

# FCC Radio Test Report

## FCC ID: QISCMR-AL19

This report concerns (check one): Original Grant Class II Change

**Project No.** : 1712C036  
**Equipment** : Tablet  
**Model Name** : CMR-AL19  
**Applicant** : Huawei Technologies Co., Ltd.  
**Address** : Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District Shenzhen China

**Date of Receipt** : Dec, 02, 2017  
**Date of Test** : Dec, 02, 2017 ~ Jan, 17, 2018  
**Issued Date** : Jan, 18, 2018  
**Tested by** : BTL Inc.

**Technical Engineer** : Shawn Xiao  
(Shawn Xiao)

**Authorized Signatory** : Steven Lu  
(Steven Lu)

# **B T L I N C .**

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**BTL's** laboratory quality assurance procedures are in compliance with the **ISO Guide17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

### **Limitation**

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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### REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-8-1712C036	Original Issue.	Jan, 18, 2018

## 1. CERTIFICATION

Equipment : Tablet  
Brand Name : HUAWEI  
Model Name : CMR-AL19  
Applicant : Huawei Technologies Co.,Ltd.  
Manufacturer : Huawei Technologies Co.,Ltd.  
Address : Administration Building, Huawei Base, Bantian, Longgang District ,  
Shenzhen 518129, P.R.China  
Factory : Huawei Technologies Co.,Ltd.  
Address : Administration Building, Huawei Base, Bantian, Longgang District ,  
Shenzhen 518129, P.R.China  
Date of Test : Dec, 02, 2017 ~ Jan, 17, 2018  
Test Sample : Engineering Sample  
Standard(s) : 47 CFR FCC Part 27  
47 CFR FCC Part 2 & ANSI/TIA-603-D-2010  
KDB 971168 D01 Power Meas License Digital Systems v02r02

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-8-1712C036) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP according to the ISO-17025 quality assessment standard and technical standard(s).

**Test results included in this report is only for the LTE Band 4, 7, 12, 17, 38 and 41 part.**

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 27 & Part 2			
Standard(s) Section	Test Item	Judgment	Tested By
2.1046 27.50(d)(4)	Radiated power	PASS	Paul Li
2.1046 27.50(d)(4)	Conducted Output Power	PASS	Paul Li
2.1049 27.53(h)	Occupied Bandwidth	PASS	Paul Li
2.1051 27.53(h)	Conducted Spurious Emissions	PASS	Paul Li
2.1053 27.53(h)	Radiated Spurious Emissions	PASS	Paul Li
27.53(h)	Band Edge Measurements	PASS	Paul Li
27.50	Peak To Average Ratio	PASS	Paul Li
2.1055 27.54	Frequency Stability	PASS	Paul Li

**NOTE:**

(1) "N/A" denotes test is not applicable to this device.

## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's test firm number for FCC: 854385

BTL's designation number for FCC: CN5020

## 2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2  $U_{\text{cispr}}$  requirement.

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95%**.

### A. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m)	CISPR	9KHz ~ 30MHz	V	3.79
		9KHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	3.82
		30MHz ~ 200MHz	H	3.78
		200MHz ~ 1,000MHz	V	4.10
		200MHz ~ 1,000MHz	H	4.06

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 18GHz	V	3.12
		1GHz ~ 18GHz	H	3.68

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (1m)	CISPR	18GHz ~ 40GHz	V	4.15
		18GHz ~ 40GHz	H	4.14

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	Tablet	
Brand Name	HUAWEI	
Model Name	CMR-AL19	
Model Difference	N/A	
Modulation Type	LTE	UP: QPSK,16QAM DL: QPSK,16QAM,64AQM
Operation Frequency	LTE 4 (Channel Bandwidth: 1.4MHz)	1710.7 ~ 1754.3 MHz
	LTE 4 (Channel Bandwidth: 3MHz)	1711.5 ~ 1753.5 MHz
	LTE 4 (Channel Bandwidth: 5MHz)	1712.5 ~ 1752.5 MHz
	LTE 4 (Channel Bandwidth: 10MHz)	1715.0 ~ 1750.0 MHz
	LTE 4 (Channel Bandwidth: 15MHz)	1717.5 ~ 1747.5 MHz
	LTE 4 (Channel Bandwidth: 20MHz)	1720.0 ~ 1745.0 MHz
	LTE 7 (Channel Bandwidth: 5MHz)	2502.5 ~ 2567.5 MHz
	LTE 7 (Channel Bandwidth: 10MHz)	2505.0 ~ 2565.0 MHz
	LTE 7 (Channel Bandwidth: 15MHz)	2507.5 ~ 2562.5 MHz
	LTE 7 (Channel Bandwidth: 20MHz)	2510.0 ~ 2560.0 MHz
	LTE 12 (Channel Bandwidth: 1.4MHz)	699.7 ~ 715.3MHz
	LTE 12 (Channel Bandwidth: 3MHz)	700.5 ~ 714.5MHz
	LTE 12 (Channel Bandwidth: 5MHz)	701.5 ~ 713.5MHz
	LTE 12 (Channel Bandwidth: 10MHz)	704.0 ~ 711.0MHz
	LTE 17 (Channel Bandwidth: 5MHz)	706.5 ~ 713.5 MHz
	LTE 17 (Channel Bandwidth: 10MHz)	709.0 ~ 711.0 MHz
	LTE 38 (Channel Bandwidth: 5MHz)	2572.5 ~ 2617.5 MHz
	LTE 38 (Channel Bandwidth: 10MHz)	2575 ~ 2615 MHz
	LTE 38 (Channel Bandwidth: 15MHz)	2577.5 ~ 2612.5 MHz
	LTE 38 (Channel Bandwidth: 20MHz)	2580 ~ 2610 MHz
LTE 41 (Channel Bandwidth: 5MHz)	2547.5 ~ 2652.2 MHz	
LTE 41 (Channel Bandwidth: 10MHz)	2550 ~ 2650 MHz	
LTE 41 (Channel Bandwidth: 15MHz)	2552.5 ~ 2467.5 MHz	
LTE 41 (Channel Bandwidth: 20MHz)	2555 ~ 2645 MHz	

Max. EIRP Power	LTE 4 (Channel Bandwidth: 1.4MHz)	QPSK	24.23	dBm	
		16QAM	23.55	dBm	
	LTE 4 (Channel Bandwidth: 3MHz)	QPSK	24.30	dBm	
		16QAM	23.59	dBm	
	LTE 4 (Channel Bandwidth: 5MHz)	QPSK	24.24	dBm	
		16QAM	23.59	dBm	
	LTE 4 (Channel Bandwidth: 10MHz)	QPSK	24.12	dBm	
		16QAM	23.46	dBm	
	LTE 4 (Channel Bandwidth: 15MHz)	QPSK	24.28	dBm	
		16QAM	23.58	dBm	
	LTE 4 (Channel Bandwidth: 20MHz)	QPSK	24.13	dBm	
		16QAM	23.50	dBm	
	Max. EIRP Power	LTE 7 (Channel Bandwidth: 5MHz)	QPSK	25.08	dBm
			16QAM	24.56	dBm
LTE 7 (Channel Bandwidth: 10MHz)		QPSK	25.26	dBm	
		16QAM	24.61	dBm	
LTE 7 (Channel Bandwidth: 15MHz)		QPSK	25.11	dBm	
		16QAM	24.53	dBm	
LTE 7 (Channel Bandwidth: 20MHz)		QPSK	25.25	dBm	
		16QAM	24.82	dBm	
Max. ERP Power	LTE 12 (Channel Bandwidth: 1.4MHz)	QPSK	16.58	dBm	
		16QAM	15.58	dBm	
	LTE 12 (Channel Bandwidth: 3MHz)	QPSK	16.64	dBm	
		16QAM	15.61	dBm	
	LTE 12 (Channel Bandwidth: 5MHz)	QPSK	16.99	dBm	
		16QAM	16.15	dBm	
	LTE 12 (Channel Bandwidth: 10MHz)	QPSK	17.05	dBm	
		16QAM	15.97	dBm	
	LTE 17 (Channel Bandwidth: 5MHz)	QPSK	16.81	dBm	
		16QAM	16.16	dBm	
	LTE 17 (Channel Bandwidth: 10MHz)	QPSK	16.81	dBm	
		16QAM	16.09	dBm	

Max. EIRP Power	LTE 38 (Channel Bandwidth: 5MHz)	QPSK	25.48	dBm
		16QAM	24.87	dBm
	LTE 38 (Channel Bandwidth: 10MHz)	QPSK	25.64	dBm
		16QAM	25.05	dBm
	LTE 38 (Channel Bandwidth: 15MHz)	QPSK	25.39	dBm
		16QAM	24.78	dBm
	LTE 38 (Channel Bandwidth: 20MHz)	QPSK	25.77	dBm
		16QAM	25.08	dBm
	LTE 41 (Channel Bandwidth: 5MHz)	QPSK	25.35	dBm
		16QAM	24.81	dBm
	LTE 41 (Channel Bandwidth: 10MHz)	QPSK	25.45	dBm
		16QAM	24.91	dBm
	LTE 41 (Channel Bandwidth: 15MHz)	QPSK	25.36	dBm
		16QAM	24.81	dBm
LTE 41 (Channel Bandwidth: 20MHz)	QPSK	25.61	dBm	
	16QAM	25.07	dBm	

Antenna Type	Fixed Internal Antenna		
Antenna Gain	LTE 4	1.3dBi	
	LTE 7 & 38 & 41	2.6dBi	
	LTE 12 & 17	-5.4dBi	
Hardware Version	SH1CMRONLM		
Software Version	CMR-AL19 8.0.1.3(SP1C331)		
IMEI No.	Radiated	867030030002165	
	Conducted	867030030002397	
Power Source	#1 Supplied from AC/DC adapter. #2 Battery Supplied.		
Power Rating	#1 Input: 100V~240V AC and 50/60 Hz,0.5A Output: 5V ---2A OR 9V ---2A #2 ---3.82V 7350mAh		

Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2.

The EUT contains following accessory devices.

Item	Mfr/Brand	Model.
Battery	SCUD (FUJIAN) Electronics Co., Ltd	HB2994I8ECW
	Sunwoda Electronic Co., LTD.	HB2994I8ECW
	Huizhou Desay Battery Co., Ltd	HB2994I8ECW
USB Cable	HONGLIN TECHNOLOGY CO.,LTD	130-26988
	Luxshare Precision Industry Co., Ltd	L99UC001-CS-H
	FOXCONN INTERCONNECT TECHNOLOGY LIMITED	CUDU01B-HC288-EH
	foxlink cheng uei precision industry Co., Ltd	6691-10YZ-0183
USB Type-C to 3.5 mm headset jack adapter cable	FOSTER ELECTRIC CO. (HONG KONG) LTD	620891
	Boluo County Quancheng Electronic Co.,Ltd.	6001-7001-TC-294
	Jiangxi Lianchuang Hongsheng Electronic Co.,LTD	HWTYPEC3R5009AW
	MERRY ELECTRONICS CO., LTD.	L99UD002-CS-H
Adapter	Salcomp (Shenzhen) Co., Ltd.	HW-059200UHQ
	HUIZHOU BYD ELECTRONIC CO.,LTD	

### 3.2 DESCRIPTION OF TEST MODES AND TEST CONDITION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports  
 The worst case was found when positioned on X-plane for EIRP and X-axis for radiated emission.  
 Following channel(s) was (were) selected for the final test as listed below:

LTE BAND 4					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
EIRP	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	1RB/3RB/6RB
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	1RB/8RB/15RB
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	1RB/25RB/50RB
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	1RB/36RB/75RB
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	1RB/50RB/100RB
Occupied Bandwidth	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	6RB
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	15RB
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	25RB
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	50RB
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	75 RB
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	100RB
Conducted Emission	19957 to 20393	20175	1.4MHz	QPSK	1RB
	19965 to 20385	20175	3MHz	QPSK	1RB
	19975 to 20375	20175	5MHz	QPSK	1RB
	20000 to 20350	20175	10MHz	QPSK	1RB
	20025 to 20325	20175	15MHz	QPSK	1RB
	20050 to 20300	20175	20MHz	QPSK	1RB
Radiated Emission	19957 to 20393	20175	1.4MHz	QPSK	1RB
	20050 to 20300	20175	20MHz	QPSK	1RB

LTE BAND 4						
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode	
Band Edge	19957 to 20393	19957	1.4MHz	QPSK	1RB/6RB	
		20393	1.4MHz	QPSK		
	19965 to 20385	19965	3MHz	QPSK	1RB/15RB	
		20385	3MHz	QPSK		
	19975 to 20375	19975	5MHz	QPSK	1RB/25RB	
		20375	5MHz	QPSK		
	20000 to 20350	20000	10MHz	QPSK	1RB/50RB	
		20350	10MHz	QPSK		
	20025 to 20325	20025	15MHz	QPSK	1RB/75RB	
		20325	15MHz	QPSK		
	20050 to 20300	20050	20MHz	QPSK	1RB/100RB	
		20300	20MHz	QPSK		
	Peak To Average Ratio	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	1RB
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	1RB
19975 to 20375		19975, 20175, 20375	5MHz	QPSK, 16QAM	1RB	
20000 to 20350		20000, 20175, 20350	10MHz	QPSK, 16QAM	1RB	
20025 to 20325		20025, 20175, 20325	15MHz	QPSK, 16QAM	1RB	
20050 to 20300		20050, 20175, 20300	20MHz	QPSK, 16QAM	1RB	
Frequency Stability	19957 to 20393	20175	1.4MHz	QPSK	1RB	
	19965 to 20385	20175	3MHz	QPSK	1RB	
	19975 to 20375	20175	5MHz	QPSK	1RB	
	20000 to 20350	20175	10MHz	QPSK	1RB	
	20025 to 20325	20175	15MHz	QPSK	1RB	
	20050 to 20300	20175	20MHz	QPSK	1RB	

LTE BAND 7					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
EIRP	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	1RB/25RB/50RB
	20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	1RB/36RB/75RB
	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	1RB/50RB/100RB
Occupied Bandwidth	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	25RB
	20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	50RB
	20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	75RB
	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	100RB
Conducted Emission	20775 to 21425	21100	5MHz	QPSK	1 RB
	20800 to 21400	21100	10MHz	QPSK	1 RB
	20825 to 21375	21100	15MHz	QPSK	1 RB
	20850 to 21350	21100	20MHz	QPSK	1 RB
Radiated Emission	20775 to 21425	21100	5MHz	QPSK	1 RB
	20850 to 21350	21100	20MHz	QPSK	1 RB
Band Edge	20775 to 21425	20775	5MHz	QPSK	1RB/25RB
		21425	5MHz	QPSK	
	20800 to 21400	20800	10MHz	QPSK	1RB/50RB
		21400	10MHz	QPSK	
	20825 to 21375	20825	15MHz	QPSK	1RB/75RB
		21375	15MHz	QPSK	
	20850 to 21350	20850	20MHz	QPSK	1RB/100RB
		21350	20MHz	QPSK	
Peak To Average Ratio	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM	1RB
	20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	1RB
	20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	1RB
	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	1RB
Frequency Stability	20775 to 21425	21100	5MHz	QPSK	1RB
	20800 to 21400	21100	10MHz	QPSK	1RB
	20825 to 21375	21100	15MHz	QPSK	1RB
	20850 to 21350	21100	20MHz	QPSK	1RB

LTE BAND 12					
Test Item	Available Channel	Tested Channel	Channel	Modulation	Mode
ERP	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK, 16QAM	1RB/3RB/6RB
	23025 to 23165	23025, 23095, 23165	3MHz	QPSK, 16QAM	1RB/8RB/15RB
	23035 to 23155	23035, 23095, 23155	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	23060 to 23130	23060, 23095, 23130	10MHz	QPSK, 16QAM	1RB/25RB/50RB
Frequency Stability	23017 to 23173	23095	1.4MHz	QPSK	1 RB
	23025 to 23165	23095	3MHz	QPSK	1 RB
	23035 to 23155	23095	5MHz	QPSK	1 RB
	23060 to 23130	23095	10MHz	QPSK	1 RB
Occupied Bandwidth	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK, 16QAM	6RB
	23025 to 23165	23025, 23095, 23165	3MHz	QPSK, 16QAM	15RB
	23035 to 23155	23035, 23095, 23155	5MHz	QPSK, 16QAM	25RB
	23060 to 23130	23060, 23095, 23130	10MHz	QPSK, 16QAM	50RB
Peak to Average Ratio	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK, 16QAM	1 RB
	23025 to 23165	23025, 23095, 23165	3MHz	QPSK, 16QAM	1 RB
	23035 to 23155	23035, 23095, 23155	5MHz	QPSK, 16QAM	1 RB
	23060 to 23130	23060, 23095, 23130	10MHz	QPSK, 16QAM	1 RB
Band Edge	23017 to 23173	23017	1.4MHz	QPSK	1RB/6RB
		23173	1.4MHz	QPSK	
	23025 to 23165	23025	3MHz	QPSK	1RB/15RB
		23165	3MHz	QPSK	
	23035 to 23155	23035	5MHz	QPSK	1RB/25RB
		23155	5MHz	QPSK	
	23060 to 23130	23060	10MHz	QPSK	1RB/50RB
		23130	10MHz	QPSK	
Conducted Emission	23017 to 23173	23095	1.4MHz	QPSK	1 RB
	23025 to 23165	23095	3MHz	QPSK	1 RB
	23035 to 23155	23095	5MHz	QPSK	1 RB
	23060 to 23130	23095	10MHz	QPSK	1 RB
Radiated Emission	23017 to 23173	23095	1.4MHz	QPSK	1 RB
	23060 to 23130	23095	10MHz	QPSK	1 RB



LTE BAND 17					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
ERP	706.5 to 713.5	23755, 23790, 23825	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	709.0 to 711.0	23780, 23790, 23775	10MHz	QPSK, 16QAM	1RB/25RB/50RB
Occupied Bandwidth	706.5 to 713.5	23755, 23790, 23825	5MHz	QPSK, 16QAM	25RB
	709.0 to 711.0	23780, 23790, 23775	10MHz	QPSK, 16QAM	50RB
Conducted Emission	706.5 to 713.5	23790	5MHz	QPSK	1 RB
	709.0 to 711.0	23790	10MHz	QPSK	1 RB
Radiated Emission	706.5 to 713.5	23755	5MHz	QPSK	1 RB
	709.0 to 711.0	23755	10MHz	QPSK	1 RB
Band Edge	706.5 to 713.5	23755	5MHz	QPSK	1RB/25RB
		23825	5MHz	QPSK	
	709.0 to 711.0	23780	10MHz	QPSK	1RB/50RB
		23775	10MHz	QPSK	
Peak To Average Ratio	706.5 to 713.5	23755, 23790, 23825	5MHz	QPSK, 16QAM	1 RB
	709.0 to 711.0	23780, 23790, 23775	10MHz	QPSK, 16QAM	1 RB
Frequency Stability	706.5 to 713.5	23790	5MHz	QPSK	1 RB
	709.0 to 711.0	23790	10MHz	QPSK	1 RB

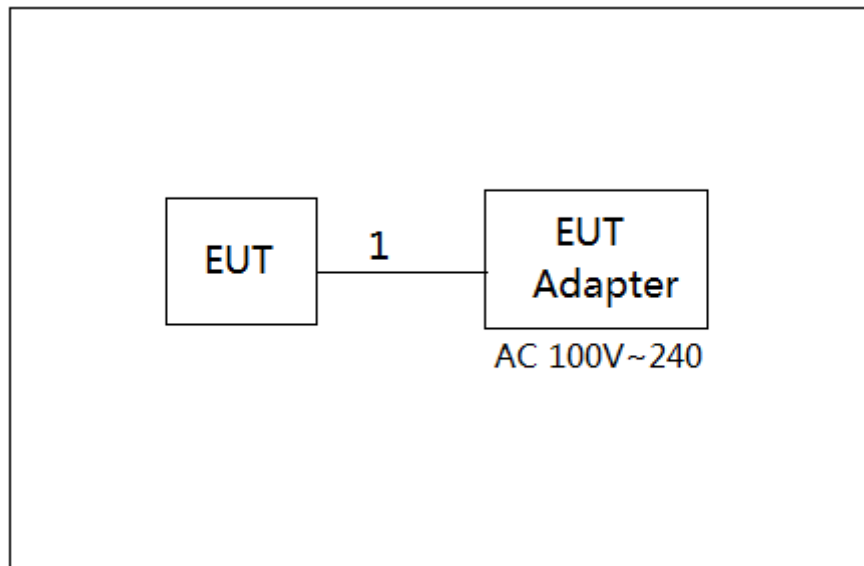
LTE BAND 38					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
EIRP	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM	1RB/25RB/50RB
	37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM	1RB/36RB/75RB
	37850 to 38150	37850, 38000, 38150	20MHz	QPSK, 16QAM	1RB/50RB/100RB
Frequency Stability	37775 to 38225	38000	5MHz	QPSK	1 RB
	37800 to 38200	38000	10MHz	QPSK	1 RB
	37825 to 38175	38000	15MHz	QPSK	1 RB
	37850 to 38150	38000	20MHz	QPSK	1 RB
Occupied Bandwidth	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM	25RB
	37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM	50RB
	37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM	75 RB
	37850 to 38150	37850, 38000, 38150	20MHz	QPSK, 16QAM	100RB
Peak to Average Ratio	37775 to 38225	37775, 38000, 38225	5MHz	QPSK, 16QAM	1 RB
	37800 to 38200	37800, 38000, 38200	10MHz	QPSK, 16QAM	1 RB
	37825 to 38175	37825, 38000, 38175	15MHz	QPSK, 16QAM	1 RB
	37850 to 38150	37850, 38000, 38150	20MHz	QPSK, 16QAM	1 RB
Band Edge	37775 to 38225	37775, 38225	5MHz	QPSK, 16QAM	1RB/25RB
	37800 to 38200	37800, 38200	10MHz	QPSK, 16QAM	1RB/50RB
	37825 to 38175	37825, 38175	15MHz	QPSK, 16QAM	1RB/75RB
	37850 to 38150	37850, 38150	20MHz	QPSK, 16QAM	1RB/100RB
Conducted Emission	37775 to 38225	38000	5MHz	QPSK	1 RB
	37800 to 38200	38000	10MHz	QPSK	1 RB
	37825 to 38175	38000	15MHz	QPSK	1 RB
	37850 to 38150	38000	20MHz	QPSK	1 RB
Radiated Emission	37775 to 38225	38000	5MHz	QPSK	1 RB
	37850 to 38150	38000	20MHz	QPSK	1 RB

LTE BAND 41					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
EIRP	40165 to 41215	40165, 40690, 41215	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	40165 to 41215	40165, 40690, 41215	10MHz	QPSK, 16QAM	1RB/25RB/50RB
	40165 to 41215	40165, 40690, 41215	15MHz	QPSK, 16QAM	1RB/36RB/75RB
	40165 to 41215	40165, 40690, 41215	20MHz	QPSK, 16QAM	1RB/50RB/100RB
Frequency Stability	40165 to 41215	40690	5MHz	QPSK	1 RB
	40165 to 41215	40690	10MHz	QPSK	1 RB
	40165 to 41215	40690	15MHz	QPSK	1 RB
	40165 to 41215	40690	20MHz	QPSK	1 RB
Occupied Bandwidth	40165 to 41215	40165, 40690, 41215	5MHz	QPSK, 16QAM	25RB
	40165 to 41215	40165, 40690, 41215	10MHz	QPSK, 16QAM	50RB
	40165 to 41215	40165, 40690, 41215	15MHz	QPSK, 16QAM	75 RB
	40165 to 41215	40165, 40690, 41215	20MHz	QPSK, 16QAM	100RB
Peak to Average Ratio	40165 to 41215	40165, 40690, 41215	5MHz	QPSK, 16QAM	1 RB
	40165 to 41215	40165, 40690, 41215	10MHz	QPSK, 16QAM	1 RB
	40165 to 41215	40165, 40690, 41215	15MHz	QPSK, 16QAM	1 RB
	40165 to 41215	40165, 40690, 41215	20MHz	QPSK, 16QAM	1 RB
Band Edge	40165 to 41215	40165, 41215	5MHz	QPSK, 16QAM	1RB/25RB
	40165 to 41215	40165, 41215	10MHz	QPSK, 16QAM	1RB/50RB
	40165 to 41215	40165, 41215	15MHz	QPSK, 16QAM	1RB/75RB
	40165 to 41215	40165, 41215	20MHz	QPSK, 16QAM	1RB/100RB
Conducted Emission	40165 to 41215	40690	5MHz	QPSK	1 RB
	40165 to 41215	40690	10MHz	QPSK	1 RB
	40165 to 41215	40690	15MHz	QPSK	1 RB
	40165 to 41215	40690	20MHz	QPSK	1 RB
Radiated Emission	40165 to 41215	40690	5MHz	QPSK	1 RB
	40165 to 41215	40690	20MHz	QPSK	1 RB

**EUT TEST CONDITIONS:**

Test Item	Environmental Conditions	Test Voltage
EIRP	24°C, 63%RH	DC 3.82V
Conducted Output Power	25°C, 65%RH	DC 3.82V
Occupied Bandwidth	25°C, 65%RH	DC 3.82V
Conducted Emission	25°C, 65%RH	DC 3.82V
Radiated Emission	25°C, 60%RH	AC 120V/60Hz
Band Edge	25°C, 65%RH	DC 3.82V
Peak to Average Ratio	25°C, 65%RH	DC 3.82V
Frequency Stability	25°C, 65%RH	DC 3.82V

**3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED**



**3.4 DESCRIPTION OF SUPPORT UNITS**

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	YES	NO	1.2m	USB cable

## 4. TEST RESULT

### 4.1 OUTPUT POWER MEASUREMENT

#### 4.1.1 LIMIT

Mobile / Portable station are limited to 1 watts e.i.r.p. (LTE 4)

Mobile / Portable station are limited to 2 watts e.i.r.p. (LTE 7 and LTE 38, LTE 41)

Mobile / Portable station are limited to 3 watts e.i.r.p. (LTE 12 and LTE 17)

#### 4.1.2 TEST PROCEDURE

##### EIRP/ERP:

EIRP= Conducted Power +Antenan gain

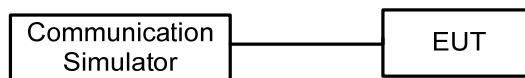
ERP power=EIPR power-2.15dBi.

##### Conducted Power:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

#### 4.1.3 TESTSETUP LAYOUT

##### Conducted Power Measurement



#### 4.1.4 TEST DEVIATION

No deviation

#### 4.1.5 TEST RESULTS

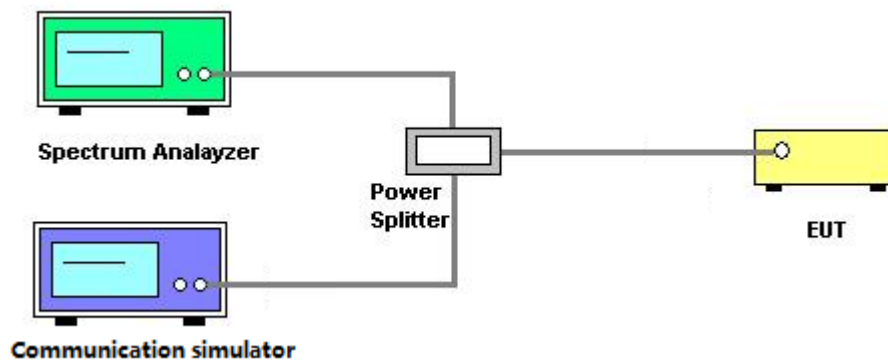
Please refer to the Appendix A.

## 4.2 OCCUPIED BANDWIDTH MEASUREMENT

### 4.2.1 TEST PROCEDURE

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth and 26dB bandwidth.

### 4.2.2 TEST SETUP LAYOUT



### 4.2.3 TEST DEVIATION

No deviation

### 4.2.4 TEST RESULTS

Please refer to the Appendix B.

### 4.3 CONDUCTED EMISSIONS MEASUREMENT

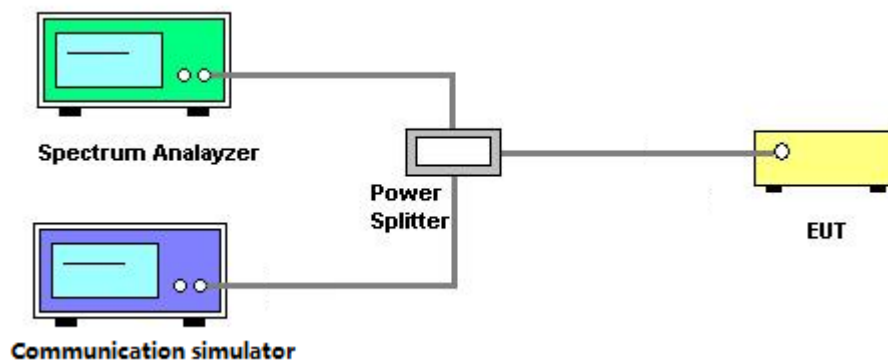
#### 4.3.1 LIMIT

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  $43 + 10 \log(P)$  dB. The emission limit equal to -13dBm.

#### 4.3.2 TEST PROCEDURES

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured. Set  $RBW \geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from  $43+10\log(P)$ dB below the transmitter power P(Watts)  
 $=P(W)-[43+10\log(P)](dB)$   
 $=[30+10\log(P)](dBm)-[43+10\log(P)](dB)$   
 $=-13dBm$

#### 4.3.3 TESTSETUP LAYOUT



#### 4.3.4 TESTDEVIATION

No deviation

#### 4.3.5 TEST RESULTS

Please refer to the Appendix C.

## 4.4 RADIATED EMISSIONS MEASUREMENT

### 4.4.1 LIMIT

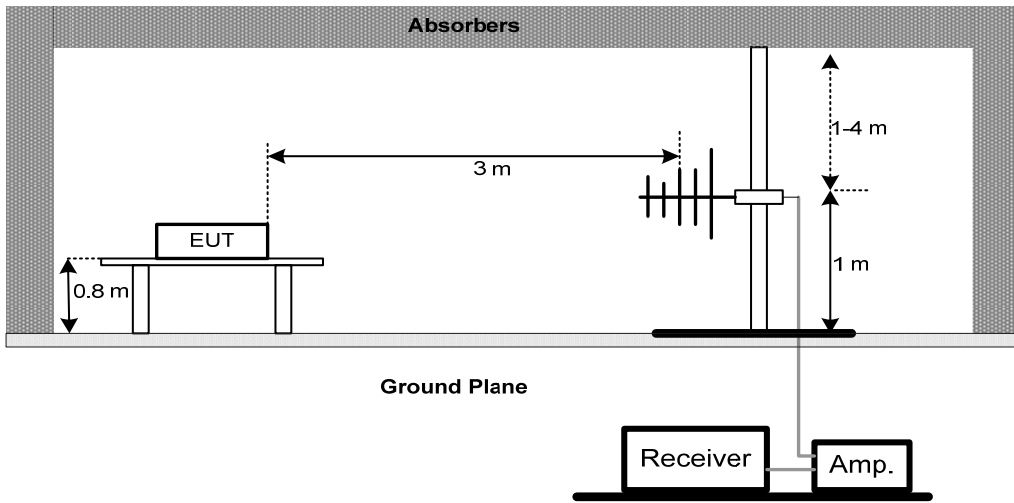
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to -13dBm.

### 4.4.2 TEST PROCEDURES

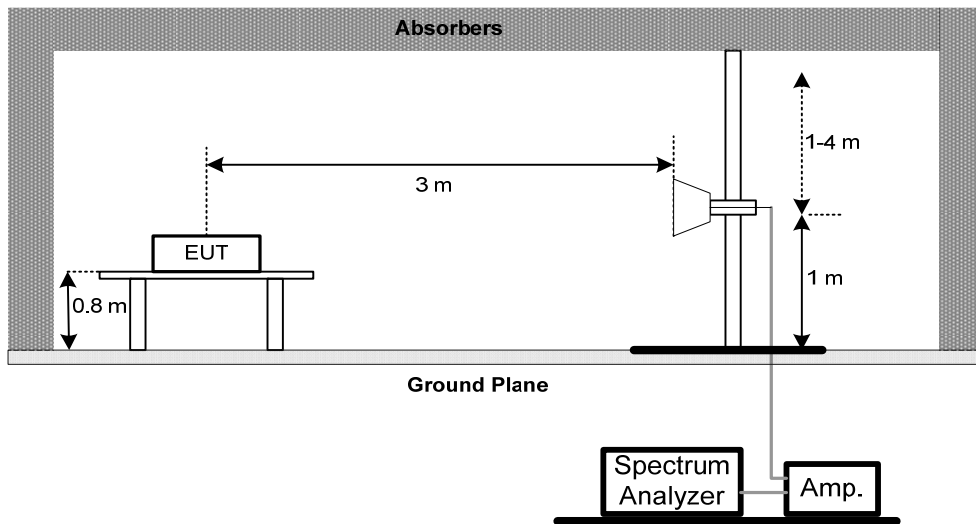
1. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
2. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G
3. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
4. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.



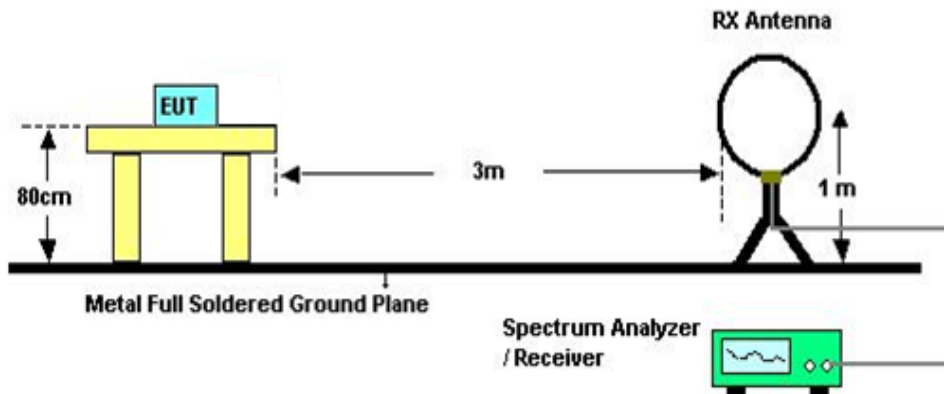
**4.4.3 TESTSETUP LAYOUT**  
**Below 1G**



**Above 1G**



**Below 30MHz**



#### 4.4.4 TEST DEVIATION

No deviation

#### 4.4.5 TEST RESULTS

Please refer to the Appendix D.

## 4.5 BAND EDGE MEASUREMENT

### 4.5.1 LIMIT

For operations in the 704-716 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log(P)$  dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

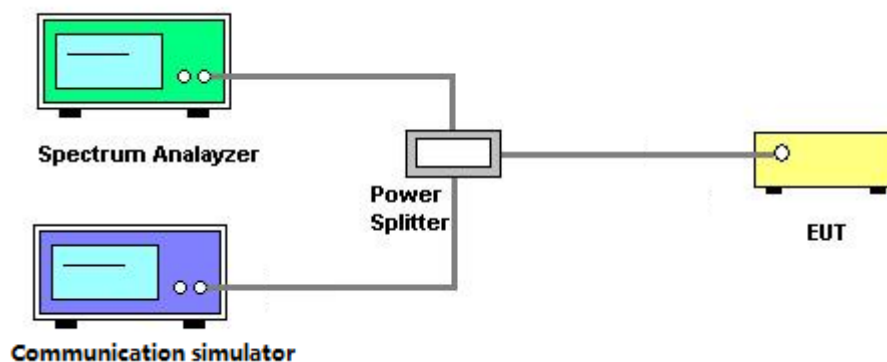
However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

For operations in the 1710–1755 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB.

### 4.5.2 TEST PROCEDURES

1. All measurements were done at low and high operational frequency range.
2. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 13kHz and VB of the spectrum is 51kHz (LTE Bandwidth 1.4MHz).
3. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Bandwidth 3MHz).
4. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Bandwidth 5MHz/10MHz).
5. Record the max trace plot into the test report.

### 4.5.3 TESTSETUP LAYOUT



### 4.5.4 TESTDEVIATION

No deviation

### 4.5.5 TEST RESULTS

Please refer to the Appendix E.

## 4.6 PEAK TO AVERAGE RATIO MEASUREMENT

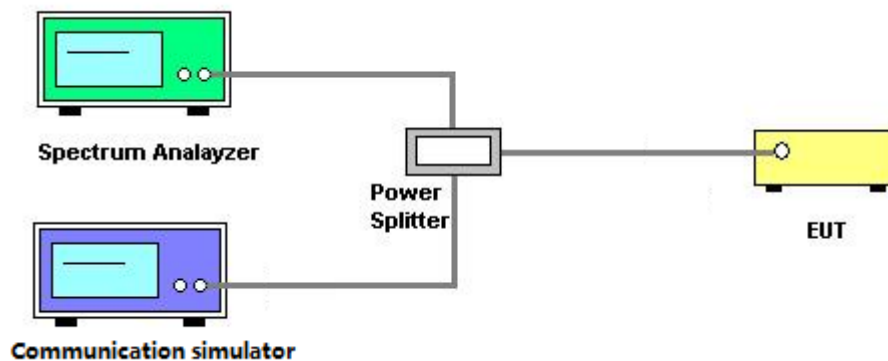
### 4.6.1 LIMIT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

### 4.6.2 TEST PROCEDURES

1. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

### 4.6.3 TESTSETUP LAYOUT



### 4.6.4 TESTDEVIATION

No deviation

### 4.6.5 TEST RESULTS

Please refer to the Appendix F.

## 4.7 FREQUENCY STABILITY MEASUREMENT

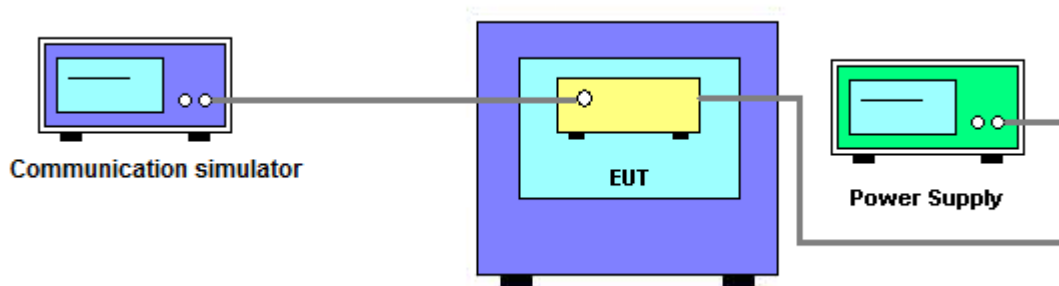
### 4.7.1 LIMIT

1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

### 4.7.2 TEST PROCEDURES

1. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
2. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
3. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}\text{C}$  during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.
4. The frequency error was recorded frequency error from the communication simulator.

### 4.7.3 TESTSETUP LAYOUT



### 4.7.4 TESTDEVIATION

No deviation

### 4.7.5 TEST RESULTS

Please refer to the Appendix G.

## 5. LIST OF MEASUREMENT EQUIPMENTS

Radiated Emission & ERP or EIRP Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 26, 2018
2	Double Ridged Guide Antenna	ETS	3115	75789	Mar. 26, 2018
3	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Apr. 22, 2018
4	Amplifier	Agilent	8449B	3008A02274	Mar. 09, 2018
5	Amplifier	HP	8447D	2944A09673	Oct. 19, 2018
6	HighPass Filter	Wairwright Instruments Gmbh	WHK 1.5/15G-10ST	11	Mar. 09, 2018
7	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1710/1785-1690/180 5-60/12SS	38	Feb. 22, 2018
8	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 824/849-810/863-60/ 9SS	7	Feb. 22, 2018
9	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 880/915-860/935-60/ 9SS	14	Feb. 22, 2018
10	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1850/1910-1830/193 0-60/10SS	17	Feb. 22, 2018
11	HighPass Filter	Wairwright Instruments Gmbh	WHK3.1/18G-10SS	24	Mar. 09, 2018
12	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 26, 2018
13	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 26, 2018
14	Receiver	Agilent	N9038A	MY52130039	Sep. 03, 2018
15	wideband radio communication tester	R&S	CMW500	152372	Mar. 26, 2018
16	High pass filter	ZHPF-M1000-4000-1	ZHPF-M3-12.75G-3869	B2015073763	Aug. 03, 2018
17	High pass filter	ZHPF-M3-12.75G-3869	ZHPF-M1000-4000-1	B2015073762	Aug. 03, 2018
18	High pass filter	ZHPF-M6-18G-1727	ZHPF-M6-186-1727	B2015073764	Aug. 03, 2018
19	Cable	emci	LMR-400(30MHz-1GHz)(8m+5m)	N/A	Jun. 26, 2018
20	Cable	emci	EMC104-SM-SM-12000(12m)	N/A	Jul. 05, 2018
21	Controller	ETS-Lindgren	2090	N/A	N/A
22	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Conducted Emission & Band Edge & Occupied Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 26, 2018
2	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Mar. 26, 2018
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S +	331000910-1	Feb. 25, 2018
4	wideband radio communication tester	R&S	CMW500	152372	Mar. 26, 2018
5	Cable	N/A	RG316(0.3m)	N/A	Jul. 05, 2018

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 26, 2018
2	DC power supply	GW Instek	GPC-3030DN	EK880675	Oct. 12, 2018
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S +	331000910-1	Feb. 25, 2018
4	wideband radio communication tester	R&S	CMW500	152372	Mar. 26, 2018
5	Const Temp, & Humidity Chamber	Bell	BTH-50C	20170306001	Mar. 26, 2018
6	Cable	N/A	RG316(0.3m)	N/A	Jul. 05, 2018

Remark: "N/A" denotes no model name, serial no. or calibration specified.  
 All calibration period of equipment list is one year.

## APPENDIX A - OUTPUT POWER



**Conducted Power:**

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				19957 CH	20175 CH	20393 CH
				1710.7 MHz	1732.5 MHz	1754.3 MHz
4 / 1.4M	QPSK	1	0	22.29	22.77	22.90
		1	2	22.43	22.90	22.93
		1	5	22.27	22.73	22.81
		3	0	22.29	22.81	22.83
		3	1	22.24	22.86	22.83
		3	3	22.28	22.85	22.88
	16QAM	6	0	21.47	21.96	22.14
		1	0	21.42	22.11	22.20
		1	2	21.50	22.18	22.25
		1	5	21.36	22.01	22.16
		3	0	21.28	21.89	22.08
		3	1	21.31	21.95	22.09
		3	3	21.30	21.95	22.11
		6	0	21.33	21.81	22.03

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				19965 CH	20175 CH	20385 CH
				1711.5 MHz	1732.5 MHz	1753.5 MHz
4 / 3M	QPSK	1	0	22.02	22.59	22.70
		1	7	22.34	22.94	23.00
		1	14	21.94	22.50	22.63
		8	0	21.42	21.91	22.06
		8	3	21.52	21.97	22.14
		8	7	21.43	21.86	22.01
	16QAM	15	0	21.46	21.88	22.08
		1	0	21.37	21.83	21.96
		1	7	21.72	22.13	22.29
		1	14	21.38	21.71	21.91
		8	0	21.37	21.76	22.01
		8	3	21.46	21.82	22.08
		8	7	21.37	21.71	21.97
		15	0	21.33	21.74	21.95

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				19975 CH	20175 CH	20375 CH
				1712.5 MHz	1732.5 MHz	1752.5 MHz
4 / 5M	QPSK	1	0	22.28	22.62	22.84
		1	12	22.40	22.77	22.94
		1	24	22.38	22.66	22.82
		12	0	21.63	22.03	22.26
		12	6	21.75	22.16	22.30
		12	13	21.63	22.01	22.17
		25	0	21.61	21.96	22.16
	16QAM	1	0	21.52	21.94	22.21
		1	12	21.67	22.18	22.29
		1	24	21.66	22.08	22.19
		12	0	21.51	21.92	22.13
		12	6	21.63	22.05	22.17
		12	13	21.54	21.90	22.05
		25	0	21.46	21.83	22.03

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				20000 CH	20175 CH	20350 CH
				1715 MHz	1732.5 MHz	1750 MHz
4 / 10M	QPSK	1	0	22.24	22.80	22.63
		1	24	22.40	22.78	22.82
		1	49	22.35	22.47	22.55
		25	0	21.61	21.97	22.12
		25	12	21.77	22.04	22.21
		25	25	21.73	21.84	22.08
		50	0	21.68	21.93	22.06
	16QAM	1	0	21.40	22.16	21.74
		1	24	21.63	22.08	21.89
		1	49	21.66	21.79	21.73
		25	0	21.45	21.82	21.99
		25	12	21.63	21.88	22.07
		25	25	21.61	21.69	21.96
		50	0	21.54	21.79	21.90

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				20025 CH	20175 CH	20325 CH
				1717.5 MHz	1732.5 MHz	1747.5 MHz
4 / 15M	QPSK	1	0	22.30	22.82	22.60
		1	37	22.70	22.97	22.98
		1	74	22.68	22.45	22.65
		36	0	21.76	22.45	22.00
		36	19	21.82	22.03	22.12
		36	39	21.98	21.87	22.20
		75	0	21.83	21.97	21.98
	16QAM	1	0	21.71	22.11	21.86
		1	37	22.22	22.14	22.28
		1	74	22.19	21.63	22.03
		36	0	21.65	21.63	21.89
		36	19	21.72	21.89	21.99
		36	39	21.87	21.73	22.07
		75	0	21.70	21.80	21.81

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				20050 CH	20175 CH	20300 CH
				1720 MHz	1732.5 MHz	1745 MHz
4 / 20M	QPSK	1	0	22.27	22.68	22.56
		1	50	22.74	21.98	22.83
		1	99	22.65	22.40	22.59
		50	0	21.71	21.93	21.85
		50	25	21.93	21.98	21.92
		50	50	21.98	21.80	22.06
		100	0	21.79	21.82	21.97
	16QAM	1	0	21.51	22.05	21.96
		1	50	22.15	21.86	22.20
		1	99	21.95	21.66	22.06
		50	0	21.61	21.82	21.76
		50	25	21.84	21.88	21.81
		50	50	21.86	21.70	21.95
		100	0	21.64	21.70	21.83

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20775 CH	21100 CH	21425 CH
				2502.5 MHz	2535 MHz	2567.5 MHz
7 / 5M	QPSK	1	0	21.87	22.39	22.25
		1	12	22.05	22.44	22.37
		1	24	22.01	22.48	22.35
		12	0	21.23	21.62	21.49
		12	6	21.27	21.66	21.53
		12	13	21.50	21.50	21.36
	16QAM	25	0	21.47	21.48	21.35
		1	0	21.32	21.92	21.63
		1	12	21.51	21.96	21.75
		1	24	21.43	21.94	21.68
		12	0	20.81	21.18	21.06
		12	6	20.82	21.27	21.09
		12	13	21.02	21.11	20.99
		25	0	21.01	21.07	20.96

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20800 CH	21100 CH	21400 CH
				2505 MHz	2535 MHz	2565 MHz
7 / 10M	QPSK	1	0	22.14	22.66	22.53
		1	24	22.04	22.55	22.50
		1	49	21.94	22.52	22.37
		25	0	21.57	21.61	21.48
		25	12	21.52	21.59	21.45
		25	25	21.69	21.55	21.37
		50	0	21.56	21.54	21.38
	16QAM	1	0	21.54	22.01	21.77
		1	24	21.48	21.96	21.75
		1	49	21.35	21.89	21.54
		25	0	21.06	21.16	21.05
		25	12	21.01	21.09	21.03
		25	25	21.22	21.04	20.94
		50	0	21.07	21.03	20.98

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20825 CH	21100 CH	21375 CH
				2507.5 MHz	2535 MHz	2562.5 MHz
7 / 15M	QPSK	1	0	22.11	22.50	22.32
		1	37	21.94	22.51	22.49
		1	74	21.90	22.26	22.18
		36	0	21.52	21.55	21.44
		36	19	21.69	21.65	21.53
		36	39	21.49	21.51	21.41
		75	0	21.52	21.52	21.36
	16QAM	1	0	21.32	21.87	21.75
		1	37	21.23	21.93	21.88
		1	74	21.11	21.63	21.60
		36	0	21.04	21.11	21.04
		36	19	21.26	21.16	21.07
		36	39	21.05	21.03	20.95
		75	0	21.05	21.01	20.91

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20850 CH	21100 CH	21350 CH
				2510 MHz	2535 MHz	2560 MHz
7 / 20M	QPSK	1	0	22.11	22.42	22.19
		1	50	22.16	22.65	22.57
		1	99	22.26	22.26	22.33
		50	0	21.64	21.56	21.53
		50	25	21.61	21.58	21.48
		50	50	21.49	21.48	21.51
		100	0	21.58	21.48	21.49
	16QAM	1	0	21.49	21.92	21.85
		1	50	21.55	22.11	22.22
		1	99	21.69	21.83	21.95
		50	0	21.15	20.98	20.94
		50	25	21.14	21.02	20.95
		50	50	21.03	20.96	20.96
		100	0	21.06	20.96	20.92

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				23017 CH	23095 CH	23173 CH
				699.7 MHz	707.5 MHz	715.3 MHz
12 / 1.4M	QPSK	1	0	23.63	23.98	23.75
		1	2	23.72	24.13	23.99
		1	5	23.60	24.02	23.89
		3	0	23.61	24.07	23.88
		3	1	23.63	24.13	23.95
		3	3	23.57	24.09	23.95
	16QAM	6	0	22.33	22.74	22.55
		1	0	22.45	22.97	22.72
		1	2	22.56	23.13	22.95
		1	5	22.44	22.98	22.86
		3	0	22.41	22.83	22.62
		3	1	22.44	22.89	22.67
		3	3	22.38	22.86	22.68
		6	0	21.48	21.86	21.80

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				23025 CH	23095 CH	23165 CH
				700.5 MHz	707.5 MHz	714.5 MHz
12 / 3M	QPSK	1	0	23.42	23.91	23.56
		1	7	23.67	24.19	24.04
		1	14	23.25	23.81	23.74
		8	0	22.28	22.70	22.41
		8	3	22.27	22.73	22.52
		8	7	22.15	22.63	22.46
		15	0	22.20	22.61	22.46
	16QAM	1	0	22.42	22.87	22.51
		1	7	22.61	23.16	22.89
		1	14	22.20	22.78	22.62
		8	0	21.36	21.84	21.55
		8	3	21.42	21.90	21.66
		8	7	21.26	21.80	21.59
		15	0	21.29	21.81	21.50

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				23035 CH	23095 CH	23155 CH
				701.5 MHz	707.5 MHz	713.5 MHz
12 / 5M	QPSK	1	0	23.82	24.02	24.00
		1	12	23.91	24.54	24.23
		1	24	23.91	24.09	24.21
		12	0	22.77	23.11	22.97
		12	6	22.70	23.29	23.08
		12	13	22.64	23.22	23.02
		25	0	22.61	23.15	22.90
	16QAM	1	0	22.65	23.23	23.02
		1	12	22.75	23.70	23.17
		1	24	22.75	23.31	23.17
		12	0	21.90	22.13	22.10
		12	6	21.83	22.36	22.16
		12	13	21.78	22.28	22.09
		25	0	21.70	22.11	21.95

LTE Band / BW	Modulation	RB Sizing	RB Offset	Low CH	Mid CH	High CH
				23060 CH	23095 CH	23130 CH
				704 MHz	707.5 MHz	711 MHz
12 / 10M	QPSK	1	0	24.08	24.09	24.54
		1	24	24.18	24.60	24.40
		1	49	24.15	23.89	24.21
		25	0	22.68	23.01	23.21
		25	12	22.91	23.28	23.10
		25	25	22.92	22.99	22.75
		50	0	22.76	23.00	22.92
	16QAM	1	0	22.93	23.03	23.26
		1	24	23.09	23.52	23.21
		1	49	23.10	22.85	22.86
		25	0	21.81	22.04	22.20
		25	12	22.01	22.26	22.18
		25	25	21.98	22.03	21.82
		50	0	21.80	22.05	21.98

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				23755 CH	23790 CH	23825 CH
				706.5 MHz	710.0 MHz	713.5 MHz
17 / 5M	QPSK	1	0	23.72	24.26	23.97
		1	12	24.36	24.31	24.24
		1	24	24.17	23.93	24.22
		12	0	23.25	23.56	23.53
		12	6	23.52	23.50	23.50
		12	13	23.50	23.37	23.44
	16QAM	25	0	23.32	23.39	23.40
		1	0	23.19	23.52	23.30
		1	12	23.71	23.60	23.48
		1	24	23.52	23.30	23.37
		12	0	22.43	22.67	22.53
		12	6	22.69	22.62	22.53
		12	13	22.67	22.52	22.47
		25	0	22.45	22.47	22.39

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				23780 CH	23790 CH	23800 CH
				709.0 MHz	710.0 MHz	711.0 MHz
17 / 10M	QPSK	1	0	24.08	24.23	24.36
		1	24	24.33	24.35	24.24
		1	49	23.91	24.17	24.16
		25	0	23.47	23.58	23.57
		25	12	23.58	23.54	23.51
		25	25	23.24	23.29	23.24
		50	0	23.37	23.36	23.28
	16QAM	1	0	23.42	23.55	23.47
		1	24	23.64	23.63	23.37
		1	49	23.16	23.36	23.15
		25	0	22.50	22.61	22.60
		25	12	22.61	22.58	22.57
		25	25	22.28	22.26	22.21
		50	0	22.44	22.43	22.32

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				37775 CH	38000 CH	38225 CH
				2572.5 MHz	2595 MHz	2617.5 MHz
38 / 5M	QPSK	1	0	22.32	22.67	22.88
		1	12	22.41	22.68	22.88
		1	24	22.41	22.56	22.84
		12	0	21.58	21.89	22.00
		12	6	21.65	21.96	22.06
		12	13	21.56	21.83	21.98
		25	0	21.52	21.83	21.95
	16QAM	1	0	21.52	22.25	22.23
		1	12	21.72	22.27	22.23
		1	24	21.62	22.16	22.19
		12	0	21.53	21.84	21.92
		12	6	21.60	21.91	21.97
		12	13	21.52	21.79	21.89
		25	0	21.51	21.74	21.91

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				37800 CH	38000 CH	38200 CH
				2575 MHz	2595 MHz	2615 MHz
38 / 10M	QPSK	1	0	22.32	22.74	22.79
		1	24	22.69	22.93	23.04
		1	49	22.54	22.55	22.73
		25	0	21.59	21.89	21.93
		25	12	21.73	21.90	21.99
		25	25	21.70	21.76	21.90
		50	0	21.66	21.78	21.94
	16QAM	1	0	21.80	22.00	22.18
		1	24	22.10	22.21	22.45
		1	49	21.95	21.81	22.14
		25	0	21.60	21.83	21.97
		25	12	21.74	21.84	22.03
		25	25	21.71	21.69	21.94
		50	0	21.64	21.71	21.92



LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				37825 CH	38000 CH	38175 CH
				2577.5 MHz	2595 MHz	2612.5 MHz
38 / 15M	QPSK	1	0	22.26	22.54	22.56
		1	37	22.77	22.71	22.79
		1	74	22.49	22.36	22.58
		36	0	21.67	21.88	21.84
		36	19	21.84	21.92	21.98
		36	39	21.77	21.76	21.84
		75	0	21.70	21.81	21.84
	16QAM	1	0	21.64	21.90	21.61
		1	37	22.18	22.06	21.82
		1	74	21.82	21.71	21.60
		36	0	21.62	21.81	21.80
		36	19	21.79	21.86	21.93
		36	39	21.72	21.69	21.78
		75	0	21.69	21.74	21.79

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				37850 CH	38000 CH	38150 CH
				2580 MHz	2595 MHz	2610 MHz
38 / 20M	QPSK	1	0	22.47	22.94	22.95
		1	50	23.01	23.09	23.17
		1	99	22.70	22.78	23.04
		50	0	21.85	22.11	22.03
		50	25	21.95	21.96	22.07
		50	50	21.95	21.93	22.05
		100	0	21.93	21.99	22.01
	16QAM	1	0	21.96	22.17	22.17
		1	50	22.48	22.32	22.37
		1	99	22.18	21.98	22.26
		50	0	21.77	21.96	22.01
		50	25	21.86	21.84	22.05
		50	50	21.86	21.78	22.03
		100	0	21.89	21.87	21.95

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				40165 CH	40690 CH	41215 CH
				2547.5 MHz	2600 MHz	2652.5 MHz
41 / 5M	QPSK	1	0	22.39	22.75	22.60
		1	12	22.41	22.68	22.55
		1	24	22.38	22.66	22.53
		12	0	21.77	21.99	21.90
		12	6	21.76	22.00	21.89
		12	13	21.66	21.81	21.86
		25	0	21.64	21.83	21.79
	16QAM	1	0	21.77	22.21	22.03
		1	12	21.80	22.13	21.98
		1	24	21.75	22.09	21.97
		12	0	21.72	21.95	21.85
		12	6	21.71	21.94	21.85
		12	13	21.60	21.76	21.67
		25	0	21.65	21.84	21.79

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				40190 CH	40690 CH	41190 CH
				2550 MHz	2600 MHz	2650 MHz
41 / 10M	QPSK	1	0	22.43	22.85	22.77
		1	24	22.39	22.69	22.76
		1	49	22.44	22.72	22.58
		25	0	21.70	21.98	21.92
		25	12	21.64	21.87	21.92
		25	25	21.57	21.84	21.79
		50	0	21.60	21.85	22.01
	16QAM	1	0	21.82	22.31	22.22
		1	24	21.78	22.14	22.12
		1	49	21.85	22.17	22.03
		25	0	21.71	22.00	21.92
		25	12	21.65	21.88	21.92
		25	25	21.58	21.85	21.78
		50	0	21.54	21.81	21.93

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				40215 CH	40690 CH	41165 CH
				2552.5 MHz	2600 MHz	2647.5 MHz
41 / 15M	QPSK	1	0	22.23	22.67	22.64
		1	37	22.43	22.72	22.76
		1	74	22.42	22.73	22.50
		36	0	21.71	22.04	22.02
		36	19	21.72	22.01	22.02
		36	39	21.68	21.92	21.94
		75	0	21.66	21.91	22.10
	16QAM	1	0	21.61	22.12	22.08
		1	37	21.80	22.17	22.21
		1	74	21.82	22.07	21.95
		36	0	21.71	22.02	22.01
		36	19	21.71	22.00	21.99
		36	39	21.67	21.90	21.91
		75	0	21.58	21.82	22.01

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				40240 CH	40690 CH	41140 CH
				2555 MHz	2600 MHz	2645 MHz
41 / 20M	QPSK	1	0	22.56	23.01	22.99
		1	50	22.48	22.71	22.81
		1	99	22.83	22.95	22.65
		50	0	21.83	22.15	22.23
		50	25	21.77	21.96	22.04
		50	50	21.80	22.01	22.00
		100	0	21.78	22.02	22.15
	16QAM	1	0	21.93	22.47	22.42
		1	50	21.85	22.16	22.26
		1	99	22.22	22.30	22.09
		50	0	21.71	22.07	22.15
		50	25	21.71	21.89	21.97
		50	50	21.72	21.93	21.92
		100	0	21.69	21.93	22.06

**EIRP Power:**

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				19957 CH	20175 CH	20393 CH
				1710.7 MHz	1732.5 MHz	1754.3 MHz
4 / 1.4M	QPSK	1	0	23.59	24.07	24.20
		1	2	23.73	24.20	24.23
		1	5	23.57	24.03	24.11
		3	0	23.59	24.11	24.13
		3	1	23.54	24.16	24.13
		3	3	23.58	24.15	24.18
		6	0	22.77	23.26	23.44
	16QAM	1	0	22.72	23.41	23.50
		1	2	22.80	23.48	23.55
		1	5	22.66	23.31	23.46
		3	0	22.58	23.19	23.38
		3	1	22.61	23.25	23.39
		3	3	22.60	23.25	23.41
		6	0	22.63	23.11	23.33

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				19965 CH	20175 CH	20385 CH
				1711.5 MHz	1732.5 MHz	1753.5 MHz
4 / 3M	QPSK	1	0	23.32	23.89	24.00
		1	7	23.64	24.24	24.30
		1	14	23.24	23.80	23.93
		8	0	22.72	23.21	23.36
		8	3	22.82	23.27	23.44
		8	7	22.73	23.16	23.31
		15	0	22.76	23.18	23.38
	16QAM	1	0	22.67	23.13	23.26
		1	7	23.02	23.43	23.59
		1	14	22.68	23.01	23.21
		8	0	22.67	23.06	23.31
		8	3	22.76	23.12	23.38
		8	7	22.67	23.01	23.27
		15	0	22.63	23.04	23.25

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				19975 CH	20175 CH	20375 CH
				1712.5 MHz	1732.5 MHz	1752.5 MHz
4 / 5M	QPSK	1	0	23.58	23.92	24.14
		1	12	23.70	24.07	24.24
		1	24	23.68	23.96	24.12
		12	0	22.93	23.33	23.56
		12	6	23.05	23.46	23.60
		12	13	22.93	23.31	23.47
		25	0	22.91	23.26	23.46
	16QAM	1	0	22.82	23.24	23.51
		1	12	22.97	23.48	23.59
		1	24	22.96	23.38	23.49
		12	0	22.81	23.22	23.43
		12	6	22.93	23.35	23.47
		12	13	22.84	23.20	23.35
		25	0	22.76	23.13	23.33

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20000 CH	20175 CH	20350 CH
				1715 MHz	1732.5 MHz	1750 MHz
4 / 10M	QPSK	1	0	23.54	24.10	23.93
		1	24	23.70	24.08	24.12
		1	49	23.65	23.77	23.85
		25	0	22.91	23.27	23.42
		25	12	23.07	23.34	23.51
		25	25	23.03	23.14	23.38
	16QAM	50	0	22.98	23.23	23.36
		1	0	22.70	23.46	23.04
		1	24	22.93	23.38	23.19
		1	49	22.96	23.09	23.03
		25	0	22.75	23.12	23.29
		25	12	22.93	23.18	23.37
		25	25	22.91	22.99	23.26
		50	0	22.84	23.09	23.20

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20025 CH	20175 CH	20325 CH
				1717.5 MHz	1732.5 MHz	1747.5 MHz
4 / 15M	QPSK	1	0	23.60	24.12	23.90
		1	37	24.00	24.27	24.28
		1	74	23.98	23.75	23.95
		36	0	23.06	23.75	23.30
		36	19	23.12	23.33	23.42
		36	39	23.28	23.17	23.50
		75	0	23.13	23.27	23.28
	16QAM	1	0	23.01	23.41	23.16
		1	37	23.52	23.44	23.58
		1	74	23.49	22.93	23.33
		36	0	22.95	22.93	23.19
		36	19	23.02	23.19	23.29
		36	39	23.17	23.03	23.37
		75	0	23.00	23.10	23.11

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20050 CH	20175 CH	20300 CH
				1720 MHz	1732.5 MHz	1745 MHz
4 / 20M	QPSK	1	0	23.57	23.98	23.86
		1	50	24.04	23.28	24.13
		1	99	23.95	23.70	23.89
		50	0	23.01	23.23	23.15
		50	25	23.23	23.28	23.22
		50	50	23.28	23.10	23.36
		100	0	23.09	23.12	23.27
	16QAM	1	0	22.81	23.35	23.26
		1	50	23.45	23.16	23.50
		1	99	23.25	22.96	23.36
		50	0	22.91	23.12	23.06
		50	25	23.14	23.18	23.11
		50	50	23.16	23.00	23.25
		100	0	22.94	23.00	23.13

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20775 CH	21100 CH	21425 CH
				2502.5 MHz	2535 MHz	2567.5 MHz
7 / 5M	QPSK	1	0	24.47	24.99	24.85
		1	12	24.65	25.04	24.97
		1	24	24.61	25.08	24.95
		12	0	23.83	24.22	24.09
		12	6	23.87	24.26	24.13
		12	13	24.10	24.10	23.96
		25	0	24.07	24.08	23.95
	16QAM	1	0	23.92	24.52	24.23
		1	12	24.11	24.56	24.35
		1	24	24.03	24.54	24.28
		12	0	23.41	23.78	23.66
		12	6	23.42	23.87	23.69
		12	13	23.62	23.71	23.59
		25	0	23.61	23.67	23.56

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20800 CH	21100 CH	21400 CH
				2505 MHz	2535 MHz	2565 MHz
7 / 10M	QPSK	1	0	24.74	25.26	25.13
		1	24	24.64	25.15	25.10
		1	49	24.54	25.12	24.97
		25	0	24.17	24.21	24.08
		25	12	24.12	24.19	24.05
		25	25	24.29	24.15	23.97
		50	0	24.16	24.14	23.98
	16QAM	1	0	24.14	24.61	24.37
		1	24	24.08	24.56	24.35
		1	49	23.95	24.49	24.14
		25	0	23.66	23.76	23.65
		25	12	23.61	23.69	23.63
		25	25	23.82	23.64	23.54
		50	0	23.67	23.63	23.58

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20825 CH	21100 CH	21375 CH
				2507.5 MHz	2535 MHz	2562.5 MHz
7 / 15M	QPSK	1	0	24.71	25.10	24.92
		1	37	24.54	25.11	25.09
		1	74	24.50	24.86	24.78
		36	0	24.12	24.15	24.04
		36	19	24.29	24.25	24.13
		36	39	24.09	24.11	24.01
		75	0	24.12	24.12	23.96
	16QAM	1	0	23.92	24.47	24.35
		1	37	23.83	24.53	24.48
		1	74	23.71	24.23	24.20
		36	0	23.64	23.71	23.64
		36	19	23.86	23.76	23.67
		36	39	23.65	23.63	23.55
		75	0	23.65	23.61	23.51

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				20850 CH	21100 CH	21350 CH
				2510 MHz	2535 MHz	2560 MHz
7 / 20M	QPSK	1	0	24.71	25.02	24.79
		1	50	24.76	25.25	25.17
		1	99	24.86	24.86	24.93
		50	0	24.24	24.16	24.13
		50	25	24.21	24.18	24.08
		50	50	24.09	24.08	24.11
		100	0	24.18	24.08	24.09
	16QAM	1	0	24.09	24.52	24.45
		1	50	24.15	24.71	24.82
		1	99	24.29	24.43	24.55
		50	0	23.75	23.58	23.54
		50	25	23.74	23.62	23.55
		50	50	23.63	23.56	23.56
		100	0	23.66	23.56	23.52

**ERP Power:**

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				23017 CH	23095 CH	23173 CH
				699.7 MHz	707.5 MHz	715.3 MHz
12 / 1.4M	QPSK	1	0	16.08	16.43	16.20
		1	2	16.17	16.58	16.44
		1	5	16.05	16.47	16.34
		3	0	16.06	16.52	16.33
		3	1	16.08	16.58	16.40
		3	3	16.02	16.54	16.40
	16QAM	6	0	14.78	15.19	15.00
		1	0	14.90	15.42	15.17
		1	2	15.01	15.58	15.40
		1	5	14.89	15.43	15.31
		3	0	14.86	15.28	15.07
		3	1	14.89	15.34	15.12
		3	3	14.83	15.31	15.13
		6	0	13.93	14.31	14.25

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				23025 CH	23095 CH	23165 CH
				700.5 MHz	707.5 MHz	714.5 MHz
12 / 3M	QPSK	1	0	15.87	16.36	16.01
		1	7	16.12	16.64	16.49
		1	14	15.70	16.26	16.19
		8	0	14.73	15.15	14.86
		8	3	14.72	15.18	14.97
		8	7	14.60	15.08	14.91
	16QAM	15	0	14.65	15.06	14.91
		1	0	14.87	15.32	14.96
		1	7	15.06	15.61	15.34
		1	14	14.65	15.23	15.07
		8	0	13.81	14.29	14.00
		8	3	13.87	14.35	14.11
		8	7	13.71	14.25	14.04
		15	0	13.74	14.26	13.95

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				23035 CH	23095 CH	23155 CH
				701.5 MHz	707.5 MHz	713.5 MHz
12 / 5M	QPSK	1	0	16.27	16.47	16.45
		1	12	16.36	16.99	16.68
		1	24	16.36	16.54	16.66
		12	0	15.22	15.56	15.42
		12	6	15.15	15.74	15.53
		12	13	15.09	15.67	15.47
		25	0	15.06	15.60	15.35
	16QAM	1	0	15.10	15.68	15.47
		1	12	15.20	16.15	15.62
		1	24	15.20	15.76	15.62
		12	0	14.35	14.58	14.55
		12	6	14.28	14.81	14.61
		12	13	14.23	14.73	14.54
		25	0	14.15	14.56	14.40



LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				23060 CH	23095 CH	23130 CH
				704 MHz	707.5 MHz	711 MHz
12 / 10M	QPSK	1	0	16.53	16.54	16.99
		1	24	16.63	17.05	16.85
		1	49	16.60	16.34	16.66
		25	0	15.13	15.46	15.66
		25	12	15.36	15.73	15.55
		25	25	15.37	15.44	15.20
		50	0	15.21	15.45	15.37
	16QAM	1	0	15.38	15.48	15.71
		1	24	15.54	15.97	15.66
		1	49	15.55	15.30	15.31
		25	0	14.26	14.49	14.65
		25	12	14.46	14.71	14.63
		25	25	14.43	14.48	14.27
		50	0	14.25	14.50	14.43

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				23755 CH	23790 CH	23825 CH
				706.5 MHz	710.0 MHz	713.5 MHz
17 / 5M	QPSK	1	0	16.17	16.71	16.42
		1	12	16.81	16.76	16.69
		1	24	16.62	16.38	16.67
		12	0	15.70	16.01	15.98
		12	6	15.97	15.95	15.95
		12	13	15.95	15.82	15.89
		25	0	15.77	15.84	15.85
	16QAM	1	0	15.64	15.97	15.75
		1	12	16.16	16.05	15.93
		1	24	15.97	15.75	15.82
		12	0	14.88	15.12	14.98
		12	6	15.14	15.07	14.98
		12	13	15.12	14.97	14.92
		25	0	14.90	14.92	14.84

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				23780 CH	23790 CH	23800 CH
				709.0 MHz	710.0 MHz	711.0 MHz
17 / 10M	QPSK	1	0	16.53	16.68	16.81
		1	24	16.78	16.80	16.69
		1	49	16.36	16.62	16.61
		25	0	15.92	16.03	16.02
		25	12	16.03	15.99	15.96
		25	25	15.69	15.74	15.69
		50	0	15.82	15.81	15.73
	16QAM	1	0	15.87	16.00	15.92
		1	24	16.09	16.08	15.82
		1	49	15.61	15.81	15.60
		25	0	14.95	15.06	15.05
		25	12	15.06	15.03	15.02
		25	25	14.73	14.71	14.66
		50	0	14.89	14.88	14.77

**EIRP Power:**

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				37775 CH	38000 CH	38225 CH
				2572.5 MHz	2595 MHz	2617.5 MHz
38 / 5M	QPSK	1	0	24.92	25.27	25.48
		1	12	25.01	25.28	25.48
		1	24	25.01	25.16	25.44
		12	0	24.18	24.49	24.60
		12	6	24.25	24.56	24.66
		12	13	24.16	24.43	24.58
		25	0	24.12	24.43	24.55
	16QAM	1	0	24.12	24.85	24.83
		1	12	24.32	24.87	24.83
		1	24	24.22	24.76	24.79
		12	0	24.13	24.44	24.52
		12	6	24.20	24.51	24.57
		12	13	24.12	24.39	24.49
		25	0	24.11	24.34	24.51

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				37800 CH	38000 CH	38200 CH
				2575 MHz	2595 MHz	2615 MHz
38 / 10M	QPSK	1	0	24.92	25.34	25.39
		1	24	25.29	25.53	25.64
		1	49	25.14	25.15	25.33
		25	0	24.19	24.49	24.53
		25	12	24.33	24.50	24.59
		25	25	24.30	24.36	24.50
		50	0	24.26	24.38	24.54
	16QAM	1	0	24.40	24.60	24.78
		1	24	24.70	24.81	25.05
		1	49	24.55	24.41	24.74
		25	0	24.20	24.43	24.57
		25	12	24.34	24.44	24.63
		25	25	24.31	24.29	24.54
		50	0	24.24	24.31	24.52

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				37825 CH	38000 CH	38175 CH
				2577.5 MHz	2595 MHz	2612.5 MHz
38 / 15M	QPSK	1	0	24.86	25.14	25.16
		1	37	25.37	25.31	25.39
		1	74	25.09	24.96	25.18
		36	0	24.27	24.48	24.44
		36	19	24.44	24.52	24.58
		36	39	24.37	24.36	24.44
		75	0	24.30	24.41	24.44
	16QAM	1	0	24.24	24.50	24.21
		1	37	24.78	24.66	24.42
		1	74	24.42	24.31	24.20
		36	0	24.22	24.41	24.40
		36	19	24.39	24.46	24.53
		36	39	24.32	24.29	24.38
		75	0	24.29	24.34	24.39

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				37850 CH	38000 CH	38150 CH
				2580 MHz	2595 MHz	2610 MHz
38 / 20M	QPSK	1	0	25.07	25.54	25.55
		1	50	25.61	25.69	25.77
		1	99	25.30	25.38	25.64
		50	0	24.45	24.71	24.63
		50	25	24.55	24.56	24.67
		50	50	24.55	24.53	24.65
		100	0	24.53	24.59	24.61
	16QAM	1	0	24.56	24.77	24.77
		1	50	25.08	24.92	24.97
		1	99	24.78	24.58	24.86
		50	0	24.37	24.56	24.61
		50	25	24.46	24.44	24.65
		50	50	24.46	24.38	24.63
		100	0	24.49	24.47	24.55

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				40165 CH	40690 CH	41215 CH
				2547.5 MHz	2600 MHz	2652.5 MHz
41 / 5M	QPSK	1	0	24.99	25.35	25.20
		1	12	25.01	25.28	25.15
		1	24	24.98	25.26	25.13
		12	0	24.37	24.59	24.50
		12	6	24.36	24.60	24.49
		12	13	24.26	24.41	24.46
		25	0	24.24	24.43	24.39
	16QAM	1	0	24.37	24.81	24.63
		1	12	24.40	24.73	24.58
		1	24	24.35	24.69	24.57
		12	0	24.32	24.55	24.45
		12	6	24.31	24.54	24.45
		12	13	24.20	24.36	24.27
		25	0	24.25	24.44	24.39

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				40190 CH	40690 CH	41190 CH
				2550 MHz	2600 MHz	2650 MHz
41 / 10M	QPSK	1	0	25.03	25.45	25.37
		1	24	24.99	25.29	25.36
		1	49	25.04	25.32	25.18
		25	0	24.30	24.58	24.52
		25	12	24.24	24.47	24.52
		25	25	24.17	24.44	24.39
		50	0	24.20	24.45	24.61
	16QAM	1	0	24.42	24.91	24.82
		1	24	24.38	24.74	24.72
		1	49	24.45	24.77	24.63
		25	0	24.31	24.60	24.52
		25	12	24.25	24.48	24.52
		25	25	24.18	24.45	24.38
		50	0	24.14	24.41	24.53

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				40215 CH	40690 CH	41165 CH
				2552.5 MHz	2600 MHz	2647.5 MHz
41 / 15M	QPSK	1	0	24.83	25.27	25.24
		1	37	25.03	25.32	25.36
		1	74	25.02	25.33	25.10
		36	0	24.31	24.64	24.62
		36	19	24.32	24.61	24.62
		36	39	24.28	24.52	24.54
		75	0	24.26	24.51	24.70
	16QAM	1	0	24.21	24.72	24.68
		1	37	24.40	24.77	24.81
		1	74	24.42	24.67	24.55
		36	0	24.31	24.62	24.61
		36	19	24.31	24.60	24.59
		36	39	24.27	24.50	24.51
		75	0	24.18	24.42	24.61

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				40240 CH	40690 CH	41140 CH
				2555 MHz	2600 MHz	2645 MHz
41 / 20M	QPSK	1	0	25.16	25.61	25.59
		1	50	25.08	25.31	25.41
		1	99	25.43	25.55	25.25
		50	0	24.43	24.75	24.83
		50	25	24.37	24.56	24.64
		50	50	24.40	24.61	24.60
		100	0	24.38	24.62	24.75
	16QAM	1	0	24.53	25.07	25.02
		1	50	24.45	24.76	24.86
		1	99	24.82	24.90	24.69
		50	0	24.31	24.67	24.75
		50	25	24.31	24.49	24.57
		50	50	24.32	24.53	24.52
		100	0	24.29	24.53	24.66

## APPENDIX B - OCCUPIED BANDWIDTH

LTE Band 4_1.4M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
19957	1710.7	1.1018	19957	1710.7	1.1030
20175	1732.5	1.1014	20175	1732.5	1.0951
20393	1754.3	1.1058	20393	1754.3	1.1044
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
19957	1710.7	1.273	19957	1710.7	1.269
20175	1732.5	1.245	20175	1732.5	1.238
20393	1754.3	1.477	20393	1754.3	1.395

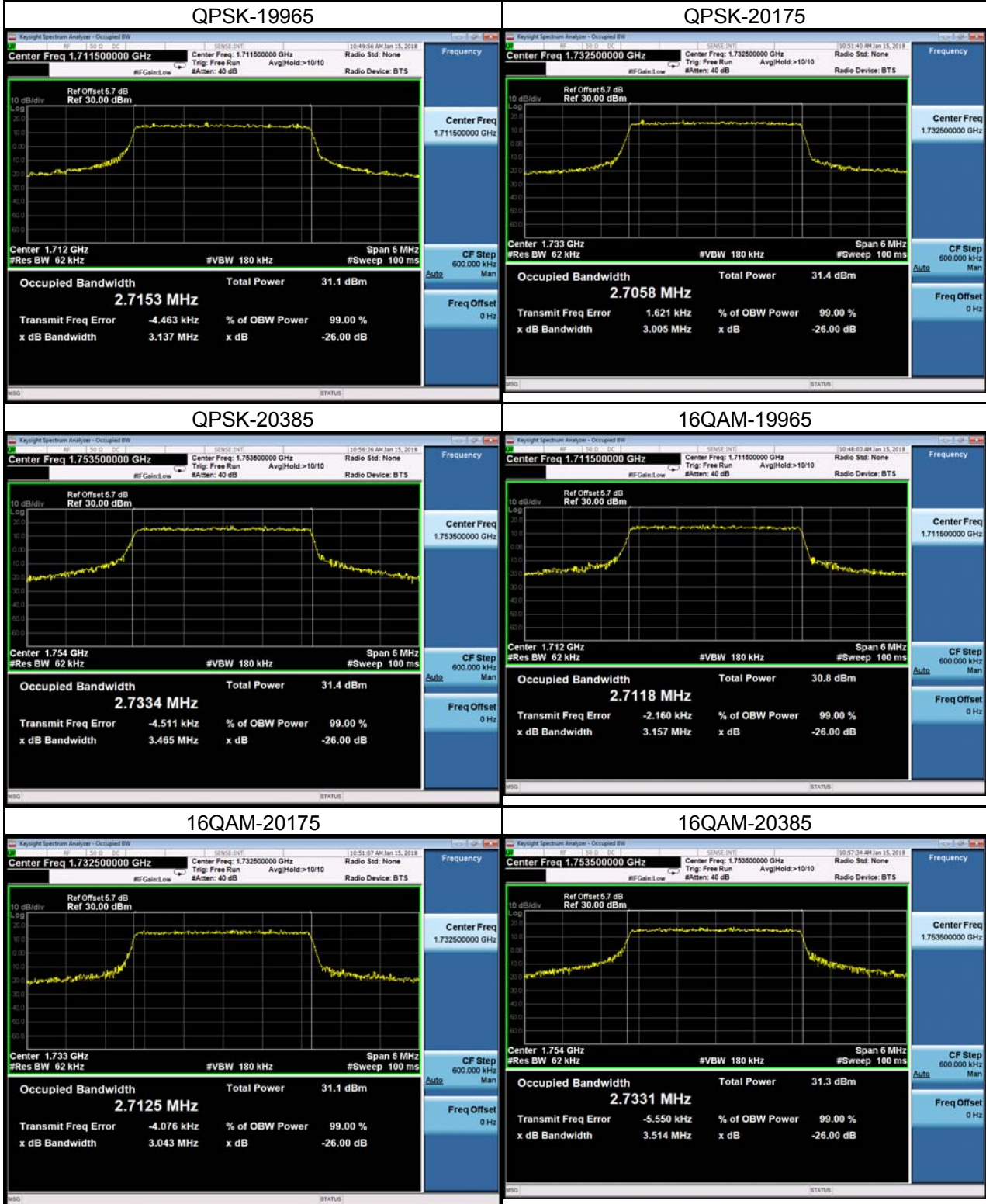


### Spectrum Plot



LTE Band 4_3M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
19965	1711.5	2.7153	19965	1711.5	2.7118
20175	1732.5	2.7058	20175	1732.5	2.7125
20385	1753.5	2.7334	20385	1753.5	2.7331
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
19965	1711.5	3.137	19965	1711.5	3.157
20175	1732.5	3.005	20175	1732.5	3.043
20385	1753.5	3.465	20385	1753.5	3.514

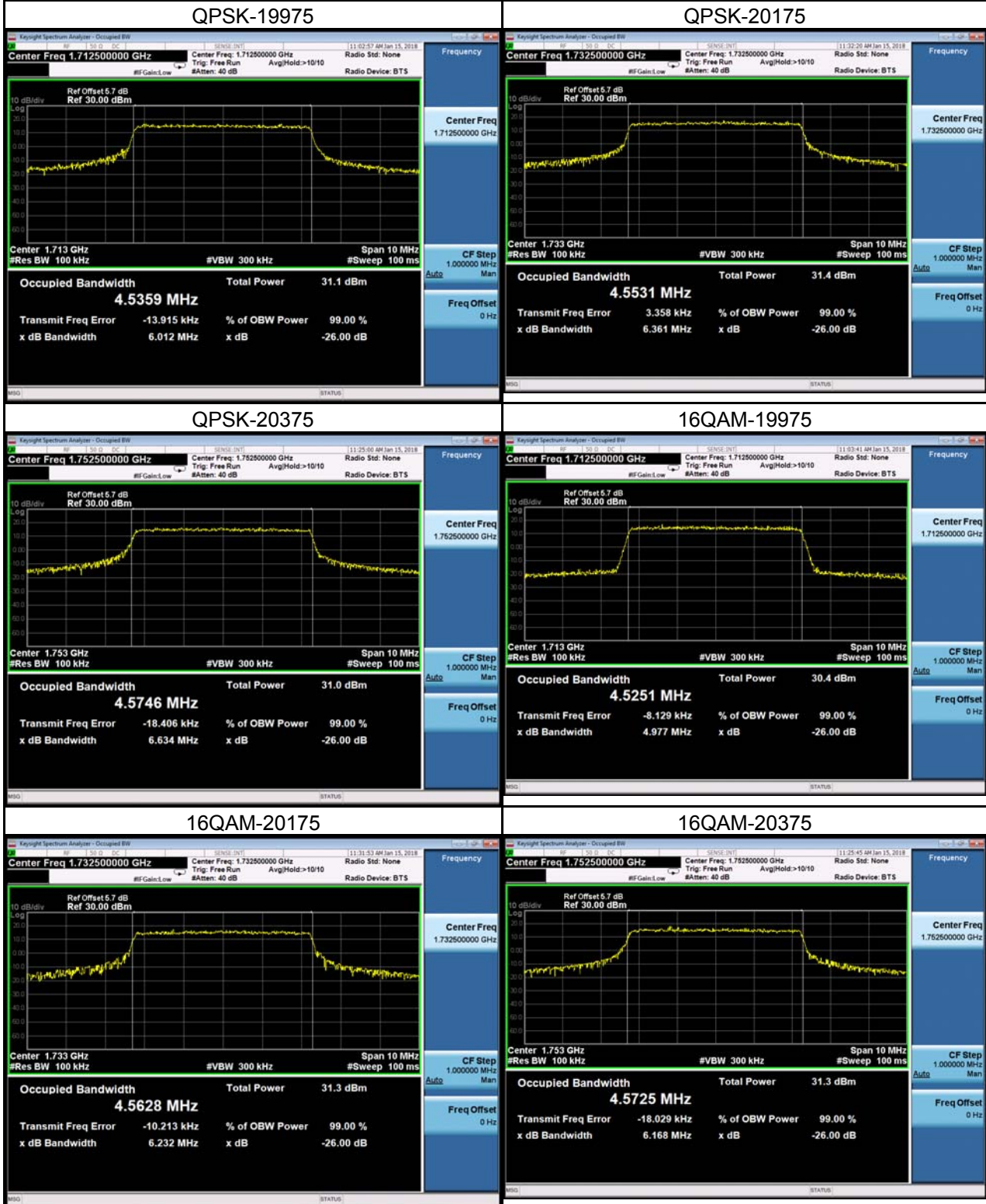
### Spectrum Plot



LTE Band 4_5M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
19975	1712.5	4.5359	19975	1712.5	4.5251
20175	1732.5	4.5531	20175	1732.5	4.5628
20375	1752.5	4.5746	20375	1752.5	4.5725
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
19975	1712.5	6.012	19975	1712.5	4.977
20175	1732.5	6.361	20175	1732.5	6.232
20375	1752.5	6.634	20375	1752.5	6.618



### Spectrum Plot



LTE Band 4_10M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20000	1715	9.0322	20000	1715	9.0201
20175	1732.5	8.9778	20175	1732.5	8.9552
20350	1750	8.9984	20350	1750	8.9925
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20000	1715	10.14	20000	1715	9.970
20175	1732.5	9.861	20175	1732.5	9.902
20350	1750	9.949	20350	1750	9.908

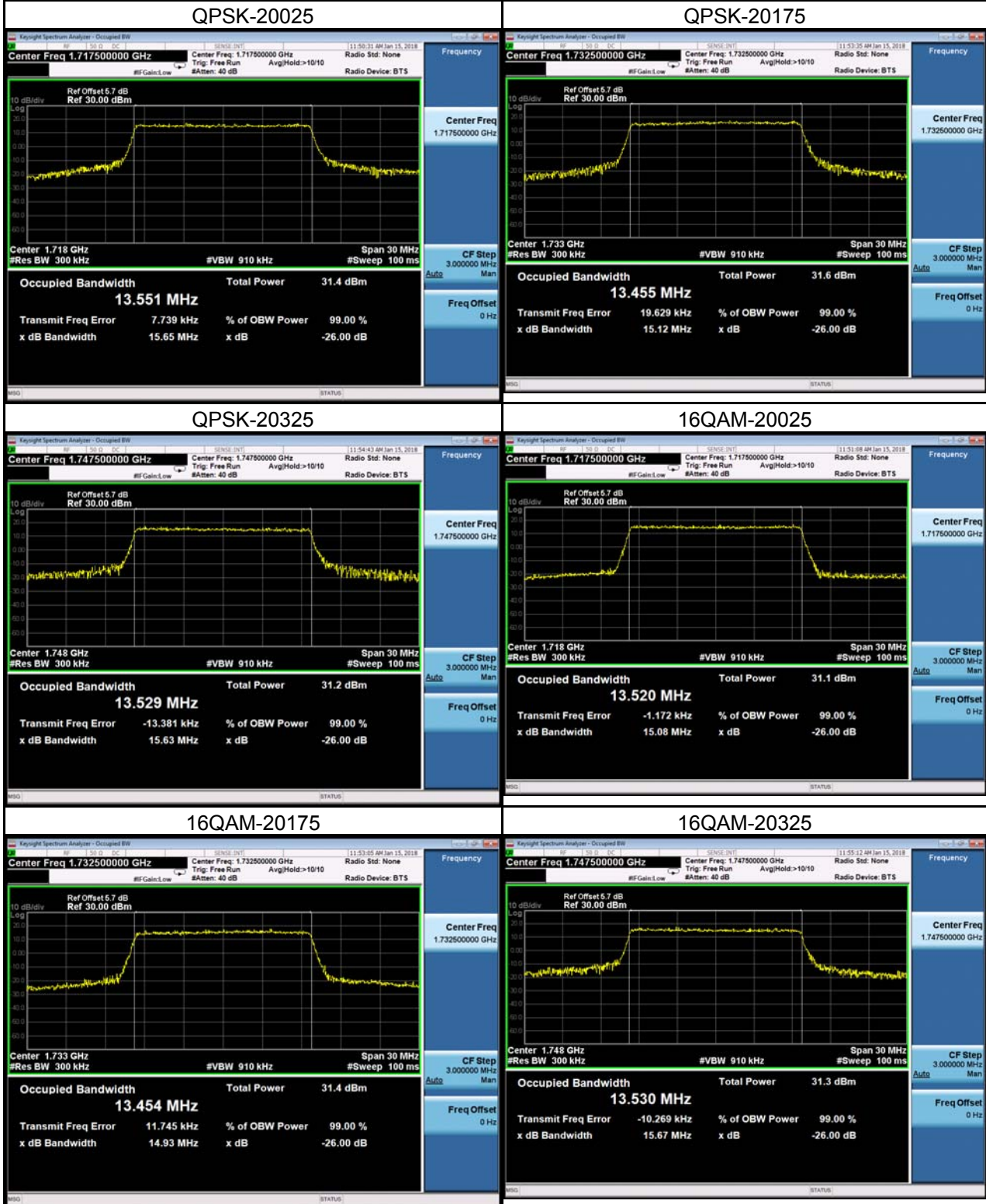
### Spectrum Plot



LTE Band 4_15M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20025	1717.5	13.551	20025	1717.5	13.520
20175	1732.5	13.455	20175	1732.5	13.454
20325	1747.5	13.529	20325	1747.5	13.530
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20025	1717.5	15.65	20025	1717.5	15.08
20175	1732.5	15.12	20175	1732.5	14.93
20325	1747.5	15.63	20325	1747.5	15.67

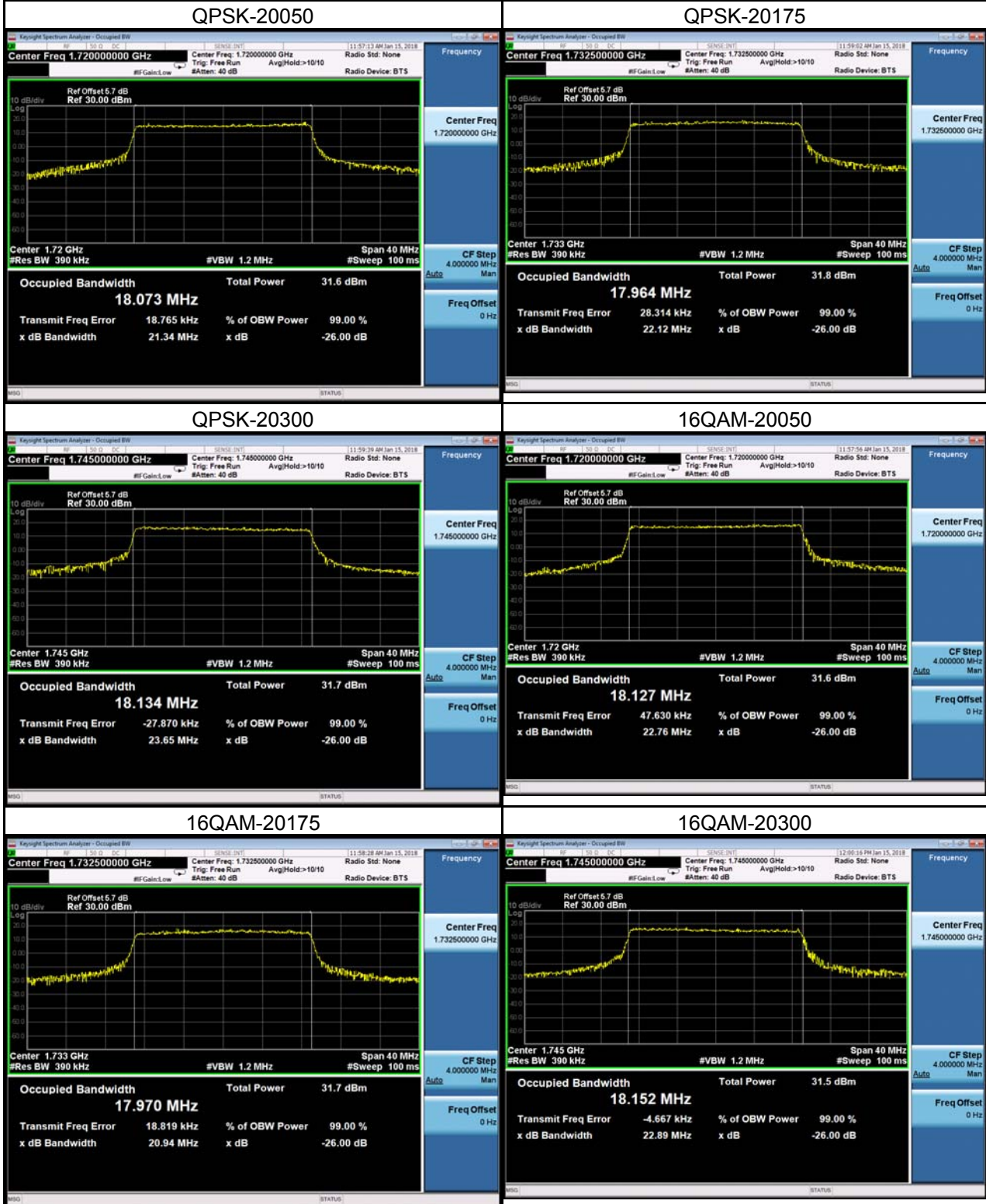


### Spectrum Plot



LTE Band 4_20M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20050	1720	18.073	20050	1720	18.127
20175	1732.5	17.964	20175	1732.5	17.970
20300	1745	18.134	20300	1745	18.152
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20050	1720	21.34	20050	1720	22.76
20175	1732.5	22.12	20175	1732.5	20.94
20300	1745	23.65	20300	1745	22.89

### Spectrum Plot



LTE Band 7_5M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20775	2502.5	4.5031	20775	2502.5	4.5109
21100	2535	4.5096	21100	2535	4.4963
21425	2567.5	4.4987	21425	2567.5	4.5025
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20775	2502.5	4.905	20775	2502.5	4.922
21100	2535	4.979	21100	2535	4.916
21425	2567.5	4.925	21425	2567.5	4.954

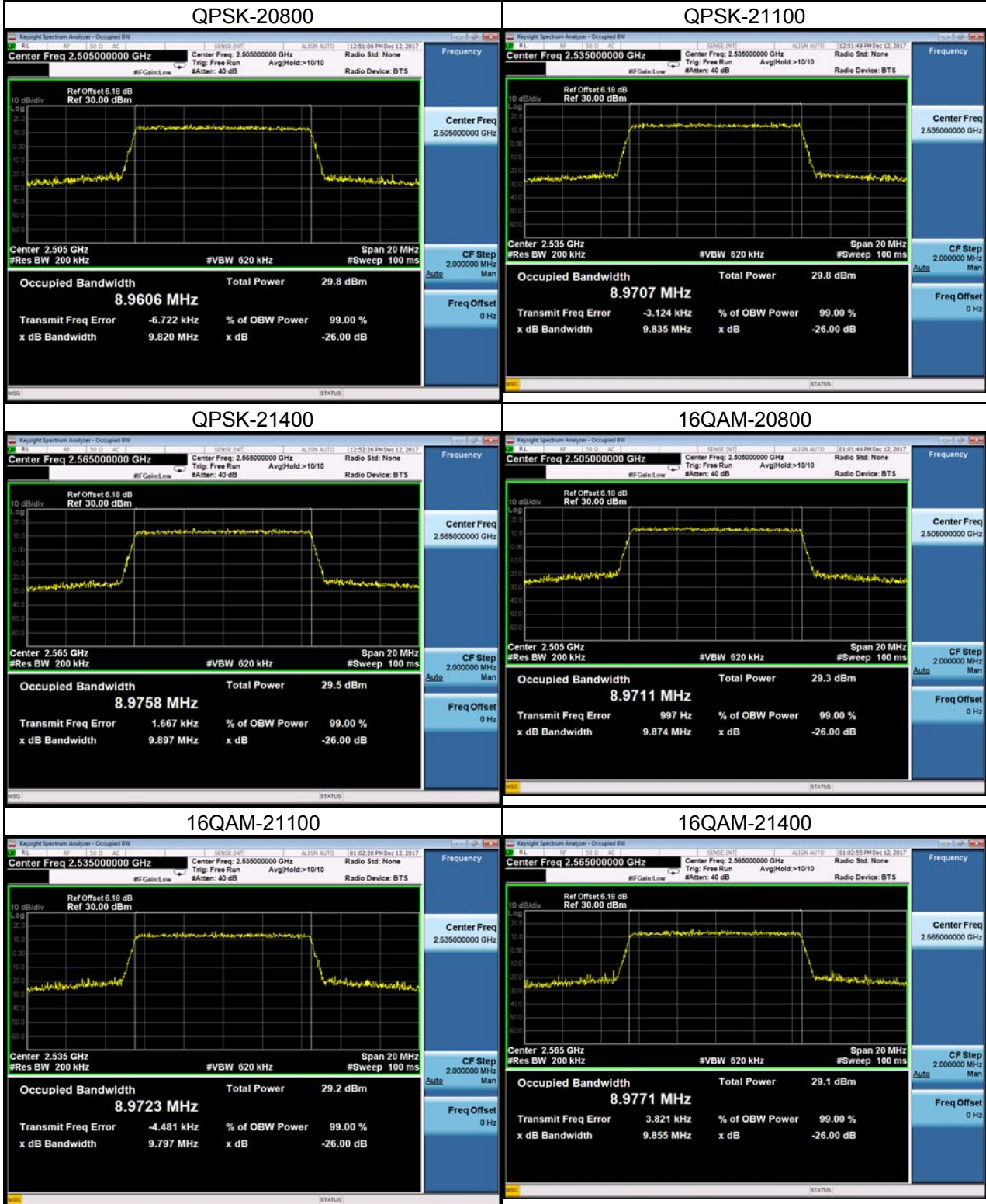


### Spectrum Plot



LTE Band 7_10M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20800	2505	8.9606	20800	2505	8.9711
21100	2535	8.9707	21100	2535	8.9723
21400	2565	8.9758	21400	2565	8.9771
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20800	2505	9.820	20800	2505	9.874
21100	2535	9.835	21100	2535	9.797
21400	2565	9.897	21400	2565	9.855

### Spectrum Plot



LTE Band 7_15M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20825	2507.5	13.480	20825	2507.5	13.470
21100	2535	13.468	21100	2535	13.458
21375	2562.5	13.453	21375	2562.5	13.484
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20825	2507.5	14.88	20825	2507.5	14.84
21100	2535	14.90	21100	2535	14.92
21375	2562.5	14.78	21375	2562.5	14.99



### Spectrum Plot



LTE Band 7_20M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20850	2510	17.960	20850	2510	17.995
21100	2535	17.937	21100	2535	17.930
21350	2560	17.986	21350	2560	18.004
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20850	2510	19.76	20850	2510	19.84
21100	2535	19.75	21100	2535	19.59
21350	2560	19.75	21350	2560	19.58

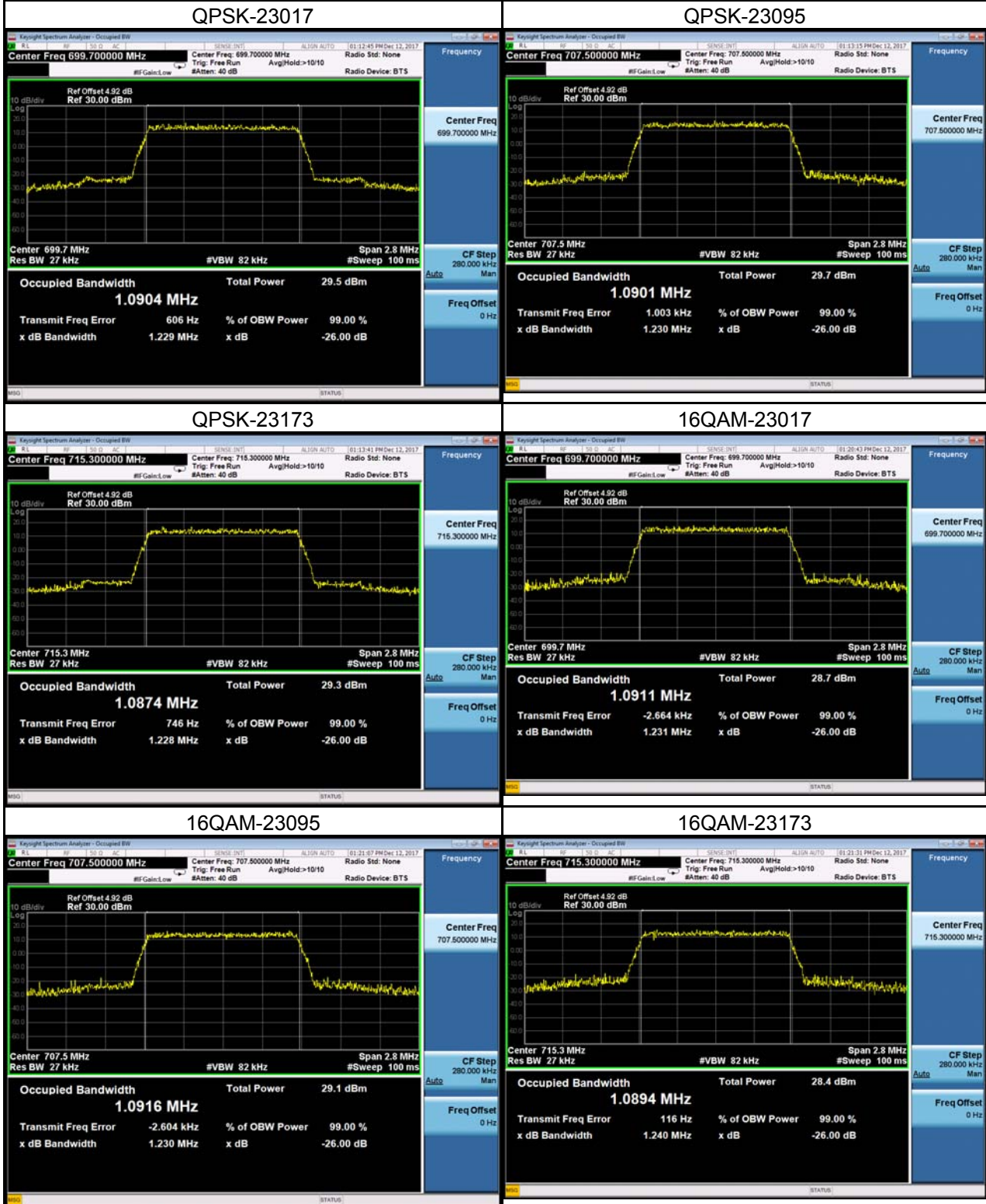
### Spectrum Plot



LTE Band 12_1.4M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
23017	699.7	1.0904	23017	699.7	1.0911
23095	707.5	1.0901	23095	707.5	1.0916
23173	715.3	1.0874	23173	715.3	1.0894
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
23017	699.7	1.229	23017	699.7	1.231
23095	707.5	1.230	23095	707.5	1.230
23173	715.3	1.228	23173	715.3	1.240

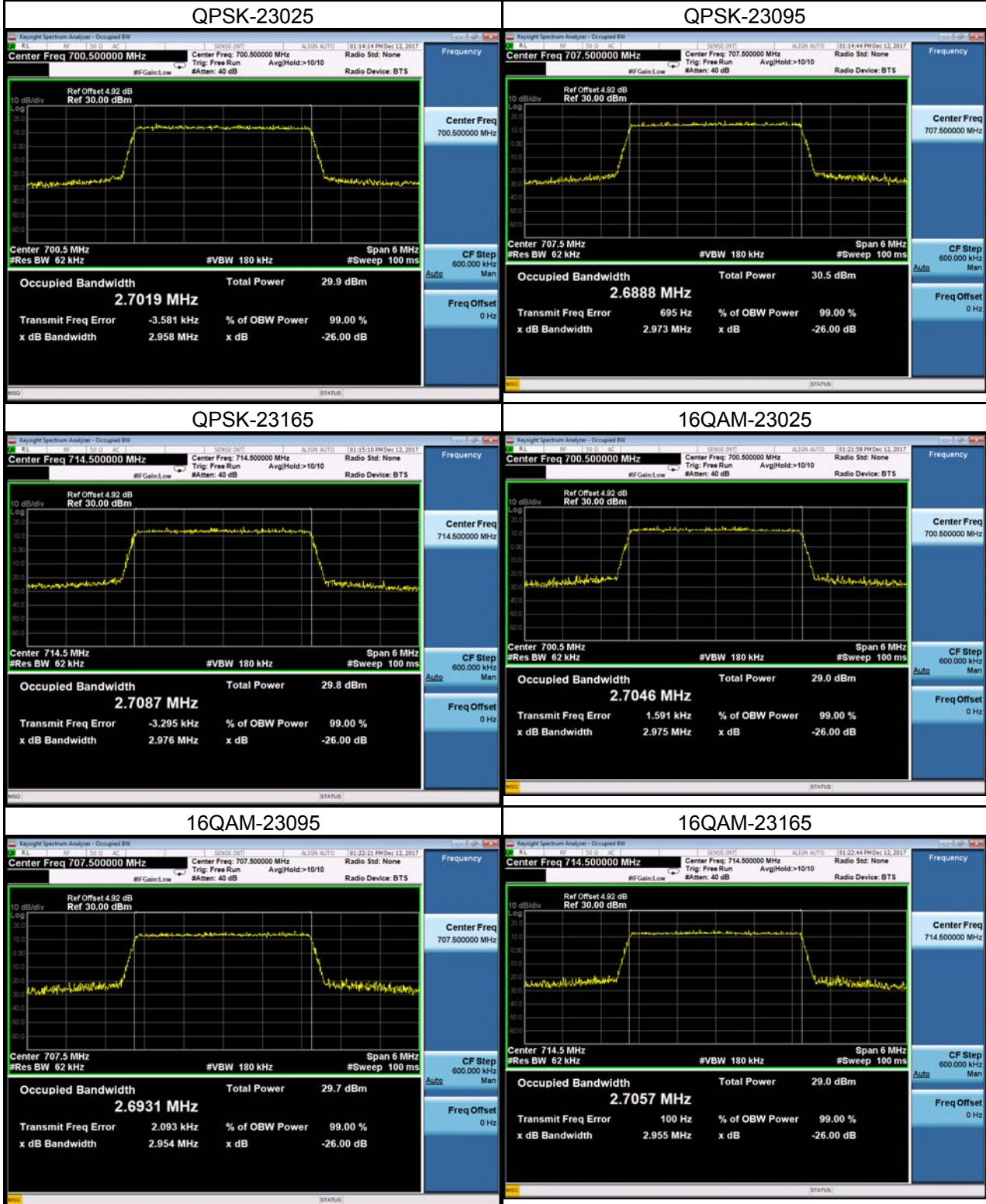


### Spectrum Plot



LTE Band 12_3M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
23025	700.5	2.7019	23025	700.5	2.7046
23095	707.5	2.6888	23095	707.5	2.6931
23165	714.5	2.7087	23165	714.5	2.7057
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
23025	700.5	2.958	23025	700.5	2.975
23095	707.5	2.973	23095	707.5	2.954
23165	714.5	2.976	23165	714.5	2.955

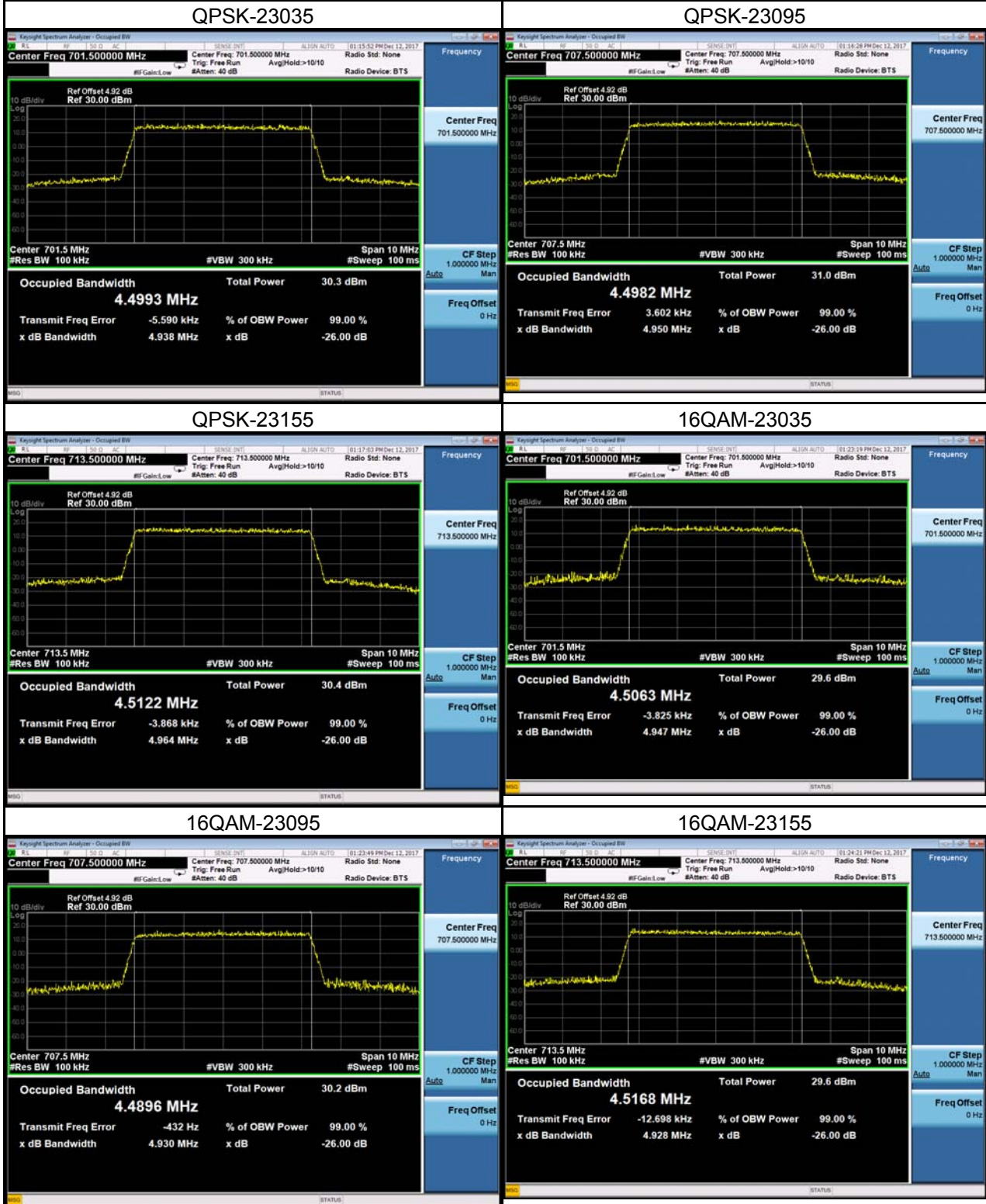
### Spectrum Plot



LTE Band 12_5M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
23035	701.5	4.4993	23035	701.5	4.5063
23095	707.5	4.4982	23095	707.5	4.4896
23155	713.5	4.5122	23155	713.5	4.5168
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
23035	701.5	4.938	23035	701.5	4.947
23095	707.5	4.950	23095	707.5	4.930
23155	713.5	4.964	23155	713.5	4.928

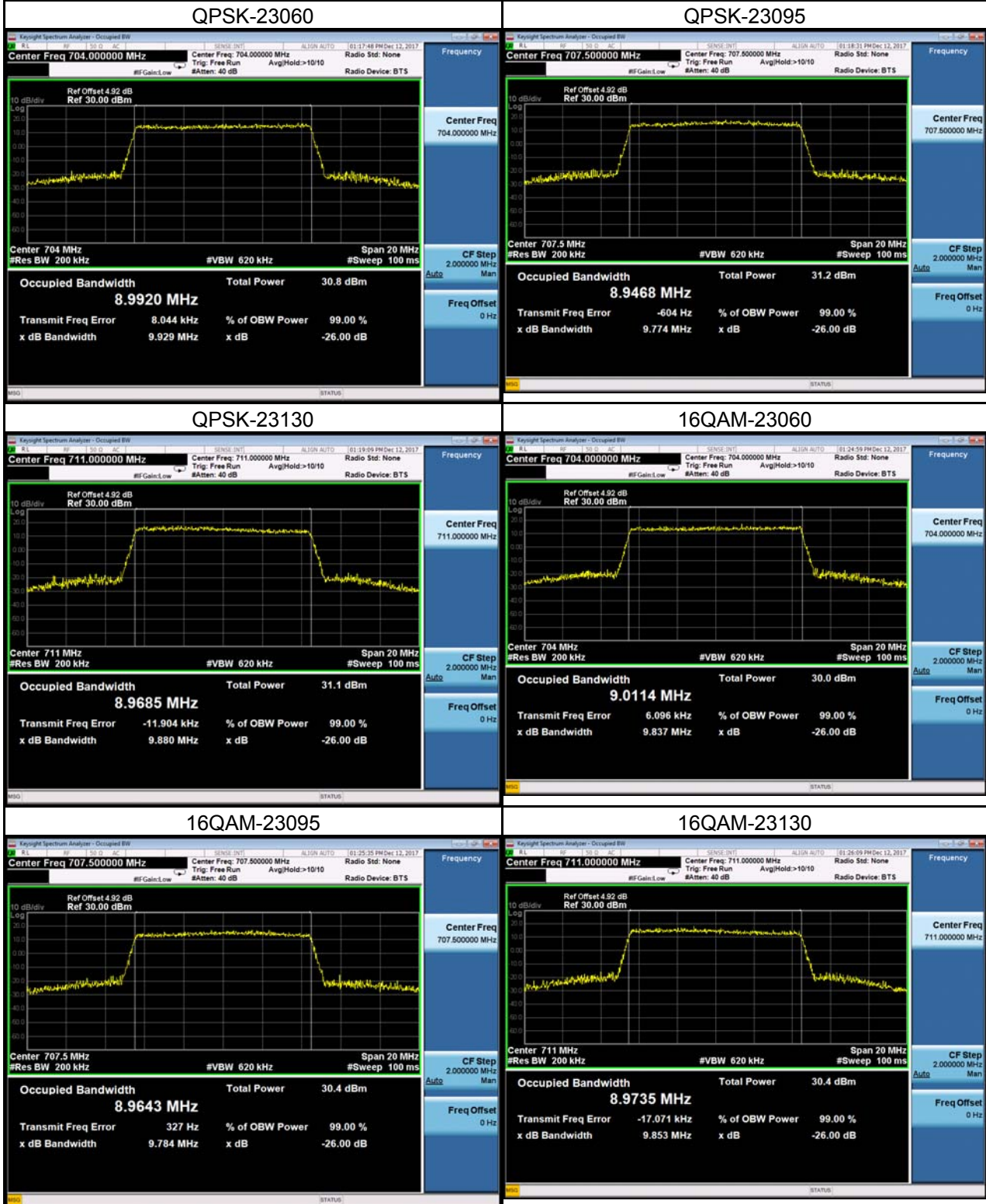


### Spectrum Plot



LTE Band 12_10M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
23060	704.0	8.9920	23060	704.0	9.0114
23095	707.5	8.9468	23095	707.5	8.9643
23130	711.0	8.9685	23130	711.0	8.9735
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
23060	704.0	9.929	23060	704.0	9.837
23095	707.5	9.774	23095	707.5	9.784
23130	711.0	9.880	23130	711.0	9.853

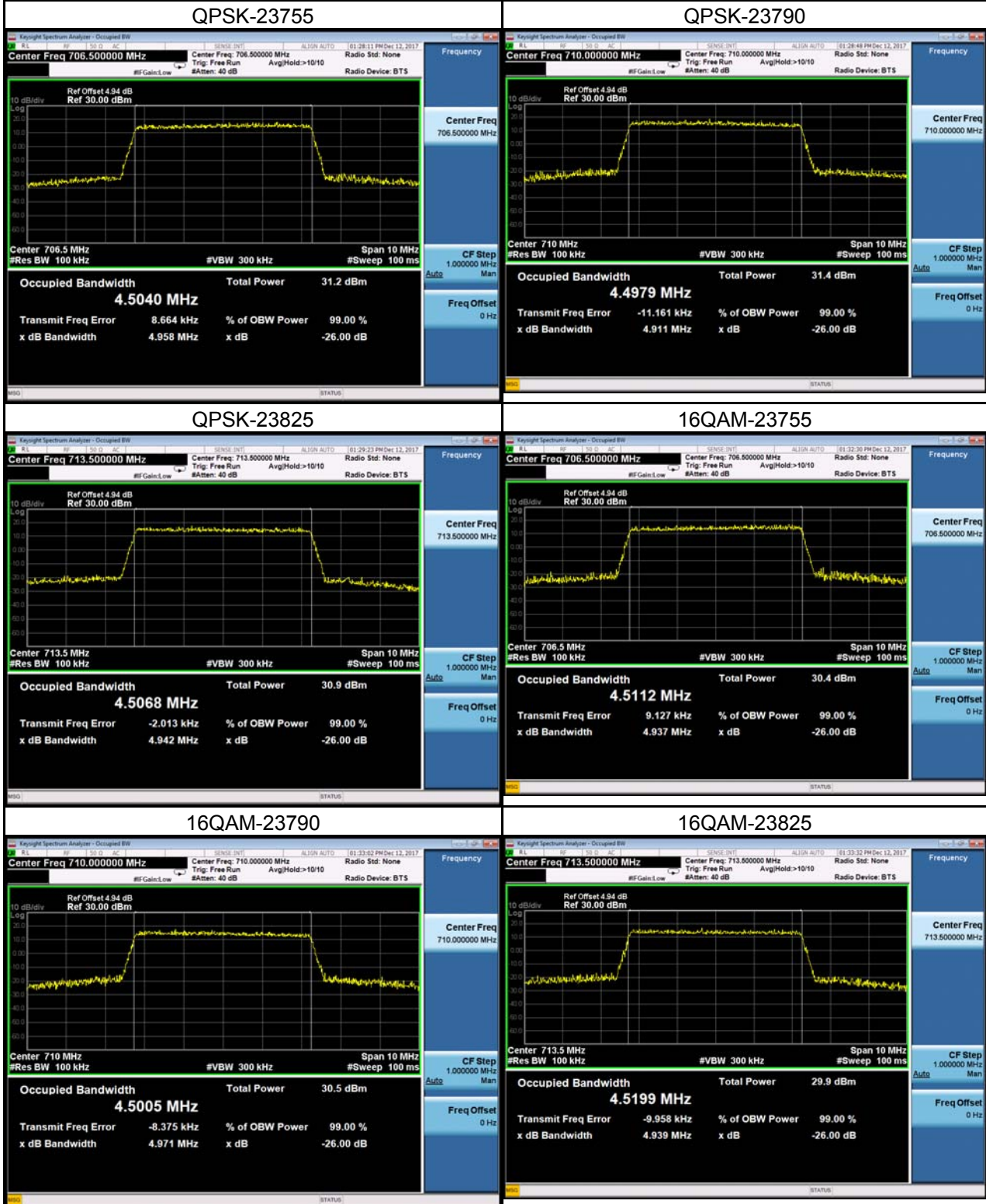
### Spectrum Plot



LTE Band 17_5M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
23755	706.5	4.5040	23755	706.5	4.5112
23790	710.0	4.4979	23790	710.0	4.5005
23825	713.5	4.5068	23825	713.5	4.5199
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
23755	706.5	4.958	23755	706.5	4.937
23790	710.0	4.911	23790	710.0	4.971
23825	713.5	4.942	23825	713.5	4.939

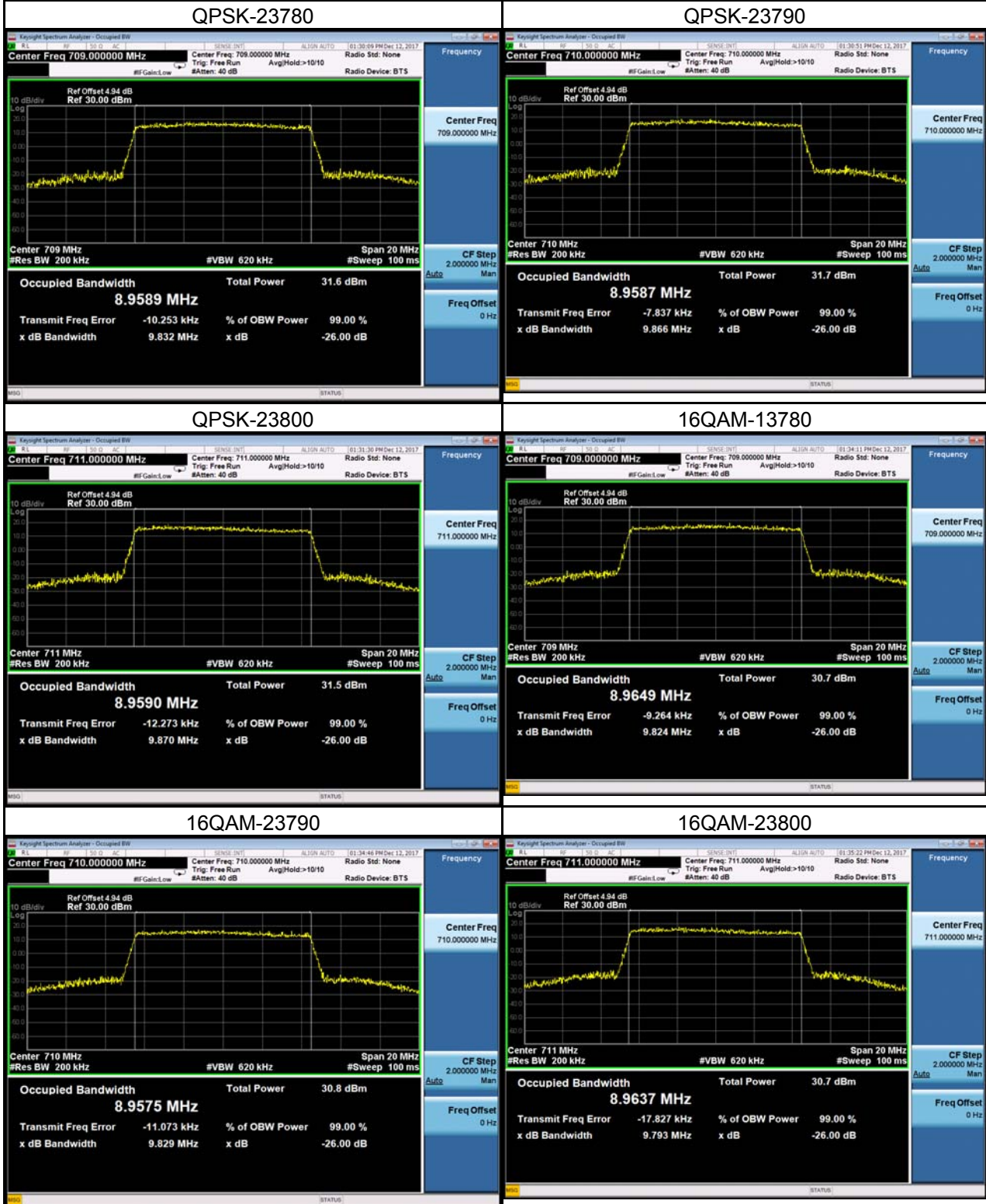


### Spectrum Plot



LTE Band 17_10M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
23780	709.0	8.9589	23780	709.0	8.9649
23790	710.0	8.9587	23790	710.0	8.9575
23800	711.0	8.9590	23800	711.0	8.9637
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
23780	709.0	9.832	23780	709.0	9.824
23790	710.0	9.866	23790	710.0	9.829
23800	711.0	9.870	23800	711.0	9.793

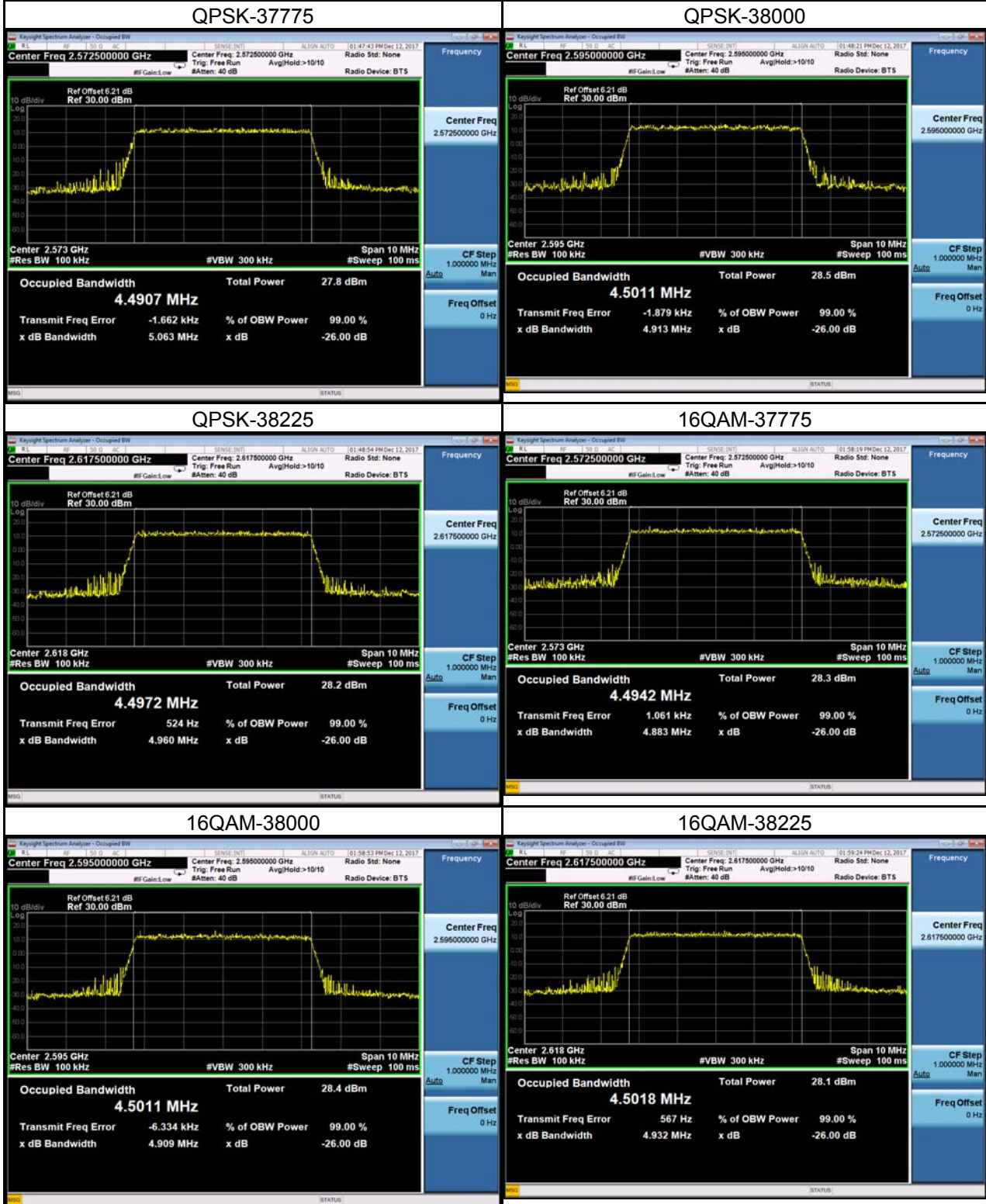
### Spectrum Plot



LTE Band 38_5M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
37775	2472.5	4.4907	37775	2472.5	4.4942
38000	2595	4.5011	38000	2595	4.5011
38225	2617.5	4.4972	38225	2617.5	4.5018
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
37775	2472.5	5.063	37775	2472.5	4.883
38000	2595	4.913	38000	2595	4.909
38225	2617.5	4.960	38225	2617.5	4.932

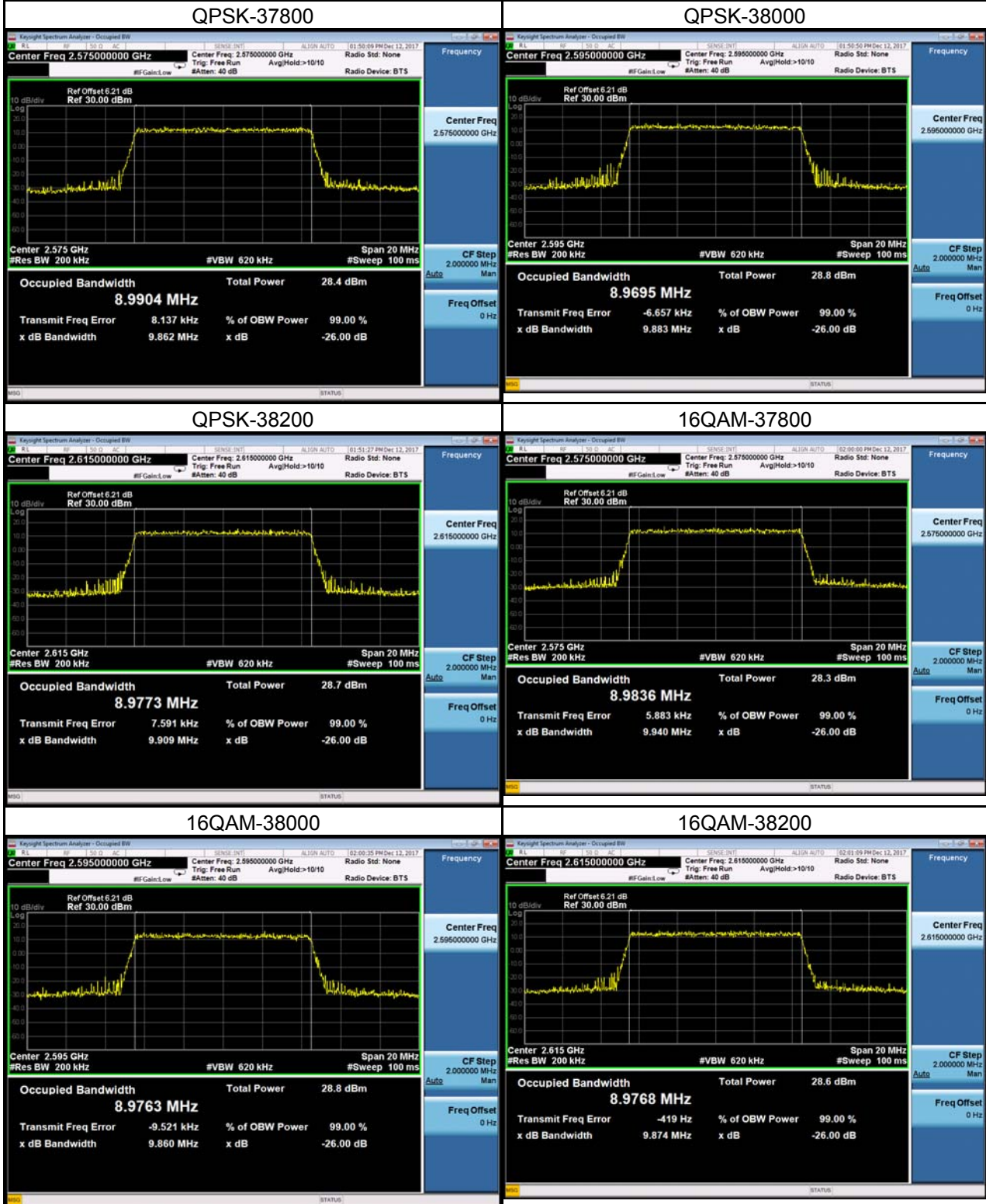


### Spectrum Plot



LTE Band 38_10M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
37800	2575	8.9904	37800	2575	8.9836
38000	2595	8.9695	38000	2595	8.9763
38200	2615	8.9773	38200	2615	8.9768
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
37800	2575	9.862	37800	2575	9.940
38000	2595	9.883	38000	2595	9.860
38200	2615	9.909	38200	2615	9.874

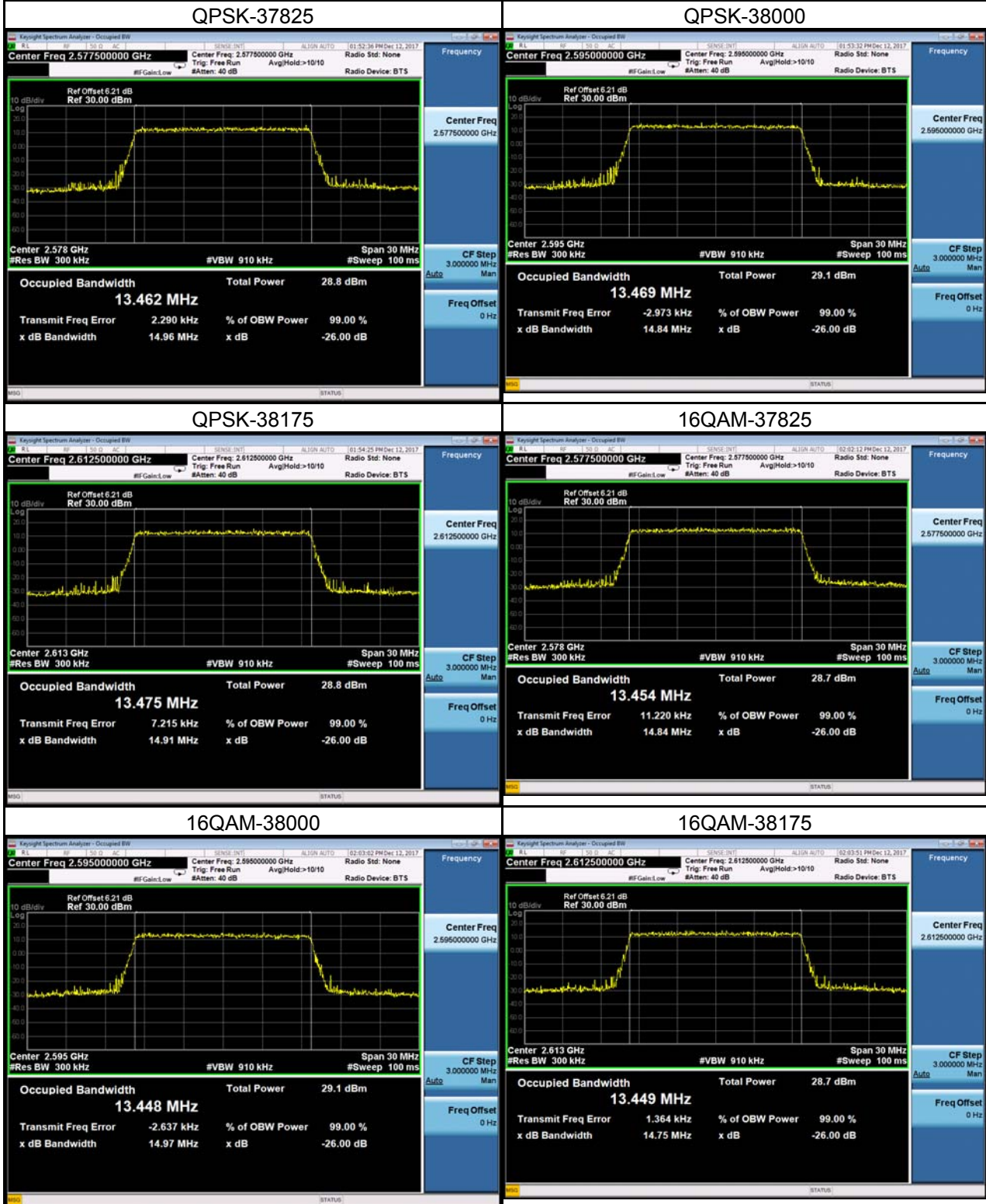
### Spectrum Plot



LTE Band 38_15M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
37825	2577.5	13.462	37825	2577.5	13.454
38000	2595	13.469	38000	2595	13.448
38175	2612.5	13.475	38175	2612.5	13.449
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
37825	2577.5	14.96	37825	2577.5	14.84
38000	2595	14.84	38000	2595	14.97
38175	2612.5	14.91	38175	2612.5	14.75

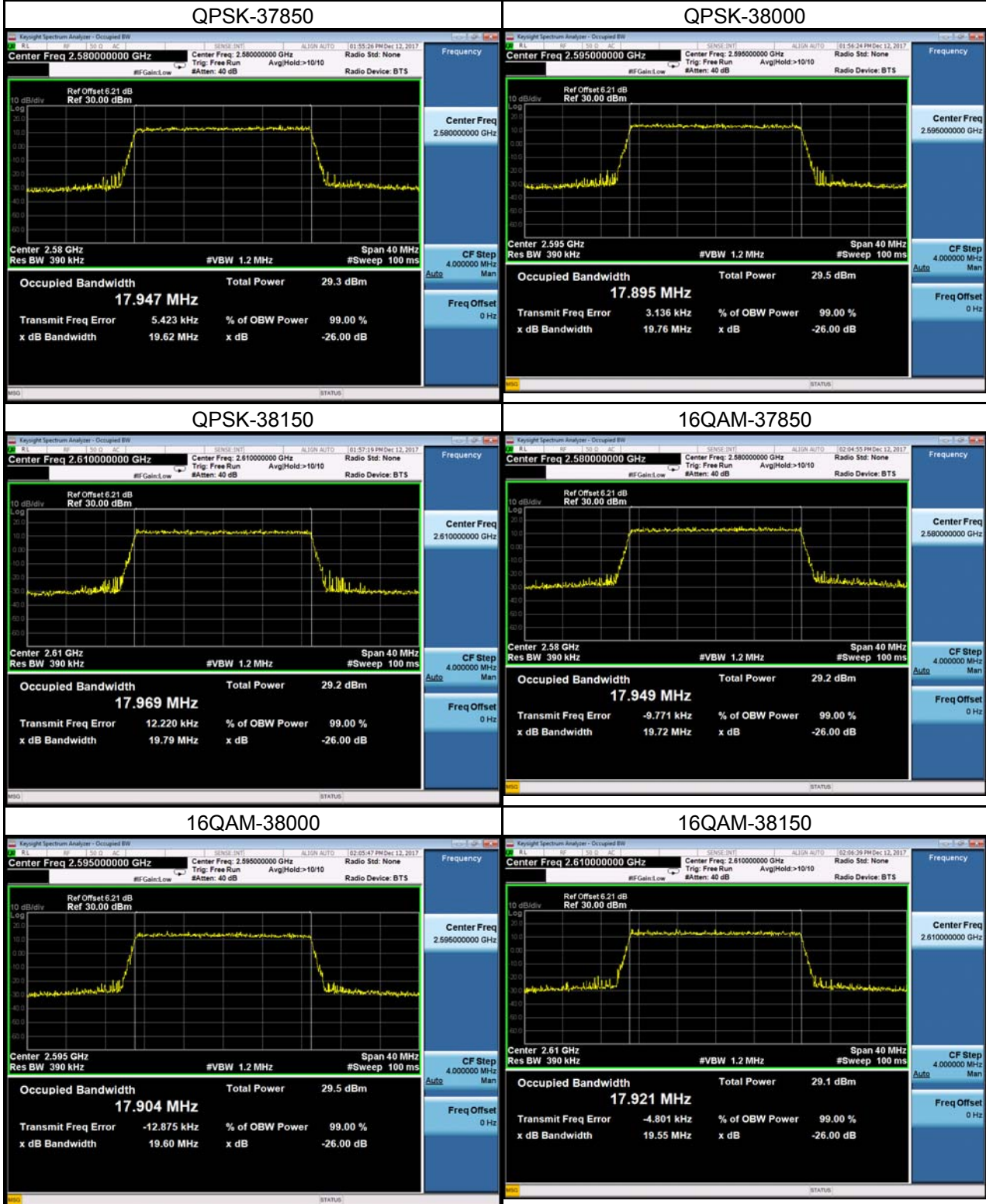


### Spectrum Plot



LTE Band 38_20M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
37850	2580	17.947	37850	2580	17.949
38000	2595	17.895	38000	2595	17.904
38150	2610	17.969	38150	2610	17.921
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
37850	2580	19.62	37850	2580	19.72
38000	2595	19.76	38000	2595	19.60
38150	2610	19.79	38150	2610	19.55

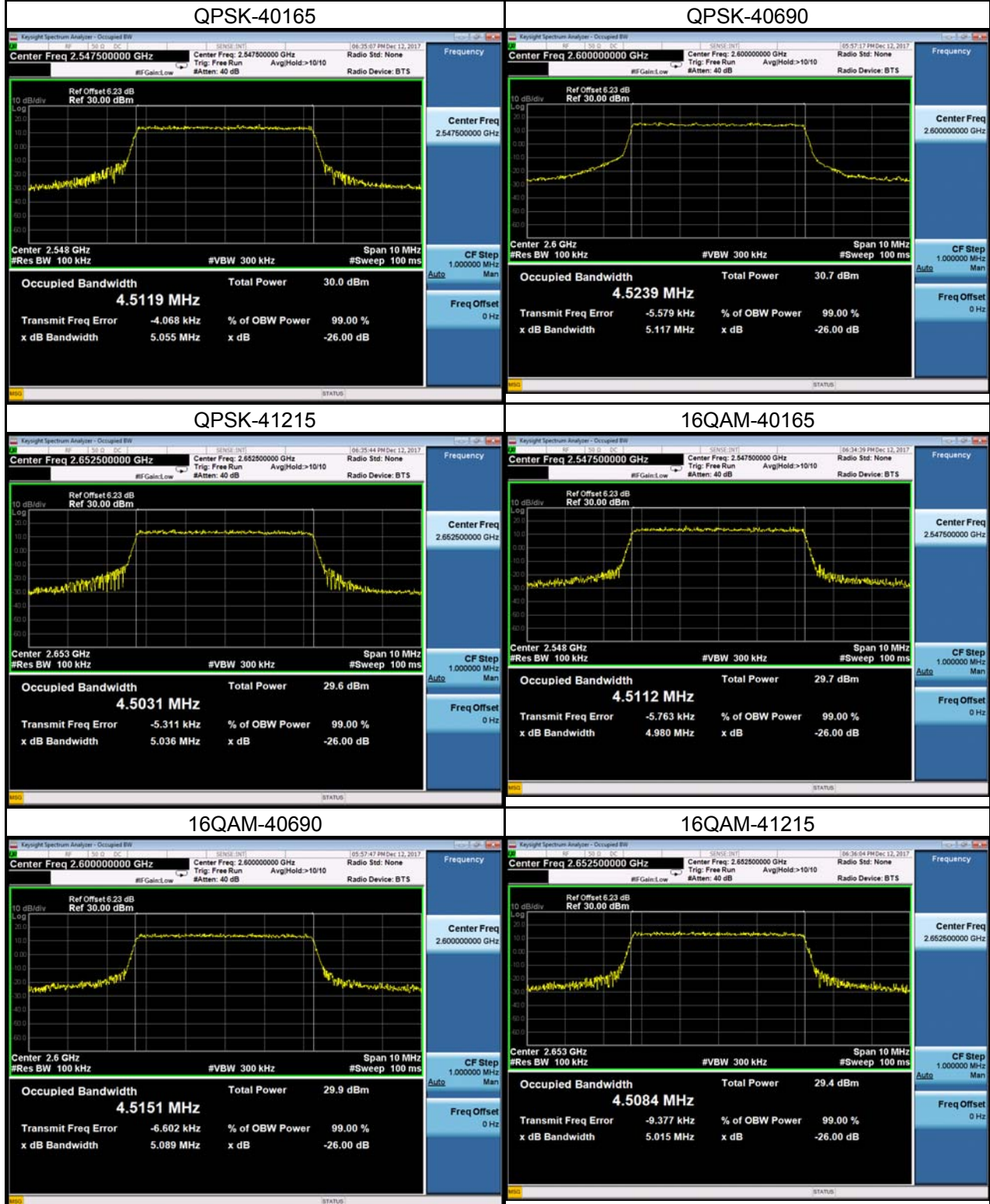
### Spectrum Plot



LTE Band 41_5M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
40165	2547.5	4.5119	40165	2547.5	4.5112
40690	2600	4.5239	40690	2600	4.5151
41215	2652.5	4.5031	41215	2652.5	4.5084
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
40165	2547.5	5.055	40165	2547.5	4.980
40690	2600	5.117	40690	2600	5.089
41215	2652.5	5.036	41215	2652.5	5.015



### Spectrum Plot



LTE Band 41_10M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
40190	2550	8.9831	40190	2550	8.9759
40690	2600	9.0027	40690	2600	8.9974
41190	2650	8.9807	41190	2650	9.0033
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
40190	2550	9.999	40190	2550	9.906
40690	2600	9.926	40690	2600	9.950
41190	2650	9.975	41190	2650	9.974

### Spectrum Plot

