RF TEST REPORT

Applicant	ZTE Corporation
FCC ID	SRQ-MC801A
Product	5G CPE
Model	MC801A
Report No.	R2112A1085-R1
Issue Date	December 31, 2021

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2020)/ FCC CFR 47 Part 22H (2020)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Peng Tao

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000

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Summary of measurement results

No.	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective Radiated Power	2.1046 22.913(a)(5)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edge Compliance	2.1051 / 22.917(a)	PASS
4	Peak-to-Average Power Ratio	22.913(d)/ KDB 971168 D01(5.7)	PASS
5	Frequency Stability	2.1055 / 22.355	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 / 22.917(a)	PASS
7	Radiates Spurious Emission	2.1053 / 22.917 (a)	PASS
Date of Testing: December 4, 2021 ~ December 25, 2021 Date of Sample Received: December 1, 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.			

1. Test Laboratory

1.1. Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

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
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	http://www.ta-shanghai.com
E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

2.2. General Information

EUT Description			
Model	MC801A		
IMEI	863671043881410		
Hardware Version	MC801AHW-1.0.0		
Software Version	BD_TLCMXMC801AV1.0.0B01		
Power Supply	AC adapter		
Antenna Type	Internal Antenna		
Antenna Gain	WCDMA Band V	1.5 dBi	
	LTE Band 5	1.5 dBi	
Test Mode(s)	WCDMA Band V; LTE Band 5;		
Test Modulation	(WCDMA) BPSK, QPSK,16QAM; (LTE) QPSK, 16QAM, 64QAM;		
Maximum E.R.P.	WCDMA Band V:	23.02 dBm	
	LTE Band 5:	23.71 dBm	
Rated Power Supply Voltage	12V		
Operating Voltage	Minimum: 10.8V Maximum: 13.2V		
Operating Temperature	Lowest: -20°C Highest: +55°C		
Testing Temperature	Lowest: -30°C Highest: +50°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	WCDMA Band V	824 ~ 849	869 ~ 894
	LTE Band 5	824 ~ 849	869 ~ 894
EUT Accessory			
Adapter 1	Manufacturer: Shenzhen Ruijing Industrial Co.,Ltd Model: STC-A1215C55-C		
Adapter 2	Manufacturer: Shenzhen Dokocom Energy Technology Co., Ltd. Model: STC-A1215C55-C		
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.			

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 22H (2020)

FCC CFR47 Part 2 (2020)

Reference standard:
ANSI C63.26 (2015)

KDB 971168 D01 Power Meas License Digital Systems v03r01

4. Test Configuration

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 (Z axis, horizontal polarization) 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 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
	WCDMA Band V
RF Power Output and Effective Radiated power	RMC HSDPA/HSUPA DC-HSDPA/HSPA+
Occupied Bandwidth	RMC
Band Edge Compliance	RMC
Peak-to-Average Power Ratio	RMC
Frequency Stability	RMC
Spurious Emissions at Antenna Terminals	RMC
Radiates Spurious Emission	RMC

Test modes are chosen as the worst case configuration below for LTE Band 5.

Test items	Bandwidth (MHz)				Modulation		RB			Test Channel		
	1.4	3	5	10	QPSK	16QAM/ 64QAM	1	50%	100%	L	M	H
RF power output and Effective Radiated power	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	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
Frequency Stability	O	O	O	O	O	O	O	-	-	-	O	-
Spurious Emissions at	O	O	O	O	O	-	O	-	-	O	O	O

Antenna Terminals												
Radiates Spurious Emission	O	-	O	O	O	-	O	-	-	-	O	-

5. Test Case Results

5.1. RF Power Output and Effective Radiated Power

Ambient condition

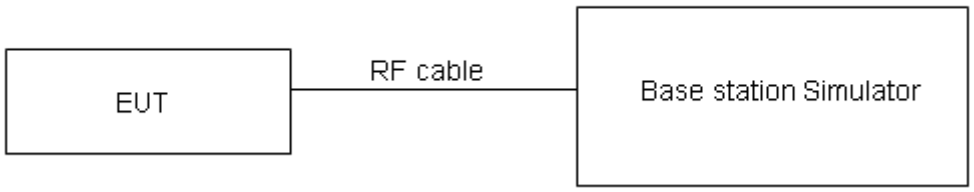
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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 22.913(a)(5) specifies that "Mobile/portable stations are limited to 7 watts ERP".

Limit	≤ 7 W (38.45 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 ERP.

Test Results

WCDMA Band V		Maximum Output Power (dBm)			ERP (dBm)		
		Channel 4132	Channel 4183	Channel 4233	Channel 4132	Channel 4183	Channel 4233
		826.4 (MHz)	836.6 (MHz)	846.6 (MHz)	826.4 (MHz)	836.6 (MHz)	846.6 (MHz)
RMC		23.65	23.66	23.67	23.00	23.01	23.02
HSDPA	Sub - Test 1	23.07	23.08	23.09	22.42	22.43	22.44
	Sub - Test 2	23.06	23.07	23.08	22.41	22.42	22.43
	Sub - Test 3	22.55	22.56	22.57	21.90	21.91	21.92
	Sub - Test 4	22.54	22.55	22.56	21.89	21.90	21.91
HSUPA	Sub - Test 1	22.03	22.04	22.05	21.38	21.39	21.40
	Sub - Test 2	20.02	20.03	20.04	19.37	19.38	19.39
	Sub - Test 3	21.00	21.02	21.03	20.35	20.37	20.38
	Sub - Test 4	19.99	20.01	20.02	19.34	19.36	19.37
	Sub - Test 5	23.48	23.50	23.51	22.83	22.85	22.86
DC-HSDPA	Sub - Test 1	22.99	23.02	23.01	22.34	22.37	22.36
	Sub - Test 2	22.98	23.01	23.00	22.33	22.36	22.35
	Sub - Test 3	22.56	22.50	22.51	21.91	21.85	21.86
	Sub - Test 4	22.55	22.49	22.50	21.90	21.84	21.85
HSPA+	16QAM	21.14	21.17	21.18	20.49	20.52	20.53

LTE Band 5							
Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	ERP (dBm)	Verdict
1.4	20407	1	#0	QPSK	24.02	23.37	PASS
1.4	20407	1	#Mid	QPSK	24.09	23.44	PASS
1.4	20407	1	#Max	QPSK	24.00	23.35	PASS
1.4	20407	3	#0	QPSK	23.98	23.33	PASS
1.4	20407	3	#Mid	QPSK	23.96	23.31	PASS
1.4	20407	3	#Max	QPSK	23.95	23.30	PASS
1.4	20407	6	#0	QPSK	23.03	22.38	PASS
1.4	20407	1	#0	QAM16	23.06	22.41	PASS
1.4	20407	1	#Mid	QAM16	23.11	22.46	PASS
1.4	20407	1	#Max	QAM16	22.97	22.32	PASS
1.4	20407	3	#0	QAM16	23.21	22.56	PASS
1.4	20407	3	#Mid	QAM16	23.22	22.57	PASS
1.4	20407	3	#Max	QAM16	23.25	22.60	PASS
1.4	20407	6	#0	QAM16	22.16	21.51	PASS
1.4	20525	1	#0	QPSK	23.94	23.29	PASS
1.4	20525	1	#Mid	QPSK	24.07	23.42	PASS
1.4	20525	1	#Max	QPSK	23.97	23.32	PASS
1.4	20525	3	#0	QPSK	23.99	23.34	PASS
1.4	20525	3	#Mid	QPSK	23.99	23.34	PASS
1.4	20525	3	#Max	QPSK	24.01	23.36	PASS
1.4	20525	6	#0	QPSK	23.15	22.50	PASS
1.4	20525	1	#0	QAM16	23.19	22.54	PASS
1.4	20525	1	#Mid	QAM16	23.43	22.78	PASS
1.4	20525	1	#Max	QAM16	23.20	22.55	PASS
1.4	20525	3	#0	QAM16	22.99	22.34	PASS
1.4	20525	3	#Mid	QAM16	23.00	22.35	PASS
1.4	20525	3	#Max	QAM16	23.19	22.54	PASS
1.4	20525	6	#0	QAM16	22.11	21.46	PASS
1.4	20643	1	#0	QPSK	24.16	23.51	PASS
1.4	20643	1	#Mid	QPSK	24.21	23.56	PASS
1.4	20643	1	#Max	QPSK	24.08	23.43	PASS
1.4	20643	3	#0	QPSK	24.09	23.44	PASS
1.4	20643	3	#Mid	QPSK	24.08	23.43	PASS
1.4	20643	3	#Max	QPSK	24.01	23.36	PASS
1.4	20643	6	#0	QPSK	23.10	22.45	PASS
1.4	20643	1	#0	QAM16	23.11	22.46	PASS
1.4	20643	1	#Mid	QAM16	23.13	22.48	PASS
1.4	20643	1	#Max	QAM16	22.98	22.33	PASS
1.4	20643	3	#0	QAM16	23.21	22.56	PASS

1.4	20643	3	#Mid	QAM16	23.18	22.53	PASS
1.4	20643	3	#Max	QAM16	23.21	22.56	PASS
1.4	20643	6	#0	QAM16	22.17	21.52	PASS
3	20415	1	#0	QPSK	24.07	23.42	PASS
3	20415	1	#Mid	QPSK	24.03	23.38	PASS
3	20415	1	#Max	QPSK	23.92	23.27	PASS
3	20415	8	#0	QPSK	23.15	22.50	PASS
3	20415	8	#Mid	QPSK	23.11	22.46	PASS
3	20415	8	#Max	QPSK	23.05	22.40	PASS
3	20415	15	#0	QPSK	23.12	22.47	PASS
3	20415	1	#0	QAM16	23.41	22.76	PASS
3	20415	1	#Mid	QAM16	23.36	22.71	PASS
3	20415	1	#Max	QAM16	23.27	22.62	PASS
3	20415	8	#0	QAM16	22.25	21.60	PASS
3	20415	8	#Mid	QAM16	22.18	21.53	PASS
3	20415	8	#Max	QAM16	22.17	21.52	PASS
3	20415	15	#0	QAM16	22.13	21.48	PASS
3	20525	1	#0	QPSK	23.99	23.34	PASS
3	20525	1	#Mid	QPSK	24.10	23.45	PASS
3	20525	1	#Max	QPSK	24.00	23.35	PASS
3	20525	8	#0	QPSK	23.19	22.54	PASS
3	20525	8	#Mid	QPSK	23.19	22.54	PASS
3	20525	8	#Max	QPSK	23.24	22.59	PASS
3	20525	15	#0	QPSK	23.17	22.52	PASS
3	20525	1	#0	QAM16	23.38	22.73	PASS
3	20525	1	#Mid	QAM16	23.44	22.79	PASS
3	20525	1	#Max	QAM16	23.34	22.69	PASS
3	20525	8	#0	QAM16	22.20	21.55	PASS
3	20525	8	#Mid	QAM16	22.24	21.59	PASS
3	20525	8	#Max	QAM16	22.18	21.53	PASS
3	20525	15	#0	QAM16	22.10	21.45	PASS
3	20635	1	#0	QPSK	24.32	23.67	PASS
3	20635	1	#Mid	QPSK	24.36	23.71	PASS
3	20635	1	#Max	QPSK	24.23	23.58	PASS
3	20635	8	#0	QPSK	23.29	22.64	PASS
3	20635	8	#Mid	QPSK	23.29	22.64	PASS
3	20635	8	#Max	QPSK	23.24	22.59	PASS
3	20635	15	#0	QPSK	23.29	22.64	PASS
3	20635	1	#0	QAM16	23.26	22.61	PASS
3	20635	1	#Mid	QAM16	23.26	22.61	PASS
3	20635	1	#Max	QAM16	23.12	22.47	PASS
3	20635	8	#0	QAM16	22.32	21.67	PASS
3	20635	8	#Mid	QAM16	22.32	21.67	PASS

3	20635	8	#Max	QAM16	22.25	21.60	PASS
3	20635	15	#0	QAM16	22.31	21.66	PASS
5	20425	1	#0	QPSK	24.11	23.46	PASS
5	20425	1	#Mid	QPSK	24.03	23.38	PASS
5	20425	1	#Max	QPSK	23.97	23.32	PASS
5	20425	12	#0	QPSK	23.12	22.47	PASS
5	20425	12	#Mid	QPSK	23.16	22.51	PASS
5	20425	12	#Max	QPSK	23.07	22.42	PASS
5	20425	25	#0	QPSK	23.11	22.46	PASS
5	20425	1	#0	QAM16	23.50	22.85	PASS
5	20425	1	#Mid	QAM16	23.44	22.79	PASS
5	20425	1	#Max	QAM16	23.35	22.70	PASS
5	20425	12	#0	QAM16	22.20	21.55	PASS
5	20425	12	#Mid	QAM16	22.20	21.55	PASS
5	20425	12	#Max	QAM16	22.02	21.37	PASS
5	20425	25	#0	QAM16	22.12	21.47	PASS
5	20525	1	#0	QPSK	24.19	23.54	PASS
5	20525	1	#Mid	QPSK	24.19	23.54	PASS
5	20525	1	#Max	QPSK	24.11	23.46	PASS
5	20525	12	#0	QPSK	23.26	22.61	PASS
5	20525	12	#Mid	QPSK	23.22	22.57	PASS
5	20525	12	#Max	QPSK	23.21	22.56	PASS
5	20525	25	#0	QPSK	23.15	22.50	PASS
5	20525	1	#0	QAM16	23.46	22.81	PASS
5	20525	1	#Mid	QAM16	23.48	22.83	PASS
5	20525	1	#Max	QAM16	23.44	22.79	PASS
5	20525	12	#0	QAM16	22.20	21.55	PASS
5	20525	12	#Mid	QAM16	22.23	21.58	PASS
5	20525	12	#Max	QAM16	22.26	21.61	PASS
5	20525	25	#0	QAM16	22.20	21.55	PASS
5	20625	1	#0	QPSK	24.11	23.46	PASS
5	20625	1	#Mid	QPSK	24.04	23.39	PASS
5	20625	1	#Max	QPSK	23.91	23.26	PASS
5	20625	12	#0	QPSK	23.22	22.57	PASS
5	20625	12	#Mid	QPSK	23.28	22.63	PASS
5	20625	12	#Max	QPSK	23.26	22.61	PASS
5	20625	25	#0	QPSK	23.33	22.68	PASS
5	20625	1	#0	QAM16	23.50	22.85	PASS
5	20625	1	#Mid	QAM16	23.62	22.97	PASS
5	20625	1	#Max	QAM16	23.44	22.79	PASS
5	20625	12	#0	QAM16	22.35	21.70	PASS
5	20625	12	#Mid	QAM16	22.34	21.69	PASS
5	20625	12	#Max	QAM16	22.38	21.73	PASS

5	20625	25	#0	QAM16	22.30	21.65	PASS
10	20450	1	#0	QPSK	24.01	23.36	PASS
10	20450	1	#Mid	QPSK	23.91	23.26	PASS
10	20450	1	#Max	QPSK	23.96	23.31	PASS
10	20450	25	#0	QPSK	23.10	22.45	PASS
10	20450	25	#Mid	QPSK	23.09	22.44	PASS
10	20450	25	#Max	QPSK	23.11	22.46	PASS
10	20450	50	#0	QPSK	23.14	22.49	PASS
10	20450	1	#0	QAM16	23.53	22.88	PASS
10	20450	1	#Mid	QAM16	23.32	22.67	PASS
10	20450	1	#Max	QAM16	23.39	22.74	PASS
10	20450	25	#0	QAM16	22.15	21.50	PASS
10	20450	25	#Mid	QAM16	22.19	21.54	PASS
10	20450	25	#Max	QAM16	22.15	21.50	PASS
10	20450	50	#0	QAM16	22.18	21.53	PASS
10	20525	1	#0	QPSK	24.00	23.35	PASS
10	20525	1	#Mid	QPSK	23.95	23.30	PASS
10	20525	1	#Max	QPSK	23.97	23.32	PASS
10	20525	25	#0	QPSK	23.21	22.56	PASS
10	20525	25	#Mid	QPSK	23.18	22.53	PASS
10	20525	25	#Max	QPSK	23.28	22.63	PASS
10	20525	50	#0	QPSK	23.16	22.51	PASS
10	20525	1	#0	QAM16	23.32	22.67	PASS
10	20525	1	#Mid	QAM16	23.42	22.77	PASS
10	20525	1	#Max	QAM16	23.40	22.75	PASS
10	20525	25	#0	QAM16	22.22	21.57	PASS
10	20525	25	#Mid	QAM16	22.23	21.58	PASS
10	20525	25	#Max	QAM16	22.33	21.68	PASS
10	20525	50	#0	QAM16	22.17	21.52	PASS
10	20600	1	#0	QPSK	24.26	23.61	PASS
10	20600	1	#Mid	QPSK	24.22	23.57	PASS
10	20600	1	#Max	QPSK	24.15	23.50	PASS
10	20600	25	#0	QPSK	23.29	22.64	PASS
10	20600	25	#Mid	QPSK	23.22	22.57	PASS
10	20600	25	#Max	QPSK	23.18	22.53	PASS
10	20600	50	#0	QPSK	23.26	22.61	PASS
10	20600	1	#0	QAM16	23.19	22.54	PASS
10	20600	1	#Mid	QAM16	23.09	22.44	PASS
10	20600	1	#Max	QAM16	23.06	22.41	PASS
10	20600	25	#0	QAM16	22.20	21.55	PASS
10	20600	25	#Mid	QAM16	22.24	21.59	PASS
10	20600	25	#Max	QAM16	22.33	21.68	PASS
10	20600	50	#0	QAM16	22.31	21.66	PASS

1.4	20407	1	#0	QAM64	22.55	21.90	PASS
1.4	20407	1	#Mid	QAM64	22.65	22.00	PASS
1.4	20407	1	#Max	QAM64	22.53	21.88	PASS
1.4	20407	3	#0	QAM64	22.85	22.20	PASS
1.4	20407	3	#Mid	QAM64	22.79	22.14	PASS
1.4	20407	3	#Max	QAM64	22.70	22.05	PASS
1.4	20407	6	#0	QAM64	21.66	21.01	PASS
1.4	20525	1	#0	QAM64	22.69	22.04	PASS
1.4	20525	1	#Mid	QAM64	22.85	22.20	PASS
1.4	20525	1	#Max	QAM64	22.74	22.09	PASS
1.4	20525	3	#0	QAM64	22.66	22.01	PASS
1.4	20525	3	#Mid	QAM64	22.65	22.00	PASS
1.4	20525	3	#Max	QAM64	22.70	22.05	PASS
1.4	20525	6	#0	QAM64	21.67	21.02	PASS
1.4	20643	1	#0	QAM64	22.60	21.95	PASS
1.4	20643	1	#Mid	QAM64	22.65	22.00	PASS
1.4	20643	1	#Max	QAM64	22.52	21.87	PASS
1.4	20643	3	#0	QAM64	22.80	22.15	PASS
1.4	20643	3	#Mid	QAM64	22.81	22.16	PASS
1.4	20643	3	#Max	QAM64	22.76	22.11	PASS
1.4	20643	6	#0	QAM64	21.66	21.01	PASS
3	20415	1	#0	QAM64	22.93	22.28	PASS
3	20415	1	#Mid	QAM64	22.88	22.23	PASS
3	20415	1	#Max	QAM64	22.78	22.13	PASS
3	20415	8	#0	QAM64	21.68	21.03	PASS
3	20415	8	#Mid	QAM64	21.69	21.04	PASS
3	20415	8	#Max	QAM64	21.59	20.94	PASS
3	20415	15	#0	QAM64	21.64	20.99	PASS
3	20525	1	#0	QAM64	22.85	22.20	PASS
3	20525	1	#Mid	QAM64	22.98	22.33	PASS
3	20525	1	#Max	QAM64	22.74	22.09	PASS
3	20525	8	#0	QAM64	21.69	21.04	PASS
3	20525	8	#Mid	QAM64	21.68	21.03	PASS
3	20525	8	#Max	QAM64	21.71	21.06	PASS
3	20525	15	#0	QAM64	21.63	20.98	PASS
3	20635	1	#0	QAM64	22.79	22.14	PASS
3	20635	1	#Mid	QAM64	22.76	22.11	PASS
3	20635	1	#Max	QAM64	22.63	21.98	PASS
3	20635	8	#0	QAM64	21.85	21.20	PASS
3	20635	8	#Mid	QAM64	21.84	21.19	PASS
3	20635	8	#Max	QAM64	21.78	21.13	PASS
3	20635	15	#0	QAM64	21.87	21.22	PASS
5	20425	1	#0	QAM64	23.66	23.01	PASS

5	20425	1	#Mid	QAM64	23.52	22.87	PASS
5	20425	1	#Max	QAM64	23.51	22.86	PASS
5	20425	12	#0	QAM64	22.69	22.04	PASS
5	20425	12	#Mid	QAM64	22.64	21.99	PASS
5	20425	12	#Max	QAM64	22.59	21.94	PASS
5	20425	25	#0	QAM64	22.66	22.01	PASS
5	20525	1	#0	QAM64	23.71	23.06	PASS
5	20525	1	#Mid	QAM64	23.70	23.05	PASS
5	20525	1	#Max	QAM64	23.70	23.05	PASS
5	20525	12	#0	QAM64	22.74	22.09	PASS
5	20525	12	#Mid	QAM64	22.75	22.10	PASS
5	20525	12	#Max	QAM64	22.73	22.08	PASS
5	20525	25	#0	QAM64	22.77	22.12	PASS
5	20625	1	#0	QAM64	23.57	22.92	PASS
5	20625	1	#Mid	QAM64	23.59	22.94	PASS
5	20625	1	#Max	QAM64	23.49	22.84	PASS
5	20625	12	#0	QAM64	22.83	22.18	PASS
5	20625	12	#Mid	QAM64	22.76	22.11	PASS
5	20625	12	#Max	QAM64	22.83	22.18	PASS
5	20625	25	#0	QAM64	22.86	22.21	PASS
10	20450	1	#0	QAM64	23.10	22.45	PASS
10	20450	1	#Mid	QAM64	22.82	22.17	PASS
10	20450	1	#Max	QAM64	22.98	22.33	PASS
10	20450	25	#0	QAM64	21.57	20.92	PASS
10	20450	25	#Mid	QAM64	21.64	20.99	PASS
10	20450	25	#Max	QAM64	21.72	21.07	PASS
10	20450	50	#0	QAM64	21.72	21.07	PASS
10	20525	1	#0	QAM64	22.91	22.26	PASS
10	20525	1	#Mid	QAM64	22.87	22.22	PASS
10	20525	1	#Max	QAM64	22.89	22.24	PASS
10	20525	25	#0	QAM64	21.73	21.08	PASS
10	20525	25	#Mid	QAM64	21.75	21.10	PASS
10	20525	25	#Max	QAM64	21.79	21.14	PASS
10	20525	50	#0	QAM64	21.73	21.08	PASS
10	20600	1	#0	QAM64	22.68	22.03	PASS
10	20600	1	#Mid	QAM64	22.61	21.96	PASS
10	20600	1	#Max	QAM64	22.57	21.92	PASS
10	20600	25	#0	QAM64	21.81	21.16	PASS
10	20600	25	#Mid	QAM64	21.72	21.07	PASS
10	20600	25	#Max	QAM64	21.77	21.12	PASS
10	20600	50	#0	QAM64	21.78	21.13	PASS

5.2. Occupied Bandwidth

Ambient condition

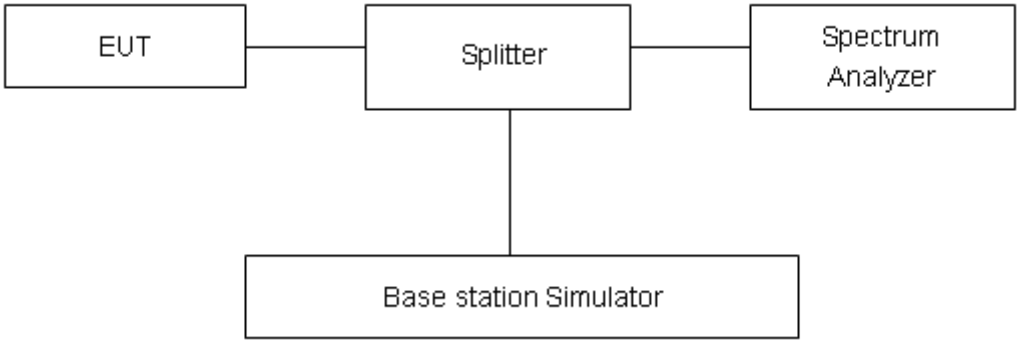
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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.

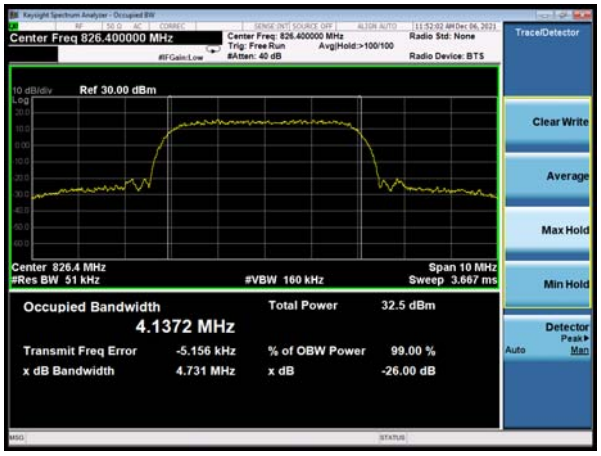
Test Result

Mode	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
WCDMA Band V (RMC)	4132	826.4	4.1372	4.731
	4183	836.6	4.1533	4.763
	4233	846.6	4.1515	4.725

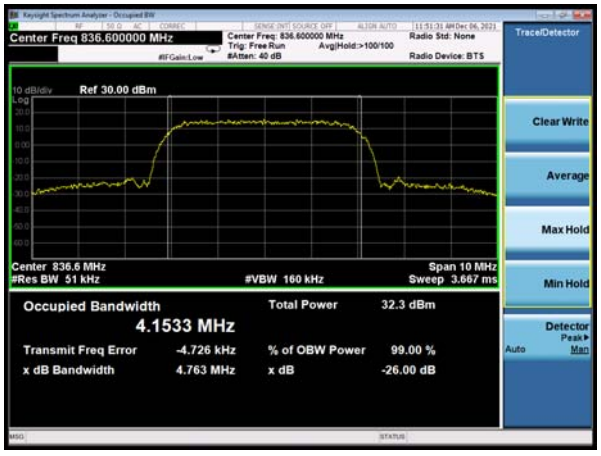
LTE Band 5						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	20407	824.7	1.0900	1.242
			20525	836.5	1.0940	1.239
			20643	848.3	1.0920	1.229
		3	20415	825.5	2.7010	2.964
			20525	836.5	2.7040	3.023
			20635	847.5	2.6990	2.983
		5	20425	826.5	4.5150	4.960
			20525	836.5	4.5010	4.943
			20625	846.5	4.5110	4.990
		10	20450	829	8.9710	9.729
			20525	836.5	8.9600	9.720
			20600	844	8.9570	9.726
	16QAM	1.4	20407	824.7	1.0950	1.242
			20525	836.5	1.0940	1.255
			20643	848.3	1.0910	1.228
		3	20415	825.5	2.7040	3.006
			20525	836.5	2.7040	2.985
			20635	847.5	2.6880	2.977
		5	20425	826.5	4.5050	4.977
			20525	836.5	4.5120	4.919
			20625	846.5	4.5070	4.964
		10	20450	829	8.9720	9.742
			20525	836.5	8.9530	9.718
			20600	844	8.9400	9.735

	64QAM	1.4	20407	824.7	1.0970	1.239
			20525	836.5	1.0900	1.235
			20643	848.3	1.0860	1.226
		3	20415	825.5	2.7100	2.978
			20525	836.5	2.6980	2.966
			20635	847.5	2.6970	3.018
		5	20425	826.5	4.4980	4.982
			20525	836.5	4.5410	4.928
			20625	846.5	4.5020	4.959
		10	20450	829	8.9650	9.794
			20525	836.5	8.9540	9.709
			20600	844	8.9540	9.692

WCDMA Band V CH-Low

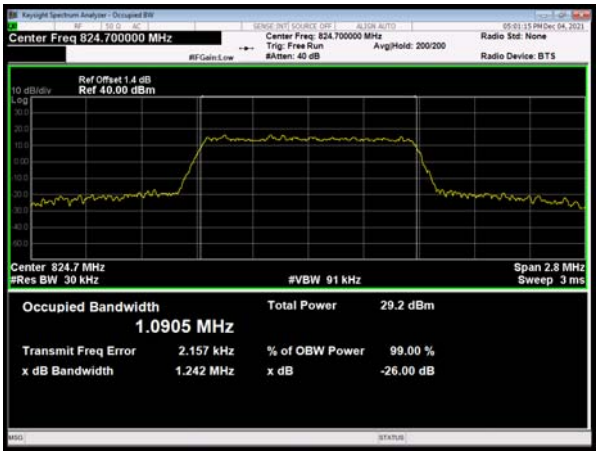


WCDMA Band V CH-Middle

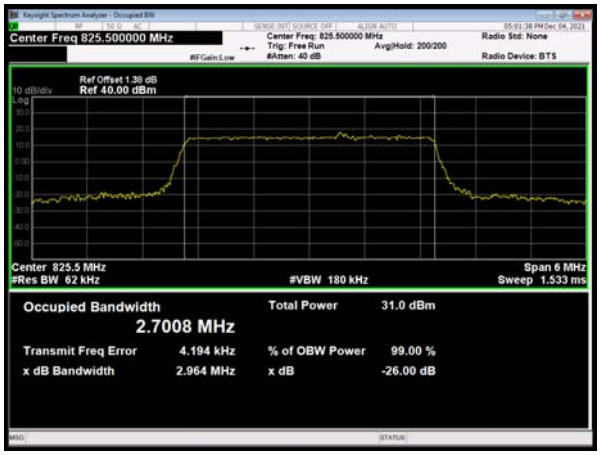


WCDMA Band V CH-High

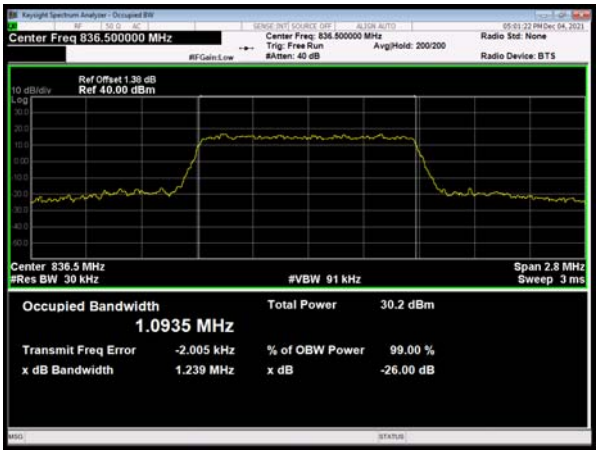
LTE Band 5 QPSK 1.4MHz CH-Low



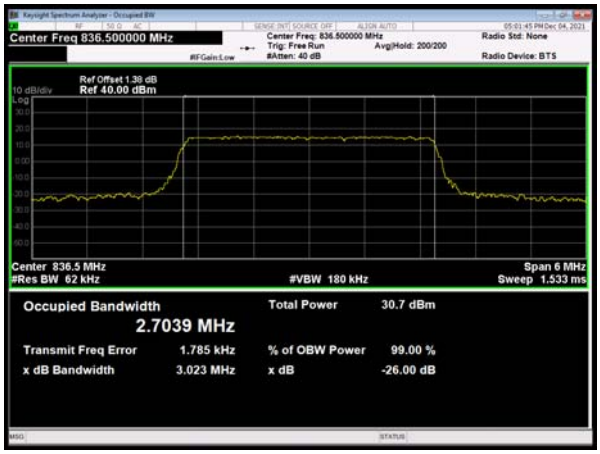
LTE Band 5 QPSK 3MHz CH-Low



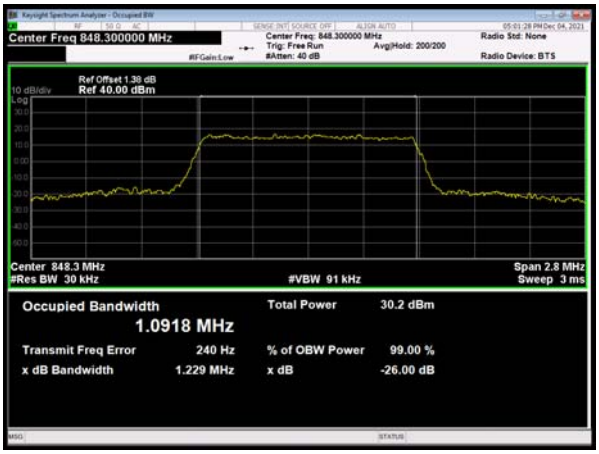
LTE Band 5 QPSK 1.4MHz CH-Middle



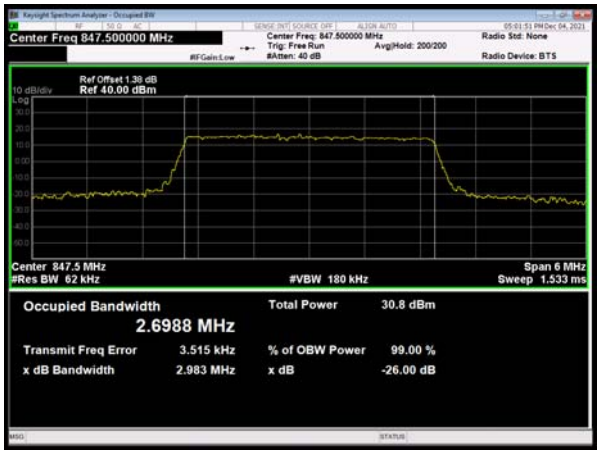
LTE Band 5 QPSK 3MHz CH-Middle



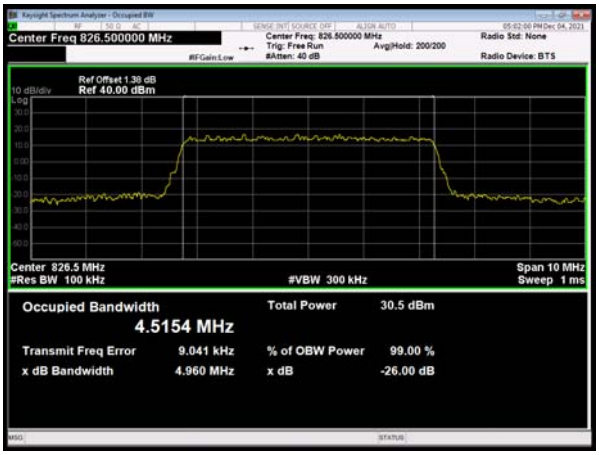
LTE Band 5 QPSK 1.4MHz CH-High



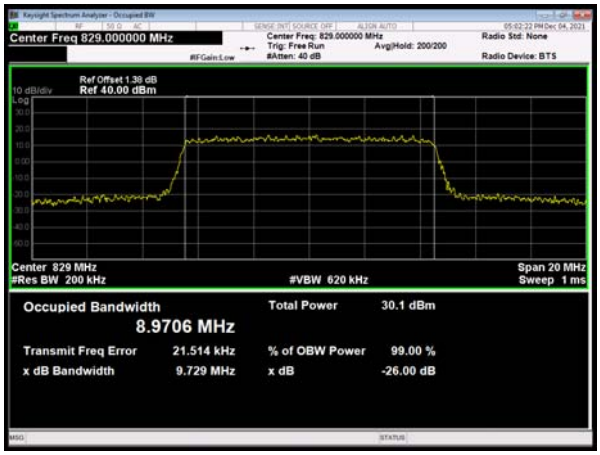
LTE Band 5 QPSK 3MHz CH-High



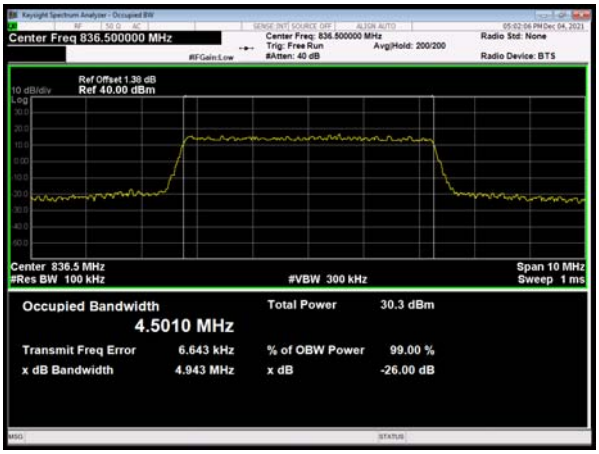
LTE Band 5 QPSK 5MHz CH-Low



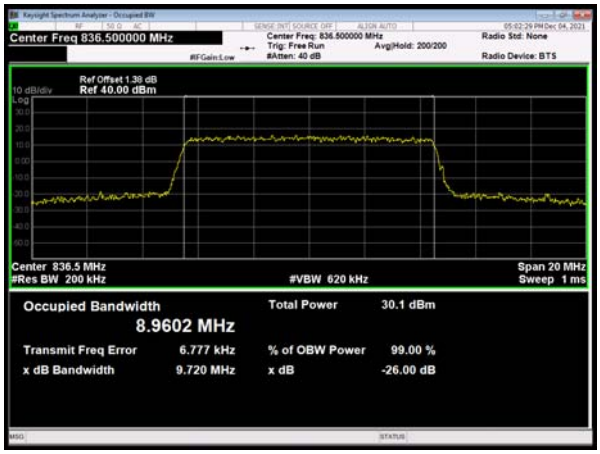
LTE Band 5 QPSK 10MHz CH-Low



LTE Band 5 QPSK 5MHz CH-Middle



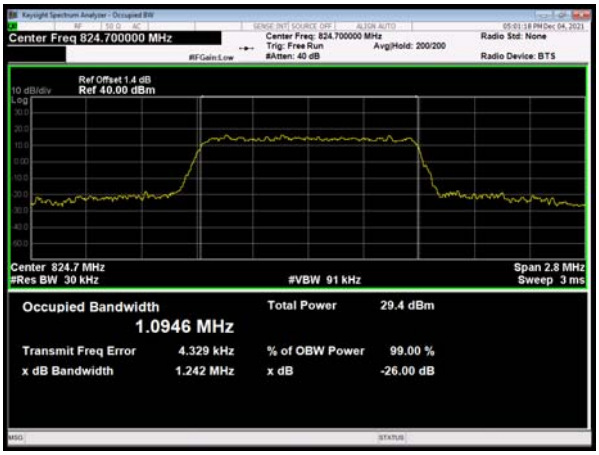
LTE Band 5 QPSK 10MHz CH-Middle



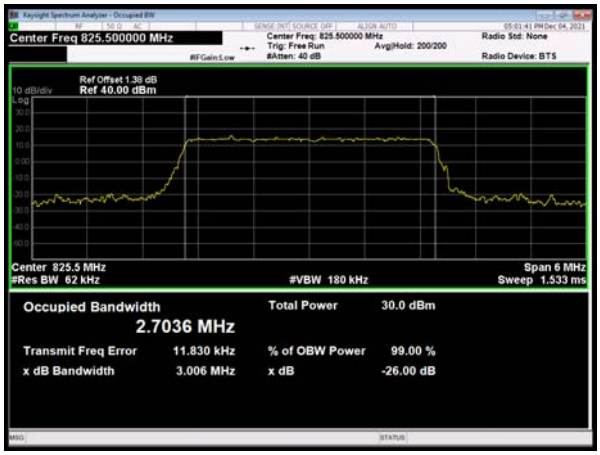
LTE Band 5 QPSK 5MHz CH-High

LTE Band 5 QPSK 10MHz CH-High

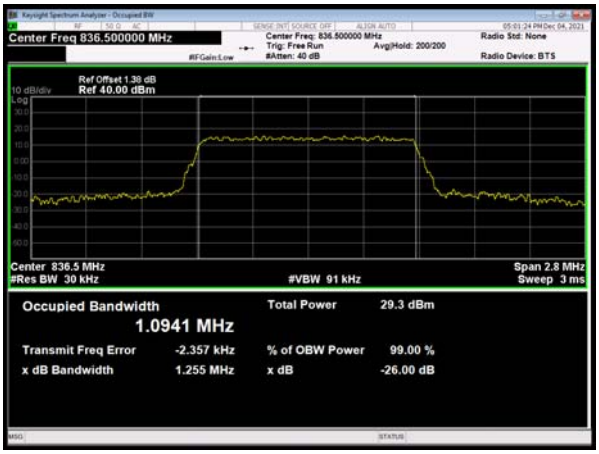
LTE Band 5 16QAM 1.4MHz CH-Low



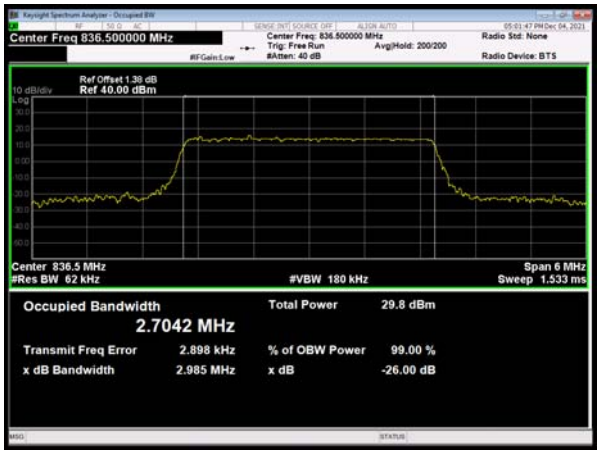
LTE Band 5 16QAM 3MHz CH-Low



LTE Band 5 16QAM 1.4MHz CH-Middle



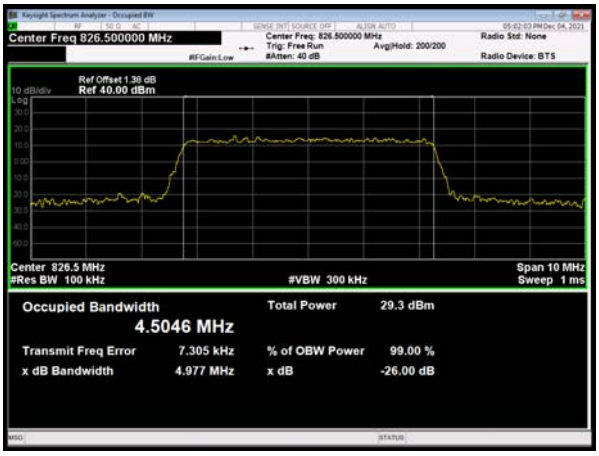
LTE Band 5 16QAM 3MHz CH-Middle



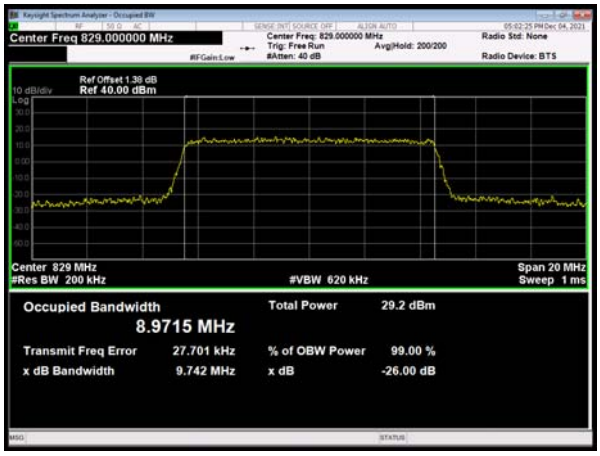
LTE Band 5 16QAM 1.4MHz CH-High

LTE Band 5 16QAM 3MHz CH-High

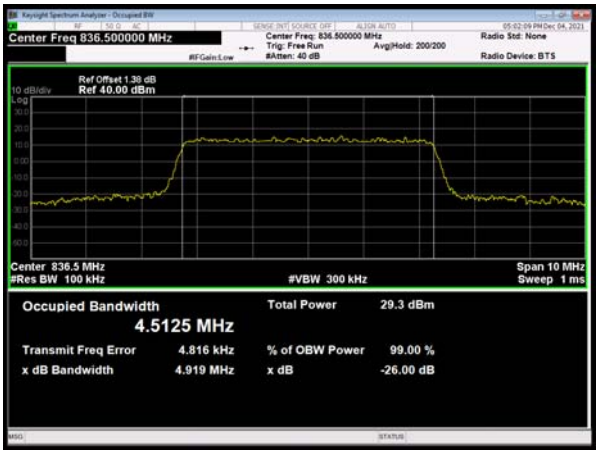
LTE Band 5 16QAM 5MHz CH-Low



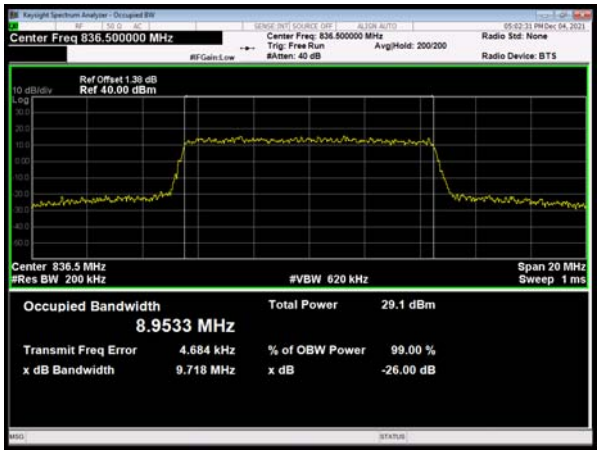
LTE Band 5 16QAM 10MHz CH-Low



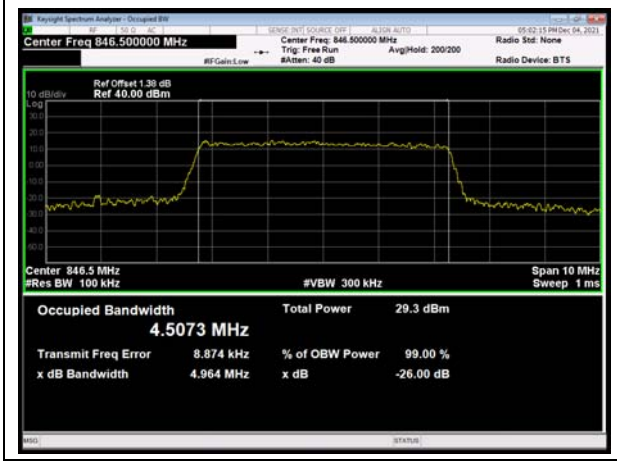
LTE Band 5 16QAM 5MHz CH-Middle



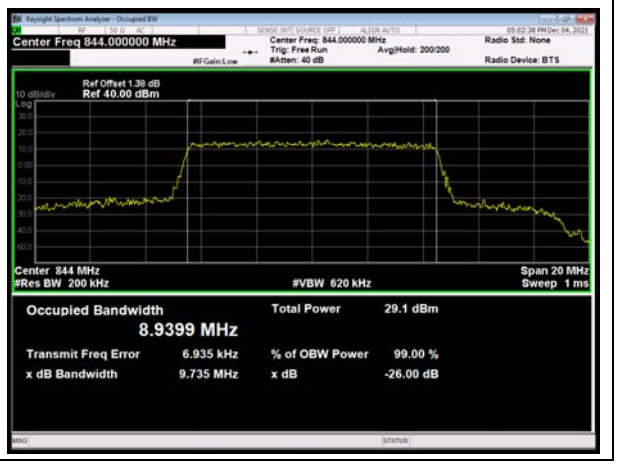
LTE Band 5 16QAM 10MHz CH-Middle



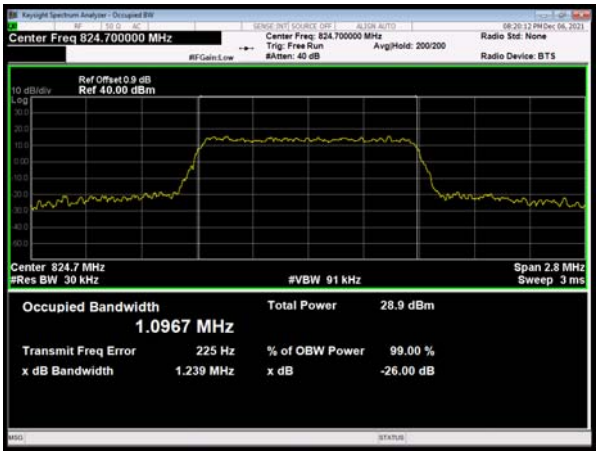
LTE Band 5 16QAM 5MHz CH-High



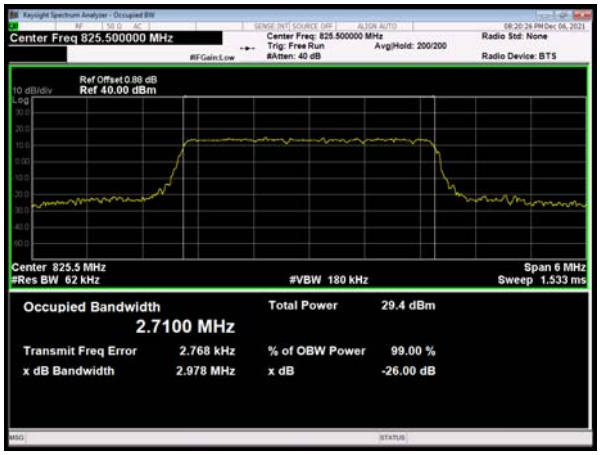
LTE Band 5 16QAM 10MHz CH-High



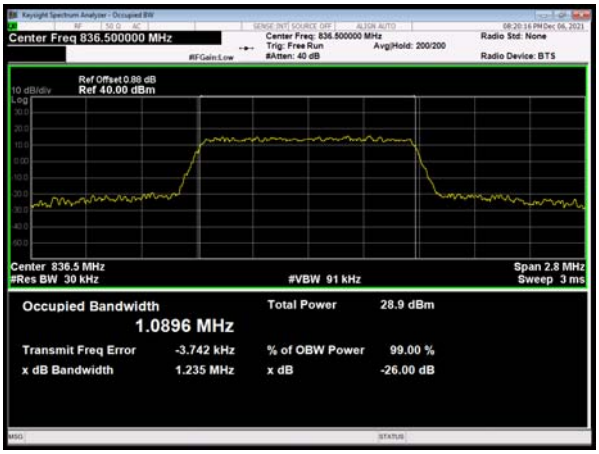
LTE Band 5 64QAM 1.4MHz CH-Low



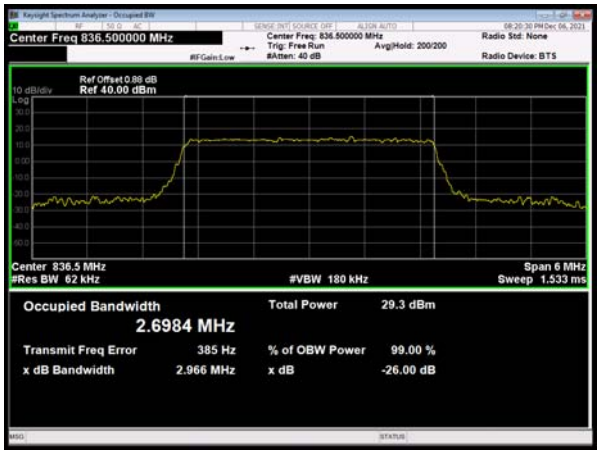
LTE Band 5 64QAM 3MHz CH-Low



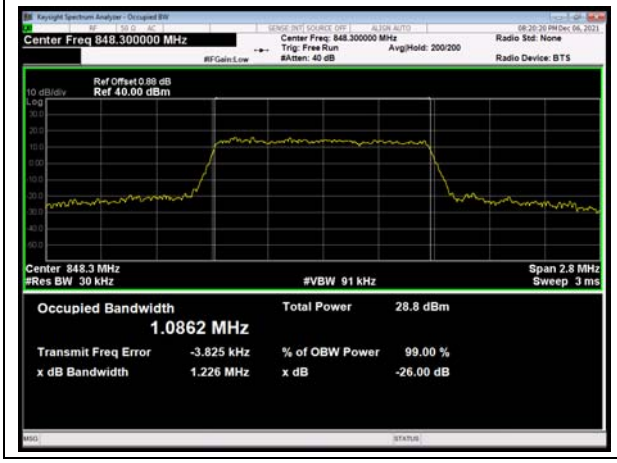
LTE Band 5 64QAM 1.4MHz CH-Middle



LTE Band 5 64QAM 3MHz CH-Middle

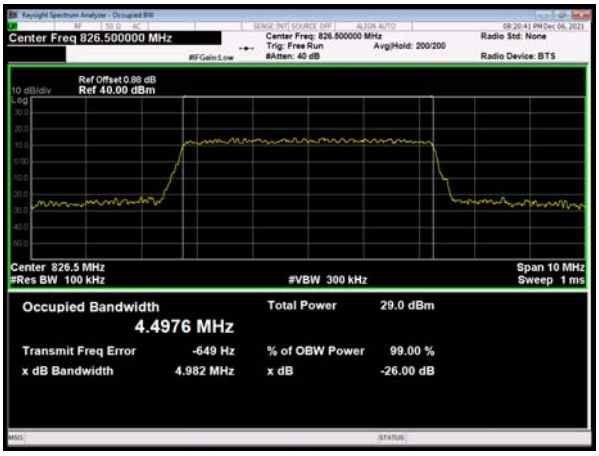


LTE Band 5 64QAM 1.4MHz CH-High

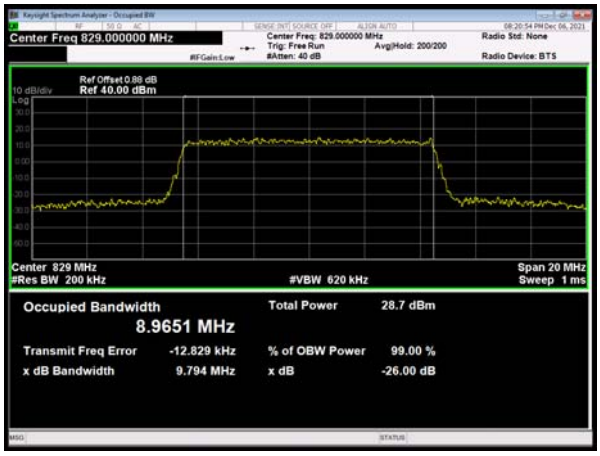


LTE Band 5 64QAM 3MHz CH-High

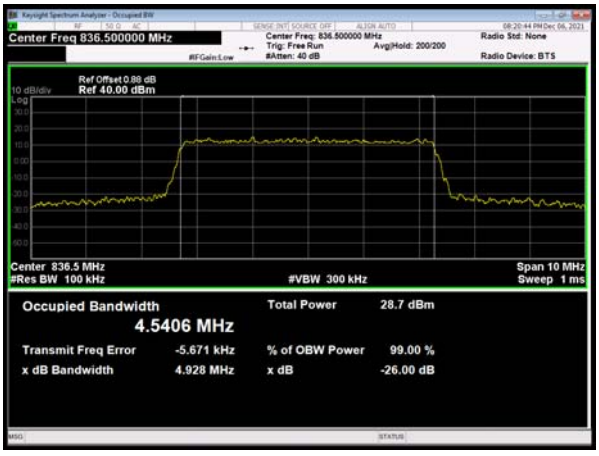
LTE Band 5 64QAM 5MHz CH-Low



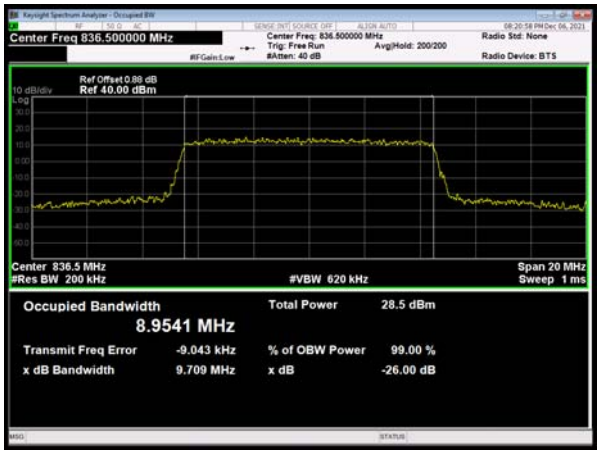
LTE Band 5 64QAM 10MHz CH-Low



LTE Band 5 64QAM 5MHz CH-Middle

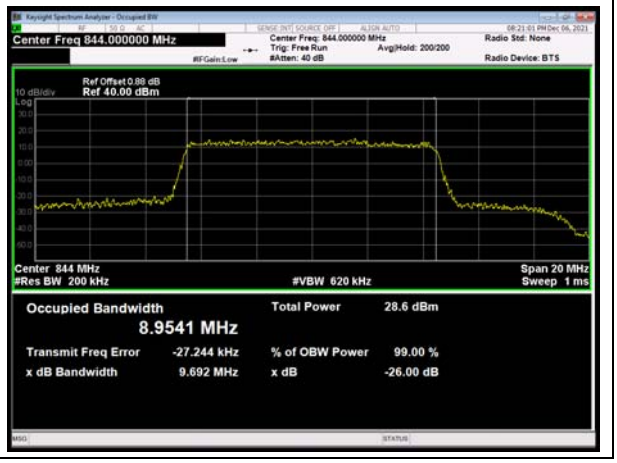


LTE Band 5 64QAM 10MHz CH-Middle



LTE Band 5 64QAM 5MHz CH-High

LTE Band 5 64QAM 10MHz CH-High



5.3. Band Edge Compliance

Ambient condition

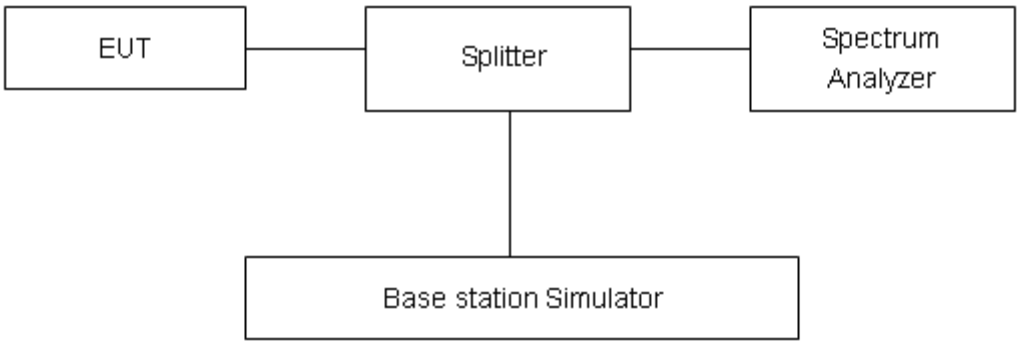
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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.
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 22.917(a) specifies that “The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.”

Limit	-13 dBm

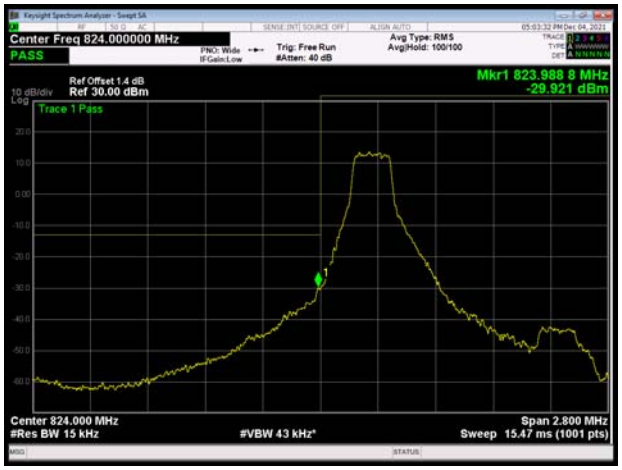
Measurement Uncertainty

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

Test Result:

WCDMA Band V CH-Low	WCDMA Band V CH-High
	

LTE Band 5 QPSK 1.4MHz CH-Low 1RB

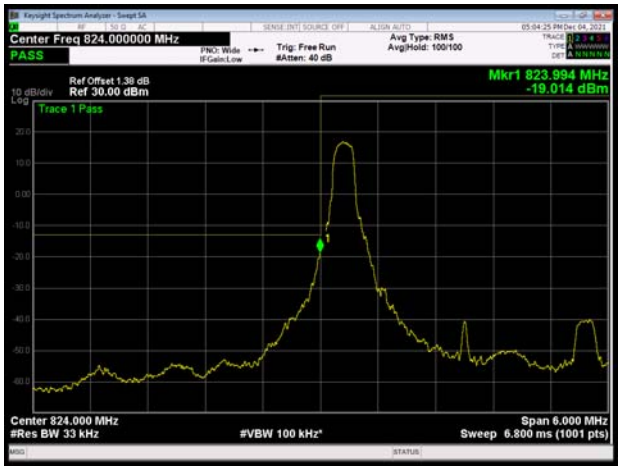


LTE Band 5 QPSK 1.4MHz CH-High 1RB

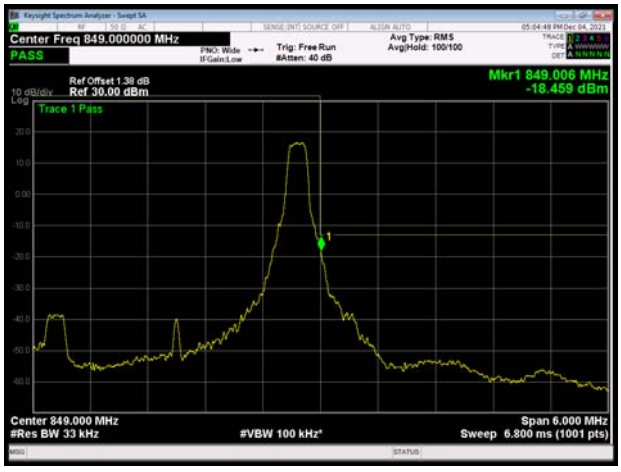
LTE Band 5 QPSK 1.4MHz CH-Low 100%RB

LTE Band 5 QPSK 1.4MHz CH-High 100%RB

LTE Band 5 QPSK 3MHz CH-Low 1RB



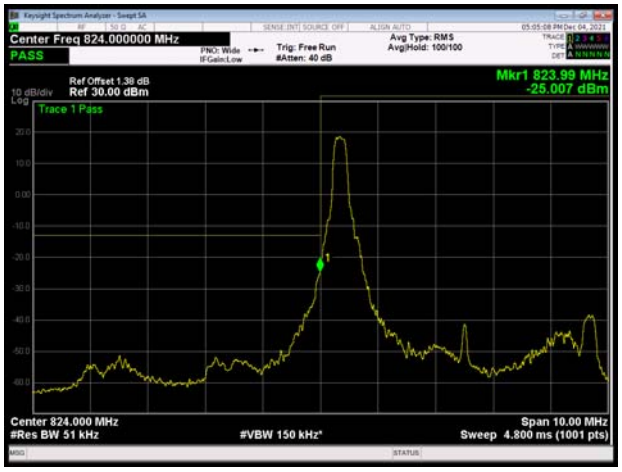
LTE Band 5 QPSK 3MHz CH-High 1RB



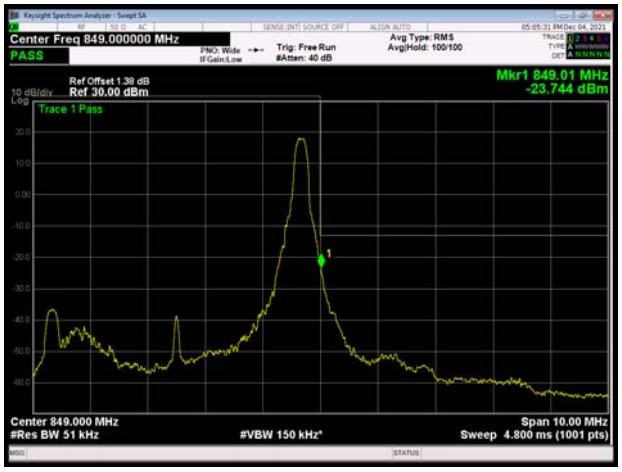
LTE Band 5 QPSK 3MHz CH-Low 100%RB

LTE Band 5 QPSK 3MHz CH-High 100%RB

LTE Band 5 QPSK 5MHz CH-Low 1RB



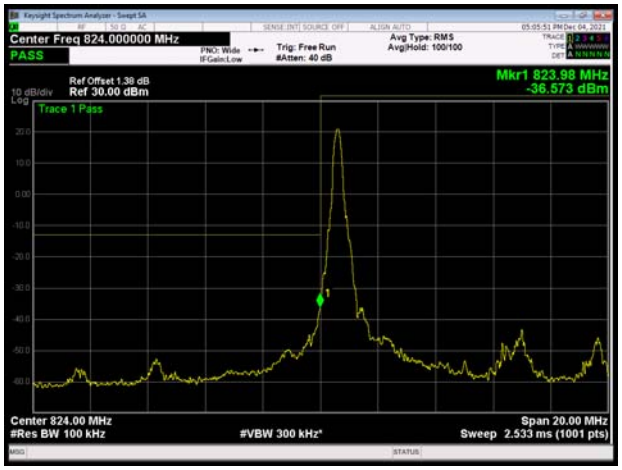
LTE Band 5 QPSK 5MHz CH-High 1RB



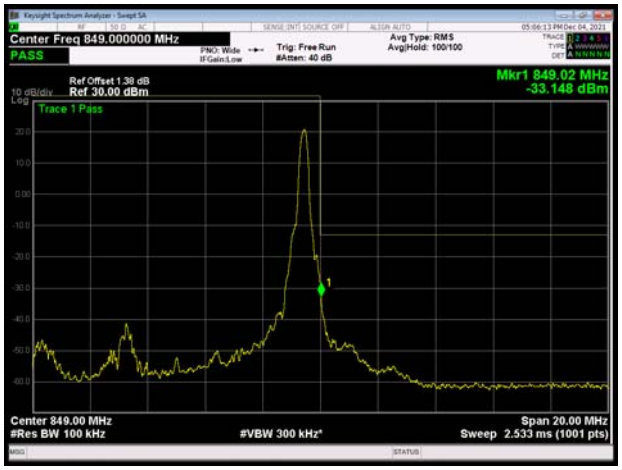
LTE Band 5 QPSK 5MHz CH-Low 100%RB

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

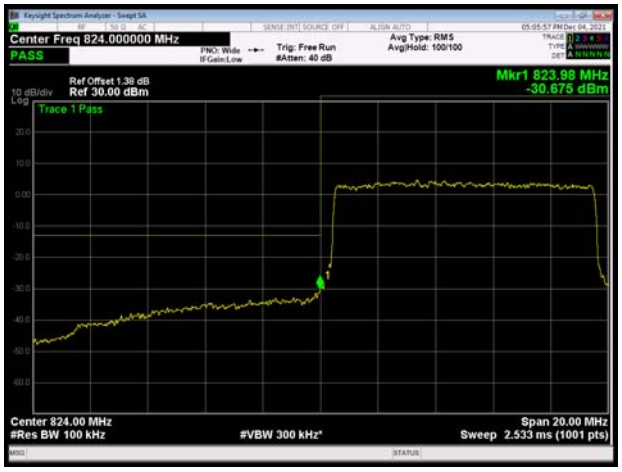
LTE Band 5 QPSK 10MHz CH-Low 1RB



LTE Band 5 QPSK 10MHz CH-High 1RB

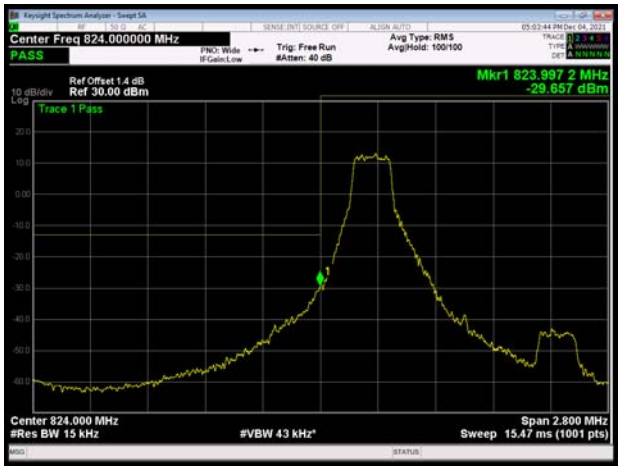


LTE Band 5 QPSK 10MHz CH-Low 100%RB

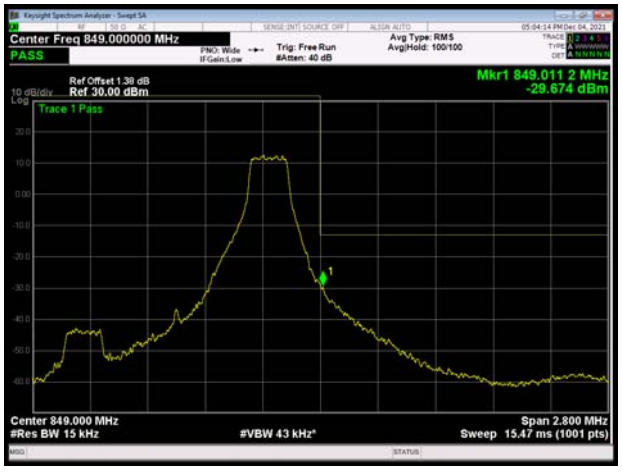


LTE Band 5 QPSK 10MHz CH-High 100%RB

LTE Band 5 16QAM 1.4MHz CH-Low 1RB



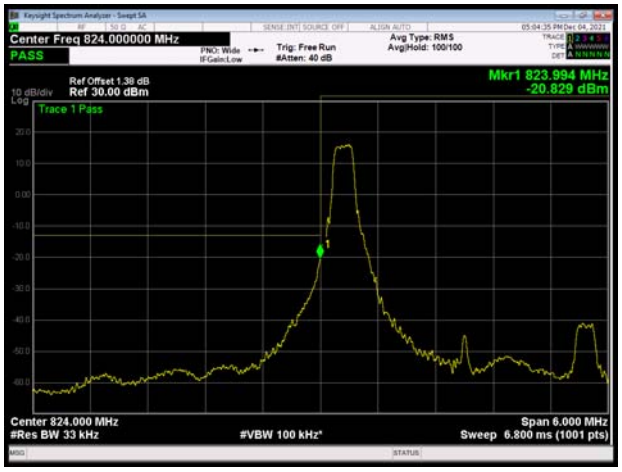
LTE Band 5 16QAM 1.4MHz CH-High 1RB



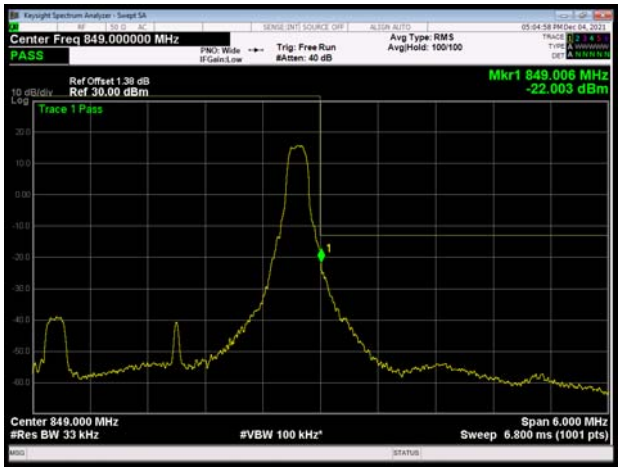
LTE Band 5 16QAM 1.4MHz CH-Low 100%RB

LTE Band 5 16QAM 1.4MHz CH-High 100%RB

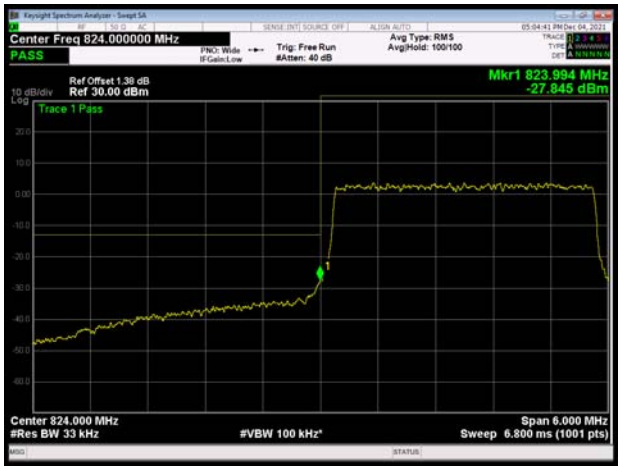
LTE Band 5 16QAM 3MHz CH-Low 1RB



LTE Band 5 16QAM 3MHz CH-High 1RB

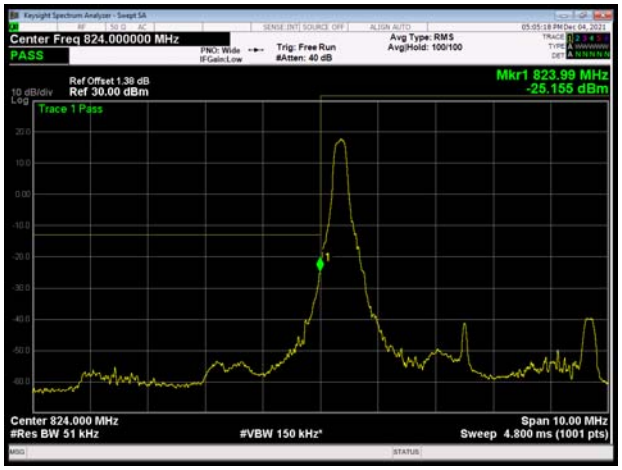


LTE Band 5 16QAM 3MHz CH-Low 100%RB

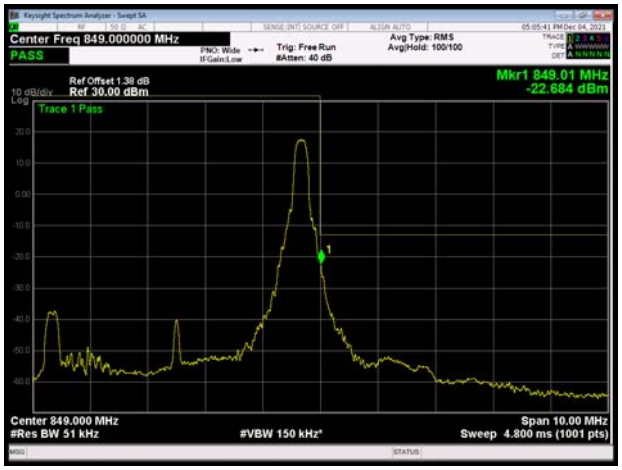


LTE Band 5 16QAM 3MHz CH-High 100%RB

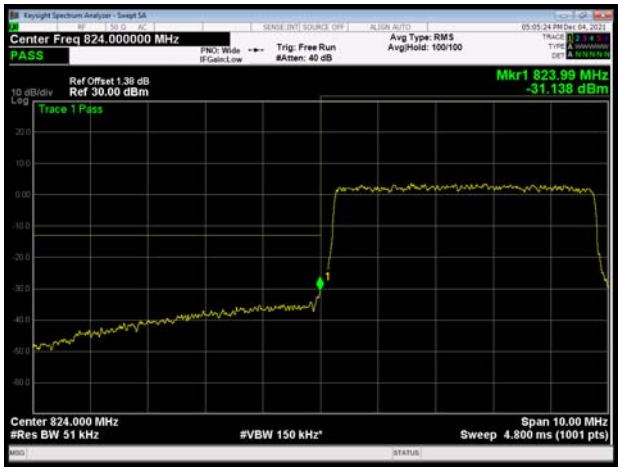
LTE Band 5 16QAM 5MHz CH-Low 1RB



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

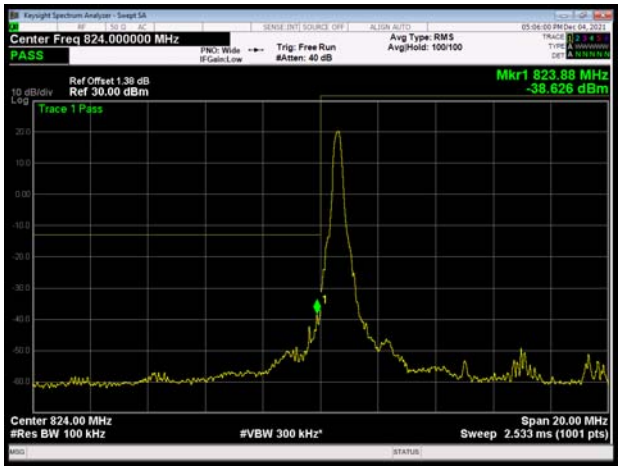


LTE Band 5 16QAM 5MHz CH-Low 100%RB

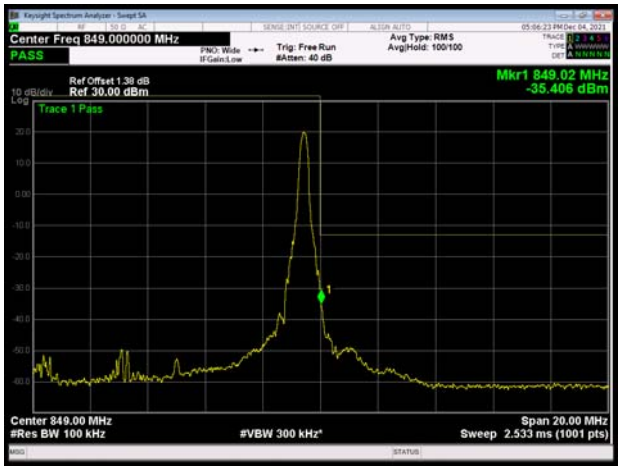


LTE Band 5 16QAM 5MHz CH-High 100%RB

LTE Band 5 16QAM 10MHz CH-Low 1RB



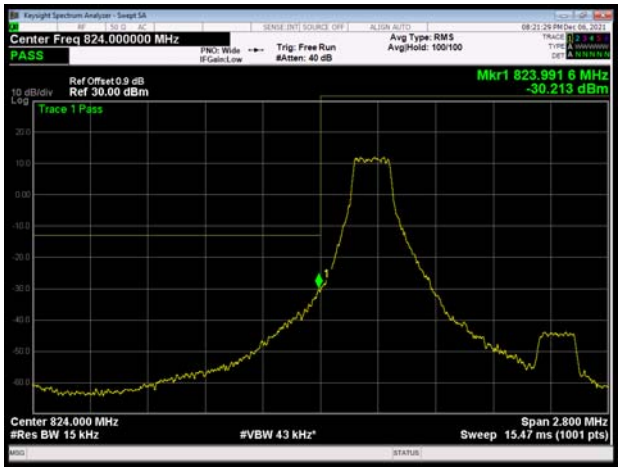
LTE Band 5 16QAM 10MHz CH-High 1RB



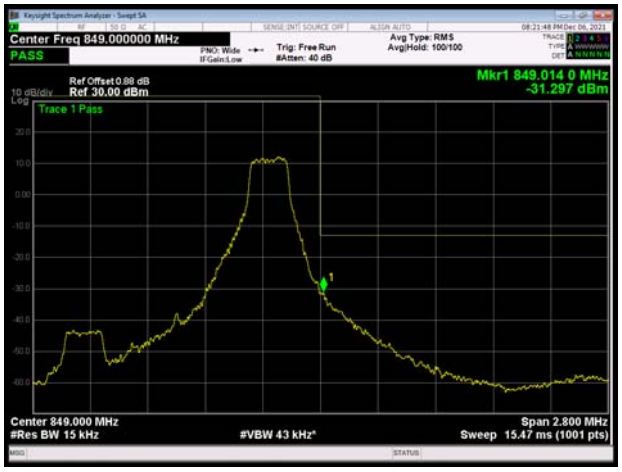
LTE Band 5 16QAM 10MHz CH-Low 100%RB

LTE Band 5 16QAM 10MHz CH-High 100%RB

LTE Band 5 64QAM 1.4MHz CH-Low 1RB



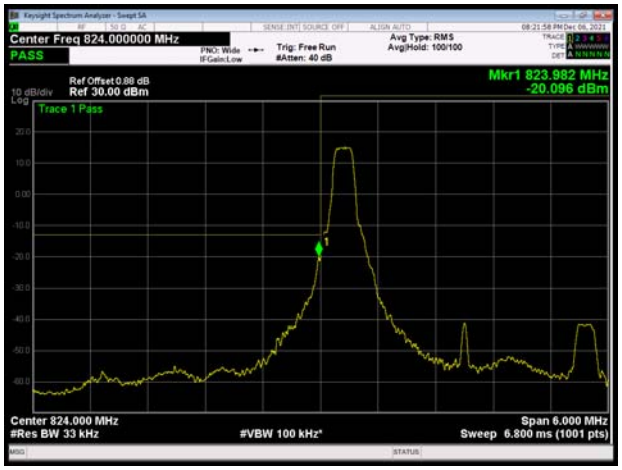
LTE Band 5 64QAM 1.4MHz CH-High 1RB



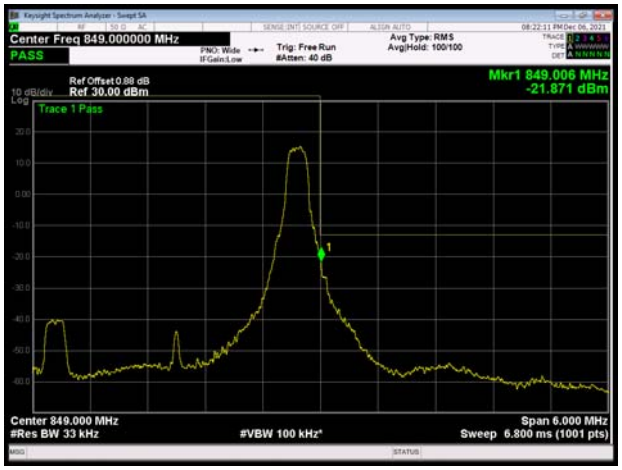
LTE Band 5 64QAM 1.4MHz CH-Low 100%RB

LTE Band 5 64QAM 1.4MHz CH-High 100%RB

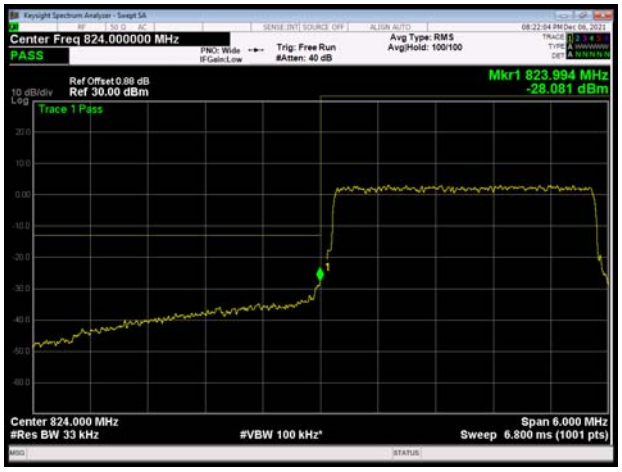
LTE Band 5 64QAM 3MHz CH-Low 1RB



LTE Band 5 64QAM 3MHz CH-High 1RB

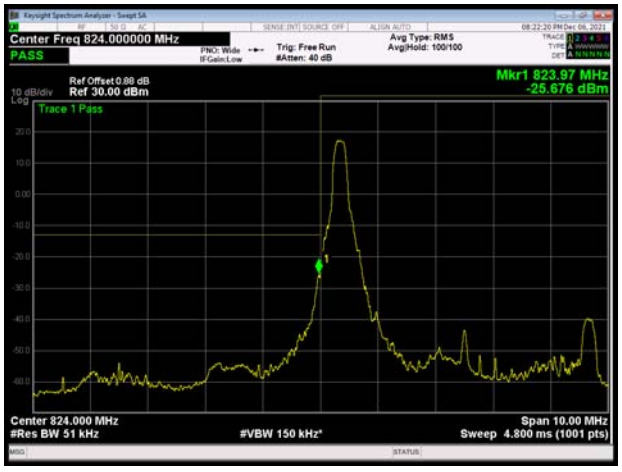


LTE Band 5 64QAM 3MHz CH-Low 100%RB

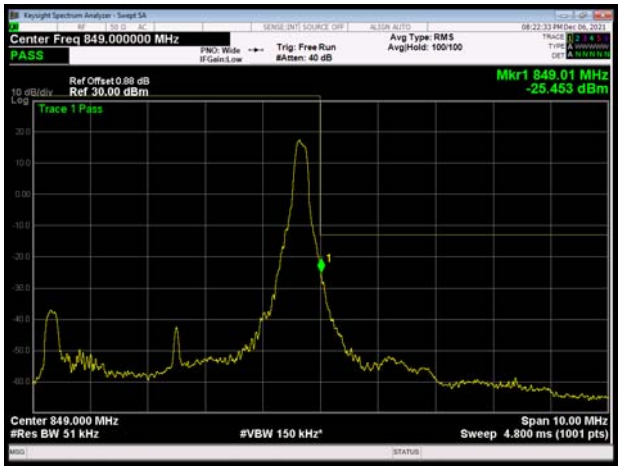


LTE Band 5 64QAM 3MHz CH-High 100%RB

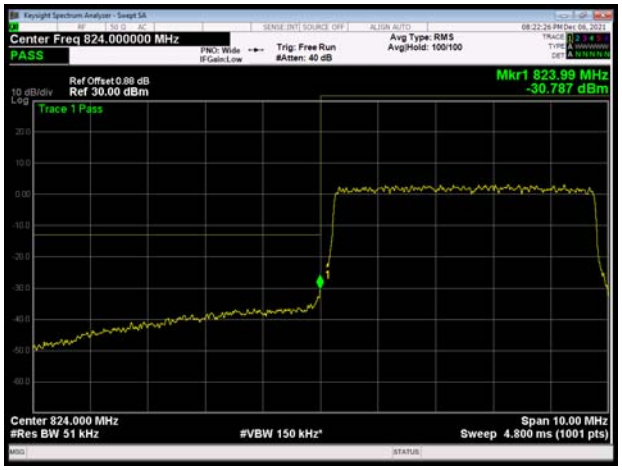
LTE Band 5 64QAM 5MHz CH-Low 1RB



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



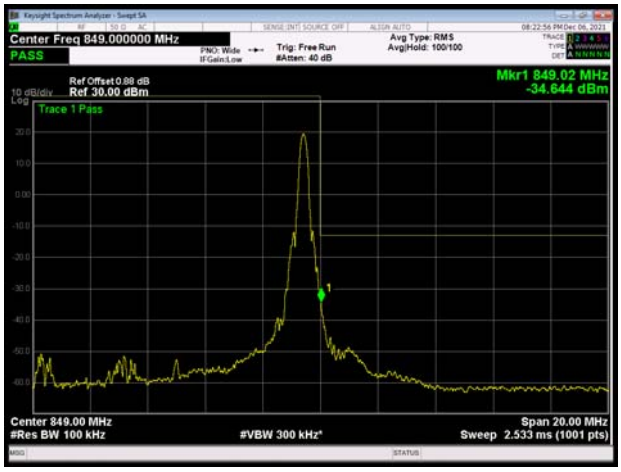
LTE Band 5 64QAM 5MHz CH-Low 100%RB



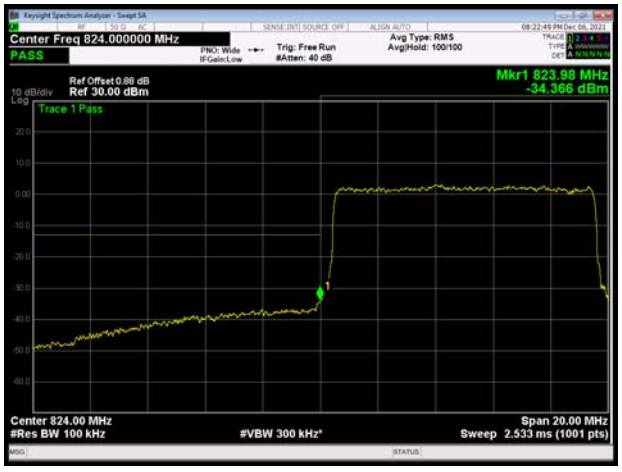
LTE Band 5 64QAM 5MHz CH-High 100%RB

LTE Band 5 64QAM 10MHz CH-Low 1RB

LTE Band 5 64QAM 10MHz CH-High 1RB



LTE Band 5 64QAM 10MHz CH-Low 100%RB



LTE Band 5 64QAM 10MHz CH-High 100%RB

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

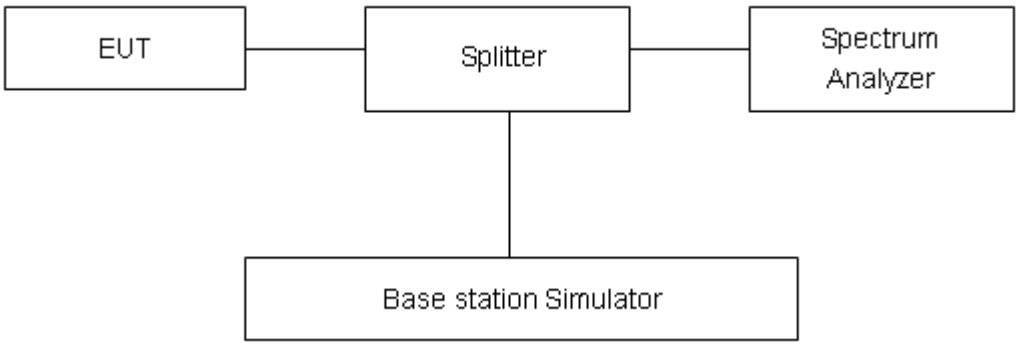
Ambient condition

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

Methods of Measurement

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

Test Setup



Limits

According to the Sec. 22.913(d), The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

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.

Test Results

Mode	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
WCDMA Band V (RMC)	4132	826.4	26.07	23.56	2.51	≤13	PASS
	4183	836.6	25.91	23.55	2.36	≤13	PASS
	4233	846.6	26.00	23.56	2.44	≤13	PASS

LTE Band 5								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	20407	824.7	26.31	22.17	4.14	≤13	PASS
		20525	836.5	26.28	22.18	4.10	≤13	PASS
		20643	848.3	26.24	22.10	4.14	≤13	PASS
	3	20415	825.5	26.44	22.28	4.16	≤13	PASS
		20525	836.5	26.26	22.19	4.07	≤13	PASS
		20635	847.5	26.29	22.20	4.09	≤13	PASS
	5	20425	826.5	26.54	22.31	4.23	≤13	PASS
		20525	836.5	26.41	22.29	4.12	≤13	PASS
		20625	846.5	26.56	22.30	4.26	≤13	PASS
	10	20450	829	26.60	22.33	4.27	≤13	PASS
		20525	836.5	26.52	22.28	4.24	≤13	PASS
		20600	844	26.76	22.24	4.52	≤13	PASS
16QAM	1.4	20407	824.7	26.25	21.27	4.98	≤13	PASS
		20525	836.5	26.25	21.20	5.05	≤13	PASS
		20643	848.3	26.10	21.12	4.98	≤13	PASS
	3	20415	825.5	26.36	21.29	5.07	≤13	PASS
		20525	836.5	26.18	21.23	4.95	≤13	PASS
		20635	847.5	26.23	21.28	4.95	≤13	PASS
	5	20425	826.5	26.40	21.32	5.08	≤13	PASS
		20525	836.5	26.27	21.28	4.99	≤13	PASS
		20625	846.5	26.35	21.26	5.09	≤13	PASS
	10	20450	829	26.46	21.33	5.13	≤13	PASS
		20525	836.5	26.35	21.27	5.08	≤13	PASS
		20600	844	26.61	21.26	5.35	≤13	PASS
64QAM	1.4	20407	824.7	25.84	20.83	5.01	≤13	PASS
		20525	836.5	25.86	20.79	5.07	≤13	PASS
		20643	848.3	25.75	20.66	5.09	≤13	PASS
	3	20415	825.5	25.91	20.83	5.08	≤13	PASS
		20525	836.5	25.84	20.78	5.06	≤13	PASS
		20635	847.5	25.83	20.82	5.01	≤13	PASS
	5	20425	826.5	25.97	20.80	5.17	≤13	PASS
		20525	836.5	25.88	20.80	5.08	≤13	PASS
		20625	846.5	25.95	20.77	5.18	≤13	PASS
	10	20450	829	26.04	20.85	5.19	≤13	PASS
		20525	836.5	25.97	20.79	5.18	≤13	PASS

		20600	844	26.18	20.79	5.39	≤13	PASS

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 -30°C to +50°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.

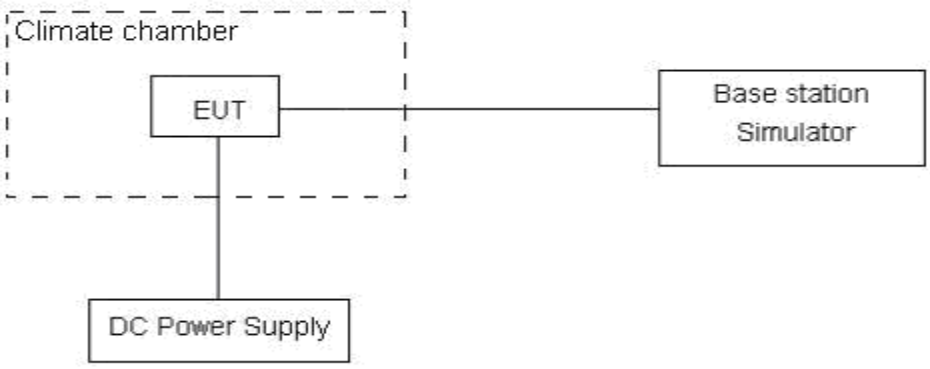
(3) Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements. Frequency Stability (Voltage Variation)

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 10.8V and 13.2V, with a nominal voltage of 12V.

Test setup



Limits

According to the Sec. 22.355, the frequency stability of the carrier shall be accurate to within 2.5 ppm of the received frequency for mobile stations.

Limits	≤ 2.5 ppm

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.

Test Result

WCDMA Band V						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal（25℃）	Normal	7.10	11.61	0.00849	0.01388	PASS
Extreme（50℃）		3.19	16.87	0.00381	0.02017	PASS
Extreme（40℃）		14.30	17.52	0.01709	0.02094	PASS
Extreme（30℃）		9.67	8.95	0.01155	0.01070	PASS
Extreme（20℃）		14.31	11.50	0.01711	0.01375	PASS
Extreme（10℃）		9.05	7.78	0.01082	0.00930	PASS
Extreme（0℃）		9.88	12.66	0.01181	0.01513	PASS
Extreme（-10℃）		8.80	1.42	0.01052	0.00170	PASS
Extreme（-20℃）		5.97	13.03	0.00713	0.01558	PASS
Extreme（-30℃）		16.46	6.13	0.01967	0.00732	PASS
25℃	LV	17.56	16.05	0.02099	0.01918	PASS
	HV	14.09	6.35	0.01684	0.00759	PASS

LTE Band 5								
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	8.43	2.79	11.17	0.01008	0.00333	0.01336	PASS
Extreme（50℃）		15.53	15.16	15.20	0.01856	0.01813	0.01817	PASS
Extreme（40℃）		13.16	6.31	9.77	0.01574	0.00755	0.01169	PASS
Extreme（30℃）		2.88	6.90	16.73	0.00344	0.00825	0.02001	PASS
Extreme（20℃）		5.94	1.12	10.75	0.00710	0.00134	0.01285	PASS
Extreme（10℃）		17.10	13.56	8.70	0.02044	0.01621	0.01040	PASS
Extreme（0℃）		3.19	5.76	8.56	0.00381	0.00689	0.01023	PASS
Extreme（-10℃）		2.86	7.88	12.86	0.00342	0.00942	0.01537	PASS
Extreme（-20℃）		10.11	13.77	8.76	0.01209	0.01646	0.01047	PASS
Extreme（-30℃）		9.49	14.07	13.95	0.01135	0.01682	0.01667	PASS
25℃	LV	2.59	9.24	11.23	0.00310	0.01105	0.01342	PASS
	HV	2.88	9.42	9.68	0.00344	0.01126	0.01158	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	2.98	13.71	10.70	0.00356	0.01638	0.01279	PASS
Extreme（50℃）		14.06	14.21	17.91	0.01681	0.01699	0.02141	PASS
Extreme（40℃）		15.58	10.84	13.06	0.01863	0.01296	0.01561	PASS
Extreme（30℃）		1.92	12.20	6.61	0.00230	0.01459	0.00790	PASS
Extreme（20℃）		6.02	4.47	6.20	0.00719	0.00535	0.00742	PASS
Extreme（10℃）		14.62	7.19	4.82	0.01748	0.00859	0.00576	PASS
Extreme（0℃）		8.81	13.90	11.61	0.01053	0.01661	0.01388	PASS
Extreme（-10℃）		7.29	13.34	4.46	0.00871	0.01595	0.00533	PASS
Extreme（-20℃）		16.13	10.43	3.06	0.01928	0.01247	0.00366	PASS
Extreme（-30℃）		16.24	13.60	16.82	0.01941	0.01626	0.02010	PASS
25℃	LV	14.19	6.53	9.83	0.01697	0.00781	0.01175	PASS
	HV	13.82	12.83	14.48	0.01652	0.01533	0.01731	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	15.19	7.48	14.07	0.01816	0.00894	0.01682	PASS
Extreme（50℃）		16.01	13.26	7.87	0.01913	0.01585	0.00940	PASS
Extreme（40℃）		15.06	13.88	5.12	0.01801	0.01659	0.00612	PASS
Extreme（30℃）		5.46	17.37	2.69	0.00653	0.02077	0.00322	PASS
Extreme（20℃）		6.16	17.33	8.11	0.00736	0.02072	0.00969	PASS
Extreme（10℃）		15.57	15.99	1.33	0.01861	0.01912	0.00159	PASS
Extreme（0℃）		11.40	13.75	6.58	0.01363	0.01644	0.00787	PASS
Extreme（-10℃）		3.93	14.61	14.23	0.00470	0.01746	0.01701	PASS
Extreme（-20℃）		17.26	3.97	13.62	0.02064	0.00474	0.01628	PASS
Extreme（-30℃）		17.33	7.00	15.98	0.02072	0.00836	0.01911	PASS
25℃	LV	8.91	7.45	7.31	0.01066	0.00891	0.00874	PASS
	HV	9.24	9.65	16.03	0.01105	0.01154	0.01916	PASS

Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	

Normal（25℃）	Normal	9.54	4.56	17.82	0.01141	0.00545	0.02130	PASS
Extreme（50℃）		12.30	2.00	13.32	0.01470	0.00239	0.01593	PASS
Extreme（40℃）		2.16	13.85	14.14	0.00258	0.01656	0.01690	PASS
Extreme（30℃）		1.32	3.05	12.04	0.00158	0.00365	0.01439	PASS
Extreme（20℃）		4.37	5.63	10.34	0.00522	0.00673	0.01236	PASS
Extreme（10℃）		8.79	2.75	5.61	0.01051	0.00329	0.00671	PASS
Extreme（0℃）		10.15	15.88	14.27	0.01213	0.01898	0.01706	PASS
Extreme（-10℃）		9.65	4.99	7.67	0.01154	0.00597	0.00917	PASS
Extreme（-20℃）		2.81	11.79	16.02	0.00336	0.01410	0.01915	PASS
Extreme（-30℃）		15.43	6.00	4.16	0.01844	0.00717	0.00497	PASS
25℃	LV	9.12	3.97	10.88	0.01090	0.00474	0.01301	PASS
	HV	5.71	5.94	15.66	0.00682	0.00710	0.01872	PASS

5.6. Spurious Emissions at Antenna Terminals

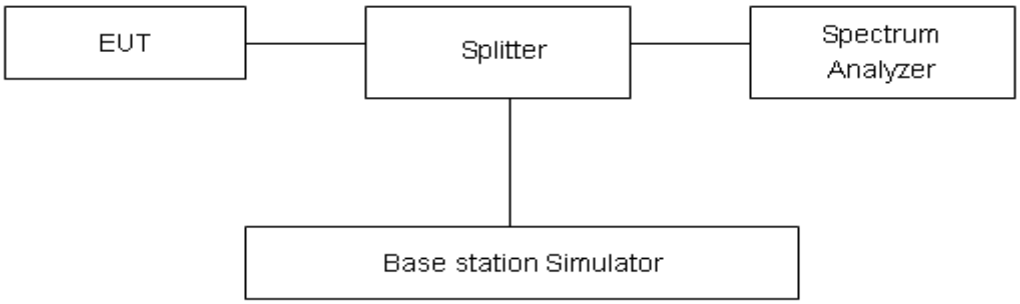
Ambient condition

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 are set to 100 kHz and VBW are set to 300 kHz for below 1G, RBW are set to 1MHz and VBW are set to 3MHz for above 1G, 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 22.917(a) specifies that “The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.”

Limit	-13 dBm

Measurement Uncertainty

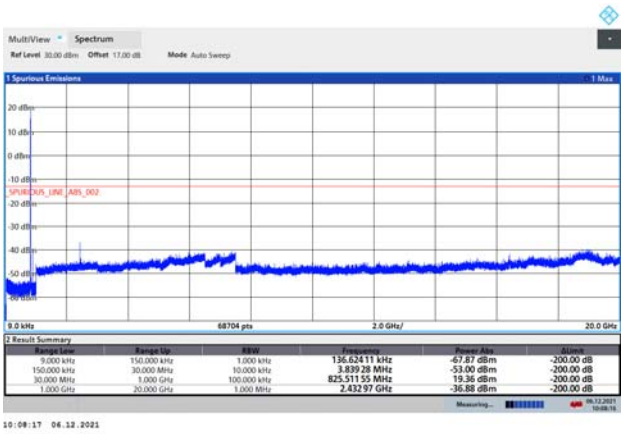
The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor k = 1.96.

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

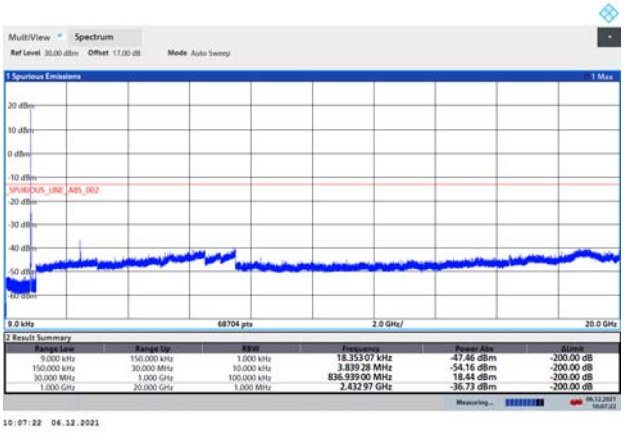
Test Result

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.

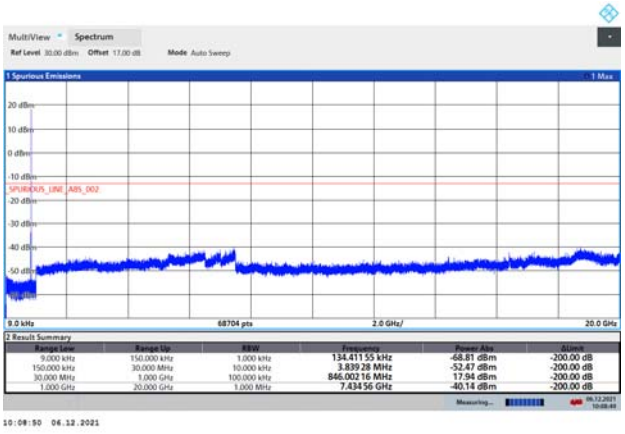
WCDMA BAND V CH-Low 9kHz ~ 20GHz



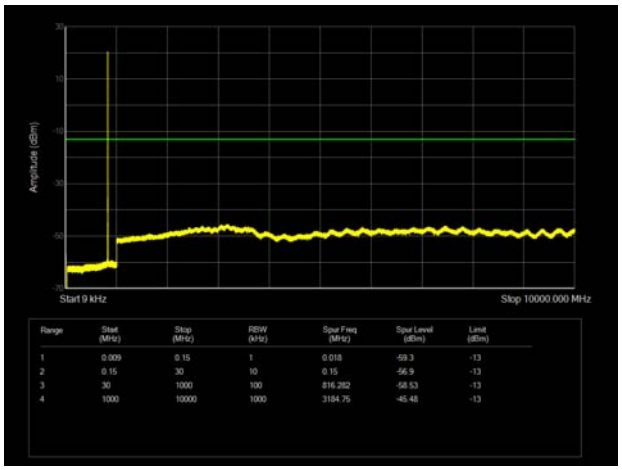
WCDMA BAND V CH-Middle 9kHz ~ 20GHz



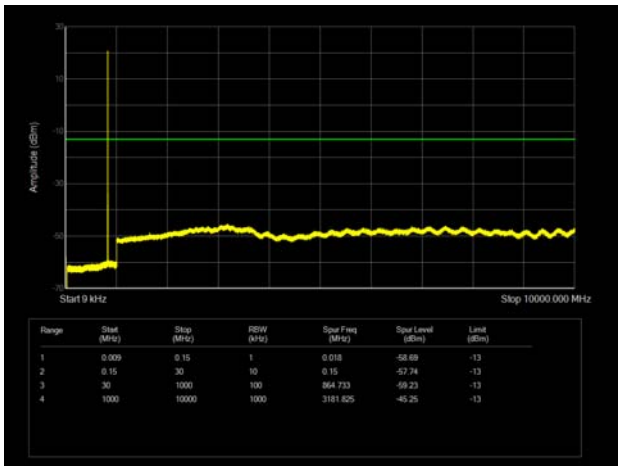
WCDMA BAND V CH-High 9kHz ~ 20GHz



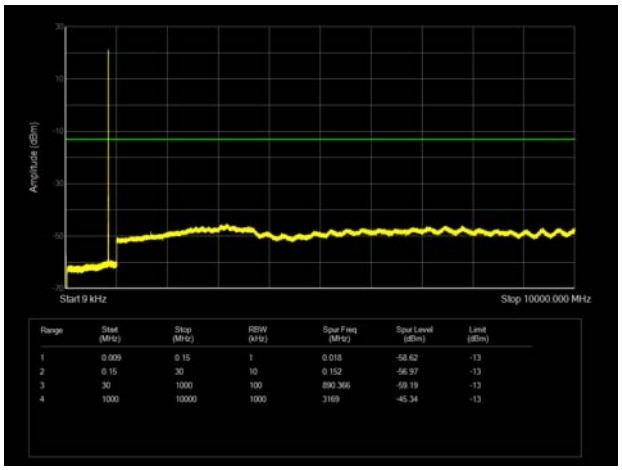
LTE Band 5 1.4MHz CH-Low 9kHz~10GHz



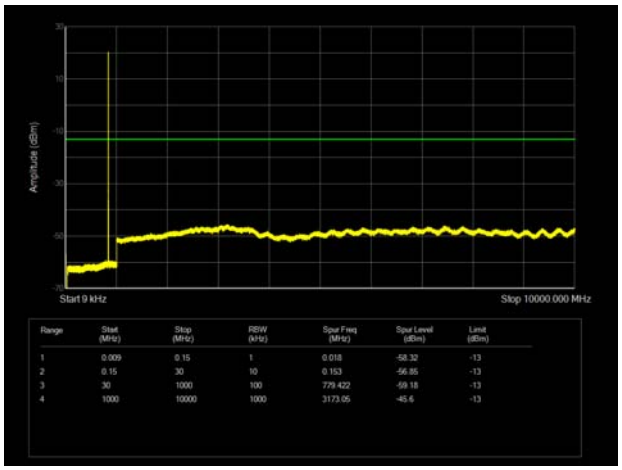
LTE Band 5 3MHz CH-Low 9kHz~10GHz



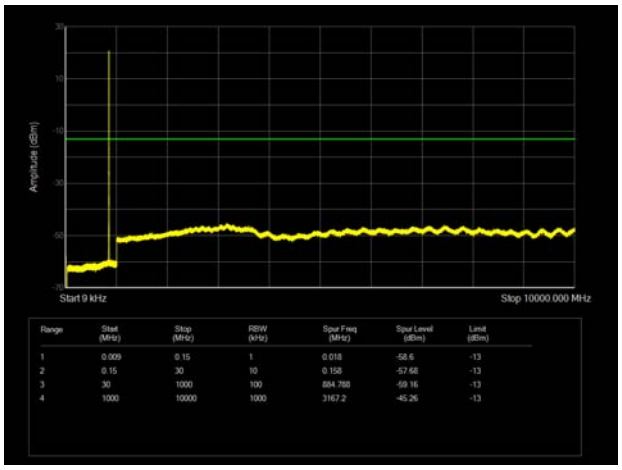
LTE Band 5 1.4MHz CH-Middle 9kHz~10GHz



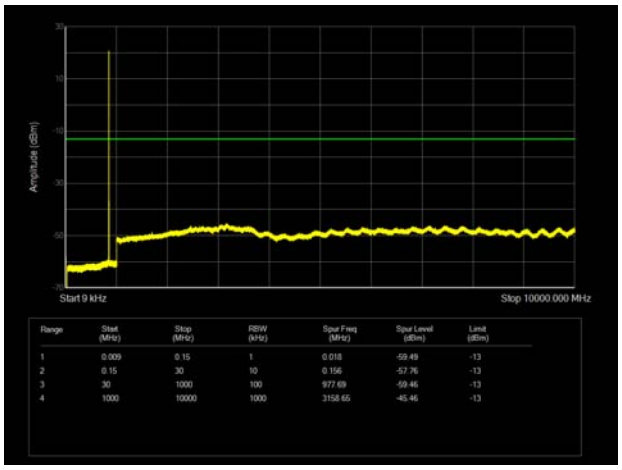
LTE Band 5 3MHz CH-Middle 9kHz~10GHz



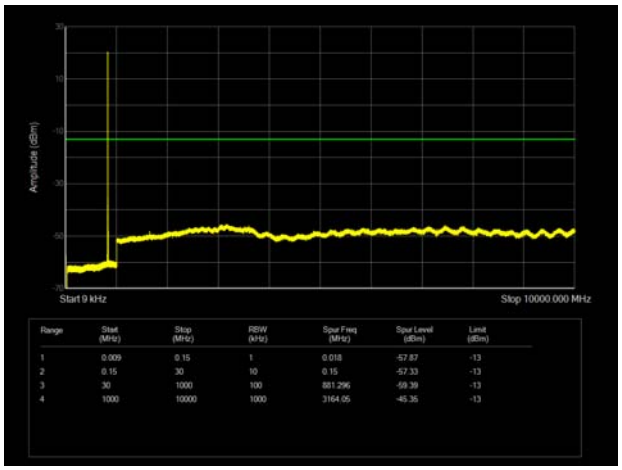
LTE Band 5 1.4MHz CH-High 9kHz~10GHz



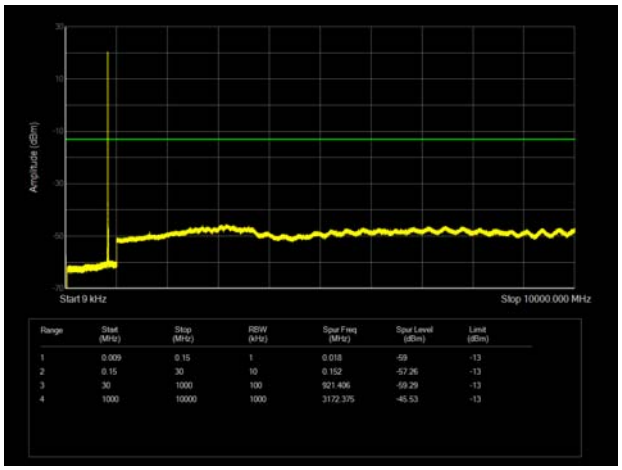
LTE Band 5 3MHz CH-High 9kHz~10GHz



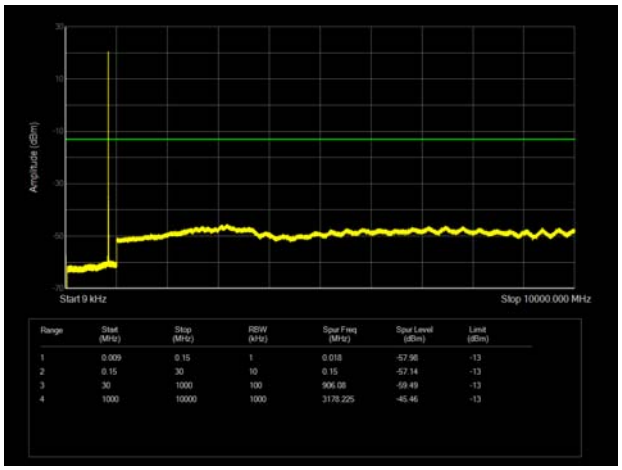
LTE Band 5 5MHz CH-Low 9kHz~10GHz



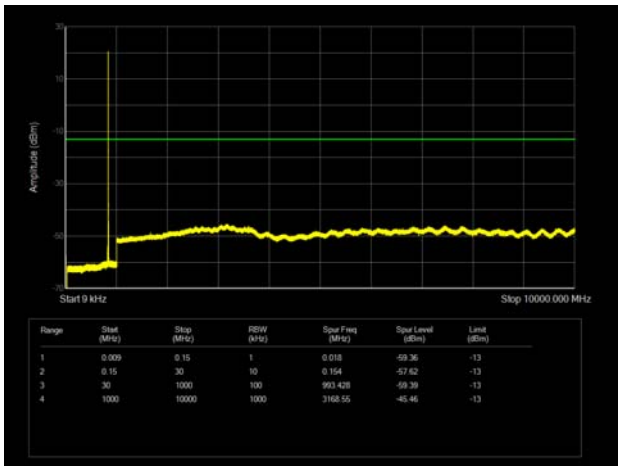
LTE Band 5 10MHz CH-Low 9kHz~10GHz



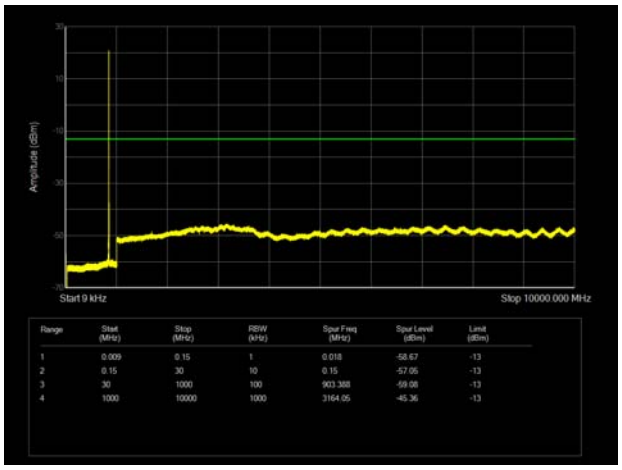
LTE Band 5 5MHz CH-Middle 9kHz~10GHz



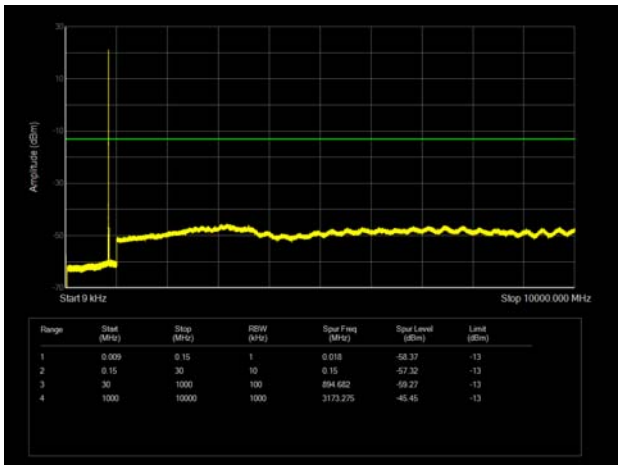
LTE Band 5 10MHz CH-Middle 9kHz~10GHz



LTE Band 5 5MHz CH-High 9kHz~10GHz



LTE Band 5 10MHz CH-High 9kHz~10GHz



5.7. Radiates Spurious Emission

Ambient condition

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

Method of Measurement

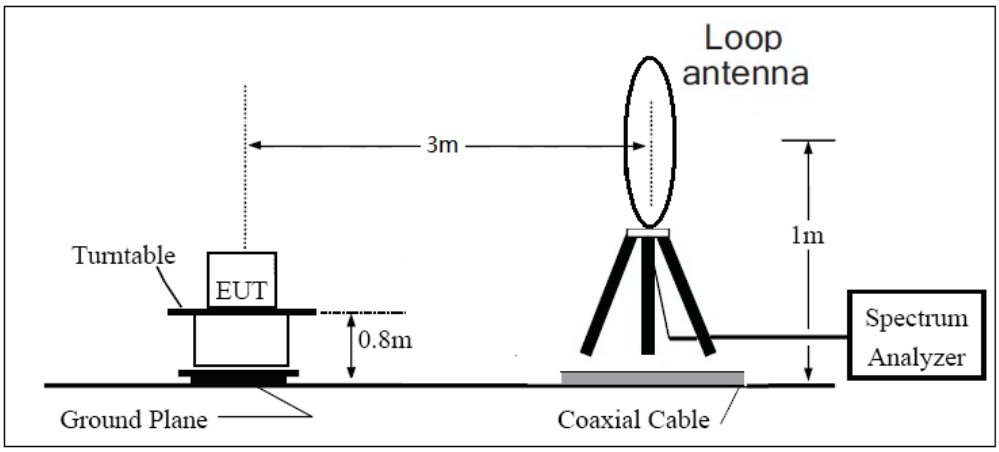
1. The testing follows FCC KDB 971168 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable 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=100kHz, VBW=300kHz for 30MHz to 1GHz and RBW=1MHz, VBW=3MHz for above 1GHz, 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

= EIRP-2.15dB.

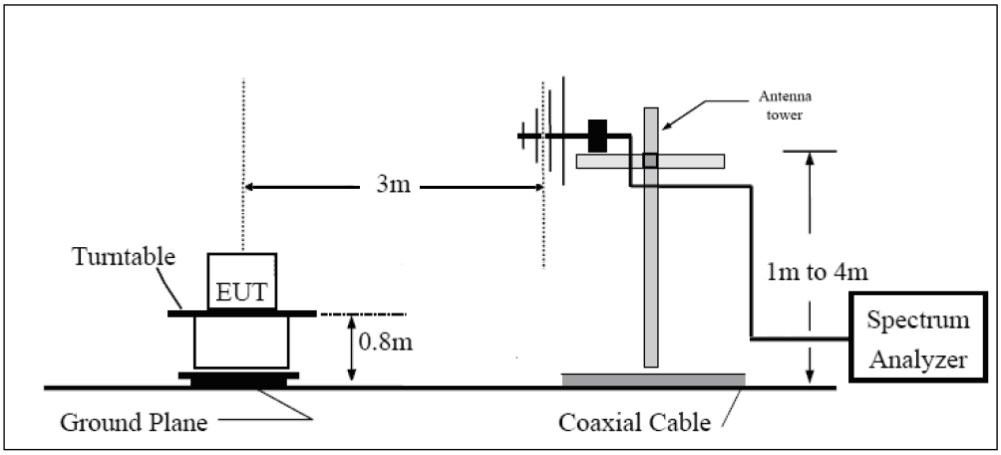
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

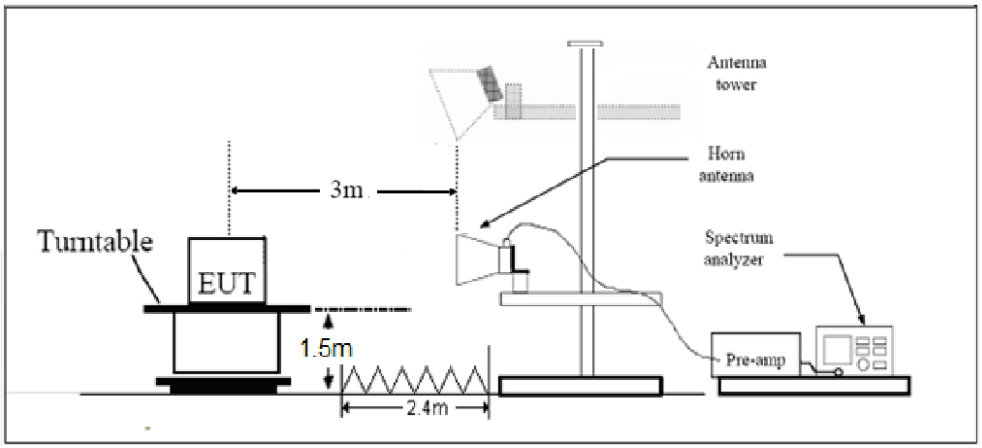
9KHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

Rule Part 22.917(a) specifies that “The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.”

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.

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.

WCDMA Band V CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1671.20	-64.29	1.70	8.70	Horizontal	-59.44	-13.00	46.44	315
3	2510.40	-65.03	2.30	12.00	Horizontal	-57.48	-13.00	44.48	90
4	3346.40	-64.82	2.70	12.70	Horizontal	-56.97	-13.00	43.97	90
5	4183.00	-63.35	3.00	12.50	Horizontal	-56.00	-13.00	43.00	45
6	5019.60	-60.20	3.40	12.50	Horizontal	-53.25	-13.00	40.25	315
7	5856.20	-61.55	3.40	12.80	Horizontal	-54.30	-13.00	41.30	90
8	6692.80	-57.32	4.10	11.50	Horizontal	-52.07	-13.00	39.07	45
9	7529.40	-55.92	4.20	12.20	Horizontal	-50.07	-13.00	37.07	0
10	8366.00	-55.99	4.30	12.50	Horizontal	-49.94	-13.00	36.94	90
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 5 1.4MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1671.60	-65.16	1.70	8.70	Horizontal	-60.31	-13.00	47.31	0
3	2507.40	-63.31	2.30	12.00	Horizontal	-55.76	-13.00	42.76	90
4	3343.20	-65.27	2.70	12.70	Horizontal	-57.42	-13.00	44.42	45
5	4179.00	-63.26	3.00	12.50	Horizontal	-55.91	-13.00	42.91	270
6	5014.80	-60.86	3.40	12.50	Horizontal	-53.91	-13.00	40.91	180
7	5850.60	-61.71	3.40	12.80	Horizontal	-54.46	-13.00	41.46	0
8	6686.40	-57.47	4.10	11.50	Horizontal	-52.22	-13.00	39.22	0
9	7522.20	-56.89	4.20	12.20	Horizontal	-51.04	-13.00	38.04	90
10	8358.00	-56.13	4.30	12.50	Horizontal	-50.08	-13.00	37.08	315
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 5 5MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1668.60	-64.97	1.70	8.70	Horizontal	-60.12	-13.00	47.12	135
3	2503.30	-64.66	2.30	12.00	Horizontal	-57.11	-13.00	44.11	135
4	3337.50	-65.01	2.70	12.70	Horizontal	-57.16	-13.00	44.16	90
5	4171.88	-63.45	3.00	12.50	Horizontal	-56.10	-13.00	43.10	90
6	5006.25	-60.08	3.40	12.50	Horizontal	-53.13	-13.00	40.13	180
7	5840.63	-63.02	3.40	12.80	Horizontal	-55.77	-13.00	42.77	45
8	6675.00	-58.06	4.10	11.50	Horizontal	-52.81	-13.00	39.81	270
9	7509.38	-55.60	4.20	12.20	Horizontal	-49.75	-13.00	36.75	90
10	8343.75	-56.92	4.30	12.50	Horizontal	-50.87	-13.00	37.87	180
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 5 10MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1664.40	-64.35	1.70	8.70	Horizontal	-59.50	-13.00	46.50	180
3	2496.60	-64.67	2.30	12.00	Horizontal	-57.12	-13.00	44.12	90
4	3346.00	-64.75	2.70	12.70	Horizontal	-56.90	-13.00	43.90	0
5	4182.50	-62.87	3.00	12.50	Horizontal	-55.52	-13.00	42.52	0
6	5019.00	-59.84	3.40	12.50	Horizontal	-52.89	-13.00	39.89	45
7	5855.50	-62.15	3.40	12.80	Horizontal	-54.90	-13.00	41.90	270
8	6692.00	-57.84	4.10	11.50	Horizontal	-52.59	-13.00	39.59	135
9	7528.50	-55.81	4.20	12.20	Horizontal	-49.96	-13.00	36.96	45
10	8365.00	-56.44	4.30	12.50	Horizontal	-50.39	-13.00	37.39	90
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.									

6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113645	2021-05-15	2022-05-14
Climate Chamber	Weiss	VT4002	58226119450010	2021-05-15	2022-05-14
Spectrum Analyzer	Keysight	N9020A	MY52330084	2021-05-15	2022-05-14
Universal Radio Communication Tester	Key sight	E5515C	GB44400275	2021-05-15	2022-05-14
Signal Analyzer	R&S	FSV3030	101411	2020-12-13	2021-12-12
				2021-12-12	2022-12-12
Signal Analyzer	R&S	FSV30	100815	2020-12-17	2021-12-16
				2021-12-12	2022-12-11
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	01439	2021-06-30	2024-06-29
Horn Antenna	Schwarzbeck	BBHA 9120D	01799	2019-09-21	2022-09-20
Software	R&S	EMC32	9.26.0	/	/

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

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.