

TEST REPORT

Application No.: SZCR2104020531AT
Applicant: SHENZHEN DNS INDUSTRIES CO., LTD.
Address of Applicant: 23/F Building A, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian, shenzhen, 518026 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 D&S CABLE CO., LTD.
2. HUI ZHOU DNS TECHNOLOGY CO., LTD.
3. D AND S INDUSTRIES (PHILIPPINES) CORPORATION
Address of Factory: 1. Longjin Dongjiang Industry Zone Shuikou, Huicheng, Huizhou, Guangdong, China
2. 5 Dongshun South Road, Dongjiang Hi-tech Industrial Park, Zhongkai Hi-tech Zone, Huizhou City, 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: WIRELESS CHARGER, iWatch portable charger with USB A cable
iWatch portable charger with USB C cable
Model No.: WD-254A, WD-254B, 699396 ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark: DNS, omars, mbest, NOVOO, KEYMOX, Infinitive
FCC ID: ZBCWD254A
Standard(s) : 47 CFR Part 15, Subpart C
Date of Receipt: 2021-04-14
Date of Test: 2021-04-17 to 2021-04-26
Date of Issue: 2021-04-26

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

Keny Xu

Keny Xu
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-04-26		Original

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

2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C		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

Declaration of EUT Family Grouping:

Model No.: WD-254A, WD-254B, 699396

Only the model WD-254B was tested fully, and the model WD-254A was performed the Radiated Emissions (30MHz-1GHz), Radiated Emissions (9kHz-30MHz) and Conducted Emissions at AC Mains Power Port (150kHz-30MHz) tests for discrepancy According to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on input port, circuitry about power input, product name, and trade mark.

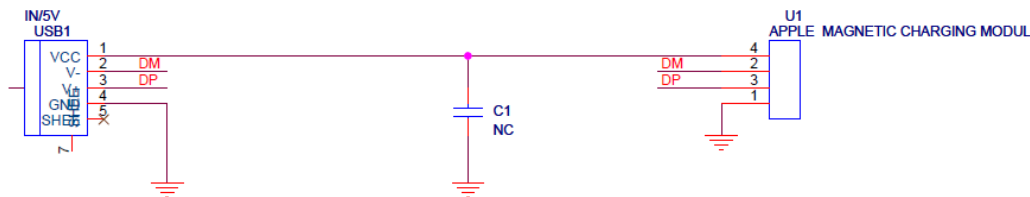


Details see below:

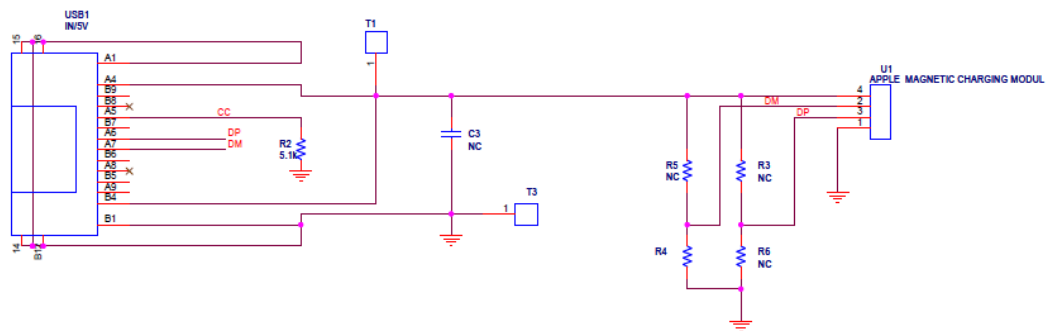
Trade mark	Product name	Model number	input port	circuitry about power input
DNS,omars,mbest ,NOVOO, KEYMOX	Wireless Charger for Apple Watch, Watch Magnetic Charger	WD-254A	USB A	See note
DNS,omars,mbest ,NOVOO, KEYMOX	Wireless Charger for Apple Watch, Watch Magnetic Charger	WD-254B	TYPE C	See note
Infinitive	Wireless Charger for Apple Watch, Watch Magnetic Charger	699396	USB A	See note

Note :

circuitry about USB A port



circuitry about TYPE C port



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4 General Information

4.1 Details of E.U.T.

Power supply:	Input: DC 5V, 1A Output: 2.5W(Max)
Operation frequency:	326.5kHz
Modulation type:	Load modulation
Antenna type:	Loop Antenna

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
iwatch	Apple	Series5	N/A
Adapter	Apple	A1357	REF. No.SEA0501C

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Mains Power Port (150kHz-30MHz)	$\pm 3.0\text{dB}$ (150kHz to 30MHz)
Radiated Emissions (30MHz-1GHz)	$\pm 4.5\text{dB}$
Radiated Emissions (9kHz-30MHz)	$\pm 4.5\text{dB}$
20dB Bandwidth	$\pm 3\%$
Restricted Bands	$\pm 3\%$

Remark:

The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR 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.

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

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**

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. 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: CN1178**

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

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **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 Mains Power Port (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2019-06-13	2022-06-12
EMI Test Receiver	Rohde&Schwarz	ESCI	SEM004-02	2021-03-24	2022-03-23
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2020-07-10	2021-07-09
LISN	Rohde&Schwarz	ENV216	SEM007-01	2020-09-23	2021-09-22
LISN	ETS-LINDGREN	3816/2	SEM007-02	2021-03-24	2022-03-25

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2021-03-27	2024-03-26
MXE EMI receiver	KEYSIGHT	N9038A	SEM004-16	2020-11-02	2021-11-01
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	SEM003-18	2019-08-08	2022-08-07
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2021-04-08	2022-04-07
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2020-08-14	2023-08-13
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2020-07-10	2021-07-09

Radiated Emissions (9kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2021-03-27	2024-03-26
MXE EMI receiver	KEYSIGHT	N9038A	SEM004-16	2020-11-02	2021-11-01
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	SEM003-18	2019-08-08	2022-08-07
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2021-04-08	2022-04-07
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2020-08-14	2023-08-13
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2020-07-10	2021-07-09



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20dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2021-03-23	2022-03-22
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2021-03-24	2022-03-23
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021-04-08	2022-04-07
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021-03-23	2022-03-22

Restricted Bands					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2021-03-23	2022-03-22
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2021-03-24	2022-03-23
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2020-07-10	2021-07-09
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2021-04-08	2022-04-07
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2021-03-23	2022-03-22

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2020-09-15	2021-09-14
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2020-09-15	2021-09-14
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2021-03-30	2022-03-29



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 permanently attached antenna or of an antenna that use an unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

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.

This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site.

However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement.

Refer to internal photos



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

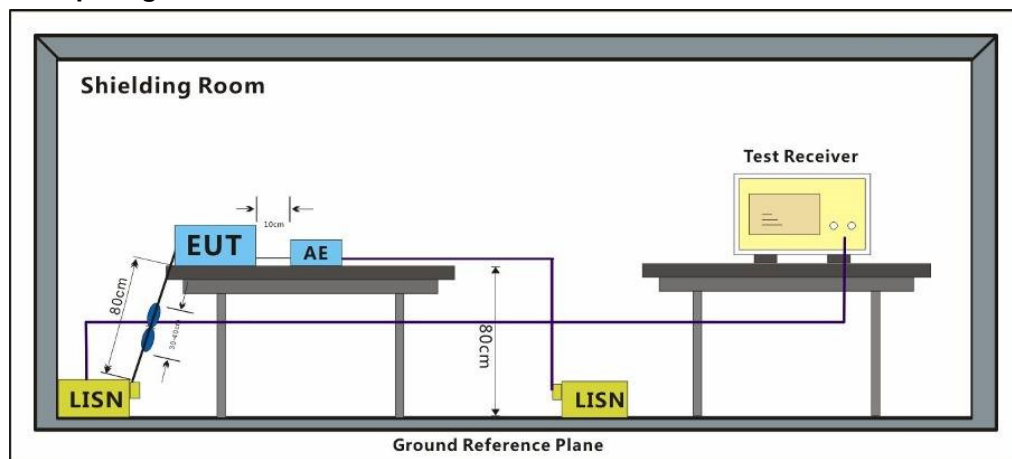
Operating Environment:

Temperature: 22.4 °C Humidity: 58.9 % RH Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge mode_Keep the EUT charging(2.5W)

7.1.3 Test Setup Diagram



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7.1.4 Measurement Procedure and Data

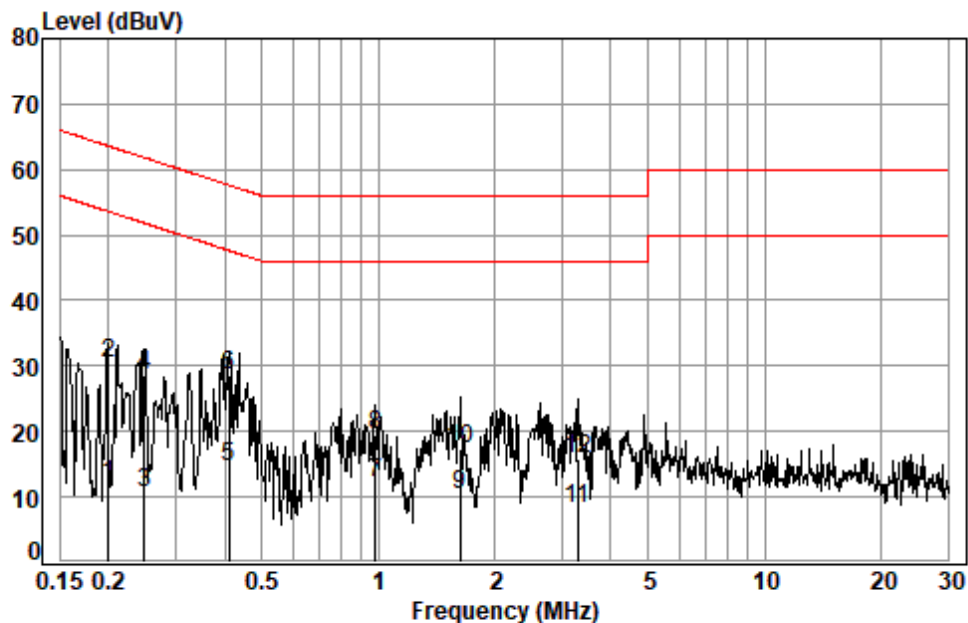
- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to 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 model: WD-254B

Test Mode: 00; Line: Live line

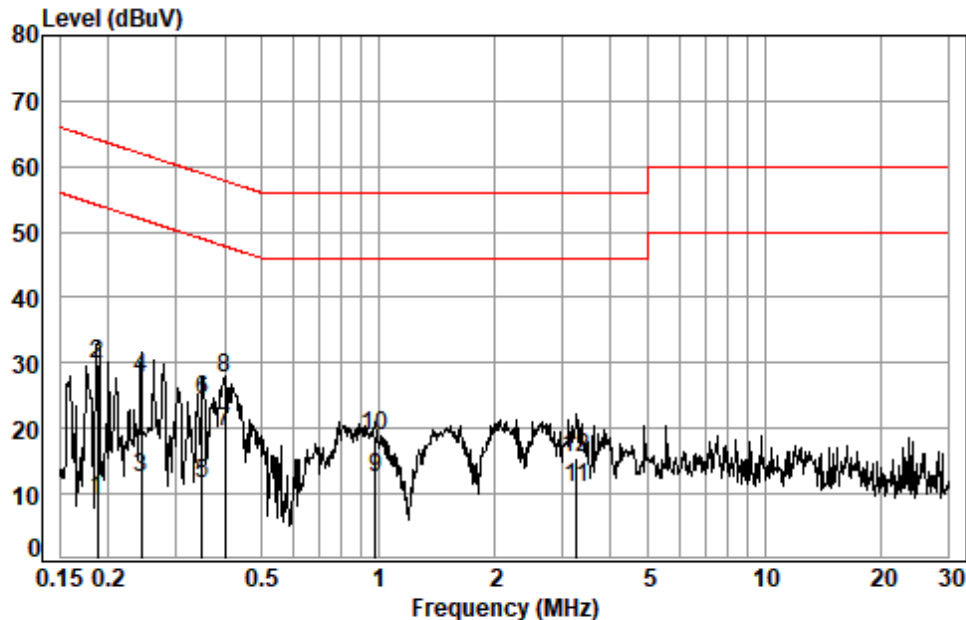


Site : Shielding Room
Condition: Line
Job No. : 20531AT
Test mode: 00

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1997	0.04	9.64	2.13	11.81	53.62	-41.81	Average
2	0.1997	0.04	9.64	20.70	30.38	63.62	-33.24	QP
3	0.2481	0.05	9.65	0.83	10.53	51.82	-41.29	Average
4	0.2481	0.05	9.65	18.84	28.54	61.82	-33.28	QP
5	0.4105	0.07	9.67	4.75	14.49	47.64	-33.15	Average
6	0.4105	0.07	9.67	18.79	28.53	57.64	-29.11	QP
7	0.9839	0.10	9.68	2.28	12.06	46.00	-33.94	Average
8	0.9839	0.10	9.68	9.65	19.43	56.00	-36.57	QP
9	1.6276	0.12	9.69	0.39	10.20	46.00	-35.80	Average
10	1.6276	0.12	9.69	7.53	17.34	56.00	-38.66	QP
11	3.2756	0.14	9.72	-1.62	8.24	46.00	-37.76	Average
12	3.2756	0.14	9.72	5.99	15.85	56.00	-40.15	QP



Test Mode: 00; Line: Neutral Line



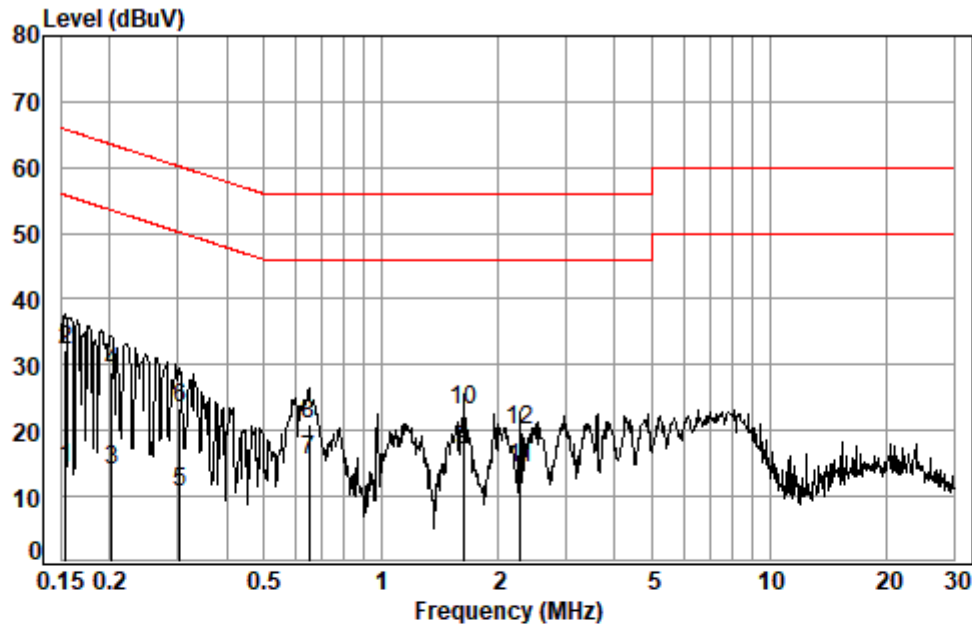
Site : Shielding Room
Condition: Neutral
Job No. : 20531AT
Test mode: 00

	Freq	Cable Loss	LISN Factor	Read Level	Limit	Over	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB
1	0.1874	0.03	9.63	-0.56	9.10	54.15	-45.05 Average
2	0.1874	0.03	9.63	20.11	29.77	64.15	-34.38 QP
3	0.2429	0.04	9.65	2.85	12.54	52.00	-39.46 Average
4	0.2429	0.04	9.65	17.96	27.65	62.00	-34.35 QP
5	0.3502	0.06	9.66	1.92	11.64	48.96	-37.32 Average
6	0.3502	0.06	9.66	14.48	24.20	58.96	-34.76 QP
7	0.4019	0.06	9.66	9.85	19.57	47.81	-28.24 Average
8	0.4019	0.06	9.66	17.98	27.70	57.81	-30.11 QP
9	0.9839	0.10	9.67	2.61	12.38	46.00	-33.62 Average
10	0.9839	0.10	9.67	8.97	18.74	56.00	-37.26 QP
11	3.2583	0.14	9.71	1.02	10.87	46.00	-35.13 Average
12	3.2583	0.14	9.71	5.81	15.66	56.00	-40.34 QP



Test model: WD-254A

Test Mode: 00; Line: Live line



Site : Shielding Room
Condition: Line
Job No. : 20531AT
Test mode: 00

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1540	0.03	9.62	4.62	14.27	55.78	-41.51	Average
2	0.1540	0.03	9.62	22.55	32.20	65.78	-33.58	QP
3	0.2029	0.04	9.64	4.33	14.01	53.49	-39.48	Average
4	0.2029	0.04	9.64	19.27	28.95	63.49	-34.54	QP
5	0.3035	0.05	9.66	1.05	10.76	50.15	-39.39	Average
6	0.3035	0.05	9.66	13.68	23.39	60.15	-36.76	QP
7	0.6508	0.08	9.68	5.81	15.57	46.00	-30.43	Average
8	0.6508	0.08	9.68	11.36	21.12	56.00	-34.88	QP
9	1.6323	0.12	9.69	7.30	17.11	46.00	-28.89	Average
10	1.6323	0.12	9.69	13.40	23.21	56.00	-32.79	QP
11	2.2847	0.13	9.70	4.49	14.32	46.00	-31.68	Average
12	2.2847	0.13	9.70	10.28	20.11	56.00	-35.89	QP

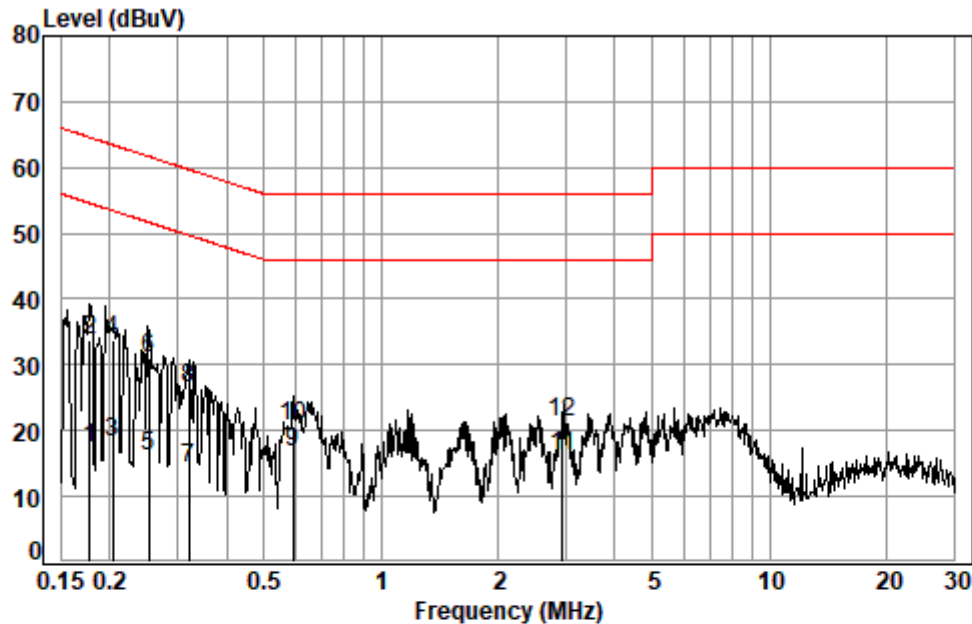


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Test Mode: 00; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 20531AT
Test mode: 00

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1777	0.03	9.63	7.69	17.35	54.59	-37.24	Average
2	0.1777	0.03	9.63	24.05	33.71	64.59	-30.88	QP
3	0.2040	0.04	9.63	8.67	18.34	53.45	-35.11	Average
4	0.2040	0.04	9.63	24.23	33.90	63.45	-29.55	QP
5	0.2521	0.05	9.65	6.54	16.24	51.69	-35.45	Average
6	0.2521	0.05	9.65	21.46	31.16	61.69	-30.53	QP
7	0.3200	0.06	9.65	4.43	14.14	49.71	-35.57	Average
8	0.3200	0.06	9.65	16.67	26.38	59.71	-33.33	QP
9	0.5948	0.08	9.67	6.88	16.63	46.00	-29.37	Average
10	0.5948	0.08	9.67	10.90	20.65	56.00	-35.35	QP
11	2.9401	0.14	9.70	6.37	16.21	46.00	-29.79	Average
12	2.9401	0.14	9.70	11.46	21.30	56.00	-34.70	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: 10m

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.

7.2.1 E.U.T. Operation

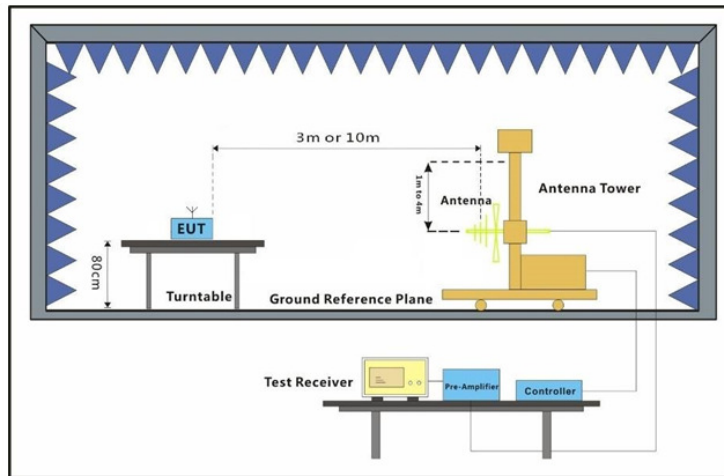
Operating Environment:

Temperature: 23.2 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge mode_Keep the EUT charging(2.5W)

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

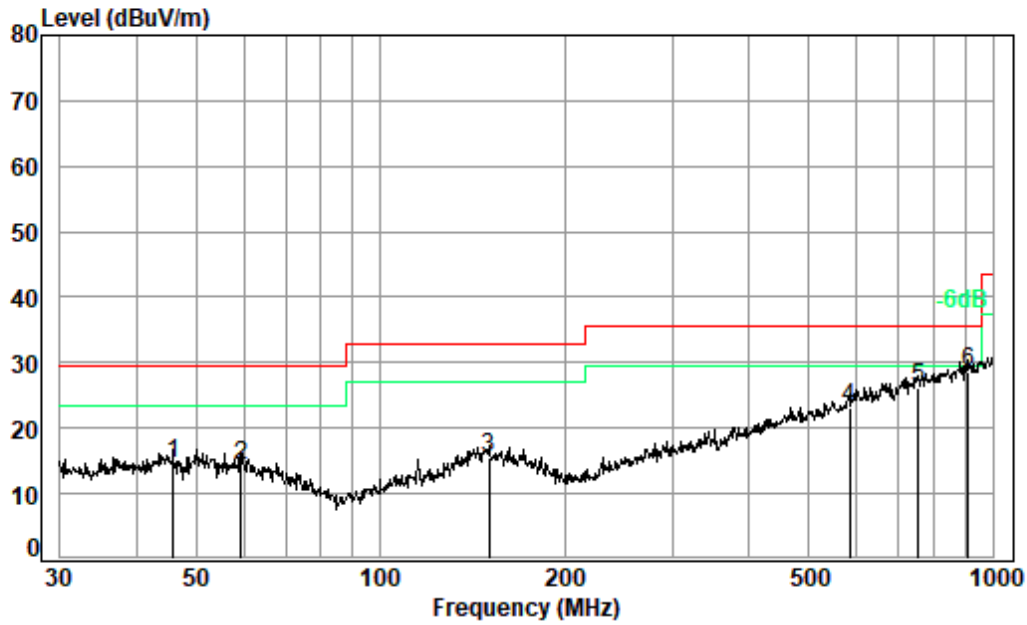
- The EUT was placed on the top of a rotating table 0.8 meters above the ground for below 1GHz at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.
- Test the EUT in the lowest channel, the middle channel, the Highest channel
- 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.
- Repeat above procedures until all frequencies measured was complete.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



Test model:WD-254B

Test Mode: 00; Polarity: Horizontal



Condition: 10m HORIZONTAL

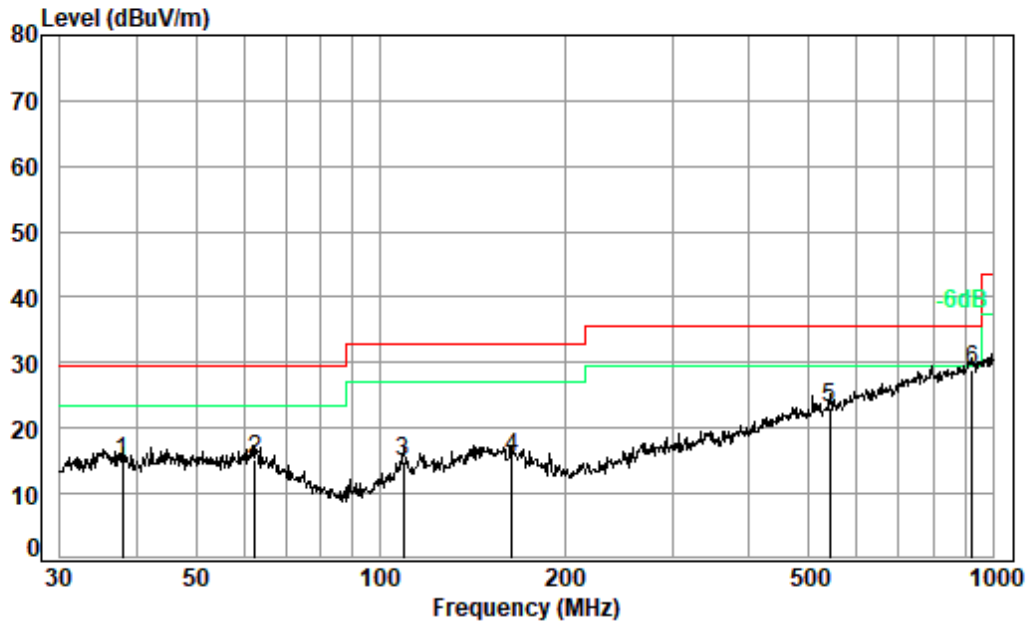
Job No. : 20531AT

Test Mode: 00

	Freq	Read Level	Ant Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	45.855	25.72	20.49	0.95	32.50	14.66	29.50	-14.84	QP
2	59.232	26.36	19.33	1.04	32.49	14.24	29.50	-15.26	QP
3	150.538	26.23	20.18	1.49	32.42	15.48	33.00	-17.52	QP
4	584.790	26.94	25.49	3.08	32.30	23.21	35.60	-12.39	QP
5	755.387	26.69	28.30	3.33	32.19	26.13	35.60	-9.47	QP
6 pp	912.862	26.90	29.62	3.48	31.48	28.52	35.60	-7.08	QP



Test Mode: 00; Polarity: Vertical



Condition: 10m VERTICAL

Job No. : 20531AT

Test Mode: 00

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	37.945	26.47	19.99	0.92	32.50	14.88	29.50	-14.62	QP
2	62.431	27.79	18.95	1.06	32.48	15.32	29.50	-14.18	QP
3	109.029	29.87	16.22	1.29	32.44	14.94	33.00	-18.06	QP
4	163.755	26.73	19.61	1.52	32.41	15.45	33.00	-17.55	QP
5	541.373	27.91	24.53	3.01	32.30	23.15	35.60	-12.45	QP
6 pp	925.756	26.87	29.80	3.50	31.36	28.81	35.60	-6.79	QP



The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance,

$$L_3 / L_{10} = D_{10} / D_3$$

Note:

L₃: Level @ 3m distance. Unit: uV/m;

L₁₀: Level @ 10m distance. Unit: uV/m;

D₃: 3m distance. Unit: m

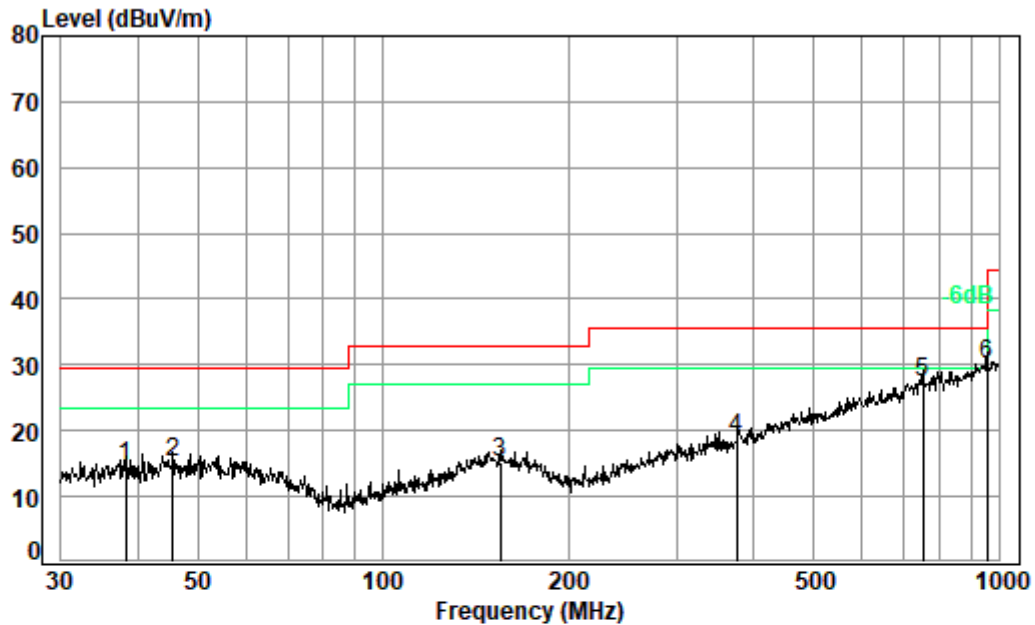
D₁₀: 10m distance. Unit: m

The level at 3m test distance is below:

Frequency (MHz)	Level @ 10m (dBuV/m)	Level @ 10m (uV/m)	Level @ 3m (uV/m)	Level @ 3m (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)	Ant. Polarization
37.95	14.88	5.55	18.49	25.34	40.00	-14.66	V
62.43	15.32	5.83	19.45	25.78	40.00	-14.22	V
109.03	14.94	5.58	18.62	25.40	43.50	-18.10	V
163.76	15.45	5.92	19.74	25.91	43.50	-17.59	V
541.37	23.15	14.37	47.90	33.61	46.00	-12.39	V
925.76	28.81	27.57	91.91	39.27	46.00	-6.73	V
45.86	14.66	5.41	18.03	25.12	40.00	-14.88	H
59.23	14.24	5.15	17.17	24.70	40.00	-15.30	H
150.54	15.48	5.94	19.81	25.94	43.50	-17.56	H
584.79	23.21	14.47	48.24	33.67	46.00	-12.33	H
755.39	26.13	20.25	67.51	36.59	46.00	-9.41	H
912.86	28.52	26.67	88.90	38.98	46.00	-7.02	H

Test model: WD-254A

Test Mode: 00; Polarity: Horizontal



Condition: 10m HORIZONTAL

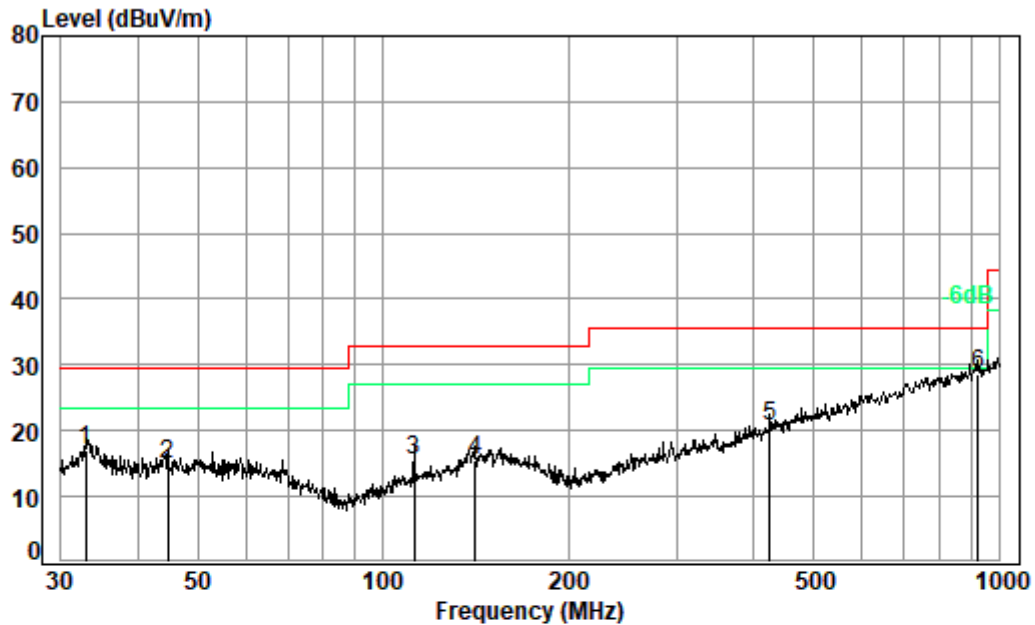
Job No. : 20531AT

Test Mode: 00

	Ant Freq	Preamp Factor	Cable Loss	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	38.212	20.00	32.50	0.92	26.14	14.56	29.50	-14.94 QP
2	45.535	20.45	32.50	0.95	26.31	15.21	29.50	-14.29 QP
3	154.821	20.00	32.42	1.50	26.19	15.27	33.00	-17.73 QP
4	375.939	21.38	32.32	2.35	27.34	18.75	35.60	-16.85 QP
5	752.743	28.30	32.19	3.33	28.00	27.44	35.60	-8.16 QP
6 pp	955.438	29.88	31.09	3.57	27.79	30.15	35.60	-5.45 QP



Test Mode: 00; Polarity: Vertical



Condition: 10m VERTICAL

Job No. : 20531AT

Test Mode: 00

		Ant	Preamp	Cable	Read	Limit	Over	
	Freq	Factor	Factor	Loss	Level	Level	Line	Limit Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	32.864	19.01	32.50	0.89	29.49	16.89	29.50	-12.61 QP
2	44.743	20.38	32.50	0.95	26.16	14.99	29.50	-14.51 QP
3	112.524	16.51	32.44	1.30	30.17	15.54	33.00	-17.46 QP
4	141.330	19.77	32.43	1.45	26.65	15.44	33.00	-17.56 QP
5	425.028	22.50	32.30	2.48	27.86	20.54	35.60	-15.06 QP
6 pp	925.756	29.80	31.36	3.50	26.72	28.66	35.60	-6.94 QP



The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance,

$$L_3 / L_{10} = D_{10} / D_3$$

Note:

L₃: Level @ 3m distance. Unit: uV/m;

L₁₀: Level @ 10m distance. Unit: uV/m;

D₃: 3m distance. Unit: m

D₁₀: 10m distance. Unit: m

The level at 3m test distance is below:

Frequency (MHz)	Level @ 10m (dBuV/m)	Level @ 10m (uV/m)	Level @ 3m (uV/m)	Level @ 3m (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)	Ant. Polarization
32.864	16.89	6.99	23.30	27.35	40.00	-12.65	V
44.743	14.99	5.62	18.72	25.45	40.00	-14.55	V
112.524	15.54	5.98	19.95	26.00	43.50	-17.50	V
141.330	15.44	5.92	19.72	25.90	43.50	-17.60	V
425.028	20.54	10.64	35.47	31.00	46.00	-15.00	V
925.756	28.66	27.10	90.34	39.12	46.00	-6.88	V
38.212	14.56	5.35	17.82	25.02	40.00	-14.98	H
45.535	15.21	5.76	19.20	25.67	40.00	-14.33	H
154.821	15.27	5.80	19.34	25.73	43.50	-17.77	H
375.939	18.75	8.66	28.87	29.21	46.00	-16.79	H
752.743	27.44	23.55	78.50	37.90	46.00	-8.10	H
955.438	30.15	32.17	107.25	40.61	46.00	-5.39	H

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: 23.2 °C

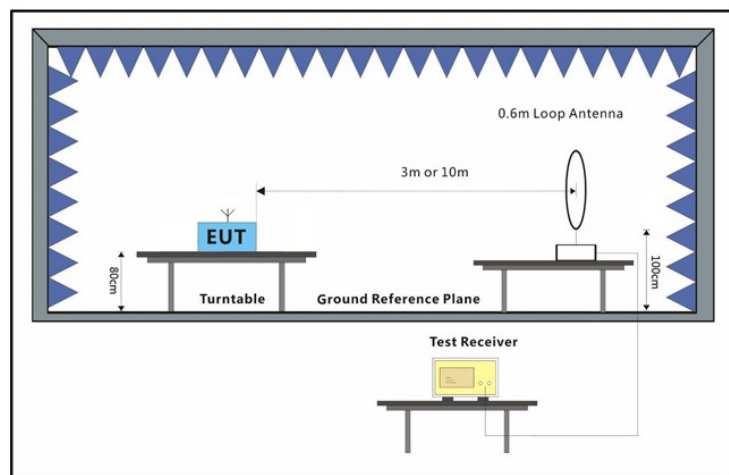
Humidity: 49.9 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge mode_Keep the EUT charging(2.5W)

7.3.3 Test Setup Diagram

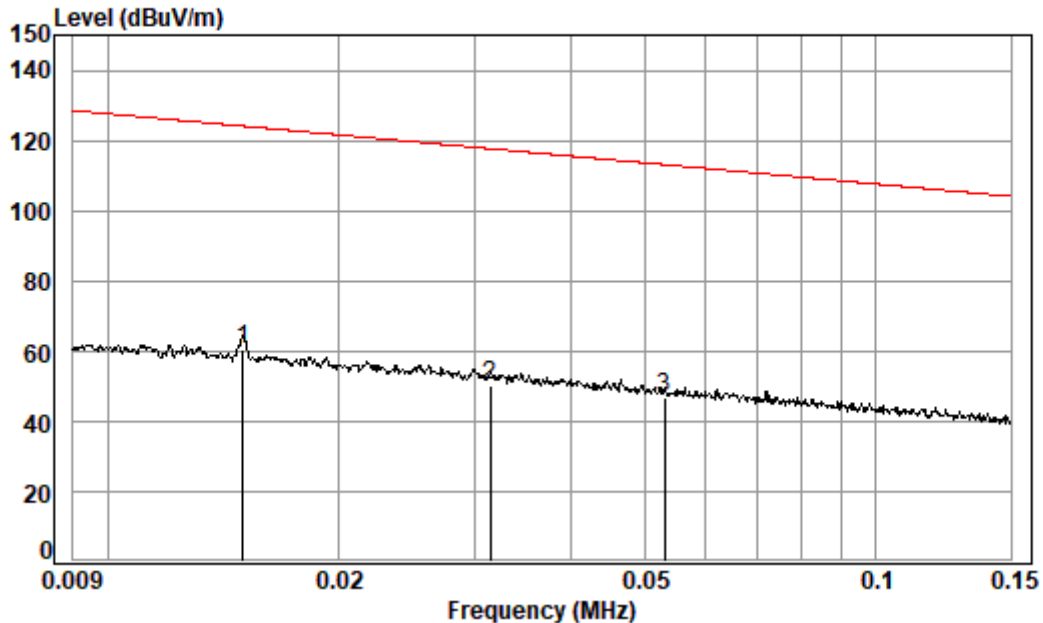


7.3.4 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.

Test model: WD-254B

9KHz-150KHz



Condition: 3m

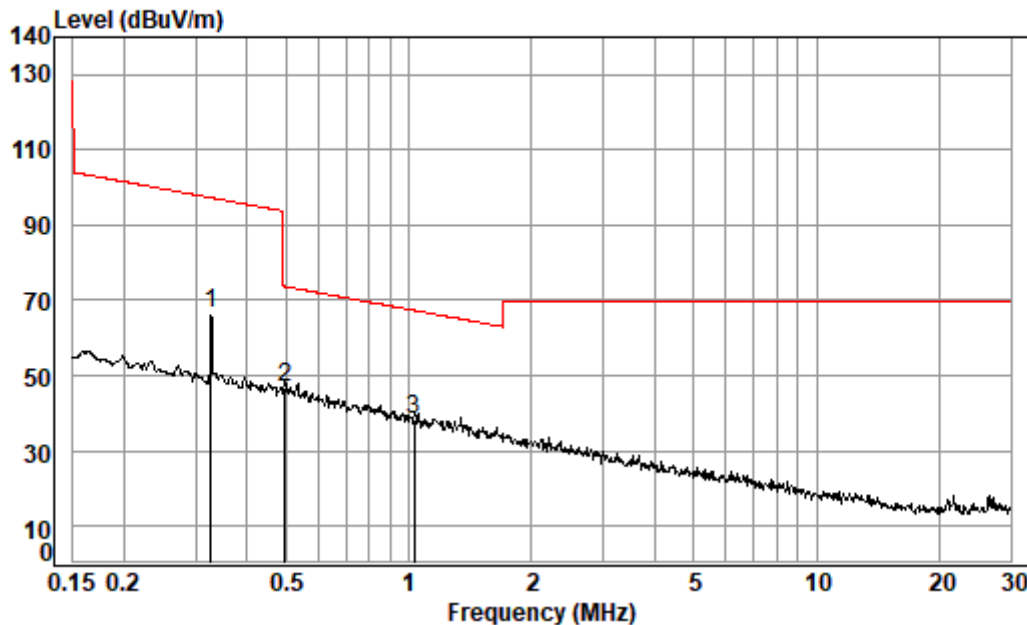
Job No. : 20531AT

Test Mode: 00

		Read	Ant	Cable	Preamp		Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 pp	0.015	75.93	16.00	0.01	31.73	60.21	124.10	-63.89	Average
2	0.031	69.60	12.53	0.01	32.20	49.94	117.65	-67.71	Average
3	0.053	67.81	11.51	0.01	32.50	46.83	113.10	-66.27	Average



150KHz-30MHz



Condition: 3m

Job No. : 20531AT

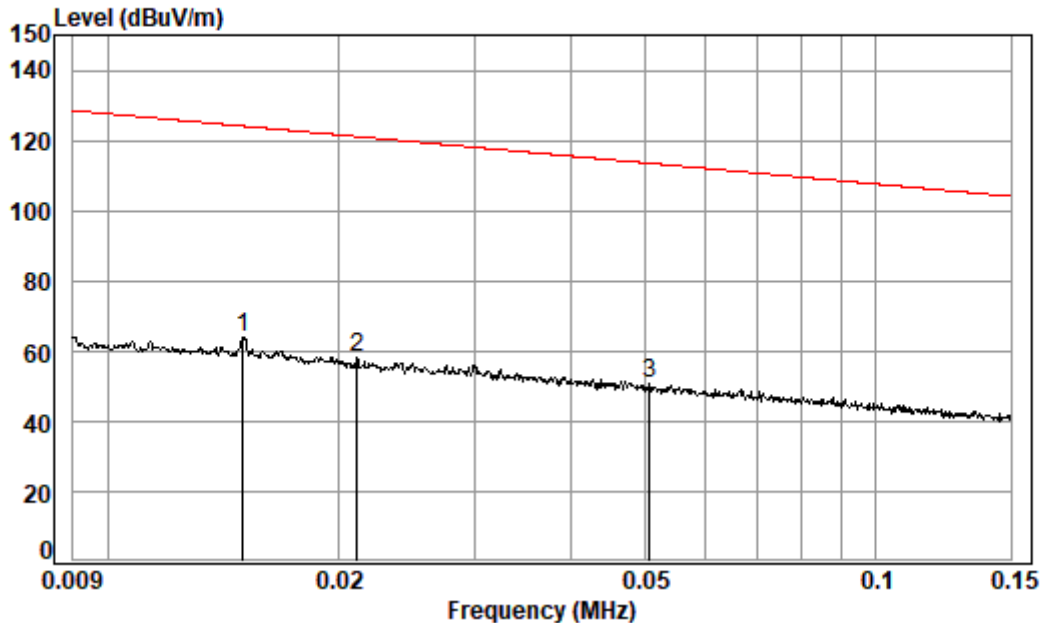
Test Mode: 00

		Ant	Preamp	Cable	Read	Limit	Over	
	Freq	Factor	Factor	Loss	Level	Level	Line	Limit Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	av	0.327	10.88	32.50	0.29	87.76	66.43	97.32 -30.89 Average
2	pp	0.497	10.85	32.50	0.47	68.12	46.94	73.68 -26.74 QP
3		1.032	10.84	32.50	0.48	59.62	38.44	67.33 -28.89 QP



Test model: WD-254A

9KHz-150KHz



Condition: 3m

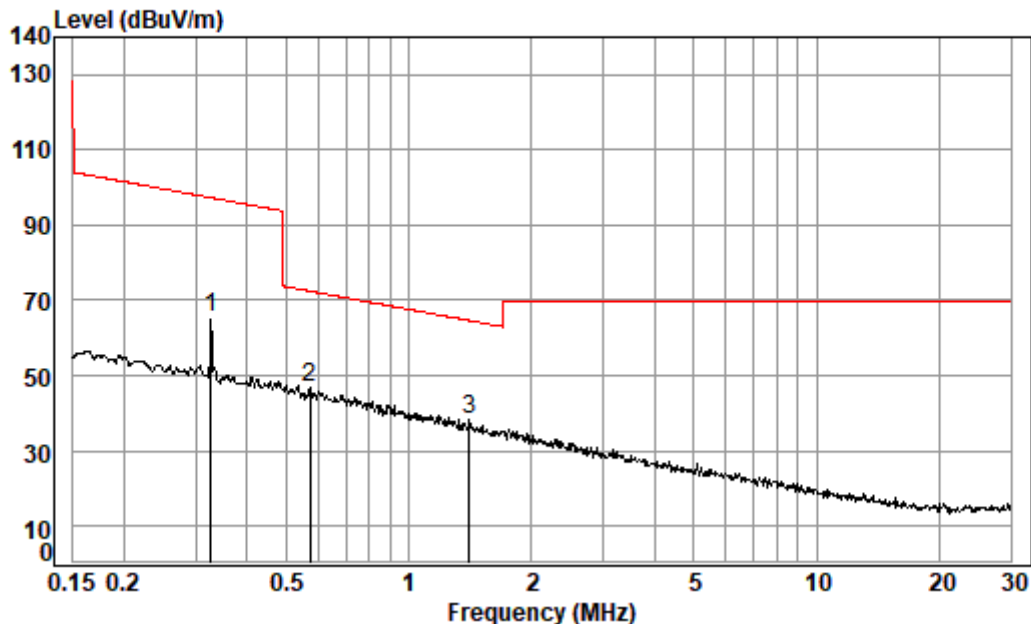
Job No. : 20531AT

Test Mode: 00

		Ant	Preamp	Cable	Read		Limit	Over	
	Freq	Factor	Factor	Loss	Level	Level	Line	Limit	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	0.015	16.00	31.73	0.01	79.80	64.08	124.10	-60.02	QP
2	0.021	13.97	31.95	0.01	76.01	58.04	121.12	-63.08	QP
3	0.051	11.55	32.50	0.01	71.45	50.51	113.49	-62.98	QP



150KHz-30MHz



Condition: 3m

Job No. : 20531AT

Test Mode: 00

		Ant	Preamp	Cable	Read	Limit	Over	
	Freq	Factor	Factor	Loss	Level	Level	Line	Limit Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB
1	av	0.327	10.88	32.50	0.29	86.65	65.32	97.33 -32.01 Average
2	pp	0.573	10.84	32.50	0.55	67.78	46.67	72.44 -25.77 QP
3		1.411	10.88	32.50	0.48	59.49	38.35	64.62 -26.27 QP



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: 20.2 °C

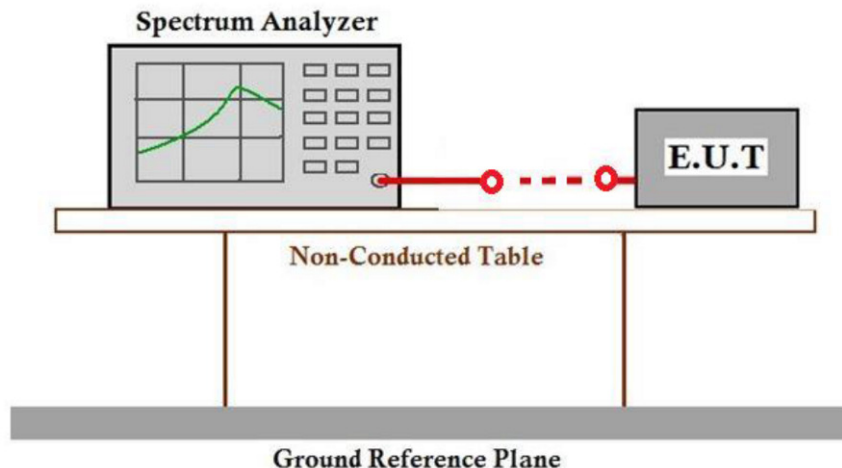
Humidity: 50.4 % RH

Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge mode_Keep the EUT charging(2.5W)

7.4.3 Test Setup Diagram



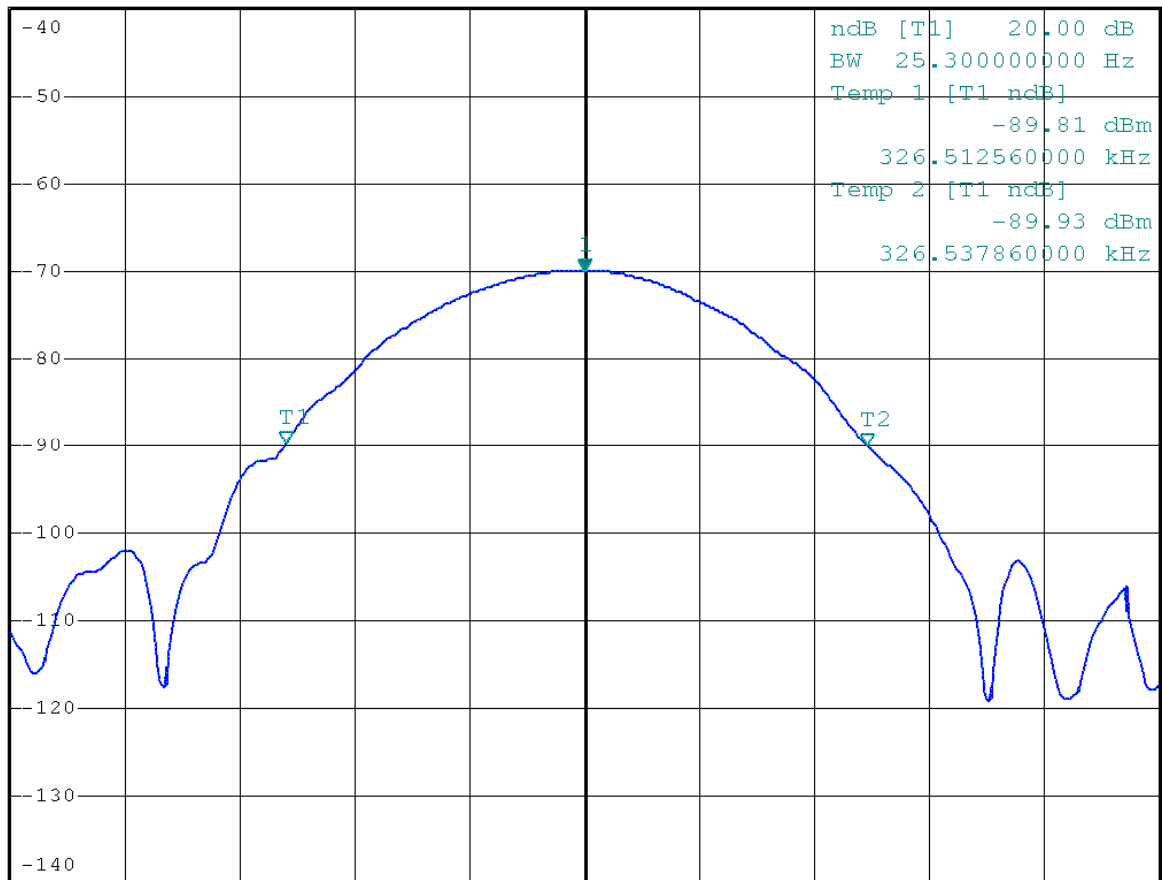
7.4.4 Measurement Procedure and Data

Test Frequency(KHz)	20dB bandwidth (KHz)	Limit (KHz)	Results
326.526	0.0253	N/A	Pass



*RBW 10 Hz Marker 1 [T1]
 *VBW 30 Hz -69.98 dBm
 Ref -40 dBm Att 10 dB SWT 1 s 326.525560000 kHz

1 AP
VIEW



Center 326.52556 kHz 5 Hz/ Span 50 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 and 495-505KHz

7.5.1 E.U.T. Operation

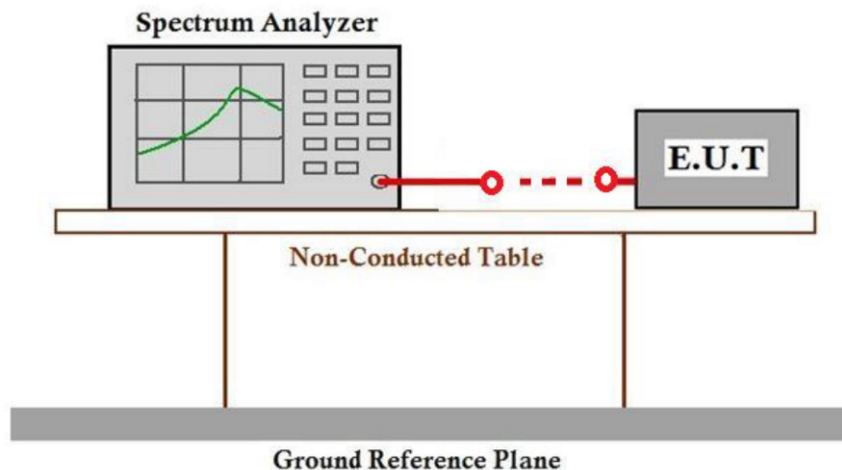
Operating Environment:

Temperature: 20.2 °C Humidity: 50.4 % RH Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge mode_Keep the EUT charging(2.5W)

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Remark: For the transmitting frequency is 326.5kHz, and the nearest restricted band is 0.090-0.110 MHz and 0.495-0.505 MHz, this EUT meets the restricted band requirement.



*RBW 10 Hz Marker 1 [T1]
*VBW 30 Hz -69.98 dBm
SWT 1 s 326.525560000 kHz

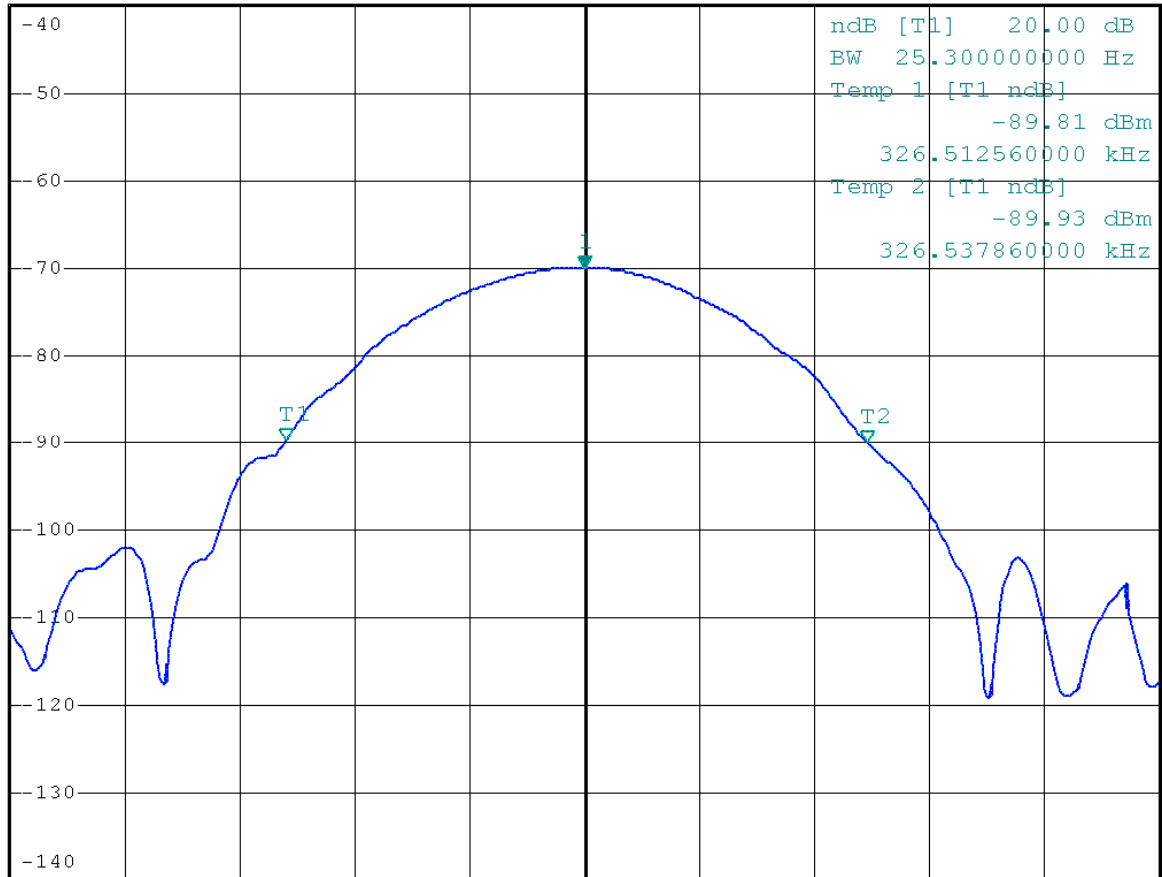
Ref -40 dBm

Att 10 dB

SWT 1 s

326.525560000 kHz

1 AP
VIEW



Center 326.52556 kHz

5 Hz/

Span 50 Hz



8 Test Setup Photo

Refer to Setup Photos

9 EUT Constructional Details (EUT Photos)

Refer to EUT external and internal photos

- End of the Report -

