

FCC Radio Test Report

FCC ID: 2AH4HATD600

This report concerns: Original Grant

Project No. : 2107C193
Equipment : LTE Cat-M1 Tracker
Brand Name : Mobilogix
Test Model : ATD600S
Series Model : N/A
Applicant : Mobilogix, Inc.
Address : 5500 Trabuco Rd Suite 150 Irvine, CA, USA
Manufacturer : Mobilogix, Inc.
Address : 5500 Trabuco Rd Suite 150 Irvine, CA, USA
Factory : Suga Electronics (Dongguan) Co., Ltd.
Address : No.8 Fulong Road, Qingxi Town, Dongguan City
Date of Receipt : Jul. 29, 2021
Date of Test : Jul. 30, 2021 ~ Sep. 10, 2021
Issued Date : Sep. 18, 2021
Report Version : R00
Test Sample : Engineering Sample No.: DG2021081225 for radiated, DG2021081224 for conducted.
Standard(s) : 47 CFR FCC Part 24 Subpart E
 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.

Vegeta Li

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TESTING CERT #5123.02

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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's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

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.	Sep. 18, 2021

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 24 Subpart E & Part 2			
Standard(s) Section	Test Item	Judgment	Remark
2.1046 24.232(c)	Output Power & Equivalent Isotropic Radiated Power	PASS	-----
2.1049	Occupied Bandwidth	PASS	-----
2.1051 24.238(a)	Conducted Spurious Emissions	PASS	-----
2.1053 24.238(a)	Radiated Spurious Emissions	PASS	-----
24.238(a)	Band Edge Measurements	PASS	-----
24.232(d)	Peak To Average Ratio	PASS	-----
2.1055 24.235	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 Rd. Shixia, Dalang Town, Dongguan City, Guangdong, People's Republic of 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	CISPR	9kHz ~ 30MHz	-	2.36
		30MHz ~ 200MHz	V	4.36
		30MHz ~ 200MHz	H	3.32
		200MHz ~ 1,000MHz	V	4.08
		200MHz ~ 1,000MHz	H	3.96
		1GHz ~ 6GHz	-	3.80
		6GHz ~ 18GHz	-	4.82

B. Other Measurement:

Parameter	Uncertainty
Spectrum Bandwidth	±3.8 %
Maximum Output Power	±0.95 dB
Power Spectral Density	±0.86 dB
Frequency Stability	±0.16 dB
Temperature	±0.08 °C
Time	±0.58 %
Supply voltages	±0.3 %

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 & EIRP	23.5°C	43%	DC 3.6 V	Tate Liu
Occupied Bandwidth	23.5°C	43%	DC 3.6 V	Tate Liu
Conducted Spurious Emissions	23.5°C	43%	DC 3.6 V	Tim Yang
Radiated Spurious Emissions	26°C	52%	DC 3.6 V	Kwok Guo
Band Edge	23.5°C	43%	DC 3.6 V	Tate Liu
Peak to Average Ratio	23.5°C	43%	DC 3.6 V	Tate Liu
Frequency Stability	Normal & Extreme	43%	Normal & Extreme	Tate Liu

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	LTE Cat-M1 Tracker				
Brand Name	Mobilogix				
Test Model	ATD600S				
Series Model	N/A				
Model Difference(s)	N/A				
Hardware Version	1.1				
Software Version	1.1.45				
Power Source	Supplied from battery.				
Power Rating	DC 3.6V				
IEMI No.	Conducted	867730051961021			
	Radiated	867730051961708			
LTE Category	M1				
Modulation Type	GSM		GMSK		
	EDGE/GPRS		GMSK, 8PSK		
	LTE		UL: QPSK,16QAM DL: QPSK,16QAM		
Max. EIRP	GSM 1900 / GPRS 1900		GMSK	33.35	dBm
	EDGE 1900		8PSK	28.23	dBm
	LTE	Channel Bandwidth (MHz)	QPSK (dBm)		16QAM (dBm)
	Band 2	1.4	23.62		22.55
		3	23.58		22.59
		5	23.64		23.55
		10	23.78		23.68
		15	23.86		23.75
		20	23.77		23.49
	Band 25	1.4	23.75		22.45
		3	23.57		22.40
		5	23.66		23.63
		10	23.54		23.53
		15	23.58		23.65
		20	23.49		23.77

Note:

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

2. Channel List:

PCS 1900				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	512	1850.2	528	1930.2
Mid Range	661	1880	677	1960
High Range	810	1909.8	826	1989.8

LTE Band 2					
Test Frequency ID	Bandwidth (MHz)	N _{UL}	Frequency of Uplink (MHz)	N _{DL}	Frequency of Downlink (MHz)
Low Range	1.4	18607	1850.7	607	1930.7
	3	18615	1851.5	615	1931.5
	5	18625	1852.5	625	1932.5
	10	18650	1855	650	1935
	15	18675	1857.5	675	1937.5
	20	18700	1860	700	1940
Mid Range	1.4/3/5/10/15/20	18900	1880	900	1960
High Range	1.4	19193	1909.3	1193	1989.3
	3	19185	1908.5	1185	1988.5
	5	19175	1907.5	1175	1987.5
	10	19150	1905	1150	1985
	15	19125	1902.5	1125	1982.5
	20	19100	1900	1100	1980

LTE Band 25					
Test Frequency ID	Bandwidth (MHz)	N _{UL}	Frequency of Uplink (MHz)	N _{DL}	Frequency of Downlink (MHz)
Low Range	1.4	26047	1850.7	8047	1930.7
	3	26055	1851.5	8055	1931.5
	5	26065	1852.5	8065	1932.5
	10	26090	1855	8090	1935
	15	26115	1857.5	8115	1937.5
	20	26140	1860	8140	1940
Mid Range	1.4/3/5/10/15/20	26365	1882.5	8365	1962.5
High Range	1.4	26683	1914.3	8683	1994.3
	3	26675	1913.5	8675	1993.5
	5	26665	1912.5	8665	1992.5
	10	26640	1910	8640	1990
	15	26615	1907.5	8615	1987.5
	20	26590	1905	8590	1985

3. Table for Filed Antenna:

Brand	P/N	Antenna Type	Connector	Gain (dBi)	Note
Ethertronics	1004795	Chip	N/A	3.1	PCS 1900
Ethertronics	1004795	Chip	N/A	3.1	LTE Band 2
Ethertronics	1004795	Chip	N/A	3.1	LTE Band 25

Note: The antenna gain is provided by the manufacturer.

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 & EIRP	512 to 810	512, 661, 810	GSM, GPRS, EDGE
Occupied Bandwidth	512 to 810	512, 661, 810	GSM, EDGE
Conducted Spurious Emissions	512 to 810	661	GSM, EDGE
Radiated Spurious Emissions	512 to 810	661	GSM
Band Edge	512 to 810	512, 810	GSM, EDGE
Peak to Average Ratio	512 to 810	512, 661, 810	GSM, EDGE
Frequency Stability	512 to 810	661	GSM

LTE BAND 2 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	1RB/6RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	1RB/6RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1RB/6RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1RB/4RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1RB/6RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1RB/6RB
Occupied Bandwidth	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	6RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	6RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	6RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	6RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	6RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	6RB
Conducted Spurious Emissions	18607 to 19193	18900	1.4 MHz	QPSK	1RB
	18625 to 19175	18900	5MHz	QPSK	1RB
	18700 to 19100	18900	20MHz	QPSK	1RB
Radiated Spurious Emissions	18607 to 19193	18900	1.4 MHz	QPSK	1RB
	18625 to 19175	18900	5MHz	QPSK	1RB
	18700 to 19100	18900	20MHz	QPSK	1RB
Band Edge	18607 to 19193	18607, 19193	1.4MHz	QPSK	1RB/6RB
	18615 to 19185	18615, 19185	3MHz	QPSK	1RB/6RB
	18625 to 19175	18625, 19175	5MHz	QPSK	1RB/6RB
	18650 to 19150	18650, 19150	10MHz	QPSK	1RB/6RB
	18675 to 19125	18675, 19125	15MHz	QPSK	1RB/6RB
	18700 to 19100	18700, 19100	20MHz	QPSK	1RB/6RB
Peak To Average Ratio	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	1RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	1RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1RB
Frequency Stability	18607 to 19193	18900	1.4MHz	QPSK	1RB
	18615 to 19185	18900	3MHz	QPSK	1RB
	18625 to 19175	18900	5MHz	QPSK	1RB
	18650 to 19150	18900	10MHz	QPSK	1RB
	18675 to 19125	18900	15MHz	QPSK	1RB
	18700 to 19100	18900	20MHz	QPSK	1RB

LTE BAND 25 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & EIRP	26047 to 26683	26047, 26365, 22683	1.4MHz	QPSK, 16QAM	1RB/6RB
	26055 to 26675	26055, 26365, 26675	3MHz	QPSK, 16QAM	1RB/6RB
	26065 to 26665	26065, 26365, 26665	5MHz	QPSK, 16QAM	1RB/6RB
	26090 to 26640	26090, 26365, 26640	10MHz	QPSK, 16QAM	1RB/4RB
	26115 to 26615	26115, 26365, 26615	15MHz	QPSK, 16QAM	1RB/6RB
	26140 to 26590	26140, 26365, 26590	20MHz	QPSK, 16QAM	1RB/6RB
Occupied Bandwidth	26047 to 26683	26047, 26365, 22683	1.4MHz	QPSK, 16QAM	6RB
	26055 to 26675	26055, 26365, 26675	3MHz	QPSK, 16QAM	6RB
	26065 to 26665	26065, 26365, 26665	5MHz	QPSK, 16QAM	6RB
	26090 to 26640	26090, 26365, 26640	10MHz	QPSK, 16QAM	6RB
	26115 to 26615	26115, 26365, 26615	15MHz	QPSK, 16QAM	6RB
	26140 to 26590	26140, 26365, 26590	20MHz	QPSK, 16QAM	6RB
Conducted Spurious Emissions	26047 to 26683	26365	1.4MHz	QPSK	1RB
	26065 to 26665	26365	5MHz	QPSK	1RB
	26140 to 26590	26365	20MHz	QPSK	1RB
Radiated Spurious Emissions	26047 to 26683	26365	1.4MHz	QPSK	1RB
	26065 to 26665	26365	5MHz	QPSK	1RB
	26140 to 26590	26365	20MHz	QPSK	1RB
Band Edge	26047 to 26683	26047, 26683	1.4MHz	QPSK	1RB/6RB
	26055 to 26675	26055, 26675	3MHz	QPSK	1RB/6RB
	26065 to 26665	26065, 26665	5MHz	QPSK	1RB/6RB
	26090 to 26640	26090, 26640	10MHz	QPSK	1RB/6RB
	26115 to 26615	26115, 26615	15MHz	QPSK	1RB/6RB
	26140 to 26590	26140, 26590	20MHz	QPSK	1RB/6RB
Peak To Average Ratio	26047 to 26683	26047, 26365, 22683	1.4MHz	QPSK, 16QAM	1RB
	26055 to 26675	26055, 26365, 26675	3MHz	QPSK, 16QAM	1RB
	26065 to 26665	26065, 26365, 26665	5MHz	QPSK, 16QAM	1RB
	26090 to 26640	26090, 26365, 26640	10MHz	QPSK, 16QAM	1RB
	26115 to 26615	26115, 26365, 26615	15MHz	QPSK, 16QAM	1RB
	26140 to 26590	26140, 26365, 26590	20MHz	QPSK, 16QAM	1RB
Frequency Stability	26047 to 26683	26365	1.4MHz	QPSK	1RB
	26055 to 26675	26365	3MHz	QPSK	1RB
	26065 to 26665	26365	5MHz	QPSK	1RB
	26090 to 26640	26365	10MHz	QPSK	1RB
	26115 to 26615	26365	15MHz	QPSK	1RB
	26140 to 26590	26365	20MHz	QPSK	1RB

2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 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	Brand	Model No.	Series No.
-	-	-	-	-

Item	Cable Type	Shielded Type	Ferrite Core	Length
-	-	-	-	-

3. TEST RESULT

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMIT

Mobile / Portable station are limited to 2 watts e.i.r.p.

3.1.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 5.

EIRP:

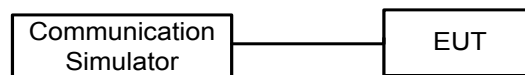
$EIRP = \text{Output Power} + \text{Antenan gain}$

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.

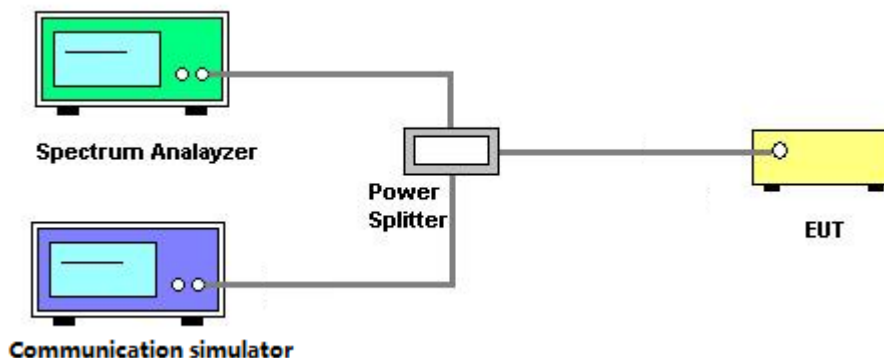
3.2 OCCUPIED BANDWIDTH MEASUREMENT

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. $RBW = (1\% \sim 5\%) \cdot EBW$
 $VBW \geq 3 \cdot RBW$
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

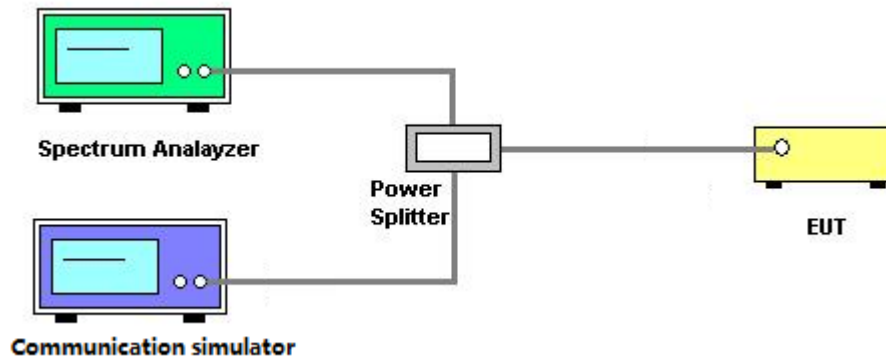
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm.

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 $\geq 1\%$ 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.

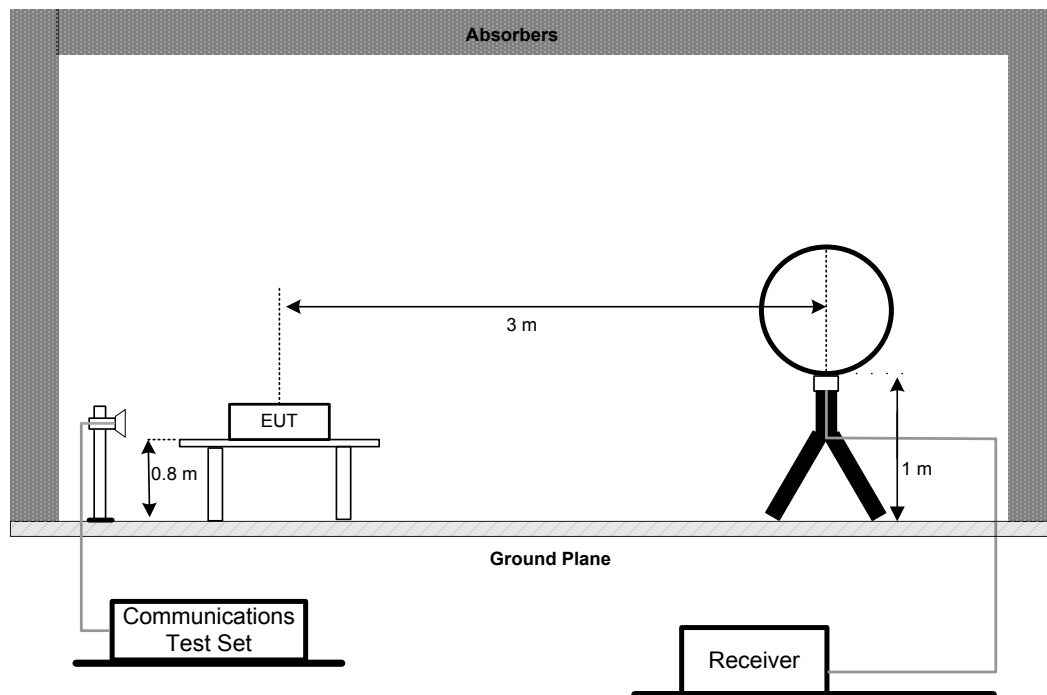
3.4.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.2.

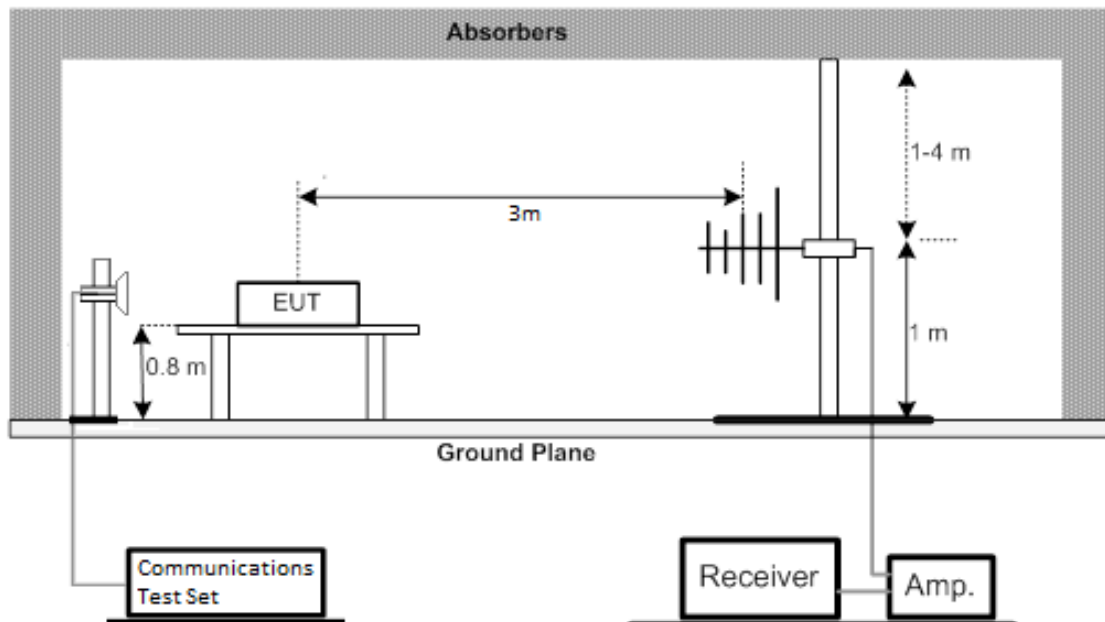
1. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
4. ERP can be calculated form EIRP by subtracting the gain of dipole, $ERP = EIPR - 2.15\text{dBi}.$
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

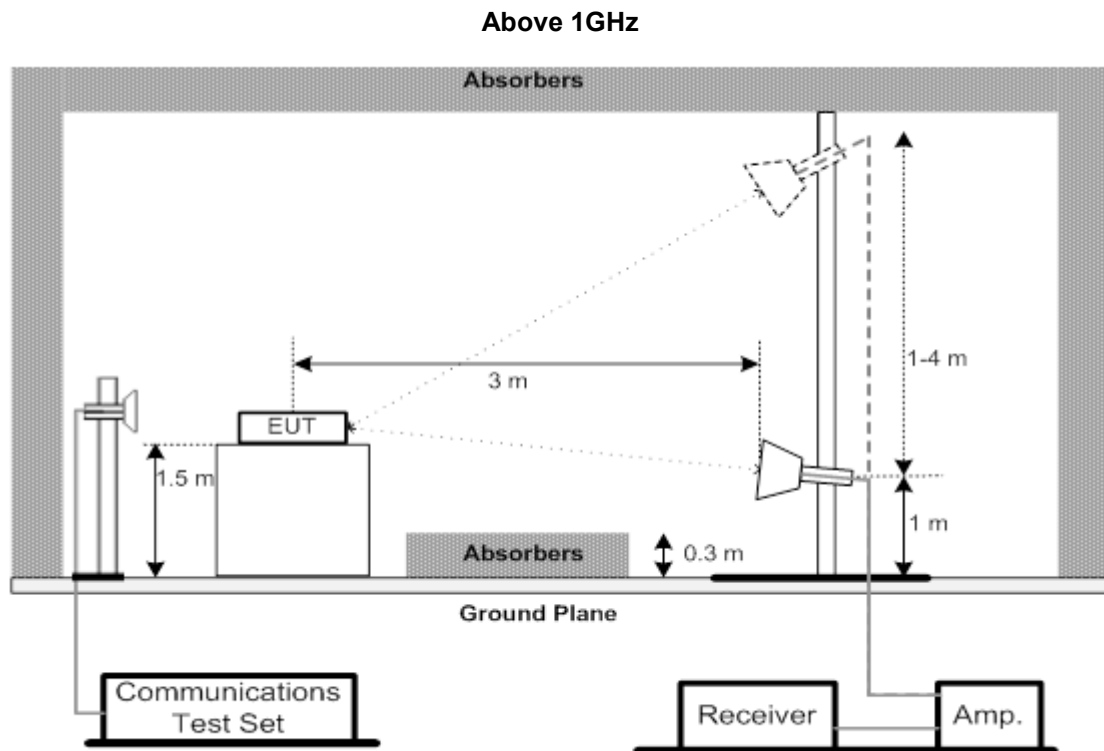
3.4.3 TEST SETUP LAYOUT

Below 30MHz



30MHz to 1000MHz





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

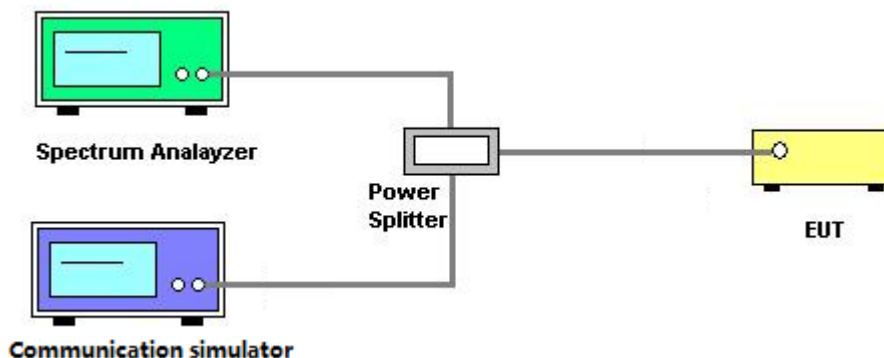
A Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the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

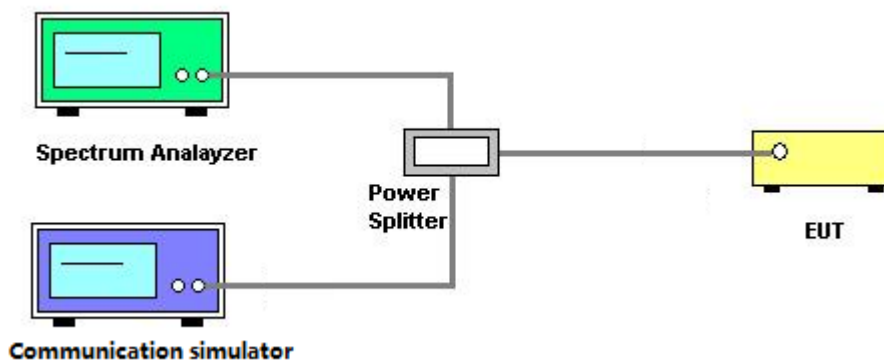
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.6.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 5.7.

1. Set resolution/measurement bandwidth $\geq$ 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%.

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

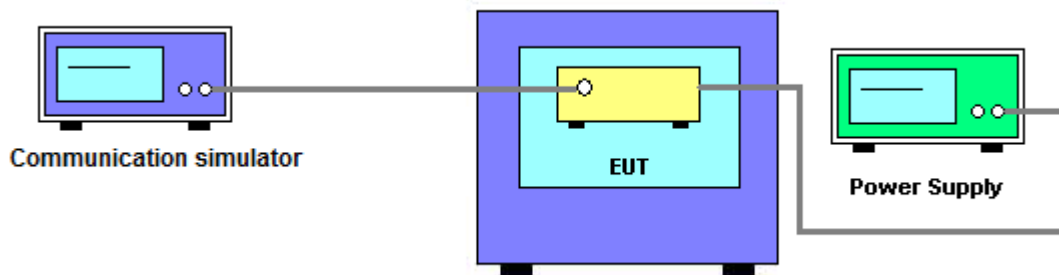
± 1.5 ppm is for base and fixed station. ± 2.5 ppm is for mobile station.

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 $\pm 0.5^{\circ}\text{C}$ 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.

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. 15, 2022
2	Amplifier	Agilent	8449B	3008A02334	Feb. 27, 2022
3	High Pass Filter	Wairwright Instruments Gmbh	WHK 1.5/15G-10ST	11	Feb. 27, 2022
4	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1710/1785-1690/1805-60/ 12SS	38	Feb. 27, 2022
5	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 824/849-810/863-60/9SS	7	Feb. 27, 2022
6	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 880/915-860/935-60/9SS	14	Feb. 27, 2022
7	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1850/1910-1830/1930-60/ 10SS	17	Feb. 27, 2022
8	High Pass Filter	Wairwright Instruments Gmbh	WHK3.1/18G-10SS	24	Feb. 27, 2022
9	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Feb. 28, 2022
10	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Feb. 28, 2022
11	Receiver	Agilent	N9038A	MY52130039	Mar. 19, 2022
12	wideband radio communication tester	R&S	CMW500	152372	Feb. 27, 2022
13	High pass filter	KANGMAIWEI	ZHPF-M3-12.75G-3869	B2015073763	Feb. 07, 2022
14	High pass filter	KANGMAIWEI	ZHPF-M1000-4000-1	B2015073762	Feb. 07, 2022
15	High pass filter	KANGMAIWEI	ZHPF-M6-186-1727	B2015073764	Feb. 07, 2022
16	Cable	emci	LMR-400(30MHz-1GHz) (8m+5m)	N/A	May 20, 2022
17	Cable	mitron	RWLP50-4.0A-KJ-SMSM-12M	N/A	Nov. 23, 2021
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	Apr. 28, 2022
21	Double Ridged Guide Antenna	ETS	3115	75846	Mar. 17, 2022
22	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 30, 2022

Conducted Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Feb. 28, 2022
2	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Feb. 28, 2022
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 27, 2022
4	wideband radio communication tester	R&S	CMW500	152372	Feb. 27, 2022

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Feb. 28, 2022
2*	Multi-output DC Power Supply	GW Instek	GPC-3030DN	EK880675	Jul. 25, 2023
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 27, 2022
4	wideband radio communication tester	R&S	CMW500	152372	Feb. 27, 2022
5	Const Temp,& Humidity Chamber	Bell	BTH-50C	20170306001	Feb. 27, 2022

Remark: "N/A" denotes no model name, serial no. or calibration specified.

"*" calibration period of equipment list is three year.

Except * item, all calibration period of equipment list is one year.

APPENDIX A - OUTPUT POWER

Output Power (dBm):

PCS1900		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
GSM (CS)		29.74	30.25	30.08
GPRS/EDGE (GMSK)	1 Tx Slot	29.62	30.13	30.05
	2 Tx Slot	28.32	28.65	28.45
	3 Tx Slot	26.33	26.06	25.76
	4 Tx Slot	24.38	24.83	24.53
EDGE (8PSK)	1 Tx Slot	25.03	25.13	24.75
	2 Tx Slot	23.94	24.01	23.66
	3 Tx Slot	22.03	22.07	21.62
	4 Tx Slot	20.72	20.83	20.63

LTE Band / BW	Channel / Frequency (MHz)	RB Size	RB Offset	Index	Conducted Power (dBm)	
					QPSK	16QAM
2 / 1.4M	18607 / 1850.7	1	0	0	20.49	19.45
		6	0	0	18.04	18.11
	18900 / 1880	1	0	0	20.52	19.38
		6	0	0	18.09	18.05
	19193 / 1909.3	1	5	0	19.79	18.36
		6	0	0	18.05	18.12
2 / 3M	18615 / 1851.5	1	0	0	20.18	19.49
		6	0	0	18.02	18.01
	18900 / 1880	1	0	0	20.48	19.39
		6	0	0	18.07	18.26
	19185 / 1908.5	1	5	1	19.79	18.46
		6	0	1	18.04	18.22
2 / 5M	18625 / 1852.5	1	0	0	20.25	20.66
		6	0	0	18.90	19.00
	18900 / 1880	1	0	0	20.54	20.14
		6	0	0	19.06	19.31
	19175 / 1907.5	1	5	0	20.24	20.45
		6	0	3	19.01	18.94
2 / 10M	18650 / 1855	1	0	3	20.22	20.31
		4	0	0	20.12	20.20
	18900 / 1880	1	0	0	20.68	20.33
		4	0	0	20.27	20.58
	19150 / 1905	1	5	4	20.32	20.53
		4	2	7	20.02	20.32
2 / 15M	18675 / 1857.5	1	0	3	20.76	20.65
		6	0	0	20.13	20.42
	18900 / 1880	1	0	0	20.59	20.19
		6	0	0	20.38	20.43
	19125 / 1902.5	1	5	8	20.54	20.14
		6	0	11	20.20	20.39
2 / 20M	18700 / 1860	1	0	3	20.67	19.98
		6	0	0	20.32	20.36
	18900 / 1880	1	0	0	20.33	20.05
		6	0	0	20.30	20.39
	19100 / 1900	1	5	12	20.15	19.92
		6	0	15	20.21	20.34

LTE Band / BW	Channel / Frequency (MHz)	RB Size	RB Offset	Index	Conducted Power (dBm)	
					QPSK	16QAM
25 / 1.4M	26047 / 1850.7	1	0	0	20.21	18.86
		6	0	0	18.18	18.20
	26365 / 1880	1	0	0	20.65	19.35
		6	0	0	18.34	18.24
	26683 / 1914.3	1	5	0	20.04	19.12
		6	0	0	18.05	18.01
25 / 3M	26055 / 1851.5	1	0	0	20.25	18.88
		6	0	0	18.18	18.20
	26365 / 1882.5	1	0	0	20.47	19.30
		6	0	0	18.33	18.22
	26675 / 1913.5	1	5	1	20.02	18.38
		6	0	1	18.09	18.04
25 / 5M	26065 / 1852.5	1	0	0	20.37	20.53
		6	0	0	19.19	19.16
	26365 / 1882.5	1	0	0	20.56	20.26
		6	0	0	19.32	19.24
	26665 / 1912.5	1	5	0	20.17	20.28
		6	0	3	19.04	19.35
25 / 10M	26090 / 1855	1	0	3	20.44	20.43
		4	0	0	20.17	20.38
	26365 / 1882.5	1	0	0	20.42	20.30
		4	0	0	20.33	19.88
	26640 / 1910	1	5	4	20.12	20.24
		4	2	7	20.15	20.22
25 / 15M	26115 / 1857.5	1	0	3	20.32	20.47
		6	0	0	20.17	20.17
	26365 / 1882.5	1	0	0	20.48	20.55
		6	0	0	20.35	20.38
	26615 / 1907.5	1	5	8	20.03	20.17
		6	0	11	20.25	20.27
25 / 20M	26140 / 1860	1	0	3	20.34	20.13
		6	0	0	20.17	20.28
	26365 / 1882.5	1	0	0	20.39	20.67
		6	0	0	20.30	20.46
	26590 / 1905	1	5	12	20.27	20.24
		6	0	15	20.24	20.34

EIRP (dBm):

PCS1900		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
GSM (CS)		32.84	33.35	33.18
GPRS/EDGE (GMSK)	1 Tx Slot	32.72	33.23	33.15
	2 Tx Slot	31.42	31.75	31.55
	3 Tx Slot	29.43	29.16	28.86
	4 Tx Slot	27.48	27.93	27.63
EDGE (8PSK)	1 Tx Slot	28.13	28.23	27.85
	2 Tx Slot	27.04	27.11	26.76
	3 Tx Slot	25.13	25.17	24.72
	4 Tx Slot	23.82	23.93	23.73

LTE Band / BW	Channel / Frequency (MHz)	RB Size	RB Offset	Index	Conducted Power (dBm)	
					QPSK	16QAM
2 / 1.4M	18607 / 1850.7	1	0	0	23.59	22.55
		6	0	0	21.14	21.21
	18900 / 1880	1	0	0	23.62	22.48
		6	0	0	21.19	21.15
	19193 / 1909.3	1	5	0	22.89	21.46
		6	0	0	21.15	21.22
2 / 3M	18615 / 1851.5	1	0	0	23.28	22.59
		6	0	0	21.12	21.11
	18900 / 1880	1	0	0	23.58	22.49
		6	0	0	21.17	21.36
	19185 / 1908.5	1	5	1	22.89	21.56
		6	0	1	21.14	21.32
2 / 5M	18625 / 1852.5	1	0	0	23.35	23.76
		6	0	0	22.00	22.10
	18900 / 1880	1	0	0	23.64	23.24
		6	0	0	22.16	22.41
	19175 / 1907.5	1	5	0	23.34	23.55
		6	0	3	22.11	22.04
2 / 10M	18650 / 1855	1	0	3	23.32	23.41
		4	0	0	23.22	23.30
	18900 / 1880	1	0	0	23.78	23.43
		4	0	0	23.37	23.68
	19150 / 1905	1	5	4	23.42	23.63
		4	2	7	23.12	23.42
2 / 15M	18675 / 1857.5	1	0	3	23.86	23.75
		6	0	0	23.23	23.52
	18900 / 1880	1	0	0	23.69	23.29
		6	0	0	23.48	23.53
	19125 / 1902.5	1	5	8	23.64	23.24
		6	0	11	23.30	23.49
2 / 20M	18700 / 1860	1	0	3	23.77	23.08
		6	0	0	23.42	23.46
	18900 / 1880	1	0	0	23.43	23.15
		6	0	0	23.40	23.49
	19100 / 1900	1	5	12	23.25	23.02
		6	0	15	23.31	23.44

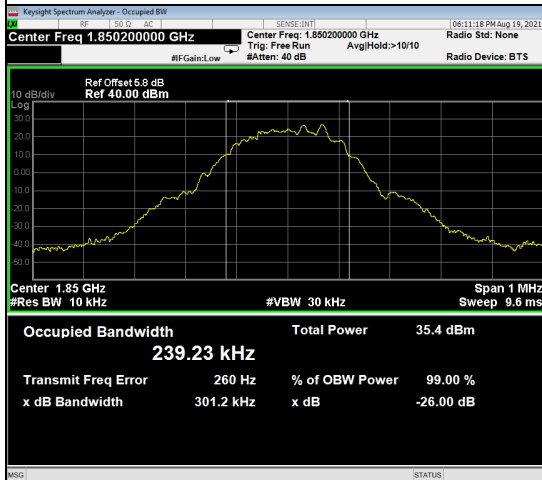
LTE Band / BW	Channel / Frequency (MHz)	RB Size	RB Offset	Index	Conducted Power (dBm)	
					QPSK	16QAM
25 / 1.4M	26047 / 1850.7	1	0	0	23.31	21.96
		6	0	0	21.28	21.30
	26365 / 1880	1	0	0	23.75	22.45
		6	0	0	21.44	21.34
	26683 / 1914.3	1	5	0	23.14	22.22
		6	0	0	21.15	21.11
25 / 3M	26055 / 1851.5	1	0	0	23.35	21.98
		6	0	0	21.28	21.30
	26365 / 1882.5	1	0	0	23.57	22.40
		6	0	0	21.43	21.32
	26675 / 1913.5	1	5	1	23.12	21.48
		6	0	1	21.19	21.14
25 / 5M	26065 / 1852.5	1	0	0	23.47	23.63
		6	0	0	22.29	22.26
	26365 / 1882.5	1	0	0	23.66	23.36
		6	0	0	22.42	22.34
	26665 / 1912.5	1	5	0	23.27	23.38
		6	0	3	22.14	22.45
25 / 10M	26090 / 1855	1	0	3	23.54	23.53
		4	0	0	23.27	23.48
	26365 / 1882.5	1	0	0	23.52	23.40
		4	0	0	23.43	22.98
	26640 / 1910	1	5	4	23.22	23.34
		4	2	7	23.25	23.32
25 / 15M	26115 / 1857.5	1	0	3	23.42	23.57
		6	0	0	23.27	23.27
	26365 / 1882.5	1	0	0	23.58	23.65
		6	0	0	23.45	23.48
	26615 / 1907.5	1	5	8	23.13	23.27
		6	0	11	23.35	23.37
25 / 20M	26140 / 1860	1	0	3	23.44	23.23
		6	0	0	23.27	23.38
	26365 / 1882.5	1	0	0	23.49	23.77
		6	0	0	23.40	23.56
	26590 / 1905	1	5	12	23.37	23.34
		6	0	15	23.34	23.44

APPENDIX B - OCCUPIED BANDWIDTH

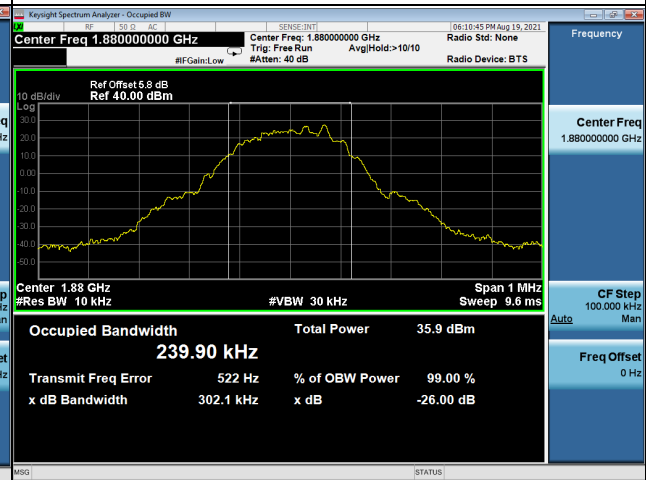
PCS1900					
GSM			EDGE		
CS			8PSK		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
512	1850.2	0.2392	512	1850.2	0.2452
661	1880	0.2399	661	1880	0.2490
810	1909.8	0.2408	810	1909.8	0.2422
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
512	1850.2	0.3012	512	1850.2	0.3190
661	1880	0.3021	661	1880	0.3084
810	1909.8	0.3065	810	1909.8	0.3139

Spectrum Plot

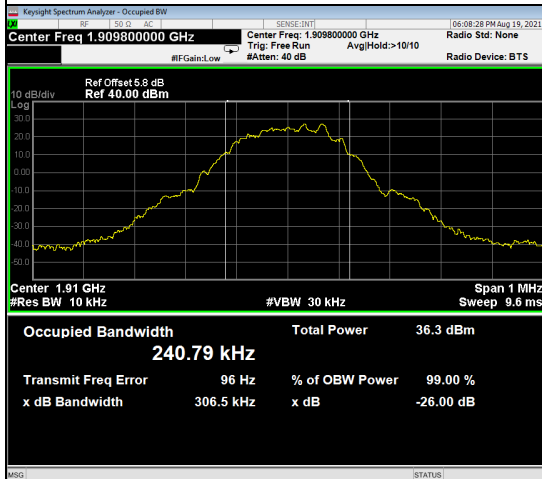
GSM-512



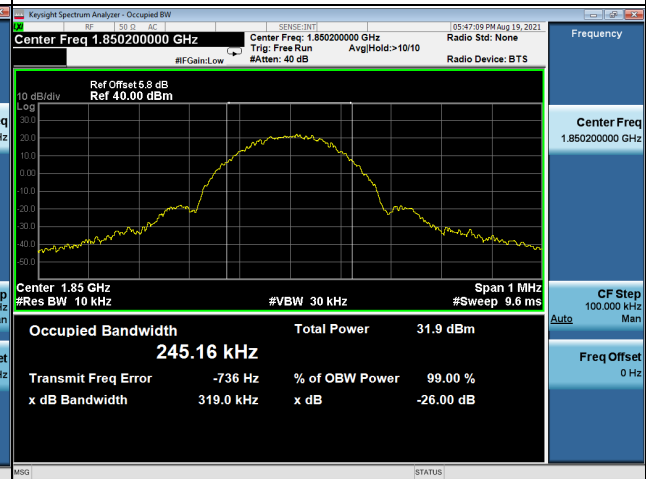
GSM-661



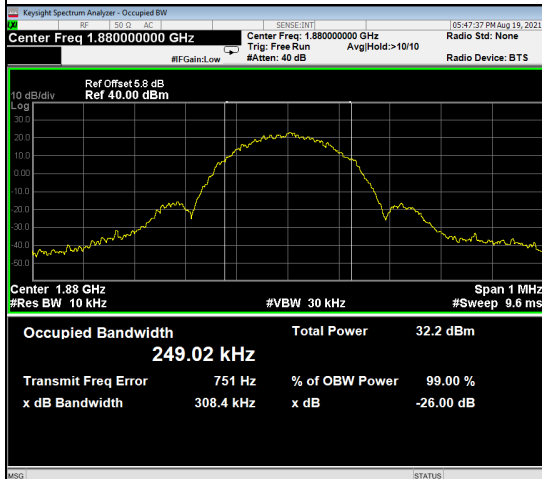
GSM-810



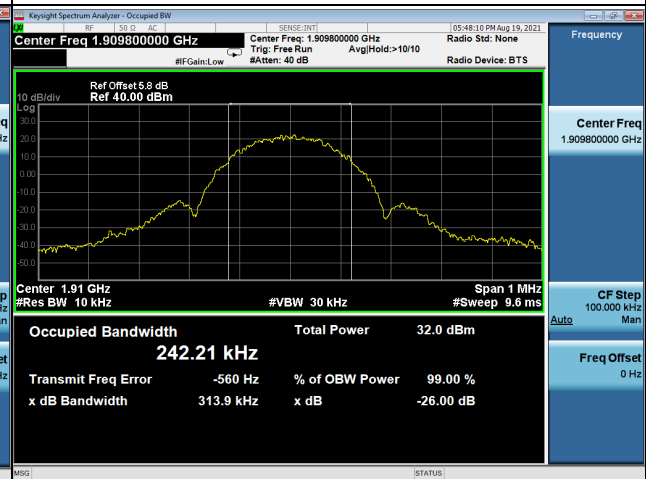
EDGE-512



EDGE-661



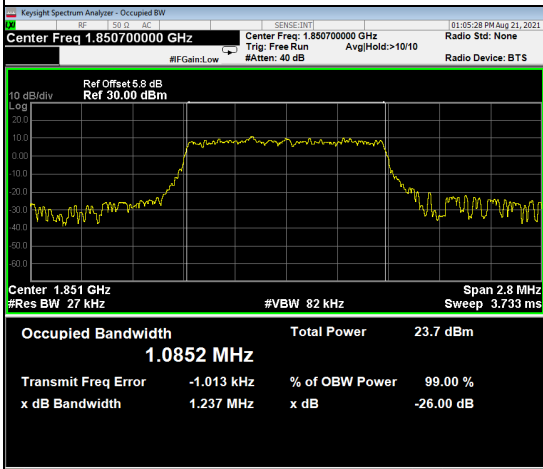
EDGE-810



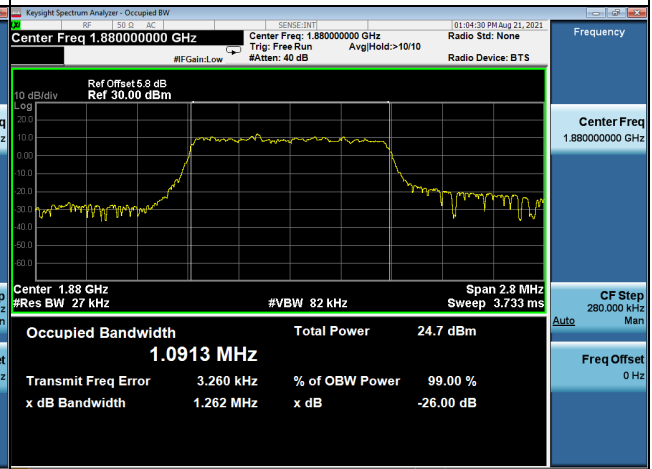
LTE Band 2_1.4M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18607	1850.7	1.0852	18607	1850.7	1.237
18900	1880	1.0913	18900	1880	1.262
19193	1909.3	1.0851	19193	1909.3	1.255
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18607	1850.7	0.9287	18607	1850.7	1.148
18900	1880	0.9229	18900	1880	1.115
19193	1909.3	1.0973	19193	1909.3	1.198

Spectrum Plot

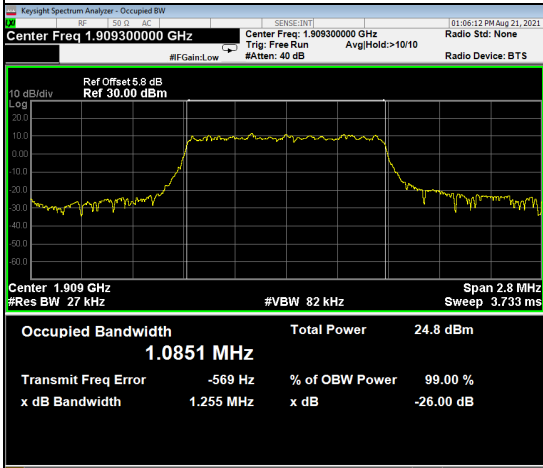
QPSK-18607



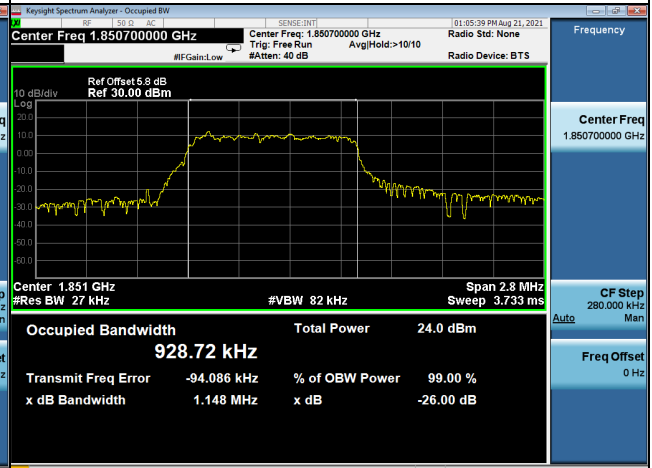
QPSK-18900



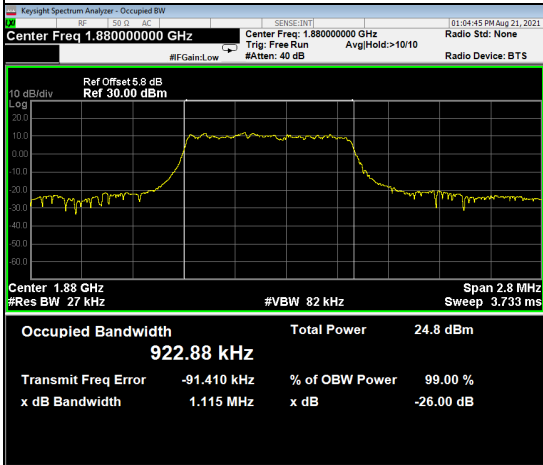
QPSK-19193



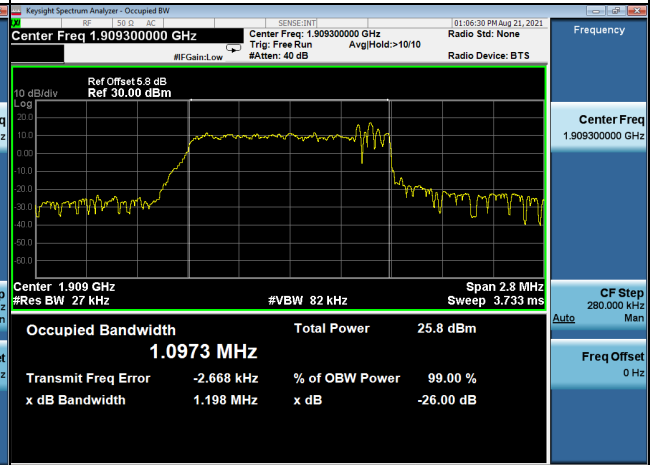
16QAM-18607



16QAM-18900



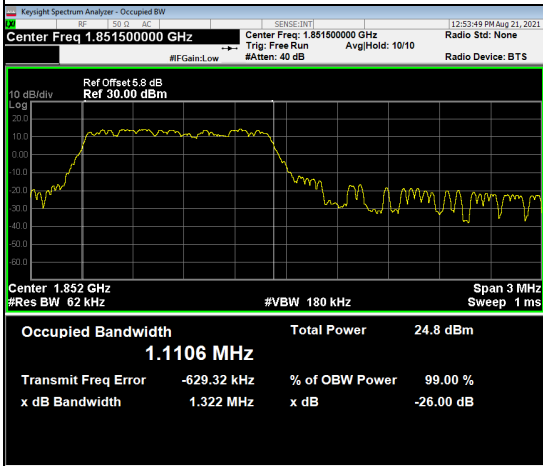
16QAM-19193



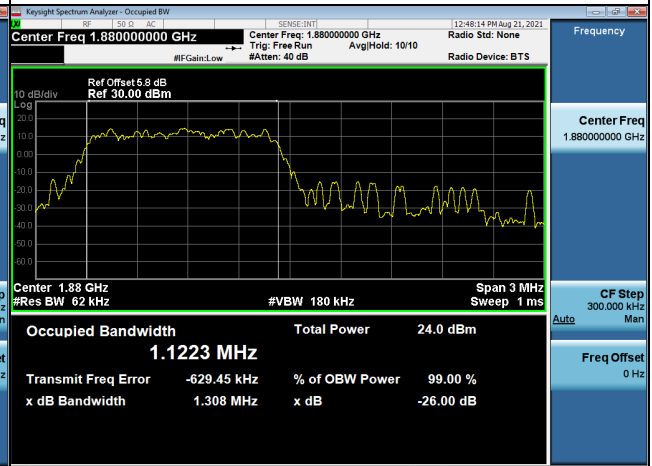
LTE Band 2_3M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18615	1851.5	1.1106	18615	1851.5	1.322
18900	1880	1.1223	18900	1880	1.308
19185	1908.5	1.1168	19185	1908.5	1.322
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18615	1851.5	0.9580	18615	1851.5	1.365
18900	1880	0.9544	18900	1880	1.168
19185	1908.5	0.9602	19185	1908.5	1.216

Spectrum Plot

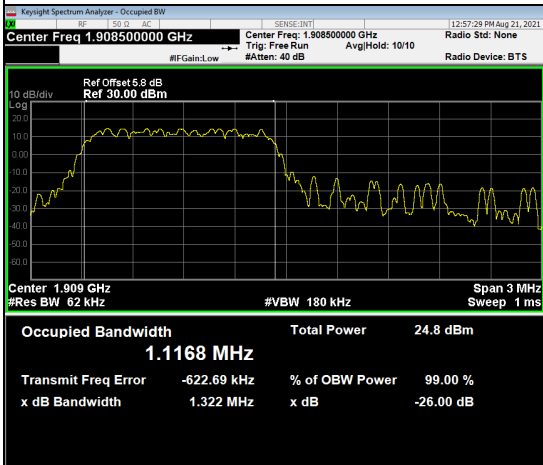
QPSK-18615



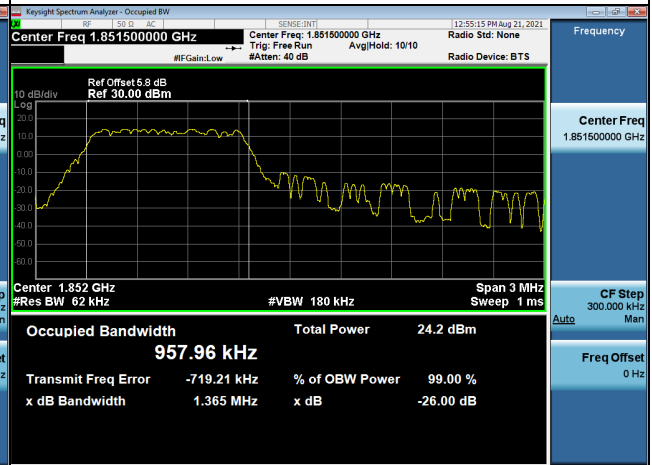
QPSK-18900



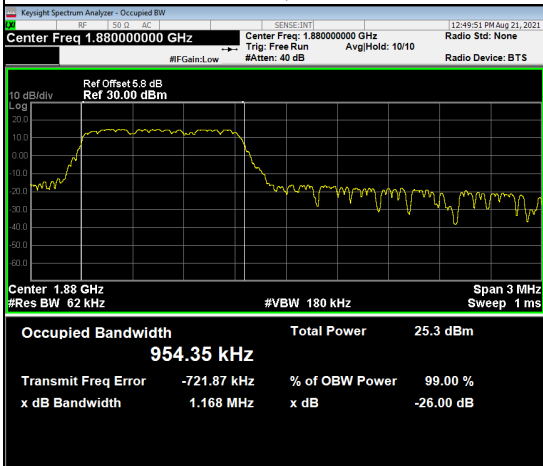
QPSK-19185



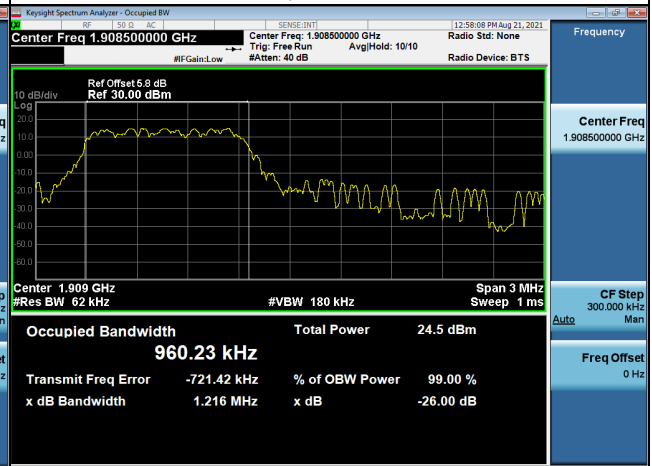
16QAM-18615



16QAM-18900



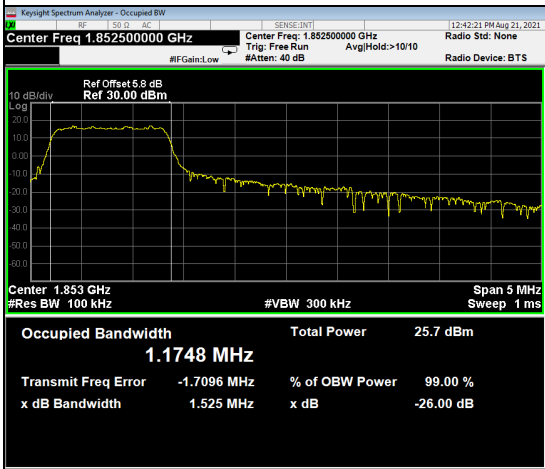
16QAM-19185



LTE Band 2_5M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18625	1852.5	1.1748	18625	1852.5	1.525
18900	1880	1.1805	18900	1880	1.436
19175	1907.5	1.1859	19175	1907.5	1.467
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18625	1852.5	1.0709	18625	1852.5	1.498
18900	1880	1.0246	18900	1880	1.246
19175	1907.5	1.0290	19175	1907.5	1.264

Spectrum Plot

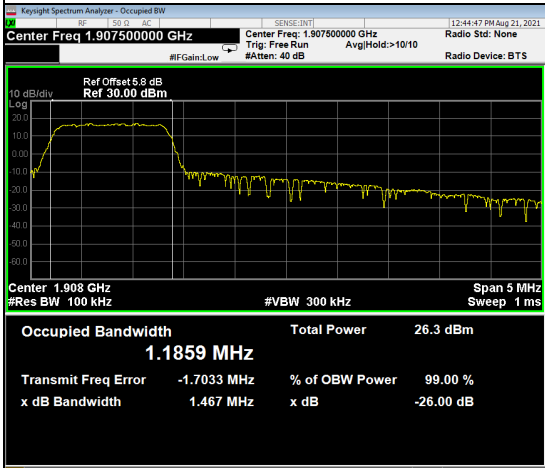
QPSK-18625



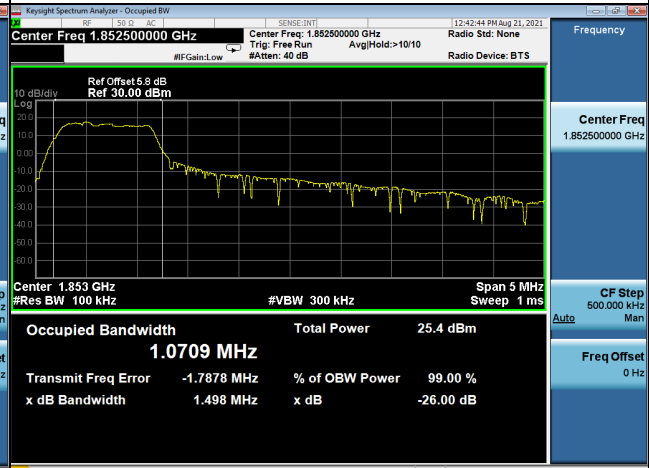
QPSK-18900



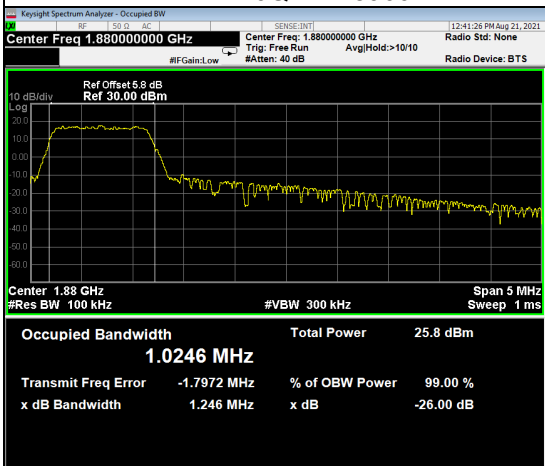
QPSK-19175



16QAM-18625



16QAM-18900



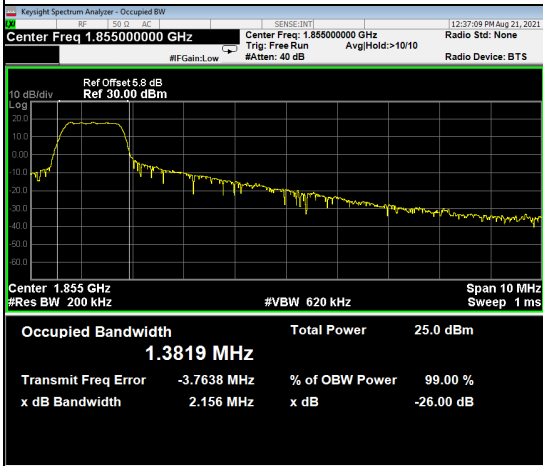
16QAM-19175



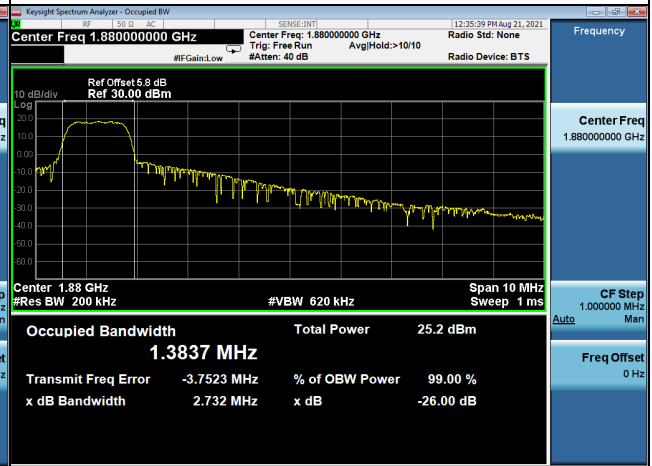
LTE Band 2_10M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18650	1855	1.3819	18650	1855	2.156
18900	1880	1.3837	18900	1880	2.732
19150	1905	1.7244	19150	1905	2.626
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18650	1855	1.4467	18650	1855	2.144
18900	1880	1.1973	18900	1880	1.707
19150	1905	1.2872	19150	1905	2.140

Spectrum Plot

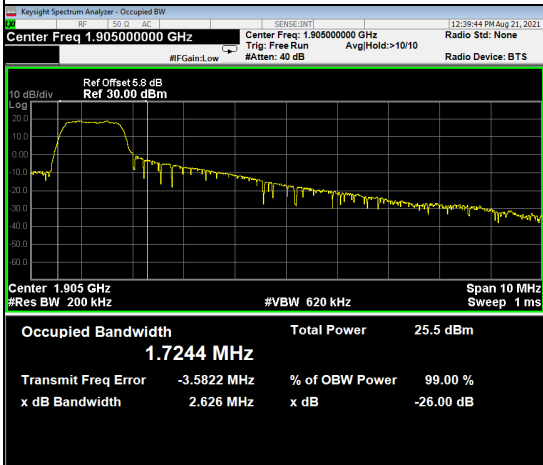
QPSK-18650



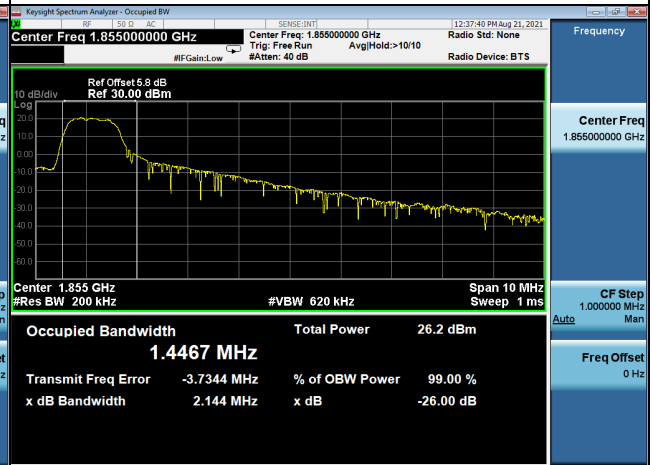
QPSK-18900



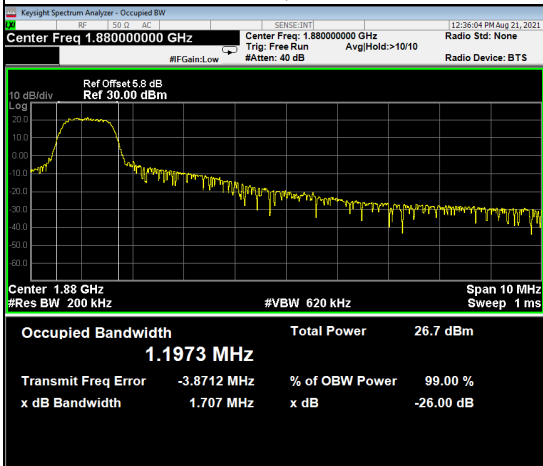
QPSK-19150



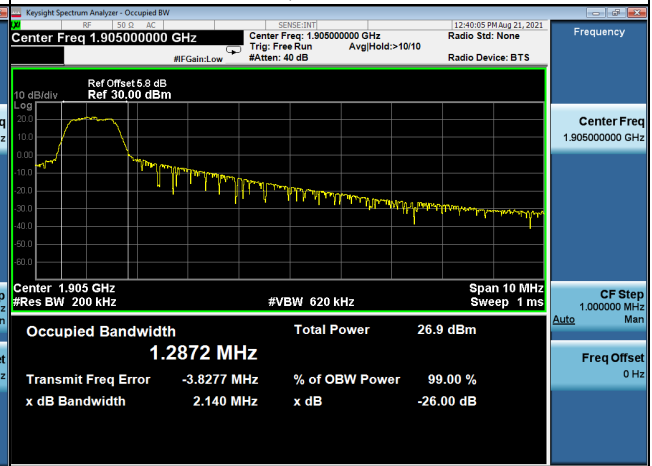
16QAM-18650



16QAM-18900



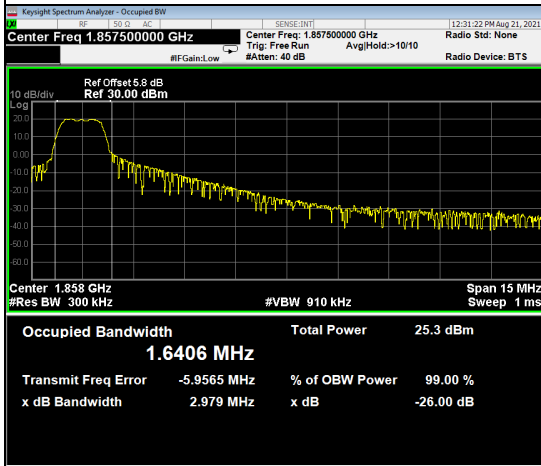
16QAM-19150



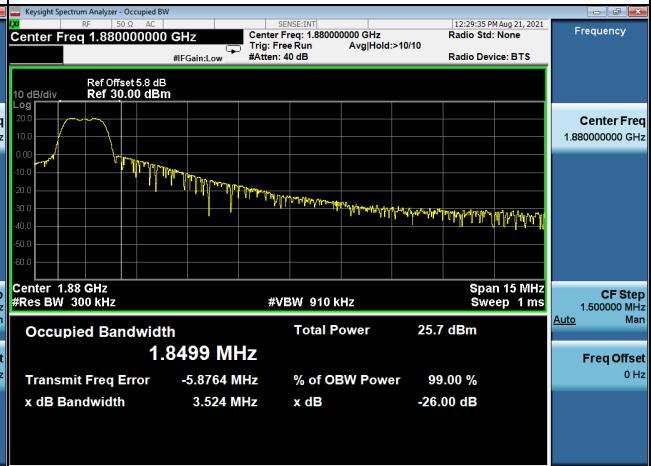
LTE Band 2_15M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18675	1857.5	1.6406	18675	1857.5	2.979
18900	1880	1.8499	18900	1880	3.524
19125	1902.5	1.8803	19125	1902.5	3.541
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18675	1857.5	1.8489	18675	1857.5	3.016
18900	1880	1.4302	18900	1880	2.495
19125	1902.5	1.3975	19125	1902.5	2.632

Spectrum Plot

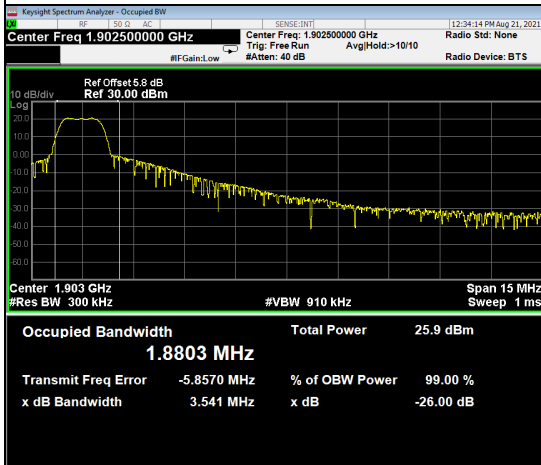
QPSK-18675



QPSK-18900



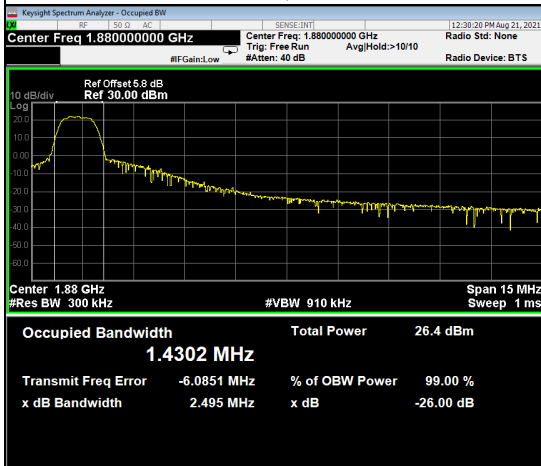
QPSK-19125



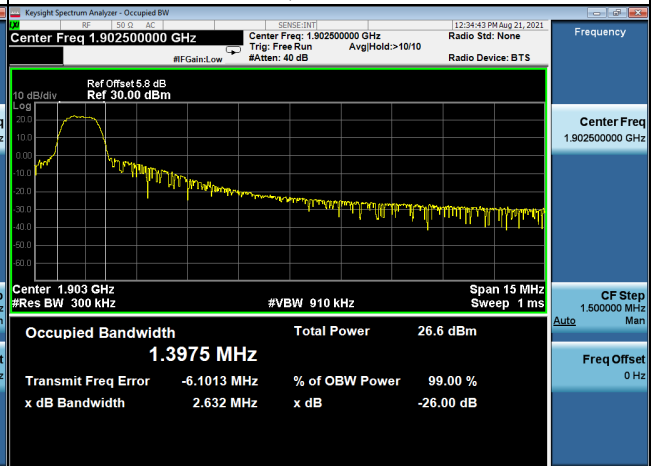
16QAM-18675



16QAM-18900



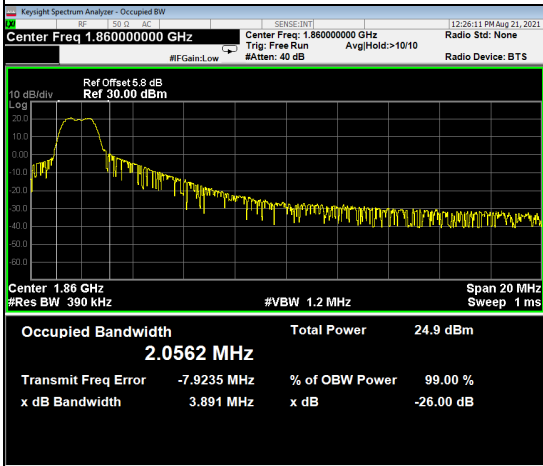
16QAM-19125



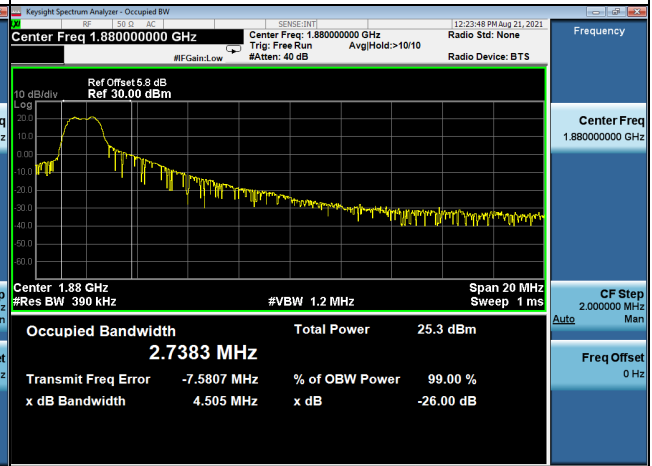
LTE Band 2_20M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18700	1860	2.0562	18700	1860	3.891
18900	1880	2.7383	18900	1880	4.505
19100	1900	2.3243	19100	1900	4.329
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18700	1860	1.9955	18700	1860	3.647
18900	1880	1.9840	18900	1880	3.855
19100	1900	1.7141	19100	1900	3.549

Spectrum Plot

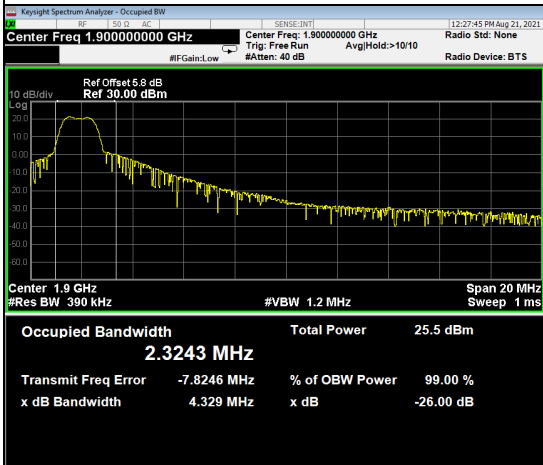
QPSK-18700



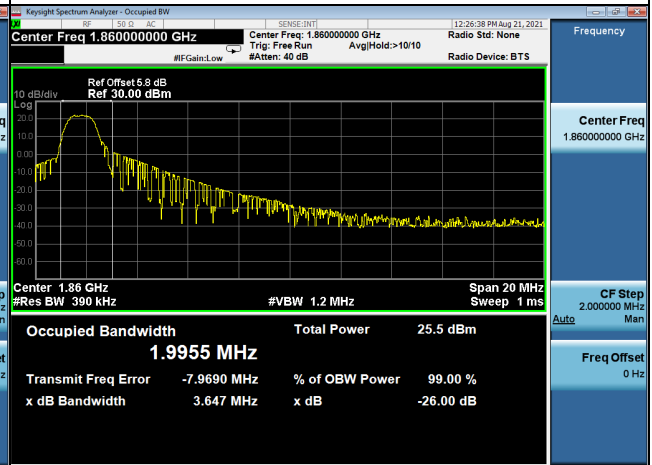
QPSK-18900



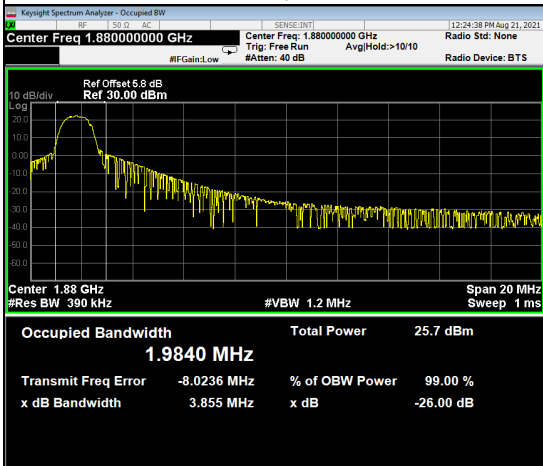
QPSK-19100



16QAM-18700



16QAM-18900



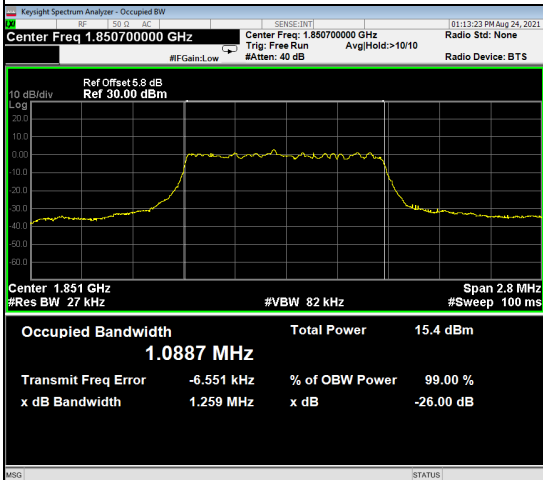
16QAM-19100



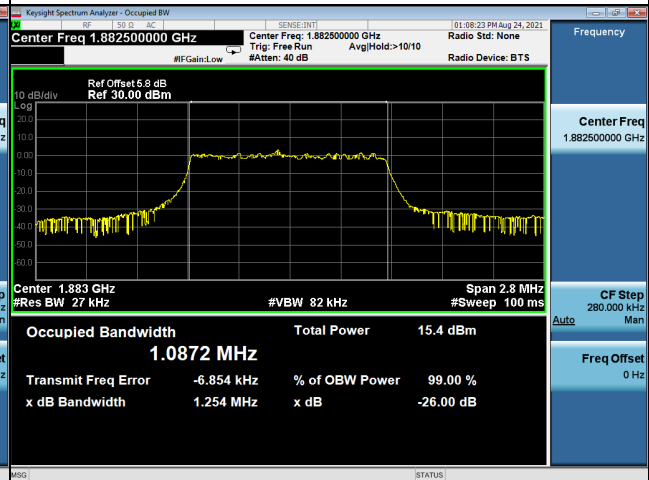
LTE Band 25_1.4M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26047	1850.7	1.0887	26047	1850.7	1.259
26365	1882.5	1.0872	26365	1882.5	1.254
26683	1914.3	1.0892	26683	1914.3	1.270
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26047	1850.7	0.9245	26047	1850.7	1.186
26365	1882.5	0.9243	26365	1882.5	1.190
26683	1914.3	0.9250	26683	1914.3	1.126

Spectrum Plot

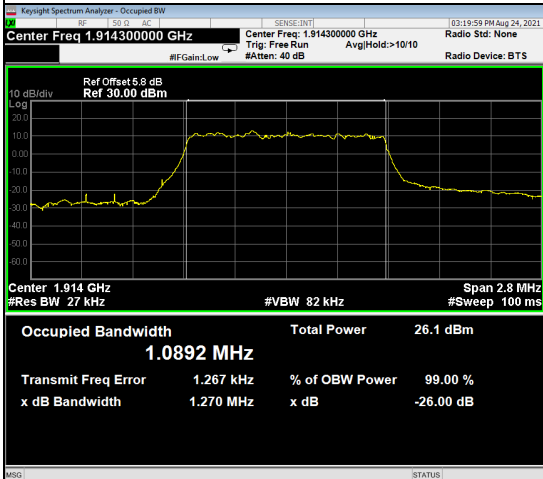
QPSK-26047



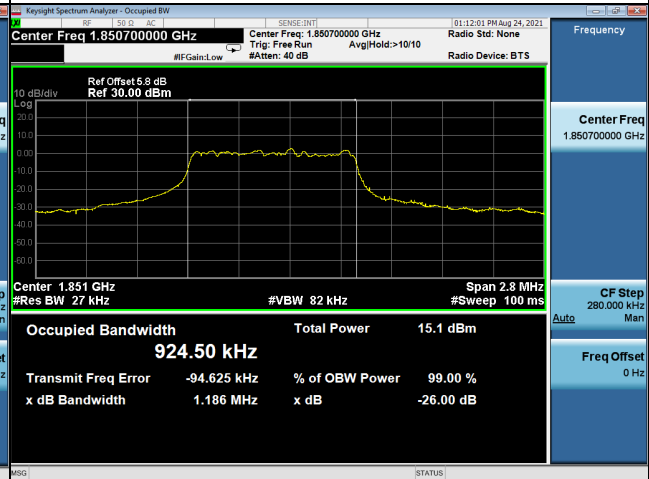
QPSK-26365



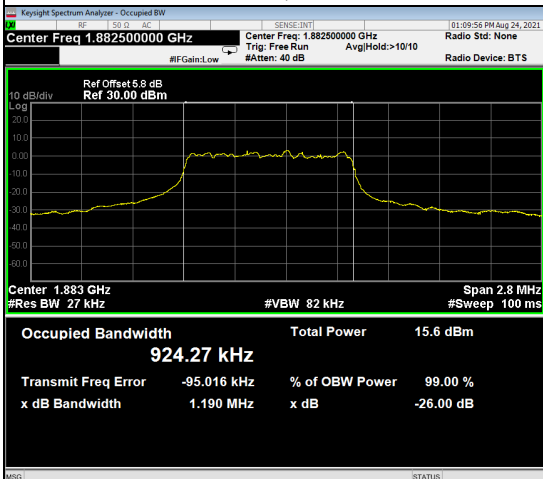
QPSK-26683



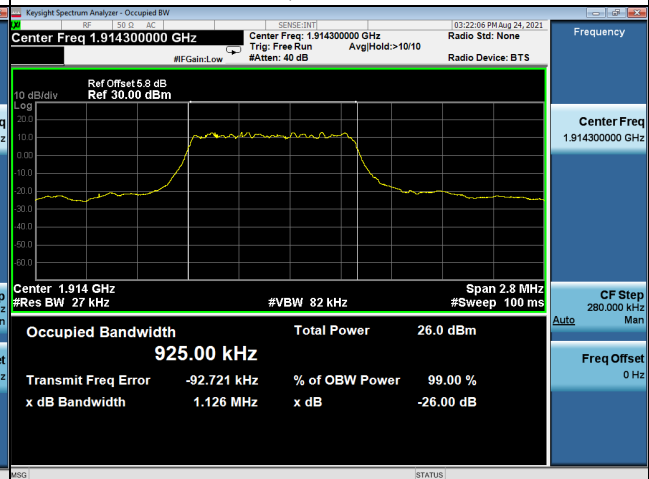
16QAM-26047



16QAM-26365



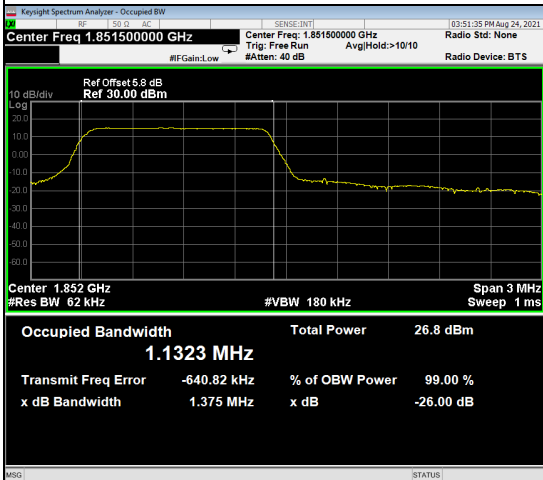
16QAM-26683



LTE Band 25_3M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26055	1851.5	1.1323	26055	1851.5	1.375
26365	1882.5	1.1311	26365	1882.5	1.378
26675	1913.5	1.1320	26675	1913.5	1.405
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26055	1851.5	0.9936	26055	1851.5	1.547
26365	1882.5	0.9867	26365	1882.5	1.476
26675	1913.5	0.9695	26675	1913.5	1.178

Spectrum Plot

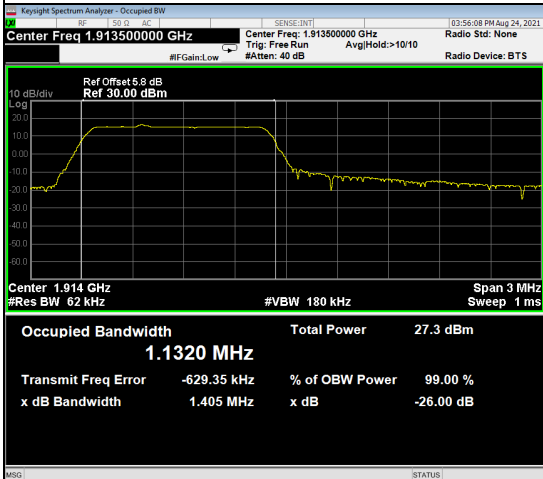
QPSK-26055



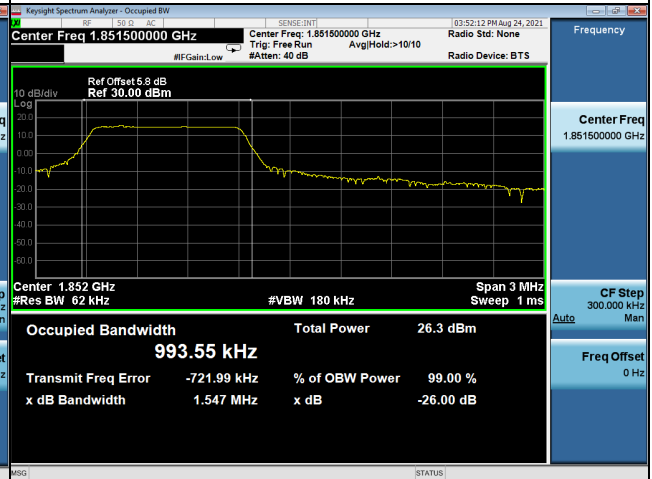
QPSK-26365



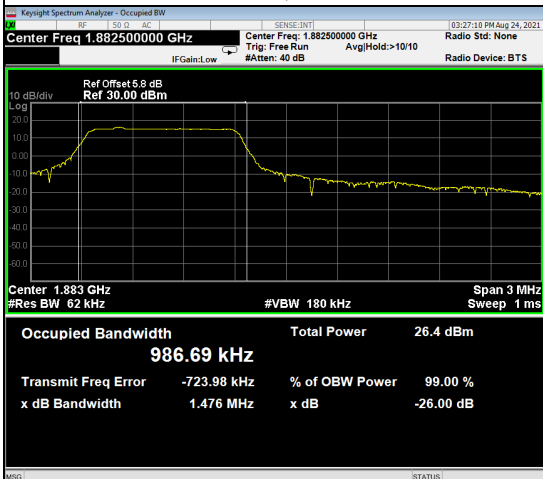
QPSK-26675



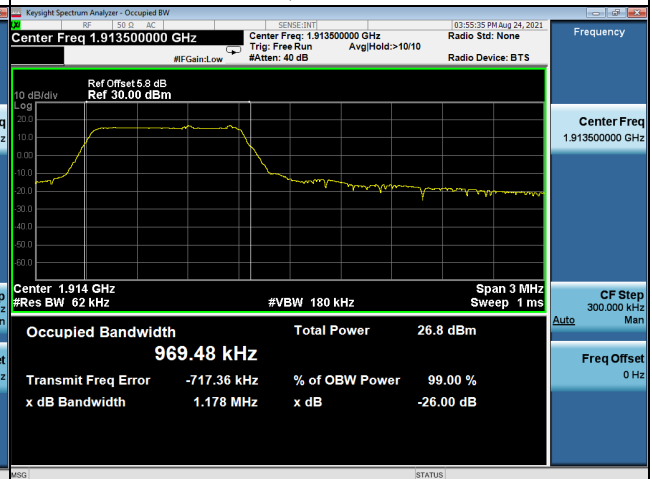
16QAM-26055



16QAM-26365



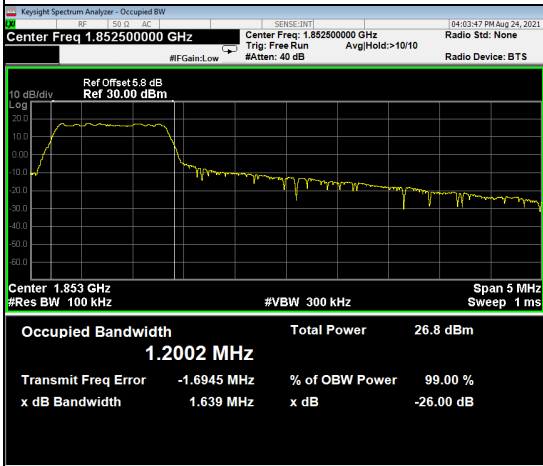
16QAM-26675



LTE Band 25_5M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26065	1852.5	1.2002	26065	1852.5	1.639
26365	1882.5	1.1918	26365	1882.5	1.507
26665	1912.5	1.1903	26665	1912.5	1.527
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26065	1852.5	1.0935	26065	1852.5	1.614
26365	1882.5	1.0294	26365	1882.5	1.496
26665	1912.5	1.0332	26665	1912.5	1.491

Spectrum Plot

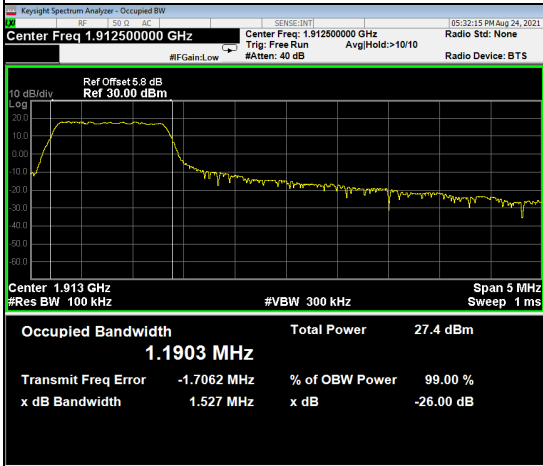
QPSK-26065



QPSK-26365



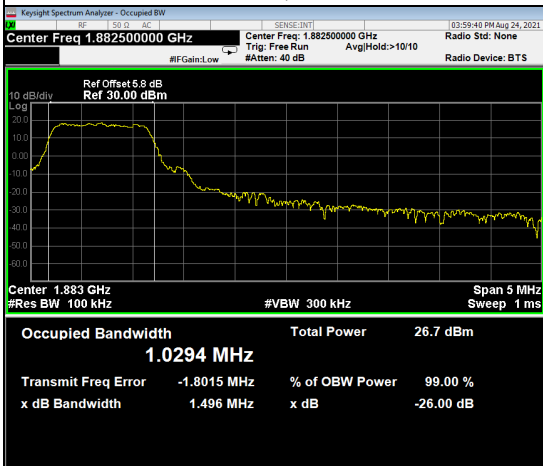
QPSK-26665



16QAM-26065



16QAM-26365



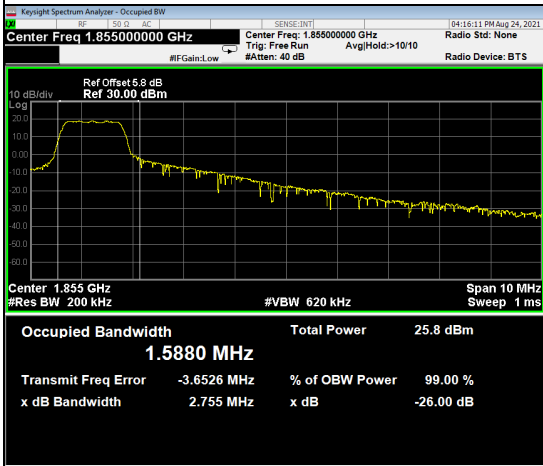
16QAM-26665



LTE Band 25_10M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26090	1855	1.5880	26090	1855	2.755
26365	1882.5	1.3751	26365	1882.5	2.147
26640	1910	1.3437	26640	1910	2.039
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26090	1855	1.5572	26090	1855	2.674
26365	1882.5	1.3525	26365	1882.5	2.125
26640	1910	1.2011	26640	1910	1.754

Spectrum Plot

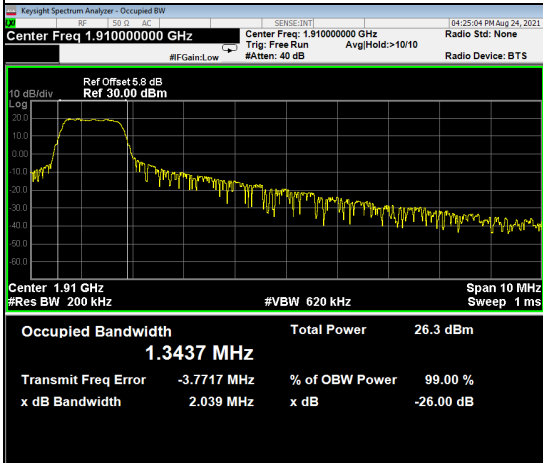
QPSK-26090



QPSK-26365



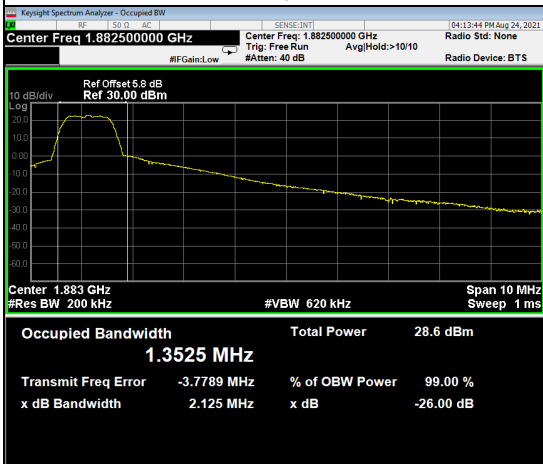
QPSK-26640



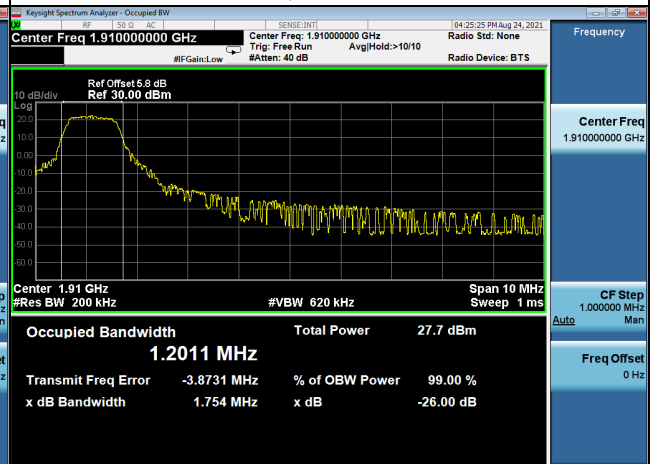
16QAM-26090



16QAM-26365



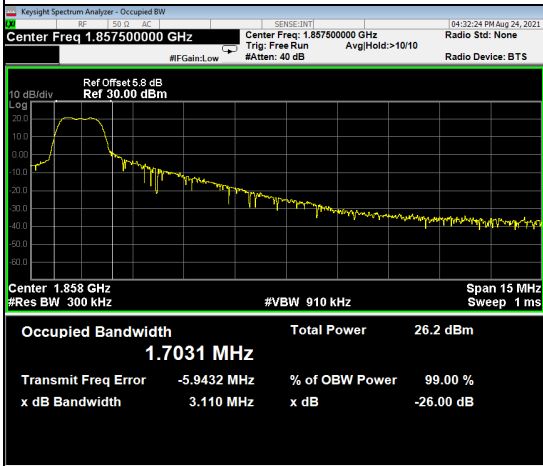
16QAM-26640



LTE Band 25_15M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26115	1857.5	1.7031	26115	1857.5	3.110
26365	1882.5	1.5561	26365	1882.5	2.587
26615	1907.5	2.1230	26615	1907.5	3.728
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26115	1857.5	1.3822	26115	1857.5	2.138
26365	1882.5	1.3834	26365	1882.5	2.237
26615	1907.5	2.1751	26615	1907.5	3.522

Spectrum Plot

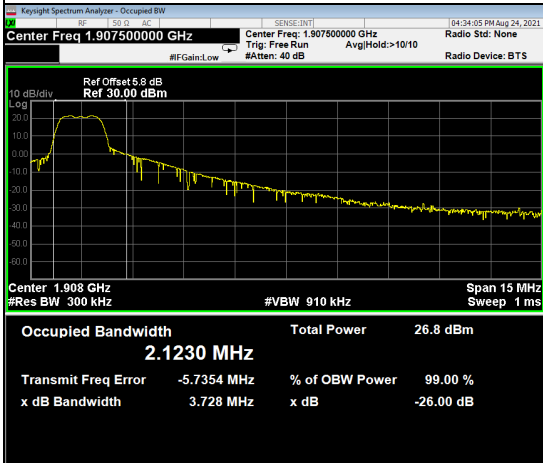
QPSK-26115



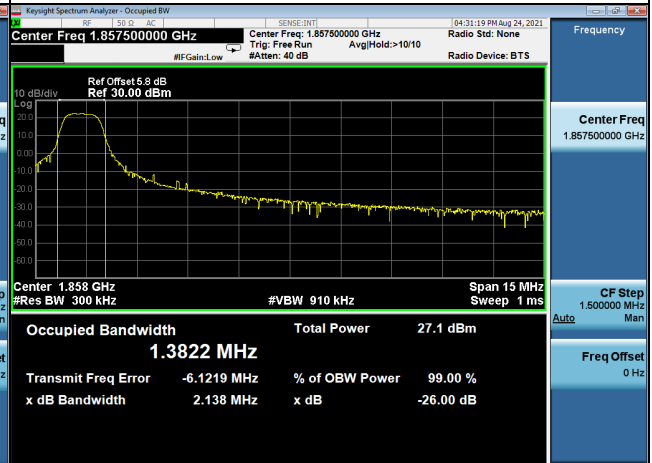
QPSK-26365



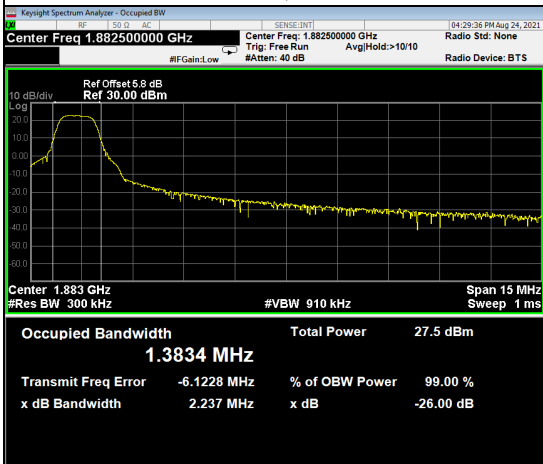
QPSK-26615



16QAM-26115



16QAM-26365



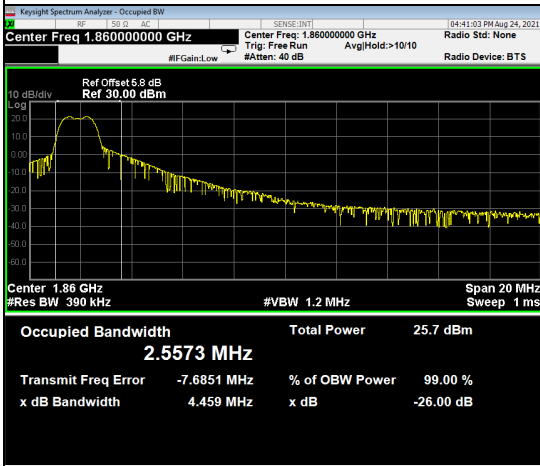
16QAM-26615



LTE Band 25_20M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26140	1860	2.5573	26140	1860	4.459
26365	1882.5	2.0769	26365	1882.5	3.674
26590	1905	2.5505	26590	1905	4.484
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
26140	1860	2.5729	26140	1860	4.443
26365	1882.5	1.5379	26365	1882.5	2.339
26590	1905	2.5561	26590	1905	4.387

Spectrum Plot

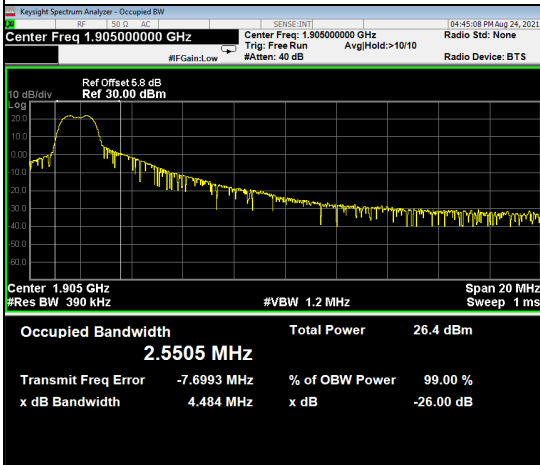
QPSK-26140



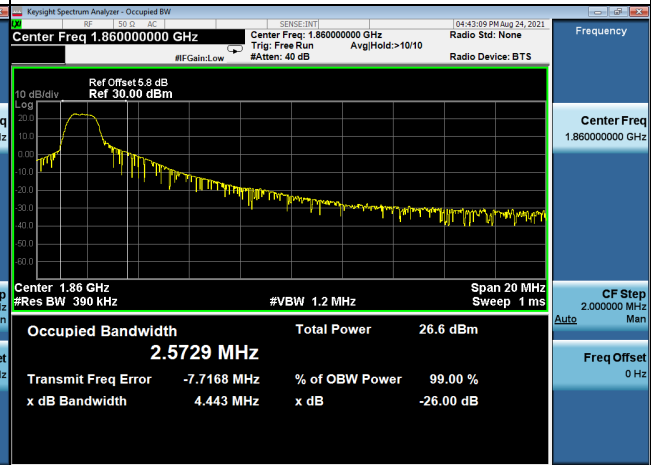
QPSK-26365



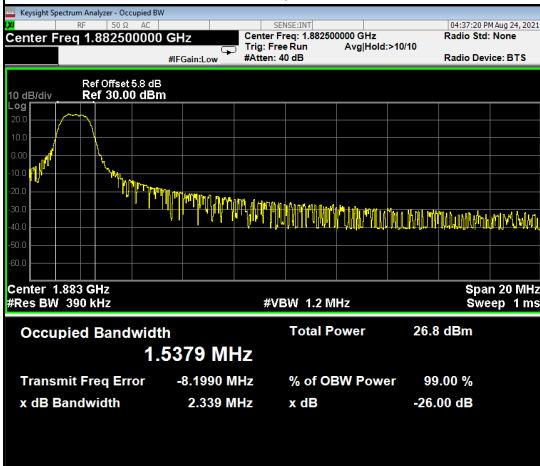
QPSK-26590



16QAM-26140



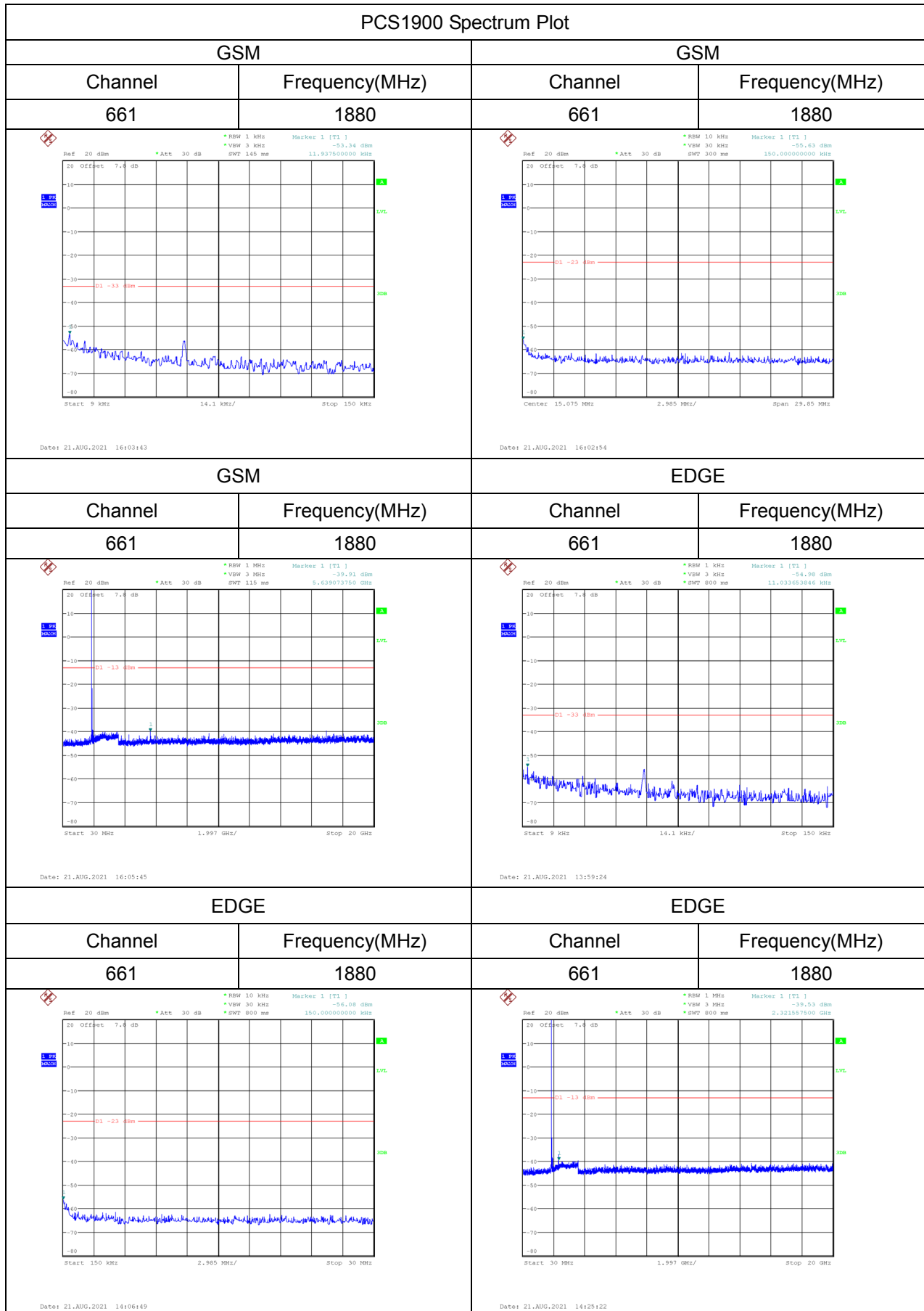
16QAM-26365

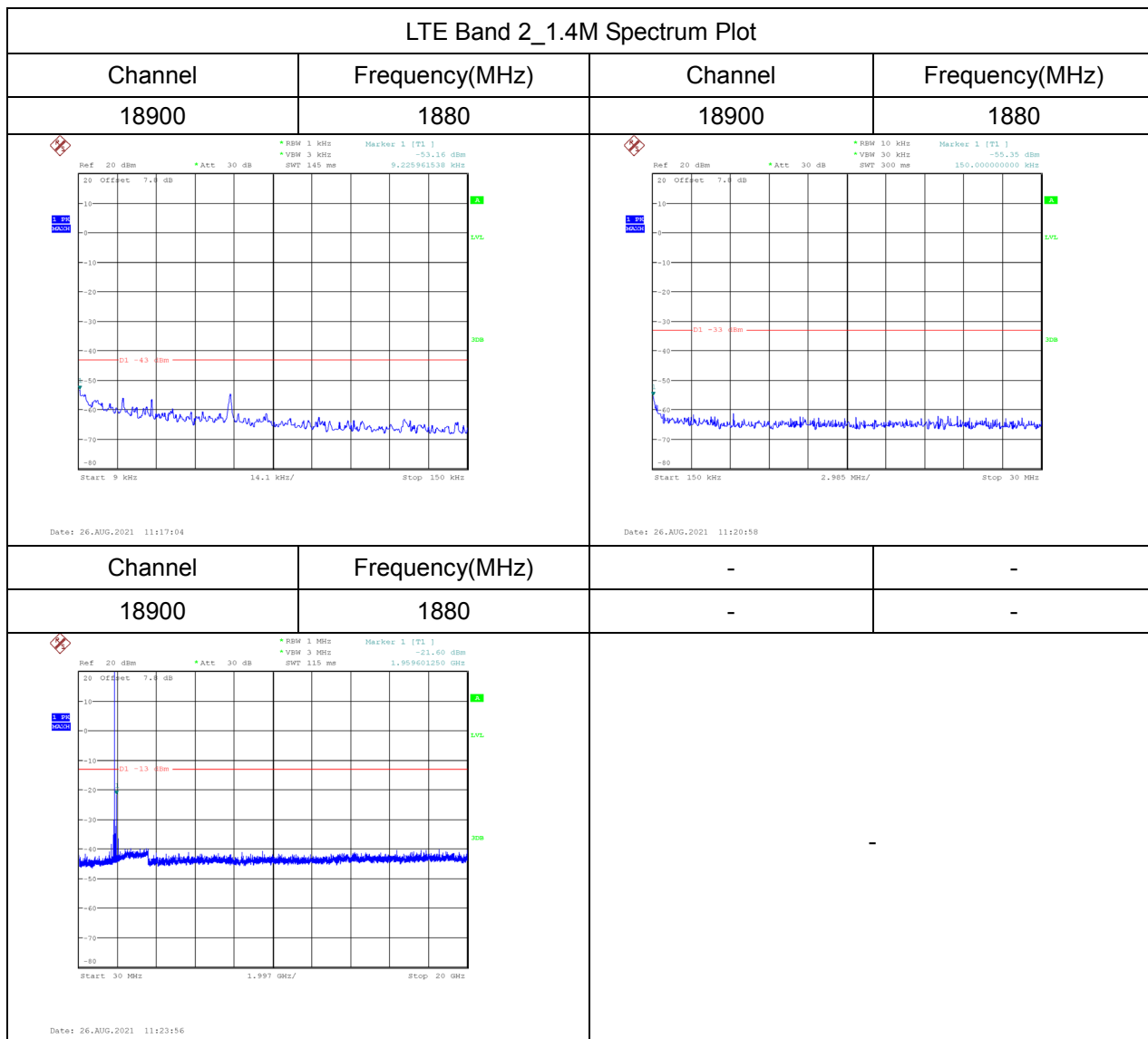


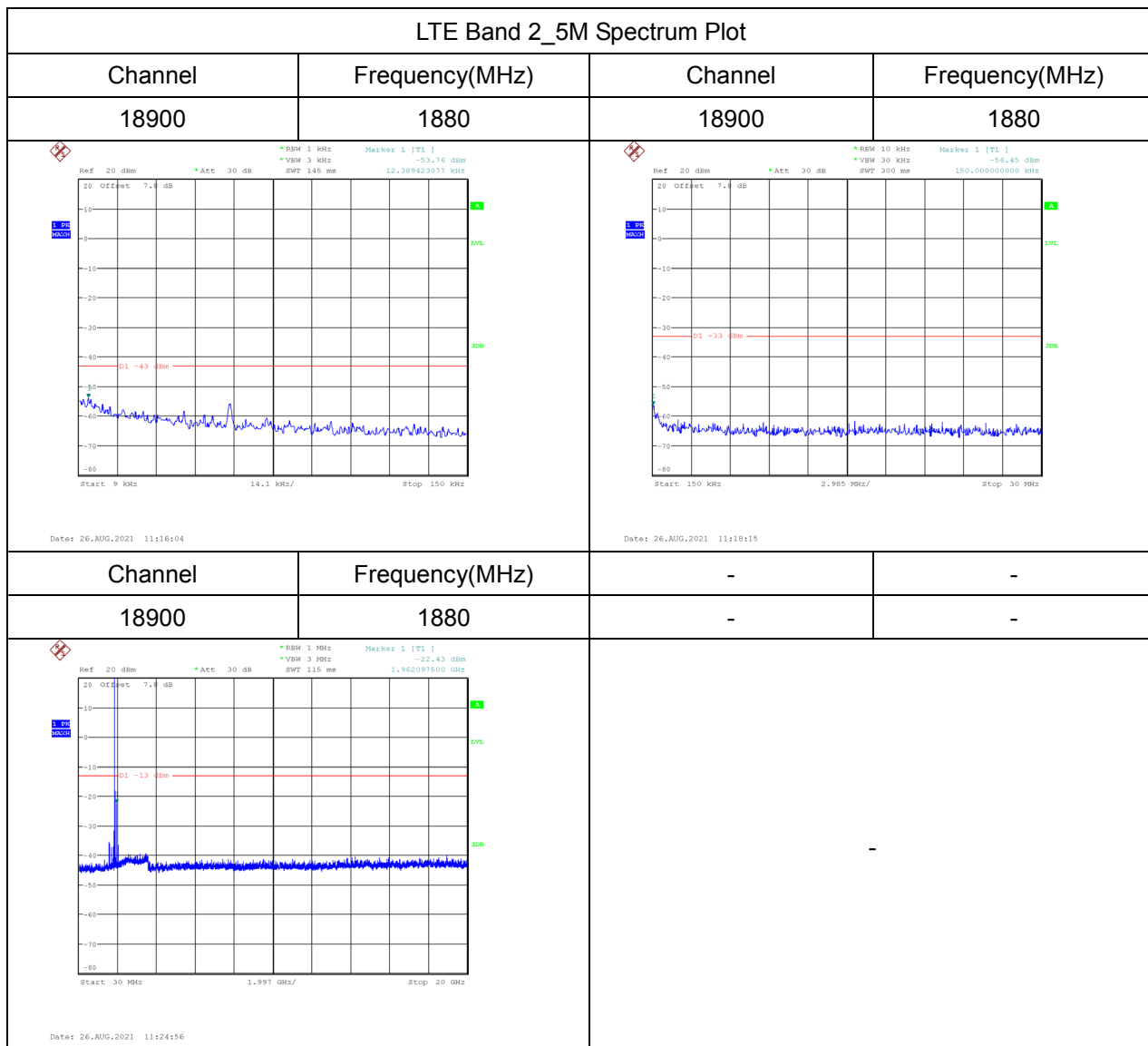
16QAM-26590

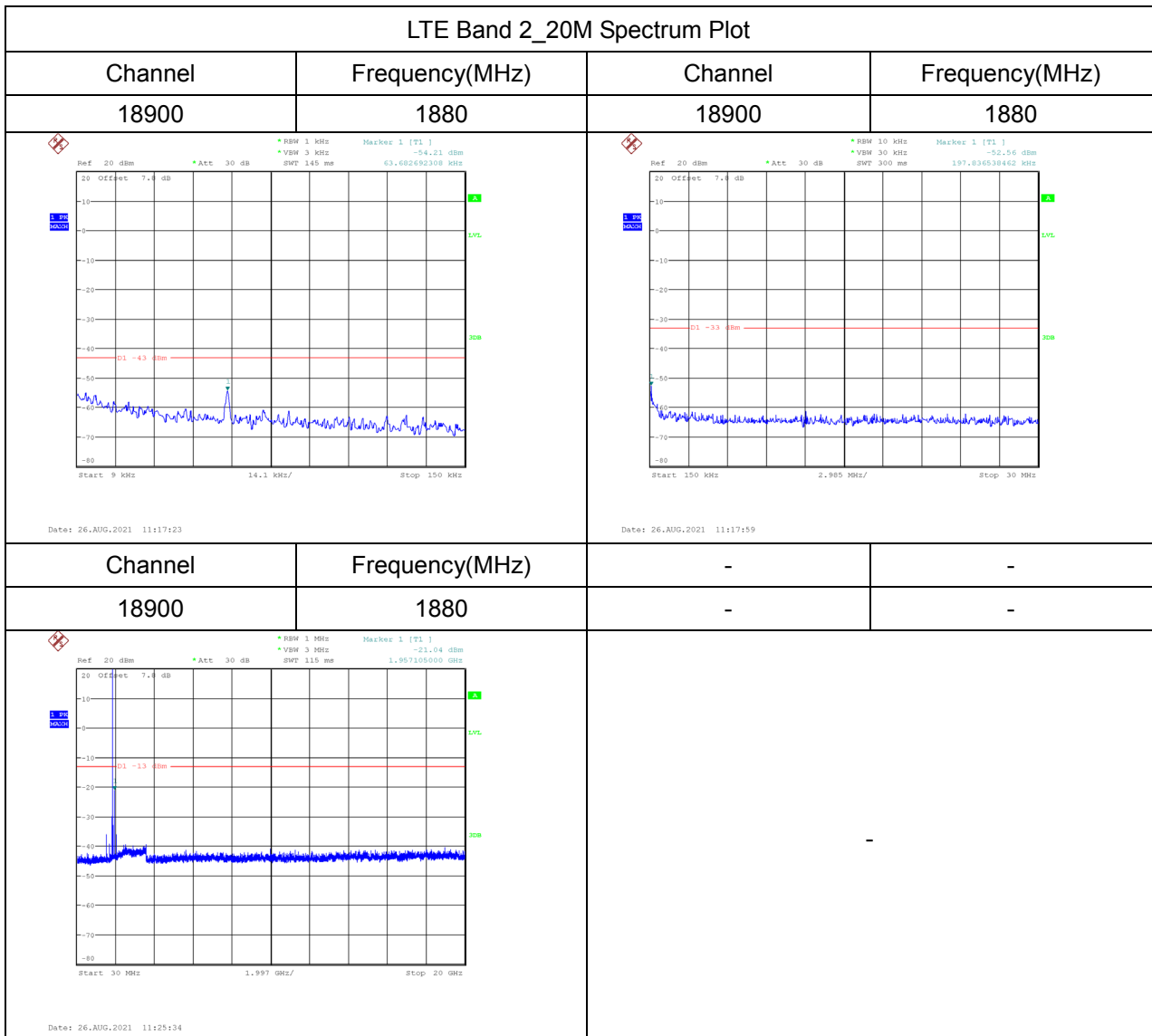


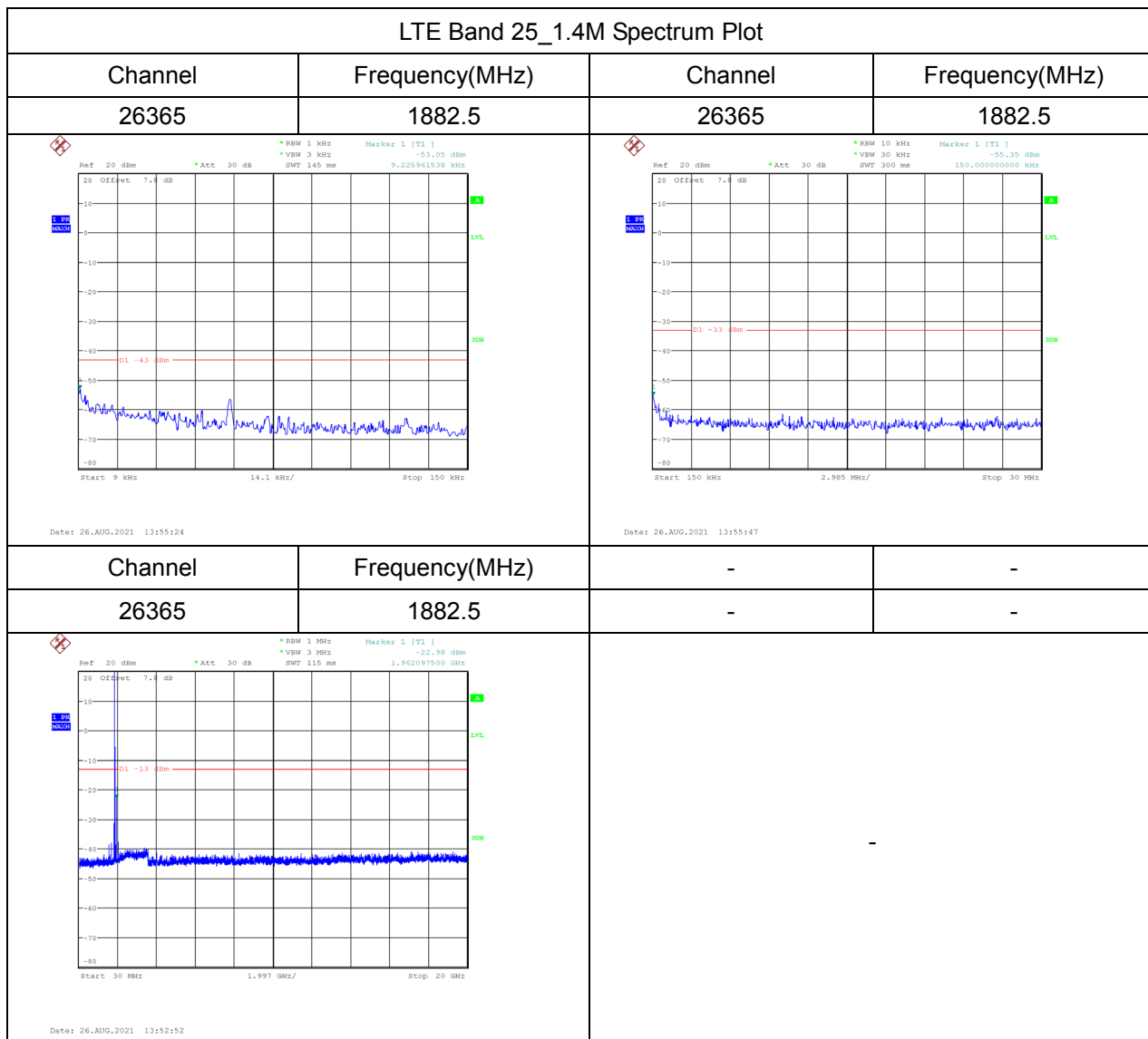
APPENDIX C - CONDUCTED SPURIOUS EMISSIONS

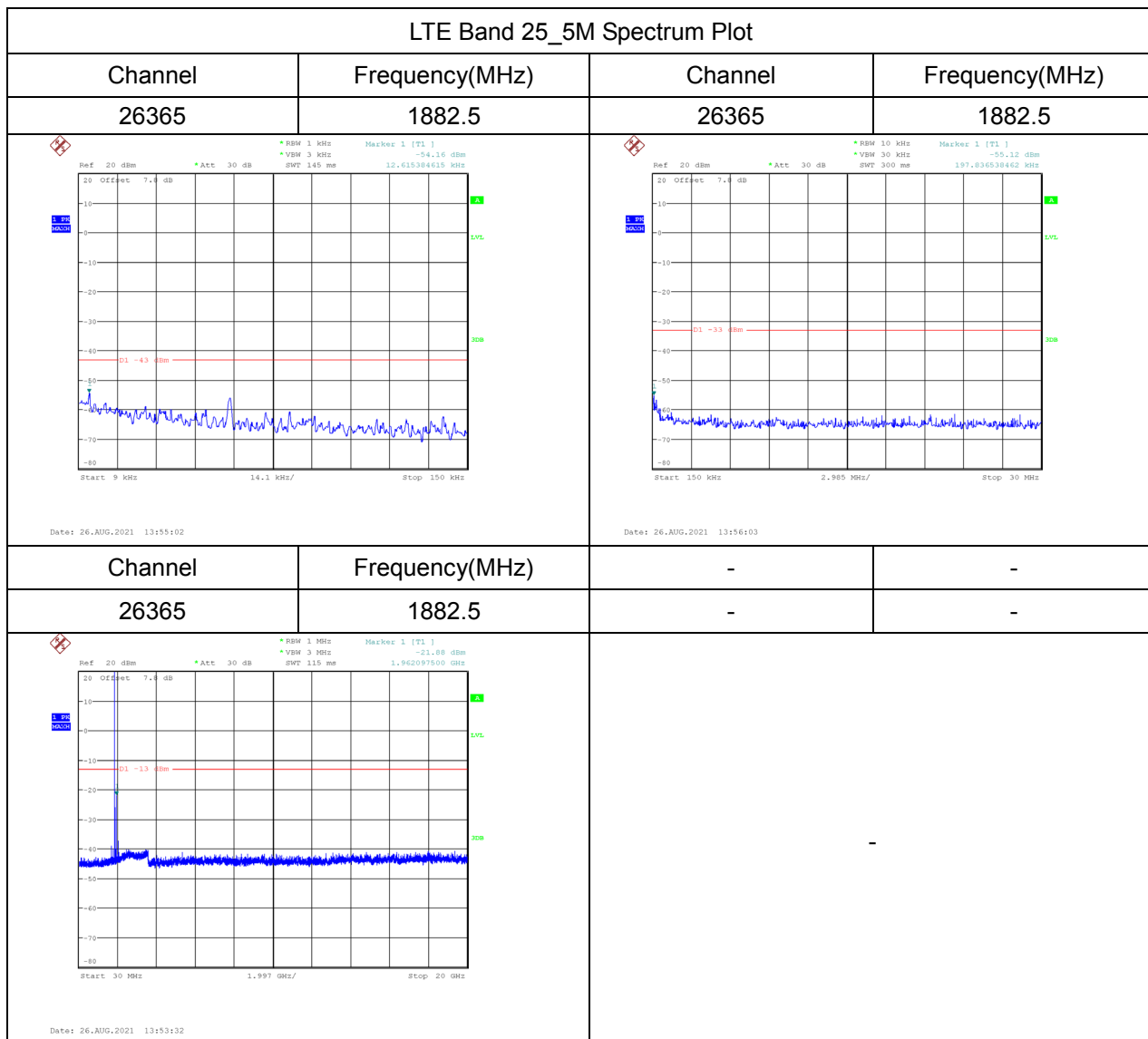


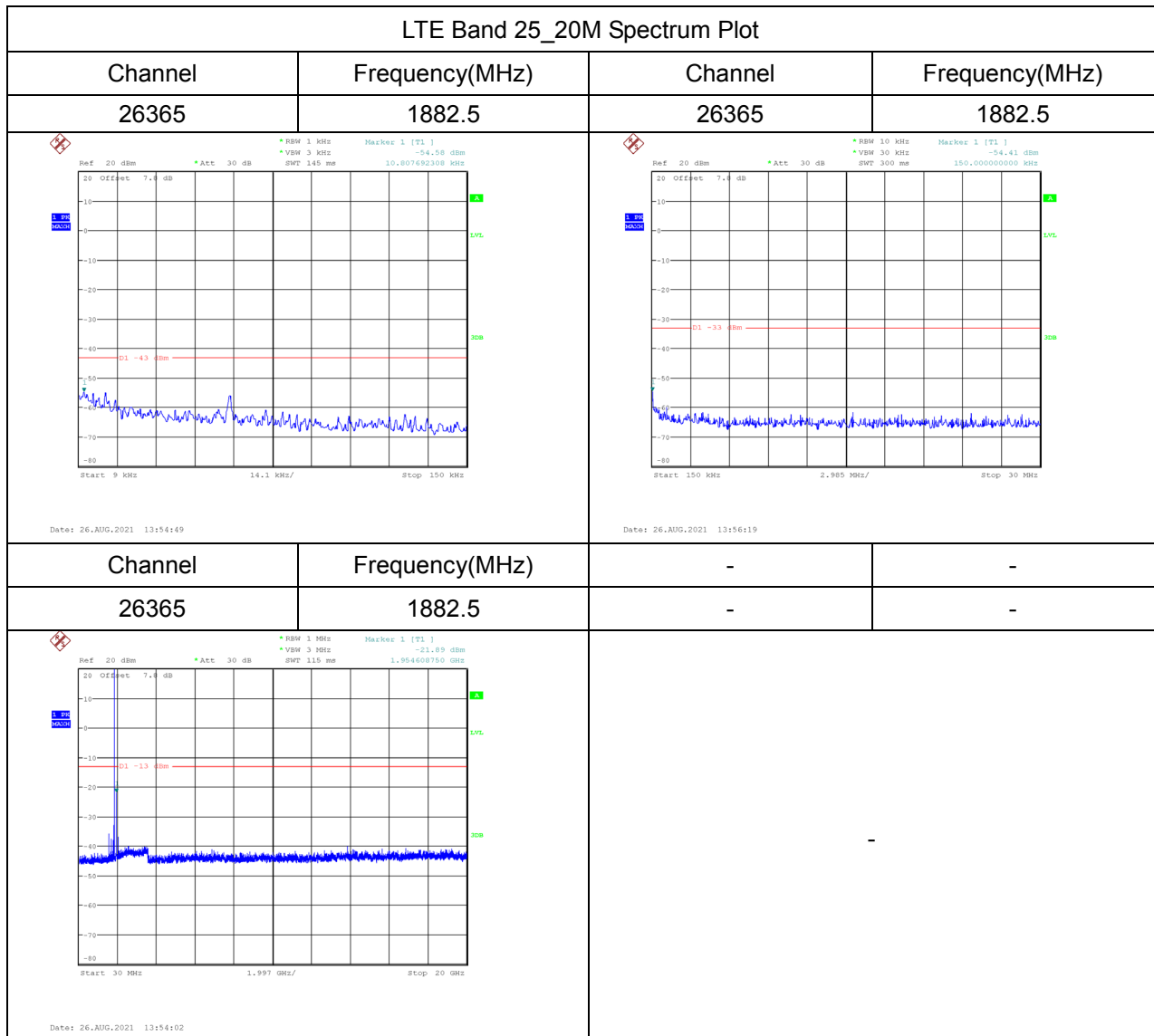








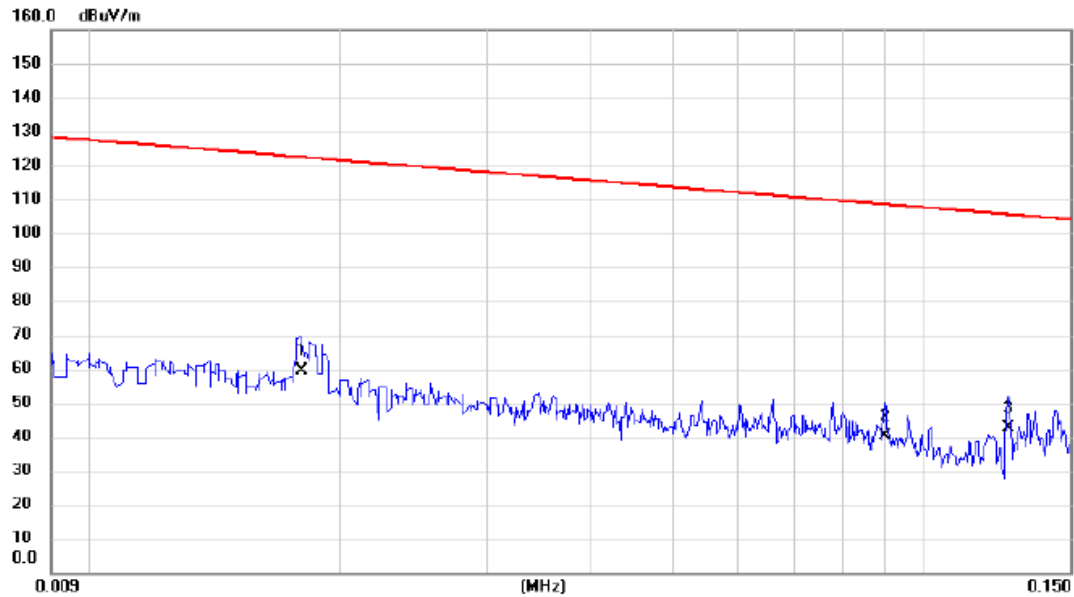




APPENDIX D - RADIATED SPURIOUS EMISSIONS (9KHZ TO 30MHZ)

Test Mode	TX Mode
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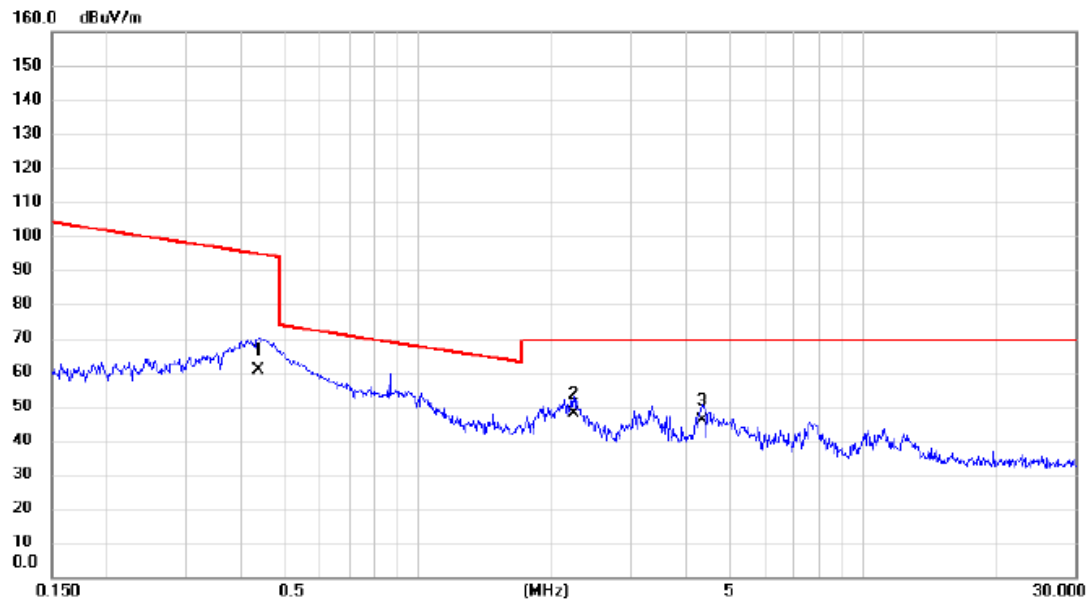
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	0.0180	45.65	13.84	59.49	122.50	-63.01	AVG		
2		0.0900	27.48	12.66	40.14	108.52	-68.38	AVG		
3		0.1263	29.68	12.73	42.41	105.58	-63.17	AVG		

Test Mode	TX Mode
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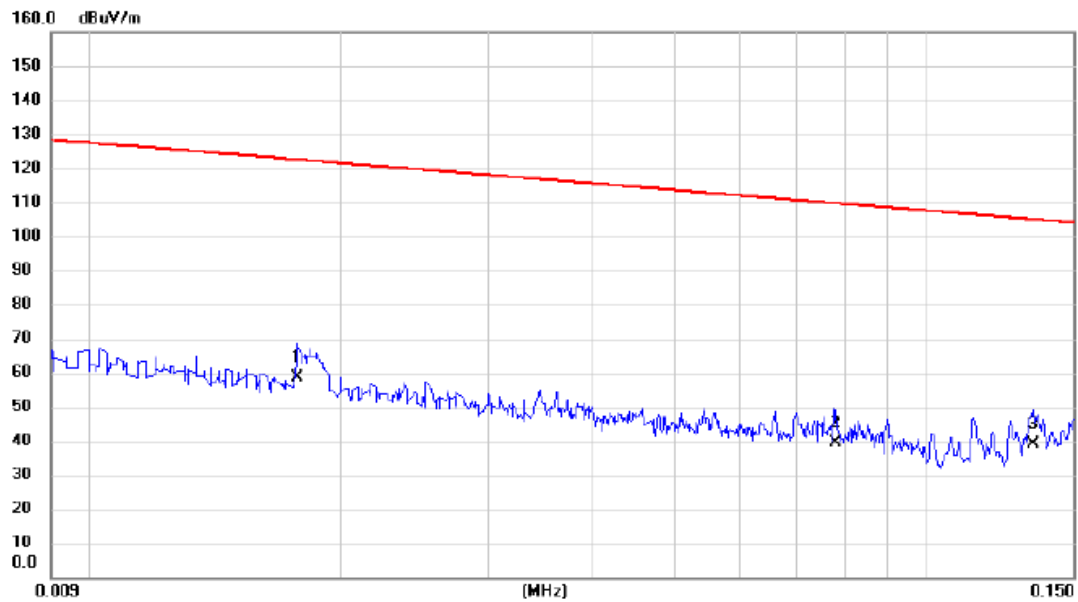
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		0.4374	48.25	12.17	60.42	94.79	-34.37	AVG		
2	*	2.2367	36.79	11.19	47.98	69.54	-21.56	QP		
3		4.3606	34.85	11.00	45.85	69.54	-23.69	QP		

Test Mode	TX Mode
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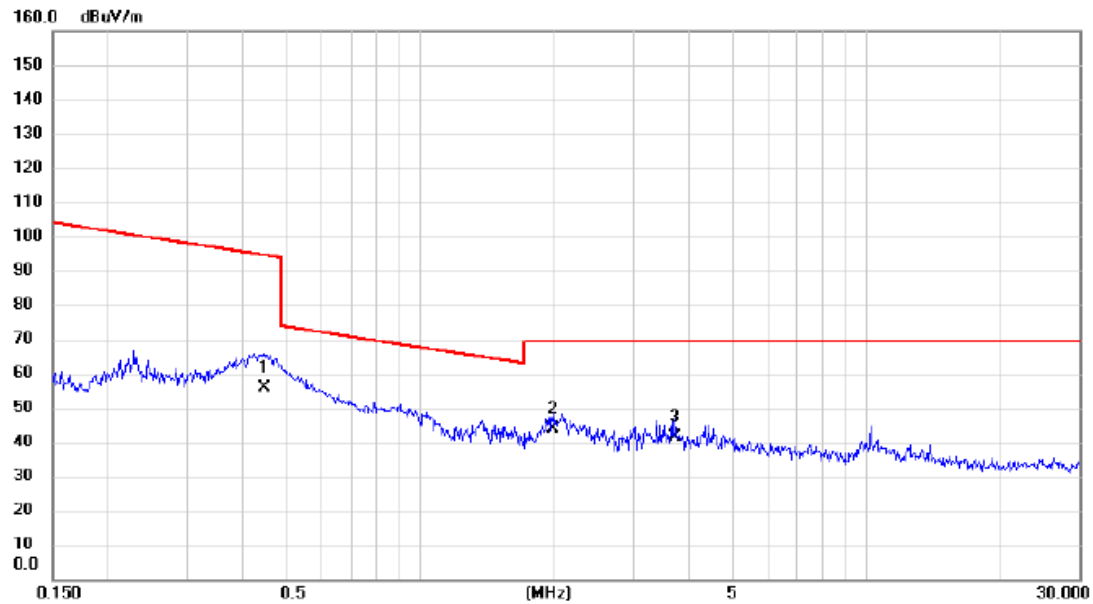
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	0.0177	44.51	13.93	58.44	122.65	-64.21	AVG		
2		0.0780	26.89	12.59	39.48	109.76	-70.28	AVG		
3		0.1344	26.43	12.73	39.16	105.04	-65.88	AVG		

Test Mode	TX Mode
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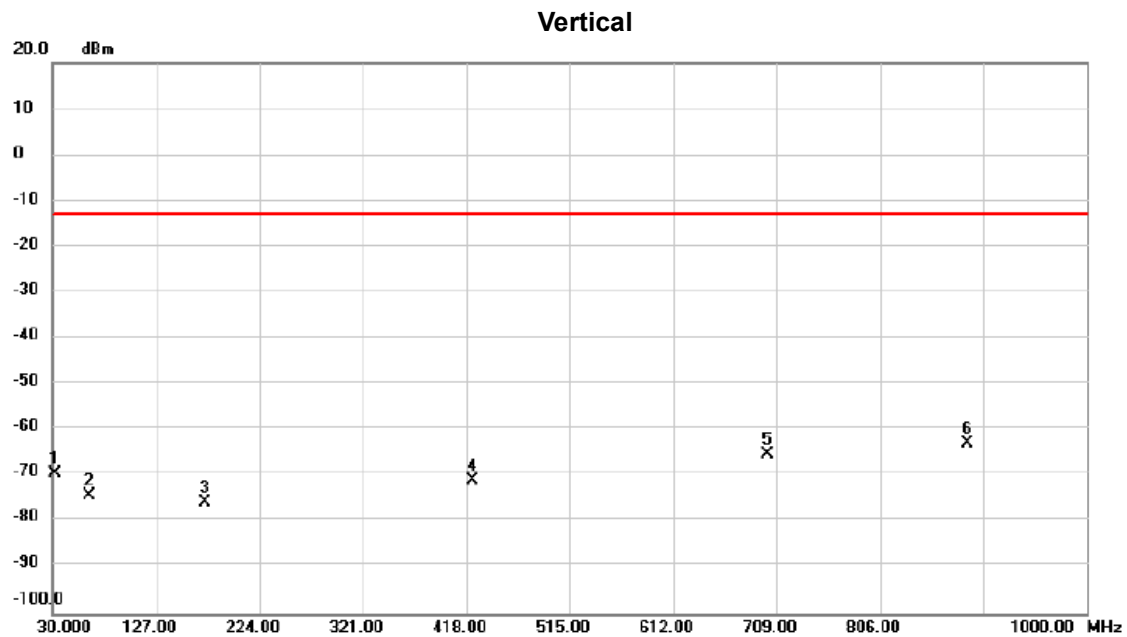
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		0.4468	43.83	12.14	55.97	94.60	-38.63	AVG		
2	*	1.9906	32.57	11.31	43.88	69.54	-25.66	QP		
3		3.7198	30.49	10.91	41.40	69.54	-28.14	QP		

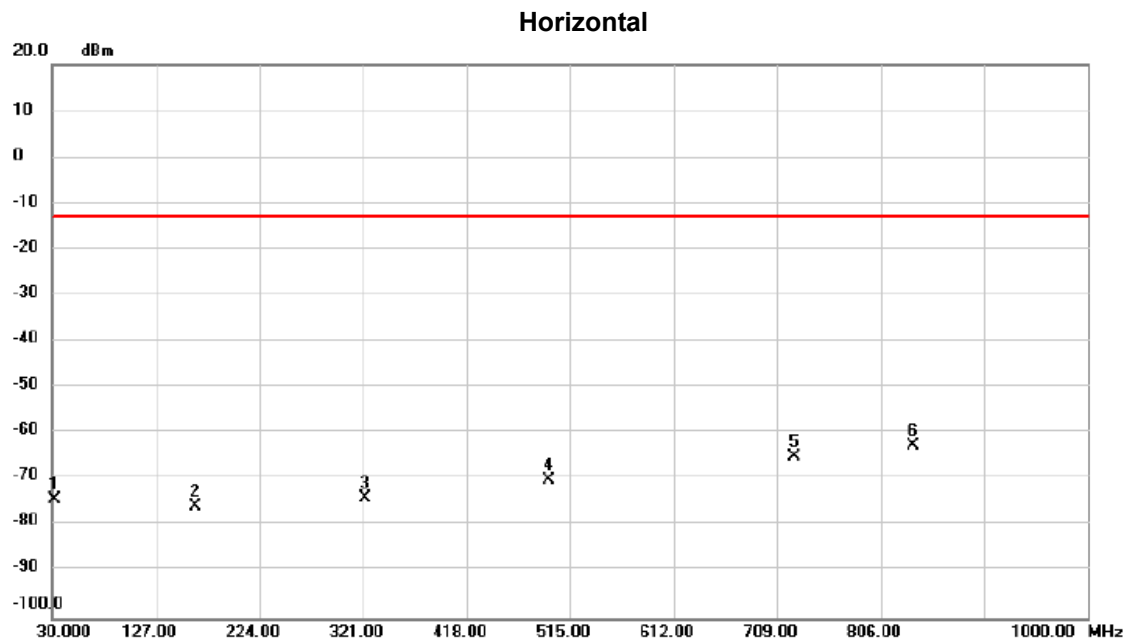
APPENDIX E - RADIATED SPURIOUS EMISSIONS (30MHZ TO 1000MHZ)

Test Mode	PCS1900_TX CH661_GSM
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No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		32.264	-54.27	-15.31	-69.58	-13.00	-56.58	peak	
2		64.608	-59.13	-15.16	-74.29	-13.00	-61.29	peak	
3		172.637	-62.86	-12.93	-75.79	-13.00	-62.79	peak	
4		423.951	-62.60	-8.30	-70.90	-13.00	-57.90	peak	
5		700.170	-62.02	-3.29	-65.31	-13.00	-52.31	peak	
6	*	888.413	-62.99	-0.06	-63.05	-13.00	-50.05	peak	

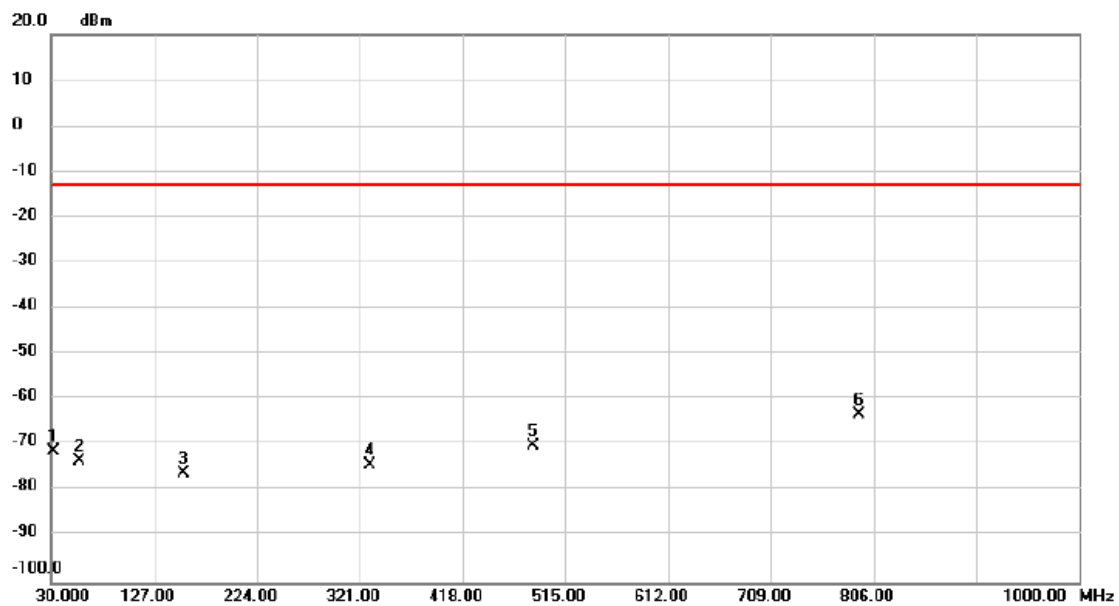
Test Mode	PCS1900_TX CH661_GSM
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No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		31.617	-59.09	-15.36	-74.45	-13.00	-61.45	peak	
2		163.581	-63.44	-12.52	-75.96	-13.00	-62.96	peak	
3		323.361	-63.44	-10.58	-74.02	-13.00	-61.02	peak	
4		495.432	-63.15	-6.86	-70.01	-13.00	-57.01	peak	
5		725.722	-62.21	-2.69	-64.90	-13.00	-51.90	peak	
6 *		836.339	-61.82	-0.79	-62.61	-13.00	-49.61	peak	

Test Mode	LTE Band 2_TX CH18900_1.4M
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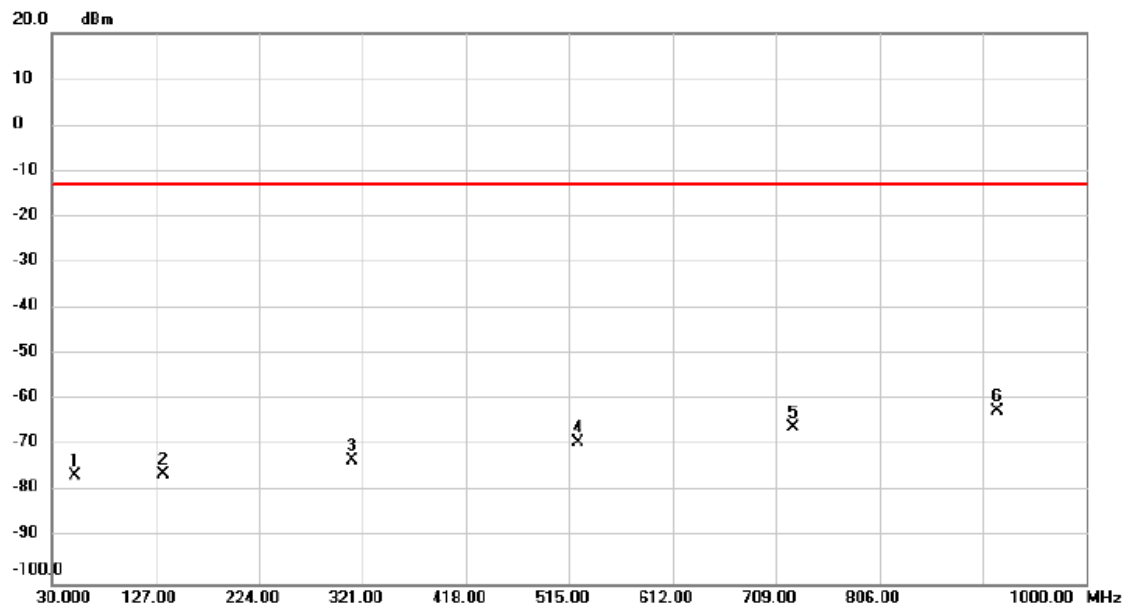
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		32.264	-65.71	-5.72	-71.43	-13.00	-58.43	peak	
2		55.875	-68.84	-4.57	-73.41	-13.00	-60.41	peak	
3		154.525	-73.10	-2.99	-76.09	-13.00	-63.09	peak	
4		331.124	-73.36	-0.85	-74.21	-13.00	-61.21	peak	
5		484.758	-72.59	2.56	-70.03	-13.00	-57.03	peak	
6	*	792.998	-71.93	8.58	-63.35	-13.00	-50.35	peak	

Test Mode	LTE Band 2_TX CH18900_1.4M
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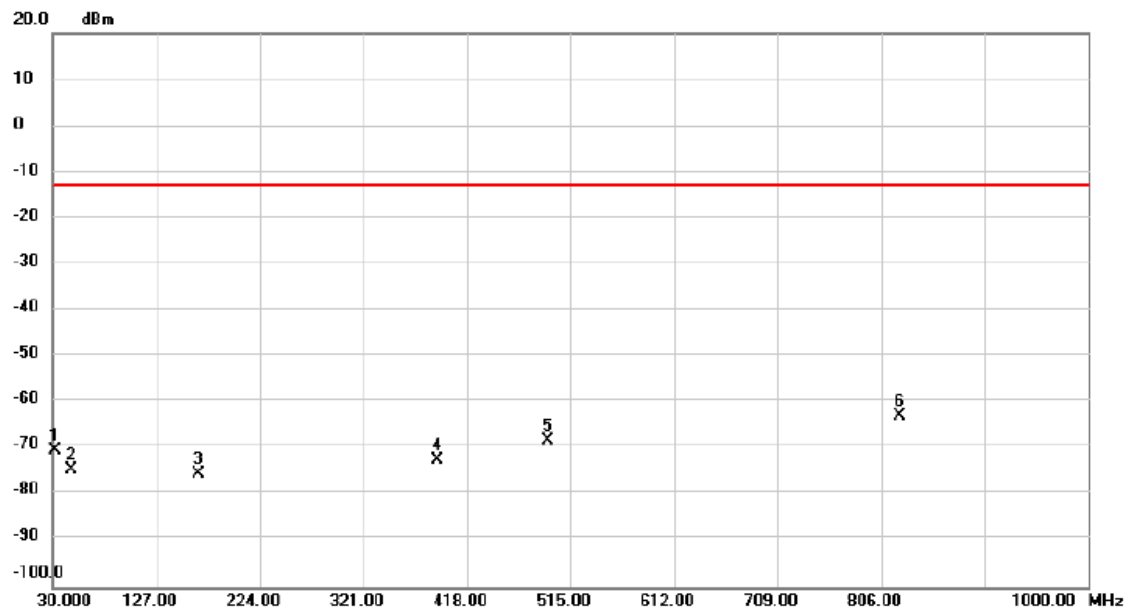
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		50.700	-72.27	-4.13	-76.40	-13.00	-63.40	peak	
2		133.501	-72.47	-3.69	-76.16	-13.00	-63.16	peak	
3		311.070	-72.08	-1.21	-73.29	-13.00	-60.29	peak	
4		523.895	-72.50	3.11	-69.39	-13.00	-56.39	peak	
5		725.722	-72.79	6.90	-65.89	-13.00	-52.89	peak	
6	*	916.552	-72.48	10.26	-62.22	-13.00	-49.22	peak	

Test Mode	LTE Band 2_TX CH18900_5M
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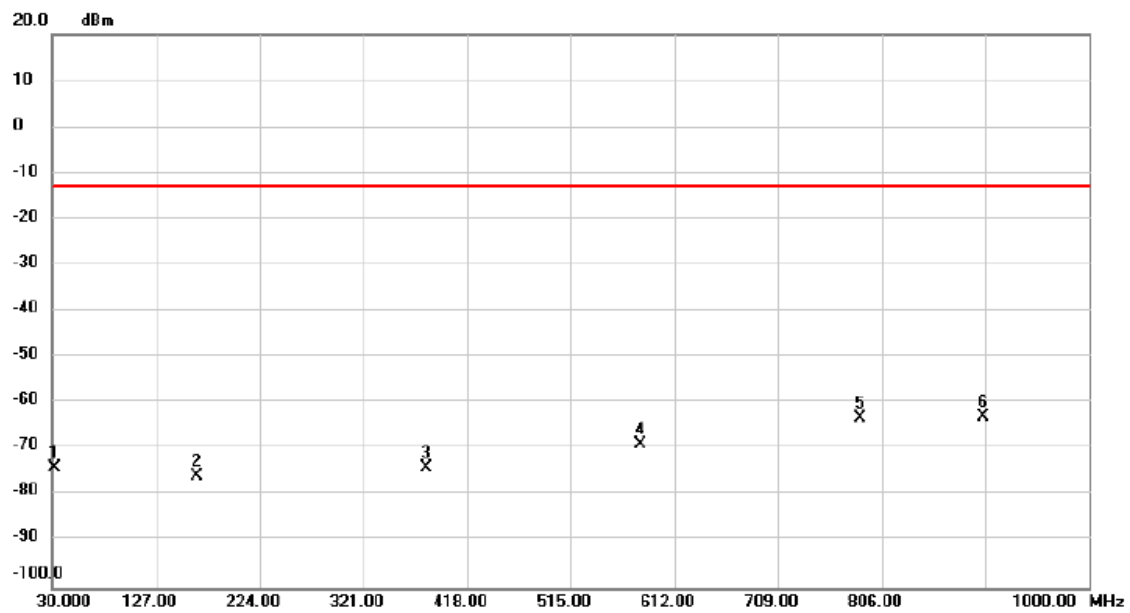
Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		31.941	-64.60	-5.76	-70.36	-13.00	-57.36	peak	
2		46.819	-70.23	-4.27	-74.50	-13.00	-61.50	peak	
3		165.845	-72.69	-2.98	-75.67	-13.00	-62.67	peak	
4		389.990	-73.06	0.40	-72.66	-13.00	-59.66	peak	
5		493.491	-70.92	2.69	-68.23	-13.00	-55.23	peak	
6	*	823.401	-71.84	8.78	-63.06	-13.00	-50.06	peak	

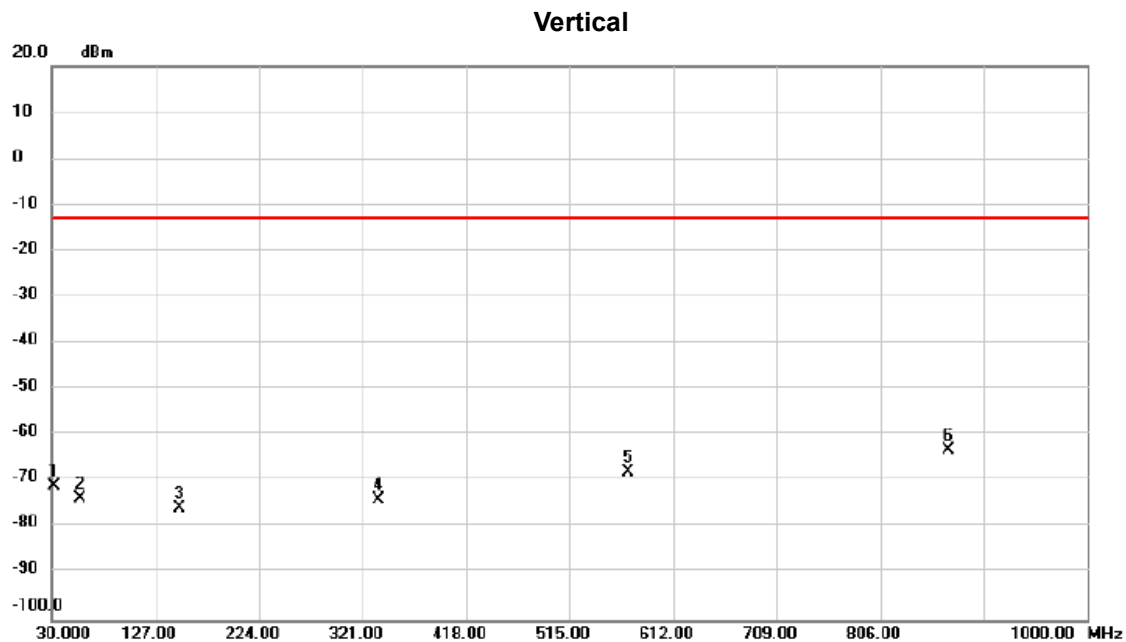
Test Mode	LTE Band 2_TX CH18900_5M
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Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1		31.617	-68.34	-5.77	-74.11	-13.00	-61.11	peak	
2		164.875	-72.77	-2.95	-75.72	-13.00	-62.72	peak	
3		379.316	-74.11	0.17	-73.94	-13.00	-60.94	peak	
4		579.850	-73.07	4.21	-68.86	-13.00	-55.86	peak	
5		785.882	-71.55	8.39	-63.16	-13.00	-50.16	peak	
6	*	901.027	-72.60	9.78	-62.82	-13.00	-49.82	peak	

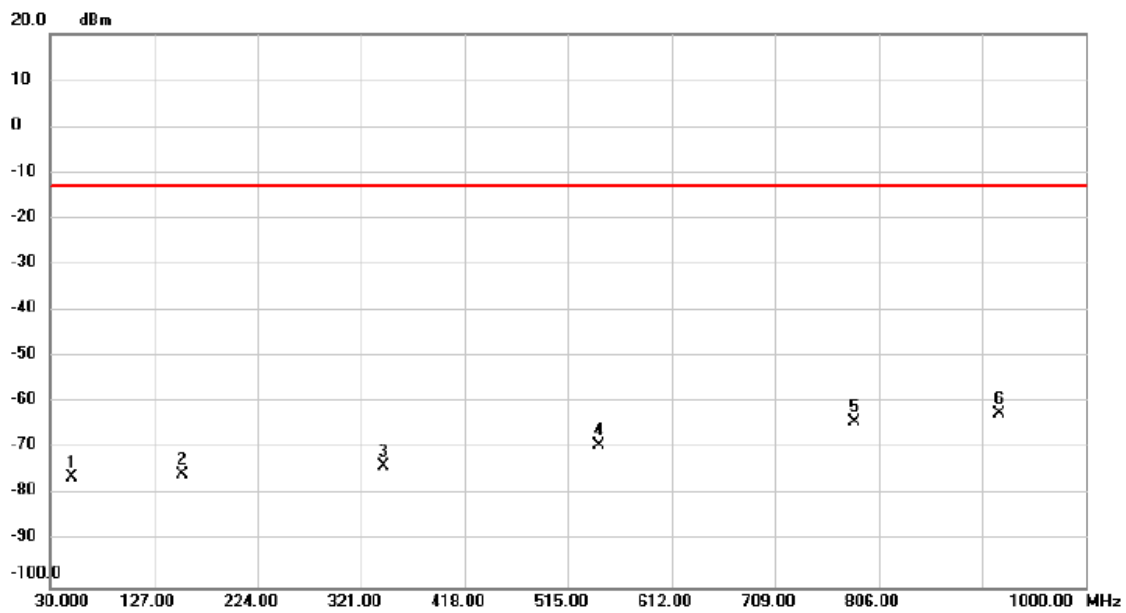
Test Mode	LTE Band 2_TX CH18900_20M
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No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		31.617	-65.20	-5.77	-70.97	-13.00	-57.97	peak	
2		56.199	-69.31	-4.58	-73.89	-13.00	-60.89	peak	
3		149.673	-72.59	-3.11	-75.70	-13.00	-62.70	peak	
4		336.299	-73.37	-0.76	-74.13	-13.00	-61.13	peak	
5		569.823	-71.98	3.95	-68.03	-13.00	-55.03	peak	
6	*	869.653	-72.46	9.19	-63.27	-13.00	-50.27	peak	

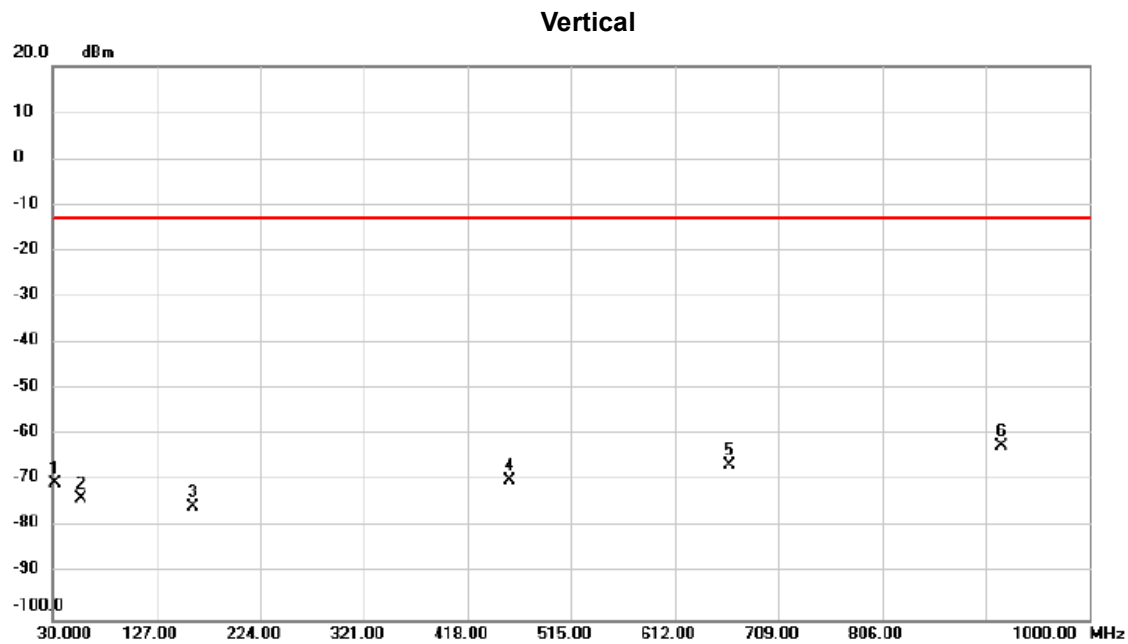
Test Mode LTE Band 2_TX CH18900_20M

Horizontal



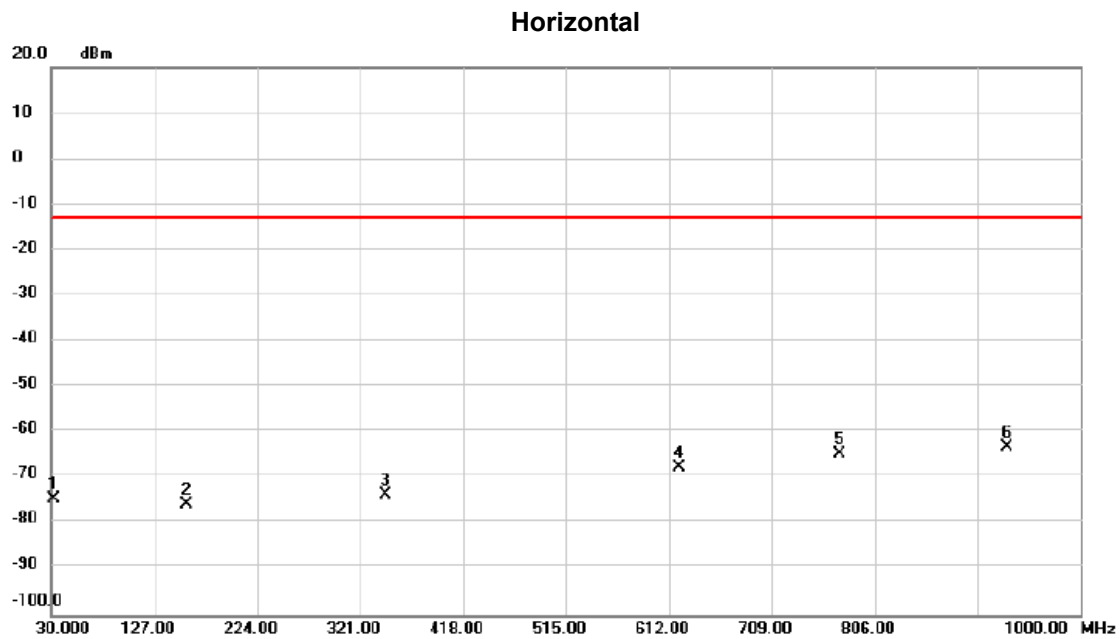
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		50.053	-72.00	-4.09	-76.09	-13.00	-63.09	peak	
2		153.878	-72.49	-3.00	-75.49	-13.00	-62.49	peak	
3		342.444	-72.98	-0.65	-73.63	-13.00	-60.63	peak	
4		544.271	-72.62	3.35	-69.27	-13.00	-56.27	peak	
5		783.618	-72.52	8.33	-64.19	-13.00	-51.19	peak	
6	*	919.787	-72.57	10.36	-62.21	-13.00	-49.21	peak	

Test Mode	LTE Band 25_TX CH26365_1.4M
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No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		31.941	-64.84	-5.76	-70.60	-13.00	-57.60	peak	
2		56.522	-69.20	-4.59	-73.79	-13.00	-60.79	peak	
3		160.994	-72.78	-2.87	-75.65	-13.00	-62.65	peak	
4		457.589	-72.07	2.11	-69.96	-13.00	-56.96	peak	
5		663.298	-72.46	5.78	-66.68	-13.00	-53.68	peak	
6	*	918.169	-72.59	10.31	-62.28	-13.00	-49.28	peak	

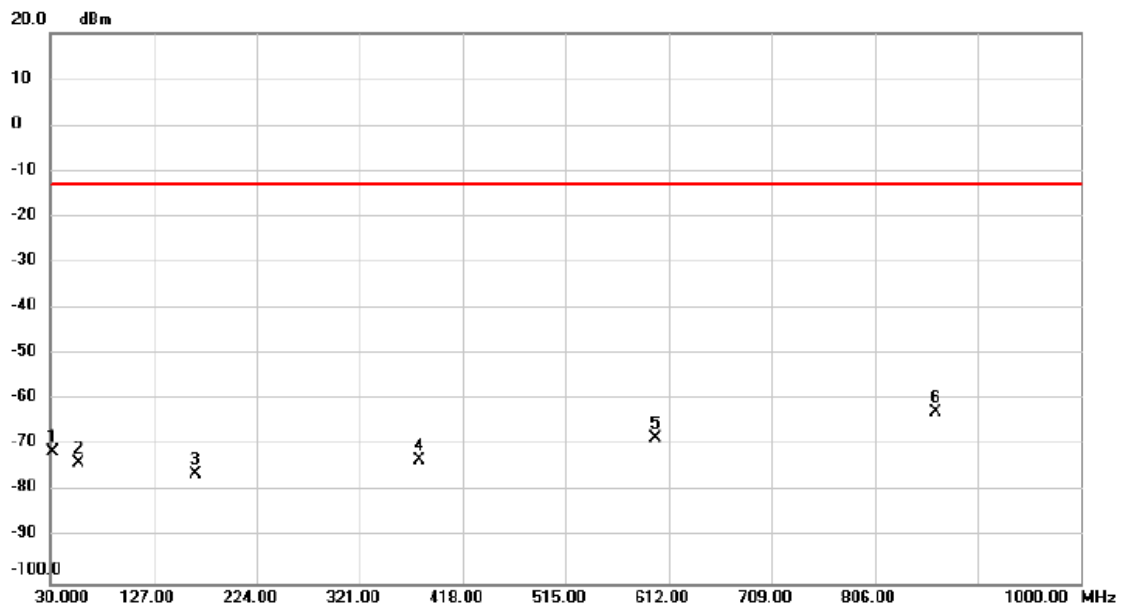
Test Mode	LTE Band 25_TX CH26365_1.4M
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No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		31.617	-68.96	-5.77	-74.73	-13.00	-61.73	peak	
2		157.436	-72.85	-2.91	-75.76	-13.00	-62.76	peak	
3		344.708	-73.09	-0.61	-73.70	-13.00	-60.70	peak	
4		621.250	-72.75	5.11	-67.64	-13.00	-54.64	peak	
5		772.621	-72.72	8.05	-64.67	-13.00	-51.67	peak	
6	*	931.107	-73.85	10.71	-63.14	-13.00	-50.14	peak	

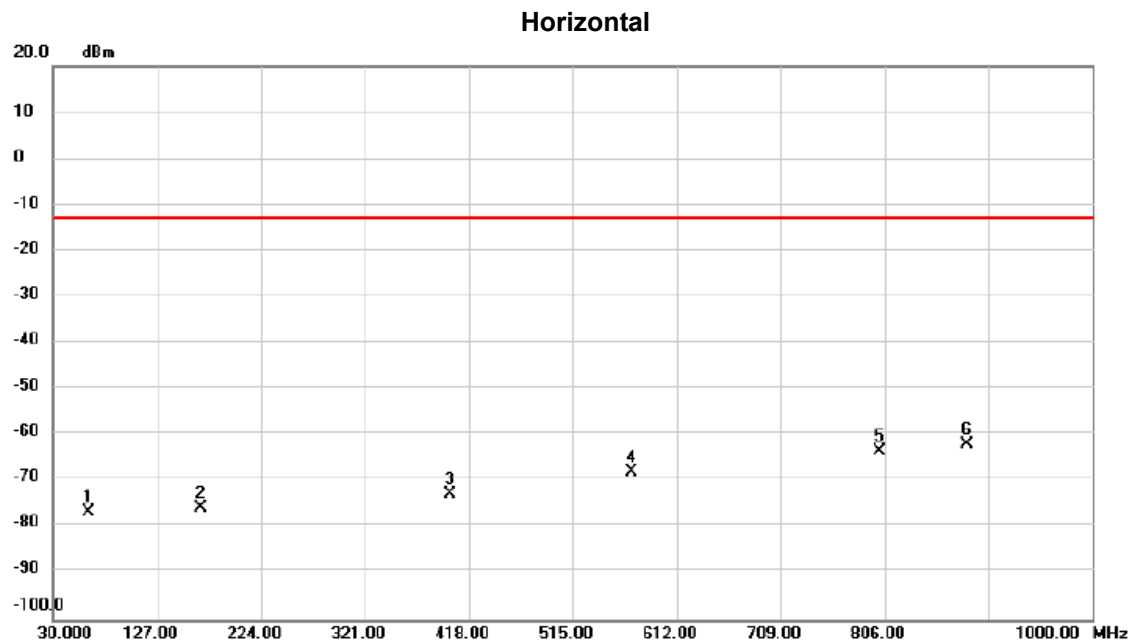
Test Mode LTE Band 25_TX CH26365_5M

Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		31.941	-65.68	-5.76	-71.44	-13.00	-58.44	peak	
2		56.199	-69.22	-4.58	-73.80	-13.00	-60.80	peak	
3		166.169	-73.08	-2.99	-76.07	-13.00	-63.07	peak	
4		377.699	-73.14	0.13	-73.01	-13.00	-60.01	peak	
5		599.256	-73.02	4.72	-68.30	-13.00	-55.30	peak	
6	*	863.508	-71.77	9.07	-62.70	-13.00	-49.70	peak	

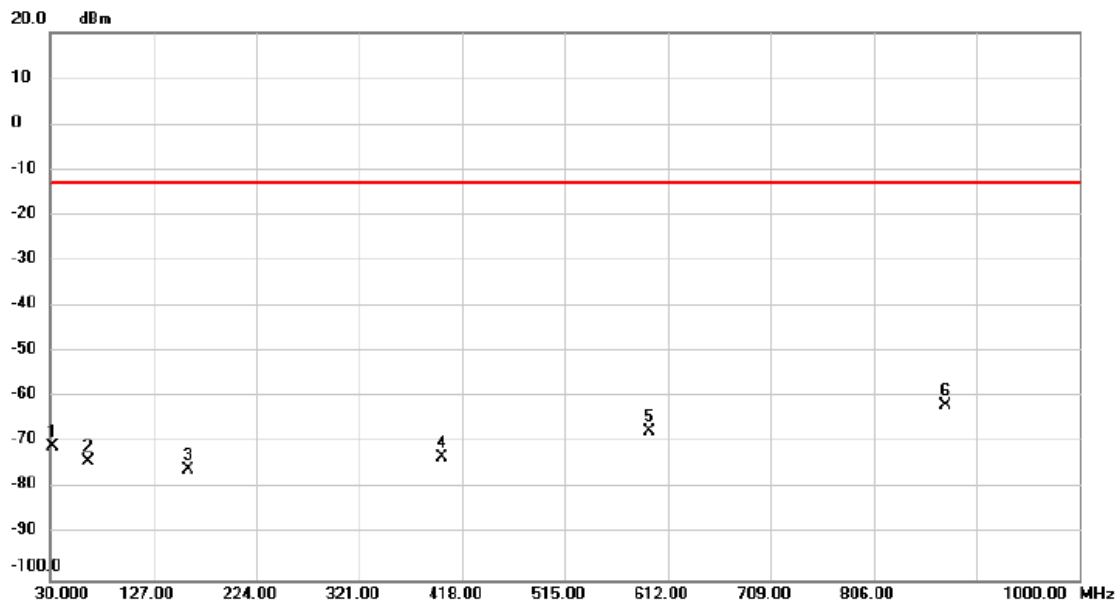
Test Mode	LTE Band 25_TX CH26365_5M
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No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		62.668	-71.49	-5.28	-76.77	-13.00	-63.77	peak	
2		167.786	-72.93	-3.01	-75.94	-13.00	-62.94	peak	
3		400.664	-73.47	0.66	-72.81	-13.00	-59.81	peak	
4		570.147	-71.93	3.96	-67.97	-13.00	-54.97	peak	
5		801.731	-72.37	8.77	-63.60	-13.00	-50.60	peak	
6	*	882.914	-71.43	9.43	-62.00	-13.00	-49.00	peak	

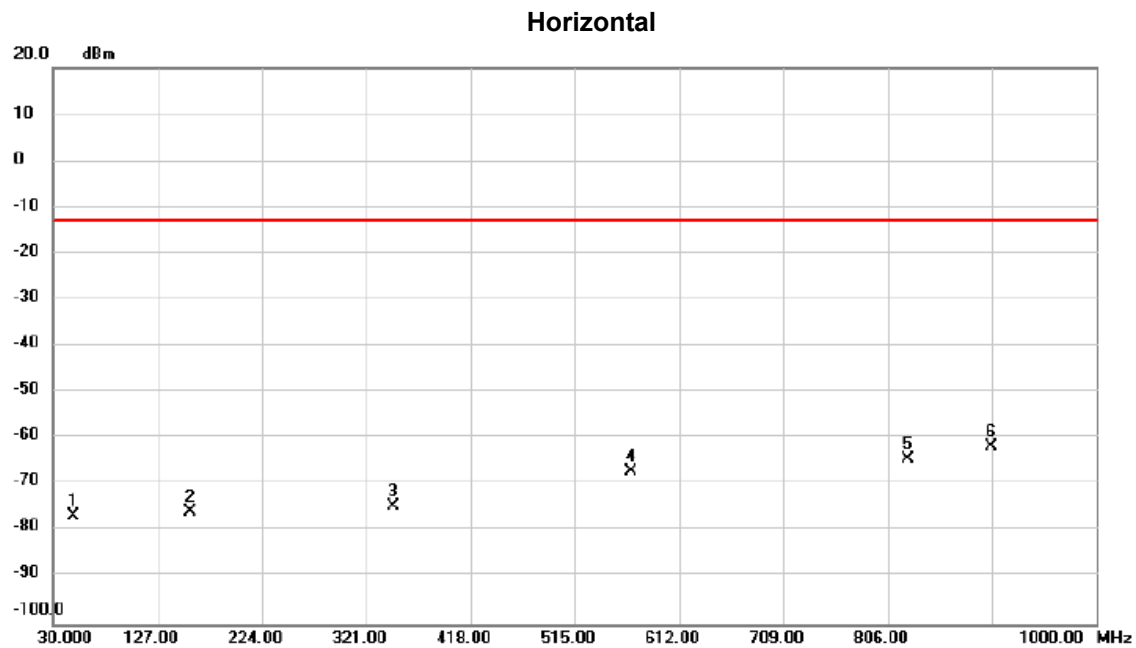
Test Mode LTE Band 25_TX CH26365_20M

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		31.941	-64.99	-5.76	-70.75	-13.00	-57.75	peak	
2		64.932	-68.48	-5.62	-74.10	-13.00	-61.10	peak	
3		159.376	-72.91	-2.87	-75.78	-13.00	-62.78	peak	
4		398.723	-73.76	0.61	-73.15	-13.00	-60.15	peak	
5		594.728	-72.14	4.60	-67.54	-13.00	-54.54	peak	
6	*	873.534	-71.04	9.26	-61.78	-13.00	-48.78	peak	

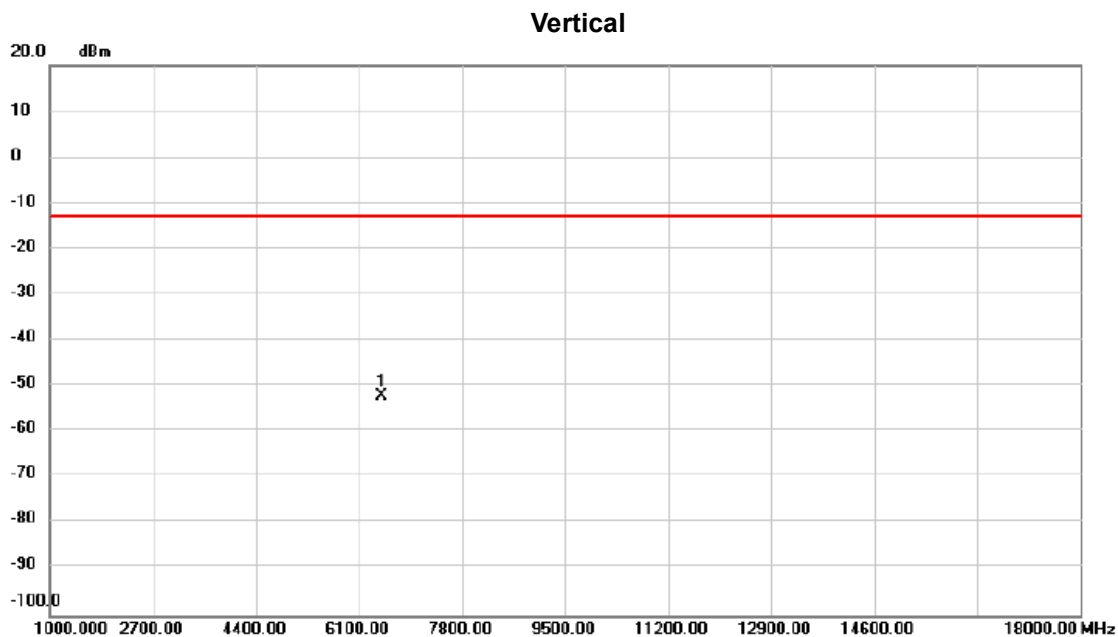
Test Mode	LTE Band 25_TX CH26365_20M
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No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		48.113	-72.60	-4.19	-76.79	-13.00	-63.79	peak	
2		157.436	-72.94	-2.91	-75.85	-13.00	-62.85	peak	
3		346.649	-73.97	-0.57	-74.54	-13.00	-61.54	peak	
4		567.236	-71.09	3.88	-67.21	-13.00	-54.21	peak	
5		825.018	-73.10	8.79	-64.31	-13.00	-51.31	peak	
6	*	902.321	-71.71	9.83	-61.88	-13.00	-48.88	peak	

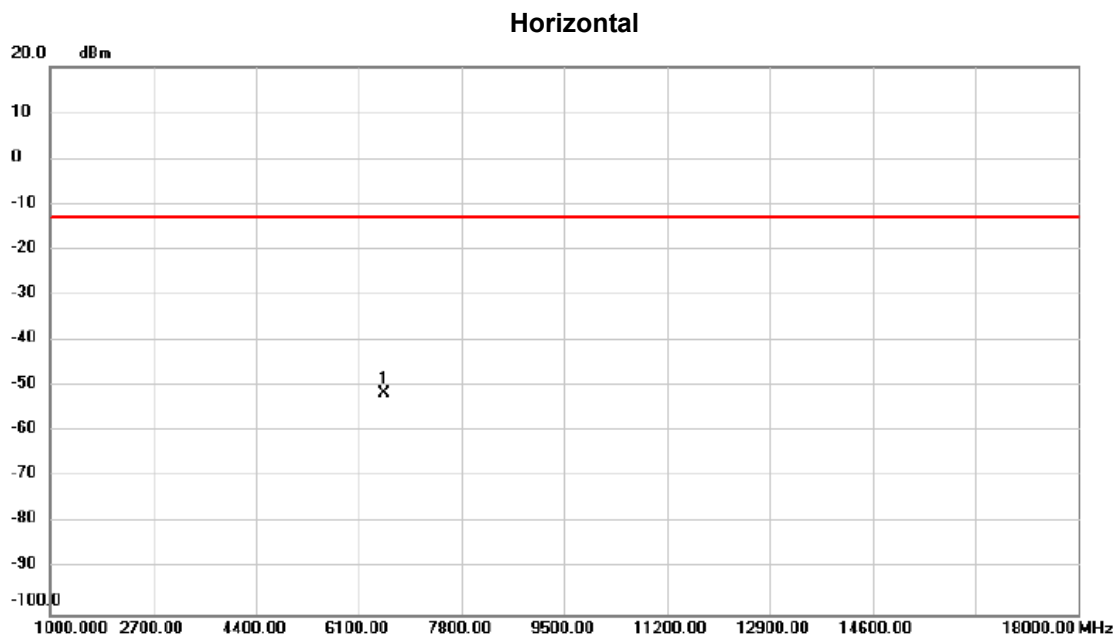
APPENDIX F - RADIATED SPURIOUS EMISSIONS (ABOVE 1000MHZ)

Test Mode	PCS1900_TX CH661_GSM
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	6482.500	-60.10	7.87	-52.23	-13.00	-39.23	peak	

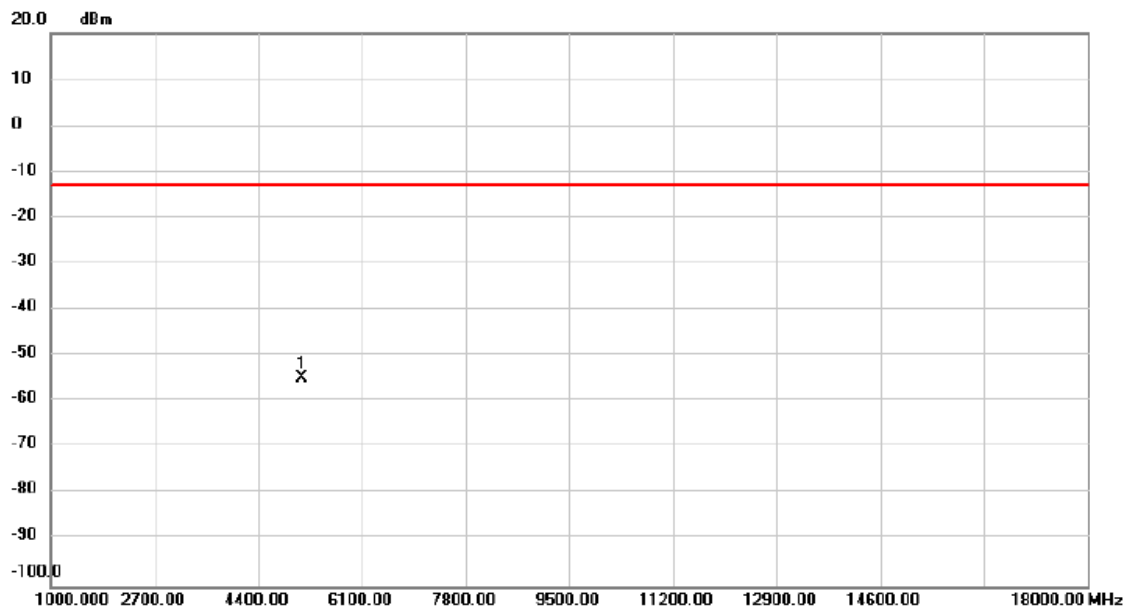
Test Mode	PCS1900_TX CH661_GSM
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No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	6525.000	-59.55	8.02	-51.53	-13.00	-38.53	peak	

Test Mode	LTE Band 2_TX CH18900_1.4M
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Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	5114.000	-72.86	17.98	-54.88	-13.00	-41.88	peak	