

FCC Radio Test Report

FCC ID: R9C-CPH2015

This report concerns: Original Grant

Project No. : 1911C066
Equipment : Mobile Phone
Brand Name : OPPO
Test Model : CPH2015
Series Model : N/A
Applicant : GuangDong Oppo Mobile Telecommunications Corp., Ltd.
Address : NO. 18 HaiBin Road, WuSha village, Chang An Town, DongGuan City,Guangdong,China.
Manufacturer : GuangDong Oppo Mobile Telecommunications Corp., Ltd.
Address : NO. 18 HaiBin Road, WuSha village, Chang An Town, DongGuan City,Guangdong,China.
Factory : GuangDong Oppo Mobile Telecommunications Corp., Ltd.
Address : NO. 18 HaiBin Road, WuSha village, Chang An Town, DongGuan City,Guangdong,China.
Date of Receipt : Nov. 12, 2019
Date of Test : Nov. 12, 2019 ~ Dec. 18, 2019
Issued Date : Dec. 24, 2019
Report Version : R00
Test Sample : Engineering Sample No.: DG2019112566 for conducted, DG2019112565 for radiated.
Standard(s) : 47 CFR FCC Part 22 Subpart H
47 CFR FCC Part 2
ANSI/TIA/EIA-603-E-2016
FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

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

Treey Chen

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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).

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

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

Limitation

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

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

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Dec. 24, 2019

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

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

Note:

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

1.1 TEST FACILITY

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

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

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

The BTL measurement uncertainty as below table:

A. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m)	CISPR	9KHz ~ 30MHz	V	3.79
		9KHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	4.88
		30MHz ~ 200MHz	H	4.14
		200MHz ~ 1,000MHz	V	4.62
		200MHz ~ 1,000MHz	H	4.80

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

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

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
Output Power & ERP	22.6°C	50.5%	DC 3.85V	Vegeta Li
Occupied Bandwidth	22.6°C	50.5%	DC 3.85V	Vegeta Li
Conducted Spurious Emissions	22.6°C	50.5%	DC 3.85V	Vegeta Li
Radiated Spurious Emissions	24°C	68%	AC 120V/60Hz	Berton Luo
Band Edge	22.6°C	50.5%	DC 3.85V	Vegeta Li
Peak to Average Ratio	22.6°C	50.5%	DC 3.85V	Vegeta Li
Frequency Stability	Normal and Extreme			Vegeta Li

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Mobile Phone				
Brand Name	OPPO				
Test Model	CPH2015				
Series Model	N/A				
Model Difference(s)	N/A				
Hardware Version	11				
Software Version	ColorOS V6.1.2				
Power Source	1. DC Voltage supplied from AC/DC adapter. 1# Model: OP52KAUH 2# Model: OP52JAUH 3# Model: OP52JBUH 4# Model: OP52YAUH 2. Supplied from Li-ion Polymer battery. 1# Factory / Model: Scud / BLP673 2# Factory / Model: Desay / BLP673 3. Supplied from USB port.				
Power Rating	1. I/P:100-240V~ 50/60Hz 0.4A O/P:5V---2A 2. 3.85Vdc, 4100mAh/15.78Wh 3. DC 5V				
IEMI No.	Radiated	867898040019951			
	Conducted	867898040019977			
Modulation Type	GSM/GPRS		GMSK		
	EDGE		GMSK, 8PSK		
	WCDMA/HSDPA/HSUPA		UL: QPSK DL: QPSK, 16QAM		
	LTE		UL: QPSK, 16QAM, 64QAM DL: QPSK, 16QAM, 64QAM		
Max. ERP	GSM 850 / GPRS 850		GMSK	27.90	dBm
	EDGE 850		8PSK	22.74	dBm
	WCDMA Band V		QPSK	17.45	dBm
	HSDPA Band V		QPSK	16.94	dBm
	HSUPA Band V		QPSK	16.41	dBm
	LTE	Channel Bandwidth (MHz)	QPSK (dBm)	16QAM (dBm)	64QAM (dBm)
	Band 5	1.4	17.39	16.44	15.45
		3	16.49	15.92	14.81
		5	16.45	15.92	14.79
		10	16.60	15.92	14.80

Note:

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

2. Channel List:

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

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

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

3. Table for Filed Antenna:

Main Antenna

Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
N/A	N/A	Internal	N/A	-2.9	GSM 850
N/A	N/A	Internal	N/A	-3.4	WCDMA Band V
N/A	N/A	Internal	N/A	-3.4	LTE Band 5

Second Antenna

Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
N/A	N/A	Internal	N/A	-2.9	GSM 850
N/A	N/A	Internal	N/A	-3.4	WCDMA Band V
N/A	N/A	Internal	N/A	-3.4	LTE Band 5

2.2 DESCRIPTION OF TEST MODES

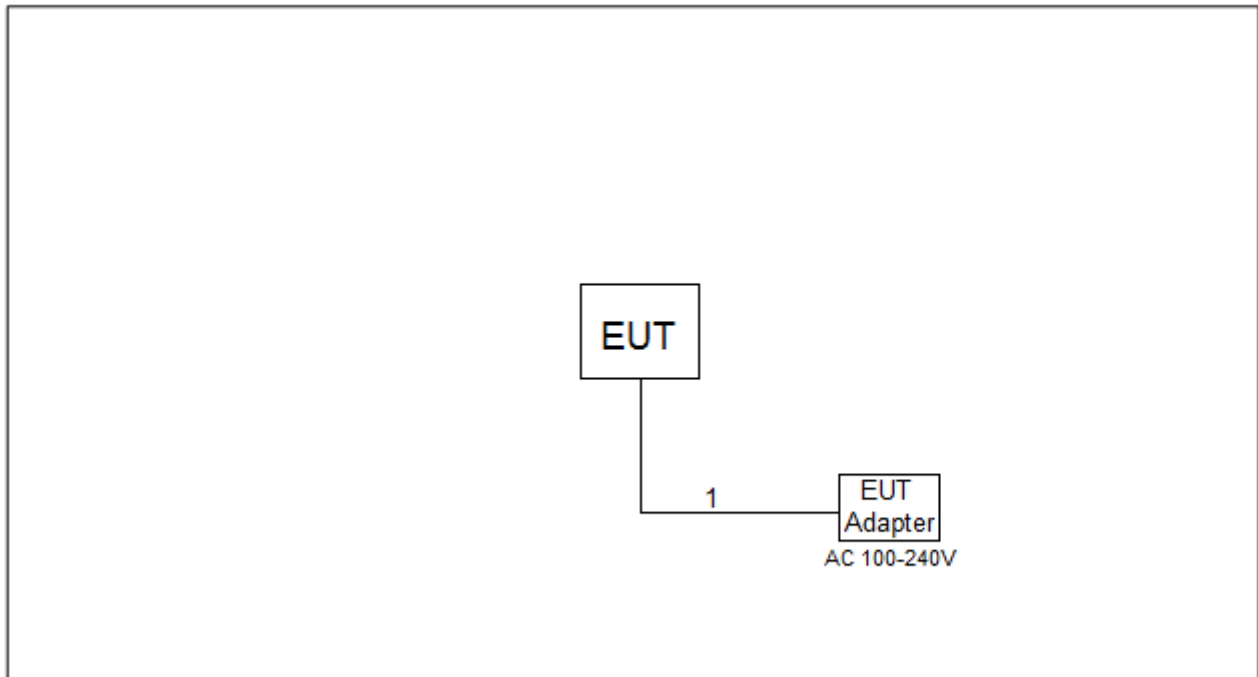
Following mode(s) is (were) found to be the worst case(s) and selected for the final test.

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

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

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

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATIONOFSYSTEMTESTED



3.4 DESCRIPTION OF SUPPORT UNITS

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

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

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

3. TEST RESULT

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMIT

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

3.1.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 5.

EIRP / ERP:

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

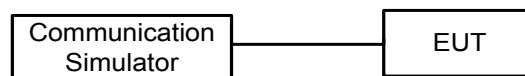
$ERP = EIPR - 2.15\text{dBi}$

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.

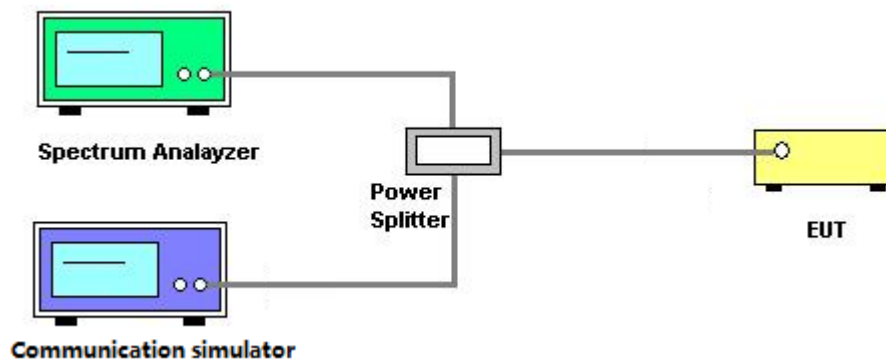
3.2 OCCUPIED BANDWIDTH MEASUREMENT

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

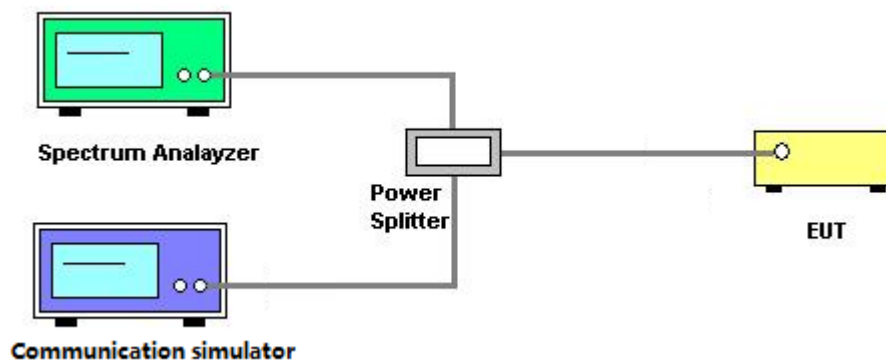
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm.

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.

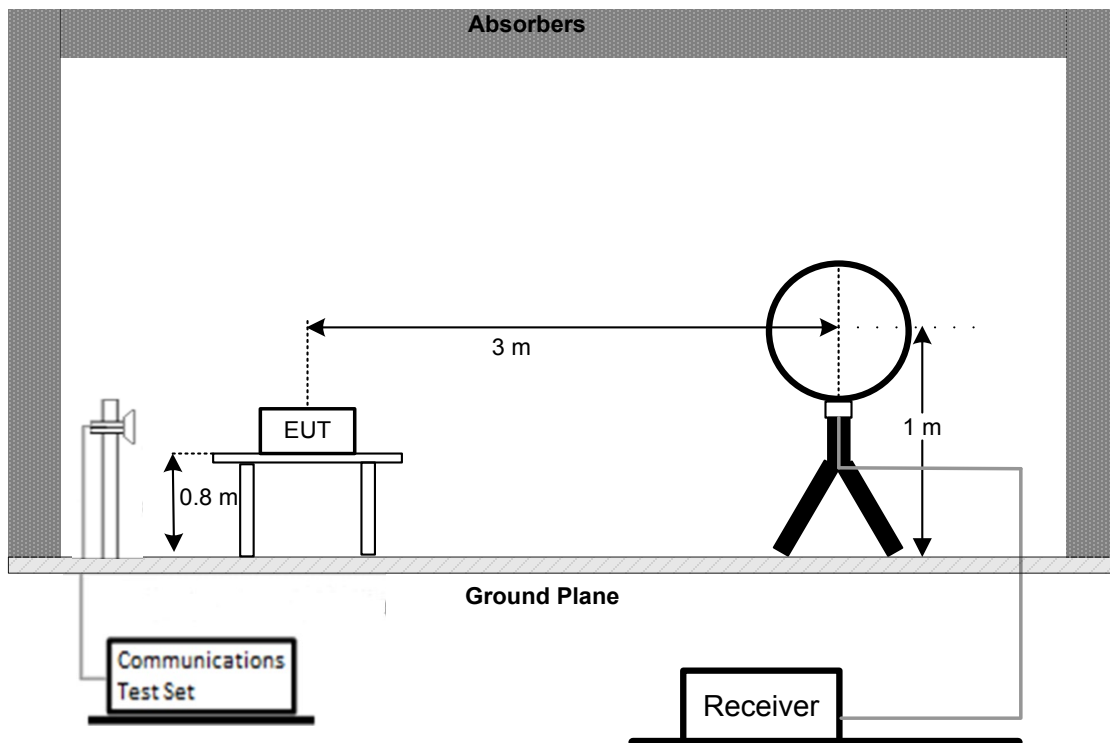
3.4.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.2.

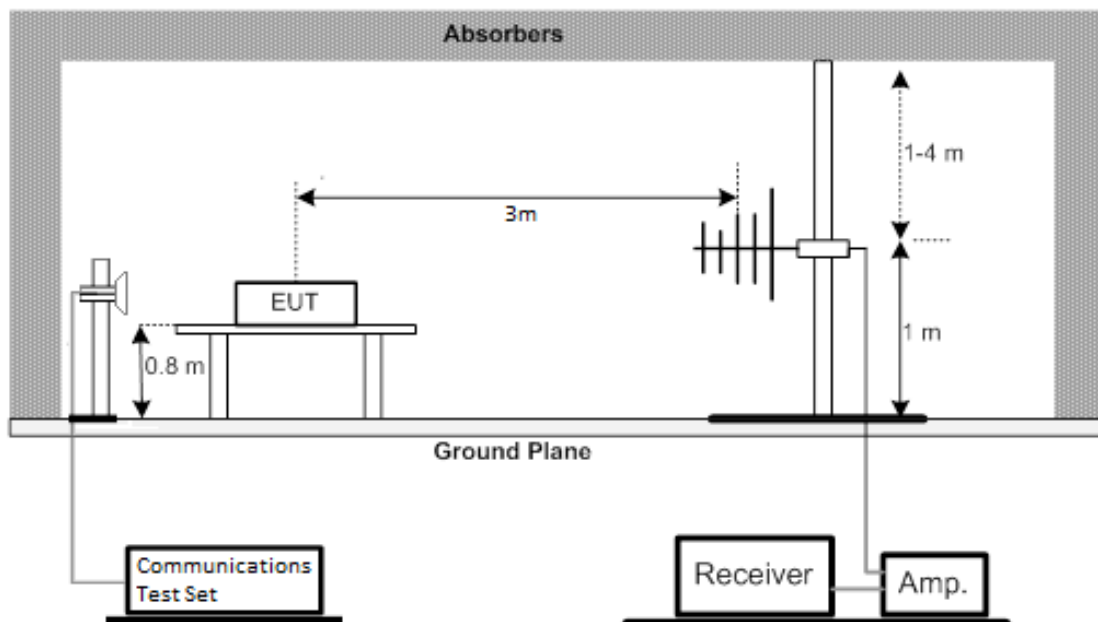
1. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from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

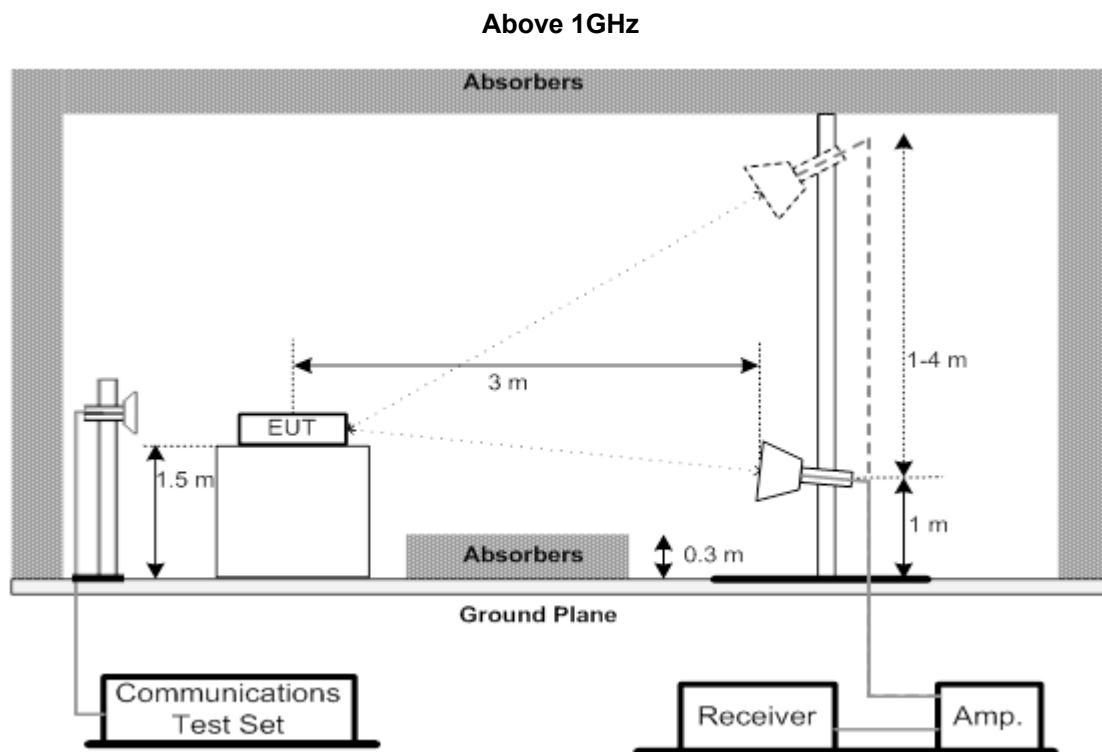
3.4.3 TEST SETUP LAYOUT

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

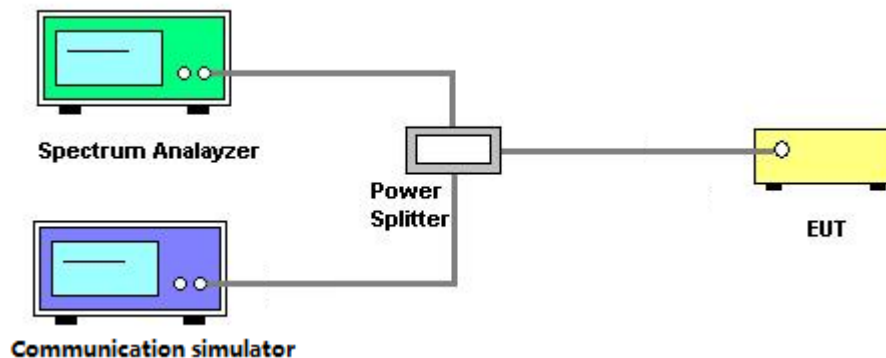
A Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the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

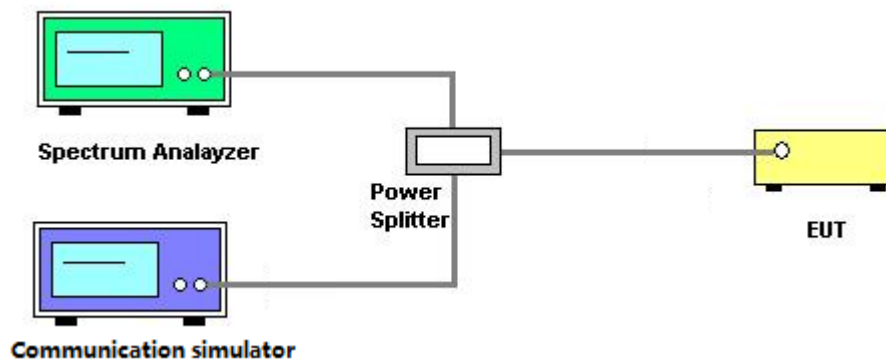
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

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

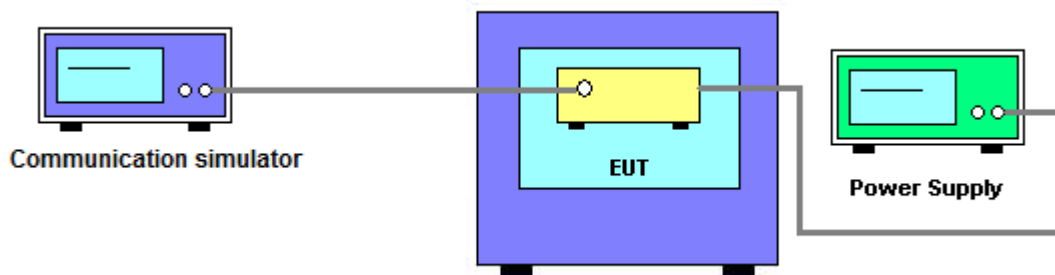
± 1.5 ppm is for base and fixed station. ± 2.5 ppm is for mobile station.

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. 09, 2020
2	Amplifier	Agilent	8449B	3008A02274	Mar. 10, 2020
3	HighPass Filter	Wairwright Instruments Gmbh	WHK 1.5/15G-10ST	11	Mar. 10, 2020
4	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1710/1785-1690/1805-60/12SS	38	Mar. 10, 2020
5	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 824/849-810/863-60/9SS	7	Mar. 10, 2020
6	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 880/915-860/935-60/9SS	14	Mar. 10, 2020
7	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1850/1910-1830/1930-60/10SS	17	Mar. 10, 2020
8	HighPass Filter	Wairwright Instruments Gmbh	WHK3.1/18G-10SS	24	Mar. 10, 2020
9	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 10, 2020
10	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 10, 2020
11	Receiver	Agilent	N9038A	MY52130039	Aug. 03, 2020
12	wideband radio communication tester	R&S	CMW500	152372	Mar. 10, 2020
13	High pass filter	KANGMAIWEI	ZHPF-M3-12.75G-3869	B2015073763	Feb. 12, 2020
14	High pass filter	KANGMAIWEI	ZHPF-M1000-4000-1	B2015073762	Feb. 12, 2020
15	High pass filter	KANGMAIWEI	ZHPF-M6-186-1727	B2015073764	Feb. 12, 2020
16	Cable	emci	LMR-400(30MHz-1GHz)(8m+5m)	N/A	May 24, 2020
17	Cable	mitron	B10-01-01-12M	18072744	Jun. 29, 2020
18	Controller	ETS-Lindgren	2090	N/A	N/A
19	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
20	Loop Antenna	EM	EM-6876-1	230	Jan. 15, 2020
21	Double Ridged Guide Antenna	ETS	3115	75789	Mar. 09, 2020
22	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 23, 2020

Conducted Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 10, 2020
2	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Mar. 10, 2020
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Mar. 10, 2020
4	wideband radio communication tester	R&S	CMW500	152372	Mar. 10, 2020

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 10, 2020
2	Multi-output DC Power Supply	GW Instek	GPC-3030DN	EK880675	Sep. 26, 2020
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Mar. 10, 2020
4	wideband radio communication tester	R&S	CMW500	152372	Mar. 10, 2020
5	Const Temp,& Humidity Chamber	Bell	BTH-50C	20170306001	Mar. 10, 2020

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

All calibration period of equipment list is one year.

APPENDIX A - OUTPUT POWER

Output Power (dBm):

GSM850		128CH	190CH	251CH
		824.2MHz	836.6MHz	848.8MHz
GSM (CS)		32.86	32.95	32.90
GPRS/EDGE (GMSK)	1 Tx Slot	32.87	32.94	32.89
	2 Tx Slot	30.54	30.66	30.62
	3 Tx Slot	28.98	29.10	29.05
	4 Tx Slot	27.97	28.11	28.03
EDGE (8PSK)	1 Tx Slot	27.57	27.79	27.74
	2 Tx Slot	25.5	25.43	25.66
	3 Tx Slot	24.36	24.37	24.71
	4 Tx Slot	23.66	23.80	23.95

Modulation	Band	WCDMA Band V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
QPSK	RMC 12.2K	22.91	22.93	22.95
	RMC 64K	22.94	22.97	23
	RMC 144K	22.92	22.95	22.97
	RMC 384K	22.93	22.96	22.94
	HSDPA Subtest-1	22.42	22.44	22.49
	HSDPA Subtest-2	22.38	22.46	22.45
	HSDPA Subtest-3	21.9	21.94	21.97
	HSDPA Subtest-4	21.89	21.96	21.95
	HSUPA Subtest-1	20.9	20.94	20.99
	HSUPA Subtest-2	20.91	20.95	21.01
	HSUPA Subtest-3	21.89	21.94	21.96
	HSUPA Subtest-4	20.45	20.45	20.49
	HSUPA Subtest-5	21.84	21.89	21.92

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4M	QPSK	1	0	21.78	21.81	21.79
		1	2	21.86	21.89	21.92
		1	5	21.76	21.78	21.80
		3	0	22.87	22.89	22.88
		3	1	22.88	22.91	22.94
		3	2	22.83	22.90	22.88
		6	0	21.82	21.78	21.83
	16QAM	1	0	20.91	21.04	21.18
		1	2	20.96	21.10	21.29
		1	5	20.85	21.02	21.20
		3	0	21.83	21.99	21.87
		3	1	21.85	21.83	21.90
		3	2	21.80	21.74	21.88
		6	0	20.84	20.85	20.80
	64QAM	1	0	19.99	20.09	20.24
		1	2	20.13	20.15	20.41
		1	5	19.93	20.11	20.30
		3	0	20.99	20.87	20.97
		3	1	21.00	20.92	20.96
		3	2	20.96	20.90	20.99
		6	0	19.97	19.82	19.92

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3M	QPSK	1	0	21.84	21.90	21.88
		1	7	21.96	22.04	21.98
		1	14	21.87	21.94	21.85
		8	0	21.85	21.83	21.86
		8	4	21.91	21.87	21.91
		8	7	21.85	21.84	21.82
		15	0	21.87	21.87	21.87
	16QAM	1	0	20.88	21.28	20.96
		1	7	20.98	21.47	21.08
		1	14	20.85	21.38	20.95
		8	0	20.99	20.99	20.91
		8	4	20.90	20.94	20.98
		8	7	20.96	20.90	20.90
		15	0	20.90	20.94	20.84
	64QAM	1	0	20.25	20.03	20.12
		1	7	20.36	20.25	20.25
		1	14	20.22	20.18	20.09
		8	0	19.91	19.96	19.89
		8	4	19.92	19.94	19.93
		8	7	19.94	19.91	19.86
		15	0	19.88	19.96	19.92

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5M	QPSK	1	0	21.89	21.81	21.90
		1	13	22.00	21.91	21.98
		1	24	21.86	21.81	21.83
		12	0	21.83	21.93	21.94
		12	6	21.91	21.96	21.96
		12	11	21.93	21.97	21.90
		25	0	21.88	21.98	21.88
	16QAM	1	0	21.06	21.34	21.01
		1	13	21.16	21.47	21.06
		1	24	20.98	21.39	20.97
		12	0	20.87	20.87	20.93
		12	6	20.96	20.90	20.99
		12	11	20.96	20.94	20.93
		25	0	20.86	20.83	20.82
	64QAM	1	0	19.83	20.19	20.14
		1	13	19.92	20.34	20.18
		1	24	19.76	20.24	20.10
		12	0	19.88	19.92	19.96
		12	6	19.94	19.94	19.82
		12	11	19.93	19.97	19.94
		25	0	19.85	19.96	19.89

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10M	QPSK	1	0	21.86	21.95	21.90
		1	25	22.12	22.15	22.13
		1	49	21.85	21.96	21.83
		25	0	21.89	21.87	21.91
		25	13	21.95	21.78	21.98
		25	25	21.86	21.85	21.89
		50	0	21.90	21.90	21.91
	16QAM	1	0	20.89	21.28	20.98
		1	25	21.00	21.47	21.09
		1	49	20.82	21.35	20.91
		25	0	20.86	20.93	20.98
		25	13	20.90	20.85	20.85
		25	25	20.83	20.89	20.97
		50	0	20.83	20.91	20.91
	64QAM	1	0	20.24	20.10	20.17
		1	25	20.35	20.28	20.29
		1	49	20.21	20.14	20.12
		25	0	19.92	19.99	19.98
		25	13	19.94	19.91	19.88
		25	25	19.84	19.97	19.97
		50	0	19.87	19.95	19.90

ERP (dBm):

GSM850		128CH	190CH	251CH
		824.2MHz	836.6MHz	848.8MHz
GSM (CS)		27.81	27.90	27.85
GPRS/EDGE (GMSK)	1 Tx Slot	27.82	27.89	27.84
	2 Tx Slot	25.49	25.61	25.57
	3 Tx Slot	23.93	24.05	24.00
	4 Tx Slot	22.92	23.06	22.98
EDGE (8PSK)	1 Tx Slot	22.52	22.74	22.69
	2 Tx Slot	20.45	20.38	20.61
	3 Tx Slot	19.31	19.32	19.66
	4 Tx Slot	18.61	18.75	18.90

Modulation	Band	WCDMA Band V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
QPSK	RMC 12.2K	17.36	17.38	17.40
	RMC 64K	17.39	17.42	17.45
	RMC 144K	17.37	17.40	17.42
	RMC 384K	17.38	17.41	17.39
	HSDPA Subtest-1	16.87	16.89	16.94
	HSDPA Subtest-2	16.83	16.91	16.90
	HSDPA Subtest-3	16.35	16.39	16.42
	HSDPA Subtest-4	16.34	16.41	16.40
	HSUPA Subtest-1	15.35	15.39	15.44
	HSUPA Subtest-2	15.36	15.40	15.46
	HSUPA Subtest-3	16.34	16.39	16.41
	HSUPA Subtest-4	14.90	14.90	14.94
	HSUPA Subtest-5	16.29	16.34	16.37

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4M	QPSK	1	0	16.23	16.26	16.24
		1	2	16.31	16.34	16.37
		1	5	16.21	16.23	16.25
		3	0	17.32	17.34	17.33
		3	1	17.33	17.36	17.39
		3	2	17.28	17.35	17.33
		6	0	16.27	16.23	16.28
	16QAM	1	0	15.36	15.49	15.63
		1	2	15.41	15.55	15.74
		1	5	15.30	15.47	15.65
		3	0	16.28	16.44	16.32
		3	1	16.30	16.28	16.35
		3	2	16.25	16.19	16.33
		6	0	15.29	15.30	15.25
	64QAM	1	0	14.44	14.54	14.69
		1	2	14.58	14.60	14.86
		1	5	14.38	14.56	14.75
		3	0	15.44	15.32	15.42
		3	1	15.45	15.37	15.41
		3	2	15.41	15.35	15.44
		6	0	14.42	14.27	14.37

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3M	QPSK	1	0	16.29	16.35	16.33
		1	7	16.41	16.49	16.43
		1	14	16.32	16.39	16.30
		8	0	16.30	16.28	16.31
		8	4	16.36	16.32	16.36
		8	7	16.30	16.29	16.27
		15	0	16.32	16.32	16.32
	16QAM	1	0	15.33	15.73	15.41
		1	7	15.43	15.92	15.53
		1	14	15.30	15.83	15.40
		8	0	15.44	15.44	15.36
		8	4	15.35	15.39	15.43
		8	7	15.41	15.35	15.35
		15	0	15.35	15.39	15.29
	64QAM	1	0	14.70	14.48	14.57
		1	7	14.81	14.70	14.70
		1	14	14.67	14.63	14.54
		8	0	14.36	14.41	14.34
		8	4	14.37	14.39	14.38
		8	7	14.39	14.36	14.31
		15	0	14.33	14.41	14.37

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5M	QPSK	1	0	16.34	16.26	16.35
		1	13	16.45	16.36	16.43
		1	24	16.31	16.26	16.28
		12	0	16.28	16.38	16.39
		12	6	16.36	16.41	16.41
		12	11	16.38	16.42	16.35
		25	0	16.33	16.43	16.33
	16QAM	1	0	15.51	15.79	15.46
		1	13	15.61	15.92	15.51
		1	24	15.43	15.84	15.42
		12	0	15.32	15.32	15.38
		12	6	15.41	15.35	15.44
		12	11	15.41	15.39	15.38
		25	0	15.31	15.28	15.27
	64QAM	1	0	14.28	14.64	14.59
		1	13	14.37	14.79	14.63
		1	24	14.21	14.69	14.55
		12	0	14.33	14.37	14.41
		12	6	14.39	14.39	14.27
		12	11	14.38	14.42	14.39
		25	0	14.30	14.41	14.34

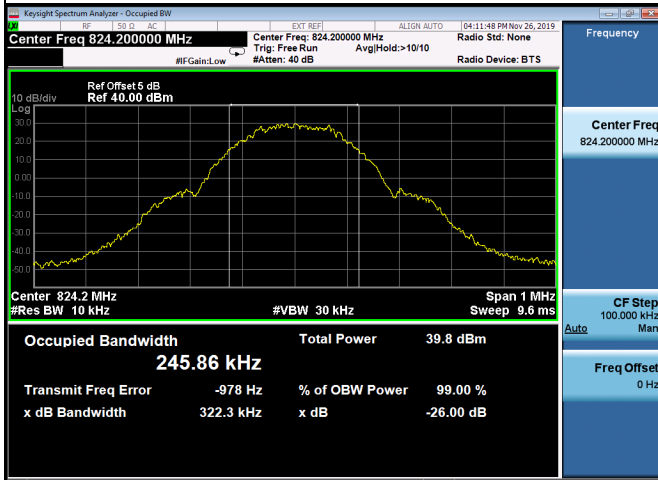
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				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10M	QPSK	1	0	16.31	16.40	16.35
		1	25	16.57	16.60	16.58
		1	49	16.30	16.41	16.28
		25	0	16.34	16.32	16.36
		25	13	16.40	16.23	16.43
		25	25	16.31	16.30	16.34
		50	0	16.35	16.35	16.36
	16QAM	1	0	15.34	15.73	15.43
		1	25	15.45	15.92	15.54
		1	49	15.27	15.80	15.36
		25	0	15.31	15.38	15.43
		25	13	15.35	15.30	15.30
		25	25	15.28	15.34	15.42
		50	0	15.28	15.36	15.36
	64QAM	1	0	14.69	14.55	14.62
		1	25	14.80	14.73	14.74
		1	49	14.66	14.59	14.57
		25	0	14.37	14.44	14.43
		25	13	14.39	14.36	14.33
		25	25	14.29	14.42	14.42
		50	0	14.32	14.40	14.35

APPENDIX B - OCCUPIED BANDWIDTH

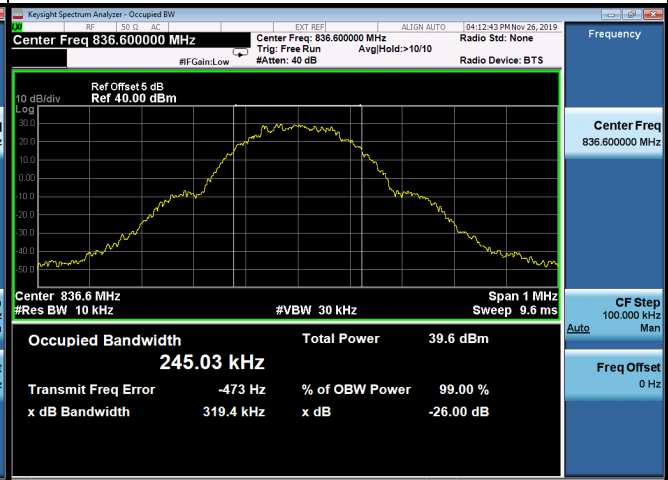
GSM850					
GSM			EDGE		
CS			8PSK		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
128	824.2	0.2459	128	824.2	0.2486
190	836.6	0.2450	190	836.6	0.2451
251	848.8	0.2448	251	848.8	0.2475
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
128	824.2	0.3223	128	824.2	0.3113
190	836.6	0.3194	190	836.6	0.3166
251	848.8	0.3212	251	848.8	0.3110

Spectrum Plot

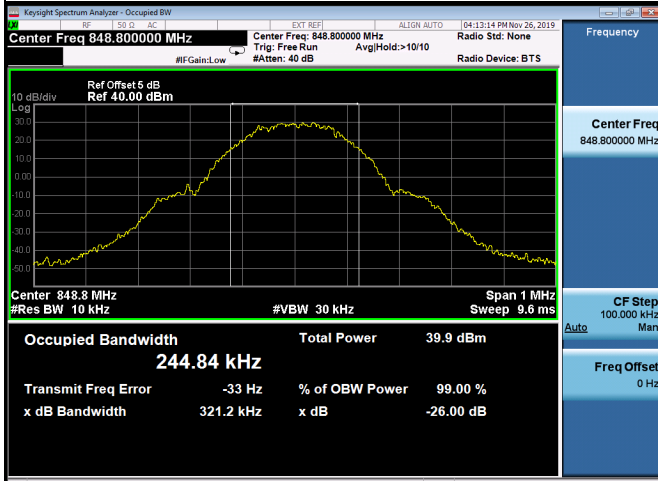
GSM-128



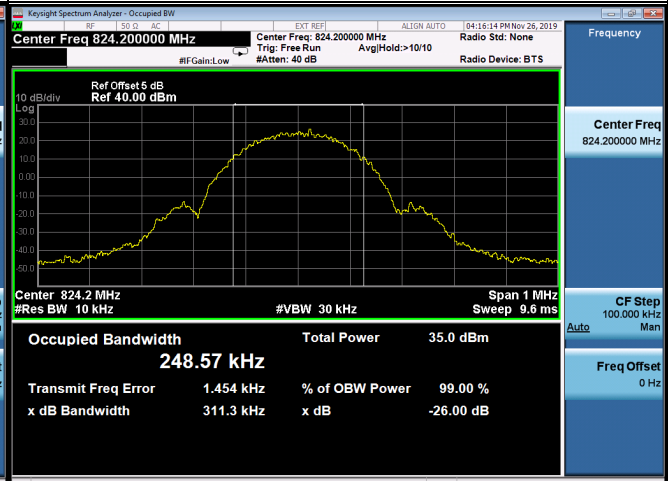
GSM-190



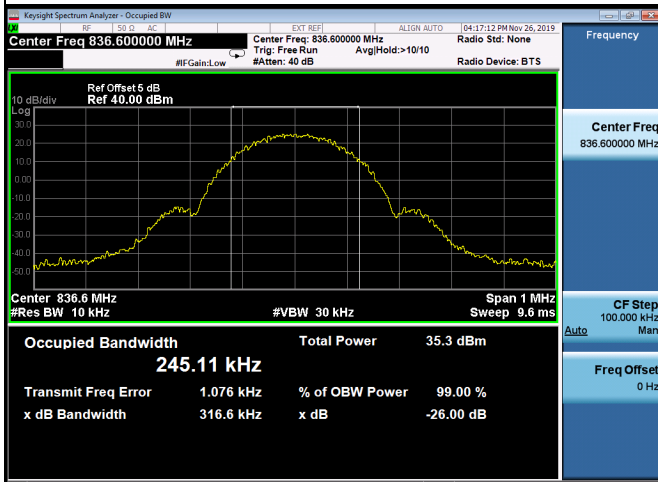
GSM-251



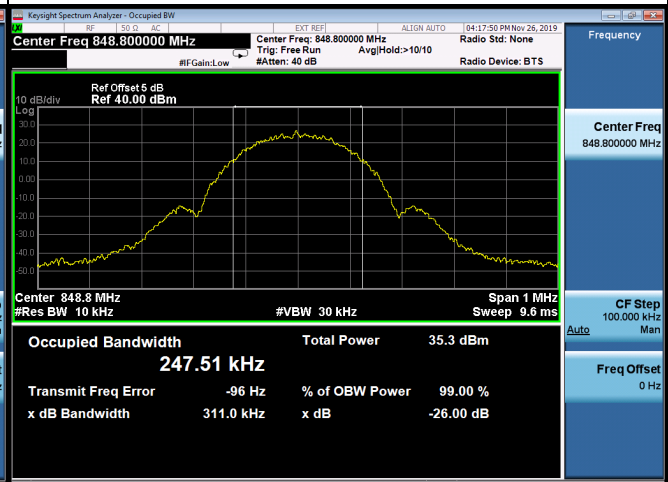
EDGE-128



EDGE-190



EDGE-251



WCDMA Band V_WCDMA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
4132	826.4	4.1608	4132	826.4	4.709
4182	836.4	4.1699	4182	836.4	4.714
4233	846.6	4.1528	4233	846.6	4.697



WCDMA Band V_HSDPA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
4132	826.4	4.1614	4132	826.4	4.703
4182	836.4	4.1763	4182	836.4	4.716
4233	846.6	4.1685	4233	846.6	4.706



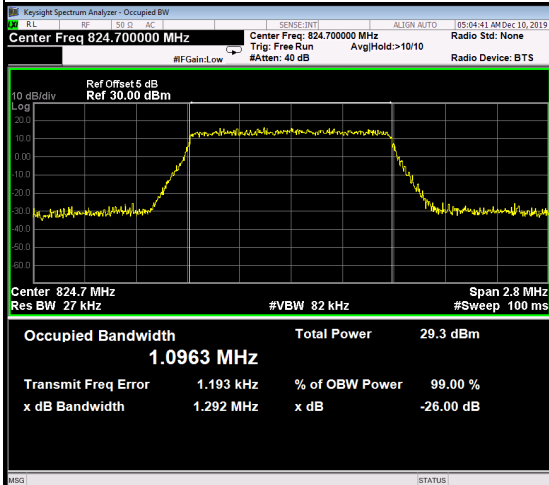
WCDMA Band V_HSUPA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
4132	826.4	4.1852	4132	826.4	4.740
4182	836.4	4.2043	4182	836.4	4.728
4233	846.6	4.1875	4233	846.6	4.710



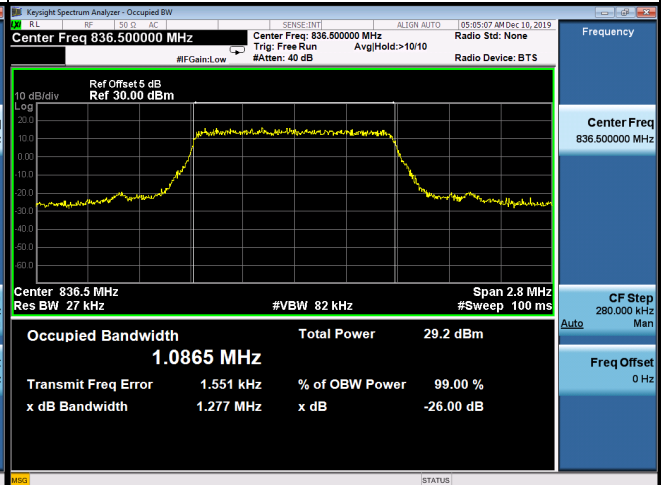
LTE Band 5_1.4M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20407	824.7	1.0963	20407	824.7	1.292
20525	836.5	1.0865	20525	836.5	1.277
20643	848.3	1.0900	20643	848.3	1.288
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20407	824.7	1.0903	20407	824.7	1.293
20525	836.5	1.0946	20525	836.5	1.288
20643	848.3	1.0860	20643	848.3	1.272
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20407	824.7	1.0816	20407	824.7	1.264
20525	836.5	1.0887	20525	836.5	1.285
20643	848.3	1.0842	20643	848.3	1.274

Spectrum Plot

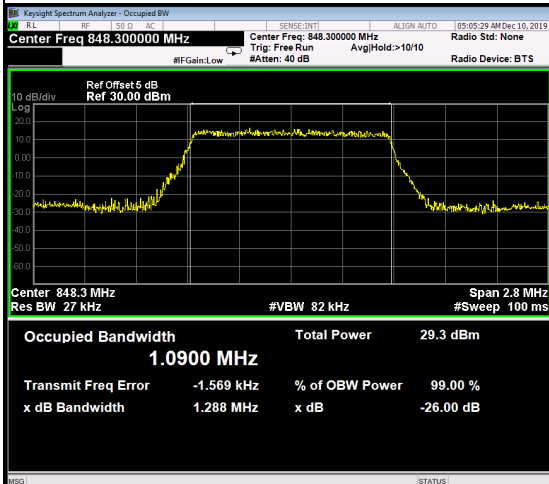
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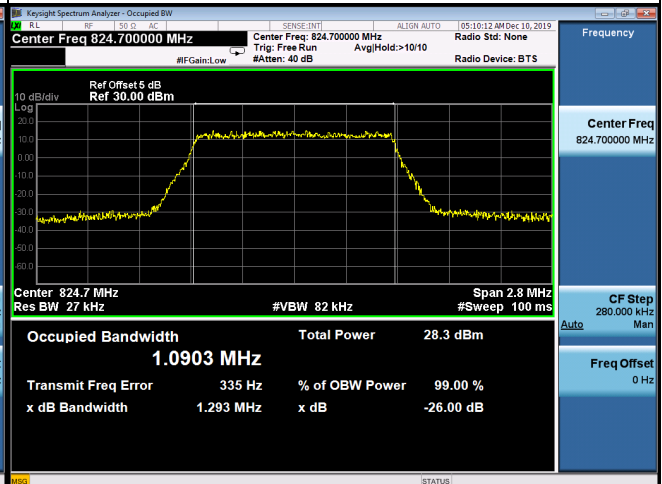
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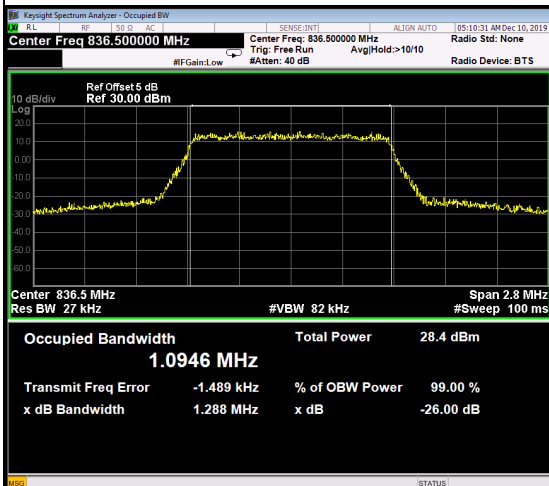
QPSK-20643



16QAM-20407



16QAM-20525

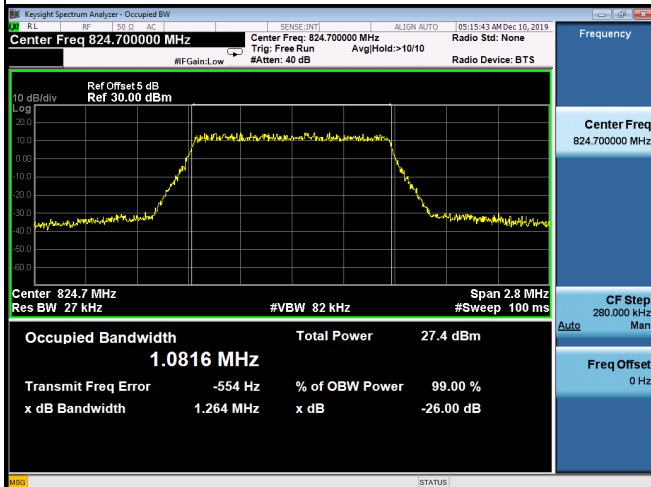


16QAM-20643

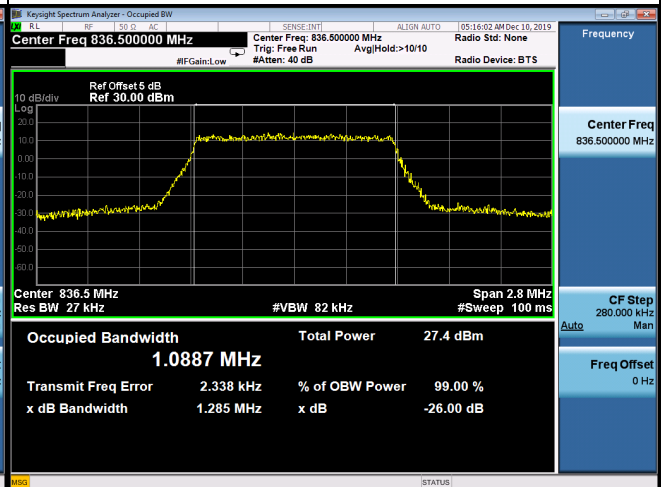


Spectrum Plot

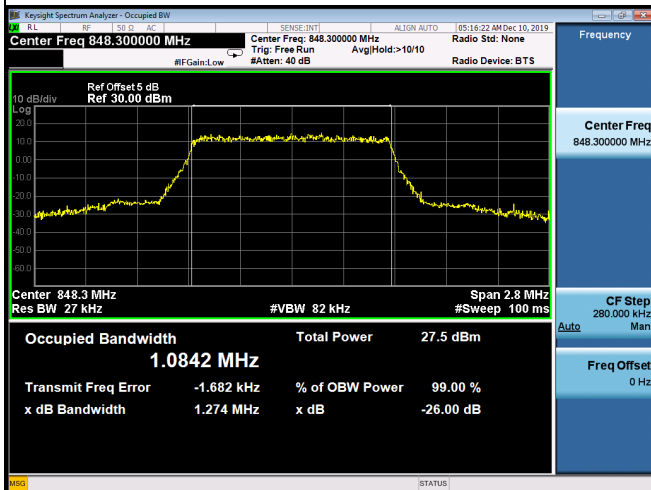
64QAM-20407



64QAM-20525



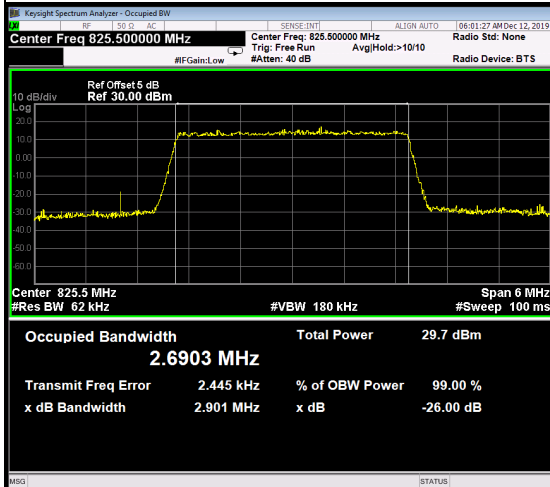
64QAM-20643



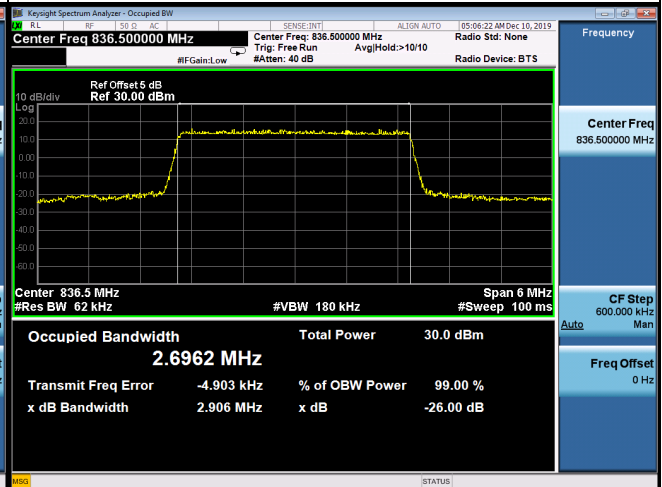
LTE Band 5_3M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20415	825.5	2.6903	20415	825.5	2.901
20525	836.5	2.6962	20525	836.5	2.906
20635	847.5	2.6890	20635	847.5	2.914
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20415	825.5	2.6879	20415	825.5	2.905
20525	836.5	2.6866	20525	836.5	2.927
20635	847.5	2.6882	20635	847.5	2.926
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20415	825.5	2.6907	20415	825.5	2.919
20525	836.5	2.6896	20525	836.5	2.903
20635	847.5	2.6830	20635	847.5	2.906

Spectrum Plot

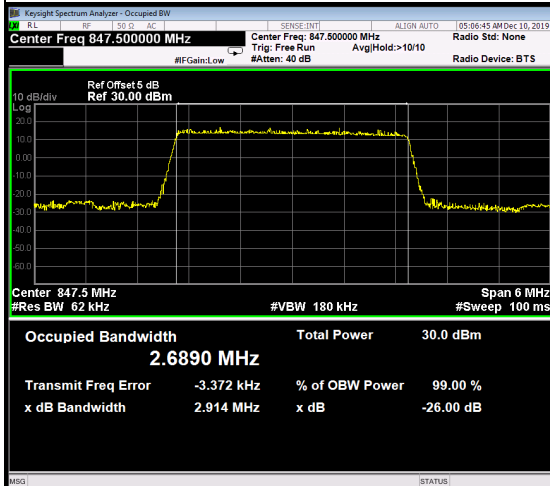
QPSK-20415



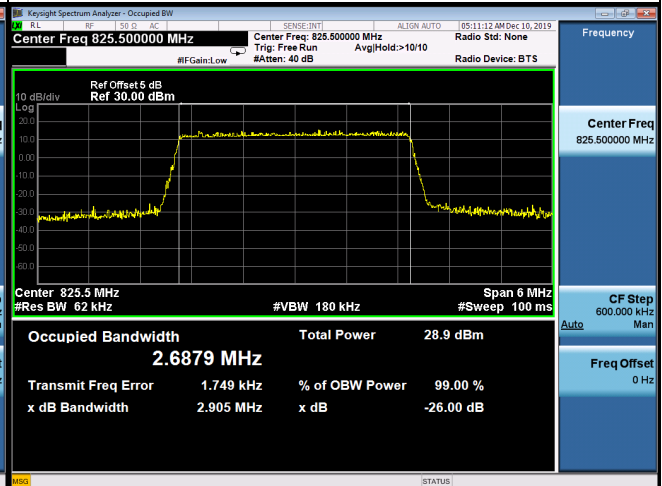
QPSK-20525



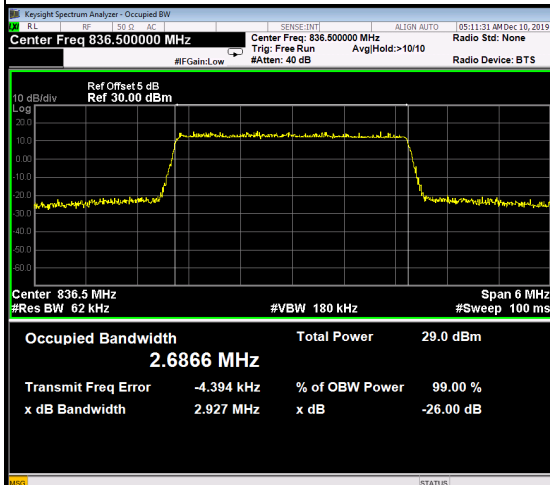
QPSK-20635



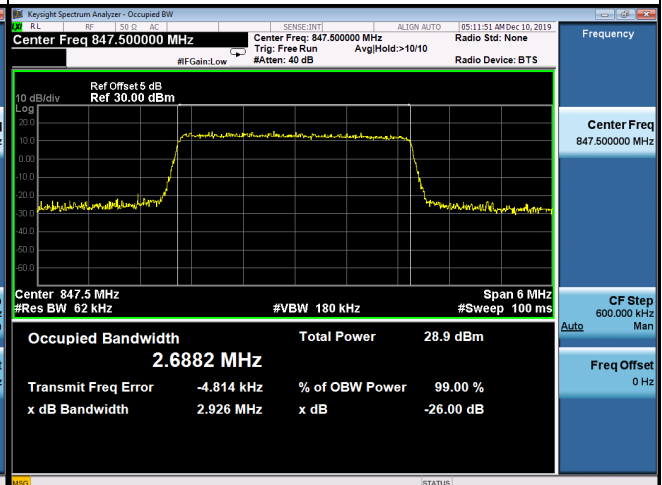
16QAM-20415



16QAM-20525

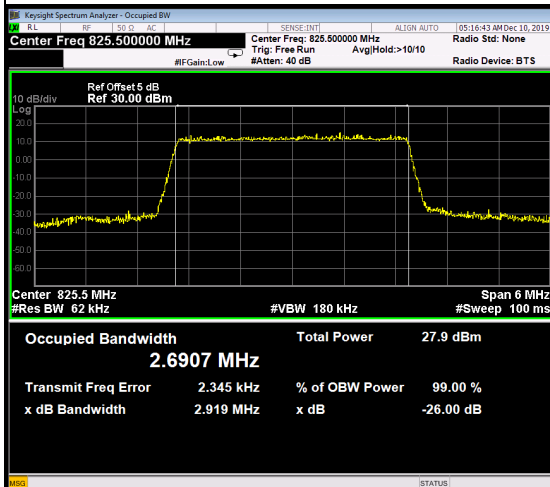


16QAM-20635

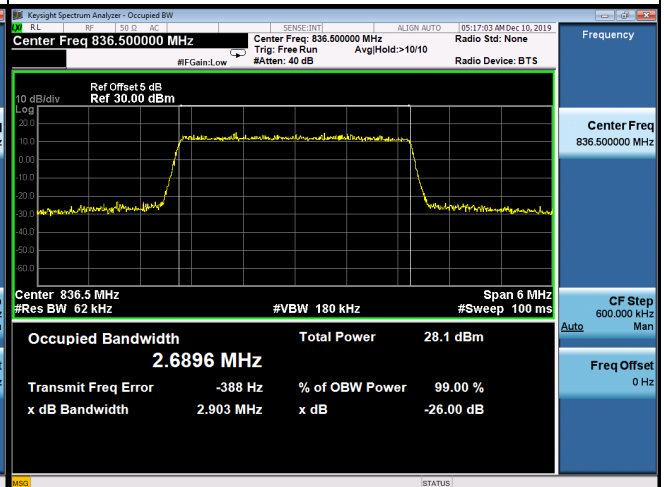


Spectrum Plot

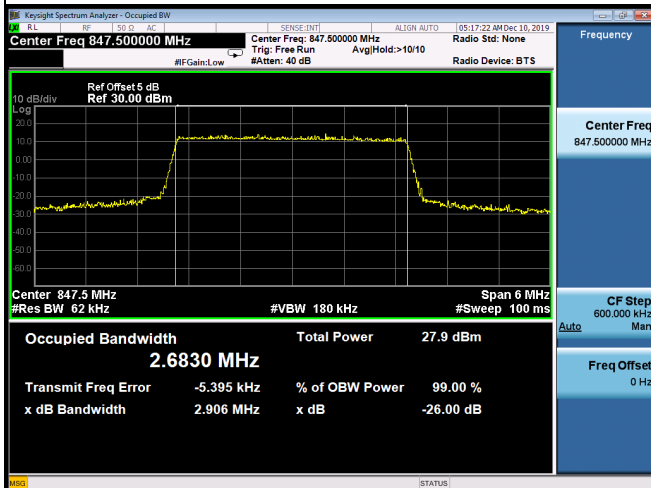
64QAM-20415



64QAM-20525



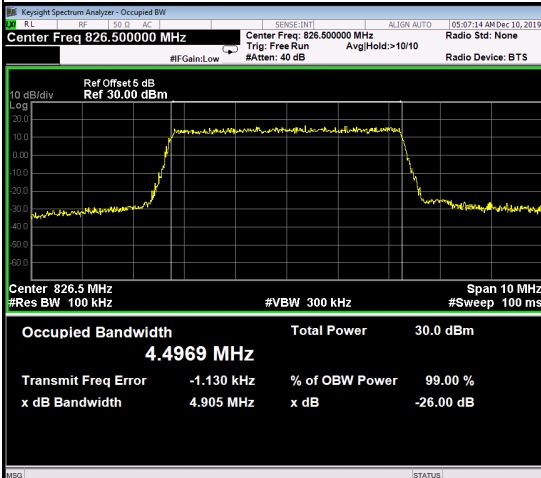
64QAM-20635



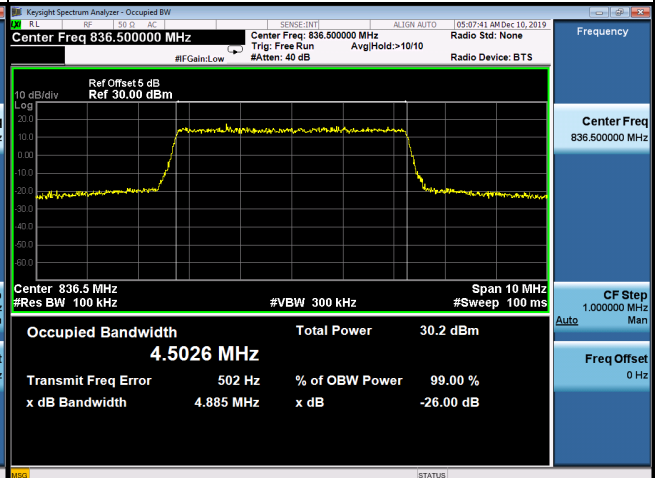
LTE Band 5_5M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20425	826.5	4.4969	20425	826.5	4.905
20525	836.5	4.5026	20525	836.5	4.885
20625	846.5	4.4923	20625	846.5	4.890
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20425	826.5	4.4864	20425	826.5	4.936
20525	836.5	4.4947	20525	836.5	4.938
20625	846.5	4.4773	20625	846.5	4.885
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20425	826.5	4.4856	20425	826.5	4.896
20525	836.5	4.4977	20525	836.5	4.888
20625	846.5	4.4853	20625	846.5	4.900

Spectrum Plot

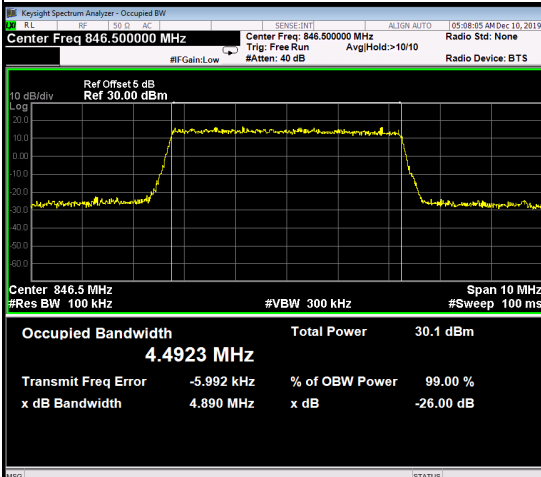
QPSK-20425



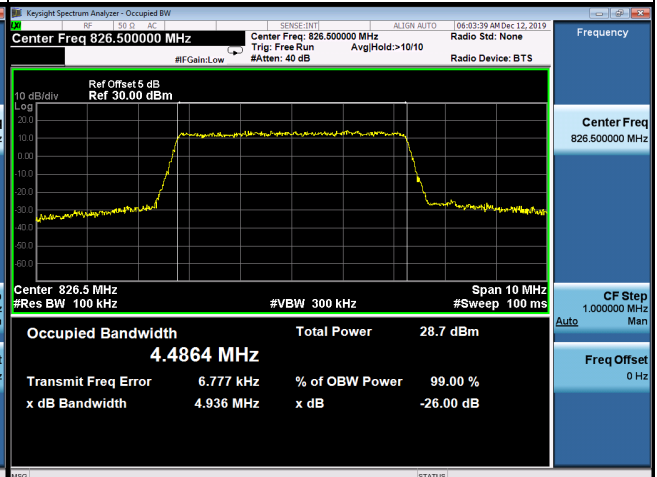
QPSK-20525



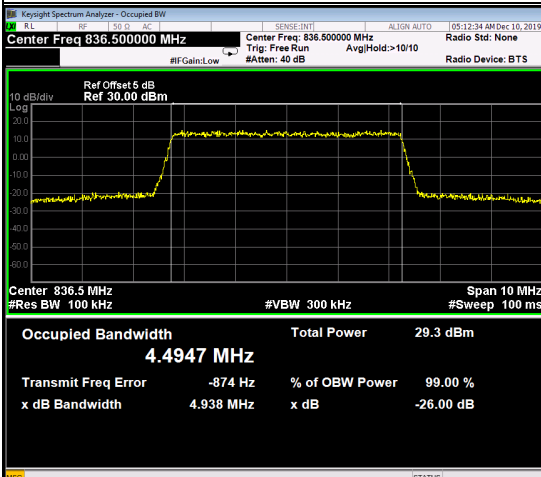
QPSK-20625



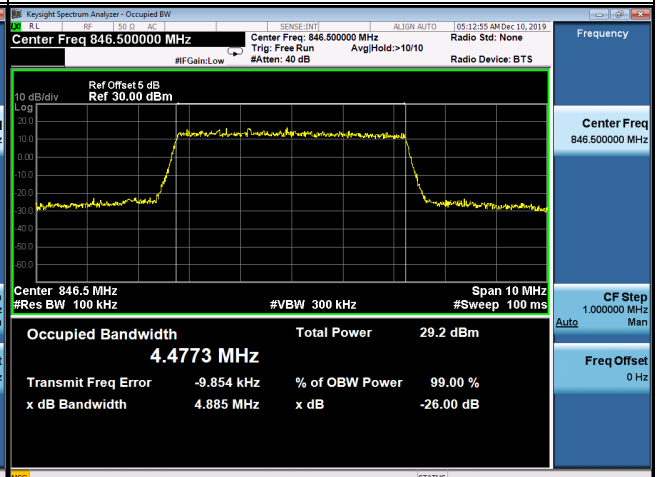
16QAM-20425



16QAM-20525

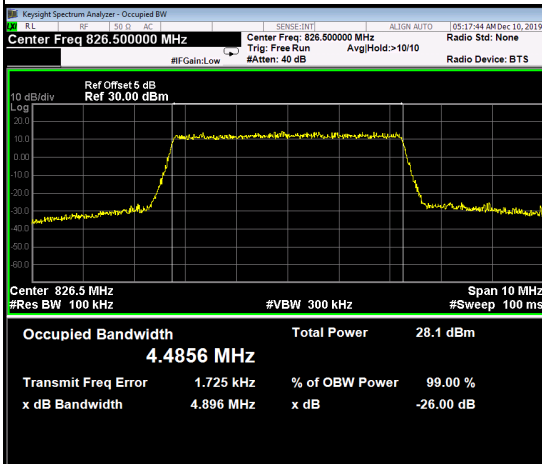


16QAM-20625

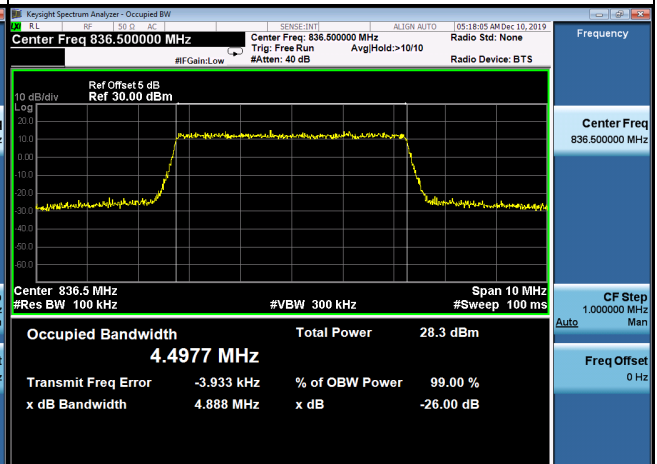


Spectrum Plot

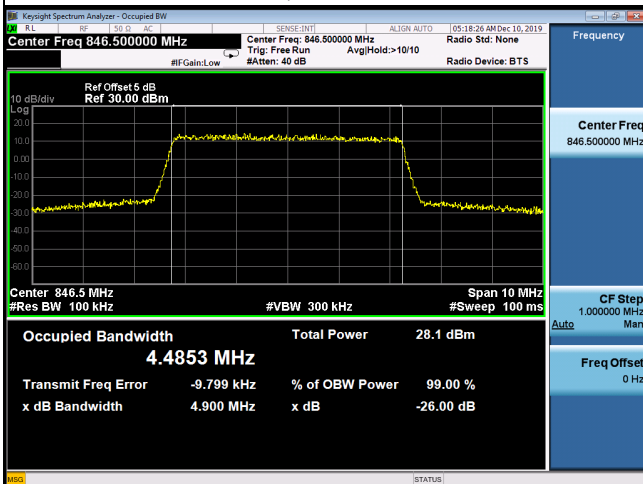
64QAM-20425



64QAM-20525



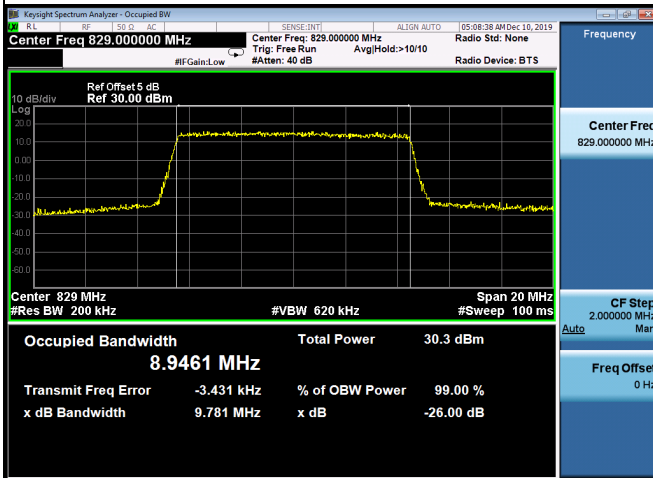
64QAM-20625



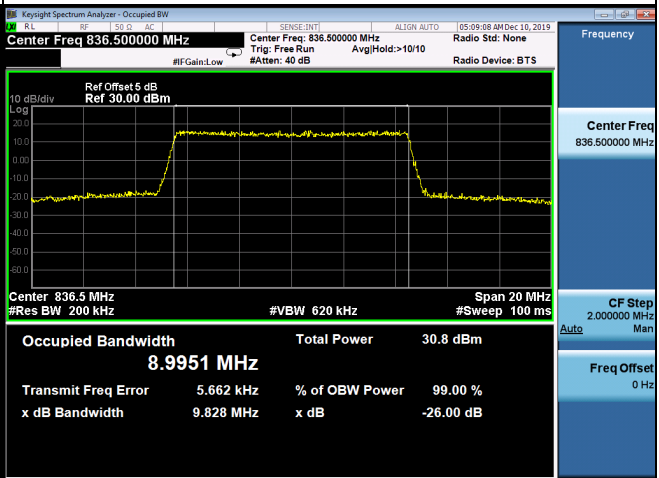
LTE Band 5_10M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20450	829.0	8.9461	20450	829.0	9.781
20525	836.5	8.9951	20525	836.5	9.828
20600	844.0	8.9447	20600	844.0	9.790
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20450	829.0	8.9755	20450	829.0	9.739
20525	836.5	8.9951	20525	836.5	9.790
20600	844.0	8.9496	20600	844.0	9.696
64QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20450	829.0	8.9537	20450	829.0	9.768
20525	836.5	9.0017	20525	836.5	9.772
20600	844.0	8.9432	20600	844.0	9.660

Spectrum Plot

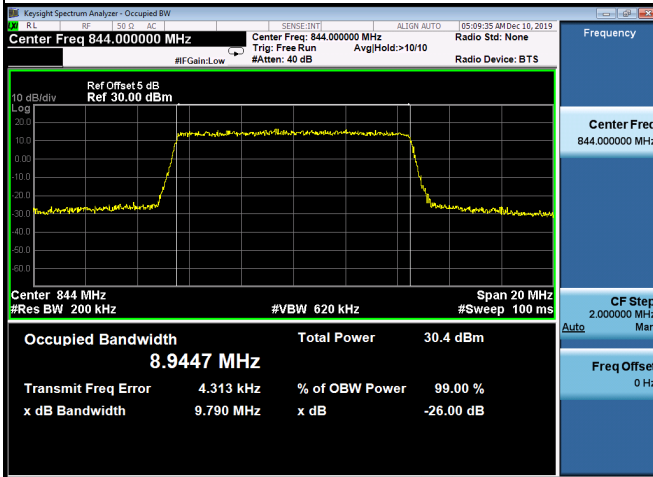
QPSK-20450



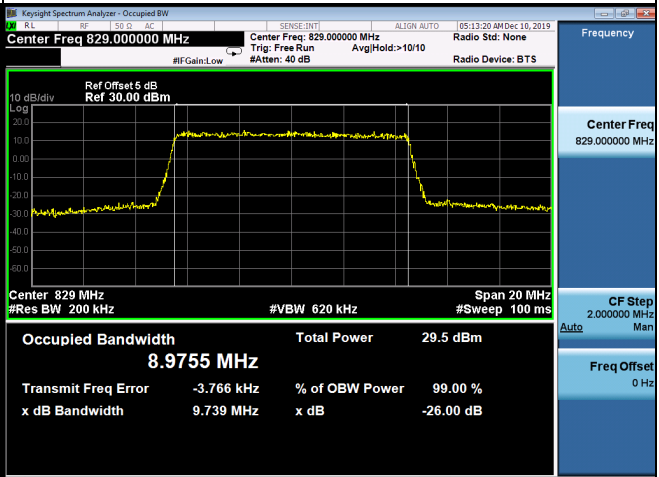
QPSK-20525



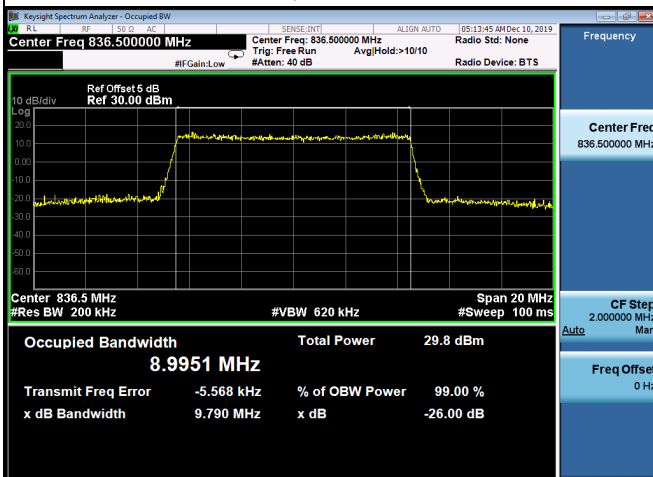
QPSK-20600



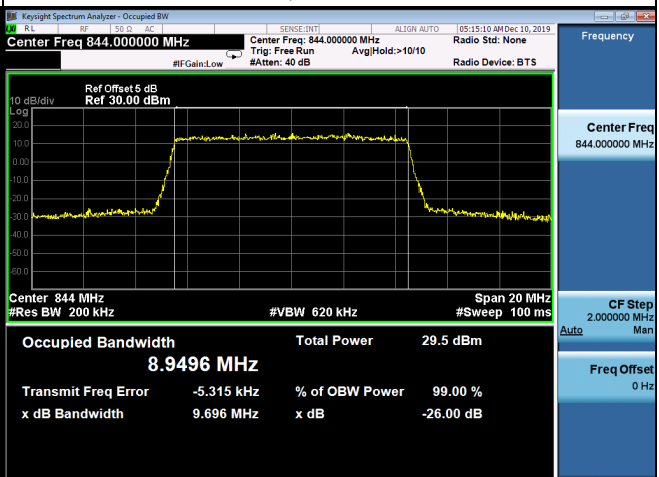
16QAM-20450



16QAM-20525

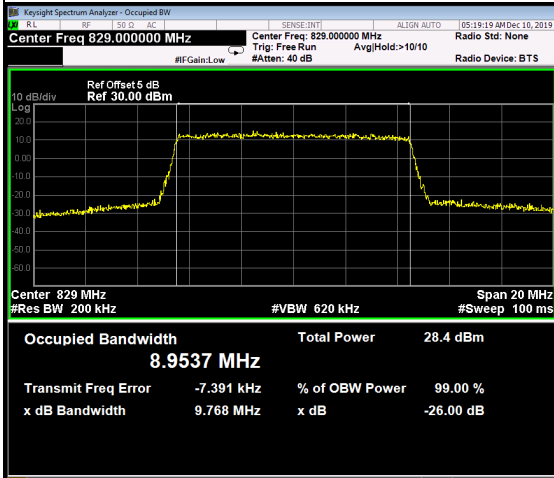


16QAM-20600

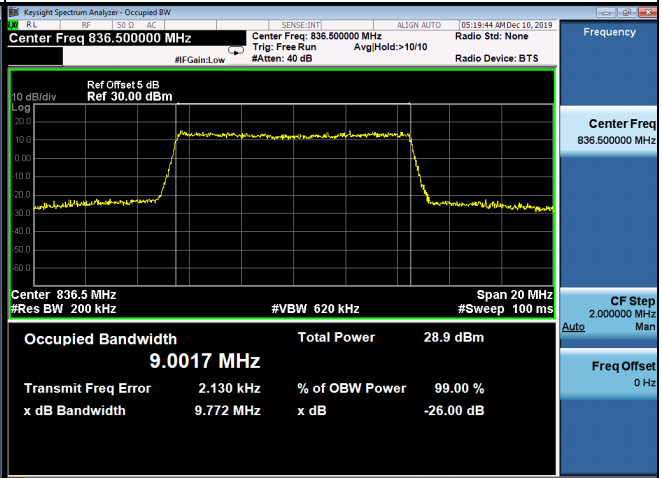


Spectrum Plot

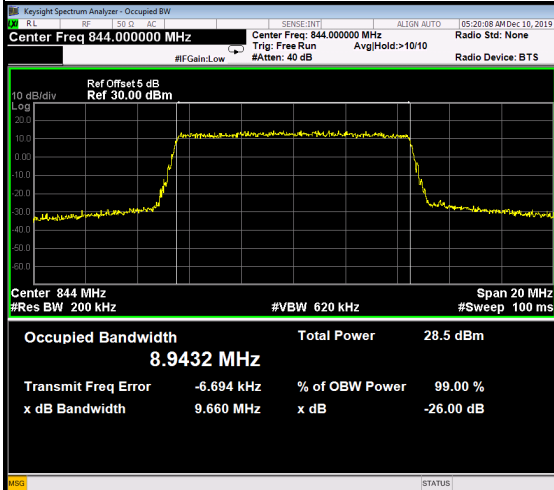
64QAM-20450



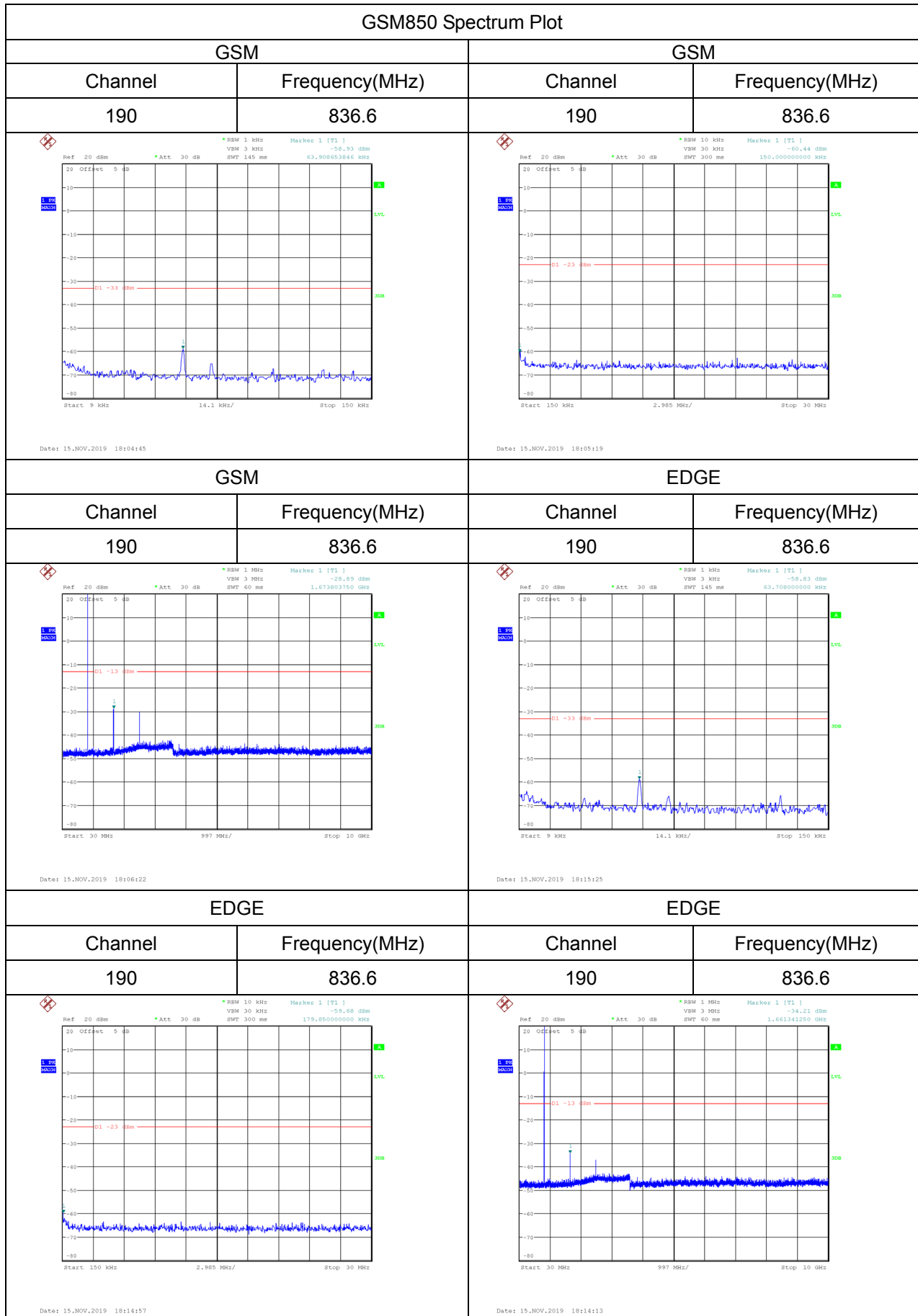
64QAM-20525

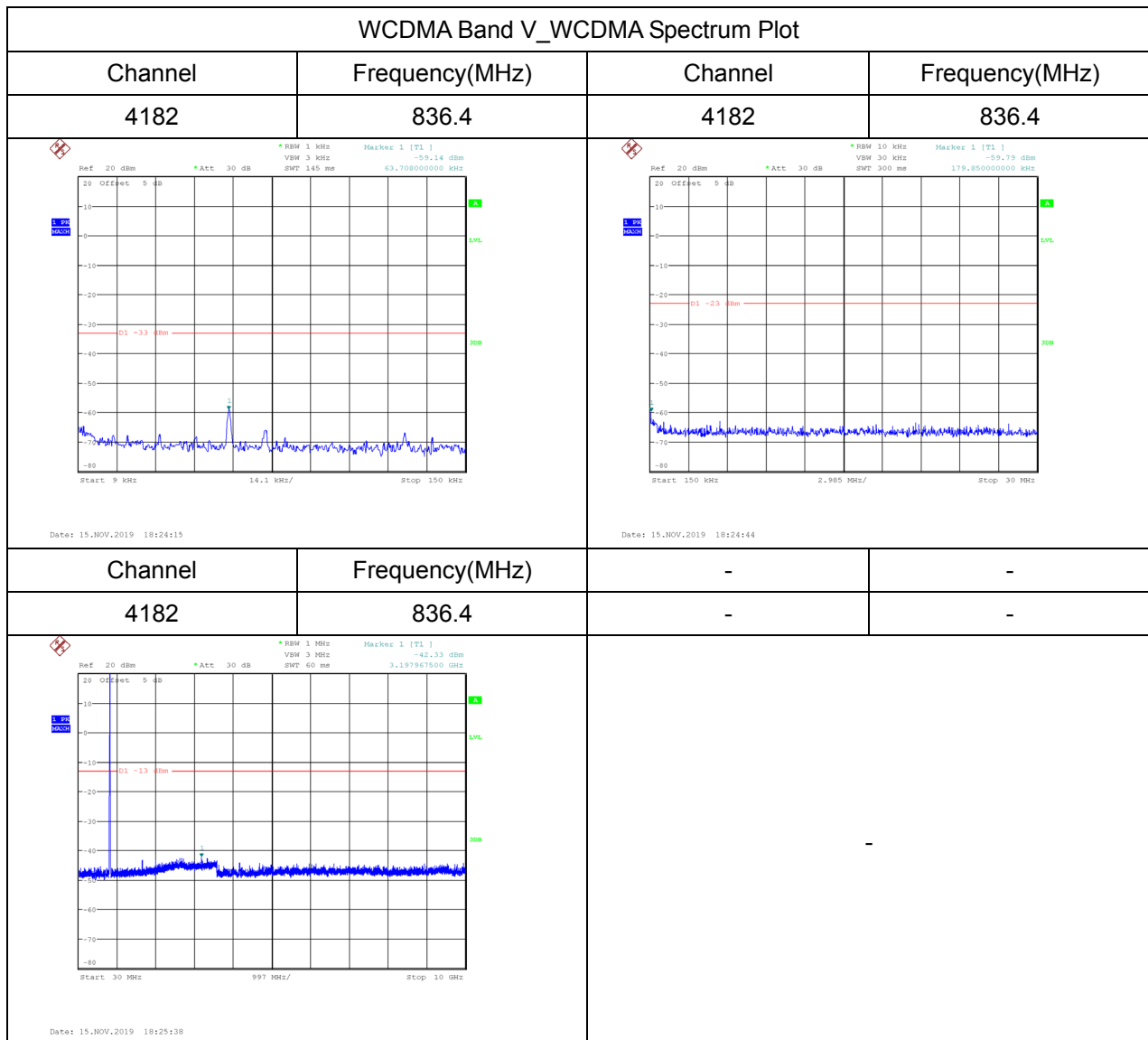


64QAM-20600

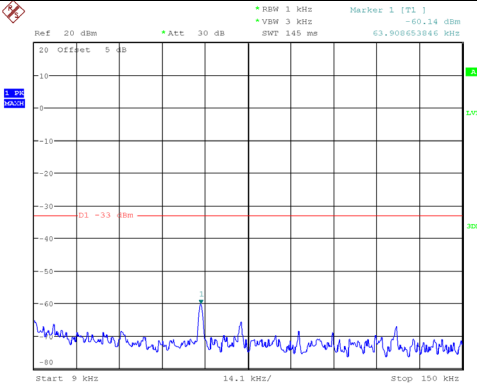
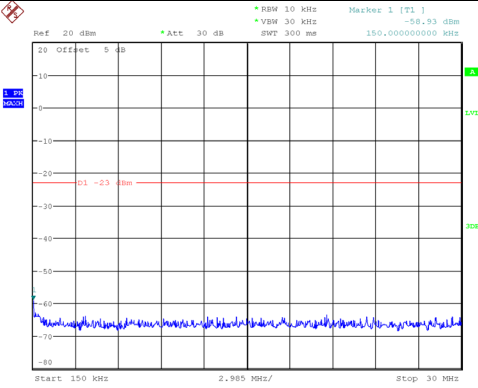
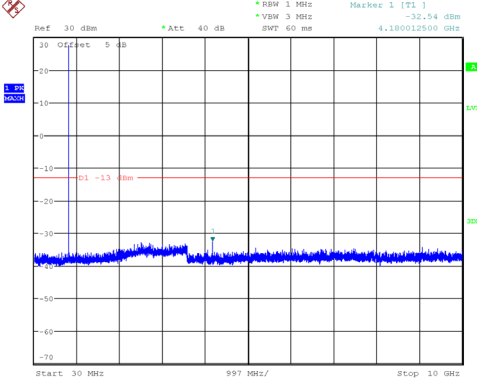


APPENDIX C - CONDUCTED SPURIOUS EMISSIONS

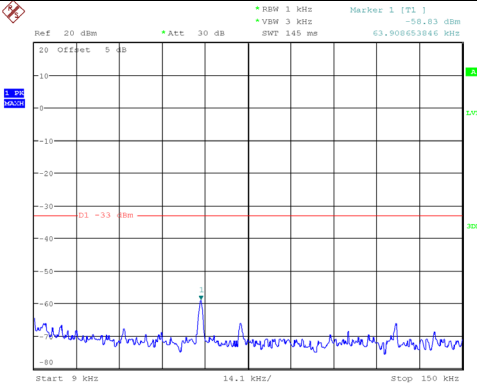
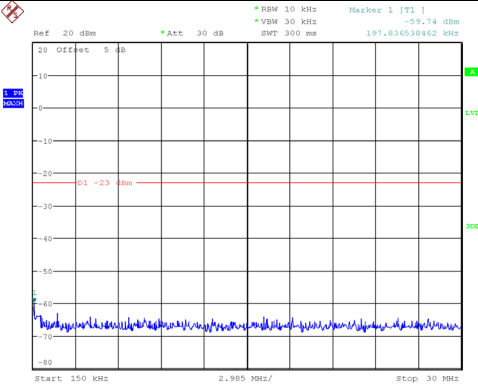
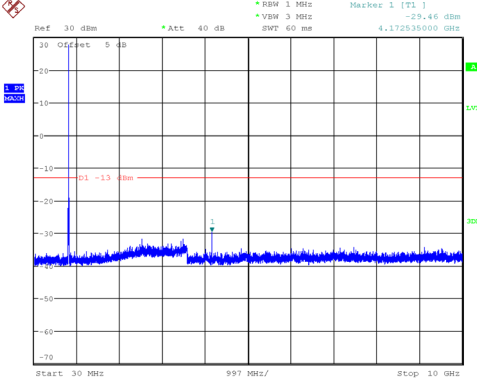


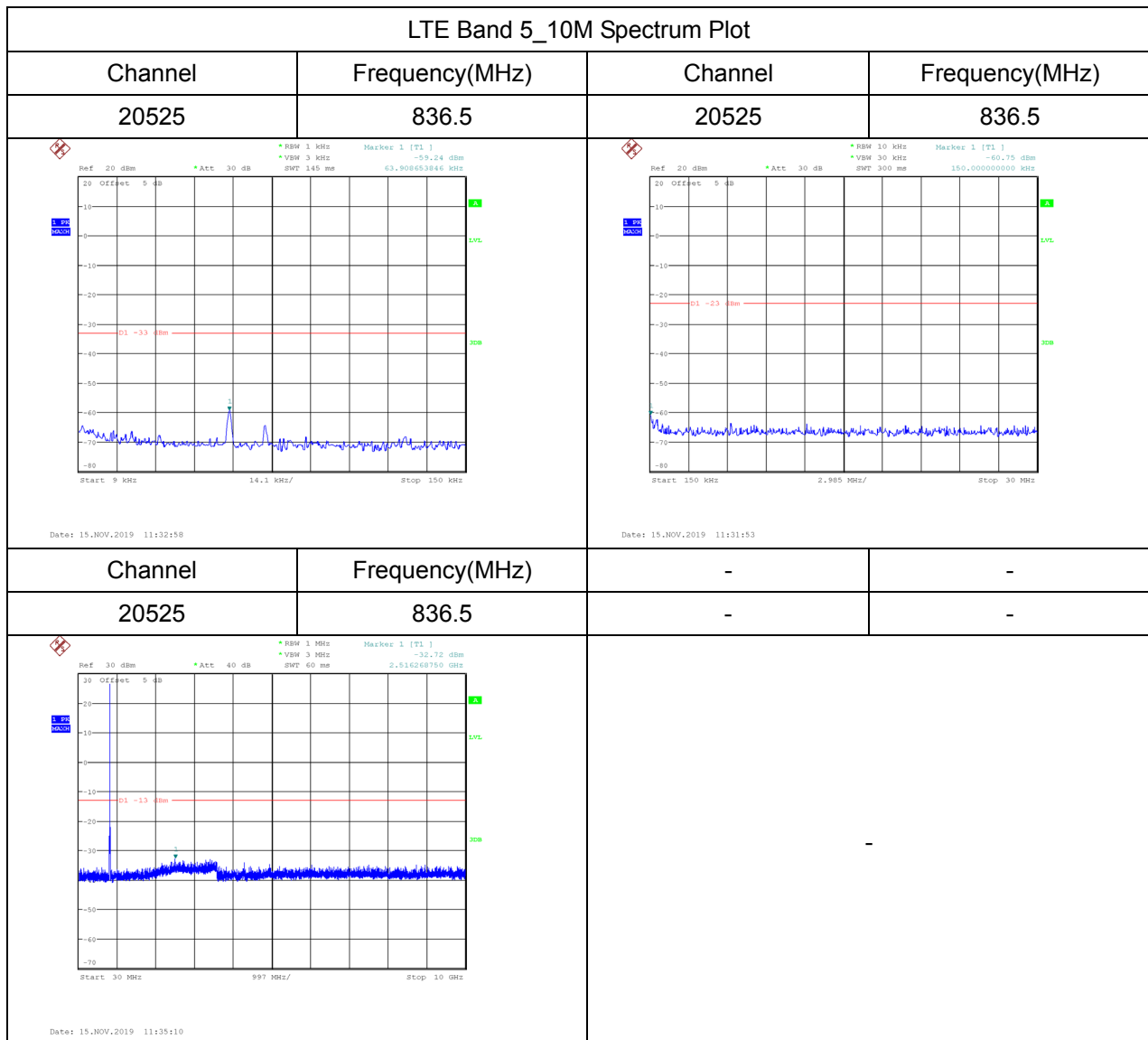


LTE Band 5_1.4M Spectrum Plot

Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
 Ref: 20 dBm Att: 30 dB RBW: 1 kHz VSW: 3 kHz SWF: 145 ms Marker 1 [T1] -60.14 dBm 63.90853845 kHz Start: 9 kHz 14.1 kHz/ Stop: 150 kHz Date: 15.NOV.2019 11:33:35		 Ref: 20 dBm Att: 30 dB RBW: 10 kHz VSW: 30 kHz SWF: 300 ms Marker 1 [T1] -58.93 dBm 150.00000000 kHz Start: 150 kHz 2.985 MHz/ Stop: 30 MHz Date: 15.NOV.2019 11:29:07	
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
 Ref: 30 dBm Att: 40 dB RBW: 1 MHz VSW: 3 MHz SWF: 60 ms Marker 1 [T1] -32.54 dBm 4.185012500 GHz Start: 30 MHz 997 MHz/ Stop: 10 GHz Date: 15.NOV.2019 11:34:31		-	

LTE Band 5_5M Spectrum Plot

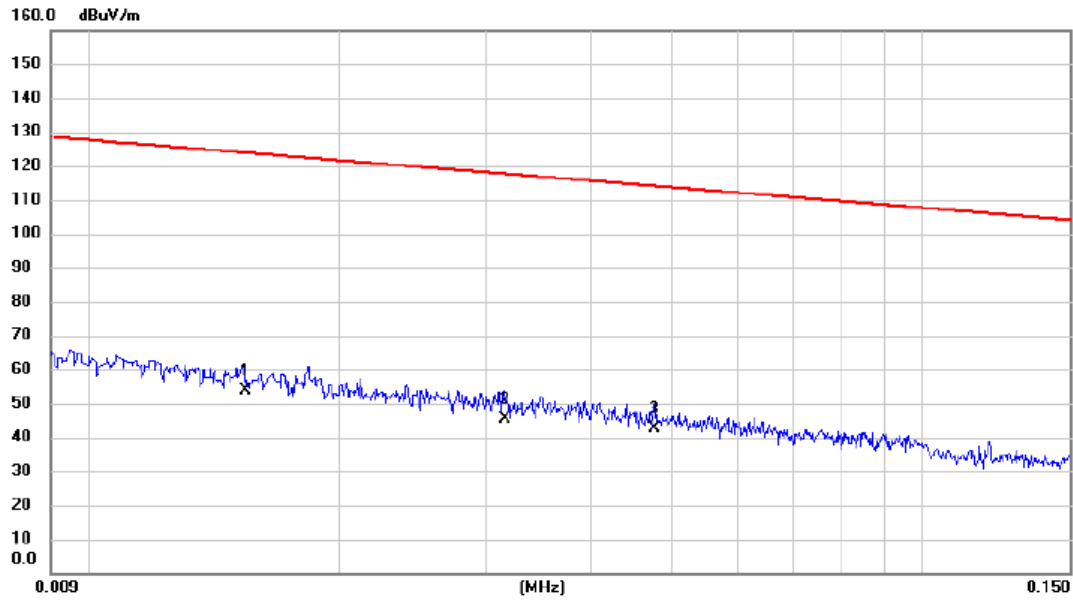
Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
			
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
		-	



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

Test Mode	TX Mode
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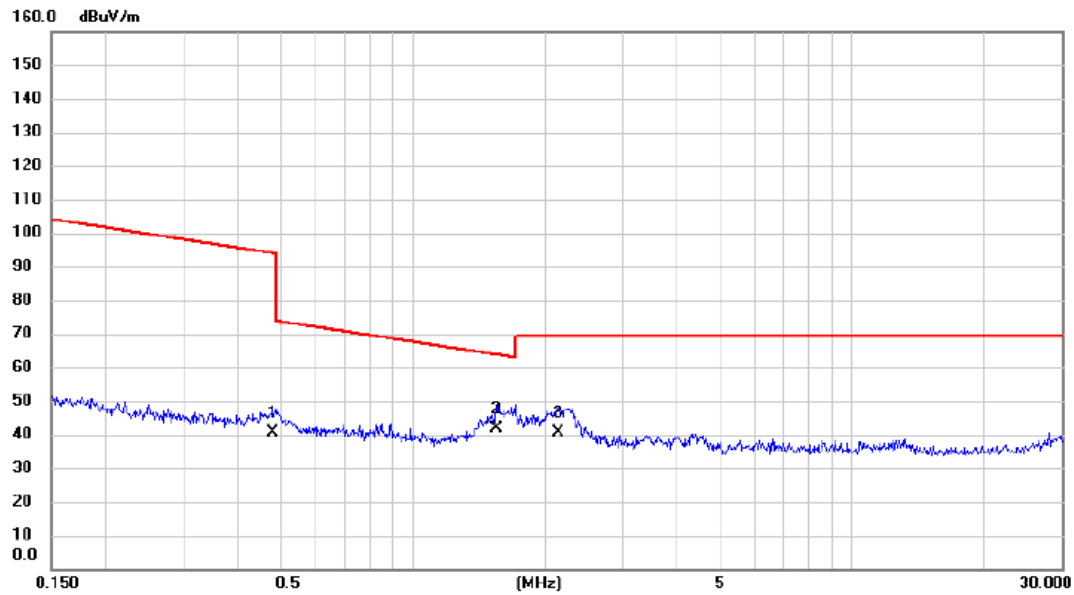
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	0.0154	38.45	15.20	53.65	123.85	-70.20	AVG	
2		0.0316	31.58	13.86	45.44	117.61	-72.17	AVG	
3		0.0477	28.73	13.92	42.65	114.03	-71.38	AVG	

Test Mode	TX Mode
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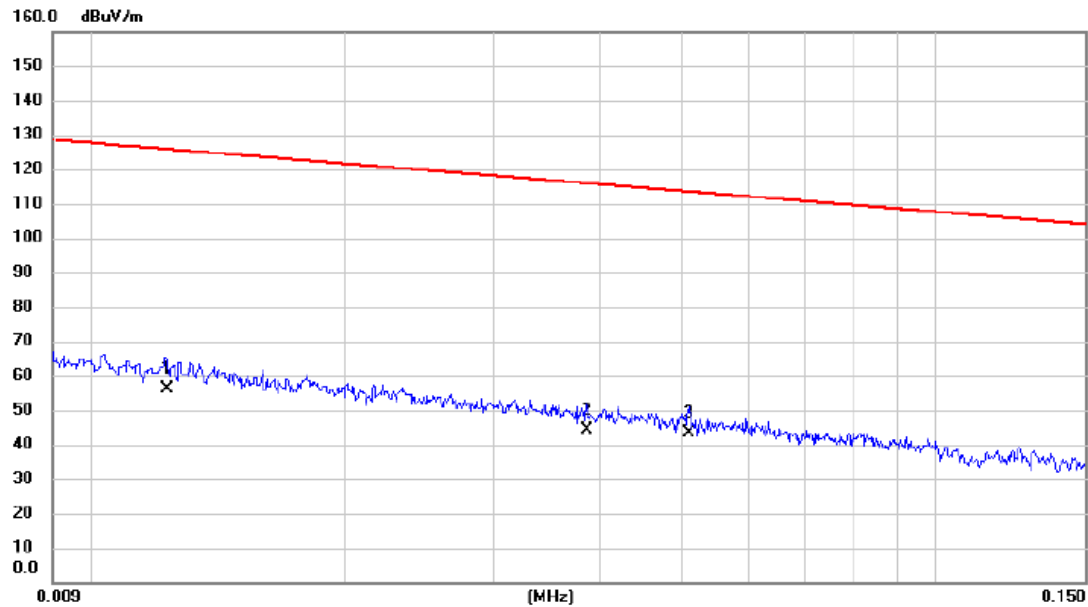
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.4786	27.65	13.11	40.76	94.00	-53.24	AVG	
2	*	1.5518	29.87	12.12	41.99	63.79	-21.80	QP	
3		2.1440	28.74	11.73	40.47	69.54	-29.07	QP	

Test Mode	TX Mode
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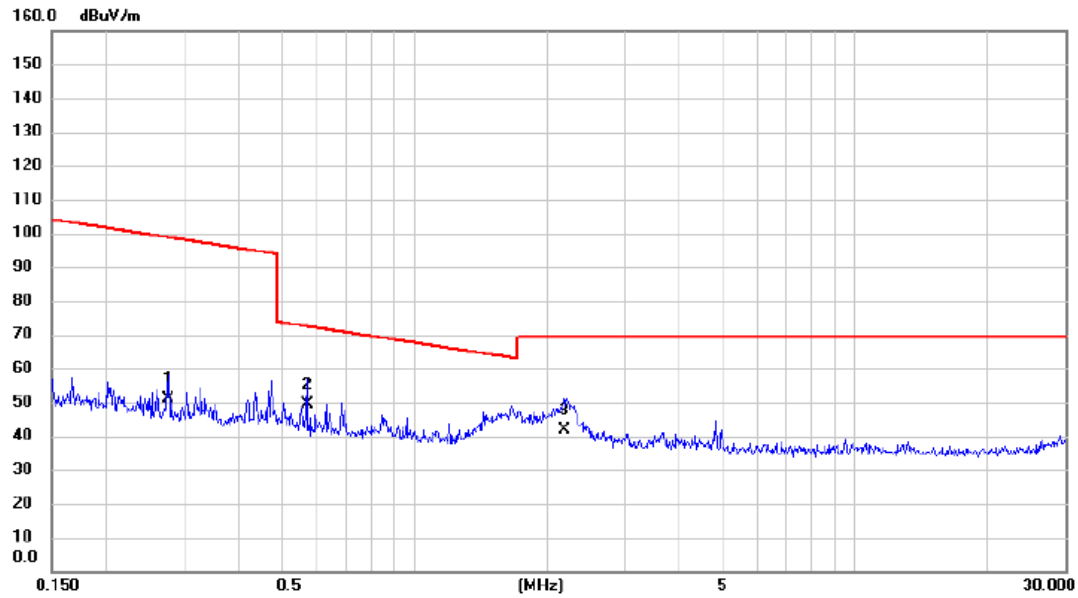
Ant 90°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	0.0123	40.25	16.13	56.38	125.81	-69.43	AVG	
2		0.0387	30.14	13.89	44.03	115.85	-71.82	AVG	
3		0.0510	29.66	13.91	43.57	113.45	-69.88	AVG	

Test Mode TX Mode

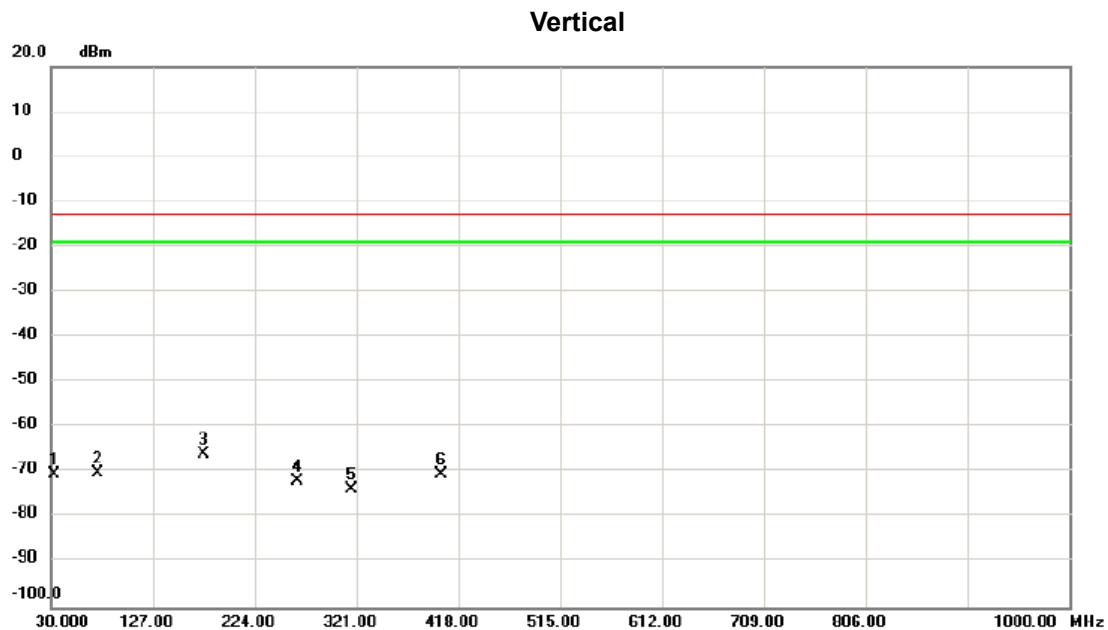
Ant 90°



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1		0.2760	37.45	13.60	51.05	98.79	-47.74	AVG	
2	*	0.5701	36.48	12.93	49.41	72.48	-23.07	QP	
3		2.1898	30.15	11.71	41.86	69.54	-27.68	QP	

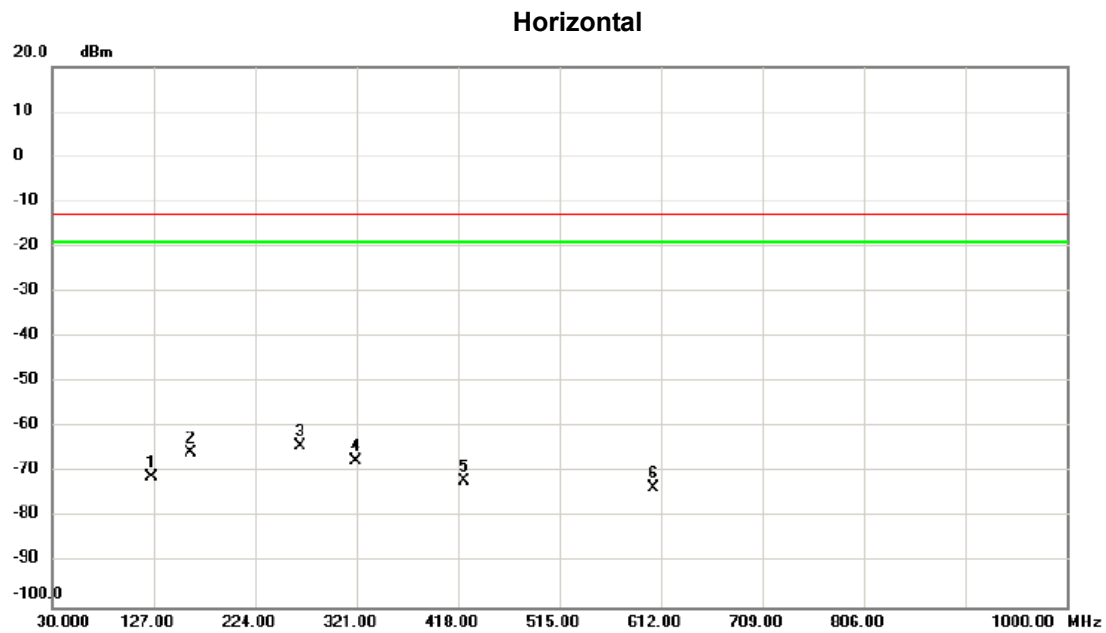
APPENDIX E - RADIATED SPURIOUS EMISSIONS (30MHZ TO 1000MHZ)

Test Mode	GSM850_TX CH190_GSM_Main Antenna
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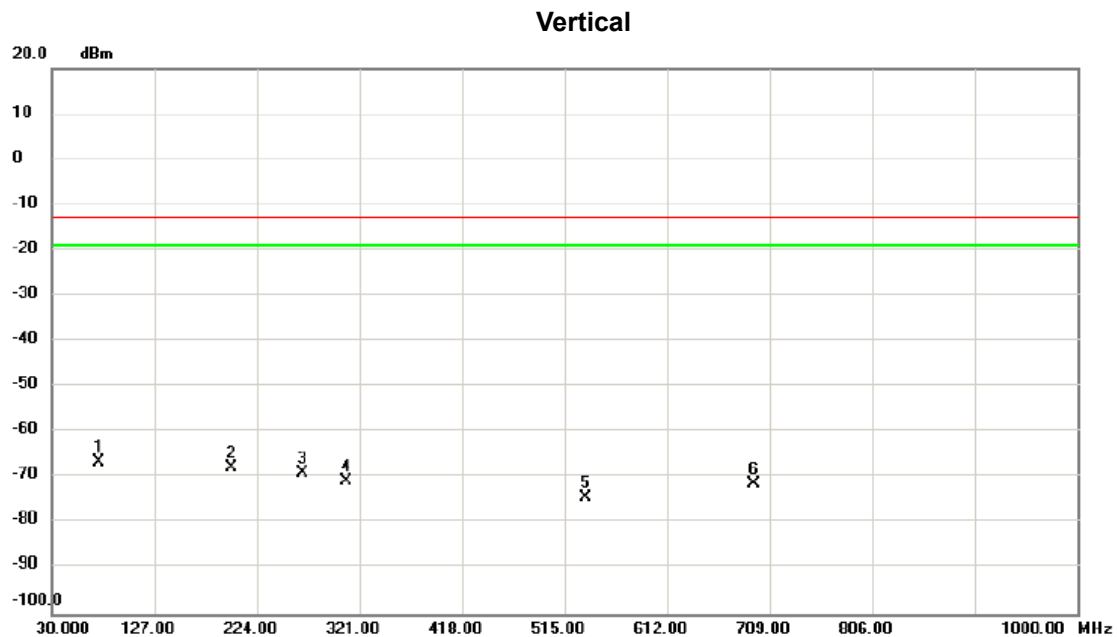
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		32.910	-55.49	-14.96	-70.45	-13.00	-57.45	peak	
2		74.620	-52.97	-17.11	-70.08	-13.00	-57.08	peak	
3	*	175.500	-53.16	-12.88	-66.04	-13.00	-53.04	peak	
4		264.740	-59.14	-12.93	-72.07	-13.00	-59.07	peak	
5		316.150	-62.49	-11.29	-73.78	-13.00	-60.78	peak	
6		401.510	-60.84	-9.49	-70.33	-13.00	-57.33	peak	

Test Mode	GSM850_ TX CH190_GSM_Main Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		125.060	-57.95	-13.10	-71.05	-13.00	-58.05	peak	
2		162.890	-54.04	-11.48	-65.52	-13.00	-52.52	peak	
3	*	266.680	-51.01	-13.01	-64.02	-13.00	-51.02	peak	
4		320.030	-56.35	-11.22	-67.57	-13.00	-54.57	peak	
5		423.820	-63.14	-8.87	-72.01	-13.00	-59.01	peak	
6		605.210	-67.87	-5.69	-73.56	-13.00	-60.56	peak	

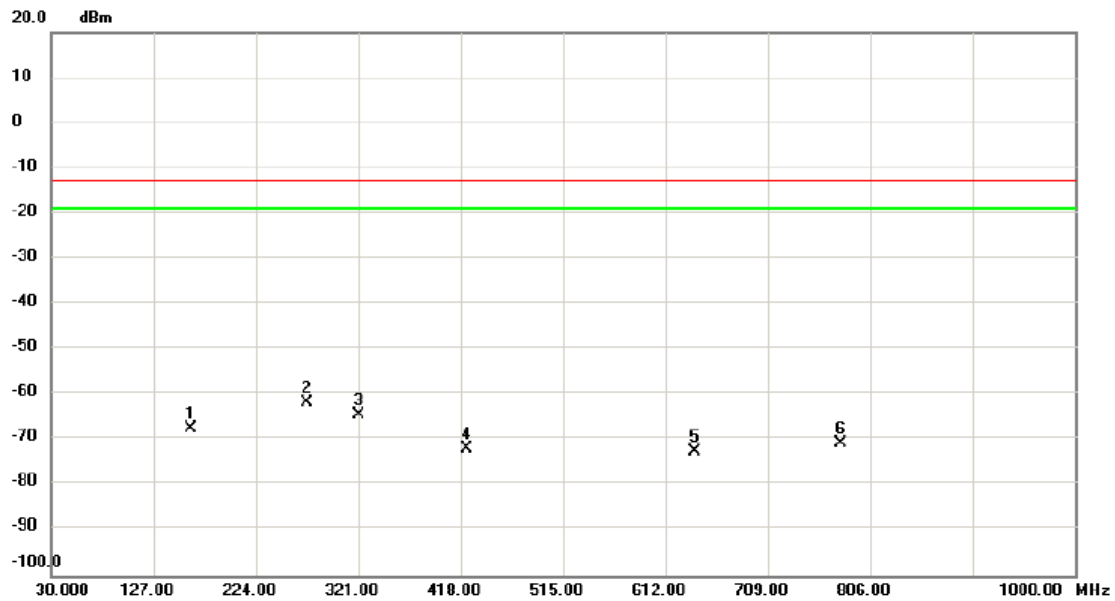
Test Mode	GSM850_ TX CH190_EDGE_Main Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	74.620	-49.47	-17.11	-66.58	-13.00	-53.58	peak	
2		199.750	-52.62	-15.22	-67.84	-13.00	-54.84	peak	
3		267.650	-55.80	-13.05	-68.85	-13.00	-55.85	peak	
4		308.390	-59.40	-11.42	-70.82	-13.00	-57.82	peak	
5		535.370	-66.89	-7.42	-74.31	-13.00	-61.31	peak	
6		693.480	-67.15	-4.13	-71.28	-13.00	-58.28	peak	

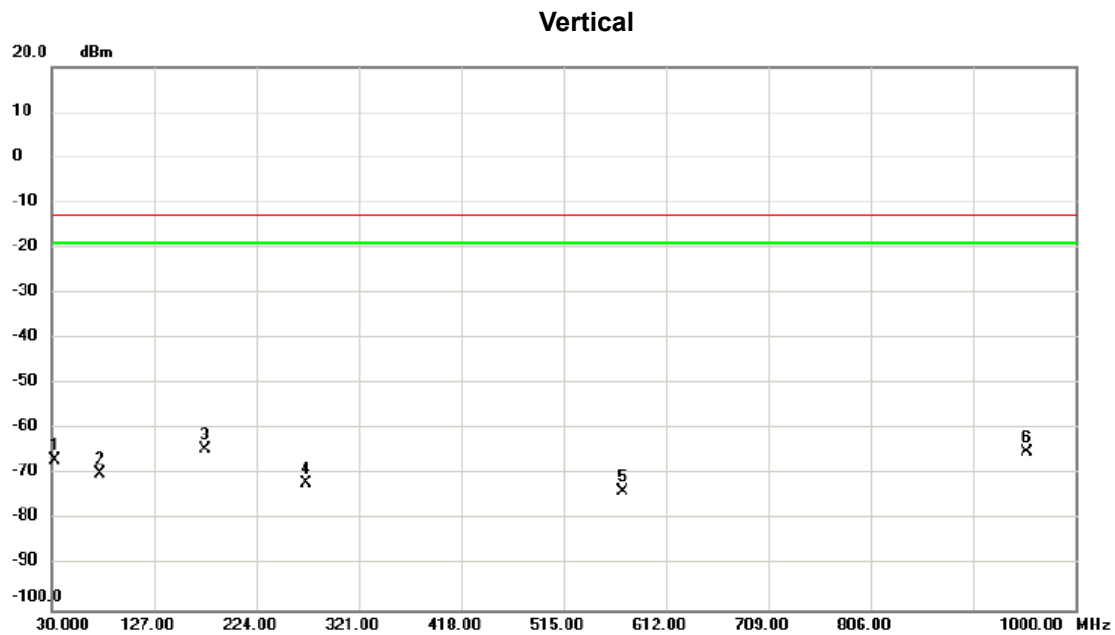
Test Mode	GSM850_ TX CH190_EDGE_Main Antenna
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Horizontal



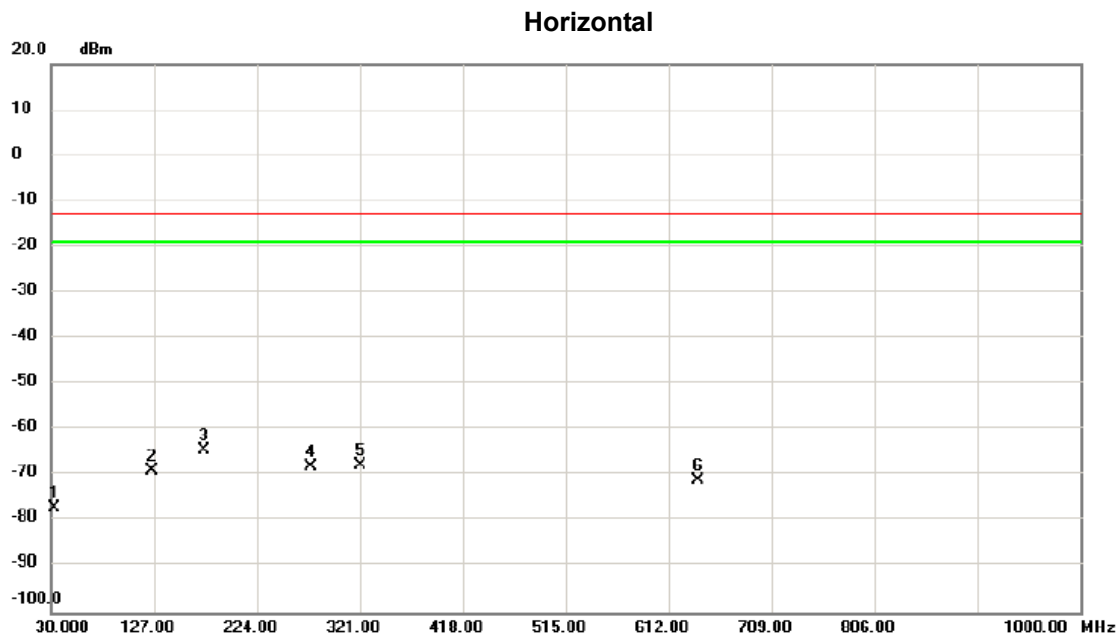
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1		162.890	-56.04	-11.48	-67.52	-13.00	-54.52	peak	
2	*	272.500	-48.70	-13.04	-61.74	-13.00	-48.74	peak	
3		321.970	-53.34	-11.19	-64.53	-13.00	-51.53	peak	
4		423.820	-63.14	-8.87	-72.01	-13.00	-59.01	peak	
5		640.130	-67.55	-4.93	-72.48	-13.00	-59.48	peak	
6		777.870	-67.35	-3.30	-70.65	-13.00	-57.65	peak	

Test Mode	GSM850_TX CH190_GSM_Second Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		32.910	-51.84	-14.96	-66.80	-13.00	-53.80	peak	
2		75.590	-52.56	-17.30	-69.86	-13.00	-56.86	peak	
3	*	175.500	-51.51	-12.88	-64.39	-13.00	-51.39	peak	
4		270.560	-58.87	-13.13	-72.00	-13.00	-59.00	peak	
5		571.260	-67.07	-6.65	-73.72	-13.00	-60.72	peak	
6		953.440	-64.47	-0.65	-65.12	-13.00	-52.12	peak	

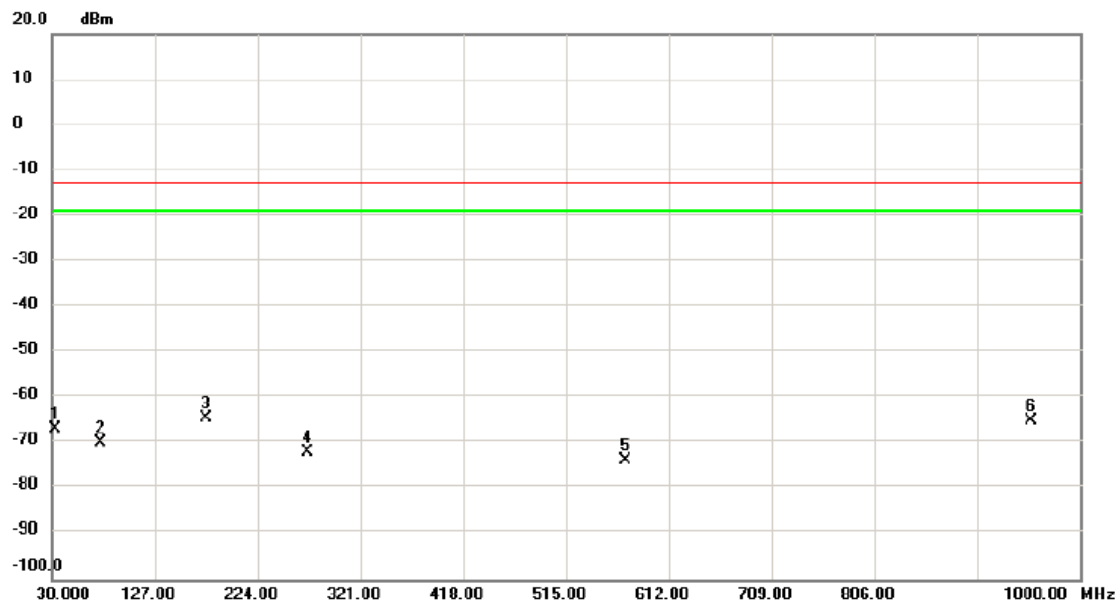
Test Mode	GSM850_ TX CH190_GSM_Second Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		32.910	-62.19	-14.96	-77.15	-13.00	-64.15	peak	
2		125.060	-55.91	-13.10	-69.01	-13.00	-56.01	peak	
3	*	174.530	-51.56	-12.81	-64.37	-13.00	-51.37	peak	
4		275.410	-55.23	-12.90	-68.13	-13.00	-55.13	peak	
5		321.970	-56.69	-11.19	-67.88	-13.00	-54.88	peak	
6		640.130	-66.05	-4.93	-70.98	-13.00	-57.98	peak	

Test Mode	GSM850_TX CH190_EDGE_Second Antenna
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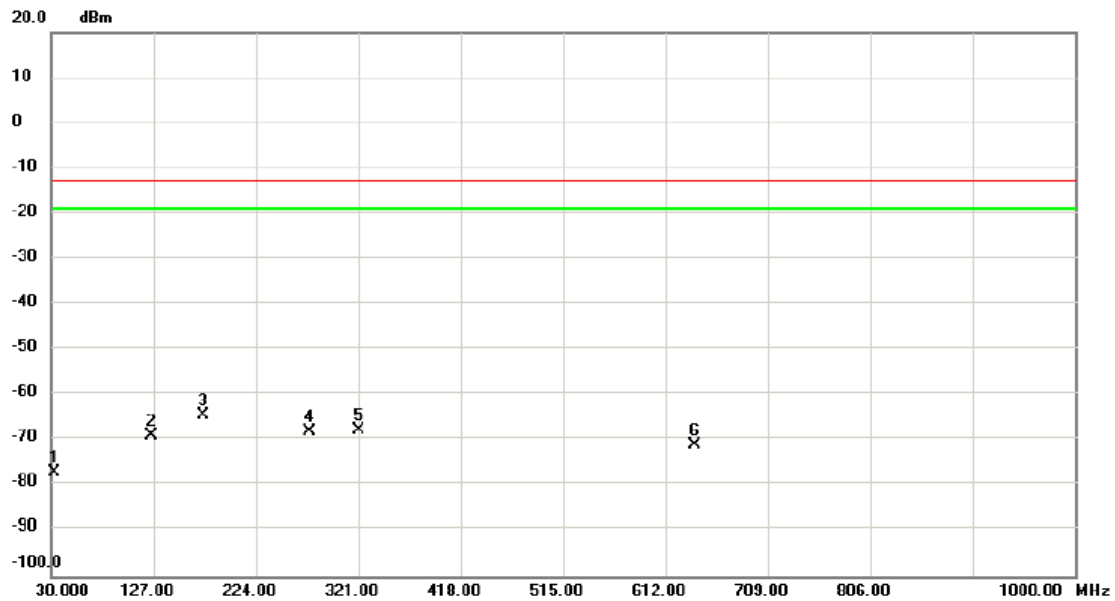
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		32.910	-51.84	-14.96	-66.80	-13.00	-53.80	peak	
2		75.590	-52.56	-17.30	-69.86	-13.00	-56.86	peak	
3	*	175.500	-51.51	-12.88	-64.39	-13.00	-51.39	peak	
4		270.560	-58.87	-13.13	-72.00	-13.00	-59.00	peak	
5		571.260	-67.07	-6.65	-73.72	-13.00	-60.72	peak	
6		953.440	-64.47	-0.65	-65.12	-13.00	-52.12	peak	

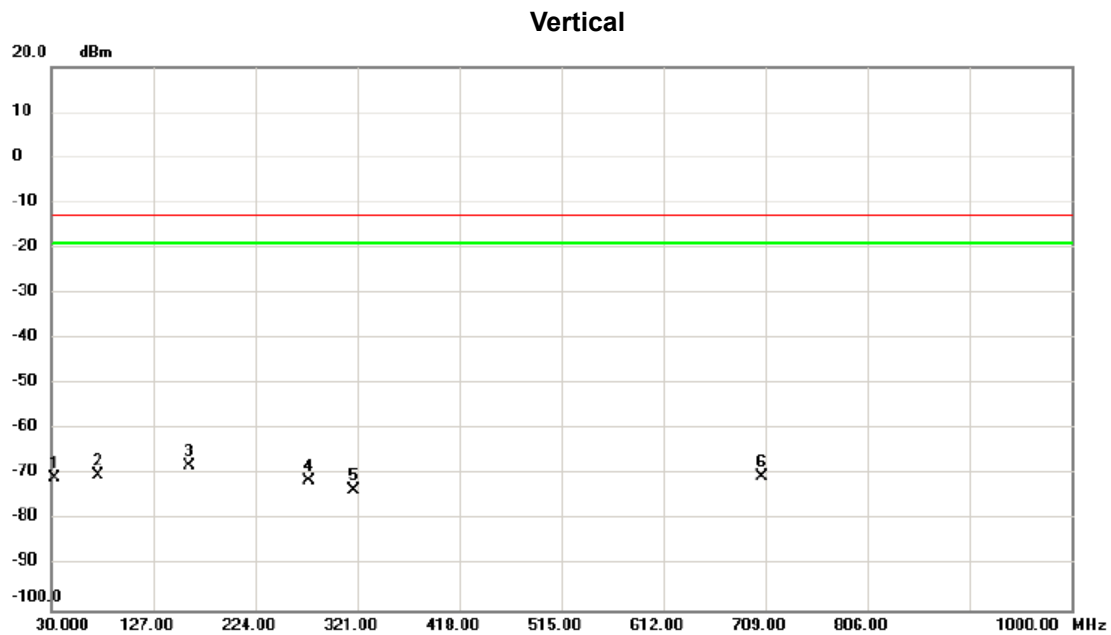
Test Mode	GSM850_ TX CH190_EDGE_Second Antenna
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Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1		32.910	-62.19	-14.96	-77.15	-13.00	-64.15	peak	
2		125.060	-55.91	-13.10	-69.01	-13.00	-56.01	peak	
3	*	174.530	-51.56	-12.81	-64.37	-13.00	-51.37	peak	
4		275.410	-55.23	-12.90	-68.13	-13.00	-55.13	peak	
5		321.970	-56.69	-11.19	-67.88	-13.00	-54.88	peak	
6		640.130	-66.05	-4.93	-70.98	-13.00	-57.98	peak	

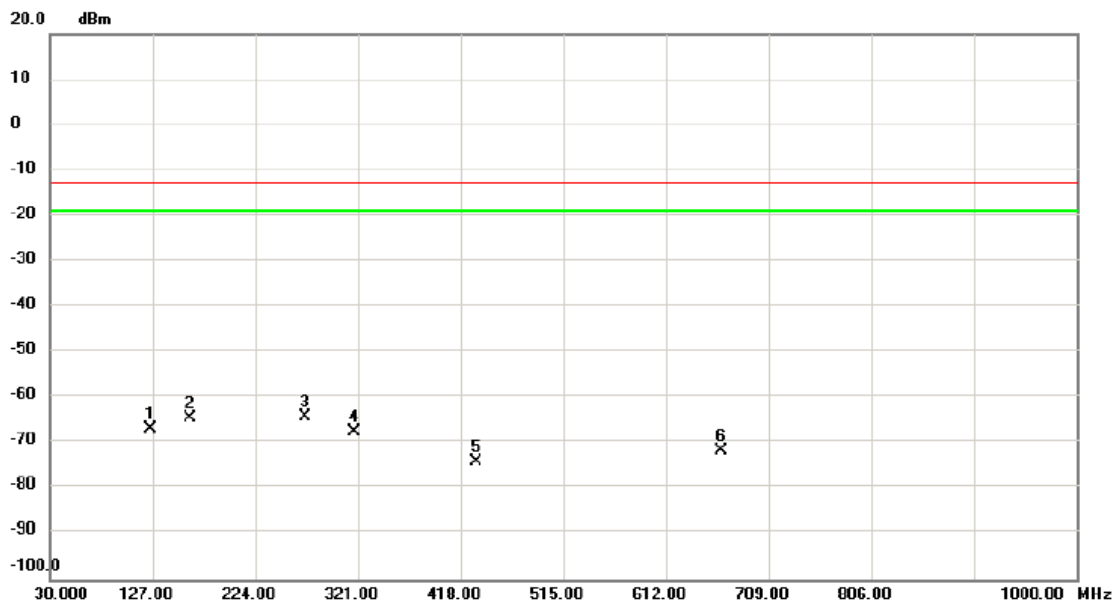
Test Mode	WCDMA Band V_TX CH4182_Main Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		32.910	-55.82	-14.96	-70.78	-13.00	-57.78	peak	
2		74.620	-53.00	-17.11	-70.11	-13.00	-57.11	peak	
3	*	160.950	-56.79	-11.20	-67.99	-13.00	-54.99	peak	
4		275.410	-58.35	-12.90	-71.25	-13.00	-58.25	peak	
5		318.090	-62.28	-11.25	-73.53	-13.00	-60.53	peak	
6		705.120	-66.46	-3.99	-70.45	-13.00	-57.45	peak	

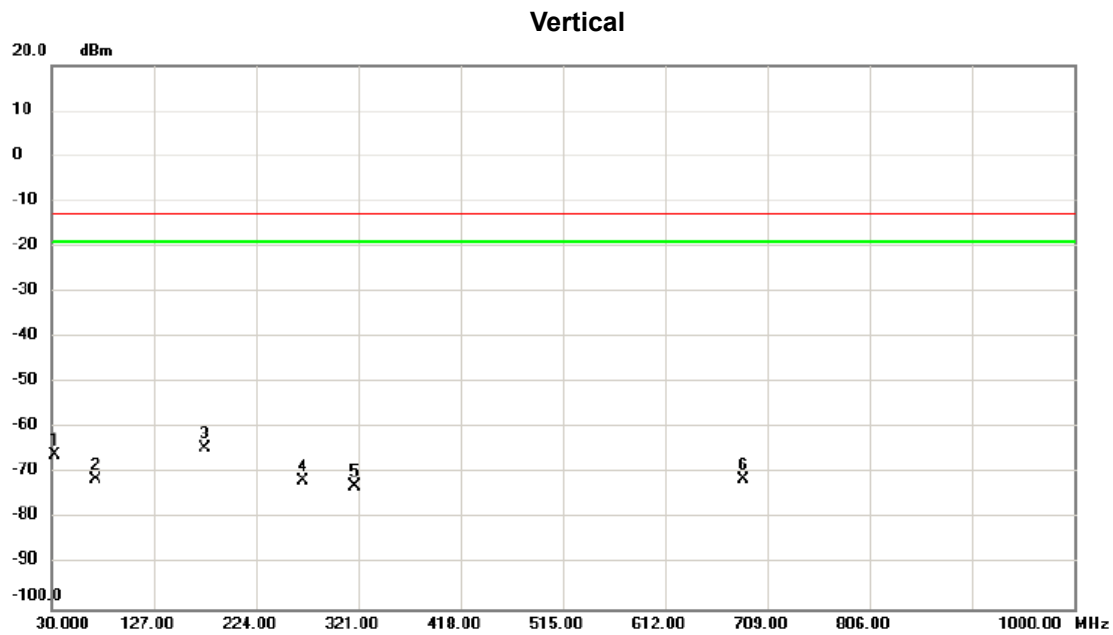
Test Mode	WCDMA Band V_TX CH4182_Main Antenna
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Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		125.060	-53.77	-13.10	-66.87	-13.00	-53.87	peak	
2		162.890	-53.07	-11.48	-64.55	-13.00	-51.55	peak	
3	*	270.560	-51.16	-13.13	-64.29	-13.00	-51.29	peak	
4		318.090	-56.15	-11.25	-67.40	-13.00	-54.40	peak	
5		432.550	-65.34	-8.63	-73.97	-13.00	-60.97	peak	
6		664.380	-67.25	-4.52	-71.77	-13.00	-58.77	peak	

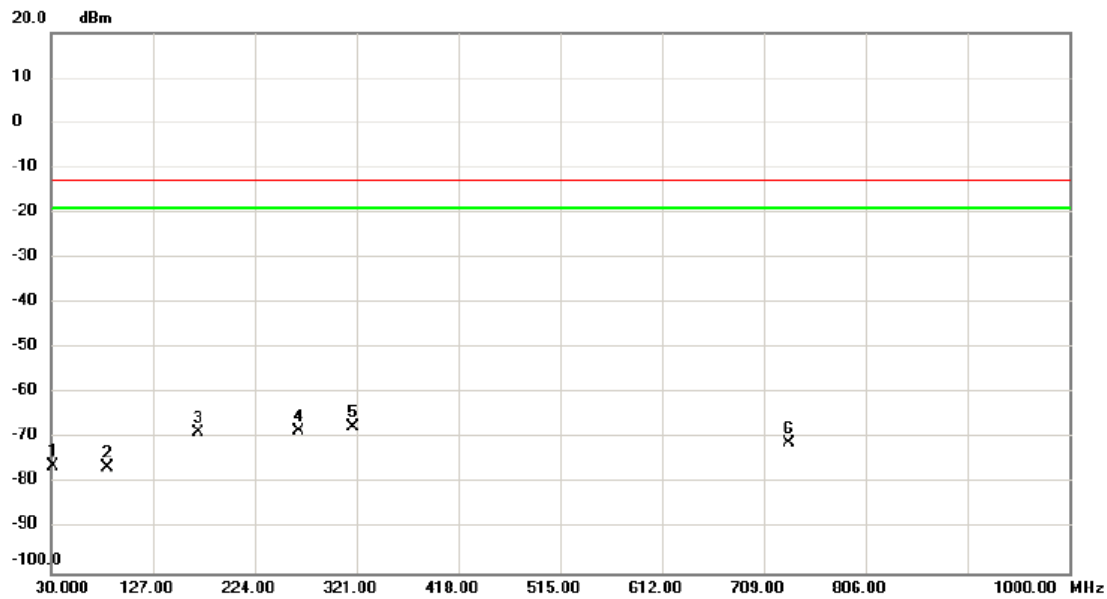
Test Mode	WCDMA Band V_TX CH4182_Second Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		32.910	-51.14	-14.96	-66.10	-13.00	-53.10	peak	
2		71.710	-54.83	-16.56	-71.39	-13.00	-58.39	peak	
3 *		175.500	-51.60	-12.88	-64.48	-13.00	-51.48	peak	
4		268.620	-58.41	-13.10	-71.51	-13.00	-58.51	peak	
5		318.090	-61.72	-11.25	-72.97	-13.00	-59.97	peak	
6		686.690	-67.24	-4.21	-71.45	-13.00	-58.45	peak	

Test Mode	WCDMA Band V_TX CH4182_Second Antenna
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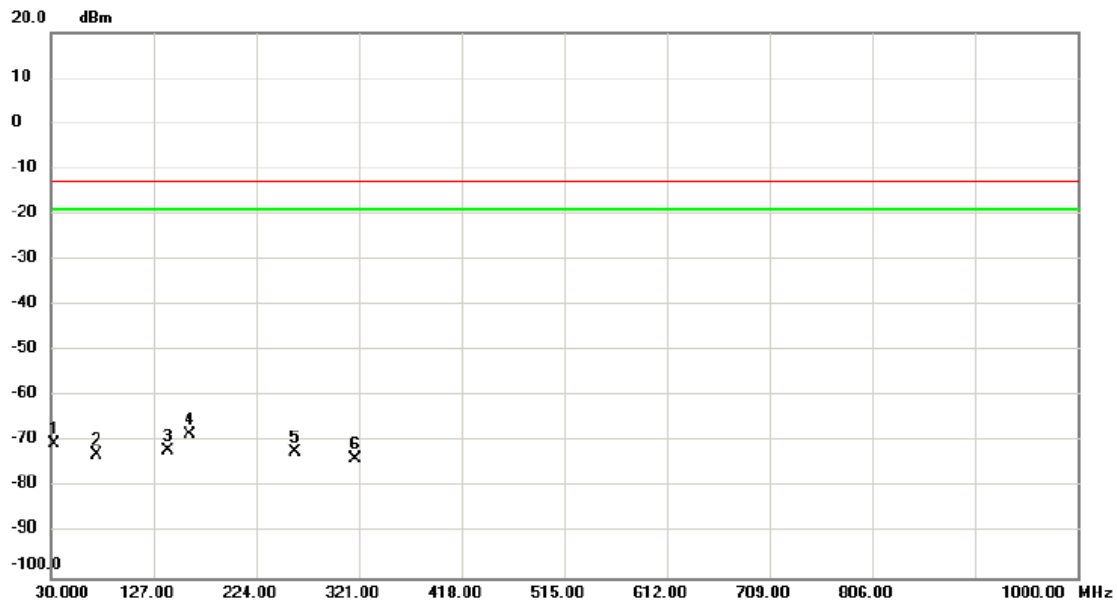
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		31.940	-61.36	-14.81	-76.17	-13.00	-63.17	peak	
2		83.350	-59.17	-17.42	-76.59	-13.00	-63.59	peak	
3		169.680	-56.13	-12.44	-68.57	-13.00	-55.57	peak	
4		265.710	-55.39	-12.98	-68.37	-13.00	-55.37	peak	
5	*	318.090	-56.29	-11.25	-67.54	-13.00	-54.54	peak	
6		732.280	-67.28	-3.80	-71.08	-13.00	-58.08	peak	

Test Mode	LTE Band 5_TX CH20525_1.4M_Main Antenna
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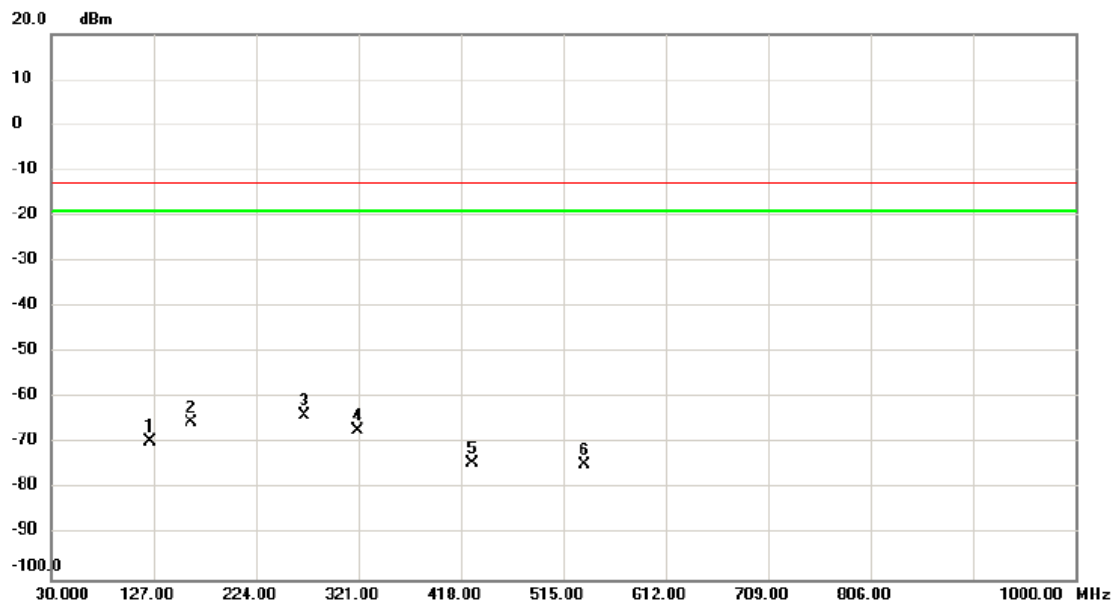
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	32.910	-55.52	-14.96	-70.48	-13.00	-57.48	peak	
2	72.680	-56.06	-16.75	-72.81	-13.00	-59.81	peak	
3	140.580	-59.03	-12.90	-71.93	-13.00	-58.93	peak	
4 *	160.950	-57.00	-11.20	-68.20	-13.00	-55.20	peak	
5	260.860	-59.51	-12.76	-72.27	-13.00	-59.27	peak	
6	318.090	-62.50	-11.25	-73.75	-13.00	-60.75	peak	

Test Mode	LTE Band 5_TX CH20525_1.4M_Main Antenna
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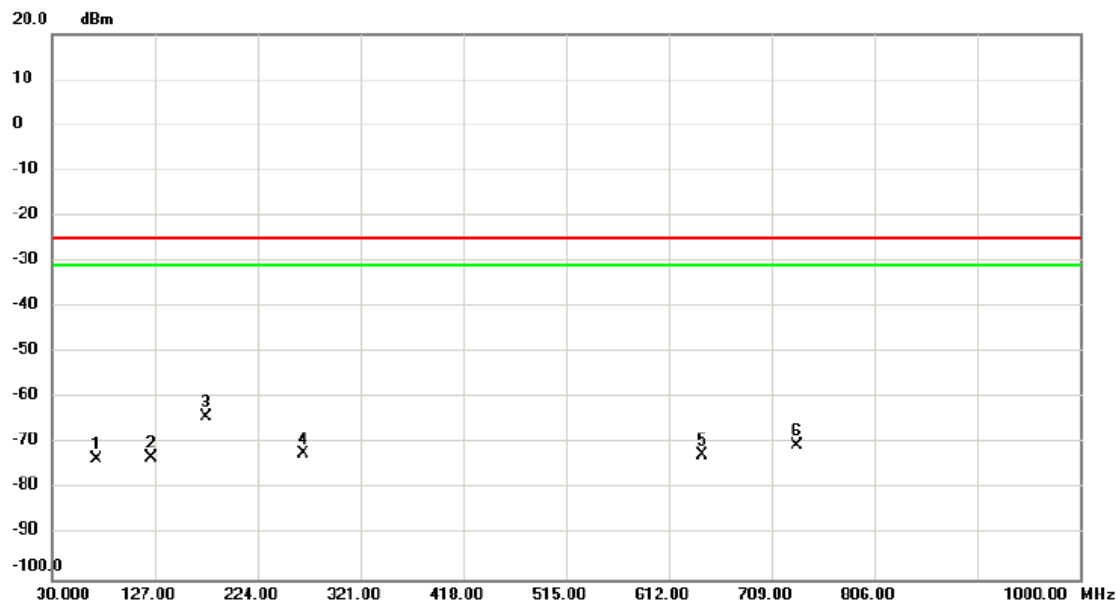
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1		124.090	-56.57	-13.10	-69.67	-13.00	-56.67	peak	
2		161.920	-54.14	-11.35	-65.49	-13.00	-52.49	peak	
3	*	269.590	-50.84	-13.14	-63.98	-13.00	-50.98	peak	
4		320.030	-55.80	-11.22	-67.02	-13.00	-54.02	peak	
5		428.670	-65.51	-8.74	-74.25	-13.00	-61.25	peak	
6		534.400	-67.20	-7.43	-74.63	-13.00	-61.63	peak	

Test Mode	LTE Band 5_TX CH20525_5M_Main Antenna
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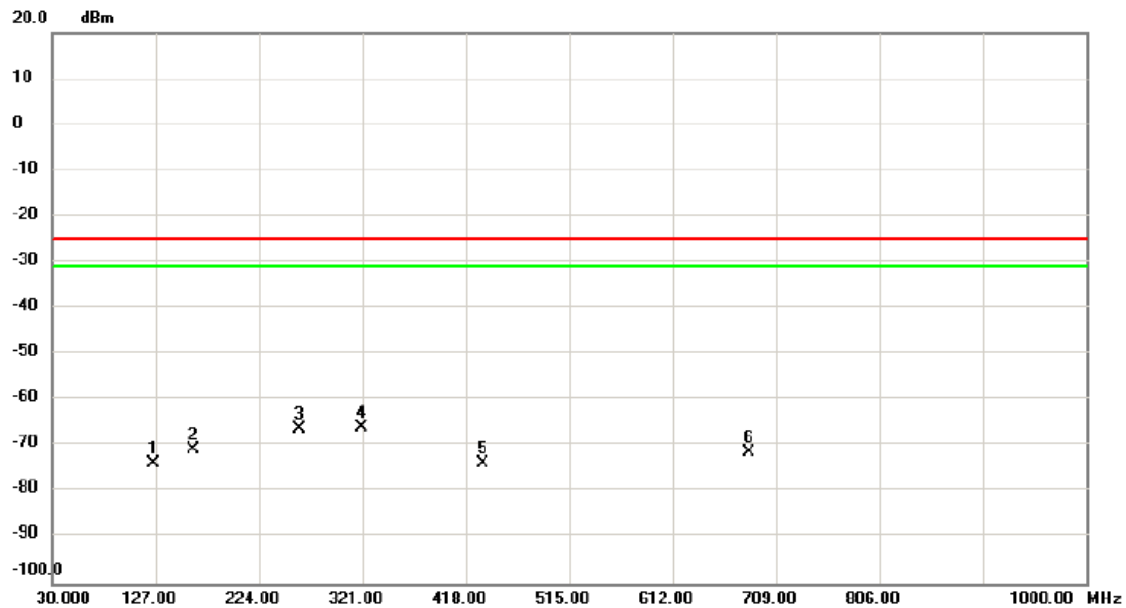
Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		71.710	-57.02	-16.56	-73.58	-25.00	-48.58	peak	
2		124.090	-59.99	-13.10	-73.09	-25.00	-48.09	peak	
3	*	175.500	-51.18	-12.88	-64.06	-25.00	-39.06	peak	
4		267.650	-59.22	-13.05	-72.27	-25.00	-47.27	peak	
5		644.010	-67.67	-4.85	-72.52	-25.00	-47.52	peak	
6		732.280	-66.75	-3.80	-70.55	-25.00	-45.55	peak	

Test Mode	LTE Band 5_TX CH20525_5M_Main Antenna
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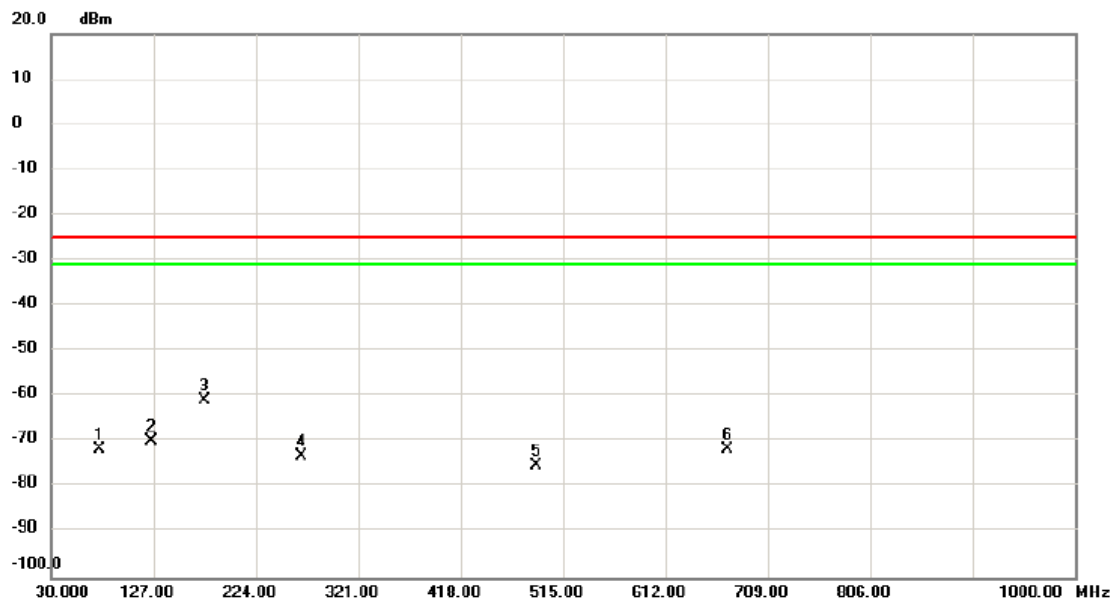
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		125.060	-60.65	-13.10	-73.75	-25.00	-48.75	peak	
2		162.890	-59.27	-11.48	-70.75	-25.00	-45.75	peak	
3		261.830	-53.58	-12.81	-66.39	-25.00	-41.39	peak	
4	*	320.030	-54.59	-11.22	-65.81	-25.00	-40.81	peak	
5		433.520	-65.07	-8.60	-73.67	-25.00	-48.67	peak	
6		683.780	-66.98	-4.25	-71.23	-25.00	-46.23	peak	

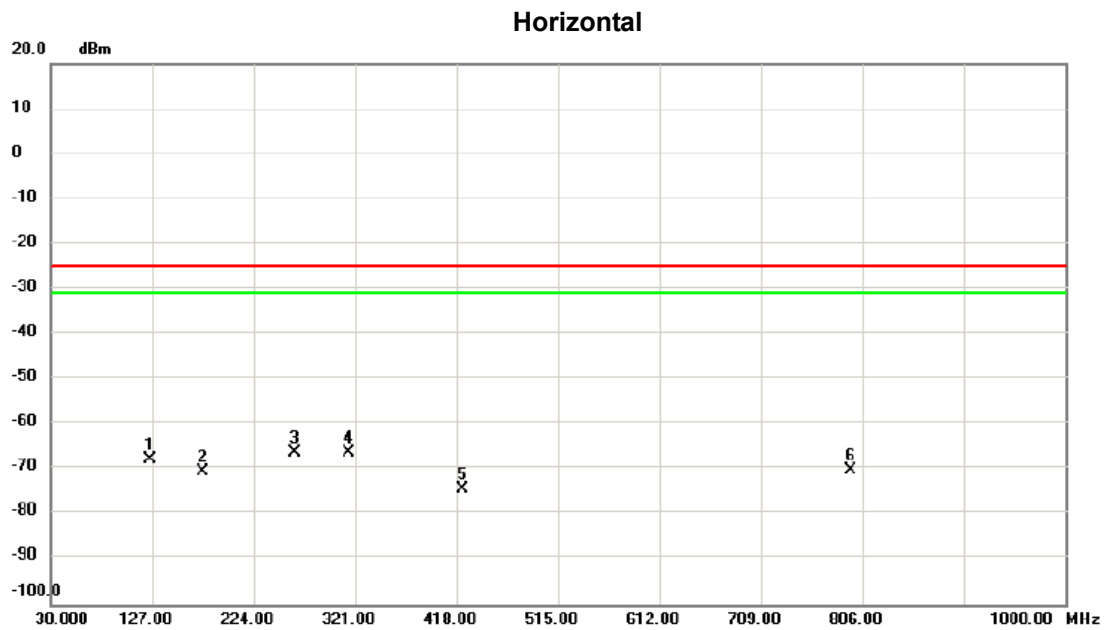
Test Mode LTE Band 5_TX CH20525_10M_Main Antenna

Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	75.590	-54.46	-17.30	-71.76	-25.00	-46.76	peak	
2	125.060	-56.82	-13.10	-69.92	-25.00	-44.92	peak	
3 *	175.500	-48.06	-12.88	-60.94	-25.00	-35.94	peak	
4	266.680	-60.01	-13.01	-73.02	-25.00	-48.02	peak	
5	489.780	-67.36	-7.84	-75.20	-25.00	-50.20	peak	
6	671.170	-67.20	-4.43	-71.63	-25.00	-46.63	peak	

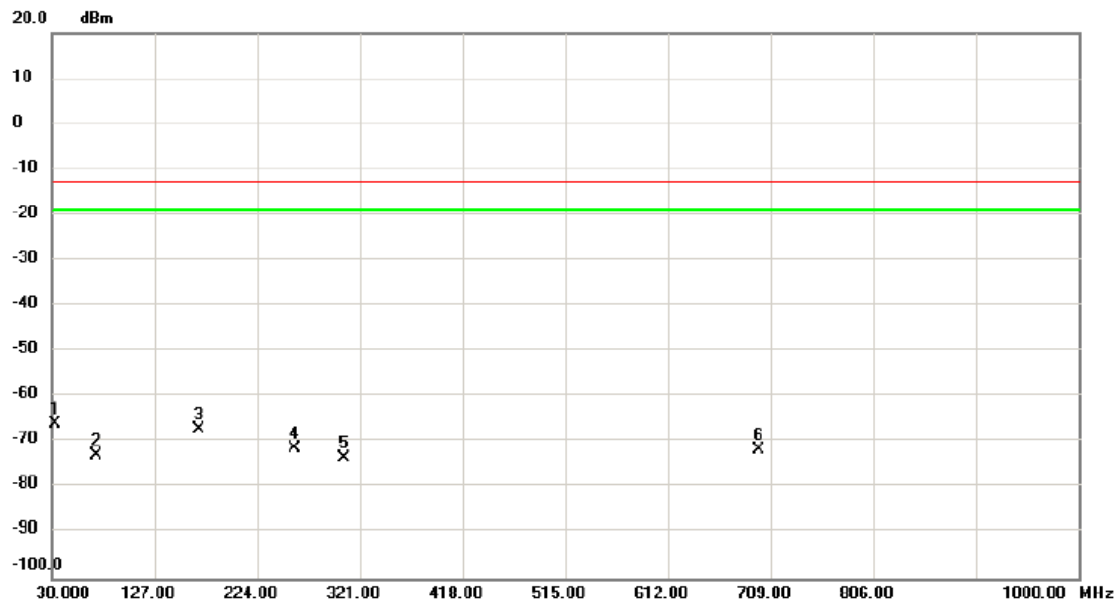
Test Mode	LTE Band 5_TX CH20525_10M_Main Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		125.060	-54.60	-13.10	-67.70	-25.00	-42.70	peak	
2		175.500	-57.68	-12.88	-70.56	-25.00	-45.56	peak	
3	*	262.800	-53.32	-12.85	-66.17	-25.00	-41.17	peak	
4		315.180	-55.01	-11.31	-66.32	-25.00	-41.32	peak	
5		423.820	-65.50	-8.87	-74.37	-25.00	-49.37	peak	
6		795.330	-66.95	-3.08	-70.03	-25.00	-45.03	peak	

Test Mode	LTE Band 5_TX CH20525_1.4M_Second Antenna
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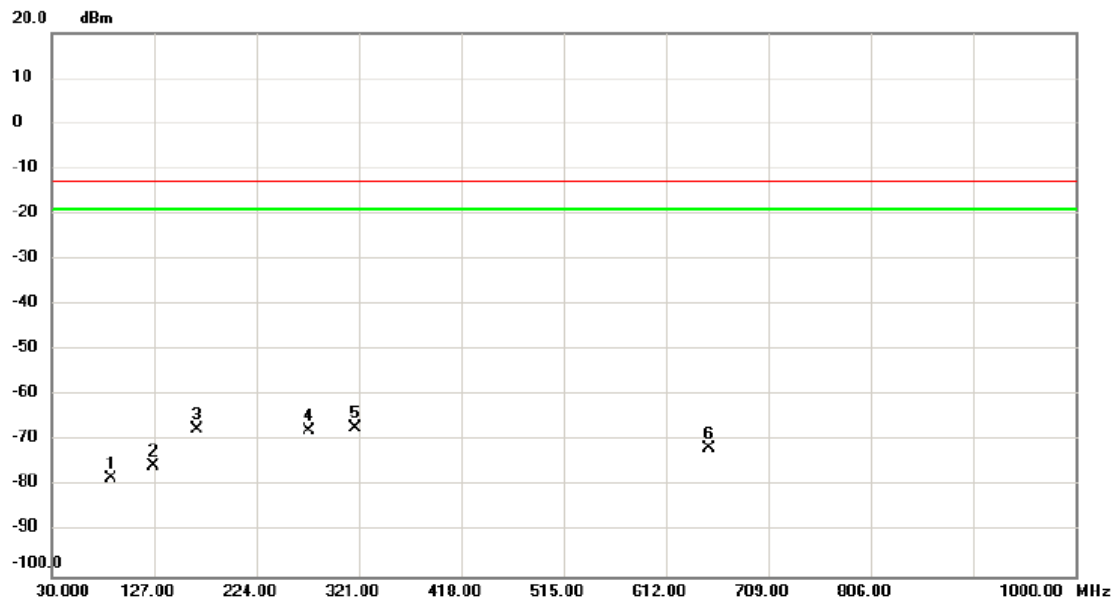
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1 *	32.910	-50.95	-14.96	-65.91	-13.00	-52.91	peak	
2	71.710	-56.16	-16.56	-72.72	-13.00	-59.72	peak	
3	168.710	-54.95	-12.31	-67.26	-13.00	-54.26	peak	
4	258.920	-58.63	-12.84	-71.47	-13.00	-58.47	peak	
5	306.450	-62.11	-11.45	-73.56	-13.00	-60.56	peak	
6	697.360	-67.72	-4.07	-71.79	-13.00	-58.79	peak	

Test Mode	LTE Band 5_TX CH20525_1.4M_Second Antenna
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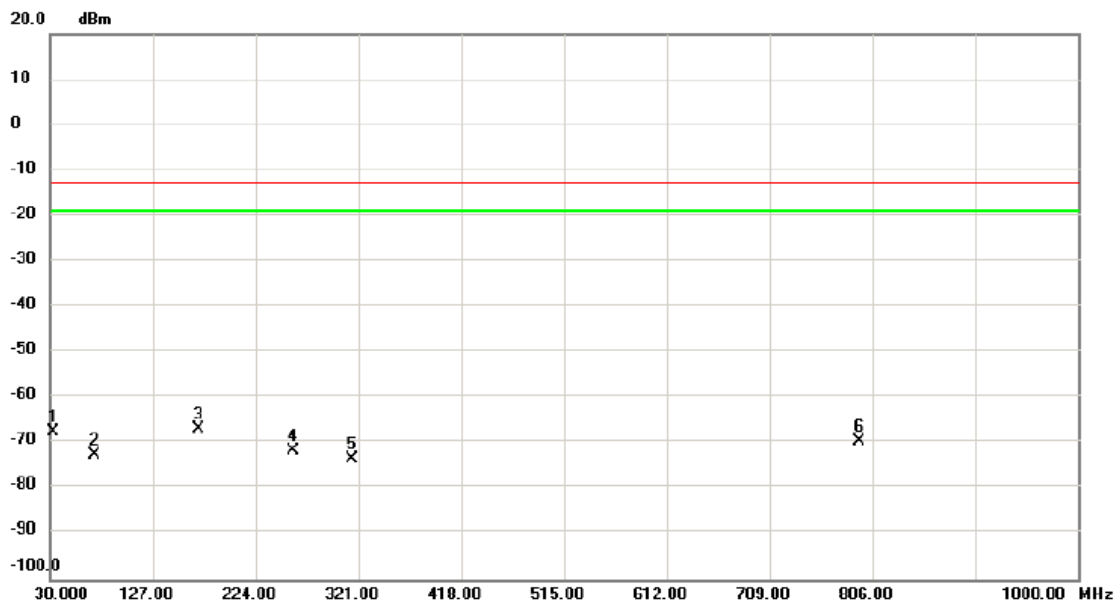
Horizontal



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	86.260	-61.41	-16.85	-78.26	-13.00	-65.26	peak	
2	126.030	-62.55	-13.11	-75.66	-13.00	-62.66	peak	
3	167.740	-55.27	-12.17	-67.44	-13.00	-54.44	peak	
4	273.470	-54.89	-12.99	-67.88	-13.00	-54.88	peak	
5 *	318.090	-55.83	-11.25	-67.08	-13.00	-54.08	peak	
6	652.740	-67.10	-4.68	-71.78	-13.00	-58.78	peak	

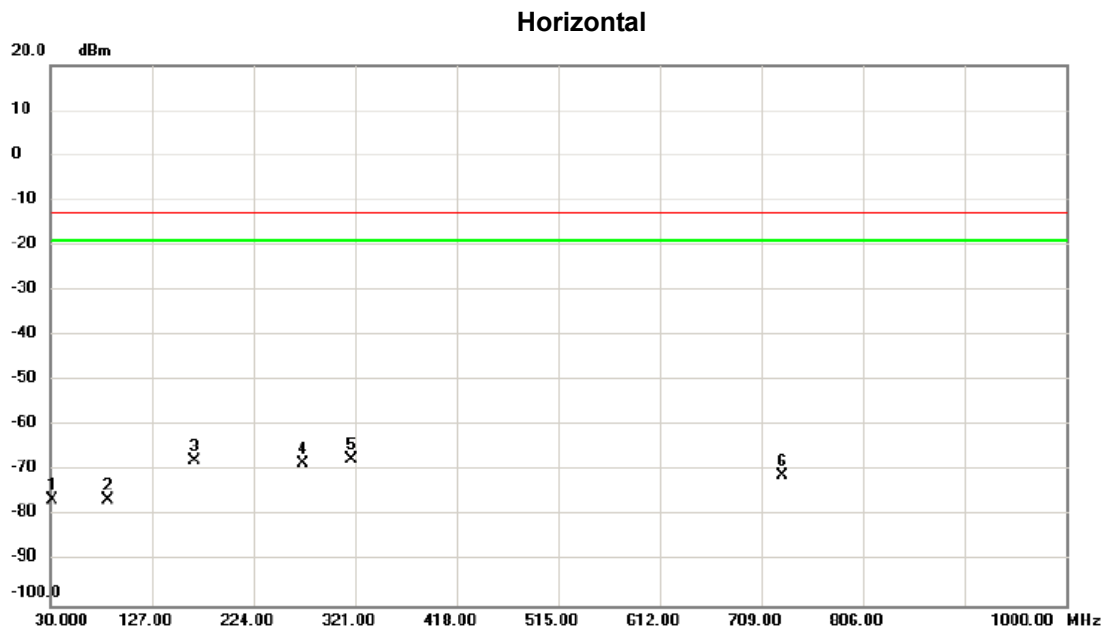
Test Mode	LTE Band 5_TX CH20525_5M_Second Antenna
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Vertical



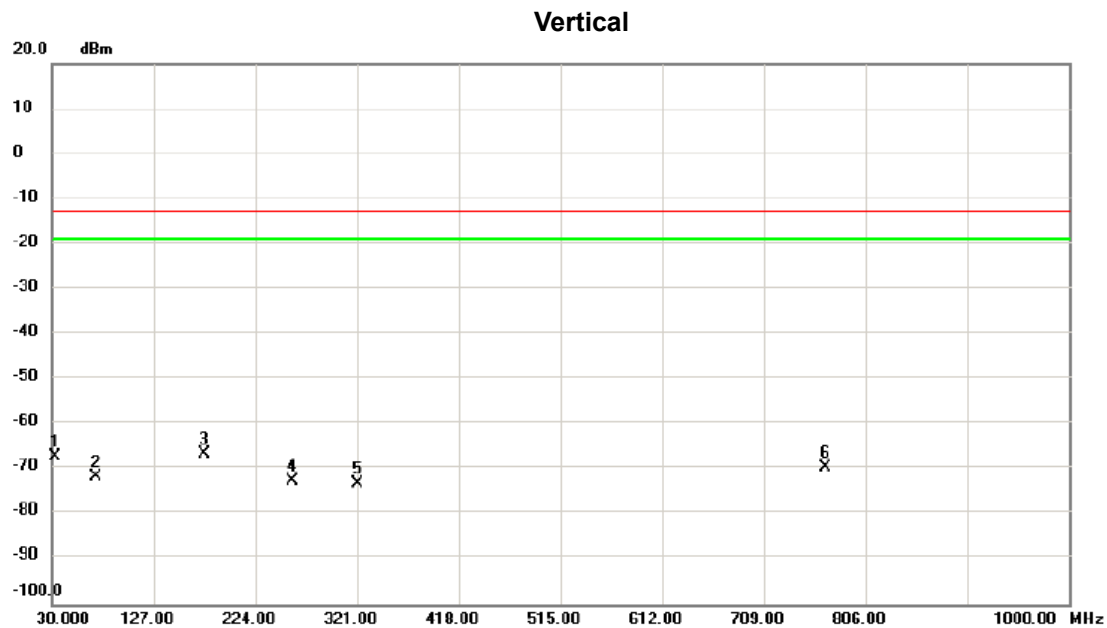
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		32.910	-52.49	-14.96	-67.45	-13.00	-54.45	peak	
2		71.710	-56.13	-16.56	-72.69	-13.00	-59.69	peak	
3	*	169.680	-54.51	-12.44	-66.95	-13.00	-53.95	peak	
4		259.890	-58.86	-12.74	-71.60	-13.00	-58.60	peak	
5		315.180	-62.17	-11.31	-73.48	-13.00	-60.48	peak	
6		793.390	-66.54	-3.10	-69.64	-13.00	-56.64	peak	

Test Mode	LTE Band 5_TX CH20525_5M_Second Antenna
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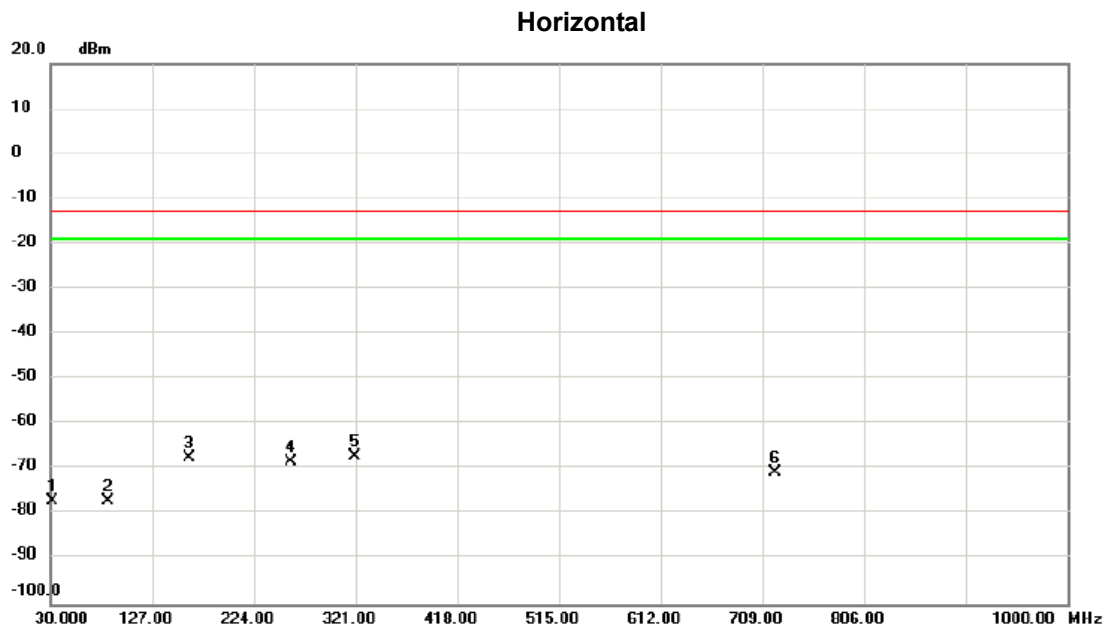
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		31.940	-61.77	-14.81	-76.58	-13.00	-63.58	peak	
2		85.290	-59.39	-17.05	-76.44	-13.00	-63.44	peak	
3		167.740	-55.72	-12.17	-67.89	-13.00	-54.89	peak	
4		271.530	-55.38	-13.08	-68.46	-13.00	-55.46	peak	
5	*	317.120	-56.17	-11.28	-67.45	-13.00	-54.45	peak	
6		728.400	-67.23	-3.82	-71.05	-13.00	-58.05	peak	

Test Mode	LTE Band 5_TX CH20525_10M_Second Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		32.910	-52.10	-14.96	-67.06	-13.00	-54.06	peak	
2		71.710	-55.06	-16.56	-71.62	-13.00	-58.62	peak	
3	*	175.500	-53.71	-12.88	-66.59	-13.00	-53.59	peak	
4		259.890	-59.79	-12.74	-72.53	-13.00	-59.53	peak	
5		321.000	-61.96	-11.21	-73.17	-13.00	-60.17	peak	
6		767.200	-66.19	-3.44	-69.63	-13.00	-56.63	peak	

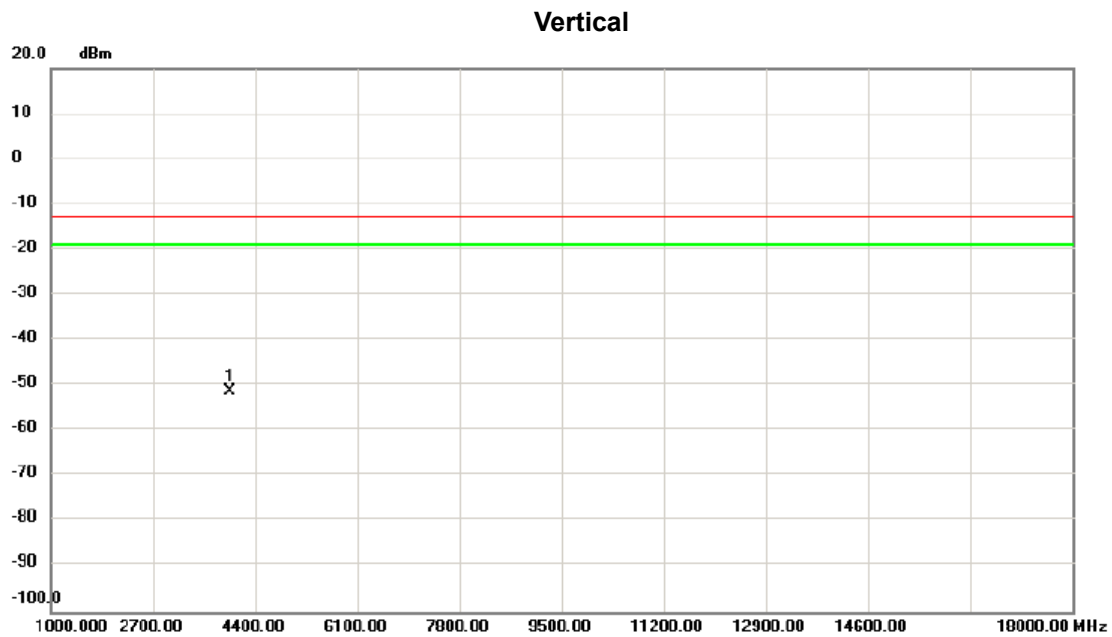
Test Mode	LTE Band 5_TX CH20525_10M_Second Antenna
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No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		31.940	-62.09	-14.81	-76.90	-13.00	-63.90	peak	
2		85.290	-59.89	-17.05	-76.94	-13.00	-63.94	peak	
3		161.920	-55.98	-11.35	-67.33	-13.00	-54.33	peak	
4		259.890	-55.51	-12.74	-68.25	-13.00	-55.25	peak	
5	*	320.030	-55.89	-11.22	-67.11	-13.00	-54.11	peak	
6		721.610	-66.97	-3.87	-70.84	-13.00	-57.84	peak	

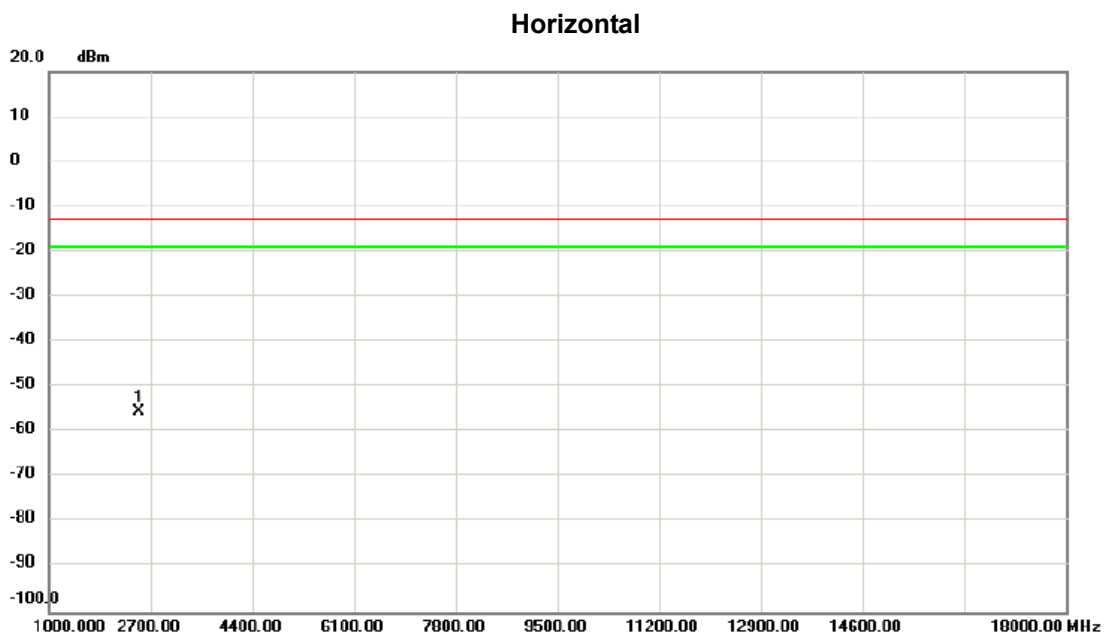
APPENDIX F - RADIATED SPURIOUS EMISSIONS (ABOVE 1000MHZ)

Test Mode	GSM850_ TX CH190_GSM_Main Antenna
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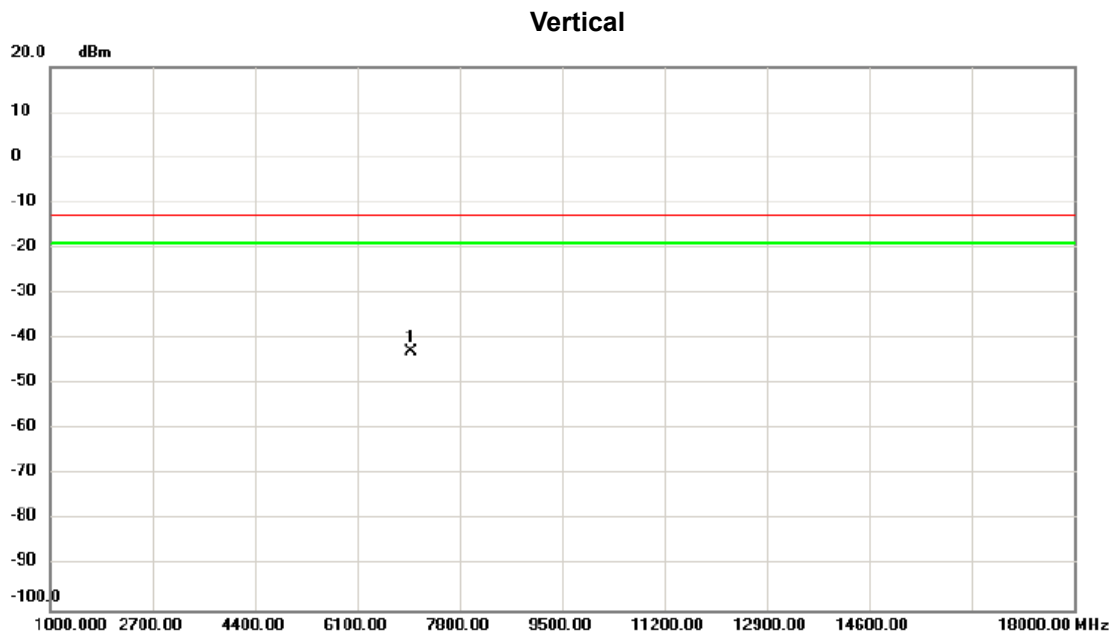
No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1 *	3975.000	-69.30	18.06	-51.24	-13.00	-38.24	peak	

Test Mode	GSM850_ TX CH190_GSM_Main Antenna
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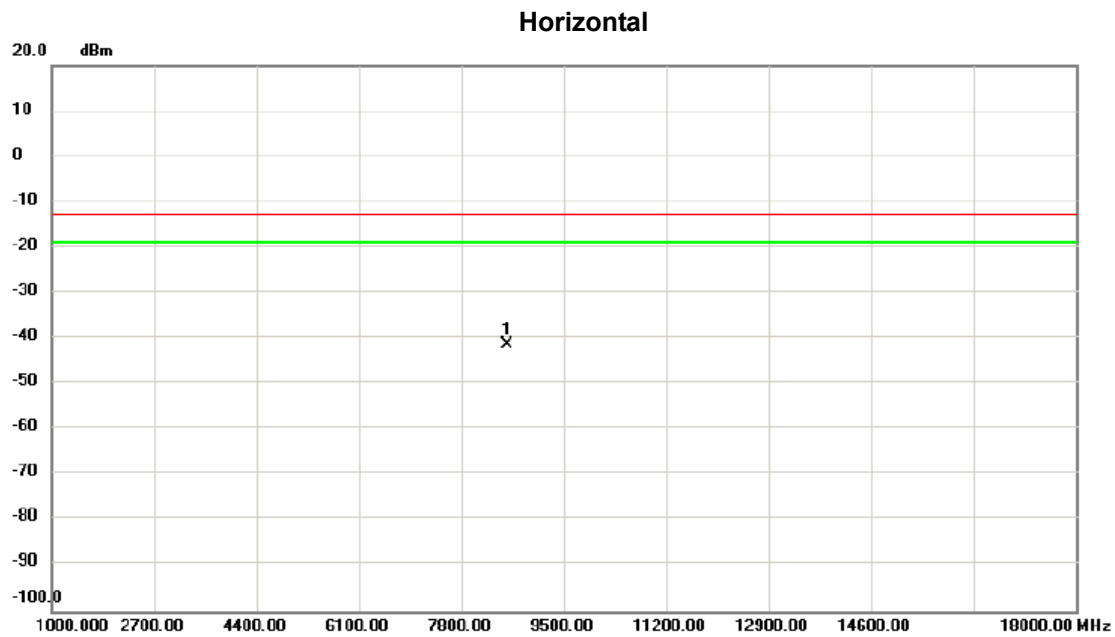
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	2513.000	-66.25	10.82	-55.43	-13.00	-42.43	peak	

Test Mode	GSM850_ TX CH190_EDGE_Main Antenna
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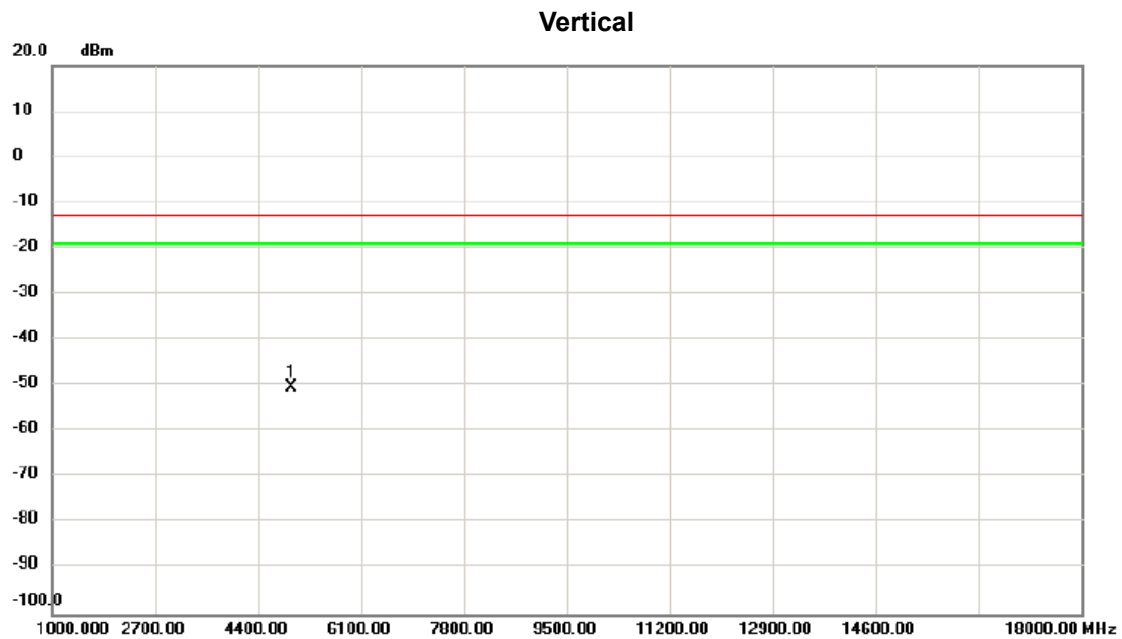
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	7001.000	-71.20	28.25	-42.95	-13.00	-29.95	peak	

Test Mode	GSM850_ TX CH190_EDGE_Main Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	8548.000	-71.55	30.35	-41.20	-13.00	-28.20	peak	

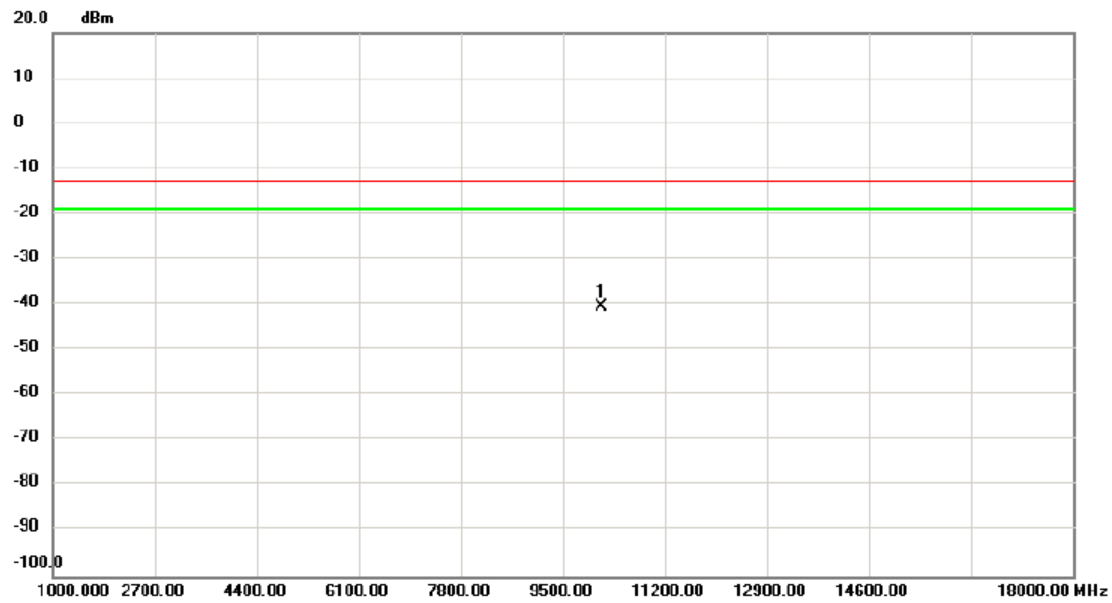
Test Mode	GSM850_ TX CH190_GSM_Second Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	4961.000	-58.70	8.50	-50.20	-13.00	-37.20	peak	

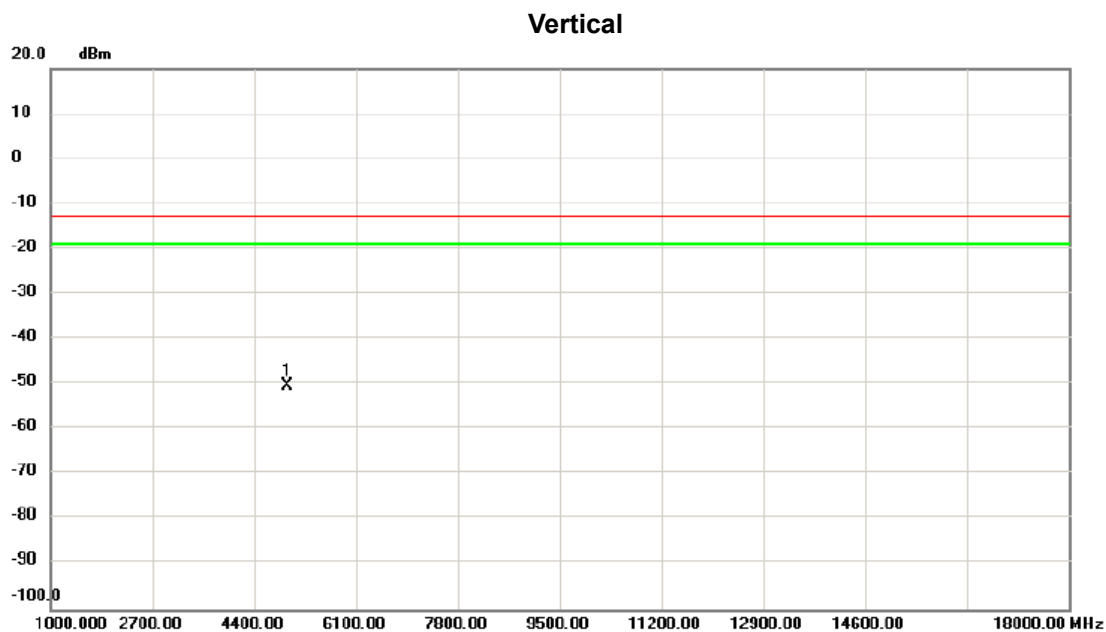
Test Mode GSM850_ TX CH190_GSM_Second Antenna

Horizontal



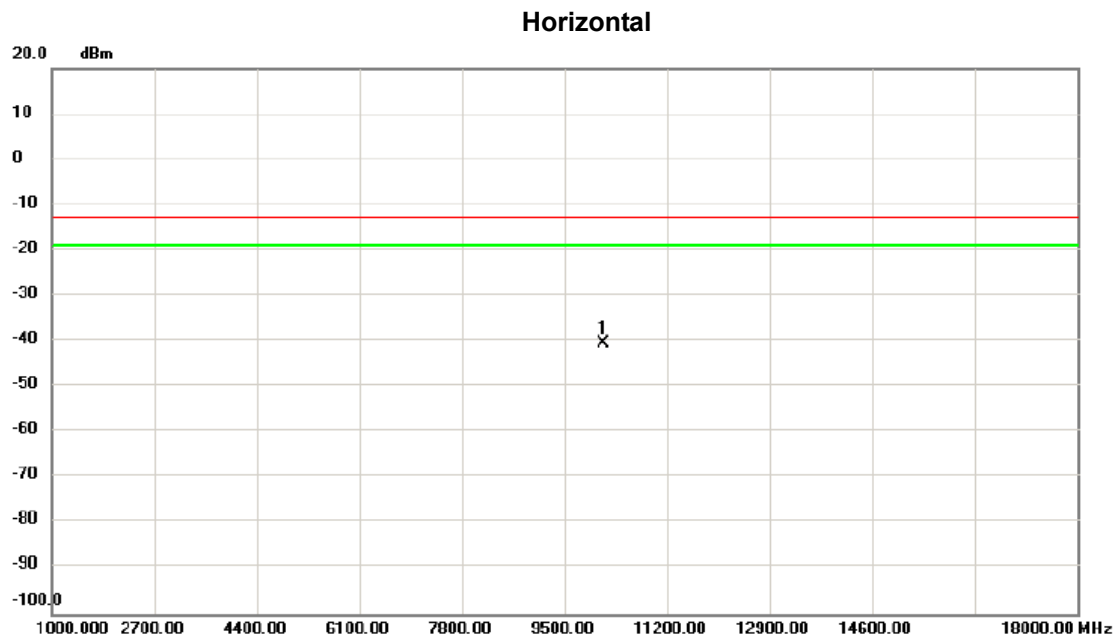
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	10146.000	-59.72	19.33	-40.39	-13.00	-27.39	peak	

Test Mode	GSM850_ TX CH190_EDGE_Second Antenna
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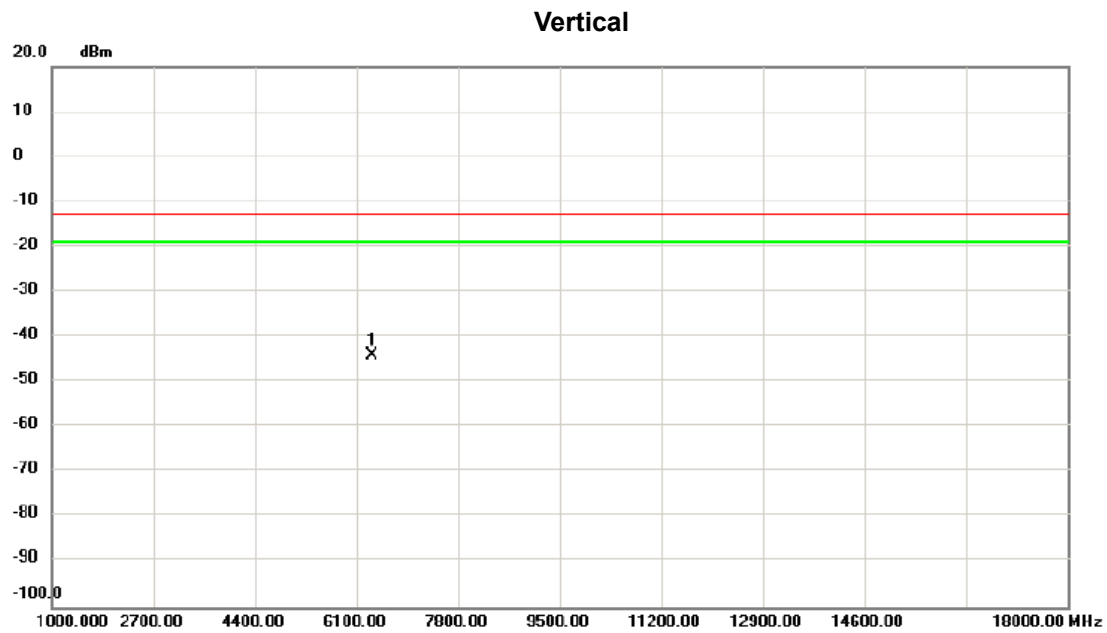
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	4961.000	-58.70	8.50	-50.20	-13.00	-37.20	peak	

Test Mode	GSM850_ TX CH190_EDGE_Second Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	10146.000	-59.72	19.33	-40.39	-13.00	-27.39	peak	

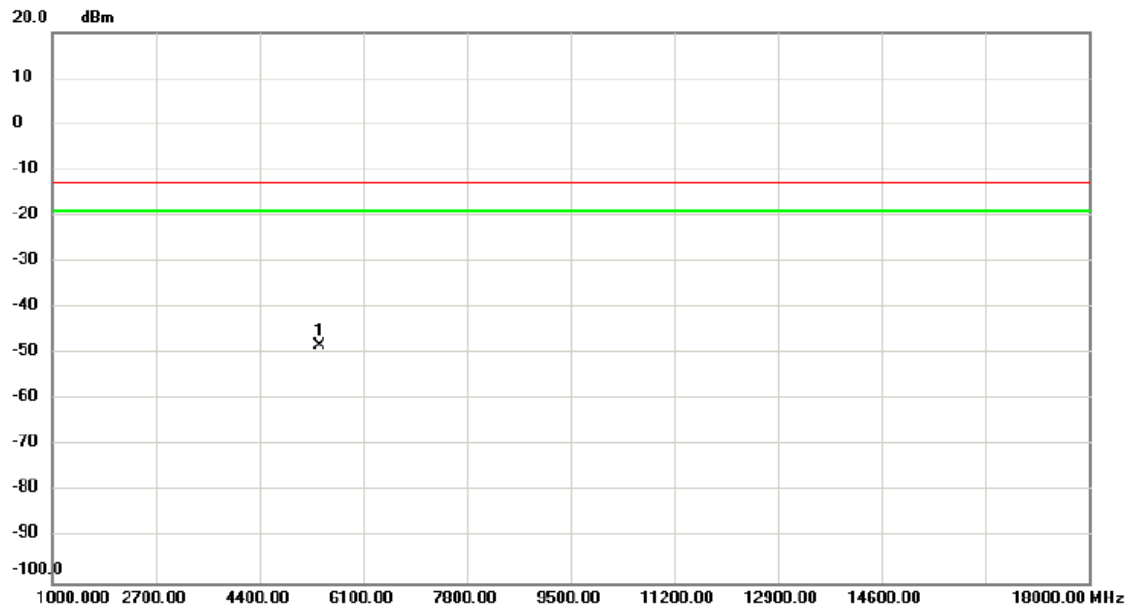
Test Mode	WCDMA Band V_TX CH4182_Main Antenna
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No. Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
	MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1 *	6355.000	-58.71	14.75	-43.96	-13.00	-30.96	peak	

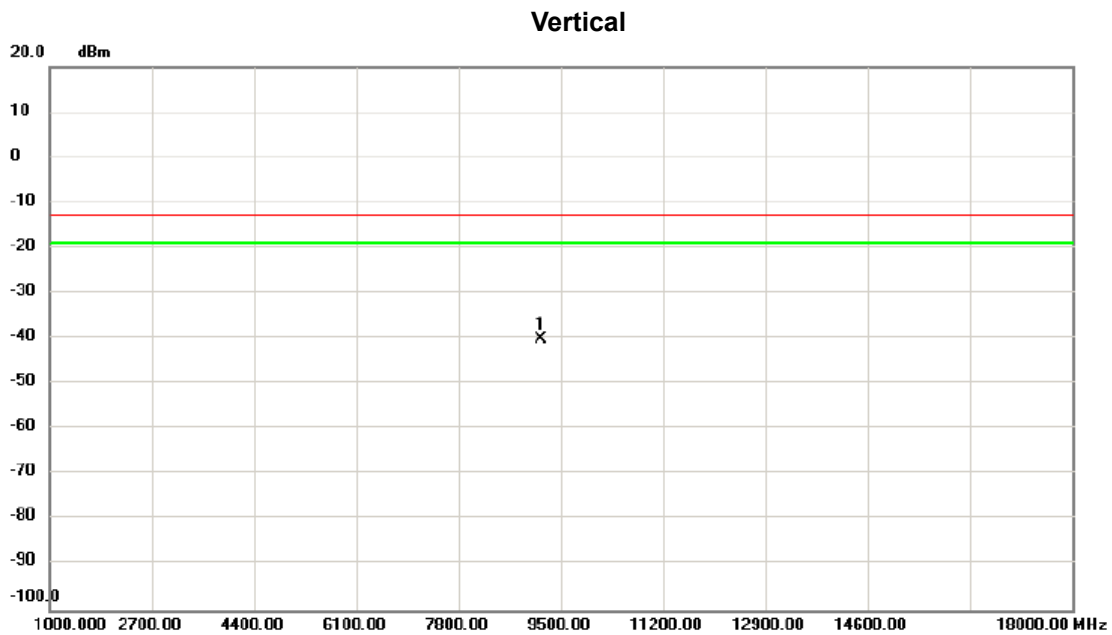
Test Mode	WCDMA Band V_TX CH4182_Main Antenna
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Horizontal



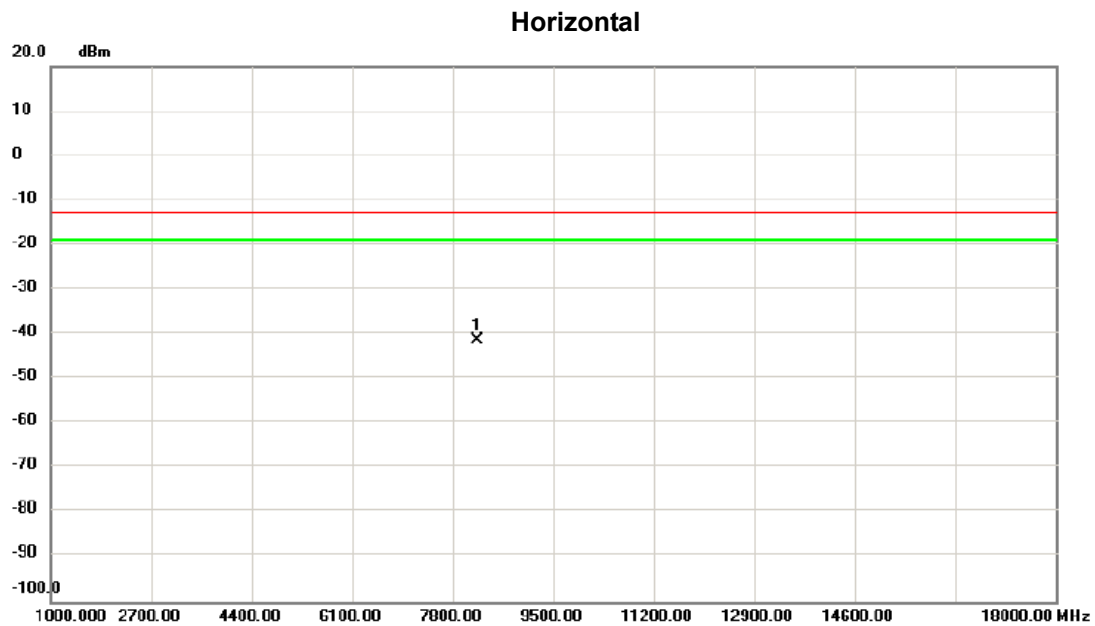
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	5386.000	-58.24	10.03	-48.21	-13.00	-35.21	peak	

Test Mode	WCDMA Band V_TX CH4182_Second Antenna
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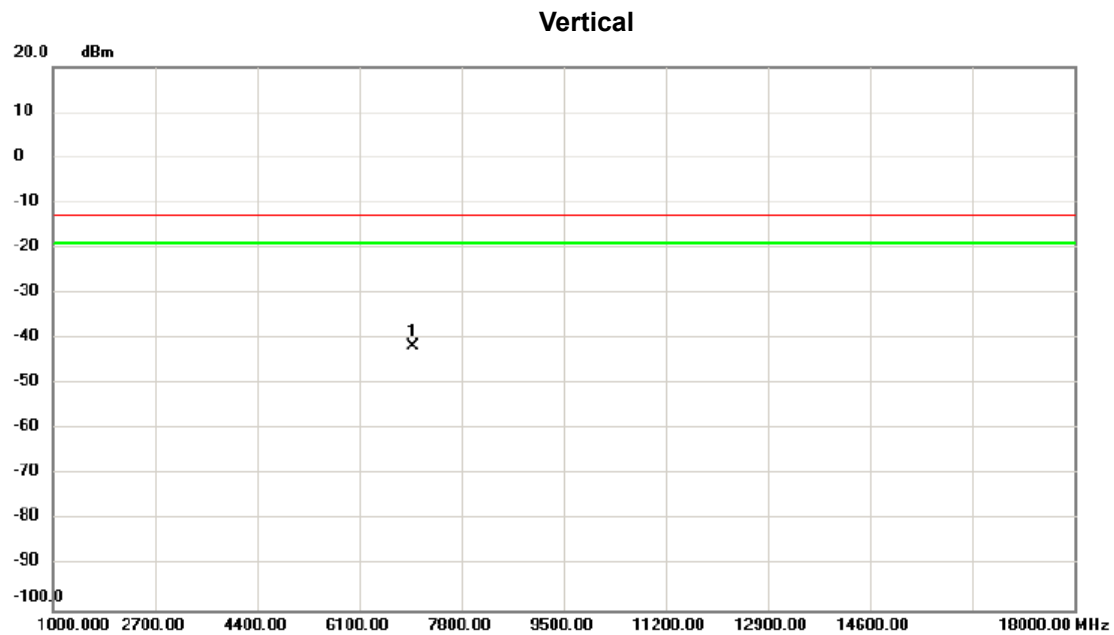
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	9177.000	-58.96	18.69	-40.27	-13.00	-27.27	peak	

Test Mode	WCDMA Band V_TX CH4182_Second Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	8225.000	-59.10	17.80	-41.30	-13.00	-28.30	peak	

Test Mode	LTE Band 5_TX CH20525_1.4M_Main Antenna
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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	6984.000	-58.05	16.48	-41.57	-13.00	-28.57	peak	