FCC Radio Test Report

FCC ID: M82-SCN100

Report No.	:	BTL-FCCP-6-2212T004
Equipment	:	Computer
Model Name	:	SCN-100-9, SCN-100-9xxxxxxxxxxxxxxx (where "x" may be any alphanumeric character, "-" or blank for marketing purpose and no impact safety related critical components and constructions)
Brand Name	:	(1) ADVANTECH or ADVANTECH (2) SCANIA
Applicant	:	Advantech Co., Ltd.
Address	:	No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan.
Radio Function	:	WCDMA Band II & LTE Band 2
FCC Rule Part(s)	:	FCC CFR Title 47, Part 24, Subpart E
Date of Receipt	:	2022/12/9
Date of Test	:	2023/2/24 ~ 2023/10/27
Issued Date	:	2023/11/7

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

Prepared by : Jerry Chuang, Supervisor

Approved by : Peter Chen, Manager

ilac-MRA TAF Testing Laboratory 0659

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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.

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** 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.

CONTENTS

REVISION HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-6-2212T004	R00	Original Report.	2023/9/4	Invalid
BTL-FCCP-6-2212T004	R01	Added others conducted test items.	2023/11/7	Valid

1 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

Standard(s) Section	Description	Test Result	Judgement	Remark
2.1046 24.232(c)	Conducted Output Power Effective Isotropic Radiated Power	APPENDIX A	Pass	------
2.1049	Occupied Bandwidth	APPENDIX B	Pass	------
2.1051 24.238(a)	Conducted Spurious Emissions	APPENDIX C	Pass	------
2.1053 24.238(a)	Radiated Spurious Emissions	APPENDIX D	Pass	------
24.238(a)	Band Edge Measurements	APPENDIX E	Pass	------
24.232(d)	Peak To Average Ratio	APPENDIX F	Pass	------
2.1055 24.235	Frequency Stability	APPENDIX G	Pass	------

NOTE:
(1) ”N/A” denotes test is not applicable in this Test Report.
(2) The report format version is TP.1.1.1.

1.1 REFERENCE TEST GUIDANCE

ANSI C63.26-2015
ANSI/TIA-603-E-2016
FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

1.2 TEST FACILITY

The test locations stated below are under the TAF Accreditation Number 0659.
The test location(s) used to collect the test data in this report are:
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)
☐ C05 ☐ SR10 ☒ SR11
No. 72, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)
☐ C06 ☒ CB21 ☐ CB22

1.3 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**, where expanded uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k = 2**, providing a level of confidence of approximately **95 %**. The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

A. Effective Isotropic Radiated Power and Radiated emissions test :

Test Site	Measurement Frequency Range	U,(dB)
CB21	0.03 GHz ~ 0.2 GHz	4.17
	0.2 GHz ~ 1 GHz	4.72
	1 GHz ~ 6 GHz	5.21
	6 GHz ~ 18 GHz	5.51
	18 GHz ~ 26 GHz	3.69
	26 GHz ~ 40 GHz	4.23

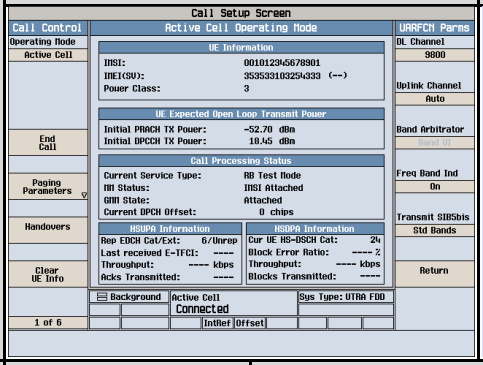
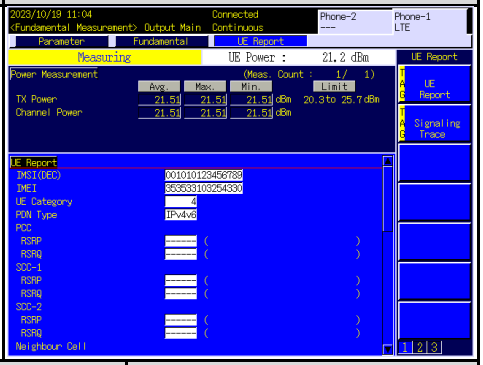
NOTE:
Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.4 TEST ENVIRONMENT CONDITIONS

Test Item	Environment Condition	Test Voltage	Tested by
Conducted Output Power	23.4 °C, 59 %	AC 120V	Cora Lin
Effective Isotropic Radiated Power	Refer to data	AC 120V	Mark Wang
Occupied Bandwidth	25.4 °C, 54 %	AC 120V	Cora Lin
Conducted Spurious Emissions	25.4 °C, 54 %	AC 120V	Cora Lin
Radiated Spurious Emissions	Refer to data	AC 120V	Mark Wang
Band Edge	25.4 °C, 54 %	AC 120V	Cora Lin
Peak to Average Ratio	25.4 °C, 54 %	AC 120V	Cora Lin
Frequency Stability	Normal and Extreme		Cora Lin

2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

Equipment	Computer
Model Name	SCN-100-9, SCN-100-9xxxxxxxxxxxxxxx (where “x” may be any alphanumeric character, “-” or blank for marketing purpose and no impact safety related critical components and constructions)
Brand Name	(1) ADVANTECH or (2) SCANIA
Model Difference	Different model distribute to different area.
Power Source	DC voltage supplied from AC/DC Adapter.
Power Rating	EUT: 12-32Vdc, 10-3.75A For Adapter: I/P: 100-240V~2.3A, 50-60Hz O/P: 24.0V⎓7.5A 180.0W
Products Covered	1 * Adapter: FSP / FSP180-AAAN3
WWAN Module	AirPrime / EM7565
IMEI No.	WCDMA:  LTE: 

Operation Frequency	Band	UL Frequency (MHz)	DL Frequency (MHz)
	WCDMA II	1850 ~ 1910	1930 ~ 1990
	LTE 2	1850 ~ 1910	1930 ~ 1990

Maximum EIRP	Band	BW (MHz)	Mode	Power (W)
	WCDMA II	-	-	0.521
	LTE 2	1.4	QPSK	0.499
			16QAM	0.400
		3	QPSK	0.498
			16QAM	0.405
		5	QPSK	0.504
			16QAM	0.409
		10	QPSK	0.509
			16QAM	0.414
		15	QPSK	0.515
			16QAM	0.419
		20	QPSK	0.521
			16QAM	0.424

Test Model	SCN-100-9
Sample Status	Engineering Sample
EUT Modification(s)	N/A

NOTE:
(1) The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

(2) Channel List:

WCDMA Band II				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	9262	1852.4	9662	1932.4
Mid Range	9400	1880.0	9800	1960.0
High Range	9538	1907.6	9938	1987.6

LTE Band 2					
Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink (MHz)	N_{DL}	Frequency of Downlink (MHz)
Low Range	1.4	18607	1850.7	607	1930.7
	3	18615	1851.5	615	1931.5
	5	18625	1852.5	625	1932.5
	10	18650	1855	650	1935
	15	18675	1857.5	675	1937.5
	20	18700	1860	700	1940
Mid Range	1.4/3/5/10/15/20	18900	1880	900	1960
High Range	1.4	19193	1909.3	1193	1989.3
	3	19185	1908.5	1185	1988.5
	5	19175	1907.5	1175	1987.5
	10	19150	1905	1150	1985
	15	19125	1902.5	1125	1982.5
	20	19100	1900	1100	1980

(3) Table for Filed Antenna:

Antenna	Manufacture	Part Number	Type	Connector	Gain (dBi)	Note
Main	TAOGLAS.	PCUB77.A.07.A.001	PCB	I-PEX MFH4L	3.21	WCDMA Band II
						LTE Band 2
Aux	TAOGLAS.	PCUB77.A.07.A.001	PCB	I-PEX MFH4L	4.30	WCDMA Band II
						LTE Band 2

(4) The above Antenna information are derived from the antenna data sheet provided by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

2.2 TEST MODES

WCDMA BAND II MODE			
Test Item	Available Channel	Tested Channel	Mode
Conducted Output Power and Effective Isotropic Radiated Power	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA, HSUPA, HSPA+
Occupied Bandwidth	9262 to 9538	9262, 9400, 9538	WCDMA
Conducted Spurious Emissions	9262 to 9538	9400	WCDMA
Radiated Spurious Emissions	9262 to 9538	9400	WCDMA
Band Edge	9262 to 9538	9262, 9538	WCDMA
Peak to Average Ratio	9262 to 9538	9262, 9400, 9538	WCDMA
Frequency Stability	9262 to 9538	9400	WCDMA

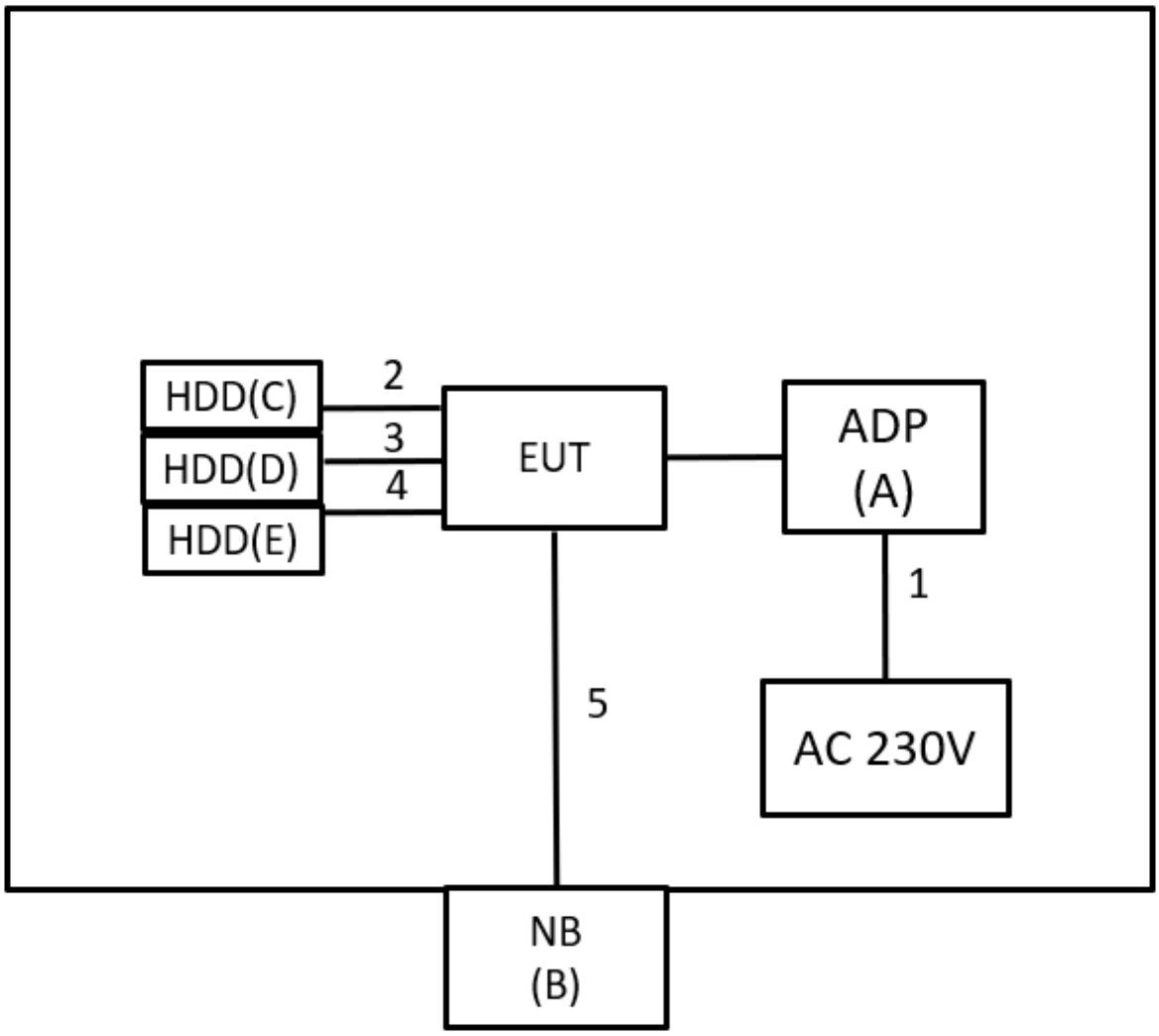
LTE BAND 2 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Conducted Output Power& Effective Isotropic Radiated Power	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	1RB/3RB/6RB
	18615 to 19185	18615 , 18900, 19185	3MHz	QPSK, 16QAM	1RB/8RB/15RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1RB/25RB/50RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1RB/36RB/75RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1RB/50RB/100RB
Occupied Bandwidth	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	6RB
	18615 to 19185	18615 , 18900, 19185	3MHz	QPSK, 16QAM	15RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	25RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	50RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	75 RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	100RB

LTE BAND 2 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Conducted Spurious Emissions	18607 to 19193	18900	1.4MHz	QPSK	1RB
	18615 to 19185	18900	3MHz	QPSK	1RB
	18625 to 19175	18900	5MHz	QPSK	1RB
	18650 to 19150	18900	10MHz	QPSK	1RB
	18675 to 19125	18900	15MHz	QPSK	1RB
	18700 to 19100	18900	20MHz	QPSK	1RB
Radiated Spurious Emissions	18607 to 19193	18900	1.4MHz	QPSK	1RB
	18615 to 19185	18900	3MHz	QPSK	1RB
	18625 to 19175	18900	5MHz	QPSK	1RB
	18650 to 19150	18900	10MHz	QPSK	1RB
	18675 to 19125	18900	15MHz	QPSK	1RB
	18700 to 19100	18900	20MHz	QPSK	1RB
Band Edge	18607 to 19193	18607, 19193	1.4MHz	QPSK	1RB/6RB
	18615 to 19185	18615, 19185	3MHz	QPSK	1RB/15RB
	18625 to 19175	18625, 19175	5MHz	QPSK	1RB/25RB
	18650 to 19150	18650, 19150	10MHz	QPSK	1RB/50RB
	18675 to 19125	18675, 19125	15MHz	QPSK	1RB/75RB
	18700 to 19100	18700, 19100	20MHz	QPSK	1RB/100RB
Peak To Average Ratio	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	1RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	1RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1RB
Frequency Stability	18607 to 19193	18900	1.4MHz	QPSK	1RB
	18615 to 19185	18900	3MHz	QPSK	1RB
	18625 to 19175	18900	5MHz	QPSK	1RB
	18650 to 19150	18900	10MHz	QPSK	1RB
	18675 to 19125	18900	15MHz	QPSK	1RB
	18700 to 19100	18900	20MHz	QPSK	1RB

NOTE:
(1) For Radiated Spurious Emissions both QPSK and 16QAM are evaluated, but only the worst case (QPSK) is recorded.

2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Equipment letters and Cable numbers refer to item numbers described in the tables of clause 2.4.



2.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	ADP	FSP GROUP	FSP180-AAAN3	N/A	Supplied by test requester.
B	NB	HP	TPN-C125	N/A	Furnished by test lab.
C	USB 2.5" HDD	AKITIO	Neutrino U3.1	SK21D1621D003F	Furnished by test lab.
D	USB 2.5" HDD	AKITIO	Neutrino U3.1	SK21D1621D003F	Furnished by test lab.
E	USB 3.0 HDD	WD	WDBC3C0010BSL-0B	WX81A88ALJUC	Furnished by test lab.

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	N/A	N/A	1m	Power Cable	Supplied by test requester.
2	N/A	N/A	0.6m	TypeC to TypeC Cable	Furnished by test lab.
3	N/A	N/A	1m	TypeC to TypeC Cable	Furnished by test lab.
4	N/A	N/A	0.3m	TypeC to TypeC Cable	Furnished by test lab.
5	N/A	N/A	12m	RJ45 Cable	Furnished by test lab.

3 CONDUCTED OUTPUT POWER AND EFFECTIVE ISOTROPIC RADIATED POWER MEASUREMENT

3.1 LIMIT

Mobile / Portable station are limited to 2 watts e.i.r.p.

NOTE:
(1) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value
Calculation example:

Reading Level (dBm)		Correct Factor (dB)		Measurement Value (dBm)
-29.66	+	34.26	=	4.60

Measurement Value (dBm)		Limit Value (dBm)		Margin Level (dB)
4.60	-	38.45	=	-33.85

3.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 5.

EIRP / ERP Power Measurement:
EIRP = Conducted Power + Antenna gain.
ERP power = EIPR power - 2.15 dBi.

Conducted Measurement:

The EUT was set up for the maximum power with 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.

Radiated Measurement:

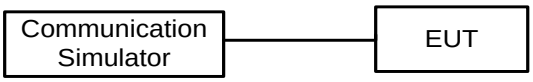
a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step a. Record the power level of S.G
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. ERP can be calculated form EIRP by subtracting the gain of dipole, ERP = EIPR - 2.15dBi..
e. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.3 DEVIATION FROM TEST STANDARD

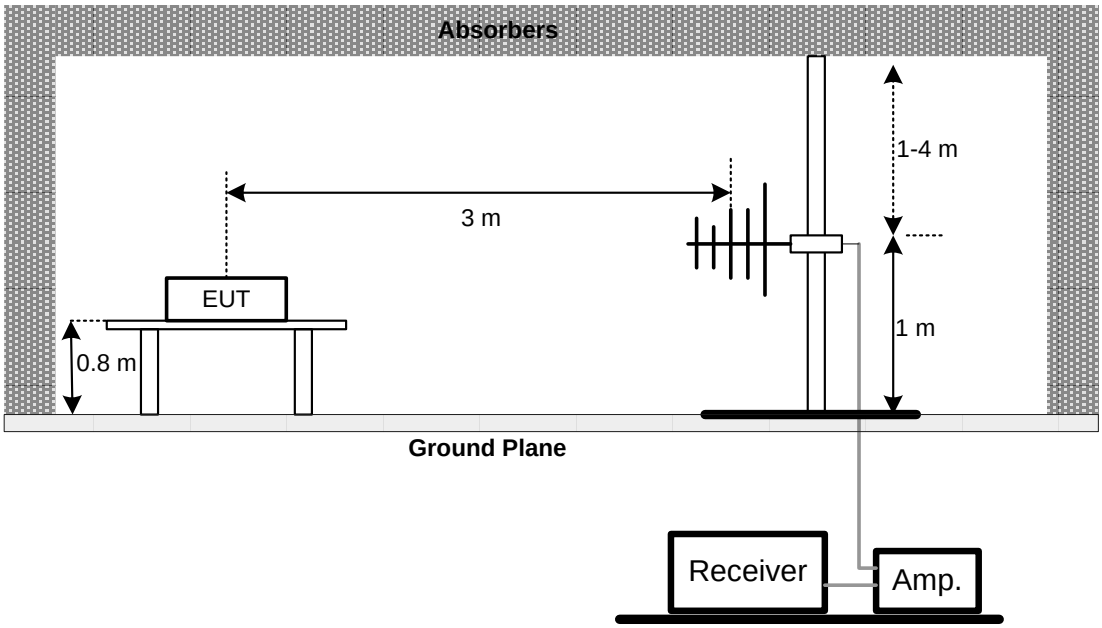
No deviation.

3.4 TEST SETUP

Conducted Measurement:



Radiated Measurement:



3.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

3.6 TEST RESULT

Please refer to the APPENDIX A.

4 OCCUPIED BANDWIDTH MEASUREMENT

4.1 TEST PROCEDURE

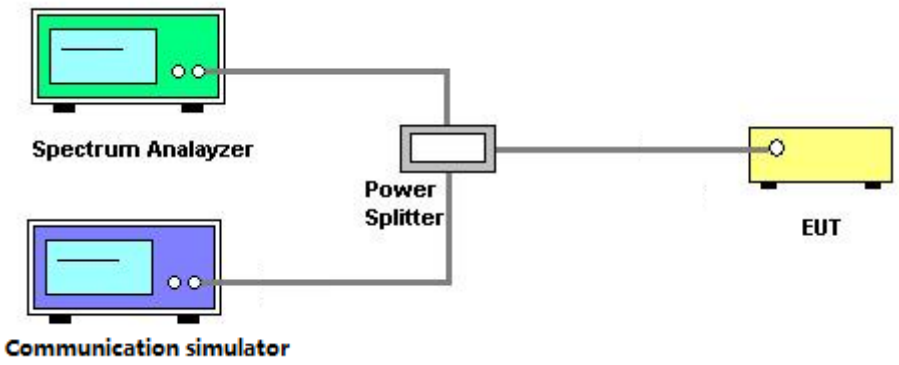
The testing follows FCC KDB 971168 v03r01 Section 4.

a. 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.
b. The EUT was connected to spectrum analyzer and system simulator via a power divider.
c. RBW=(1% ~ 5%)*EBW
   VBW≥3* RBW.
d. Set spectrum analyzer with Peak detector.

4.2 DEVIATION FROM TEST STANDARD

No deviation.

4.3 TEST SETUP



4.4 TEST RESULT

Please refer to the APPENDIX B

5 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

5.1 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.

5.2 TEST PROCEDURE

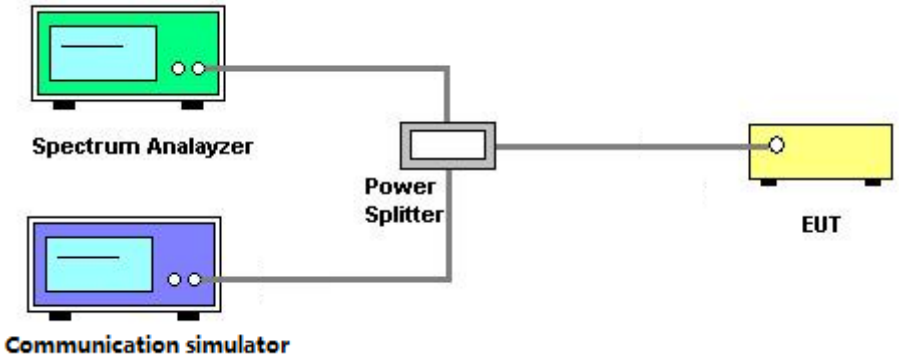
The testing follows FCC KDB 971168 v03r01 Section 6.

a. The EUT was connected to spectrum analyzer and system simulator via a power divider.
b. 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.
c. Set spectrum analyzer with Peak detector.
d. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

5.3 DEVIATION FROM TEST STANDARD

No deviation.

5.4 TEST SETUP



5.5 TEST RESULT

Please refer to the APPENDIX C.

6 RADIATED SPURIOUS EMISSIONS MEASUREMENT

6.1 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.

NOTE:
(1) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value
Calculation example:

Reading Level (dBm)		Correct Factor (dB)		Measurement Value (dBm)
-50.43	+	-2.11	=	-52.54

Measurement Value (dBm)		Limit Value (dBm)		Margin Level (dB)
-52.54	-	-13	=	-39.54

6.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 6.2.

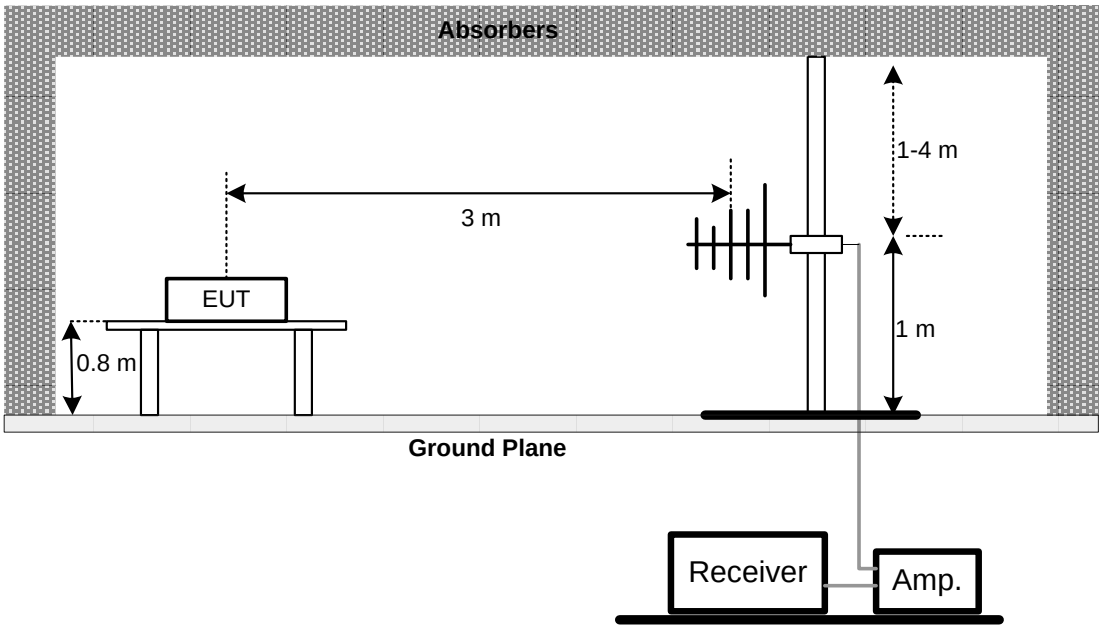
a. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step a. Record the power level of S.G
c. EIRP = Output power level of S.G - TX cable loss + Antenna gain of substitution horn.
d. ERP power can be calculated form EIRP power by subtracting the gain of dipole,
ERP power = EIRP power - 2.15 dBi.
e. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is1 MHz / 3 MHz.

6.3 DEVIATION FROM TEST STANDARD

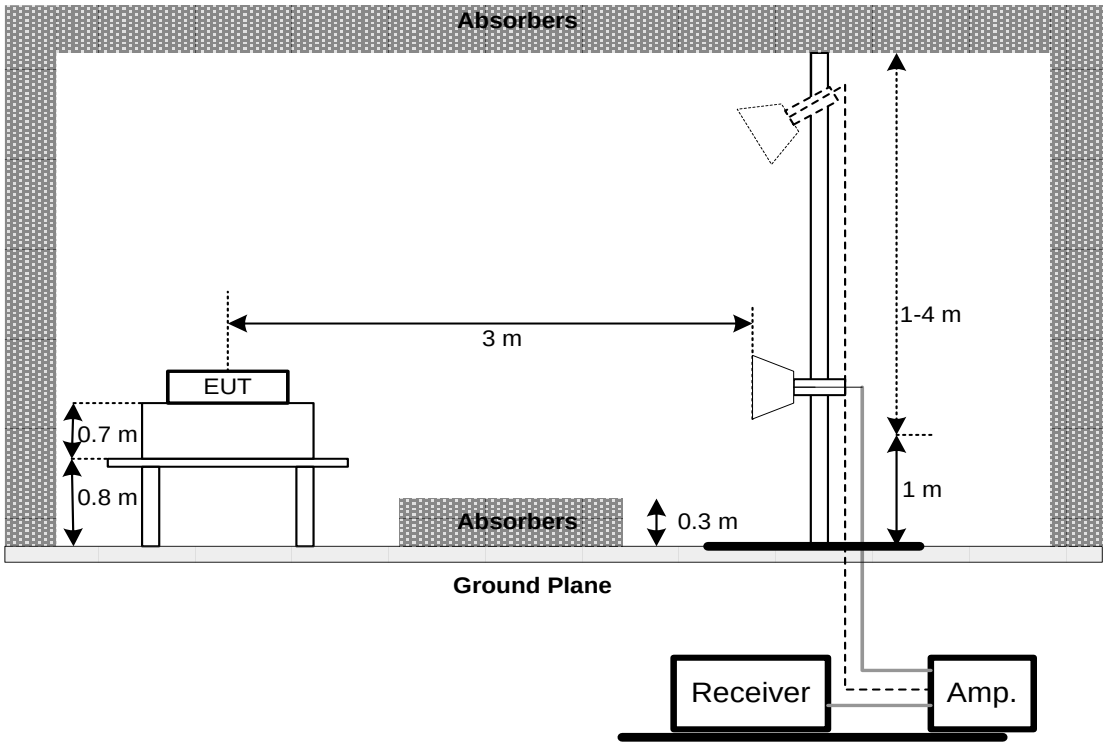
No deviation.

6.4 TEST SETUP

30 MHz to 1 GHz



Above 1 GHz



6.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.6 TEST RESULT

Please refer to the APPENDIX D.

7 BAND EDGE MEASUREMENT

7.1 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.

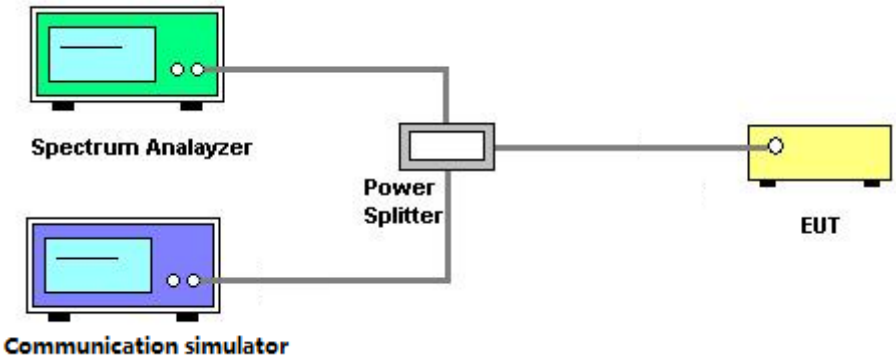
7.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 6.
a. All measurements were done at low and high operational frequency range.
b. Record the max trace plot into the test report.

7.3 DEVIATION FROM TEST STANDARD

No deviation.

7.4 TEST SETUP



7.5 TEST RESULT

Please refer to the APPENDIX E

8 PEAK TO AVERAGE RATIO MEASUREMENT

8.1 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.

8.2 TEST PROCEDURE

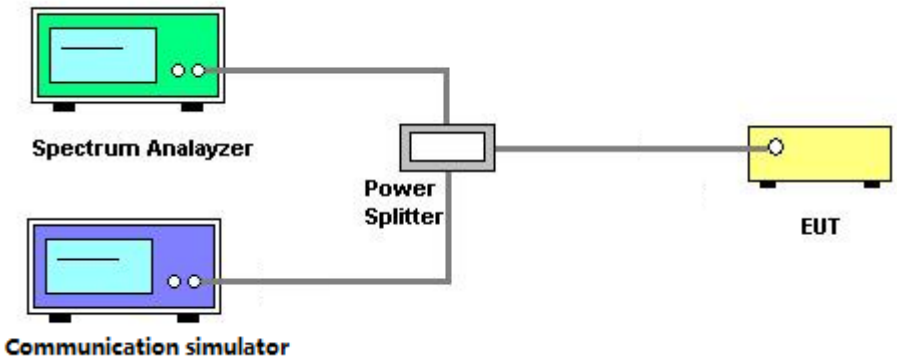
The testing follows FCC KDB 971168 v03r01 Section 5.7.

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

8.3 DEVIATION FROM TEST STANDARD

No deviation.

8.4 TEST SETUP



8.5 TEST RESULT

Please refer to the APPENDIX F.

9 FREQUENCY STABILITY MEASUREMENT

9.1 LIMIT

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

9.2 TEST PROCEDURE

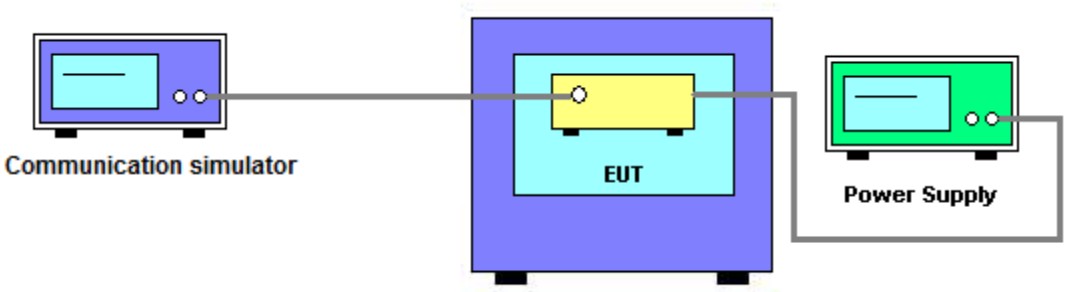
The testing follows FCC KDB 971168 v03r01 Section 9.

a. 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.
b. 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.
c. 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.
d. The frequency error was recorded frequency error from the communication simulator.

9.3 DEVIATION FROM TEST STANDARD

No deviation.

9.4 TEST SETUP



9.5 TEST RESULT

Please refer to the APPENDIX G

10 LIST OF MEASURING EQUIPMENTS

Conducted Output Power						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Spectrum Analyzer	Keysight	N9010A	MY56480489	2022/10/19	2023/10/18
2	WIRELESS COMMUNICATIO N TEST SET	Agilent	E5515C	GB47390193	2023/7/4	2024/7/3
3	Radio Communication Test Station	ANRITSU	MT8821C	6262044728	2022/11/25	2023/11/24

Effective Isotropic Radiated Power and Radiated Emissions						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Preamplifier	EMCI	EMC330N	980850	2022/9/19	2023/9/18
2	Preamplifier	EMCI	EMC118A45SE	980819	2023/3/7	2024/3/6
3	Pre-Amplifier	EMCI	EMC184045SE	980907	2022/9/28	2023/9/27
4	Test Cable	EMCI	EMC104-SM-SM-1000	220319	2023/3/14	2024/3/13
5	Test Cable	EMCI	EMC104-SM-SM-3000	220322	2023/3/14	2024/3/13
6	Test Cable	EMCI	EMC104-SM-SM-7000	220324	2023/3/14	2024/3/13
7	EXA Signal Analyzer	keysight	N9020B	MY57120120	2023/2/24	2024/2/23
8	Horn Antenna	RFSPIN	DRH18-E	211202A18EN	2022/5/18	2023/5/17
9	Horn Ant	Schwarzbeck	BBHA 9170D	1136	2022/5/18	2023/5/17
10	Log-bicon Antenna	Schwarzbeck	VULB9168	1369	2022/5/20	2023/5/19
11	6dB Attenuator	EMCI	EMCI-N-6-06	AT-06001	2022/5/20	2023/5/19
12	Test Cable	EMCI	EMC101G-KM-K M-3000	220329	2023/3/14	2024/3/13
13	Test Cable	EMCI	EMC102-KM-KM-1000	220327	2023/3/14	2024/3/13
14	WIRELESS COMMUNICATIO N TEST SET	Agilent	E5515C	GB47390193	2022/7/7	2023/7/6
15	Radio Communication Analyzer	ANRITSU	MT8820C	6201381608	2022/12/22	2023/12/21
16	Radio Communication Test Station	ANRITSU	MT8821C	6262044728	2022/11/25	2023/11/24
17	Radio Communication Analyzer	ANRITSU	MT8000A	6262036844	2022/11/24	2023/11/23
18	Wideband Radio Communication Tester	R&S	CMW500	154121	2023/1/12	2024/1/11
19	Radio Communication Analyzer	Keysight	E7515B	MY59020217	2022/7/8	2023/7/7
20	Measurement Software	EZ	EZ_EMC (Version NB-03A1-01)	N/A	N/A	N/A

Others Conducted Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Spectrum Analyzer	R&S	FSV7	103032	2023/8/10	2024/8/9
2	Spectrum Analyzer	Keysight	N9010A	MY54200240	2023/6/26	2024/6/25
3	Spectrum Analyzer	Keysight	N9010A	MY56480489	2022/10/19	2023/10/18
4	Thermal Chamber	HOLINK	H-TH-2SP-B	EK04101902	2023/7/3	2024/7/2
5	WIRELESS COMMUNICATIO N TEST SET	Agilent	E5515C	GB47390193	2023/7/4	2024/7/3
6	Radio Communication Analyzer	ANRITSU	MT8820C	6201381608	2022/12/22	2023/12/21
7	Radio Communication Test Station	ANRITSU	MT8821C	6262044728	2022/11/25	2023/11/24

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

11 EUT TEST PHOTO

Please refer to document Appendix No.: TP-2212T004-FCCP-1 (APPENDIX-TEST PHOTOS).

12 EUT PHOTOS

Please refer to document Appendix No.: EP-2212T004-1 (APPENDIX-EUT PHOTOS).

APPENDIX A EFFECTIVE ISOTROPIC RADIATED POWER

Conducted Output Power and Calculated EIRP:

WCDMA Band II Power:

Band	Mode	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)	EIRP power (dBm)	EIRP power (W)
WCDMA Band II	Rel 99	9262/9662	1852.4	22.79	26.00	0.398
		9400/9800	1880.0	23.84	27.05	0.507
		9538/9938	1907.6	23.78	26.99	0.500

Band	Sub-test	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)	EIRP power (dBm)	EIRP power (W)
HSDPA II	1	9262/9662	1852.4	23.91	27.12	0.515
		9400/9800	1880.0	23.96	27.17	0.521
		9538/9938	1907.6	23.91	27.12	0.515
	2	9262/9662	1852.4	23.41	26.62	0.459
		9400/9800	1880.0	23.48	26.69	0.467
		9538/9938	1907.6	23.41	26.62	0.459
	3	9262/9662	1852.4	22.92	26.13	0.410
		9400/9800	1880.0	22.99	26.20	0.417
		9538/9938	1907.6	22.96	26.17	0.414
	4	9262/9662	1852.4	22.96	26.17	0.414
		9400/9800	1880.0	23.03	26.24	0.421
		9538/9938	1907.6	22.93	26.14	0.411

Band	Sub-test	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)	EIRP power (dBm)	EIRP power (W)
HSUPA II	1	9262/9662	1852.4	23.86	27.07	0.509
		9400/9800	1880.0	23.88	27.09	0.512
		9538/9938	1907.6	23.87	27.08	0.511
	2	9262/9662	1852.4	21.88	25.09	0.323
		9400/9800	1880.0	21.93	25.14	0.327
		9538/9938	1907.6	21.88	25.09	0.323
	3	9262/9662	1852.4	22.91	26.12	0.409
		9400/9800	1880.0	22.92	26.13	0.410
		9538/9938	1907.6	22.88	26.09	0.406
	4	9262/9662	1852.4	21.91	25.12	0.325
		9400/9800	1880.0	21.89	25.10	0.324
		9538/9938	1907.6	21.90	25.11	0.324
	5	9262/9662	1852.4	23.81	27.02	0.504
		9400/9800	1880.0	23.81	27.02	0.504
		9538/9938	1907.6	23.78	26.99	0.500

NOTE:
(1) EIRP = Average power + Antenna gain.
(2) ERP = EIRP - 2.15.
(3) $P(W) = 1\ W \cdot 10^{(P(dBm)/10)} / 1000$

LTE Band 2 Power:

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	**EIRP** power (dBm)	**EIRP** power (W)
2	1.4	18607	1850.7	QPSK	1	0	0	22.84	26.05	0.403
					1	2	0	22.84	26.05	0.403
					1	5	0	22.84	26.05	0.403
					3	0	0	22.85	26.06	0.404
					3	1	0	22.90	26.11	0.408
					3	2	0	22.88	26.09	0.406
					6	0	1	21.95	25.16	0.328
				16QAM	1	0	1	21.93	25.14	0.327
					1	2	1	21.94	25.15	0.327
					1	5	1	21.95	25.16	0.328
					3	0	1	21.79	25.00	0.316
					3	1	1	21.80	25.01	0.317
					3	2	1	21.80	25.01	0.317
					6	0	2	20.87	24.08	0.256
		18900	1880.0	QPSK	1	0	0	23.12	26.33	0.430
					1	2	0	23.19	26.40	0.437
					1	5	0	23.11	26.32	0.429
					3	0	0	23.13	26.34	0.431
					3	1	0	23.25	26.46	0.443
					3	2	0	23.15	26.36	0.433
					6	0	1	22.30	25.51	0.356
				16QAM	1	0	1	22.21	25.42	0.348
					1	2	1	22.29	25.50	0.355
					1	5	1	22.22	25.43	0.349
					3	0	1	22.28	25.49	0.354
					3	1	1	22.36	25.57	0.361
					3	2	1	22.21	25.42	0.348
					6	0	2	21.33	24.54	0.284
		19193	1909.3	QPSK	1	0	0	23.66	26.87	0.486
					1	2	0	23.71	26.92	0.492
					1	5	0	23.57	26.78	0.476
					3	0	0	23.67	26.88	0.488
					3	1	0	23.77	26.98	0.499
					3	2	0	23.61	26.82	0.481
					6	0	1	22.77	25.98	0.396
				16QAM	1	0	1	22.75	25.96	0.394
					1	2	1	22.81	26.02	0.400
					1	5	1	22.68	25.89	0.388
					3	0	1	22.52	25.73	0.374
					3	1	1	22.72	25.93	0.392
					3	2	1	22.67	25.88	0.387
					6	0	2	21.74	24.95	0.313

NOTE:
(1) EIRP = Average power + Antenna gain.
(2) ERP = EIRP - 2.15.
(3) $P(W) = 1\ W \cdot 10^{(P(dBm)\ /\ 10)} / 1000$

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	EIRP power (dBm)	EIRP power (W)
2	3	18615	1851.5	QPSK	1	0	0	22.89	26.10	0.407
					1	7	0	22.89	26.10	0.407
					1	14	0	22.89	26.10	0.407
					8	0	1	22.00	25.21	0.332
					8	4	1	22.05	25.26	0.336
					8	7	1	22.03	25.24	0.334
					15	0	1	22.00	25.21	0.332
				16QAM	1	0	1	21.98	25.19	0.330
					1	7	1	21.99	25.20	0.331
					1	14	1	22.00	25.21	0.332
					8	0	2	20.94	24.15	0.260
					8	4	2	21.00	24.21	0.264
					8	7	2	20.95	24.16	0.261
					15	0	2	20.92	24.13	0.259
		18900	1880.0	QPSK	1	0	0	23.17	26.38	0.435
					1	7	0	23.24	26.45	0.442
					1	14	0	23.16	26.37	0.434
					8	0	1	22.28	25.49	0.354
					8	4	1	22.40	25.61	0.364
					8	7	1	22.30	25.51	0.356
					15	0	1	22.35	25.56	0.360
				16QAM	1	0	1	22.26	25.47	0.352
					1	7	1	22.34	25.55	0.359
					1	14	1	22.27	25.48	0.353
					8	0	2	21.43	24.64	0.291
					8	4	2	21.51	24.72	0.296
					8	7	2	21.36	24.57	0.286
					15	0	2	21.38	24.59	0.288
		19185	1908.5	QPSK	1	0	0	23.71	26.92	0.492
					1	7	0	23.76	26.97	0.498
					1	14	0	23.62	26.83	0.482
					8	0	1	22.82	26.03	0.401
					8	4	1	22.92	26.13	0.410
					8	7	1	22.76	25.97	0.395
					15	0	1	22.82	26.03	0.401
				16QAM	1	0	1	22.80	26.01	0.399
					1	7	1	22.86	26.07	0.405
					1	14	1	22.73	25.94	0.393
					8	0	2	21.67	24.88	0.308
					8	4	2	21.87	25.08	0.322
					8	7	2	21.82	25.03	0.318
					15	0	2	21.79	25.00	0.316

NOTE:
(1) EIRP = Average power + Antenna gain.
(2) ERP = EIRP - 2.15.
(3) $P(W) = 1\ W \cdot 10^{(P(dBm)\ /\ 10)} / 1000$

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	EIRP power (dBm)	EIRP power (W)
2	5	18625	1852.5	QPSK	1	0	0	22.94	26.15	0.412
					1	12	0	22.94	26.15	0.412
					1	24	0	22.94	26.15	0.412
					12	0	1	22.05	25.26	0.336
					12	6	1	22.10	25.31	0.340
					12	11	1	22.08	25.29	0.338
					25	0	1	22.05	25.26	0.336
				16QAM	1	0	1	22.03	25.24	0.334
					1	12	1	22.04	25.25	0.335
					1	24	1	22.05	25.26	0.336
					12	0	2	20.99	24.20	0.263
					12	6	2	21.05	24.26	0.267
					12	11	2	21.00	24.21	0.264
					25	0	2	20.97	24.18	0.262
		18900	1880.0	QPSK	1	0	0	23.22	26.43	0.440
					1	12	0	23.29	26.50	0.447
					1	24	0	23.21	26.42	0.439
					12	0	1	22.33	25.54	0.358
					12	6	1	22.45	25.66	0.368
					12	11	1	22.35	25.56	0.360
					25	0	1	22.40	25.61	0.364
				16QAM	1	0	1	22.31	25.52	0.356
					1	12	1	22.39	25.60	0.363
					1	24	1	22.32	25.53	0.357
					12	0	2	21.48	24.69	0.294
					12	6	2	21.56	24.77	0.300
					12	11	2	21.41	24.62	0.290
					25	0	2	21.43	24.64	0.291
		19175	1907.5	QPSK	1	0	0	23.76	26.97	0.498
					1	12	0	23.81	27.02	0.504
					1	24	0	23.67	26.88	0.488
					12	0	1	22.87	26.08	0.406
					12	6	1	22.97	26.18	0.415
					12	11	1	22.81	26.02	0.400
					25	0	1	22.87	26.08	0.406
				16QAM	1	0	1	22.85	26.06	0.404
					1	12	1	22.91	26.12	0.409
					1	24	1	22.78	25.99	0.397
					12	0	2	21.72	24.93	0.311
					12	6	2	21.92	25.13	0.326
					12	11	2	21.87	25.08	0.322
					25	0	2	21.84	25.05	0.320

NOTE:
(1) EIRP = Average power + Antenna gain.
(2) ERP = EIRP - 2.15.
(3) $P(W) = 1\ W \cdot 10^{(P(dBm)\ /\ 10)} / 1000$

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	EIRP power (dBm)	EIRP power (W)
2	10	18650	1855.0	QPSK	1	0	0	22.99	26.20	0.417
					1	24	0	22.99	26.20	0.417
					1	49	0	22.99	26.20	0.417
					25	0	1	22.10	25.31	0.340
					25	12	1	22.15	25.36	0.344
					25	24	1	22.13	25.34	0.342
					50	0	1	22.10	25.31	0.340
				16QAM	1	0	1	22.08	25.29	0.338
					1	24	1	22.09	25.30	0.339
					1	49	1	22.10	25.31	0.340
					25	0	2	21.04	24.25	0.266
					25	12	2	21.10	24.31	0.270
					25	24	2	21.05	24.26	0.267
					50	0	2	21.02	24.23	0.265
		18900	1880.0	QPSK	1	0	0	23.27	26.48	0.445
					1	24	0	23.34	26.55	0.452
					1	49	0	23.26	26.47	0.444
					25	0	1	22.38	25.59	0.362
					25	12	1	22.50	25.71	0.372
					25	24	1	22.40	25.61	0.364
					50	0	1	22.45	25.66	0.368
				16QAM	1	0	1	22.36	25.57	0.361
					1	24	1	22.44	25.65	0.367
					1	49	1	22.37	25.58	0.361
					25	0	2	21.53	24.74	0.298
					25	12	2	21.61	24.82	0.303
					25	24	2	21.46	24.67	0.293
					50	0	2	21.48	24.69	0.294
		19150	1905.0	QPSK	1	0	0	23.81	27.02	0.504
					1	24	0	23.86	27.07	0.509
					1	49	0	23.72	26.93	0.493
					25	0	1	22.92	26.13	0.410
					25	12	1	23.02	26.23	0.420
					25	24	1	22.86	26.07	0.405
					50	0	1	22.92	26.13	0.410
				16QAM	1	0	1	22.90	26.11	0.408
					1	24	1	22.96	26.17	0.414
					1	49	1	22.83	26.04	0.402
					25	0	2	21.77	24.98	0.315
					25	12	2	21.97	25.18	0.330
					25	24	2	21.92	25.13	0.326
					50	0	2	21.89	25.10	0.324

NOTE:
(1) EIRP = Average power + Antenna gain.
(2) ERP = EIRP - 2.15.
(3) $P(W) = 1\ W \cdot 10^{(P(dBm)\ /\ 10)} / 1000$

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	EIRP power (dBm)	EIRP power (W)
2	15	18675	1857.5	QPSK	1	0	0	23.04	26.25	0.422
					1	37	0	23.04	26.25	0.422
					1	74	0	23.04	26.25	0.422
					36	0	1	22.15	25.36	0.344
					36	18	1	22.20	25.41	0.348
					36	35	1	22.18	25.39	0.346
					75	0	1	22.15	25.36	0.344
				16QAM	1	0	1	22.13	25.34	0.342
					1	37	1	22.14	25.35	0.343
					1	74	1	22.15	25.36	0.344
					36	0	2	21.09	24.30	0.269
					36	18	2	21.15	24.36	0.273
					36	35	2	21.10	24.31	0.270
					75	0	2	21.07	24.28	0.268
		18900	1880.0	QPSK	1	0	0	23.32	26.53	0.450
					1	37	0	23.39	26.60	0.457
					1	74	0	23.31	26.52	0.449
					36	0	1	22.43	25.64	0.366
					36	18	1	22.55	25.76	0.377
					36	35	1	22.45	25.66	0.368
					75	0	1	22.50	25.71	0.372
				16QAM	1	0	1	22.41	25.62	0.365
					1	37	1	22.49	25.70	0.372
					1	74	1	22.42	25.63	0.366
					36	0	2	21.58	24.79	0.301
					36	18	2	21.66	24.87	0.307
					36	35	2	21.51	24.72	0.296
					75	0	2	21.53	24.74	0.298
		19125	1902.5	QPSK	1	0	0	23.86	27.07	0.509
					1	37	0	23.91	27.12	0.515
					1	74	0	23.77	26.98	0.499
					36	0	1	22.97	26.18	0.415
					36	18	1	23.07	26.28	0.425
					36	35	1	22.91	26.12	0.409
					75	0	1	22.97	26.18	0.415
				16QAM	1	0	1	22.95	26.16	0.413
					1	37	1	23.01	26.22	0.419
					1	74	1	22.88	26.09	0.406
					36	0	2	21.82	25.03	0.318
					36	18	2	22.02	25.23	0.333
					36	35	2	21.97	25.18	0.330
					75	0	2	21.94	25.15	0.327

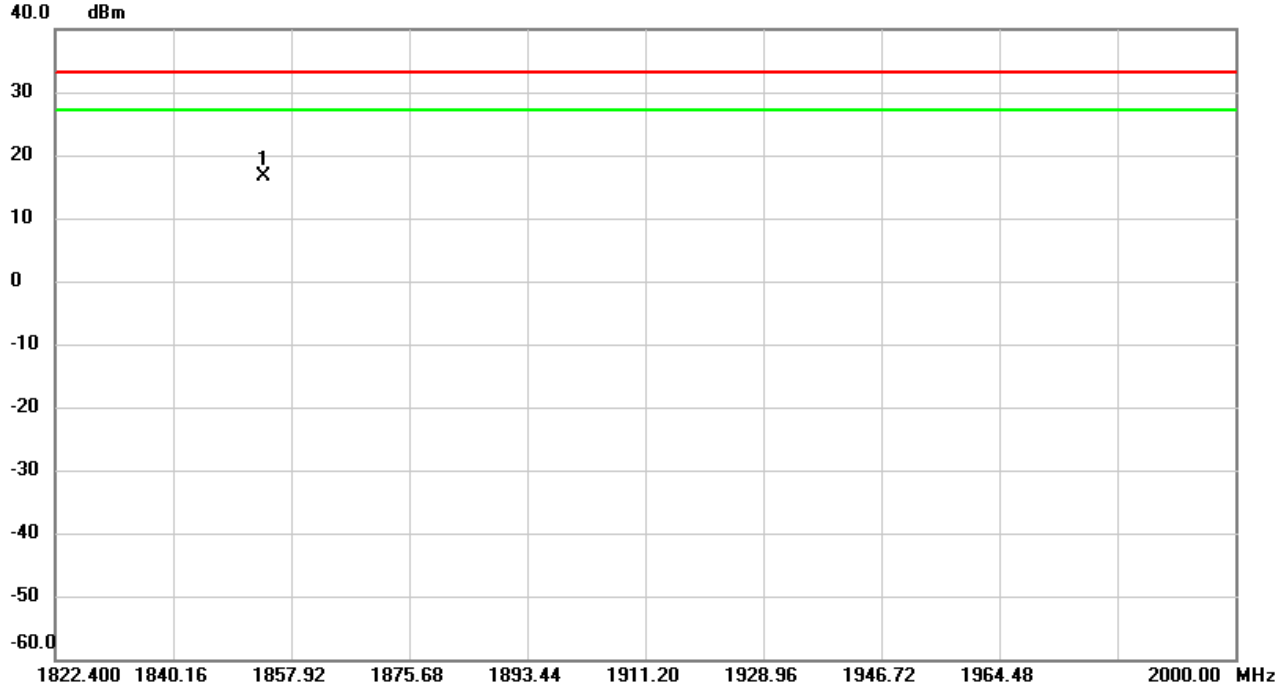
NOTE:
(1) EIRP = Average power + Antenna gain.
(2) ERP = EIRP - 2.15.
(3) $P(W) = 1\ W \cdot 10^{(P(dBm)\ /\ 10)} / 1000$

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	EIRP power (dBm)	EIRP power (W)
2	20	18700	1860.0	QPSK	1	0	0	**23.09**	26.30	0.427
					1	49	0	**23.09**	26.30	0.427
					1	99	0	**23.09**	26.30	0.427
					50	0	1	22.20	25.41	0.348
					50	24	1	22.25	25.46	0.352
					50	49	1	22.23	25.44	0.350
					100	0	1	22.20	25.41	0.348
				16QAM	1	0	1	22.18	25.39	0.346
					1	49	1	22.19	25.40	0.347
					1	99	1	22.20	25.41	0.348
					50	0	2	21.14	24.35	0.272
					50	24	2	21.20	24.41	0.276
					50	49	2	21.15	24.36	0.273
					100	0	2	21.12	24.33	0.271
		18900	1880.0	QPSK	1	0	0	**23.37**	26.58	0.455
					1	49	0	**23.44**	26.65	0.462
					1	99	0	**23.36**	26.57	0.454
					50	0	1	22.48	25.69	0.371
					50	24	1	22.60	25.81	0.381
					50	49	1	22.50	25.71	0.372
					100	0	1	22.55	25.76	0.377
				16QAM	1	0	1	22.46	25.67	0.369
					1	49	1	22.54	25.75	0.376
					1	99	1	22.47	25.68	0.370
					50	0	2	21.63	24.84	0.305
					50	24	2	21.71	24.92	0.310
					50	49	2	21.56	24.77	0.300
					100	0	2	21.58	24.79	0.301
		19100	1900.0	QPSK	1	0	0	**23.91**	27.12	0.515
					1	49	0	**23.96**	27.17	0.521
					1	99	0	**23.82**	27.03	0.505
					50	0	1	23.02	26.23	0.420
					50	24	1	23.12	26.33	0.430
					50	49	1	22.96	26.17	0.414
					100	0	1	23.02	26.23	0.420
				16QAM	1	0	1	23.00	26.21	0.418
					1	49	1	23.06	26.27	0.424
					1	99	1	22.93	26.14	0.411
					50	0	2	21.87	25.08	0.322
					50	24	2	22.07	25.28	0.337
					50	49	2	22.02	25.23	0.333
					100	0	2	21.99	25.20	0.331

NOTE:
(1) EIRP = Average power + Antenna gain.
(2) ERP = EIRP - 2.15.
(3) $P(W) = 1\ W \cdot 10^{(P(dBm)\ /\ 10)} / 1000$

Radiated ERIP Power:

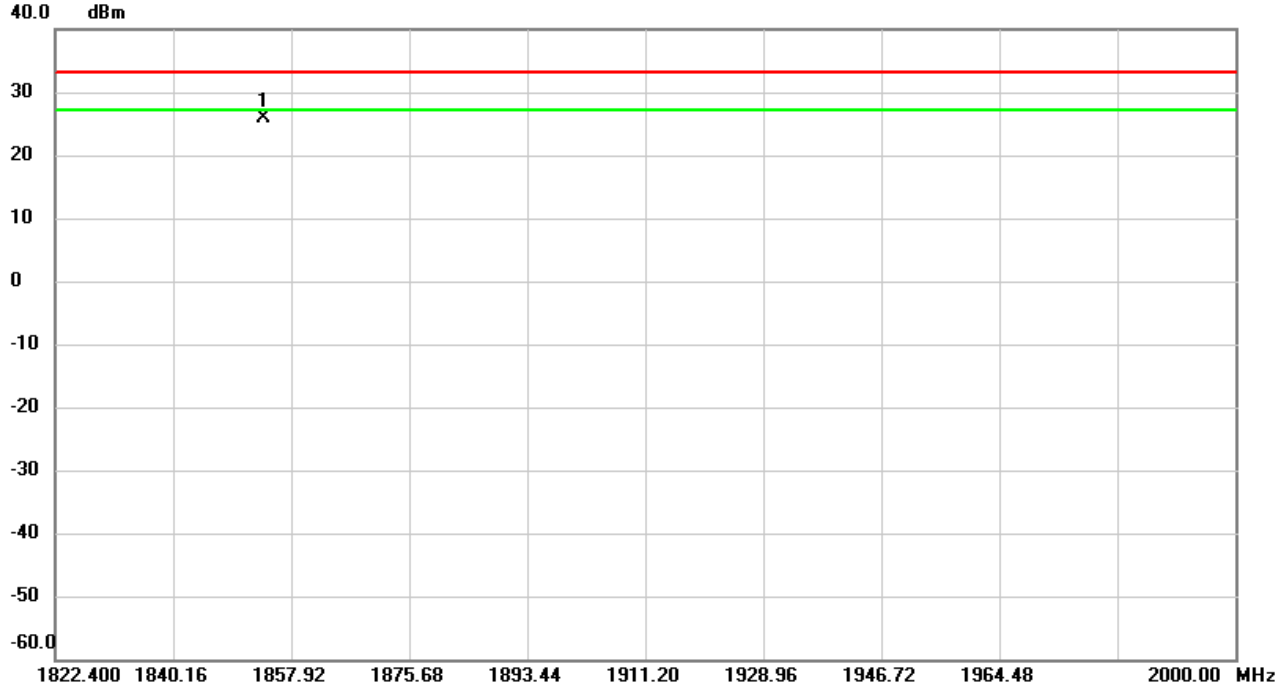
Test Mode	WCDMA Band II	Test Date	2023/3/30
Test Channel	CH9262	Polarization	Vertical
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1853.740	12.46	4.19	16.65	33.01	-16.36	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

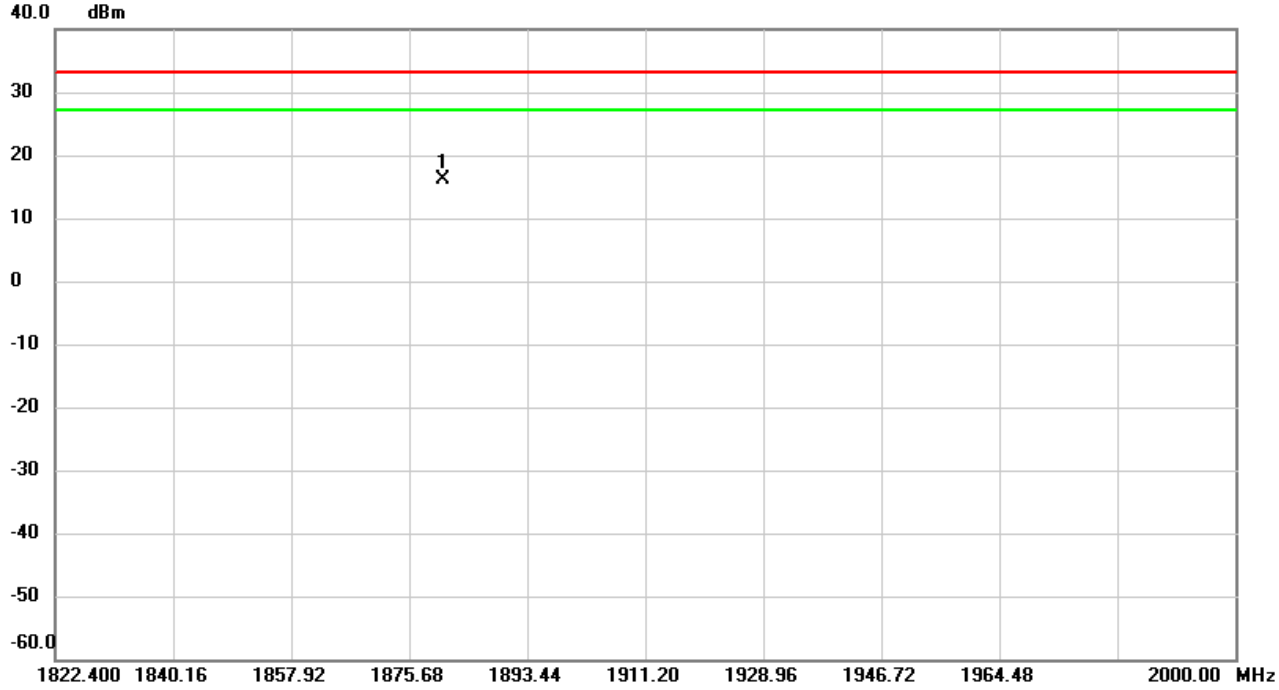
Test Mode	WCDMA Band II	Test Date	2023/3/30
Test Channel	CH9262	Polarization	Horizontal
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1853.735	21.69	4.19	25.88	33.01	-7.13	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

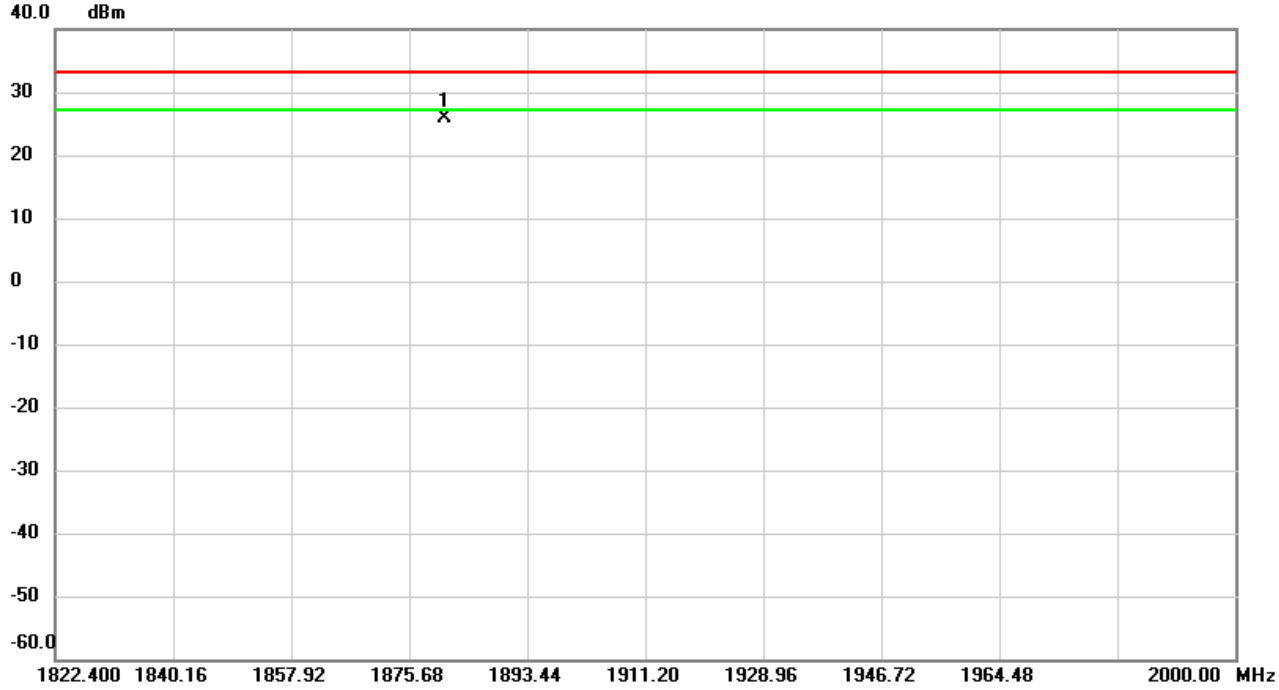
Test Mode	WCDMA Band II	Test Date	2023/3/30
Test Channel	CH9400	Polarization	Vertical
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1880.854	11.63	4.53	16.16	33.01	-16.85	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

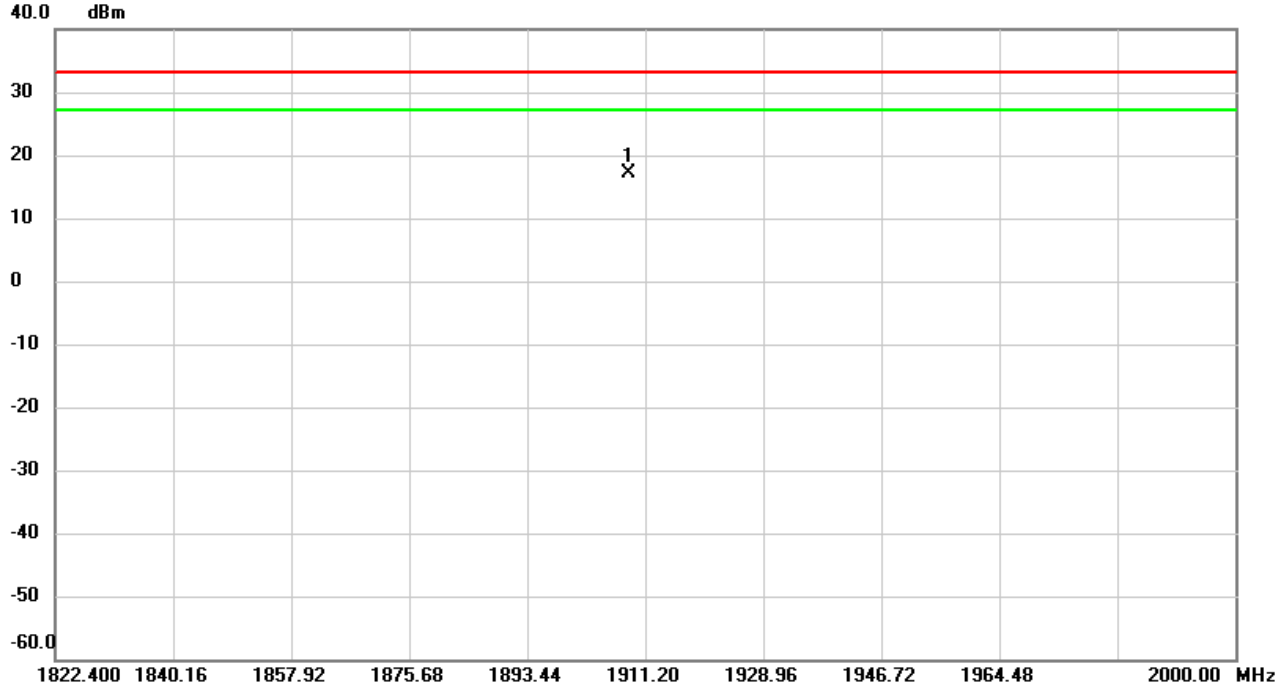
Test Mode	WCDMA Band II	Test Date	2023/3/30
Test Channel	CH9400	Polarization	Horizontal
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1880.901	21.50	4.44	25.94	33.01	-7.07	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

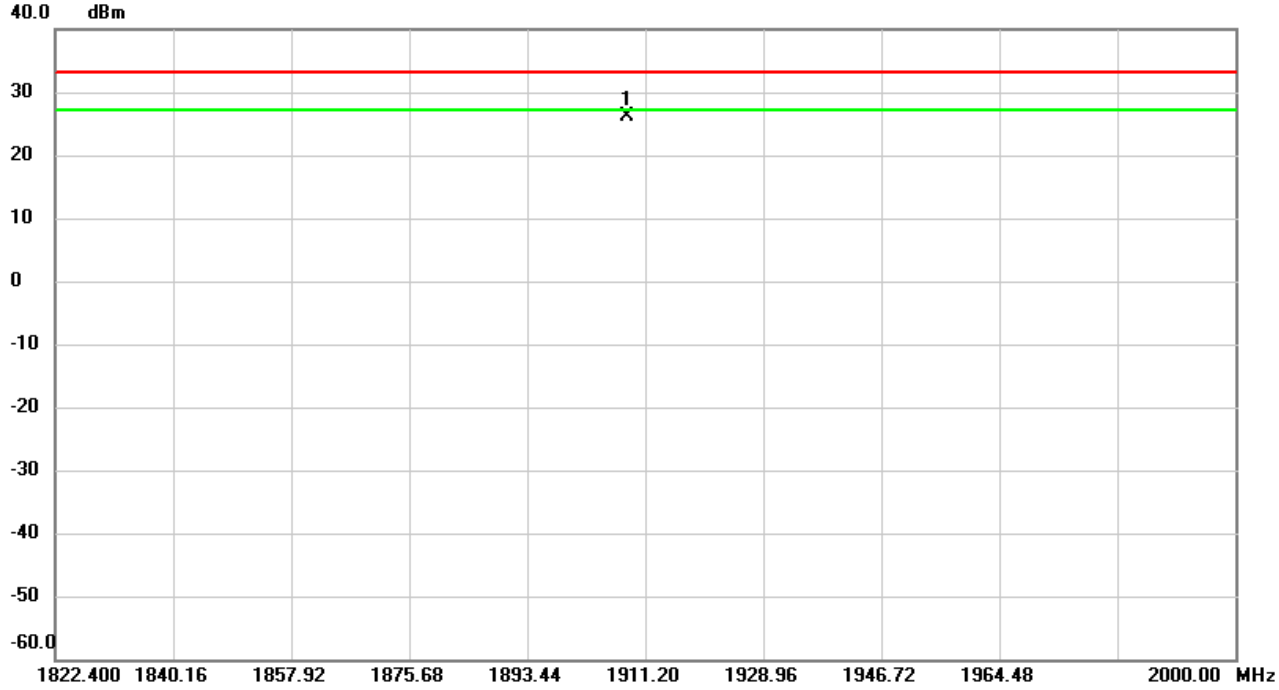
Test Mode	WCDMA Band II	Test Date	2023/3/30
Test Channel	CH9538	Polarization	Vertical
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1908.820	12.27	4.84	17.11	33.01	-15.90	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

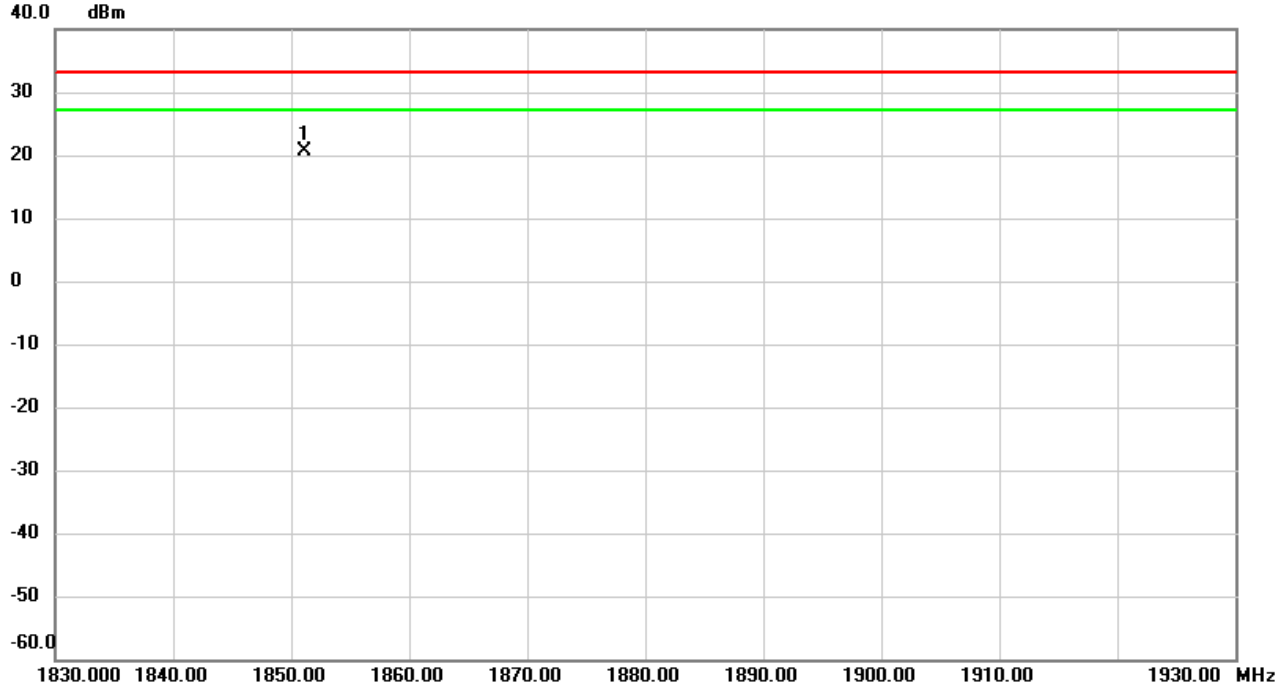
Test Mode	WCDMA Band II	Test Date	2023/3/30
Test Channel	CH9538	Polarization	Horizontal
Temp	25°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1908.500	21.34	4.71	26.05	33.01	-6.96	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

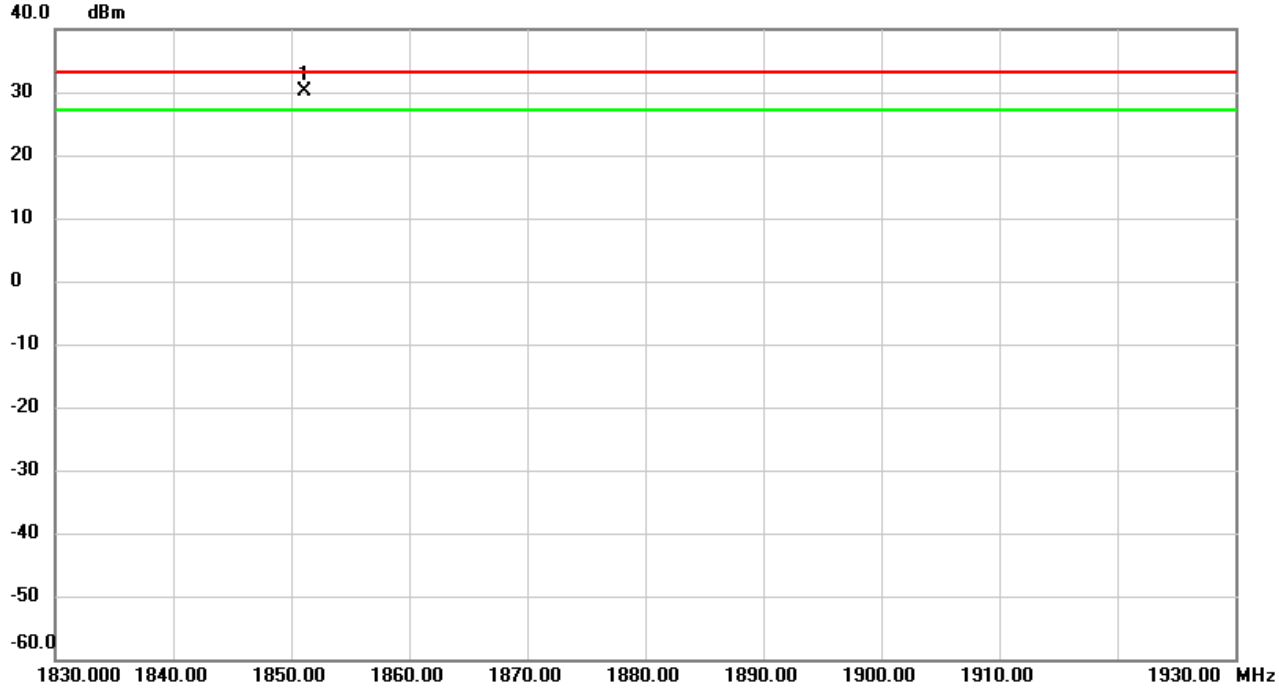
Test Mode	LTE Band 2	Test Date	2023/3/25
Test Channel	CH18700	Polarization	Vertical
Temp	24°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1851.070	16.51	4.15	20.66	33.01	-12.35	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

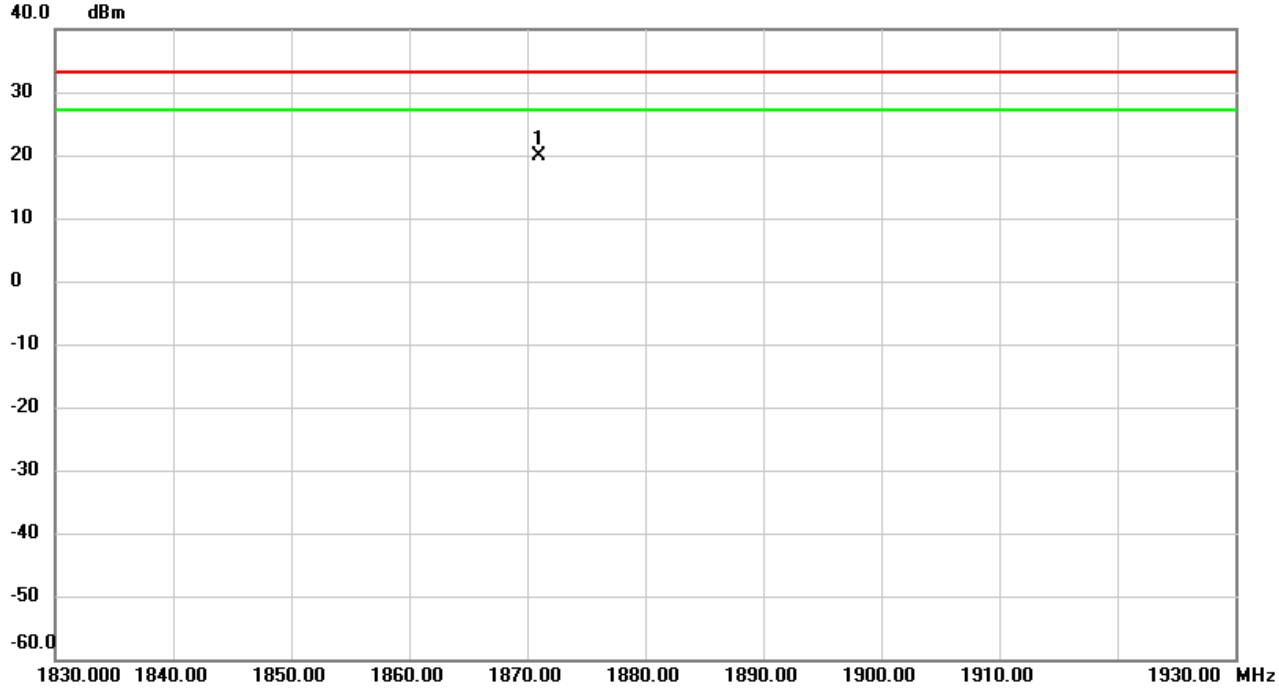
Test Mode	LTE Band 2	Test Date	2023/3/25
Test Channel	CH18700	Polarization	Horizontal
Temp	24°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1851.180	26.09	4.16	30.25	33.01	-2.76	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

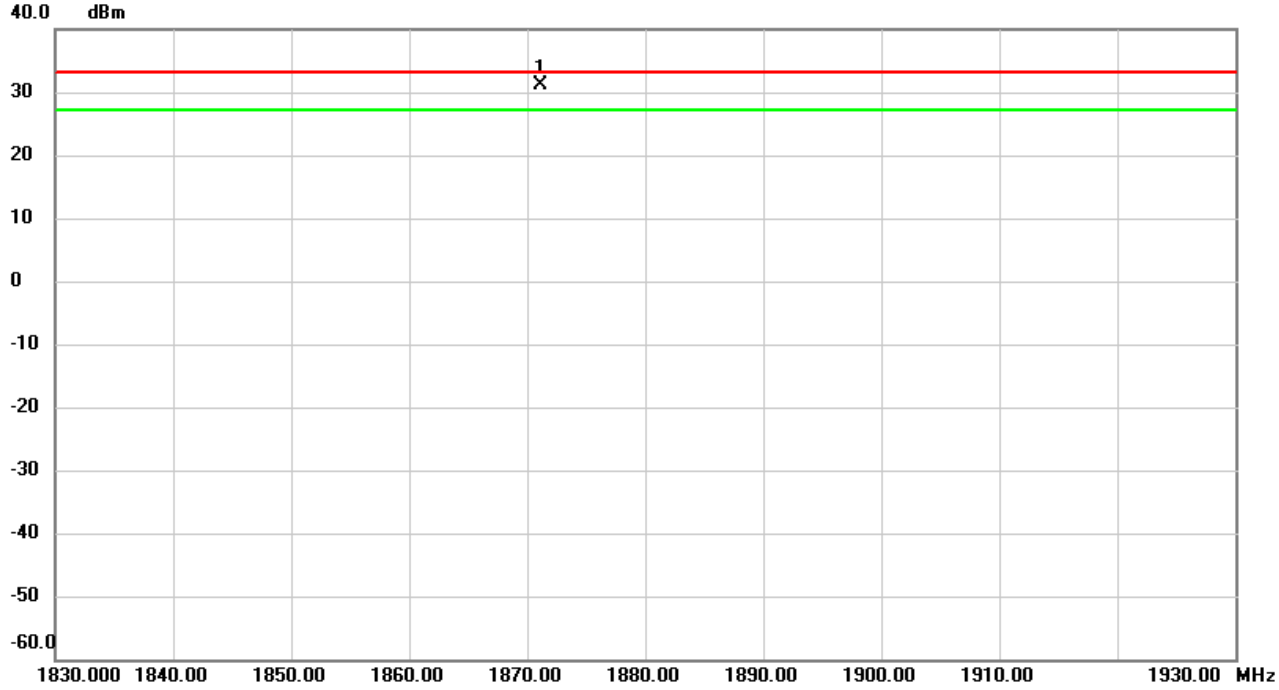
Test Mode	LTE Band 2	Test Date	2023/3/25
Test Channel	CH18900	Polarization	Vertical
Temp	24°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1871.037	15.50	4.41	19.91	33.01	-13.10	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

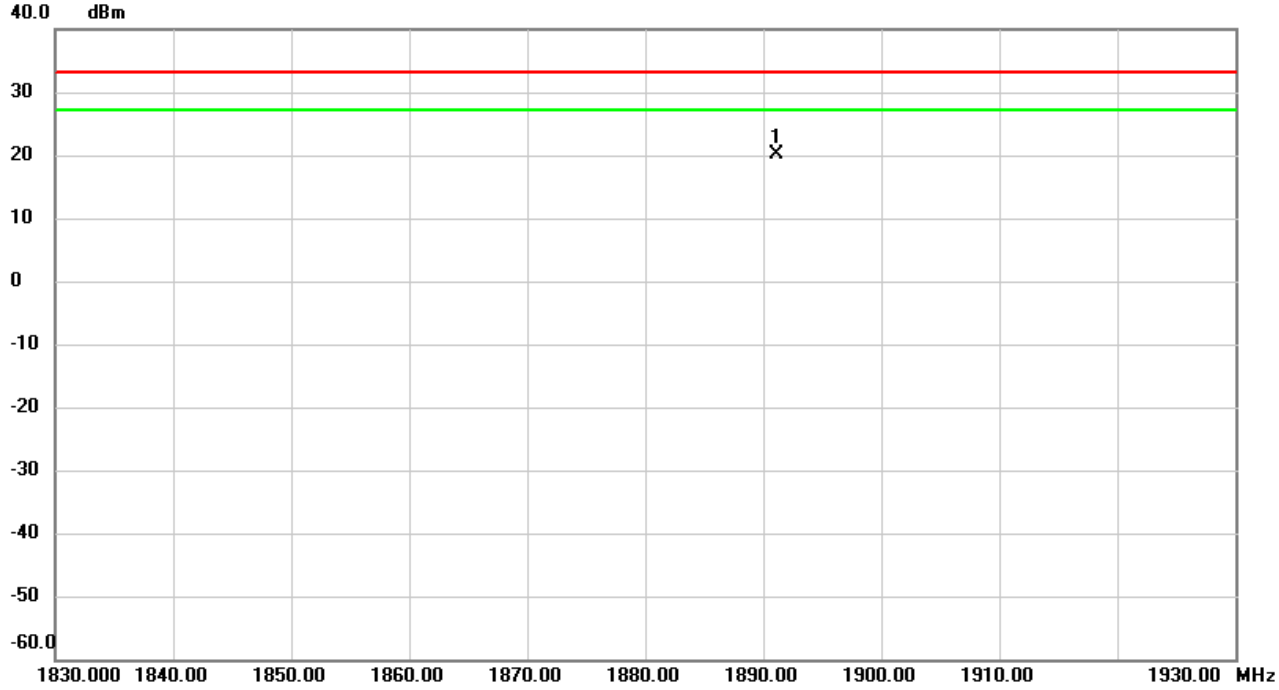
Test Mode	LTE Band 2	Test Date	2023/3/25
Test Channel	CH18900	Polarization	Horizontal
Temp	24°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1871.103	26.82	4.35	31.17	33.01	-1.84	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

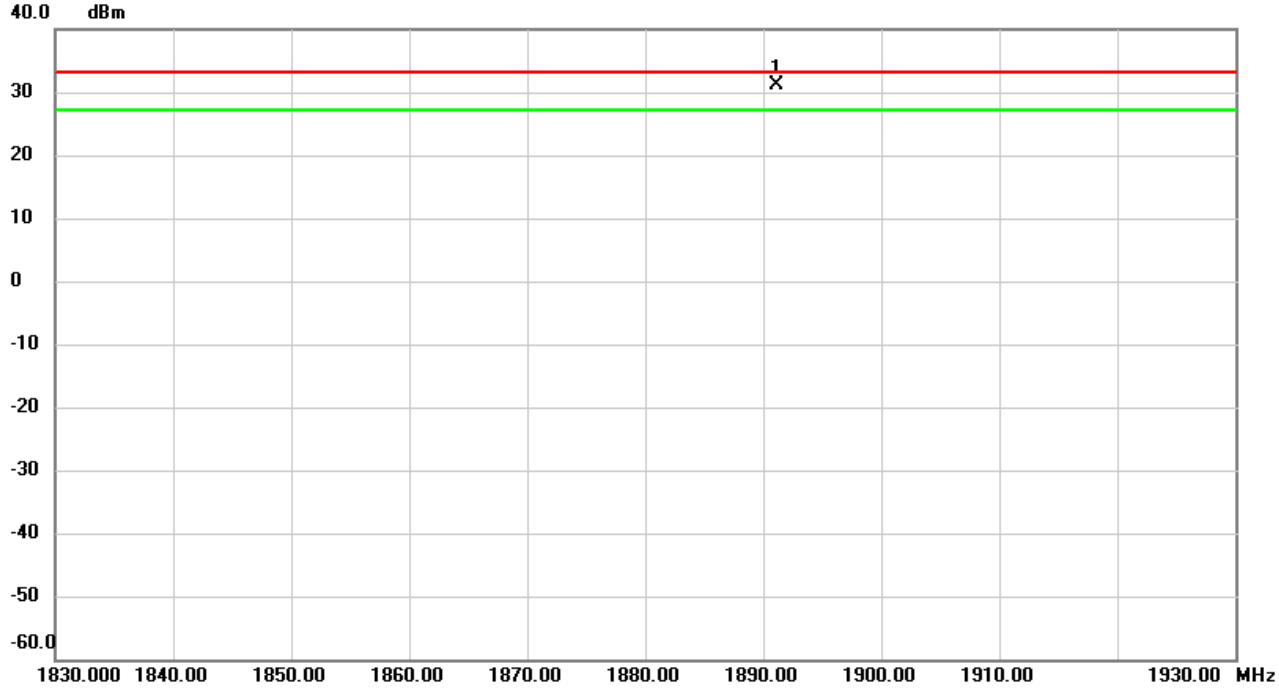
Test Mode	LTE Band 2	Test Date	2023/3/25
Test Channel	CH19100	Polarization	Vertical
Temp	24°C	Hum.	61%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1891.087	15.35	4.67	20.02	33.01	-12.99	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2023/3/25
Test Channel	CH19100	Polarization	Horizontal
Temp	24°C	Hum.	61%

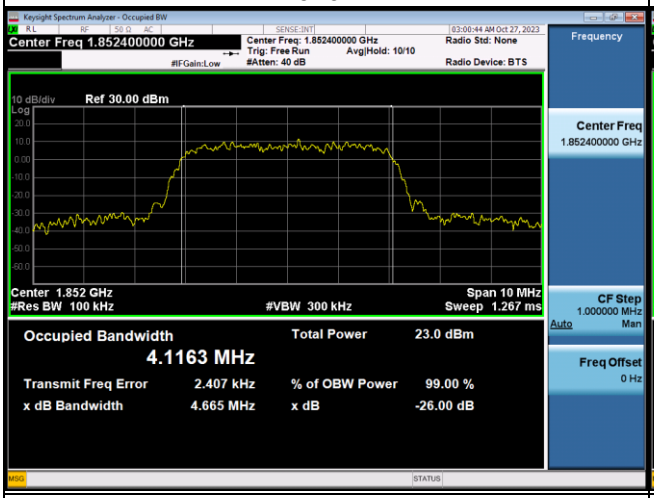
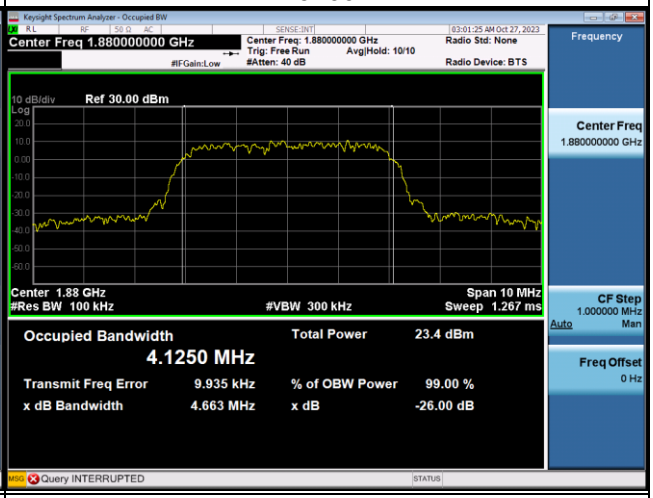
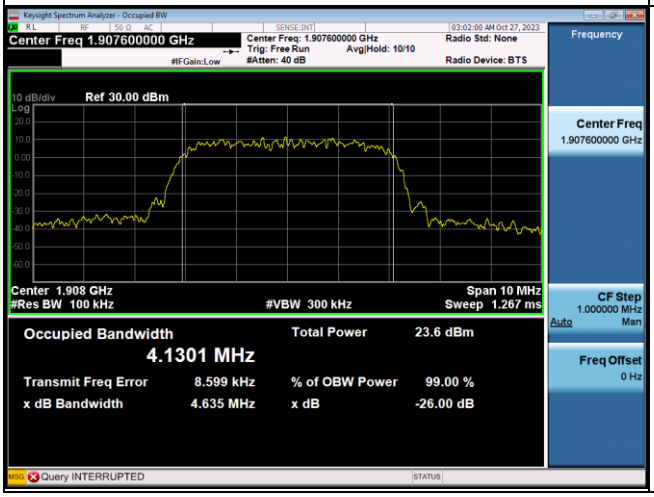


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	1891.193	26.52	4.54	31.06	33.01	-1.95	peak	

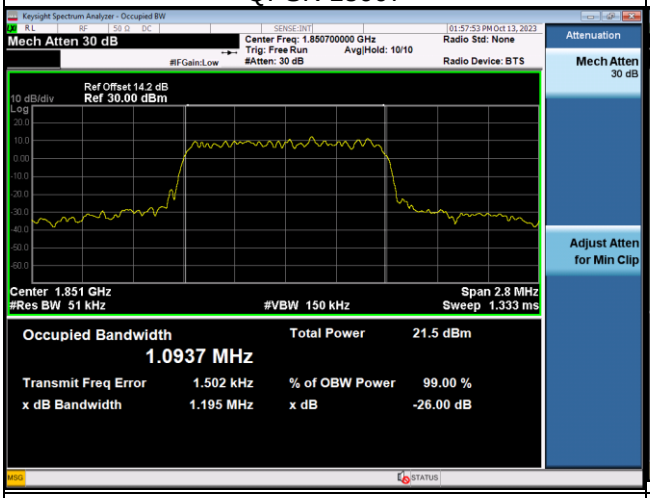
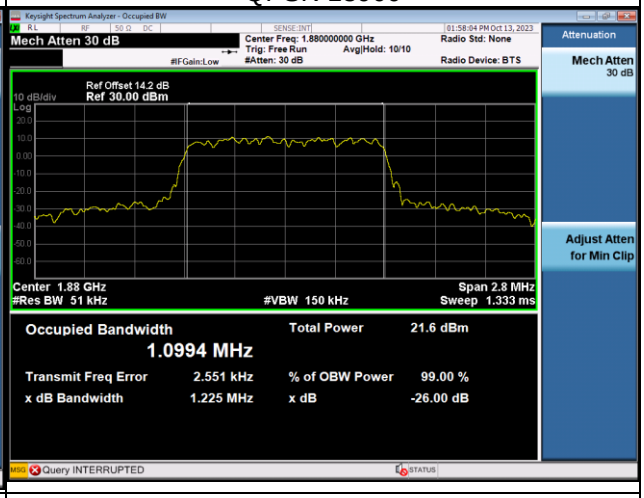
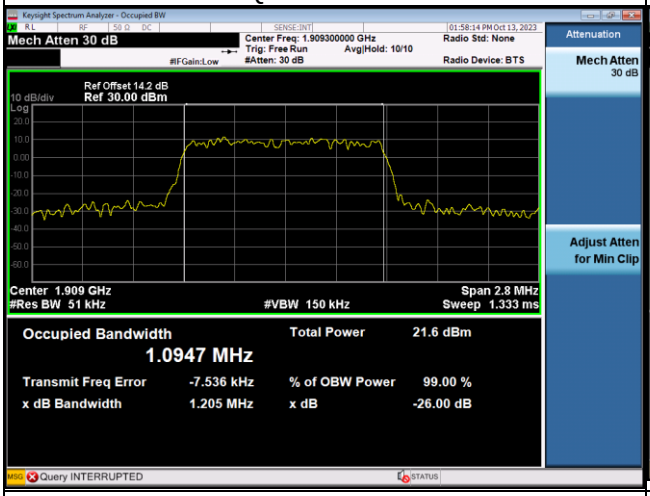
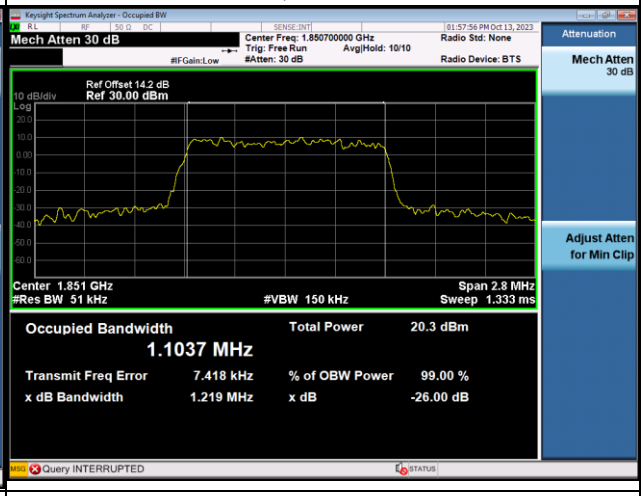
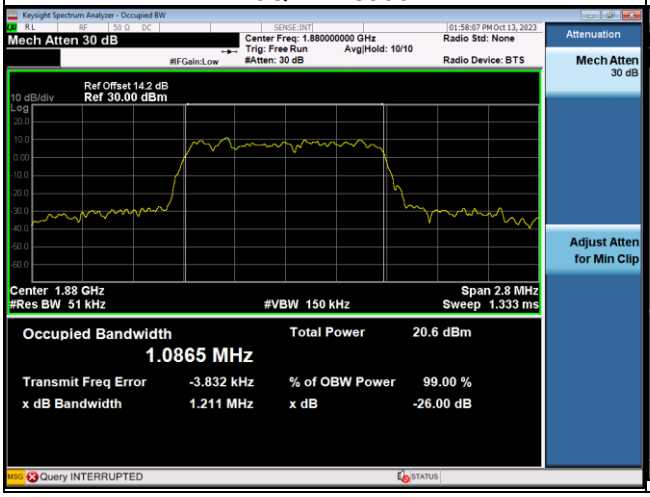
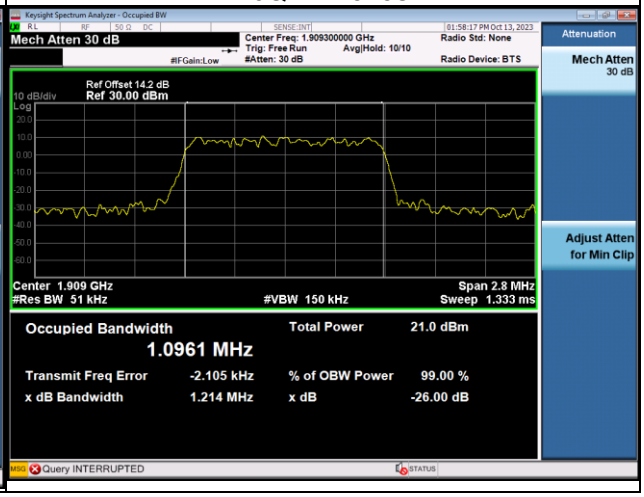
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

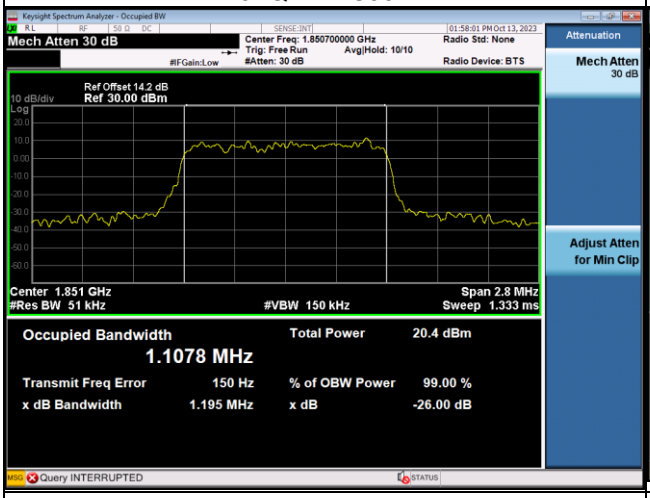
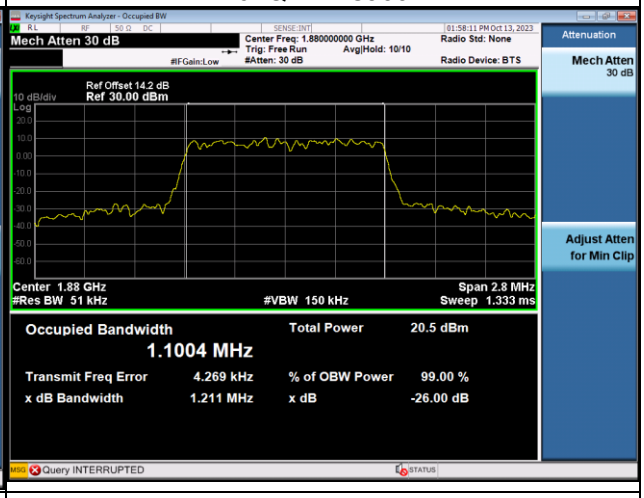
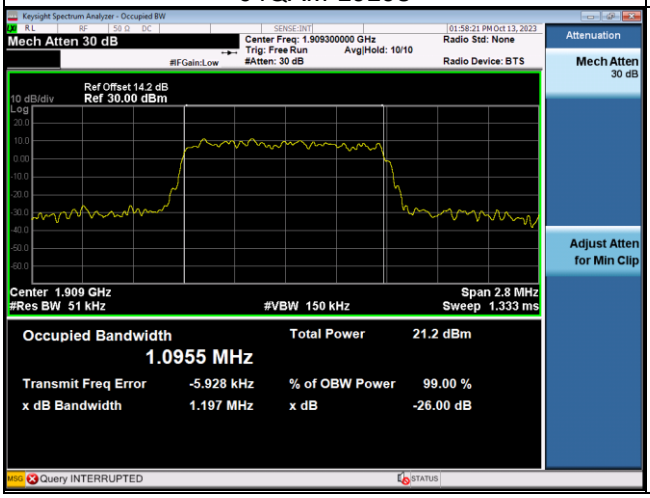
APPENDIX B OCCUPIED BANDWIDTH

WCDMA Band II_WCDMA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
9262	1852.4	4.1163	9262	1852.4	4.665
9400	1880	4.1250	9400	1880	4.663
9538	1907.6	4.1301	9538	1907.6	4.635

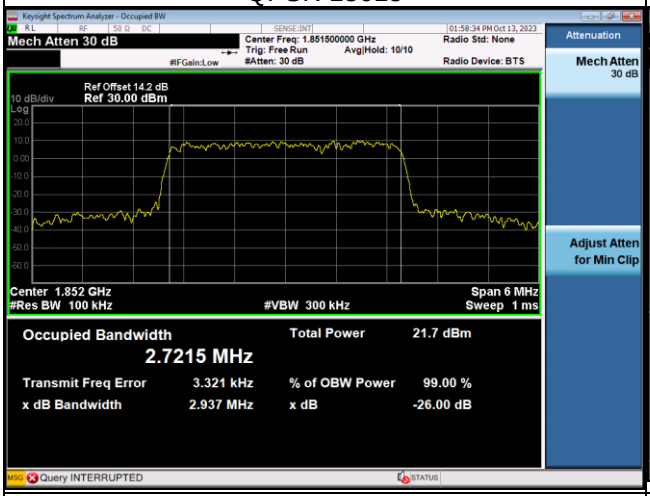
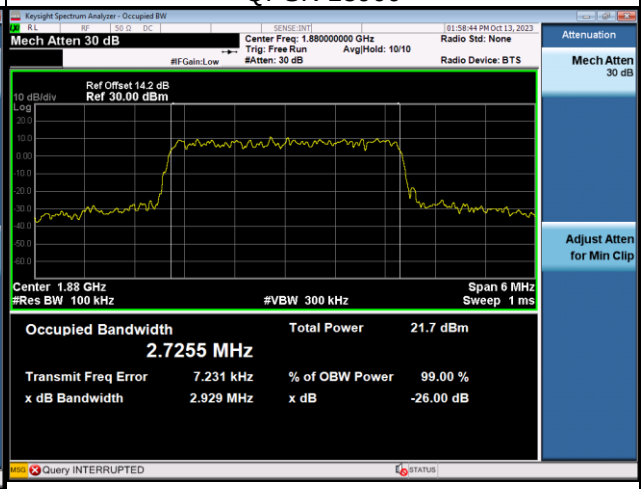
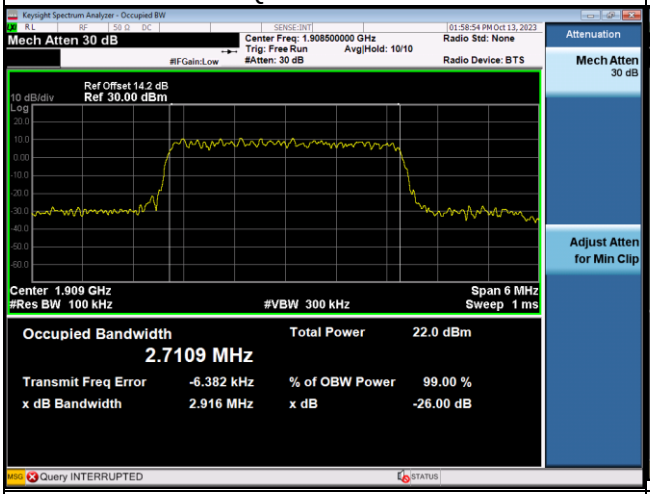
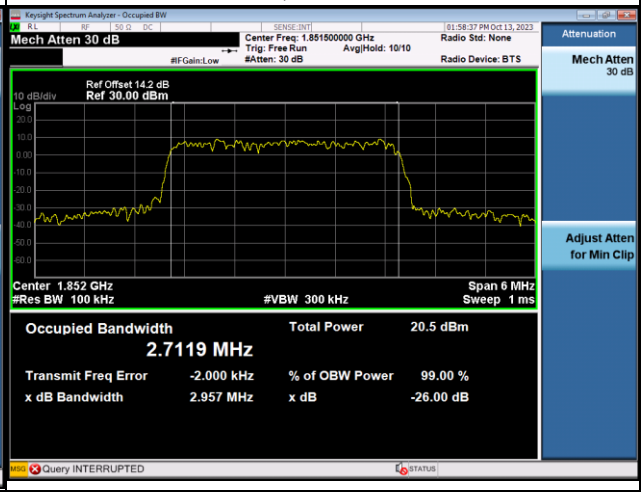
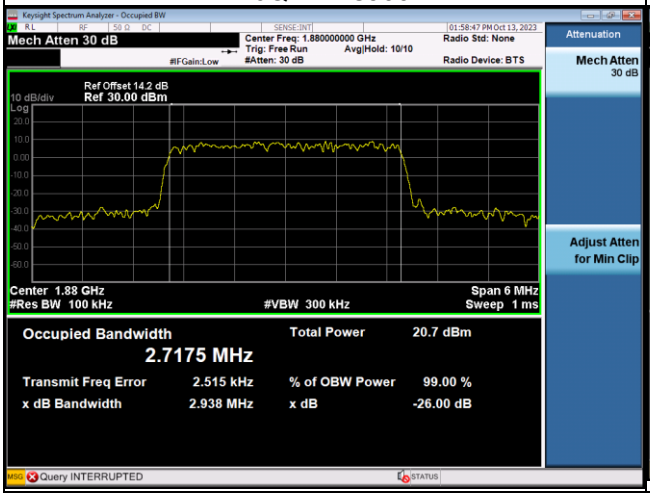
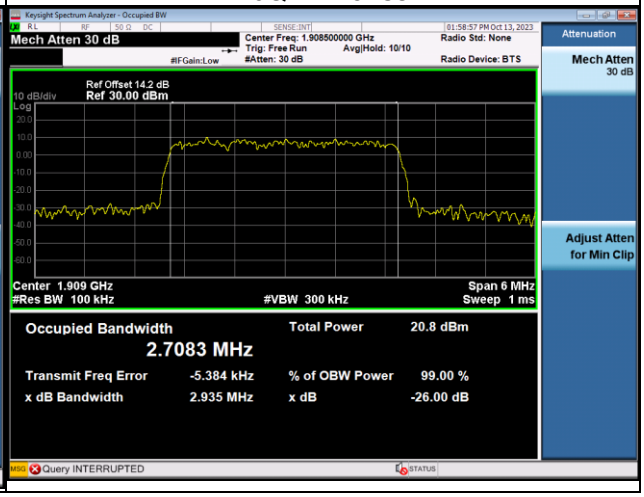
Spectrum Plot	
9262	9400
	
9538	-
	-

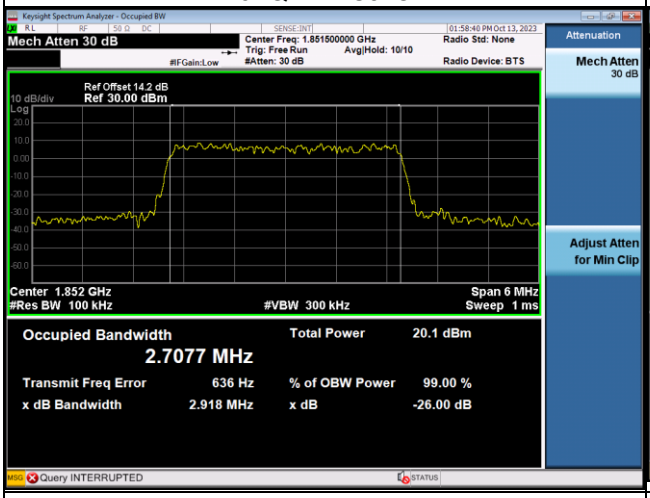
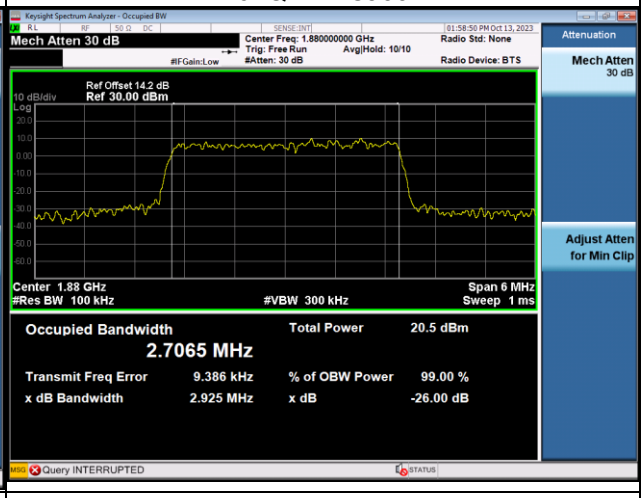
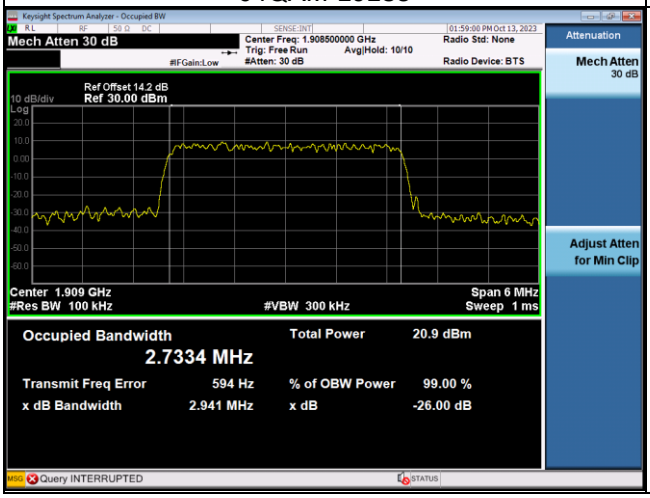
LTE Band 2_1.4M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18607	1850.7	1.0937	18607	1850.7	1.195
18900	1880	1.0994	18900	1880	1.225
19193	1909.3	1.0947	19193	1909.3	1.205
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18607	1850.7	1.1037	18607	1850.7	1.219
18900	1880	1.0865	18900	1880	1.211
19193	1909.3	1.0961	19193	1909.3	1.214
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18607	1850.7	1.1078	18607	1850.7	1.195
18900	1880	1.1004	18900	1880	1.211
19193	1909.3	1.0955	19193	1909.3	1.197

Spectrum Plot	
QPSK-18607	QPSK-18900
	
QPSK-19193	16QAM-18607
	
16QAM-18900	16QAM-19193
	

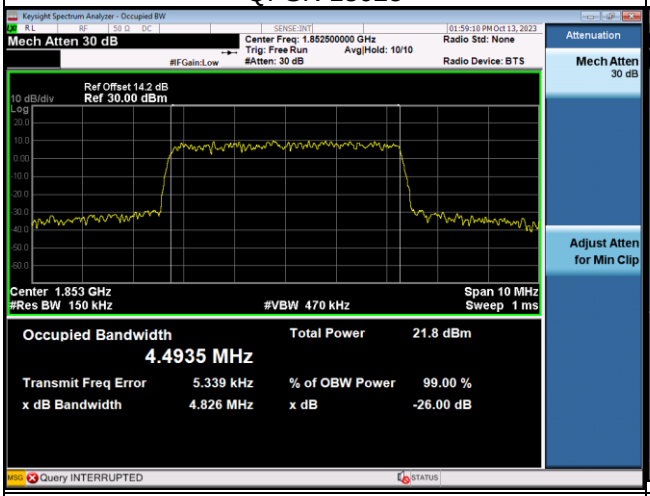
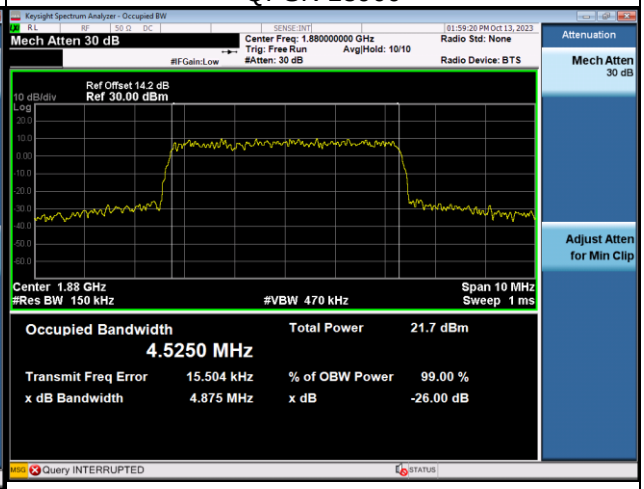
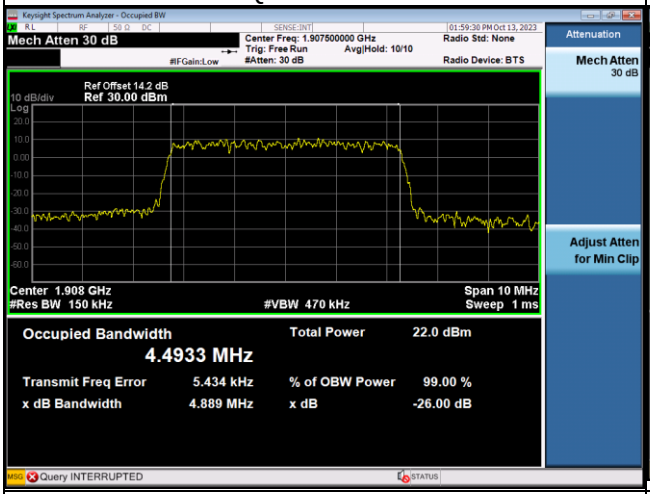
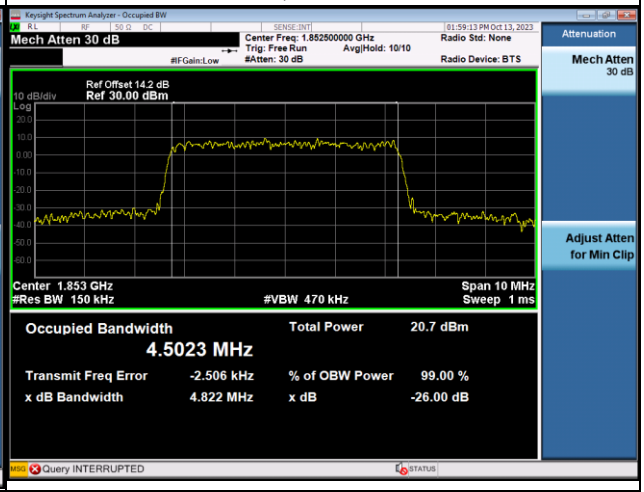
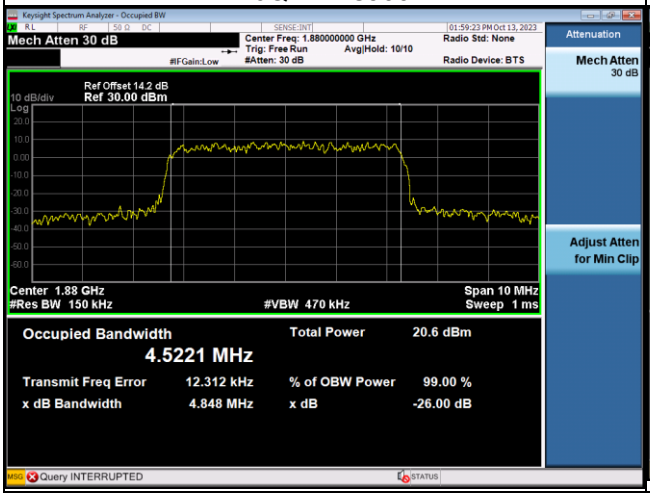
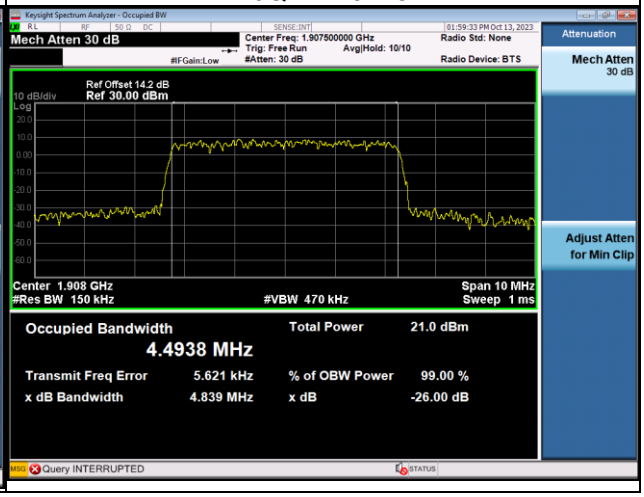
64QAM-18607	64QAM-18900
	
64QAM-19193	-
	-

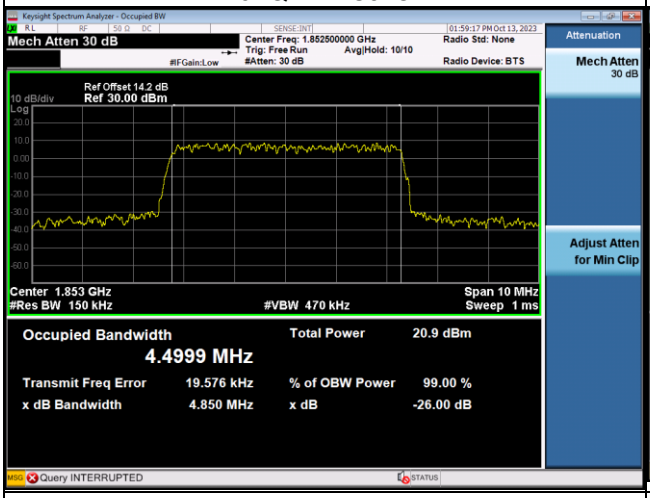
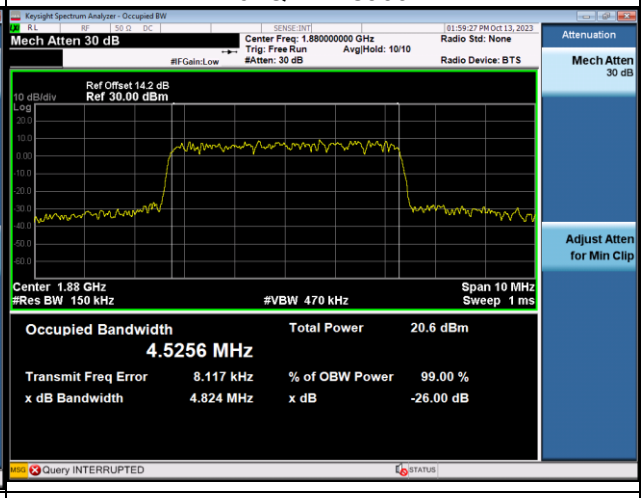
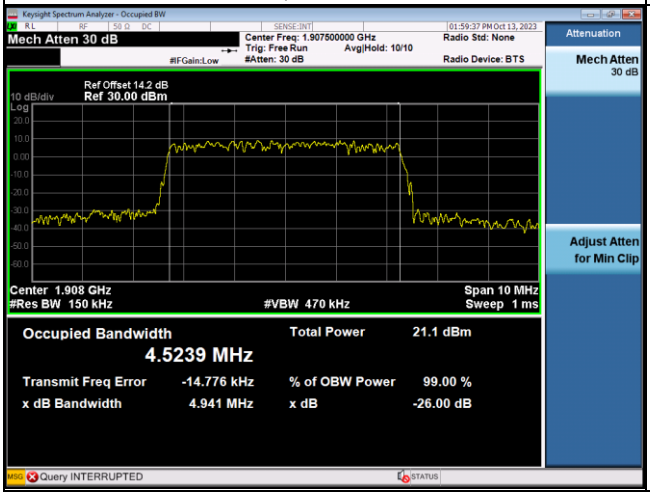
LTE Band 2_3M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18615	1851.5	2.7215	18615	1851.5	2.937
18900	1880	2.7255	18900	1880	2.929
19185	1908.5	2.7109	19185	1908.5	2.916
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18615	1851.5	2.7119	18615	1851.5	2.957
18900	1880	2.7175	18900	1880	2.938
19185	1908.5	2.7083	19185	1908.5	2.935
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18615	1851.5	2.7077	18615	1851.5	2.918
18900	1880	2.7065	18900	1880	2.925
19185	1908.5	2.7334	19185	1908.5	2.941

Spectrum Plot	
QPSK-18615	QPSK-18900
	
QPSK-19185	16QAM-18615
	
16QAM-18900	16QAM-19185
	

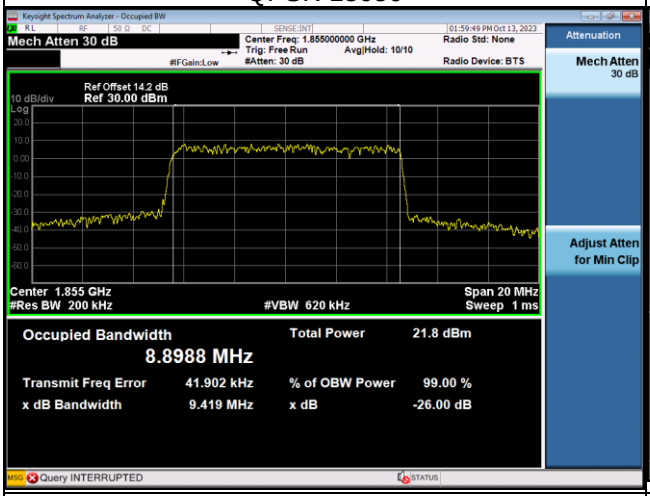
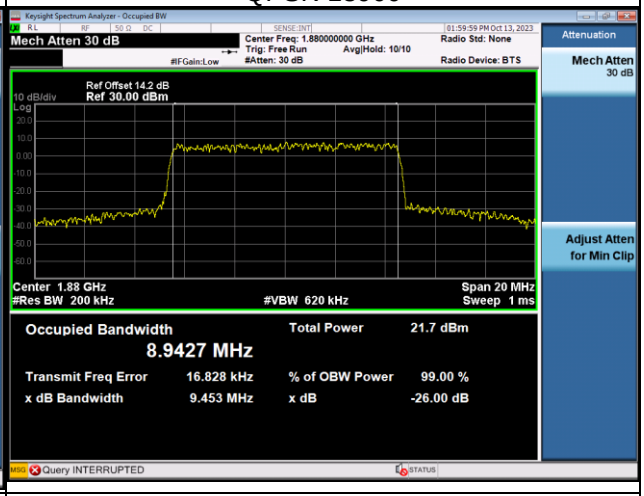
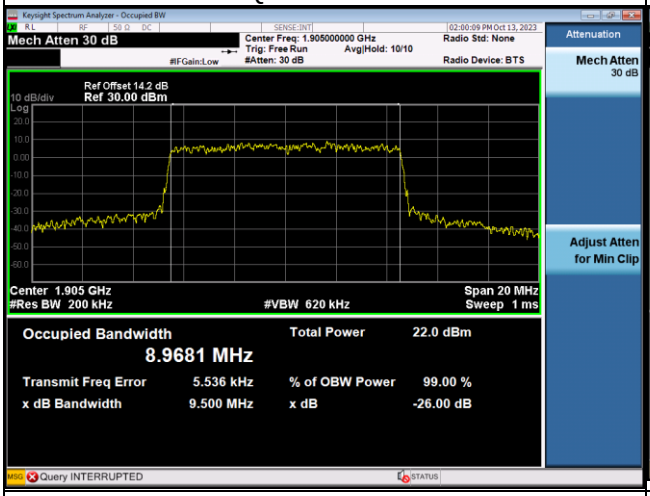
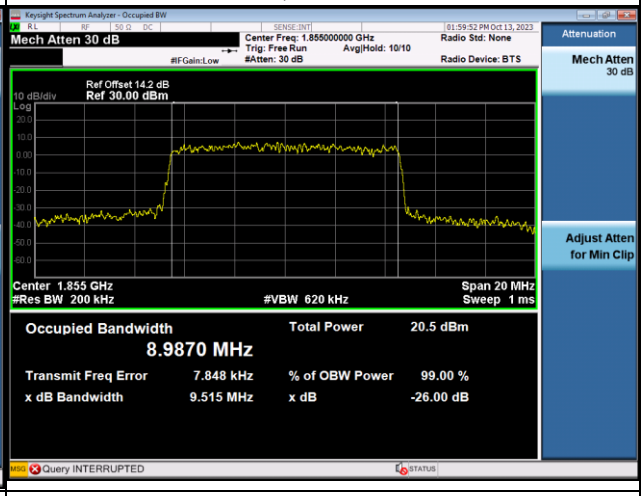
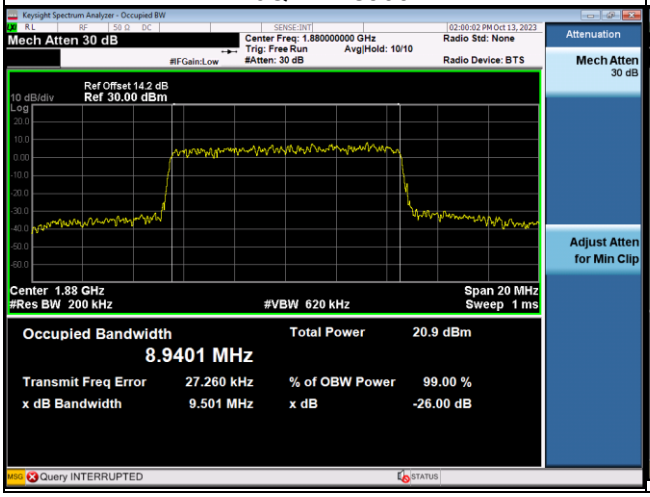
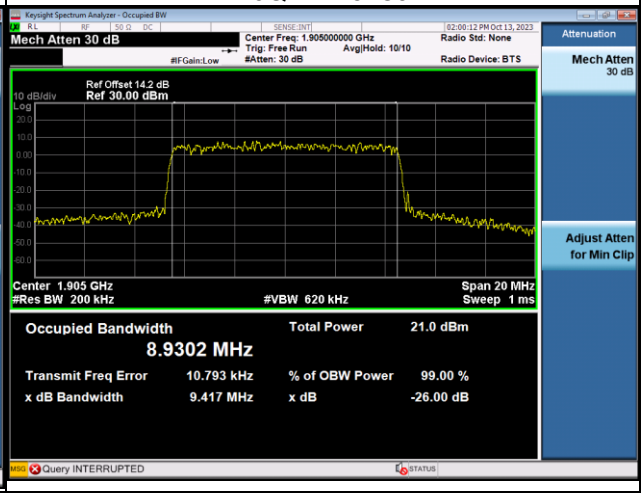
64QAM-18615	64QAM-18900
	
64QAM-19185	-
	-

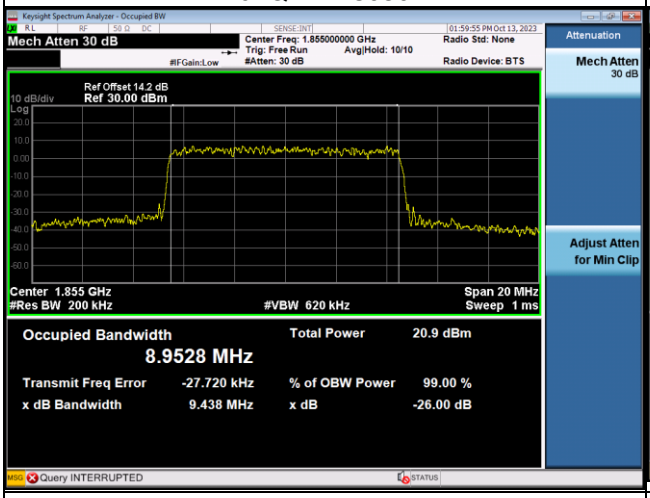
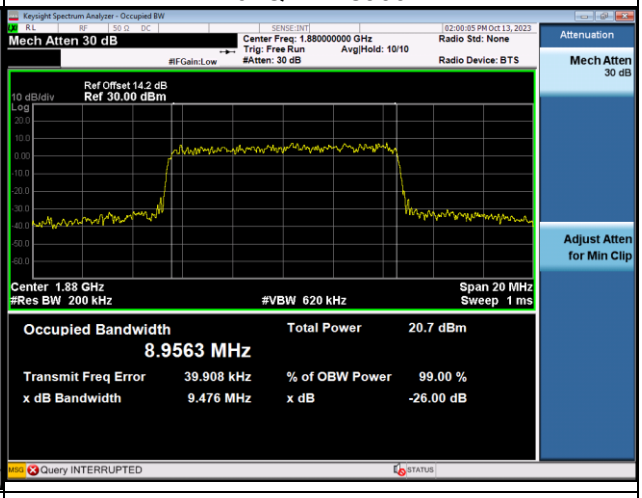
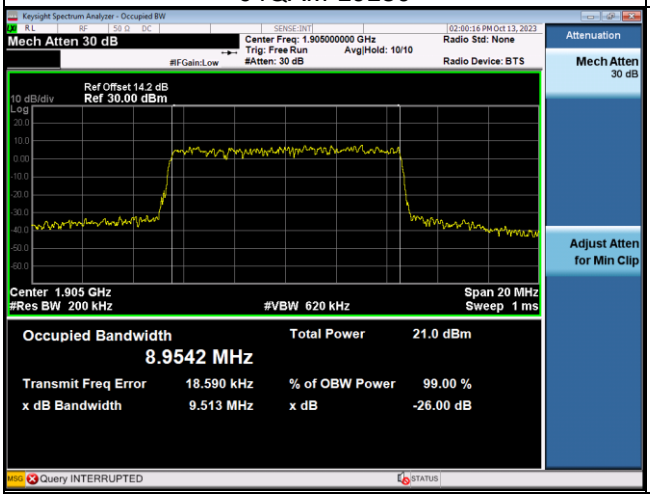
LTE Band 2_5M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18625	1852.5	4.4935	18625	1852.5	4.826
18900	1880	4.5250	18900	1880	4.875
19175	1907.5	4.4933	19175	1907.5	4.889
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18625	1852.5	4.5023	18625	1852.5	4.822
18900	1880	4.5221	18900	1880	4.848
19175	1907.5	4.4938	19175	1907.5	4.839
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18625	1852.5	4.4999	18625	1852.5	4.850
18900	1880	4.5256	18900	1880	4.824
19175	1907.5	4.5239	19175	1907.5	4.941

Spectrum Plot	
QPSK-18625	QPSK-18900
	
QPSK-19175	16QAM-18625
	
16QAM-18900	16QAM-19175
	

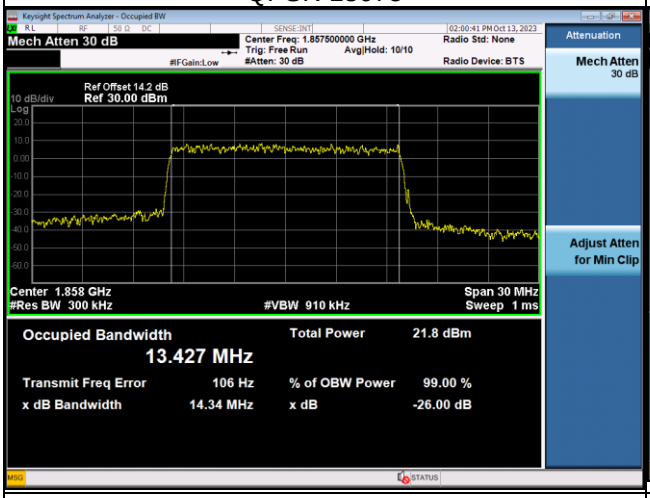
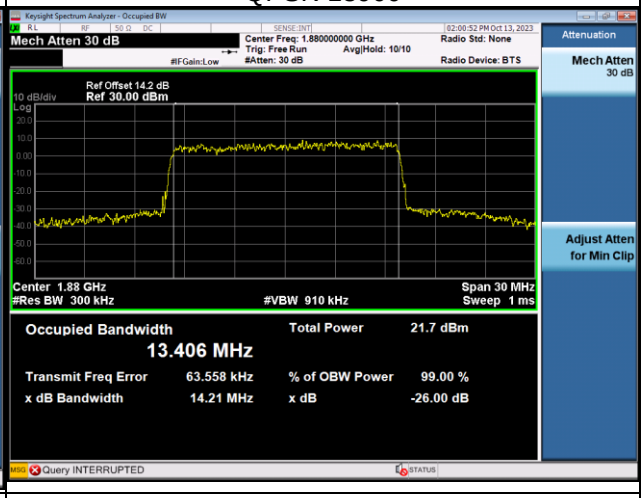
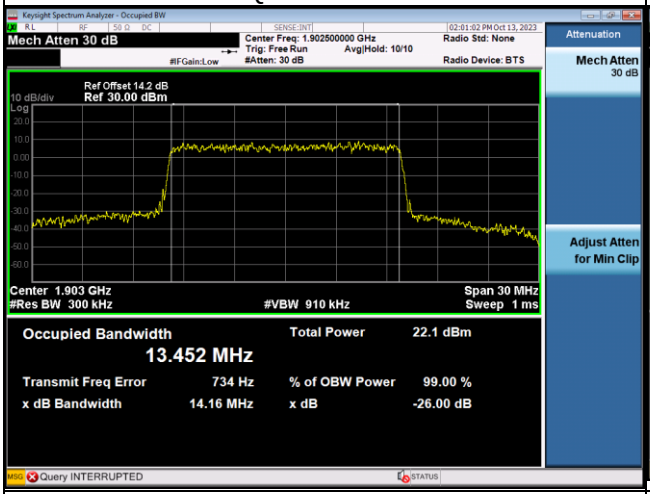
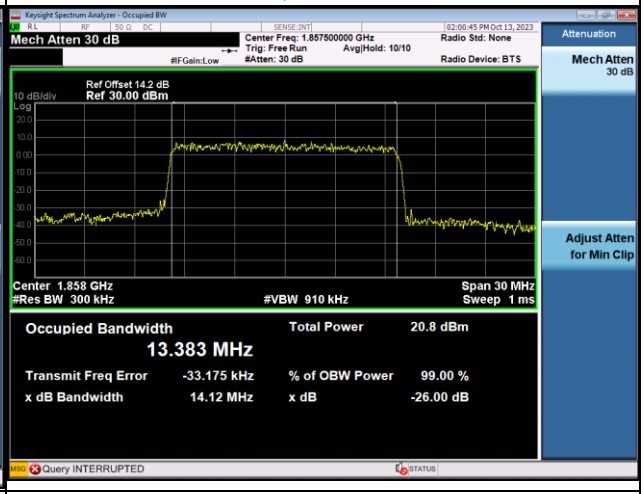
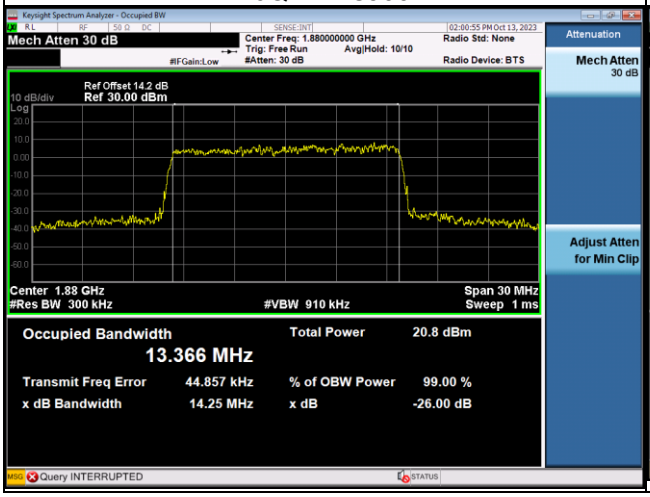
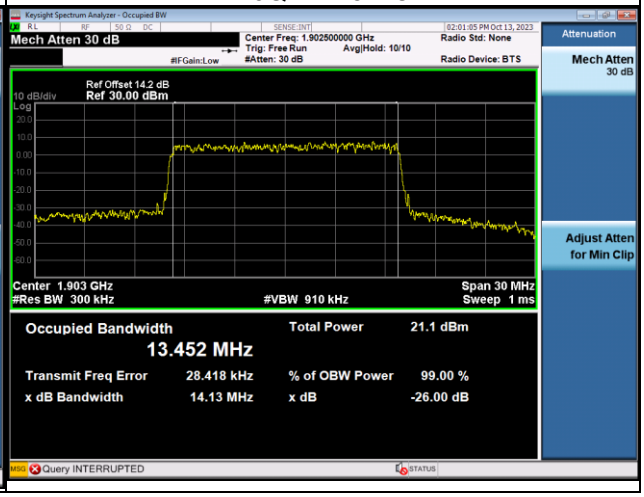
64QAM-18625	64QAM-18900
	
64QAM-19175	-
	-

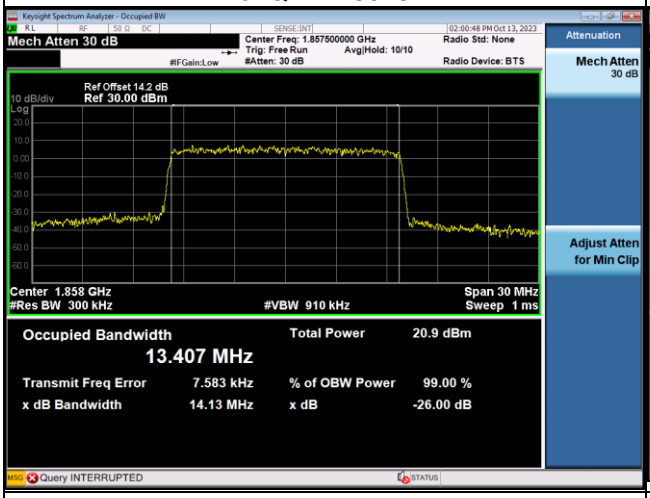
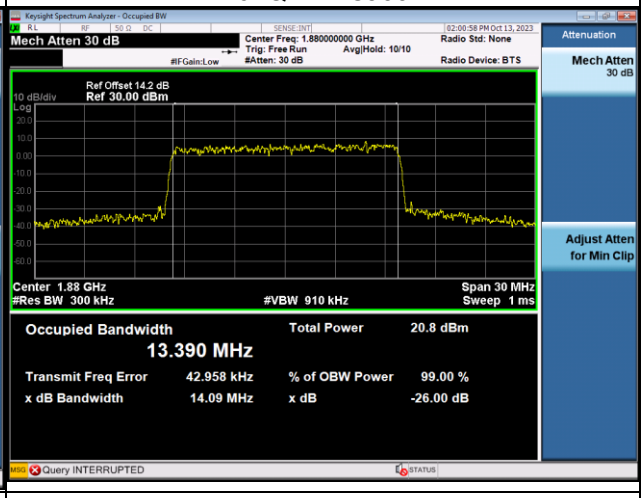
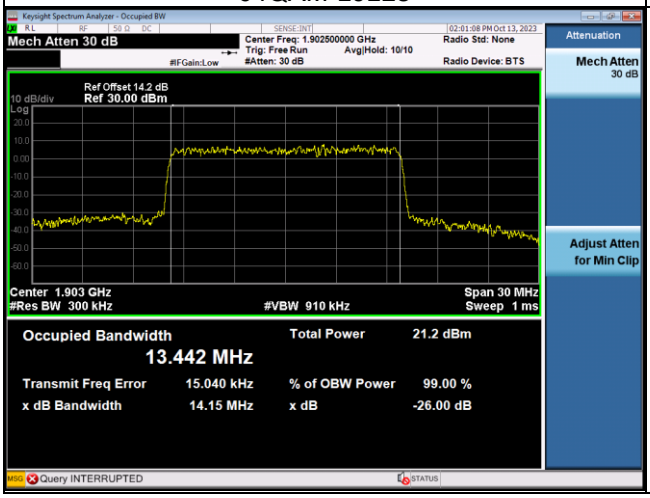
LTE Band 2_10M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18650	1855	8.8988	18650	1855	9.419
18900	1880	8.9427	18900	1880	9.453
19150	1905	8.9681	19150	1905	9.500
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18650	1855	8.9870	18650	1855	9.515
18900	1880	8.9401	18900	1880	9.501
19150	1905	8.9302	19150	1905	9.417
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18650	1855	8.9528	18650	1855	9.438
18900	1880	8.9563	18900	1880	9.476
19150	1905	8.9542	19150	1905	9.513

Spectrum Plot	
QPSK-18650	QPSK-18900
	
QPSK-19150	16QAM-18650
	
16QAM-18900	16QAM-19150
	

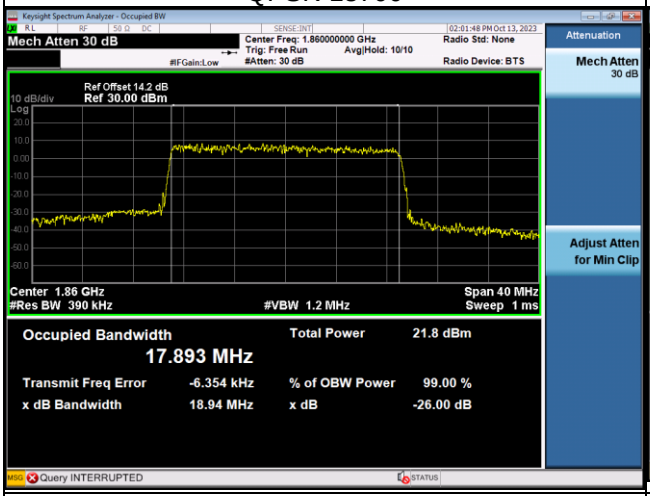
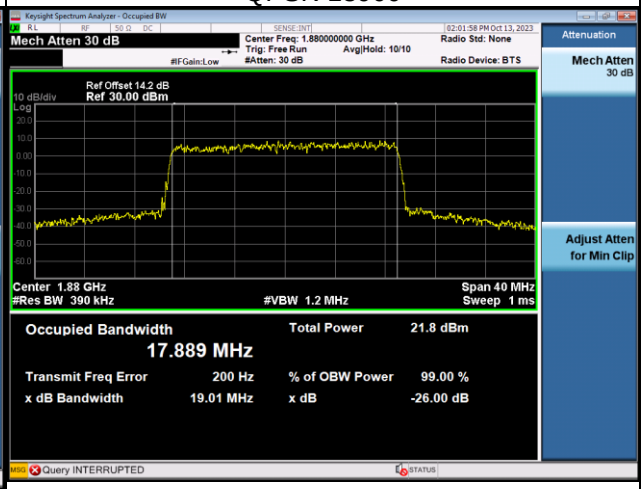
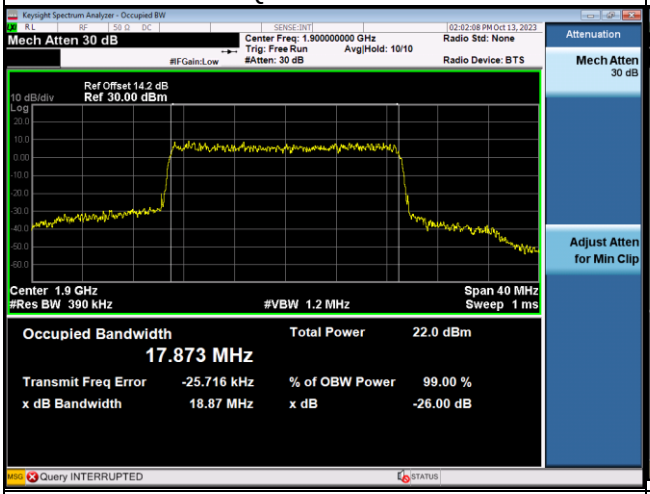
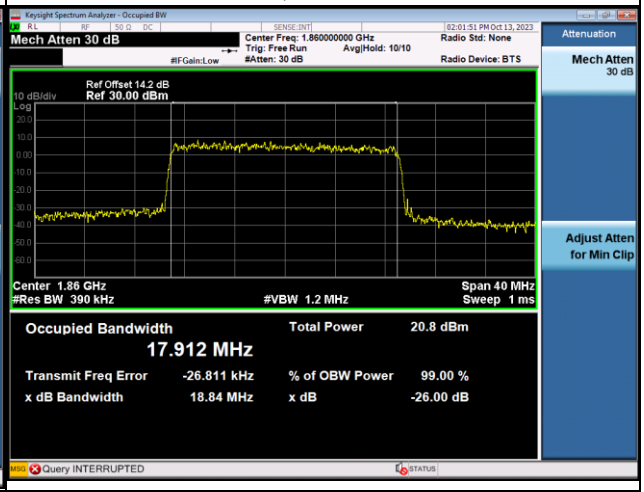
64QAM-18650	64QAM-18900
	
64QAM-19150	-
	-

LTE Band 2_15M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18675	1857.5	13.427	18675	1857.5	14.34
18900	1880	13.406	18900	1880	14.21
19125	1902.5	13.452	19125	1902.5	14.16
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18675	1857.5	13.383	18675	1857.5	14.12
18900	1880	13.366	18900	1880	14.25
19125	1902.5	13.452	19125	1902.5	14.13
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18675	1857.5	13.407	18675	1857.5	14.13
18900	1880	13.390	18900	1880	14.09
19125	1902.5	13.442	19125	1902.5	14.15

Spectrum Plot	
QPSK-18675	QPSK-18900
	
QPSK-19125	16QAM-18675
	
16QAM-18900	16QAM-19125
	

64QAM-18675	64QAM-18900
	
64QAM-19125	-
	-

LTE Band 2_20M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18700	1860	17.893	18700	1860	18.94
18900	1880	17.889	18900	1880	19.01
19100	1900	17.873	19100	1900	18.87
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18700	1860	17.912	18700	1860	18.84
18900	1880	17.868	18900	1880	18.87
19100	1900	17.960	19100	1900	18.86
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18700	1860	17.799	18700	1860	18.81
18900	1880	17.828	18900	1880	18.82
19100	1900	17.878	19100	1900	18.95

Spectrum Plot	
QPSK-18700	QPSK-18900
	
QPSK-19100	16QAM-18700
	
16QAM-18900	16QAM-19100