FCC Radio Test Report

FCC ID: R9C-CPH2083

This report concerns: Original Grant

Project No.	:	2003C217
Equipment	:	Mobile Phone
Brand Name	:	OPPO
Test Model	:	CPH2083
Series Model	:	N/A
Applicant	:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address	:	NO. 18 HaiBin Road, Wusha village, Chang An Town, DongGuan City, Guangdong, China
Manufacturer	:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address	:	NO. 18 HaiBin Road, Wusha village, Chang An Town, DongGuan City, Guangdong, China
Factory	:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address	:	NO. 18 HaiBin Road, Wusha village, Chang An Town, DongGuan City, Guangdong, China
Date of Receipt	:	Mar. 27, 2020
Date of Test	:	Mar. 28, 2020 ~ Apr. 24, 2020
Issued Date	:	Apr. 29, 2020
Report Version	:	R00
Test Sample	:	Engineering Sample No.: DG2020032776 for conducted, DG2020032773 for radiated.
Standard(s)	:	47 CFR FCC Part 22 Subpart H 47 CFR FCC Part 2 ANSI/TIA/EIA-603-E-2016 FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

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

Treey Chen

Prepared by : Treey Chen

Steven Lu

Approved by : Steven Lu

Certificate #5123.02

Add: No.3, Jinshagang 1st Road, Shixia, Dalang Town,Dongguan, Guangdong, China.
Tel: +86-769-8318-3000
Web: www.newbtl.com

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

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.
Please note that the measurement uncertainty is provided for informational purpose only and is not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Apr. 29, 2020

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 22 Subpart H & Part 2			
Standard(s) Section	**Test Item**	**Judgment**	**Remark**
2.1046 22.913(a)(5)	Effective Radiated Power	PASS	------
2.1049	Occupied Bandwidth	PASS	------
2.1051 22.917(a)	Conducted Spurious Emissions	PASS	------
2.1053 22.917(a)	Radiated Spurious Emissions	PASS	------
22.917(a)	Band Edge Measurements	PASS	------
-	Peak To Average Ratio	PASS	Record Only
2.1055 22.355	Frequency Stability	PASS	------

Note:

(1) “N/A” denotes test is not applicable in this test report.

1.1 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 Registration Number for FCC: 357015
BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))
The BTL measurement uncertainty as below table:

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	4.88
		30MHz ~ 200MHz	H	4.14
		200MHz ~ 1,000MHz	V	4.62
		200MHz ~ 1,000MHz	H	4.80

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 6GHz	4.58
		6GHz ~ 18GHz	5.18

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

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
Output Power & ERP	23.1°C	45%	DC 3.85V	Laughing Zhang
Occupied Bandwidth	23.1°C	45%	DC 3.85V	Hayden Chen
Conducted Spurious Emissions	23.1°C	45%	DC 3.85V	Hayden Chen
Radiated Spurious Emissions	24°C	68%	AC 120V/60Hz	Kwok Guo
Band Edge	23.1°C	45%	DC 3.85V	Hayden Chen
Peak to Average Ratio	23.1°C	45%	DC 3.85V	Hayden Chen
Frequency Stability	Normal and Extreme			Hayden Chen

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Mobile Phone				
Brand Name	OPPO				
Test Model	CPH2083				
Series Model	N/A				
Model Difference(s)	N/A				
Hardware Version	11				
Software Version	ColorOS V6.1.2				
Power Source	1. DC Voltage supplied from AC/DC adapter. 1# Model: OP52KAUH 2# Model: OP52JAUH 3# Model: OP52YAUH 2. Supplied from Li-ion Polymer battery. Model: BLP673 3. Supplied from USB port.				
Power Rating	1. I/P:100-240V~ 50/60Hz 0.4A O/P:5V⎓2A 2. 3.85Vdc, 4100mAh/15.78Wh 3. DC 5V				
IEMI No.	Radiated	863634040130637			
	Conducted	863634040130603			
Modulation Type	GSM		GMSK		
	EDGE/GPRS		GMSK, 8PSK		
	WCDMA/HSDPA/HSUPA		UL: QPSK DL: QPSK, 16QAM		
	LTE		UL: QPSK,16QAM,64QAM DL: QPSK,16QAM,64QAM		
Max. ERP	GSM 850 / GPRS 850		GMSK	25.60	dBm
	EDGE 850		8PSK	19.28	dBm
	WCDMA Band V		QPSK	16.05	dBm
	HSDPA Band V		QPSK	15.03	dBm
	HSUPA Band V		QPSK	16.04	dBm
	LTE	Channel Bandwidth (MHz)	QPSK (dBm)	16QAM (dBm)	64QAM (dBm)
	Band 5	1.4	15.71	14.94	14.19
		3	15.78	15.08	14.20
		5	15.74	15.12	14.05
		10	15.82	15.11	14.23
	Band 26	1.4	15.49	14.24	14.19
		3	15.35	14.25	14.51
		5	15.40	14.41	14.08
		10	15.51	14.32	14.09
		15	15.76	14.76	14.27

Note:

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

2. Channel List:

GSM 850				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	128	824.2	137	869.2
Mid Range	190	836.6	199	881.6
High Range	251	848.8	260	893.8

WCDMA Band V				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	4132	826.4	4357	871.4
Mid Range	4182	836.4	4407	881.4
High Range	4233	846.6	4458	891.6

LTE Band 5					
Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink (MHz)	N_{DL}	Frequency of Downlink (MHz)
Low Range	1.4	20407	824.7	2407	869.7
	3	20415	825.5	2415	870.5
	5	20425	826.5	2425	871.5
	10	20450	829	2450	874
Mid Range	1.4/3/5/10	20525	836.5	2525	881.5
High Range	1.4	20643	848.3	2643	893.3
	3	20635	847.5	2635	892.5
	5	20625	846.5	2625	891.5
	10	20600	844	2600	889

LTE Band 26					
Test Frequency ID	Bandwidth (MHz)	N_{UL}	Frequency of Uplink (MHz)	N_{DL}	Frequency of Downlink (MHz)
Low Range	1.4	26797	824.7	8797	869.7
	3	26805	825.5	8805	870.5
	5	26815	826.5	8815	871.5
	10	26840	829	8840	874
	15	26865	831.5	8865	876.5
Mid Range	1.4/3/5/10/15	26915	836.5	8915	881.5
High Range	1.4	27033	848.3	9033	893.3
	3	27025	847.5	9025	892.5
	5	27015	846.5	9015	891.5
	10	26990	844	8990	889
	15	26965	841.5	8965	886.5

3. Table for Filed Antenna:

Main Antenna

Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
N/A	N/A	Internal	N/A	-5.1	GSM 850
N/A	N/A	Internal	N/A	-5.1	WCDMA Band V
N/A	N/A	Internal	N/A	-5.1	LTE Band 5
N/A	N/A	Internal	N/A	-5.24	LTE Band 26

Second Antenna

Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
N/A	N/A	Internal	N/A	-8.7	GSM 850
N/A	N/A	Internal	N/A	-8.7	WCDMA Band V
N/A	N/A	Internal	N/A	-8.7	LTE Band 5
N/A	N/A	Internal	N/A	-9	LTE Band 26

2.2 DESCRIPTION OF TEST MODES

Following mode(s) is (were) found to be the worst case(s) and selected for the final test.

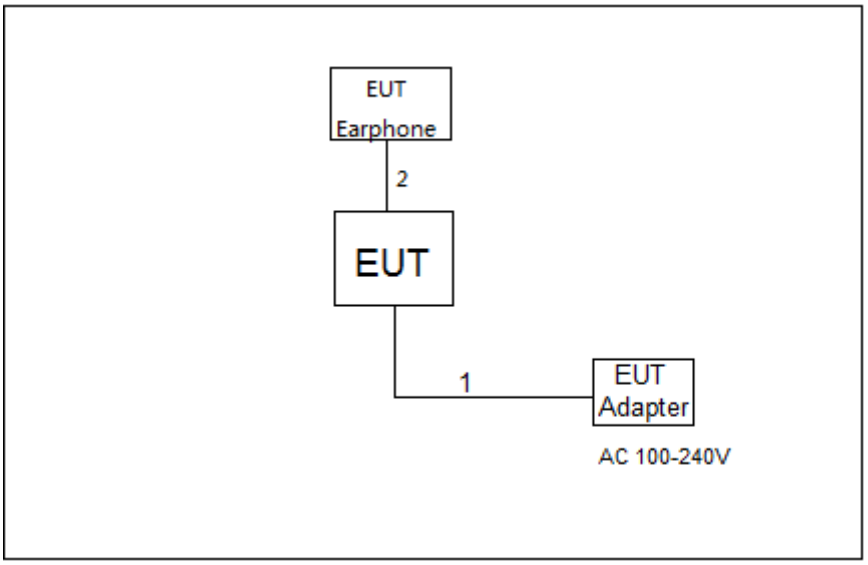
GSM MODE			
Test Item	Available Channel	Tested Channel	Mode
Output Power & ERP	128 to 251	128, 190, 251	GSM, GPRS, EDGE
Occupied Bandwidth	128 to 251	128, 190, 251	GSM, EDGE
Conducted Spurious Emissions	128 to 251	190	GSM, EDGE
Radiated Spurious Emissions	128 to 251	190	GSM
Band Edge	128 to 251	128, 251	GSM, EDGE
Peak to Average Ratio	128 to 251	128, 190, 251	GSM, EDGE
Frequency Stability	128 to 251	190	GSM

WCDMA BAND V MODE			
Test Item	Available Channel	Tested Channel	Mode
Output Power & ERP	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
Occupied Bandwidth	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
Conducted Spurious Emissions	4132 to 4233	4182	WCDMA
Radiated Spurious Emissions	4132 to 4233	4182	WCDMA
Band Edge	4132 to 4233	4132, 4233	WCDMA, HSDPA, HSUPA
Peak to Average Ratio	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
Frequency Stability	4132 to 4233	4182	WCDMA

LTE BAND 5 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM,64QAM	1RB/3RB/6RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM,64QAM	1RB/8RB/15RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM,64QAM	1RB/12RB/25RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM,64QAM	1RB/25RB/50RB
Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM,64QAM	6RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM,64QAM	15RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM,64QAM	25RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM,64QAM	50RB
Conducted Spurious Emissions	20407 to 20643	20525	1.4MHz	QPSK	1RB
	20425 to 20625	20525	5MHz	QPSK	1RB
	20450 to 20600	20525	10MHz	QPSK	1RB
Radiated Spurious Emissions	20407 to 20643	20525	1.4MHz	QPSK	1RB
	20425 to 20625	20525	5MHz	QPSK	1RB
	20450 to 20600	20525	10MHz	QPSK	1RB
Band Edge	20407 to 20643	20407, 20643	1.4MHz	QPSK	1RB/6RB
	20415 to 20635	20415, 20635	3MHz	QPSK	1RB/15RB
	20425 to 20625	20425, 20625	5MHz	QPSK	1RB/25RB
	20450 to 20600	20450, 20600	10MHz	QPSK	1RB/50RB
Peak To Average Ratio	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM,64QAM	1RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM,64QAM	1RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM,64QAM	1RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM,64QAM	1RB
Frequency Stability	20407 to 20643	20525	1.4MHz	QPSK	1RB
	20415 to 20635	20525	3MHz	QPSK	1RB
	20425 to 20625	20525	5MHz	QPSK	1RB
	20450 to 20600	20525	10MHz	QPSK	1RB

LTE BAND 26 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & ERP	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK, 16QAM, 64QAM	1RB/3RB/6RB
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK, 16QAM, 64QAM	1RB/8RB/15RB
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK, 16QAM, 64QAM	1RB/12RB/25RB
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK, 16QAM, 64QAM	1RB/25RB/50RB
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK, 16QAM, 64QAM	1RB/36RB/75RB
Occupied Bandwidth	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK, 16QAM, 64QAM	6RB
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK, 16QAM, 64QAM	15RB
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK, 16QAM, 64QAM	25RB
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK, 16QAM, 64QAM	50RB
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK, 16QAM, 64QAM	75RB
Conducted Spurious Emissions	26815 to 27015	226915	1.4MHz	QPSK	1RB
	26815 to 27015	226915	5MHz	QPSK	1RB
	26865 to 26965	226915	15MHz	QPSK	1RB
Radiated Spurious Emissions	26815 to 27015	226915	1.4MHz	QPSK	1RB
	26815 to 27015	226915	5MHz	QPSK	1RB
	26865 to 26965	226915	15MHz	QPSK	1RB
Band Edge	26797 to 27033	26797, 27033	1.4MHz	QPSK	1RB
					6RB
	26805 to 27025	26805, 27025	3MHz	QPSK	1RB
					15RB
	26815 to 27015	26815, 27015	5MHz	QPSK	1RB
					25RB
	26840 to 26990	26840, 26990	10MHz	QPSK	1RB
					50RB
	26865 to 26965	26865, 26965	15MHz	QPSK	1RB
					75RB
Peak To Average Ratio	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK, 16QAM, 64QAM	1RB
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK, 16QAM, 64QAM	1RB
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK, 16QAM, 64QAM	1RB
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK, 16QAM, 64QAM	1RB
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK, 16QAM, 64QAM	1RB
Frequency Stability	26797 to 27033	226915	1.4MHz	QPSK	1RB
	26805 to 27025	226915	3MHz	QPSK	1RB
	26815 to 27015	226915	5MHz	QPSK	1RB
	26840 to 26990	226915	10MHz	QPSK	1RB
	26865 to 26965	226915	15MHz	QPSK	1RB

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATIONOFSYSTEMTESTED



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.	Series No.
-	-	-	-	-

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	USB Cable	YES	NO	1m
2	Audio Cable	NO	NO	1m

3. TEST RESULT

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMIT

Mobile / Portable station are limited to 7 watts e.r.p.

3.1.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 5.

EIRP / ERP:

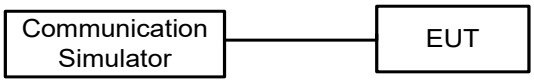
EIRP = Output Power + Antenan gain
ERP = EIPR - 2.15dBi

Output Power:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA 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.

3.1.3 TEST SETUP LAYOUT

Output Power Measurement



3.1.4 TEST DEVIATION

No deviation

3.1.5 TEST RESULTS

Please refer to the APPENDIX A.

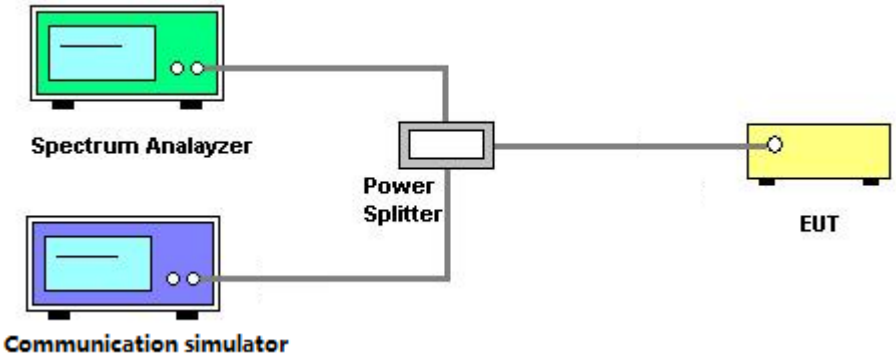
3.2 OCCUPIED BANDWIDTH MEASUREMENT

3.2.1 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 4.

1. 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.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. RBW=(1% ~ 5%)*EBW
   VBW⩾3* RBW
4. Set spectrum analyzer with Peak detector.

3.2.2 TEST SETUP LAYOUT



3.2.3 TEST DEVIATION

No deviation

3.2.4 TEST RESULTS

Please refer to the APPENDIX B.

3.3 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

3.3.1 LIMIT

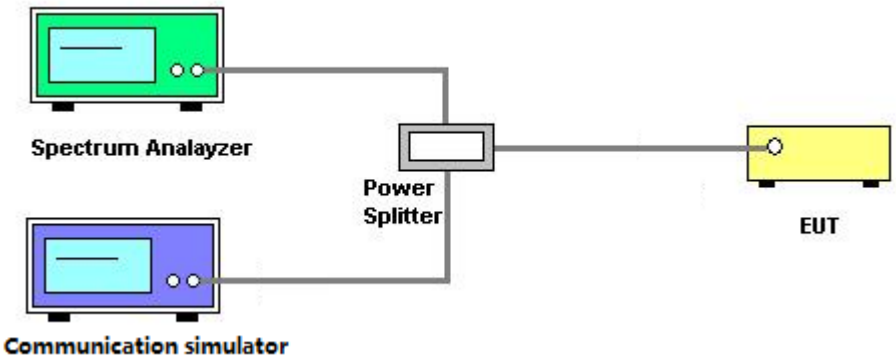
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13dBm.

3.3.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Set RBW>=1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
3. Set spectrum analyzer with Peak detector.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.3.3 TEST SETUP LAYOUT



3.3.4 TEST DEVIATION

No deviation

3.3.5 TEST RESULTS

Please refer to the APPENDIX C.

3.4 RADIATED SPURIOUS EMISSIONS MEASUREMENT

3.4.1 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.

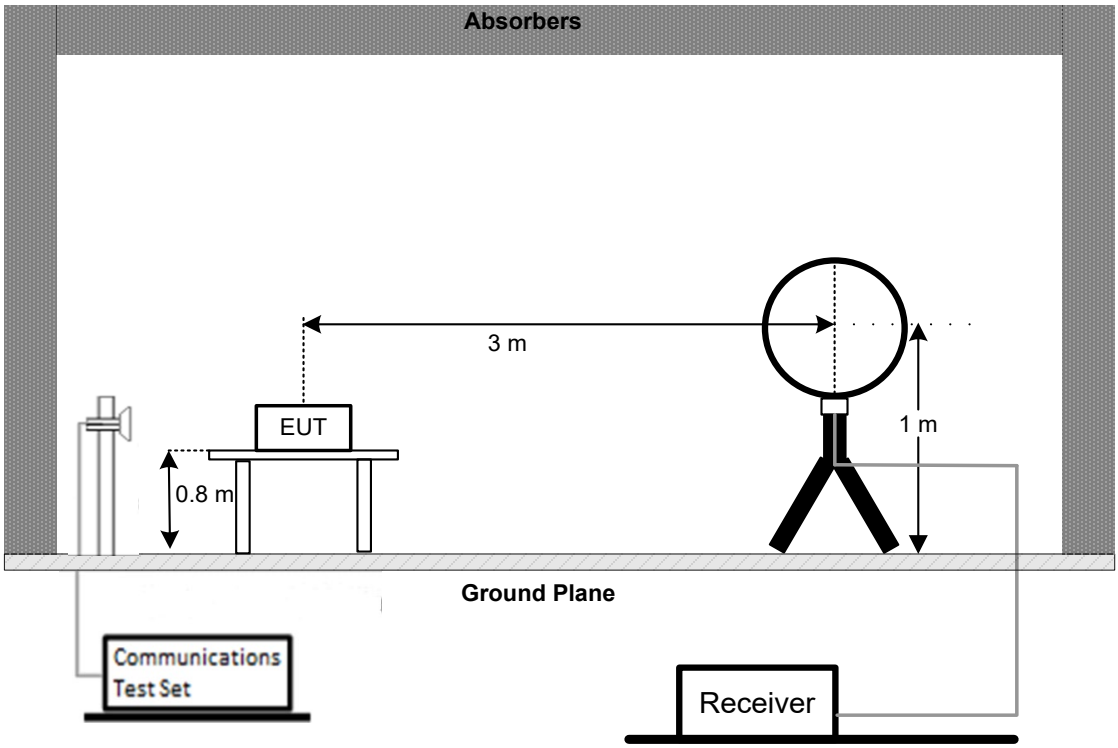
3.4.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.2.

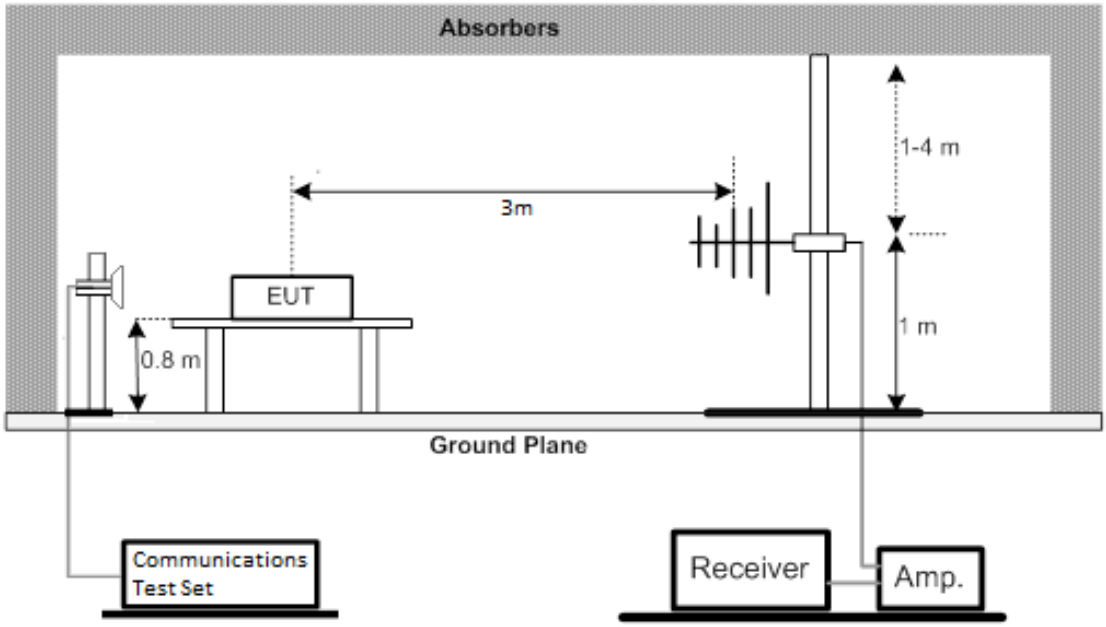
1. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 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. ERP can be calculated form EIRP by subtracting the gain of dipole, ERP = EIPR - 2.15dBi.
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.4.3 TEST SETUP LAYOUT

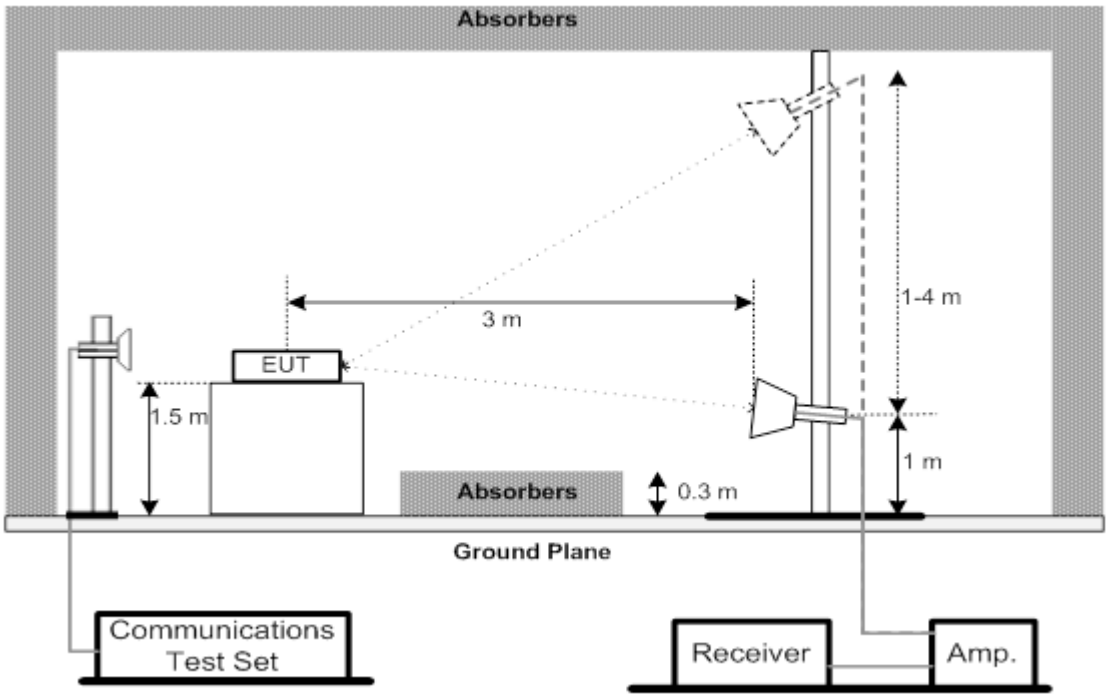
Below 30MHz



30MHz to 1000MHz



Above 1GHz



3.4.4 TEST DEVIATION

No deviation

3.4.5 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the APPENDIX D.

3.4.6 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the APPENDIX E.

3.4.7 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the APPENDIX F.

3.5 BAND EDGE MEASUREMENT

3.5.1 LIMIT

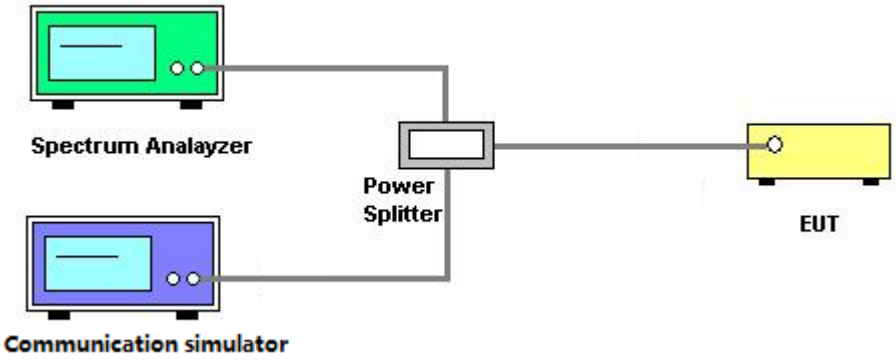
A Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.5.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.

1. All measurements were done at low and high operational frequency range.
2. Record the max trace plot into the test report.

3.5.3 TEST SETUP LAYOUT



3.5.4 TEST DEVIATION

No deviation

3.5.5 TEST RESULTS

Please refer to the APPENDIX G.

3.6 PEAK TO AVERAGE RATIO MEASUREMENT

3.6.1 LIMIT

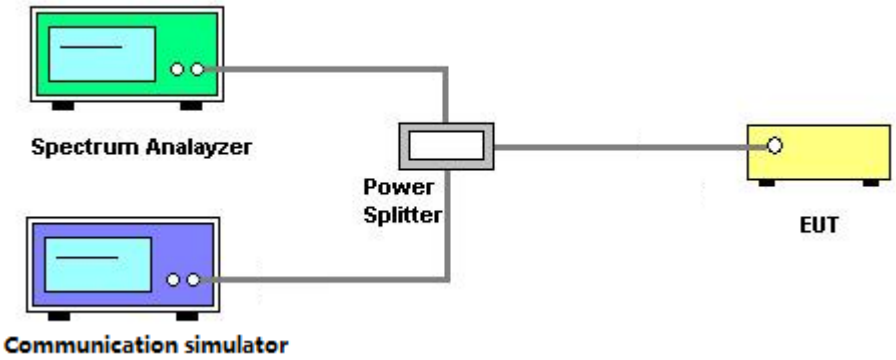
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.6.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 5.7.

1. Set resolution/measurement bandwidth ≥ 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%.

3.6.3 TEST SETUP LAYOUT



3.6.4 TEST DEVIATION

No deviation

3.6.5 TEST RESULTS

Please refer to the APPENDIX H.

3.7 FREQUENCY STABILITY MEASUREMENT

3.7.1 LIMIT

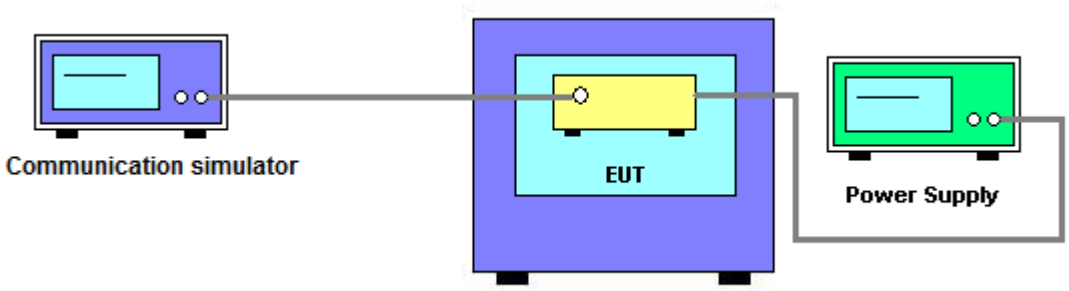
±1.5 ppm is for base and fixed station. ±2.5 ppm is for mobile station.

3.7.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 9.

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 ±0.5°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.

3.7.3 TEST SETUP LAYOUT



3.7.4 TEST DEVIATION

No deviation

3.7.5 TEST RESULTS

Please refer to the APPENDIX I.

4. LIST OF MEASUREMENT EQUIPMENTS

Radiated Spurious Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 09, 2021
2	Amplifier	Agilent	8449B	3008A02334	Mar. 01, 2021
3	High Pass Filter	Wairrwright Instruments Gmbh	WHK 1.5/15G-10ST	11	Feb. 28, 2021
4	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 1710/1785-1690/1805-60/12SS	38	Feb. 28, 2021
5	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 824/849-810/863-60/9 SS	7	Feb. 28, 2021
6	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 880/915-860/935-60/9 SS	14	Feb. 28, 2021
7	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 1850/1910-1830/1930-60/10SS	17	Feb. 28, 2021
8	High Pass Filter	Wairrwright Instruments Gmbh	WHK3.1/18G-10SS	24	Feb. 28, 2021
9	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 01, 2021
10	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 07, 2021
11	Receiver	Agilent	N9038A	MY52130039	Aug. 03, 2020
12	wideband radio communication tester	R&S	CMW500	152372	Feb. 28, 2021
13	High pass filter	KANGMAIWEI	ZHPF-M3-12.75G-3869	B2015073763	Feb. 11, 2021
14	High pass filter	KANGMAIWEI	ZHPF-M1000-4000-1	B2015073762	Feb. 11, 2021
15	High pass filter	KANGMAIWEI	ZHPF-M6-186-1727	B2015073764	Feb. 11, 2021
16	Cable	emci	LMR-400(30MHz-1GHz)(8m+5m)	N/A	May 24, 2020
17	Cable	mitron	B10-01-01-12M	18072744	Jun. 29, 2020
18	Controller	ETS-Lindgren	2090	N/A	N/A
19	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
20	Loop Antenna	EM	EM-6876-1	230	Jan. 15, 2022
21	Double Ridged Guide Antenna	ETS	3115	75846	Mar. 19, 2021
22	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 23, 2020

Conducted Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 01, 2021
2	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Mar. 01, 2021
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 28, 2021
4	wideband radio communication tester	R&S	CMW500	152372	Feb. 28, 2021

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 01, 2021
2	Multi-output DC Power Supply	GW Instek	GPC-3030DN	EK880675	Sep. 26, 2020
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 28, 2021
4	wideband radio communication tester	R&S	CMW500	152372	Feb. 28, 2021
5	Const Temp,& Humidity Chamber	Bell	BTH-50C	20170306001	Feb. 28, 2021

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

Output Power (dBm):

GSM850		128CH	190CH	251CH
		824.2MHz	836.6MHz	848.8MHz
GSM (CS)		32.85	32.76	32.80
GPRS/EDGE (GMSK)	1 Tx Slot	32.85	32.76	32.80
	2 Tx Slot	31.03	30.94	30.98
	3 Tx Slot	28.98	28.85	28.86
	4 Tx Slot	27.93	27.81	27.83
EDGE (8PSK)	1 Tx Slot	26.53	26.48	26.41
	2 Tx Slot	25.32	25.23	25.17
	3 Tx Slot	24.09	23.96	23.89
	4 Tx Slot	22.92	22.74	22.65

Modulation	Band	WCDMA Band V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
QPSK	RMC 12.2K	23.21	23.23	23.19
	RMC 64K	23.17	23.22	23.24
	RMC 144K	23.22	23.24	23.30
	RMC 384K	23.18	23.19	23.25
	HSDPA Subtest-1	22.24	22.22	22.27
	HSDPA Subtest-2	22.21	22.24	22.28
	HSDPA Subtest-3	22.19	22.22	22.25
	HSDPA Subtest-4	22.22	22.19	22.27
	HSUPA Subtest-1	20.95	21.05	21.07
	HSUPA Subtest-2	21.18	21.22	21.25
	HSUPA Subtest-3	21.79	21.87	21.84
	HSUPA Subtest-4	20.74	20.86	20.71
	HSUPA Subtest-5	23.21	23.29	23.26

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4M	QPSK	1	0	22.75	22.83	22.82
		1	2	22.91	22.94	22.96
		1	5	22.82	22.83	22.83
		3	0	22.89	22.88	22.89
		3	1	22.95	22.93	22.94
		3	2	22.94	22.89	22.89
		6	0	21.95	21.88	21.90
	16QAM	1	0	21.88	21.89	22.09
		1	2	21.95	22.00	22.19
		1	5	21.86	21.88	22.09
		3	0	22.11	21.89	21.99
		3	1	22.15	21.93	22.01
		3	2	22.12	21.89	21.97
		6	0	21.99	21.92	21.64
	64QAM	1	0	21.12	21.27	20.97
		1	2	21.19	21.44	21.14
		1	5	21.18	21.26	20.97
		3	0	20.97	21.30	21.07
		3	1	21.00	21.35	21.12
		3	2	20.97	21.28	21.06
		6	0	20.06	19.94	20.23

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3M	QPSK	1	0	22.85	22.91	22.85
		1	7	23.03	23.03	22.93
		1	14	22.94	22.88	22.82
		8	0	21.97	21.86	21.84
		8	4	21.96	21.89	21.90
		8	7	21.89	21.82	21.83
		15	0	21.95	21.83	21.81
	16QAM	1	0	21.86	22.19	21.84
		1	7	21.94	22.33	21.92
		1	14	21.81	22.19	21.75
		8	0	21.95	21.84	21.73
		8	4	21.95	21.85	21.80
		8	7	21.88	21.80	21.72
		15	0	21.87	21.76	21.66
	64QAM	1	0	21.31	21.02	21.13
		1	7	21.45	21.17	21.21
		1	14	21.31	21.07	21.01
		8	0	20.07	19.99	19.87
		8	4	20.08	20.02	19.91
		8	7	20.01	19.97	19.85
		15	0	19.95	19.98	19.94

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5M	QPSK	1	0	22.87	22.85	22.81
		1	13	22.99	22.89	22.91
		1	24	22.91	22.76	22.82
		12	0	21.95	21.87	21.89
		12	6	21.91	21.93	21.88
		12	11	21.90	21.91	21.86
		25	0	21.87	21.85	21.82
	16QAM	1	0	22.01	22.32	21.85
		1	13	22.03	22.37	21.92
		1	24	21.97	22.25	21.82
		12	0	21.88	21.87	21.80
		12	6	21.87	21.92	21.80
		12	11	21.86	21.89	21.75
		25	0	21.79	21.81	21.64
	64QAM	1	0	20.88	21.23	21.07
		1	13	20.95	21.30	21.17
		1	24	20.87	21.15	21.07
		12	0	20.01	19.90	20.01
		12	6	20.07	19.92	20.00
		12	11	20.04	19.92	19.97
		25	0	19.96	19.91	19.90

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10M	QPSK	1	0	22.87	22.98	22.86
		1	25	23.07	23.06	22.98
		1	49	22.89	22.87	22.82
		25	0	21.99	21.93	21.94
		25	13	21.93	21.93	21.88
		25	25	22.00	21.90	21.77
		50	0	21.98	21.91	21.87
	16QAM	1	0	21.86	22.29	21.78
		1	25	22.00	22.36	21.93
		1	49	21.80	22.19	21.73
		25	0	21.91	21.84	21.85
		25	13	21.84	21.84	21.80
		25	25	21.92	21.85	21.72
		50	0	21.88	21.81	21.76
	64QAM	1	0	21.32	21.17	21.11
		1	25	21.48	21.24	21.27
		1	49	21.36	21.04	21.09
		25	0	20.17	20.07	20.12
		25	13	20.07	20.09	20.07
		25	25	20.13	20.07	19.97
		50	0	20.12	20.07	19.97

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				CH26797	CH26915	CH27033
				824.7MHz	836.5MHz	848.3MHz
26 / 1.4M	QPSK	1	0	22.60	22.71	22.72
		1	2	22.70	22.85	22.88
		1	5	22.64	22.71	22.59
		3	0	22.69	22.79	22.39
		3	1	22.69	22.77	22.21
		3	2	22.64	22.67	22.21
		6	0	21.55	21.68	21.18
	16QAM	1	0	21.41	21.50	21.42
		1	2	21.57	21.63	21.61
		1	5	21.16	21.49	21.40
		3	0	21.03	21.57	21.47
		3	1	20.99	21.57	21.38
		3	2	20.99	21.37	21.42
		6	0	20.02	20.48	20.52
	64QAM	1	0	21.30	21.45	21.21
		1	2	21.36	21.58	21.32
		1	5	21.32	21.46	21.14
		3	0	21.14	21.44	21.25
		3	1	21.21	21.50	21.30
		3	2	21.16	21.43	21.29
		6	0	20.22	20.09	20.39

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				CH26805	CH26915	CH27025
				825.5MHz	836.5MHz	847.5MHz
26 / 3M	QPSK	1	0	22.66	22.68	22.70
		1	7	22.69	22.66	22.74
		1	14	22.52	22.69	22.69
		8	0	21.65	22.71	21.58
		8	4	21.72	21.67	21.63
		8	7	21.68	21.73	21.62
		15	0	21.64	21.69	21.58
	16QAM	1	0	21.52	21.48	21.64
		1	7	21.49	21.40	21.60
		1	14	21.47	21.44	21.30
		8	0	20.66	20.77	20.73
		8	4	20.65	20.71	20.67
		8	7	20.68	20.70	20.62
		15	0	20.57	20.63	20.62
	64QAM	1	0	21.65	21.29	21.42
		1	7	21.90	21.45	21.52
		1	14	21.67	21.23	21.38
		8	0	20.18	20.08	20.16
		8	4	20.20	20.14	20.16
		8	7	20.16	20.11	20.07
		15	0	20.06	20.09	20.04

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				CH26815	CH26915	CH27015
				826.5MHz	836.5MHz	846.5MHz
26 / 5M	QPSK	1	0	22.63	22.72	22.67
		1	13	22.76	22.79	22.76
		1	24	22.69	22.72	22.69
		12	0	21.67	21.70	21.72
		12	6	21.71	21.69	21.74
		12	11	21.73	21.70	21.72
		25	0	21.63	21.73	21.73
	16QAM	1	0	21.68	21.58	21.55
		1	13	21.80	21.66	21.68
		1	24	21.75	21.58	21.55
		12	0	20.78	20.73	20.72
		12	6	20.78	20.72	20.67
		12	11	20.79	20.73	20.67
		25	0	20.70	20.80	20.73
	64QAM	1	0	21.32	20.92	20.98
		1	13	21.47	21.01	21.13
		1	24	21.35	20.93	20.94
		12	0	20.05	20.06	20.17
		12	6	20.11	20.14	20.23
		12	11	20.07	20.11	20.15
		25	0	20.08	20.03	20.10

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				CH26840	CH26915	CH26990
				829MHz	836.5MHz	844MHz
26 / 10M	QPSK	1	0	22.69	22.72	22.66
		1	25	22.90	22.74	22.73
		1	49	22.78	22.65	22.68
		25	0	21.79	21.71	21.80
		25	13	21.81	21.74	21.81
		25	25	21.82	21.70	21.64
		50	0	21.76	21.68	21.69
	16QAM	1	0	21.48	21.44	21.62
		1	25	21.68	21.57	21.71
		1	49	21.57	21.38	21.61
		25	0	20.91	20.78	20.78
		25	13	20.87	20.80	20.78
		25	25	20.87	20.74	20.65
		50	0	20.84	20.74	20.72
	64QAM	1	0	21.31	21.23	21.40
		1	25	21.48	21.35	19.57
		1	49	21.30	21.21	21.39
		25	0	20.31	20.22	20.24
		25	13	20.26	20.25	20.21
		25	25	20.28	20.24	20.10
		50	0	20.20	20.18	20.12

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				CH26865	CH26915	CH26965
				831.5MHz	836.5MHz	841.5MHz
26 / 15M	QPSK	1	0	23.01	22.58	23.08
		1	38	23.15	22.65	23.10
		1	74	23.07	22.57	23.01
		36	0	22.19	21.77	22.21
		36	18	22.18	21.76	22.21
		36	39	22.20	21.75	22.23
		75	0	22.27	21.72	22.20
	16QAM	1	0	21.99	21.75	21.81
		1	38	22.15	21.80	21.86
		1	74	22.01	21.67	21.73
		36	0	21.20	20.79	21.19
		36	18	21.20	20.84	21.13
		36	39	21.19	20.83	21.17
		75	0	21.21	20.74	21.21
	64QAM	1	0	21.53	21.34	21.55
		1	38	21.66	21.41	21.63
		1	74	21.53	21.32	21.49
		36	0	20.64	20.08	20.54
		36	18	20.62	20.16	20.62
		36	39	20.59	20.16	20.58
		75	0	20.61	20.13	20.52

ERP (dBm):

GSM850		128CH	190CH	251CH
		824.2MHz	836.6MHz	848.8MHz
GSM (CS)		25.60	25.51	25.55
GPRS/EDGE (GMSK)	1 Tx Slot	25.60	25.51	25.55
	2 Tx Slot	23.78	23.69	23.73
	3 Tx Slot	21.73	21.60	21.61
	4 Tx Slot	20.68	20.56	20.58
EDGE (8PSK)	1 Tx Slot	19.28	19.23	19.16
	2 Tx Slot	18.07	17.98	17.92
	3 Tx Slot	16.84	16.71	16.64
	4 Tx Slot	15.67	15.49	15.40

Modulation	Band	WCDMA Band V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
QPSK	RMC 12.2K	15.96	15.98	15.94
	RMC 64K	15.92	15.97	15.99
	RMC 144K	15.97	15.99	16.05
	RMC 384K	15.93	15.94	16.00
	HSDPA Subtest-1	14.99	14.97	15.02
	HSDPA Subtest-2	14.96	14.99	15.03
	HSDPA Subtest-3	14.94	14.97	15.00
	HSDPA Subtest-4	14.97	14.94	15.02
	HSUPA Subtest-1	13.70	13.80	13.82
	HSUPA Subtest-2	13.93	13.97	14.00
	HSUPA Subtest-3	14.54	14.62	14.59
	HSUPA Subtest-4	13.49	13.61	13.46
	HSUPA Subtest-5	15.96	16.04	16.01

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4M	QPSK	1	0	15.50	15.58	15.57
		1	2	15.66	15.69	15.71
		1	5	15.57	15.58	15.58
		3	0	15.64	15.63	15.64
		3	1	15.70	15.68	15.69
		3	2	15.69	15.64	15.64
		6	0	14.70	14.63	14.65
	16QAM	1	0	14.63	14.64	14.84
		1	2	14.70	14.75	14.94
		1	5	14.61	14.63	14.84
		3	0	14.86	14.64	14.74
		3	1	14.90	14.68	14.76
		3	2	14.87	14.64	14.72
		6	0	14.74	14.67	14.39
	64QAM	1	0	13.87	14.02	13.72
		1	2	13.94	14.19	13.89
		1	5	13.93	14.01	13.72
		3	0	13.72	14.05	13.82
		3	1	13.75	14.10	13.87
		3	2	13.72	14.03	13.81
		6	0	12.81	12.69	12.98

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3M	QPSK	1	0	15.60	15.66	15.60
		1	7	15.78	15.78	15.68
		1	14	15.69	15.63	15.57
		8	0	14.72	14.61	14.59
		8	4	14.71	14.64	14.65
		8	7	14.64	14.57	14.58
		15	0	14.70	14.58	14.56
	16QAM	1	0	14.61	14.94	14.59
		1	7	14.69	15.08	14.67
		1	14	14.56	14.94	14.50
		8	0	14.70	14.59	14.48
		8	4	14.70	14.60	14.55
		8	7	14.63	14.55	14.47
		15	0	14.62	14.51	14.41
	64QAM	1	0	14.06	13.77	13.88
		1	7	14.20	13.92	13.96
		1	14	14.06	13.82	13.76
		8	0	12.82	12.74	12.62
		8	4	12.83	12.77	12.66
		8	7	12.76	12.72	12.60
		15	0	12.70	12.73	12.69

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5M	QPSK	1	0	15.62	15.60	15.56
		1	13	15.74	15.64	15.66
		1	24	15.66	15.51	15.57
		12	0	14.70	14.62	14.64
		12	6	14.66	14.68	14.63
		12	11	14.65	14.66	14.61
		25	0	14.62	14.60	14.57
	16QAM	1	0	14.76	15.07	14.60
		1	13	14.78	15.12	14.67
		1	24	14.72	15.00	14.57
		12	0	14.63	14.62	14.55
		12	6	14.62	14.67	14.55
		12	11	14.61	14.64	14.50
		25	0	14.54	14.56	14.39
	64QAM	1	0	13.63	13.98	13.82
		1	13	13.70	14.05	13.92
		1	24	13.62	13.90	13.82
		12	0	12.76	12.65	12.76
		12	6	12.82	12.67	12.75
		12	11	12.79	12.67	12.72
		25	0	12.71	12.66	12.65

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10M	QPSK	1	0	15.62	15.73	15.61
		1	25	15.82	15.81	15.73
		1	49	15.64	15.62	15.57
		25	0	14.74	14.68	14.69
		25	13	14.68	14.68	14.63
		25	25	14.75	14.65	14.52
		50	0	14.73	14.66	14.62
	16QAM	1	0	14.61	15.04	14.53
		1	25	14.75	15.11	14.68
		1	49	14.55	14.94	14.48
		25	0	14.66	14.59	14.60
		25	13	14.59	14.59	14.55
		25	25	14.67	14.60	14.47
		50	0	14.63	14.56	14.51
	64QAM	1	0	14.07	13.92	13.86
		1	25	14.23	13.99	14.02
		1	49	14.11	13.79	13.84
		25	0	12.92	12.82	12.87
		25	13	12.82	12.84	12.82
		25	25	12.88	12.82	12.72
		50	0	12.87	12.82	12.72

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				CH26797	CH26915	CH27033
				824.7MHz	836.5MHz	848.3MHz
26 / 1.4M	QPSK	1	0	15.21	15.32	15.33
		1	2	15.31	15.46	15.49
		1	5	15.25	15.32	15.20
		3	0	15.30	15.40	15.00
		3	1	15.30	15.38	14.82
		3	2	15.25	15.28	14.82
		6	0	14.16	14.29	13.79
	16QAM	1	0	14.02	14.11	14.03
		1	2	14.18	14.24	14.22
		1	5	13.77	14.10	14.01
		3	0	13.64	14.18	14.08
		3	1	13.60	14.18	13.99
		3	2	13.60	13.98	14.03
		6	0	12.63	13.09	13.13
	64QAM	1	0	13.91	14.06	13.82
		1	2	13.97	14.19	13.93
		1	5	13.93	14.07	13.75
		3	0	13.75	14.05	13.86
		3	1	13.82	14.11	13.91
		3	2	13.77	14.04	13.90
		6	0	12.83	12.70	13.00

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				CH26805	CH26915	CH27025
				825.5MHz	836.5MHz	847.5MHz
26 / 3M	QPSK	1	0	15.27	15.29	15.31
		1	7	15.30	15.27	15.35
		1	14	15.13	15.30	15.30
		8	0	14.26	15.32	14.19
		8	4	14.33	14.28	14.24
		8	7	14.29	14.34	14.23
		15	0	14.25	14.30	14.19
	16QAM	1	0	14.13	14.09	14.25
		1	7	14.10	14.01	14.21
		1	14	14.08	14.05	13.91
		8	0	13.27	13.38	13.34
		8	4	13.26	13.32	13.28
		8	7	13.29	13.31	13.23
		15	0	13.18	13.24	13.23
	64QAM	1	0	14.26	13.90	14.03
		1	7	14.51	14.06	14.13
		1	14	14.28	13.84	13.99
		8	0	12.79	12.69	12.77
		8	4	12.81	12.75	12.77
		8	7	12.77	12.72	12.68
		15	0	12.67	12.70	12.65

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				CH26815	CH26915	CH27015
				826.5MHz	836.5MHz	846.5MHz
26 / 5M	QPSK	1	0	15.24	15.33	15.28
		1	13	15.37	15.40	15.37
		1	24	15.30	15.33	15.30
		12	0	14.28	14.31	14.33
		12	6	14.32	14.30	14.35
		12	11	14.34	14.31	14.33
		25	0	14.24	14.34	14.34
	16QAM	1	0	14.29	14.19	14.16
		1	13	14.41	14.27	14.29
		1	24	14.36	14.19	14.16
		12	0	13.39	13.34	13.33
		12	6	13.39	13.33	13.28
		12	11	13.40	13.34	13.28
		25	0	13.31	13.41	13.34
	64QAM	1	0	13.93	13.53	13.59
		1	13	14.08	13.62	13.74
		1	24	13.96	13.54	13.55
		12	0	12.66	12.67	12.78
		12	6	12.72	12.75	12.84
		12	11	12.68	12.72	12.76
		25	0	12.69	12.64	12.71

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				CH26840	CH26915	CH26990
				829MHz	836.5MHz	844MHz
26 / 10M	QPSK	1	0	15.30	15.33	15.27
		1	25	15.51	15.35	15.34
		1	49	15.39	15.26	15.29
		25	0	14.40	14.32	14.41
		25	13	14.42	14.35	14.42
		25	25	14.43	14.31	14.25
		50	0	14.37	14.29	14.30
	16QAM	1	0	14.09	14.05	14.23
		1	25	14.29	14.18	14.32
		1	49	14.18	13.99	14.22
		25	0	13.52	13.39	13.39
		25	13	13.48	13.41	13.39
		25	25	13.48	13.35	13.26
		50	0	13.45	13.35	13.33
	64QAM	1	0	13.92	13.84	14.01
		1	25	14.09	13.96	12.18
		1	49	13.91	13.82	14.00
		25	0	12.92	12.83	12.85
		25	13	12.87	12.86	12.82
		25	25	12.89	12.85	12.71
		50	0	12.81	12.79	12.73

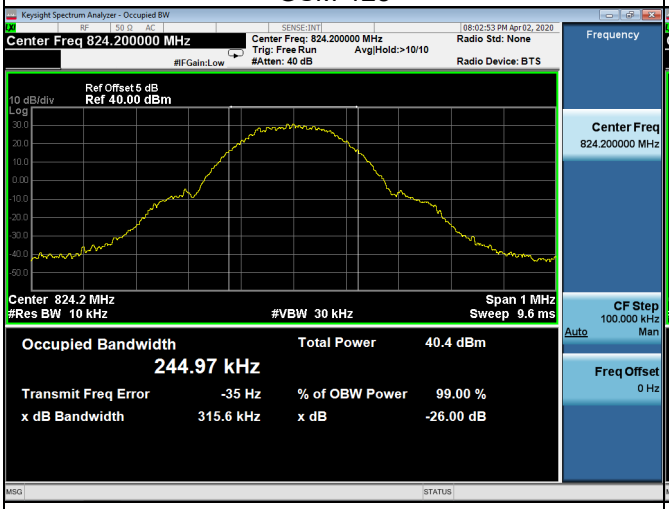
LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				CH26865	CH26915	CH26965
				831.5MHz	836.5MHz	841.5MHz
26 / 15M	QPSK	1	0	15.62	15.19	15.69
		1	38	15.76	15.26	15.71
		1	74	15.68	15.18	15.62
		36	0	14.80	14.38	14.82
		36	18	14.79	14.37	14.82
		36	39	14.81	14.36	14.84
		75	0	14.88	14.33	14.81
	16QAM	1	0	14.60	14.36	14.42
		1	38	14.76	14.41	14.47
		1	74	14.62	14.28	14.34
		36	0	13.81	13.40	13.80
		36	18	13.81	13.45	13.74
		36	39	13.80	13.44	13.78
		75	0	13.82	13.35	13.82
	64QAM	1	0	14.14	13.95	14.16
		1	38	14.27	14.02	14.24
		1	74	14.14	13.93	14.10
		36	0	13.25	12.69	13.15
		36	18	13.23	12.77	13.23
		36	39	13.20	12.77	13.19
		75	0	13.22	12.74	13.13

APPENDIX B - OCCUPIED BANDWIDTH

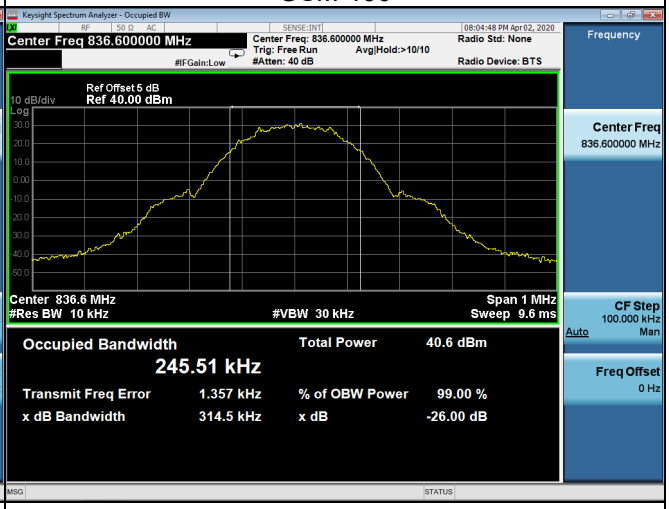
GSM850					
GSM			EDGE		
CS			8PSK		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
128	824.2	0.2450	128	824.2	0.2520
190	836.6	0.2455	190	836.6	0.2479
251	848.8	0.2447	251	848.8	0.2474
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
128	824.2	0.3156	128	824.2	0.3200
190	836.6	0.3145	190	836.6	0.3214
251	848.8	0.3191	251	848.8	0.3206

Spectrum Plot

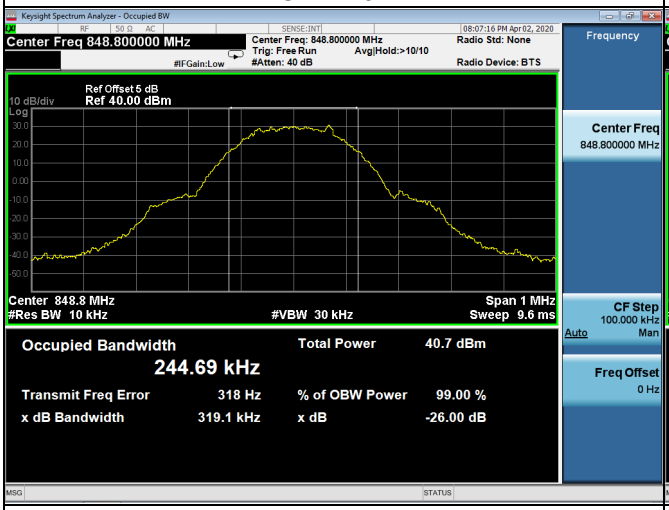
GSM-128



GSM-190

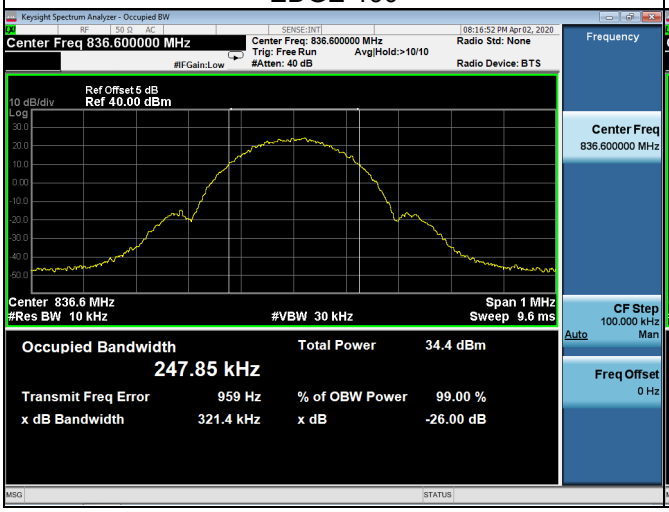


GSM-251

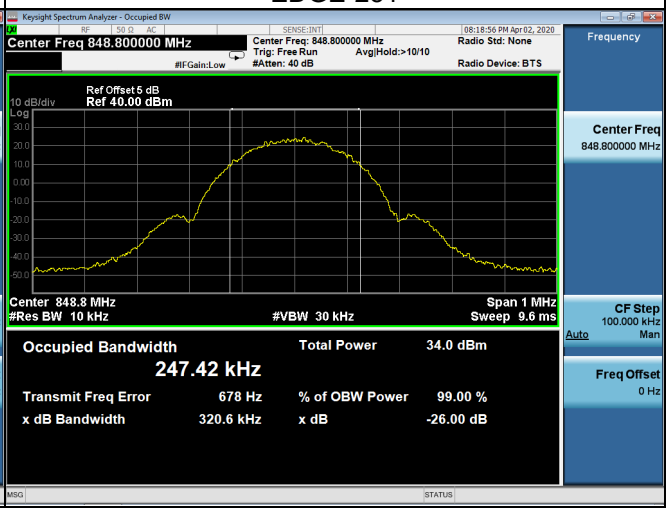


EDGE-128

EDGE-190



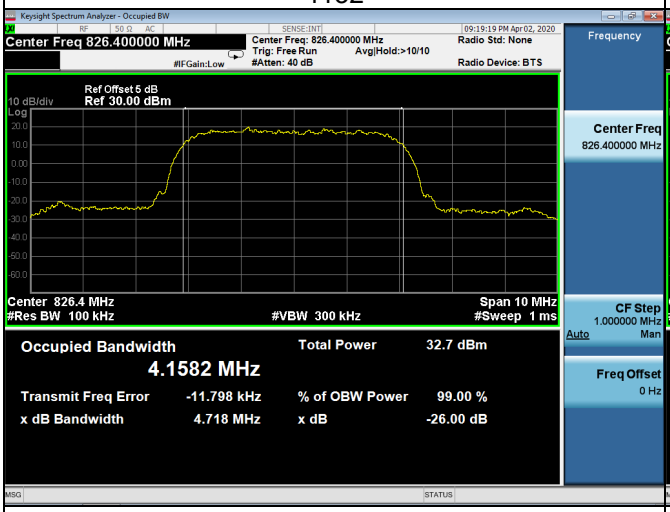
EDGE-251



WCDMA Band V_WCDMA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
4132	826.4	4.1582	4132	826.4	4.718
4182	836.4	4.1698	4182	836.4	4.727
4233	846.6	4.1640	4233	846.6	4.722

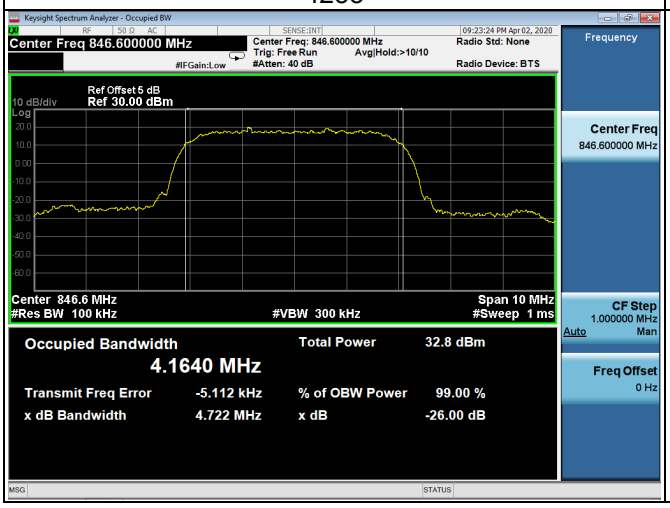
Spectrum Plot

4132



4182

4233



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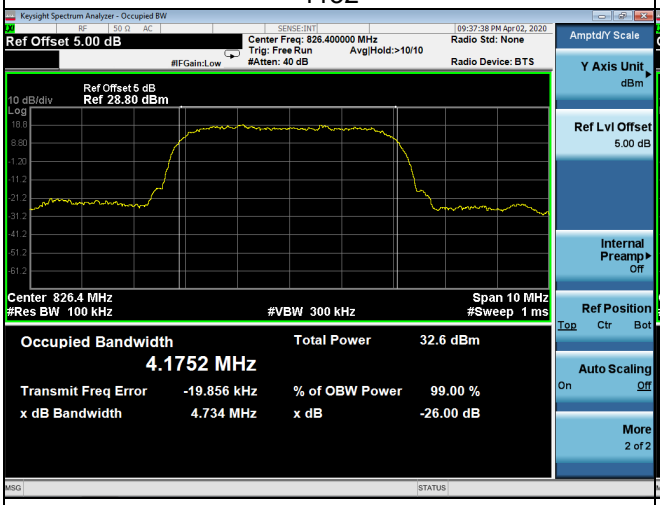
WCDMA Band V_HSDPA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
4132	826.4	4.1752	4132	826.4	4.734
4182	836.4	4.1710	4182	836.4	4.729
4233	846.6	4.1599	4233	846.6	4.727

Spectrum Plot

4132



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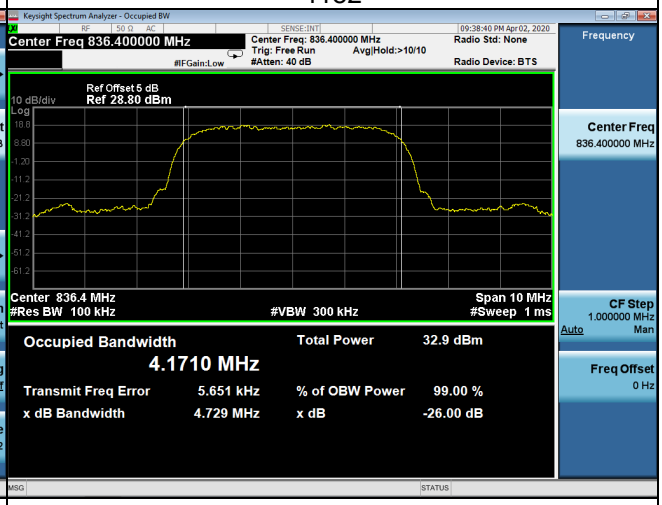

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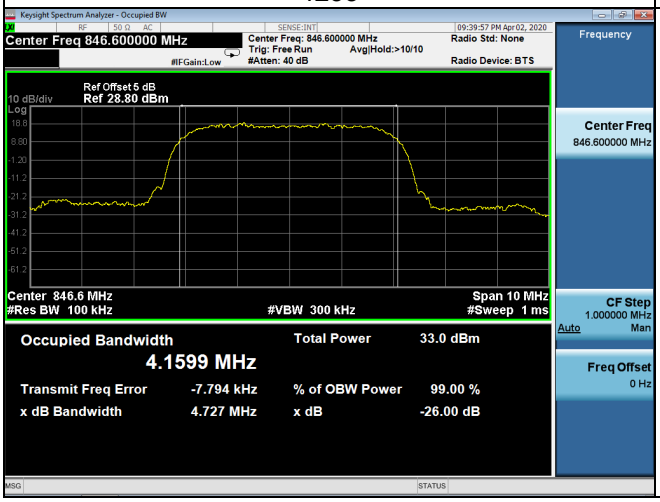

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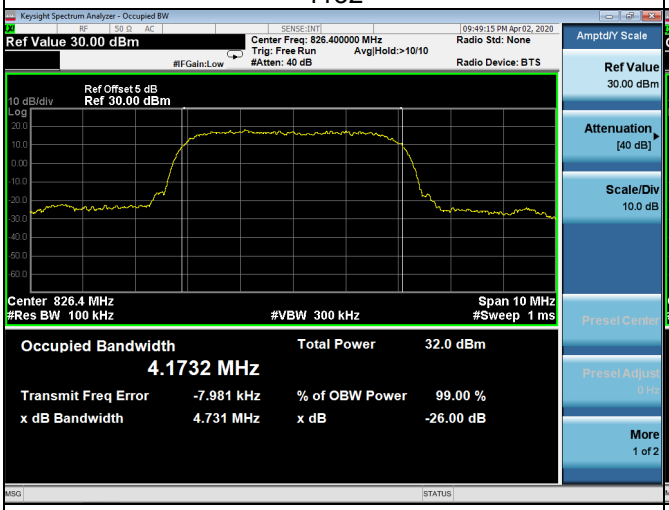
WCDMA Band V_HSUPA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
4132	826.4	4.1732	4132	826.4	4.731
4182	836.4	4.1718	4182	836.4	4.729
4233	846.6	4.1730	4233	846.6	4.727

Spectrum Plot

4132



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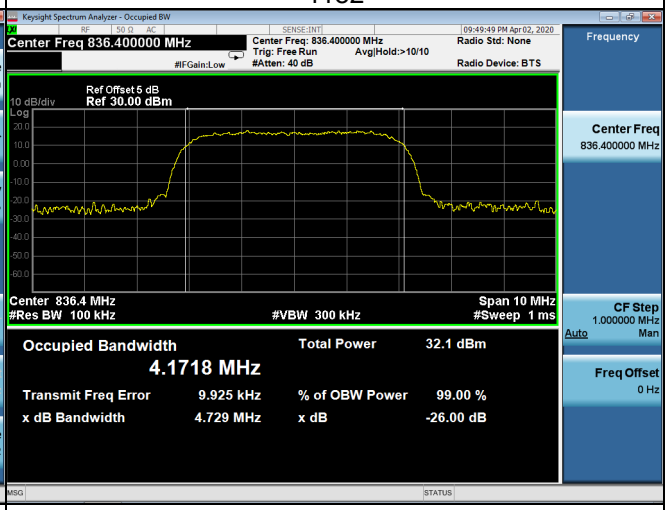

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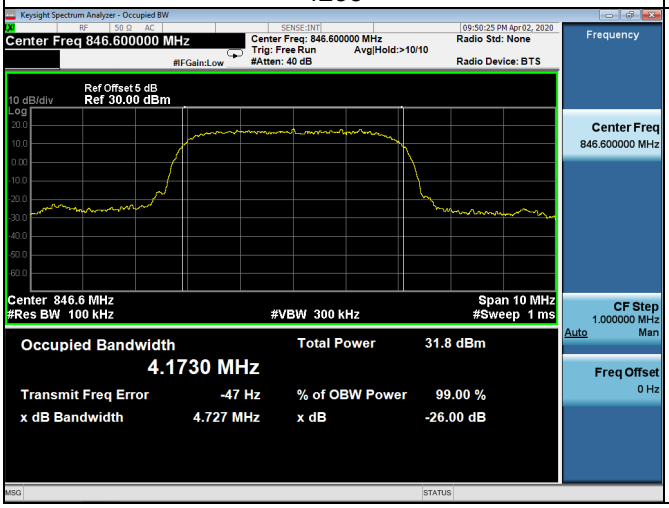

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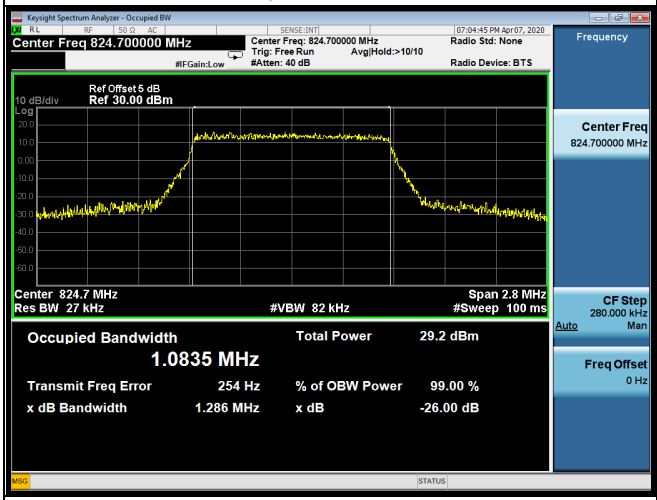
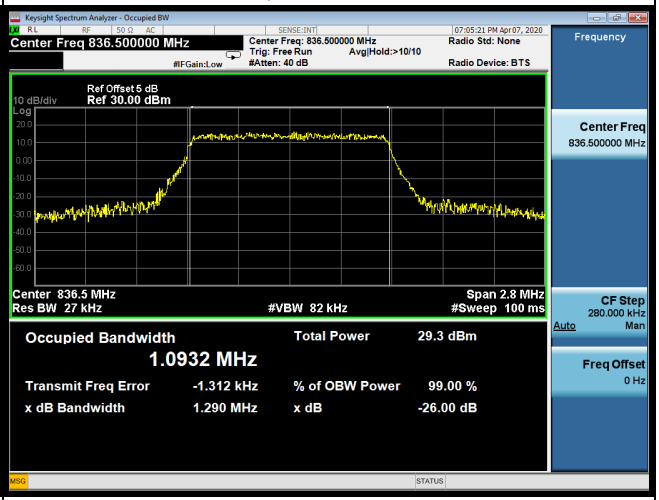
LTE Band 5_1.4M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20407	824.7	1.0835	20407	824.7	1.286
20525	836.5	1.0932	20525	836.5	1.290
20643	848.3	1.0972	20643	848.3	1.308
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20407	824.7	1.0909	20407	824.7	1.290
20525	836.5	1.0934	20525	836.5	1.298
20643	848.3	1.0885	20643	848.3	1.288
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20407	824.7	1.0865	20407	824.7	1.273
20525	836.5	1.0826	20525	836.5	1.262
20643	848.3	1.0863	20643	848.3	1.255

Spectrum Plot

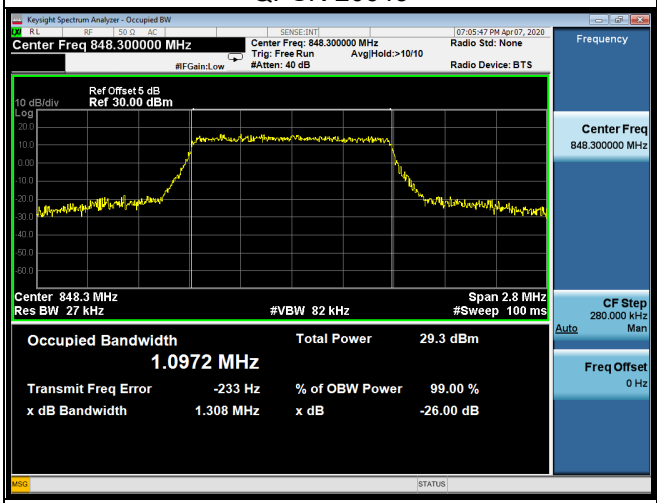
QPSK-20407



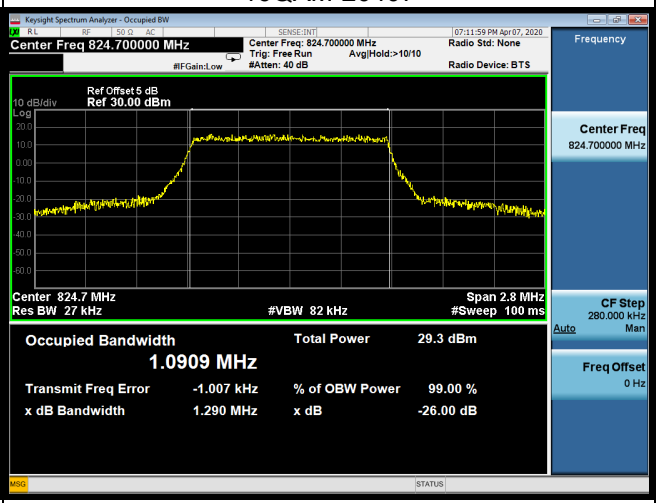
QPSK-20525



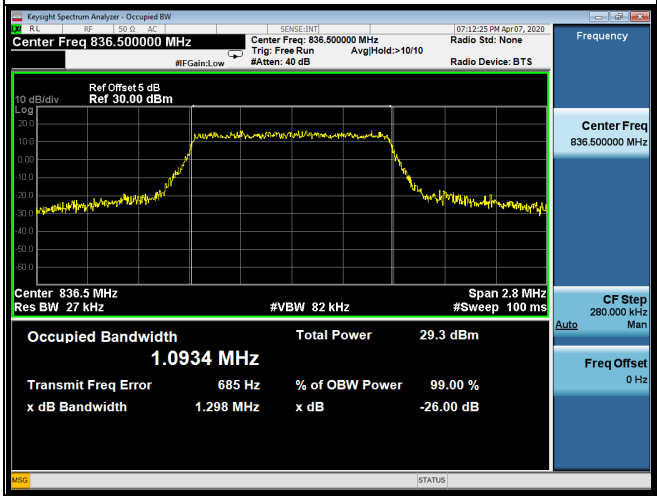
QPSK-20643



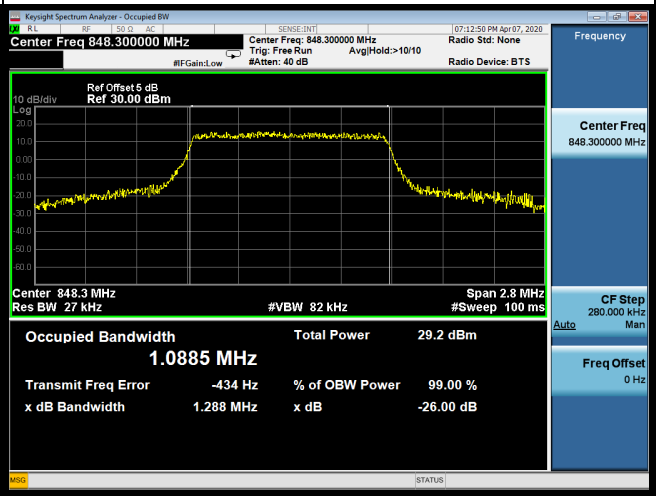
16QAM-20407

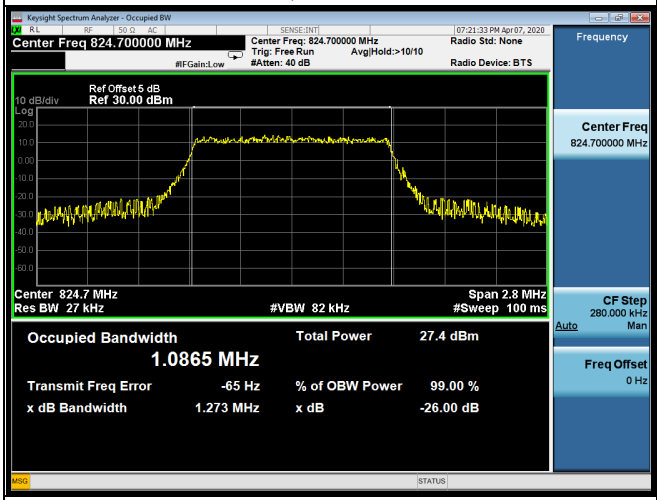
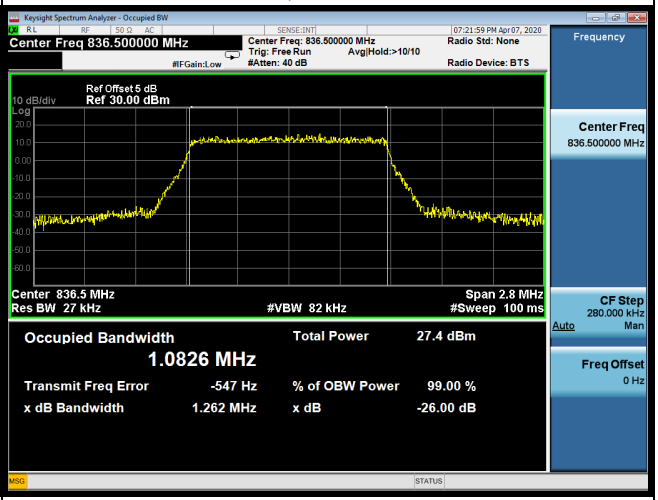
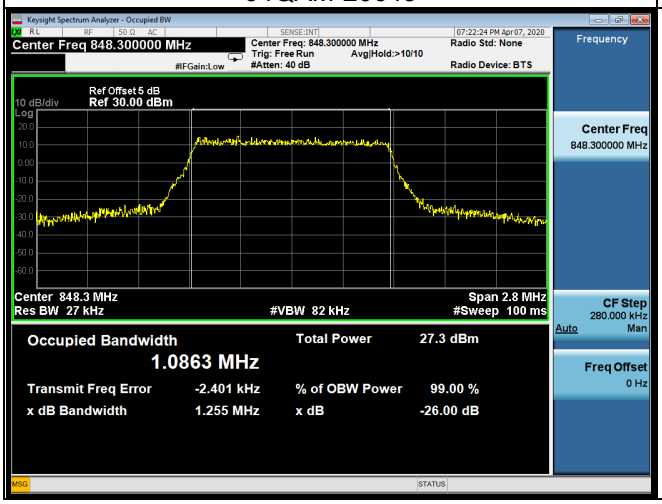


16QAM-20525



16QAM-20643

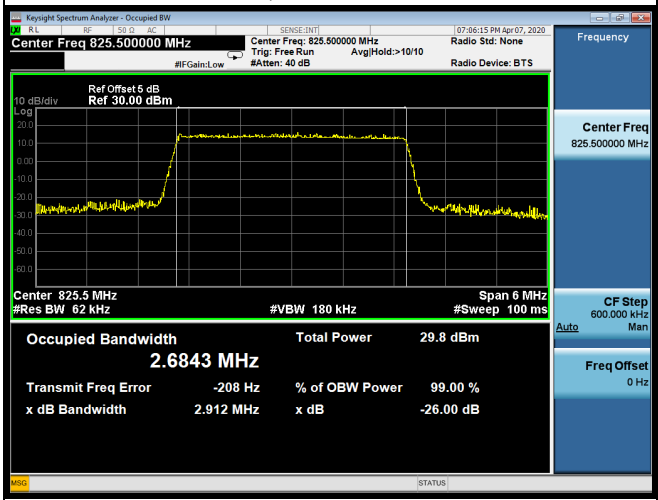


Spectrum Plot	
64QAM-20407	64QAM-20525
	
64QAM-20643	-
	-

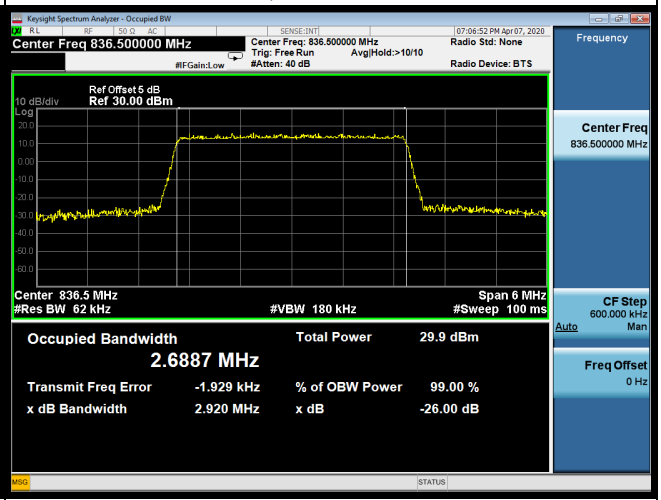
LTE Band 5_3M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20415	825.5	2.6843	20415	825.5	2.912
20525	836.5	2.6887	20525	836.5	2.920
20635	847.5	2.6855	20635	847.5	2.914
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20415	825.5	2.6904	20415	825.5	2.909
20525	836.5	2.6864	20525	836.5	2.896
20635	847.5	2.6826	20635	847.5	2.919
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20415	825.5	2.6916	20415	825.5	2.924
20525	836.5	2.6921	20525	836.5	2.897
20635	847.5	2.6833	20635	847.5	2.893

Spectrum Plot

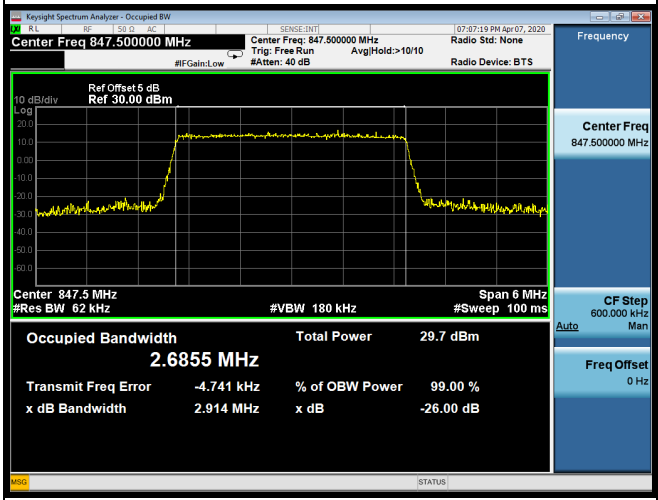
QPSK-20415



QPSK-20525

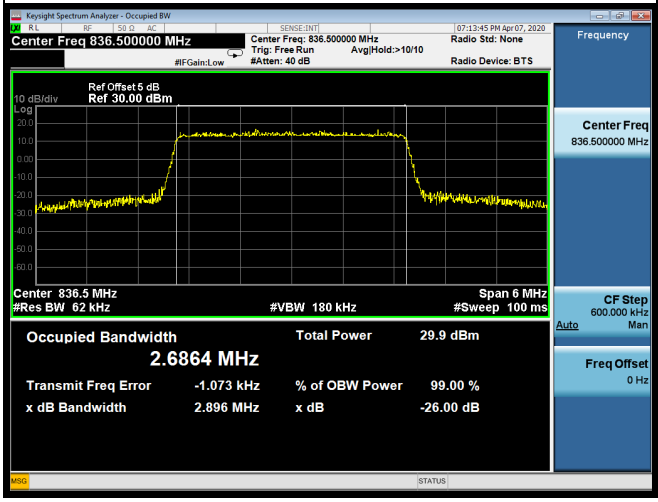


QPSK-20635

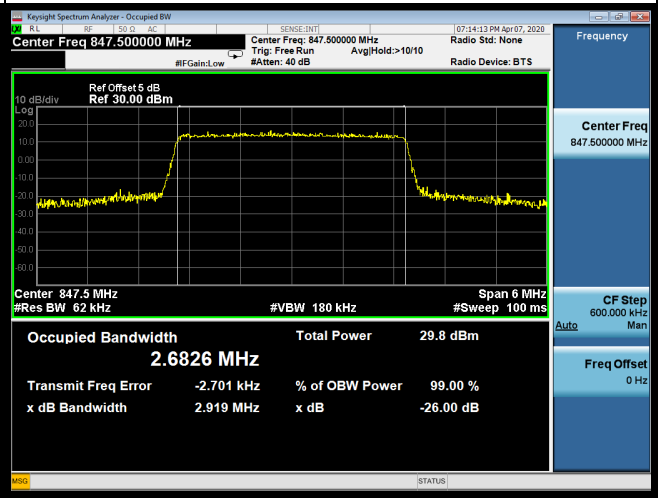


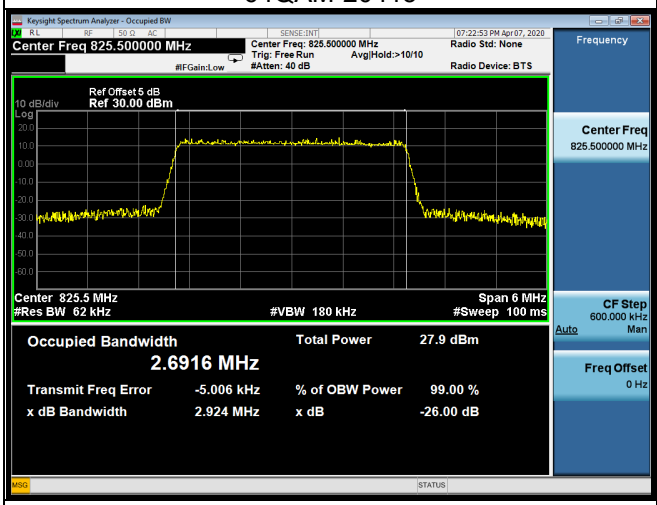
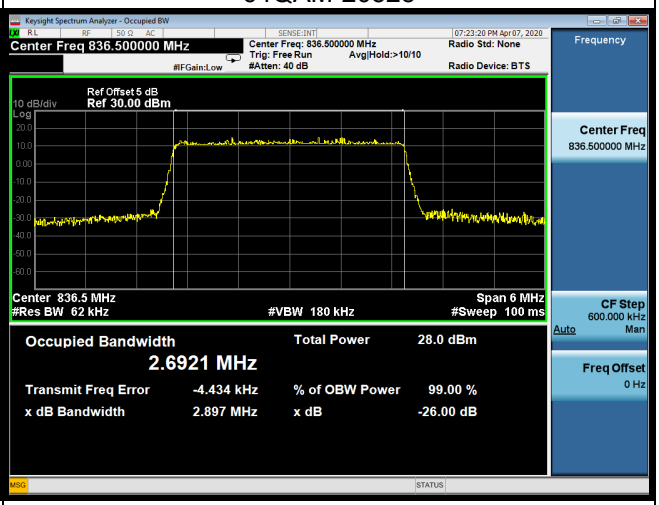
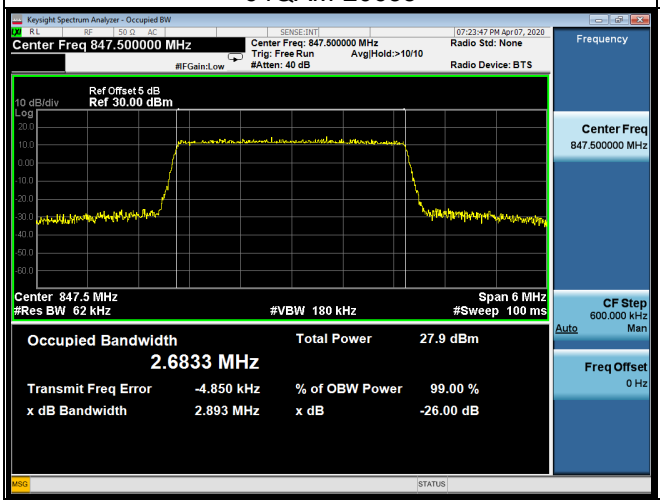
16QAM-20415

16QAM-20525



16QAM-20635

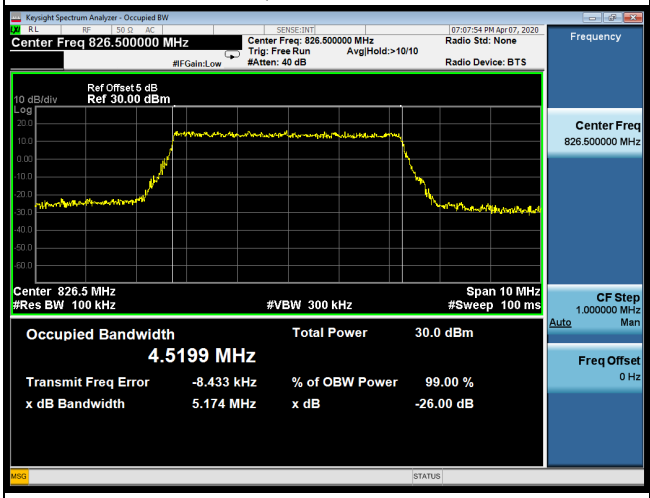


Spectrum Plot	
64QAM-20415	64QAM-20525
	
64QAM-20635	-
	-

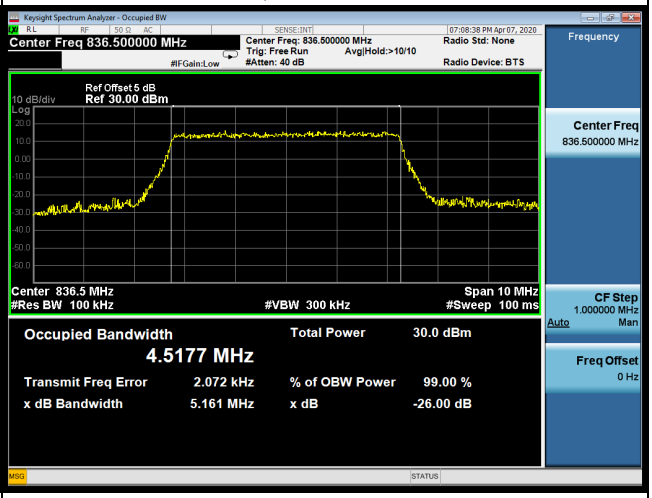
LTE Band 5_5M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20425	826.5	4.5199	20425	826.5	5.174
20525	836.5	4.5177	20525	836.5	5.161
20625	846.5	4.5116	20625	846.5	5.114
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20425	826.5	4.5121	20425	826.5	5.178
20525	836.5	4.5128	20525	836.5	5.123
20625	846.5	4.5097	20625	846.5	5.112
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20425	826.5	4.5299	20425	826.5	5.201
20525	836.5	4.5164	20525	836.5	5.158
20625	846.5	4.5142	20625	846.5	5.127

Spectrum Plot

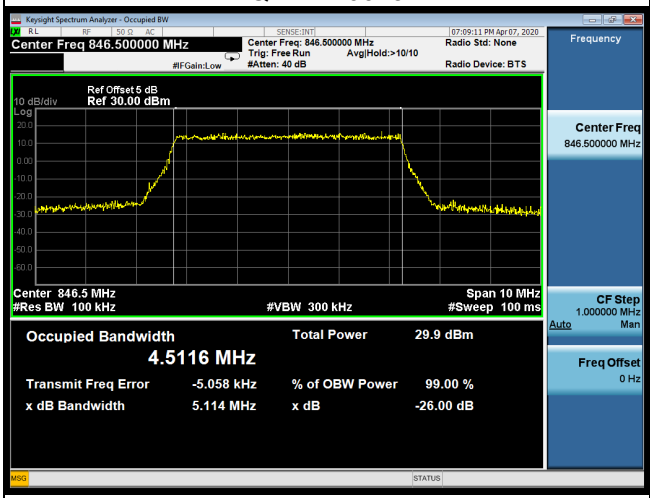
QPSK-20425



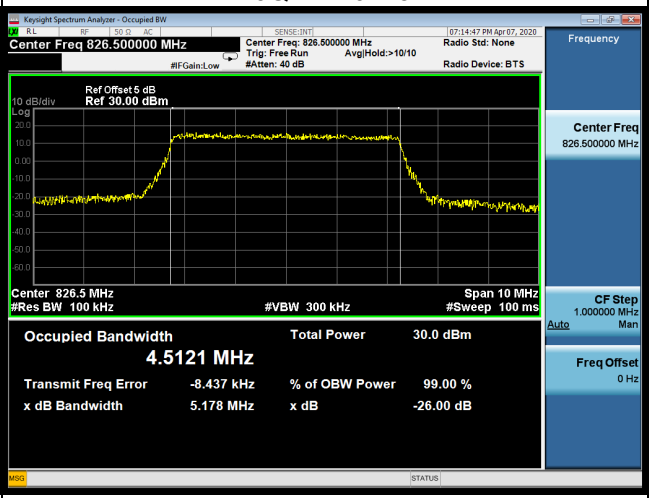
QPSK-20525



QPSK-20625



16QAM-20425



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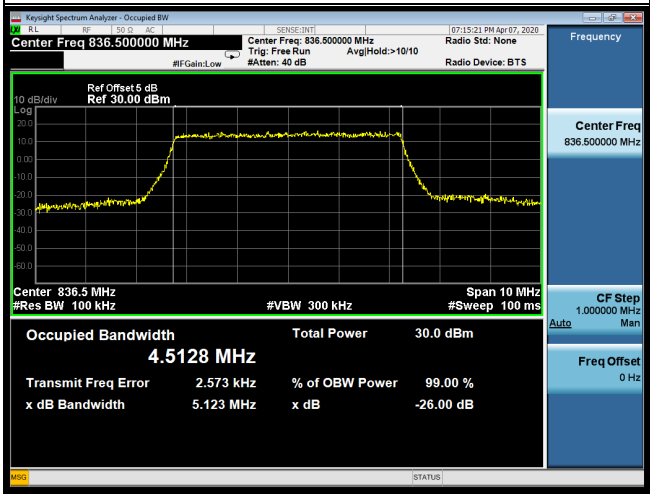
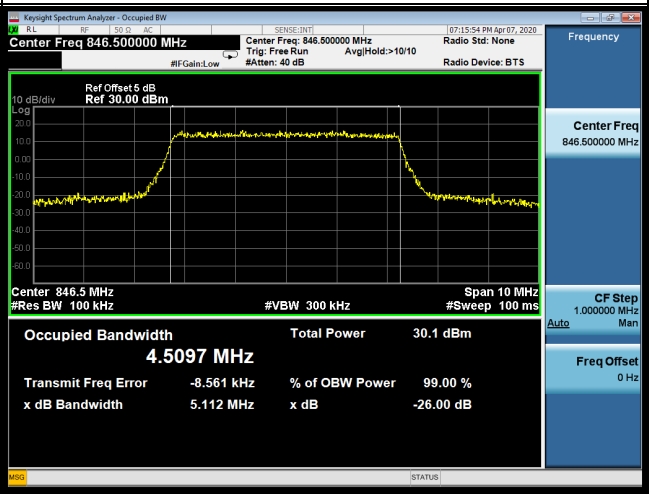
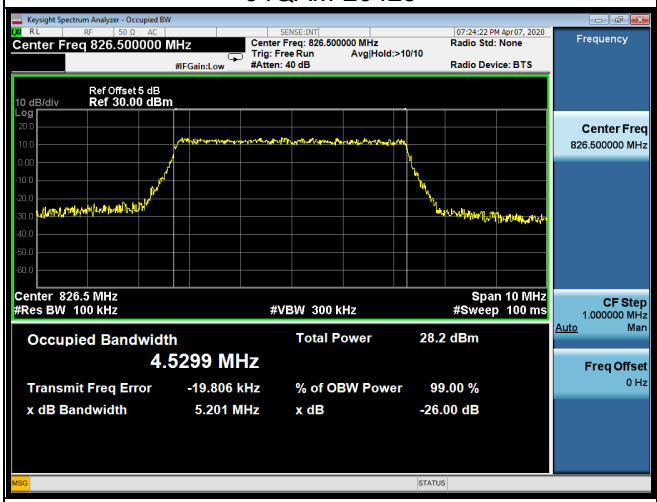
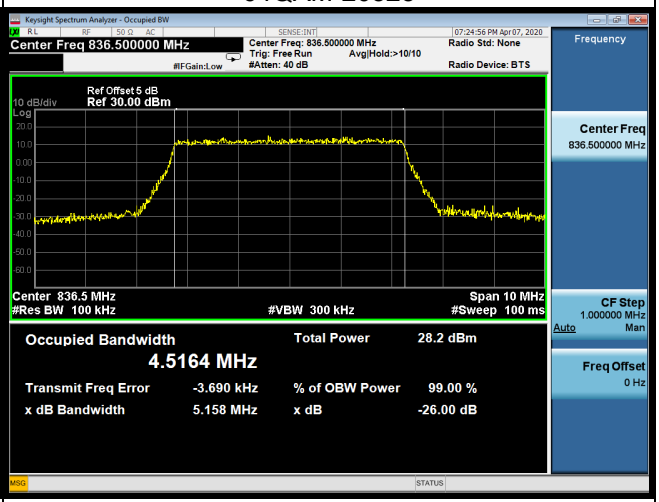
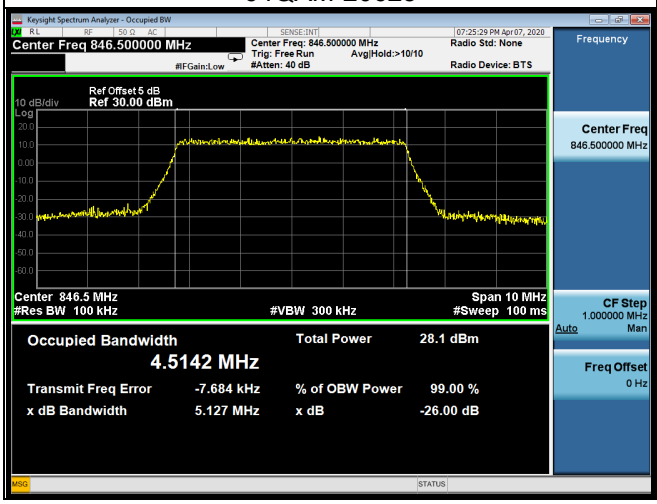


16QAM-20625

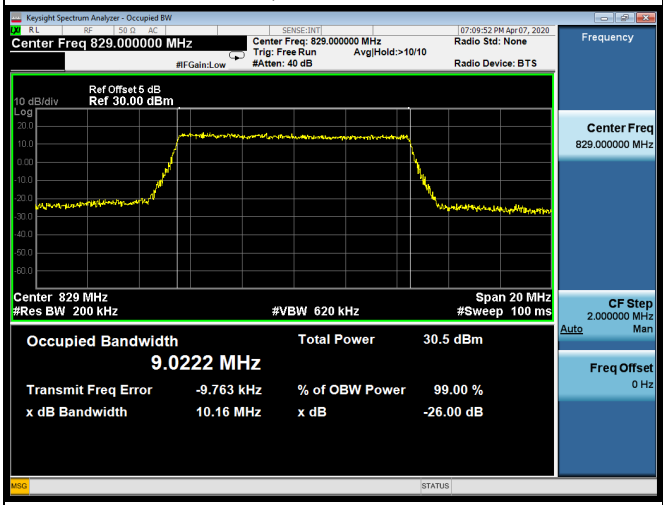


Spectrum Plot	
64QAM-20425	64QAM-20525
	
64QAM-20625	-
	-

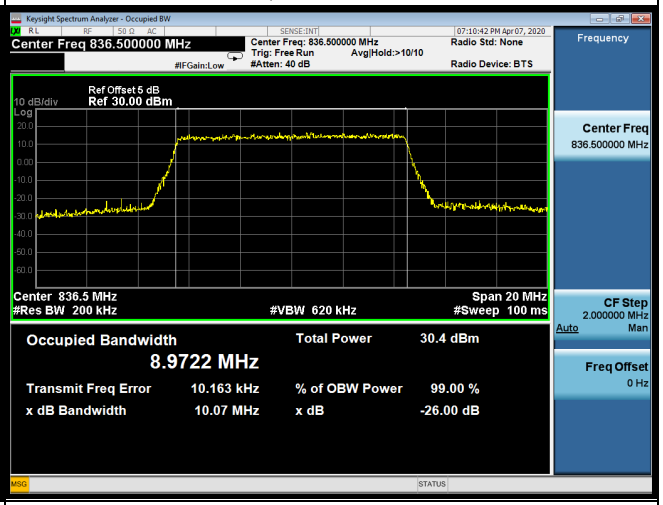
LTE Band 5_10M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20450	829.0	9.0222	20450	829.0	10.16
20525	836.5	8.9722	20525	836.5	10.07
20600	844.0	9.0333	20600	844.0	10.20
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20450	829.0	9.0269	20450	829.0	10.19
20525	836.5	8.9794	20525	836.5	10.05
20600	844.0	9.0000	20600	844.0	10.13
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20450	829.0	9.0019	20450	829.0	10.13
20525	836.5	8.9816	20525	836.5	10.07
20600	844.0	9.0150	20600	844.0	10.09

Spectrum Plot

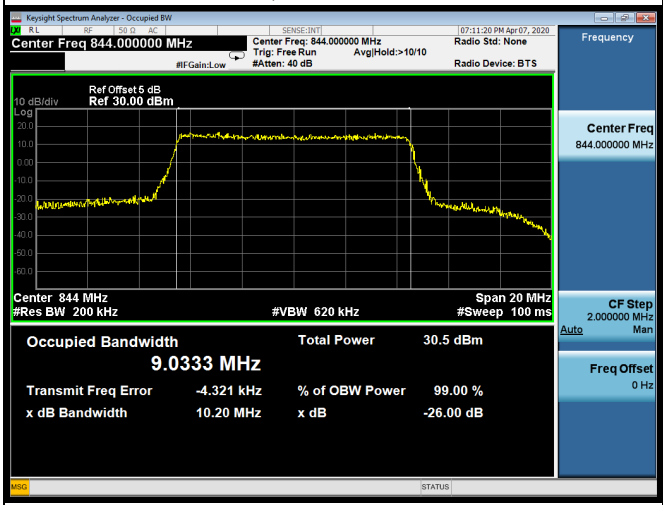
QPSK-20450



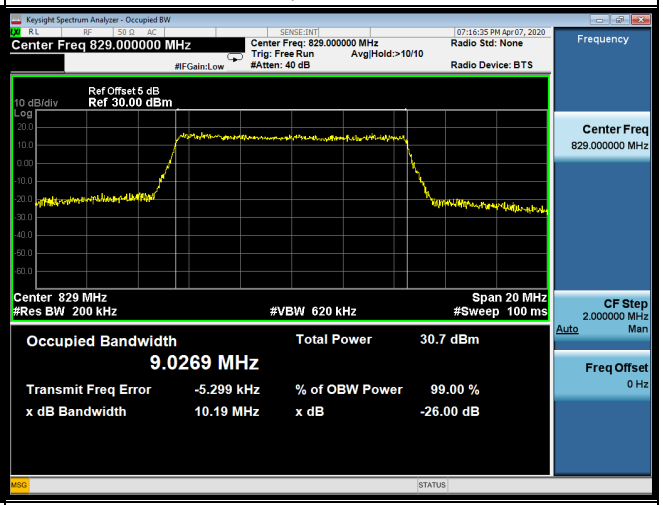
QPSK-20525



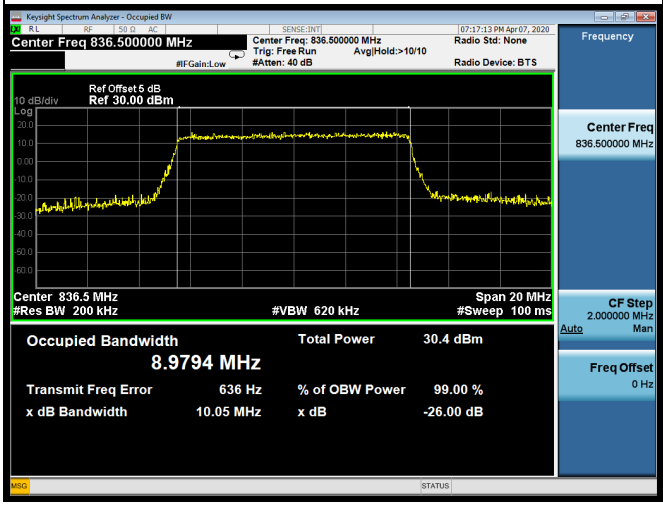
QPSK-20600



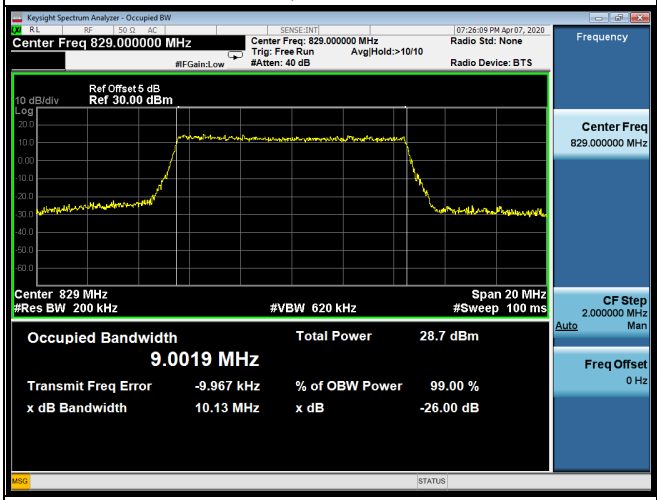
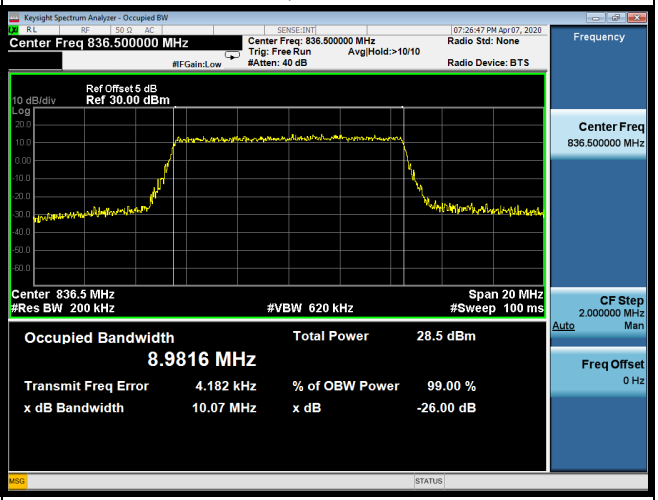
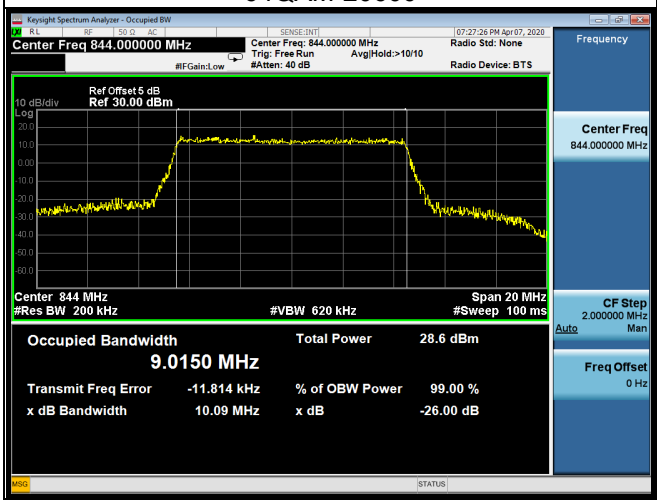
16QAM-20450



16QAM-20525



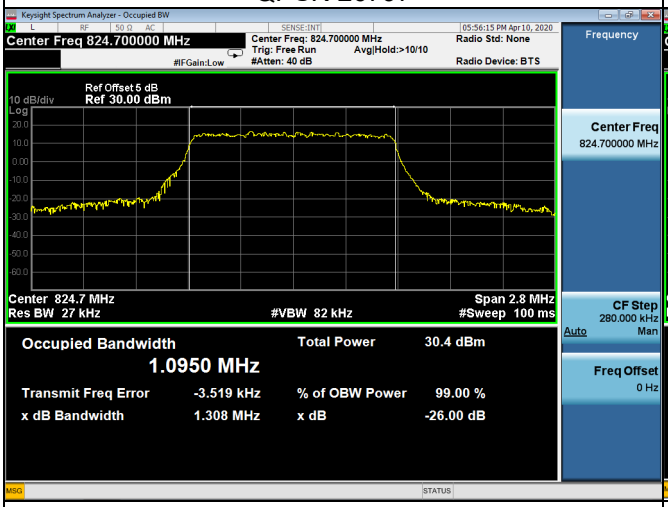
16QAM-20600

Spectrum Plot	
64QAM-20450	64QAM-20525
	
64QAM-20600	-
	-

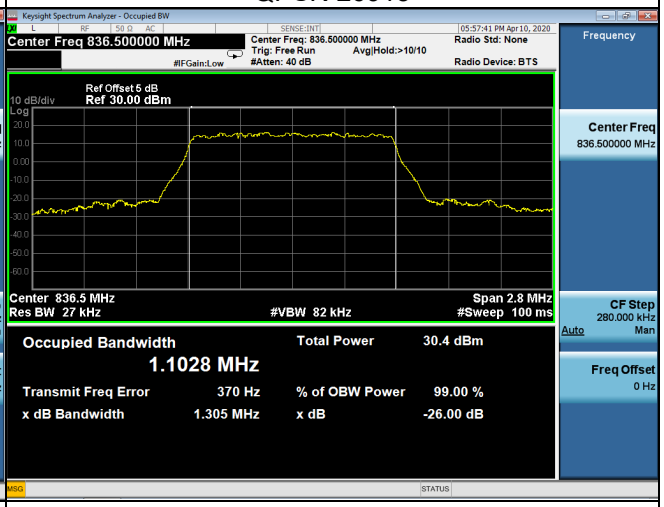
LTE Band 26_1.4M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26797	824.7	1.0950	26797	824.7	1.308
26915	836.5	1.1028	26915	836.5	1.305
27033	848.3	1.0852	27033	848.3	1.280
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26797	824.7	1.0953	26797	824.7	1.310
26915	836.5	1.0863	26915	836.5	1.279
27033	848.3	1.0912	27033	848.3	1.279
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26797	824.7	1.0842	26797	824.7	1.281
26915	836.5	1.0960	26915	836.5	1.309
27033	848.3	1.0860	27033	848.3	1.278

Spectrum Plot

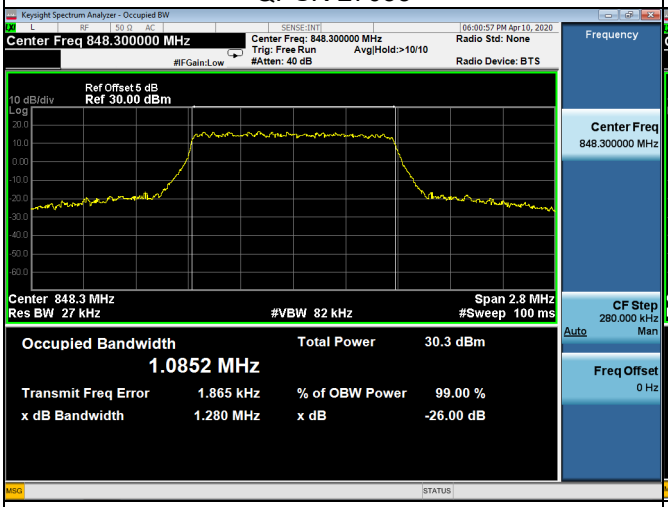
QPSK-26797



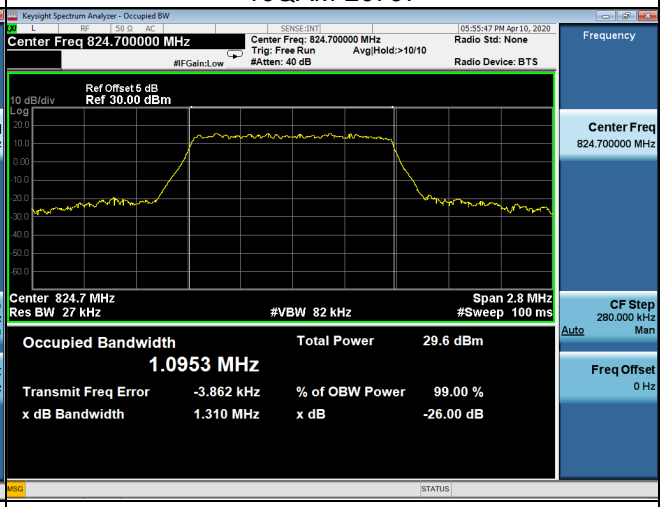
QPSK-26915



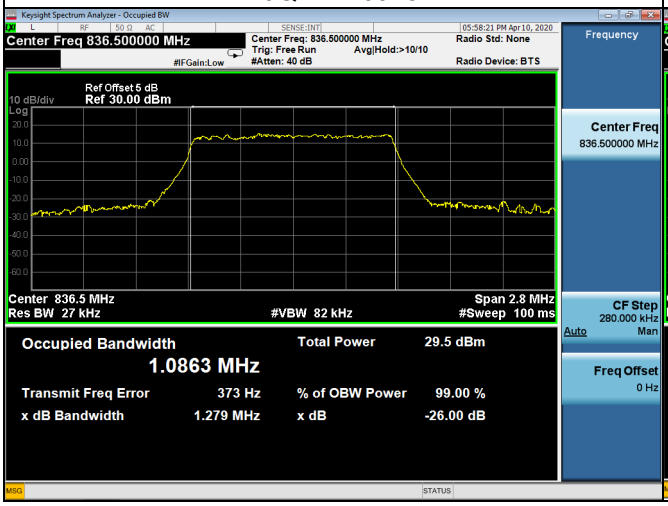
QPSK-27033



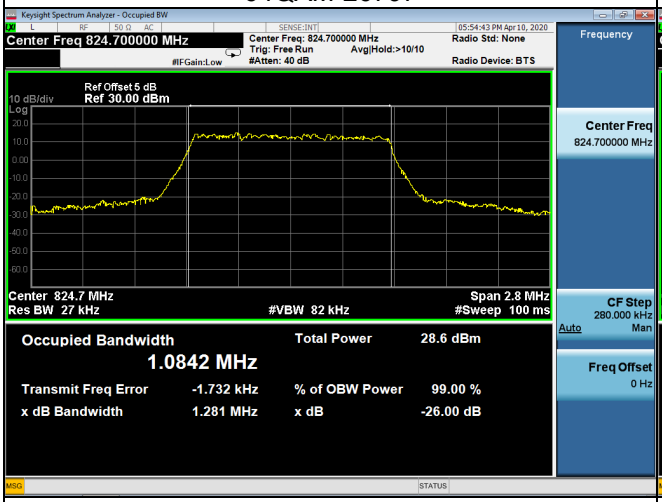
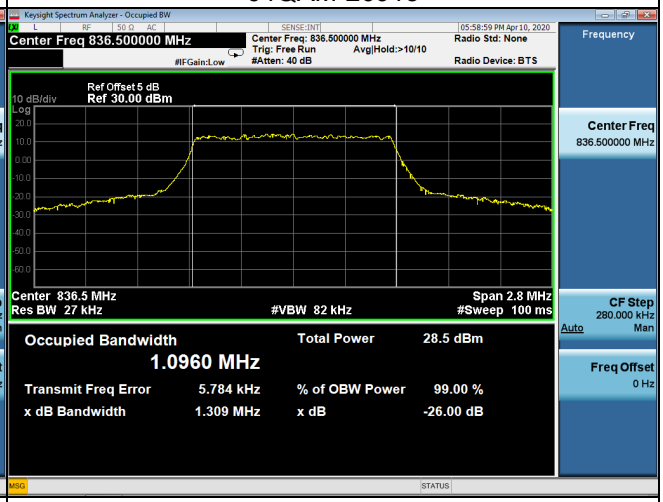
16QAM-26797



16QAM-26915



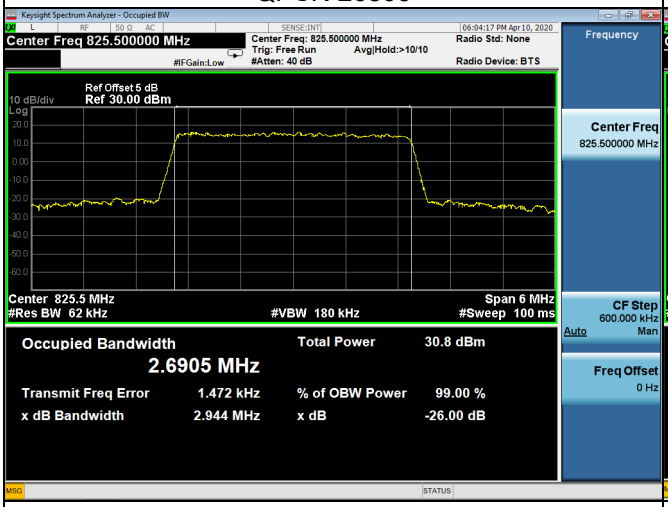
16QAM-27033

Spectrum Plot	
64QAM-26797	64QAM-26915
	
64QAM-27033	-
	-

LTE Band 26_3M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26805	825.5	2.6905	26805	825.5	2.944
26915	836.5	2.6939	26915	836.5	2.924
27025	847.5	2.6895	27025	847.5	2.926
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26805	825.5	2.7018	26805	825.5	2.922
26915	836.5	2.6901	26915	836.5	2.928
27025	847.5	2.6803	27025	847.5	2.924
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26805	825.5	2.6953	26805	825.5	2.937
26915	836.5	2.6973	26915	836.5	2.920
27025	847.5	2.6858	27025	847.5	2.910

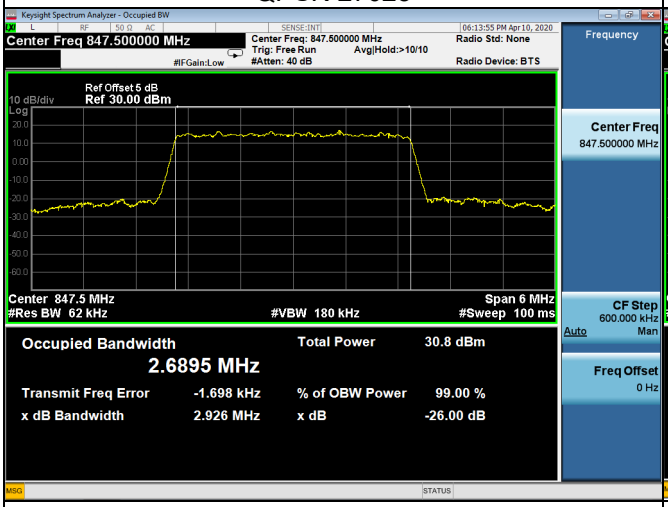
Spectrum Plot

QPSK-26805

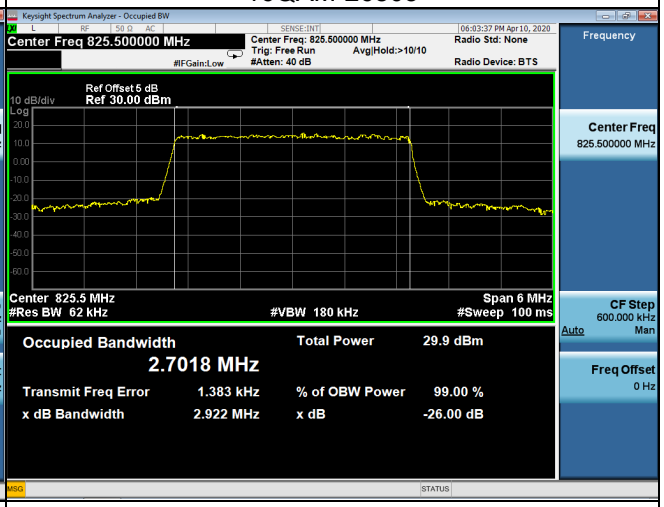


QPSK-26915

QPSK-27025

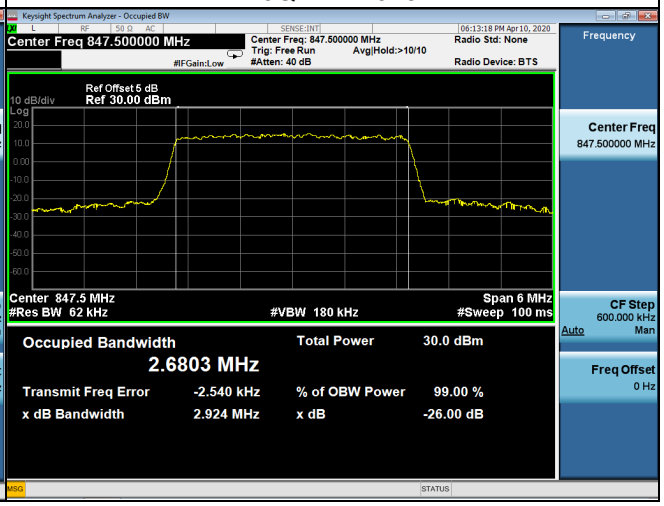


16QAM-26805



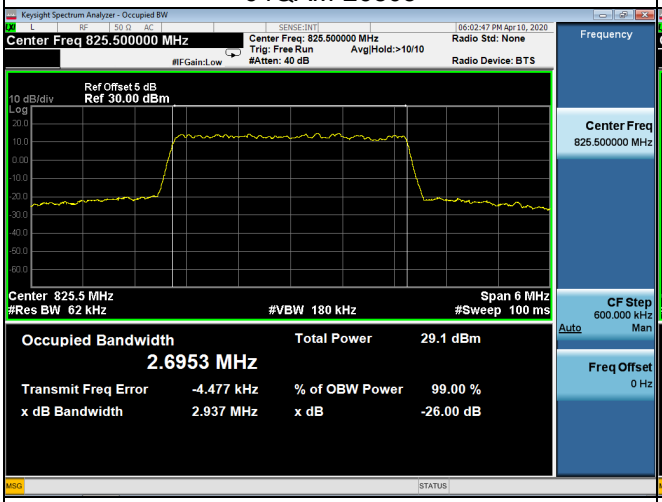
16QAM-26915

16QAM-27025

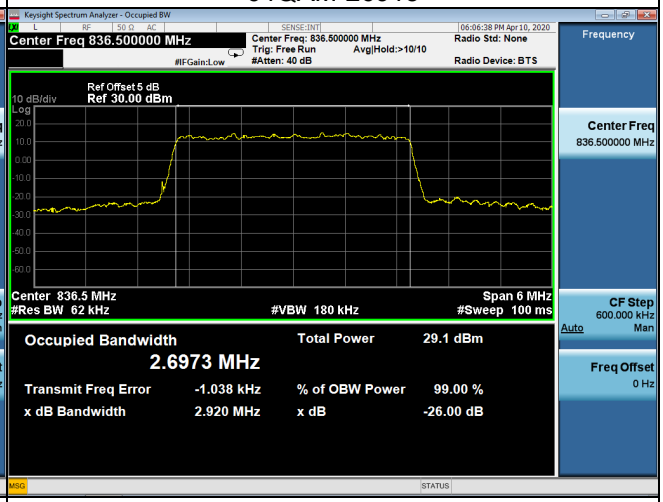


Spectrum Plot

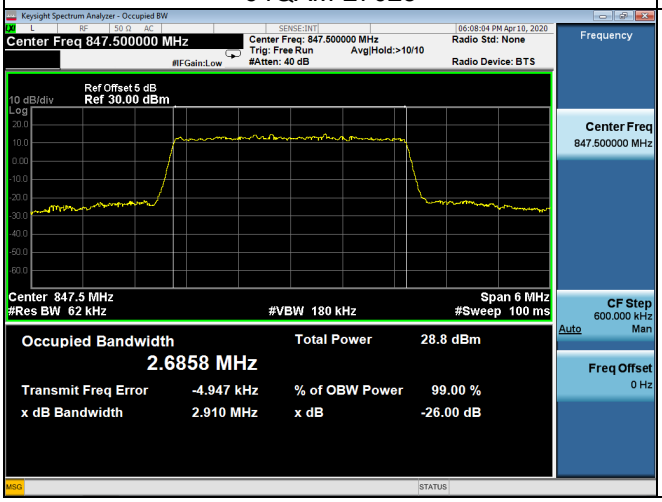
64QAM-26805



64QAM-26915



64QAM-27025



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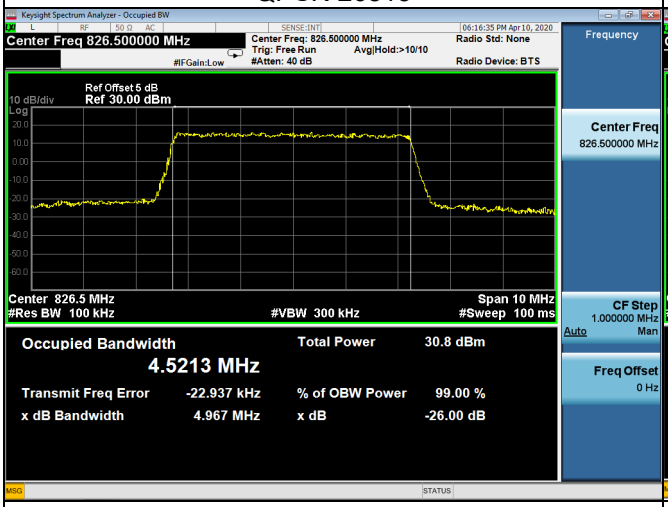
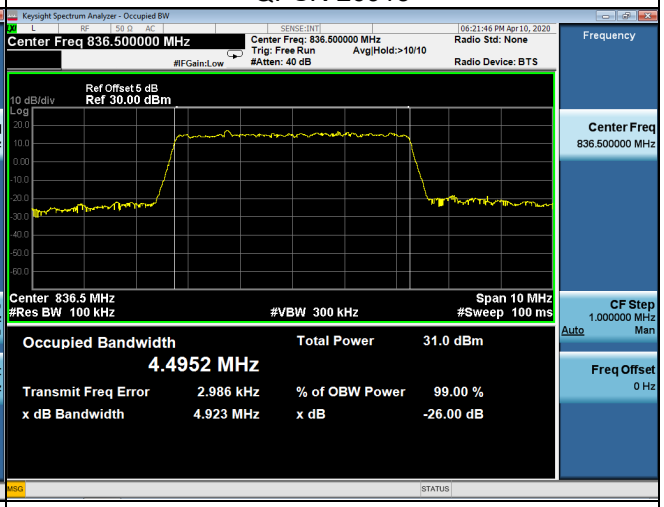
LTE Band 26_5M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26815	826.5	4.5213	26815	826.5	4.967
26915	836.5	4.4952	26915	836.5	4.923
27015	846.5	4.4944	27015	846.5	4.900
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26815	826.5	4.4926	26815	826.5	4.922
26915	836.5	4.4834	26915	836.5	4.923
27015	846.5	4.4806	27015	846.5	4.910
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26815	826.5	4.5135	26815	826.5	4.952
26915	836.5	4.5032	26915	836.5	5.002
27015	846.5	4.4936	27015	846.5	4.913

Spectrum Plot

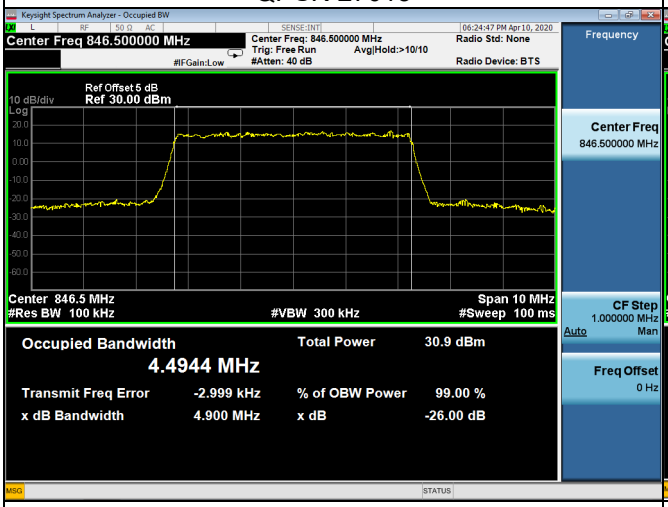
QPSK-26815



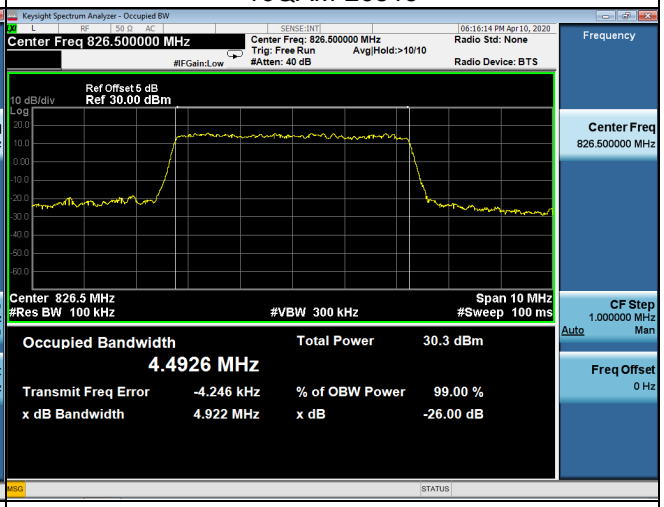
QPSK-26915



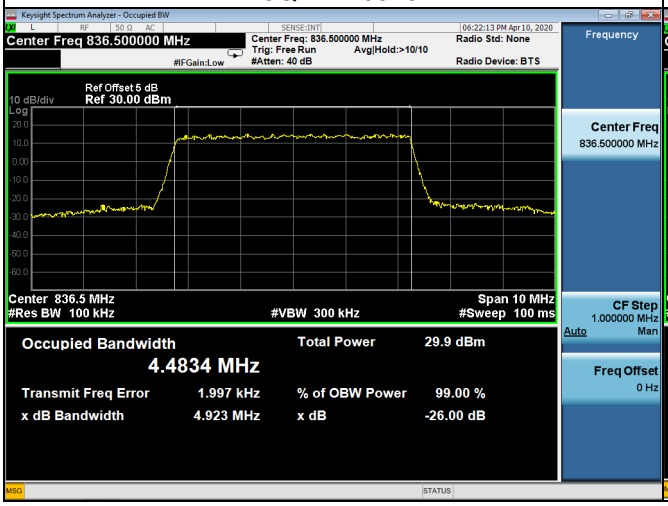
QPSK-27015



16QAM-26815



16QAM-26915



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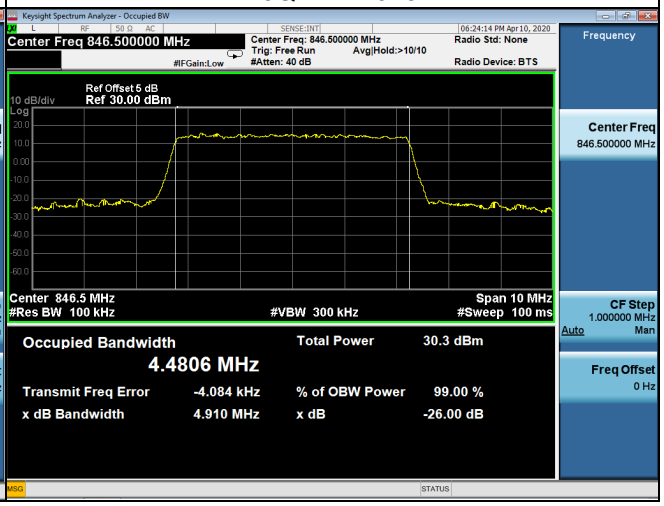
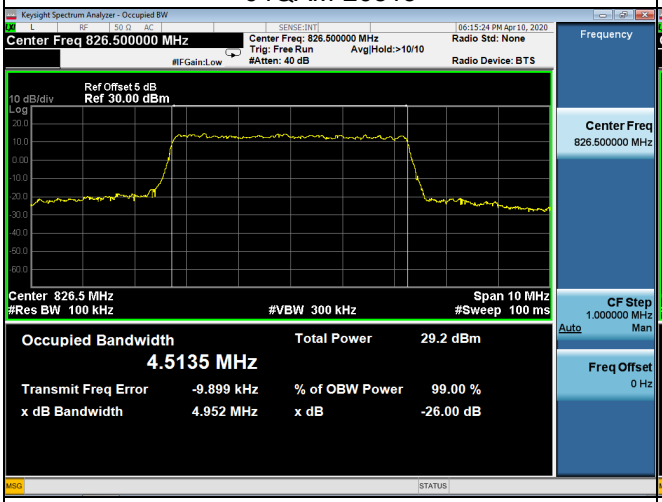
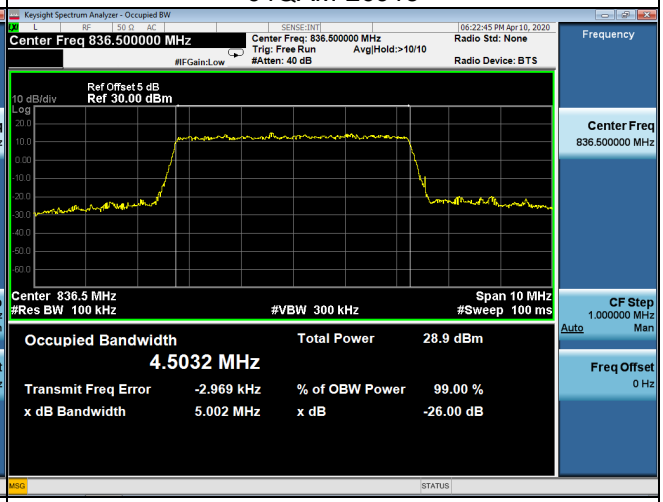
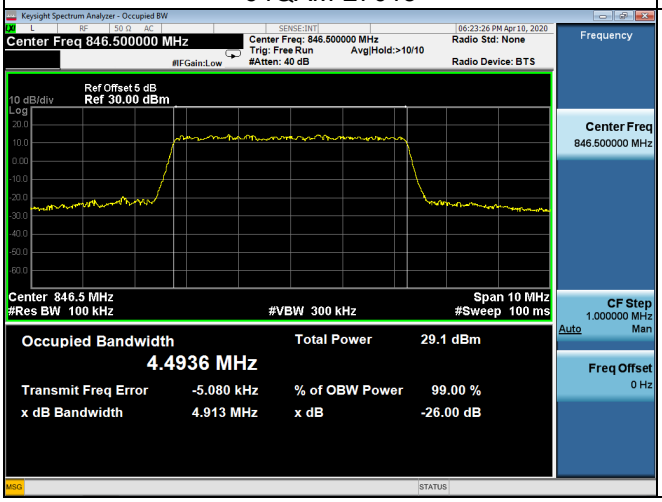
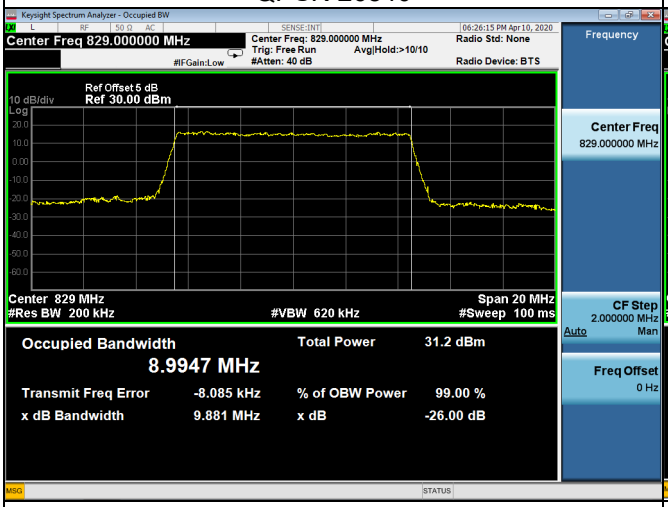


Spectrum Plot	
64QAM-26815	64QAM-26915
	
64QAM-27015	-
	-

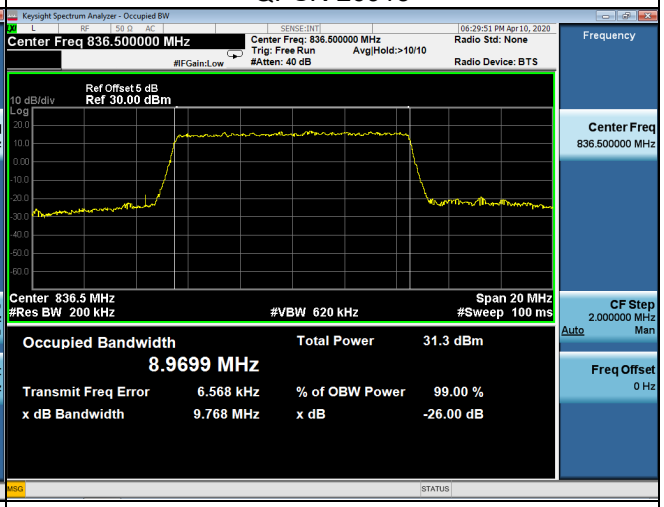
LTE Band 26_10M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26840	829	8.9947	26840	829	9.881
26915	836.5	8.9699	26915	836.5	9.768
26990	844	9.0025	26990	844	9.837
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26840	829	9.0096	26840	829	9.833
26915	836.5	8.9672	26915	836.5	9.779
26990	844	9.0061	26990	844	9.807
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26840	829	8.9931	26840	829	9.789
26915	836.5	8.9656	26915	836.5	9.842
26990	844	8.9854	26990	844	9.802

Spectrum Plot

QPSK-26840



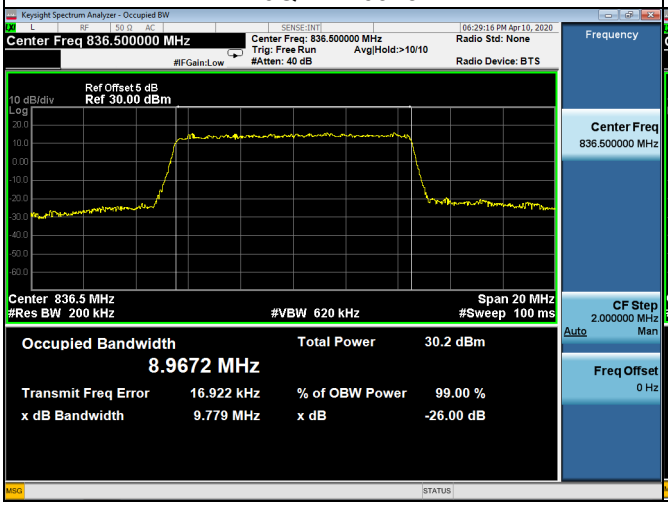
QPSK-26915



QPSK-26990

16QAM-26840

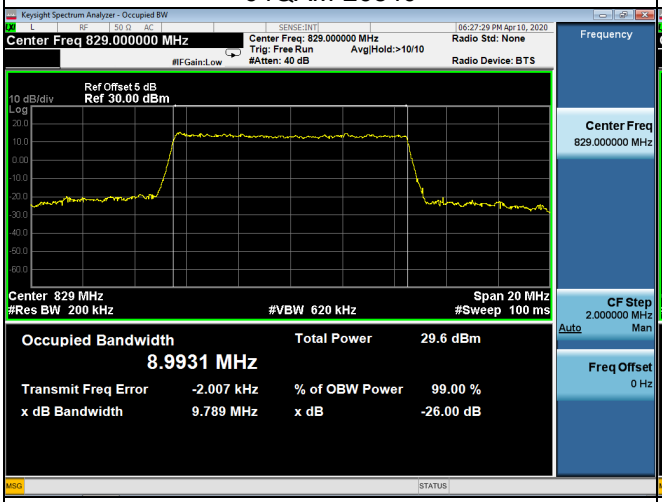
16QAM-26915



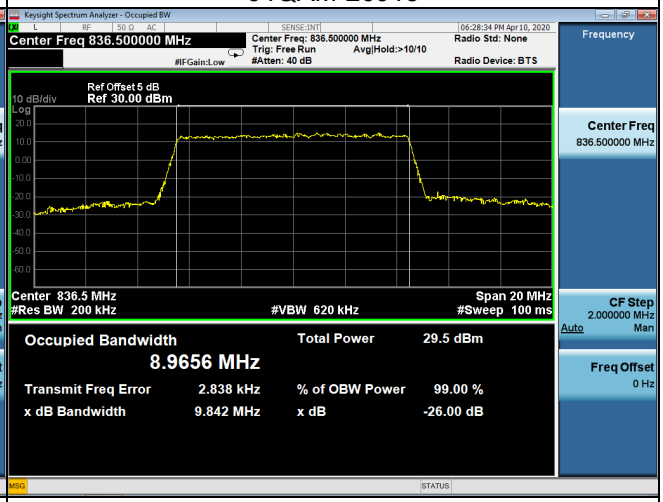
16QAM-26990

Spectrum Plot

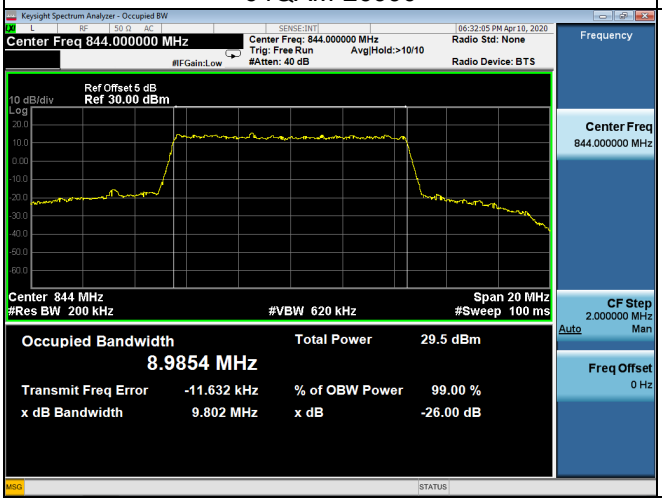
64QAM-26840



64QAM-26915



64QAM-26990



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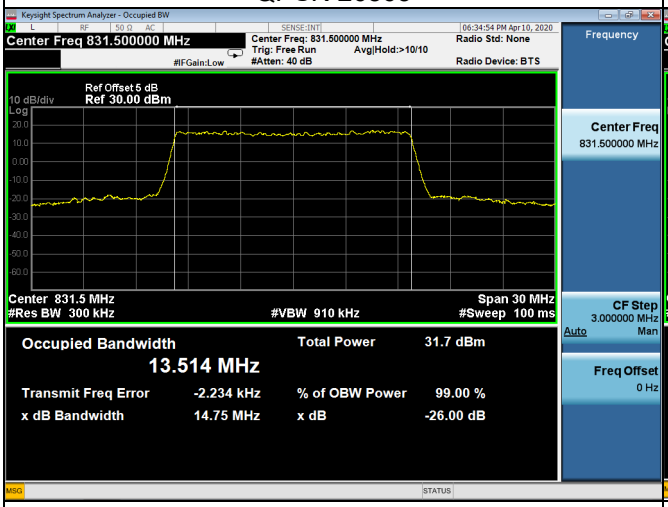
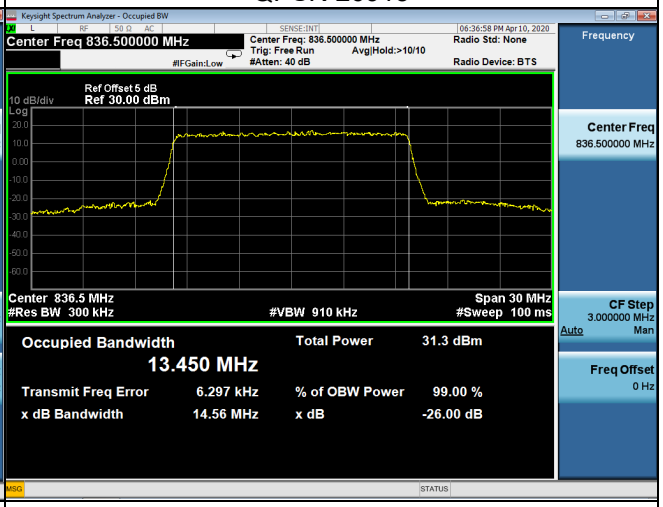
LTE Band 26_15M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26865	831.5	13.514	26865	831.5	14.75
26915	836.5	13.450	26915	836.5	14.56
26965	841.5	13.426	26965	841.5	14.59
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26865	831.5	13.510	26865	831.5	14.66
26915	836.5	13.430	26915	836.5	14.61
26965	841.5	13.455	26965	841.5	14.66
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26865	831.5	13.506	26865	831.5	14.65
26915	836.5	13.452	26915	836.5	14.60
26965	841.5	13.465	26965	841.5	14.62

Spectrum Plot

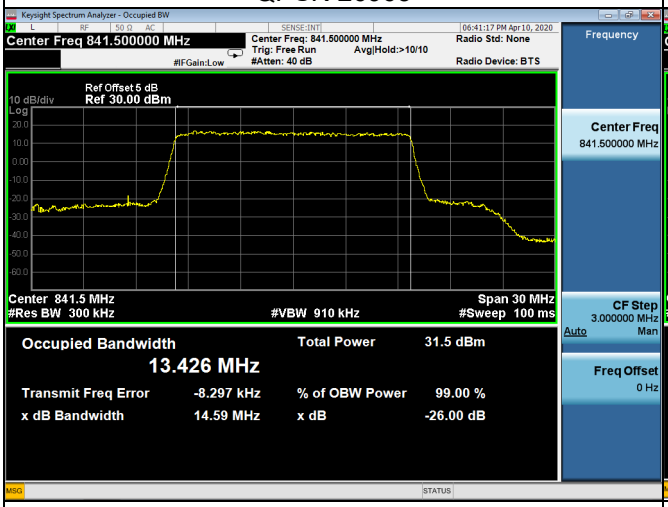
QPSK-26865



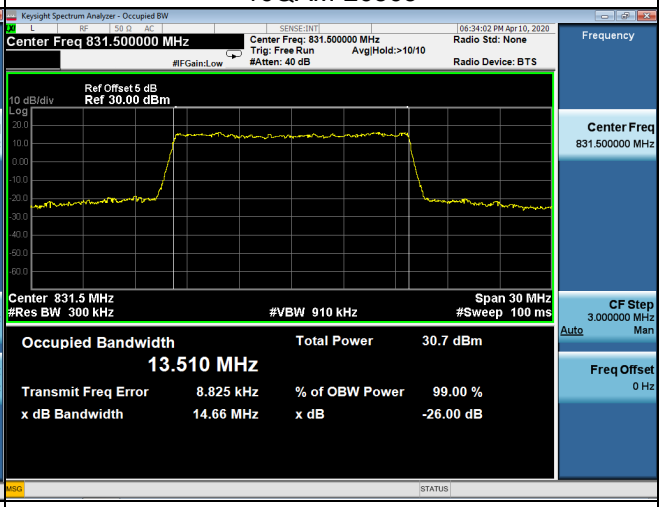
QPSK-26915



QPSK-26965



16QAM-26865



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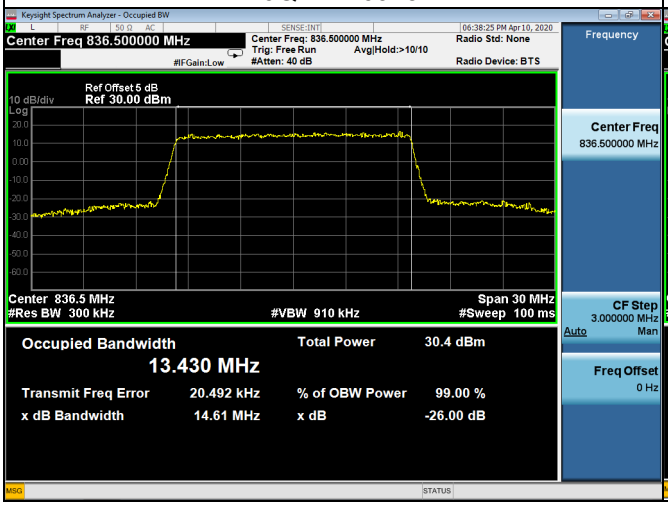
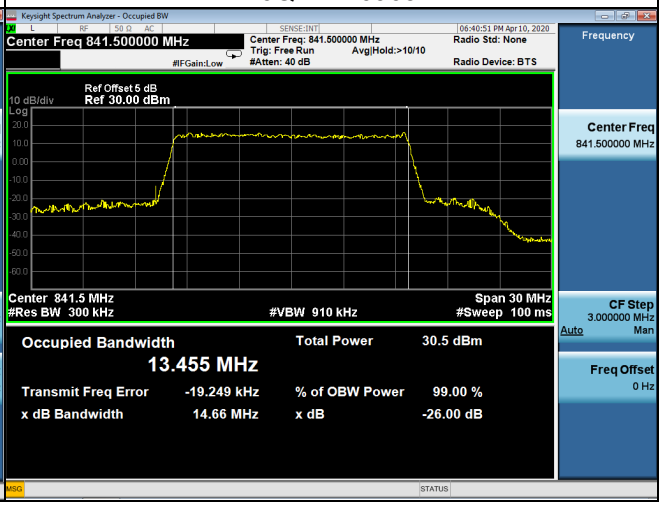
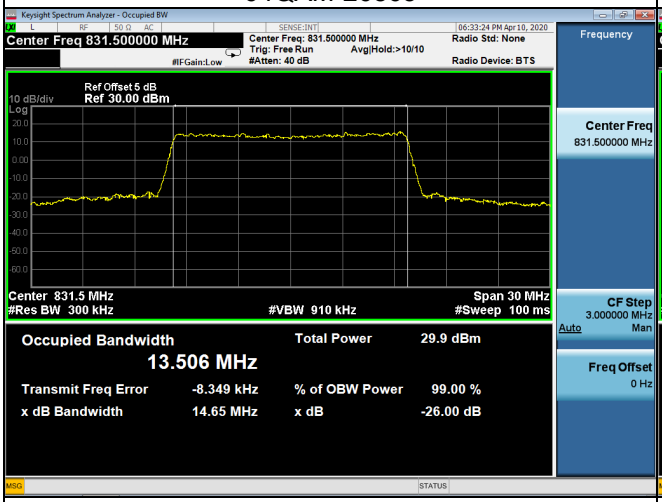
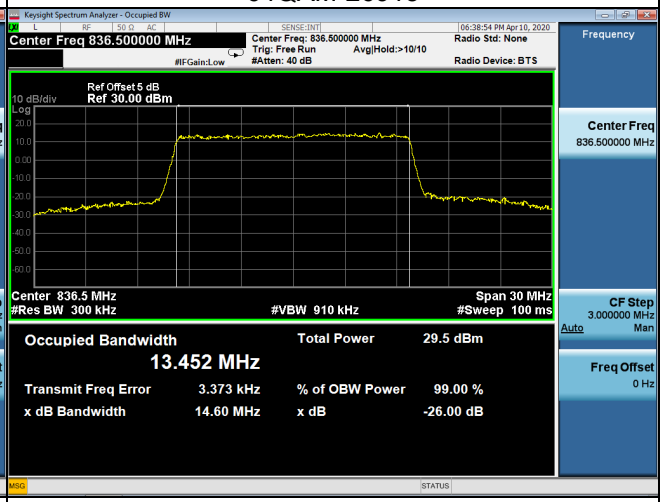
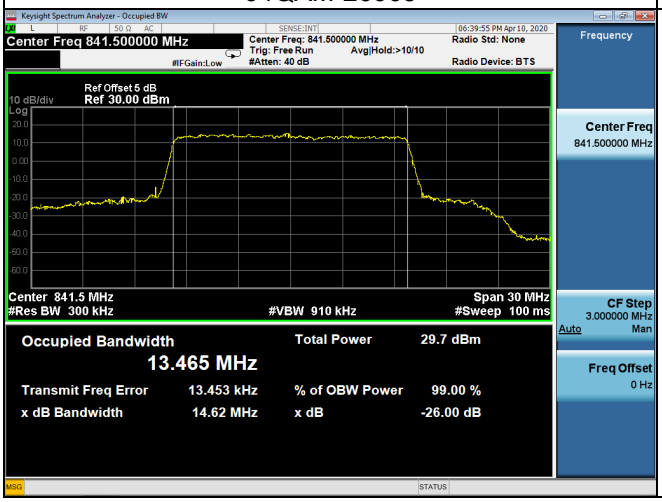
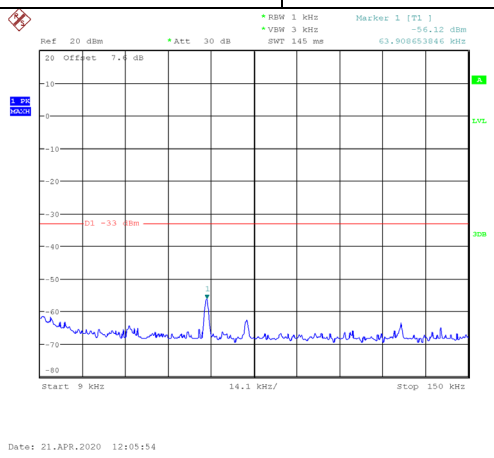
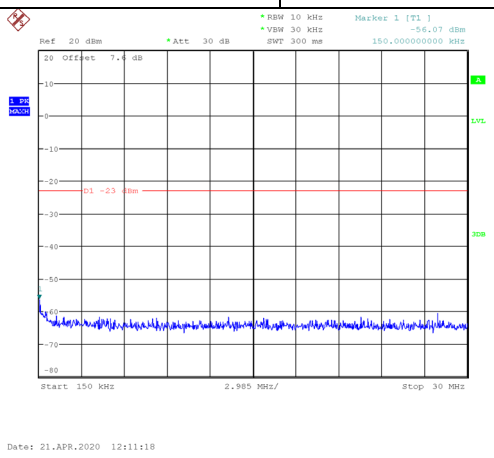
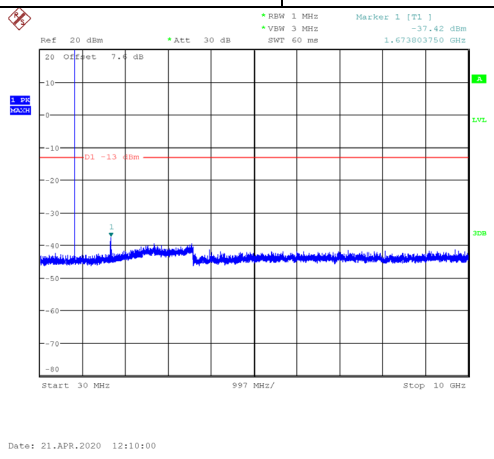
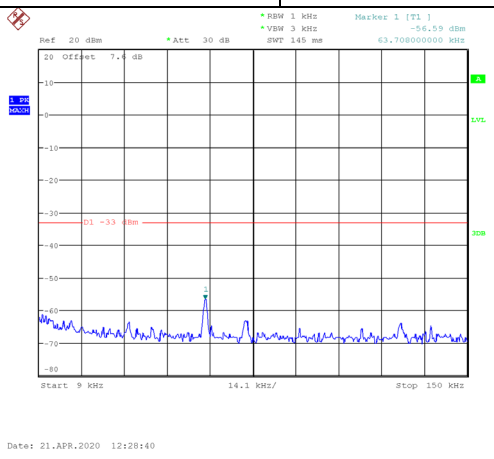
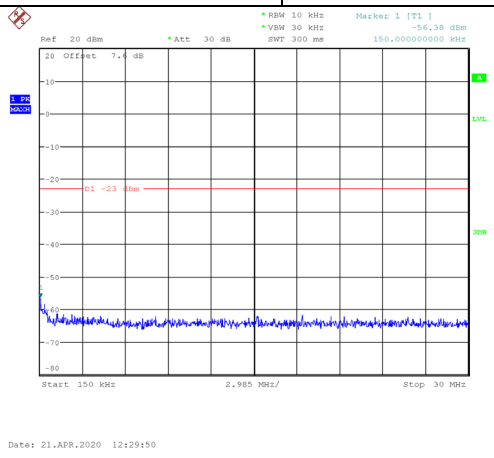
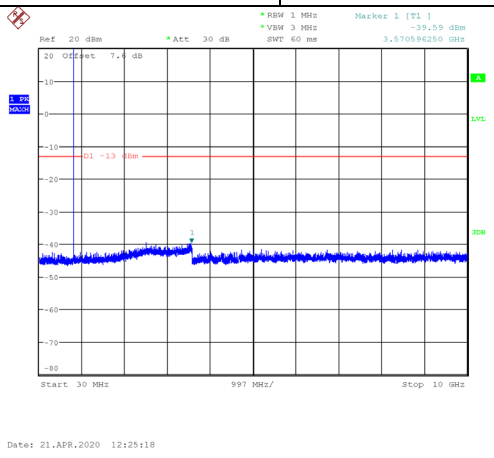


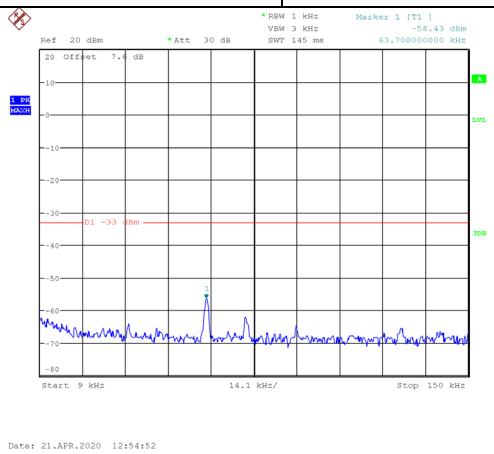
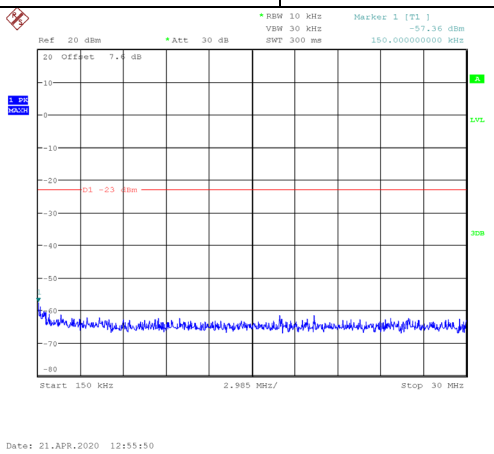
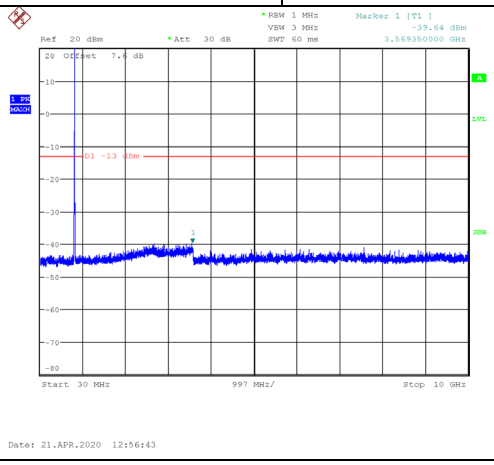
16QAM-26965

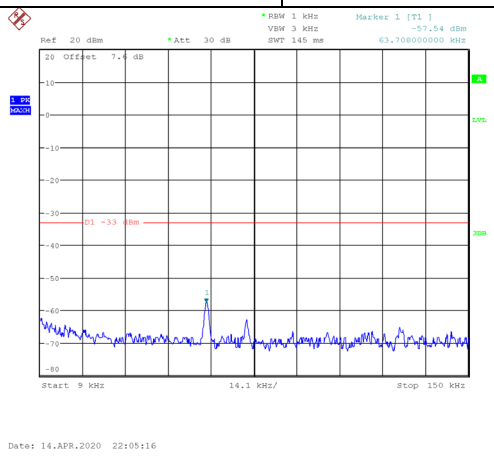
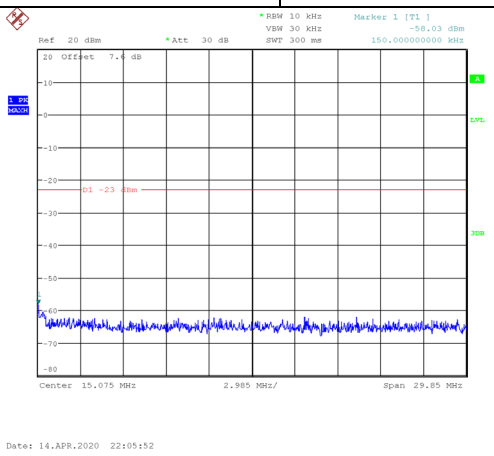
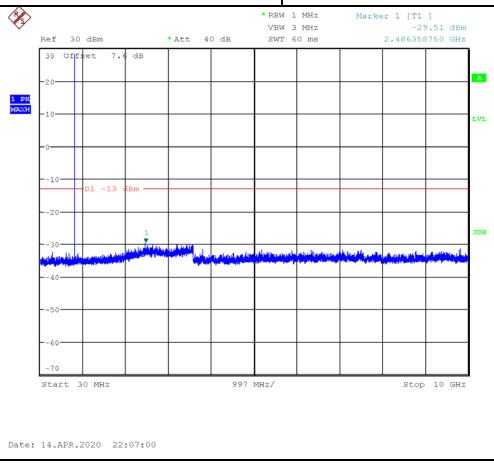


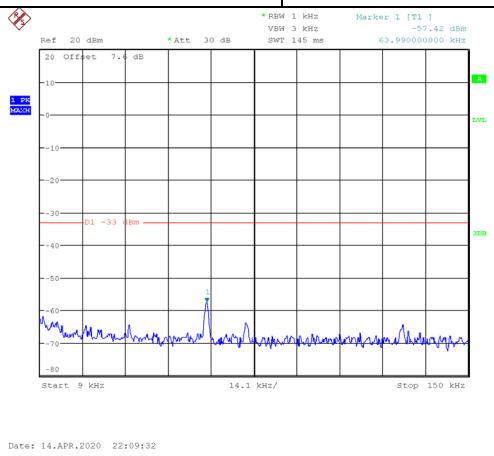
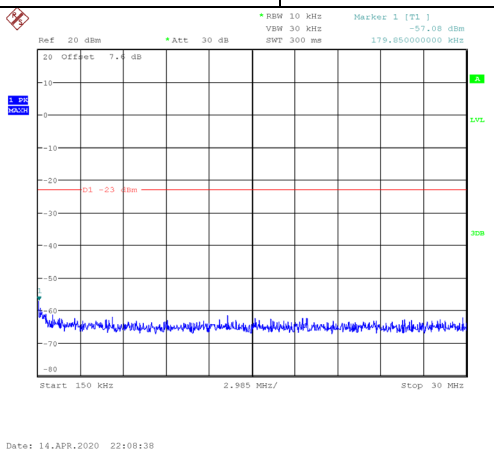
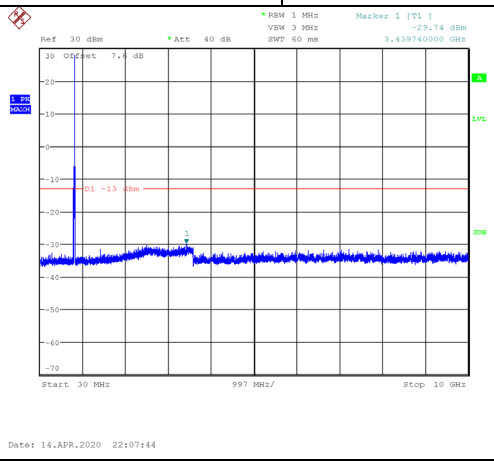
Spectrum Plot	
64QAM-26865	64QAM-26915
	
64QAM-26965	-
	-

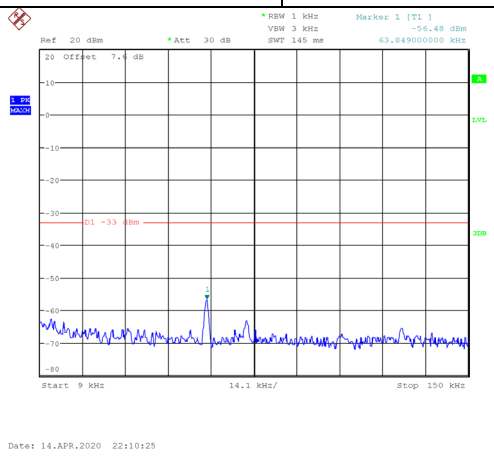
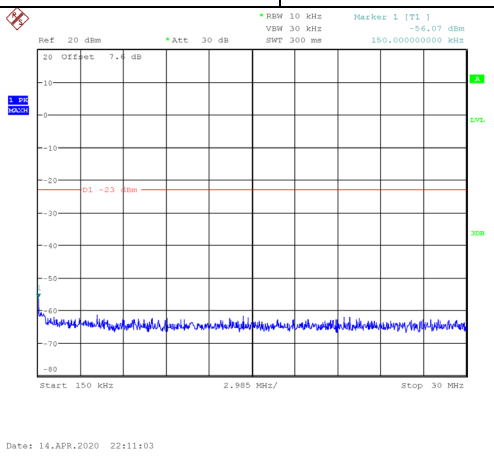
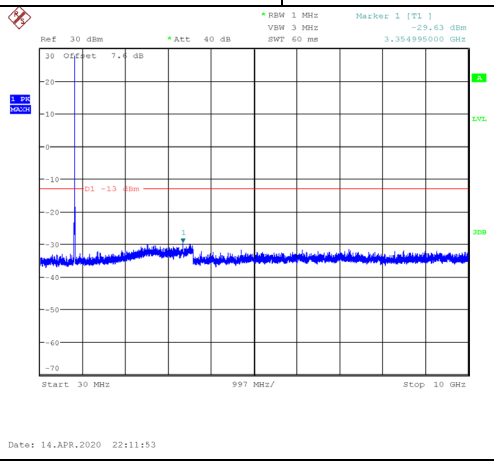
APPENDIX C - CONDUCTED SPURIOUS EMISSIONS

GSM850 Spectrum Plot			
GSM		GSM	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
190	836.6	190	836.6
			
GSM		EDGE	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
190	836.6	190	836.6
			
EDGE		EDGE	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
190	836.6	190	836.6
			

WCDMA Band V_WCDMA Spectrum Plot			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
4182	836.4	4182	836.4
			
Channel	Frequency(MHz)	-	-
4182	836.4	-	-
		-	

LTE Band 5_1.4M Spectrum Plot			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
			
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
		-	

LTE Band 5_5M Spectrum Plot			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
			
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
		-	

LTE Band 5_10M Spectrum Plot			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
			
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
		-	