

# TEST REPORT

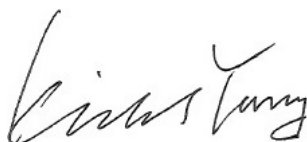
**Application No.:** FYFR2203000005AT  
**Applicant:** SHENZHEN DNS INDUSTRIES CO., LTD.  
**Address of Applicant:** 23/F Building A, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian shenzhen China  
**Manufacturer:** SHENZHEN DNS INDUSTRIES CO., LTD.  
**Address of Manufacturer:** 23/F Building A, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian shenzhen China  
**Factory:**  
 1. HUIZHOU DNS TECHNOLOGY CO., LTD.  
 2. HUIZHOU D&S CABLE CO., LTD.  
 3. D AND S INDUSTRIES (PHILIPPINES) CORPORATION.  
**Address of Factory:**  
 1. 5 Dongshun South Road, Dongjiang Hi-tech Industrial Park, Zhongkai Hi-tech Zone, Huizhou City, Guangdong, China  
 2. LONGJIN DONGJIANG INDUSTRY ZONE, SHUIKOU, HUICHENG, HUIZHOU, GUANGDONG, CHINA  
 3. 1 to 5 Orient Goldcrest Suntrust Ecotown Building 2, Lot 8 Block 8, Sahud Ulan, Suntrust Ecotown Tanza, Region IV-A, Cavite, Philippines.

**Equipment Under Test (EUT):**

**EUT Name:** Magnetic Wireless Charger  
**Model No.:** WD-274C  
**Trade Mark:** DNS, omars, mbest, NOVOO, KEYMOX  
**FCC ID:** ZBC-WD274C  
**Standard(s) :** 47 CFR Part 15, Subpart C  
**Date of Receipt:** 2022-03-04  
**Date of Test:** 2022-04-08 to 2022-04-11  
**Date of Issue:** 2022-04-13

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



Kidd Yang  
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2022-04-13		Original

<b>Authorized for issue by:</b>			
		<i>Tree Zhan</i>	
		_____	
		<b>Tree Zhan/Project Engineer</b>	
		<i>Winkey Wang</i>	
		_____	
		<b>Winkey Wang/Reviewer</b>	



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## 2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C	N/A	47 CFR Part 15, Subpart C 15.203	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Mains Power Port (150kHz-30MHz)	47 CFR Part 15, Subpart C	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Radiated Emissions (30MHz-1GHz)		ANSI C63.10 (2013) Section 6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Emissions (9kHz-30MHz)		ANSI C63.10 (2013) Section 6.4	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
20dB Bandwidth		ANSI C63.10 (2013) Section 6.9.2	47 CFR Part 15, Subpart C 15.215	Pass
Restricted Bands		ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205	Pass

N/A: Not applicable



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### 3 Contents

	Page
1 COVER PAGE .....	1
2 TEST SUMMARY .....	3
3 CONTENTS .....	4
4 GENERAL INFORMATION .....	6
4.1 DETAILS OF E.U.T. ....	6
4.2 DESCRIPTION OF SUPPORT UNITS .....	6
4.3 TEST LOCATION .....	6
4.4 TEST FACILITY .....	7
4.5 DEVIATION FROM STANDARDS .....	7
4.6 ABNORMALITIES FROM STANDARD CONDITIONS .....	7
5 EQUIPMENT LIST .....	8
6 RADIO SPECTRUM TECHNICAL REQUIREMENT .....	11
6.1 ANTENNA REQUIREMENT .....	11
6.1.1 Test Requirement: .....	11
6.1.2 Conclusion .....	11
7 RADIO SPECTRUM MATTER TEST RESULTS .....	12
7.1 CONDUCTED EMISSIONS AT AC MAINS POWER PORT (150kHz-30MHz) .....	12
7.1.1 E.U.T. Operation .....	12
7.1.2 Test Mode Description .....	12
7.1.3 Test Setup Diagram .....	13
7.1.4 Measurement Procedure and Data .....	13
7.2 RADIATED EMISSIONS (30MHz-1GHz) .....	16
7.2.1 E.U.T. Operation .....	16
7.2.2 Test Mode Description .....	16
7.2.3 Test Setup Diagram .....	17
7.2.4 Measurement Procedure and Data .....	18
7.3 RADIATED EMISSIONS (9kHz-30MHz) .....	21
7.3.1 E.U.T. Operation .....	22
7.3.2 Test Mode Description .....	22
7.3.3 Test Setup Diagram .....	23
7.3.4 Measurement Procedure and Data .....	23
7.4 20dB BANDWIDTH .....	26
7.4.1 E.U.T. Operation .....	26
7.4.2 Test Mode Description .....	26
7.4.3 Test Setup Diagram .....	27
7.4.4 Measurement Procedure and Data .....	28
7.5 RESTRICTED BANDS .....	31
7.5.1 E.U.T. Operation .....	31
7.5.2 Test Mode Description .....	31
7.5.3 Test Setup Diagram .....	32



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7.5.4 Measurement Procedure and Data.....33

8 TEST SETUP PHOTO.....36

9 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS) .....36



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## 4 General Information

### 4.1 Details of E.U.T.

EUT Name:	Magnetic Wireless Charger
Model No.:	WD-274C
EUT function:	This device is used to transfer power to a Smart device and/or an Airpods with Qi technology installed; meanwhile this device can transfer power to an iWatch with Apple wireless technology installed
Power supply:	Input: 5V/3A,9V/3A, 12V/2.5A Output 1: 5W/7.5W/10W Max. Output 2: 5.0W Max. Output 3: 2.5W Max.
Cable(s):	DC Cable: 100cm unshielded
Antenna Type:	Loop Antenna
Modulation Type:	Load Modulation
Operating frequency:	For Output 1: 112.04kHz to 153.48kHz For Output 2: 112.00kHz to 175.20kHz For Output 3: 325.20kHz to 327.60kHz

### 4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	Chicony	W16-045N5A	84BZ01F77
Airpods	Apple	A2566	REF. No.SEA10D00
Watch	Apple	Series 5	REF. No.SEA32A00
iPhone 13	Apple	MLDYCH/A	REF. No.SEA16Q00

### 4.3 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc. Shenzhen branch.

Fuyong lab. Xinlong TechnoPark, Fengtang Road, Fuyong Subdistrict, Bao'an, Shenzhen, China

Tel: +86 755 8866 3988 Fax: +86 755 2671 0594

No tests were sub-contracted.



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Fuyong lab. Xinlong TechnoPark, Fengtang Road, Fuyong Subdistrict, Bao'an, Shenzhen, China 518103 t (86-755) 88663988 f (86-755) 26710594 www.sgs.com.cn  
中国·深圳·宝安区福永街道凤塘大道鑫龙科技园福永实验室 邮编: 518103 t (86-755) 88663988 f (86-755) 26710594 sgs.china@sgs.com



#### 4.4 Test Facility

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

- **A2LA (Certificate No. 6606.01)**

Compliance Certification Services (Kunshan) Inc. Shenzhen branch is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6606.01.

- **FCC –Designation Number: CN1322**

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

Designation Number: CN1322. Test Firm Registration Number: 718073

- **Innovation, Science and Economic Development Canada**

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

CAB identifier: CN0129.

IC#: 28189.

#### 4.5 Deviation from Standards

None

#### 4.6 Abnormalities from Standard Conditions

None



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## 5 Equipment List

99% OBW					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021/7/13	2022/7/12
MXA Signal Analyzer(10Hz-26.5GHz)	Agilent	N9020A	SEM004-20	2021/7/13	2022/7/12
Signal Generator(9kHz-40GHz)	Agilent	N5173B	SEM006-05	2021/7/13	2022/7/12
ESG Vector Signal Generator(250kHz-6GHz)	Agilent	E4438C	SEM006-15	2021/7/13	2022/7/12
Power Sensor	Erika Fiedler	U2021XA	SEM009-15	2021/7/13	2022/7/12
Power Sensor	Erika Fiedler	U2021XA	SEM009-16	2021/7/13	2022/7/12
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-08	2021/7/13	2022/7/12
Programmable DC Source	Chroma	62024P-80-60	SEM011-09	2021/7/13	2022/7/12
Attenuator(18GHz, 20dB, 2W)	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021/7/13	2022/7/12

Restricted band					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021/7/13	2022/7/12
MXA Signal Analyzer(10Hz-26.5GHz)	Agilent	N9020A	SEM004-20	2021/7/13	2022/7/12
Signal Generator(9kHz-40GHz)	Agilent	N5173B	SEM006-05	2021/7/13	2022/7/12
ESG Vector Signal Generator(250kHz-6GHz)	Agilent	E4438C	SEM006-15	2021/7/13	2022/7/12
Power Sensor	Erika Fiedler	U2021XA	SEM009-15	2021/7/13	2022/7/12
Power Sensor	Erika Fiedler	U2021XA	SEM009-16	2021/7/13	2022/7/12
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-08	2021/7/13	2022/7/12
Programmable DC Source	Chroma	62024P-80-60	SEM011-09	2021/7/13	2022/7/12



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Attenuator(18GHz, 20dB, 2W)	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021/7/13	2022/7/12
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<b>Conducted Emissions at Mains Terminals (150kHz-30MHz)</b>					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	CRT	N/A	SEM001-14	2021/7/13	2024/7/12
EMI Test Receiver(9kHz-3GHz)	Rohde & Schwarz	ESCI	SEM004-01	2021/7/13	2022/7/12
Two-Line V-Network(9kHz-30MHz)	Rohde & Schwarz	ENV216	SEM007-16	2021/7/13	2022/7/12
Two-Line V-Network(9kHz-30MHz)	Rohde & Schwarz	ESH3-Z5	SEM007-22	2021/7/13	2022/7/12

<b>Radiated emissions(9kHz-30MHz)</b>					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Anechoic Chamber	CRT	N/A	SEM001-13	2021/7/13	2022/7/12
Trilog-Broadband Antenna(25MHz-2GHz)	Schwarzbeck	VULB9168	SEM003-33	2021/9/25	2024/9/24
Biconical Antenna(150MHz-1GHz)	Schwarzbeck	VUBA9117	SEM003-35	2021/12/26	2024/12/25
Loop Antenna(9kHz-30MHz)	ETS-LINDGREN	6502	SEM003-36	2021/9/26	2024/9/25
MXE EMI receiver(20Hz-8.4GHz)	Agilent	N9038A	SEM004-05	2021/7/13	2022/7/12
Pre-amplifier (0.1-1.3GHz)	HP	8447D	SEM005-02	2021/7/13	2022/7/12
Broad-Band Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2021/7/11	2024/7/10
Broad-Band Horn Antenna (1-18GHz)	Schwarzbeck	BBHA 9120D	SEM003-32	2021/9/26	2024/9/25
Double-ridged waveguide horn (1-18GHz)	ETS-LINDGREN	3117	SEM003-34	2021/9/25	2024/9/24
Spectrum Analyzer(20Hz-43GHz)	Rohde & Schwarz	101288	SEM004-08	2021/7/13	2022/7/12
Low Noise Amplifier(100MHz-18GHz)	CLAVIO	BDLNA-0118-352810	SEM005-05	2021/7/13	2022/7/12
Pre-amplifier(26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2021/7/13	2022/7/12
Pre-amplifier(18GHz-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2021/7/13	2022/7/12



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<b>Radiated emission(30MHz-1GHz)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
3m Anechoic Chamber	CRT	N/A	SEM001-13	2021/7/13	2022/7/12
Trilog-Broadband Antenna(25MHz-2GHz)	Schwarzbeck	VULB9168	SEM003-33	2021/9/25	2024/9/24
Biconical Antenna(150MHz-1GHz)	Schwarzbeck	VUBA9117	SEM003-35	2021/12/26	2024/12/25
Loop Antenna(9kHz-30MHz)	ETS-LINDGREN	6502	SEM003-36	2021/9/26	2024/9/25
MXE EMI receiver(20Hz-8.4GHz)	Agilent	N9038A	SEM004-05	2021/7/13	2022/7/12
Pre-amplifier (0.1-1.3GHz)	HP	8447D	SEM005-02	2021/7/13	2022/7/12
Broad-Band Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2021/7/11	2024/7/10
Broad-Band Horn Antenna (1-18GHz)	Schwarzbeck	BBHA 9120D	SEM003-32	2021/9/26	2024/9/25
Double-ridged waveguide horn (1-18GHz)	ETS-LINDGREN	3117	SEM003-34	2021/9/25	2024/9/24
Spectrum Analyzer(20Hz-43GHz)	Rohde & Schwarz	101288	SEM004-08	2021/7/13	2022/7/12
Low Noise Amplifier(100MHz-18GHz)	CLAVIO	BDLNA-0118-352810	SEM005-05	2021/7/13	2022/7/12
Pre-amplifier(26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2021/7/13	2022/7/12
Pre-amplifier(18GHz-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2021/7/13	2022/7/12

<b>General used equipment</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
Humidity/ Temperature Indicator	Mingle	TH607	SEM002-22	2021-07-13	2022-07-12
Humidity/ Temperature Indicator	Mingle	TH607	SEM002-23	2021-07-13	2022-07-12
Barometer	DUMAI	DYM3	SEM002-24	2021-07-13	2022-07-12



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## 6 Radio Spectrum Technical Requirement

### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 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 antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an 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.

Refer to internal photos



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## 7 Radio Spectrum Matter Test Results

### 7.1 Conducted Emissions at AC Mains Power Port (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

#### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C

Humidity: 53.8 % RH

Atmospheric Pressure: 1020 mbar

#### 7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	00	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W).
Pre-scan	01	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W).
Pre-scan	02	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W).
Pre-scan	03	Operation(Wireless):Keep the EUT pairing with other devices(Output2: 5W).
Pre-scan	04	Operation(Wireless):Keep the EUT pairing with other devices(Output3: 2.5W).
Pre-scan	05	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output2: 5W).
Pre-scan	06	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output2: 5W).
Pre-scan	07	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output2: 5W).
Pre-scan	08	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output3: 2.5W).
Pre-scan	09	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output3: 2.5W).
Pre-scan	10	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output3: 2.5W).



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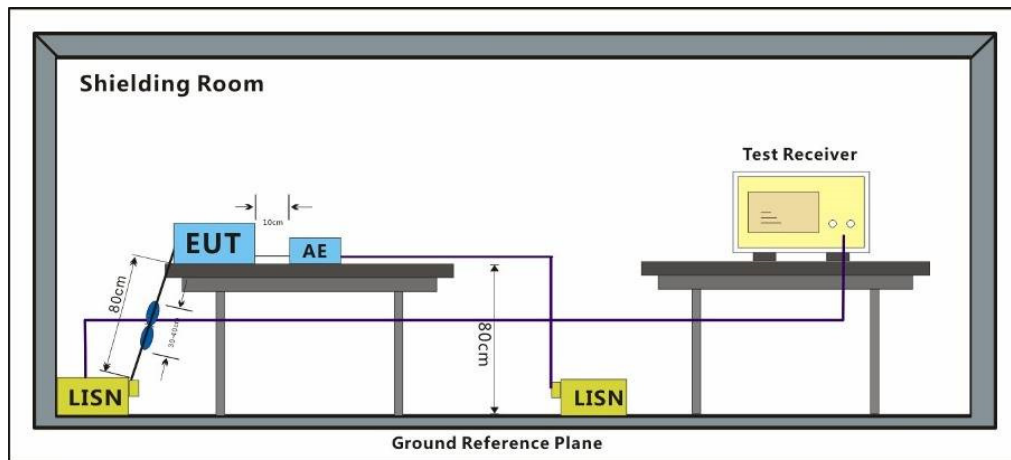
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Pre-scan	11	Operation(Wireless):Keep the EUT pairing with other devices(Output2: 5W+Output3: 2.5W).
Pre-scan	12	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output2: 5W+Output3: 2.5W).
Pre-scan	13	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output2: 5W+Output3: 2.5W).
Final test	14	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output2: 5W+Output3: 2.5W).

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

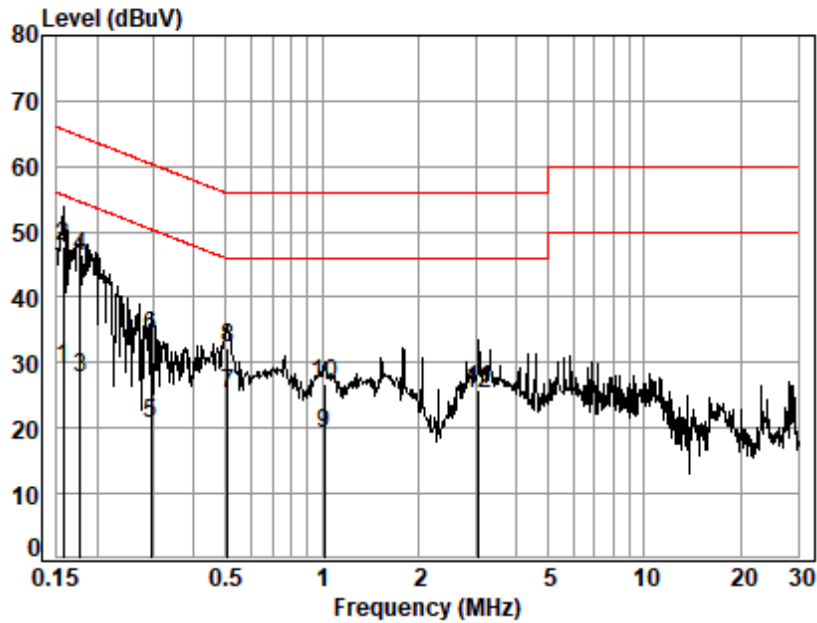


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Test Mode: 14; Line: Live line



Site : Shielding Room  
Condition: Line  
Job No. : 00005AT  
Test mode: 14

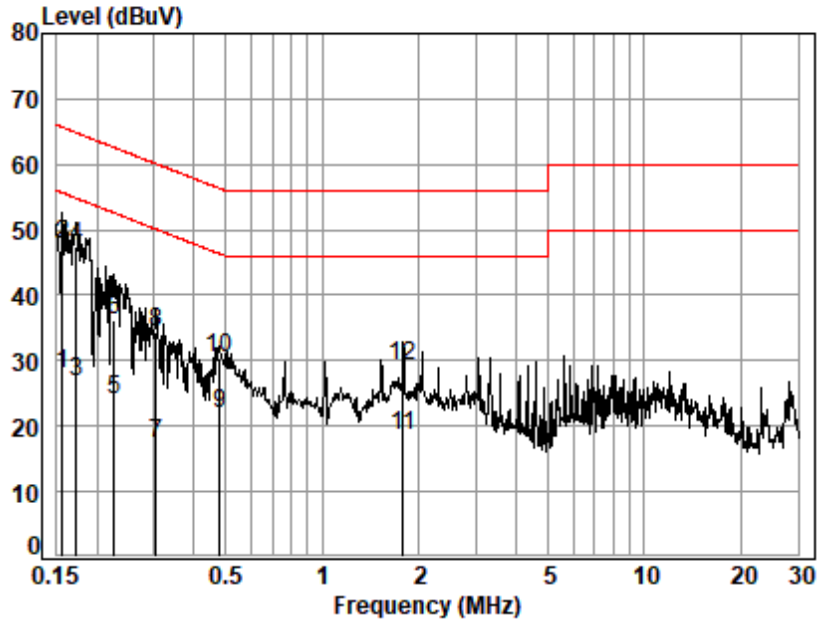
	Freq	Cable Loss	LISN Factor	Read Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dB	
1	0.16	0.09	0.18	28.90	55.60	-26.43	Average
2	0.16	0.09	0.18	47.63	65.60	-17.70	QP
3	0.18	0.10	0.16	27.44	54.59	-26.89	Average
4	0.18	0.10	0.16	45.99	64.59	-18.34	QP
5	0.29	0.08	0.15	20.34	50.41	-29.84	Average
6	0.29	0.08	0.15	33.87	60.41	-26.31	QP
7	0.51	0.10	0.16	25.04	46.00	-20.70	Average
8	0.51	0.10	0.16	32.03	56.00	-23.71	QP
9	1.02	0.08	0.18	18.89	46.00	-26.85	Average
10	1.02	0.08	0.18	26.36	56.00	-29.38	QP
11	3.06	0.06	0.17	25.66	46.00	-20.11	Average
12	3.06	0.06	0.17	25.05	56.00	-30.72	QP



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Test Mode: 14; Line: Neutral Line



Site : Shielding Room  
Condition: Neutral  
Job No. : 00005AT  
Test mode: 14

	Freq	Cable Loss	LISN Factor	Read Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dB	
1	0.16	0.09	0.19	27.68	55.69	-27.73	Average
2	0.16	0.09	0.19	47.33	65.69	-18.08	QP
3	0.17	0.10	0.19	26.33	54.86	-28.24	Average
4	0.17	0.10	0.19	47.19	64.86	-17.38	QP
5	0.23	0.09	0.18	23.69	52.57	-28.61	Average
6	0.23	0.09	0.18	35.99	62.57	-26.31	QP
7	0.31	0.08	0.18	17.19	50.10	-32.65	Average
8	0.31	0.08	0.18	34.26	60.10	-25.58	QP
9	0.48	0.09	0.19	21.72	46.32	-24.32	Average
10	0.48	0.09	0.19	30.03	56.32	-26.01	QP
11	1.78	0.03	0.07	18.45	46.00	-27.45	Average
12	1.78	0.03	0.07	29.15	56.00	-26.75	QP



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## 7.2 Radiated Emissions (30MHz-1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209  
 Test Method: ANSI C63.10 (2013) Section 6.5  
 Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
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.

### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar

### 7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	00	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W).
Pre-scan	01	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W).
Pre-scan	02	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W).
Pre-scan	03	Operation(Wireless):Keep the EUT pairing with other devices(Output2: 5W).
Pre-scan	04	Operation(Wireless):Keep the EUT pairing with other devices(Output3: 2.5W).
Pre-scan	05	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output2: 5W).
Pre-scan	06	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output2: 5W).
Pre-scan	07	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output2: 5W).
Pre-scan	08	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output3: 2.5W).
Pre-scan	09	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output3: 2.5W).
Pre-scan	10	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output3: 2.5W).

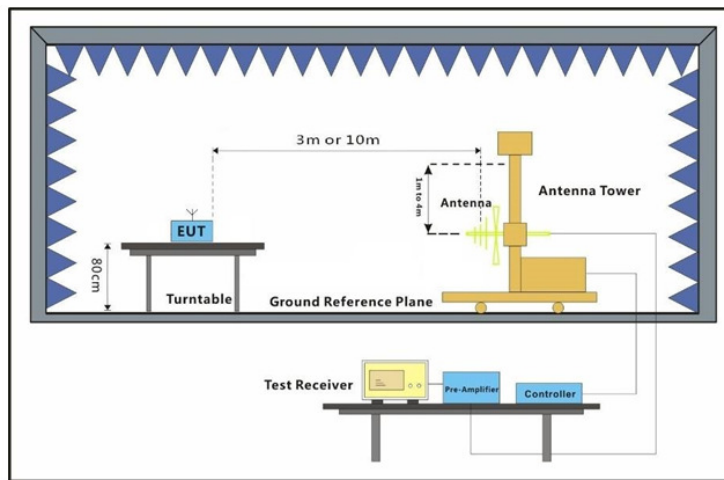


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Pre-scan	11	Operation(Wireless):Keep the EUT pairing with other devices(Output2: 5W+Output3: 2.5W).
Pre-scan	12	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output2: 5W+Output3: 2.5W).
Pre-scan	13	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output2: 5W+Output3: 2.5W).
Final test	14	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output2: 5W+Output3: 2.5W).
Pre-scan	15	Idle:Keep the EUT standby.

### 7.2.3 Test Setup Diagram



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**7.2.4 Measurement Procedure and Data**

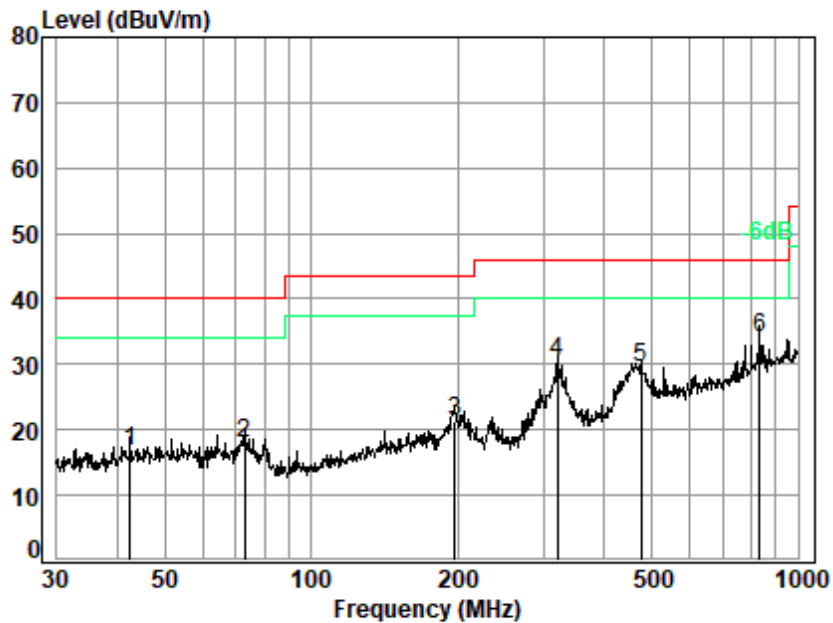
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground for below 1GHz at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
  - b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
  - c. 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.
  - d. 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.
  - e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
  - f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
  - g. Test the EUT in the lowest channel,the middle channel,the Highest channel
  - h. 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.
  - i. Repeat above procedures until all frequencies measured was complete.
- Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



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Test Mode: 14; Polarity: Horizontal



Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 00005AT  
Mode : 14

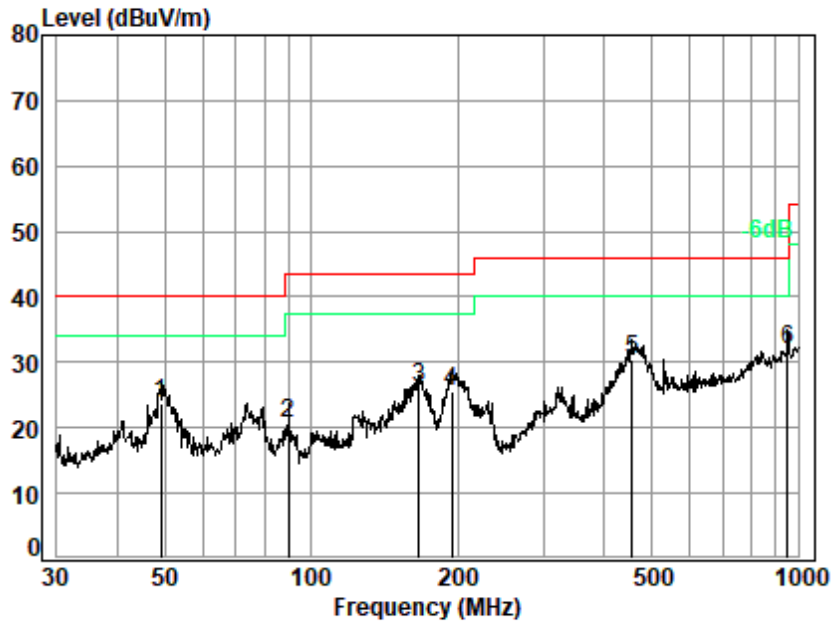
	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	42.451	0.21	17.19	25.87	25.27	16.80	40.00	-23.20	QP
2	72.847	0.34	15.17	25.83	28.27	17.95	40.00	-22.05	QP
3	197.200	0.69	15.21	25.37	30.84	21.37	43.50	-22.13	QP
4	319.937	1.21	19.27	25.26	35.16	30.38	46.00	-15.62	QP
5	475.499	1.42	22.02	26.23	32.45	29.66	46.00	-16.34	QP
6 p	833.317	2.87	27.76	26.53	29.82	33.92	46.00	-12.08	QP



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Test Mode: 14; Polarity: Vertical



Site : chamber  
Condition: 3m VERTICAL  
Job No : 00005AT  
Mode : 14

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	49.187	0.22	17.34	25.86	31.92	23.62	40.00	-16.38	QP
2	89.905	0.67	13.61	25.81	32.35	20.82	43.50	-22.68	QP
3	166.068	0.75	17.01	25.48	33.81	26.09	43.50	-17.41	QP
4	194.453	0.69	15.32	25.38	35.07	25.70	43.50	-17.80	QP
5	455.906	1.44	21.79	26.13	33.43	30.53	46.00	-15.47	QP
6 p	952.094	2.09	29.27	26.29	26.78	31.85	46.00	-14.15	QP



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### 7.3 Radiated Emissions (9kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209  
 Test Method: ANSI C63.10 (2013) Section 6.4  
 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

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. 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.

If field strength is measured at only a single point, then that point shall be at the radial from the EUT that produces the maximum emission at the frequency being measured, as described in 5.4. If that point is closer to the EUT than  $\lambda/2\pi$  and the limit distance is greater than  $\lambda/2\pi$ , the measurement shall be extrapolated to the limit distance by conservatively presuming that the field strength decreases at a 40 dB/decade of distance rate to the  $\lambda/2\pi$  distance, and at a 20 dB/decade of distance rate beyond  $\lambda/2\pi$ . This shall be accomplished using Equation (2):

$$FS_{(10m)} = FS_{(30/300m)} + 40\log\{d_{(near\ field)}/d_{(10m)}\} + 20\log\{d_{(30/300m)}/d_{(near\ field)}\} \quad (2)$$

If the single point measured is at a distance greater than  $\lambda/2\pi$ , then extrapolation to the limit distance shall be calculated using Equation (3):

$$FS_{(10m)} = FS_{(30/300m)} + 20\log\{d_{(30/300m)}/d_{(10m)}\} \quad (3)$$

If both the single point and the limit distance are equal to or closer to the EUT than  $\lambda/2\pi$ , then extrapolation to the limit distance shall be calculated using Equation (4):

$$FS_{(10m)} = FS_{(30/300m)} + 40\log\{d_{(30/300m)}/d_{(10m)}\} \quad (4)$$

Remark:

$$d_{near\ field} = 47.77 / f_{MHz}$$

where  $f_{MHz}$  is the frequency of the emission being measured in MHz.



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**7.3.1 E.U.T. Operation**

Operating Environment:

Temperature: 22.6 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar

**7.3.2 Test Mode Description**

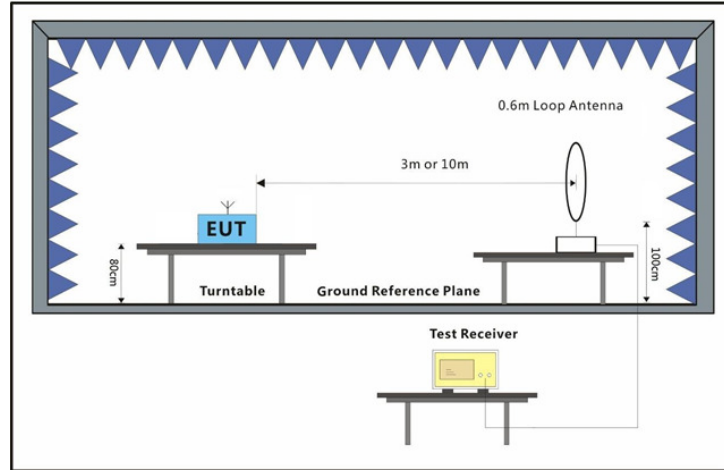
Pre-scan / Final test	Mode Code	Description
Pre-scan	00	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W).
Pre-scan	01	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W).
Pre-scan	02	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W).
Pre-scan	03	Operation(Wireless):Keep the EUT pairing with other devices(Output2: 5W).
Pre-scan	04	Operation(Wireless):Keep the EUT pairing with other devices(Output3: 2.5W).
Pre-scan	05	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output2: 5W).
Pre-scan	06	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output2: 5W).
Pre-scan	07	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output2: 5W).
Pre-scan	08	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output3: 2.5W).
Pre-scan	09	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output3: 2.5W).
Pre-scan	10	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output3: 2.5W).
Pre-scan	11	Operation(Wireless):Keep the EUT pairing with other devices(Output2: 5W+Output3: 2.5W).
Pre-scan	12	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output2: 5W+Output3: 2.5W).
Pre-scan	13	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output2: 5W+Output3: 2.5W).
Final test	14	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output2: 5W+Output3: 2.5W).
Pre-scan	15	Idle:Keep the EUT standby.



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**7.3.3 Test Setup Diagram**



**7.3.4 Measurement Procedure and Data**

- a. All radiated emission measurements in terms of magnetic field strength shall be performed with a shielded loop antenna.
- b. For all radiated emission measurements in terms of magnetic field strength, the loop antenna were placed such that:
  - i. its centre shall be at 1.3 m height above the ground plane;
  - ii. the projection of its centre onto the ground plane shall be at the specified measurement distance from the projection on the ground plane of the closest point on the boundary of the equipment under test (EUT); and
  - iii. measurements shall be performed with the loop antenna placed vertically, in turn, in two polarizations (the measurement axis specified below is the line segment connecting the projections on the ground plane of the centre of the loop antenna and the centre of the EUT arrangement):
    - coaxial (loop plane perpendicular to the ground plane and to the measurement axis); and
    - coplanar (loop plane perpendicular to the ground plane and coplanar with the measurement axis).

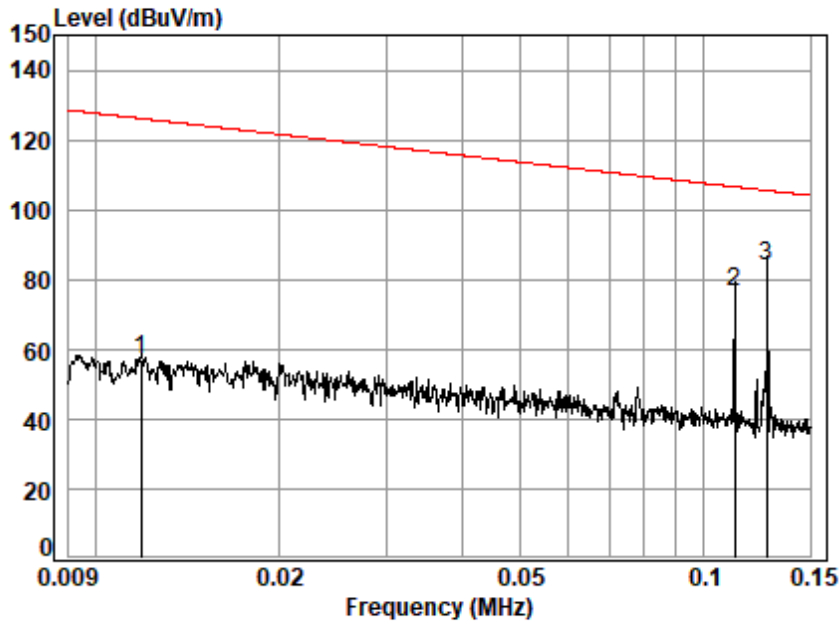


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Test mode:14



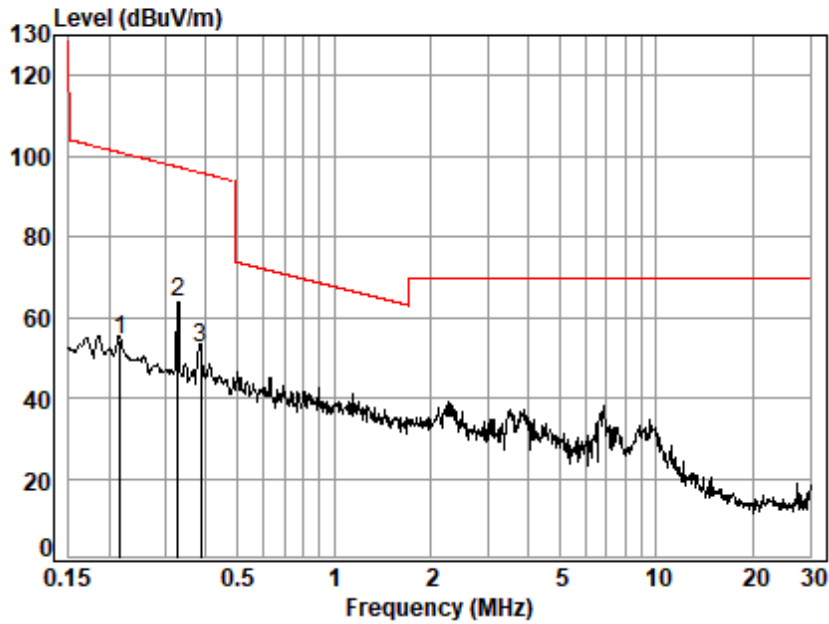
Site : chamber  
Condition: 3m VERTICAL  
Job No. : 00005AT  
Test Mode: 14

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	0.012	0.29	17.13	31.61	71.13	56.94	126.13	-69.19	Average
2	0.113	0.32	10.47	31.79	97.35	76.35	106.58	-30.23	Average
3 p	0.127	0.33	10.43	31.79	105.00	83.97	105.50	-21.53	Average



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Test mode:14



Site : chamber  
Condition: 3m HORIZONTAL  
Job No. : 00005AT  
Test Mode: 14

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	0.217	0.30	10.36	31.77	75.53	54.42	100.86	-46.44	Average
2 p	0.327	0.33	10.32	31.75	84.68	63.58	97.33	-33.75	Average
3	0.385	0.32	10.31	31.74	73.46	52.35	95.89	-43.54	Average



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### 7.4 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215  
Test Method: ANSI C63.10 (2013) Section 6.9.2

Limit:

For report reference only

#### 7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C Humidity: 54.2 % RH Atmospheric Pressure: 1020 mbar

#### 7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	00	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W).
Pre-scan	01	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W).
Final test	02	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W).
Final test	03	Operation(Wireless):Keep the EUT pairing with other devices(Output2: 5W).
Final test	04	Operation(Wireless):Keep the EUT pairing with other devices(Output3: 2.5W).
Pre-scan	05	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output2: 5W).
Pre-scan	06	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output2: 5W).
Pre-scan	07	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output2: 5W).
Pre-scan	08	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output3: 2.5W).
Pre-scan	09	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output3: 2.5W).
Pre-scan	10	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output3: 2.5W).
Pre-scan	11	Operation(Wireless):Keep the EUT pairing with other devices(Output2: 5W+Output3: 2.5W).
Pre-scan	12	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output2: 5W+Output3: 2.5W).
Pre-scan	13	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output2: 5W+Output3: 2.5W).
Pre-scan	14	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output2: 5W+Output3: 2.5W).

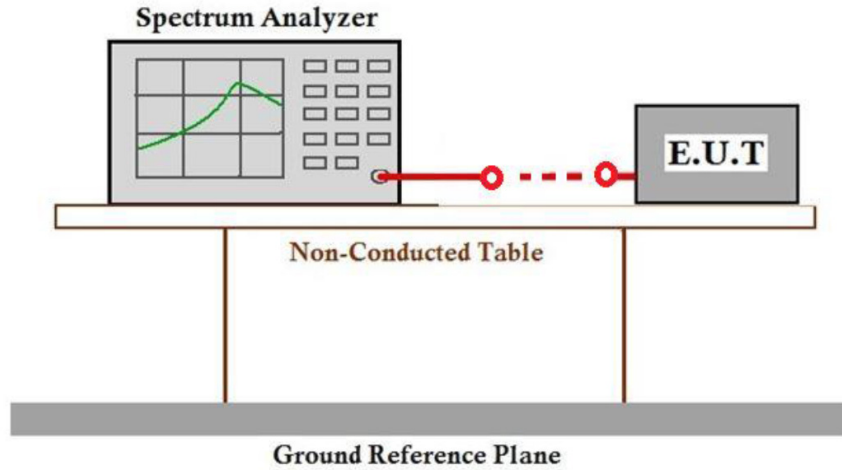


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### 7.4.3 Test Setup Diagram



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**7.4.4 Measurement Procedure and Data**

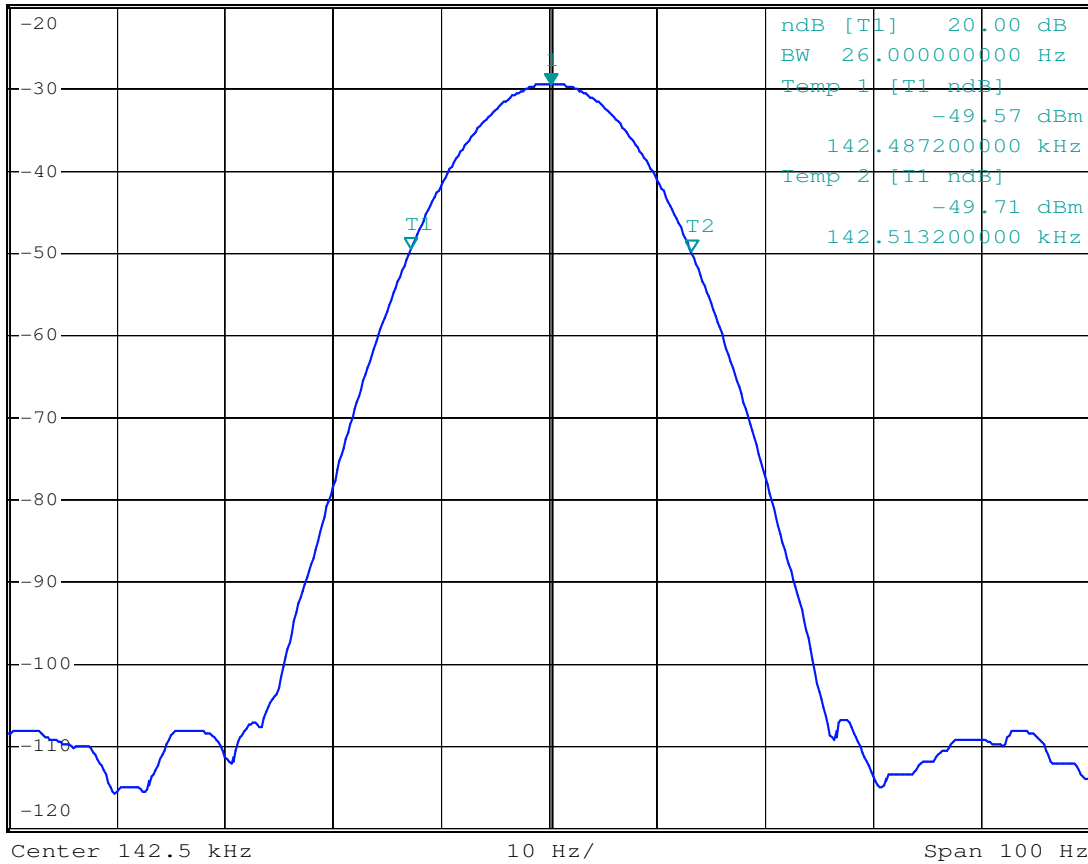
Mode 2:

Test Frequency(KHz)	20dB bandwidth (KHz)	Limit (KHz)	Results
142.5	0.026	N/A	Pass



Ref -20 dBm      Att 10 dB      SWT 1 s      \*RBW 10 Hz      Marker 1 [T1]      -29.49 dBm  
 \*VBW 30 Hz      142.50020000 kHz

1 PK  
VIEW



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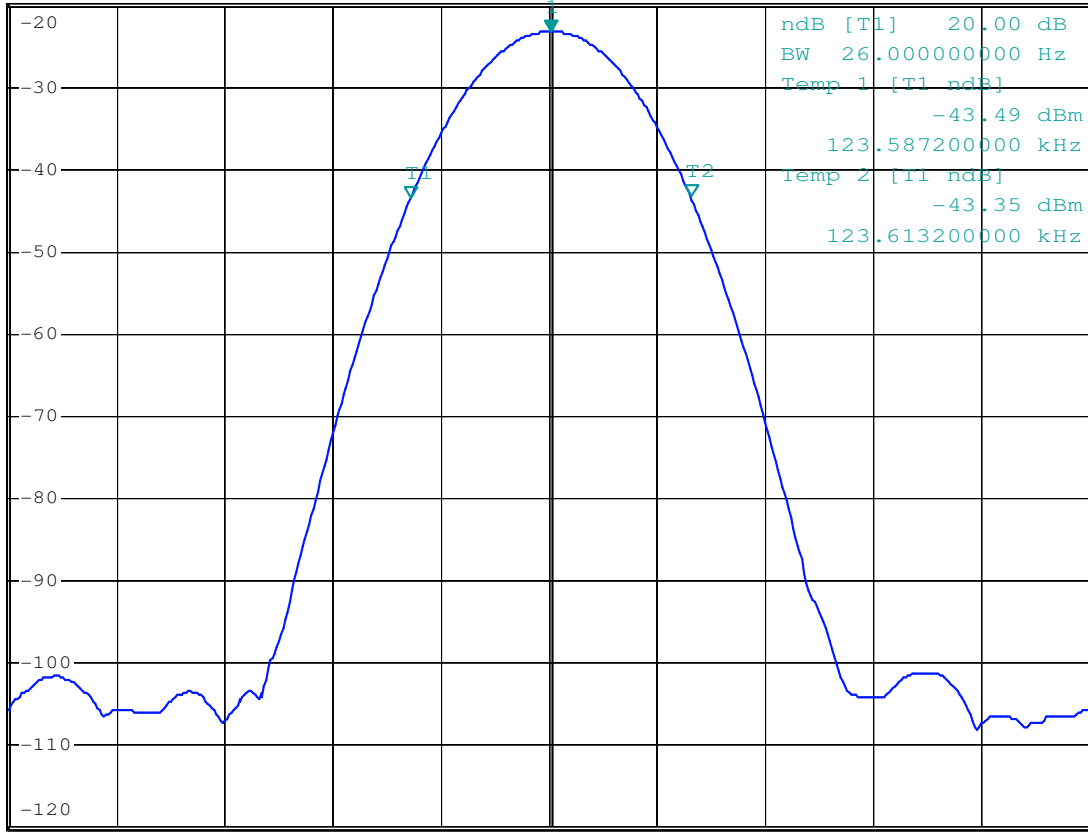
Mode 3:

Test Frequency(KHz)	20dB bandwidth (KHz)	Limit (KHz)	Results
123.6	0.026	N/A	Pass



\*RBW 10 Hz      Marker 1 [T1 ]  
\*VBW 30 Hz      -23.27 dBm  
Ref -20 dBm      Att 10 dB      SWT 1 s      123.600200000 kHz

1 PK  
VIEW



Center 123.6 kHz

10 Hz/

Span 100 Hz



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Mode 4:

Test Frequency(KHz)	20dB bandwidth (KHz)	Limit (KHz)	Results
326.6	0.0258	N/A	Pass

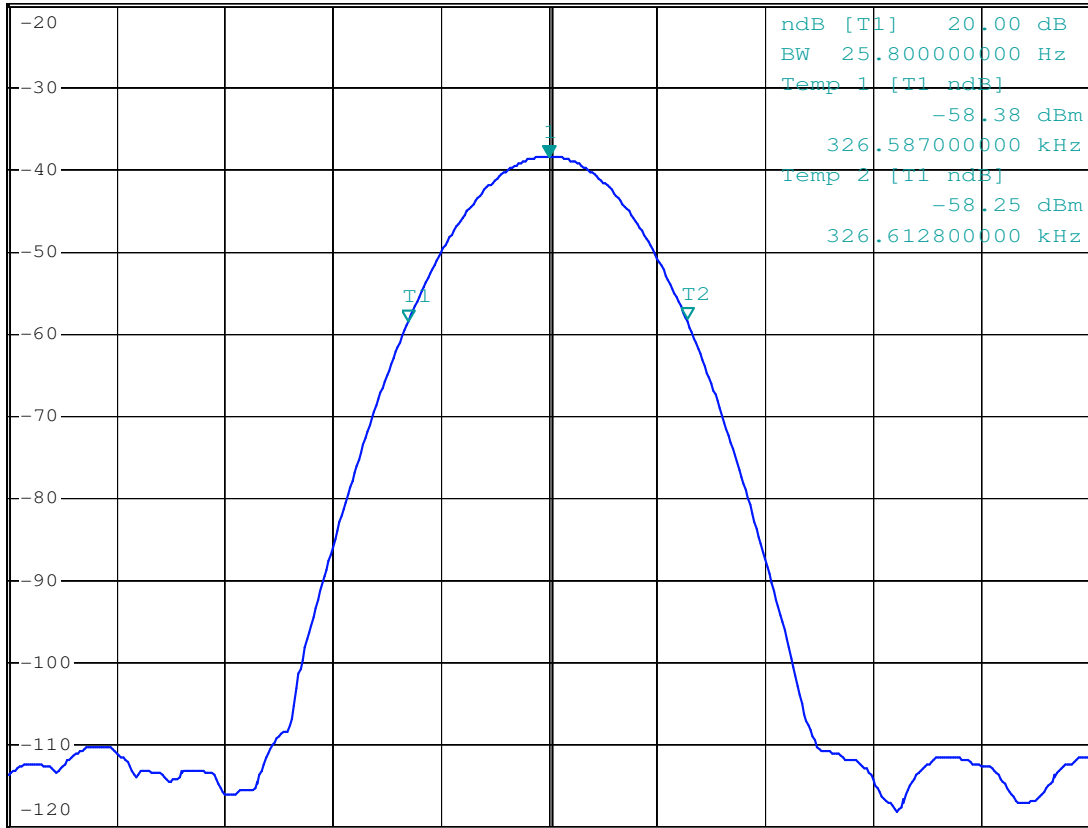


\*RBW 10 Hz      Marker 1 [T1]      -38.44 dBm  
\*VBW 30 Hz  
SWT 1 s      326.600000000 kHz

Ref -20 dBm

Att 10 dB

1 PK  
VIEW



Center 326.6 kHz

10 Hz/

Span 100 Hz



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### 7.5 Restricted Bands

Test Requirement 47 CFR Part 15, Subpart C 15.205  
Test Method: ANSI C63.10 (2013) Section 6.10.5

Limit:

The fundamental wave could not fall in the restricted band 90KHz-110KHz

#### 7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C Humidity: 54.2 % RH Atmospheric Pressure: 1020 mbar

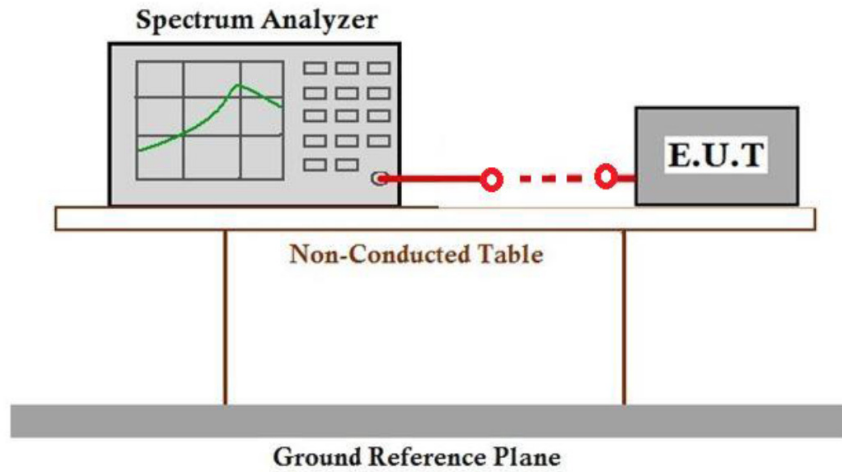
#### 7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	00	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W).
Pre-scan	01	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W).
Final test	02	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W).
Final test	03	Operation(Wireless):Keep the EUT pairing with other devices(Output2: 5W).
Final test	04	Operation(Wireless):Keep the EUT pairing with other devices(Output3: 2.5W).
Pre-scan	05	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output2: 5W).
Pre-scan	06	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output2: 5W).
Pre-scan	07	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output2: 5W).
Pre-scan	08	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output3: 2.5W).
Pre-scan	09	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output3: 2.5W).
Pre-scan	10	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output3: 2.5W).
Pre-scan	11	Operation(Wireless):Keep the EUT pairing with other devices(Output2: 5W+Output3: 2.5W).
Pre-scan	12	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 5W+Output2: 5W+Output3: 2.5W).
Pre-scan	13	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 7.5W+Output2: 5W+Output3: 2.5W).
Pre-scan	14	Operation(Wireless):Keep the EUT pairing with other devices(Output1: 10W+Output2: 5W+Output3: 2.5W).



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### 7.5.3 Test Setup Diagram



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### 7.5.4 Measurement Procedure and Data

Mode 2



\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 3 kHz      -21.85 dBm  
SWT 70 ms      112.74000000 kHz

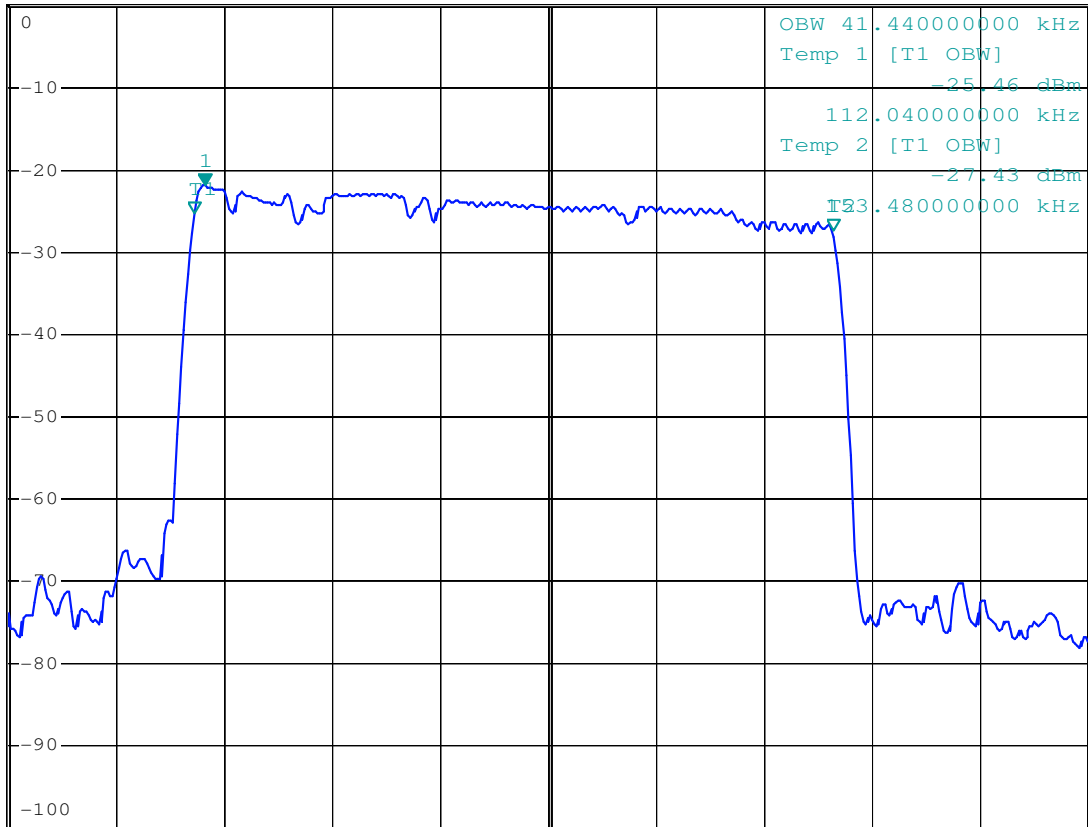
Ref 0 dBm

Att 20 dB

SWT 70 ms

112.74000000 kHz

1 PK  
VIEW



Center 135 kHz

7 kHz/

Span 70 kHz



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Mode 3

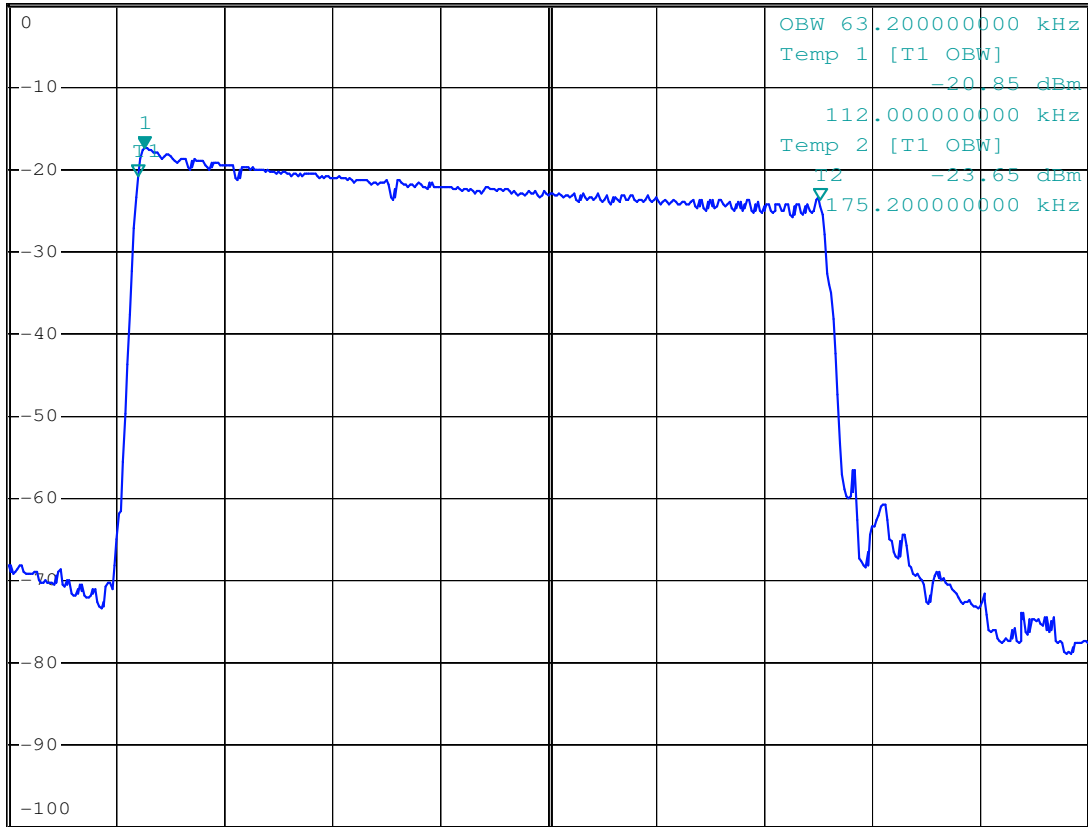


\* RBW 1 kHz      Marker 1 [T1 ]  
 \* VBW 3 kHz      -17.46 dBm  
 SWT 100 ms      112.600000000 kHz

Ref 0 dBm

Att 20 dB

1 PK  
VIEW



Center 150 kHz

10 kHz/

Span 100 kHz



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Mode 4

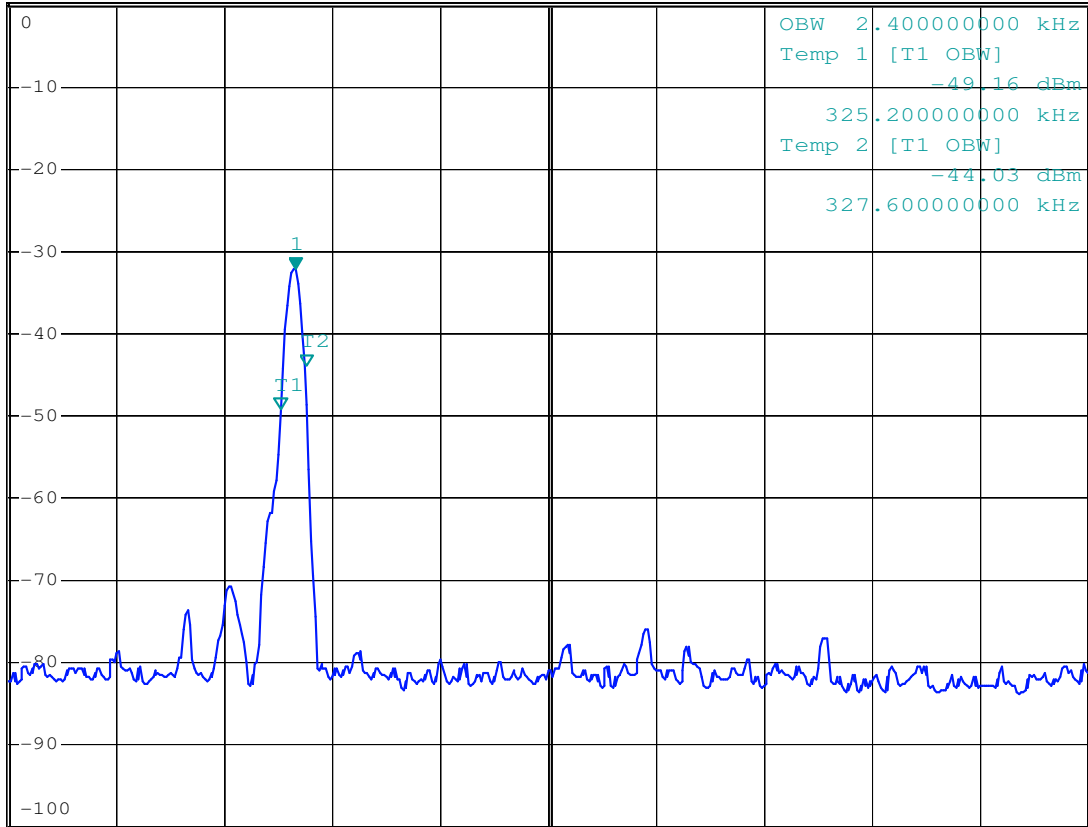


\* RBW 1 kHz      Marker 1 [T1 ]  
 \* VBW 3 kHz      -32.24 dBm  
 SWT 100 ms      326.60000000 kHz

Ref 0 dBm

Att 20 dB

1 PK  
VIEW



OBW 2.40000000 kHz  
 Temp 1 [T1 OBW] -49.16 dBm  
 325.20000000 kHz  
 Temp 2 [T1 OBW] -44.03 dBm  
 327.60000000 kHz

Center 350 kHz

10 kHz/

Span 100 kHz



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## 8 Test Setup Photo

Refer to Appendix – test setup photos for FYFR2203000005AT

## 9 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for FYFR2203000005AT

- End of the Report -



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