UNIFIED COMPLIANCE LABORATORY

427 West 12800 South
Draper, UT 84020

Test Report

Certification

FCC ID	SWX-LBEAX
ISED ID	6545A-LBEAX
Equipment Under Test	LBE-AX
Test Report Serial Number	TR6451_02
Date of Test(s)	22 July; 2, 3, 10 and 13 August 2021
Report Issue Date	June 7, 2022

Test Specification	Applicant
47 CFR FCC Part 15, Subpart E	Ubiquiti Inc. 685 Third Avenue New York, NY 10019 U.S.A.

NVLAP TESTING ilac-MRA

NVLAP LAB CODE 600241-0

Certification of Engineering Report

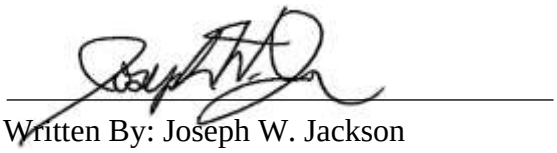
This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart E. This report may be reproduced in full. Partial reproduction of this report may only be made with 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	airMAX
Model Number	LBE-AX
FCC ID	SWX-LBEAX
ISED ID	6545A-LBEAX

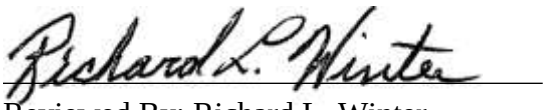
On this 7th day of June 2022, I individually and for Unified Compliance Laboratory certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge and are made in good faith.

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	13 September 2021
02	Added Elevation data adjustments	7 June 2022

Table of Contents

1 Client Information

1.1 Applicant

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Mark Feil
Title	Compliance Manager

1.2 Manufacturer

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Mark Feil
Title	Compliance Manager

2 Equipment Under Test (EUT)

2.1 Identification of EUT

Brand Name	airMAX
Model Number	LBE-AX
Serial Number	68D79A1FA536
Dimensions (cm)	35.8 x 27.2 x 27.3

2.2 Description of EUT

The LBE-AX is a point-to-point transceiver intended for outdoor use and operating in the 5 GHz WiFi, UNII-1, UNII-2A/2C and UNII-3 frequency bands. The 5 GHz WiFi is a 2x2 radio with cross polarized elements. The LBE-AX is designed to be lightweight and aimed to create extremely long-distance wireless links. The LBE-AX also has a Bluetooth LE transceiver for device management. An Ethernet port is used for data transfer and to provide power using a POE-24V-24W POE power adapter.

Band	WiFi Mode	Modulation Bandwidth	Modulation Type	Frequency (MHz)
UNII-1	ax	20 MHz	HE	5165, 5175, 5185, 5200, 5210, 5220, 5230, 5240
	ax	40 MHz	HE	5175, 5185, 5200, 5215, 5230
	ax	80 MHz	HE	5195, 5200, 5205, 5210

This report covers the circuitry of the device subject to FCC Part 15, Subpart E. 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: airMAX MN: LBE-AX (Note 1) SN: 68D79A1FA536	Wireless Transceiver	See Section 2.4
BN: Ubiquiti Inc. MN: POE-24-24W (Note 1) SN: None	POE Supply	POE Port See Section 2.4
BN: Dell MN: XPS 13 SN: None	Laptop PC	LAN Port / Shielded or 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 (PoE Injector)	1	3 conductor power cord/80cm
LAN (PoE Injector)	1	Shielded or Unshielded Cat 5e cable/1 meter
Data	1	Shielded or Unshielded Cat 5e cable/8meters

2.5 Operating Environment

Power Supply	120 Vac to 24 Volts PoE Power
AC Mains Frequency	60 Hz
Temperature	24.6 – 26.8 °C
Humidity	33.3 – 51.1 %
Barometric Pressure	1015 mBar

2.6 Operating Modes

The LBE-AX was tested using test software in order to enable a constant transmission. The measurements within this report are corrected to reference a 100% duty cycle. All emission modes of 802.11 ax were investigated. All measurements are reported with the worst-case mode (802.11ax) 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

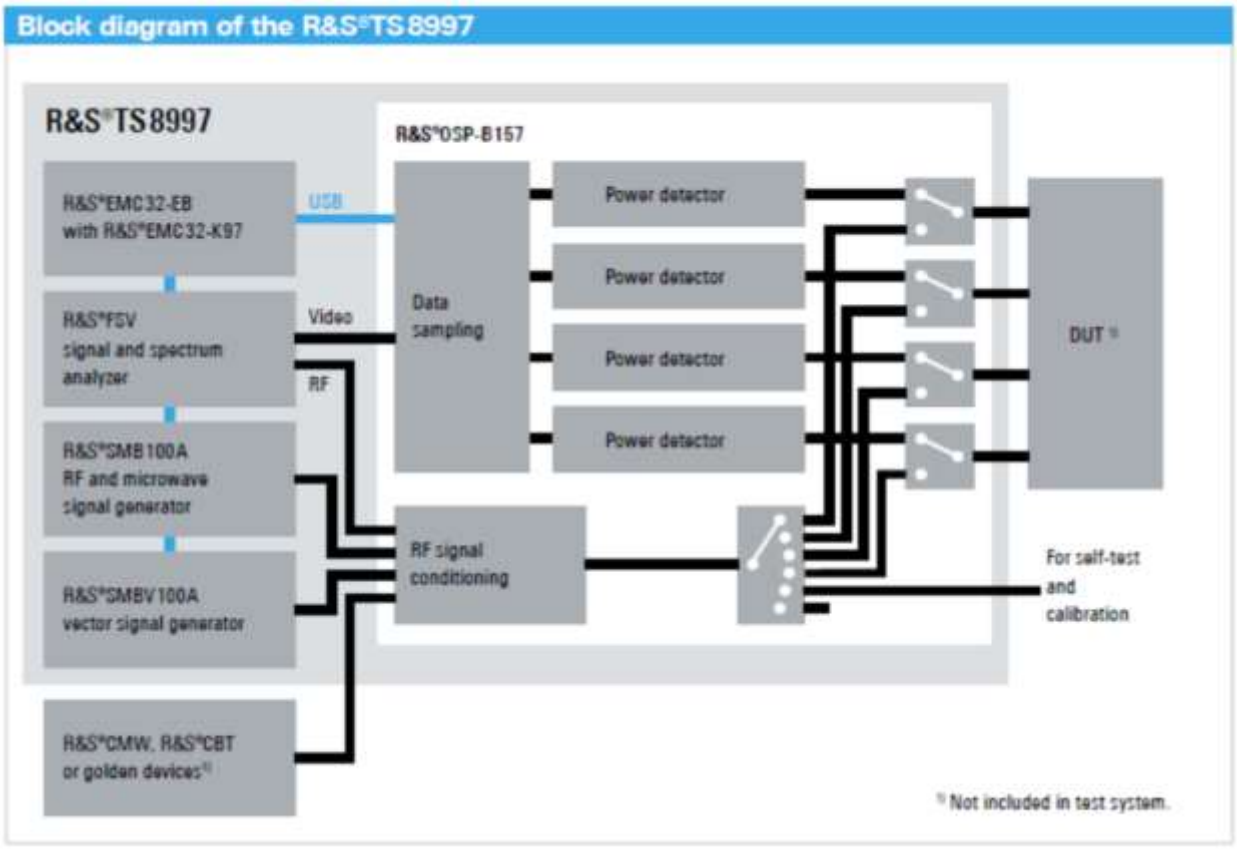


Diagram 1: Test Configuration Block Diagram

2.9 Modification Incorporated/Special Accessories on EUT

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

2.10 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 E, Section 15.407 Limits and methods of measurement of radio interference characteristics of Unlicensed National Information Infrastructure 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 15.407

See test standard for details.

3.3 FCC Part 15, Subpart E

3.3.1 Summary of Tests

FCC Section	ISED Section	Environmental Phenomena	Frequency Range (MHZ)	Result
15.407(a)	N/A	Antenna requirements	Structural Requirement	Compliant
15.407(b)	RSS-Gen	Conducted Disturbance at Mains Port	0.15 to 30	Compliant
15.407(c)	RSS-247 §6.2.2, §6.2.3	Bandwidth Requirement	5180 to 5210	Compliant
15.407(e)	RSS-247 §6.2.2, §6.2.3	Peak Output Power	5180 to 5210	Compliant
15.407(f)	RSS-247 §6.2.2, §6.2.3	Antenna Conducted Spurious Emissions	0.009 to 40000	N/A
15.407(g)	RSS-247 §6.2.2, §6.2.3	Radiated Spurious Emissions	0.009 to 40000	Compliant
15.407(h)	RSS-247 §6.2.2, §6.2.3	Peak Power Spectral Density	5180 to 5210	Compliant
The testing was performed according to the procedures in ANSI C63.10-2013, KDB 789033 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 2022. This site has also been registered with Innovations, Science and Economic Development (ISED) department as was accepted under Appendix B, Phase 1 procedures of the APEC Tel MRA for Canadian recognition. ISED No.: 25346, effective until 30 June 2022. Unified Compliance Laboratory has been assigned 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	9/18/2020	9/17/2021
LISN	AFJ	LS16C/10	UCL-2512	5/26/2020	5/26/2022
Cat6 ISN	Teseq	ISN T8-Cat6	UCL-2971	5/18/2020	5/18/2022
ISN	Teseq	ISN T800	UCL-2974	6/4/2021	6/4/2022
LISN	Com-Power	LIN-120C	UCL-2612	5/19/2021	5/19/2022
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

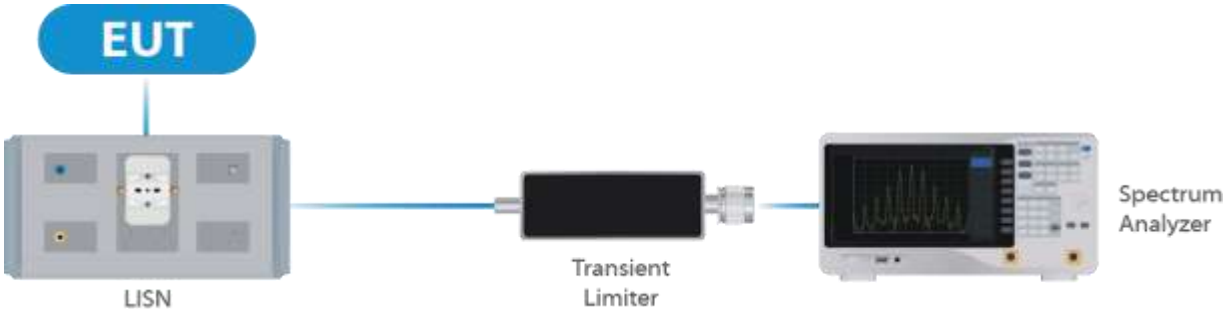


Figure 1: Conducted Emissions Test

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	8/24/2020	10/23/2021
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	9/8/2020	9/8/2021
Switch Extension	R&S	OSP-150W	UCL-2870	3/3/2021	3/3/2022

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

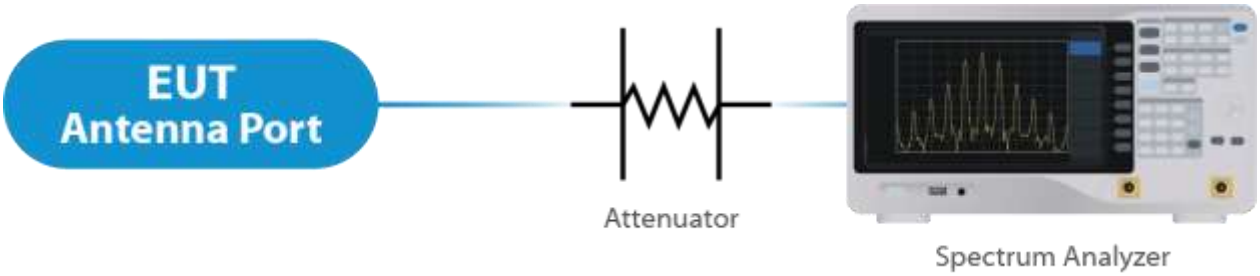


Figure 2: Direct Connect at the Antenna Port Test

Figure 3: Output Power Measurement

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	6/21/2021	6/21/2022
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	9/10/2020	9/10/2021
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3062	8/28/2020	8/27/2022
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3071	5/19/2020	5/19/2022
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	7/8/2021	7/8/2022
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	11/16/2020	11/16/2021
15 - 40 GHz Horn Antenna	Scwarzbeck	BBHA 9170	UCL-2487	5/21/2020	5/21/2022
1 – 18 GHz Amplifier	Com-Power	PAM 118A	UCL-3833	9/29/2020	9/29/2021
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 3: List of equipment used for Radiated Emissions

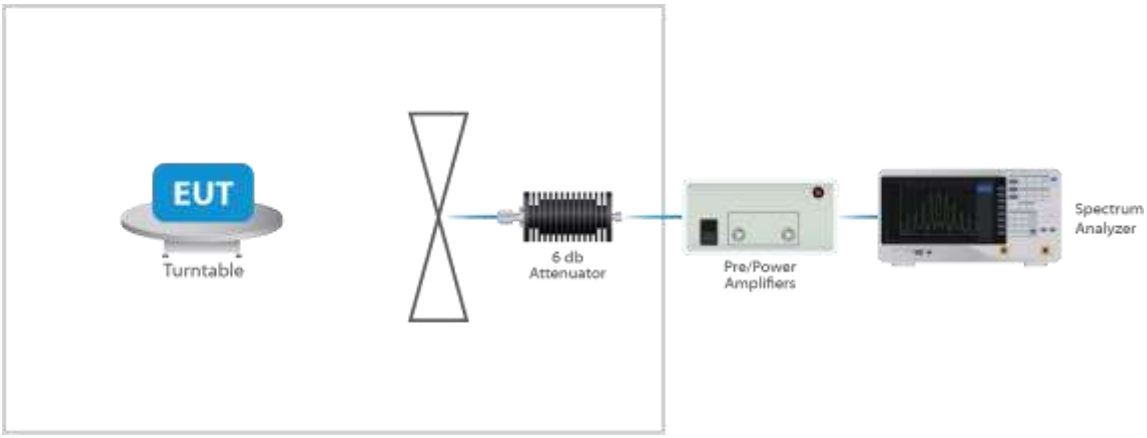


Figure 4: Radiated Emissions Test

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 (± 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

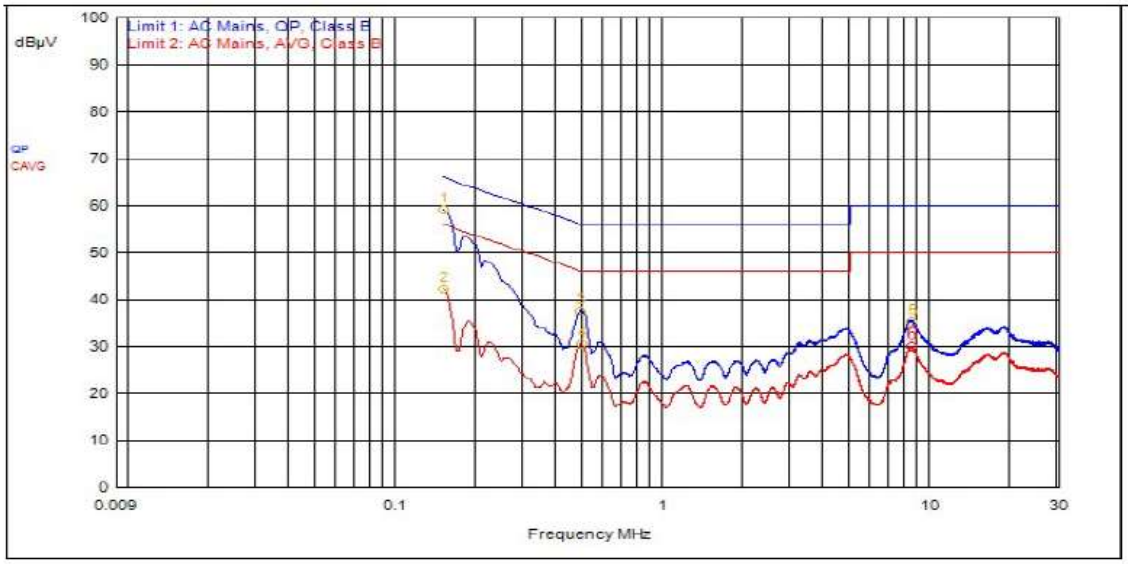
The EUT uses an integral antenna and an optional accessory dish antenna. The maximum gain of the integral antenna is 3 dBi and the optional dish antenna is 23 dBi. This is an 802.11 device and utilizes CDD as described in KDB 662911 D01. The integral antenna is not user replaceable. While the optional dish antenna is user replaceable. The EUT has a 2x2 transmitter and the chains are cross polarized.

Results

The EUT complied with the specification

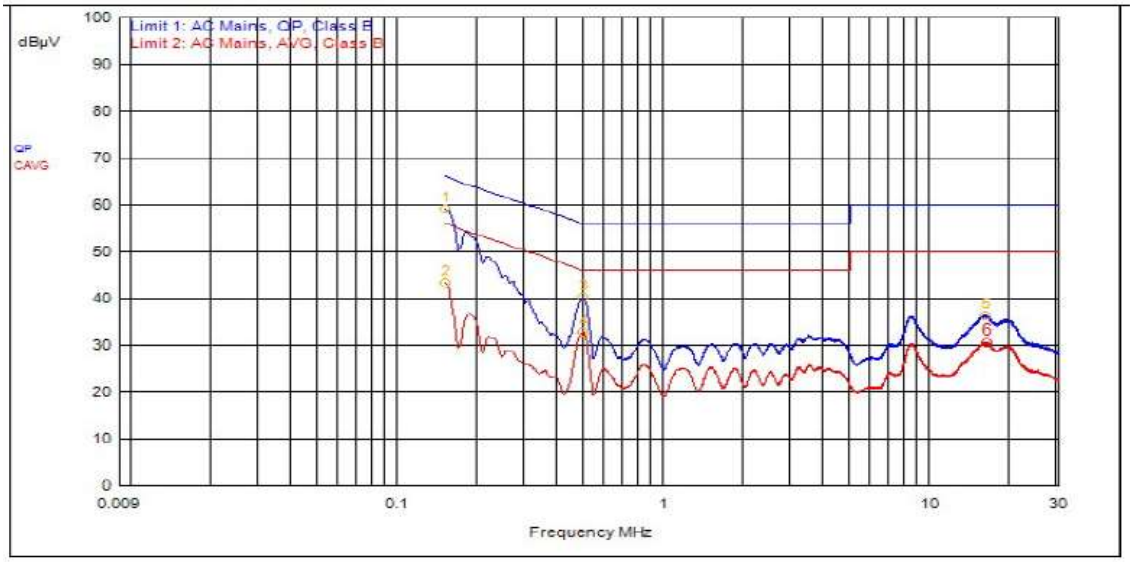
5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
1	150,000kHz	12.4	0.0		QPeak	46.7	59.1	66.0	-6.9		
3	483,000kHz	12.4	0.0		QPeak	25.2	37.6	56.3	-18.7		
5	8.373MHz	12.3	0.2		QPeak	22.8	35.3	60.0	-24.7		
2	150,000kHz	12.4	0.0		C_AVG	29.7	42.1			56.0	-13.9
4	492,000kHz	12.4	0.0		C_AVG	18.1	30.5			46.1	-15.6
6	8.436MHz	12.3	0.2		C_AVG	17.4	29.9			50.0	-20.1

5.2.2 Neutral



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
1	150,000kHz	12.4	0.0		QPeak	46.8	59.2	66.0	-6.8		
3	489,000kHz	12.4	0.0		QPeak	27.7	40.2	56.2	-16.0		
5	15.858MHz	12.4	0.2		QPeak	23.7	36.4	60.0	-23.6		
2	150,000kHz	12.4	0.0		C_AVG	30.8	43.2			56.0	-12.8
4	492,000kHz	12.4	0.0		C_AVG	20.5	32.9			46.1	-13.2
6	16.020MHz	12.4	0.2		C_AVG	18.0	30.6			50.0	-19.4

Result

The EUT complied with the specification limit.

5.3 §15.403(i) 26 dB Emissions Bandwidth

All chains were measured under the guidance of KDB 789033 Section II.C. and KDB 66291 D01. Please see associated annex for details on instrument settings.

Nominal BW (MHz)	Frequency (MHz)	99% Bandwidth (MHz)	Emissions 26 dB Bandwidth (MHz)
HE 20	5165	18.9	20.6
HE 20	5200	20.9	34.6
HE 20	5240	24.2	40.2
HE 40	5175	37.8	39.8
HE 40	5200	37.8	39.9
HE 40	5230	37.8	40.8
HE 80	5195	77.0	82.0
HE 80	5200	76.5	81.5
HE 80	5210	76.5	82.0

Result

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

The 26 dB bandwidths are reported for information purposes. Please see Annex for all bandwidth measurements.

5.4 §15.403(a)(1) Maximum Average Output Power

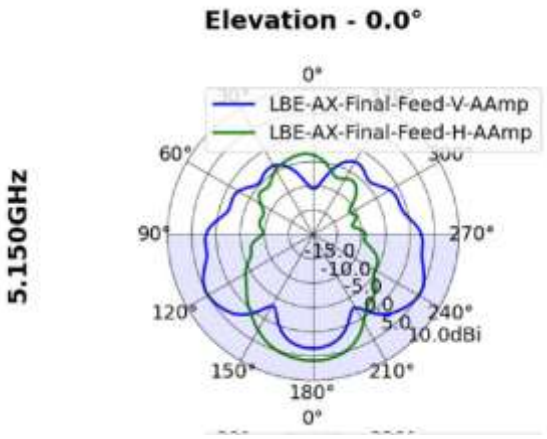
All chains were measured and summed under the guidance of KDB 789033 Section II. E.2. and KDB 66291 D01. Please see associated annex for details on instrument settings.

The maximum average RF conducted output power measured for this device was 18.45 dBm or 69.98 mW. The limit is 30 dBm, or 1 Watt when using an antenna with 23 dBi (Fixed point to point) or less gain. The integral antenna has a gain of 3 dBi with the dish antenna having a gain of 22 dBi. TP setting reflected are with the 3 dBi antenna. The maximum e.i.r.p at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

The maximum average RF conducted output power was additionally calculated for the radiation pattern between 30° and 90° based on the highest conducted output power. The calculated value shall be below 125 mW (21 dBm) per KDB 789033 Do2 Section H at an elevation angle higher than 30°.

Mod. / BW	Freq. (MHz)	Data Rate	TP Lvl	Output Power (dBm)	Meas. PSD (dBm)	Max Ant. Gain 30-90° (dBi)[1]	MAX EIRP @ 30-90° (dBm)	Limit 30-90° (dBm)	Ant. Ptrn Delta (dB)
HE 20	5165	Mcs0	31	16.75	3.07	2.5	19.25	21	-1.75
HE 20	5200	Mcs0	36	18.18	4.44	2.5	20.68	21	-0.32
HE 20	5240	Mcs0	36	18.45	4.76	2.5	20.95	21	-0.05
HE 40	5175	Mcs0	34	17.27	0.99	2.5	19.77	21	-1.23
HE 40	5200	Mcs0	35	17.99	1.48	2.5	20.49	21	-0.51
HE 40	5230	Mcs0	35	18.15	4.76	2.5	20.65	21	-0.35
HE 80	5195	Mcs0	29	14.64	-3.96	2.5	17.14	21	-3.86
HE 80	5200	Mcs0	36	18.34	-0.43	2.5	20.84	21	-0.16
HE 80	5210	Mcs0	36	18.4	-0.42	2.5	20.9	21	-0.1

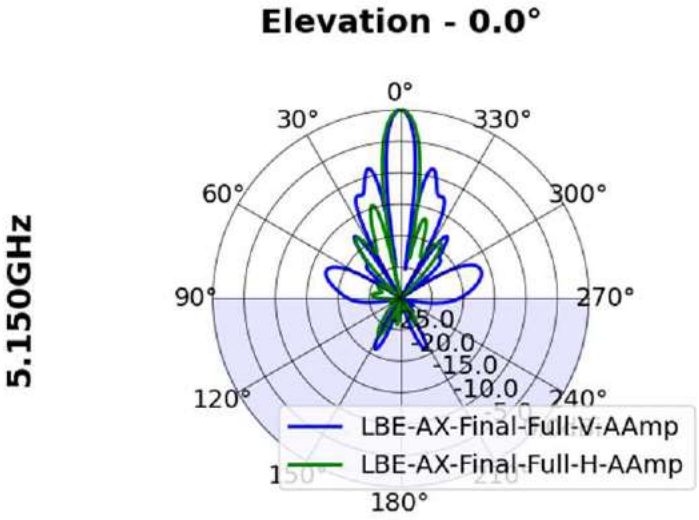
Table 4: 3 dBi Antenna



Graph 1: 3dBi Antenna Elevation Plot

Mod. / BW	Freq. (MHz)	Data Rate	TP Lvl	Output Power (dBm)	Meas. PSD (dBm)	Max Ant. Gain 30-90° (dBi)[1]	MAX EIRP @ 30-90° (dBm)	Limit 30-90° (dBm)	Ant. Ptrn Delta (dB)
HE 20	5165	Mcs0	-	-3.1	-	-15	-18.1	21	-39.1
HE 20	5200	Mcs0	-	5.9	-	-15	-9.1	21	-30.1
HE 20	5240	Mcs0	-	6.3	-	-15	-8.7	21	-29.7
HE 40	5175	Mcs0	-	-2.7	-	-15	-17.7	21	-38.7
HE 40	5200	Mcs0	-	0.4	-	-15	-14.6	21	-35.6
HE 40	5230	Mcs0	-	3.6	-	-15	-11.4	21	-32.4
HE 80	5195	Mcs0	-	-5.2	-	-15	-20.2	21	-41.2
HE 80	5200	Mcs0	-	-1.3	-	-15	-16.3	21	-37.3
HE 80	5210	Mcs0	-	-0.8	-	-15	-15.8	21	-36.8

Table 5: 23 dBi Antenna



Graph 2: 21dBi Antenna Elevation Plot

Result

In the configuration tested, the maximum summed average RF output power was less than 1 watt; therefore, the EUT compiled with the requirements of the specification (see spectrum analyzer plots in attached Annex).

5.5 §15.407(b) Spurious Emissions

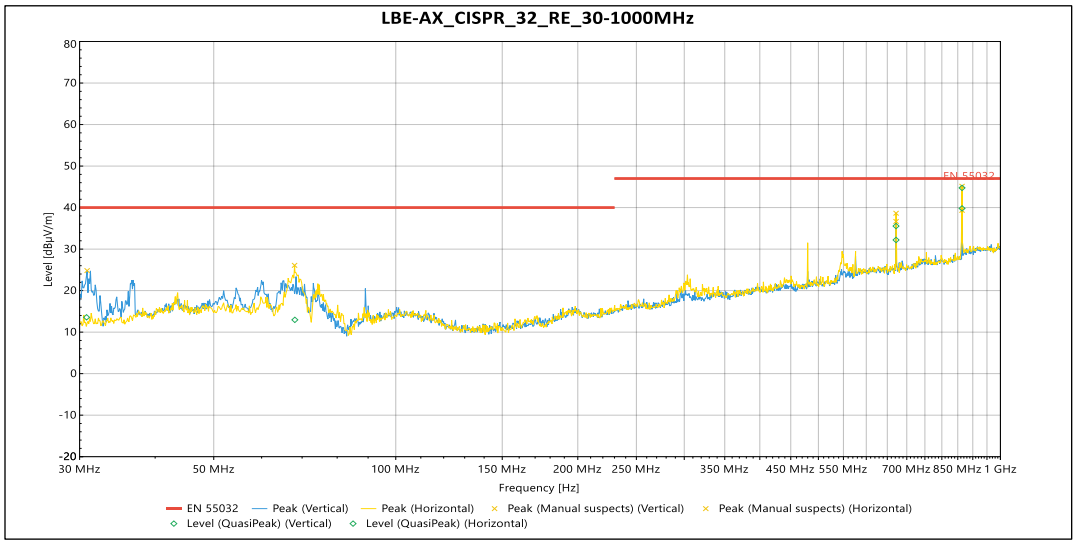
5.5.1 Radiated Spurious Emissions in the Restricted Bands of § 15.205

The EUT uses various power settings based on the channel in use. In order to reduce test time, the radiated spurious emissions at the lowest, middle, and highest channel were measured at the maximum power of TP60, as this setting was found to be worst case for spurious emissions. Power was subsequently reduced during in-band and band edge testing. The band edge at the restricted band ending at 5140 MHz was measured using radiated measurement or conducted at the antenna port methods. [For radiated] All emissions modes were tested, and the worst-case measurement are shown below. For frequencies above 1 GHz, a measurement of 3 meters was used. For frequencies below 1 GHz, a measurement distance of 10 meters was used.

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

Result

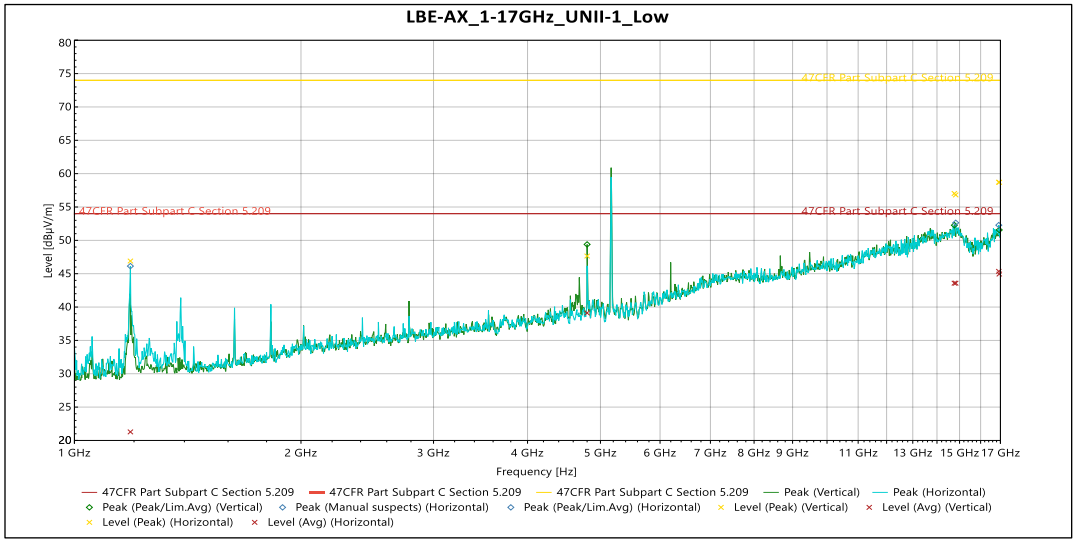
All emissions in the restricted bands of § 15.205 met the limits specified in § 15.209; therefore, the EUT complies with the specification. All emissions me the limits specified in § 15.407(b). Representative band edge plots are included in this report.



QuasiPeak

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
QuasiPeak	30.806 MHz	13.565	40	-26.435	224	2.59	Vertical	-15.5
QuasiPeak	672 MHz	32.198	47	-14.802	177	2.234	Vertical	-4.703
QuasiPeak	863.99 MHz	39.808	47	-7.192	334	2.628	Vertical	-1.466
QuasiPeak	68.093 MHz	12.963	40	-27.037	148	2.923	Horizontal	-15.671
QuasiPeak	671.94 MHz	35.553	47	-11.447	16	3.804	Horizontal	-4.704
QuasiPeak	863.99 MHz	44.752	47	-2.248	358	1.246	Horizontal	-1.466

Table 6: Radiated Emissions 30 – 1000 MHz



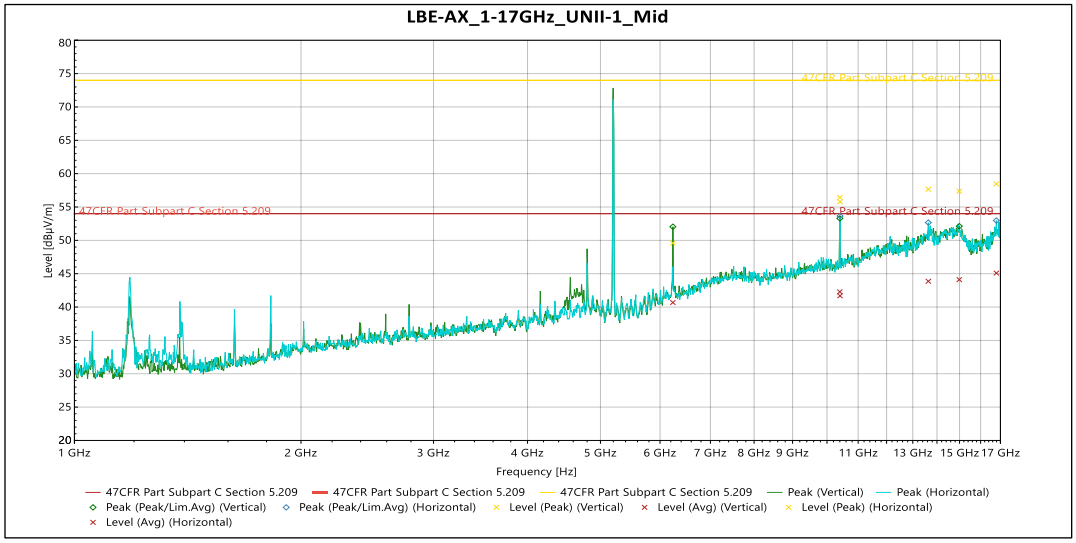
Peak

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	4.8001 GHz	47.647	74	-26.353	104	3.631	Vertical	0.036
Peak	14.765 GHz	57.029	74	-16.971	241	1.702	Vertical	14.443
Peak	16.94 GHz	58.698	74	-15.302	70	1.994	Vertical	16.882
Peak	1.1868 GHz	46.898	74	-27.102	16	3.803	Horizontal	-11.764
Peak	14.826 GHz	56.814	74	-17.186	306	3.106	Horizontal	14.72
Peak	16.916 GHz	58.719	74	-15.281	108	2.047	Horizontal	17.17

Avg

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	4.8001 GHz	39.112	54	-14.888	104	3.631	Vertical	0.036
Avg	14.765 GHz	43.581	54	-10.419	241	1.702	Vertical	14.443
Avg	16.94 GHz	44.949	54	-9.051	70	1.994	Vertical	16.882
Avg	1.1868 GHz	21.276	54	-32.724	16	3.803	Horizontal	-11.764
Avg	14.826 GHz	43.576	54	-10.424	306	3.106	Horizontal	14.72
Avg	16.916 GHz	45.35	54	-8.65	108	2.047	Horizontal	17.17

Table 7: Transmitting on the Lowest Frequency 5165 MHz 1 – 17 GHz



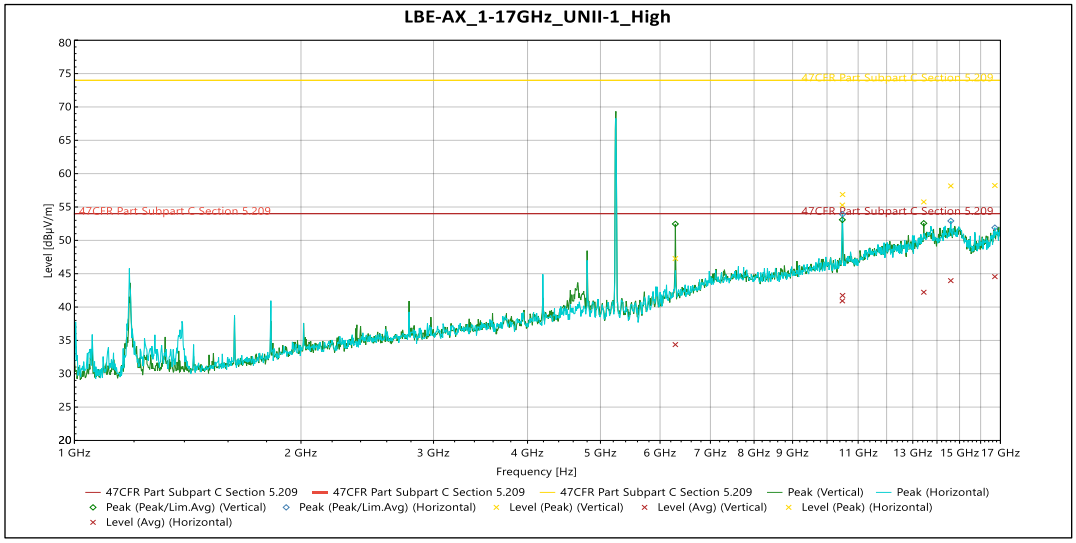
Peak

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	6.2399 GHz	49.59	74	-24.41	125	1.5	Vertical	4.345
Peak	10.4 GHz	56.444	74	-17.556	233	1.632	Vertical	10.028
Peak	14.99 GHz	57.37	74	-16.63	106	2.177	Vertical	14.922
Peak	10.407 GHz	55.776	74	-18.224	108	3.453	Horizontal	9.938
Peak	13.635 GHz	57.663	74	-16.337	45	3.456	Horizontal	14.406
Peak	16.79 GHz	58.468	74	-15.532	167	2.393	Horizontal	16.864

Avg

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	6.2399 GHz	40.679	54	-13.321	125	1.5	Vertical	4.345
Avg	10.4 GHz	42.277	54	-11.723	233	1.632	Vertical	10.028
Avg	14.99 GHz	44.113	54	-9.887	106	2.177	Vertical	14.922
Avg	10.407 GHz	41.68	54	-12.32	108	3.453	Horizontal	9.938
Avg	13.635 GHz	43.856	54	-10.144	45	3.456	Horizontal	14.406
Avg	16.79 GHz	45.093	54	-8.907	167	2.393	Horizontal	16.864

Table 8: Transmitting on the Middle Frequency 5200 MHz 1 – 17 GHz



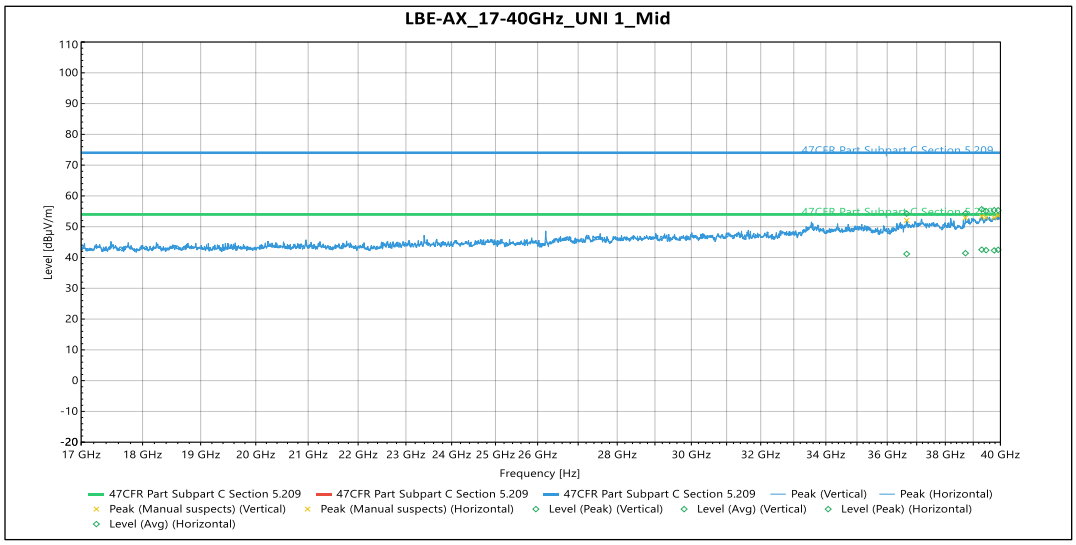
Peak

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	6.2878 GHz	47.273	74	-26.727	250	3.631	Vertical	4.533
Peak	10.481 GHz	55.295	74	-18.705	319	2.921	Vertical	10.122
Peak	13.447 GHz	55.756	74	-18.244	208	3.453	Vertical	14.903
Peak	10.488 GHz	56.874	74	-17.126	93	2.714	Horizontal	10.201
Peak	14.605 GHz	58.159	74	-15.841	156	2.719	Horizontal	14.908
Peak	16.713 GHz	58.22	74	-15.78	104	1.991	Horizontal	16.303

Avg

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	6.2878 GHz	34.366	54	-19.634	250	3.631	Vertical	4.533
Avg	10.481 GHz	40.919	54	-13.081	319	2.921	Vertical	10.122
Avg	13.447 GHz	42.223	54	-11.777	208	3.453	Vertical	14.903
Avg	10.488 GHz	41.738	54	-12.262	93	2.714	Horizontal	10.201
Avg	14.605 GHz	43.958	54	-10.042	156	2.719	Horizontal	14.908
Avg	16.713 GHz	44.563	54	-9.437	104	1.991	Horizontal	16.303

Table 9: Transmitting on the Highest Frequency 5240 MHz 1 – 17 GHz



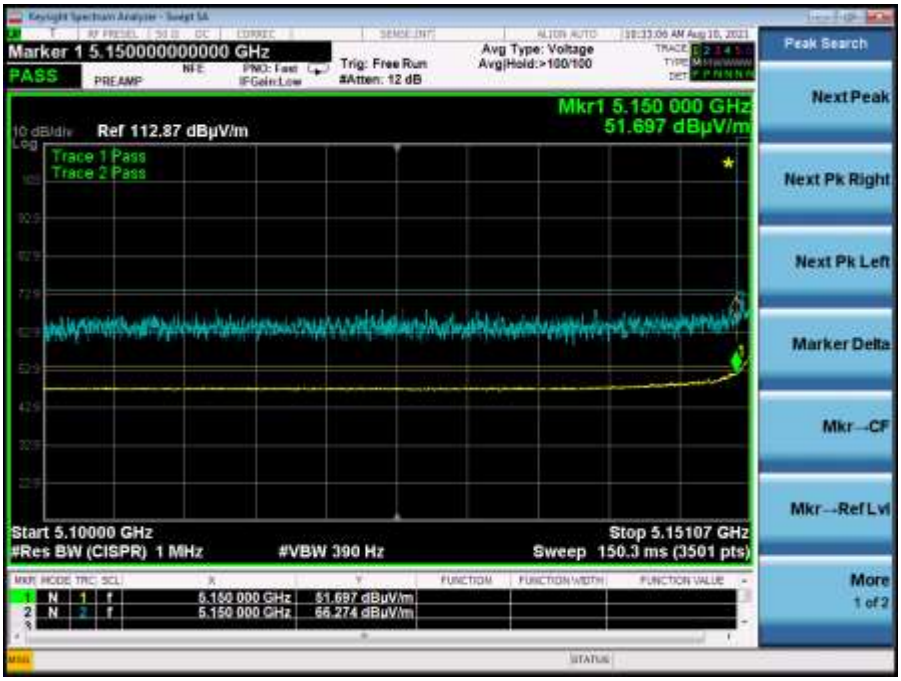
Peak

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
Peak	36.657 GHz	54.255	74	-19.745	35	Vertical	0.975
Peak	39.469 GHz	55.088	74	-18.912	113	Vertical	3.272
Peak	39.915 GHz	55.338	74	-18.662	99	Vertical	3.688
Peak	38.719 GHz	54.311	74	-19.689	238	Horizontal	1.959
Peak	39.31 GHz	55.666	74	-18.334	84	Horizontal	3.306
Peak	39.77 GHz	55.368	74	-18.632	26	Horizontal	3.355

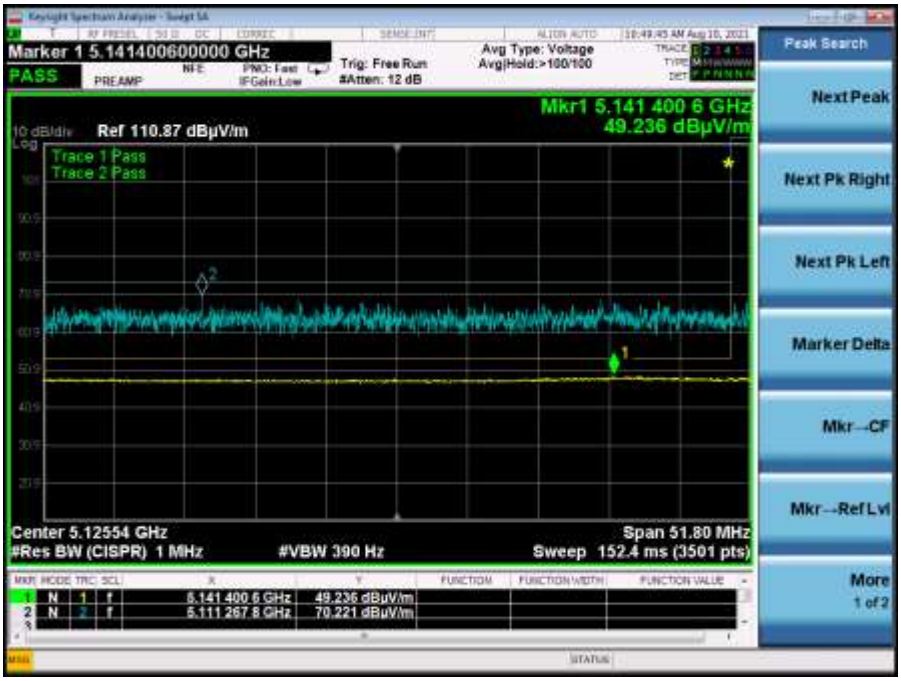
Avg

Source	Frequency	Level (dBµV/m)	Limit (dBµV/m) (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
Avg	36.657 GHz	41.15	54	-12.85	35	Vertical	0.975
Avg	39.469 GHz	42.385	54	-11.615	113	Vertical	3.272
Avg	39.915 GHz	42.487	54	-11.513	99	Vertical	3.688
Avg	38.719 GHz	41.387	54	-12.613	238	Horizontal	1.959
Avg	39.31 GHz	42.54	54	-11.46	84	Horizontal	3.306
Avg	39.77 GHz	42.303	54	-11.697	26	Horizontal	3.355

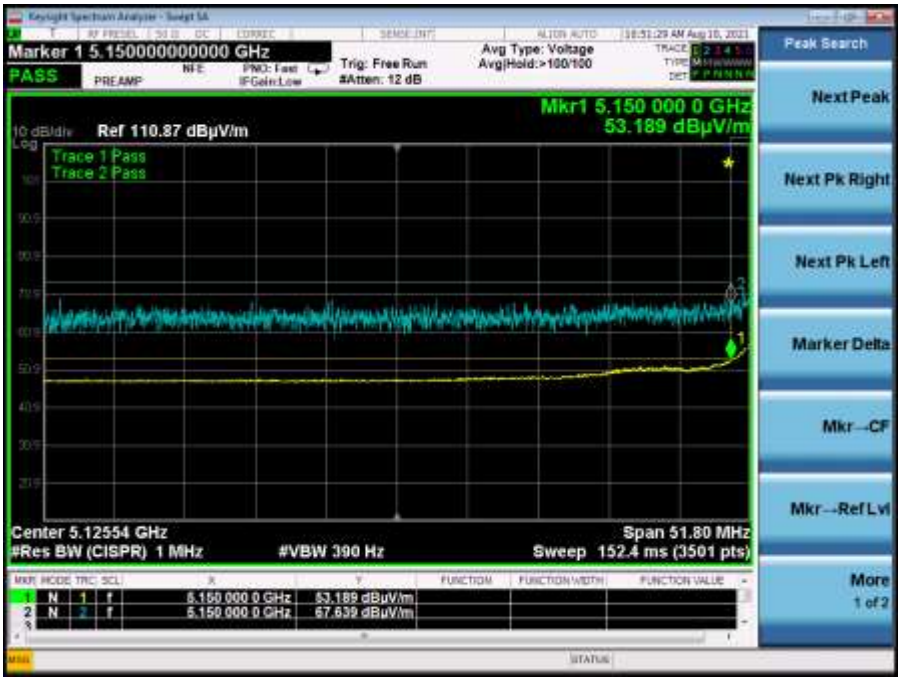
Table 10: Transmitting on the Highest Frequency 5240 MHz 17 – 40 GHz (Worse Case)



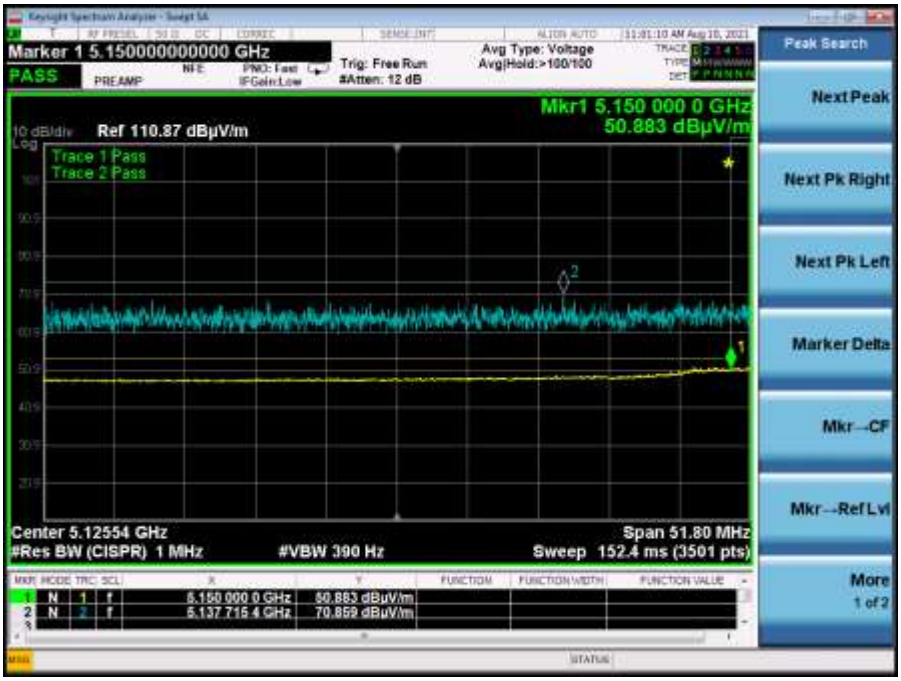
Graph 3: Band Edge ax20 Mode Low 5165 MHz



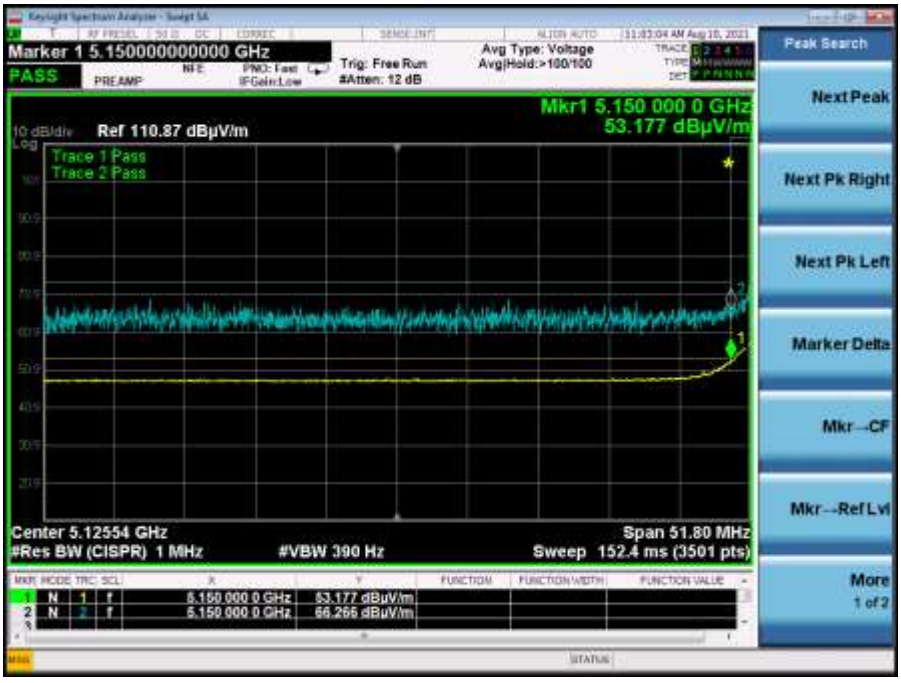
Graph 4: Band Edge ax20 Mode High 5240 MHz



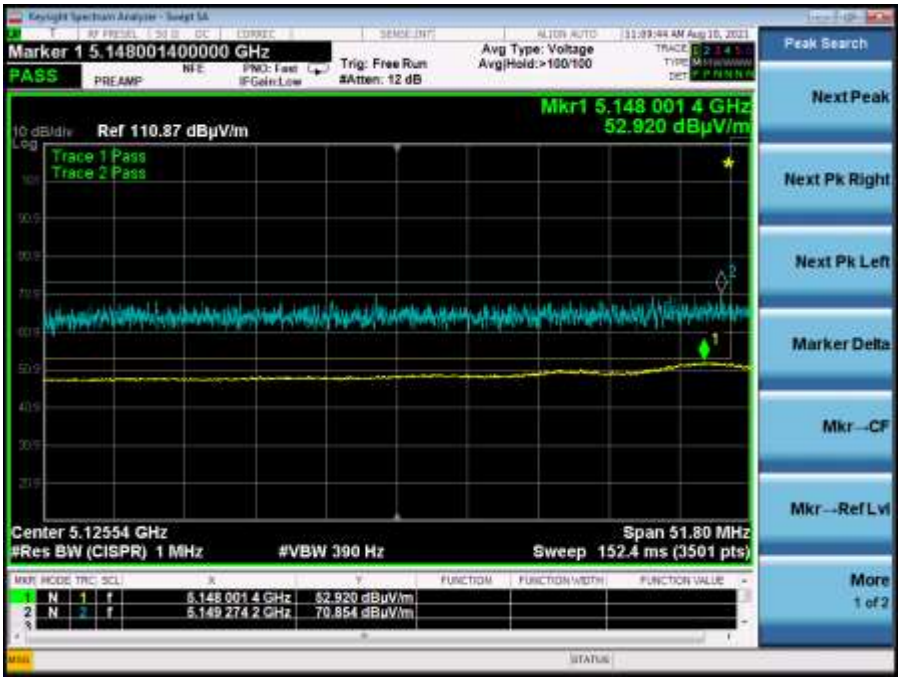
Graph 5: Band Edge ax40 Mode Low 5175 MHz



Graph 6: Band Edge ax40 Mode High 5230 MHz



Graph 7: Band Edge ax80 Mode Low 5195 MHz



Graph 8: Band Edge ax80 Mode High 5210 MHz

5.6 §15.407(a) Maximum Power Spectral Density

All chains were measured and summed under the guidance of KDB 789033 Section II. F. 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 17 dBm in any 1 MHz band during any time interval of continuous transmission.
The EUT has a 2x2 transmitter and the chains are cross polarized.

Results of this testing are summarized.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Measured PSD
HE 20	5165	Mcs0	31	3
HE 20	5200	Mcs0	60	12
HE 20	5240	Mcs0	60	12.2
HE 40	5175	Mcs0	31	1.2
HE 40	5200	Mcs0	38	4
HE 40	5230	Mcs0	43	7.1
HE 80	5195	Mcs0	27	-4
HE 80	5200	Mcs0	35	-0.2
HE 80	5210	Mcs0	36	0.4

Table 11: 3 dBi Antenna

Modulation (BW)	Frequency (MHz)	Data Rate	Measured PSD
HE 20	5165	Mcs0	-17
HE 20	5200	Mcs0	-8
HE 20	5240	Mcs0	-7.8
HE 40	5175	Mcs0	-18.8
HE 40	5200	Mcs0	-16
HE 40	5230	Mcs0	-12.9
HE 80	5195	Mcs0	-24
HE 80	5200	Mcs0	-20.2
HE 80	5210	Mcs0	-19.6

Table 12: 23 dBi Antenna

Result

The maximum summed average power spectral density was less than the limit of 17dBm; therefore, the EUT complies with the specification.

-- End of Test Report --