



Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR220200021301

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## TEST REPORT

**Application No.:** KSCR2202000213AT  
**FCC ID:** DMOXSWIEMSR  
**Applicant:** Sennheiser Electronic Corp  
**Address of Applicant:** 1 Enterprise Drive, Old Lyme, Connecticut 06371 United States  
**Manufacturer:** Sennheiser electronic GmbH & Co.KG  
**Address of Manufacturer:** Am Labor 1,30900 Wedemark, Germany  
**Factory:** Pasgao Electronics Co. Ltd  
**Address of Factory:** V1 2nd District, Industrial Transfer Park, Enping City, Guangdong, China 529400

**Equipment Under Test (EUT):**

**EUT Name:** XS Wireless  
**Model No.:** XSW IEM SR  
**Trade mark:** SENNHEISER  
**Standard(s) :** 47 CFR Part 15, Subpart C 15.236  
**Date of Receipt:** 2022-02-17  
**Date of Test:** 2022-02-17 to 2022-02-25  
**Date of Issue:** 2022-02-25

<b>Test Result:</b>	Pass*
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\* In the configuration tested, the EUT complied with the standards specified above.

Eric Lin  
EMC Laboratory Manager

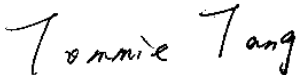
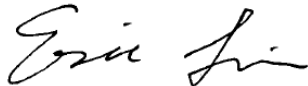


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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2022-02-25		Original

Authorized for issue by:				
				
		<u>Tommie_Tang/Project Engineer</u>		
				
		<u>Eric Lin/Reviewer</u>		



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# 1 Test Summary

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Maximum Conducted Output Power	47 CFR Part 15, Subpart C 15.236	ANSI C63.10 (2013) Section 6.7	47 CFR Part 15, Subpart C 15.236(d)	Pass
Occupied Bandwidth	47 CFR Part 15, Subpart C 15.236	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.236(f)(2)	Pass
Frequency Stability	47 CFR Part 15, Subpart C 15.236	ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart C 15.236(f)	Pass
Transmitter unwanted emissions(radiated or conducted)	47 CFR Part 15, Subpart C 15.236	EN 300 422-1 V1.4.2	47 CFR Part 15, Subpart C 15.236(g)	Pass
Necessary bandwidth (BN) for analogue systems	47 CFR Part 15, Subpart C 15.236	EN 300 422-1 V1.4.2	47 CFR Part 15, Subpart C 15.236(g)	Pass
AC Main Conducted Emissions	47 CFR Part 15, Subpart C 15.236	ANSI C63.10(2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass



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### 3 General Information

#### 3.1 Details of E.U.T.

Stereo Transmitter & Power Supply	Stereo Transmitter: XSW IEM SR Power Supply : SSC-5WVI-12 120050 Input: AC 120-240V 50/60Hz 0.2A Output: DC 12V 0.5A 6W DC cable:187cm unshielded
Test Voltage:	AC 120V, 60Hz or AC 240V, 50Hz Note: Both nominal AC 120V, 60Hz and AC 240 V, 50Hz are required for testing in accordance with FCC KDB174176, this report only shows the results of the worst test result(AC 120V, 60Hz);
Frequency Range:	476-500MHz 572-596MHz
Modulation:	FM
Number of Channel:	10
Sample Type:	Mobile device
Antenna Type:	Omni Antenna
Antenna Gain:	-1.5 dBi
Hardware Version:	XSW-IEM-TX-MB-V7.5 XSW-IEM-TX V9.3
Software version:	2.1

#### 476-500MHz

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	476.2MHz	4	478.9MHz	7	486.7MHz	10	499.9MHz
2	476.8MHz	5	480.7MHz	8	491.8MHz		
3	477.7MHz	6	483.1MHz	9	495.1MHz		

#### Test Channel:

Channel	Frequency
The lowest channel (CH1)	476.2MHz
The middle channel (CH7)	486.7MHz
The highest channel (CH10)	499.9MHz



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## 572-596MHz

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	572.2MHz	4	574.9MHz	7	582.7MHz	10	595.9MHz
2	572.8MHz	5	576.7MHz	8	587.8MHz		
3	573.7MHz	6	579.1MHz	9	591.1MHz		

## Test Channel:

Channel	Frequency
The lowest channel (CH1)	572.2MHz
The middle channel (CH7)	582.7MHz
The highest channel (CH10)	595.9MHz

## 3.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Power Amplifier	Yamaha	GA-15	IQN150002
Professional Analog Audio Signal Generator	NTI	MR-PRO	600000310
Audio Cable	Provided by SGS	YPH-8310	SEA08A00

## 3.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$8.4 \times 10^{-8}$
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz) 5.9dB (Above 1GHz)
9	Radiated Spurious Emission Test	4.2dB (Below 30MHz) 4.5dB (30MHz-1GHz) 5.1dB (1GHz-18GHz) 5.4dB (Above 18GHz)
10	Temperature Test	1 °C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%



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Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .



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### 3.4 Test Location

All tests were performed at:

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No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888

Fax: +86 512 5737 0818

No tests were sub-contracted.

### 3.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L4354)**

CNAS has accredited Compliance Certification Services (Kunshan) Inc. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 2541.01)**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC (Designation Number: CN1172)**

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory.

Designation Number: CN1172.

- **ISED (CAB identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

Company Number: 2324E

- **VCCI (Member No.: 1938)**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

### 3.6 Deviation from Standards

None

### 3.7 Abnormalities from Standard Conditions

None



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## 4 Equipment List

Item	Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal. Due Date
<b>Conducted Emission at Mains Terminals (150kHz-30MHz)</b>						
1	EMI Test Receive	R&S	ESCI	100781	01/22/2022	01/21/2023
2	LISN	R&S	ENV216	101604	10/12/2021	10/11/2022
3	LISN	Schwarzbeck	NNLK 8129	8129-143	10/12/2021	10/11/2022
4	Pulse Limiter	R&S	ESH3-Z2	100609	01/22/2022	01/21/2023
5	CE test Cable	Thermax	/	14	10/16/2021	10/15/2022
6	Test Software	Faratronic	EZ-EMC	CCS-03A1	N.C.R	N.C.R
<b>RF Conducted Test</b>						
1	Spectrum Analyzer	Agilent	E4446A	MY44020154	04/16/2021	04/15/2022
2	Spectrum Analyzer	Keysight	N9020A	MY55370209	10/11/2021	10/10/2022
4	Signal Generator	Agilent	N5182A	MY50142015	08/27/2021	08/26/2022
5	Spectrum Analyzer	Keysight	N9030B	MY61330164	01/22/2022	01/21/2023
6	Vector Signal Generator	R&S	SMW200A	110074	10/12/2021	10/11/2022
7	Radio Communication Test Station	Anritsu	MT8000A	6262012849	09/23/2021	09/22/2022
8	Radio Communication Analyzer	Anritsu	MT8821C	6201692222	09/23/2021	09/22/2022
9	Power Meter	Anritsu	ML2495A	1445010	04/15/2021	04/14/2022
10	Switcher	CCSRF	FY562	KUS2001M001-3	10/12/2021	10/11/2022
11	AC Power Source	EXTECH	6605	1570106	N.C.R	N.C.R
12	DC Power Supply	Aglient	E3632A	MY50340053	N.C.R	N.C.R
13	6dB Attenuator	Mini-Circuits	NAT-6-2W	15542-1	N.C.R	N.C.R
14	Power Divider	AISI	IOWOPE2068	PE2068	N.C.R	N.C.R
15	Filter	MICRO-TRONICS	BRM50701	5	N.C.R	N.C.R
16	Conducted Test Cable	/	RF01-RF04	/	04/15/2021	04/14/2022
17	Software	BST	TST-PASS	N/A	N/A	N/A
18	Temp. / Humidity Chamber	TERCHY	MHK-120AK	X30109	04/15/2021	04/14/2022
19	Thermometer	Anymetre	TH603	CCS007	10/14/2021	10/13/2022
<b>RF Radiated Test</b>						
1	Spectrum Analyzer	R&S	FSV40	101493	10/11/2021	10/10/2022
2	Signal Generator	Agilent	E8257C	MY43321570	10/18/2021	10/17/2022
3	Loop Antenna	Schwarzbeck	HXY29170	9170-108	02/22/2021	02/21/2022
4	Bilog Antenna	TESEQ	CBL 6112D	35403	06/21/2021	06/20/2023
5	Bilog Antenna	SCHWARZBECK	VULB9160	9160-3342	04/13/2021	04/12/2023
6	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	267	10/26/2020	10/25/2022
7	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	00143290	02/22/2021	02/21/2023
8	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	BBHA9170171	02/22/2021	02/21/2022
9	Pre-Amplifier(30MHz~18GHz)	LNA	/	/	04/15/2021	04/14/2022
10	Amplifier(18~40GHz)	COM-POWER	PAM-840A	461332	10/18/2021	10/17/2022
11	Low Pass Filter	MICRO-TRONICS	VLFX-950	RV142900829	N.C.R	N.C.R
12	High Pass Filter	Mini-Circuits	VHF-1200	15542	N.C.R	N.C.R
13	Filter (815 MHz~860 MHz)	MICRO-TRONICS	BRM14697	1	N.C.R	N.C.R



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14	RE test cable	/	RE01-RE04	/	04/15/2021	04/14/2022
15	Software	Faratronic	EZ EMC	N/A	N/A	N/A



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## 5 Radio Spectrum Matter Test Results

### 5.1 Transmitter output power

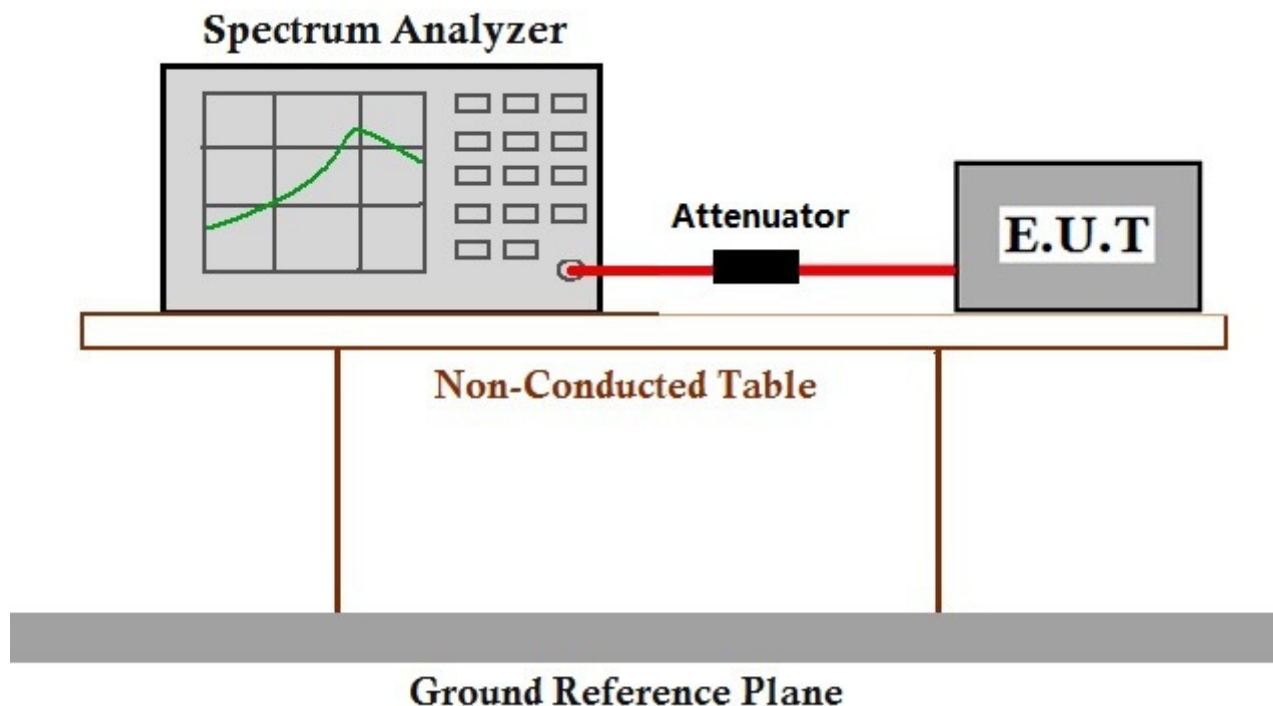
Test Requirement 47 CFR Part 15, Subpart C 15.236(d)  
Test Method: ANSI C63.10 (2013) Section 6.7  
Limit: 17dBm

#### 5.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1010 mbar  
Test mode: 02: Tx mode, Keep the EUT in transmitting mode.

#### 5.1.2 Test Setup Diagram



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## 5.1.3 Measurement Procedure and Data

Modulation Type	Channel	Frequency (MHz)	Measured Maximum Average Power(dBm)	Antenna Gain: (dBi)	EIRP: (dBm)	Limits EIRP (dBm)	Verdict
Single Carrier	1	476.2	14.551	-1.5	13.051	17	Pass
	7	486.7	13.292	-1.5	11.792	17	Pass
	10	499.9	12.066	-1.5	10.566	17	Pass
Single Carrier	1	572.2	13.032	-1.5	11.532	17	Pass
	7	582.7	13.533	-1.5	12.033	17	Pass
	10	595.9	13.71	-1.5	12.21	17	Pass



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## 5.2 Occupied bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.236(f)(2)  
 Test Method: ANSI C63.10 (2013) Section 6.9  
 Limit: <200 kHz

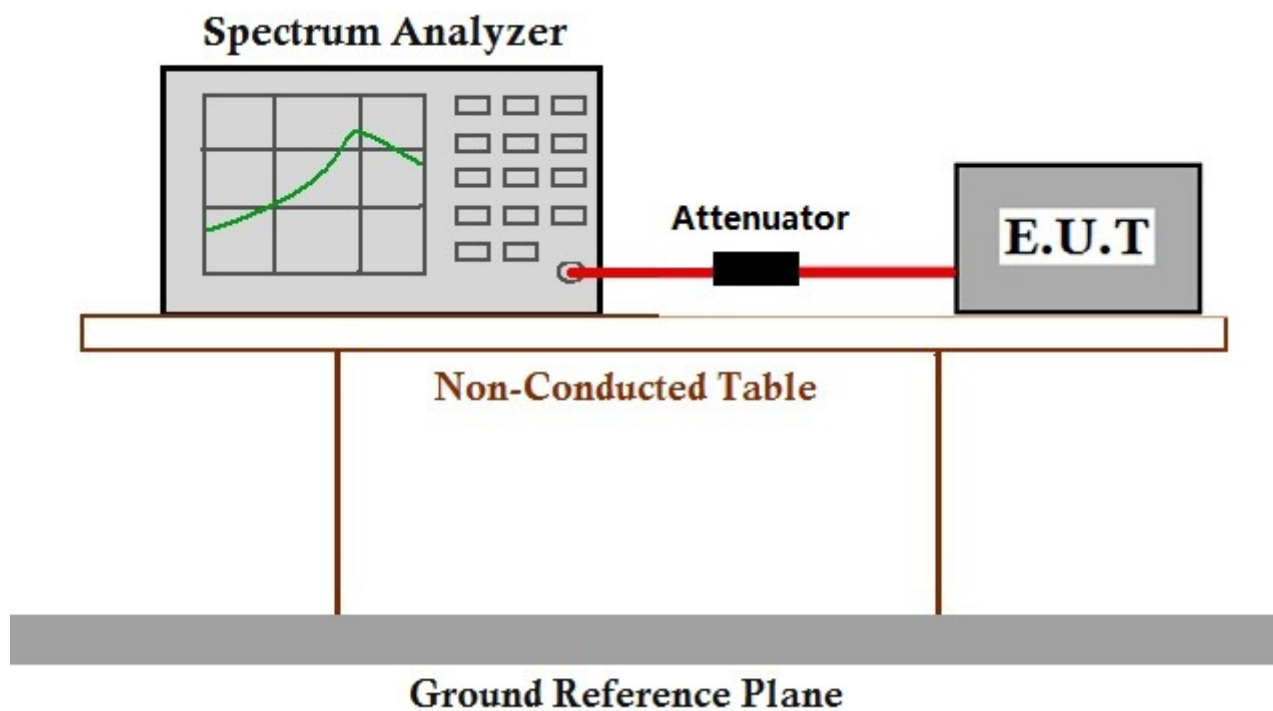
### 5.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1010 mbar

Test mode: 02: Tx mode, Keep the EUT in transmitting mode.

### 5.2.2 Test Setup Diagram



### 5.2.3 Measurement Procedure and Data

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (KHz)	Limits (KHz)	Verdict
FM	1	476.2	91.099	200	Pass
	7	486.7	93.931		Pass



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	10	499.9	96.814		Pass
FM	1	572.2	92.971	200	Pass
	7	582.7	92.442		Pass
	10	595.9	96.211		Pass



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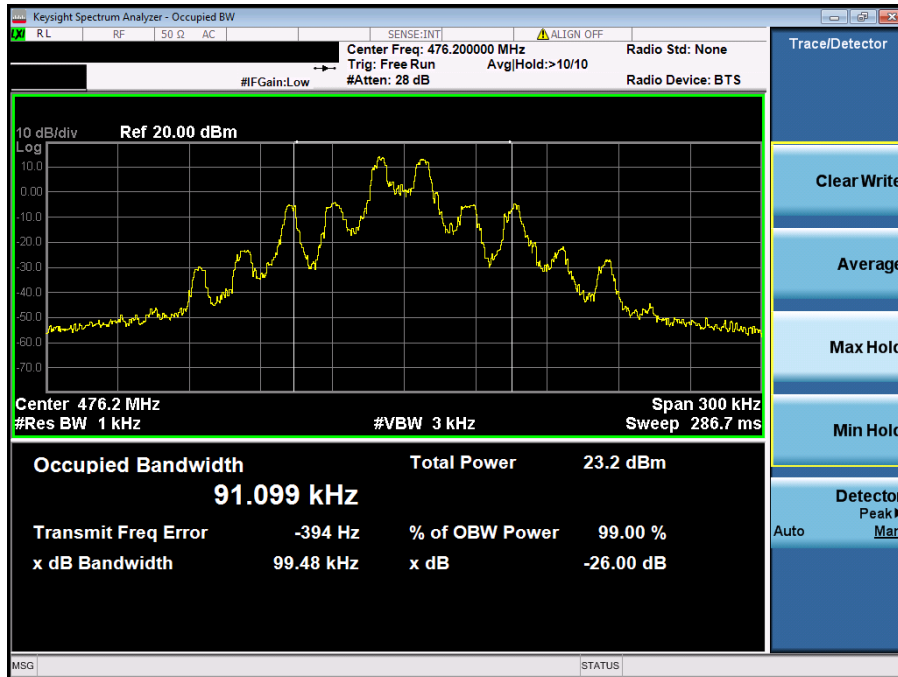
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## Test Plots:



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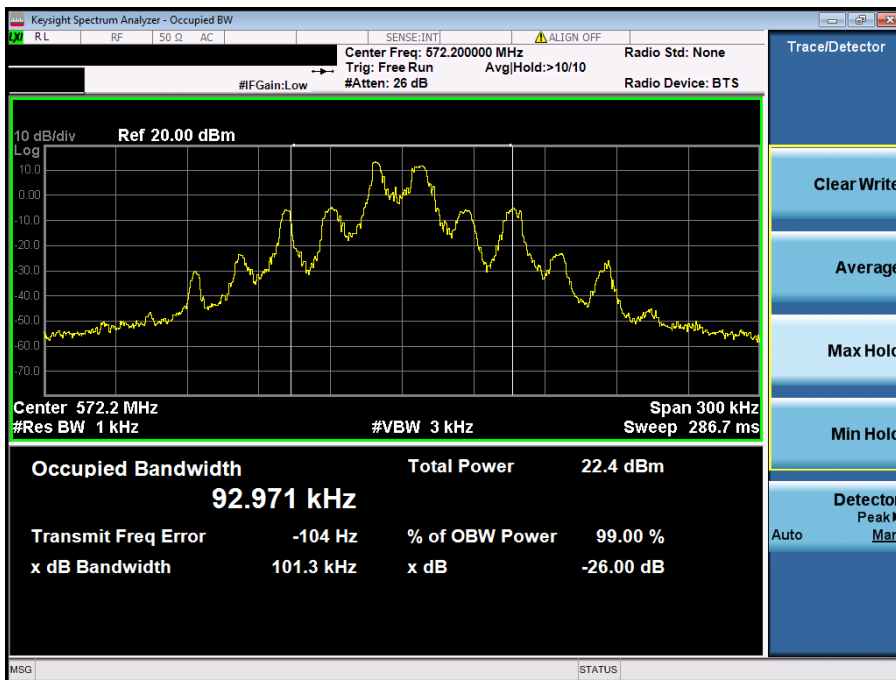
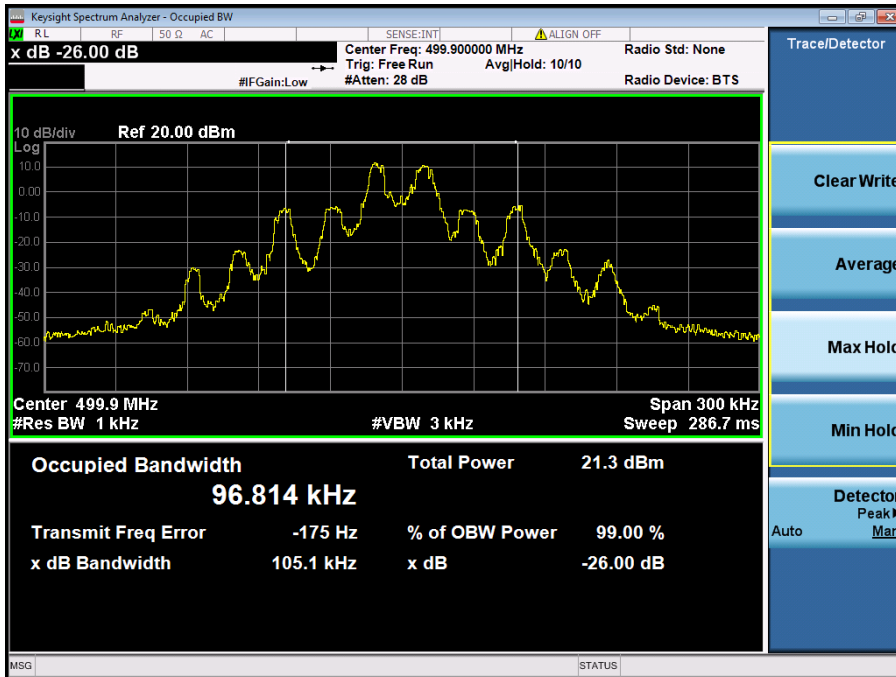
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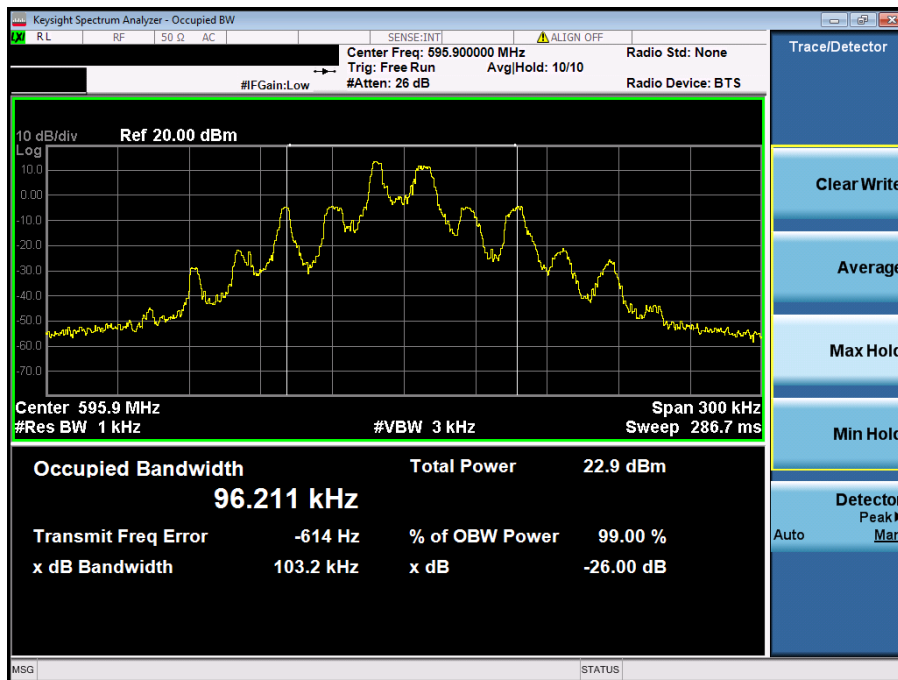
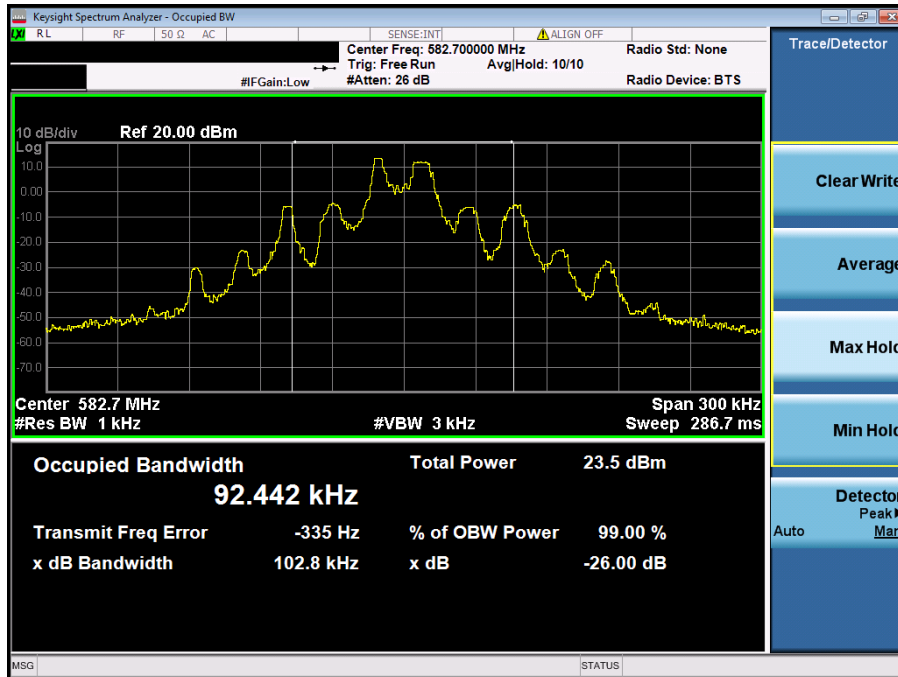
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### 5.3 AC Main Conducted Emissions

Test Requirement	47 CFR Part 15, Subpart C 15.207
Test Method:	ANSI C63.10(2013) Section 6.2
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

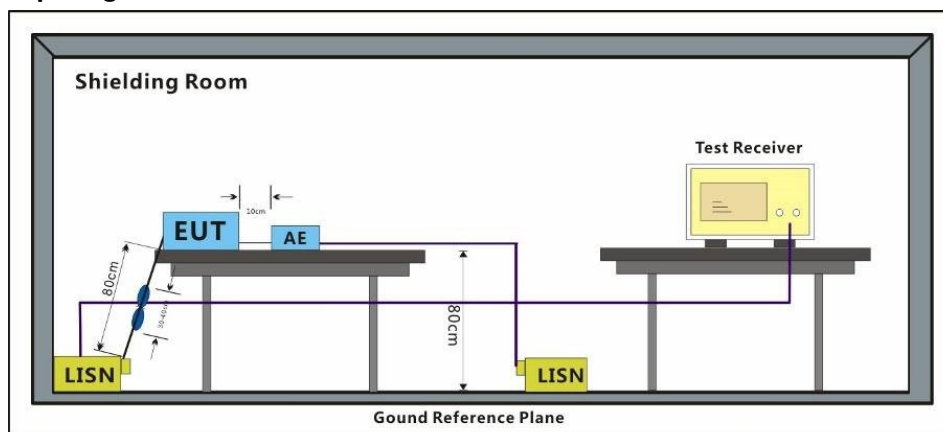
#### 5.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1010 mbar

Test mode: 02: Tx mode, Keep the EUT in transmitting mode.

#### 5.3.2 Test Setup Diagram



#### 5.3.3 Measurement Procedure and Data



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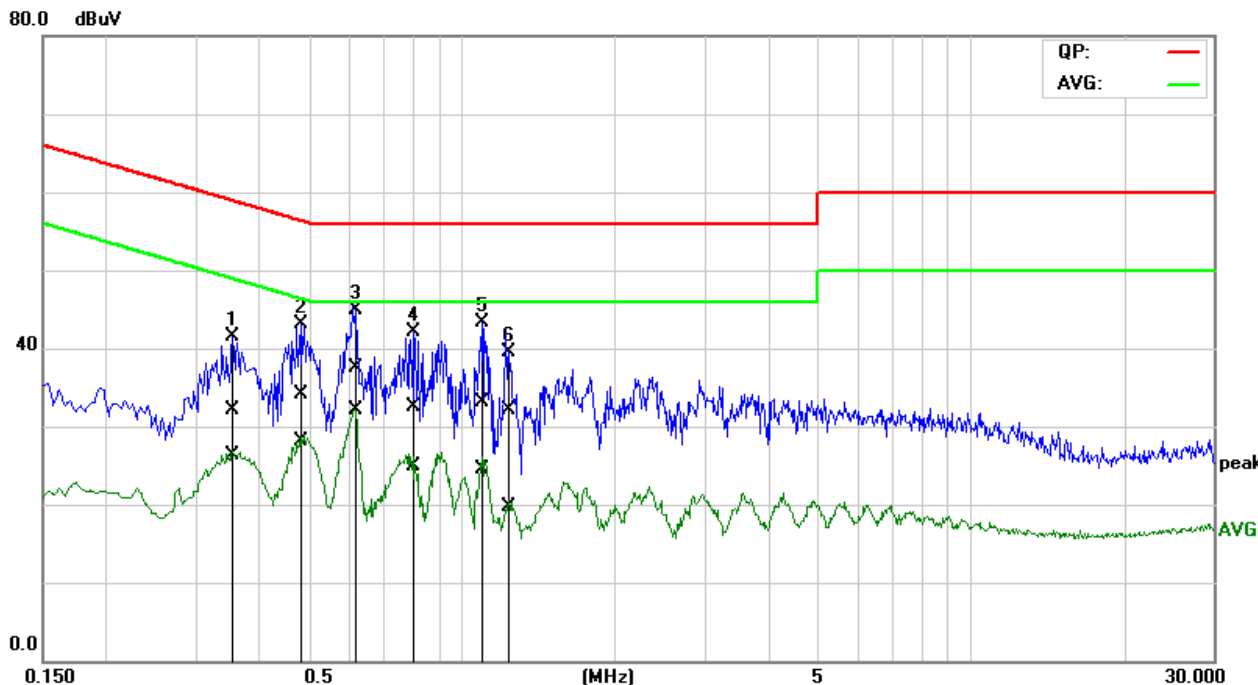
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Test data for 476.2MHz

Test Mode: 02; Line: Live line



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.3540	12.27	6.53	19.75	32.02	26.28	58.87	48.87	-26.85	-22.59	Pass
2	0.4850	14.24	8.37	19.79	34.03	28.16	56.25	46.25	-22.22	-18.09	Pass
3*	0.6155	17.78	12.32	19.75	37.53	32.07	56.00	46.00	-18.47	-13.93	Pass
4	0.7973	12.86	5.28	19.71	32.57	24.99	56.00	46.00	-23.43	-21.01	Pass
5	1.0962	13.46	4.78	19.69	33.15	24.47	56.00	46.00	-22.85	-21.53	Pass
6	1.2329	12.41	0.07	19.70	32.11	19.77	56.00	46.00	-23.89	-26.23	Pass



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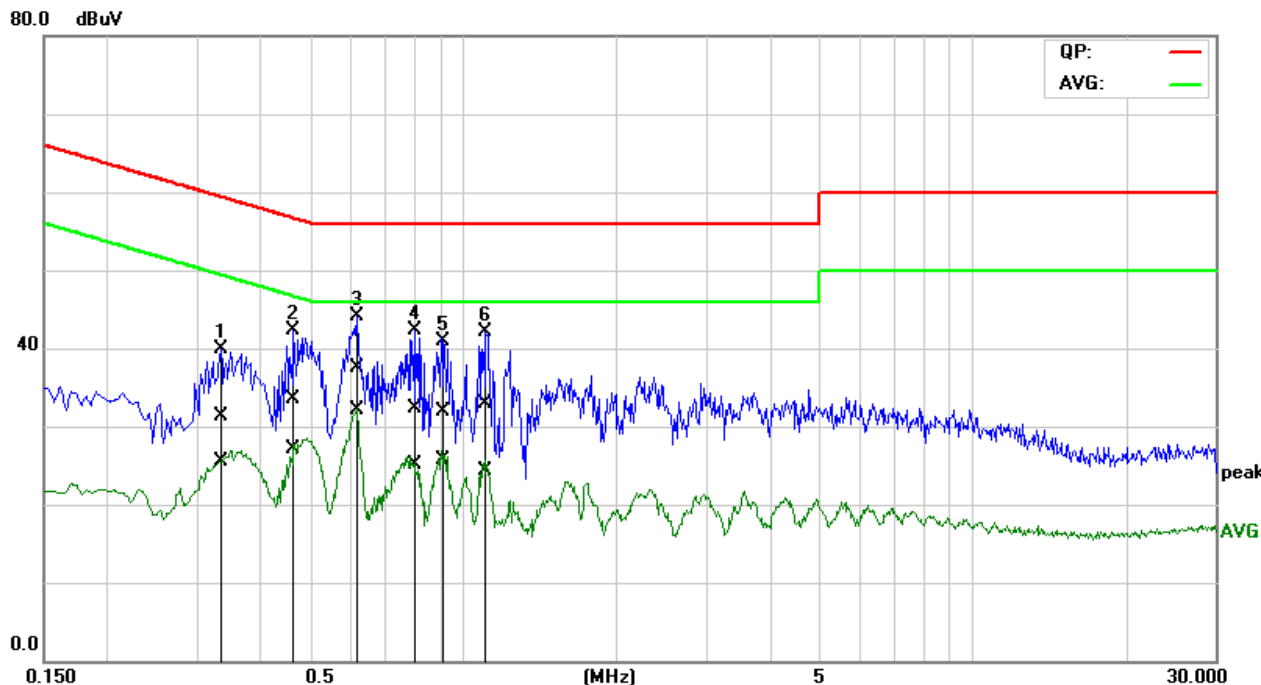
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Test Mode: 02; Line: Neutral Line



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.3358	11.62	5.69	19.74	31.36	25.43	59.31	49.31	-27.95	-23.88	Pass
2	0.4683	13.72	7.23	19.79	33.51	27.02	56.54	46.54	-23.03	-19.52	Pass
3*	0.6131	17.71	12.40	19.75	37.46	32.15	56.00	46.00	-18.54	-13.85	Pass
4	0.7966	12.69	5.38	19.71	32.40	25.09	56.00	46.00	-23.60	-20.91	Pass
5	0.9144	12.23	6.04	19.70	31.93	25.74	56.00	46.00	-24.07	-20.26	Pass
6	1.0944	13.29	4.65	19.69	32.98	24.34	56.00	46.00	-23.02	-21.66	Pass



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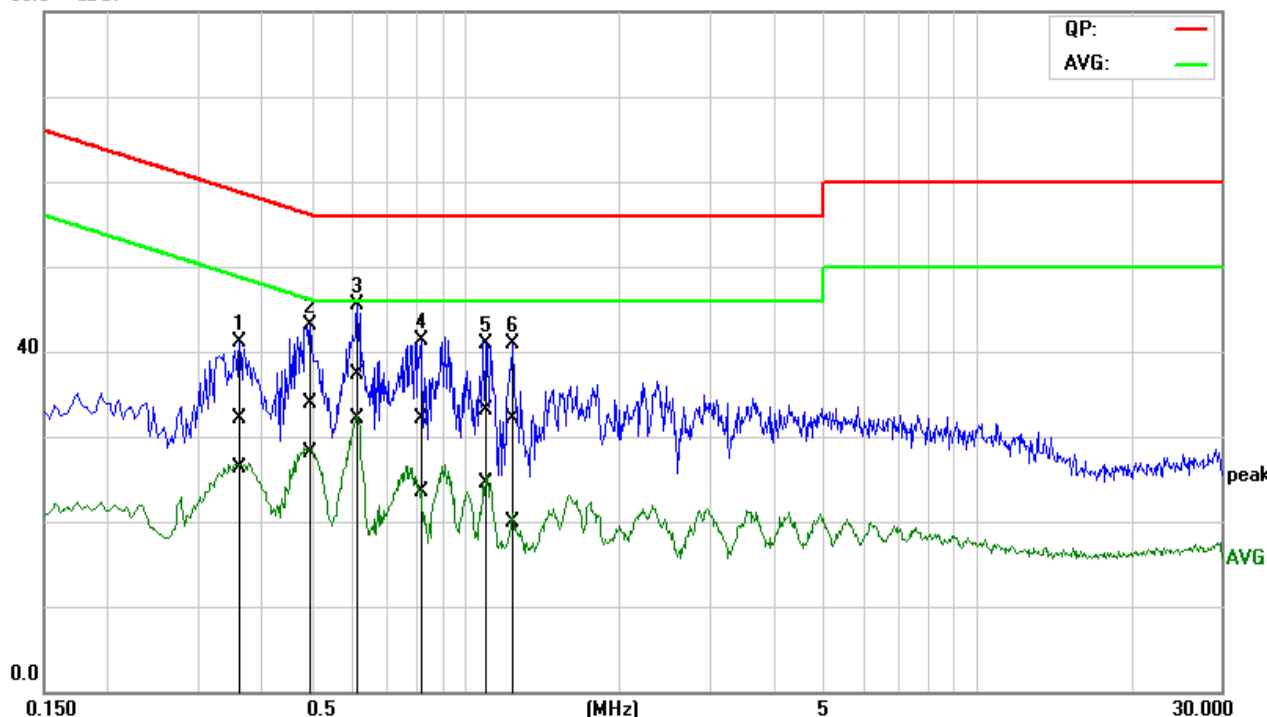
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Test data for 572.2MHz

Test Mode: 02; Line: Live line

80.0 dBuV



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.3577	12.32	6.60	19.75	32.07	26.35	58.78	48.78	-26.71	-22.43	Pass
2	0.5002	14.01	8.26	19.80	33.81	28.06	56.00	46.00	-22.19	-17.94	Pass
3*	0.6134	17.60	12.41	19.75	37.35	32.16	56.00	46.00	-18.65	-13.84	Pass
4	0.8124	12.43	3.88	19.71	32.14	23.59	56.00	46.00	-23.86	-22.41	Pass
5	1.0993	13.35	4.85	19.69	33.04	24.54	56.00	46.00	-22.96	-21.46	Pass
6	1.2345	12.32	0.14	19.70	32.02	19.84	56.00	46.00	-23.98	-26.16	Pass



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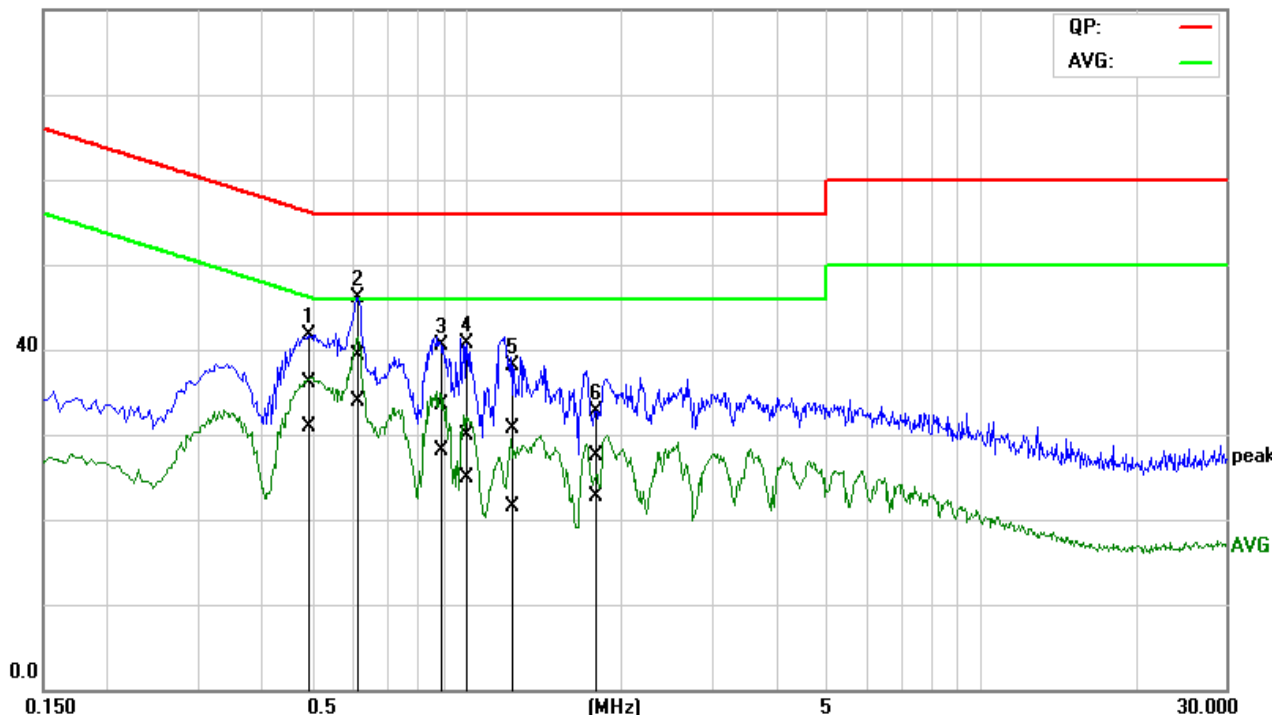
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Test Mode: 02; Line: Neutral Line

80.0 dBuV



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.4951	16.31	11.02	19.80	36.11	30.82	56.08	46.08	-19.97	-15.26	Pass
2*	0.6151	19.57	14.18	19.75	39.32	33.93	56.00	46.00	-16.68	-12.07	Pass
3	0.8946	13.73	8.31	19.70	33.43	28.01	56.00	46.00	-22.57	-17.99	Pass
4	0.9971	10.28	5.29	19.69	29.97	24.98	56.00	46.00	-26.03	-21.02	Pass
5	1.2341	10.97	1.87	19.70	30.67	21.57	56.00	46.00	-25.33	-24.43	Pass
6	1.7728	7.78	3.07	19.71	27.49	22.78	56.00	46.00	-28.51	-23.22	Pass



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## 5.4 Radiated Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.236(g)

Test Method: ETSI EN 300 422-1 V1.4.2

Measurement Distance: 3m

Limit:

Frequency range	Maximum power, e.r.p. ( $\leq 1$ GHz) e.i.r.p. ( $> 1$ GHz)	Bandwidth
25 MHz to 47 MHz	-36dBm	100 kHz
47 MHz to 74 MHz	-54dBm	100 kHz
74 MHz to 87,5 MHz	-36dBm	100 kHz
87,5 MHz to 137 MHz	-54dBm	100 kHz
137 MHz to 174 MHz	-36dBm	100 kHz
174 MHz to 230 MHz	-54dBm	100 kHz
230 MHz to 470 MHz	-36dBm	100 kHz
470 MHz to 862 MHz	-54dBm	100 kHz
862 MHz to 1 GHz	-36dBm	100 kHz
Above 1GHz	-30dBm	1MHz

### 5.4.1 E.U.T. Operation

Operating Environment:

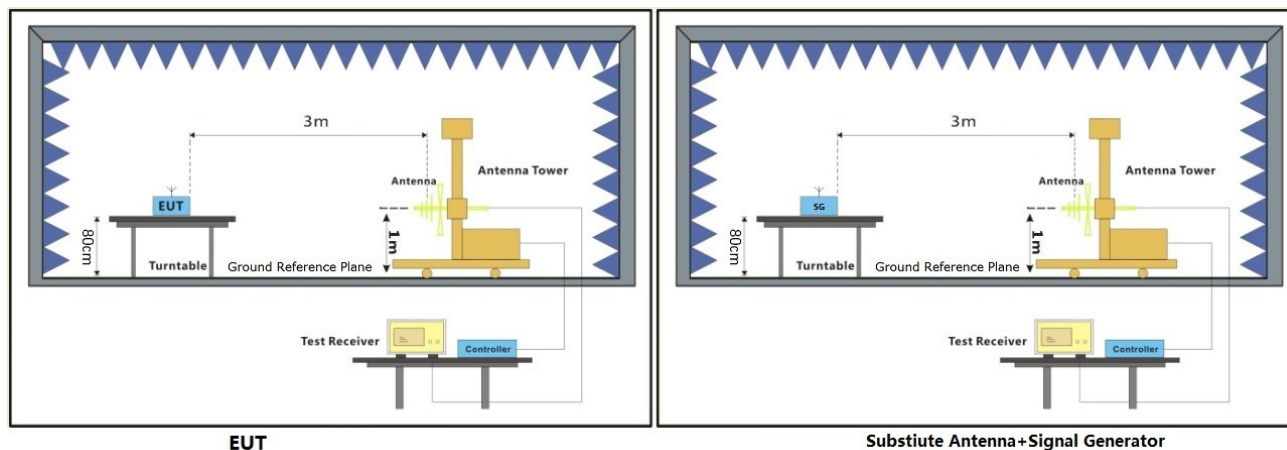
Temperature: 22.7 °C

Humidity: 68.2 % RH

Atmospheric Pressure: 1010 mbar

Test mode: 02: Tx mode, Keep the EUT in transmitting mode.

### 5.4.2 Test Setup Diagram



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### 5.4.3 Measurement Procedure and Data

#### Test Procedure:

- (1) On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
- (2) The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
- (3) The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
- (4) The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
- (5) The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
- (6) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- (7) The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
- (8) The maximum signal level detected by the measuring receiver shall be noted.
- (9) The measurement shall be repeated with the test antenna set to horizontal polarization.
- (10) Replace the antenna with a proper Antenna (substitution antenna).
- (11) The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
- (12) The substitution antenna shall be connected to a calibrated signal generator.
- (13) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- (14) The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
- (15) The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
- (16) The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
- (17) The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.



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476.2MHz

Maximum Frequency	Spurious Emission position and Level		Limit	Over Limit
MHz	Polarity	dBm	dBm	dB
37.812	V	-56.47	-36	-20.47
63.983	V	-68.71	-54	-14.71
99.18	V	-68.67	-54	-14.67
190.405	V	-82.52	-54	-28.52
510.044	V	-78.16	-54	-24.16
771.449	V	-72.83	-54	-18.83
1356.221	V	-53.59	-30	-23.59
5658.47	V	-46.43	-30	-16.43
9561.854	V	-41.38	-30	-11.38
37.548	H	-55.46	-36	-19.46
49.881	H	-74.75	-54	-20.75
98.487	H	-76.73	-54	-22.73
198.588	H	-85	-54	-31
535.707	H	-75.25	-54	-21.25
771.449	H	-72.75	-54	-18.75
1356.368	H	-52.59	-30	-22.59
5658.473	H	-46.32	-30	-16.32
9562.021	H	-41.24	-30	-11.24

486.7MHz

Maximum Frequency	Spurious Emission position and Level		Limit	Over Limit
MHz	Polarity	dBm	dBm	dB
38.078	V	-56.69	-36	-20.69
49.881	V	-74.5	-54	-20.5
62.431	V	-69.93	-54	-15.93
96.436	V	-70.56	-54	-16.56
198.588	V	-83.66	-54	-29.66
517.248	V	-77.79	-54	-23.79
1326.214	V	-52.94	-30	-22.94
5458.324	V	-47.24	-30	-17.24
9256.584	V	-43.02	-30	-13.02
37.548	H	-55.37	-36	-19.37
48.163	H	-70.63	-54	-16.63



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62.651	H	-75.98	-54	-21.98
97.798	H	-78.1	-54	-24.1
541.373	H	-76.34	-54	-22.34
682.348	H	-74.81	-54	-20.81
1319.264	H	-57.21	-30	-27.21
5458.561	H	-45.24	-30	-15.24
9256.714	H	-43.38	-30	-13.38

## 499.9MHz

Maximum Frequency	Spurious Emission position and Level		Limit	Over Limit
MHz	Polarity	dBm	dBm	dB
39.437	V	-58.61	-36	-22.61
50.586	V	-78.2	-54	-24.2
64.659	V	-69.79	-54	-15.79
99.528	V	-69.02	-54	-15.02
510.044	V	-77.48	-54	-23.48
758.041	V	-72.96	-54	-18.96
1326.214	V	-54.21	-30	-24.21
5457.675	V	-46.4	-30	-16.4
9254.236	V	-40.32	-30	-10.32
36.895	H	-56.23	-36	-20.23
52.575	H	-78.99	-54	-24.99
98.142	H	-77.44	-54	-23.44
187.096	H	-86.8	-54	-32.8
530.101	H	-77.21	-54	-23.21
739.661	H	-74.27	-54	-17.27
1301.315	H	-56.85	-30	-26.85
5355.624	H	-46.41	-30	-16.41
9863.987	H	-42.28	-30	-12.28

## 572.2MHz

Maximum Frequency	Spurious Emission position and Level		Limit	Over Limit
MHz	Polarity	dBm	dBm	dB
26.985	V	-55.98	-36	-19.98
63.785	V	-67.85	-54	-13.85
101.23	V	-69.26	-54	-15.26
193.256	V	-83.01	-54	-29.01
498.65	V	-77.98	-54	-23.98



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780.246	V	-73.02	-54	-19.02
1358.654	V	-53.45	-30	-23.45
5659.212	V	-46.58	-30	-16.58
9563.258	V	-41.56	-30	-11.56
37.651	H	-55.72	-36	-19.72
49.924	H	-73.98	-54	-19.98
97.652	H	-76.53	-54	-22.53
198.632	H	-84.25	-54	-30.25
537.365	H	-73.26	-54	-19.26
774.265	H	-73.01	-54	-19.01
1357.021	H	-53.04	-30	-23.04
5658.624	H	-46.58	-30	-16.58
9563.24	H	-42.34	-30	-12.34

582.7MHz

Maximum Frequency	Spurious Emission position and Level		Limit	Over Limit
MHz	Polarity	dBm	dBm	dB
38.129	V	-55.69	-36	-19.69
49.985	V	-73.69	-54	-19.69
65.321	V	-70.12	-54	-16.12
97.654	V	-70.26	-54	-16.26
198.872	V	-82.98	-54	-28.98
550.263	V	-76.98	-54	-22.98
1330.241	V	-53.94	-30	-13.94
5460.289	V	-46.26	-30	-16.26
9264.231	V	-43.89	-30	-13.89
38.654	H	-55.64	-36	-19.64
48.965	H	-69.78	-54	-15.78
63.267	H	-75.58	-54	-21.58
98.658	H	-77.89	-54	-23.89
543.265	H	-75.75	-54	-21.75
690.245	H	-74.36	-54	-20.36
1330.278	H	-51.21	-30	-21.21
5456.289	H	-45.21	-30	-15.21
9270.612	H	-42.79	-30	-12.79



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595.9MHz

Maximum Frequency	Spurious Emission position and Level		Limit	Over Limit
MHz	Polarity	dBm	dBm	dB
39.654	V	-59.42	-36	-23.42
51.268	V	-77.68	-54	-23.68
66.874	V	-70.12	-54	16.12
102.245	V	-67.68	-54	-13.68
520.314	V	-78.01	-54	-24.01
770.265	V	-71.97	-54	-17.97
1340.265	V	-53.56	-30	-23.56
5470.261	V	-46.21	-30	-16.21
9270.364	V	-41.25	-30	-11.25
38.521	H	-57.64	-36	-21.64
51.246	H	-76.59	-54	-22.59
99.867	H	-76.89	-54	-22.89
191.235	H	-84.98	-54	-30.98
532.412	H	-76.24	-54	-22.24
750.325	H	-73.65	-54	-19.65
1335.698	H	-56.98	-30	-26.98
5360.284	H	-47.21	-30	-17.21
9870.264	H	-43.02	-30	-13.02



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## 5.5 Necessary bandwidth (BN) for analogue systems

Test Requirement 47 CFR Part 15, Subpart C 15.236(g)

Test Method: ETSI EN 300 422-1 V1.4.2

Limit:

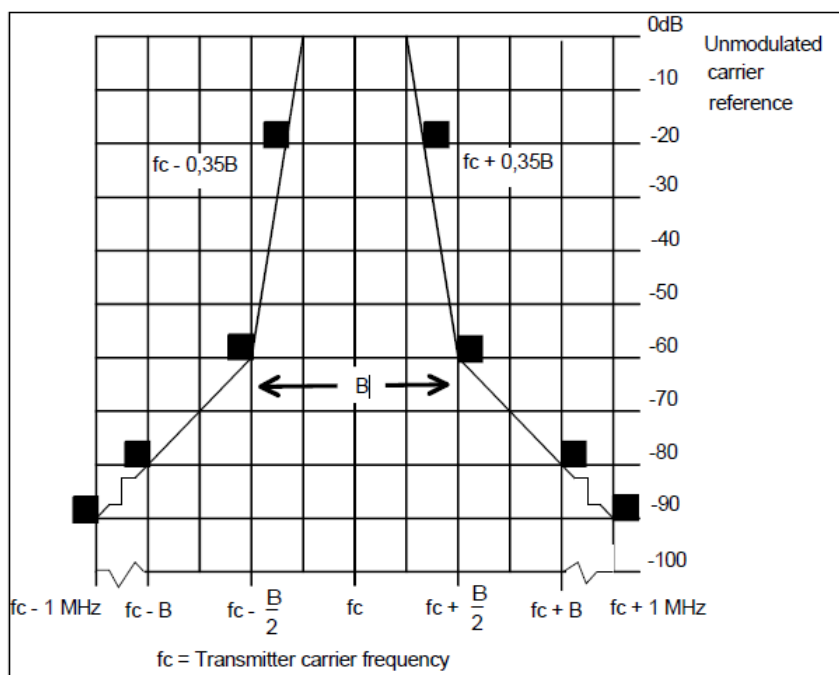


Figure 3: Spectrum mask for analogue systems in all bands

### 5.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1010 mbar

Test mode: 02: Tx mode, Keep the EUT in transmitting mode.



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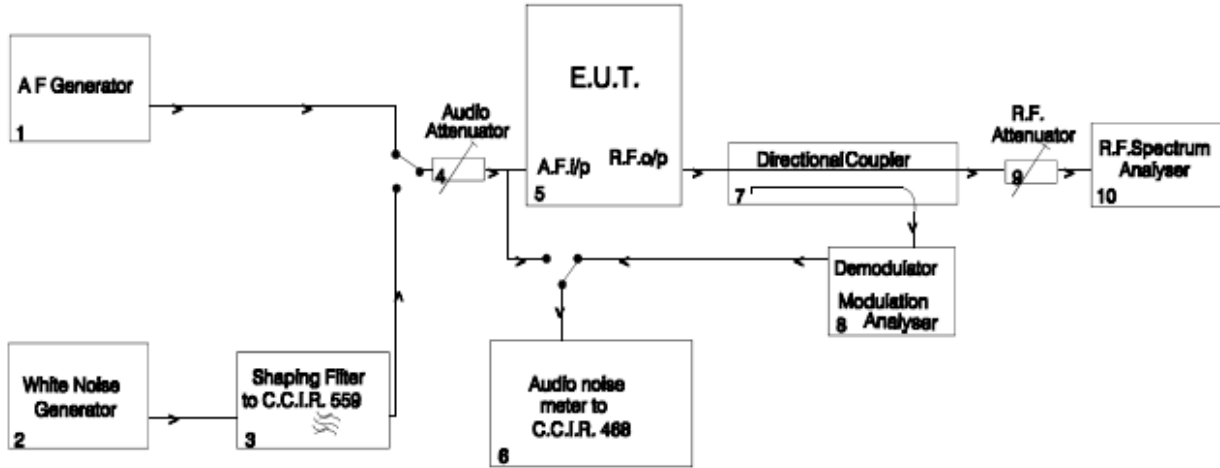
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## 5.5.2 Test Setup Diagram



## 5.5.3 Measurement Procedure and Data



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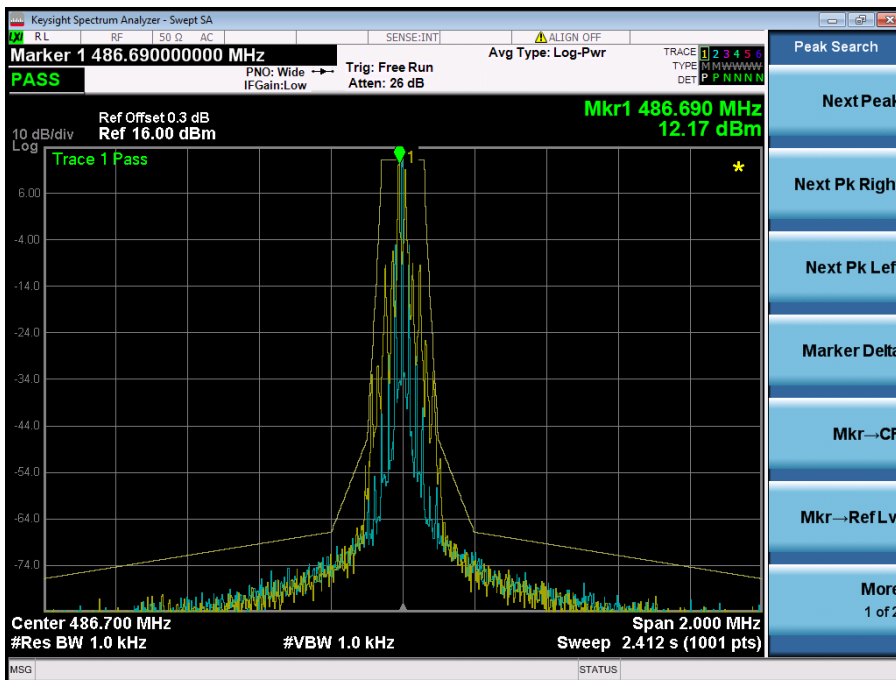
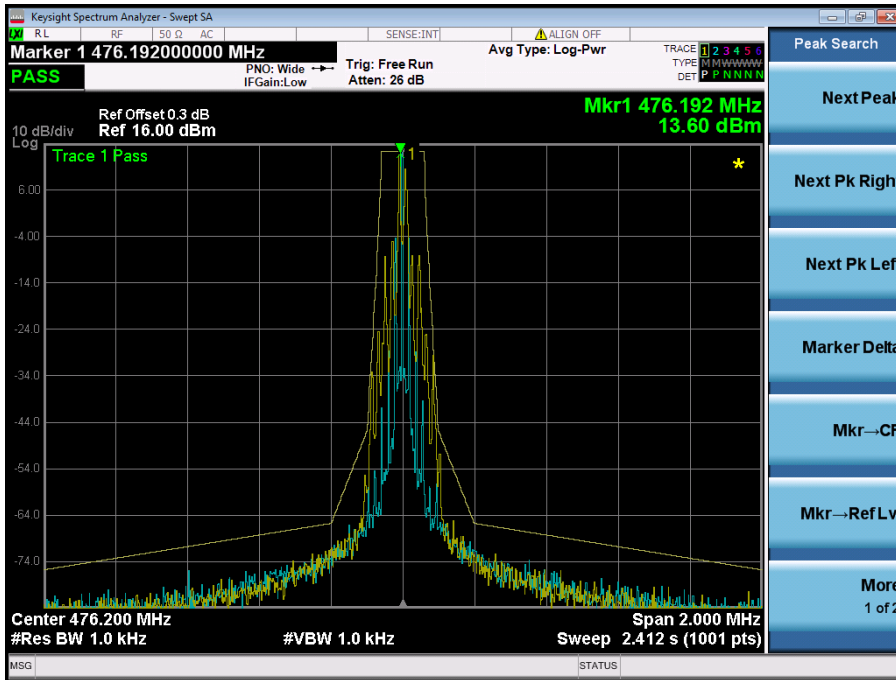
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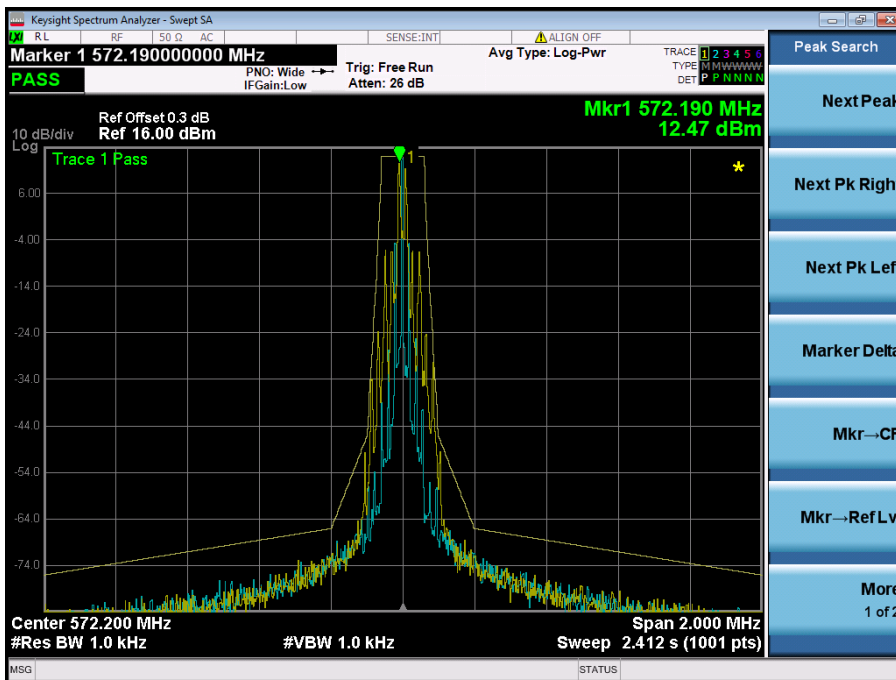
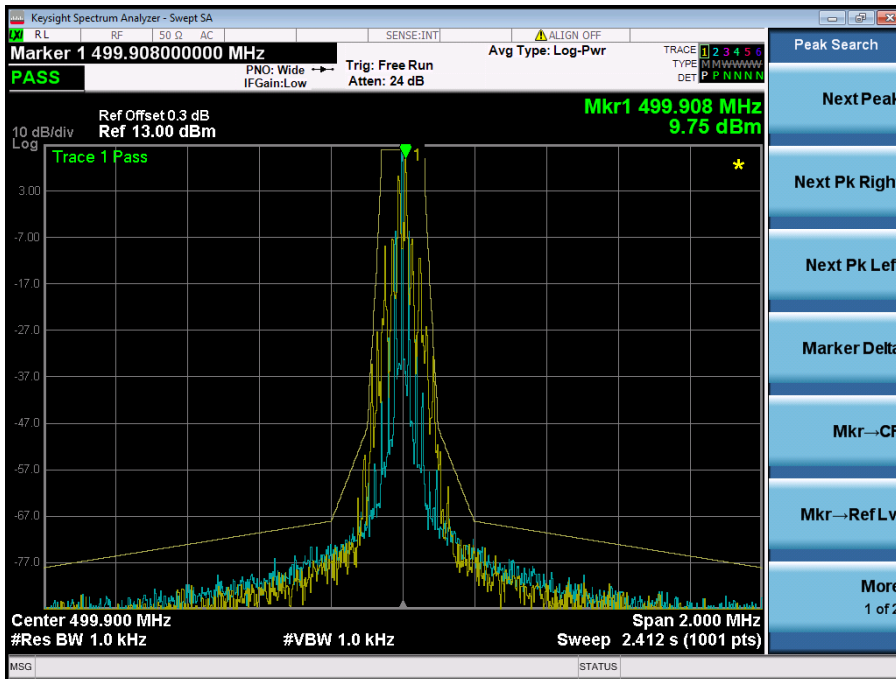
## Results:



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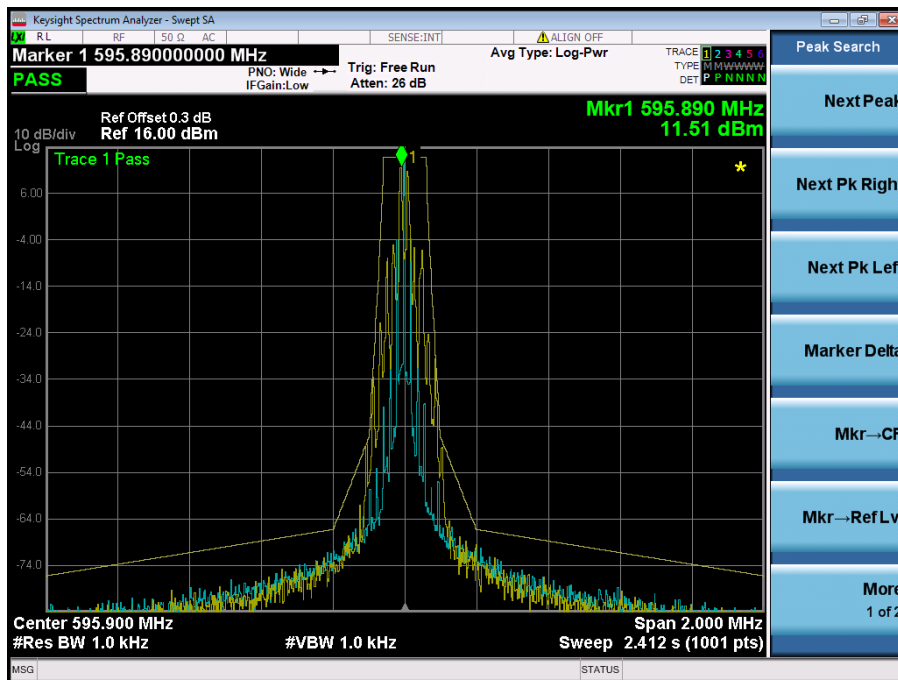
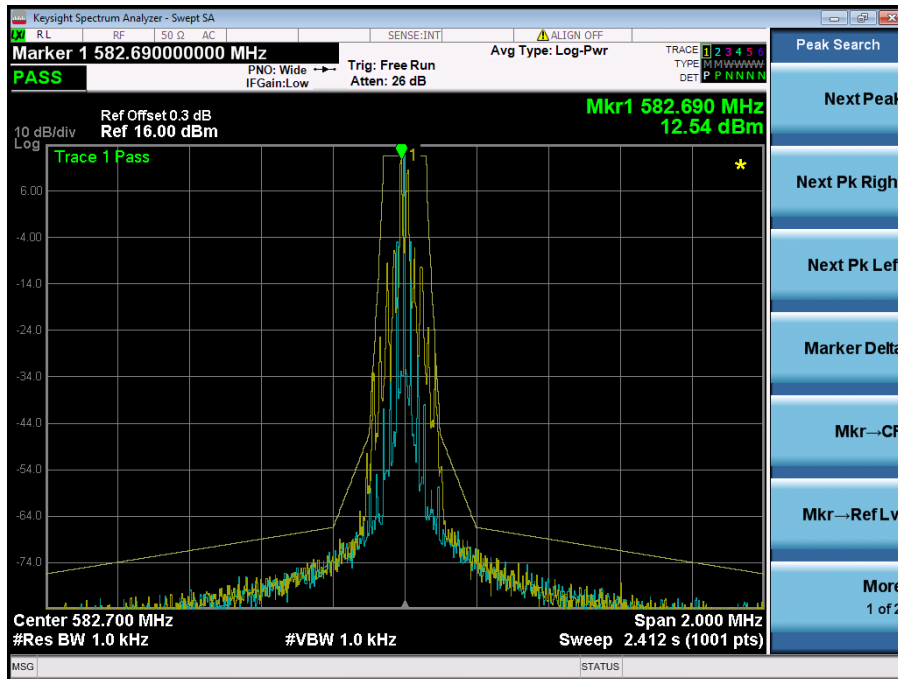


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## 5.6 Frequency Stability

Test Requirement 47 CFR Part 15, Subpart C 15.236(f)  
Test Method: ANSI C63.10 (2013) Section 6.8  
Limit: The frequency tolerance of the transmitter shall be  $\pm 50$  ppm.

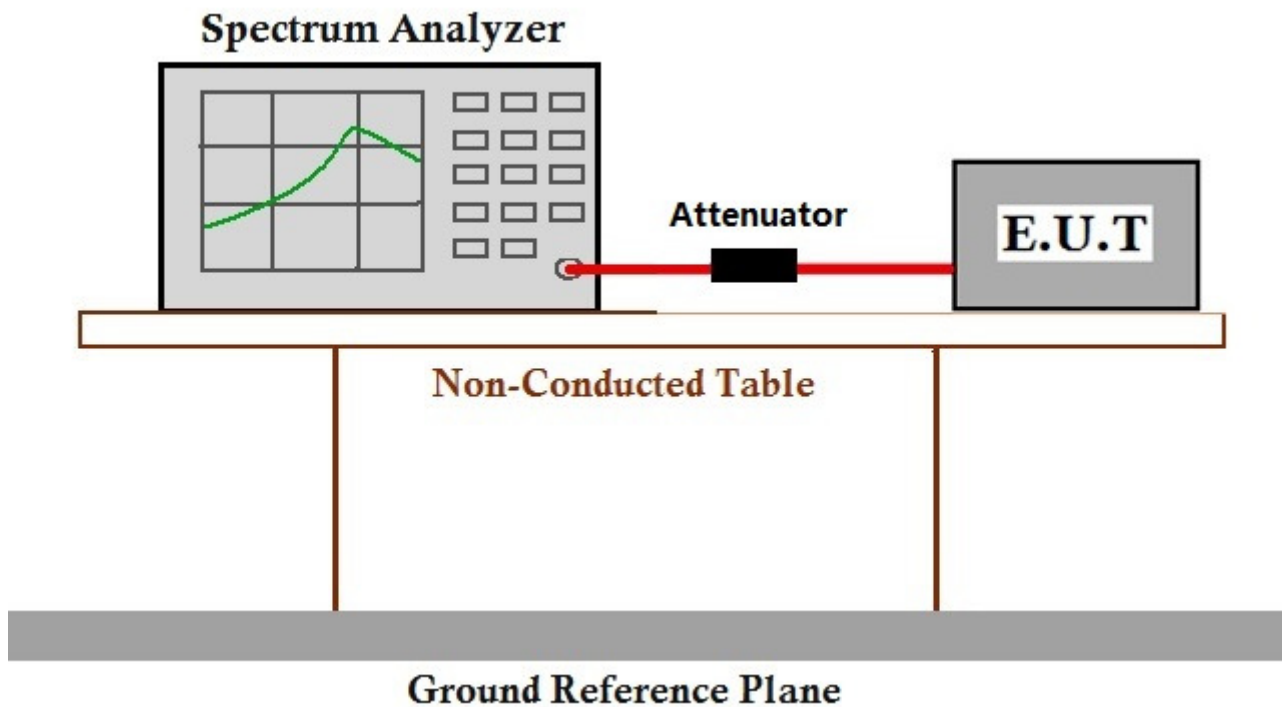
### 5.6.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1010 mbar

Test mode: 02: Tx mode, Keep the EUT in transmitting mode.

### 5.6.2 Test Setup Diagram



### 5.6.3 Measurement Procedure and Data



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Assigned Frequency: 476.2MHz					
Voltage(V)	Temperature (°C)	Measured Frequency(MHz)	Frequency Deviation(ppm)	FCC Limit (ppm)	Result
120	-30	476.2000089	0.0187	±50	Pass
	-20	476.2000051	0.0107		
	-10	476.2000078	0.0164		
	0	476.2000055	0.0115		
	10	476.2000051	0.0107		
	20	476.2000052	0.0109		
	30	476.2000079	0.0166		
	40	476.2000039	0.0089		
	50	476.2000024	0.0050		
100.2	25	476.2000032	0.0067	±50	Pass
138	25	476.2000019	0.0040		

Assigned Frequency: 486.7MHz					
Voltage(V)	Temperature (°C)	Measured Frequency(MHz)	Frequency Deviation(ppm)	FCC Limit (ppm)	Result
120	-30	486.7000083	0.0171	±50	Pass
	-20	486.7000079	0.0162		
	-10	486.7000035	0.0072		
	0	486.7000017	0.0035		
	10	486.7000024	0.0049		
	20	486.7000029	0.0060		
	30	486.7000045	0.0092		
	40	486.7000087	0.0179		
	50	486.7000095	0.0195		
100.2	25	486.7000098	0.0201	±50	Pass
138	25	486.7000089	0.0183		



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Assigned Frequency: 499.9MHz					
Voltage(V)	Temperature (°C)	Measured Frequency(MHz)	Frequency Deviation(ppm)	FCC Limit (ppm)	Result
120	-30	499.9000091	0.0182	±50	Pass
	-20	499.9000058	0.0116		
	-10	499.9000087	0.0174		
	0	499.9000063	0.0126		
	10	499.9000059	0.0118		
	20	499.9000058	0.0116		
	30	499.9000085	0.0170		
	40	499.9000045	0.0090		
	50	499.9000030	0.0060		
100.2	25	499.9000039	0.0078		
138	25	499.9000026	0.0052		



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## 6 Test Setup Photographs

Refer to the < Test Setup photos-FCC>.

## 7 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

- End of the Report -



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