FCC Radio Test Report

FCC ID: 2A5LO-ZLTP90

This report concerns: Original Grant

Project No.	:	2410C237
Equipment	:	4G Wireless Router
Brand Name	:	TOZED KANGWEI
Test Model	:	ZLT P90
Series Model	:	ZLT P90Y(Y,Y can be A-J), Telsey P90
Applicant	:	Tozed Kangwei Tech Co., Ltd
Address	:	Room 1301, No. 37, Jinlong, Nansha Street, Xiangjiang Financial Business Center, Nansha District, Guangzhou,China
Manufacturer	:	Tozed Kangwei Tech Co., Ltd
Address	:	Room 1301, No. 37, Jinlong, Nansha Street, Xiangjiang Financial Business Center, Nansha District, Guangzhou,China
Factory	:	Tozed Kangwei Tech Co., Ltd
Address	:	Room 1301, No. 37, Jinlong, Nansha Street, Xiangjiang Financial Business Center, Nansha District, Guangzhou,China
Date of Receipt	:	Oct. 30, 2024
Date of Test	:	Nov. 01, 2024 ~ Nov. 26, 2024
Issued Date	:	Nov. 29, 2024
Report Version	:	R00
Test Sample	:	Engineering Sample No.: DG20241030390 for radiated, DG20241030387 for conducted.
Standard(s)	:	47 CFR FCC Part 22 Subpart H 47 CFR FCC Part 2

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

Prepared by : Edward Li

Edward Li

Approved by : Treey Chen

Treey Chen

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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).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. BTL assumes no responsibility for the data provided by the customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by BTL.

The report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

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-FCCP-1-2410C237	R00	Original Report.	Nov. 29, 2024	Valid

1. APPLICABLE STANDARDS

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:
ANSI C63.26-2015
The following reference test guidance is not within the scope of accreditation of A2LA:
FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 22 Subpart H & Part 2			
Standard(s) Section	**Test Item**	**Judgment**	**Remark**
2.1046	Output Power	PASS	------
22.913(a)(5)	Effective Radiated Power	PASS	------
2.1049	Occupied Bandwidth	PASS	------
2.1051 22.917(a)	Conducted Spurious Emissions	PASS	------
2.1053 22.917(a)	Radiated Spurious Emissions	PASS	------
22.917(a)	Band Edge Measurements	PASS	------
22.913(d)	Peak To Average Ratio	PASS	------
2.1055 22.355	Frequency Stability	PASS	------

Note:
(1) “N/A” denotes test is not applicable in this test report.

2.1 TEST FACILITY

For radiated spurious emissions(9 kHz to 30 MHz) item:
The test facilities used to collect the test data in this report is at the location of 1-2/F, 4/F, Building A, 1-2/F, Building B, 3/F, Building C, No.3, Jinshagang 1st Road, Dalang Town, Dongguan City, Guangdong People's Republic of China.

For other items:
The test facilities used to collect the test data in this report is at the location of Room 108-116, 309-310, Building 2, No.1, Yile Road, Songshan Lake Zone, Dongguan City, Guangdong, People's Republic of China.
BTL's Registration Number for FCC: 747969
BTL's Designation Number for FCC: CN1377

2.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))
The BTL measurement uncertainty as below table:

A. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	*U*,(dB)
DG-CB01	CISPR	9kHz ~ 30MHz	2.36

Test Site	Method	Measurement Frequency Range	Ant. H / V	*U*,(dB)
SSL-CB01 (3m)	CISPR	30MHz ~ 200MHz	V	4.70
		30MHz ~ 200MHz	H	3.56
		200MHz ~ 1,000MHz	V	4.92
		200MHz ~ 1,000MHz	H	4.54

Test Site	Method	Measurement Frequency Range	*U*,(dB)
SSL-CB01 (3m)	CISPR	1GHz ~ 6GHz	4.56
		6GHz ~ 18GHz	5.14

B. Other Measurement:

Parameter	Uncertainty
Spectrum Bandwidth	±1.74 dB
Maximum Output Power	±0.87 dB
Frequency Stability	±53.10Hz
Conducted Spurious Emissions	2.71 dB
Temperature	±0.48 °C
Humidity	±1.37 %

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

2.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By	Test Date
Output Power & ERP	23.3-24.1°C	36-47%	DC 24V	Gavin Ge	Nov. 02, 2024 ~ Nov. 26, 2024
Occupied Bandwidth	23.3-24.1°C	36-47%	DC 24V	Gavin Ge	Nov. 02, 2024 ~ Nov. 26, 2024
Conducted Spurious Emissions	23.3-24.1°C	36-47%	DC 24V	Gavin Ge	Nov. 02, 2024 ~ Nov. 26, 2024
Radiated Spurious Emissions (9 kHz to 30 MHz)	26°C	47%	AC 120V/60Hz	Vance Lv	Nov. 19, 2024
Radiated Spurious Emissions (30 MHz to 1000 MHz)	20°C	50%	AC 120V/60Hz	Young Zou	Nov. 22, 2024
Radiated Spurious Emissions (Above 1000 MHz)	20°C	50%	AC 120V/60Hz	Young Zou	Nov. 22, 2024
Band Edge	23.3-24.1°C	36-47%	DC 24V	Gavin Ge	Nov. 02, 2024 ~ Nov. 26, 2024
Peak to Average Ratio	23.3-24.1°C	36-47%	DC 24V	Gavin Ge	Nov. 02, 2024 ~ Nov. 26, 2024
Frequency Stability	Normal & Extreme	36-47%	Normal & Extreme	Gavin Ge	Nov. 02, 2024 ~ Nov. 26, 2024

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	4G Wireless Router				
Brand Name	TOZED KANGWEI				
Test Model	ZLT P90				
Series Model	ZLT P90Y(Y,Y can be A-J), Telsey P90				
Model Difference(s)	There is no difference except model difference, shell color and silk screen change.				
Hardware Version	TZ7.823.386A				
Software Version	V1.0				
Power Source	DC Voltage supplied from PoE adapter. Model: GS-P240100E954				
Power Rating	I/P: 100-240V ~ 50/60Hz 0.8A O/P: 24V ⎓ 1.0A +4.5pins, -7.8pins				
IMEI No.	Radiated	868553060003943			
	Conducted	868553060003646			
Modulation Type	WCDMA/HSDPA/HSUPA		UL: QPSK,16QAM DL: QPSK,16QAM,64QAM		
	LTE		UL: QPSK,16QAM DL: QPSK,16QAM,64QAM		
Max. ERP	WCDMA Band V		QPSK	22.10	dBm
	HSDPA Band V		QPSK	21.04	dBm
	HSUPA Band V		QPSK	20.97	dBm
	LTE	Channel Bandwidth (MHz)	QPSK (dBm)	16QAM (dBm)	
	Band 5	1.4	23.31	22.35	
		3	23.36	22.56	
		5	23.43	22.72	
		10	23.27	22.49	

Note:

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

2. Channel List:

WCDMA Band V				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	4132	826.4	4357	871.4
Mid Range	4182	836.4	4407	881.4
High Range	4233	846.6	4458	891.6

LTE Band 5(UL: 824-849MHz,DL: 869-894MHz)					
Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink (MHz)	N_{DL}	Frequency of Downlink (MHz)
Low Range	1.4	20407	824.7	2407	869.7
	3	20415	825.5	2415	870.5
	5	20425	826.5	2425	871.5
	10	20450	829	2450	874
Mid Range	1.4/3/5/10	20525	836.5	2525	881.5
High Range	1.4	20643	848.3	2643	893.3
	3	20635	847.5	2635	892.5
	5	20625	846.5	2625	891.5
	10	20600	844	2600	889

3. Table for Filed Antenna:

Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
Shenzhen Be-Comfortable Technology Co. Ltd	N19-0728-R0A	PCB	N/A	4.66	WCDMA Band V
				4.66	LTE Band 5

Note: The antenna gain is provided by the manufacturer.

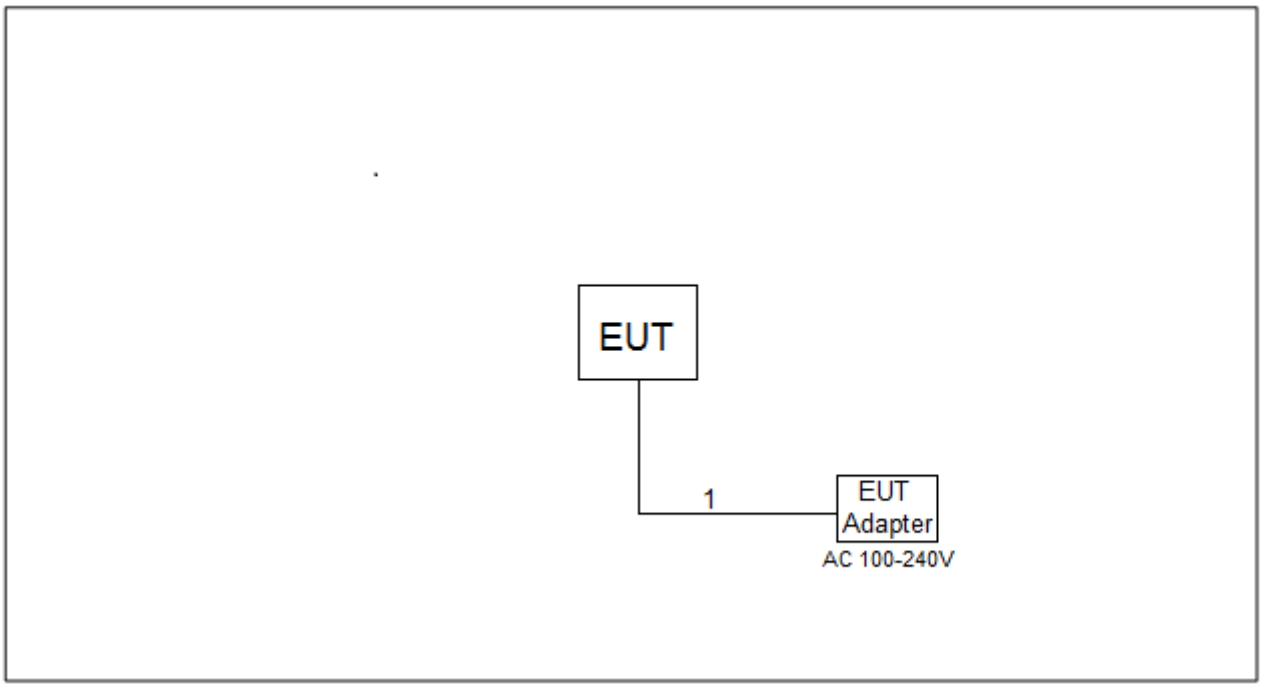
3.2 DESCRIPTION OF TEST MODES

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

WCDMA BAND V MODE			
Test Item	Available Channel	Tested Channel	Mode
Output Power & ERP	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
Occupied Bandwidth	4132 to 4233	4132, 4182, 4233	WCDMA
Conducted Spurious Emissions	4132 to 4233	4182	WCDMA
Radiated Spurious Emissions	4132 to 4233	4182	WCDMA
Band Edge	4132 to 4233	4132, 4233	WCDMA
Peak To Average Ratio	4132 to 4233	4132, 4182, 4233	WCDMA
Frequency Stability	4132 to 4233	4182	WCDMA

LTE BAND 5 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1RB/3RB/6RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1RB/8RB/15RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1RB/25RB/50RB
Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	6RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	15RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	25RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	50RB
Conducted Spurious Emissions	20407 to 20643	20525	1.4MHz	QPSK	1RB
	20425 to 20625	20525	5MHz	QPSK	1RB
	20450 to 20600	20525	10MHz	QPSK	1RB
Radiated Spurious Emissions	20407 to 20643	20525	1.4MHz	QPSK	1RB
	20425 to 20625	20525	5MHz	QPSK	1RB
	20450 to 20600	20525	10MHz	QPSK	1RB
Band Edge	20407 to 20643	20407, 20643	1.4MHz	QPSK	1RB/6RB
	20415 to 20635	20415, 20635	3MHz	QPSK	1RB/15RB
	20425 to 20625	20425, 20625	5MHz	QPSK	1RB/25RB
	20450 to 20600	20450, 20600	10MHz	QPSK	1RB/50RB
Peak To Average Ratio	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1RB
Frequency Stability	20450 to 20600	20525	10MHz	QPSK	50RB

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATIONOFSYSTEMTESTED



2.4 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	Mfr/Brand	Model/Type No.	Series No.
-	-	-	-	-

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	RJ45 Cable	NO	NO	1.5m

4. TEST RESULT

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMIT

Mobile / Portable station are limited to 7 watts e.r.p.

4.1.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 5 or ANSI C63.26-2015 Section 5.2.

EIRP / ERP:

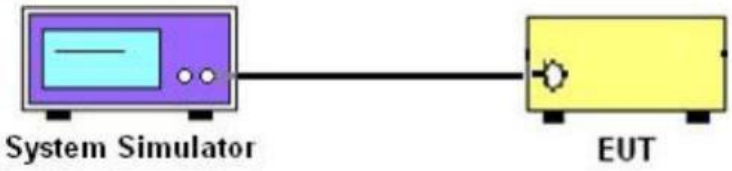
EIRP = Output Power + Antenan gain
ERP = EIPR - 2.15dBi

Output Power:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 TEST SETUP LAYOUT

Output Power Measurement



4.1.4 TEST DEVIATION

No deviation

4.1.5 TEST RESULTS

Please refer to the APPENDIX A.

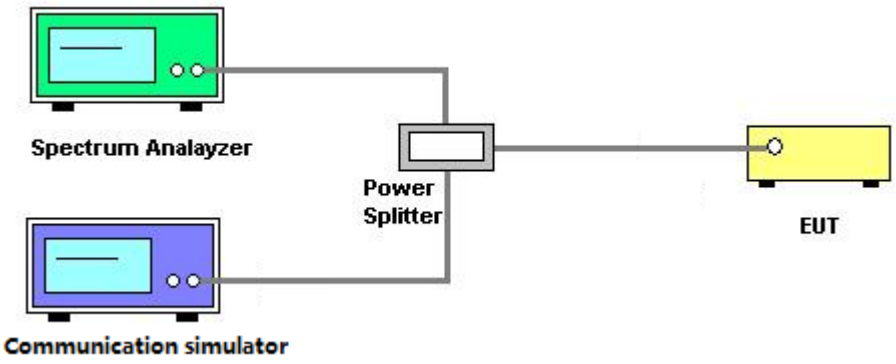
4.2 OCCUPIED BANDWIDTH MEASUREMENT

4.2.1 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 4 or ANSI C63.26-2015 Section 5.4.

1. The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth and 26dB bandwidth.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. RBW=(1% ~ 5%)*EBW
   VBW≥3* RBW
4. Set spectrum analyzer with Peak detector.

4.2.2 TEST SETUP LAYOUT



4.2.3 TEST DEVIATION

No deviation

4.2.4 TEST RESULTS

Please refer to the APPENDIX B.

4.3 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

4.3.1 LIMIT

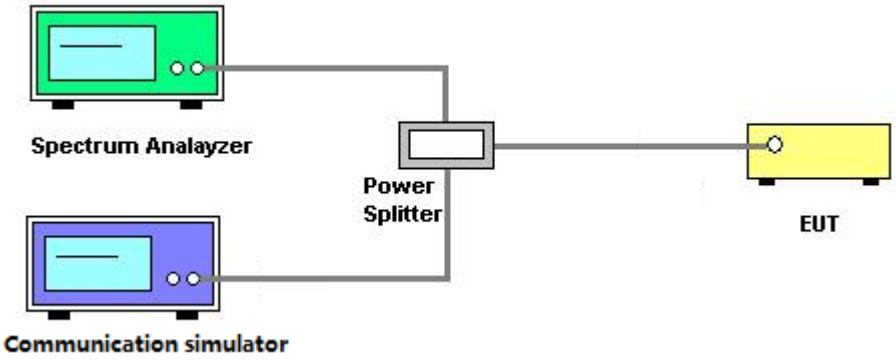
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13dBm.

4.3.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6 or ANSI C63.26-2015 Section 5.7.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Set RBW>=1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
3. Set spectrum analyzer with Peak or RMS detector.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

4.3.3 TEST SETUP LAYOUT



4.3.4 TEST DEVIATION

No deviation

4.3.5 TEST RESULTS

Please refer to the APPENDIX C.

4.4 RADIATED SPURIOUS EMISSIONS MEASUREMENT

4.4.1 LIMIT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13dBm.

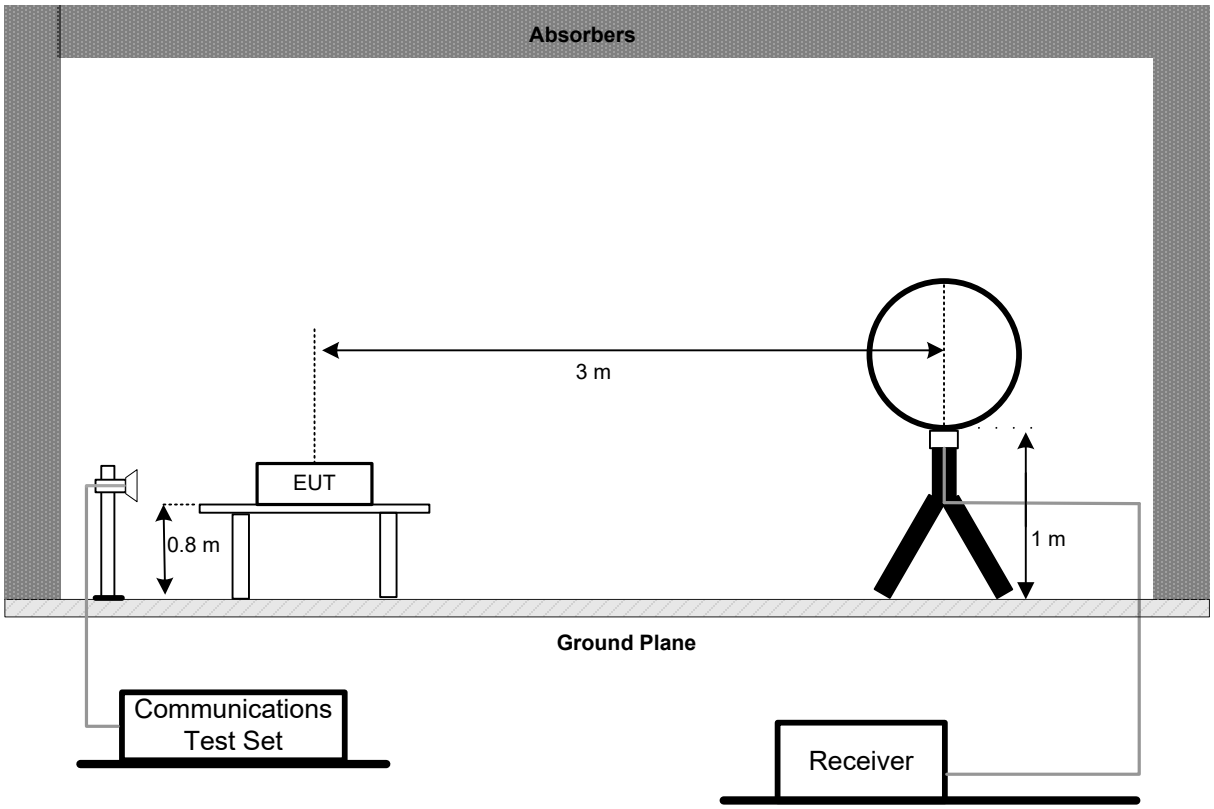
4.4.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.2 or ANSI C63.26-2015 Section 5.5.

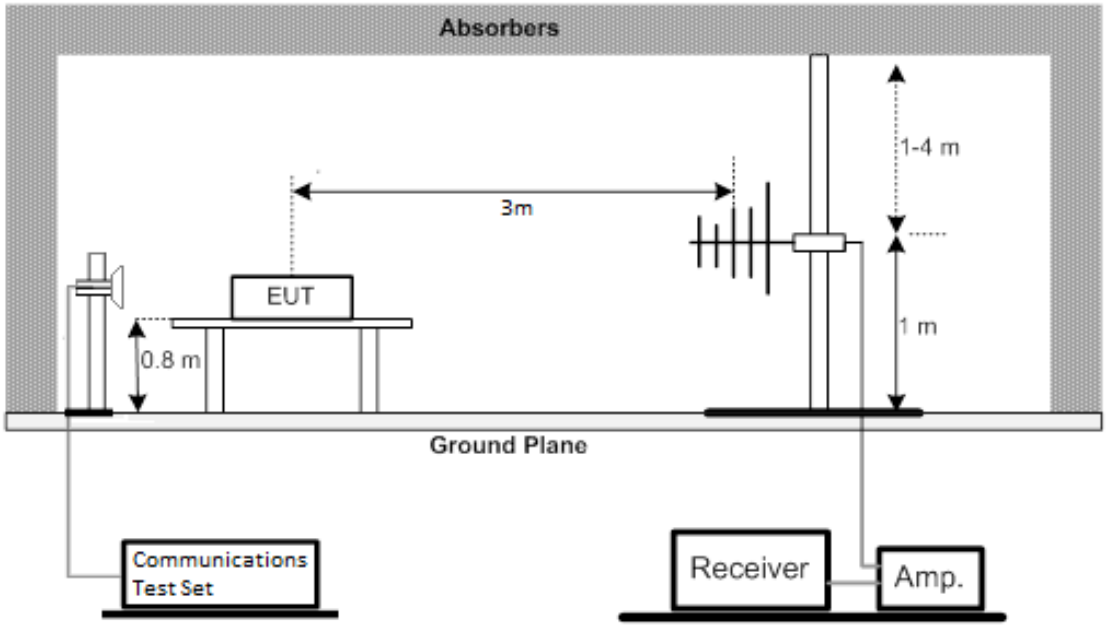
1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
4. Start the test, rotate the table 360° to find the worst Angle, maintain the worst Angle, raise the antenna to 1-4m to find the worst height, maintain the worst height, then rotate the table to determine the final worst Angle, grab the spectrum diagram.
5. EUT shall be placed in accordance with X,Y,Z as required by Figure 5 in ANSI C63.26.
   Repeat Step 5 above to find the worst placement. Test all bands according to the worst placement.
6. Then EIRP is then converted to field strength as follows in Equation
7. E (dBuV/m) = EIRP (dBm) - 20log(D) + 104.8; where D is the measurement distance (in the far field region) in m.The emission limit equal to 82.26dBuV/m.

4.4.3 TEST SETUP LAYOUT

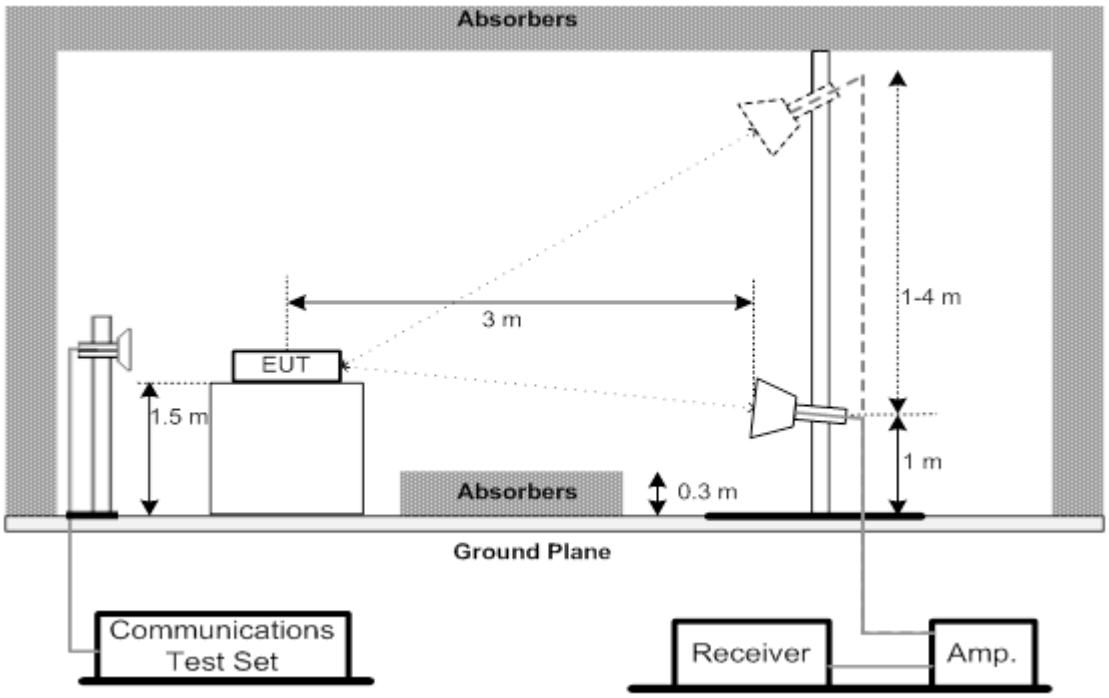
Below 30MHz



30MHz to 1000MHz



Above 1GHz



4.4.4 TEST DEVIATION

No deviation

4.4.5 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the APPENDIX D.

4.4.6 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the APPENDIX E.

4.4.7 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the APPENDIX F.

4.5 BAND EDGE MEASUREMENT

4.5.1 LIMIT

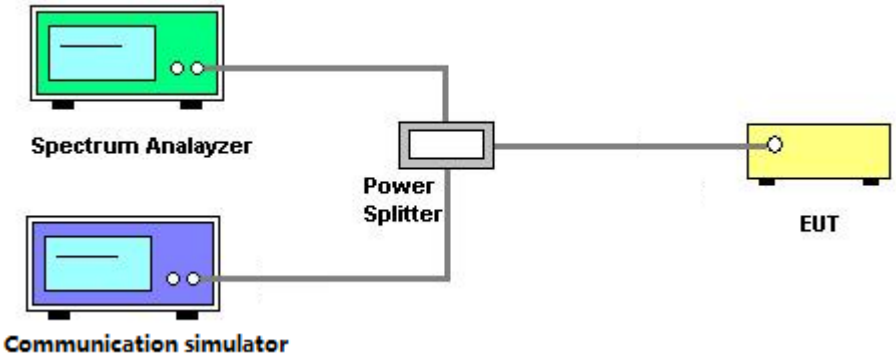
A Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

4.5.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6 or ANSI C63.26-2015 Section 5.7.

1. All measurements were done at low and high operational frequency range.
2. Record the max trace plot into the test report.

4.5.3 TEST SETUP LAYOUT



4.5.4 TEST DEVIATION

No deviation

4.5.5 TEST RESULTS

Please refer to the APPENDIX G.

4.6 PEAK TO AVERAGE RATIO MEASUREMENT

4.6.1 LIMIT

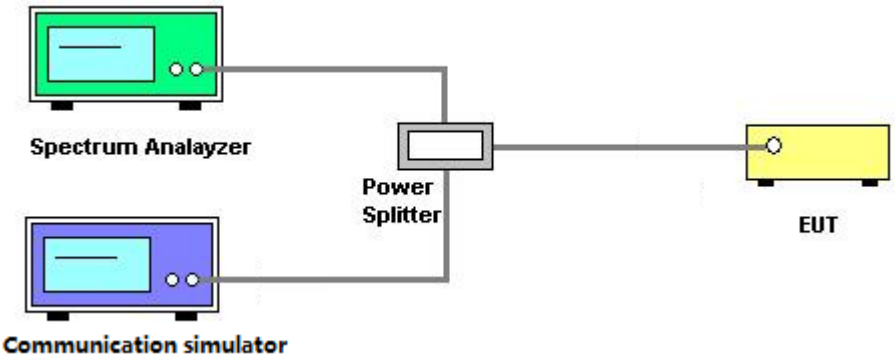
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

4.6.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 5.7 or ANSI C63.26-2015 Section 5.2.6.

1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

4.6.3 TEST SETUP LAYOUT



4.6.4 TEST DEVIATION

No deviation

4.6.5 TEST RESULTS

Please refer to the APPENDIX H.

4.7 FREQUENCY STABILITY MEASUREMENT

4.7.1 LIMIT

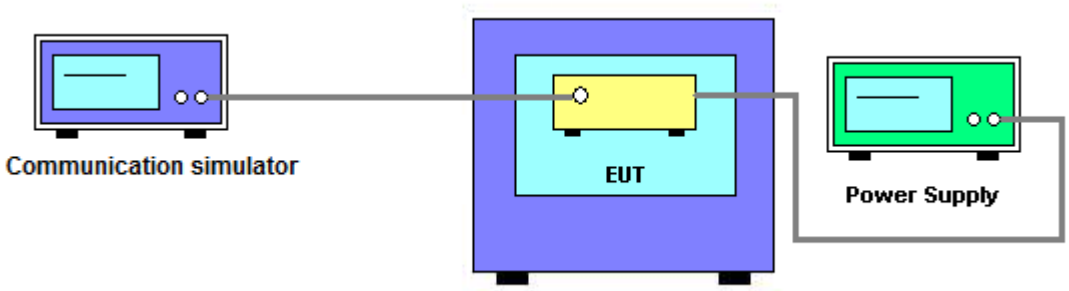
±1.5 ppm is for base and fixed station. ±2.5 ppm is for mobile station.

4.7.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 9 or ANSI C63.26-2015 Section 5.6.

1. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
2. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
3. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5°C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.
4. The frequency error was recorded frequency error from the communication simulator.

4.7.3 TEST SETUP LAYOUT



4.7.4 TEST DEVIATION

No deviation

4.7.5 TEST RESULTS

Please refer to the APPENDIX I.

4. LIST OF MEASUREMENT EQUIPMENTS

Radiated Emissions - 9 kHz to 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Active Loop Antenna	Schwarzbeck	FMZB 1513-60B	1513-60 B-034	Mar. 30, 2025
2	MXE EMI Receiver	Keysight	N9038A	MY56400091	Dec. 22, 2024
3	Cable	N/A	RW4950-3.8A-NMSM-1.5	N/A	Nov. 12, 2025
4	Cable	N/A	LMR400-NMNM-8M	N/A	Nov. 12, 2025
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	966 Chamber room	ETS	9*6*6	N/A	May 16, 2025
7	wideband radio communication tester	R&S	CMW500	152372	Dec. 22, 2024

Radiated Emissions - 30 MHz to 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	01269	May 18, 2025
2	Attenuator	EMCI	EMCI-N-6-06	AN-N0697	May 18, 2025
3	MXE EMI Receiver	Keysight	N9038A	MY59050118	Jun. 28, 2025
4	Preamplifier	EMC INSTRUMENT	EMC001330	980825	Jan. 19, 2025
5	Cable	EMC INSTRUMENT	EMCCFD400-NM-NM-2500	N/A	Jun. 06, 2025
6	Cable	EMC INSTRUMENT	EMCCFD400-NM-NM-7000	N/A	Jun. 06, 2025
7	Cable	EMC INSTRUMENT	EMCCFD400-NM-NM-3000	N/A	Jun. 06, 2025
8	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
9	Wideband Radio Communication Tester	R&S	CWM 500	165848	Jan. 19, 2025
10	966 Chamber room	Tai He	9*6*6(NSA&VSWR)	N/A	Jun. 06, 2025

Radiated Emissions - Above 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	MXE EMI Receiver	Keysight	N9038A	MY59050118	Jun. 28, 2025
2	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
3	Preamplifier	EMC INSTRUMENT	EMC118A45SE	980739	Jan. 19, 2025
4	Cable	EMC INSTRUMENT	EMC104-SM-SM-10000	N/A	Jun. 06, 2025
5	Cable	EMC INSTRUMENT	EMC104-SM-SM-3000	N/A	Jun. 06, 2025
6	Cable	EMC INSTRUMENT	EMC104-SM-SM-800	N/A	Jun. 06, 2025
7	Double Ridged Broadband Horn Antenna	RF SPIN	DRH18-E	210106A18E	Jul. 17, 2025
8	Band Reject Filter	COM-MW	ZHPF6-C3000-18000-174	7213126	Jun. 28, 2025
9	Band Reject Filter	COM-MW	ZHPF6-M1000-15000-533	7213127	Jun. 28, 2025
10	Attenuator	Talent Microwave	ATT-18G2W-10	N/A	N/A
11	966 Chamber room	Tai He	9*6*6(NSA&VSWR)	N/A	Jun. 06, 2025
12	Wideband Radio Communication Tester	R&S	CWM 500	165848	Jan. 19, 2025

Conducted Measurement For TR06					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wideband Radio Communication Tester	R&S	CWM 500	165578	Jan. 19, 2025
2	Signal Analyzer	R&S	FSV 40	100948	Jun. 28, 2025
3	MXA Signal Analyzer	Agilent Technologies	N9020A	MY49100060	Jun. 28, 2025
4	MXA Signal Analyzer	Agilent Technologies	N9020B	MY49100060	Oct. 29, 2025
5	Temperature Chamber	ESPEC	SU-242	93018786	Jun. 28, 2025
6	DC Source metter	Iteck	IT6154	006104126768201001	Jun. 28, 2025
7	Measurement Software	BTL	BTL-Mobile Test20231204(1246884249)	N/A	N/A

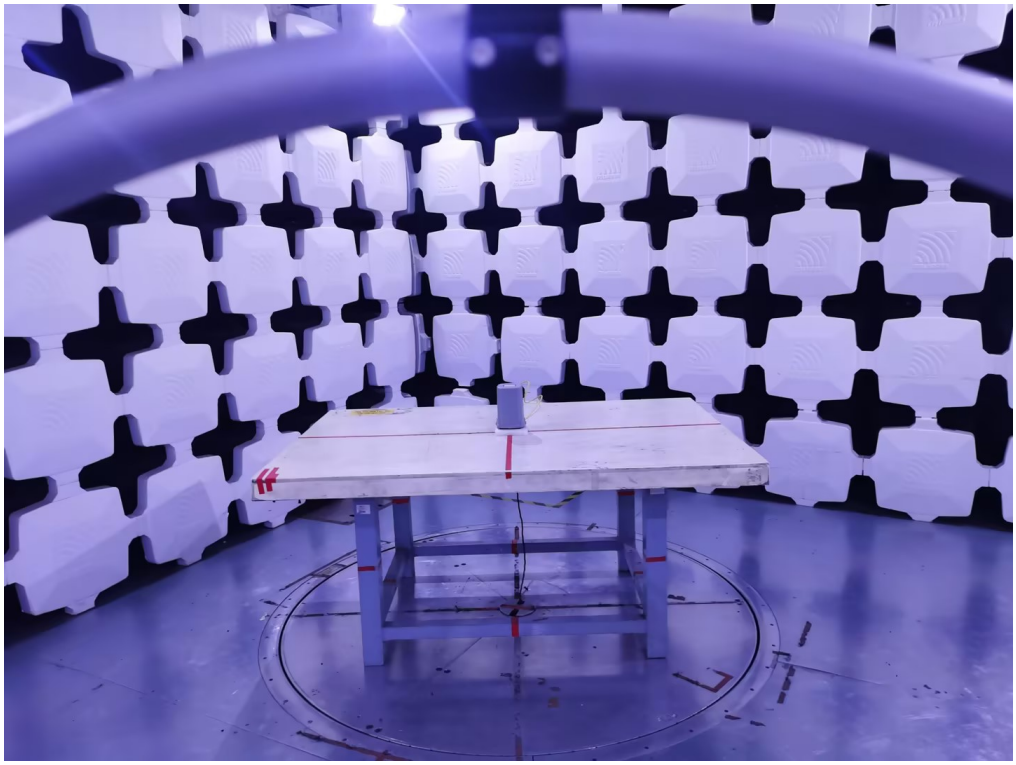
Conducted Measurement For TR02					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	8960 SERIES 10 Wireless Communications Test Set	Agilent Technologies	E5515E	MY54491001	Jun. 28, 2025
2	RF Interface	KEYSIGHT	N1960-80103	MY45490268	N/A
3	Measurement Software	Keysight	GS-8800(SW Ver:DVT.3.4.1.0.0)	N/A	N/A

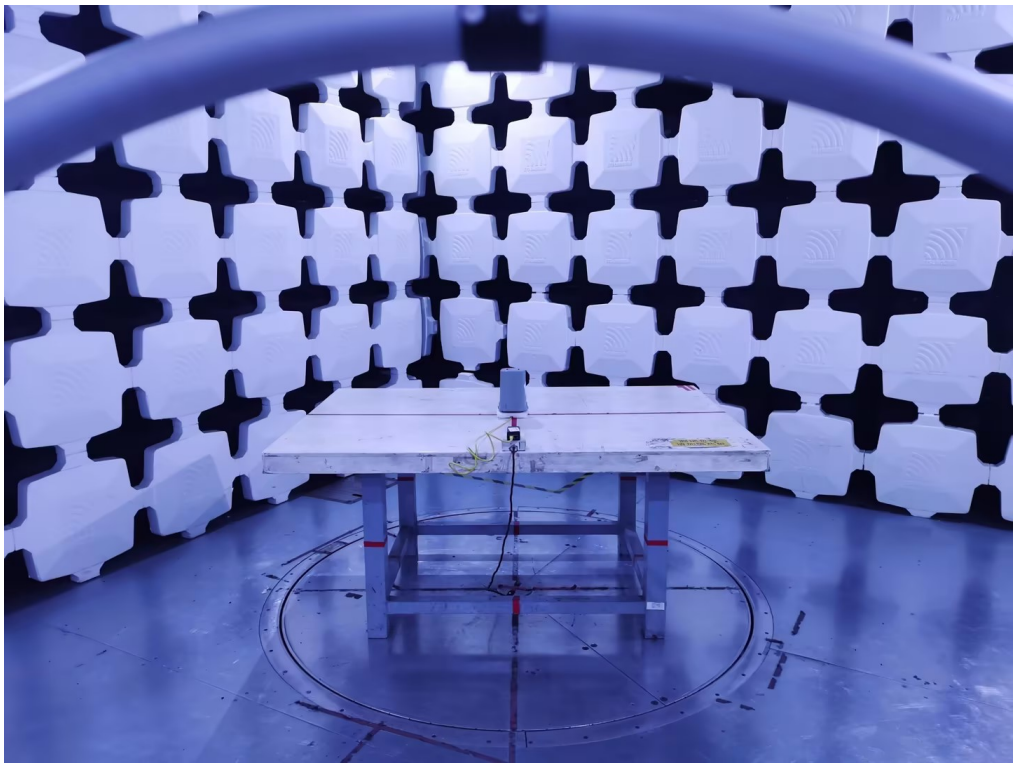
Remark: ”N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

5. EUT TEST PHOTO

Radiated Emissions Test Photos

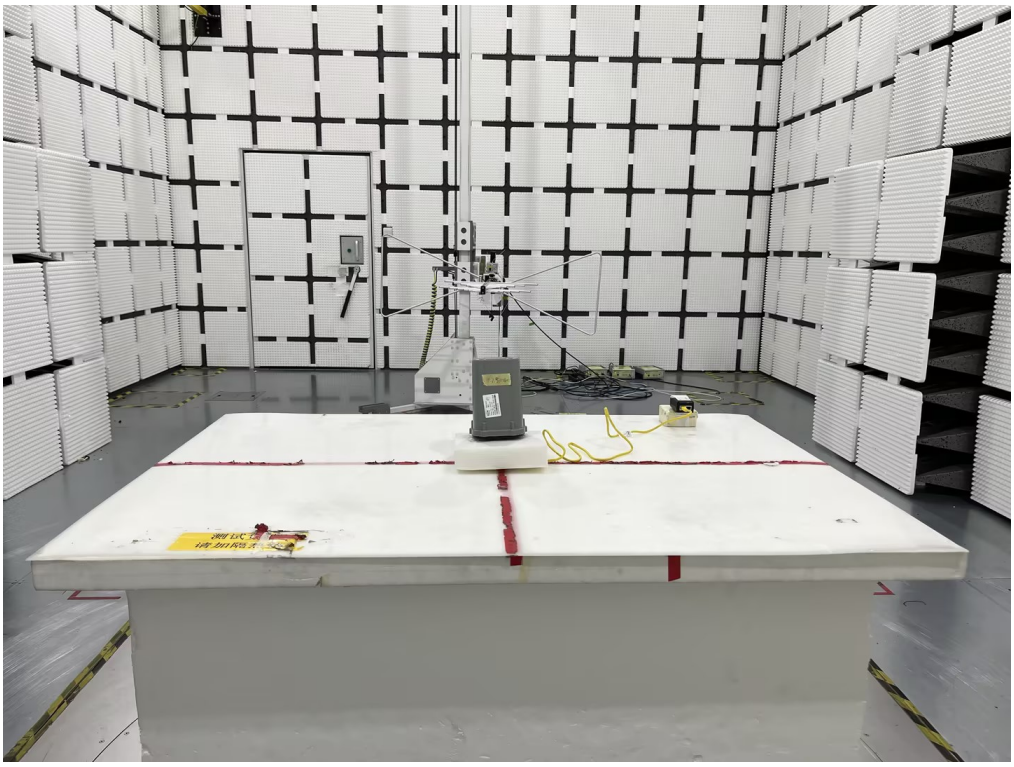
9 kHz to 30 MHz

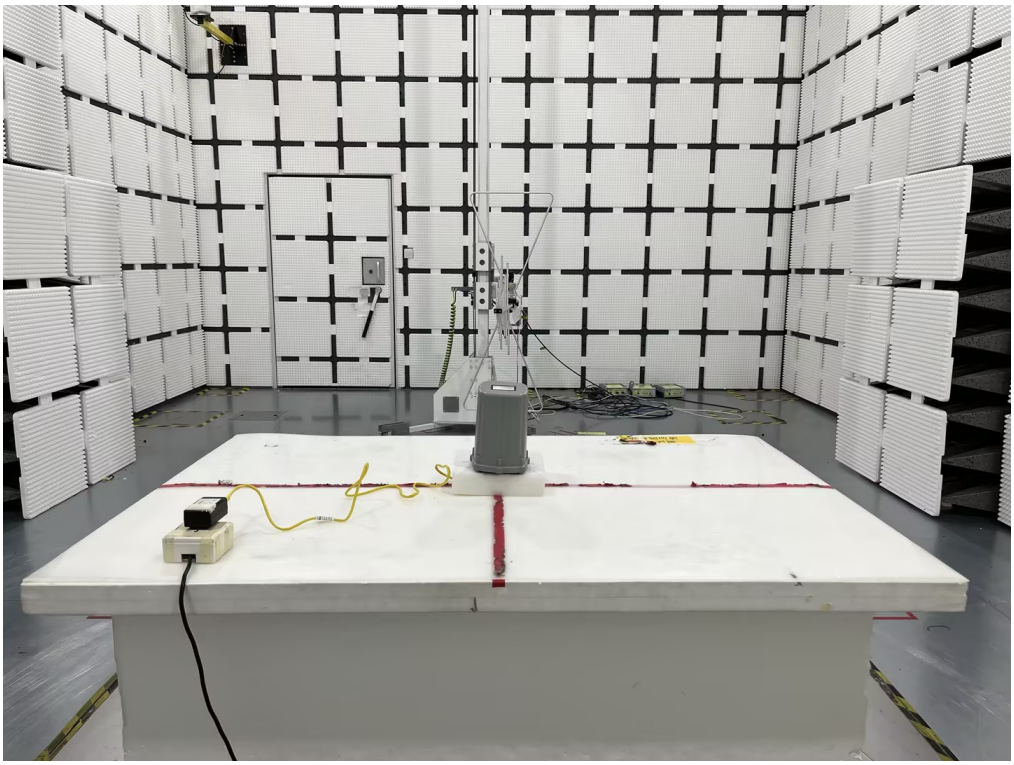




Radiated Emissions Test Photos

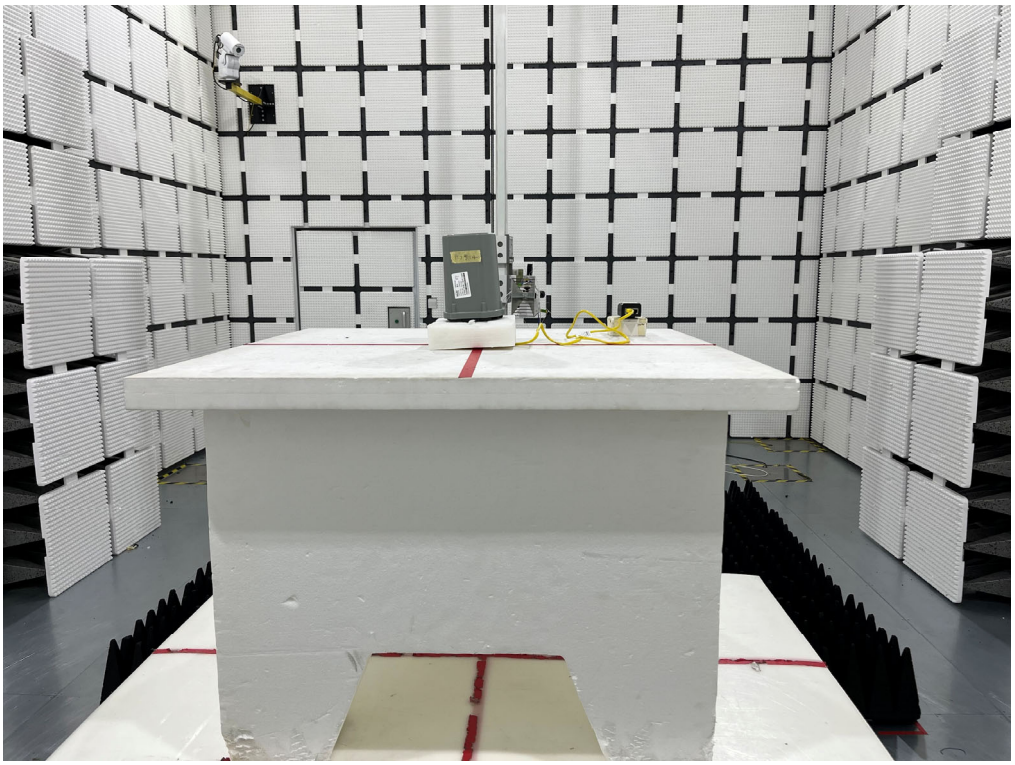
30 MHz to 1 GHz

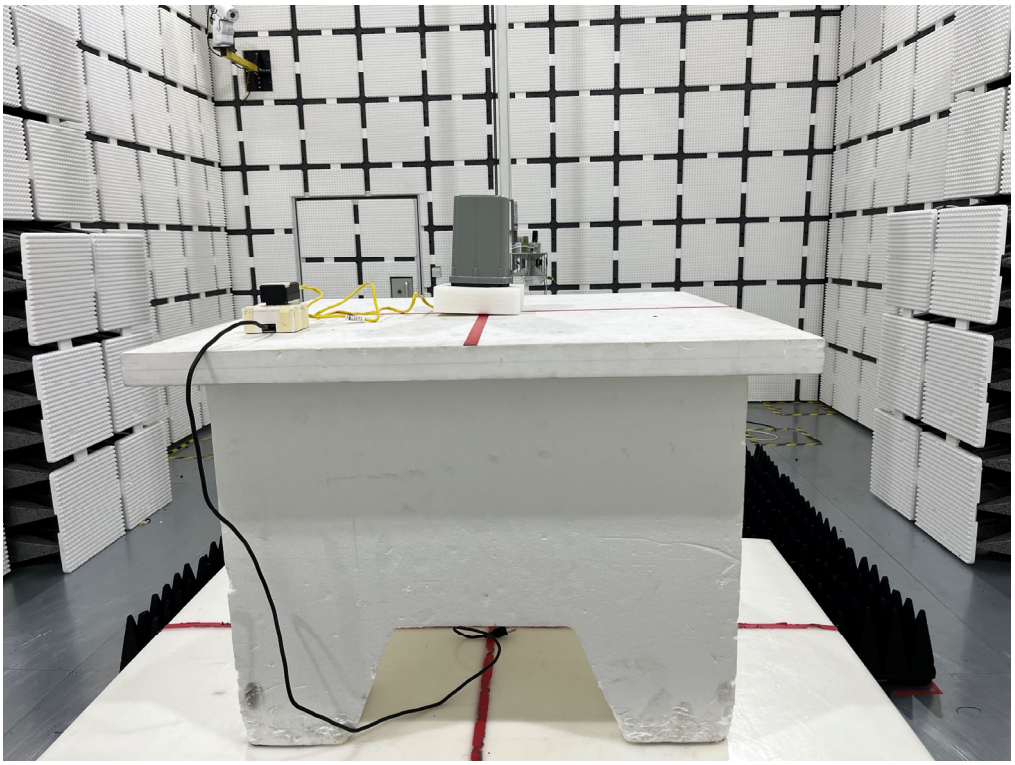




Radiated Emissions Test Photos

Above 1 GHz





APPENDIX A - OUTPUT POWER

Output Power (dBm)

Modulation	Band	WCDMA Band V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
QPSK	RMC 12.2K	19.52	19.59	19.24
	RMC 64K	19.54	19.57	19.23
	RMC 144K	19.55	19.58	19.24
	RMC 384K	19.53	19.58	19.26
	HSDPA Subtest-1	18.5	18.53	18.17
	HSDPA Subtest-2	18.5	18.49	18.04
	HSDPA Subtest-3	17.94	17.99	17.54
	HSDPA Subtest-4	17.97	18.04	17.53
	HSUPA Subtest-1	18.4	18.46	17.99
	HSUPA Subtest-2	16.39	16.44	16
	HSUPA Subtest-3	17.45	17.43	16.93
	HSUPA Subtest-4	16.45	16.49	16
	HSUPA Subtest-5	18.31	18.38	18

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4MHz	QPSK	1	0	20.63	20.68	19.43
		1	2	20.59	20.80	19.38
		1	5	20.46	20.76	19.22
		3	0	20.60	20.65	19.33
		3	1	20.59	20.68	19.34
		3	2	20.49	20.60	19.23
		6	0	19.90	19.83	19.29
	16QAM	1	0	19.63	19.69	18.85
		1	2	19.69	19.70	18.82
		1	5	19.58	19.66	18.66
		3	0	19.76	19.59	18.65
		3	1	19.84	19.66	18.66
		3	2	19.74	19.59	18.53
		6	0	18.84	18.80	18.35

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3MHz	QPSK	1	0	20.72	20.79	19.63
		1	7	20.48	20.85	19.50
		1	14	20.31	20.85	19.25
		8	0	19.80	19.86	19.57
		8	4	19.93	19.82	19.52
		8	7	19.75	19.76	19.40
		15	0	19.77	19.74	19.50
	16QAM	1	0	19.59	20.05	18.81
		1	7	19.52	20.04	18.66
		1	14	19.30	19.93	18.43
		8	0	18.83	18.81	18.62
		8	4	18.86	18.82	18.65
		8	7	18.81	18.73	18.57
		15	0	18.74	18.71	18.50

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5MHz	QPSK	1	0	20.92	20.78	19.96
		1	13	20.41	20.82	19.61
		1	24	20.37	20.77	19.45
		12	0	19.80	19.83	19.65
		12	6	19.89	19.79	19.62
		12	11	19.71	19.76	19.56
		25	0	19.87	19.72	19.63
	16QAM	1	0	19.87	20.21	19.12
		1	13	19.61	20.19	18.78
		1	24	19.58	20.06	18.68
		12	0	18.80	18.91	18.68
		12	6	18.84	18.89	18.66
		12	11	18.80	18.81	18.61
		25	0	18.75	18.74	18.52

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10MHz	QPSK	1	0	20.56	20.36	20.40
		1	25	20.02	20.76	19.48
		1	49	20.23	19.81	19.00
		25	0	19.85	19.86	19.67
		25	13	19.85	19.74	19.66
		25	25	19.81	19.70	19.37
		50	0	19.83	19.73	19.72
	16QAM	1	0	19.60	19.76	19.86
		1	25	19.06	19.98	19.13
		1	49	19.24	19.22	18.63
		25	0	18.78	18.79	18.57
		25	13	18.86	18.75	18.56
		25	25	18.82	18.66	18.61
		50	0	18.82	18.71	18.50

ERP (dBm)

Modulation	Band	WCDMA Band V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
QPSK	RMC 12.2K	22.03	22.10	21.75
	RMC 64K	22.05	22.08	21.74
	RMC 144K	22.06	22.09	21.75
	RMC 384K	22.04	22.09	21.77
	HSDPA Subtest-1	21.01	21.04	20.68
	HSDPA Subtest-2	21.01	21.00	20.55
	HSDPA Subtest-3	20.45	20.50	20.05
	HSDPA Subtest-4	20.48	20.55	20.04
	HSUPA Subtest-1	20.91	20.97	20.50
	HSUPA Subtest-2	18.90	18.95	18.51
	HSUPA Subtest-3	19.96	19.94	19.44
	HSUPA Subtest-4	18.96	19.00	18.51
	HSUPA Subtest-5	20.82	20.89	20.51

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4MHz	QPSK	1	0	23.14	23.19	21.94
		1	2	23.10	23.31	21.89
		1	5	22.97	23.27	21.73
		3	0	23.11	23.16	21.84
		3	1	23.10	23.19	21.85
		3	2	23.00	23.11	21.74
		6	0	22.41	22.34	21.80
	16QAM	1	0	22.14	22.20	21.36
		1	2	22.20	22.21	21.33
		1	5	22.09	22.17	21.17
		3	0	22.27	22.10	21.16
		3	1	22.35	22.17	21.17
		3	2	22.25	22.10	21.04
		6	0	21.35	21.31	20.86

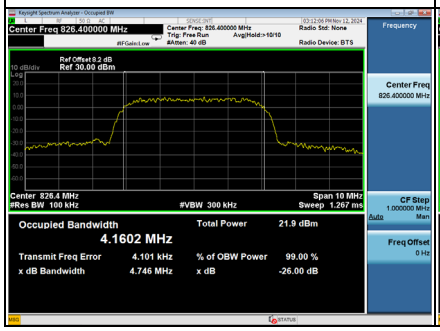
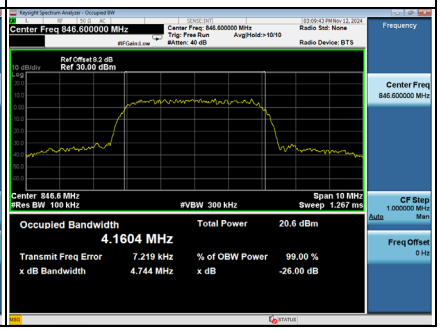
LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3MHz	QPSK	1	0	23.23	23.30	22.14
		1	7	22.99	23.36	22.01
		1	14	22.82	23.36	21.76
		8	0	22.31	22.37	22.08
		8	4	22.44	22.33	22.03
		8	7	22.26	22.27	21.91
		15	0	22.28	22.25	22.01
	16QAM	1	0	22.10	22.56	21.32
		1	7	22.03	22.55	21.17
		1	14	21.81	22.44	20.94
		8	0	21.34	21.32	21.13
		8	4	21.37	21.33	21.16
		8	7	21.32	21.24	21.08
		15	0	21.25	21.22	21.01

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5MHz	QPSK	1	0	23.43	23.29	22.47
		1	13	22.92	23.33	22.12
		1	24	22.88	23.28	21.96
		12	0	22.31	22.34	22.16
		12	6	22.40	22.30	22.13
		12	11	22.22	22.27	22.07
		25	0	22.38	22.23	22.14
	16QAM	1	0	22.38	22.72	21.63
		1	13	22.12	22.70	21.29
		1	24	22.09	22.57	21.19
		12	0	21.31	21.42	21.19
		12	6	21.35	21.40	21.17
		12	11	21.31	21.32	21.12
		25	0	21.26	21.25	21.03

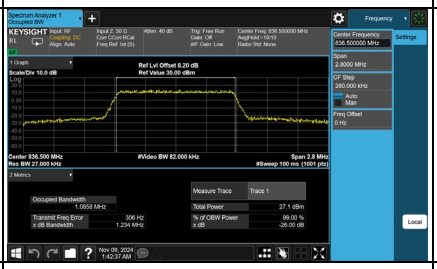
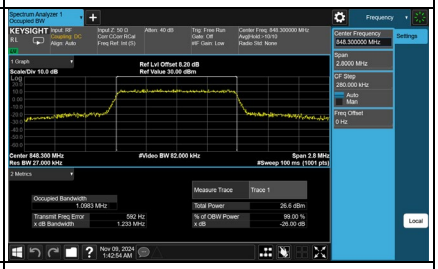
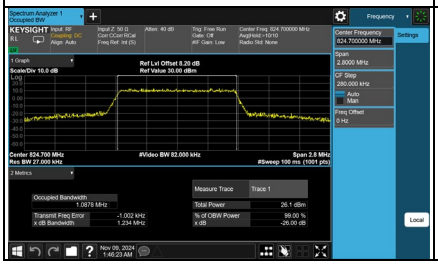
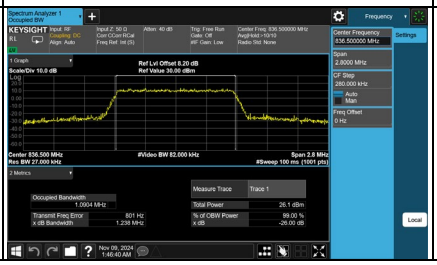
LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10MHz	QPSK	1	0	23.07	22.87	22.91
		1	25	22.53	23.27	21.99
		1	49	22.74	22.32	21.51
		25	0	22.36	22.37	22.18
		25	13	22.36	22.25	22.17
		25	25	22.32	22.21	21.88
		50	0	22.34	22.24	22.23
	16QAM	1	0	22.11	22.27	22.37
		1	25	21.57	22.49	21.64
		1	49	21.75	21.73	21.14
		25	0	21.29	21.30	21.08
		25	13	21.37	21.26	21.07
		25	25	21.33	21.17	21.12
		50	0	21.33	21.22	21.01

APPENDIX B - OCCUPIED BANDWIDTH

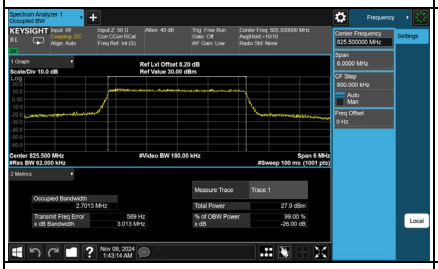
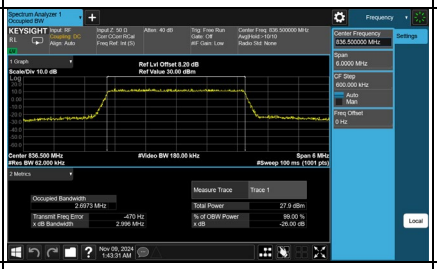
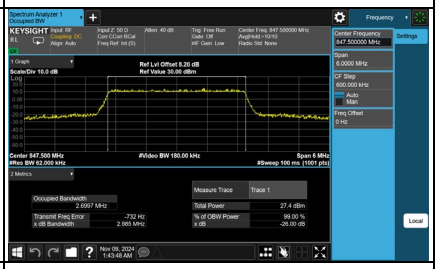
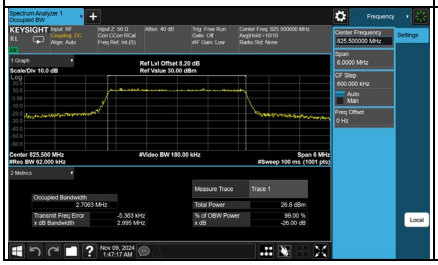
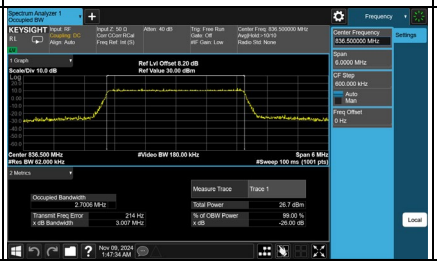
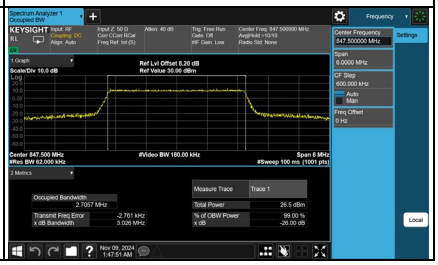
WCDMA Band V_WCDMA			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
		QPSK	QPSK
4132	826.4	4.1602	4.746
4182	836.4	4.1212	4.741
4233	846.6	4.1604	4.744

Spectrum Plot		
4132	4182	4233
		

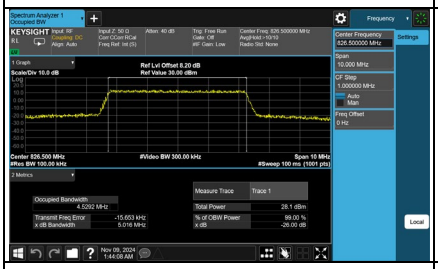
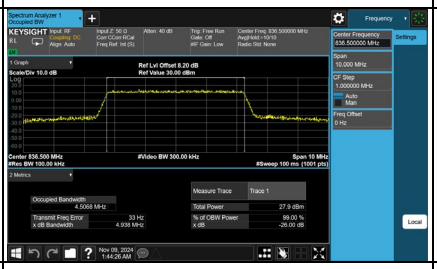
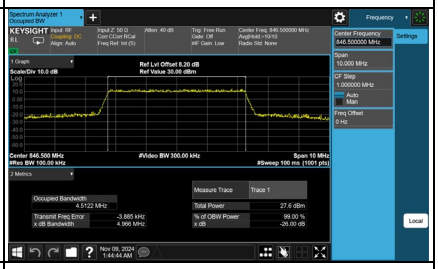
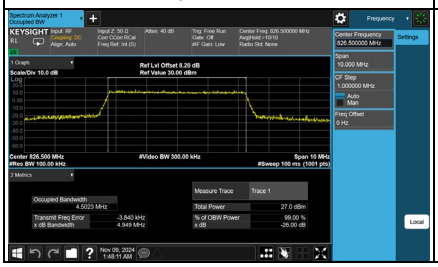
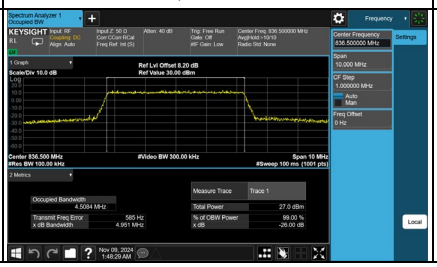
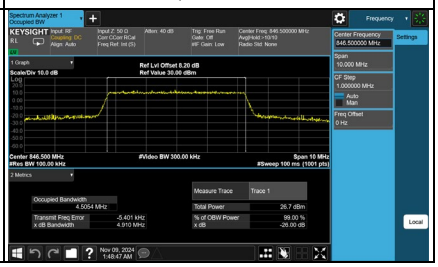
LTE Band 5_1.4MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20407	824.7	1.0860	1.0878	1.288	1.234
20525	836.5	1.0858	1.0904	1.234	1.238
20643	848.3	1.0983	1.0857	1.233	1.234

Spectrum Plot		
QPSK-20407	QPSK-20525	QPSK-20643
		
16QAM-20407	16QAM-20525	16QAM-20643
		

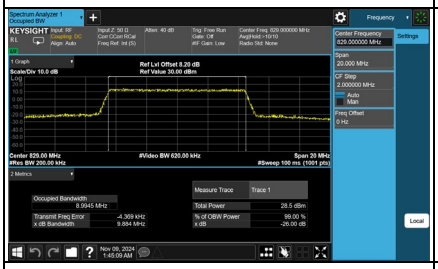
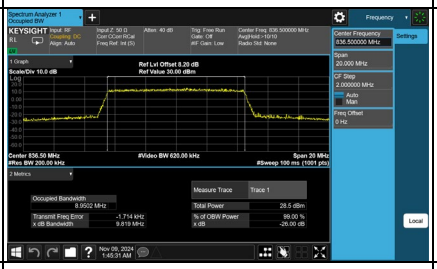
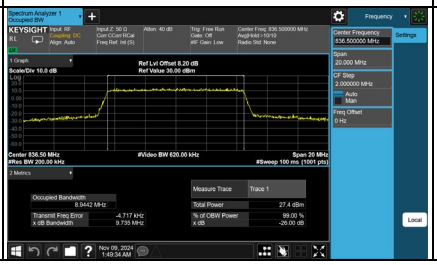
LTE Band 5_3MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20415	825.5	2.7013	2.7063	3.013	2.995
20525	836.5	2.6973	2.7006	2.996	3.007
20635	847.5	2.6997	2.7057	2.985	3.026

Spectrum Plot		
QPSK-20415	QPSK-20525	QPSK-20635
		
16QAM-20415	16QAM-20525	16QAM-20635
		

LTE Band 5_5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20425	826.5	4.5292	4.5023	5.016	4.949
20525	836.5	4.5068	4.5084	4.938	4.951
20625	846.5	4.5122	4.5054	4.966	4.910

Spectrum Plot		
QPSK-20425	QPSK-20525	QPSK-20625
		
16QAM-20425	16QAM-20525	16QAM-20625
		

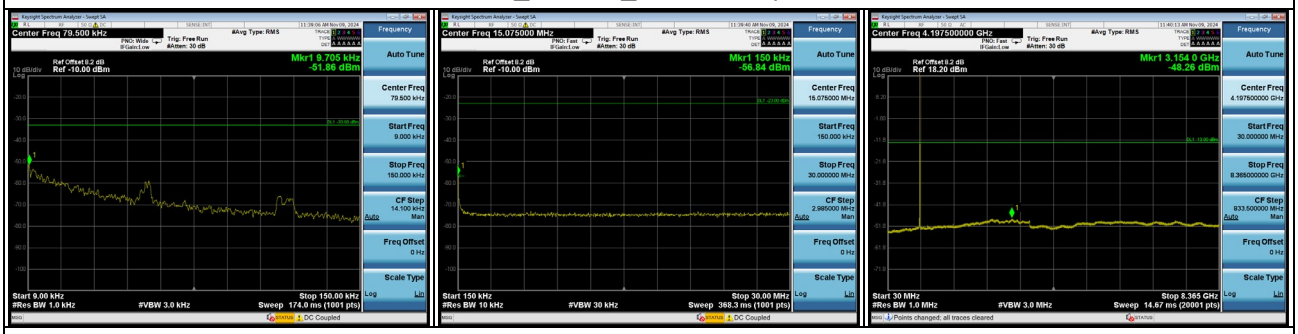
LTE Band 5_10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20450	829.0	8.9945	8.9772	9.884	9.809
20525	836.5	8.9502	8.9442	9.819	9.735
20600	844.0	9.0172	8.9906	9.923	9.823

Spectrum Plot		
QPSK-20450	QPSK-20525	QPSK-20600
		
16QAM-20450	16QAM-20525	16QAM-20600
		

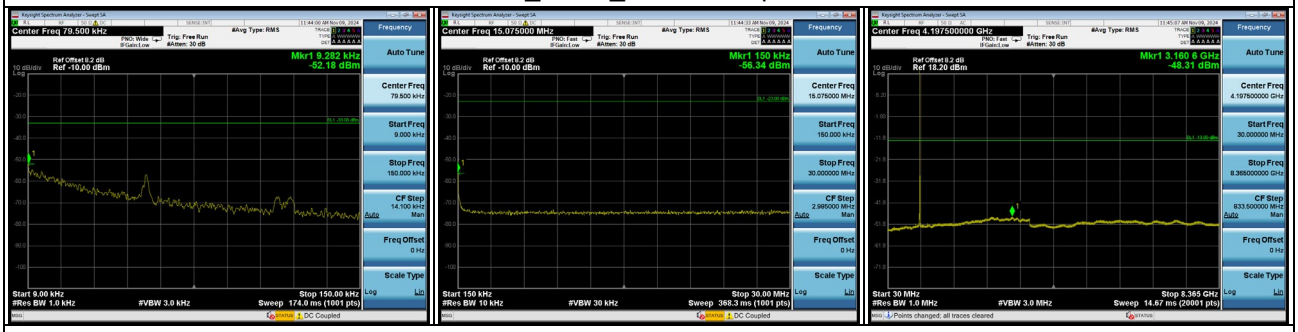
APPENDIX C - CONDUCTED SPURIOUS EMISSIONS

WCDMA Band V_WCDMA_CH4182 Spectrum Plot

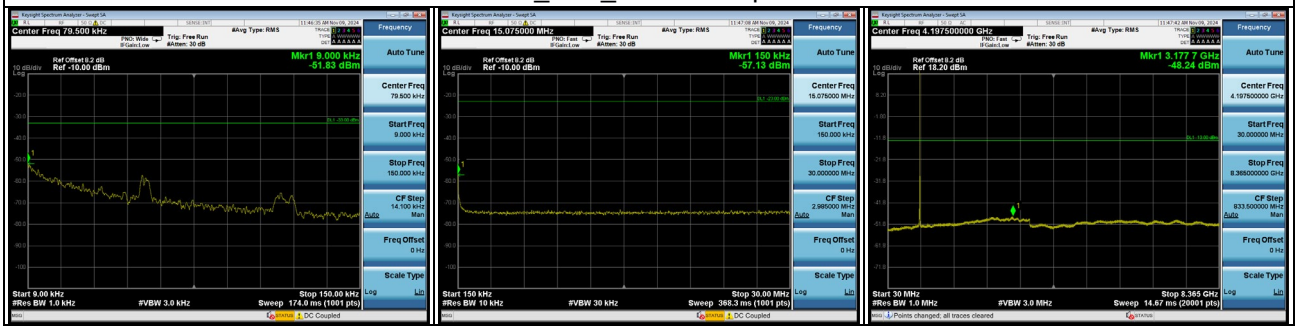
LTE Band 5_1.4MHz_CH20525 Spectrum Plot



LTE Band 5_5MHz_CH20525 Spectrum Plot



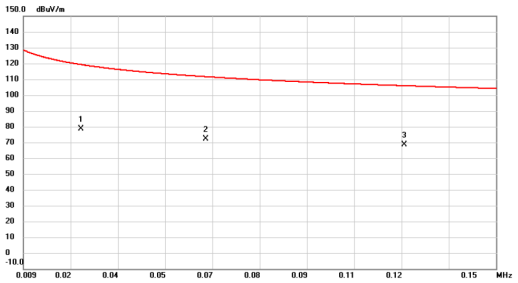
LTE Band 5_10M_CH20525 Spectrum Plot



APPENDIX D - RADIATED SPURIOUS EMISSIONS (9KHZ TO 30MHZ)

Test Mode :	TX Mode

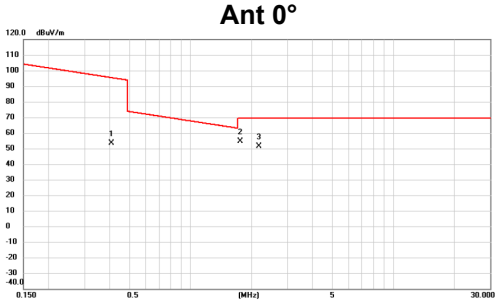
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0262	57.58	21.03	78.61	119.24	-40.63	AVG			
2		0.0634	50.88	21.28	72.16	111.56	-39.40	AVG			
3	*	0.1226	47.21	21.31	68.52	105.84	-37.32	QP			

Test Mode :	TX Mode

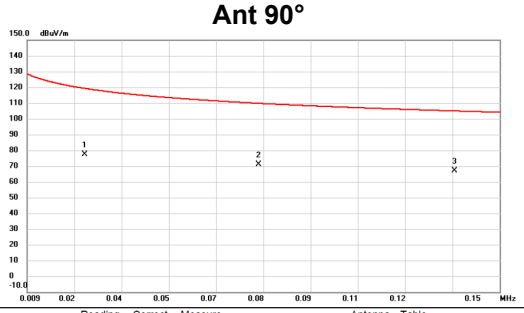
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.4083	32.18	21.05	53.23	95.38	-42.15	AVG			
2	*	1.7620	33.35	21.13	54.48	69.54	-15.06	QP			
3		2.1798	30.33	21.11	51.44	69.54	-18.10	QP			

Test Mode :	TX Mode

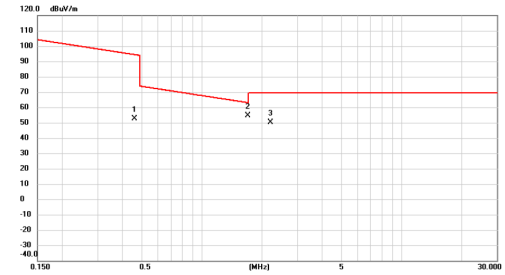
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0262	56.47	21.03	77.50	119.24	-41.74	AVG			
2		0.0780	49.69	21.33	71.02	109.76	-38.74	AVG			
3	*	0.1365	45.87	21.29	67.16	104.90	-37.74	QP			

Test Mode :	TX Mode

Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.4612	31.69	21.06	52.75	94.33	-41.58	QP			
2	*	1.7022	33.45	21.14	54.59	62.98	-8.39	QP			
3		2.2096	29.25	21.11	50.36	69.54	-19.18	QP			

APPENDIX E - RADIATED SPURIOUS EMISSIONS (30MHZ TO 1000MHZ)