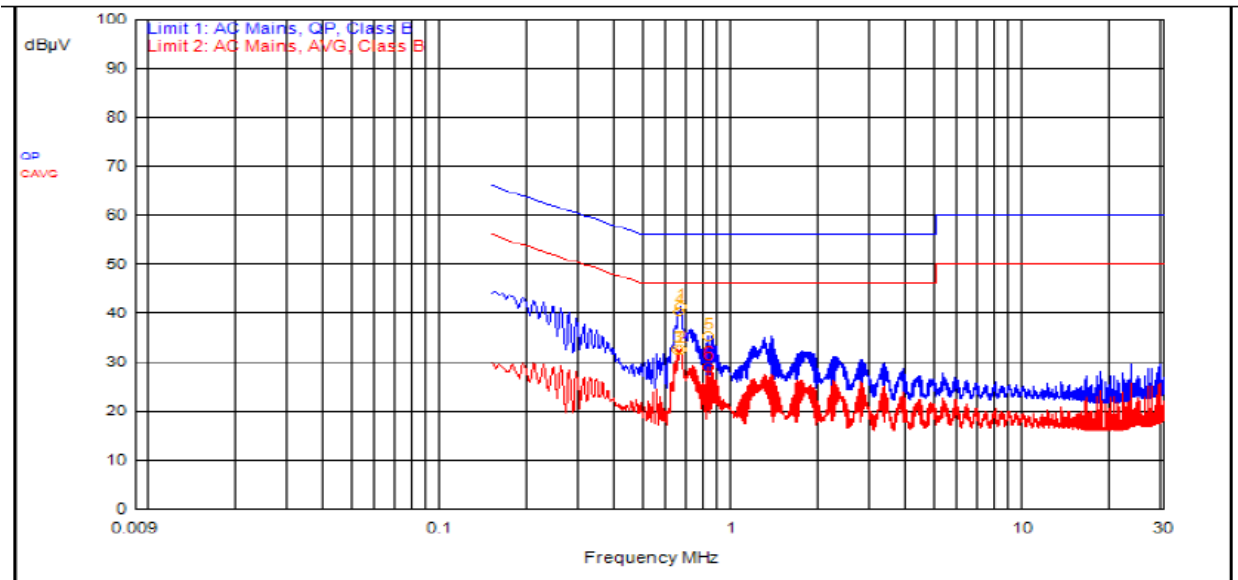
For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for $\text{NANT} \leq 4$;

For PSD measurements when Nss=1: Array Gain = $10 \log(\text{NANT}/\text{NSS})$ dB + Antenna Gain (dBi).

Results

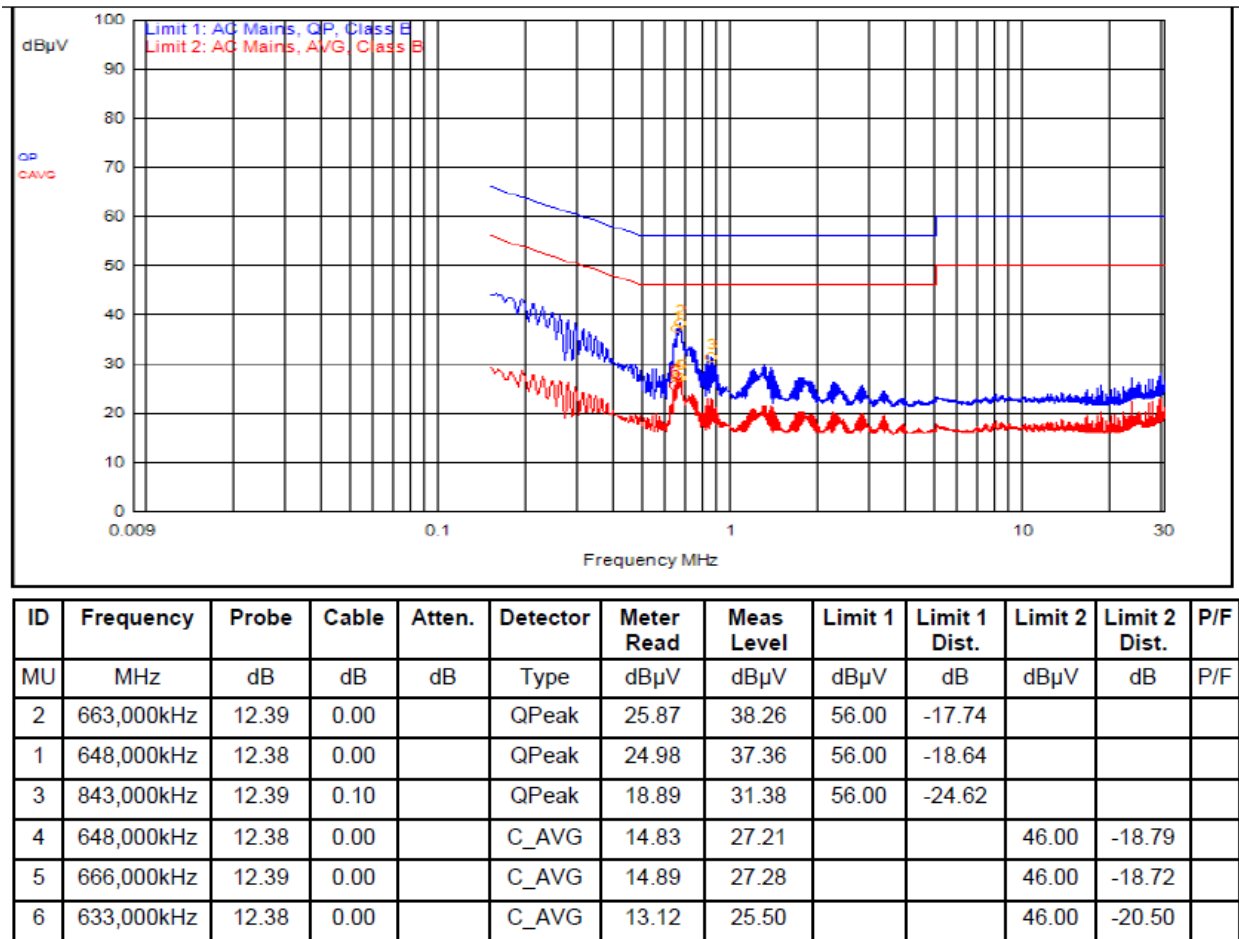
The EUT complied with the specification

5.2 Conducted Emissions at Mains Ports Data



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.	P/F
MU	MHz	dB	dB	dB	Type	dBμV	dBμV	dBμV	dB	dBμV	dB	P/F
1	663,000kHz	12.41	0.00		QPeak	28.98	41.39	56.00	-14.61			
4	651,000kHz	12.41	0.00		QPeak	27.99	40.40	56.00	-15.60			
5	825,000kHz	12.41	0.10		QPeak	22.82	35.33	56.00	-20.67			
2	666,000kHz	12.41	0.00		C_AVG	20.07	32.48			46.00	-13.52	
3	648,000kHz	12.40	0.00		C_AVG	20.20	32.60			46.00	-13.40	
6	825,000kHz	12.41	0.10		C_AVG	16.28	28.79			46.00	-17.21	

Graph 1: Conducted Emissions Plot - Neutral



Graph 2: Conducted Emissions Plot – Line 1

Result

The EUT complied with the specification limit.

5.3 §15.247(a)(2) Emissions Bandwidth

All chains were measured under the guidance of KDB 558074 Section 8.2. and KDB 66291 D01. Please see associated annex for details on instrument settings.

Mode	Frequency (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth (MHz)
b	2412	17.1	10.2
	2437	16.4	10.2
	2462	14.0	10.2
g	2412	20.7	12.8
	2437	22.6	16.2
	2462	16.3	14.0
n 20	2412	20.7	16.8
	2437	22.0	16.4
	2462	17.4	16.8
n 40	2422	36.0	34.3
	2437	36.0	32.4
	2452	35.8	33.9

Result

All chains were tested and the highest bandwidth per chain is reported above.

In the configuration tested, the 6 dB bandwidth was greater than 500 kHz; therefore, the EUT complied with the requirements of the specification (see spectrum analyzer plot within the Annex).

5.4 §15.247(b)(3) Maximum Average Output Power

All chains were measured and summed under the guidance of KDB 558074 Section 8.3.2.3. and KDB 66291 D01. Please see associated annex for details on instrument settings.

The maximum average RF conducted output power measured for this device was 22.49 dBm or 177.42 mW. The limit is 30 dBm or 1 Watt when using antennas with 6 dBi or less gain. The antenna has a gain of 4.0 dBi.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power *	Measured EIRP
b 20	2412	Mcs0	25	22.22	26.22
	2417	Mcs0	25	22.08	26.08
	2422	Mcs0	25	22.12	26.12
	2427	Mcs0	25	22.20	26.20
	2432	Mcs0	26	22.45	26.45
	2437	Mcs0	25	21.96	25.96
	2442	Mcs0	26	22.49	26.49
	2447	Mcs0	24	21.33	25.33
	2452	Mcs0	24	21.14	25.14
	2457	Mcs0	23	20.79	24.79
	2462	Mcs0	21	19.35	23.35
g 20	2412	Mcs0	23	20.71	24.71
	2417	Mcs0	24	21.65	25.65
	2422	Mcs0	24	21.37	25.37
	2427	Mcs0	25	22.08	26.08
	2432	Mcs0	25	21.93	25.93
	2437	Mcs0	24	21.19	25.19
	2442	Mcs0	24	21.22	25.22
	2447	Mcs0	23	20.69	24.69
	2452	Mcs0	22	20.05	24.05
	2457	Mcs0	21	19.33	23.33
	2462	Mcs0	18	16.91	20.91
n 20	2412	Mcs0	23	20.59	24.59
	2417	Mcs0	24	21.55	25.55
	2422	Mcs0	24	21.28	25.28
	2427	Mcs0	25	21.95	25.95
	2432	Mcs0	25	21.83	25.83

	2437	Mcs0	24	21.04	25.04
	2442	Mcs0	24	21.09	25.09
	2447	Mcs0	23	20.57	24.57
	2452	Mcs0	22	19.89	23.89
	2457	Mcs0	21	19.16	23.16
	2462	Mcs0	18	16.60	20.60
n 40	2422	Mcs0	18	16.83	20.83
	2437	Mcs0	19	17.73	21.73
	2452	Mcs0	17	15.79	19.79

Result

In the configuration tested, the maximum average RF output power was less than 1 watt; therefore, the EUT complied with the requirements of the specification (see spectrum analyzer plot within the Annex).

* Gated EIRP shown in the Annex is the conducted measurement

5.5 §15.247(d) Spurious Emissions

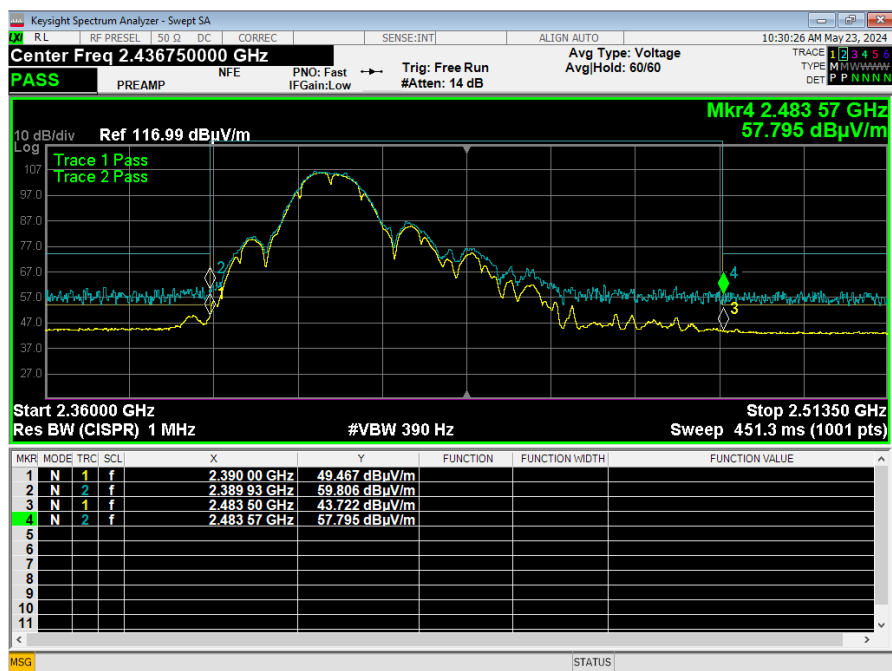
5.5.1 Conducted Spurious Emissions

The frequency range from the lowest frequency generated or used in the device to the tenth harmonic of the highest fundamental frequency was investigated to measure any antenna-conducted emissions. The table show the measurement data from spurious emissions noted across the frequency range when transmitting at the lowest frequency, middle frequency and upper frequency. Shown below are plot(s) with the EUT tuned to the upper and lower channels. These demonstrate compliance with the provisions of this section at the band edges.

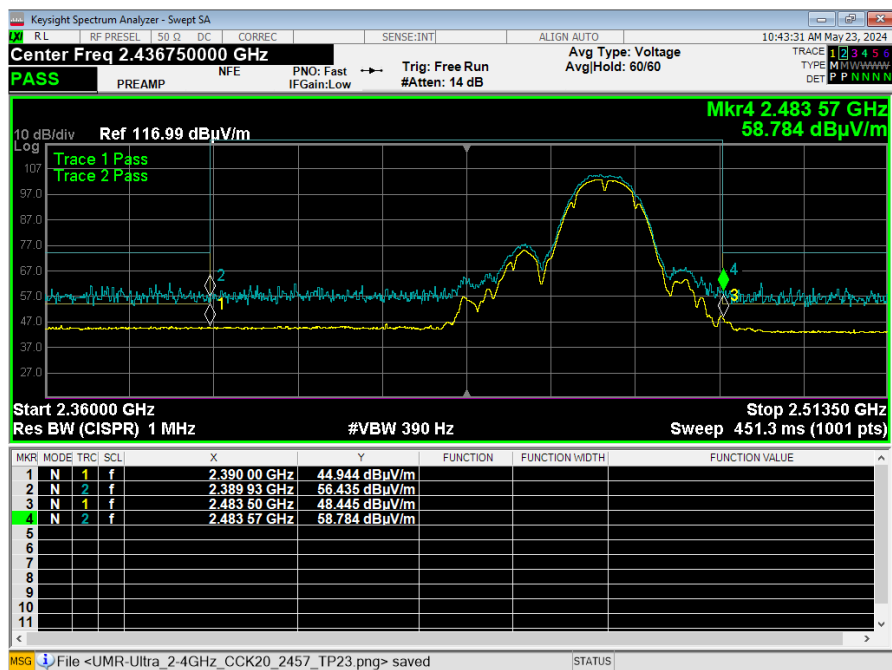
The emissions must be attenuated 30 dB or more below the highest power spectral density level measured within the authorized band as measured with a 100 kHz RBW.

Result

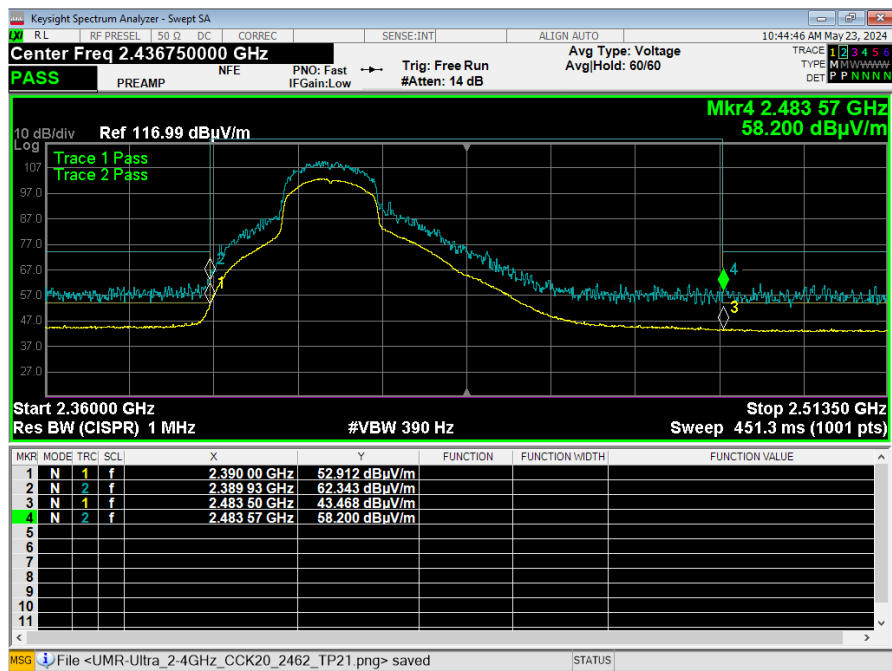
Conducted spurious emissions were attenuated 30 dB or more below the fundamental; therefore, the EUT complies with the specification.



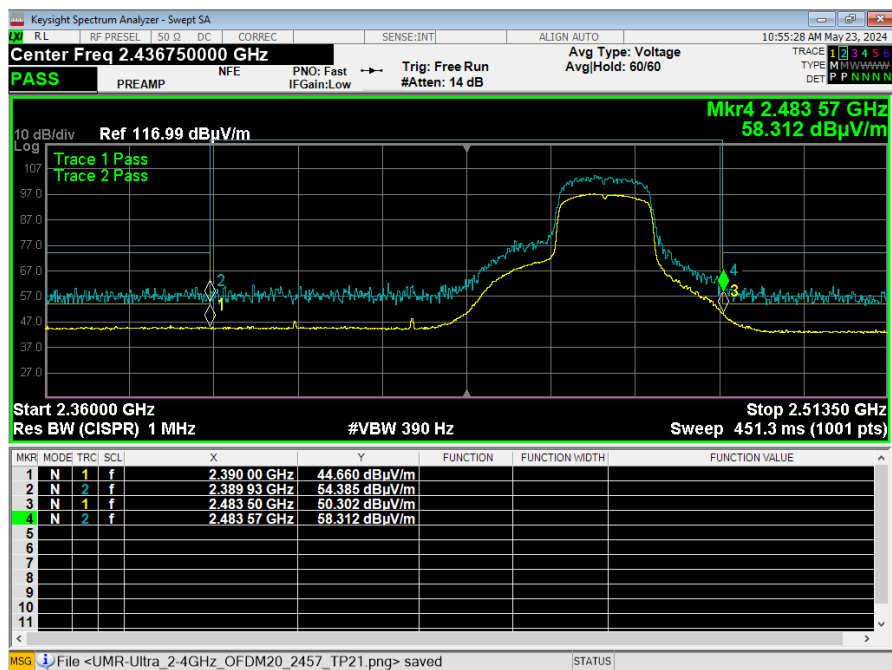
Graph 3: Lower Band Edge Plot b Mode 20 MHz



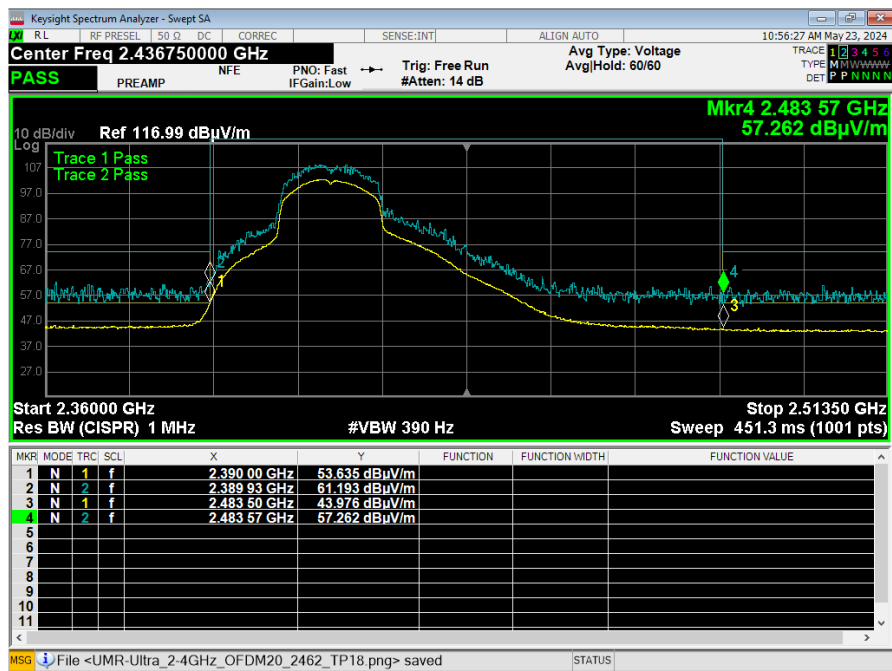
Graph 4: Upper Band Edge Plot b Mode 20 MHz



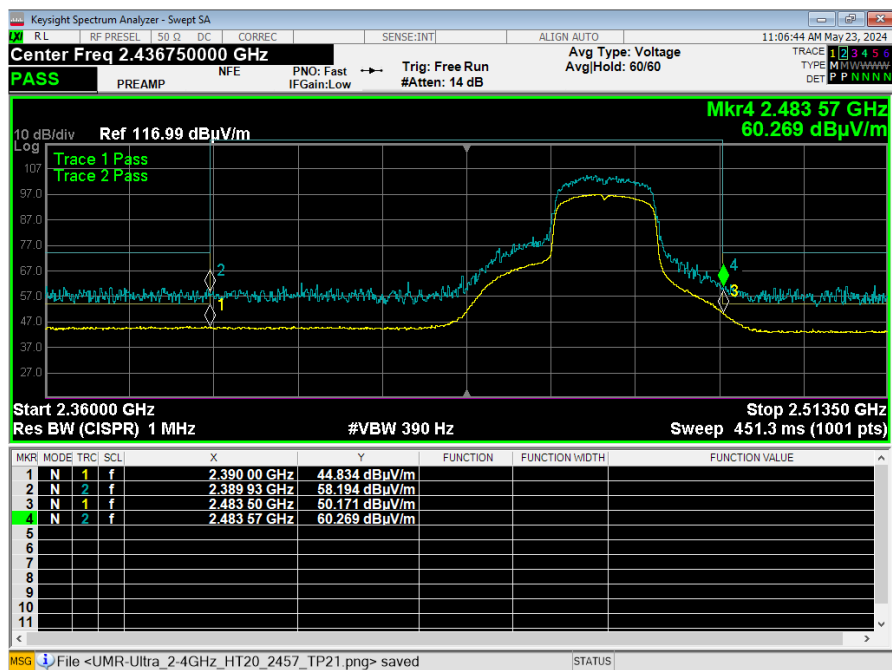
Graph 5: Lower Band Edge Plot g Mode 20 MHz



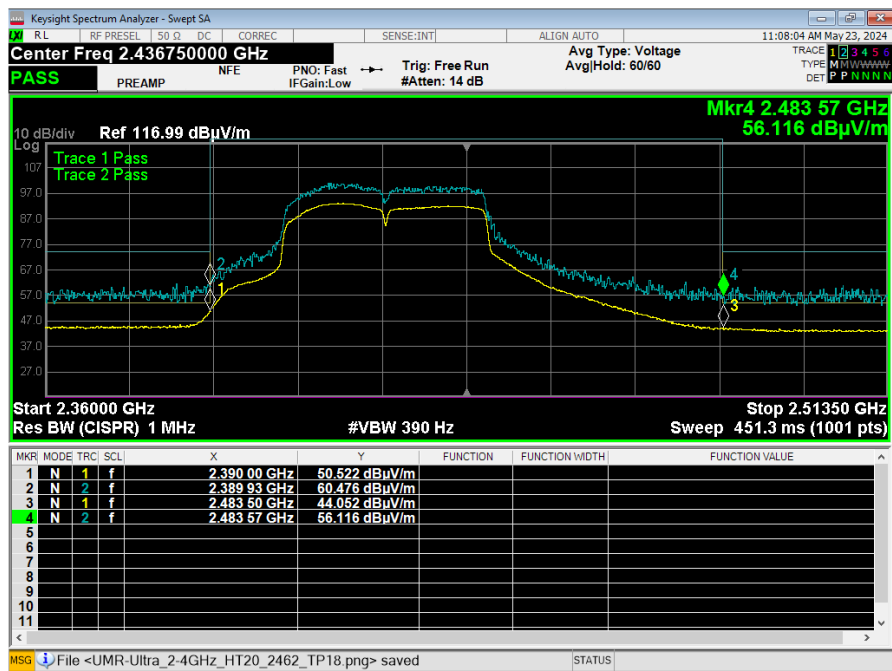
Graph 6: Upper Band Edge Plot g Model 20 MHz



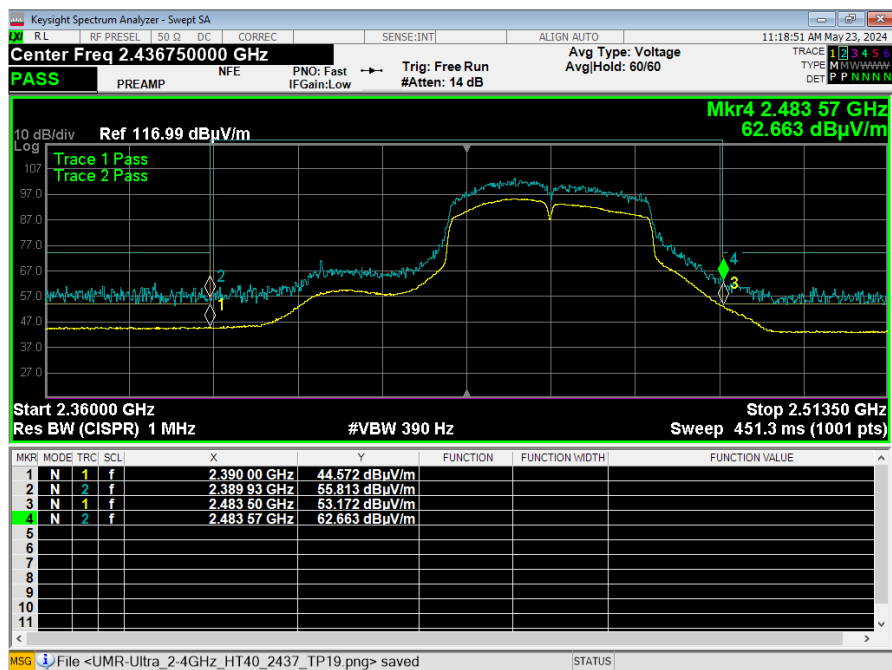
Graph 7: Lower Band Edge Plot n Mode 20 MHz



Graph 8: Upper Band Edge Plot n Mode 20 MHz



Graph 9: Lower Band Edge Plot n Mode 40 MHz



Graph 10: Upper Band Edge Plot n Mode 40 MHz

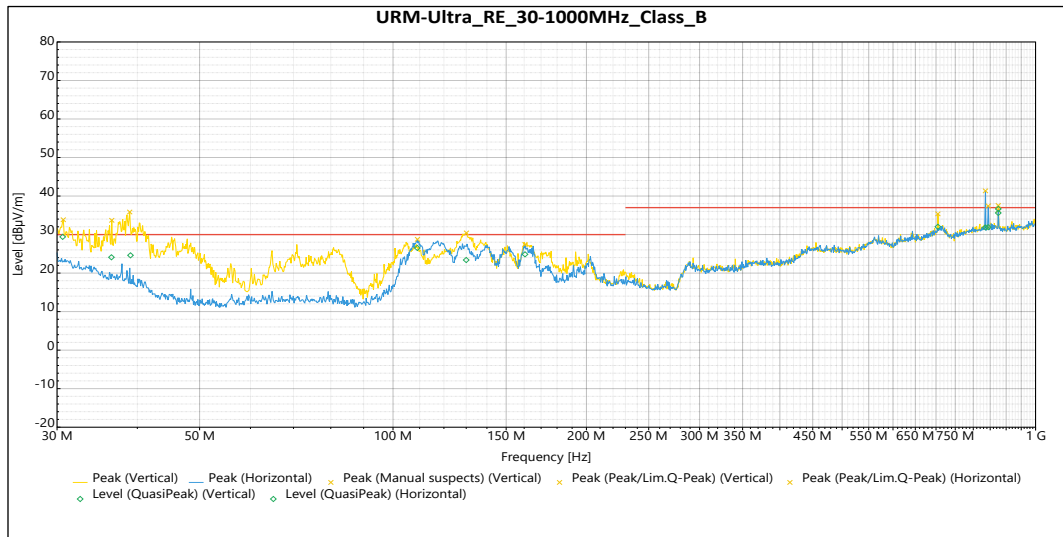
5.5.2 Radiated Spurious Emissions in the Restricted Bands of §15.205

The frequency range from the lowest frequency generated or used in the device to the tenth harmonic of the highest fundamental emissions was investigated to measure any radiated emissions in the restricted bands. The following tables show measurements of any emissions that fell into the restricted bands of §15.205. The tables show the worst-case emissions measured from the EUT. For frequencies above 18.0 GHz, a measurement distance of 1 meter was used. The noise floor was a minimum of 6 dB below the limits. The emissions in the restricted bands must meet the limits specified in §15.209. Tabular data for each of the spurious emissions is shown below for each of the units. Plots of the band edges are also shown.

Correction Factor = Antenna Factor + Cable Loss - Pre-Amplifier Gain, and is added to the Receiver reading.

Result

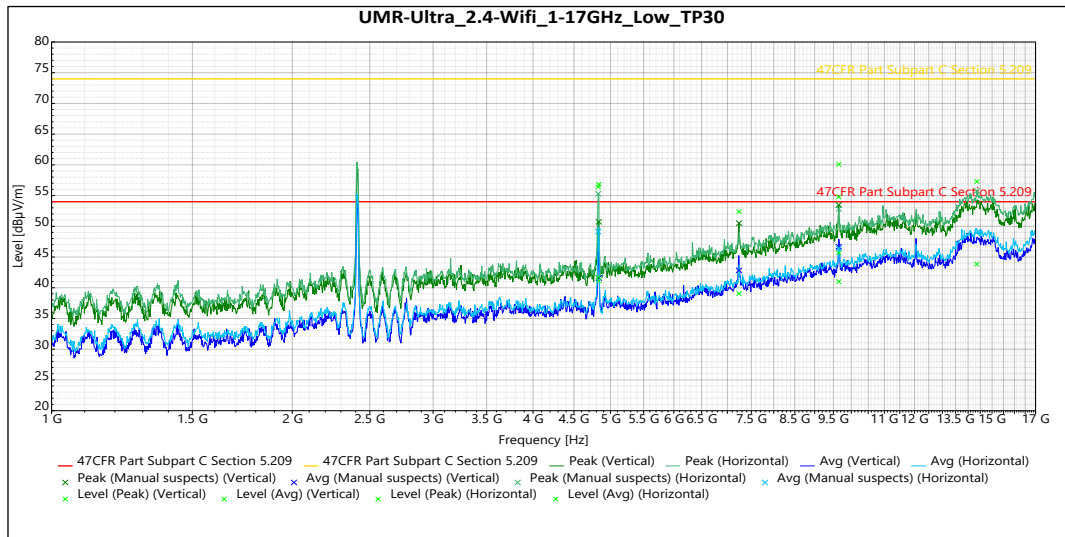
All emissions in the restricted bands of §15.205 met the limits specified in §15.209; therefore, the EUT complies with the specification.



QuasiPeak

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
30.611 MHz	29.406	30	-0.594	55	1.065	Vertical	-5.421
36.456 MHz	24.113	30	-5.887	125	2.017	Vertical	-9.215
39.033 MHz	24.616	30	-5.384	115	2.516	Vertical	-10.959
129.99 MHz	23.401	30	-6.599	240	3.996	Vertical	-8.547
704.66 MHz	32.029	37	-4.971	114	1.105	Vertical	0.778
874.95 MHz	35.619	37	-1.381	326	1.733	Vertical	1.947
109.11 MHz	26.529	30	-3.471	147	3.994	Horizontal	-11.654
160.48 MHz	24.878	30	-5.122	161	3.775	Horizontal	-10.766
835.64 MHz	31.853	37	-5.147	132	1.101	Horizontal	1.461
844.01 MHz	31.923	37	-5.077	242	3.842	Horizontal	1.551
875.02 MHz	36.661	37	-0.339	257	1.141	Horizontal	1.945

Table 4: Radiated Emissions 30 – 1000 MHz



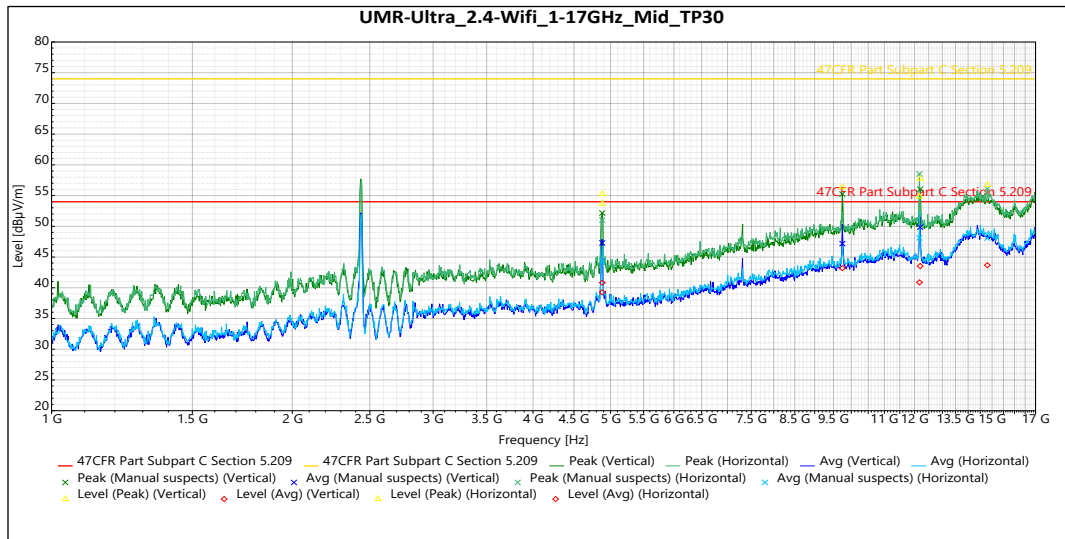
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.8352 GHz	56.837	74	-17.163	119	2.142	Vertical	-5.964
7.2386 GHz	52.402	74	-21.598	32	1.638	Vertical	0.864
9.6463 GHz	60.084	74	-13.916	173	2.65	Vertical	5.557
4.8267 GHz	56.429	74	-17.571	206	2.142	Horizontal	-5.97
9.6478 GHz	54.789	74	-19.211	254	2.142	Horizontal	5.556
14.357 GHz	57.297	74	-16.703	34	2.142	Horizontal	11.919

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.8352 GHz	41.157	54	-12.843	119	2.142	Vertical	-5.964
7.2386 GHz	39.07	54	-14.93	32	1.638	Vertical	0.864
9.6463 GHz	45.705	54	-8.295	173	2.65	Vertical	5.557
4.8267 GHz	41.775	54	-12.225	206	2.142	Horizontal	-5.97
9.6478 GHz	41.008	54	-12.992	254	2.142	Horizontal	5.556
14.357 GHz	43.861	54	-10.139	34	2.142	Horizontal	11.919

Table 5: Radiated Emissions 1 – 17 GHz at the Lowest Frequency



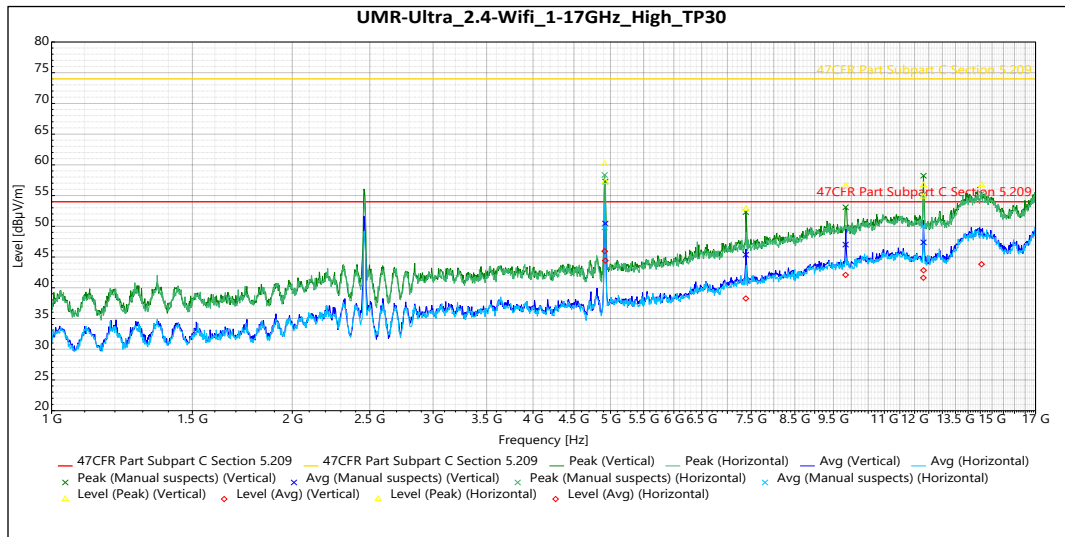
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.8832 GHz	53.704	74	-20.296	296	3.802	Vertical	-5.905
9.7475 GHz	56.369	74	-17.631	27	3.802	Vertical	5.781
12.196 GHz	57.754	74	-16.246	208	3.311	Vertical	8.335
4.883 GHz	55.257	74	-18.743	42	3.311	Horizontal	-5.905
12.17 GHz	54.857	74	-19.143	315	2.82	Horizontal	8.518
14.796 GHz	56.744	74	-17.256	316	3.798	Horizontal	11.63

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.8832 GHz	39.279	54	-14.721	296	3.802	Vertical	-5.905
9.7475 GHz	43.195	54	-10.805	27	3.802	Vertical	5.781
12.196 GHz	43.54	54	-10.46	208	3.311	Vertical	8.335
4.883 GHz	40.828	54	-13.172	42	3.311	Horizontal	-5.905
12.17 GHz	40.877	54	-13.123	315	2.82	Horizontal	8.518
14.796 GHz	43.678	54	-10.322	316	3.798	Horizontal	11.63

Table 6: Radiated Emissions 1 – 17 GHz at the Middle Frequency



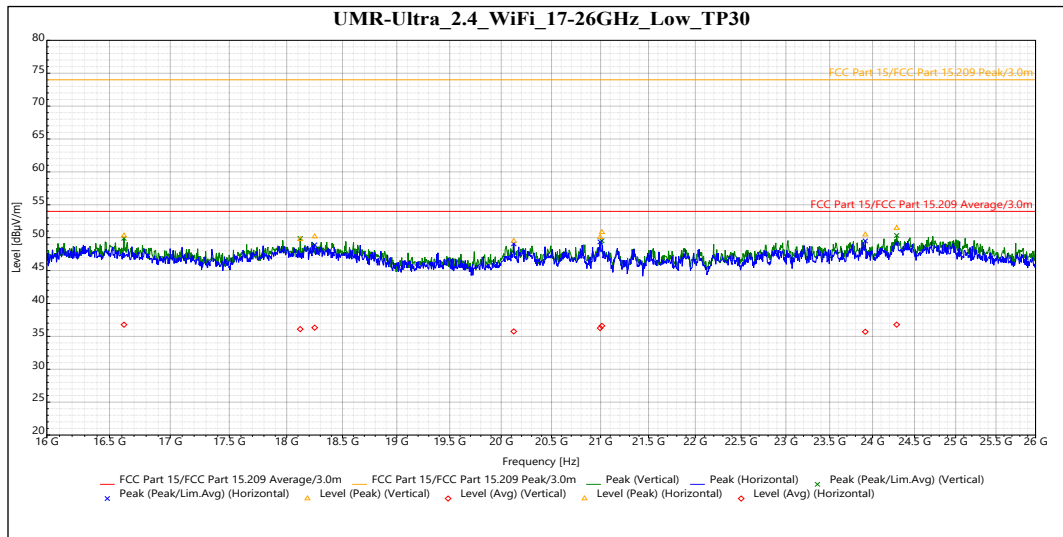
Peak

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.9259 GHz	57.277	74	-16.723	331	3.802	Vertical	-5.859
7.3824 GHz	52.856	74	-21.144	111	3.802	Vertical	0.804
9.8386 GHz	56.596	74	-17.404	31	3.802	Vertical	5.752
12.314 GHz	56.704	74	-17.296	170	3.311	Vertical	7.774
4.917 GHz	60.154	74	-13.846	40	3.802	Horizontal	-5.867
12.308 GHz	54.85	74	-19.15	116	3.307	Horizontal	7.789
14.553 GHz	56.718	74	-17.282	336	3.798	Horizontal	11.807

Avg

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.9259 GHz	44.43	54	-9.57	331	3.802	Vertical	-5.859
7.3824 GHz	38.268	54	-15.732	111	3.802	Vertical	0.804
9.8386 GHz	42.102	54	-11.898	31	3.802	Vertical	5.752
12.314 GHz	42.847	54	-11.153	170	3.311	Vertical	7.774
4.917 GHz	45.96	54	-8.04	40	3.802	Horizontal	-5.867
12.308 GHz	41.634	54	-12.366	116	3.307	Horizontal	7.789
14.553 GHz	43.845	54	-10.155	336	3.798	Horizontal	11.807

Table 7: Radiated Emissions 1 – 17 GHz at the Highest Frequency



Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
16.618 GHz	50.32	74	-23.68	294	Vertical	0.07
18.12 GHz	49.758	74	-24.242	243	Vertical	-0.895
21.013 GHz	50.826	74	-23.174	304	Vertical	0.899
24.286 GHz	51.456	74	-22.544	286	Vertical	1.956
18.249 GHz	50.174	74	-23.826	262	Horizontal	-0.547
20.123 GHz	49.497	74	-24.503	306	Horizontal	0.559
20.995 GHz	50.065	74	-23.935	265	Horizontal	0.81
23.915 GHz	50.462	74	-23.538	58	Horizontal	1.415

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
16.618 GHz	36.769	54	-17.231	294	Vertical	0.07
18.12 GHz	36.1	54	-17.9	243	Vertical	-0.895
21.013 GHz	36.593	54	-17.407	304	Vertical	0.899
24.286 GHz	36.777	54	-17.223	286	Vertical	1.956
18.249 GHz	36.316	54	-17.684	262	Horizontal	-0.547
20.123 GHz	35.748	54	-18.252	306	Horizontal	0.559
20.995 GHz	36.257	54	-17.743	265	Horizontal	0.81
23.915 GHz	35.702	54	-18.298	58	Horizontal	1.415

Table 8: Radiated Emissions 17 – 40 GHz at the Lowest Frequency (worse case)

5.6 §15.247(e) Maximum Average Power Spectral Density

All chains were measured and summed under the guidance of KDB 558074 Section 8.4. and KDB 66291 D01. Please see associated annex for details on instrument settings.

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

Mode	Frequency (MHz)	Measurement (dBm)	Criteria (dBm)
b	2412	-10.66	8.0
	2437	-10.50	8.0
	2462	-12.55	8.0
g	2412	-13.50	8.0
	2437	-13.03	8.0
	2462	-17.94	8.0
n 20	2412	-13.82	8.0
	2437	-13.29	8.0
	2462	-18.22	8.0
n 40	2422	-21.01	8.0
	2437	-19.42	8.0
	2452	-21.30	8.0

Result

The maximum average power spectral density was less than the limit of 8 dBm; therefore, the EUT complies with the specification.

-- End of Test Report --