



CE Radio Test Report

Project No. : 2401C127A
Equipment : AX1500 Wi-Fi 6 5G NR Router
Brand Name : Tenda
Model Name : 5G01
Series Model : N/A
Applicant : SHENZHEN TENDA TECHNOLOGY CO.,LTD.
Address : 6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052
Manufacturer : SHENZHEN TENDA TECHNOLOGY CO.,LTD.
Address : 6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052
Date of Receipt : Jan. 16, 2024
Date of Test : Jan. 17, 2024 ~ Jan. 27, 2024
Issued Date : Apr. 09, 2024
Report Version : R00
Test Sample : Engineering Sample No.: DG2024011642
Standard(s) : ETSI EN 301 908-1 V15.2.1 (2023-01)
ETSI EN 301 908-2 V13.1.1 (2020-06)

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

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BTL's laboratory quality assurance procedures are in compliance with the ISO/IEC 17025: 2017 requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-ETSP-8-2401C127A	R00	This is a copy report which referencing test data are provided from the original test report (BTL-ETSP-8-2401C127). The product name, brand, model name, applicant and manufacturer information are changed which does not affect the test results. Other are kept the same.	Apr. 09, 2024	Valid

1. TEST SUMMARY

Applied Standard: ETSI EN 301 908-1 V15.2.1 (2023-01) & ETSI EN 301 908-2 V13.1.1 (2020-06) (See Note 3)		
Subclause	Description of Test	Verdict
5.2	Transmitter Maximum Output Power	Pass
5.9	Transmitter Spectrum Emission Mask	Pass
5.11	Transmitter Spurious Emissions	Pass
5.4.3	Transmitter Minimum Output Power	Pass
6.4	Receiver Adjacent Channel Selectivity (ACS)	Pass
6.5	Receiver Blocking Characteristics	Pass
6.6	Receiver Spurious Response	Pass
6.7	Receiver Intermodulation Characteristics	Pass
6.8	Receiver Spurious Emissions	Pass
5.4.4	Out-Of-Synchronization Handling Of Output Power	Pass
5.10	Transmitter Adjacent Channel Leakage Power Ratio(ACLR)	Pass
6.2	Receiver Reference Sensitivity Level	Pass
4.2.14	Receiver Total Radiated Sensitivity (TRS)	N/A (Note 2)
4.2.15	Total Radiated Power (TRP)	N/A (Note 2)
4.2.2	Radiated Emissions(UE)	Pass
4.2.4	Control And Monitoring Functions (UE)	Pass

Note:

- For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".
- The present requirement applies to handheld phones/DUTs that are narrower than 72 mm.
- Normative References:
 ETSI TS 134 121-1 V12.1.0 (2015-10)
 *ETSI TS 134 108 V12.1.0 (2015-10)
 *ETSI TS 134 109 V12.0.0 (2014-09)
 *ETSI TS 125 101 V11.11.0 (2015-10)
 *ETSI TS 125 214 V11.12.0 (2015-07)
 *ETSI TS 145 004 V11.0.0 (2012-10)
 Note: The standards in note 3 are the reference standards for the standards shown on page 1, and * item are not listed in the A2LA scope.

4. The RF module of this AX1500 Wi-Fi 6 5G NR Router has been tested and certified. Please refer to the module report as listed in the below table for the test results of the RF module.

RF Module Model	Module Function	Report Number	Standard
RM500U-EA	WCDMA	PD20230064RF01	ETSI EN 301 908-1 V15.2.1 ETSI EN 301 908-2 V13.1.1
	LTE	PD20230064RF02	ETSI EN 301 908-1 V15.2.1 ETSI EN 301 908-13 V13.2.1
	5G NR	PD20230064RF03	ETSI EN 301 908-1 V15.2.1 Draft EN 301 908-25 V15.1.1_0.0.12 ETSI TS 138 521-1 V17.5.0 ETSI TS 138 521-3 V17.5.0

- 1) Compared with module report (report number: PD20230064RF01), the output power had been re-evaluated. It was found that the output power of module was the worst case. Thus, only the radiated spurious emissions was evaluated and recorded in this report. For the test results of all other test items please refer to above module test report.
5. Based on the RF module the antennas for this AX1500 Wi-Fi 6 5G NR Router were updated as below table:

Ant. P/N	Type	Ant. Brand	Antenna Gain(dBi)	Note
N/A	PCB		1.70	WCDMA Band V

- 1) The antenna gain is provided by the manufacturer.
6. Two adapters only differ in the plug, so tested the EU plug.

2. TEST ENVIRONMENT AND DESCRIPTION

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **SSL-CB05** at the location of Room 108, Building 2, No.1, Yile Road, Songshan Lake Zone, Dongguan City, Guangdong, People's Republic of China.


2.2 MEASUREMENT UNCERTAINTY

Measurement Uncertainty for a Level of Confidence of 95.45 %, $U=2 \times u_c(y)$.

Parameter	Uncertainty
Spurious Emissions, Radiated $25 \text{ MHz} \leq f \leq 1000 \text{ MHz}$	$\pm 3.76 \text{ dB}$
Spurious Emissions, Radiated $1 \text{ GHz} < f \leq 18 \text{ GHz}$	$\pm 3.76 \text{ dB}$

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	AX1500 Wi-Fi 6 5G NR Router	
Brand Name	Tenda	
Model Name	5G01	
Series Model	N/A	
Model Difference(s)	N/A	
Hardware Version	v1.0	
Software Version	V1.0.0.1	
RF Module Model	RM500U-EA	
Power Source	DC Voltage supplied from AC adapter. 1# Model: BN026-A24012E(EU) 2# Model: BN026-A24012B(UK)	
Power Rating	I/P: 100-240V~ 50/60Hz 0.7A O/P: 12.0V  2.0A 24.0W	
Operation Frequency Band	Band V : UL:824MHz ~ 849MHz, DL: 869MHz ~ 894MHz	
Modulation Type	BPSK, QPSK, 16QAM, 64QAM	
Power Class	3	
IMEI NO.	Radiated	869841060052583

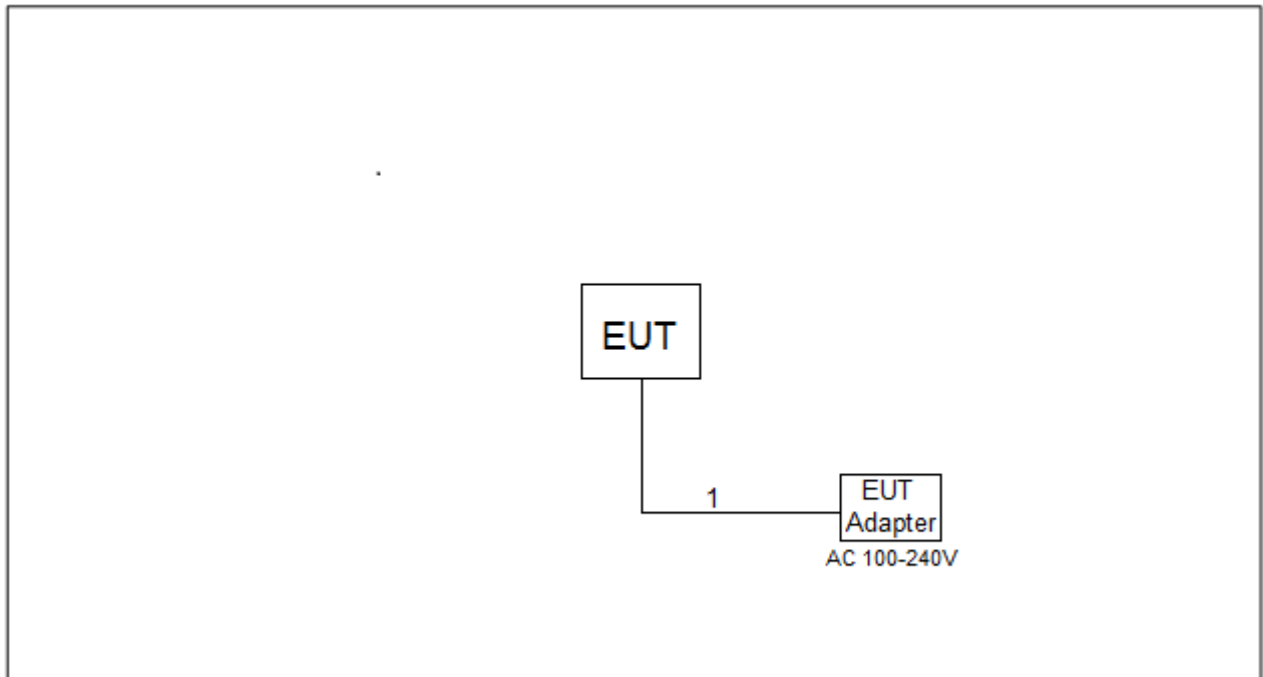
Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. Channel List:

Bands	Sub-test	Channel	Frequency (MHz)	
WCDMA Band V	---	4133	Low	826.6
		4175	Mid	835.0
		4232	High	846.4

3.2 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model No.	Series No.
-	-	-	-	-

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	1.5m

4. RADIATED EMISSIONS (UE)

4.1 TEST REQUIREMENTS

The frequency boundary and reference bandwidths for the detailed transitions of the limits between the requirements for out-of-band emissions and spurious emissions are based on Recommendations ITU-R SM.329-12 [1] and SM.1539-1 [i.6].

The requirements shown in table 4.2.2.2-1 are only applicable for frequencies in the spurious domain.

Table 4.2.2.2-1: Radiated spurious emissions requirements (UE)

Frequency	Minimum requirement (e.r.p.)/ reference bandwidth idle mode	Minimum requirement (e.r.p.)/ reference bandwidth traffic mode	Applicability
$30 \text{ MHz} \leq f < 1\,000 \text{ MHz}$	-57 dBm/100 kHz	-36 dBm/100 kHz	All
$1 \text{ GHz} \leq f < 12,75 \text{ GHz}$	-47 dBm/1 MHz	-30 dBm/1 MHz	All
$12,75 \text{ GHz} \leq f < 5^{\text{th}}$ harmonic of the upper frequency edge of the Uplink operating band in GHz	-47 dBm/1 MHz	-30 dBm/1 MHz	All (note 3)
$12,75 \text{ GHz} < f < 26 \text{ GHz}$	-47 dBm/1 MHz	-30 dBm/1 MHz	All (note 4)
$f_c - 2,5 \times 5 \text{ MHz} < f < f_c + 2,5 \times 5 \text{ MHz}$ (note 1 and note 2)	Not defined	Not defined	UTRA FDD, UTRA TDD, 3,84 Mcps option, cdma2000, spreading rate 3
$f_c - 2,5 \times \text{BW}_{\text{Channel}} \text{ MHz} < f < f_c + 2,5 \times \text{BW}_{\text{Channel}} \text{ MHz}$ (note 1 and note 2)	Not defined	Not defined	E-UTRA FDD, E-UTRA TDD, Mobile WiMAX™
$f_c - (1,5 \times \text{BW}_{\text{Channel}} + 5) \text{ MHz} < f < f_c + (1,5 \times \text{BW}_{\text{Channel}} + 5) \text{ MHz}$ (note 1)	Not defined	Not defined	NR operating in FR1
$f_c - 2,5 \times 10 \text{ MHz} < f < f_c + 2,5 \times 10 \text{ MHz}$ (note 1 and note 2)	Not defined	Not defined	UTRA TDD, 7,68 Mcps option
$f_c - 4 \text{ MHz} < f < f_c + 4 \text{ MHz}$ (note 1 and note 2)	Not defined	Not defined	UTRA TDD, 1,28 Mcps option cdma2000, spreading rate 1

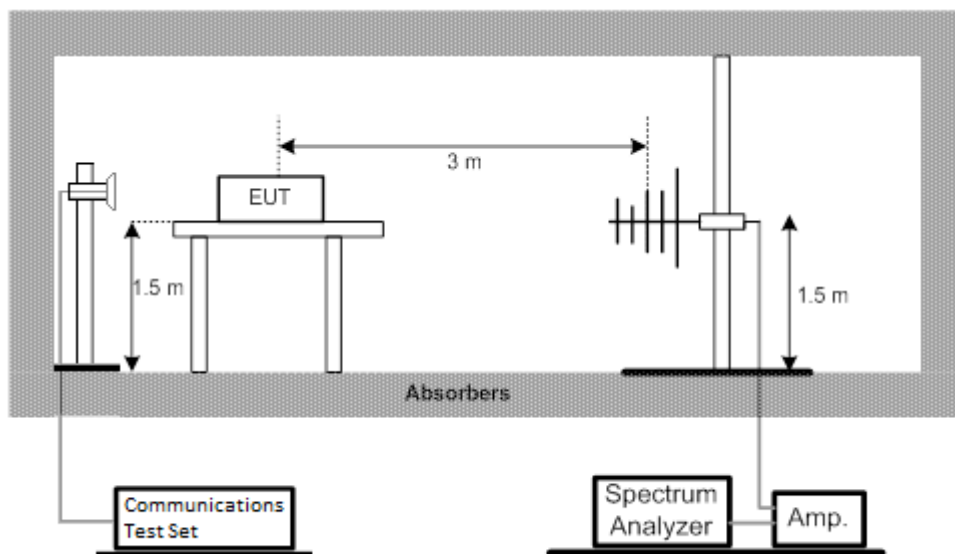
NOTE 1: f_c is the UE transmit centre frequency.
NOTE 2: This frequency range is not in the spurious domain, no requirement is then defined for this frequency range.
NOTE 3: Applies for Band that the upper frequency edge of the Uplink Band more than 2,69 GHz.
NOTE 4: Applies for Band that the upper frequency edge of the Uplink Band more than 5,2 GHz.

4.2 CONFORMANCE

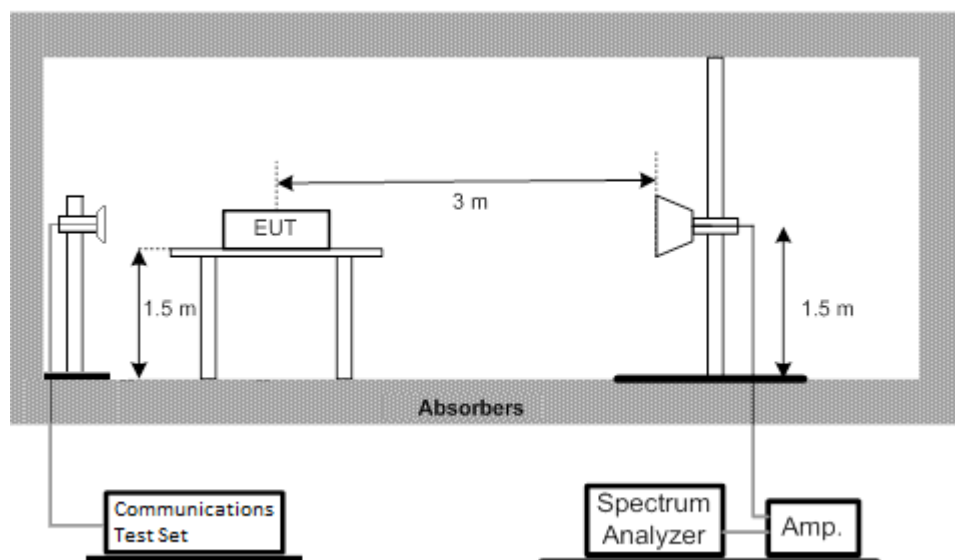
Conformance tests described in EN 301 908-1 clause 5.3.1 shall be carried out.

4.3 TEST SETUP

Radiated Emission Test Set-Up Frequency 30 MHz ~ 1 GHz



Radiated Emission Test Set-Up Frequency Above 1 GHz



4.4 TEST PROCEDURE

Step 1:

The measurement is carried out in the fully anechoic chamber. EUT was placed on a 1.50 meter high nonconductive table at a 3 meter test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. The height of receiving antenna is 1.50 m and varies in certain range to find the maximum power value. Connect the EUT to the BTS simulator via the air interface. The measurement is carried out using a spectrum analyzer or receiver. Then the antenna height and turn table rotation is adjusted till the maximum power value is founded on spectrum analyzer or receiver. A filter is necessary in the band near to the carrier frequency. A filter is needed to avoid the distortion of the testing equipment in the band above the carrier frequency.

Step 2:

A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT.

The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

Calculation procedure:

The data of cable loss, antenna gain and air loss has been calibrated in full testing frequency range before the testing.

The power of the Radiated Spurious Emissions is calculated by adding the cable loss, antenna gain and air loss. The basic equation with a sample calculation is as followed:

$$P = PR + LC + LA - G$$

Where

P: Power of the Radiated Spurious Emissions (dBm)

PR: reading of the receiver (dBm)

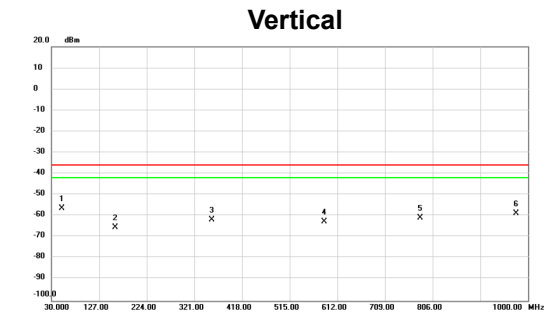
LC: Cable Lose and power amilifer gain and filter cable loss (dB)

LA: Air loss (dB)

G: Antenna Gain (dBi)

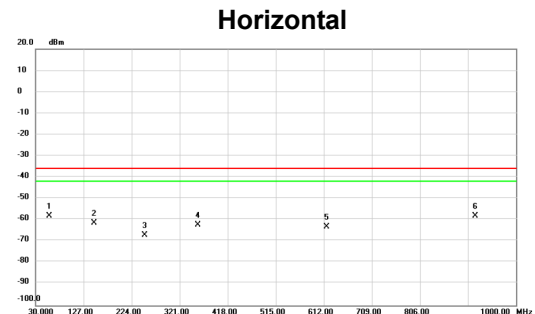
4.5 RADIATED EMISSIONS TRAFFIC MODE MEASUREMENT (UE)

Test Mode : WCDMA_Traffic Mode_Mid CH
Band V



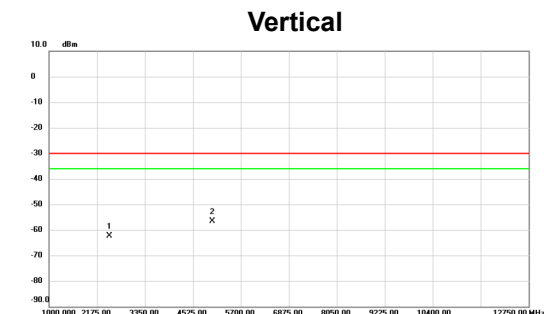
No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	51.728	-66.99	10.54	-56.45	-36.00	-20.45	RMS	
2	160.077	-75.24	9.97	-65.27	-36.00	-29.27	RMS	
3	356.987	-72.76	11.09	-61.67	-36.00	-25.67	RMS	
4	585.422	-75.34	12.83	-62.51	-36.00	-26.51	RMS	
5	780.780	-76.03	15.29	-60.74	-36.00	-24.74	RMS	
6	976.332	-76.31	17.68	-58.63	-36.00	-22.63	RMS	

Test Mode : WCDMA_Traffic Mode_Mid CH
Band V



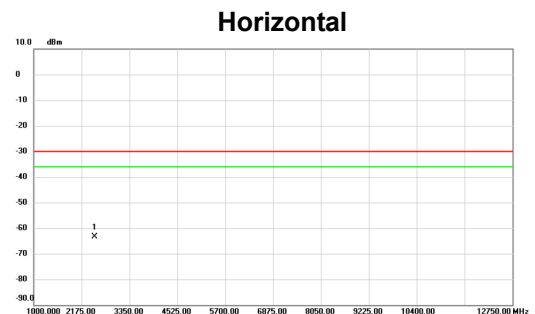
No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	57.257	-67.18	8.93	-58.25	-36.00	-22.25	RMS	
2	148.049	-70.04	8.66	-61.38	-36.00	-25.38	RMS	
3	249.899	-73.25	6.04	-67.21	-36.00	-31.21	RMS	
4	357.860	-73.63	11.17	-62.46	-36.00	-26.46	RMS	
5	617.238	-76.59	13.20	-63.39	-36.00	-27.39	RMS	
6 *	917.841	-75.35	17.15	-58.20	-36.00	-22.20	RMS	

Test Mode : WCDMA_Traffic Mode_Mid CH
Band V



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	2475.800	-62.00	-0.46	-62.46	-30.00	-32.46	RMS	
2 *	4999.700	-60.10	3.53	-56.57	-30.00	-26.57	RMS	

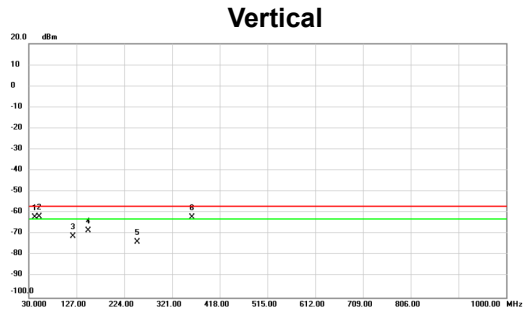
Test Mode : WCDMA_Traffic Mode_Mid CH
Band V



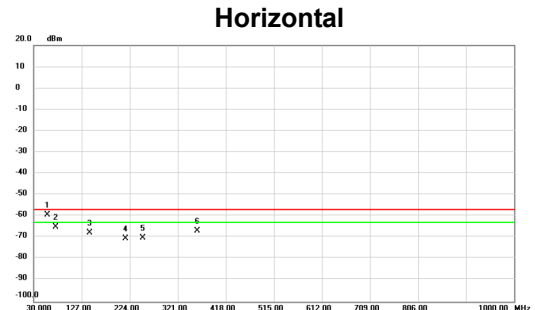
No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	2499.887	-62.18	-1.15	-63.33	-30.00	-33.33	RMS	

4.6 RADIATED EMISSIONS IDLE MODE MEASUREMENT (UE)

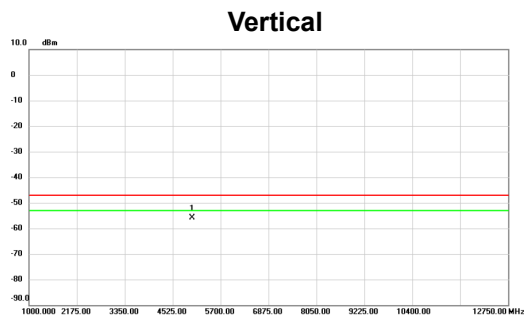
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Band V



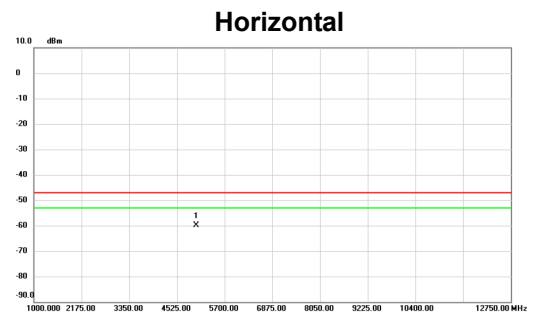
Test Mode : WCDMA_Idle Mode_Mid CH
Band V



Test Mode : WCDMA_Idle Mode_Mid CH
Band V



Test Mode : WCDMA_Idle Mode_Mid CH
Band V



5. MEASUREMENT INSTRUMENTS LIST

DETAILS FOR RADIATED EMISSIONS_30MHZ~1GHZ					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	01381	Oct. 10, 2024
2	Attenuator	EMC INSTRUMENT	EMCI-N-6-06	AT-06009	Oct. 10, 2024
3	Preamplifier	EMC INSTRUMENT	EMC330N	980855	Jul. 07, 2024
4	Cable	RegalWay	SW50T-CA038-3000	N/A	Jul. 05, 2024
5	Cable	RegalWay	SW50T-CA038-4000	N/A	Jul. 05, 2024
6	Cable	RegalWay	SW50T-CA038-4000	N/A	Jul. 05, 2024
7	Signal & Spectrum Analyzer	R&S	FSV3004	101285	Jul. 07, 2024
8	Top precision	Pneumatic Mast Contorller	N/A	N/A	N/A
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
10*	Chamber room	ETS	1055	Q2162	Aug. 21, 2027
11	wideband radio communication tester	R&S	CMW500	165578	Jan. 19, 2025
12	Power Splitter	Mini-Circuits	ZN2PD2-14W-S+	SFG5450192 7	Jan. 19, 2025
13	Attenuator	Talent Microwave	ATT-18G2W-10	N/A	N/A

DETAILS FOR RADIATED EMISSIONS_ABOVE 1GHZ					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Top precision	Pneumatic Mast Contorller	N/A	N/A	N/A
2	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
3	Signal & Spectrum Analyzer	R&S	FSV3044	101377	Jul. 07, 2024
4	Cable	RegalWay	SW50T-CA004-4000	NA	Jul.05, 2024
5	Cable	RegalWay	SW50T-CA0037-2500	NA	Jul. 05, 2024
6	Cable	RegalWay	SW50T-CA004-3000	NA	Jul. 05, 2024
7	Double-Ridged Waveguide Horn Antennas	ETS-LINDGREN	3117-PA	00252542	Sep. 15, 2024
8	Preamplifier	ETS-LINDGREN	3117-PA	00252542	Sep. 16, 2024
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
10	Band Reject Filter	COM-MW	ZHPF6-C3000-18000-174	07213126	Jul. 07, 2024
11	Band Reject Filter	COM-MW	ZHPF6-C1500-10000-1753	07213128	Jul. 07, 2024
12	Cable	RegalWay	RWP50-4.6A-SMSM-1M	NA	Aug. 15, 2024
13	Cable	RegalWay	RWP50-4.6A-SMSM-1M	NA	Aug. 15, 2024
14	Cable	RegalWay	RWP50-4.6A-SMSM-1M	NA	Aug. 15, 2024
15	Cable	RegalWay	RWP50-4.6A-SMSM-1M	NA	Aug. 15, 2024
16	wideband radio communication tester	R&S	CMW500	165578	Jan. 19, 2025
17	Attenuator	Talent Microwave	ATT-18G2W-10	N/A	N/A

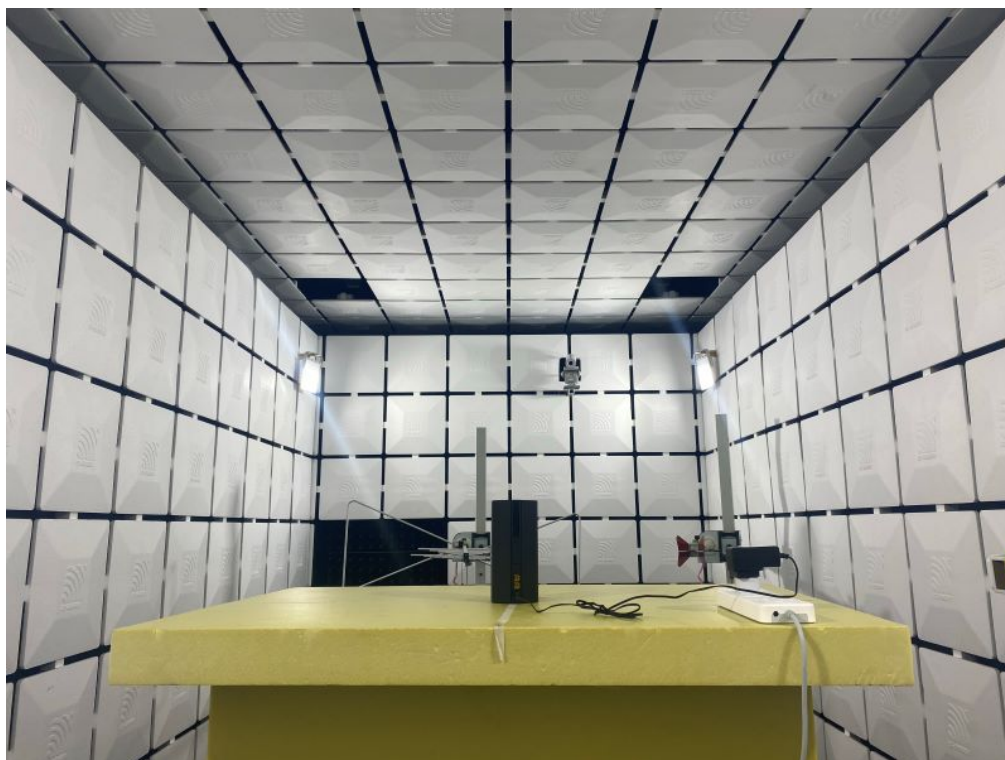
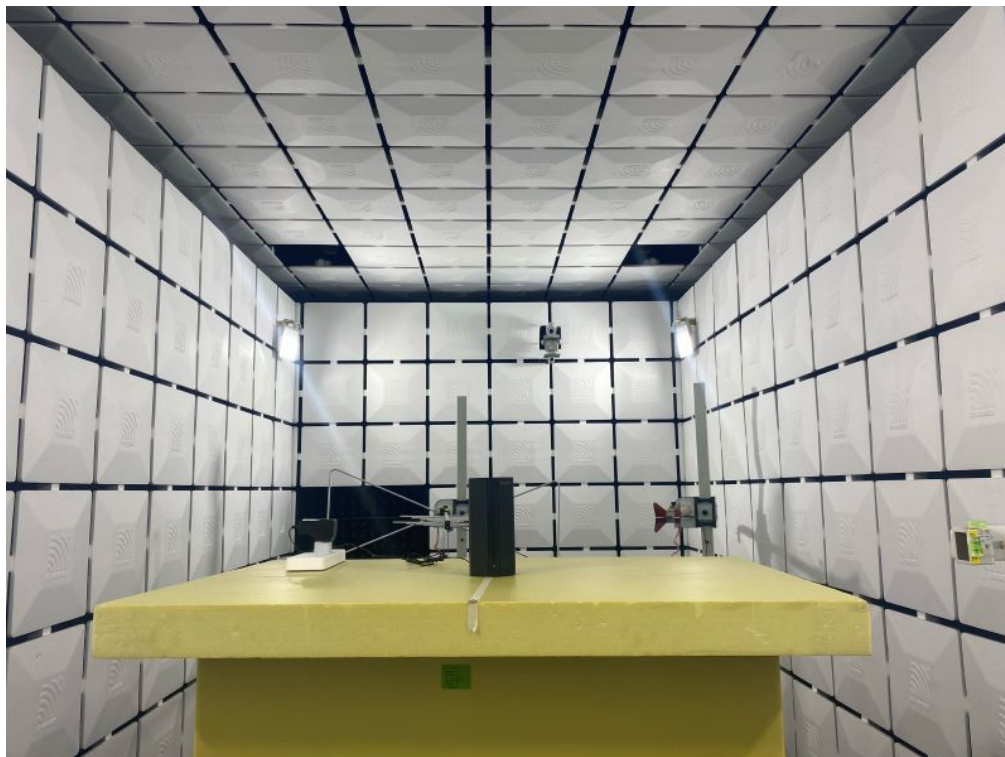
Remark: "N/A" denotes no model Name, serial no. or calibration specified.

"**" calibration period of equipment list is five year.

Except * item, all calibration period of equipment list is one year.

6. EUT TEST PHOTO

Radiated Emissions Test Photos



End of Test Report