FCC Radio Test Report

FCC ID: QISE5573CS-509

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

Project No.	: 1702C058
Equipment	: Mobile WiFi
Model Name	: E5573Cs-509
Applicant	: Huawei Technologies Co.,Ltd.
Address	: Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

Date of Receipt	: Feb. 14, 2017
Date of Test	: Feb. 14, 2017 ~ Mar. 06, 2017
Issued Date	: Mar. 06, 2017
Tested by	: BTL Inc.

Technical Engineer : Shawn xiao

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Limitation

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-2-1702C058	Original Issue.	Mar. 06, 2017

1. CERTIFICATION

Equipment	:	Mobile WiFi
Brand Name	:	HUAWEI
Model Name	:	E5573Cs-509
Applicant	:	Huawei Technologies Co.,Ltd.
Manufacturer	:	Huawei Technologies Co.,Ltd.
Address	:	Administration Building, Huawei Base, Bantian, Longgang District , Shenzhen 518129, P.R.China
Factory	:	Huawei Technologies Co.,Ltd.
Address	:	Administration Building, Huawei Base, Bantian, Longgang District , Shenzhen 518129, P.R.China
Date of Test	:	Feb. 14, 2017 ~ Mar. 06, 2017
Test Sample	:	Engineering Sample
Standard(s)	:	47 CFR FCC Part 24 Subpart E 47 CFR FCC Part 2 ANSI/TIA-603-D-2010 KDB 971168 D01 Power Meas License Digital Systems v02r02

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-2-1702C058) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

Test results included in this report is only for the DCS1900, WCDMA Band 2 and LTE Band 2 part.

2. 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	Tested By
2.1046 24.232(c)	Radiated power	PASS	Paul Li
2.1046 24.232(c)	Conducted Output Power	PASS	Paul Li
2.1049 24.238(a)	Occupied Bandwidth	PASS	Paul Li
2.1051 24.238(a)	Conducted Spurious Emissions	PASS	Paul Li
2.1053 24.238(a)	Radiated Spurious Emissions	PASS	Biao Chen
24.238(a)	Band Edge Measurements	PASS	Paul Li
24.232(d)	Peak To Average Ratio	PASS	Paul Li
2.1055 24.235	Frequency Stability	PASS	Paul Li

NOTE:

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

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.
BTL's test firm number for FCC: 319330

2.2 MEASUREMENT UNCERTAINTY

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

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

A. Radiated Measurement :

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

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

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

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Mobile WiFi			
Brand Name	HUAWEI			
Model Name	E5573Cs-509			
Model Difference	N/A			
Modulation Type	GSM/GPRS	GMSK		
	EDGE	GMSK, 8PSK		
	WCDMA	Uplink: BPSK Downlink: QPSK		
	WCDMA(HSDPA/HSUPA/HSPA+)	16QAM/64QAM		
	LTE	QPSK, 16QAM		
Operation Frequency	GSM /EDGE/GPRS	1850.2 ~ 1909.8 MHz		
	WCDMA Band 2	1852.4 ~ 1907.6 MHz		
	LTE 2 (Channel Bandwidth: 5MHz)	1852.5 ~ 1907.5 MHz		
	LTE 2 (Channel Bandwidth: 10MHz)	1855.0 ~ 1905.0 MHz		
	LTE 2 (Channel Bandwidth: 15MHz)	1857.5 ~ 1902.5 MHz		
	LTE 2 (Channel Bandwidth: 20MHz)	1860.0 ~ 1900.0 MHz		
Max. EIRP Power	GSM/GPRS	GMSK	32.25	dBm
	EDGE	8PSK	28.02	dBm
	WCDMA	BPSK	25.40	dBm
	WCDMA_HSDPA	16QAM	25.20	dBm
	WCDMA_HSUPA	16QAM	23.62	dBm
	LTE 2 (Channel Bandwidth: 5MHz)	QPSK	25.35	dBm
		16QAM	24.70	dBm
	LTE 2 (Channel Bandwidth: 10MHz)	QPSK	25.70	dBm
		16QAM	24.70	dBm
	LTE 2 (Channel Bandwidth: 15MHz)	QPSK	25.35	dBm
		16QAM	24.71	dBm
	LTE 2 (Channel Bandwidth: 20MHz)	QPSK	25.36	dBm
		16QAM	24.48	dBm
Antenna Type	Fixed Internal Antenna			
Antenna Gain	1.62 dBi(Diversity Ant),2.71 dBi(Main Ant)			
Hardware Version	CL2E5573CSM01			
Softwarre Version	21.323.00.00.00			
IMEI No.1	Radiated	004401728362586		
	Conducted	004401728362530		
Power Source	#1 Supplied from PC USB port or adapter. #2 Battery Supplied.			
Power Rating	#1 100-240V~ 50/60Hz #2 ⎓4.0V（3.8V-4.2V）			

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT contains following accessory devices.

Item	Mfr/Brand	Model.
Battery	Sunwoda Electronic Co., LTD	HB434666RBC
	SCUD (FUJIAN) Electronics Co., Ltd	HB434666RBC
USB Cable	CONNREX(SHEN ZHEN)INDUSTRIAL.,LTD.	CD-U0405-831
	HONGLIN TECHNOLOGY CO.,LTD	02451044
Adapter	DONGGUAN PHITEK ELECTRONICS CO.,LTD.	HW-050100E01(EU) HW-050100U01(US) HW-050100B01(UK) HW-050100A01(AU)
	SHENZHEN HUNTKEY ELECTRONIC CO.,LTD.	
	HUIZHOU BYD ELECTRONIC CO., LTD.	

3.2 DESCRIPTION OF TEST MODES AND TEST CONDITION

Following channel(s) was (were) selected for the final test as listed below:

GSM MODE			
Test Item	Available Channel	Tested Channel	Mode
EIRP	512 to 810	512, 661, 810	GSM, EDGE
Conducted Output Power	512 to 810	512, 661, 810	GSM, EDGE
Occupied Bandwidth	512 to 810	512, 661, 810	GSM, EDGE
Condcudeted Emission	512 to 810	661	GSM, EDGE
Radiated Emission	512 to 810	512	GSM, EDGE
Band Edge	512 to 810	512, 810	GSM, EDGE
Peak to Average Ratio	512 to 810	512, 661, 810	GSM, EDGE
Frequency Stability	512 to 810	661	GSM, EDGE

WCDMA MODE			
Test Item	Available Channel	Tested Channel	Mode
EIRP	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA,HSUPA
Conducted Output Power	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA,HSUPA
Condcudeted Emission	9262 to 9538	9400	WCDMA, HSDPA, HSUPA
Radiated Emission	9262 to 9538	9400	WCDMA, HSDPA, HSUPA
Band Edge	9262 to 9538	9262, 9538	WCDMA, HSDPA, HSUPA
Peak to Average Ratio	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA, HSUPA
Frequency Stability	9262 to 9538	9262	WCDMA, HSDPA, HSUPA

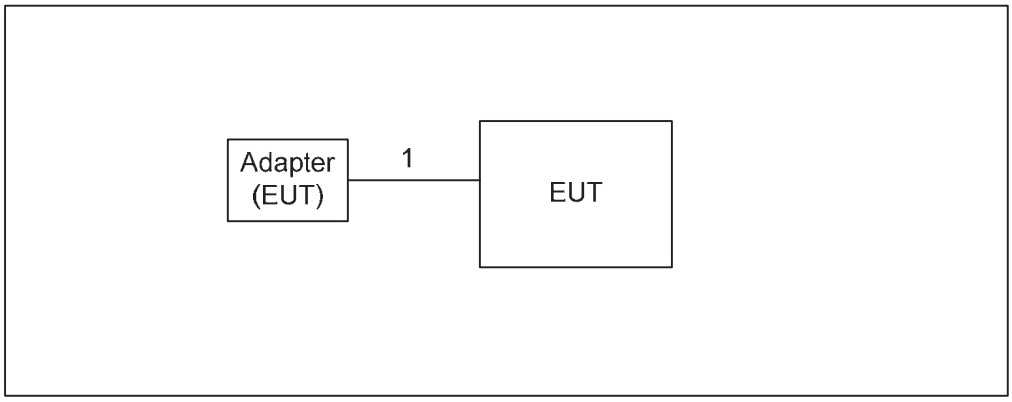
Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in **QPSK** modulation.

LTE BAND 2 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
EIRP	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
Occupied Bandwidth	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	100 RB / 0 RB Offset
Conducted Emission	18625 to 19175	18900	5MHz	QPSK	1 RB / 0 RB Offset
	18650 to 19150	18900	10MHz	QPSK	1 RB / 0 RB Offset
	18675 to 19125	18900	15MHz	QPSK	1 RB / 0 RB Offset
	18700 to 19100	18900	20MHz	QPSK	1 RB / 0 RB Offset
Radiated Emission	18625 to 19175	19100	5MHz	QPSK	1 RB / 0 RB Offset
	18700 to 19100	18900	20MHz	QPSK	1 RB / 0 RB Offset
Band Edge	18625 to 19175	18625	5MHz	QPSK	1 RB / 0 RB Offset
					25 RB / 0 RB Offset
		19175	5MHz	QPSK	1 RB / 24 RB Offset
					25 RB / 0 RB Offset
	18650 to 19150	18650	10MHz	QPSK	1 RB / 0 RB Offset
					50 RB / 0 RB Offset
		19150	10MHz	QPSK	1 RB / 49 RB Offset
					50 RB / 0 RB Offset
	18675 to 19125	18675	15MHz	QPSK	1 RB / 0 RB Offset
					75 RB / 0 RB Offset
		19125	15MHz	QPSK	1 RB / 74 RB Offset
					75 RB / 0 RB Offset
	18700 to 19100	18700	20MHz	QPSK	1 RB / 0 RB Offset
					100 RB / 0 RB Offset
		19100	20MHz	QPSK	1 RB / 99 RB Offset
					100 RB / 0 RB Offset
Peak To Average Ratio	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
Frequency Stability	18625 to 19175	18900	5MHz	QPSK	1 RB / 0 RB Offset
	18650 to 19150	18900	10MHz	QPSK	1 RB / 0 RB Offset
	18675 to 19125	18900	15MHz	QPSK	1 RB / 0 RB Offset
	18700 to 19100	18900	20MHz	QPSK	1 RB / 0 RB Offset

EUT TEST CONDITIONS:

Test Item	Environmental Conditions	Test Voltage
EIRP	25°C, 60%RH	DC 3.8V
Conducted Output Power	25°C, 65%RH	DC 3.8V
Occupied Bandwidth	25°C, 65%RH	DC 3.8V
Conducted Emission	25°C, 65%RH	DC 3.8V
Radiated Emission	25°C, 60%RH	AC 120V/60Hz
Band Edge	25°C, 65%RH	DC 3.8V
Peak to Average Ratio	25°C, 65%RH	DC 3.8V
Frequency Stability	25°C, 65%RH	DC 3.8V

3.3 BLOCKDIGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED FOR RADIATED



3.4 DESCRIPTION OF SUPPORT UNITS

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

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

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

4. TEST RESULT

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMIT

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

4.1.2 TEST PROCEDURE

EIRP/ERP:

EIRP= Conducted Power +Antenan gain
ERP power=EIPR power-2.15dBi.

Conducted Power:

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

4.1.3 TESTSETUP LAYOUT

Conducted Power Measurement

4.1.4 TEST DEVIATION

No deviation

4.1.5 TEST RESULTS

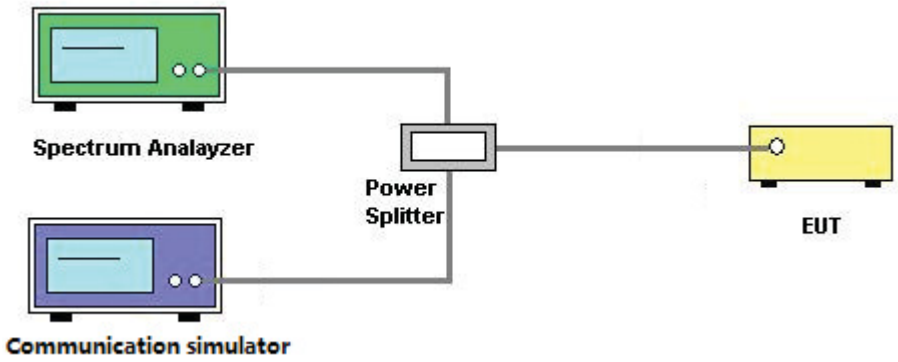
Please refer to the Attachment A.

4.2 OCCUPIED BANDWIDTH MEASUREMENT

4.2.1 TEST PROCEDURE

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

4.2.2 TEST SETUP LAYOUT



4.2.3 TEST DEVIATION

No deviation

4.2.4 TEST RESULTS

Please refer to the Attachment B.

4.3 CONDUCTED EMISSIONS MEASUREMENT

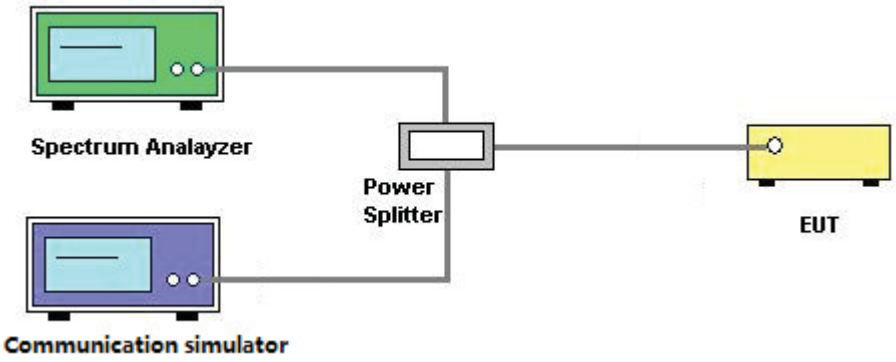
4.3.1 LIMIT

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

4.3.2 TEST PROCEDURES

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

4.3.3 TESTSETUP LAYOUT



4.3.4 TESTDEVIATION

No deviation

4.3.5 TEST RESULTS

Please refer to the Attachment C.

4.4 RADIATED EMISSIONS MEASUREMENT

4.4.1 LIMIT

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

4.4.2 TEST PROCEDURES

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

4.4.3 TESTSETUP LAYOUT

This test setup layout is the same as that shown in **section 4.1.3.**

4.4.4 TESTDEVIATION

No deviation

4.4.5 TEST RESULTS

Please refer to the Attachment D.

4.5 BAND EDGE MEASUREMENT

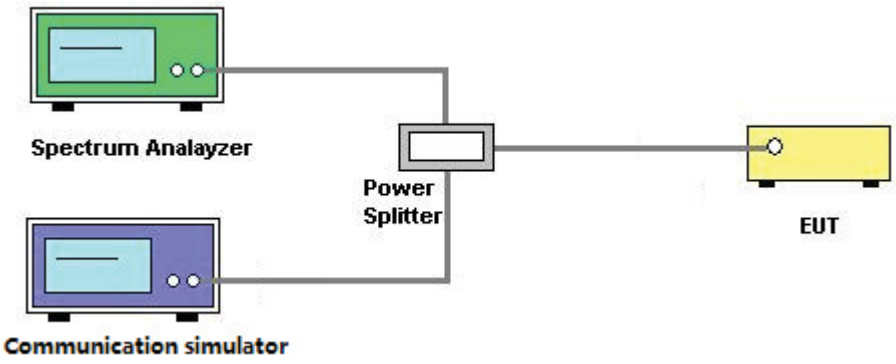
4.5.1 LIMIT

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.

4.5.2 TEST PROCEDURES

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

4.5.3 TESTSETUP LAYOUT



4.5.4 TESTDEVIATION

No deviation

4.5.5 TEST RESULTS

Please refer to the Attachment E.

4.6 PEAK TO AVERAGE RATIO MEASUREMENT

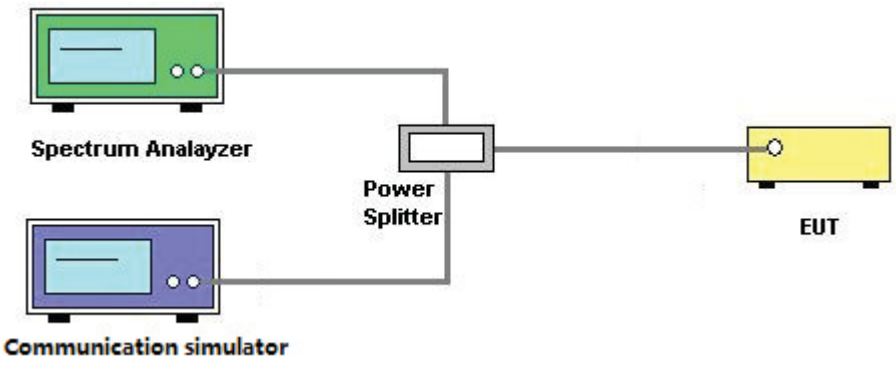
4.6.1 LIMIT

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

4.6.2 TEST PROCEDURES

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

4.6.3 TESTSETUP LAYOUT



4.6.4 TESTDEVIATION

No deviation

4.6.5 TEST RESULTS

Please refer to the Attachment F.

4.7 FREQUENCY STABILITY MEASUREMENT

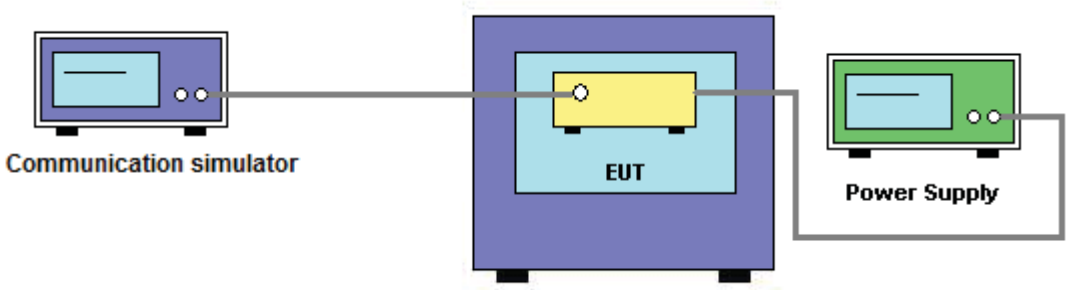
4.7.1 LIMIT

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

4.7.2 TEST PROCEDURES

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

4.7.3 TESTSETUP LAYOUT



4.7.4 TESTDEVIATION

No deviation

4.7.5 TEST RESULTS

Please refer to the Attachment G.

5. LIST OF MEASUREMENT EQUIPMENTS

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 27, 2017
2	Double Ridged Guide Antenna	ETS	3115	75789	Mar. 27, 2017
3	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Apr. 23, 2017
4	Amplifier	Agilent	8449B	3008A02274	Mar. 10, 2017
5	Amplifier	HP	8447D	2944A09673	Oct. 20, 2017
6	HighPass Filter	Wairrwright Instruments Gmbh	WHK 1.5/15G-10ST	11	Mar. 10, 2017
7	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 1710/1785-1690/1805-60/12SS	38	Feb. 22, 2018
8	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 824/849-810/863-60/9SS	7	Feb. 22, 2018
9	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 880/915-860/935-60/9SS	14	Feb. 22, 2018
10	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 1850/1910-1830/1930-60/10SS	17	Feb. 22, 2018
11	HighPass Filter	Wairrwright Instruments Gmbh	WHK3.1/18G-10SS	24	Mar. 10, 2017
12	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 27, 2017
13	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 27, 2017
14	Receiver	Agilent	N9038A	MY52130039	Sep. 04, 2017
15	wideband radio communication tester	R&S	CMW500	152372	Mar. 27, 2017
16	High pass filter	ZHPF-M1000-4000-1	ZHPF-M3-12.75G-3869	B2015073763	Aug. 04, 2017
17	High pass filter	ZHPF-M3-12.75G-3869	ZHPF-M1000-4000-1	B2015073762	Aug. 04, 2017
18	High pass filter	ZHPF-M6-18G-1727	ZHPF-M6-186-1727	B2015073764	Aug. 04, 2017
19	Cable	emci	LMR-400(30MHz-1GHz)(8m+5m)	N/A	Jun. 27, 2017
20	Cable	emci	EMC104-SM-SM-12000(12m)	N/A	Jul. 06, 2017
21	Controller	ETS-Lindgren	2090	N/A	N/A
22	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Conducted Emission & Band Edge & Occupied Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 27, 2017
2	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Mar. 27, 2017
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 26, 2017
4	wideband radio communication tester	R&S	CMW500	152372	Mar. 27, 2017
5	Cable	N/A	RG316(0.3m)	N/A	Jul. 06, 2017
6	Cable	N/A	RG316(0.3m)	N/A	Jul. 06, 2017

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 27, 2017
2	DC power supply	GW Instek	GPC-3030DN	EK880675	Oct. 13, 2017
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 26, 2017
4	wideband radio communication tester	R&S	CMW500	152372	Mar. 27, 2017
5	Const Temp,& Humidity Chamber	Giant?Force	ITH-225-20-S	IAB0309-001	Sep. 04, 2017
6	Cable	N/A	RG316(0.3m)	N/A	Jul. 06, 2017

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

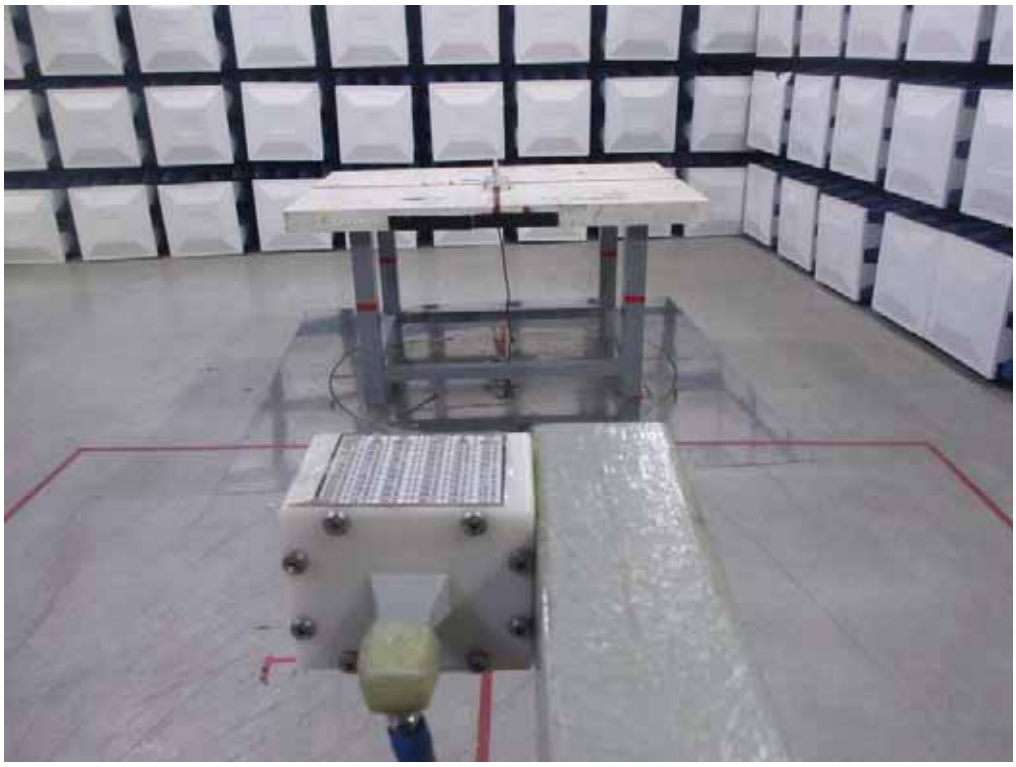
6. EUT TEST PHOTO

Radiated Measurement Photos
9KHz to 30MHz

Radiated Measurement Photos
Below 1GHz

Radiated Measurement Photos
1GHz to 18GHz

Radiated Measurement Photos
18GHz to 40GHz



ATTACHMENT A - OUTPUT POWER

Conducted Power:

DCS1900 (Capsensor Off)	Burst Conducted Power (dBm)		
	512CH	661CH	810CH
	1850.2MHz	1880MHz	1909.8MHz
GPRS/EDGE (GMSK)	29.54	29.51	29.49
	27.36	27.28	27.35
	25.37	25.23	25.21
	24.13	24.02	23.81
EDGE (8PSK)	25.27	25.26	25.31
	22.96	22.88	22.93
	21.07	20.86	20.92
	19.24	19.21	19.14

Modulation	Band	WCDMA Band 2(Capsensor Off)		
	Tx Channel	9262CH	9400CH	9538CH
	Rx Channel	9662CH	9800CH	9938CH
	Frequency	1852.4MHz	1880MHz	1907.6MHz
BPSK	RMC 12.2K	22.53	22.62	22.49
	RMC 64K	22.59	22.69	22.48
	RMC 144K	22.62	22.63	22.49
	RMC 384K	22.57	22.68	22.47
16QAM	HSDPA Subtest-1	22.43	22.49	22.26
	HSDPA Subtest-2	22.38	22.48	22.23
	HSDPA Subtest-3	21.87	21.93	21.78
	HSDPA Subtest-4	21.82	21.83	21.81
16QAM	HSUPA Subtest-1	20.19	19.94	20.03
	HSUPA Subtest-2	19.57	19.75	19.44
	HSUPA Subtest-3	20.51	20.78	20.74
	HSUPA Subtest-4	19.79	19.78	19.60
	HSUPA Subtest-5	20.82	20.91	20.87

LTE Band / BW	Modulation	RB Sizet	RB Offset	Low CH	Mid CH	High CH
				18625 CH	18900 CH	19175 CH
				1852.5 MHz	1880 MHz	1907.5 MHz
2 / 5M	QPSK	1	0	21.43	21.90	21.79
		1	12	22.03	22.55	22.64
		1	24	21.43	22.04	21.95
		12	0	20.75	21.40	21.50
		12	6	21.01	21.54	21.81
		12	13	20.96	21.49	21.70
		25	0	20.78	21.34	21.44
	16QAM	1	0	20.69	21.43	21.00
		1	12	21.39	21.85	21.99
		1	24	20.78	21.56	21.31
		12	0	20.91	21.46	21.46
		12	6	21.14	21.58	21.78
		12	13	21.08	21.52	21.66
		25	0	20.82	21.32	21.40

LTE Band / BW	Modulation	RB Sizet	RB Offset	Low CH	Mid CH	High CH
				18650 CH	18900 CH	19150 CH
				1855 MHz	1880 MHz	1905 MHz
2 / 10M	QPSK	1	0	22.10	22.53	21.87
		1	24	22.81	22.99	22.91
		1	49	21.61	22.12	21.89
		25	0	21.34	21.78	21.19
		25	12	21.55	21.98	21.66
		25	25	21.32	21.88	21.58
		50	0	21.37	21.77	21.31
	16QAM	1	0	21.21	21.84	21.00
		1	24	21.91	21.99	21.91
		1	49	20.88	21.47	21.05
		25	0	21.29	21.74	21.14
		25	12	21.49	21.93	21.60
		25	25	21.27	21.83	21.51
		50	0	21.30	21.71	21.23

LTE Band / BW	Modulation	RB Sizet	RB Offset	Low CH	Mid CH	High CH
				18675 CH	18900 CH	19125 CH
				1857.5 MHz	1880 MHz	1902.5 MHz
2 / 15M	QPSK	1	0	22.09	22.45	21.87
		1	37	22.15	22.64	21.98
		1	74	21.66	22.02	21.90
		36	0	20.95	21.92	20.84
		36	19	21.11	21.54	21.01
		36	39	20.99	21.42	21.12
		75	0	21.04	21.41	20.95
	16QAM	1	0	21.53	22.00	21.29
		1	37	21.49	21.94	21.35
		1	74	20.99	21.67	21.32
		36	0	20.91	21.67	20.87
		36	19	21.03	21.63	21.02
		36	39	20.91	21.49	21.12
		75	0	20.90	21.46	20.94

LTE Band / BW	Modulation	RB Sizet	RB Offset	Low CH	Mid CH	High CH
				18700 CH	18900 CH	19100 CH
				1860 MHz	1880 MHz	1900 MHz
2 / 20M	QPSK	1	0	22.32	**22.65**	22.46
		1	50	22.09	22.26	22.15
		1	99	21.94	22.28	22.42
		50	0	21.24	21.59	21.06
		50	25	21.18	21.57	21.39
		50	50	21.26	**21.66**	21.48
		100	0	21.14	21.63	21.41
	16QAM	1	0	21.55	21.77	21.57
		1	50	21.27	20.97	21.09
		1	99	21.19	21.46	21.49
		50	0	20.97	21.31	20.75
		50	25	20.91	21.28	20.74
		50	50	20.97	21.37	20.81
		100	0	20.84	21.34	20.74

EIRP Power

DCS1900 (Capsensor Off)	EIRP Power (dBm)		
	512CH	661CH	810CH
	1850.2MHz	1880MHz	1909.8MHz
GPRS/EDGE (GMSK)	32.25	32.22	32.20
	30.07	29.99	30.06
	28.08	27.94	27.92
	26.84	26.73	26.52
EDGE (8PSK)	27.98	27.97	28.02
	25.67	25.59	25.64
	23.78	23.57	23.63
	21.95	21.92	21.85

Modulation	Band	WCDMA Band 2(Capsensor Off)		
	Tx Channel	9262CH	9400CH	9538CH
	Rx Channel	9662CH	9800CH	9938CH
	Frequency	1852.4MHz	1880MHz	1907.6MHz
BPSK	RMC 12.2K	25.24	25.33	25.20
	RMC 64K	25.30	25.40	25.19
	RMC 144K	25.33	25.34	25.20
	RMC 384K	25.28	25.39	25.18
16QAM	HSDPA Subtest-1	25.14	25.20	24.97
	HSDPA Subtest-2	25.09	25.19	24.94
	HSDPA Subtest-3	24.58	24.64	24.49
	HSDPA Subtest-4	24.53	24.54	24.52
16QAM	HSUPA Subtest-1	22.90	22.65	22.74
	HSUPA Subtest-2	22.28	22.46	22.15
	HSUPA Subtest-3	23.22	23.49	23.45
	HSUPA Subtest-4	22.50	22.49	22.31
	HSUPA Subtest-5	23.53	23.62	23.58

LTE Band / BW	Modulation	RB Sizet	RB Offset	Low CH	Mid CH	High CH
				18625 CH	18900 CH	19175 CH
				1852.5 MHz	1880 MHz	1907.5 MHz
2 / 5M	QPSK	1	0	24.14	24.61	24.50
		1	12	24.74	25.26	25.35
		1	24	24.14	24.75	24.66
		12	0	23.46	24.11	24.21
		12	6	23.72	24.25	24.52
		12	13	23.67	24.20	24.41
		25	0	23.49	24.05	24.15
	16QAM	1	0	23.40	24.14	23.71
		1	12	24.10	24.56	24.70
		1	24	23.49	24.27	24.02
		12	0	23.62	24.17	24.17
		12	6	23.85	24.29	24.49
		12	13	23.79	24.23	24.37
		25	0	23.53	24.03	24.11

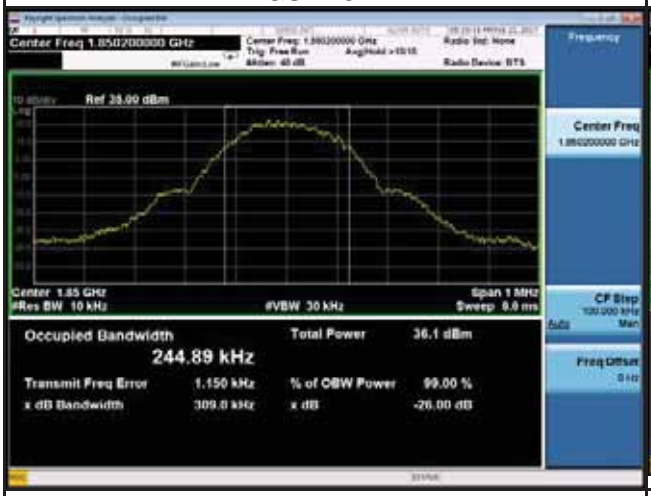
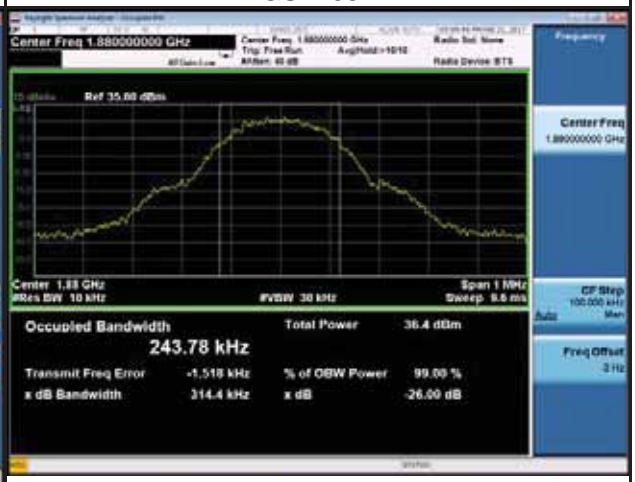
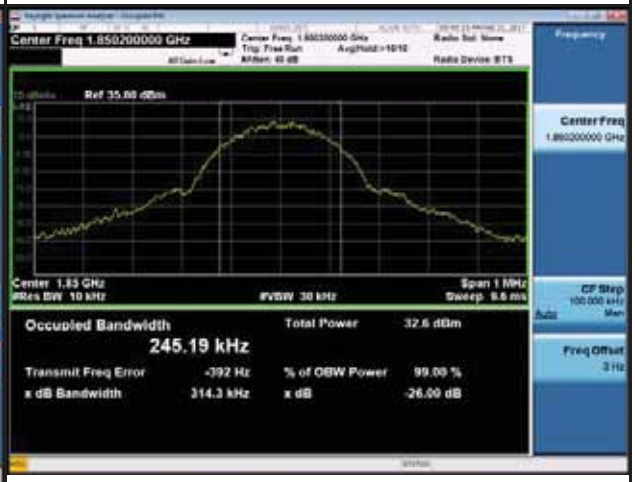
LTE Band / BW	Modulation	RB Sizet	RB Offset	Low CH	Mid CH	High CH
				18650 CH	18900 CH	19150 CH
				1855 MHz	1880 MHz	1905 MHz
2 / 10M	QPSK	1	0	24.81	25.24	24.58
		1	24	25.52	25.70	25.62
		1	49	24.32	24.83	24.60
		25	0	24.05	24.49	23.90
		25	12	24.26	24.69	24.37
		25	25	24.03	24.59	24.29
		50	0	24.08	24.48	24.02
	16QAM	1	0	23.92	24.55	23.71
		1	24	24.62	24.70	24.62
		1	49	23.59	24.18	23.76
		25	0	24.00	24.45	23.85
		25	12	24.20	24.64	24.31
		25	25	23.98	24.54	24.22
		50	0	24.01	24.42	23.94

LTE Band / BW	Modulation	RB Sizet	RB Offset	Low CH	Mid CH	High CH
				18675 CH	18900 CH	19125 CH
				1857.5 MHz	1880 MHz	1902.5 MHz
2 / 15M	QPSK	1	0	24.80	25.16	24.58
		1	37	24.86	25.35	24.69
		1	74	24.37	24.73	24.61
		36	0	23.66	24.63	23.55
		36	19	23.82	24.25	23.72
		36	39	23.70	24.13	23.83
		75	0	23.75	24.12	23.66
	16QAM	1	0	24.24	24.71	24.00
		1	37	24.20	24.65	24.06
		1	74	23.70	24.38	24.03
		36	0	23.62	24.38	23.58
		36	19	23.74	24.34	23.73
		36	39	23.62	24.20	23.83
		75	0	23.61	24.17	23.65

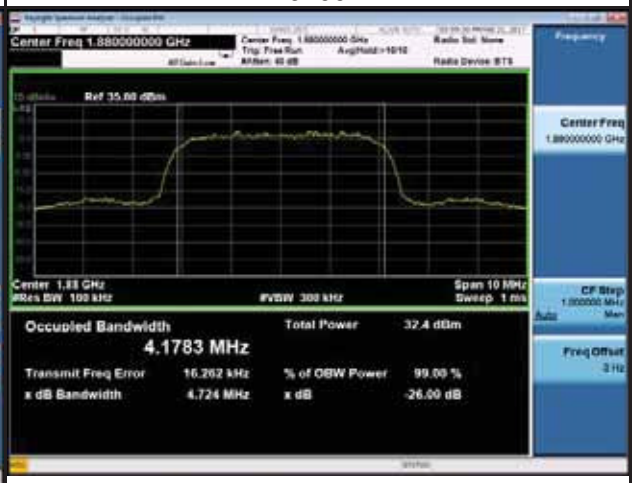
LTE Band / BW	Modulation	RB Sizet	RB Offset	Low CH	Mid CH	High CH
				18700 CH	18900 CH	19100 CH
				1860 MHz	1880 MHz	1900 MHz
2 / 20M	QPSK	1	0	25.03	25.36	25.17
		1	50	24.80	24.97	24.86
		1	99	24.65	24.99	25.13
		50	0	23.95	24.30	23.77
		50	25	23.89	24.28	24.10
		50	50	23.97	24.37	24.19
		100	0	23.85	24.34	24.12
	16QAM	1	0	24.26	24.48	24.28
		1	50	23.98	23.68	23.80
		1	99	23.90	24.17	24.20
		50	0	23.68	24.02	23.46
		50	25	23.62	23.99	23.45
		50	50	23.68	24.08	23.52
		100	0	23.55	24.05	23.45

ATTACHMENT B - OCCUPIED BANDWIDTH

DCS1900					
GSM			EDGE		
CS			8PSK		
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)
512	1850.2	244.89	512	1850.2	245.19
661	1880	243.78	661	1880	246.31
810	1909.8	241.48	810	1909.8	248.70
Channel	Frequency (MHz)	26dB Bandwidth (kHz)	Channel	Frequency (MHz)	26dB Bandwidth (kHz)
512	1850.2	309.00	512	1850.2	314.30
661	1880	314.40	661	1880	317.60
810	1909.8	317.50	810	1909.8	303.20

Spectrum Plot	
GSM -512	GSM-661
	
GSM-810	EDGE-512
	
EDGE-661	EDGE-810

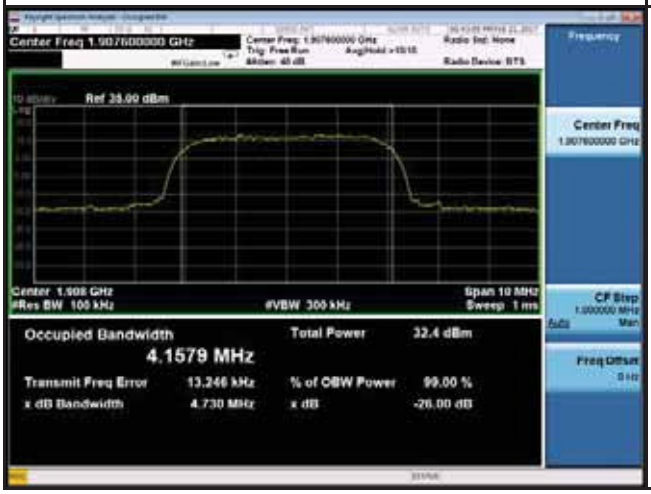
WCDMA Band 2					
BPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
9262	1852.4	4.1836	9262	1852.4	4.721
9400	1880	4.1783	9400	1880	4.724
9538	1907.6	4.1529	9538	1907.6	4.700

Spectrum Plot	
9262	9400
	
9538	-
	-

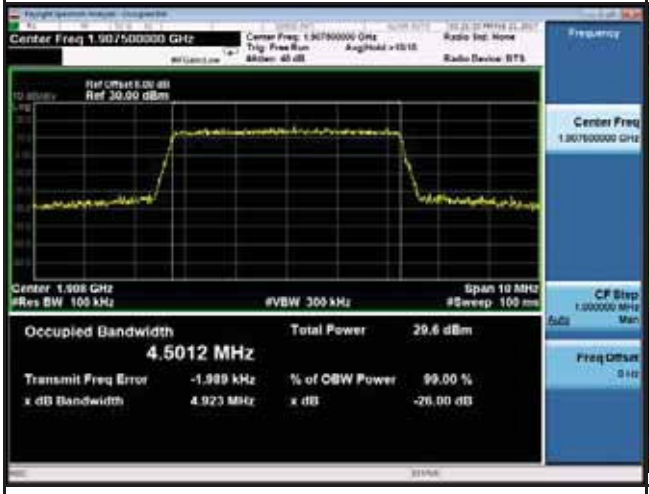
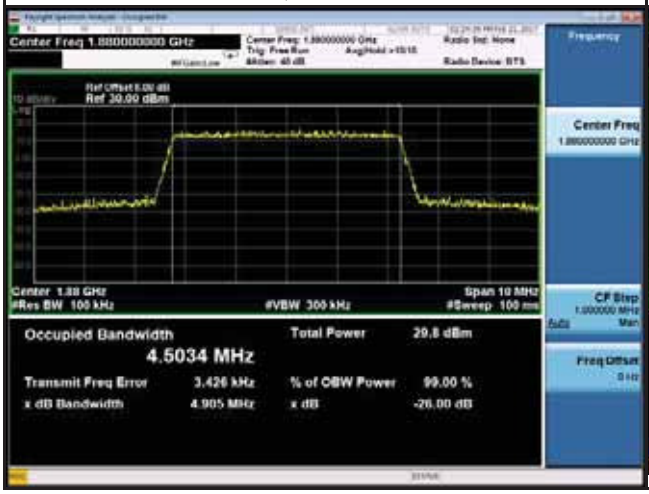
WCDMA_HSDPA Band 2					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
9262	1852.4	4.1809	9262	1852.4	4.789
9400	1880	4.1684	9400	1880	4.734
9538	1907.6	4.1642	9538	1907.6	4.729

Spectrum Plot	
9262	9400
9538	-
	-

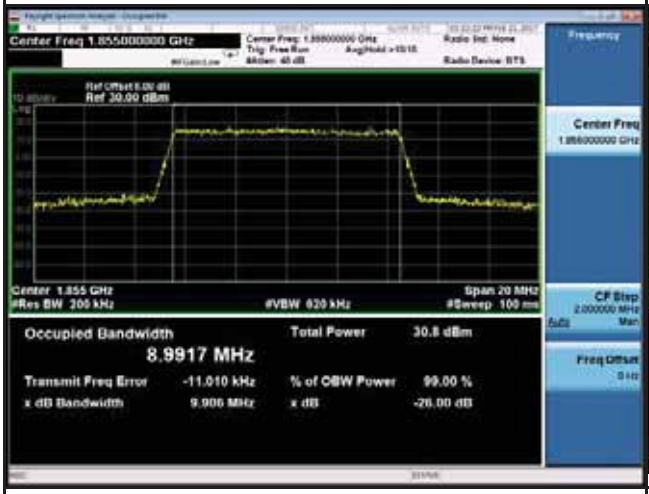
WCDMA_HSUPA Band 2					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
9262	1852.4	4.1686	9262	1852.4	4.737
9400	1880	4.1633	9400	1880	4.740
9538	1907.6	4.1579	9538	1907.6	4.730

Spectrum Plot	
9262	9400
9538	-
	-

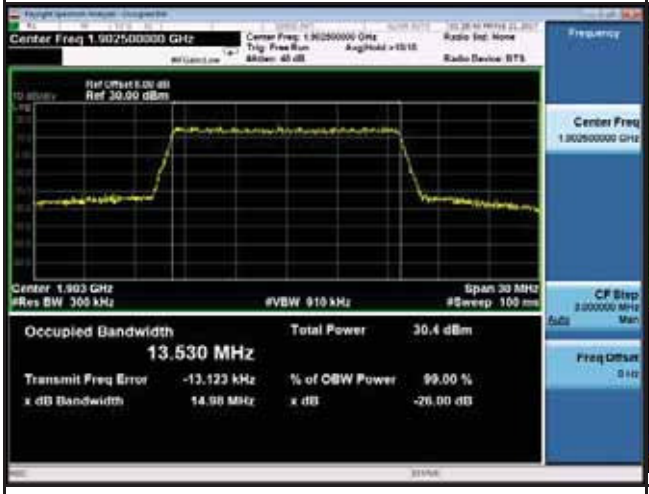
LTE Band 2_5M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
18625	1852.5	4.5000	18625	1852.5	4.5036
18900	1880	4.5010	18900	1880	4.5034
19175	1907.5	4.5012	19175	1907.5	4.5037
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18625	1852.5	4.925	18625	1852.5	4.952
18900	1880	4.937	18900	1880	4.905
19175	1907.5	4.923	19175	1907.5	4.925

Spectrum Plot	
QPSK-18625	QPSK-18900
QPSK-19175	16QAM-18625
	
16QAM-18900	16QAM-19175
	

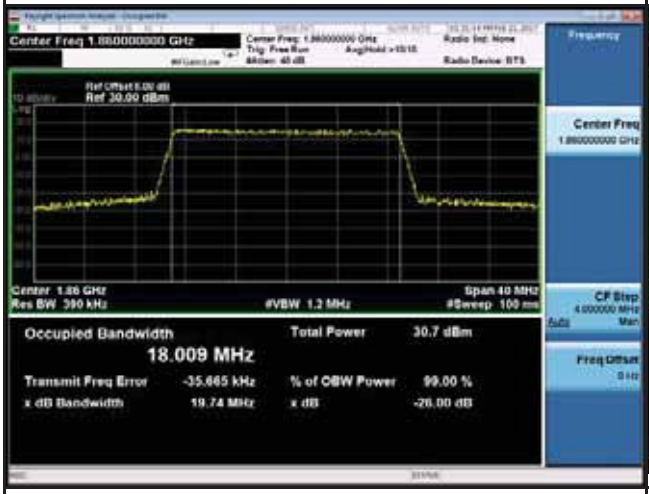
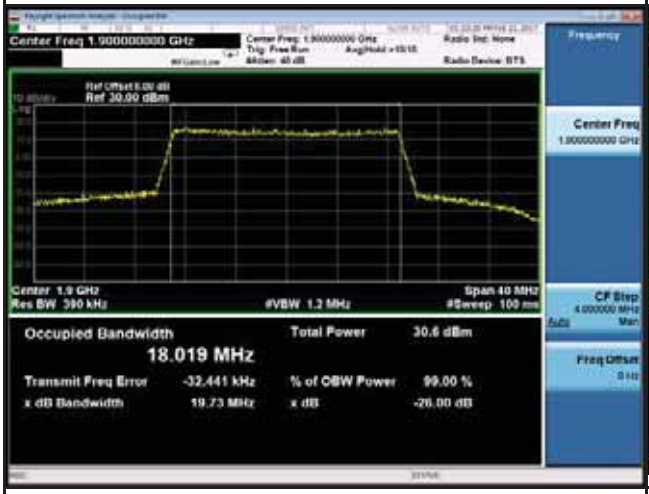
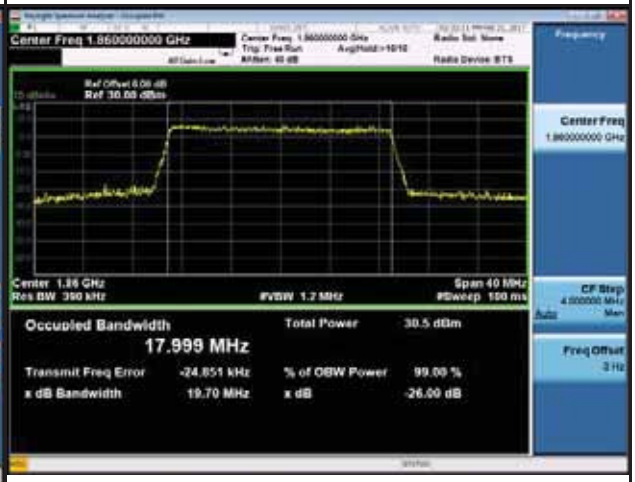
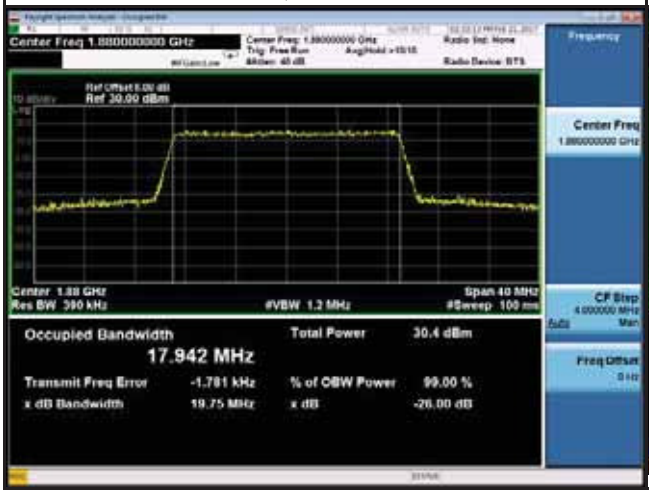
LTE Band 2_10M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
18650	1855	8.9917	18650	1855	9.0300
18900	1880	9.0101	18900	1880	8.9819
19150	1905	9.0356	19150	1905	8.9920
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18650	1855	9.906	18650	1855	9.948
18900	1880	9.864	18900	1880	9.860
19150	1905	9.890	19150	1905	9.886

Spectrum Plot	
QPSK-18650	QPSK-18900
	
QPSK-19150	16QAM-18650
16QAM-18900	16QAM-19150

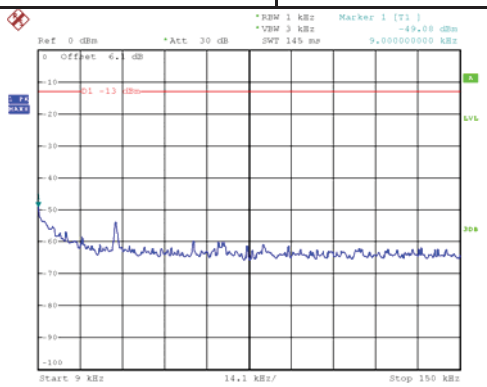
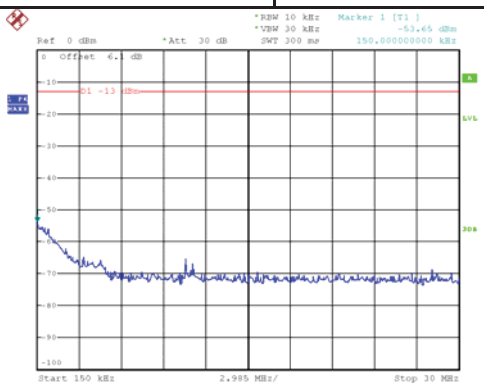
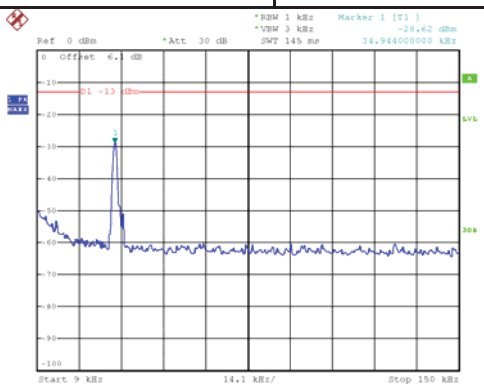
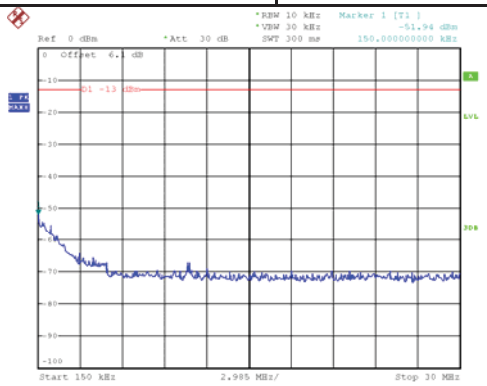
LTE Band 2_15M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
18675	1857.5	13.478	18675	1857.5	13.484
18900	1880	13.488	18900	1880	13.469
19125	1902.5	13.530	19125	1902.5	13.511
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18675	1857.5	14.87	18675	1857.5	15.01
18900	1880	15.00	18900	1880	14.92
19125	1902.5	14.98	19125	1902.5	15.00

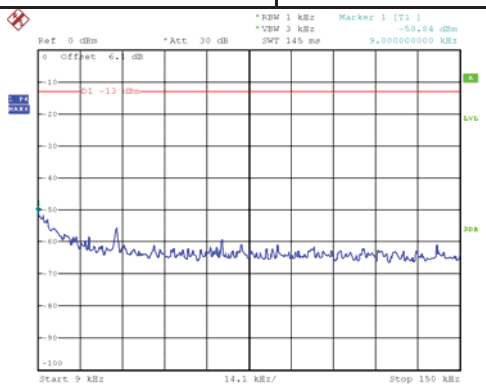
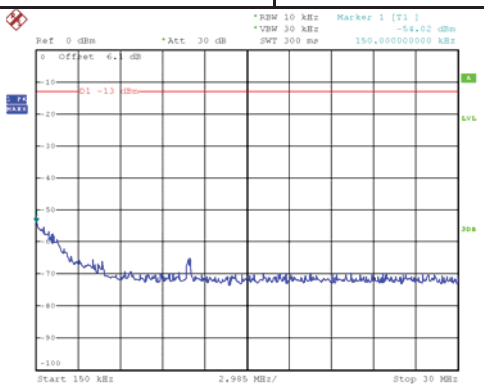
Spectrum Plot	
QPSK-18675	QPSK-18900
QPSK-19125	16QAM-18675
	
16QAM-18900	16QAM-19125

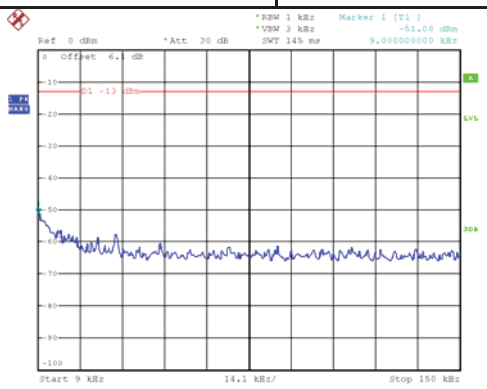
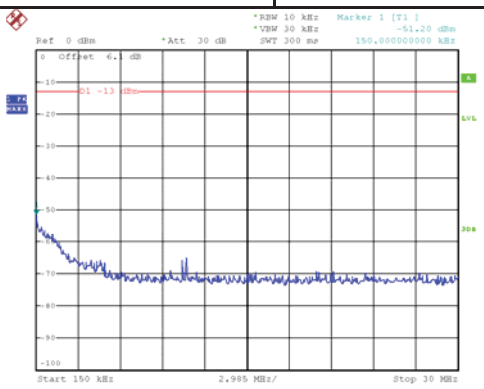
LTE Band 2_20M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
18700	1860	18.009	18700	1860	17.999
18900	1880	19.971	18900	1880	17.942
19100	1900	18.019	19100	1900	18.036
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18700	1860	19.74	18700	1860	19.70
18900	1880	19.66	18900	1880	19.75
19100	1900	19.73	19100	1900	19.67

Spectrum Plot	
QPSK-18700	QPSK-18900
	
QPSK-19100	16QAM-18700
	
16QAM-18900	16QAM-19100
	

ATTACHMENT C - CONDUCTED EMISSIONS

DCS1900			
GSM		GSM	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
661	1880	661	1880
			
GSM		EDGE	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
661	1880	661	1880
			
EDGE		EDGE	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
661	1880	661	1880
			

WCDMA Band 2			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
9400	1880	9400	1880
			
Channel	Frequency(MHz)	-	-
9400	1880	-	-
		-	

<table>
<tr><td colspan="4">WCDMA_HSDPA Band 2</td></tr>
<tr><td>Channel</td><td>Frequency(MHz)</td><td>Channel</td><td>Frequency(MHz)</td></tr>
<tr><td>9400</td><td>1880</td><td>9400</td><td>1880</td></tr>
<tr><td>  </td><td colspan="3">  </td></tr>
<tr><td>Channel</td><td>Frequency(MHz)</td><td>-</td><td>-</td></tr>
<tr><td>9400</td><td>1880</td><td>-</td><td>-</td></tr>
<tr><td> </td><td colspan="3">-</td></tr>
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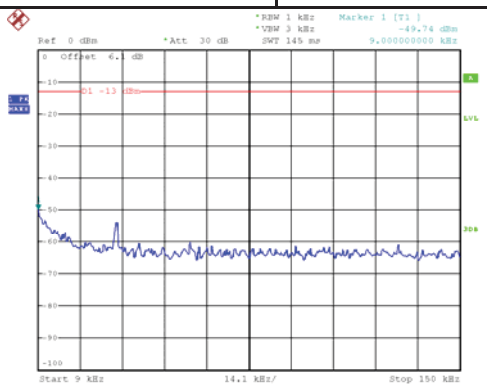
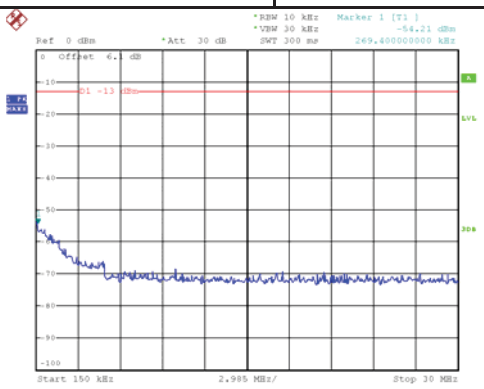
WCDMA_HSUPA Band 2			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
9400	1880	9400	1880
			
Channel	Frequency(MHz)	-	-
9400	1880	-	-
		-	

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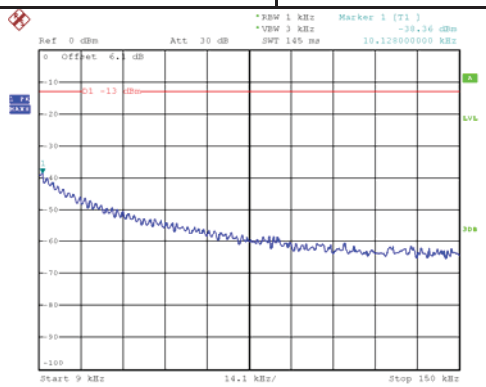
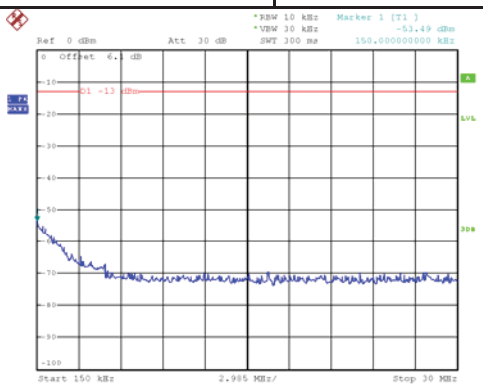
<tr><td colspan="4">LTE Band 2_5M</td></tr>
<tr><td>Channel</td><td>Frequency(MHz)</td><td>Channel</td><td>Frequency(MHz)</td></tr>
<tr><td>18900</td><td>1880</td><td>18900</td><td>1880</td></tr>
<tr><td colspan="2">  </td><td colspan="2">  </td></tr>
<tr><td>Channel</td><td>Frequency(MHz)</td><td>-</td><td>-</td></tr>
<tr><td>18900</td><td>1880</td><td>-</td><td>-</td></tr>
<tr><td colspan="2"> </td><td colspan="2">-</td></tr>
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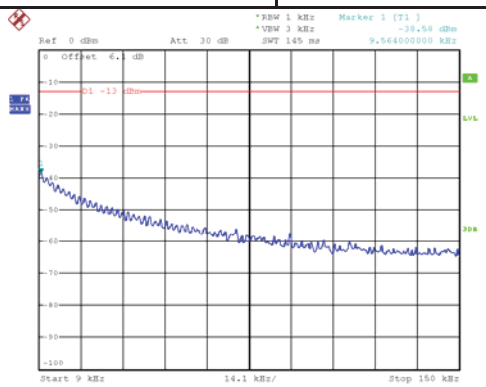
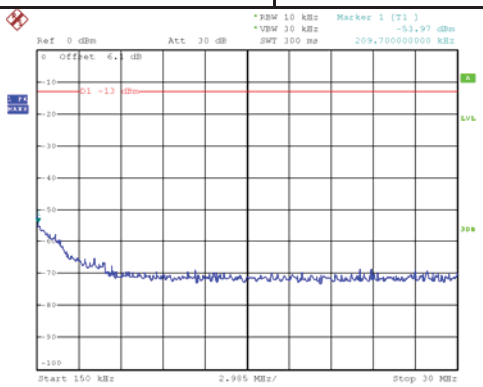
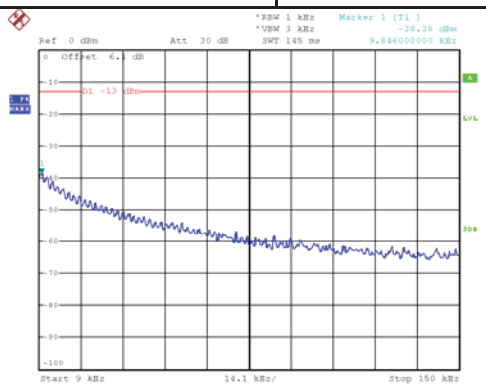
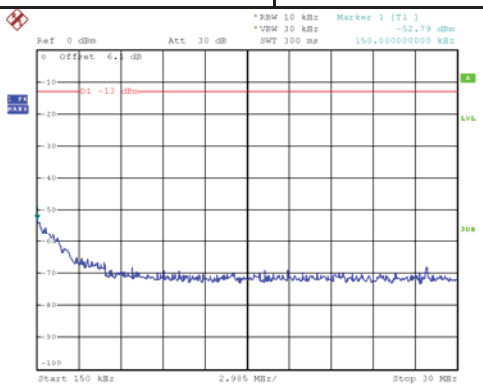
LTE Band 2_10M			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
18900	1880	18900	1880
			
Channel	Frequency(MHz)	-	-
18900	1880	-	-
		-	

LTE Band 2_15M			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
18900	1880	18900	1880
			
Channel	Frequency(MHz)	-	-
18900	1880	-	-
		-	

<table>
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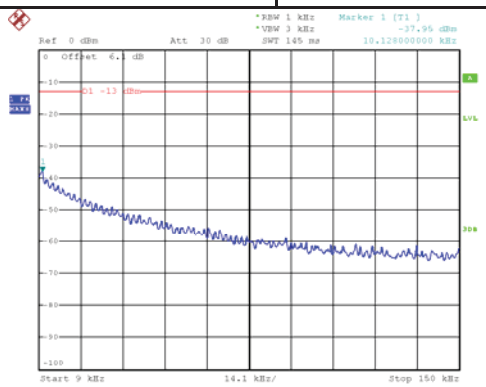
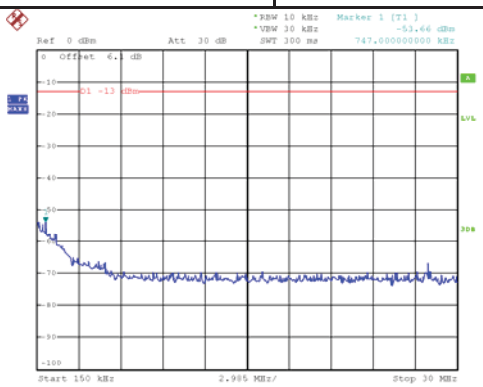
<tr><td>Channel</td><td>Frequency(MHz)</td><td>Channel</td><td>Frequency(MHz)</td></tr>
<tr><td>18900</td><td>1880</td><td>18900</td><td>1880</td></tr>
<tr><td colspan="2">  </td><td colspan="2">  </td></tr>
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<tr><td>18900</td><td>1880</td><td>-</td><td>-</td></tr>
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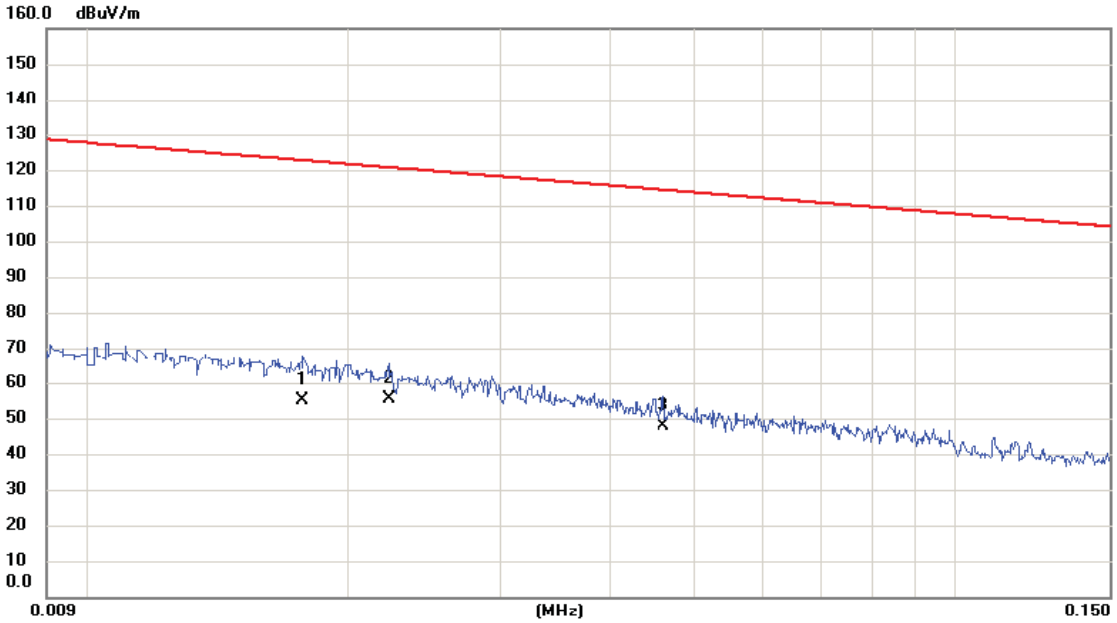
</table>

ATTACHMENT D - RADIATED EMISSION

Test Mode:	TX Mode (Adapter: PHITEK)

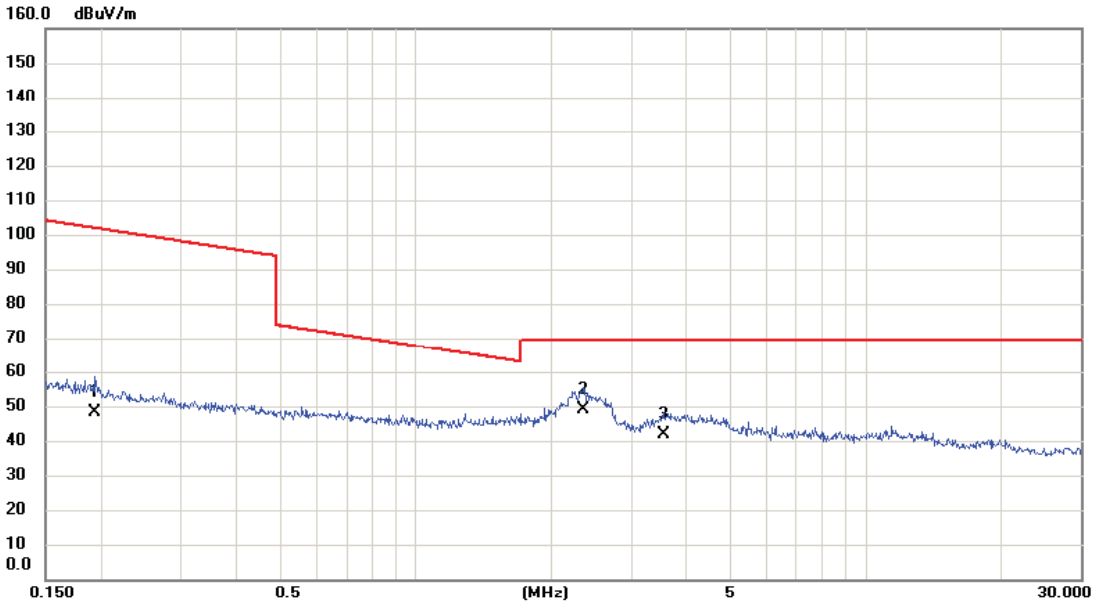
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0177	31.44	23.66	55.10	122.65	-67.55	AVG	
2	*	0.0223	32.16	23.24	55.40	120.64	-65.24	AVG	
3		0.0461	27.64	20.30	47.94	114.33	-66.39	AVG	

Test Mode:	TX Mode (Adapter: PHITEK)

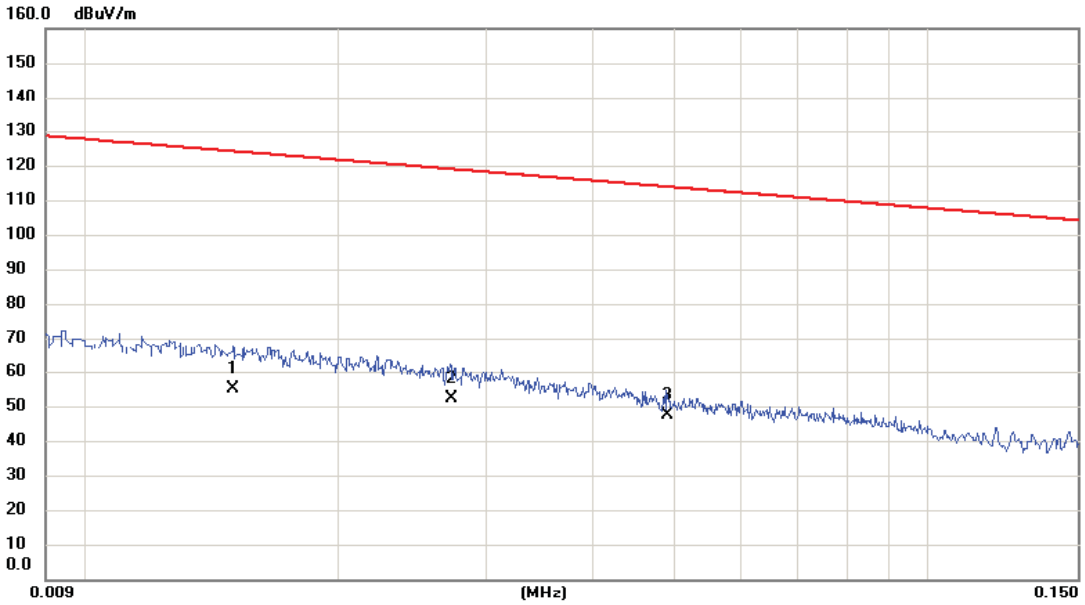
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1934	29.44	18.70	48.14	101.88	-53.74	AVG	
2	*	2.3584	31.42	17.44	48.86	69.54	-20.68	QP	
3		3.5653	24.12	17.83	41.95	69.54	-27.59	QP	

Test Mode:	TX Mode (Adapter: PHITEK)

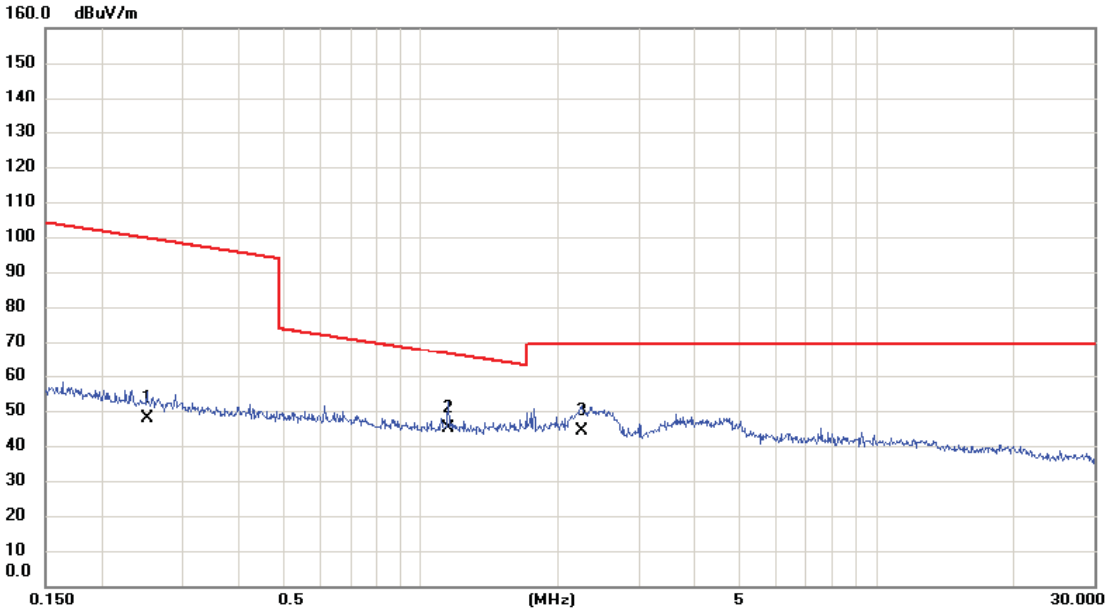
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0150	31.14	23.82	54.96	124.08	-69.12	AVG	
2		0.0273	29.55	22.62	52.17	118.88	-66.71	AVG	
3	*	0.0491	27.58	19.93	47.51	113.78	-66.27	AVG	

Test Mode:	TX Mode (Adapter: PHITEK)

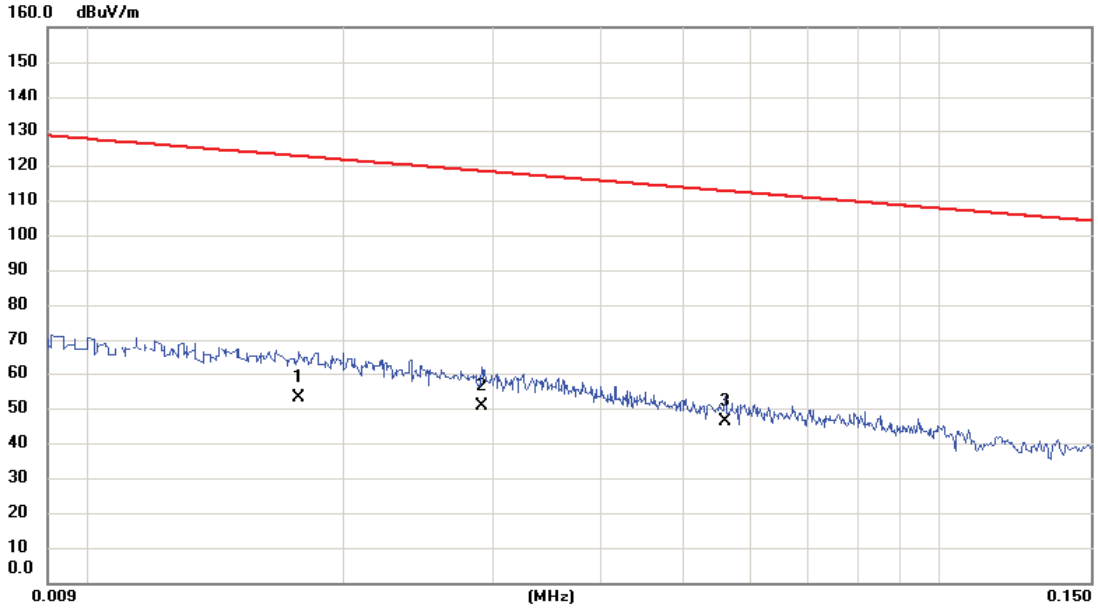
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.2508	29.22	18.65	47.87	99.62	-51.75	AVG	
2	*	1.1534	27.33	17.71	45.04	66.36	-21.32	QP	
3		2.2486	26.74	17.59	44.33	69.54	-25.21	QP	

Test Mode:	TX Mode (Adapter: HUNTKEY)

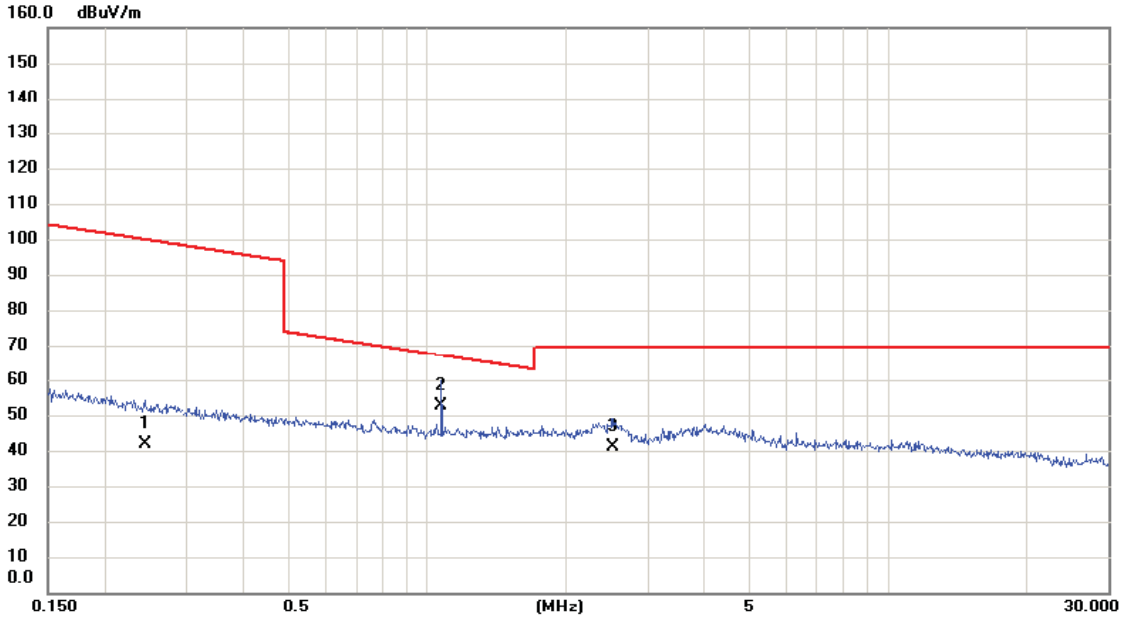
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0177	29.32	23.66	52.98	122.65	-69.67	AVG	
2		0.0291	28.15	22.40	50.55	118.33	-67.78	AVG	
3	*	0.0561	26.41	19.76	46.17	112.63	-66.46	AVG	

Test Mode:	TX Mode (Adapter: HUNTKEY)

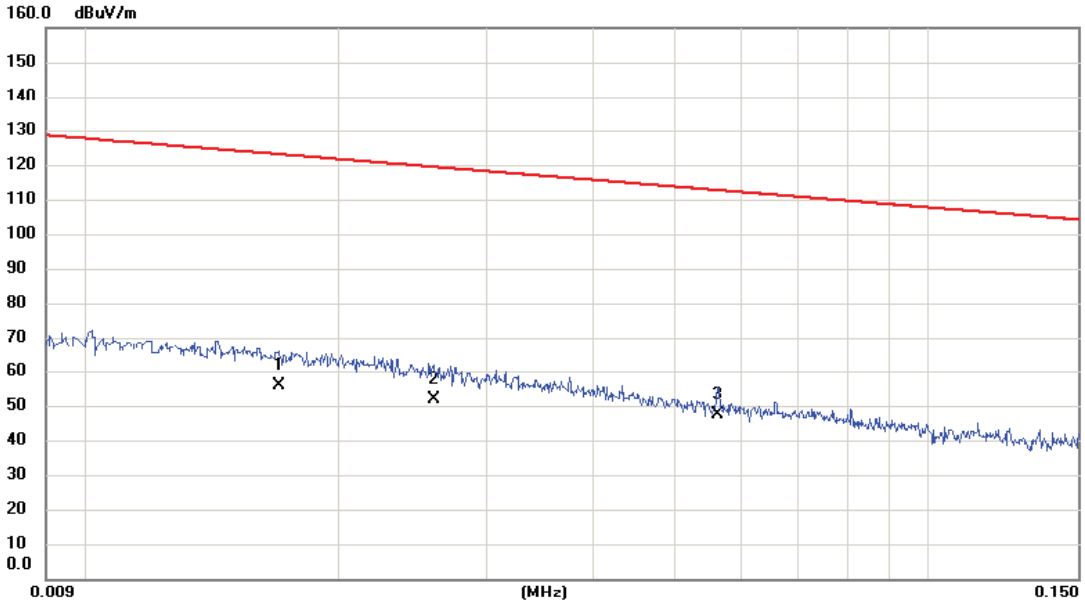
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.2430	23.12	18.66	41.78	99.89	-58.11	AVG	
2	*	1.0766	34.96	17.70	52.66	66.96	-14.30	QP	
3		2.5133	23.70	17.25	40.95	69.54	-28.59	QP	

Test Mode:	TX Mode (Adapter: HUNTKEY)

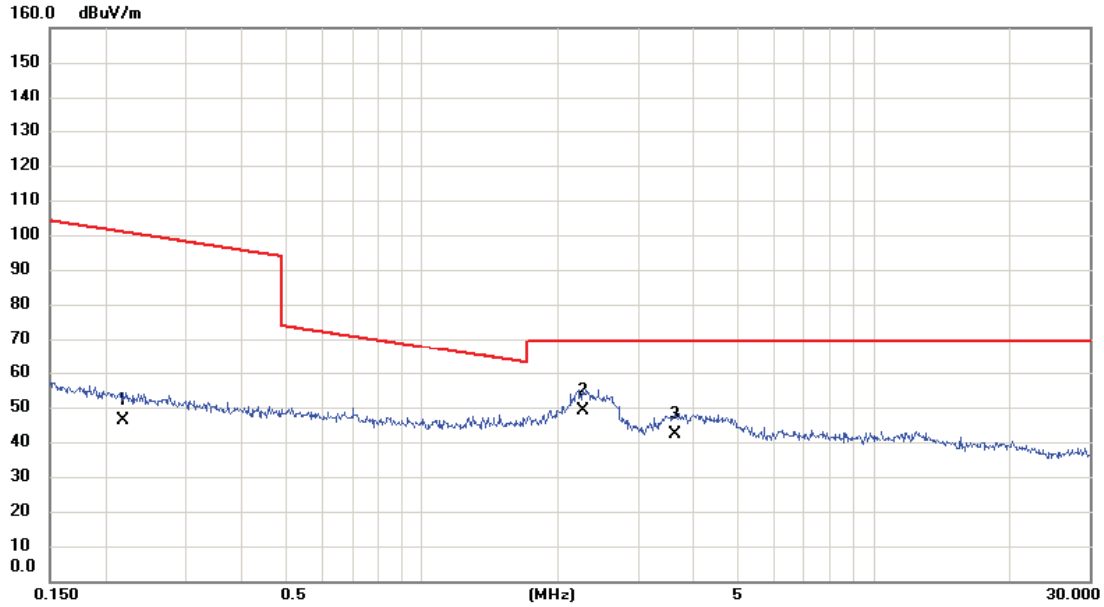
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0170	32.15	23.70	55.85	123.00	-67.15	AVG	
2		0.0260	29.04	22.78	51.82	119.31	-67.49	AVG	
3	*	0.0563	27.52	19.75	47.27	112.59	-65.32	AVG	

Test Mode:	TX Mode (Adapter: HUNTKEY)

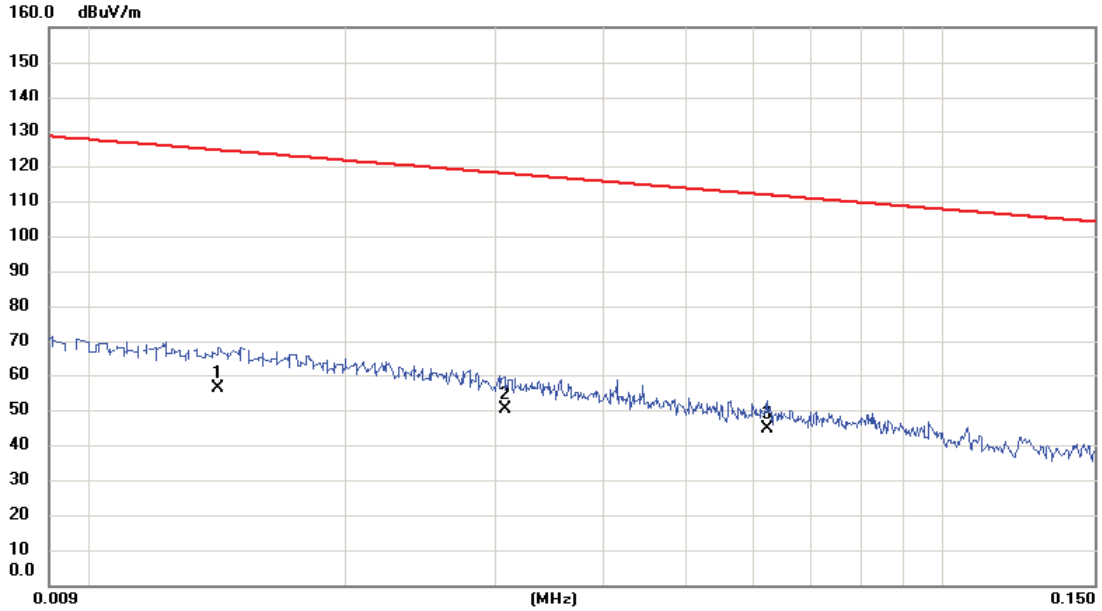
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.2174	27.67	18.68	46.35	100.86	-54.51	AVG	
2	*	2.2725	31.55	17.56	49.11	69.54	-20.43	QP	
3		3.6417	24.11	18.00	42.11	69.54	-27.43	QP	

Test Mode:	TX Mode (Adapter: BYD)

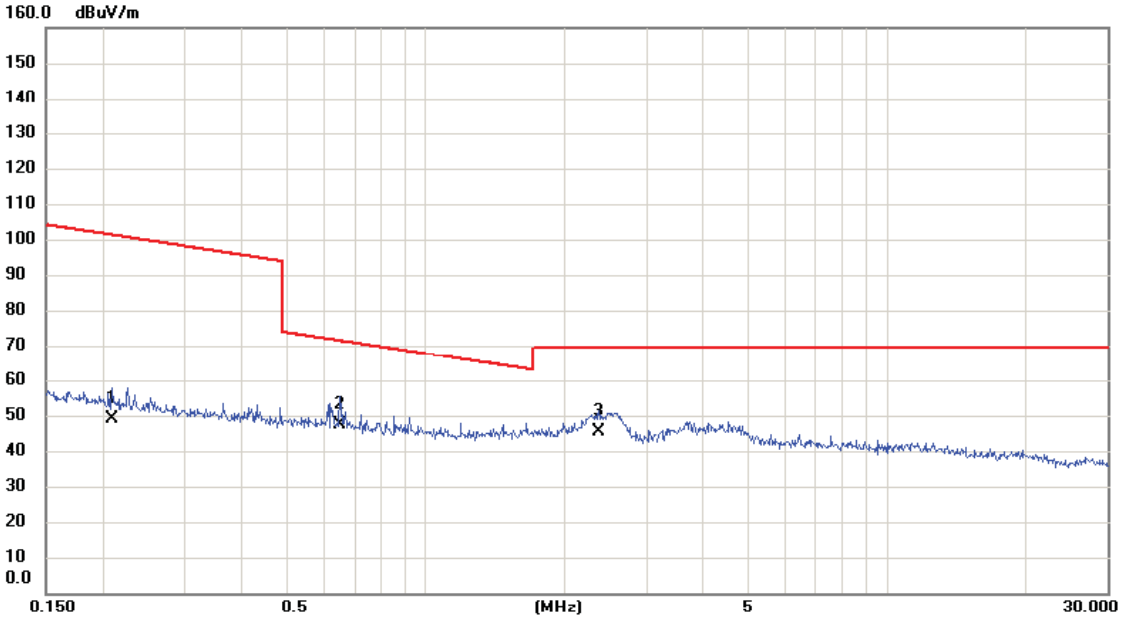
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0142	32.29	23.87	56.16	124.56	-68.40	peak	
2		0.0307	28.09	22.20	50.29	117.86	-67.57	peak	
3	*	0.0623	24.86	19.68	44.54	111.72	-67.18	peak	

Test Mode:	TX Mode (Adapter: BYD)

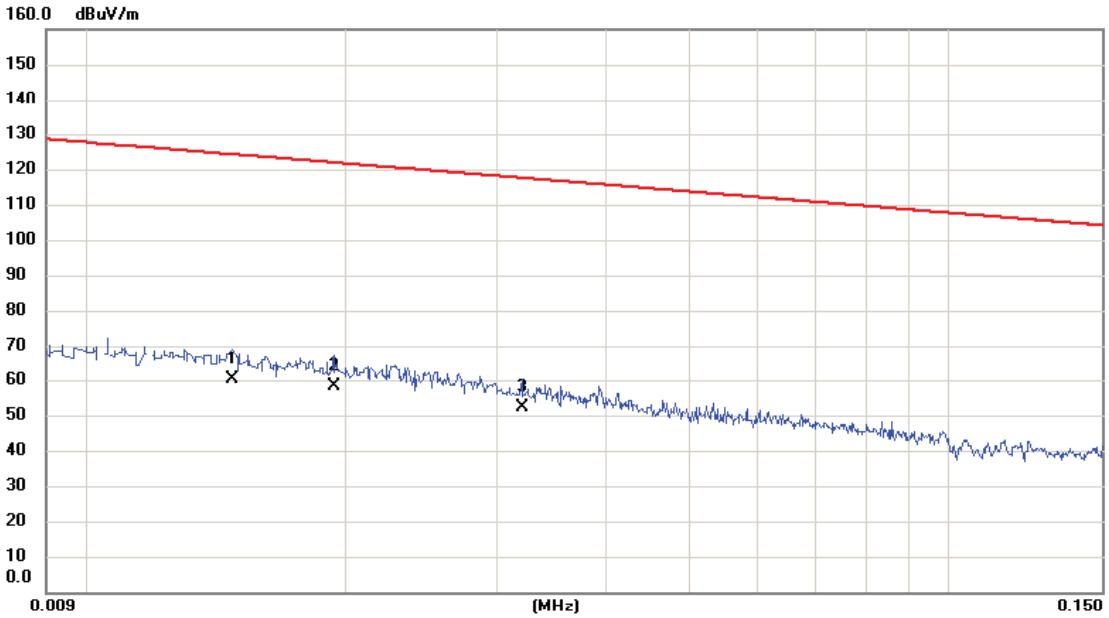
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.2083	30.19	18.68	48.87	101.23	-52.36	AVG	
2	*	0.6508	28.96	18.43	47.39	71.34	-23.95	QP	
3		2.3710	27.84	17.43	45.27	69.54	-24.27	QP	

Test Mode:	TX Mode (Adapter: BYD)

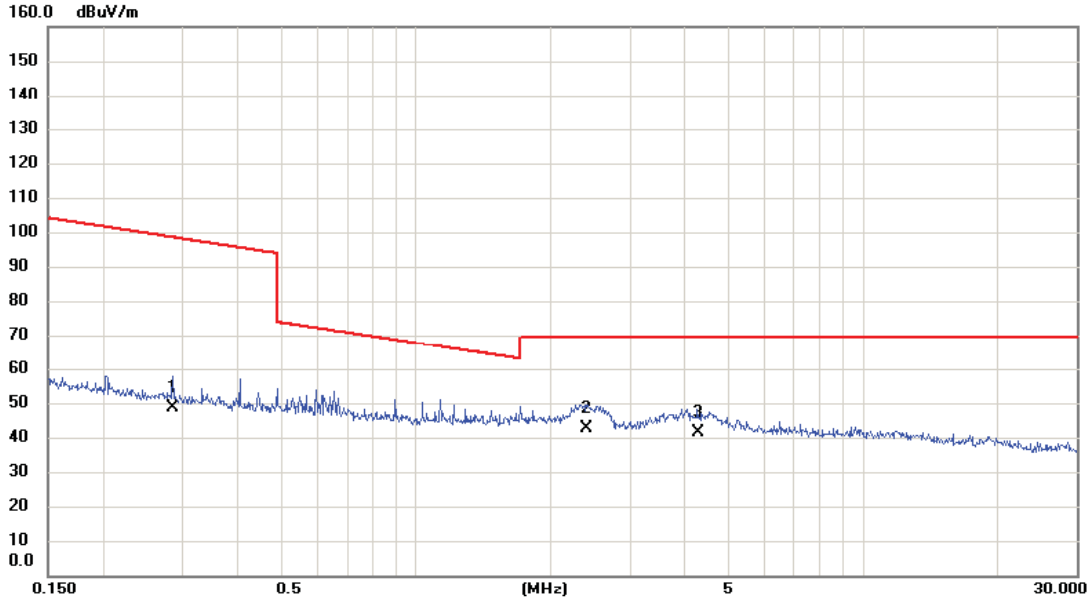
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0148	36.26	23.83	60.09	124.20	-64.11	AVG	
2	*	0.0194	34.69	23.56	58.25	121.85	-63.60	AVG	
3		0.0320	30.01	22.04	52.05	117.50	-65.45	AVG	

Test Mode:	TX Mode (Adapter: BYD)

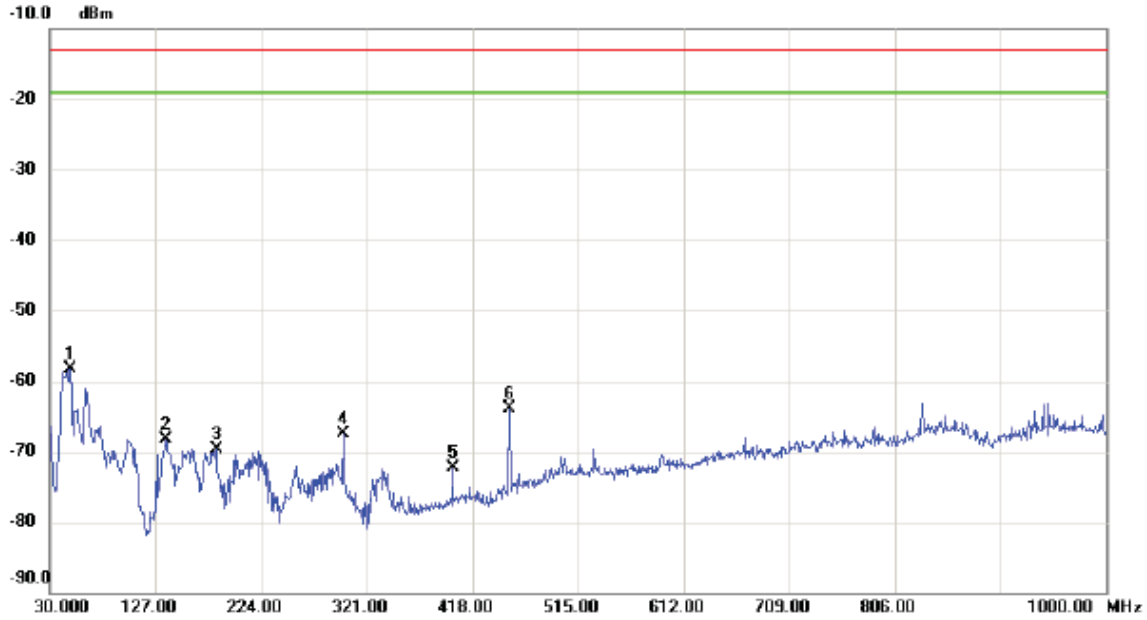
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.2847	30.02	18.61	48.63	98.52	-49.89	AVG	
2	*	2.3962	25.18	17.39	42.57	69.54	-26.97	QP	
3		4.2692	23.02	18.19	41.21	69.54	-28.33	QP	

Test Mode:	DCS1900_TX CH512_GSM

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	48.430	-59.32	1.03	-58.29	-13.00	-45.29	peak	
2		136.700	-69.47	1.24	-68.23	-13.00	-55.23	peak	
3		182.775	-69.76	0.06	-69.70	-13.00	-56.70	peak	
4		300.145	-68.55	0.98	-67.57	-13.00	-54.57	peak	
5		400.055	-76.39	4.11	-72.28	-13.00	-59.28	peak	
6		451.950	-69.12	5.26	-63.86	-13.00	-50.86	peak	

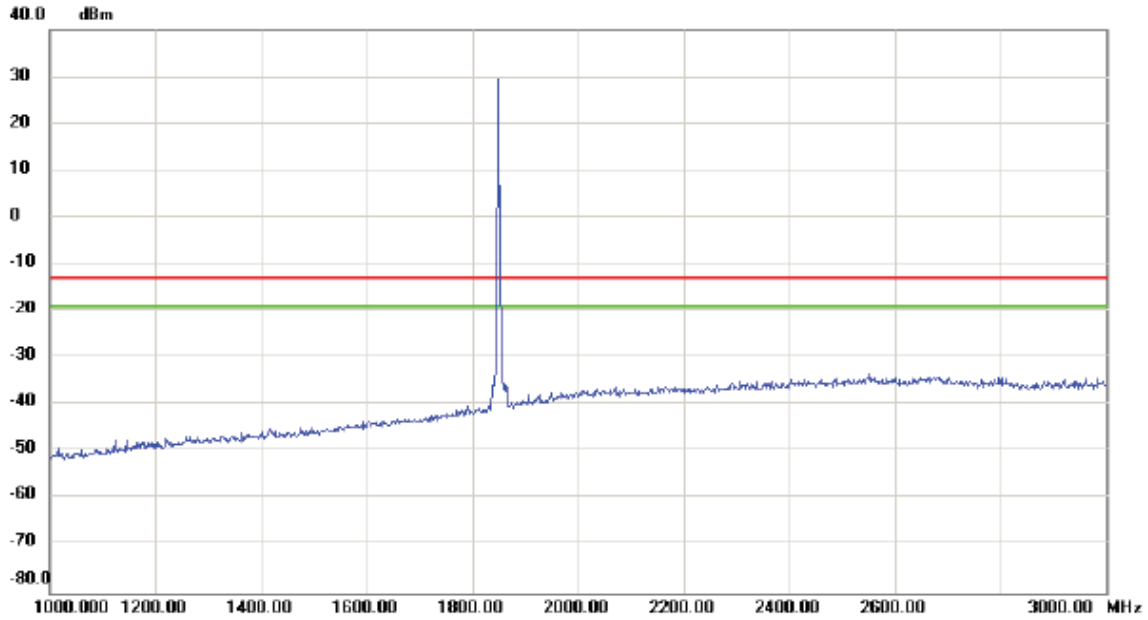
Test Mode:	DCS1900_TX CH512_GSM

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		49.400	-70.40	1.48	-68.92	-13.00	-55.92	peak	
2		152.705	-72.07	3.84	-68.23	-13.00	-55.23	peak	
3		225.940	-64.77	2.15	-62.62	-13.00	-49.62	peak	
4	*	300.145	-62.11	0.53	-61.58	-13.00	-48.58	peak	
5		334.095	-67.94	2.46	-65.48	-13.00	-52.48	peak	
6		692.510	-79.55	13.47	-66.08	-13.00	-53.08	peak	

Test Mode:	DCS1900_TX CH512_GSM

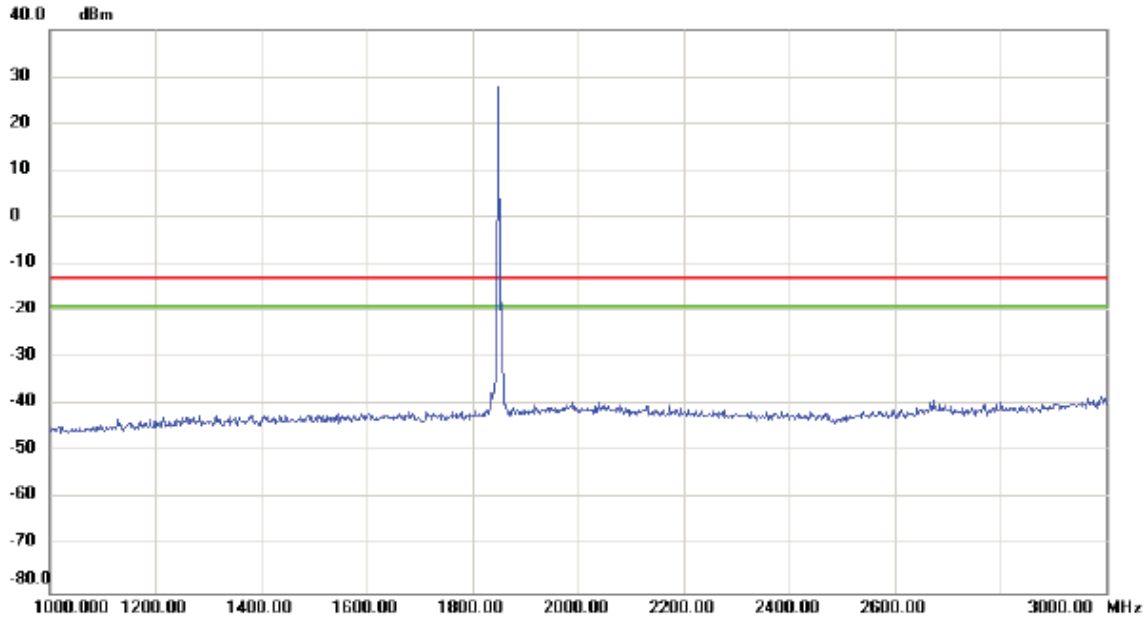
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	DCS1900_TX CH512_GSM

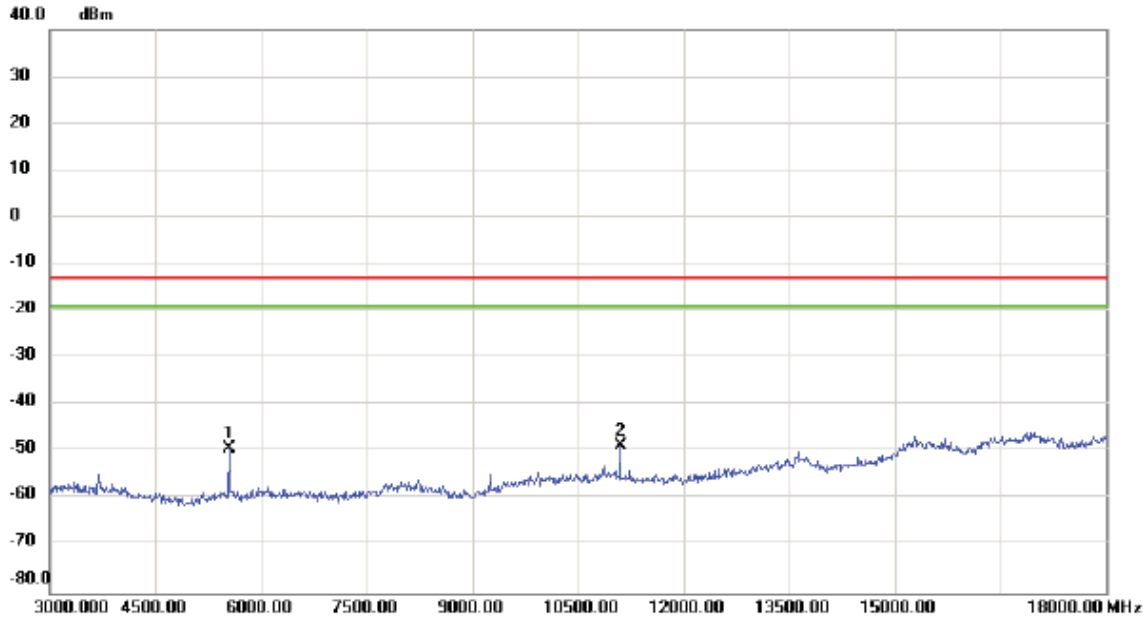
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	DCS1900_TX CH512_GSM

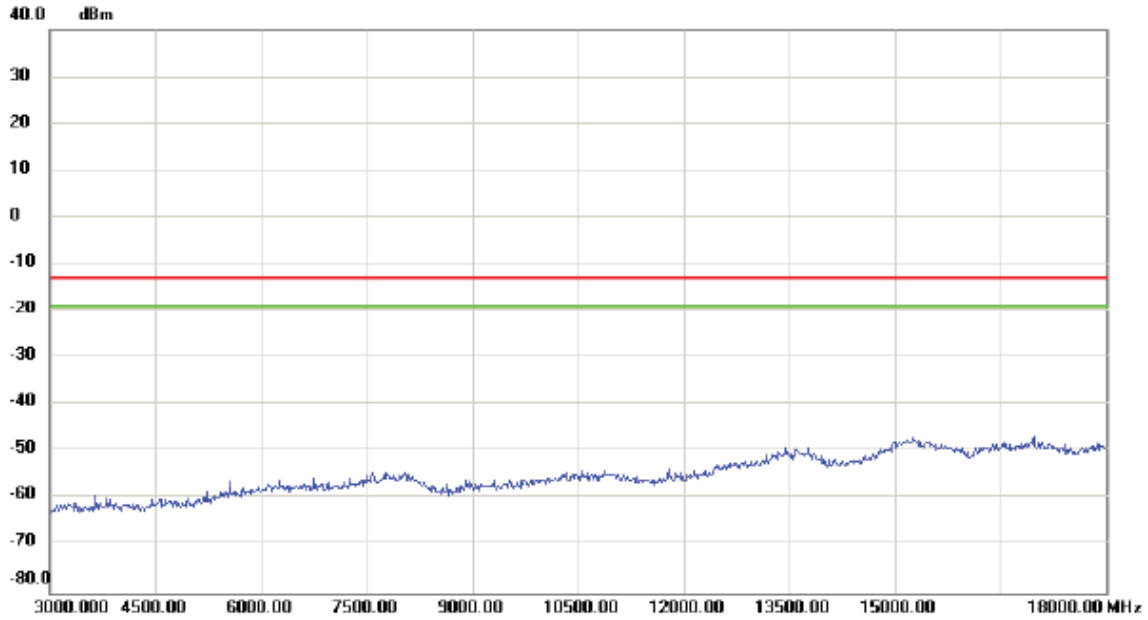
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		5550.000	-65.29	16.16	-49.13	-13.00	-36.13	peak	
2	*	11100.000	-72.20	23.45	-48.75	-13.00	-35.75	peak	

Test Mode:	DCS1900_TX CH512_GSM

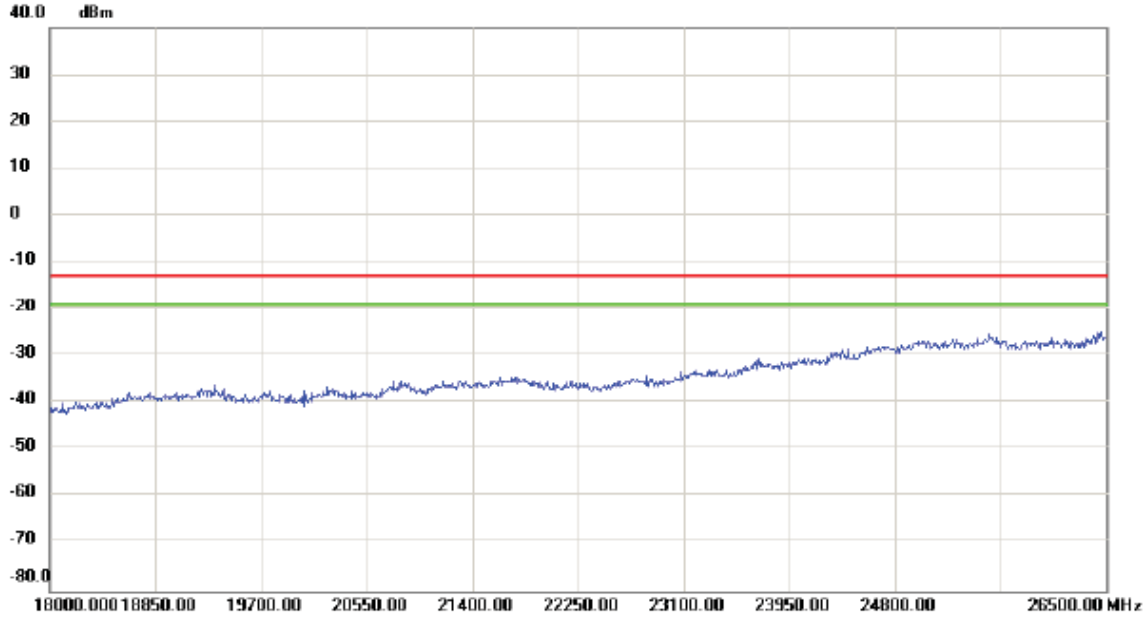
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	DCS1900_TX CH512_GSM

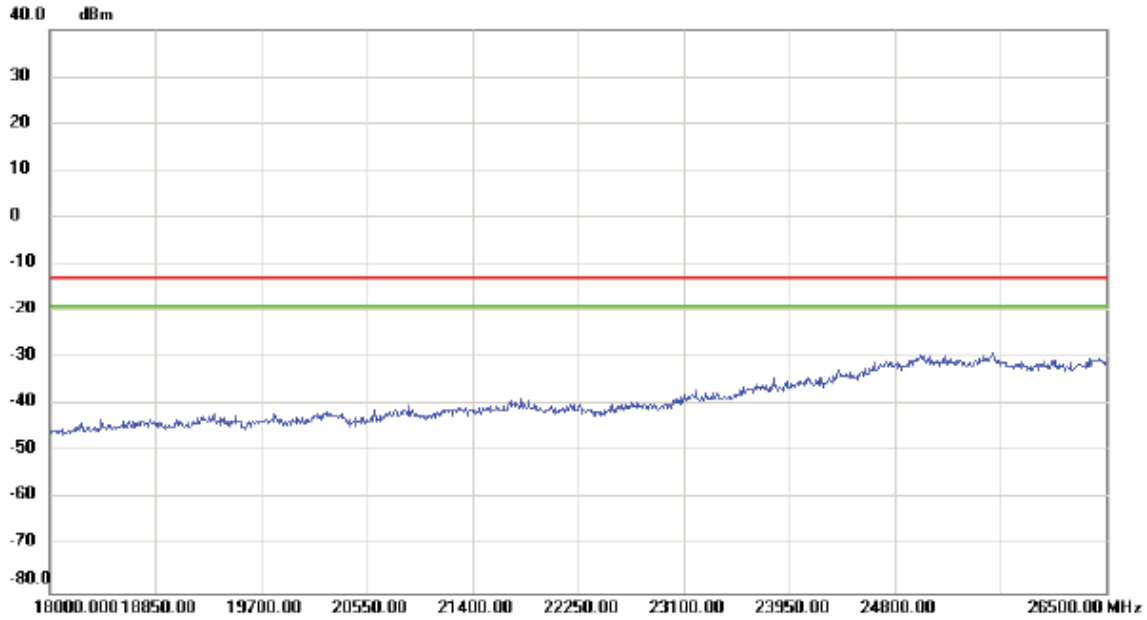
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	DCS1900_TX CH512_GSM

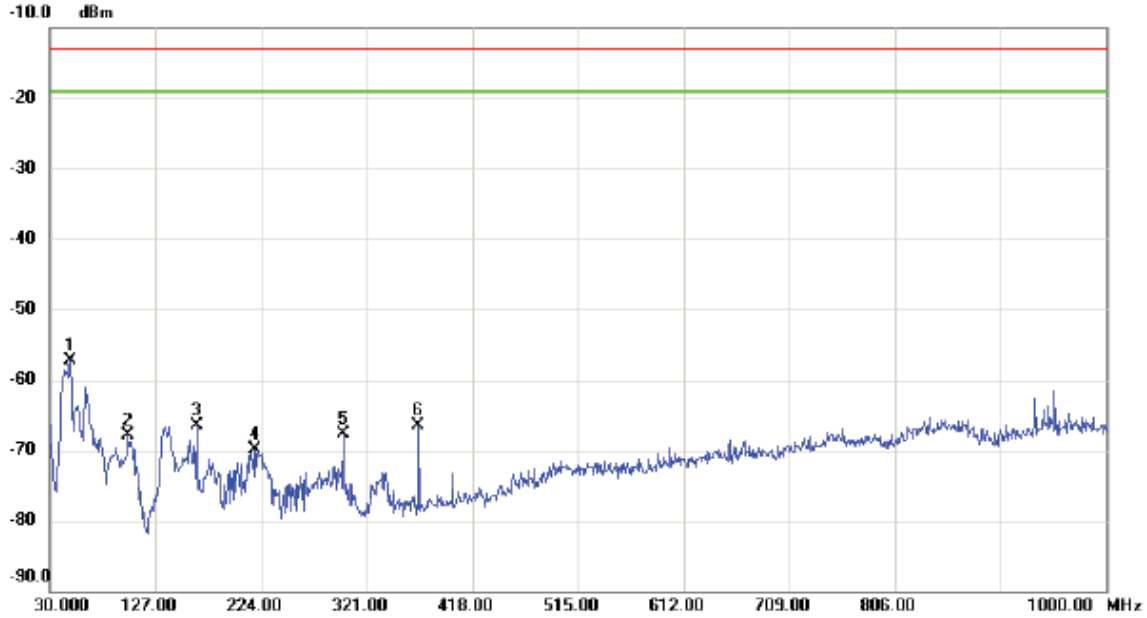
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	DCS1900_TX CH512_EDGE

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	48.430	-58.30	1.03	-57.27	-13.00	-44.27	peak	
2		102.265	-66.57	-1.29	-67.86	-13.00	-54.86	peak	
3		165.315	-67.93	1.43	-66.50	-13.00	-53.50	peak	
4		217.695	-68.20	-1.64	-69.84	-13.00	-56.84	peak	
5		300.145	-68.75	0.98	-67.77	-13.00	-54.77	peak	
6		368.530	-69.79	3.25	-66.54	-13.00	-53.54	peak	

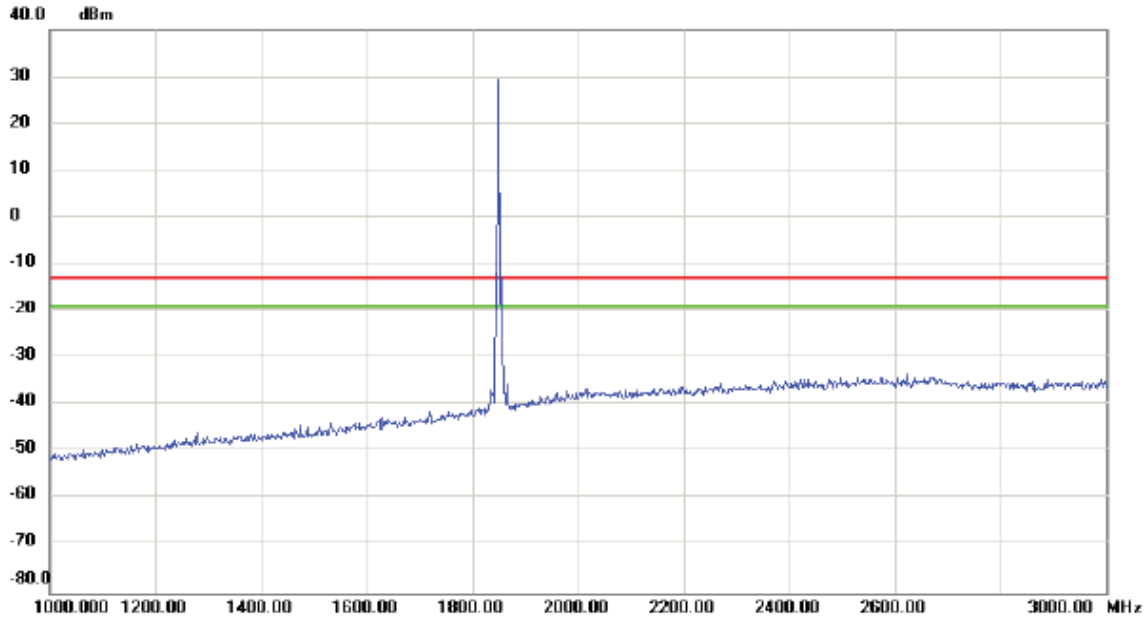
Test Mode:	DCS1900_TX CH512_EDGE

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		44.550	-66.75	2.97	-63.78	-13.00	-50.78	peak	
2		106.630	-69.48	-2.97	-72.45	-13.00	-59.45	peak	
3		152.220	-72.28	3.91	-68.37	-13.00	-55.37	peak	
4		224.485	-64.93	1.76	-63.17	-13.00	-50.17	peak	
5	*	300.145	-62.33	0.53	-61.80	-13.00	-48.80	peak	
6		328.275	-67.28	2.39	-64.89	-13.00	-51.89	peak	

Test Mode:	DCS1900_TX CH512_EDGE

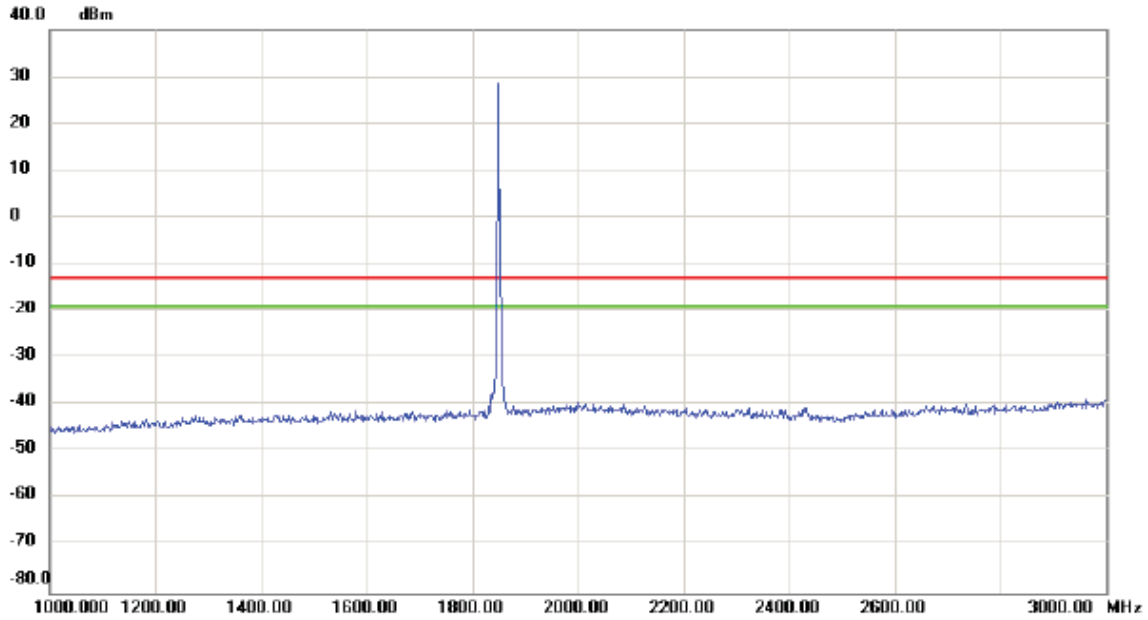
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	DCS1900_TX CH512_EDGE

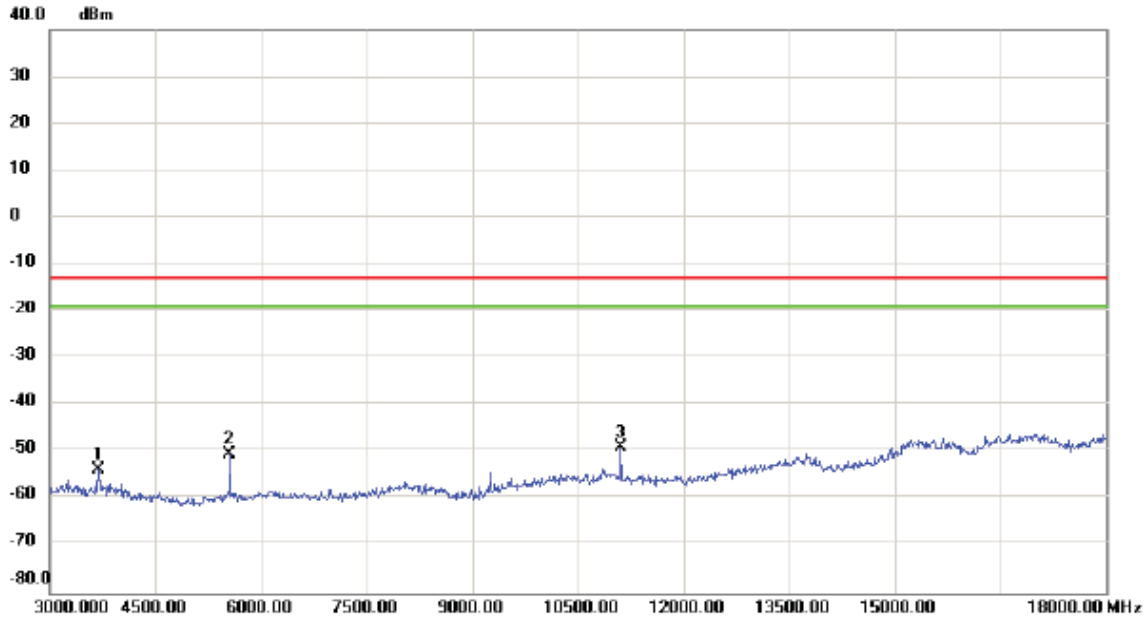
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	DCS1900_TX CH512_EDGE

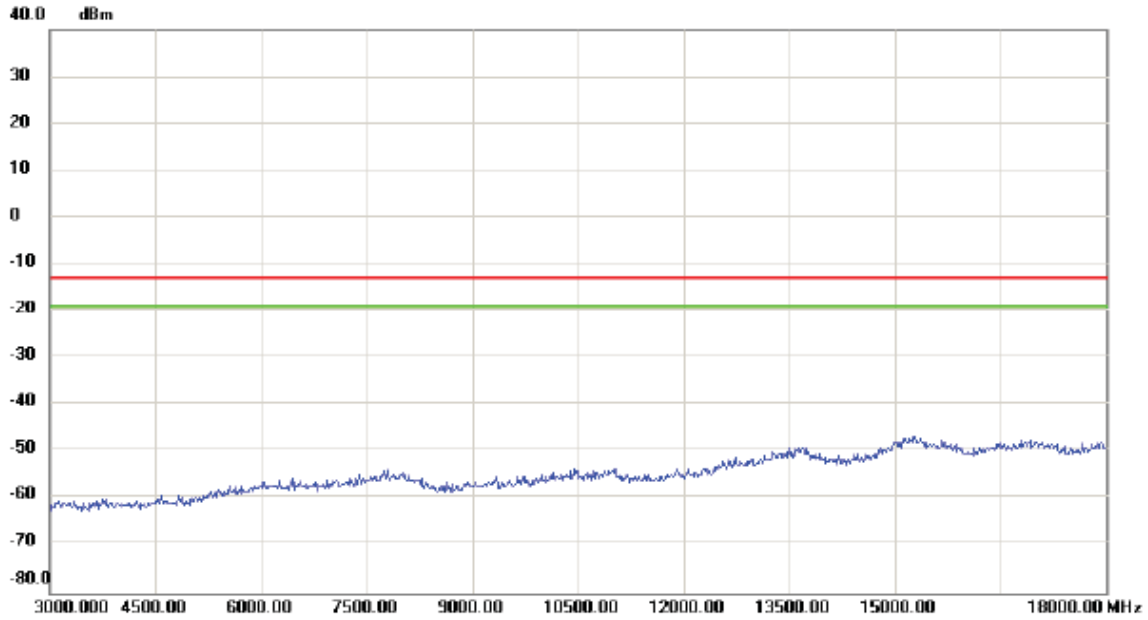
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		3697.500	-68.22	14.45	-53.77	-13.00	-40.77	peak	
2		5550.000	-66.68	16.16	-50.52	-13.00	-37.52	peak	
3	*	11100.000	-72.31	23.45	-48.86	-13.00	-35.86	peak	

Test Mode:	DCS1900_TX CH512_EDGE

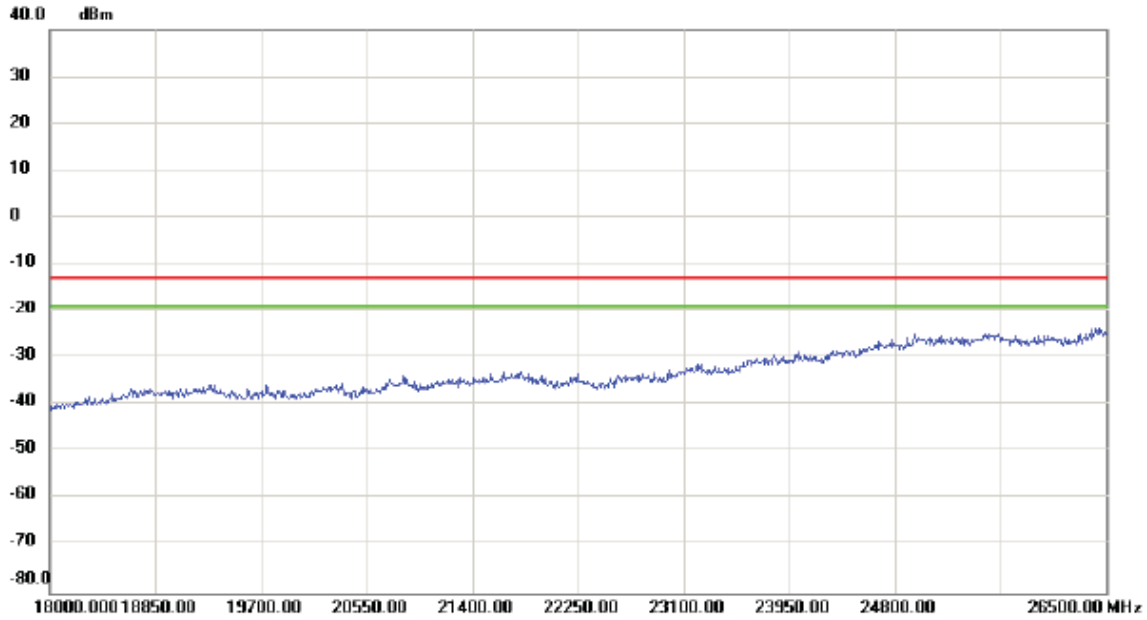
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	DCS1900_TX CH512_EDGE

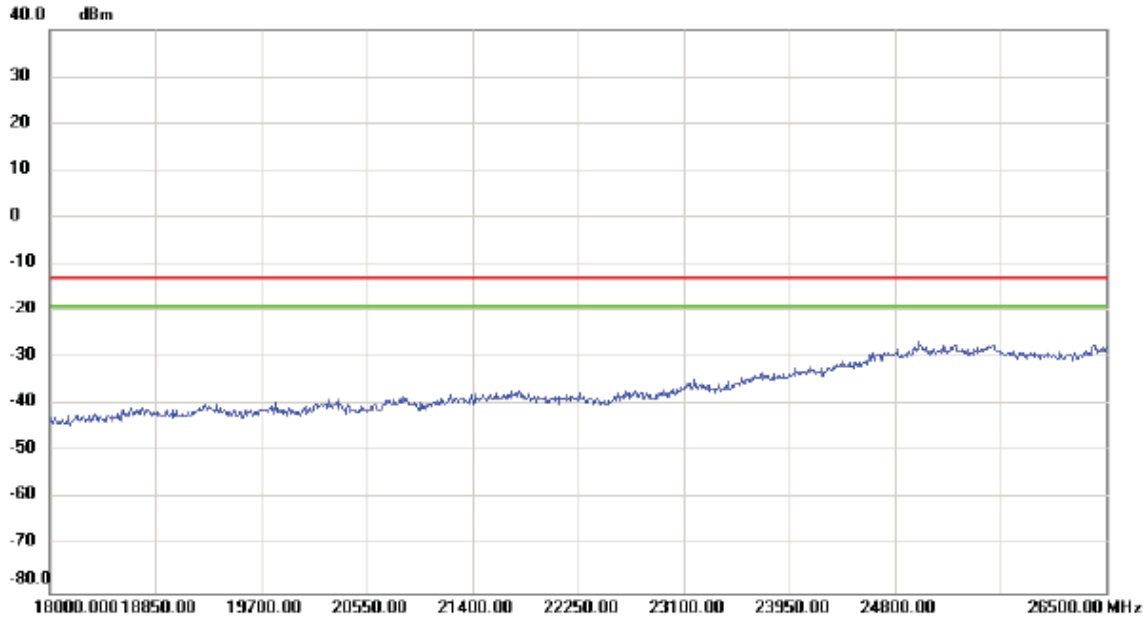
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	DCS1900_TX CH512_EDGE

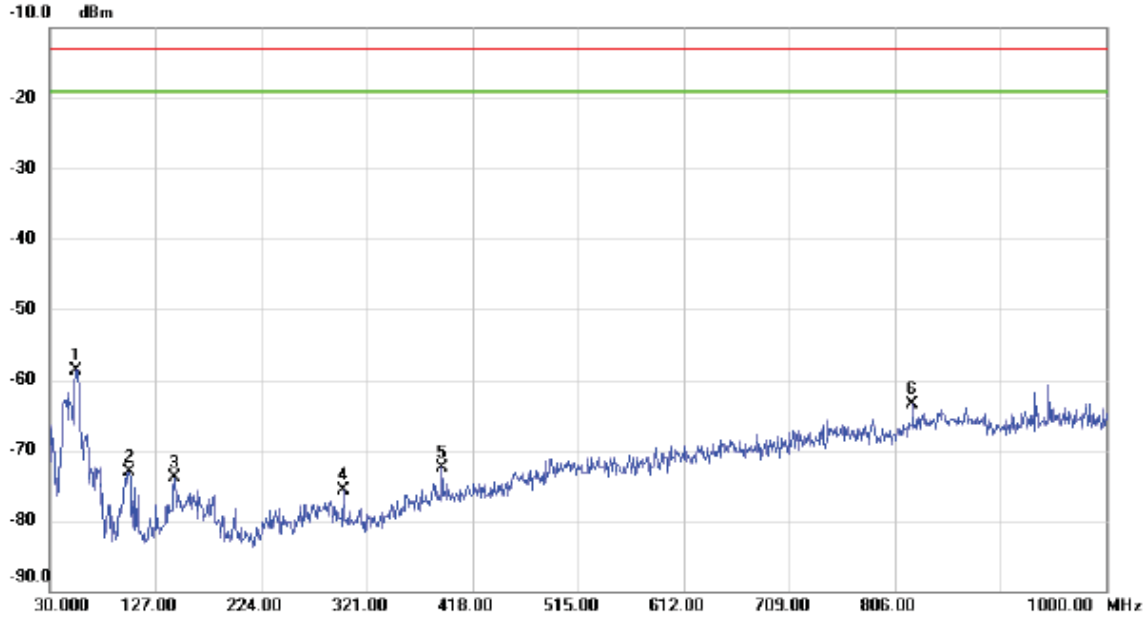
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_TX CH9400

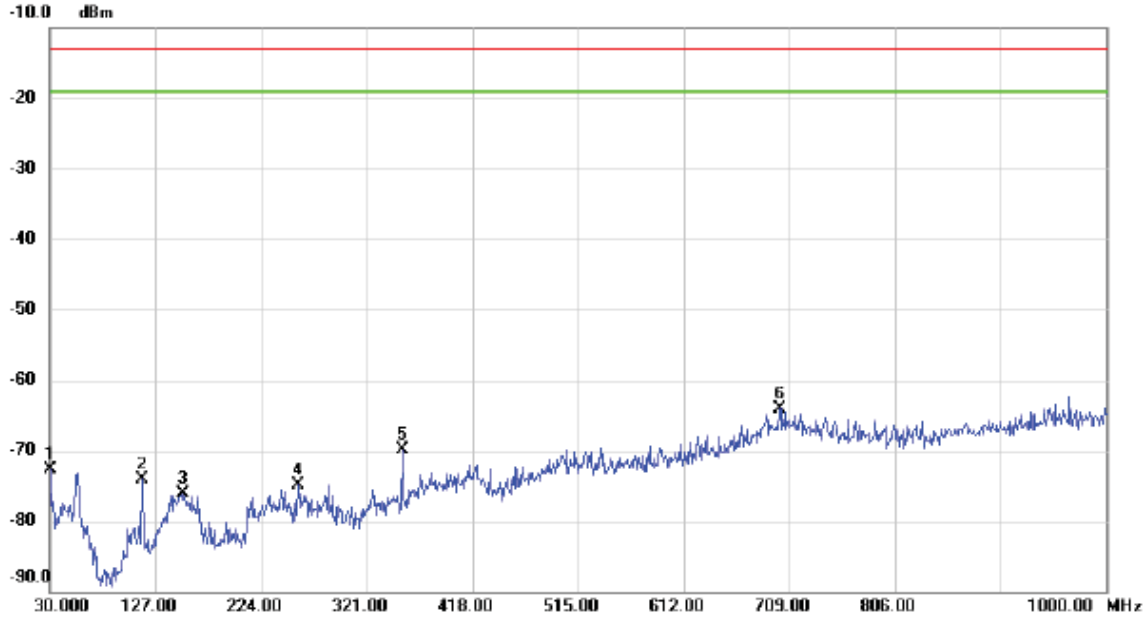
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	54.250	-61.05	2.40	-58.65	-13.00	-45.65	peak	
2		102.750	-71.82	-1.28	-73.10	-13.00	-60.10	peak	
3		144.460	-76.51	2.60	-73.91	-13.00	-60.91	peak	
4		299.660	-76.75	1.02	-75.73	-13.00	-62.73	peak	
5		389.870	-76.42	3.97	-72.45	-13.00	-59.45	peak	
6		822.490	-76.49	13.05	-63.44	-13.00	-50.44	peak	

Test Mode:	WCDMA Band II_TX CH9400

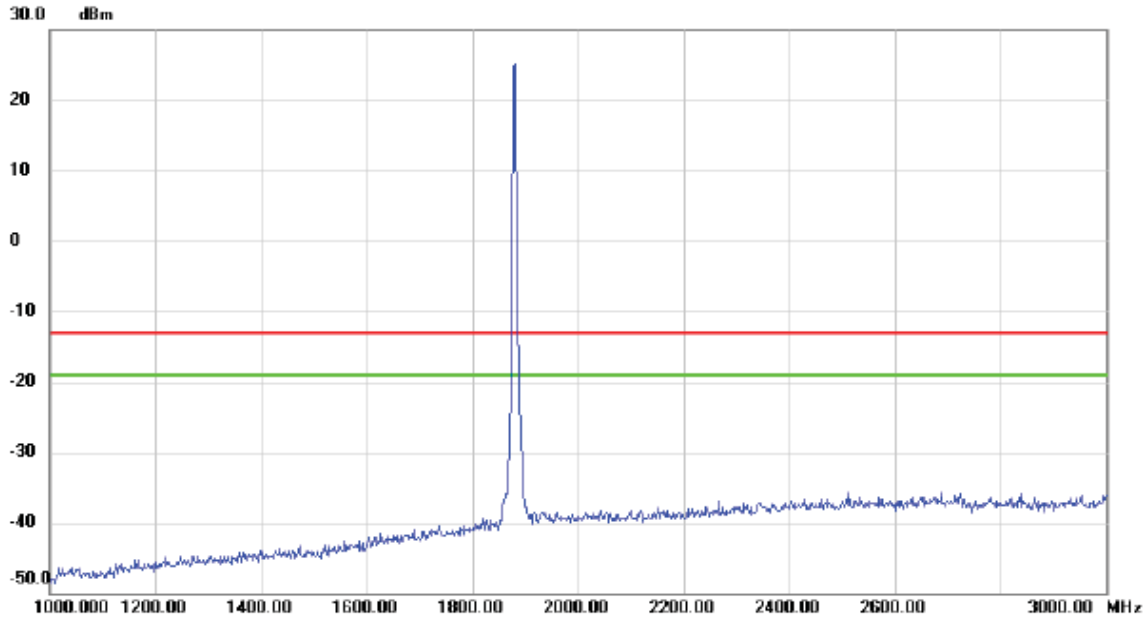
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		30.000	-74.54	1.88	-72.66	-13.00	-59.66	peak	
2		114.390	-71.27	-2.91	-74.18	-13.00	-61.18	peak	
3		152.220	-80.04	3.91	-76.13	-13.00	-63.13	peak	
4		257.950	-76.76	1.92	-74.84	-13.00	-61.84	peak	
5		353.980	-73.31	3.36	-69.95	-13.00	-56.95	peak	
6	*	700.270	-78.08	13.97	-64.11	-13.00	-51.11	peak	

Test Mode:	WCDMA Band II_TX CH9400

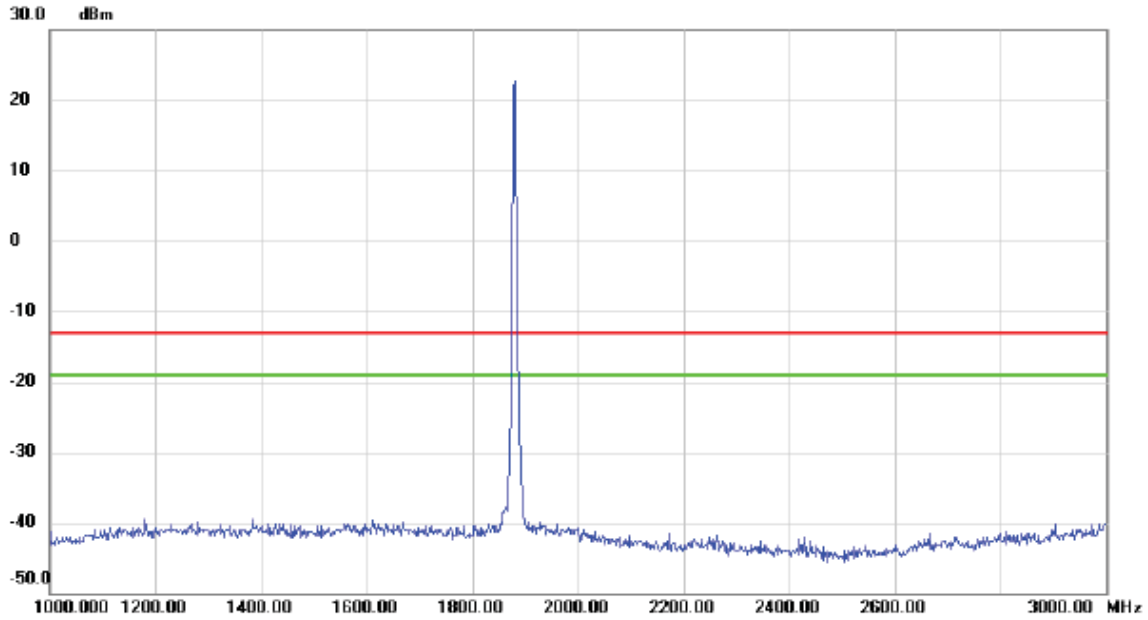
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_TX CH9400

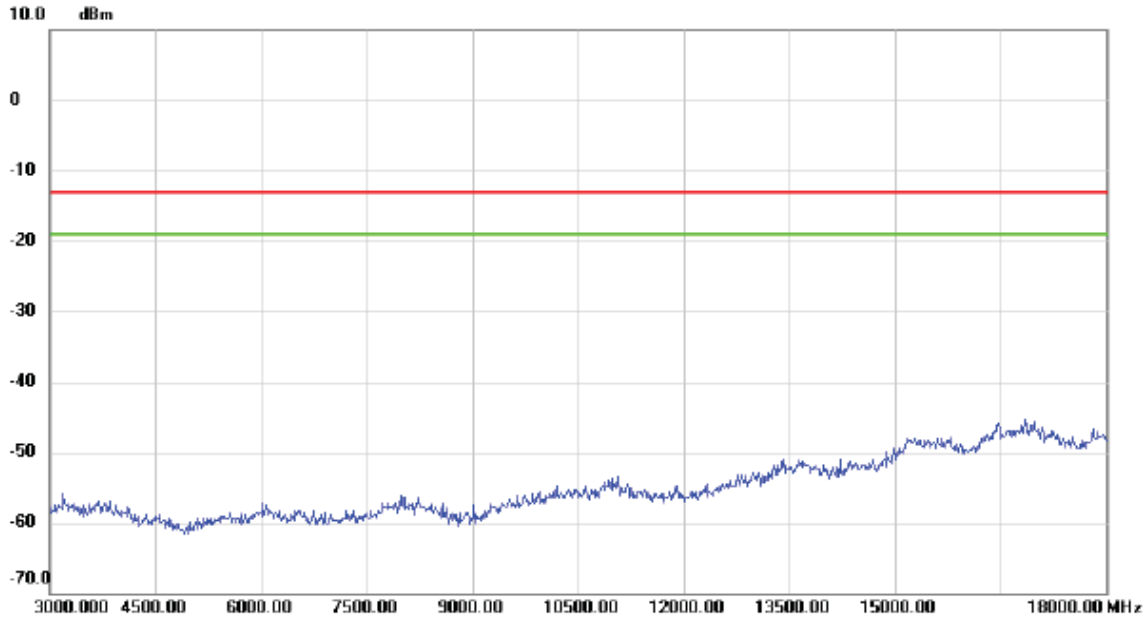
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_TX CH9400

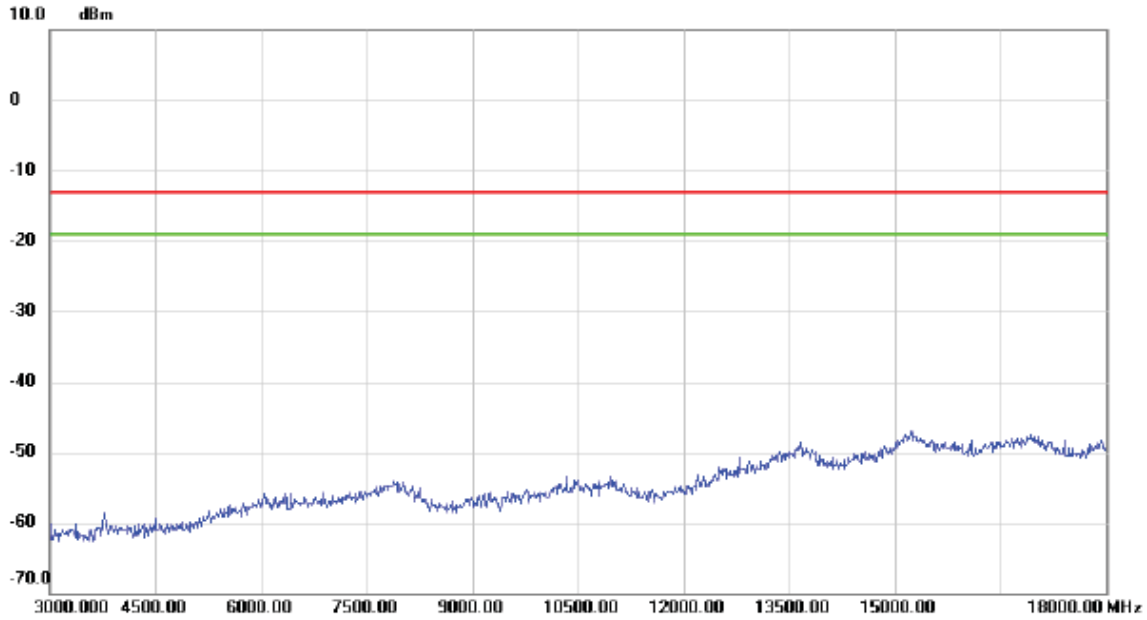
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_TX CH9400

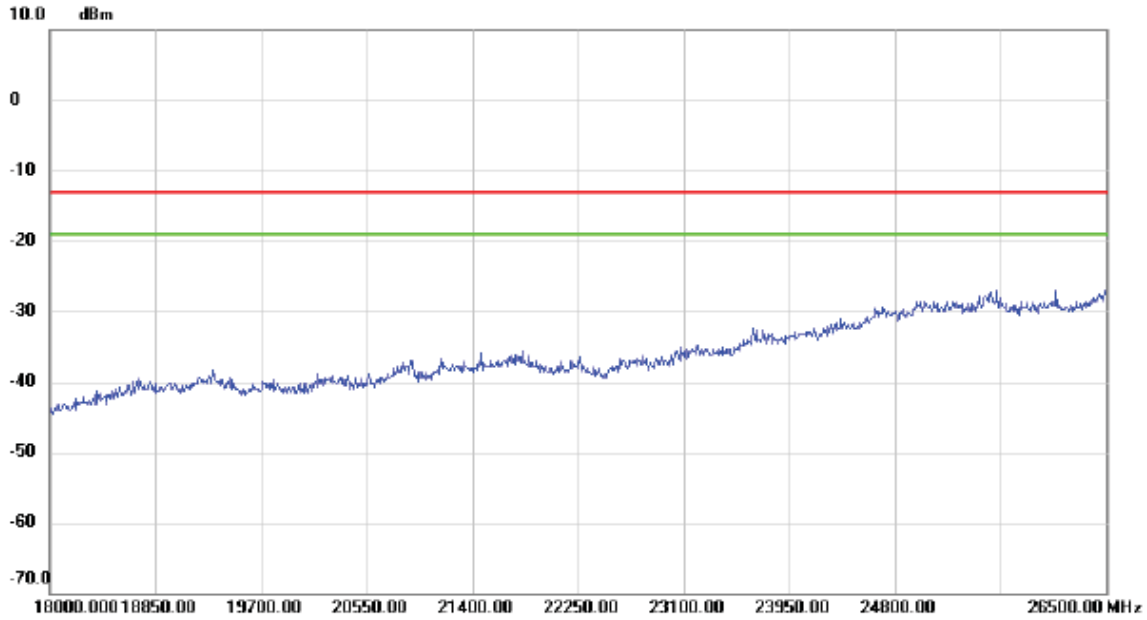
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_TX CH9400

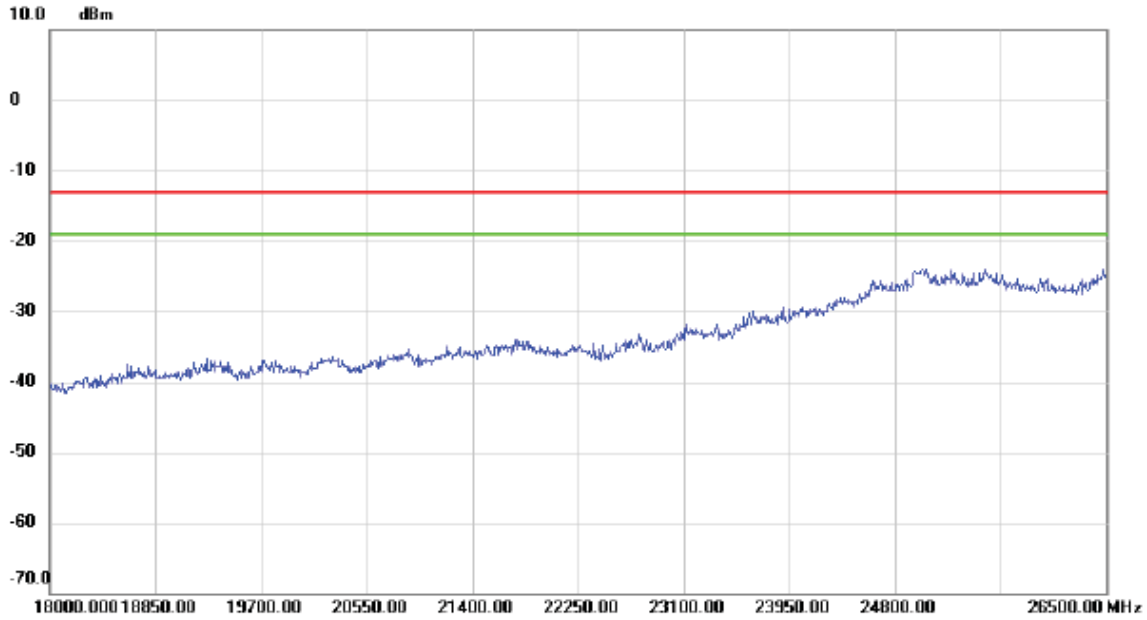
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_TX CH9400

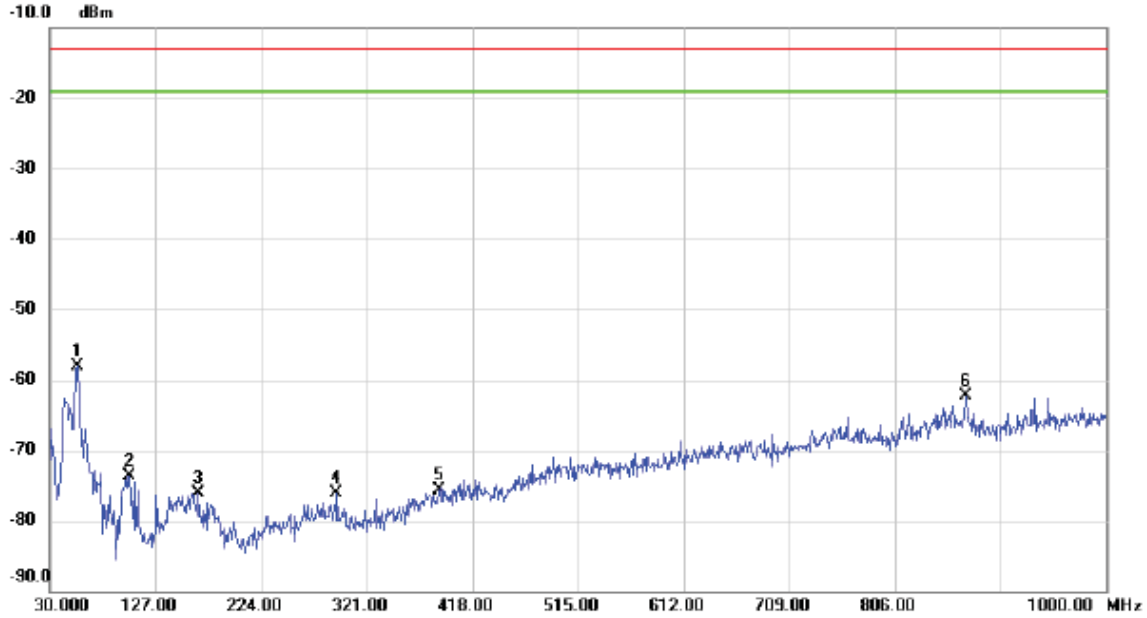
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSDPA_TX CH9400

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	55.220	-60.79	2.61	-58.18	-13.00	-45.18	peak	
2		102.750	-72.35	-1.28	-73.63	-13.00	-60.63	peak	
3		166.770	-77.09	0.95	-76.14	-13.00	-63.14	peak	
4		293.840	-77.77	1.74	-76.03	-13.00	-63.03	peak	
5		387.930	-79.72	3.94	-75.78	-13.00	-62.78	peak	
6		870.990	-76.01	13.72	-62.29	-13.00	-49.29	peak	

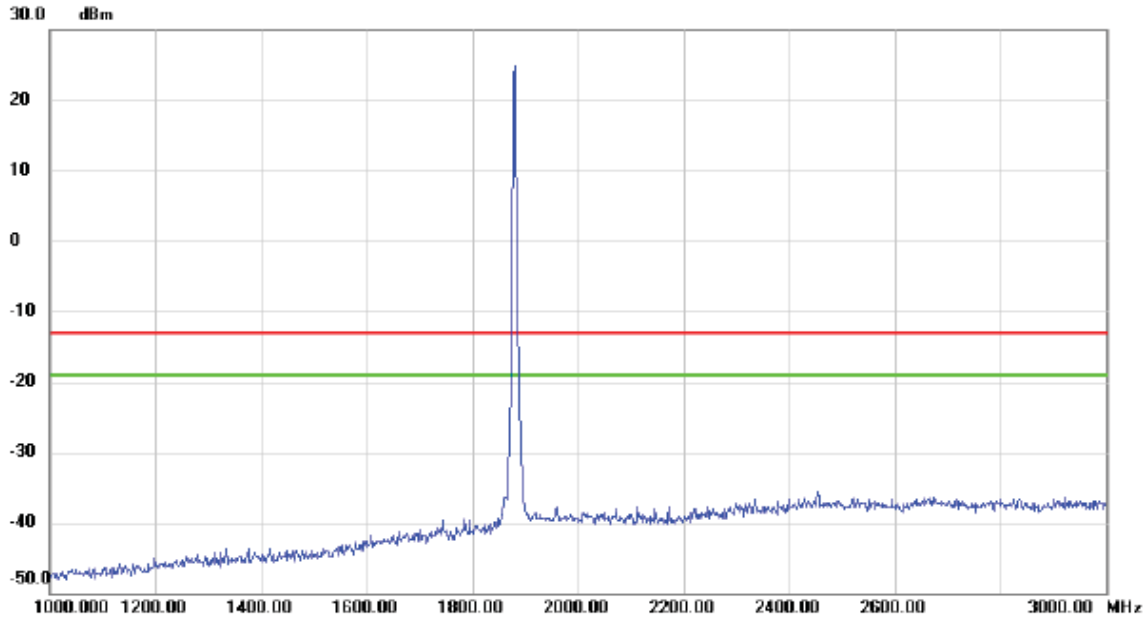
Test Mode:	WCDMA Band II_HSDPA _TX CH9400

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		30.000	-67.80	1.88	-65.92	-13.00	-52.92	peak	
2		143.490	-71.97	3.52	-68.45	-13.00	-55.45	peak	
3		264.740	-74.98	2.45	-72.53	-13.00	-59.53	peak	
4		417.030	-78.43	6.73	-71.70	-13.00	-58.70	peak	
5	*	704.150	-76.42	13.88	-62.54	-13.00	-49.54	peak	
6		831.220	-74.68	11.92	-62.76	-13.00	-49.76	peak	

Test Mode:	WCDMA Band II_HSDPA _TX CH9400

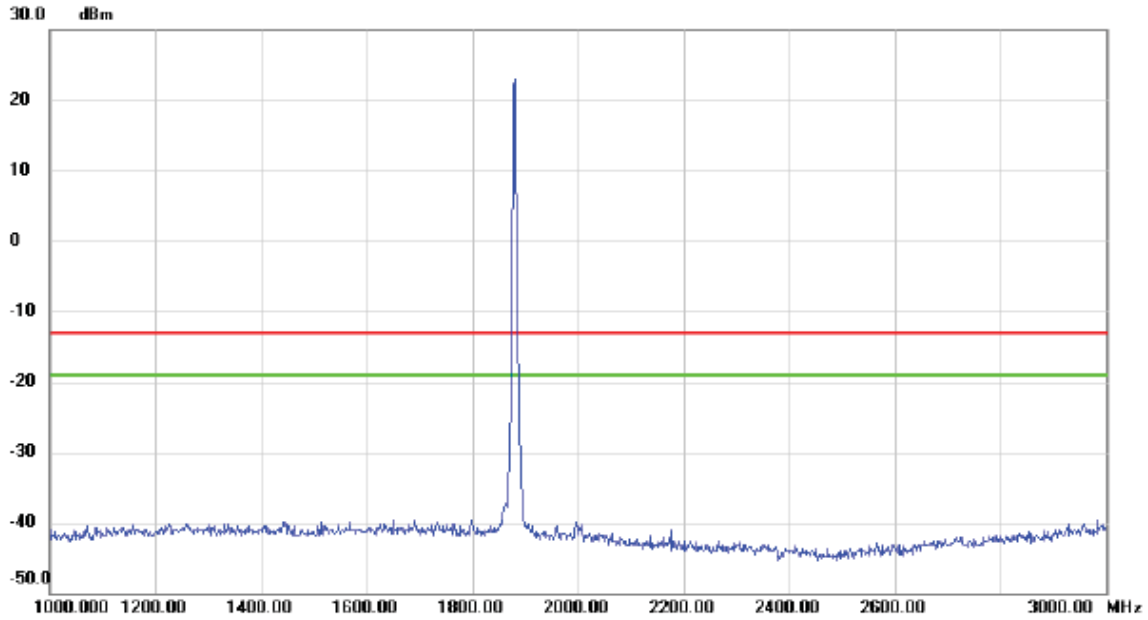
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSDPA _TX CH9400

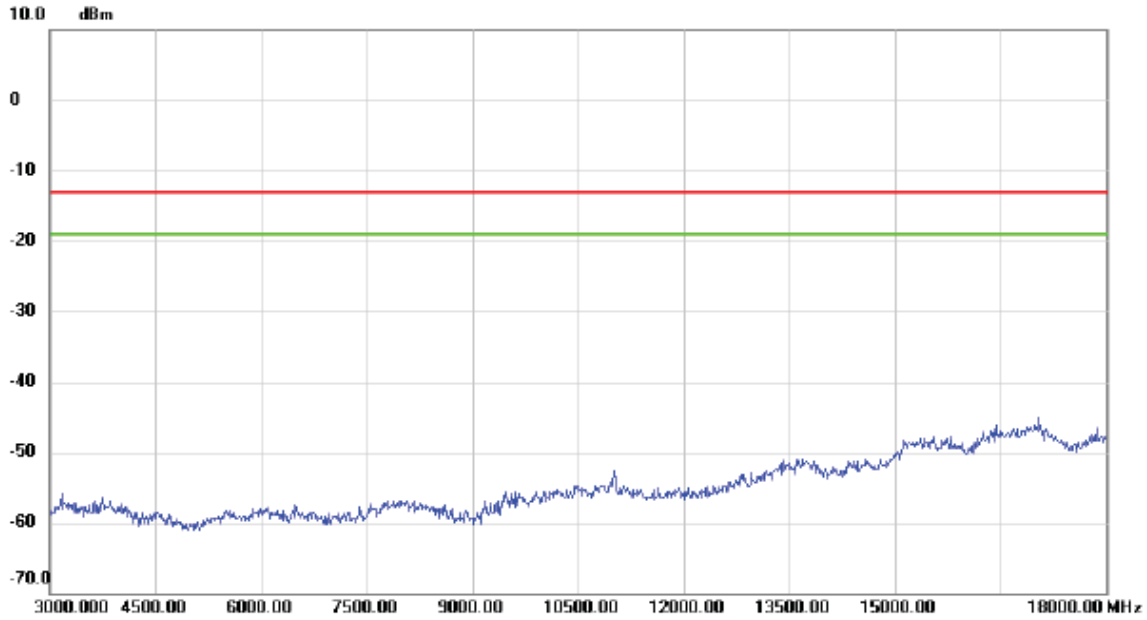
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSDPA _TX CH9400

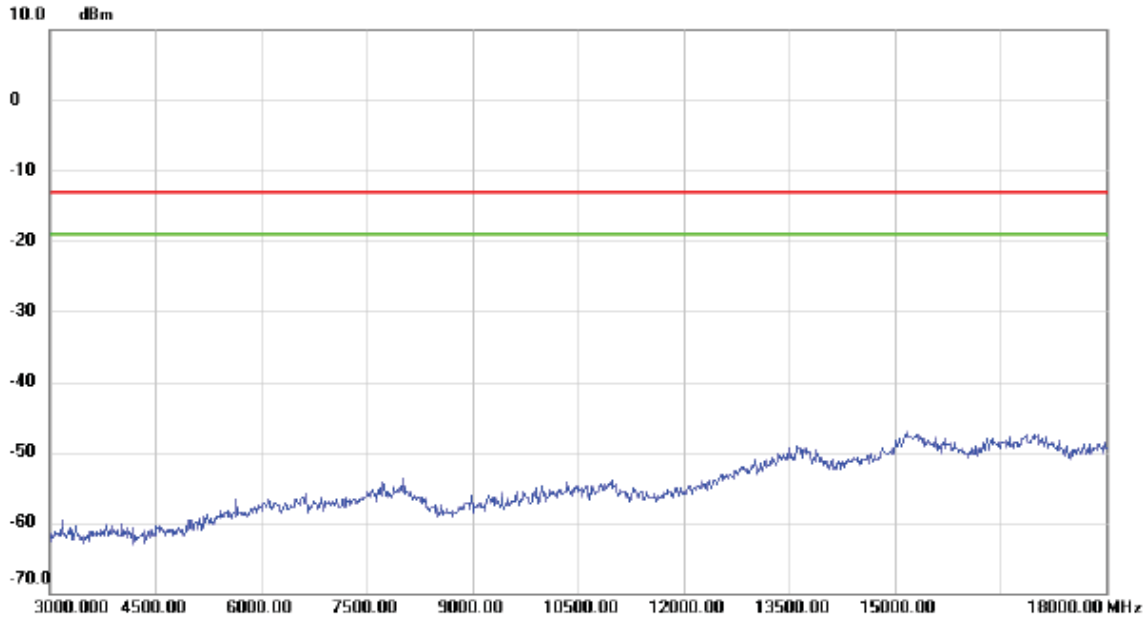
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSDPA _TX CH9400

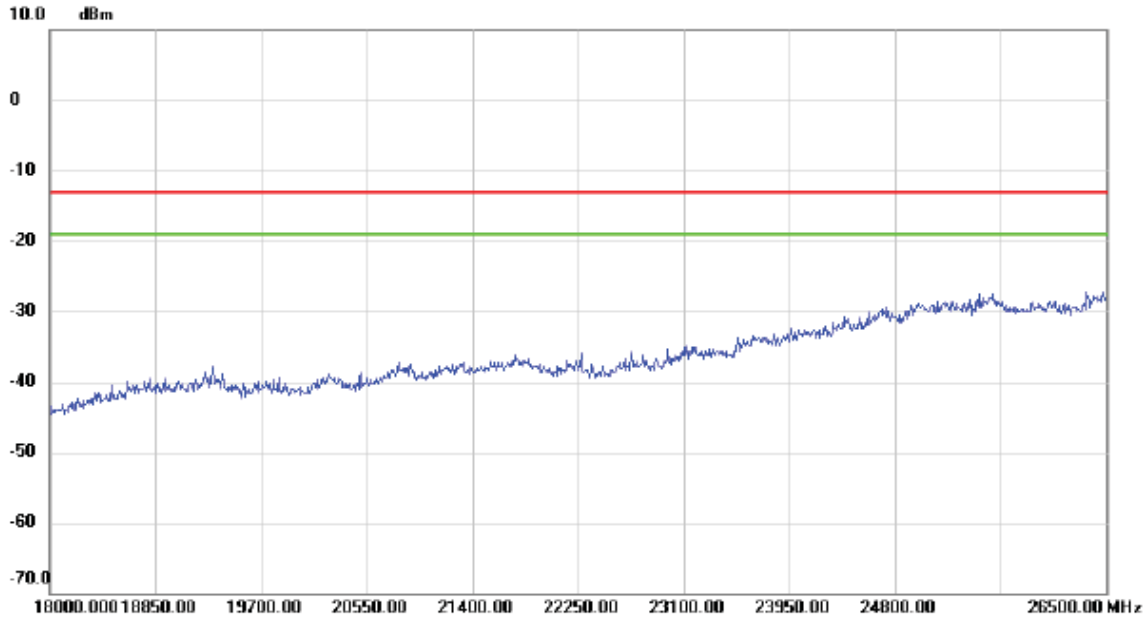
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSDPA _TX CH9400

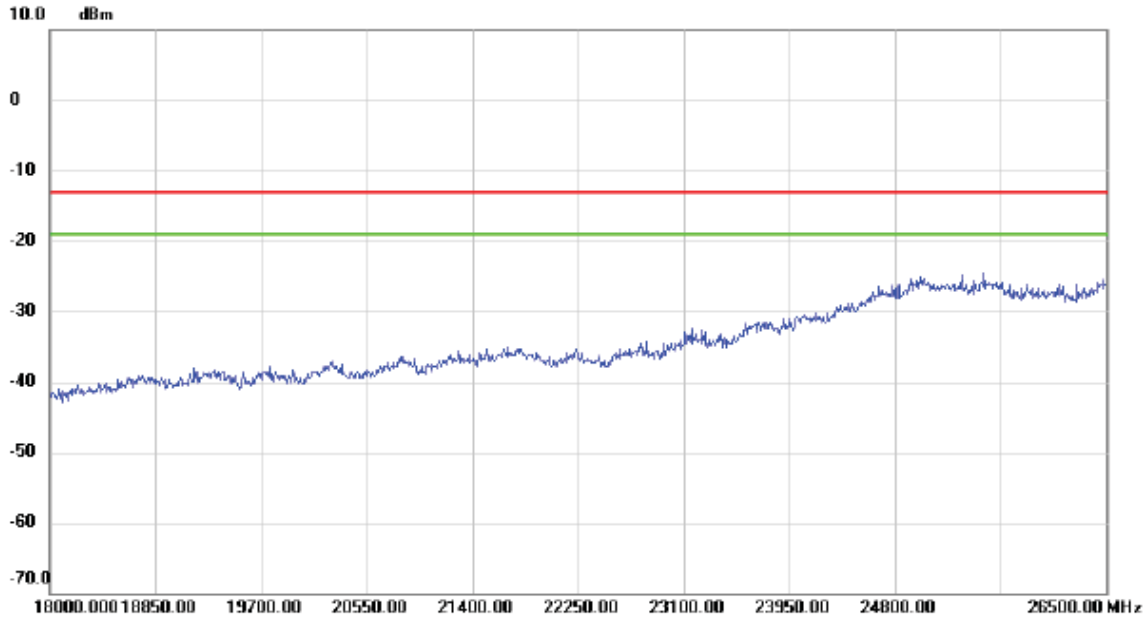
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSDPA_TX CH9400

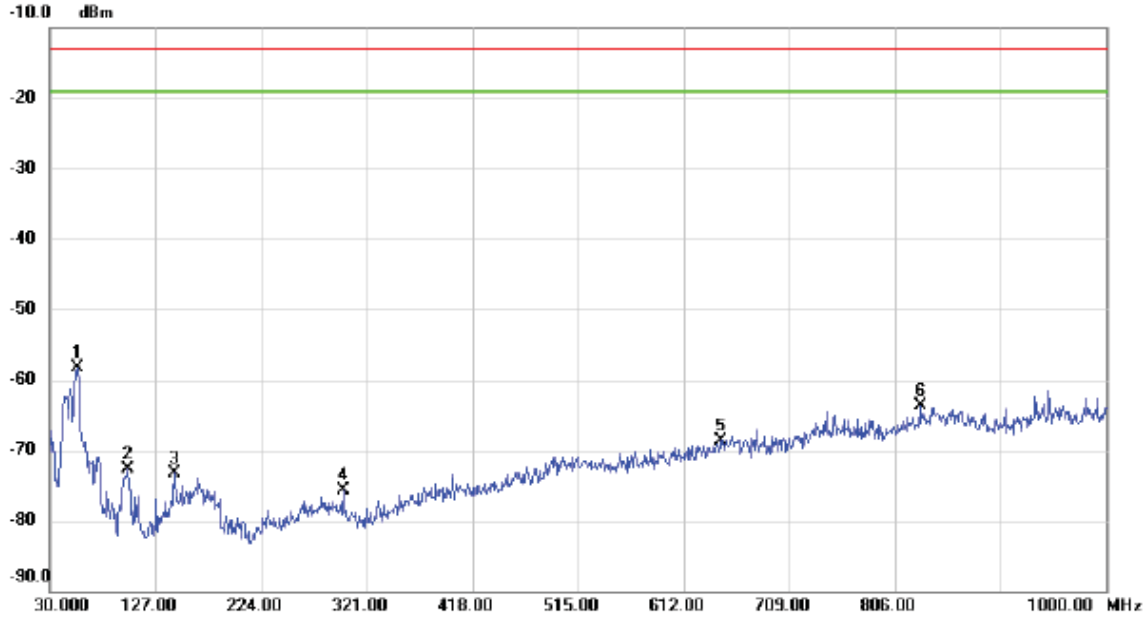
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSUPA_TX CH9400

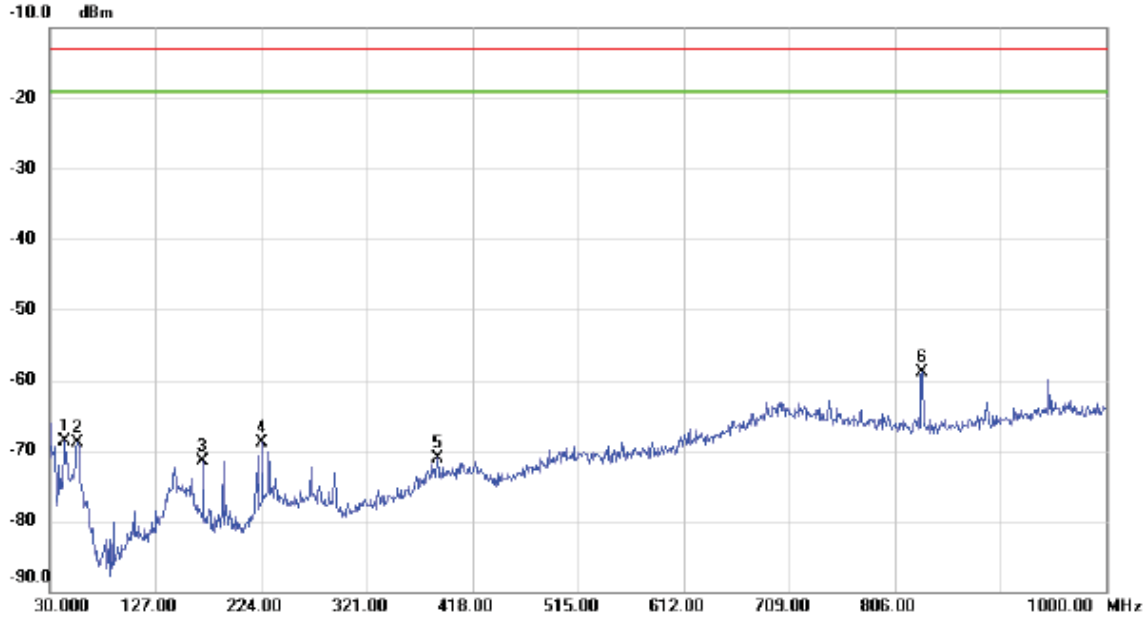
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	55.220	-60.89	2.61	-58.28	-13.00	-45.28	peak	
2		101.780	-71.37	-1.31	-72.68	-13.00	-59.68	peak	
3		144.460	-75.93	2.60	-73.33	-13.00	-60.33	peak	
4		299.660	-76.79	1.02	-75.77	-13.00	-62.77	peak	
5		646.920	-78.69	10.03	-68.66	-13.00	-55.66	peak	
6		829.280	-77.04	13.40	-63.64	-13.00	-50.64	peak	

Test Mode:	WCDMA Band II_HSUPA_TX CH9400

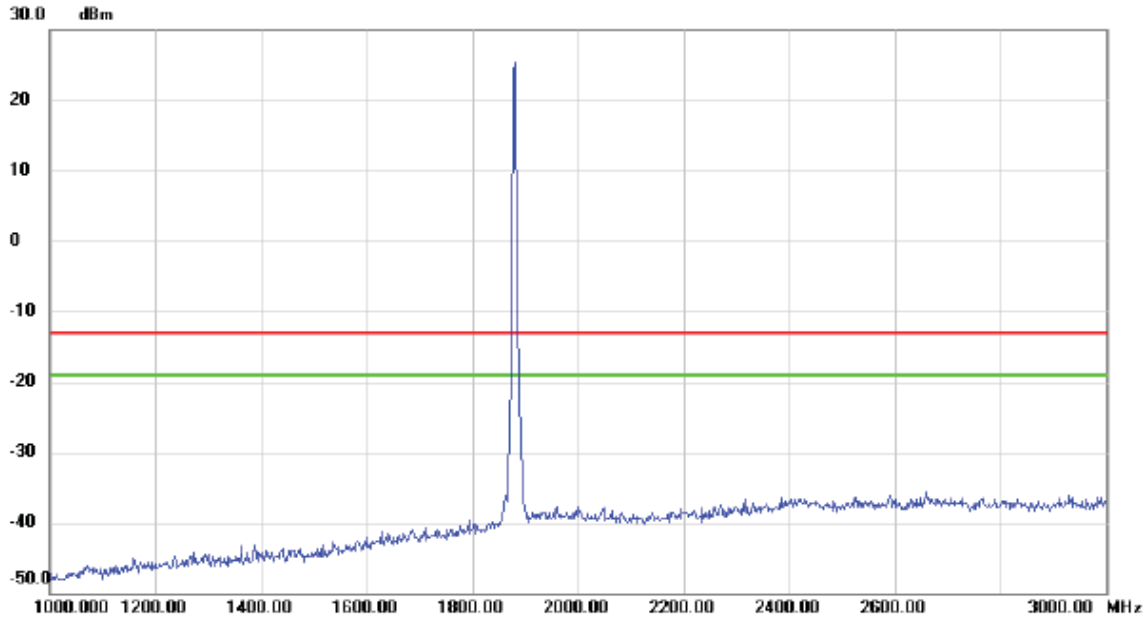
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		43.580	-71.56	2.78	-68.78	-13.00	-55.78	peak	
2		55.220	-71.44	2.53	-68.91	-13.00	-55.91	peak	
3		170.650	-70.00	-1.46	-71.46	-13.00	-58.46	peak	
4		224.970	-70.84	1.89	-68.95	-13.00	-55.95	peak	
5		385.990	-77.04	6.03	-71.01	-13.00	-58.01	peak	
6	*	831.220	-70.77	11.92	-58.85	-13.00	-45.85	peak	

Test Mode:	WCDMA Band II_HSUPA_TX CH9400

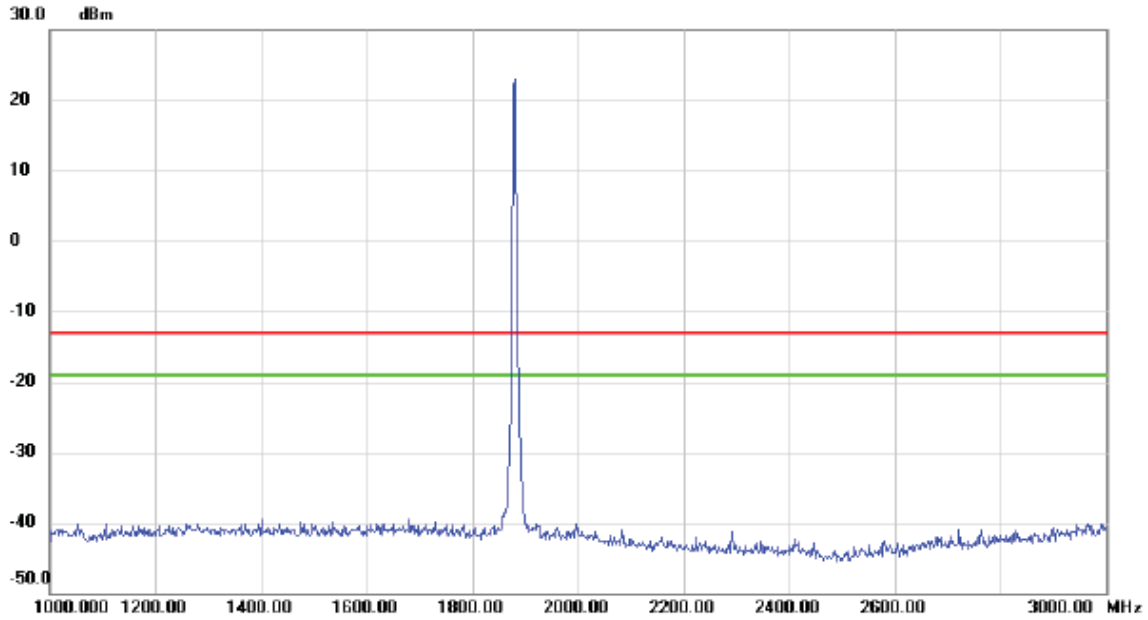
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSUPA_TX CH9400

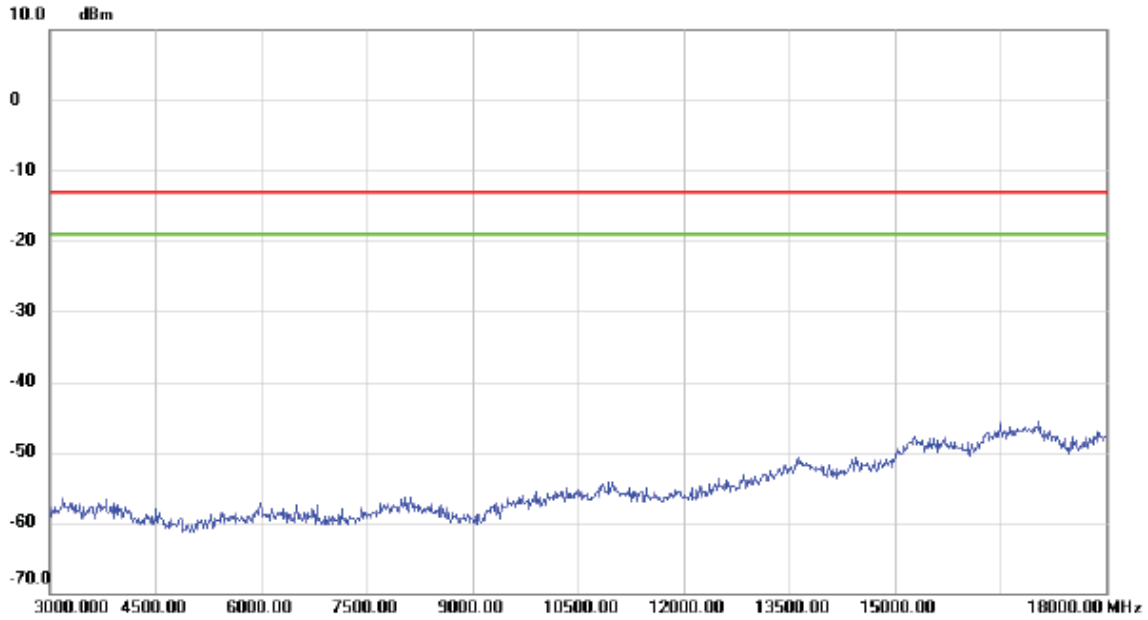
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSUPA_TX CH9400

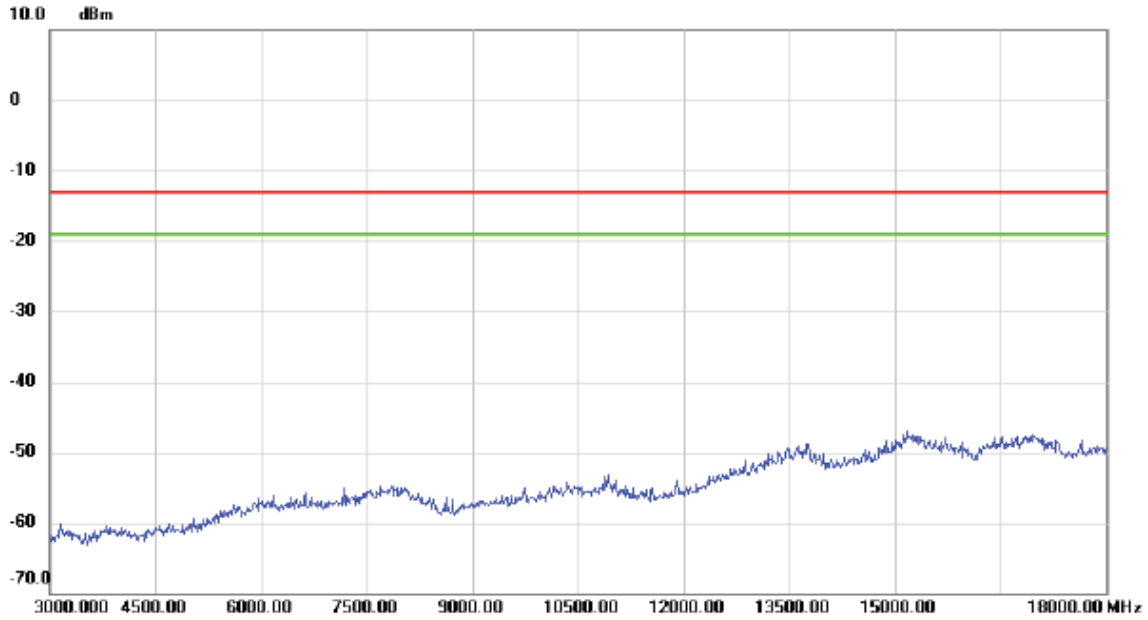
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSUPA_TX CH9400

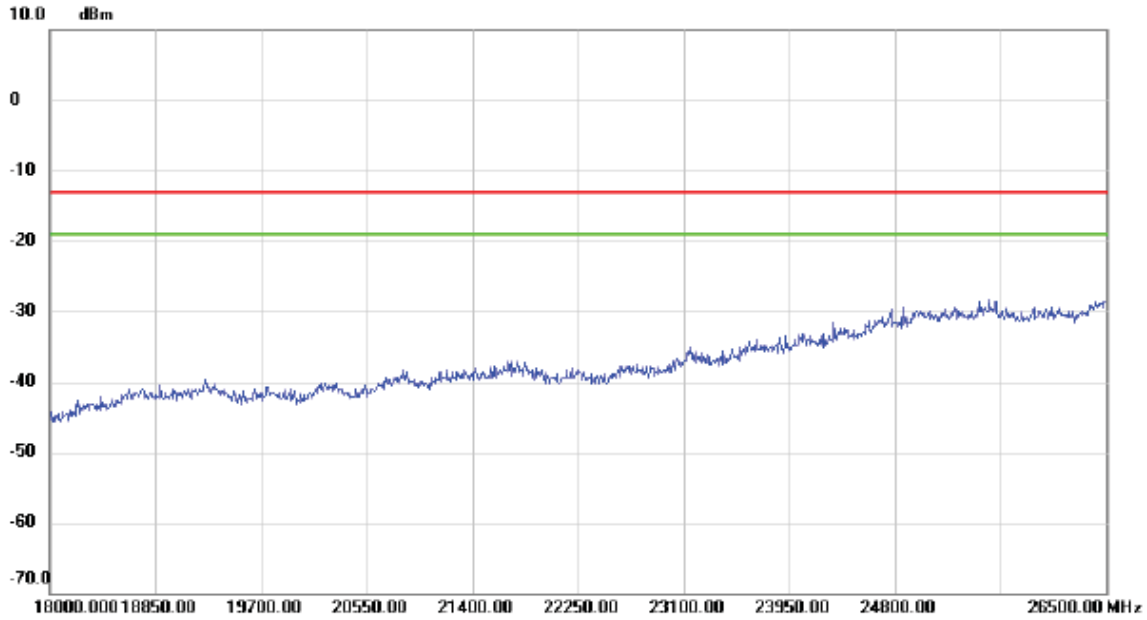
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSUPA_TX CH9400

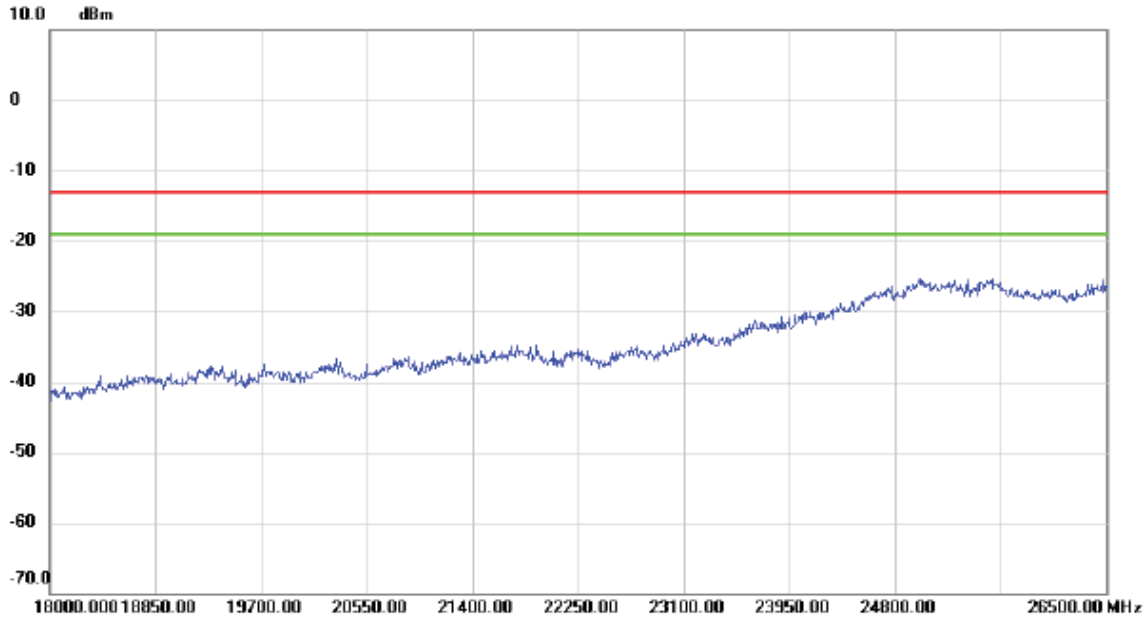
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	WCDMA Band II_HSUPA_TX CH9400

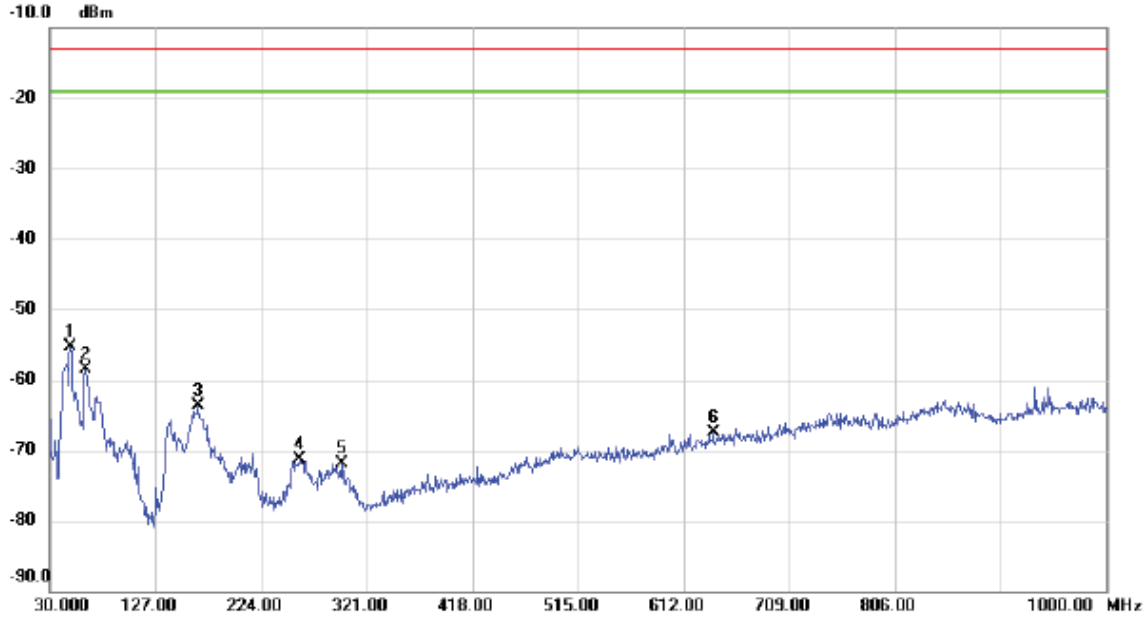
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH19100_5M

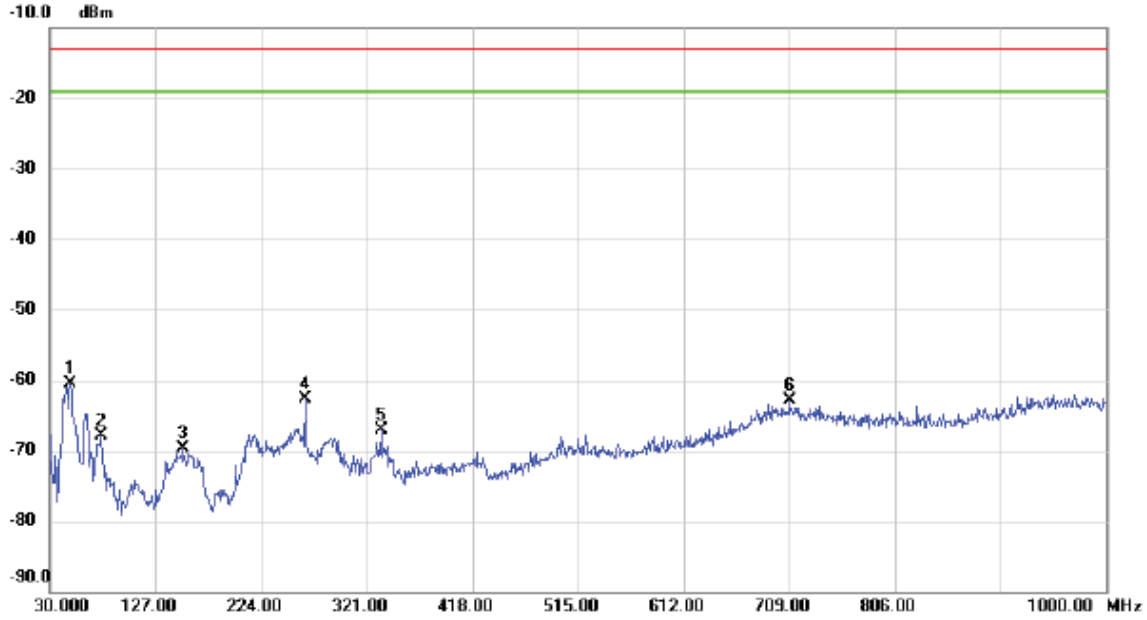
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	48.430	-56.32	1.03	-55.29	-13.00	-42.29	peak	
2		62.980	-59.28	0.85	-58.43	-13.00	-45.43	peak	
3		165.800	-65.00	1.27	-63.73	-13.00	-50.73	peak	
4		259.890	-71.94	0.73	-71.21	-13.00	-58.21	peak	
5		297.720	-73.18	1.26	-71.92	-13.00	-58.92	peak	
6		639.160	-77.34	9.81	-67.53	-13.00	-54.53	peak	

Test Mode:	LTE Band 2_TX CH19100_5M

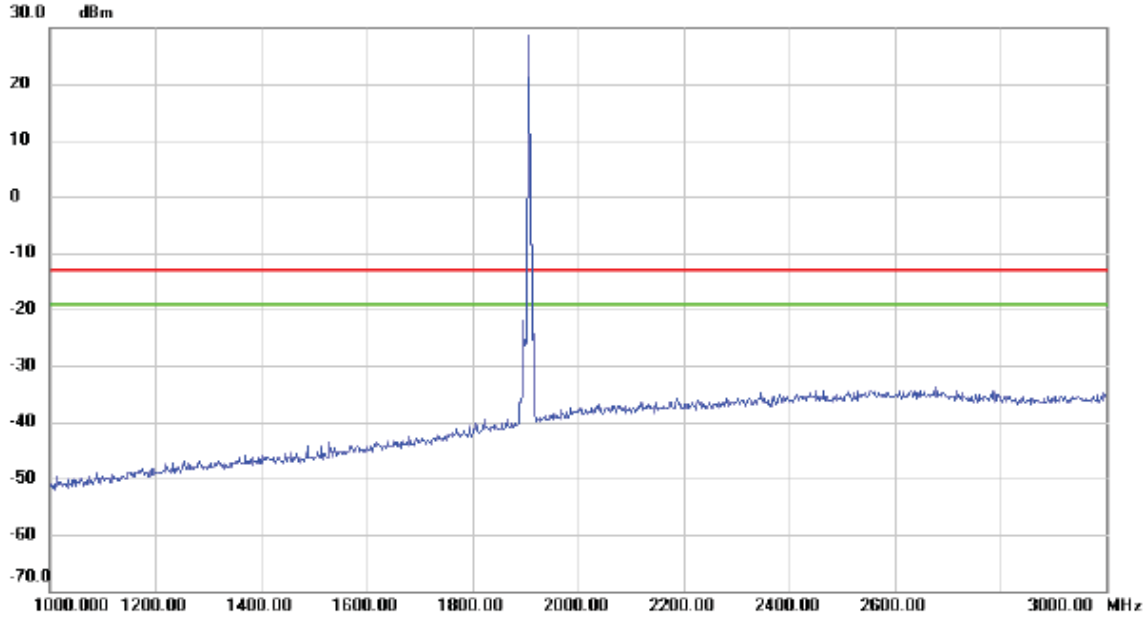
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	48.430	-62.40	1.83	-60.57	-13.00	-47.57	peak	
2		76.560	-60.68	-7.19	-67.87	-13.00	-54.87	peak	
3		152.220	-73.70	3.91	-69.79	-13.00	-56.79	peak	
4		264.740	-65.20	2.45	-62.75	-13.00	-49.75	peak	
5		334.580	-69.56	2.46	-67.10	-13.00	-54.10	peak	
6		709.000	-76.69	13.76	-62.93	-13.00	-49.93	peak	

Test Mode:	LTE Band 2_TX CH19100_5M

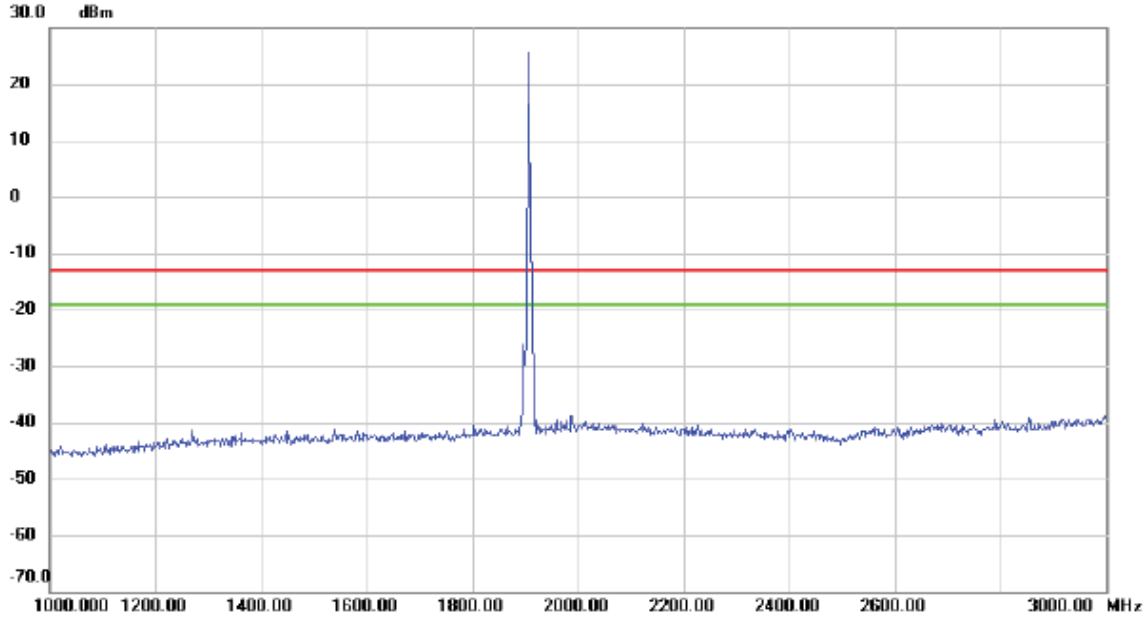
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH19100_5M

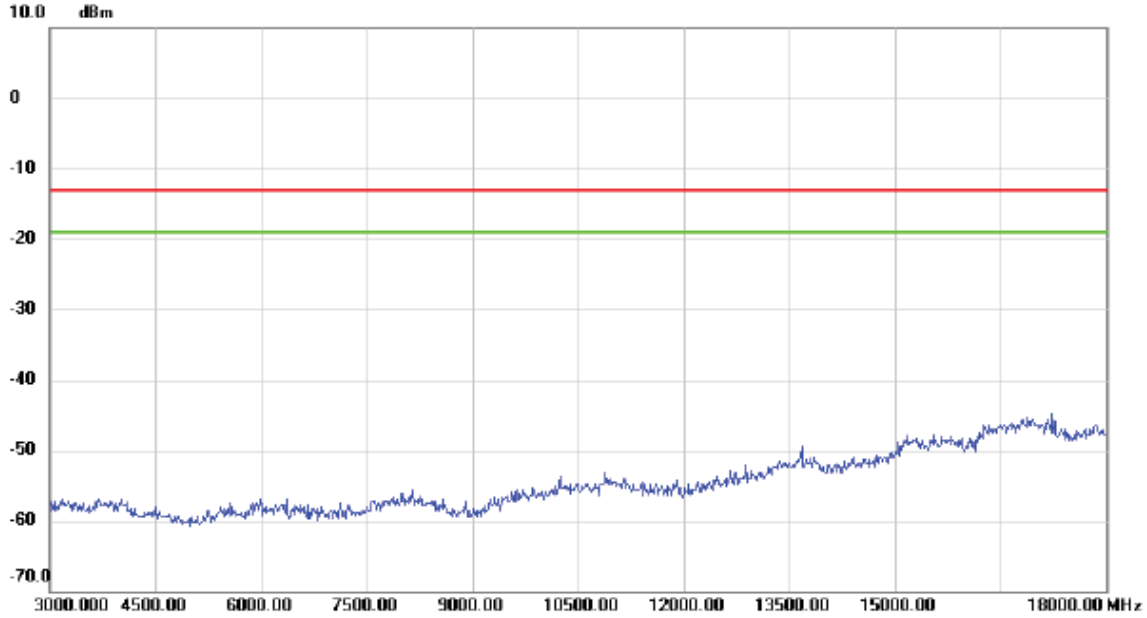
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH19100_5M

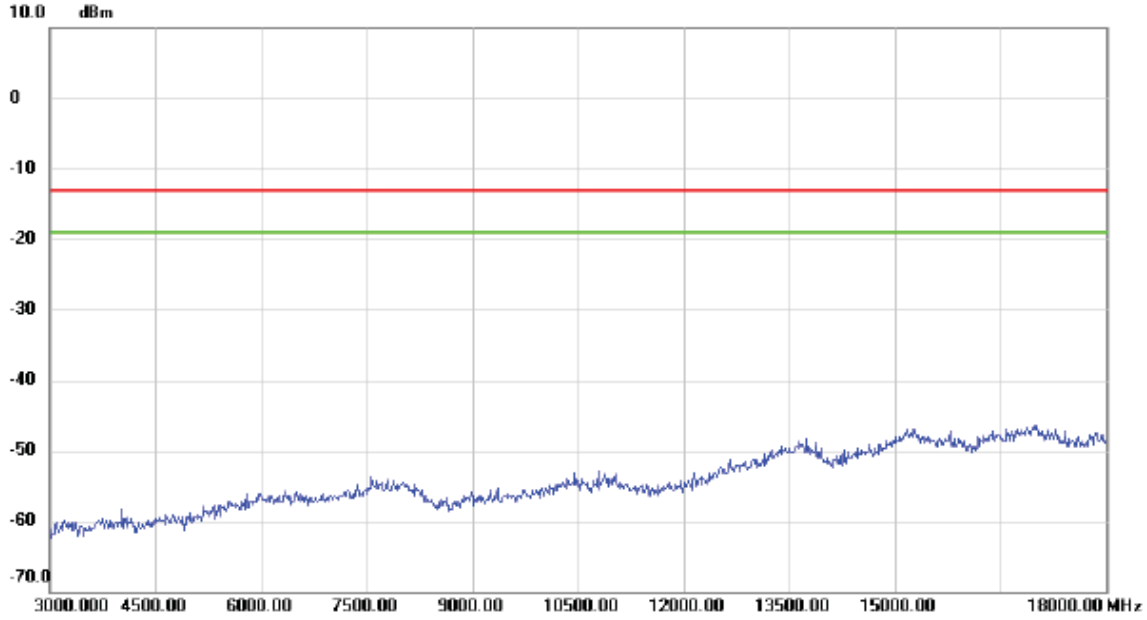
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH19100_5M

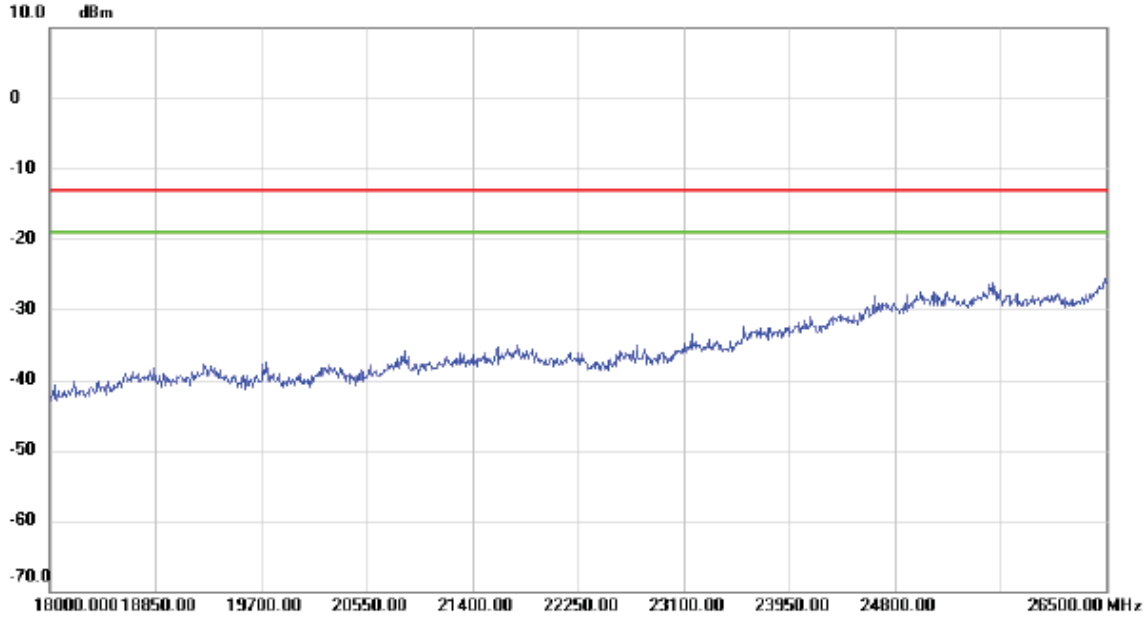
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH19100_5M

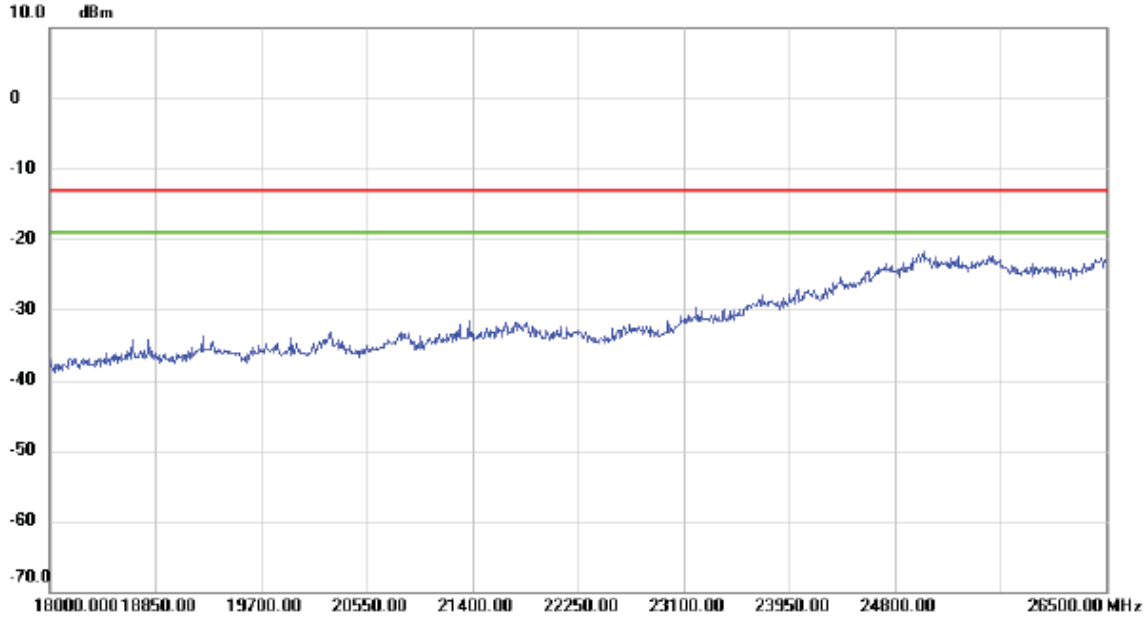
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH19100_5M

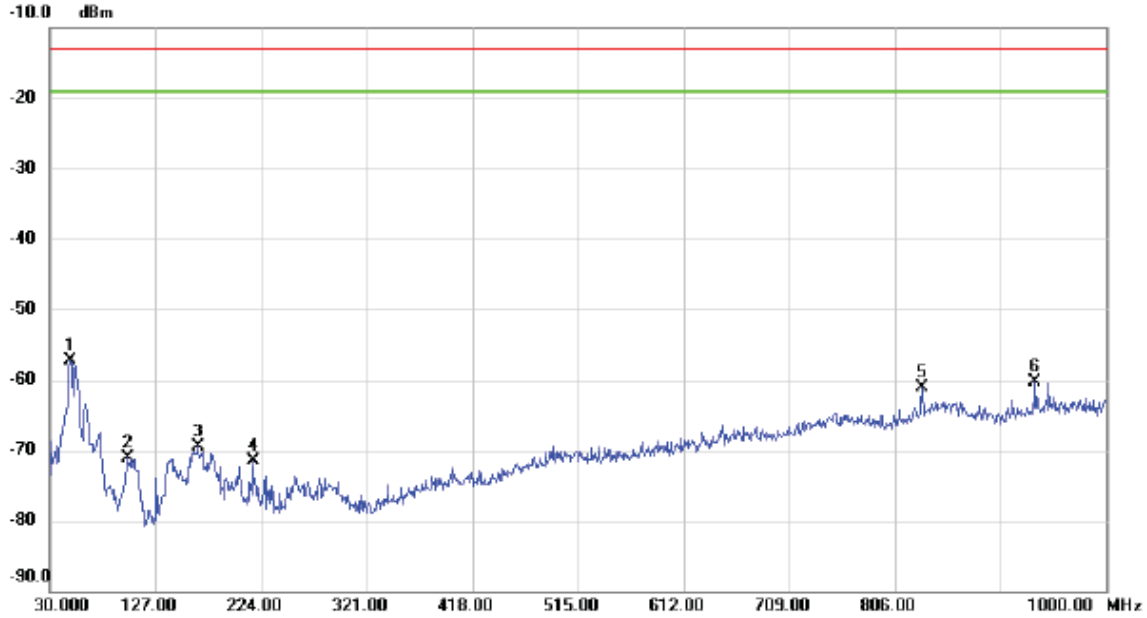
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH18900_20M

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	48.430	-58.42	1.03	-57.39	-13.00	-44.39	peak	
2		101.780	-69.77	-1.31	-71.08	-13.00	-58.08	peak	
3		165.800	-70.84	1.27	-69.57	-13.00	-56.57	peak	
4		216.240	-69.78	-1.80	-71.58	-13.00	-58.58	peak	
5		831.220	-74.66	13.50	-61.16	-13.00	-48.16	peak	
6		935.010	-74.29	14.02	-60.27	-13.00	-47.27	peak	

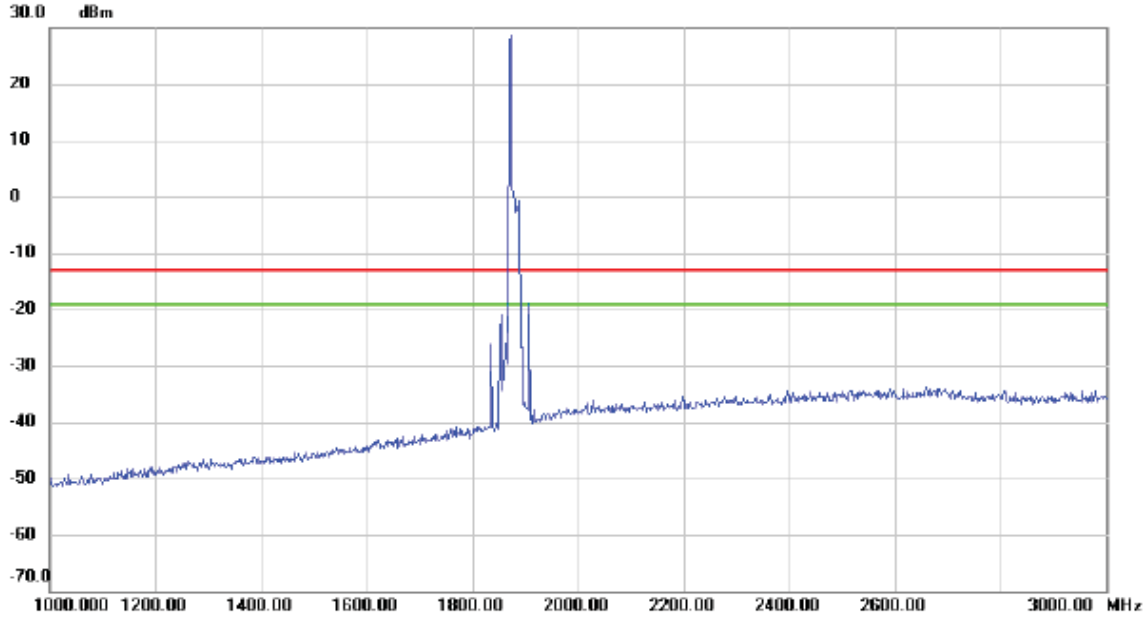
Test Mode:	LTE Band 2_TX CH18900_20M

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		30.970	-72.70	1.57	-71.13	-13.00	-58.13	peak	
2		110.510	-71.58	-2.60	-74.18	-13.00	-61.18	peak	
3		147.370	-76.59	3.95	-72.64	-13.00	-59.64	peak	
4		261.830	-71.45	2.13	-69.32	-13.00	-56.32	peak	
5		345.250	-73.65	2.84	-70.81	-13.00	-57.81	peak	
6	*	712.880	-76.69	13.67	-63.02	-13.00	-50.02	peak	

Test Mode:	LTE Band 2_TX CH18900_20M

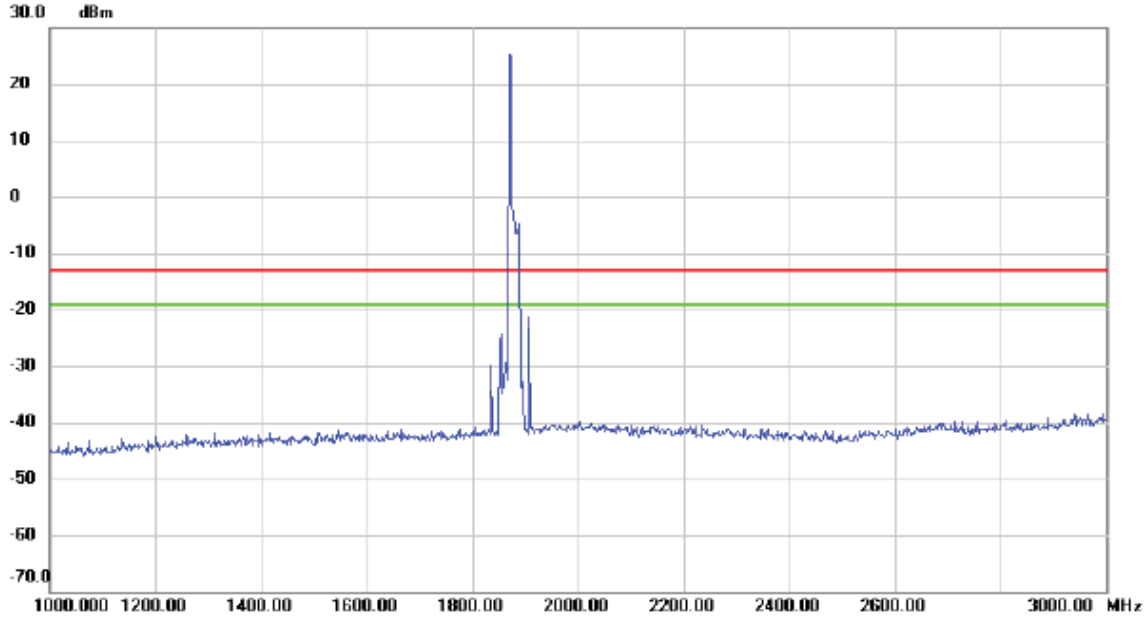
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH18900_20M

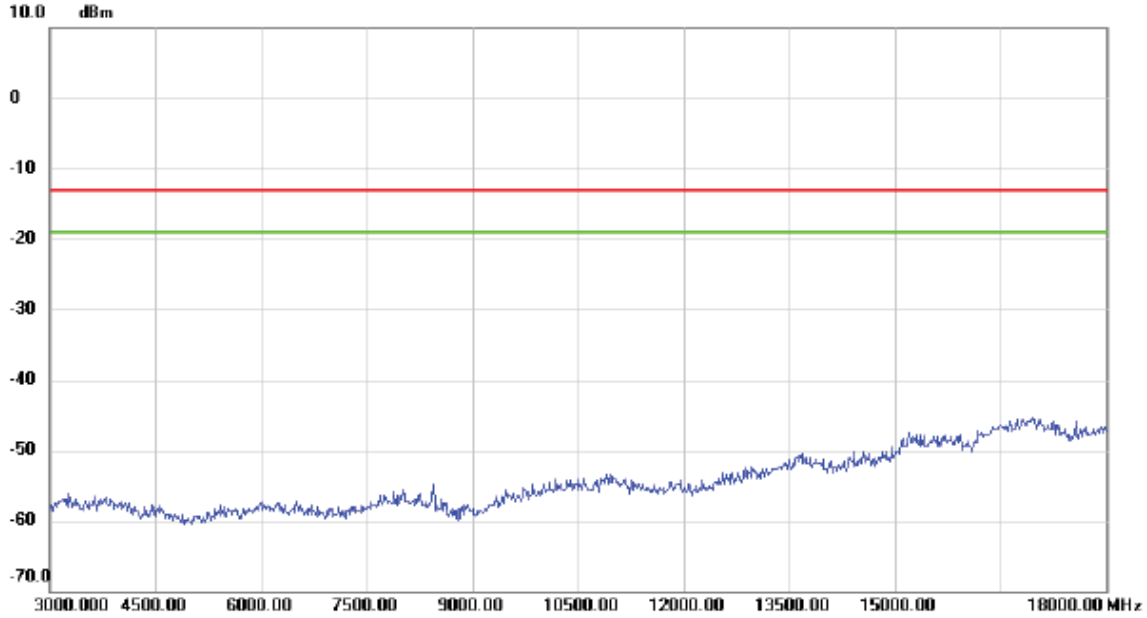
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH18900_20M

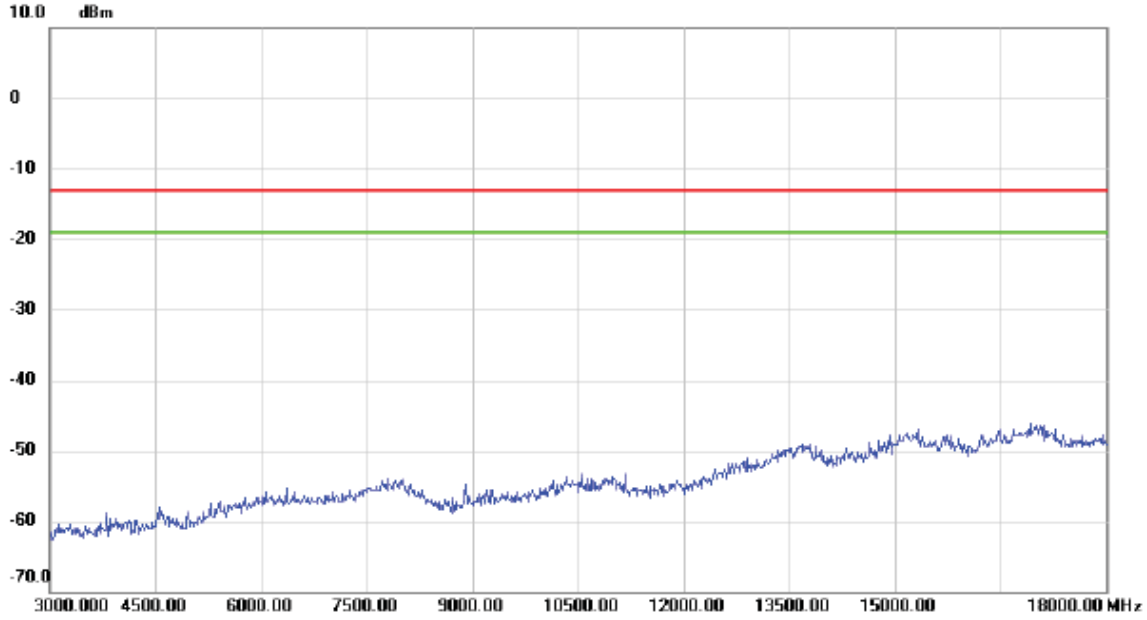
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH18900_20M

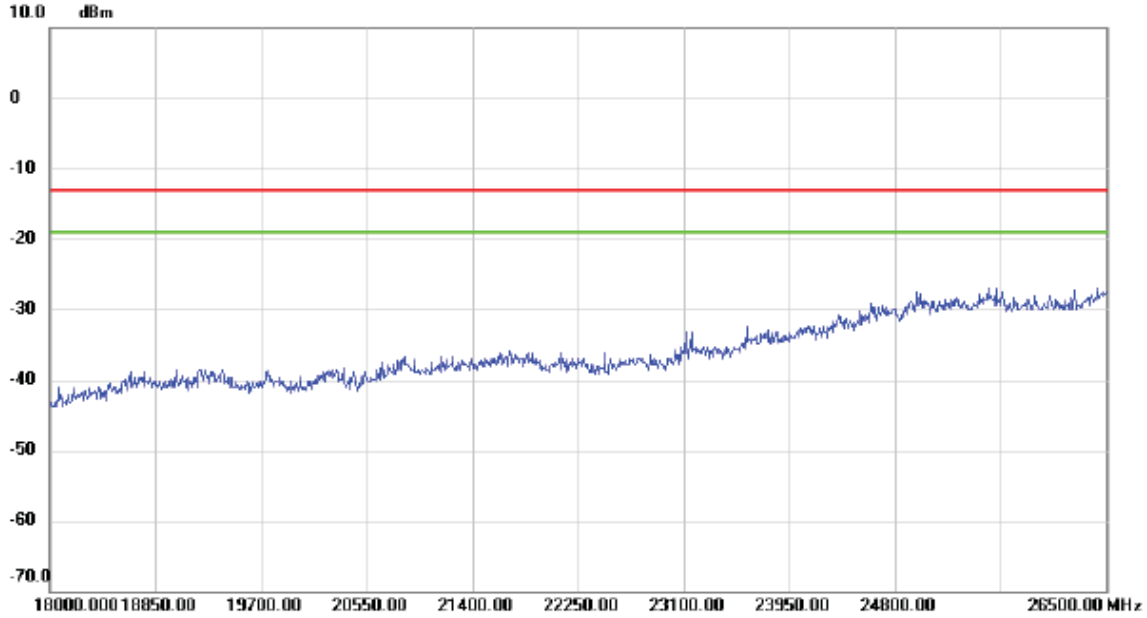
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

Test Mode:	LTE Band 2_TX CH18900_20M

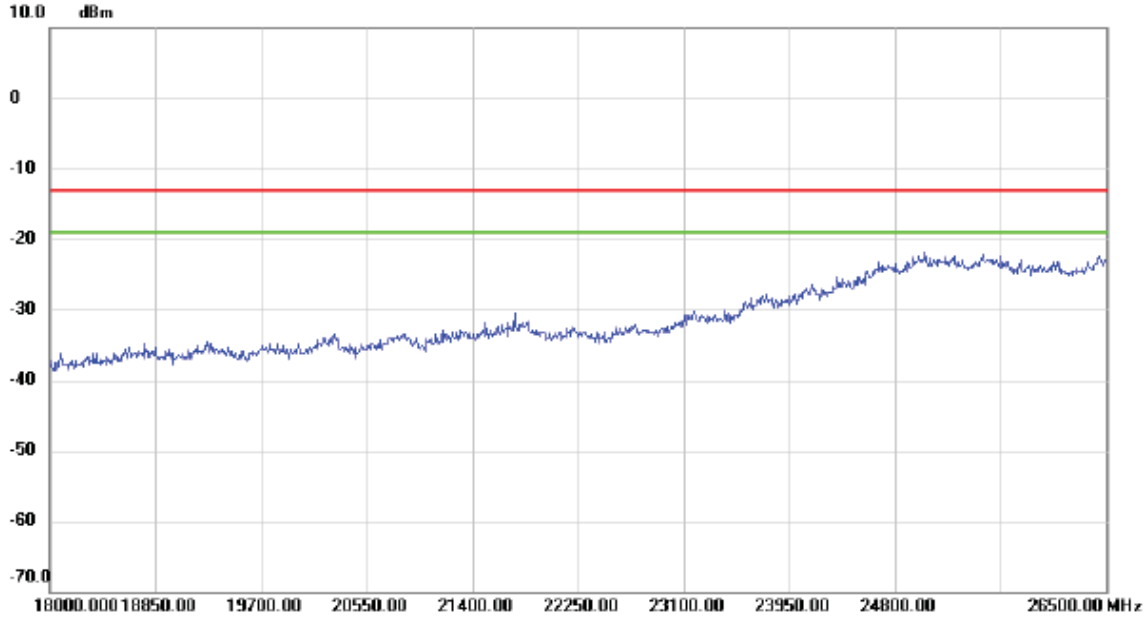
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

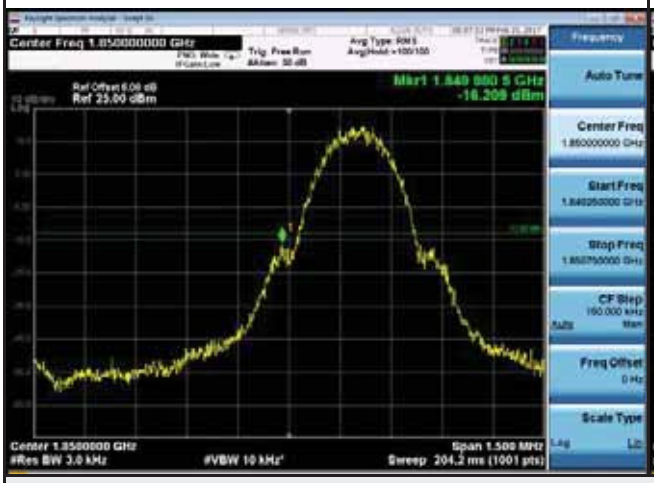
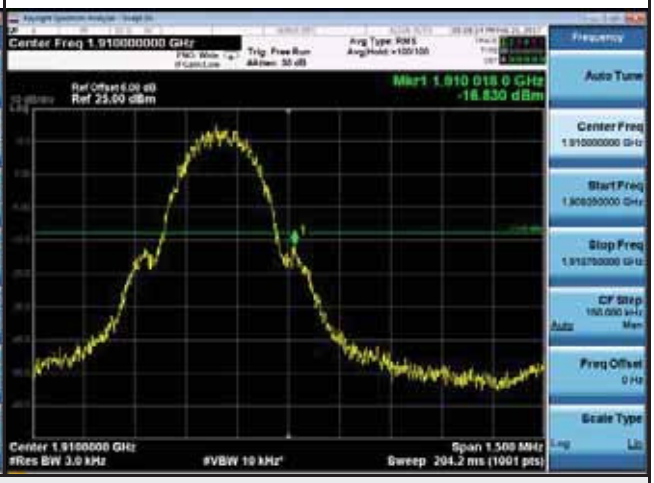
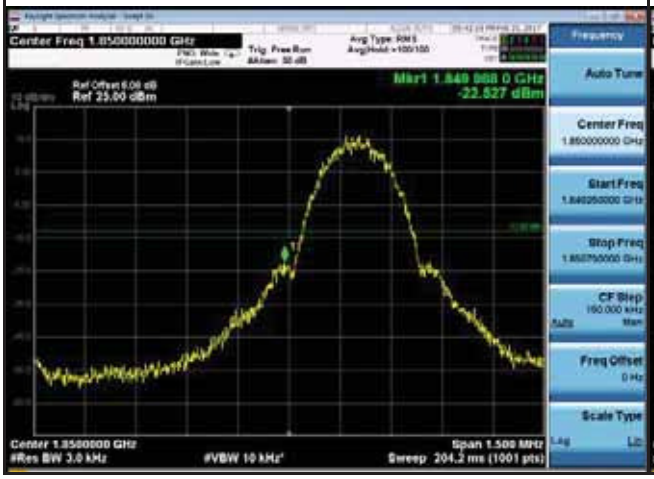
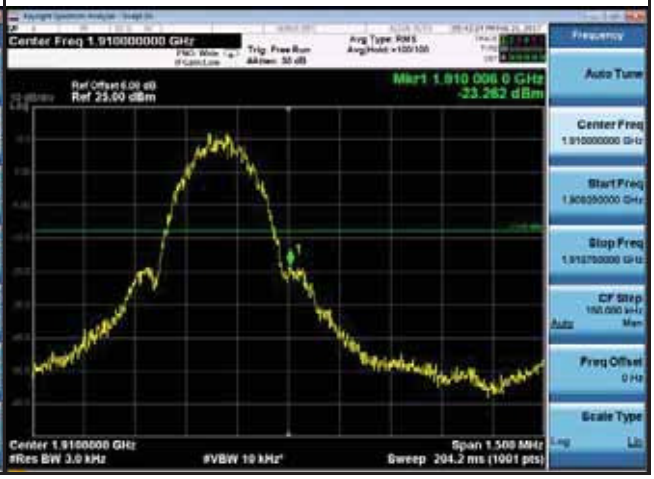
Test Mode:	LTE Band 2_TX CH18900_20M

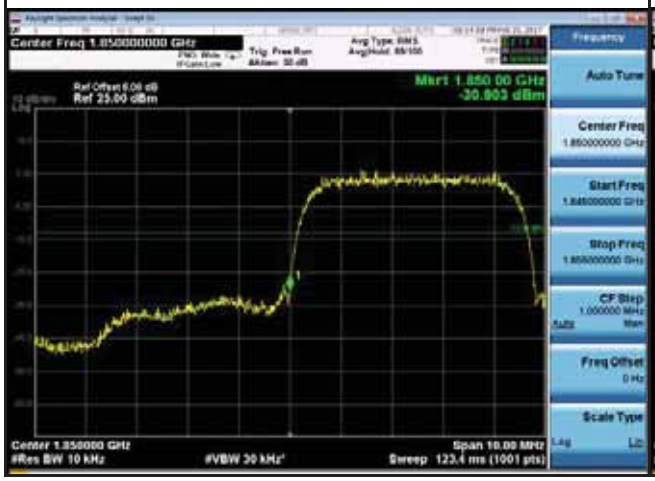
Horizontal

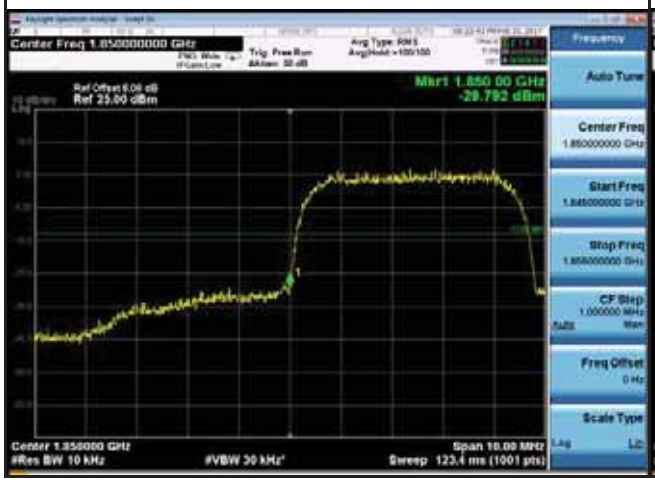
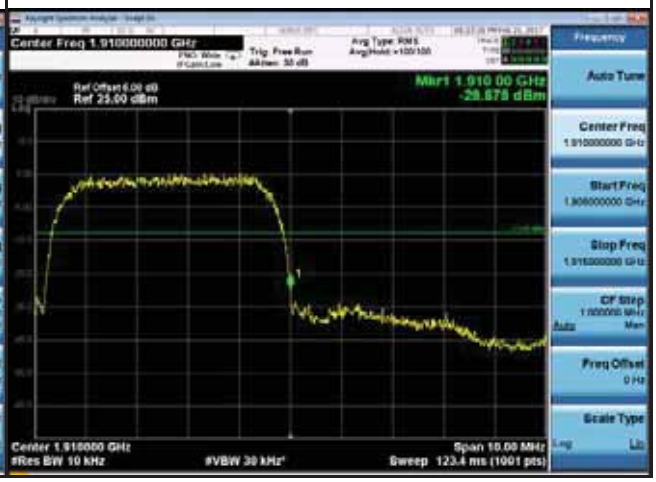


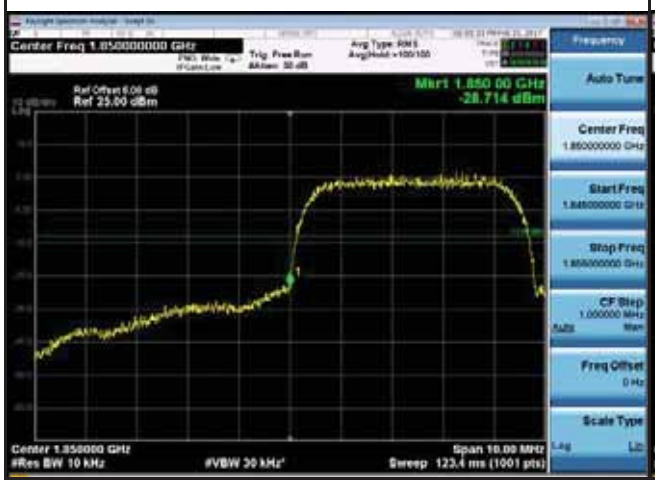
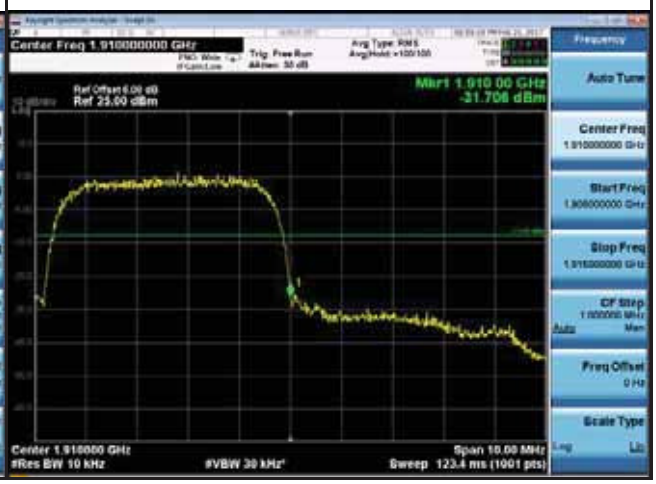
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment

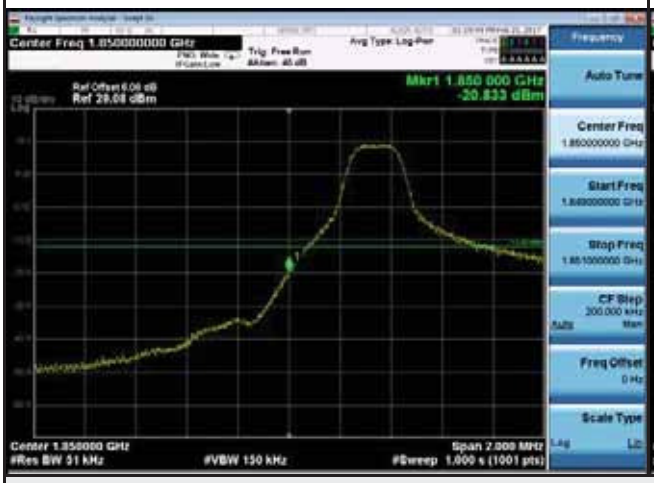
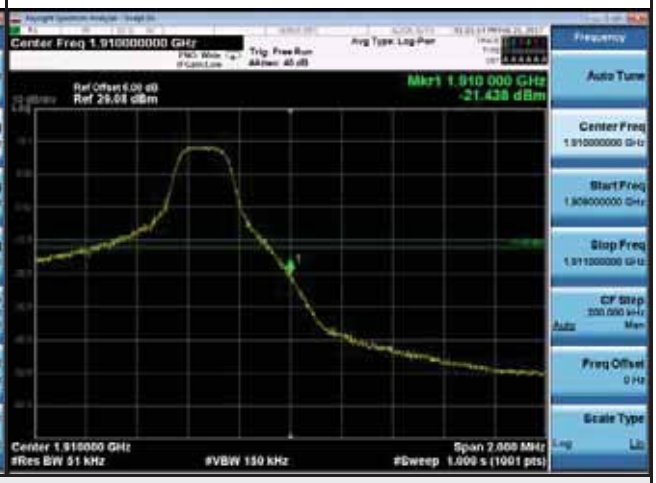
ATTACHMENT E - BAND EDGE

DCS1900			
GSM			
Channel	512	Channel	810
			
EDGE			
Channel	512	Channel	810
			

WCDMA Band 2			
Channel	9262	Channel	9538
			

WCDMA_HSDPA Band 2			
Channel	9262	Channel	9538
			

WCDMA_HSUPA Band 2			
Channel	9262	Channel	9538
			

LTE Band 2_5M			
1RB0		1RB24	
Channel	18625	Channel	19175
			
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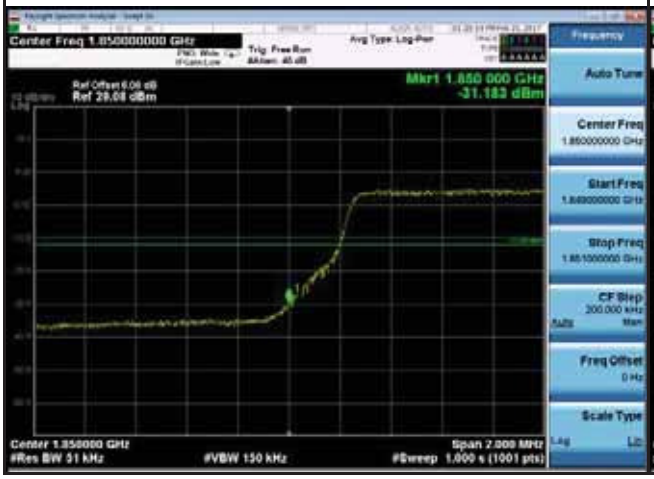			

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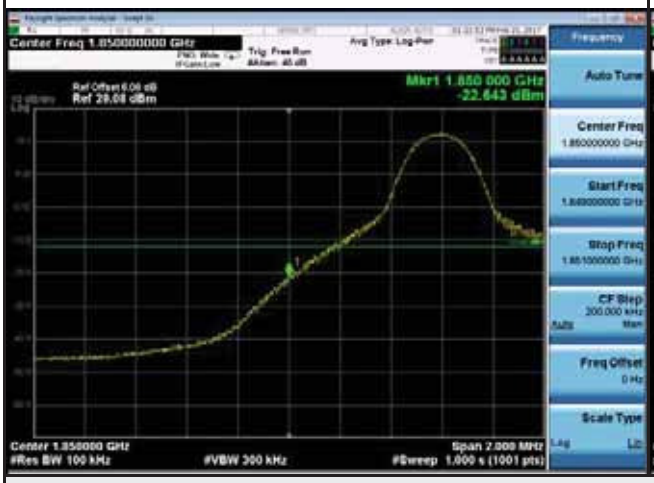		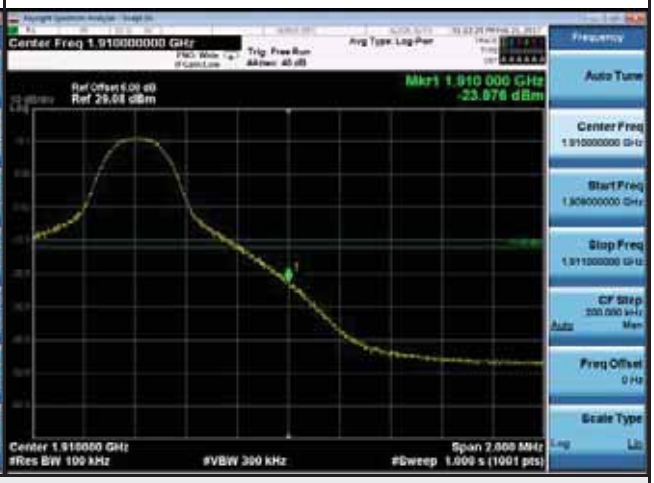	
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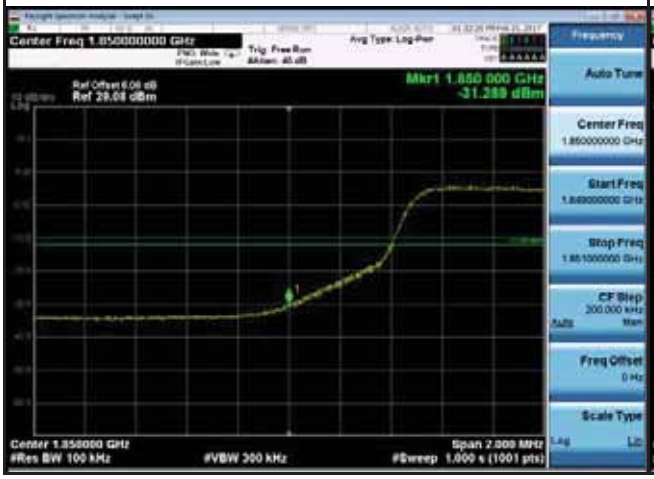		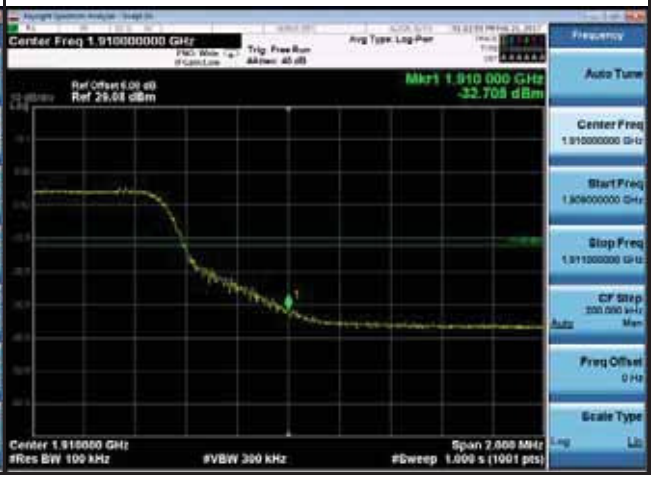	

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		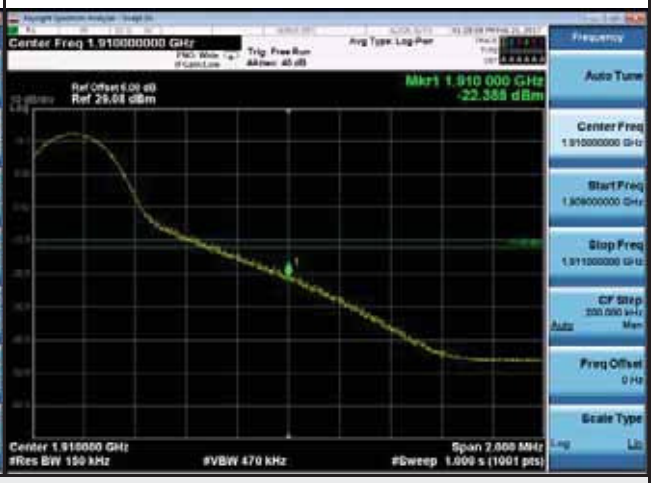	
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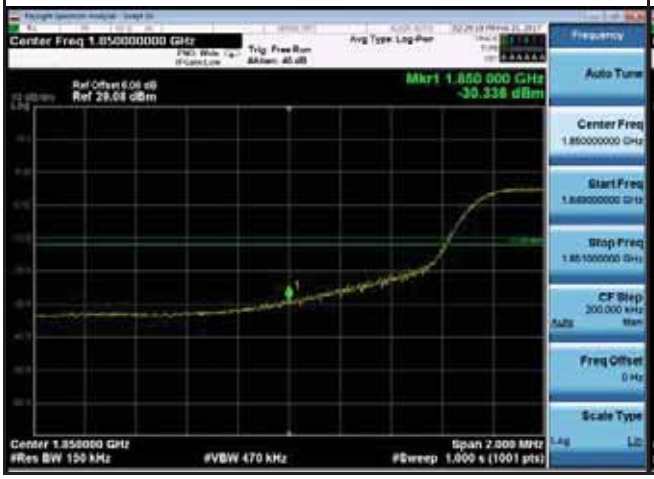		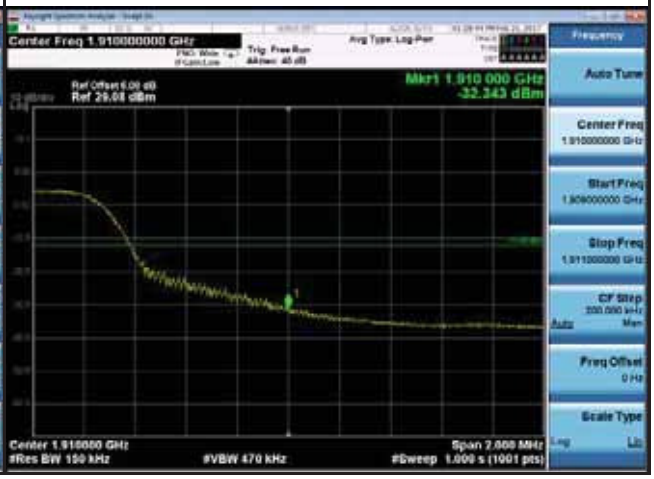	

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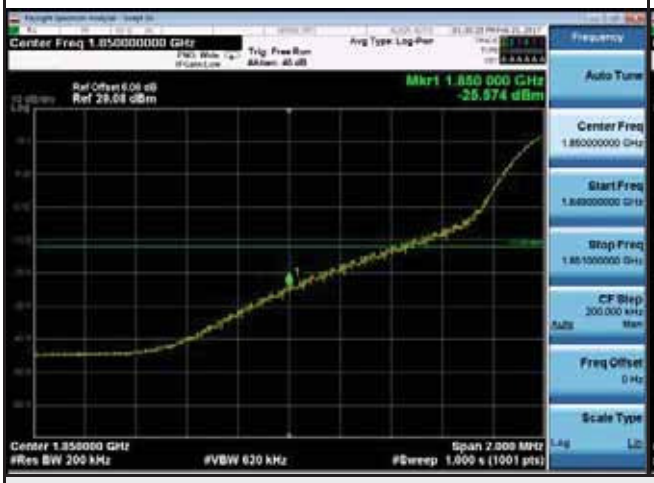
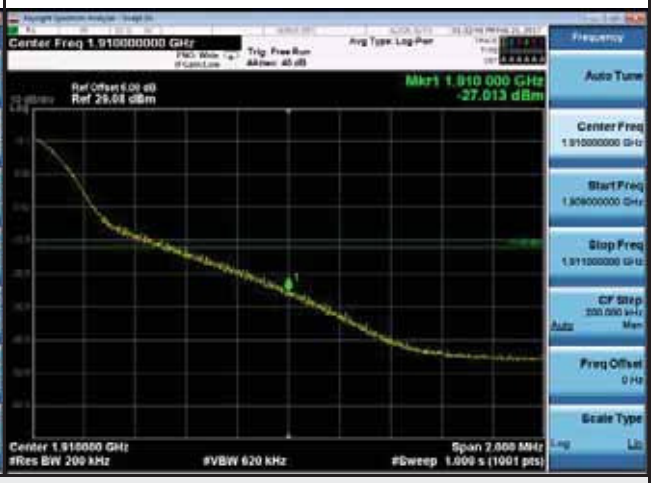
<tr><td colspan="2">  </td><td colspan="2">  </td></tr>
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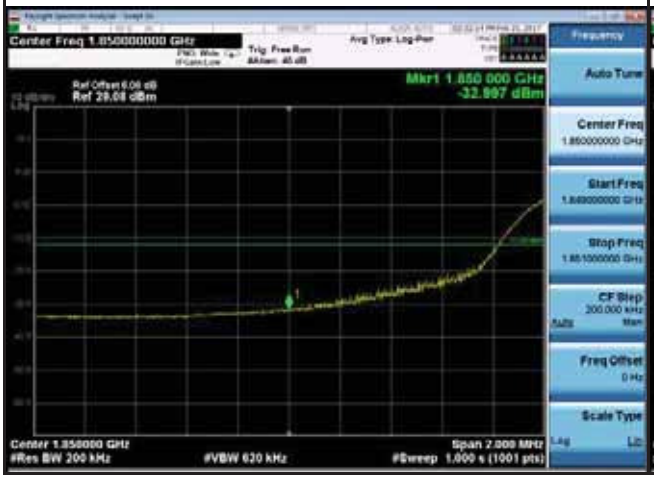
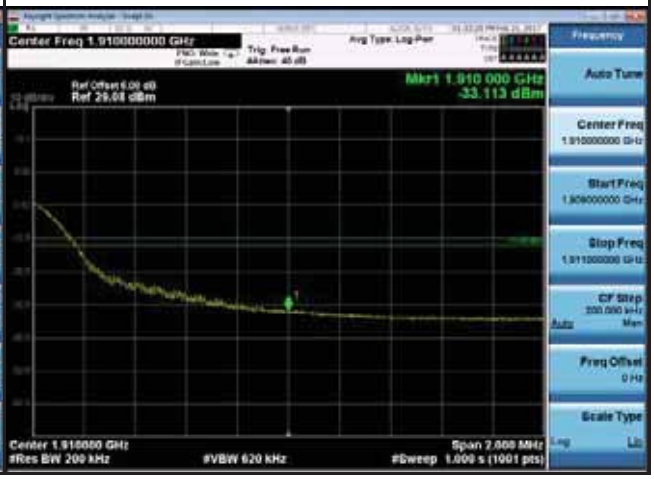
<tr><td colspan="2">  </td><td colspan="2">  </td></tr>
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ATTACHMENT F - PEAK TO AVERAGE RATIO

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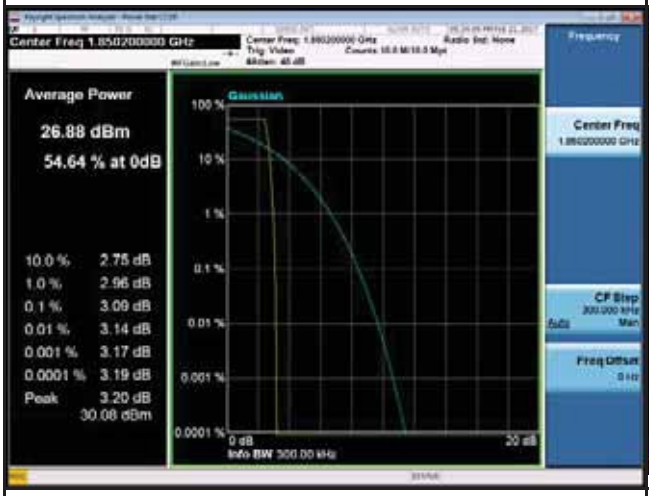	
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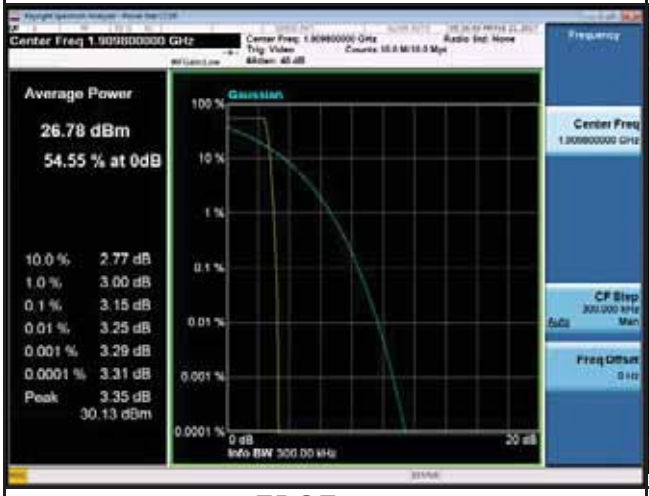
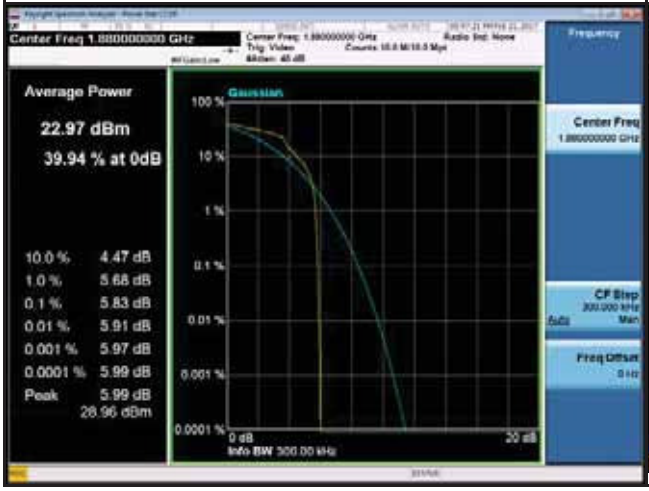
	
EDGE-661	EDGE-810
	

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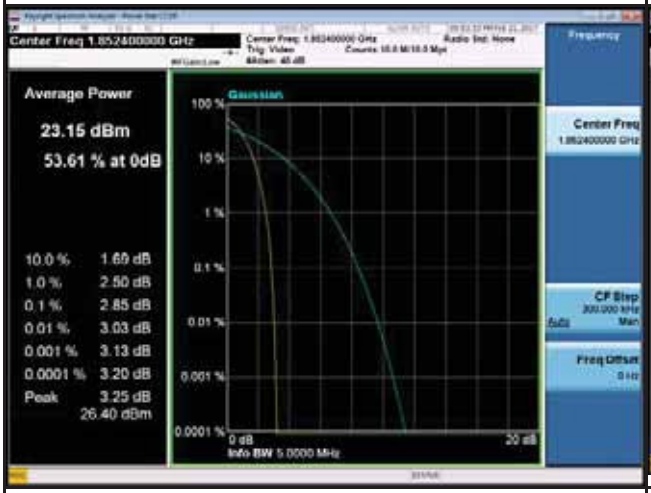	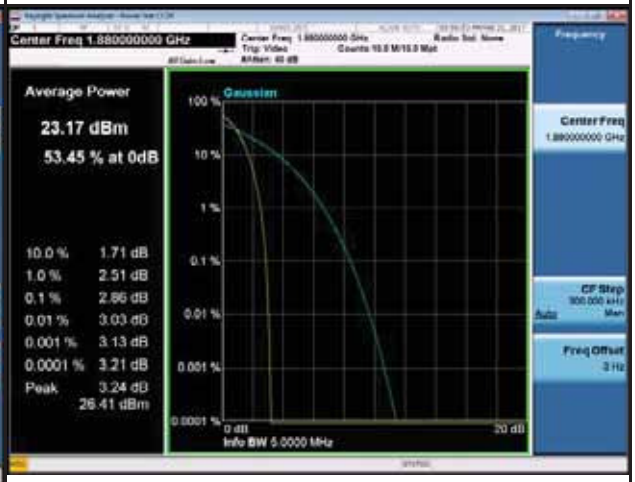
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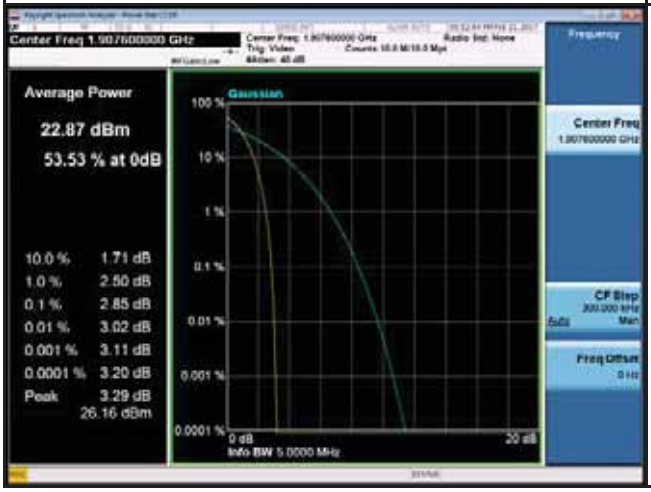	-

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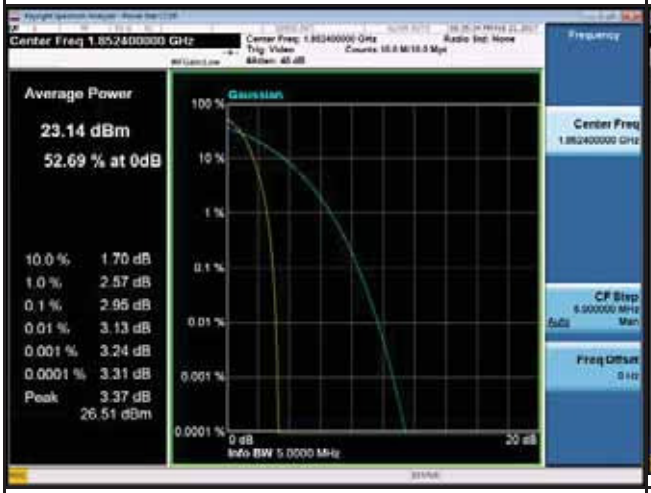	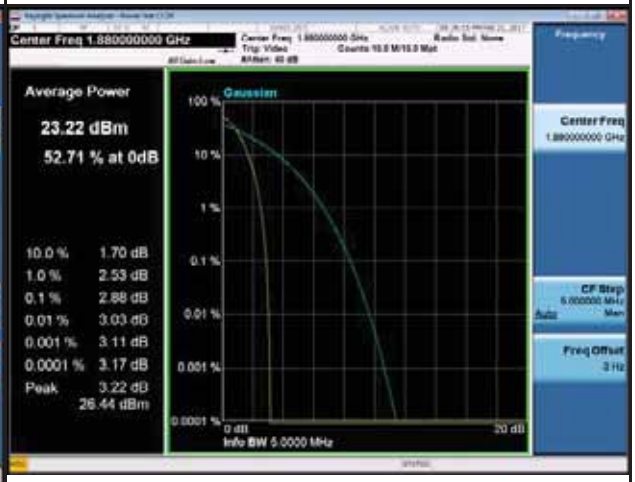
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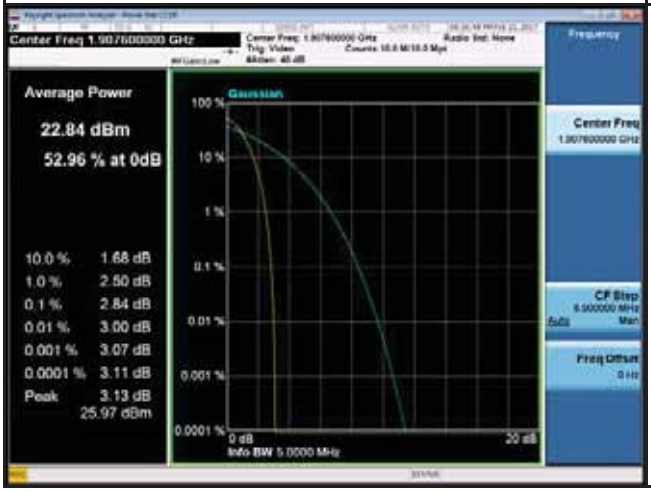	-

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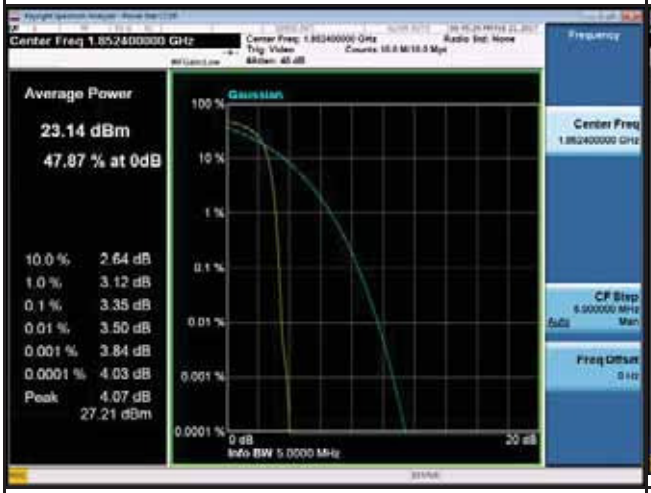	
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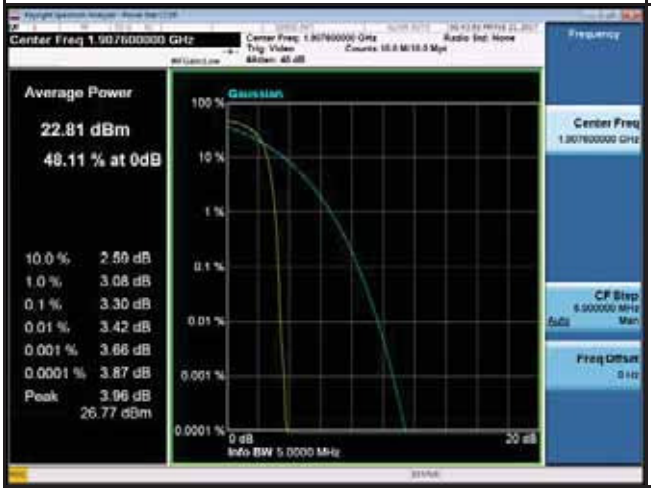	-

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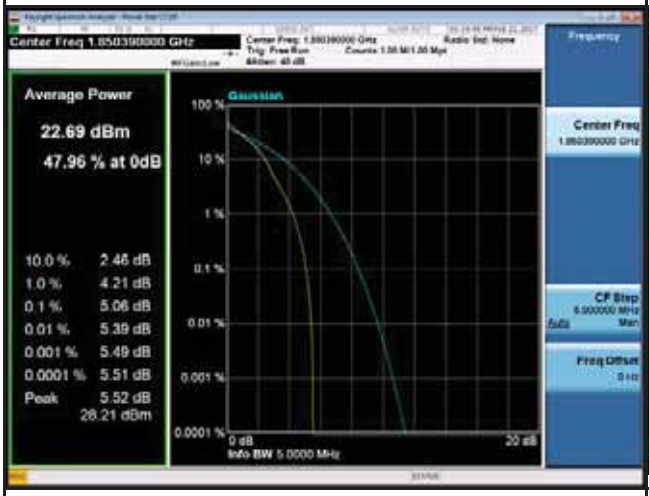	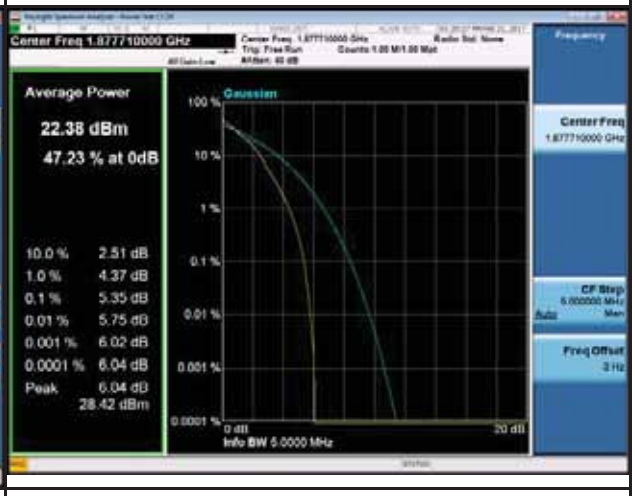
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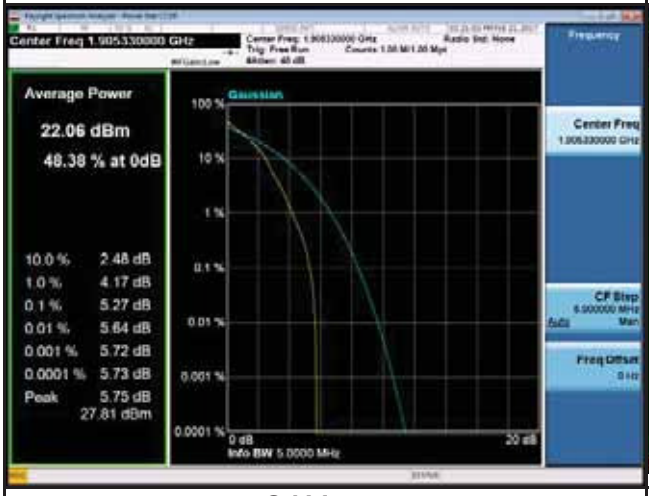	
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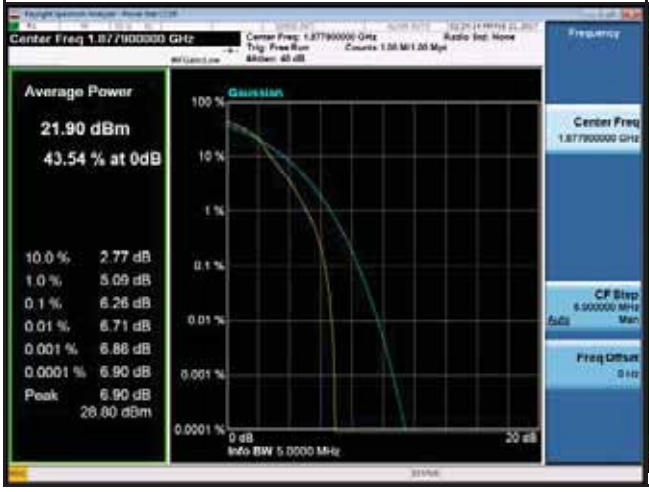	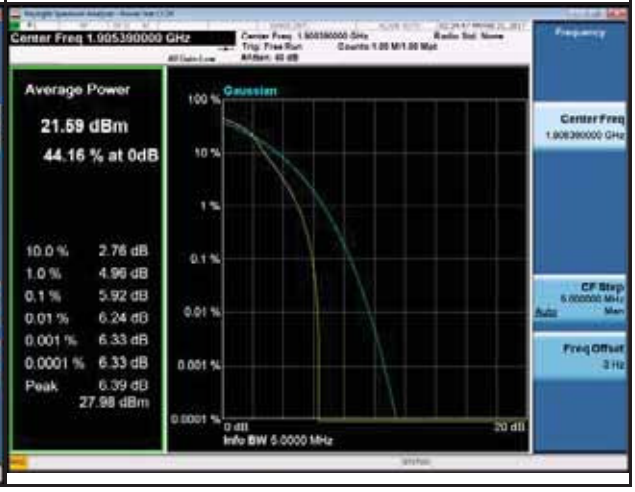

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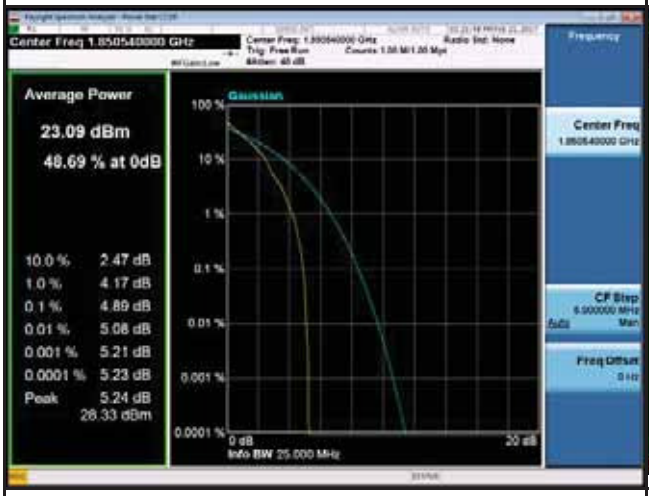	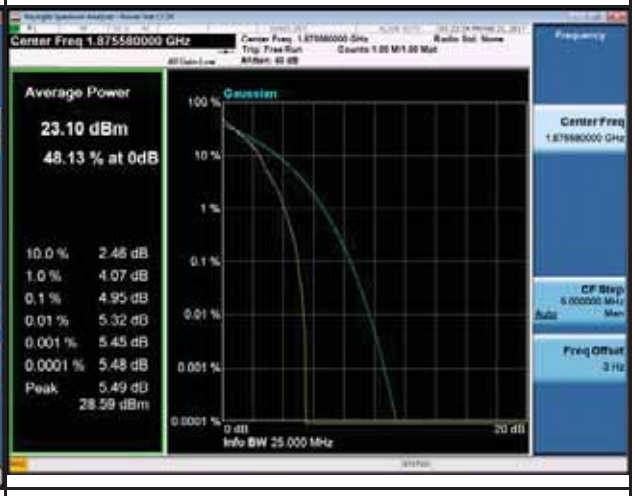
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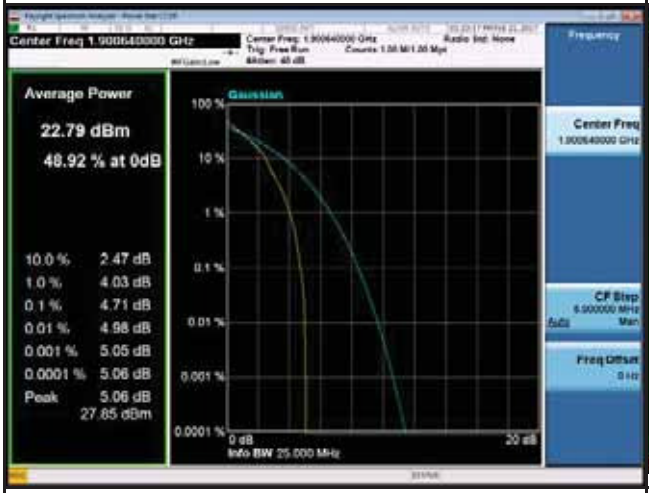	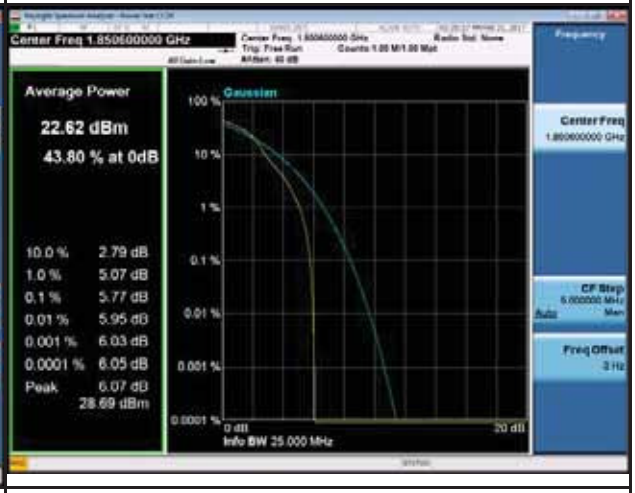
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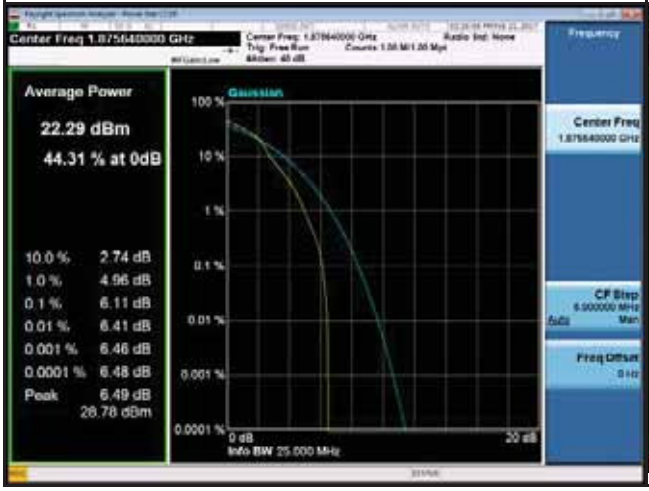	

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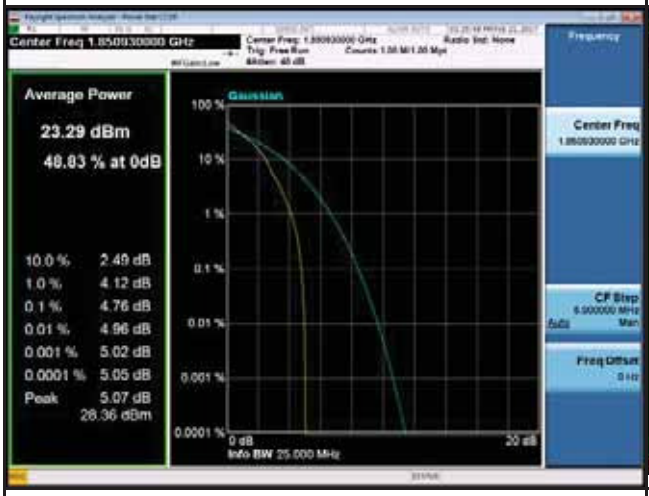	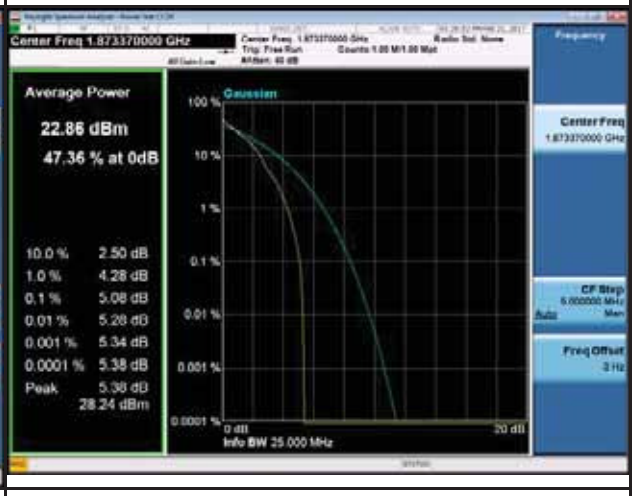
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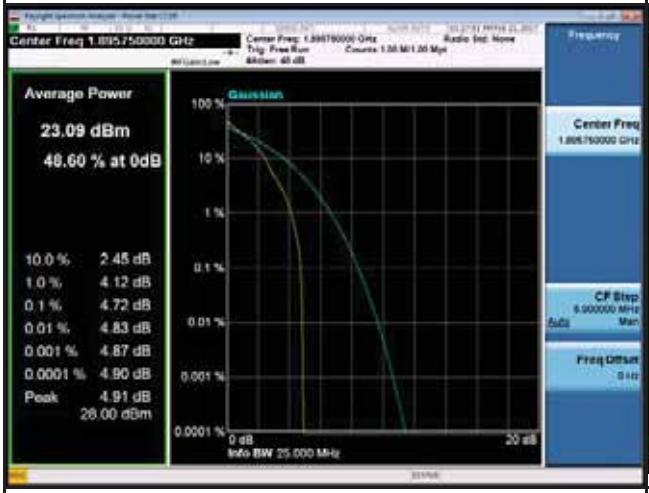	
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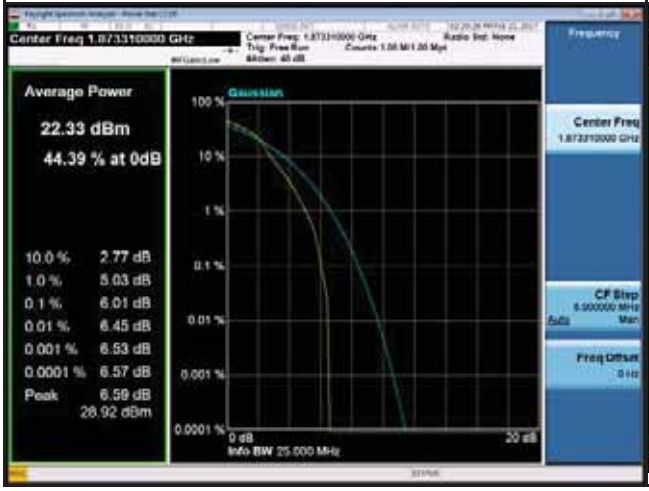	

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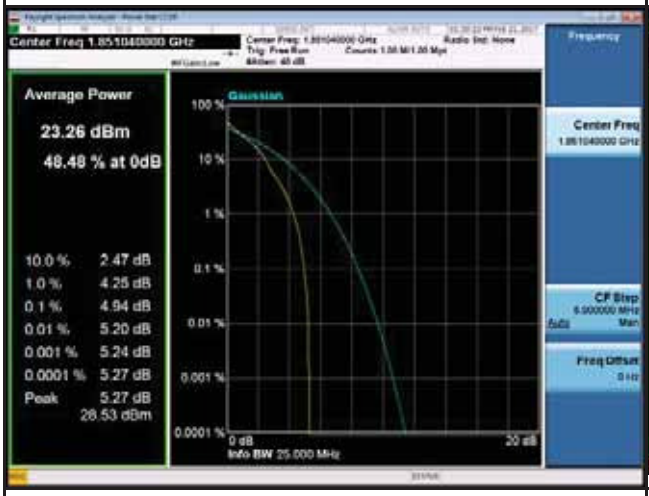	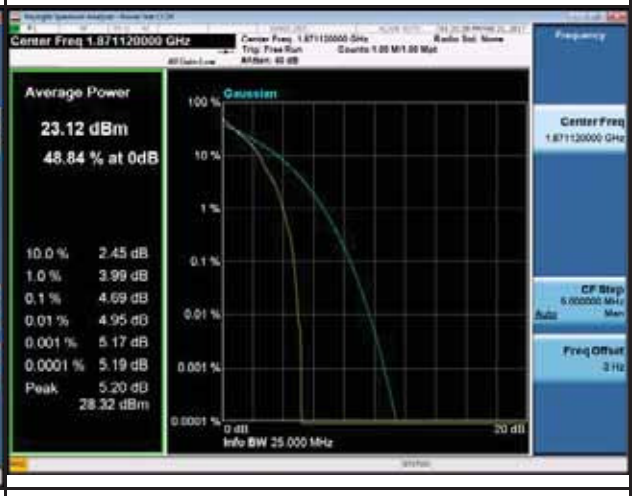
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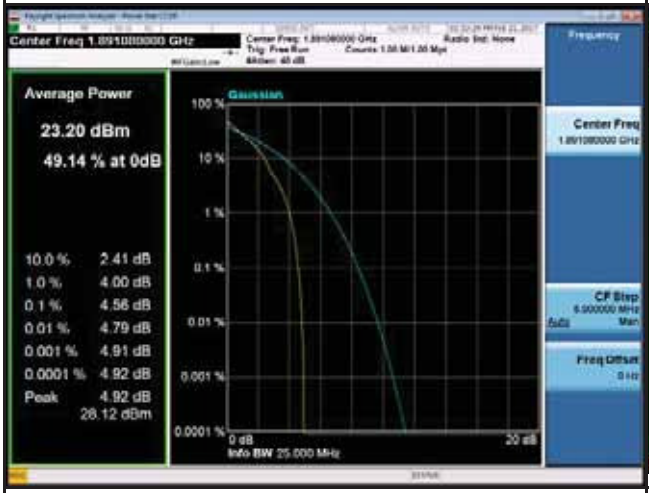	
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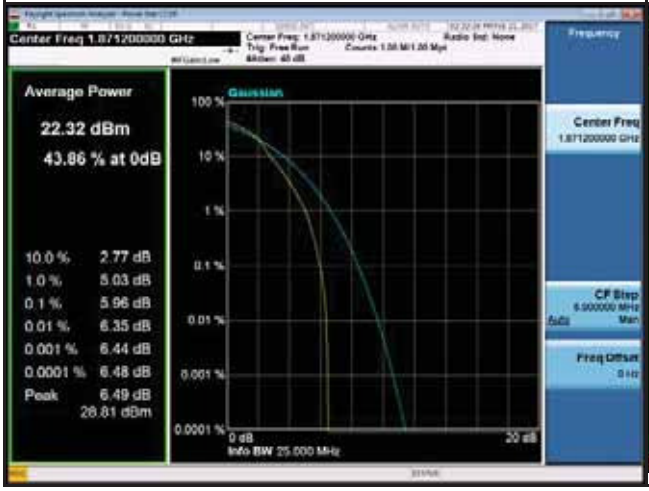	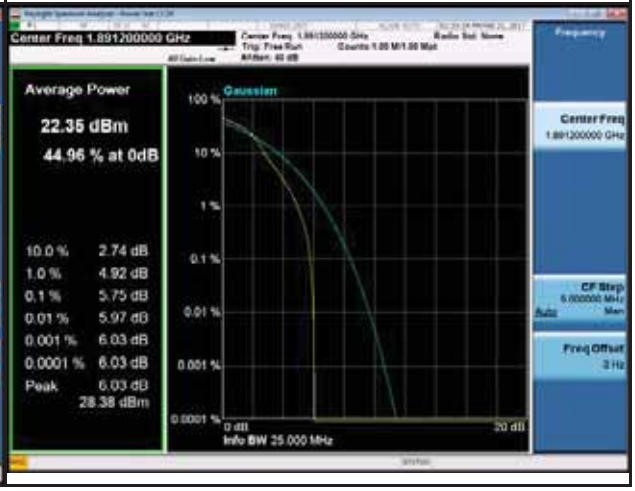

ATTACHMENT G - FREQUENCY STABILITY

Test Mode:	DCS1900_CH661

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	5.33	0.00288077	2.5
-20	6.48	0.003502324	2.5
-10	4.67	0.002524051	2.5
0	5.28	0.002853746	2.5
10	8.64	0.004669765	2.5
20	5.1	0.002756459	2.5
30	4.59	0.002480813	2.5
40	7.81	0.004221165	2.5
50	8.3	0.004486002	2.5
Max. Deviation (ppm)	8.64	0.004669765	2.5

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	5.08	0.002745649	2.5
4	6.47	0.003496919	2.5
4.2	8.39	0.004534645	2.5
Max. Deviation (ppm)	8.39	0.004534645	2.5

Test Mode:	WCDMA Band 2_CH9400

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	7.32	0.003893617	2.5
-20	9.64	0.00512766	2.5
-10	5.21	0.002771277	2.5
0	5.69	0.003026596	2.5
10	8.91	0.004739362	2.5
20	6.52	0.003468085	2.5
30	7.51	0.003994681	2.5
40	9.32	0.004957447	2.5
50	8.16	0.004340426	2.5
Max. Deviation (ppm)	9.64	0.00512766	2.5

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	6.37	0.003388298	2.5
4	8.45	0.004494681	2.5
4.2	7.25	0.003856383	2.5
Max. Deviation (ppm)	8.45	0.004494681	2.5

Test Mode:	LTE Band 2_CH18900_5M

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	5.27	0.002803191	2.5
-20	4.36	0.002319149	2.5
-10	-5.98	0.003180851	2.5
0	1.58	0.000840426	2.5
10	-3.54	0.001882979	2.5
20	2.69	0.001430851	2.5
30	-6.58	0.0035	2.5
40	-3.37	0.001792553	2.5
50	2.41	0.001281915	2.5
Max. Deviation (ppm)	**6.58**	**0.0035**	2.5

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	1.17	0.00062234	2.5
4	2.83	0.001505319	2.5
4.2	-3.54	0.001882979	2.5
Max. Deviation (ppm)	**3.54**	**0.001882979**	2.5

Test Mode:	LTE Band 2_CH18900_10M

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	2.21	0.001175532	2.5
-20	3.65	0.001941489	2.5
-10	-5.24	0.002787234	2.5
0	1.34	0.000712766	2.5
10	-6.34	0.00337234	2.5
20	6.87	0.003654255	2.5
30	2.56	0.001361702	2.5
40	1.08	0.000574468	2.5
50	6.30	0.003351064	2.5
Max. Deviation (ppm)	6.87	0.003654255	2.5

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	4.38	0.002329787	2.5
4	-5.49	0.002920213	2.5
4.2	2.68	0.001425532	2.5
Max. Deviation (ppm)	5.49	0.002920213	2.5

Test Mode:	LTE Band 2_CH18900_15M

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	1.33	0.000707447	2.5
-20	-5.21	0.002771277	2.5
-10	6.32	0.003361702	2.5
0	-5.24	0.002787234	2.5
10	-3.57	0.001898936	2.5
20	2.59	0.00137766	2.5
30	4.66	0.002478723	2.5
40	-3.27	0.001739362	2.5
50	-4.13	0.002196809	2.5
Max. Deviation (ppm)	6.32	0.003361702	2.5

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	5.20	0.002765957	2.5
4	3.77	0.002005319	2.5
4.2	-4.21	0.002239362	2.5
Max. Deviation (ppm)	5.20	0.002765957	2.5

Test Mode:	LTE Band 2_CH18900_20M

Temperature vs. Frequency Stabiility

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-30	2.21	0.001175532	2.5
-20	3.68	0.001957447	2.5
-10	4.52	0.002404255	2.5
0	-5.62	0.002989362	2.5
10	-3.84	0.002042553	2.5
20	6.98	0.003712766	2.5
30	1.92	0.001021277	2.5
40	2.08	0.001106383	2.5
50	-3.62	0.001925532	2.5
Max. Deviation (ppm)	6.98	0.003712766	2.5

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.8	2.58	0.00137234	2.5
4	2.67	0.001420213	2.5
4.2	-3.41	0.00181383	2.5
Max. Deviation (ppm)	3.41	0.00181383	2.5