RF Test Report

Test in accordance with
Federal Communications Commission(FCC)
CFR TITLE 47, Parts 2, 22, 24, 27

Product Name : Coolpad Flo

Model No. : Coolpad 7560T

FCC ID : R38YL7560T

IC ID : 10367A-YL7560T

Applicant : Yulong Computer Telecommunication Scientific (Shenzhen) Co. LTD

Address : Park(North), Nanshan District, Shenzhen City, Guangdong Province, P.R.C.

Date of Receipt : 2013-08-26

Test Date : 2013-08-26~2013-09-03

Issued Date : 2013-09-04

Report No. : ZZ20130826001-4

Report Version : V1.0

Test Report Certification

Issued Date : 2013-09-04
Report No. : UL20130826001-4

Product Name :	Coolpad Flo
Applicant :	Yulong Computer Telecommunication Scientific (Shenzhen) Co. LTD
Address :	Park(North),Nanshan District, Shenzhen City, Guangdong Province, P.R.C.
Manufacturer :	Yulong Computer Telecommunication Scientific (Shenzhen) Co. LTD.
Address :	Park(North),Nanshan District, Shenzhen City, Guangdong Province, P.R.C.
Model No. :	Coolpad 7560T
EUT Voltage :	MIN: 3.6V, NOR: 3.7V, MAX: 4.2V
Brand Name :	Coolpad
FCC ID:	R38YL7560T
IC ID:	10367A-YL7560T
Applicable Standard :	ANSI/TIA-603-D-2010; FCC CFR Title 47 Part 2; FCC CFR Title 47 Part 22 Subpart H; FCC CFR Title 47 Part24 Subpart E; FCC CFR Title 47 Part 27 Subpart C;
Test Result :	Complied
Performed Location :	Unilab (Shanghai) Co., Ltd. FCC 2.948 register number is 714465 No. 1350, Lianxi Rd. Pudong New District, Shanghai, China TEL: +86-21-50275125 FAX: +86-21-50275126

Documented By : Andy Wei
(Technical Engineer: Andy Wei)

Reviewed By : Forest cao
(Senior Engineer: Forest Cao)

Approved By : Eva wang
(Supervisor: Eva Wang)

TABLE OF CONTENTS

SUMMARY OF TEST RESULT

Report Section	FCC CFR 47	Description	Limit	Result
3	part2.1046	Conducted Output Power	N/A	PASS
3	part 22.913(a)(2)	Effective Radiated Power	<7 Watts	PASS
3	part 24.232(c)	Equivalent Isotropic Radiated Power	<2 Watts	PASS
3	part 27.50(d)(4)		<1 Watt	PASS
4	part 2.1046	Modulation Characteristic	N/A	PASS
5	part 2.1049 part 22.917(a) part 24.238(a) part 27.53(h)(1)	Occupied Bandwidth	N/A	PASS
6	part 2.1051 part 22.917(a) part 24.238(a) part 27.53(h)	Band Edge Measurement	<43+10lg(P[Watts])	PASS
7	part 2.1051 part 22.917(a) part 24.238(a) part 27.53(h)	Conducted Spurious Emission	<43+10lg(P[Watts])	PASS
7	part 2.1053 part 22.917(a) part 24.238(a) part 27.53(h)	Field Strength of Supurious Radiation	<43+10lg(P[Watts])	PASS
8	part 2.1055 part 22.355 part 24.235 part 27.54	Frequency Stability for Temperature & Voltage	<2.5 ppm	PASS

1.General Information

1.1. EUT Description

Product Name:	Coolpad Flo
Model Name:	Coolpad 7560T
Hardware Version:	P2
Software Version:	4.1.009.P2.130819.7560T
RF Exposure Environment:	Uncontrolled
GSM/ EGPRS	
Support Band:	GSM850/PCS1900
EGPRS Class:	12
Tx Frequency Range:	GSM 850: 824.2MHz to 848.8MHz PCS 1900: 1850.2MHz to 1909.8MHz
Rx Frequency Range:	GSM 850: 869.2MHz to 893.8MHz PCS 1900: 1930.2MHz to 1989.8MHz
Type of modulation:	GSM for GMSK EGPRS for 8PSK
Antenna Type:	Internal
Antenna Peak Gain:	GSM 850: 1.6dBi PCS 1900: 3.8dBi
WCDMA	
Support Band:	WCDMA Band V
Tx Frequency Range:	WCDMA(UMTS): 826.4-846.6MHz
Rx Frequency Range:	WCDMA(UMTS): 871.4-891.6MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Internal
Antenna Peak Gain:	WCDMA Band V: 1.6dBi
Support Band:	WCDMA Band IV
Tx Frequency Range:	WCDMA(UMTS): 1712.4-1752.6MHz
Rx Frequency Range:	WCDMA(UMTS): 2112.4-2152.6MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Internal
Antenna Peak Gain:	WCDMA Band IV: 2.5dBi
Support Band:	WCDMA Band II
Tx Frequency Range:	WCDMA(UMTS): 1852.4-1907.6MHz

Rx Frequency Range:	WCDMA(UMTS): 1932.4-1987.6MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Internal
Antenna Peak Gain:	WCDMA Band II: 3.9dBi
Component	
AC Adapter:	Model Name: CYSK05-050100
	Input: AC 100-240V 50/60Hz 0.15A
	Output: DC 5V/1000mA

1.2. Mode of Operation

Unilab has verified the construction and function in typical operation. EUT is inlink mode with base station emulator at maxium power level. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode		
Band	Radiated TCs	Conducted TCs
GSM 850	GSM Link EDGE 8 Link	GSM Link EDGE 8 Link
GSM1900	GSM Link EDGE 8 Link	GSM Link EDGE 8 Link
WCDMA Band V	RMC 12.2Kbps Link	RMC 12.2Kbps Link
WCDMA Band IV	RMC 12.2Kbps Link	RMC 12.2Kbps Link
WCDMA Band II	RMC 12.2Kbps Link	RMC 12.2Kbps Link

Note:
1. Regards to the frequency band operation: the lowest、middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. The maximum power levels are GSM for GMSK link, EDGE multi-slot class 8 mode for 8PSK link, RMC 12.2Kbps mode for WCDMA Band V, and RMC 12.2Kbps mode for WCDMA Band IV, and RMC 12.2Kbps mode for WCDMA Band II, only these modes were used for all tests.
3. For the ERP/EIRP and radiated emission test, every axis (X, Y, Z) was verified, and show the worst (Z axis) result on this report.
4. This device is a composite device in accordance with Part 15 Subpart B regulations. The report number is UL20130826001-4

The conducted power table is as follows:

Conducted Power (Unit: dBm)						
Band	GSM 850			GSM 1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880	1909.8
GSM	31.70	31.70	31.68	28.04	28.35	28.33
GPRS 8	31.41	31.42	31.53	27.97	28.04	27.82
GPRS 10	28.73	28.73	28.75	24.55	24.51	24.60
GPRS 12	25.68	25.73	25.71	24.21	24.52	24.24
EGPRS 8	31.84	31.80	31.75	28.51	28.52	28.42
EGPRS 10	24.55	24.51	24.46	24.79	24.76	24.87

EGPRS 12	22.62	22.61	22.64	22.23	22.22	22.24

Conducted Power (Unit: dBm)									
Band	WCDMA V			WCDMA IV			WCDMA II		
TX Channel	4132	4182	4233	1312	1412	1513	9262	9400	9538
RX Channel	4357	4408	4458	1537	1637	1738	9662	9800	9938
Frequency	826.4	836.4	846.6	1712.4	1732.4	1752.6	1852.4	1880	1907.6
RMC 12.2K	22.64	22.71	22.68	20.48	21.76	20.67	21.57	22.02	22.15
HSDPA Subtest-1	22.62	22.11	22.65	20.45	21.73	20.64	21.42	21.95	22.12
HSDPA Subtest-2	22.60	22.45	22.59	20.42	21.69	20.61	21.39	21.93	22.09
HSDPA Subtest-3	21.58	21.44	22.06	20.31	21.65	20.59	21.35	21.89	22.05
HSDPA Subtest-4	21.56	21.48	21.35	20.29	21.61	20.56	21.3	21.84	21.95
HSUPA Subtest-1	21.86	21.76	21.72	20.43	21.74	20.64	21.48	21.98	21.98
HSUPA Subtest-2	21.76	21.68	21.62	20.36	21.62	20.57	21.42	21.92	21.89
HSUPA Subtest-3	21.43	21.54	21.36	20.34	21.59	20.54	21.36	21.89	21.82
HSUPA Subtest-4	21.11	20.95	20.97	20.25	21.46	20.51	21.27	21.85	21.78
HSUPA Subtest-5	20.97	20.88	20.88	20.19	21.42	20.49	21.24	21.81	21.72

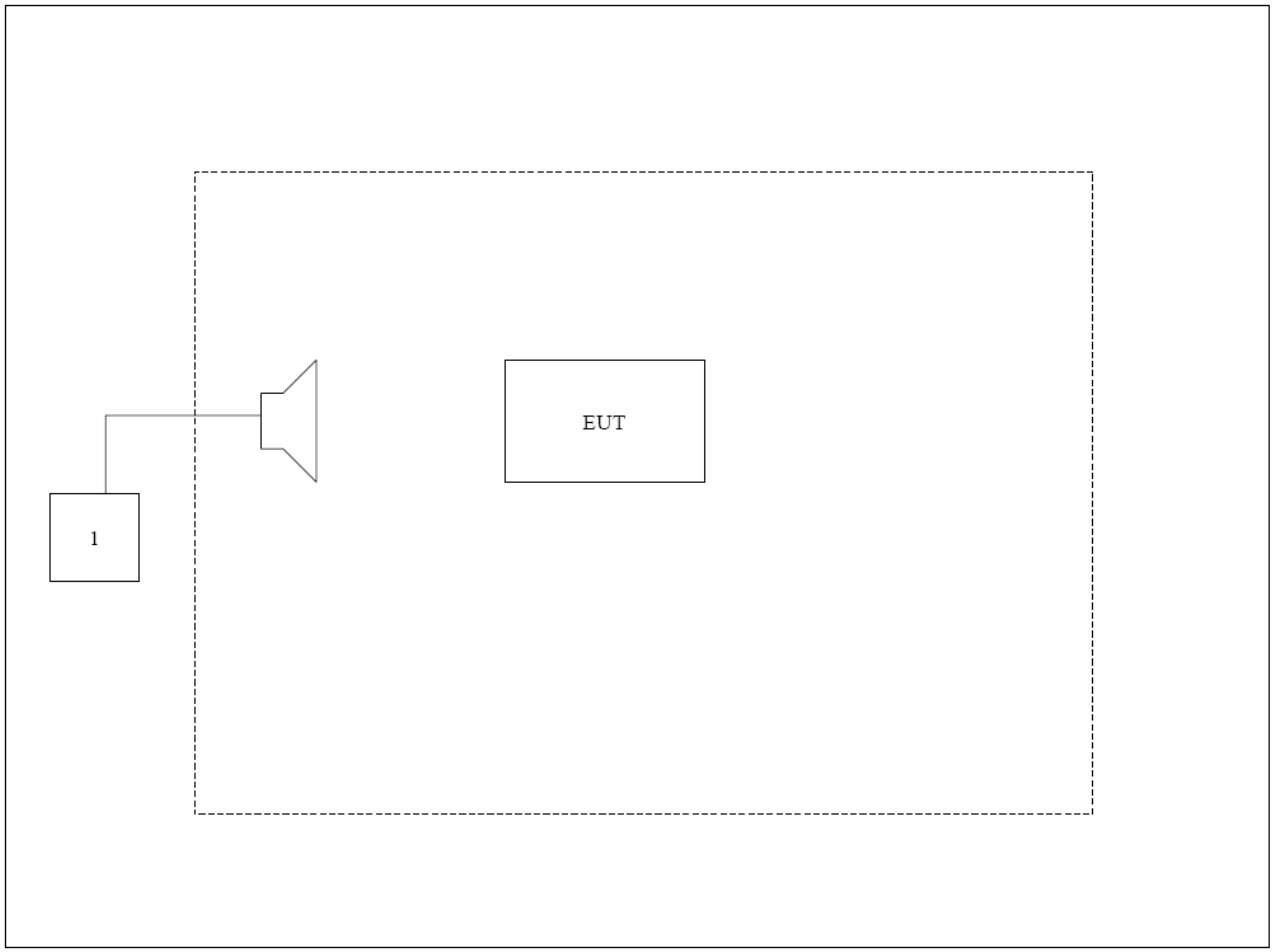
1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model	Serial No.	Power Cord
1	Agilent8960	Agilent	E5515C	GB46581718	N/A

1.4. Configuration of Tested System

Connection Diagram



1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	EUT Communicate with E5515C, then select channel to test.

2. Technical Test

2.1. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (℃)	15-35	25
Humidity (%RH)	25-75	68
Barometric pressure (mbar)	860-1060	950-1000

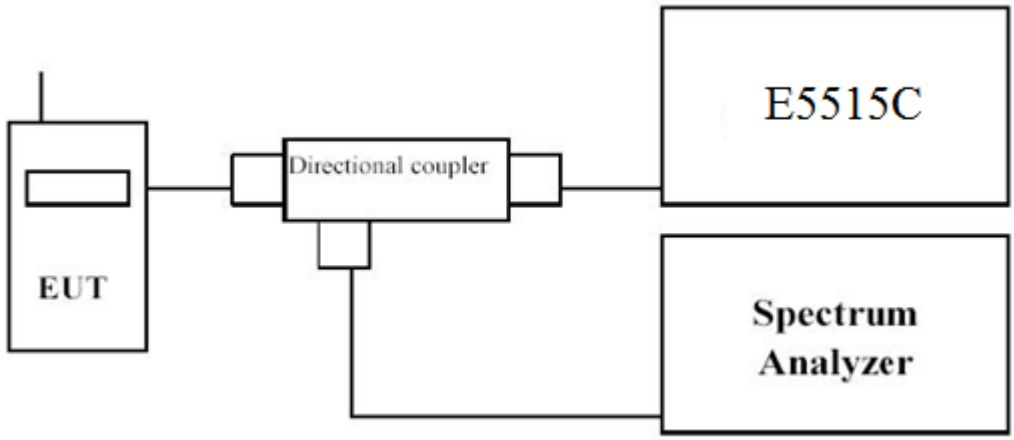
3. Peak Output Power

3.1. Test Equipment

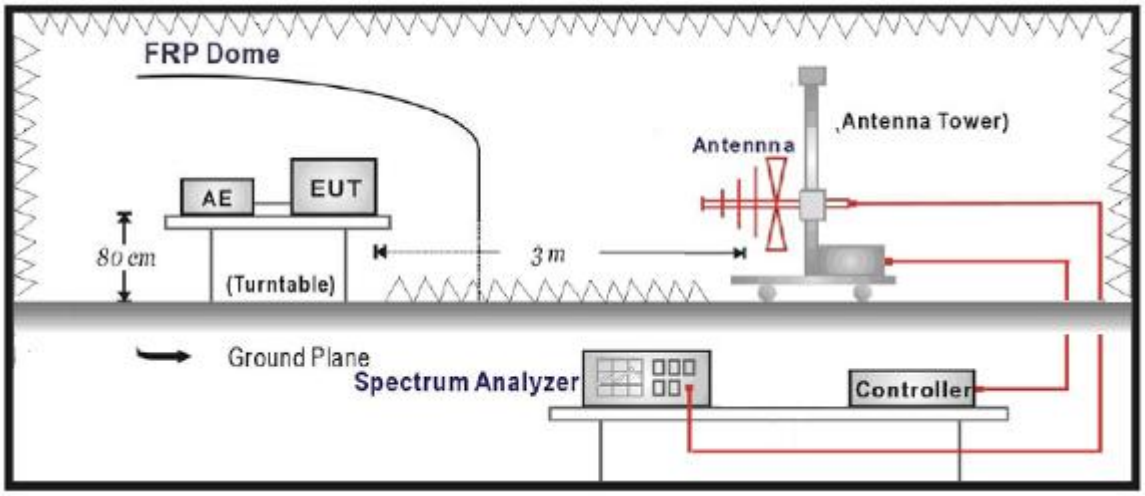
Instrument	Manufacturer	Model	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9038A	MY51210142	2014.07.27
Radio Communication Tester	Agilent	E5515C	GB46581718	2013.10.25
Signal Generator	Agilent	N5183A	MY50140938	2013.10.08
Preamplifier	CEM	EM30180	3008A0245	2014.03.01
DC Power Supply	Agilent	6612C	MY43002989	2014.03.04
Bilog Antenna	Schwarzbeck	VULB9160	9160-3316	2014.07.19
VHF-UHF-Biconical Antenna	Schwarzbeck	VUBA9117	9117-263	2014.07.19
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-942	2014.07.19
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-943	2014.07.19

3.2. Test Setup

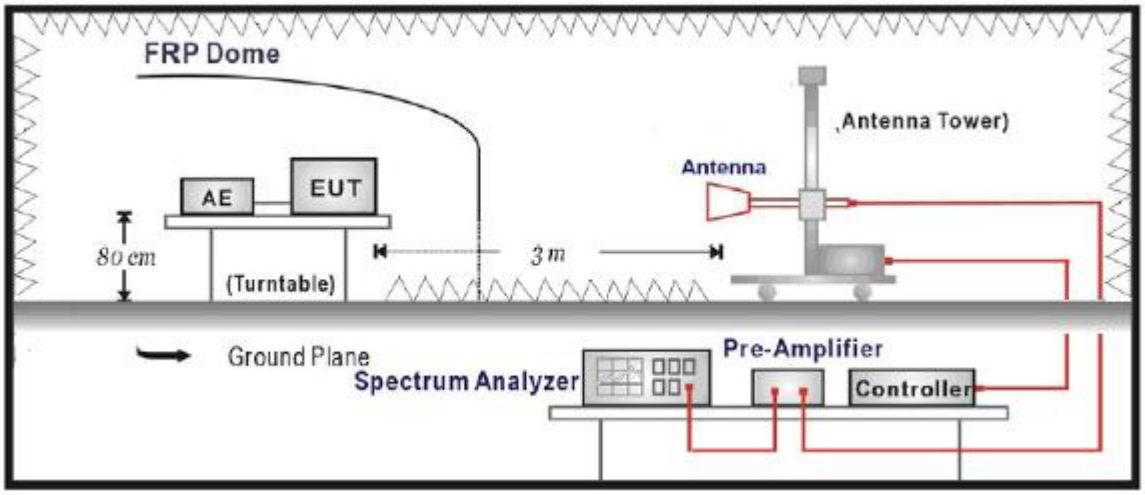
Conducted Power Measurement:



Radiated Spurious Measurement: below 1GHz



Radiated Spurious Measurement: above 1GHz



3.3. Limit

For FCC Part 22.913(a)(2):
The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

For FCC Part 24.232(c):
The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 2 Watts.

For FCC Part 27.50(d)(4):
The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 1 Watt.

3.4. Test Procedure

Conducted Power Measurement:
a. Place the EUT on a bench and set it in transmitting mode.
b.Connect a low loss RF cable from the antenna port to a spectrum analyzer and E5515C by a Directional Couple.
c. EUT Communicate with E5515C, then selects a channel for testing.
d. Add a correction factor to the display of spectrum, and then test.

Radiated Power Measurement:
a. The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
b. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
c. The output of the test antenna shall be connected to the measuring receiver.
d. The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
e. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
f. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
g. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
h. The maximum signal level detected by the measuring receiver shall be noted.
i.The transmitter shall be replaced by a substitution antenna.
j. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
k. The substitution antenna shall be connected to a calibrated signal generator.
l. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
m. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
n. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
o. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
p. The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
q.Test site anechoic chamber refer to ANSI C63.4: 2009.

3.5. Uncertainty

The measurement uncertainty is defined as for Conducted Power Measurement±1.1 dB,
for Radiated Power Measurement±3.1 dB

3.6. Test Result

The following table shows the conducted power measured:

Table 1

GSM850				
Modes	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)
GSM850 (GSM)	128(Low)	824.2	31.70	1.479
	189(Mid)	836.4	31.70	1.479
	251(High)	848.8	31.68	1.472
GSM850 (EDGE 8)	128(Low)	824.2	31.84	1.528
	189(Mid)	836.4	31.80	1.514
	251(High)	848.8	31.75	1.496

Table 2

GSM1900				
Modes	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)
GSM1900 (GSM)	512(Low)	1850.2	28.04	0.637
	661(Mid)	1880.0	28.35	0.684
	810(High)	1909.8	28.33	0.681
GSM1900 (EDGE 8)	512(Low)	1850.2	28.51	0.710
	661(Mid)	1880.0	28.52	0.711
	810(High)	1909.8	28.42	0.695

WCDMA				
Modes	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)
WCDMA Band V	4132(Low)	826.4	22.64	0.184
	4182(Mid)	836.4	22.71	0.187
	4233(High)	846.4	22.68	0.185
WCDMA Band IV	1312(Low)	1712.4	20.48	0.112
	1412(Mid)	1732.4	21.76	0.150
	1513(High)	1752.6	20.67	0.117
WCDMA Band II	9262(Low)	1852.4	21.57	0.144
	9400(Mid)	1880.0	22.02	0.159
	9538(High)	1907.6	22.15	0.164

The following table shows the Radiated power measured :

GSM850 (GSM Link)

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	ERP (W)
Low Channel 128 (824.20MHz)						
824.2	H	35.85	3.83	-2.99	29.03	0.800
824.2	V	34.27	3.83	-2.99	27.45	0.556
Middle Channel 189 (836.40MHz)						
836.4	H	36.21	3.96	-3.04	29.21	0.834
836.4	V	33.93	3.96	-3.04	26.93	0.493
High Channel 251 (848.80MHz)						
848.8	H	36.04	3.97	-3.10	28.97	0.789
848.8	V	34.29	3.97	-3.10	27.22	0.527

GSM850 (EDGE 8 Link)

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	ERP (W)
Low Channel 128 (824.20MHz)						
824.2	H	35.47	3.83	-2.99	28.65	0.733
824.2	V	34.50	3.83	-2.99	27.68	0.586
Middle Channel 189 (836.40MHz)						
836.4	H	32.29	3.96	-3.04	28.45	0.700
836.4	V	34.03	3.96	-3.04	27.03	0.505
High Channel 251 (848.80MHz)						
848.8	H	36.38	3.97	-3.10	29.31	0.853
848.8	V	34.20	3.97	-3.10	27.13	0.516

GSM1900 (GSM Link)

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	EIRP (W)
Low Channel 512(1850.20MHz)						
1850.2	H	22.75	6.26	10.40	26.89	0.489
1850.2	V	20.51	6.26	10.40	24.65	0.292
Middle Channel 661 (1880.00MHz)						
1880.0	H	22.89	6.19	10.43	27.13	0.516
1880.0	V	21.22	6.19	10.43	25.46	0.352
High Channel 810 (1909.80MHz)						
1909.8	H	23.03	6.15	10.44	27.32	0.540
1909.8	V	20.57	6.15	10.44	24.86	0.306

GSM1900 (EDGE 8 Link)

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	EIRP (W)
Low Channel 512(1850.20MHz)						
1850.2	H	21.51	6.26	10.40	25.65	0.367
1850.2	V	22.60	6.26	10.40	26.74	0.472
Middle Channel 661 (1880.00MHz)						
1880.0	H	20.08	6.19	10.43	24.32	0.270
1880.0	V	20.77	6.19	10.43	25.01	0.317
High Channel 810 (1909.80MHz)						
1909.8	H	21.07	6.15	10.44	25.36	0.344
1909.8	V	21.08	6.15	10.44	25.37	0.344

WCDMA Band V

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	ERP (dBm)
Low Channel 4132(826.4MHz)						
826.4	H	24.78	3.83	-2.99	17.96	0.063
826.4	V	25.24	3.83	-2.99	18.42	0.070
Middle Channel 4182 (836.4MHz)						
836.4	H	25.00	3.96	-3.04	18.04	0.064
836.4	V	25.86	3.96	-3.04	18.89	0.077
High Channel 4233 (846.6MHz)						
846.6	H	25.23	3.97	-3.10	18.16	0.065
846.6	V	25.50	3.97	-3.10	18.43	0.070

WCDMA Band IV

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	EIRP (dBm)	EIRP (W)
Low Channel 1312 (1712.4MHz)						
1712.4	H	16.02	5.78	10.38	20.62	0.115
1712.4	V	14.27	5.78	10.38	18.87	0.077
Middle Channel 1412 (1732.4MHz)						
1732.4	H	16.64	6.01	10.41	21.04	0.138
1732.4	V	14.63	6.01	10.41	19.03	0.080
High Channel 1513 (1752.6MHz)						
1752.6	H	17.58	6.89	10.44	21.13	0.130
1752.6	V	14.67	5.89	10.44	19.22	0.084

WCDMA Band II

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	EIRP (dBm)	EIRP (W)
Low Channel 9262(1852.4MHz)						
1852.4	H	17.50	6.26	10.40	21.64	0.146
1852.4	V	14.09	6.26	10.40	18.23	0.067
Middle Channel 9400 (1880.0MHz)						

1880.0	H	17.19	6.19	10.43	21.43	0.139
1880.0	V	14.79	6.19	10.43	19.03	0.080
High Channel 9538 (1907.6MHz)						
1907.6	H	17.25	6.15	10.44	21.54	0.142
1907.6	V	14.85	6.15	10.44	19.14	0.082

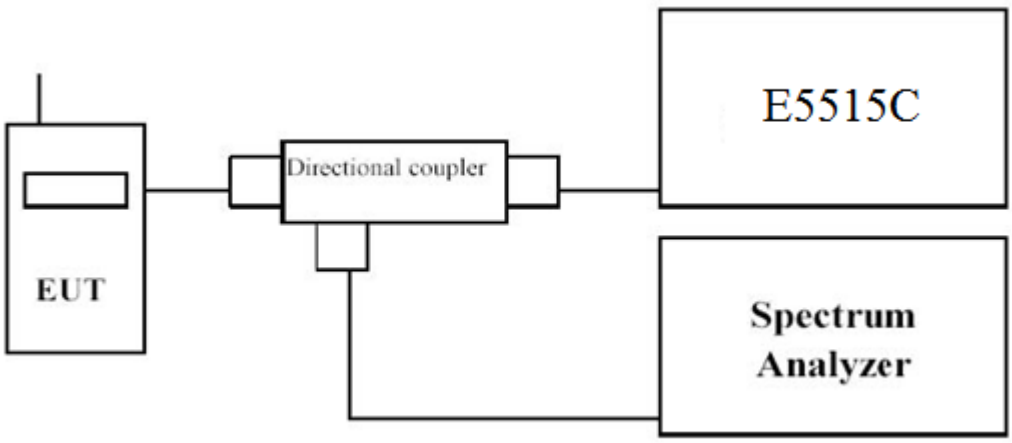
4. Modulation Characteristic

4.1. Test Equipment

Modulation Characteristic / AC-6

Instrument	Manufacturer	Model	Serial No	Cal. Date
Radio Communication Tester	Agilent	E5515C	GB46581718	2013.10.25
DC Power Supply	Agilent	6612C	MY43002989	2014.03.04

4.2. Test Setup



4.3. Limit

N/A

4.4. Test Procedure

GMSK is a form of binary signaling schemes which represent digital states as a shift between discrete sinusoidal frequencies called Frequency Shift Keying (FSK). Minimum Shift Keying (MSK) is continuous phase FSK with the smallest possible modulation index h. Modulation index is defined as:
h = 2*F*Tb
where F = Peak frequency deviation in Hz and Tb = Bit period in seconds

Two discrete frequencies, representing two distinct digital states, with equal phases at switch time t = 0 requires a minimum value of h = 0.5. The Gaussian part of GMSK describes the fact that the digital pulses are filtered in the time domain. This results in bits which are sinusoidal rather than square. The effective spectrum is then compressed with the average carrier frequency in the center of the passband. This is a great advantage because of the significantly reduced bandwidth. GMSK is utilized because of these bandwidth conservation properties.

The bandwidth for GSM is a 60 MHz up-link at 1850-1910 MHz and down-link at 1930-1990 MHz. The 65 MHz is divided into 299 channels, each of which is 200 kHz wide. Slight
spectral spillage is allowed into neighboring channels (which is minimized by GMSK). This
separated transmit/receive frequencies scheme under GSM enables easier duplex filtering.

Within the bandwidth, individual channels are subdivided into multiframes (made of 26 frames), frames (made of 8 time slots), and time slots (made of 8 fields). The time slots are 0.57 ms long allowing 156.25 bits of information including overhead.

The modulation used in GPRS is the same used in GSM. A GSM channel contains eight timeslots, each timeslot is dedicated to one circuit switched call. For GPRS the timeslots are assigned on an as needed basis, and more than one timeslot can be assigned for a particular transmission depending on the network and the device.

4.5. Uncertainty

The measurement uncertainty is defined as 0.1%

4.6. Test Result

The modulation of GSM/EGPRS 850 and 1900, WCDMA Band V/IV/II was verified and confirmed compliance with requirement.

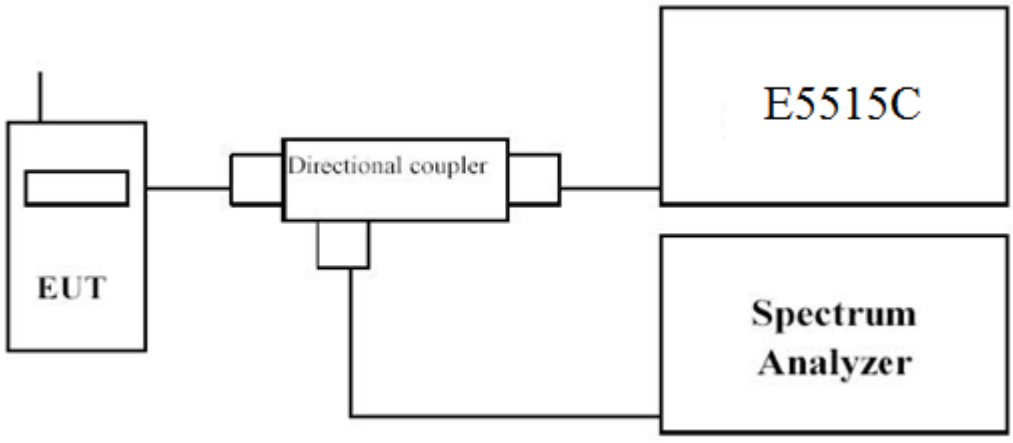
5. Occupied Bandwidth

5.1. Test Equipment

Occupied Bandwidth

Instrument	Manufacturer	Model	Serial No	Cal. Date
Radio Communication Tester	Agilent	E5515C	GB46581718	2013.10.25
Spectrum Analyzer	Agilent	N9038A	MY51210142	2014.07.27
DC Power Supply	Agilent	6612C	MY43002989	2014.03.04

5.2. Test Setup



5.3. Limit

N/A

5.4. Test Procedure

Using Occupied Bandwidth measurement function of spectrum analyzer, and setting as follows:
For GSM850/1900 test --- RBW = 3 kHz and VBW = 10 kHz
For WCDMA Band V/IV/II test --- RBW = 100 kHz and VBW = 300 kHz

5.5. Uncertainty

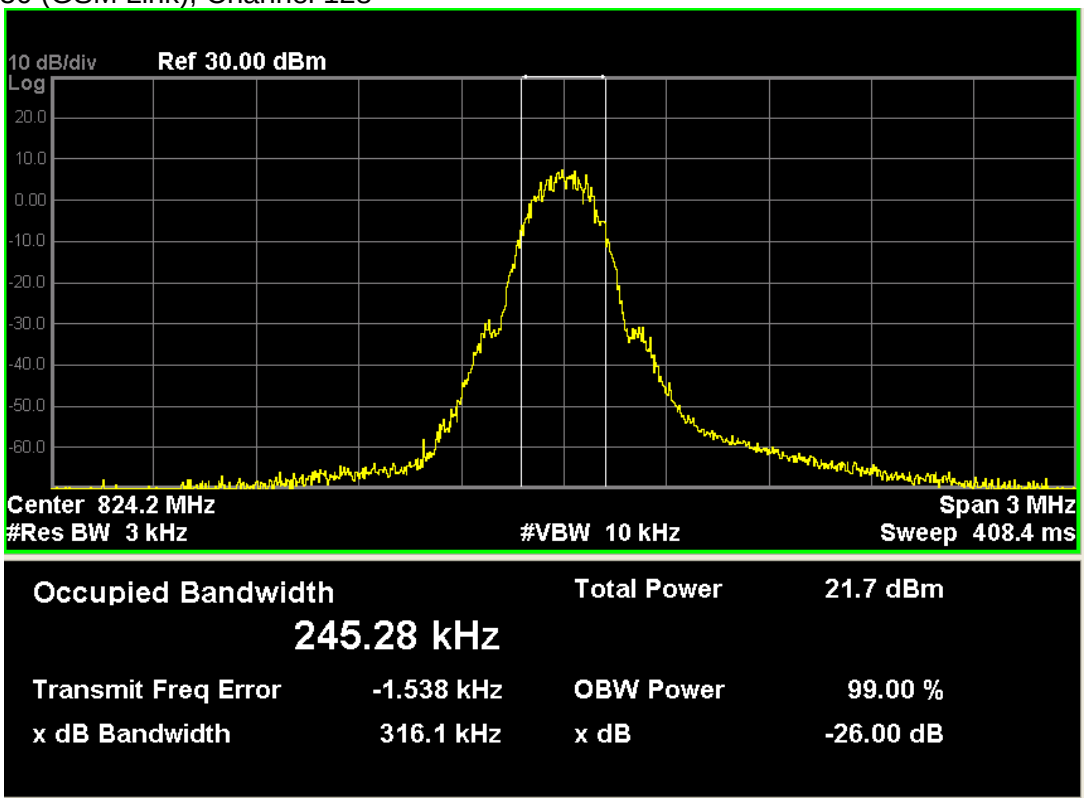
The measurement uncertainty is defined as ± 10 Hz

5.6. Test Result

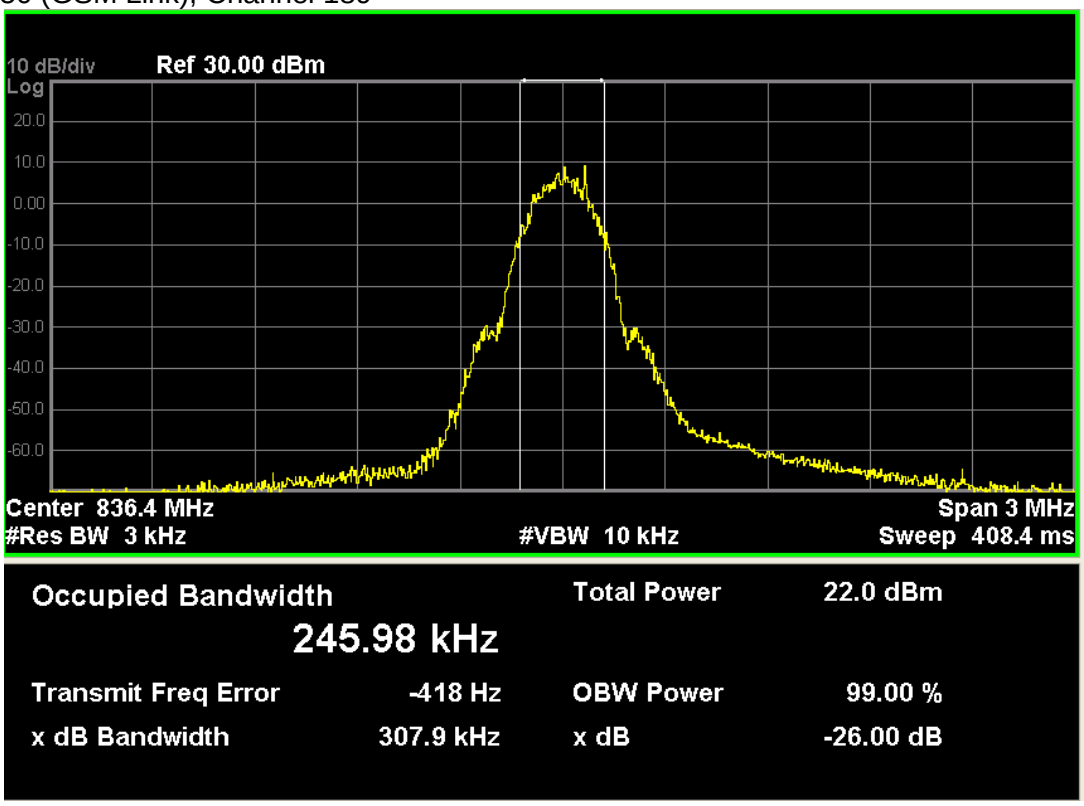
GSM850 (GSM Link)

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
128	824.20	316	245
189	836.40	307	245
251	848.80	307	247

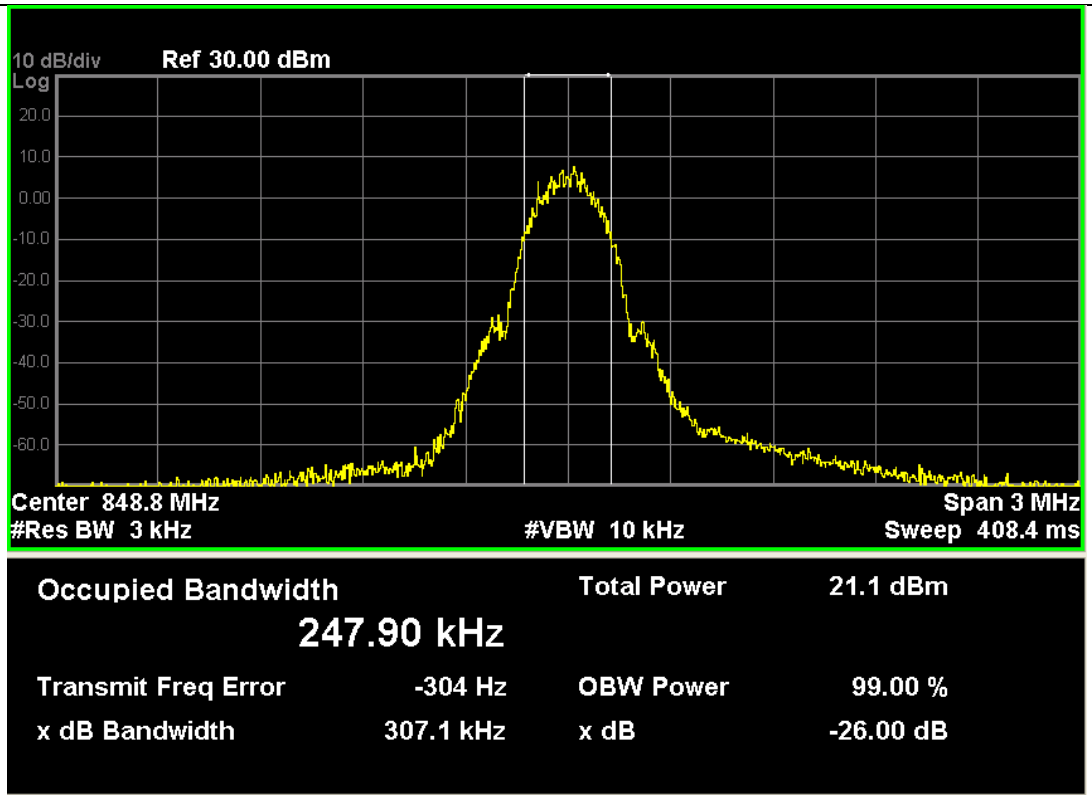
GSM850 (GSM Link), Channel 128



GSM850 (GSM Link), Channel 189



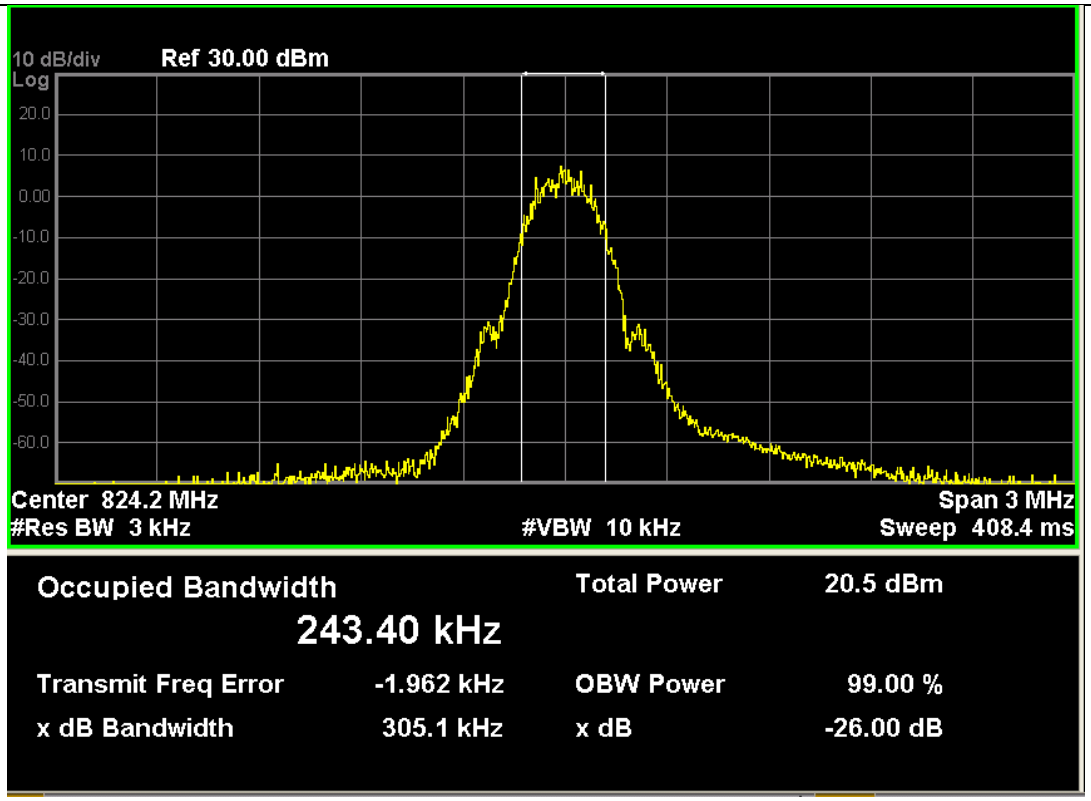
GSM850 (GSM Link), Channel 251



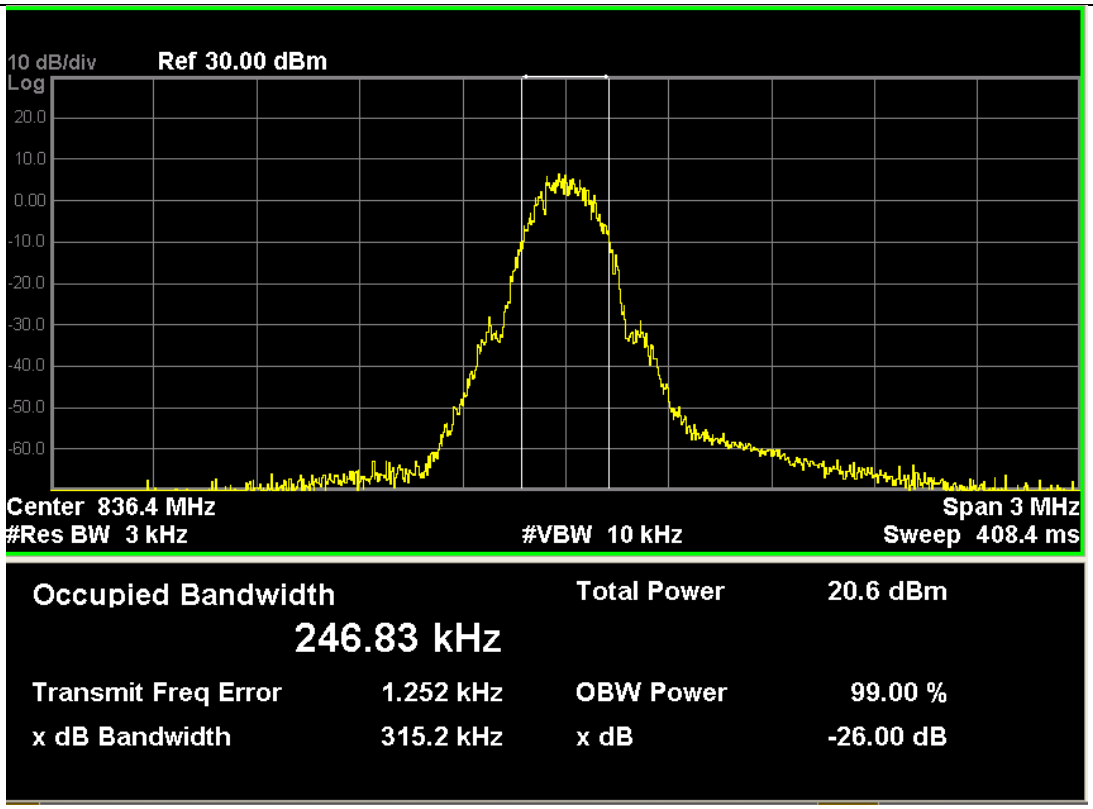
GSM850 (EDGE 8 Link)

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
128	824.20	305	243
189	836.40	315	246
251	848.80	316	248

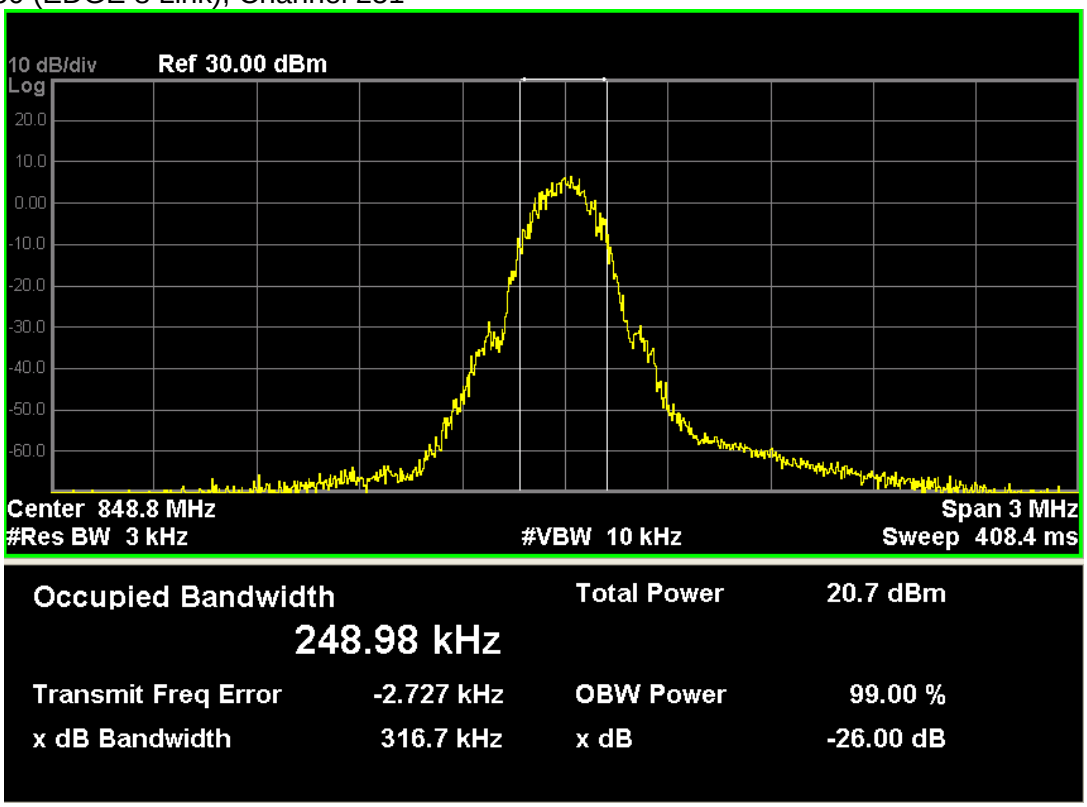
GSM850 (EDGE 8 Link), Channel 128



GSM850 (EDGE 8 Link), Channel 189



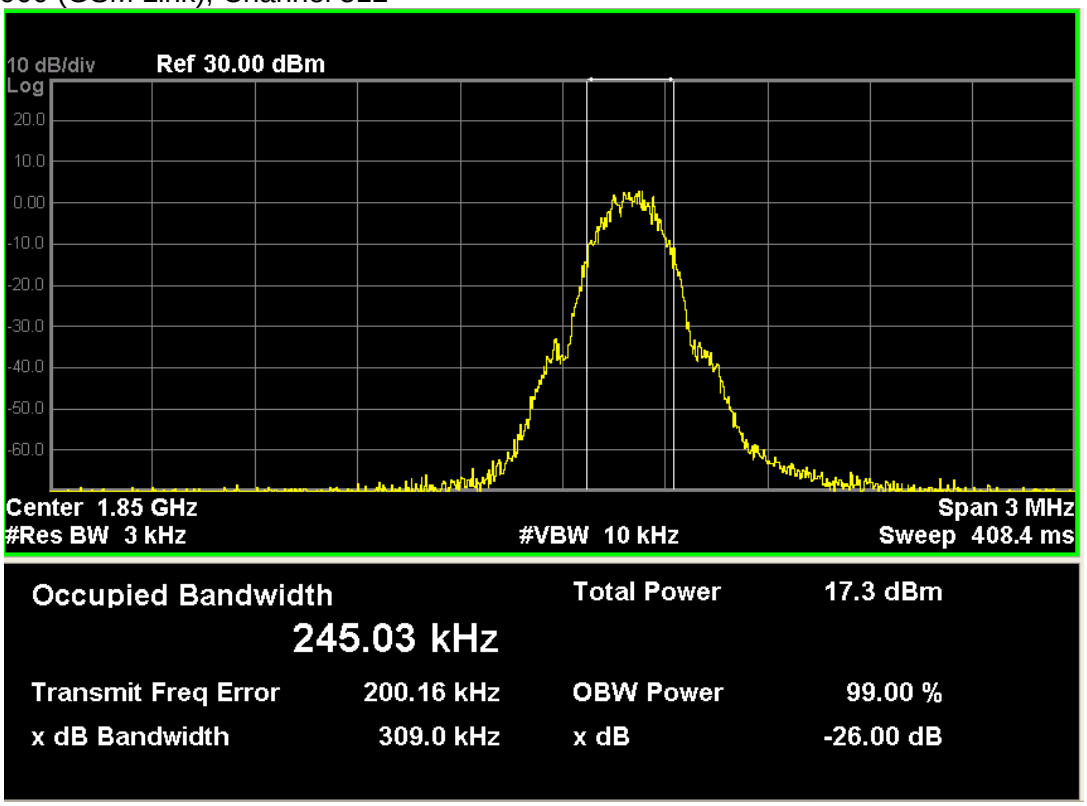
GSM850 (EDGE 8 Link), Channel 251



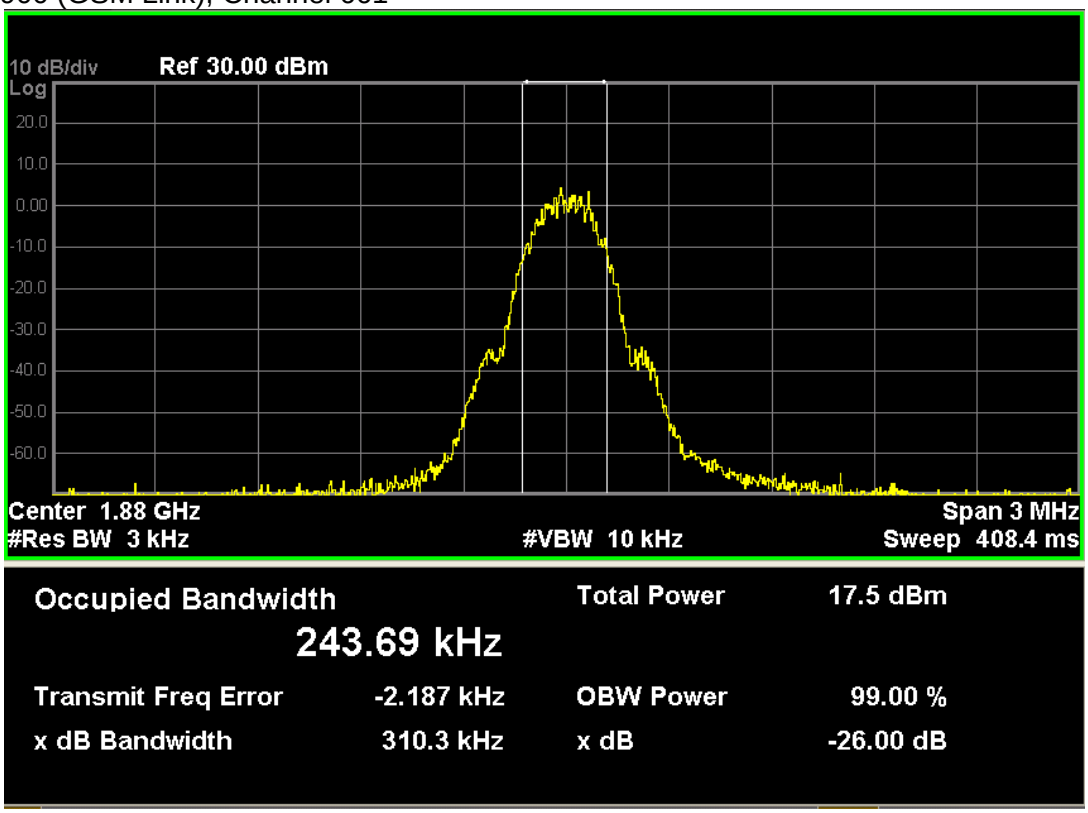
GSM 1900 (GSM Link)

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
512	1850.20	309	245
661	1880.00	310	243
810	1909.80	309	244

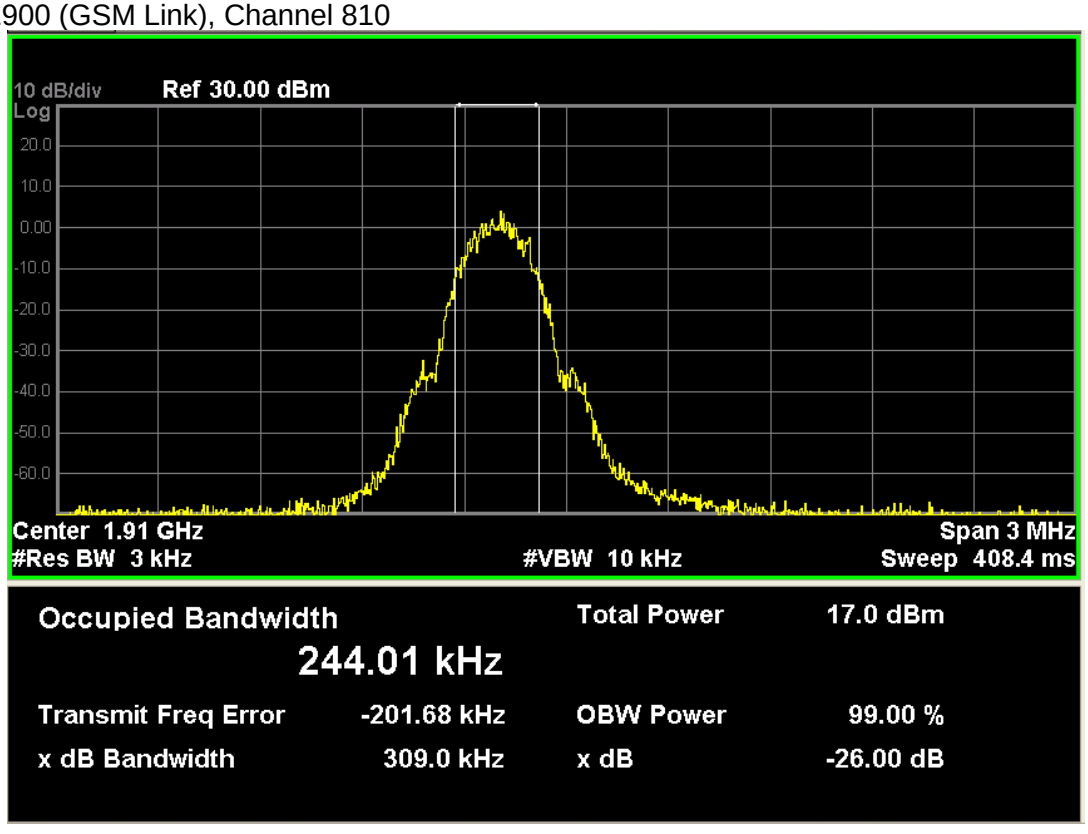
GSM1900 (GSM Link), Channel 512



GSM1900 (GSM Link), Channel 661



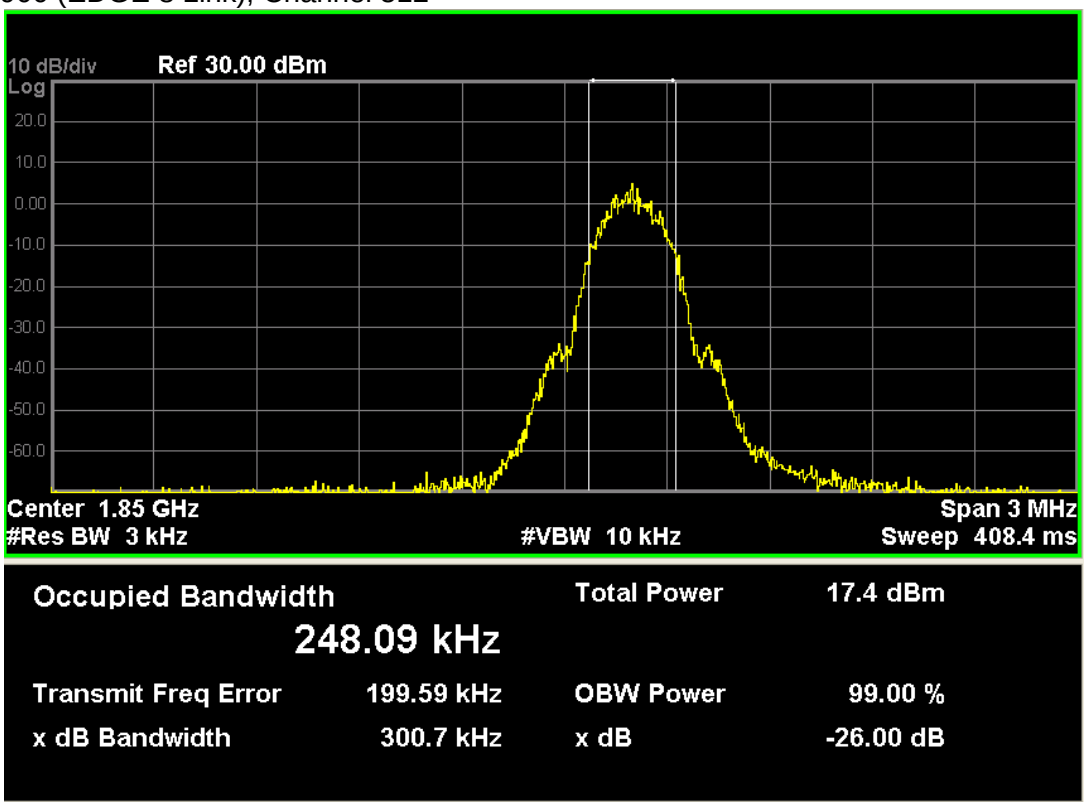
GSM1900 (GSM Link), Channel 810



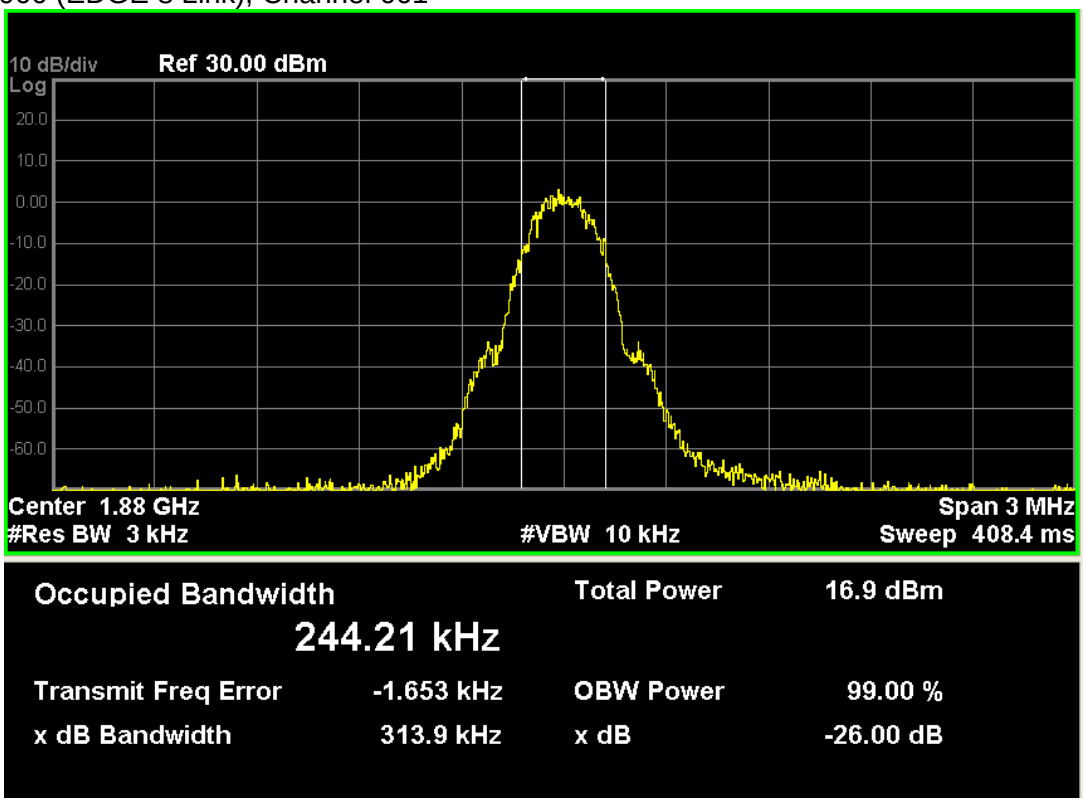
GSM1900 (EDGE 8 Link)

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
512	1850.20	300	248
661	1880.00	313	244
810	1909.80	312	245

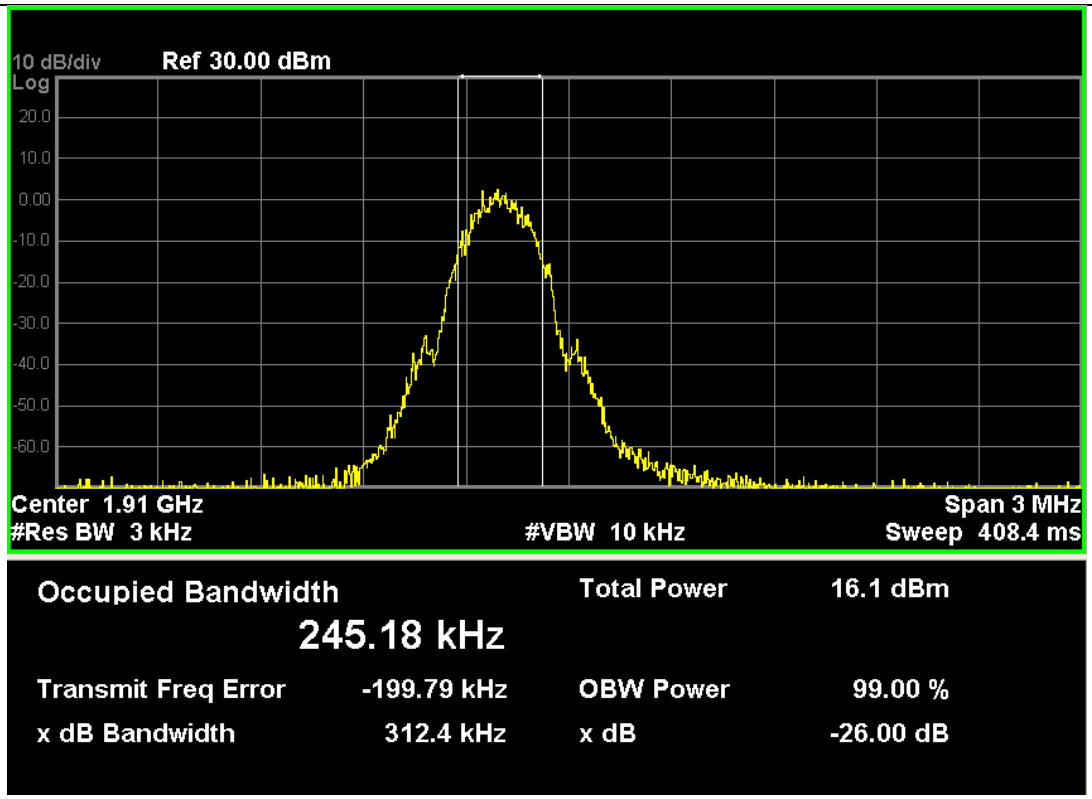
GSM1900 (EDGE 8 Link), Channel 512



GSM1900 (EDGE 8 Link), Channel 661



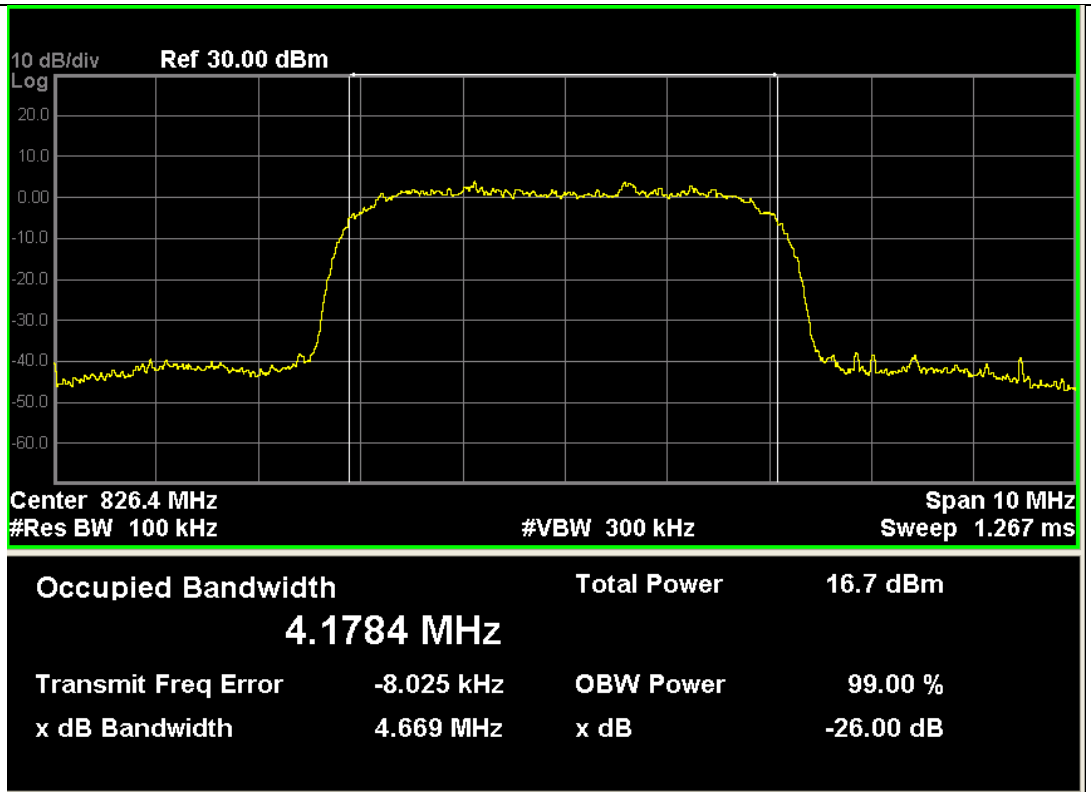
GSM1900 (EDGE 8 Link), Channel 810



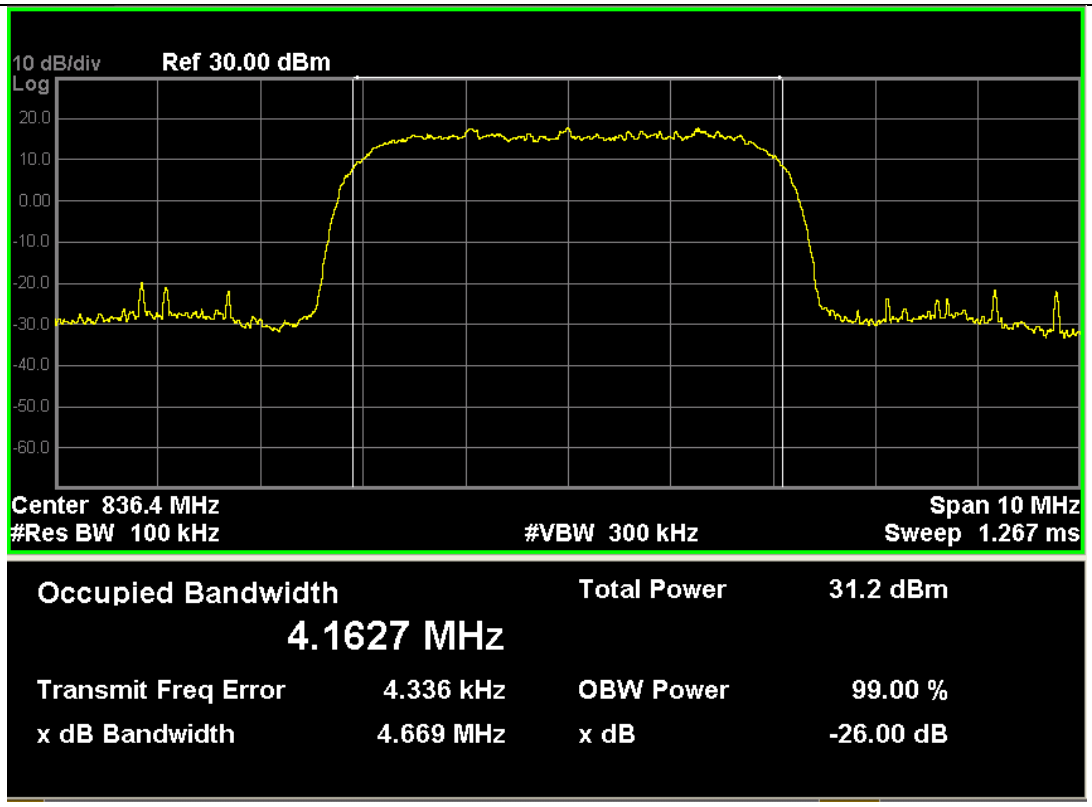
WCDMA Band V

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
4132	826.40	4.67	4.18
4182	836.40	4.67	4.16
4233	846.40	4.66	4.16

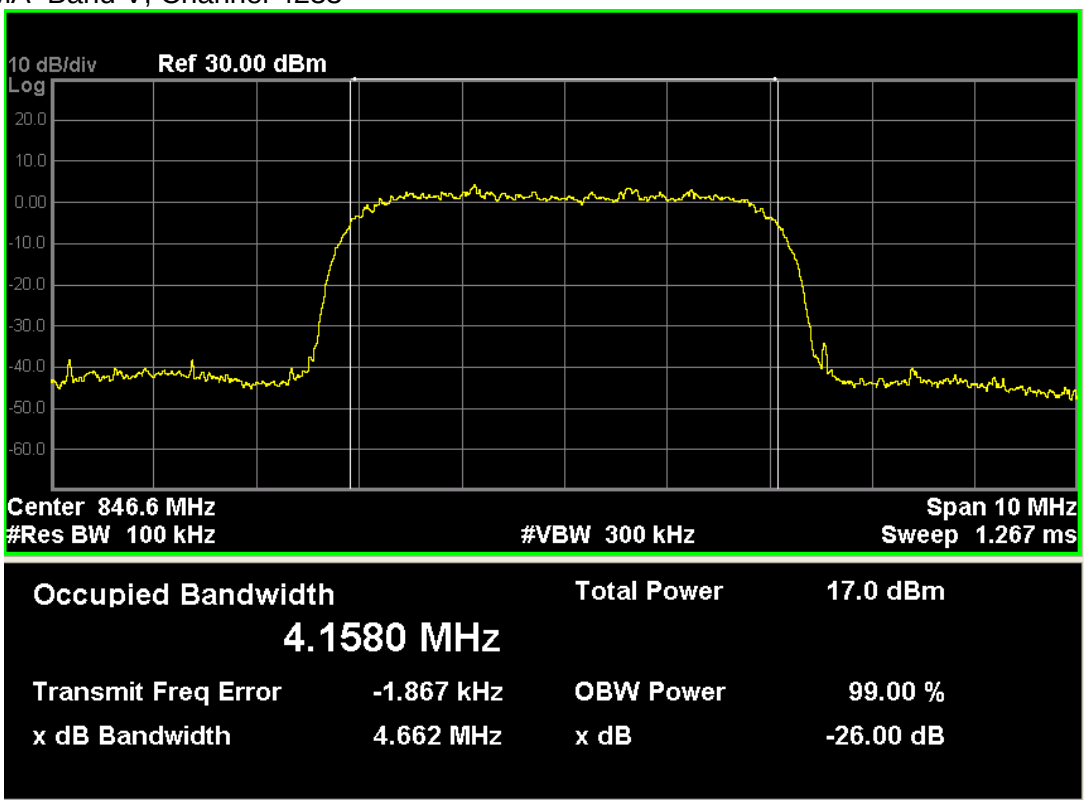
WCDMA Band V, Channel 4132



WCDMA Band V, Channel 4182



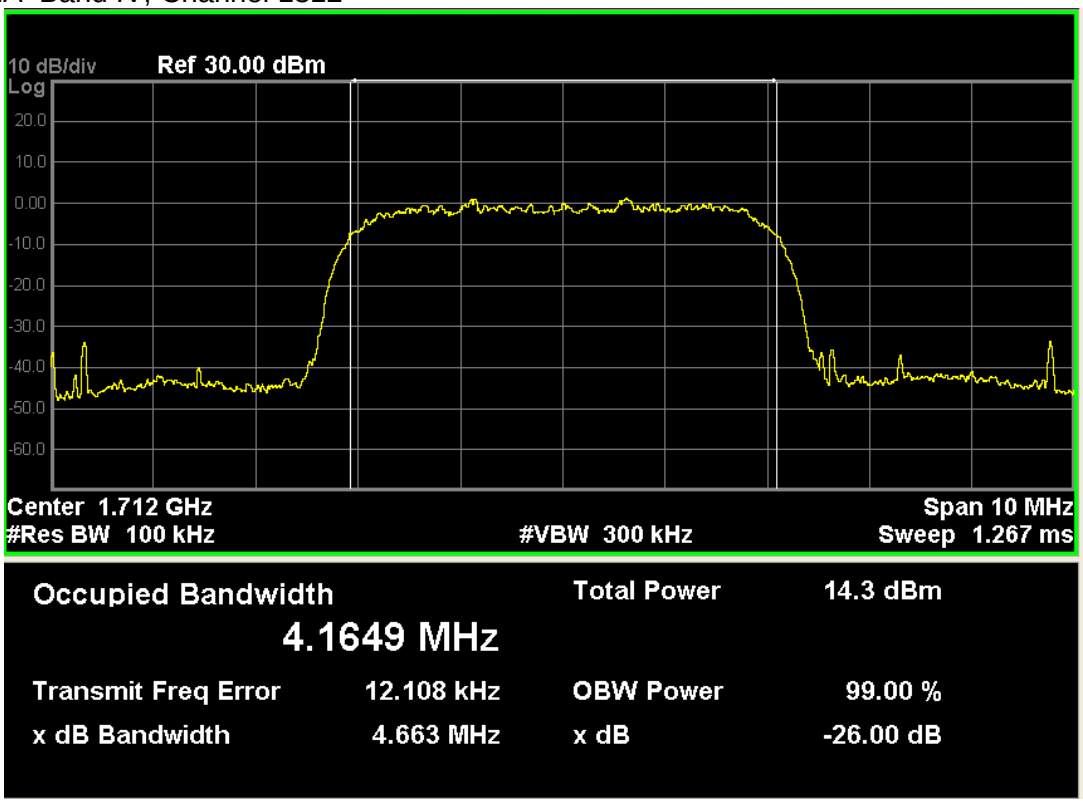
WCDMA Band V, Channel 4233



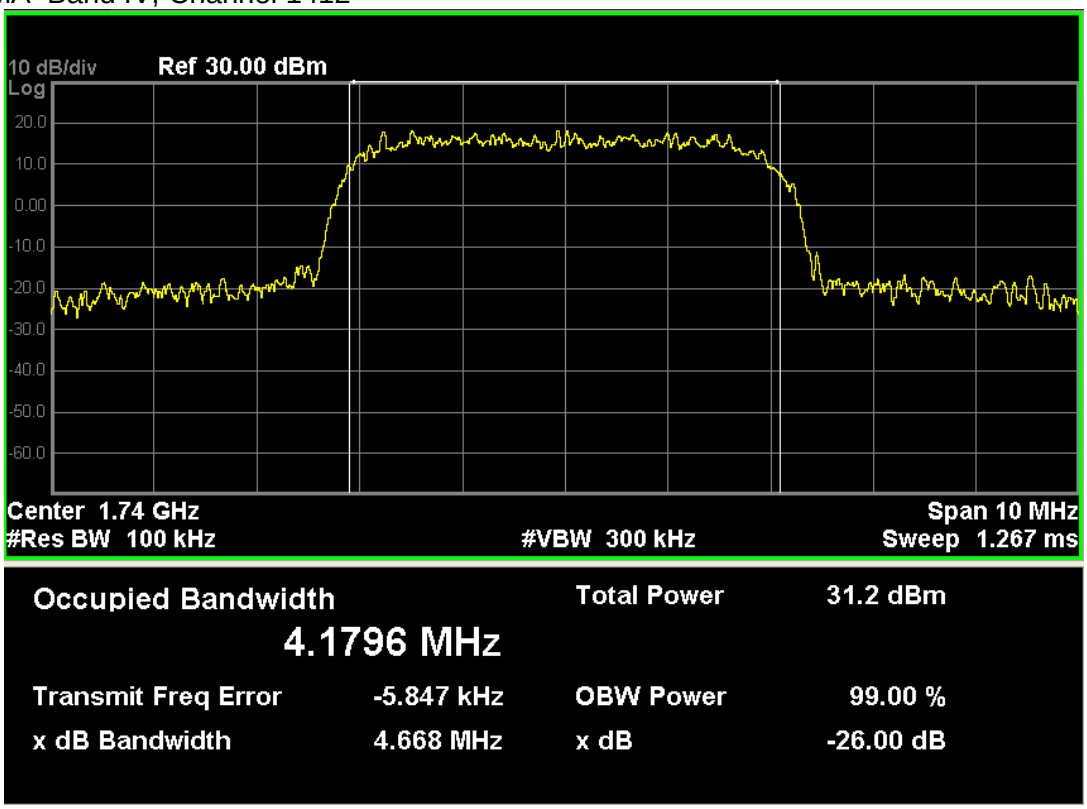
WCDMA Band IV

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
1312	1712.4	4.66	4.16
1412	1732.4	4.67	4.18
1513	1752.6	4.67	4.17

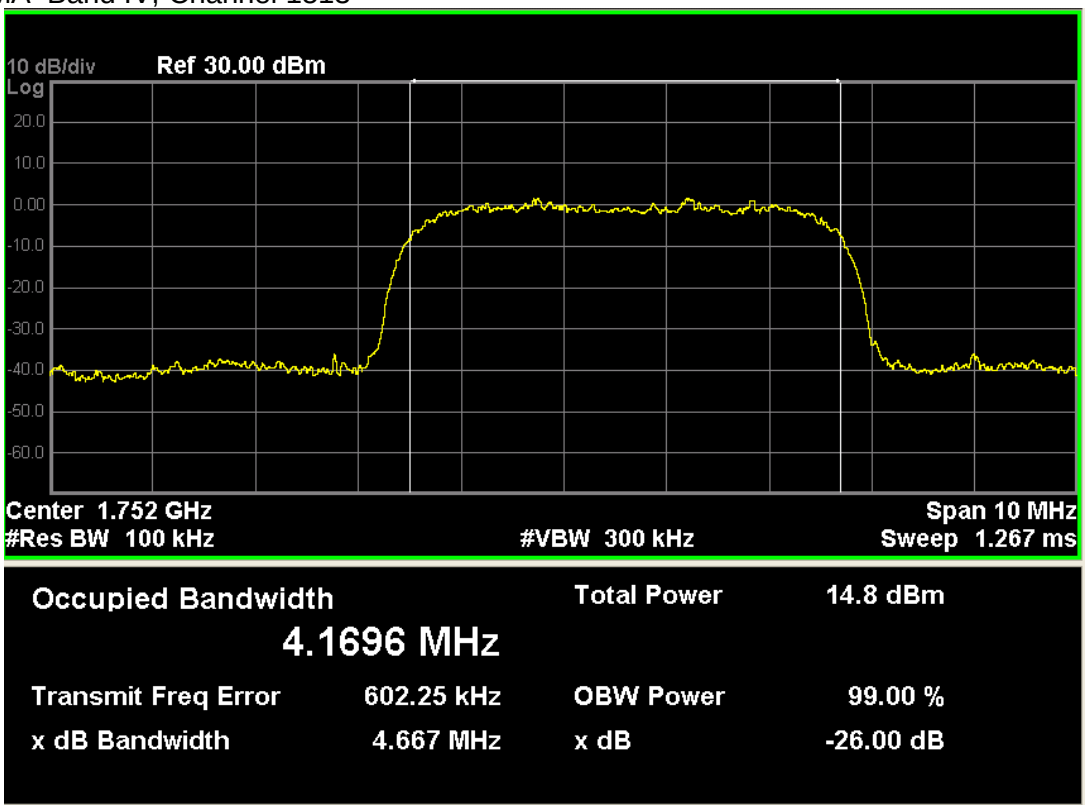
WCDMA Band IV, Channel 1312



WCDMA Band IV, Channel 1412



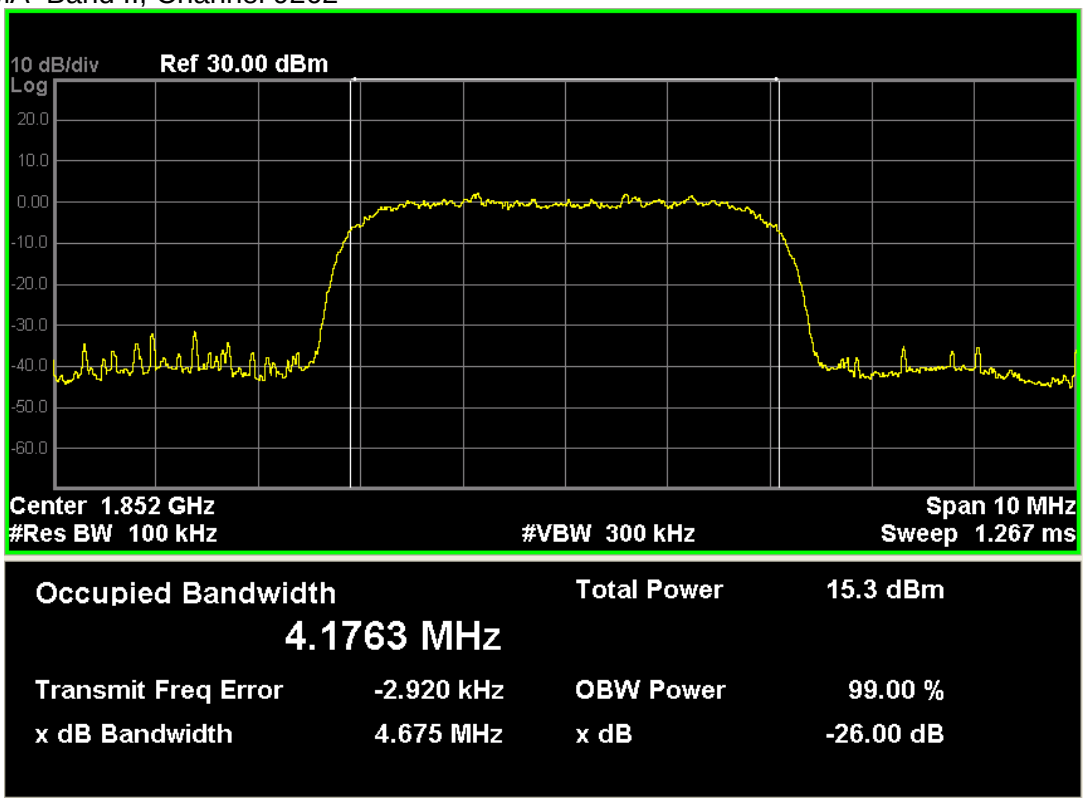
WCDMA Band IV, Channel 1513



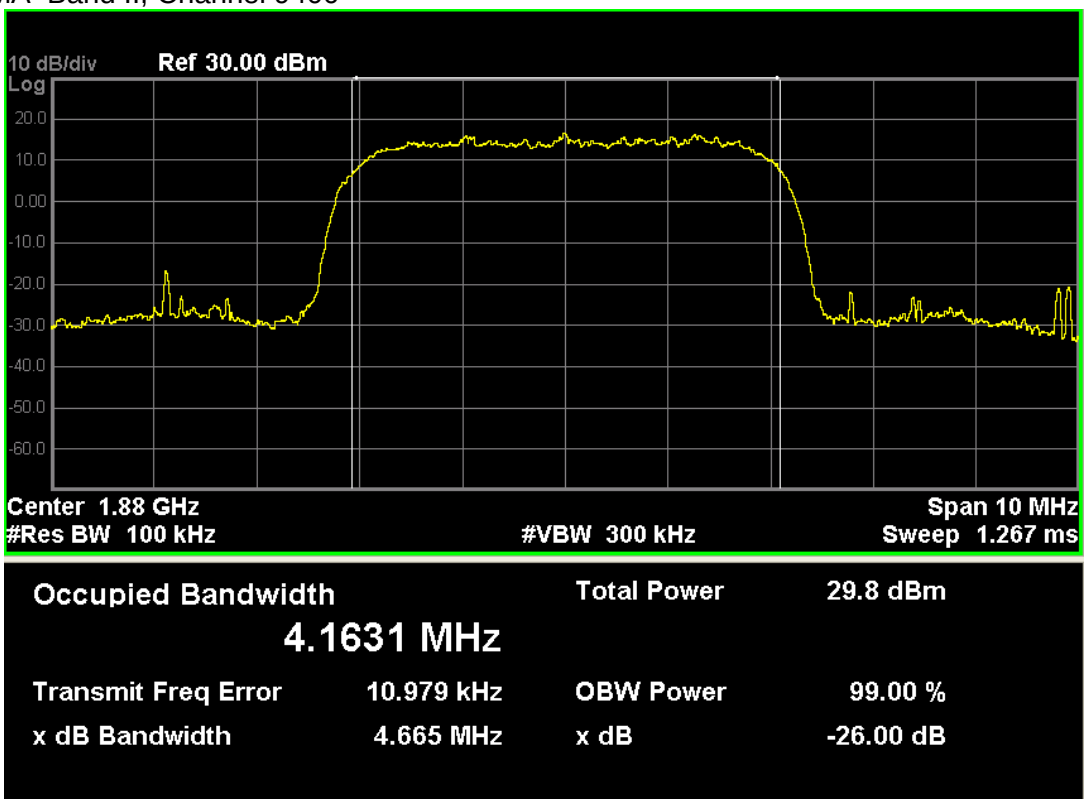
WCDMA Band II

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
9262	1852.4	4.68	4.18
9400	1880.0	4.67	4.16
9538	1907.6	4.68	4.17

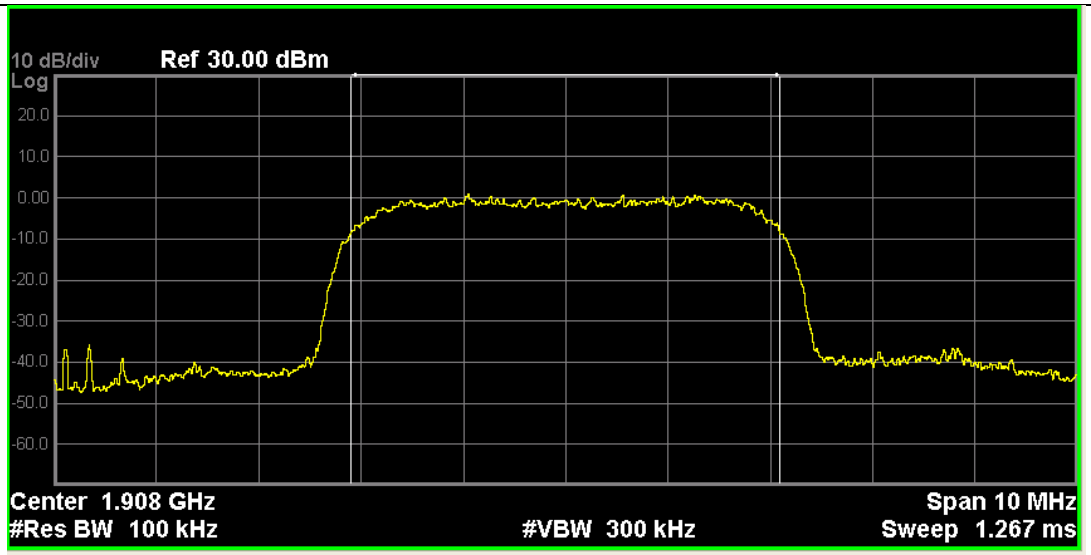
WCDMA Band II, Channel 9262



WCDMA Band II, Channel 9400



WCDMA Band II, Channel 9538



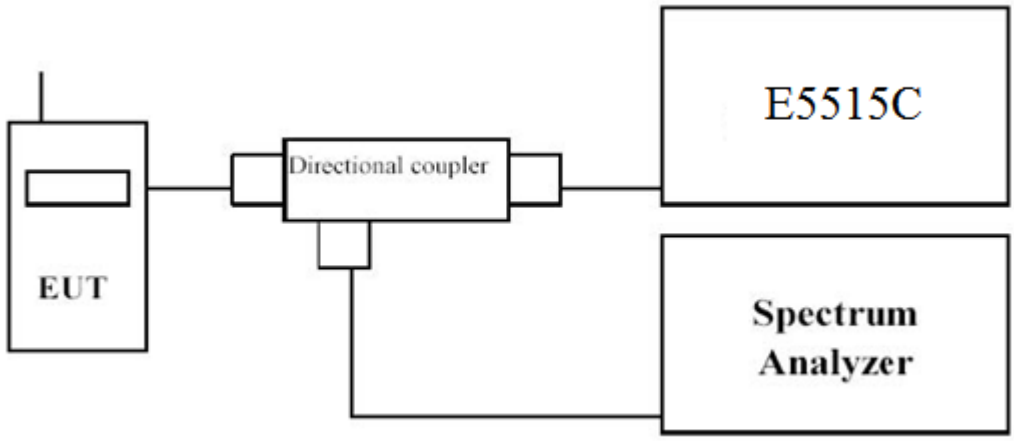
Occupied Bandwidth		Total Power	14.4 dBm
4.1699 MHz			
Transmit Freq Error	5.134 kHz	OBW Power	99.00 %
x dB Bandwidth	4.680 MHz	x dB	-26.00 dB

6.Spurious Emission At Antenna Terminals (+/- 1MHz)

6.1. Test Equipment

Instrument	Manufacturer	Model	Serial No	Cal. Date
Radio Communication Tester	Agilent	E5515C	GB46581718	2013.10.25
Spectrum Analyzer	Agilent	N9038A	MY51210142	2014.07.27
DC Power Supply	Agilent	6612C	MY43002989	2014.03.04

6.2. Test Setup



6.3. 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 + 10log(P) dB.

6.4. Test Procedure

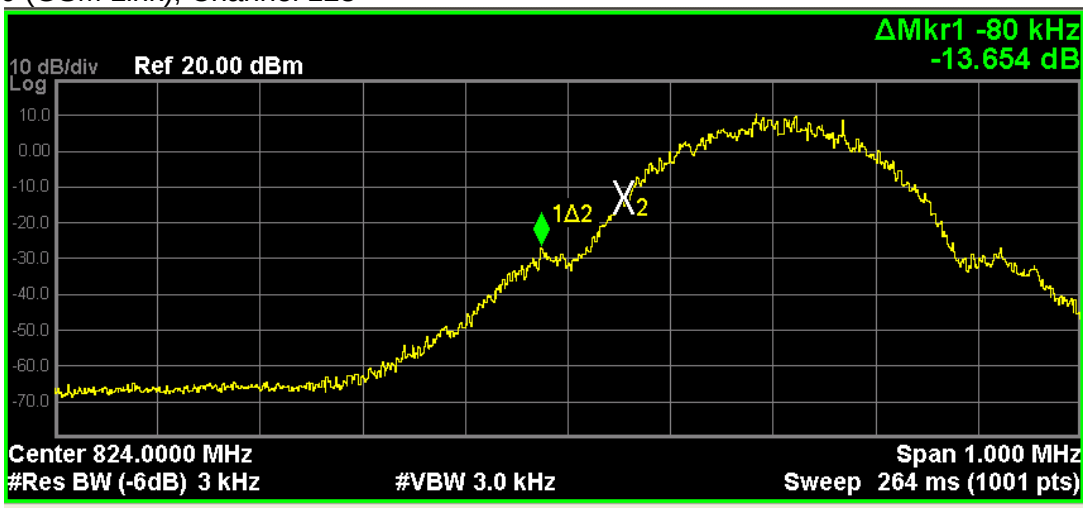
In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

6.5. Uncertainty

The measurement uncertainty is defined as ±1.2 dB.

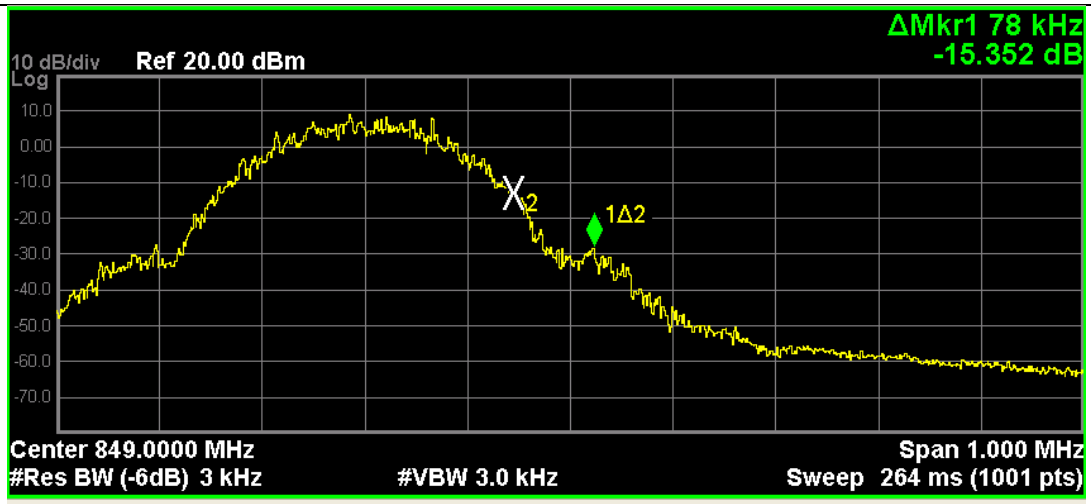
6.6. Test Result

GSM850 (GSM Link), Channel 128



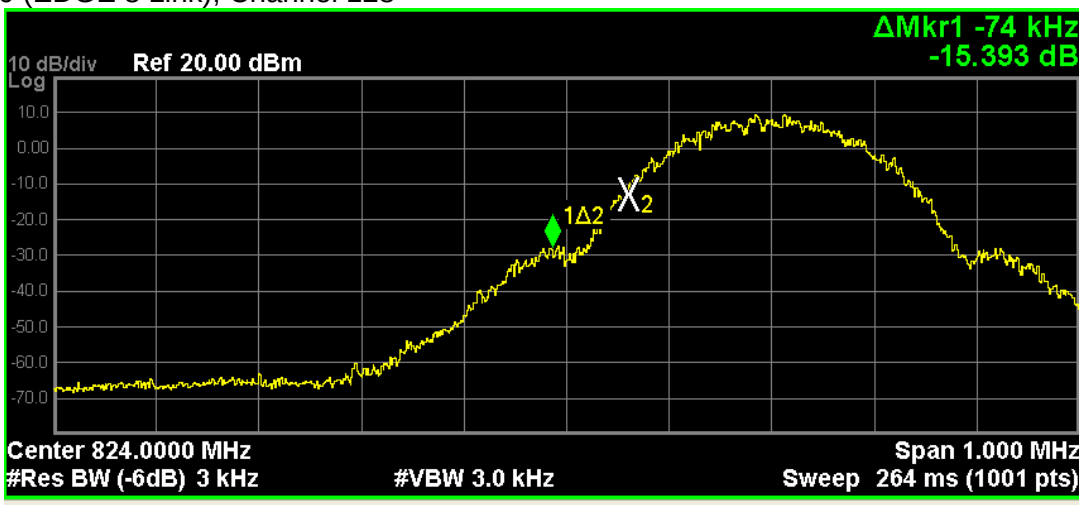
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) -80 kHz	(Δ) -13.654 dB			
2	F	1	f	824.054 MHz	-13.183 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

GSM850 (GSM Link), Channel 251



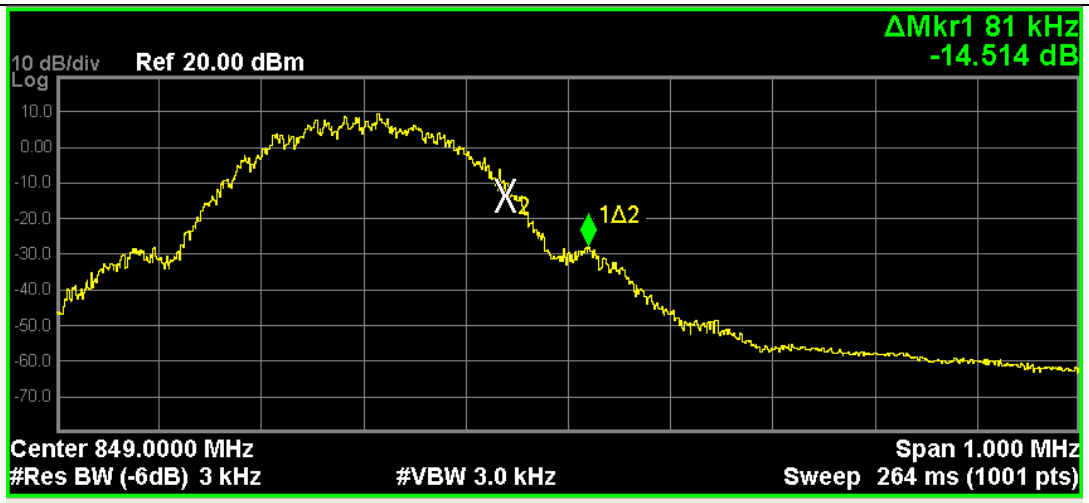
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 78 kHz	(Δ) -15.352 dB			
2	F	1	f	848.945 MHz	-12.966 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

GSM850 (EDGE 8 Link), Channel 128



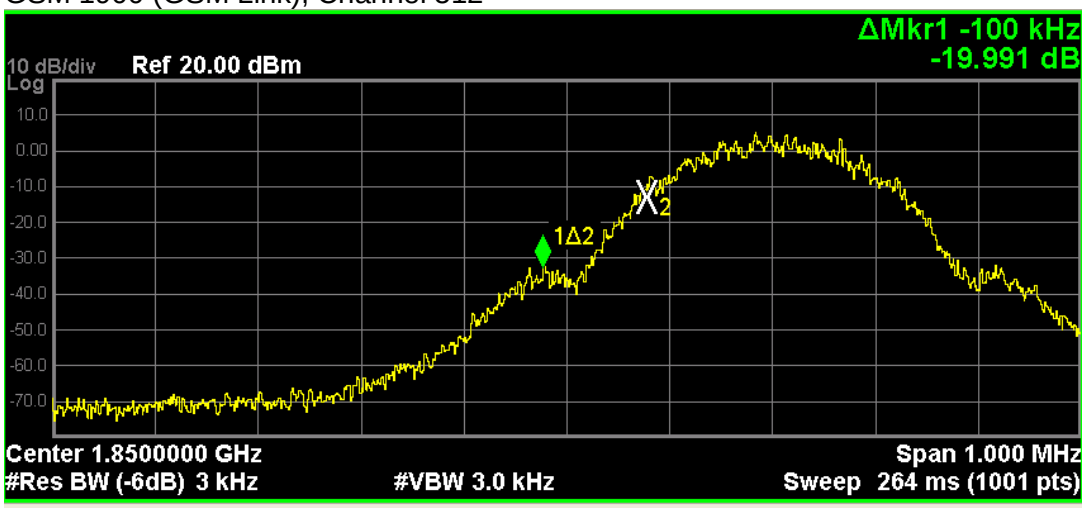
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) -74 kHz	(Δ) -15.393 dB			
2	F	1	f	824.060 MHz	-13.015 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

GSM850 (EDGE 8 Link), Channel 251



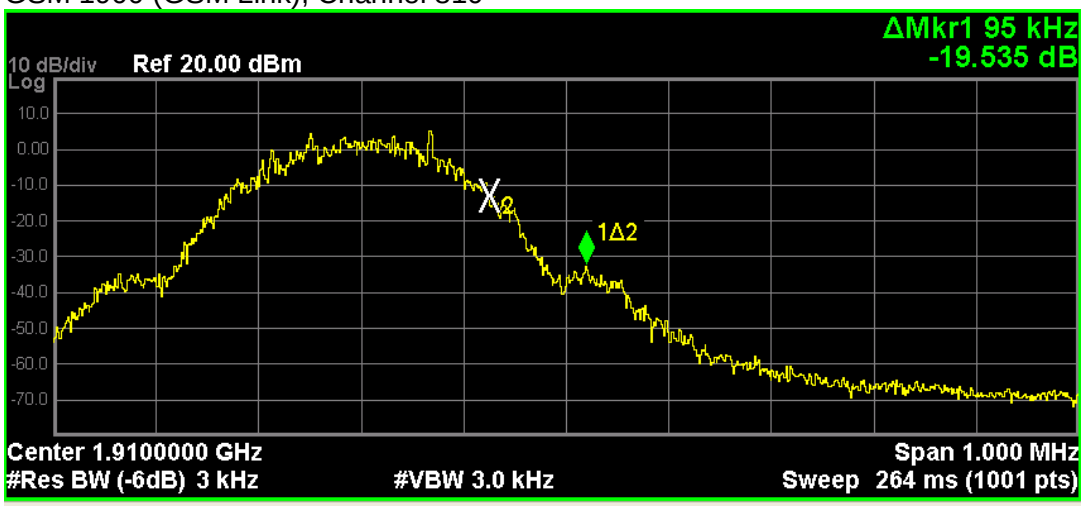
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 81 kHz	(Δ) -14.514 dB			
2	F	1	f	848.939 MHz	-13.855 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

GSM 1900 (GSM Link), Channel 512



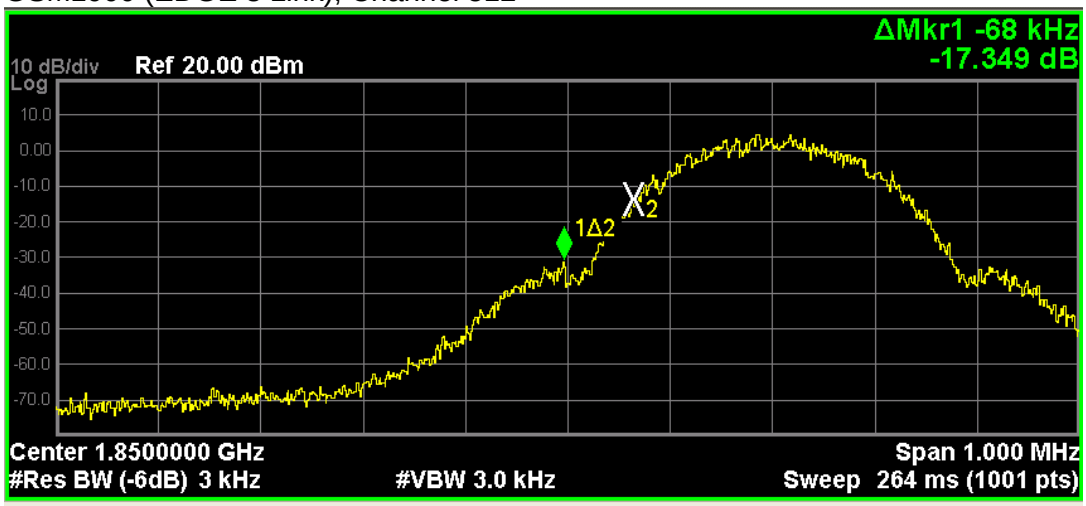
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) -100 kHz	(Δ) -19.991 dB			
2	F	1	f	1.850 077 GHz	-13.107 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

GSM 1900 (GSM Link), Channel 810



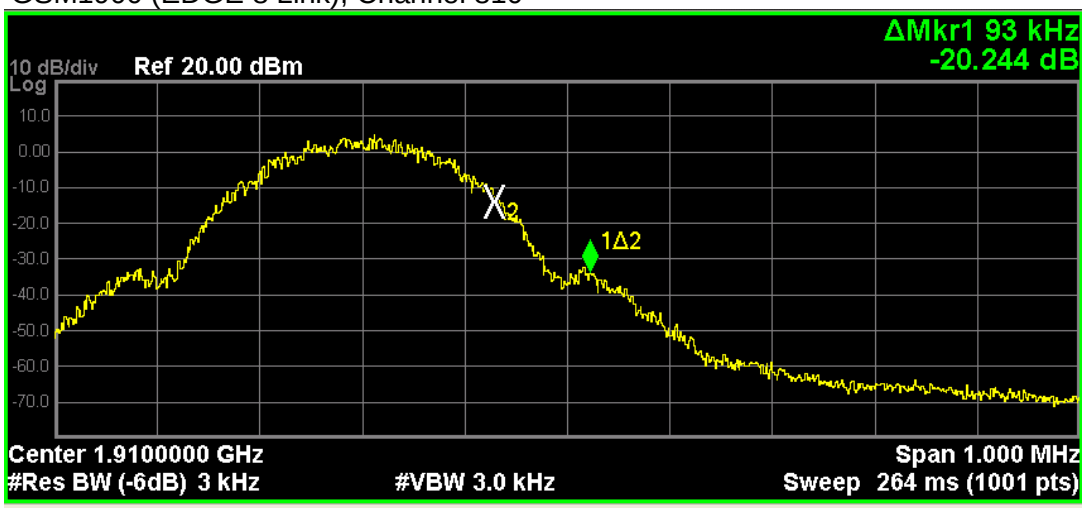
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 95 kHz	(Δ) -19.535 dB			
2	F	1	f	1.909 925 GHz	-13.015 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

GSM1900 (EDGE 8 Link), Channel 512



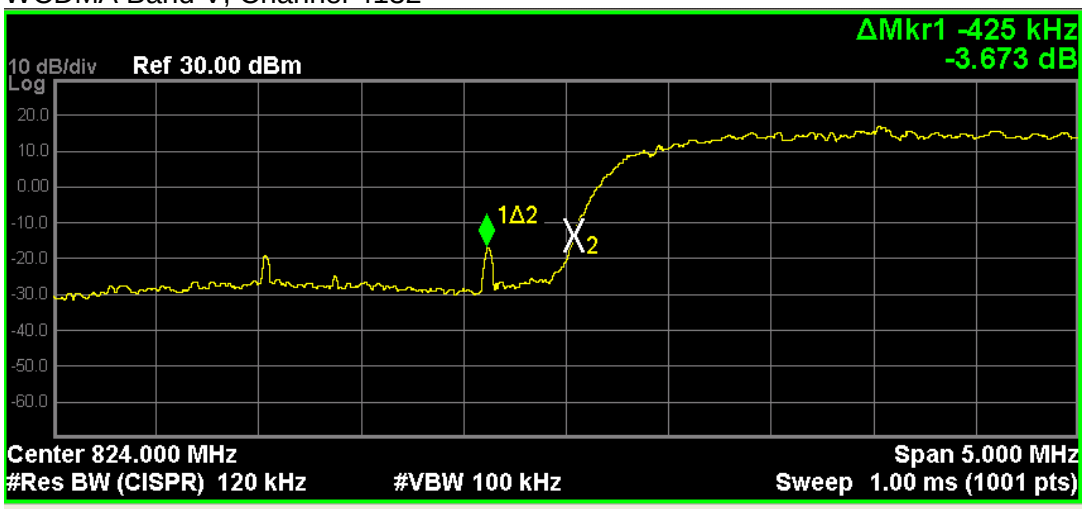
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) -68 kHz	(Δ) -17.349 dB			
2	F	1	f	1.850 064 GHz	-13.808 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

GSM1900 (EDGE 8 Link), Channel 810



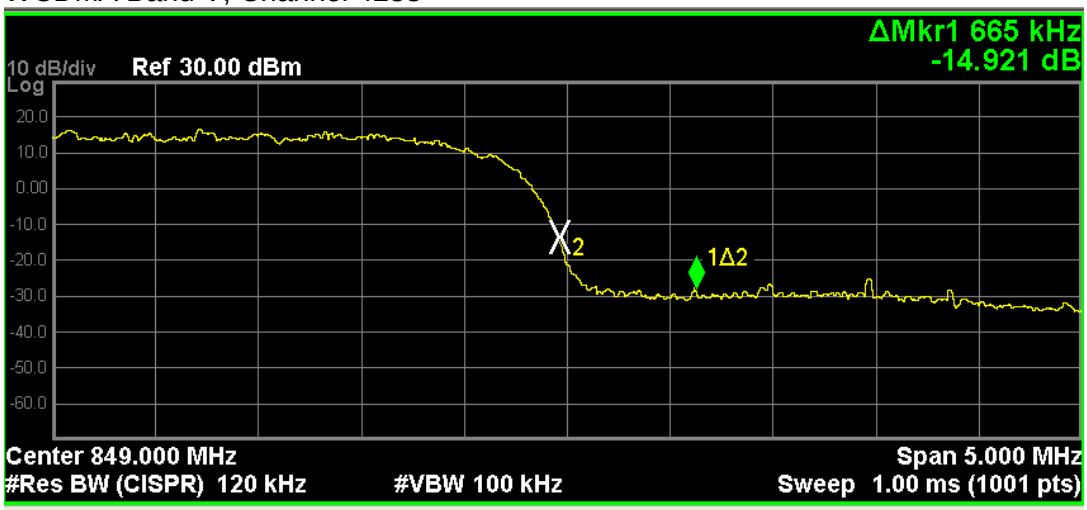
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 93 kHz	(Δ) -20.244 dB			
2	F	1	f	1.909 929 GHz	-13.943 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

WCDMA Band V, Channel 4132



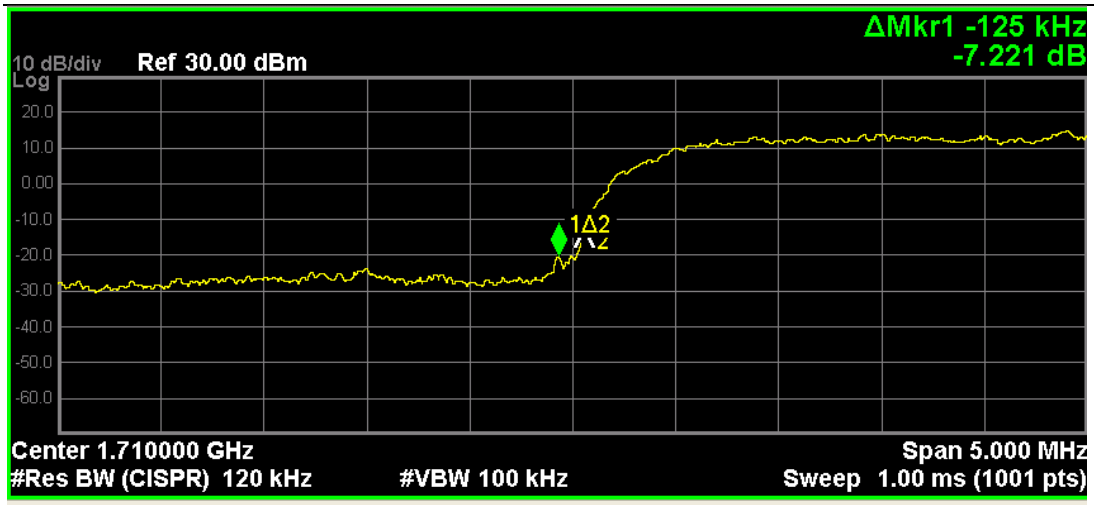
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) -425 kHz	(Δ) -3.673 dB			
2	F	1	f	824.040 MHz	-13.554 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

WCDMA Band V, Channel 4233



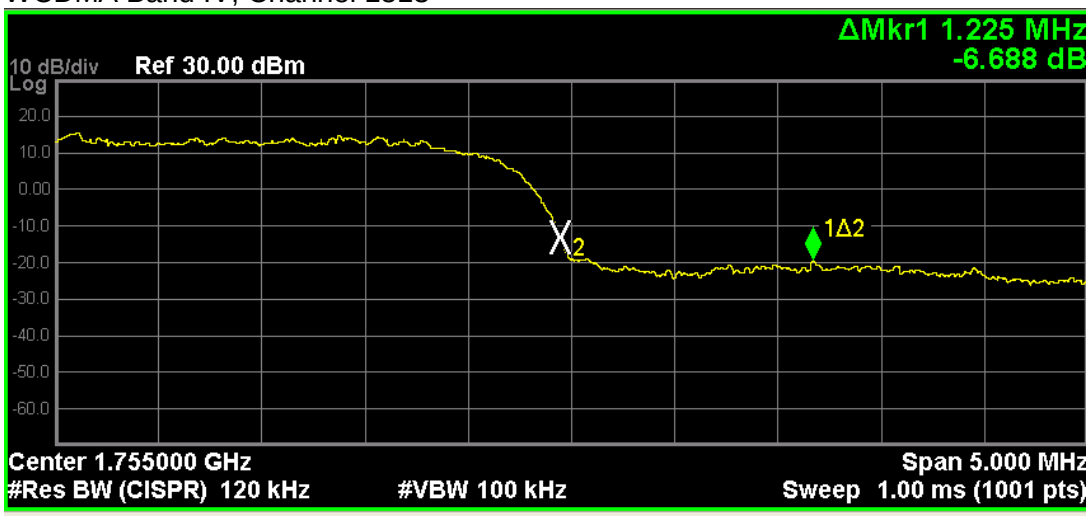
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 665 kHz	(Δ) -14.921 dB			
2	F	1	f	848.960 MHz	-13.582 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

WCDMA Band IV, Channel 1312



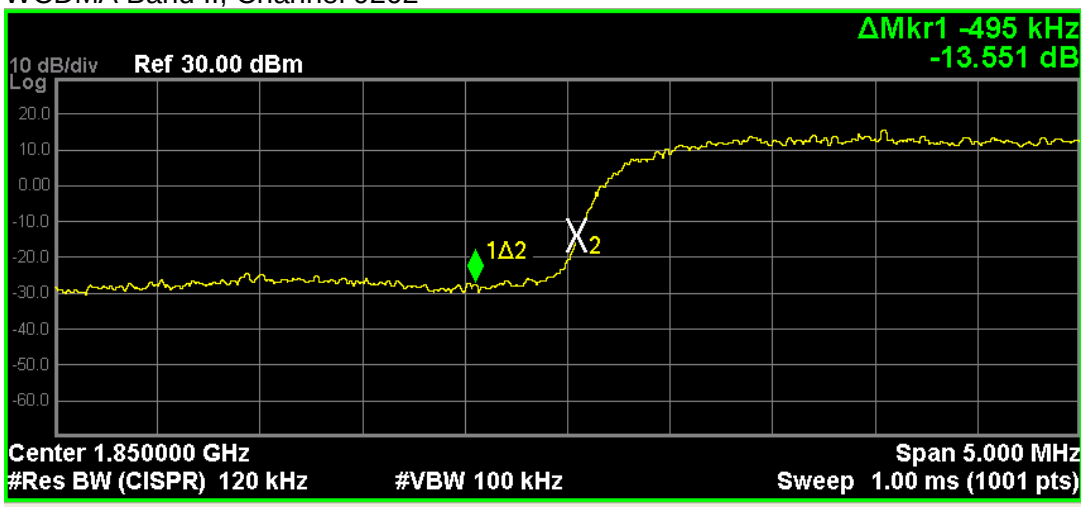
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) -125 kHz	(Δ) -7.221 dB			
2	F	1	f	1.710 055 GHz	-13.342 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

WCDMA Band IV, Channel 1513



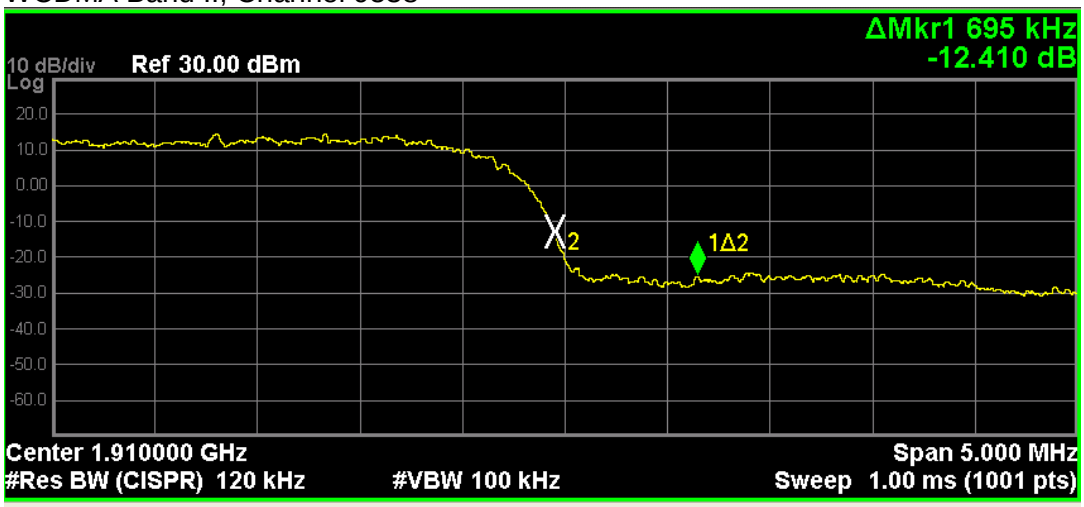
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 1.225 MHz	(Δ) -6.688 dB			
2	F	1	f	1.754 945 GHz	-13.097 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

WCDMA Band II, Channel 9262



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) -495 kHz	(Δ) -13.551 dB			
2	F	1	f	1.850 045 GHz	-13.977 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

WCDMA Band II, Channel 9538



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 695 kHz	(Δ) -12.410 dB			
2	F	1	f	1.909 950 GHz	-12.916 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

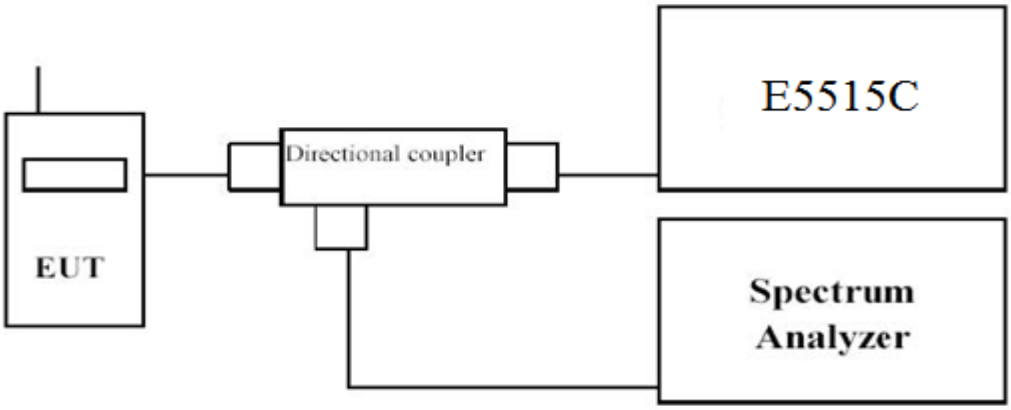
7.Spurious Emission

7.1. Test Equipment

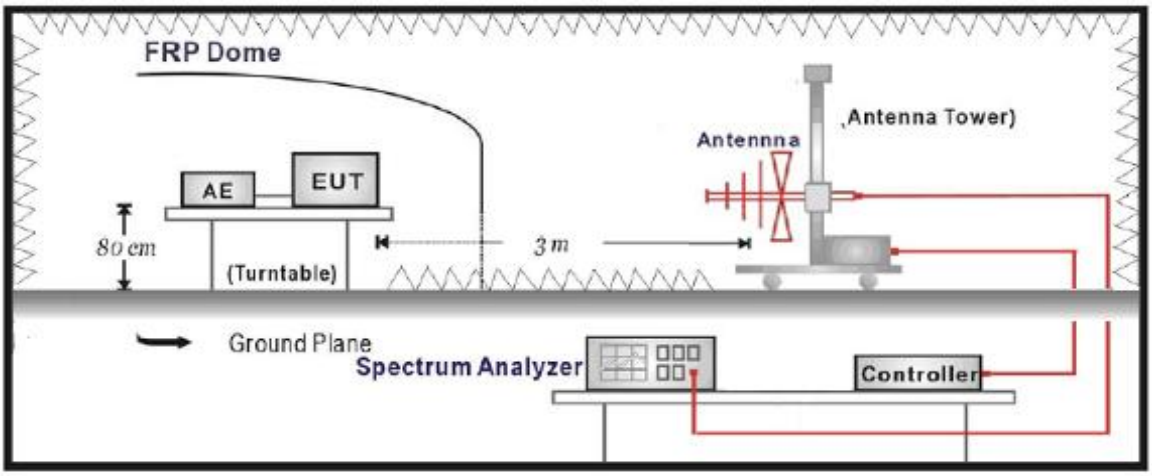
Instrument	Manufacturer	Model	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9038A	MY51210142	2014.07.27
Radio Communication Tester	Agilent	E5515C	GB46581718	2013.10.25
Signal Generator	Agilent	N5183A	MY50140938	2013.10.08
Preamplifier	CEM	EM30180	3008A0245	2014.03.01
DC Power Supply	Agilent	6612C	MY43002989	2014.03.04
Bilog Antenna	Schwarzbeck	VULB9160	9160-3316	2014.07.19
VHF-UHF-Biconical Antenna	Schwarzbeck	VUBA9117	9117-263	2014.07.19
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-942	2014.07.19
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-943	2014.07.19

7.2. Test Setup

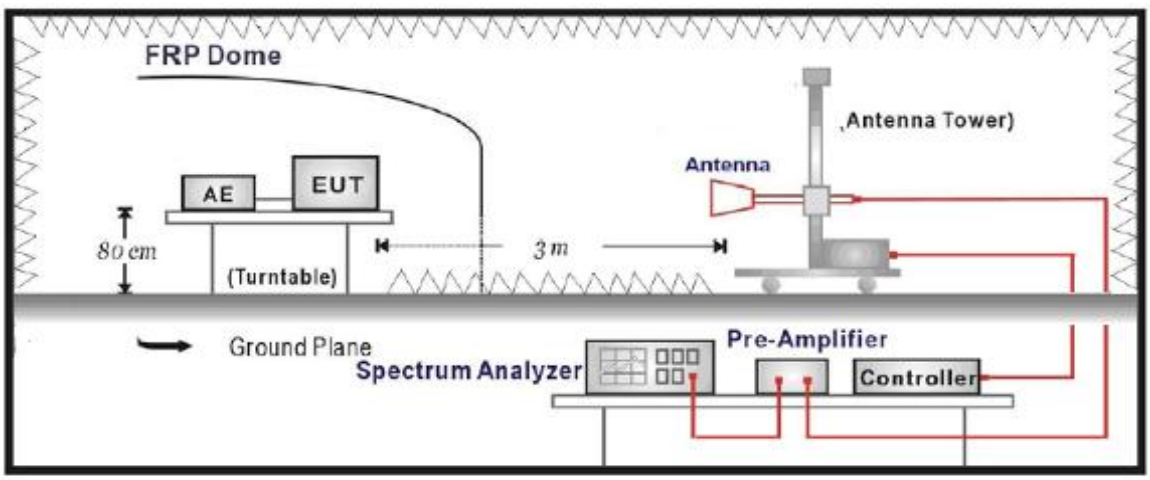
Conducted Spurious Emission Measurement:



Radiated Spurious Measurement: below 1GHz



Radiated Spurious Measurement: above 1GHz



7.3. 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 + 10log(P) dB.

7.4. Test Procedure

Conducted Spurious Measurement:

a. Place the EUT on a bench and set it in transmitting mode.
b. Connect a low loss RF cable from the antenna port to a spectrum analyzer and E5515C by a Directional Couple.
c. EUT Communicate with E5515C, then select a channel for testing.
d. Add a correction factor to the display of spectrum, and then test.
e. The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

Radiated Spurious Measurement:

a. The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
b. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
c. The output of the test antenna shall be connected to the measuring receiver. The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
d. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
e. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
f. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
h. The maximum signal level detected by the measuring receiver shall be noted.
i. The transmitter shall be replaced by a substitution antenna.
j. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
k. The substitution antenna shall be connected to a calibrated signal generator.
l. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
m. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
n. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
o. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

p. The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
q. The frequency range was checked up to 10^{th} harmonic.
r. Test site anechoic chamber refer to ANSI C63.4: 2009

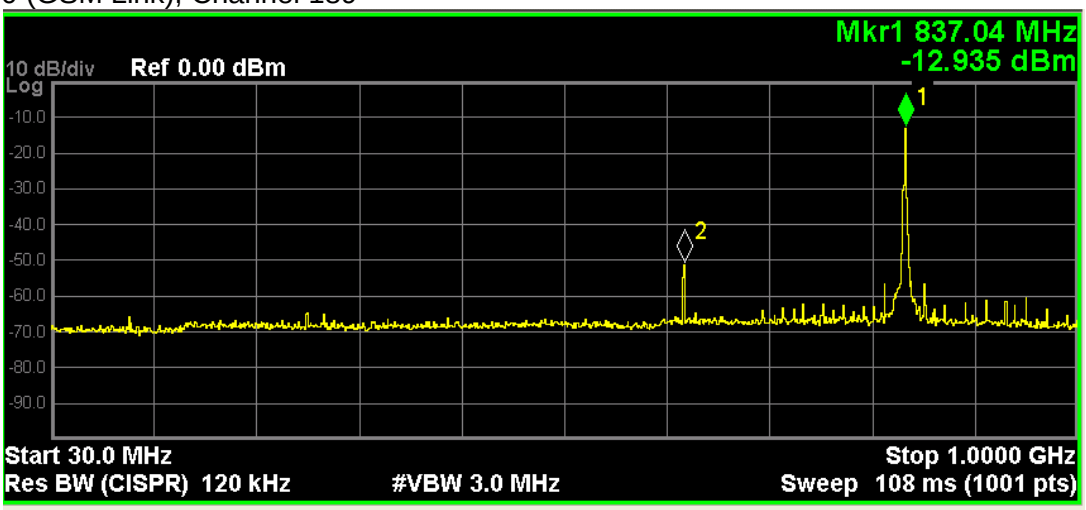
7.5. Uncertainty

The measurement uncertainty is defined as 3.2 dB for Radiated Power Measurement.

7.6. Test Result

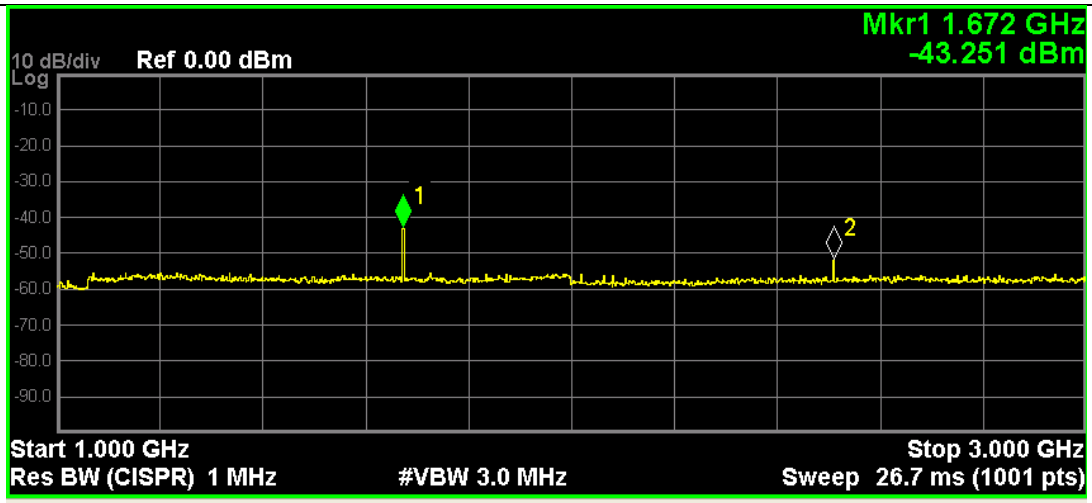
Conducted Spurious Measurement:

GSM850 (GSM Link), Channel 189

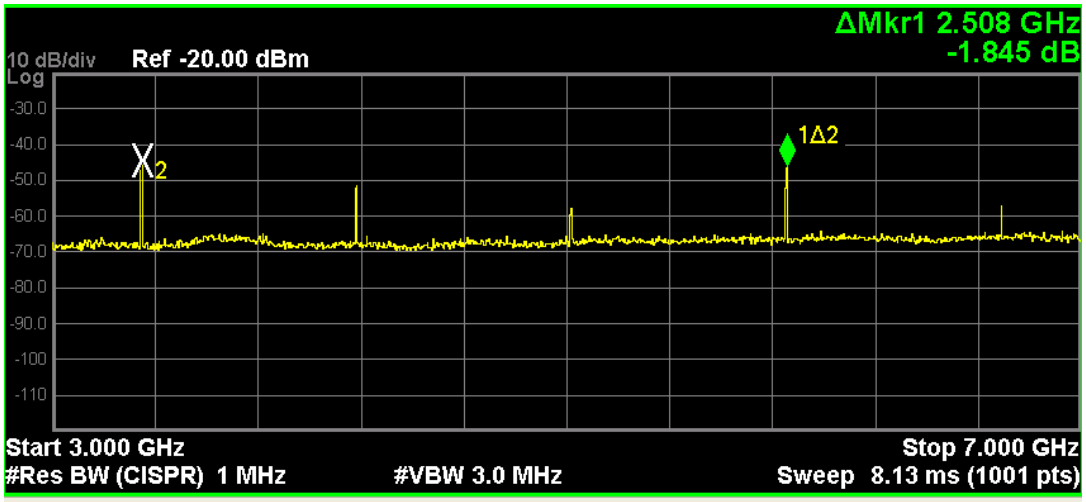


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	837.04 MHz	-12.935 dBm			
2	N	1	f	628.49 MHz	-51.096 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

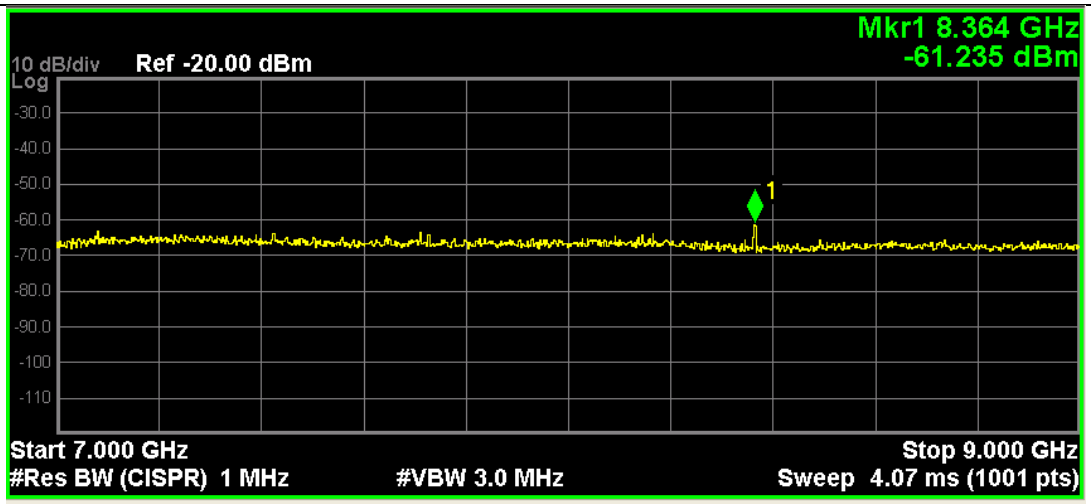
Note: The signal at point 1 is carrier



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	1.672 GHz	-43.251 dBm			
2	N	1	f	2.510 GHz	-52.084 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

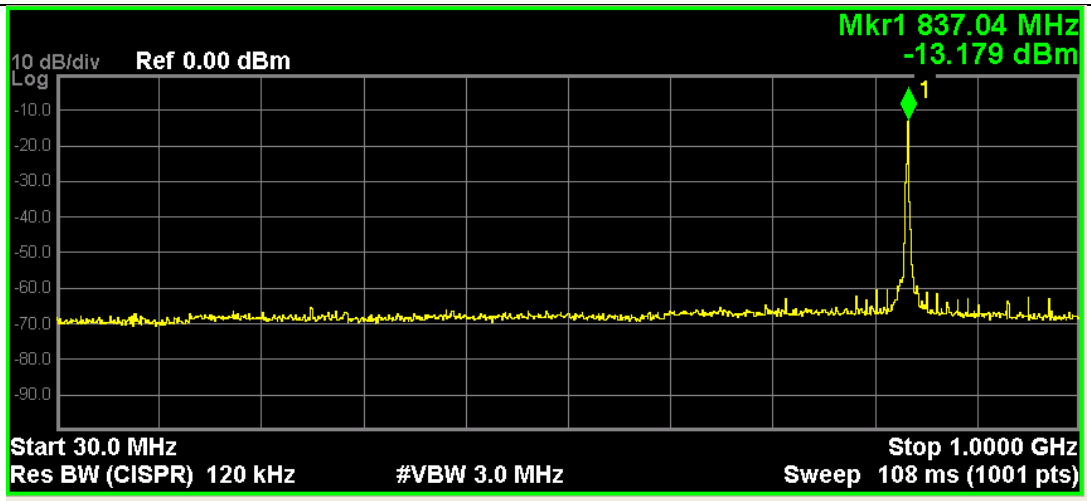


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 2.508 GHz	(Δ) -1.845 dB			
2	F	1	f	3.348 GHz	-44.710 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

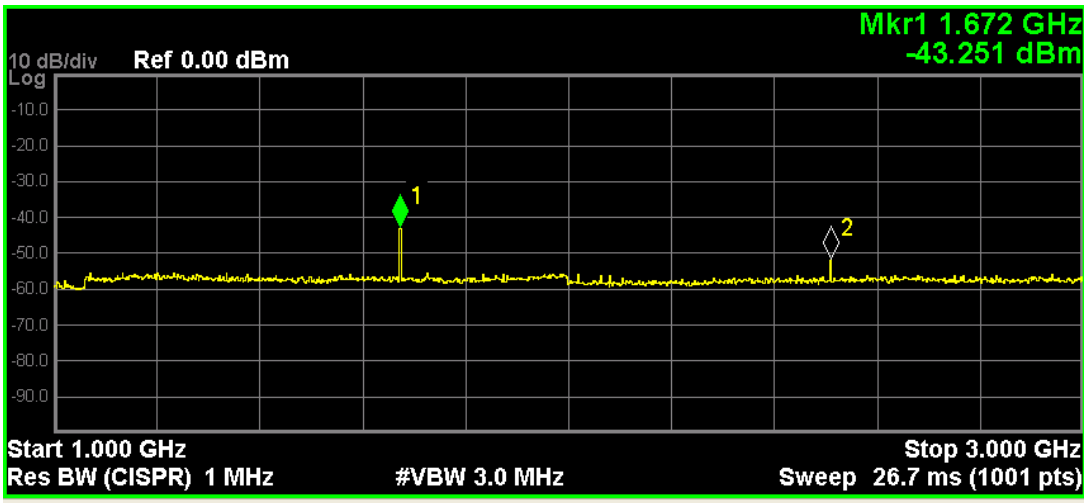


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	8.364 GHz	-61.235 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

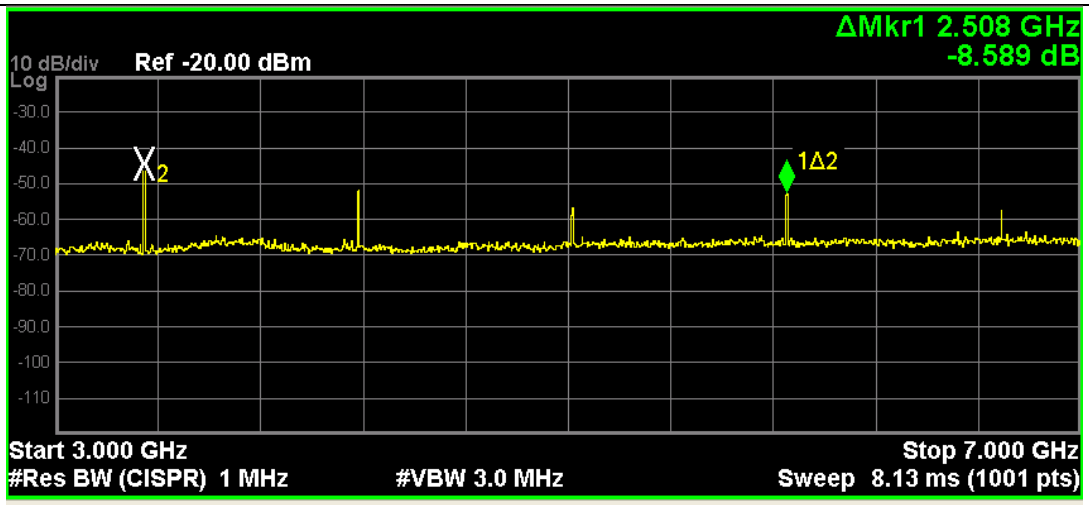
GSM850 (EDGE 8 Link), Channel 189



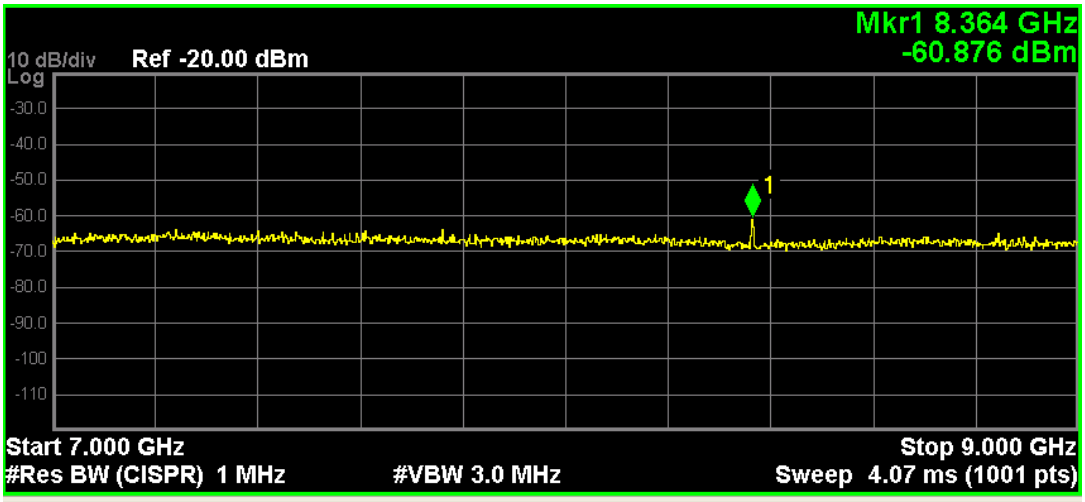
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	837.04 MHz	-13.179 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	1.672 GHz	-43.251 dBm			
2	N	1	f	2.510 GHz	-52.084 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

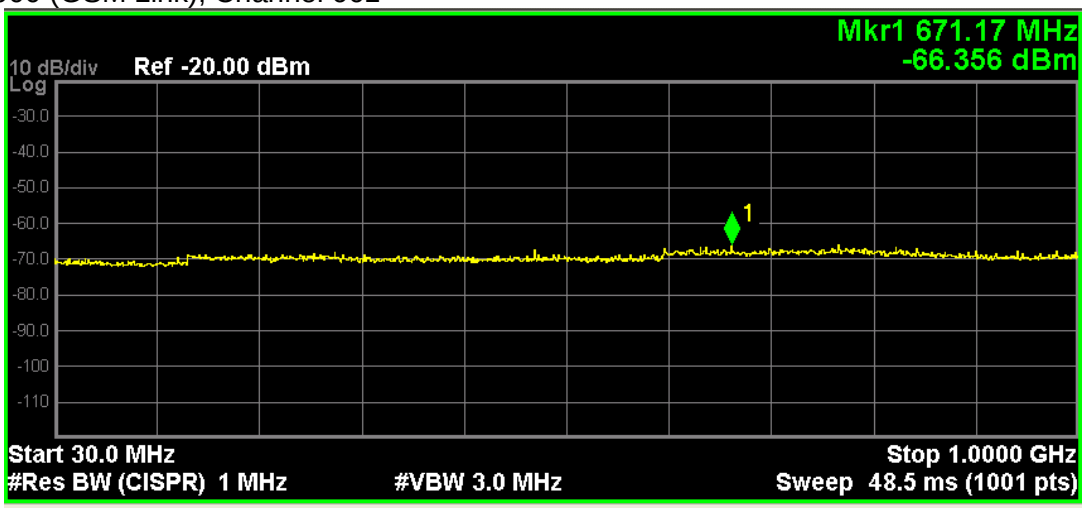


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 2.508 GHz	(Δ) -8.589 dB			
2	F	1	f	3.344 GHz	-44.530 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

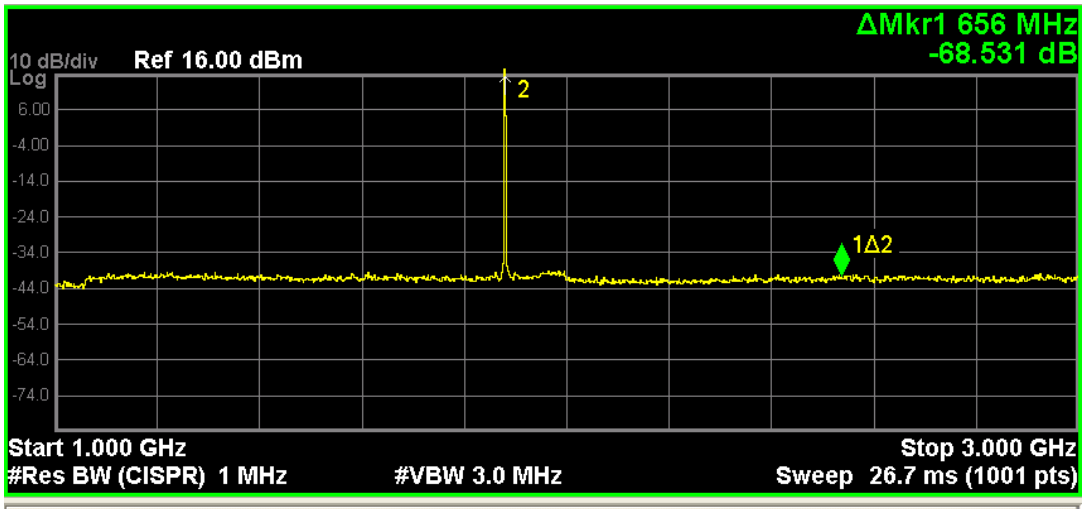


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	8.364 GHz	-60.876 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

GSM 1900 (GSM Link), Channel 661

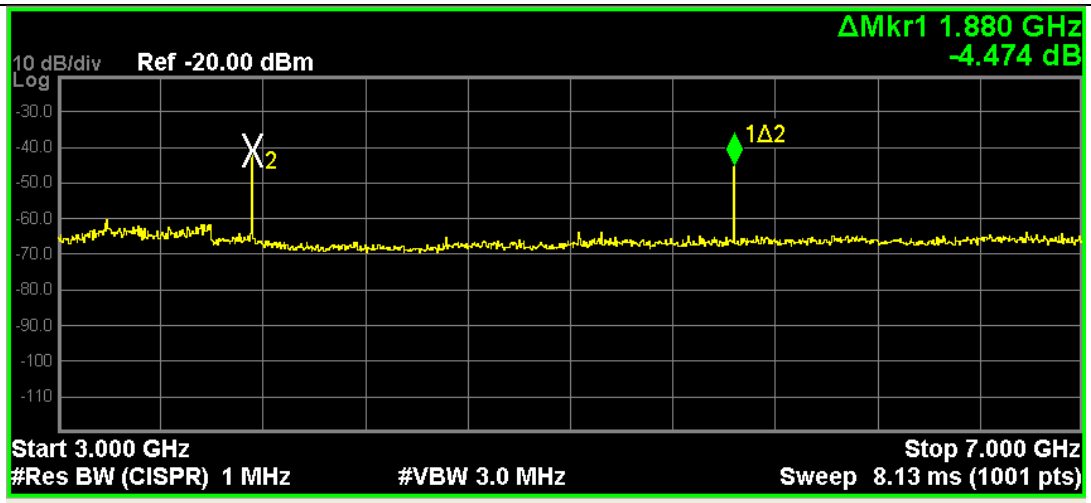


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	671.17 MHz	-66.356 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

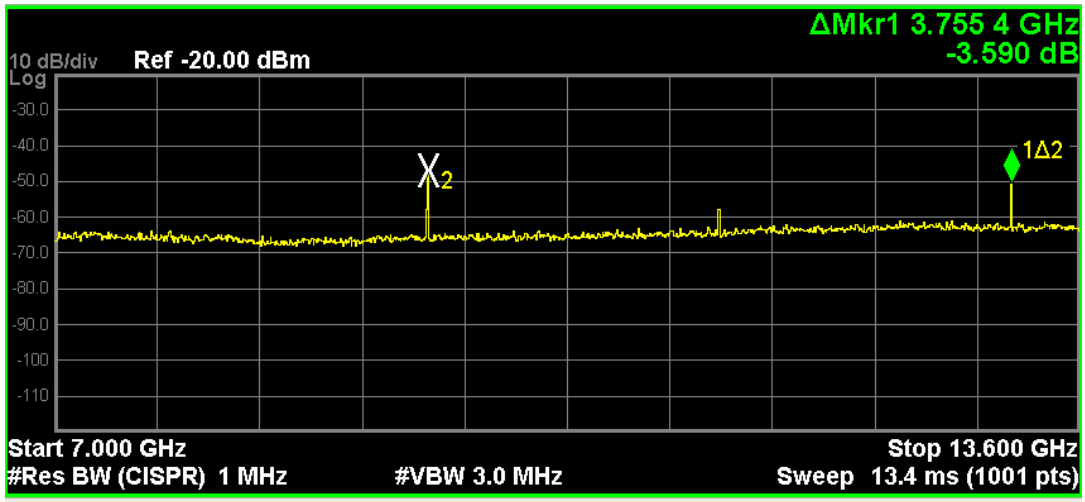


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 656 MHz	(Δ) -68.531 dB			
2	F	1	f	1.880 GHz	27.437 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

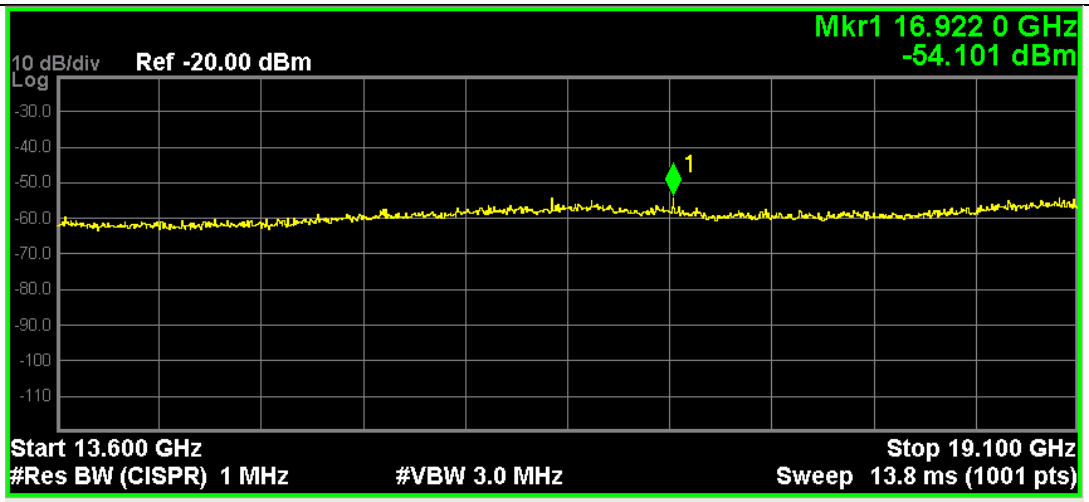
Note: The signal at point 2 is carrier



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 1.880 GHz	(Δ) -4.474 dB			
2	F	1	f	3.760 GHz	-41.044 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

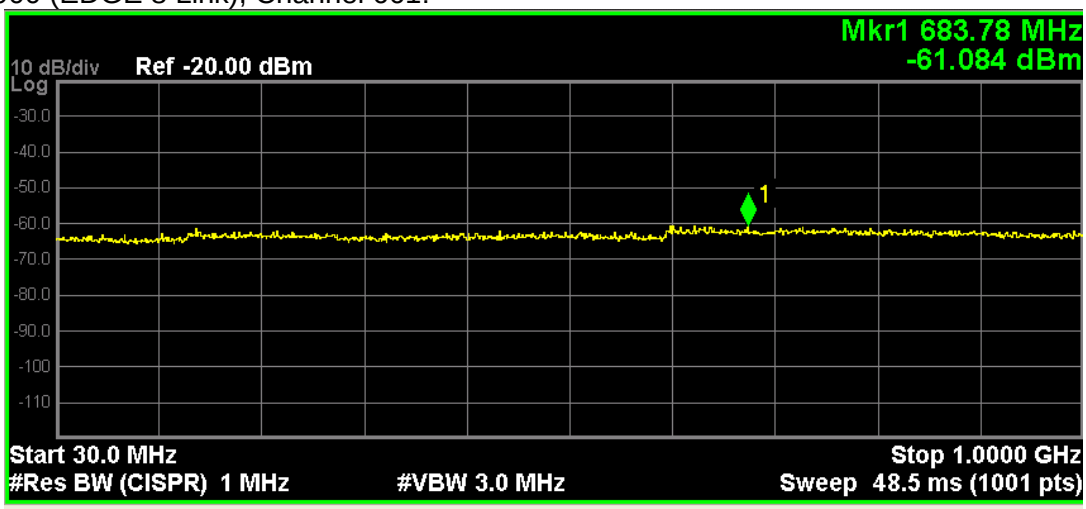


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 3.755 4 GHz	(Δ) -3.590 dB			
2	F	1	f	9.402 4 GHz	-47.054 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

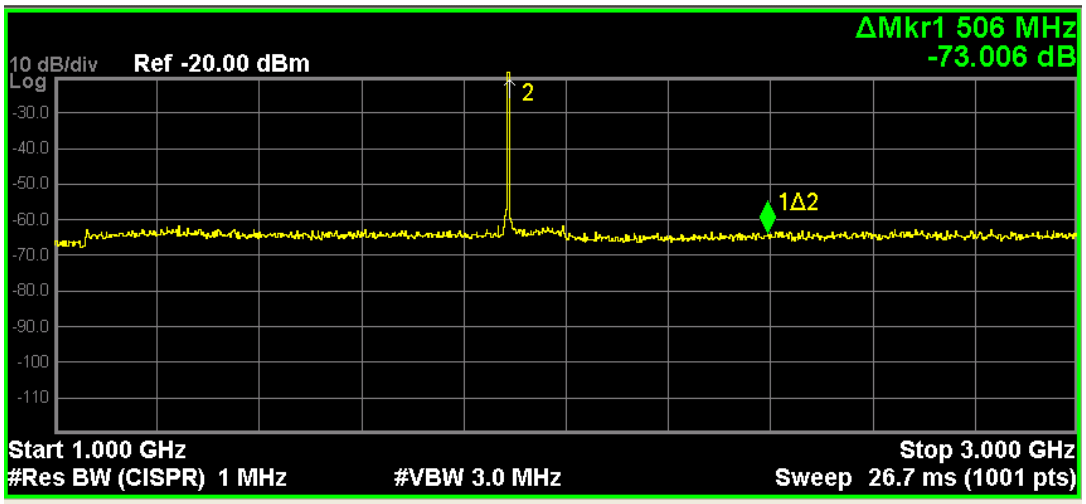


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	16.922 0 GHz	-54.101 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

GSM 1900 (EDGE 8 Link), Channel 661:

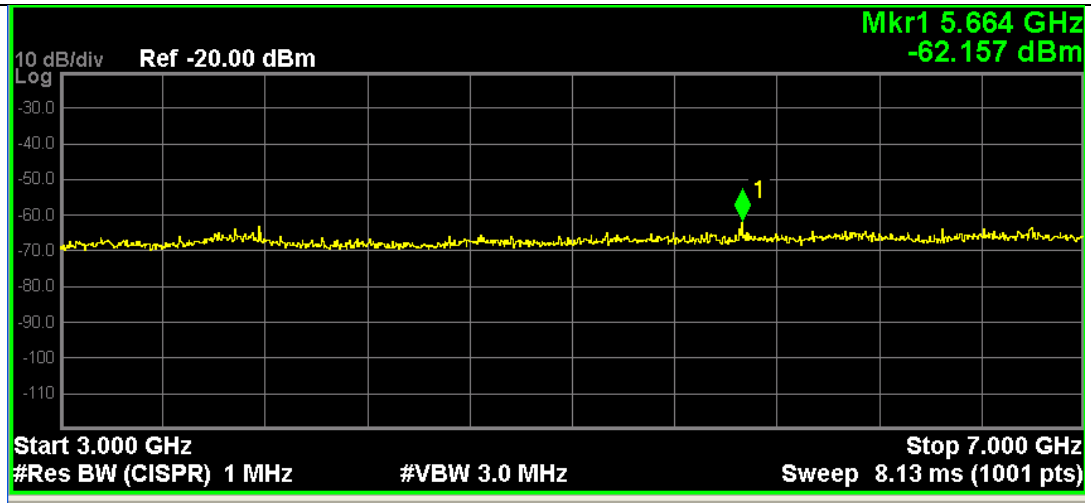


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	683.78 MHz	-61.084 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

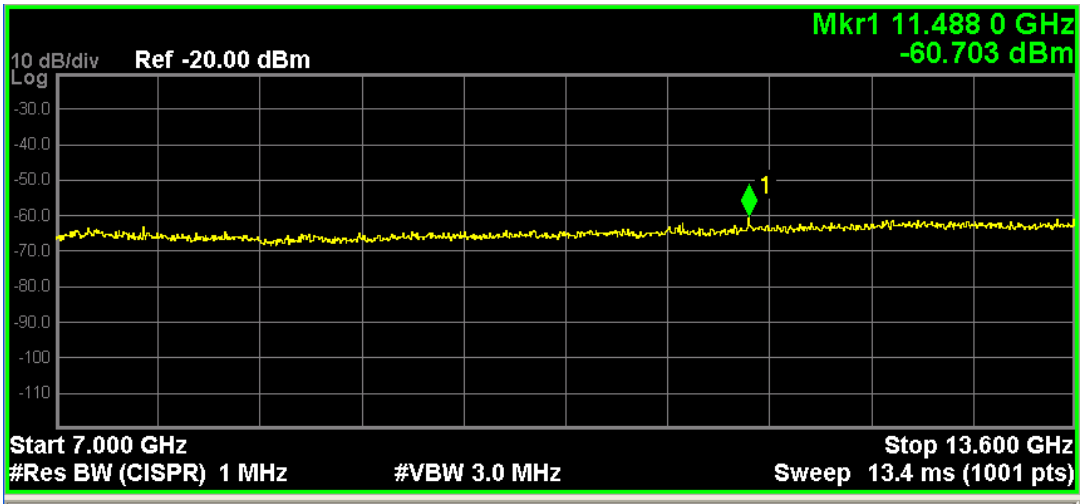


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 506 MHz	(Δ) -73.006 dB			
2	F	1	f	1.888 GHz	8.517 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

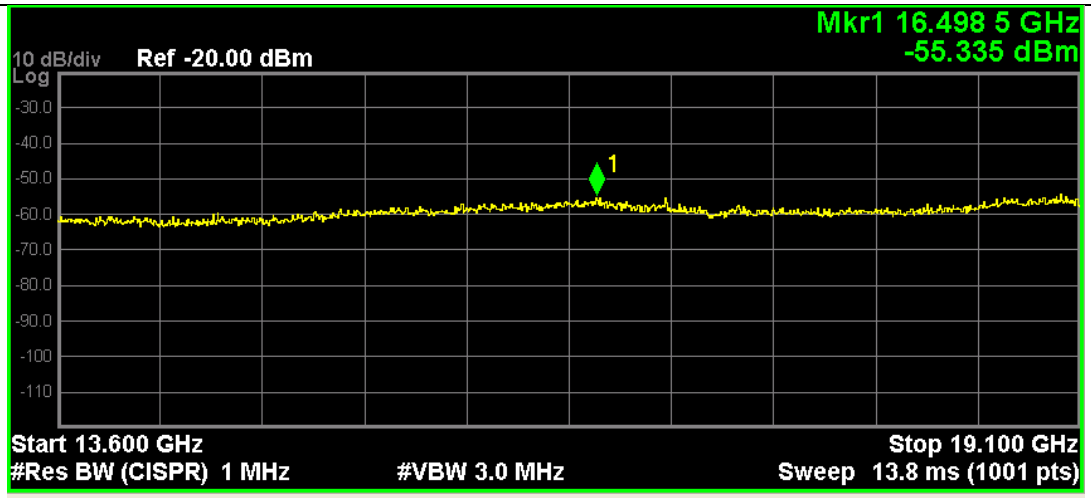
Note: The signal at point 2 is carrier



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	5.664 GHz	-62.157 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

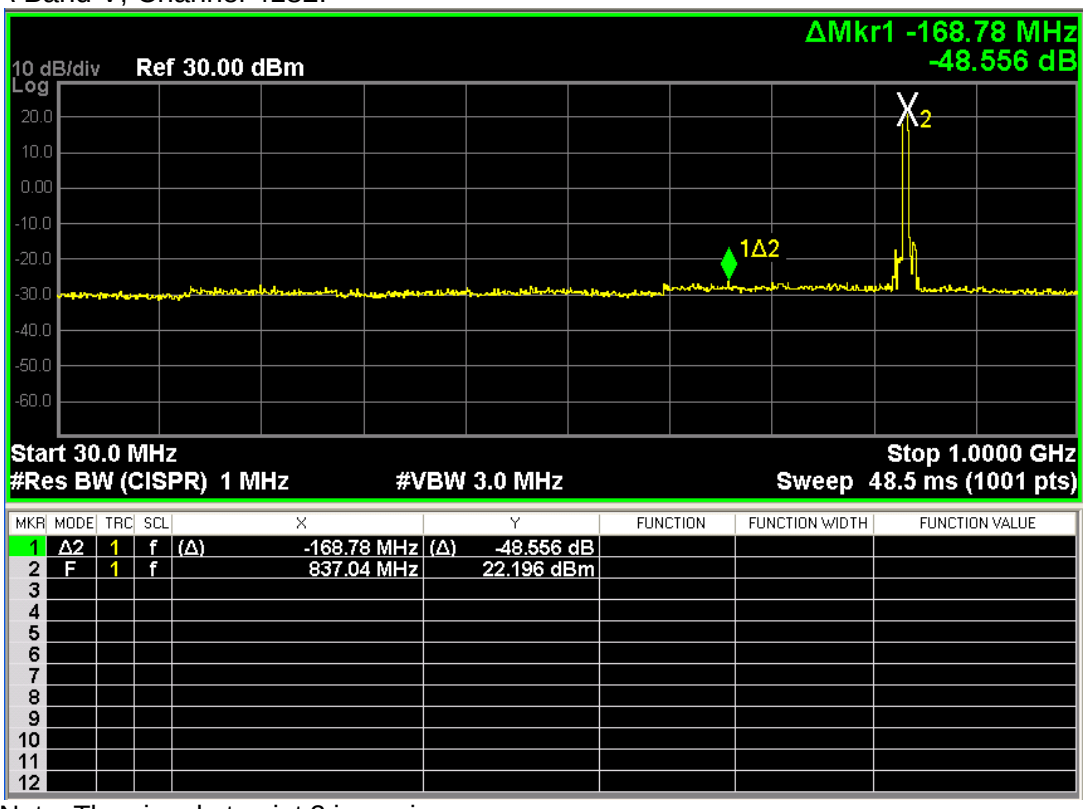


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	11.488 0 GHz	-60.703 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								



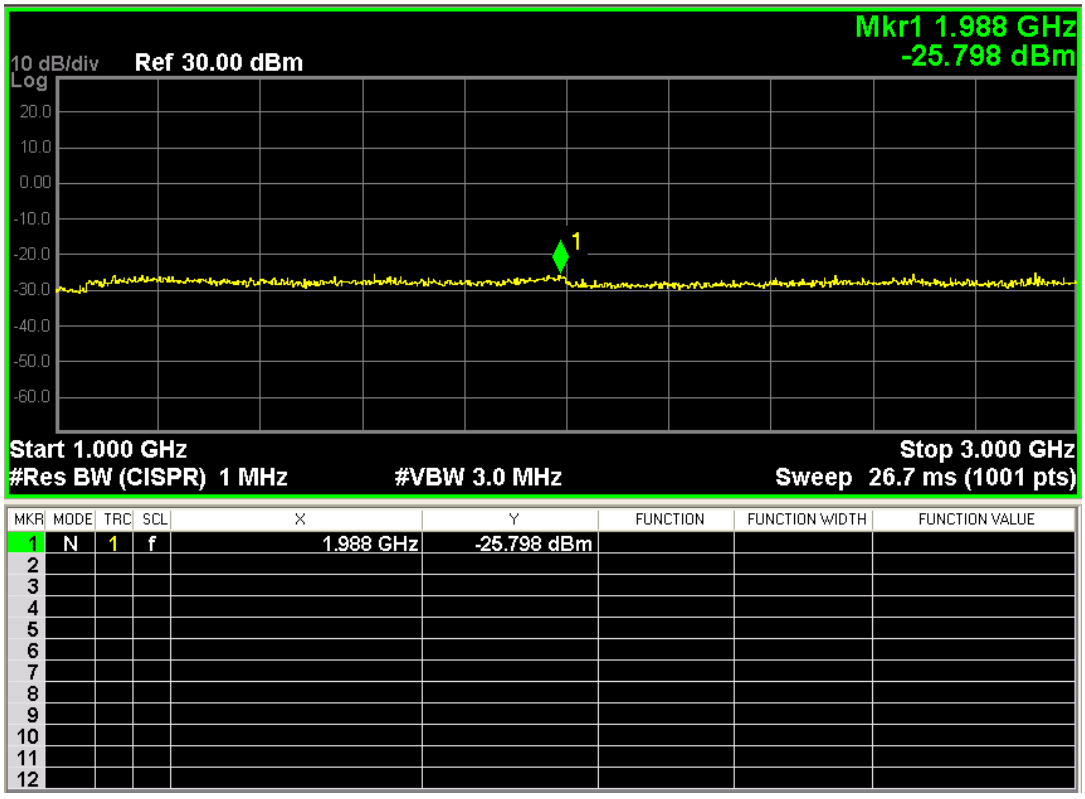
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	16.498 5 GHz	-55.335 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

WCDMA Band V, Channel 4182:

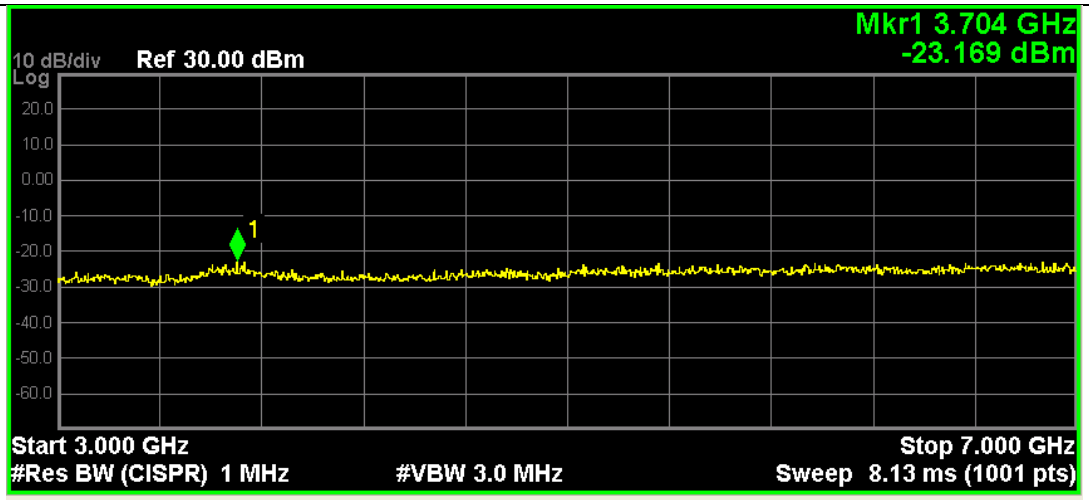


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) -168.78 MHz	(Δ) -48.556 dB			
2	F	1	f	837.04 MHz	22.196 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

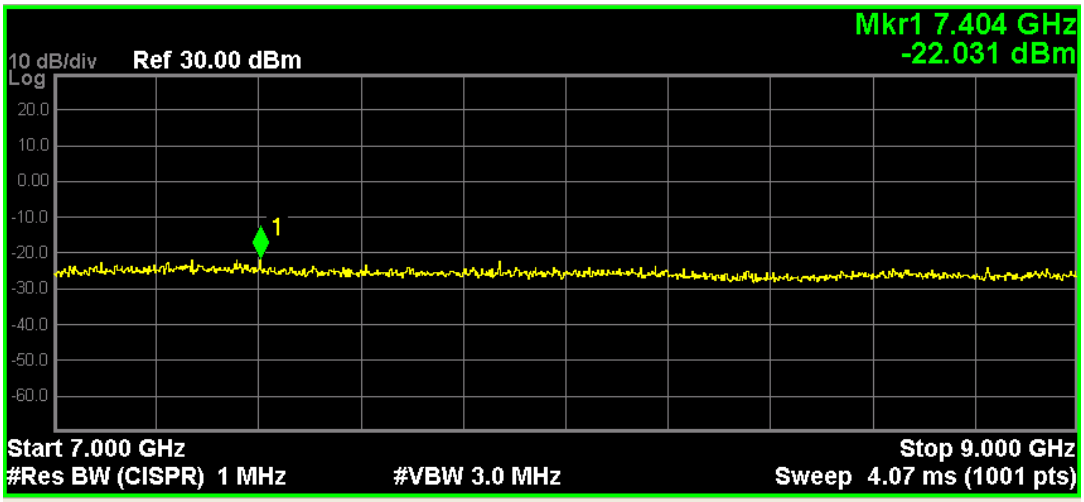
Note: The signal at point 2 is carrier



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	1.988 GHz	-25.798 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

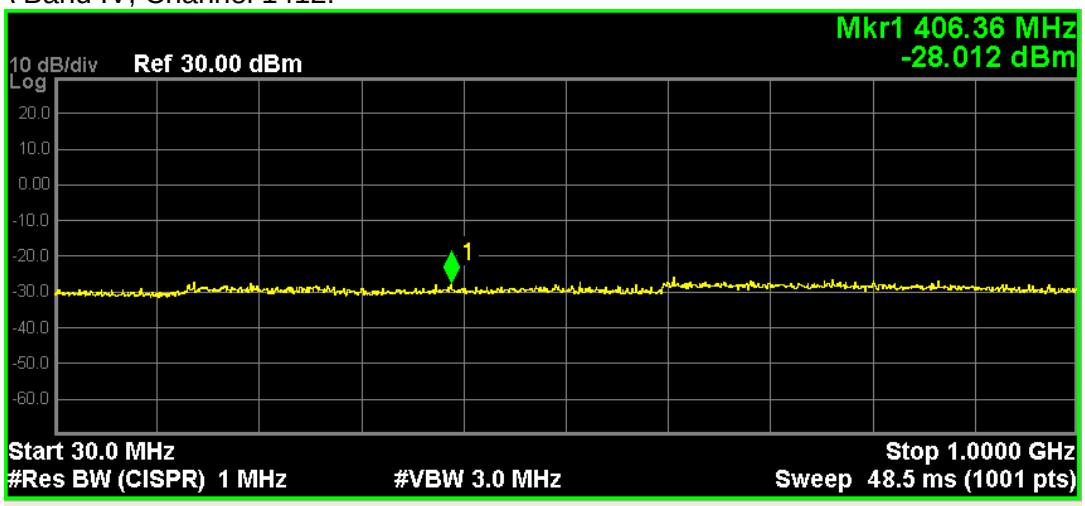


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	3.704 GHz	-23.169 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

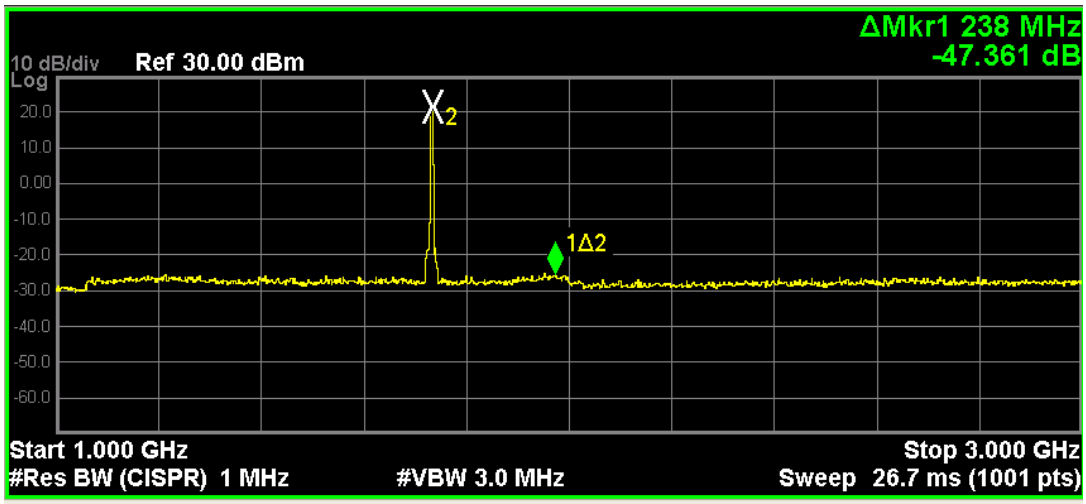


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	7.404 GHz	-22.031 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

WCDMA Band IV, Channel 1412:

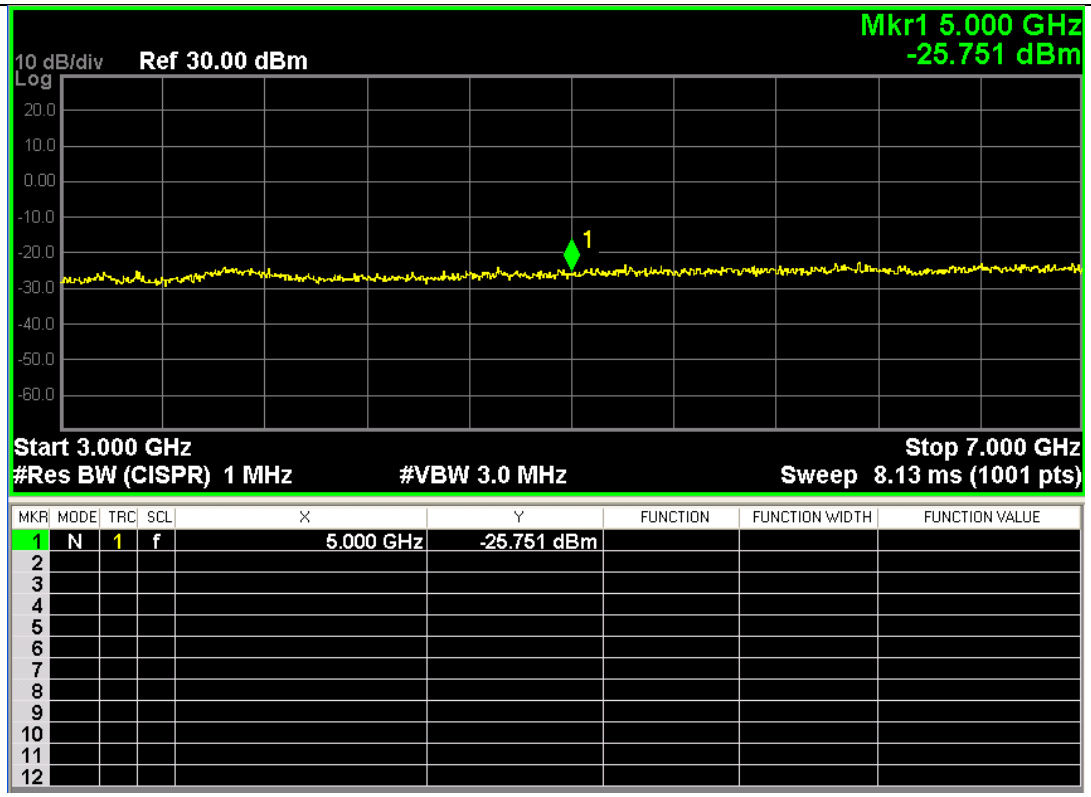


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	406.36 MHz	-28.012 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

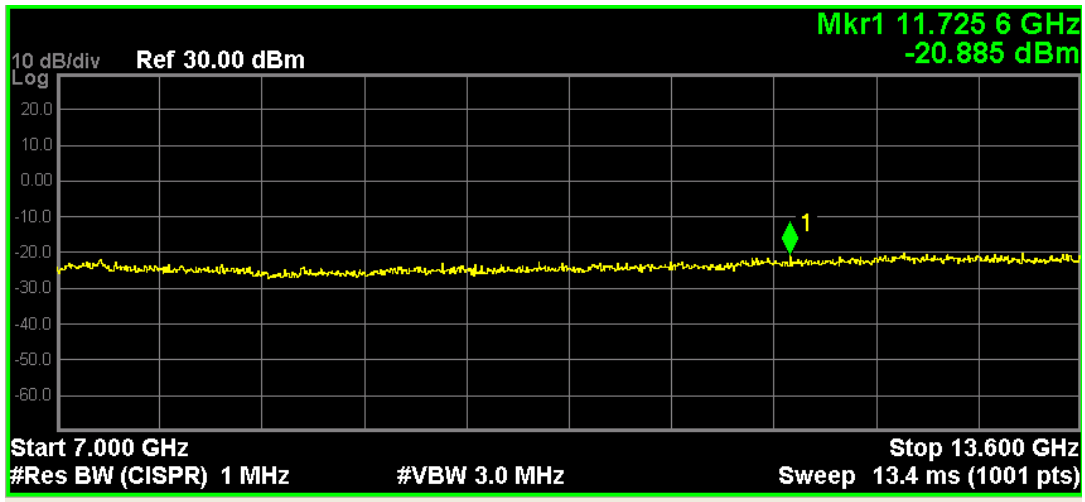


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 238 MHz	(Δ) -47.361 dB			
2	F	1	f	1.734 GHz	21.411 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

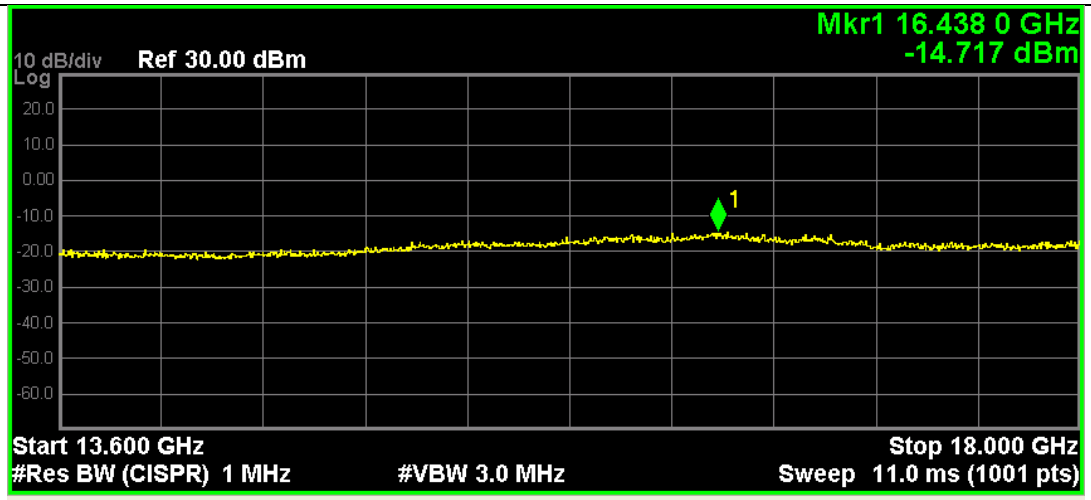
Note: The signal at point 2 is carrier



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	5.000 GHz	-25.751 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

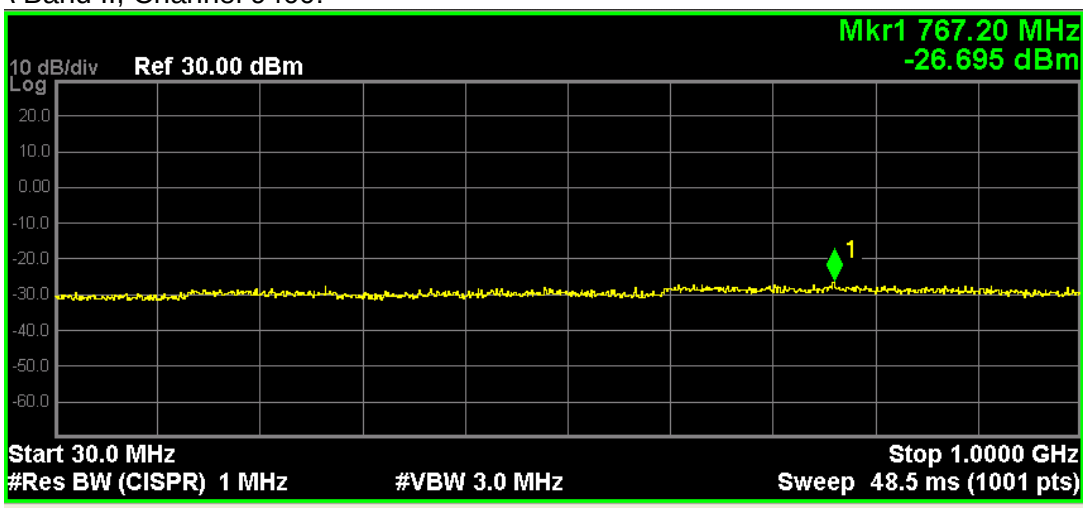


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	11.725 6 GHz	-20.885 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

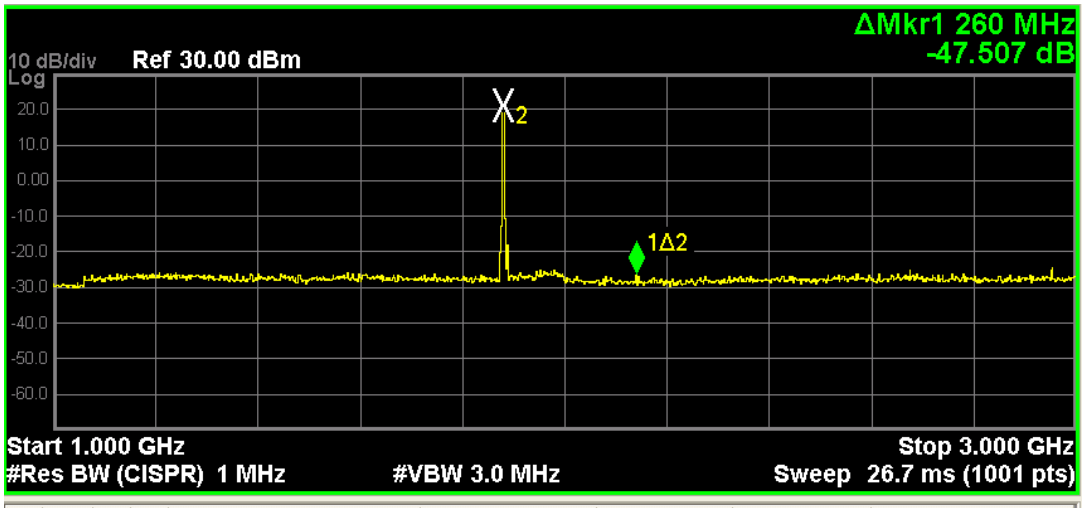


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	16.438 0 GHz	-14.717 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

WCDMA Band II, Channel 9400:

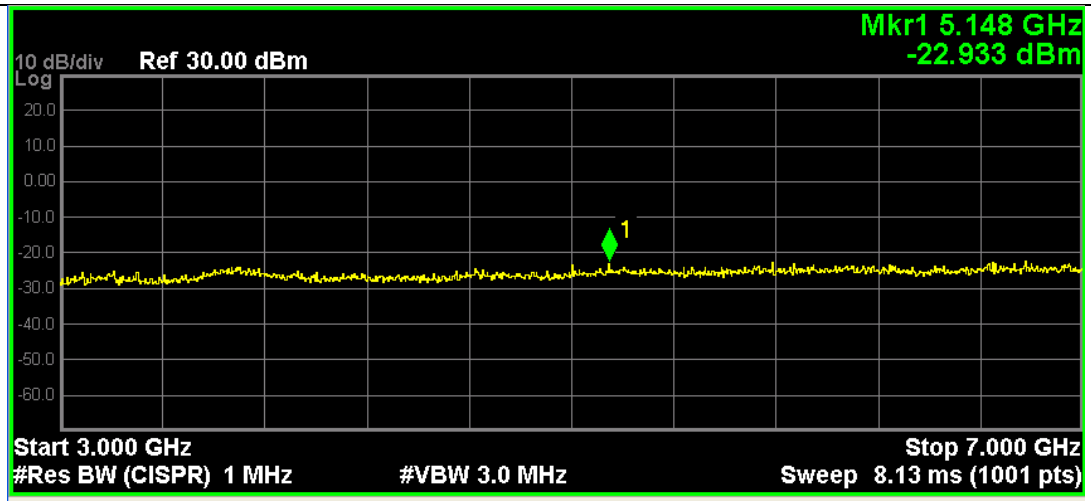


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	767.20 MHz	-26.695 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

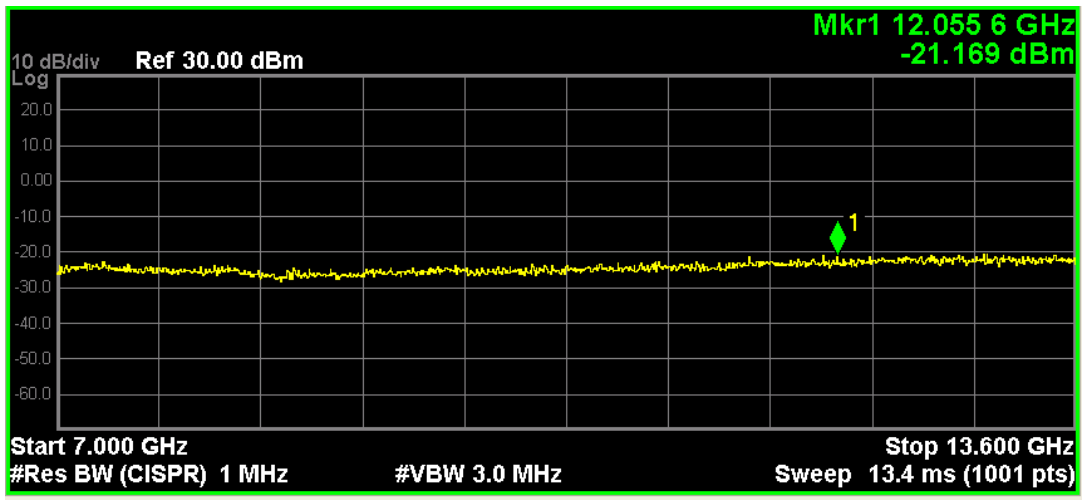


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	1	f	(Δ) 260 MHz	(Δ) -47.507 dB			
2	F	1	f	1.880 GHz	20.890 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

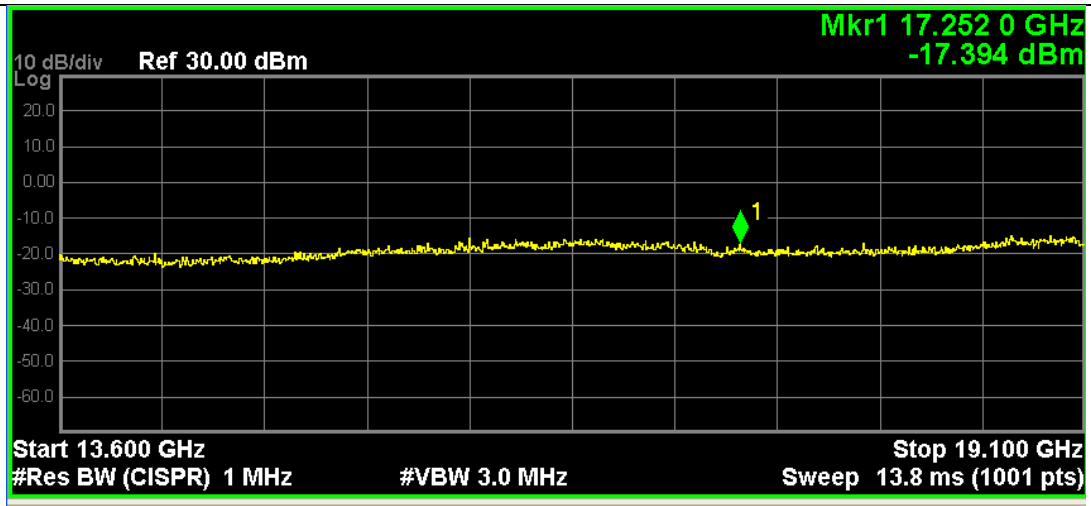
Note: The signal at point 2 is carrier



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	5.148 GHz	-22.933 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	12.055 6 GHz	-21.169 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	17.252 0 GHz	-17.394 dBm			
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

Radiated Spurious Measurement:

GSM850 (GSM Link), Below 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 189 (836.40MHz)							
207.4	H	-64.52	2.09	-0.71	-67.32	-13.00	-54.32
886.5	H	-62.17	3.78	-2.41	-68.36	-13.00	-55.36
207.4	V	-67.83	2.09	-0.71	-70.63	-13.00	-57.63
886.5	V	-66.50	3.78	-2.41	-72.69	-13.00	-59.69

GSM850 (GSM Link), Above 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 189 (836.40MHz)							
1672.5	H	-53.49	6.00	7.80	-51.69	-13.00	-38.69
3345.6	H	-46.17	7.36	8.46	-45.07	-13.00	-32.07
1672.5	V	-50.35	6.00	7.80	-48.55	-13.00	-35.55
3345.6	V	-48.41	7.36	8.46	-47.31	-13.00	-34.31

GSM850 (EDGE 8 Link), Below 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 189 (836.40MHz)							
207.4	H	-64.47	2.09	-0.71	-67.27	-13.00	-54.27
886.5	H	-62.42	3.78	-2.41	-68.61	-13.00	-55.61
207.4	V	-68.76	2.09	-0.71	-71.56	-13.00	-58.56
886.5	V	-67.19	3.78	-2.41	-73.38	-13.00	-60.38

GSM850 (EDGE 8 Link), Above 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 189 (836.40MHz)							
1672.5	H	-50.37	6.00	7.80	-48.57	-13.00	-35.57
3345.6	H	-43.17	7.36	8.46	-42.07	-13.00	-29.07

1672.5	V	-47.13	6.00	7.80	-45.33	-13.00	-32.33
3345.6	V	-40.59	7.36	8.46	-39.49	-13.00	-26.49

GSM 1900 (GSM Link), Below 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 661 (1880.00MHz)							
118.6	H	-68.56	2.09	1.45	-69.20	-13.00	-56.20
715.5	H	-67.34	3.78	-0.26	-71.38	-13.00	-58.38
118.6	V	-73.84	2.09	1.45	-74.48	-13.00	-61.48
715.5	V	-69.05	3.78	-0.26	-73.09	-13.00	-60.09

GSM 1900 (GSM Link), Above 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 661 (1880.00MHz)							
3760.4	H	-56.06	8.95	12.73	-49.43	-13.00	-36.43
7520.5	H	-60.67	11.12	13.12	-58.67	-13.00	-45.67
3760.4	V	-53.83	8.95	12.73	-50.05	-13.00	-37.05
7520.5	V	-59.24	11.12	13.12	-57.24	-13.00	-44.24

GSM1900 (EDGE 8 Link), Below 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 661 (1880.00MHz)							
118.6	H	-68.67	2.09	1.45	-69.31	-13.00	-56.31
715.5	H	-64.51	3.78	-0.26	-78.55	-13.00	-56.24
118.6	V	-72.51	2.09	1.45	-73.15	-13.00	-60.15
715.5	V	-70.05	3.78	-0.26	-74.09	-13.00	-61.09

GSM1900 (EDGE 8 Link), Above 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 661 (1880.00MHz)							
3760.4	H	-59.28	8.95	12.73	-52.65	-13.00	-39.65
7520.5	H	-61.56	11.12	13.12	-59.56	-13.00	-46.56
3760.4	V	-55.23	8.95	12.73	-51.45	-13.00	-38.45
7520.5	V	-60.32	11.12	13.12	-58.32	-13.00	-45.32

WCDMA Band V Below 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 4182 (836.40MHz)							
115.3	H	-66.53	2.09	-0.71	-69.33	-13.00	-56.33
685.6	H	-63.82	3.78	-2.41	-70.01	-13.00	-57.01
115.3	V	-67.18	2.09	-0.71	-69.98	-13.00	-56.98
685.3	V	-64.04	3.78	-2.41	-70.23	-13.00	-57.23

WCDMA Band V Above 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 4182 (836.40MHz)							
1674.6	H	-44.94	6.00	7.80	-43.14	-13.00	-30.14
2509.8	H	-38.64	7.36	8.46	-37.54	-13.00	-24.54
1674.6	V	-43.23	6.00	7.80	-41.43	-13.00	-28.43
2509.8	V	-36.17	7.36	8.46	-35.07	-13.00	-22.07

WCDMA Band IV Below 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 1412 (1732.4MHz)							
107.3	H	-62.31	2.09	-0.71	-69.11	-13.00	-56.11
775.5	H	-61.22	3.78	-2.41	-67.41	-13.00	-54.41
107.3	V	-66.18	2.09	-0.71	-68.98	-13.00	-55.98
775.5	V	-63.37	3.78	-2.41	-69.56	-13.00	-56.56

WCDMA Band IV Above 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 1412 (1732.4MHz)							
3560.6	H	-43.94	6.00	7.80	-42.14	-13.00	-29.14
5560.8	H	-35.64	7.36	8.46	-34.54	-13.00	-21.54
3560.6	V	-42.35	6.00	7.80	-40.55	-13.00	-27.55
5560.8	V	-34.16	7.36	8.46	-33.06	-13.00	-20.06

WCDMA Band II Below 1GHz

Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 9400 (1880.0MHz)							
118.6	H	-67.53	2.09	-0.71	-70.32	-13.00	-57.32
715.5	H	-63.13	3.78	-2.41	-69.35	-13.00	-56.35
118.6	V	-68.98	2.09	-0.71	-71.78	-13.00	-58.78
715.5	V	-66.28	3.78	-2.41	-72.47	-13.00	-59.47

WCDMA Band II Above 1GHz

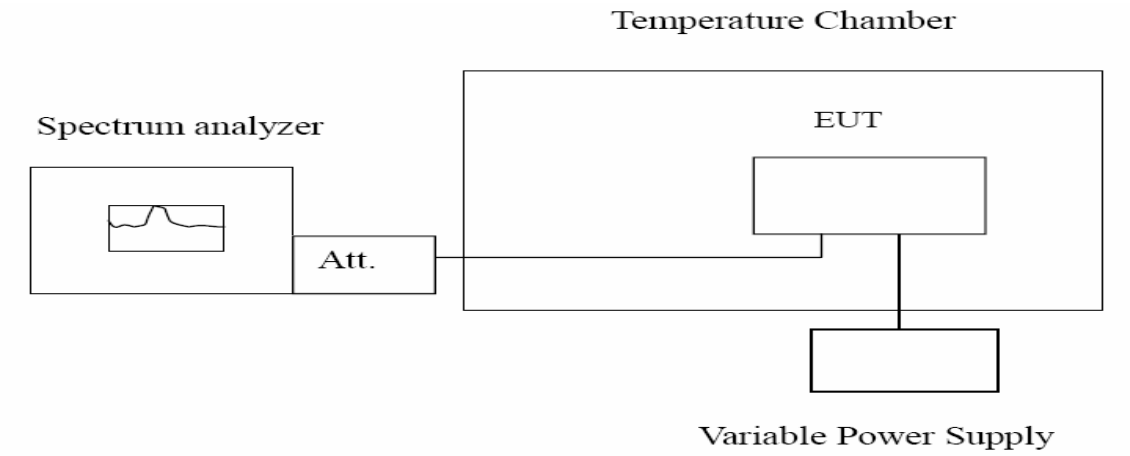
Frequency (MHz)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Middle Channel 9400 (1880.0MHz)							
3768.2	H	-39.84	6.00	7.80	-38.04	-13.00	-25.04
7515.5	H	-32.75	7.36	8.46	-31.65	-13.00	-18.65
3768.2	V	-39.33	6.00	7.80	-37.43	-13.00	-24.43
7515.5	V	-31.38	7.36	8.46	-30.28	-13.00	-17.28

8. Frequency Stability Under Temperature & Voltage Variations

8.1. Test Equipment

Instrument	Manufacturer	Model	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9038A	MY51210142	2014.07.27
Radio Communication Tester	Agilent	E5515C	GB46581718	2013.10.25
DC Power Supply	Agilent	6612C	MY43002989	2014.03.04
DC Power Supply	ITECH	IT5612	01600210661201014	2013.11.16
Temperature Chamber	WEISS	DU/20/40	58226017340050	2013.12.04

8.2. Test Setup



8.3. Limit

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

Limit	< ±2.5 ppm

8.4. Test Procedure

Frequency Stability Under Temperature Variations:
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure
EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.
Frequency Stability Under Voltage Variations:
Set chamber temperature to 20℃. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.
Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

8.5. Uncertainty

The measurement uncertainty is defined as±10 Hz.

8.6. Test Result

GSM850 (GSM Link):

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	836.40	-23.7	±2091
-20	836.40	-21.5	±2091
-10	836.40	-20.5	±2091
0	836.40	-10.3	±2091
10	836.40	-15.6	±2091
20	836.40	-20.5	±2091
30	836.40	-31.2	±2091
40	836.40	-22.5	±2091
50	836.40	-40.2	±2091

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.6	836.40	-16.54	±2091
3.7	836.40	-21.20	±2091
4.2	836.40	-32.54	±2091

Notes: the manufacture declared that the EUT could work between voltages 3.6V～4.2 V.

GSM850 (EDGE 8 Link):

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	836.40	-36.2	±2091
-20	836.40	-28.5	±2091
-10	836.40	-24.3	±2091
0	836.40	-15.3	±2091
10	836.40	-15.7	±2091
20	836.40	-18.3	±2091
30	836.40	-30.2	±2091
40	836.40	-33.5	±2091
50	836.40	-40.2	±2091

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.6	836.40	-15.32	±2091
3.7	836.40	-20.25	±2091
4.2	836.40	-30.22	±2091

Notes: the manufacture declared that the EUT could work between voltages 3.6V～4.2 V.

GSM 1900 (GSM Link):

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	1880.00	-45.41	±4700
-20	1880.00	-30.21	±4700
-10	1880.00	-20.20	±4700
0	1880.00	-22.40	±4700
10	1880.00	-25.24	±4700
20	1880.00	-31.24	±4700
30	1880.00	-40.22	±4700
40	1880.00	-50.21	±4700
50	1880.00	-50.21	±4700

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.6	1880.00	-11.20	±4700
3.7	1880.00	-19.15	±4700
4.2	1880.00	-24.10	±4700

Notes: the manufacture declared that the EUT could work between voltages 3.6V～4.2 V.

GSM1900 (EDGE 8 Link):

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	1880.00	-31.30	±4700
-20	1880.00	-24.25	±4700
-10	1880.00	-20.21	±4700
0	1880.00	-20.22	±4700
10	1880.00	-28.21	±4700
20	1880.00	-32.10	±4700
30	1880.00	-42.12	±4700
40	1880.00	-50.25	±4700
50	1880.00	-54.52	±4700

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.6	1880.00	-11.20	±4700
3.7	1880.00	-21.50	±4700
4.2	1880.00	-20.54	±4700

Notes: the manufacture declared that the EUT could work between voltages 3.6V～4.2 V.

WCDMA Band V:

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	836.40	10.17	±2091
-20	836.40	15.21	±2091
-10	836.40	-12.12	±2091
0	836.40	-14.25	±2091
10	836.40	-16.80	±2091
20	836.40	-15.32	±2091
30	836.40	14.22	±2091
40	836.40	13.21	±2091
50	836.40	20.20	±2091

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.6	836.40	20.14	±2091
3.7	836.40	15.21	±2091
4.2	836.40	20.21	±2091

Notes: the manufacture declared that the EUT could work between voltages 3.6V～4.2 V.

.

WCDMA Band IV:

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	1732.4	12.41	±4331
-20	1732.4	16.35	±4331
-10	1732.4	-15.32	±4331
0	1732.4	-18.21	±4331
10	1732.4	-15.36	±4331
20	1732.4	-11.45	±4331
30	1732.4	-12.54	±4331
40	1732.4	14.22	±4331
50	1732.4	20.55	±4331

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.6	1732.4	18.22	±4331
3.7	1732.4	-15.31	±4331
4.2	1732.4	20.58	±4331

Notes: the manufacture declared that the EUT could work between voltages 3.6V～4.2 V.

WCDMA Band II:

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	1880.00	17.30	±4700
-20	1880.00	14.25	±4700
-10	1880.00	-16.32	±4700
0	1880.00	-14.21	±4700
10	1880.00	-17.51	±4700
20	1880.00	-16.31	±4700
30	1880.00	14.57	±4700
40	1880.00	14.32	±4700
50	1880.00	20.12	±4700

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.6	1880.00	14.20	±4700
3.7	1880.00	-15.32	±4700
4.2	1880.00	28.26	±4700

Notes: The manufacture declared that the EUT could work between voltages 3.6V～4.2 V.

9.Attachment

PHOTOGRAPHS OF TEST SETUP

Please refer to the file named “R38YL7560T_Part22 24 27 Setup Photos”.

PHOTOGRAPHS OF EUT

Please refer to the two files named “R38YL560T_External Photos” and “R38YL560T_INternal Photos”.

----End of the report----