



427 West 12800 South  
 Draper, UT 84020

## Test Report Certification

<b>FCC ID</b>	SWX-WAVEAM
<b>IC ID</b>	6545A-WAVEAM
<b>Equipment Under Test</b>	Wave-AP-Micro
<b>Test Report Serial Number</b>	TR7569_01
<b>Date of Tests</b>	August 12, through September 12, 2022,
<b>Report Issue Date</b>	October 19, 2022

Test Specification	Applicant
47 CFR FCC Part 15, Subpart C RSS-GEN Issue 5	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.



NVLAP LAB CODE 600241-0

## Certification of Engineering Report

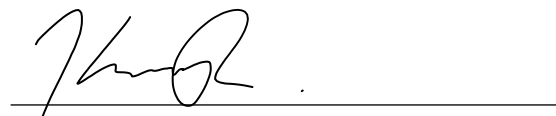
This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart C. This report may be reproduced in full. Partial reproduction of this report may only be made with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

<b>Applicant</b>	Ubiquiti Inc.
<b>Manufacturer</b>	Ubiquiti Inc.
<b>Brand Name</b>	Wave
<b>Model Number</b>	Wave-AP-Micro
<b>FCC ID</b>	SWX-WAVEAM
<b>IC ID</b>	6545A-WAVEAM

On this 19<sup>th</sup> day of October 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: Kimberly Rodriguez



Reviewed By: Richard L. Winter

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<b>Revision History</b>		
<b>Revision</b>	<b>Description</b>	<b>Date</b>
01	Original Report Release	October 19, 2022

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# 1 Client Information

## 1.1 Applicant

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

## 1.2 Manufacturer

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

## 2 Equipment Under Test (EUT)

### 2.1 Identification of EUT

<b>Brand Name</b>	Wave
<b>Model Number</b>	Wave-AP-Micro
<b>Serial Number</b>	0418D6A28CB3
<b>Dimensions (cm)</b>	28.4 x 15.6 x 7.6

### 2.2 Description of EUT

The Wave-AP-Micro is 60 GHz point-to-multipoint customer premise equipment that features wave technology with a 1.5+ Gbps throughput rate. The Wave-AP-Micro is also equipped with a 5 GHz Wi-Fi 6 backup radio to sustain connectivity during a 60 GHz link disruption caused by inclement weather conditions. A Bluetooth LE transceiver is included for device management. The Wave-AP-Micro is an outdoor device and has an Ethernet port which is used for data transfer and to provide power using an Ubiquiti U-POE-at 48-volt PoE power adapter.

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.

<b>Brand Name Model Number Serial Number</b>	<b>Description</b>	<b>Name of Interface Ports / Interface Cables</b>
BN: Wave MN: Wave-AP-Micro (Note 1) SN: 0418D6A28CB3	Wireless P-P/P-MP Radio	See Section 2.4
BN: Ubiquiti MN: U-POE-at SN: N/A	PoE Power Adapter	Shielded or Un-shielded cat 5e cable
BN: Dell MN: XPS 13 SN: N/A	Laptop Computer	Shielded or Un-shielded 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
PoE In	1	Shielded or Un-shielded cat 5e cable/7 meter

## 2.5 Operating Environment

<b>Power Supply</b>	48 Volts PoE (120V to PoE Injector)
<b>AC Mains Frequency</b>	60Hz to PoE Injector
<b>Temperature</b>	22.0-22.7 °C
<b>Humidity</b>	18.7-22.9 %
<b>Barometric Pressure</b>	1009 mBar

## 2.6 Operating Modes

The Wave-AP-Micro 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 Bluetooth transceiver.

## 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

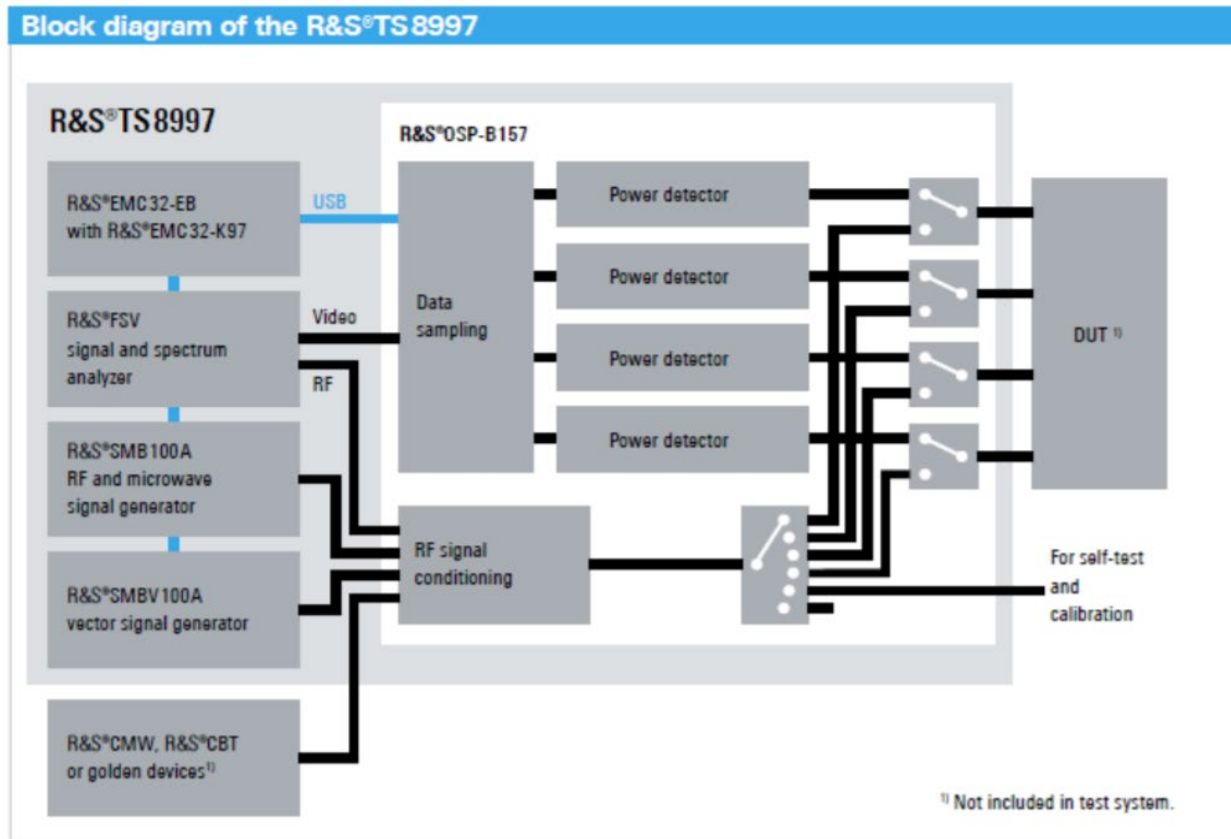


Diagram 1: Test Configuration Block Diagram

## 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

<b>Title</b>	-47 CFR FCC Part 15, Subpart C 15.203, 15.209 and 15.247 Limits and methods of measurement of radio interference characteristics of radio frequency devices. -RSS-Gen, issue 5, General Requirements for Compliance of Radio Apparatus -RSS-247, Issue Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices
<b>Purpose of Test</b>	The tests were performed to demonstrate initial compliance

#### 3.2 Methods & Procedures

##### 3.2.1 47 CFR FCC Part 15 Section 15.203 / RSS-Gen Section 6.8

See test standard for details.

##### 3.2.2 47 CFR FCC Part 15 Section 15.207 / RSS-Gen Section 6.13

See test standard for details.

##### 3.2.3 47 CFR FCC Part 15 Section 15.247 / RSS-247 Section 5

See test standard for details.

#### 3.3 FCC Part 15, Subpart C / RSS-247 / RSS-GEN

##### 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	2400 to 2480	Compliant
15.247(b)	RSS-247 § 5.4	Peak Output Power	2400 to 2480	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	30 to 40000	Compliant
15.247(e)	RSS-247 § 5.2	Peak Power Spectral Density	2400 to 2480	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 chamber 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 2023. 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 2023. Unified Compliance Laboratory has been assigned Conformity Assessment Number US0223 by ISED and has registered MRA Test Site number US5037.

## 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-6754	12/8/2021	12/8/2022
LISN	AFJ	LS16C/10	UCL-6749	12/6/2021	12/6/2023
Cat6 ISN	Teseq	ISN T8-Cat6	UCL-2971	1/30/2022	1/30/2023
ISN	Teseq	ISN T800	UCL-2974	6/27/2022	6/27/2023
LISN	Com-Power	LIN-120C	UCL-2612	1/6/2022	1/6/2023
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

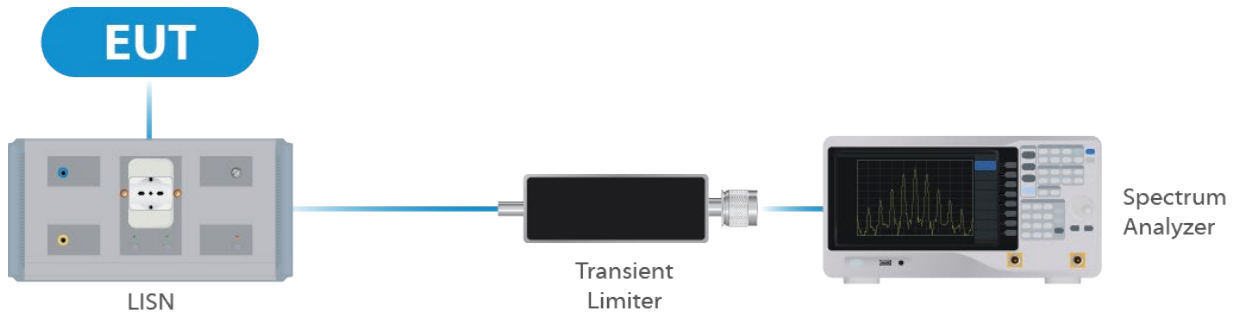


Figure 1: Conducted Emissions Test

## 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	1/03/2022	1/03/2023
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	1/03/2022	1/03/2023
Switch Extension	R&S	OSP-150W	UCL-2870	1/03/2022	1/03/2023

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

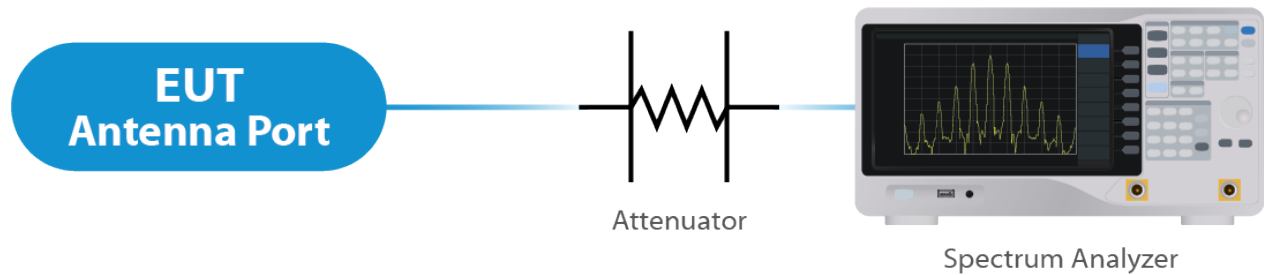


Figure 2: Direct Connect at the Antenna Port Test

### 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	1/4/2022	1/4/2023
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	10/7/2021	11/7/2022
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3062	9/13/2022	9/13/2024
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3071	6/08/2022	6/22/2024
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	9/22/2022	9/22/2024
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	11/16/2020	11/16/2022
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	10/7/2021	11/7/2022
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 3: List of equipment used for Radiated Emissions

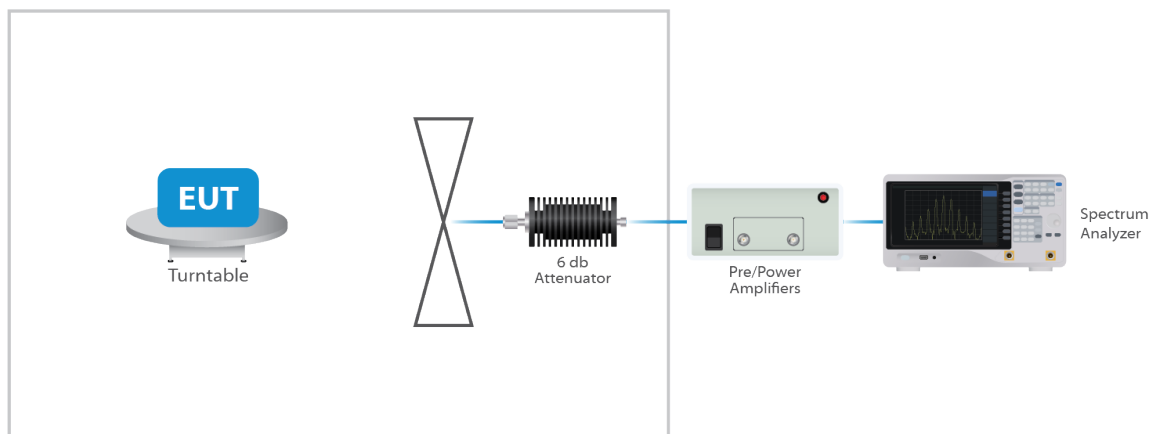


Figure 3: Radiated Emissions Test

### 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
<b>Direct Connect Tests</b>	<b>K Factor</b>	<b>Value</b>
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**

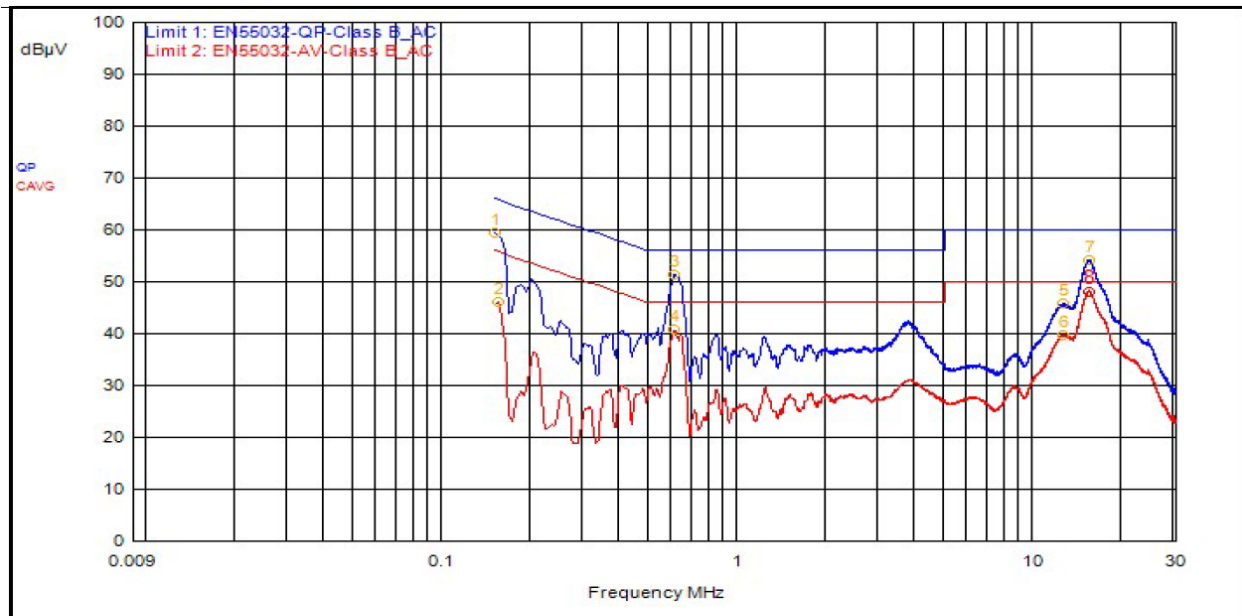
The EUT uses an integral antenna. The Maximum gain of the antenna is 3.5 dBi. The antenna is not user replaceable.

## Results

The EUT complied with the specification

## 5.2 Conducted Emissions at Mains Ports Data

### 5.2.1 PoE Injector AC Mains (Line)



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
3	606,000kHz	9.5	0.2		QPeak	41.7	51.4	56.0	-4.6		
7	15.327MHz	9.7	0.2		QPeak	44.3	54.2	60.0	-5.8		
1	150,000kHz	9.5	0.0		QPeak	49.9	59.4	66.0	-6.6		
5	12.462MHz	9.6	0.3		QPeak	35.8	45.7	60.0	-14.3		
2	153,000kHz	9.5	0.0		C_AVG	36.6	46.1			55.8	-9.7
4	606,000kHz	9.5	0.2		C_AVG	31.0	40.7			46.0	-5.3
6	12.465MHz	9.6	0.3		C_AVG	29.9	39.8			50.0	-10.2
8	15.255MHz	9.7	0.2		C_AVG	38.3	48.1			50.0	-1.9

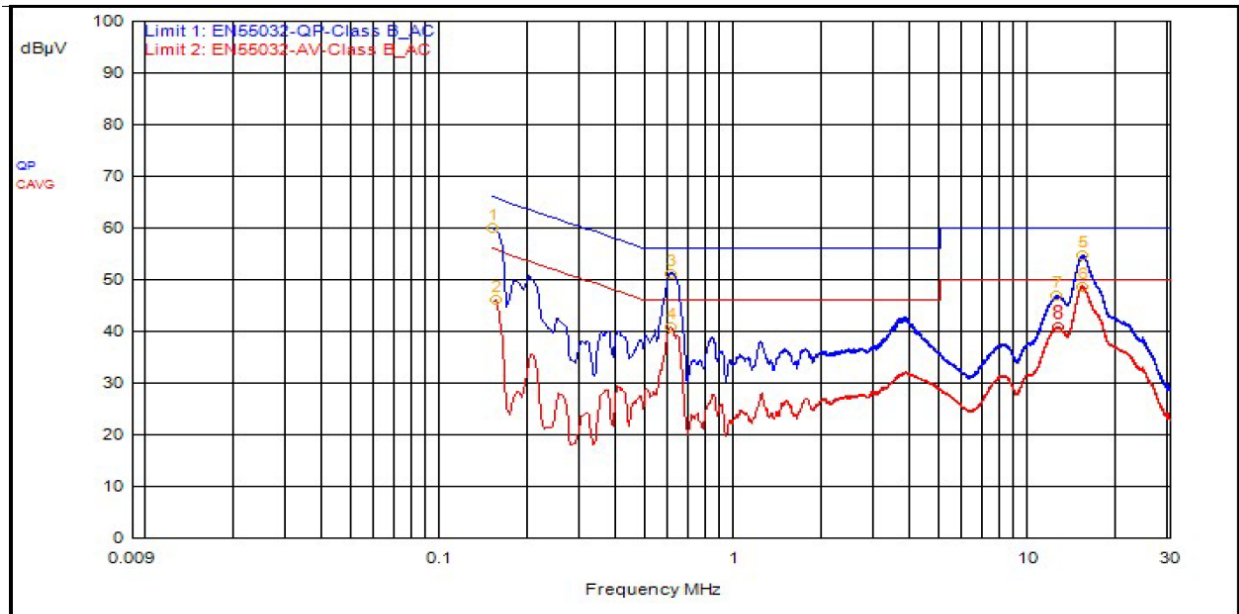
Meas. Level = Meter Read + Probe + Cable

## Result

The EUT complied with the specification limit.



## 5.2.2 PoE Injector AC Mains (Neutral)



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
3	603,000kHz	9.5	0.2		QPeak	41.5	51.2	56.0	-4.8		
5	15.084MHz	9.6	0.2		QPeak	44.9	54.7	60.0	-5.3		
1	150,000kHz	9.5	0.0		QPeak	50.3	59.9	66.0	-6.1		
7	12.354MHz	9.6	0.3		QPeak	37.0	46.9	60.0	-13.1		
2	153,000kHz	9.5	0.0		C_AVG	36.7	46.2			55.8	-9.6
4	606,000kHz	9.5	0.2		C_AVG	31.1	40.8			46.0	-5.2
6	15.072MHz	9.6	0.2		C_AVG	38.9	48.7			50.0	-1.3
8	12.453MHz	9.6	0.3		C_AVG	30.8	40.7			50.0	-9.3

Meas. Level = Meter Read + Probe + Cable

### Result

The EUT complied with the specification limit.

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**5.3 §15.247(a)(2) Emissions Bandwidth**

<b>Frequency (MHz)</b>	<b>Emissions 6 dB Bandwidth (MHz)</b>	<b>Emissions 99% Bandwidth (MHz)</b>
2402	0.653	0.990
2442	0.653	0.995
2480	0.673	1.005

**Result**

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

The maximum average RF conducted output power measured for this device was 5.9 dBm or 3.9 mW. The limit is 30 dBm or 1 Watt when using antennas with 6 dBi or less gain. The antenna has a gain of 3.5 dBi.

Frequency (MHz)	Measured Output Power (dBm)	Output Power (mW)
2402	5.7	3.7
2442	5.9	3.9
2480	4.2	2.6

#### 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).

## 5.5 §15.247(d) Spurious Emissions

### 5.5.1 Conducted Spurious Emissions

The frequency range is 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 within the Annex are plots 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 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.

### 5.5.2 Radiated Spurious Emissions in the Restricted Bands of §15.205

The frequency range is 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 bans 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.

#### Result

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

Frequency	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Meas. Time (s)	RBW (Hz)	Detector	Correction (dB)
7.4408 GHz	45.759	74	-28.241	310	3.802	Horizontal	5	1000000	Peak	-3.853
7.4408 GHz	32.392	54	-21.608	310	3.802	Horizontal	5	1000000	Average	-3.853
7.2068 GHz	49.92	74	-24.08	36	1.643	Horizontal	5	1000000	Peak	-4.337
7.2068 GHz	37.373	54	-16.627	36	1.643	Horizontal	5	1000000	Average	-4.337
7.3269 GHz	46.98	74	-27.02	325	3.802	Horizontal	5	1000000	Peak	-3.733
7.3269 GHz	33.527	54	-20.473	325	3.802	Horizontal	5	1000000	Average	-3.733
17.006 GHz	32.693	54	-21.307	178	1.500	Vertical	5	1000000	Average	-4.552
17.006 GHz	45.707	74	-28.293	178	1.500	Vertical	5	1000000	Peak	-4.552
17.243 GHz	46.04	74	-27.96	312	1.500	Vertical	5	1000000	Peak	-5.038
17.243 GHz	32.165	54	-21.835	312	1.500	Vertical	5	1000000	Average	-5.038

### 5.5.3 Band Edge Results

#### Band Edge low (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

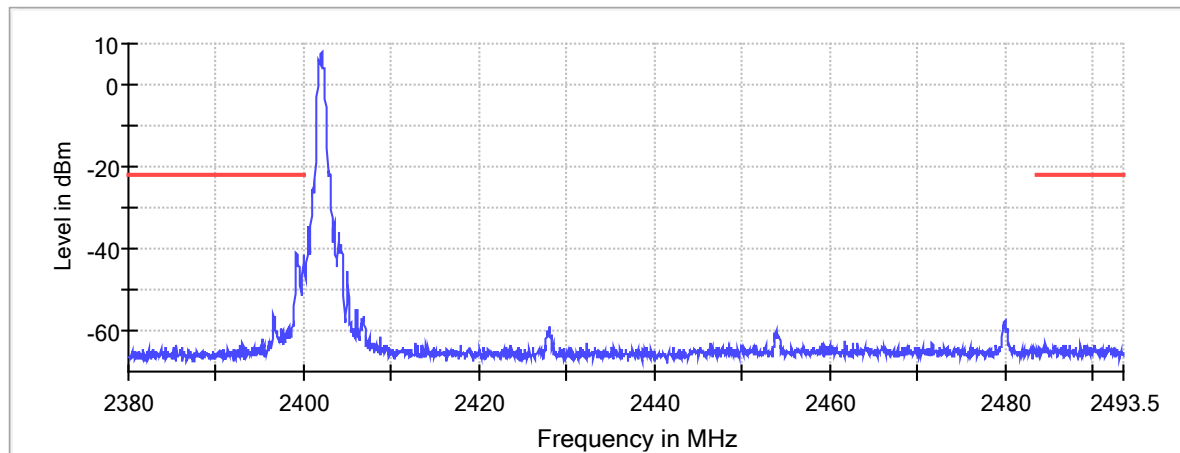
#### Result

DUT Frequency (MHz)	Result
2402.000000	PASS

#### Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.175000	-40.8	19.0	-21.9	PASS
2399.975000	-41.6	19.7	-21.9	PASS
2399.225000	-41.7	19.8	-21.9	PASS
2399.275000	-42.3	20.4	-21.9	PASS
2399.125000	-42.8	20.9	-21.9	PASS
2399.925000	-43.5	21.6	-21.9	PASS
2399.425000	-44.0	22.1	-21.9	PASS
2399.375000	-44.1	22.2	-21.9	PASS
2399.325000	-44.3	22.4	-21.9	PASS
2399.475000	-44.3	22.4	-21.9	PASS
2399.075000	-46.0	24.1	-21.9	PASS
2399.525000	-46.4	24.5	-21.9	PASS
2399.875000	-46.7	24.8	-21.9	PASS
2399.025000	-47.8	25.9	-21.9	PASS
2399.575000	-47.9	26.0	-21.9	PASS

Band Edge



— Limit    — Sum Level    × Fail

## Emissions in restricted frequency bands (Average) (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

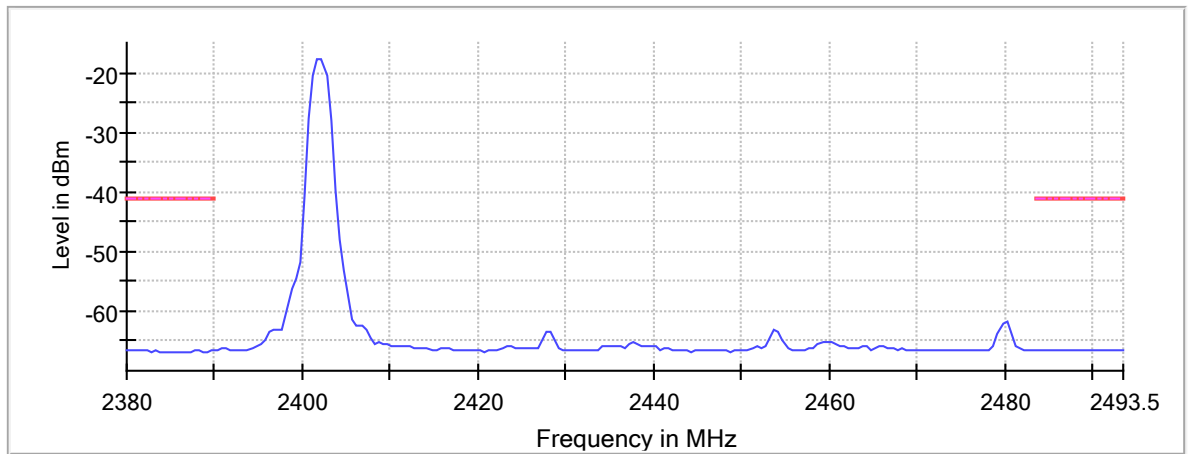
### Result

DUT Frequency (MHz)	Result
2402.000000	PASS

### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2489.750000	-66.4	25.2	-41.2
2490.750000	-66.4	25.2	-41.2
2486.750000	-66.4	25.2	-41.2
2489.250000	-66.5	25.3	-41.2
2485.750000	-66.5	25.3	-41.2
2486.250000	-66.5	25.3	-41.2
2490.250000	-66.5	25.3	-41.2
2381.750000	-66.5	25.3	-41.2
2380.250000	-66.5	25.3	-41.2
2380.000000	-66.5	25.3	-41.2
2483.750000	-66.5	25.3	-41.2
2488.750000	-66.5	25.3	-41.2
2488.250000	-66.5	25.3	-41.2
2484.750000	-66.5	25.3	-41.2
2485.250000	-66.6	25.4	-41.2

Restricted Band



— Limit    - - - - Threshold    × Critical    — Sum Level    × Final Critical

## Emissions in restricted frequency bands (Peak) (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

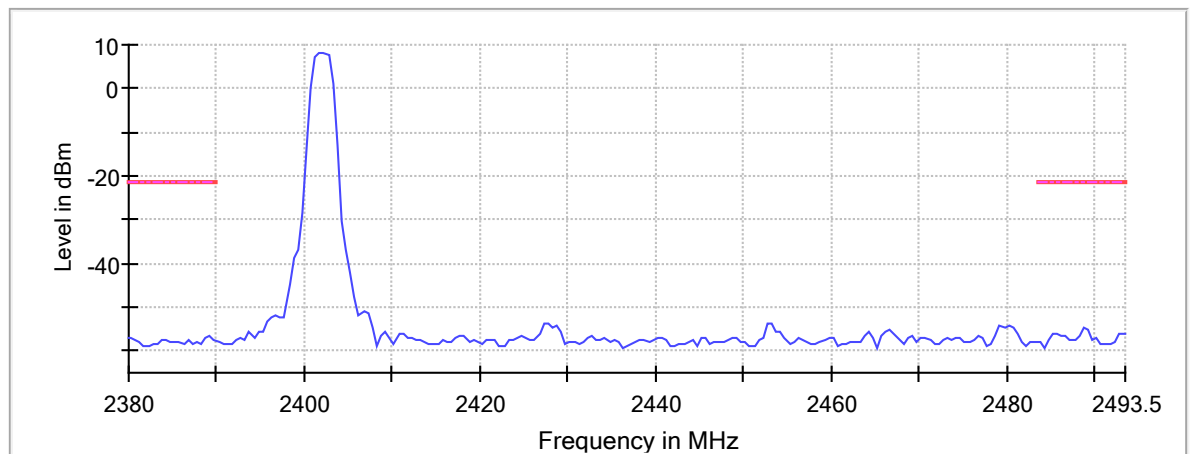
### Result

DUT Frequency (MHz)	Result
2402.000000	PASS

### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2488.750000	-54.6	33.4	-21.2
2489.250000	-55.0	33.8	-21.2
2492.750000	-55.9	34.7	-21.2
2485.750000	-56.0	34.8	-21.2
2493.500000	-56.0	34.8	-21.2
2493.250000	-56.0	34.8	-21.2
2485.250000	-56.1	34.9	-21.2
2488.250000	-56.5	35.3	-21.2
2486.250000	-56.7	35.5	-21.2
2486.750000	-56.7	35.5	-21.2
2389.250000	-56.8	35.6	-21.2
2380.250000	-57.0	35.8	-21.2
2380.000000	-57.0	35.8	-21.2
2388.750000	-57.0	35.8	-21.2
2490.250000	-57.3	36.1	-21.2

Restricted Band



— Limit    - - - - Threshold    × Critical    — Sum Level    × Final Critical

## Band Edge low (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

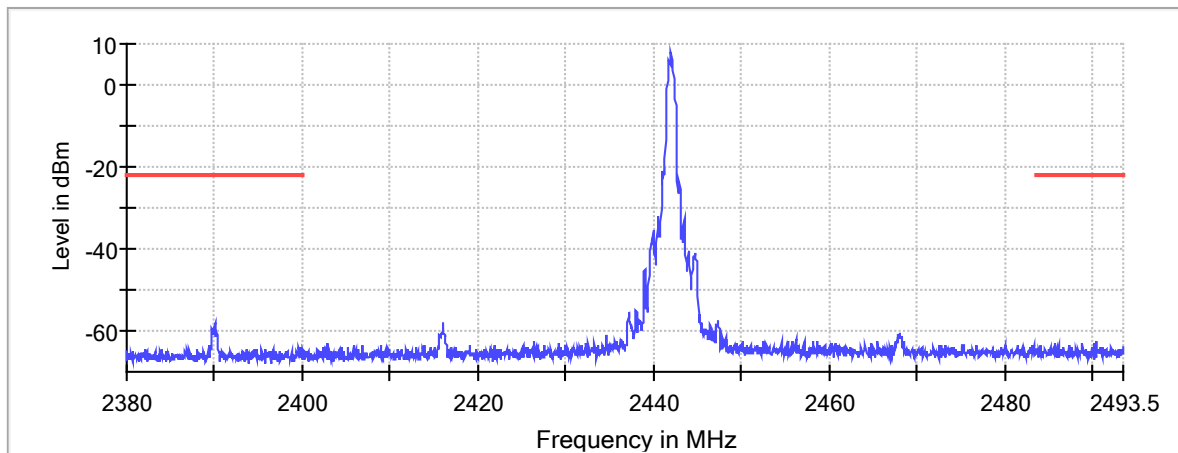
### Result

DUT Frequency (MHz)	Result
2442.000000	PASS

### Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2390.025000	-58.2	36.2	-22.0	PASS
2389.975000	-59.3	37.3	-22.0	PASS
2389.725000	-59.6	37.6	-22.0	PASS
2390.125000	-59.8	37.8	-22.0	PASS
2390.225000	-60.2	38.2	-22.0	PASS
2389.925000	-60.2	38.2	-22.0	PASS
2389.775000	-60.6	38.6	-22.0	PASS
2389.875000	-60.7	38.7	-22.0	PASS
2390.075000	-60.8	38.8	-22.0	PASS
2390.275000	-61.0	39.0	-22.0	PASS
2389.825000	-61.1	39.1	-22.0	PASS
2389.675000	-61.1	39.1	-22.0	PASS
2390.175000	-61.7	39.7	-22.0	PASS
2389.625000	-62.0	40.0	-22.0	PASS
2390.325000	-62.2	40.2	-22.0	PASS

Band Edge



— Limit    — Sum Level    × Fail



## Emissions in restricted frequency bands (Average) (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

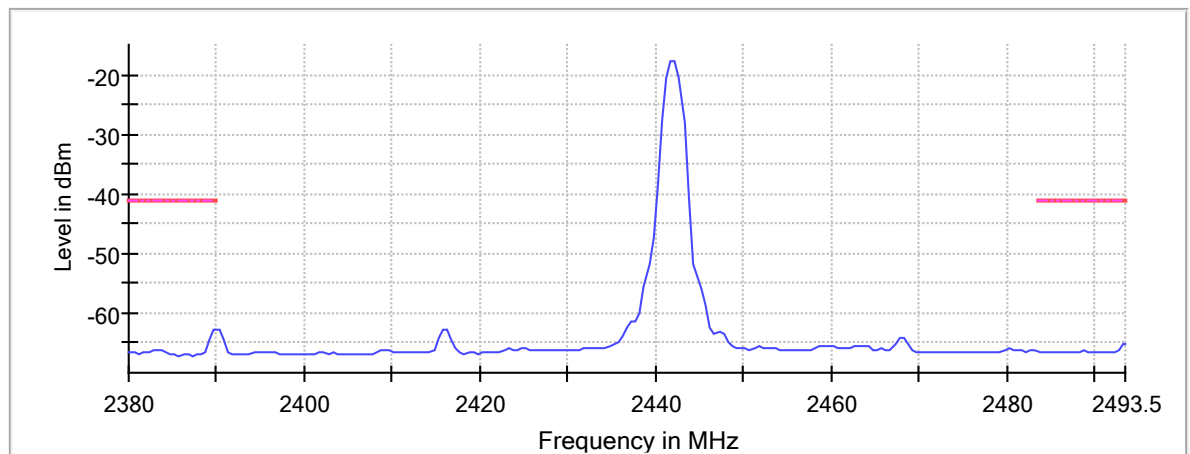
### Result

DUT Frequency (MHz)	Result
2442.000000	PASS

### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2389.750000	-62.7	21.5	-41.2
2389.250000	-64.5	23.3	-41.2
2493.500000	-65.1	23.9	-41.2
2493.250000	-65.1	23.9	-41.2
2383.250000	-66.1	24.9	-41.2
2383.750000	-66.1	24.9	-41.2
2382.750000	-66.3	25.1	-41.2
2492.750000	-66.4	25.2	-41.2
2488.750000	-66.4	25.2	-41.2
2380.250000	-66.4	25.2	-41.2
2380.000000	-66.4	25.2	-41.2
2487.250000	-66.5	25.3	-41.2
2487.750000	-66.5	25.3	-41.2
2388.750000	-66.5	25.3	-41.2
2484.750000	-66.5	25.3	-41.2

Restricted Band



— Limit    - - - - Threshold    × Critical    — Sum Level    × Final Critical

## Emissions in restricted frequency bands (Peak) (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

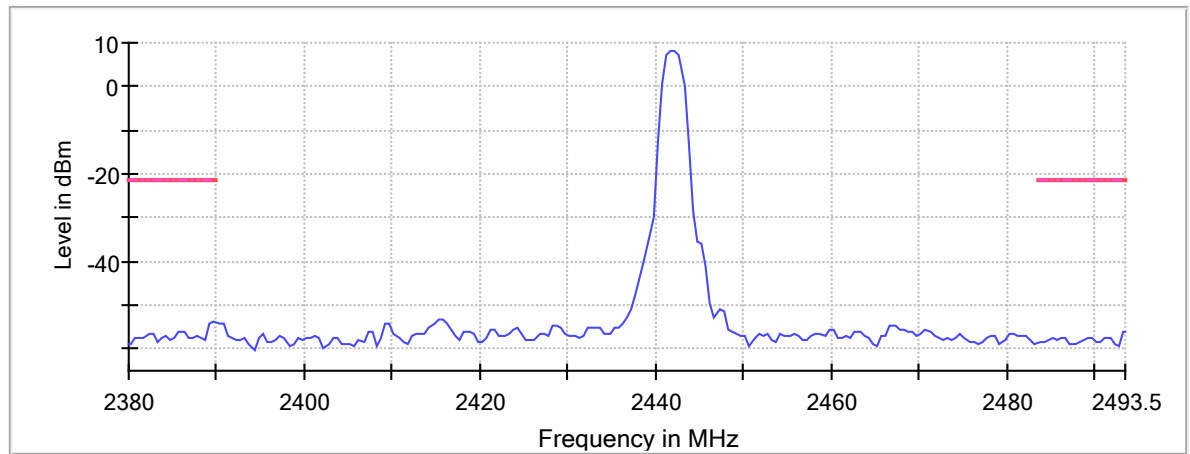
### Result

DUT Frequency (MHz)	Result
2442.000000	PASS

### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2389.750000	-54.0	32.8	-21.2
2389.250000	-54.3	33.1	-21.2
2385.750000	-56.1	34.9	-21.2
2493.500000	-56.2	35.0	-21.2
2493.250000	-56.2	35.0	-21.2
2386.250000	-56.2	35.0	-21.2
2382.250000	-56.6	35.4	-21.2
2382.750000	-56.6	35.4	-21.2
2387.750000	-56.9	35.7	-21.2
2384.250000	-57.1	35.9	-21.2
2491.750000	-57.3	36.1	-21.2
2491.250000	-57.3	36.1	-21.2
2489.750000	-57.4	36.2	-21.2
2386.750000	-57.4	36.2	-21.2
2387.250000	-57.4	36.2	-21.2

Restricted Band



— Limit    - - - - Threshold    × Critical    — Sum Level    × Final Critical

## Band Edge low (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

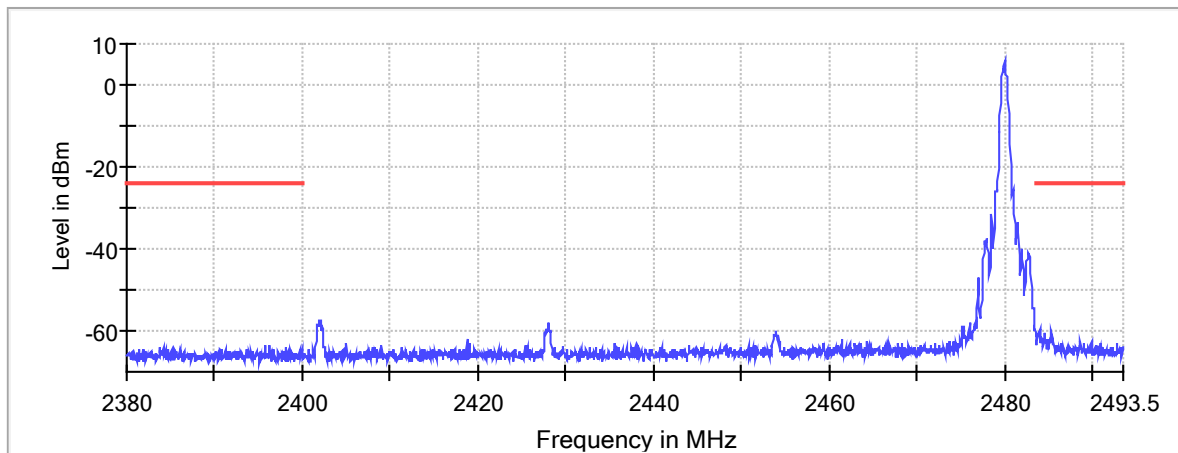
### Result

DUT Frequency (MHz)	Result
2480.000000	PASS

### Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.975000	-59.7	35.7	-24.0	PASS
2485.375000	-59.9	35.9	-24.0	PASS
2485.325000	-60.3	36.3	-24.0	PASS
2484.525000	-60.3	36.3	-24.0	PASS
2483.525000	-60.5	36.5	-24.0	PASS
2483.625000	-60.7	36.7	-24.0	PASS
2483.825000	-61.0	37.0	-24.0	PASS
2483.775000	-61.1	37.1	-24.0	PASS
2483.925000	-61.2	37.2	-24.0	PASS
2485.275000	-61.2	37.2	-24.0	PASS
2483.875000	-61.5	37.5	-24.0	PASS
2484.125000	-61.5	37.5	-24.0	PASS
2484.175000	-61.5	37.5	-24.0	PASS
2483.575000	-61.7	37.7	-24.0	PASS
2485.175000	-61.7	37.7	-24.0	PASS

Band Edge



— Limit    — Sum Level    × Fail

## Emissions in restricted frequency bands (Average) (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

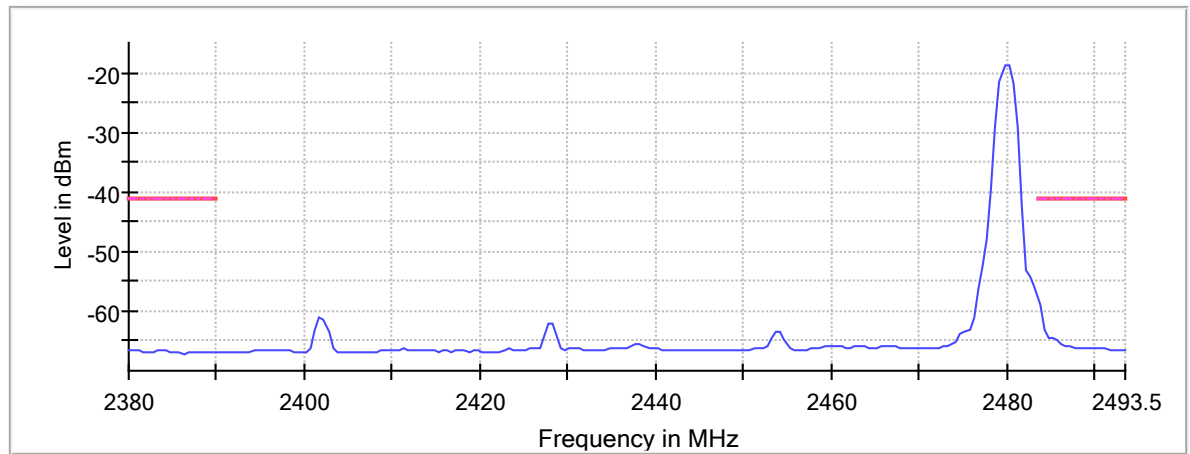
### Result

DUT Frequency (MHz)	Result
2480.000000	PASS

### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2483.750000	-58.9	17.7	-41.2
2484.250000	-63.0	21.8	-41.2
2484.750000	-64.6	23.4	-41.2
2485.250000	-64.6	23.4	-41.2
2485.750000	-64.8	23.6	-41.2
2486.250000	-65.5	24.3	-41.2
2486.750000	-65.8	24.6	-41.2
2487.250000	-65.9	24.7	-41.2
2488.250000	-66.1	24.9	-41.2
2487.750000	-66.1	24.9	-41.2
2489.250000	-66.1	24.9	-41.2
2488.750000	-66.2	25.0	-41.2
2489.750000	-66.2	25.0	-41.2
2490.250000	-66.3	25.1	-41.2
2491.250000	-66.3	25.1	-41.2

Restricted Band



— Limit    
 - - - Threshold    
 × Critical    
 — Sum Level    
 × Final Critical

## Emissions in restricted frequency bands (Peak) (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

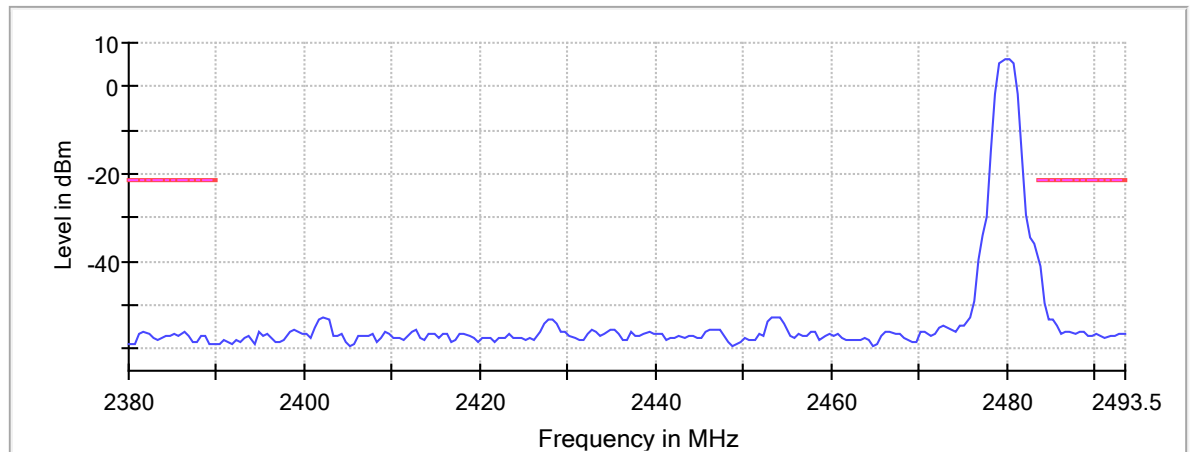
### Result

DUT Frequency (MHz)	Result
2480.000000	PASS

### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2483.750000	-41.0	19.8	-21.2
2484.250000	-49.7	28.5	-21.2
2485.250000	-53.2	32.0	-21.2
2484.750000	-53.3	32.1	-21.2
2485.750000	-54.9	33.7	-21.2
2487.250000	-56.1	34.9	-21.2
2488.750000	-56.1	34.9	-21.2
2486.750000	-56.1	34.9	-21.2
2386.250000	-56.2	35.0	-21.2
2381.750000	-56.2	35.0	-21.2
2488.250000	-56.3	35.1	-21.2
2382.250000	-56.4	35.2	-21.2
2486.250000	-56.4	35.2	-21.2
2493.500000	-56.5	35.3	-21.2
2493.250000	-56.5	35.3	-21.2

Restricted Band



— Limit    - - - - Threshold    × Critical    — Sum Level    × Final Critical

## 5.6 §15.247(e) Maximum Average Power Spectral Density

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. Results of this testing are summarized.

<b>Frequency (MHz)</b>	<b>Measurement (dBm)</b>	<b>Criteria (dBm)</b>
2402	-2.1	8.0
2442	-1.8	8.0
2480	-3.5	8.0

### Result

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

## Test Results

---

# FCC Part 47 §15.247 2400-2483.5 MHz 2018

## Hardware Setup: WMS Measurements\TS8997 Hardware Setup

Spectrum Analyzer: SA FSV 40 (SA FSV 40) @ VISA (ADR  
TCPIP::192.168.48.100::inst0::instr), SN 1321.3008K40/101752, FW  
3.70

Vector Generator: VG SMW200A (VG SMW200A) @ VISA (ADR TCPIP0::A-N5182B-  
301471::inst0::INSTR), SN 101752, FW 3.70

Generator: SMB100A (SMB100A) @ VISA (ADR  
TCPIP::192.168.48.110::inst0::INSTR), SN 180599, FW 3.20.390.24  
/ Drv:Rev 2.21.0, 07/2016, CVI 2015

OSP: OSP-B157W8PLUS (OSP-B157W8PLUS) @ VISA (ADR  
TCPIP::192.168.48.157::inst0::instr), SN 1527.1144.06 / 100955, FW  
2.00.1.0



## Summary

Test	Frequency (MHz)	Nominal Power (dBm)	Nominal Bandwidth (MHz)	Result
RF output power	2402.000	15.0	1.000000	PASS
Minimum Emission Bandwidth 6 dB	2402.000	15.0	1.000000	PASS
Peak Power Spectral Density	2402.000	15.0	1.000000	PASS
Occupied Channel Bandwidth 99%	2402.000	15.0	1.000000	PASS
Band Edge low	2402.000	15.0	1.000000	PASS
Tx Spurious Emission	2402.000	15.0	1.000000	PASS
Emissions in restricted frequency bands (Average)	2402.000	15.0	1.000000	PASS
Minimum Emission Bandwidth 6 dB	2442.000	15.0	1.000000	PASS
Occupied Channel Bandwidth 99%	2442.000	15.0	1.000000	PASS
Tx Spurious Emission	2442.000	15.0	1.000000	PASS
Emissions in restricted frequency bands (Average)	2442.000	15.0	1.000000	PASS
Minimum Emission Bandwidth 6 dB	2480.000	15.0	1.000000	PASS
Occupied Channel Bandwidth 99%	2480.000	15.0	1.000000	PASS
Band Edge high	2480.000	15.0	1.000000	PASS
Tx Spurious Emission	2480.000	15.0	1.000000	PASS
Emissions in restricted frequency bands (Average)	2480.000	15.0	1.000000	PASS

## RF output power (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

### Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2402.000000	5.7	30.0	9.2	62.675	PASS

### OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 $\mu$ s	1.000 $\mu$ s

## Minimum Emission Bandwidth 6 dB (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

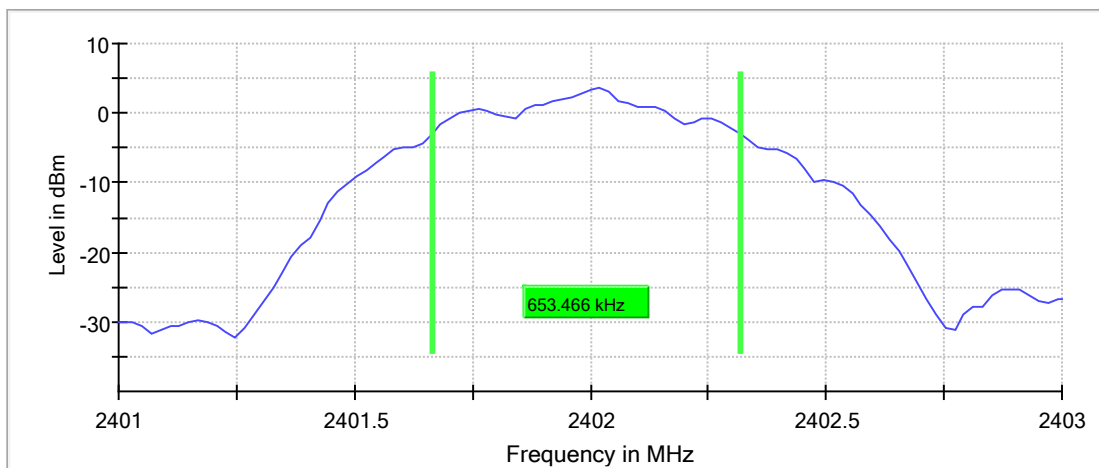
### 6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.653466	0.500000	---	2401.663366	2402.316832

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	3.6	PASS

6 dB Bandwidth



Bandwidth



Date: 15.AUG.2022 00:21:16

## Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweeptime	18.938 $\mu$ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

## Peak Power Spectral Density (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

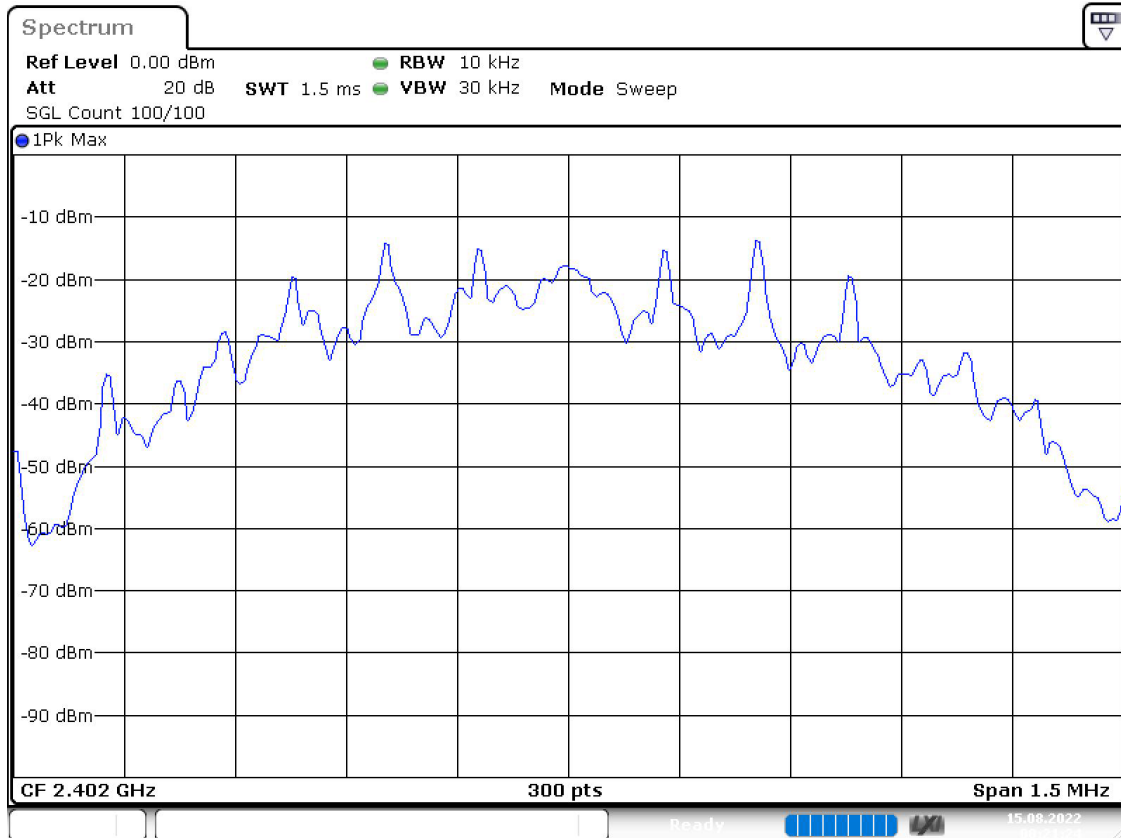
### Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2402.000000	2402.252500	-2.057	8.0	PASS

### Ports

Port	State
1	used

PSD Connector 1



Date: 15.AUG.2022 00:21:25

## Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40125 GHz	2.40125 GHz
Stop Frequency	2.40275 GHz	2.40275 GHz
Span	1.500 MHz	1.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	300	~ 300
SweepTime	1.500 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off

## Occupied Channel Bandwidth 99% (2402 MHz; 15.000 dBm; 1 MHz)

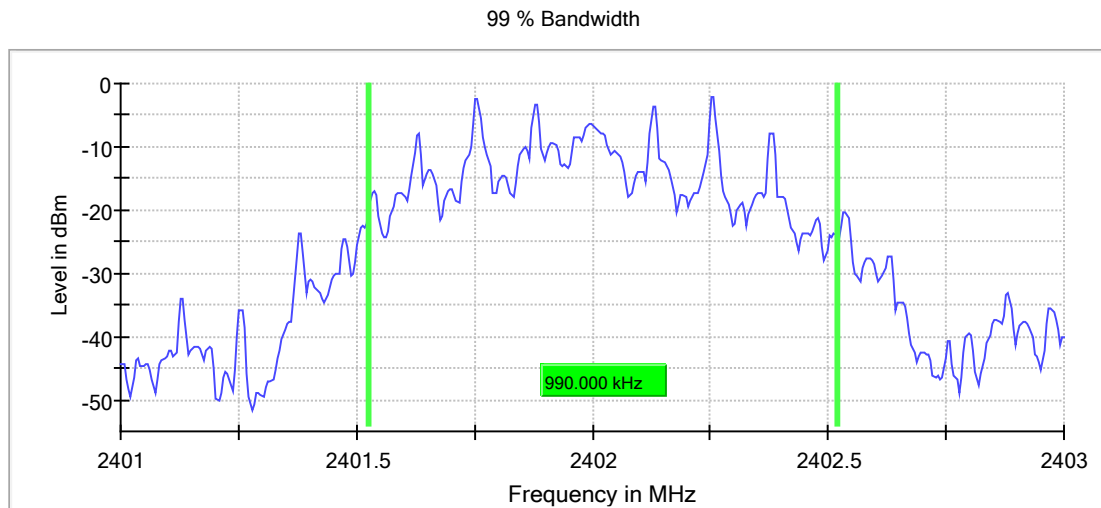
Customized settings.

### 99 % Bandwidth

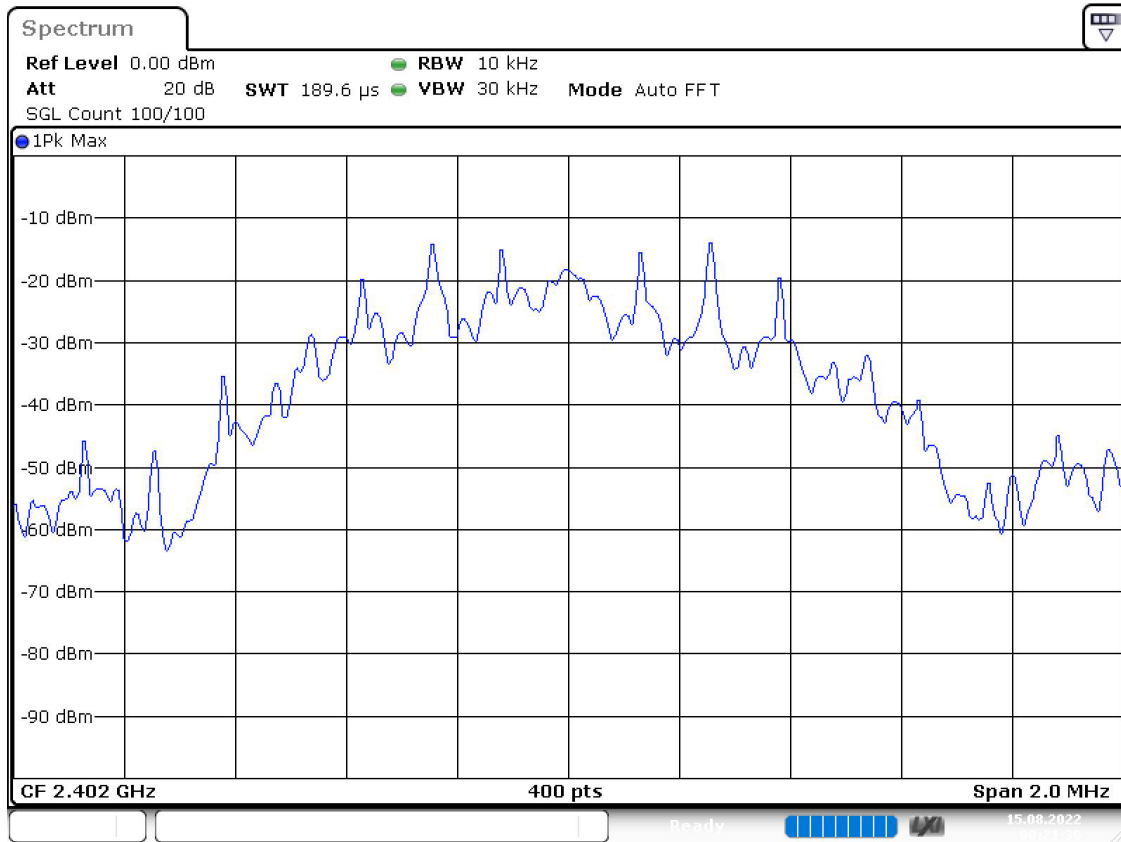
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.990000	---	---	2401.527500	2402.517500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS



Bandwidth



Date: 15.AUG.2022 00:21:30

## Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	$\geq$ 10.000 kHz
VBW	30.000 kHz	$\geq$ 30.000 kHz
SweepPoints	400	$\sim$ 400
Sweeptime	189.648 $\mu$ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off



## Band Edge low (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

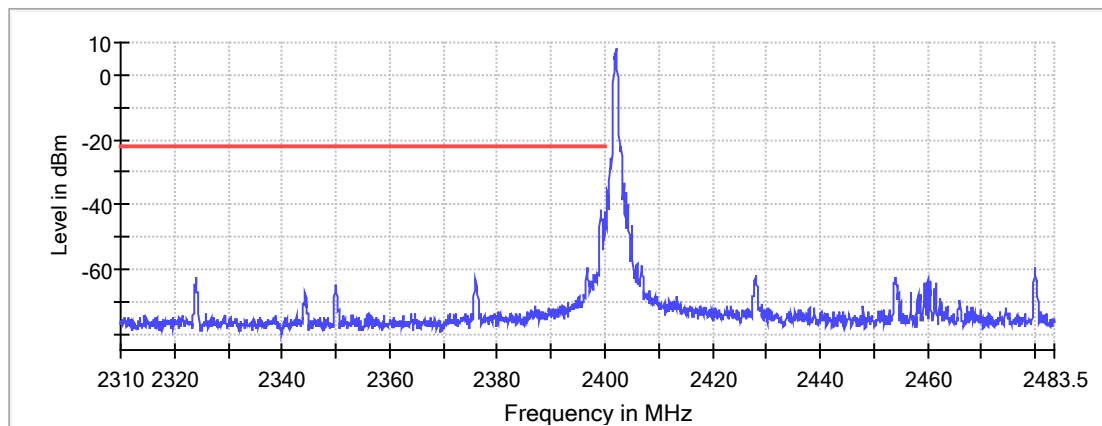
### Result

DUT Frequency (MHz)	Result
2402.000000	PASS

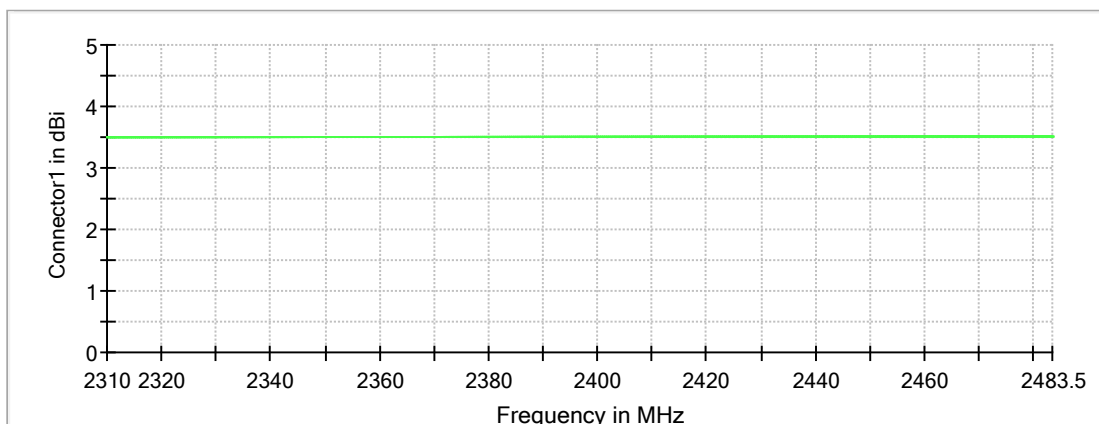
### Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.225000	-41.4	19.5	-22.0	PASS
2399.175000	-41.5	19.5	-22.0	PASS
2399.275000	-42.7	20.7	-22.0	PASS
2399.125000	-43.2	21.2	-22.0	PASS
2399.425000	-44.6	22.6	-22.0	PASS
2399.975000	-44.6	22.6	-22.0	PASS
2399.475000	-44.6	22.7	-22.0	PASS
2399.325000	-45.0	23.0	-22.0	PASS
2399.375000	-45.4	23.5	-22.0	PASS
2399.075000	-47.1	25.1	-22.0	PASS
2399.525000	-47.5	25.6	-22.0	PASS
2399.925000	-47.6	25.7	-22.0	PASS
2399.875000	-49.1	27.1	-22.0	PASS
2399.825000	-49.1	27.1	-22.0	PASS
2399.575000	-49.5	27.5	-22.0	PASS

Band Edge

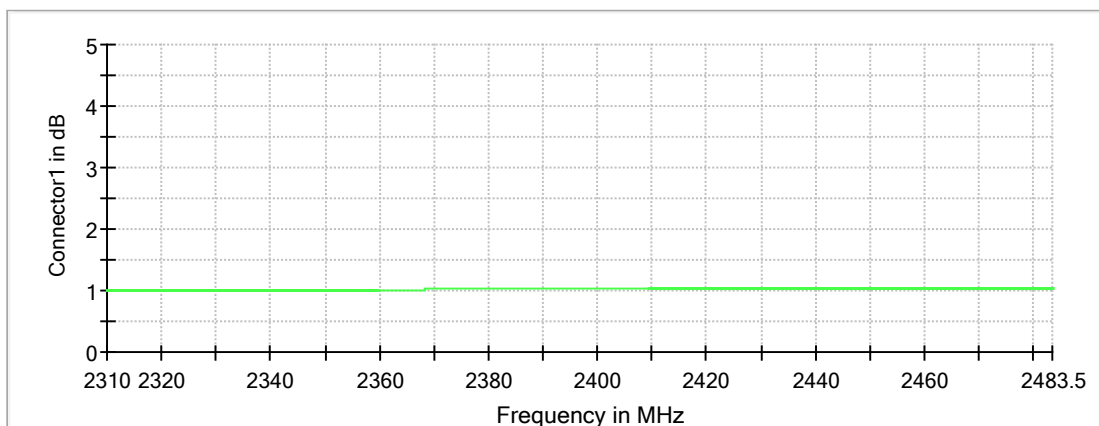


Gain



Connector1

Attenuation



Connector1

## Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
SweepTime	113.672 $\mu$ s	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

## Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	94.727 $\mu$ s	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

## Tx Spurious Emission (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

### Result

DUT Frequency (MHz)	Result
2402.000000	PASS

### Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

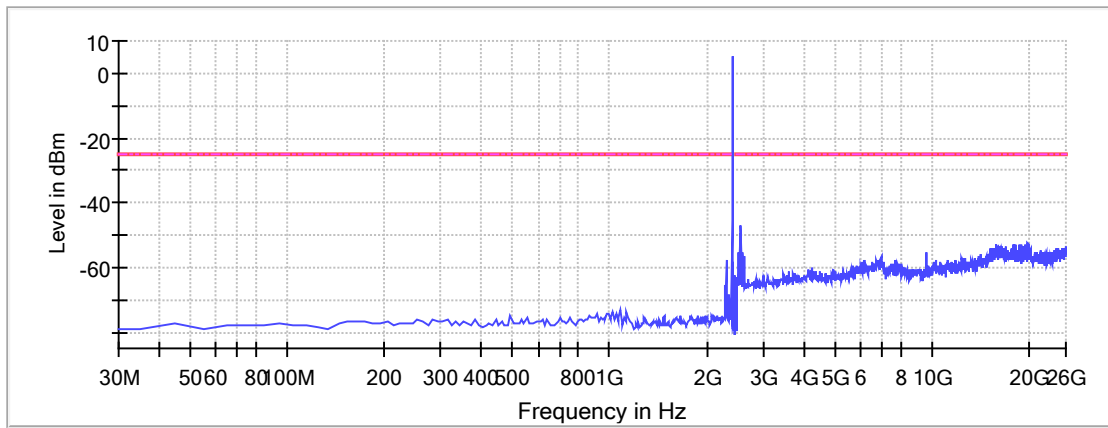
### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2395.021008	-45.4	20.5	-24.9
2558.456970	-47.0	22.1	-24.9
2528.474182	-49.4	24.5	-24.9
19848.531343	-52.6	27.7	-24.9
19858.525606	-52.8	27.9	-24.9
17859.673077	-52.9	28.0	-24.9
18879.087867	-52.9	28.0	-24.9
15840.832023	-52.9	28.0	-24.9
19498.732150	-53.1	28.2	-24.9
17889.655865	-53.1	28.2	-24.9
18539.282937	-53.2	28.3	-24.9
15880.809074	-53.2	28.3	-24.9
18159.500956	-53.2	28.3	-24.9
16870.241075	-53.3	28.3	-24.9
16170.642690	-53.3	28.4	-24.9

### Measurement Settings

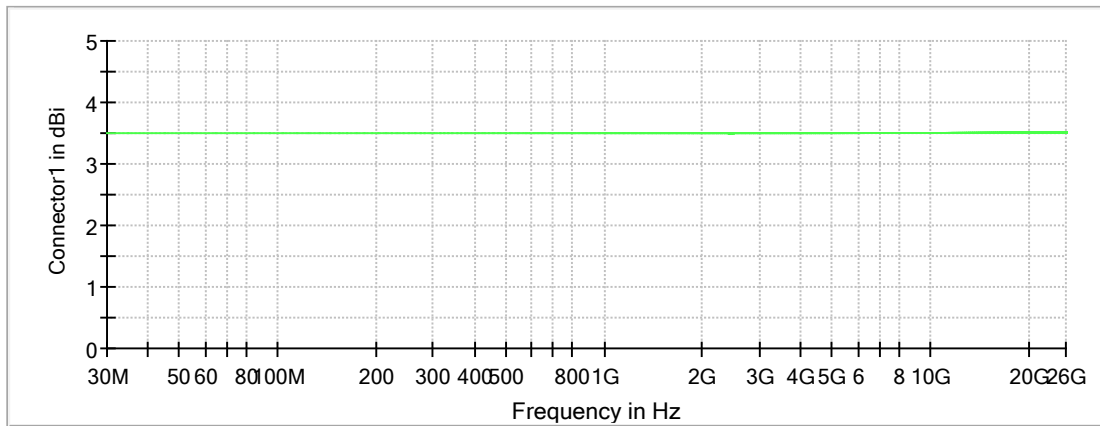
Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	26000.000000	1	1

Spurious



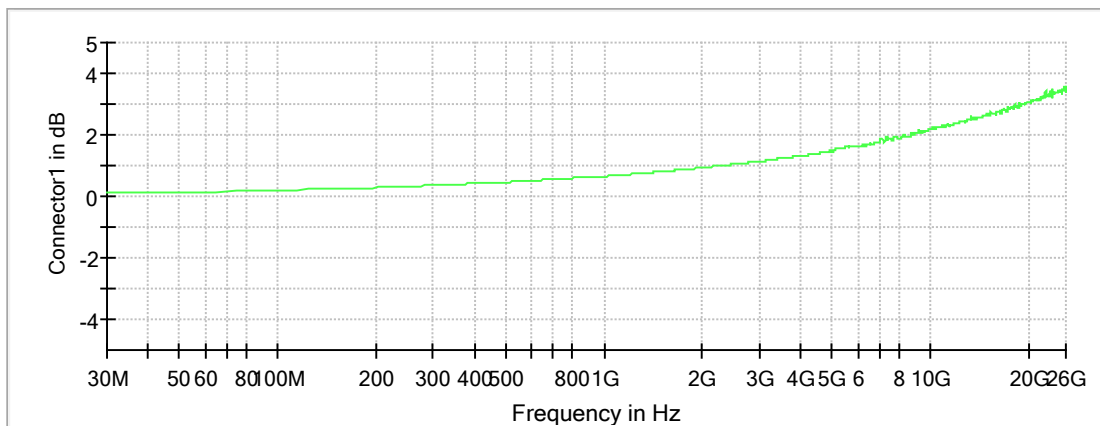
— Limit    — Sum Level    - - - Threshold    X Critical    X Final Critical

Gain



Connector1

Attenuation



Connector1

### Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	238	~ 238
SweepTime	23.700 ms	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

## Emissions in restricted frequency bands (Average) (2402 MHz; 15.000 dBm; 1 MHz)

Customized settings.

### Result

DUT Frequency (MHz)	Result
2402.000000	PASS

### Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

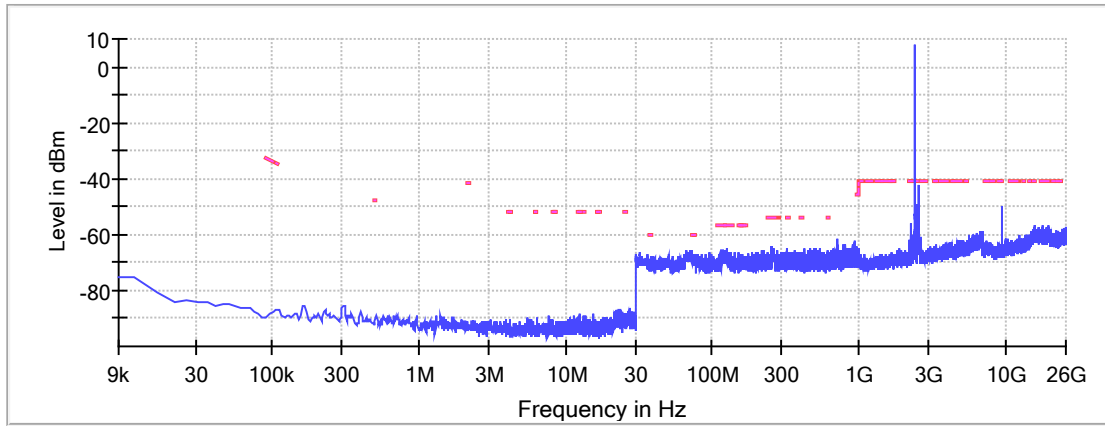
### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
73.275000	-65.9	6.0	-59.9
73.225000	-66.4	6.5	-59.9
73.325000	-66.9	7.0	-59.9
74.225000	-67.0	7.1	-59.9
74.175000	-67.1	7.2	-59.9
73.775000	-67.1	7.2	-59.9
74.075000	-67.1	7.2	-59.9
74.025000	-67.5	7.6	-59.9
73.375000	-67.6	7.7	-59.9
75.175000	-67.6	7.7	-59.9
73.725000	-67.7	7.8	-59.9
74.975000	-67.8	7.9	-59.9
75.025000	-67.8	7.9	-59.9
73.825000	-68.0	8.1	-59.9
74.875000	-68.1	8.2	-59.9

### Measurement Settings

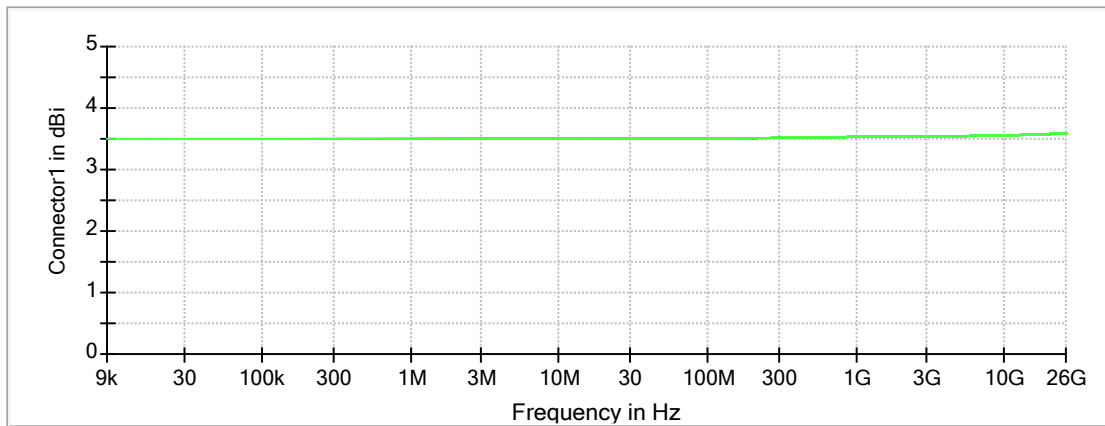
Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
0.009000	30.000000	2	2
30.000000	1000.000000	2	2
1000.000000	7000.000000	1	1
7000.000000	26000.000000	1	1

Restricted Band



— Limit    - - - - Threshold    × Critical    — Sum Level    × Final Critical

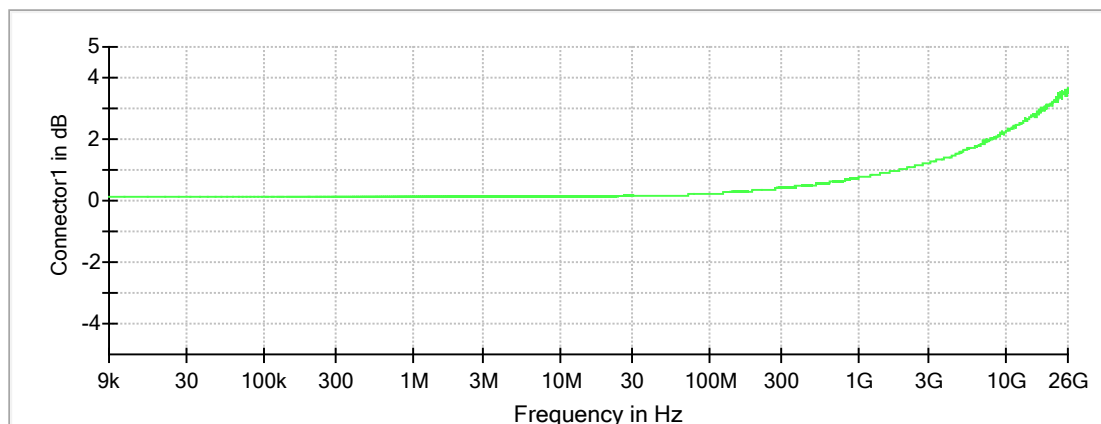
Gain



— Connector1



Attenuation



Connector1

### Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	12000	~ 12000
SweepTime	12.000 ms	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	Average	Average
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

### Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	5998	~ 5998
SweepTime	1.327 ms	AUTO
Reference Level	-20.000 dBm	-30.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

## Minimum Emission Bandwidth 6 dB (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

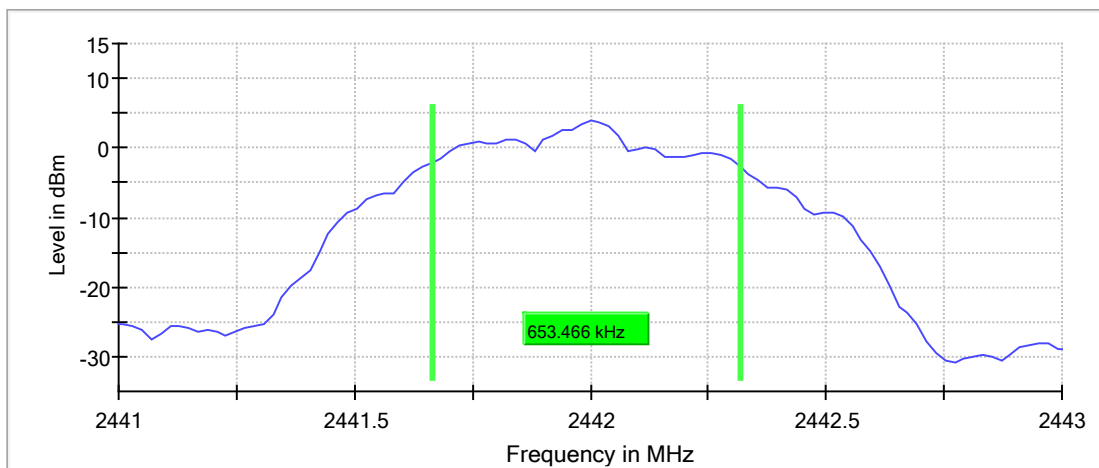
### 6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2442.000000	0.653466	0.500000	---	2441.663366	2442.316832

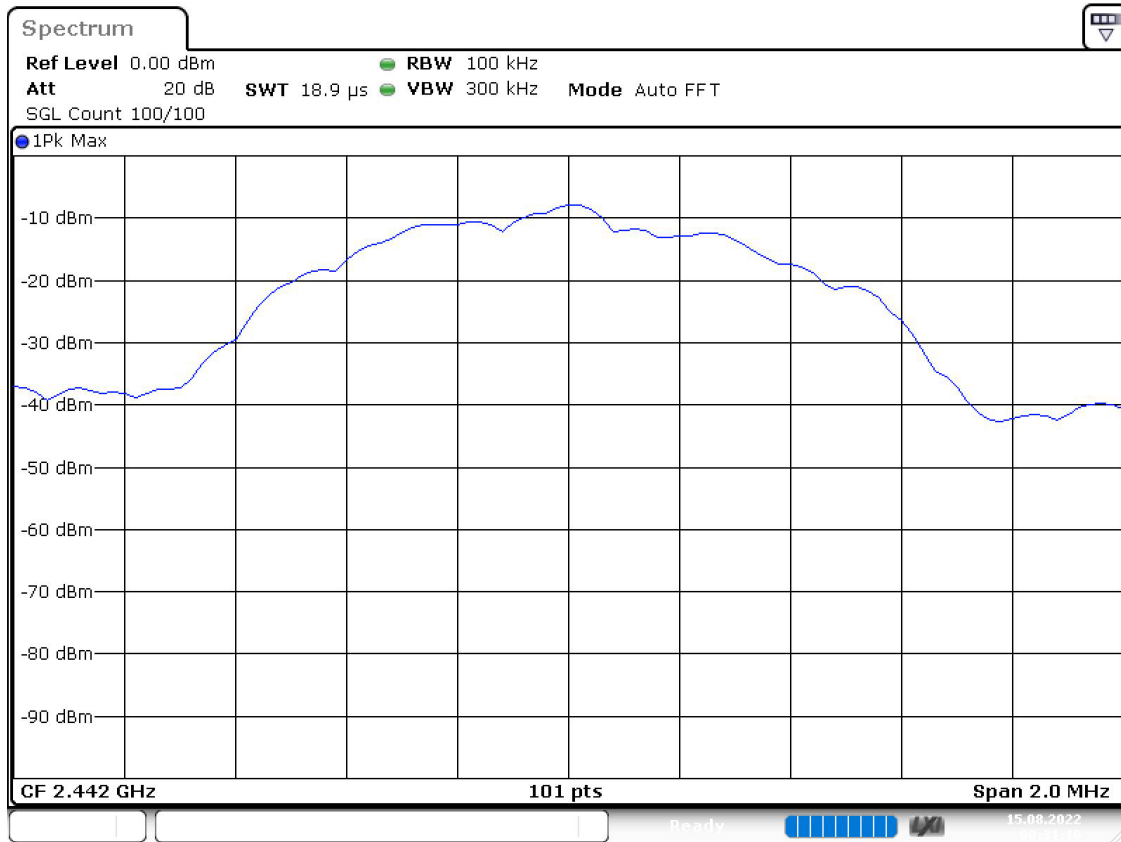
(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2442.000000	3.8	PASS

6 dB Bandwidth



Bandwidth



Date: 15.AUG.2022 00:31:11

## Occupied Channel Bandwidth 99% (2442 MHz; 15.000 dBm; 1 MHz)

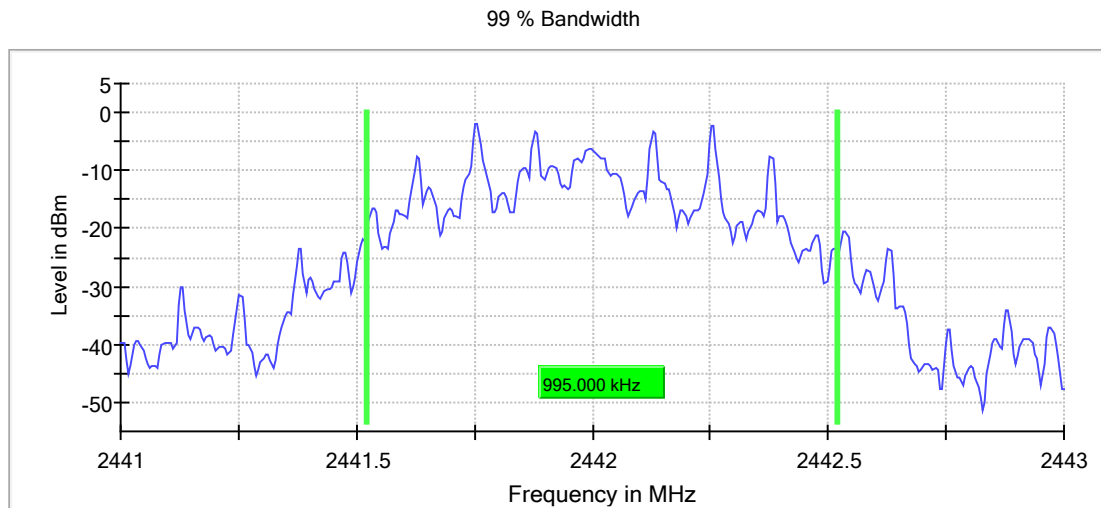
Customized settings.

### 99 % Bandwidth

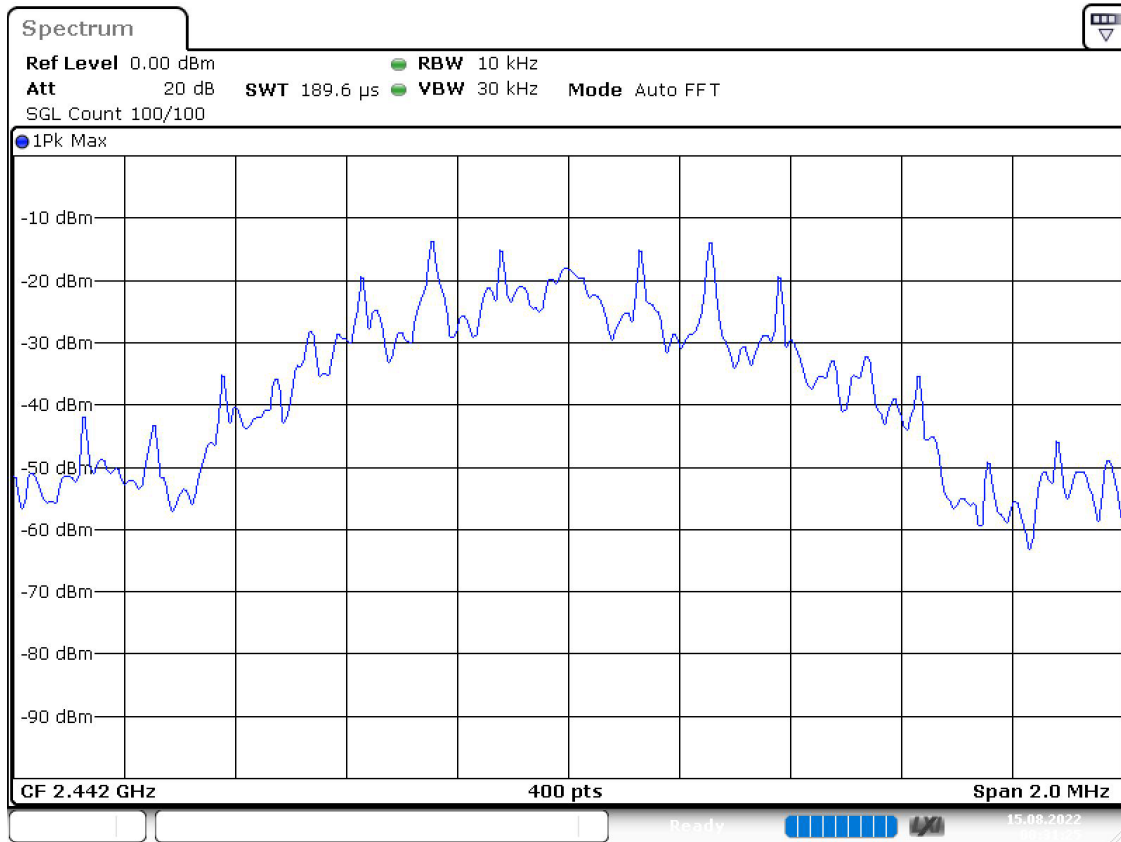
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2442.000000	0.995000	---	---	2441.522500	2442.517500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2442.000000	PASS



Bandwidth



Date: 15.AUG.2022 00:31:25

## Tx Spurious Emission (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

### Result

DUT Frequency (MHz)	Result
2442.000000	PASS

### Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

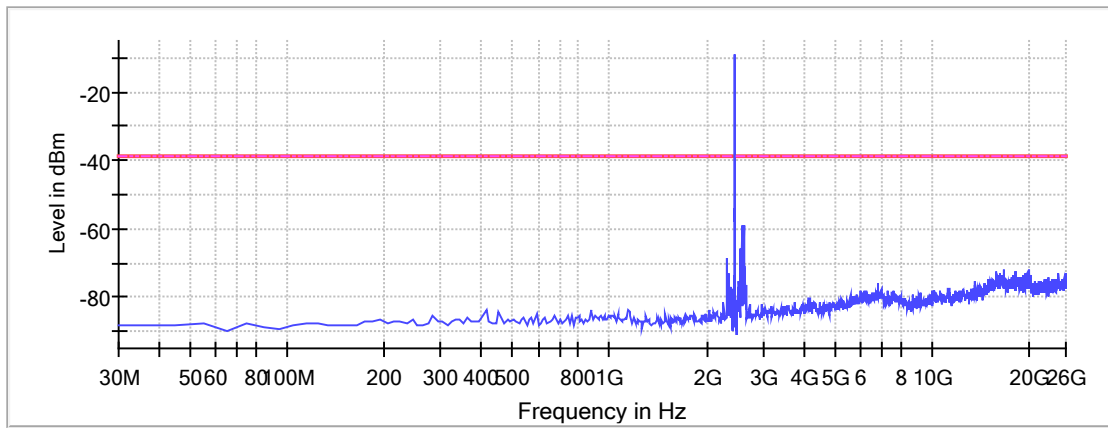
### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2598.434020	-59.0	20.3	-38.7
2568.451232	-59.2	20.5	-38.7
2548.462707	-65.9	27.2	-38.7
2315.357143	-68.7	30.0	-38.7
2628.416808	-71.0	32.3	-38.7
19928.485444	-71.8	33.1	-38.7
16800.281237	-72.1	33.4	-38.7
19918.491181	-72.4	33.6	-38.7
18199.478007	-72.6	33.9	-38.7
15810.849235	-72.7	34.0	-38.7
18169.495219	-72.8	34.1	-38.7
19528.714938	-72.9	34.2	-38.7
24525.846260	-72.9	34.2	-38.7
16200.625478	-72.9	34.2	-38.7
19908.496919	-72.9	34.2	-38.7

### Measurement Settings

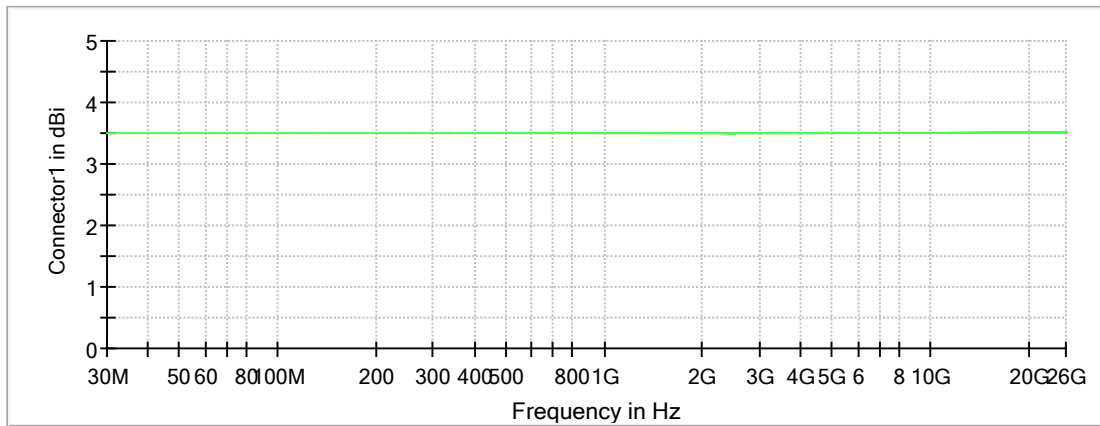
Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	26000.000000	1	1

Spurious



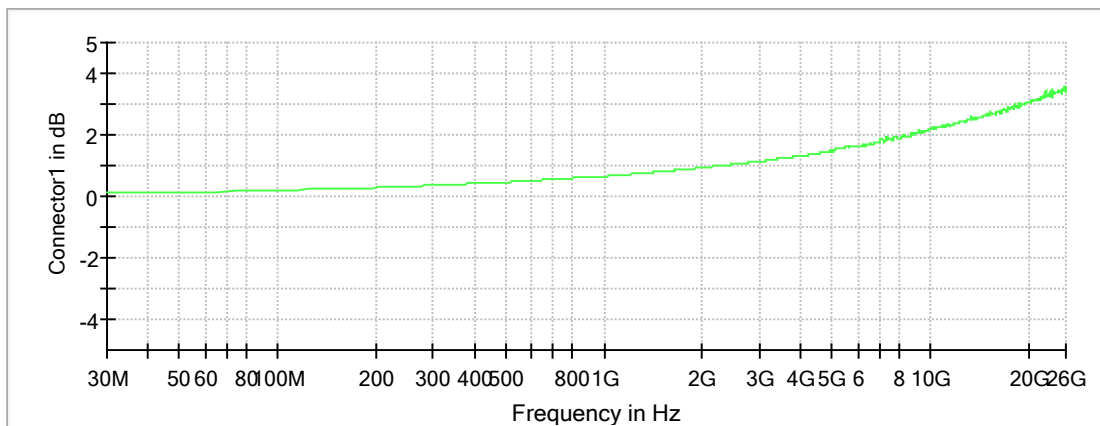
— Limit    — Sum Level    - - - - Threshold    X Critical    X Final Critical

Gain



Connector1

Attenuation



Connector1



## Emissions in restricted frequency bands (Average) (2442 MHz; 15.000 dBm; 1 MHz)

Customized settings.

### Result

DUT Frequency (MHz)	Result
2442.000000	PASS

### Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

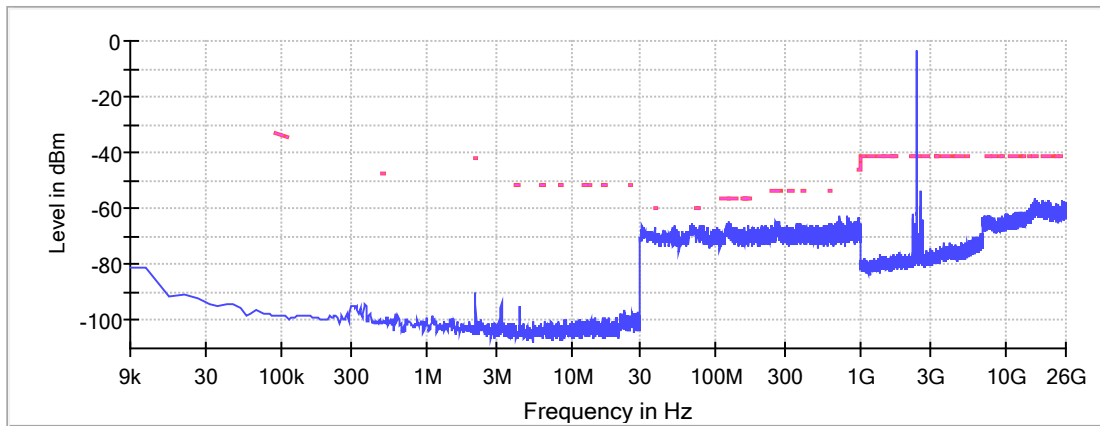
### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
73.075000	-66.8	6.9	-59.9
73.025000	-67.1	7.2	-59.9
73.125000	-67.3	7.4	-59.9
73.175000	-67.4	7.5	-59.9
73.725000	-67.6	7.7	-59.9
73.225000	-67.6	7.7	-59.9
73.275000	-67.6	7.7	-59.9
74.225000	-67.6	7.7	-59.9
74.175000	-67.7	7.8	-59.9
74.125000	-67.7	7.8	-59.9
73.675000	-67.8	7.9	-59.9
75.025000	-68.0	8.1	-59.9
73.325000	-68.0	8.1	-59.9
74.075000	-68.1	8.2	-59.9
74.975000	-68.2	8.3	-59.9

### Measurement Settings

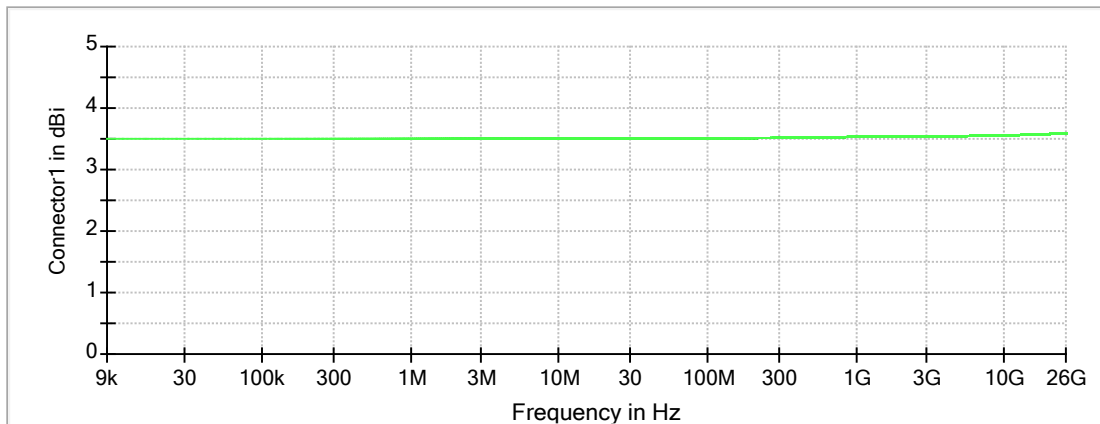
Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
0.009000	30.000000	2	2
30.000000	1000.000000	2	2
1000.000000	7000.000000	1	1
7000.000000	26000.000000	1	1

Restricted Band



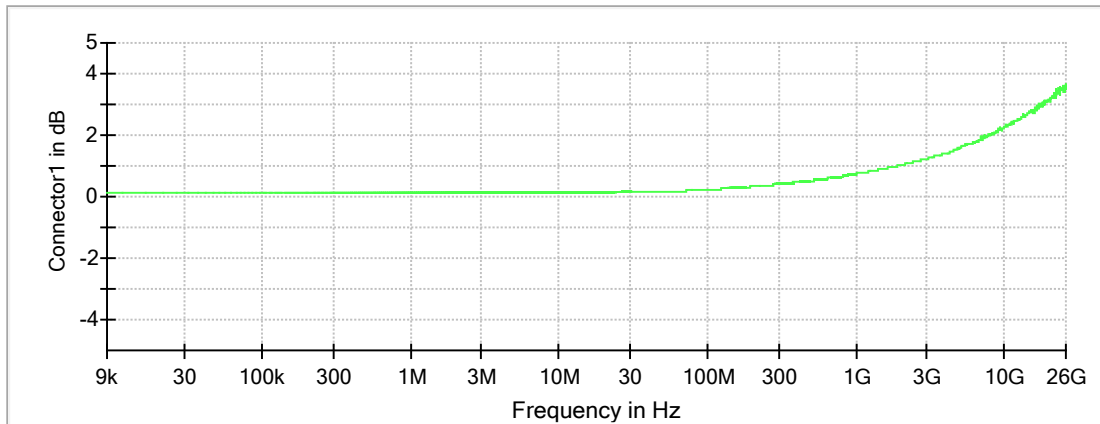
— Limit    - - - - Threshold    × Critical    — Sum Level    × Final Critical

Gain



— Connector1

Attenuation



— Connector1

## Minimum Emission Bandwidth 6 dB (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

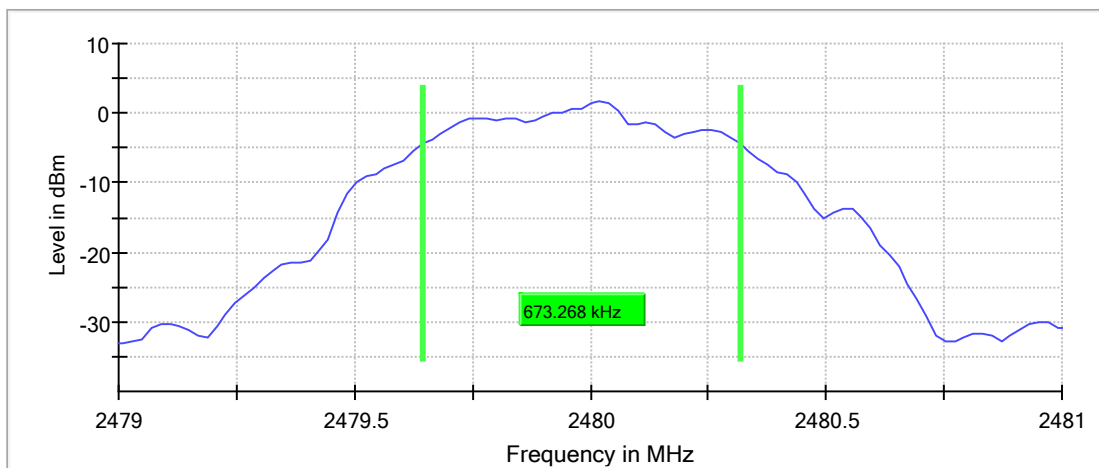
### 6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.673268	0.500000	---	2479.643564	2480.316832

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	1.8	PASS

6 dB Bandwidth



Bandwidth



Date: 15.AUG.2022 00:39:03

## Occupied Channel Bandwidth 99% (2480 MHz; 15.000 dBm; 1 MHz)

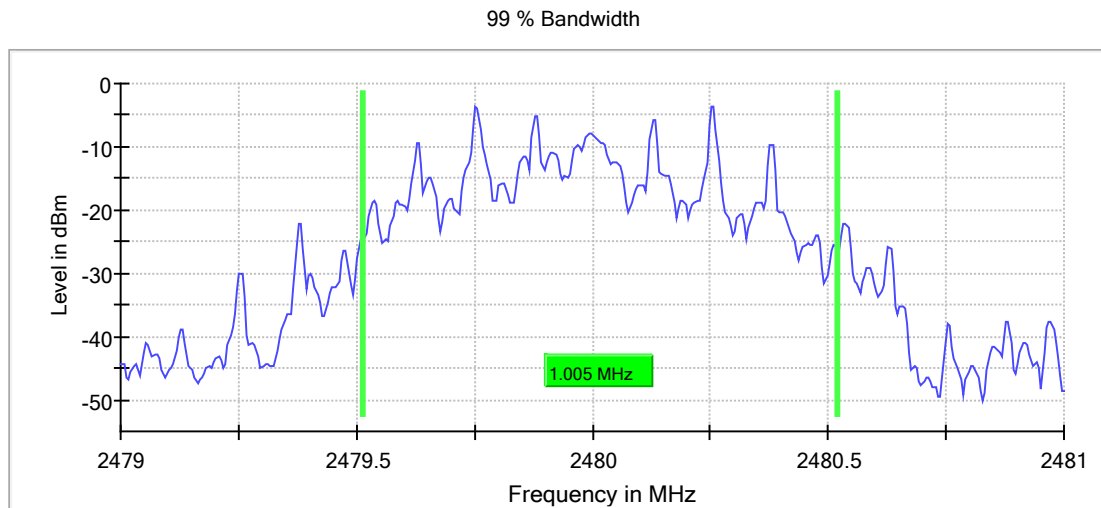
Customized settings.

### 99 % Bandwidth

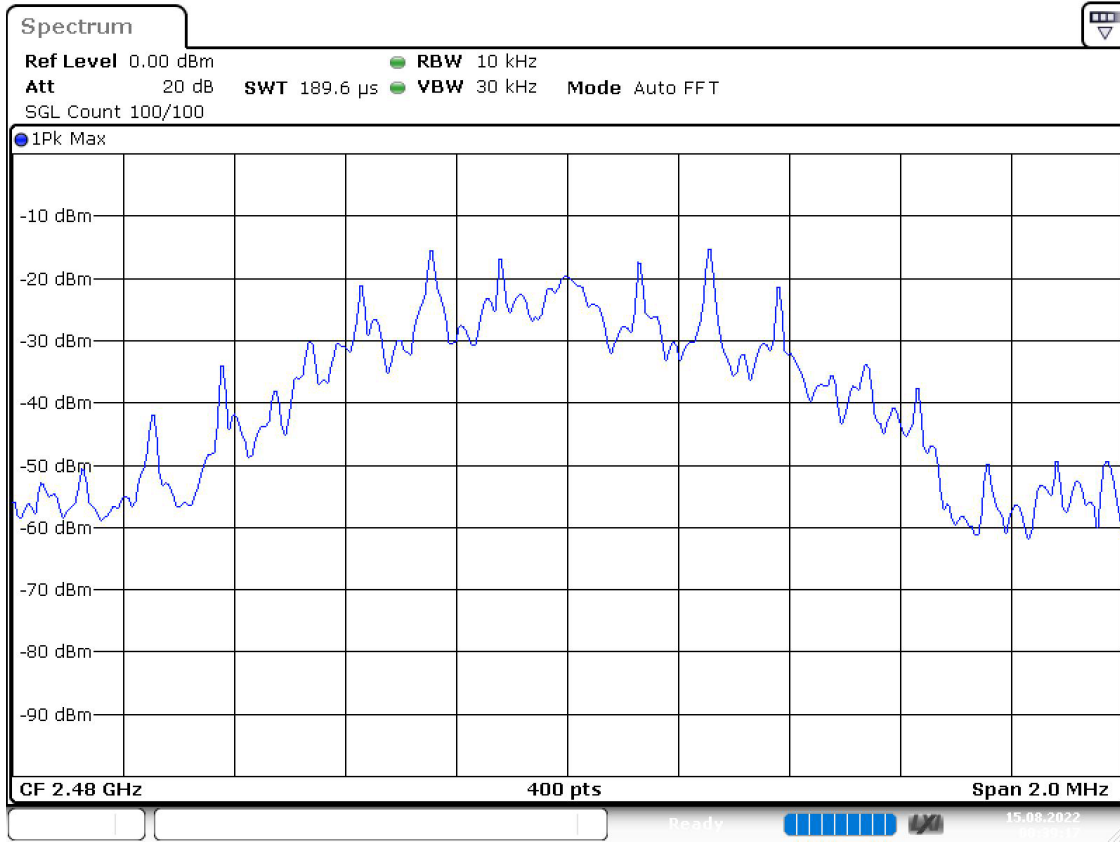
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.005000	---	---	2479.512500	2480.517500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS



Bandwidth



Date: 15.AUG.2022 00:39:17

## Band Edge high (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

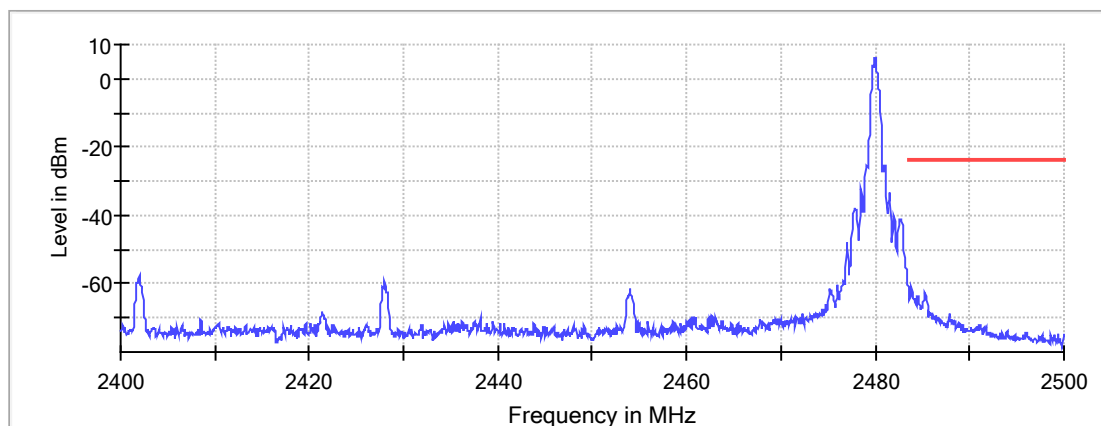
### Result

DUT Frequency (MHz)	Result
2480.000000	PASS

### Measurements

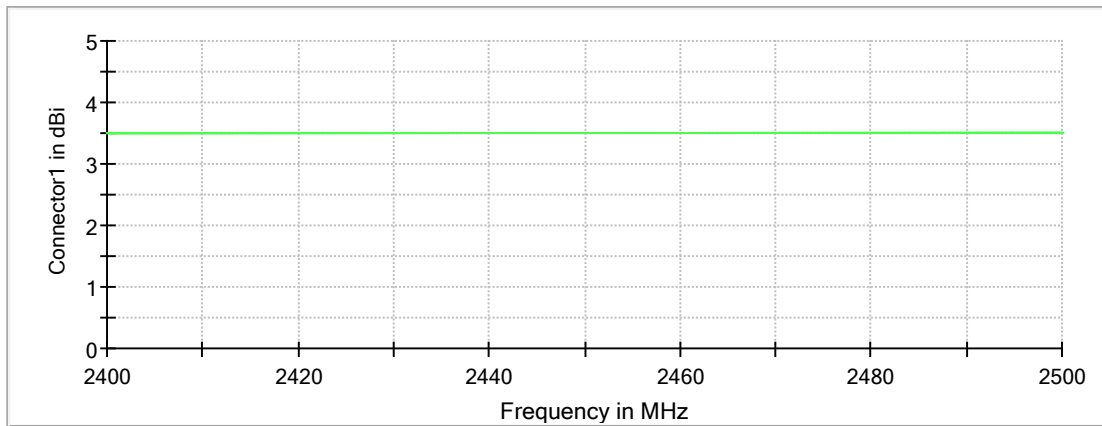
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.825000	-61.0	37.0	-24.0	PASS
2483.875000	-61.0	37.0	-24.0	PASS
2483.525000	-61.1	37.0	-24.0	PASS
2483.925000	-62.6	38.6	-24.0	PASS
2485.275000	-62.7	38.7	-24.0	PASS
2483.575000	-62.8	38.8	-24.0	PASS
2485.225000	-62.8	38.8	-24.0	PASS
2483.775000	-62.9	38.9	-24.0	PASS
2483.975000	-63.0	39.0	-24.0	PASS
2484.025000	-63.0	39.0	-24.0	PASS
2485.325000	-63.4	39.4	-24.0	PASS
2485.375000	-63.5	39.4	-24.0	PASS
2483.725000	-63.6	39.6	-24.0	PASS
2483.625000	-63.6	39.6	-24.0	PASS
2484.525000	-63.7	39.7	-24.0	PASS

Band Edge



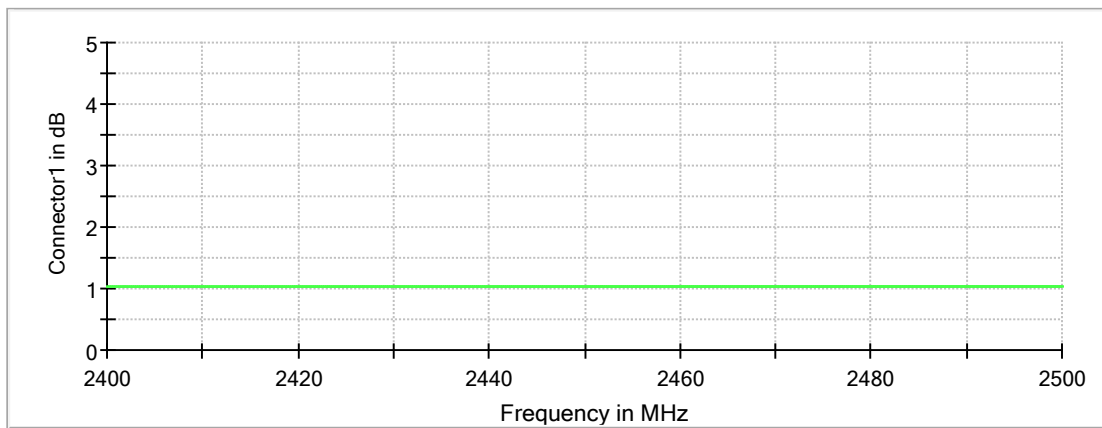


Gain



Connector1

Attenuation



Connector1

## Tx Spurious Emission (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

### Result

DUT Frequency (MHz)	Result
2480.000000	PASS

### Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

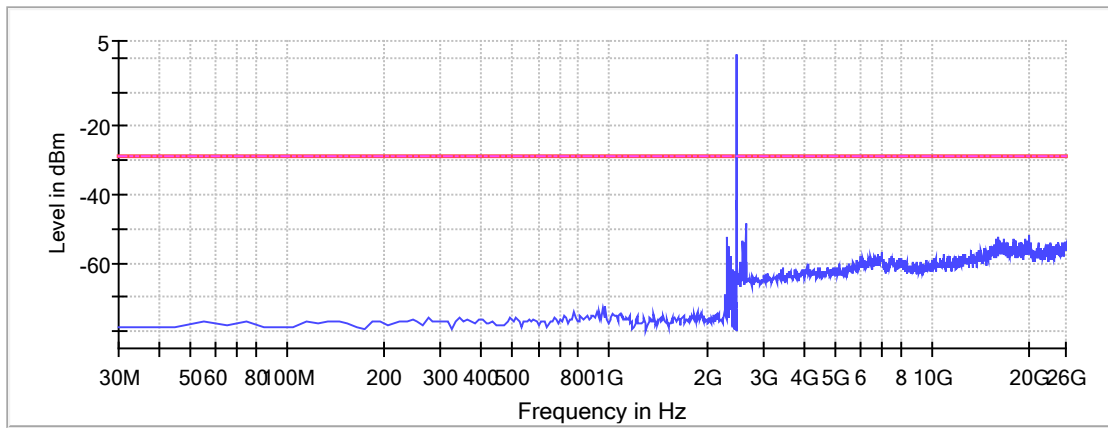
### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2638.411071	-48.5	19.8	-28.7
19898.502656	-51.8	23.2	-28.7
16120.671377	-52.5	23.8	-28.7
15940.774649	-52.6	23.9	-28.7
2325.315126	-52.6	23.9	-28.7
19958.468232	-52.6	24.0	-28.7
15790.860710	-52.8	24.1	-28.7
19558.697726	-53.0	24.3	-28.7
19908.496919	-53.0	24.4	-28.7
17889.655865	-53.0	24.4	-28.7
16130.665640	-53.2	24.5	-28.7
16790.286974	-53.2	24.5	-28.7
19568.691989	-53.4	24.7	-28.7
2588.439758	-53.5	24.8	-28.7
19548.703464	-53.5	24.8	-28.7

### Measurement Settings

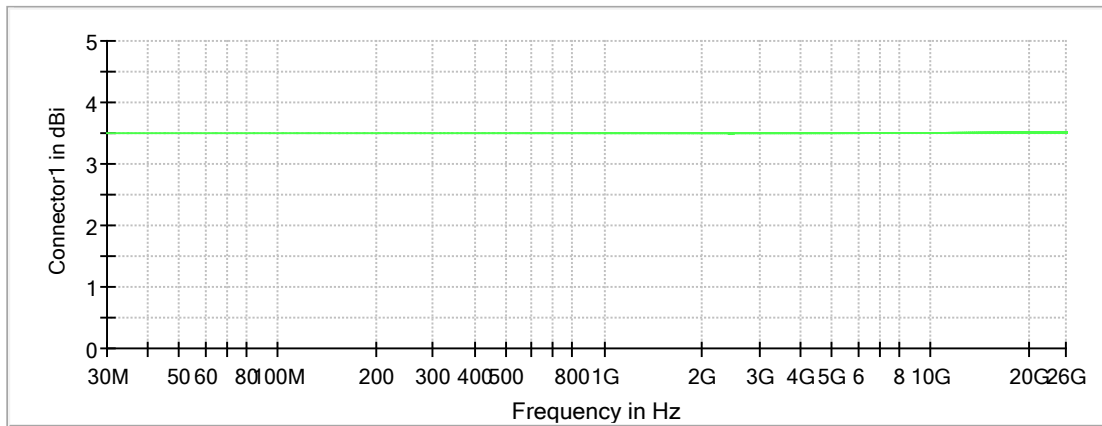
Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	26000.000000	1	1

Spurious



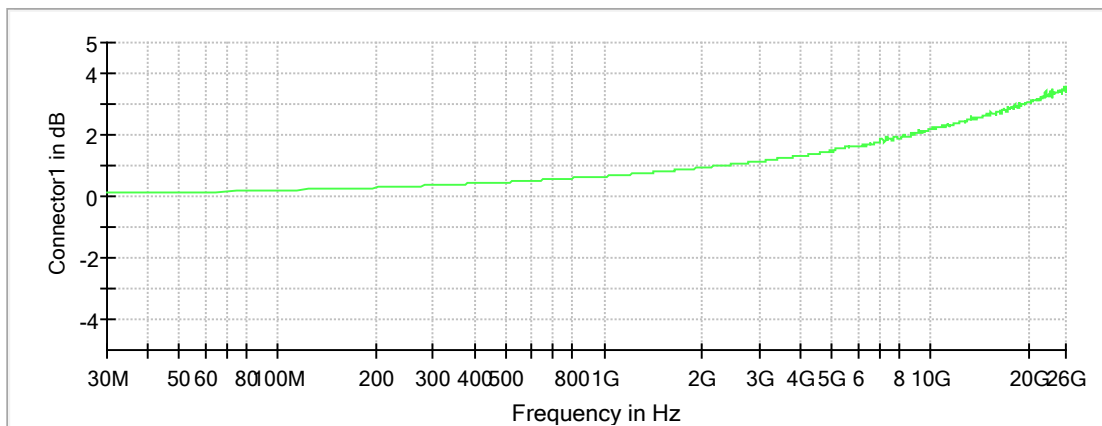
— Limit    — Sum Level    - - - Threshold    × Critical    × Final Critical

Gain



Connector1

Attenuation



Connector1

## Emissions in restricted frequency bands (Average) (2480 MHz; 15.000 dBm; 1 MHz)

Customized settings.

### Result

DUT Frequency (MHz)	Result
2480.000000	PASS

### Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
2483.750000	-40.6	-42.1	-41.2	0.9	PASS

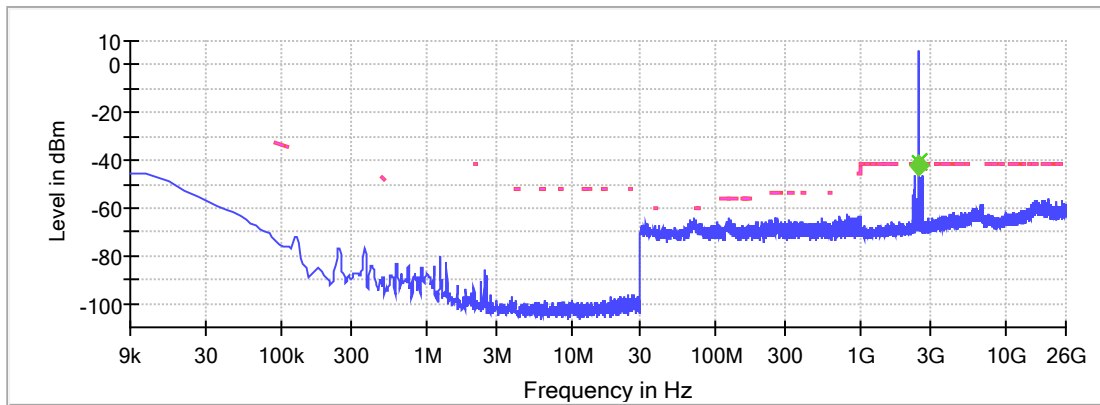
### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2483.750000	-40.6	-0.6	-41.2
2324.250000	-46.7	5.5	-41.2
73.125000	-65.8	5.9	-59.9
2324.750000	-47.3	6.1	-41.2
73.075000	-66.4	6.5	-59.9
73.175000	-66.4	6.5	-59.9
2323.750000	-48.0	6.8	-41.2
73.775000	-66.9	7.0	-59.9
73.825000	-67.0	7.1	-59.9
73.675000	-67.3	7.4	-59.9
73.625000	-67.3	7.4	-59.9
73.275000	-67.5	7.6	-59.9
73.425000	-67.7	7.8	-59.9
37.525000	-67.7	7.8	-59.9
74.275000	-67.8	7.9	-59.9

### Measurement Settings

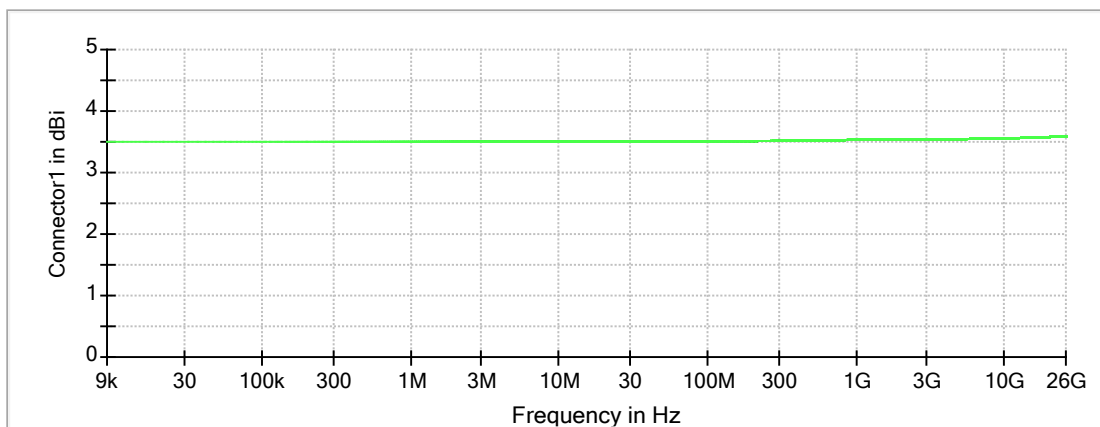
Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
0.009000	30.000000	2	2
30.000000	1000.000000	2	2
1000.000000	7000.000000	1	1
7000.000000	26000.000000	1	1

Restricted Band



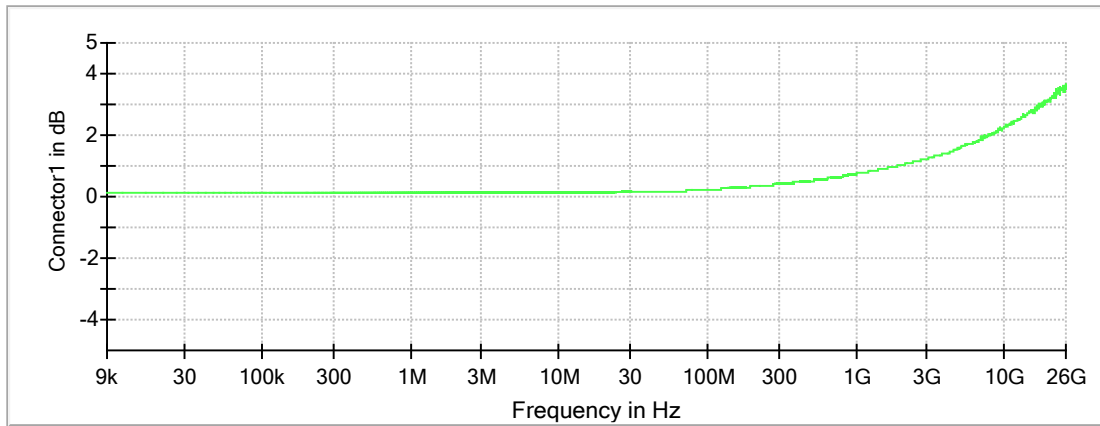
- Limit
- - - Threshold
- X Critical
- Sum Level
- X Final Critical
- ◆ Fail
- ◆ Pass

Gain



- Connector1

Attenuation



— Connector1

-- End of Test Report --