



FCC Radio Test Report

FCC ID: 2A5LO-TOZEDZLTX100

This report concerns: Original Grant

Project No. : 2312C154
Equipment : 5G Wireless Router
Brand Name : Tozed Kangwei
Test Model : ZLT X100 PRO
Series Model : N/A
Applicant : Tozed Kangwei Tech Co., Ltd
Address : Room 1301, NO. 37 Jinlong , Nansha Street, Xiangjiang Financial Business Center, Nansha District, Guangzhou
Manufacturer : Tozed Kangwei Tech Co., Ltd
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Factory : Tozed Kangwei Tech Co., Ltd
Address : Room 1301, NO. 37 Jinlong , Nansha Street, Xiangjiang Financial Business Center, Nansha District, Guangzhou
Date of Receipt : Dec. 25, 2023
Date of Test : Dec. 26, 2023 ~ Jan. 26, 2024
Issued Date : Jan. 31, 2024
Report Version : R00
Test Sample : Engineering Sample No.: DG2023122563 for radiated, DG2023122562 and DG2023122565 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.

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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** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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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-FCCP-4-2312C154	R00	Original Report.	Jan. 31, 2024	Valid

1. APPLICABLE STANDARDS

The following reference test guidance is not within the scope of accreditation of NVLAP:

ANSI C63.26-2015

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

The test facilities used to collect the test data in this report is at the location of Room 108, Building 2, No. 1, Yile Road, Songshan Lake Zone, Dongguan City, Guangdong 523000.

BTL's Registration Number for FCC: 568794

BTL's Designation Number for FCC: CN5041

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)
SSL-CB01	CISPR	9kHz ~ 30MHz	2.74

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

Test Site	Method	Measurement Frequency Range	U , (dB)
SSL-CB01 (1m)	CISPR	18 ~ 26.5 GHz	3.30
		26.5 ~ 40 GHz	3.82

B. Other Measurement:

Parameter	Uncertainty
Spectrum Bandwidth	± 3.8 %
Maximum Output Power	± 0.95 dB
Frequency Stability	± 0.16 dB
Temperature	± 0.08 °C
Time	± 0.58 %
Supply voltages	± 0.3 %

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
Output Power & ERP	24°C	40%	DC 12V	Gana Cai
Occupied Bandwidth	24°C	40%	DC 12V	Gana Cai
Conducted Spurious Emissions	24°C	40%	DC 12V	Gana Cai
Radiated Spurious Emissions (9 kHz to 30 MHz)	25°C	60%	AC 120V/60Hz	Max Wang
Radiated Spurious Emissions (30 MHz to 1000 MHz)	24°C	43%	AC 120V/60Hz	Geoffrey Zou
Radiated Spurious Emissions (Above 1000 MHz)	23~24°C	43~46%	AC 120V/60Hz	Max Wang
Band Edge	24°C	40%	DC 12V	Gana Cai
Peak to Average Ratio	24°C	40%	DC 12V	Gana Cai
Frequency Stability	Normal & Extreme	40%	Normal & Extreme	Gana Cai

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	5G Wireless Router				
Brand Name	Tozed Kangwei				
Test Model	ZLT X100 PRO				
Series Model	N/A				
Model Difference(s)	N/A				
Software Version	V1.0				
Hardware Version	TZ7.823.806A				
Power Source	DC voltage supplied from AC adapter. 1# Manufacturer / Model: KELI / KL-WA120YYY-G1 2# Manufacturer / Model: JiYin / JYSY018-1201500UD				
Power Rating	1# I/P: 100-240V~ 50/60Hz 0.7A O/P: 12V  1.5A 2# I/P: 100-240V~ 50/60Hz 0.5A O/P: 12V  1.5A				
IMEI No.	Radiated	862378060001747			
	Conducted	862378060001796, 862378060001309			
Modulation Type	UL: QPSK, 16QAM, 64QAM DL: QPSK, 16QAM, 64QAM, 256QAM				
Max. ERP	Band	Channel Bandwidth (MHz)	QPSK (dBm)	16QAM (dBm)	64QAM (dBm)
	Band 5	1.4	21.92	21.11	21.74
		3	21.91	21.04	21.70
		5	21.78	20.70	20.99
		10	21.66	21.24	21.68

Note:

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

2. Channel List:

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
ZTX	X100 PRO-ANT1	FPC	N/A	-0.59	LTE Band 5

Note: The antenna gain is provided by the manufacturer.

3.2 DESCRIPTION OF TEST MODES

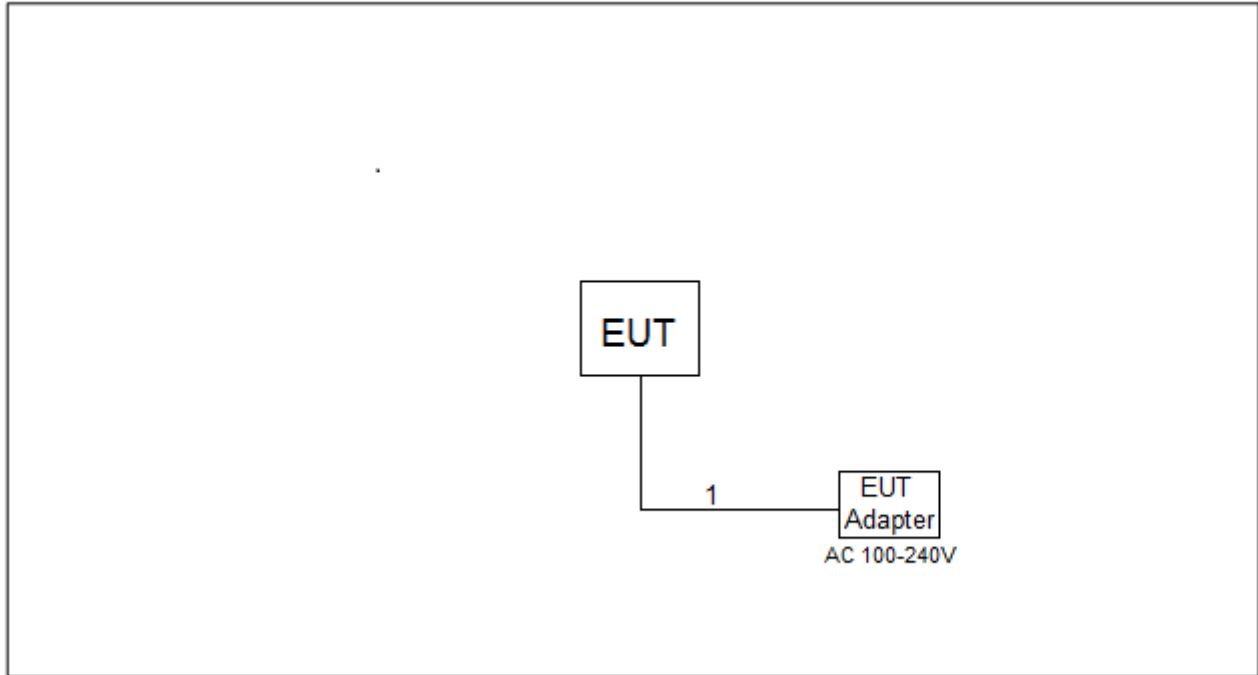
Following mode(s) is (were) found to be the worst case(s) and selected for the final test.

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, 64QAM	1RB/3RB/6RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM, 64QAM	1RB/8RB/15RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM, 64QAM	1RB/12RB/25RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM, 64QAM	1RB/25RB/50RB
Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM, 64QAM	6RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM, 64QAM	15RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM, 64QAM	25RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM, 64QAM	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, 64QAM	1RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM, 64QAM	1RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM, 64QAM	1RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM, 64QAM	1RB
Frequency Stability	20450 to 20600	20525	10MHz	QPSK	50RB

Note:

- (1) For radiated emissions below 1 GHz test, all adapters had been pre-tested and in this report only recorded the worst adapter(Manufacturer / Model: JiYi / JYSY018-1201500UD).

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	DC 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:

$EIRP = \text{Output Power} + \text{Antenan gain}$

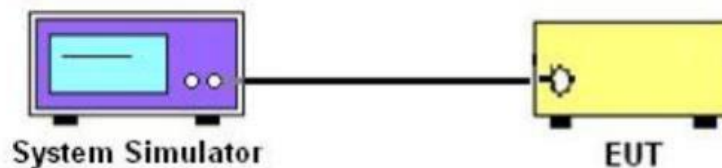
$ERP = EIPR - 2.15\text{dBi}$

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.

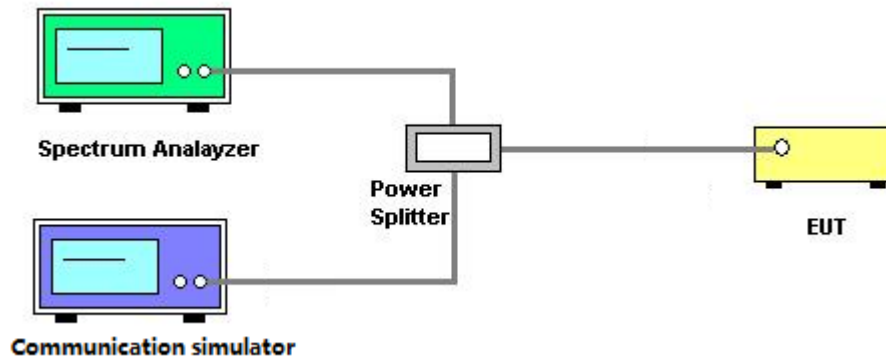
4.2 OCCUPIED BANDWIDTH MEASUREMENT

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. $RBW = (1\% \sim 5\%) * EBW$
 $VBW \geq 3 * RBW$
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

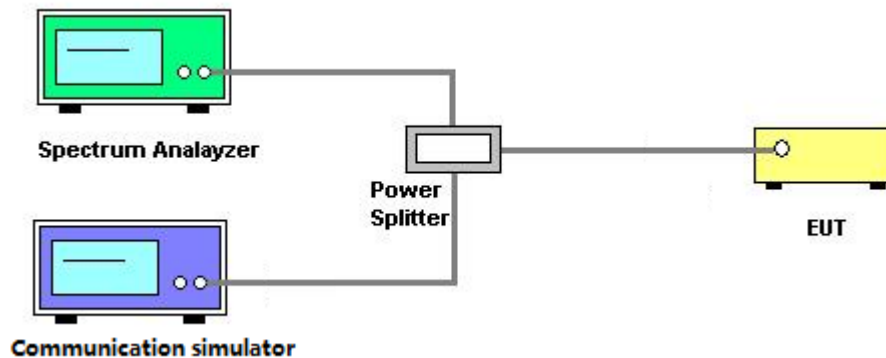
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm.

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 $\geq 1\%$ 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.

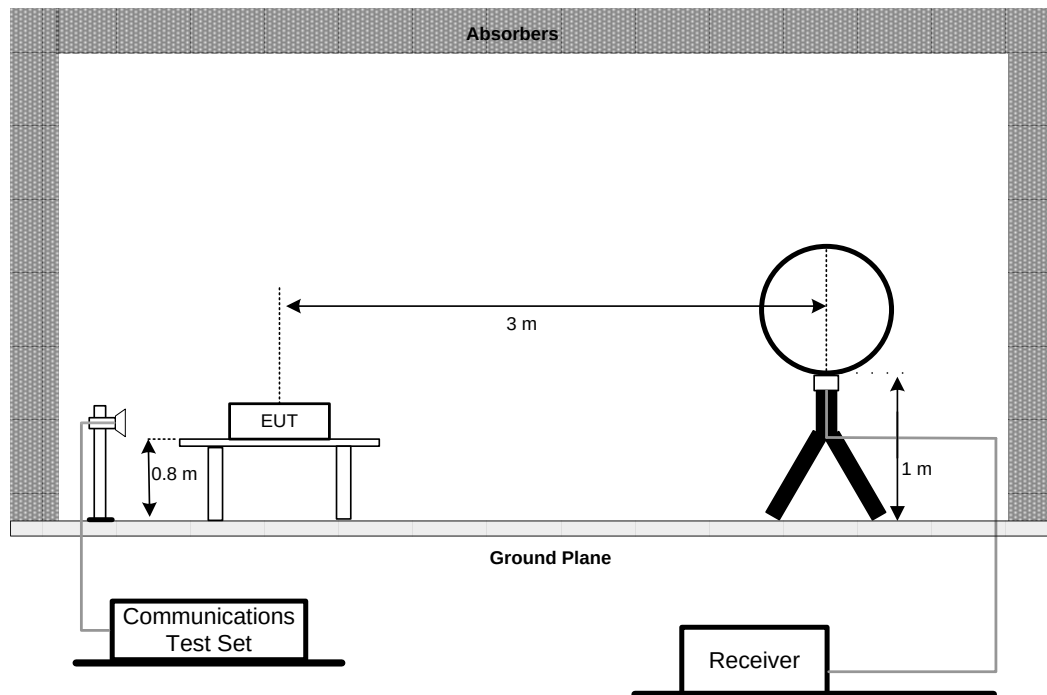
4.4.2 TEST PROCEDURES

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

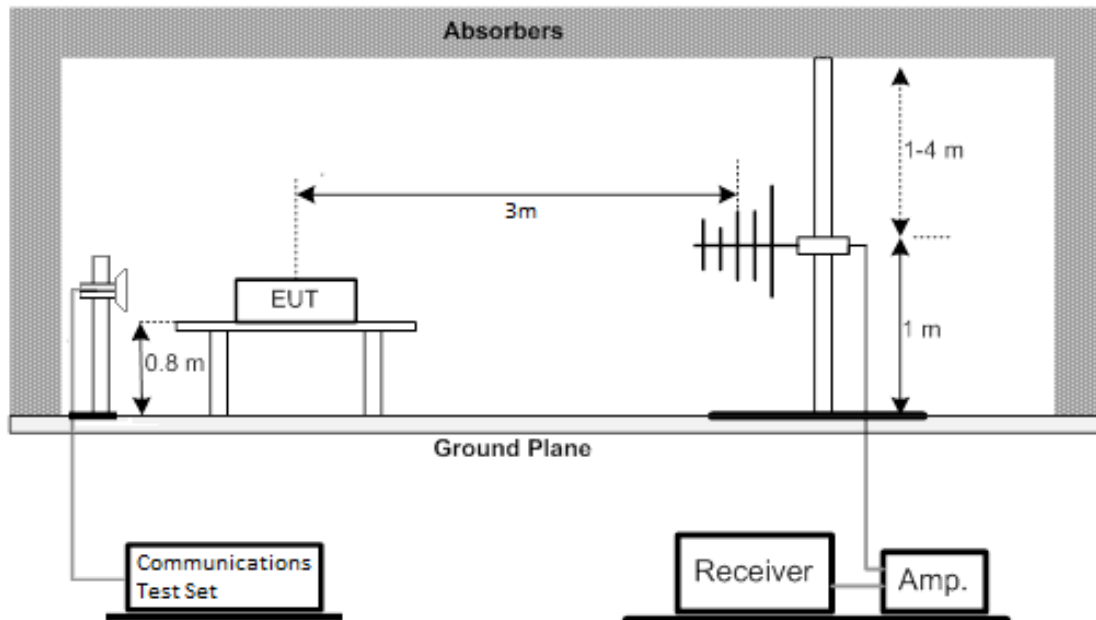
1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. During the measurement, the system simulator parameters 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. $E \text{ (dBuV/m)} = \text{EIRP (dBm)} - 20\log(D) + 104.8$; where D is the measurement distance (in the far field region) in m. The emission limit equal to 82.26dBuV/m.

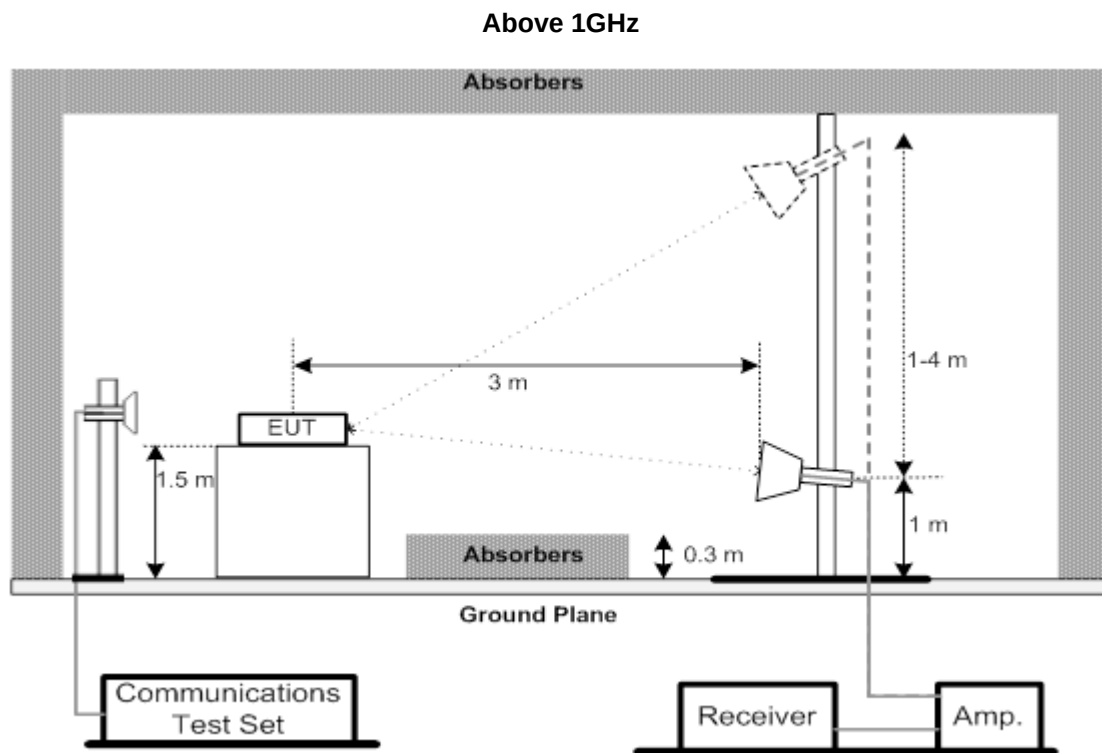
4.4.3 TEST SETUP LAYOUT

Below 30MHz



30MHz to 1000MHz





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

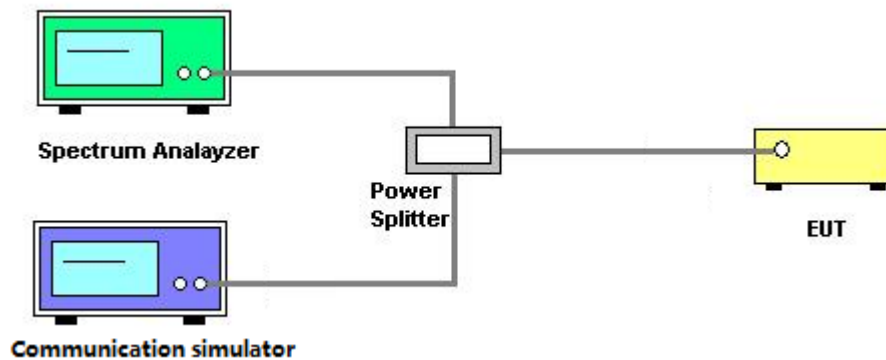
A Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the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

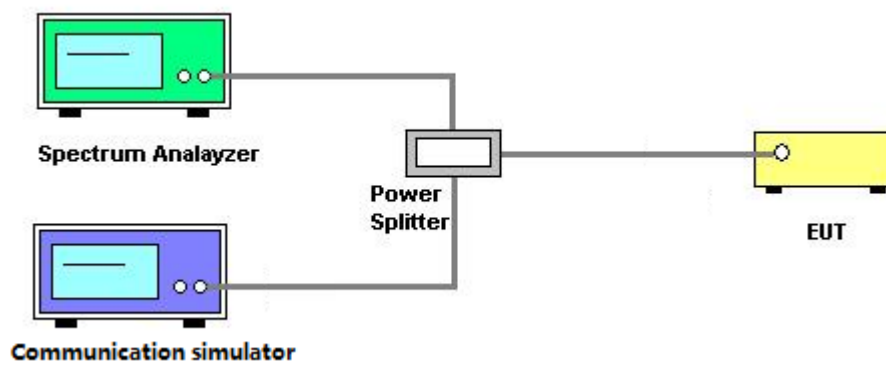
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

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 $\geq$ 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

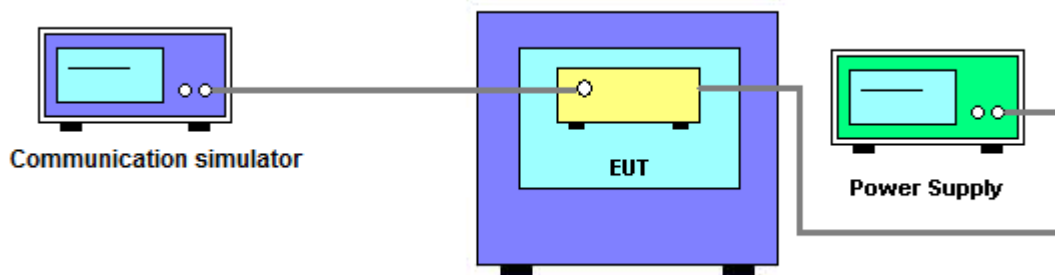
± 1.5 ppm is for base and fixed station. ± 2.5 ppm is for mobile station.

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 $\pm 0.5^{\circ}\text{C}$ 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 1513-60	1513-60-025	Apr. 01, 2024
2	MXE EMI Receiver	Keysight	N9038A	MY59050118	Feb. 10, 2024
3	Cable	EMC INSTRUMENT	EMCCFD400-NM-N M-3000	N/A	Jun. 08, 2024
4	Cable	EMC INSTRUMENT	EMCCFD400-NM-N M-7000	N/A	Jun. 08, 2024
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	966 Chamber room	Maorui	9*6*6 (NSA&VSWR)	N/A	Jun. 02, 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. 15, 2024
2	Attenuator	EMC INSTRUMENT	EMCI-N-6-06	AN-N0697	May. 15, 2024
3	Preamplifier	EMC INSTRUMENT	EMC001330	4585/5/27	Feb. 10, 2024
4	Cable	EMC INSTRUMENT	EMCCFD400-NM-N M-2500	N/A	Jun. 08, 2024
5	Cable	EMC INSTRUMENT	EMCCFD400-NM-N M-7000	N/A	Jun. 08, 2024
6	Cable	EMC INSTRUMENT	EMCCFD400-NM-N M-3000	N/A	Jun. 08, 2024
7	MXE EMI Receiver	KEYSIGHT	N9038A	MY59050118	Feb. 10, 2024
8	Positioning Controller	MF	MF-7802BS	N/A	N/A
9	Max-Full Antenna Corp	MF	MFA-560BSN	N/A	N/A
10	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
11	wideband radio communication tester	R&S	CMW500	164094	Jul. 07, 2024
12	Attenuator	Talent Microwave	TA10A2-S-18	N/A	N/A
13	966 Chamber room	Maorui	9*6*6 (NSA&VSWR)	N/A	Jun. 02, 2024

Radiated Emissions - Above 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	MXE EMI Receiver	Keysight	N9038A	MY59050118	Feb. 10, 2024
2	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
3	Preamplifier	EMC INSTRUMENT	EMC118A45SE	980739	Feb. 10, 2024
4	Cable	EMC INSTRUMENT	EMC104-SM-SM-1 0000	N/A	Jun. 08, 2024
5	Cable	EMC INSTRUMENT	EMC104-SM-SM-3 000	N/A	Jun. 08, 2024
6	Cable	EMC INSTRUMENT	EMC104-SM-SM-8 00	N/A	Jun. 08, 2024
7	wideband radio communication tester	R&S	CMW500	164094	Jul. 07, 2024
8	Attenuator	Talent Microwave	TA10A2-S-18	N/A	N/A
9	Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	1046	Jul. 05, 2024
10	966 Chamber room	Maorui	9*6*6 (NSA&VSWR)	N/A	Jun. 02, 2024

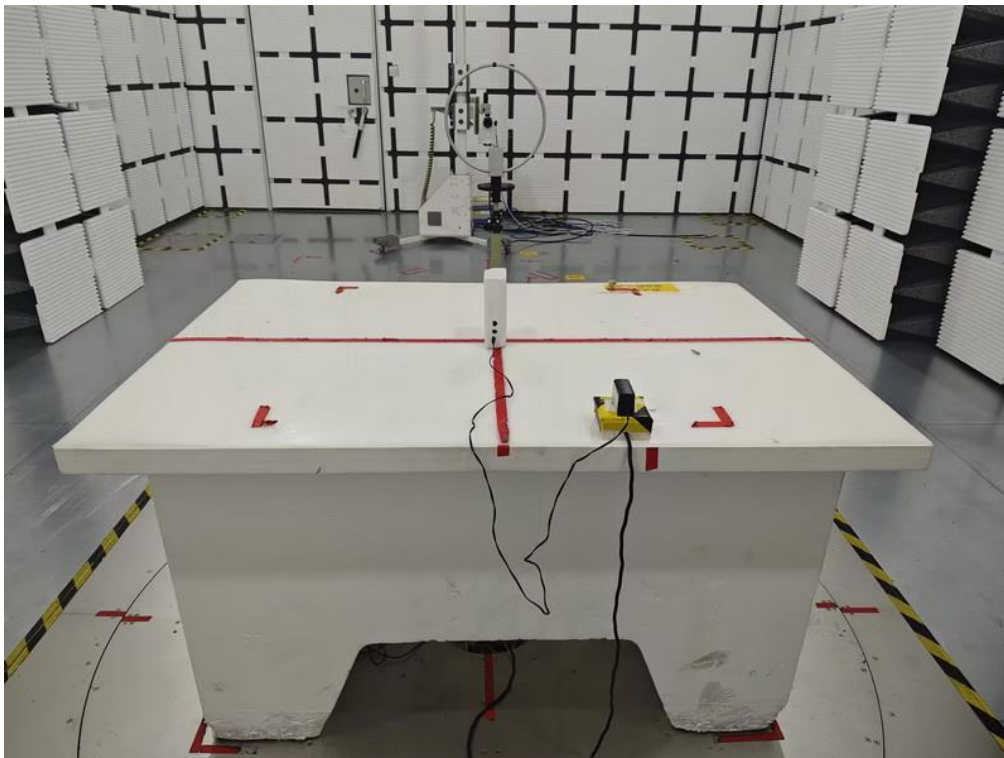
Conducted Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wideband Radio Communication Tester	R&S	CWM 500	165848	Feb. 10, 2024
2	Signal Analyzer	R&S	FSV 40	100948	Jul. 07, 2024
3	MXA Signal Analyzer	Agilent Technologies	N9020A	MY49100060	Jul. 07, 2024
4	Temperature Chamber	ESPEC	SU-242	93018791	Jul. 07, 2024
5	DC POWER SUPPLY	ITECH	IT6332C	8034160117673300	May 10, 2024
6	Cable	N/A	RWP50-4.6A-SM SM-1M	N/A	N/A

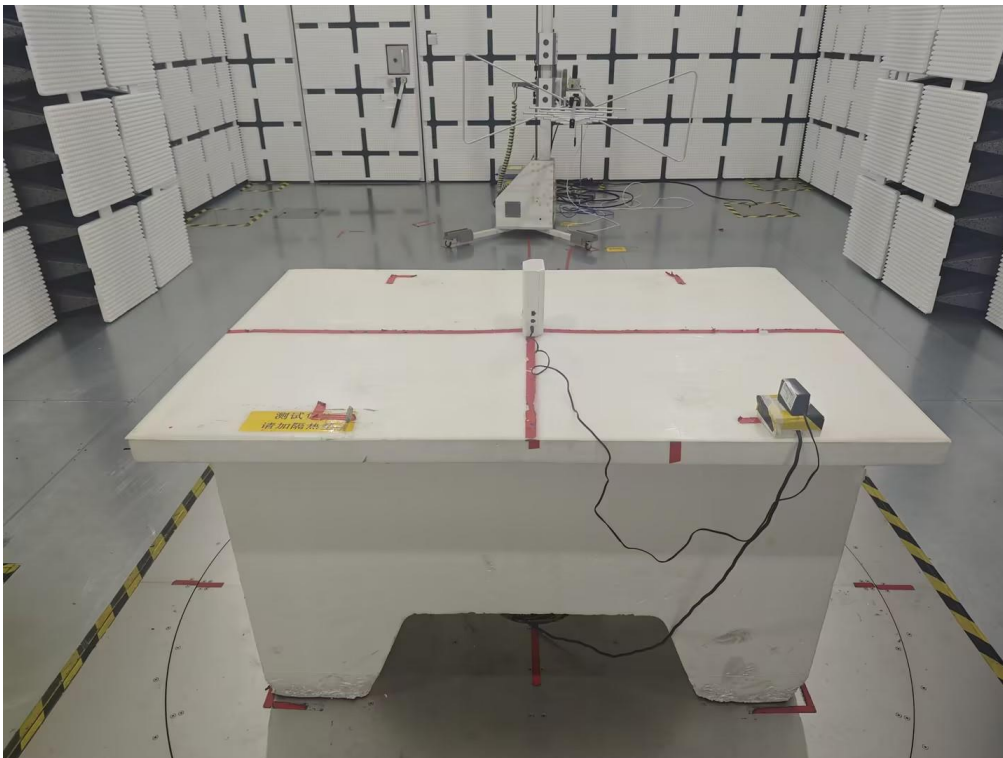
Remark: "N/A" denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

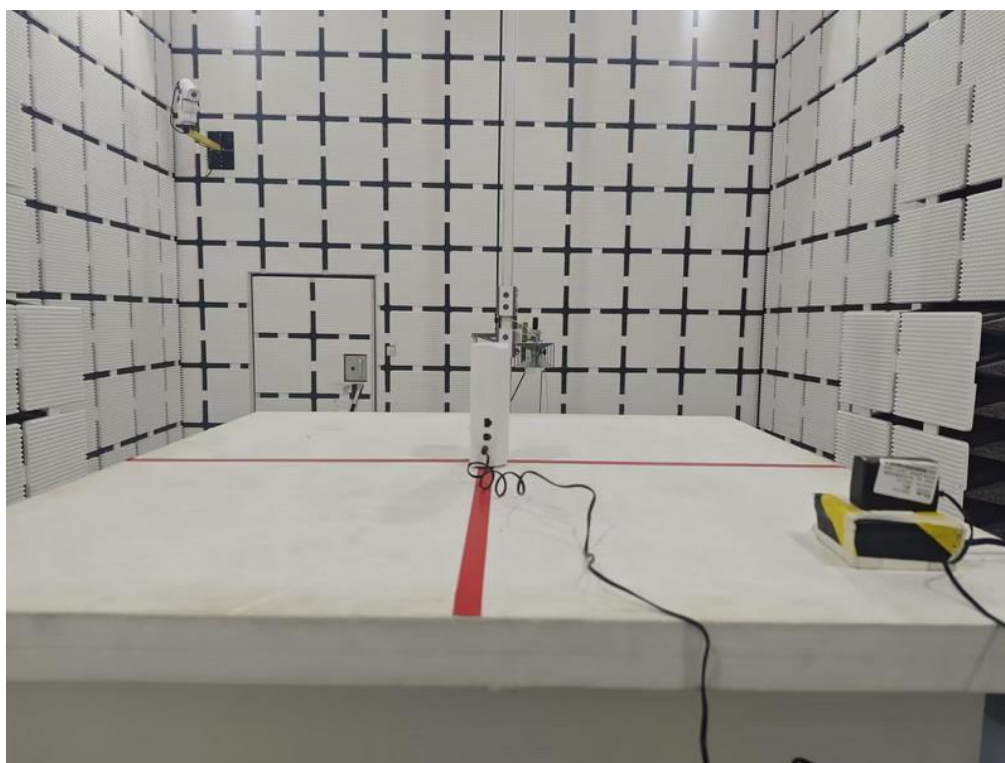
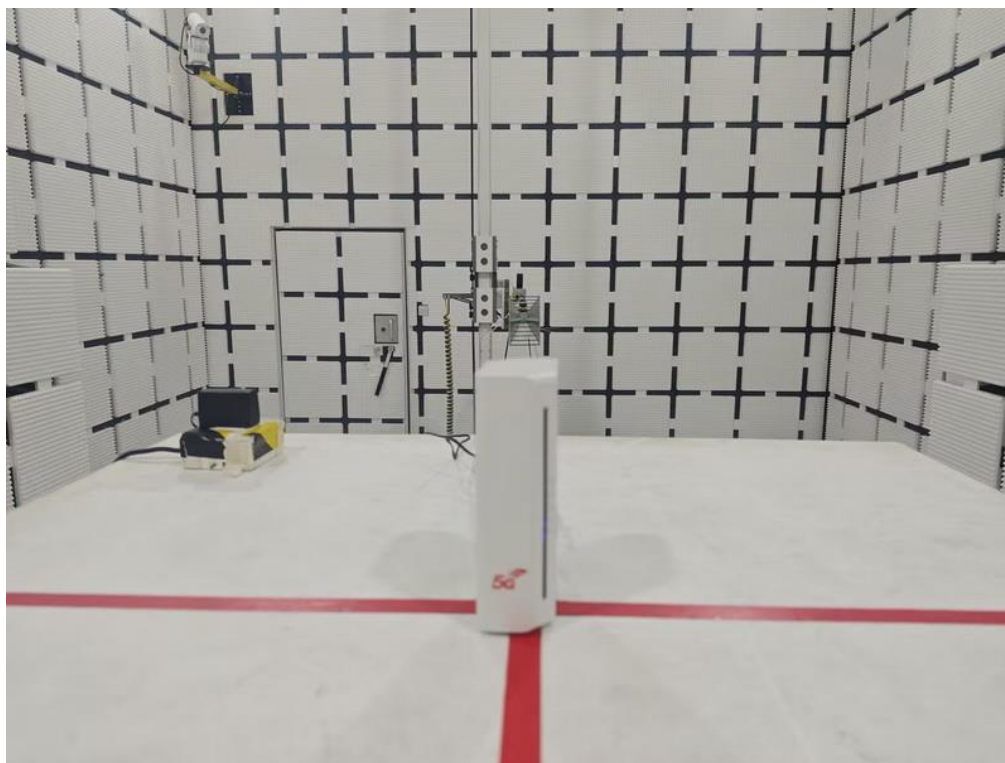
5. EUT TEST PHOTO

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)

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	24.66	24.51	24.56
		1	2	24.62	24.47	24.55
		1	5	24.62	24.45	24.58
		3	0	24.60	24.53	24.56
		3	1	24.55	24.53	24.57
		3	2	24.57	24.49	24.56
		6	0	23.22	23.26	23.34
	16QAM	1	0	23.81	23.76	23.36
		1	2	23.84	23.78	23.34
		1	5	23.85	23.69	23.36
		3	0	23.23	23.13	23.19
		3	1	23.25	23.10	23.12
		3	2	23.26	23.11	23.16
		6	0	22.26	21.98	22.41
	64QAM	1	0	23.01	22.54	24.48
		1	2	22.99	22.54	24.36
		1	5	23.05	22.47	24.46
		3	0	22.95	22.88	22.69
		3	1	22.90	22.90	22.69
		3	2	22.97	22.86	22.66
		6	0	21.22	21.90	21.63

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	24.48	24.52	24.65
		1	7	24.58	24.52	24.56
		1	14	24.55	24.49	24.46
		8	0	23.27	23.27	23.19
		8	4	23.27	23.23	23.08
		8	7	23.22	23.24	23.08
		15	0	23.19	23.23	23.18
	16QAM	1	0	22.82	23.78	23.33
		1	7	22.86	23.74	23.36
		1	14	22.86	23.67	23.32
		8	0	21.96	22.23	22.52
		8	4	21.97	22.20	22.52
		8	7	21.99	22.20	22.49
		15	0	22.08	22.18	22.14
	64QAM	1	0	23.74	22.53	24.44
		1	7	23.74	22.52	24.41
		1	14	23.78	22.46	24.40
		8	0	22.21	21.11	22.95
		8	4	22.28	21.08	22.96
		8	7	22.30	21.04	22.95
		15	0	22.18	21.08	23.07

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	24.39	24.52	24.31
		1	13	24.37	24.44	24.27
		1	24	24.39	24.38	24.22
		12	0	23.57	23.40	23.46
		12	6	23.58	23.42	23.42
		12	11	23.49	23.36	23.44
		25	0	23.03	23.07	23.12
	16QAM	1	0	22.44	22.86	23.44
		1	13	22.47	22.82	23.44
		1	24	22.47	22.77	23.40
		12	0	22.06	22.34	22.10
		12	6	22.07	22.32	22.11
		12	11	22.06	22.30	22.06
		25	0	22.01	22.20	22.35
	64QAM	1	0	22.10	23.73	22.97
		1	13	22.09	23.66	22.96
		1	24	22.15	23.58	22.93
		12	0	21.00	22.17	21.71
		12	6	21.11	22.14	21.80
		12	11	21.11	22.06	21.75
		25	0	20.99	22.12	21.67

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	24.40	24.27	24.23
		1	25	24.32	24.29	24.17
		1	49	24.19	24.25	24.26
		25	0	23.32	23.36	23.40
		25	13	23.27	23.36	23.35
		25	25	23.43	23.29	23.39
		50	0	22.94	22.95	23.03
	16QAM	1	0	22.99	23.98	23.43
		1	25	23.02	23.88	23.40
		1	49	23.19	23.77	23.47
		25	0	21.91	22.20	22.33
		25	13	21.88	22.21	22.29
		25	25	22.08	22.16	22.39
		50	0	21.98	22.14	22.13
	64QAM	1	0	23.77	22.56	24.36
		1	25	23.78	22.56	24.35
		1	49	23.96	22.46	24.42
		25	0	22.71	21.01	22.73
		25	13	22.45	21.16	23.23
		25	25	22.33	21.04	23.19
		50	0	22.29	21.00	23.07

ERP (dBm)

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	21.92	21.77	21.82
		1	2	21.88	21.73	21.81
		1	5	21.88	21.71	21.84
		3	0	21.86	21.79	21.82
		3	1	21.81	21.79	21.83
		3	2	21.83	21.75	21.82
		6	0	20.48	20.52	20.60
	16QAM	1	0	21.07	21.02	20.62
		1	2	21.10	21.04	20.60
		1	5	21.11	20.95	20.62
		3	0	20.49	20.39	20.45
		3	1	20.51	20.36	20.38
		3	2	20.52	20.37	20.42
		6	0	19.52	19.24	19.67
	64QAM	1	0	20.27	19.80	21.74
		1	2	20.25	19.80	21.62
		1	5	20.31	19.73	21.72
		3	0	20.21	20.14	19.95
		3	1	20.16	20.16	19.95
		3	2	20.23	20.12	19.92
		6	0	18.48	19.16	18.89

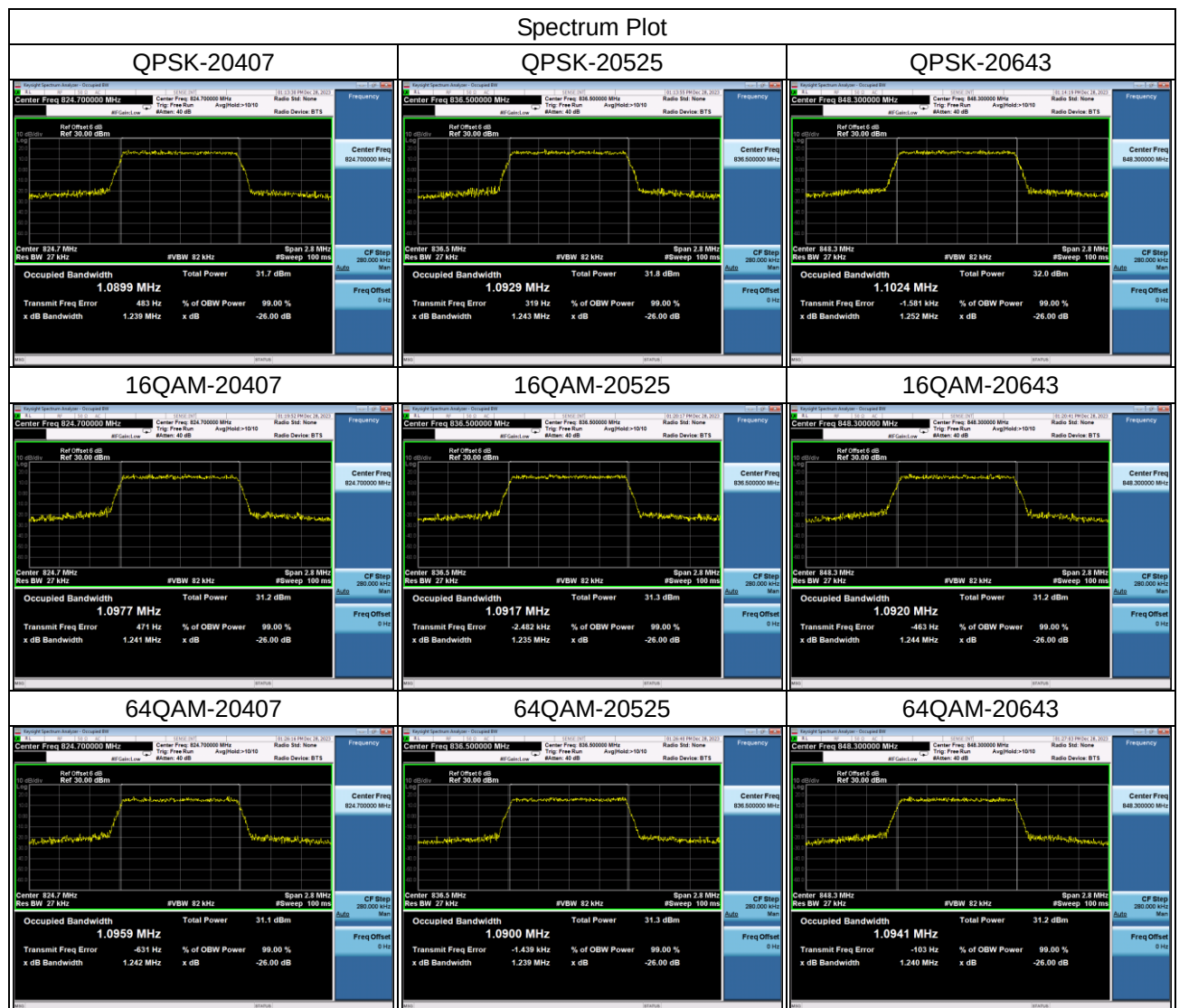
LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3MHz	QPSK	1	0	21.74	21.78	21.91
		1	7	21.84	21.78	21.82
		1	14	21.81	21.75	21.72
		8	0	20.53	20.53	20.45
		8	4	20.53	20.49	20.34
		8	7	20.48	20.50	20.34
		15	0	20.45	20.49	20.44
	16QAM	1	0	20.08	21.04	20.59
		1	7	20.12	21.00	20.62
		1	14	20.12	20.93	20.58
		8	0	19.22	19.49	19.78
		8	4	19.23	19.46	19.78
		8	7	19.25	19.46	19.75
		15	0	19.34	19.44	19.40
	64QAM	1	0	21.00	19.79	21.70
		1	7	21.00	19.78	21.67
		1	14	21.04	19.72	21.66
		8	0	19.47	18.37	20.21
		8	4	19.54	18.34	20.22
		8	7	19.56	18.30	20.21
		15	0	19.44	18.34	20.33

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	21.65	21.78	21.57
		1	13	21.63	21.70	21.53
		1	24	21.65	21.64	21.48
		12	0	20.83	20.66	20.72
		12	6	20.84	20.68	20.68
		12	11	20.75	20.62	20.70
		25	0	20.29	20.33	20.38
	16QAM	1	0	19.70	20.12	20.70
		1	13	19.73	20.08	20.70
		1	24	19.73	20.03	20.66
		12	0	19.32	19.60	19.36
		12	6	19.33	19.58	19.37
		12	11	19.32	19.56	19.32
		25	0	19.27	19.46	19.61
	64QAM	1	0	19.36	20.99	20.23
		1	13	19.35	20.92	20.22
		1	24	19.41	20.84	20.19
		12	0	18.26	19.43	18.97
		12	6	18.37	19.40	19.06
		12	11	18.37	19.32	19.01
		25	0	18.25	19.38	18.93

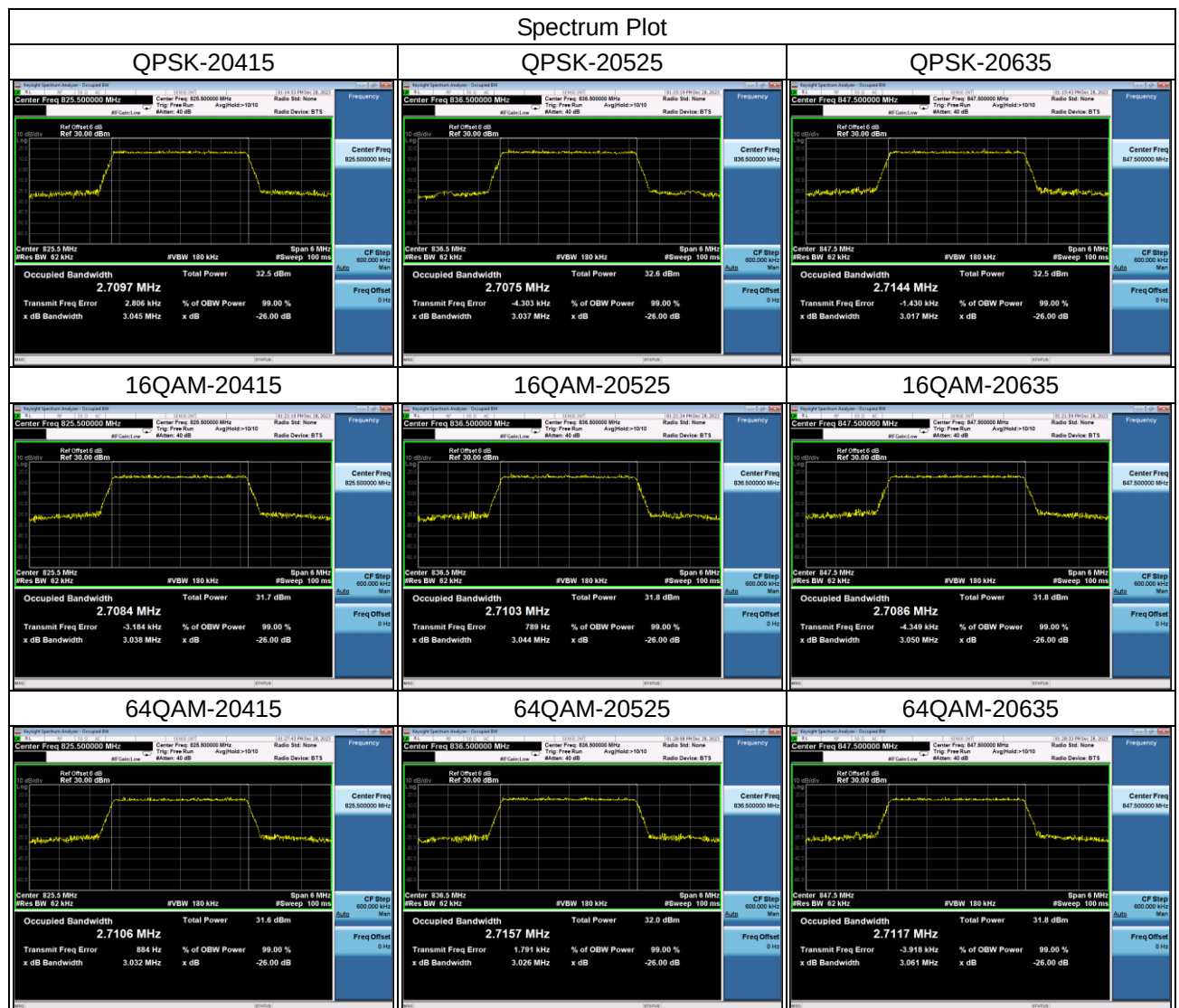
LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10MHz	QPSK	1	0	21.66	21.53	21.49
		1	25	21.58	21.55	21.43
		1	49	21.45	21.51	21.52
		25	0	20.58	20.62	20.66
		25	13	20.53	20.62	20.61
		25	25	20.69	20.55	20.65
		50	0	20.20	20.21	20.29
	16QAM	1	0	20.25	21.24	20.69
		1	25	20.28	21.14	20.66
		1	49	20.45	21.03	20.73
		25	0	19.17	19.46	19.59
		25	13	19.14	19.47	19.55
		25	25	19.34	19.42	19.65
		50	0	19.24	19.40	19.39
	64QAM	1	0	21.03	19.82	21.62
		1	25	21.04	19.82	21.61
		1	49	21.22	19.72	21.68
		25	0	19.97	18.27	19.99
		25	13	19.71	18.42	20.49
		25	25	19.59	18.30	20.45
		50	0	19.55	18.26	20.33

APPENDIX B - OCCUPIED BANDWIDTH

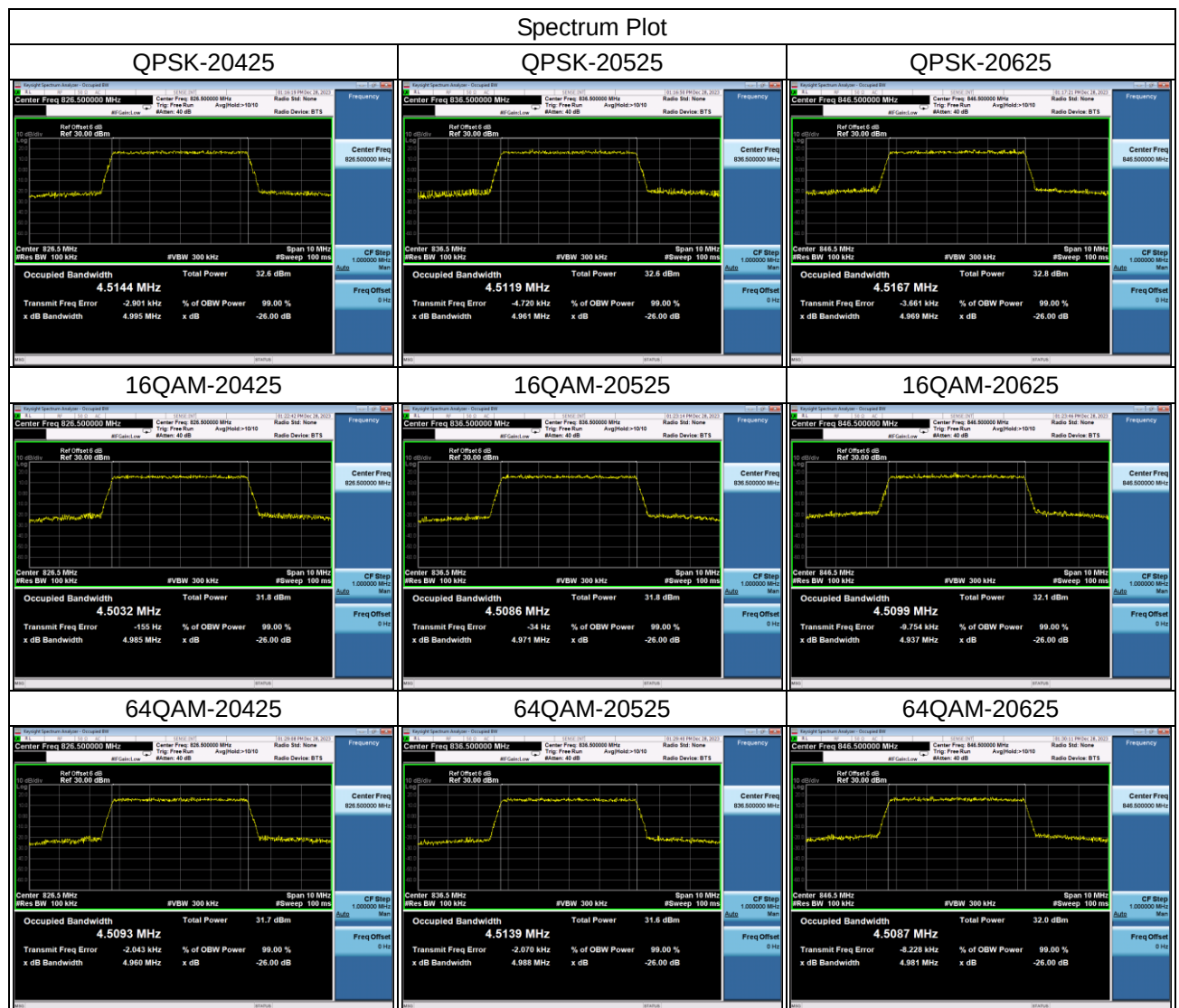
LTE Band 5_1.4MHz							
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20407	824.7	1.0899	1.0977	1.0959	1.239	1.241	1.242
20525	836.5	1.0929	1.0917	1.0900	1.243	1.235	1.239
20643	848.3	1.1024	1.0920	1.0941	1.252	1.244	1.240



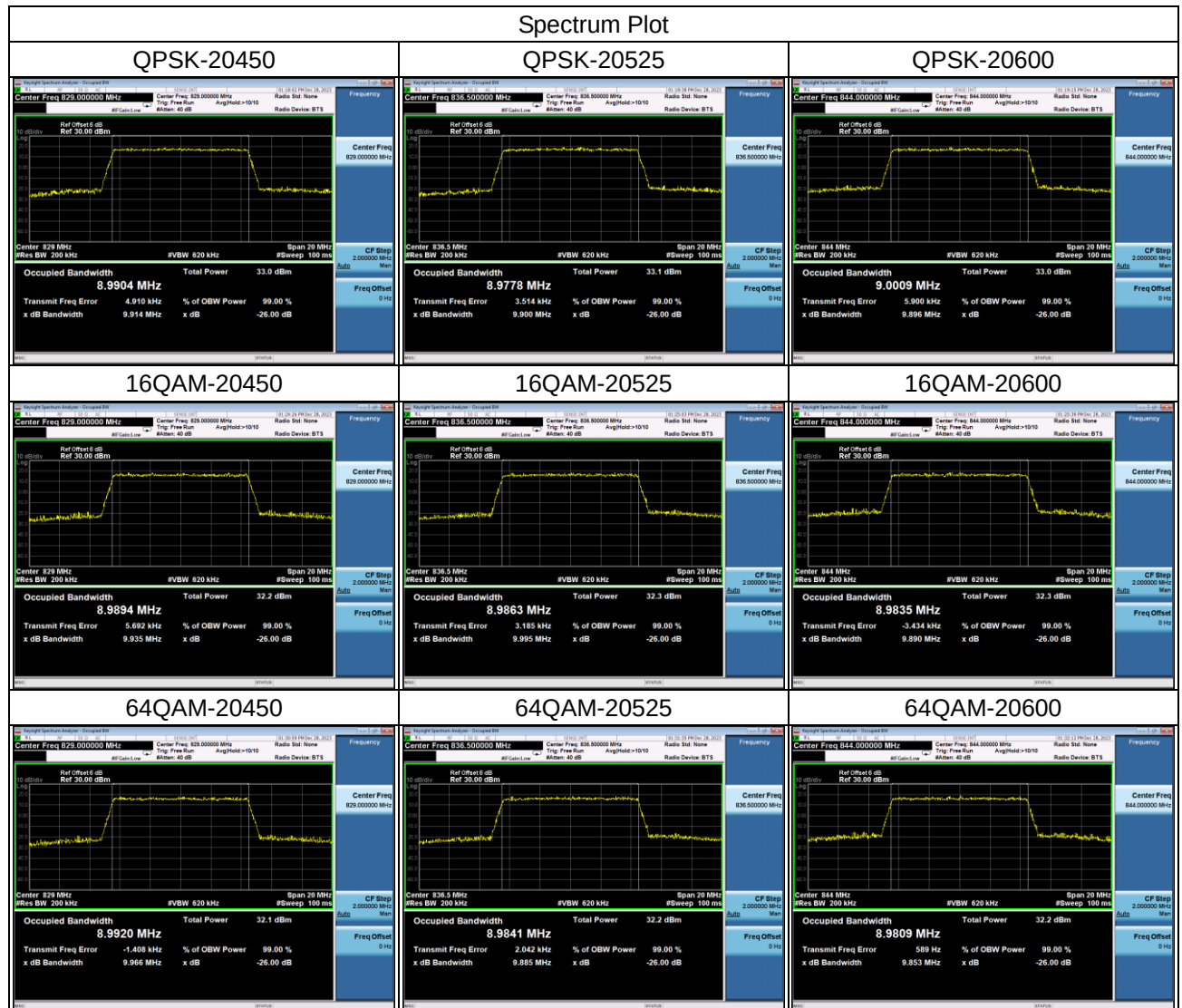
LTE Band 5_3MHz							
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20415	825.5	2.7097	2.7084	2.7106	3.045	3.038	3.032
20525	836.5	2.7075	2.7103	2.7157	3.037	3.044	3.026
20635	847.5	2.7144	2.7086	2.7117	3.017	3.050	3.061



LTE Band 5_5MHz							
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20425	826.5	4.5144	4.5032	4.5093	4.995	4.985	4.960
20525	836.5	4.5119	4.5086	4.5139	4.961	4.971	4.988
20625	846.5	4.5167	4.5099	4.5087	4.969	4.937	4.981

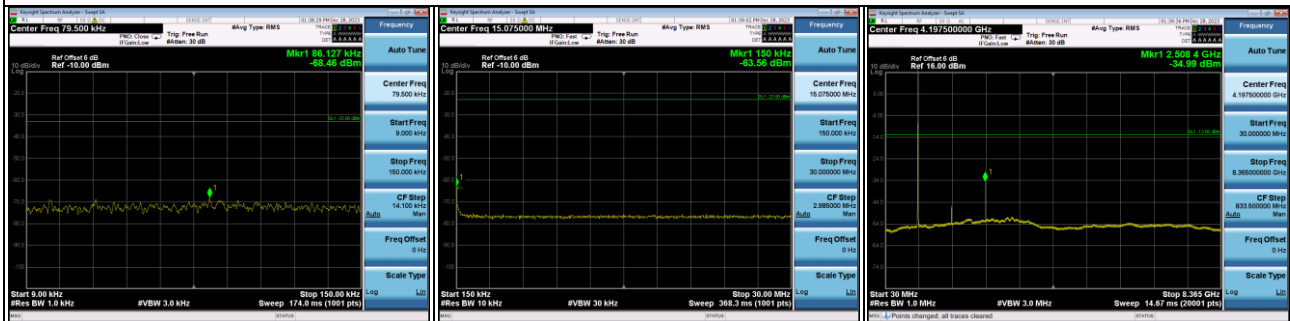


LTE Band 5_10MHz							
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20450	829.0	8.9904	8.9894	8.9920	9.914	9.935	9.966
20525	836.5	8.9778	8.9896	8.9841	9.900	9.995	9.885
20600	844.0	9.0009	8.9835	8.9809	9.896	9.890	9.853

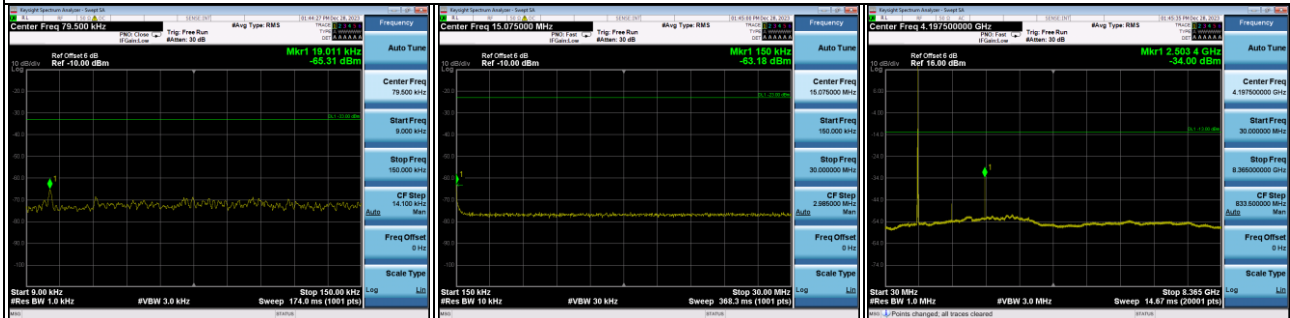


APPENDIX C - CONDUCTED SPURIOUS EMISSIONS

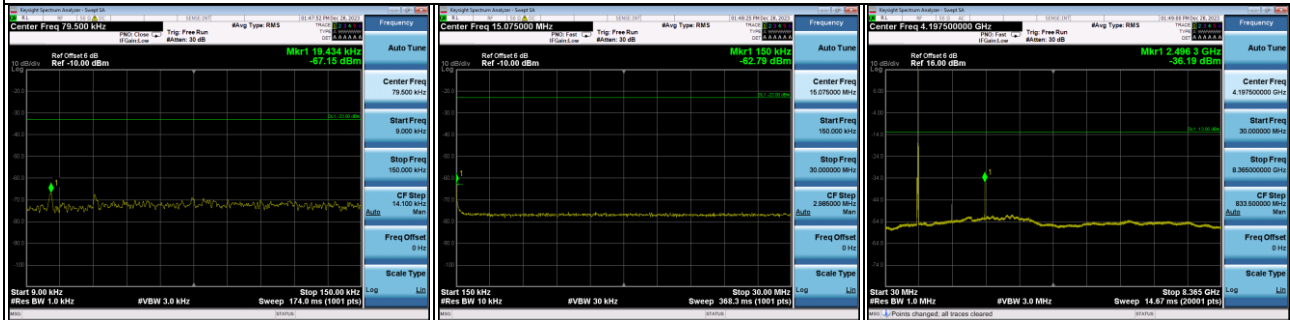
LTE Band 5_1.4MHz_CH20525 Spectrum Plot



LTE Band 5_5MHz_CH20525 Spectrum Plot



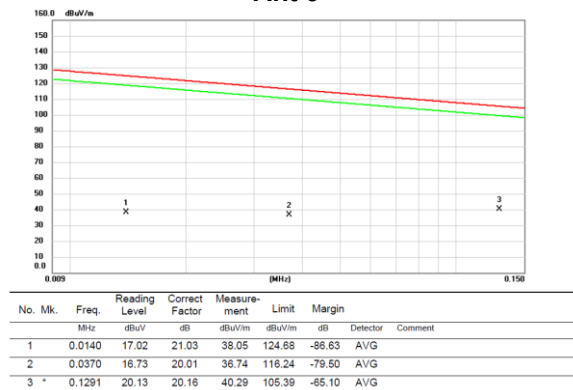
LTE Band 5_10M_CH20525 Spectrum Plot



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

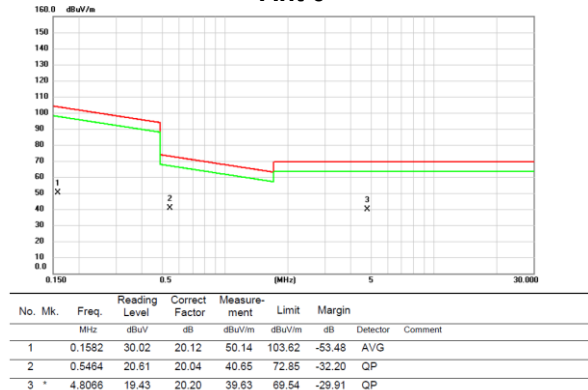
Test Mode : TX Mode

Ant 0°



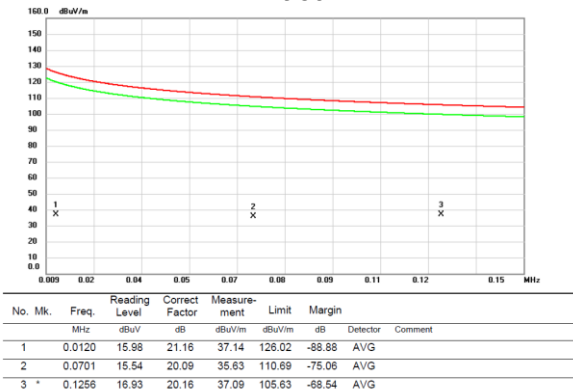
Test Mode : TX Mode

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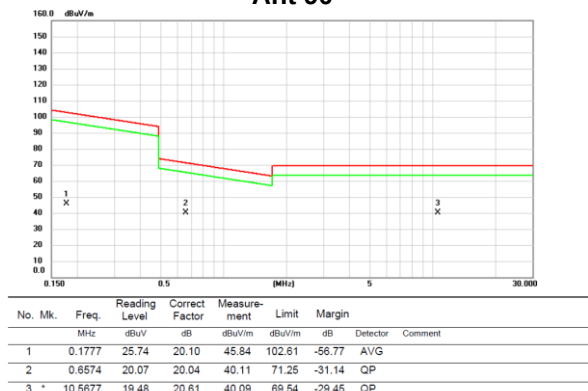
Test Mode : TX Mode

Ant 90°



Test Mode : TX Mode

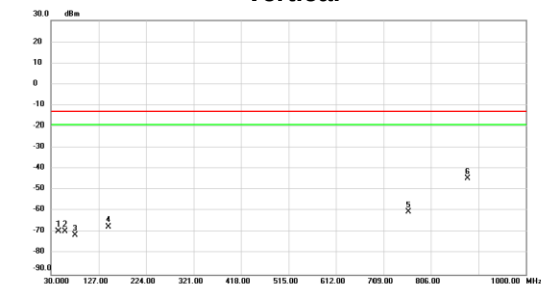
Ant 90°



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

Test Mode : LTE Band 5_TX CH20525_1.4MHz

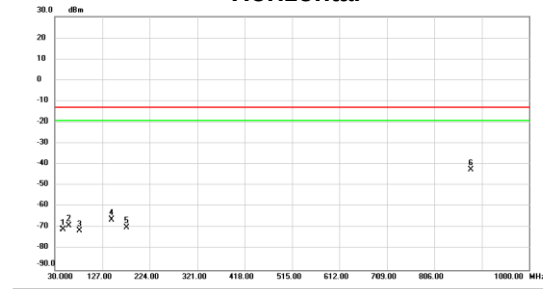
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	45.0350	-69.15	-0.36	-69.51	-13.00	-56.51	peak	
2	57.6450	-68.69	-0.63	-69.32	-13.00	-56.32	peak	
3	78.5000	-66.94	-4.40	-71.34	-13.00	-58.34	peak	
4	146.8850	-67.27	-0.19	-67.46	-13.00	-54.46	peak	
5	760.4100	-71.10	10.61	-60.49	-13.00	-47.49	peak	
6 *	881.1750	-55.75	11.27	-44.48	-13.00	-31.48	peak	

Test Mode : LTE Band 5_TX CH20525_1.4MHz

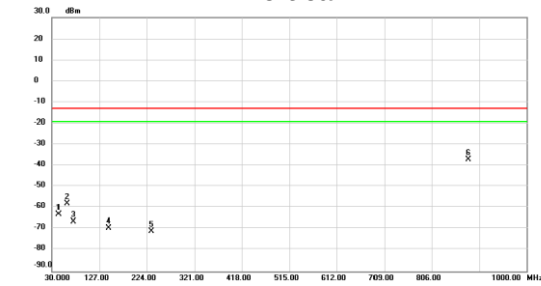
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	45.5200	-70.41	-0.35	-70.76	-13.00	-57.76	peak	
2	57.6450	-68.10	-0.63	-68.73	-13.00	-55.73	peak	
3	79.4700	-66.75	-4.64	-71.39	-13.00	-58.39	peak	
4	145.4300	-65.97	-0.29	-66.26	-13.00	-53.26	peak	
5	176.4700	-68.86	-0.98	-69.84	-13.00	-56.84	peak	
6 *	881.6600	-53.68	11.28	-42.40	-13.00	-29.40	peak	

Test Mode : LTE Band 5_TX CH20525_5MHz

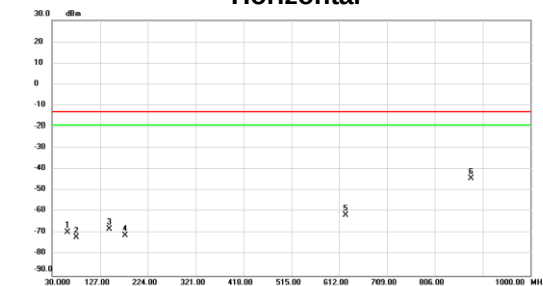
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	43.0950	-62.50	-0.53	-63.03	-13.00	-50.03	peak	
2	60.0700	-57.28	-0.85	-58.13	-13.00	-45.13	peak	
3	73.6500	-63.14	-3.26	-66.40	-13.00	-53.40	peak	
4	145.9150	-69.08	-0.26	-69.34	-13.00	-56.34	peak	
5	234.1850	-68.74	-2.09	-70.83	-13.00	-57.83	peak	
6 *	882.1450	-48.39	11.28	-37.11	-13.00	-24.11	peak	

Test Mode : LTE Band 5_TX CH20525_5MHz

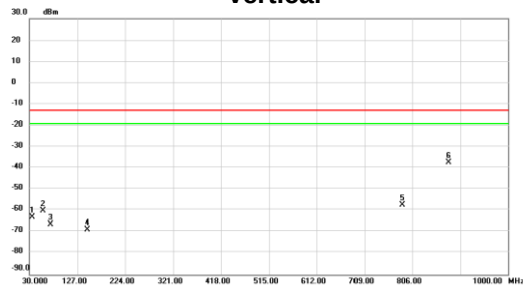
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	60.0700	-68.58	-0.85	-69.43	-13.00	-56.43	peak	
2	78.9850	-67.25	-4.52	-71.77	-13.00	-58.77	peak	
3	145.9150	-67.66	-0.26	-67.92	-13.00	-54.92	peak	
4	177.4400	-69.79	-1.08	-70.87	-13.00	-57.87	peak	
5	625.5800	-69.75	7.96	-61.79	-13.00	-48.79	peak	
6 *	880.6900	-55.64	11.26	-44.38	-13.00	-31.38	peak	

Test Mode : LTE Band 5_TX CH20525_10MHz

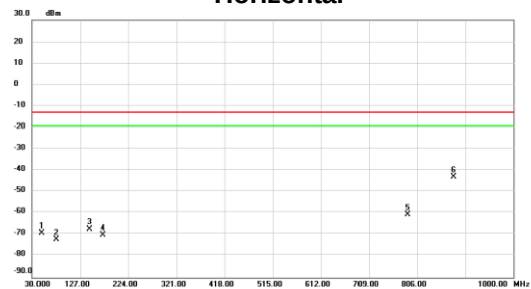
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	36.3050	-61.84	-1.26	-63.10	-13.00	-50.10	peak	
2	56.6750	-59.52	-0.54	-60.06	-13.00	-47.06	peak	
3	71.7100	-63.62	-2.82	-66.44	-13.00	-53.44	peak	
4	147.3700	-68.60	-0.16	-68.76	-13.00	-55.76	peak	
5	786.1150	-68.05	10.71	-57.34	-13.00	-44.34	peak	
6 *	879.7200	-48.67	11.25	-37.42	-13.00	-24.42	peak	

Test Mode : LTE Band 5_TX CH20525_10MHz

Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	48.9150	-69.00	-0.25	-69.25	-13.00	-56.25	peak	
2	78.9850	-67.76	-4.52	-72.28	-13.00	-59.28	peak	
3	145.4300	-67.11	-0.29	-67.40	-13.00	-54.40	peak	
4	173.0750	-69.36	-0.59	-69.95	-13.00	-56.95	peak	
5	787.0850	-71.34	10.71	-60.63	-13.00	-47.63	peak	
6 *	880.2050	-54.18	11.26	-42.92	-13.00	-29.92	peak	

APPENDIX F - RADIATED SPURIOUS EMISSIONS (ABOVE 1000MHZ)

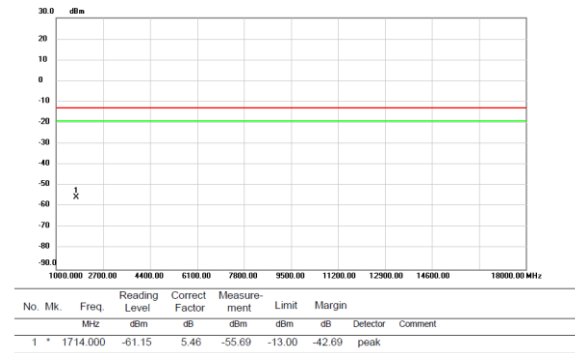
Test Mode : LTE Band 5_TX CH20525_1.4MHz

Vertical



Test Mode : LTE Band 5_TX CH20525_1.4MHz

Horizontal



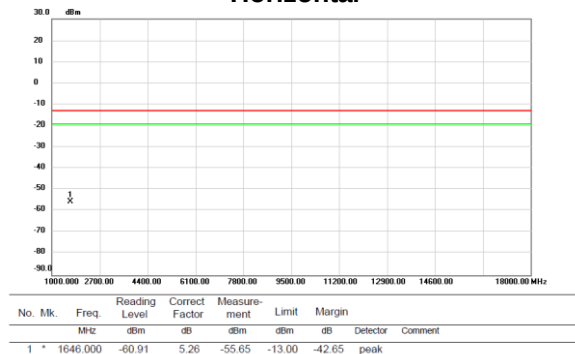
Test Mode : LTE Band 5_TX CH20525_5MHz

Vertical



Test Mode : LTE Band 5_TX CH20525_5MHz

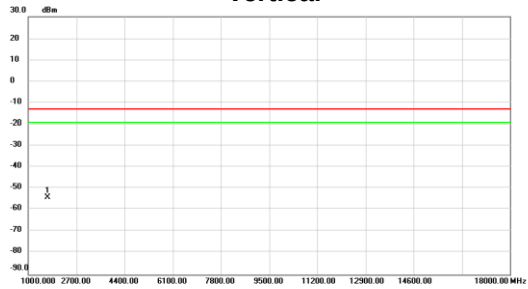
Horizontal



Test Mode : LTE Band 5_TX CH20525_10MHz

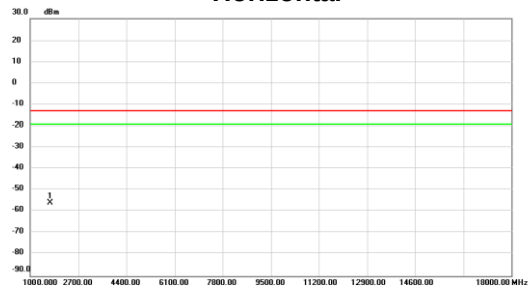
Test Mode : LTE Band 5_TX CH20525_10MHz

Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	1663.000	-59.48	5.31	-54.17	-13.00	-41.17	peak	

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	1697.000	-61.36	5.41	-55.95	-13.00	-42.95	peak	

APPENDIX G - BAND EDGE