RF TEST REPORT

Applicant	MobiWire SAS
FCC ID	QPN-H6821
Product	4G Smart Phone
Brand	MobiWire; MobiWire; Altice
Model	MobiWire H6821; MBW Vodafone Smart V22; Altice S64
Report No.	R2206A0570-R1
Issue Date	August 17, 2022

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2021)/ FCC CFR 47 Part 22H (2021)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Xu Ying *Approved by: Xu Kai*

TA Technology (Shanghai) Co., Ltd.

Building 3, No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
TEL: +86-021-50791141/2/3
FAX: +86-021-50791141/2/3-8000

TABLE OF CONTENT

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: June 27, 2022 ~ July 15, 2022 Date of Sample Received: March 24, 2022			
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:	Building 3, No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
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	MobiWire SAS
Applicant address	107 Boulevard de la Mission Marchand, 92400 Courbevoie, France.
Manufacturer	MobiWire SAS
Manufacturer address	107 Boulevard de la Mission Marchand, 92400 Courbevoie, France.

2.2. General Information

EUT Description		
Model	MobiWire H6821; MBW Vodafone Smart V22; Altice S64	
IMEI	353539550000384	
Hardware Version	V00	
Software Version	MobiWire_H6821M_V01	
Power Supply	Battery / AC adapter	
Antenna Type	Internal Antenna	
Antenna Gain	Band	Antenna Gain(dBi)
	GSM850	-2.5
	WCDMA Band V	-2.5
	LTE Band 5	-2.5
Test Mode(s)	GSM 850; WCDMA Band V; LTE Band 5;	
Test Modulation	(GSM/GPRS)GMSK, (EGPRS) GMSK/ 8PSK; (WCDMA) BPSK, QPSK,16QAM; (LTE) QPSK, 16QAM;	
GPRS Multislot Class	12	
EGPRS Multislot Class	12	
HSDPA UE Category	14	
HSUPA UE Category	7	
DC-HSDPA UE Category	24	
HSPA+ UE Category	24	
LTE Release	11	
Maximum E.R.P.	GSM 850:	28.42dBm
	WCDMA Band V:	19.01dBm
	LTE Band 5:	19.89dBm
Rated Power Supply Voltage	3.85V	
Operating Voltage	Minimum: 3.60V Maximum: 4.40V	
Operating Temperature	Lowest: -10°C Highest: +55°C	

Testing Temperature	Lowest: -30°C Highest: +50°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM850	824 ~ 849	869 ~ 894
	WCDMA Band V	824 ~ 849	869 ~ 894
	LTE Band 5	824 ~ 849	869 ~ 894
EUT Accessory			
Adapter	Manufacturer: Dongguan Aohai Technology Co., Ltd. Model: A18A-050100U-US2		
Battery	Manufacturer: NINGBO VEKEN BATTERY CO., LTD Model: 178249203		
Earphone	Manufacturer: JIU JIANG JUWEI ELECTRONICS CO.,LTD Model: JWEP0957-M01R		
USB Cable	Manufacturer: SHENZHEN FKY-QY HARDWARE ELECTRONIC CO.,LTD Model: AM/MICRO5P		
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.			

Item	Configure 1	Configure 2
Components on PCB changes	/	add second memory
Others	The same	The same
Note: Customer declaration, two models are the same, except for the memory, There are more than one Configure, each one should be applied throughout the compliance test respectively, and however, only the worst case (Configure 1) will be recorded in this report.		

Three models: MobiWire H6821; MBW Vodafone Smart V22; Altice S64
The difference:
MBW Vodafone Smart V22, Altice S64:
1. Battery silkscreen logo is different.
2. Different chargers are used. MBW Vodafone Smart V22 use AU charger, Altice S64 use US charger.
MobiWire H6821 is same as MBW Vodafone Smart V22.
And only the data for MobiWire H6821 is recorded in this report.

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 (2021)

FCC CFR47 Part 2 (2021)

Reference standard:
ANSI C63.26-2015

KDB 971168 D01 Power Meas License Digital Systems v03r01

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 (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 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 850	WCDMA Band V
RF Power Output and Effective Radiated power	GSM GPRS EGPRS	RMC HSDPA/HSUPA DC-HSDPA/HSPA+
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

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	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 Antenna Terminals	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.											

5. Test Case

5.1. RF Power Output and Effective Radiated Power

Ambient condition

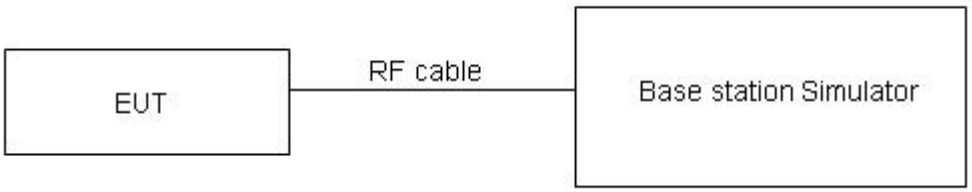
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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

Refer to the section 6.1 of this report for test data.

5.2. Occupied Bandwidth

Ambient condition

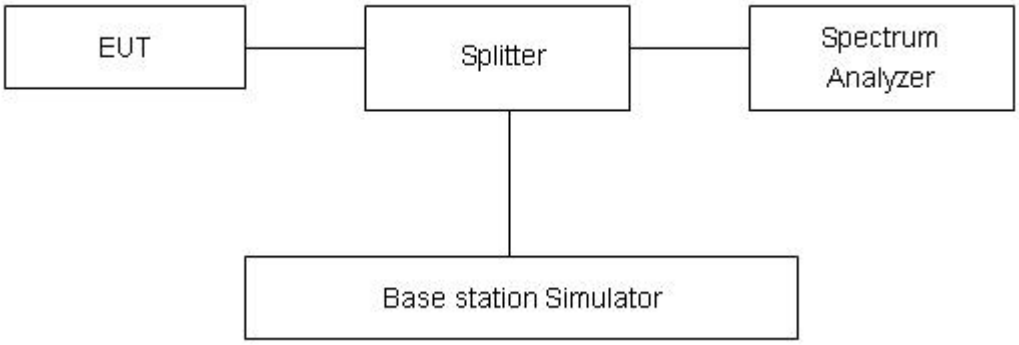
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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 Results

Refer to the section 6.2 of this report for test data.

5.3. Band Edge Compliance

Ambient condition

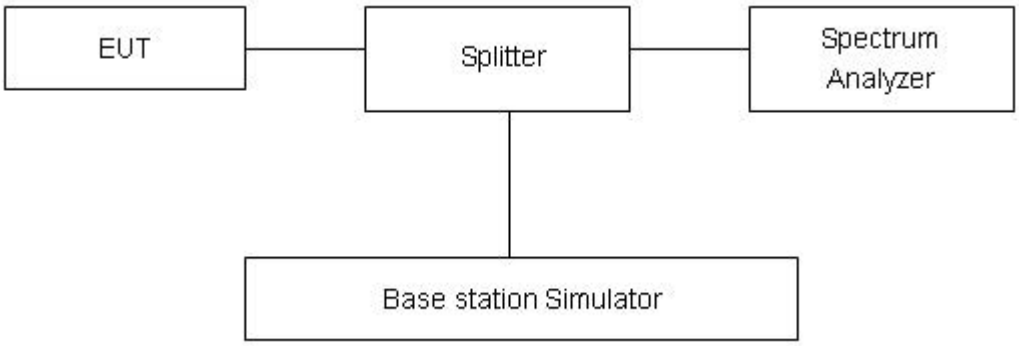
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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 Results

Refer to the section 6.3 of this report for test data.

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

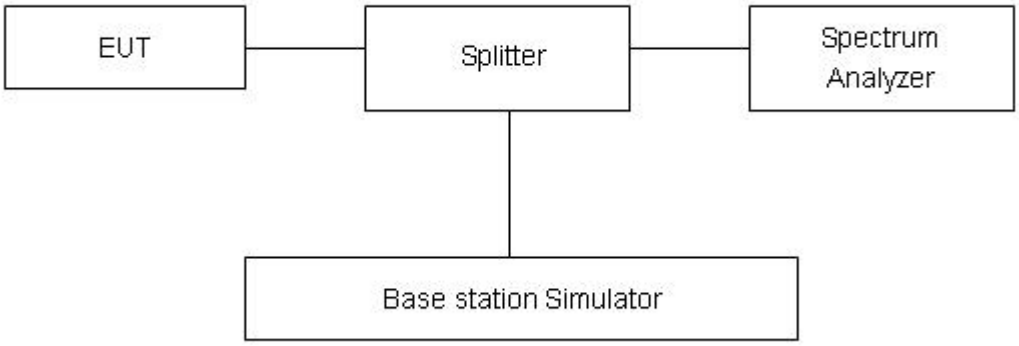
Ambient condition

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

Refer to the section 6.4 of this report for test data.

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.

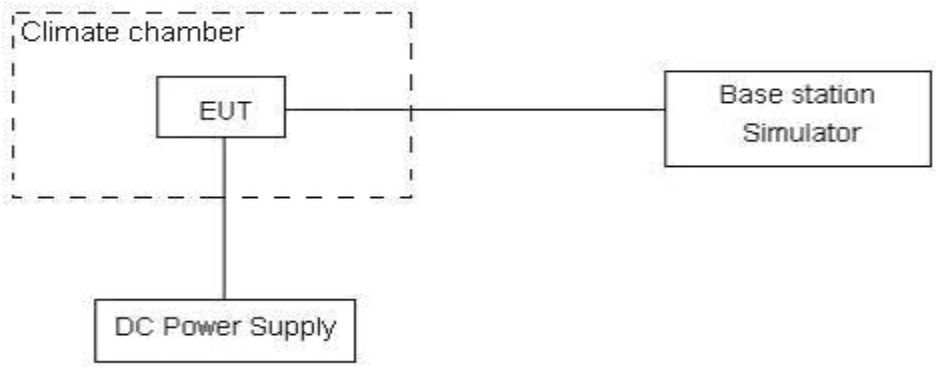
(3) Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements. Frequency Stability (Voltage Variation)

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 3.60 V and 4.40 V, with a nominal voltage of 3.85V.

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 Results

Refer to the section 6.5 of this report for test data.

5.6. Spurious Emissions at Antenna Terminals

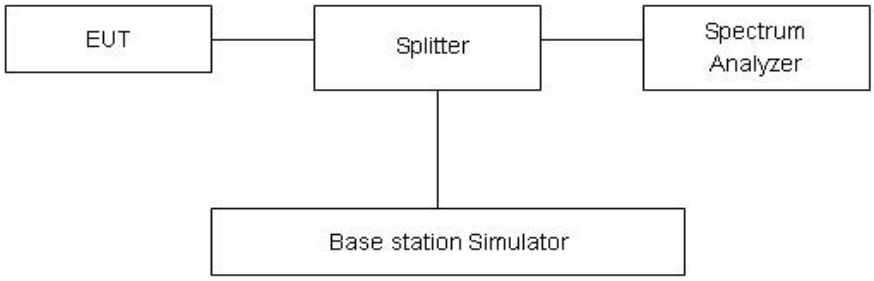
Ambient condition

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 Results

Refer to the section 6.6 of this report for test data.

5.7. Radiates Spurious Emission

Ambient condition

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

Method of Measurement

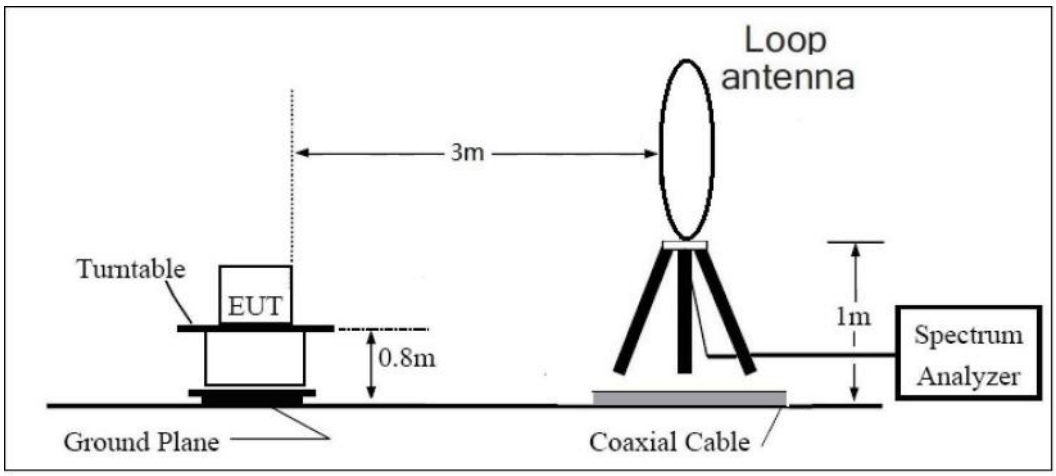
1. The testing follows FCC KDB 971168 v03r01 Section 5.8 and ANSI C63.26-2015.
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable 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, 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.

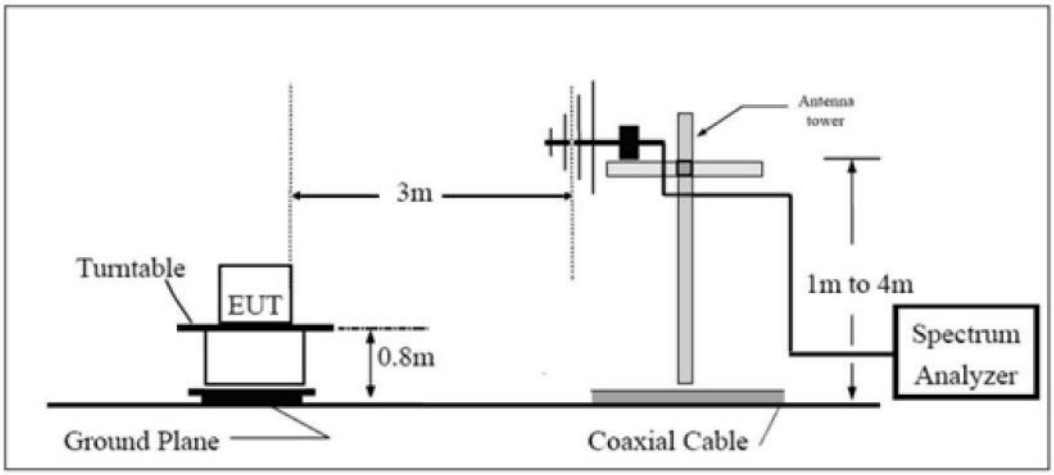
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

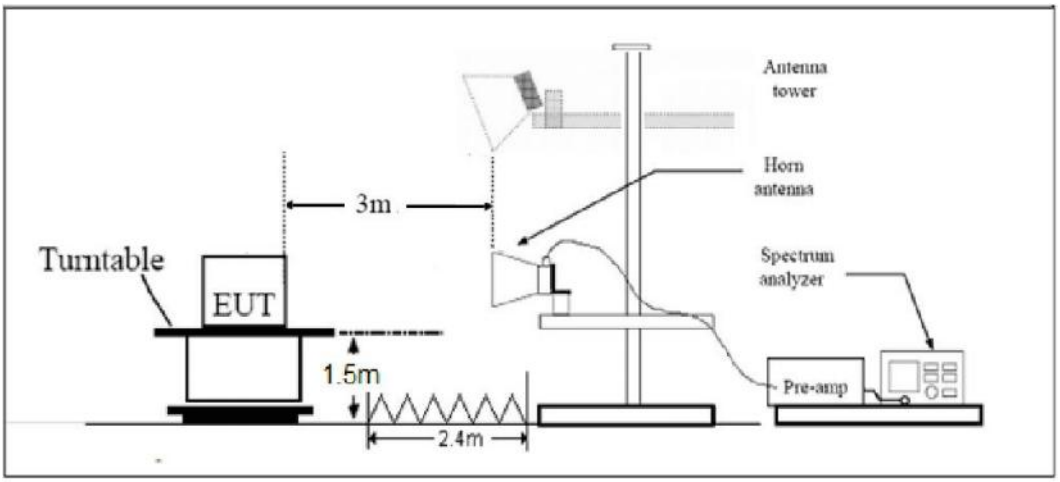
9KHz~ 30MHz



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 Results

Refer to the section 6.7 of this report for test data.

6. Test Result

6.1. RF Power Output and Effective Radiated Power

GSM 850		Maximum Output Power (dBm)			ERP (dBm)		
		Channel 128	Channel 190	Channel 251	Channel 128	Channel 190	Channel 251
		824.2 (MHz)	836.6 (MHz)	848.8 (MHz)	824.2 (MHz)	836.6 (MHz)	848.8 (MHz)
GSM(GMSK)	Results	33.00	33.07	33.06	28.35	28.42	28.41
GPRS (GMSK)	1TXslot	32.98	33.02	33.03	28.33	28.37	28.38
	2TXslots	30.93	30.96	30.99	26.28	26.31	26.34
	3TXslots	28.94	28.93	28.95	24.29	24.28	24.30
	4TXslots	27.95	27.97	27.98	23.30	23.32	23.33
EGPRS (8PSK)	1TXslot	26.44	26.46	26.16	21.79	21.81	21.51
	2TXslots	25.21	25.32	25.07	20.56	20.67	20.42
	3TXslots	22.95	22.94	22.42	18.30	18.29	17.77
	4TXslots	21.56	21.58	21.35	16.91	16.93	16.70

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		23.66	23.65	23.54	19.01	19.00	18.89
HSDPA	Sub - Test 1	23.12	23.07	22.98	18.47	18.42	18.33
	Sub - Test 2	23.11	23.09	22.95	18.46	18.44	18.30
	Sub - Test 3	22.58	22.59	22.47	17.93	17.94	17.82
	Sub - Test 4	22.59	22.60	22.45	17.94	17.95	17.80
HSUPA	Sub - Test 1	23.08	23.06	22.93	18.43	18.41	18.28
	Sub - Test 2	22.07	22.04	21.92	17.42	17.39	17.27
	Sub - Test 3	22.54	22.52	22.41	17.89	17.87	17.76
	Sub - Test 4	22.00	22.01	21.89	17.35	17.36	17.24
	Sub - Test 5	23.01	22.99	22.87	18.36	18.34	18.22
DC-HSDPA	Sub - Test 1	23.00	23.01	22.88	18.35	18.36	18.23
	Sub - Test 2	22.99	23.00	22.87	18.34	18.35	18.22
	Sub - Test 3	22.57	22.49	22.38	17.92	17.84	17.73

	Sub - Test 4	22.56	22.48	22.37	17.91	17.83	17.72
HSPA+	16QAM	22.55	22.56	22.44	17.90	17.91	17.79

LTE Band 5							
Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	ERP(dBm)	Verdict
1.4	20407	1	#0	QPSK	24.32	19.67	PASS
1.4	20407	1	#Mid	QPSK	24.54	19.89	PASS
1.4	20407	1	#Max	QPSK	24.31	19.66	PASS
1.4	20407	3	#0	QPSK	24.30	19.65	PASS
1.4	20407	3	#Mid	QPSK	24.32	19.67	PASS
1.4	20407	3	#Max	QPSK	24.33	19.68	PASS
1.4	20407	6	#0	QPSK	23.30	18.65	PASS
1.4	20407	1	#0	16QAM	23.04	18.39	PASS
1.4	20407	1	#Mid	16QAM	23.28	18.63	PASS
1.4	20407	1	#Max	16QAM	23.05	18.40	PASS
1.4	20407	3	#0	16QAM	23.31	18.66	PASS
1.4	20407	3	#Mid	16QAM	23.34	18.69	PASS
1.4	20407	3	#Max	16QAM	23.39	18.74	PASS
1.4	20407	6	#0	16QAM	22.32	17.67	PASS
1.4	20525	1	#0	QPSK	24.21	19.56	PASS
1.4	20525	1	#Mid	QPSK	24.42	19.77	PASS
1.4	20525	1	#Max	QPSK	24.21	19.56	PASS
1.4	20525	3	#0	QPSK	24.32	19.67	PASS
1.4	20525	3	#Mid	QPSK	24.30	19.65	PASS
1.4	20525	3	#Max	QPSK	24.30	19.65	PASS
1.4	20525	6	#0	QPSK	23.30	18.65	PASS
1.4	20525	1	#0	16QAM	23.22	18.57	PASS
1.4	20525	1	#Mid	16QAM	23.38	18.73	PASS
1.4	20525	1	#Max	16QAM	23.20	18.55	PASS
1.4	20525	3	#0	16QAM	23.18	18.53	PASS
1.4	20525	3	#Mid	16QAM	23.19	18.54	PASS
1.4	20525	3	#Max	16QAM	23.23	18.58	PASS
1.4	20525	6	#0	16QAM	22.21	17.56	PASS
1.4	20643	1	#0	QPSK	24.25	19.60	PASS
1.4	20643	1	#Mid	QPSK	24.51	19.86	PASS
1.4	20643	1	#Max	QPSK	24.22	19.57	PASS
1.4	20643	3	#0	QPSK	24.32	19.67	PASS
1.4	20643	3	#Mid	QPSK	24.35	19.70	PASS
1.4	20643	3	#Max	QPSK	24.32	19.67	PASS
1.4	20643	6	#0	QPSK	23.28	18.63	PASS
1.4	20643	1	#0	16QAM	22.82	18.17	PASS
1.4	20643	1	#Mid	16QAM	23.03	18.38	PASS

1.4	20643	1	#Max	16QAM	22.86	18.21	PASS
1.4	20643	3	#0	16QAM	23.17	18.52	PASS
1.4	20643	3	#Mid	16QAM	23.16	18.51	PASS
1.4	20643	3	#Max	16QAM	23.16	18.51	PASS
1.4	20643	6	#0	16QAM	22.22	17.57	PASS
3	20415	1	#0	QPSK	24.34	19.69	PASS
3	20415	1	#Mid	QPSK	24.27	19.62	PASS
3	20415	1	#Max	QPSK	24.24	19.59	PASS
3	20415	8	#0	QPSK	23.28	18.63	PASS
3	20415	8	#Mid	QPSK	23.26	18.61	PASS
3	20415	8	#Max	QPSK	23.29	18.64	PASS
3	20415	15	#0	QPSK	23.27	18.62	PASS
3	20415	1	#0	16QAM	23.49	18.84	PASS
3	20415	1	#Mid	16QAM	23.44	18.79	PASS
3	20415	1	#Max	16QAM	23.44	18.79	PASS
3	20415	8	#0	16QAM	22.26	17.61	PASS
3	20415	8	#Mid	16QAM	22.28	17.63	PASS
3	20415	8	#Max	16QAM	22.28	17.63	PASS
3	20415	15	#0	16QAM	22.25	17.60	PASS
3	20525	1	#0	QPSK	24.31	19.66	PASS
3	20525	1	#Mid	QPSK	24.27	19.62	PASS
3	20525	1	#Max	QPSK	24.30	19.65	PASS
3	20525	8	#0	QPSK	23.28	18.63	PASS
3	20525	8	#Mid	QPSK	23.27	18.62	PASS
3	20525	8	#Max	QPSK	23.24	18.59	PASS
3	20525	15	#0	QPSK	23.25	18.60	PASS
3	20525	1	#0	16QAM	23.23	18.58	PASS
3	20525	1	#Mid	16QAM	23.18	18.53	PASS
3	20525	1	#Max	16QAM	23.18	18.53	PASS
3	20525	8	#0	16QAM	22.25	17.60	PASS
3	20525	8	#Mid	16QAM	22.26	17.61	PASS
3	20525	8	#Max	16QAM	22.22	17.57	PASS
3	20525	15	#0	16QAM	22.16	17.51	PASS
3	20635	1	#0	QPSK	24.24	19.59	PASS
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3	20635	1	#Max	QPSK	24.29	19.64	PASS
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3	20635	8	#Mid	QPSK	23.27	18.62	PASS
3	20635	8	#Max	QPSK	23.29	18.64	PASS
3	20635	15	#0	QPSK	23.24	18.59	PASS
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3	20635	1	#Max	16QAM	22.90	18.25	PASS

3	20635	8	#0	16QAM	22.20	17.55	PASS
3	20635	8	#Mid	16QAM	22.22	17.57	PASS
3	20635	8	#Max	16QAM	22.21	17.56	PASS
3	20635	15	#0	16QAM	22.24	17.59	PASS
5	20425	1	#0	QPSK	24.26	19.61	PASS
5	20425	1	#Mid	QPSK	24.36	19.71	PASS
5	20425	1	#Max	QPSK	24.32	19.67	PASS
5	20425	12	#0	QPSK	23.30	18.65	PASS
5	20425	12	#Mid	QPSK	23.27	18.62	PASS
5	20425	12	#Max	QPSK	23.26	18.61	PASS
5	20425	25	#0	QPSK	23.28	18.63	PASS
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5	20525	25	#0	QPSK	23.27	18.62	PASS
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5	20625	12	#Mid	QPSK	23.27	18.62	PASS
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5	20625	1	#Max	16QAM	23.42	18.77	PASS
5	20625	12	#0	16QAM	22.20	17.55	PASS

5	20625	12	#Mid	16QAM	22.16	17.51	PASS
5	20625	12	#Max	16QAM	22.17	17.52	PASS
5	20625	25	#0	16QAM	22.28	17.63	PASS
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10	20450	1	#Mid	QPSK	24.46	19.81	PASS
10	20450	1	#Max	QPSK	24.33	19.68	PASS
10	20450	25	#0	QPSK	23.31	18.66	PASS
10	20450	25	#Mid	QPSK	23.30	18.65	PASS
10	20450	25	#Max	QPSK	23.31	18.66	PASS
10	20450	50	#0	QPSK	23.31	18.66	PASS
10	20450	1	#0	16QAM	23.21	18.56	PASS
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10	20450	25	#0	16QAM	22.31	17.66	PASS
10	20450	25	#Mid	16QAM	22.31	17.66	PASS
10	20450	25	#Max	16QAM	22.31	17.66	PASS
10	20450	50	#0	16QAM	22.28	17.63	PASS
10	20525	1	#0	QPSK	24.34	19.69	PASS
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10	20525	1	#Max	QPSK	24.30	19.65	PASS
10	20525	25	#0	QPSK	23.32	18.67	PASS
10	20525	25	#Mid	QPSK	23.32	18.67	PASS
10	20525	25	#Max	QPSK	23.30	18.65	PASS
10	20525	50	#0	QPSK	23.31	18.66	PASS
10	20525	1	#0	16QAM	22.96	18.31	PASS
10	20525	1	#Mid	16QAM	23.09	18.44	PASS
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10	20525	25	#0	16QAM	22.36	17.71	PASS
10	20525	25	#Mid	16QAM	22.37	17.72	PASS
10	20525	25	#Max	16QAM	22.29	17.64	PASS
10	20525	50	#0	16QAM	22.35	17.70	PASS
10	20600	1	#0	QPSK	24.24	19.59	PASS
10	20600	1	#Mid	QPSK	24.39	19.74	PASS
10	20600	1	#Max	QPSK	24.28	19.63	PASS
10	20600	25	#0	QPSK	23.31	18.66	PASS
10	20600	25	#Mid	QPSK	23.32	18.67	PASS
10	20600	25	#Max	QPSK	23.26	18.61	PASS
10	20600	50	#0	QPSK	23.28	18.63	PASS
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10	20600	1	#Mid	16QAM	23.58	18.93	PASS
10	20600	1	#Max	16QAM	23.36	18.71	PASS
10	20600	25	#0	16QAM	22.39	17.74	PASS
10	20600	25	#Mid	16QAM	22.39	17.74	PASS

10	20600	25	#Max	16QAM	22.28	17.63	PASS
10	20600	50	#0	16QAM	22.24	17.59	PASS

6.2. Occupied Bandwidth

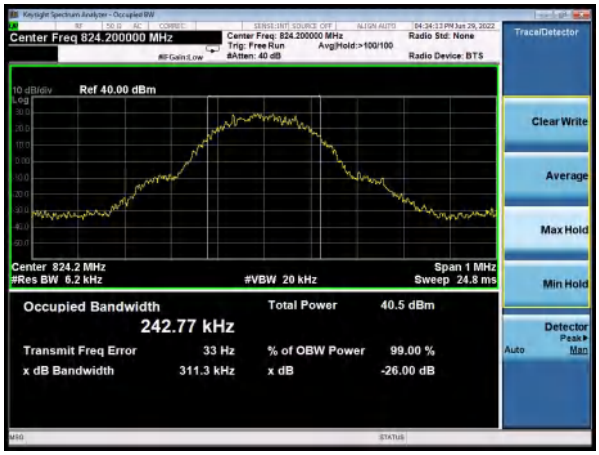
Mode	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
GSM 850 (GMSK)	128	824.2	0.2454	0.3018
	190	836.6	0.2436	0.3002
	251	848.8	0.2404	0.3030
GPRS 850 (GMSK)	128	824.2	0.2428	0.3113
	190	836.6	0.2457	0.3167
	251	848.8	0.2480	0.3105
EGPRS 850 (8PSK)	128	824.2	0.2489	0.3025
	190	836.6	0.2531	0.3200
	251	848.8	0.2459	0.3006
WCDMA Band V (RMC)	4132	826.4	4.1622	4.6970
	4183	836.6	4.1635	4.6820
	4233	846.6	4.1574	4.6950

LTE Band 5						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	20407	824.7	1.094	1.286
			20525	836.5	1.092	1.272
			20643	848.3	1.100	1.306
		3	20415	825.5	2.684	2.916
			20525	836.5	2.691	2.914
			20635	847.5	2.689	2.920
		5	20425	826.5	4.510	4.883
			20525	836.5	4.514	4.944
			20625	846.5	4.516	4.900
		10	20450	829	8.972	9.754
			20525	836.5	8.984	9.732
			20600	844	8.991	9.768
	16QAM	1.4	20407	824.7	1.099	1.262
			20525	836.5	1.096	1.290
			20643	848.3	1.093	1.272

		3	20415	825.5	2.680	2.925
			20525	836.5	2.683	2.900
			20635	847.5	2.689	2.925
		5	20425	826.5	4.504	4.957
			20525	836.5	4.509	4.871
			20625	846.5	4.505	4.935
		10	20450	829	8.982	9.777
			20525	836.5	8.999	9.654
			20600	844	8.949	9.613

GSM 850 CH-Low

GSM 850 GPRS CH-Low

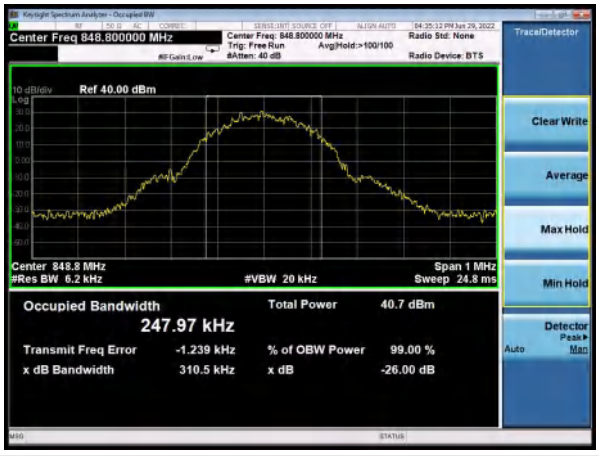


GSM 850 CH-Middle

GSM 850 GPRS CH-Middle

GSM 850 CH-High

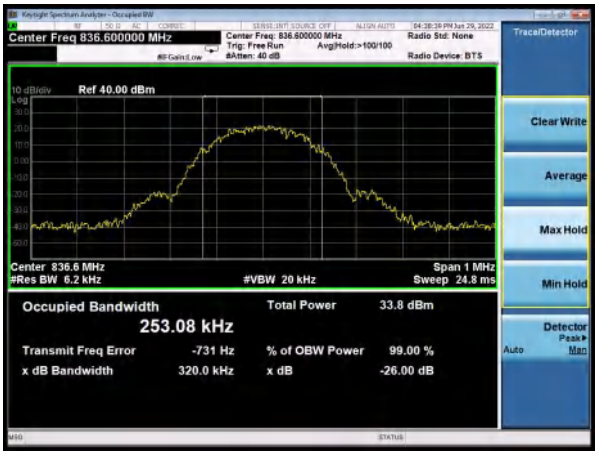
GSM 850 GPRS CH-High



GSM 850 EGPRS CH-Low

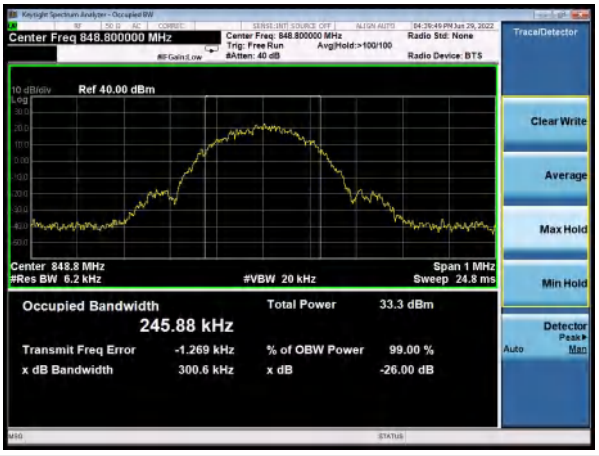
WCDMA Band V CH-Low

GSM 850 EGPRS CH-Middle



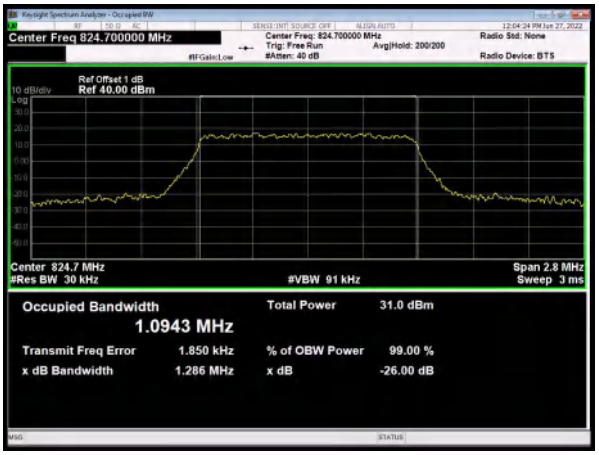
WCDMA Band V CH-Middle

GSM 850 EGPRS CH-High

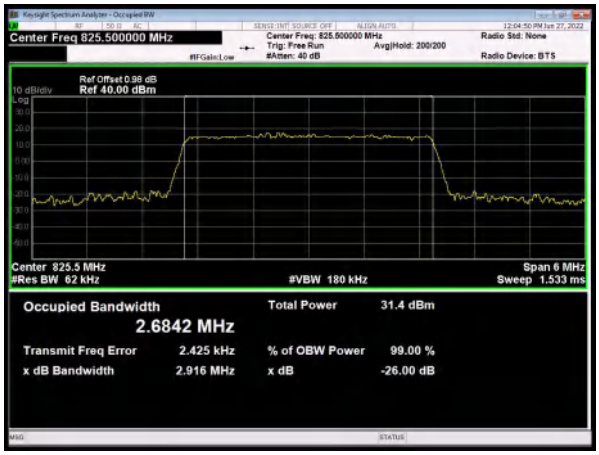


WCDMA Band V CH-High

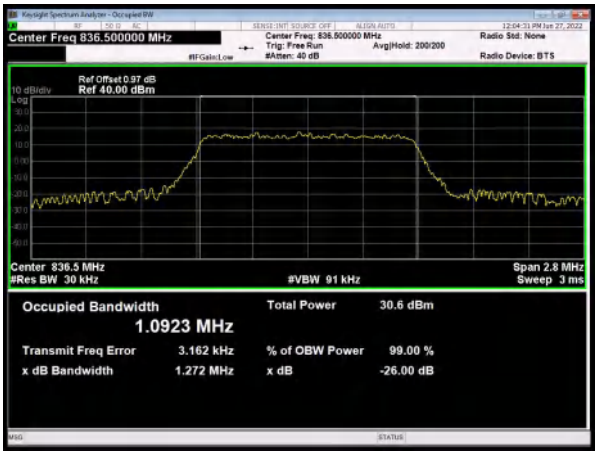
LTE Band 5 QPSK 1.4MHz CH-Low



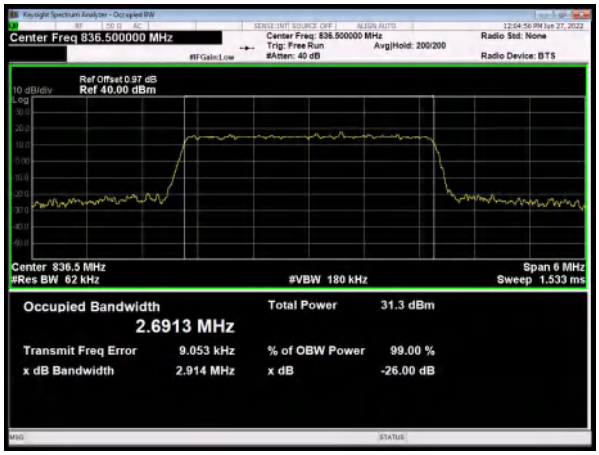
LTE Band 5 QPSK 3MHz CH-Low



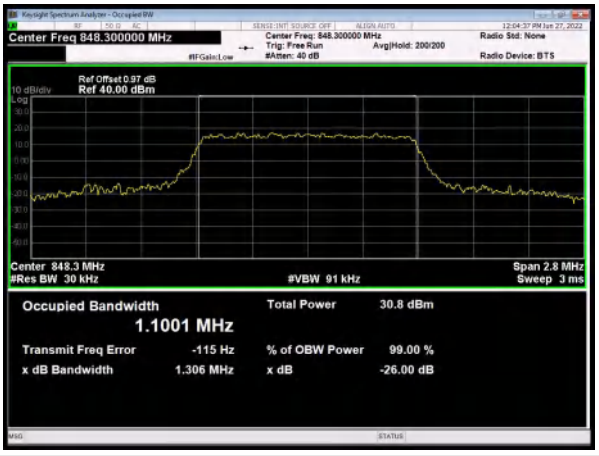
LTE Band 5 QPSK 1.4MHz CH-Middle



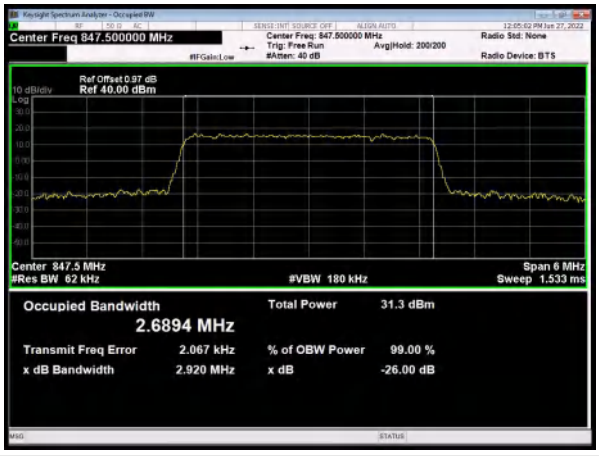
LTE Band 5 QPSK 3MHz CH-Middle



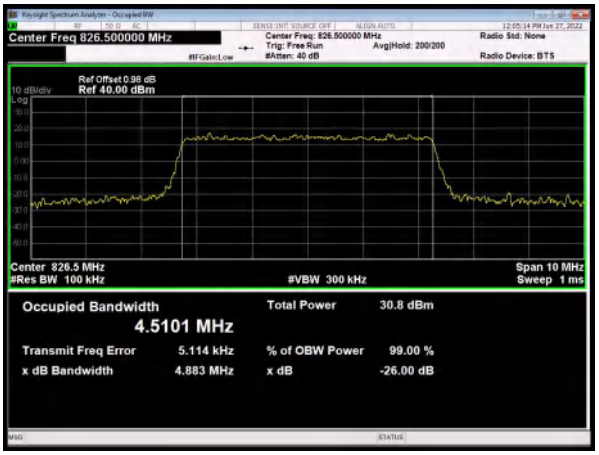
LTE Band 5 QPSK 1.4MHz CH-High



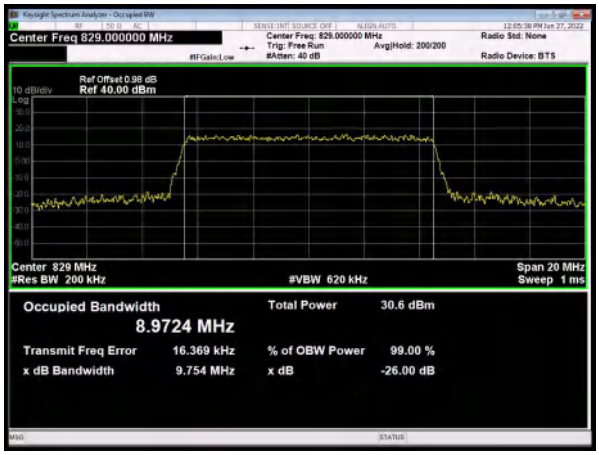
LTE Band 5 QPSK 3MHz CH-High



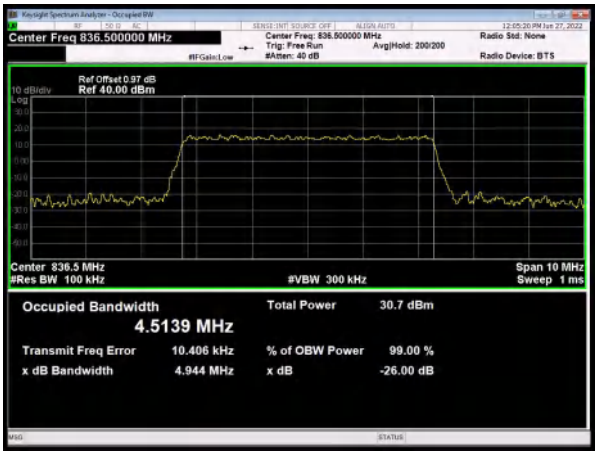
LTE Band 5 QPSK 5MHz CH-Low



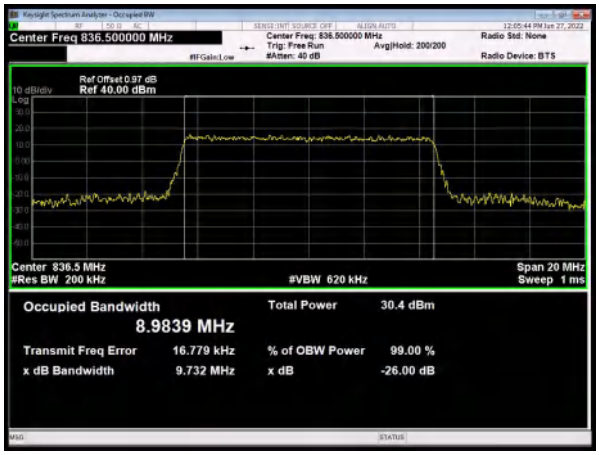
LTE Band 5 QPSK 10MHz CH-Low



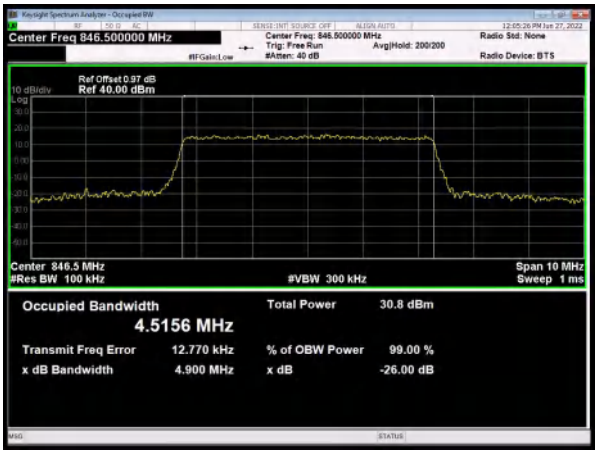
LTE Band 5 QPSK 5MHz CH-Middle



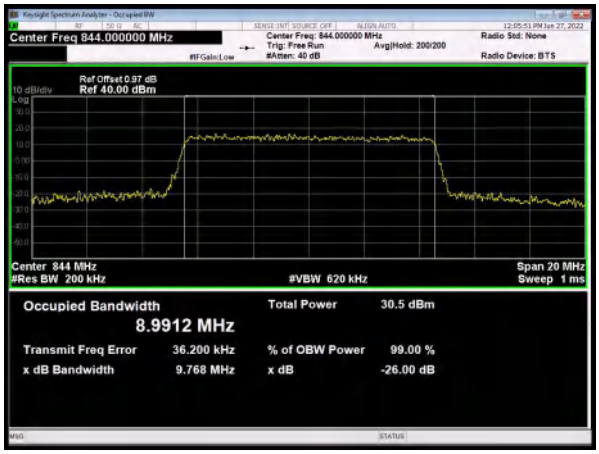
LTE Band 5 QPSK 10MHz CH-Middle



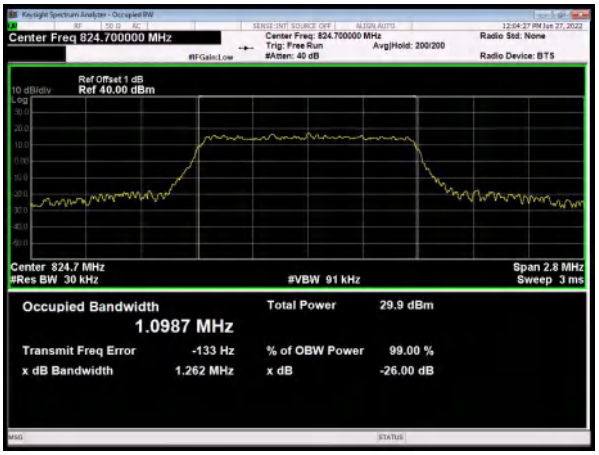
LTE Band 5 QPSK 5MHz CH-High



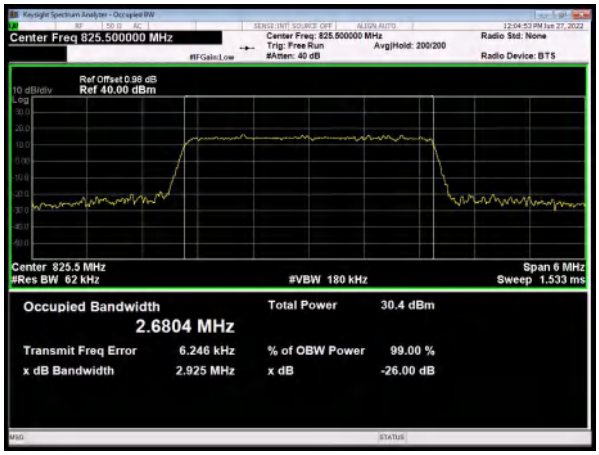
LTE Band 5 QPSK 10MHz CH-High



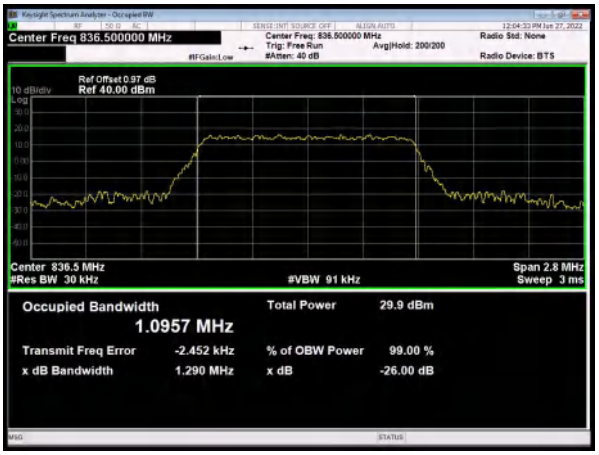
LTE Band 5 16QAM 1.4MHz CH-Low



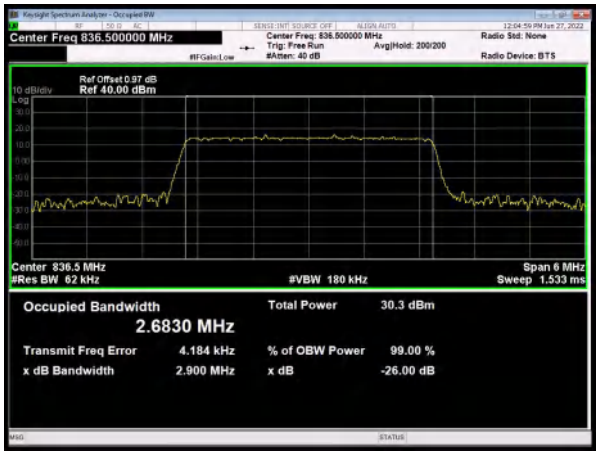
LTE Band 5 16QAM 3MHz CH-Low



LTE Band 5 16QAM 1.4MHz CH-Middle

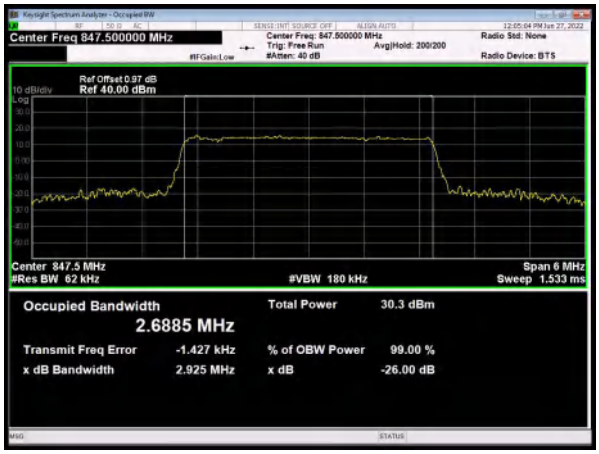


LTE Band 5 16QAM 3MHz CH-Middle

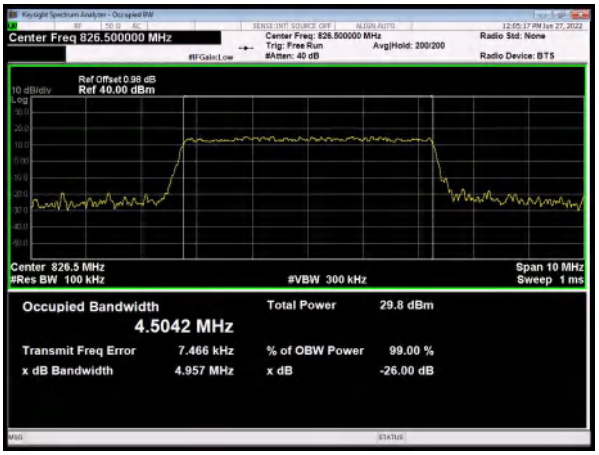


LTE Band 5 16QAM 1.4MHz CH-High

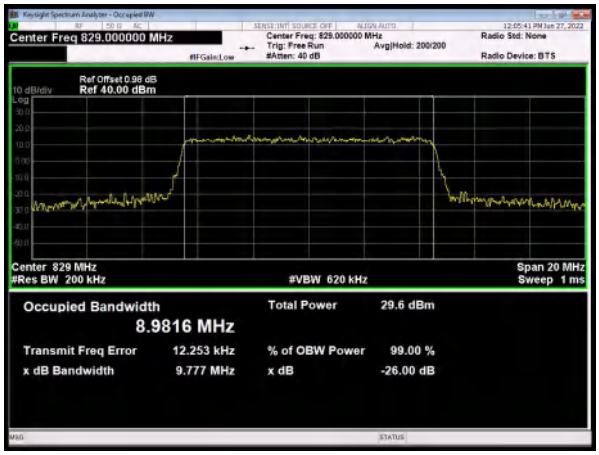
LTE Band 5 16QAM 3MHz CH-High



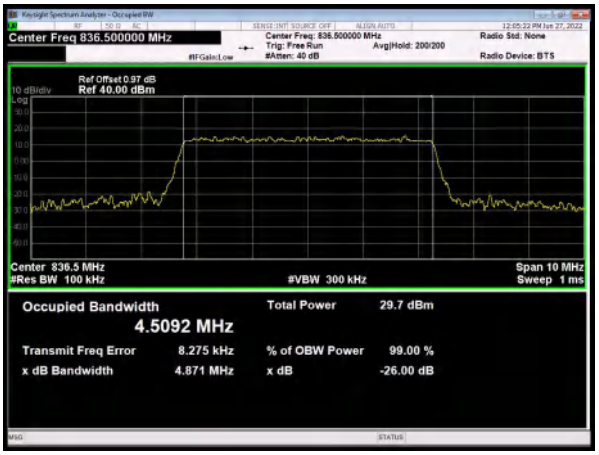
LTE Band 5 16QAM 5MHz CH-Low



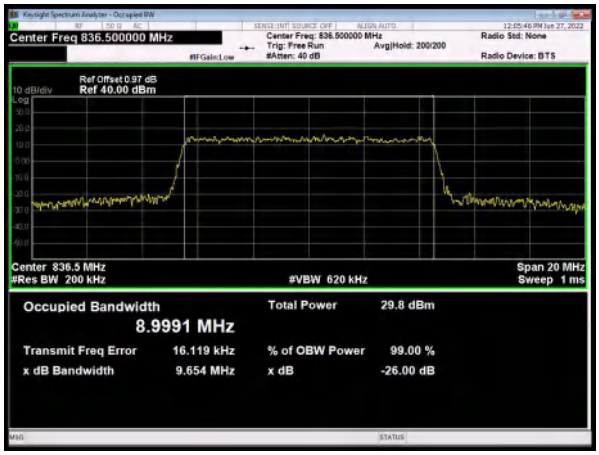
LTE Band 5 16QAM 10MHz CH-Low



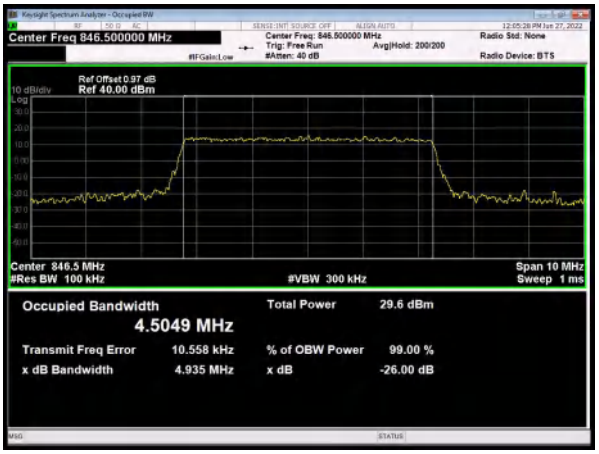
LTE Band 5 16QAM 5MHz CH-Middle



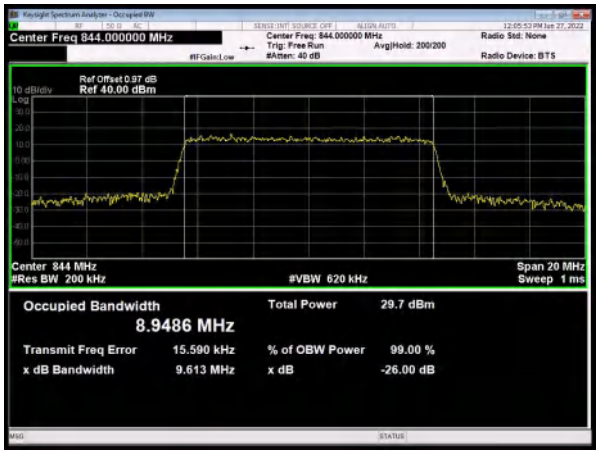
LTE Band 5 16QAM 10MHz CH-Middle



LTE Band 5 16QAM 5MHz CH-High



LTE Band 5 16QAM 10MHz CH-High



6.3. Band Edge Compliance

GSM 850 CH-Low

GSM 850 CH-High

GSM 850 GPRS CH-Low

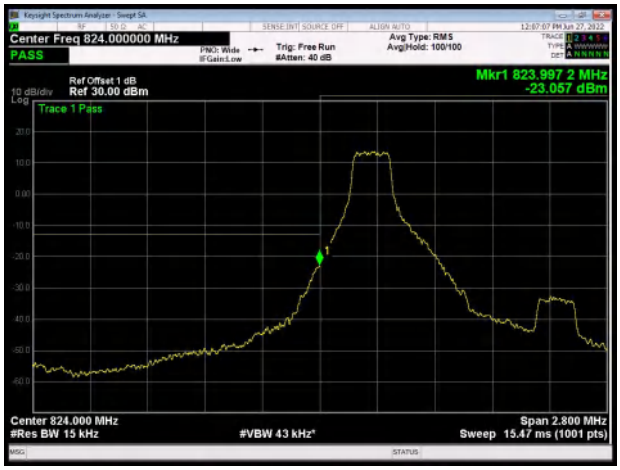
GSM 850 GPRS CH-High

GSM 850 EGPRS CH-Low

GSM 850 EGPRS CH-High

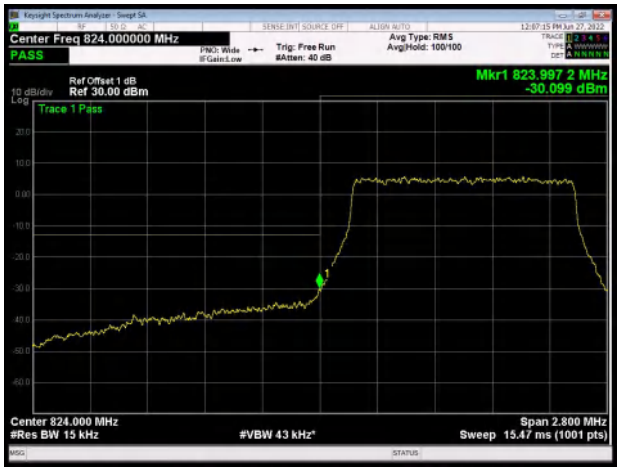
WCDMA Band V CH-Low	WCDMA Band V CH-High
	

LTE Band 5 QPSK 1.4MHz CH-Low 1RB



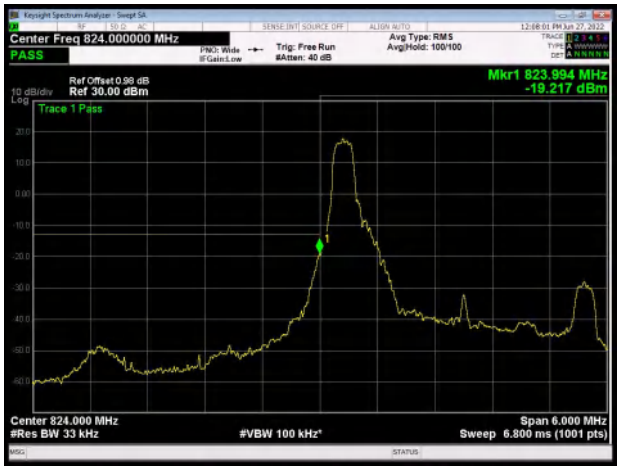
LTE Band 5 QPSK 1.4MHz CH-High 1RB

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

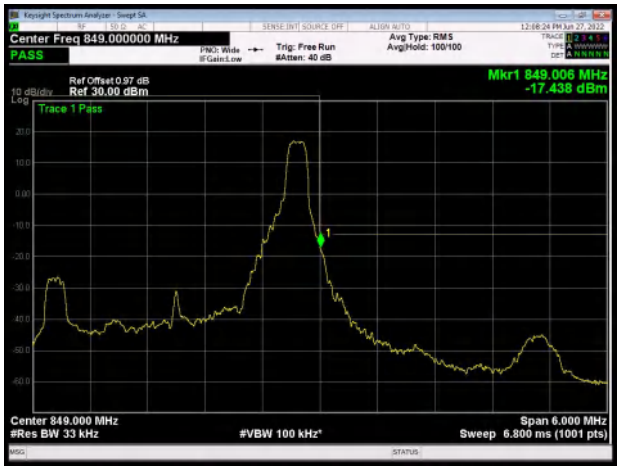


LTE Band 5 QPSK 1.4MHz CH-High 100%RB

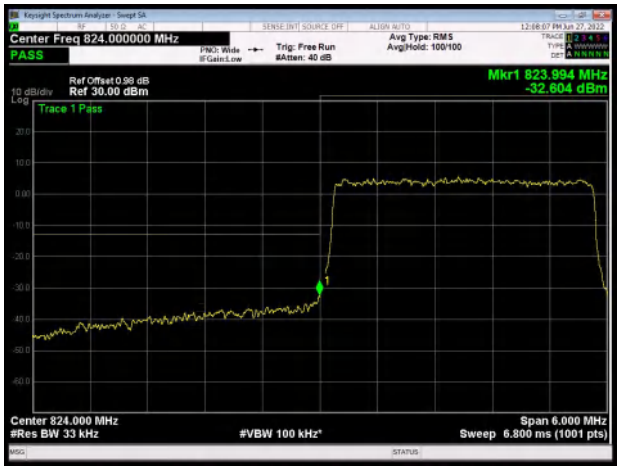
LTE Band 5 QPSK 3MHz CH-Low 1RB



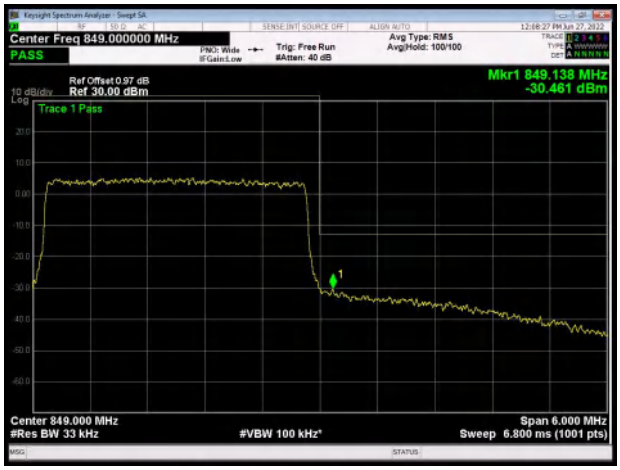
LTE Band 5 QPSK 3MHz CH-High 1RB



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



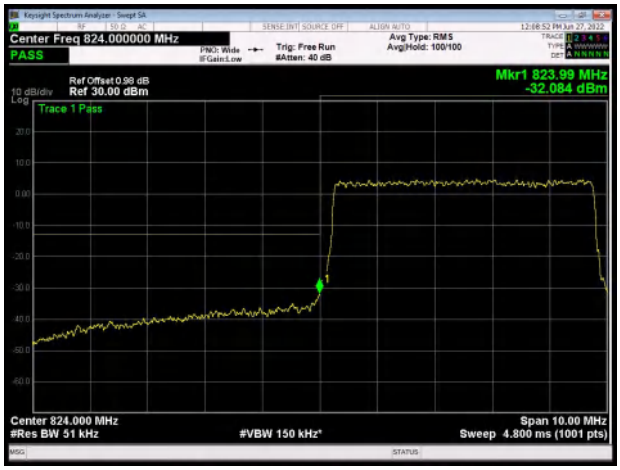
LTE Band 5 QPSK 3MHz CH-High 100%RB



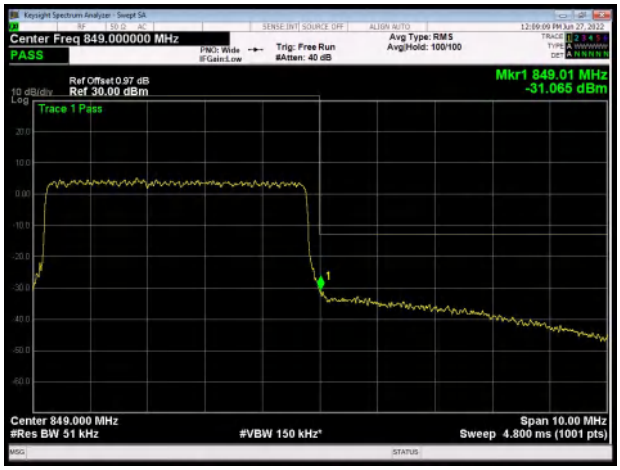
LTE Band 5 QPSK 5MHz CH-Low 1RB

LTE Band 5 QPSK 5MHz CH-High 1RB

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



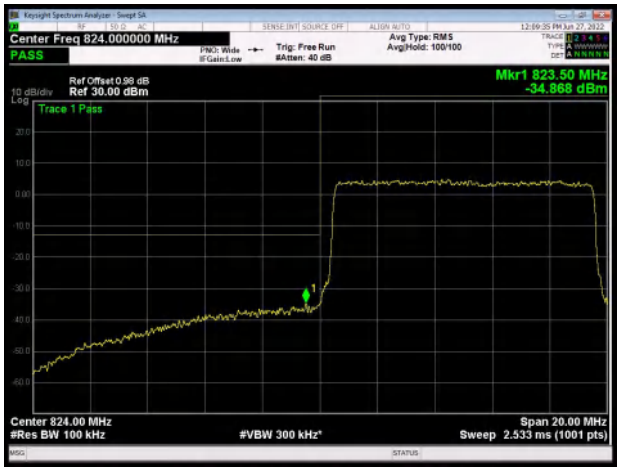
LTE Band 5 QPSK 5MHz CH-High 100%RB



LTE Band 5 QPSK 10MHz CH-Low 1RB

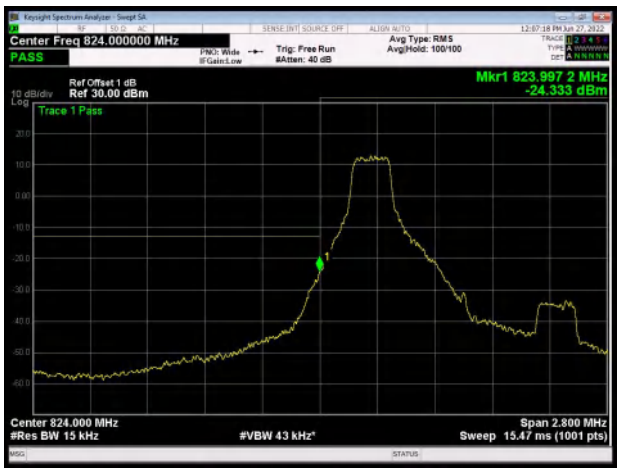
LTE Band 5 QPSK 10MHz CH-High 1RB

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



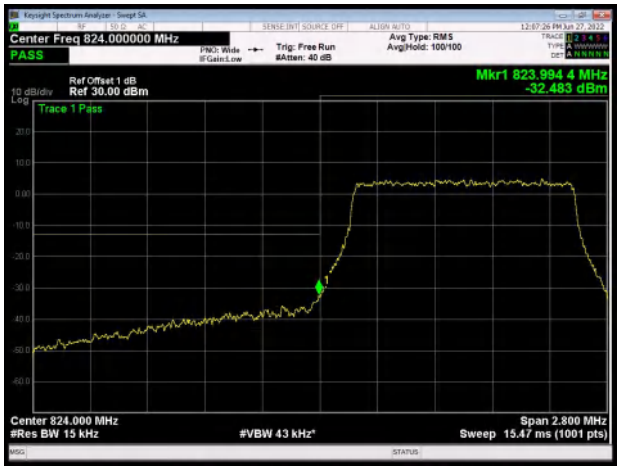
LTE Band 5 QPSK 10MHz CH-High 100%RB

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

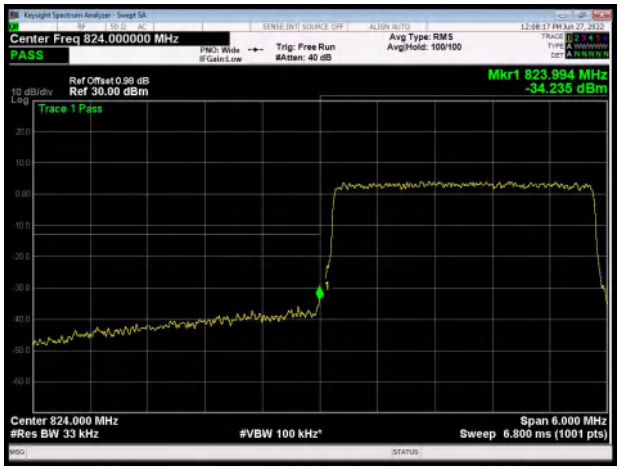


LTE Band 5 16QAM 1.4MHz CH-High 100%RB

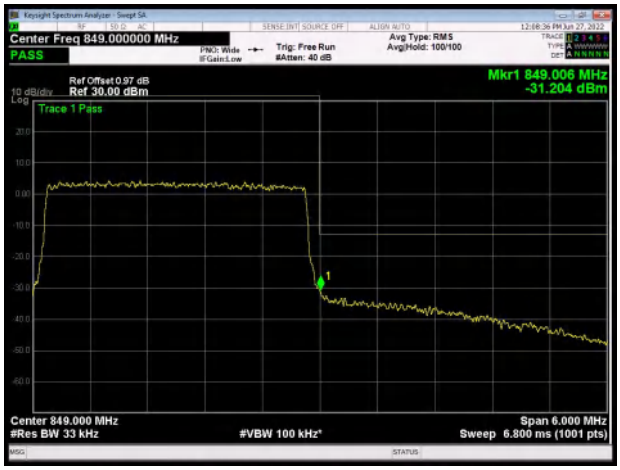
LTE Band 5 16QAM 3MHz CH-Low 1RB

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

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



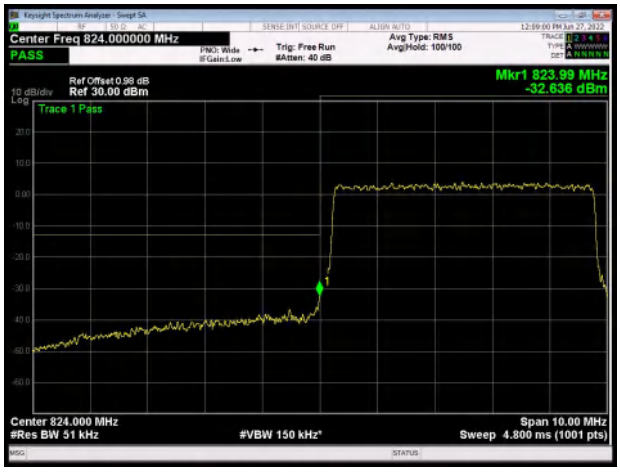
LTE Band 5 16QAM 3MHz CH-High 100%RB



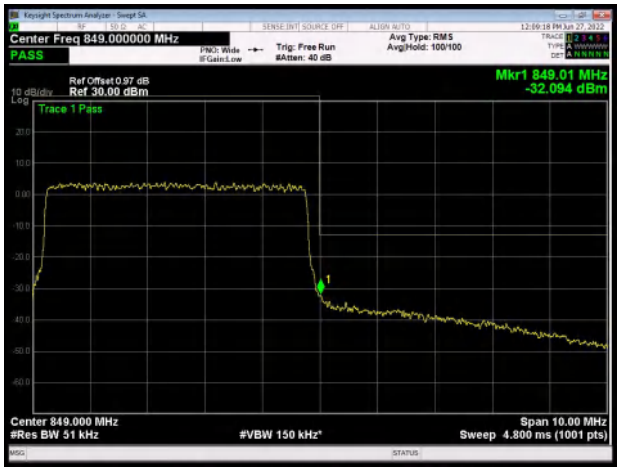
LTE Band 5 16QAM 5MHz CH-Low 1RB

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

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

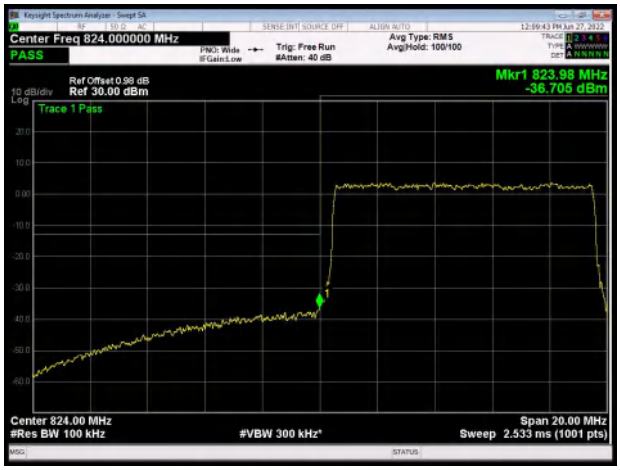


LTE Band 5 16QAM 5MHz CH-High 100%RB



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
	

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

Mode	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
GSM 850 (GMSK)	128	824.2	34.47	31.87	2.60	≤13	PASS
	190	836.6	34.54	31.94	2.60	≤13	PASS
	251	848.8	34.52	31.91	2.61	≤13	PASS
GPRS 850 (GMSK)	128	824.2	34.49	31.88	2.61	≤13	PASS
	190	836.6	34.55	31.94	2.61	≤13	PASS
	251	848.8	34.51	31.91	2.60	≤13	PASS
EGPRS 850 (8PSK)	128	824.2	30.85	25.19	5.66	≤13	PASS
	190	836.6	30.71	25.04	5.67	≤13	PASS
	251	848.8	30.53	24.71	5.82	≤13	PASS
WCDMA Band V (RMC)	4132	826.4	28.16	25.24	2.92	≤13	PASS
	4183	836.6	28.23	25.19	3.04	≤13	PASS
	4233	846.6	27.92	25.07	2.85	≤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	27.49	22.85	4.64	≤13	PASS
		20525	836.5	27.63	22.78	4.85	≤13	PASS
		20643	848.3	27.03	22.79	4.24	≤13	PASS
	3	20415	825.5	27.49	22.74	4.75	≤13	PASS
		20525	836.5	27.69	22.74	4.95	≤13	PASS
		20635	847.5	27.19	22.72	4.47	≤13	PASS
	5	20425	826.5	27.60	22.77	4.83	≤13	PASS
		20525	836.5	27.79	22.76	5.03	≤13	PASS
		20625	846.5	27.36	22.71	4.65	≤13	PASS
	10	20450	829	27.74	22.80	4.94	≤13	PASS
		20525	836.5	27.79	22.77	5.02	≤13	PASS
		20600	844	27.68	22.71	4.97	≤13	PASS
16QAM	1.4	20407	824.7	27.36	21.78	5.58	≤13	PASS
		20525	836.5	27.59	21.77	5.82	≤13	PASS
		20643	848.3	26.95	21.80	5.15	≤13	PASS
	3	20415	825.5	27.43	21.76	5.67	≤13	PASS

		20525	836.5	27.62	21.74	5.88	≤13	PASS
		20635	847.5	27.10	21.73	5.37	≤13	PASS
	5	20425	826.5	27.45	21.76	5.69	≤13	PASS
		20525	836.5	27.66	21.77	5.89	≤13	PASS
		20625	846.5	27.25	21.72	5.53	≤13	PASS
	10	20450	829	27.62	21.80	5.82	≤13	PASS
		20525	836.5	27.67	21.78	5.89	≤13	PASS
		20600	844	27.54	21.72	5.82	≤13	PASS
64QAM	1.4	20407	824.7	27.49	22.85	4.64	≤13	PASS
		20525	836.5	27.63	22.78	4.85	≤13	PASS
		20643	848.3	27.03	22.79	4.24	≤13	PASS
	3	20415	825.5	27.49	22.74	4.75	≤13	PASS
		20525	836.5	27.69	22.74	4.95	≤13	PASS
		20635	847.5	27.19	22.72	4.47	≤13	PASS
	5	20425	826.5	27.60	22.77	4.83	≤13	PASS
		20525	836.5	27.79	22.76	5.03	≤13	PASS
		20625	846.5	27.36	22.71	4.65	≤13	PASS
	10	20450	829	27.74	22.80	4.94	≤13	PASS
		20525	836.5	27.79	22.77	5.02	≤13	PASS
		20600	844	27.68	22.71	4.97	≤13	PASS

6.5. Frequency Stability

GSM 850						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
Temperature	Voltage	GMSK	8PSK	GMSK	8PSK	
Normal（25℃）	Normal	2.36	15.92	0.00282	0.01903	PASS
Extreme（50℃）		1.95	1.13	0.00233	0.00135	PASS
Extreme（40℃）		5.96	13.50	0.00712	0.01614	PASS
Extreme（30℃）		9.63	2.59	0.01151	0.00310	PASS
Extreme（20℃）		16.82	12.29	0.02011	0.01469	PASS
Extreme（10℃）		9.81	2.70	0.01172	0.00323	PASS
Extreme（0℃）		13.41	7.86	0.01603	0.00940	PASS
Extreme（-10℃）		16.30	12.70	0.01948	0.01518	PASS
Extreme（-20℃）		1.63	13.47	0.00194	0.01610	PASS
Extreme（-30℃）		2.61	7.35	0.00312	0.00878	PASS
25℃	LV	1.39	10.10	0.00166	0.01208	PASS
	HV	6.84	17.09	0.00817	0.02043	PASS

WCDMA V						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal（25℃）	Normal	9.97	4.10	0.01192	0.00491	PASS
Extreme（50℃）		10.49	12.10	0.01254	0.01446	PASS
Extreme（40℃）		17.96	7.93	0.02146	0.00948	PASS
Extreme（30℃）		2.07	9.42	0.00248	0.01126	PASS
Extreme（20℃）		12.97	13.45	0.01551	0.01607	PASS
Extreme（10℃）		12.65	1.18	0.01512	0.00142	PASS
Extreme（0℃）		15.66	5.34	0.01872	0.00639	PASS
Extreme（-10℃）		9.04	9.82	0.01080	0.01174	PASS
Extreme（-20℃）		1.01	2.28	0.00121	0.00273	PASS
Extreme（-30℃）		2.35	5.04	0.00280	0.00602	PASS
25℃	LV	16.15	3.46	0.01930	0.00413	PASS
	HV	6.91	15.75	0.00826	0.01883	PASS

LTE Band 5						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	1.4MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	13.54	5.70	0.01619	0.00681	PASS
Extreme（50℃）		14.87	4.19	0.01778	0.00501	PASS
Extreme（40℃）		15.28	4.55	0.01827	0.00544	PASS
Extreme（30℃）		8.24	17.80	0.00985	0.02128	PASS
Extreme（20℃）		8.36	11.00	0.00999	0.01315	PASS
Extreme（10℃）		3.00	16.43	0.00358	0.01964	PASS
Extreme（0℃）		11.55	14.58	0.01381	0.01742	PASS
Extreme（-10℃）		13.65	14.40	0.01631	0.01722	PASS
Extreme（-20℃）		3.05	6.74	0.00364	0.00806	PASS
Extreme（-30℃）		16.42	4.06	0.01963	0.00486	PASS
25℃	LV	8.41	4.15	0.01006	0.00496	PASS
	HV	17.20	12.59	0.02057	0.01505	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	3MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	9.82	6.57	0.01174	0.00785	PASS
Extreme（50℃）		4.28	11.10	0.00512	0.01327	PASS
Extreme（40℃）		17.01	12.58	0.02033	0.01504	PASS
Extreme（30℃）		15.42	17.96	0.01843	0.02147	PASS
Extreme（20℃）		2.85	1.15	0.00341	0.00137	PASS
Extreme（10℃）		5.10	15.66	0.00609	0.01872	PASS
Extreme（0℃）		13.82	13.89	0.01652	0.01661	PASS
Extreme（-10℃）		14.97	14.00	0.01789	0.01673	PASS
Extreme（-20℃）		3.17	7.37	0.00379	0.00881	PASS
Extreme（-30℃）		15.50	9.29	0.01853	0.01111	PASS
25℃	LV	16.01	12.18	0.01914	0.01456	PASS
	HV	9.73	14.85	0.01163	0.01775	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	5MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	2.02	17.24	0.00241	0.02061	PASS
Extreme（50℃）		15.11	17.96	0.01807	0.02147	PASS
Extreme（40℃）		6.96	1.21	0.00832	0.00145	PASS

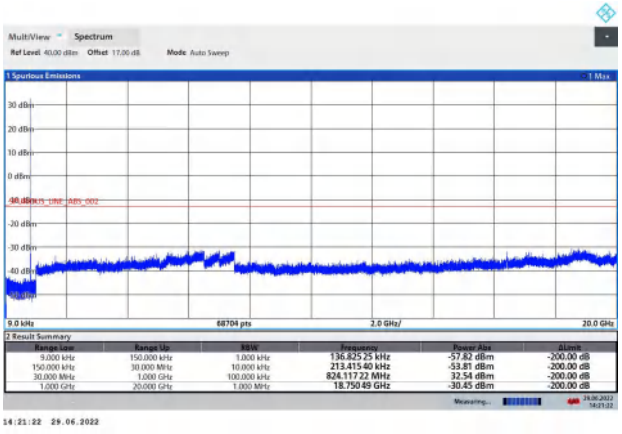
Extreme（30℃）		2.03	3.28	0.00243	0.00392	PASS
Extreme（20℃）		10.08	17.15	0.01205	0.02050	PASS
Extreme（10℃）		6.96	13.38	0.00832	0.01600	PASS
Extreme（0℃）		13.78	9.68	0.01647	0.01157	PASS
Extreme（-10℃）		3.85	13.11	0.00460	0.01567	PASS
Extreme（-20℃）		11.56	2.06	0.01382	0.00246	PASS
Extreme（-30℃）		10.13	2.06	0.01211	0.00246	PASS
25℃	LV	5.12	6.48	0.00612	0.00775	PASS
	HV	9.71	12.56	0.01161	0.01501	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	10MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	6.56	5.11	0.00784	0.00611	PASS
Extreme（50℃）		4.55	7.58	0.00544	0.00907	PASS
Extreme（40℃）		13.81	4.91	0.01652	0.00587	PASS
Extreme（30℃）		2.20	15.77	0.00263	0.01885	PASS
Extreme（20℃）		2.96	3.69	0.00354	0.00441	PASS
Extreme（10℃）		8.90	2.23	0.01064	0.00267	PASS
Extreme（0℃）		3.42	11.31	0.00408	0.01352	PASS
Extreme（-10℃）		6.83	12.36	0.00817	0.01478	PASS
Extreme（-20℃）		7.24	6.91	0.00866	0.00826	PASS
Extreme（-30℃）		4.01	11.17	0.00479	0.01336	PASS
25℃	LV	9.72	16.85	0.01163	0.02014	PASS
	HV	13.48	9.19	0.01612	0.01098	PASS

6.6. Spurious Emissions at Antenna Terminals

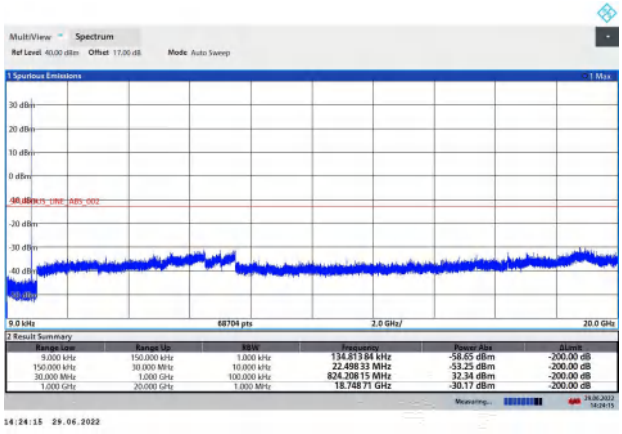
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The signal beyond the limit is carrier.

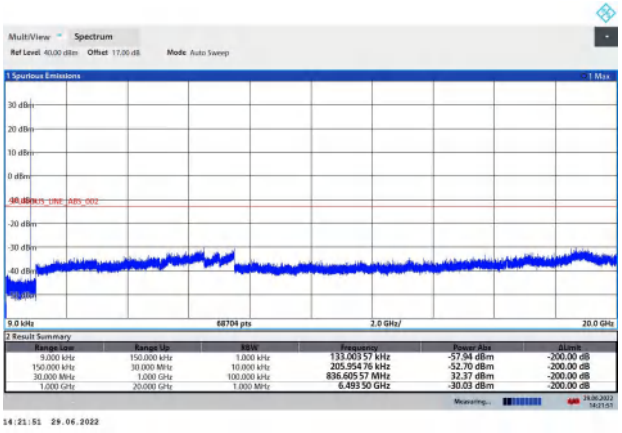
GSM 850 CH-Low 9kHz ~ 20GHz



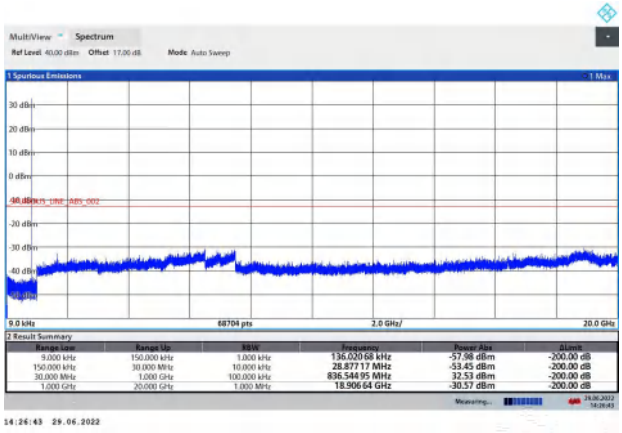
GPRS 850 CH-Low 9kHz ~ 20GHz



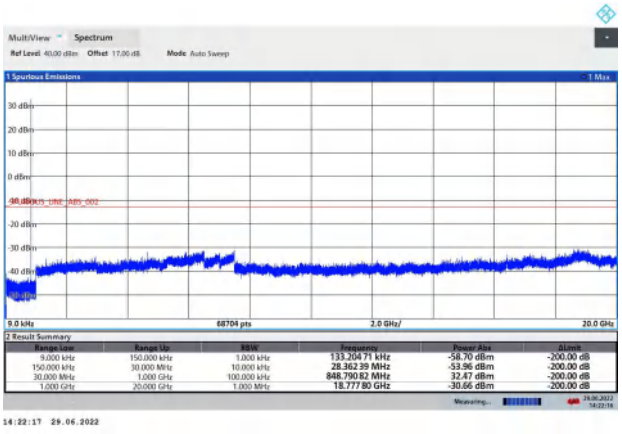
GSM 850 CH-Middle 9kHz ~ 20GHz



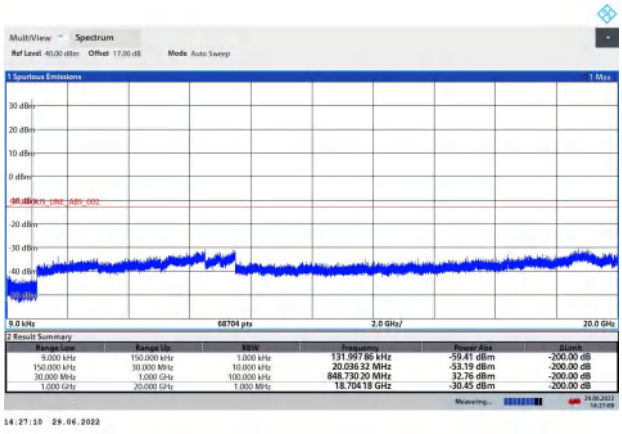
GPRS 850 CH-Middle 9kHz ~ 20GHz



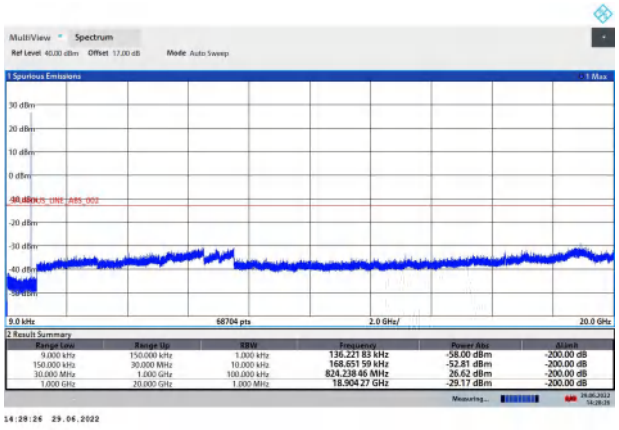
GSM 850 CH-High 9kHz ~ 20GHz



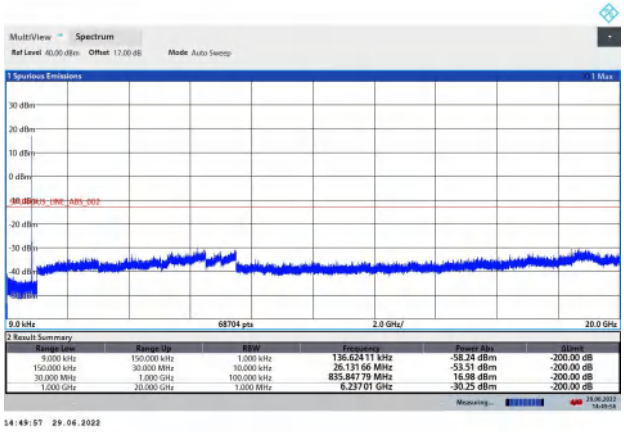
GPRS 850 CH-High 9kHz ~ 20GHz



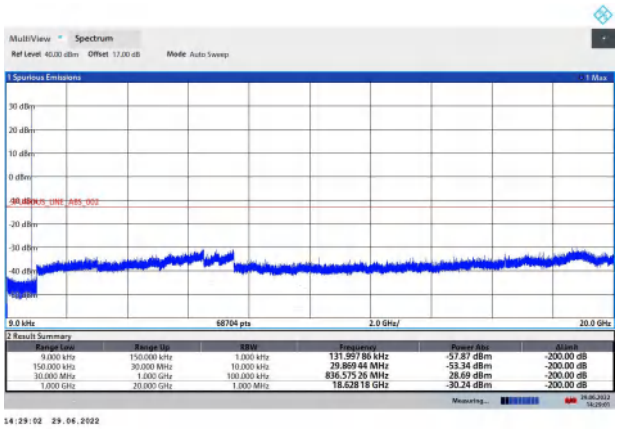
EGPRS 850 CH-Low 9kHz ~ 20GHz



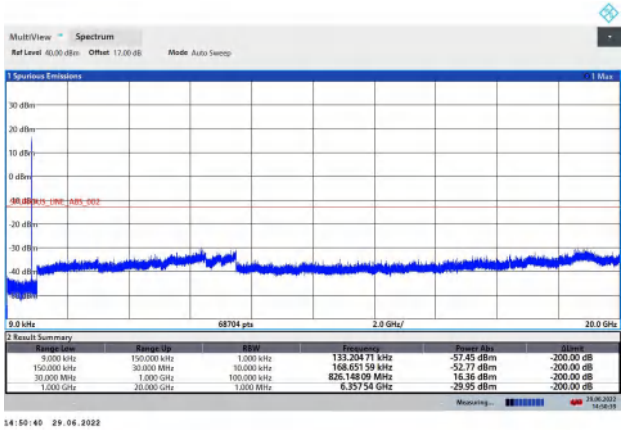
WCDMA BAND V CH-Low 9kHz ~ 20GHz



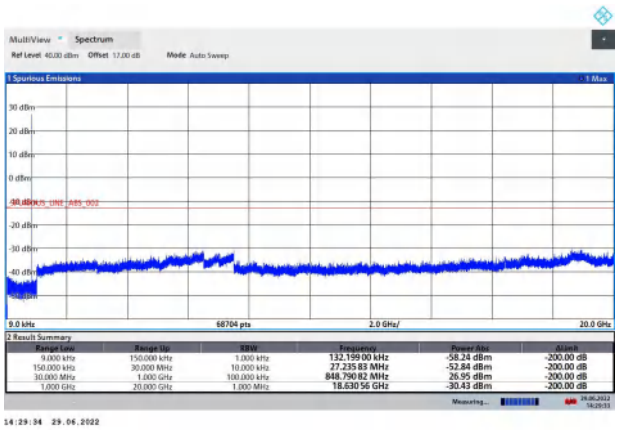
EGPRS 850 CH-Middle 9kHz ~ 20GHz



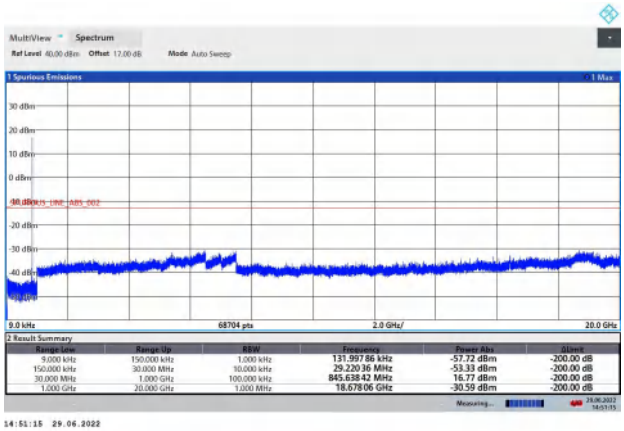
WCDMA BAND V CH-Middle 9kHz ~ 20GHz



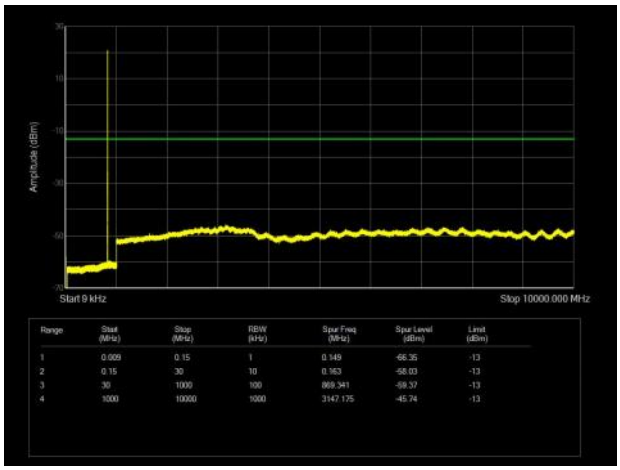
EGPRS 850 CH-High 9kHz ~ 20GHz



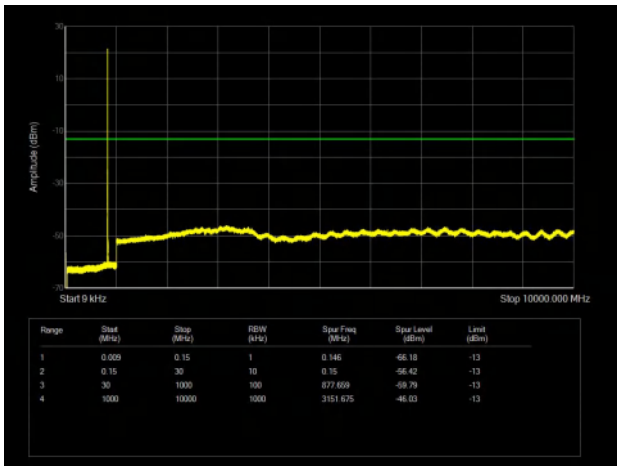
WCDMA BAND V CH-High 9kHz ~ 20GHz



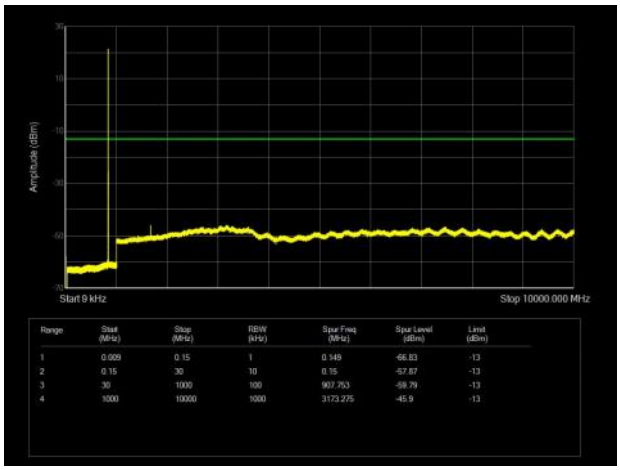
LTE Band 5 1.4MHz CH-Low 9kHz~10GHz



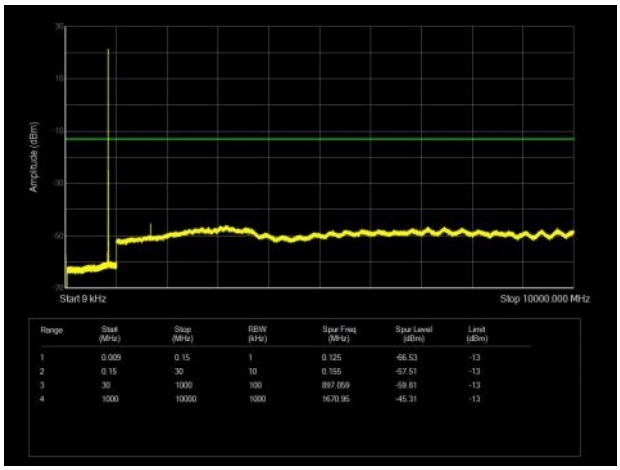
LTE Band 5 3MHz CH-Low 9kHz~10GHz



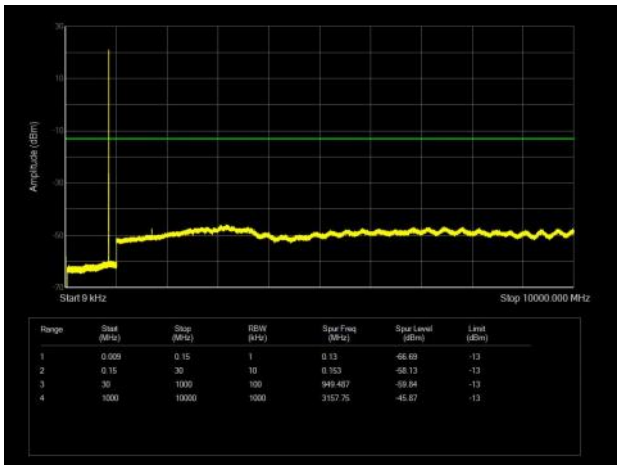
LTE Band 5 1.4MHz CH-Middle 9kHz~10GHz



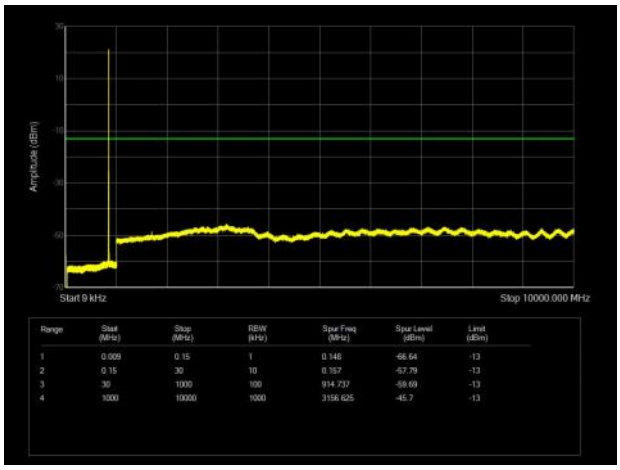
LTE Band 5 3MHz CH-Middle 9kHz~10GHz



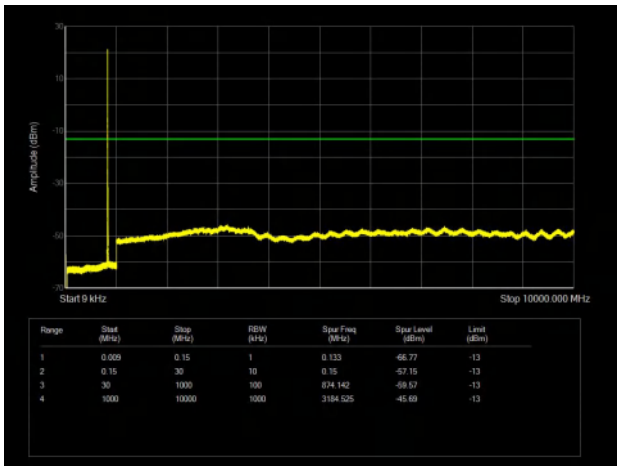
LTE Band 5 1.4MHz CH-High 9kHz~10GHz



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

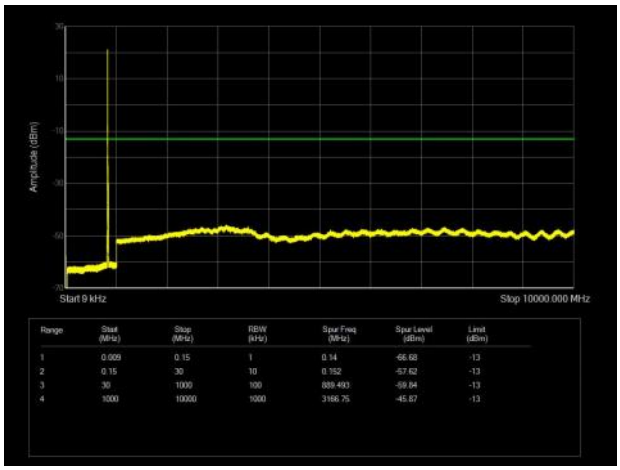


LTE Band 5 5MHz CH-Low 9kHz~10GHz



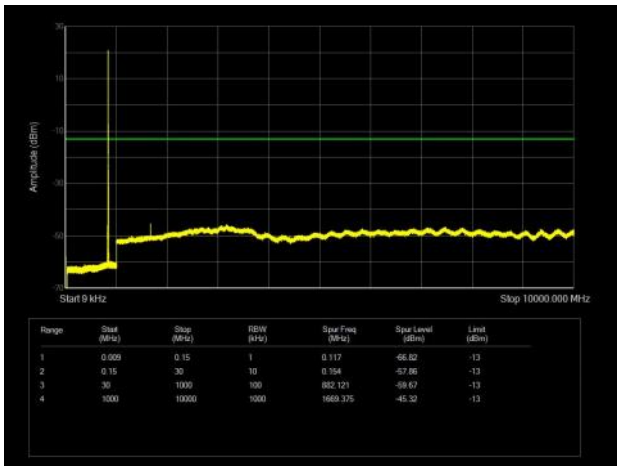
Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.133	-66.77	-13
2	0.15	30	10	0.15	-57.15	-13
3	30	1000	100	874.142	-59.57	-13
4	1000	10000	1000	3184.525	-45.69	-13

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



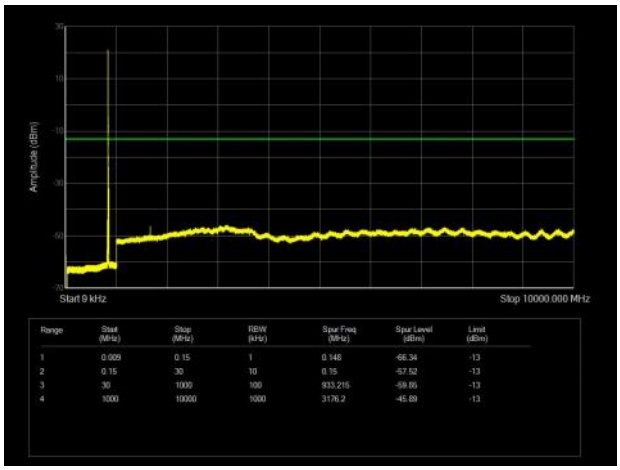
Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.14	-66.68	-13
2	0.15	30	10	0.152	-57.62	-13
3	30	1000	100	889.493	-59.84	-13
4	1000	10000	1000	3166.75	-45.87	-13

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



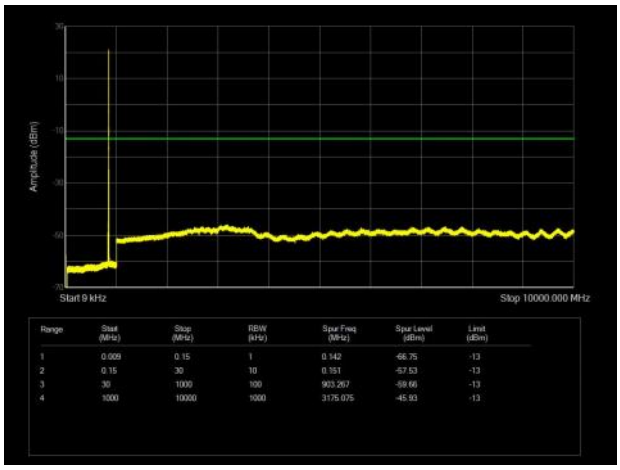
Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.117	-66.82	-13
2	0.15	30	10	0.154	-57.86	-13
3	30	1000	100	882.121	-59.67	-13
4	1000	10000	1000	1669.375	-45.32	-13

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



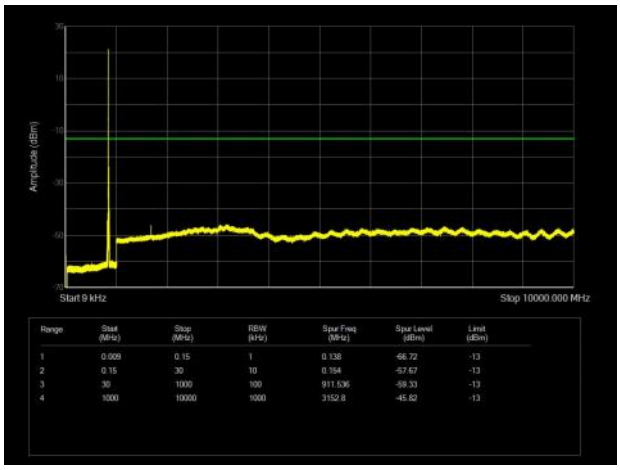
Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.148	-66.34	-13
2	0.15	30	10	0.15	-57.52	-13
3	30	1000	100	933.215	-59.85	-13
4	1000	10000	1000	3176.2	-45.89	-13

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



Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.142	-66.75	-13
2	0.15	30	10	0.151	-57.53	-13
3	30	1000	100	903.267	-59.66	-13
4	1000	10000	1000	3175.075	-45.93	-13

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



Range	Start (MHz)	Stop (MHz)	RBW (kHz)	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)
1	0.009	0.15	1	0.138	-66.72	-13
2	0.15	30	10	0.154	-57.67	-13
3	30	1000	100	911.536	-59.33	-13
4	1000	10000	1000	3152.8	-45.82	-13

6.7. Radiates Spurious Emission

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.

GSM 850 CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1673.20	-58.50	1.70	8.70	Horizontal	-53.65	-13.00	40.65	180
3	2509.80	-41.11	2.30	12.00	Horizontal	-33.56	-13.00	20.56	90
4	3346.40	-55.93	2.70	12.70	Horizontal	-48.08	-13.00	35.08	315
5	4183.00	-54.52	3.00	12.50	Horizontal	-47.17	-13.00	34.17	90
6	5019.60	-60.18	3.40	12.50	Horizontal	-53.23	-13.00	40.23	135
7	5856.20	-58.89	3.40	12.80	Horizontal	-51.64	-13.00	38.64	270
8	6692.80	-58.54	4.10	11.50	Horizontal	-53.29	-13.00	40.29	45
9	7529.40	-56.61	4.20	12.20	Horizontal	-50.76	-13.00	37.76	180
10	8366.00	-56.69	4.30	12.50	Horizontal	-50.64	-13.00	37.64	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.									

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	-63.61	1.70	8.70	Horizontal	-58.76	-13.00	45.76	135
3	2510.40	-56.79	2.30	12.00	Horizontal	-49.24	-13.00	36.24	225
4	3346.40	-65.23	2.70	12.70	Horizontal	-57.38	-13.00	44.38	135
5	4183.00	-63.64	3.00	12.50	Horizontal	-56.29	-13.00	43.29	225
6	5019.60	-60.07	3.40	12.50	Horizontal	-53.12	-13.00	40.12	45
7	5856.20	-59.56	3.40	12.80	Horizontal	-52.31	-13.00	39.31	180
8	6692.80	-59.23	4.10	11.50	Horizontal	-53.98	-13.00	40.98	270
9	7529.40	-57.25	4.20	12.20	Horizontal	-51.40	-13.00	38.40	90
10	8366.00	-57.93	4.30	12.50	Horizontal	-51.88	-13.00	38.88	225
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	1673.00	-65.04	1.70	8.70	Horizontal	-60.19	-13.00	47.19	315
3	2509.50	-48.26	2.30	12.00	Horizontal	-40.71	-13.00	27.71	90
4	3346.00	-66.47	2.70	12.70	Horizontal	-58.62	-13.00	45.62	225
5	4182.50	-51.81	3.00	12.50	Horizontal	-44.46	-13.00	31.46	0
6	5019.00	-51.54	3.40	12.50	Horizontal	-44.59	-13.00	31.59	135
7	5855.50	-60.22	3.40	12.80	Horizontal	-52.97	-13.00	39.97	90
8	6692.00	-59.01	4.10	11.50	Horizontal	-53.76	-13.00	40.76	45
9	7528.50	-56.51	4.20	12.20	Horizontal	-50.66	-13.00	37.66	0
10	8365.00	-57.11	4.30	12.50	Horizontal	-51.06	-13.00	38.06	45
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	-57.04	1.70	8.70	Horizontal	-52.19	-13.00	39.19	270
3	2503.30	-43.73	2.30	12.00	Horizontal	-36.18	-13.00	23.18	315
4	3337.50	-66.15	2.70	12.70	Horizontal	-58.30	-13.00	45.30	0
5	4171.88	-59.55	3.00	12.50	Horizontal	-52.20	-13.00	39.20	45
6	5006.25	-57.51	3.40	12.50	Horizontal	-50.56	-13.00	37.56	225
7	5840.63	-59.78	3.40	12.80	Horizontal	-52.53	-13.00	39.53	45
8	6675.00	-58.83	4.10	11.50	Horizontal	-53.58	-13.00	40.58	0
9	7509.38	-57.09	4.20	12.20	Horizontal	-51.24	-13.00	38.24	45
10	8343.75	-57.02	4.30	12.50	Horizontal	-50.97	-13.00	37.97	0
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	-55.77	1.70	8.70	Horizontal	-50.92	-13.00	37.92	45
3	2496.60	-46.70	2.30	12.00	Horizontal	-39.15	-13.00	26.15	0
4	3346.00	-66.35	2.70	12.70	Horizontal	-58.50	-13.00	45.50	45
5	4182.50	-59.03	3.00	12.50	Horizontal	-51.68	-13.00	38.68	225
6	5019.00	-56.50	3.40	12.50	Horizontal	-49.55	-13.00	36.55	0
7	5855.50	-60.87	3.40	12.80	Horizontal	-53.62	-13.00	40.62	45
8	6692.00	-58.89	4.10	11.50	Horizontal	-53.64	-13.00	40.64	0
9	7528.50	-57.19	4.20	12.20	Horizontal	-51.34	-13.00	38.34	45
10	8365.00	-58.61	4.30	12.50	Horizontal	-52.56	-13.00	39.56	225
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.									

7. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Climate Chamber	ESPEC	SU-242	93000506	2021-12-12	2022-12-11
Wideband radio communication tester	R&S	CMW500	113645	2022-05-14	2023-05-13
Spectrum Analyzer	Keysight	N9020A	MY50510203	2021-12-12	2022-12-11
Universal Radio Communication Tester	Agilent	E5515C	GB44400275	2021-12-12	2022-12-11
Spectrum Analyzer	R&S	FSV30	104028	2021-12-12	2022-12-11
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	01111	2019--9-12	2022-09-11
Horn Antenna	Schwarzbeck	BBHA 9120D	1594	2020-12-17	2023-12-16
Software	R&S	EMC32	10.35.10	/	/

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

ANNEX A: The EUT Appearance

The EUT Appearance is submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos is submitted separately.