FCC Test Report

Report Reference No.....:	HK2412187831-8E
FCC ID.....:	2BDI3-S
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Supervised by (position+printed name+signature)..:	Technical Manager Sliver Wan
Approved by (position+printed name+signature)..:	Authorized Signatory Jason Zhou
Date of issue.....:	Feb. 17, 2025
Testing Laboratory Name .....:	**Shenzhen HUAK Testing Technology Co., Ltd.**
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Applicant's name.....:	**Shenzhen Haimeilan Technology Co., LTD.**
Address .....:	9V777, East 9th Floor, Building 2, SEG Science Park, Huaqiang North Street, Futian District, Shenzhen, 518000 China
Test specification .....:	
Standard .....:	**FCC CFR Title 47 Part 2, Part 24E**
TRF Originator.....:	Shenzhen HUAK Testing Technology Co., Ltd.

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Test item description .....:	Smart Phone
Trade Mark .....:	N/A
Manufacturer.....:	**Shenzhen Yinma Intelligent Technology Co., Ltd**
Model/Type reference.....:	S25 Ultra
Series Models .....:	S24 Ultra, S23 Ultra, C25 Ultra, C24 Ultra, C23 Ultra, X23 Ultra, X24 Ultra, X25 Ultra, Z23 Ultra, Z24 Ultra, Z25 Ultra, C10 Plus, C30 Plus, G50 Plus, G60 Plus, C73, C7 Ultra, Polaris7 Pro, C3 Luxury, G37 Ultra, M13 Pro, Polaris7, Rise77 Luxury, Opus33 Luxury, Acro77 Luxury, Sirius40 Ultra, H50 Ultra, G3 Luxury, Rise30 Ultra, G7 Ultra, E-on33 Ultra, Vista16 Ultra, I24 Ultra, I25 Ultra, X24, S01, C25, S10, S11, S08, S25 MAX, I15 Ultra, S24 Pro Max
Modulation Type.....:	QPSK, 16QAM
Rating .....:	DC 5V From Type-C or DC 3.85V From Battery
Hardware version .....:	V1.0
Software version.....:	V1.0
Result.....:	**PASS**

TEST REPORT

Test Report No. :	HK2412187831-8E	Feb. 17, 2025 Date of issue

Equipment under Test	:	Smart Phone
Model /Type	:	S25 Ultra
Series Models	:	S24 Ultra, S23 Ultra, C25 Ultra, C24 Ultra, C23 Ultra, X23 Ultra, X24 Ultra, X25 Ultra, Z23 Ultra, Z24 Ultra, Z25 Ultra, C10 Plus, C30 Plus, G50 Plus, G60 Plus, C73, C7 Ultra, Polaris7 Pro, C3 Luxury, G37 Ultra, M13 Pro, Polaris7, Rise77 Luxury, Opus33 Luxury, Acro77 Luxury, Sirius40 Ultra, H50 Ultra, G3 Luxury, Rise30 Ultra, G7 Ultra, E-on33 Ultra, Vista16 Ultra, I24 Ultra, I25 Ultra, X24, S01, C25, S10, S11, S08, S25 MAX, I15 Ultra, S24 Pro Max
Applicant	:	**Shenzhen Haimeilan Technology Co., LTD.**
Address	:	9V777, East 9th Floor, Building 2, SEG Science Park, Huaqiang North Street, Futian District, Shenzhen, 518000 China
Manufacturer	:	**Shenzhen Yinma Intelligent Technology Co., Ltd**
Address	:	2nd Floor, Building 2, Donglongxing Science and Technology Park, Dalang Street, Longhua District, Shenzhen, 518000 China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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** Modified History **

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Feb. 17, 2025	Jason Zhou

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1 Test Standards

The tests were performed according to following standards:

FCC Part 24:Public Mobile Services.

TIA/EIA 603 D June 2010:Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

47 CFR FCC Part 15 Subpart B: Unintentional Radiators.

FCC Part 2: Frequency Alloca-Tions And Radio Treaty Mat-Ters; General Rules And Reg-Ulations.

KDB971168 D01:v03r01 Measurement Guidance For Certification Of Licensed Digital Transmitters.

ANSI C63.4:2014:Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

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2 Summary

2.1 General Remarks

Date of receipt of test sample	:	Dec. 18, 2024
Testing commenced on	:	Dec. 18, 2024
Testing concluded on	:	Feb. 17, 2025

2.2 Product Description

The **Shenzhen Haimeilan Technology Co., LTD.**'s Model: S25 Ultra or the "EUT" as referred to in this report; more general information as follows,for more details, refer to the user's manual of the EUT.

Name of EUT:	Smart Phone
Model/Type reference:	S25 Ultra
Series Models:	S24 Ultra, S23 Ultra, C25 Ultra, C24 Ultra, C23 Ultra, X23 Ultra, X24 Ultra, X25 Ultra, Z23 Ultra, Z24 Ultra, Z25 Ultra, C10 Plus, C30 Plus, G50 Plus, G60 Plus, C73, C7 Ultra, Polaris7 Pro, C3 Luxury, G37 Ultra, M13 Pro, Polaris7, Rise77 Luxury, Opus33 Luxury, Acro77 Luxury, Sirius40 Ultra, H50 Ultra, G3 Luxury, Rise30 Ultra, G7 Ultra, E-on33 Ultra, Vista16 Ultra, I24 Ultra, I25 Ultra, X24, S01, C25, S10, S11, S08, S25 MAX, I15 Ultra, S24 Pro Max
Model Difference:	All model's the function, software and electric circuit are the same, only with a product appearance, color and model named different. Test sample mode: S25 Ultra.
Power supply:	DC 5V From Type-C or DC 3.85V From Battery
Modilation Type:	QPSK,16QAM
Antenna Type:	FPC Antenna
Antenna Gain:	0.56dBi
Operation Frequency Band:	LTE Band 2
Operation frequency:	LTE Band 2: 1850~1910 MHz(TX), 1930~1990 MHz(TX)
LTE Release:	R8
Extreme temp. Tolerance:	-30°C to +70°C
Extreme vol. Limits:	4.25VDC to5.75VDC (nominal: 5.0VDC)
Note: 1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2. Antenna gain Refer to the antenna specifications. 3. The cable loss data is obtained from the supplier. 4. The test results in the report only apply to the tested sample.	

2.3 Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	120V/ 60 Hz	○	115V/60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 5V From Type-C or DC 3.85V From Battery

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2.4 Short Description of The Equipment Under Test (EUT)

2.4.1 General Description

This is a Smart Phone.

For more details, refer to the user's manual of the EUT.

2.5 Test Frequency List

TX Channel Bandwidth	Frequency (MHz)	channel
1.4 MHz	1850.7	18607
	1880.0	18900
	1909.3	19193
3 MHz	1851.5	18615
	1880.0	18900
	1908.5	19185
5 MHz	1852.5	18625
	1880.0	18900
	1907.5	19175
10 MHz	1855.0	18650
	1880.0	18900
	1905.0	19150
15 MHz	1857.5	18675
	1880.0	18900
	1902.5	19125
20 MHz	1860.0	18700
	1880.0	18900
	1900.0	19100

2.6 Normal Accessory Setting

Fully charged battery was used during the test.

2.7 EUT Configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
○	Multimeter	Manufacturer :	/
		Model No. :	/

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2.8 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID:** 2BDI3-S filing to comply with FCC Part 24, Rules.

2.9 Modifications

No modifications were implemented to meet testing criteria.

2.10 GeneralTest Conditions/Configurations

2.10.1 Test Environment

EnvironmentParameter	SelectedValuesDuringTests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	4.25V
	VN	5.0V
	VH	5.75V

NOTE:VL=lowerextreme testvoltageVN=nominalvoltage
VH=upperextreme testvoltageTN=normaltemperature

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3 Test Environment

3.1 Information of The Test Laboratory

Shenzhen HUAK Testing Technology Co., Ltd.
Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization:

A2LA Accreditation Code is 4781.01.
FCC Designation Number is CN1229.
Canada IC CAB identifier is CN0045.
CNAS Registration Number is L9589.

3.2 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.3 Test Description

PCSBand (1850-1915MHz pairedwith 1930-1995MHz)

Test Item	FCCRuleNo.	Requirements	Verdict
Effective(Isotropic)Radiated Output Power	Part§2.1046, Part§24.232	EIRP ≤ 2W	Pass
Peak-Average Ratio	Part§2.1046, Part§24.232	FCC:Limit≤13dB	Pass
Bandwidth	Part§2.1049 RSS-133	OBW: Nolimit. EBW: Nolimit.	Pass
Band Edges Compliance	Part§2.1051, Part§24.238	≤ -13dBm/1%*EBW, In1MHz bands immediately outside and adjacent to The frequency block.	Pass
Spurious Emission at Antenna Terminals	Part§2.1051, Part§24.238	≤-13dBm/1MHz, from 9kHz to10th harmonics but outside authorized Operating frequency ranges.	Pass
Field Strength of Spurious Radiation	Part§2.1053, Part§24.238	≤ -13dBm/1MHz.	Pass
Frequency Stability	Part§2.1055, Part§24.235	FCC:within authorized frequency block.	Pass
NOTE 1:For theverdict, the"N/A"denotes"not applicable", the"N/T"denotes "nottested".			

Remark:
1. The measurement uncertainty is not included in the test result.

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3.4 Equipments Used During The Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
1	L.I.S.N.	R&S	ENV216	HKE-002	2024/02/20	2025/02/19
2	L.I.S.N.	R&S	ENV216	HKE-059	2024/02/20	2025/02/19
3	EMI Test Receiver	R&S	ESR	HKE-005	2024/02/20	2025/02/19
4	Spectrum analyzer	Agilent	N9020A	HKE-117	2024/02/20	2025/02/19
5	Spectrum analyzer	R&S	FSV3044	HKE-126	2024/02/20	2025/02/19
6	Preamplifier	EMCI	EMC051845S	HKE-006	2024/02/20	2025/02/19
7	Preamplifier	Schwarzbeck	BBV 9743	HKE-016	2024/02/20	2025/02/19
8	Preamplifier	A.H. Systems	SAS-574	HKE-182	2024/02/20	2025/02/19
9	6d Attenuator	Pasternack	6db	HKE-184	2024/02/20	2025/02/19
10	EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	2024/02/20	2025/02/19
11	Broadband Antenna	Schwarzbeck	VULB9168	HKE-167	2024/02/21	2026/02/20
12	Loop Antenna	COM-POWER	AL-130R	HKE-014	2024/02/21	2026/02/20
13	Horn Antenna	Schwarzbeck	9120D	HKE-013	2024/02/21	2026/02/20
14	EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	/	/
15	EMI Test Software	Tonscend	JS32-RE 5.0.0	HKE-082	/	/
16	RF Automatic control unit	Tonscend	JS0806-1	HKE-096	2024/02/20	2025/02/19
17	High pass filter unit	Tonscend	JS0806-F	HKE-055	2024/02/20	2025/02/19
18	Wireless Communication Test Set	R&S	CMU200	HKE-026	2024/02/20	2025/02/19
19	Wireless Communication Test Set	R&S	CMW500	HKE-027	2024/02/20	2025/02/19
20	High-low temperature chamber	Guangke	HT-80L	HKE-118	2024/06/10	2025/06/09
21	Temperature and humidity meter	Boyang	HTC-1	HKE-075	2024/06/10	2025/06/09
22	RF Test Software	Tonscend	JS1120 Version 3.1.46	HKE-183	/	/
23	RSE Test Software	Tonscend	JS36-RSE 5.0.0	HKE-184	/	/

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4 Test Conditions and Results

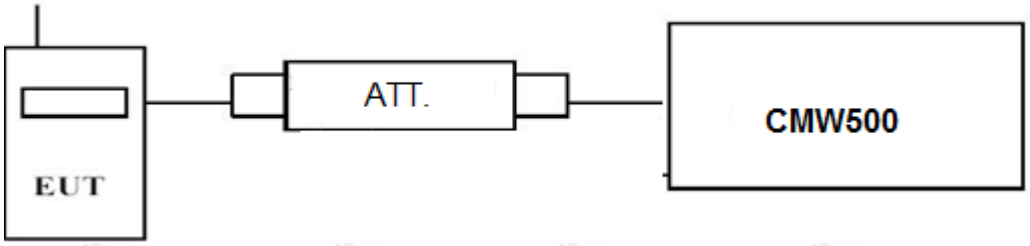
4.1 Output Power

4.1.1 Coducted Output Power

TEST APPLICABLE

During the process of testing, the EUT was controlled via R&S Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation. This result contains output power and EIRP measurements for the EUT. In all cases, output power is within the specified limits.

TEST CONFIGURATION



TEST PROCEDURE

Conducted Power Measurement:

a) Place the EUT on a bench and set it in transmitting mode.
b) Connect a low loss RF cable from the antenna port to a CMW500 by an Att.
c) EUT Communicate with CMW500 then selects a channel for testing.
d) Add a correction factor to the display CMW500, and then test.

TEST RESULTS

Remark:

1. *We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 2;*

LTE FDD Band 2				
TX Channel Bandwidth	Frequency (MHz)	RB Size/Offset	Burst Average Power [dBm]	
			QPSK	16QAM
1.4 MHz	1850.7	1 RB low	25.82	24.46
		1 RB high	25.92	24.64
		50% RB mid	25.79	24.49
		100% RB	25.76	24.54
	1880.0	1 RB low	25.47	24.34
		1 RB high	25.60	24.51
		50% RB mid	25.47	24.32
		100% RB	25.53	24.34
	1909.3	1 RB low	25.71	24.55
		1 RB high	25.79	24.77
		50% RB mid	25.72	24.56
		100% RB	25.73	24.54
3 MHz	1851.5	1 RB low	25.79	24.73
		1 RB high	25.77	24.69
		50% RB mid	25.77	24.74
		100% RB	24.78	23.75
	1880.0	1 RB low	25.46	24.44

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		1 RB high	25.45	24.46
		50% RB mid	25.48	24.44
		100% RB	24.50	23.49
	1908.5	1 RB low	25.70	24.73
		1 RB high	25.70	24.75
		50% RB mid	25.72	24.76
		100% RB	24.77	23.74
5 MHz	1852.5	1 RB low	25.78	24.63
		1 RB high	25.87	24.77
		50% RB mid	25.74	24.66
		100% RB	24.76	23.67
	1880.0	1 RB low	25.46	24.35
		1 RB high	25.56	24.44
		50% RB mid	25.48	24.41
		100% RB	24.51	23.42
	1907.5	1 RB low	25.69	24.67
		1 RB high	25.78	24.74
		50% RB mid	25.74	24.66
		100% RB	24.77	23.70
10 MHz	1855.0	1 RB low	25.30	24.27
		1 RB high	25.38	24.45
		50% RB mid	25.20	24.15
		100% RB	24.33	23.31
	1880.0	1 RB low	25.03	24.05
		1 RB high	25.22	24.21
		50% RB mid	25.05	24.08
		100% RB	24.10	23.08
	1905.0	1 RB low	25.15	24.24
		1 RB high	25.39	24.37
		50% RB mid	25.32	24.33
		100% RB	24.32	23.26
15 MHz	1857.5	1 RB low	25.28	24.26
		1 RB high	25.30	24.27
		50% RB mid	25.02	23.96
		100% RB	24.34	24.37
	1880.0	1 RB low	24.97	23.89
		1 RB high	25.13	24.10
		50% RB mid	25.00	24.00
		100% RB	24.17	24.15
	1902.5	1 RB low	25.11	24.08
		1 RB high	25.30	24.28
		50% RB mid	25.30	24.26
		100% RB	24.31	24.34
20 MHz	1860.0	1 RB low	25.21	24.02
		1 RB high	25.45	24.20
		50% RB mid	24.85	23.71
		100% RB	24.32	23.34
	1880.0	1 RB low	24.85	23.89
		1 RB high	25.32	24.31
		50% RB mid	24.89	23.95
		100% RB	24.03	23.00
	1900.0	1 RB low	25.02	23.86
		1 RB high	25.26	24.29
		50% RB mid	25.17	24.04
		100% RB	24.14	23.11

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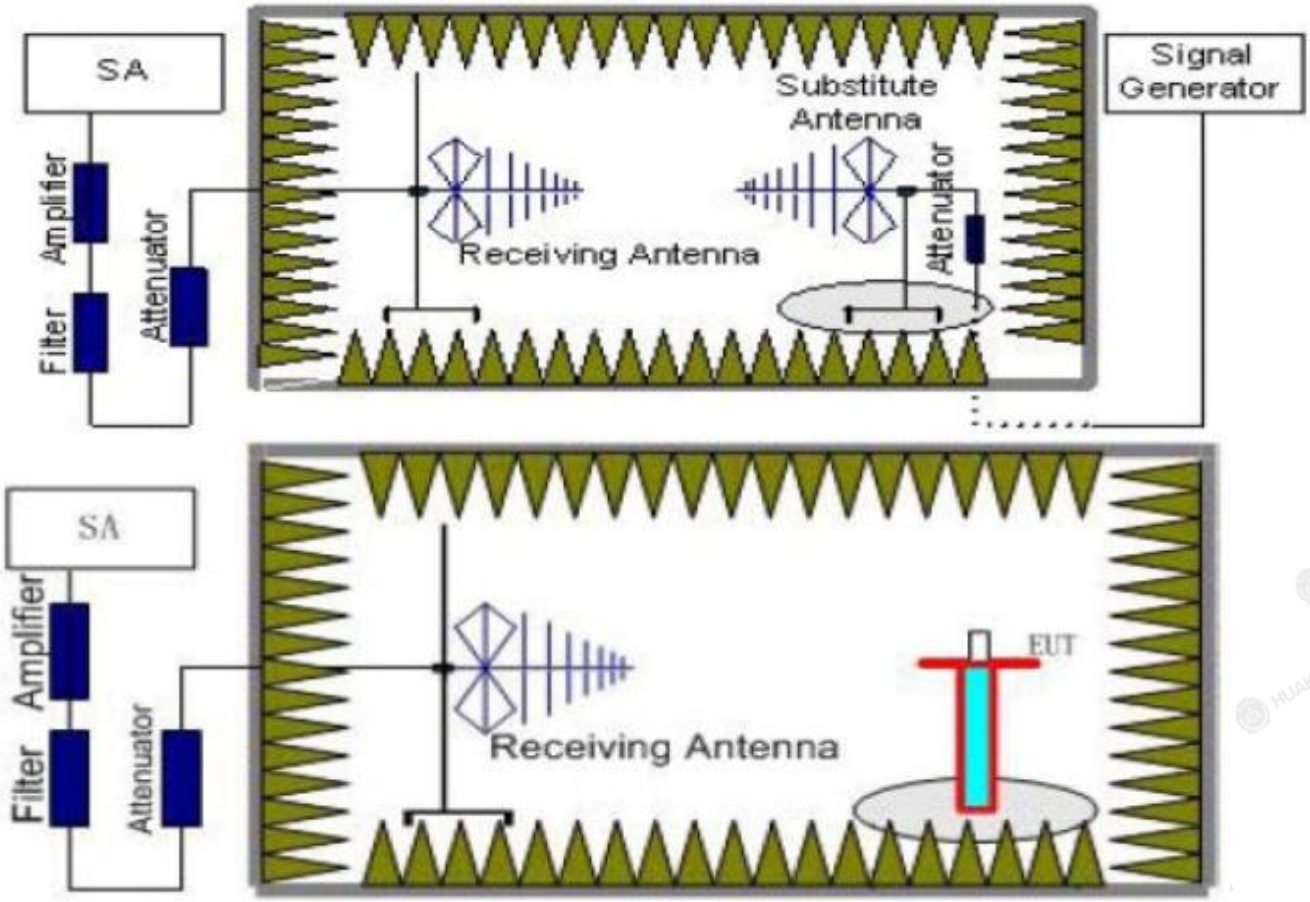
4.1.2. Radiated Output Power

LIMIT

This is the test for the maximum radiated power from the EUT.
Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p.

TEST CONFIGURATION



TEST PROCEDURE

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz, And the maximum value of the receiver should be recorded as (P_r).
4. The EUT shall be replaced by a substitution antenna.In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest isconnected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna.

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5. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.
   The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}- P_{Ag} - P_{cl}+ G_a
   We used SMF100A micowave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substituation test; The measurement results are amend as described below:
   Power(EIRP)=P_{Mea}- P_{cl}+ G_a
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
8. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST RESULTS

Radiated Measurement:

Remark:
1. *We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 2; recorded worst case for each Channel Bandwidth of LTE FDD Band 2.*
2. *EIRP=P_{Mea}(dBm)-P_{cl}(dB)+P_{Ag}(dB)+G_a(dBi)*
3. *We measured both Horizontal and Vertical direction, recorded worst case direction.*

LTE FDD Band 2_Channel Bandwidth 1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1850.7	-14.37	3.41	10.24	33.6	26.06	33.01	6.95	V
1880.0	-14.42	3.49	10.24	33.6	25.93	33.01	7.08	V
1909.3	-15.31	3.55	10.23	33.6	24.97	33.01	8.04	V

LTE FDD Band 2_Channel Bandwidth 3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1851.5	-14.03	3.41	10.24	33.6	26.4	33.01	6.61	V
1880.0	-15.63	3.49	10.24	33.6	24.72	33.01	8.29	V
1908.5	-15.5	3.55	10.23	33.6	24.78	33.01	8.23	V

LTE FDD Band 2_Channel Bandwidth 5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1852.5	-15.15	3.41	10.24	33.6	25.28	33.01	7.73	V
1880.0	-15.16	3.49	10.24	33.6	25.19	33.01	7.82	V
1907.5	-14.46	3.55	10.23	33.6	25.82	33.01	7.19	V

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LTE FDD Band 2_Channel Bandwidth 10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1855.0	-16.68	3.41	10.24	33.6	23.75	33.01	9.26	V
1880.0	-14.71	3.49	10.24	33.6	25.64	33.01	7.37	V
1905.0	-14.13	3.55	10.23	33.6	26.15	33.01	6.86	V

LTE FDD Band 2_Channel Bandwidth 15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1857.5	-14.62	3.41	10.24	33.6	25.81	33.01	7.2	V
1880.0	-15.08	3.49	10.24	33.6	25.27	33.01	7.74	V
1902.5	-14.01	3.55	10.23	33.6	26.27	33.01	6.74	V

LTE FDD Band 2_Channel Bandwidth 20MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1860.0	-12.38	3.41	10.24	33.6	28.05	33.01	4.96	V
1880.0	-13.97	3.49	10.24	33.6	26.38	33.01	6.63	V
1900.0	-16.45	3.55	10.23	33.6	23.83	33.01	9.18	V

LTE FDD Band 2_Channel Bandwidth 1.4MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1850.7	-14.57	3.41	10.24	33.6	25.86	33.01	7.15	V
1880.0	-15.07	3.49	10.24	33.6	25.28	33.01	7.73	V
1909.3	-13.62	3.55	10.23	33.6	26.66	33.01	6.35	V

LTE FDD Band 2_Channel Bandwidth 3MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1851.5	-15.51	3.41	10.24	33.6	24.92	33.01	8.09	V
1880.0	-14.82	3.49	10.24	33.6	25.53	33.01	7.48	V
1908.5	-15.86	3.55	10.23	33.6	24.42	33.01	8.59	V

LTE FDD Band 2_Channel Bandwidth 5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1852.5	-14.51	3.41	10.24	33.6	25.92	33.01	7.09	V
1880.0	-14.89	3.49	10.24	33.6	25.46	33.01	7.55	V
1907.5	-14.34	3.55	10.23	33.6	25.94	33.01	7.07	V

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LTE FDD Band 2_Channel Bandwidth 10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1855.0	-14.85	3.41	10.24	33.6	25.58	33.01	7.43	V
1880.0	-14.13	3.49	10.24	33.6	26.22	33.01	6.79	V
1905.0	-15.83	3.55	10.23	33.6	24.45	33.01	8.56	V

LTE FDD Band 2_Channel Bandwidth 15MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1857.5	-13.85	3.41	10.24	33.6	26.58	33.01	6.43	V
1880.0	-15.09	3.49	10.24	33.6	25.26	33.01	7.75	V
1902.5	-14.58	3.55	10.23	33.6	25.7	33.01	7.31	V

LTE FDD Band 2_Channel Bandwidth 20MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1860.0	-14.62	3.41	10.24	33.6	25.81	33.01	7.2	V
1880.0	-12.73	3.49	10.24	33.6	27.62	33.01	5.39	V
1900.0	-14.59	3.55	10.23	33.6	25.69	33.01	7.32	V

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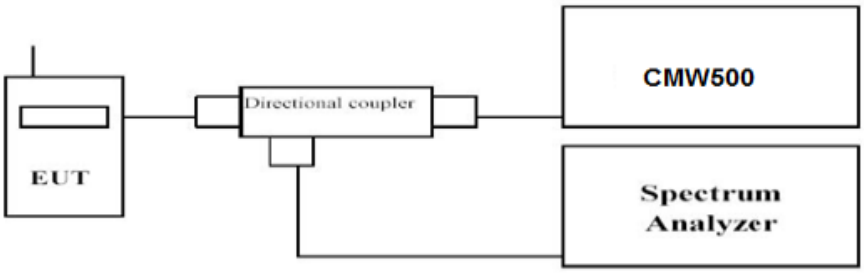
4.2 Peak-to-Average Ratio (PAR)

LIMIT

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

TEST CONFIGURATION



TEST PROCEDURE

1. Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
2. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
3. Set the number of counts to a value that stabilizes the measured CCDF curve;
4. Set the measurement interval as follows:
   1). for continuous transmissions, set to 1 ms;
   2). for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
5. Record the maximum PAPR level associated with a probability of 0.1%.

TEST RESULTS

Remark:

1. *We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 2; recorded worst case for each Channel Bandwidth of LTE FDD Band 2.*

LTE FDD Band 2				
TX Channel Bandwidth	Frequency (MHz)	RB Size/Offset	PAPR(dB)	
			QPSK	16QAM
1.4 MHz	1850.7	*1RB#0*	3.30	4.50
	1880.0		3.93	5.09
	1909.3		3.44	4.69
3 MHz	1851.5	*1RB#0*	3.23	4.22
	1880.0		3.86	4.81
	1908.5		3.47	4.44
5 MHz	1852.5	*1RB#0*	3.83	4.64
	1880.0		4.39	5.12
	1907.5		4.14	4.96
10 MHz	1855.0	*1RB#0*	3.73	4.67
	1880.0		4.28	5.20
	1905.0		4.47	5.40
15 MHz	1857.5	*1RB#0*	3.76	4.70
	1880.0		4.39	5.27
	1902.5		4.78	5.66
20 MHz	1860.0	*1RB#0*	3.49	4.39
	1880.0		4.40	5.35
	1900.0		4.50	5.27

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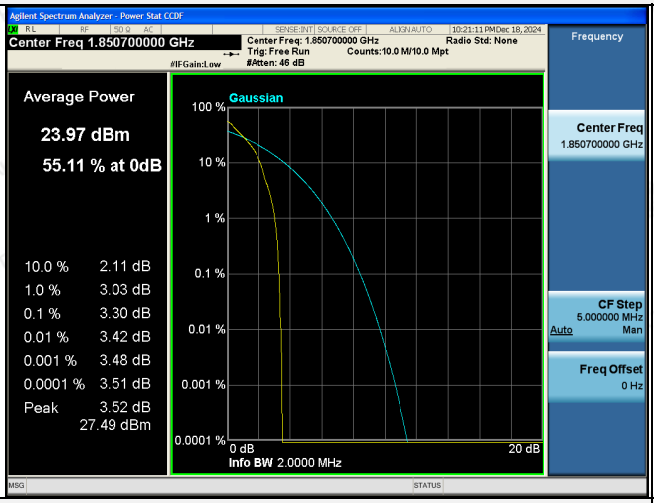
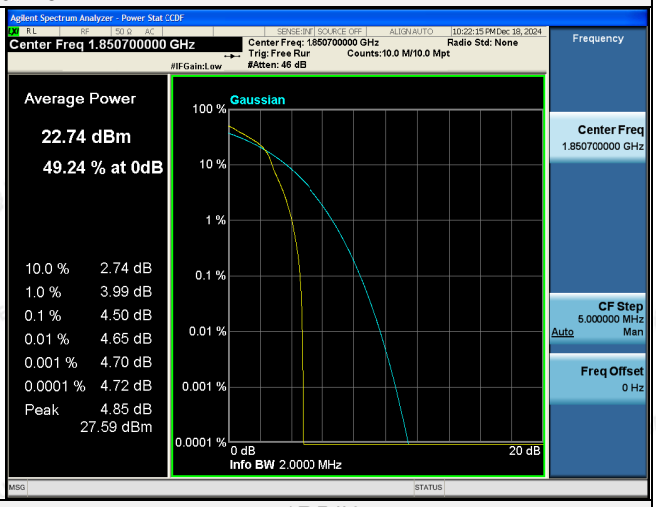
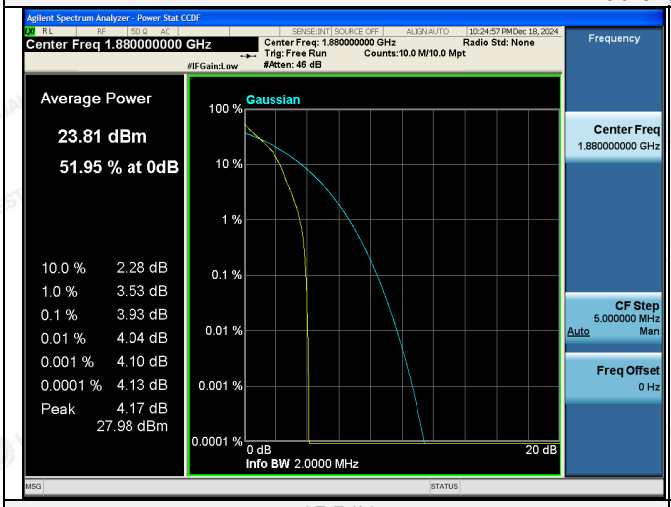
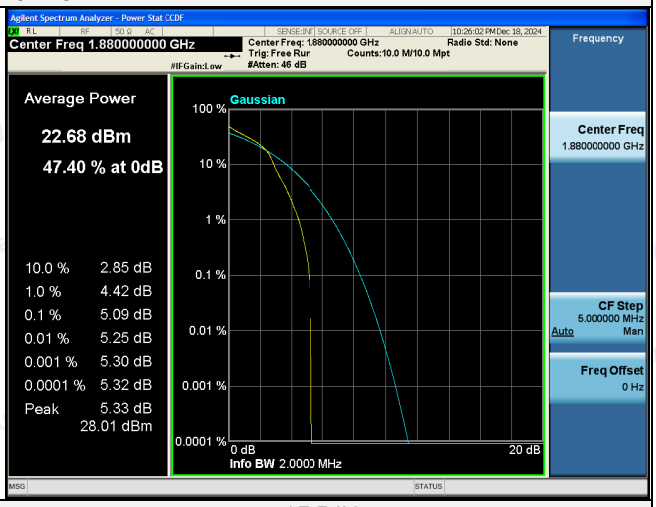
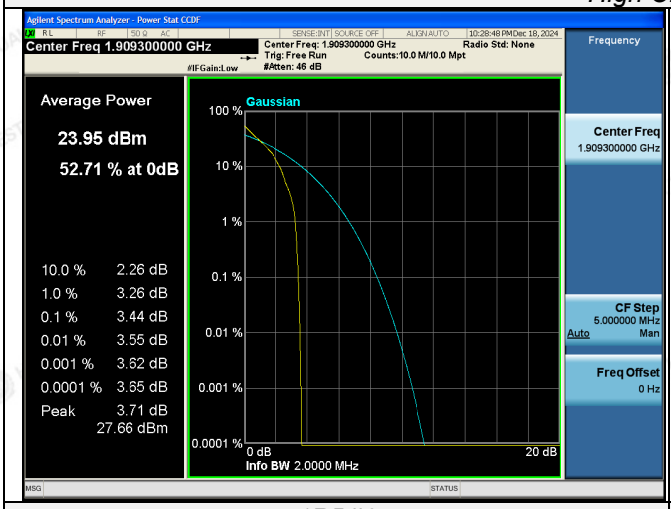
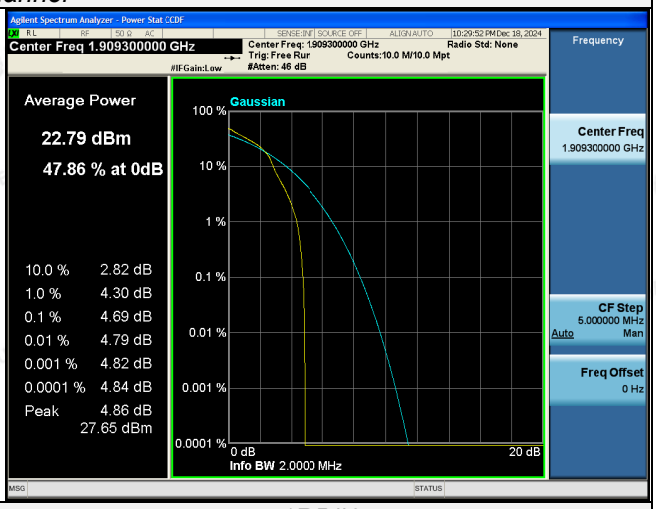
LTE FDD Band 2 – 1.4 MHz Channel BandwidthPAPR

QPSK	16QAM
Low Channel	
	
1RB#0	1RB#0
Middle Channel	
	
1RB#0	1RB#0
High Channel	
	
1RB#0	1RB#0

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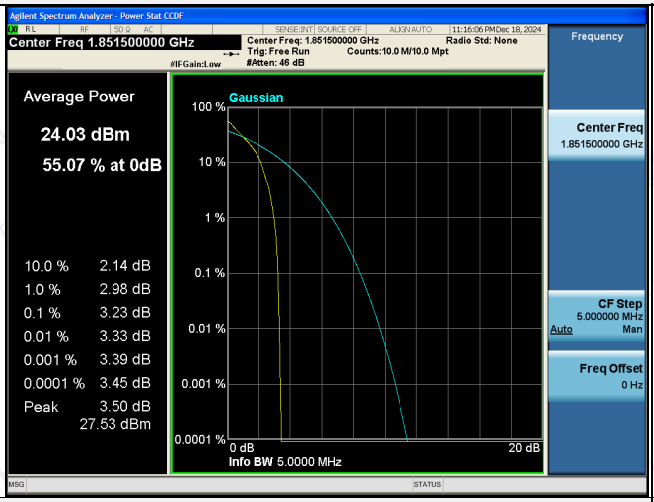
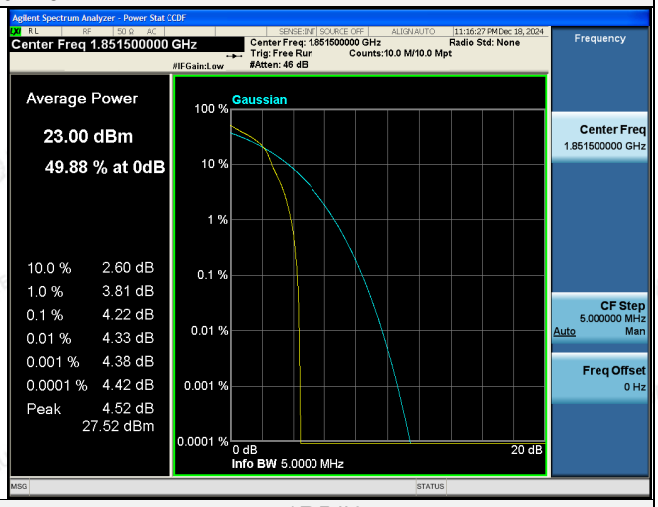
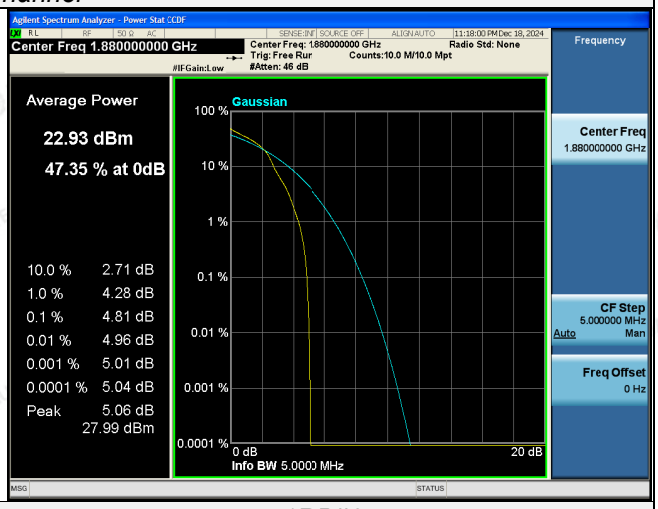
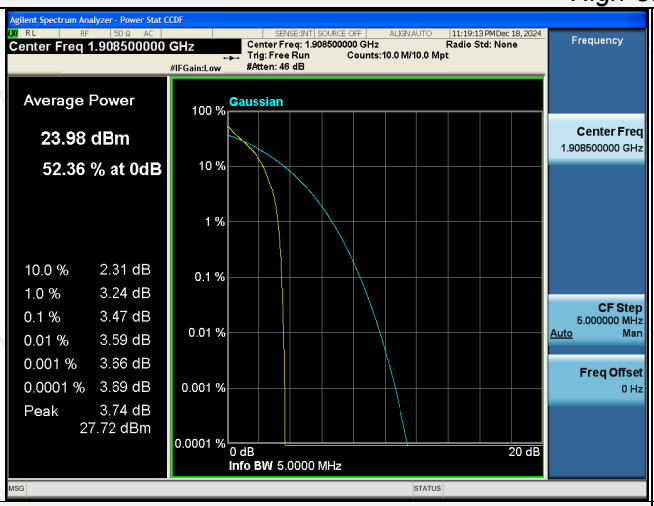
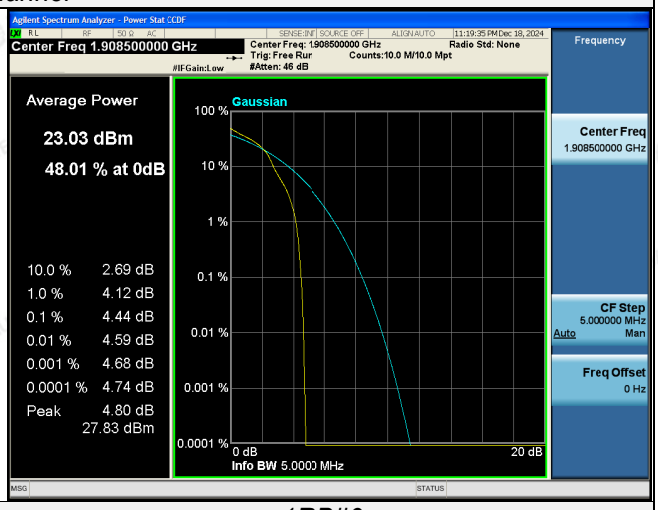
LTE FDD Band 2–3MHz Channel BandwidthPAPR

QPSK	16QAM
Low Channel	
	
1RB#0	1RB#0
Middle Channel	
	
1RB#0	1RB#0
High Channel	
	
1RB#0	1RB#0

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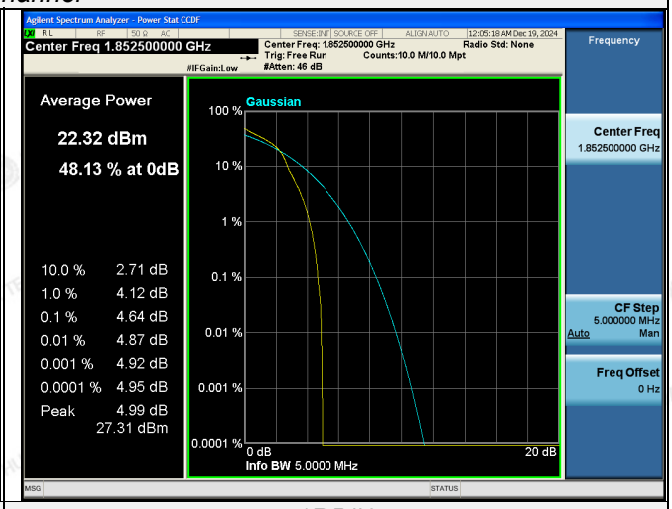
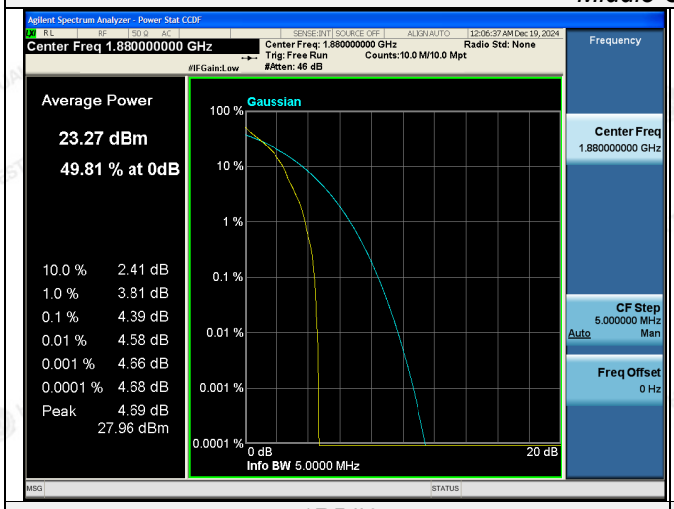
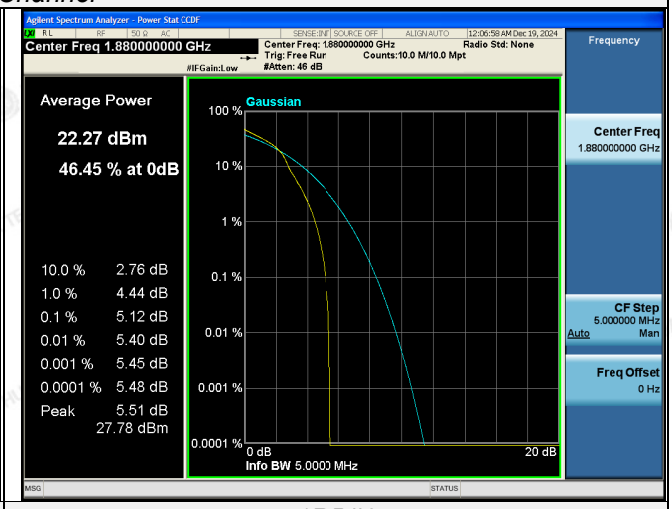
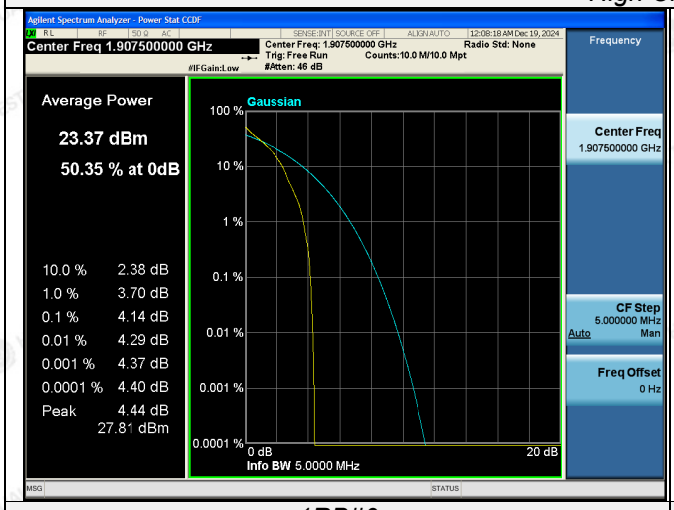
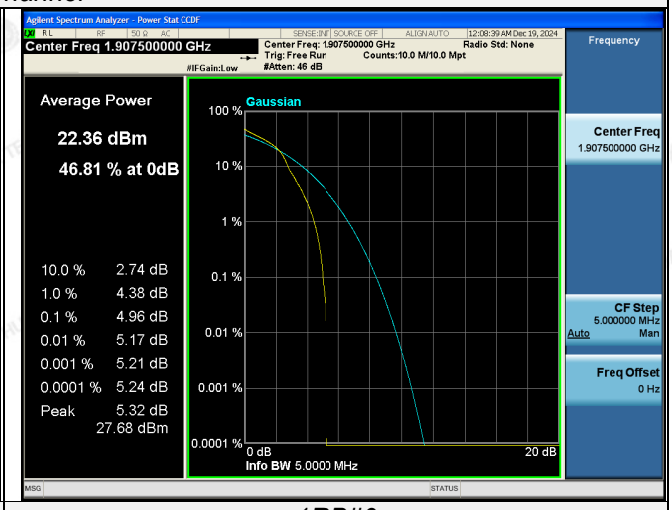
LTE FDD Band 2–5MHz Channel BandwidthPAPR

QPSK	16QAM
Low Channel	
	
1RB#0	1RB#0
Middle Channel	
	
1RB#0	1RB#0
High Channel	
	
1RB#0	1RB#0

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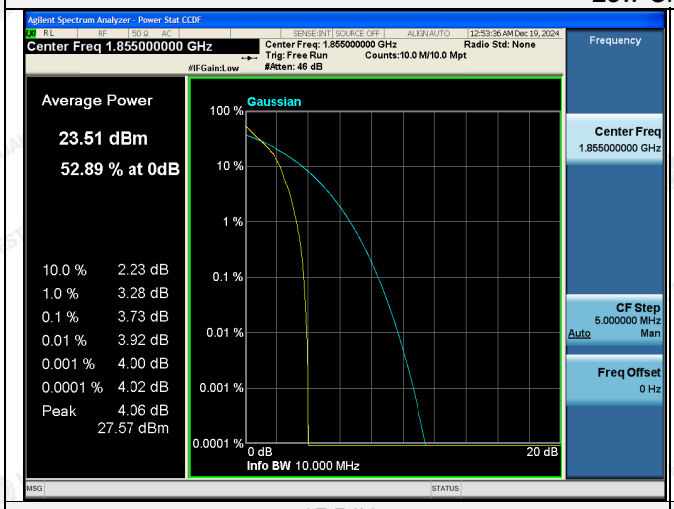
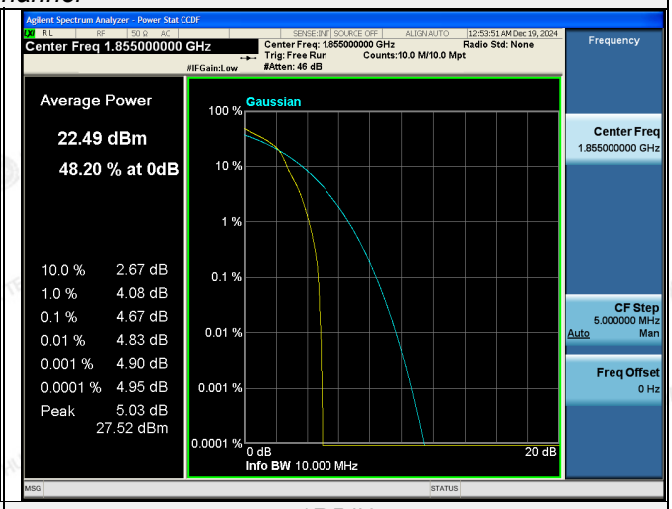
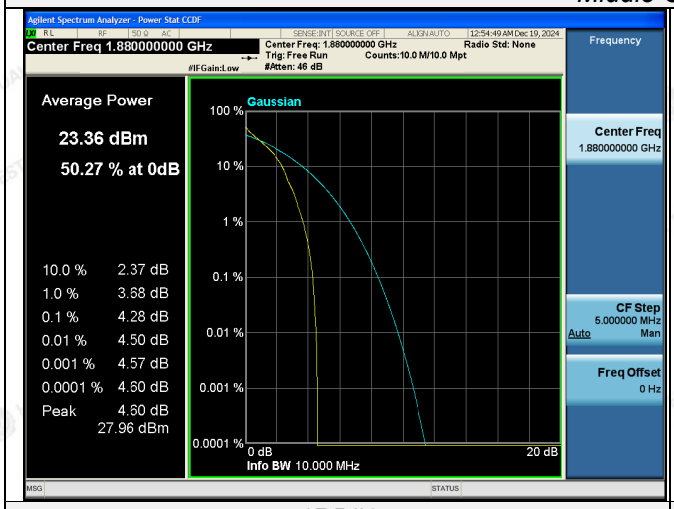
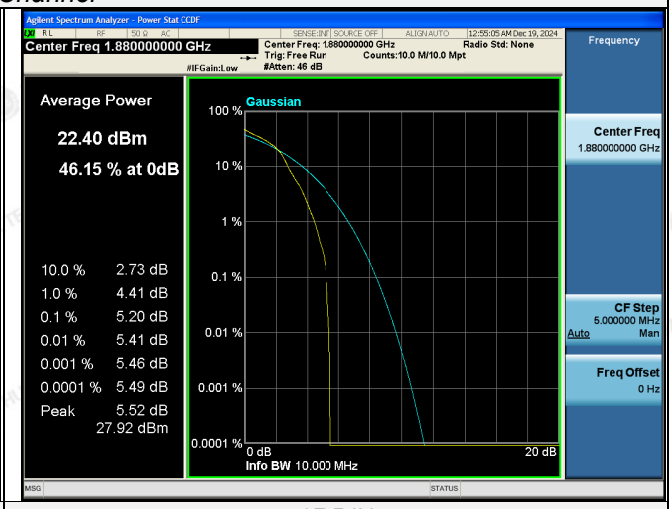
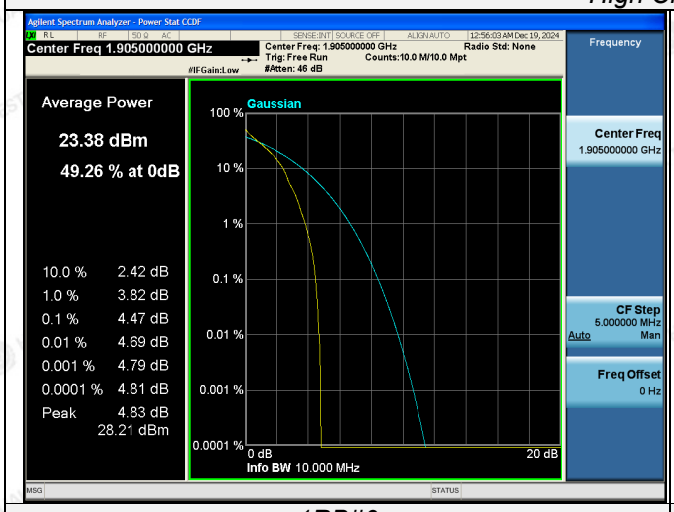
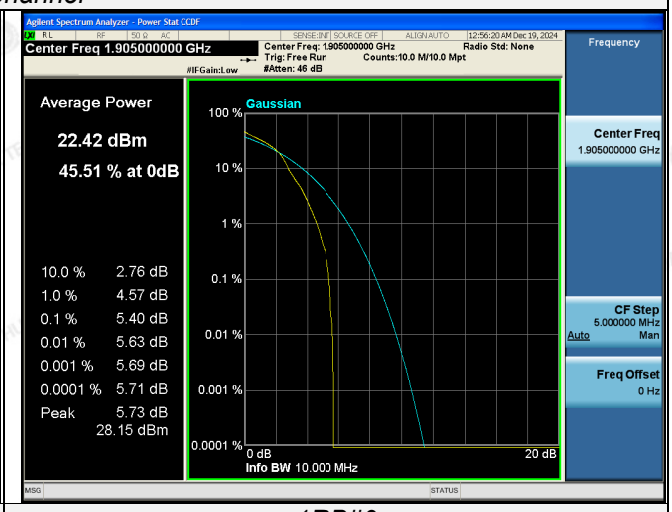
LTE FDD Band 2–10MHz Channel BandwidthPAPR

QPSK	16QAM
Low Channel	
	
1RB#0	1RB#0
Middle Channel	
	
1RB#0	1RB#0
High Channel	
	
1RB#0	1RB#0

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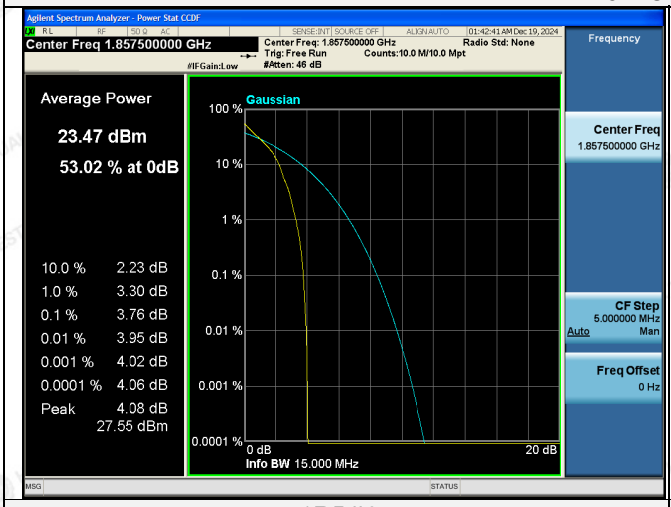
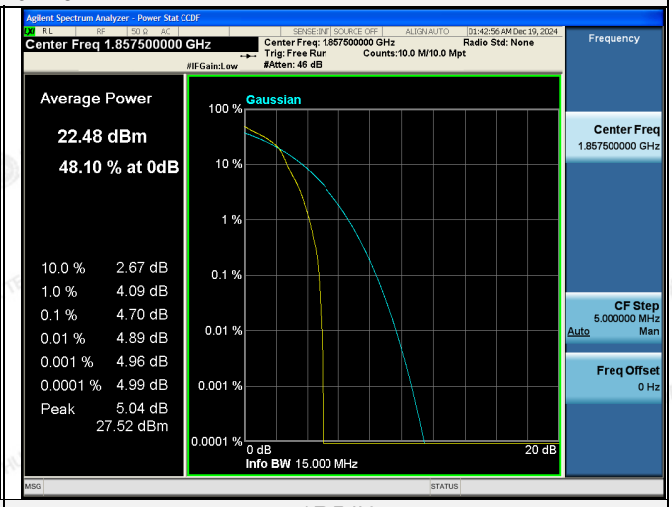
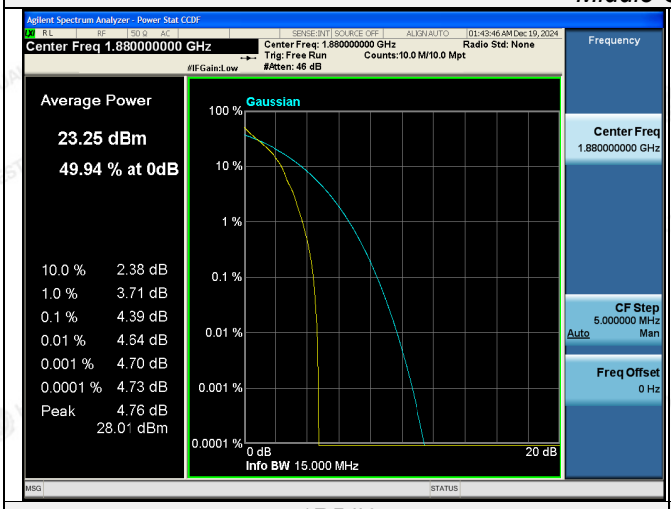
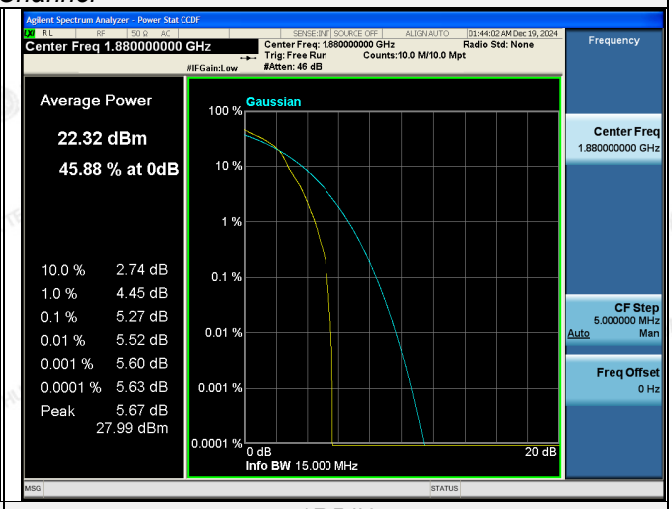
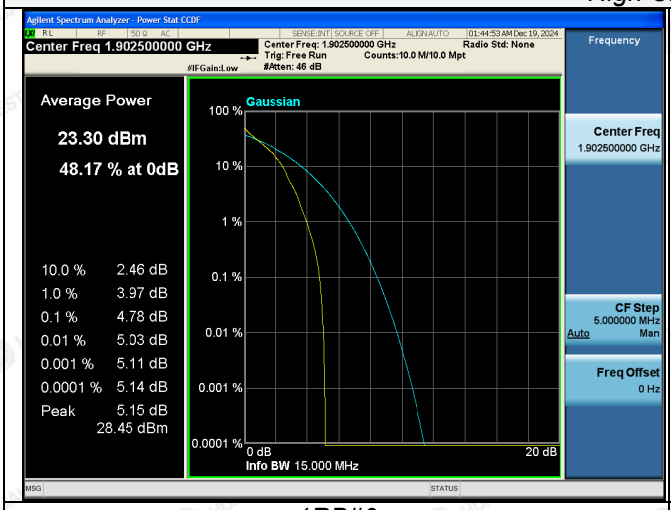
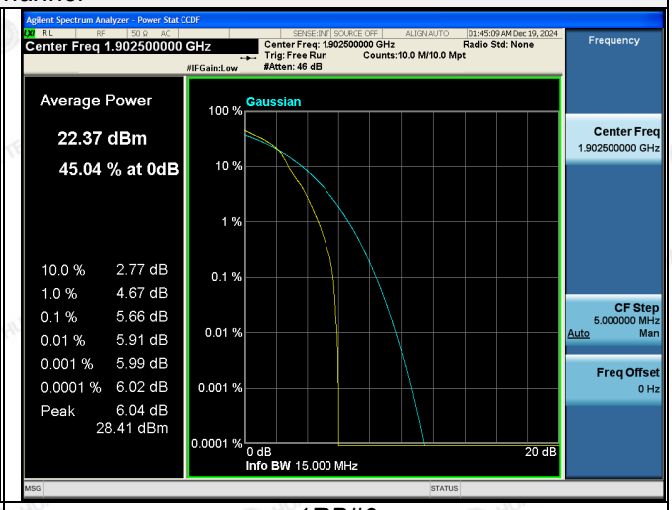
LTE FDD Band 2– 15 MHz Channel BandwidthPAPR

QPSK	16QAM
Low Channel	
	
1RB#0	1RB#0
Middle Channel	
	
1RB#0	1RB#0
High Channel	
	
1RB#0	1RB#0

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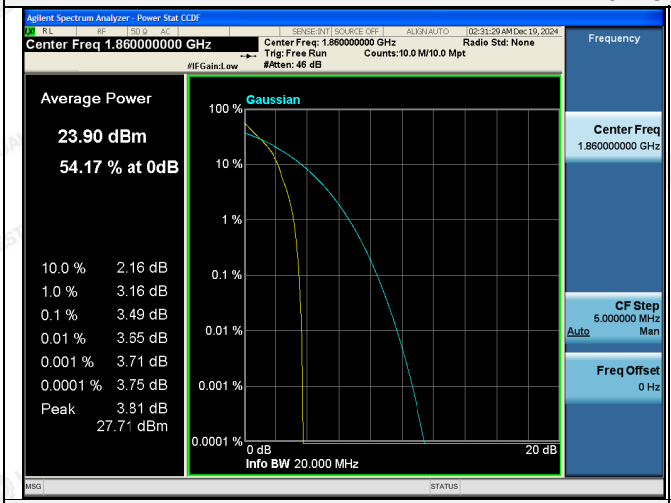
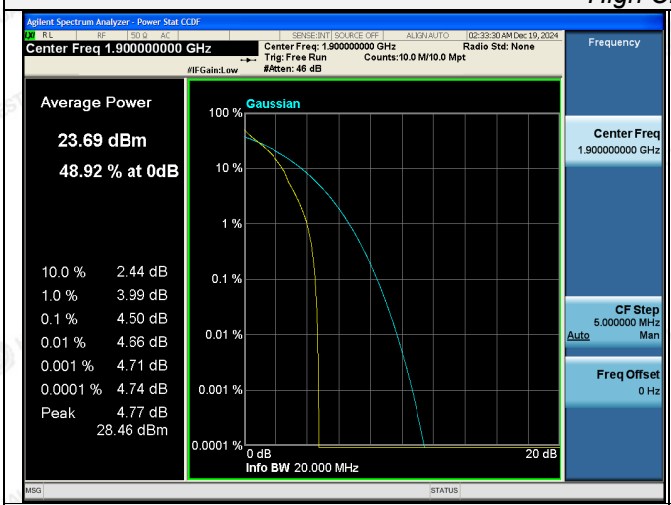
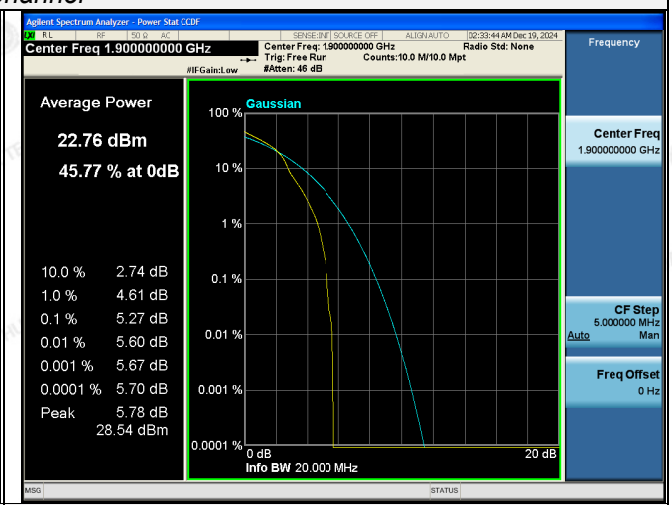
LTE FDD Band 2–20MHz Channel BandwidthPAPR

QPSK	16QAM
Low Channel	
	
1RB#0	1RB#0
Middle Channel	
1RB#0	1RB#0
High Channel	
	
1RB#0	1RB#0

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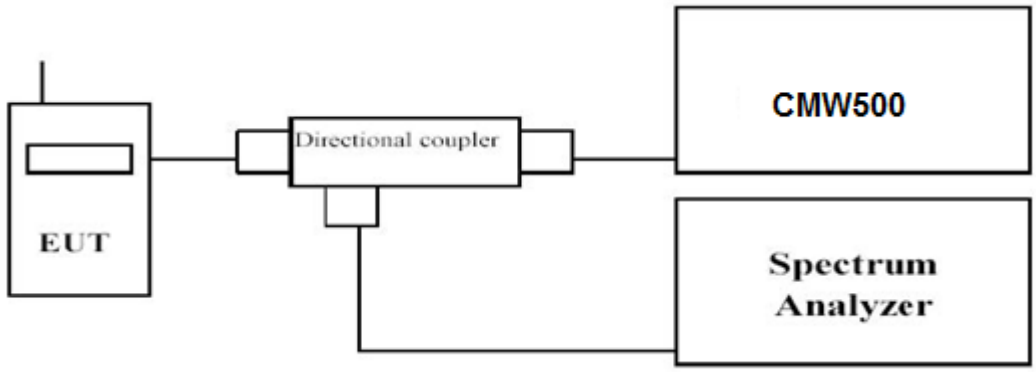
4.3 Occupied Bandwidth and Emission Bandwidth

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at low, middle and high channel in each band. The -26dBc Emission bandwidth was also measured and recorded.
Set RBWwas set to about 1% of emission BW, VBW≥3 times RBW.
-26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth isthe delta frequency between the two points where the display line intersects the signal trace.

TEST RESULTS

Remark:

1. *We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 2; recorded worst case for each Channel Bandwidth of LTE FDD Band 2.*

LTE FDD Band 2						
TX Channel Bandwidth	RB Size/Offset	Frequency (MHz)	-26dBc Emission bandwidth (MHz)		99% Occupied bandwidth (MHz)	
			QPSK	16QAM	QPSK	16QAM
1.4 MHz	*6RB#0*	1850.7	1.325	1.300	1.0925	1.0988
		1880.0	1.309	1.306	1.0921	1.1011
		1909.3	1.308	1.306	1.0950	1.1000
3 MHz	*15RB#0*	1851.5	2.917	2.888	2.6939	2.6847
		1880.0	2.897	2.900	2.6916	2.6793
		1908.5	2.894	2.910	2.6908	2.6772
5 MHz	*25RB#0*	1852.5	4.947	4.951	4.4980	4.4961
		1880.0	4.940	4.919	4.4946	4.4923
		1907.5	5.502	5.017	4.5020	4.4927
10 MHz	*50RB#0*	1855.0	9.823	9.760	8.9941	8.9788
		1880.0	9.837	9.735	8.9888	8.9835
		1905.0	9.802	9.739	8.9885	8.9690
15 MHz	*75RB#0*	1857.5	14.78	14.59	13.505	13.493
		1880.0	14.74	14.66	13.498	13.466
		1902.5	14.62	14.64	13.481	13.473
20 MHz	*100RB#0*	1860.0	19.40	19.45	17.972	18.017
		1880.0	19.59	19.35	17.956	17.946
		1900.0	19.41	19.42	17.952	17.952

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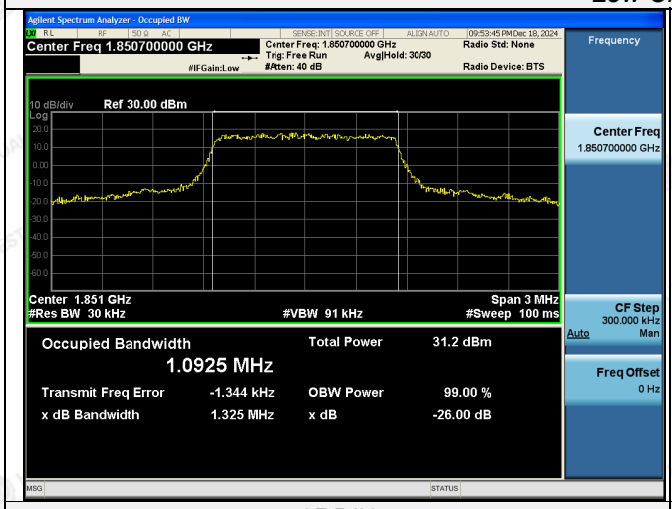
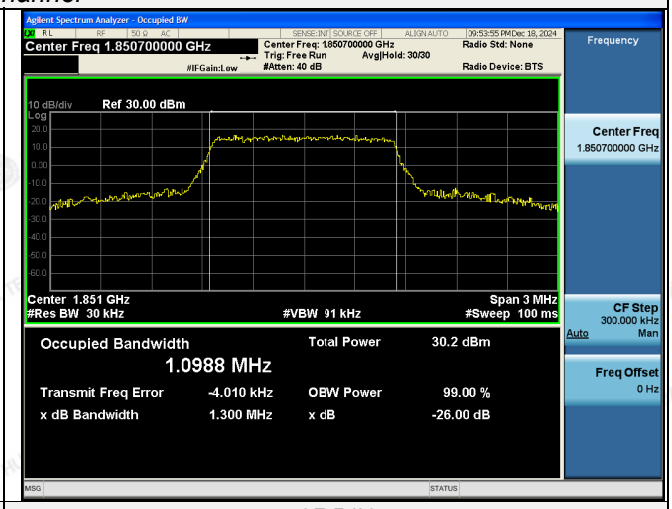
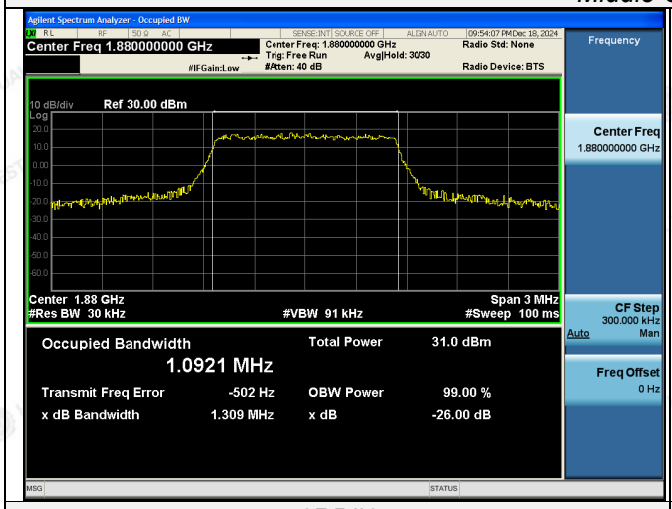
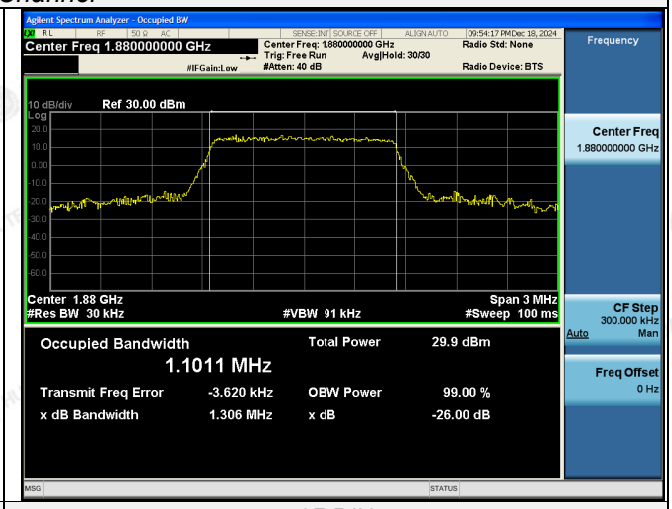
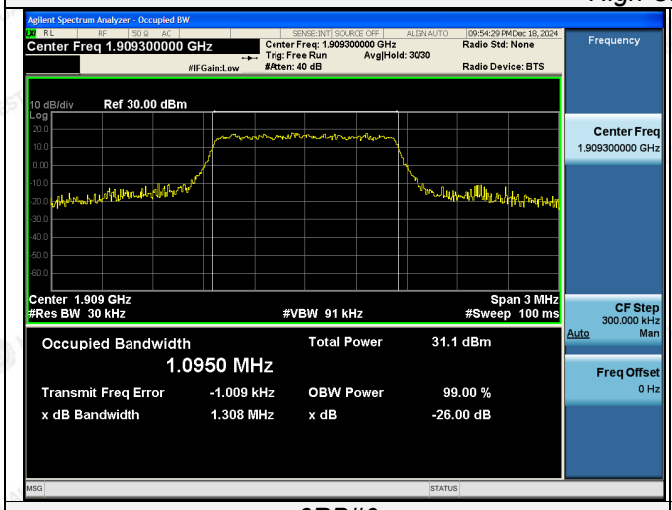
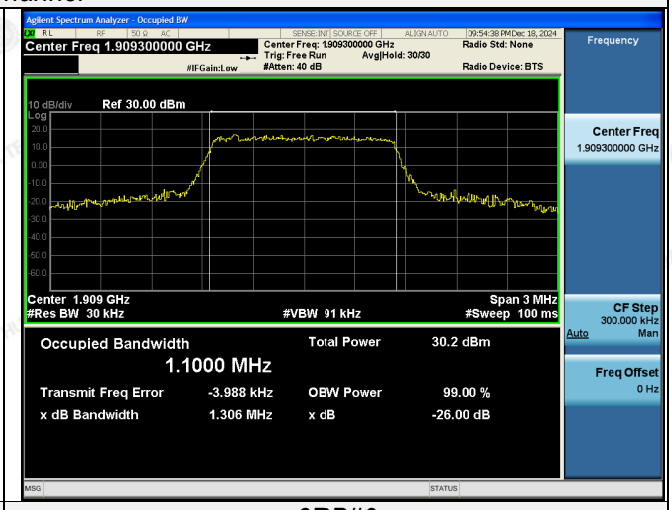
LTE FDD Band 2 – 1.4 MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK	16QAM
Low Channel	
	
6RB#0	6RB#0
Middle Channel	
	
6RB#0	6RB#0
High Channel	
	
6RB#0	6RB#0

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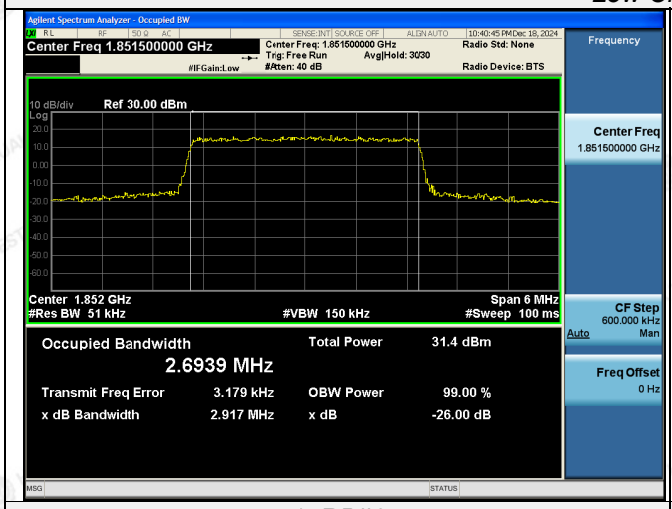
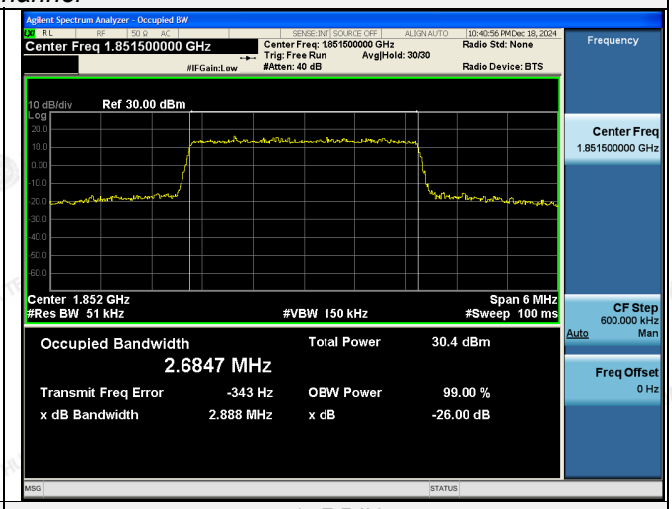
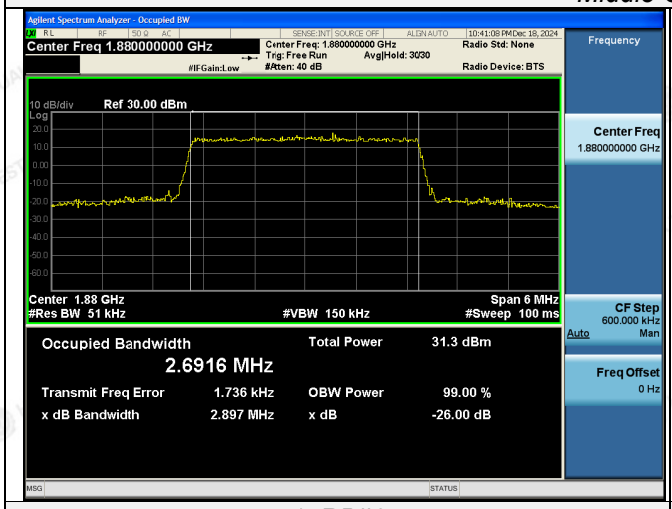
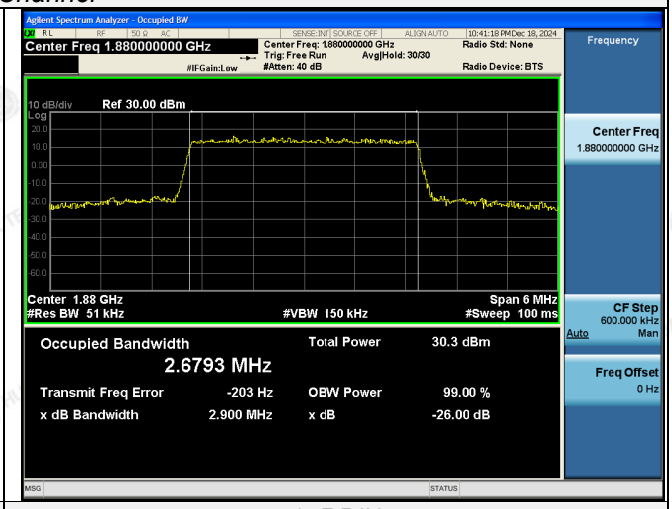
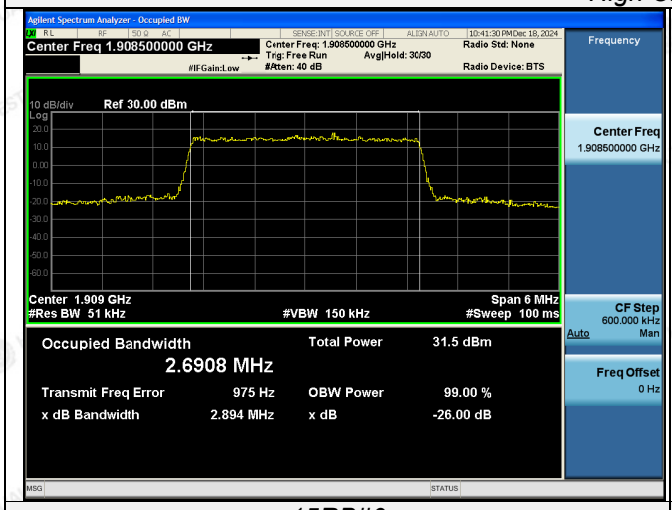
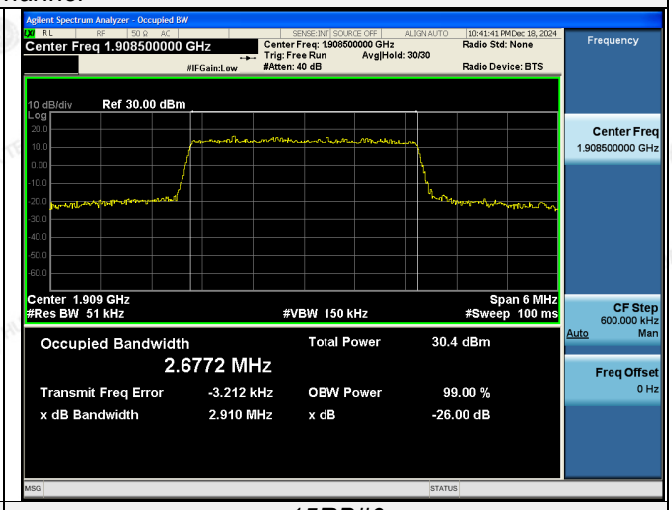
LTE FDD Band 2–3MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK	16QAM
Low Channel	
	
15RB#0	15RB#0
Middle Channel	
	
15RB#0	15RB#0
High Channel	
	
15RB#0	15RB#0

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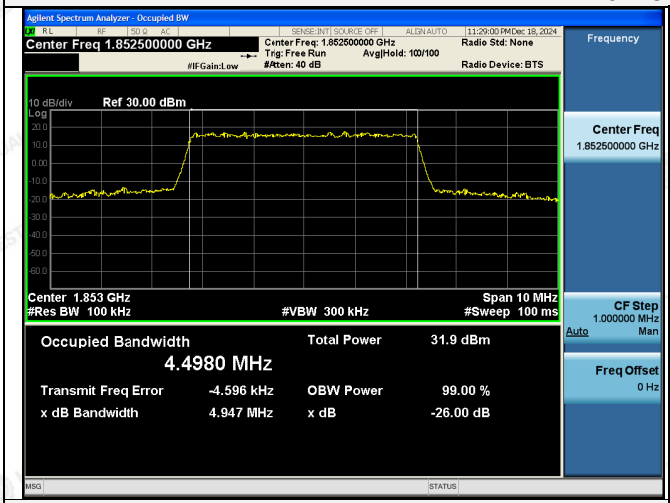
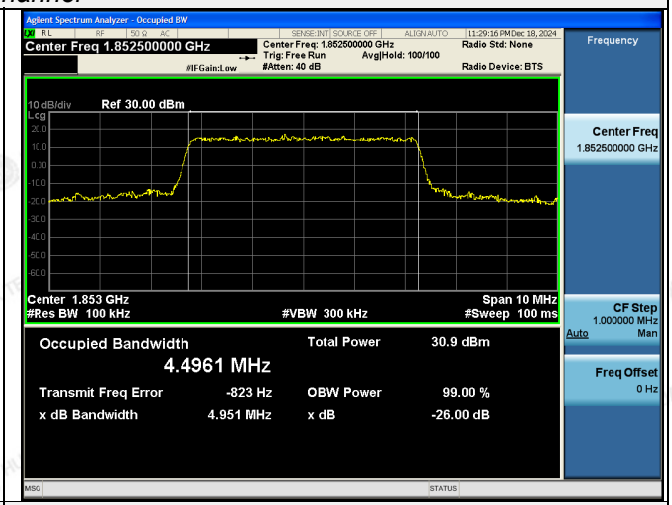
LTE FDD Band 2–5MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK	16QAM

Low Channel

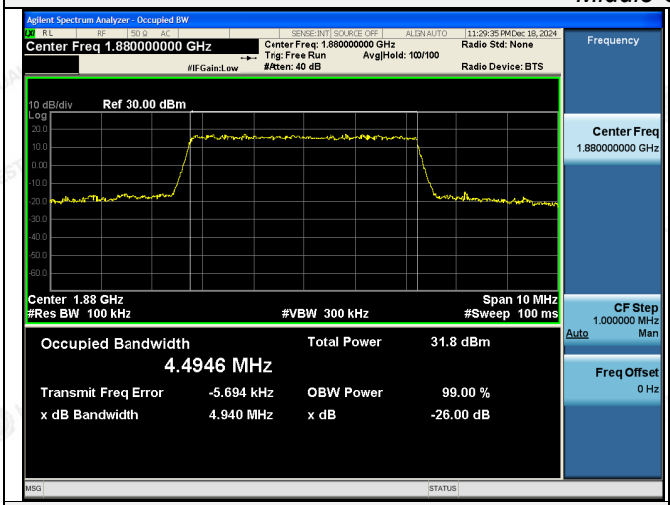


25RB#0

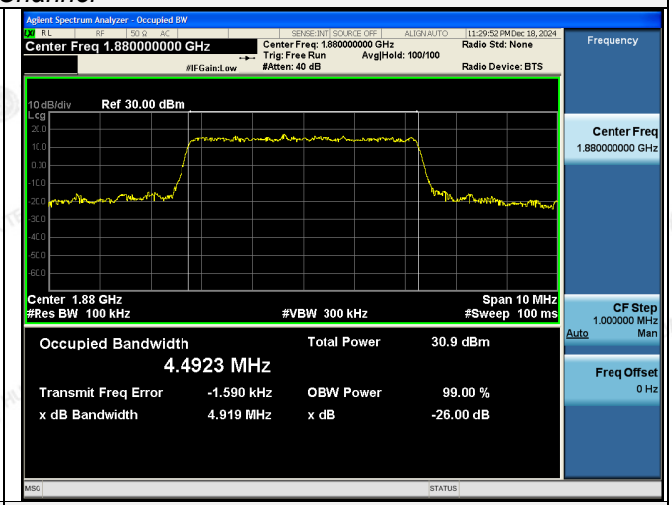


25RB#0

Middle Channel

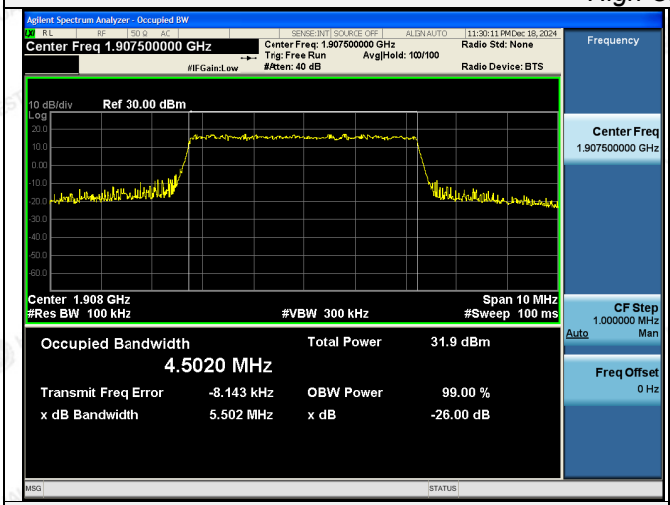


25RB#0

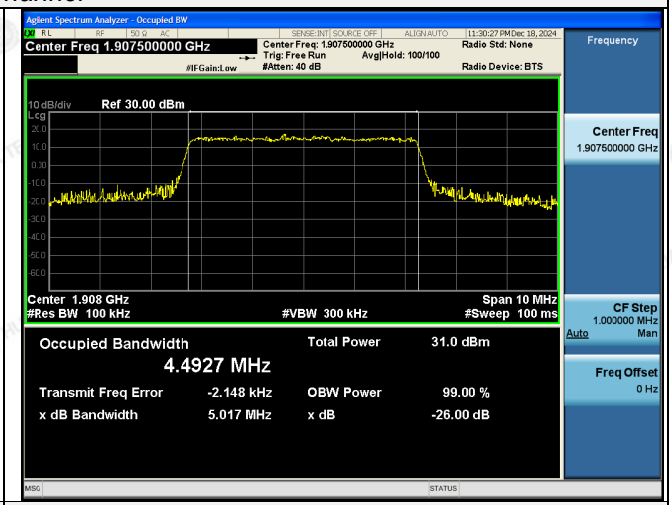


25RB#0

High Channel



25RB#0



25RB#0

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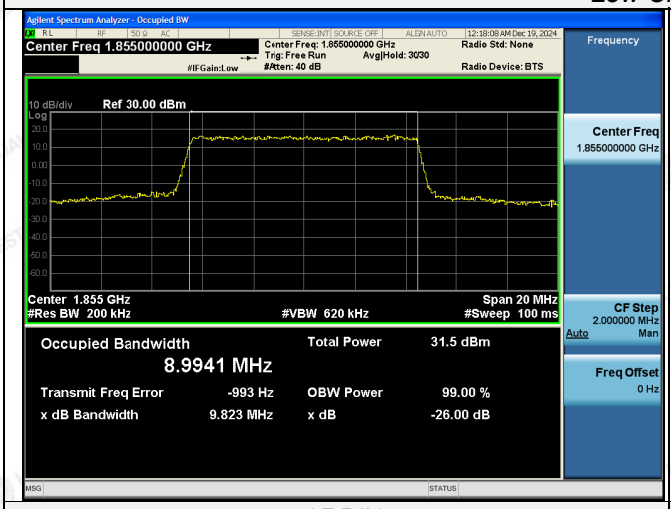
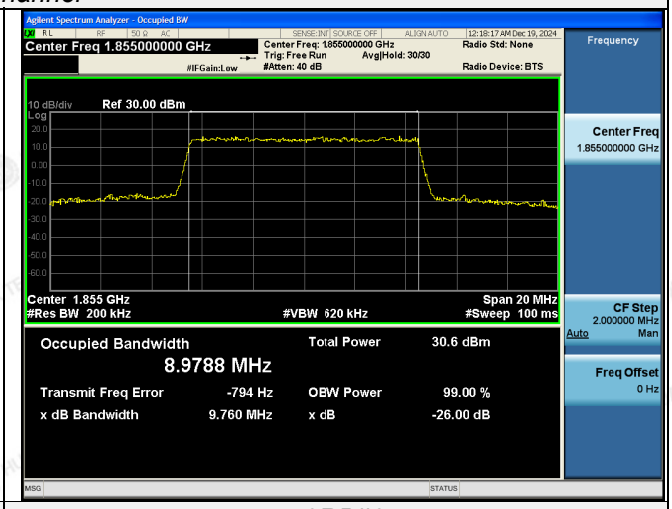
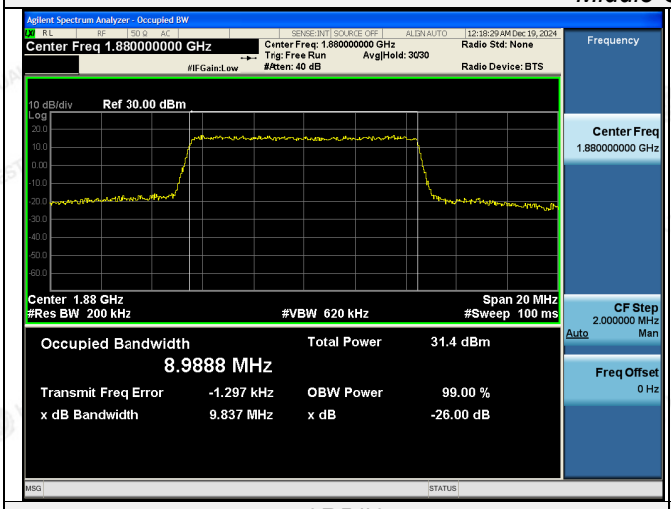
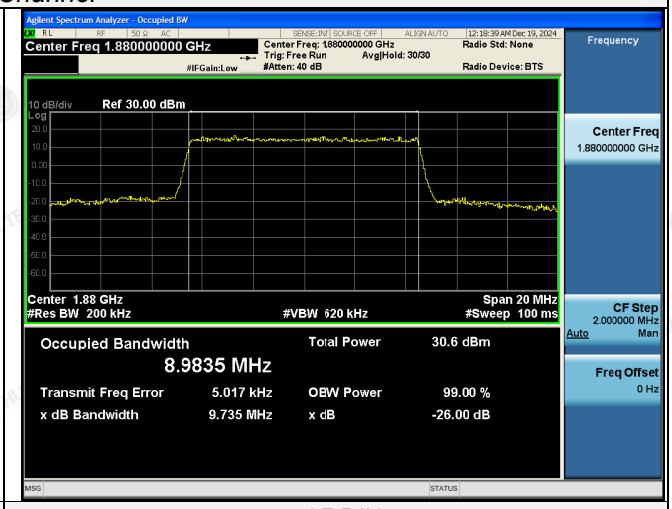
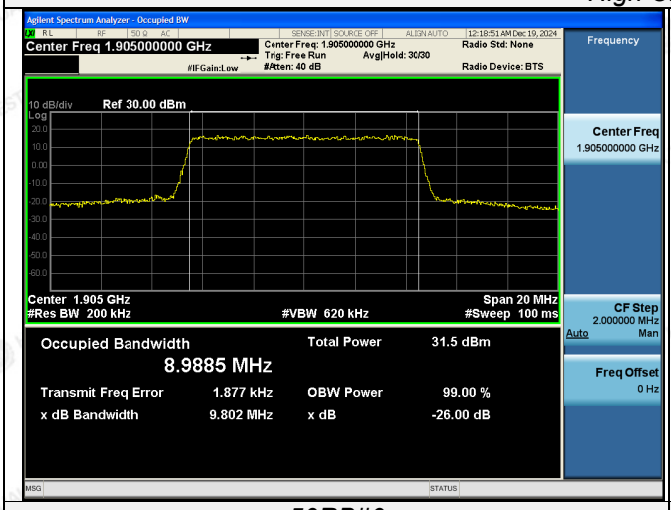
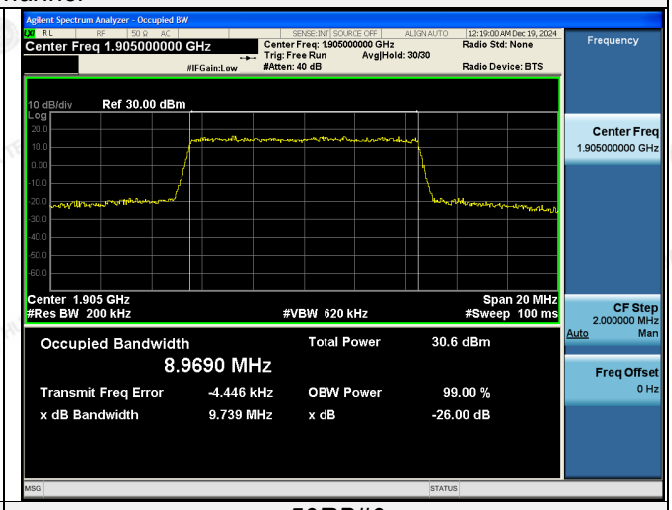
LTE FDD Band 2–10MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK	16QAM
Low Channel	
	
50RB#0	50RB#0
Middle Channel	
	
50RB#0	50RB#0
High Channel	
	
50RB#0	50RB#0

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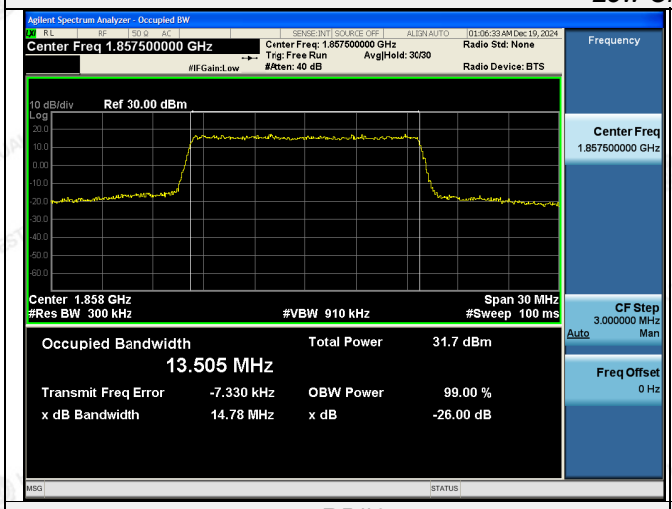
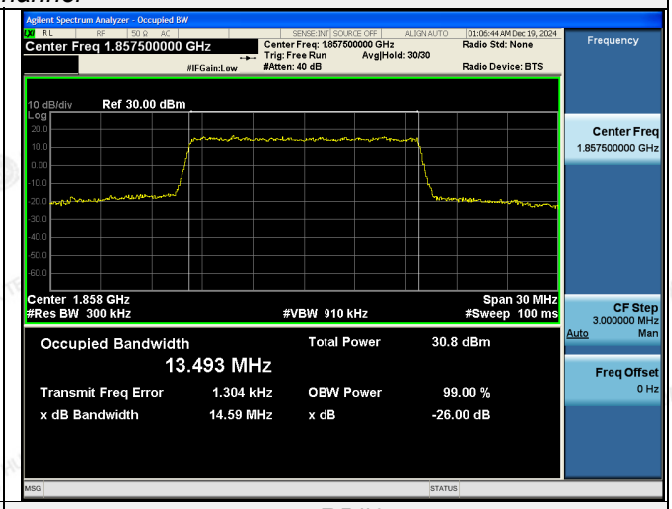
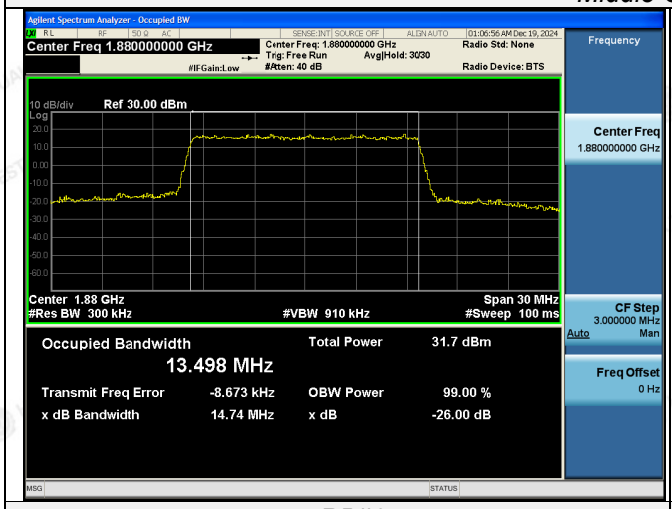
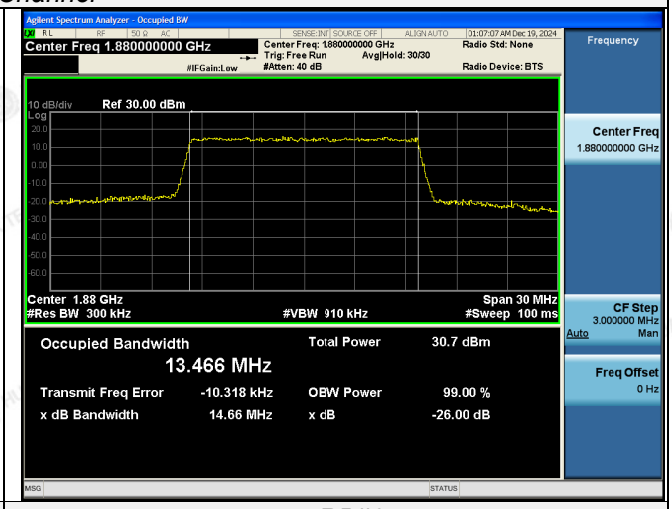
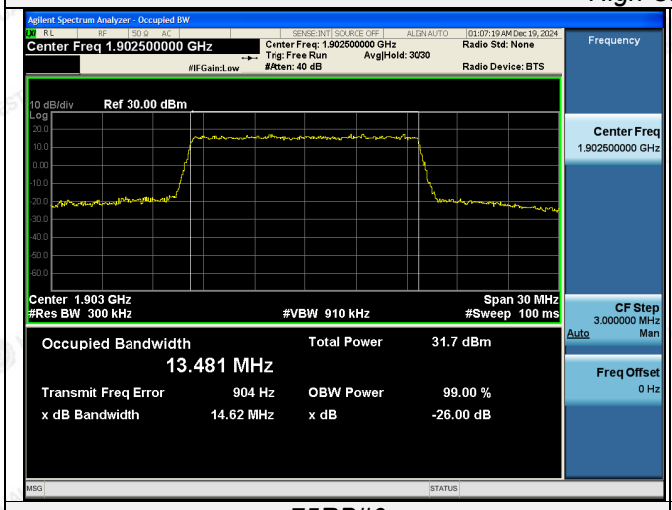
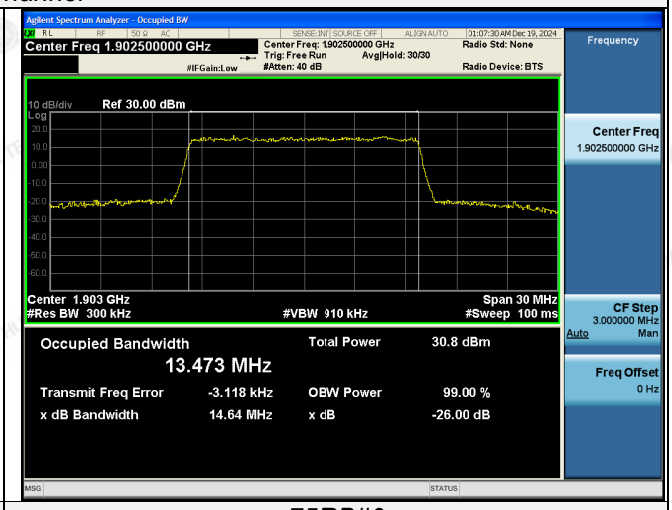
LTE FDD Band 2–15MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK	16QAM
Low Channel	
	
75RB#0	75RB#0
Middle Channel	
	
75RB#0	75RB#0
High Channel	
	
75RB#0	75RB#0

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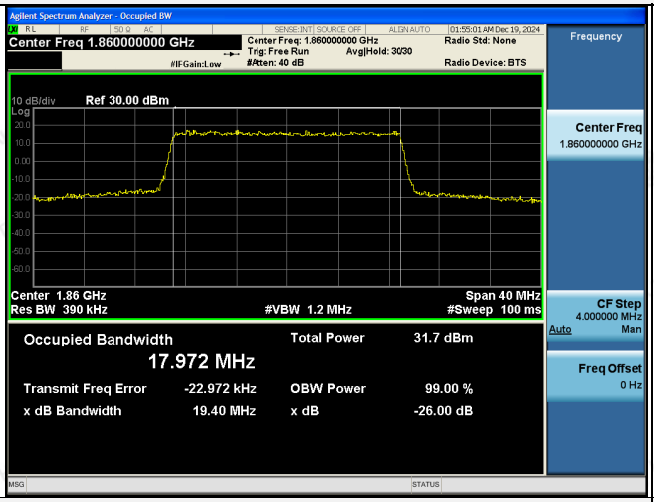
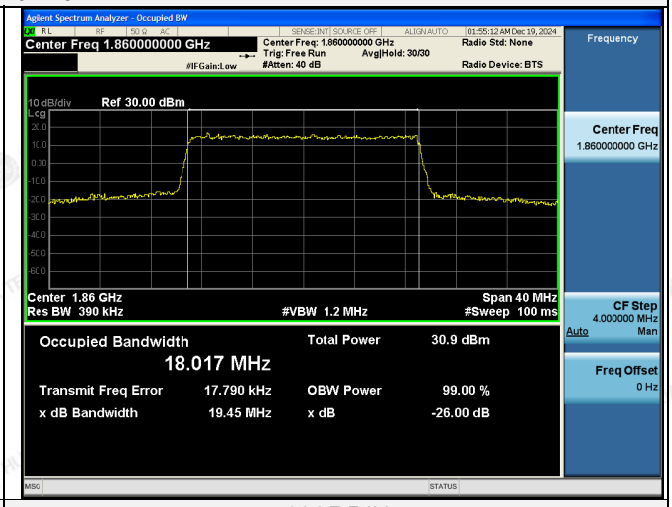
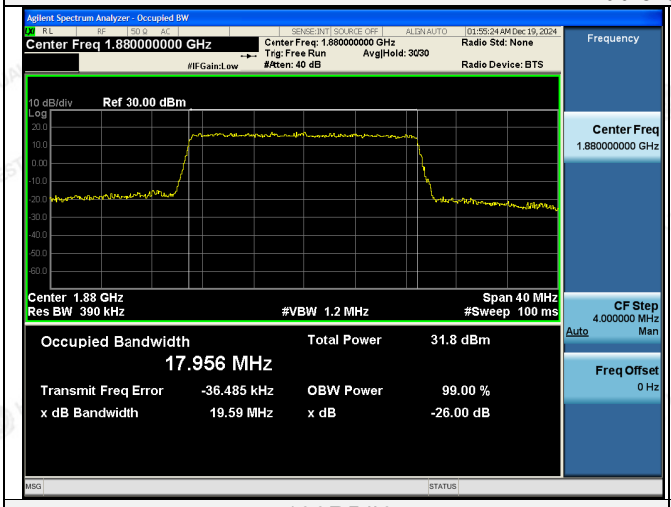
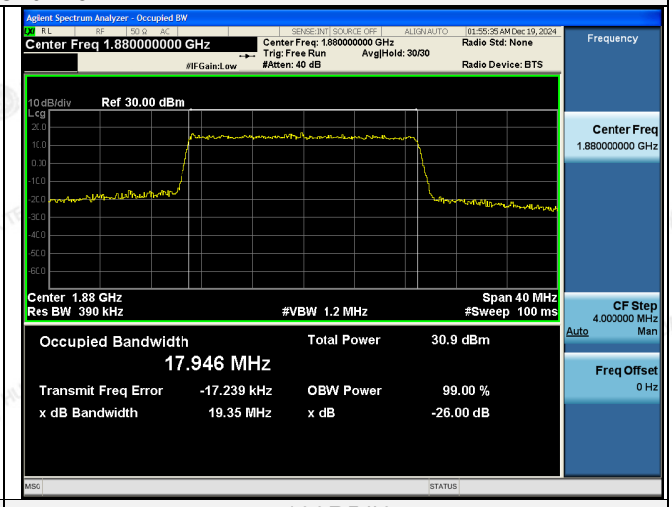
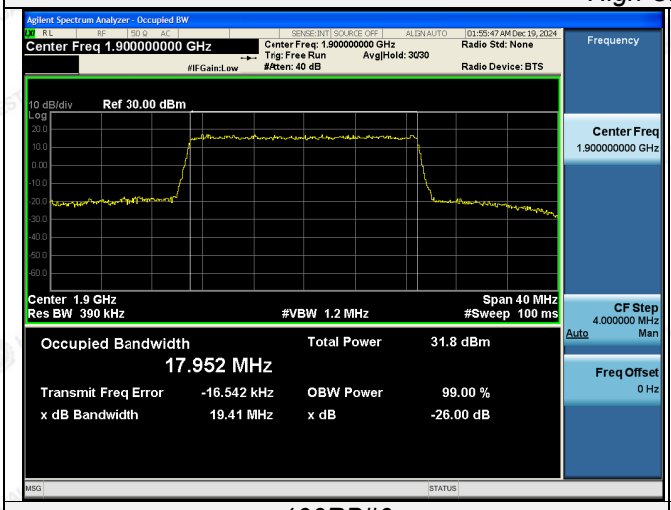
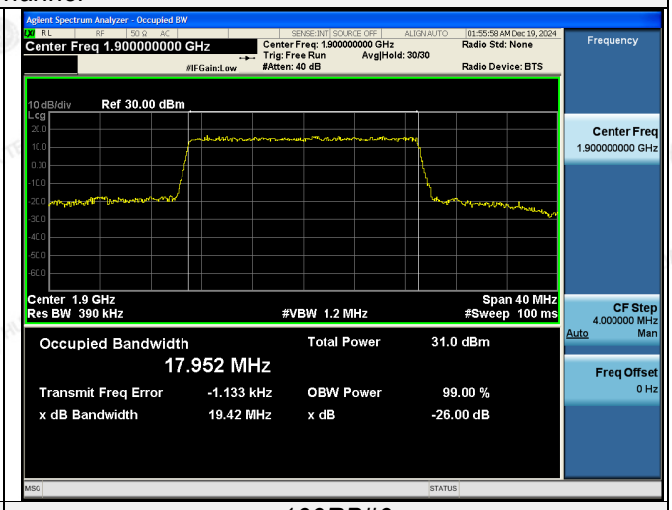
LTE FDD Band 2–20MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK	16QAM
Low Channel	
	
100RB#0	100RB#0
Middle Channel	
	
100RB#0	100RB#0
High Channel	
	
100RB#0	100RB#0

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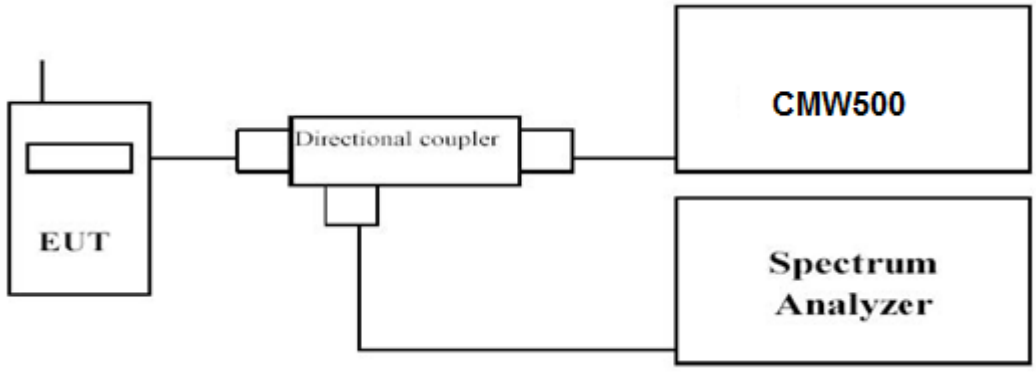
4.4 Band Edge Compliance

LIMIT

Per FCC §24.238 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 + 10log(P) dB.

TEST CONFIGURATION



TEST PROCEDURE

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowestand highest channels for each band and different modulation.
5. Measure Band edge using RMS (Average) detector by spectrum.

TEST RESULTS

Remark:

1. *We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 2; recorded worst case for each Channel Bandwidth of LTE FDD Band 2.*

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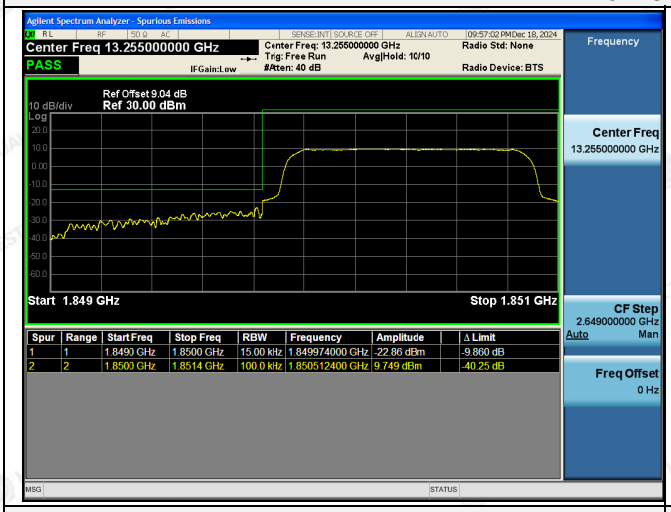
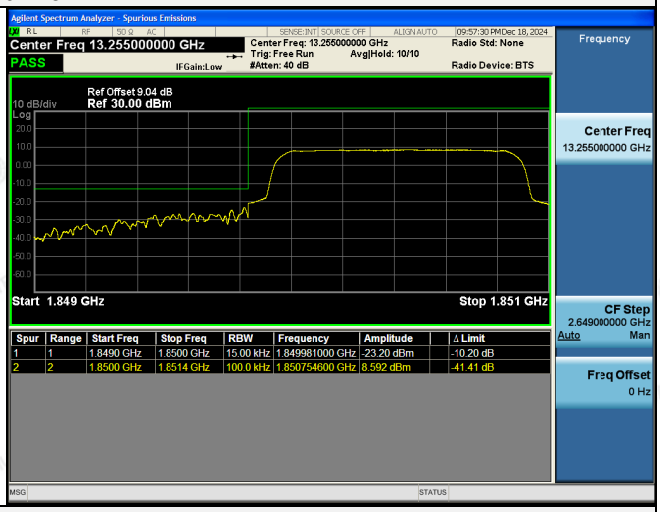
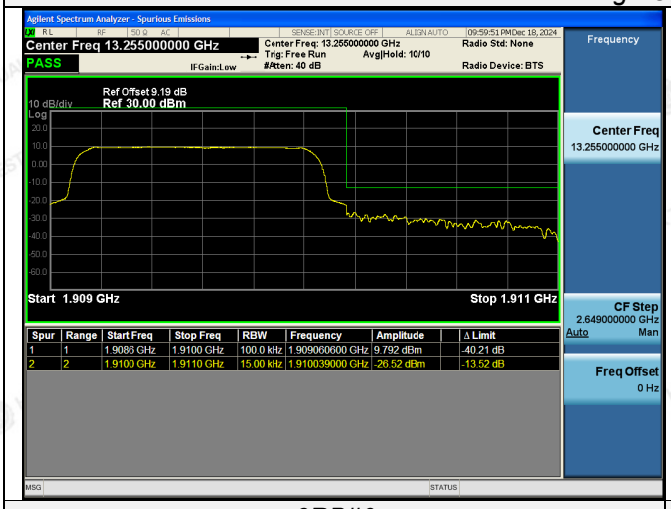
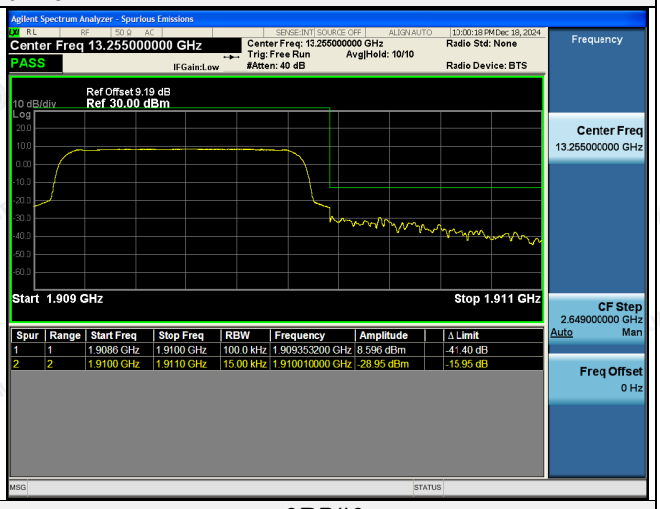
LTE FDD Band 2 – 1.4 MHz Channel BandwidthBand Edge Compliance	
QPSK	16QAM
Low Channel	
	
6RB#0	6RB#0
High Channel	
	
6RB#0	6RB#0

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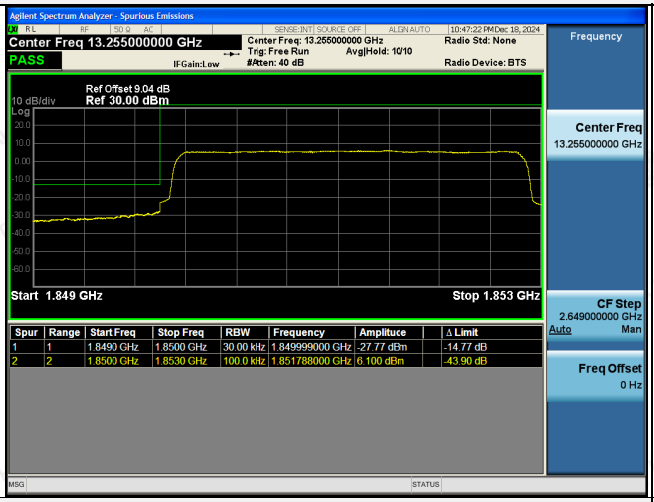
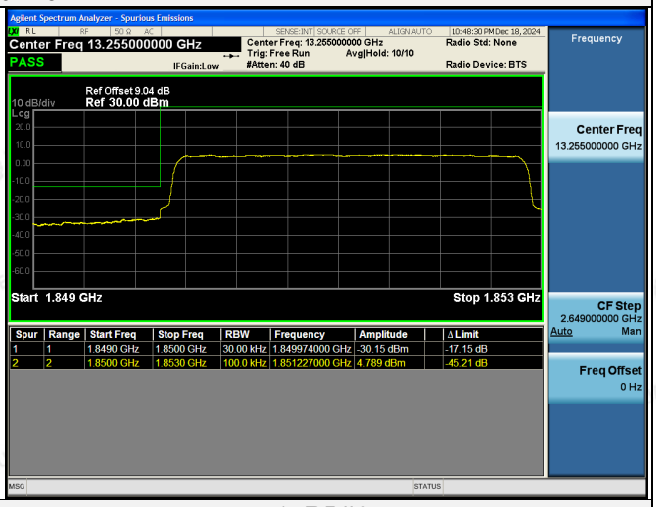
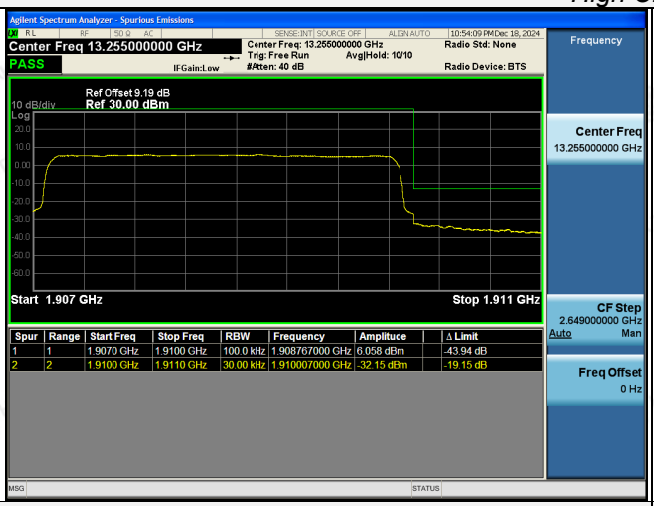
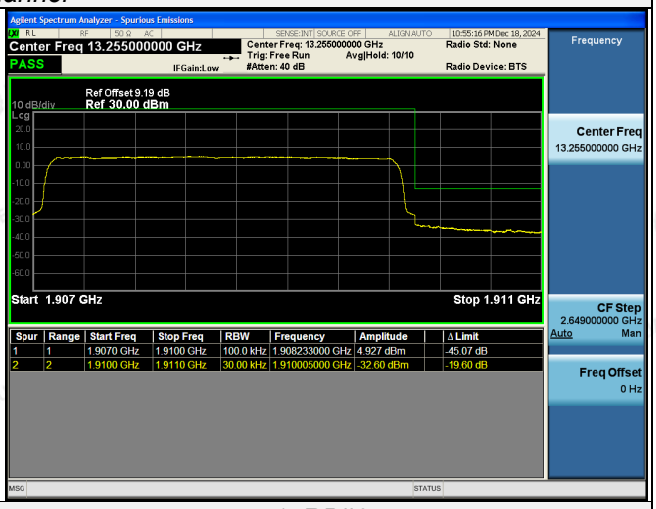
LTE FDD Band 2–3MHz Channel BandwidthBand Edge Compliance	
QPSK	16QAM
Low Channel	
	
15RB#0	15RB#0
High Channel	
	
15RB#0	15RB#0

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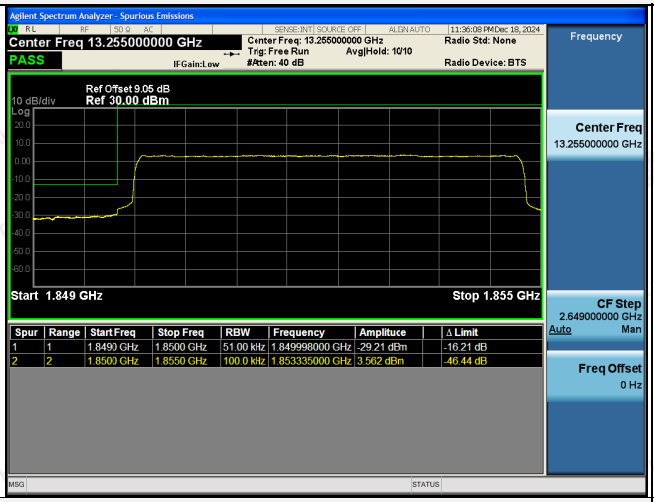
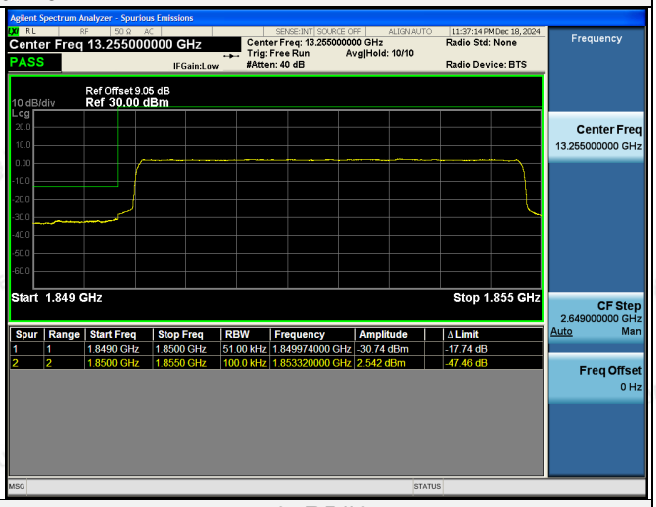
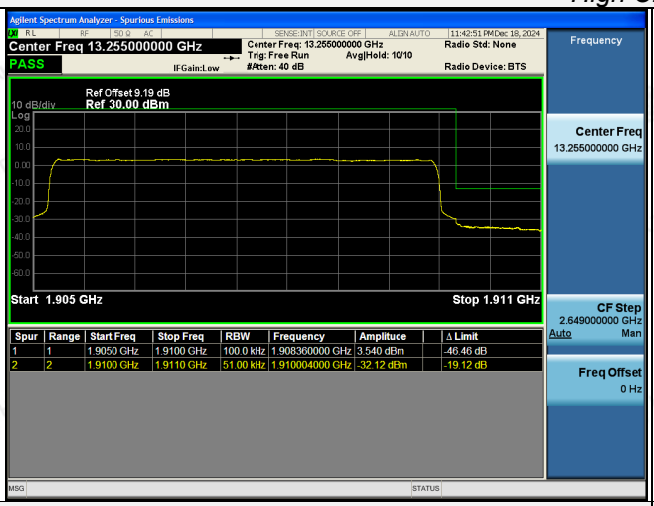
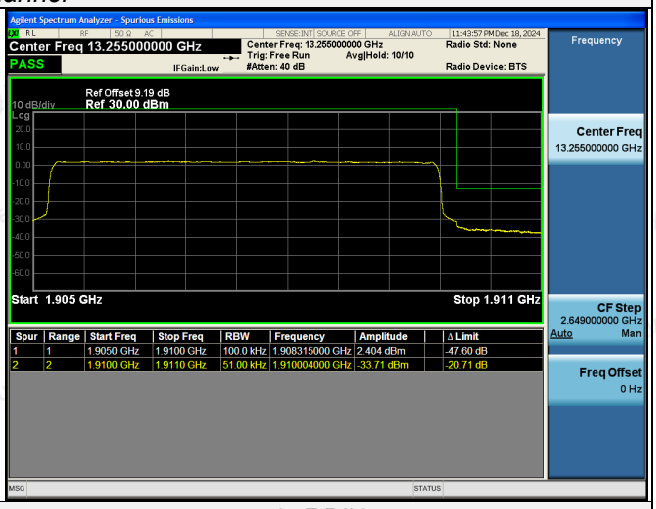
LTE FDD Band 2–5MHz Channel BandwidthBand Edge Compliance	
QPSK	16QAM
Low Channel	
	
25RB#0	25RB#0
High Channel	
	
25RB#0	25RB#0

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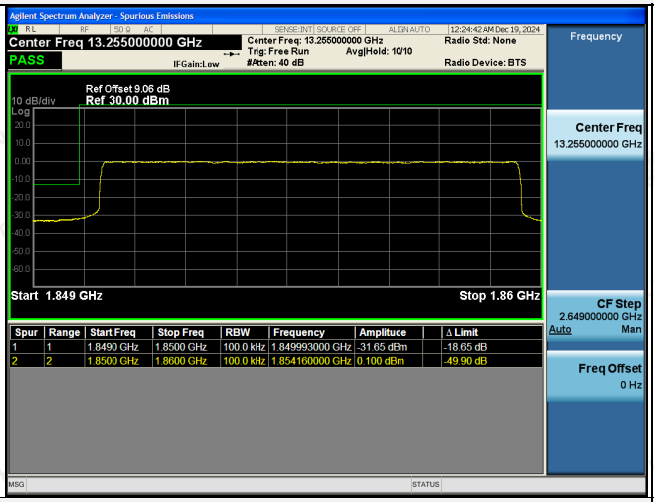
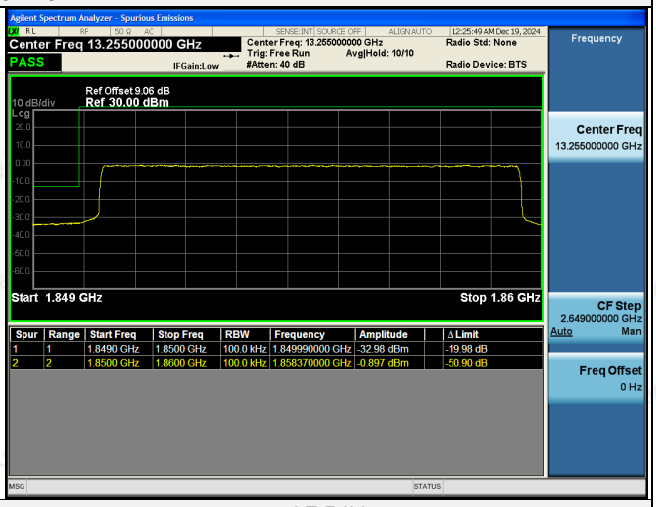
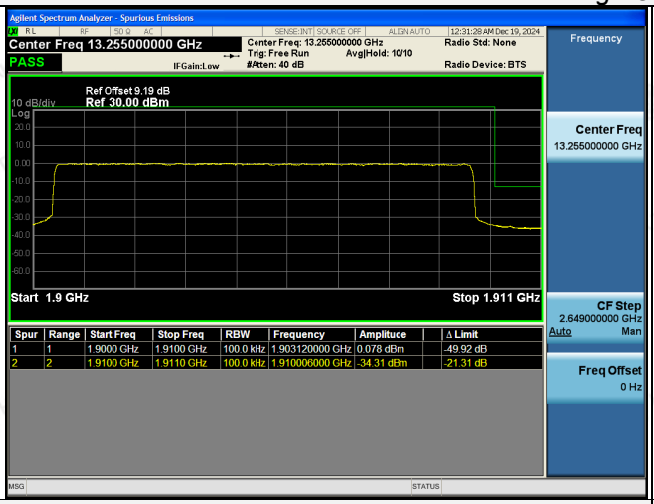
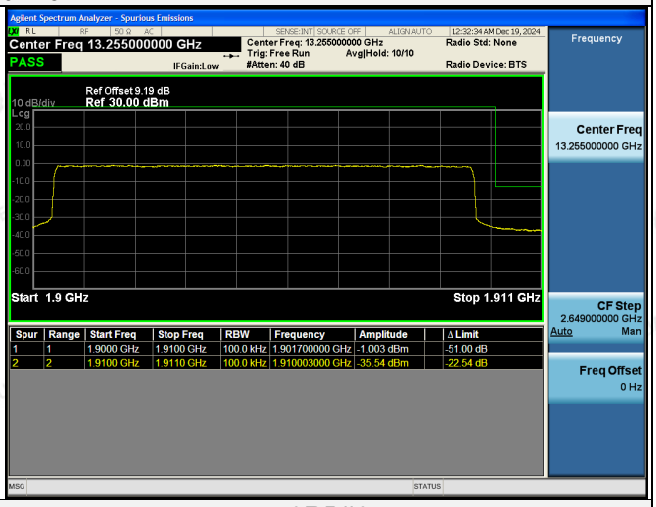
LTE FDD Band 2 – 10 MHz Channel BandwidthBand Edge Compliance	
QPSK	16QAM
Low Channel	
	
50RB#0	50RB#0
High Channel	
	
50RB#0	50RB#0

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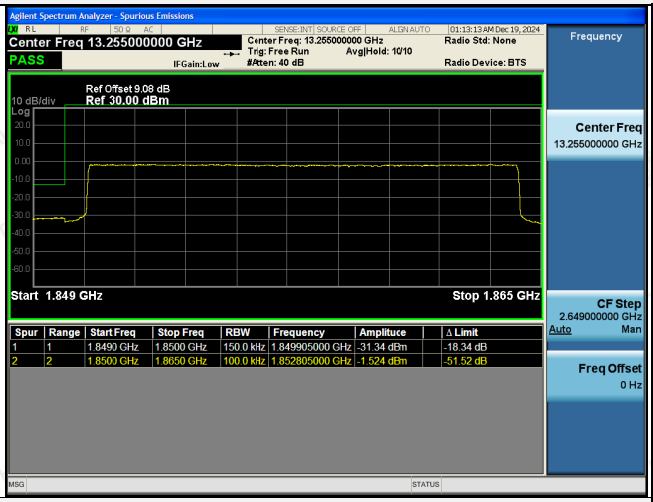
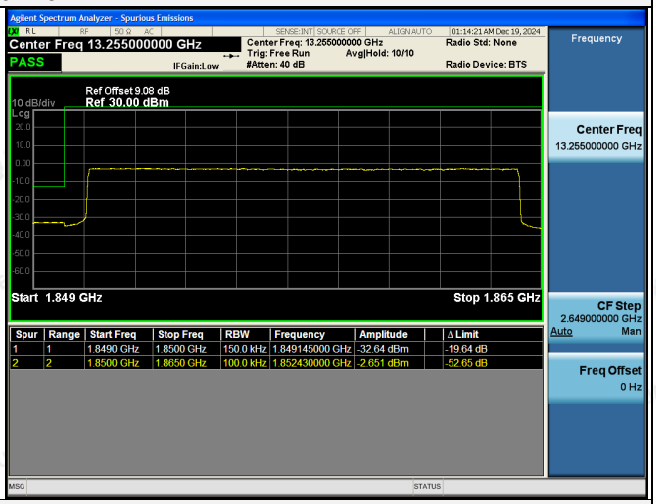
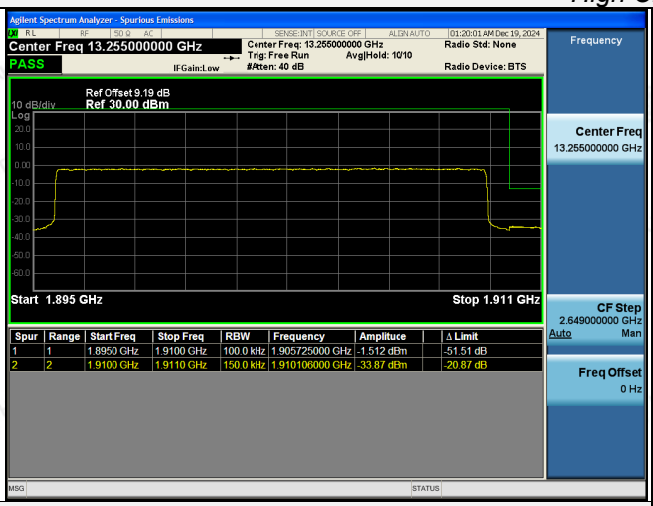
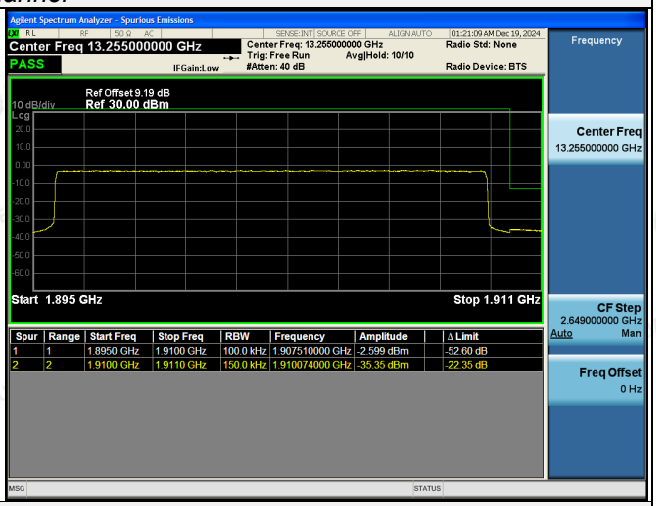
LTE FDD Band 2–15MHz Channel BandwidthBand Edge Compliance	
QPSK	16QAM
Low Channel	
	
75RB#0	75RB#0
High Channel	
	
75RB#0	75RB#0

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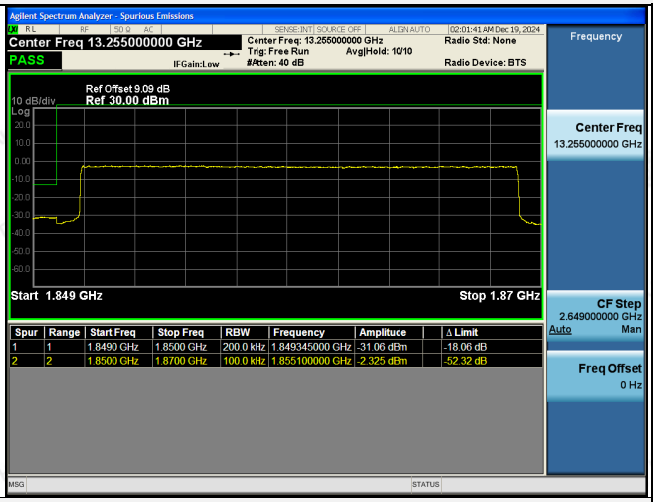
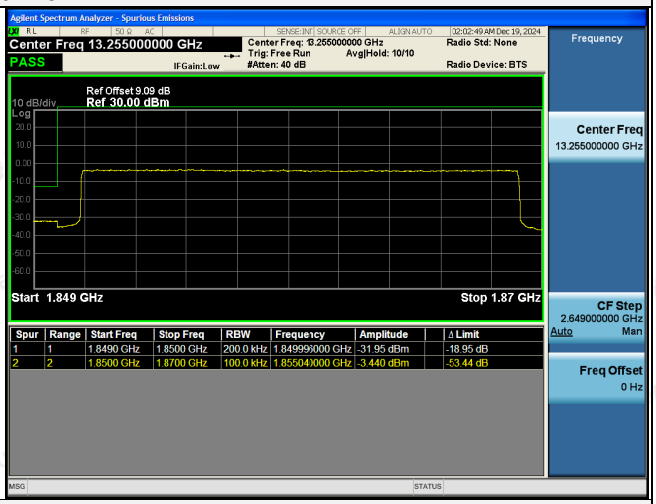
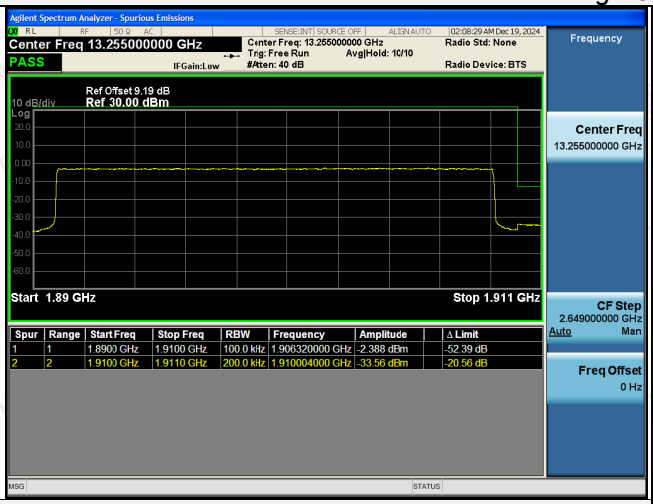
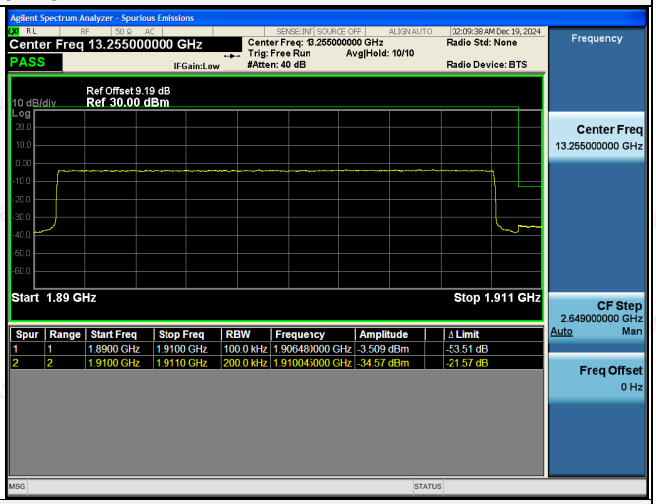
LTE FDD Band 2–20MHz Channel BandwidthBand Edge Compliance	
QPSK	16QAM
Low Channel	
	
100RB#0	100RB#0
High Channel	
	
100RB#0	100RB#0

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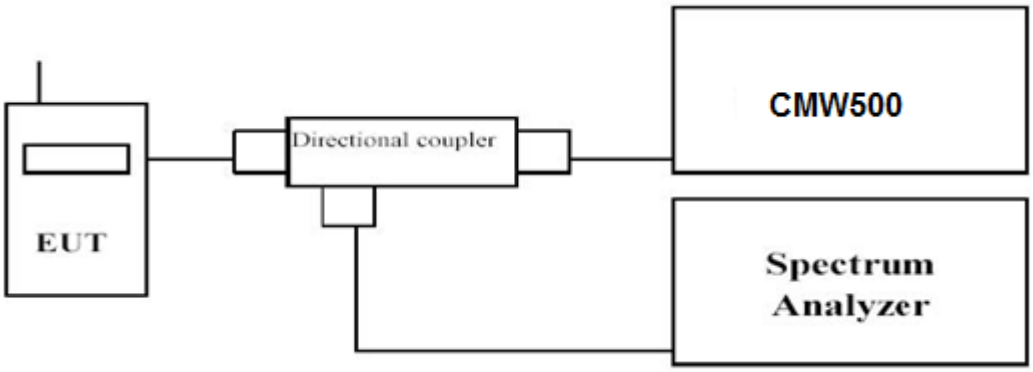
4.5 Spurious Emssion on Antenna Port

LIMIT

Per FCC §24.238, 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 + 10log(P) dB.

TEST CONFIGURATION



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D.

a. Place the EUT on a bench and set it in transmitting mode.
b. Connect a low loss RF cable from the antenna port to a spectrum analyzer andCMW500 by a Directional Couple.
c. EUT Communicate with CMW500, then select a channel for testing.
d. Add a correction factor to the display of spectrum, and then test.
e. The resolution bandwidth of the spectrum analyzer was setsufficient scans were taken to show the out of band Emission if any up to10th harmonic.
f. Please refer to following tables for test antenna conducted emissions.

Working Frequency	Sub range (GHz)	RBW	VBW	Sweep time (s)
LTE FDD Band 2	0.00015~0.03	10 KHz	30 KHz	Auto
	0.03~1	100 KHz	300 KHz	Auto
	1~3	1 MHz	3 MHz	Auto
	3~20	1 MHz	3 MHz	Auto

TEST RESULTS

Remark:

1. *We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 2; recorded worst case at the QPSK Mode for each Channel Bandwidth of LTE FDD Band 2.*

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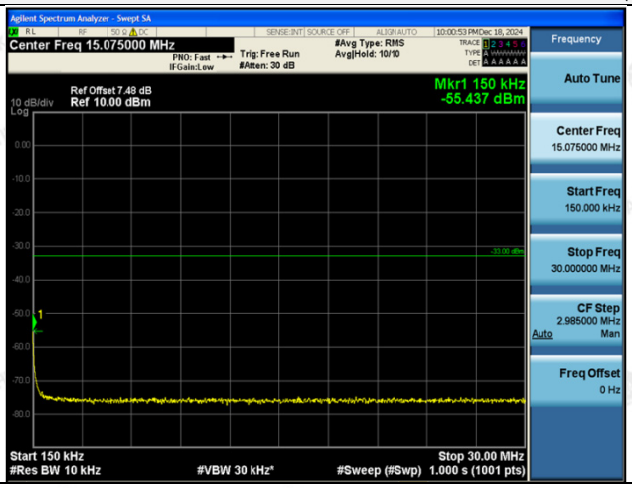
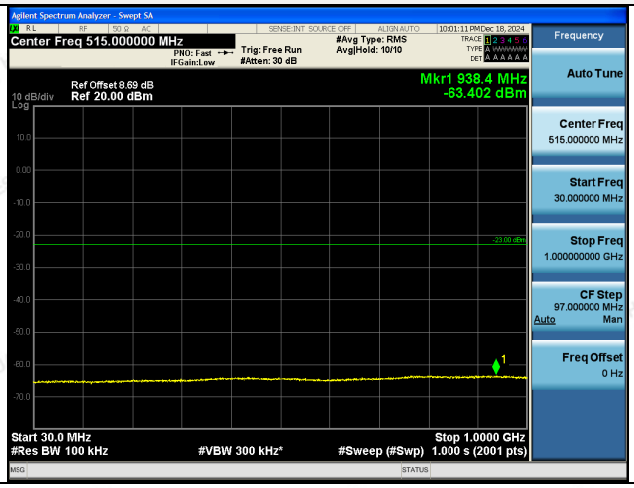
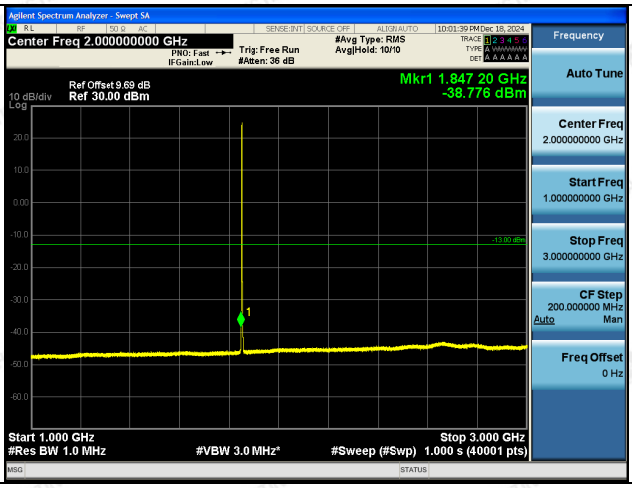
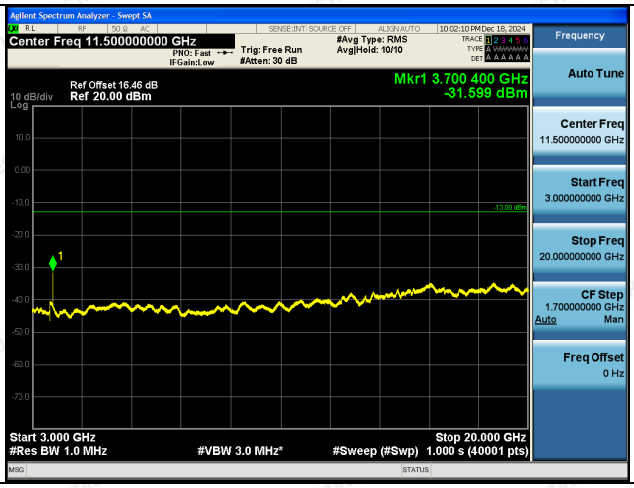
LTE FDD Band 2-1.4MHz Channel Bandwidth	
Low Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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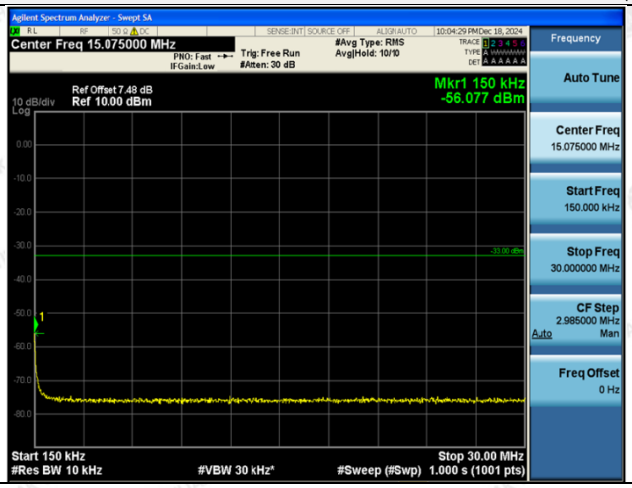
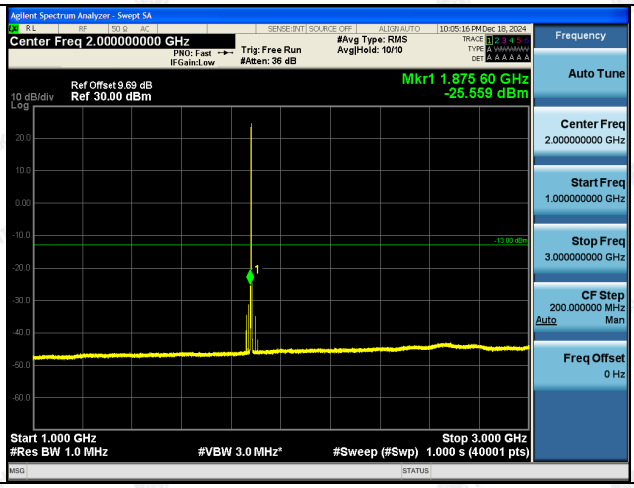
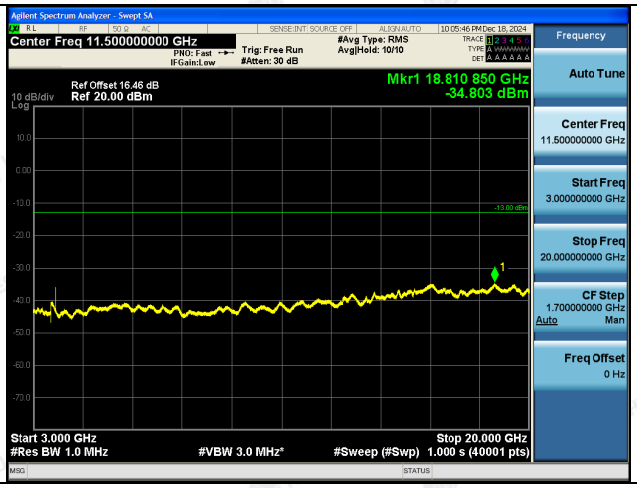
LTE FDD Band 2-1.4MHz Channel Bandwidth	
Middle Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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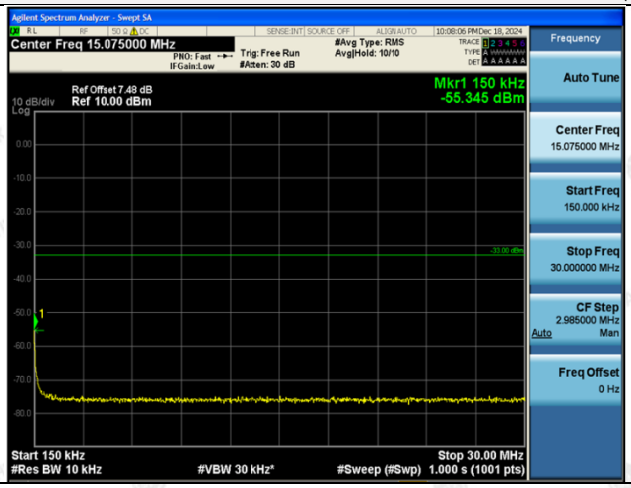
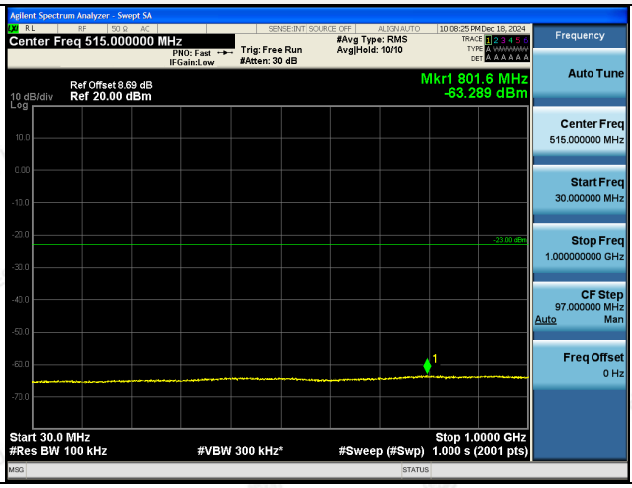
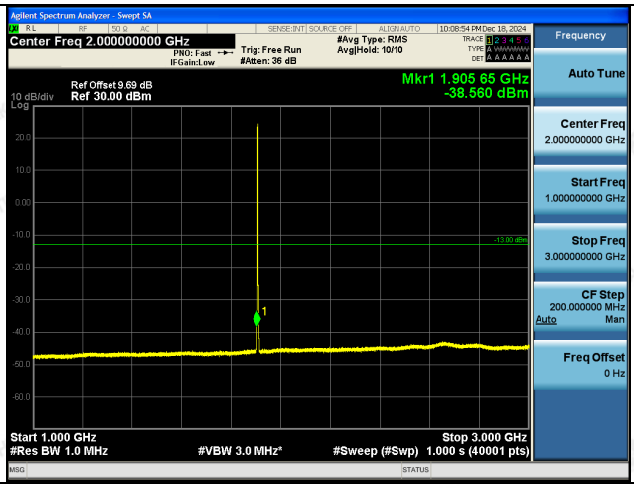
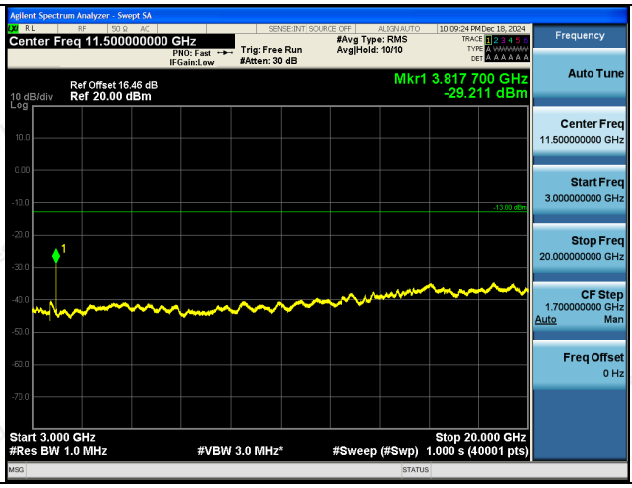
LTE FDD Band 2-1.4MHz Channel Bandwidth	
High Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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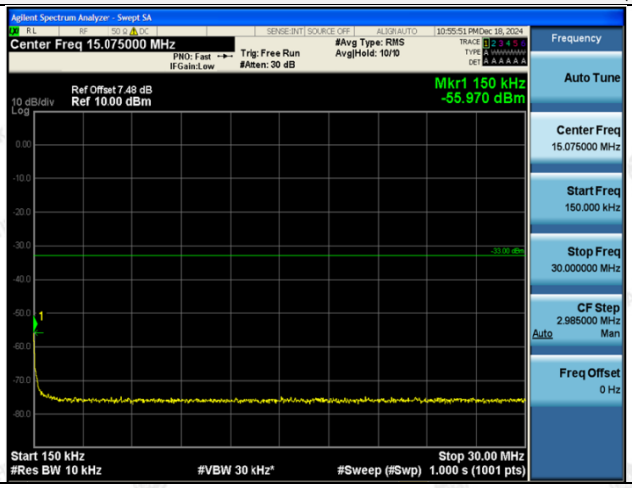
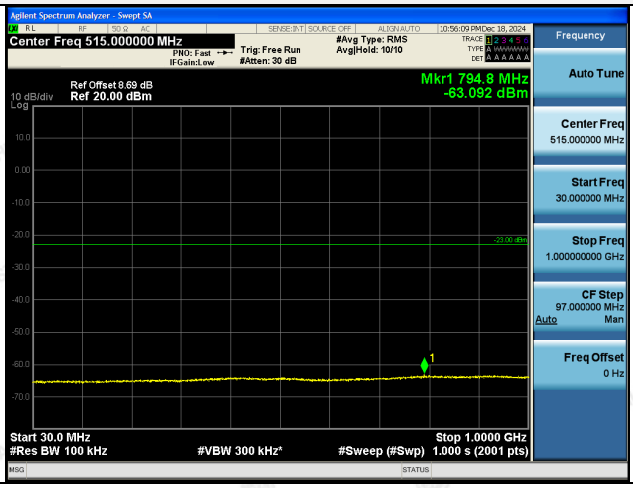
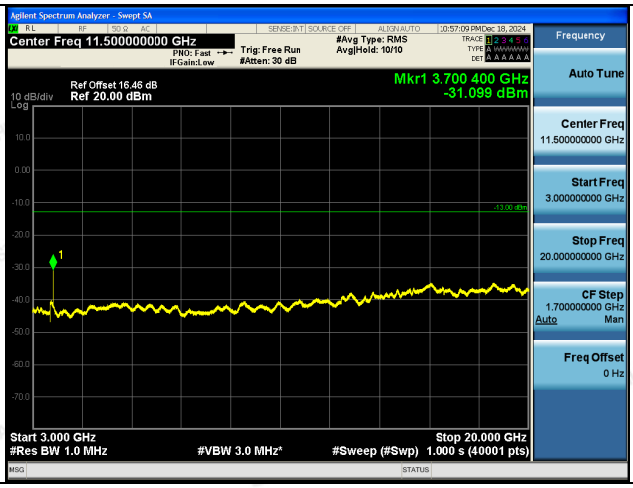
LTE FDD Band 2-3MHz Channel Bandwidth	
Low Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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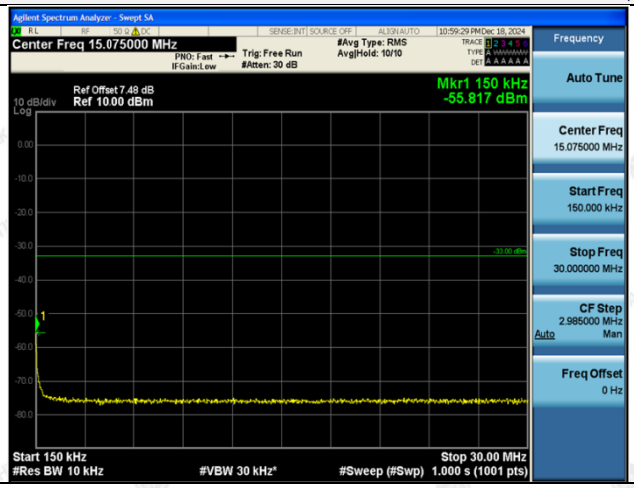
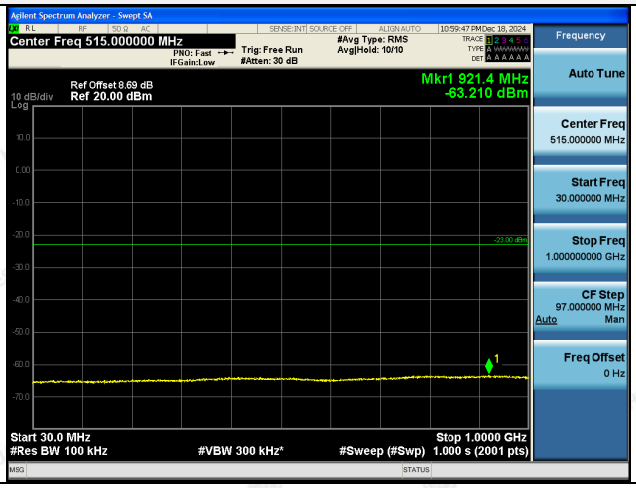
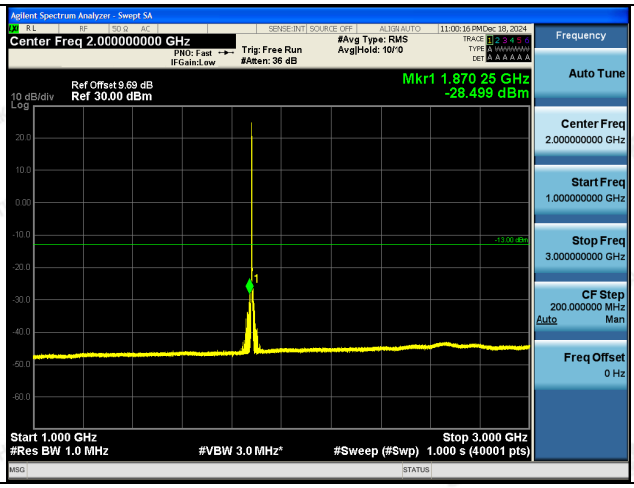
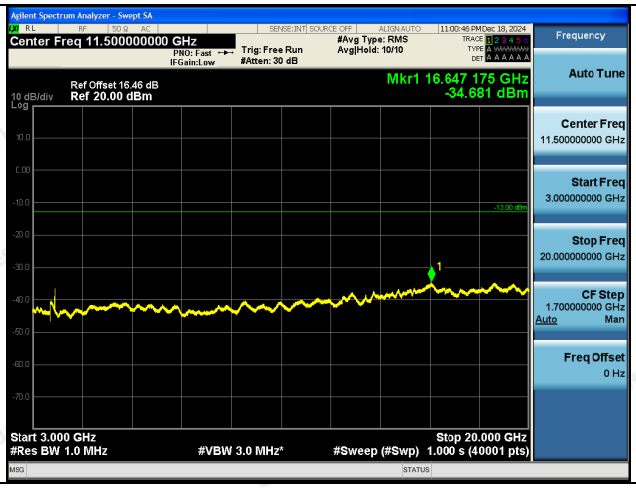
LTE FDD Band 2-3MHz Channel Bandwidth	
Middle Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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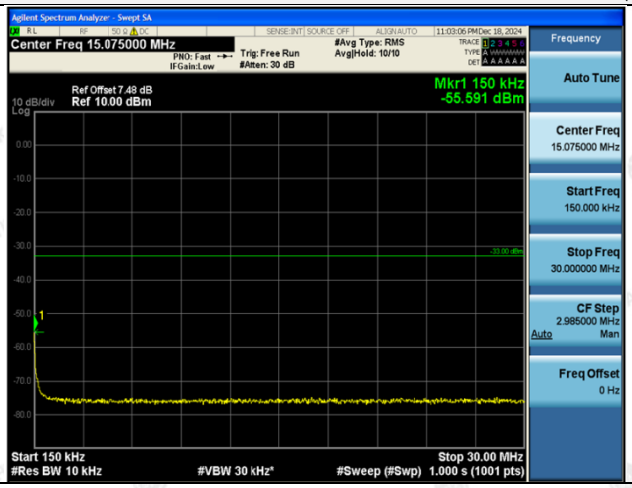
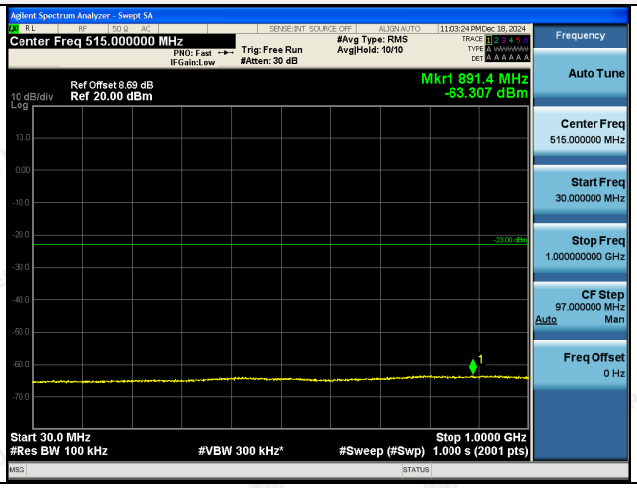
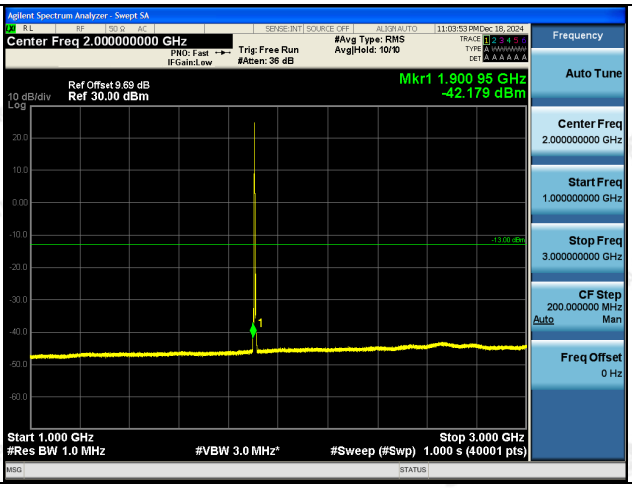
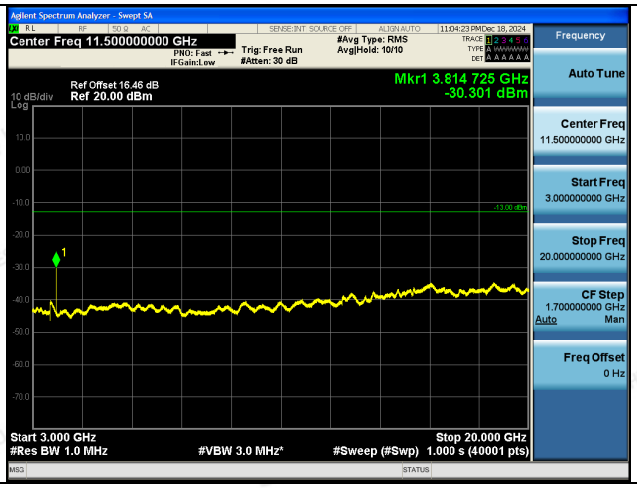
LTE FDD Band 2-3MHz Channel Bandwidth	
High Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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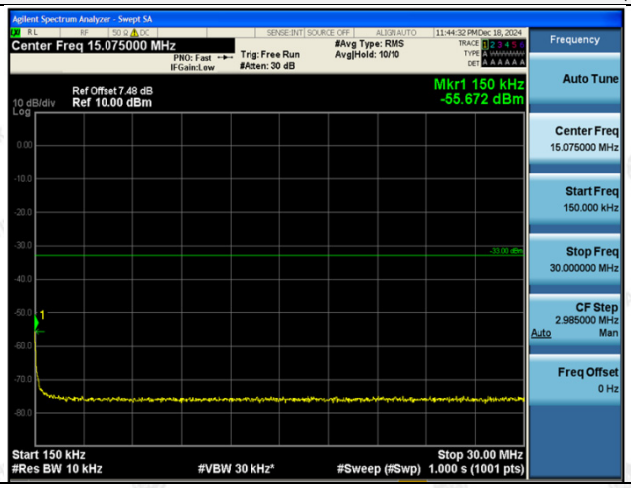
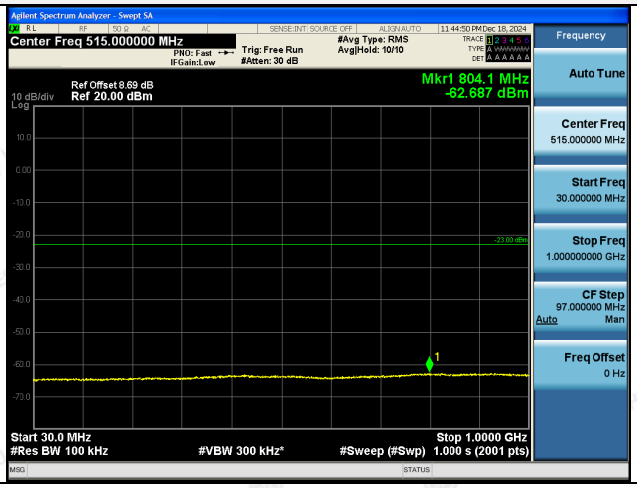
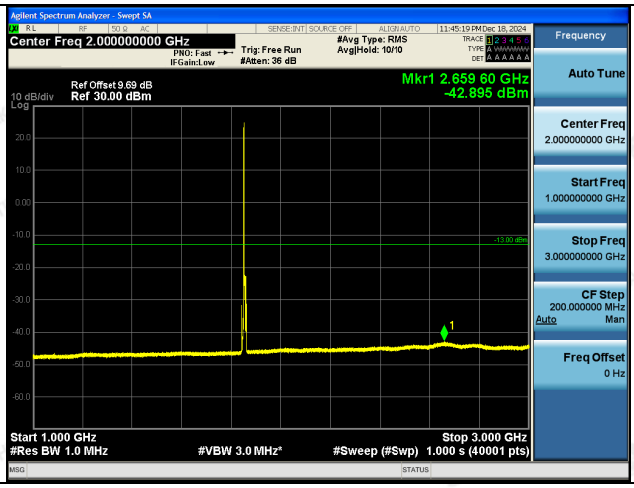
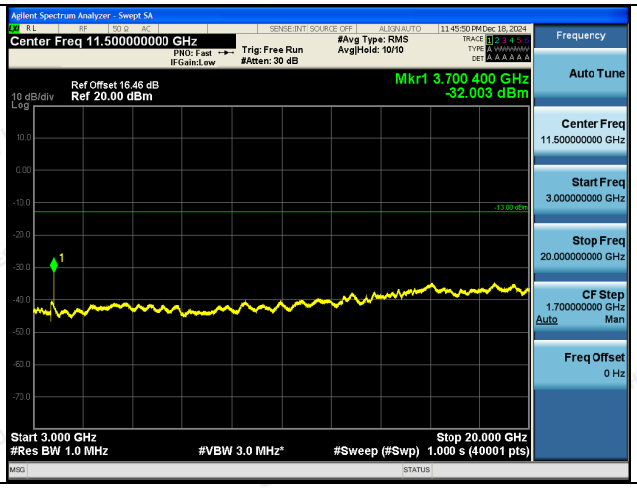
LTE FDD Band 2-5 MHz Channel Bandwidth	
Low Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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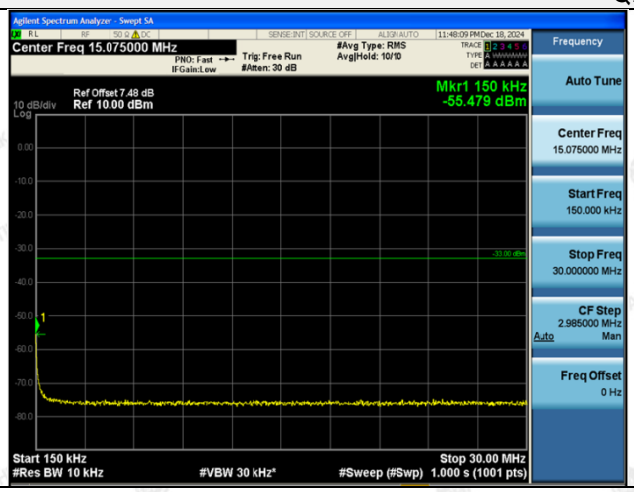
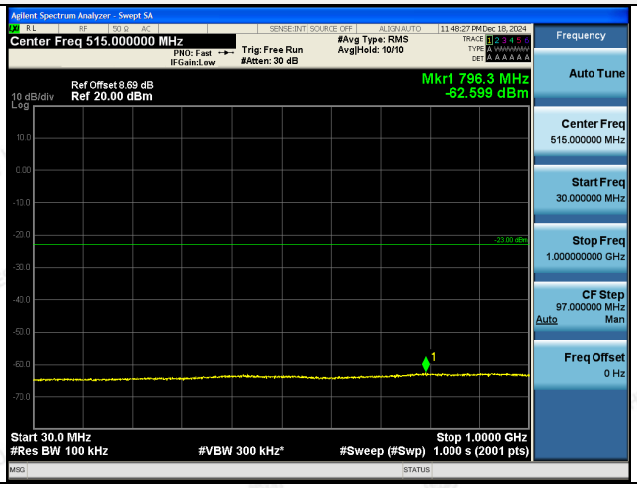
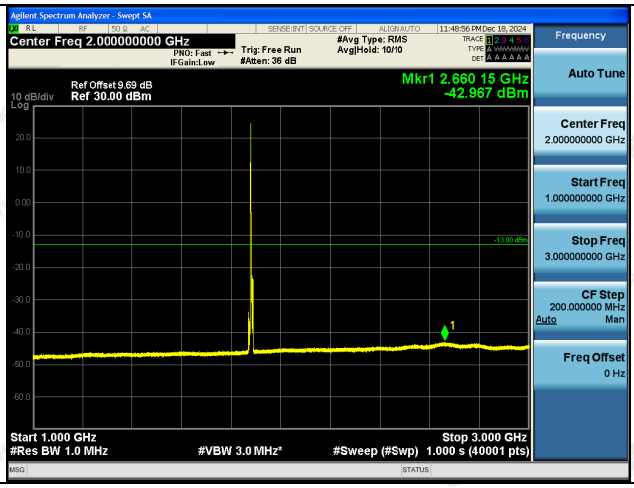
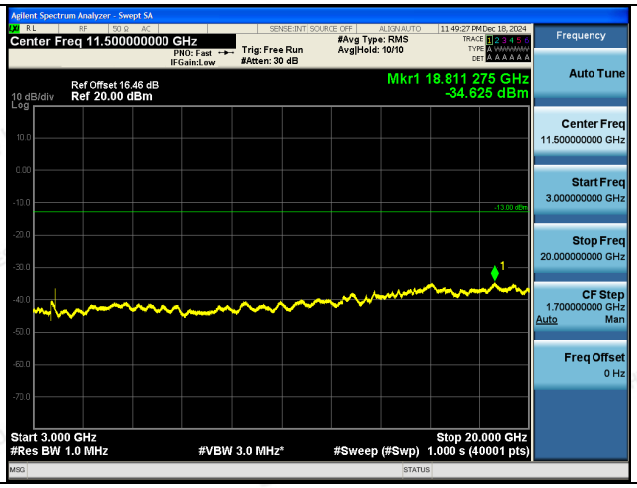
LTE FDD Band 2-5 MHz Channel Bandwidth	
Middle Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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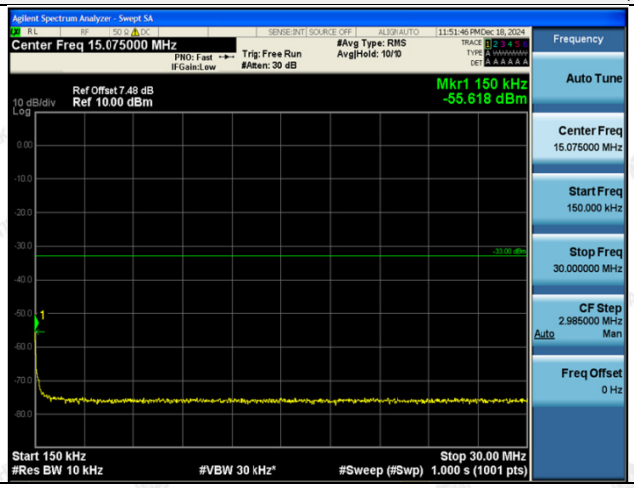
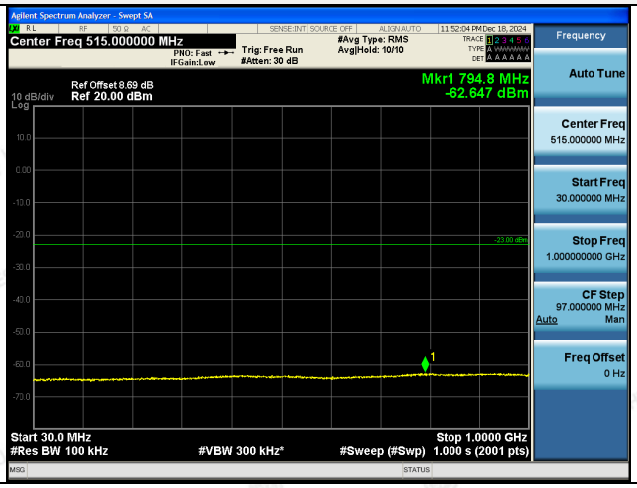
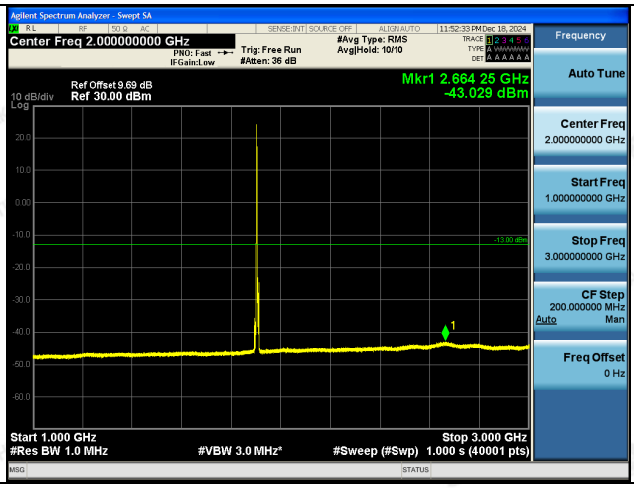
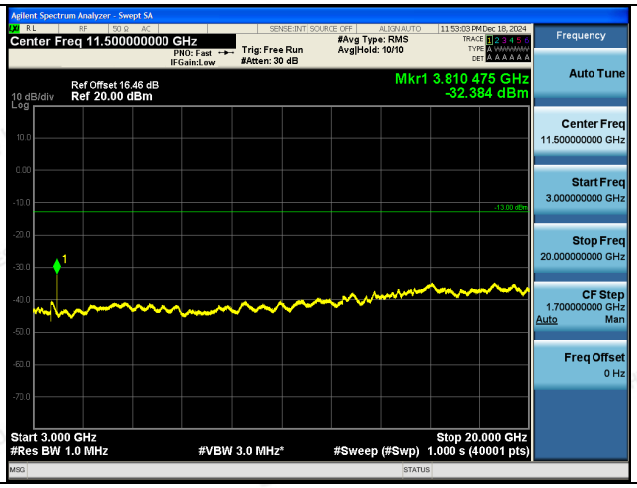
LTE FDD Band 2-5 MHz Channel Bandwidth	
High Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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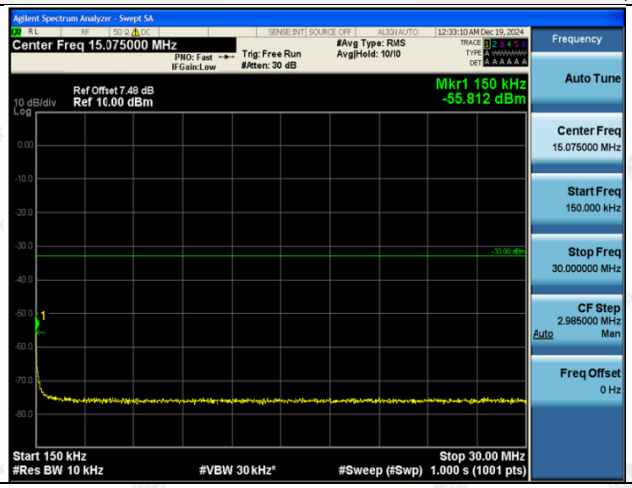
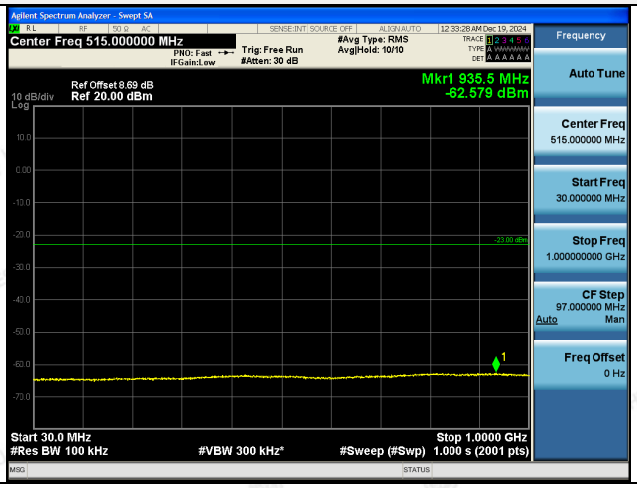
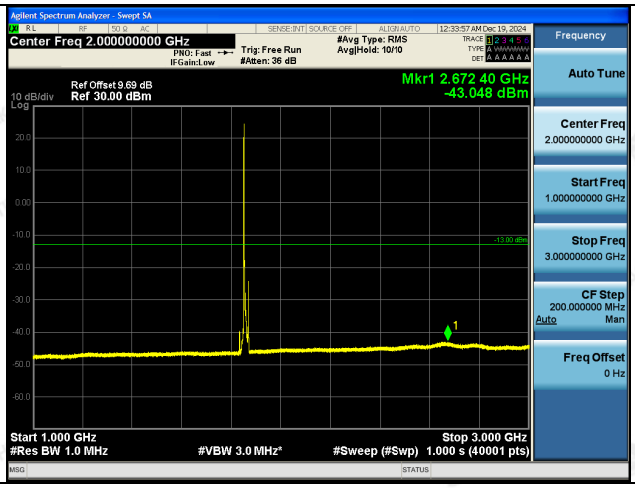
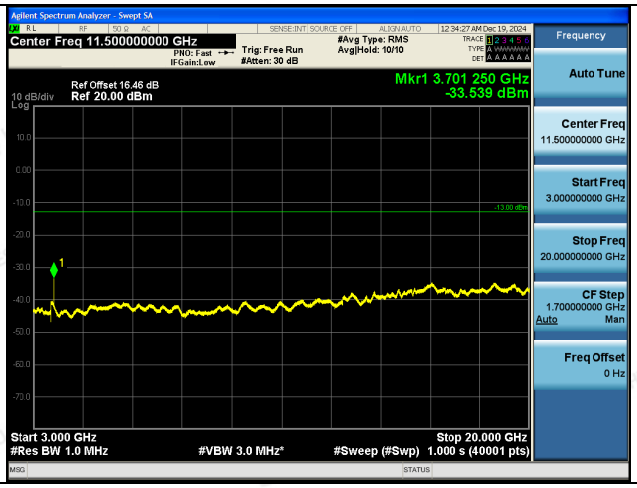
LTE FDD Band 2-10 MHz Channel Bandwidth	
Low Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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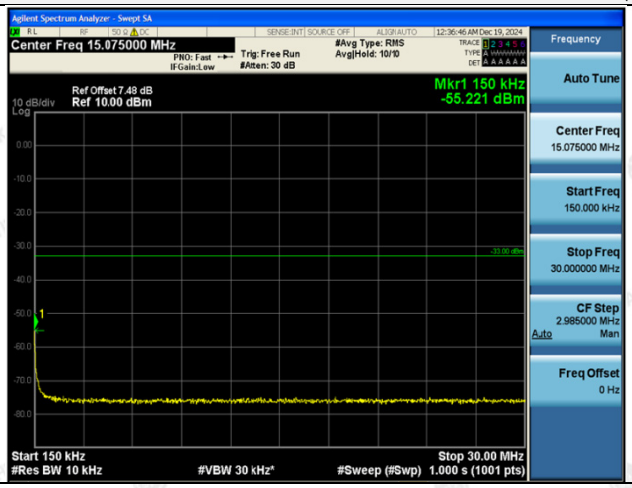
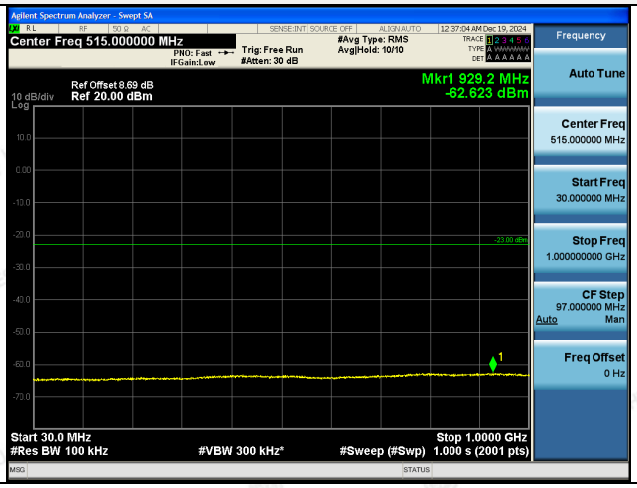
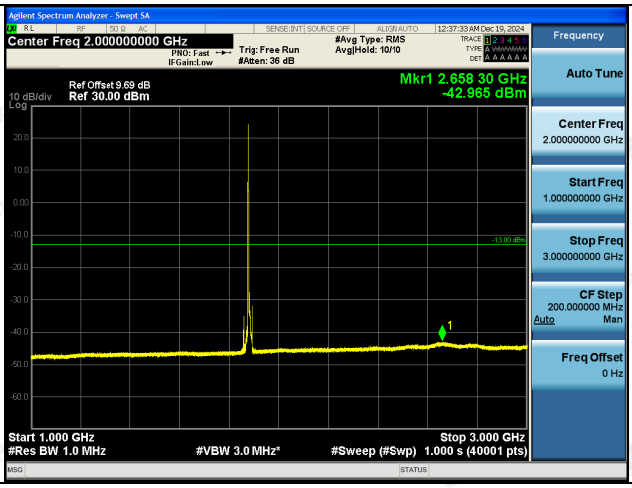
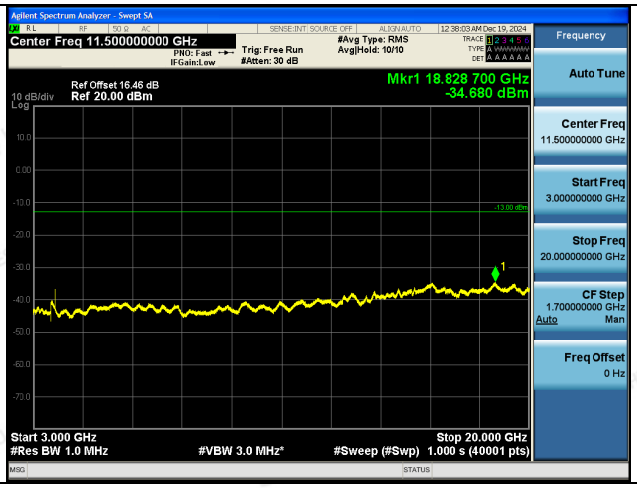
LTE FDD Band 2-10 MHz Channel Bandwidth	
Middle Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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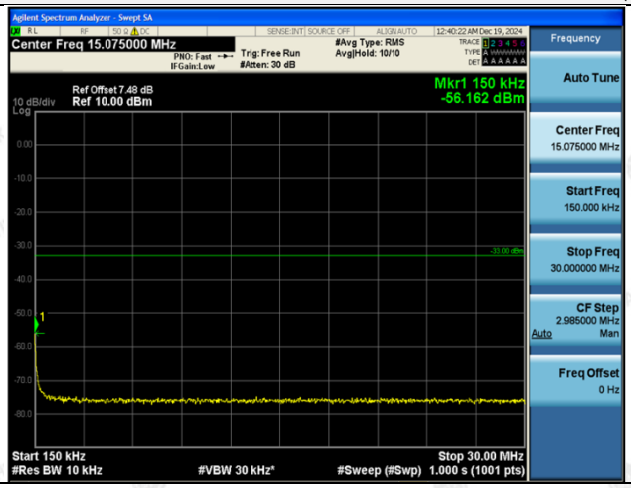
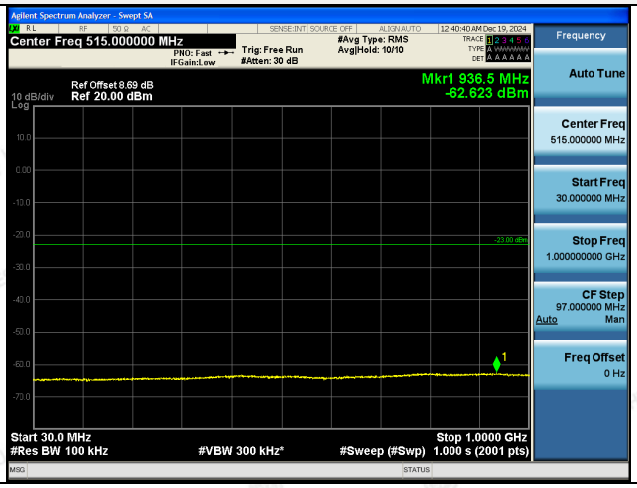
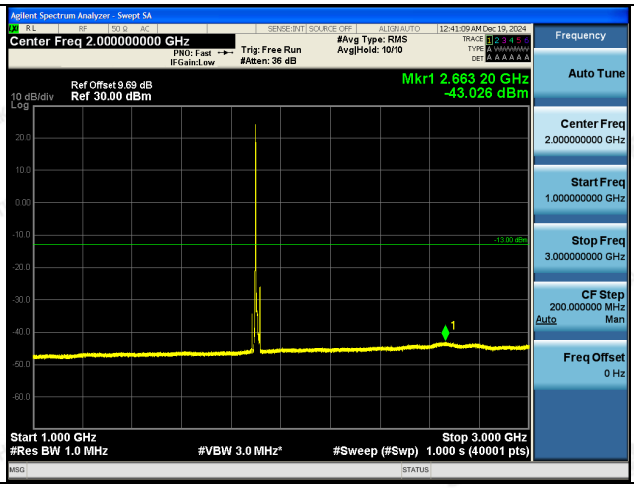
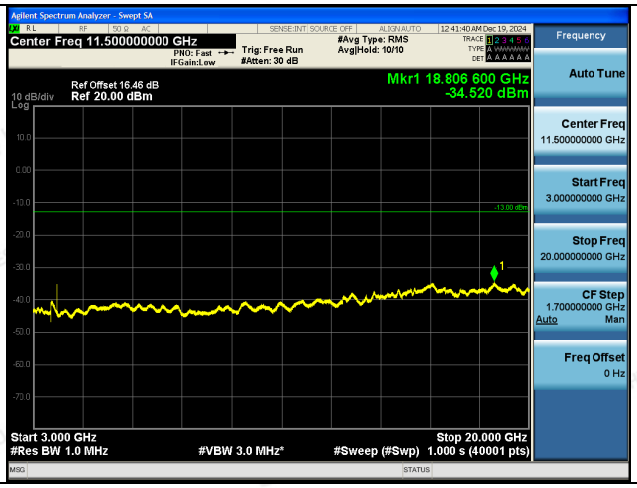
LTE FDD Band 2-10 MHz Channel Bandwidth	
High Channel	
QPSK	
	
0.15MHz~30MHz	30MHz~1GHz
	
1GHz~3GHz	3GHz~20GHz

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