FCC Radio Test Report

FCC ID: 2AM8GCHAMELEON5R

Original Grant

Report No.	:	TB-FCC179086
Applicant	:	Guangzhou Lie Dun Electronics Technology CO.,Ltd
Equipment Under Test (EUT)		
EUT Name	:	RUGGEDIZED HAND-HELD DEVICE
Model No.	:	CHAMELEON 5R SINGLE
Series Model No.	:	CHAMELEON 5R DUAL
Brand Name	:	CHAMELEON
Sample ID	:	20190923-01-1#& 20190923-01-2#
Receipt Date	:	2019-12-16
Test Date	:	2019-12-17 to 2021-02-27
Issue Date	:	2021-03-09
Standards	:	47 CFR FCC Part 2, Part 90
Test Method	:	ANSI C63.26 2015
Conclusions	:	**PASS**

In the configuration tested, the EUT complied with the standards specified above,

Test/Witness Engineer	:	Rebeca
Engineer Supervisor	:	IVAN SU
Engineer Manager	:	Ray Lai

Rebeca

Ivan Su

Ray Lai

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Tel: +86 75526509301 Fax: +86 75526509195

Contents

CONTENTS....2
1. GENERAL INFORMATION ABOUT EUT....5
1.1 Client Information....5
1.2 General Description of EUT (Equipment Under Test)....5
1.3 Block Diagram Showing the Configuration of System Tested....7
1.4 Description of Support Units....7
1.5 Description of Test Mode....8
1.6 Measurement Uncertainty....9
1.7 Test Facility....9
2. TEST SUMMARY....10
3. TEST SOFTWARE....10
4. TEST EQUIPMENT....11
5. CONDUCTED RF OUTPUT POWER....13
5.1 Test Standard and Limit....13
5.2 Test Setup....13
5.3 Test Procedure....13
5.4 Deviation From Test Standard....13
5.5 EUT Operating Condition....13
5.6 Test Data....13
6. PEAK-AVERAGE RATIO....14
6.1 Test Standard and Limit....14
6.2 Test Setup....14
6.3 Test Procedure....14
6.4 Deviation From Test Standard....14
6.5 EUT Operating Condition....14
6.6 Test Data....14
7. OCCUPIED BANDWIDTH....15
7.1 Test Standard and Limit....15
7.2 Test Setup....15
7.3 Test Procedure....15
7.4 Deviation From Test Standard....15
7.5 EUT Operating Condition....16
7.6 Test Data....16
8. OUT OF BAND EMISSION AT ANTENNA TERMINALS....17
8.1 Test Standard and Limit....17
8.2 Test Setup....17
8.3 Test Procedure....18
8.4 Deviation From Test Standard....18
8.5 EUT Operating Condition....18
8.6 Test Data....18

9. EMISSION MASK 19
9.1 Test Standard and Limit 19
9.2 Test Setup 19
9.3 Test Procedure 19
9.4 Deviation From Test Standard 19
9.5 EUT Operating Condition 19
9.6 Test Data 19
10. RADIATED OUTPUT POWER 20
10.1 Test Standard and Limit 20
10.2 Test Setup 20
10.3 Test Procedure 21
10.4 Deviation From Test Standard 21
10.5 EUT Operating Condition 21
10.6 Test Data 21
11. RADIATED OUT BAND OF EMISSIONS 22
11.1 Test Standard and Limit 22
11.2 Test Setup 22
11.3 Test Procedure 22
11.4 Deviation From Test Standard 23
11.5 EUT Operating Condition 23
11.6 Test Data 23
12. FREQUENCY STABILITY 24
12.1 Test Standard and Limit 24
12.2 Test Setup 24
12.3 Test Procedure 25
12.4 Deviation From Test Standard 25
12.5 EUT Operating Condition 25
12.6 Test Data 25
ATTACHMENT A--CONDUCTED RF OUTPUT POWER 26
ATTACHMENT B--PEAK-AVERAGE RATIO 28
ATTACHMENT C--OCCUPY BANDWIDTH 30
ATTACHMENT D--OUT OF BAND EMISSION AT ANTENNA TERMINALS 35
ATTACHMENT E--EMISSION MASKS 39
ATTACHMENT F--RADIATED OUTPUT POWER 44
ATTACHMENT G--RADIATED OUT BAND OF EMISSIONS 46
ATTACHMENT H--FREQUENCY STABILITY 48

Revision History

Report No.	Version	Description	Issued Date
TB-FCC179086	Rev.01	Initial issue of report	2021-03-09

1. General Information about EUT

1.1 Client Information

Applicant	:	Guangzhou Lie Dun Electronics Technology CO.,Ltd
Address	:	No.4 plant of No.43 South International Trade Avenue, Hualong Town, Panyu District, Guangzhou, Guangdong, China
Manufacturer	:	Guangzhou Lie Dun Electronics Technology CO.,Ltd
Address	:	No.4 plant of No.43 South International Trade Avenue, Hualong Town, Panyu District, Guangzhou, Guangdong, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	RUGGEDIZED HAND-HELD DEVICE	
Models No.	:	CHAMELEON 5R SINGLE, CHAMELEON 5R DUAL	
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is size.	
Product Description	:	Frequency Bands: LTE Band 26:TX: 814MHz-824MHz, RX: 859MHz-869MHz	
		Antenna Type:	4.5 PIFA Antenna
		Modulation Type:	QPSK, 16QAM
		Bandwidth:	1.4MHz/3MHz/5MHz/10MHz
Power Rating	:	DC 5V from Adapter(P12DUSB050200 US) Input: 100-240V~, 50/60Hz, 0.3A Output: DC 5V 2A DC 3.85V 7100mAh/27Wh by rechargeable Li-ion battery.	
Software Version	:	CH501_V0.37_qfil_user_20201109	
Hardware Version	:	5FBD61_V1.03_PCB	
Remark	:	The antenna gain and adapter provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.	

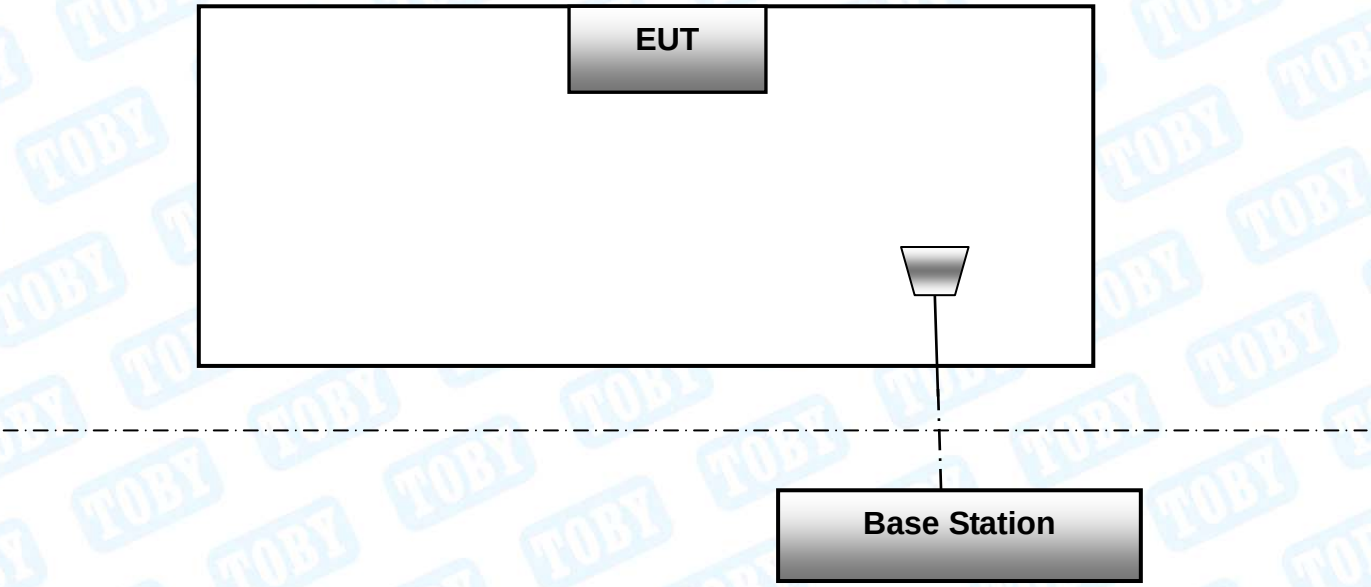
Note:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(2) Channel List

LTE Band 26(1.4MHz)		LTE Band 26(3MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
26697	**814.70**	**26705**	**815.50**
26698	814.60	26706	814.60
……	……	……	……
26739	818.90	26739	818.90
26740	**819.00**	**26740**	**819.00**
26741	819.10	26741	819.10
……	…..	……	…..
26782	823.20	26774	822.40
26783	**823.30**	**26775**	**822.50**
LTE Band 26(5MHz)		**LTE Band 26(10MHz)**	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
26715	**816.50**	……	……
26698	816.60	……	……
……	……	……	……
26739	818.90	……	…..
26740	**819.00**	**26740**	**819.00**
26741	819.10	……	…..
……	…..	……	…..
26764	822.40	……	…..
26765	**821.50**	……	…..

1.3 Block Diagram Showing the Configuration of System Tested



The above block diagram of setup is the normal mode. And more detail please refer to the test setup of each test item of bellow.

1.4 Description of Support Units

The EUT has been tested as an independent unit.

1.5 Description of Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 v03r01 and ANSI C63.26 2015 Power Meas. License Digital Systems with maximum output power. Radiated measurements are performed by rotating the EUT in three different or tho-gonal test planes to find the maximum emission.

Remark:
1. The mark “v “ means that this configuration is chosen for testing
2. The mark “--“ means that this bandwidth is not supported.
3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated

ITEMS	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
RF Output Power	26	V	V	V	V	--	--	V	V	V	V	V	V	V	V
Peak-to-Average Ratio	26	--	--	--	V	--	--	V	V			V	--	V	--
99% & -26 dB Occupied Bandwidth	26	V	V	V	V	--	--	V	V	V			V	V	V
Spurious Emissions at Antenna Terminal	26	V	V	V	V	--	--	V	V	V		V	V	V	V
Field Strength of Spurious Radiation	26	V	V	V	V	--	--	V	V	V				V	
Emission Masks	26	V	V	V	V	--	--	V	V	V		V	V	V	V
Frequency stability	26	V	V	V	V	--	--	V	V	V				V	

Note:

(1) During the testing procedure, the EUT is in link mode with base station emulator at maximum power level in each test mode.

(2) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on Z-plane as the normal use. Therefore only the test data of this Z-plane was used for radiated emission measurement test.

1.6 Measurement Uncertainty

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
RF Power, conducted	/	±0.82 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB

1.7 Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at: 1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China.
At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)
The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01
The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025：2005 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01. FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)
The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A.

2. Test Summary

Test Item	Section in CFR 47	Result
RF Output Power	2.1046/90.635(b)	**PASS**
Peak-to-Average Ratio	KDB 971168 D01(5.7)	**PASS**
99% & -26 dB Occupied Bandwidth	2.1049/ 90.209	**PASS**
Spurious Emissions at Antenna Terminal	2.1051 / 90.691	**PASS**
Field Strength of Spurious Radiation	2.1053 /90.691	**PASS**
Emission Masks	2.1051 / 90.691	**PASS**
Frequency stability vs. temperature	2.1055 / 90.213	**PASS**
Frequency stability vs. voltage	2.1055 / 90.213	**PASS**
Pass: The EUT complies with the essential requirements in the standard.		

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Radiation Emission	EZ-EMC	EZ	FA-03A2RE

4. Test Equipment

Radiation Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 13, 2019	Jul. 12, 2020
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 13, 2019	Jul. 12, 2020
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 13, 2019	Jul. 12, 2020
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.03, 2019	Mar. 02, 2020
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.03, 2019	Mar. 02, 2020
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.03, 2019	Mar. 02, 2020
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 13, 2019	Jul. 12, 2020
Pre-amplifier	Sonoma	310N	185903	Mar.03, 2019	Mar. 02, 2020
Pre-amplifier	HP	8449B	3008A00849	Mar.03, 2019	Mar. 02, 2020
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	Mar.03, 2019	Mar. 02, 2020
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.03, 2019	Mar. 02, 2020
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 13, 2019	Jul. 12, 2020
Spectrum Analyzer	Rohde & Schwarz	ESPI	100010/007	Jul. 13, 2019	Jul. 12, 2020
Wideband Radio Comunication Tester	Rohde & Schwarz	CMW500	144382	Sep. 16, 2019	Sep. 15, 2020
Universal Radio Communication Tester	Rohde&Schwarz	CMU200	103903	Jul. 13, 2019	Jul. 12, 2020
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 16, 2019	Sep. 15, 2020
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 16, 2019	Sep. 15, 2020
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 16, 2019	Sep. 15, 2020
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 16, 2019	Sep. 15, 2020
Note: The test equipments of the above project valid until 2020 year. Because of the EUT test time across 2020 and 2021 year, So the new calibrated equipment please see below test equipments.					

Radiation Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 06, 2020	Jul. 05, 2021
Wideband Radio Comunication Tester	Rohde & Schwarz	CMW500	144382	Sep. 11, 2020	Sep. 10, 2021
Universal Radio Communication Tester	Rohde&Schwarz	CMU200	103903	Jul. 06, 2020	Jul. 05, 2021
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.01, 2020	Feb. 28, 2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 07, 2020	Jul. 06, 2021
Pre-amplifier	Sonoma	310N	185903	Mar.01, 2020	Feb. 28, 2021
Pre-amplifier	HP	8449B	3008A00849	Mar.01, 2020	Feb. 28, 2021
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	Mar.01, 2020	Feb. 28, 2021
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.01, 2020	Feb. 28, 2021
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
Wideband Radio Comunication Tester	Rohde & Schwarz	CMW500	144382	Sep. 11, 2020	Sep. 10, 2021
Universal Radio Communication Tester	Rohde&Schwarz	CMU200	103903	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	ESPI	100010/007	Jul. 06, 2020	Jul. 05, 2021
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 11, 2020	Sep. 10, 2021
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 11, 2020	Sep. 10, 2021
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 11, 2020	Sep. 10, 2021
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 11, 2020	Sep. 10, 2021

5. Conducted RF Output Power

5.1 Test Standard and Limit

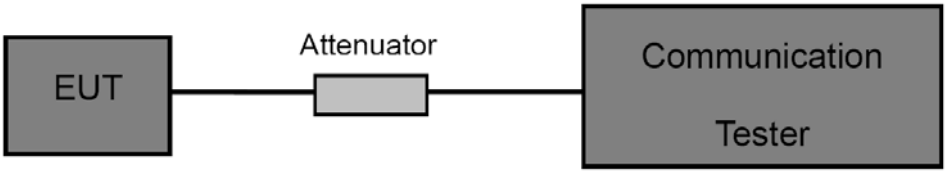
5.1.1 Test Standard

FCC part 2.1046
FCC Part 90.635(b)

5.1.2 Test Limit

RF Output Power
LTE Band 26(814MHz-824MHz**)**
100W(50dBm)

5.2 Test Setup



5.3 Test Procedure

(1) The EUT is coupled to the Base Station with the suitable Attenuator, the path loss is calibrated to correct the reading.
(2) A call is set up by the Base Station to the generic call set up procedure.
(3) Set EUT at maximum power level through base station by power level command.
(4) Then read record the power value from the Base Station in dBm.

5.4 Deviation From Test Standard

No deviation

5.5 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

5.6 Test Data

Please refer to the Attachment A.

6. Peak-Average Ratio

6.1 Test Standard and Limit

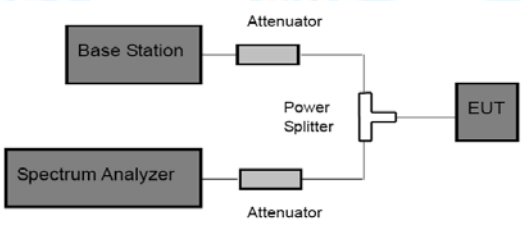
6.1.1 Test Standard

FCC Part 90

6.1.2 Test Limit

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

6.2 Test Setup



6.3 Test Procedure

According with KDB 971168

(1) The signal analyzer's CCDF measurement profile is enabled.
(2) Frequency = carrier center frequency.
(3) Measurement BW>Emission bandwidth of signal.
(4) The signal analyzer was set to collect one million samples to generate the CCDF curve.
(5) Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level.
(6) The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which of the transmitter is operating at maximum power.

6.4 Deviation From Test Standard

No deviation

6.5 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

6.6 Test Data

Please refer to the Attachment B.

7. Occupied Bandwidth

7.1 Test Standard and Limit

7.1.1 Test Standard

FCC Part 2.1049

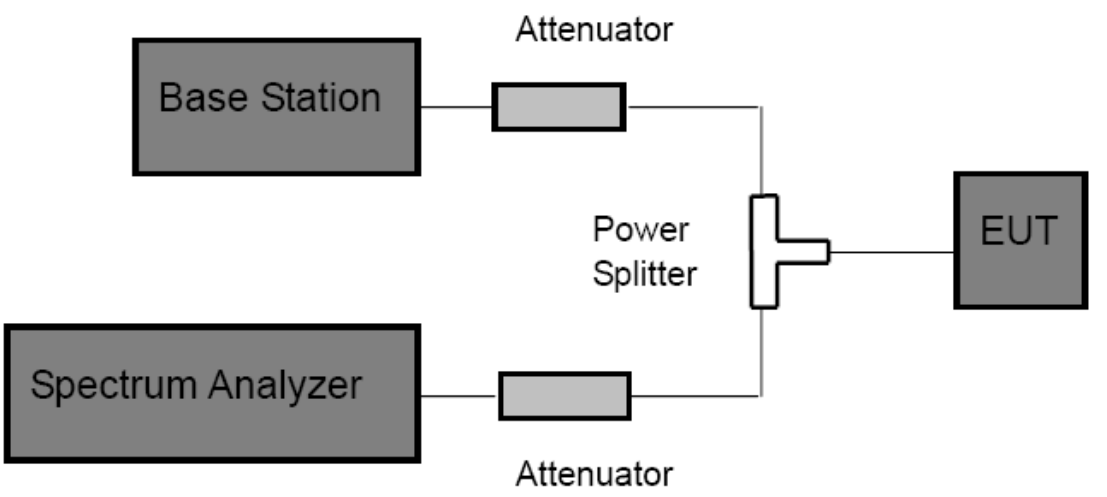
FCC Part 90.209

7.1.2 Test Requirement

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as 99% power and -26dBC occupied bandwidths.

7.2 Test Setup



7.3 Test Procedure

(1) The EUT was directly connected to the spectrum analyzer and Base station via power splitter as show in the block diagram above.

(2) The resolution bandwidth of the Spectrum Analyzer is set to at least 1% of the occupied bandwidth. VBW= 3 times RBW.

(3) The low, middle and the high channels are selected to perform tests respectively.

(4) Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak; make a line whose value is 26dB lower than the peak; mark two points which the line intersected the waveform at; finally record the delta of the two points as the occupied bandwidth and the plot.

(5) Set the Spectrum Analyzer Occupied bandwidth function to measure the 99% occupied bandwidth.

7.4 Deviation From Test Standard

No deviation

7.5 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

7.6 Test Data

Please refer to the Attachment C.

8. Out of Band Emission at Antenna Terminals

8.1 Test Standard and Limit

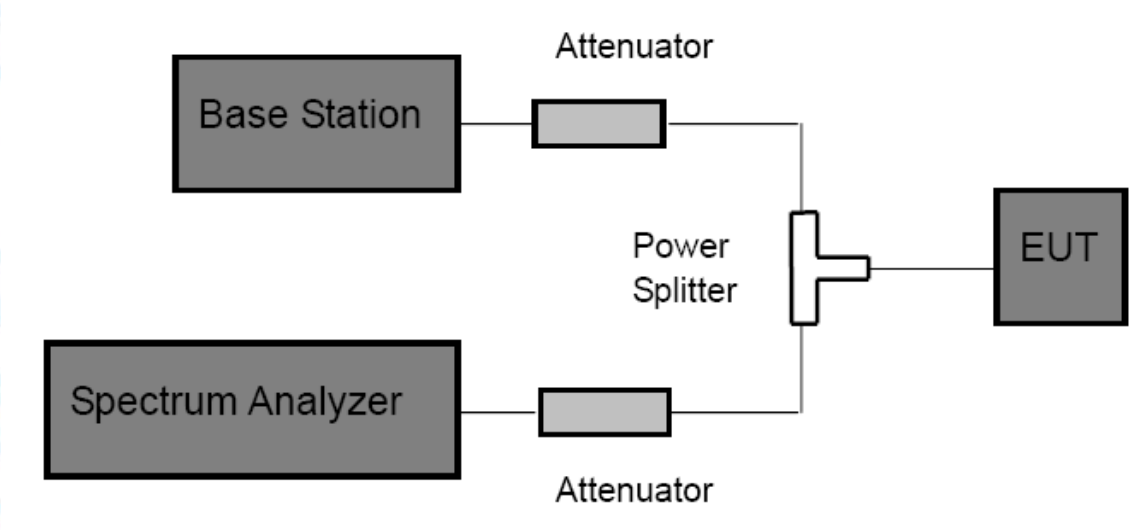
8.1.1 Test Standard

FCC Part 2: 2.1051
FCC Part 90.691

8.1.2 Test Limit

Rule Part 90.691 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.” this becomes a constant specification limit of -13 dBm.

8.2 Test Setup



8.3 Test Procedure

1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.

2 The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

3 For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic.

4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter.

8.4 Deviation From Test Standard

No deviation

8.5 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

8.6 Test Data

Please refer to the Attachment D.

9. Emission Mask

9.1 Test Standard and Limit

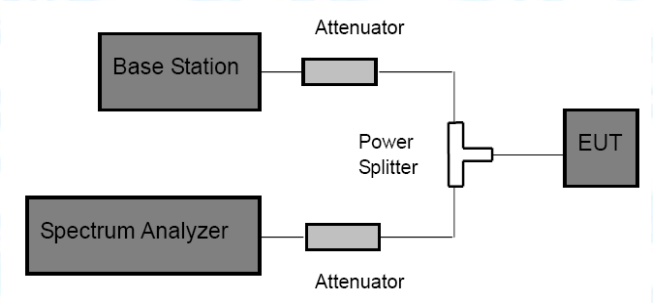
9.1.1 Test Standard

FCC Part 2: 2.1051
FCC Part 90.691

9.1.2 Test Limit

Rule Part 90.691(a) specifies that " For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz."

9.2 Test Setup



9.3 Test Procedure

(1) The EUT was directly connected to the spectrum analyzer and Base station via power splitter as show in the block diagram above.
(2) Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter.

9.4 Deviation From Test Standard

No deviation

9.5 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

9.6 Test Data

Please refer to the Attachment E.

10. Radiated Output Power

10.1 Test Standard and Limit

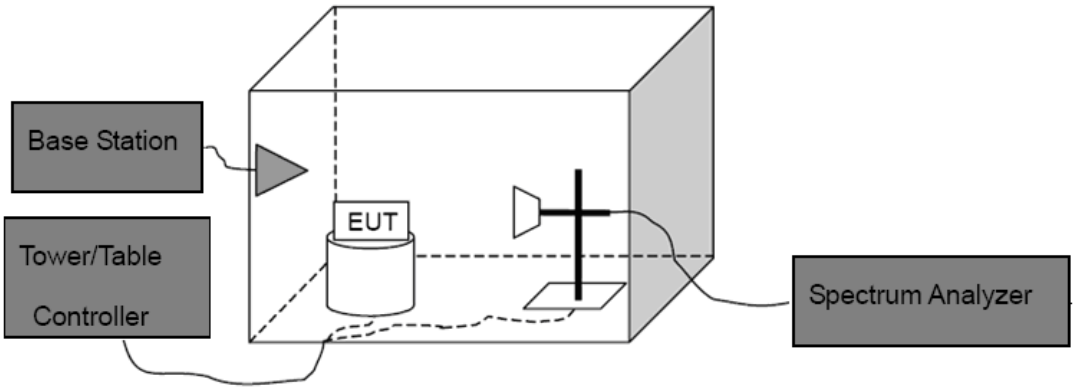
10.1.1 Test Standard

FCC Part 2.1046
FCC part 90.635(B)

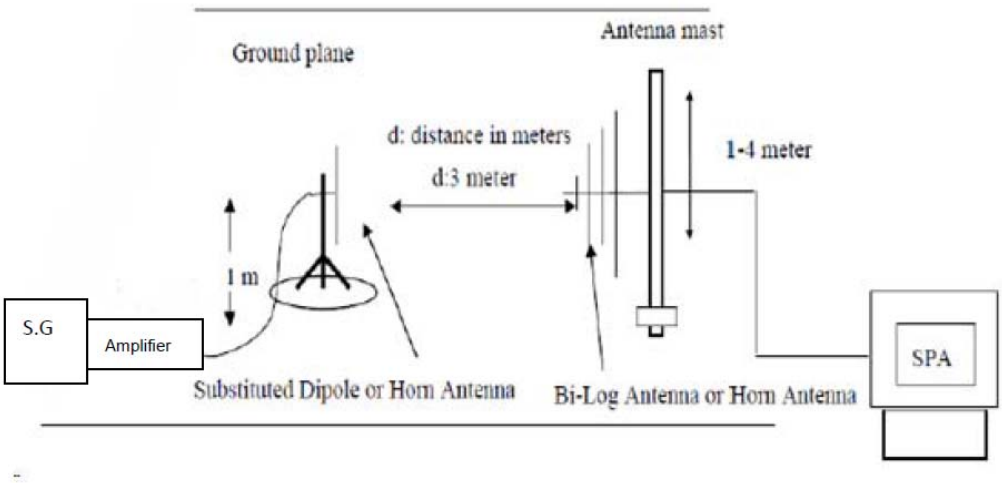
10.1.2 Test Limit

E.R.P
LTE Band 26(814MHz-824MHz**)**
100W(50dBm)

10.2 Test Setup



Above 1G



Substituted Method

10.3 Test Procedure

(1) The EUT was placed on an non-conductive rotating platform with 0.8 meter height in an anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW=3 MHz, VBW=3 MHz and peak detector settings.

(2) During the measurement, the EUT was enforced in maximum power and linked with the Base Station. The highest was recorded from analyzer power level (LVT) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.

(3) Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to C63.26. The EUT was replaced by dipole antenna (for frequency below 1 GHz) or Horn antenna (for frequency above 1 GHz) at same location with same polarize of receiver antenna and then a known power of each measure frequency from S.G. was applied into the dipole antenna or Horn antenna through a TX cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna.

Note: In test, the S.G Connect the Pre-amplifier(Sonoma 310N Pre-amplifier for frequency below 1 GHz, HP 8449B Pre-amplifier for frequency above 1 GHz)

Then the EUT's EIRP and ERP was calculated with the correction factor:
ERP=S.G.Level +Antenna Gain Cord.(dBd)-Cable Loss(dB)
EIRP=S.G.Level+Antenna Gain Cord.(dBi)-Cable Loss(dB)

10.4 Deviation From Test Standard

No deviation

10.5 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

10.6 Test Data

Please refer to the Attachment F.
Measurement Data (worst case)

11. Radiated Out Band of Emissions

11.1 Test Standard and Limit

11.1.1 Test Standard

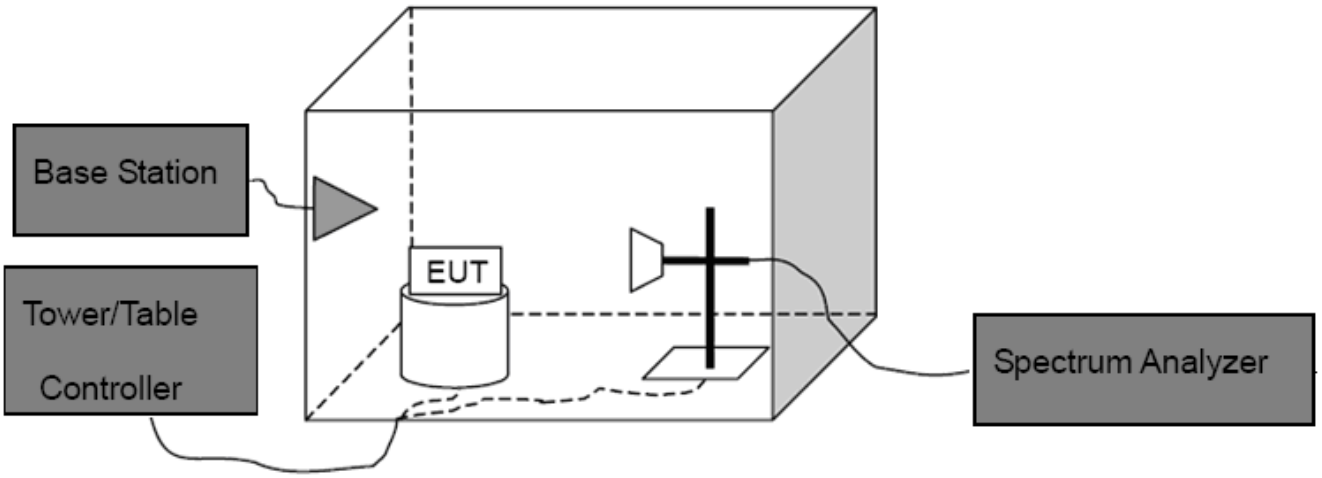
FCC Part 2.1053

FCC Part 90.691

11.1.2 Test Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power(P) by a factor of at least 43+10log(P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

11.2 Test Setup



11.3 Test Procedure

(1) The test system setup as show in the block diagram above.

(2) The EUT was placed on an non-conductive rotating platform in an anechoic chamber. The radiated spurious emissions from 30MHz to 10th harmonious of fundamental frequency were measured at 3 m with a test antenna and a spectrum analyzer with RBW=1 MHz, VBW=1 MHz, peak detector settings.

(3) During the measurement, the EUT was enforced in maximum power and linked with a base station. All the spurious emissions at 3m were measured by rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.

(4) When found the maximum level of emissions from the EUT. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB=10 log(TX power in Watts/0.001)-the absolute level

Spurious attenuation limit in dB=43+10 log(power out in Watts)

11.4 Deviation From Test Standard

No deviation

11.5 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

11.6 Test Data

Please refer to the Attachment G.
Measurement Data (worst case)

12. Frequency Stability

12.1 Test Standard and Limit

12.1.1 Test Standard

FCC Part 2.1055(a)(1)(b)
FCC Part 90.213

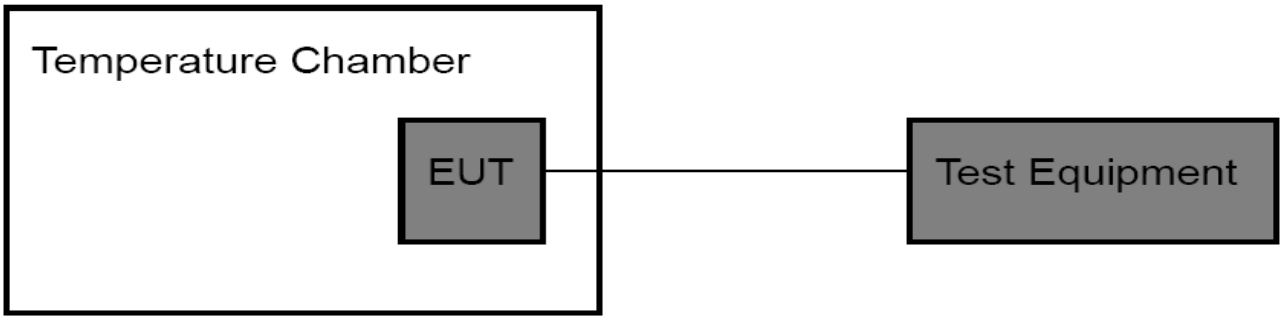
12.1.2 Limit

According to the Sec. 90.213.(a) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table. Minimum Frequency Stability
[Parts per million (ppm)]

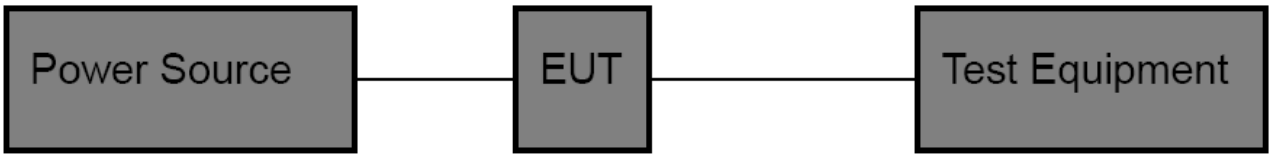
Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
809-824	1.5	2.5	2.5

12.2 Test Setup

For Temperature Test:



For Voltage Test:



12.3 Test Procedure

Test Procedures for Temperature Variation:

(1) The EUT was set up in the thermal chamber and connected with the base station.

(2) With power off, the temperature was decreased to -30℃ and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.

(3) With power off, the temperature was raised in 10℃ set up to 50℃ and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.

(4) If the EUT cannot be turned on at -30℃, the testing lowest temperature will be raised in 10℃ step until the EUT can be turned on.

Test Procedures for Voltage Variation:

(1) The EUT was placed in a temperature chamber at 25±5℃ and connected with the base station.

(2) Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.

(3) The variation in frequency was measured for the worst case.

12.4 Deviation From Test Standard

No deviation

12.5 EUT Operating Condition

The Equipment Under Test was set to Communication with the Base Station.

12.6 Test Data

Please refer to the Attachment H.

ATTACHMENT A--CONDUCTED RF OUTPUT POWER

FDD-LTE Band 26						
Channel Bandwidth: 1.4 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.14	23.15	23.07	PASS
	1	3	23.26	23.26	23.19	PASS
	1	5	23.17	23.21	22.95	PASS
	3	0	23.22	23.11	23.22	PASS
	3	1	23.11	23.22	23.34	PASS
	3	3	23.07	23.11	23.27	PASS
	6	0	22.21	22.11	22.19	PASS
16QAM	1	0	21.99	22.09	22.48	PASS
	1	3	21.99	22.20	22.44	PASS
	1	5	22.04	22.14	22.26	PASS
	3	0	22.24	22.35	22.28	PASS
	3	1	22.20	22.35	22.32	PASS
	3	3	22.19	22.29	22.24	PASS
	6	0	21.20	21.09	21.42	PASS
Channel Bandwidth: 3 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.07	23.10	23.02	PASS
	1	8	23.15	23.11	23.05	PASS
	1	14	23.01	23.03	22.92	PASS
	8	0	22.22	22.26	22.36	PASS
	8	4	22.27	22.23	22.33	PASS
	8	7	22.37	22.23	22.27	PASS
	15	0	22.23	22.25	22.38	PASS
16QAM	1	0	21.77	21.82	22.18	PASS
	1	8	21.76	21.87	22.33	PASS
	1	14	21.71	21.73	22.24	PASS
	8	0	20.97	21.45	21.69	PASS
	8	4	21.35	21.40	21.60	PASS
	8	7	21.37	21.40	21.39	PASS
	15	0	21.15	21.40	21.32	PASS

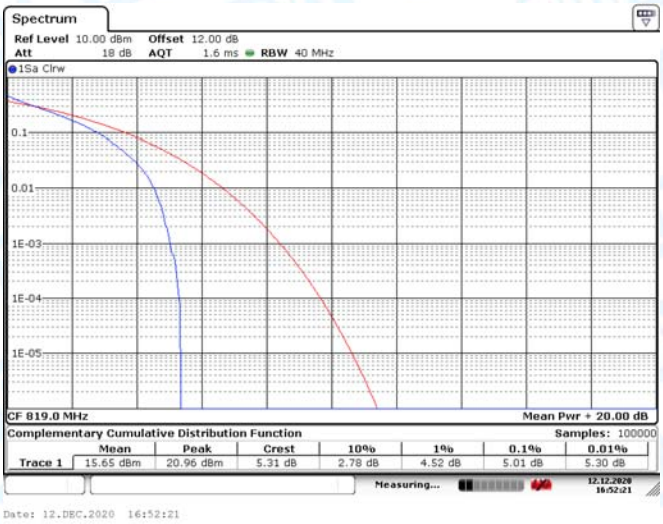
FDD-LTE Band 26						
Channel Bandwidth: 5 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.05	22.26	23.17	PASS
	1	12	23.89	22.15	23.40	PASS
	1	24	22.97	22.14	23.10	PASS
	12	0	22.12	21.57	22.16	PASS
	12	6	22.26	22.00	22.34	PASS
	12	11	22.15	21.24	22.24	PASS
	25	0	22.14	21.08	22.25	PASS
16QAM	1	0	21.57	21.17	21.76	PASS
	1	12	22.00	21.06	22.18	PASS
	1	24	21.24	21.11	21.43	PASS
	12	0	21.08	21.27	20.89	PASS
	12	6	21.17	21.29	21.01	PASS
	12	11	21.06	21.00	20.88	PASS
	25	0	21.11	21.29	21.12	PASS
Channel Bandwidth: 10 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	----	23.05	----	PASS
	1	24	----	23.31	----	PASS
	1	49	----	23.19	----	PASS
	25	0	----	22.18	----	PASS
	25	12	----	22.24	----	PASS
	25	24	----	22.31	----	PASS
	50	0	----	22.22	----	PASS
16QAM	1	0	----	21.96	----	PASS
	1	24	----	22.02	----	PASS
	1	49	----	21.83	----	PASS
	25	0	----	21.17	----	PASS
	25	12	----	21.22	----	PASS
	25	24	----	21.24	----	PASS
	50	0	----	21.12	----	PASS
	1	37	22.19	----	----	PASS
	1	74	21.73	----	----	PASS
	36	0	21.13	----	----	PASS
	36	16	21.21	----	----	PASS
	36	35	21.30	----	----	PASS
	75	0	21.16	----	----	PASS

ATTACHMENT B--PEAK-AVERAGE RATIO

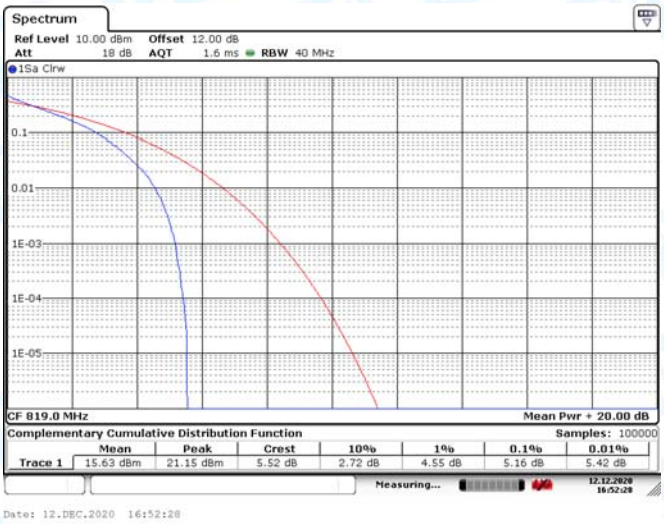
Test Mode	CH	Modulation	RB Size	RB Offset	PAPR with 0.1% probability (dB)	Limit (dB)	Result
LTE BAND 26 1.4MHz	Middle	QPSK	6	0	5.01	≤13	PASS
	Middle	16QAM	6	0	5.16	≤13	PASS
LTE BAND 26 3MHz	Middle	QPSK	15	0	5.13	≤13	PASS
	Middle	16QAM	15	0	5.13	≤13	PASS
LTE BAND 26 5MHz	Middle	QPSK	25	0	5.10	≤13	PASS
	Middle	16QAM	25	0	5.13	≤13	PASS
LTE BAND 26 10MHz	/	QPSK	50	0	5.22	≤13	PASS
	/	16QAM	50	0	5.28	≤13	PASS

Note: Only show the worst case data

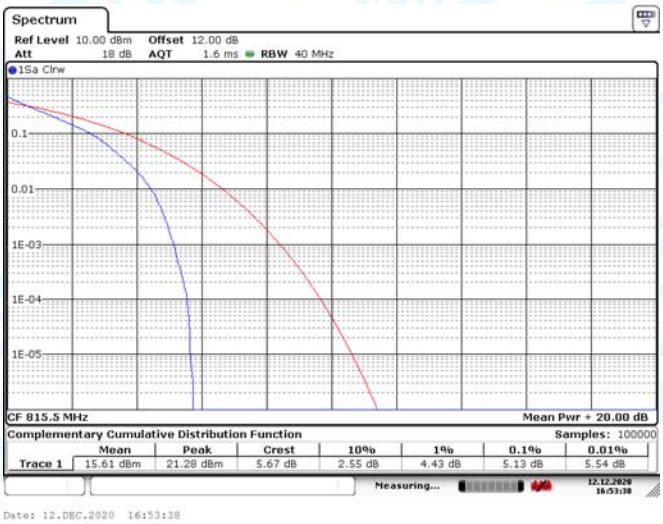
LTE Band 26 1.4MHz-QPSK



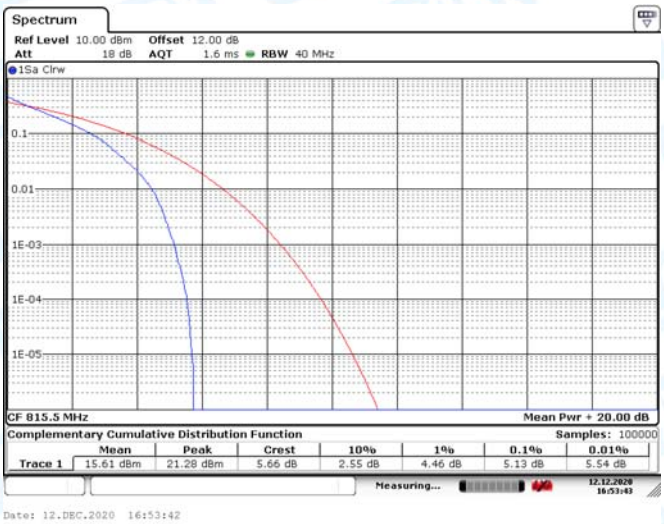
LTE Band 26 1.4MHz-16QAM

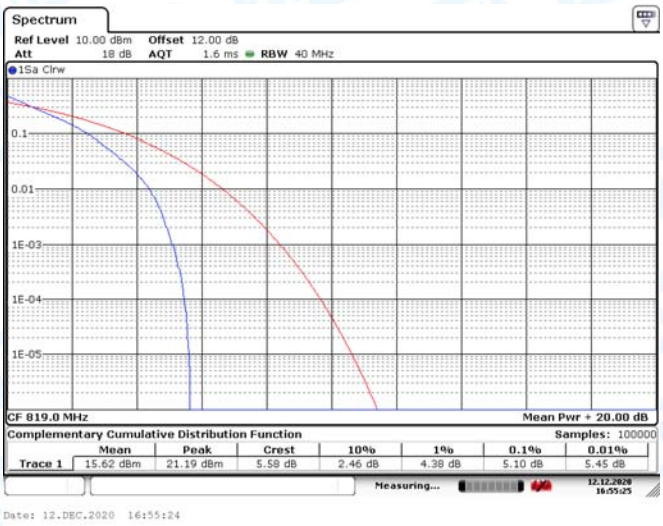
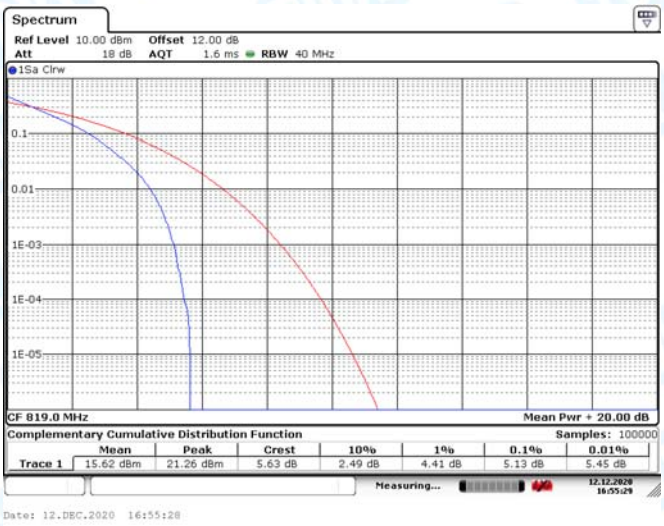
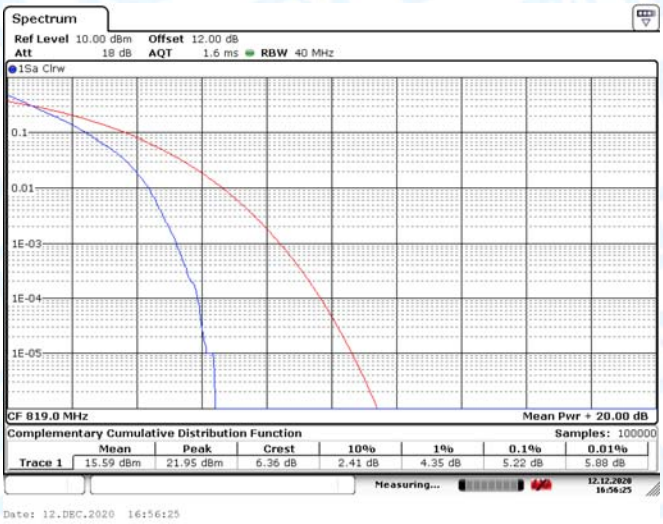
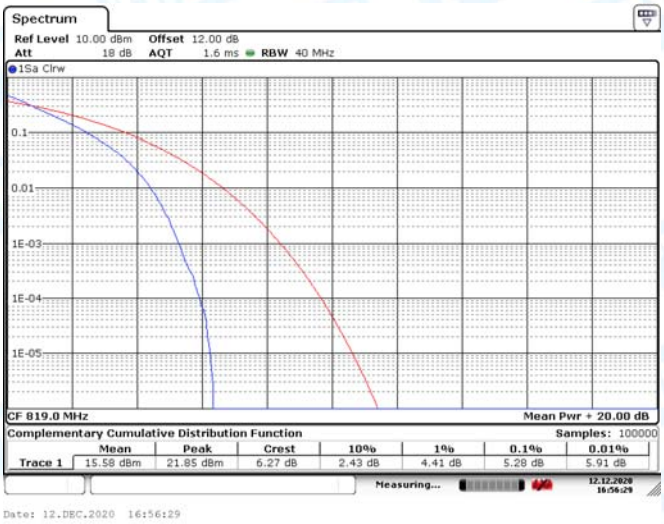


LTE Band 26 3MHz-QPSK



LTE Band 26 3MHz-16QAM



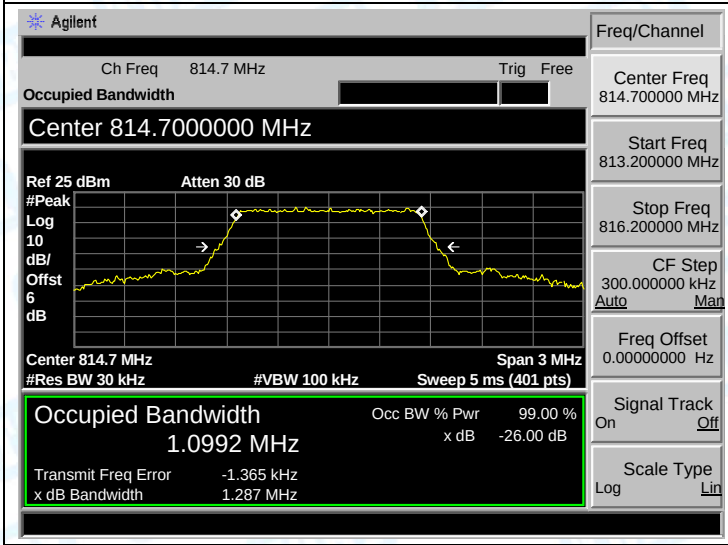
LTE Band 26 5MHz-QPSK	LTE Band 26 5MHz-16QAM
	
LTE Band 26 10MHz-QPSK	**LTE Band 26 10MHz-16QAM**
	

ATTACHMENT C--OCCUPY BANDWIDTH

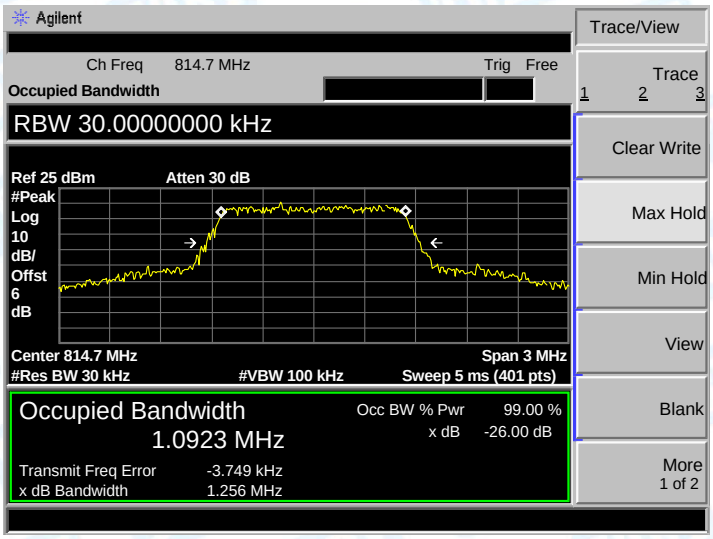
LTE Band 26							
Mode	Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	99% OBW (MHz)	-26dB Bandwidth (MHz)
1.4MHz	26697	814.70	QPSK	6	0	1.0992	1.287
			16QAM	6	0	1.0923	1.255
	26740	819.00	QPSK	6	0	1.0911	1.288
			16QAM	6	0	1.0942	1.266
	26783	823.30	QPSK	6	0	1.0934	1.261
			16QAM	6	0	1.0884	1.301
3MHz	26705	815.50	QPSK	15	0	2.7383	3.123
			16QAM	15	0	2.7381	3.074
	26740	819.00	QPSK	15	0	2.7324	3.098
			16QAM	15	0	2.7410	3.091
	26775	822.50	QPSK	15	0	2.7378	3.090
			16QAM	15	0	2.7462	3.106
5MHz	26715	816.50	QPSK	25	0	4.4996	4.867
			16QAM	25	0	4.4797	4.900
	26740	819.00	QPSK	25	0	4.4856	4.950
			16QAM	25	0	4.5034	5.021
	26765	821.50	QPSK	25	0	4.4950	4.994
			16QAM	25	0	4.4893	4.947
10MHz	26740	819.00	QPSK	50	0	8.9283	9.915
			16QAM	50	0	8.9019	9.613

Occupy Bandwidth Test Plot

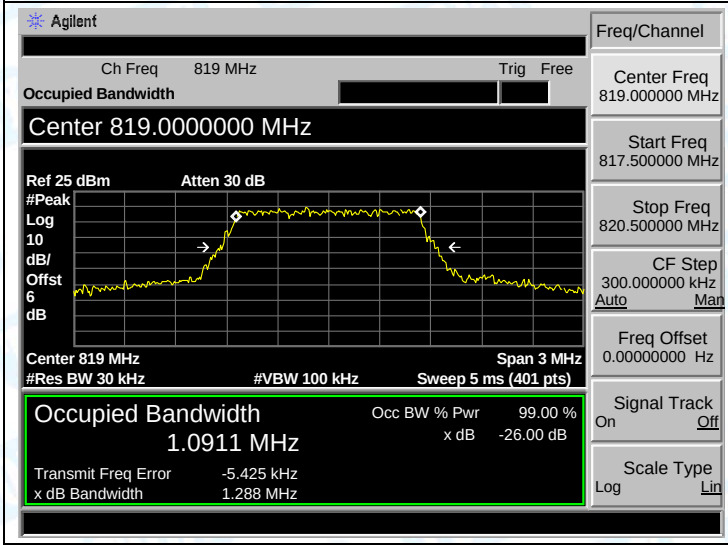
LTE BAND 26 (1.4MHz QPSK-Low CH)



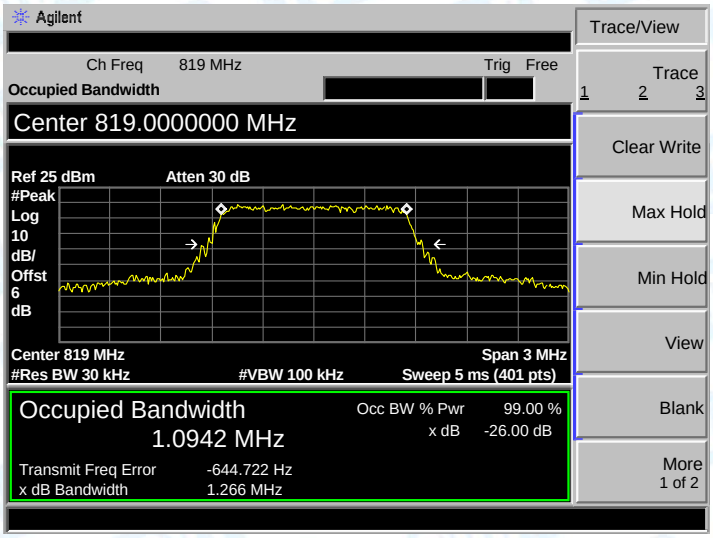
LTE BAND 26 (1.4MHz 16QAM-Low CH)



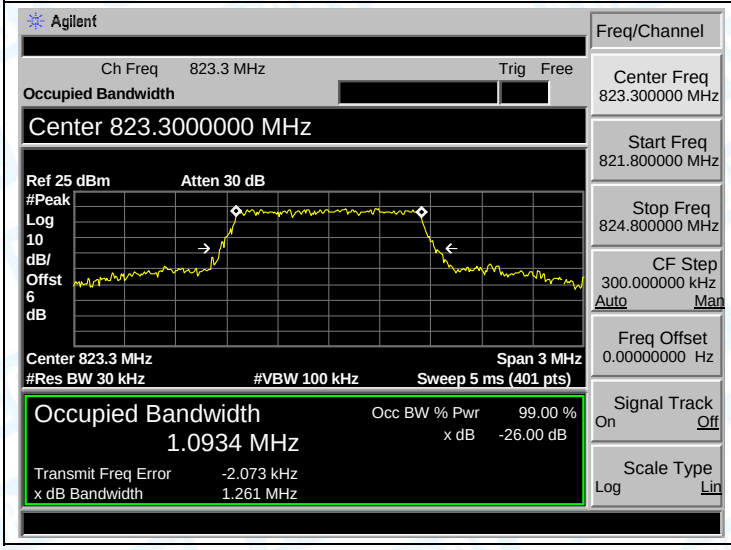
LTE BAND 26 (1.4MHz QPSK-Middle CH)



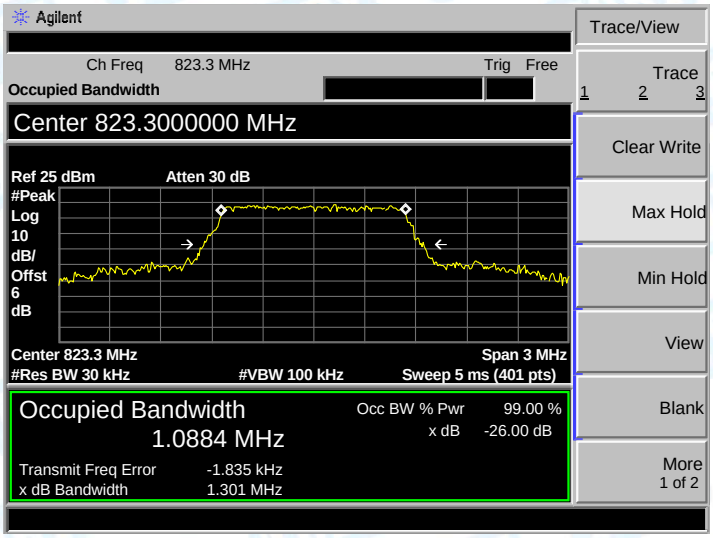
LTE BAND 26 (1.4MHz 16QAM- Middle CH)



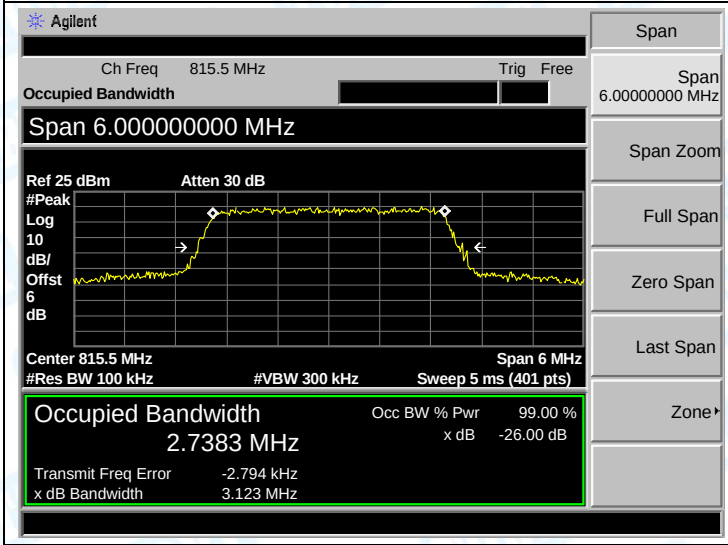
LTE BAND 26 (1.4MHz QPSK-High CH)



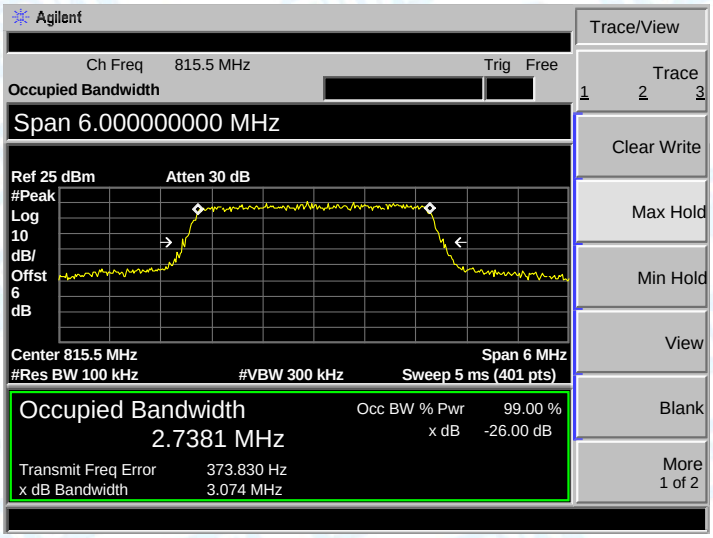
LTE BAND 26 (1.4MHz 16QAM-High CH)



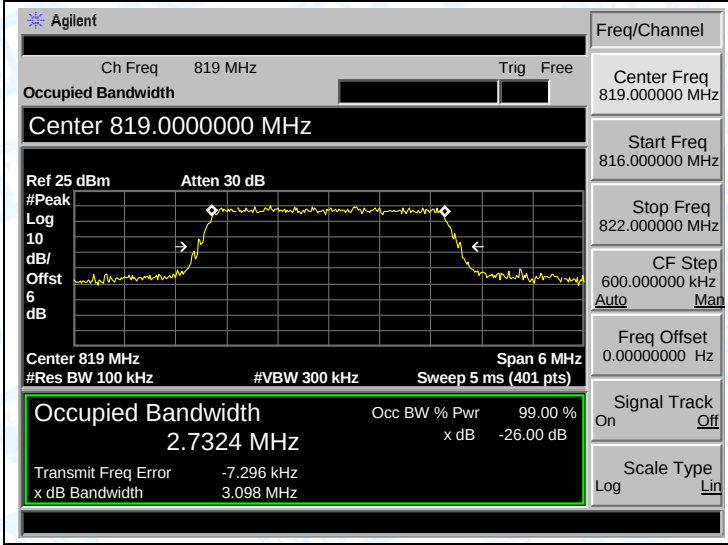
LTE BAND 26 (3MHz QPSK-Low CH)



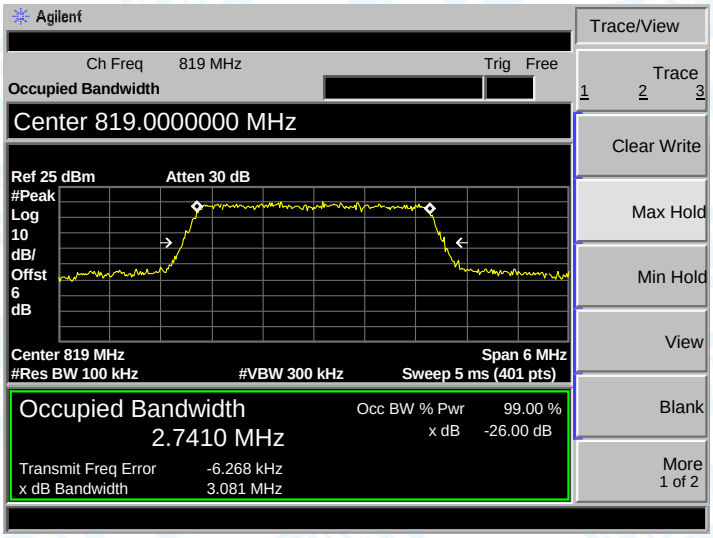
LTE BAND 26 (3MHz 16QAM-Low CH)



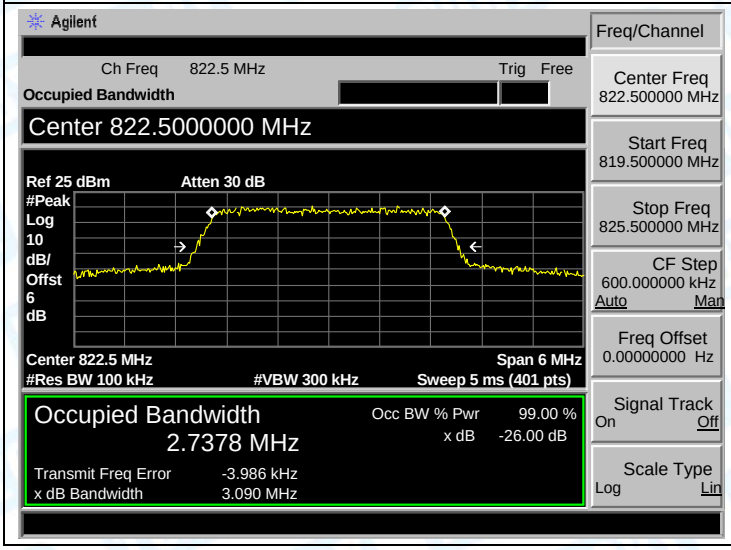
LTE BAND 26 (3MHz QPSK-Middle CH)



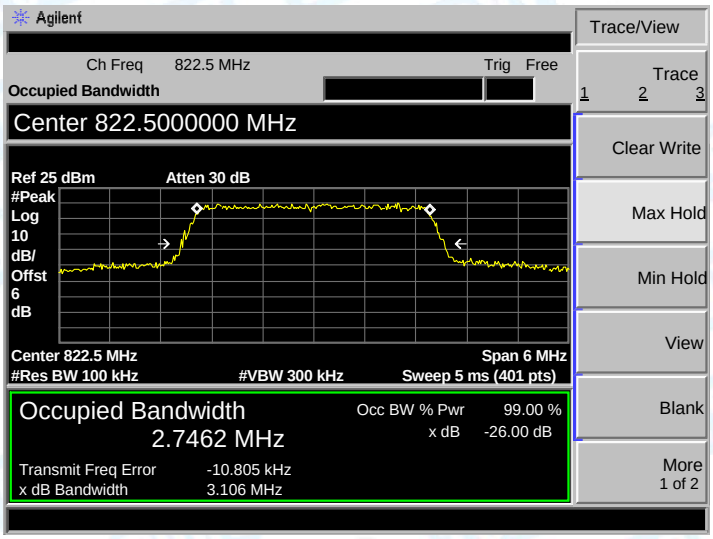
LTE BAND 26 (3MHz 16QAM- Middle CH)



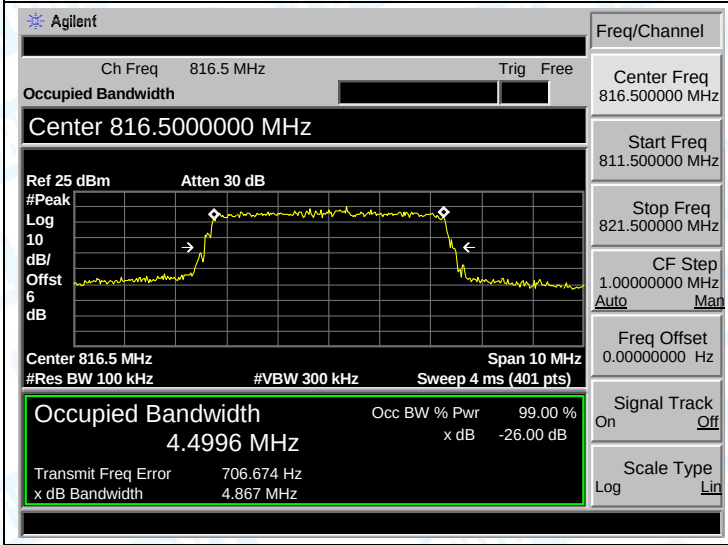
LTE BAND 26 (3MHz QPSK-High CH)



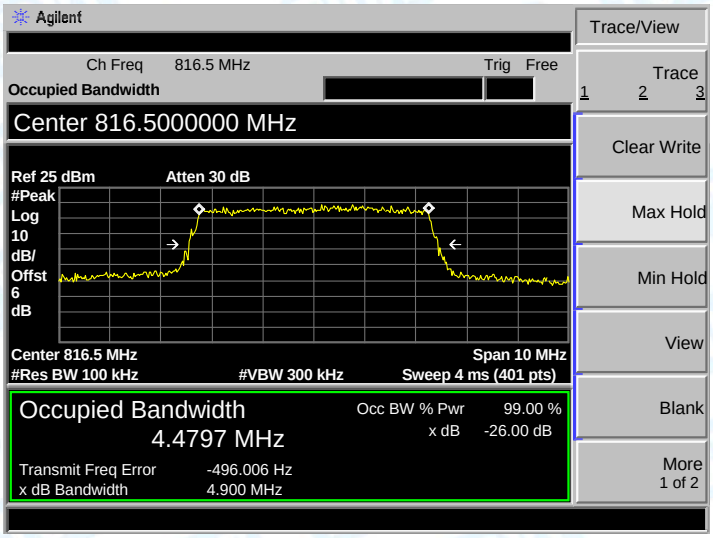
LTE BAND 26 (3MHz 16QAM-High CH)



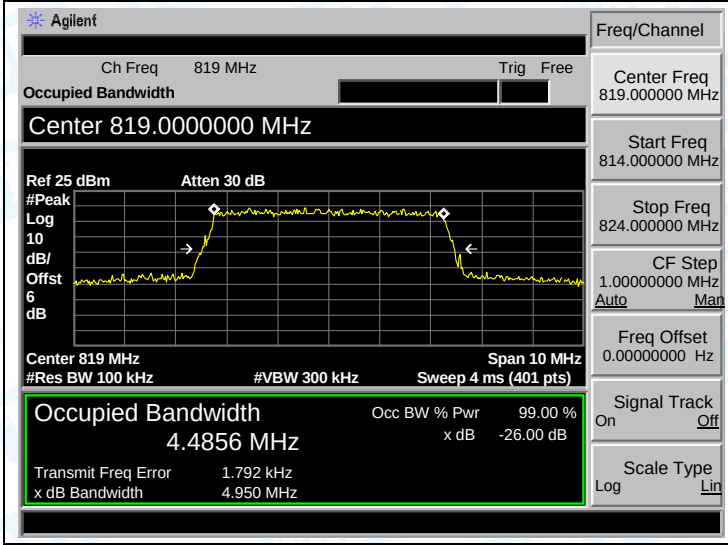
LTE BAND 26 (5MHz QPSK-Low CH)



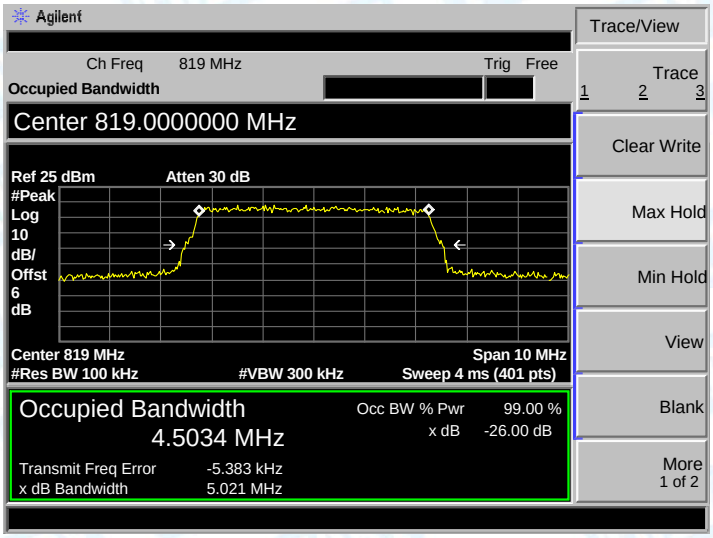
LTE BAND 26 (5MHz 16QAM-Low CH)



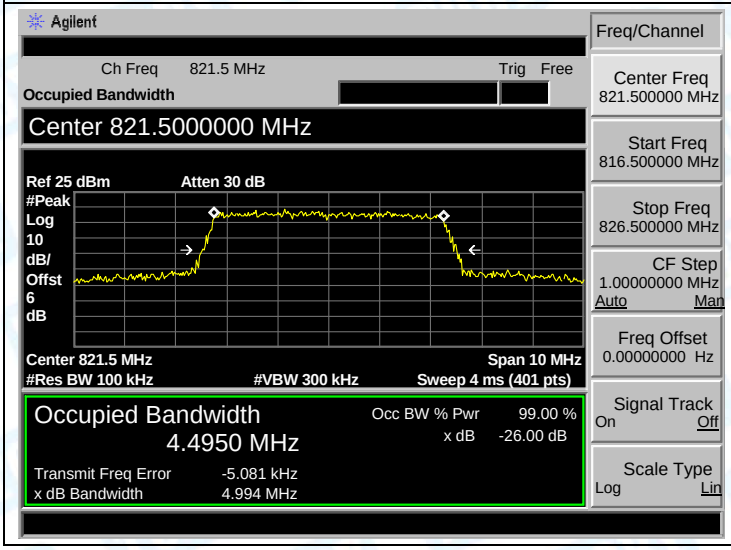
LTE BAND 26 (5MHz QPSK-Middle CH)



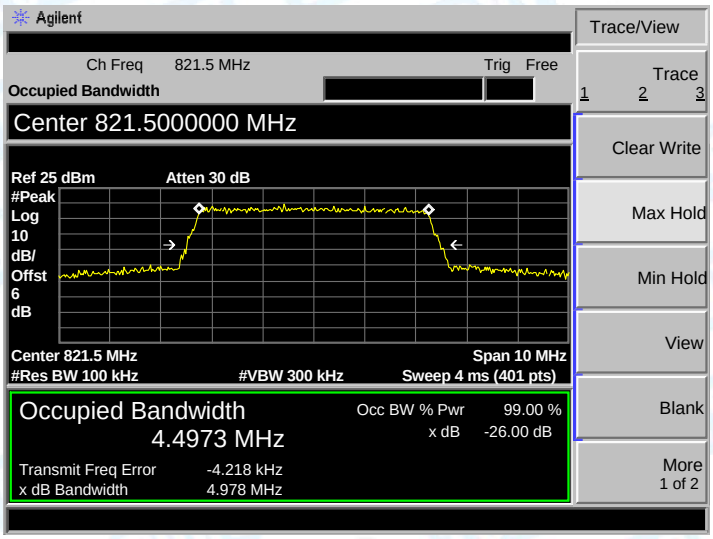
LTE BAND 26 (5MHz 16QAM- Middle CH)

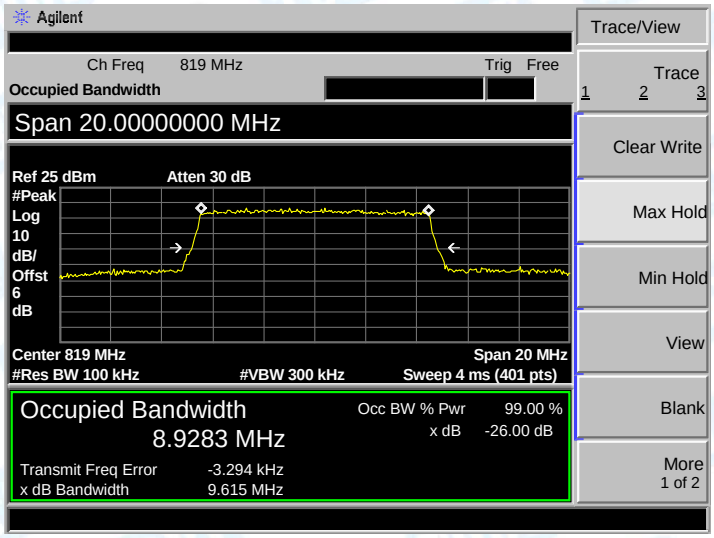
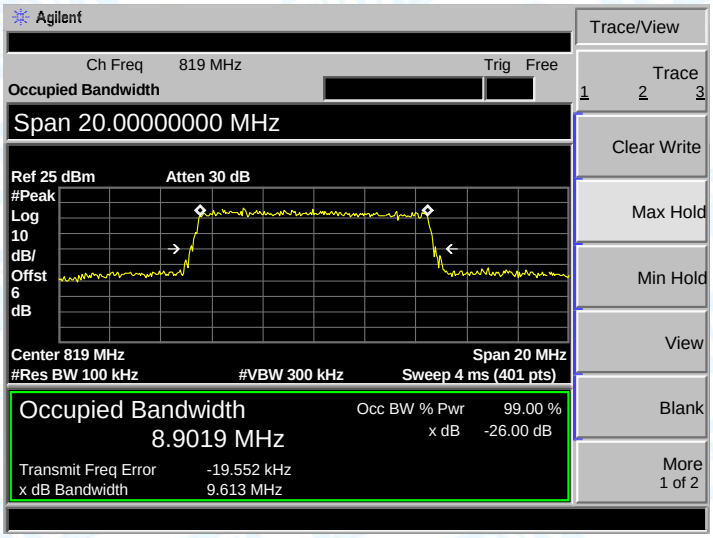


LTE BAND 26 (5MHz QPSK-High CH)



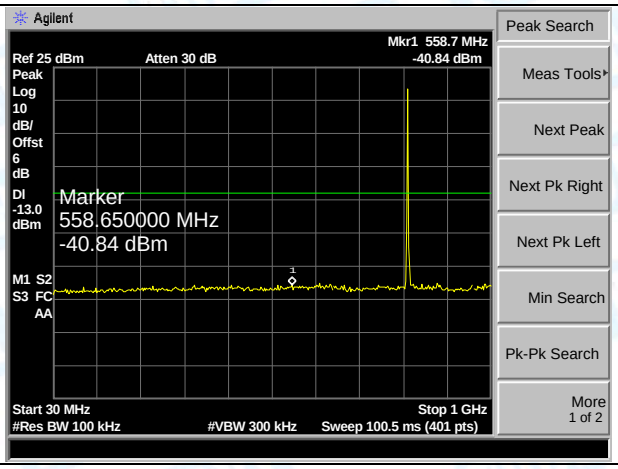
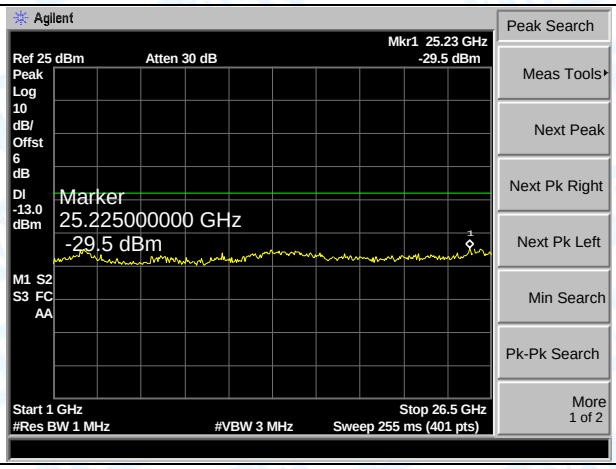
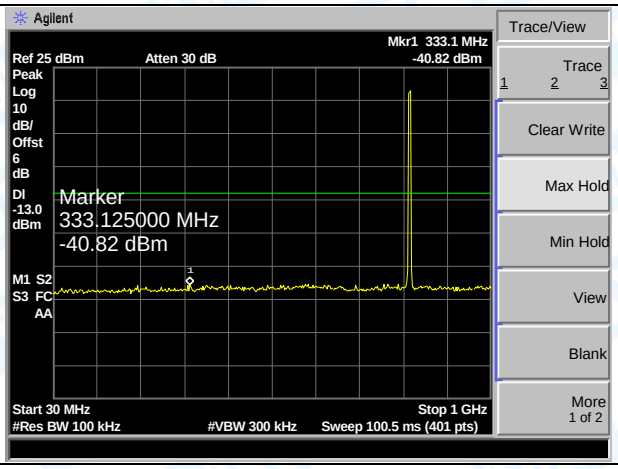
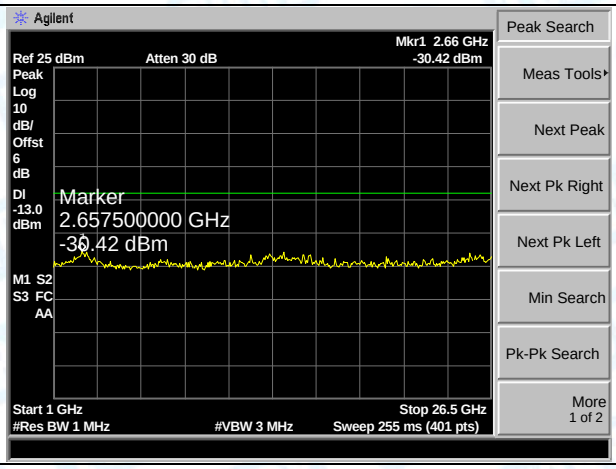
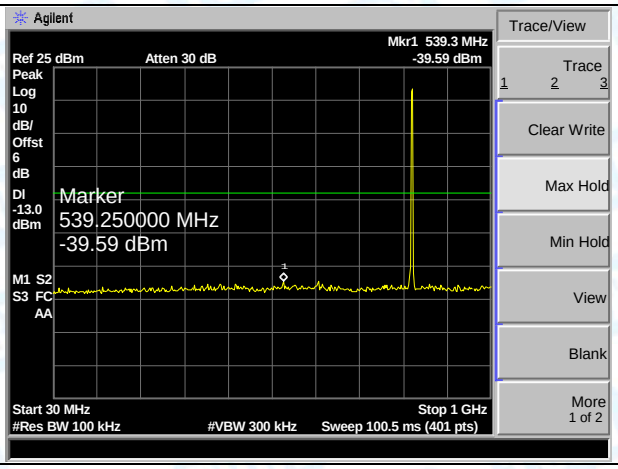
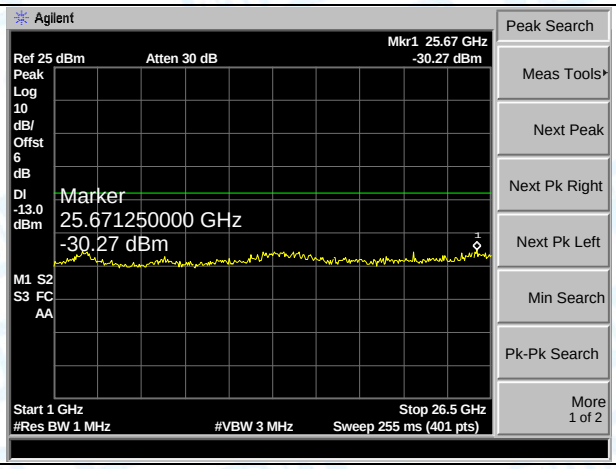
LTE BAND 26 (5MHz 16QAM-High CH)



LTE BAND 26 (10MHz QPSK)	LTE BAND 26 (10MHz 16QAM)
	

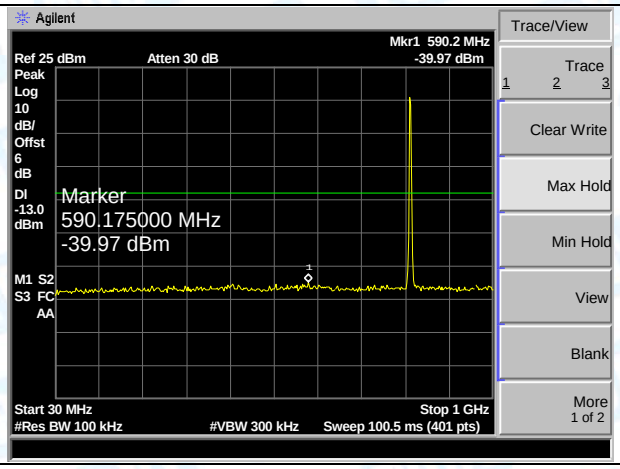
ATTACHMENT D--OUT OF BAND EMISSION AT ANTENNA TERMINALS

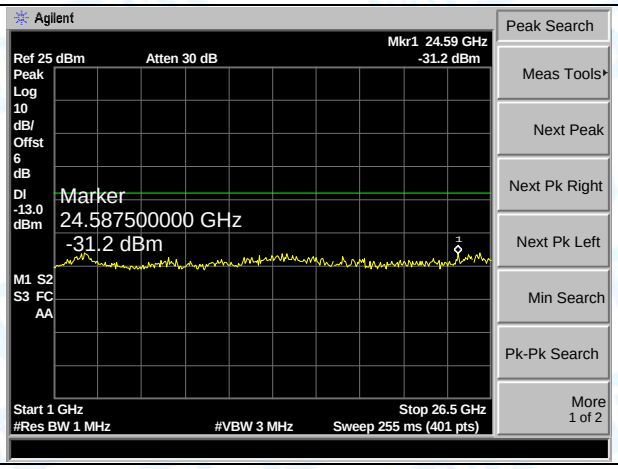
Only show the worst case QPSK Mode

30MHz-1GHz	1GHz-26.5GHz
LTE BAND 26 (1.4MHz RB Size 6& RB Offset 0 QPSK-Low CH)	
	
LTE BAND 26 (1.4MHz RB Size 6& RB Offset 0 QPSK-Middle CH)	
	
LTE BAND 26 (1.4MHz RB Size 6& RB Offset 0 QPSK-High CH)	
	

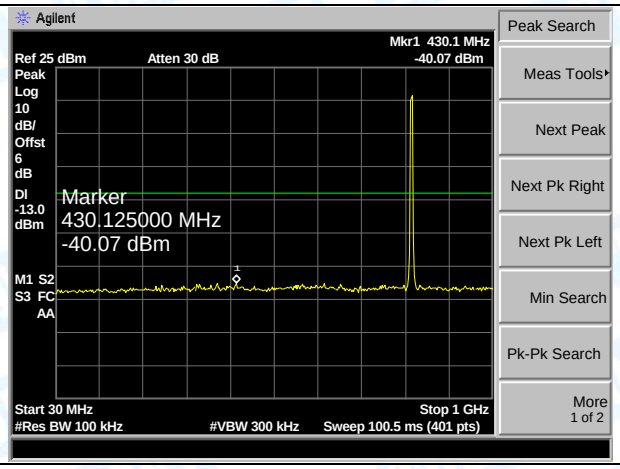
30MHz-1GHz	1GHz-26.5GHz

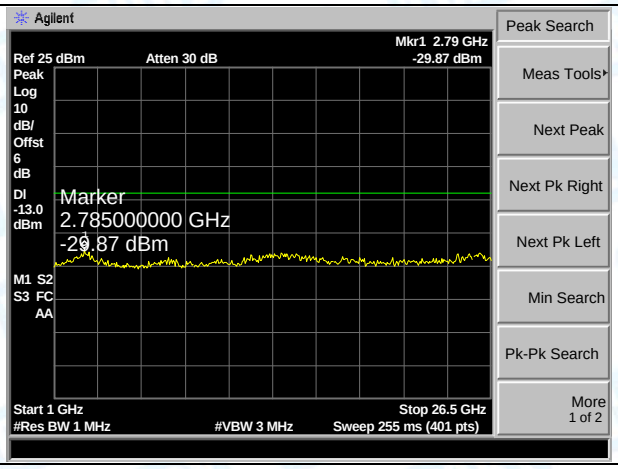
LTE BAND 26 (3MHz RB Size 15& RB Offset 0 QPSK-Low CH)



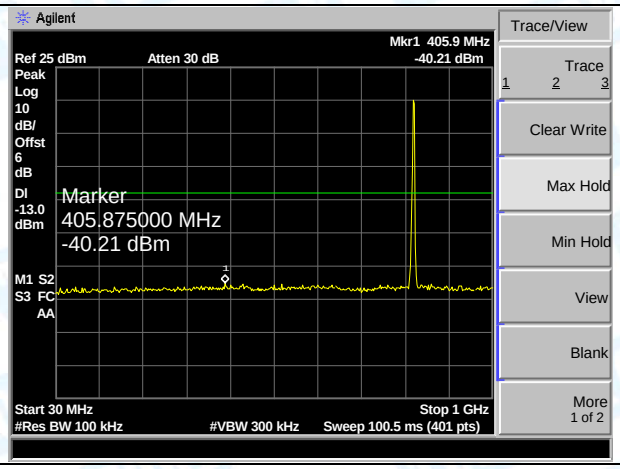


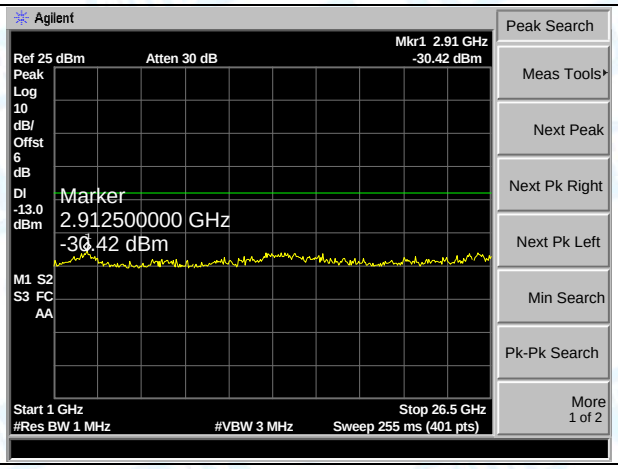
LTE BAND 26 (3MHz RB Size 15& RB Offset 0 QPSK-Middle CH)

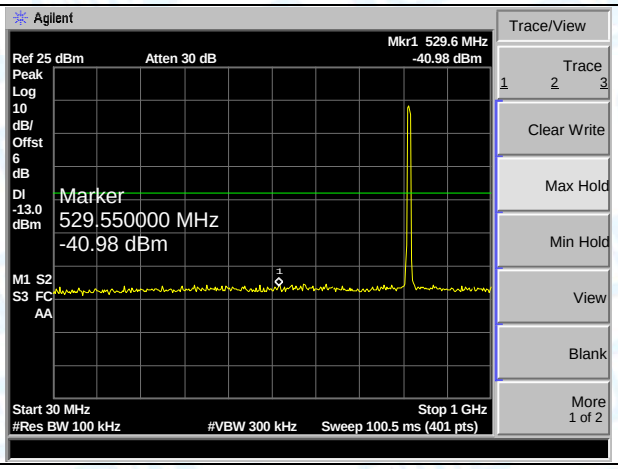
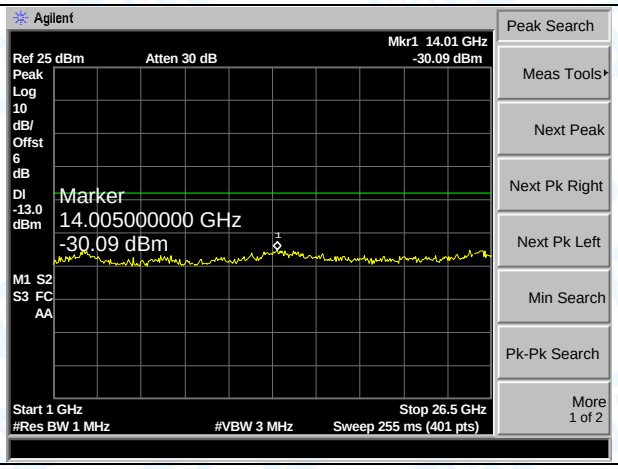
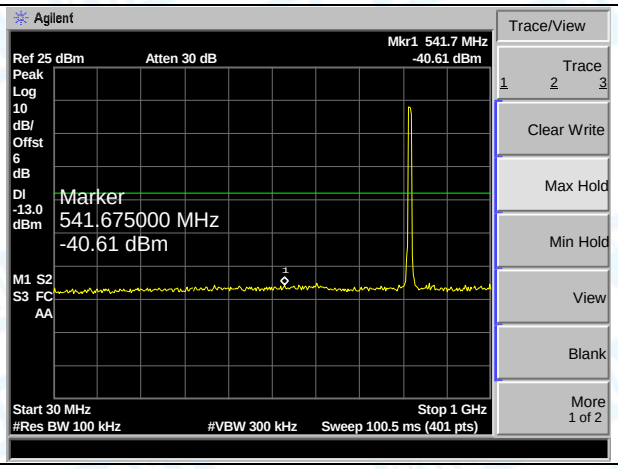
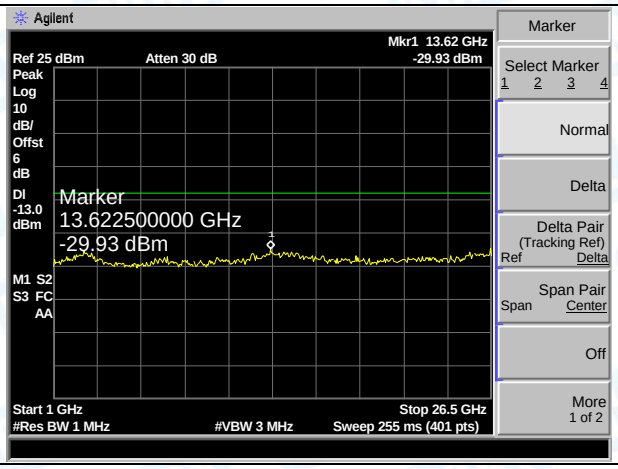
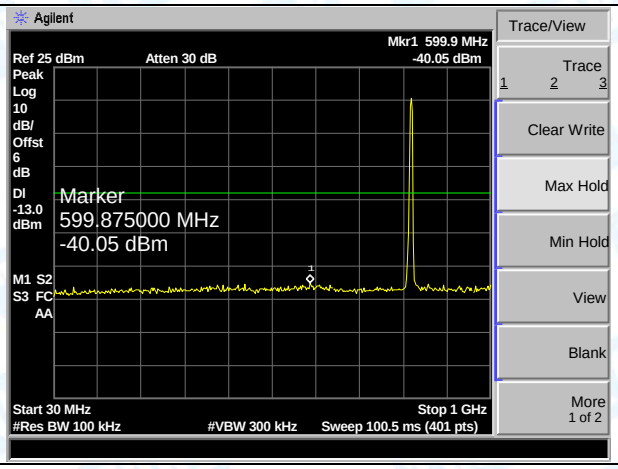
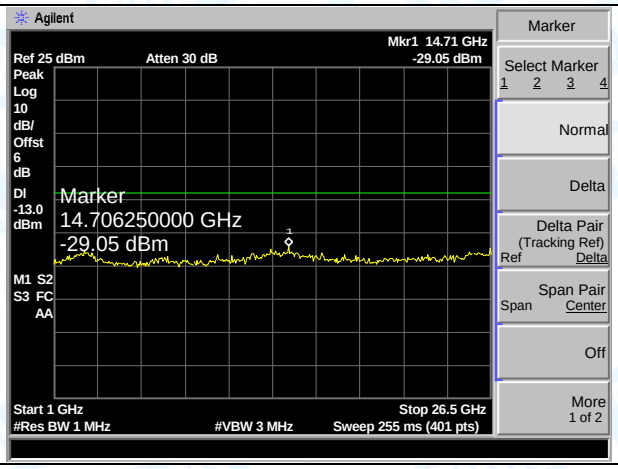


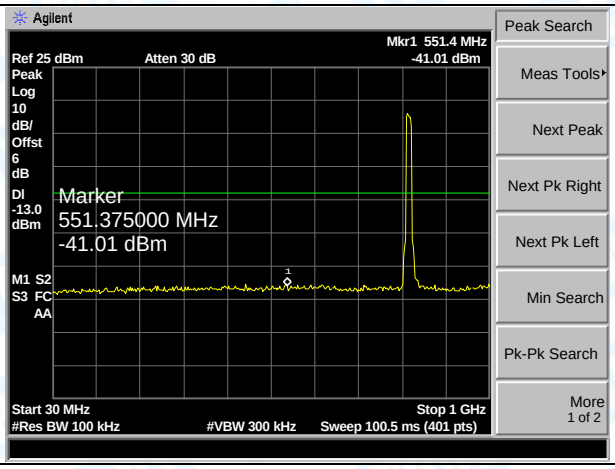
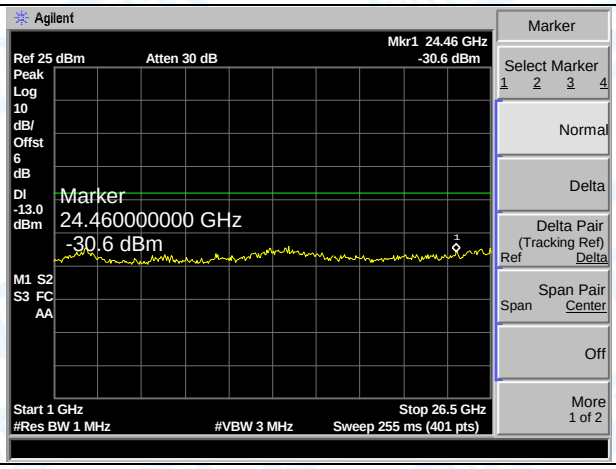


LTE BAND 26 (3MHz RB Size 15& RB Offset 0 QPSK-High CH)





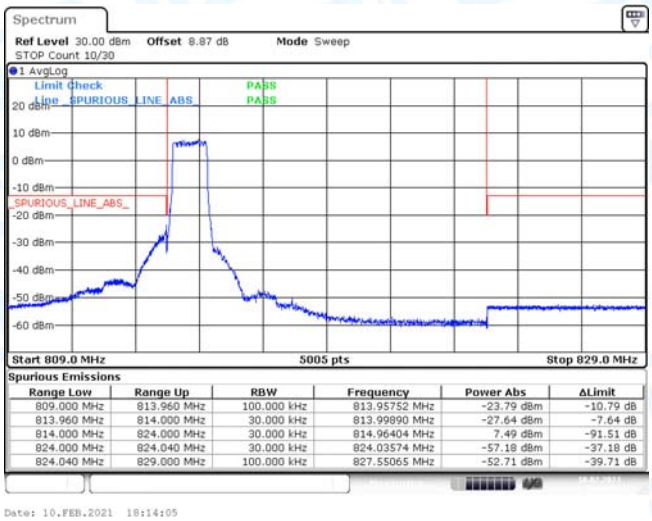
30MHz-1GHz	1GHz-26.5GHz
LTE BAND 26 (5MHz RB Size 25& RB Offset 0 QPSK-Low CH)	
	
LTE BAND 26 (5MHz RB Size 25& RB Offset 0 QPSK-Middle CH)	
	
LTE BAND 26 (5MHz RB Size 25& RB Offset 0 QPSK-High CH)	
	

30MHz-1GHz	1GHz-26.5GHz
LTE BAND 26 (10MHz RB Size 50& RB Offset 0 QPSK)	
	

ATTACHMENT E--EMISSION MASKS

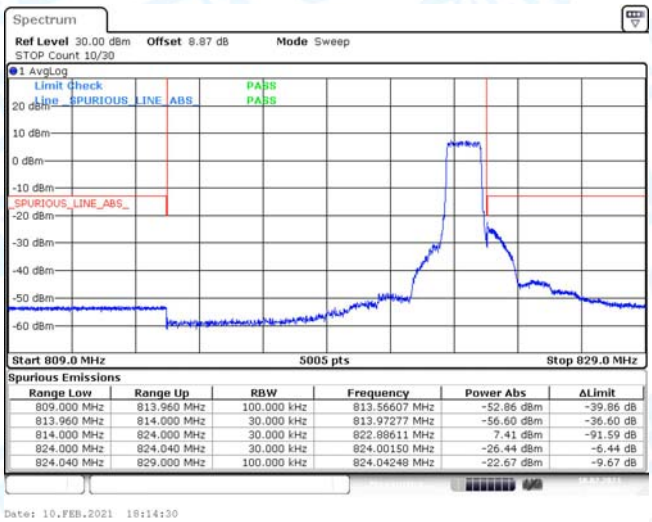
Only show the worst case(max RB size).

Band26-1.4MHz-QPSK-26697-6RB#0



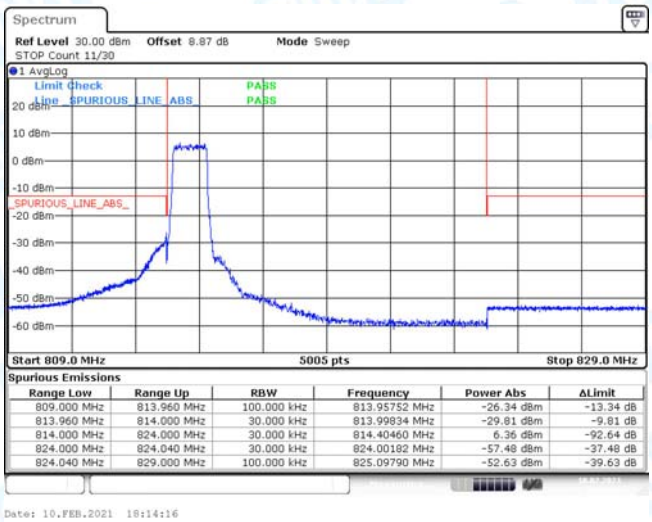
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.95752 MHz	-23.79 dBm	-10.79 dB
813.960 MHz	814.000 MHz	30.000 kHz	813.99890 MHz	-27.64 dBm	-7.64 dB
814.000 MHz	824.000 MHz	30.000 kHz	814.96404 MHz	7.49 dBm	-91.51 dB
824.000 MHz	824.040 MHz	30.000 kHz	824.03574 MHz	-57.18 dBm	-37.18 dB
824.040 MHz	829.000 MHz	100.000 kHz	827.55065 MHz	-52.71 dBm	-39.71 dB

Band26-1.4MHz-QPSK-26783-6RB#0



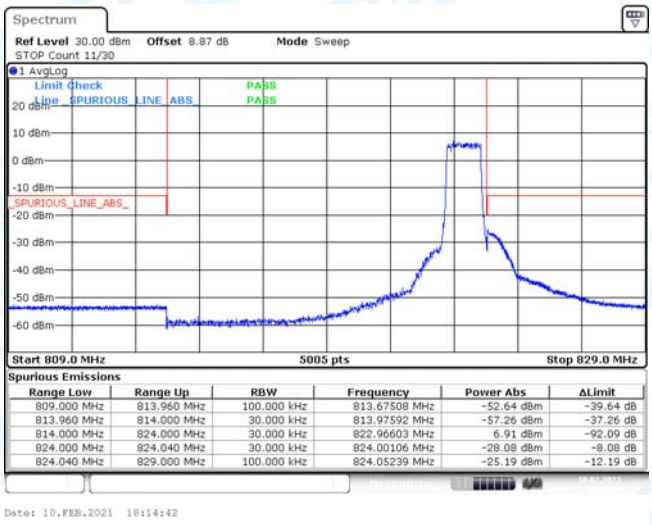
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.56607 MHz	-52.86 dBm	-39.86 dB
813.960 MHz	814.000 MHz	30.000 kHz	813.97277 MHz	-56.60 dBm	-36.60 dB
814.000 MHz	824.000 MHz	30.000 kHz	822.88611 MHz	7.41 dBm	-91.59 dB
824.000 MHz	824.040 MHz	30.000 kHz	824.00150 MHz	-26.44 dBm	-6.44 dB
824.040 MHz	829.000 MHz	100.000 kHz	824.04248 MHz	-22.67 dBm	-9.67 dB

Band26-1.4MHz-16QAM-26697-6RB#0

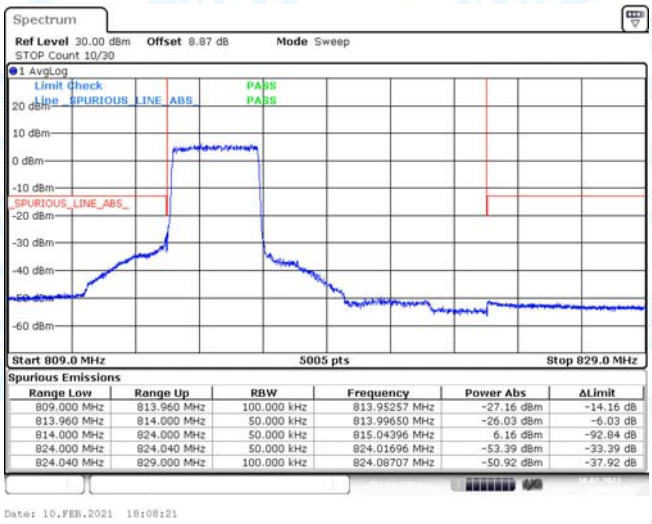


Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.95752 MHz	-26.34 dBm	-13.34 dB
813.960 MHz	814.000 MHz	30.000 kHz	813.99834 MHz	-29.81 dBm	-9.81 dB
814.000 MHz	824.000 MHz	30.000 kHz	814.40460 MHz	6.36 dBm	-92.64 dB
824.000 MHz	824.040 MHz	30.000 kHz	824.00182 MHz	-57.48 dBm	-37.48 dB
824.040 MHz	829.000 MHz	100.000 kHz	825.09790 MHz	-52.63 dBm	-39.63 dB

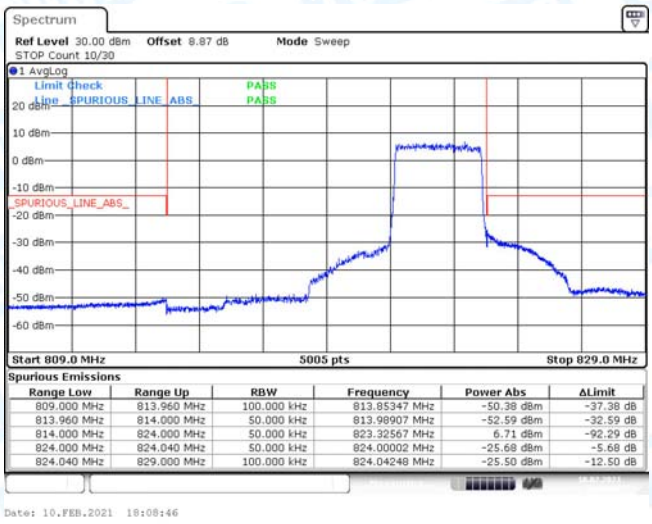
Band26-1.4MHz-16QAM-26783-6RB#0



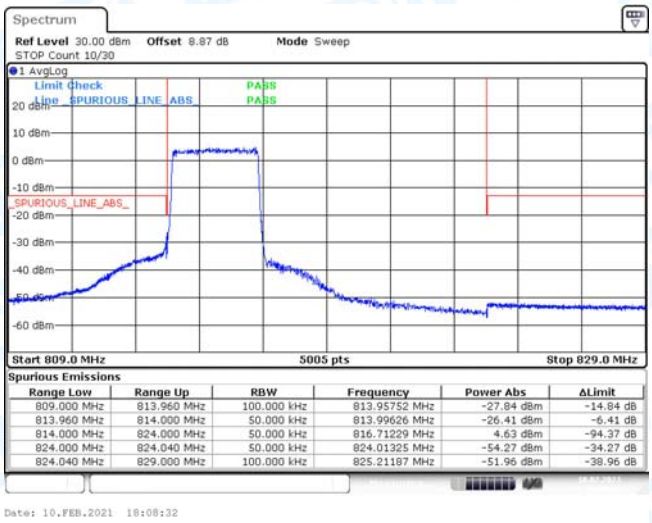
Band26-3MHz-QPSK-26705-15RB#0



Band26-3MHz-QPSK-26775-15RB#0



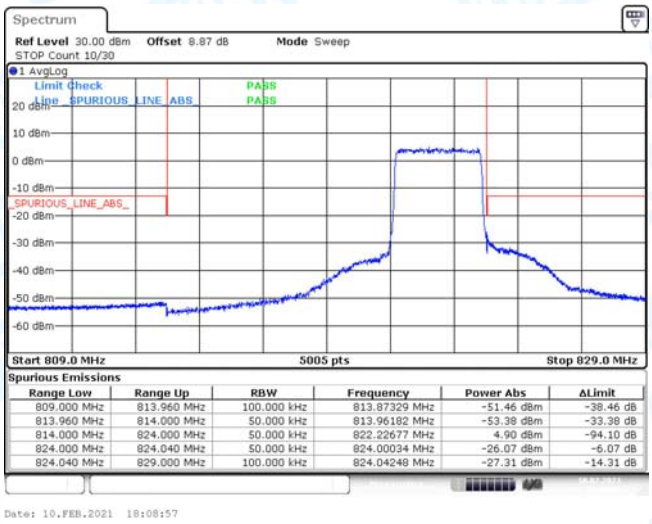
Band26-3MHz-16QAM-26705-15RB#0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.95752 MHz	-27.84 dBm	-14.84 dB
813.960 MHz	814.000 MHz	50.000 kHz	813.99626 MHz	-26.41 dBm	-6.41 dB
814.000 MHz	824.000 MHz	50.000 kHz	816.71229 MHz	4.63 dBm	-94.37 dB
824.000 MHz	824.040 MHz	50.000 kHz	824.01325 MHz	-54.27 dBm	-34.27 dB
824.040 MHz	829.000 MHz	100.000 kHz	825.21187 MHz	-51.96 dBm	-38.96 dB

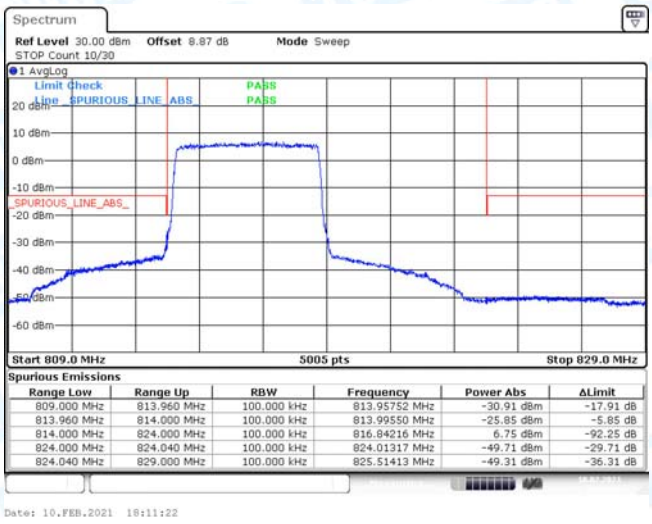
Band26-3MHz-16QAM-26775-15RB#0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.87329 MHz	-51.46 dBm	-38.46 dB
813.960 MHz	814.000 MHz	50.000 kHz	813.96182 MHz	-53.38 dBm	-33.38 dB
814.000 MHz	824.000 MHz	50.000 kHz	822.22677 MHz	4.90 dBm	-94.10 dB
824.000 MHz	824.040 MHz	50.000 kHz	824.00034 MHz	-26.07 dBm	-6.07 dB
824.040 MHz	829.000 MHz	100.000 kHz	824.04248 MHz	-27.31 dBm	-14.31 dB

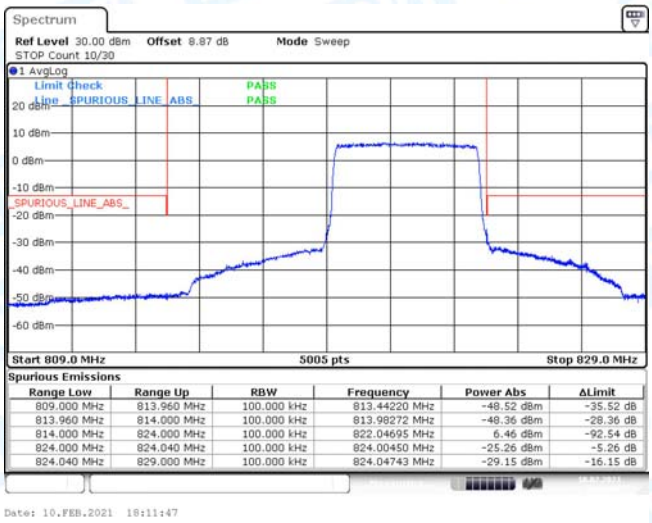
Band26-5MHz-QPSK-26715-25RB#0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.95752 MHz	-30.91 dBm	-17.91 dB
813.960 MHz	814.000 MHz	100.000 kHz	813.99550 MHz	-25.85 dBm	-5.85 dB
814.000 MHz	824.000 MHz	100.000 kHz	816.84216 MHz	6.75 dBm	-92.25 dB
824.000 MHz	824.040 MHz	100.000 kHz	824.01317 MHz	-49.71 dBm	-29.71 dB
824.040 MHz	829.000 MHz	100.000 kHz	825.51413 MHz	-49.31 dBm	-36.31 dB

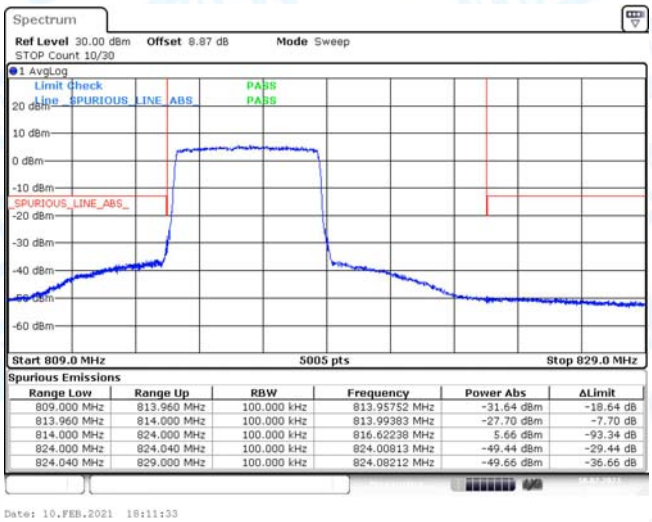
Band26-5MHz-QPSK-26765-25RB#0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.44220 MHz	-48.52 dBm	-35.52 dB
813.960 MHz	814.000 MHz	100.000 kHz	813.98272 MHz	-48.36 dBm	-28.36 dB
814.000 MHz	824.000 MHz	100.000 kHz	822.04695 MHz	6.46 dBm	-92.54 dB
824.000 MHz	824.040 MHz	100.000 kHz	824.00450 MHz	-25.26 dBm	-5.26 dB
824.040 MHz	829.000 MHz	100.000 kHz	824.04743 MHz	-29.15 dBm	-16.15 dB

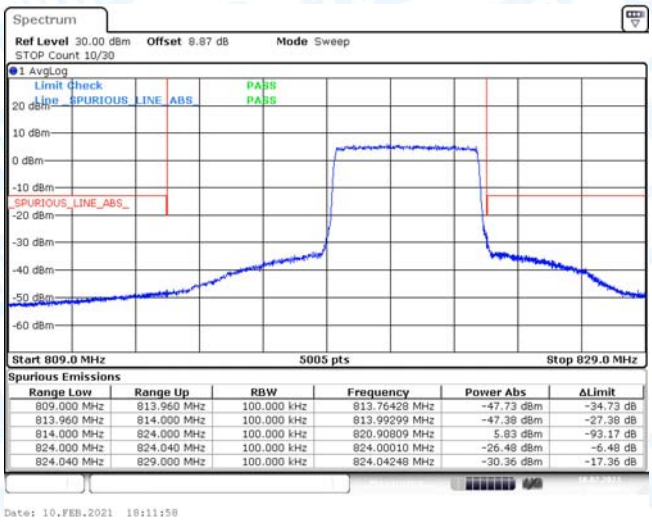
Band26-5MHz-16QAM-26715-25RB#0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.95752 MHz	-31.64 dBm	-18.64 dB
813.960 MHz	814.000 MHz	100.000 kHz	813.99383 MHz	-27.70 dBm	-7.70 dB
814.000 MHz	824.000 MHz	100.000 kHz	816.62238 MHz	5.66 dBm	-93.34 dB
824.000 MHz	824.040 MHz	100.000 kHz	824.00813 MHz	-49.44 dBm	-29.44 dB
824.040 MHz	829.000 MHz	100.000 kHz	824.08212 MHz	-49.66 dBm	-36.66 dB

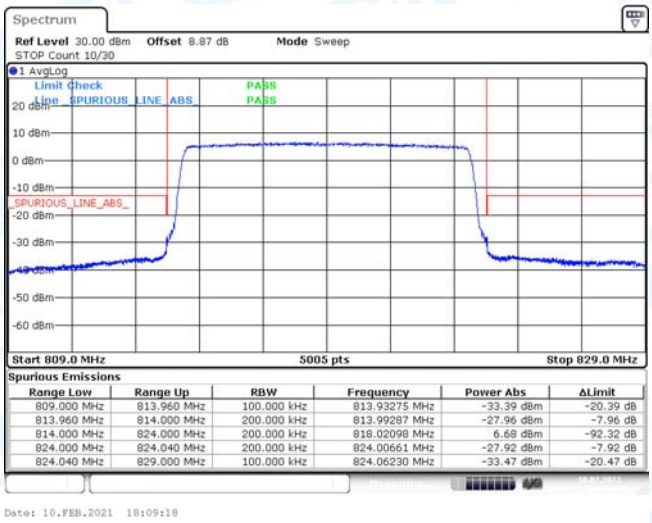
Band26-5MHz-16QAM-26765-25RB#0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.76428 MHz	-47.73 dBm	-34.73 dB
813.960 MHz	814.000 MHz	100.000 kHz	813.99299 MHz	-47.38 dBm	-27.38 dB
814.000 MHz	824.000 MHz	100.000 kHz	820.90809 MHz	5.83 dBm	-93.17 dB
824.000 MHz	824.040 MHz	100.000 kHz	824.00010 MHz	-26.48 dBm	-6.48 dB
824.040 MHz	829.000 MHz	100.000 kHz	824.04248 MHz	-30.36 dBm	-17.36 dB

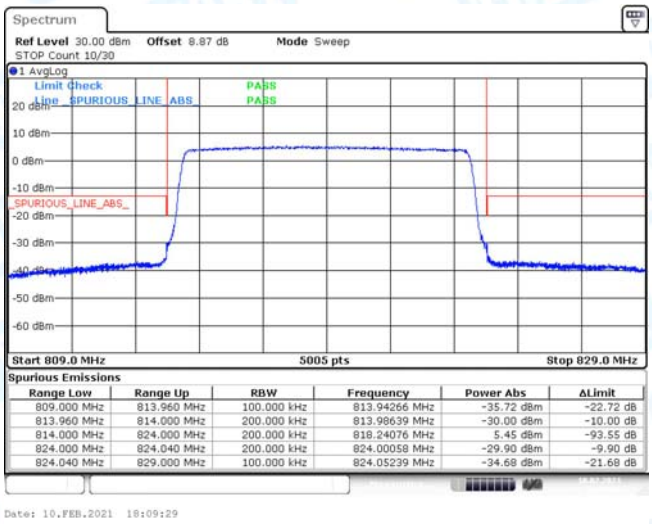
Band26-10MHz-QPSK-26740-50RB#0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.93275 MHz	-33.39 dBm	-20.39 dB
813.960 MHz	814.000 MHz	200.000 kHz	813.99287 MHz	-27.96 dBm	-7.96 dB
814.000 MHz	824.000 MHz	200.000 kHz	818.02098 MHz	6.68 dBm	-92.32 dB
824.000 MHz	824.040 MHz	200.000 kHz	824.00661 MHz	-27.92 dBm	-7.92 dB
824.040 MHz	829.000 MHz	100.000 kHz	824.06230 MHz	-33.47 dBm	-20.47 dB

Band26-10MHz-16QAM-26740-50RB#0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
809.000 MHz	813.960 MHz	100.000 kHz	813.94266 MHz	-35.72 dBm	-22.72 dB
813.960 MHz	814.000 MHz	200.000 kHz	813.98639 MHz	-30.00 dBm	-10.00 dB
814.000 MHz	824.000 MHz	200.000 kHz	818.24076 MHz	5.45 dBm	-93.55 dB
824.000 MHz	824.040 MHz	200.000 kHz	824.00058 MHz	-29.90 dBm	-9.90 dB
824.040 MHz	829.000 MHz	100.000 kHz	824.05239 MHz	-34.68 dBm	-21.68 dB

ATTACHMENT F--RADIATED OUTPUT POWER

Radiated Power (ERP) for LTE Band 26 / 1.4M									
Modulation	RB		Channel	Antenna (H&V)	SG Level (dBm)	Antenna Factor (dBd)	Cable Loss (dB)	EIRP (dBm)	EIRP (W)
	Size	offset							
QPSK	1	0	Lowest	H	20.65	3.46	1.26	22.85	0.193
				V	16.45	3.46	1.26	18.65	0.073
	1	0	Middle	H	20.31	3.82	1.26	22.87	0.194
				V	16.06	3.82	1.26	18.62	0.073
	1	0	Highest	H	20.14	4.16	1.26	23.04	0.201
				V	16.12	4.16	1.26	19.02	0.080
16QAM	1	0	Lowest	H	20.37	3.46	1.26	22.57	0.181
				V	16.32	3.46	1.26	18.52	0.071
	1	0	Middle	H	20.68	3.82	1.26	23.24	0.211
				V	15.69	3.82	1.26	18.25	0.067
	1	0	Highest	H	19.14	4.16	1.26	22.04	0.160
				V	15.34	4.16	1.26	18.24	0.067
Limit								**50**	**100**

Radiated Power (ERP) for LTE Band 26 / 3M									
Modulation	RB		Channel	Antenna (H&V)	SG Level (dBm)	Antenna Factor (dBd)	Cable Loss (dB)	EIRP (dBm)	EIRP (W)
	Size	offset							
QPSK	1	0	Lowest	H	20.92	3.46	1.26	23.12	0.205
				V	16.82	3.46	1.26	19.02	0.080
	1	0	Middle	H	20.68	3.82	1.26	23.24	0.211
				V	16.39	3.82	1.26	18.95	0.079
	1	0	Highest	H	19.46	4.16	1.26	22.36	0.172
				V	15.35	4.16	1.26	18.25	0.067
16QAM	1	0	Lowest	H	20.37	3.46	1.26	22.57	0.181
				V	16.45	3.46	1.26	18.65	0.073
	1	0	Middle	H	20.39	3.82	1.26	22.95	0.197
				V	15.67	3.82	1.26	18.23	0.067
	1	0	Highest	H	19.45	4.16	1.26	22.35	0.172
				V	15.64	4.16	1.26	18.54	0.071
Limit								**50**	**100**

Radiated Power (ERP) for LTE Band 26 / 5M									
Modulation	RB		Channel	Antenna (H&V)	SG Level (dBm)	Antenna Factor (dBd)	Cable Loss (dB)	EIRP (dBm)	EIRP (W)
	Size	offset							
QPSK	1	0	Lowest	H	20.15	3.46	1.26	22.35	0.172
				V	16.05	3.46	1.26	18.25	0.067
	1	0	Middle	H	20.13	3.82	1.26	22.69	0.186
				V	16.18	3.82	1.26	18.74	0.075
	1	0	Highest	H	19.79	4.16	1.26	22.69	0.186
				V	15.45	4.16	1.26	18.35	0.068
16QAM	1	0	Lowest	H	20.94	3.46	1.26	23.14	0.206
				V	16.32	3.46	1.26	18.52	0.071
	1	0	Middle	H	20.65	3.82	1.26	23.21	0.209
				V	16.69	3.82	1.26	19.25	0.084
	1	0	Highest	H	19.77	4.16	1.26	22.67	0.185
				V	15.67	4.16	1.26	18.57	0.072
Limit								**50**	**100**

Radiated Power (ERP) for LTE Band 26 / 10M									
Modulation	RB		Channel	Antenna (H&V)	SG Level (dBm)	Antenna Factor (dBd)	Cable Loss (dB)	EIRP (dBm)	EIRP (W)
	Size	offset							
QPSK	1	0	Middle	H	19.58	3.82	1.26	22.14	0.164
				V	15.80	3.82	1.26	18.36	0.069
16QAM	1	0	Middle	H	19.61	3.82	1.26	22.17	0.165
				V	15.69	3.82	1.26	18.25	0.067
Limit								**50**	**100**

ATTACHMENT G--RADIATED OUT BAND OF EMISSIONS

Measurement Data (worst case)

Test mode:	LTE BAND 26 1.4MHz(RB size 1 & RB offset 0) for QPSK						
Channel:	Middle			Date of Test:	2020-06-25		
Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
	Polarization (H&V)	Read Level (dBm)	Antenna Correct Factor (dBi)	Cable Loss (dB)	Emission Level (dBm)		
1638.45	Horizontal	-58.04	7.49	3.97	-46.58	-13.00	Pass
2457.51	H	-61.43	7.03	5.05	-49.35		
3276.84	H	-65.71	12.48	5.98	-47.25		
1638.45	Vertical	-62.34	8.02	3.97	-50.35	-13.00	Pass
2457.51	V	-63.77	10.47	5.05	-48.25		
3276.84	V	-68.14	16.92	5.98	-45.24		

Remark: 1, The testing has been conformed to 10*819.0MHz=8190MHz.
2, All other emissions more than 50 dB below the limit.
3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss

Test mode:	LTE BAND 26 3MHz(RB size 1 & RB offset 0) for QPSK						
Channel:	Middle			Date of Test:	2020-06-25		
Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
	Polarization (H&V)	Read Level (dBm)	Antenna Correct Factor (dBi)	Cable Loss (dB)	Emission Level (dBm)		
1638.45	Horizontal	-59.98	7.49	3.97	-48.52	-13.00	Pass
2457.51	H	-54.44	7.03	5.05	-42.36		
3276.84	H	-58.98	12.48	5.98	-40.52		
1638.45	Vertical	-61.24	8.02	3.97	-49.25	-13.00	Pass
2457.51	V	-61.77	10.47	5.05	-46.25		
3276.84	V	-65.25	16.92	5.98	-42.35		

Remark: 1, The testing has been conformed to 10*819.0MHz=8190MHz.
2, All other emissions more than 50 dB below the limit.
3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss

Test mode:	LTE BAND 26 5MHz(RB size 1 & RB offset 0) for QPSK						
Channel:	Middle			Date of Test:	2020-06-25		
Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
	Polarization (H&V)	Read Level (dBm)	Antenna Correct Factor (dBi)	Cable Loss (dB)	Emission Level (dBm)		
1638.45	Horizontal	-59.71	7.49	3.97	-48.25	-13.00	Pass
2457.51	H	-56.33	7.03	5.05	-44.25		
3276.84	H	-59.71	12.48	5.98	-41.25		
1638.45	Vertical	-59.34	8.02	3.97	-47.35	-13.00	Pass
2457.51	V	-61.77	10.47	5.05	-46.25		
3276.84	V	-64.15	16.92	5.98	-41.25		

Remark: 1, The testing has been conformed to 10*819.0MHz=8190MHz.
2, All other emissions more than 50 dB below the limit.
3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss

Test mode:	LTE BAND 26 10MHz(RB size 1 & RB offset 0) for QPSK						
Channel:	/			Date of Test:	2020-06-25		
Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
	Polarization (H&V)	Read Level (dBm)	Antenna Correct Factor (dBi)	Cable Loss (dB)	Emission Level (dBm)		
1638.45	Horizontal	-58.71	7.49	3.97	-47.25	-13.00	Pass
2457.51	H	-56.33	7.03	5.05	-44.25		
3276.84	H	-57.71	12.48	5.98	-39.25		
1638.45	Vertical	-57.24	8.02	3.97	-45.25	-13.00	Pass
2457.51	V	-58.77	10.47	5.05	-43.25		
3276.84	V	-63.60	16.92	5.98	-40.70		

Remark: 1, The testing has been conformed to 10*819.0MHz=8190MHz.
2, All other emissions more than 50 dB below the limit.
3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss

ATTACHMENT H--FREQUENCY STABILITY

Temperature Variation					
Reference Frequency: LTE Band 26 QPSK(1.4MHz) Middle channel=26740 Frequency=819.0MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.85	-30	50	0.0611	±2.5	Pass
	-20	17	0.0211		
	-10	48	0.0584		
	0	41	0.0496		
	10	26	0.0319		
	20	47	0.0578		
	30	88	0.1069		
	40	20	0.0243		
	50	49	0.0603		
Reference Frequency: LTE Band 26 QPSK(3MHz) Middle channel=26740 Frequency=819.0MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.85	-30	68	0.0830	±2.5	Pass
	-20	58	0.0703		
	-10	45	0.0545		
	0	78	0.0947		
	10	40	0.0489		
	20	77	0.0937		
	30	40	0.0494		
	40	100	0.1227		
	50	102	0.1244		
Reference Frequency: LTE Band 26 QPSK(5MHz) Middle channel=26740 Frequency=819.0MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.85	-30	75	0.0916	±2.5	Pass
	-20	45	0.0547		
	-10	106	0.1290		
	0	73	0.0892		
	10	92	0.1126		
	20	40	0.0493		
	30	85	0.1035		
	40	96	0.1178		
	50	93	0.1131		
Reference Frequency: LTE Band 26 QPSK(10MHz) channel=26740 Frequency=819.0MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.85	-30	69	0.0842	±2.5	Pass
	-20	60	0.0734		
	-10	85	0.1035		
	0	70	0.0851		
	10	60	0.0731		
	20	48	0.0592		
	30	60	0.0729		
	40	105	0.1278		
	50	51	0.0619		

Voltage Variation					
Reference Frequency: LTE Band 26 QPSK(1.4MHz) Middle channel=26740 Frequency=819.0MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.50	58	0.0708	±2.5	Pass
	3.85	44	0.0536		
	4.20	36	0.0441		
Reference Frequency: LTE Band 26 QPSK(3MHz) Middle channel=26740 Frequency=819.0MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.50	25	0.0306	±2.5	Pass
	3.85	42	0.0519		
	4.20	91	0.1109		
Reference Frequency: LTE Band 26 QPSK(5MHz) Middle channel=26740 Frequency=819.0MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.50	39	0.0475	±2.5	Pass
	3.85	75	0.0910		
	4.20	84	0.1026		
Reference Frequency: LTE Band 26 QPSK(10MHz) channel=26740 Frequency=819.0MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.50	65	0.0794	±2.5	Pass
	3.85	85	0.1032		
	4.20	74	0.0900		

------End of Report------