TEST REPORT

FCC ID: 2ACCFADWAT102G
IC: 21085-ADWAT102G
Product: MPERSENS
Model No.: ADWAT102G
Additional Model No.: N/A
Trade Mark: VESAG
Report No.: TCT141028E011
Issued Date: Jan. 15, 2016

Issued for:

VESAG Health Inc
#B202C, 675 US Highway One, North Brunswick, 08902 NJ, United States

Issued By:

Shenzhen Tongce Testing Lab.
1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China
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Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

1. Test Certification

Product:	MPERSENS
Model No.:	ADWAT102G
Additional Model No.:	N/A
Applicant:	VESAG Health Inc
Address:	#B202C, 675 US Highway One, North Brunswick, 08902 NJ, United States
Manufacturer:	VESAG Health Inc
Address:	#B202C, 675 US Highway One, North Brunswick, 08902 NJ, United States
Date of Test:	Sep. 10,2015 –Jan. 12, 2016
Applicable Standards:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part22 Subpart H FCC CFR Title 47 Part24 Subpart E FCC 47 CFR PART 27 RSS-132 Issue 3 RSS-133 Issue 6 RSS-Gen Issue 4 RSS-139 Issue 3

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: Garen **Date:** ***Jan. 14, 2016***

Reviewed By: Joe Zhou **Date:** ***Jan. 15, 2016***

Approved By: Tomsin **Date:** ***Jan. 15, 2016***

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2. Test Result Summary

Requirement	CFR 47 Section	IC Rule	Result
Conducted Output Power	§22.913; §2.1046 §24.232; §27.50(d)	RSS-132(5.4) RSS-133(6.4)	PASS
Peak-to-Average Ratio	§2.1046; §24.232(d) §27.50(d)	RSS-132(5.4) RSS-133(6.4)	PASS
Effective Radiated Power	§2.1046; §22.913(a) §24.232; §27.50(d)	RSS-132(4.4) SRSP-503(5.1.3) SRSP-503(5.1.2)	PASS
Equivalent Isotropic Radiated Power	§2.1046; §22.913(a) §24.232; §27.50(d)	RSS-133 (6.4) SRSP-510(5.1.2)	PASS
Occupied Bandwidth	§2.1049	RSS-Gen (4.6.1)	PASS
Band Edge	§2.1051 §22.917(a) §24.238(a) § 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5)	PASS
Conducted Spurious Emission	§2.1051; §22.917 §24.238; § 27.53(h)	RSS-132 (4.5.1) RSS-133 (6.5.1)	PASS
Field Strength of Spurious Radiation	§2.1053; §22.917(a) §24.238; § 27.53(g)	RSS-132 (4.5.1) RSS-133 (6.5.1) RSS-139 (6.5) RSS-Gen (4.10)	PASS
Frequency Stability for Temperature & Voltage	§2.1055;§22.355 §24.235;§27.54	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3)	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

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3. EUT Description

Product Name:	MPERSENS
Model :	ADWAT102G
Additional Model:	N/A
Trade Mark:	**VESAG**
Hardware Version:	H1.1.1
Software Version:	S1.1.1
Tx Frequency:	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz
Rx Frequency:	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz WCDMA Band IV: 2112.4 MHz ~ 2152.6 MHz
Maximum Output Power to Antenna:	GSM850 : 31.65 dBm GSM1900 : 29.31 dBm WCDMA Band V : 23.07 dBm WCDMA Band II : 22.57 dBm WCDMA Band IV : 23.41 dBm
99% Occupied Bandwidth:	GSM850: 244KGXM GSM1900: 245KGXM WCDMA Band V RMC 12.2Kbps: 4M19F9W WCDMA Band II RMC 12.2Kbps: 4M23F9W WCDMA Band IV RMC 12.2Kbps: 4M26F9W
Type of Modulation:	GSM: GMSK GPRS: GMSK WCDMA/HSDPA/HSUPA: QPSK
Antenna Type:	PIFA Antenna
Antenna Gain:	GSM 850: 5.22dbi GSM 1900: 3.31dbi WCDMA Band V: 5.22dbi WCDMA Band II: 3.31dbi WCDMA Band IV: 4.21dbi
Power Supply:	DC 3.7V from Rechargeable Li-ion Battery

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4. Genera Information

4.1. Test environment and mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation

The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

Description Operation Frequency

GSM 850		PCS1900	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
128	824.20	512	1850.20
129	824.40	513	1850.40
….	….	….	….
189	836.40	660	1879.80
190	836.60	661	1880.00
191	836.80	662	1880.20
…	…	…	…
250	848.60	809	1909.60
251	848.80	810	1909.80

WCDMA Band IV		WCDMA Band V		WCDMA Band II	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
1312	1712.4	4132	826.40	9262	1852.40
….	….	4133	826.60	9263	1852.60
….	….	….	….	….	….
….	….	4182	836.40	9399	1879.80
1413	1732.6	4183	836.60	9400	1880.00
….	….	4184	836.80	9401	1880.20
….	….	…	…	…	…
1513	1752.6	4233	846.60	9538	1907.60

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4.2. Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power. Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.
Radiated emissions were investigated as following frequency range:

1. *30 MHz to 9000 MHz for GSM850.*
2. *30 MHz to 19000 MHz for PCS1900.*

All modes and data rates and positions were investigated.
Test modes are chosen to be reported as the worst case configuration below:

Test Mode		
Band	**Radiated TCs**	**Conducted TCs**
GSM 850	GSM Link GPRS class 8 Link	GSM Link GPRS class 8 Link
PCS 1900	GSM Link GPRS class 8 Link	GSM Link GPRS class 8 Link
WCDMA Band V	RMC 12.2Kbps Link	RMC 12.2Kbps Link
WCDM Band II	RMC 12.2Kbps Link	RMC 12.2Kbps Link
WCDMA Band IV	RMC 12.2Kbps Link	RMC 12.2Kbps Link

Note: *The maximum power levels are chosen to test as the worst case configuration as follows:*
GSM multi-slot class 8 mode for GMSK modulation,
GPRS multi-slot class 8 mode for GMSK modulation, Only these modes were used for all tests. In addition to above worst-case test, below investigating on all data rates, and all modes are compliance with each FCC test case which has specific test limits. For spurious emissions at antenna port, the EUT was investigated the band edges on low and high channels, and the unwanted spurious emissions on middle channel for all modes, the results are PASS, then only the worst-results were reported in the test report. The Radiated Spurious emissions for GSM/GPRS modes were investigated on the middle channel and the PASS results were not worst than those data tested from the highest power channels.

4.3. 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.

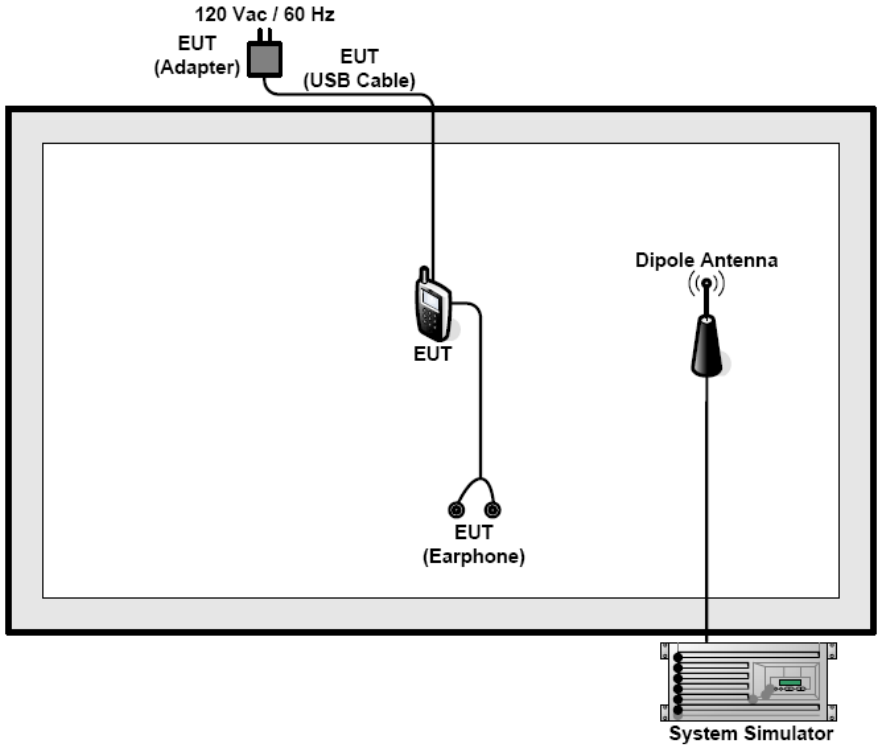
Equipment	Model No.	Serial No.	FCC ID	Trade Name

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4. Configuration of Tested System



4.5. Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level. The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

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5. Facilities and Accreditations

5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 572331

  Shenzhen Tongce Testing Lab.

  The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

  The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

- CNAS - Registration No.: CNAS L6165

  Shenzhen TCT Testing Technology Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6165.

5.2. Location

Shenzhen Tongce Testing Lab.

Address: 1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China

Tel: 86-755-36638142

5.3. Measurement Uncertainty

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

No.	Item	MU
1	Conducted Emission	±2.56dB
2	RF power, conducted	±0.12dB
3	Spurious emissions, conducted	±0.11dB
4	All emissions, radiated(<1G)	±3.92dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
7	Humidity	±1.0%

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6. Test Results and Measurement Data

6.1. Conducted Output Power Measurement

6.1.1. Test Specification

Test Requirement:	FCC part 22.913(a) and FCC part 24.232, FCC part 27.50(d); RSS-132(5.4);RSS-133(6.4)
Test Method:	FCC part 2.1046
Limits:	GSM 850: 7W PCS 1900: 2W WCDMA Band V: 7W WCDMA Band II: 2W WCDMA Band IV: 1W
Test Setup:	
Test Procedure:	1. The transmitter output port was connected to the system simulator. 2. Set EUT at maximum power through system simulator. 3. Select lowest, middle, and highest channels for each band and different modulation. 4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.
Test Result:	PASS

6.1.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Sep. 11, 2016

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.1.3. Test data

Conducted Power Measurement Results:

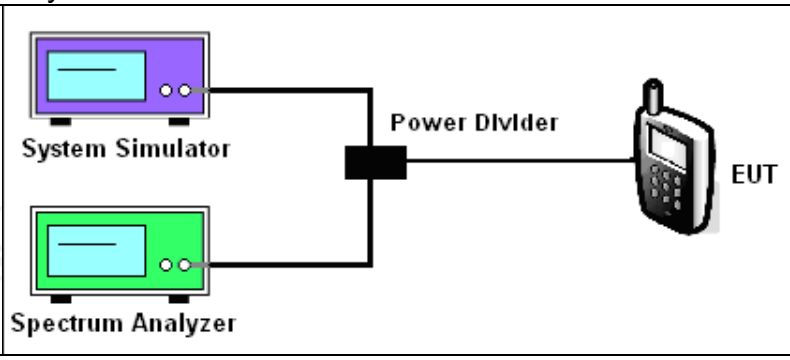
Conducted Power (*Unit: dBm)						
Band	**GSM850**			**PCS 1900**		
Channel	128	190	251	512	661	810
Frequency(MHz)	824.2	836.6	848.8	1850.2	1880.0	1909.8
GSM	31.23	31.48	31.65	28.63	28.79	29.31
GPRS class8	29.91	30.44	30.57	28.71	28.74	28.34
GPRS class10	29.04	29.57	30.06	28.46	28.55	29.12
GPRS class11	27.29	27.77	28.28	26.89	27.01	27.13
GPRS class12	26.41	26.86	27.84	26.26	26.27	26.67

Conducted Power (*Unit: dBm)									
Band	**WCDMA Band IV**			**WCDMA Band V**			**WCDMA Band II**		
Channel	1312	1413	1513	4132	4183	4233	9262	9400	9538
Frequency(MHz)	1712.4	1732.6	1752.6	826.4	836.6	846.6	1850.2	1880.0	1907.6
RMC 12.2K	23.41	23.21	22.95	23.04	23.07	22.98	22.11	22.91	22.36
RMC 64K	23.69	23.14	22.67	23.01	23.03	22.97	20.94	22.54	21.81
RMC 144K	23.27	23.12	23.46	23.03	23.05	23.01	20.96	22.56	21.73
RMC 384K	23.12	23.01	23.62	23.03	23.06	23.00	20.92	22.55	21.70
HSDPA Subtest-1	21.14	21.55	21.62	21.95	21.99	21.91	20.33	21.45	21.52
HSDPA Subtest-2	22.45	22.07	21.26	22.02	22.03	21.97	20.24	21.43	21.50
HSDPA Subtest-3	21.65	21.12	21.63	21.81	21.88	21.78	20.13	21.38	21.74
HSDPA Subtest-4	22.32	22.38	22.04	22.04	22.06	22.03	20.36	21.34	21.62
HSUPA Subtest-1	22.33	22.28	22.69	22.15	22.08	22.01	20.66	21.43	21.55
HSUPA Subtest-2	21.41	21.88	21.79	21.97	21.98	21.86	20.53	21.26	21.32
HSUPA Subtest-3	21.42	21.87	21.45	21.93	21.89	21.85	20.42	21.31	21.21
HSUPA Subtest-4	21.19	21.96	21.73	21.78	21.67	21.77	20.31	21.27	21.43
HSUPA Subtest-5	21.90	21.48	21.51	21.83	21.84	21.73	20.13	21.12	21.26

Note: *Maximum Burst Average Power for GSM.*

6.2. Peak to Average Ratio

6.2.1. Test Specification

Test Requirement:	FCC part 24.232(d) ; FCC part 22.913;RSS-132(5.4) FCC part 27.50(d);RSS-133(6.4)
Test Method:	FCC part 24.232(d); FCC part 27.50(d)
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 5.7.1. 2. The EUT was connected to spectrum analyzer and system simulator via a power divider. 3. Set EUT to transmit at maximum output power. 4. For GSM/EGPRS operating modes, signal gating is implemented on the spectrum analyzer by triggering from the system simulator. 5. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer. Record the maximum PAPR level associated with a probability of 0.1%.
Test Result:	PASS

6.2.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Sep. 11, 2016
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.2.3. Test Data

Mode	GSM850 (GSM)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128	190	251	4132	4183	4233
Frequency (MHz)	824.2	836.6	848.8	826.4	836.6	846.6
Peak-to-Average Ratio (dB)	0.24	0.09	0.02	3.25	2.36	3.43

Mode	GSM 1900 (GSM)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512	661	810	9262	9400	9538
Frequency (MHz)	1850.2	1880.0	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.00	0.02	0.01	2.40	2.21	1.88

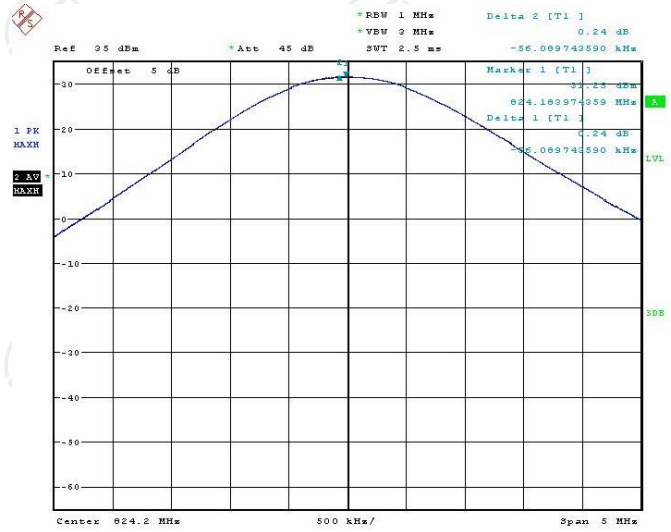
Mode	WCDMA Band IV (RMC 12.2Kbps)		
Channel	1312	1413	1513
Frequency (MHz)	1712.4	1732.6	1752.6
Peak-to-Average Ratio (dB)	1.80	1.75	1.76

Note: *Maximum Burst Average Power for GSM.*

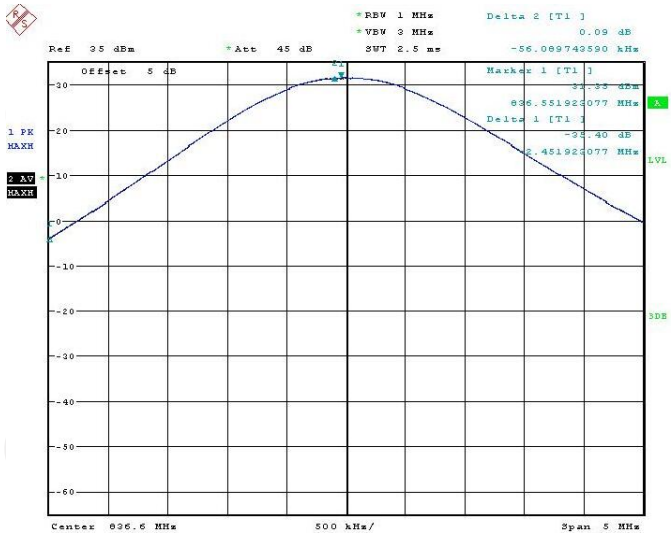
Test plots as follows:

GSM 850

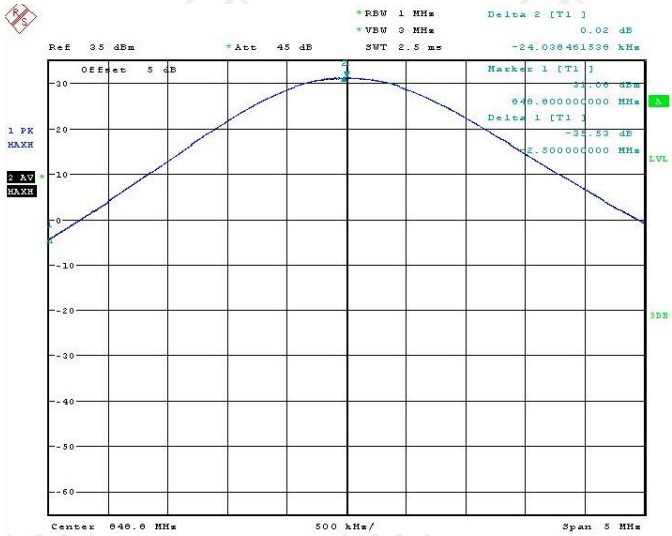
Peak-to-Average Ratio on Channel 128



Peak-to-Average Ratio on Channel 190

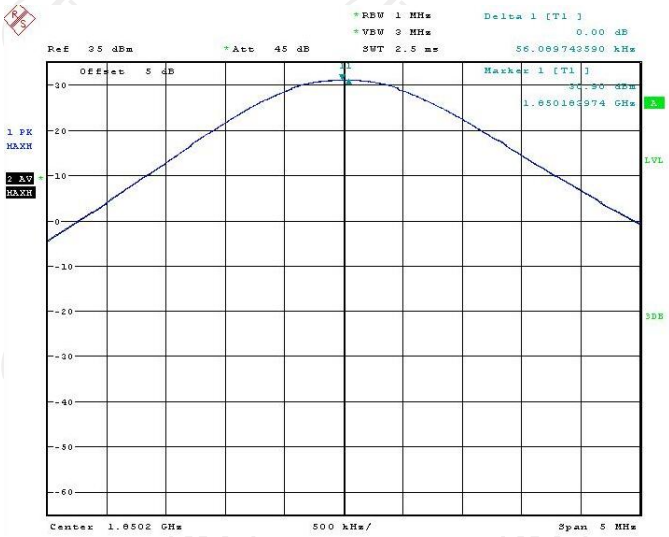


Peak-to-Average Ratio on Channel 251

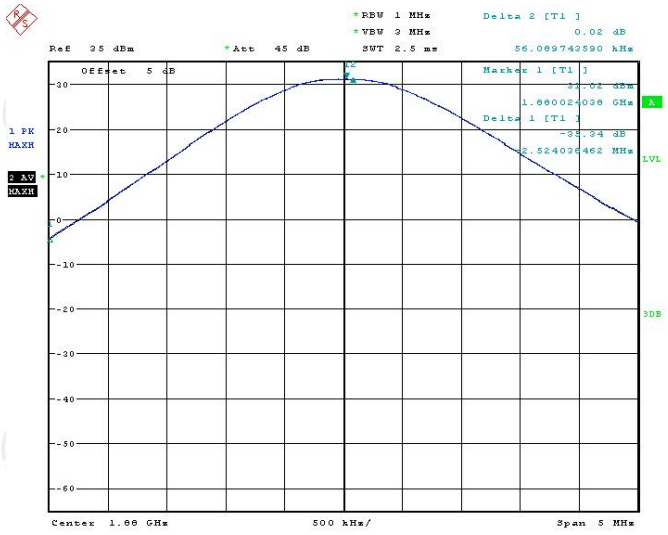


GSM 1900

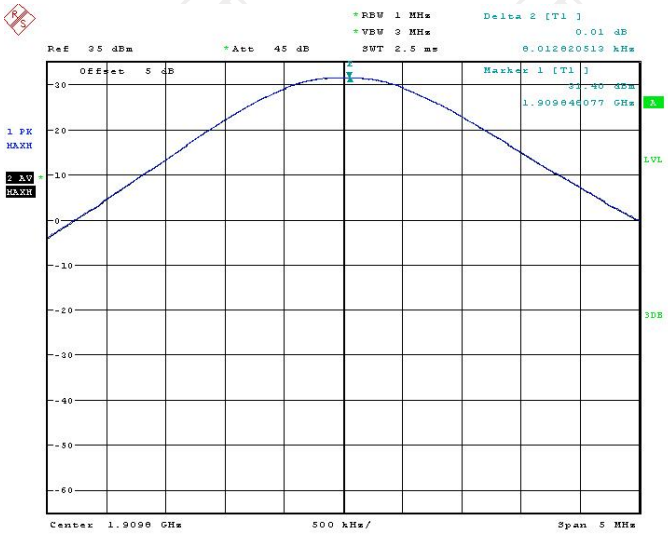
Peak-to-Average Ratio on Channel 512



Peak-to-Average Ratio on Channel 661



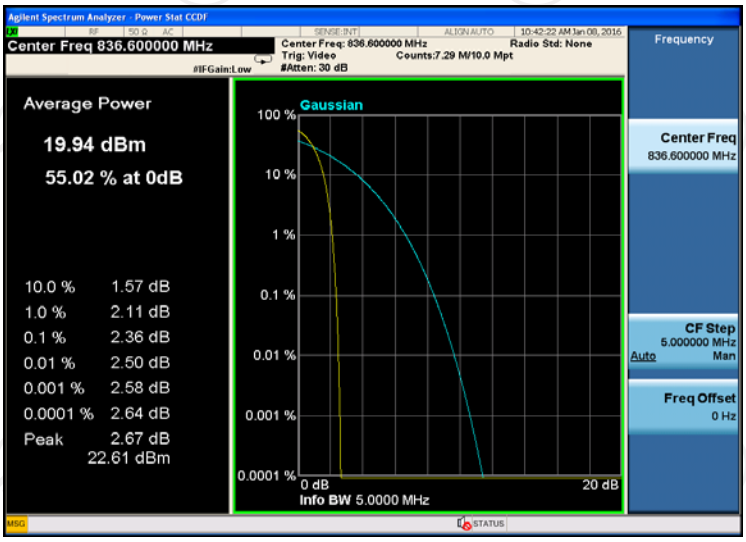
Peak-to-Average Ratio on Channel 810



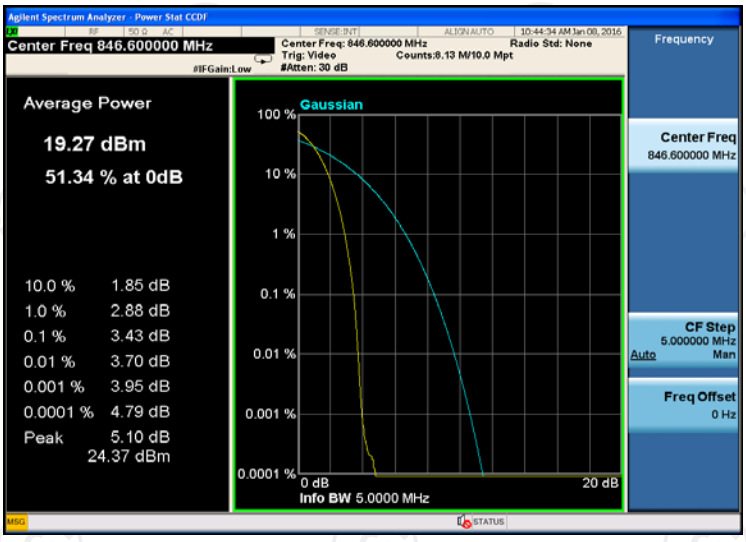
WCDMA Band V 12.2K

Peak-to-Average Ratio on Channel 4132

Peak-to-Average Ratio on Channel 4183

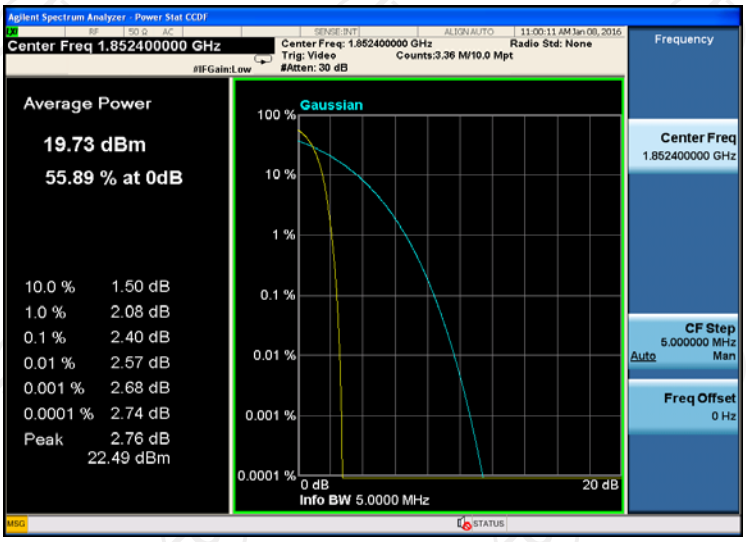


Peak-to-Average Ratio on Channel 4233

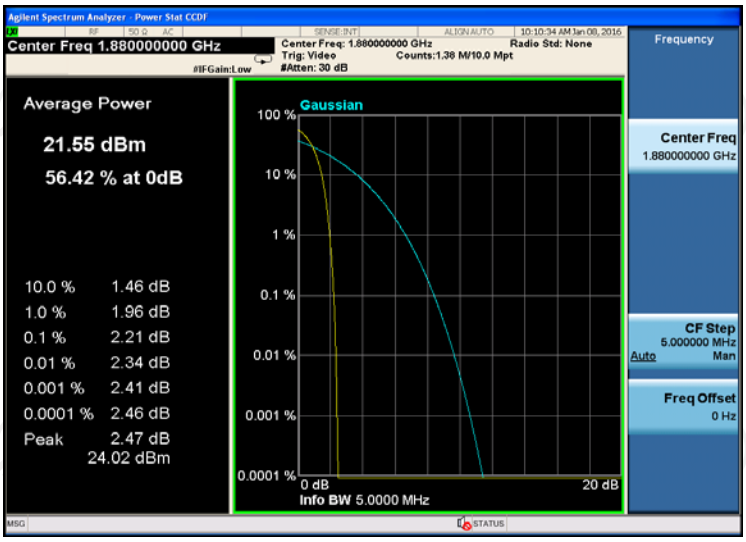


WCDMA Band II 12.2Kbps

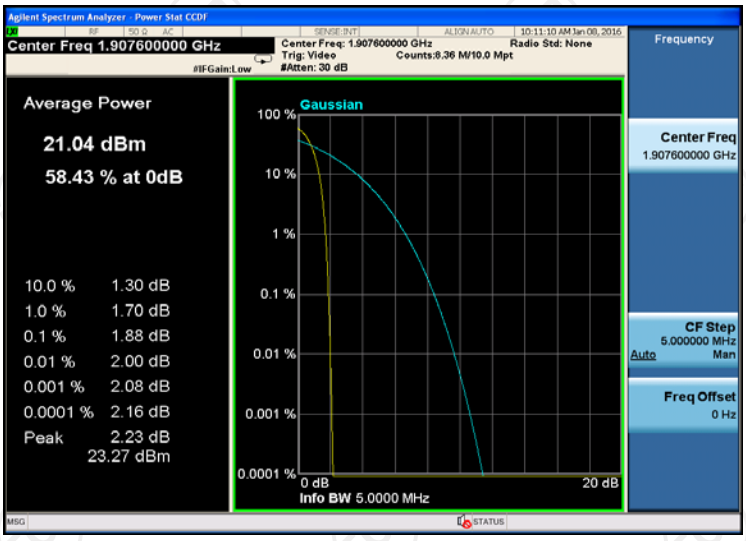
Peak-to-Average Ratio on Channel 9262



Peak-to-Average Ratio on Channel 9400

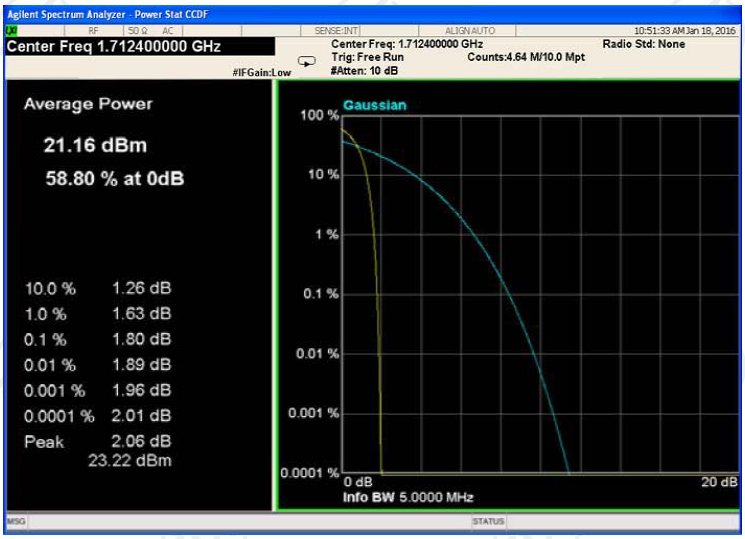


Peak-to-Average Ratio on Channel 9538

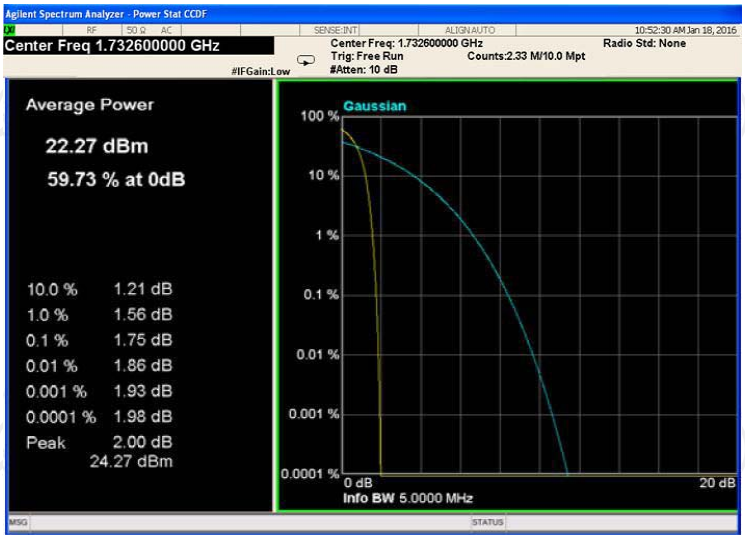


WCDMA Band IV 12.2Kbps

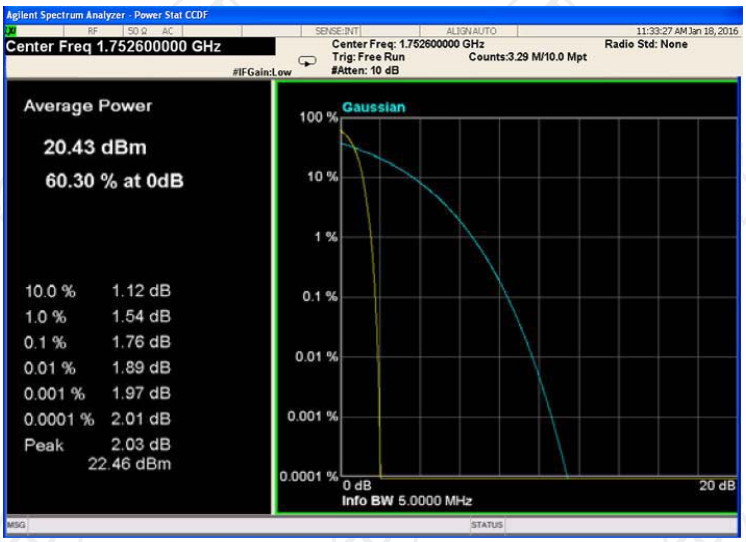
Peak-to-Average Ratio on Channel 1312



Peak-to-Average Ratio on Channel 1413

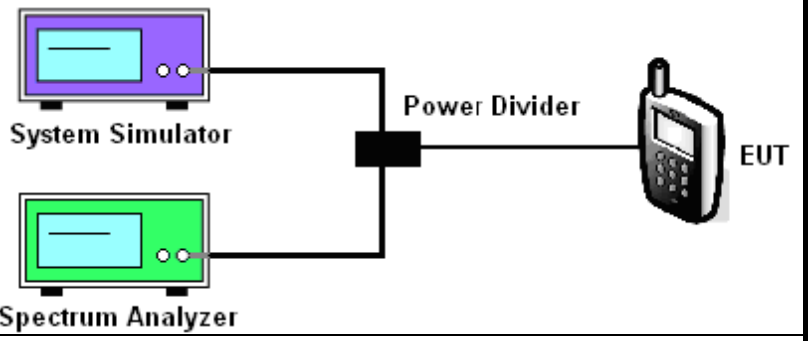


Peak-to-Average Ratio on Channel 1513



6.3. 99% Occupied Bandwidth and 26dB Bandwidth Measurement

6.3.1. Test Specification

Test Requirement:	FCC part 2.1049 ;RSS-Gen (4.6.1)
Test Method:	FCC part 2.1049
Limit:	N/A
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 4.2. 2. The EUT was connected to the spectrum analyzer and system simulator via a power divider. 3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 4. The 99% occupied bandwidth were measured, set RBW= 1% of span, VBW= 3*RBW, sample detector, trace maximum hold. 5. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3*RBW, peak detector, trace maximum hold.
Test Result:	PASS

6.3.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Sep. 11, 2016
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.3.3. Test data

Cellular Band						
Mode	GSM850 (GSM)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128	190	251	4132	4183	4233
Frequency (MHz)	824.2	836.6	848.8	826.4	836.6	846.6
99% OBW (kHz)	243.59	241.99	241.99	4166.0	4190.6	4169.4
26dB BW (kHz)	310.90	317.31	318.91	4707	4743	4704

PCS Band						
Mode	GSM 1900 (GSM)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512	661	810	9262	9400	9538
Frequency (MHz)	1850.2	1880.0	1908.8	1852.4	1880	1907.6
99% OBW (kHz)	238.78	245.19	243.59	4170.7	4178.6	4232.9
26dB BW (kHz)	315.71	317.31	318.91	4731	4764	4842

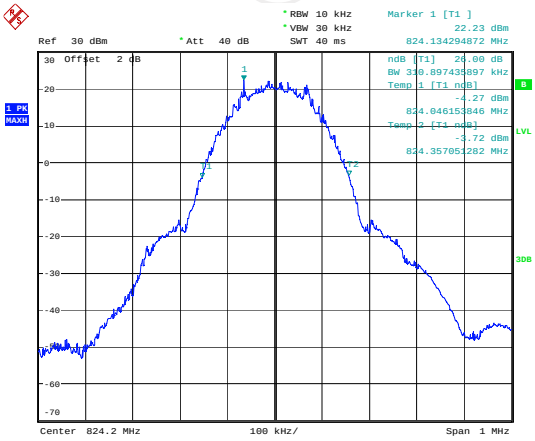
Mode	WCDMA Band IV (RMC 12.2Kbps)		
Channel	1312	1413	1513
Frequency (MHz)	1712.4	1732.6	1752.6
99% OBW (kHz)	4220	4260	4260
26dB BW (kHz)	4940	4940	4880

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

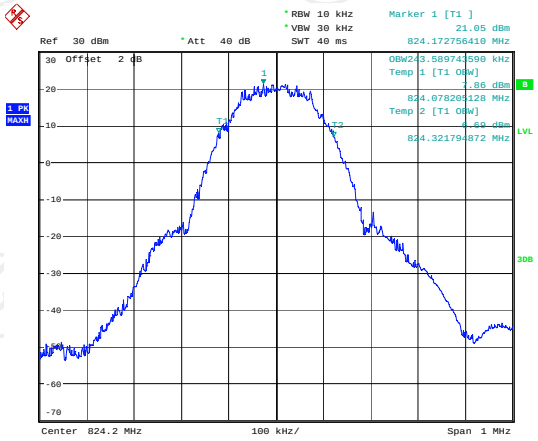
Test plots as follows:

Band:	GSM 850	Test Mode:	GSM Link (GMSK)

26dB&99% Occupied Bandwidth Plot on Channel 128

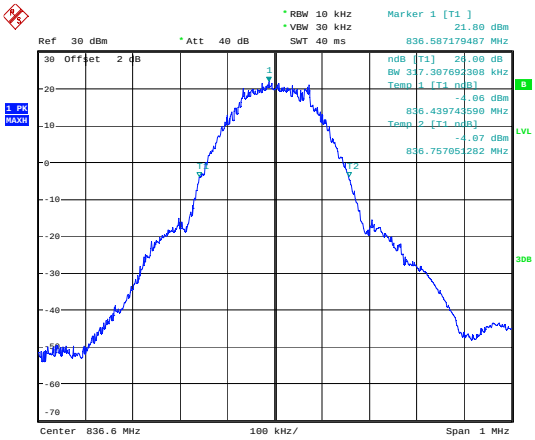


Date: 15.SEP.2015 16:58:28

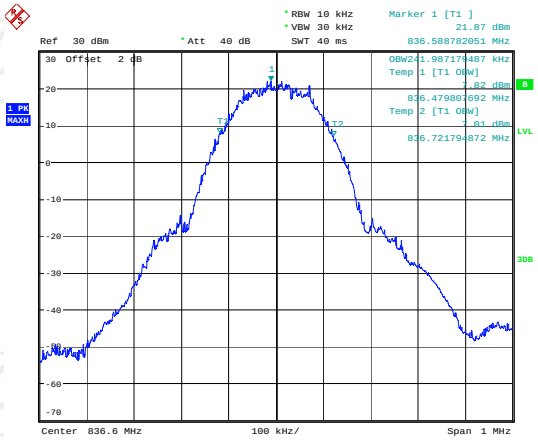


Date: 15.SEP.2015 16:59:01

26dB&99% Occupied Bandwidth Plot on Channel 190

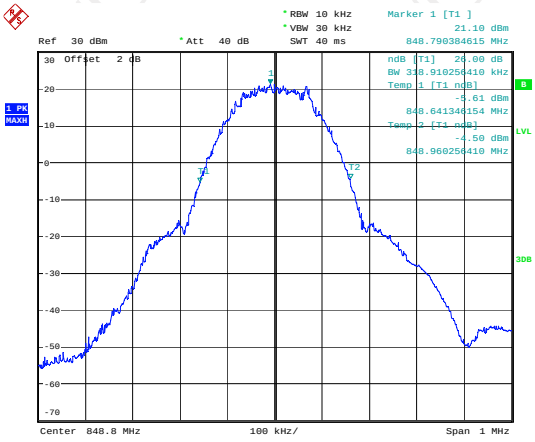


Date: 15.SEP.2015 16:57:17

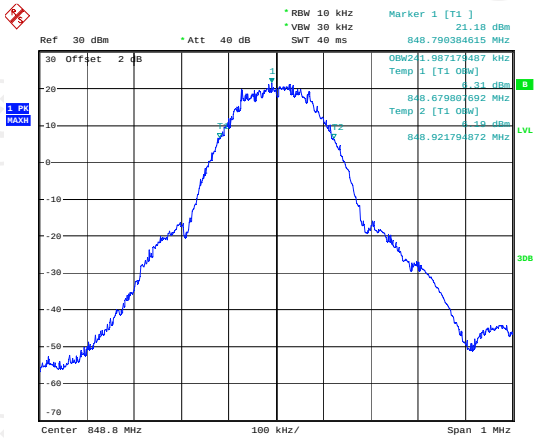


Date: 15.SEP.2015 16:59:45

26dB&99% Occupied Bandwidth Plot on Channel 251



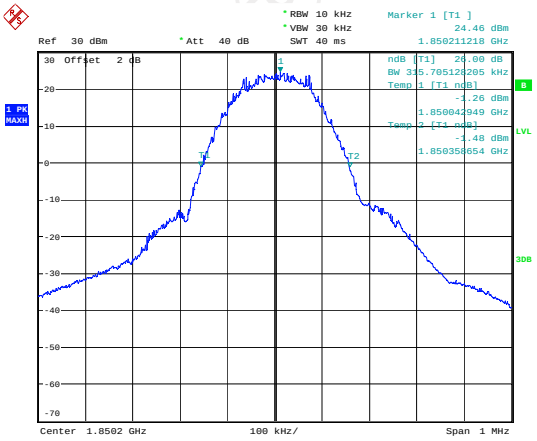
Date: 15.SEP.2015 16:55:07



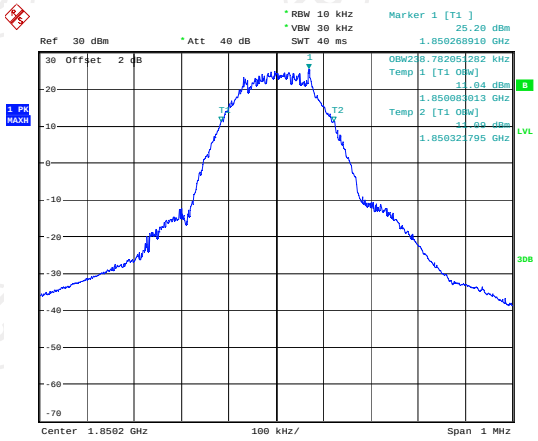
Date: 15.SEP.2015 17:00:27

Band:	GSM 1900	Test Mode:	GSM Link (GMSK)

26dB&99% Occupied Bandwidth Plot on Channel 512

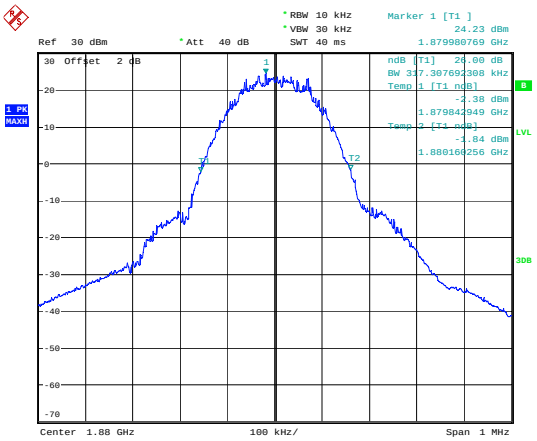


Date: 15.SEP.2015 17:30:58

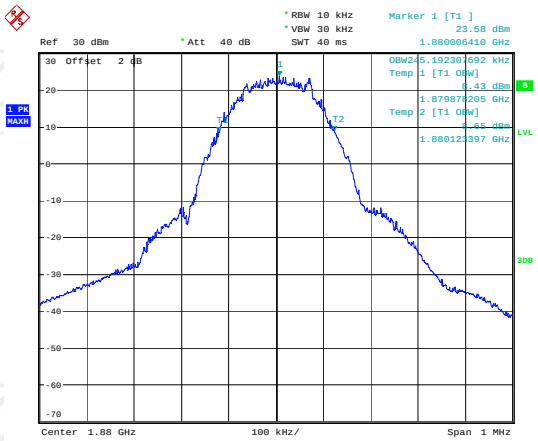


Date: 15.SEP.2015 17:30:23

26dB&99% Occupied Bandwidth Plot on Channel 661

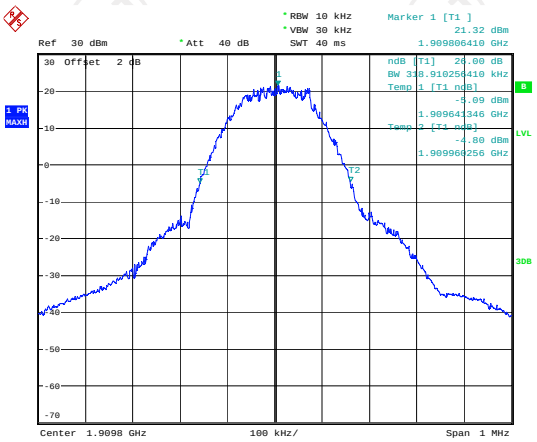


Date: 15.SEP.2015 17:31:40

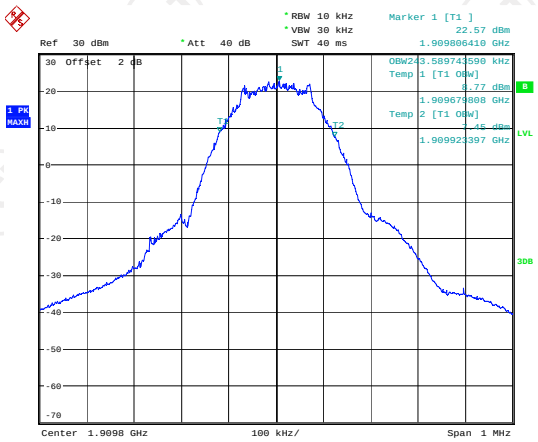


Date: 15.SEP.2015 17:29:00

26dB&99% Occupied Bandwidth Plot on Channel 810



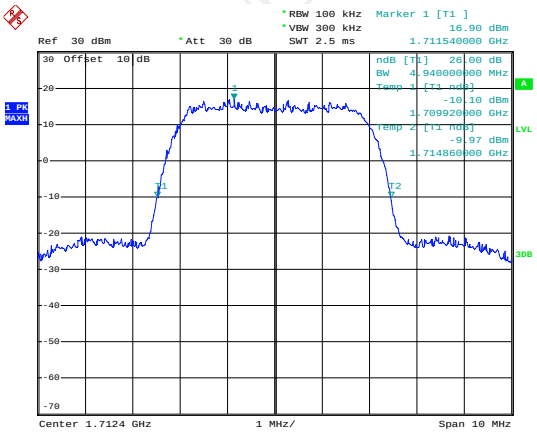
Date: 15.SEP.2015 17:32:40

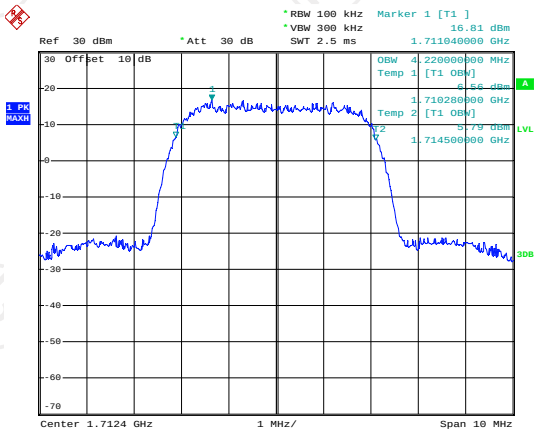


Date: 15.SEP.2015 17:27:54

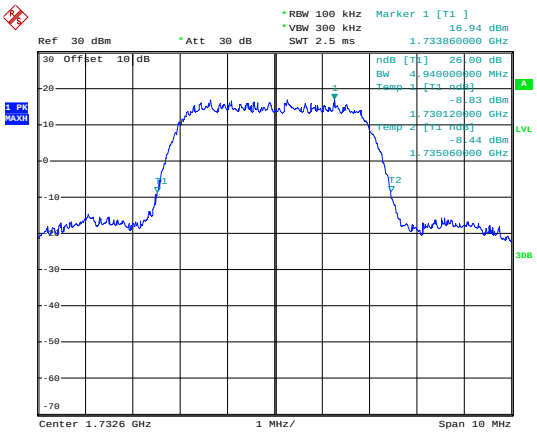
Band:	WCDMA Band IV	Test Mode:	RMC 12.2Kbps Link (QPSK)

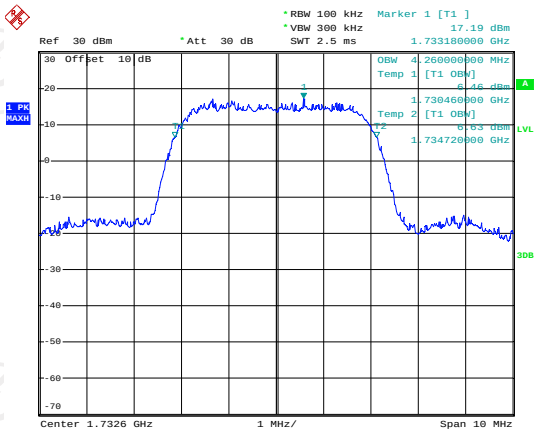
26dB&99% Occupied Bandwidth Plot on Channel 1312



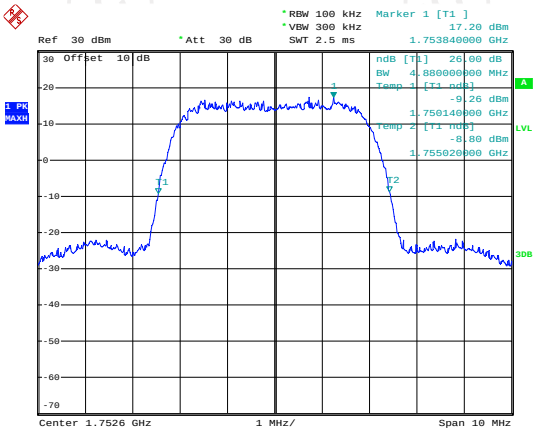


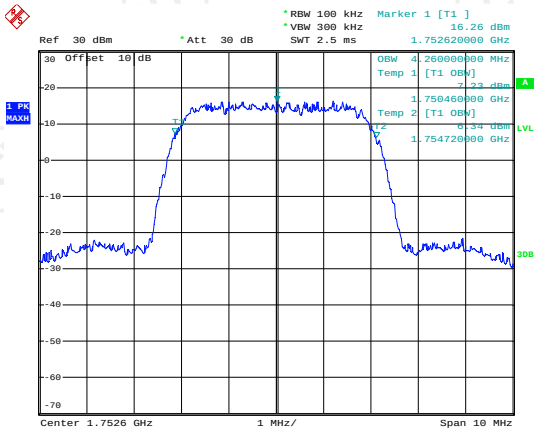
26dB&99% Occupied Bandwidth Plot on Channel 1413





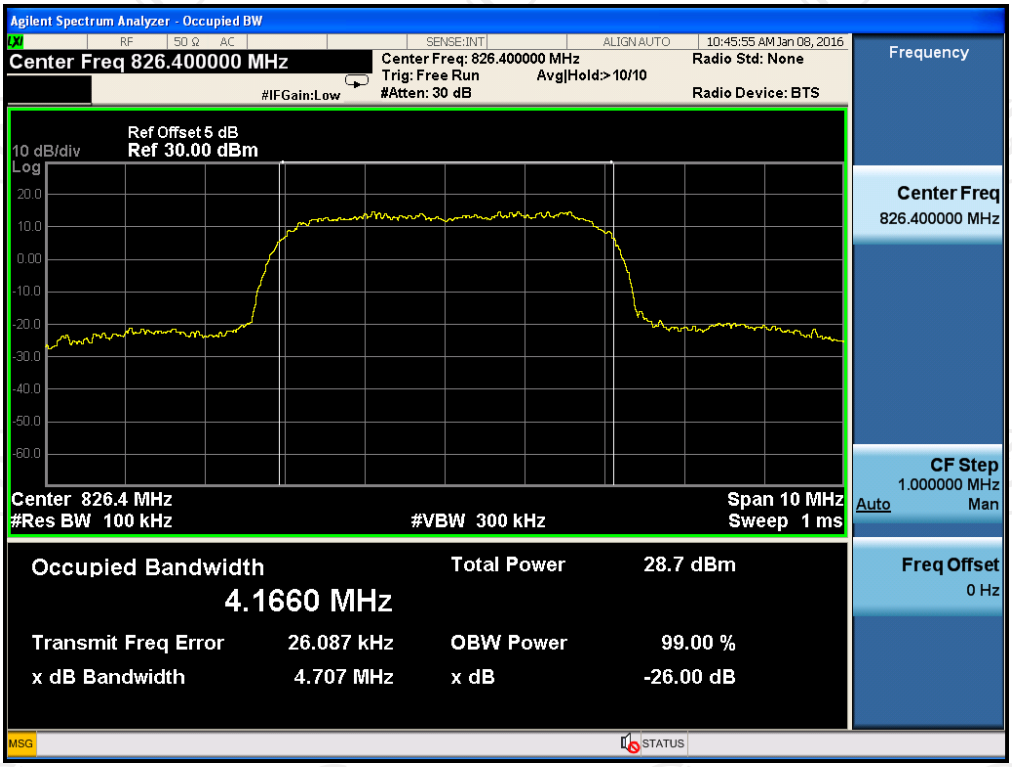
26dB&99% Occupied Bandwidth Plot on Channel 1513



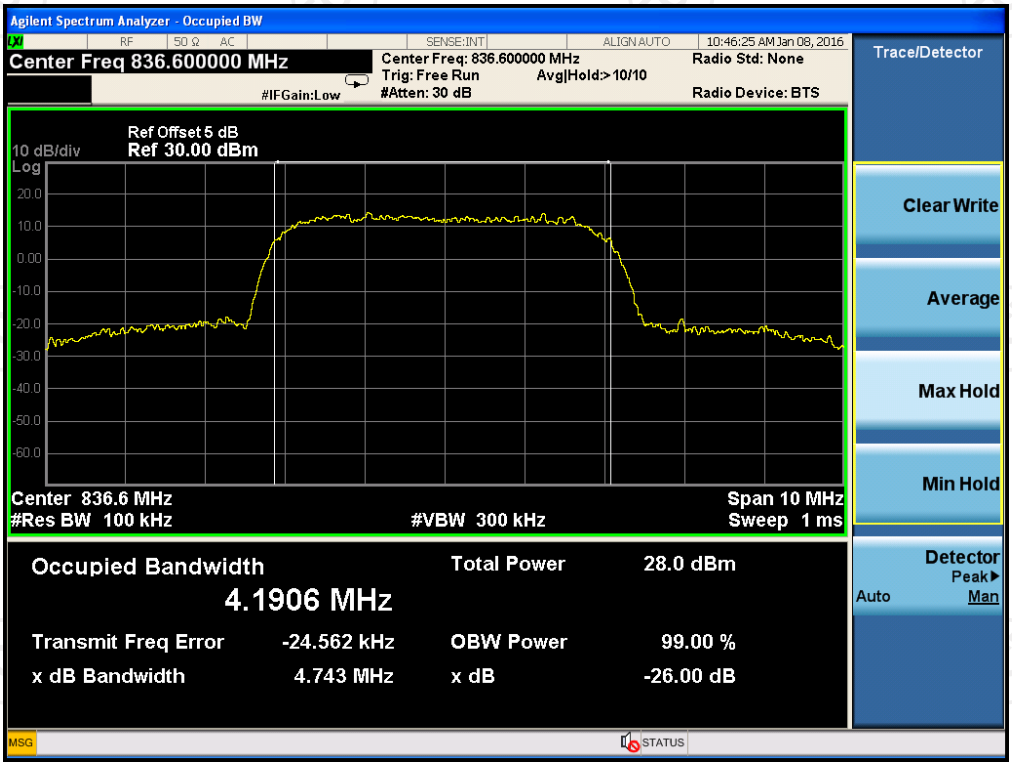


Band:	WCDMA Band V	Test Mode:	RMC 12.2Kbps Link (QPSK)

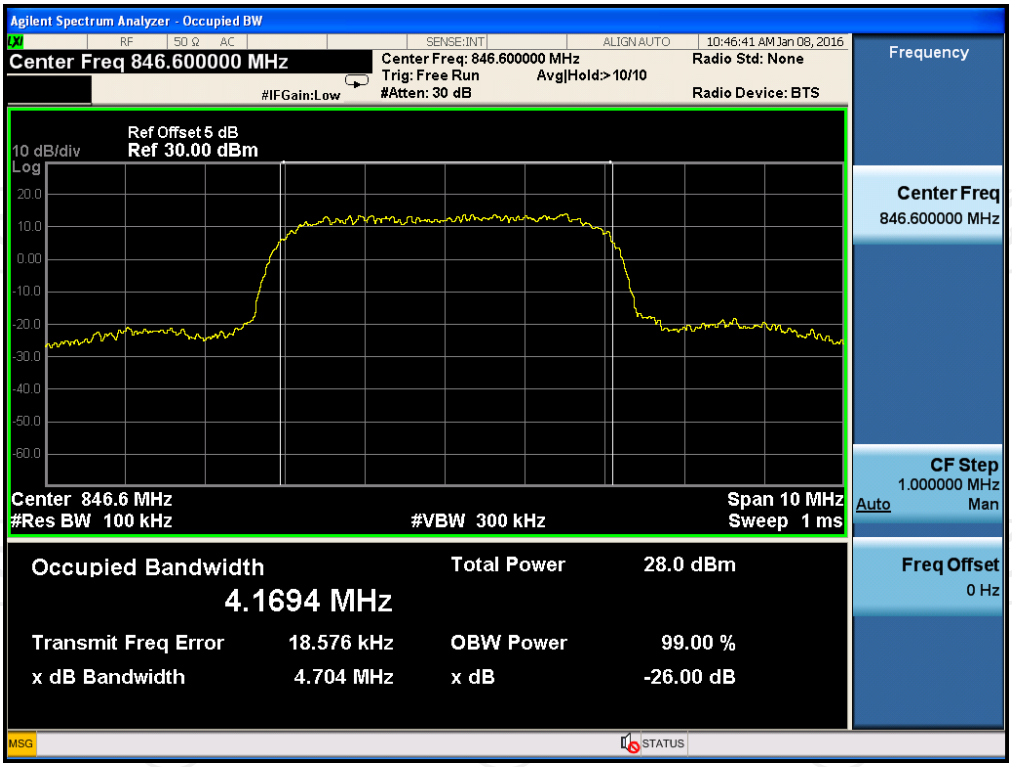
26dB&99% Occupied Bandwidth Plot on Channel 4132



26dB&99% Occupied Bandwidth Plot on Channel 4183

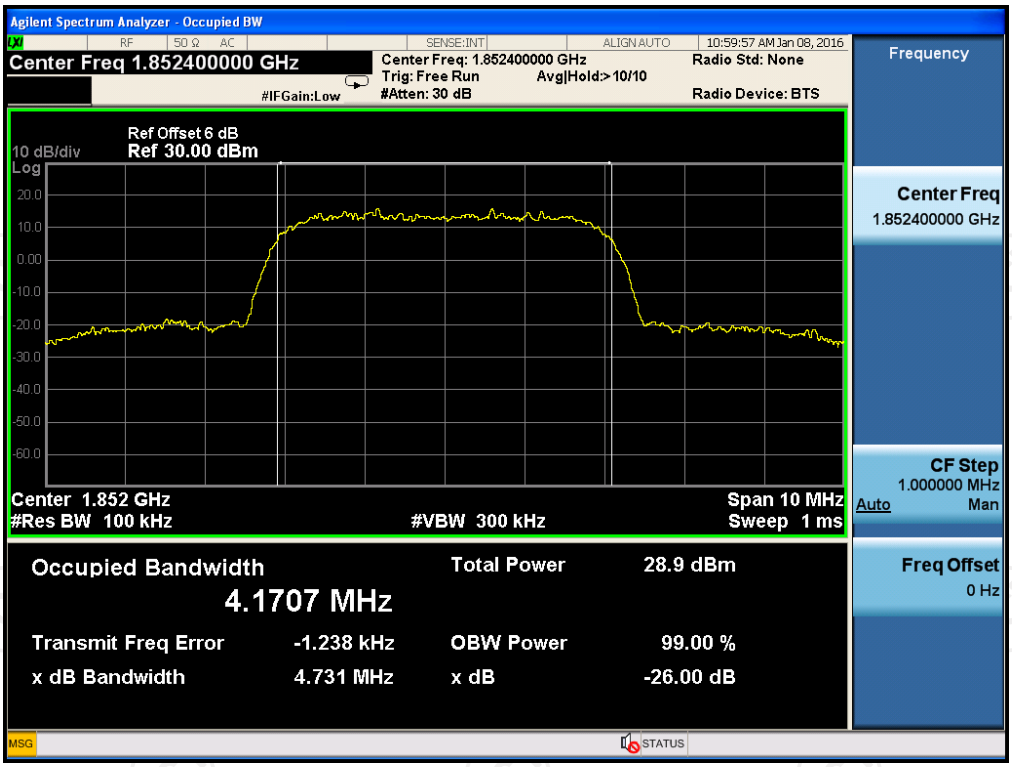


26dB&99% Occupied Bandwidth Plot on Channel 4233

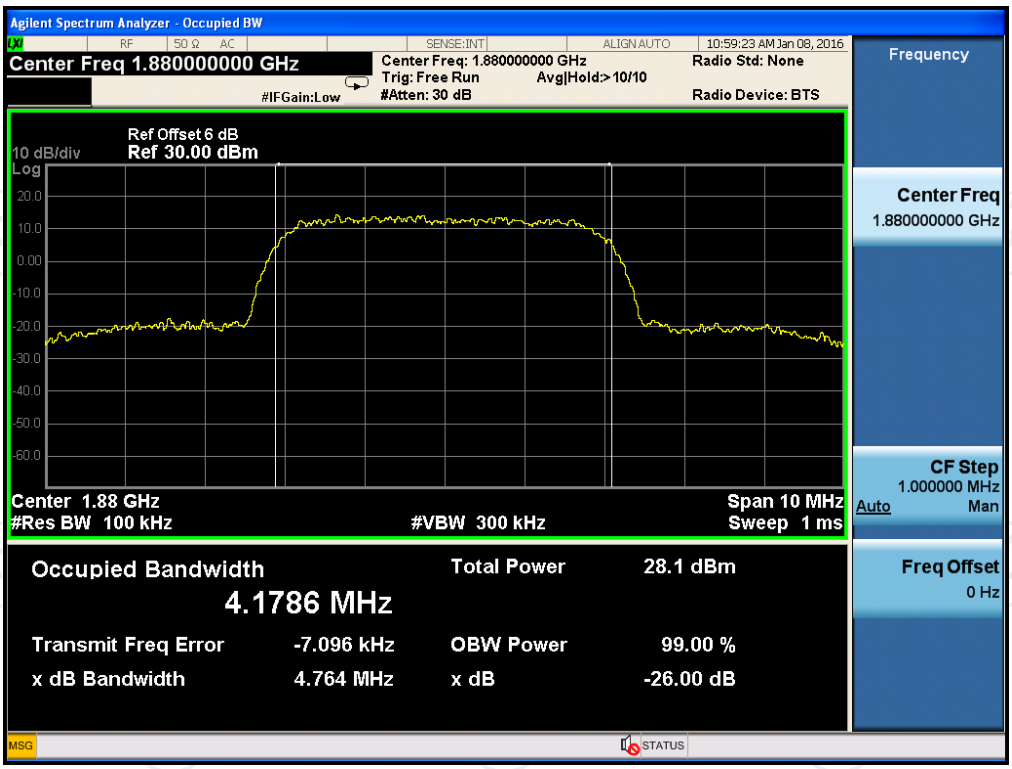


Band:	WCDMA Band II	Test Mode:	RMC 12.2Kbps Link (QPSK)

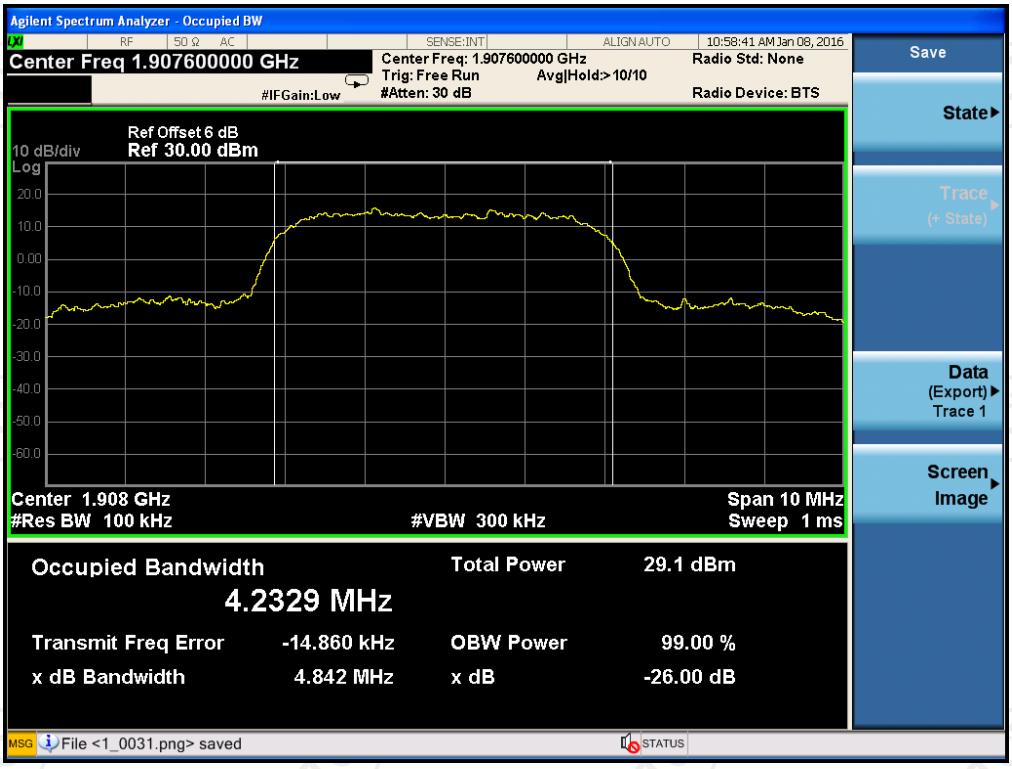
26dB&99% Occupied Bandwidth Plot on Channel 9262



26dB&99% Occupied Bandwidth Plot on Channel 9400

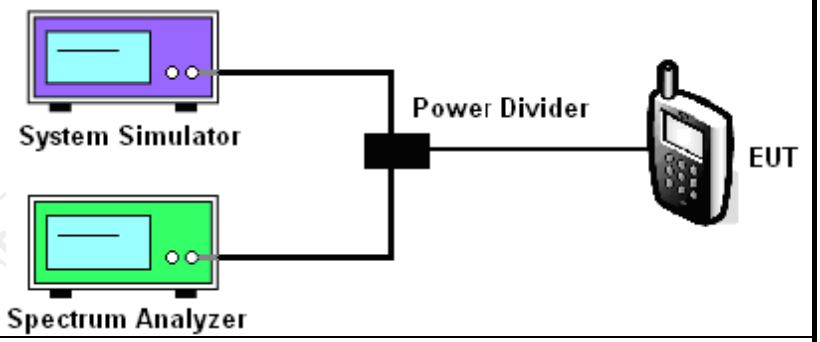


26dB&99% Occupied Bandwidth Plot on Channel 9538



6.4. Band Edge and Conducted Spurious Emission Measurement

6.5. Test Specification

Test Requirement:	**FCC part22.917(a) ;FCC part24.238(a); FCC part24.238(a) RSS-132(4.5.1); RSS-133(6.5.1); RSS-139(6.9)**
Test Method:	FCC part2.1051
Limit:	-13dBm
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 6.0. 2. The EUT was connected to the spectrum analyzer and system simulator via a power divider. 3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement. 4. The band edges of low and high channels for the highest RF powers were measured. 5. The conducted spurious emission for the whole frequency range was taken. 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band. 7. 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.
Test Result:	PASS

6.5.1. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Sep. 11, 2016
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 12, 2016

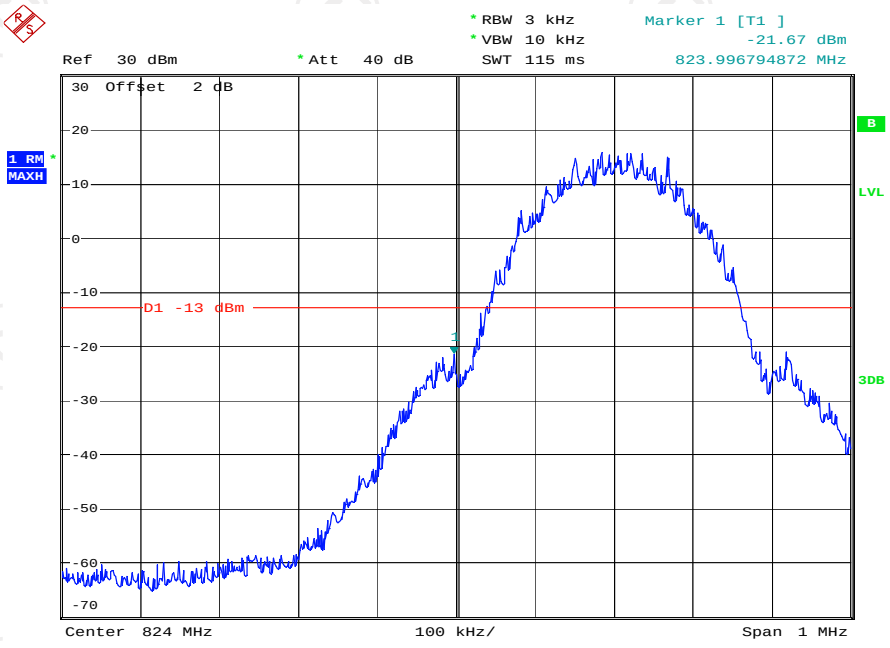
Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.5.2. Test data

Test plots as follows:

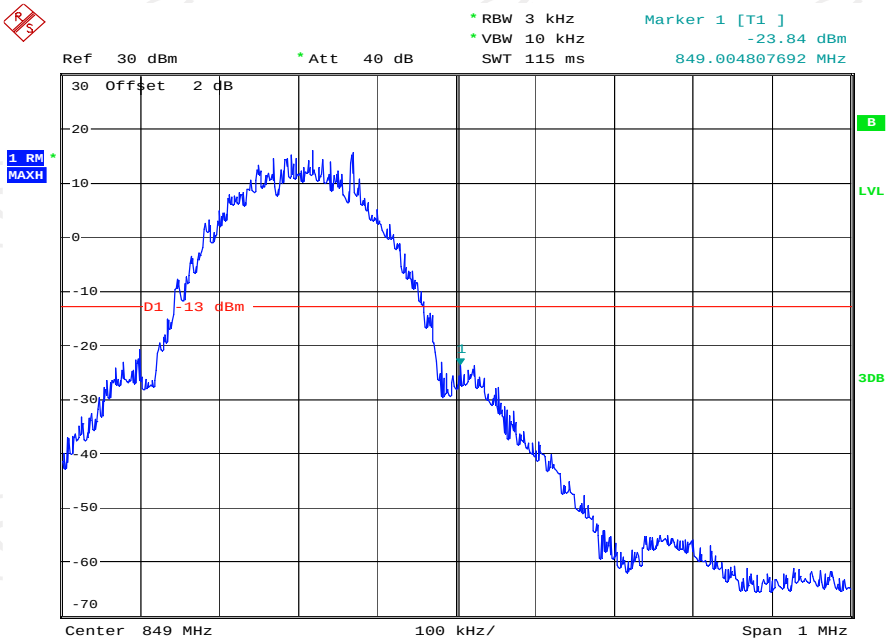
Band:	GSM 850	Test Mode:	GSM Link (GMSK)

Lower Band Edge Plot on Channel 128



Date: 15.SEP.2015 17:08:09

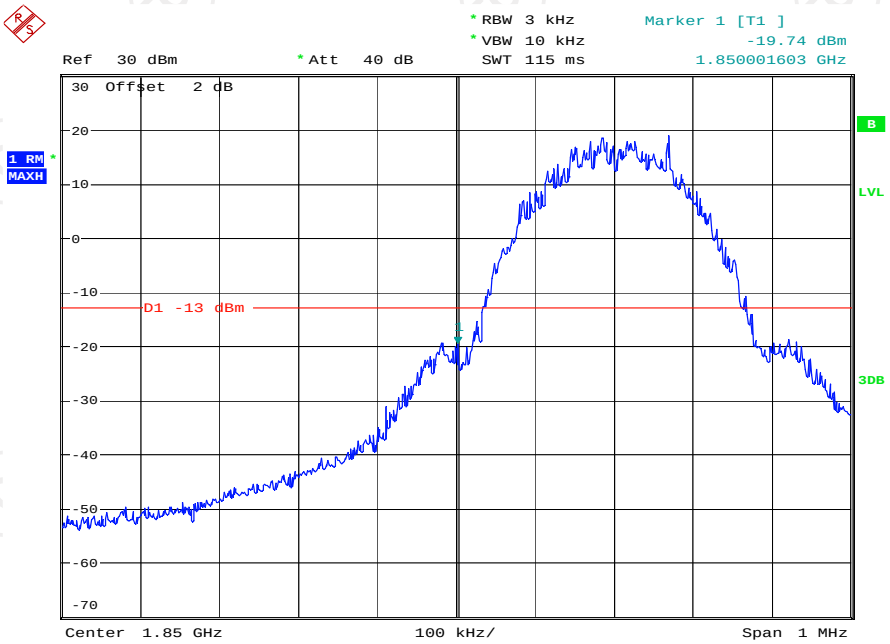
Higher Band Edge Plot on Channel 251



Date: 15.SEP.2015 17:06:50

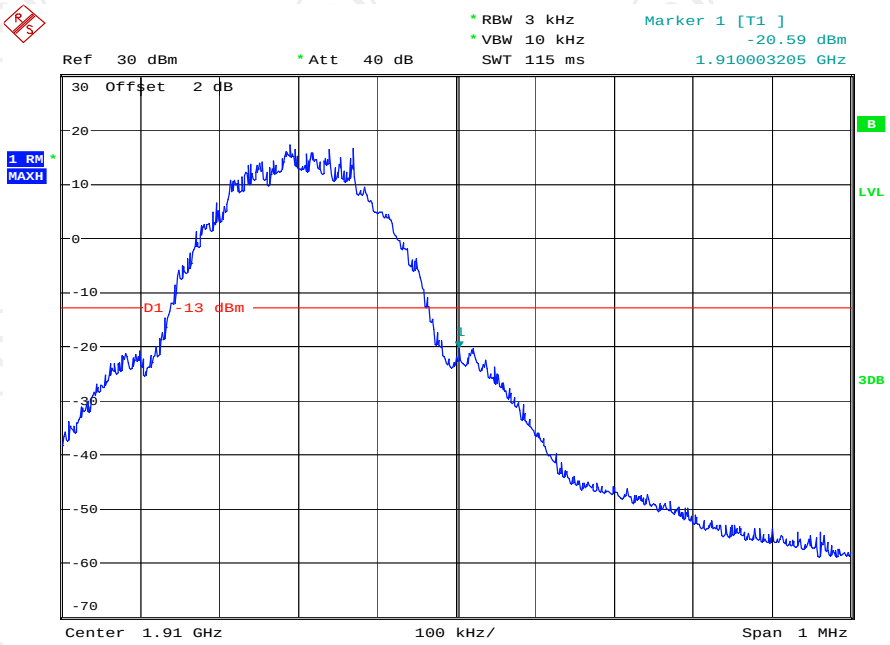
Band:	GSM 1900	Test Mode:	GSM Link (GMSK)

Lower Band Edge Plot on Channel 512



Date: 15.SEP.2015 17:18:03

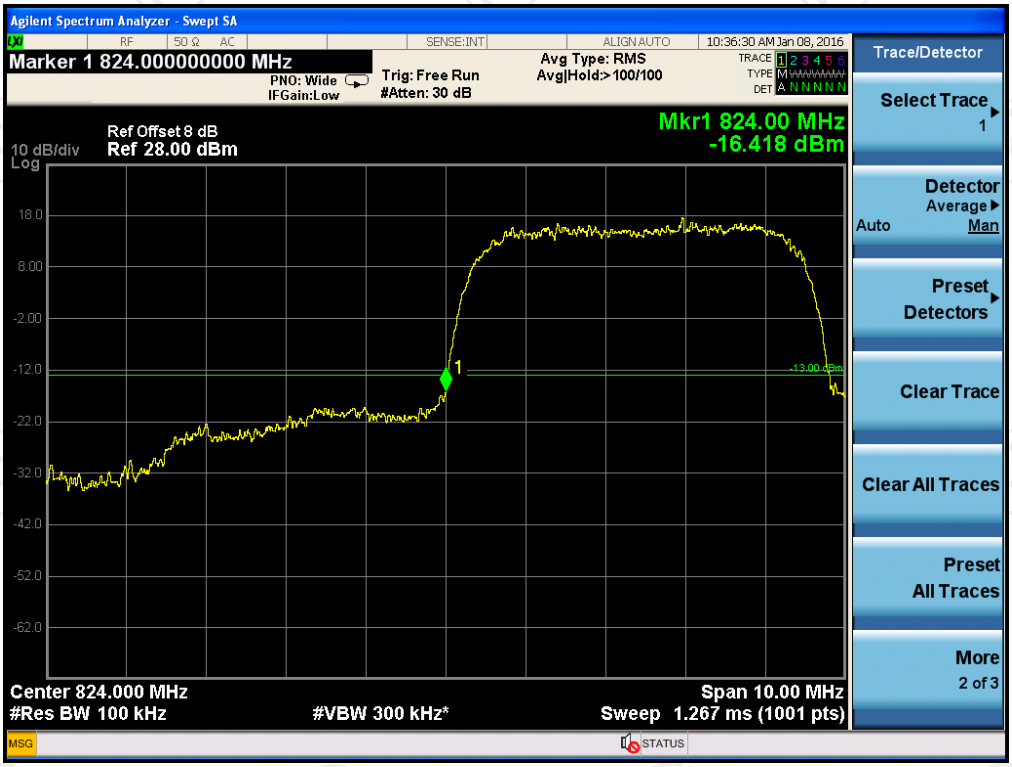
Higher Band Edge Plot on Channel 810



Date: 15.SEP.2015 17:20:02

Band:	WCDMA Band V	Test Mode:	RMC 12.2Kbps Link (QPSK)

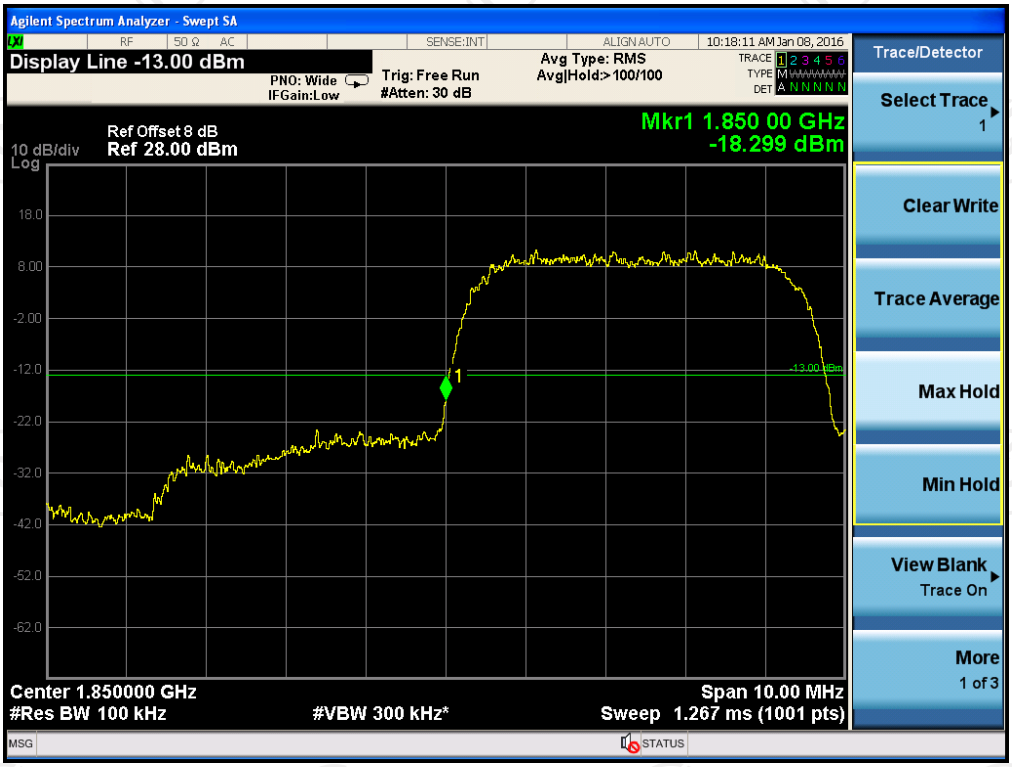
Lower Band Edge Plot on Channel 4132



Higher Band Edge Plot on Channel 4233

Band:	WCDMA Band II	Test Mode:	RMC 12.2Kbps Link (QPSK)

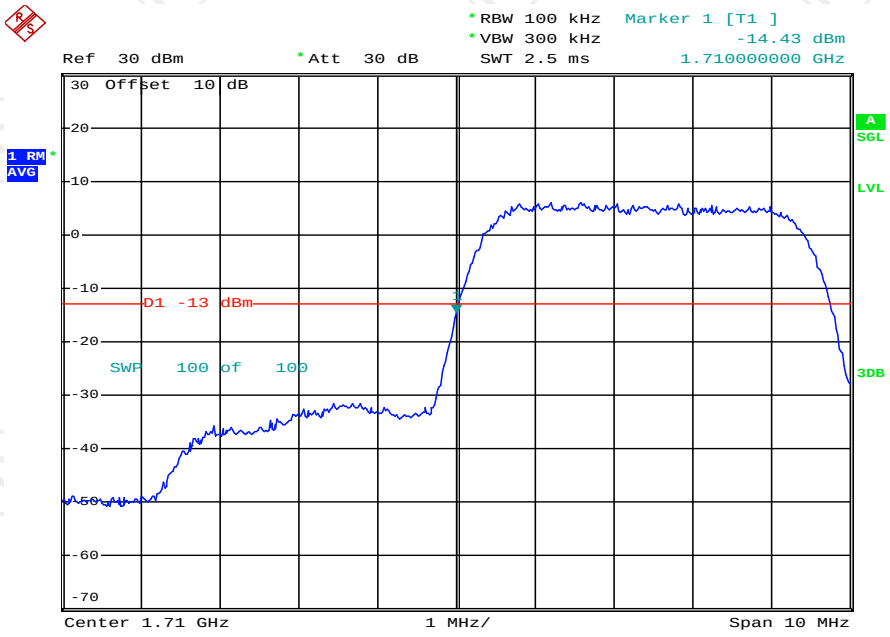
Lower Band Edge Plot on Channel 9262



Higher Band Edge Plot on Channel 9538

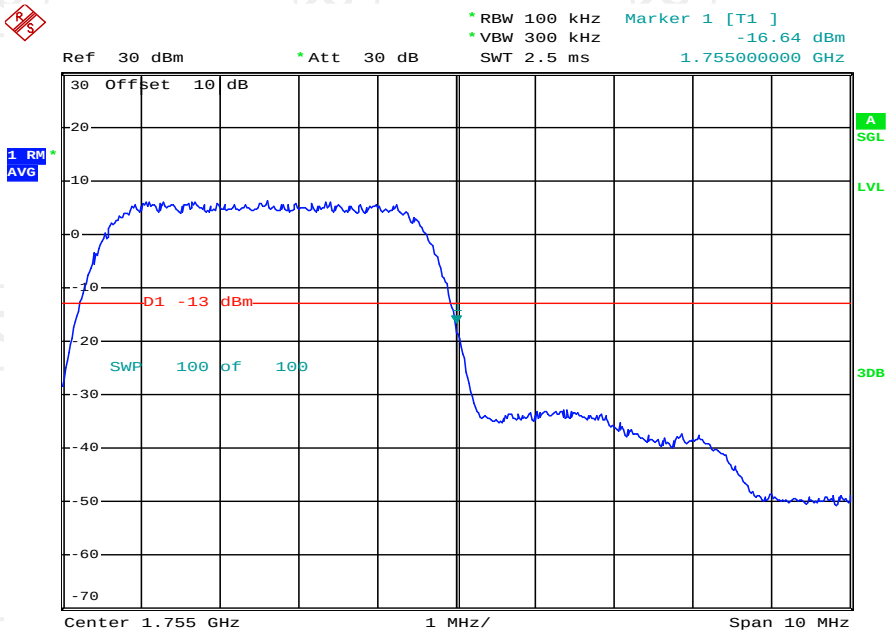
Band:	WCDMA Band IV	Test Mode:	RMC 12.2Kbps Link (QPSK)

Lower Band Edge Plot on Channel 1312



Date: 28.NOV.2015 02:53:03

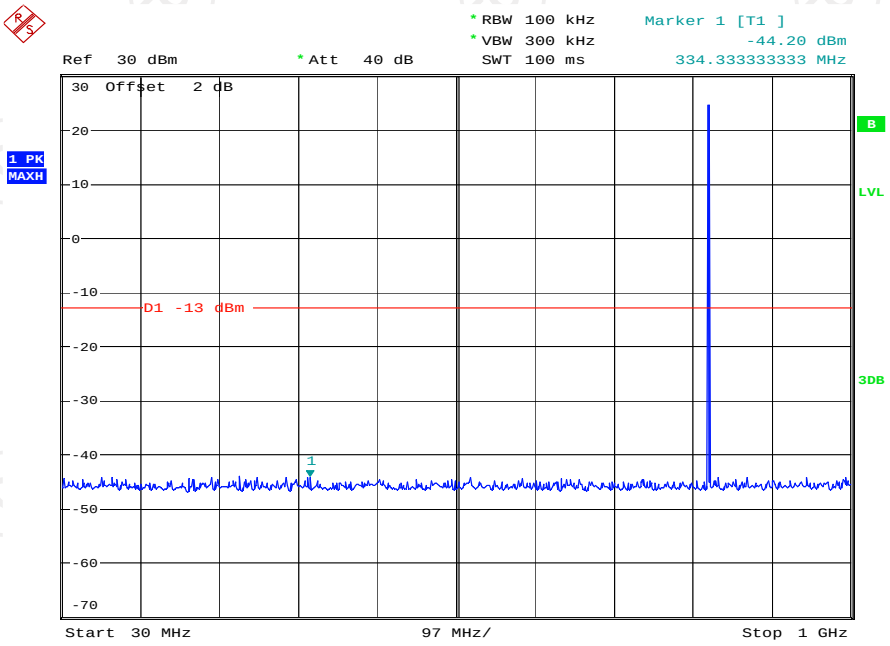
Higher Band Edge Plot on Channel 1513



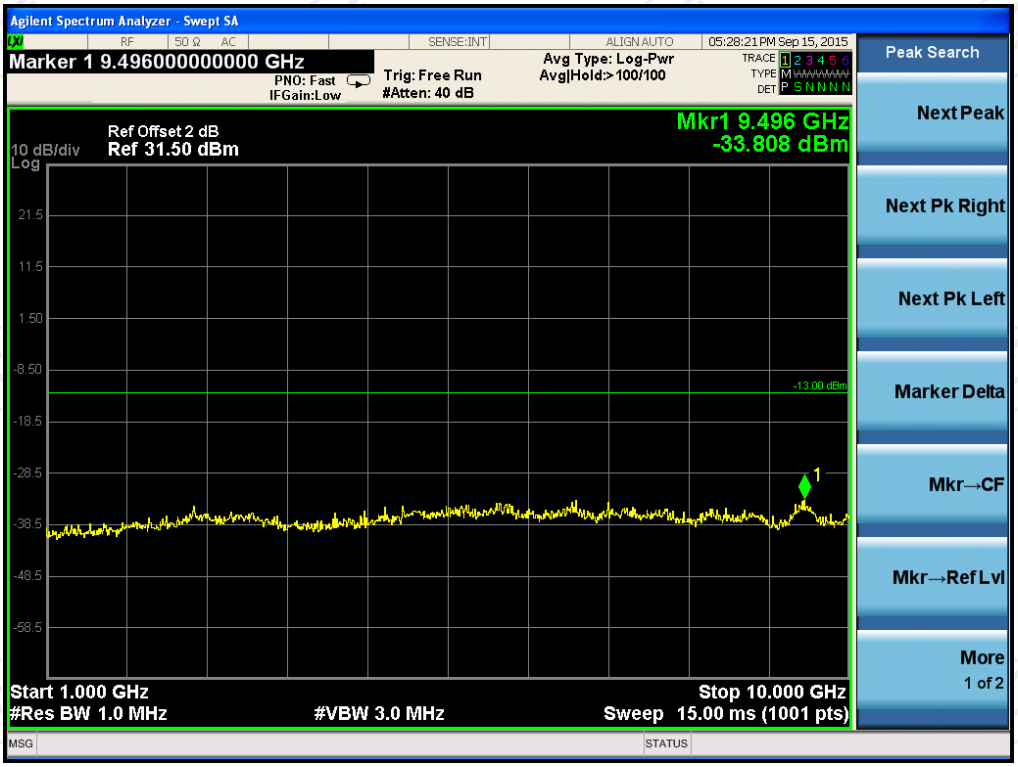
Date: 28.NOV.2015 02:52:46

Band:	GSM 850	Test Mode:	GSM Link (GMSK)

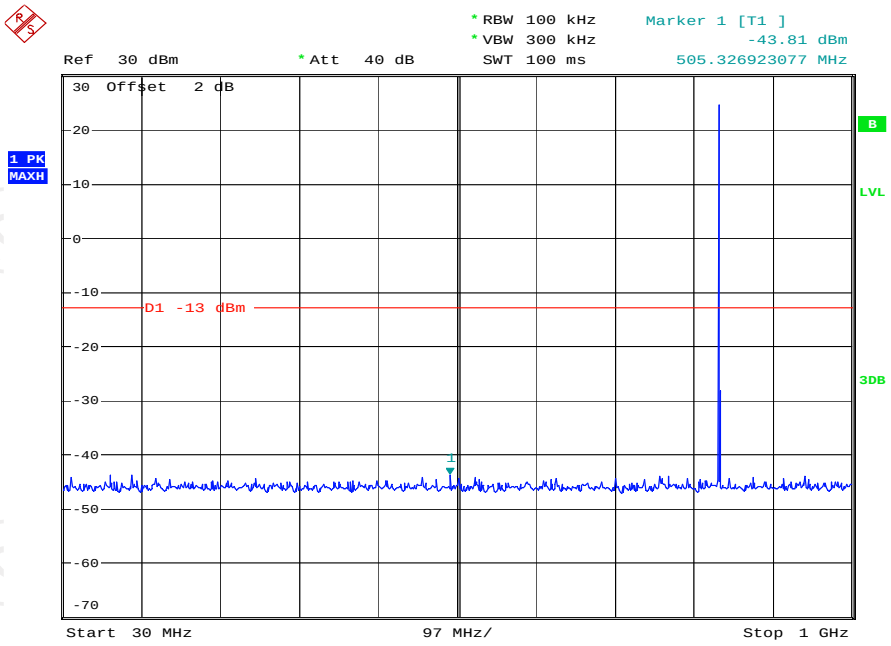
Conducted Spurious Emission on Channel 128



Date: 15.SEP.2015 17:09:16

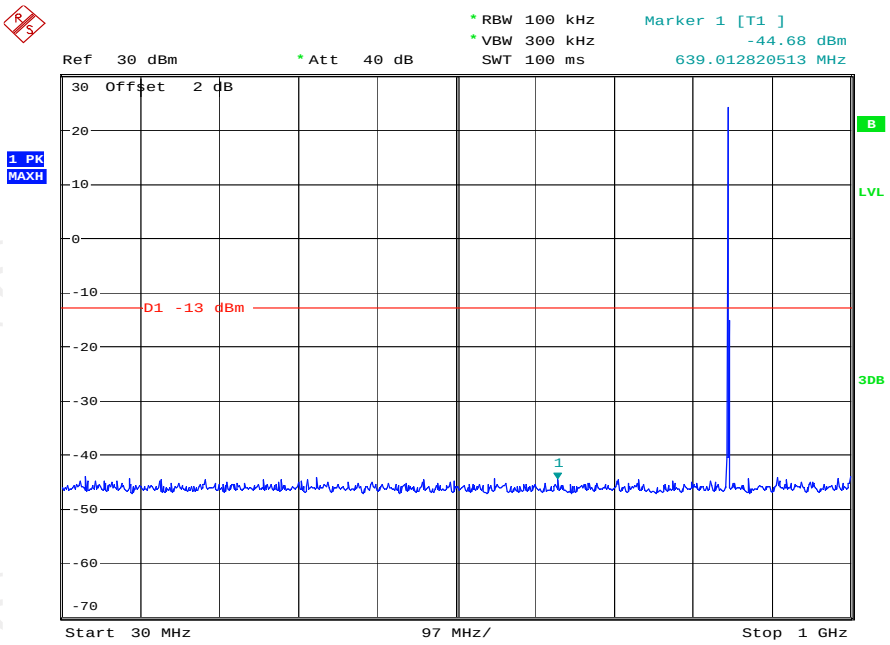


Conducted Spurious Emission on Channel 190

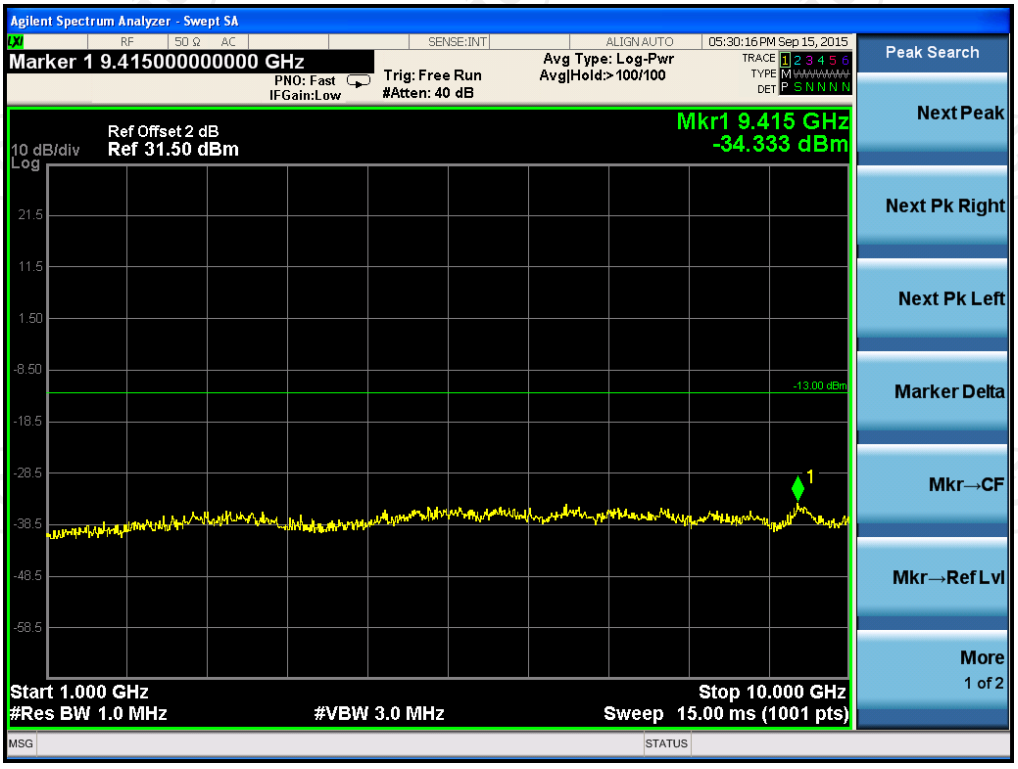


Date: 15.SEP.2015 17:09:47

Conducted Spurious Emission on Channel 251

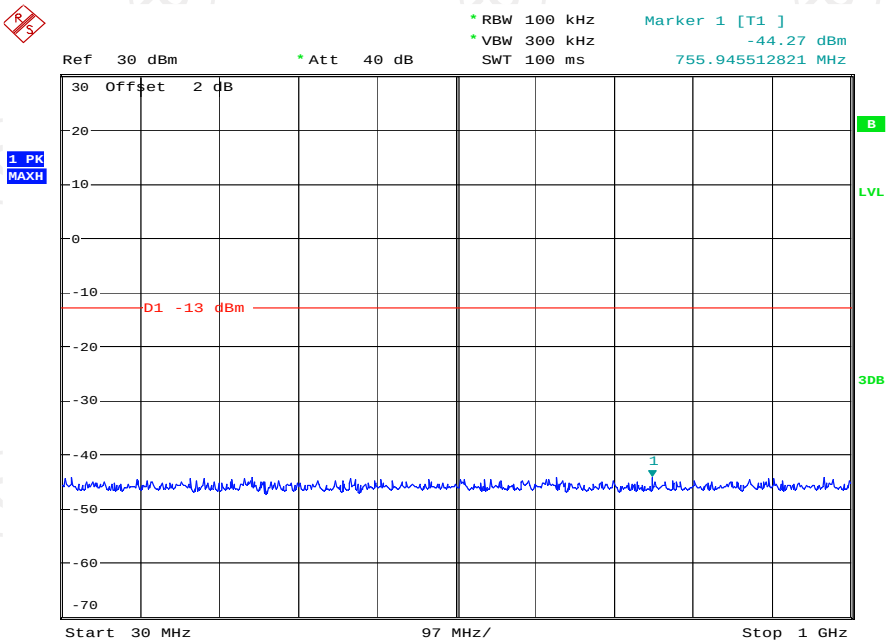


Date: 15.SEP.2015 17:10:13

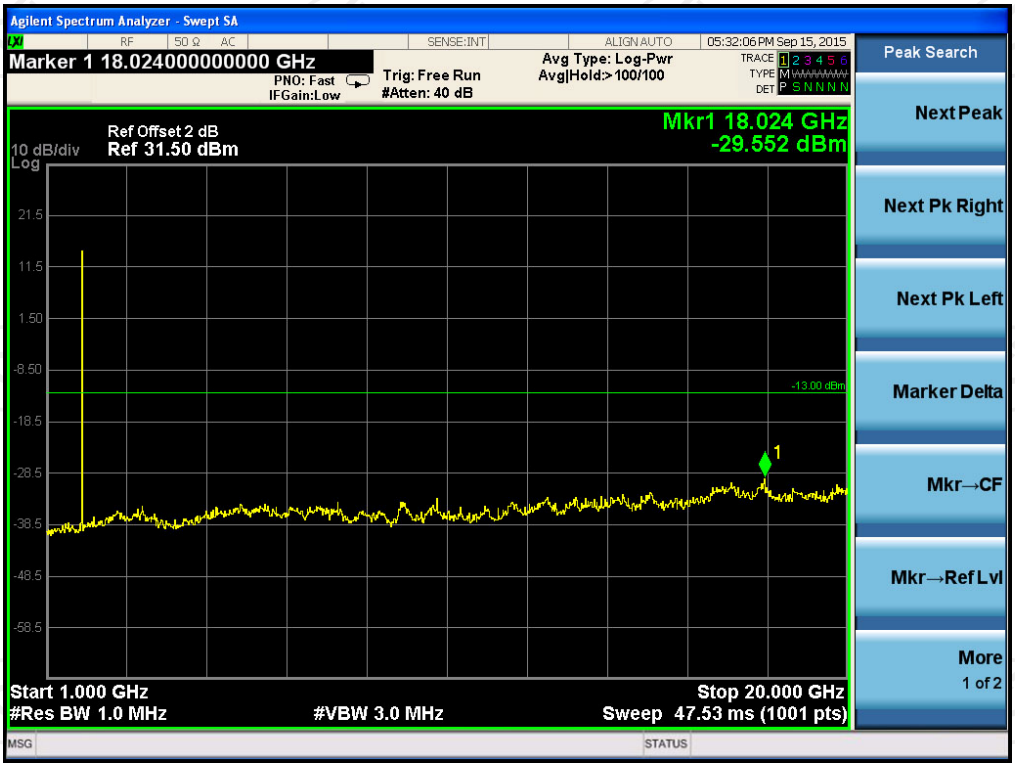


Band:	GSM 1900	Test Mode:	GSM Link (GMSK)

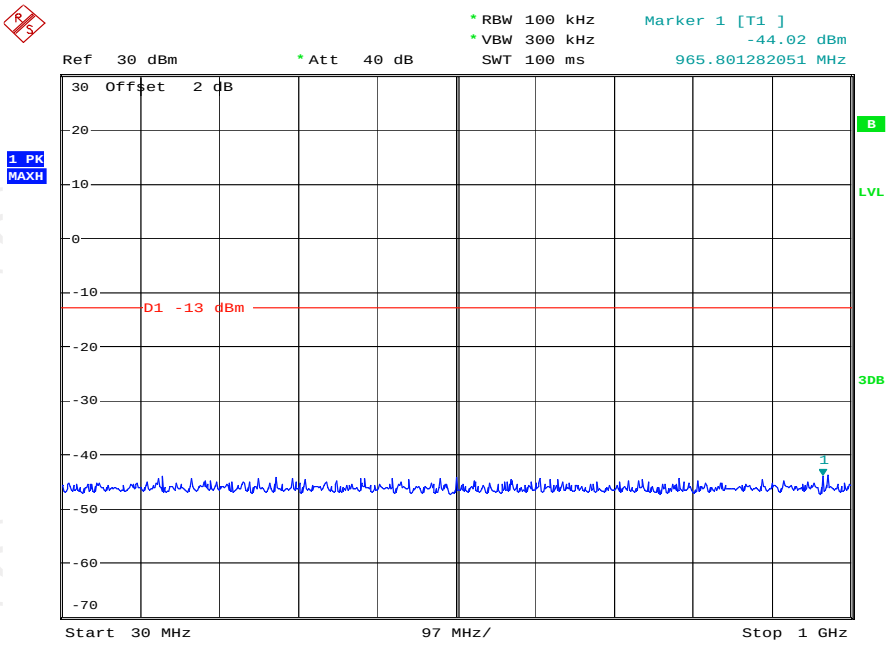
Conducted Spurious Emission on Channel 512

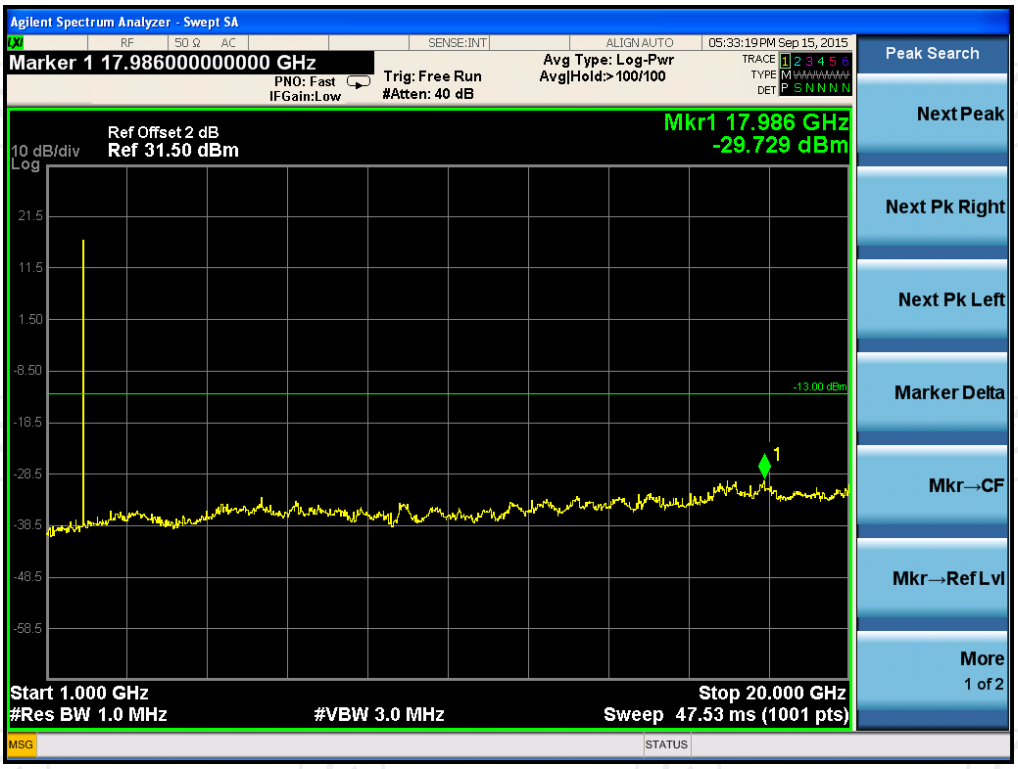


Date: 15.SEP.2015 17:11:57

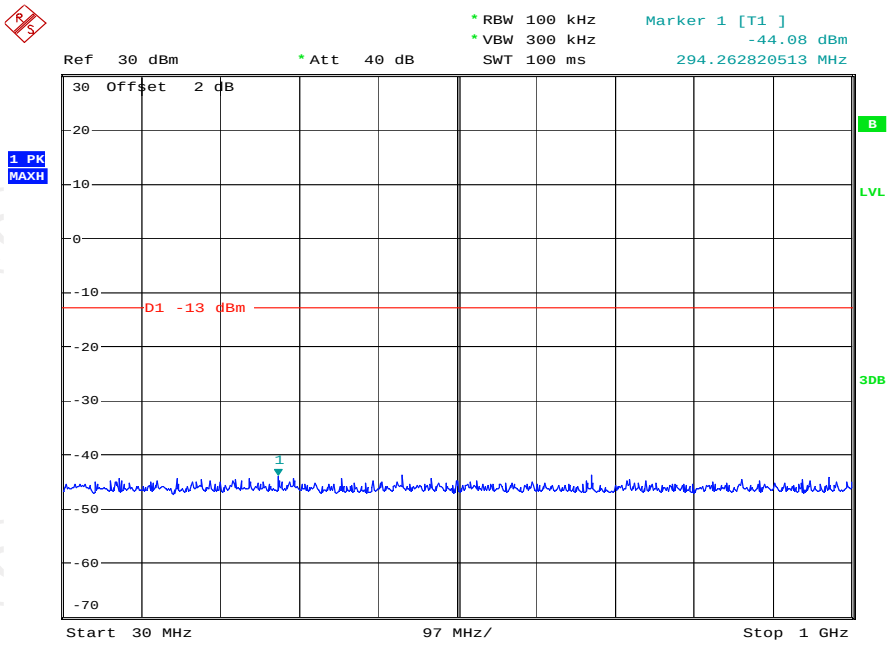


Conducted Spurious Emission on Channel 661

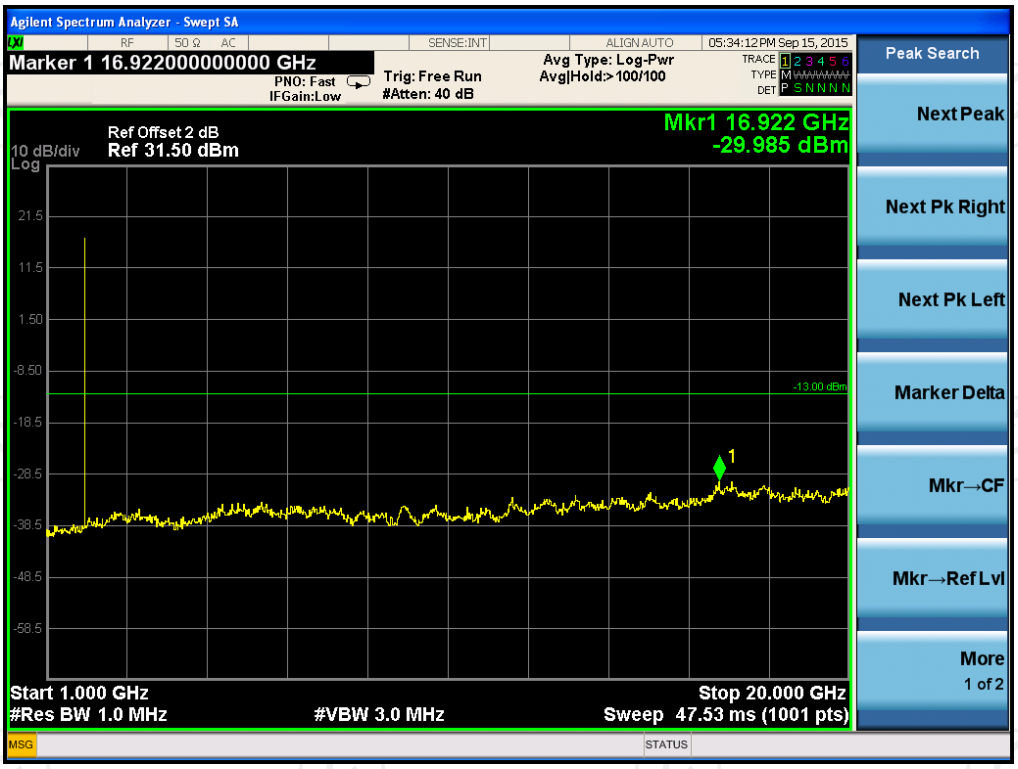




Conducted Spurious Emission on Channel 810

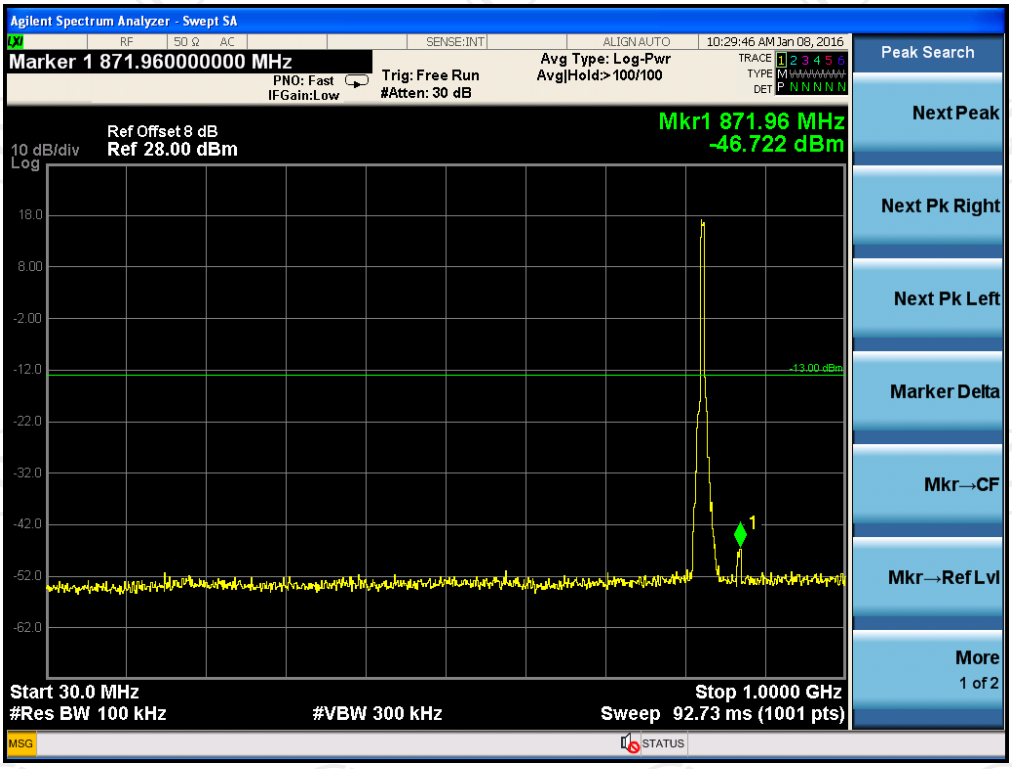


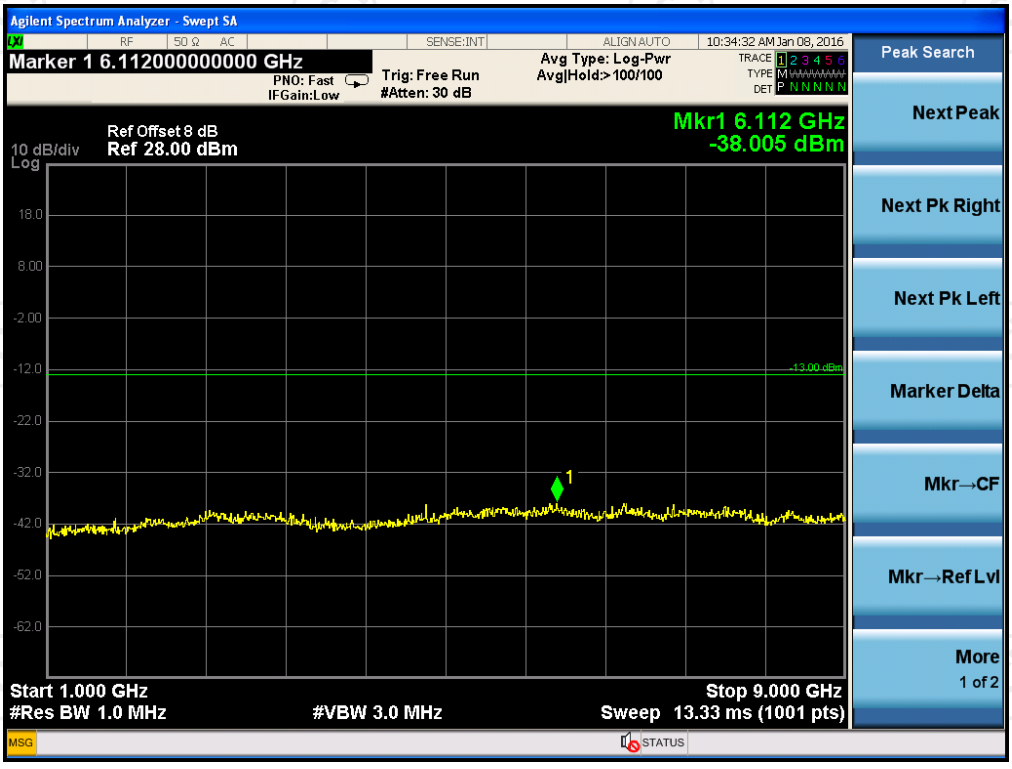
Date: 15.SEP.2015 17:12:32



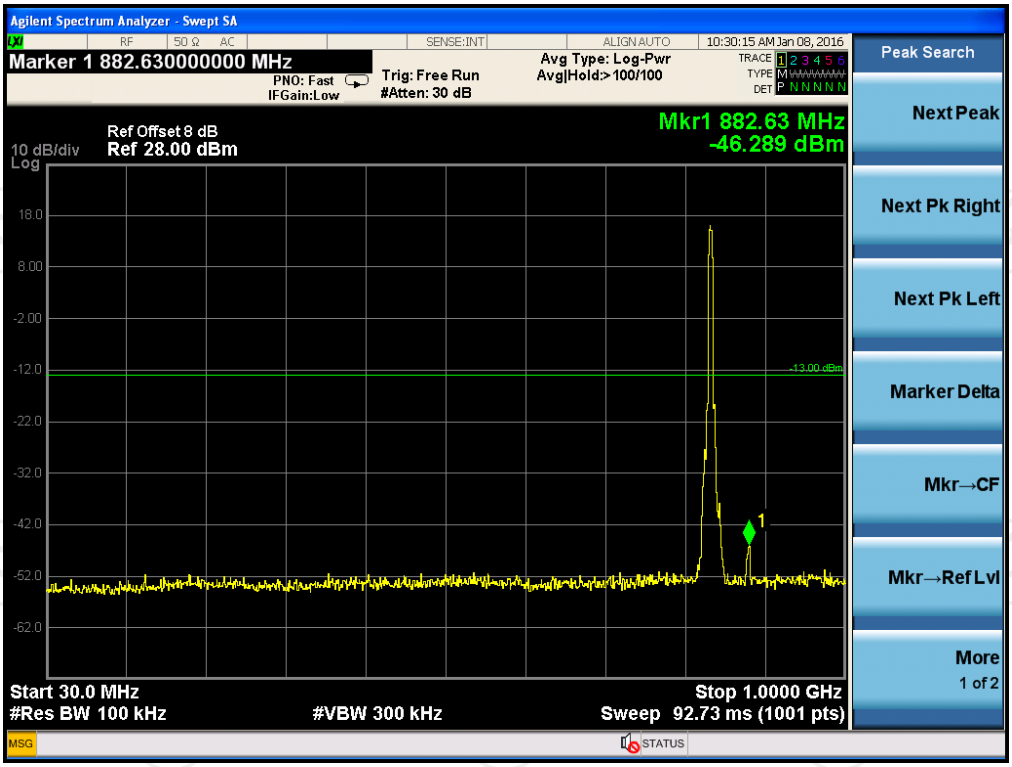
Band:	WCDMA Band V	Test Mode:	RMC 12.2Kbps Link (QPSK)

Conducted Spurious Emission on Channel 4132

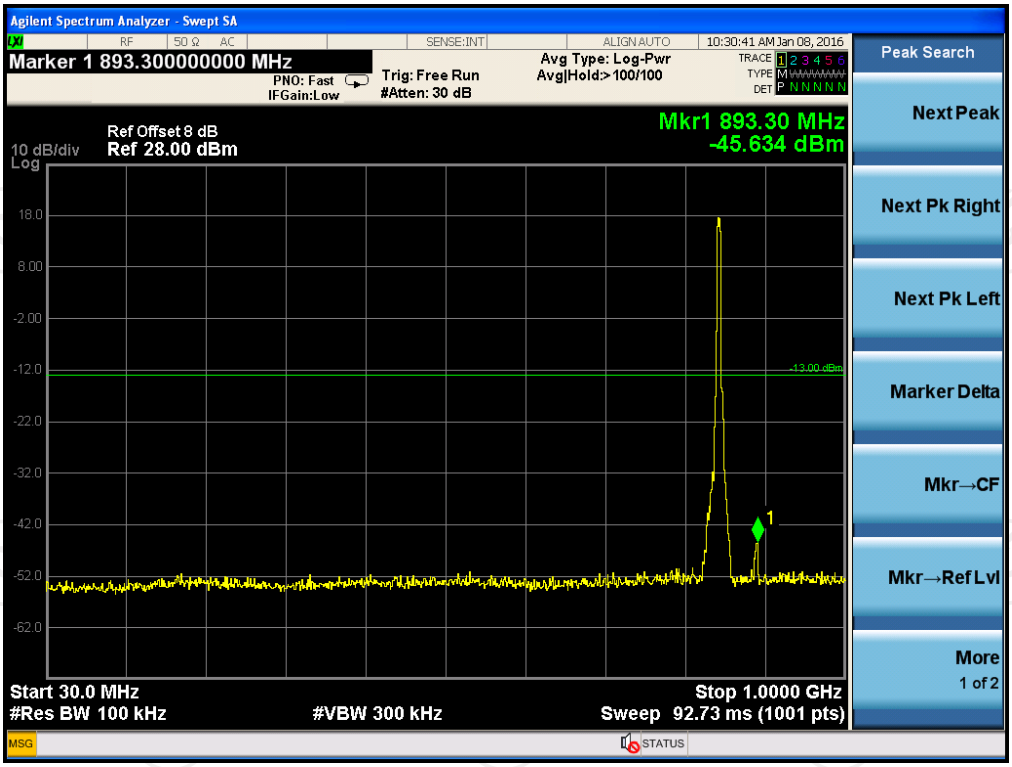


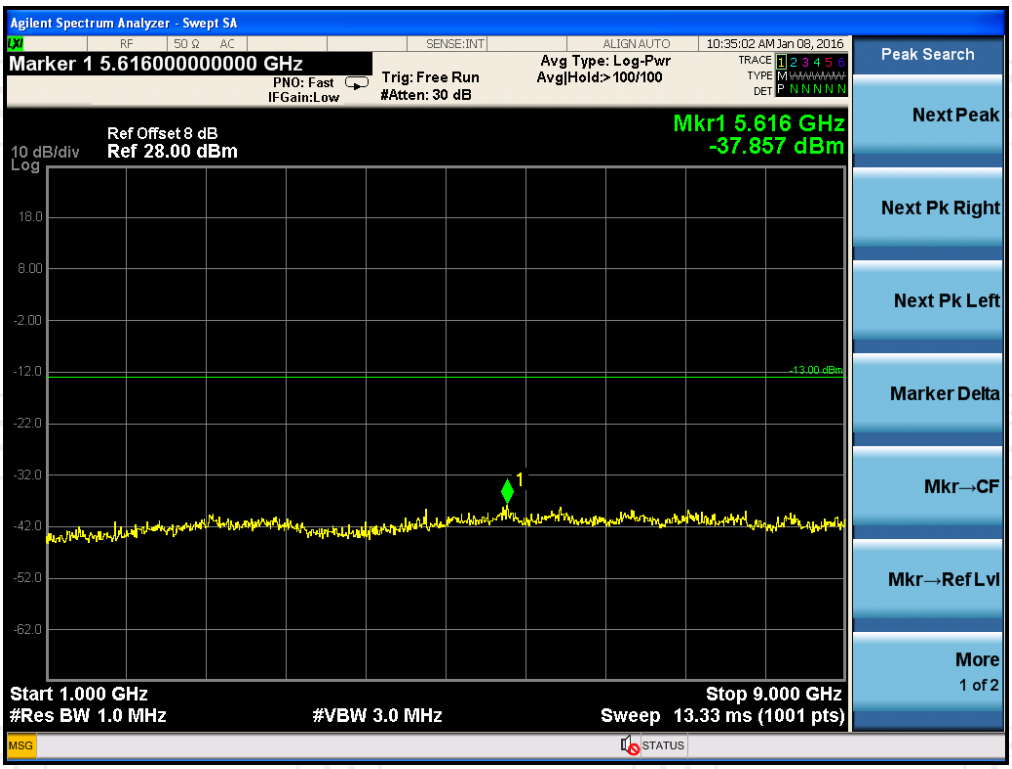


Conducted Spurious Emission on Channel 4183



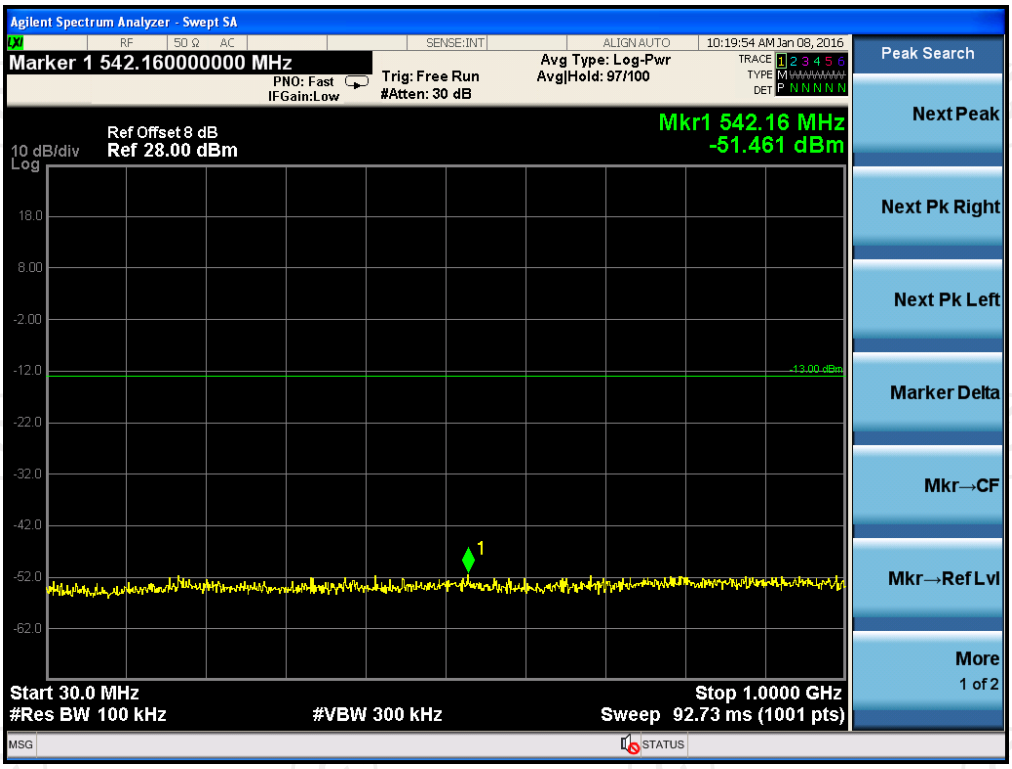
Conducted Spurious Emission on Channel 4233

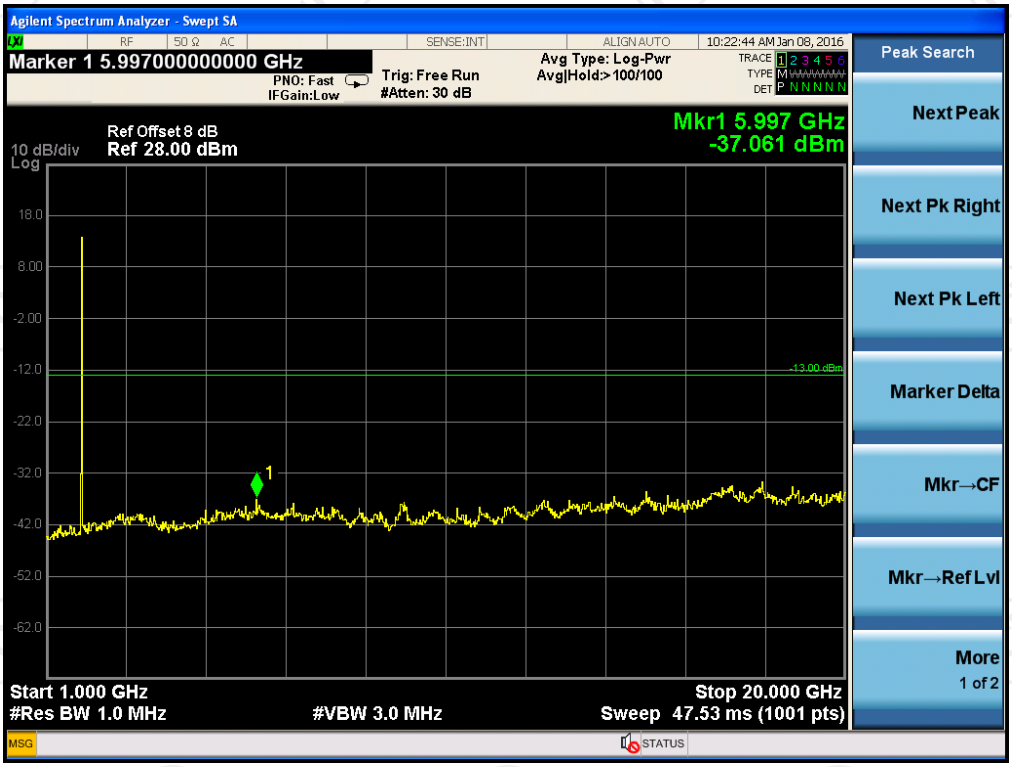




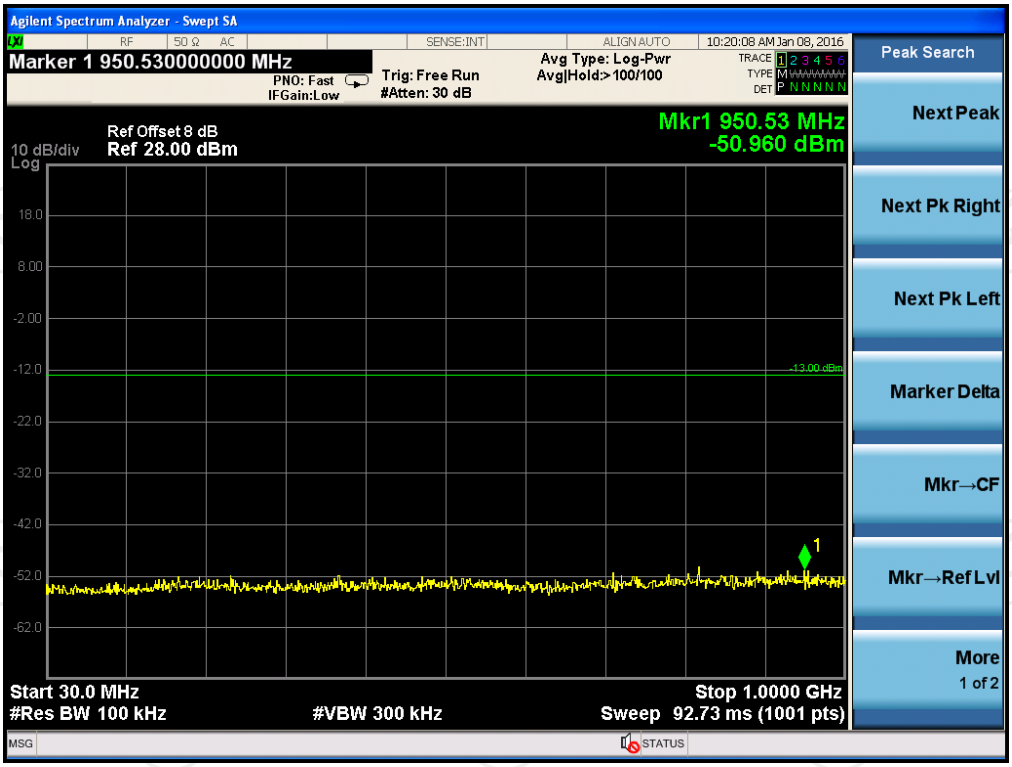
Band:	WCDMA Band II	Test Mode:	RMC 12.2Kbps Link (QPSK)

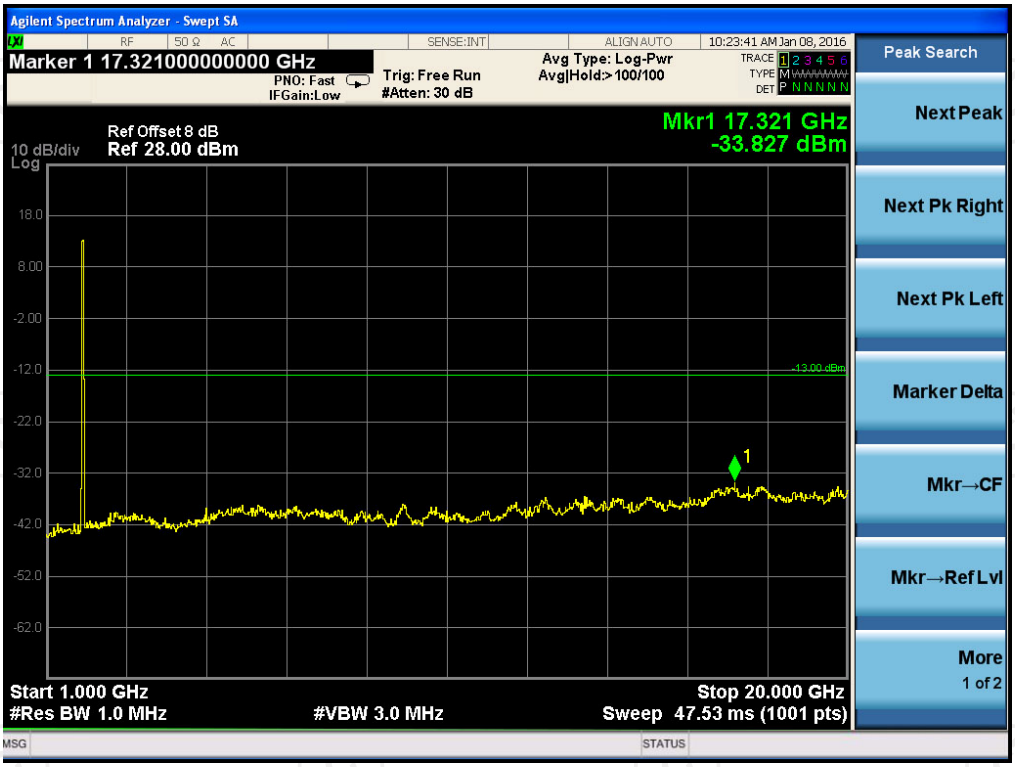
Conducted Spurious Emission on Channel 9262



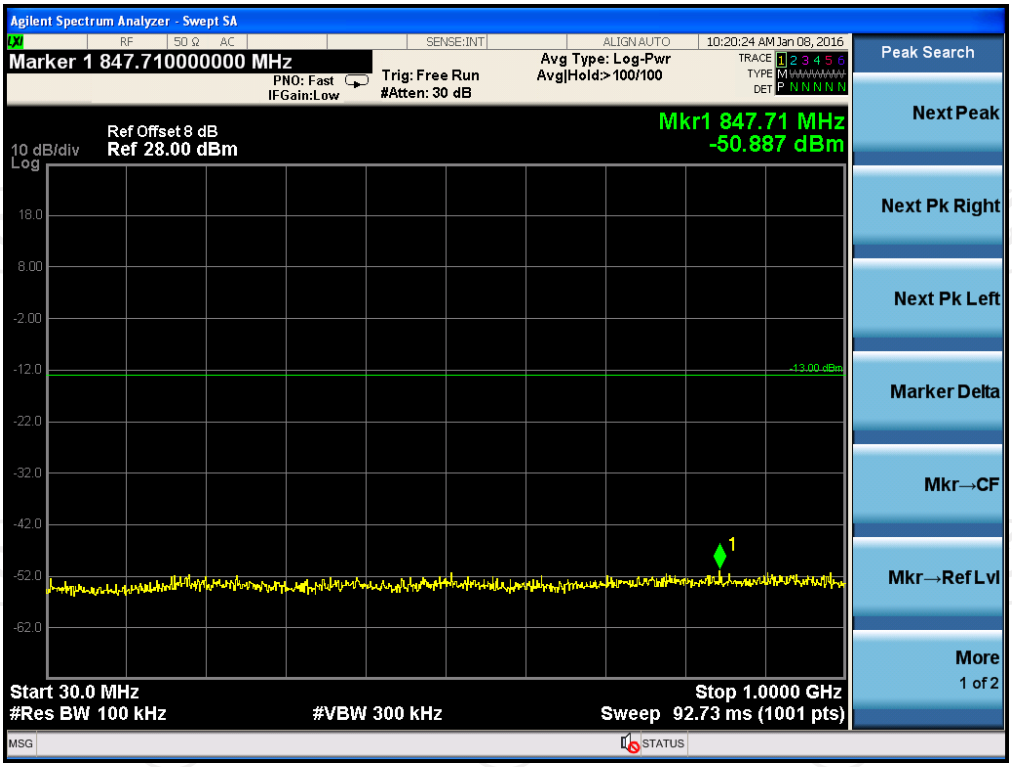


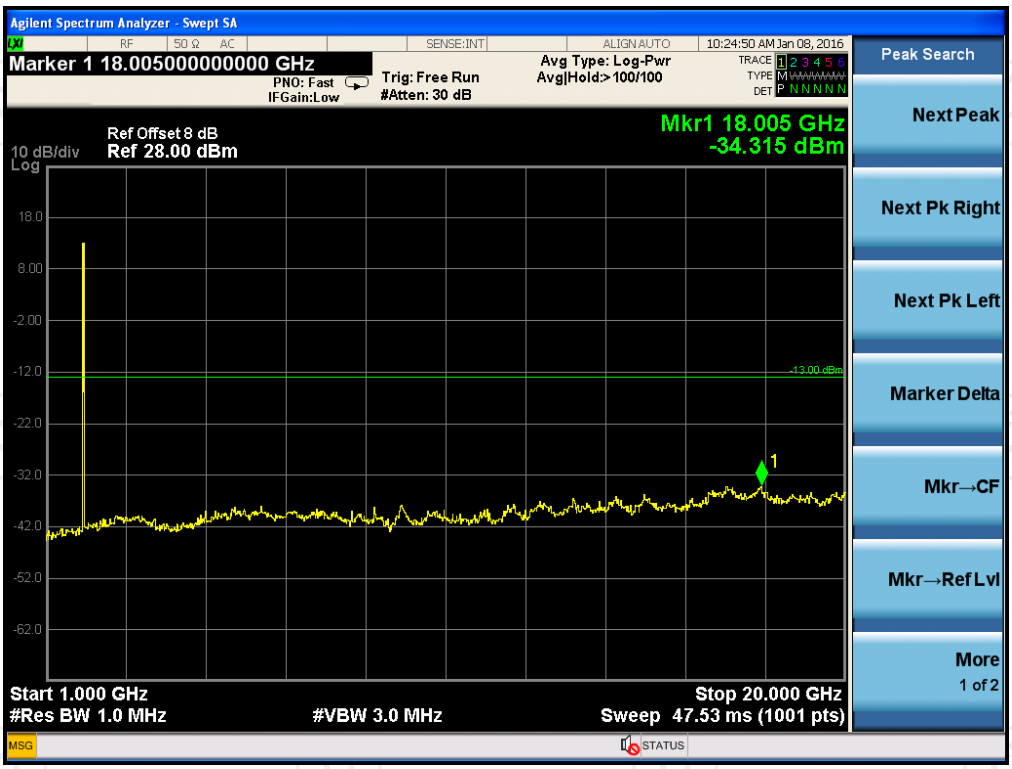
Conducted Spurious Emission on Channel 9400





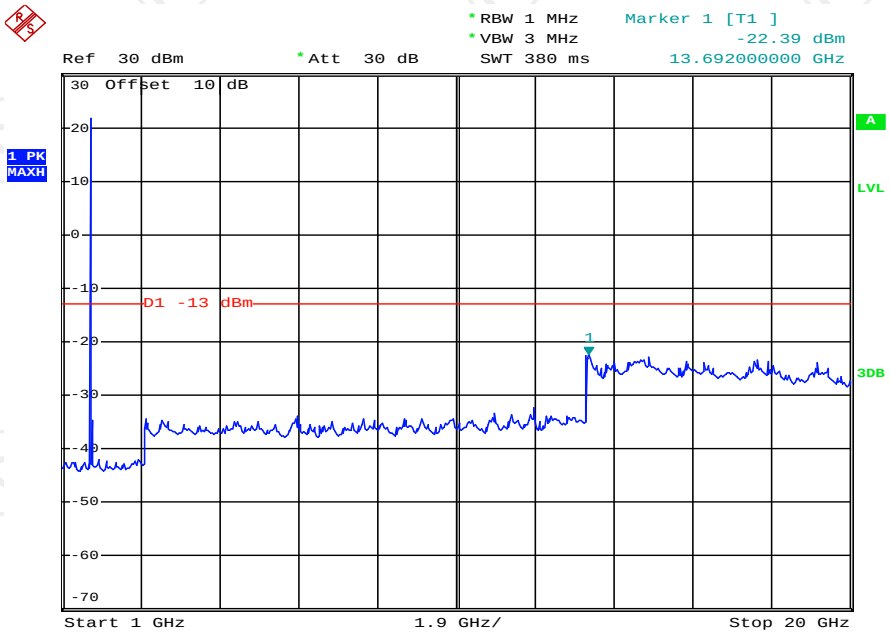
Conducted Spurious Emission on Channel 9538



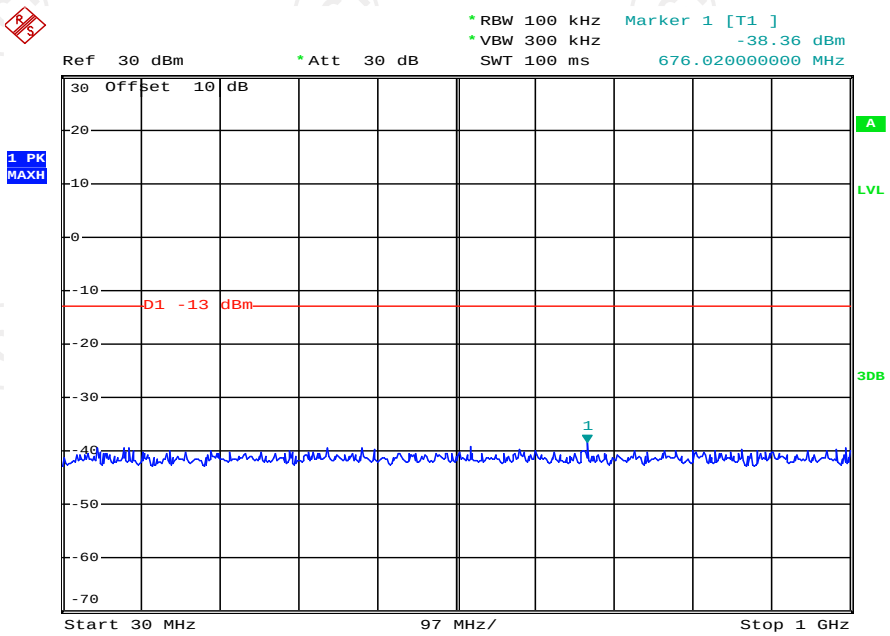


Band:	WCDMA Band IV	Test Mode:	RMC 12.2Kbps Link (QPSK)

Conducted Spurious Emission on Channel 1312

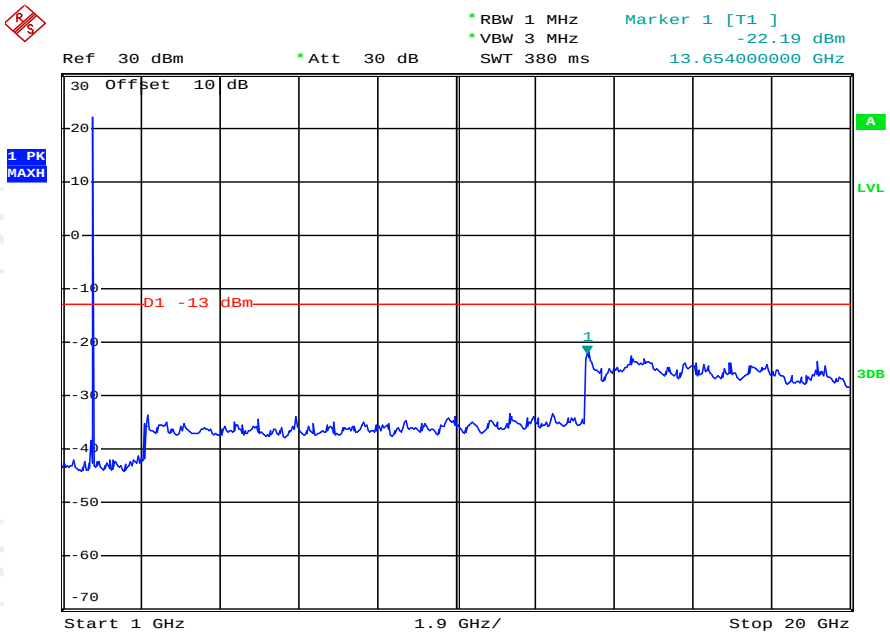


Date: 28.NOV.2015 02:51:42

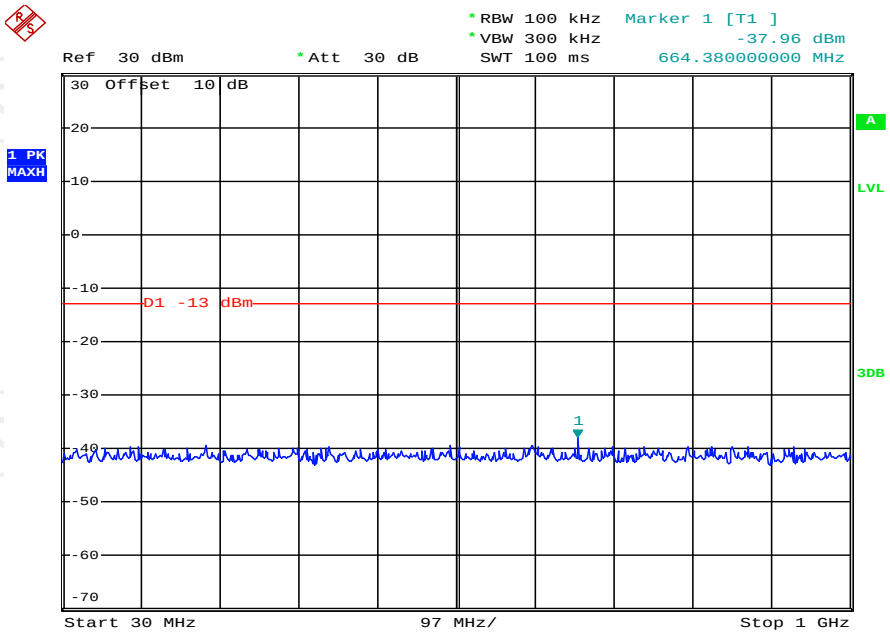


Date: 28.NOV.2015 02:51:29

Conducted Spurious Emission on Channel 1413

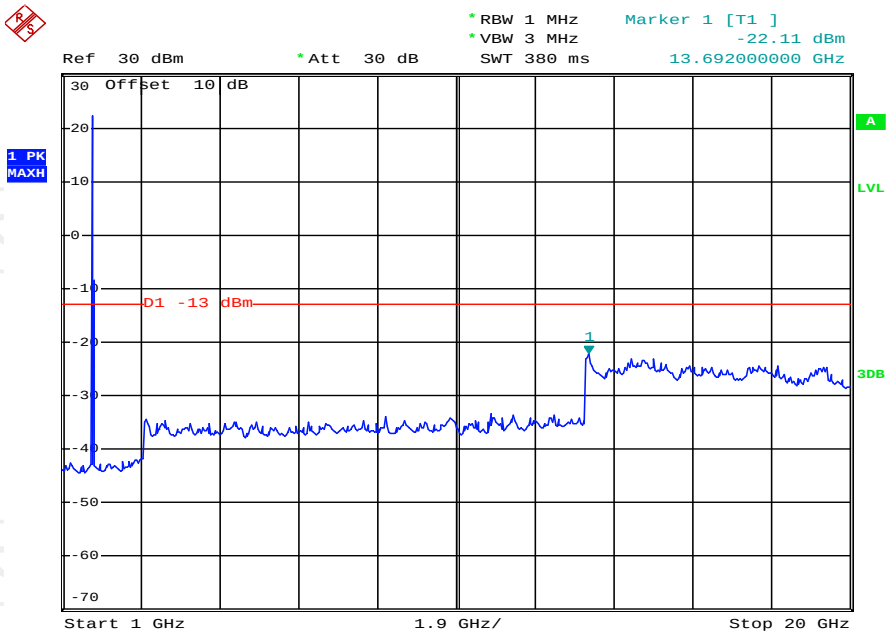


Date: 28.NOV.2015 02:51:56

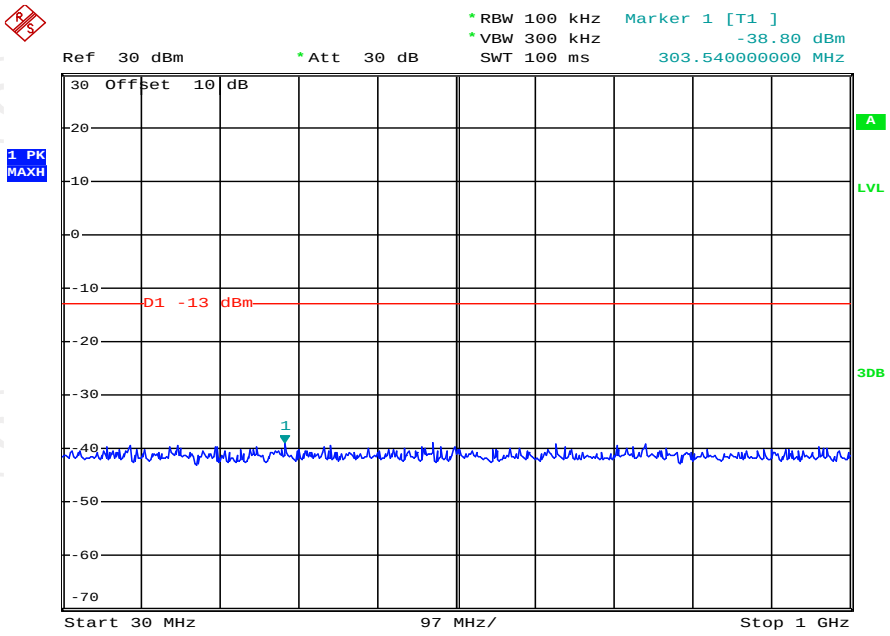


Date: 28.NOV.2015 02:51:20

Conducted Spurious Emission on Channel 1513



Date: 28.NOV.2015 02:52:08



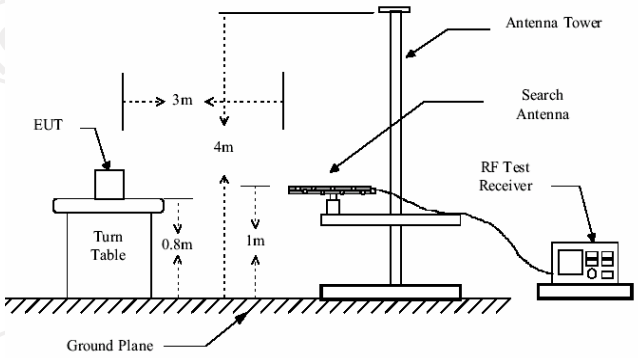
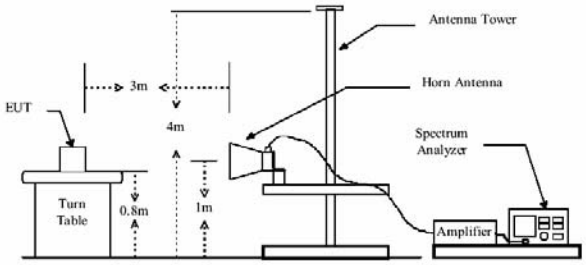
Date: 28.NOV.2015 02:51:14

6.6. Effective Radiated Power and Effective Isotropic Radiated Power Measurement

6.6.1. Test Specification

Test Requirement:	**FCC part 22.913(a);FCC part 24.232(b); FCC part 27.50(d) RSS-132(4.4); RSS-133 (6.4)**
Test Method:	FCC part 2.1046
Receiver Setup:	

	GSM/GPRS/GPRS	WCDMA/HSPA
SPAN	500kHz	10MHz
RBW	10kHz	100kHz
VBW	30kHz	300kHz
Detector	RMS	RMS
Trace	Average	Average
Average Type	Power	Power
Sweep Count	100	100

Limit:	GSM850: 7W ERP; WCDMA Band V: 7W ERP PCS1900: 2W EIRP; WCDMA Band II: 2W EIRP WCDMA Band IV: 1W EIRP
Test setup:	For ERP  For EIRP 
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GPRS/GPRS) and ANSI / TIA-603-D-2010 Section 2.2.17. 2. The EUT was placed on a non-conductive rotating

	platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01. 3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations. 4. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by dipole antenna (substitution antenna) at the same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP – 2.15 .
Test results:	PASS

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6.6.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
ESPI Test Receiver	ROHDE&SCHWARZ	ESVD	100008	Sep. 11, 2016
Spectrum Analyzer	ROHDE&SCHWARZ	FSEM	848597/001	Sep. 11, 2016
Broadband Antenna	Schwarzbeck	VULB9163	351	Sep. 13, 2016
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 13, 2016
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 13, 2016
Horn Antenna	Schwarzbeck	BBHA 9120D	629	Sep. 13, 2016
Coax cable	TCT	N/A	N/A	Sep. 11, 2016
Coax cable	TCT	N/A	N/A	Sep. 11, 2016
Coax cable	TCT	N/A	N/A	Sep. 11, 2016
Coax cable	TCT	N/A	N/A	Sep. 11, 2016
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

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