

RF TEST REPORT

Applicant	Quectel Wireless Solutions Company Limited
FCC ID	XMR2020AG525RGL
Product	LTE Module
Brand	Quectel
Model	AG525R-GL
Report No.	R2410A1542-R2
Issue Date	December 6, 2024

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2023)/ FCC CFR 47 Part 22H (2023)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Summary of measurement results

No.	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective 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: (Original) August 24, 2020 ~ October 21, 2020 and November 10, 2020 ~ November 11, 2020			
Date of Sample Received: (Original) August 24, 2020			
Note: All indications of Pass/Fail in this report are opinions expressed by Eurofins 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.			

AG525R-GL (Report No.: R2410A1542-R2) is a variant model of AG525R-GL (Report No.: R2008A0573-R2V1).

The customer declares that AG525R-GL's new version shares the same software and hardware design with original version. They support the same bands. The new version just changed some RF alternative materials.

Considering to the difference, after technical assessment, this product only tested Radiates Spurious Emission based on the worst case of one of the bands in the original report, and the data did not worsen, so they were not recorded in the report.

This report also verifies Transmitter Output Power, powers of new variant are varied due to measurement uncertainty, and sample tolerance of the acceptance range, so they were not recorded in the report.

Other test data please refer to the original report.

The detailed product change description please refers to the *Difference Declaration Letter*.

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 **Eurofins 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)

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

A2LA (Certificate Number: 3857.01)

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

1.3. Testing Location

Company: Eurofins TA Technology (Shanghai) Co., Ltd.
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2. General Description of Equipment under Test

2.3. Applicant and Manufacturer Information

Applicant	Quectel Wireless Solutions Company Limited
Applicant address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Manufacturer	Quectel Wireless Solutions Company Limited
Manufacturer address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

2.4. General Information

EUT Description		
Model	AG525R-GL	
IMEI	(Original) 864228040006472	
Hardware Version	R1.1	
Software Version	AG525RGLAAR01A16M4G_OCPU	
Power Supply	External Power Supply	
Antenna Type	External Antenna	
Antenna Gain	Frequency(MHz)	Gain (dBi)
	820	3.14
	830	2.71
	840	2.72
	850	3.10
Test Mode(s)	GSM 850; LTE Band 26;	
Test Modulation	(GSM/GPRS) GMSK; (EGPRS) GMSK/ 8PSK; (LTE)QPSK 16QAM 64QAM;	
GPRS Multislot Class	33	
EGPRS Multislot Class	33	
LTE Category	12	
Maximum E.R.P.	GSM 850:	34.09dBm
	LTE Band 26:	23.89dBm
Rated Power Supply Voltage	3.8V	
Extreme Voltage	Minimum: 3.3V Maximum: 4.3V	
Extreme Temperature	Lowest: -30°C Highest: +50°C	
Operating Voltage	Minimum: 3.3V Maximum: 4.3V	

Operating Temperature	Lowest: -40°C Highest: +85°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM850	824 ~ 849	869 ~ 894
	LTE Band 26	824 ~ 849	869 ~ 894
Note: 1. The EUT is sent from the applicant to Eurofins 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 (2023)

FCC CFR47 Part 2 (2023)

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, vertical polarization) and the worst case was recorded.

All mode and data rates and positions were investigated. Subsequently, only the worst case emissions are reported.

The following testing in GSM /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
RF Power Output and Effective Radiated power	GSM GPRS EGPRS
Occupied Bandwidth	GSM GPRS(1Tx slot) EGPRS(1Tx slot)
Band Edge Compliance	GSM GPRS(1Tx slot) EGPRS(1Tx slot)
Peak-to-Average Power Ratio	GSM GPRS(1Tx slot) EGPRS(1Tx slot)
Frequency Stability	GSM GPRS(1Tx slot) EGPRS(1Tx slot)
Spurious Emissions at Antenna Terminals	GSM
Radiates Spurious Emission	GSM

Test modes are chosen as the worst case configuration below for LTE Band 26.

Test items	Bandwidth (MHz)					Modulation			RB			Test Channel		
	1.4	3	5	10	15	QP SK	16QA M	64QA M	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	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	O	-	O
Peak-to-Average Power Ratio	O	O	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Spurious Emissions at Antenna Terminals	O	O	O	O	O	O	-	-	O	-	-	O	O	O
Radiates Spurious Emission	O	-	O	-	O	O	-	-	O	-	-	-	O	-
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.													

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.

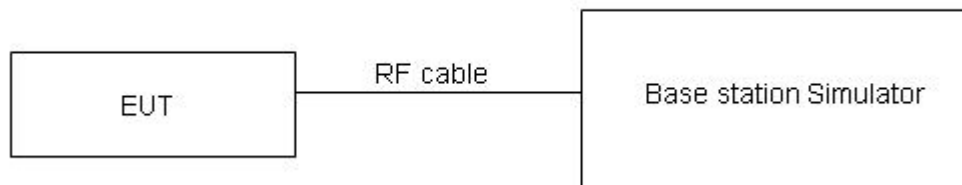
ERP can then be calculated as follows:

$EIRP \text{ (dBm)} = \text{Output Power (dBm)} - \text{Losses (dB)} + \text{Antenna Gain (dBi)}$

where:dBd refers to gain relative to an ideal dipole.

$EIRP \text{ (dBm)} = ERP \text{ (dBm)} + 2.15 \text{ (dB)}$.

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	$\leq 7 \text{ W}$ (38.45 dBm)
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.4 \text{ dB}$ for RF power output, $k = 2$, $U = 1.19 \text{ dB}$ for ERP .

Test Results

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	33.01	33.12	33.14	34.00	33.69	34.09
GPRS (GMSK)	1TXslot	32.97	33.06	33.07	33.96	33.63	34.02
	2TXslots	32.42	32.50	32.44	33.41	33.07	33.39
	3TXslots	29.79	29.68	29.53	30.78	30.25	30.48
	4TXslots	28.54	28.63	28.38	29.53	29.20	29.33
EGPRS (8PSK)	1TXslot	26.05	26.04	25.92	27.04	26.61	26.87
	2TXslots	25.87	25.88	25.74	26.86	26.45	26.69
	3TXslots	24.14	24.12	24.06	25.13	24.69	25.01
	4TXslots	23.11	22.96	22.83	24.10	23.53	23.78

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	ERP (dBm)	Verdict
LTE Band26	1.4	26797	1	#0	QPSK	22.79	23.78	PASS
LTE Band26	1.4	26797	1	#Mid	QPSK	22.90	23.89	PASS
LTE Band26	1.4	26797	1	#Max	QPSK	22.82	23.81	PASS
LTE Band26	1.4	26797	3	#0	QPSK	22.85	23.84	PASS
LTE Band26	1.4	26797	3	#Mid	QPSK	22.83	23.82	PASS
LTE Band26	1.4	26797	3	#Max	QPSK	22.79	23.78	PASS
LTE Band26	1.4	26797	6	#0	QPSK	21.85	22.84	PASS
LTE Band26	1.4	26797	1	#0	QAM16	21.85	22.84	PASS
LTE Band26	1.4	26797	1	#Mid	QAM16	22.00	22.99	PASS
LTE Band26	1.4	26797	1	#Max	QAM16	21.90	22.89	PASS
LTE Band26	1.4	26797	3	#0	QAM16	22.10	23.09	PASS
LTE Band26	1.4	26797	3	#Mid	QAM16	22.11	23.10	PASS
LTE Band26	1.4	26797	3	#Max	QAM16	22.09	23.08	PASS
LTE Band26	1.4	26797	6	#0	QAM16	20.88	21.87	PASS
LTE Band26	1.4	26797	1	#0	QAM64	21.14	22.13	PASS
LTE Band26	1.4	26797	1	#Mid	QAM64	20.98	21.97	PASS
LTE Band26	1.4	26797	1	#Max	QAM64	20.95	21.94	PASS
LTE Band26	1.4	26797	3	#0	QAM64	19.88	20.87	PASS
LTE Band26	1.4	26797	3	#Mid	QAM64	19.85	20.84	PASS
LTE Band26	1.4	26797	3	#Max	QAM64	19.79	20.78	PASS
LTE Band26	1.4	26797	6	#0	QAM64	19.80	20.79	PASS

LTE Band26	1.4	26915	1	#0	QPSK	22.69	23.26	PASS
LTE Band26	1.4	26915	1	#Mid	QPSK	22.82	23.39	PASS
LTE Band26	1.4	26915	1	#Max	QPSK	22.73	23.30	PASS
LTE Band26	1.4	26915	3	#0	QPSK	22.73	23.30	PASS
LTE Band26	1.4	26915	3	#Mid	QPSK	22.72	23.29	PASS
LTE Band26	1.4	26915	3	#Max	QPSK	22.77	23.34	PASS
LTE Band26	1.4	26915	6	#0	QPSK	21.79	22.36	PASS
LTE Band26	1.4	26915	1	#0	QAM16	21.96	22.53	PASS
LTE Band26	1.4	26915	1	#Mid	QAM16	22.09	22.66	PASS
LTE Band26	1.4	26915	1	#Max	QAM16	22.00	22.57	PASS
LTE Band26	1.4	26915	3	#0	QAM16	21.84	22.41	PASS
LTE Band26	1.4	26915	3	#Mid	QAM16	21.84	22.41	PASS
LTE Band26	1.4	26915	3	#Max	QAM16	21.87	22.44	PASS
LTE Band26	1.4	26915	6	#0	QAM16	20.70	21.27	PASS
LTE Band26	1.4	26915	1	#0	QAM64	21.13	21.70	PASS
LTE Band26	1.4	26915	1	#Mid	QAM64	20.95	21.52	PASS
LTE Band26	1.4	26915	1	#Max	QAM64	20.99	21.56	PASS
LTE Band26	1.4	26915	3	#0	QAM64	19.69	20.26	PASS
LTE Band26	1.4	26915	3	#Mid	QAM64	19.76	20.33	PASS
LTE Band26	1.4	26915	3	#Max	QAM64	19.51	20.08	PASS
LTE Band26	1.4	26915	6	#0	QAM64	19.65	20.22	PASS
LTE Band26	1.4	27033	1	#0	QPSK	22.75	23.70	PASS
LTE Band26	1.4	27033	1	#Mid	QPSK	22.78	23.73	PASS
LTE Band26	1.4	27033	1	#Max	QPSK	22.70	23.65	PASS
LTE Band26	1.4	27033	3	#0	QPSK	22.68	23.63	PASS
LTE Band26	1.4	27033	3	#Mid	QPSK	22.68	23.63	PASS
LTE Band26	1.4	27033	3	#Max	QPSK	22.64	23.59	PASS
LTE Band26	1.4	27033	6	#0	QPSK	21.78	22.73	PASS
LTE Band26	1.4	27033	1	#0	QAM16	21.67	22.62	PASS
LTE Band26	1.4	27033	1	#Mid	QAM16	21.72	22.67	PASS
LTE Band26	1.4	27033	1	#Max	QAM16	21.64	22.59	PASS
LTE Band26	1.4	27033	3	#0	QAM16	21.76	22.71	PASS
LTE Band26	1.4	27033	3	#Mid	QAM16	21.75	22.70	PASS
LTE Band26	1.4	27033	3	#Max	QAM16	21.73	22.68	PASS
LTE Band26	1.4	27033	6	#0	QAM16	20.74	21.69	PASS
LTE Band26	1.4	27033	1	#0	QAM64	21.04	21.99	PASS
LTE Band26	1.4	27033	1	#Mid	QAM64	21.16	22.11	PASS
LTE Band26	1.4	27033	1	#Max	QAM64	20.84	21.79	PASS
LTE Band26	1.4	27033	3	#0	QAM64	19.58	20.53	PASS
LTE Band26	1.4	27033	3	#Mid	QAM64	19.75	20.70	PASS
LTE Band26	1.4	27033	3	#Max	QAM64	19.51	20.46	PASS
LTE Band26	1.4	27033	6	#0	QAM64	19.65	20.60	PASS
LTE Band26	3	26805	1	#0	QPSK	22.76	23.32	PASS

LTE Band26	3	26805	1	#Mid	QPSK	22.89	23.45	PASS
LTE Band26	3	26805	1	#Max	QPSK	22.80	23.36	PASS
LTE Band26	3	26805	8	#0	QPSK	21.92	22.48	PASS
LTE Band26	3	26805	8	#Mid	QPSK	21.93	22.49	PASS
LTE Band26	3	26805	8	#Max	QPSK	21.95	22.51	PASS
LTE Band26	3	26805	15	#0	QPSK	21.98	22.54	PASS
LTE Band26	3	26805	1	#0	QAM16	22.20	22.76	PASS
LTE Band26	3	26805	1	#Mid	QAM16	22.30	22.86	PASS
LTE Band26	3	26805	1	#Max	QAM16	22.20	22.76	PASS
LTE Band26	3	26805	8	#0	QAM16	20.97	21.53	PASS
LTE Band26	3	26805	8	#Mid	QAM16	20.98	21.54	PASS
LTE Band26	3	26805	8	#Max	QAM16	20.98	21.54	PASS
LTE Band26	3	26805	15	#0	QAM16	20.93	21.49	PASS
LTE Band26	3	26805	1	#0	QAM64	21.16	21.72	PASS
LTE Band26	3	26805	1	#Mid	QAM64	21.01	21.57	PASS
LTE Band26	3	26805	1	#Max	QAM64	20.98	21.54	PASS
LTE Band26	3	26805	8	#0	QAM64	19.96	20.52	PASS
LTE Band26	3	26805	8	#Mid	QAM64	19.95	20.51	PASS
LTE Band26	3	26805	8	#Max	QAM64	19.87	20.43	PASS
LTE Band26	3	26805	15	#0	QAM64	19.83	20.39	PASS
LTE Band26	3	26915	1	#0	QPSK	22.75	23.32	PASS
LTE Band26	3	26915	1	#Mid	QPSK	22.86	23.43	PASS
LTE Band26	3	26915	1	#Max	QPSK	22.78	23.35	PASS
LTE Band26	3	26915	8	#0	QPSK	21.89	22.46	PASS
LTE Band26	3	26915	8	#Mid	QPSK	21.87	22.44	PASS
LTE Band26	3	26915	8	#Max	QPSK	21.94	22.51	PASS
LTE Band26	3	26915	15	#0	QPSK	21.89	22.46	PASS
LTE Band26	3	26915	1	#0	QAM16	22.05	22.62	PASS
LTE Band26	3	26915	1	#Mid	QAM16	22.15	22.72	PASS
LTE Band26	3	26915	1	#Max	QAM16	22.06	22.63	PASS
LTE Band26	3	26915	8	#0	QAM16	20.89	21.46	PASS
LTE Band26	3	26915	8	#Mid	QAM16	20.90	21.47	PASS
LTE Band26	3	26915	8	#Max	QAM16	20.93	21.50	PASS
LTE Band26	3	26915	15	#0	QAM16	20.76	21.33	PASS
LTE Band26	3	26915	1	#0	QAM64	21.17	21.74	PASS
LTE Band26	3	26915	1	#Mid	QAM64	21.00	21.57	PASS
LTE Band26	3	26915	1	#Max	QAM64	21.04	21.61	PASS
LTE Band26	3	26915	8	#0	QAM64	19.79	20.36	PASS
LTE Band26	3	26915	8	#Mid	QAM64	19.84	20.41	PASS
LTE Band26	3	26915	8	#Max	QAM64	19.60	20.17	PASS
LTE Band26	3	26915	15	#0	QAM64	19.69	20.26	PASS
LTE Band26	3	27025	1	#0	QPSK	22.82	23.77	PASS
LTE Band26	3	27025	1	#Mid	QPSK	22.91	23.86	PASS

LTE Band26	3	27025	1	#Max	QPSK	22.81	23.76	PASS
LTE Band26	3	27025	8	#0	QPSK	21.86	22.81	PASS
LTE Band26	3	27025	8	#Mid	QPSK	21.86	22.81	PASS
LTE Band26	3	27025	8	#Max	QPSK	21.82	22.77	PASS
LTE Band26	3	27025	15	#0	QPSK	21.86	22.81	PASS
LTE Band26	3	27025	1	#0	QAM16	21.78	22.73	PASS
LTE Band26	3	27025	1	#Mid	QAM16	21.82	22.77	PASS
LTE Band26	3	27025	1	#Max	QAM16	21.71	22.66	PASS
LTE Band26	3	27025	8	#0	QAM16	20.90	21.85	PASS
LTE Band26	3	27025	8	#Mid	QAM16	20.89	21.84	PASS
LTE Band26	3	27025	8	#Max	QAM16	20.88	21.83	PASS
LTE Band26	3	27025	15	#0	QAM16	20.84	21.79	PASS
LTE Band26	3	27025	1	#0	QAM64	21.07	22.02	PASS
LTE Band26	3	27025	1	#Mid	QAM64	21.20	22.15	PASS
LTE Band26	3	27025	1	#Max	QAM64	20.88	21.83	PASS
LTE Band26	3	27025	8	#0	QAM64	19.69	20.64	PASS
LTE Band26	3	27025	8	#Mid	QAM64	19.85	20.80	PASS
LTE Band26	3	27025	8	#Max	QAM64	19.59	20.54	PASS
LTE Band26	3	27025	15	#0	QAM64	19.68	20.63	PASS
LTE Band26	5	26815	1	#0	QPSK	22.86	23.42	PASS
LTE Band26	5	26815	1	#Mid	QPSK	22.92	23.48	PASS
LTE Band26	5	26815	1	#Max	QPSK	22.85	23.41	PASS
LTE Band26	5	26815	12	#0	QPSK	21.93	22.49	PASS
LTE Band26	5	26815	12	#Mid	QPSK	21.93	22.49	PASS
LTE Band26	5	26815	12	#Max	QPSK	21.96	22.52	PASS
LTE Band26	5	26815	25	#0	QPSK	21.97	22.53	PASS
LTE Band26	5	26815	1	#0	QAM16	22.20	22.76	PASS
LTE Band26	5	26815	1	#Mid	QAM16	22.32	22.88	PASS
LTE Band26	5	26815	1	#Max	QAM16	22.26	22.82	PASS
LTE Band26	5	26815	12	#0	QAM16	20.93	21.49	PASS
LTE Band26	5	26815	12	#Mid	QAM16	20.93	21.49	PASS
LTE Band26	5	26815	12	#Max	QAM16	20.94	21.50	PASS
LTE Band26	5	26815	25	#0	QAM16	20.98	21.54	PASS
LTE Band26	5	26815	1	#0	QAM64	21.20	21.76	PASS
LTE Band26	5	26815	1	#Mid	QAM64	21.08	21.64	PASS
LTE Band26	5	26815	1	#Max	QAM64	21.04	21.60	PASS
LTE Band26	5	26815	12	#0	QAM64	20.03	20.59	PASS
LTE Band26	5	26815	12	#Mid	QAM64	20.00	20.56	PASS
LTE Band26	5	26815	12	#Max	QAM64	19.94	20.50	PASS
LTE Band26	5	26815	25	#0	QAM64	19.91	20.47	PASS
LTE Band26	5	26915	1	#0	QPSK	22.87	23.44	PASS
LTE Band26	5	26915	1	#Mid	QPSK	22.92	23.49	PASS
LTE Band26	5	26915	1	#Max	QPSK	22.84	23.41	PASS

LTE Band26	5	26915	12	#0	QPSK	21.89	22.46	PASS
LTE Band26	5	26915	12	#Mid	QPSK	21.91	22.48	PASS
LTE Band26	5	26915	12	#Max	QPSK	21.92	22.49	PASS
LTE Band26	5	26915	25	#0	QPSK	21.88	22.45	PASS
LTE Band26	5	26915	1	#0	QAM16	22.11	22.68	PASS
LTE Band26	5	26915	1	#Mid	QAM16	22.19	22.76	PASS
LTE Band26	5	26915	1	#Max	QAM16	22.13	22.70	PASS
LTE Band26	5	26915	12	#0	QAM16	20.88	21.45	PASS
LTE Band26	5	26915	12	#Mid	QAM16	20.88	21.45	PASS
LTE Band26	5	26915	12	#Max	QAM16	20.89	21.46	PASS
LTE Band26	5	26915	25	#0	QAM16	20.83	21.40	PASS
LTE Band26	5	26915	1	#0	QAM64	21.29	21.86	PASS
LTE Band26	5	26915	1	#Mid	QAM64	21.05	21.62	PASS
LTE Band26	5	26915	1	#Max	QAM64	21.11	21.68	PASS
LTE Band26	5	26915	12	#0	QAM64	19.83	20.40	PASS
LTE Band26	5	26915	12	#Mid	QAM64	19.89	20.46	PASS
LTE Band26	5	26915	12	#Max	QAM64	19.70	20.27	PASS
LTE Band26	5	26915	25	#0	QAM64	19.78	20.35	PASS
LTE Band26	5	27015	1	#0	QPSK	22.74	23.69	PASS
LTE Band26	5	27015	1	#Mid	QPSK	22.79	23.74	PASS
LTE Band26	5	27015	1	#Max	QPSK	22.63	23.58	PASS
LTE Band26	5	27015	12	#0	QPSK	21.83	22.78	PASS
LTE Band26	5	27015	12	#Mid	QPSK	21.82	22.77	PASS
LTE Band26	5	27015	12	#Max	QPSK	21.82	22.77	PASS
LTE Band26	5	27015	25	#0	QPSK	21.82	22.77	PASS
LTE Band26	5	27015	1	#0	QAM16	22.12	23.07	PASS
LTE Band26	5	27015	1	#Mid	QAM16	22.18	23.13	PASS
LTE Band26	5	27015	1	#Max	QAM16	22.03	22.98	PASS
LTE Band26	5	27015	12	#0	QAM16	20.89	21.84	PASS
LTE Band26	5	27015	12	#Mid	QAM16	20.89	21.84	PASS
LTE Band26	5	27015	12	#Max	QAM16	20.89	21.84	PASS
LTE Band26	5	27015	25	#0	QAM16	20.79	21.74	PASS
LTE Band26	5	27015	1	#0	QAM64	21.12	22.07	PASS
LTE Band26	5	27015	1	#Mid	QAM64	21.27	22.22	PASS
LTE Band26	5	27015	1	#Max	QAM64	20.97	21.92	PASS
LTE Band26	5	27015	12	#0	QAM64	19.75	20.70	PASS
LTE Band26	5	27015	12	#Mid	QAM64	19.89	20.84	PASS
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LTE Band26	5	27015	25	#0	QAM64	19.69	20.64	PASS
LTE Band26	10	26840	1	#0	QPSK	22.81	23.37	PASS
LTE Band26	10	26840	1	#Mid	QPSK	22.67	23.23	PASS
LTE Band26	10	26840	1	#Max	QPSK	22.68	23.24	PASS
LTE Band26	10	26840	25	#0	QPSK	21.98	22.54	PASS

LTE Band26	10	26840	25	#Mid	QPSK	22.02	22.58	PASS
LTE Band26	10	26840	25	#Max	QPSK	21.98	22.54	PASS
LTE Band26	10	26840	50	#0	QPSK	21.97	22.53	PASS
LTE Band26	10	26840	1	#0	QAM16	22.21	22.77	PASS
LTE Band26	10	26840	1	#Mid	QAM16	22.06	22.62	PASS
LTE Band26	10	26840	1	#Max	QAM16	22.15	22.71	PASS
LTE Band26	10	26840	25	#0	QAM16	21.08	21.64	PASS
LTE Band26	10	26840	25	#Mid	QAM16	21.10	21.66	PASS
LTE Band26	10	26840	25	#Max	QAM16	21.06	21.62	PASS
LTE Band26	10	26840	50	#0	QAM16	20.93	21.49	PASS
LTE Band26	10	26840	1	#0	QAM64	21.15	21.71	PASS
LTE Band26	10	26840	1	#Mid	QAM64	21.02	21.58	PASS
LTE Band26	10	26840	1	#Max	QAM64	20.97	21.53	PASS
LTE Band26	10	26840	25	#0	QAM64	19.96	20.52	PASS
LTE Band26	10	26840	25	#Mid	QAM64	19.96	20.52	PASS
LTE Band26	10	26840	25	#Max	QAM64	19.87	20.43	PASS
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LTE Band26	10	26915	1	#0	QPSK	22.89	23.46	PASS
LTE Band26	10	26915	1	#Mid	QPSK	22.66	23.23	PASS
LTE Band26	10	26915	1	#Max	QPSK	22.72	23.29	PASS
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LTE Band26	10	26915	25	#Mid	QPSK	21.97	22.54	PASS
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LTE Band26	10	26915	50	#0	QPSK	21.94	22.51	PASS
LTE Band26	10	26915	1	#0	QAM16	22.20	22.77	PASS
LTE Band26	10	26915	1	#Mid	QAM16	21.92	22.49	PASS
LTE Band26	10	26915	1	#Max	QAM16	22.01	22.58	PASS
LTE Band26	10	26915	25	#0	QAM16	21.03	21.60	PASS
LTE Band26	10	26915	25	#Mid	QAM16	21.01	21.58	PASS
LTE Band26	10	26915	25	#Max	QAM16	20.97	21.54	PASS
LTE Band26	10	26915	50	#0	QAM16	20.88	21.45	PASS
LTE Band26	10	26915	1	#0	QAM64	21.16	21.73	PASS
LTE Band26	10	26915	1	#Mid	QAM64	21.01	21.58	PASS
LTE Band26	10	26915	1	#Max	QAM64	21.03	21.60	PASS
LTE Band26	10	26915	25	#0	QAM64	19.79	20.36	PASS
LTE Band26	10	26915	25	#Mid	QAM64	19.85	20.42	PASS
LTE Band26	10	26915	25	#Max	QAM64	19.62	20.19	PASS
LTE Band26	10	26915	50	#0	QAM64	19.70	20.27	PASS
LTE Band26	10	26990	1	#0	QPSK	22.92	23.49	PASS
LTE Band26	10	26990	1	#Mid	QPSK	22.76	23.33	PASS
LTE Band26	10	26990	1	#Max	QPSK	22.76	23.33	PASS
LTE Band26	10	26990	25	#0	QPSK	21.93	22.50	PASS
LTE Band26	10	26990	25	#Mid	QPSK	21.92	22.49	PASS

LTE Band26	10	26990	25	#Max	QPSK	21.88	22.45	PASS
LTE Band26	10	26990	50	#0	QPSK	21.91	22.48	PASS
LTE Band26	10	26990	1	#0	QAM16	21.85	22.42	PASS
LTE Band26	10	26990	1	#Mid	QAM16	21.64	22.21	PASS
LTE Band26	10	26990	1	#Max	QAM16	21.64	22.21	PASS
LTE Band26	10	26990	25	#0	QAM16	20.91	21.48	PASS
LTE Band26	10	26990	25	#Mid	QAM16	20.92	21.49	PASS
LTE Band26	10	26990	25	#Max	QAM16	20.92	21.49	PASS
LTE Band26	10	26990	50	#0	QAM16	20.87	21.44	PASS
LTE Band26	10	26990	1	#0	QAM64	21.06	21.63	PASS
LTE Band26	10	26990	1	#Mid	QAM64	21.21	21.78	PASS
LTE Band26	10	26990	1	#Max	QAM64	20.87	21.44	PASS
LTE Band26	10	26990	25	#0	QAM64	19.69	20.26	PASS
LTE Band26	10	26990	25	#Mid	QAM64	19.84	20.41	PASS
LTE Band26	10	26990	25	#Max	QAM64	19.60	20.17	PASS
LTE Band26	10	26990	50	#0	QAM64	19.70	20.27	PASS
LTE Band26	15	26865	1	#0	QPSK	23.06	23.62	PASS
LTE Band26	15	26865	1	#Mid	QPSK	22.97	23.53	PASS
LTE Band26	15	26865	1	#Max	QPSK	22.92	23.48	PASS
LTE Band26	15	26865	36	#0	QPSK	22.12	22.68	PASS
LTE Band26	15	26865	36	#Mid	QPSK	22.13	22.69	PASS
LTE Band26	15	26865	36	#Max	QPSK	22.01	22.57	PASS
LTE Band26	15	26865	75	#0	QPSK	22.04	22.60	PASS
LTE Band26	15	26865	1	#0	QAM16	22.44	23.00	PASS
LTE Band26	15	26865	1	#Mid	QAM16	22.40	22.96	PASS
LTE Band26	15	26865	1	#Max	QAM16	22.31	22.87	PASS
LTE Band26	15	26865	36	#0	QAM16	21.17	21.73	PASS
LTE Band26	15	26865	36	#Mid	QAM16	21.17	21.73	PASS
LTE Band26	15	26865	36	#Max	QAM16	21.06	21.62	PASS
LTE Band26	15	26865	75	#0	QAM16	21.06	21.62	PASS
LTE Band26	15	26865	1	#0	QAM64	21.11	21.67	PASS
LTE Band26	15	26865	1	#Mid	QAM64	20.99	21.55	PASS
LTE Band26	15	26865	1	#Max	QAM64	20.92	21.48	PASS
LTE Band26	15	26865	36	#0	QAM64	19.91	20.47	PASS
LTE Band26	15	26865	36	#Mid	QAM64	19.91	20.47	PASS
LTE Band26	15	26865	36	#Max	QAM64	19.81	20.37	PASS
LTE Band26	15	26865	75	#0	QAM64	19.84	20.40	PASS
LTE Band26	15	26915	1	#0	QPSK	23.01	23.58	PASS
LTE Band26	15	26915	1	#Mid	QPSK	22.99	23.56	PASS
LTE Band26	15	26915	1	#Max	QPSK	22.92	23.49	PASS
LTE Band26	15	26915	36	#0	QPSK	22.12	22.69	PASS
LTE Band26	15	26915	36	#Mid	QPSK	22.12	22.69	PASS
LTE Band26	15	26915	36	#Max	QPSK	22.02	22.59	PASS

LTE Band26	15	26915	75	#0	QPSK	22.07	22.64	PASS
LTE Band26	15	26915	1	#0	QAM16	22.37	22.94	PASS
LTE Band26	15	26915	1	#Mid	QAM16	22.25	22.82	PASS
LTE Band26	15	26915	1	#Max	QAM16	22.21	22.78	PASS
LTE Band26	15	26915	36	#0	QAM16	21.13	21.70	PASS
LTE Band26	15	26915	36	#Mid	QAM16	21.13	21.70	PASS
LTE Band26	15	26915	36	#Max	QAM16	20.99	21.56	PASS
LTE Band26	15	26915	75	#0	QAM16	20.99	21.56	PASS
LTE Band26	15	26915	1	#0	QAM64	21.08	21.65	PASS
LTE Band26	15	26915	1	#Mid	QAM64	20.96	21.53	PASS
LTE Band26	15	26915	1	#Max	QAM64	20.97	21.54	PASS
LTE Band26	15	26915	36	#0	QAM64	19.70	20.27	PASS
LTE Band26	15	26915	36	#Mid	QAM64	19.76	20.33	PASS
LTE Band26	15	26915	36	#Max	QAM64	19.54	20.11	PASS
LTE Band26	15	26915	75	#0	QAM64	19.61	20.18	PASS
LTE Band26	15	26965	1	#0	QPSK	23.11	23.68	PASS
LTE Band26	15	26965	1	#Mid	QPSK	22.99	23.56	PASS
LTE Band26	15	26965	1	#Max	QPSK	22.91	23.48	PASS
LTE Band26	15	26965	36	#0	QPSK	22.08	22.65	PASS
LTE Band26	15	26965	36	#Mid	QPSK	22.08	22.65	PASS
LTE Band26	15	26965	36	#Max	QPSK	21.97	22.54	PASS
LTE Band26	15	26965	75	#0	QPSK	22.04	22.61	PASS
LTE Band26	15	26965	1	#0	QAM16	22.18	22.75	PASS
LTE Band26	15	26965	1	#Mid	QAM16	22.09	22.66	PASS
LTE Band26	15	26965	1	#Max	QAM16	21.90	22.47	PASS
LTE Band26	15	26965	36	#0	QAM16	21.03	21.60	PASS
LTE Band26	15	26965	36	#Mid	QAM16	21.06	21.63	PASS
LTE Band26	15	26965	36	#Max	QAM16	20.99	21.56	PASS
LTE Band26	15	26965	75	#0	QAM16	21.01	21.58	PASS
LTE Band26	15	26965	1	#0	QAM64	21.01	21.58	PASS
LTE Band26	15	26965	1	#Mid	QAM64	21.16	21.73	PASS
LTE Band26	15	26965	1	#Max	QAM64	20.80	21.37	PASS
LTE Band26	15	26965	36	#0	QAM64	19.62	20.19	PASS
LTE Band26	15	26965	36	#Mid	QAM64	19.77	20.34	PASS
LTE Band26	15	26965	36	#Max	QAM64	19.52	20.09	PASS
LTE Band26	15	26965	75	#0	QAM64	19.61	20.18	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 3kHz, VBW is set to 10kHz for GSM 850,

RBW is set to 30 kHz, VBW is set to 91kHz for LTE Band 26 (1.4MHz),

RBW is set to 62 kHz, VBW is set to 180kHz for LTE Band 26 (3MHz),

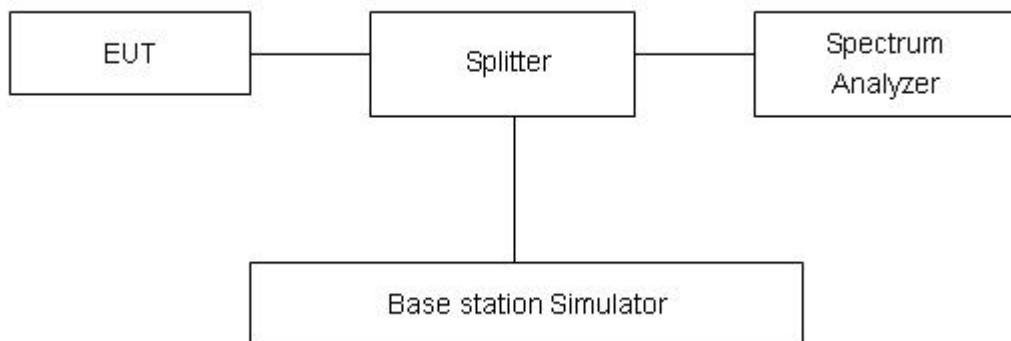
RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 26 (5MHz),

RBW is set to 200 kHz, VBW is set to 620kHz for LTE Band 26 (10MHz),

RBW is set to 300kHz, VBW is set to 910kHz for LTE Band 26 (15MHz).

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 $k = 2$, $U = 624\text{Hz}$.

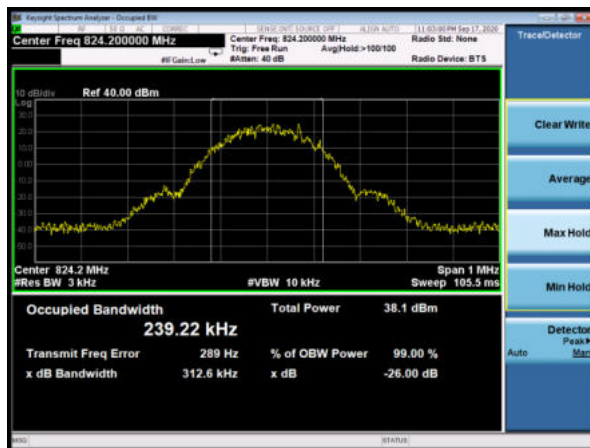
Test Result

Mode	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
GSM 850 (GMSK)	128	824.2	0.23922	0.3126
	190	836.6	0.24737	0.3040
	251	848.8	0.24304	0.3083
GPRS 850 (GMSK)	128	824.2	0.24366	0.3106
	190	836.6	0.24252	0.3099
	251	848.8	0.24346	0.3117
EGPRS 850 (8PSK)	128	824.2	0.24207	0.3079
	190	836.6	0.24313	0.3045
	251	848.8	0.24079	0.3047

LTE Band 26						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	26797	824.7	1.0942	1.238
			26915	836.5	1.0964	1.243
			27033	848.3	1.0991	1.237
		3	26805	825.5	2.6949	3.018
			26915	836.5	2.6914	2.984
			27025	847.5	2.6972	2.968
		5	26815	826.5	4.5145	4.862
			26915	836.5	4.5034	4.917
			27015	846.5	4.5124	4.936
		10	26840	829	9.0075	9.827
			26915	836.5	8.9793	9.805
			26990	844	8.9991	9.805
		15	26865	831.5	13.4410	14.410
			26915	836.5	13.4290	14.510
			26965	841.5	13.4360	14.540
	16QAM	1.4	26797	824.7	1.0922	1.234
			26915	836.5	1.0909	1.216

			27033	848.3	1.0916	1.242
		3	26805	825.5	2.6978	3.037
			26915	836.5	2.7051	2.985
			27025	847.5	2.6975	3.019
		5	26815	826.5	4.4958	4.950
			26915	836.5	4.5188	4.892
			27015	846.5	4.5097	4.930
		10	26840	829	8.9886	9.837
			26915	836.5	8.9890	9.763
			26990	844	8.9725	9.849
		15	26865	831.5	13.4530	14.640
			26915	836.5	13.4170	14.630
			26965	841.5	13.4390	14.510
	64QAM	1.4	26797	824.7	1.0988	1.243
			26915	836.5	1.0896	1.226
			27033	848.3	1.0914	1.238
		3	26805	825.5	2.6858	2.981
			26915	836.5	2.6966	2.988
			27025	847.5	2.6964	2.984
		5	26815	826.5	4.5343	4.981
			26915	836.5	4.5097	4.979
			27015	846.5	4.5206	4.941
		10	26840	829	8.9847	9.691
			26915	836.5	8.9962	9.730
			26990	844	8.9690	9.794
		15	26865	831.5	13.4020	14.580
			26915	836.5	13.4480	14.490
			26965	841.5	13.4440	14.460

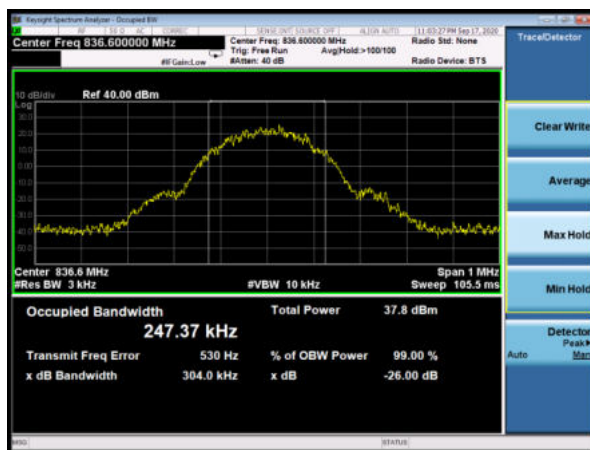
GSM 850 CH-Low



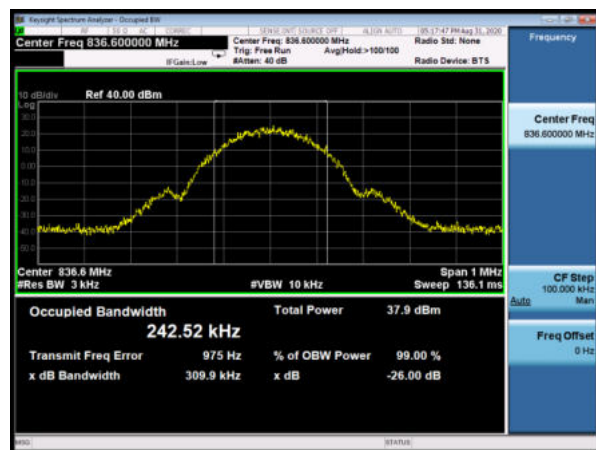
GSM 850 GPRS CH-Low



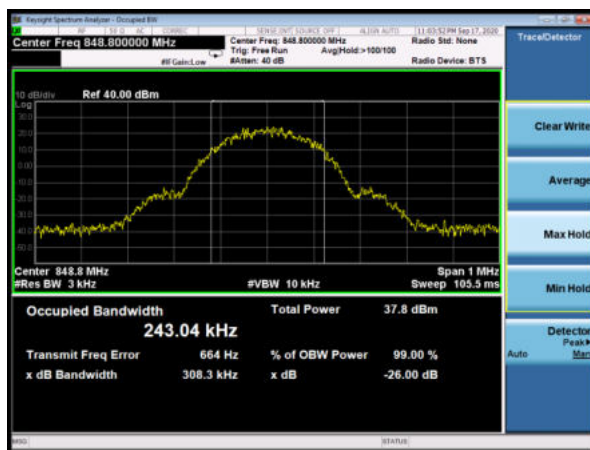
GSM 850 CH-Middle



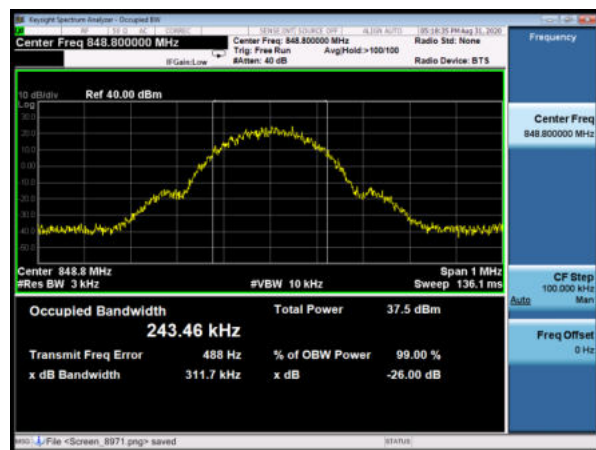
GSM 850 GPRS CH-Middle



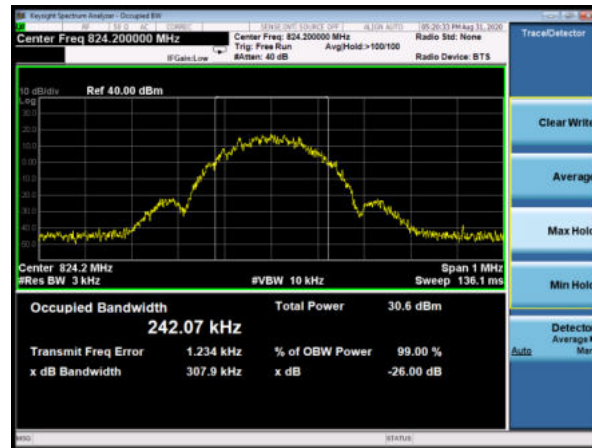
GSM 850 CH-High



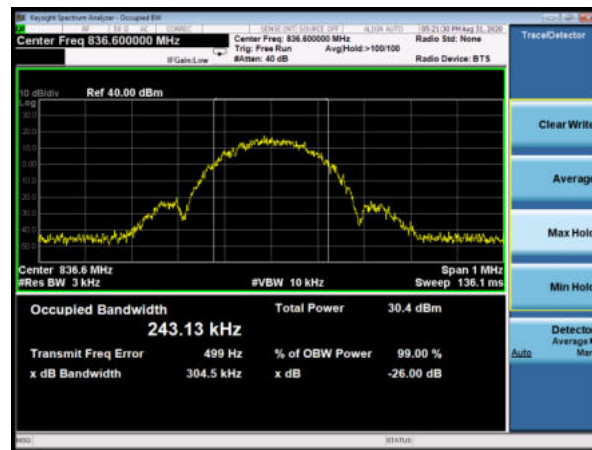
GSM 850 GPRS CH-High



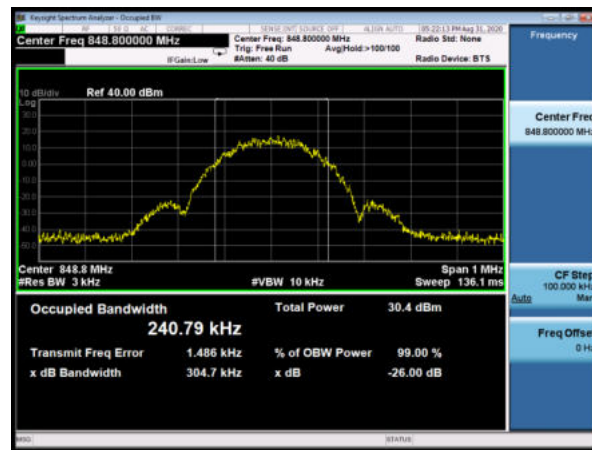
GSM 850 EGPRS CH-Low



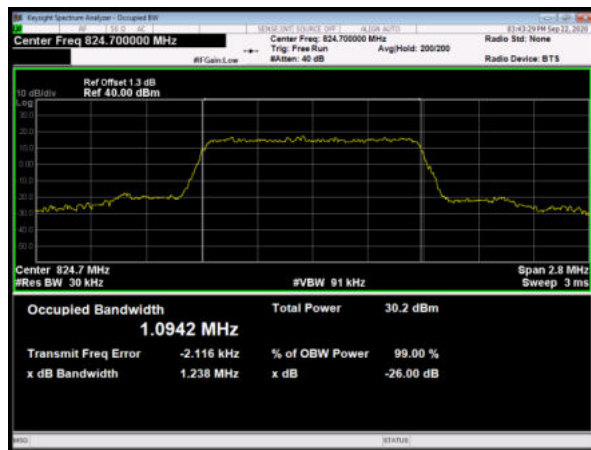
GSM 850 EGPRS CH-Middle



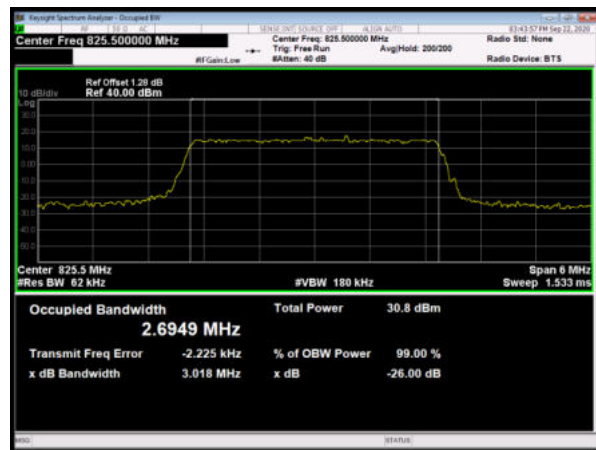
GSM 850 EGPRS CH-High



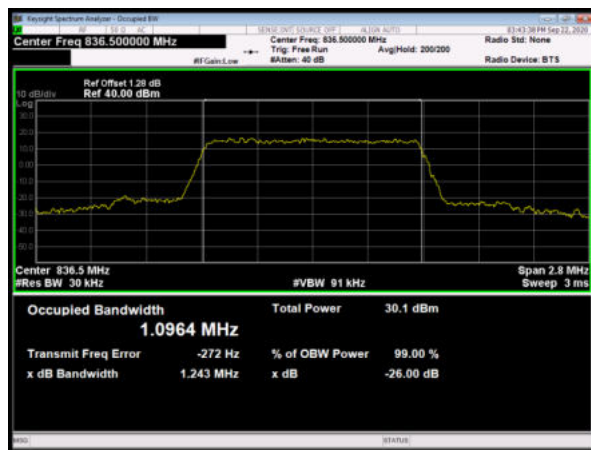
LTE Band 26 QPSK 1.4MHz CH-Low



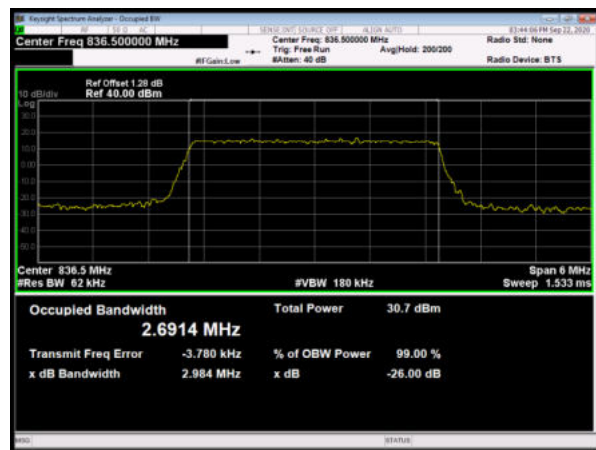
LTE Band 26 QPSK 3MHz CH-Low



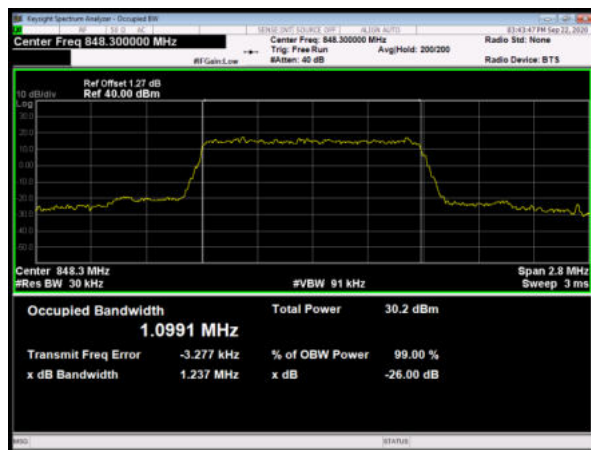
LTE Band 26 QPSK 1.4MHz CH-Middle



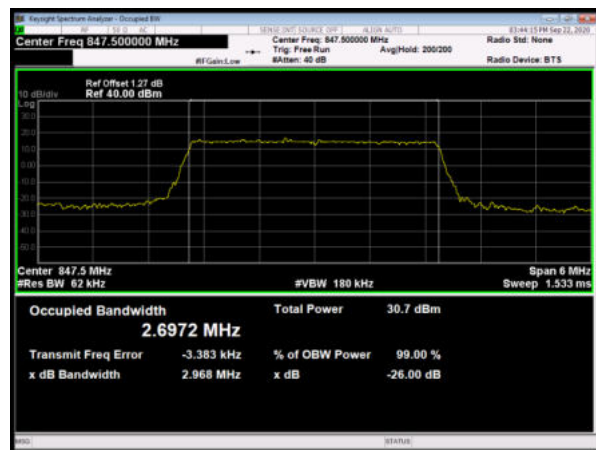
LTE Band 26 QPSK 3MHz CH-Middle



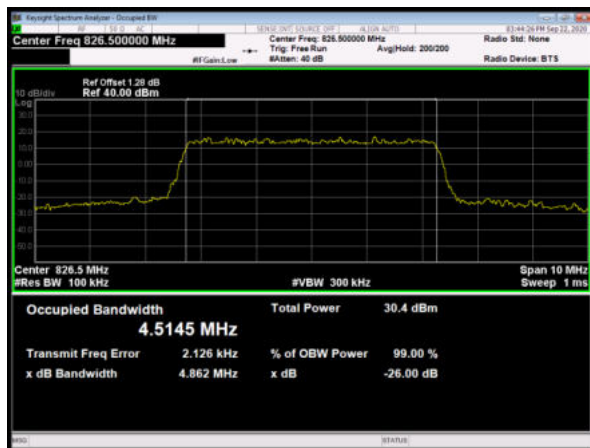
LTE Band 26 QPSK 1.4MHz CH-High



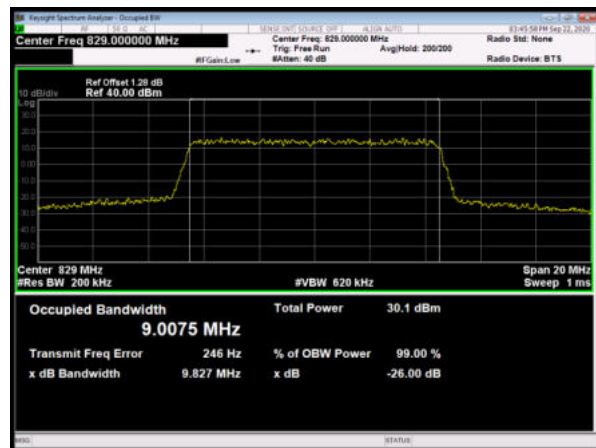
LTE Band 26 QPSK 3MHz CH-High



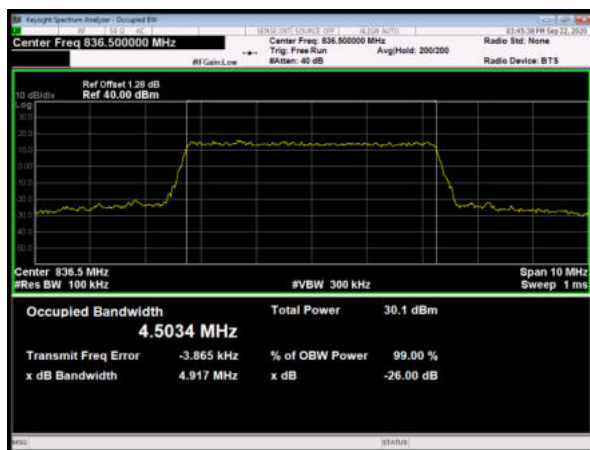
LTE Band 26 QPSK 5MHz CH-Low



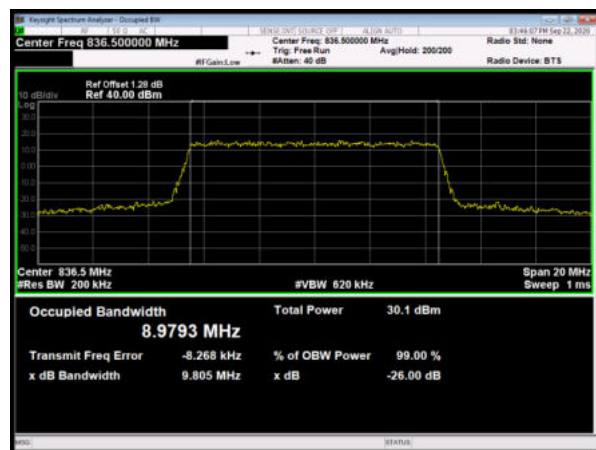
LTE Band 26 QPSK 10MHz CH-Low



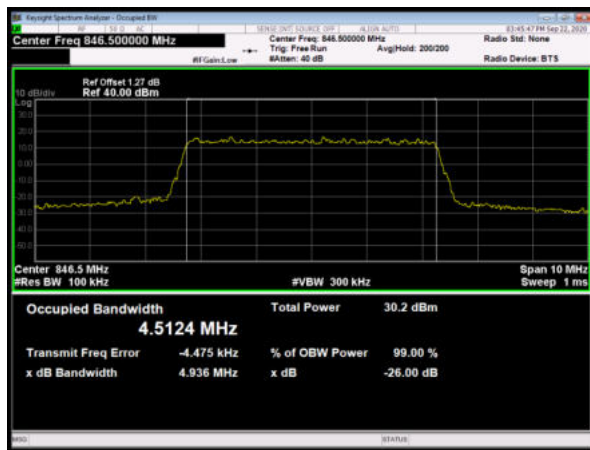
LTE Band 26 QPSK 5MHz CH-Middle



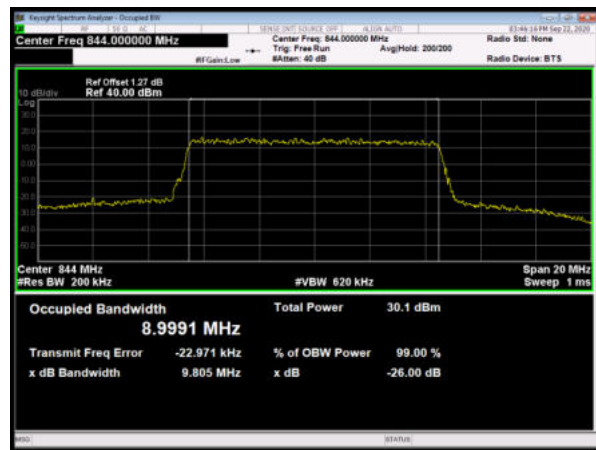
LTE Band 26 QPSK 10MHz CH-Middle



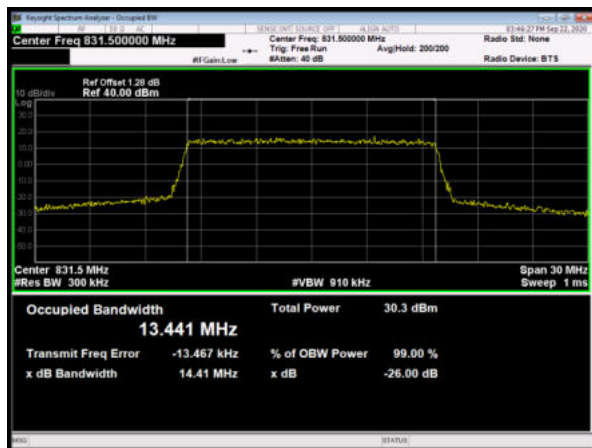
LTE Band 26 QPSK 5MHz CH-High



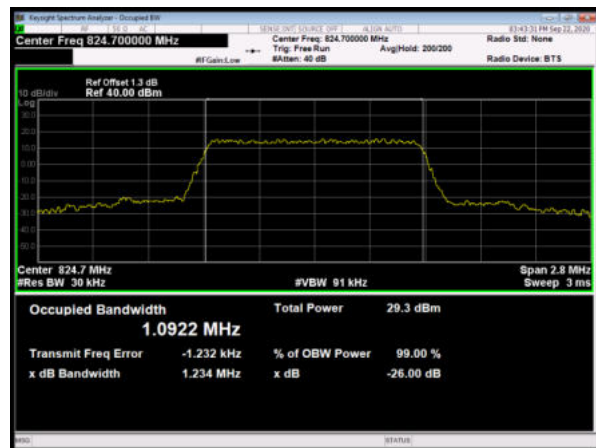
LTE Band 26 QPSK 10MHz CH-High



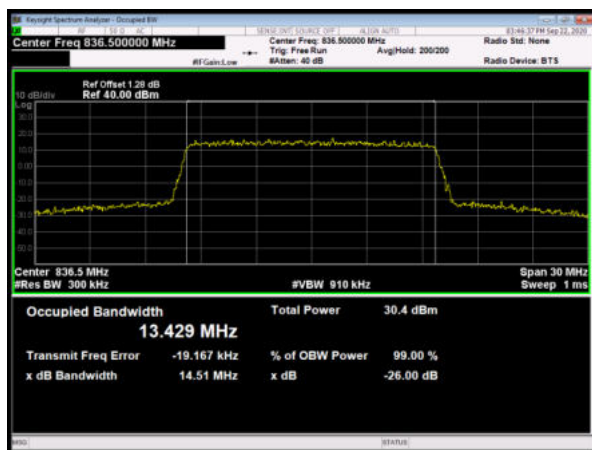
LTE Band 26 QPSK 15MHz CH-Low



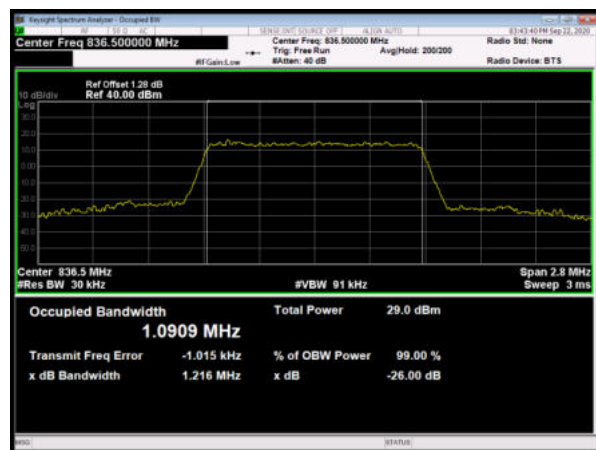
LTE Band 26 16QAM 1.4MHz CH-Low



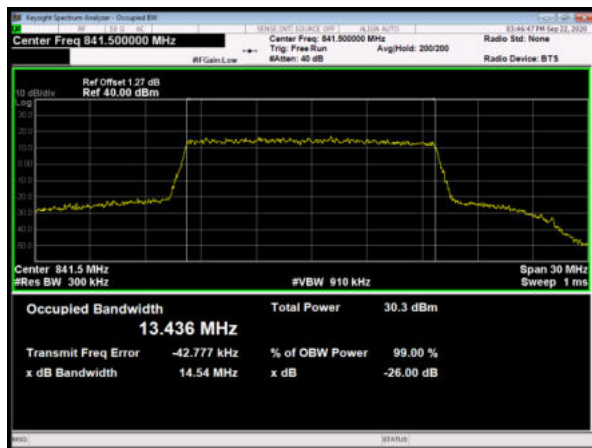
LTE Band 26 QPSK 15MHz CH-Middle



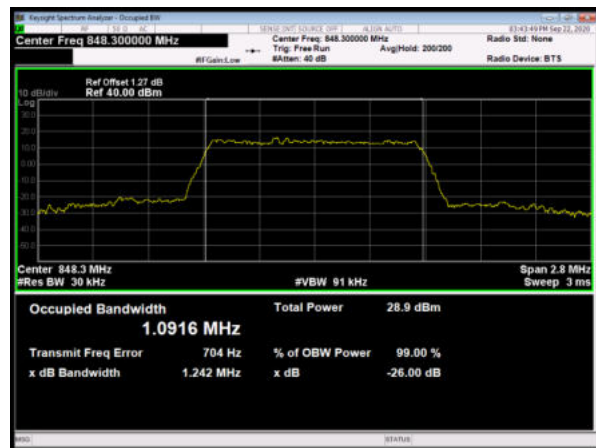
LTE Band 26 16QAM 1.4MHz CH-Middle



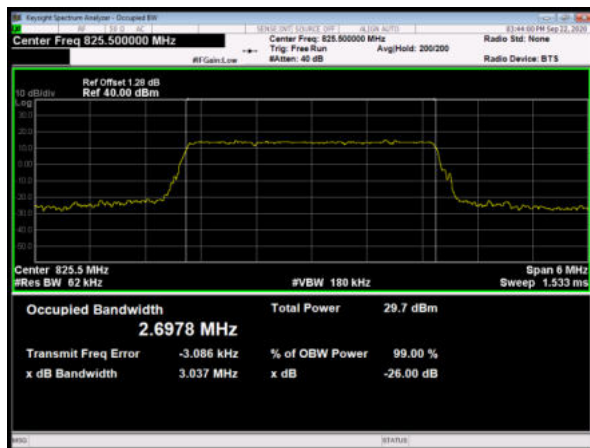
LTE Band 26 QPSK 15MHz CH-High



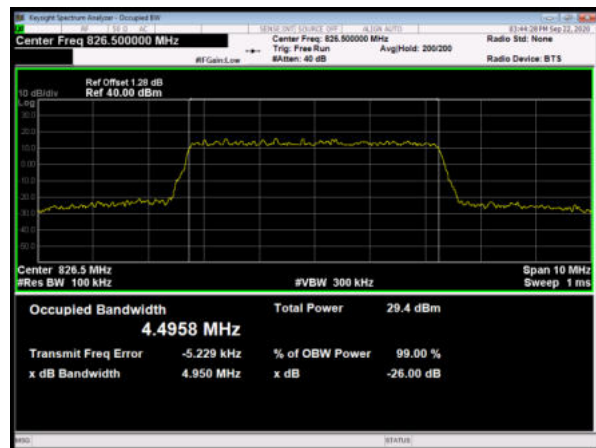
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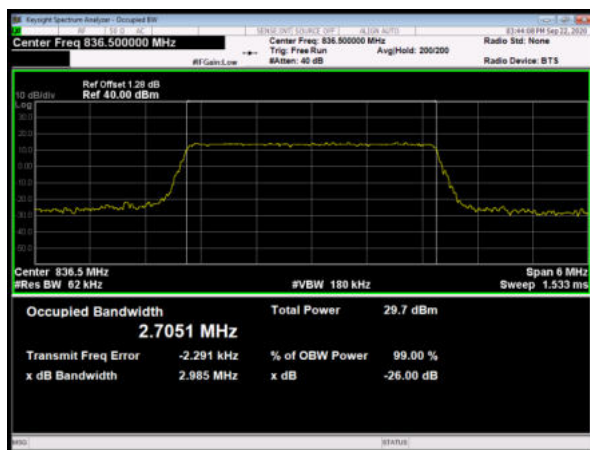
LTE Band 26 16QAM 3MHz CH-Low



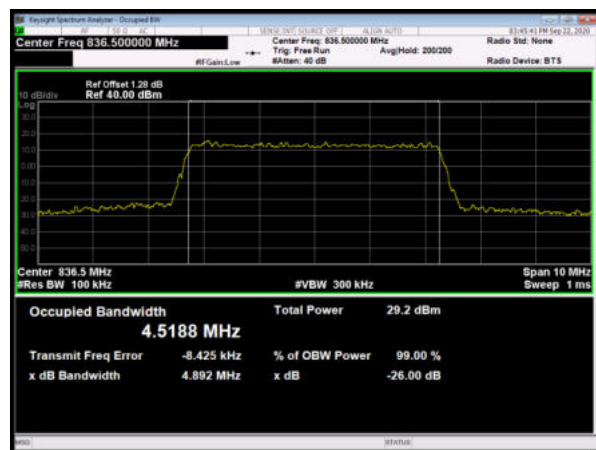
LTE Band 26 16QAM 5MHz CH-Low



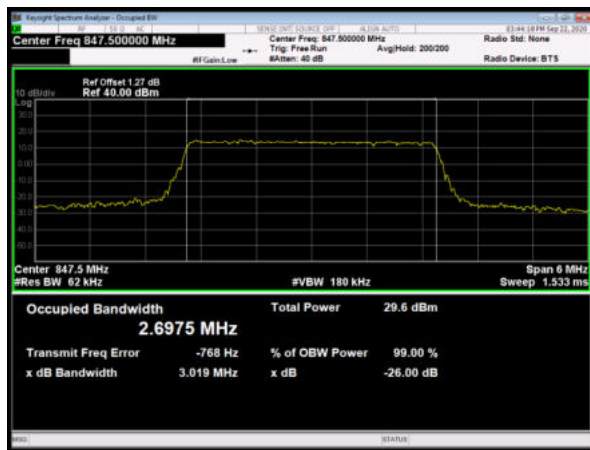
LTE Band 26 16QAM 3MHz CH-Middle



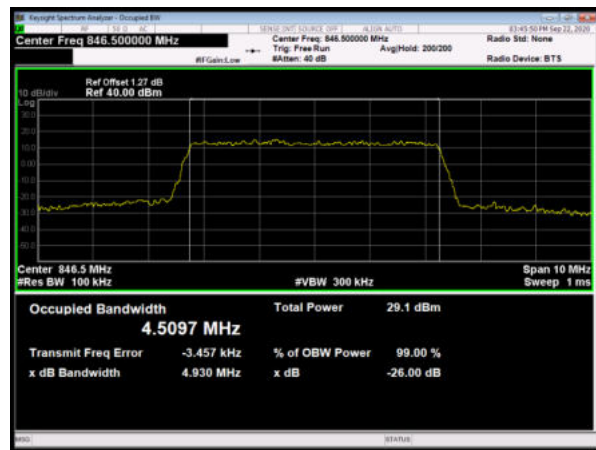
LTE Band 26 16QAM 5MHz CH-Middle



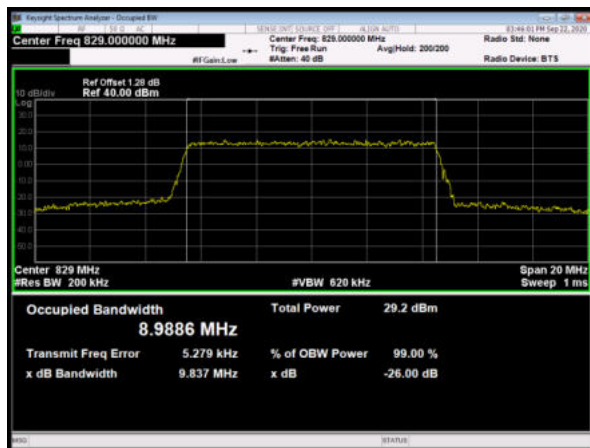
LTE Band 26 16QAM 3MHz CH-High



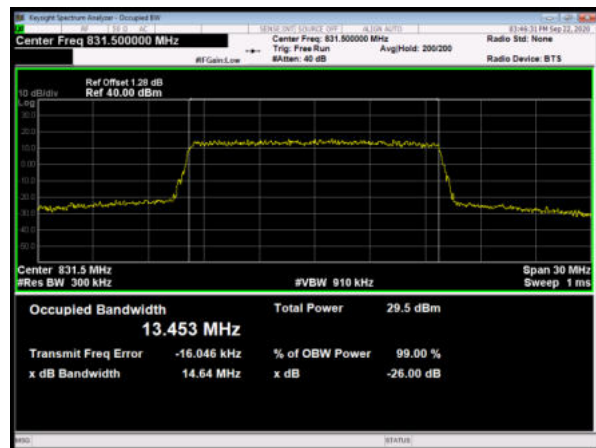
LTE Band 26 16QAM 5MHz CH-High



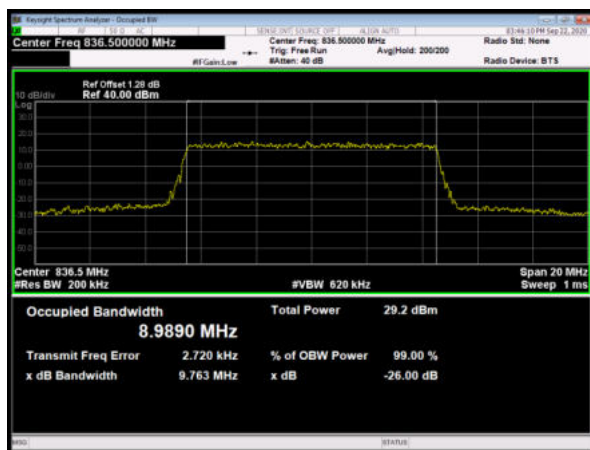
LTE Band 26 16QAM 10MHz CH-Low



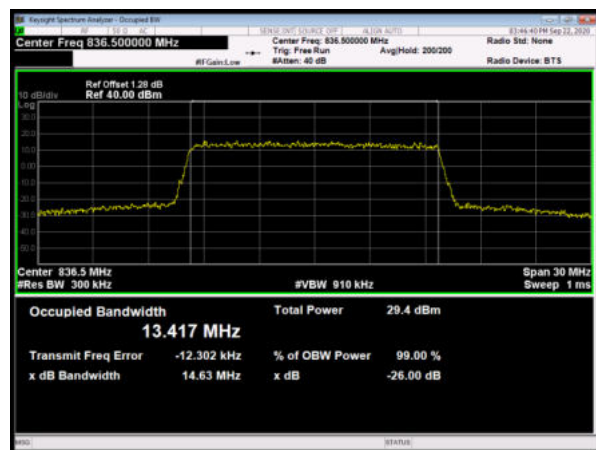
LTE Band 26 16QAM 15MHz CH-Low



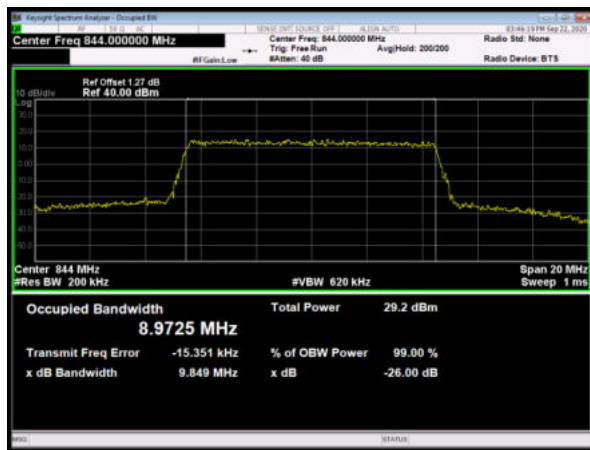
LTE Band 26 16QAM 10MHz CH-Middle



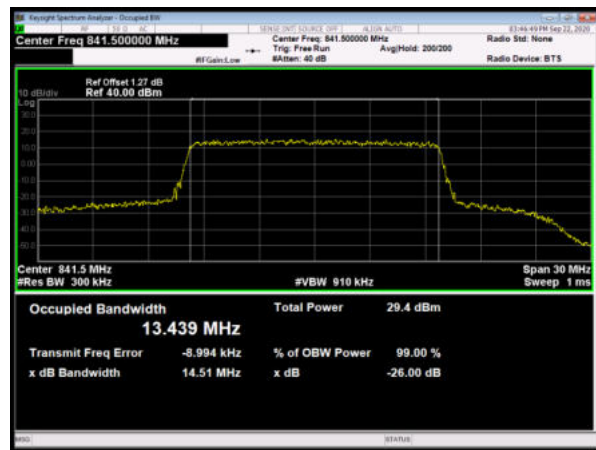
LTE Band 26 16QAM 15MHz CH-Middle



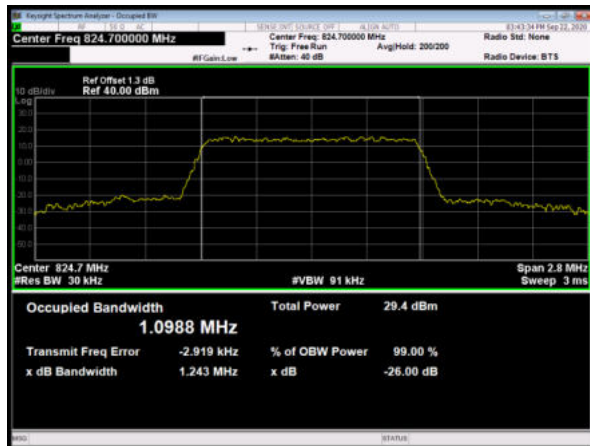
LTE Band 26 16QAM 10MHz CH-High



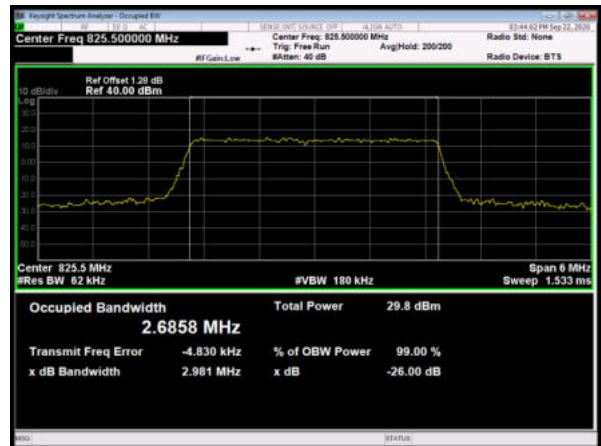
LTE Band 26 16QAM 15MHz CH-High



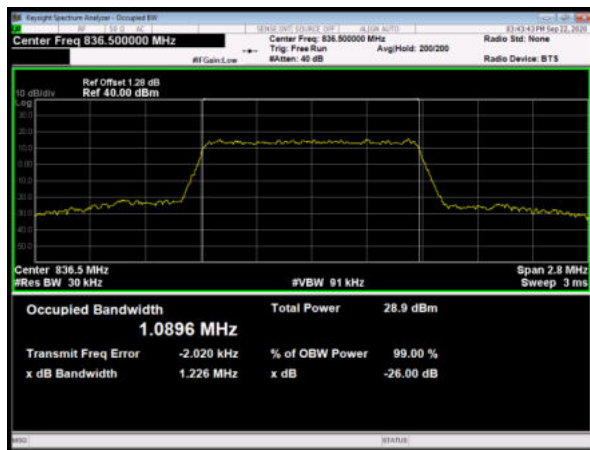
LTE Band 26 64QAM 1.4MHz CH-Low



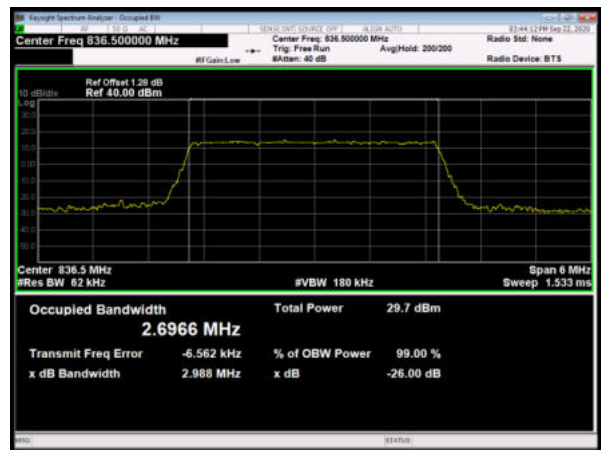
LTE Band 26 64QAM 3MHz CH-Low



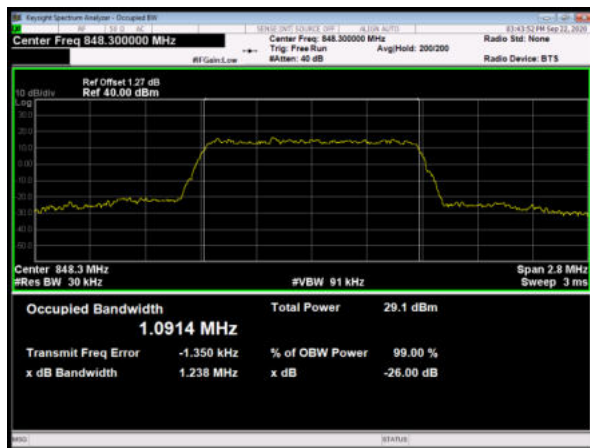
LTE Band 26 64QAM 1.4MHz CH-Middle



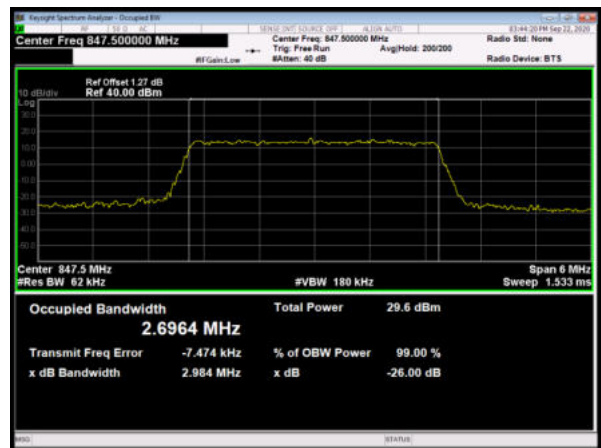
LTE Band 26 64QAM 3MHz CH-Middle



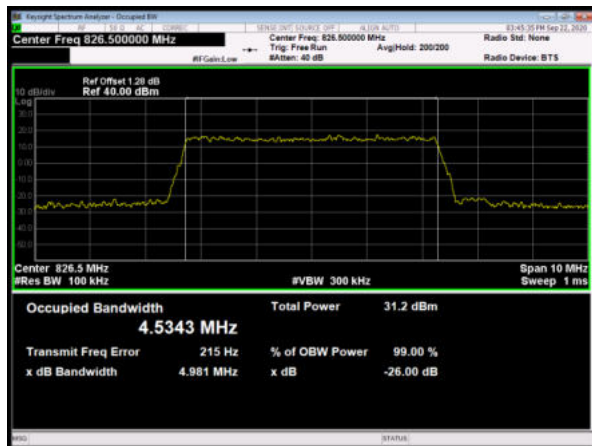
LTE Band 26 64QAM 1.4MHz CH-High



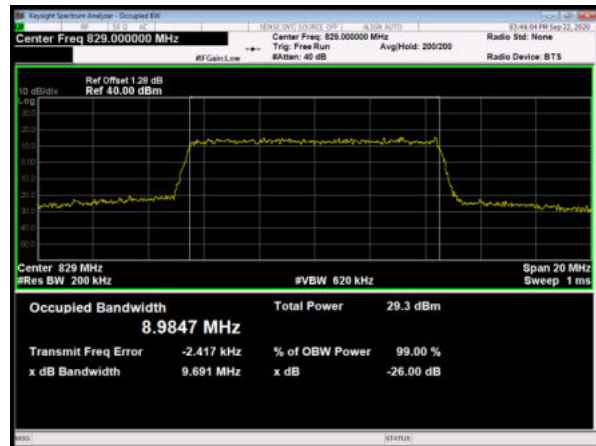
LTE Band 26 64QAM 3MHz CH-High



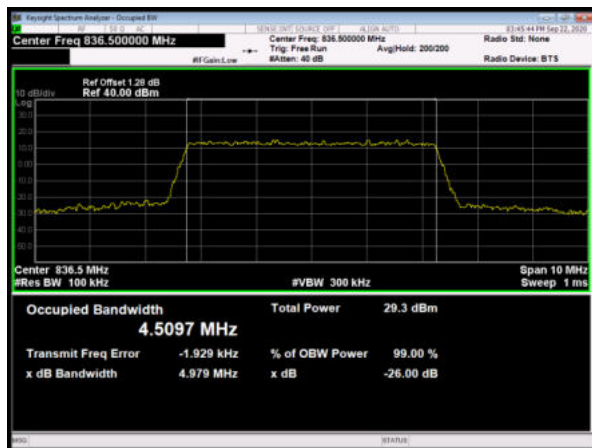
LTE Band 26 64QAM 5MHz CH-Low



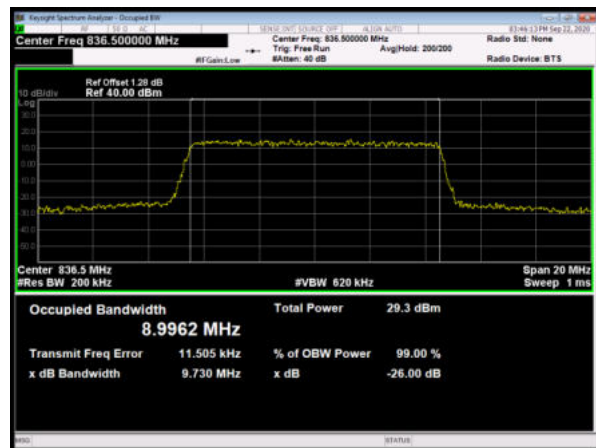
LTE Band 26 64QAM 10MHz CH-Low



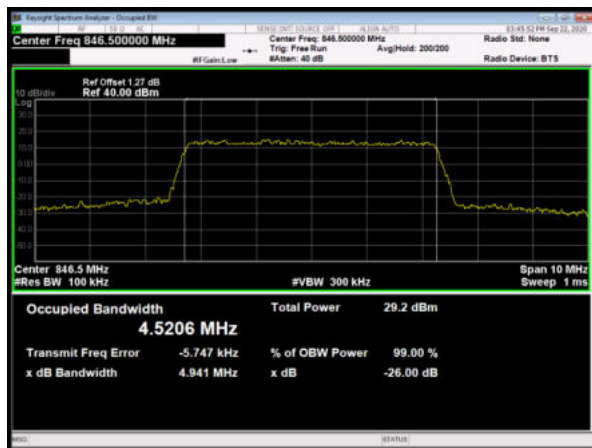
LTE Band 26 64QAM 5MHz CH-Middle



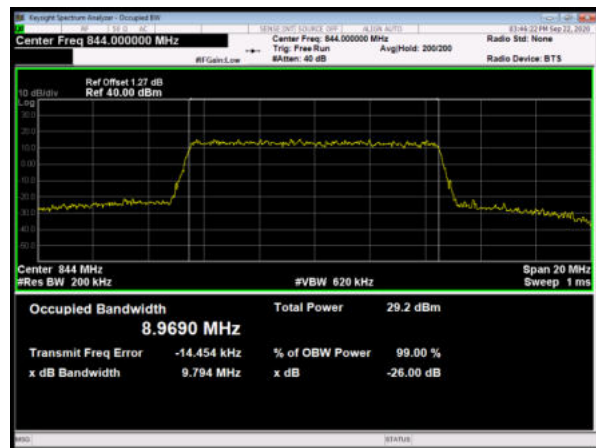
LTE Band 26 64QAM 10MHz CH-Middle



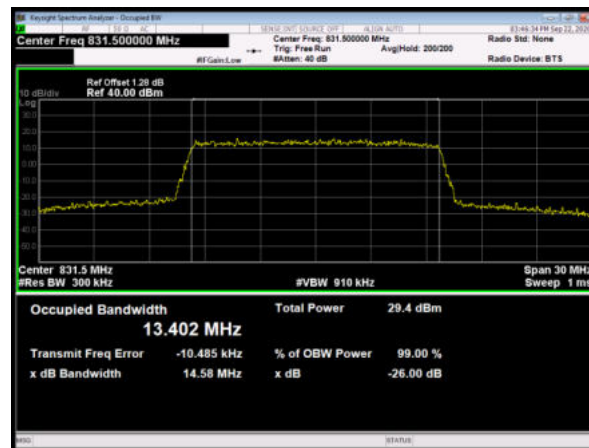
LTE Band 26 64QAM 5MHz CH-High



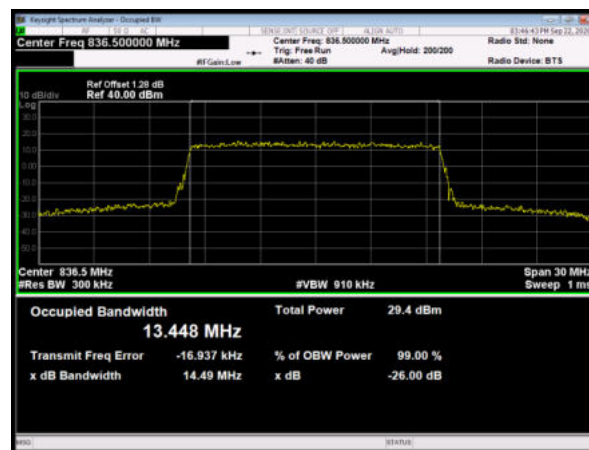
LTE Band 26 64QAM 10MHz CH-High



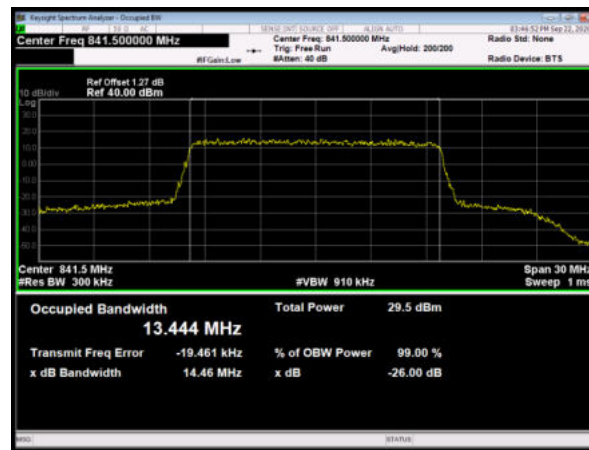
LTE Band 26 64QAM 15MHz CH-Low



LTE Band 26 64QAM 15MHz CH-Middle



LTE Band 26 64QAM 15MHz 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 3kHz,VBW is set to 10kHz for GSM 850,

RBW is set to 15kHz, VBW is set to 43kHz for LTE Band 26 (1.4MHz),

RBW is set to 30kHz,VBW is set to 91kHz for LTE Band 26 (3MHz),

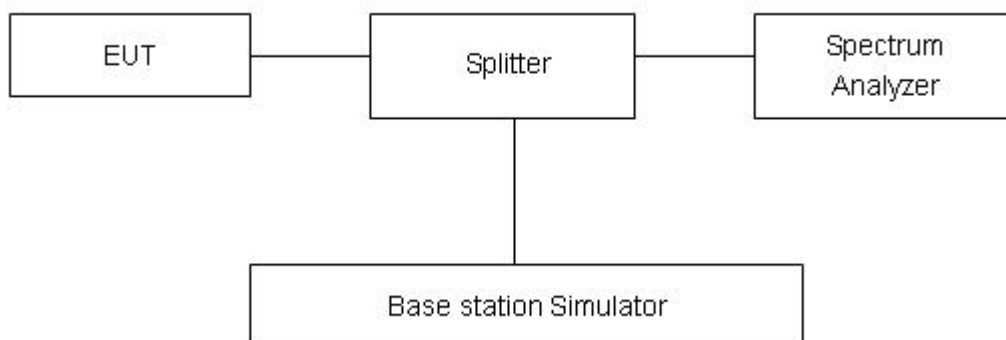
RBW is set to 51kHz,VBW is set to 150kHz for LTE Band 26 (5MHz),

RBW is set to 100kHz,VBW is set to 300kHz for LTE Band 26 (10MHz),

RBW is set to 150kHz,VBW is set to 470kHz for LTE Band 26 (15MHz).

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.”

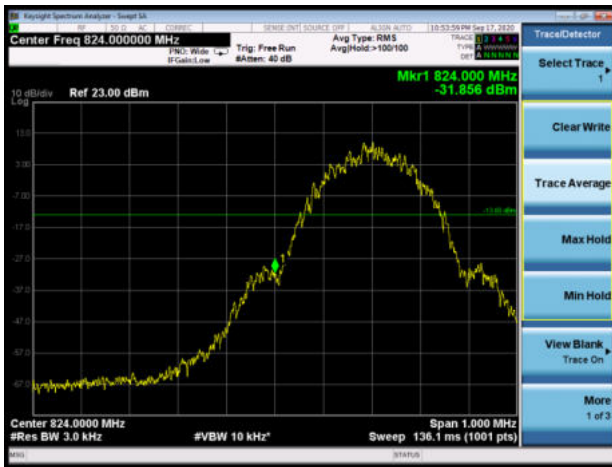
Limit	-13 dBm
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Measurement Uncertainty

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

Test Result:

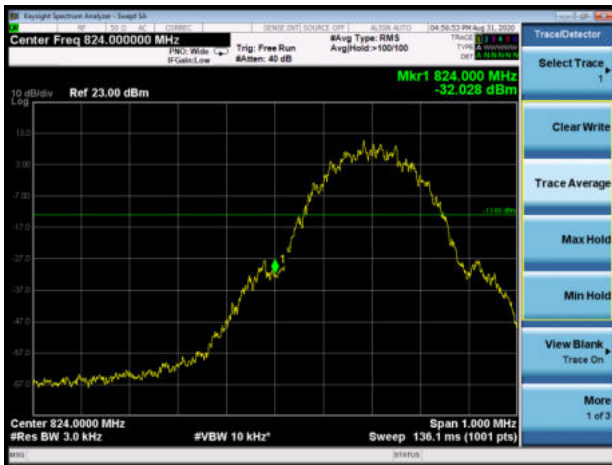
GSM 850 CH-Low



GSM 850 CH-High



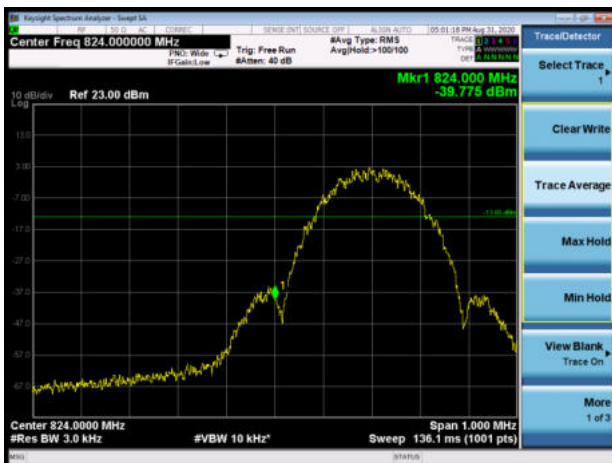
GSM 850 GPRS CH-Low



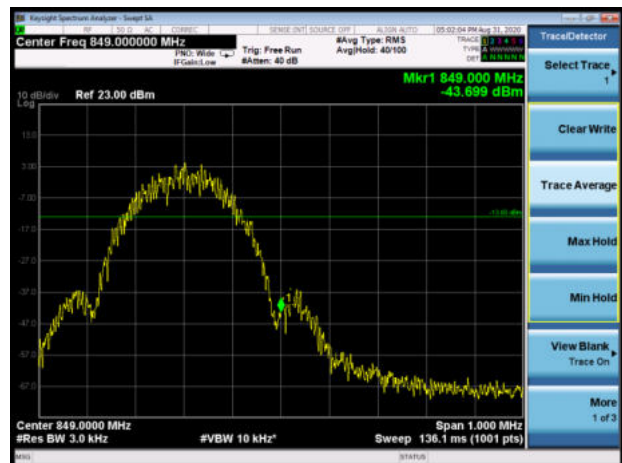
GSM 850 GPRS CH-High



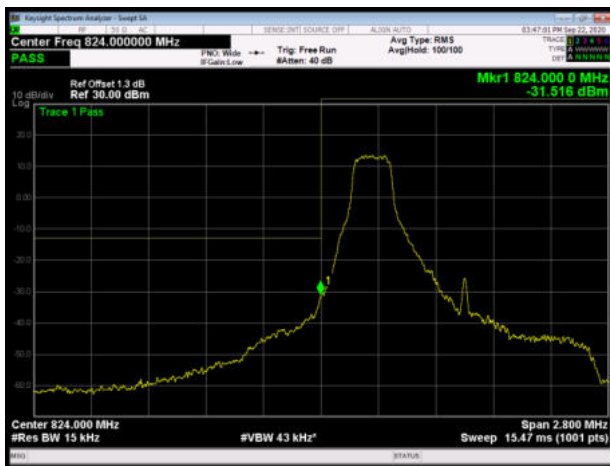
GSM 850 EGPRS CH-Low



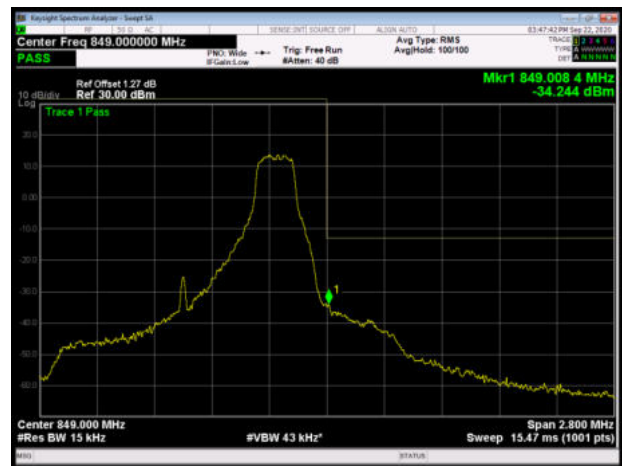
GSM 850 EGPRS CH-High



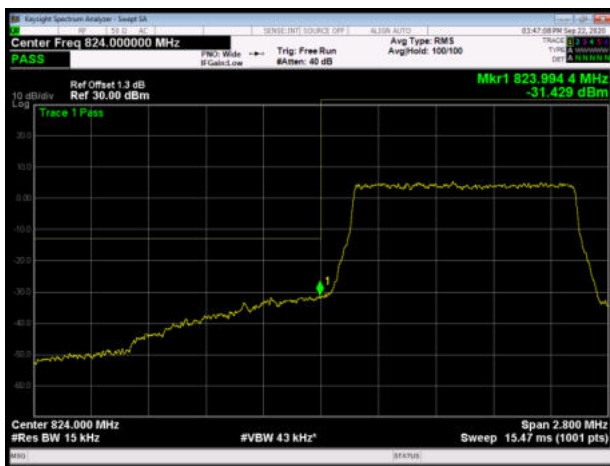
LTE Band 26 QPSK 1.4MHz CH-Low 1RB



LTE Band 26 QPSK 1.4MHz CH-High 1RB



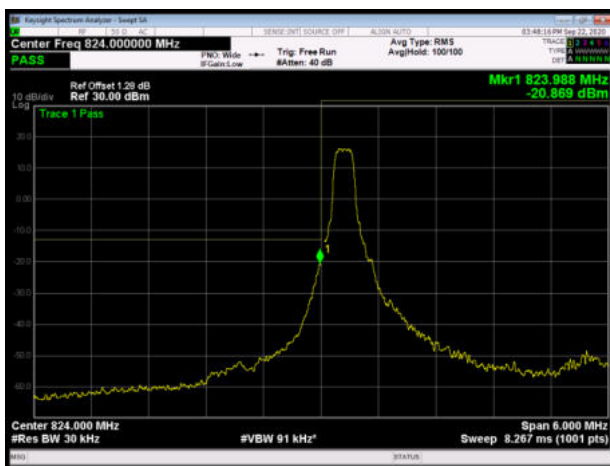
LTE Band 26 QPSK 1.4MHz CH-Low 100%RB



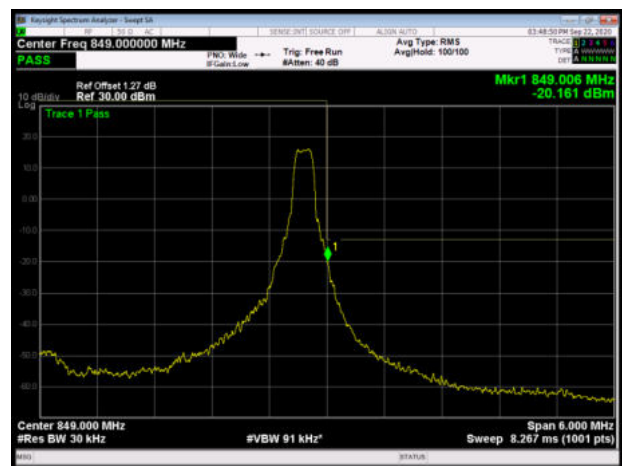
LTE Band 26 QPSK 1.4MHz CH-High 100%RB



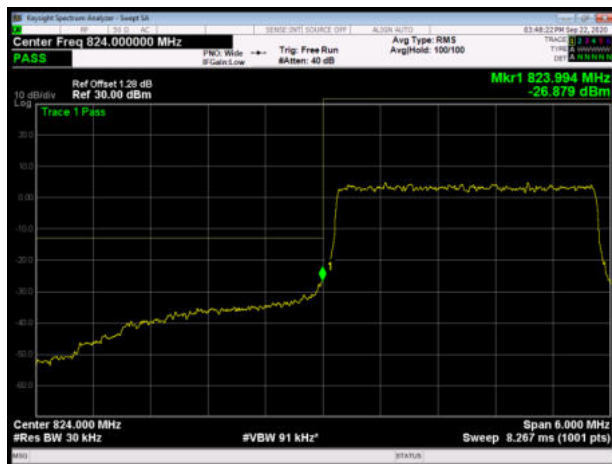
LTE Band 26 QPSK 3MHz CH-Low 1RB



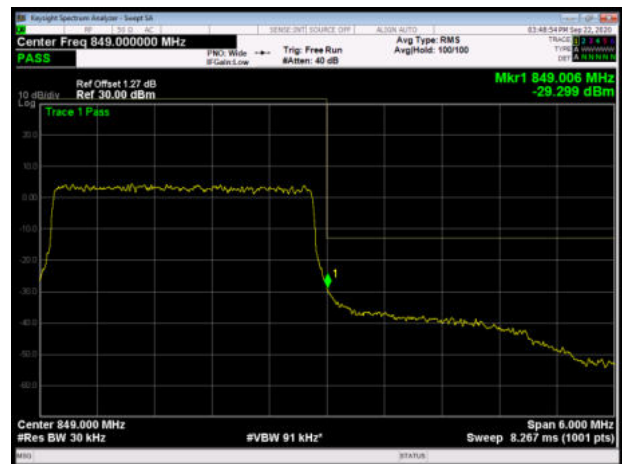
LTE Band 26 QPSK 3MHz CH-High 1RB



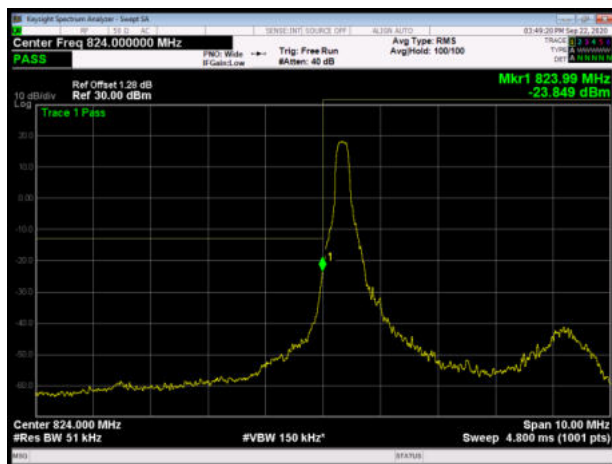
LTE Band 26 QPSK 3MHz CH-Low 100%RB



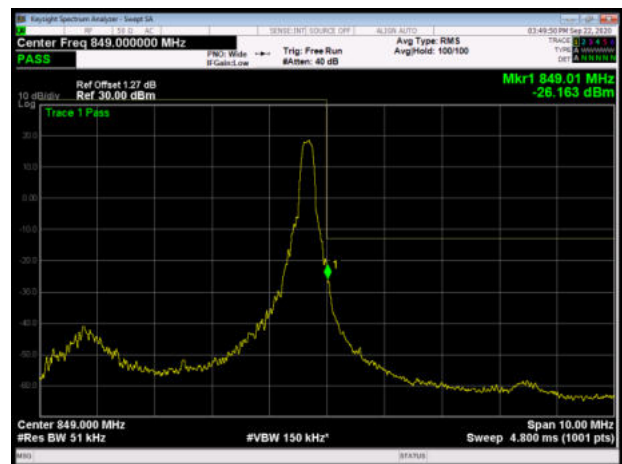
LTE Band 26 QPSK 3MHz CH-High 100%RB



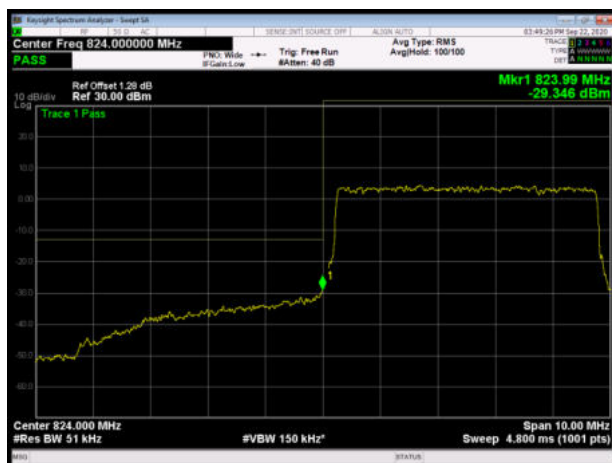
LTE Band 26 QPSK 5MHz CH-Low 1RB



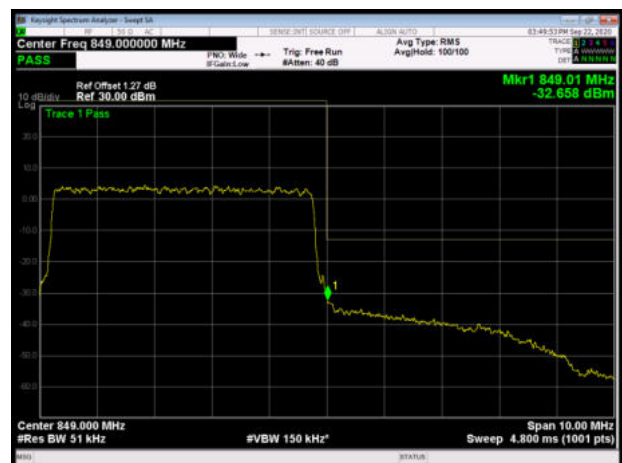
LTE Band 26 QPSK 5MHz CH-High 1RB



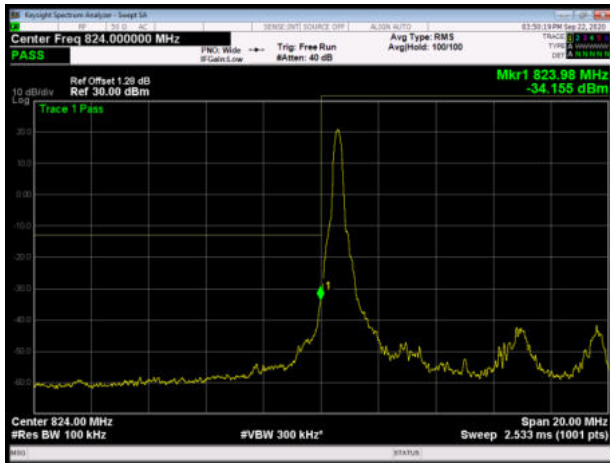
LTE Band 26 QPSK 5MHz CH-Low 100%RB



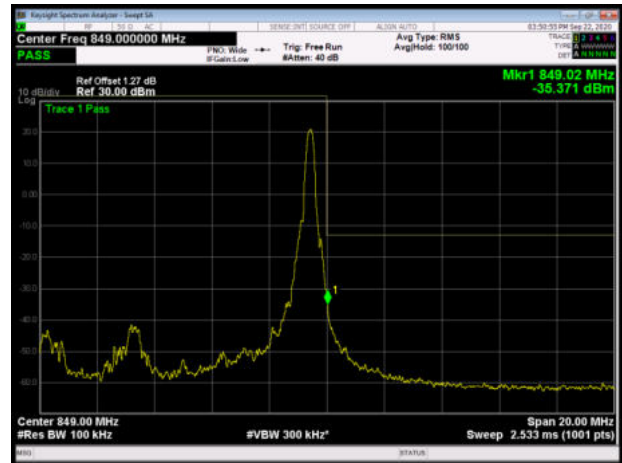
LTE Band 26 QPSK 5MHz CH-High 100%RB



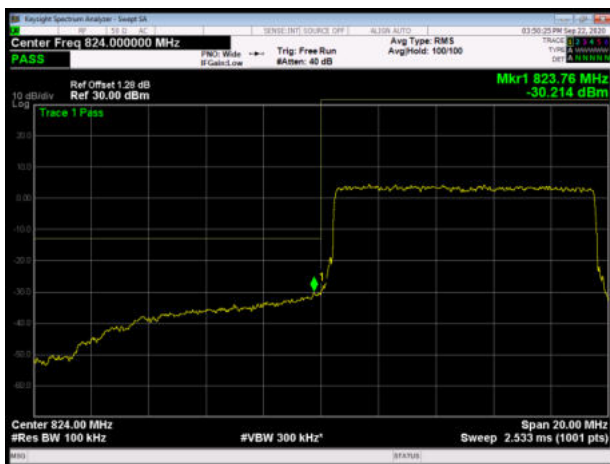
LTE Band 26 QPSK 10MHz CH-Low 1RB



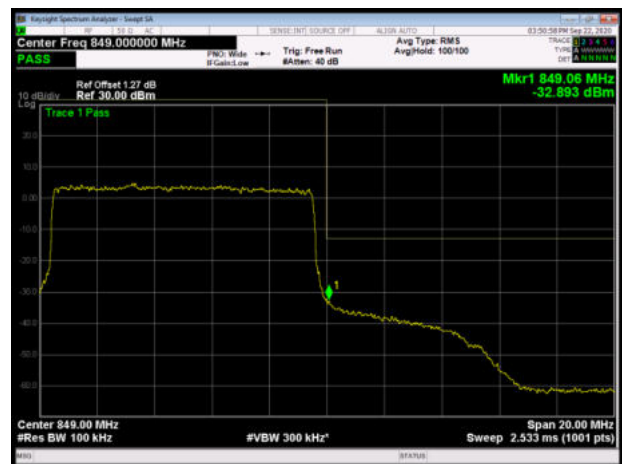
LTE Band 26 QPSK 10MHz CH-High 1RB



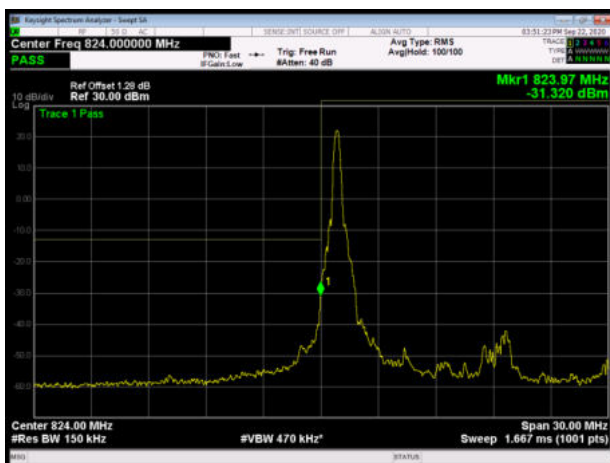
LTE Band 26 QPSK 10MHz CH-Low 100%RB



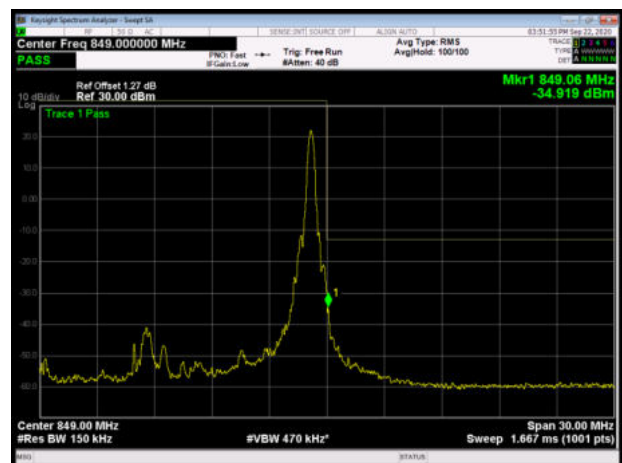
LTE Band 26 QPSK 10MHz CH-High 100%RB



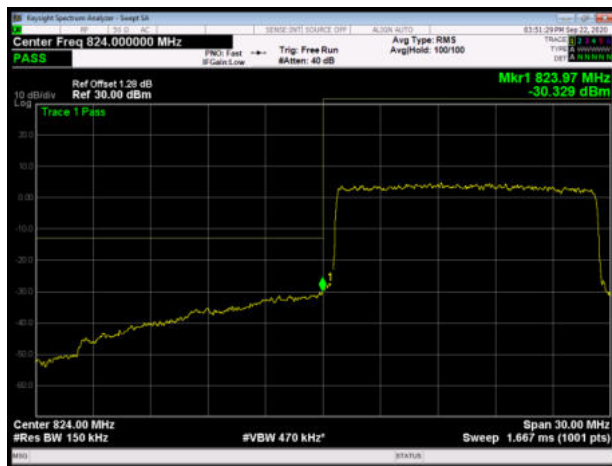
LTE Band 26 QPSK 15MHz CH-Low 1RB



LTE Band 26 QPSK 15MHz CH-High 1RB



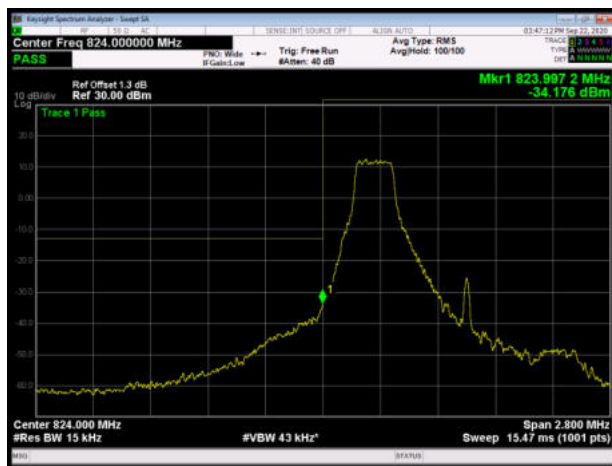
LTE Band 26 QPSK 15MHz CH-Low 100%RB



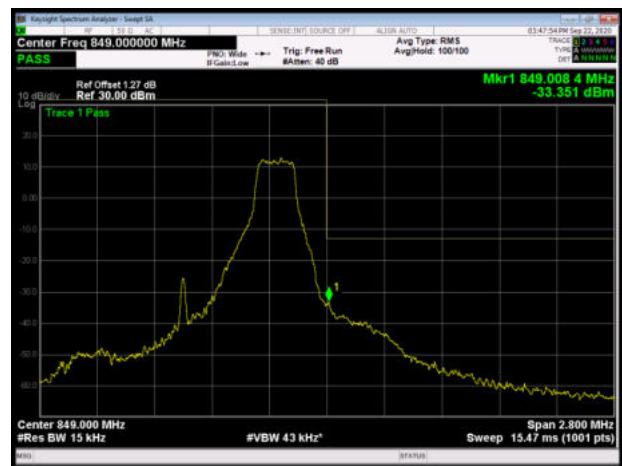
LTE Band 26 QPSK 15MHz CH-High 100%RB



LTE Band 26 16QAM 1.4MHz CH-Low 1RB



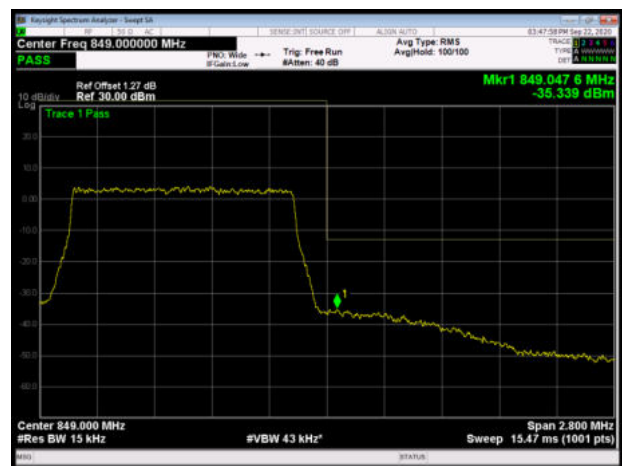
LTE Band 26 16QAM 1.4MHz CH-High 1RB



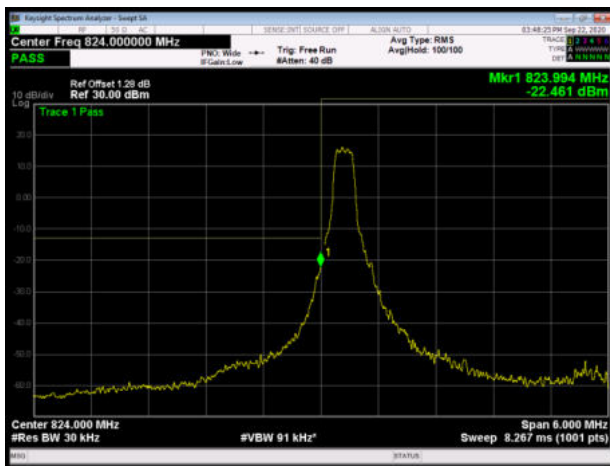
LTE Band 26 16QAM 1.4MHz CH-Low 100%RB



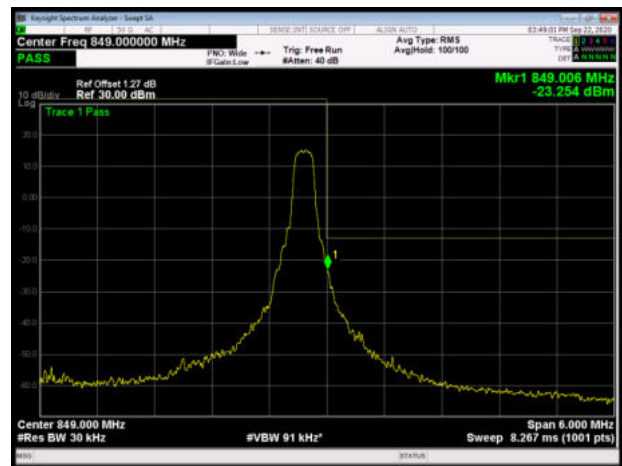
LTE Band 26 16QAM 1.4MHz CH-High 100%RB



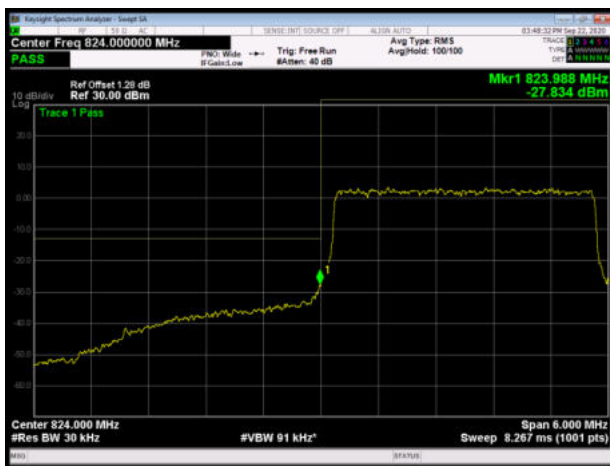
LTE Band 26 16QAM 3MHz CH-Low 1RB



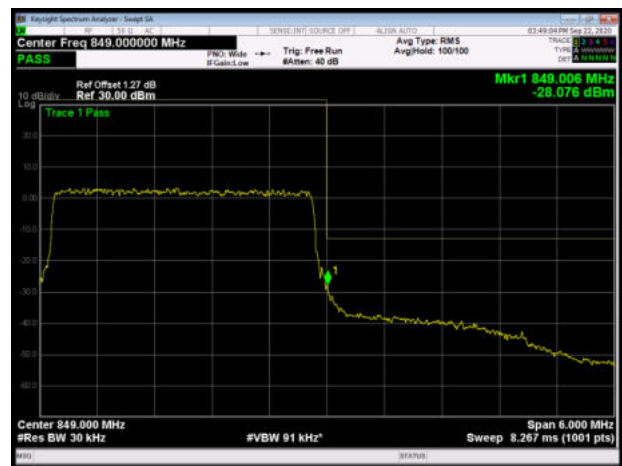
LTE Band 26 16QAM 3MHz CH-High 1RB



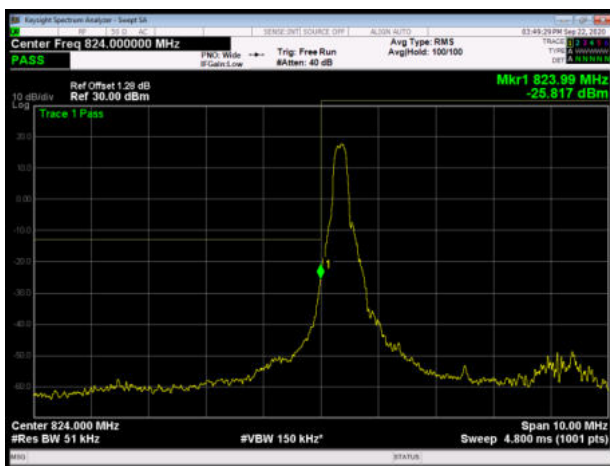
LTE Band 26 16QAM 3MHz CH-Low 100%RB



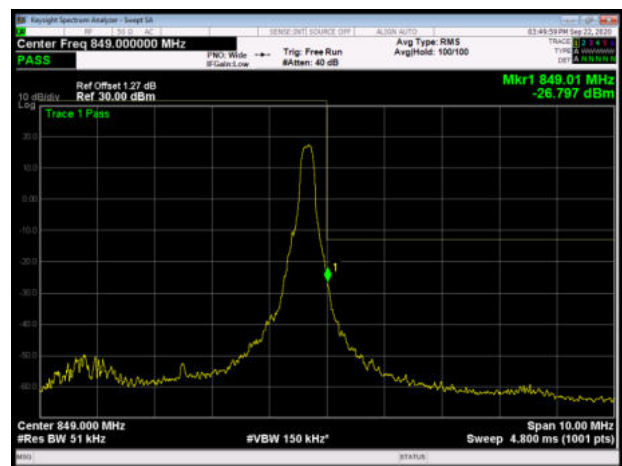
LTE Band 26 16QAM 3MHz CH-High 100%RB



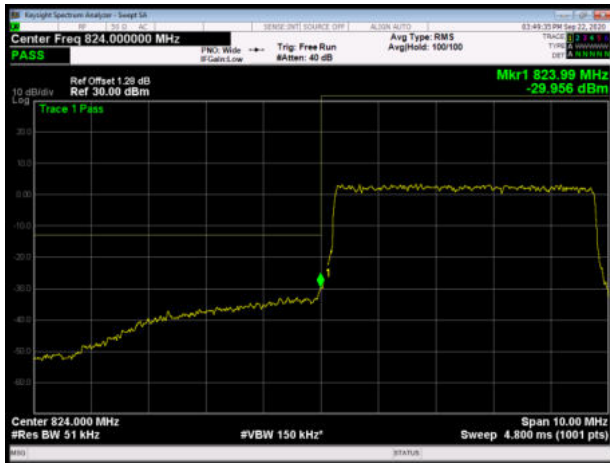
LTE Band 26 16QAM 5MHz CH-Low 1RB



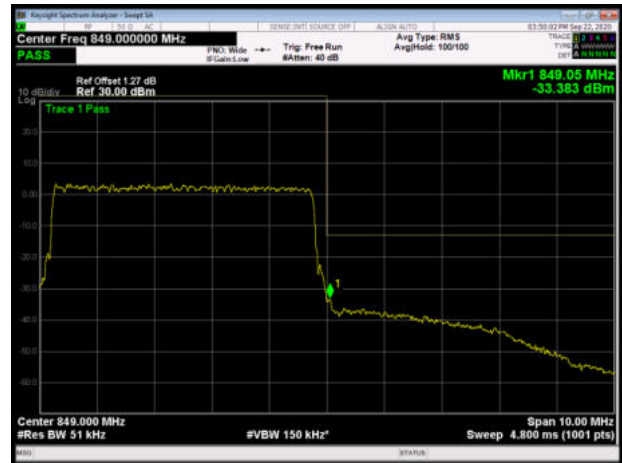
LTE Band 26 16QAM 5MHz CH-High 1RB



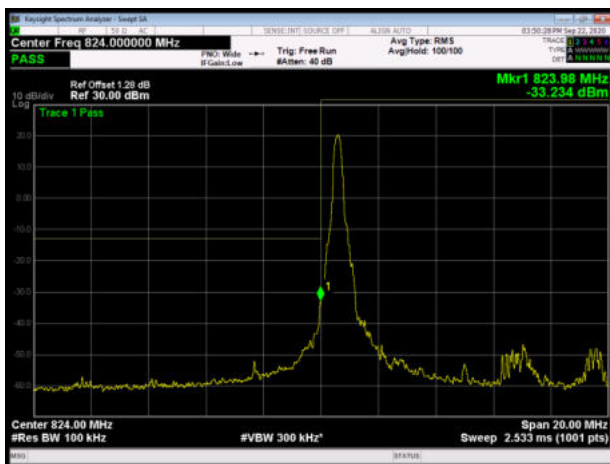
LTE Band 26 16QAM 5MHz CH-Low 100%RB



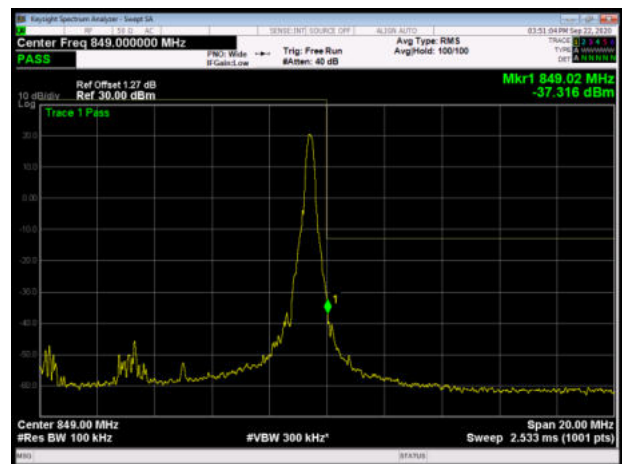
LTE Band 26 16QAM 5MHz CH-High 100%RB



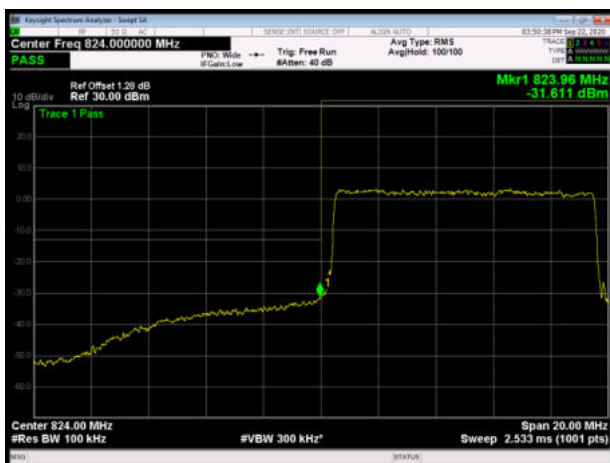
LTE Band 26 16QAM 10MHz CH-Low 1RB



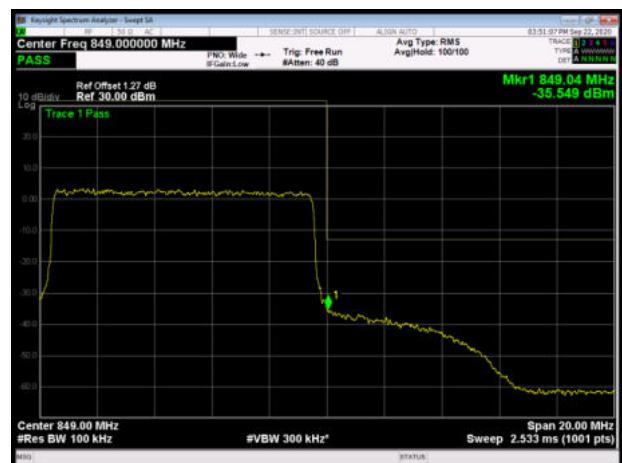
LTE Band 26 16QAM 10MHz CH-High 1RB



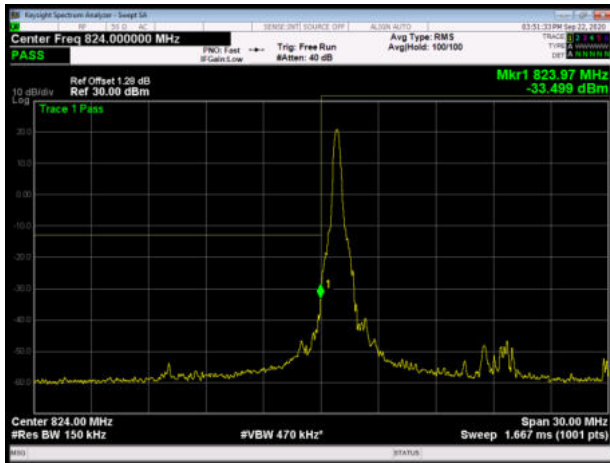
LTE Band 26 16QAM 10MHz CH-Low 100%RB



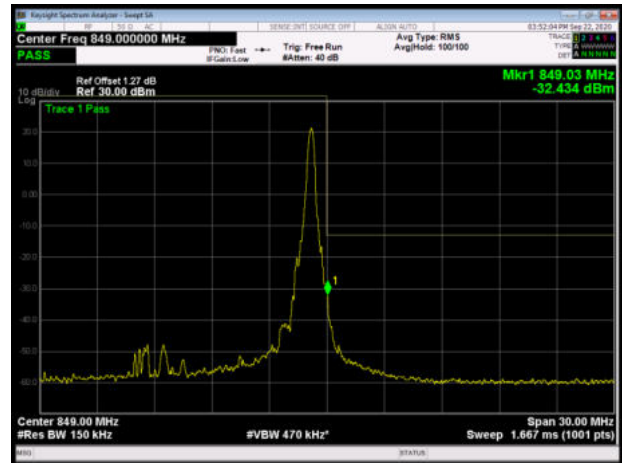
LTE Band 26 16QAM 10MHz CH-High 100%RB



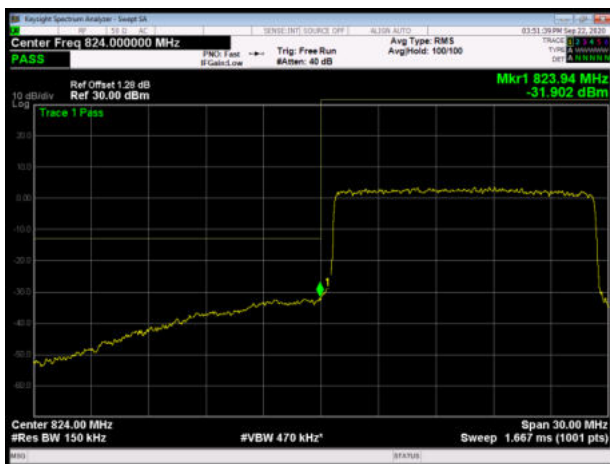
LTE Band 26 16QAM 15MHz CH-Low 1RB



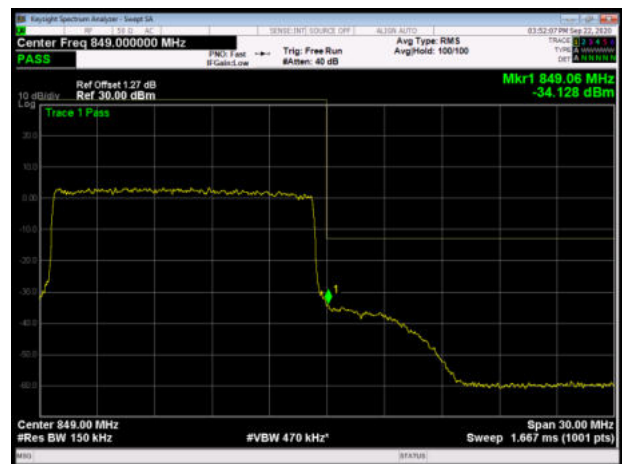
LTE Band 26 16QAM 15MHz CH-High 1RB



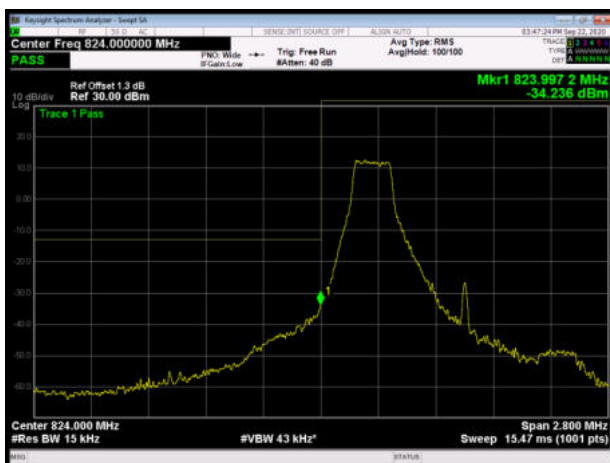
LTE Band 26 16QAM 15MHz CH-Low 100%RB



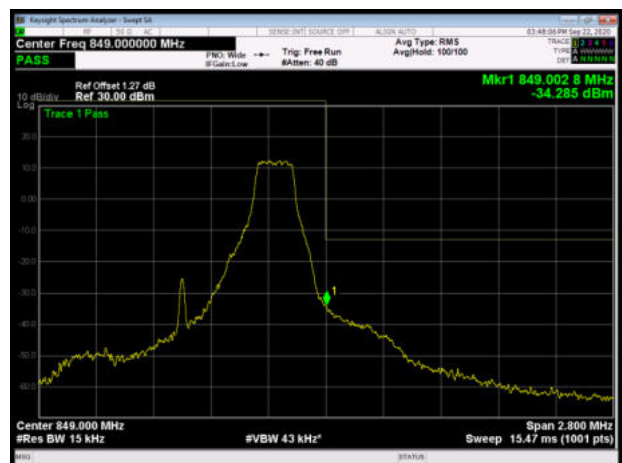
LTE Band 26 16QAM 15MHz CH-High 100%RB



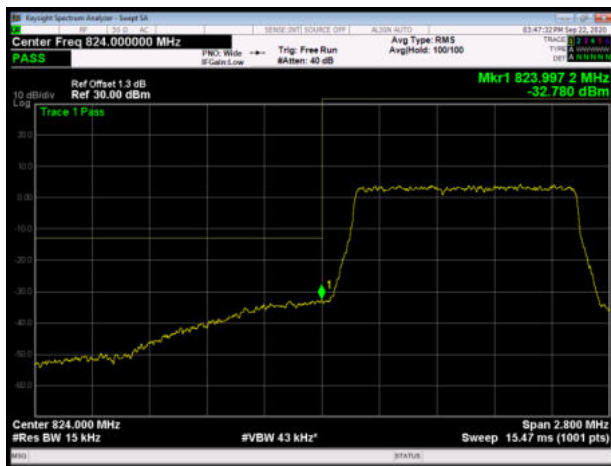
LTE Band 26 64QAM 1.4MHz CH-Low 1RB



LTE Band 26 64QAM 1.4MHz CH-High 1RB



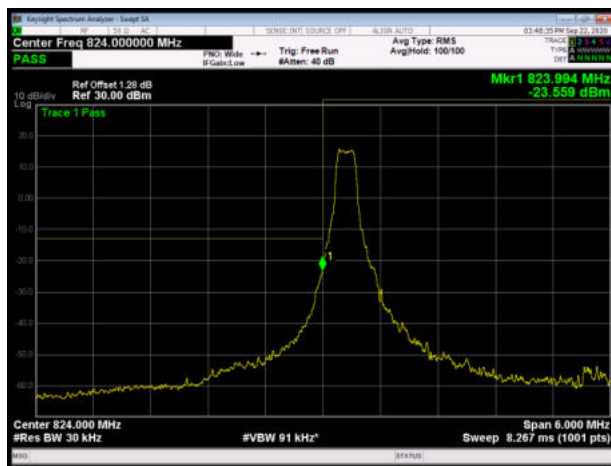
LTE Band 26 64QAM 1.4MHz CH-Low 100%RB



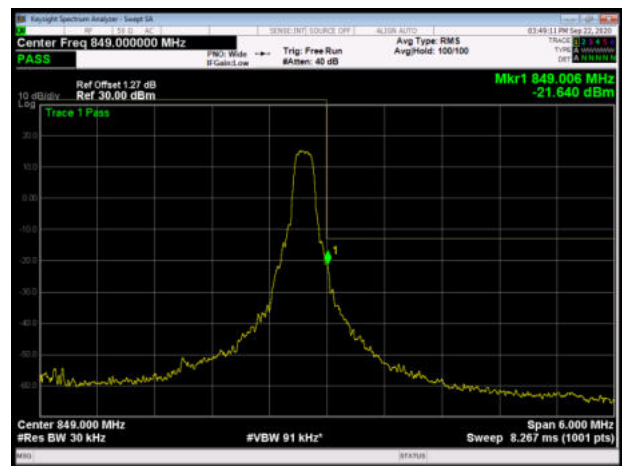
LTE Band 26 64QAM 1.4MHz CH-High 100%RB



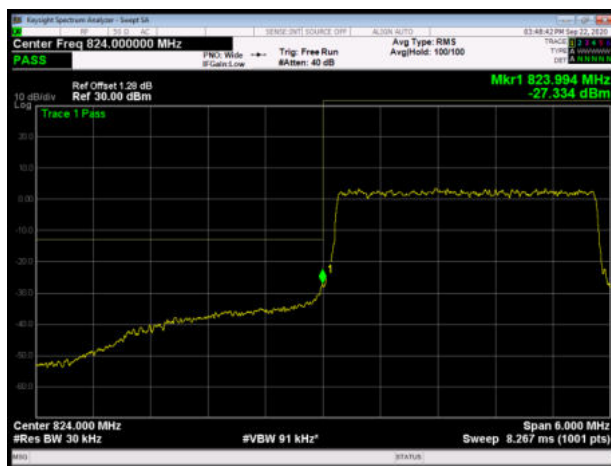
LTE Band 26 64QAM 3MHz CH-Low 1RB



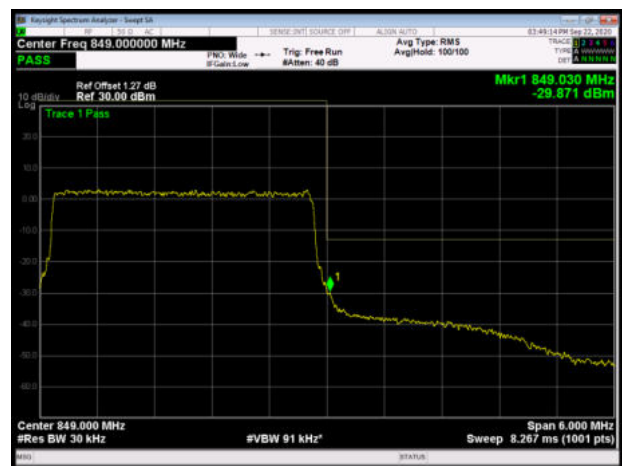
LTE Band 26 64QAM 3MHz CH-High 1RB



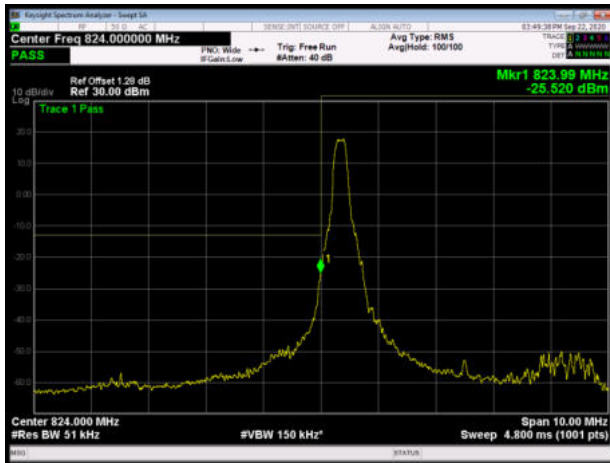
LTE Band 26 64QAM 3MHz CH-Low 100%RB



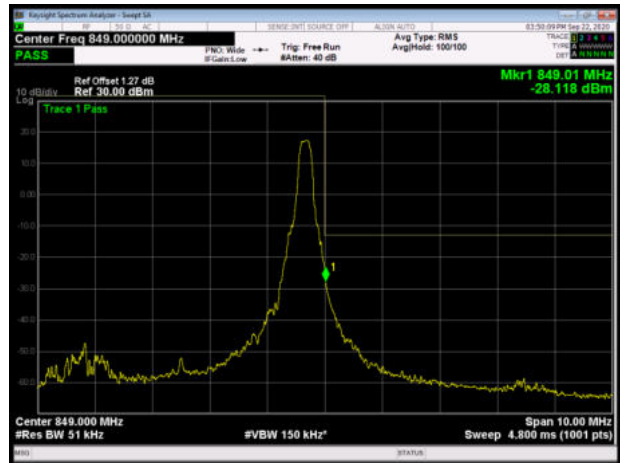
LTE Band 26 64QAM 3MHz CH-High 100%RB



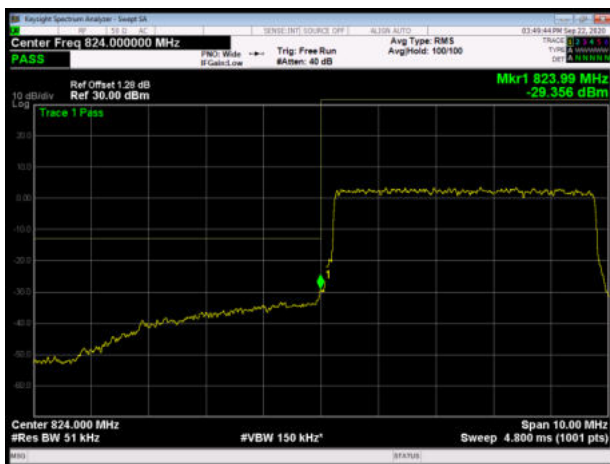
LTE Band 26 64QAM 5MHz CH-Low 1RB



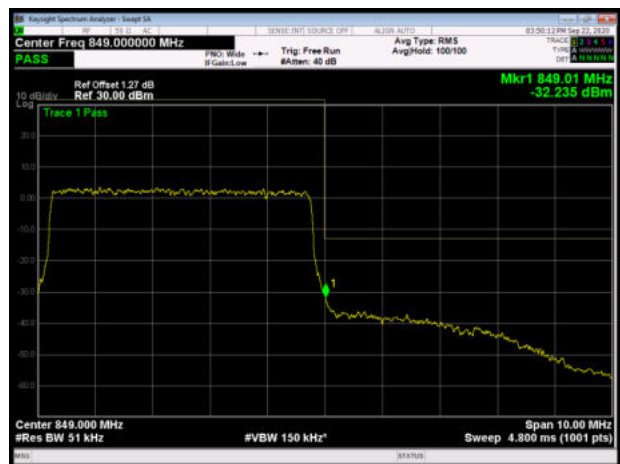
LTE Band 26 64QAM 5MHz CH-High 1RB



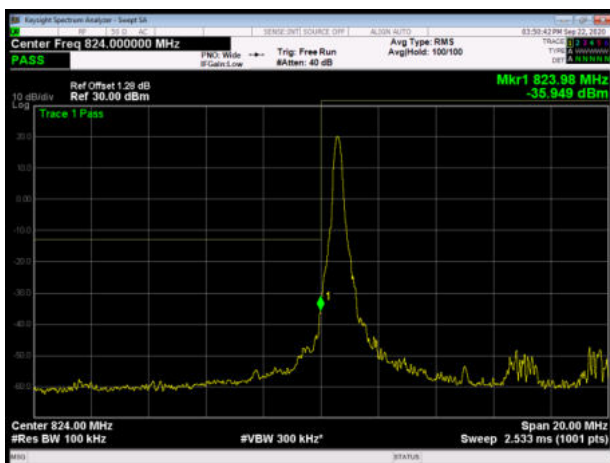
LTE Band 26 64QAM 5MHz CH-Low 100%RB



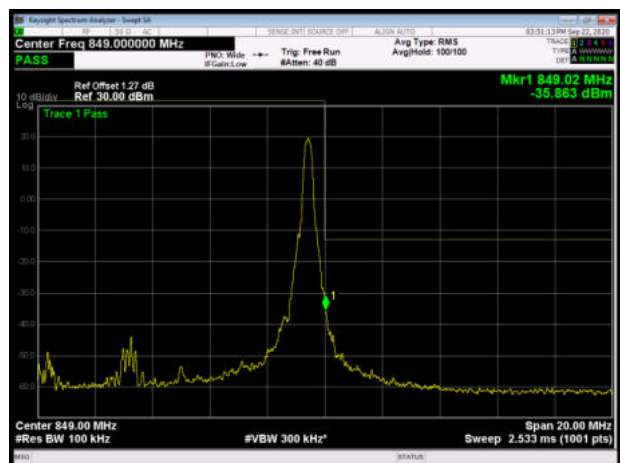
LTE Band 26 64QAM 5MHz CH-High 100%RB



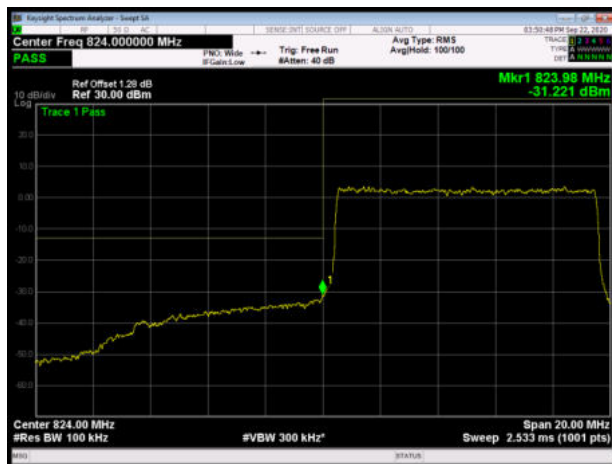
LTE Band 26 64QAM 10MHz CH-Low 1RB



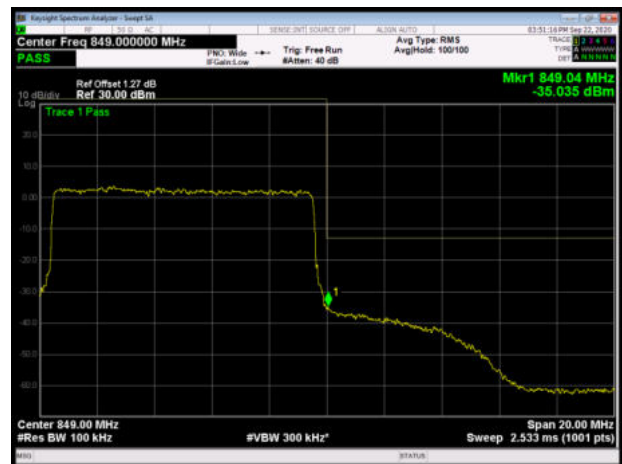
LTE Band 26 64QAM 10MHz CH-High 1RB



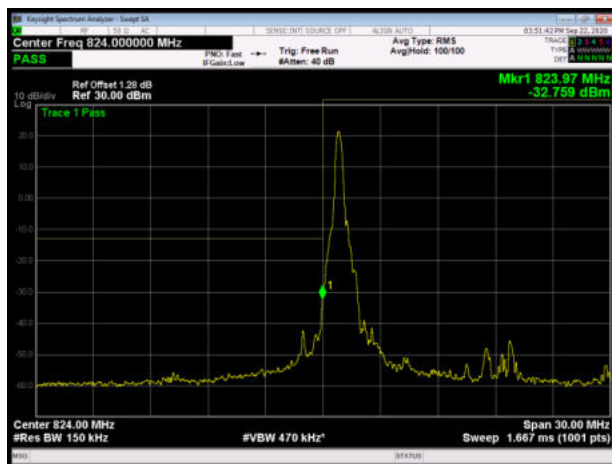
LTE Band 26 64QAM 10MHz CH-Low 100%RB



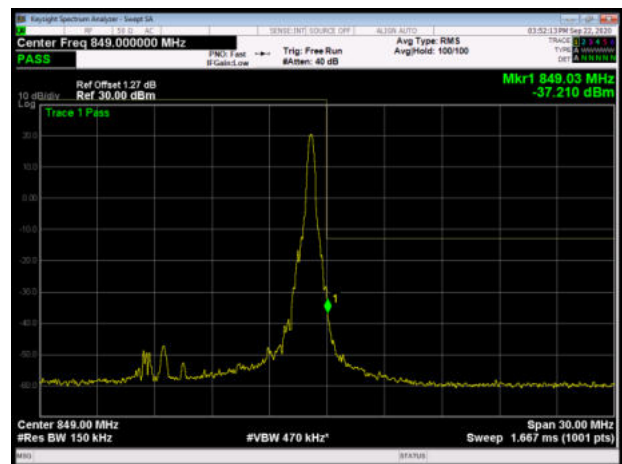
LTE Band 26 64QAM 10MHz CH-High 100%RB



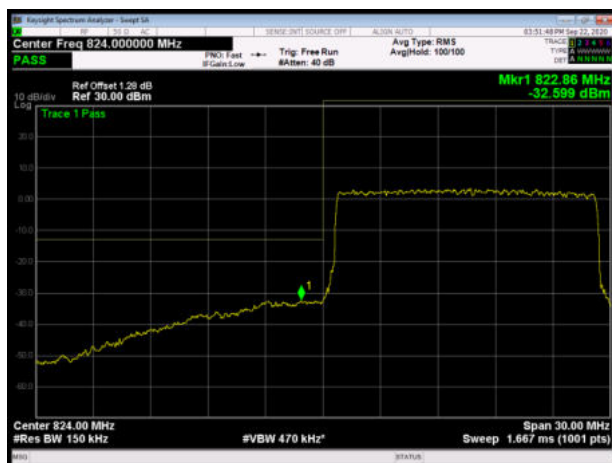
LTE Band 26 64QAM 15MHz CH-Low 1RB



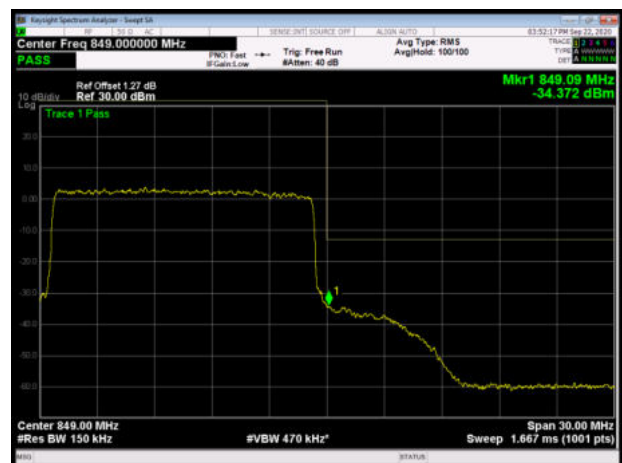
LTE Band 26 64QAM 15MHz CH-High 1RB



LTE Band 26 64QAM 15MHz CH-Low 100%RB



LTE Band 26 64QAM 15MHz CH-High 100%RB



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

Ambient condition

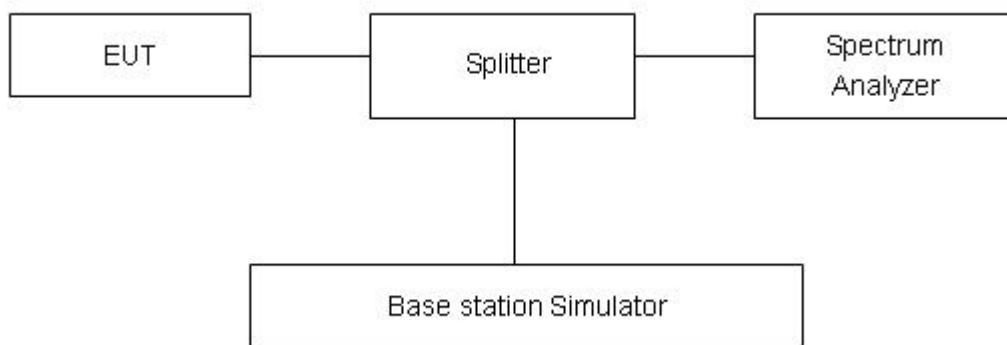
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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
GSM 850 (GMSK)	128	824.2	34.24	33.01	1.23	≤13	PASS
	190	836.6	34.36	33.12	1.24	≤13	PASS
	251	848.8	34.42	33.14	1.28	≤13	PASS
GPRS 850 (GMSK)	128	824.2	34.24	32.97	1.27	≤13	PASS
	190	836.6	34.37	33.06	1.31	≤13	PASS
	251	848.8	34.37	33.07	1.30	≤13	PASS
EGPRS 850 (8PSK)	128	824.2	27.92	26.05	1.87	≤13	PASS
	190	836.6	27.92	26.04	1.88	≤13	PASS
	251	848.8	27.77	25.92	1.85	≤13	PASS

LTE Band 26								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	26797	824.7	27.36	22.13	5.23	≤13	PASS
		26915	836.5	27.12	22.01	5.11	≤13	PASS
		27033	848.3	26.89	21.98	4.91	≤13	PASS
	3	26805	825.5	27.38	22.18	5.20	≤13	PASS
		26915	836.5	27.13	22.09	5.04	≤13	PASS
		27025	847.5	26.92	22.01	4.91	≤13	PASS
	5	26815	826.5	27.46	22.20	5.26	≤13	PASS
		26915	836.5	27.22	22.07	5.15	≤13	PASS
		27015	846.5	27.05	21.99	5.06	≤13	PASS
	10	26840	829	27.45	22.19	5.26	≤13	PASS
		26915	836.5	27.33	22.14	5.19	≤13	PASS
		26990	844	27.27	22.08	5.19	≤13	PASS
	15	26865	831.5	27.56	22.27	5.29	≤13	PASS
		26915	836.5	27.53	22.24	5.29	≤13	PASS
		26965	841.5	27.42	22.18	5.24	≤13	PASS
16QAM	1.4	26797	824.7	27.16	21.15	6.01	≤13	PASS
		26915	836.5	27.09	21.09	6.00	≤13	PASS
		27033	848.3	26.72	20.95	5.77	≤13	PASS
	3	26805	825.5	27.19	21.22	5.97	≤13	PASS
		26915	836.5	27.03	21.11	5.92	≤13	PASS
		27025	847.5	26.84	21.06	5.78	≤13	PASS

	5	26815	826.5	27.29	21.22	6.07	≤13	PASS
		26915	836.5	27.07	21.12	5.95	≤13	PASS
		27015	846.5	26.86	21.02	5.84	≤13	PASS
	10	26840	829	27.22	21.18	6.04	≤13	PASS
		26915	836.5	27.16	21.18	5.98	≤13	PASS
		26990	844	27.05	21.09	5.96	≤13	PASS
	15	26865	831.5	27.34	21.31	6.03	≤13	PASS
		26915	836.5	27.22	21.24	5.98	≤13	PASS
		26965	841.5	27.21	21.20	6.01	≤13	PASS
64QAM	1.4	26797	824.7	26.20	19.64	6.56	≤13	PASS
		26915	836.5	25.95	19.39	6.56	≤13	PASS
		27033	848.3	25.70	19.28	6.42	≤13	PASS
	3	26805	825.5	26.15	19.65	6.50	≤13	PASS
		26915	836.5	26.00	19.52	6.48	≤13	PASS
		27025	847.5	25.82	19.32	6.50	≤13	PASS
	5	26815	826.5	26.25	19.69	6.56	≤13	PASS
		26915	836.5	26.02	19.52	6.50	≤13	PASS
		27015	846.5	25.73	19.39	6.34	≤13	PASS
	10	26840	829	26.22	19.68	6.54	≤13	PASS
		26915	836.5	26.00	19.56	6.44	≤13	PASS
		26990	844	25.91	19.49	6.42	≤13	PASS
	15	26865	831.5	26.14	19.72	6.42	≤13	PASS
		26915	836.5	26.05	19.63	6.42	≤13	PASS
		26965	841.5	25.92	19.54	6.38	≤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.

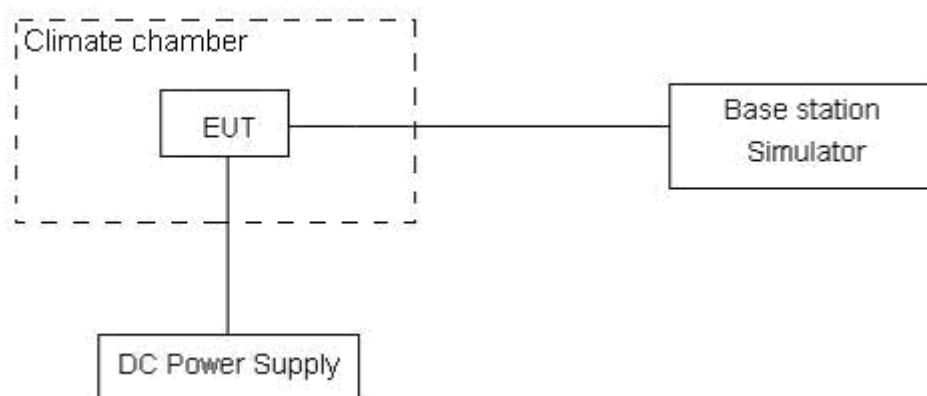
(3) Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements. Frequency Stability (Voltage Variation)

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 3.3 V and 4.3 V, with a nominal voltage of 3.8V.

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
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Measurement Uncertainty

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

Test Result

GSM850						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
Temperature	Voltage	GMSK	8PSK	GMSK	8PSK	
Normal (25℃)	Normal	3.45	14.58	0.00184	0.00776	PASS
Extreme (50℃)		11.26	2.15	0.00599	0.00114	PASS
Extreme (40℃)		12.15	2.39	0.00646	0.00127	PASS
Extreme (30℃)		17.24	8.28	0.00917	0.00441	PASS
Extreme (20℃)		7.19	5.95	0.00383	0.00317	PASS
Extreme (10℃)		15.17	4.92	0.00807	0.00262	PASS
Extreme (0℃)		14.54	3.07	0.00773	0.00163	PASS
Extreme (-10℃)		8.69	11.53	0.00462	0.00613	PASS
Extreme (-20℃)		11.63	10.40	0.00618	0.00553	PASS
Extreme (-30℃)		15.32	1.19	0.00815	0.00063	PASS
Extreme (-40℃)		8.83	16.23	0.00470	0.00863	PASS
25℃	LV	11.64	6.34	0.00619	0.00337	PASS
	HV	14.53	10.08	0.00773	0.00536	PASS

LTE Band 26								
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	16.87	15.69	2.39	0.00897	0.00834	0.00127	PASS
Extreme (50℃)		2.59	14.26	9.13	0.00138	0.00758	0.00486	PASS
Extreme (40℃)		5.41	7.18	10.75	0.00288	0.00382	0.00572	PASS
Extreme (30℃)		14.22	6.53	7.31	0.00756	0.00347	0.00389	PASS
Extreme (20℃)		10.55	16.06	16.51	0.00561	0.00855	0.00878	PASS
Extreme (10℃)		4.43	9.21	14.46	0.00236	0.00490	0.00769	PASS
Extreme (0℃)		10.53	15.18	9.68	0.00560	0.00808	0.00515	PASS
Extreme (-10℃)		12.49	1.30	4.68	0.00664	0.00069	0.00249	PASS
Extreme (-20℃)		8.73	6.16	17.60	0.00464	0.00328	0.00936	PASS
Extreme (-30℃)		9.64	14.88	8.40	0.00513	0.00792	0.00447	PASS
25℃	LV	9.43	12.25	2.51	0.00502	0.00652	0.00134	PASS
	HV	7.48	16.36	16.53	0.00398	0.00870	0.00879	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability	Frequency Stability	Frequency Stability	Verdict

BANDWIDTH	3MHz				(ppm)	(ppm)	(ppm)	
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	8.09	5.69	5.23	0.00430	0.00302	0.00278	PASS
Extreme (50℃)		8.59	5.50	9.37	0.00457	0.00292	0.00498	PASS
Extreme (40℃)		15.03	8.43	4.63	0.00799	0.00448	0.00246	PASS
Extreme (30℃)		5.41	12.07	6.56	0.00288	0.00642	0.00349	PASS
Extreme (20℃)		13.23	15.89	16.62	0.00704	0.00845	0.00884	PASS
Extreme (10℃)		9.03	9.91	15.79	0.00481	0.00527	0.00840	PASS
Extreme (0℃)		1.45	14.92	12.27	0.00077	0.00793	0.00653	PASS
Extreme (-10℃)		17.37	12.22	12.34	0.00924	0.00650	0.00656	PASS
Extreme (-20℃)		13.71	10.74	5.52	0.00729	0.00571	0.00294	PASS
Extreme (-30℃)		9.23	7.11	7.09	0.00491	0.00378	0.00377	PASS
25℃	LV	10.17	13.17	5.96	0.00541	0.00700	0.00317	PASS
	HV	7.21	5.02	5.12	0.00384	0.00267	0.00272	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	6.13	17.98	17.57	0.00326	0.00957	0.00935	PASS
Extreme (50℃)		17.26	10.80	4.18	0.00918	0.00574	0.00222	PASS
Extreme (40℃)		12.18	16.87	7.64	0.00648	0.00898	0.00407	PASS
Extreme (30℃)		14.99	3.50	9.80	0.00797	0.00186	0.00522	PASS
Extreme (20℃)		2.91	5.29	11.26	0.00155	0.00281	0.00599	PASS
Extreme (10℃)		8.93	10.95	2.82	0.00475	0.00582	0.00150	PASS
Extreme (0℃)		9.28	7.77	4.93	0.00494	0.00413	0.00262	PASS
Extreme (-10℃)		8.38	3.85	10.17	0.00446	0.00205	0.00541	PASS
Extreme (-20℃)		2.06	13.90	4.87	0.00109	0.00739	0.00259	PASS
Extreme (-30℃)		10.26	8.45	14.47	0.00546	0.00449	0.00769	PASS
25℃	LV	11.95	3.04	13.14	0.00636	0.00161	0.00699	PASS
	HV	6.55	2.12	17.94	0.00348	0.00113	0.00954	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	6.94	10.08	9.59	0.00369	0.00536	0.00510	PASS
Extreme (50℃)		3.55	16.64	13.84	0.00189	0.00885	0.00736	PASS
Extreme (40℃)		10.12	3.44	14.31	0.00538	0.00183	0.00761	PASS
Extreme (30℃)		8.78	14.00	9.03	0.00467	0.00745	0.00480	PASS
Extreme (20℃)		10.67	11.28	1.25	0.00568	0.00600	0.00066	PASS
Extreme (10℃)		16.14	4.79	8.08	0.00859	0.00255	0.00430	PASS
Extreme (0℃)		16.57	13.96	7.16	0.00881	0.00743	0.00381	PASS

Extreme (-10℃)		16.48	5.36	12.66	0.00877	0.00285	0.00673	PASS
Extreme (-20℃)		10.22	8.64	13.25	0.00544	0.00460	0.00705	PASS
Extreme (-30℃)		4.26	3.52	14.27	0.00227	0.00187	0.00759	PASS
25℃	LV	8.18	17.81	4.56	0.00435	0.00947	0.00242	PASS
	HV	7.70	7.33	6.84	0.00410	0.00390	0.00364	PASS
Condition		Freq.Error	Freq.Error	Freq.Error	Frequency	Frequency	Frequency	Verdict
BANDWIDTH	15MHz	(Hz)	(Hz)	(Hz)	Stability	Stability	Stability	
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal (25℃)	Normal	11.27	4.68	9.02	0.00599	0.00249	0.00480	PASS
Extreme (50℃)		12.83	17.00	16.58	0.00682	0.00904	0.00882	PASS
Extreme (40℃)		2.95	8.93	6.20	0.00157	0.00475	0.00330	PASS
Extreme (30℃)		12.41	4.84	13.80	0.00660	0.00258	0.00734	PASS
Extreme (20℃)		6.65	3.49	14.84	0.00354	0.00185	0.00789	PASS
Extreme (10℃)		14.89	17.84	15.32	0.00792	0.00949	0.00815	PASS
Extreme (0℃)		13.93	4.64	2.76	0.00741	0.00247	0.00147	PASS
Extreme (-10℃)		11.79	17.70	4.40	0.00627	0.00941	0.00234	PASS
Extreme (-20℃)		11.38	16.83	9.61	0.00606	0.00895	0.00511	PASS
Extreme (-30℃)		13.35	7.85	8.50	0.00710	0.00418	0.00452	PASS
25℃	LV	15.01	12.19	7.47	0.00799	0.00648	0.00397	PASS
	HV	2.28	3.14	5.39	0.00121	0.00167	0.00287	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),

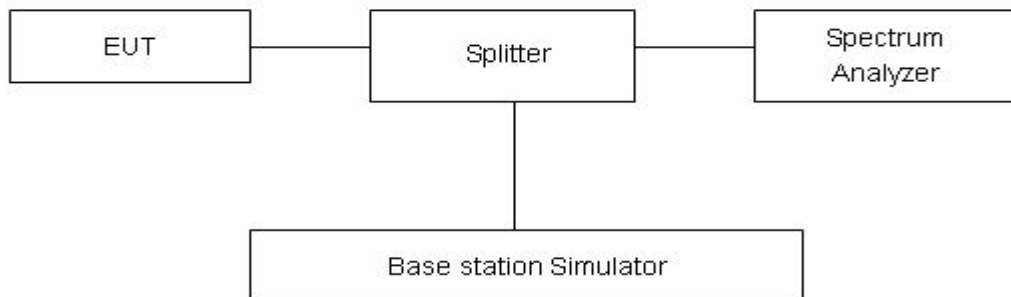
RBW is set to 10 kHz (0.15 MHz~ 30 MHz)

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
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Measurement Uncertainty

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

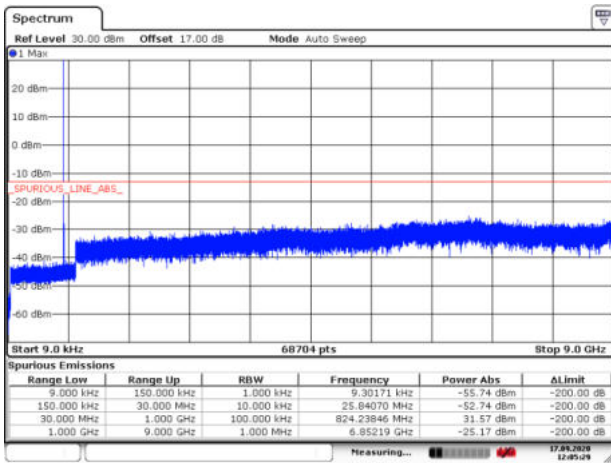
Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-18GHz	1.407 dB

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.

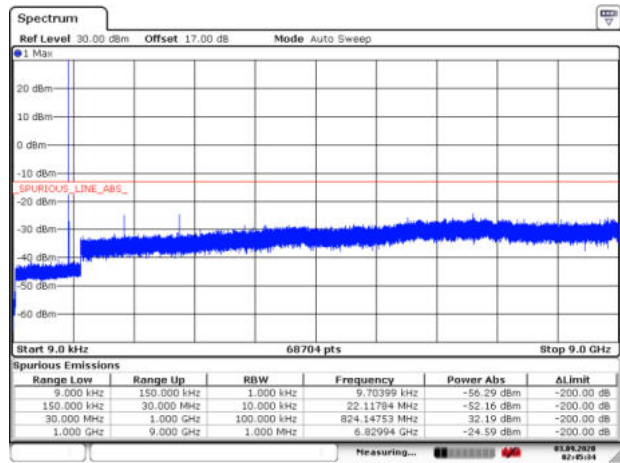
The signal beyond the limit is carrier.

GSM 850 CH-Low 9kHz ~ 9GHz



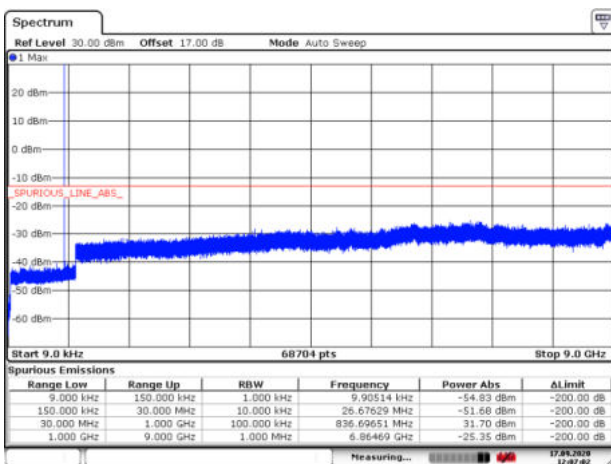
Date: 17 SEP 2020 12:05:29

GPRS 850 CH-Low 9kHz ~ 9GHz



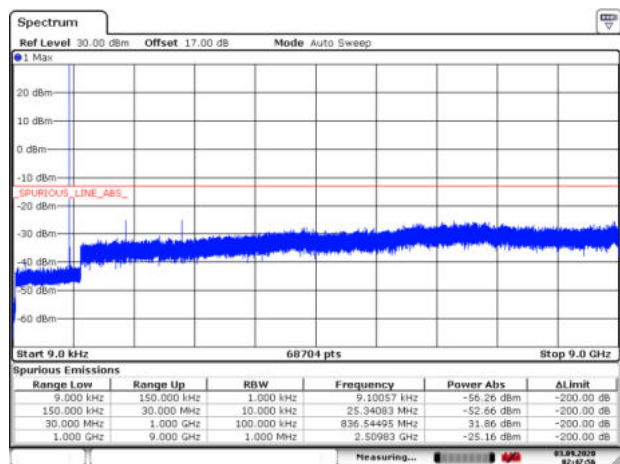
Date: 3 SEP 2020 02:45:34

GSM 850 CH-Middle 9kHz ~ 9GHz



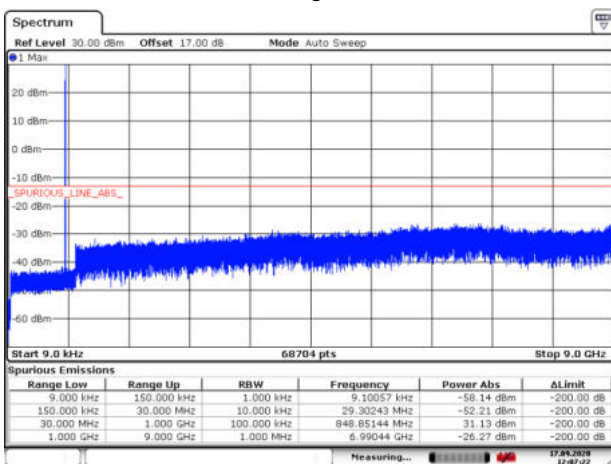
Date: 17 SEP 2020 12:07:02

GPRS 850 CH-Middle 9kHz ~ 9GHz



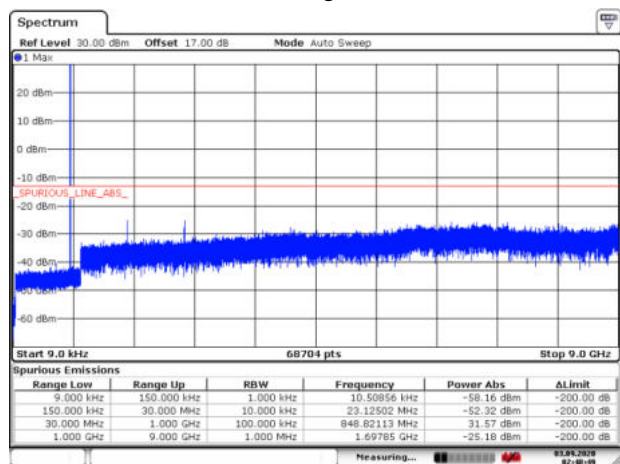
Date: 3 SEP 2020 02:47:56

GSM 850 CH-High 9kHz ~ 9GHz



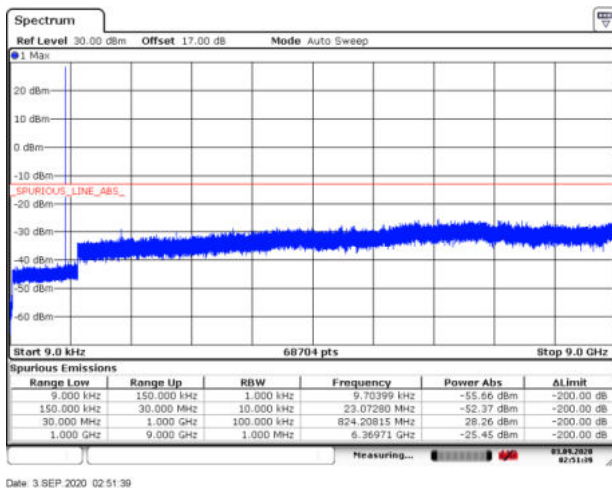
Date: 17 SEP 2020 12:07:23

GPRS 850 CH-High 9kHz ~ 9GHz

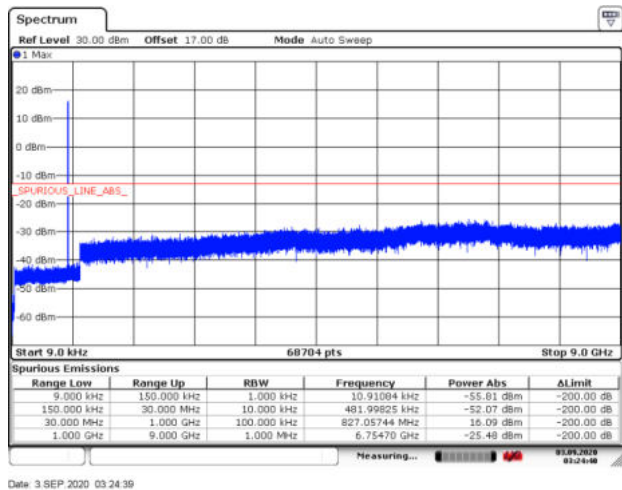


Date: 3 SEP 2020 02:48:49

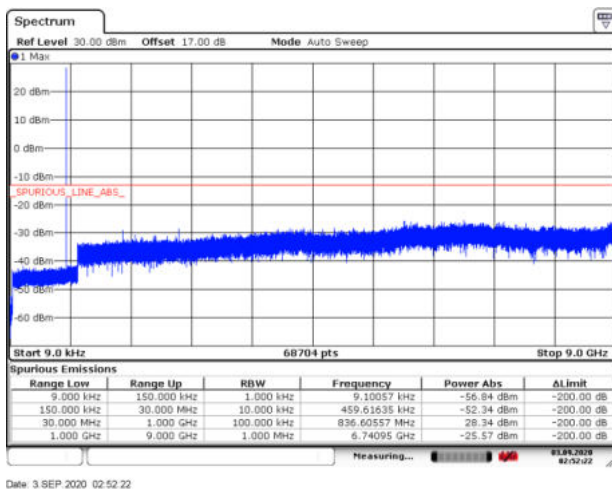
EGPRS 850 CH-Low 9kHz ~ 9GHz



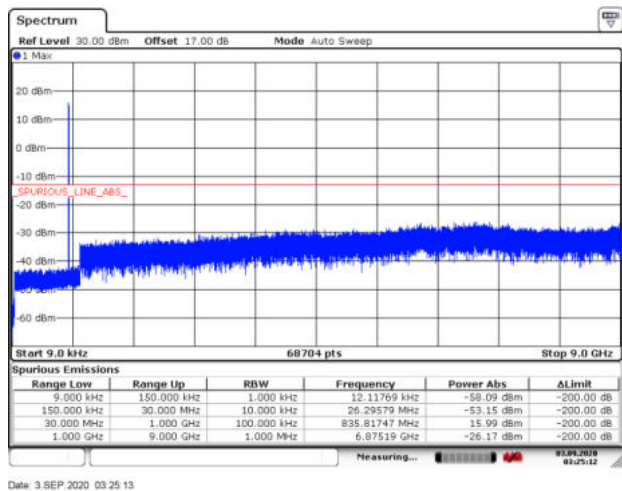
WCDMA BAND V CH-Low 9kHz ~ 9GHz



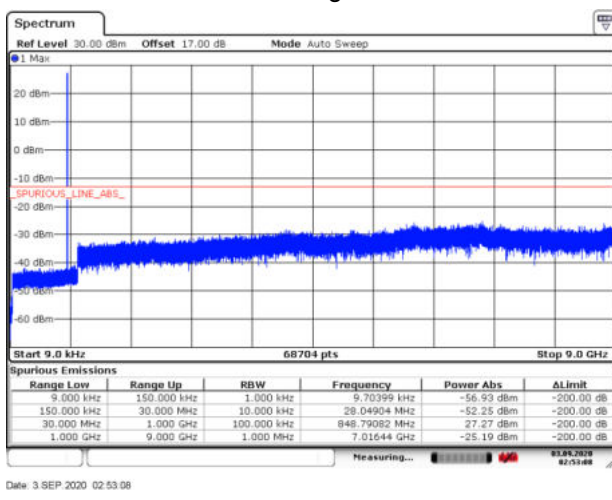
EGPRS 850 CH-Middle 9kHz ~ 9GHz



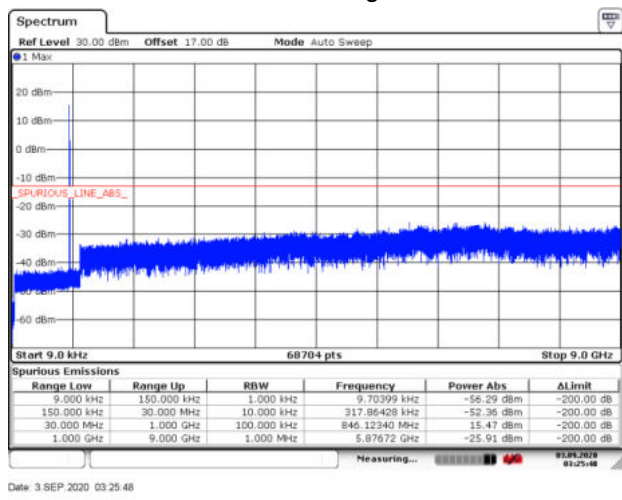
WCDMA BAND V CH-Middle 9kHz ~ 9GHz



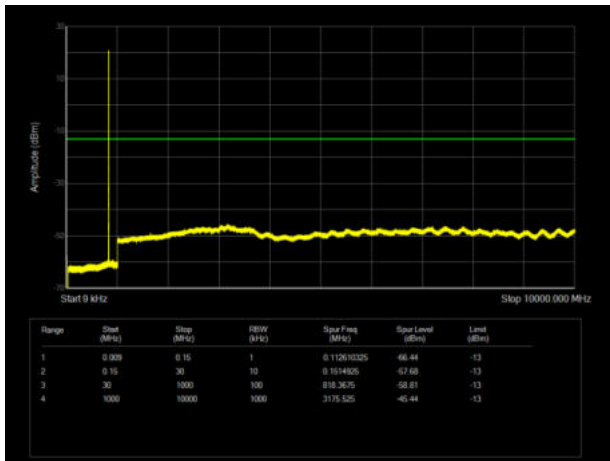
EGPRS 850 CH-High 9kHz ~ 9GHz



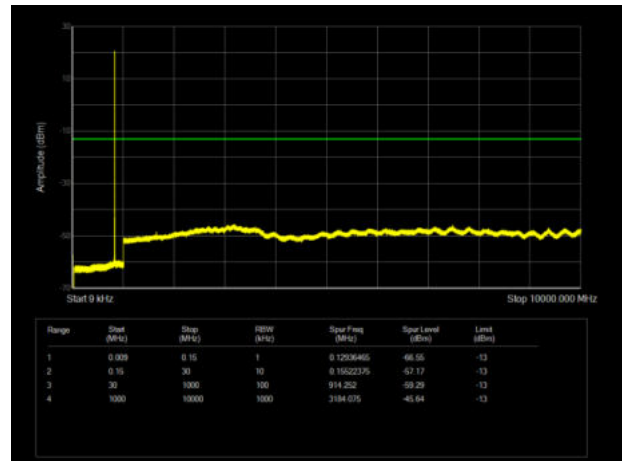
WCDMA BAND V CH-High 9kHz ~ 9GHz



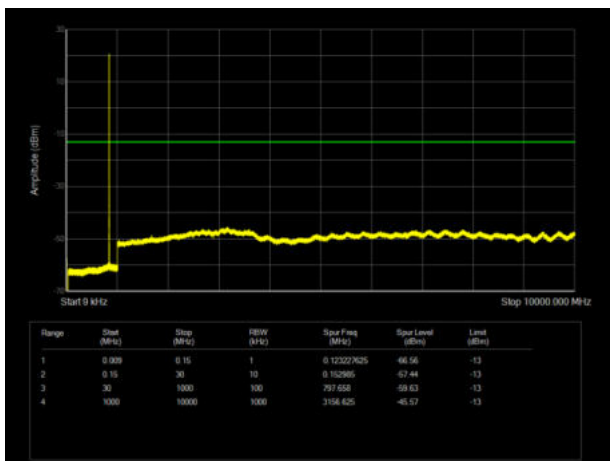
LTE Band 26 1.4MHz CH-Low 9kHz~10GHz



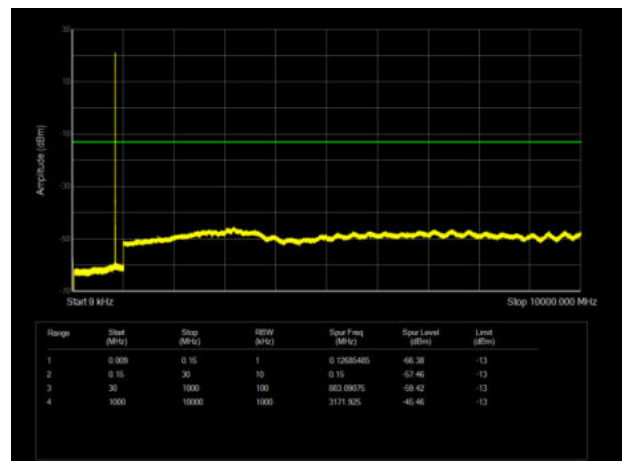
LTE Band 26 3MHz CH-Low 9kHz~10GHz



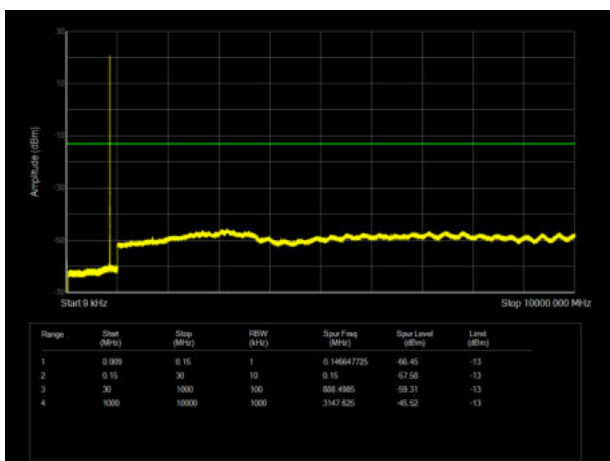
LTE Band 26 1.4MHz CH-Middle 9kHz~10GHz



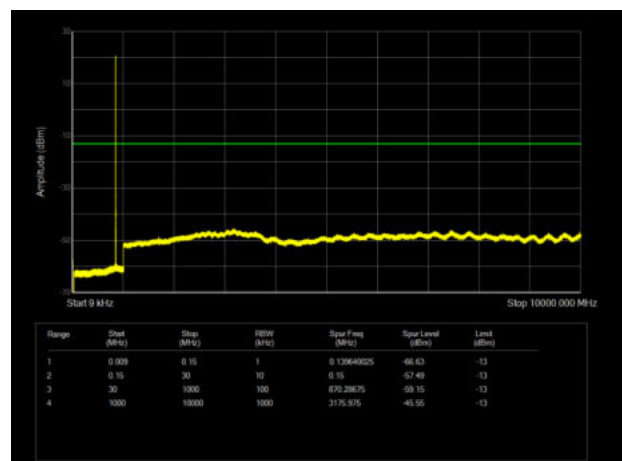
LTE Band 26 3MHz CH-Middle 9kHz~10GHz



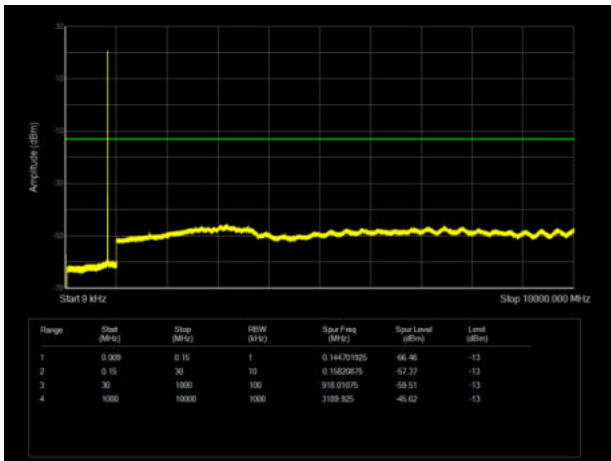
LTE Band 26 1.4MHz CH-High 9kHz~10GHz



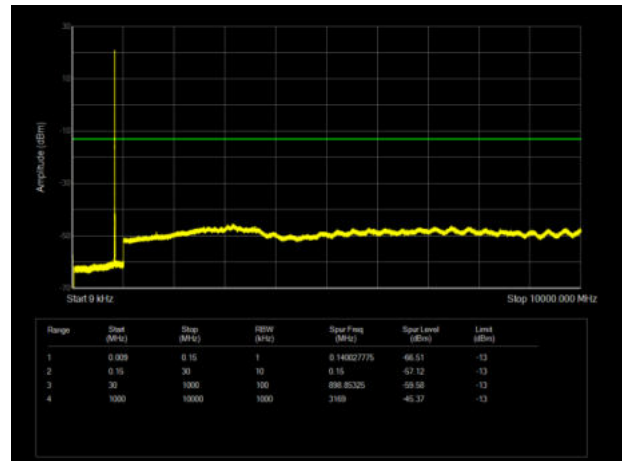
LTE Band 26 3MHz CH-High 9kHz~10GHz



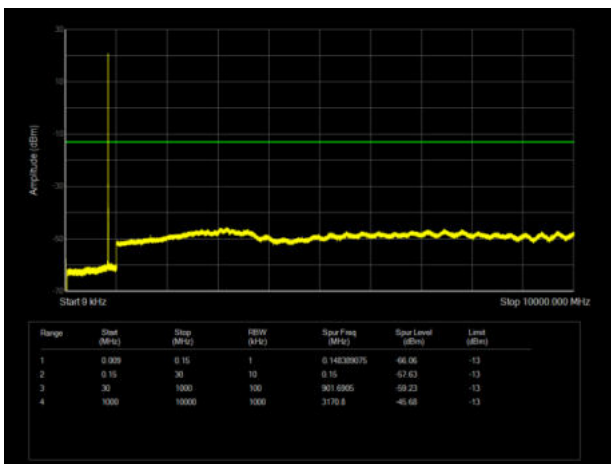
LTE Band 26 5MHz CH-Low 9kHz~10GHz



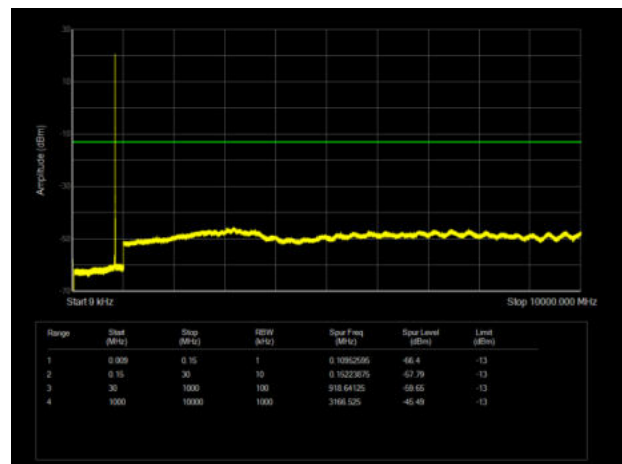
LTE Band 26 10MHz CH-Low 9kHz~10GHz



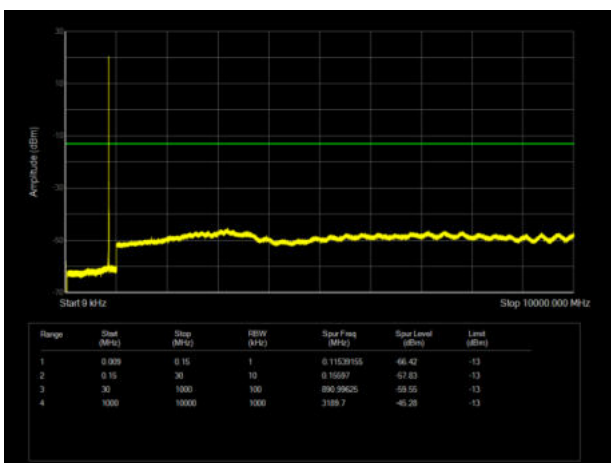
LTE Band 26 5MHz CH-Middle 9kHz~10GHz



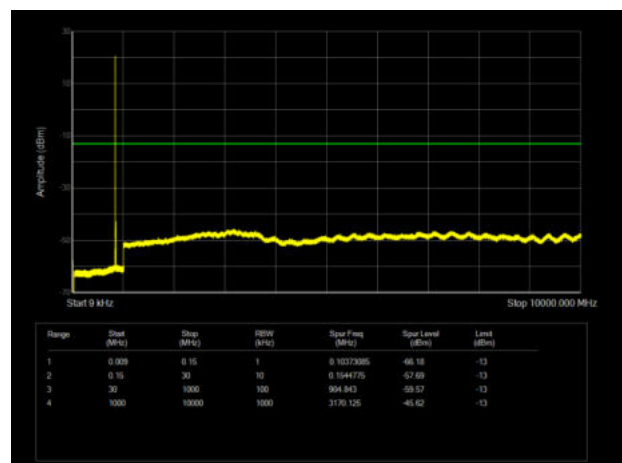
LTE Band 26 10MHz CH-Middle 9kHz~10GHz



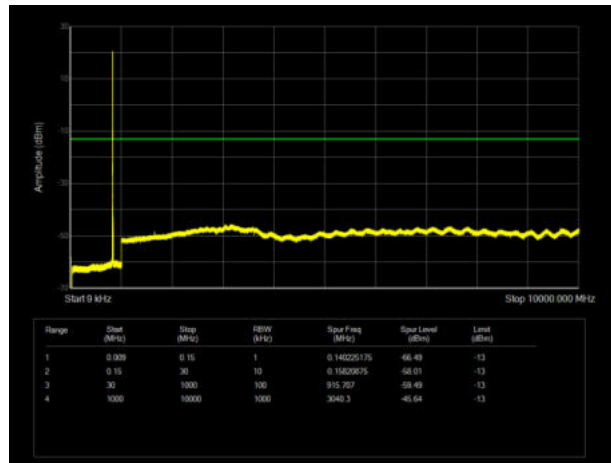
LTE Band 26 5MHz CH-High 9kHz~10GHz



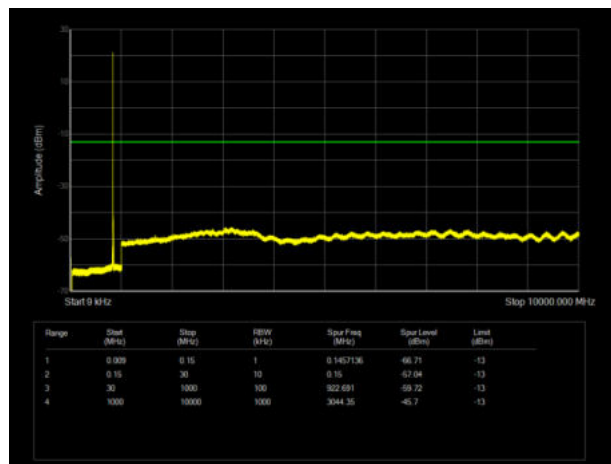
LTE Band 26 10MHz CH-High 9kHz~10GHz



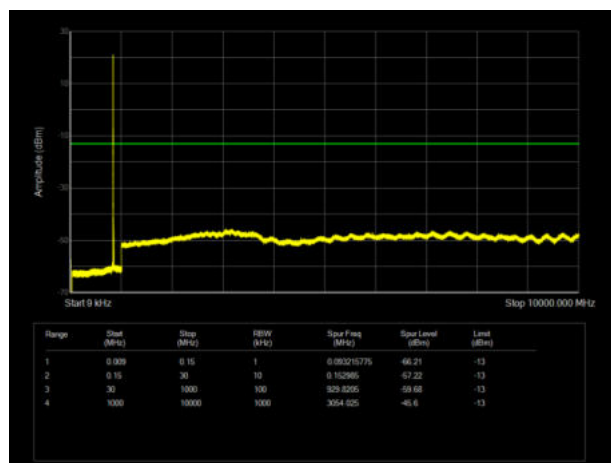
LTE Band 26 15MHz CH-Low 9kHz~10GHz



LTE Band 26 15MHz CH-Middle 9kHz~10GHz



LTE Band 26 15MHz 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=200Hz,VBW=600Hz for 9kHz-150kHz , RBW=10kHz, VBW=30kHz 150kHz-30MHz , 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

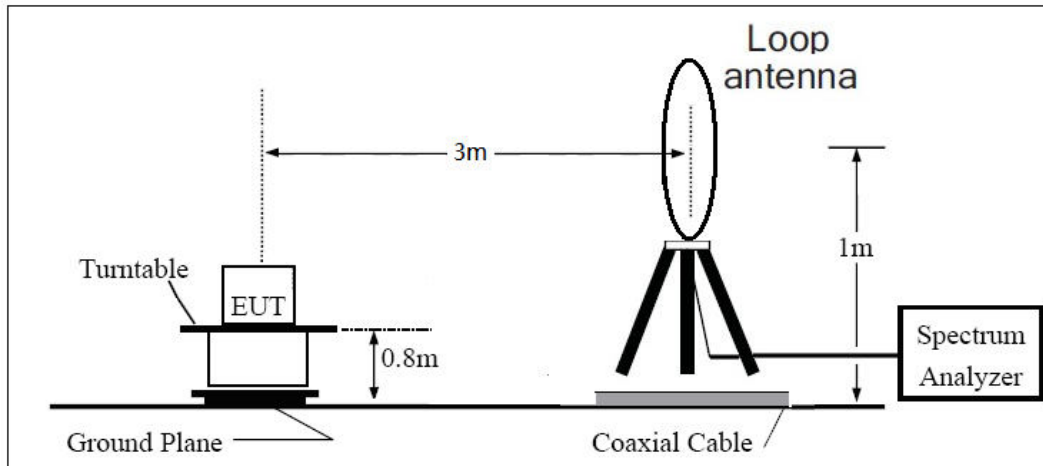
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP

= EIRP-2.15dBi.

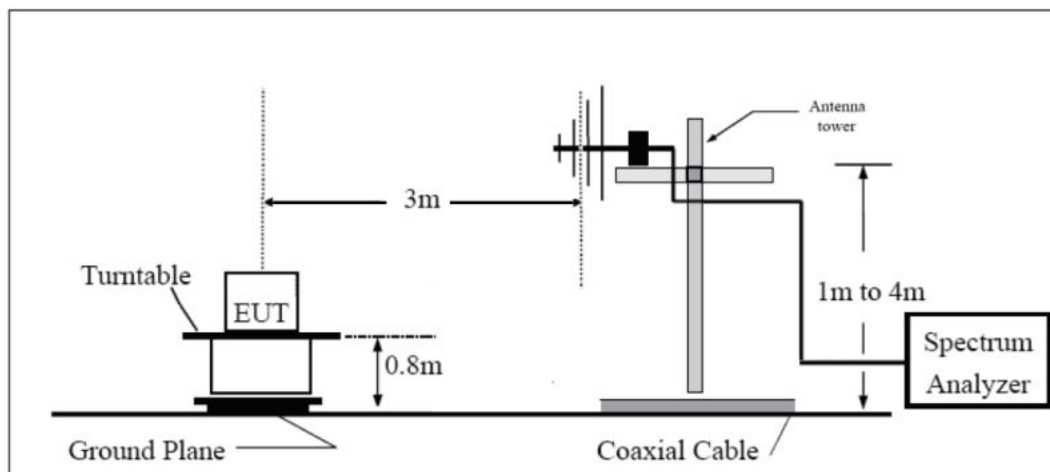
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

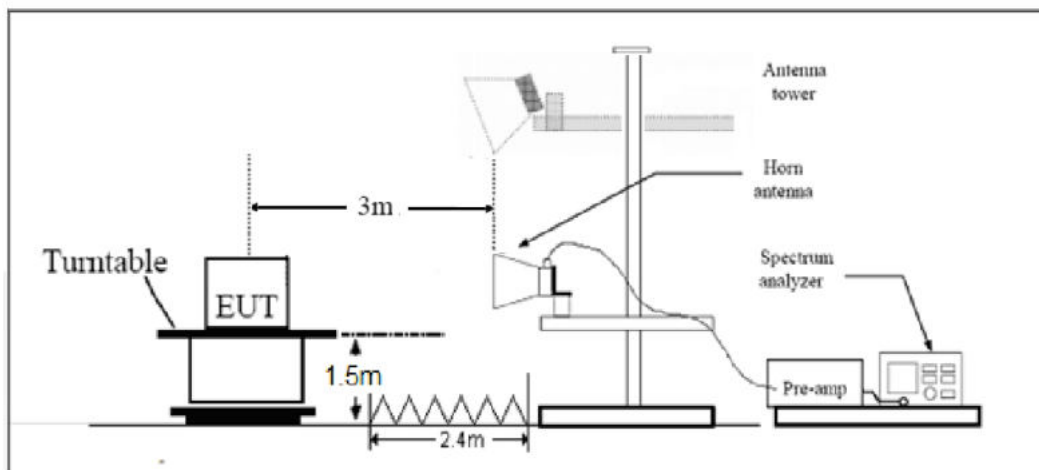
9KHz ~ 30MHz



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
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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.

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	1673.06	-47.01	2.00	10.75	Horizontal	-40.41	-13.00	27.41	270
3	2509.69	-53.18	2.51	11.05	Horizontal	-46.79	-13.00	33.79	90
4	3346.40	-57.97	4.20	11.15	Horizontal	-53.17	-13.00	40.17	135
5	4183.00	-55.36	5.20	11.15	Horizontal	-51.56	-13.00	38.56	90
6	5019.60	-54.92	5.50	11.95	Horizontal	-50.62	-13.00	37.62	270
7	5856.20	-57.10	5.70	13.55	Horizontal	-51.40	-13.00	38.40	90
8	6692.80	-57.14	6.30	13.75	Horizontal	-51.84	-13.00	38.84	45
9	7529.40	-54.16	6.80	13.85	Horizontal	-49.26	-13.00	36.26	90
10	8366.00	-54.07	6.90	14.25	Horizontal	-48.87	-13.00	35.87	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 26 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	-65.07	2.00	10.75	Horizontal	-58.47	-13.00	45.47	90
3	2509.50	-62.55	2.51	11.05	Horizontal	-56.16	-13.00	43.16	315
4	3346.00	-56.68	4.20	11.15	Horizontal	-51.88	-13.00	38.88	315
5	4182.50	-55.80	5.20	11.15	Horizontal	-52.00	-13.00	39.00	180
6	5019.00	-54.52	5.50	11.95	Horizontal	-50.22	-13.00	37.22	45
7	5855.50	-55.69	5.70	13.55	Horizontal	-49.99	-13.00	36.99	315
8	6692.00	-55.84	6.30	13.75	Horizontal	-50.54	-13.00	37.54	90
9	7528.50	-52.74	6.80	13.85	Horizontal	-47.84	-13.00	34.84	0
10	8365.00	-51.46	6.90	14.25	Horizontal	-46.26	-13.00	33.26	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 26 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	1673.00	-64.16	2.00	10.75	Horizontal	-57.56	-13.00	44.56	45
3	2509.50	-62.31	2.51	11.05	Horizontal	-55.92	-13.00	42.92	180
4	3346.00	-57.01	4.20	11.15	Horizontal	-52.21	-13.00	39.21	0
5	4182.50	-54.67	5.20	11.15	Horizontal	-50.87	-13.00	37.87	45
6	5019.00	-54.41	5.50	11.95	Horizontal	-50.11	-13.00	37.11	225
7	5855.50	-56.72	5.70	13.55	Horizontal	-51.02	-13.00	38.02	315
8	6692.00	-56.04	6.30	13.75	Horizontal	-50.74	-13.00	37.74	90
9	7528.50	-52.77	6.80	13.85	Horizontal	-47.87	-13.00	34.87	45
10	8365.00	-53.12	6.90	14.25	Horizontal	-47.92	-13.00	34.92	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 26 15MHz 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	-63.47	2.00	10.75	Horizontal	-56.87	-13.00	43.87	315
3	2509.50	-62.82	2.51	11.05	Horizontal	-56.43	-13.00	43.43	180
4	3346.00	-58.27	4.20	11.15	Horizontal	-53.47	-13.00	40.47	180
5	4182.50	-53.96	5.20	11.15	Horizontal	-50.16	-13.00	37.16	225
6	5019.00	-54.84	5.50	11.95	Horizontal	-50.54	-13.00	37.54	45
7	5855.50	-55.79	5.70	13.55	Horizontal	-50.09	-13.00	37.09	315
8	6692.00	-56.91	6.30	13.75	Horizontal	-51.61	-13.00	38.61	90
9	7528.50	-52.85	6.80	13.85	Horizontal	-47.95	-13.00	34.95	0
10	8365.00	-52.97	6.90	14.25	Horizontal	-47.77	-13.00	34.77	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.

6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2020-05-18	2021-05-17
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Key sight	N9010A	MY50210259	2020-05-18	2021-05-17
Universal Radio Communication Tester	Key sight	E5515C	MY48367192	2020-05-27	2021-05-26
Signal Analyzer	R&S	FSV30	100815	2019-12-15	2020-12-14
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2020-04-02	2023-04-01
Trilog Antenna	SCHWARZBECK	VUBL 9163	9163-201	2017-11-18	2020-11-17
Horn Antenna	R&S	HF907	102723	2018-08-11	2021-08-10
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2021-06-19
Signal generator	R&S	SMB 100A	102594	2020-05-18	2021-05-17
Climatic Chamber	ESPEC	SU-242	93000506	2017-12-17	2020-12-16
Preamplifier	R&S	SCU18	102327	2020-05-18	2021-05-17
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2020-05-18	2021-05-17
RF Cable	Agilent	SMA 15cm	0001	2020-06-12	2020-12-11
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.

ANNEX C: Product Change Description

The Product Change Description are submitted separately.