



427 West 12800 South
Draper, UT 84020

Test Report Certification

FCC ID	SWX-LTUINS
ISED ID	6545A-LTUINS
Equipment Under Test	LTU-Instant
Test Report Serial Number	TR6343_02
Date of Test(s)	3, 4, 8, 29 June (Radiated and Conducted Emissions) 9 July 2021 (AC Mains Conducted Emissions)
Report Issue Date	5 August 2021

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



Certification of Engineering Report

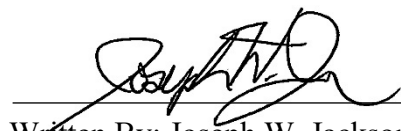
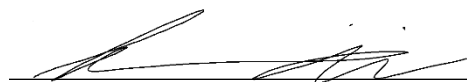
This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart E. This report may be reproduced in full. Partial reproduction of this report may only be made with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

On this 5th day of August 2021, 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: Alex Macon

Revision History		
Revision	Description	Date
01	Original Report Release	5 August 2021
02	Added information to section 5.1 Added detail to results section 5.3 Added information to section 5.5.1 Added array gain to section 5.6	8 August 2021

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	7
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	Modification Incorporated/Special Accessories on EUT.....	8
2.10	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 E.....	9
3.4	Results.....	9
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	14
4.5	Measurement Uncertainty.....	14
5	Test Results.....	15
5.1	§15.203 Antenna Requirements.....	15
5.2	Conducted Emissions at Mains Ports Data	15
5.3	§15.403(i) 26 dB Emissions Bandwidth	17
5.4	§15.403(a)(1) Maximum Average Output Power	18
5.5	§15.407(b) Spurious Emissions	20
5.6	§15.407(a) Maximum Power Spectral Density.....	30

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	LTU
Model Number	LTU-Instant
Serial Number	68D79A1F3019
Dimensions (cm)	20.2 x 6.4 x 5.6

2.2 Description of EUT

The LTU-Instant is a fixed point-to-multi-point transceivers, meant for outdoor use, operating in the 5GHz frequency bands. A Bluetooth LE transceiver is included for device management. An Ethernet port is used for data transfer and to provide power using a POE-24V-5X-HD POE supply.

Band	Modulation Bandwidth (MHz)	Modulation Type	Frequency (MHz)
UNII-1	10	HT	5160, 5165, 5170, 5200, 5245
	20	HT	5165, 5170, 5175, 5180, 5185, 5190, 5195, 5200, 5202, 5240
	30	HT	5170, 5175, 5180, 5185, 5190, 5195, 5200, 5235
	40	VHT	5175, 5180, 5185, 5190, 5195, 5200, 5205, 5210, 5215, 5230
	50	VHT	5180, 5185, 5190, 5195, 5200, 5205, 5210, 5215, 5220, 5225

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: LTU MN: LTU-Instant SN: 68D79A1F3019	Point-to-multi-point Transceiver	See Section 2.4
BN: Ubiquiti Inc. MN: POE-24V-5X-HD	PoE Power Supply	See Section 2.4

SN: N/A		
BN: Dell MN: XPS 13 SN: N/A	Laptop Personal Computer	Ethernet/Shielded or Unshielded Cat 5e Cable
BN: HP MN: Spectre SN: N/A	Laptop Personal Computer	Ethernet/Shielded or Unshielded Cat 5e Cable

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/80 cm
PoE (PoE Injector)	1	Shielded Cat 5e cable/8 meters
Lan (PoE Injector)	1	Un-Shielded Cat 5e cable/1 meters

2.5 Operating Environment

Power Supply	120 Vac to 24 Volt PoE Power
AC Mains Frequency	60 Hz
Temperature	25.4 – 26.7 °C
Humidity	31.0 – 38.3 %
Barometric Pressure	1017 mBar

2.6 Operating Modes

The LTU-Instant was tested using test software in order to enable to constant transmission of over 98%. All emission modes of 10/20/30/40/50 MHz were investigated.

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

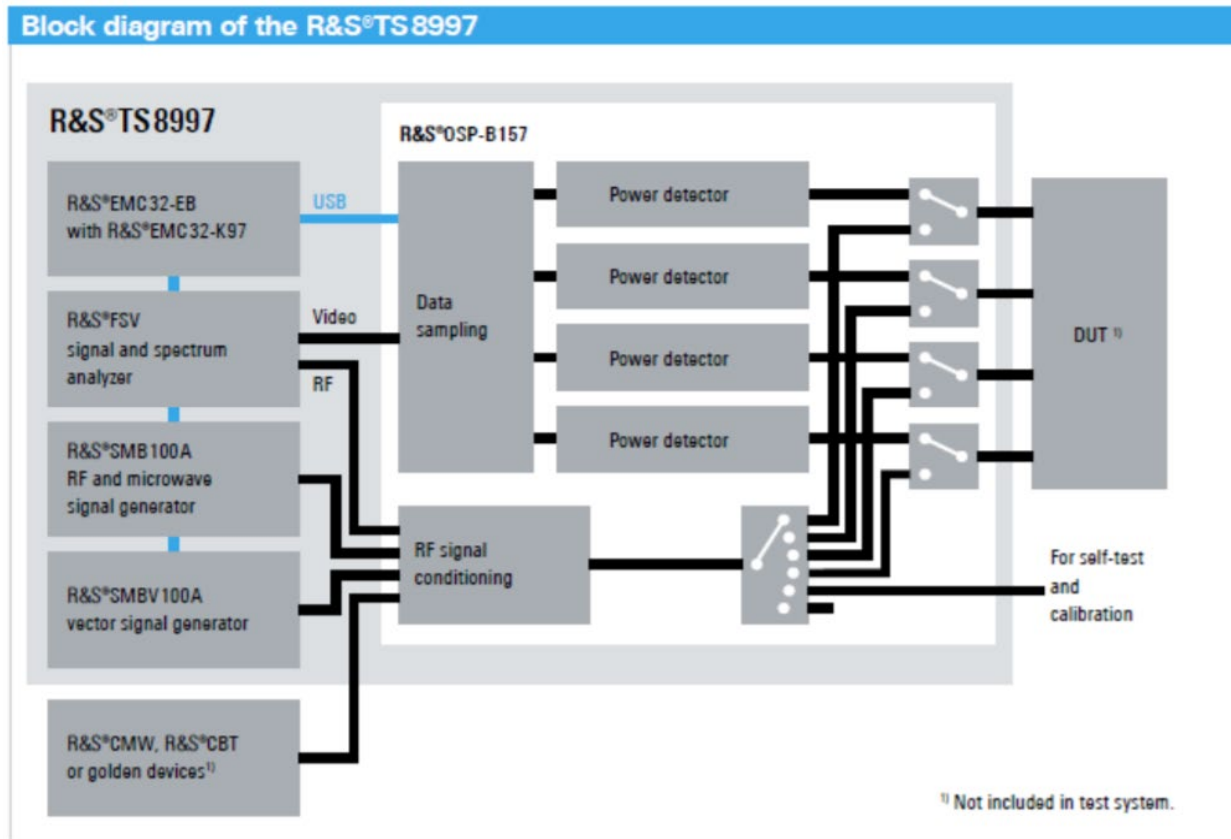


Diagram 1: Test Configuration Block Diagram

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	5160 to 5245	Compliant
15.407(e)	RSS-247 §6.2.2, §6.2.3	Peak Output Power	5160 to 5245	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	5160 to 5245	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

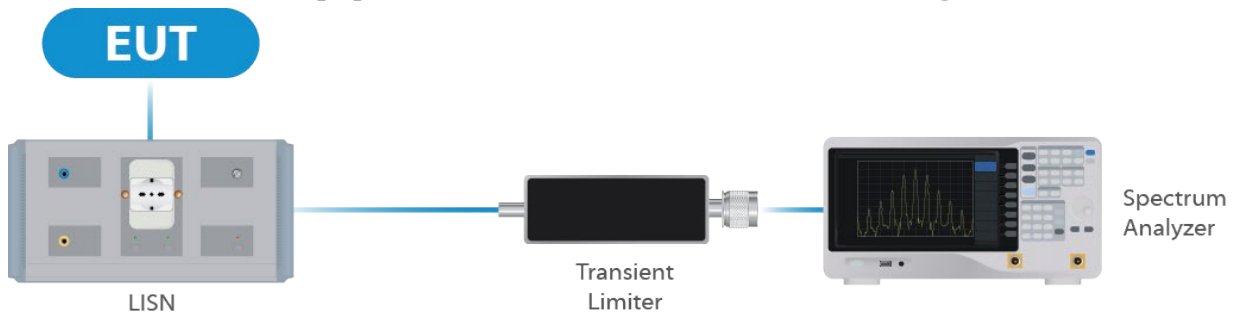


Figure 1: Conducted Emissions Test

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	8/24/2021
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

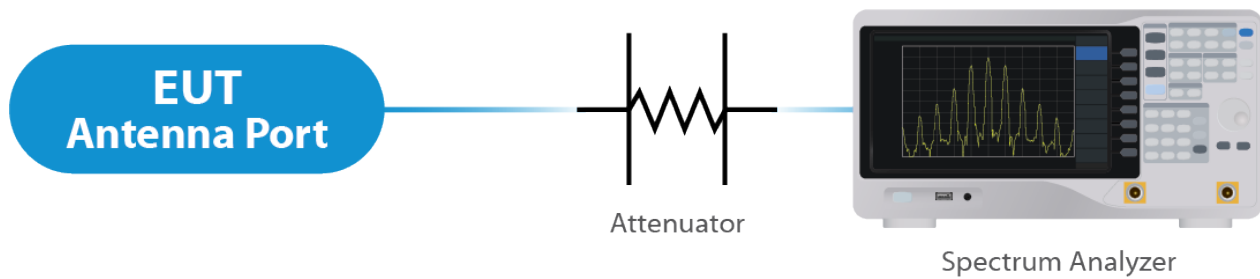


Figure 2: Direct Connect at the Antenna Port Test

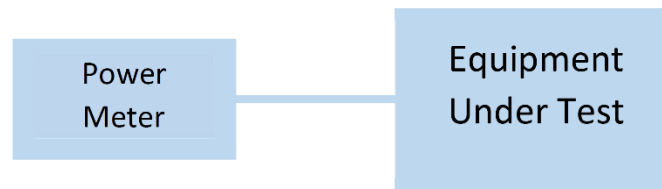


Figure 3: Output Power Measurement

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	6/1/2020	8/1/2021
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	9/10/2020	9/10/2021
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	7/8/2020	7/8/2021
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

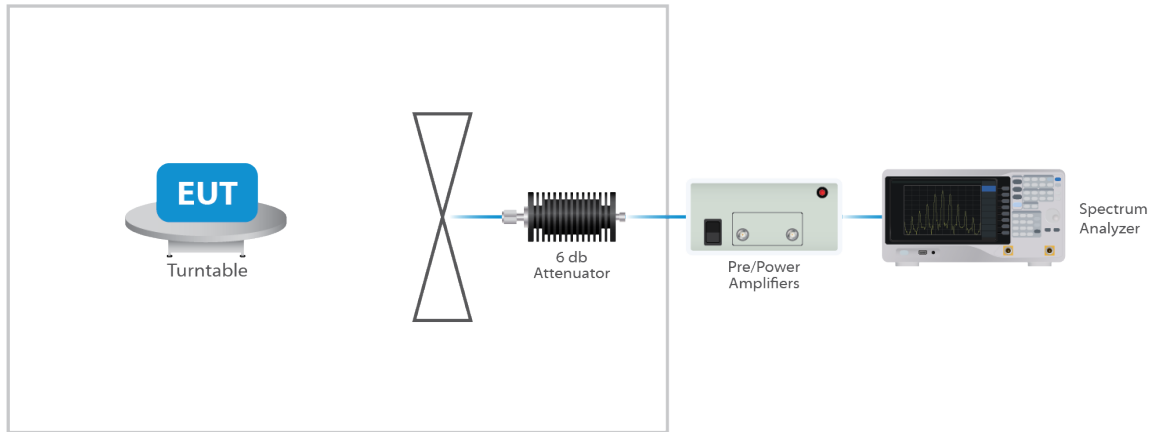


Figure 94: Radiated Emissions Test

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 integral antenna and an optional accessory dish antenna. The Maximum gain of the integral antenna is 3 dBi and the optional dish antenna is 22 dBi. The integral antenna is not user replaceable while the optional dish antenna is user replaceable.

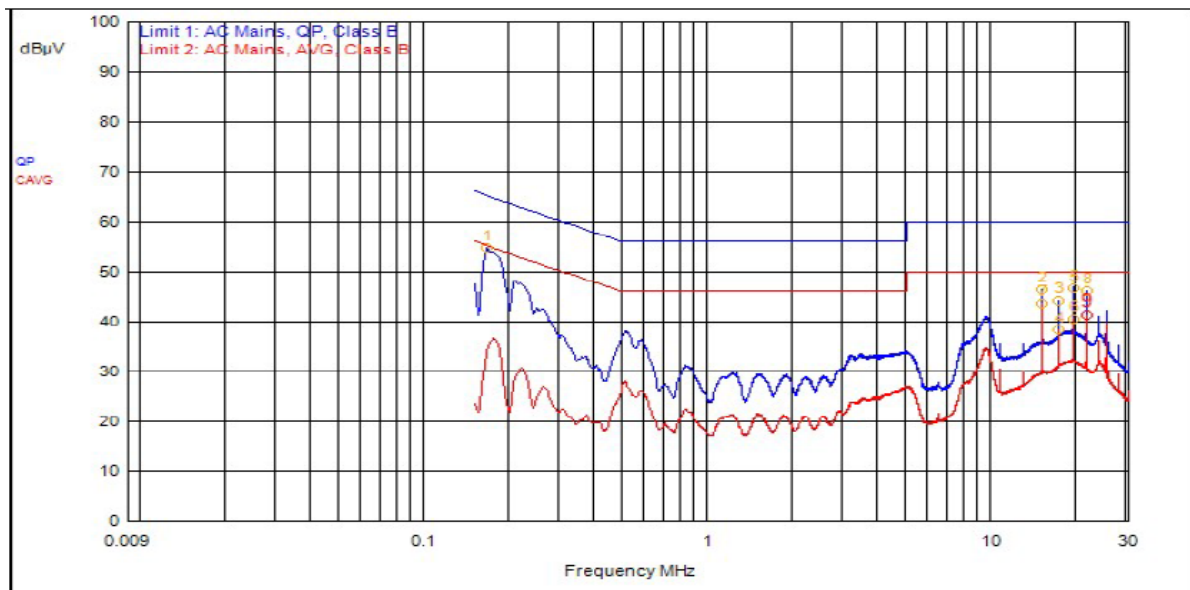
The 2 chains of the radio are cross-polarized.

Results

The EUT complied with the specification

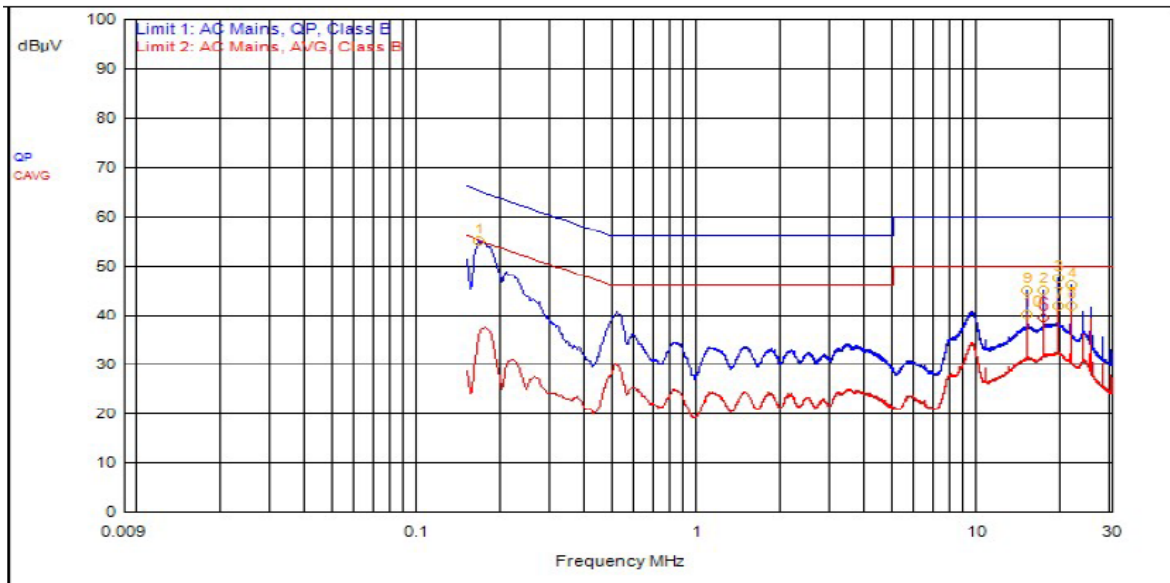
5.2 Conducted Emissions at Mains Ports Data

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	165,000kHz	12.4	0.0		QPeak	42.2	54.6	65.2	-10.6		
5	19.161MHz	12.3	0.2		QPeak	34.4	46.8	60.0	-13.2		
2	14.904MHz	12.5	0.2		QPeak	33.6	46.3	60.0	-13.7		
8	21.294MHz	12.3	0.2		QPeak	33.6	46.1	60.0	-13.9		
3	17.034MHz	12.4	0.2		QPeak	31.5	44.1	60.0	-15.9		
4	17.034MHz	12.4	0.2		C_AVG	25.6	38.2			50.0	-11.8
6	19.161MHz	12.3	0.2		C_AVG	28.2	40.6			50.0	-9.4
7	14.904MHz	12.5	0.2		C_AVG	30.8	43.5			50.0	-6.5
9	21.291MHz	12.3	0.2		C_AVG	28.9	41.4			50.0	-8.6

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	165,000kHz	12.4	0.0		QPeak	42.7	55.1	65.2	-10.1		
3	19.155MHz	12.3	0.2		QPeak	35.0	47.5	60.0	-12.5		
4	21.285MHz	12.3	0.2		QPeak	33.6	46.1	60.0	-13.9		
2	17.028MHz	12.4	0.2		QPeak	32.4	45.0	60.0	-15.0		
9	14.898MHz	12.5	0.2		QPeak	32.3	45.0	60.0	-15.0		
6	17.028MHz	12.4	0.2		C_AVG	26.8	39.4			50.0	-10.6
7	19.155MHz	12.3	0.2		C_AVG	29.5	41.9			50.0	-8.1
8	21.285MHz	12.3	0.2		C_AVG	29.4	41.9			50.0	-8.1
10	14.898MHz	12.5	0.2		C_AVG	27.5	40.2			50.0	-9.8

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)
10	5160	9.4	10.45
10	5200	9.5	11.05
10	5245	9.5	11.2
20	5165	18.7	20.6
20	5200	18.7	20.7
20	5240	19.0	22.3
30	5170	28.05	31.2
30	5200	28.05	30.75
30	5235	28.2	31.2
40	5175	37.75	41.25
40	5200	37.5	41.4
40	5230	37.75	41.25
50	5180	46.75	51.5
50	5200	46.75	52.25
50	5225	46.75	51.5

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 21.75 dBm or 149.62 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.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured EIRP	Measured PSD
HT 10	5160	Mcs0	14	14.39	17.39	2.42
HT 10	5200	Mcs0	22	21.21	24.21	9.52
HT 10	5245	Mcs0	22	21.71	24.71	9.39
HT 20	5165	Mcs0	13	12.85	15.85	-2.22
HT 20	5200	Mcs0	17	16.59	19.59	2.26
HT 20	5240	Mcs0	22	21.75	24.75	7.2
HT 30	5170	Mcs0	13	12.82	15.82	-2.71
HT 30	5200	Mcs0	20	19.25	22.25	3.21
HT 30	5235	Mcs0	22	21.73	24.73	5.88
VHT 40	5175	Mcs0	12	12.19	15.19	-4.78
VHT 40	5200	Mcs0	15	14.99	17.99	-1.74
VHT 40	5230	Mcs0	21	20.98	23.98	3.68
VHT 50	5180	Mcs0	12	11.82	14.82	-5.74
VHT 50	5200	Mcs0	13	12.75	15.75	-5.11
VHT 50	5225	Mcs0	14	14.04	17.04	-3.58

Table 4: 3 dBi Antenna

Modulation (BW)	Frequency (MHz)	Data Rate	Conducted Output Power
HT 10	5160	Mcs0	- 4.61
HT 10	5200	Mcs0	2.21
HT 10	5245	Mcs0	2.71
HT 20	5165	Mcs0	- 6.15
HT 20	5200	Mcs0	- 2.41
HT 20	5240	Mcs0	2.75
HT 30	5170	Mcs0	- 3.18
HT 30	5200	Mcs0	0.25
HT 30	5235	Mcs0	2.73
VHT 40	5175	Mcs0	- 6.81
VHT 40	5200	Mcs0	- 4.01
VHT 40	5230	Mcs0	1.98
VHT 50	5180	Mcs0	- 7.18
VHT 50	5200	Mcs0	- 6.25
VHT 50	5225	Mcs0	- 4.96

Table 5: 22 dBi Antenna

Result

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

5.5 §15.407(b) Spurious Emissions

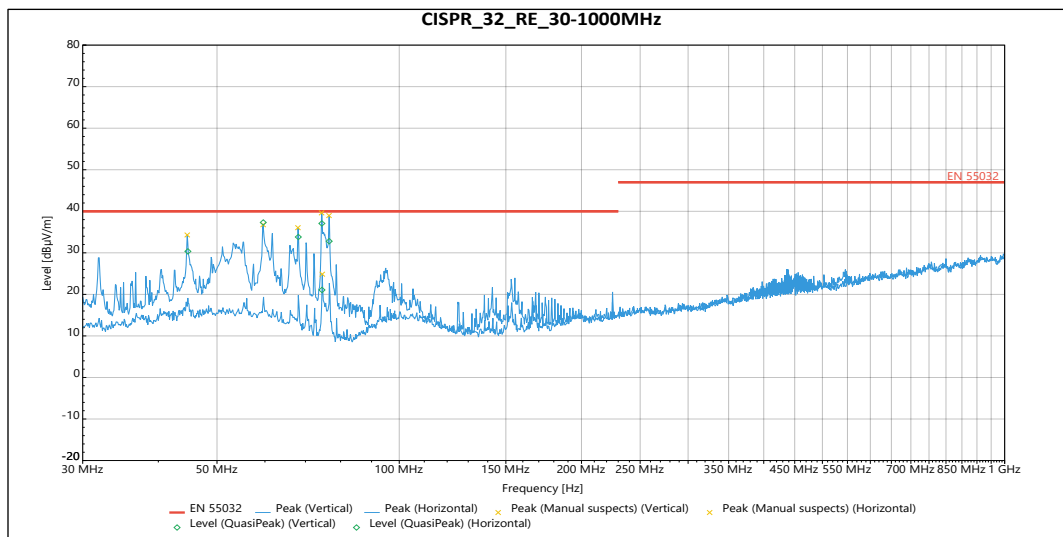
5.5.1 Radiated Spurious Emissions in the Restricted Bands of § 15.205

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 TP22, 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 was measured using radiated measurement. 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-amp 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 met the limits specified in § 15.407(b). Representative band edge plots are included in this report.

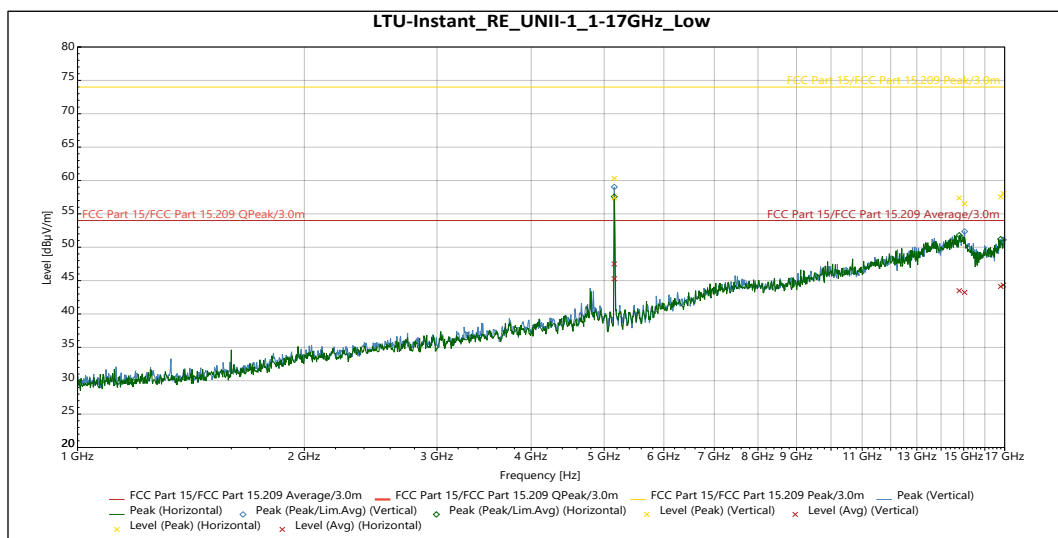


Vertical

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
QuasiPeak	44.757 MHz	30.346	40	-9.654	330	2.42	Vertical	-12.503
QuasiPeak	59.621 MHz	37.312	40	-2.688	15	3.755	Vertical	-13.354
QuasiPeak	68.125 MHz	33.808	40	-6.192	29	3.969	Vertical	-15.683
QuasiPeak	74.501 MHz	37.074	40	-2.926	2	3.916	Vertical	-18.179
QuasiPeak	76.612 MHz	32.787	40	-7.213	1	3.791	Vertical	-18.798

Horizontal

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
QuasiPeak	74.534 MHz	21.063	40	-18.937	15	1.593	Horizontal	-18.192

Table 6: Radiated Emissions 30 – 1000 MHz


Vertical

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	15.041 GHz	56.532	74	-17.468	73	3.255	Vertical	14.408
Peak	16.932 GHz	58.07	74	-15.93	36	3.457	Vertical	16.418

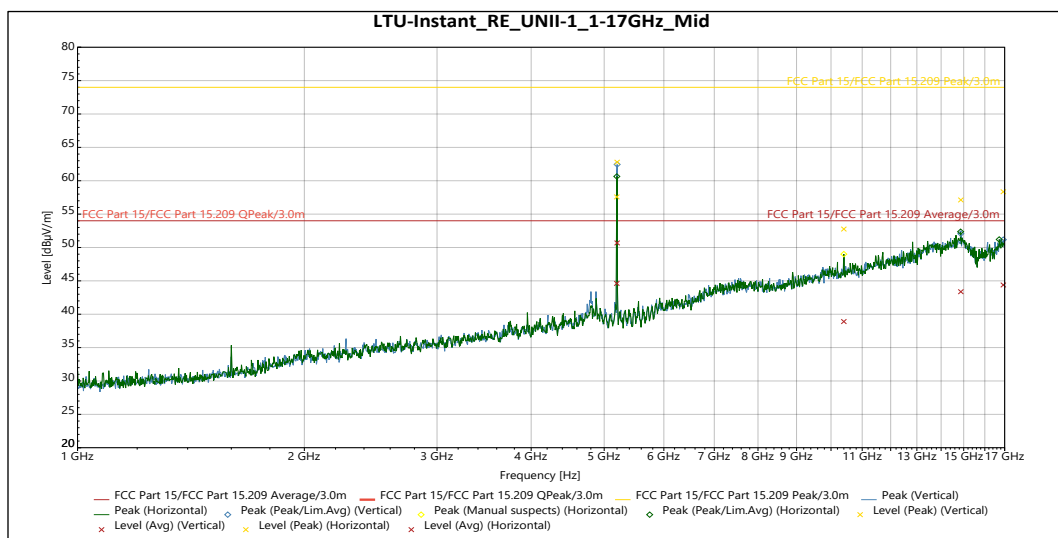
Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	15.041 GHz	43.233	54	-10.767	73	3.255	Vertical	14.408
Avg	16.932 GHz	44.332	54	-9.668	36	3.457	Vertical	16.418

Horizontal

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	14.8 GHz	57.384	74	-16.616	54	2.353	Horizontal	14.48
Peak	16.797 GHz	57.535	74	-16.465	277	1.634	Horizontal	16.149

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	14.8 GHz	43.489	54	-10.511	54	2.353	Horizontal	14.48
Avg	16.797 GHz	44.121	54	-9.879	277	1.634	Horizontal	16.149

Table 7: Transmitting on the Lowest Frequency 5160 MHz 1 – 17 GHz



Vertical

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	14.87 GHz	57.116	74	-16.884	60	3.252	Vertical	14.671
Peak	16.931 GHz	58.348	74	-15.652	144	2.55	Vertical	16.43

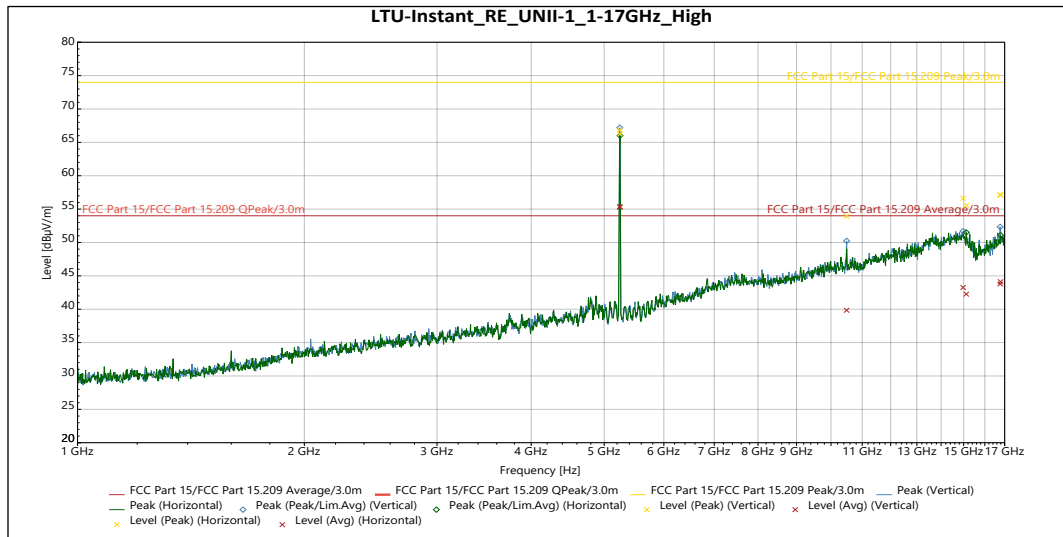
Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	14.87 GHz	43.373	54	-10.627	60	3.252	Vertical	14.671
Avg	16.931 GHz	44.379	54	-9.621	144	2.55	Vertical	16.43

Horizontal

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	10.4 GHz	52.762	74	-21.238	188	2.052	Horizontal	9.524

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	10.4 GHz	38.899	54	-15.101	188	2.052	Horizontal	9.524

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



Vertical

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	10.489 GHz	53.924	74	-20.076	267	2.138	Vertical	9.9
Peak	14.975 GHz	56.603	74	-17.397	267	2.638	Vertical	14.269
Peak	16.767 GHz	57.174	74	-16.826	64	4	Vertical	15.778

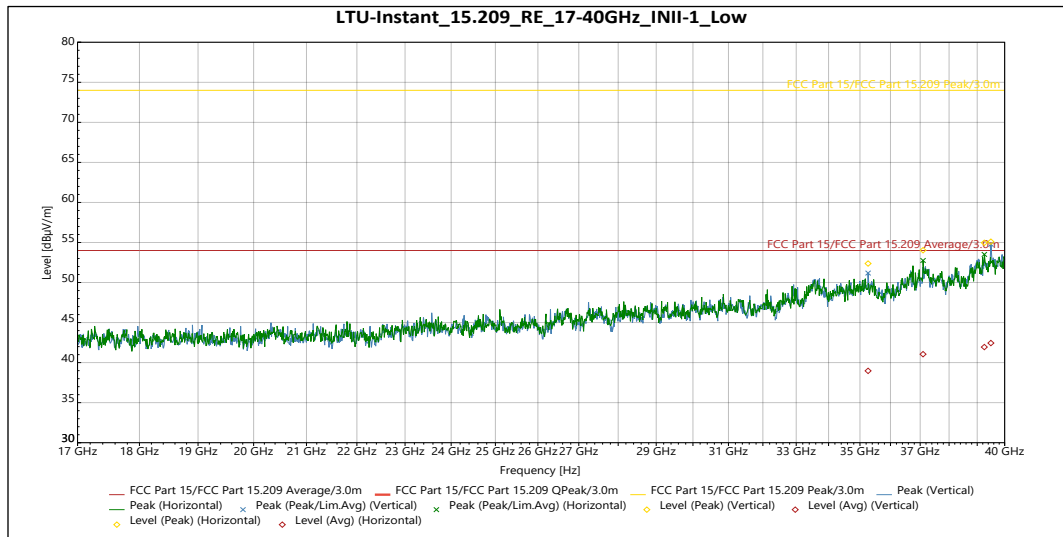
Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	10.489 GHz	39.835	54	-14.165	267	2.138	Vertical	9.9
Avg	14.975 GHz	43.261	54	-10.739	267	2.638	Vertical	14.269
Avg	16.767 GHz	43.782	54	-10.218	64	4	Vertical	15.778

Horizontal

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Peak	15.119 GHz	55.567	74	-18.433	101	3.806	Horizontal	13.496
Peak	16.786 GHz	57.056	74	-16.944	281	1.822	Horizontal	16.047

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
Avg	15.119 GHz	42.262	54	-11.738	101	3.806	Horizontal	13.496
Avg	16.786 GHz	44.115	54	-9.885	281	1.822	Horizontal	16.047

Table 9: Transmitting on the Highest Frequency 5245 MHz 1 – 17 GHz



Vertical

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
Peak	35.263 GHz	52.365	74	-21.635	75	Vertical	0.788
Peak	39.495 GHz	55.097	74	-18.903	322	Vertical	3.239

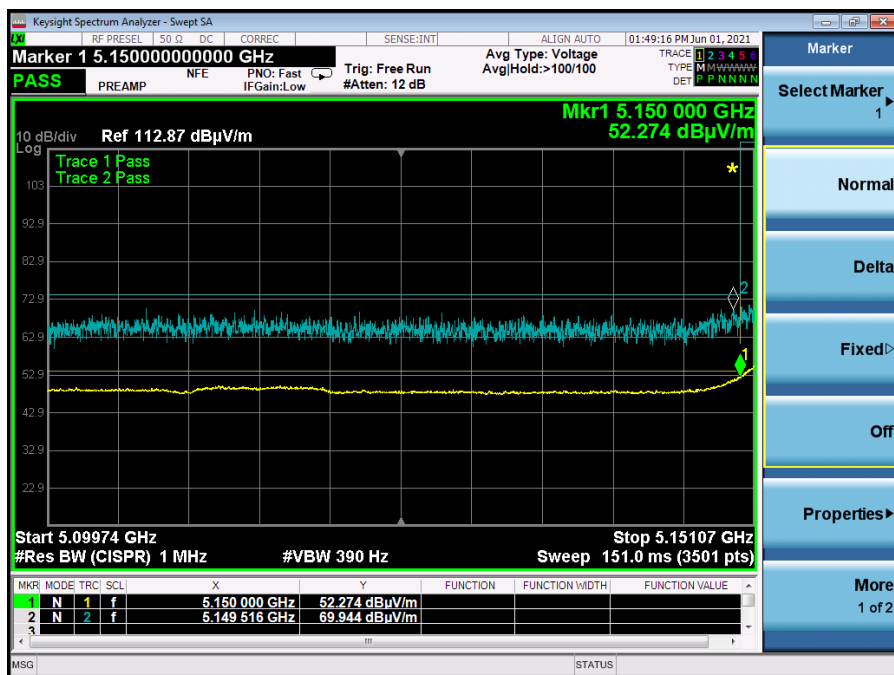
Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
Avg	35.263 GHz	38.967	54	-15.033	75	Vertical	0.788
Avg	39.495 GHz	42.437	54	-11.563	322	Vertical	3.239

Horizontal

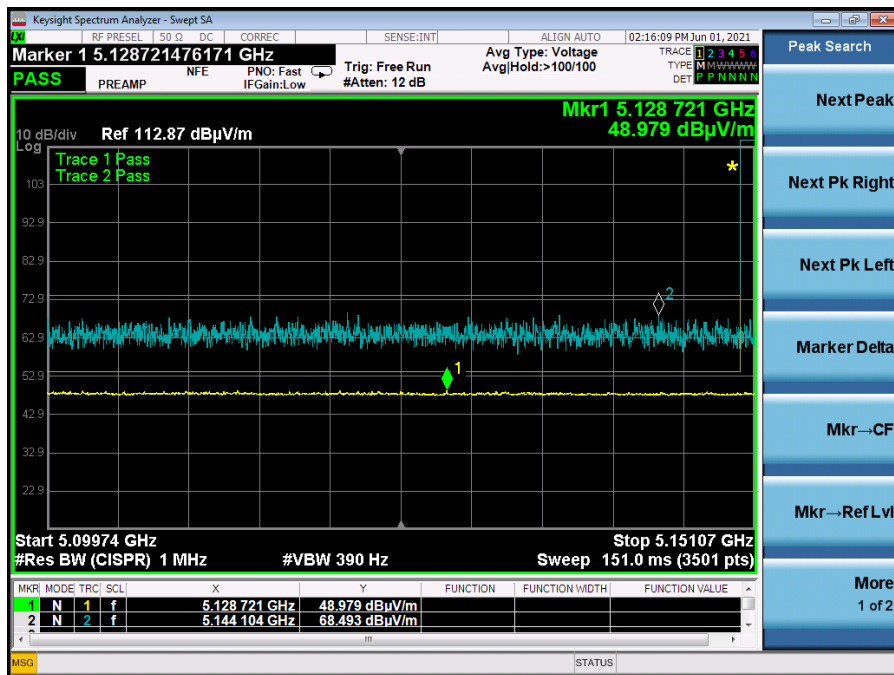
Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
Peak	37.098 GHz	54.026	74	-19.974	4	Horizontal	1.486
Peak	39.257 GHz	54.963	74	-19.037	242	Horizontal	2.996

Source	Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
Avg	37.098 GHz	41.051	54	-12.949	4	Horizontal	1.486
Avg	39.257 GHz	41.945	54	-12.055	242	Horizontal	2.996

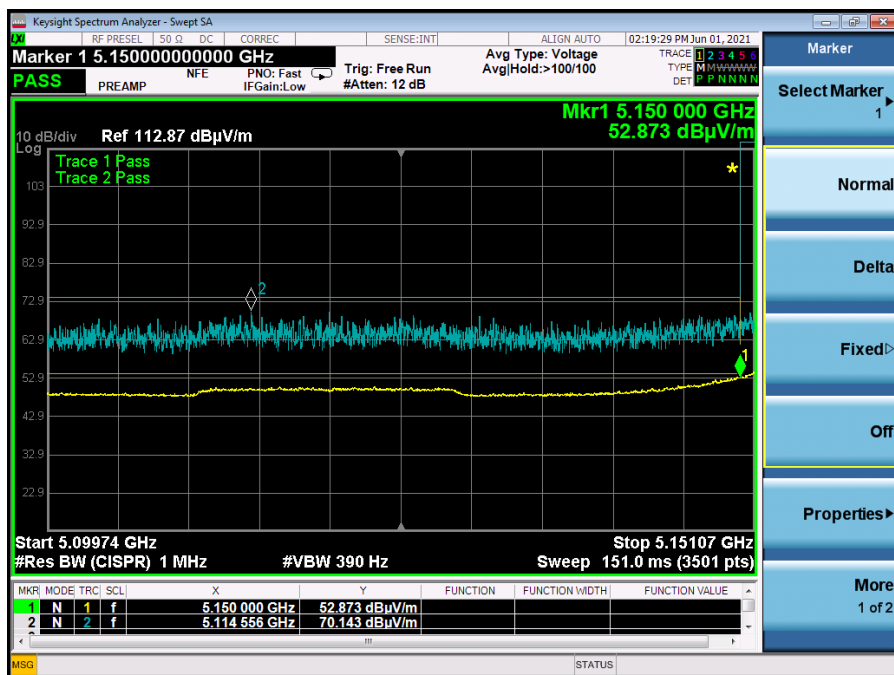
Table 10: Transmitting on the Lowest Frequency 5160 MHz 17 – 40 GHz (worse-case)



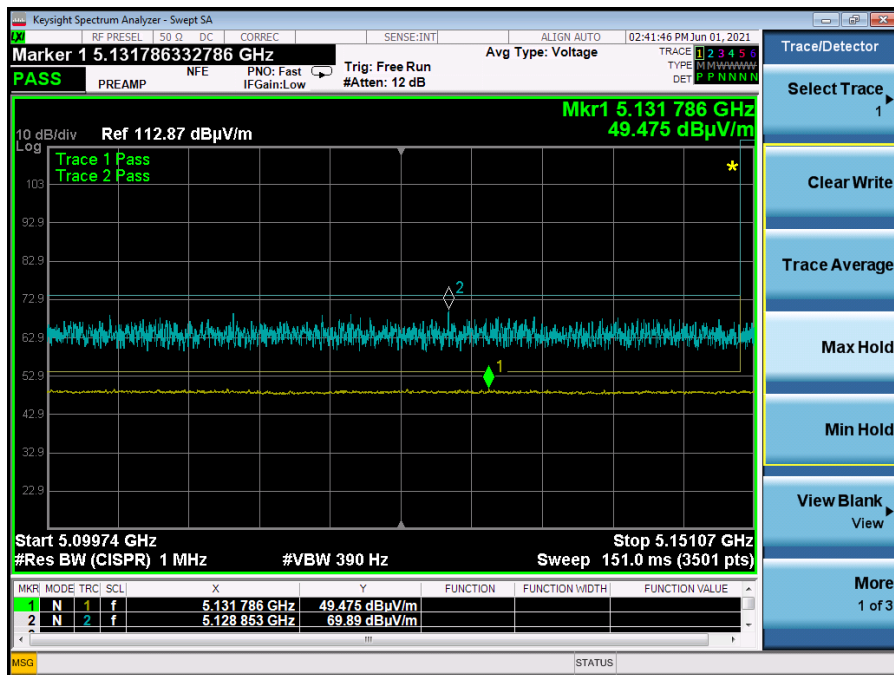
Graph 1: Lowest Band Edge HT10 – 5160 MHz



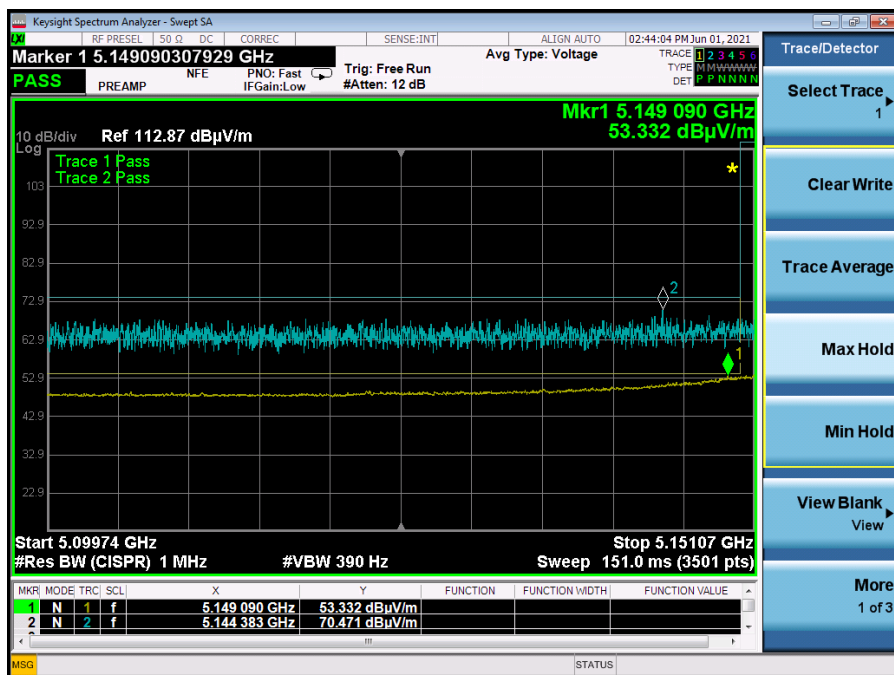
Graph 2: Highest Band Edge HT10 – 5245 MHz



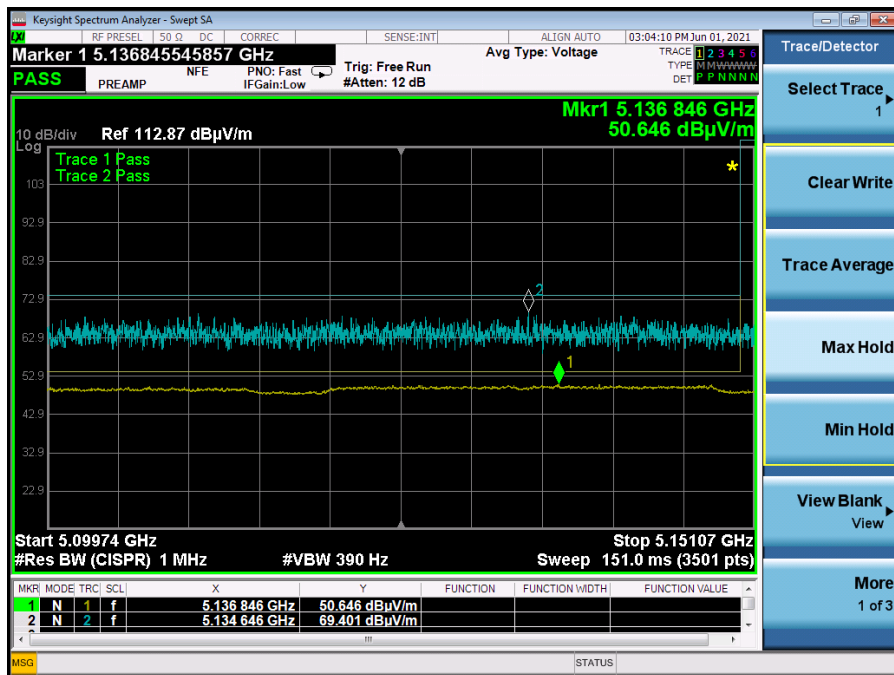
Graph 3: Lowest Band Edge HT20 – 5165 MHz



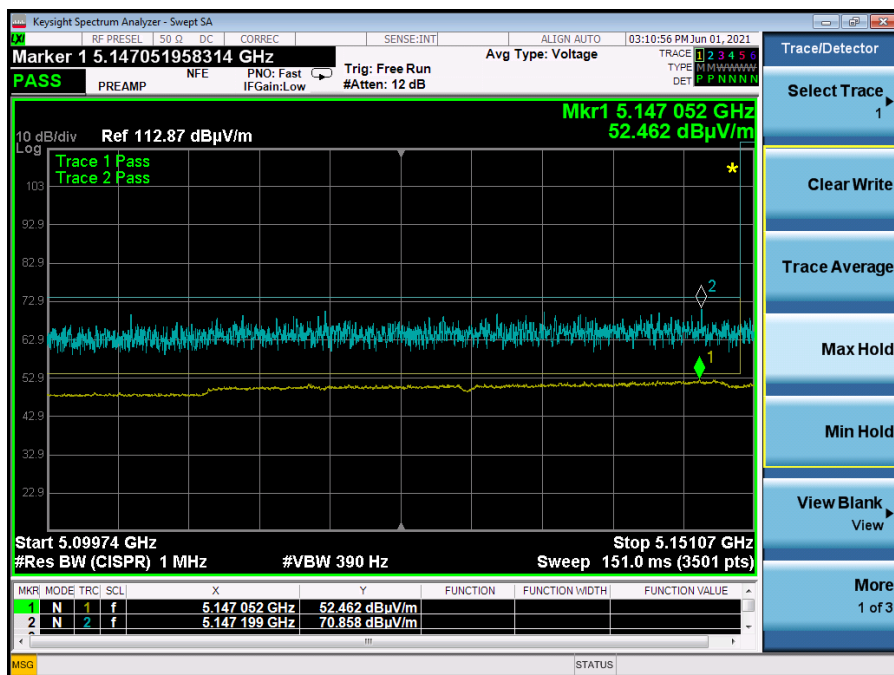
Graph 4: Highest Band Edge HT20 – 5240 MHz



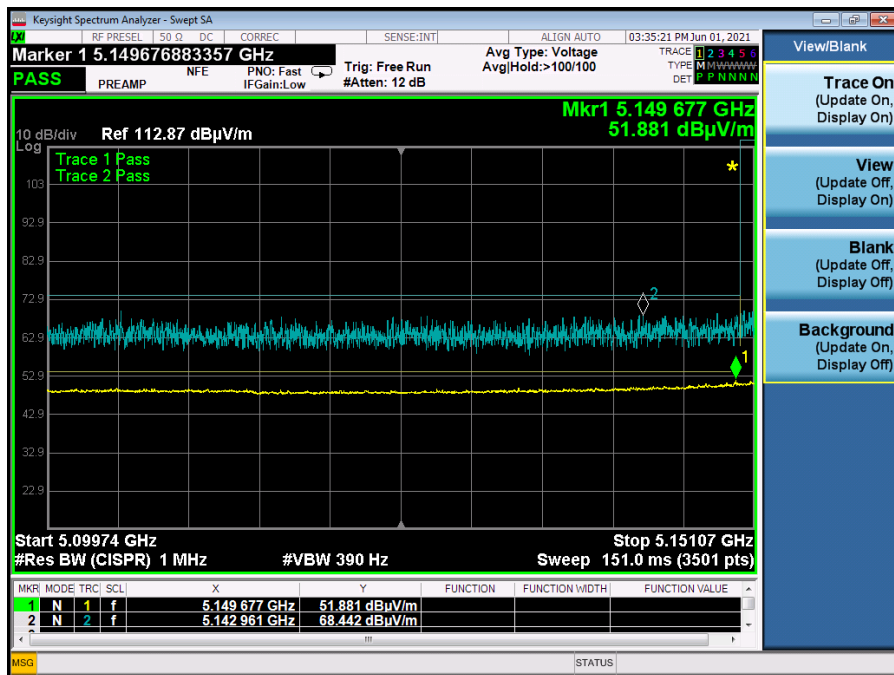
Graph 5: Lowest Band Edge HT30 – 5175 MHz



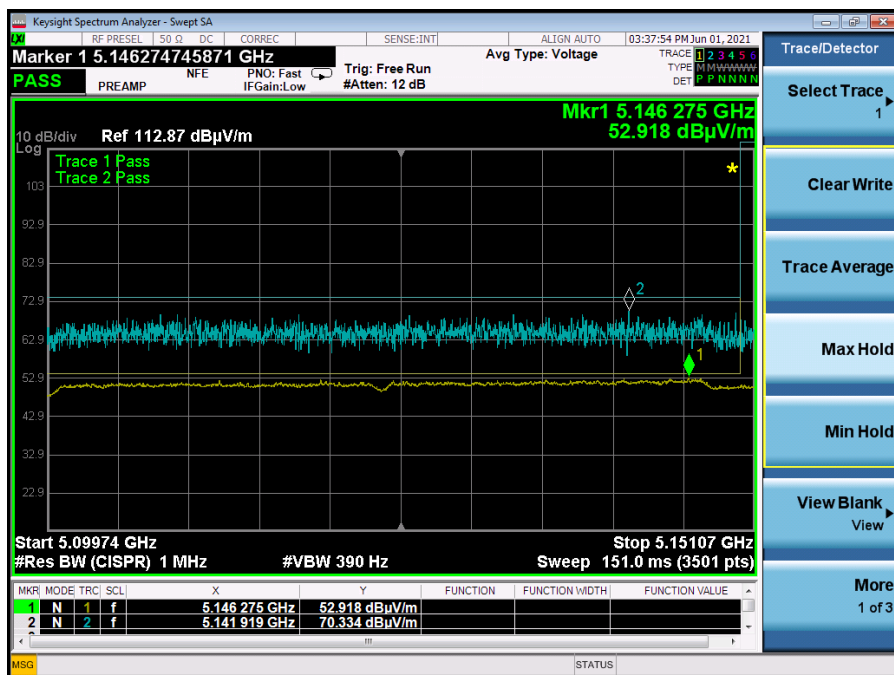
Graph 6: Highest Band Edge HT30 – 5235 MHz



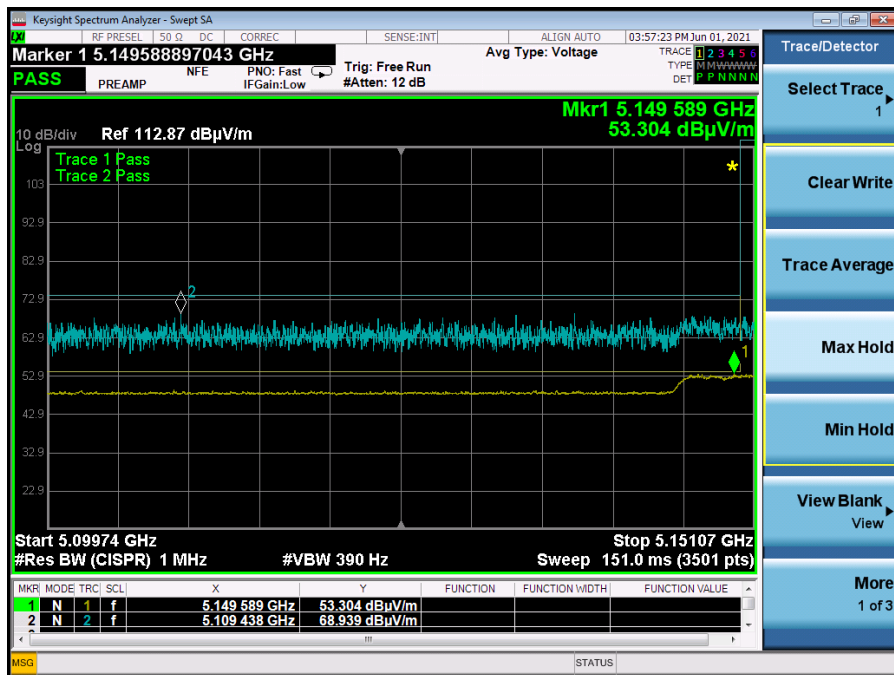
Graph 7: Lowest Band Edge VHT40 – 5175 MHz



Graph 8: Highest Band Edge VHT40 – 5230 MHz



Graph 9: Lowest Band Edge VHT50 – 5180 MHz



Graph 10: Highest Band Edge VHT50 – 5225 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.

Results of this testing are summarized.

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Measured PSD
HT 10	5160	Mcs0	14	2.42
HT 10	5200	Mcs0	22	9.52
HT 10	5245	Mcs0	22	9.39
HT 20	5165	Mcs0	13	- 2.22
HT 20	5200	Mcs0	17	2.26
HT 20	5240	Mcs0	22	7.20
HT 30	5170	Mcs0	13	- 2.71
HT 30	5200	Mcs0	20	3.21
HT 30	5235	Mcs0	22	5.88
VHT 40	5175	Mcs0	12	- 4.78
VHT 40	5200	Mcs0	15	- 1.74
VHT 40	5230	Mcs0	21	3.68
VHT 50	5180	Mcs0	12	- 5.74
VHT 50	5200	Mcs0	13	- 5.11
VHT 50	5225	Mcs0	14	- 3.58

Table 11: 3 dBi Antenna

Modulation (BW)	Frequency (MHz)	Data Rate	Measured PSD
HT 10	5160	Mcs0	- 16.58
HT 10	5200	Mcs0	- 9.48
HT 10	5245	Mcs0	- 9.61
HT 20	5165	Mcs0	- 21.22
HT 20	5200	Mcs0	- 16.74
HT 20	5240	Mcs0	- 11.80
HT 30	5170	Mcs0	- 21.71
HT 30	5200	Mcs0	- 15.79
HT 30	5235	Mcs0	- 13.12
VHT 40	5175	Mcs0	- 23.78
VHT 40	5200	Mcs0	- 20.74
VHT 40	5230	Mcs0	- 15.32
VHT 50	5180	Mcs0	- 24.74
VHT 50	5200	Mcs0	- 24.11
VHT 50	5225	Mcs0	- 22.58

Table 12: 22 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 --