

Product Name: LTE Cat-M1 Tracker	Report No: FCC022022-05738RF12(b)
Product Model: ATD521	Security Classification: Open
Version: V1.0	Total Page: 98

Testing Report



Prepared By:	Checked By:	Approved By:	
Stone Tang	Randy Lv	Daniel Chen	
<i>Stone Tang</i>	<i>Randy Lv</i>	<i>Daniel Chen</i>	

FCC Radio Test Report

FCC ID: 2AH4HATD521

This report concerns: Original Grant

Project No. : 2022-05738
Equipment : LTE Cat-M1 Tracker
Brand Name : Mobilogix
Test Model : ATD521
Series Model : NA
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 : Aug. 05, 2022
Date of Test : Aug. 09, 2022 ~ Aug. 30, 2022
Issued Date : Nov. 04, 2022
Report Version : V1.0
Test Sample : Engineering Sample No.: 20221103019315
Standard(s) : 47 CFR FCC Part 24 Subpart E
47 CFR FCC Part 2
ANSI C63.26-2015
ANSI/TIA/EIA-603-E-2016
FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

- The test result referred exclusively to the presented test model /sample.
- Without written approval of TIRT Inc. the test report shall not reproduced except in full.

Lab: Beijing TIRT Technology Service Co.,Ltd Shenzhen

Add: 101, 3 # Factory Building, Gongjin Electronics Shatin Community, Kengzi Street, Pingshan

District, Shenzhen, China

TEL: +86-0755-27087573

Table of Contents	Page
REPORT ISSUED HISTORY	5
1 . SUMMARY OF TEST RESULTS	6
1.1 TEST FACILITY	7
1.2 MEASUREMENT UNCERTAINTY	7
1.3 TEST ENVIRONMENT CONDITIONS	7
2 . GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF EUT	8
2.2 DESCRIPTION OF TEST MODES	11
2.3 BLOCKDIAGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED	13
2.4 DESCRIPTION OF SUPPORT UNITS	13
3 . TEST RESULT	14
3.1 OUTPUT POWER MEASUREMENT	14
3.1.1 LIMIT	14
3.1.2 TEST PROCEDURE	14
3.1.3 TEST SETUP LAYOUT	14
3.1.4 TEST DEVIATION	14
3.1.5 TEST RESULTS	14
3.2 OCCUPIED BANDWIDTH MEASUREMENT	15
3.2.1 TEST PROCEDURE	15
3.2.2 TEST SETUP LAYOUT	15
3.2.3 TEST DEVIATION	15
3.2.4 TEST RESULTS	15
3.3 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT	16
3.3.1 LIMIT	16
3.3.2 TEST PROCEDURES	16
3.3.3 TEST SETUP LAYOUT	16
3.3.4 TEST DEVIATION	16
3.3.5 TEST RESULTS	16
3.4 RADIATED SPURIOUS EMISSIONS MEASUREMENT	17
3.4.1 LIMIT	17
3.4.2 TEST PROCEDURES	17
3.4.3 TEST SETUP LAYOUT	18
3.4.4 TEST DEVIATION	19
3.4.5 TEST RESULTS (9KHZ TO 30MHZ)	19
3.4.6 TEST RESULTS (30MHZ TO 1000MHZ)	19
3.4.7 TEST RESULTS (ABOVE 1000MHZ)	19
3.5 BAND EDGE MEASUREMENT	20
3.5.1 LIMIT	20
3.5.2 TEST PROCEDURES	20

Table of Contents	Page
3.5.3 TEST SETUP LAYOUT	20
3.5.4 TEST DEVIATION	20
3.5.5 TEST RESULTS	20
3.6 PEAK TO AVERAGE RATIO MEASUREMENT	21
3.6.1 LIMIT	21
3.6.2 TEST PROCEDURES	21
3.6.3 TEST SETUP LAYOUT	21
3.6.4 TEST DEVIATION	21
3.6.5 TEST RESULTS	21
3.7 FREQUENCY STABILITY MEASUREMENT	22
3.7.1 LIMIT	22
3.7.2 TEST PROCEDURES	22
3.7.3 TEST SETUP LAYOUT	22
3.7.4 TEST DEVIATION	22
3.7.5 TEST RESULTS	22
4. LIST OF MEASUREMENT EQUIPMENTS	23
APPENDIX A - OUTPUT POWER	24
APPENDIX B - OCCUPIED BANDWIDTH	29
APPENDIX C - CONDUCTED SPURIOUS EMISSIONS	44
APPENDIX D - RADIATED SPURIOUS EMISSIONS (9KHZ TO 30MHZ)	48
APPENDIX E - RADIATED SPURIOUS EMISSIONS (30MHZ TO 1000MHZ)	50
APPENDIX F - RADIATED SPURIOUS EMISSIONS (ABOVE 1000MHZ)	55
APPENDIX G - BAND EDGE	66
APPENDIX H - PEAK TO AVERAGE RATIO	80
APPENDIX I - FREQUENCY STABILITY	95

REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
FCC022022-05738RF12(b)	V1.0	Original Report.	2022.11.04	Valid

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	Output Power	PASS	-----
24.232(c)	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

Company:	Beijing TIRT Technology Service Co.,Ltd Shenzhen
Address:	101, 3 # Factory Building, Gongjin Electronics Shatin Community, Kengzi Street, Pingshan District, Shenzhen, China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number:	6049.01
FCC Accredited Lab. Designation Number:	CN1309
FCC Test Firm Registration Number:	825524
Telephone:	+86-0755-27087573

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 TIRT measurement uncertainty as below table:

Parameter	Uncertainty
Occupied Channel Bandwidth	±142.12 KHz
RF power conducted	±0.74 dB
RF power radiated	±3.25dB
Spurious emissions, conducted	±1.78dB
Spurious emissions, radiated (30MHz~1GHz)	±4.6dB
Spurious emissions, radiated (1GHz ~ 18GHz)	±4.9dB
Conduction Emissions(150kHz~30MHz)	±3.1 dB
Humidity	±4.6%
Temperature	±0.7°C
Time	±1.25%

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°C	41%	DC 3.7V	Stone Tang
Occupied Bandwidth	23°C	41%	DC 3.7V	Stone Tang
Conducted Spurious Emission	23°C	41%	DC 3.7V	Stone Tang
Radiated Spurious Emissions (9 kHz to 30 MHz)	25°C	55%	AC 120V/60Hz	Stone Tang
Radiated Spurious Emissions (30 MHz to 1000 MHz)	24°C	50~51%	AC 120V/60Hz	Stone Tang
Radiated Spurious Emissions (Above 1000 MHz)	24°C	50~51%	AC 120V/60Hz	Stone Tang
Band Edge	23°C	41%	DC 3.7V	Stone Tang
Peak to Average Ratio	23°C	41%	DC 3.7V	Stone Tang
Frequency Stability	Normal & Extreme	41%	Normal & Extreme	Stone Tang

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	LTE Cat-M1 Tracker					
Brand Name	Mobilogix					
Test Model	ATD521					
Series Model	NA					
Model Difference(s)	There are 3 types of this product: 1. Type L: MCU model: EFR32BG12P232F512GM68-CR. 2. Type S: MCU model: EFR32BG12P232F1024GM68-CR. Compared to the Type L, only the memory is different. 3. Type D: The same as Type L, but the labels are different, the customer are different. The difference does not affect RF characteristics, and type L is the main test model.					
Power Source	1# DC Voltage supplied from AC adapter. Model: ADS-10LA-06 05010EPCU 2# Supplied from battery.					
Power Rating	1# I/P: 100-240V ~ 50/60Hz MAX 0.3A O/P: 5V \equiv 2.0A 2# DC 3.7V / 3000mAh					
IMEI No.	Radiated	864351051515882				
	Conducted	864351051515635				
LTE Category	M1					
Modulation Type	GPRS/EDGE		GMSK, 8PSK			
	LTE		UL: QPSK, 16QAM DL: QPSK, 16QAM			
Max. EIRP	PCS 1900		GMSK	32.86	dBm	
	LTE	Channel Bandwidth (MHz)	QPSK (dBm)	16QAM (dBm)		
	Band 2	1.4		25.04	23.94	
		3		24.87	23.48	
		5		25.36	24.94	
		10		24.80	24.71	
		15		24.97	24.83	
	Band 25	20		24.92	24.84	
		1.4		24.61	23.15	
		3		24.52	23.13	
		5		24.53	24.32	
		10		24.49	24.29	
	15		24.60	24.56		
	20		24.53	24.64		

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	Internal	N/A	3.1	PCS 1900
				3.1	LTE Band 2
				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	GPRS, EDGE
Occupied Bandwidth	512 to 810	512, 661, 810	GPRS, EDGE
Conducted Spurious Emissions	512 to 810	661	GPRS, EDGE
Radiated Spurious Emissions	512 to 810	661	GPRS
Band Edge	512 to 810	512, 810	GPRS, EDGE
Peak to Average Ratio	512 to 810	512, 661, 810	GPRS, EDGE
Frequency Stability	512 to 810	512, 810	GPRS

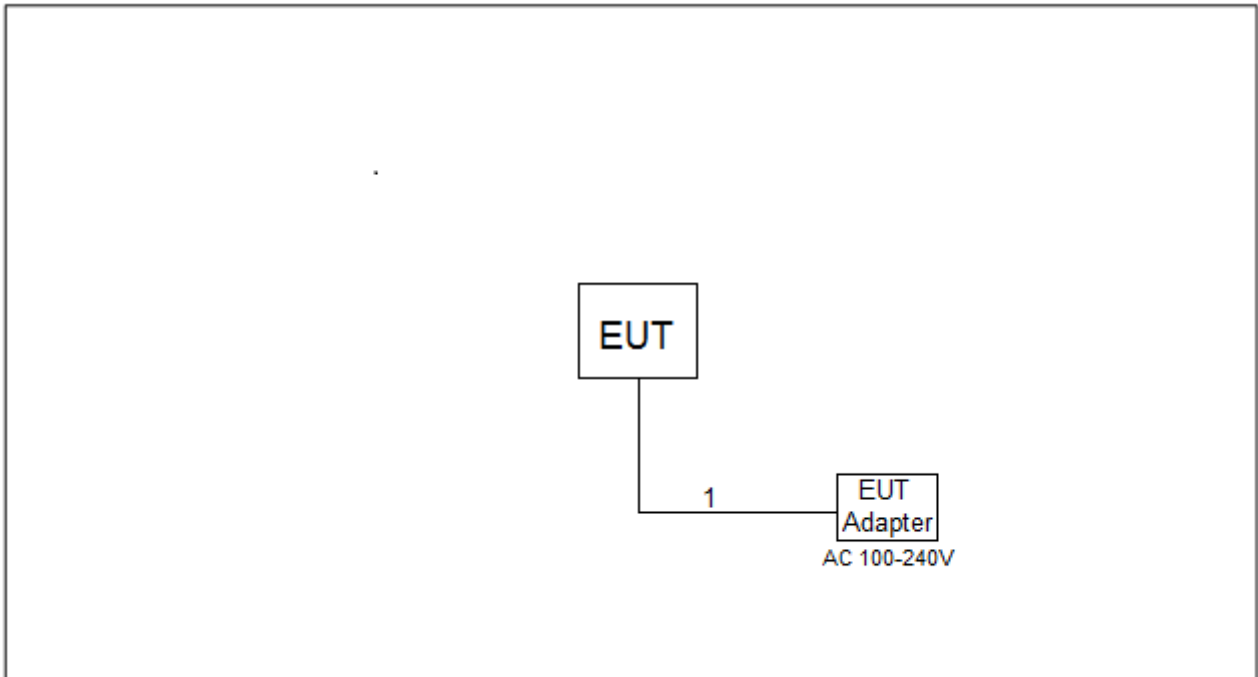
LTE BAND 2 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	1RB/5RB/6RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	1RB/5RB/6RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1RB/5RB/6RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1RB/5RB/6RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1RB/5RB/6RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1RB/5RB/6RB
Occupied Bandwidth	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	5RB/6RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	5RB/6RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	5RB/6RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	5RB/6RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	5RB/6RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	5RB/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	18700 to 19100	18700, 19100	20MHz	QPSK	6RB

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/5RB/6RB
	26055 to 26675	26055, 26365, 26675	3MHz	QPSK, 16QAM	1RB/5RB/6RB
	26065 to 26665	26065, 26365, 26665	5MHz	QPSK, 16QAM	1RB/5RB/6RB
	26090 to 26640	26090, 26365, 26640	10MHz	QPSK, 16QAM	1RB/5RB/6RB
	26115 to 26615	26115, 26365, 26615	15MHz	QPSK, 16QAM	1RB/5RB/6RB
	26140 to 26590	26140, 26365, 26590	20MHz	QPSK, 16QAM	1RB/5RB/6RB
Occupied Bandwidth	26047 to 26683	26047, 26365, 22683	1.4MHz	QPSK, 16QAM	5RB/6RB
	26055 to 26675	26055, 26365, 26675	3MHz	QPSK, 16QAM	5RB/6RB
	26065 to 26665	26065, 26365, 26665	5MHz	QPSK, 16QAM	5RB/6RB
	26090 to 26640	26090, 26365, 26640	10MHz	QPSK, 16QAM	5RB/6RB
	26115 to 26615	26115, 26365, 26615	15MHz	QPSK, 16QAM	5RB/6RB
	26140 to 26590	26140, 26365, 26590	20MHz	QPSK, 16QAM	5RB/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	26140 to 26590	26140, 26590	20MHz	QPSK	100RB

Note:

1. QPSK modulation mode supports the highest RB size up to 6RB and 16QAM modulation mode supports the highest RB size up to 5RB.

2.3 BLOCKDIGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED



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
1	USB Cable	NO	NO	1m

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:

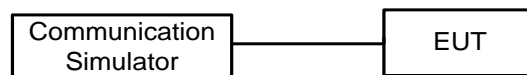
$EIRP = \text{Output Power} + \text{Antenan gain}$

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.

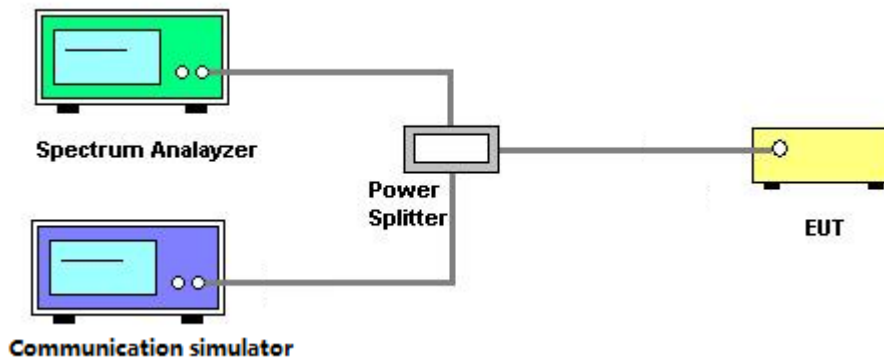
3.2 OCCUPIED BANDWIDTH MEASUREMENT

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

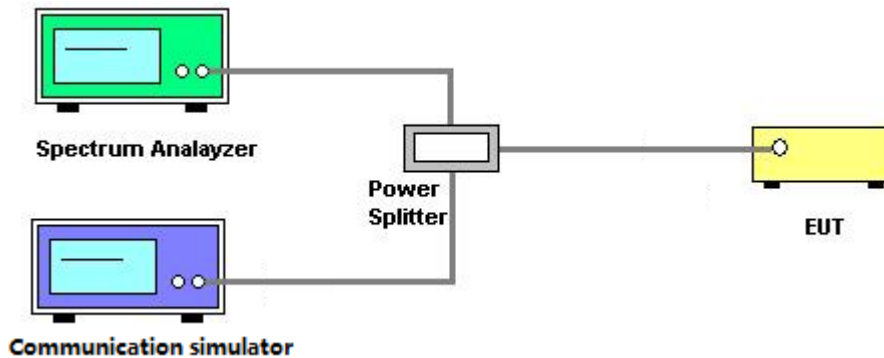
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm.

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 $\geq 1\%$ 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.

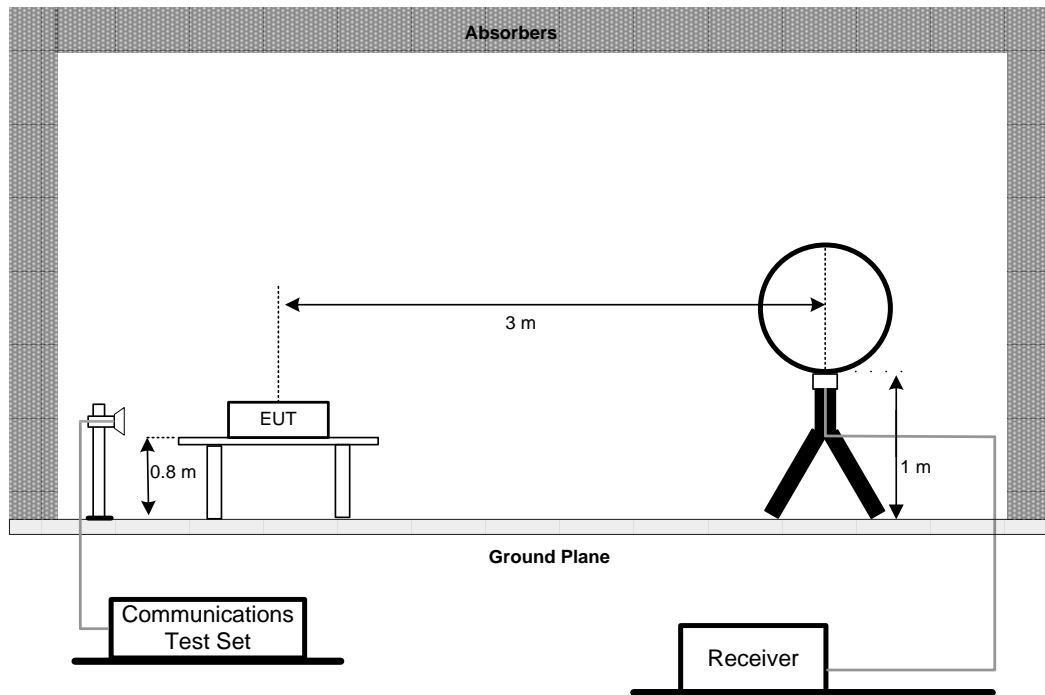
3.4.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.2.

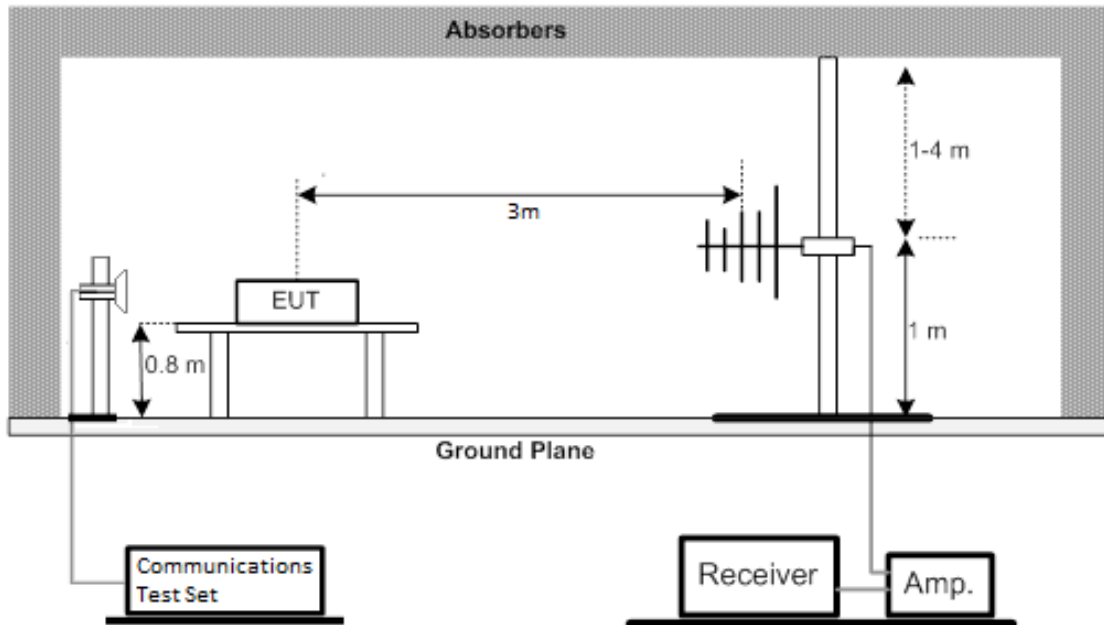
1. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. 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.

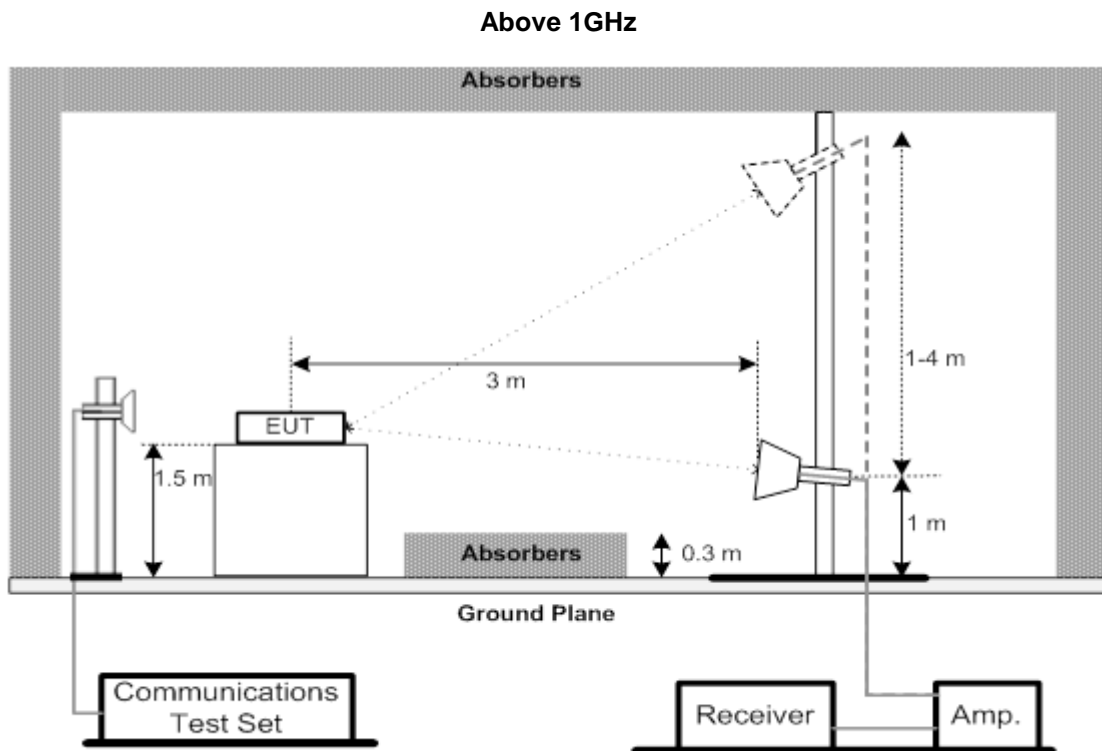
3.4.3 TEST SETUP LAYOUT

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

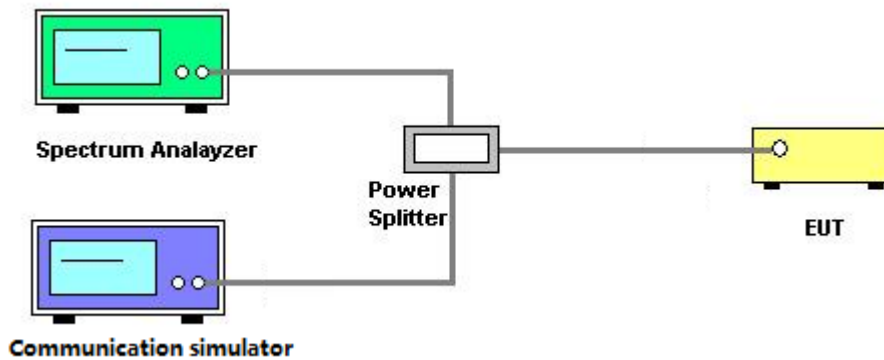
A Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the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

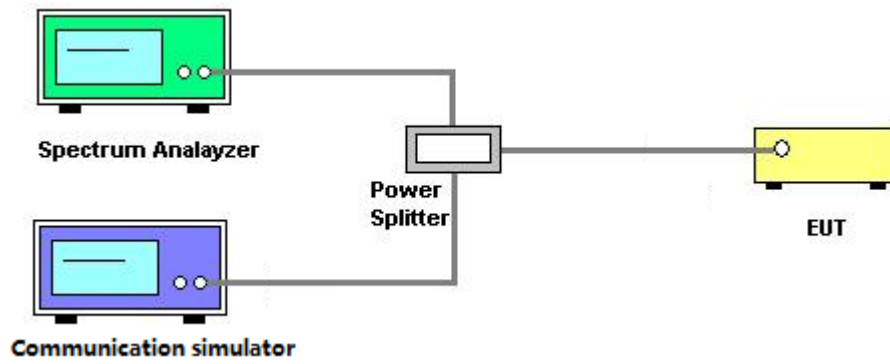
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

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

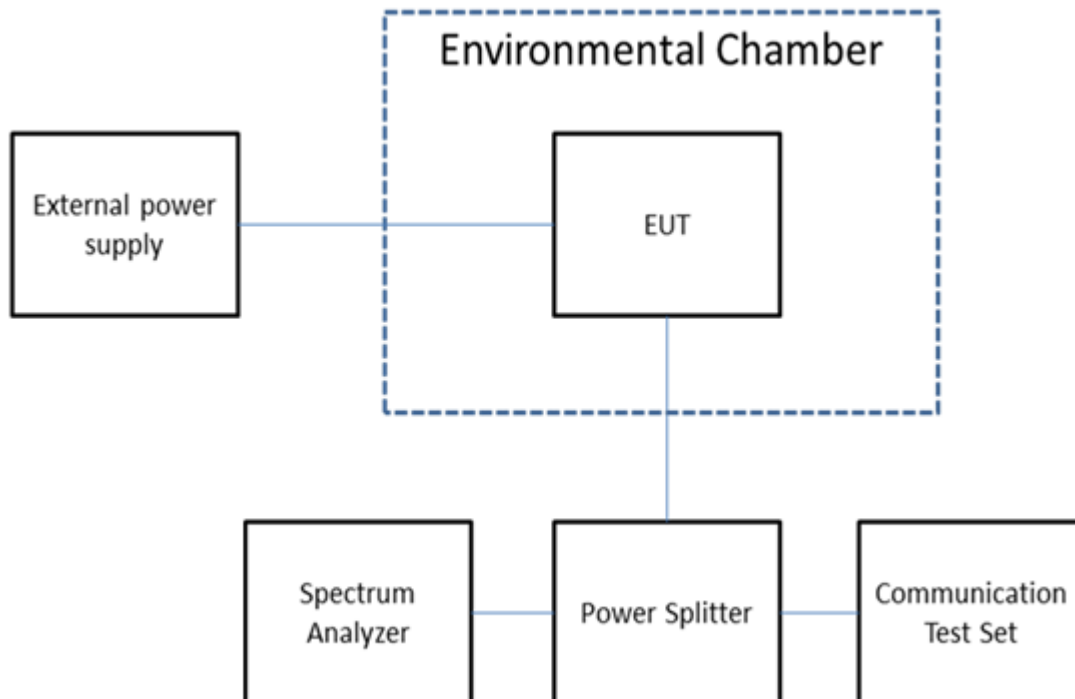
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.7.2 TEST PROCEDURES

The testing follows ANSI C63.26-2015 Section 5.6.

1. A reference point shall be established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwantedemissions specification of the applicable regulatory standard. These reference points measuredusing the lowest and highest channel of operation shall be identified as f L and f H respectively. The worst-case frequency offset determined in the above methods shall be added or subtracted from the values of f L and f H and the resulting frequencies must remain within the band.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

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

Main Test Equipment					
No.	Equipment Name	Manufacturer	Model	Calibrated date	Calibrated until
1	DC Power Supply	Keysight	E3642A	2021/11/10	2022/11/09
2	Wideband Radio Communication Tester	R & S	CMW 500	2021/11/03	2022/11/02
3	MXA Signal Analyzer	Keysight	N9020B	2021/11/10	2022/11/09
4	Programmable Temperature & Humidity Chamber	ETMOA	NTH1100-30A	2021/11/10	2022/11/09
5	Temperature & Humidity Recorder	Anymetre	JR900	2021/11/10	2022/11/09
6	Integral Antenna	SCHWARZBECK	VULB9163	2021/11/10	2022/11/09
7	Loop Antenna	SCHWARZBECK	FMZB1519B	2021/11/10	2022/11/09
8	Horn Antenna	SCHWARZBECK	BBHA 9170	2021/11/10	2022/11/09
9	Double Ridged Broadband Horn Antenna	SCHWARZBECK	BBHA 9120D	2021/11/10	2022/11/09
10	Spectrum Analyzer	R & S	FSV30	2021/11/10	2022/11/09
11	EMI Receiver	R & S	ESR	2021/11/10	2022/11/09
12	Broadband amplifier	SCHWARZBECK	BBV9718	2021/11/10	2022/11/09
13	Broadband amplifier	SCHWARZBECK	BBV9721	2021/11/10	2022/11/09
14	Anechoic Chamber	ZHONGSHUO	FSAC318	2021/07/17	2024/07/16
15	RF Cable	Top Precision	BLU18A-Sm-2m	2021/11/10	2022/11/09
16	RF Cable	Top Precision	BLU18A-Sm-2m	2021/11/10	2022/11/09
17	RF Cable	ZDECL	ZT40-2.92J-6M	2021/11/10	2022/11/09
18	Band Reject Filter Group	Tonscend	JS0806-F	NA	NA

Software Information			
Test Item	Software Name	Manufacturer	Version
RSE	EZ-EMC	EZ-EMC	TW-03A2
Conducted RF	JS1120 RF Test System	Shenzhen JS tonskend co., Ltd	2.6.9.0826

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

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

“**” calibration period of equipment list is three year.

APPENDIX A - OUTPUT POWER

Output Power (dBm)

PCS1900		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
GPRS/EDGE (GMSK)	1 Tx Slot	29.76	29.39	29.04
	2 Tx Slot	28.95	27.98	28.32
	3 Tx Slot	26.21	26.16	26.61
	4 Tx Slot	25.8	25.00	24.67
EDGE (8PSK)	1 Tx Slot	25.66	25.22	25.75
	2 Tx Slot	24.97	24.16	24.83
	3 Tx Slot	22.69	22.36	22.31
	4 Tx Slot	21.42	21.24	21.04

LTE Band / BW	Channel / Frequency (MHz)	RB Size	RB Offset	Index	Conducted Power (dBm)	RB Size	RB Offset	Index	Conducted Power (dBm)
					QPSK				16QAM
2 / 1.4MHz	18607 / 1850.7	1	0	0	21.92	1	0	0	20.45
		6	0	0	19.98	5	0	0	19.82
	18900 / 1880	1	0	0	21.94	1	0	0	20.84
		6	0	0	19.86	5	0	0	19.66
	19193 / 1909.3	1	5	0	21.80	1	5	0	20.34
		6	0	0	20.03	5	0	0	19.92
2 / 3MHz	18615 / 1851.5	1	0	0	21.66	1	0	0	20.32
		6	0	0	19.66	5	0	0	19.61
	18900 / 1880	1	0	0	21.75	1	0	0	20.38
		6	0	0	19.72	5	0	0	19.69
	19185 / 1908.5	1	5	1	21.77	1	5	1	20.33
		6	0	1	19.97	5	0	1	19.95
2 / 5MHz	18625 / 1852.5	1	0	0	21.71	1	0	0	21.46
		6	0	0	20.56	5	0	0	20.54
	18900 / 1880	1	0	0	21.93	1	0	0	21.65
		6	0	0	20.65	5	0	0	20.66
	19175 / 1907.5	1	5	0	22.26	1	5	0	21.84
		6	0	3	20.40	5	0	3	20.38
2 / 10MHz	18650 / 1855	1	0	3	21.20	1	0	3	21.01
		4	0	0	21.62	5	0	0	21.25
	18900 / 1880	1	0	0	21.70	1	0	0	21.61
		4	0	0	21.59	5	0	0	21.21
	19150 / 1905	1	5	4	21.45	1	5	4	21.43
		4	2	7	21.38	4	2	7	21.37
2 / 15MHz	18675 / 1857.5	1	0	3	21.23	1	0	3	21.28
		6	0	0	21.62	6	0	0	21.73
	18900 / 1880	1	0	0	21.87	1	0	0	21.71
		6	0	0	21.71	6	0	0	21.67
	19125 / 1902.5	1	5	8	21.56	1	5	8	21.55
		6	0	11	21.31	6	0	11	21.44
2 / 20MHz	18700 / 1860	1	0	3	21.47	1	0	3	21.31
		6	0	0	21.61	6	0	0	21.57
	18900 / 1880	1	0	0	21.82	1	0	0	21.68
		6	0	0	21.72	6	0	0	21.74
	19100 / 1900	1	5	12	21.26	1	5	12	21.10
		6	0	15	21.21	6	0	15	21.19

LTE Band / BW	Channel / Frequency (MHz)	RB Size	RB Offset	Index	Conducted Power (dBm)	RB Size	RB Offset	Index	Conducted Power (dBm)
					QPSK				16QAM
25 / 1.4MHz	26047 / 1850.7	1	0	0	21.40	1	0	0	20.05
		6	0	0	19.43	5	0	0	19.36
	26365 / 1880	1	0	0	21.33	1	0	0	19.88
		6	0	0	19.35	5	0	0	19.41
	26683 / 1914.3	1	5	0	21.51	1	5	0	19.96
		6	0	0	19.74	5	0	0	19.64
25 / 3MHz	26055 / 1851.5	1	0	0	21.37	1	0	0	19.93
		6	0	0	19.34	5	0	0	19.30
	26365 / 1882.5	1	0	0	21.42	1	0	0	19.86
		6	0	0	19.33	5	0	0	19.32
	26675 / 1913.5	1	5	1	21.26	1	5	1	20.03
		6	0	1	19.65	5	0	1	19.64
25 / 5MHz	26065 / 1852.5	1	0	0	21.43	1	0	0	20.92
		6	0	0	20.08	5	0	0	20.37
	26365 / 1882.5	1	0	0	21.29	1	0	0	21.07
		6	0	0	20.12	5	0	0	20.40
	26665 / 1912.5	1	5	0	21.42	1	5	0	21.22
		6	0	3	19.73	5	0	3	19.59
25 / 10MHz	26090 / 1855	1	0	3	20.53	1	0	3	20.42
		4	0	0	20.18	5	0	0	20.58
	26365 / 1882.5	1	0	0	21.39	1	0	0	21.19
		4	0	0	21.22	5	0	0	20.72
	26640 / 1910	1	5	4	20.71	1	5	4	20.51
		4	2	7	20.57	4	2	7	20.11
25 / 15MHz	26115 / 1857.5	1	0	3	20.76	1	0	3	20.33
		6	0	0	21.28	6	0	0	21.42
	26365 / 1882.5	1	0	0	21.50	1	0	0	21.13
		6	0	0	21.12	6	0	0	21.46
	26615 / 1907.5	1	5	8	20.93	1	5	8	20.75
		6	0	11	20.54	6	0	11	20.65
25 / 20MHz	26140 / 1860	1	0	3	20.73	1	0	3	20.55
		6	0	0	21.33	6	0	0	21.42
	26365 / 1882.5	1	0	0	21.43	1	0	0	21.00
		6	0	0	21.32	6	0	0	21.54
	26590 / 1905	1	5	12	20.22	1	5	12	20.13
		6	0	15	20.20	6	0	15	20.03

EIRP (dBm)

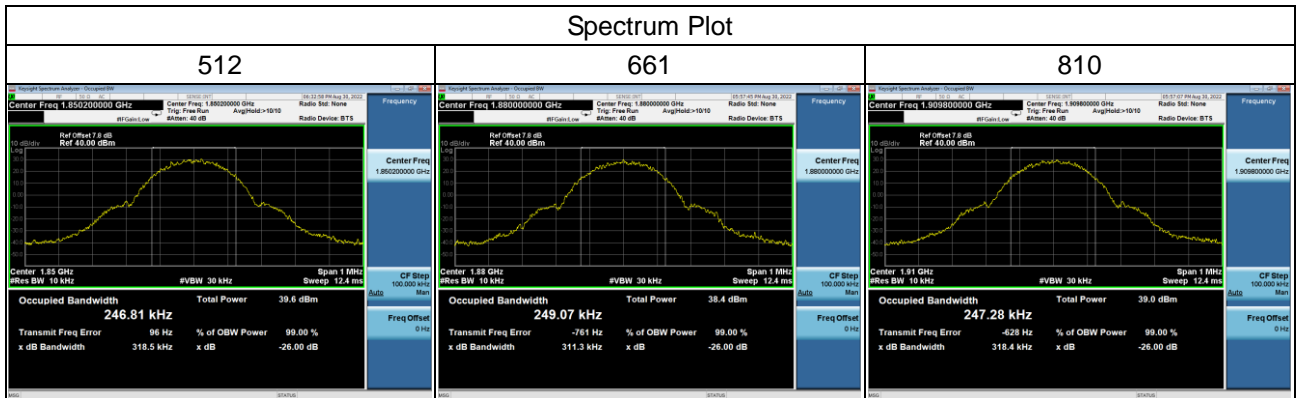
PCS1900		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
GPRS/EDGE (GMSK)	1 Tx Slot	32.16	31.79	31.44
	2 Tx Slot	31.35	30.38	30.72
	3 Tx Slot	28.61	28.56	29.01
	4 Tx Slot	28.20	27.40	27.07
EDGE (8PSK)	1 Tx Slot	28.06	27.62	28.15
	2 Tx Slot	27.37	26.56	27.23
	3 Tx Slot	25.09	24.76	24.71
	4 Tx Slot	23.82	23.64	23.44

LTE Band / BW	Channel / Frequency (MHz)	RB Size	RB Offset	Index	EIRP (dBm)	RB Size	RB Offset	Index	EIRP (dBm)
					QPSK				16QAM
2 / 1.4MHz	18607 / 1850.7	1	0	0	25.02	1	0	0	23.55
		6	0	0	23.08	5	0	0	22.92
	18900 / 1880	1	0	0	25.04	1	0	0	23.94
		6	0	0	22.96	5	0	0	22.76
	19193 / 1909.3	1	5	0	24.90	1	5	0	23.44
		6	0	0	23.13	5	0	0	23.02
2 / 3MHz	18615 / 1851.5	1	0	0	24.76	1	0	0	23.42
		6	0	0	22.76	5	0	0	22.71
	18900 / 1880	1	0	0	24.85	1	0	0	23.48
		6	0	0	22.82	5	0	0	22.79
	19185 / 1908.5	1	5	1	24.87	1	5	1	23.43
		6	0	1	23.07	5	0	1	23.05
2 / 5MHz	18625 / 1852.5	1	0	0	24.81	1	0	0	24.56
		6	0	0	23.66	5	0	0	23.64
	18900 / 1880	1	0	0	25.03	1	0	0	24.75
		6	0	0	23.75	5	0	0	23.76
	19175 / 1907.5	1	5	0	25.36	1	5	0	24.94
		6	0	3	23.50	5	0	3	23.48
2 / 10MHz	18650 / 1855	1	0	3	24.30	1	0	3	24.11
		4	0	0	24.72	5	0	0	24.35
	18900 / 1880	1	0	0	24.80	1	0	0	24.71
		4	0	0	24.69	5	0	0	24.31
	19150 / 1905	1	5	4	24.55	1	5	4	24.53
		4	2	7	24.48	4	2	7	24.47
2 / 15MHz	18675 / 1857.5	1	0	3	24.33	1	0	3	24.38
		6	0	0	24.72	6	0	0	24.83
	18900 / 1880	1	0	0	24.97	1	0	0	24.81
		6	0	0	24.81	6	0	0	24.77
	19125 / 1902.5	1	5	8	24.66	1	5	8	24.65
		6	0	11	24.41	6	0	11	24.54
2 / 20MHz	18700 / 1860	1	0	3	24.57	1	0	3	24.41
		6	0	0	24.71	6	0	0	24.67
	18900 / 1880	1	0	0	24.92	1	0	0	24.78
		6	0	0	24.82	6	0	0	24.84
	19100 / 1900	1	5	12	24.36	1	5	12	24.20
		6	0	15	24.31	6	0	15	24.29

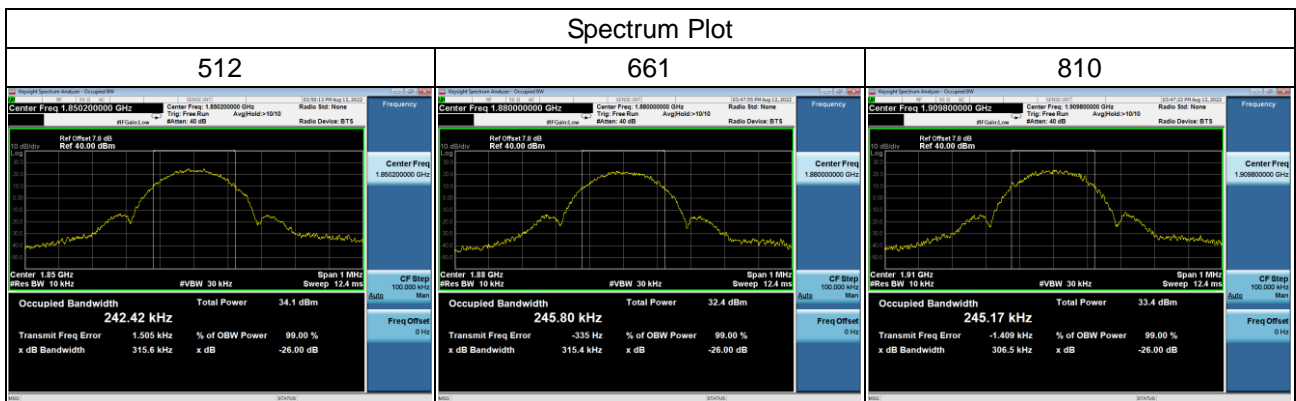
LTE Band / BW	Channel / Frequency (MHz)	RB Size	RB Offset	Index	EIRP (dBm)	RB Size	RB Offset	Index	EIRP (dBm)
					QPSK				16QAM
25 / 1.4MHz	26047 / 1850.7	1	0	0	24.50	1	0	0	23.15
		6	0	0	22.53	5	0	0	22.46
	26365 / 1880	1	0	0	24.43	1	0	0	22.98
		6	0	0	22.45	5	0	0	22.51
	26683 / 1914.3	1	5	0	24.61	1	5	0	23.06
		6	0	0	22.84	5	0	0	22.74
25 / 3MHz	26055 / 1851.5	1	0	0	24.47	1	0	0	23.03
		6	0	0	22.44	5	0	0	22.40
	26365 / 1882.5	1	0	0	24.52	1	0	0	22.96
		6	0	0	22.43	5	0	0	22.42
	26675 / 1913.5	1	5	1	24.36	1	5	1	23.13
		6	0	1	22.75	5	0	1	22.74
25 / 5MHz	26065 / 1852.5	1	0	0	24.53	1	0	0	24.02
		6	0	0	23.18	5	0	0	23.47
	26365 / 1882.5	1	0	0	24.39	1	0	0	24.17
		6	0	0	23.22	5	0	0	23.50
	26665 / 1912.5	1	5	0	24.52	1	5	0	24.32
		6	0	3	22.83	5	0	3	22.69
25 / 10MHz	26090 / 1855	1	0	3	23.63	1	0	3	23.52
		4	0	0	23.28	5	0	0	23.68
	26365 / 1882.5	1	0	0	24.49	1	0	0	24.29
		4	0	0	24.32	5	0	0	23.82
	26640 / 1910	1	5	4	23.81	1	5	4	23.61
		4	2	7	23.67	4	2	7	23.21
25 / 15MHz	26115 / 1857.5	1	0	3	23.86	1	0	3	23.43
		6	0	0	24.38	6	0	0	24.52
	26365 / 1882.5	1	0	0	24.60	1	0	0	24.23
		6	0	0	24.22	6	0	0	24.56
	26615 / 1907.5	1	5	8	24.03	1	5	8	23.85
		6	0	11	23.64	6	0	11	23.75
25 / 20MHz	26140 / 1860	1	0	3	23.83	1	0	3	23.65
		6	0	0	24.43	6	0	0	24.52
	26365 / 1882.5	1	0	0	24.53	1	0	0	24.10
		6	0	0	24.42	6	0	0	24.64
	26590 / 1905	1	5	12	23.32	1	5	12	23.23
		6	0	15	23.30	6	0	15	23.13

APPENDIX B - OCCUPIED BANDWIDTH

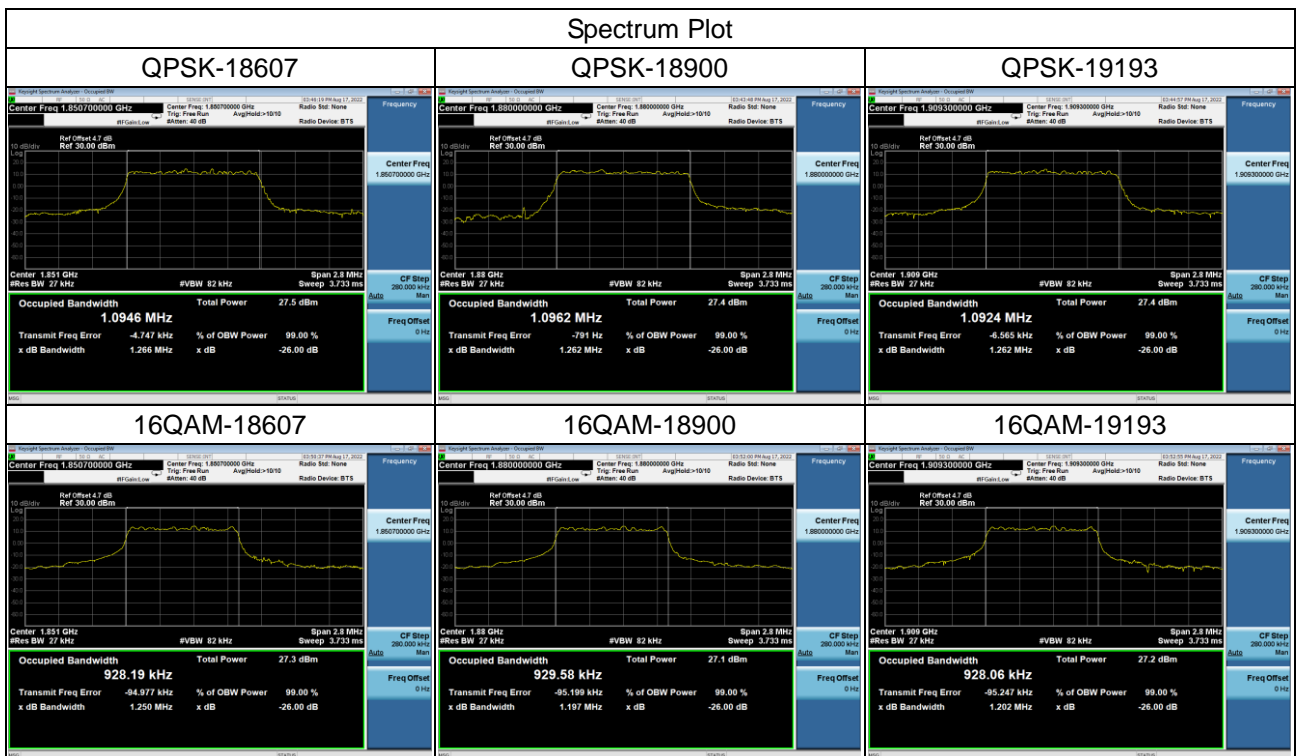
PCS1900_GPRS			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
		QPSK	QPSK
512	1850.2	0.2468	0.3185
661	1880	0.2491	0.3113
810	1909.8	0.2473	0.3184



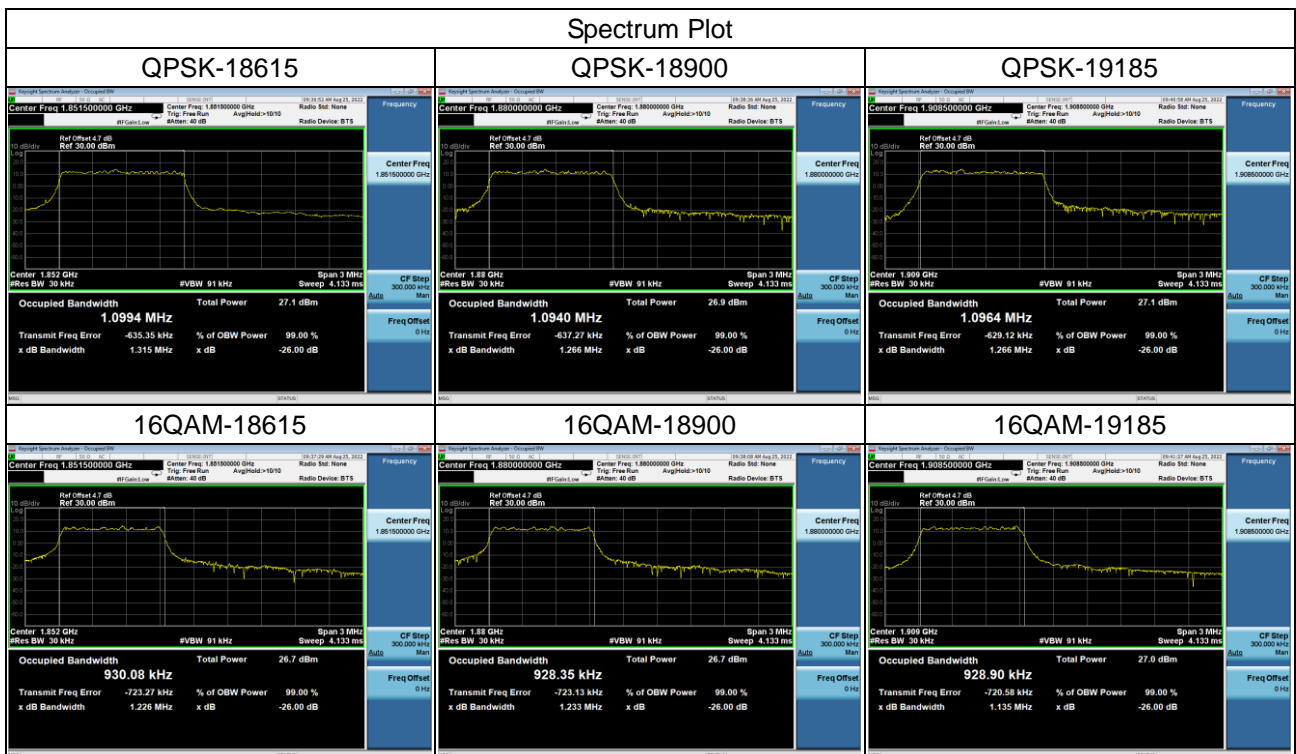
PCS1900_EDGE			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
		QPSK	QPSK
512	1850.2	0.2424	0.3156
661	1880	0.2458	0.3154
810	1909.8	0.2452	0.3065



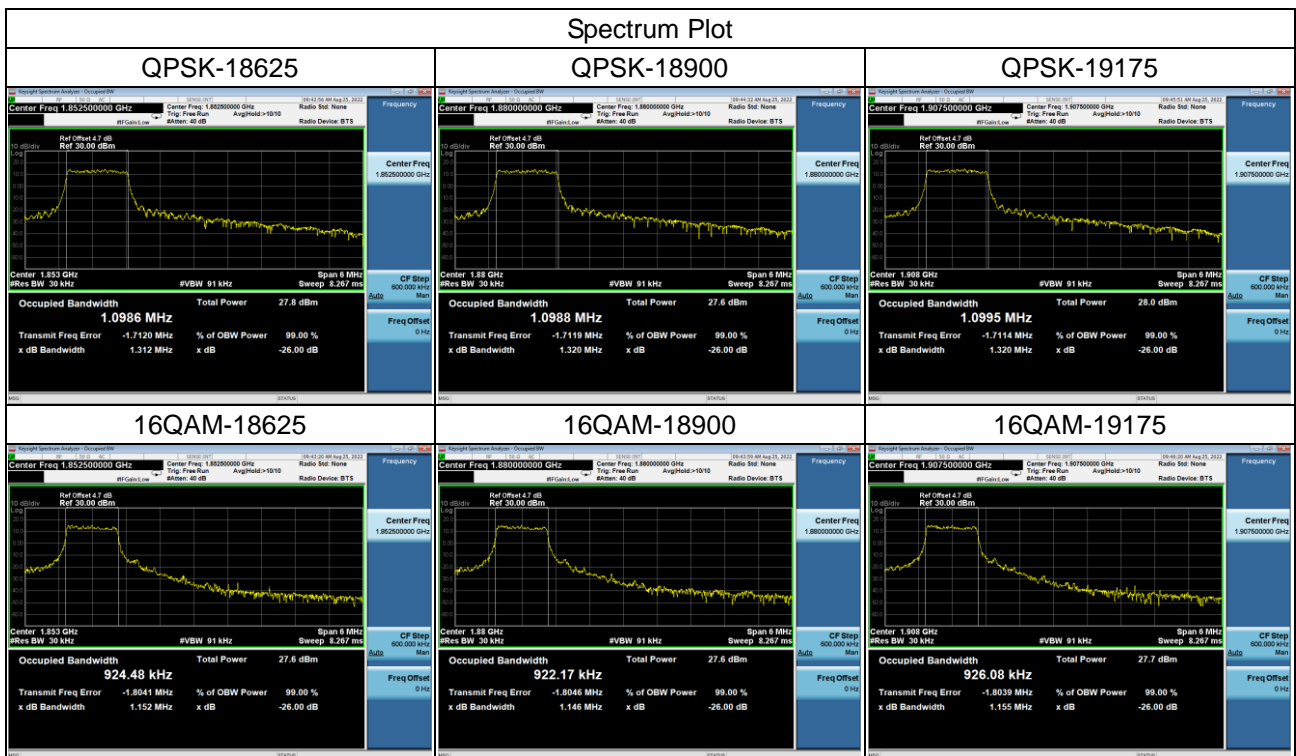
LTE Band 2_1.4MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18607	1850.7	1.0946	0.9282	1.266	1.250
18900	1880	1.0962	0.9296	1.262	1.197
19193	1909.3	1.0924	0.9281	1.262	1.202



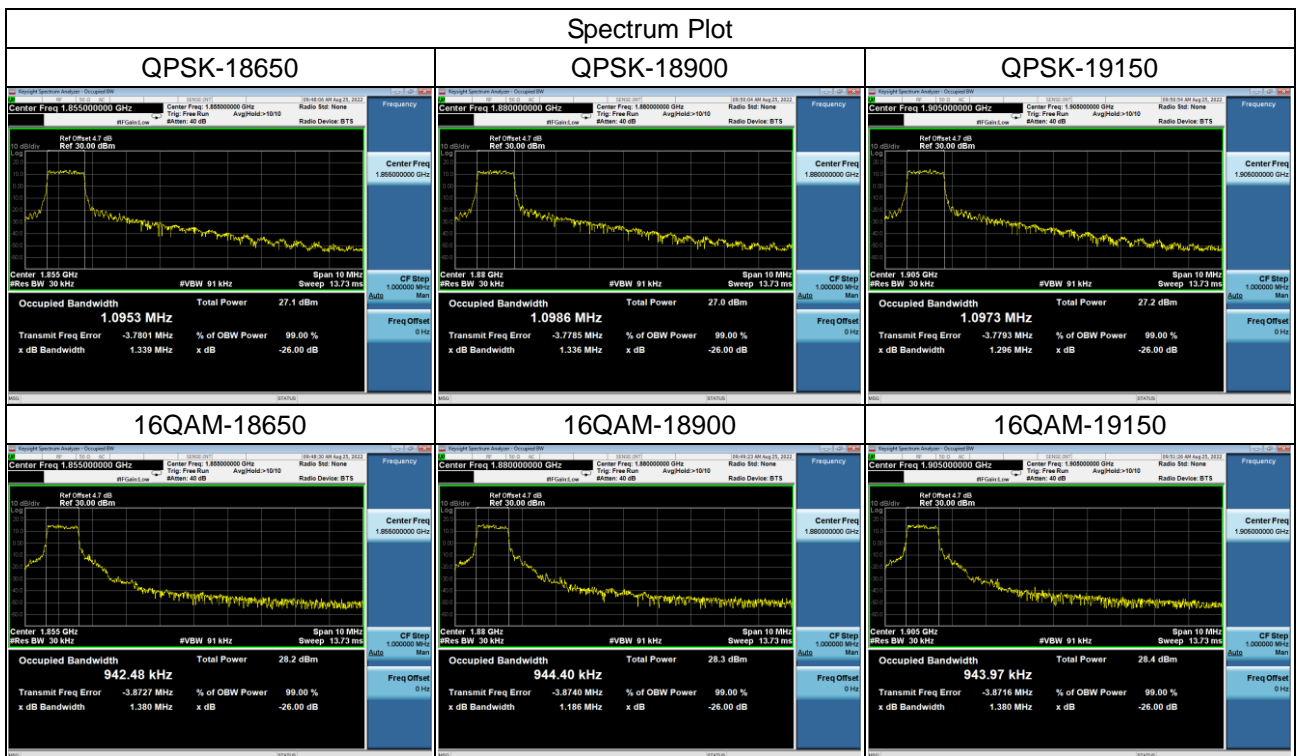
LTE Band 2_3MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18615	1851.5	1.0994	0.9301	1.315	1.226
18900	1880	1.0940	0.9284	1.266	1.233
19185	1908.5	1.0964	0.9289	1.266	1.135



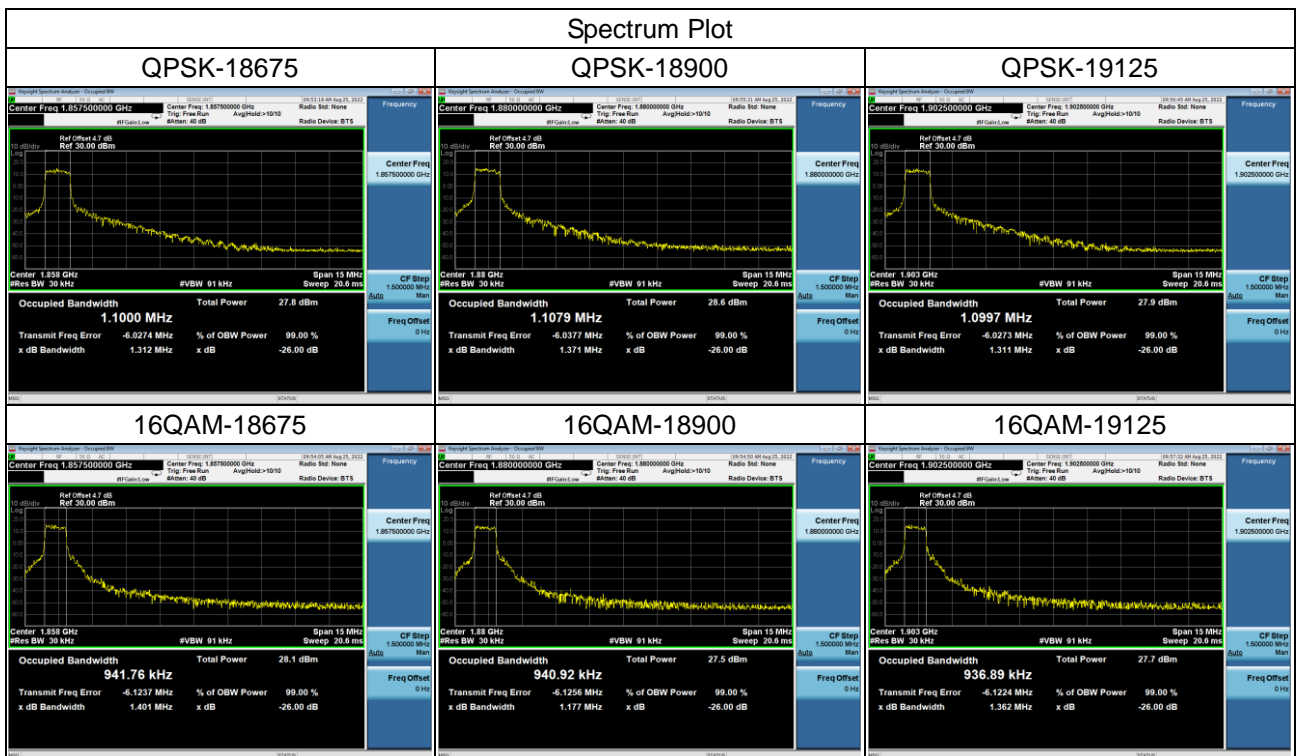
LTE Band 2_5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18625	1852.5	1.0986	0.9245	1.312	1.152
18900	1880	1.0988	0.9222	1.320	1.146
19175	1907.5	1.0995	0.9261	1.320	1.155



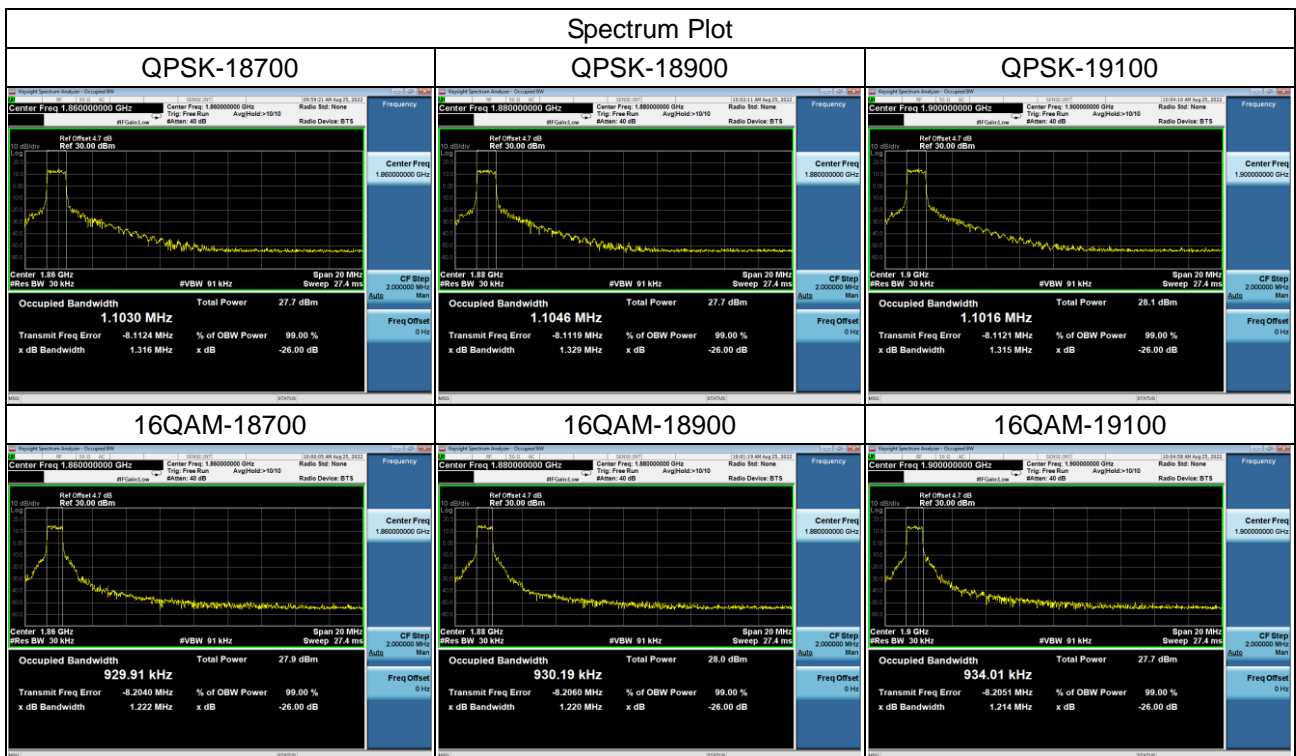
LTE Band 2_10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18650	1855	1.0953	0.9425	1.339	1.380
18900	1880	1.0986	0.9444	1.336	1.186
19150	1905	1.0973	0.9440	1.296	1.380



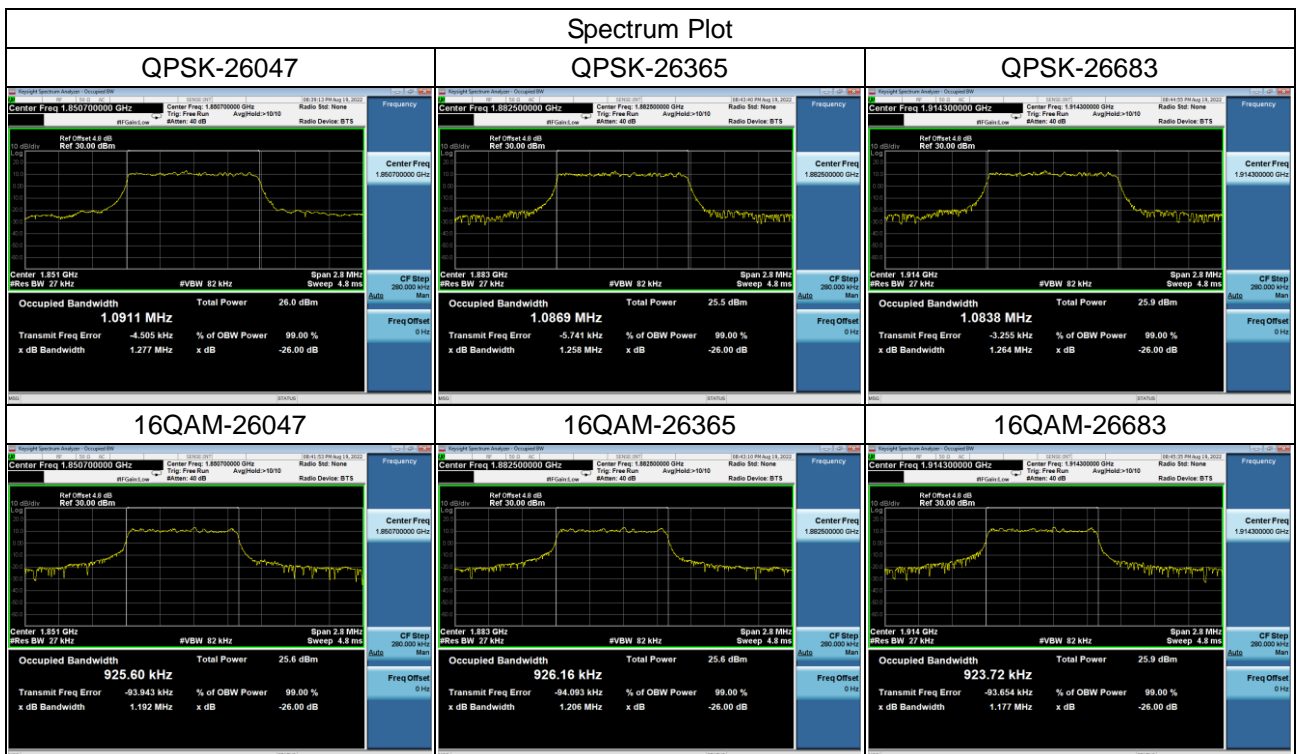
LTE Band 2_15MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)		
		QPSK	16QAM	QPSK	16QAM	
18675	1857.5	1.1000	0.9418	1.312	1.401	
18900	1880	1.1079	0.9409	1.371	1.177	
19125	1902.5	1.0997	0.9369	1.311	1.362	



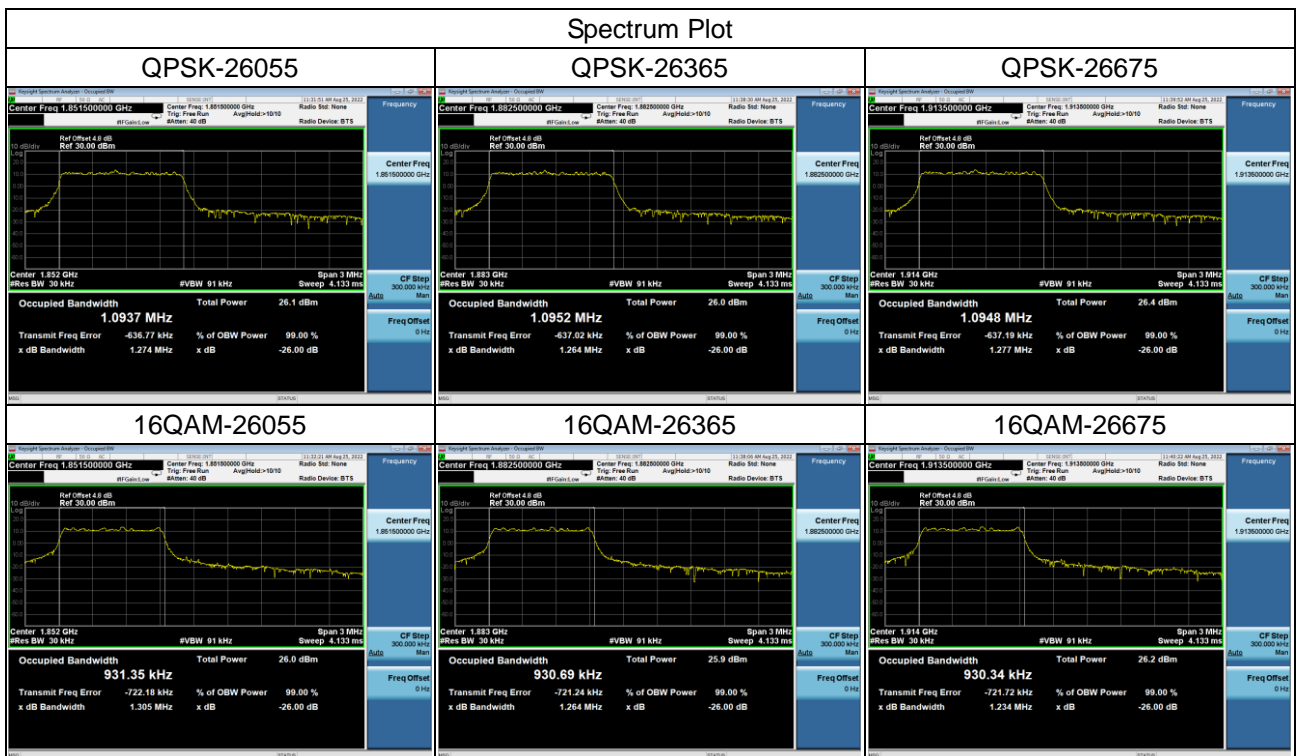
LTE Band 2_20MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
18700	1860	1.1030	0.9299	1.316	1.222
18900	1880	1.1046	0.9302	1.329	1.220
19100	1900	1.1016	0.9340	1.315	1.214



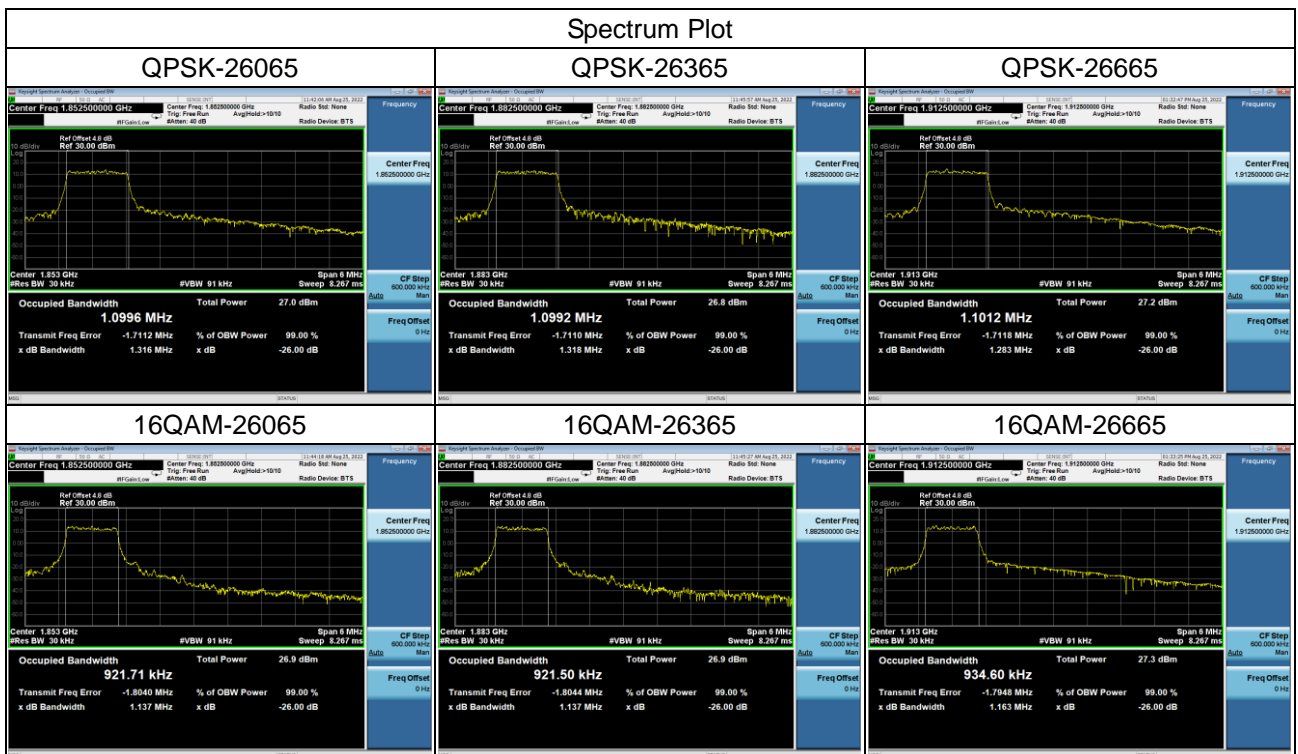
LTE Band 25_1.4MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26047	1850.7	1.0911	0.9256	1.277	1.192
26365	1882.5	1.0869	0.9262	1.258	1.206
26683	1914.3	1.0838	0.9237	1.264	1.177



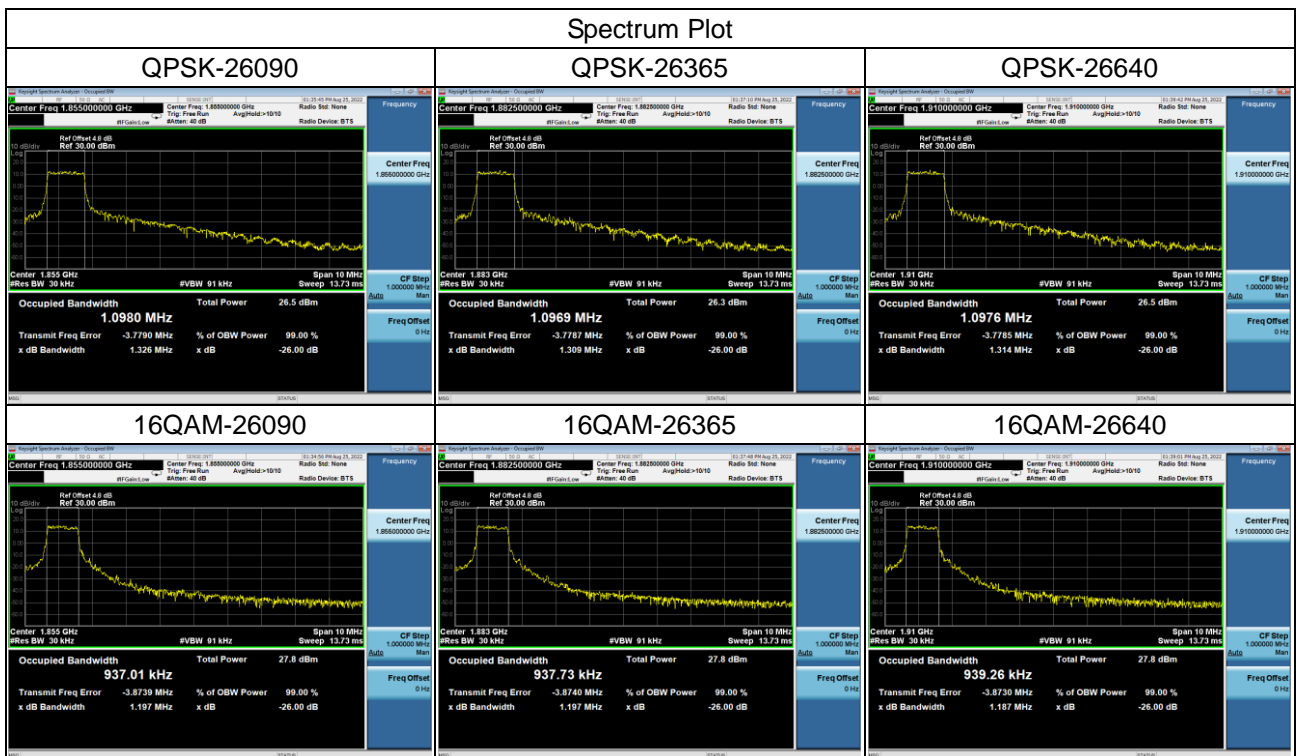
LTE Band 25_3MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26055	1851.5	1.0937	0.9314	1.274	1.305
26365	1882.5	1.0952	0.9307	1.264	1.264
26675	1913.5	1.0948	0.9303	1.277	1.234



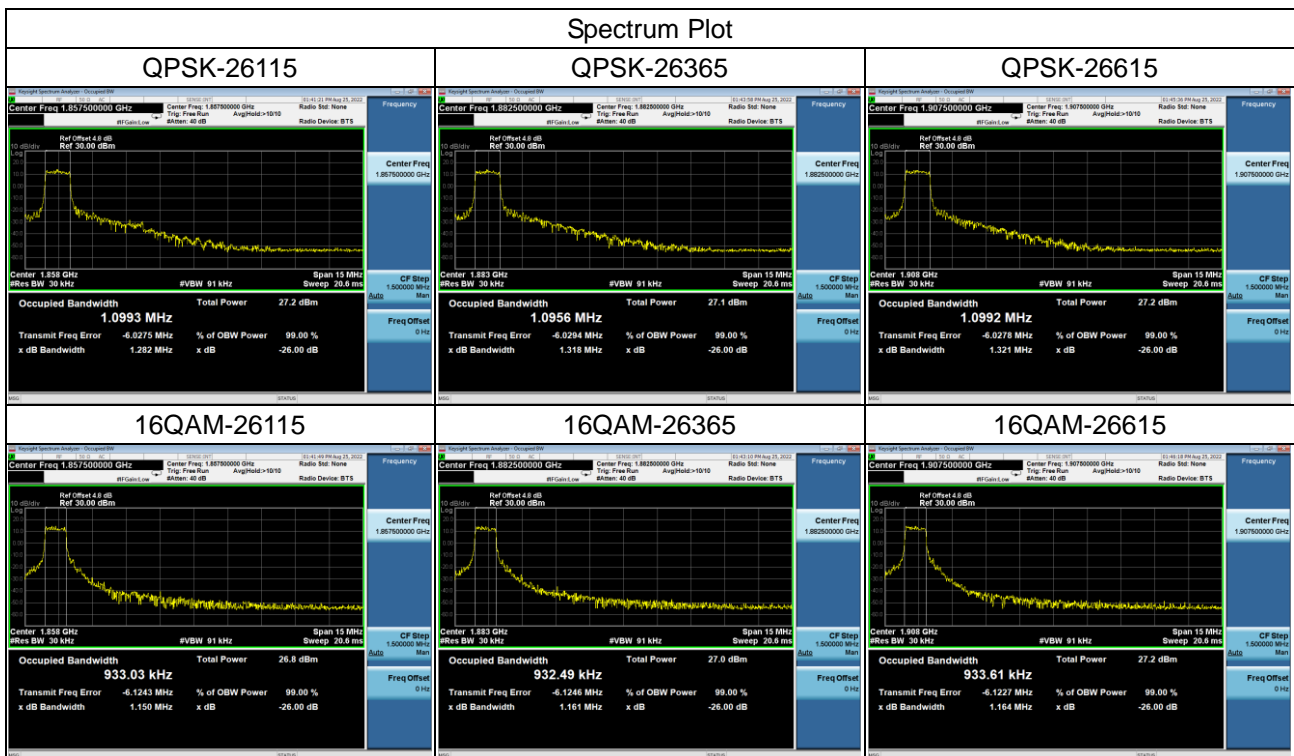
LTE Band 25_5MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26065	1852.5	1.0996	0.9217	1.316	1.137
26365	1882.5	1.0992	0.9215	1.318	1.137
26665	1912.5	1.1012	0.9346	1.283	1.163



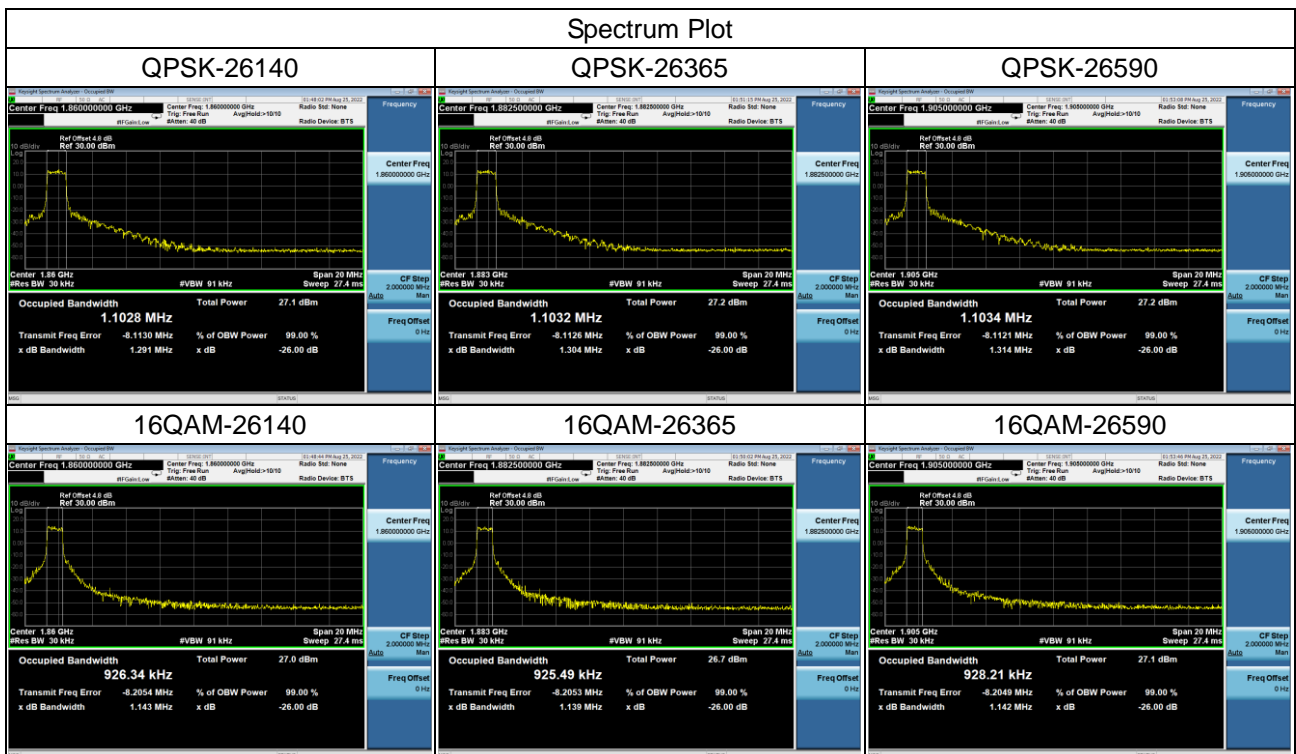
LTE Band 25_10MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26090	1855	1.0980	0.9370	1.326	1.197
26365	1882.5	1.0969	0.9377	1.309	1.197
26640	1910	1.0976	0.9393	1.314	1.187



LTE Band 25_15MHz						
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)		
		QPSK	16QAM	QPSK	16QAM	
26115	1857.5	1.0993	0.9330	1.282	1.150	
26365	1882.5	1.0956	0.9325	1.318	1.161	
26615	1907.5	1.0992	0.9336	1.321	1.164	

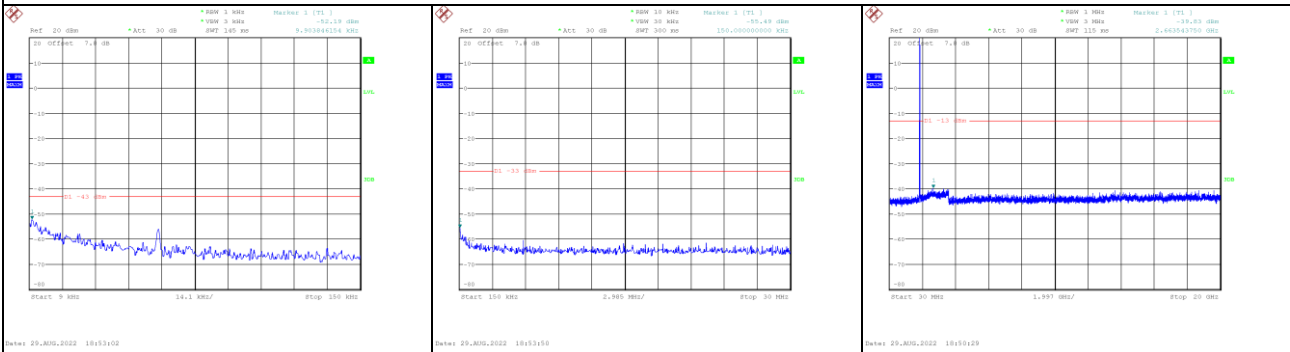


LTE Band 25_20MHz					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26140	1860	1.1028	0.9263	1.291	1.143
26365	1882.5	1.1032	0.9255	1.304	1.139
26590	1905	1.1034	0.9282	1.314	1.142

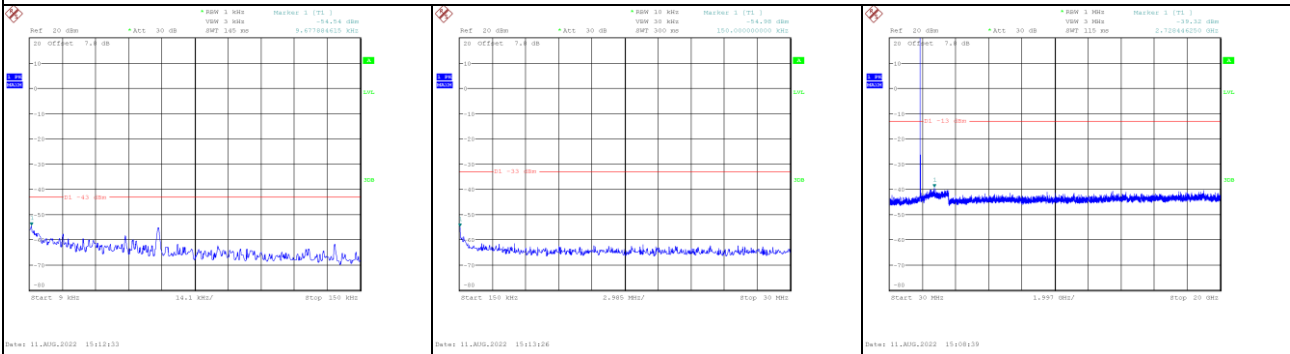


APPENDIX C - CONDUCTED SPURIOUS EMISSIONS

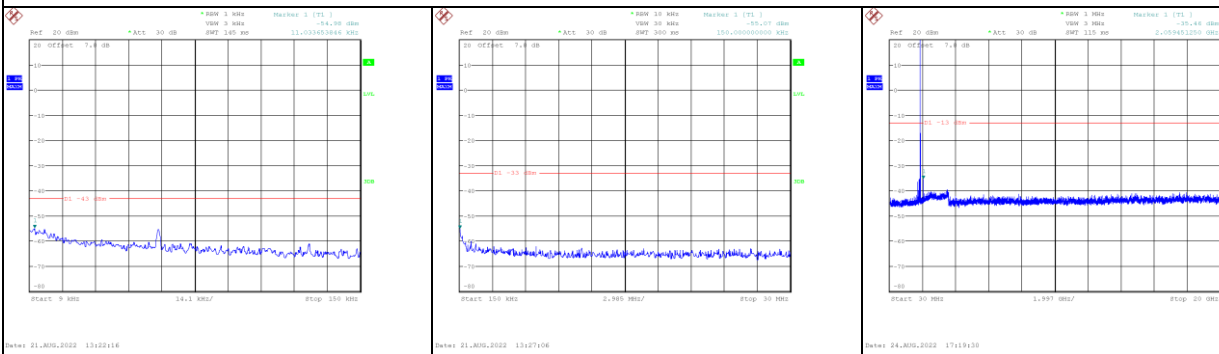
PCS1900_GPRS_CH661 Spectrum Plot



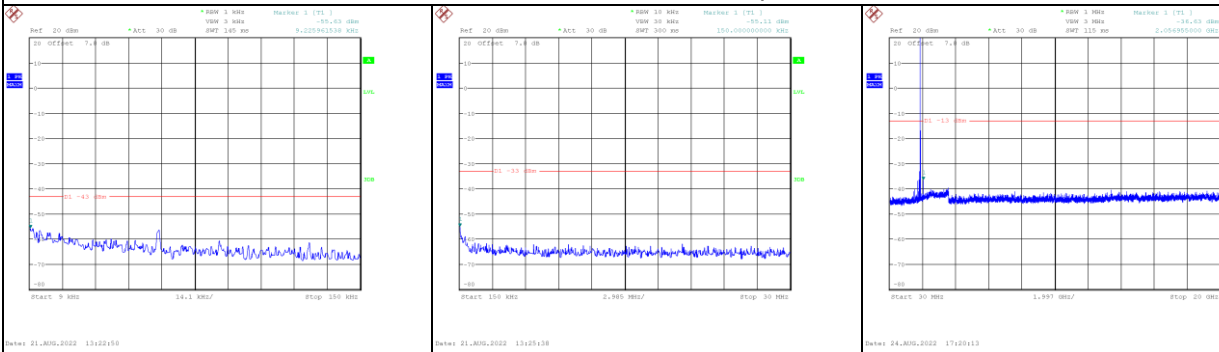
PCS1900_EDGE_CH661 Spectrum Plot



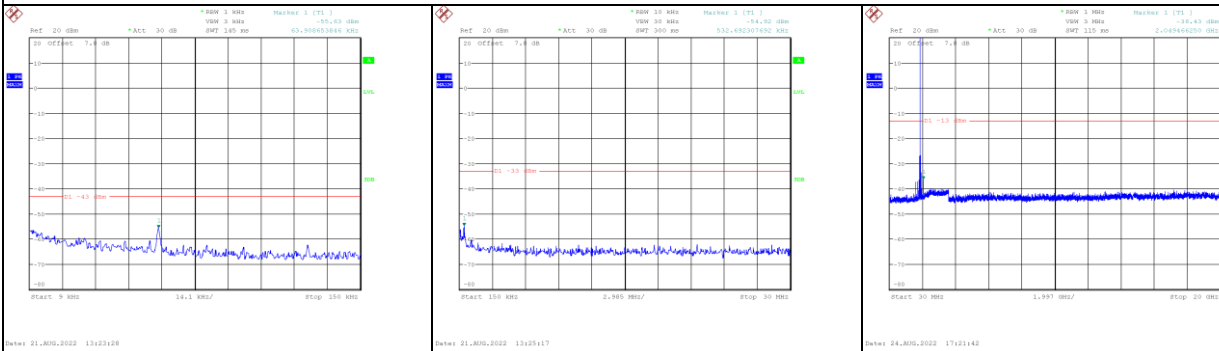
LTE Band 2_1.4MHz_CH18900 Spectrum Plot



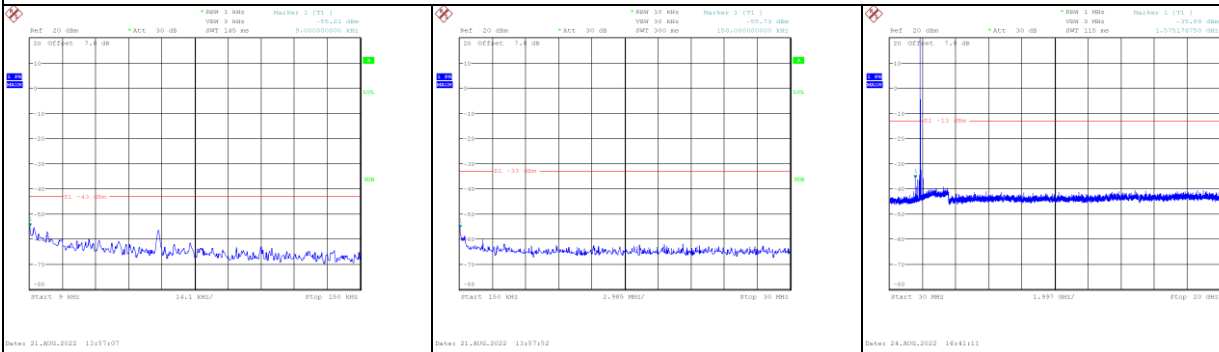
LTE Band 2_5MHz_CH18900 Spectrum Plot



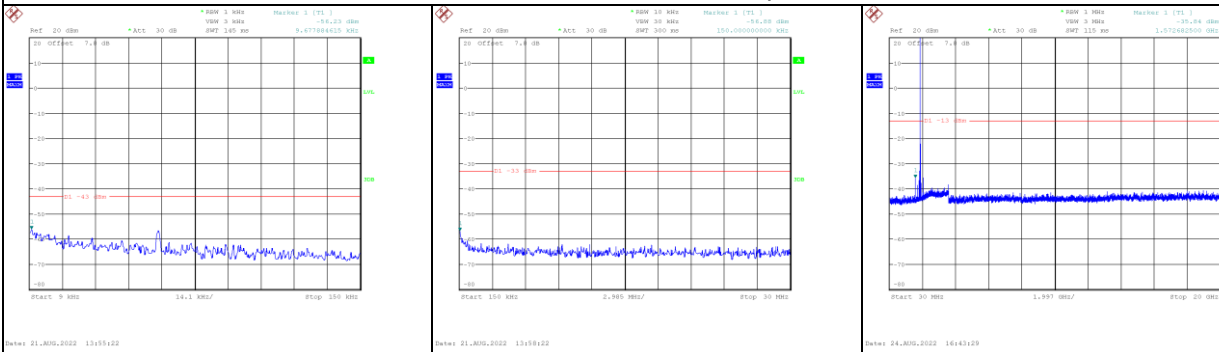
LTE Band 2_20MHz_CH18900 Spectrum Plot



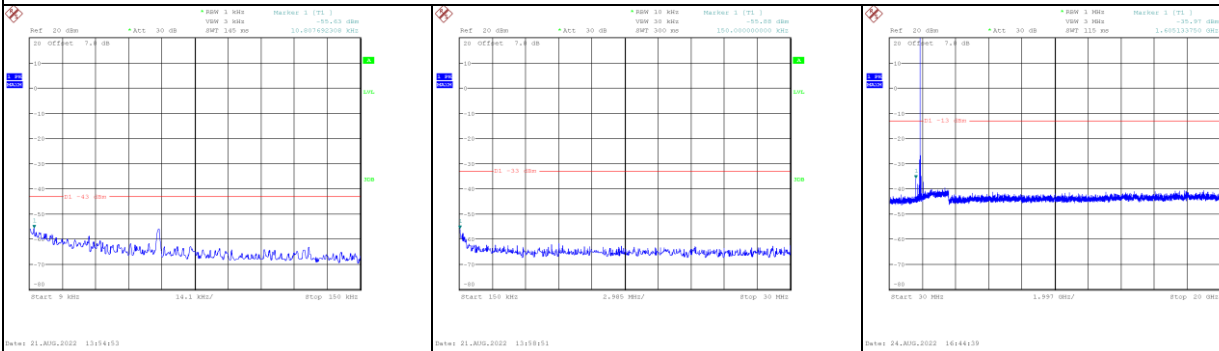
LTE Band 25_1.4MHz_CH26365 Spectrum Plot



LTE Band 25_5MHz_CH26365 Spectrum Plot



LTE Band 25_20MHz_CH26365 Spectrum Plot



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

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

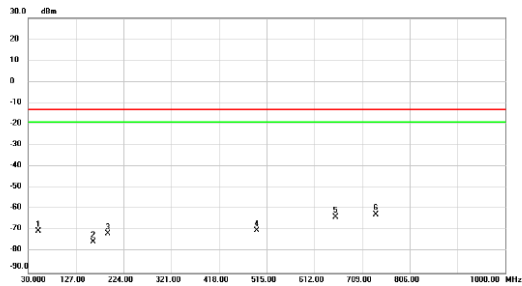
There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

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

Test Mode : PCS1900_TX CH661_GPRS

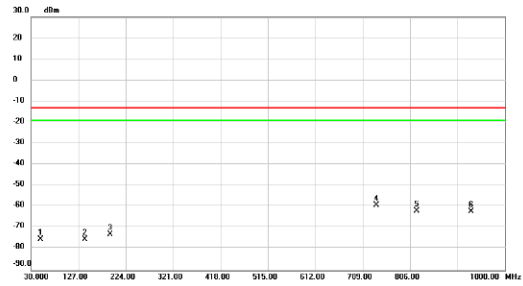
Test Mode : PCS1900_TX CH661_GPRS

Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	50.855	-67.45	-2.83	-70.28	-13.00	-57.28	peak	
2	162.405	-66.71	-8.87	-75.58	-13.00	-62.58	peak	
3	191.990	-64.66	-6.86	-71.52	-13.00	-58.52	peak	
4	494.630	-68.46	-1.68	-70.14	-13.00	-57.14	peak	
5	655.165	-64.94	1.23	-63.71	-13.00	-50.71	peak	
6 *	737.130	-64.59	1.91	-62.68	-13.00	-49.68	peak	

Horizontal

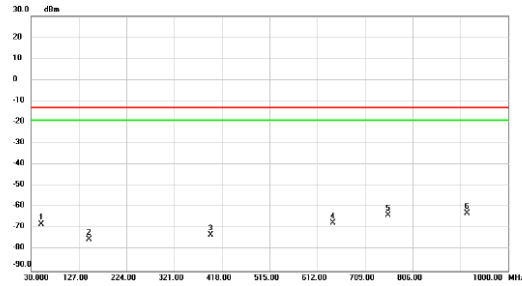


No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	49.885	-75.09	-0.23	-75.32	-13.00	-62.32	peak	
2	140.095	-64.31	-11.09	-75.40	-13.00	-62.40	peak	
3	191.990	-65.00	-8.04	-73.04	-13.00	-60.04	peak	
4 *	737.130	-61.27	1.89	-59.38	-13.00	-46.38	peak	
5	819.095	-64.64	2.76	-61.88	-13.00	-48.88	peak	
6	930.160	-65.91	3.76	-62.15	-13.00	-49.15	peak	

Test Mode : LTE Band 2_TX CH18900_1.4MHz

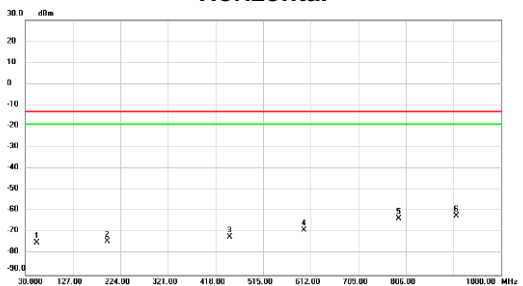
Test Mode : LTE Band 2_TX CH18900_1.4MHz

Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	51.340	-65.19	-2.85	-68.04	-13.00	-55.04	peak	
2	147.855	-65.35	-9.90	-75.25	-13.00	-62.25	peak	
3	395.205	-70.38	-2.56	-72.94	-13.00	-59.94	peak	
4	643.040	-68.51	1.15	-67.36	-13.00	-54.36	peak	
5	755.560	-66.09	2.24	-63.85	-13.00	-50.85	peak	
6 *	917.065	-66.79	4.06	-62.73	-13.00	-49.73	peak	

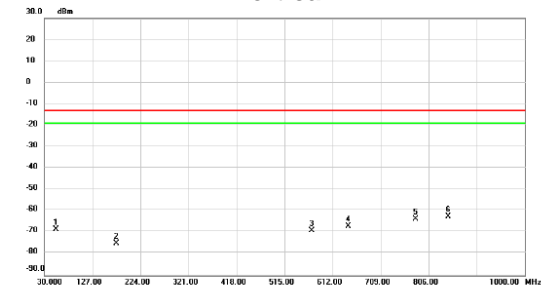
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	53.765	-75.30	0.45	-74.85	-13.00	-61.85	peak	
2	196.840	-67.36	-6.79	-74.15	-13.00	-61.15	peak	
3	447.585	-69.67	-2.44	-72.11	-13.00	-59.11	peak	
4	598.420	-69.04	0.12	-68.92	-13.00	-55.92	peak	
5	791.450	-65.85	2.37	-63.48	-13.00	-50.48	peak	
6 *	909.305	-66.10	3.71	-62.39	-13.00	-49.39	peak	

Test Mode : LTE Band 2_TX CH18900_5MHz

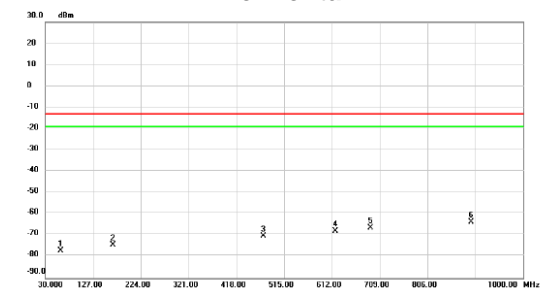
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	53.280	-65.64	-2.94	-68.58	-13.00	-55.58	peak	
2	175.985	-66.72	-8.39	-75.11	-13.00	-62.11	peak	
3	569.320	-68.85	-0.32	-69.17	-13.00	-56.17	peak	
4	643.525	-68.20	1.16	-67.04	-13.00	-54.04	peak	
5	779.810	-66.05	2.45	-63.60	-13.00	-50.60	peak	
6 *	845.285	-66.00	3.46	-62.54	-13.00	-49.54	peak	

Test Mode : LTE Band 2_TX CH18900_5MHz

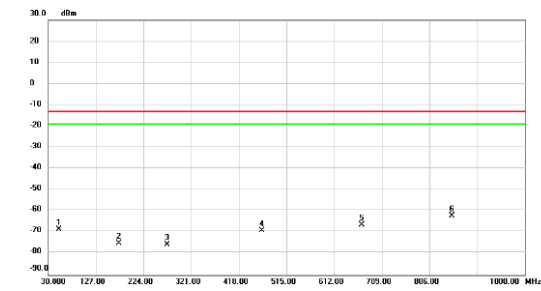
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	61.040	-76.72	-0.42	-77.14	-13.00	-64.14	peak	
2	168.225	-63.59	-10.90	-74.49	-13.00	-61.49	peak	
3	473.290	-68.02	-2.27	-70.29	-13.00	-57.29	peak	
4	619.275	-68.70	0.60	-68.10	-13.00	-55.10	peak	
5	690.570	-67.37	0.97	-66.40	-13.00	-53.40	peak	
6 *	894.755	-67.25	3.65	-63.60	-13.00	-50.60	peak	

Test Mode : LTE Band 2_TX CH18900_20MHz

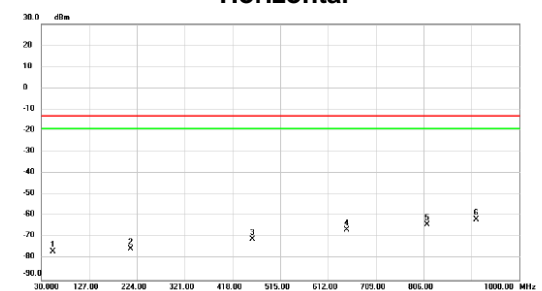
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	52.310	-65.74	-2.90	-68.64	-13.00	-55.64	peak	
2	173.560	-66.61	-8.48	-75.09	-13.00	-62.09	peak	
3	272.500	-69.90	-5.83	-75.73	-13.00	-62.73	peak	
4	465.530	-66.87	-2.32	-69.19	-13.00	-56.19	peak	
5	668.260	-67.59	1.19	-66.40	-13.00	-53.40	peak	
6 *	852.075	-65.74	3.57	-62.17	-13.00	-49.17	peak	

Test Mode : LTE Band 2_TX CH18900_20MHz

Horizontal

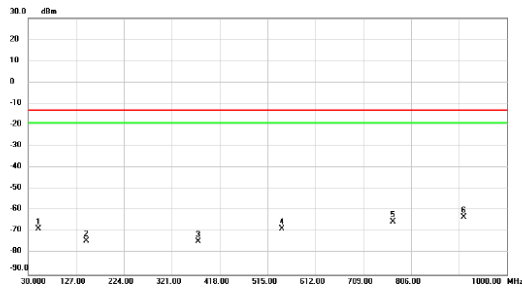


No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	53.280	-77.06	0.38	-76.68	-13.00	-63.68	peak	
2	211.390	-68.54	-6.79	-75.33	-13.00	-62.33	peak	
3	459.225	-68.14	-2.76	-70.90	-13.00	-57.90	peak	
4	650.800	-67.79	1.30	-66.49	-13.00	-53.49	peak	
5	812.790	-66.59	2.64	-63.95	-13.00	-50.95	peak	
6 *	912.700	-65.33	3.72	-61.61	-13.00	-48.61	peak	

Test Mode : LTE Band 25_TX CH26365_1.4MHz

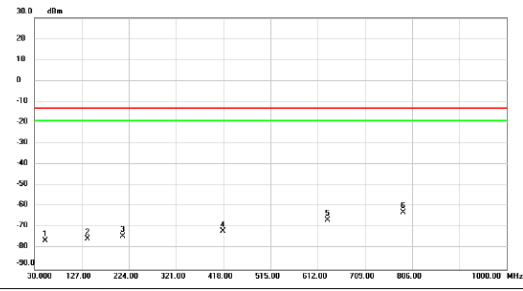
Test Mode : LTE Band 25_TX CH26365_1.4MHz

Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	51.340	-65.72	-2.85	-68.57	-13.00	-55.57	peak	
2	148.340	-64.45	-9.93	-74.38	-13.00	-61.38	peak	
3	374.350	-71.04	-3.44	-74.48	-13.00	-61.48	peak	
4	543.615	-67.49	-0.94	-68.43	-13.00	-55.43	peak	
5	768.655	-67.55	2.35	-65.20	-13.00	-52.20	peak	
6 *	912.700	-67.14	4.06	-63.08	-13.00	-50.08	peak	

Horizontal

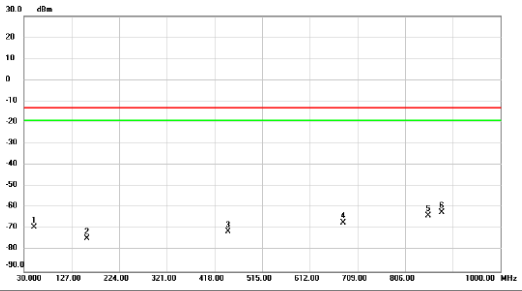


No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	52.795	-76.79	0.30	-76.49	-13.00	-63.49	peak	
2	139.125	-64.59	-10.97	-75.56	-13.00	-62.56	peak	
3	211.875	-67.37	-6.74	-74.11	-13.00	-61.11	peak	
4	417.030	-68.83	-2.93	-71.76	-13.00	-58.76	peak	
5	631.885	-67.27	0.89	-66.38	-13.00	-53.38	peak	
6 *	787.570	-65.20	2.36	-62.84	-13.00	-49.84	peak	

Test Mode : LTE Band 25_TX CH26365_5MHz

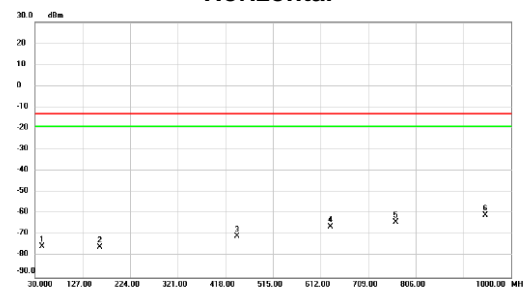
Test Mode : LTE Band 25_TX CH26365_5MHz

Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	51.825	-66.13	-2.87	-69.00	-13.00	-56.00	peak	
2	158.525	-65.53	-9.11	-74.64	-13.00	-61.64	peak	
3	445.645	-69.34	-2.01	-71.35	-13.00	-58.35	peak	
4	679.900	-68.05	1.15	-66.90	-13.00	-53.90	peak	
5	853.045	-67.21	3.58	-63.63	-13.00	-50.63	peak	
6 *	879.720	-66.04	3.85	-62.19	-13.00	-49.19	peak	

Horizontal

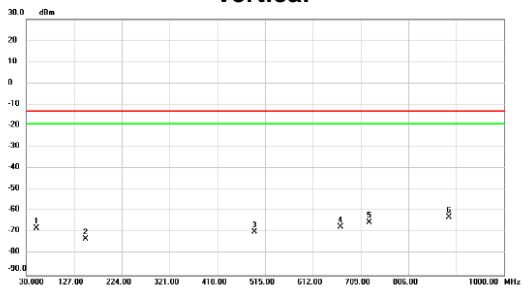


No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	44.550	-70.31	-5.17	-75.48	-13.00	-62.48	peak	
2	162.405	-64.74	-10.95	-75.69	-13.00	-62.69	peak	
3	442.250	-68.42	-2.30	-70.72	-13.00	-57.72	peak	
4	631.400	-67.10	0.88	-66.22	-13.00	-53.22	peak	
5	764.775	-66.21	2.29	-63.92	-13.00	-50.92	peak	
6 *	947.135	-64.67	3.80	-60.87	-13.00	-47.87	peak	

Test Mode : LTE Band 25_TX CH26365_20MHz

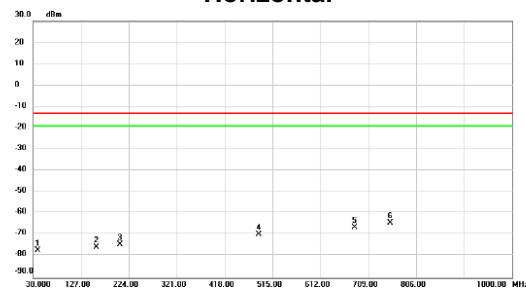
Test Mode : LTE Band 25_TX CH26365_20MHz

Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	50.855	-65.09	-2.83	-67.92	-13.00	-54.92	peak	
2	150.765	-63.21	-9.93	-73.14	-13.00	-60.14	peak	
3	493.660	-66.03	-1.70	-69.73	-13.00	-56.73	peak	
4	668.260	-66.63	1.19	-67.44	-13.00	-54.44	peak	
5	726.460	-67.02	1.67	-65.35	-13.00	-52.35	peak	
6 *	887.480	-66.70	3.92	-62.78	-13.00	-49.78	peak	

Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1	39.700	-68.21	-9.08	-77.29	-13.00	-64.29	peak	
2	158.525	-64.84	-11.02	-75.86	-13.00	-62.86	peak	
3	206.540	-67.87	-6.59	-74.46	-13.00	-61.46	peak	
4	486.870	-67.87	-1.83	-69.70	-13.00	-56.70	peak	
5	681.355	-67.59	1.05	-66.54	-13.00	-53.54	peak	
6 *	754.105	-66.61	2.25	-64.36	-13.00	-51.36	peak	

APPENDIX F - RADIATED SPURIOUS EMISSIONS (ABOVE 1000MHZ)

Test Mode : PCS1900_TX CH661_GPRS

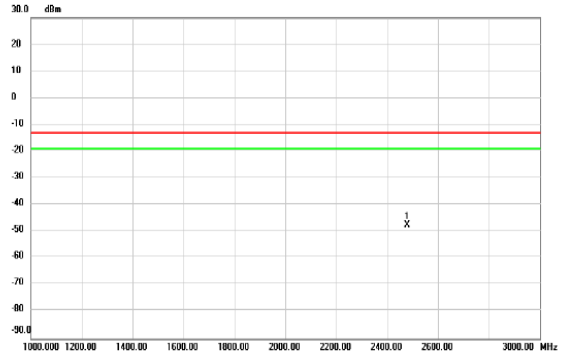
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	2477.000	-34.30	-11.03	-45.33	-13.00	-32.33	peak	

Test Mode : PCS1900_TX CH661_GPRS

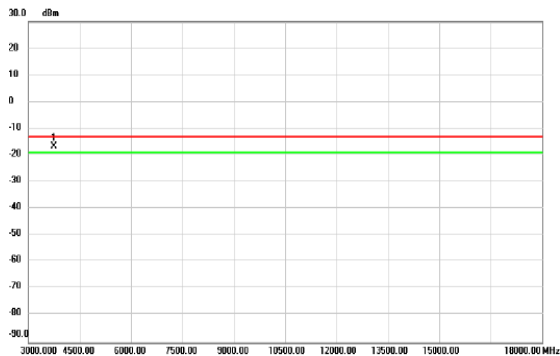
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	2478.000	-35.77	-11.67	-47.44	-13.00	-34.44	peak	

Test Mode : PCS1900_TX CH661_GPRS

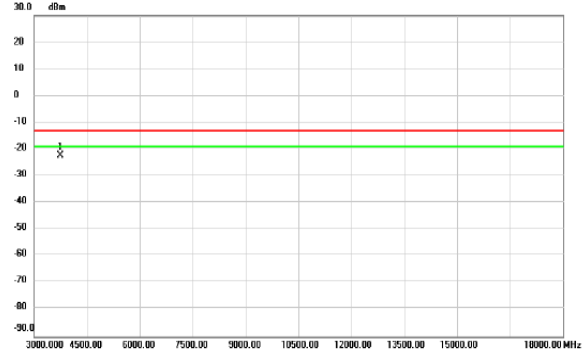
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	3757.500	-8.24	-8.45	-16.69	-13.00	-3.69	peak	

Test Mode : PCS1900_TX CH661_GPRS

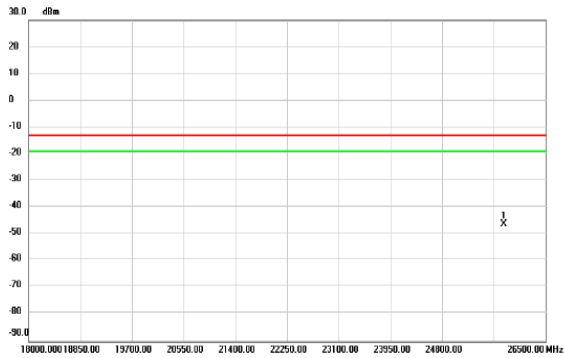
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	3757.500	-13.69	-8.62	-22.31	-13.00	-9.31	peak	

Test Mode : PCS1900_TX CH661_GPRS

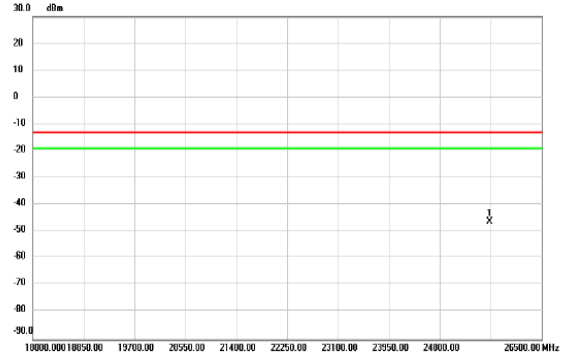
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	25815.750	-65.44	19.00	-46.44	-13.00	-33.44	peak	

Test Mode : PCS1900_TX CH661_GPRS

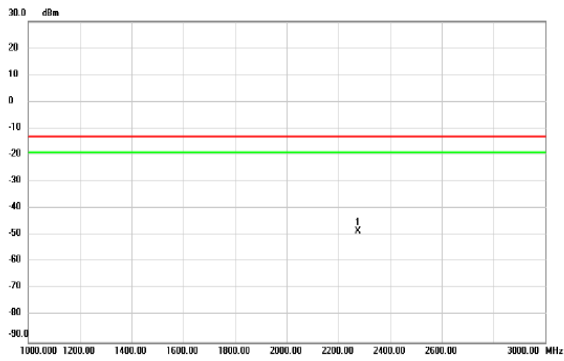
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	25833.000	-65.13	18.87	-46.26	-13.00	-33.26	peak	

Test Mode : LTE Band 2_TX CH18900_1.4MHz

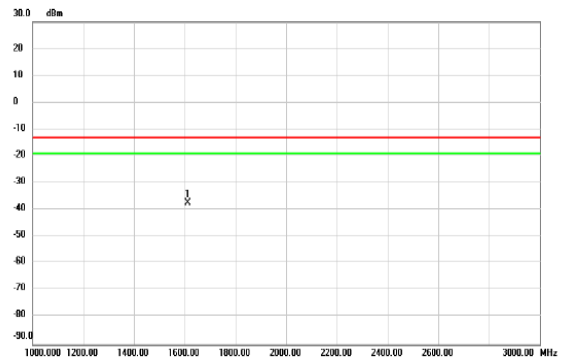
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	2276.000	-36.50	-11.86	-48.36	-13.00	-35.36	peak	

Test Mode : LTE Band 2_TX CH18900_1.4MHz

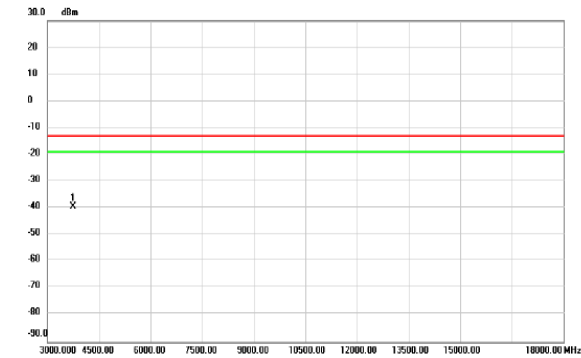
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	1611.000	-22.85	-14.37	-37.22	-13.00	-24.22	peak	

Test Mode : LTE Band 2_TX CH18900_1.4MHz

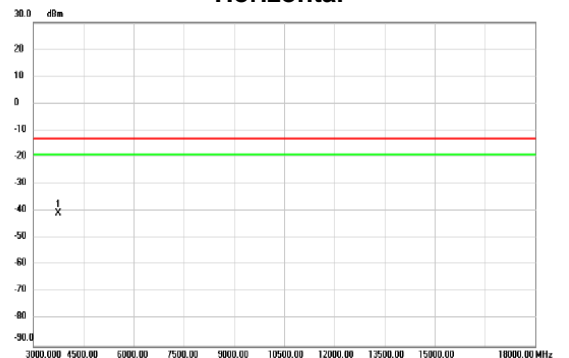
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	3757.500	-30.90	-8.45	-39.35	-13.00	-26.35	peak	

Test Mode : LTE Band 2_TX CH18900_1.4MHz

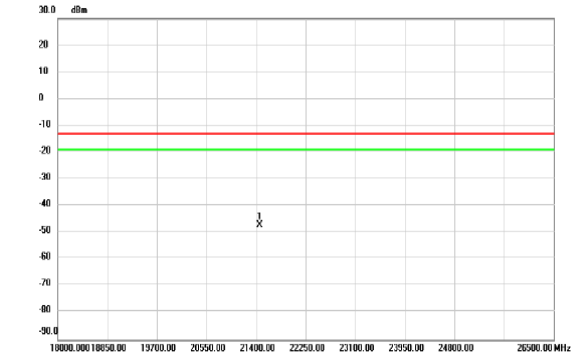
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	3757.500	-32.00	-8.62	-40.62	-13.00	-27.62	peak	

Test Mode : LTE Band 2_TX CH18900_1.4MHz

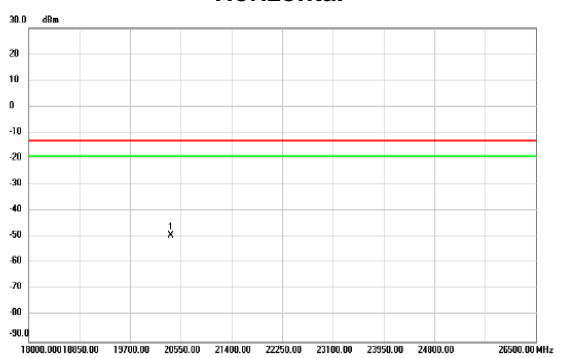
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	21459.500	-62.90	15.64	-47.26	-13.00	-34.26	peak	

Test Mode : LTE Band 2_TX CH18900_1.4MHz

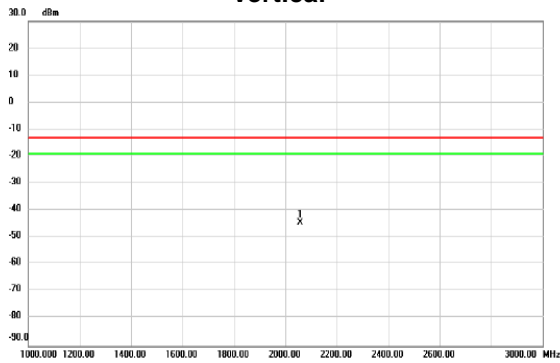
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	20388.500	-64.11	14.76	-49.35	-13.00	-36.35	peak	

Test Mode : LTE Band 2_TX CH18900_5MHz

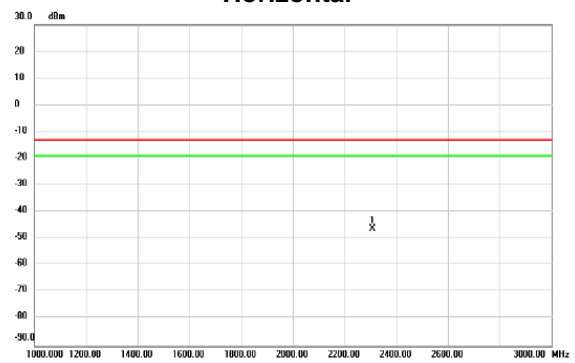
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	2057.000	-31.75	-12.77	-44.52	-13.00	-31.52	peak	

Test Mode : LTE Band 2_TX CH18900_5MHz

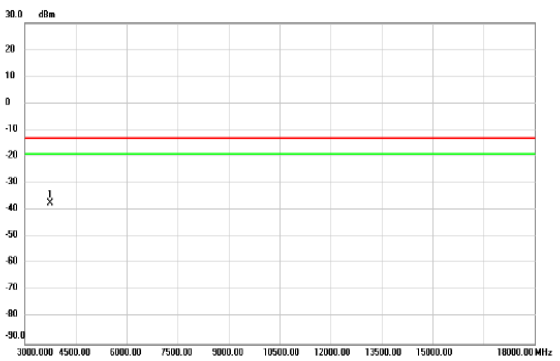
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	2309.000	-34.03	-12.32	-46.35	-13.00	-33.35	peak	

Test Mode : LTE Band 2_TX CH18900_5MHz

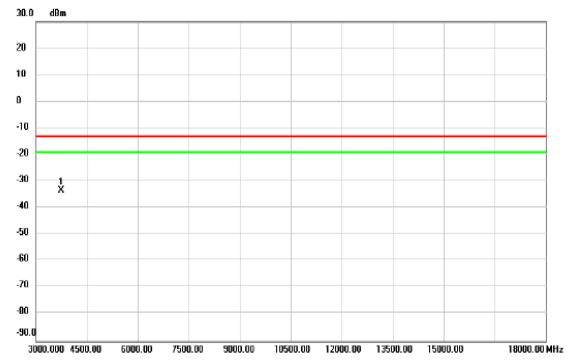
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	3742.500	-28.84	-8.50	-37.34	-13.00	-24.34	peak	

Test Mode : LTE Band 2_TX CH18900_5MHz

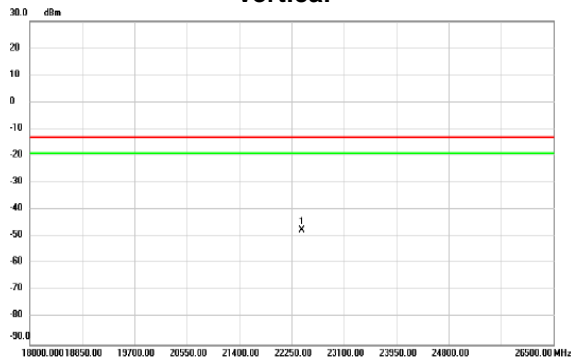
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	3742.500	-24.83	-8.67	-33.50	-13.00	-20.50	peak	

Test Mode : LTE Band 2_TX CH18900_5MHz

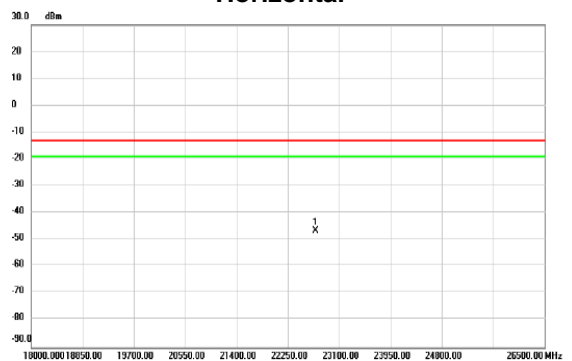
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	22411.500	-63.76	16.11	-47.65	-13.00	-34.65	peak	

Test Mode : LTE Band 2_TX CH18900_5MHz

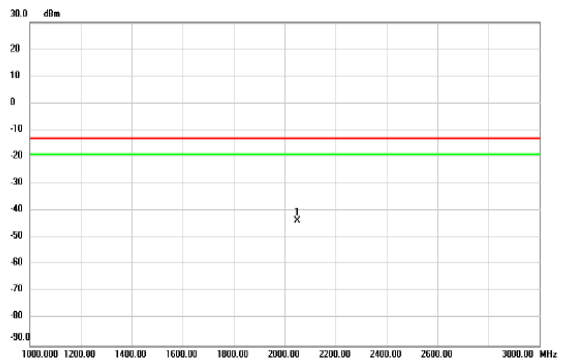
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	22713.250	-63.04	16.41	-46.63	-13.00	-33.63	peak	

Test Mode : LTE Band 2_TX CH18900_20MHz

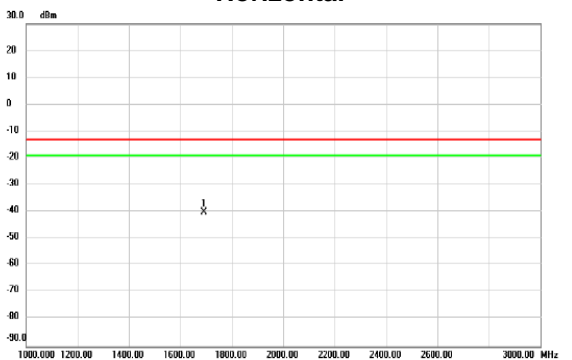
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	2050.000	-30.94	-12.80	-43.74	-13.00	-30.74	peak	

Test Mode : LTE Band 2_TX CH18900_20MHz

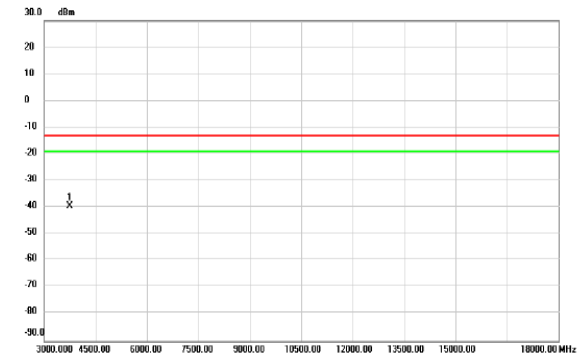
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	1693.000	-25.93	-14.19	-40.12	-13.00	-27.12	peak	

Test Mode : LTE Band 2_TX CH18900_20MHz

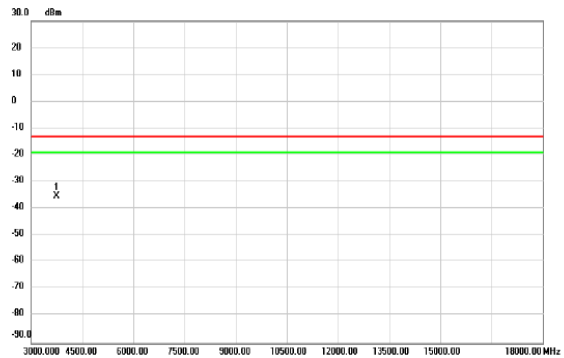
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	3757.500	-30.88	-8.45	-39.33	-13.00	-26.33	peak	

Test Mode : LTE Band 2_TX CH18900_20MHz

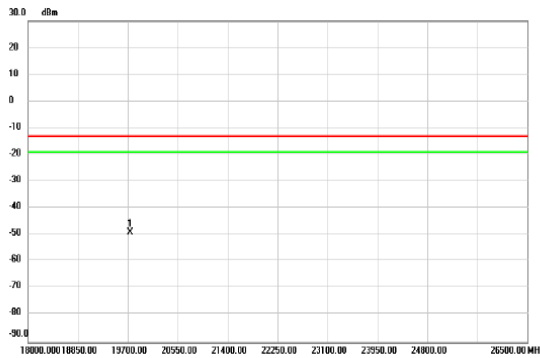
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	3742.500	-26.70	-8.67	-35.37	-13.00	-22.37	peak	

Test Mode : LTE Band 2_TX CH18900_20MHz

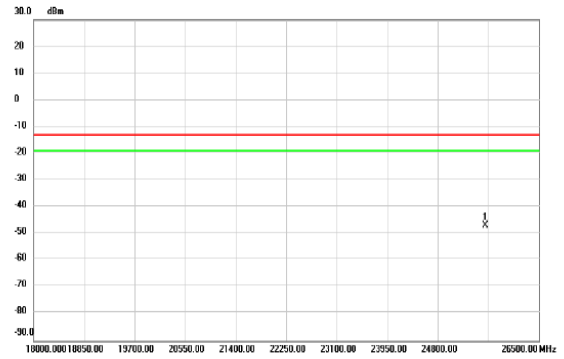
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	19738.250	-63.70	14.53	-49.17	-13.00	-36.17	peak	

Test Mode : LTE Band 2_TX CH18900_20MHz

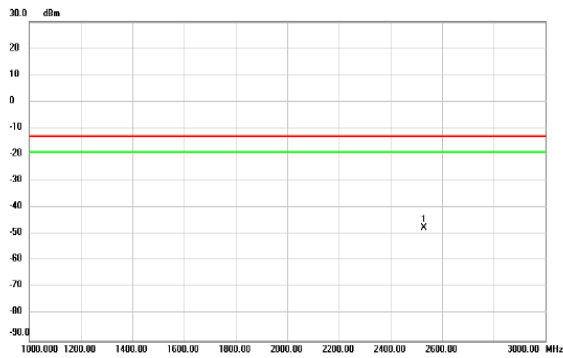
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measurement dBm	Limit dBm	Margin dB	Detector	Comment
1 *	25594.750	-65.74	18.84	-46.90	-13.00	-33.90	peak	

Test Mode : LTE Band 25_TX CH26365_1.4MHz

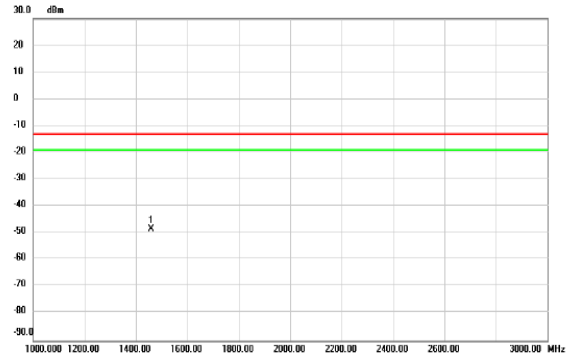
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	2530.000	-36.71	-10.85	-47.56	-13.00	-34.56	peak	

Test Mode : LTE Band 25_TX CH26365_1.4MHz

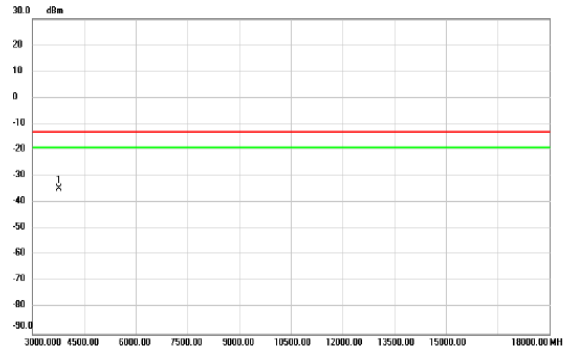
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	1459.000	-34.00	-14.54	-48.54	-13.00	-35.54	peak	

Test Mode : LTE Band 25_TX CH26365_1.4MHz

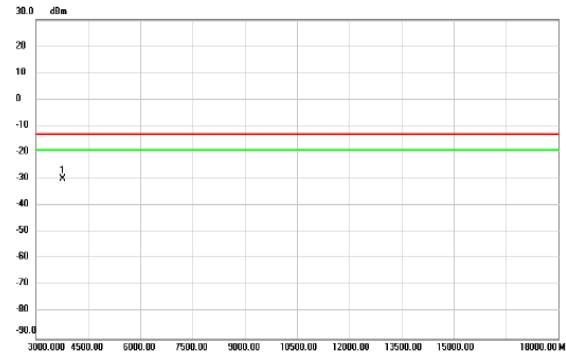
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	3765.000	-26.29	-8.42	-34.71	-13.00	-21.71	peak	

Test Mode : LTE Band 25_TX CH26365_1.4MHz

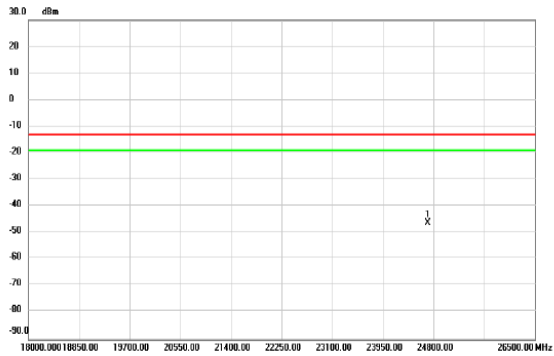
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	3765.000	-21.38	-8.59	-29.97	-13.00	-16.97	peak	

Test Mode : LTE Band 25_TX CH26365_1.4MHz

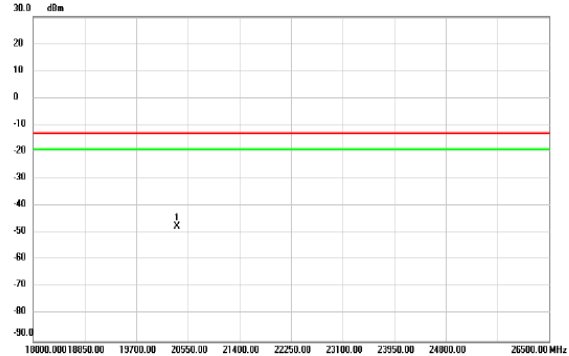
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	24698.000	-64.54	18.15	-46.39	-13.00	-33.39	peak	

Test Mode : LTE Band 25_TX CH26365_1.4MHz

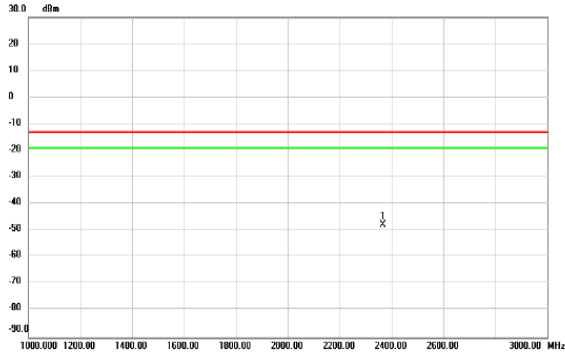
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	20371.500	-62.39	14.75	-47.64	-13.00	-34.64	peak	

Test Mode : LTE Band 25_TX CH26365_5MHz

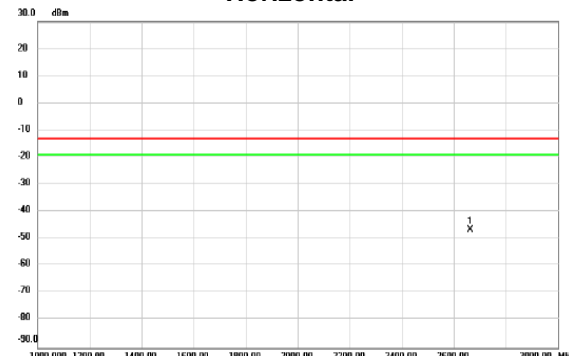
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	2367.000	-36.29	-11.48	-47.77	-13.00	-34.77	peak	

Test Mode : LTE Band 25_TX CH26365_5MHz

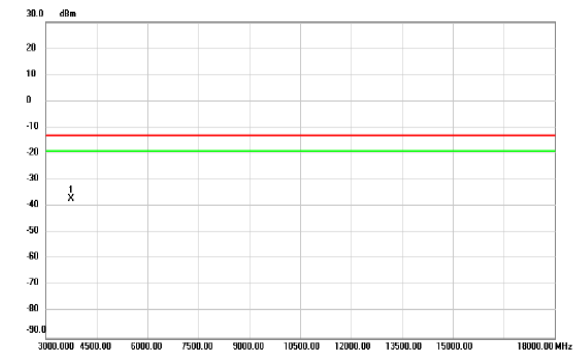
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	2663.000	-35.69	-11.07	-46.76	-13.00	-33.76	peak	

Test Mode : LTE Band 25_TX CH26365_5MHz

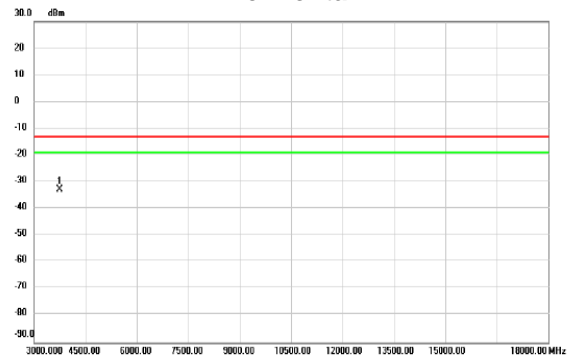
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	3757.500	-28.64	-8.45	-37.09	-13.00	-24.09	peak	

Test Mode : LTE Band 25_TX CH26365_5MHz

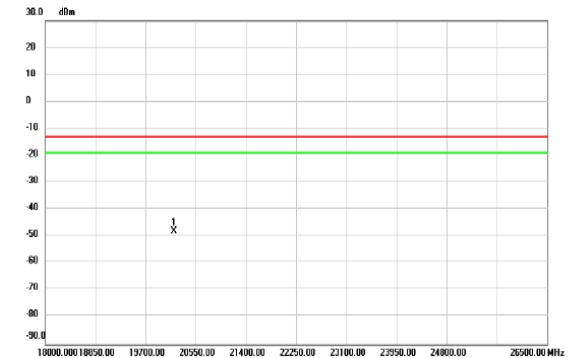
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	3757.500	-24.33	-8.62	-32.95	-13.00	-19.95	peak	

Test Mode : LTE Band 25_TX CH26365_5MHz

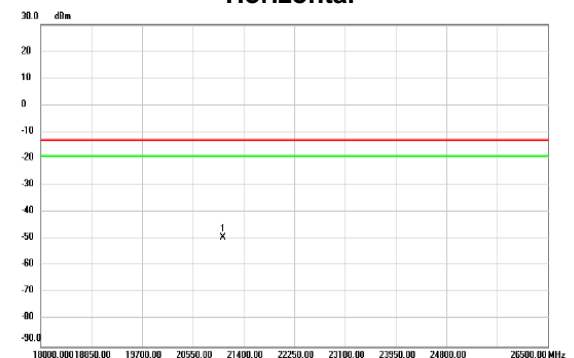
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	20184.500	-62.76	14.66	-48.10	-13.00	-35.10	peak	

Test Mode : LTE Band 25_TX CH26365_5MHz

Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	21051.500	-65.03	15.62	-49.41	-13.00	-36.41	peak	

Test Mode : LTE Band 25_TX CH26365_20MHz

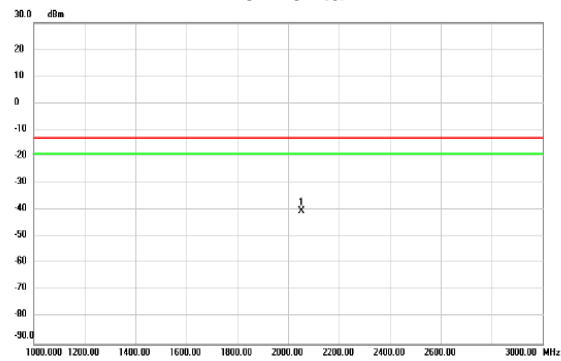
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	2549.000	-36.90	-10.80	-47.70	-13.00	-34.70	peak	

Test Mode : LTE Band 25_TX CH26365_20MHz

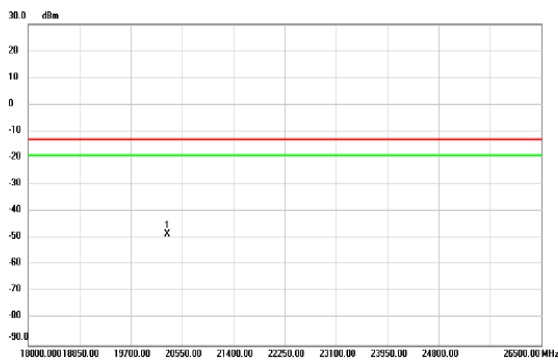
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	2053.000	-26.94	-13.31	-40.25	-13.00	-27.25	peak	

Test Mode : LTE Band 25_TX CH26365_20MHz

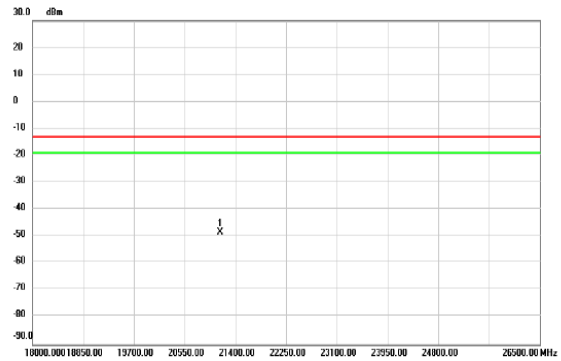
Vertical



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	20303.500	-63.15	14.72	-48.43	-13.00	-35.43	peak	

Test Mode : LTE Band 25_TX CH26365_20MHz

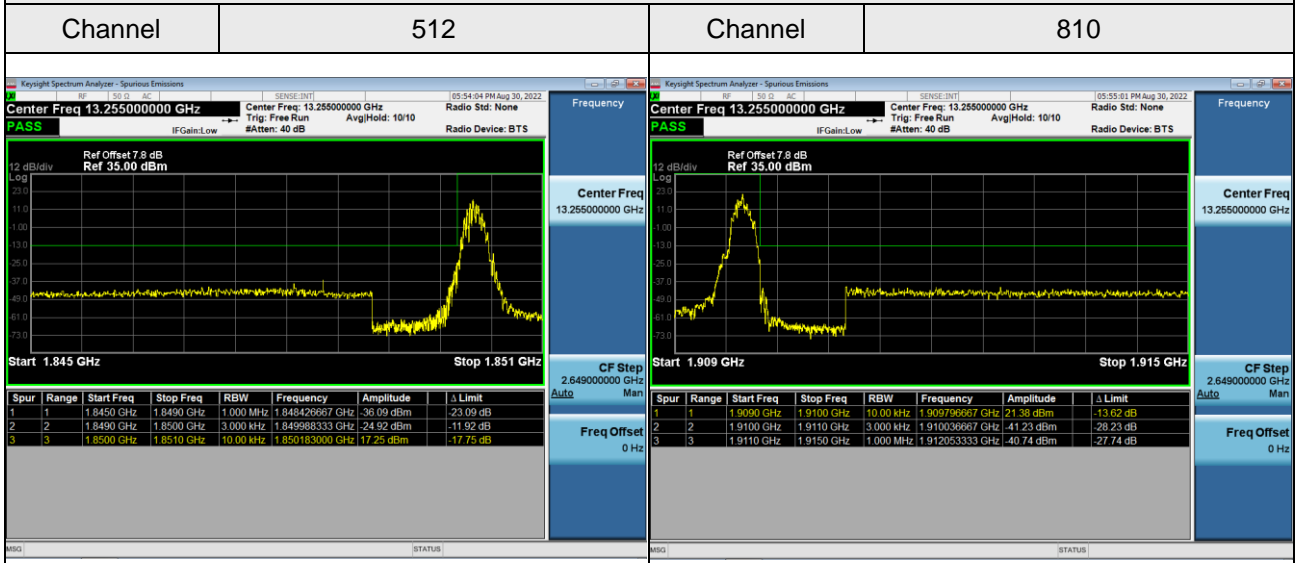
Horizontal



No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBm	dB	dBm	dBm	dB		
1 *	21145.000	-64.00	15.63	-48.37	-13.00	-35.37	peak	

APPENDIX G - BAND EDGE

PCS1900_GPRS Spectrum Plot



EDGE

