

TEST REPORT

Application No.: SZCR2510004515AT
Applicant: Motorola Mobility LLC
Address of Applicant: 222 W, Merchandise Mart Plaza, Chicago IL 60654 USA
Manufacturer: Motorola Mobility LLC
Address of Manufacturer: 222 W, Merchandise Mart Plaza, Chicago IL 60654 USA
Equipment Under Test (EUT):
EUT Name: PORTABLE WIRELESS SPEAKER
Model No.: XT2549-1
Trade Mark: Motorola
FCC ID: IHDT6AB7
Standard(s) : 47 CFR Part 15 Subpart F
 47 CFR Part 15.519
Date of Receipt: 2025-10-25
Date of Test: 2025-10-27 to 2025-11-13
Date of Issue: 2025-11-14

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Kenx. Xu

Kenx Xu
EMC Laboratory Manager



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Shenzhen Branch EMC Laboratory

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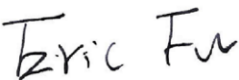
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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2025-11-14		Original

Authorized for issue by:				
				
		Leo Lai/Project Engineer		
				
		Eric Fu/Reviewer		



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2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15 Subpart F	N/A	47 CFR Part 15F Section 15.517(a3), 15.519(a2), 15.521(b), 15.203	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15 Subpart F	ANSI C63.10:2020 section 6.2	47 CFR Part 15, Subpart F 15.207, 15.505, 15.521(j),	Pass
EIRP		ANSI C63.10: 2020 section 10.3	47 CFR Part 15, Subpart F Section 15.519 (c)(e)	Pass
Spurious Emissions Below 1GHz		ANSI C63.10: 2020 section 10.2 & 10.3	47 CFR Part 15, Subpart F Section 15.519 (c)(d),15.209	Pass
Spurious Emissions Above 1GHz		ANSI C63.10: 2020 section 10.3	47 CFR Part 15, Subpart F Section 15.519 (c)(d),15.209	Pass
UWB Bandwidth		ANSI C63.10:2020 section 10.1	47 CFR Part 15F Section 15.503(a)	Pass
Dwell Time		ANSI C63.10: 2020 Section7.8.4	47 CFR Part 15 Section 15.519 (a)(1)	Pass



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 5 V 3 A powered by built-in battery as below: Model: AECA62866-1S2P Rated: DC 3.85 V, 6000mAh, 23.1Wh
Frequency Range:	6.24GHz~8.24GHz
Modulation Type:	BPSK+PM
Number of Channels:	2 (CH5, CH9)
Sample Type:	Portable production
Antenna Type:	PCB Antenna
Antenna Gain:	4.36dBi

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	L480	PF-1N6C3V

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	$\pm 3.1\text{dB}$
Dwell Time	$\pm 0.37\%$
EIRP	$\pm 4.8\text{dB}$
Spurious Emissions Below 1GHz	$\pm 6.0\text{dB}$ for 3m; $\pm 5.0\text{dB}$ for 10M
Spurious Emissions Above 1GHz	$\pm 4.6\text{dB}$ (1-18GHz); $\pm 4.8\text{dB}$ (18-40GHz)
UWB Bandwidth	$\pm 3\%$
Conducted Emissions at AC Power Line (150kHz-30MHz)	$\pm 3.1\text{dB}$

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{\text{CISPR/ETSI}}$ (CISPR/ETSI Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

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4.4 Test Location

All tests were performed at:

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Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

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

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI (Member No. 1937)

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC –Designation Number: CN1336

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2025-05-07	2028-05-06
EMI Test Receiver	Rohde&Schwarz	ESR	SZ-WRG-M-047	2025-01-08	2026-01-07
Measurement Software	AUDIX	e3 V8.2014-6-27a	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2025-07-05	2026-07-04
LISN	Rohde&Schwarz	ENV216	SEM007-01	2025-07-25	2026-07-24
LISN	ETS-LINDGREN	3816/2	SEM007-02	2025-03-03	2026-03-02

EIRP					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
3m Fully-Anechoic Chamber	AUDIX	N/A	SEM001-02	2025-05-07	2028-05-06
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2025-03-04	2026-03-03
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2025-07-22	2026-07-21
Microwave system amplifier	Agilent	83017A	SEM005-25	2025-09-10	2026-09-09
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2025-07-05	2026-07-04

Spurious Emissions Below 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2023-06-19	2026-06-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2025-07-25	2026-07-24
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2025-08-29	2027-08-28
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2025-03-04	2026-03-03
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2025-07-05	2026-07-04



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Spurious Emissions Above 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
3m Fully-Anechoic Chamber	AUDIX	N/A	SEM001-02	2025-05-07	2028-05-06
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2025-03-04	2026-03-03
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2025-07-22	2026-07-21
Microwave system amplifier	Agilent	83017A	SEM005-25	2025-09-10	2026-09-09
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2025-07-05	2026-07-04

UWB Bandwidth					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2025-07-24	2026-07-23
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2025-03-04	2026-03-03
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2025-07-05	2026-07-04
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2025-03-03	2026-03-02

General used equipment					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	deli	8838	SEM002-32	2025-07-23	2026-07-22
Humidity/ Temperature Indicator	deli	8838	SEM002-33	2025-07-23	2026-07-22
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2025-03-03	2026-03-02



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15F Section 15.517(a3), 15.519(a2), 15.521(b), 15.203

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 4.36dBi

Antenna location: Refer to internal photo.



7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart F 15.207, 15.505, 15.521(j),

Test Method: ANSI C63.10:2020 section 6.2

7.1.1 E.U.T. Operation

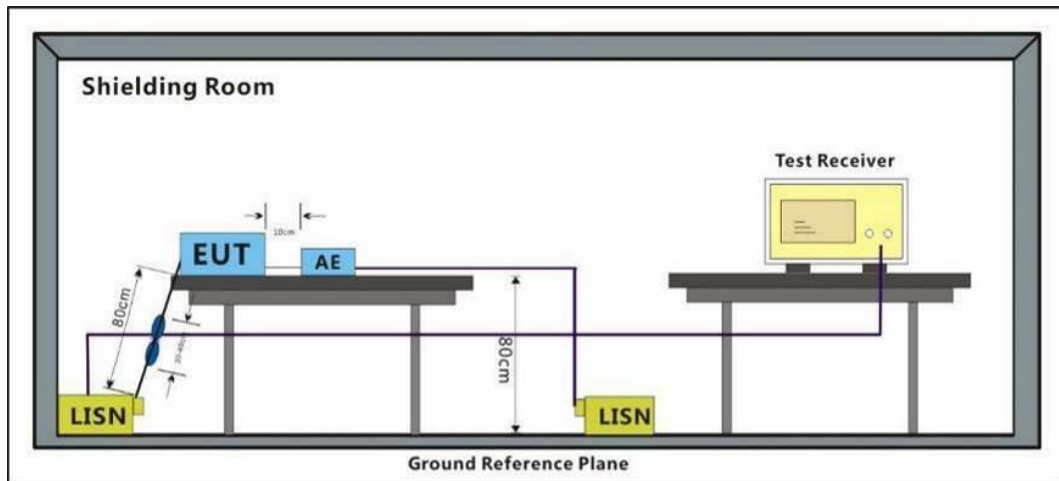
Operating Environment:

Temperature: 25.3 °C Humidity: 40.5 % RH Atmospheric Pressure: 1020 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Continuous Tx Mode: Keep the EUT Transmitting with Modulation

7.1.3 Test Setup Diagram



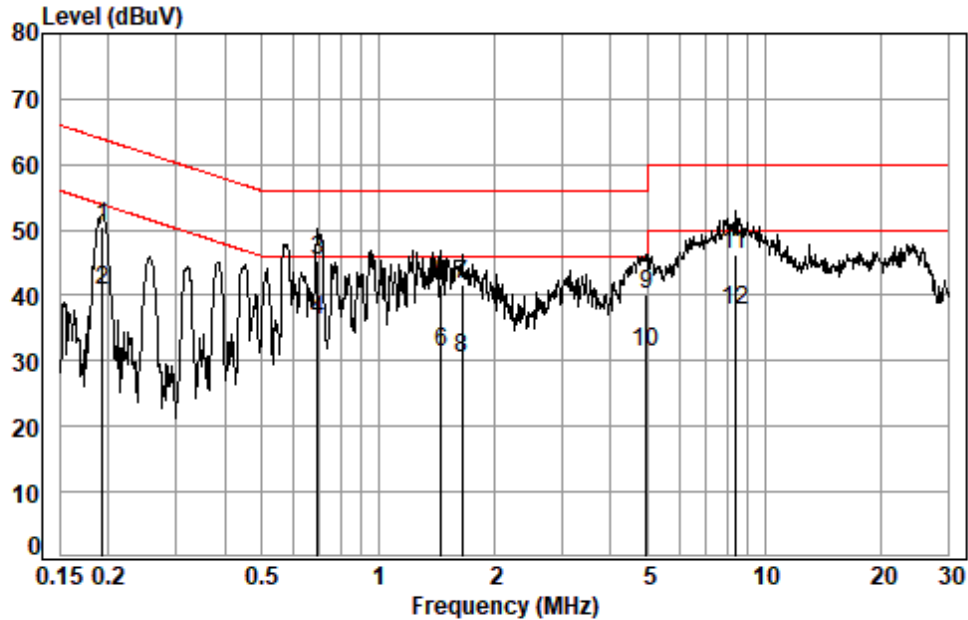
7.1.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor



Test Mode: 00; Line: Live line



Site : Shielding Room
Condition: Line
Job No. : 04516AT
Test mode: 00

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1934	0.07	10.13	40.27	50.47	63.89	-13.42	QP
2	0.1934	0.07	10.13	30.47	40.67	53.89	-13.22	Average
3 *	0.6973	0.10	9.65	35.60	45.35	56.00	-10.65	QP
4 *	0.6973	0.10	9.65	26.56	36.31	46.00	-9.69	Average
5	1.4562	0.12	9.58	32.00	41.70	56.00	-14.30	QP
6	1.4562	0.12	9.58	21.71	31.41	46.00	-14.59	Average
7	1.6450	0.12	9.58	31.88	41.58	56.00	-14.42	QP
8	1.6450	0.12	9.58	20.71	30.41	46.00	-15.59	Average
9	4.9519	0.14	9.66	30.36	40.16	56.00	-15.84	QP
10	4.9519	0.14	9.66	21.52	31.32	46.00	-14.68	Average
11	8.3671	0.15	9.69	36.31	46.15	60.00	-13.85	QP
12	8.3671	0.15	9.69	27.89	37.73	50.00	-12.27	Average



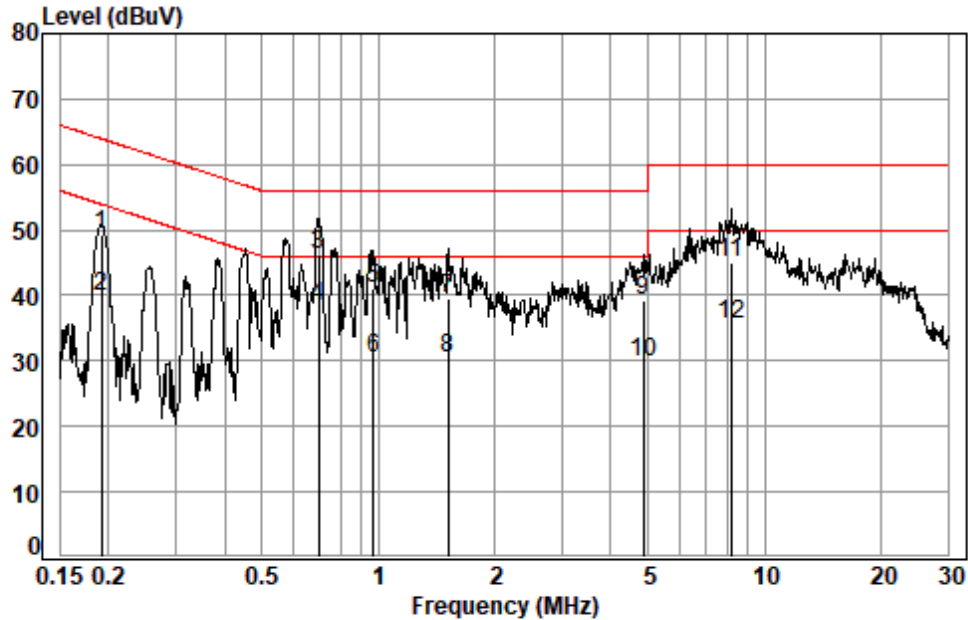
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Test Mode: 00; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 04516AT
Test mode: 00

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1924	0.07	10.09	39.02	49.18	63.93	-14.75	QP
2	0.1924	0.07	10.09	29.65	39.81	53.93	-14.12	Average
3 *	0.7010	0.10	9.65	36.56	46.31	56.00	-9.69	QP
4 *	0.7010	0.10	9.65	28.70	38.45	46.00	-7.55	Average
5	0.9735	0.11	9.55	31.27	40.93	56.00	-15.07	QP
6	0.9735	0.11	9.55	20.78	30.44	46.00	-15.56	Average
7	1.5193	0.12	9.55	29.91	39.58	56.00	-16.42	QP
8	1.5193	0.12	9.55	20.64	30.31	46.00	-15.69	Average
9	4.8480	0.14	9.56	29.47	39.17	56.00	-16.83	QP
10	4.8480	0.14	9.56	20.17	29.87	46.00	-16.13	Average
11	8.1916	0.15	9.62	35.10	44.87	60.00	-15.13	QP
12	8.1916	0.15	9.62	25.84	35.61	50.00	-14.39	Average



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7.2 EIRP

Test Requirement 47 CFR Part 15, Subpart F Section 15.519 (c)(e)

Test Method: ANSI C63.10: 2020 section 10.3

Measurement Distance: 3m

Limit:

Frequency	Limit	Detector	Measurement distance (m)
960MHz-1610MHz	-75.3 dBm (EIRP, RBW=1MHz)	RMS/AV	3
1610MHz-4750MHz	-70.0 dBm (EIRP, RBW=1MHz)	RMS/AV	3
4750MHz-10600MHz	-41.3 dBm (EIRP, RBW=1MHz)	RMS/AV	3
Above 10600MHz	-61.3 dBm (EIRP, RBW=1MHz)	RMS/AV	3
Fundamental	0 dBm (EIRP, RBW=50MHz)	Peak	3

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

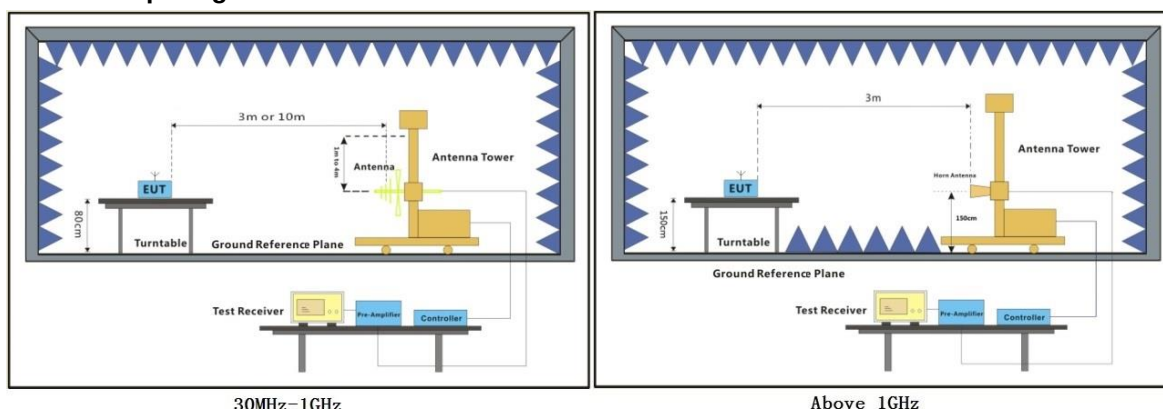
Humidity: 56.3 % RH

Atmospheric Pressure: 1020 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Continuous Tx Mode: Keep the EUT Transmitting with Modulation

7.2.3 Test Setup Diagram

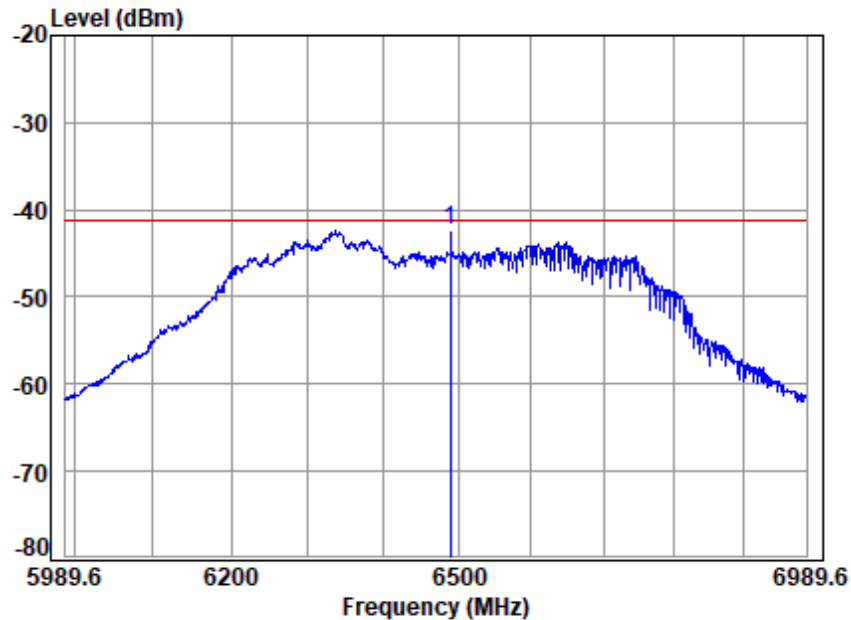


7.2.4 Measurement Procedure and Data

- 1) The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 5) The test-receiver system was set to Peak detector with Maximum Hold Mode for Max Peak EIRP measurement and RMS/AV detector for Average EIRP measurement.
- 6) Test the EUT in the lowest channel, the middle channel, the Highest channel
- 7) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.
- 8) Repeat above procedures until all frequencies measured was complete.



Test Mode: AV; Polarity: Horizontal



Condition: 3m HORIZONTAL

Job No: 04515AT

Test mode: RSE TX

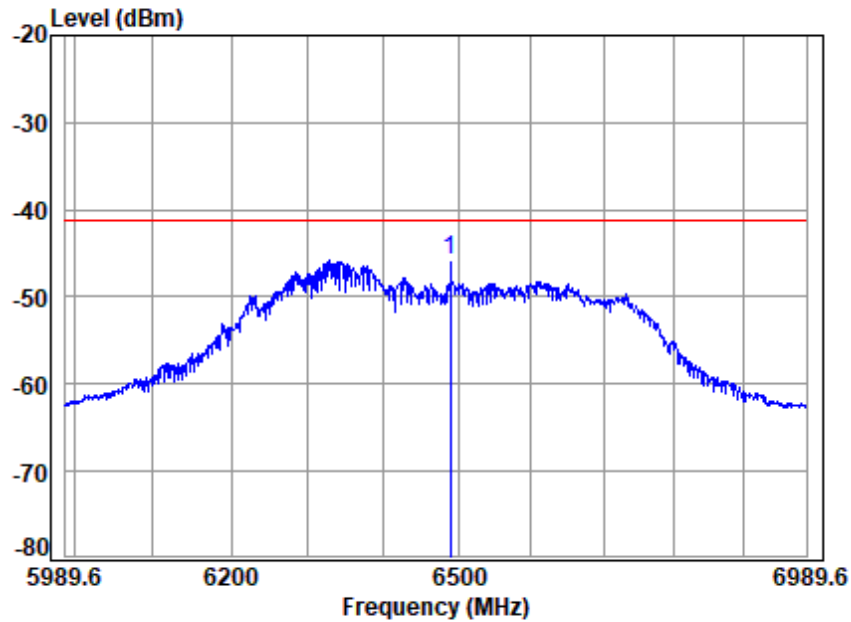
Note: CH5

Note:

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	6489.60	-42.42	-41.30	-1.12



Test Mode: AV; Polarity: Vertical



Condition: 3m VERTICAL

Job No: 04515AT

Test mode: RSE TX

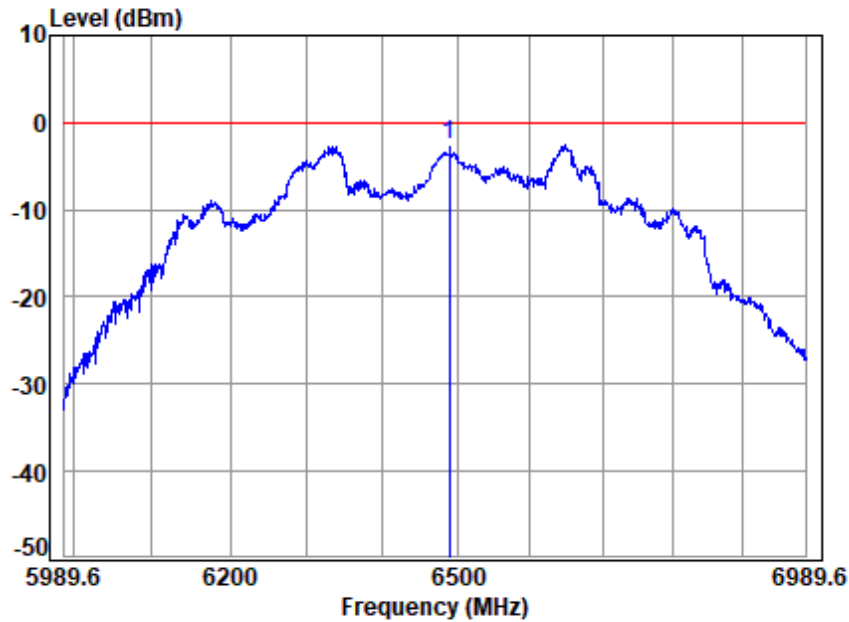
Note: CH5

Note:

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	6489.60	-45.68	-41.30	-4.38



Test Mode: PK; Polarity: Horizontal



Condition: 3m HORIZONTAL

Job No: 04515AT

Test mode: RSE TX

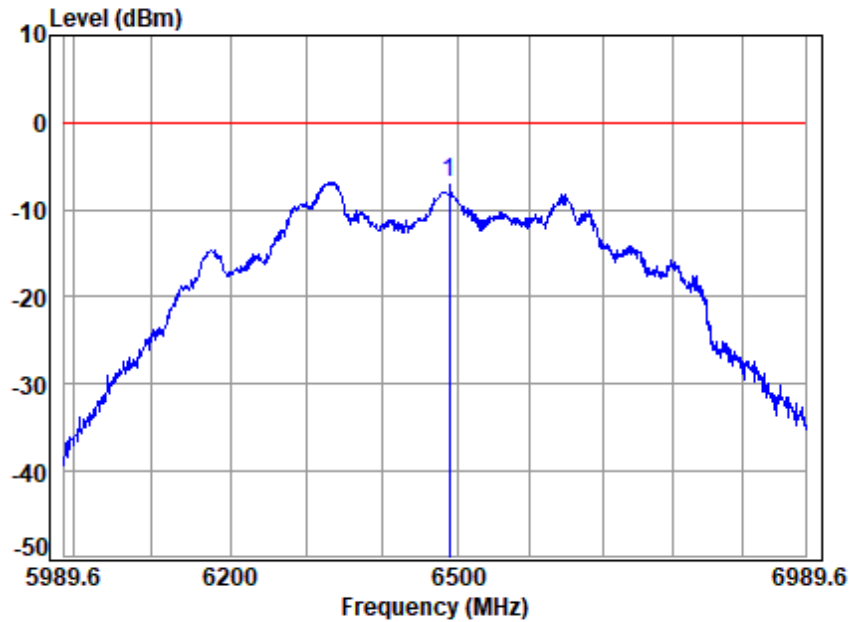
Note: CH5

Note:

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	6489.60	-2.58	0.00	-2.58



Test Mode: PK; Polarity: Vertical



Condition: 3m VERTICAL

Job No: 04515AT

Test mode: RSE TX

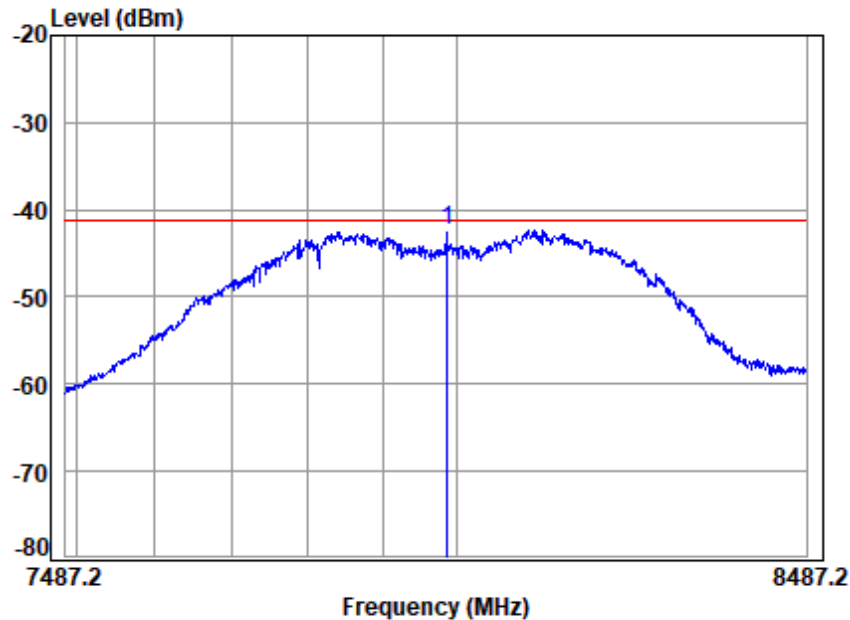
Note: CH5

Note:

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	6489.60	-6.78	0.00	-6.78



Test Mode: AV; Polarity: Horizontal



Condition: 3m HORIZONTAL

Job No: 04515AT

Test mode: RSE TX

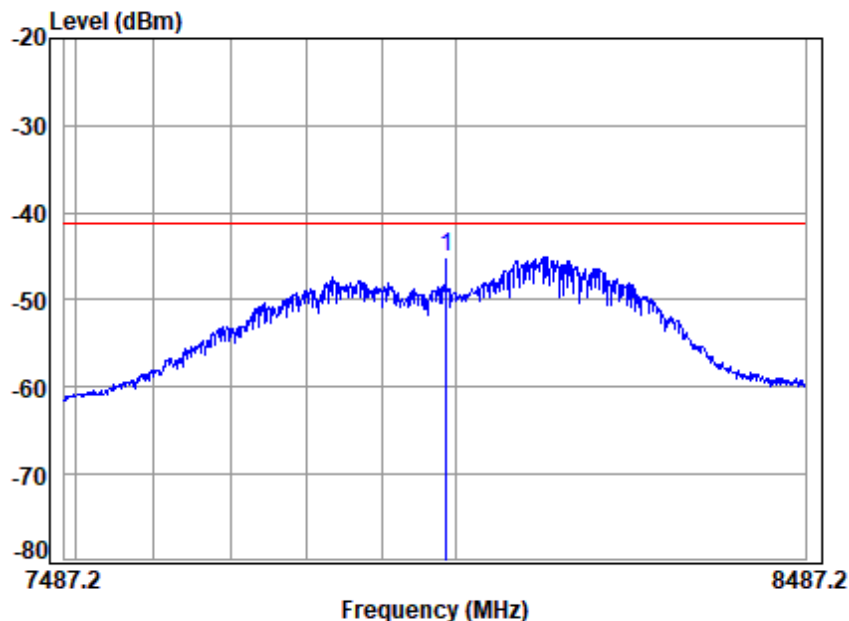
Note: CH9

Note:

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	7987.20	-42.39	-41.30	-1.09



Test Mode: AV; Polarity: Vertical



Condition: 3m VERTICAL

Job No: 04515AT

Test mode: RSE TX

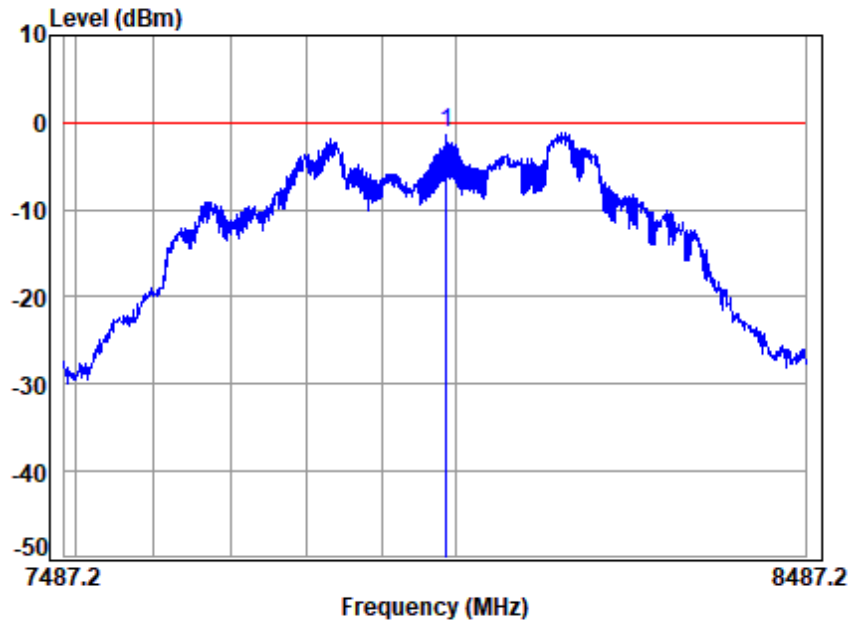
Note: CH9

Note:

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	7987.20	-45.19	-41.30	-3.89



Test Mode: PK; Polarity: Horizontal



Condition: 3m HORIZONTAL

Job No: 04515AT

Test mode: RSE TX

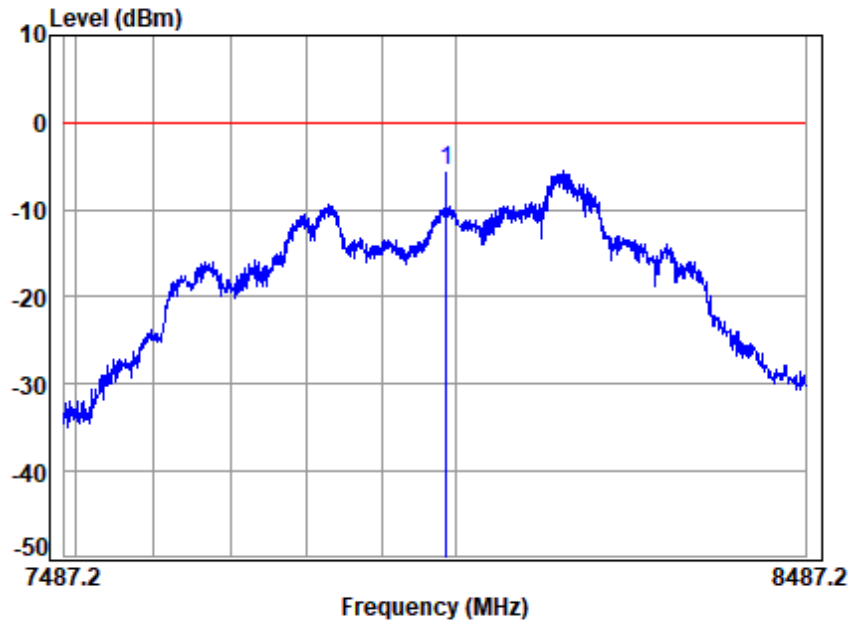
Note: CH9

Note:

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	7987.20	-1.19	0.00	-1.19



Test Mode: PK; Polarity: Vertical



Condition: 3m VERTICAL

Job No: 04515AT

Test mode: RSE TX

Note: CH9

Note:

Marker	Freq. MHz	Level dBm	Limit dBm	Over Limit dB
1	7987.20	-5.54	0.00	-5.54



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7.3 Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart F Section 15.519 (c)(d),15.209

Test Method: ANSI C63.10: 2020 section 10.2 & 10.3

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.3 °C

Humidity: 47.6 % RH

Atmospheric Pressure: 1020 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Continuous Tx Mode: Keep the EUT Transmitting with Modulation



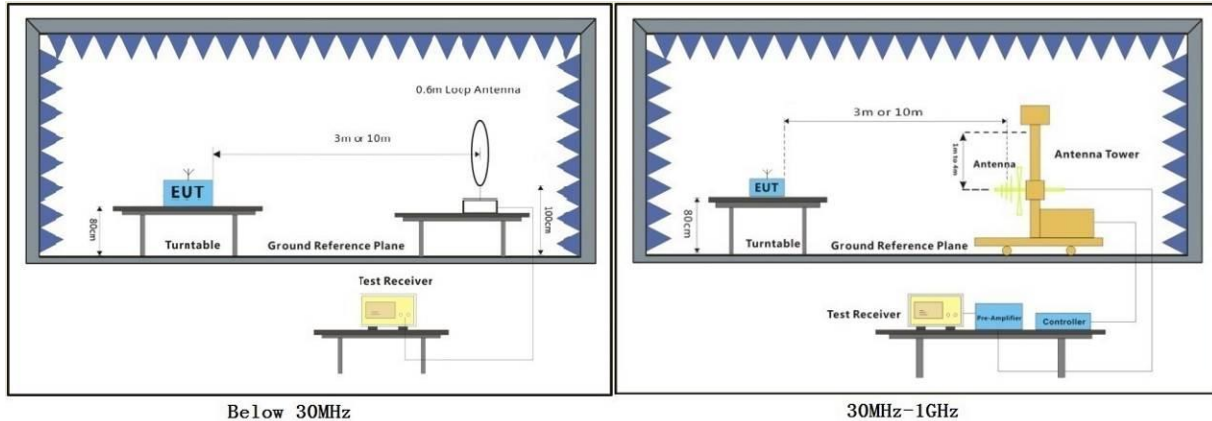
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7.3.3 Test Setup Diagram



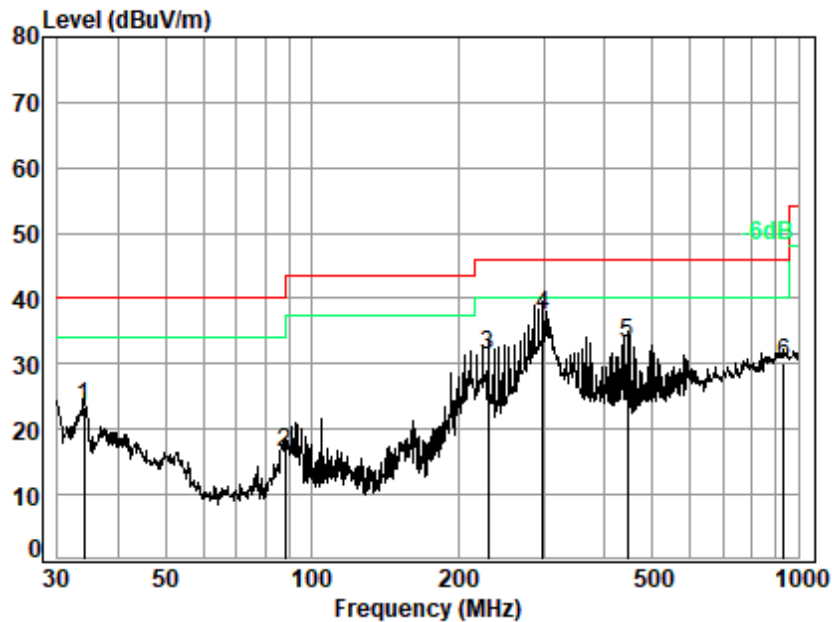
7.3.4 Measurement Procedure and Data

- 1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 5) The test-receiver system was set to Peak detector with Maximum Hold Mode. And use Quasi-Peak to measure the six highest frequencies.
- 6) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.
- 7) Repeat above procedures until all frequencies measured was complete

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test Mode: 00; Polarity: Horizontal

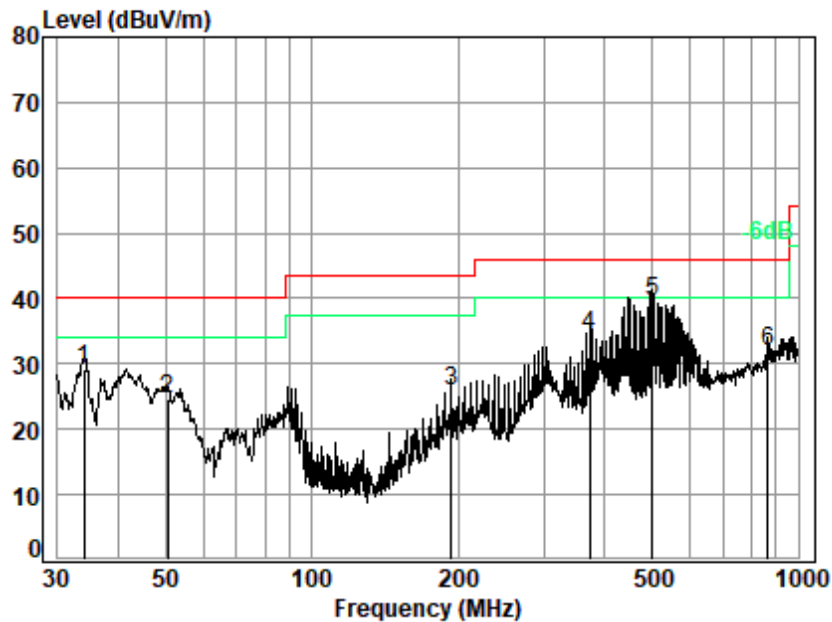


Site : chamber
Condition: 3m HORIZONTAL
Job No. : 04515AT
Test Mode: 00

	Ant	Cable	Preamp	Read	Limit	Over	
Freq	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	34.037	19.41	0.78	27.65	30.88	23.42	40.00 -16.58 QP
2	88.033	11.47	1.16	27.61	31.48	16.50	43.50 -27.00 QP
3	230.099	16.46	1.84	27.70	40.88	31.48	46.00 -14.52 QP
4 q	298.268	17.82	2.10	27.50	45.08	37.50	46.00 -8.50 QP
5	444.851	21.12	2.64	27.84	37.10	33.02	46.00 -12.98 QP
6	935.546	28.18	4.05	26.76	24.62	30.09	46.00 -15.91 QP



Test Mode: 00; Polarity: Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : 04515AT
Test Mode: 00

	Ant	Cable	Preamp	Read		Limit	Over	
Freq	Factor	Loss	Factor	Level	Level	Line	Limit	Remark
MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	34.037	19.41	0.78	27.65	36.59	29.13	40.00	-10.87 QP
2	50.586	12.67	0.90	27.63	38.58	24.52	40.00	-15.48 QP
3	193.773	14.18	1.68	27.79	37.64	25.71	43.50	-17.79 QP
4	372.005	20.54	2.39	27.69	39.10	34.34	46.00	-11.66 QP
5 q	501.179	22.95	2.81	27.94	41.68	39.50	46.00	-6.50 QP
6	866.088	27.66	3.89	27.17	27.55	31.93	46.00	-14.07 QP



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7.4 Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart F Section 15.519 (c)(d),15.209

Test Method: ANSI C63.10: 2020 section 10.3

Measurement Distance: 3m

Limit:

Frequency	Field strength (dBm)	Limit (dBuV/m)	RBW	Detector	Measurement distance (m)
960MHz-1610MHz	-75.3	20.0	1MHz	RMS/AV	3
1610MHz-1990MHz	-63.3	32.0	1MHz	RMS/AV	3
1990MHz-3100MHz	-61.3	34.0	1MHz	RMS/AV	3
3100MHz-10600MHz	-41.3	54.0	1MHz	RMS/AV	3
Above 10600MHz	-61.3	34.0	1MHz	RMS/AV	3
1164MHz-1240MHz	-85.3	10.0	1KHz	RMS/AV	3
1559MHz-1610MHz	-85.3	10.0	1KHz	RMS/AV	3

$E \text{ (dBuV/m)} = \text{EIRP(dBm)} + 95.3$

Frequency	Measurement Distance
960MHz-1610MHz	0.5
1610MHz-1990MHz	0.5
1990MHz-3100MHz	0.5
3100MHz-10600MHz	0.5
Above 10600MHz	0.5
1164MHz-1240MHz	0.5
1559MHz-1610MHz	0.5

Distance factor = $20 \cdot \log_{10}(0.5/3) = -15.56\text{dB}$

The correction factor of distance was added in the test result.

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

Humidity: 56.3 % RH

Atmospheric Pressure: 1020 mbar

7.4.2 Test Mode Description

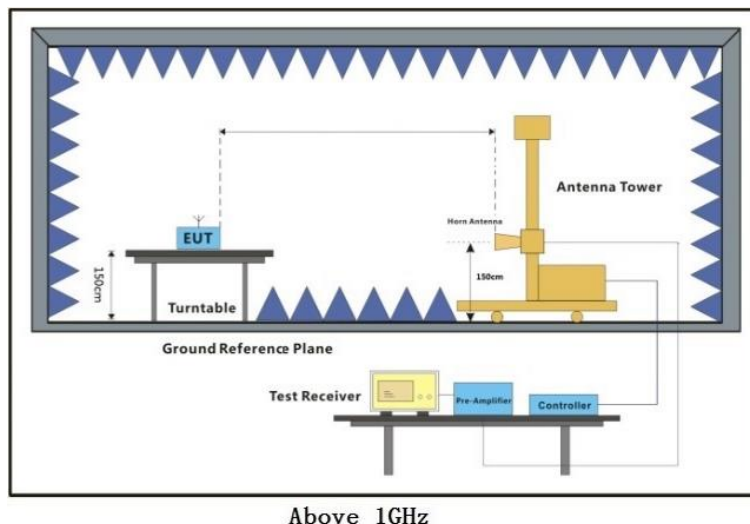
Pre-scan / Final test	Mode Code	Description
Final test	00	Continuous Tx Mode: Keep the EUT Transmitting with Modulation



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7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

- 1) The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 3) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 4) The test-receiver system was set to Peak detector with Maximum Hold Mode.
- 5) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.
- 6) Repeat above procedures until all frequencies measured was complete

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor - (Preamp Factor - Distance factor)
2. Scan from 960MHz to 18GHz, the disturbance below 1GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.



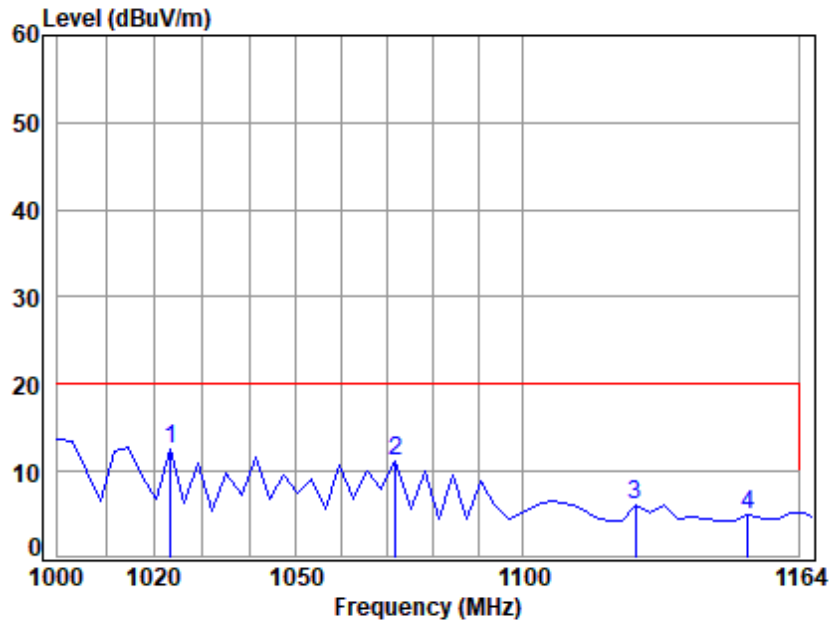
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Test Mode: 00-CH5; Polarity: Horizontal, 1000M-1164MHz



Site : chamber
Condition: HORIZONTAL
Job No : 04515AT\04516AT
Mode : CH5

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 p	1023.392	4.55	25.55	54.61	37.07	12.56	20.00	-7.44	Peak
2	1071.832	4.55	24.26	54.63	36.92	11.10	20.00	-8.90	Peak
3	1125.813	4.56	23.80	54.65	32.49	6.20	20.00	-13.80	Peak
4	1152.148	4.56	23.92	54.66	31.10	4.92	20.00	-15.08	Peak



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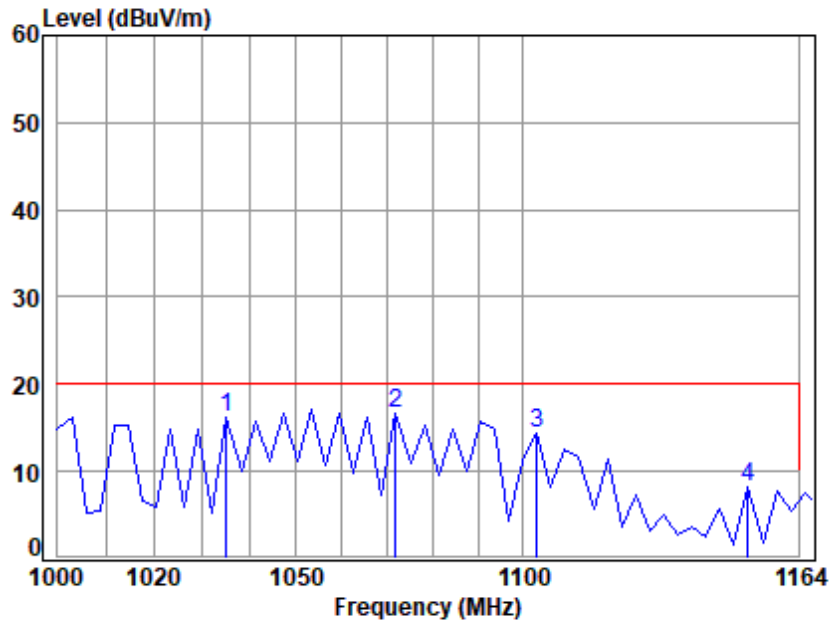
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Test Mode: 00-CH5; Polarity: Vertical, 1000M-1164MHz



Site : chamber
Condition: VERTICAL
Job No : 04515AT\04516AT
Mode : CH5

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1035.293	4.55	25.17	54.62	41.14	16.24	20.00	-3.76	Peak
2 p	1071.832	4.55	24.26	54.63	42.56	16.74	20.00	-3.26	Peak
3	1103.264	4.55	23.71	54.64	40.66	14.28	20.00	-5.72	Peak
4	1152.148	4.56	23.92	54.66	34.45	8.27	20.00	-11.73	Peak



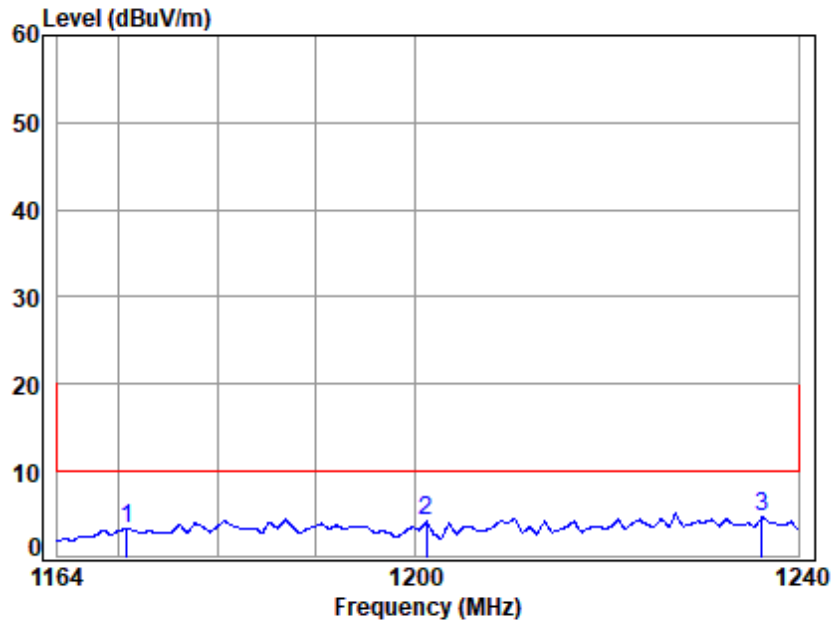
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Test Mode: 00-CH5; Polarity: Horizontal, 1164M-1240MHz



Site : chamber
Condition: HORIZONTAL
Job No : 04515AT\04516AT
Mode : CH5

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1170.867	4.56	24.11	54.67	29.44	3.44	10.00	-6.56	Peak
2	1201.247	4.56	24.42	54.68	29.93	4.23	10.00	-5.77	Peak
3 p	1236.163	4.56	24.91	54.69	30.07	4.85	10.00	-5.15	Peak



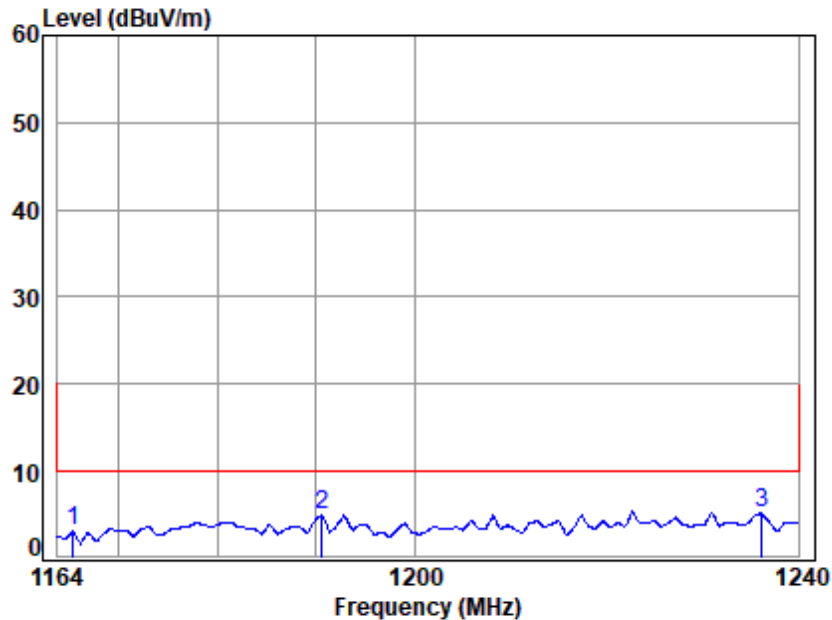
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Report No.: SZCR251000451501

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Test Mode: 00-CH5; Polarity: Vertical, 1164M-1240MHz



Site : chamber
Condition: VERTICAL
Job No : 04515AT\04516AT
Mode : CH5

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1165.547	4.56	24.06	54.67	29.23	3.18	10.00	-6.82	Peak
2	1190.582	4.56	24.31	54.68	30.93	5.12	10.00	-4.88	Peak
3 p	1236.163	4.56	24.91	54.69	30.43	5.21	10.00	-4.79	Peak



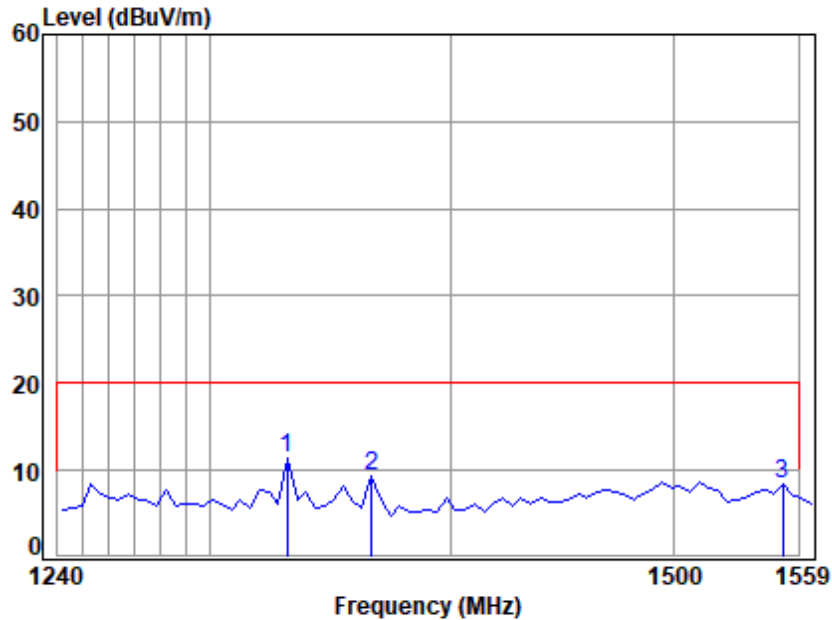
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Test Mode: 00-CH5; Polarity: Horizontal, 1240M-1559MHz



Site : chamber
Condition: HORIZONTAL
Job No : 04515AT\04516AT
Mode : CH5

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 p 1331.288		4.56	24.61	54.72	37.05	11.50	20.00	-8.50 Peak
2 1366.374		4.57	24.53	54.74	34.95	9.31	20.00	-10.69 Peak
3 1551.677		4.68	26.99	54.79	31.62	8.50	20.00	-11.50 Peak



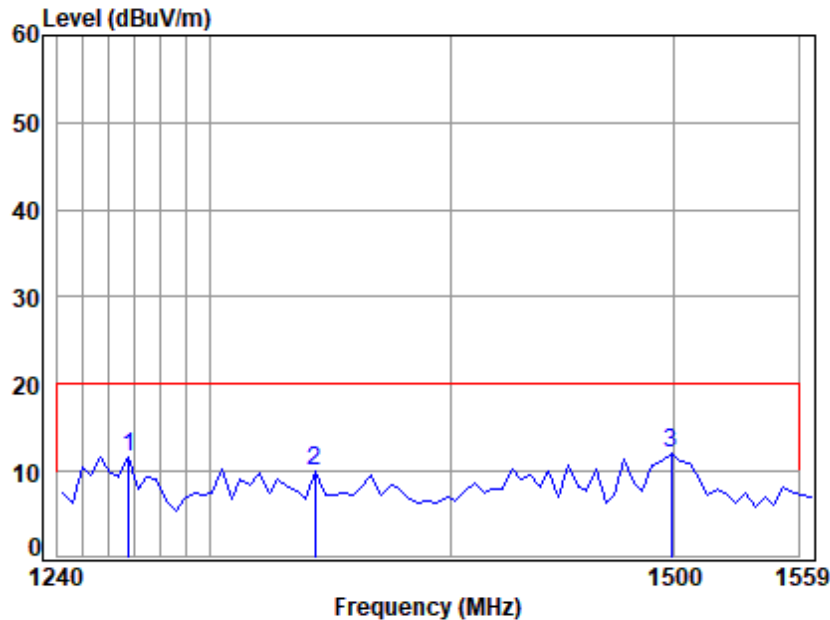
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Report No.: SZCR251000451501

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Test Mode: 00-CH5; Polarity: Vertical, 1240M-1559MHz



Site : chamber
Condition: VERTICAL
Job No : 04515AT\04516AT
Mode : CH5

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1267.454	4.56	25.00	54.70	36.68	11.54	20.00	-8.46	Peak
2	1342.882	4.56	24.54	54.73	35.62	9.99	20.00	-10.01	Peak
3 p	1498.781	4.57	26.77	54.78	35.50	12.06	20.00	-7.94	Peak



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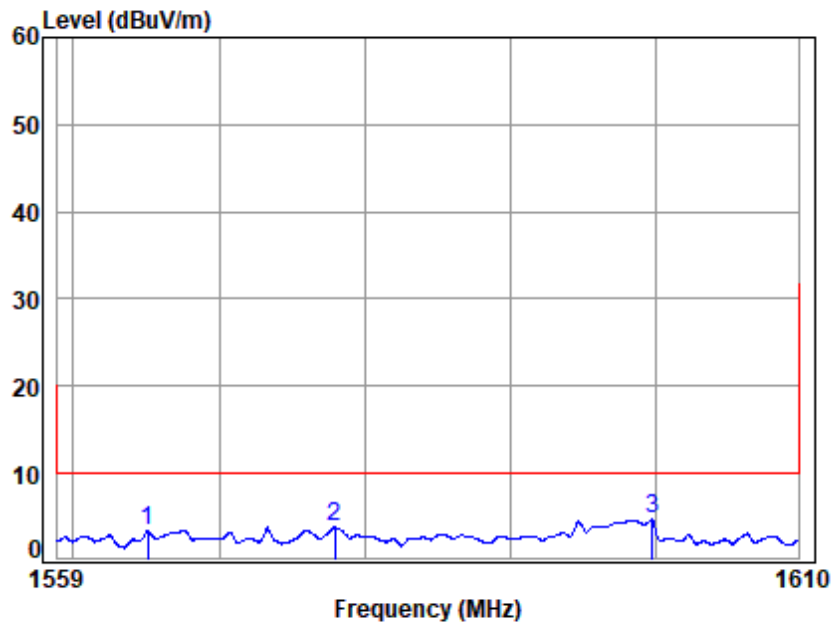
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Test Mode: 00-CH5; Polarity: Horizontal, 1559M-1610MHz



Site : chamber
Condition: HORIZONTAL
Job No : 04515AT\04516AT
Mode : CH5

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1565.134	4.71	26.94	54.79	26.62	3.48	10.00	-6.52 Peak
2	1577.882	4.74	26.89	54.80	27.08	3.91	10.00	-6.09 Peak
3 p	1599.823	4.79	26.80	54.80	27.95	4.74	10.00	-5.26 Peak



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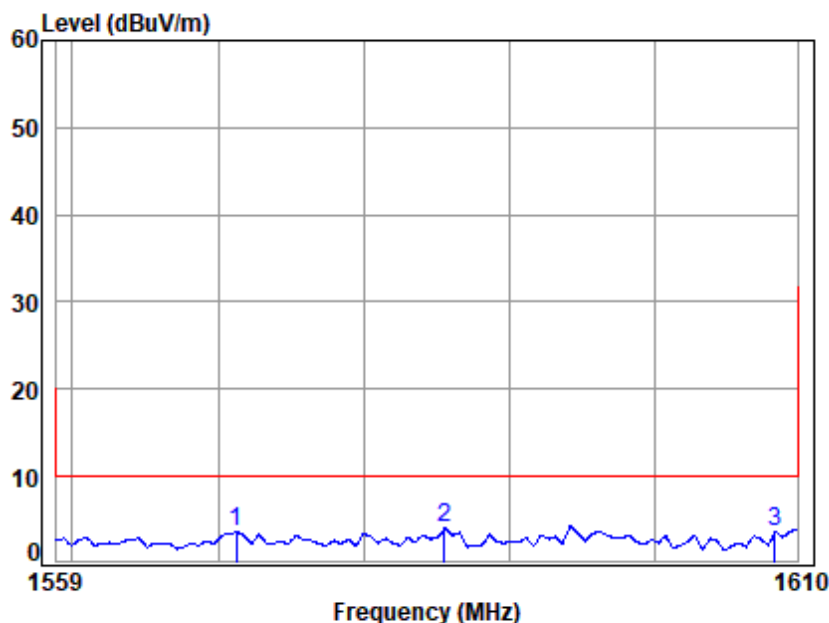
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Test Mode: 00-CH5; Polarity: Vertical, 1559M-1610MHz



Site : chamber
Condition: VERTICAL
Job No : 04515AT\04516AT
Mode : CH5

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1571.242	4.73	26.92	54.80	26.75	3.60	10.00	-6.40	Peak
2 p	1585.519	4.76	26.86	54.80	27.25	4.07	10.00	-5.93	Peak
3	1608.446	4.81	26.72	54.81	26.96	3.68	10.00	-6.32	Peak



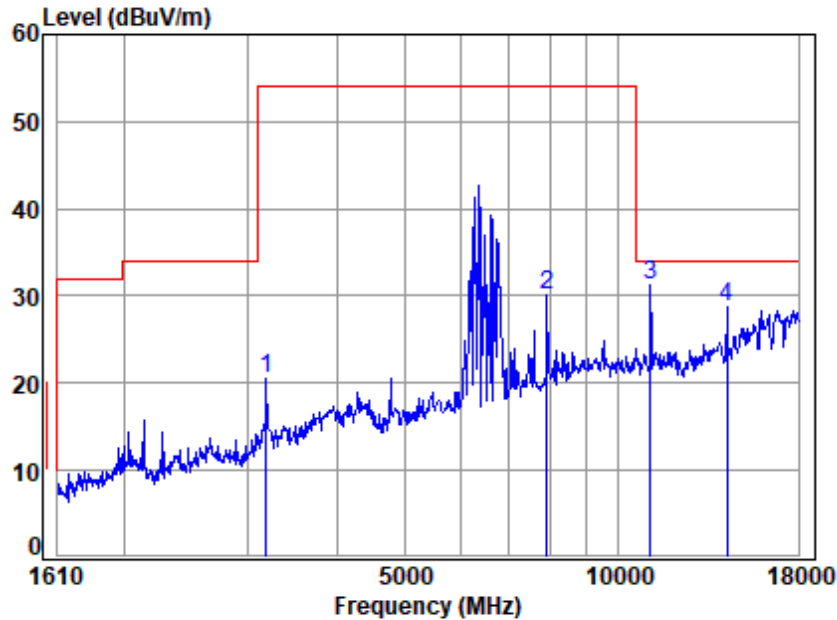
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Test Mode: 00-CH5; Polarity: Horizontal, 1610M-18000MHz

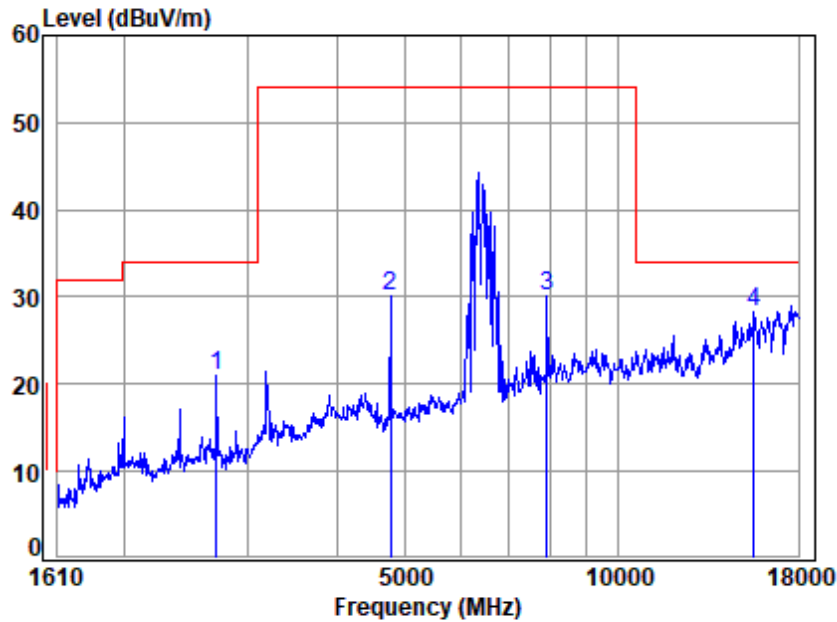


Site : chamber
Condition: HORIZONTAL
Job No : 04515AT\04516AT
Mode : CH5

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	3177.672	6.77	32.72	54.86	35.84	20.47	54.00	-33.53 Peak
2	7943.838	9.49	36.41	53.11	37.39	30.18	54.00	-23.82 Peak
3	p11108.160	12.26	37.52	53.02	34.40	31.16	34.00	-2.84 Peak
4	14284.030	13.82	40.05	52.81	27.58	28.64	34.00	-5.36 Peak



Test Mode: 00-CH5; Polarity: Vertical, 1610M-18000MHZ

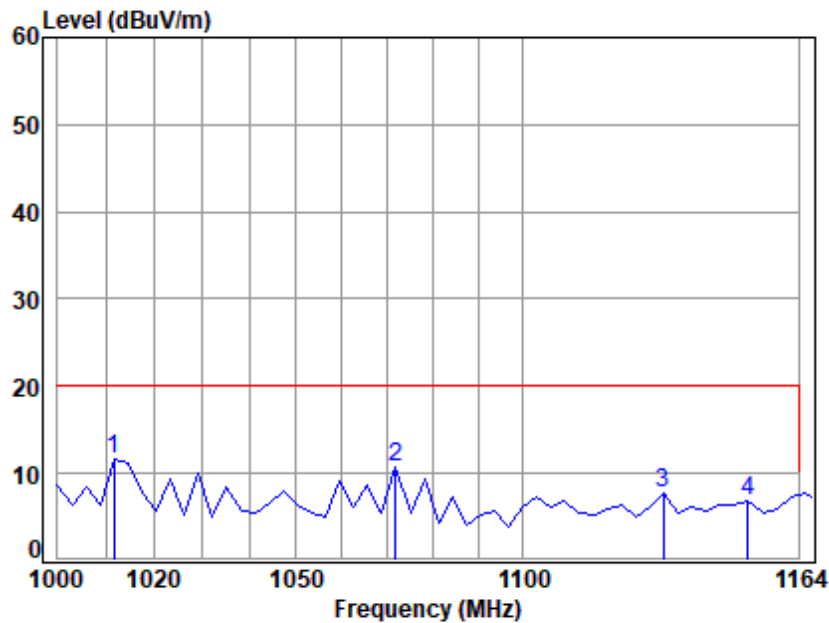


Site : chamber
Condition: VERTICAL
Job No : 04515AT\04516AT
Mode : CH5

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2702.799	6.59	29.70	54.97	39.61	20.93	34.00	-13.07	Peak
2	4762.633	7.98	34.00	54.22	42.46	30.22	54.00	-23.78	Peak
3	7943.838	9.49	36.41	53.11	37.36	30.15	54.00	-23.85	Peak
4	p15577.900	14.95	41.10	52.13	24.29	28.21	34.00	-5.79	Peak



Test Mode: 00-CH9; Polarity: Horizontal, 1000M-1164MHz



Site : chamber
Condition: HORIZONTAL
Job No : 04515AT\04516AT
Mode : CH9

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 p 1011.629		4.55	25.93	54.61	35.86	11.73	20.00	-8.27 Peak
2 1071.832		4.55	24.26	54.63	36.52	10.70	20.00	-9.30 Peak
3 1132.340		4.56	23.83	54.65	34.10	7.84	20.00	-12.16 Peak
4 1152.148		4.56	23.92	54.66	32.96	6.78	20.00	-13.22 Peak



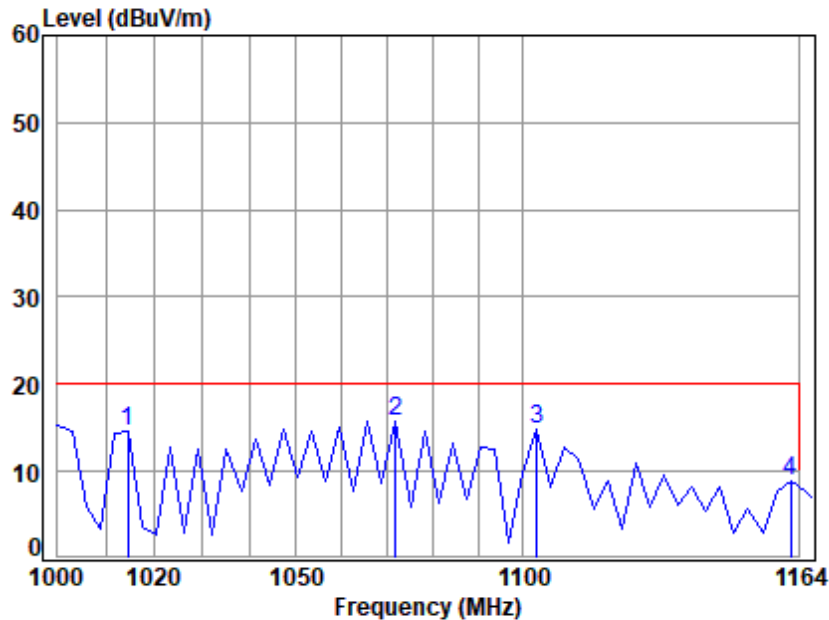
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Test Mode: 00-CH9; Polarity: Vertical, 1000M-1164MHz



Site : chamber
Condition: VERTICAL
Job No : 04515AT\04516AT
Mode : CH9

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1014.557	4.55	25.83	54.61	38.75	14.52	20.00	-5.48	Peak
2 p	1071.832	4.55	24.26	54.63	41.67	15.85	20.00	-4.15	Peak
3	1103.264	4.55	23.71	54.64	41.25	14.87	20.00	-5.13	Peak
4	1162.182	4.56	24.02	54.67	34.98	8.89	20.00	-11.11	Peak



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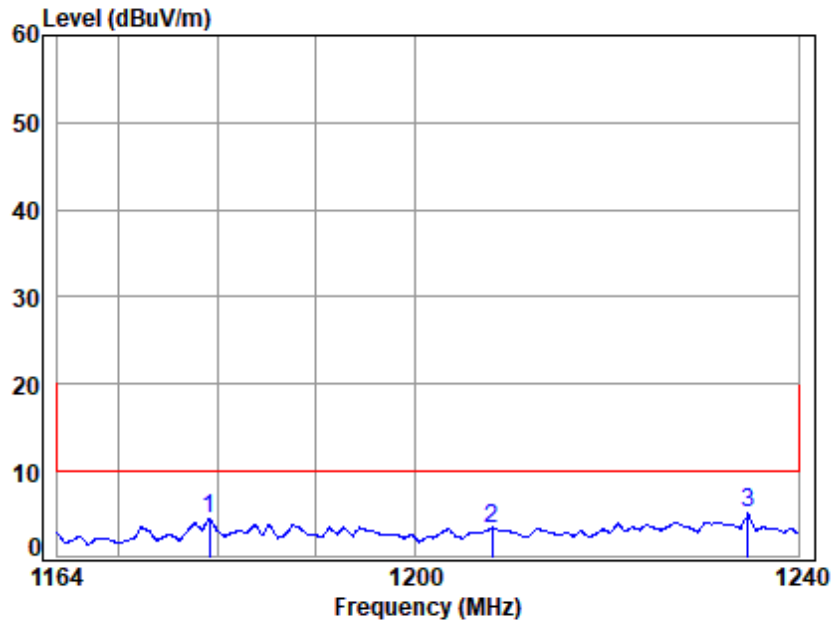
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Test Mode: 00-CH9; Polarity: Horizontal, 1164M-1240MHz



Site : chamber
Condition: HORIZONTAL
Job No : 04515AT\04516AT
Mode : CH9

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1179.191	4.56	24.19	54.67	30.59	4.67	10.00	-5.33	Peak
2	1207.952	4.56	24.51	54.68	29.10	3.49	10.00	-6.51	Peak
3 p	1234.678	4.56	24.89	54.69	30.42	5.18	10.00	-4.82	Peak



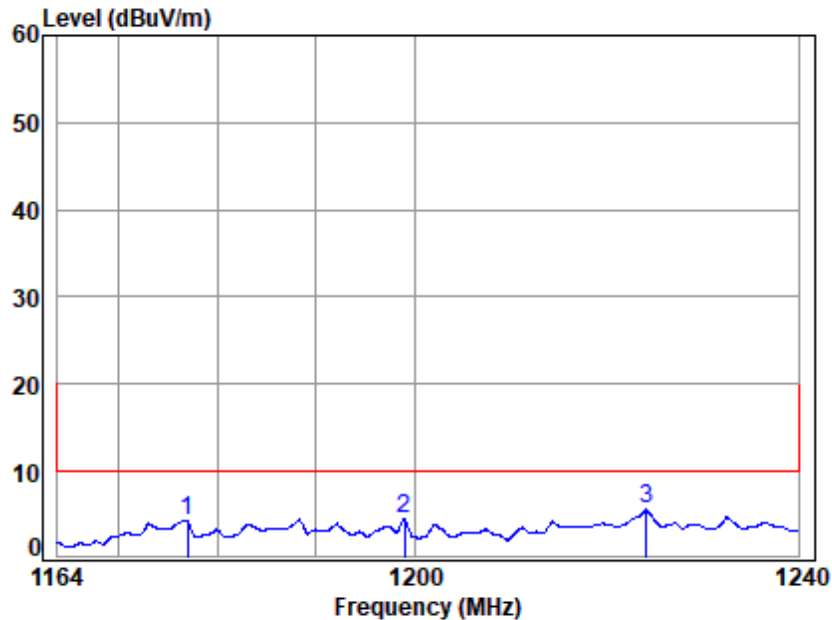
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Test Mode: 00-CH9; Polarity: Vertical, 1164M-1240MHz

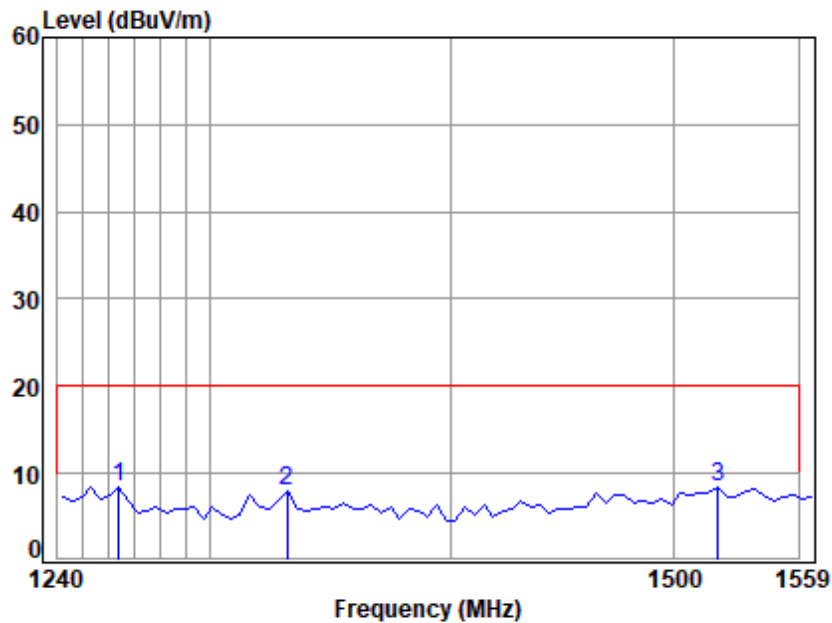


Site : chamber
Condition: VERTICAL
Job No : 04515AT\04516AT
Mode : CH9

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1176.955	4.56	24.17	54.67	30.29	4.35	10.00	-5.65	Peak
2	1198.970	4.56	24.39	54.68	30.38	4.65	10.00	-5.35	Peak
3 p	1224.026	4.56	24.74	54.69	31.07	5.68	10.00	-4.32	Peak



Test Mode: 00-CH9; Polarity: Horizontal, 1240M-1559MHz

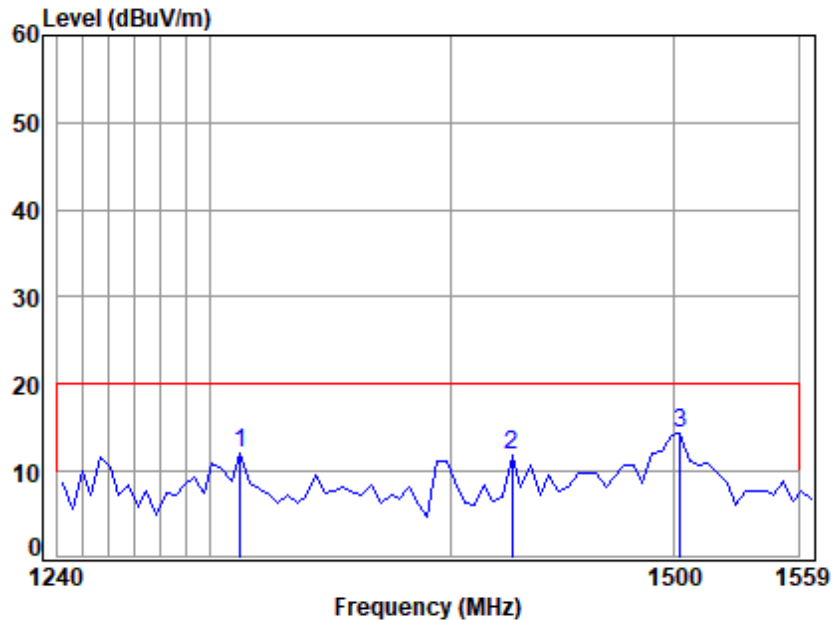


Site : chamber
Condition: HORIZONTAL
Job No : 04515AT\04516AT
Mode : CH9

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1263.796	4.56	25.02	54.70	33.59	8.47	20.00	-11.53 Peak
2	1331.288	4.56	24.61	54.72	33.57	8.02	20.00	-11.98 Peak
3 p	1520.598	4.62	26.88	54.78	31.82	8.54	20.00	-11.46 Peak



Test Mode: 00-CH9; Polarity: Vertical, 1240M-1559MHz

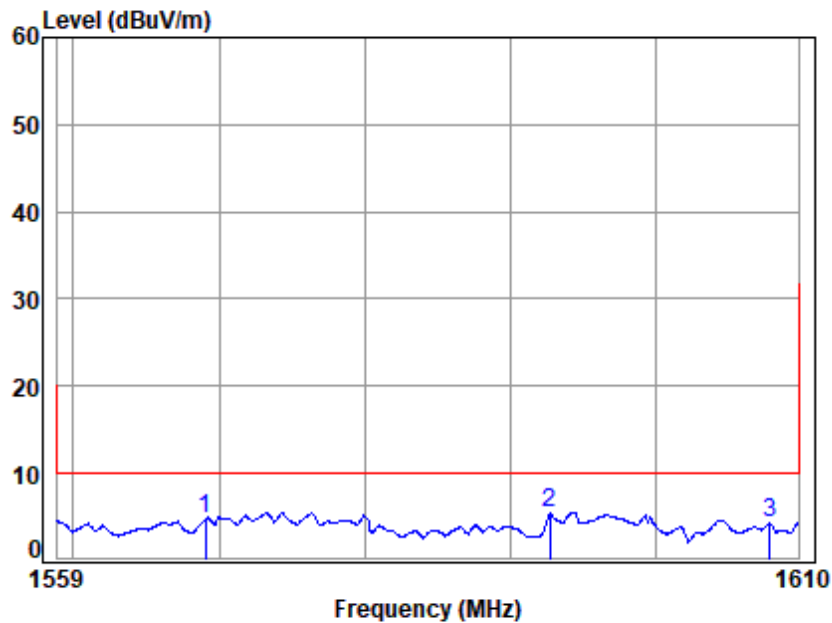


Site : chamber
Condition: VERTICAL
Job No : 04515AT\04516AT
Mode : CH9

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1312.187	4.56	24.73	54.72	37.54	12.11	20.00	-7.89	Peak
2	1426.916	4.57	25.03	54.75	37.00	11.85	20.00	-8.15	Peak
3 p	1503.119	4.58	26.81	54.78	37.79	14.40	20.00	-5.60	Peak



Test Mode: 00-CH9; Polarity: Horizontal, 1559M-1610MHz



Site : chamber
Condition: HORIZONTAL
Job No : 04515AT\04516AT
Mode : CH9

		Cable	Ant	Preamp	Read	Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1569.069	4.72	26.92	54.79	27.89	4.74	10.00	-5.26 Peak
2 p	1592.681	4.77	26.83	54.80	28.61	5.41	10.00	-4.59 Peak
3	1607.980	4.80	26.72	54.81	27.64	4.35	10.00	-5.65 Peak



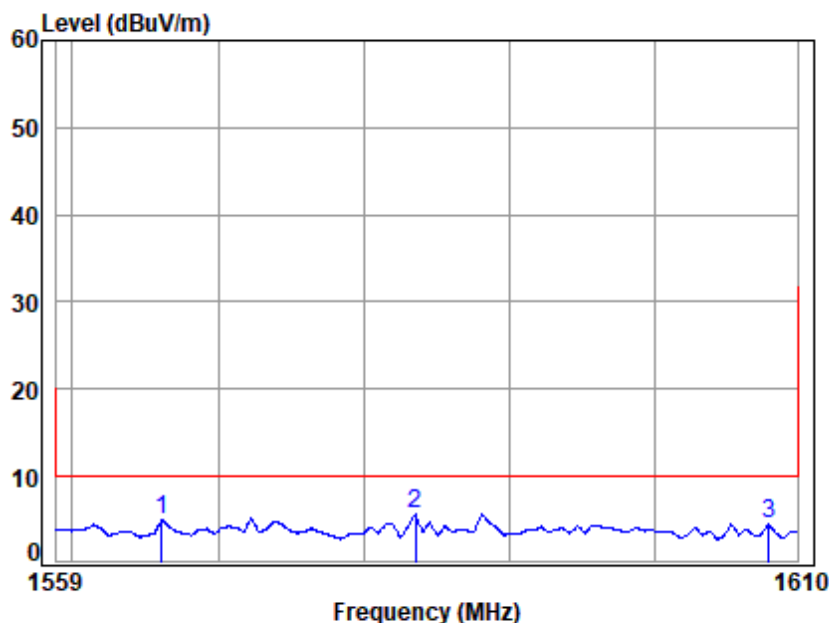
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Test Mode: 00-CH9; Polarity: Vertical, 1559M-1610MHz



Site : chamber
Condition: VERTICAL
Job No : 04515AT\04516AT
Mode : CH9

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1566.142	4.72	26.94	54.79	28.20	5.07	10.00	-4.93	Peak
2 p	1583.479	4.75	26.87	54.80	28.84	5.66	10.00	-4.34	Peak
3	1607.980	4.80	26.72	54.81	27.77	4.48	10.00	-5.52	Peak



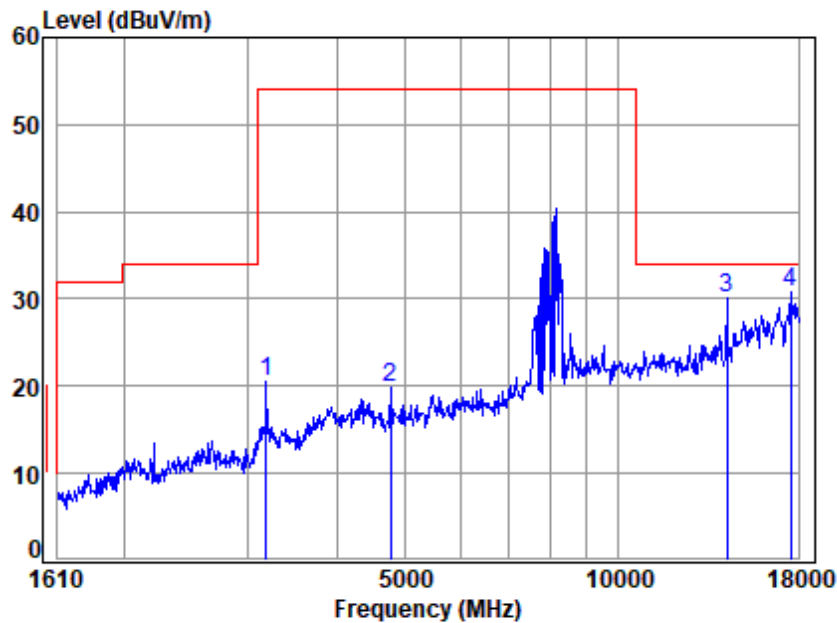
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Test Mode: 00-CH9; Polarity: Horizontal, 1610M-18000MHz

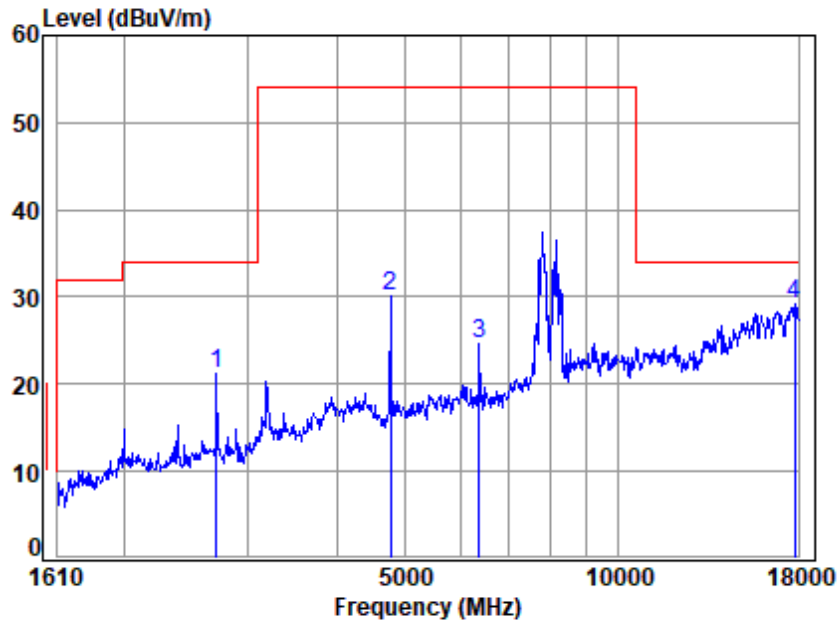


Site : chamber
Condition: HORIZONTAL
Job No : 04515AT\04516AT
Mode : CH9

		Cable	Ant	Preamp	Read	Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	3177.672	6.77	32.72	54.86	35.86	20.49	54.00	-33.51 Peak
2	4762.633	7.98	34.00	54.22	32.03	19.79	54.00	-34.21 Peak
3	14284.030	13.82	40.05	52.81	29.02	30.08	34.00	-3.92 Peak
4	p17537.800	16.25	43.48	52.63	23.71	30.81	34.00	-3.19 Peak



Test Mode: 00-CH9; Polarity: Vertical, 1610M-18000MHZ



Site : chamber
Condition: VERTICAL
Job No : 04515AT\04516AT
Mode : CH9

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2702.799	6.59	29.70	54.97	39.82	21.14	34.00	-12.86	Peak
2	4762.633	7.98	34.00	54.22	42.28	30.04	54.00	-23.96	Peak
3	6358.789	9.24	34.95	53.14	33.57	24.62	54.00	-29.38	Peak
4	p17793.090	16.37	43.89	52.50	21.36	29.12	34.00	-4.88	Peak



7.5 UWB Bandwidth

Test Requirement 47 CFR Part 15F Section 15.503(a)
Test Method: ANSI C63.10:2020 section 10.1

7.5.1 E.U.T. Operation

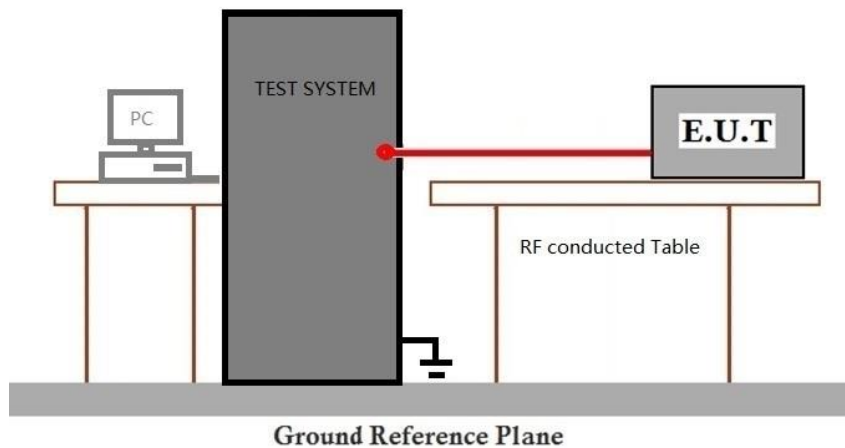
Operating Environment:

Temperature: 20.9 °C Humidity: 52.5 % RH Atmospheric Pressure: 1020 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Continuous Tx Mode: Keep the EUT Transmitting with Modulation

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

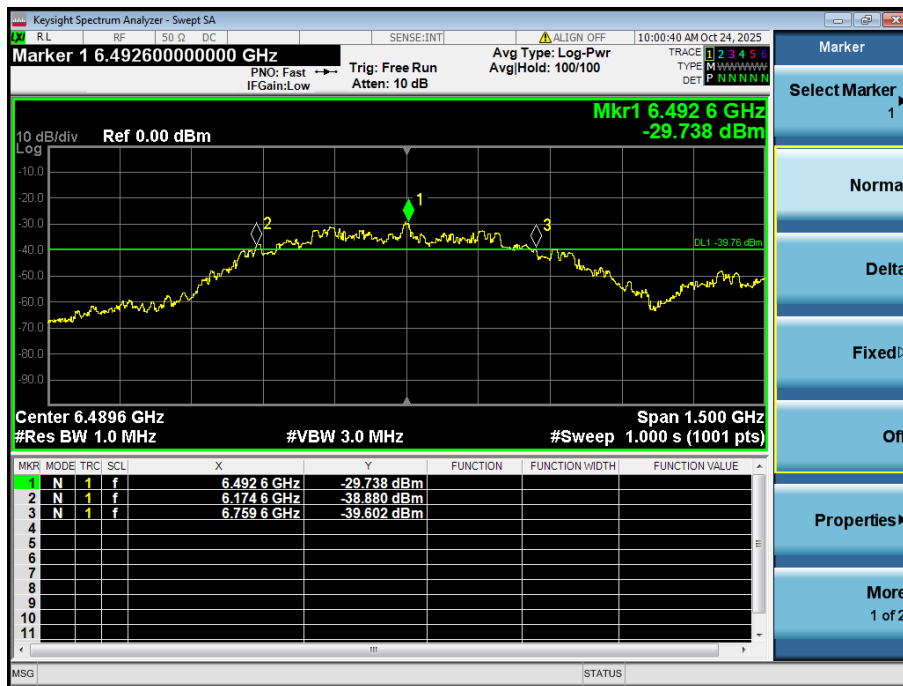
The frequency at which the maximum power level is measured with the peak detector is designated f_M . The peak power measurements shall be made using a spectrum analyzer or EMI receiver with a 1 MHz resolution bandwidth and a video bandwidth of 1 MHz or greater. The instrument shall be set to peak detection using the maximum-hold trace mode. The outermost 1 MHz segments above and below f_M , where the peak power falls by 10 dB relative to the level at f_M , are designated as f_H and f_L , respectively:

- For the lowest frequency bound f_L , the emission is searched from a frequency lower than f_M that has, by inspection, a peak power much lower than 10 dB less than the power at f_M and increased toward f_M until the peak power indicates 10 dB less than the power at f_M . The frequency of that segment is recorded.
- This process is repeated for the highest frequency bound f_H , beginning at a frequency higher than f_M that has, by inspection, a peak power much lower than 10 dB below the power at f_M . The frequency of that segment is recorded.
- The two recorded frequencies represent the highest f_H and lowest f_L bounds of the UWB transmission, and the 10 dB bandwidth (B_{-10}) is defined as $(f_H - f_L)$. The center frequency (f_c) is mathematically determined from $(f_H - f_L) / 2$.
- The fractional bandwidth is defined as $2(f_H - f_L) / (f_H + f_L)$.
- Determine whether the -10 dB bandwidth ($f_H - f_L$) is ≥ 500 MHz, or whether the fractional bandwidth $2(f_H - f_L) / (f_H + f_L)$ is ≥ 0.2 .



Measurement Data

F _c (GHz)	F _M (GHz)	F _L (GHz)	F _H (GHz)	-10dBc Bandwidth(MHz)	Limit(MHz)
6.4671	6.4926	6.1746	6.7596	585	≥500



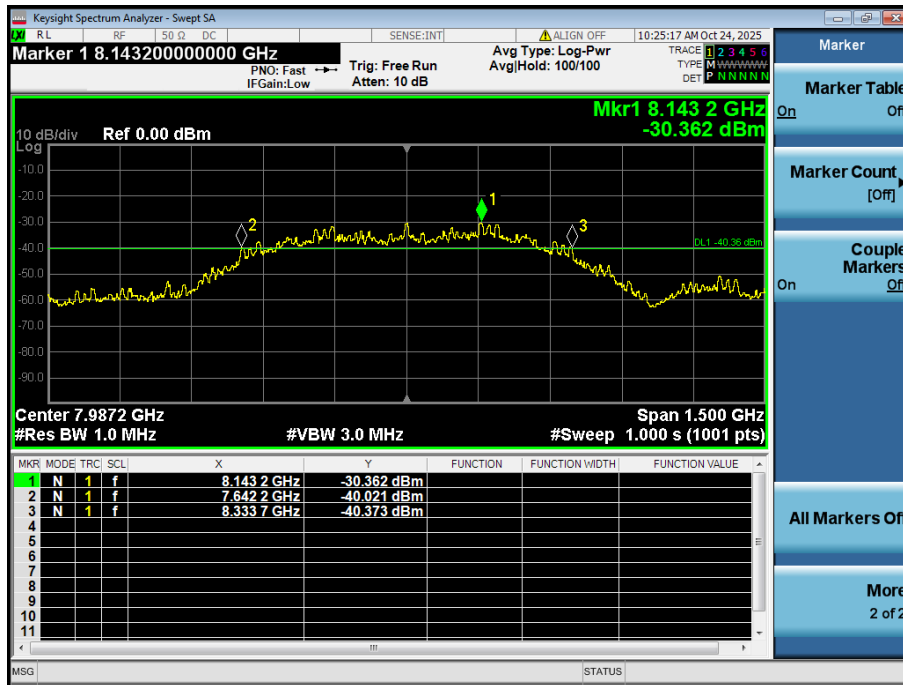
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F _c (GHz)	F _M (GHz)	F _L (GHz)	F _H (GHz)	-10dBc Bandwidth(MHz)	Limit(MHz)
7.98795	8.1432	7.6422	8.3337	691.5	≥500



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7.6 Dwell Time

Test Requirement	47 CFR Part 15 Section 15.519 (a)(1)
Test Method:	ANSI C63.10: 2020 Section 7.8.4
Limit:	The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received

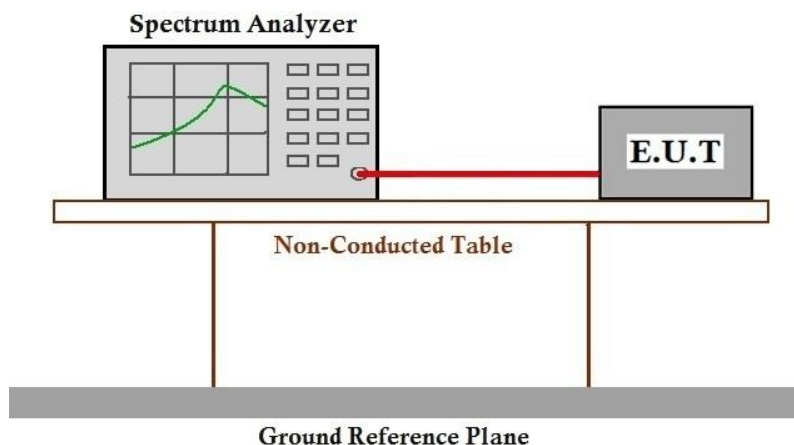
7.6.1 E.U.T. Operation

Operating Environment:					
Temperature:	20.9 °C	Humidity:	52.5 % RH	Atmospheric Pressure:	1020 mbar

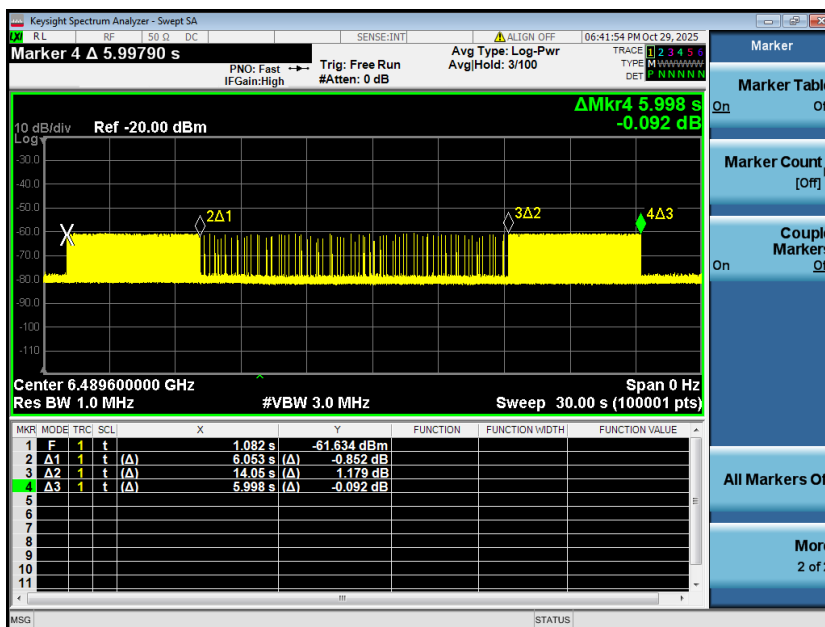
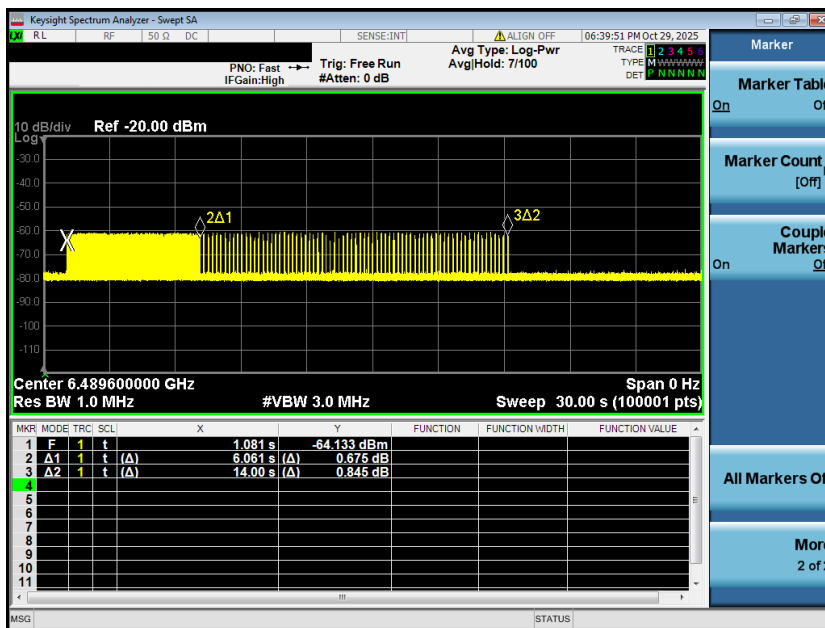
7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	Normal Operating Mode: Keep the EUT Paring with Other Device and Operating Normally

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data



RESULT: Pass

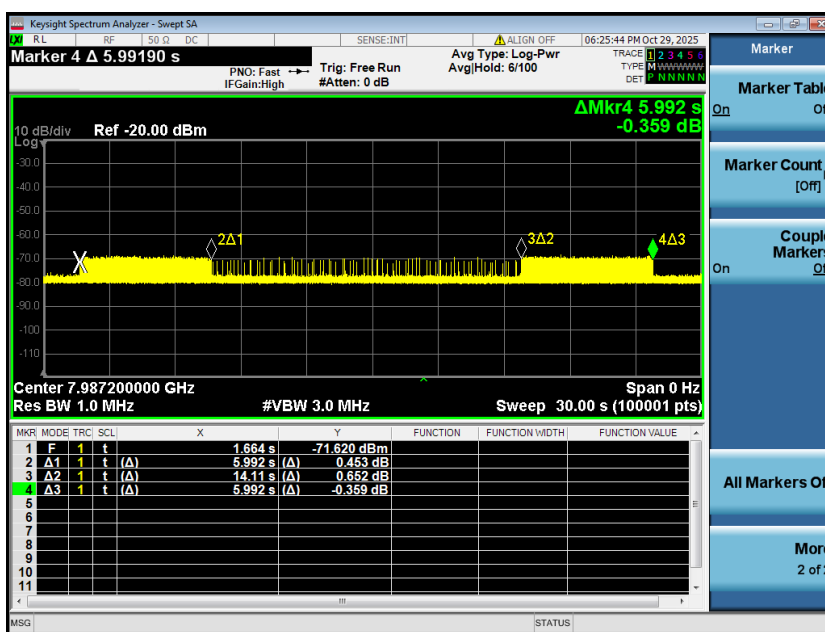
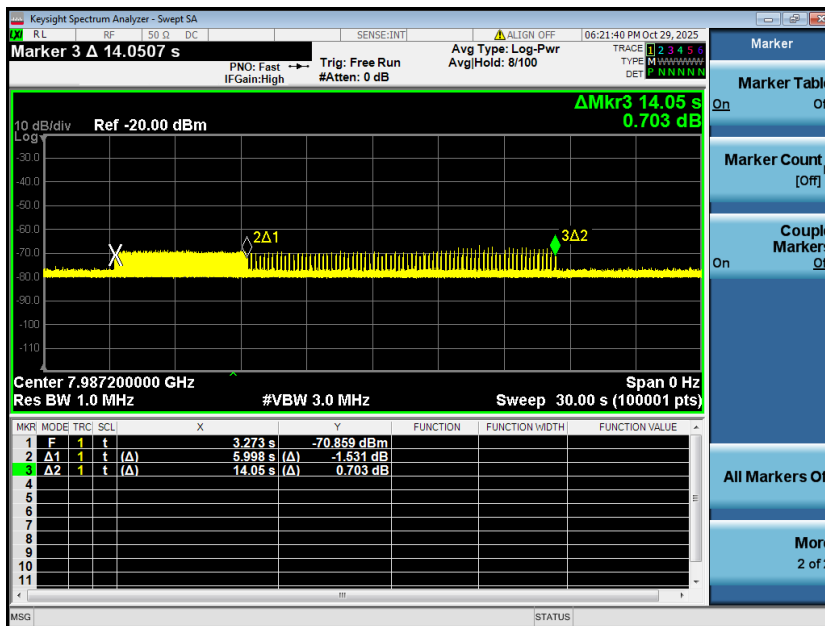
2Δ1 Shows Link Traffic, Acknowledgements and Polling Signals while Link is established

3Δ2 EUT ends the link, Smart Phone stops Acknowledgements but continues Polling

4Δ3 Shows Link Traffic, Acknowledgements and Polling Signals while Link is established



CH 9



RESULT: Pass

2Δ1 Shows Link Traffic, Acknowledgements and Polling Signals while Link is established

3Δ2 EUT ends the link, Smart Phone stops Acknowledgements but continues Polling

4Δ3 Shows Link Traffic, Acknowledgements and Polling Signals while Link is established



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8 Test Setup Photo

Refer to Setup Photo for SZCR2510004515AT

9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos.

- End of the Report -

