RF TEST REPORT

Applicant	Huawei Device Co., Ltd.
FCC ID	2ATEYJLN
Product	Smart phone
Model	JLN-LX3
Report No.	R2112A1178-R2
Issue Date	January 29, 2022

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2020)/ FCC CFR 47 Part 24E (2020)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Summary of measurement results

No.	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective Isotropic Radiated Power	2.1046 24.232(c)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	2.1051 /24.238(a)	PASS
4	Peak-to-Average Power Ratio	24.232/KDB 971168 D01(5.7)	PASS
5	Frequency Stability	2.1055 / 24.235	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 / 24.238(a)	PASS
7	Radiates Spurious Emission	2.1053 / 24.238(a)	PASS

Date of Testing: January 5, 2022 ~ January 26, 2022
Date of Sample Received: December 24, 2021

Note: PASS: The EUT complies with the essential requirements in the standard.
FAIL: The EUT does not comply with the essential requirements in the standard.
All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

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1. Test Laboratory

1.1. Notes of the test report

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1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
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2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	Huawei Device Co., Ltd.
Applicant address	No.2 of Xincheng Road, Songshan Lake Zone, Dongguan, Guangdong 523808, People's Republic of China
Manufacturer	Huawei Device Co., Ltd.
Manufacturer address	No.2 of Xincheng Road, Songshan Lake Zone, Dongguan, Guangdong 523808, People's Republic of China

2.2. General information

EUT Description			
Model	JLN-LX3		
SN	HWQYD21C07500160		
Hardware Version	HL1JLNM		
Software Version	12.0.1.100(C900E100R1P3)		
Power Supply	Battery / AC adapter		
Antenna Type	Internal Antenna		
Antenna Gain	Main Antenna(dBi)	Second Antenna(dBi)	
	-0.71	-1.91	
Test Mode(s)	GSM1900; WCDMA Band II; LTE Band 2;		
Test Modulation	(GSM/GPRS)GMSK, (EGPRS) GMSK/ 8PSK; (WCDMA) BPSK, QPSK (LTE)QPSK, 16QAM, 64QAM		
GPRS Multislot Class	12		
EGPRS Multislot Class	12		
HSDPA UE Category	24		
HSUPA UE Category	6		
LTE Category	5		
Maximum E.I.R.P	GSM 1900:	29.79dBm	
	WCDMA Band II:	21.33dBm	
	LTE Band 2:	21.28dBm	
Rated Power Supply Voltage	3.87V		
Operating Voltage	Minimum: 3.6V Maximum: 4.48V		
Operating Temperature	Lowest: 0°C Highest: +35°C		
Testing Temperature	Lowest: 0°C Highest: +35°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM1900	1850 ~ 1910	1930 ~ 1990
	WCDMA Band II	1850 ~ 1910	1930 ~ 1990

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	LTE Band 2	1850 ~ 1910	1930 ~ 1990

EUT Accessory			
Accessory	**Model**	**Manufacture**	**No.**
Adapter	HW-110600U00	Huawei Technologies Co., Ltd. (Manufacturer: Astec Electronics (Luoding) Co. Limited)	1
		Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	2
	HW-110600U02	Huawei Technologies Co., Ltd. (Manufacturer: Astec Electronics (Luoding) Co. Limited)	3
		Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	4
	HW-110600E02	Huawei Technologies Co., Ltd. (Manufacturer: Astec Electronics (Luoding) Co. Limited)	5
		Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	6
	HW-110600B02	Huawei Technologies Co., Ltd. (Manufacturer: Astec Electronics (Luoding) Co. Limited)	7
		Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	8
	HW-110600A02	Huawei Technologies Co., Ltd. (Manufacturer: Astec Electronics (Luoding) Co. Limited)	9
		Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	10
	HW-110600B00	Huawei Technologies Co., Ltd. (Manufacturer: Astec Electronics (Luoding) Co. Limited)	11
		Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	12
	HW-110600E00	Huawei Technologies Co., Ltd. (Manufacturer: Astec Electronics (Luoding) Co. Limited)	13
		Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	14
	HW-110600A00	Huawei Technologies Co., Ltd. (Manufacturer: Astec Electronics (Luoding) Co. Limited)	15
		Huawei Technologies Co., Ltd. (Manufacturer: ASAP TECHNOLOGY (Jiangxi) CO., LTD)	16
Battery	HB426493EFW	SCUD (FUJIAN) Electronics Co., Ltd.	1
		Sunwoda Electronic Co.,LTD.	2
USB Cable	L99UC139-CS-H	Luxshare Precision industry Co.,Ltd	1
	213-01011-0	MING JI ELECTRONICS CO., LTD.	2
Earphone	1311-3291-6001-TC-351	Boluo County Quancheng Electronic Co., Ltd.	1
Earphone, USB Type-C	6001-7001-TC-348	Boluo County Quancheng Electronic Co., Ltd.	1

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to 3.5mm Adapter Assembly	USB042020090AW7	Jiangxi Lianchuang Hongsheng Electronic Co.,Ltd.	2
	642344	FOSTER ELECTRIC CO.（HONG KONG）LTD	3

Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.
2. There are more than one Adapter, Battery and USB Cable, each one should be applied throughout the compliance test respectively, however, only the worst case (Adapter 2, Battery 1 and USB Cable 1) will be recorded in this report.

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3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:
FCC CFR 47 Part 24E (2020)

FCC CFR47 Part 2 (2020)

Reference standard:
ANSI C63.26 (2015)

KDB 971168 D01 Power Meas License Digital Systems v03r01

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4. Test Configuration

There is more than one SIM card slot, each one should be applied throughout the compliance test respectively, and however, only the worst case (SIM 1) will be recorded in this report.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (X axis, vertical polarization for GSM/WCDMA Band (Main Antenna); X axis, horizontal polarization for LTE Band (Main Antenna); Z axis, horizontal polarization for GSM/WCDMA/LTE Band (Second Antenna)) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated.
Subsequently, only the worst case emissions are reported.
The following testing in GSM/WCDMA/LTE is set based on the maximum RF Output Power.

Test modes are chosen to be reported as the worst case configuration below:

Test items	**Modes/Modulation**	
	GSM 1900	WCDMA Band II
RF Power Output and Effective Isotropic Radiated Power	GSM GPRS EGPRS	RMC HSDPA/HSUPA DC-HSDPA
Occupied Bandwidth	GSM GPRS(1Tx slot) EGPRS(1Tx slot)	RMC
Band Edge Compliance	GSM GPRS(1Tx slot) EGPRS(1Tx slot)	RMC
Peak-to-Average Power Ratio	GSM GPRS(1Tx slot) EGPRS(1Tx slot)	RMC
Frequency Stability	GSM GPRS(1Tx slot) EGPRS(1Tx slot)	RMC
Spurious Emissions at Antenna Terminals	GSM	RMC
Radiates Spurious Emission	GSM	RMC

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Test modes are chosen to be reported as the worst case configuration below for LTE Band 2:

Test items	Bandwidth (MHz)						Modulation		RB			Test Channel		
	1.4	3	5	10	15	20	QPSK	16QAM/ 64QAMA	1	50%	100%	L	M	H
RF Power Output and Effective Isotropic Radiated Power	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	O	O	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	O	O	O	O	O	O	O	O	O	-	-	-	O	-
Spurious Emissions at Antenna Terminals	O	O	O	O	O	O	O	-	O	-	-	O	O	O
Radiates Spurious Emission	O	-	O	-	-	O	O	-	O	-	-	-	O	-
Note	1. The mark “O” means that this configuration is chosen for testing. 2. The mark “-” means that this configuration is not testing.													

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5. Test Case Results

5.1. RF Power Output and Effective Isotropic Radiated Power

Ambient condition

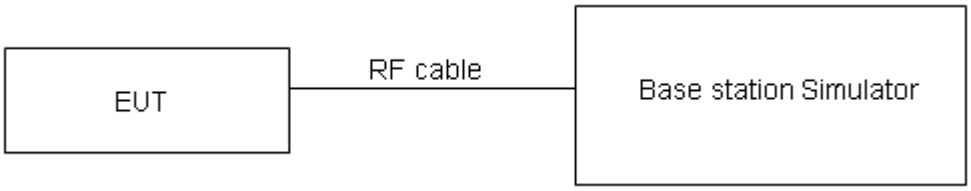
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the Base Station Simulator with a known loss. The EUT is controlled by the Base Station Simulator test set to ensure max power transmission with proper modulation.

ERP can then be calculated as follows:
EIRP (dBm) = Output Power (dBm) - Losses (dB) + Antenna Gain (dBi)
where:dBd refers to gain relative to an ideal dipole.
EIRP (dBm) = ERP (dBm) + 2.15 (dB.)

Test Setup



Limits

No specific RF power output requirements in part 2.1046.

Rule Part 24.232(c) Mobile and portable stations are limited to 2 watts EIRP.
Rule Part 24.232(e) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Limit	⩽ 2 W (33 dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 2, *U*= 0.4 dB for RF power output, *k* = 2, *U*= 1.19 dB for EIRP.

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Test Results

GSM 1900		Maximum Output Power (dBm)			Main Antenna EIRP (dBm)			Second Antenna EIRP (dBm)		
		Channel 512	Channel 661	Channel 810	Channel 512	Channel 661	Channel 810	Channel 512	Channel 661	Channel 810
		1850.2 (MHz)	1880 (MHz)	1909.8 (MHz)	1850.2 (MHz)	1880 (MHz)	1909.8 (MHz)	1850.2 (MHz)	1880 (MHz)	1909.8 (MHz)
GSM(GMSK)	Results	30.34	30.44	30.46	29.63	29.73	29.75	28.43	28.53	28.55
GPRS/EGPRS (GMSK)	1TXslot	30.24	30.50	30.43	29.53	29.79	29.72	28.33	28.59	28.52
	2TXslots	26.75	27.07	27.11	26.04	26.36	26.40	24.84	25.16	25.20
	3TXslots	24.48	24.72	24.76	23.77	24.01	24.05	22.57	22.81	22.85
	4TXslots	23.17	23.31	23.32	22.46	22.60	22.61	21.26	21.40	21.41
EGPRS	1TXslot	25.96	25.93	25.92	25.25	25.22	25.21	24.05	24.02	24.01
	2TXslots	23.02	23.13	23.25	22.31	22.42	22.54	21.11	21.22	21.34
	3TXslots	20.96	21.14	21.02	20.25	20.43	20.31	19.05	19.23	19.11
	4TXslots	19.17	19.24	19.31	18.46	18.53	18.60	17.26	17.33	17.40

WCDMA Band II		Maximum Output Power (dBm)			Main Antenna EIRP (dBm)			Second Antenna EIRP (dBm)		
		Channel 9262	Channel 9400	Channel 9538	Channel 9262	Channel 9400	Channel 9538	Channel 9262	Channel 9400	Channel 9538
		1852.4 (MHz)	1880 (MHz)	1907.6 (MHz)	1852.4 (MHz)	1880 (MHz)	1907.6 (MHz)	1852.4 (MHz)	1880 (MHz)	1907.6 (MHz)
RMC		22.03	21.98	21.93	21.32	21.27	21.22	20.12	20.07	20.02
AMR		21.87	22.04	21.99	21.16	21.33	21.28	19.96	20.13	20.08
HSDPA	Sub - Test 1	20.91	20.98	21.05	20.20	20.27	20.34	19.00	19.07	19.14
	Sub - Test 2	21.07	20.82	20.87	20.36	20.11	20.16	19.16	18.91	18.96
	Sub - Test 3	20.59	20.44	20.49	19.88	19.73	19.78	18.68	18.53	18.58
	Sub - Test 4	20.61	20.56	20.37	19.90	19.85	19.66	18.70	18.65	18.46
HSUPA	Sub - Test 1	20.43	20.54	20.35	19.72	19.83	19.64	18.52	18.63	18.44
	Sub - Test 2	18.99	18.82	18.97	18.28	18.11	18.26	17.08	16.91	17.06
	Sub - Test 3	20.17	20.02	19.91	19.46	19.31	19.20	18.26	18.11	18.00
	Sub - Test 4	18.69	18.52	18.39	17.98	17.81	17.68	16.78	16.61	16.48
	Sub - Test 5	19.99	19.82	19.83	19.28	19.11	19.12	18.08	17.91	17.92
DC-HSDPA	Sub - Test 1	21.11	20.90	20.81	20.40	20.19	20.10	19.20	18.99	18.90
	Sub - Test 2	21.03	20.86	21.05	20.32	20.15	20.34	19.12	18.95	19.14
	Sub - Test 3	20.59	20.52	20.37	19.88	19.81	19.66	18.68	18.61	18.46
	Sub - Test 4	20.61	20.60	20.29	19.90	19.89	19.58	18.70	18.69	18.38

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LTE Band 2				Maximum Output Power(dBm)				Main Antenna EIRP (dBm)		Second Antenna EIRP (dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				18607/ 1850.7	18900/ 1880	19193/ 1909.3	18607/ 1850.7	18900/ 1880	19193/ 1909.3	18607/ 1850.7	18900/ 1880	19193/ 1909.3
1.4MHz	QPSK	1	0	21.39	21.31	21.34	20.68	20.60	20.63	19.48	19.40	19.43
		1	2	21.41	21.31	21.36	20.70	20.60	20.65	19.50	19.40	19.45
		1	5	20.85	20.86	20.99	20.14	20.15	20.28	18.94	18.95	19.08
		3	0	21.45	21.36	21.48	20.74	20.65	20.77	19.54	19.45	19.57
		3	2	21.46	21.49	21.44	20.75	20.78	20.73	19.55	19.58	19.53
		3	3	21.07	20.84	20.85	20.36	20.13	20.14	19.16	18.93	18.94
		6	0	21.23	21.07	20.89	20.52	20.36	20.18	19.32	19.16	18.98
	16QAM	1	0	21.83	21.42	21.32	21.12	20.71	20.61	19.92	19.51	19.41
		1	2	21.89	21.96	21.02	21.18	21.25	20.31	19.98	20.05	19.11
		1	5	21.07	20.96	20.94	20.36	20.25	20.23	19.16	19.05	19.03
		3	0	21.18	20.88	20.83	20.47	20.17	20.12	19.27	18.97	18.92
		3	2	21.04	20.83	20.84	20.33	20.12	20.13	19.13	18.92	18.93
		3	3	20.84	20.92	20.83	20.13	20.21	20.12	18.93	19.01	18.92
		6	0	20.96	20.93	20.91	20.25	20.22	20.20	19.05	19.02	19.00
	64QAM	1	0	21.69	21.20	21.14	20.98	20.49	20.43	19.78	19.29	19.23
		1	2	21.66	21.72	20.86	20.95	21.01	20.15	19.75	19.81	18.95
		1	5	20.93	21.02	20.98	20.22	20.31	20.27	19.02	19.11	19.07
		3	0	21.20	21.40	21.43	20.49	20.69	20.72	19.29	19.49	19.52
		3	2	21.19	21.56	21.16	20.48	20.85	20.45	19.28	19.65	19.25
		3	3	20.84	21.05	20.87	20.13	20.34	20.16	18.93	19.14	18.96
		6	0	21.00	20.67	20.35	20.29	19.96	19.64	19.09	18.76	18.44
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				18615/ 1851.5	18900/ 1880	19185/ 1908.5	18615/ 1851.5	18900/ 1880	19185/ 1908.5	18615/ 1851.5	18900/ 1880	19185/ 1908.5
3MHz	QPSK	1	0	21.41	21.35	21.37	20.70	20.64	20.66	19.50	19.44	19.46
		1	7	21.41	21.33	21.40	20.70	20.62	20.69	19.50	19.42	19.49
		1	14	20.88	20.91	21.03	20.17	20.20	20.32	18.97	19.00	19.12
		8	0	21.49	21.43	21.55	20.78	20.72	20.84	19.58	19.52	19.64
		8	4	21.49	21.57	21.50	20.78	20.86	20.79	19.58	19.66	19.59
		8	7	21.11	20.89	20.89	20.40	20.18	20.18	19.20	18.98	18.98
		15	0	21.25	21.11	20.92	20.54	20.40	20.21	19.34	19.20	19.01
	16QAM	1	0	21.86	21.44	21.35	21.15	20.73	20.64	19.95	19.53	19.44
		1	7	21.92	21.98	21.06	21.21	21.27	20.35	20.01	20.07	19.15
		1	14	21.09	21.00	20.97	20.38	20.29	20.26	19.18	19.09	19.06
		8	0	21.23	20.92	20.86	20.52	20.21	20.15	19.32	19.01	18.95

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		8	4	21.09	20.90	20.90	20.38	20.19	20.19	19.18	18.99	18.99
		8	7	20.88	20.98	20.90	20.17	20.27	20.19	18.97	19.07	18.99
		15	0	20.99	20.97	20.94	20.28	20.26	20.23	19.08	19.06	19.03
	64QAM	1	0	21.72	21.22	21.17	21.01	20.51	20.46	19.81	19.31	19.26
		1	7	21.69	21.74	20.90	20.98	21.03	20.19	19.78	19.83	18.99
		1	14	20.95	21.06	21.01	20.24	20.35	20.30	19.04	19.15	19.10
		8	0	21.25	20.64	20.66	20.54	19.93	19.95	19.34	18.73	18.75
		8	4	21.24	20.83	20.42	20.53	20.12	19.71	19.33	18.92	18.51
		8	7	20.88	20.31	20.14	20.17	19.60	19.43	18.97	18.40	18.23
		15	0	21.02	20.73	20.40	20.31	20.02	19.69	19.11	18.82	18.49
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				18625/ 1852.5	18900/ 1880	19175/ 1907.5	18625/ 1852.5	18900/ 1880	19175/ 1907.5	18625/ 1852.5	18900/ 1880	19175/ 1907.5
5MHz	QPSK	1	0	21.39	21.32	21.35	20.68	20.61	20.64	19.48	19.41	19.44
		1	13	21.40	21.33	21.39	20.69	20.62	20.68	19.49	19.42	19.48
		1	24	20.86	20.88	21.01	20.15	20.17	20.30	18.95	18.97	19.10
		12	0	21.47	21.42	21.53	20.76	20.71	20.82	19.56	19.51	19.62
		12	6	21.49	21.56	21.48	20.78	20.85	20.77	19.58	19.65	19.57
		12	13	21.09	20.87	20.89	20.38	20.16	20.18	19.18	18.96	18.98
		25	0	21.23	21.11	20.91	20.52	20.40	20.20	19.32	19.20	19.00
	16QAM	1	0	21.82	21.38	21.32	21.11	20.67	20.61	19.91	19.47	19.41
		1	13	21.91	21.99	21.01	21.20	21.28	20.30	20.00	20.08	19.10
		1	24	21.07	20.96	20.95	20.36	20.25	20.24	19.16	19.05	19.04
		12	0	21.19	20.92	20.84	20.48	20.21	20.13	19.28	19.01	18.93
		12	6	21.05	20.84	20.87	20.34	20.13	20.16	19.14	18.93	18.96
		12	13	20.87	20.97	20.85	20.16	20.26	20.14	18.96	19.06	18.94
		25	0	20.96	20.95	20.89	20.25	20.24	20.18	19.05	19.04	18.98
	64QAM	1	0	21.69	21.17	21.15	20.98	20.46	20.44	19.78	19.26	19.24
		1	13	21.68	21.74	20.87	20.97	21.03	20.16	19.77	19.83	18.96
		1	24	20.92	21.01	20.98	20.21	20.30	20.27	19.01	19.10	19.07
		12	0	21.25	20.64	20.62	20.54	19.93	19.91	19.34	18.73	18.71
		12	6	21.19	20.79	20.37	20.48	20.08	19.66	19.28	18.88	18.46
		12	13	20.86	20.27	20.13	20.15	19.56	19.42	18.95	18.36	18.22
		25	0	21.02	20.72	20.36	20.31	20.01	19.65	19.11	18.81	18.45
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				18650/ 1855	18900/ 1880	19150/ 1905	18650/ 1855	18900/ 1880	18650/ 1855	18650/ 1855	18900/ 1880	18650/ 1855
10MHz	QPSK	1	0	21.38	21.33	21.33	20.67	20.62	20.62	19.47	19.42	19.42
		1	25	21.39	21.29	21.37	20.68	20.58	20.66	19.48	19.38	19.46
		1	49	20.85	20.86	20.99	20.14	20.15	20.28	18.94	18.95	19.08

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		25	0	21.46	21.38	21.51	20.75	20.67	20.80	19.55	19.47	19.60
		25	13	21.47	21.53	21.45	20.76	20.82	20.74	19.56	19.62	19.54
		25	25	21.09	20.87	20.85	20.38	20.16	20.14	19.18	18.96	18.94
		50	0	21.23	21.10	20.90	20.52	20.39	20.19	19.32	19.19	18.99
	16QAM	1	0	21.83	21.40	21.32	21.12	20.69	20.61	19.92	19.49	19.41
		1	25	21.89	21.96	21.03	21.18	21.25	20.32	19.98	20.05	19.12
		1	49	21.06	20.98	20.93	20.35	20.27	20.22	19.15	19.07	19.02
		25	0	21.21	20.88	20.83	20.50	20.17	20.12	19.30	18.97	18.92
		25	13	21.06	20.85	20.86	20.35	20.14	20.15	19.15	18.94	18.95
		25	25	20.85	20.93	20.86	20.14	20.22	20.15	18.94	19.02	18.95
		50	0	20.97	20.93	20.89	20.26	20.22	20.18	19.06	19.02	18.98
	64QAM	1	0	21.69	21.18	21.14	20.98	20.47	20.43	19.78	19.27	19.23
		1	25	21.66	21.72	20.87	20.95	21.01	20.16	19.75	19.81	18.96
		1	49	20.92	21.04	20.97	20.21	20.33	20.26	19.01	19.13	19.06
		25	0	21.23	20.60	20.63	20.52	19.89	19.92	19.32	18.69	18.72
		25	13	21.21	20.78	20.38	20.50	20.07	19.67	19.30	18.87	18.47
		25	25	20.85	20.26	20.10	20.14	19.55	19.39	18.94	18.35	18.19
		50	0	21.00	20.69	20.35	20.29	19.98	19.64	19.09	18.78	18.44
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				18675/ 1857.5	18900/ 1880	19125/ 1902.5	18675/ 1857.5	18900/ 1880	19125/ 1902.5	18675/ 1857.5	18900/ 1880	19125/ 1902.5
15MHz	QPSK	1	0	21.39	21.30	21.34	20.68	20.59	20.63	19.48	19.39	19.43
		1	38	21.40	21.33	21.38	20.69	20.62	20.67	19.49	19.42	19.47
		1	74	20.84	20.85	20.98	20.13	20.14	20.27	18.93	18.94	19.07
		36	0	21.47	21.39	21.52	20.76	20.68	20.81	19.56	19.48	19.61
		36	18	21.47	21.53	21.45	20.76	20.82	20.74	19.56	19.62	19.54
		36	39	21.08	20.88	20.86	20.37	20.17	20.15	19.17	18.97	18.95
		75	0	21.26	21.08	20.89	20.55	20.37	20.18	19.35	19.17	18.98
	16QAM	1	0	21.80	21.41	21.32	21.09	20.70	20.61	19.89	19.50	19.41
		1	38	21.90	21.97	21.04	21.19	21.26	20.33	19.99	20.06	19.13
		1	74	21.06	20.96	20.93	20.35	20.25	20.22	19.15	19.05	19.02
		36	0	21.21	20.91	20.84	20.50	20.20	20.13	19.30	19.00	18.93
		36	18	21.05	20.84	20.85	20.34	20.13	20.14	19.14	18.93	18.94
		36	39	20.86	20.94	20.87	20.15	20.23	20.16	18.95	19.03	18.96
		75	0	20.97	20.93	20.89	20.26	20.22	20.18	19.06	19.02	18.98
	64QAM	1	0	21.66	21.19	21.14	20.95	20.48	20.43	19.75	19.28	19.23
		1	38	21.67	21.73	20.88	20.96	21.02	20.17	19.76	19.82	18.97
		1	74	20.92	21.02	20.97	20.21	20.31	20.26	19.01	19.11	19.06
		36	0	21.23	20.63	20.64	20.52	19.92	19.93	19.32	18.72	18.73
		36	18	21.20	20.77	20.37	20.49	20.06	19.66	19.29	18.86	18.46

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		36	39	20.86	20.27	20.11	20.15	19.56	19.40	18.95	18.36	18.20
		75	0	21.00	20.69	20.35	20.29	19.98	19.64	19.09	18.78	18.44
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)								
				18700/ 1860	18900/ 1880	19100/ 1900	18700/ 1860	18900/ 1880	19100/ 1900	18700/ 1860	18900/ 1880	19100/ 1900
20MHz	QPSK	1	0	21.36	21.26	21.31	20.65	20.55	20.60	19.45	19.35	19.40
		1	50	21.39	21.29	21.36	20.68	20.58	20.65	19.48	19.38	19.45
		1	99	20.82	20.84	20.95	20.11	20.13	20.24	18.91	18.93	19.04
		50	0	21.44	21.34	21.48	20.73	20.63	20.77	19.53	19.43	19.57
		50	25	21.45	21.49	21.42	20.74	20.78	20.71	19.54	19.58	19.51
		50	50	21.05	20.83	20.82	20.34	20.12	20.11	19.14	18.92	18.91
		100	0	21.23	21.03	20.85	20.52	20.32	20.14	19.32	19.12	18.94
	16QAM	1	0	21.78	21.37	21.27	21.07	20.66	20.56	19.87	19.46	19.36
		1	50	21.86	21.95	21.00	21.15	21.24	20.29	19.95	20.04	19.09
		1	99	21.04	20.93	20.91	20.33	20.22	20.20	19.13	19.02	19.00
		50	0	21.18	20.87	20.81	20.47	20.16	20.10	19.27	18.96	18.90
		50	25	21.02	20.82	20.82	20.31	20.11	20.11	19.11	18.91	18.91
		50	50	20.83	20.89	20.83	20.12	20.18	20.12	18.92	18.98	18.92
		100	0	20.95	20.89	20.86	20.24	20.18	20.15	19.04	18.98	18.95
	64QAM	1	0	21.64	21.15	21.09	20.93	20.44	20.38	19.73	19.24	19.18
		1	50	21.63	21.71	20.84	20.92	21.00	20.13	19.72	19.80	18.93
		1	99	20.90	20.99	20.95	20.19	20.28	20.24	18.99	19.08	19.04
		50	0	21.20	20.59	20.61	20.49	19.88	19.90	19.29	18.68	18.70
		50	25	21.17	20.75	20.34	20.46	20.04	19.63	19.26	18.84	18.43
		50	50	20.83	20.22	20.07	20.12	19.51	19.36	18.92	18.31	18.16
		100	0	20.98	20.65	20.32	20.27	19.94	19.61	19.07	18.74	18.41

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5.2. Occupied Bandwidth

Ambient condition

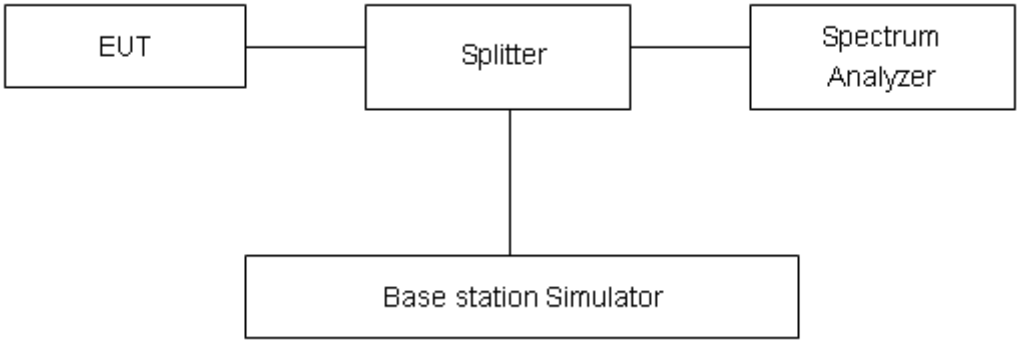
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.
RBW is set to ⩾1%EBW, VBW is set to 3x RBW.

99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 2, *U*= 624Hz.

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Test Result

Mode	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
GSM 1900 (GMSK)	512	1850.2	0.25	0.31
	661	1880.0	0.25	0.31
	810	1909.8	0.24	0.32
GPRS 1900 (GMSK)	512	1850.2	0.25	0.31
	661	1880.0	0.25	0.32
	810	1909.8	0.24	0.32
EGPRS 1900 (8PSK)	512	1850.2	0.24	0.31
	661	1880.0	0.25	0.31
	810	1909.8	0.25	0.30
WCDMA Band II (RMC)	9262	1852.4	4.14	4.72
	9400	1880	4.15	4.71
	9538	1907.6	4.14	4.70

LTE Band 2						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	18607	1850.7	1.09	1.30
			18900	1880.0	1.10	1.32
			19193	1909.3	1.11	1.28
		3	18615	1851.5	2.70	2.99
			18900	1880	2.71	2.97
			19185	1908.5	2.71	2.99
		5	18625	1852.5	4.53	4.97
			18900	1880	4.52	4.95
			19175	1907.5	4.51	4.94
		10	18650	1855	8.99	9.83
			18900	1880	8.98	9.90
			19150	1905	8.97	9.80
		15	18675	1857.5	13.48	14.68
			18900	1880	13.47	14.70
			19125	1902.5	13.39	14.53
		20	18700	1860	17.96	19.43
			18900	1880	18.02	19.34

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			19100	1900	17.88	19.11
	16QAM	1.4	18607	1850.7	1.10	1.30
			18900	1880.0	1.09	1.29
			19193	1909.3	1.10	1.30
		3	18615	1851.5	2.70	2.95
			18900	1880	2.70	2.97
			19185	1908.5	2.70	3.01
		5	18625	1852.5	4.51	4.96
			18900	1880	4.52	4.97
			19175	1907.5	4.51	4.98
		10	18650	1855	9.00	9.82
			18900	1880	8.98	9.75
			19150	1905	8.97	9.84
		15	18675	1857.5	13.45	14.59
			18900	1880	13.47	14.72
			19125	1902.5	13.43	14.46
		20	18700	1860	17.93	19.45
			18900	1880	17.96	19.41
			19100	1900	17.91	19.16
	64QAM	1.4	18607	1850.7	1.10	1.29
			18900	1880.0	1.10	1.29
			19193	1909.3	1.09	1.28
		3	18615	1851.5	2.70	2.96
			18900	1880	2.70	2.97
			19185	1908.5	2.69	2.98
		5	18625	1852.5	4.50	4.91
			18900	1880	4.51	5.00
			19175	1907.5	4.54	5.00
		10	18650	1855	8.99	9.86
			18900	1880	9.00	9.74
			19150	1905	8.97	9.78
		15	18675	1857.5	13.48	14.62
			18900	1880	13.48	14.55
			19125	1902.5	13.47	14.51
		20	18700	1860	17.91	19.35
			18900	1880	18.01	19.39
			19100	1900	17.88	19.16

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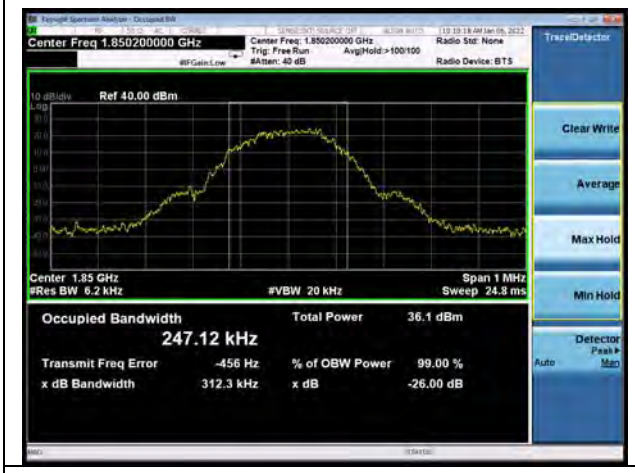
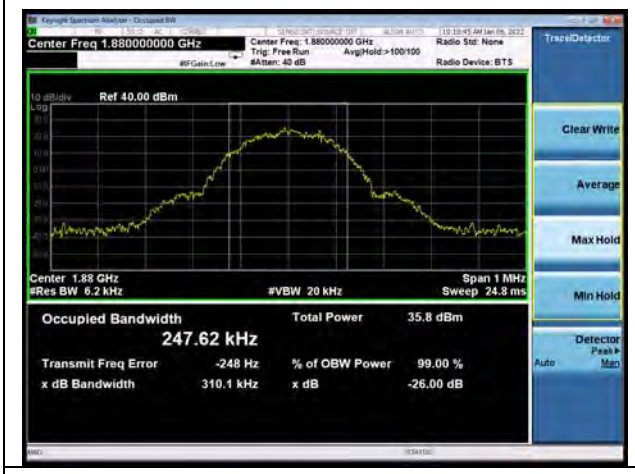
GSM1900 GSM CH-Low



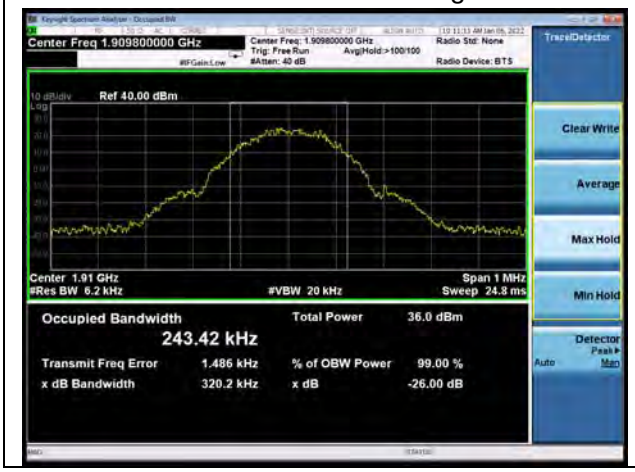
GSM1900 GPRS CH-Low

GSM 1900 GSM CH-Middle

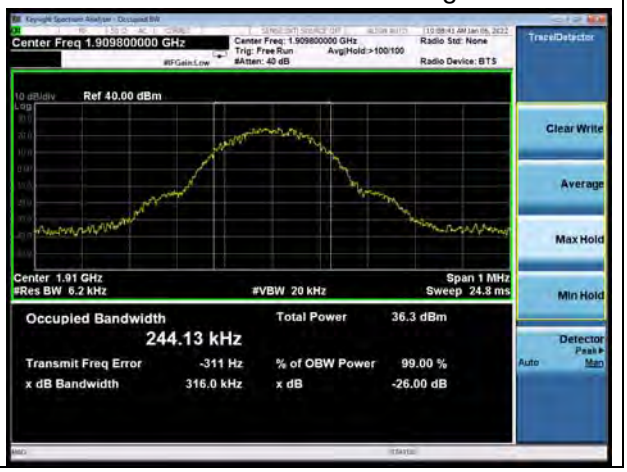


GSM 1900 GPRS CH-Middle

GSM 1900 GSM CH-High



GSM 1900 GPRS CH-High



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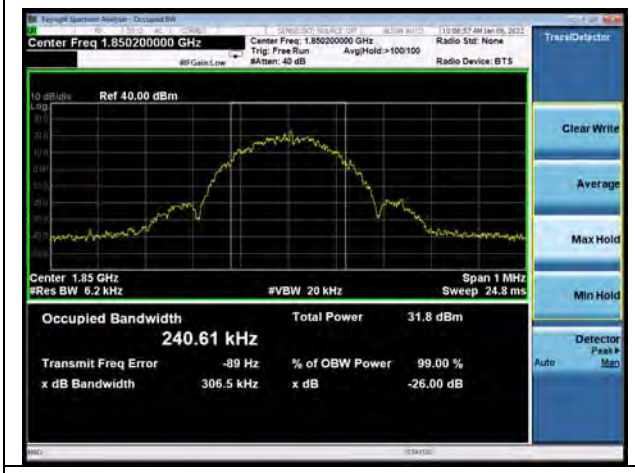
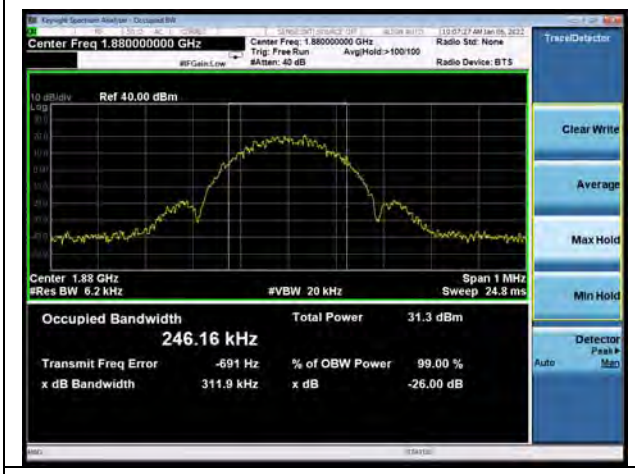
GSM1900 EGPRS CH-Low



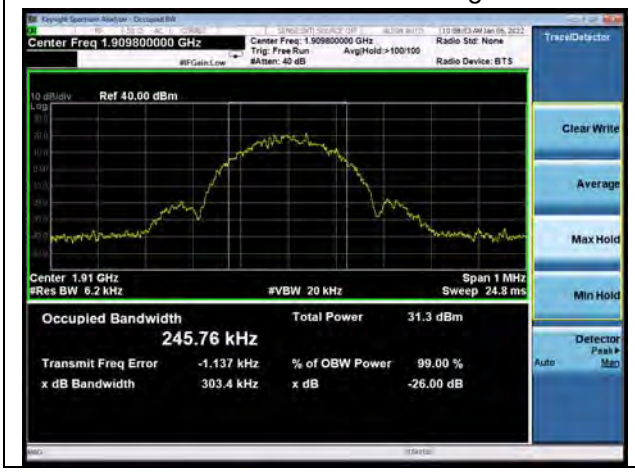
WCDMA Band II RMC CH-LOW

GSM 1900 EGPRS CH-Middle

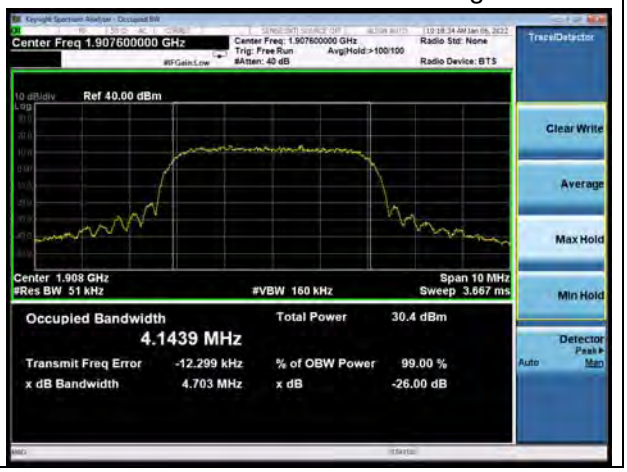


WCDMA Band II RMC CH-Middle

GSM 1900 EGPRS CH-High



WCDMA Band II RMC CH-High



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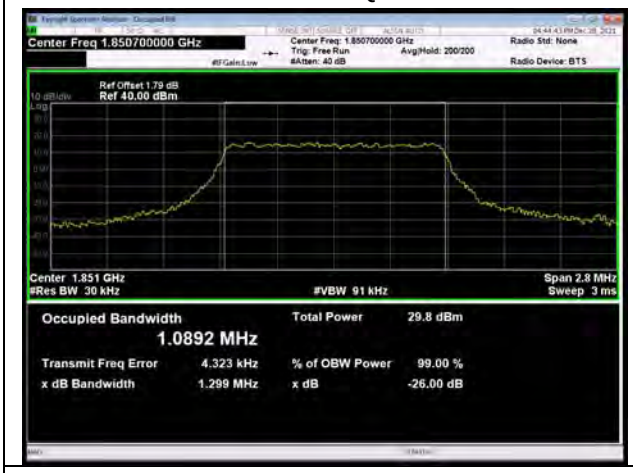
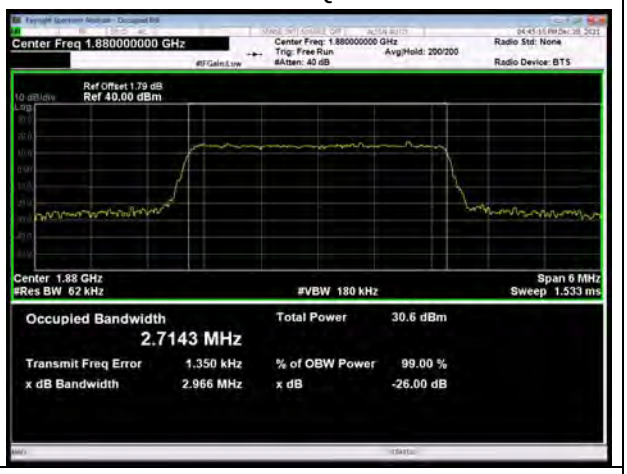
LTE Band 2 1.4MHz QPSK CH-Low



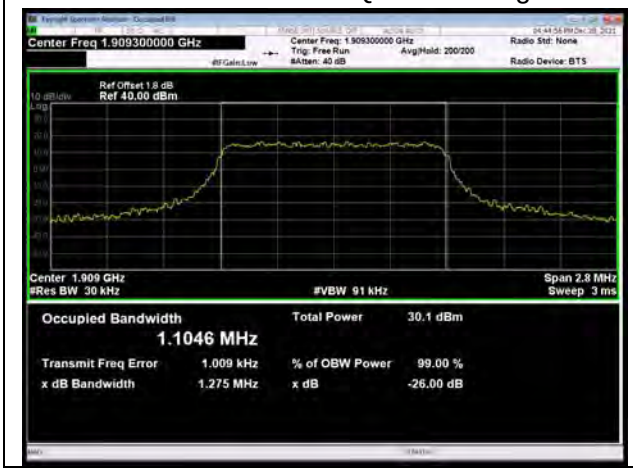
LTE Band 2 3MHz QPSK CH-Low

LTE Band 2 1.4MHz QPSK CH-Middle

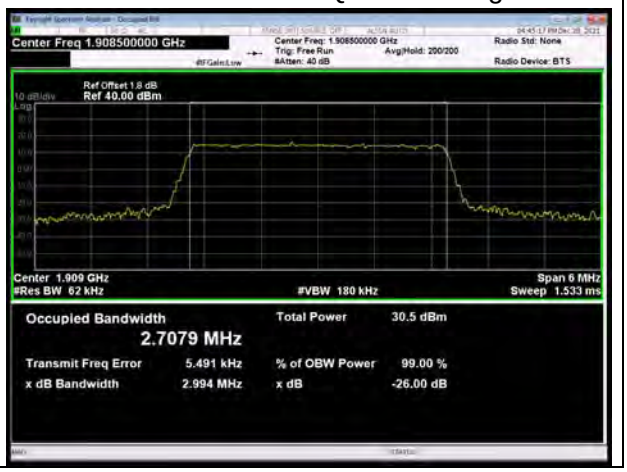
LTE Band 2 3MHz QPSK CH-Middle



LTE Band 2 1.4MHz QPSK CH-High



LTE Band 2 3MHz QPSK CH-High



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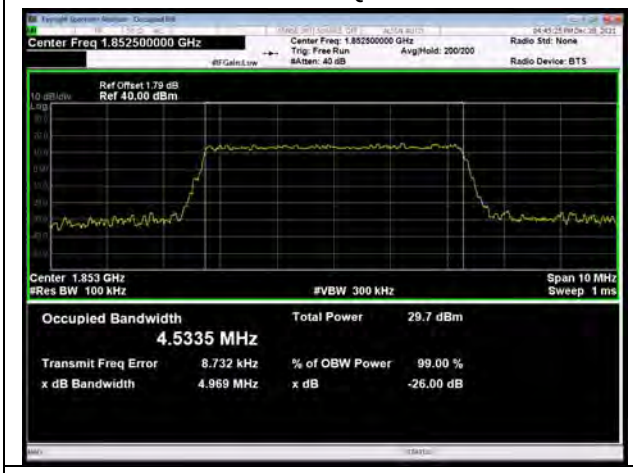
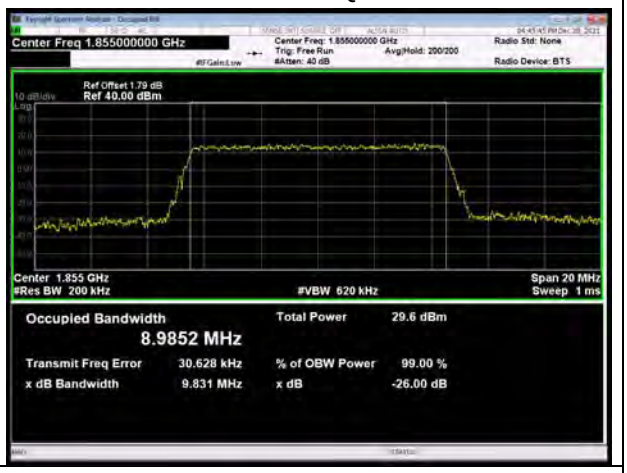
LTE Band 2 5MHz QPSK CH-Low



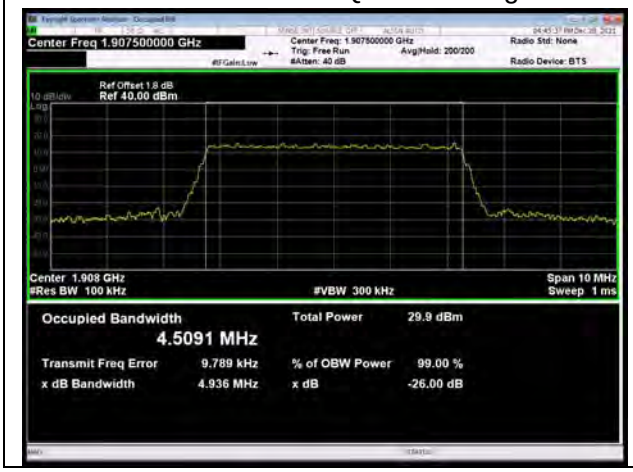
LTE Band 2 10MHz QPSK CH-Low



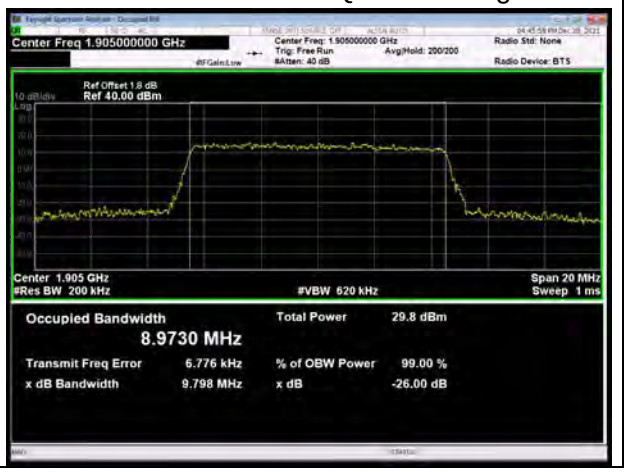
LTE Band 2 5MHz QPSK CH-Middle

LTE Band 2 10MHz QPSK CH-Middle

LTE Band 2 5MHz QPSK CH-High



LTE Band 2 10MHz QPSK CH-High



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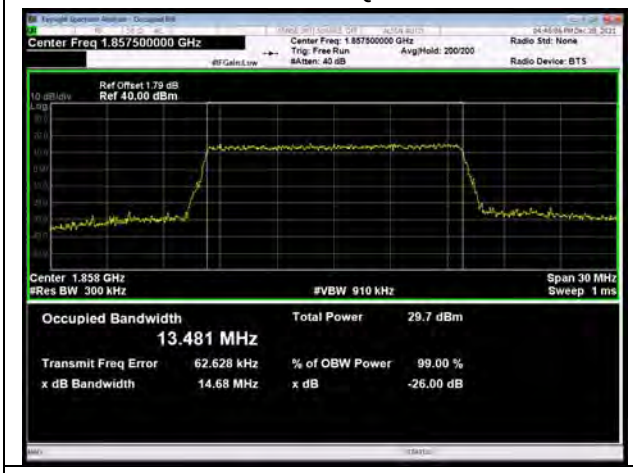
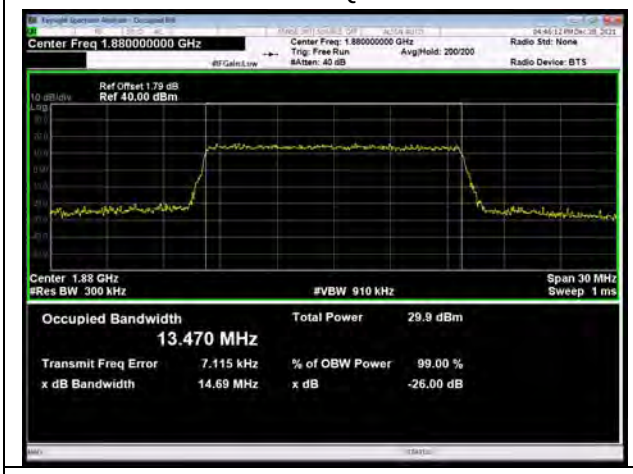
LTE Band 2 15MHz QPSK CH-Low



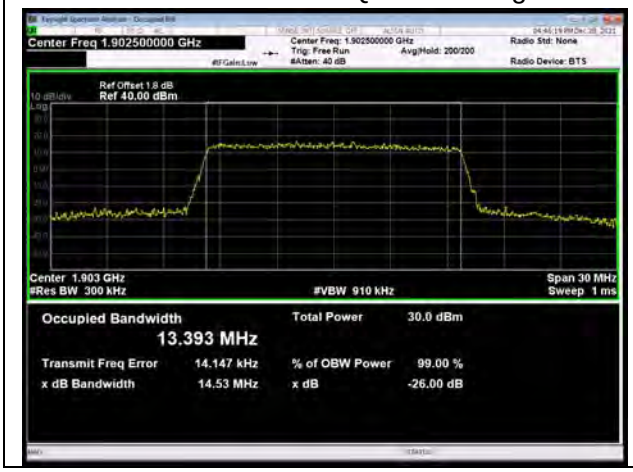
LTE Band 2 20MHz QPSK CH-Low

LTE Band 2 15MHz QPSK CH-Middle

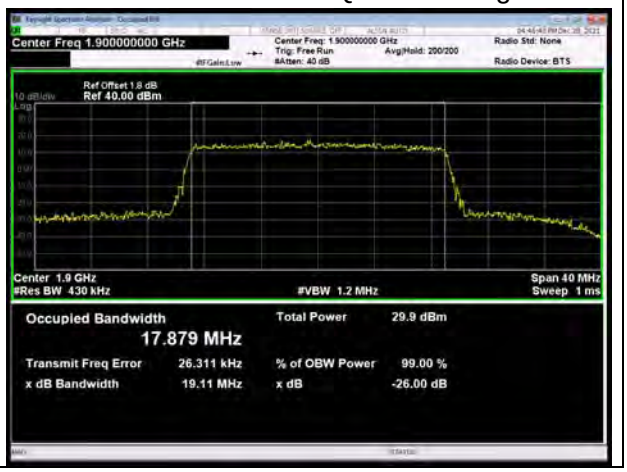


LTE Band 2 20MHz QPSK CH-Middle

LTE Band 2 15MHz QPSK CH-High



LTE Band 2 20MHz QPSK CH-High



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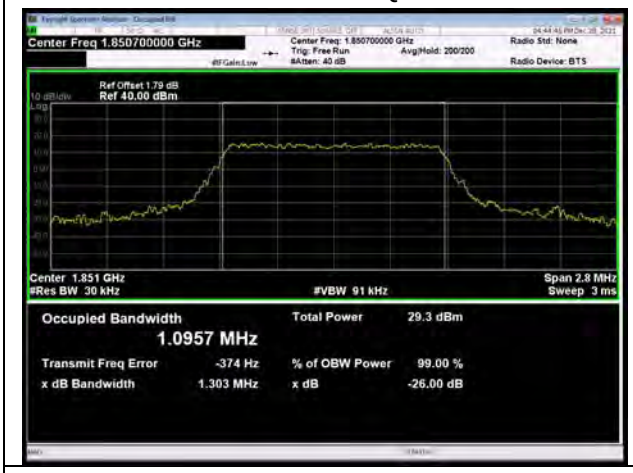
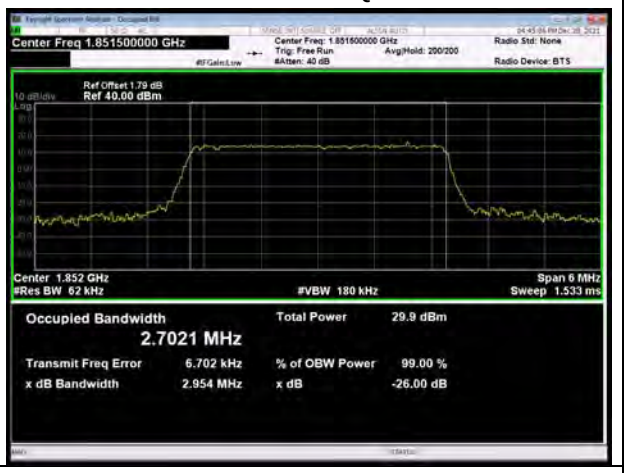
LTE Band 2 1.4MHz 16QAM CH-Low

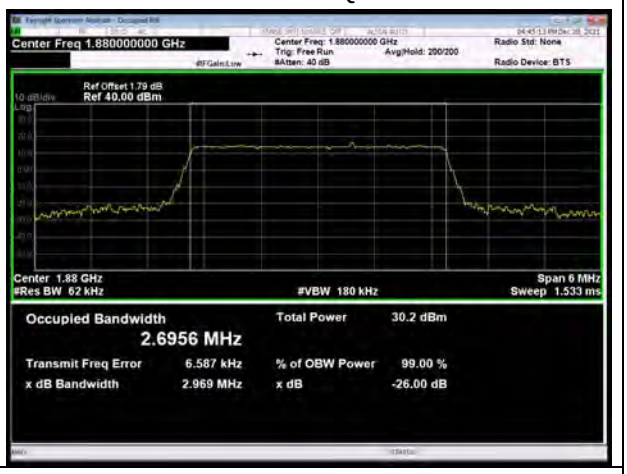


LTE Band 2 3MHz 16QAM CH-Low

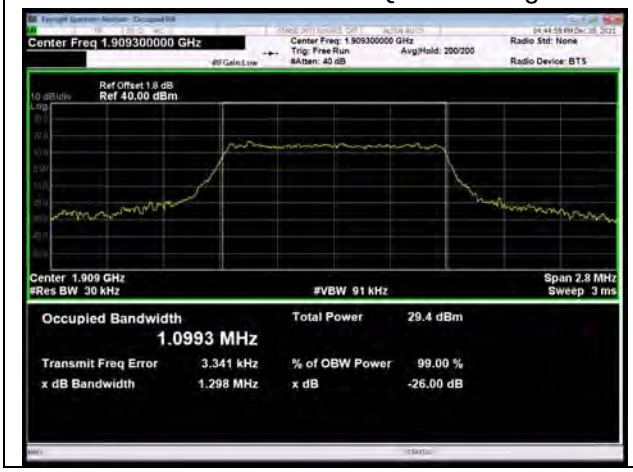


LTE Band 2 1.4MHz 16QAM CH-Middle

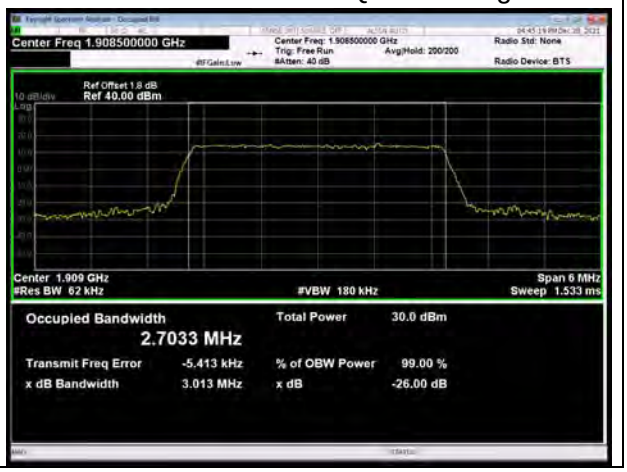
LTE Band 2 3MHz 16QAM CH-Middle



LTE Band 2 1.4MHz 16QAM CH-High



LTE Band 2 3MHz 16QAM CH-High



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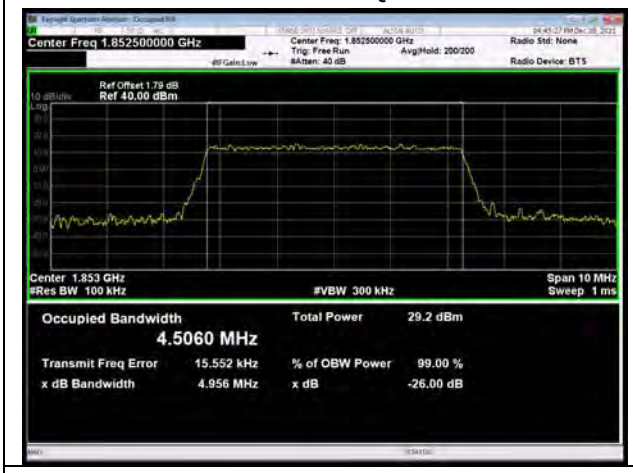
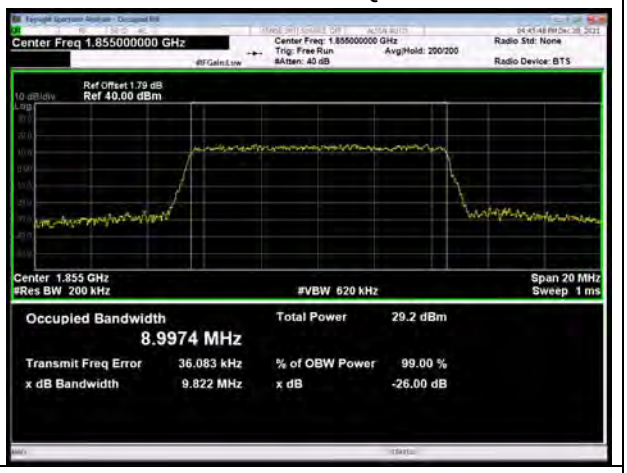
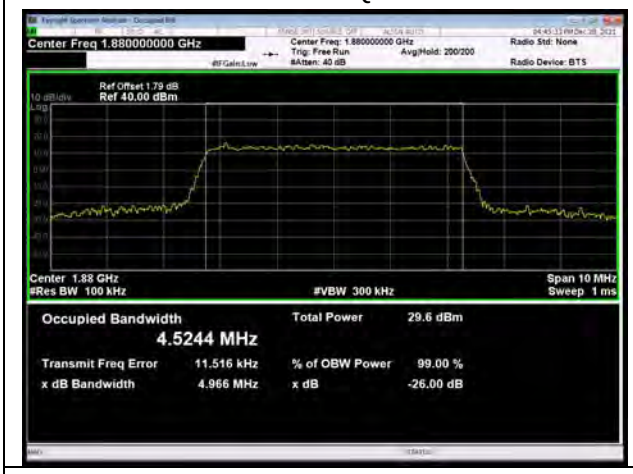
LTE Band 2 5MHz 16QAM CH-Low



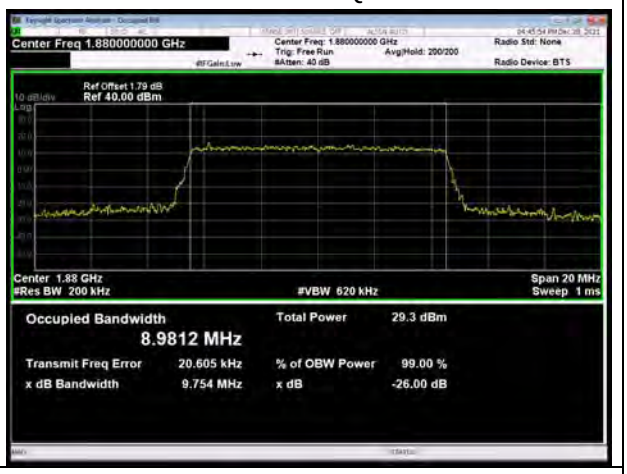
LTE Band 2 10MHz 16QAM CH-Low



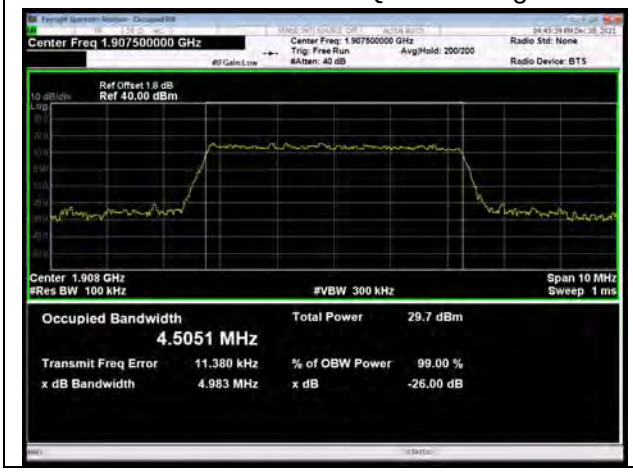
LTE Band 2 5MHz 16QAM CH-Middle



LTE Band 2 10MHz 16QAM CH-Middle



LTE Band 2 5MHz 16QAM CH-High



LTE Band 2 10MHz 16QAM CH-High

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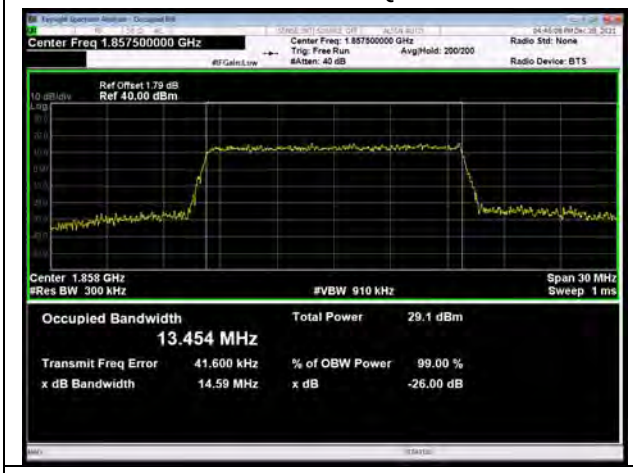
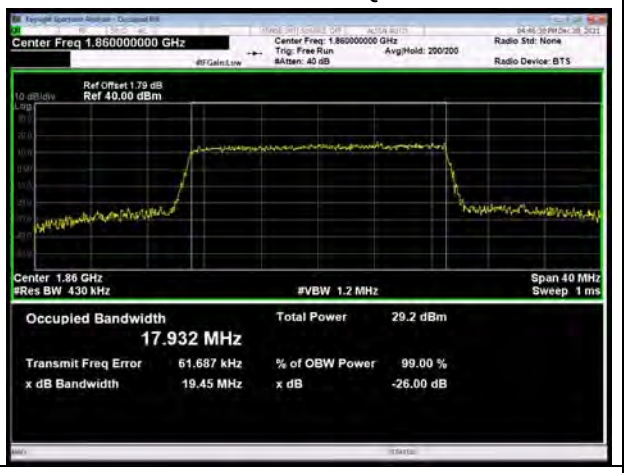
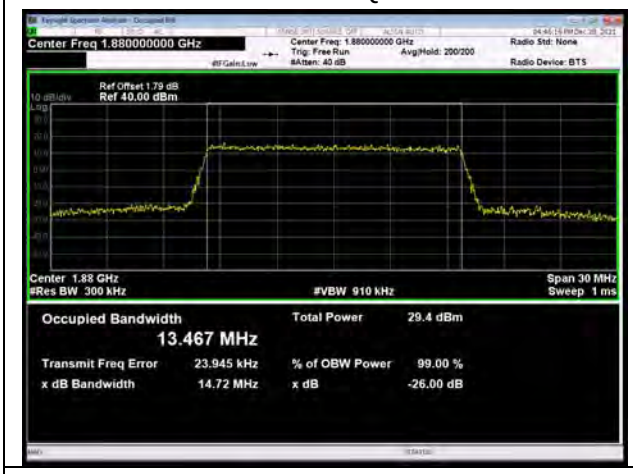
LTE Band 2 15MHz 16QAM CH-Low



LTE Band 2 20MHz 16QAM CH-Low

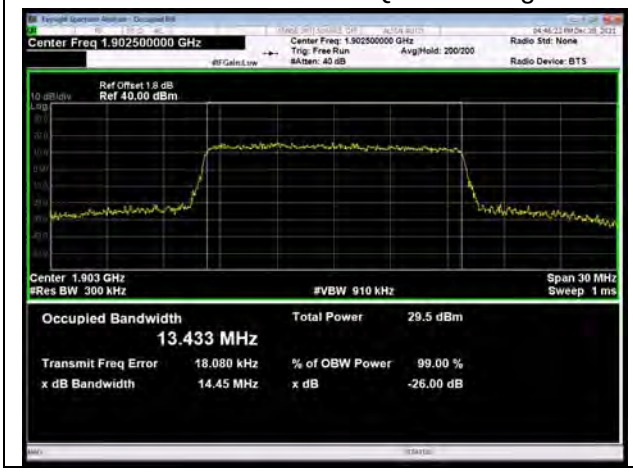


LTE Band 2 15MHz 16QAM CH-Middle

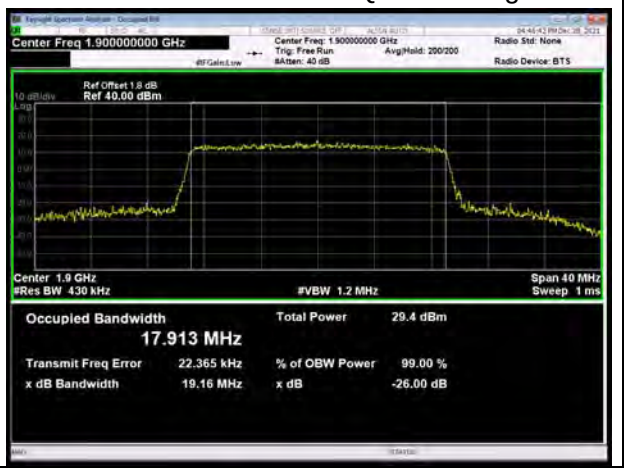


LTE Band 2 20MHz 16QAM CH-Middle

LTE Band 2 15MHz 16QAM CH-High



LTE Band 2 20MHz 16QAM CH-High



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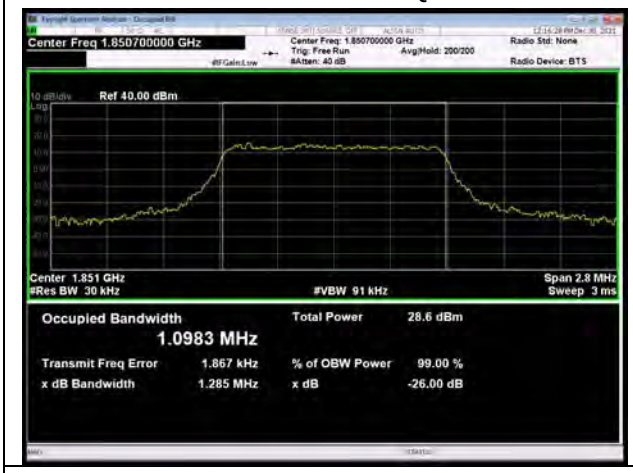
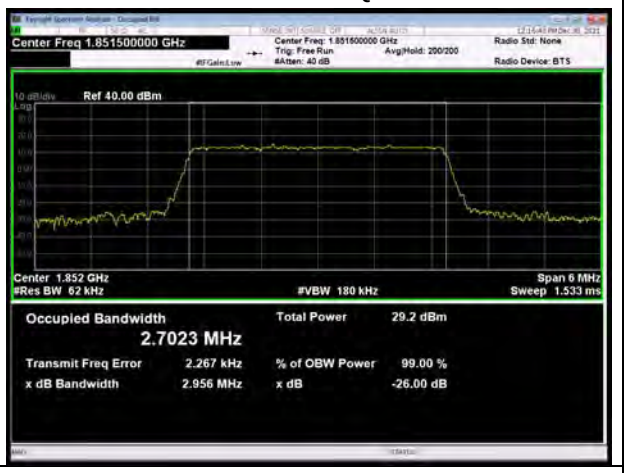
LTE Band 2 1.4MHz 64QAM CH-Low



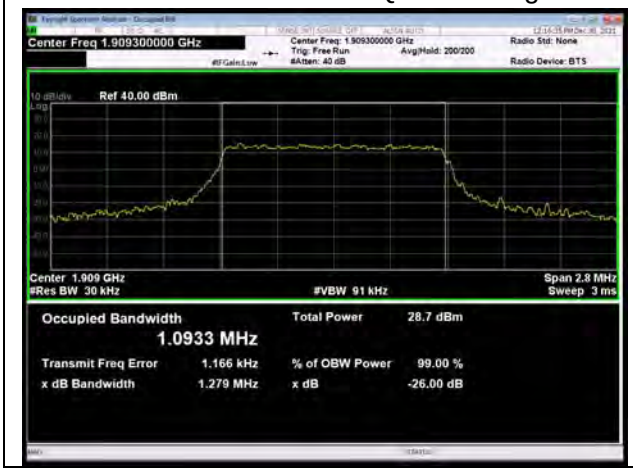
LTE Band 2 3MHz 64QAM CH-Low



LTE Band 2 1.4MHz 64QAM CH-Middle

LTE Band 2 3MHz 64QAM CH-Middle

LTE Band 2 1.4MHz 64QAM CH-High



LTE Band 2 3MHz 64QAM CH-High

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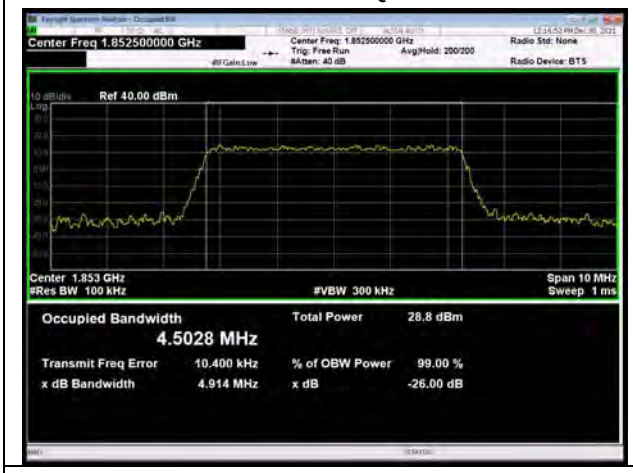
LTE Band 2 5MHz 64QAM CH-Low

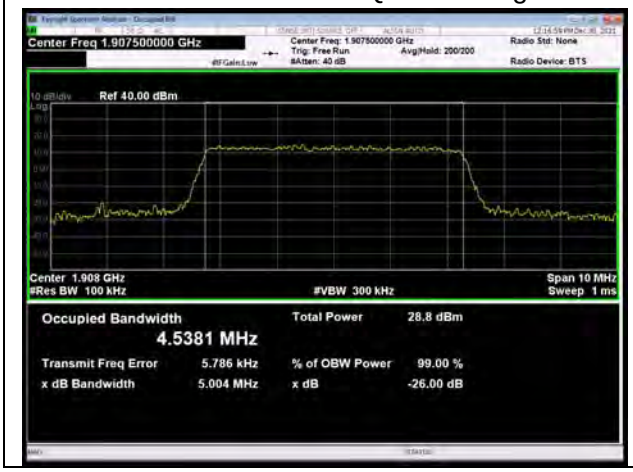


LTE Band 2 10MHz 64QAM CH-Low

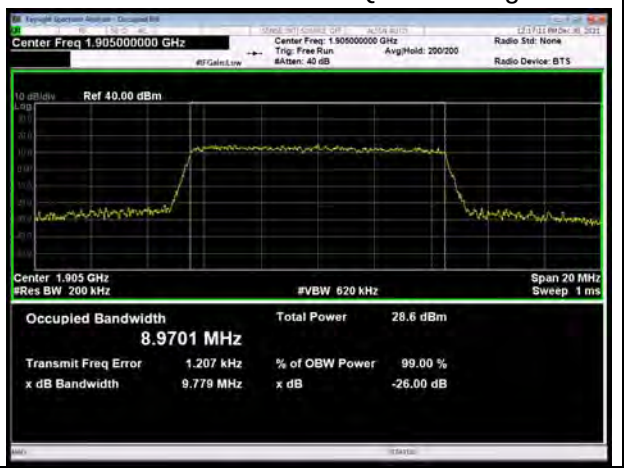
LTE Band 2 5MHz 64QAM CH-Middle

LTE Band 2 10MHz 64QAM CH-Middle

LTE Band 2 5MHz 64QAM CH-High



LTE Band 2 10MHz 64QAM CH-High



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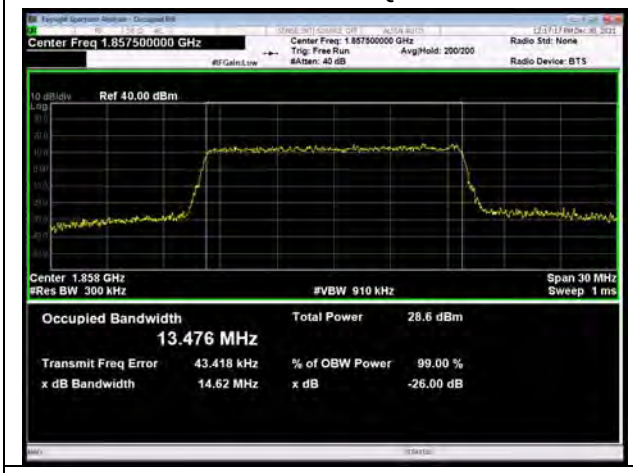
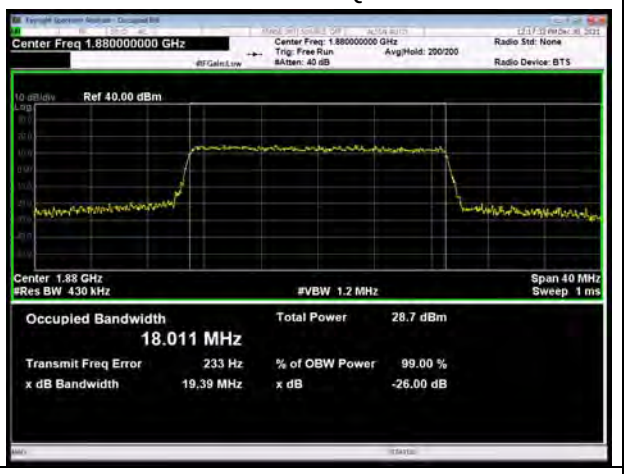
LTE Band 2 15MHz 64QAM CH-Low



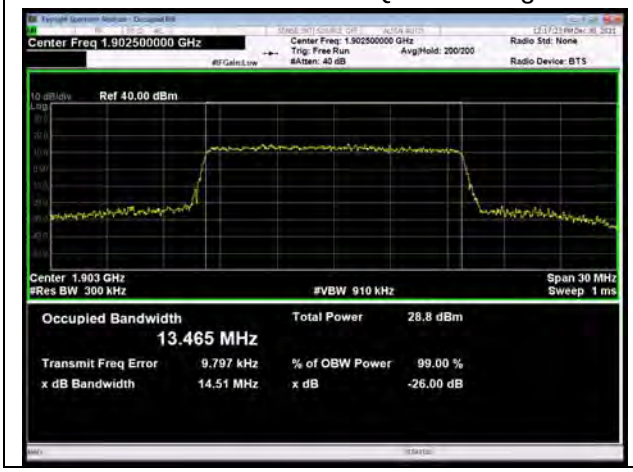
LTE Band 2 20MHz 64QAM CH-Low

LTE Band 2 15MHz 64QAM CH-Middle

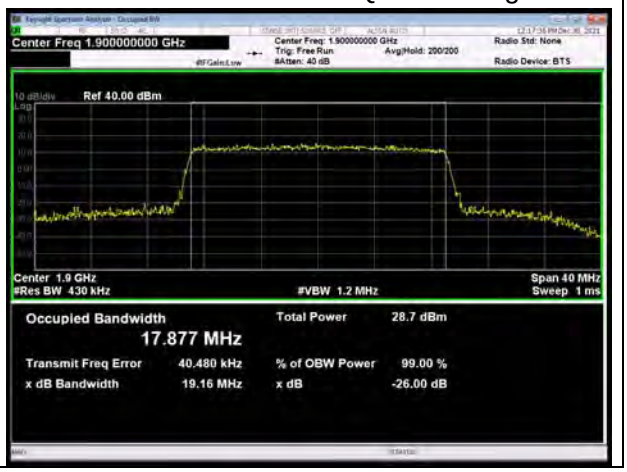
LTE Band 2 20MHz 64QAM CH-Middle



LTE Band 2 15MHz 64QAM CH-High



LTE Band 2 20MHz 64QAM CH-High



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5.3. Band Edge Compliance

Ambient condition

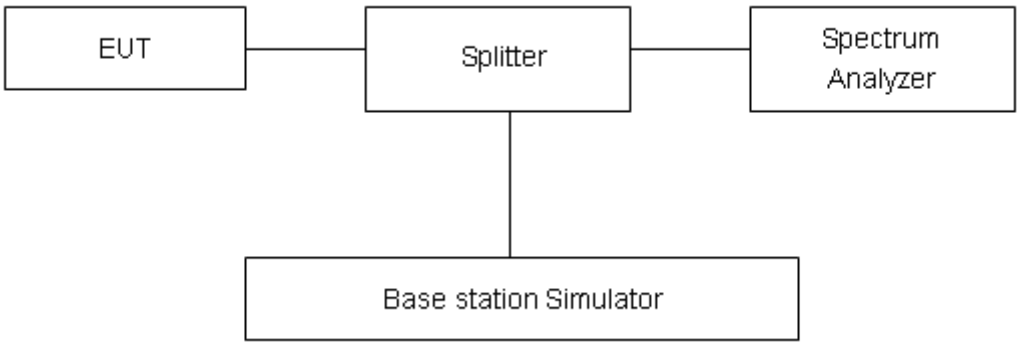
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured. The Average detector is used and RBW is set to ⩾1%EBW, VBW is set to 3x RBW.

Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB.”

Limit	-13 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96, *U*=0.684dB.

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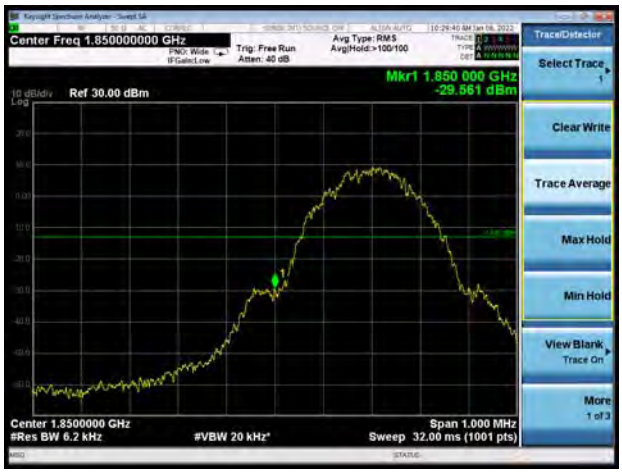
Test Result:

GSM1900 GSM CH-Low

GSM 1900 GSM CH-High

GSM1900 GPRS CH-Low



GSM 1900 GPRS CH-High

GSM1900 EGPRS CH-Low

GSM 1900 EGPRS CH-High

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WCDMA Band II RMC CH-Low

WCDMA Band II RMC CH-High

LTE Band 2 1.4MHz QPSK 1RB CH-Low

LTE Band 2 1.4MHz QPSK 1RB CH-High

LTE Band 2 1.4MHz QPSK 100%RB CH-Low

LTE Band 2 1.4MHz QPSK 100%RB CH-High

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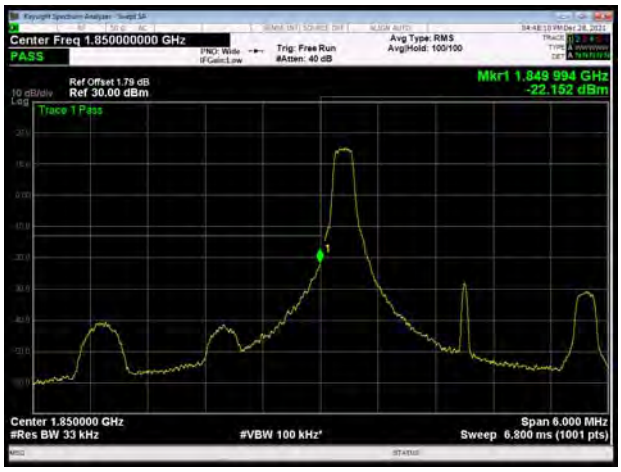
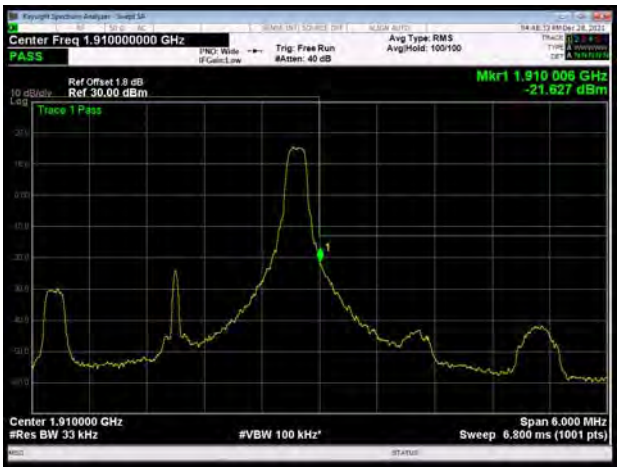
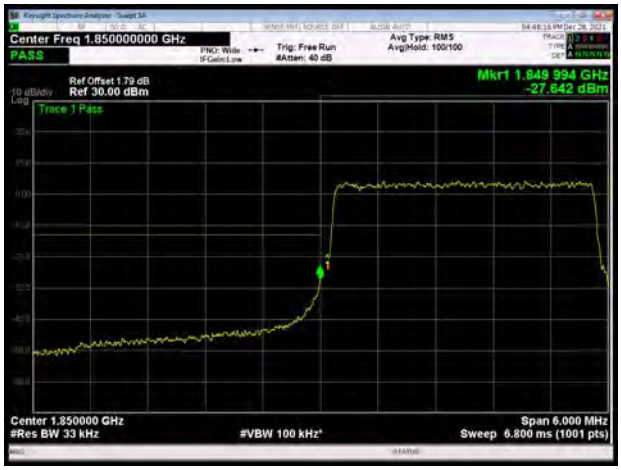
LTE Band 2 3MHz QPSK 1RB CH-Low



LTE Band 2 3MHz QPSK 1RB CH-High



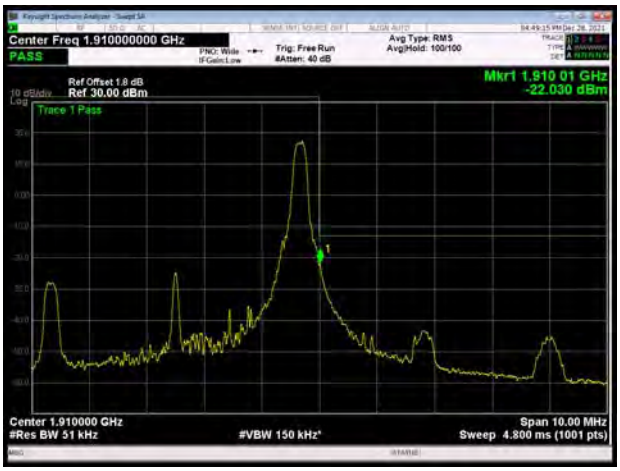
LTE Band 2 3MHz QPSK 100%RB CH-Low



LTE Band 2 3MHz QPSK 100%RB CH-High

LTE Band 2 5MHz QPSK 1RB CH-Low

LTE Band 2 5MHz QPSK 1RB CH-High



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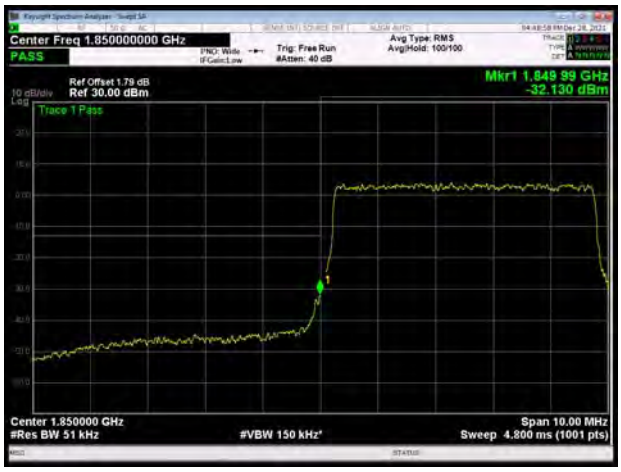
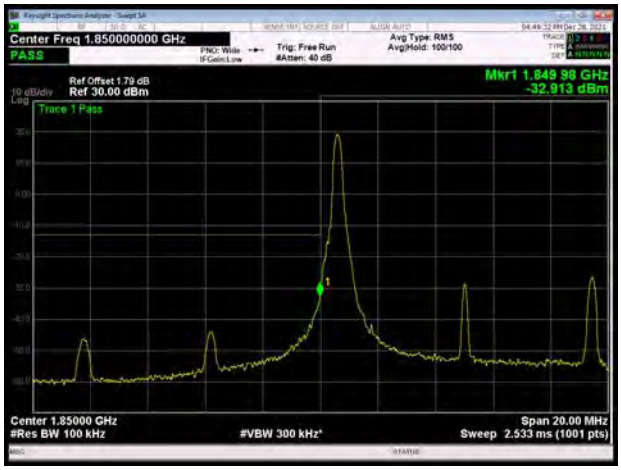
LTE Band 2 5MHz QPSK 100%RB CH-Low

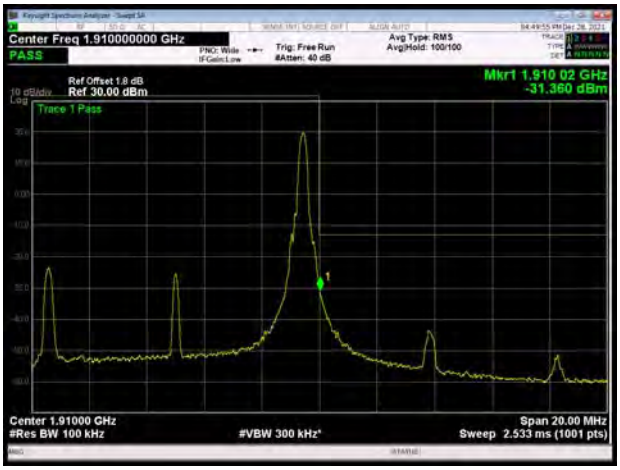


LTE Band 2 5MHz QPSK 100%RB CH-High

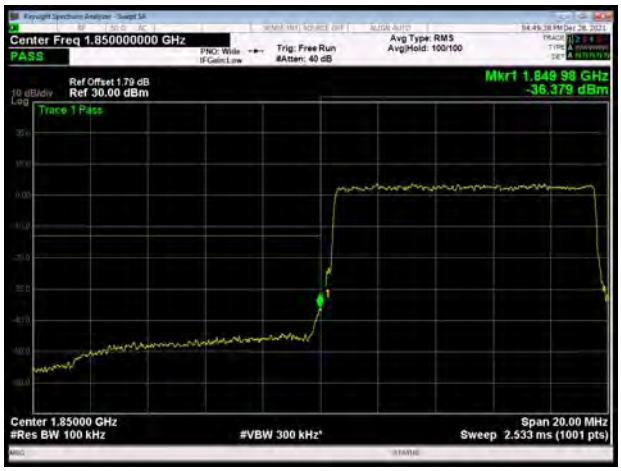
LTE Band 2 10MHz QPSK 1RB CH-Low



LTE Band 2 10MHz QPSK 1RB CH-High



LTE Band 2 10MHz QPSK 100%RB CH-Low



LTE Band 2 10MHz QPSK 100%RB CH-High

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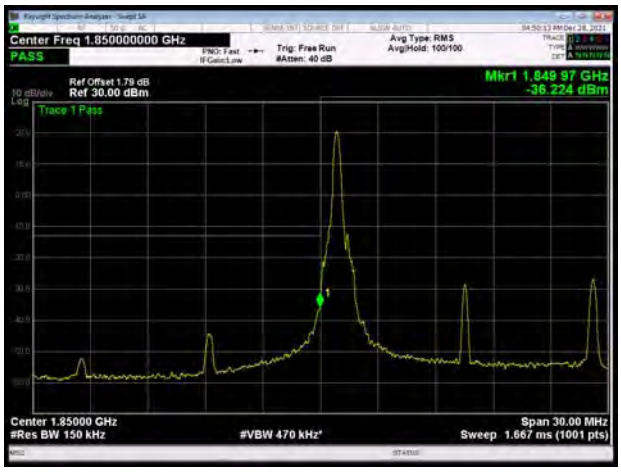
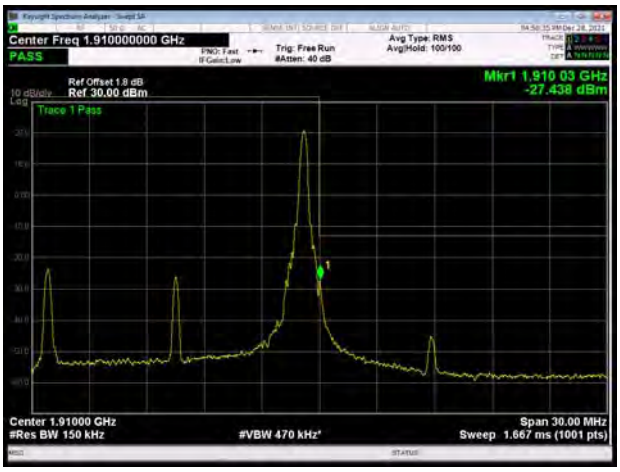
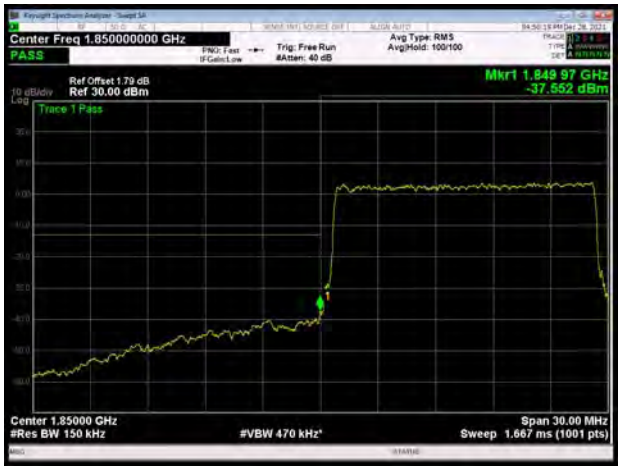
LTE Band 2 15MHz QPSK 1RB CH-Low



LTE Band 2 15MHz QPSK 1RB CH-High

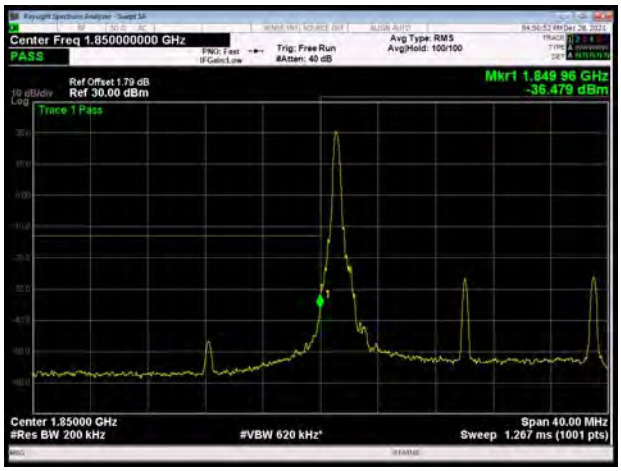


LTE Band 2 15MHz QPSK 100%RB CH-Low

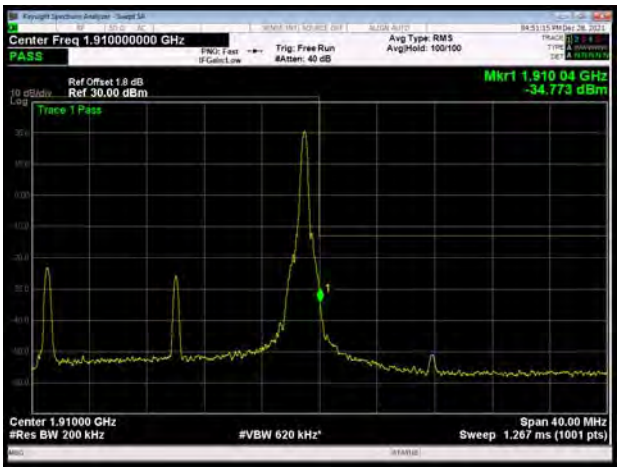


LTE Band 2 15MHz QPSK 100%RB CH-High

LTE Band 2 20MHz QPSK 1RB CH-Low



LTE Band 2 20MHz QPSK 1RB CH-High



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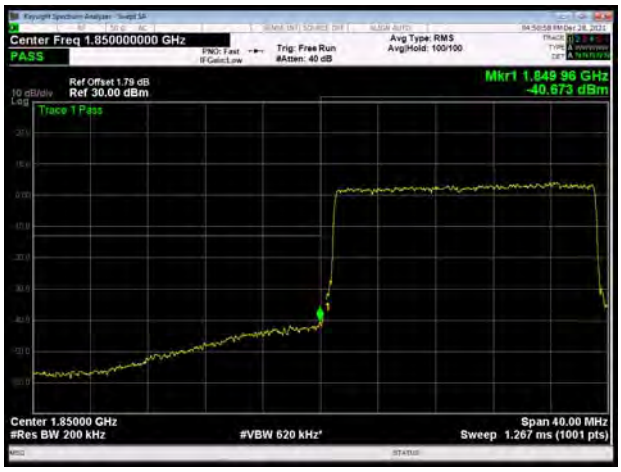
LTE Band 2 20MHz QPSK 100%RB CH-Low



LTE Band 2 20MHz QPSK 100%RB CH-High

LTE Band 2 1.4MHz 16QAM 1RB CH-Low

LTE Band 2 1.4MHz 16QAM 1RB CH-High

LTE Band 2 1.4MHz 16QAM 100%RB CH-Low

LTE Band 2 1.4MHz 16QAM 100%RB CH-High

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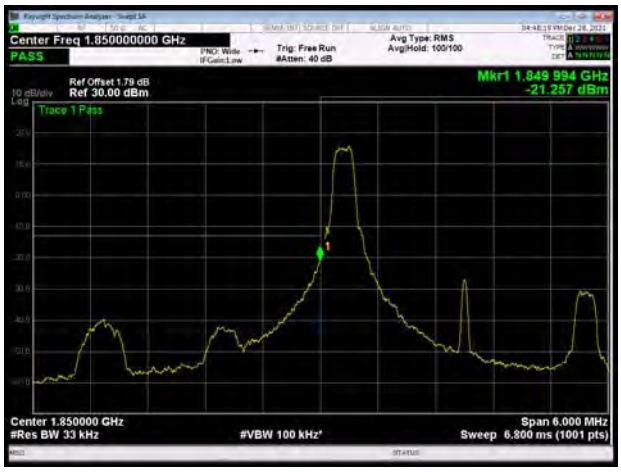
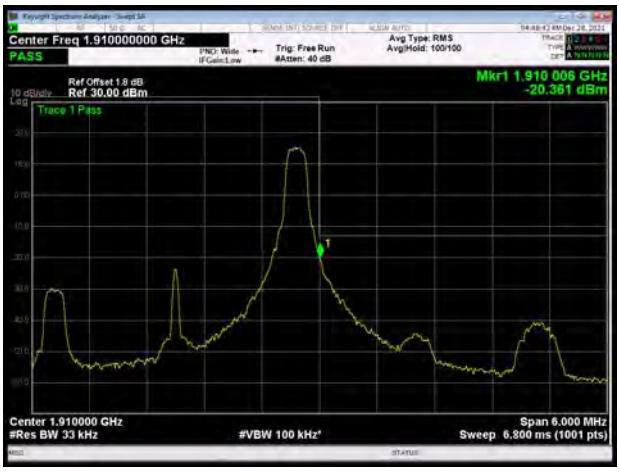
LTE Band 2 3MHz 16QAM 1RB CH-Low



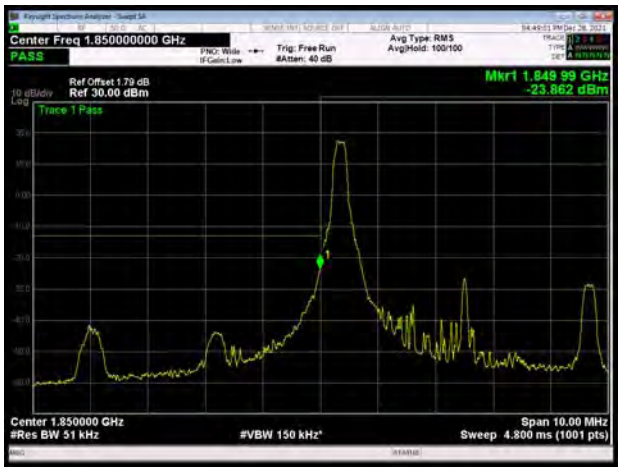
LTE Band 2 3MHz 16QAM 1RB CH-High



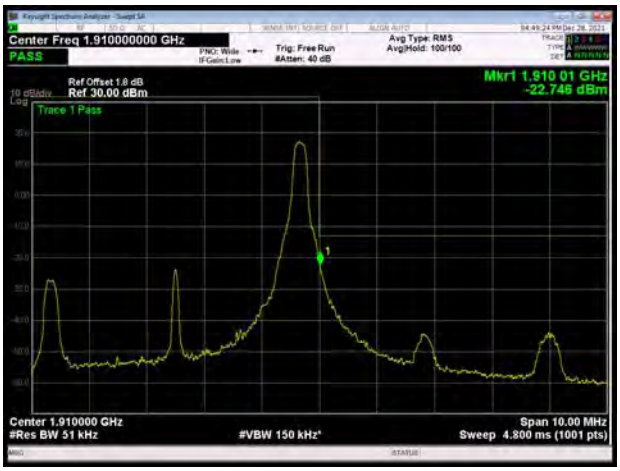
LTE Band 2 3MHz 16QAM 100%RB CH-Low

LTE Band 2 3MHz 16QAM 100%RB CH-High

LTE Band 2 5MHz 16QAM 1RB CH-Low



LTE Band 2 5MHz 16QAM 1RB CH-High



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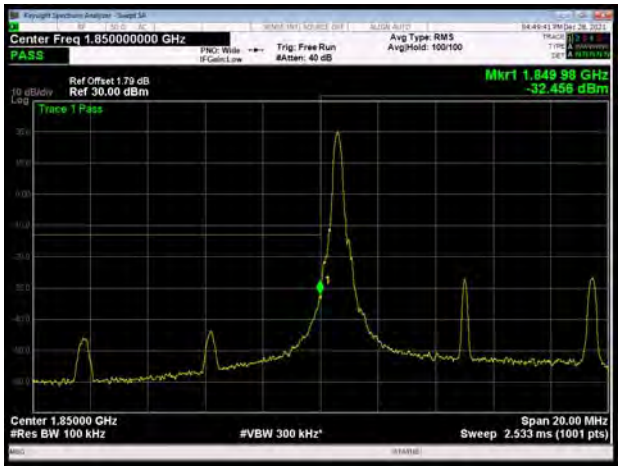
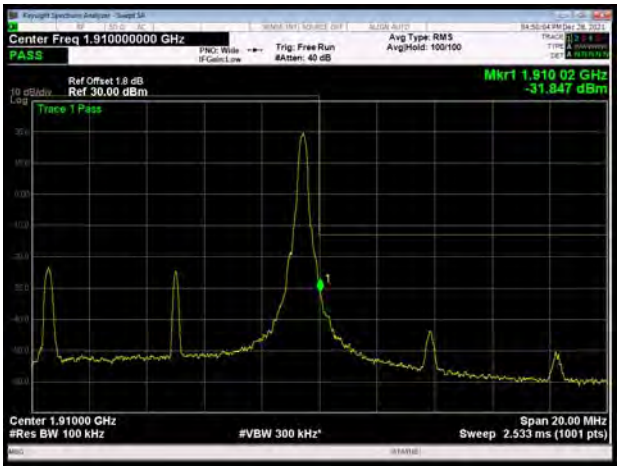
LTE Band 2 5MHz 16QAM 100%RB CH-Low

LTE Band 2 5MHz 16QAM 100%RB CH-High

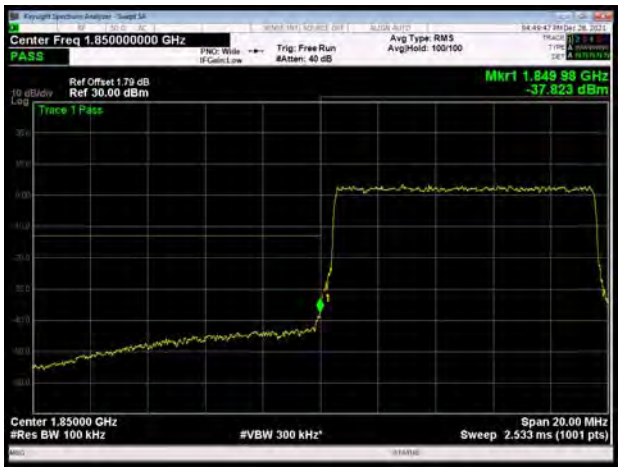
LTE Band 2 10MHz 16QAM 1RB CH-Low



LTE Band 2 10MHz 16QAM 1RB CH-High



LTE Band 2 10MHz 16QAM 100%RB CH-Low



LTE Band 2 10MHz 16QAM 100%RB CH-High

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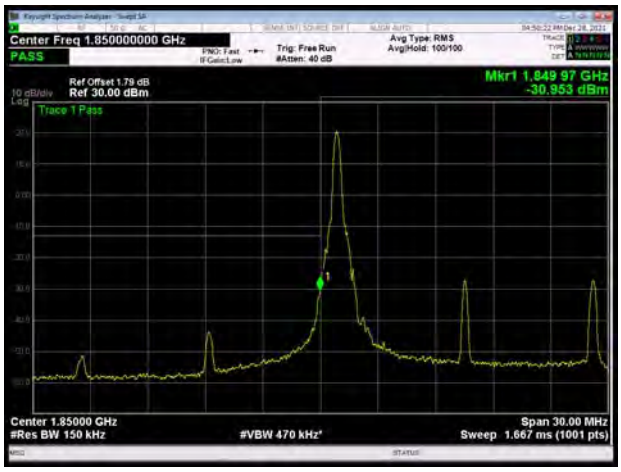
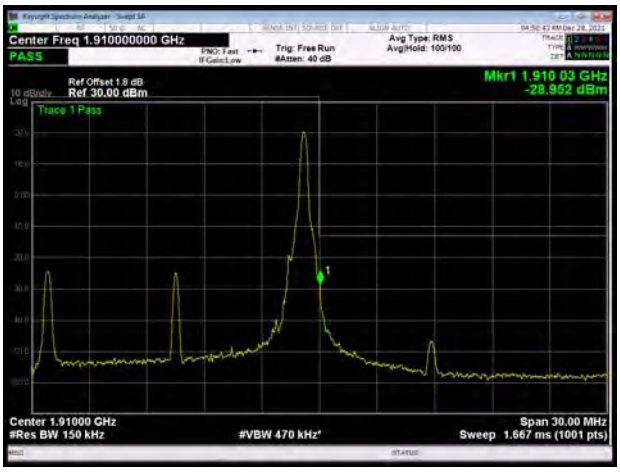
LTE Band 2 15MHz 16QAM 1RB CH-Low



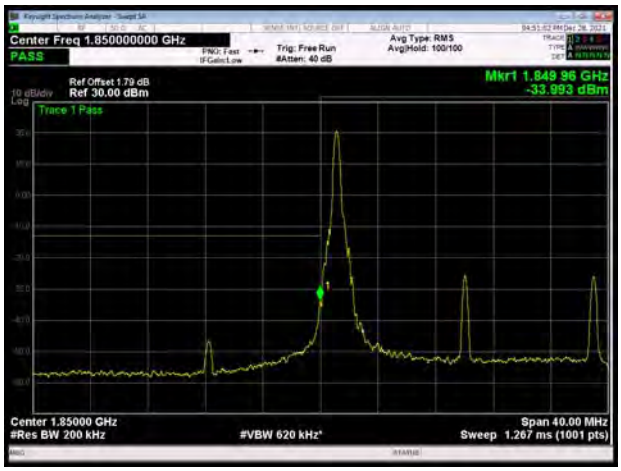
LTE Band 2 15MHz 16QAM 1RB CH-High



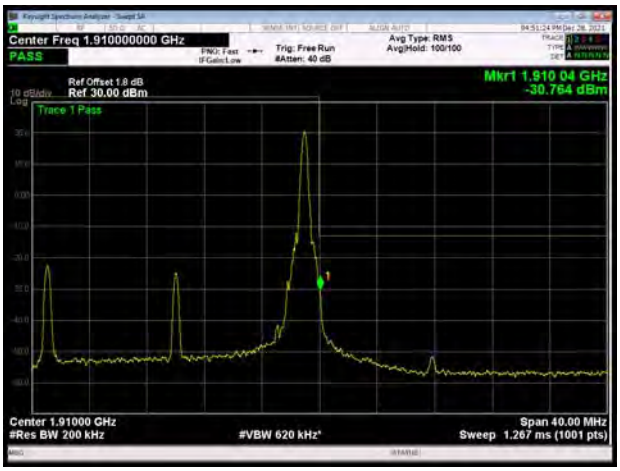
LTE Band 2 15MHz 16QAM 100%RB CH-Low

LTE Band 2 15MHz 16QAM 100%RB CH-High

LTE Band 2 20MHz 16QAM 1RB CH-Low



LTE Band 2 20MHz 16QAM 1RB CH-High



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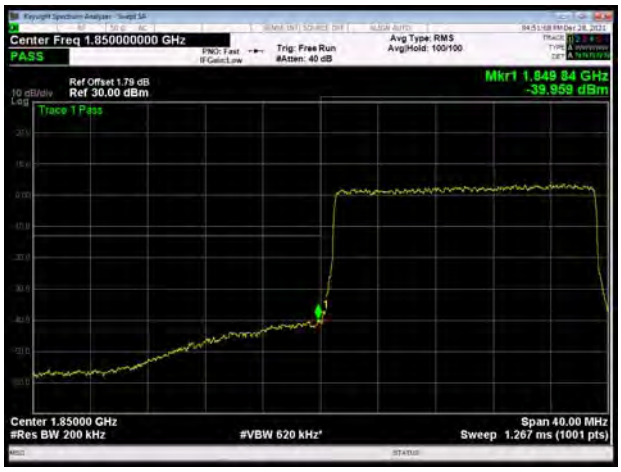
LTE Band 2 20MHz 16QAM 100%RB CH-Low



LTE Band 2 20MHz 16QAM 100%RB CH-High

LTE Band 2 1.4MHz 64QAM 1RB CH-Low

LTE Band 2 1.4MHz 64QAM 1RB CH-High

LTE Band 2 1.4MHz 64QAM 100%RB CH-Low

LTE Band 2 1.4MHz 64QAM 100%RB CH-High

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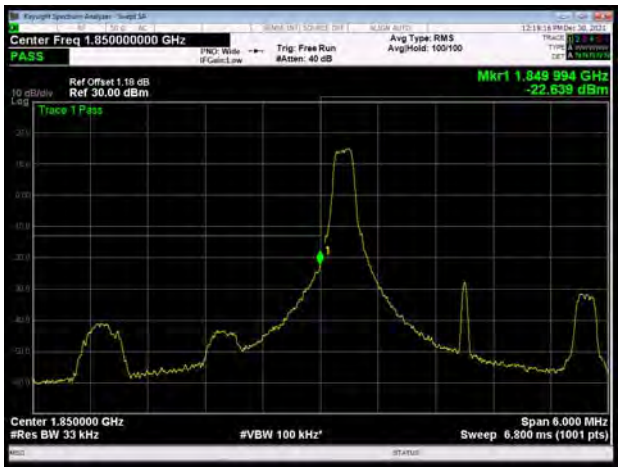
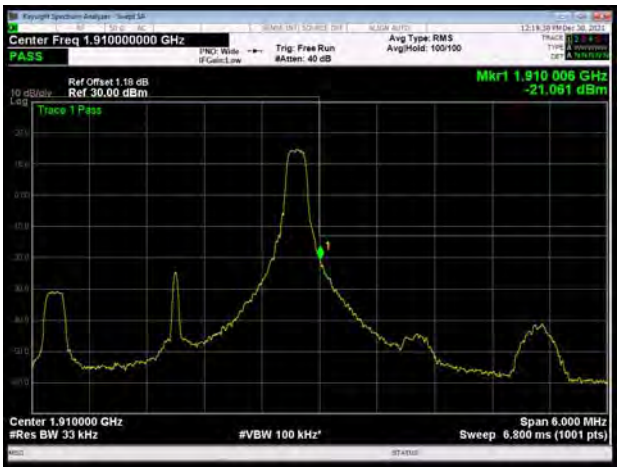
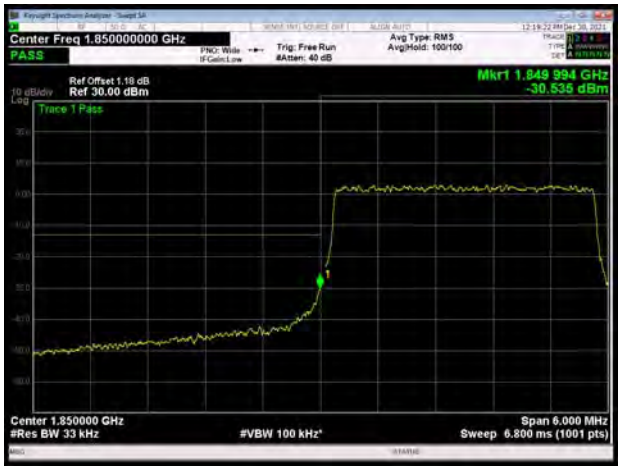
LTE Band 2 3MHz 64QAM 1RB CH-Low



LTE Band 2 3MHz 64QAM 1RB CH-High



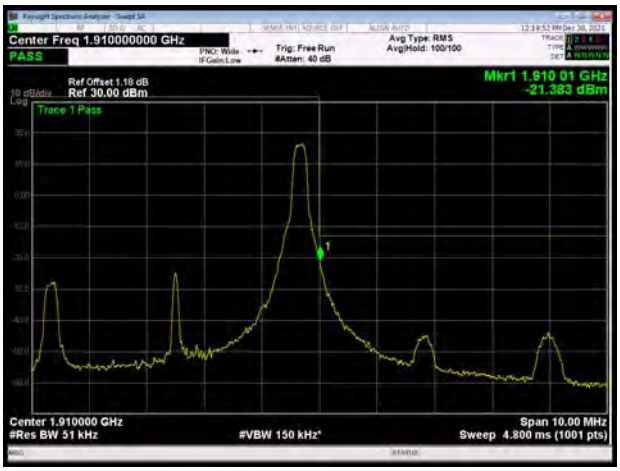
LTE Band 2 3MHz 64QAM 100%RB CH-Low



LTE Band 2 3MHz 64QAM 100%RB CH-High

LTE Band 2 5MHz 64QAM 1RB CH-Low

LTE Band 2 5MHz 64QAM 1RB CH-High



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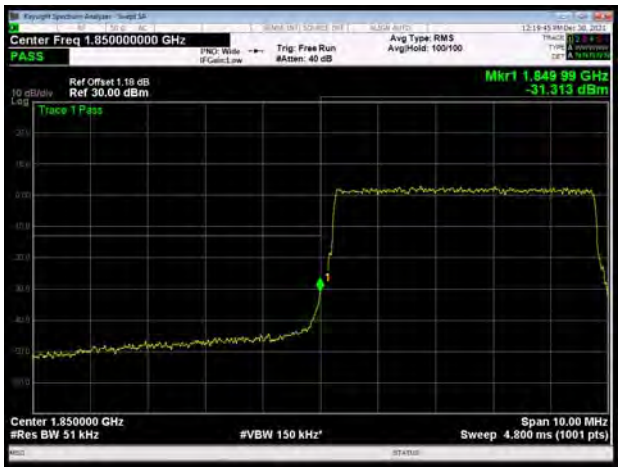
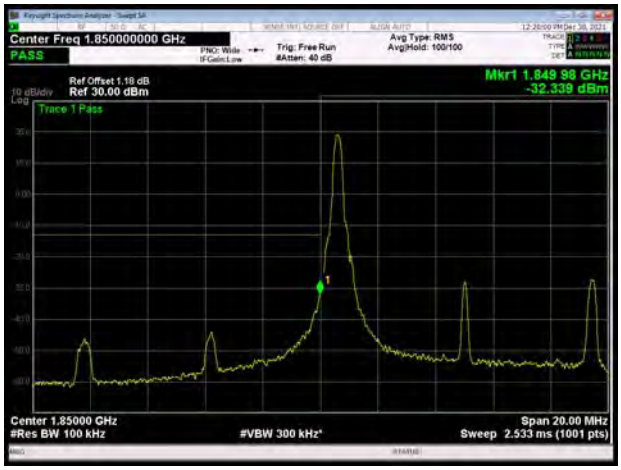
LTE Band 2 5MHz 64QAM 100%RB CH-Low

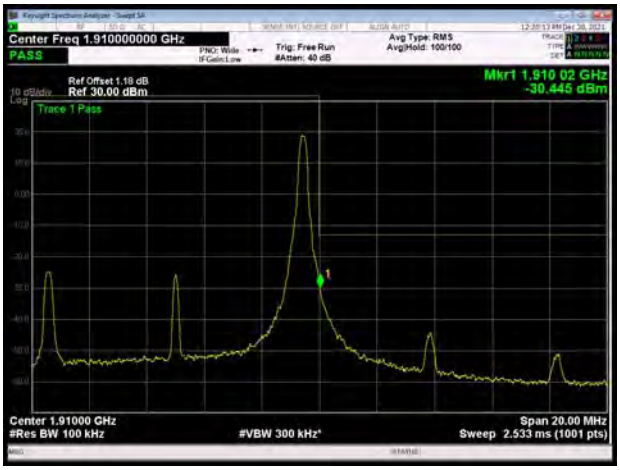


LTE Band 2 5MHz 64QAM 100%RB CH-High

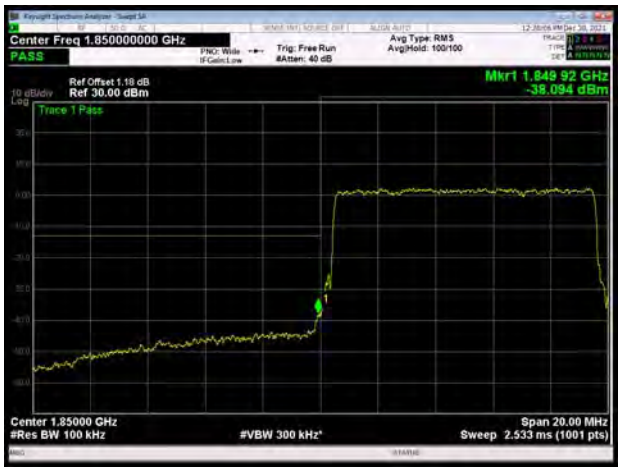
LTE Band 2 10MHz 64QAM 1RB CH-Low



LTE Band 2 10MHz 64QAM 1RB CH-High



LTE Band 2 10MHz 64QAM 100%RB CH-Low



LTE Band 2 10MHz 64QAM 100%RB CH-High

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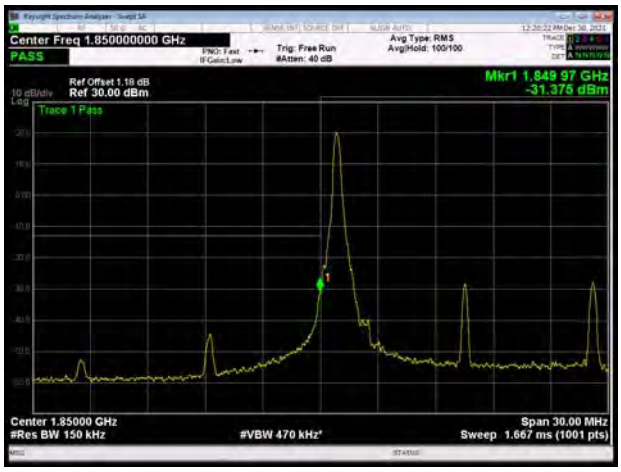
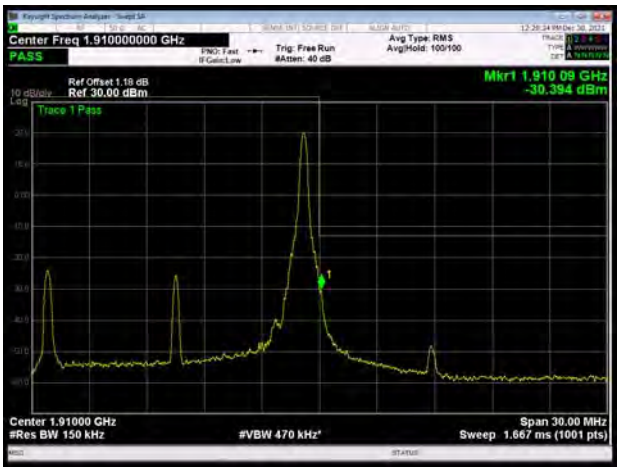
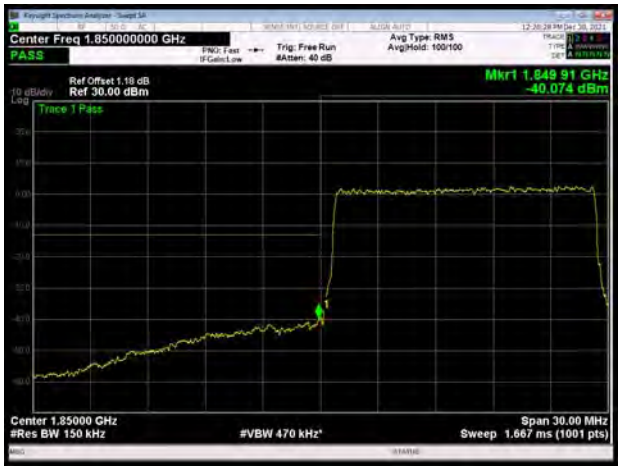
LTE Band 2 15MHz 64QAM 1RB CH-Low



LTE Band 2 15MHz 64QAM 1RB CH-High

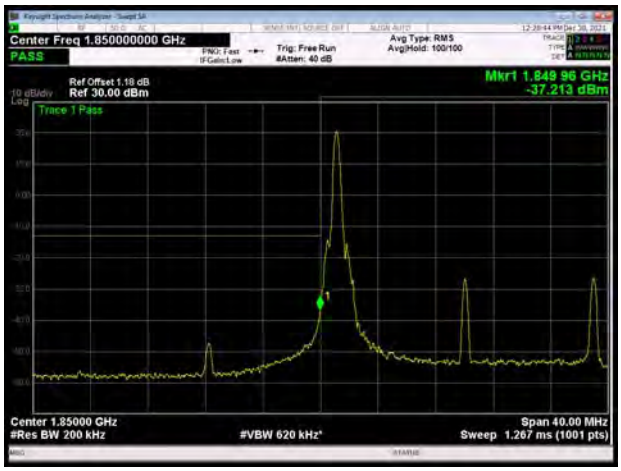


LTE Band 2 15MHz 64QAM 100%RB CH-Low

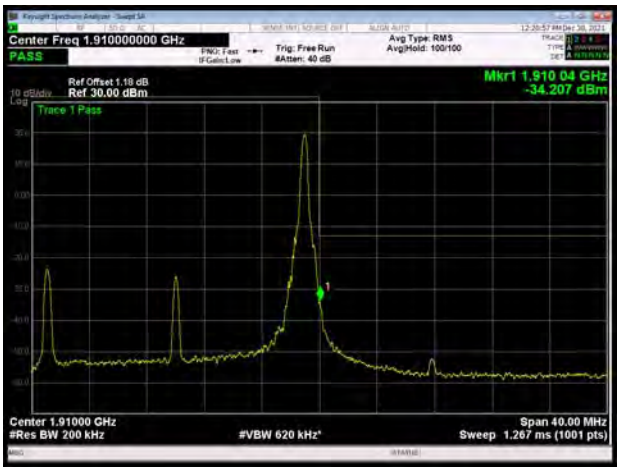


LTE Band 2 15MHz 64QAM 100%RB CH-High

LTE Band 2 20MHz 64QAM 1RB CH-Low



LTE Band 2 20MHz 64QAM 1RB CH-High



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LTE Band 2 20MHz 64QAM 100%RB CH-Low	LTE Band 2 20MHz 64QAM 100%RB CH-High

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5.4. Peak-to-Average Power Ratio (PAPR)

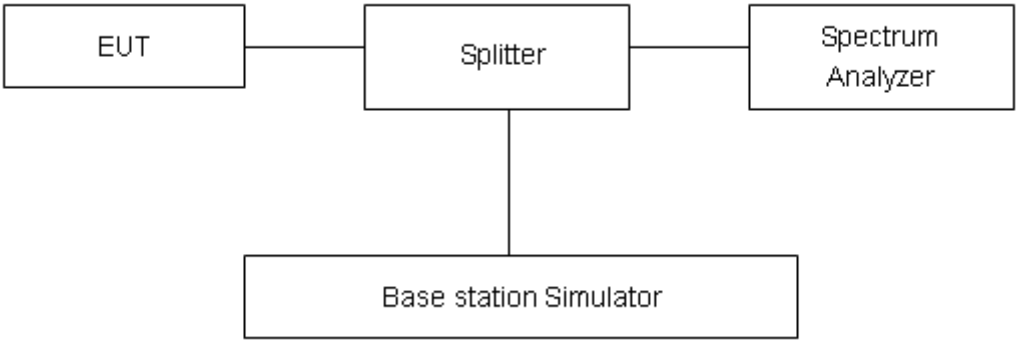
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

Measure the total peak power and record as PPk. And measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (*e.g.*, dBm). Determine the PAPR from:
PAPR (dB) = PPk (dBm) - PAvg (dBm).

Test Setup



Limits

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 in 24.232(d).

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.4 dB.

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Test Results

Mode	Channel	Frequency (MHz)	Peak(dBm)	Avg(dBm)	PAPR(dB)	Limit(dB)	Conclusion
GSM 1900 (GMSK)	512	1850.2	30.14	27.38	2.76	≤13	PASS
	661	1880	29.93	27.19	2.74	≤13	PASS
	810	1909.8	29.91	27.15	2.76	≤13	PASS
GPRS 1900 (GMSK)	512	1850.2	30.11	27.36	2.75	≤13	PASS
	661	1880	29.96	27.21	2.75	≤13	PASS
	810	1909.8	29.97	27.21	2.76	≤13	PASS
EGPRS 1900 (8PSK)	512	1850.2	28.78	22.96	5.82	≤13	PASS
	661	1880	28.49	22.62	5.87	≤13	PASS
	810	1909.8	28.44	22.59	5.85	≤13	PASS
WCDMA Band II (RMC)	9262	1852.4	24.19	21.14	3.05	≤13	PASS
	9400	1880	24.16	21.16	3.00	≤13	PASS
	9538	1907.6	24.12	21.06	3.06	≤13	PASS

LTE Band 2								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	18607	1850.7	27.13	21.72	5.41	≤13	PASS
		18900	1880.0	26.91	21.88	5.03	≤13	PASS
		19193	1909.3	27.00	21.84	5.16	≤13	PASS
	3	18615	1851.5	27.21	21.77	5.44	≤13	PASS
		18900	1880	26.92	21.92	5.00	≤13	PASS
		19185	1908.5	27.10	21.88	5.22	≤13	PASS
	5	18625	1852.5	27.24	21.79	5.45	≤13	PASS
		18900	1880	27.00	21.98	5.02	≤13	PASS
		19175	1907.5	27.16	21.93	5.23	≤13	PASS
	10	18650	1855	27.09	21.71	5.38	≤13	PASS
		18900	1880	26.93	21.93	5.00	≤13	PASS
		19150	1905	26.95	21.91	5.04	≤13	PASS
	15	18675	1857.5	27.41	21.70	5.71	≤13	PASS
		18900	1880	27.37	21.90	5.47	≤13	PASS
		19125	1902.5	27.26	21.92	5.34	≤13	PASS
	20	18700	1860	27.05	21.64	5.41	≤13	PASS
		18900	1880	27.18	21.84	5.34	≤13	PASS
		19100	1900	27.05	21.83	5.22	≤13	PASS
16QAM	1.4	18607	1850.7	27.35	21.26	6.09	≤13	PASS
		18900	1880.0	27.13	21.41	5.72	≤13	PASS

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		19193	1909.3	27.13	21.34	5.79	≤13	PASS
	3	18615	1851.5	27.43	21.28	6.15	≤13	PASS
		18900	1880	27.10	21.43	5.67	≤13	PASS
		19185	1908.5	27.30	21.42	5.88	≤13	PASS
	5	18625	1852.5	27.33	21.26	6.07	≤13	PASS
		18900	1880	27.15	21.45	5.70	≤13	PASS
		19175	1907.5	27.34	21.48	5.86	≤13	PASS
	10	18650	1855	27.24	21.20	6.04	≤13	PASS
		18900	1880	27.14	21.43	5.71	≤13	PASS
		19150	1905	27.15	21.37	5.78	≤13	PASS
	15	18675	1857.5	27.29	21.16	6.13	≤13	PASS
		18900	1880	27.34	21.40	5.94	≤13	PASS
		19125	1902.5	27.26	21.44	5.82	≤13	PASS
	20	18700	1860	27.22	21.15	6.07	≤13	PASS
		18900	1880	27.31	21.36	5.95	≤13	PASS
		19100	1900	27.26	21.38	5.88	≤13	PASS
64QAM	1.4	18607	1850.7	26.74	20.63	6.11	≤13	PASS
		18900	1880.0	26.48	20.83	5.65	≤13	PASS
		19193	1909.3	26.56	20.76	5.80	≤13	PASS
	3	18615	1851.5	26.75	20.64	6.11	≤13	PASS
		18900	1880	26.50	20.78	5.72	≤13	PASS
		19185	1908.5	26.71	20.78	5.93	≤13	PASS
	5	18625	1852.5	26.68	20.62	6.06	≤13	PASS
		18900	1880	26.53	20.86	5.67	≤13	PASS
		19175	1907.5	26.73	20.84	5.89	≤13	PASS
	10	18650	1855	26.61	20.58	6.03	≤13	PASS
		18900	1880	26.49	20.78	5.71	≤13	PASS
		19150	1905	26.51	20.73	5.78	≤13	PASS
	15	18675	1857.5	26.70	20.56	6.14	≤13	PASS
		18900	1880	26.65	20.74	5.91	≤13	PASS
		19125	1902.5	26.65	20.85	5.80	≤13	PASS
	20	18700	1860	26.58	20.52	6.06	≤13	PASS
		18900	1880	26.65	20.69	5.96	≤13	PASS
		19100	1900	26.66	20.76	5.90	≤13	PASS

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5.5. Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from 0°C to +35°C in 10°C step size,

(1) With all power removed, the temperature was decreased to 0°C and permitted to stabilize for three hours.

(2) Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from 0°C to +35°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

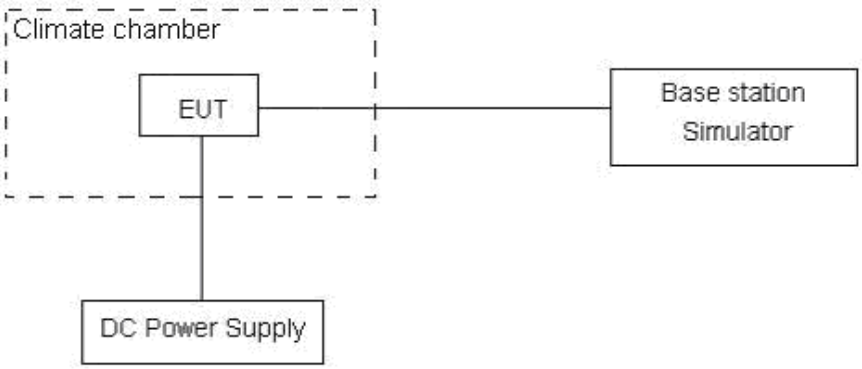
Frequency Stability (Voltage Variation)

The frequency stability shall be measured with variation of primary supply voltage as follows:

Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 3.6 V and 4.48 V, with a nominal voltage of 3.87V.

Test setup



Limits

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75％ confidence level for the normal distribution is with the coverage factor *k* = 3, U= 0.01ppm.

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Test Result

GSM1900						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
Temperature	Voltage	GMSK	8PSK	GMSK	8PSK	
Normal（25℃）	Normal	16.73	17.76	0.00890	0.00945	PASS
Extreme（35℃）		12.18	3.54	0.00648	0.00188	PASS
Extreme（30℃）		3.45	17.78	0.00183	0.00946	PASS
Extreme（20℃）		1.22	17.54	0.00065	0.00933	PASS
Extreme（10℃）		8.07	16.90	0.00429	0.00899	PASS
Extreme（0℃）		4.92	4.30	0.00261	0.00229	PASS
25℃	LV	5.98	14.47	0.00318	0.00770	PASS
	HV	5.63	2.48	0.00300	0.00132	PASS

WCDMA Band II						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
Temperature	Voltage	QPSK	BPSK	QPSK	BPSK	
Normal（25℃）	Normal	10.56	4.58	0.00562	0.00244	PASS
Extreme（35℃）		13.21	6.08	0.00702	0.00323	PASS
Extreme（30℃）		9.19	15.82	0.00489	0.00841	PASS
Extreme（20℃）		4.41	3.31	0.00234	0.00176	PASS
Extreme（10℃）		11.12	9.26	0.00591	0.00492	PASS
Extreme（0℃）		9.91	17.57	0.00527	0.00934	PASS
25℃	LV	11.13	9.26	0.00592	0.00493	PASS
	HV	12.08	11.33	0.00643	0.00603	PASS

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LTE Band 2								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	1.4MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	8.36	16.59	16.19	0.00445	0.00883	0.00861	PASS
Extreme（35℃）		5.75	9.45	2.00	0.00306	0.00503	0.00106	PASS
Extreme（30℃）		11.10	7.76	11.23	0.00591	0.00413	0.00598	PASS
Extreme（20℃）		7.89	5.04	7.28	0.00420	0.00268	0.00387	PASS
Extreme（10℃）		7.68	11.51	10.53	0.00408	0.00612	0.00560	PASS
Extreme（0℃）		10.14	3.40	14.65	0.00539	0.00181	0.00779	PASS
25℃	LV	12.85	6.20	17.88	0.00683	0.00330	0.00951	PASS
	HV	14.88	3.01	13.62	0.00791	0.00160	0.00724	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	3MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	5.17	14.45	6.76	0.00275	0.00769	0.00360	PASS
Extreme（35℃）		10.44	1.24	1.40	0.00555	0.00066	0.00075	PASS
Extreme（30℃）		13.55	15.39	16.13	0.00721	0.00819	0.00858	PASS
Extreme（20℃）		8.79	13.29	10.06	0.00467	0.00707	0.00535	PASS
Extreme（10℃）		15.65	16.83	11.54	0.00832	0.00895	0.00614	PASS
Extreme（0℃）		15.82	11.29	11.97	0.00841	0.00601	0.00637	PASS
25℃	LV	16.28	7.34	17.84	0.00866	0.00391	0.00949	PASS
	HV	8.04	5.06	3.07	0.00428	0.00269	0.00163	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	9.74	9.77	14.49	0.00518	0.00520	0.00771	PASS
Extreme（35℃）		15.65	4.01	5.18	0.00833	0.00214	0.00275	PASS
Extreme（30℃）		10.66	7.74	9.80	0.00567	0.00412	0.00521	PASS
Extreme（20℃）		17.05	7.31	13.47	0.00907	0.00389	0.00716	PASS
Extreme（10℃）		8.71	5.91	5.99	0.00463	0.00315	0.00318	PASS
Extreme（0℃）		16.41	5.85	7.73	0.00873	0.00311	0.00411	PASS
25℃	LV	9.46	7.03	10.91	0.00503	0.00374	0.00580	PASS
	HV	9.65	14.39	7.54	0.00514	0.00766	0.00401	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	10MHz							

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Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	11.88	8.52	13.92	0.00632	0.00453	0.00740	PASS
Extreme（35℃）		4.35	7.51	17.31	0.00231	0.00400	0.00921	PASS
Extreme（30℃）		14.19	15.09	15.80	0.00755	0.00803	0.00840	PASS
Extreme（20℃）		3.95	16.80	13.28	0.00210	0.00893	0.00706	PASS
Extreme（10℃）		17.25	6.75	16.72	0.00917	0.00359	0.00889	PASS
Extreme（0℃）		10.86	8.24	13.44	0.00578	0.00438	0.00715	PASS
25℃	LV	3.29	14.58	14.62	0.00175	0.00776	0.00778	PASS
	HV	5.36	15.24	12.76	0.00285	0.00811	0.00679	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	15MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	12.05	16.33	1.38	0.00641	0.00869	0.00073	PASS
Extreme（35℃）		1.48	1.86	16.51	0.00079	0.00099	0.00878	PASS
Extreme（30℃）		2.76	16.42	2.32	0.00147	0.00873	0.00123	PASS
Extreme（20℃）		7.44	15.55	9.82	0.00396	0.00827	0.00522	PASS
Extreme（10℃）		13.12	11.93	13.85	0.00698	0.00634	0.00737	PASS
Extreme（0℃）		17.47	9.01	2.99	0.00929	0.00479	0.00159	PASS
25℃	LV	17.39	6.78	3.41	0.00925	0.00361	0.00181	PASS
	HV	15.33	4.77	11.79	0.00816	0.00254	0.00627	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	20MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	3.62	17.91	11.35	0.00193	0.00953	0.00604	PASS
Extreme（35℃）		17.03	3.64	15.06	0.00906	0.00194	0.00801	PASS
Extreme（30℃）		15.97	2.24	11.95	0.00849	0.00119	0.00636	PASS
Extreme（20℃）		2.51	4.90	17.52	0.00134	0.00261	0.00932	PASS
Extreme（10℃）		7.13	14.76	17.03	0.00379	0.00785	0.00906	PASS
Extreme（0℃）		12.71	11.74	16.20	0.00676	0.00625	0.00861	PASS
25℃	LV	10.81	14.90	1.64	0.00575	0.00792	0.00087	PASS
	HV	17.12	10.21	3.24	0.00910	0.00543	0.00173	PASS

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5.6. Spurious Emissions at Antenna Terminals

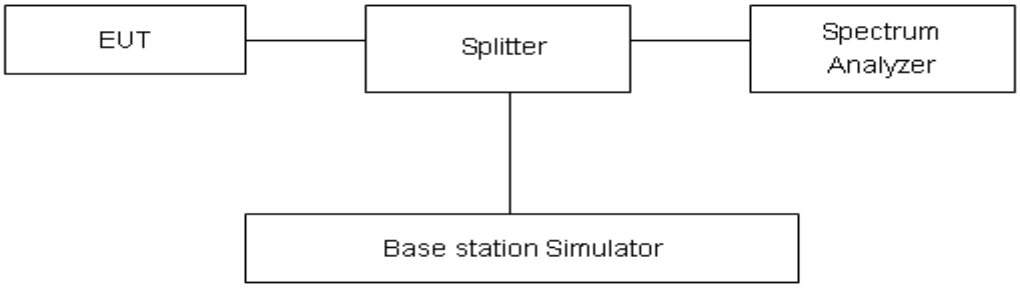
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 9kHz to the 10th harmonic of the carrier. The peak detector is used.
RBW is set to 100kHz, VBW is set to 300kHz for 30MHz~1GHz
RBW is set to 1MHz, VBW is set to 3MHz for above 1GHz, Sweep is set to ATUO.
RBW is set to 1 kHz (0.009MHz~ 0.15 MHz),
RBW is set to 10 kHz (0.15 MHz~ 30 MHz)
RBW is set to 100 kHz (30MHz~1000 MHz)
RBW is set to 1000 kHz (above 1000MHz)
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup



Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB.”

Limit	-13 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-20GHz	1.407 dB

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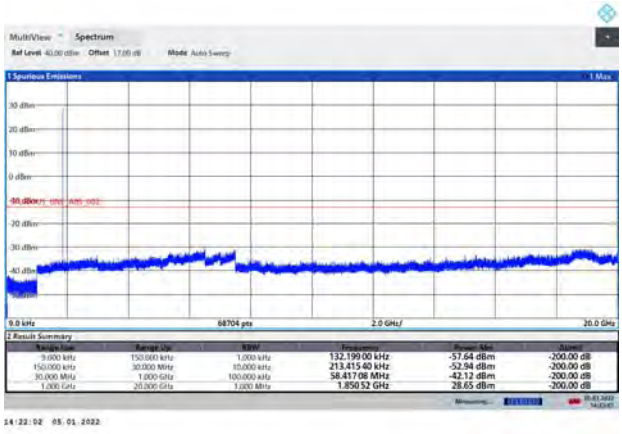
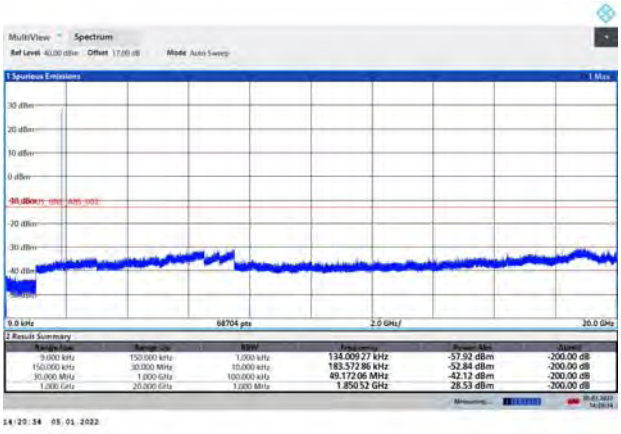
Test Result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.
The signal beyond the limit is carrier.

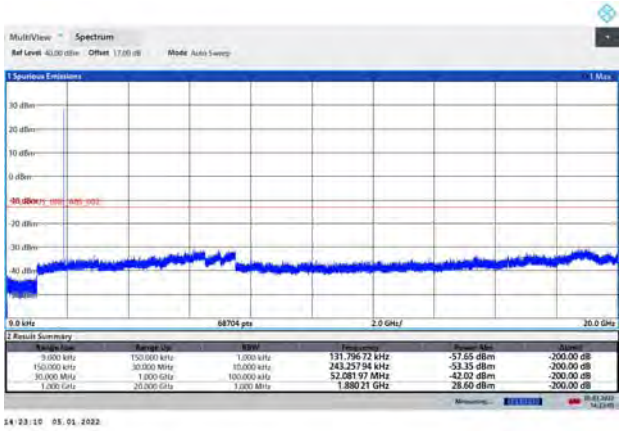
GSM 1900 CH-Low 9kHz ~ 20GHz



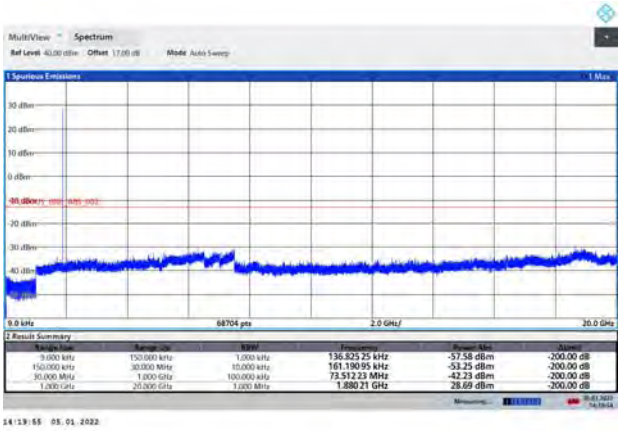
GPRS 1900 CH-Low 9kHz ~ 20GHz



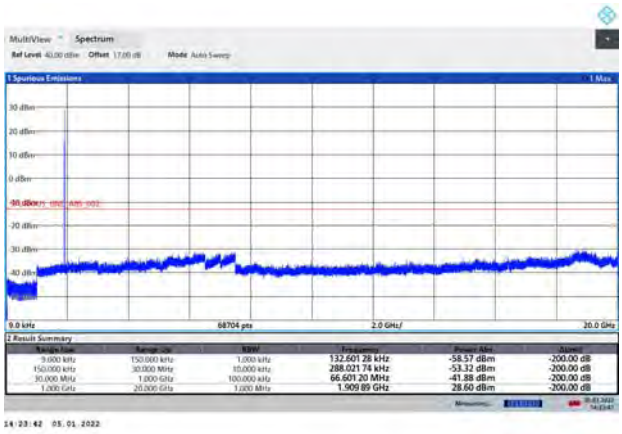
GSM 1900 CH- Middle 9kHz ~ 20GHz



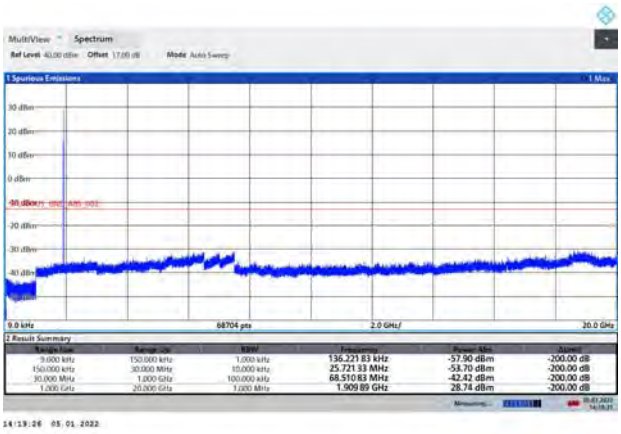
GPRS 1900 CH- Middle 9kHz ~ 20GHz



GSM 1900 CH-High 9kHz ~ 20GHz



GPRS 1900 CH-High 9kHz ~ 20GHz



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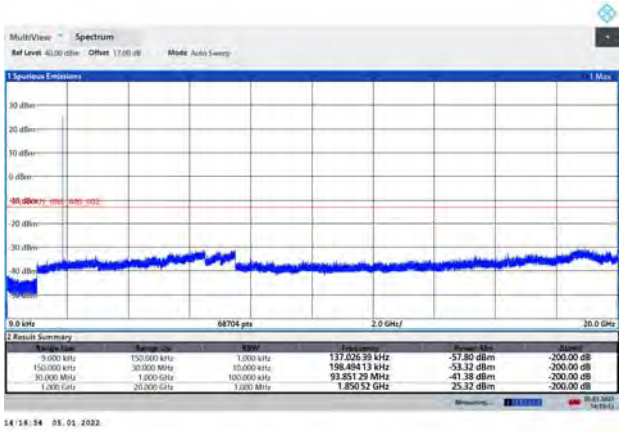
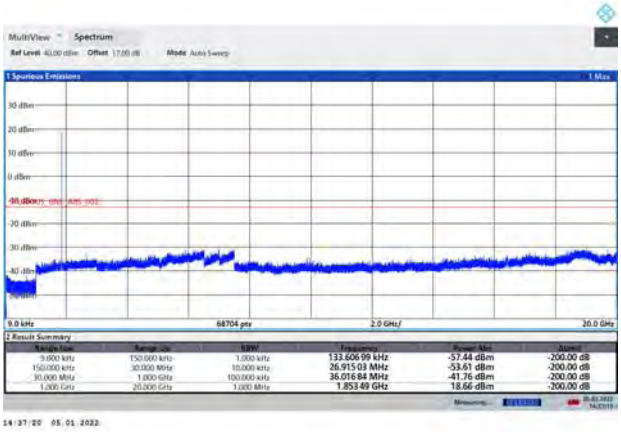
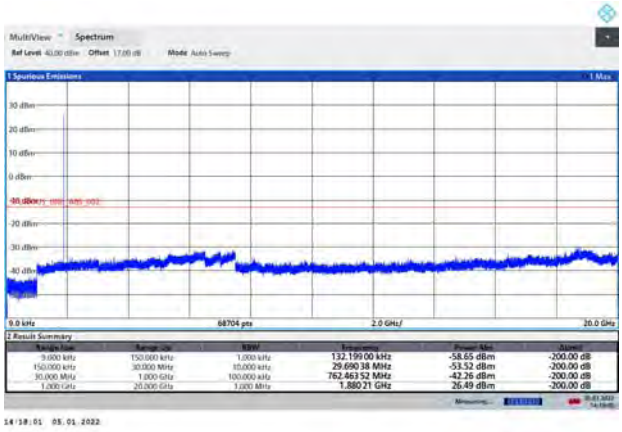
EGPRS 1900 CH-Low 9kHz ~ 20GHz



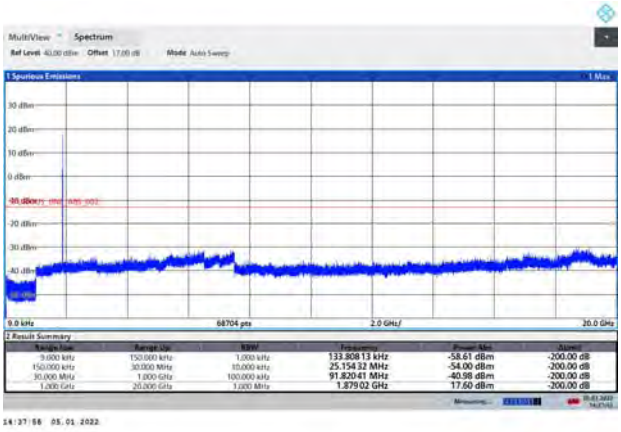
WCDMA BAND II CH-Low 9kHz ~ 20GHz



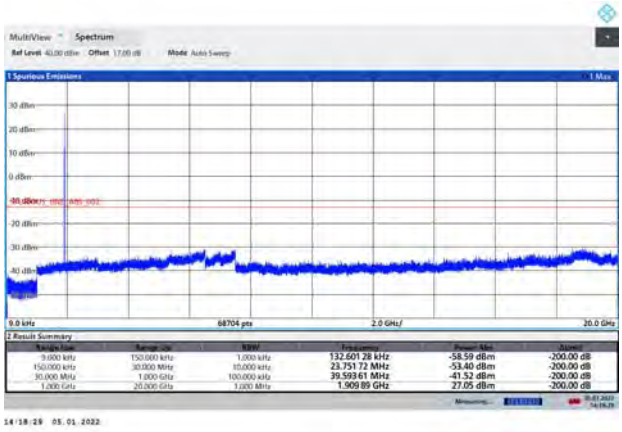
EGPRS 1900 CH- Middle 9kHz ~ 20GHz



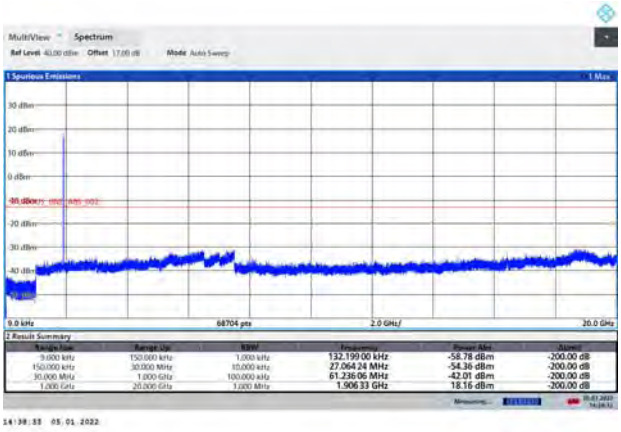
WCDMA BAND II CH- Middle 9kHz ~ 20GHz



EGPRS 1900 CH-High 9kHz ~ 20GHz



WCDMA BAND II CH-High 9kHz ~ 20GHz



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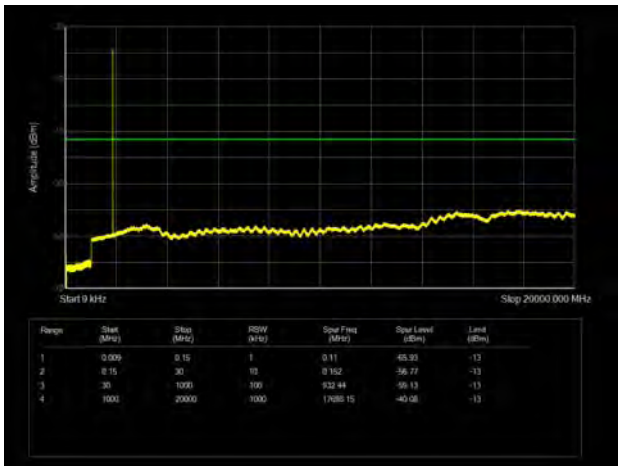
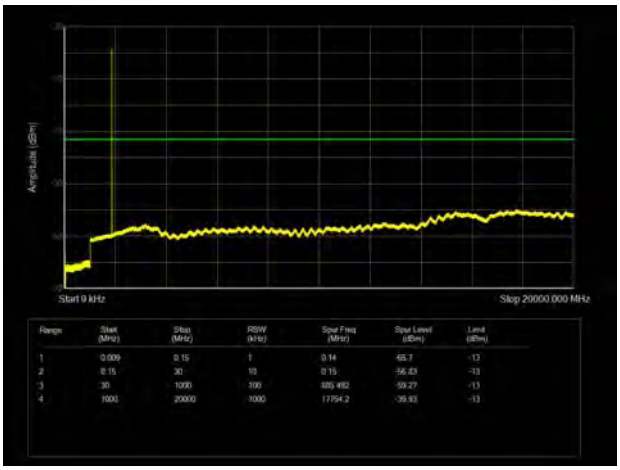
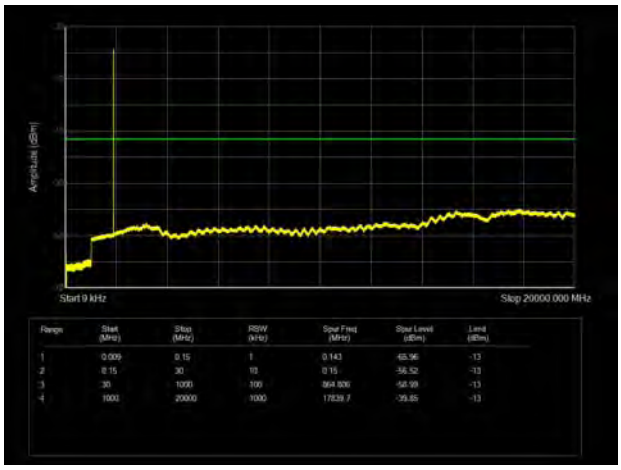
LTE Band 2 1.4MHz CH-Low 9kHz~20GHz



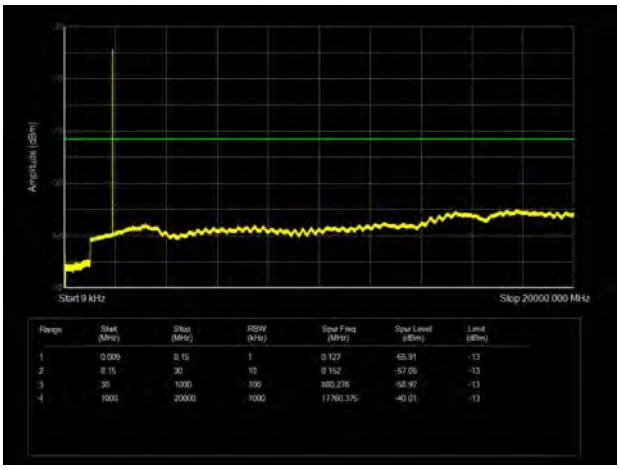
LTE Band 2 3MHz CH-Low 9kHz~20GHz



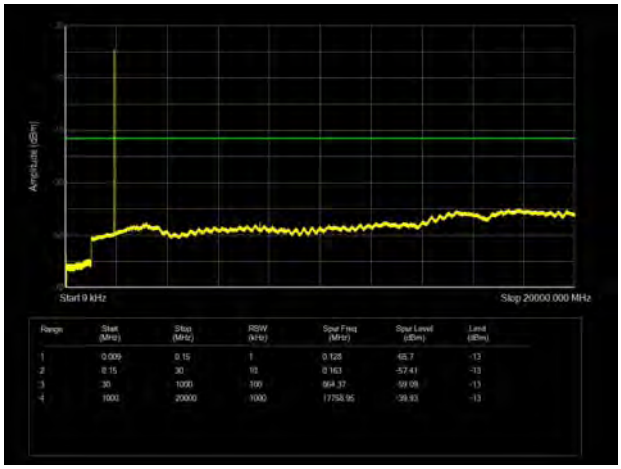
LTE Band 2 1.4MHz CH-Middle 9kHz~20GHz



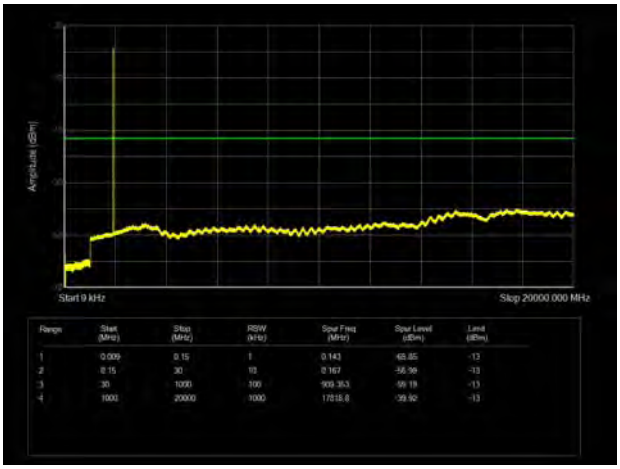
LTE Band 2 3MHz CH-Middle 9kHz~20GHz



LTE Band 2 1.4MHz CH-High 9kHz~20GHz



LTE Band 2 3MHz CH-High 9kHz~20GHz



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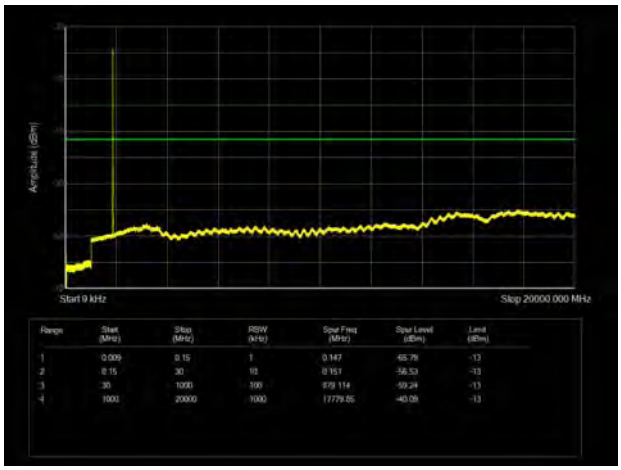
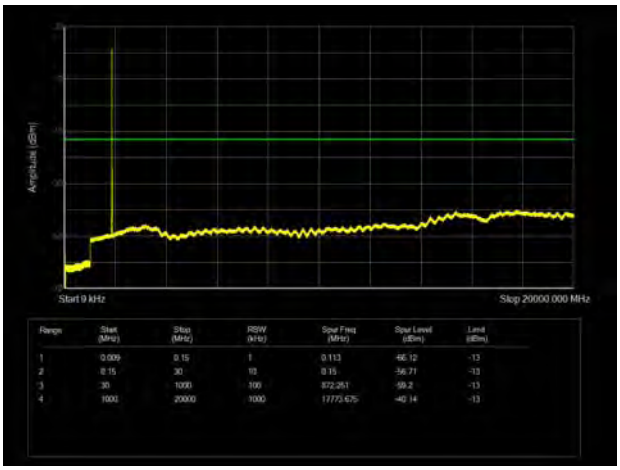
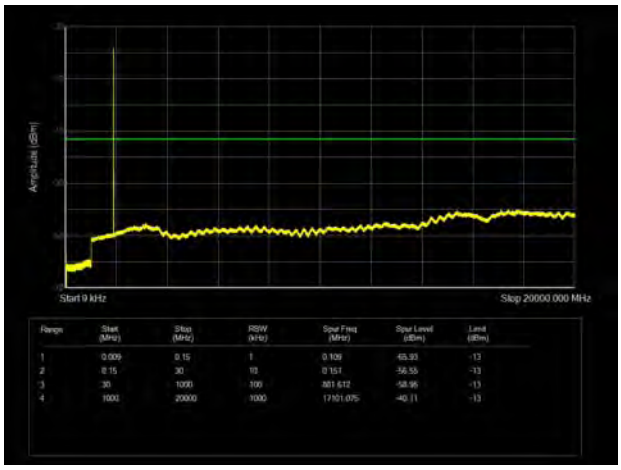
LTE Band 2 5MHz CH-Low 9kHz~20GHz



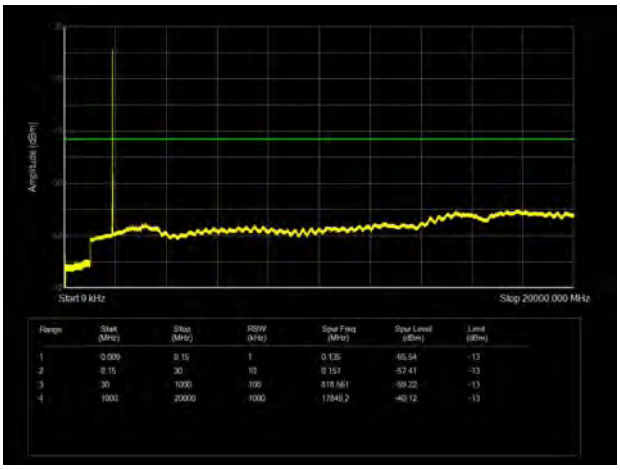
LTE Band 2 10MHz CH-Low 9kHz~20GHz



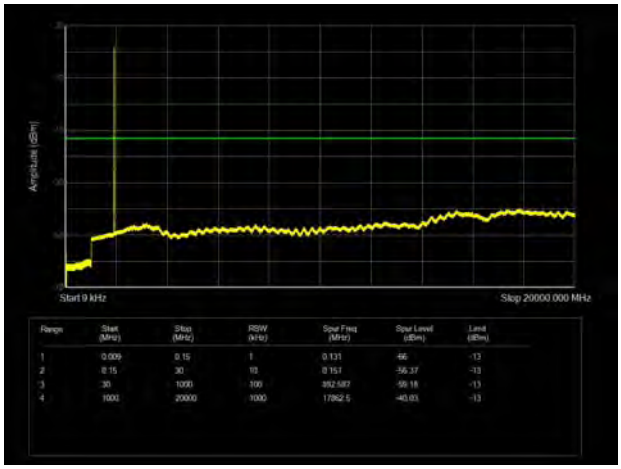
LTE Band 2 5MHz CH-Middle 9kHz~20GHz



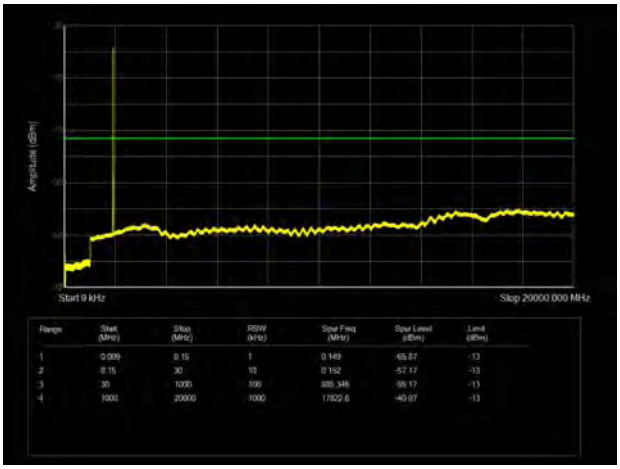
LTE Band 2 10MHz CH-Middle 9kHz~20GHz



LTE Band 2 5MHz CH-High 9kHz~20GHz



LTE Band 2 10MHz CH-High 9kHz~20GHz



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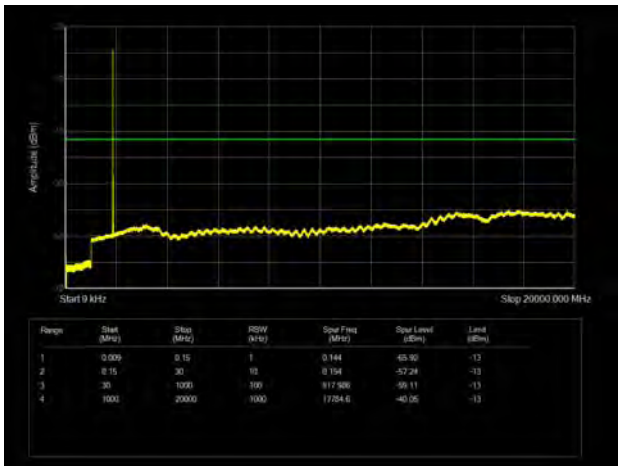
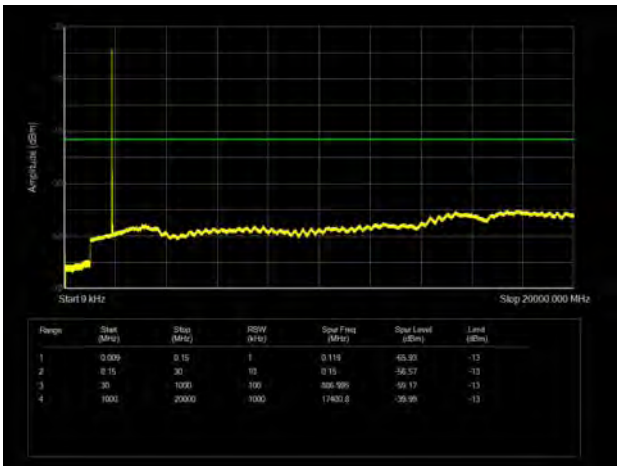
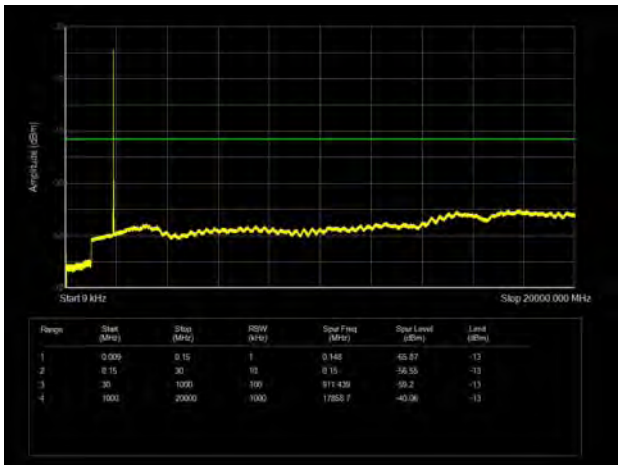
LTE Band 2 15MHz CH-Low 9kHz~20GHz



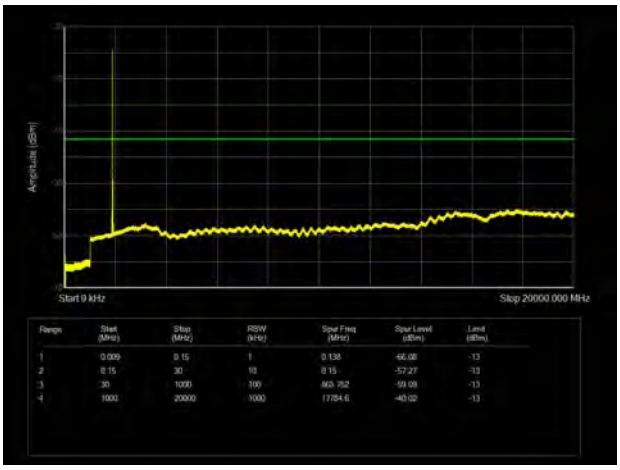
LTE Band 2 20MHz CH-Low 9kHz~20GHz



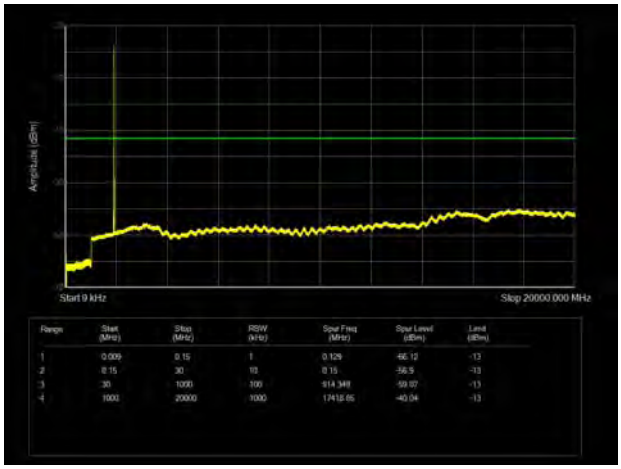
LTE Band 2 15MHz CH-Middle 9kHz~20GHz



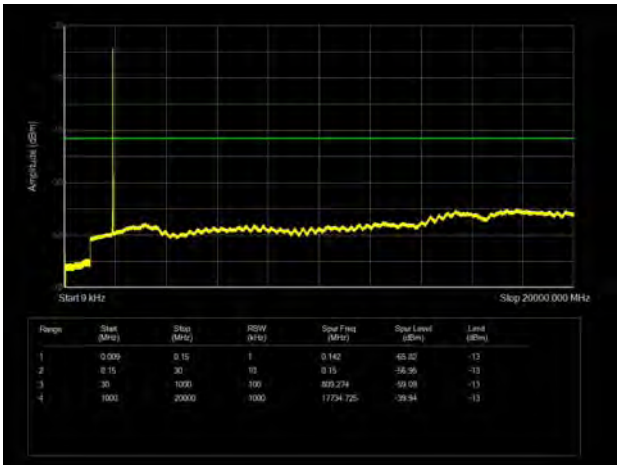
LTE Band 2 20MHz CH-Middle 9kHz~20GHz



LTE Band 2 15MHz CH-High 9kHz~20GHz



LTE Band 2 20MHz CH-High 9kHz~20GHz



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5.7. Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. The testing follows FCC KDB 971168 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A loop antenna, A log-periodic antenna or 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.
4. 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 (Pr).
5. 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 is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) 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 (Pr). The power of signal source (PMea) 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 (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
7. The measurement results are obtained as described below:
Power(EIRP)=PMea- PAg - Pcl + Ga
The measurement results are amend as described below:
Power(EIRP)=PMea- Pcl + Ga
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dB) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP

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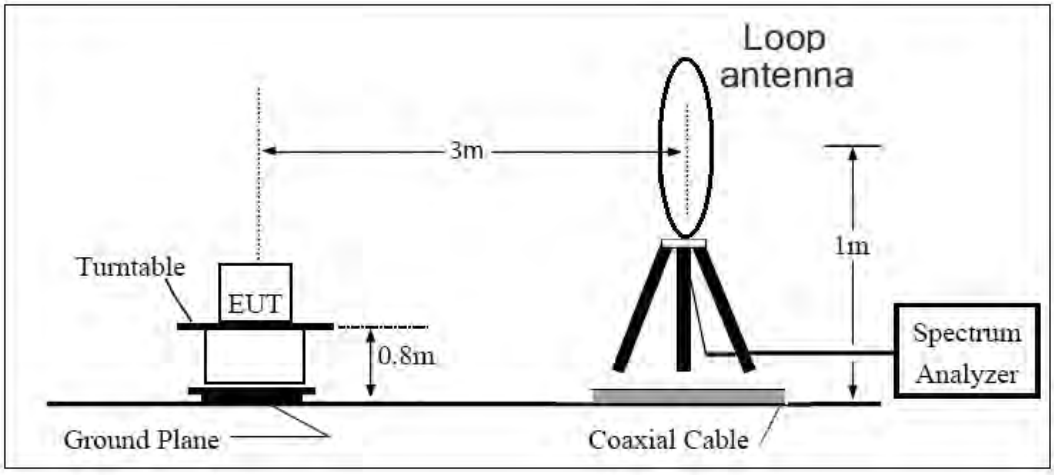
= EIRP-2.15dB.

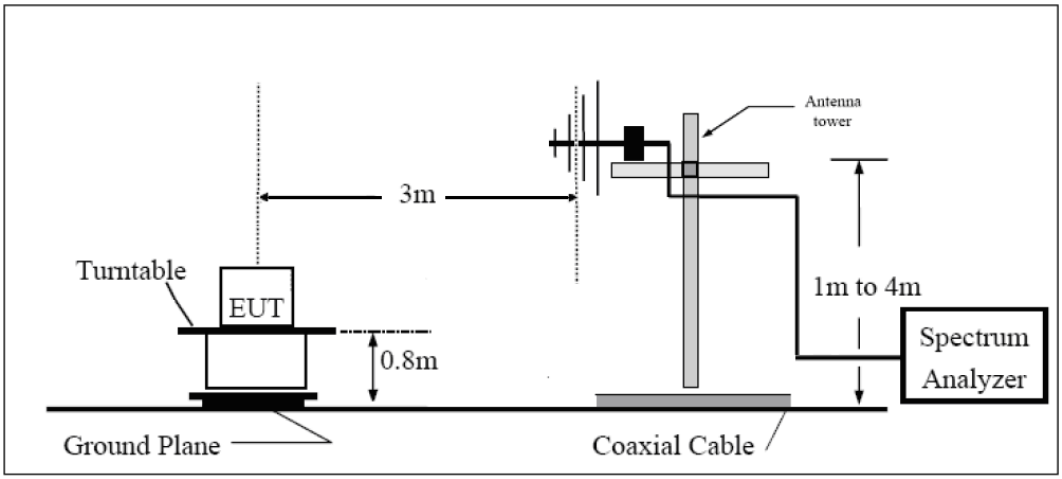
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

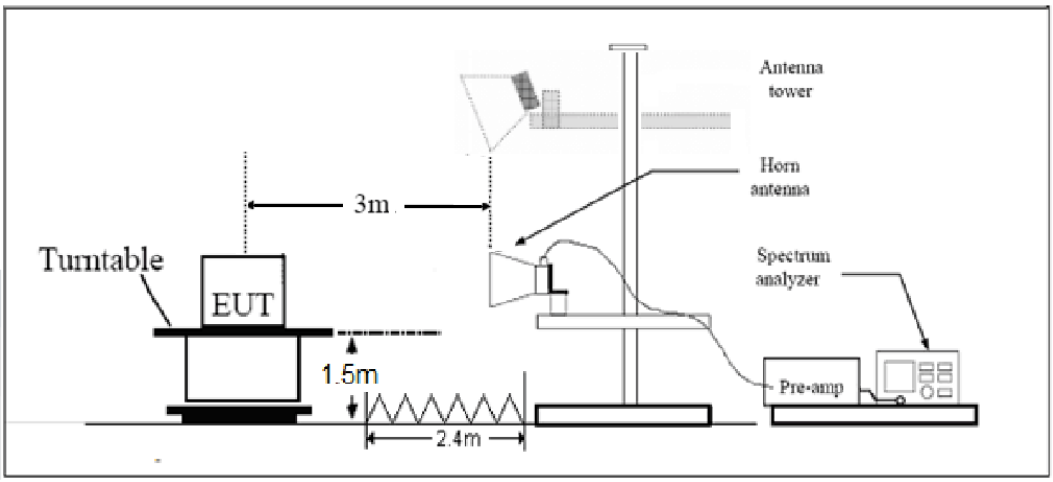
9KHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

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Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB.”

Limit	-13 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95％ confidence level for the normal distribution is with the coverage factor *k* = 1.96, *U*= 3.55 dB.

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Test Result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in the report.

Main Antenna

GSM 1900 CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3760.00	-65.97	2.60	12.50	Vertical	-56.07	-13.00	43.07	45
3	5640.00	-61.56	3.30	12.50	Vertical	-52.36	-13.00	39.36	90
4	7520.00	-56.86	4.20	12.20	Vertical	-48.86	-13.00	35.86	45
5	9400.00	-54.26	4.30	11.10	Vertical	-47.46	-13.00	34.46	270
6	11280.00	-49.96	5.90	11.90	Vertical	-43.96	-13.00	30.96	90
7	13160.00	-52.99	5.70	14.00	Vertical	-44.69	-13.00	31.69	45
8	15040.00	-51.82	5.80	13.10	Vertical	-44.52	-13.00	31.52	315
9	16920.00	-50.14	6.10	14.60	Vertical	-41.64	-13.00	28.64	90
10	18800.00	-	-	-	-	-	-	-	-

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Vertical position.

WCDMA Band II CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3760.00	-66.05	2.60	12.50	Vertical	-56.15	-13.00	43.15	45
3	5640.00	-65.03	3.30	12.50	Vertical	-55.83	-13.00	42.83	180
4	7520.00	-58.39	4.20	12.20	Vertical	-50.39	-13.00	37.39	270
5	9400.00	-51.36	4.30	11.10	Vertical	-44.56	-13.00	31.56	45
6	11280.00	-50.52	5.90	11.90	Vertical	-44.52	-13.00	31.52	135
7	13160.00	-52.78	5.70	14.00	Vertical	-44.48	-13.00	31.48	45
8	15040.00	-52.54	5.80	13.10	Vertical	-45.24	-13.00	32.24	225
9	16920.00	-50.40	6.10	14.60	Vertical	-41.90	-13.00	28.90	90
10	18800.00	-	-	-	-	-	-	-	-

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Vertical position.

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LTE Band 2 1.4MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3759.00	-64.86	2.60	12.50	Horizontal	-54.96	-13.00	41.96	315
3	5638.88	-65.75	3.30	12.50	Horizontal	-56.55	-13.00	43.55	225
4	7520.00	-57.98	4.20	12.20	Horizontal	-49.98	-13.00	36.98	90
5	9400.00	-55.27	4.30	11.10	Horizontal	-48.47	-13.00	35.47	45
6	11280.00	-51.71	5.90	11.90	Horizontal	-45.71	-13.00	32.71	0
7	13160.00	-52.74	5.70	14.00	Horizontal	-44.44	-13.00	31.44	315
8	15040.00	-53.09	5.80	13.10	Horizontal	-45.79	-13.00	32.79	0
9	16920.00	-51.49	6.10	14.60	Horizontal	-42.99	-13.00	29.99	90
10	18800.00	-	-	-	-	-	-	-	-

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 2 5MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3755.63	-66.51	2.60	12.50	Horizontal	-56.61	-13.00	43.61	315
3	5633.63	-59.45	3.30	12.50	Horizontal	-50.25	-13.00	37.25	0
4	7520.00	-59.11	4.20	12.20	Horizontal	-51.11	-13.00	38.11	315
5	9400.00	-55.18	4.30	11.10	Horizontal	-48.38	-13.00	35.38	45
6	11280.00	-51.61	5.90	11.90	Horizontal	-45.61	-13.00	32.61	180
7	13160.00	-53.20	5.70	14.00	Horizontal	-44.90	-13.00	31.90	90
8	15040.00	-52.34	5.80	13.10	Horizontal	-45.04	-13.00	32.04	0
9	16920.00	-51.31	6.10	14.60	Horizontal	-42.81	-13.00	29.81	315
10	18800.00	-	-	-	-	-	-	-	-

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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LTE Band 2 20MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3742.13	-66.82	2.60	12.50	Horizontal	-56.92	-13.00	43.92	90
3	5613.38	-57.55	3.30	12.50	Horizontal	-48.35	-13.00	35.35	270
4	7484.63	-58.26	4.20	12.20	Horizontal	-50.26	-13.00	37.26	180
5	9400.00	-55.05	4.30	11.10	Horizontal	-48.25	-13.00	35.25	0
6	11280.00	-51.98	5.90	11.90	Horizontal	-45.98	-13.00	32.98	45
7	13160.00	-53.54	5.70	14.00	Horizontal	-45.24	-13.00	32.24	315
8	15040.00	-52.48	5.80	13.10	Horizontal	-45.18	-13.00	32.18	180
9	16920.00	-52.98	6.10	14.60	Horizontal	-44.48	-13.00	31.48	0
10	18800.00	-	-	-	-	-	-	-	-

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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Second Antenna

GSM 1900 CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3760.00	-64.49	2.60	12.50	Horizontal	-54.59	-13.00	41.59	45
3	5640.00	-60.69	3.30	12.50	Horizontal	-51.49	-13.00	38.49	90
4	7520.00	-57.29	4.20	12.20	Horizontal	-49.29	-13.00	36.29	45
5	9400.00	-53.71	4.30	11.10	Horizontal	-46.91	-13.00	33.91	270
6	11280.00	-49.34	5.90	11.90	Horizontal	-43.34	-13.00	30.34	90
7	13160.00	-53.62	5.70	14.00	Horizontal	-45.32	-13.00	32.32	45
8	15040.00	-50.61	5.80	13.10	Horizontal	-43.31	-13.00	30.31	315
9	16920.00	-50.47	6.10	14.60	Horizontal	-41.97	-13.00	28.97	90
10	18800.00	-	-	-	-	-	-	-	-

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

WCDMA Band II CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3760.00	-64.47	2.60	12.50	Horizontal	-54.57	-13.00	41.57	45
3	5640.00	-64.20	3.30	12.50	Horizontal	-55.00	-13.00	42.00	180
4	7520.00	-58.63	4.20	12.20	Horizontal	-50.63	-13.00	37.63	270
5	9400.00	-52.74	4.30	11.10	Horizontal	-45.94	-13.00	32.94	45
6	11280.00	-49.79	5.90	11.90	Horizontal	-43.79	-13.00	30.79	135
7	13160.00	-52.80	5.70	14.00	Horizontal	-44.50	-13.00	31.50	45
8	15040.00	-52.06	5.80	13.10	Horizontal	-44.76	-13.00	31.76	225
9	16920.00	-50.63	6.10	14.60	Horizontal	-42.13	-13.00	29.13	90
10	18800.00	-	-	-	-	-	-	-	-

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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LTE Band 2 1.4MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3759.00	-64.21	2.60	12.50	Horizontal	-54.31	-13.00	41.31	315
3	5638.88	-61.55	3.30	12.50	Horizontal	-52.35	-13.00	39.35	225
4	7520.00	-57.38	4.20	12.20	Horizontal	-49.38	-13.00	36.38	90
5	9400.00	-53.33	4.30	11.10	Horizontal	-46.53	-13.00	33.53	45
6	11280.00	-50.35	5.90	11.90	Horizontal	-44.35	-13.00	31.35	0
7	13160.00	-51.20	5.70	14.00	Horizontal	-42.90	-13.00	29.90	315
8	15040.00	-48.24	5.80	13.10	Horizontal	-40.94	-13.00	27.94	0
9	16920.00	-50.19	6.10	14.60	Horizontal	-41.69	-13.00	28.69	90
10	18800.00	-	-	-	-	-	-	-	-

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 2 5MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3755.63	-65.01	2.60	12.50	Horizontal	-55.11	-13.00	42.11	315
3	5633.63	-62.43	3.30	12.50	Horizontal	-53.23	-13.00	40.23	0
4	7520.00	-57.35	4.20	12.20	Horizontal	-49.35	-13.00	36.35	315
5	9400.00	-53.06	4.30	11.10	Horizontal	-46.26	-13.00	33.26	45
6	11280.00	-51.92	5.90	11.90	Horizontal	-45.92	-13.00	32.92	180
7	13160.00	-52.12	5.70	14.00	Horizontal	-43.82	-13.00	30.82	90
8	15040.00	-48.18	5.80	13.10	Horizontal	-40.88	-13.00	27.88	0
9	16920.00	-50.62	6.10	14.60	Horizontal	-42.12	-13.00	29.12	315
10	18800.00	-	-	-	-	-	-	-	-

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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LTE Band 2 20MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3742.13	-65.19	2.60	12.50	Horizontal	-55.29	-13.00	42.29	90
3	5613.38	-61.77	3.30	12.50	Horizontal	-52.57	-13.00	39.57	270
4	7484.63	-57.55	4.20	12.20	Horizontal	-49.55	-13.00	36.55	180
5	9400.00	-51.99	4.30	11.10	Horizontal	-45.19	-13.00	32.19	0
6	11280.00	-50.12	5.90	11.90	Horizontal	-44.12	-13.00	31.12	45
7	13160.00	-52.49	5.70	14.00	Horizontal	-44.19	-13.00	31.19	315
8	15040.00	-47.03	5.80	13.10	Horizontal	-39.73	-13.00	26.73	180
9	16920.00	-50.26	6.10	14.60	Horizontal	-41.76	-13.00	28.76	0
10	18800.00	-65.19	-	-	-	-	-	-	-

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Signal Analyzer	R&S	FSV30	104028	2021-05-15	2022-05-14
Loop antenna	SCHWARZBECK	FMZB1519	1519-047	2020-04-02	2023-04-01
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	01111	2019-09-12	2022-09-11
Horn Antenna	Schwarzbeck	BBHA 9120D	1594	2020-12-17	2023-12-16
Horn Antenna	ETS-Lindgren	3160-09	00102643	2020-08-11	2023-08-10
Software	R&S	EMC32	10.35.10	/	/
Communication tester	Anritsu	MT8821C	6201538758	2021-05-15	2022-05-14
Climate Chamber	WEISS	VT 4002	58226119450010	2021-05-15	2022-05-14
Climate Chamber	R&S	CMW500	150415	2021-05-15	2022-05-14
Spectrum Analyzer	Keysight	N9020A	MY52330084	2021-05-15	2022-05-14
Wireless Communication Tester	Agilent	E5515C	GB44400275	2021-05-15	2022-05-14
Spectrum Analyzer	R&S	FSV3030	101411	2021-12-12	2022-12-11

********END OF REPORT ********

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ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

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ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.

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