FCC RF Test Report

Product Name: **Smart Phone**

Product Model: **HUAWEI D2-6114, D2-6114, HW-03E**

Report Number: **SYBH(Z-RF)014012013-2001**

FCC ID: **QISD2-6114**

Reliability Laboratory of Huawei Technologies Co., Ltd.

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

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Notice

1. The laboratory has Passed the accreditation by China National Accreditation Service for Conformity Assessment (CNAS). The accreditation number is L0310.

2. The laboratory has Passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.

3. The laboratory has been listed by the US Federal Communications Commission to perform electromagnetic emission measurements. The site recognition number is 97456.

4. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 6369A-2.

5. The laboratory has been listed by the VCCI to perform EMC measurements. The accreditation numbers of test site No.1 are R-2364, G-415, C-2583, and T-256, and the accreditation numbers of test site No.2 are R-3760, G-485, C-4210 and T-1237.

6. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

7. The test report is invalid if there is any evidence of erasure and/or falsification.

8. The test report is only valid for the test samples.

9. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

Applicant:	Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Product Name:	Smart Phone
Product Model:	HUAWEI D2-6114, D2-6114, HW-03E

Date of Receipt Sample:	2013-01-21
Start Date of Test:	2013-01-22
End Date of Test:	2013-02-07

Test Result: Pass

Approved by Senior Engineer:	2013-2-09	Dai Linjun	Dai Linjun
	Date	Name	Signature
Prepared by:	2013-2-09	Guo Xingxing	Guo Xingxing
	Date	Name	Signature

Modification Record

No.	Last Report No.	Modification Description
1		First report.

CONTENT

1 General Information

1.1 Applied Standard

Applied Rules:	47 CFR FCC Part 02:2012 47 CFR FCC Part 22: 2012 47 CFR FCC Part 24: 2012
Test Method:	FCC KDB 971168 D01 Power Meas License Digital Systems v02 FCC KDB 662911 D01 Multiple Transmitter Output v01r2

1.2 Test Location

Test Location 1:	Reliability Laboratory of Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

1.3 Test Environment Condition

Ambient Temperature:	19.5 to 25 °C
Ambient Relative Humidity:	40 to 55 %
Atmospheric Pressure:	Not applicable

2 Test Summary

2.1 Cellular Band (824-849 MHz paired with 869-894 MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict (NOTE 2)
Output Power Data	§2.1046, §22.913	FCC: ERP ≤ 7 W.	Appendix A	Pass
Bandwidth	§2.1049, §22.917	OBW: No limit. EBW: No limit.	Appendix B	Pass
Band Edges Compliance	§2.1051, §22.917	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Appendix C	Pass
Spurious Emission at Antenna Terminal	§2.1051, §22.917	FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Appendix D	Pass
Frequency Stability	§2.1055, §22.355	≤ ±2.5ppm.	Appendix E	Pass
Modulation Characteristics	§2.1047	Digital modulation	Appendix F	Pass
Radiated spurious emission	§2.1053, §22.917	FCC: ≤ -13 dBm/100 kHz..	Appendix G	Pass

2.2 PCS Band (1850-1915 MHz paired with 1930-1995 MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict (NOTE 2)
Output Power Data	§2.1046, §24.232	EIRP ≤ 2 W; PAR ≤ 13 dB.	Appendix A	Pass
Bandwidth	§2.1049, §22.917	OBW: No limit. EBW: No limit.	Appendix B	Pass
Band Edges Compliance	§2.1051, §24.238	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Appendix C	Pass
Spurious Emission at Antenna Terminal	§2.1051, §24.238	≤ -13 dBm/1 MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Appendix D	Pass
Frequency Stability	§2.1055, §24.235	FCC: within authorized frequency block. IC: ≤ ±2.5 ppm.	Appendix E	Pass
Modulation Characteristics	§2.1047	Digital modulation	Appendix F	Pass
Radiated spurious emission	§2.1053, §24.238	≤ -13 dBm/1 MHz.	Appendix G	Pass

3 Description of the Equipment under Test (EUT)

3.1 General Description

HUAWEI D2-6114, D2-6114, HW-03E is subscriber equipment in the LTE/UMTS/GSM system. The LTE frequency band is Band I, Band XIX and Band XXI, not included in this report. The HSUPA/HSDPA/UMTS frequency band is Band I, Band V, Band VI, and Band XIX. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900, but only GSM850 and PCS1900MHz and Band V test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/UMTS/GSM protocol processing, voice, video, MMS service, GPS, AGPS, Felica and WIFI etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

3.2 EUT Identity

NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.

3.2.1 Board

Board		
Software	Hardware Version	Description
4.1..1301141	HL1U9701LM	Main board of Mobile Phone

3.2.2 Sub-Assembly

Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
Rechargeable Li-ion	HB5R1HV	Huawei Technologies Co., Ltd.	Battery Model: HB5R1HV Rated capacity: 2150mAh Nominal Voltage: ⎓ +3.8V Charging Voltage: ⎓ +4.35V

3.3 Technical Specification

Characteristics	Description	
Radio System Type	☒ GSM ☒ UMTS	
Supported Frequency Range	GSM850	Transmission (TX): 824-849 MHz
		Receiving (RX): 869-894 MHz
	GSM1900	Transmission (TX): 1850-1910 MHz
		Receiving (RX): 1930-1990 MHz
	WCDMA850	Transmission (TX): 824-849 MHz
		Receiving (RX): 869-894 MHz
TX and RX Antenna Ports	TX & RX port:	1
	TX-only port:	0
	RX-only port:	0
TX Expected Output Power	GSM850: 32.5dBm GSM1900: 29.5dBm UMTS850: 23.5dBm	
Supported Channel Bandwidth	GSM system:	☒ 200 kHz
	UMTS system:	☒ 5 MHz
Designation of Emissions (Note: the necessary bandwidth of which is the worst value from the measured occupied bandwidths for each type of channel bandwidth configuration.)	GSM850: GSM1900	248KGXW, 253KG7W 252KGXW, 249KG7W
	UMTS 850	4M17F9W

4 General Test Conditions / Configurations

4.1 Test Modes

NOTE: The test mode(s) are selected according to relevant radio technology specifications.

Test Mode	Test Modes Description
GSM/TM1	GSM system, GSM/GPRS, GMSK modulation
GSM/TM2	GSM system, EDGE, 8PSK modulation
UMTS/TM1	WCDMA system, QPSK modulation
UMTS/TM2	HSDPA system, QPSK modulation
UMTS/TM3	HSUPA system, QPSK modulation

4.2 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	3.5V
	VN	3.8V
	VH	4.35V

NOTE: VL= lower extreme test voltage
VN= nominal voltage
VH= upper extreme test voltage
TN= normal temperature

4.3 Test Frequency

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
GSM/TM1& GSM/TM2	TX	Channel 128	Channel 190	Channel 251
		824.2MHz	836.6MHz	848.8MHz
	RX	Channel 128	Channel 190	Channel 251
		869.2MHz	881.6MHz	893.8MHz
GSM/TM1& GSM/TM2	TX	Channel 512	Channel 661	Channel 810
		1850.2MHz	1880.0MHz	1909.8MHz
	RX	Channel 512	Channel 661	Channel 810

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
		1930.2 MHz	1960.0 MHz	1989.8 MHz
UMTS/TM1& UMTS/TM2& UMTS/TM3	TX	Channel 4132	Channel 4182	Channel 4233
		826.4MHz	836.4MHz	846.6MHz
	RX	Channel 4357	Channel 4407	Channel 4458
		871.4MHz	881.4MHz	891.6MHz

4.4 DESCRIPTION OF TESTS

4.4.1 Radiated Power and Radiated Spurious Emissions

Radiated spurious emissions are investigated indoors in a semi-anechoic chamber to determine the frequencies producing the worst case emissions. Final measurements for radiated power and radiated spurious emissions are performed on the 3 meter OATS per the guidelines of ANSI/TIA-603-C-2004. The equipment under test was transmitting while connected to its integral antenna and is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. Emissions are also investigated with the receive antenna horizontally and vertically polarized.

A portable or small unlicensed wireless device shall be placed on a non-metallic test fixture or other non-metallic support during testing. The supporting fixture shall permit orientation of the EUT in each of three orthogonal (x, y, z) axis positions such that emissions from the EUT are maximized. Measure the EUT maximum RF power and record the result.

A half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

Pd [dBm] = Pg [dBm] – cable loss [dB] + antenna gain [dBd/dBi]

Where, Pd is the dipole equivalent power, Pg is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to Pg [dBm] – cable loss [dB].

The calculated Pd levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of 43 + 10log10(Power [Watts]).

Note: Reference test setup 3

4.4.2 Occupied Bandwidth

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.
Note: Reference test setup 1.

4.4.3 Spurious and Harmonic Emissions at Antenna Terminal

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
Note: Reference test setup 1.

4.4.4 Peak-Average Ratio

A peak to average ratio measurement is performed at the conducted port of the EUT. For WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth. The traces are generated with the spectrum analyzer set to zero span mode.
Note: Reference test setup 1.

4.4.5 Frequency Stability / Temperature Variation

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-C-2004. The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency.

Time Period and Procedure:

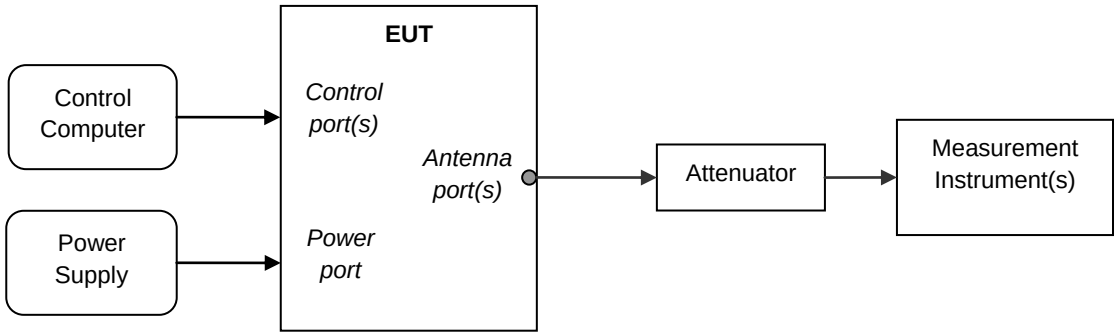
1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference). 2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

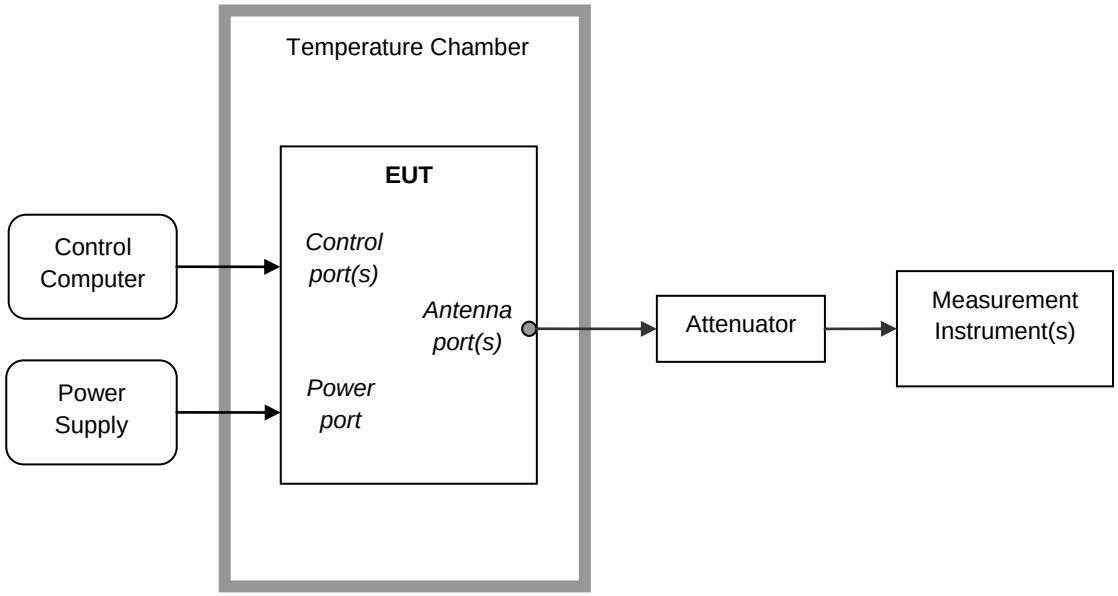
Note: Reference test setup 2.

4.5 Test Setups

4.5.1 Test Setup 1



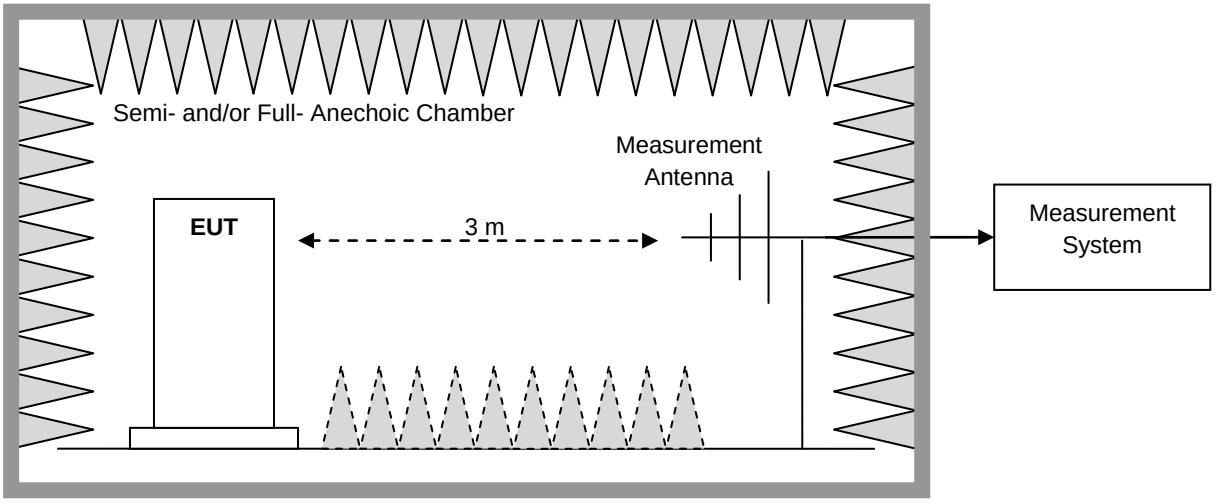
4.5.2 Test Setup 2



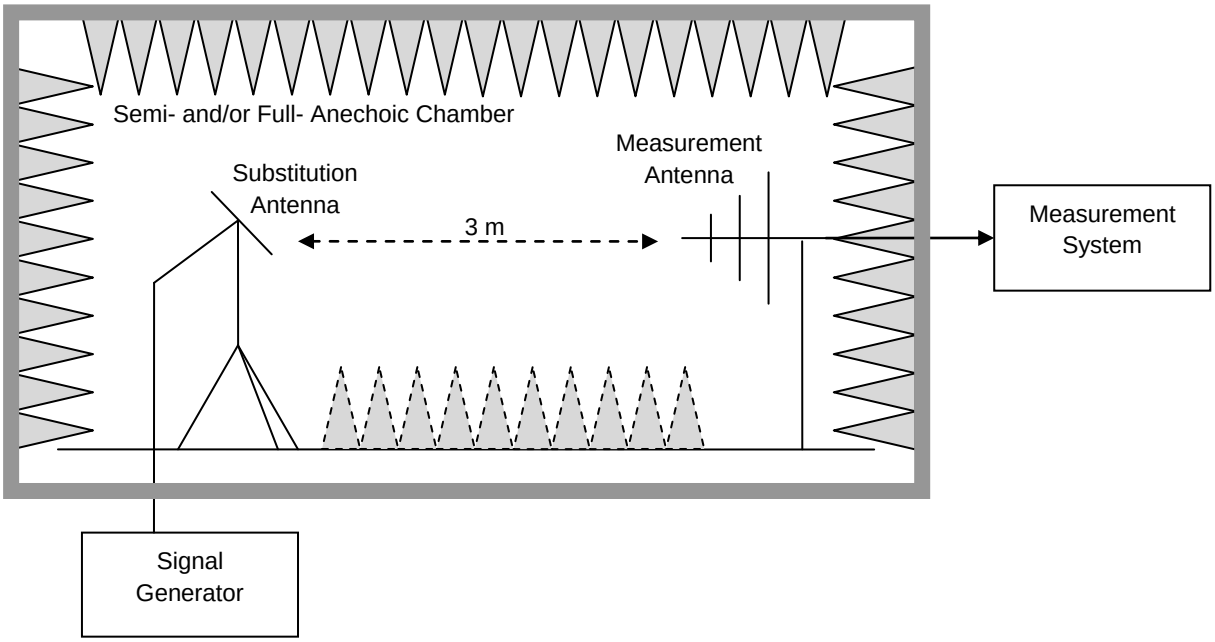
4.5.3 Test Setup 3

NOTE: Effective radiated power (ERP) refers to the radiation power output of the EUT, assuming all emissions are radiated from half-wave dipole antennas.

4.5.3.1 Step 1: Pre-test



4.5.3.2 Step 2: Substitution method to verify the maximum ERP



4.6 Test Conditions

Test Case		Test Conditions	
Transmitter Output Power	Average Power, Total	Test Env.	Ambient Climate & Rated Voltage
		Test Setup	Test Seup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	GSM/TM1& GSM/TM2&UMTS/TM1&UMTS/TM2&UMTS/TM3
	Peak-to-Average Ratio (if required)	Test Env.	Ambient Climate & Rated Voltage
		Test Setup	Test Seup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	GSM/TM1& GSM/TM2&UMTS/TM1&UMTS/TM2&UMTS/TM3
Bandwidth	Occupied Bandwidth	Test Env.	Ambient Climate & Rated Voltage
		Test Setup	Test Seup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	GSM/TM1& GSM/TM2&UMTS/TM1
	Emission Bandwidth	Test Env.	Ambient Climate & Rated Voltage
		Test Setup	Test Seup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	GSM/TM1& GSM/TM2&UMTS/TM1
Band Edges Compliance		Test Env.	Ambient Climate & Rated Voltage
		Test Setup	Test Seup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	GSM/TM1& GSM/TM2&UMTS/TM1
Spurious Emission at Antenna Terminals		Test Env.	Ambient Climate & Rated Voltage
		Test Setup	Test Seup 1
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
		Test Mode	GSM/TM1& GSM/TM2&UMTS/TM1
Radiated spurious emission		Test Env.	Ambient Climate & Rated Voltage
		Test Setup	Test Seup 3
		Test Mode	GSM/TM1& GSM/TM2&UMTS/TM1&UMTS/TM2&UMTS/TM3 NOTE: If applicable, the EUT conf. that has maximum power density (based on the equivalent power level) is selected.
		RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)

Test Case	Test Conditions	
Frequency Stability	Test Env.	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage; (2)VL, VN and VH of Rated Voltage at Ambient Climate.
	Test Setup	Test Seup 2
	RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
	Test Mode	GSM/TM1& GSM/TM2&UMTS/TM1
Modulation Characteristics	Test Env.	Ambient Climate & Rated Voltage
	Test Setup	Test Seup 2
	RF Channels (TX)	M (L= low channel, M= middle channel, H= high channel)
	Test Mode	GSM/TM1& GSM/TM2&UMTS/TM1

5 Main Test Instruments

Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal. Due
Power supply	KEITHLEY	2303	1288003	2012-11-19	2014-11-18
Universal Radio Communication Tester	R&S	CMU200	123299	2012-09-20	2013-09-19
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	2012-08-20	2013-08-19
Spectrum Analyzer	Agilent	E4440A	MY49420179	2012-11-09	2013-11-08
Signal Analyzer	R&S	FSQ31	200021	2012-11-09	2013-11-08
Temperature Chamber	WEISS	WKL64	5624600294001 0	2013-01-29	2014-01-28
Signal generator	Agilent	E8257D	MY49281095	2012-09-14	2013-09-13
Spectrum analyzer	R&S	FSU3	200474	2012-10-16	2013-10-15
Spectrum analyzer	R&S	FSU43	100144	2013-01-29	2014-01-28
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	2013-01-29	2014-01-28
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100391	2013-02-02	2014-02-01
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-521	2011-10-12	2013-10-11
Pyramidal Horn Antenna(26GHz-40GHz)	ETS-Lindgren	3160-10	00123940	2011-12-09	2013-12-08
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgren	3160-09	00125912	2011-02-28	2013-02-27

6 Measurement Uncertainty

For a 95% confidence level (k = 2), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Test Item		Extended Uncertainty
RF Power Output	Power [dBm]	U = 0.39 dB
Bandwidth	Magnitude [%]	U = 0.2%
Band Edge Compliance	Disturbance Power [dBm]	U = 2.0 dB
Spurious Emissions, Conducted	Disturbance Power [dBm]	U = 2.0 dB
Radiated spurious emission	ERP [dBm]	For 3 m Chamber: U = 4.6 dB (30 MHz to 1GHz) U = 3.0 dB (above 1 GHz) For 10 m Chamber: U = 4.6 dB (30 MHz to 1GHz) U = 3.0 dB (above 1 GHz)
Frequency Stability	Frequency Accuracy [ppm]	U = 0.21 ppm

END

Appendix for Test Report

1Appendix_A: Output Power Data

Part I - Test Results

Test Band	Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP [dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (ERP) [dBm]	FCC limit [dBm]	Result
GSM850	GSM/TM1	824.2	31.31	Horn Ant.	27.61	4.5	1	31.11	38.5	Pass
		836.6	31.56	Horn Ant.	27.86	4.5	1	31.36	38.5	Pass
		848.8	31.49	Horn Ant.	27.49	4.8	1	31.29	38.5	Pass
	GSM/TM2	824.2	27.81	Horn Ant.	24.11	4.5	1	27.61	38.5	Pass
		836.6	27.43	Horn Ant.	23.73	4.5	1	27.23	38.5	Pass
		848.8	27.07	Horn Ant.	23.07	4.8	1	26.87	38.5	Pass
WCDMA 850	UMTS/TM1	826.4	24.75	Horn Ant.	21.05	4.5	1	24.55	38.5	Pass
		836.4	24.62	Horn Ant.	20.92	4.5	1	24.42	38.5	Pass
		846.6	24.21	Horn Ant.	20.21	4.8	1	24.01	38.5	Pass

Note: a, For getting the ERP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it,

ERP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBd]

b, SGP=Signal Generator Level

Test Band	Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP [dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP) [dBm]	FCC limit [dBm]	Result
GSM1900	GSM/TM1	1850.2	30.87	Horn Ant.	27.17	4.5	1	30.67	33	Pass
		1880	31.56	Horn Ant.	27.86	4.5	1	31.36	33	Pass
		1909.8	30.78	Horn Ant.	26.78	4.8	1	30.58	33	Pass
	GSM/TM2	1850.2	26.96	Horn Ant.	23.26	4.5	1	26.76	33	Pass
		1880	27.43	Horn Ant.	23.73	4.5	1	27.23	33	Pass
		1909.8	26.96	Horn Ant.	23.21	4.8	1	27.01	33	Pass

Note: a, For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should take to calculate it,

EIRP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBi]

b, SGP=Signal Generator Level

Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
GSM1900	GSM/TM1	LCH	0.18	13	PASS
		MCH	0.52	13	PASS
		HCH	0.14	13	PASS
	GSM/TM2	LCH	3.19	13	PASS
		MCH	3.17	13	PASS
		HCH	3.24	13	PASS

2Appendix_B: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM850	GSM/TM1	LCH	244.35	309.67	Pass
		MCH	247.81	316.55	Pass
		HCH	245.13	318.53	Pass
	GSM/TM2	LCH	252.30	315.40	Pass
		MCH	250.36	316.73	Pass
		HCH	252.10	318.21	Pass
GSM1900	GSM/TM1	LCH	247.31	316.20	Pass
		MCH	251.75	316.30	Pass
		HCH	248.21	321.80	Pass
	GSM/TM2	LCH	247.59	314.60	Pass
		MCH	247.78	306.10	Pass
		HCH	248.62	317.70	Pass

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA1900	UMTS/TM1	LCH	4.15	4.72	Pass
		MCH	4.17	4.74	Pass
		HCH	4.16	4.73	Pass

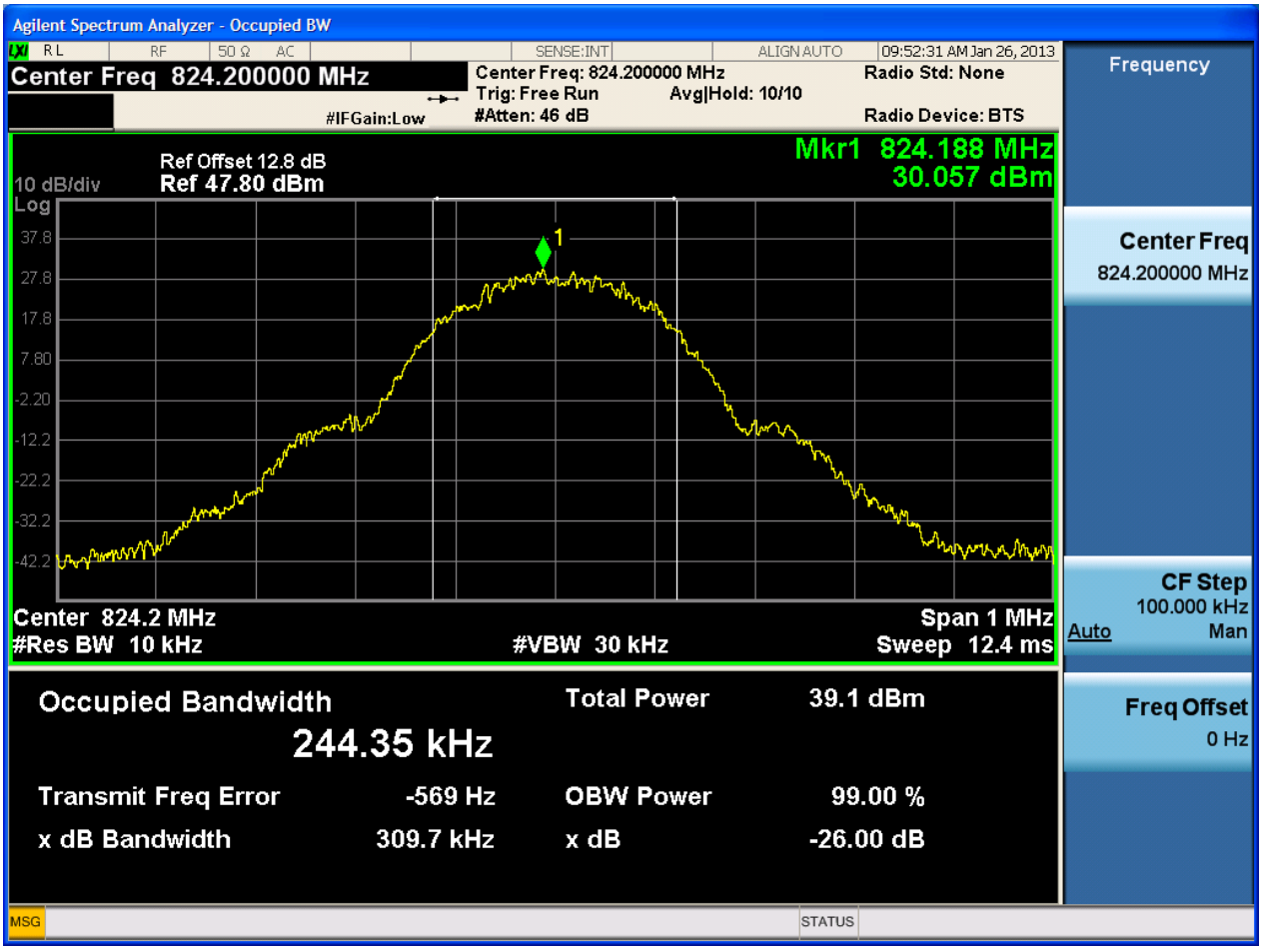
Part II - Test Plots

2.1 For GSM

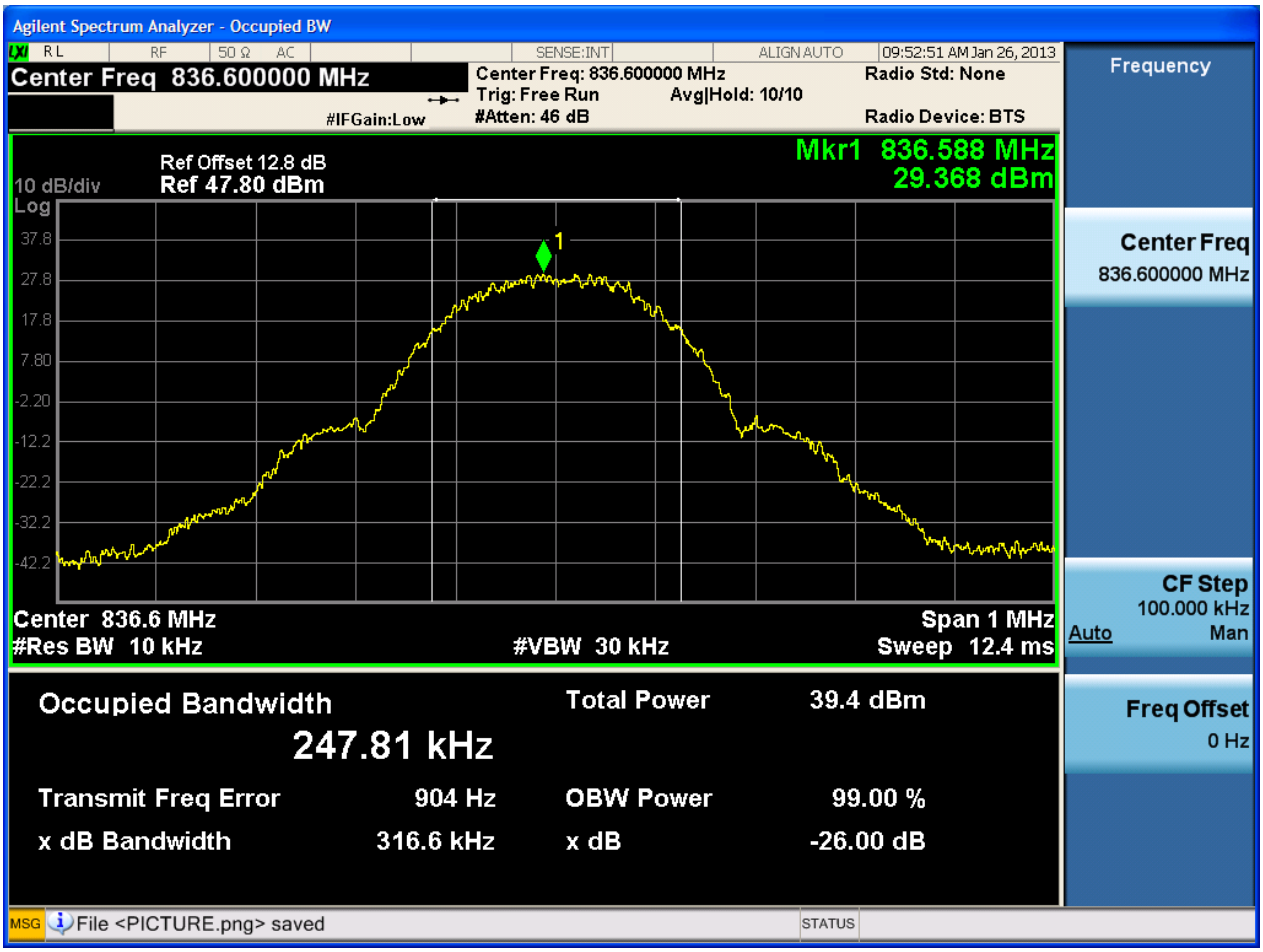
2.1.1 Test Band = GSM850

2.1.1.1 Test Mode = GSM/TM1

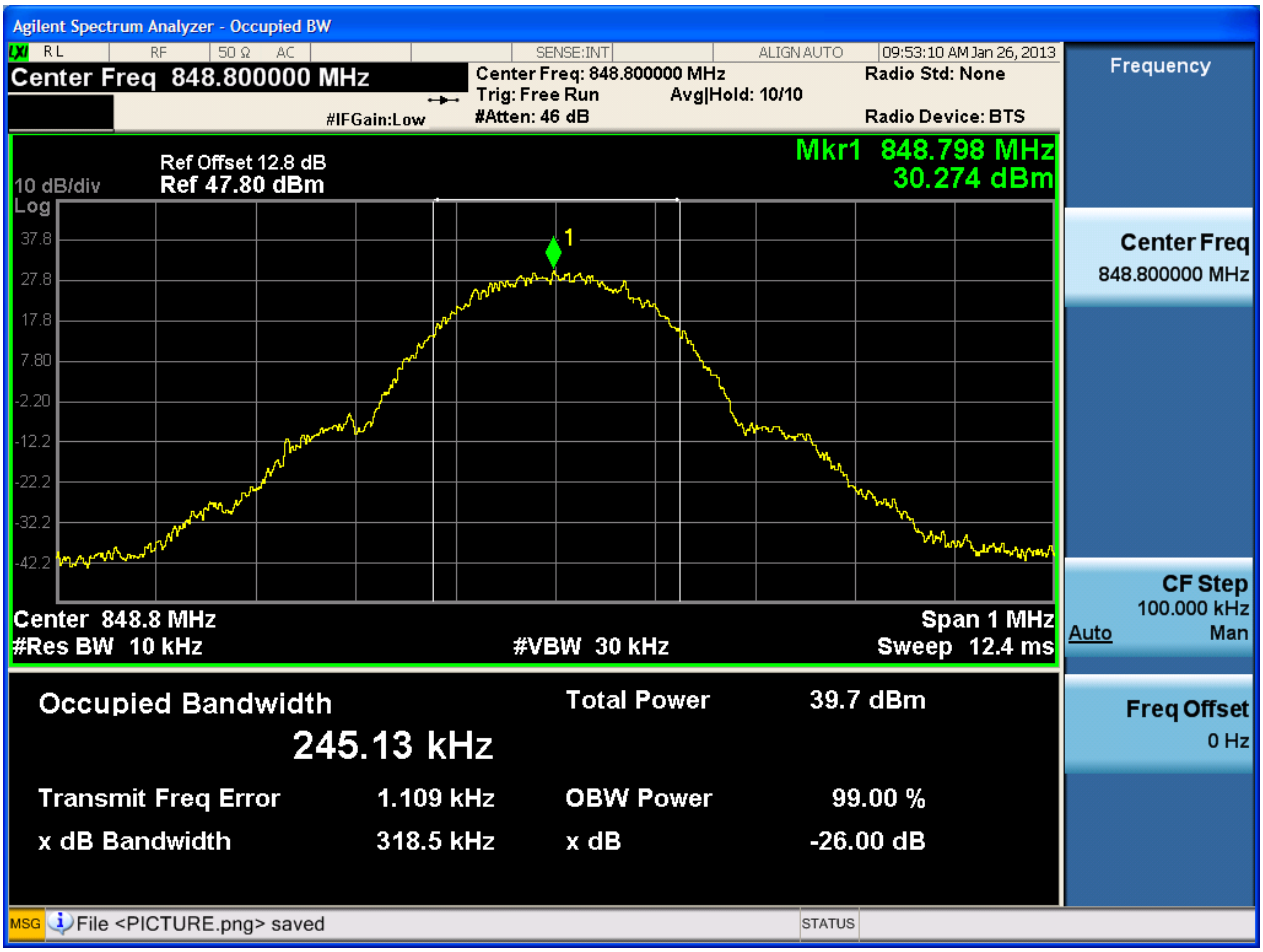
2.1.1.1.1 Test Channel = LCH



2.1.1.1.2 Test Channel = MCH

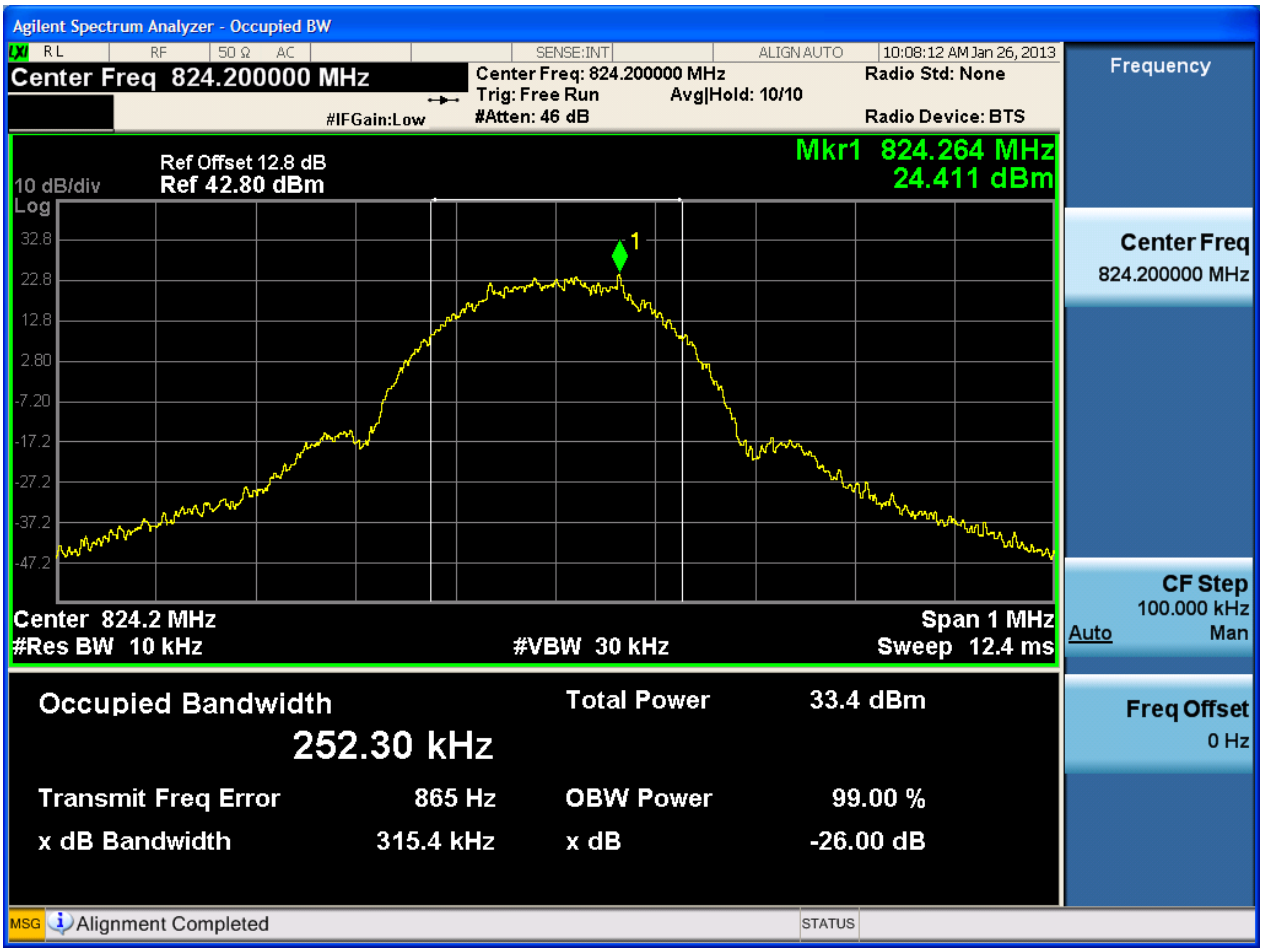


2.1.1.1.3 Test Channel = HCH

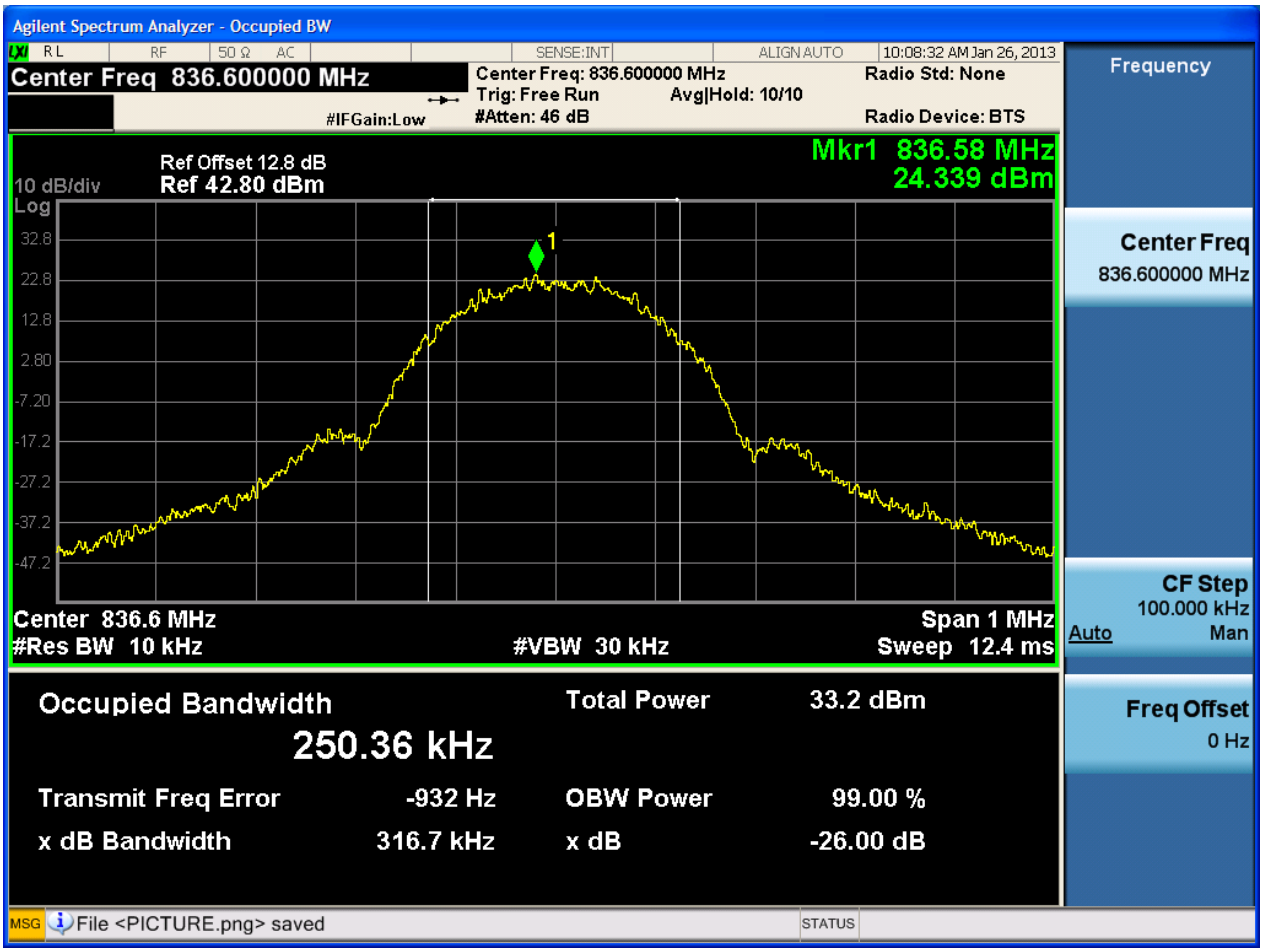


2.1.1.2 Test Mode = GSM/TM2

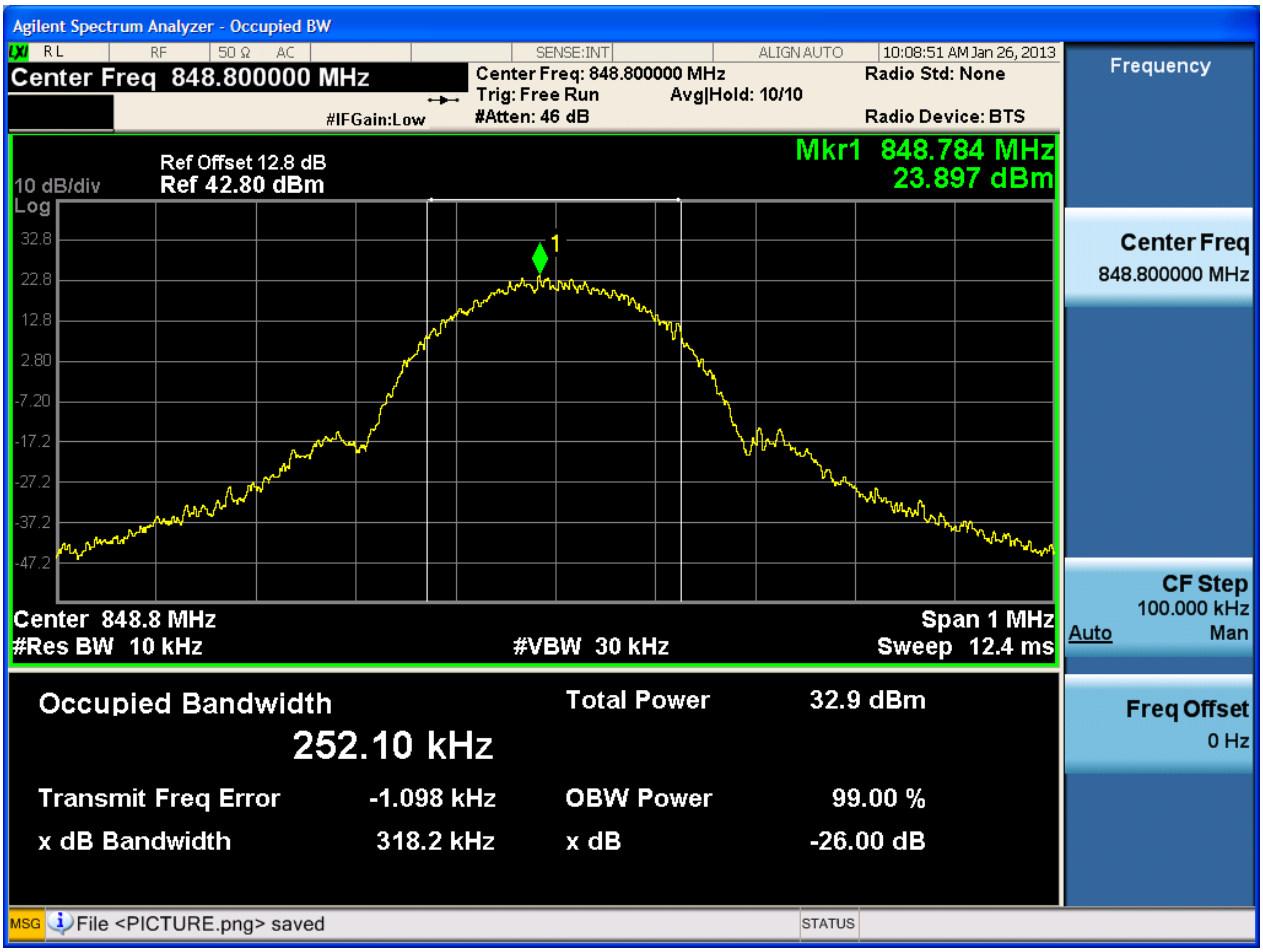
2.1.1.2.1 Test Channel = LCH



2.1.1.2.2 Test Channel = MCH



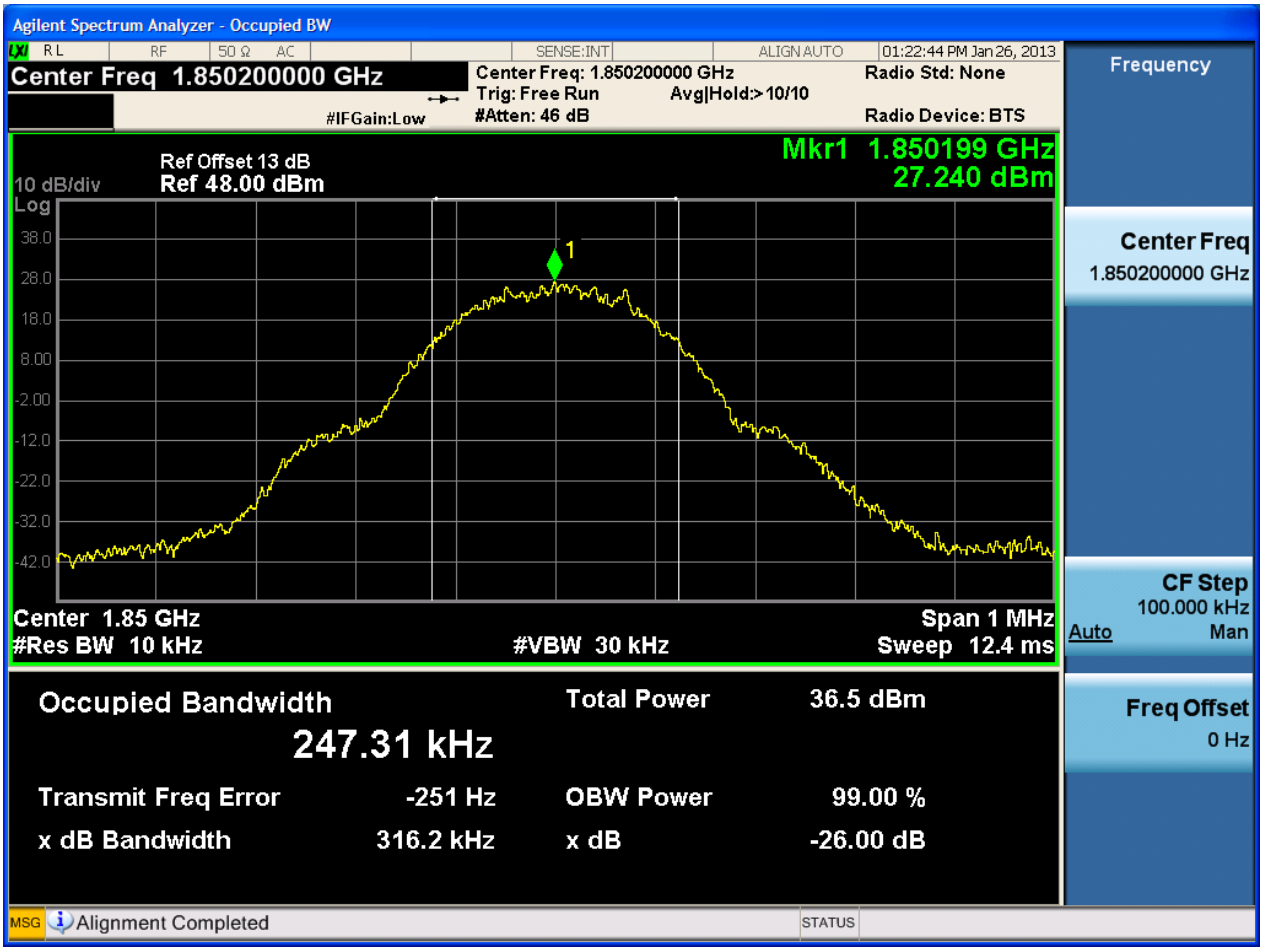
2.1.1.2.3 Test Channel = HCH



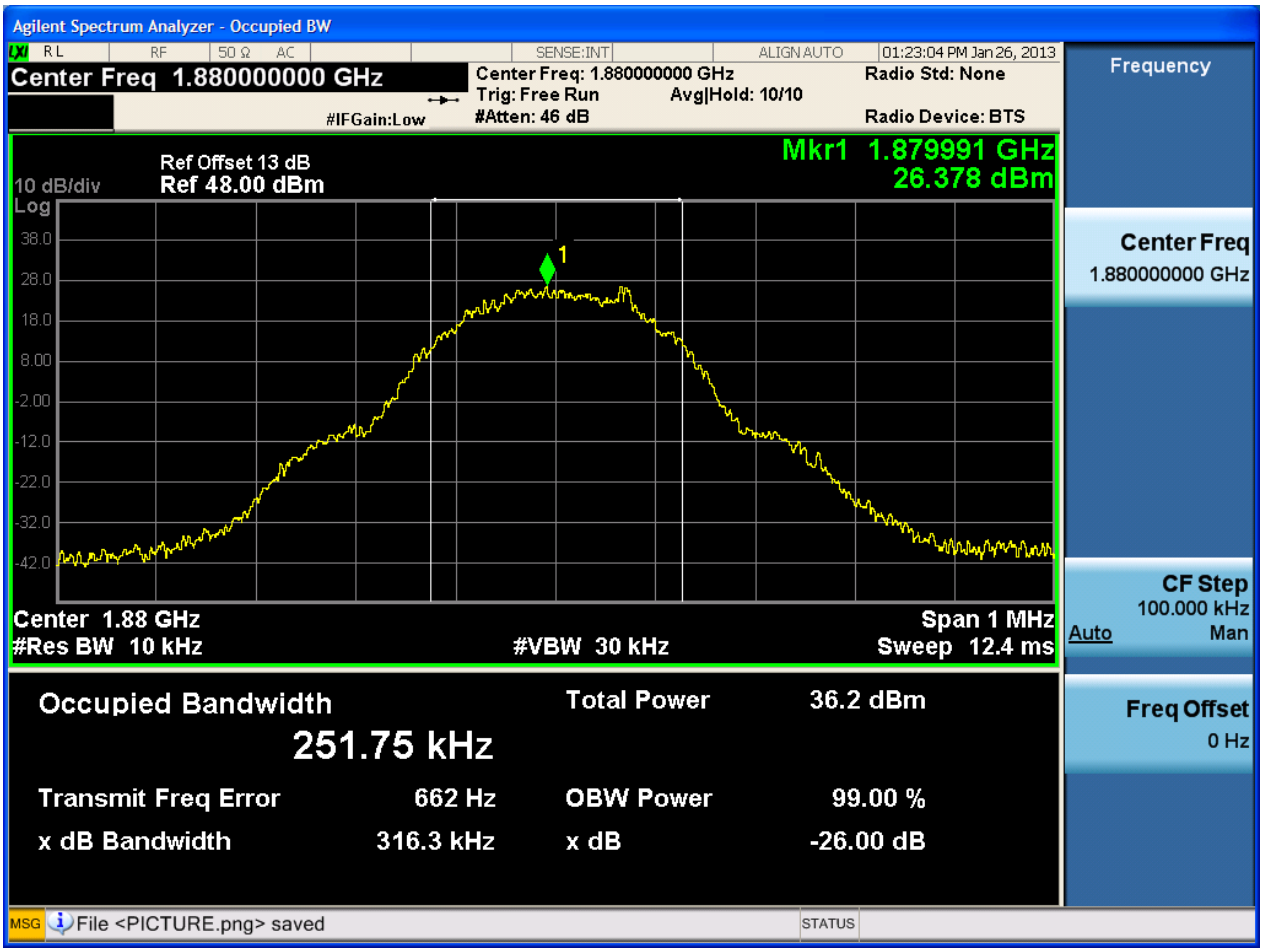
2.1.2 Test Band = GSM1900

2.1.2.1 Test Mode = GSM/TM1

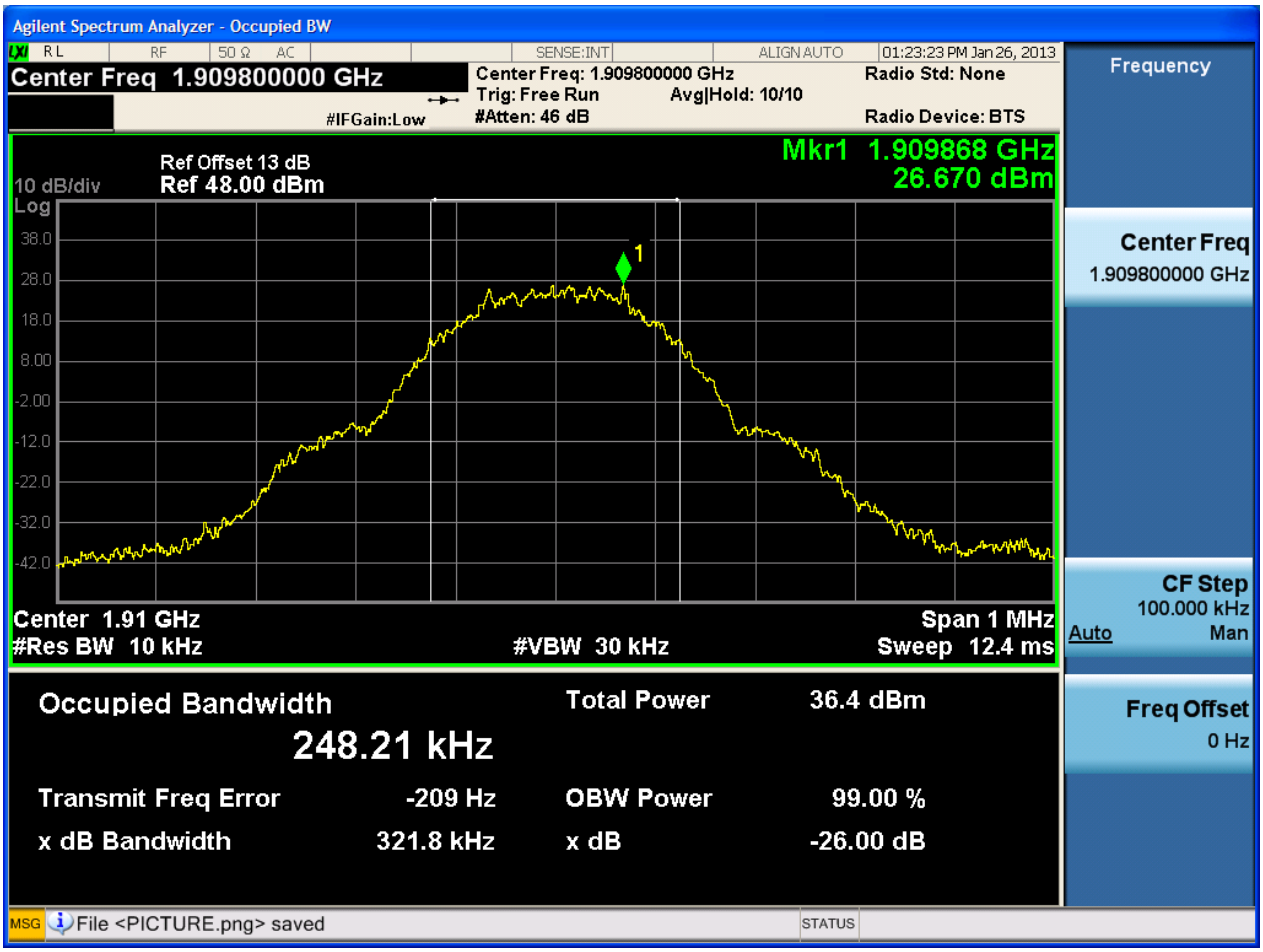
2.1.2.1.1 Test Channel = LCH



2.1.2.1.2 Test Channel = MCH

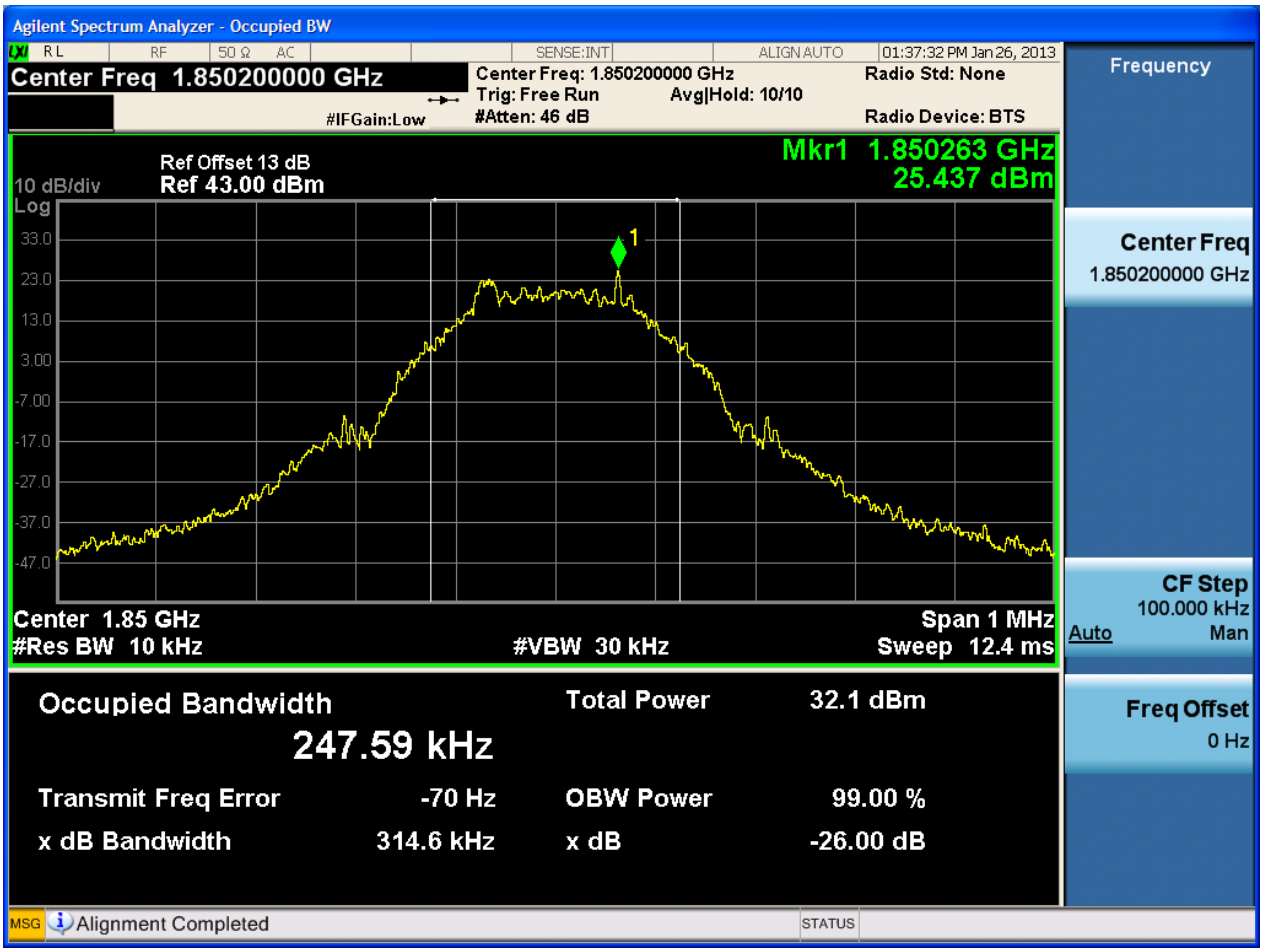


2.1.2.1.3 Test Channel = HCH

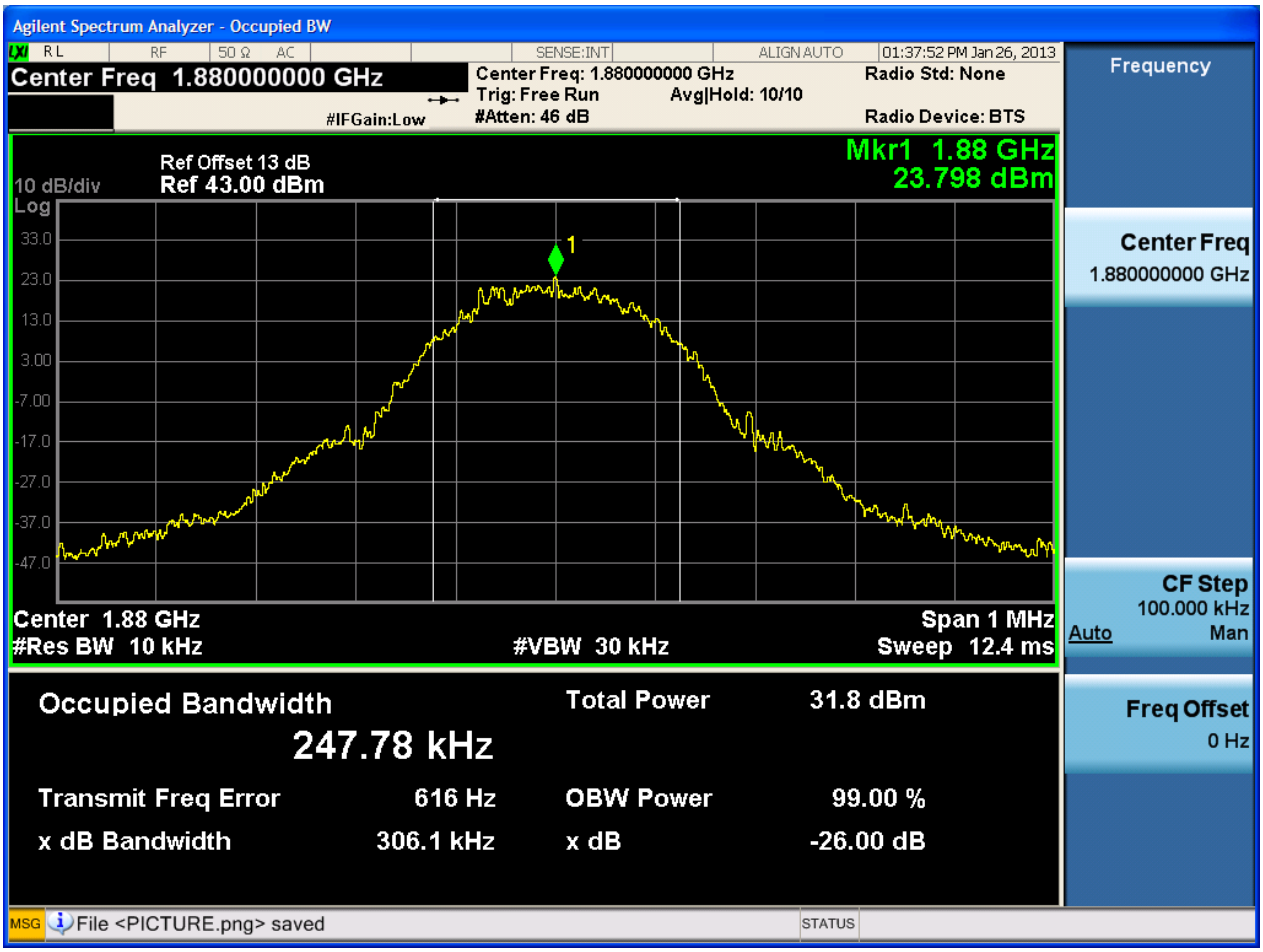


2.1.2.2 Test Mode = GSM/TM2

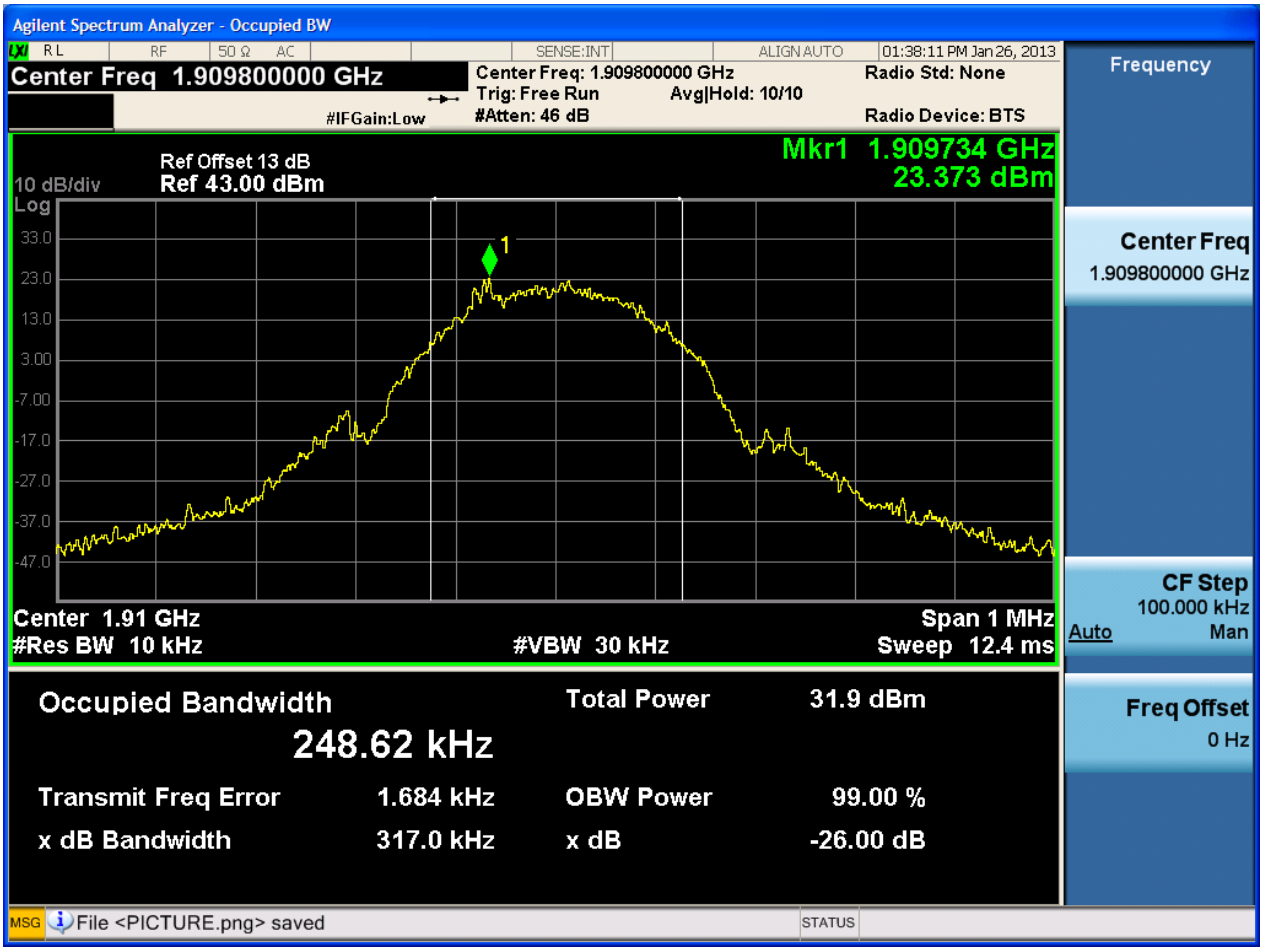
2.1.2.2.1 Test Channel = LCH



2.1.2.2.2 Test Channel = MCH



2.1.2.2.3 Test Channel = HCH

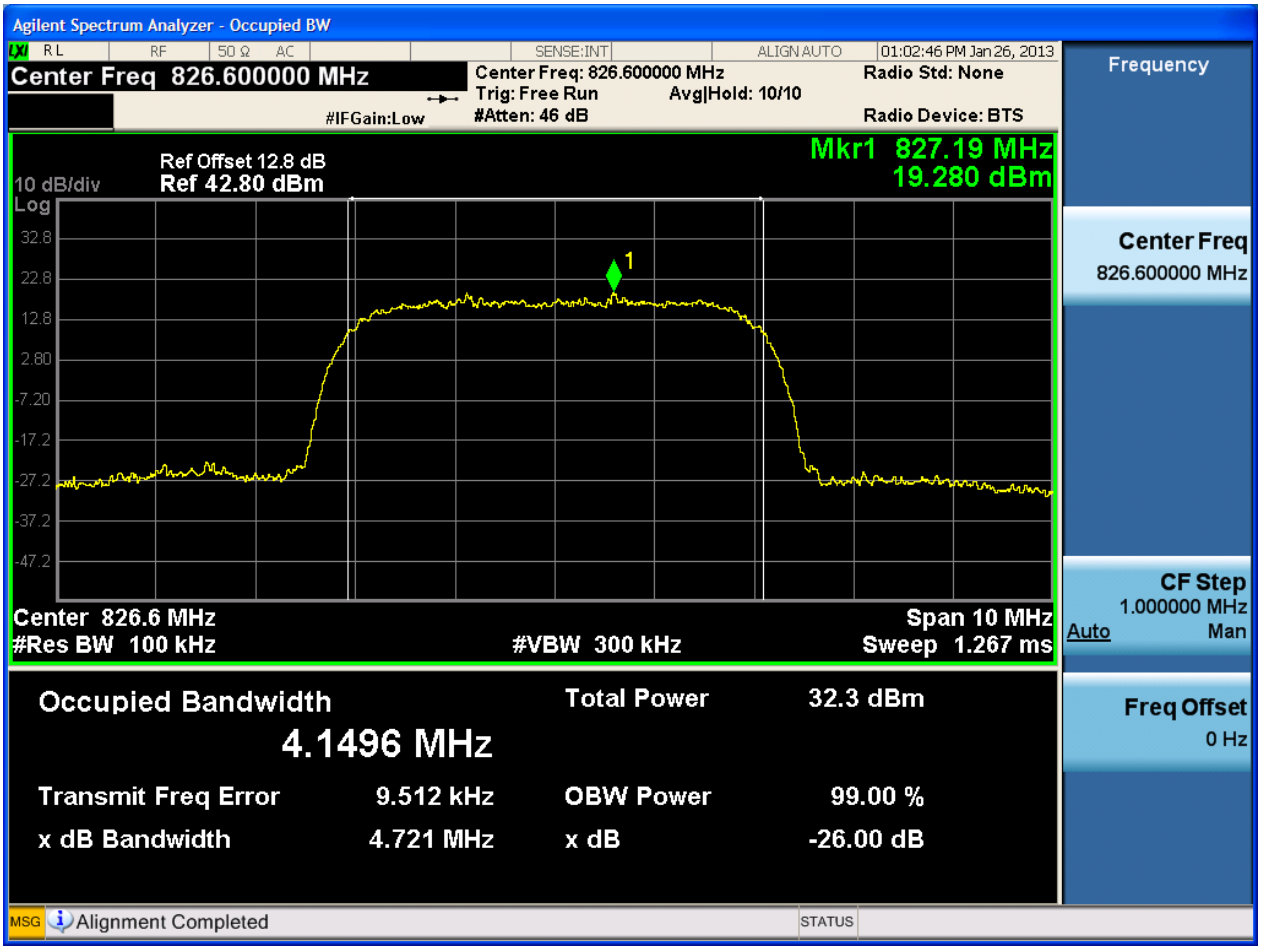


2.2 For UMTS

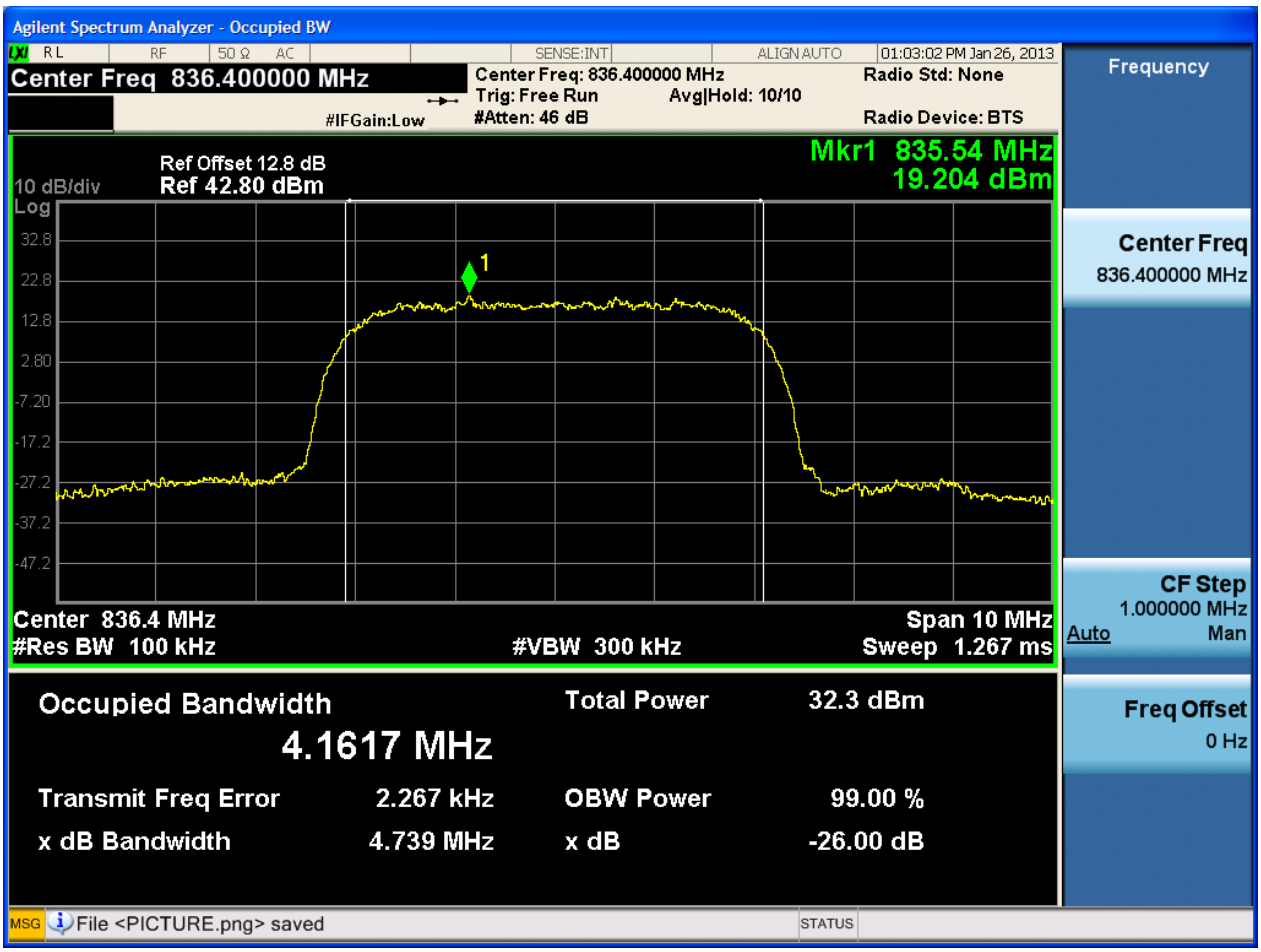
2.2.1 Test Band = WCDMA850

2.2.1.1 Test Mode = UMTS/TM1

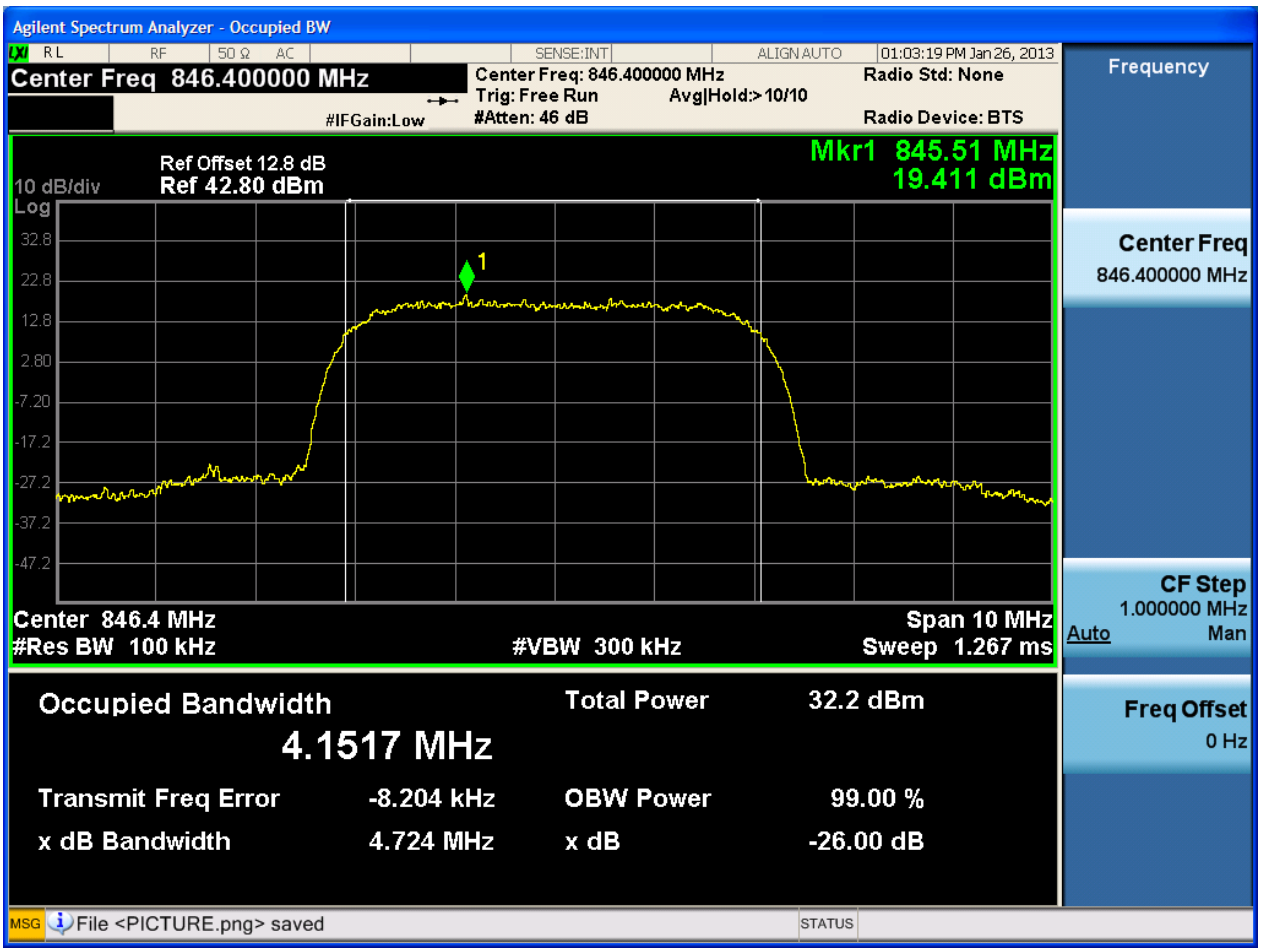
2.2.1.1.1 Test Channel = LCH



2.2.1.1.2 Test Channel = MCH



2.2.1.1.3 Test Channel = HCH



3Appendix_C: Band Edges Compliance

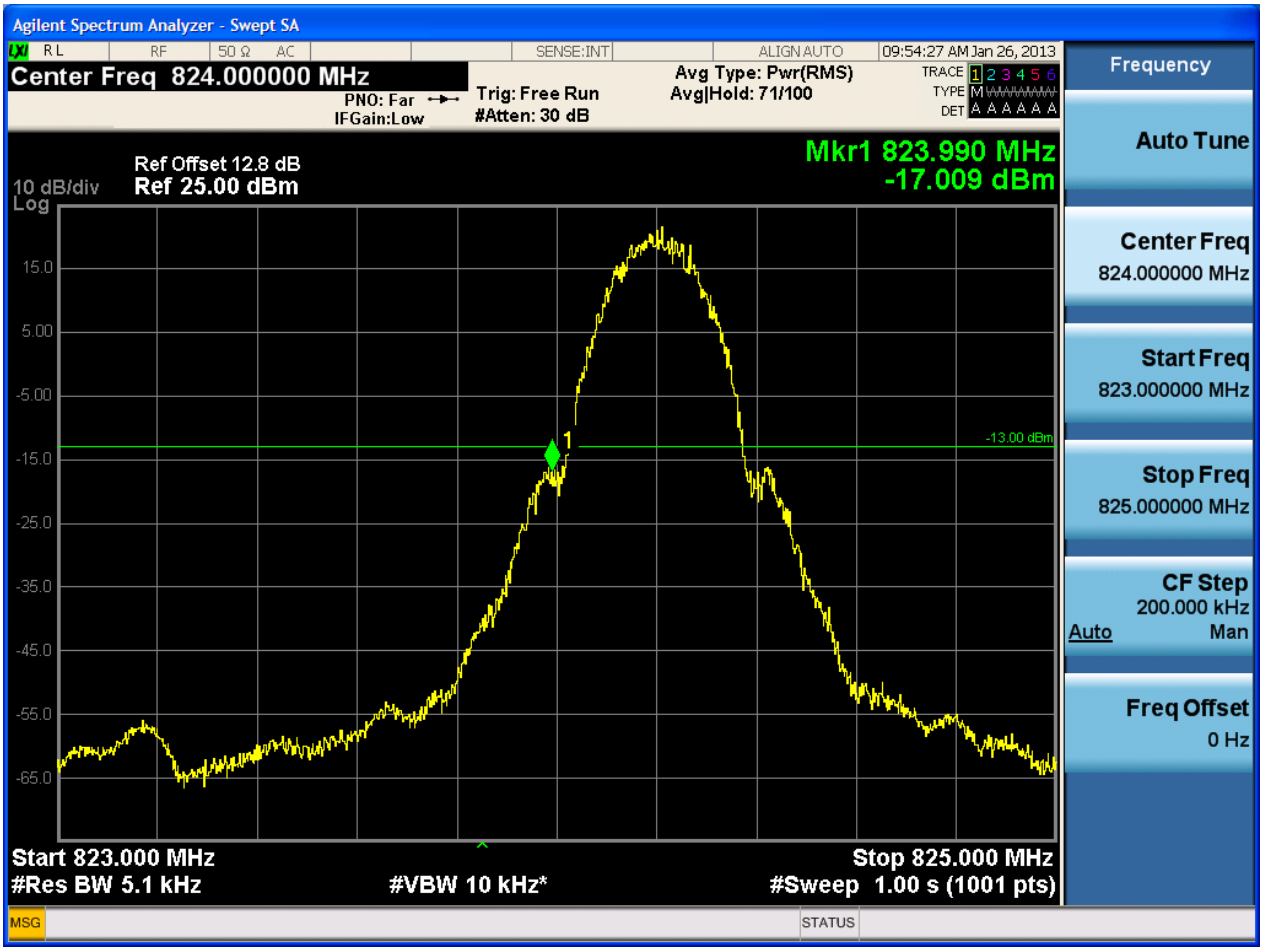
Part I - Test Plots

3.1 For GSM

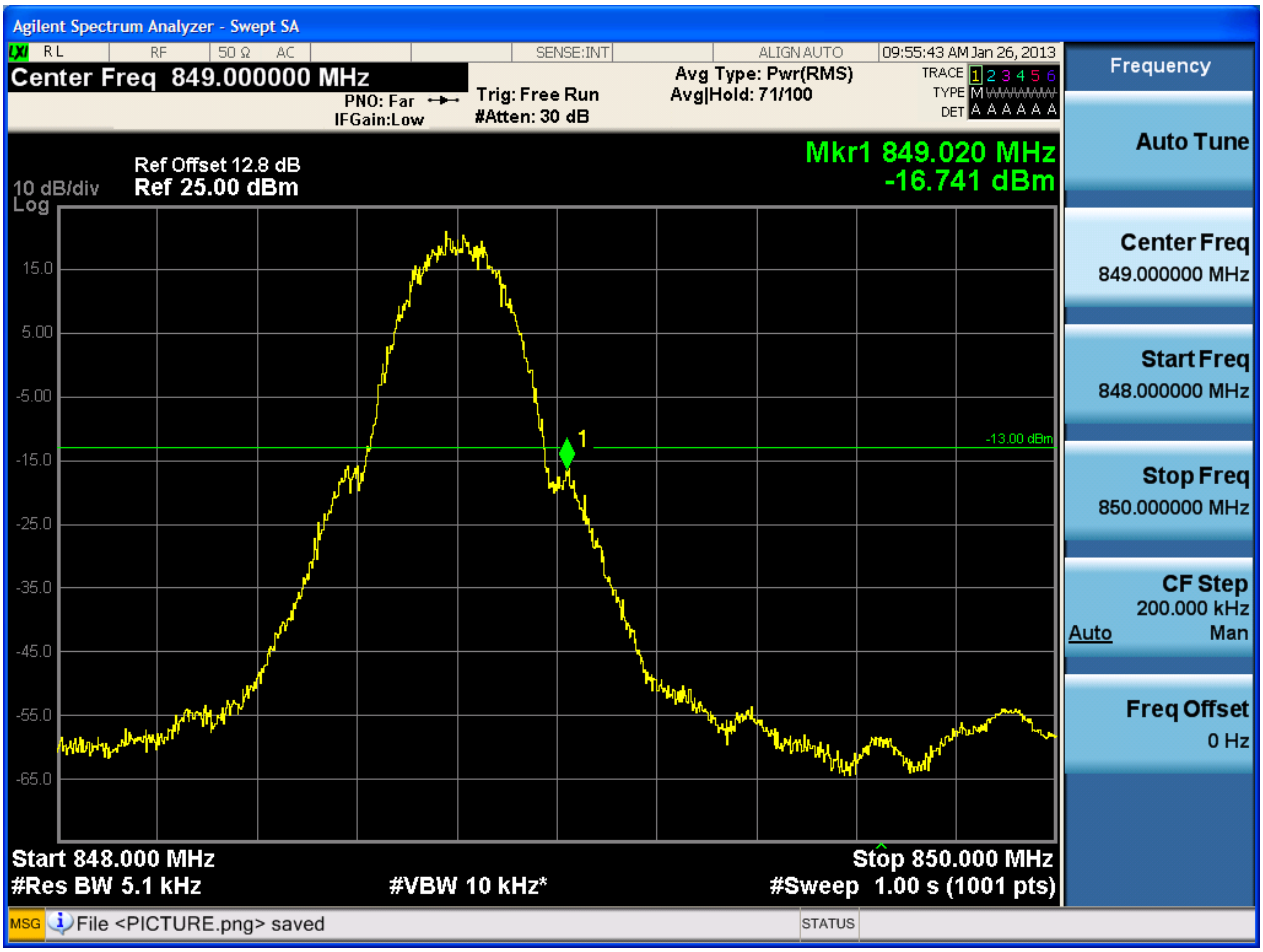
3.1.1 Test Band = GSM850

3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = LCH

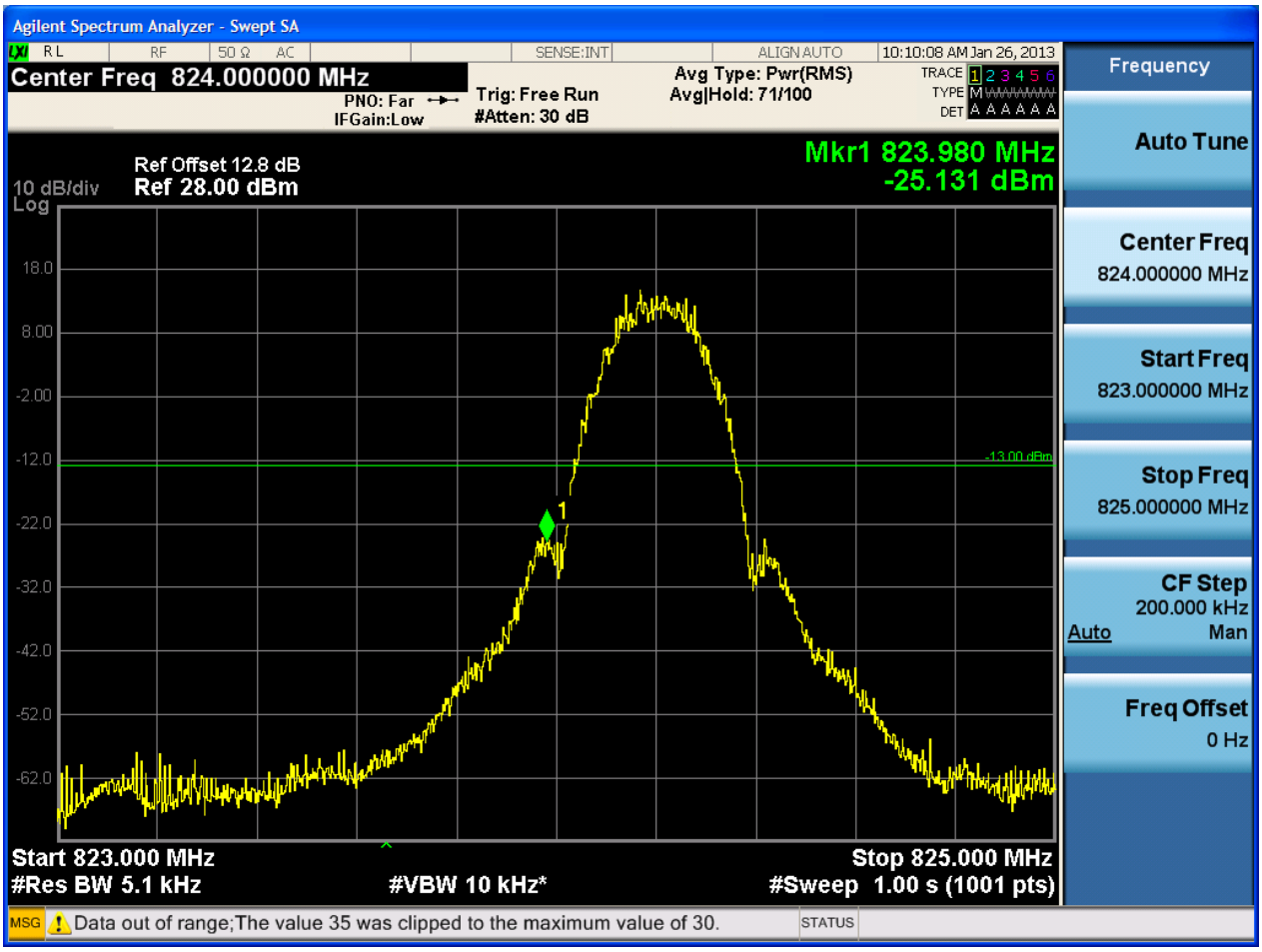


3.1.1.1.2 Test Channel = HCH

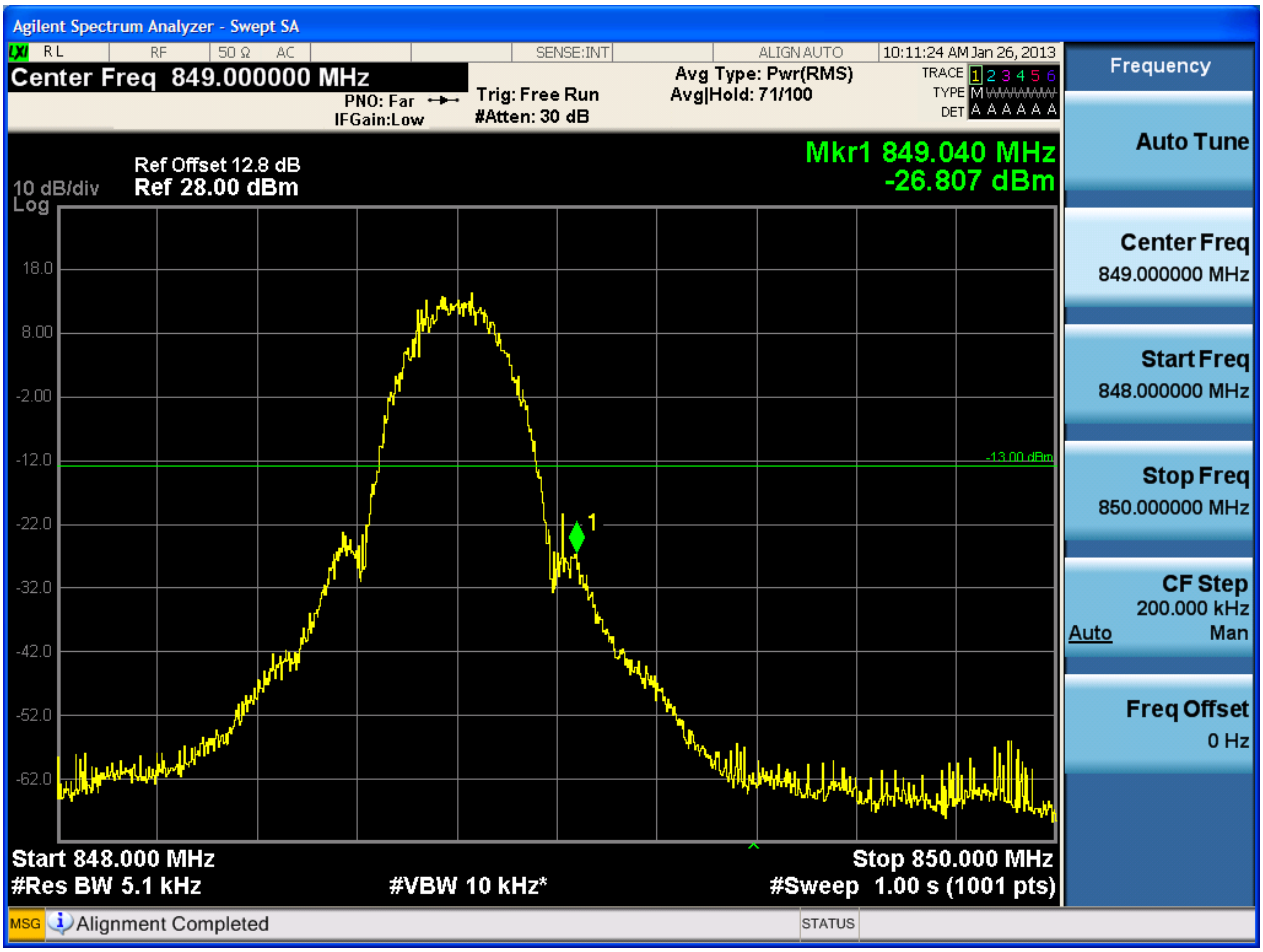


3.1.1.2 Test Mode = GSM/TM2

3.1.1.2.1 Test Channel = LCH



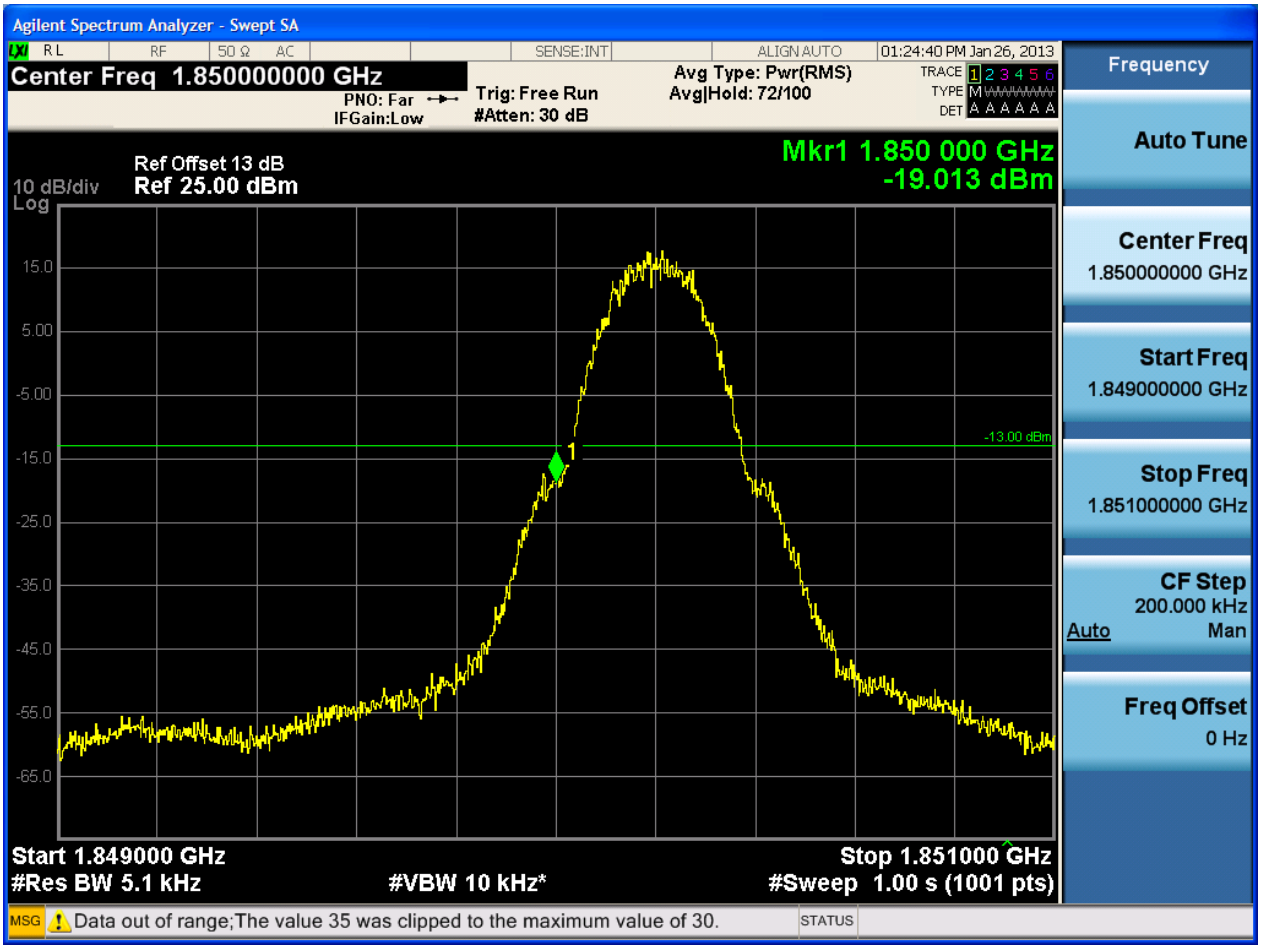
3.1.1.2.2 Test Channel = HCH



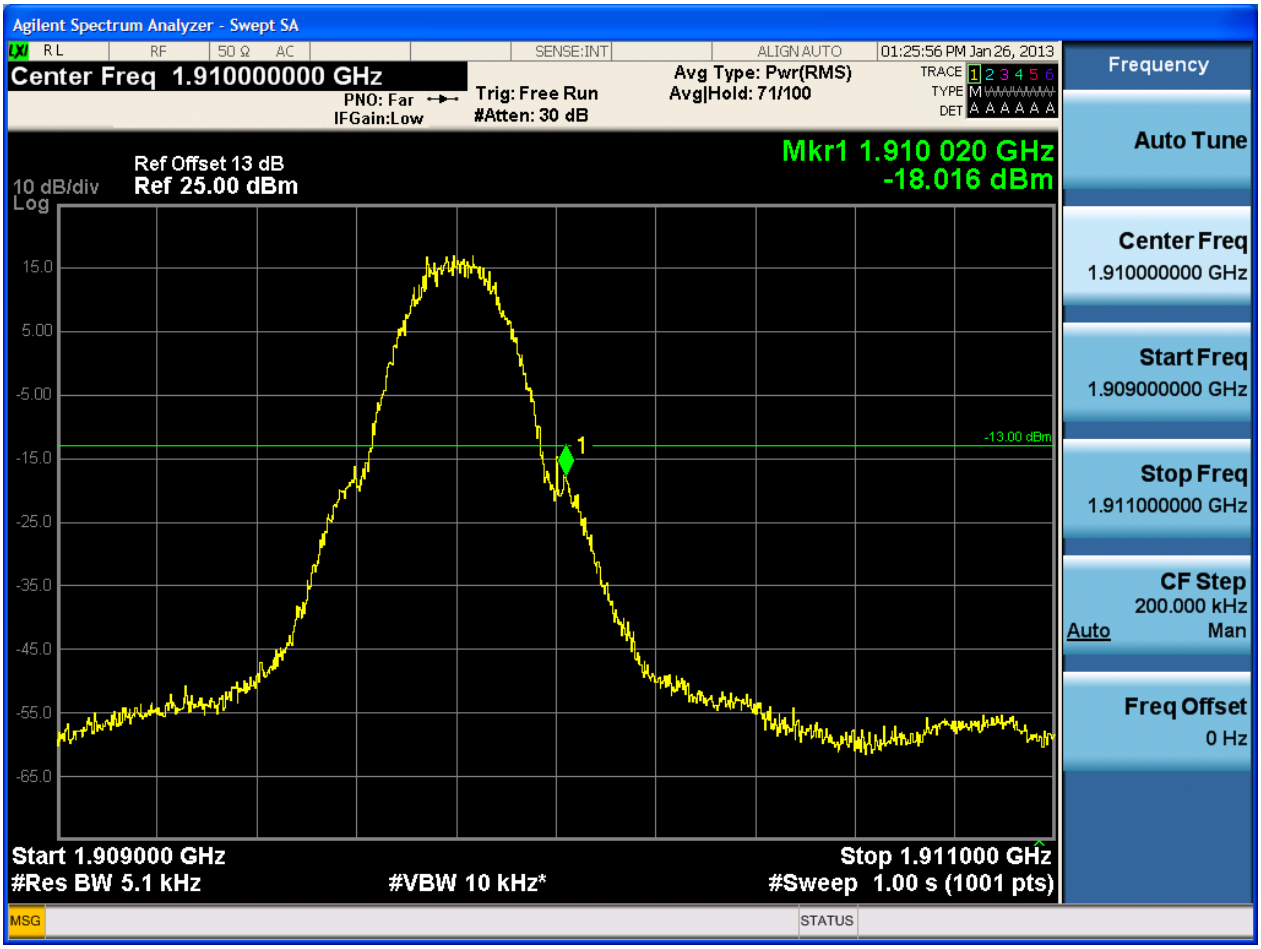
3.1.2 Test Band = GSM1900

3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = LCH

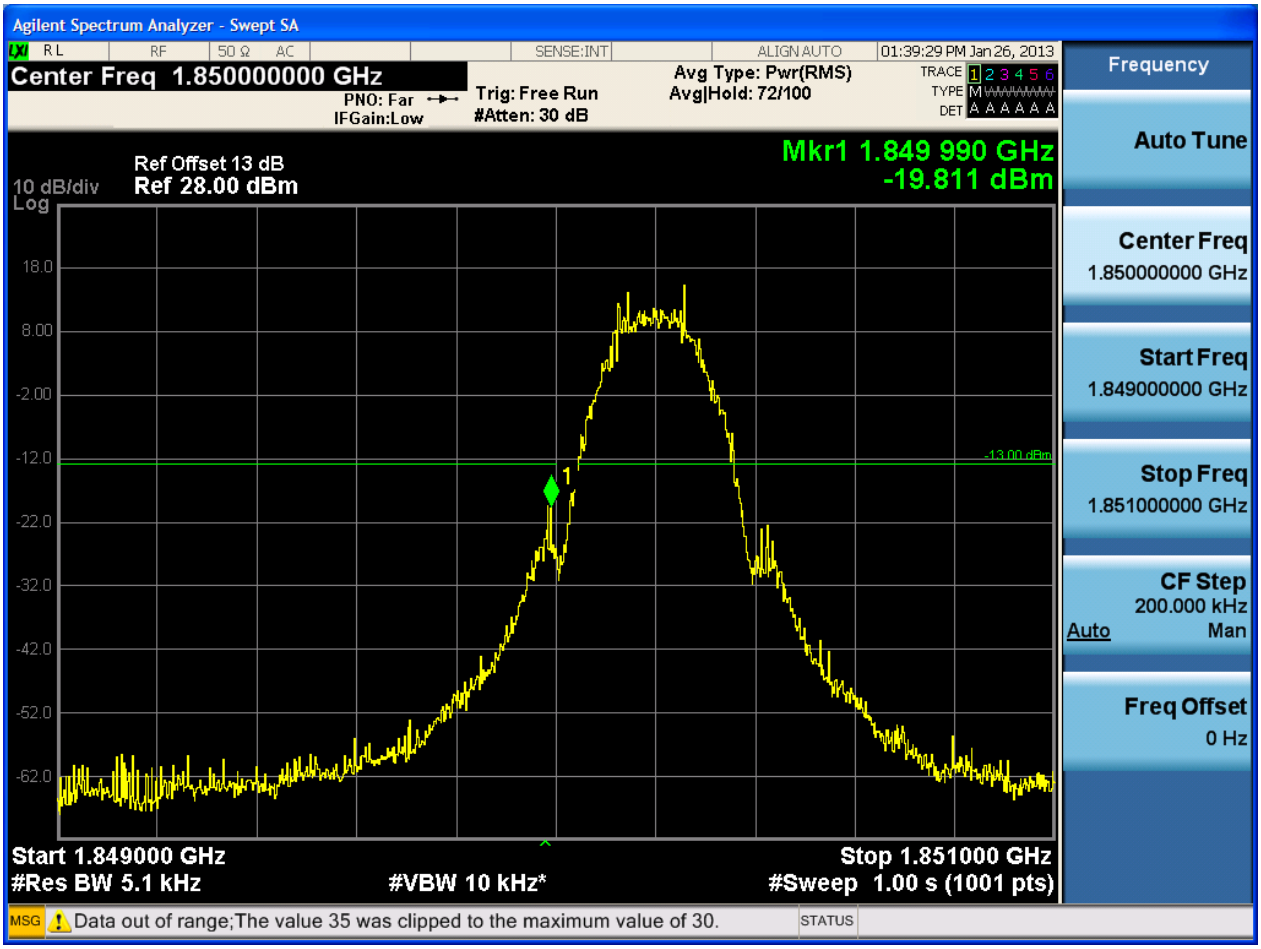


3.1.2.1.2 Test Channel = HCH

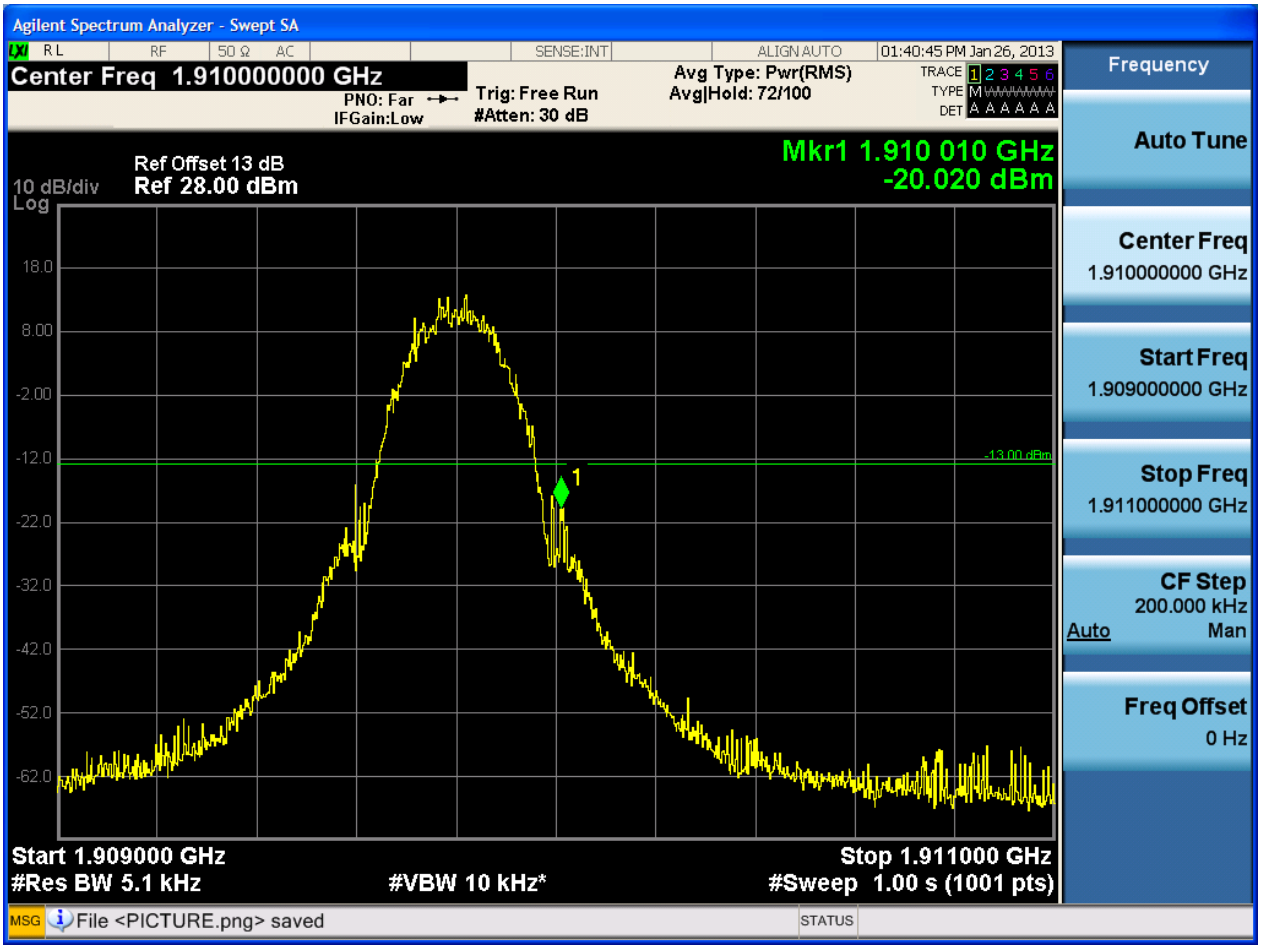


3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = LCH



3.1.2.2.2 Test Channel = HCH

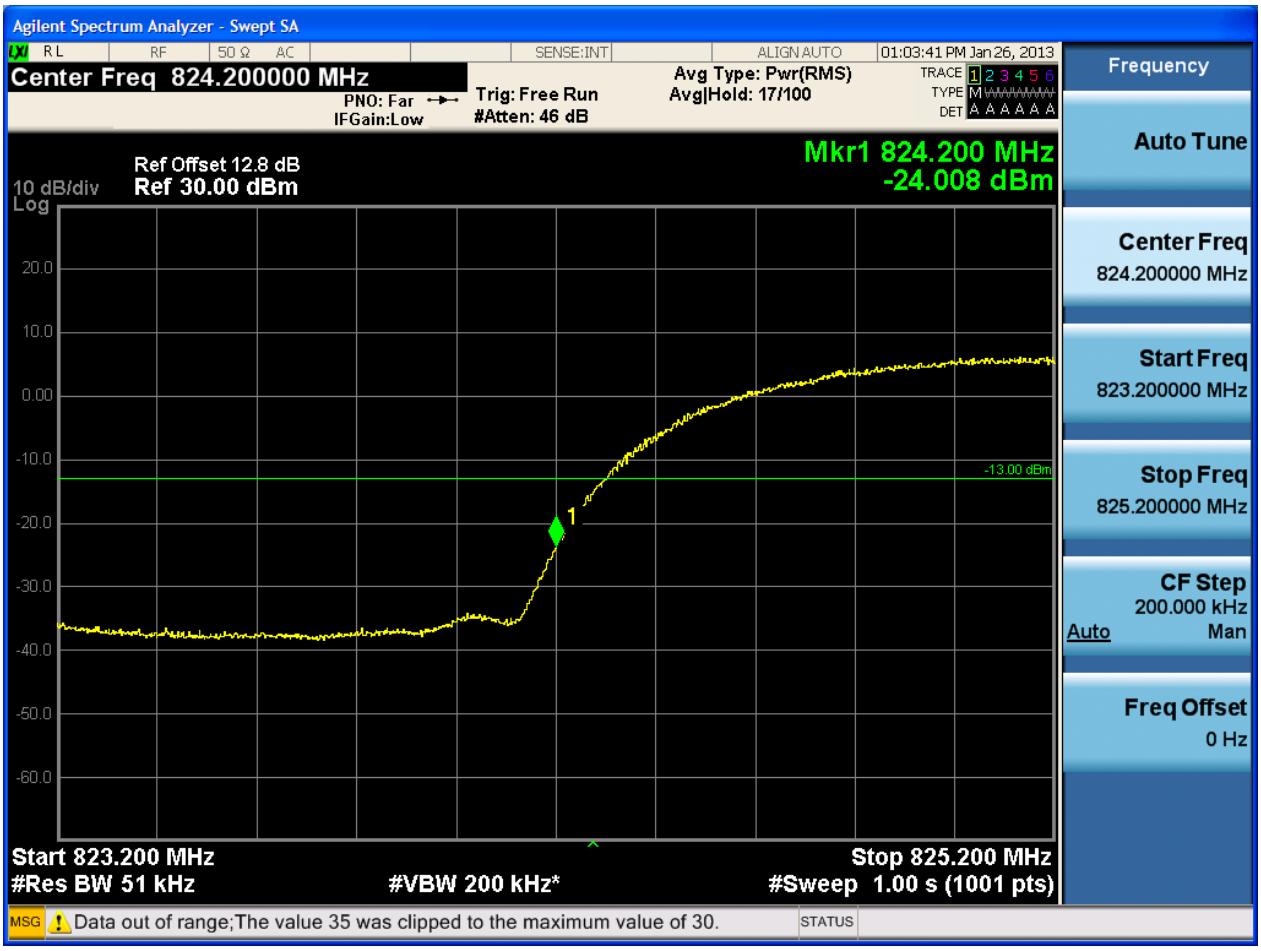


3.2 For UMTS

3.2.1 Test Band = WCDMA850

3.2.1.1 Test Mode = UMTS/TM1

3.2.1.1.1 Test Channel = LCH



3.2.1.1.2 Test Channel = HCH

4Appendix_D: Spurious Emission at Antenna Terminal

NOTE: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of < RBW/2 so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = k * (Span / RBW)" with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

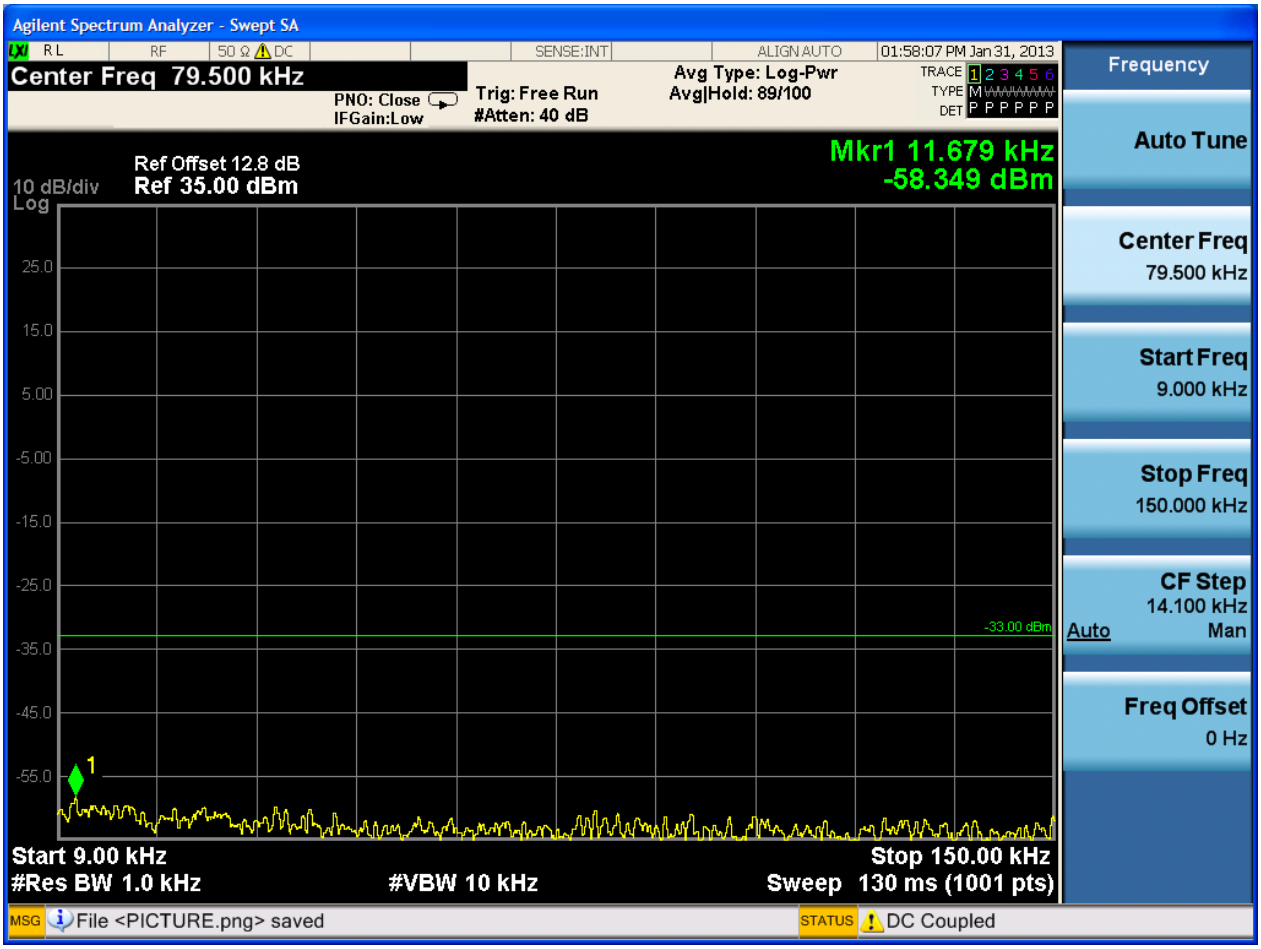
Part I - Test Plots

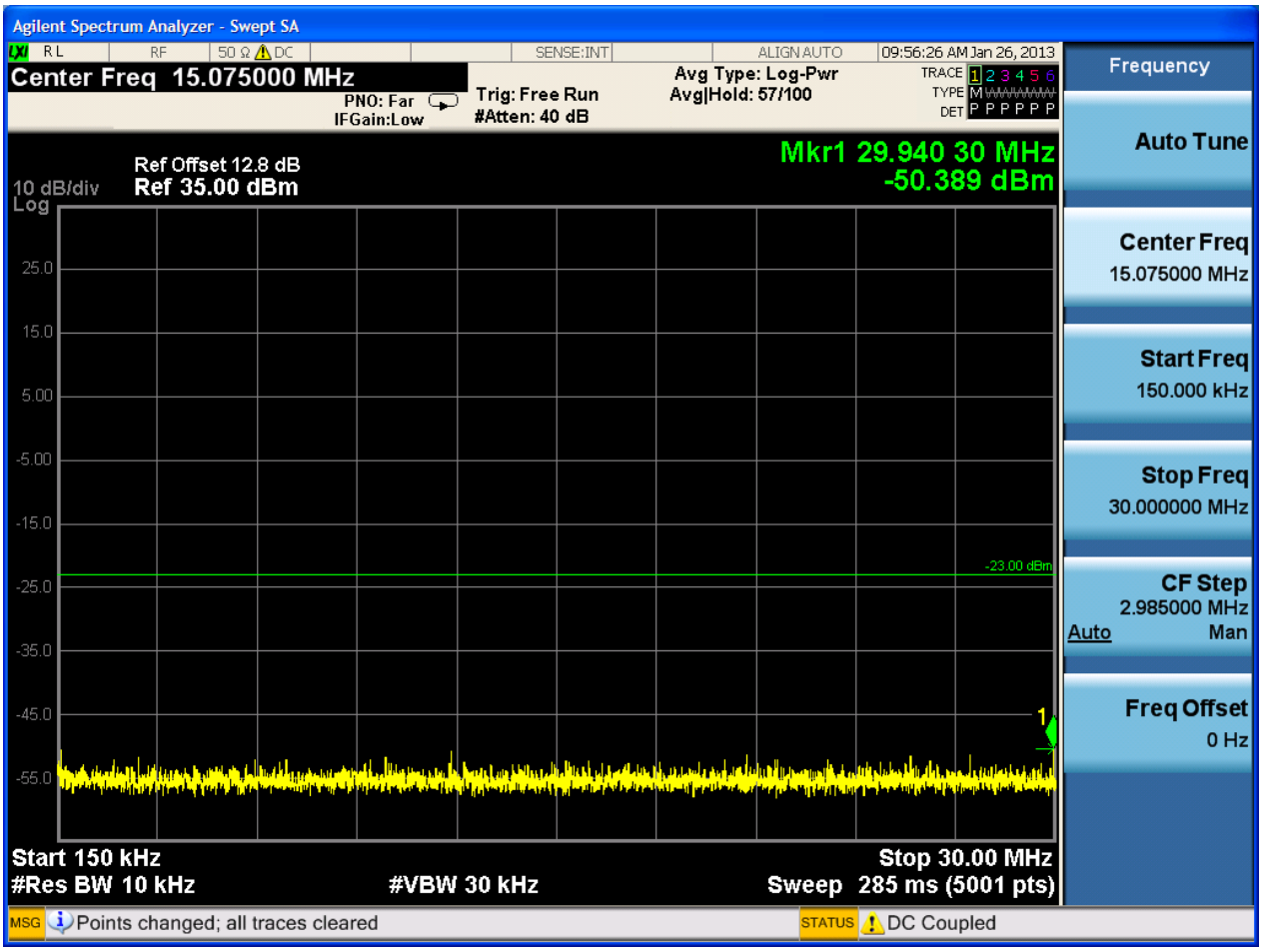
4.1 For GSM

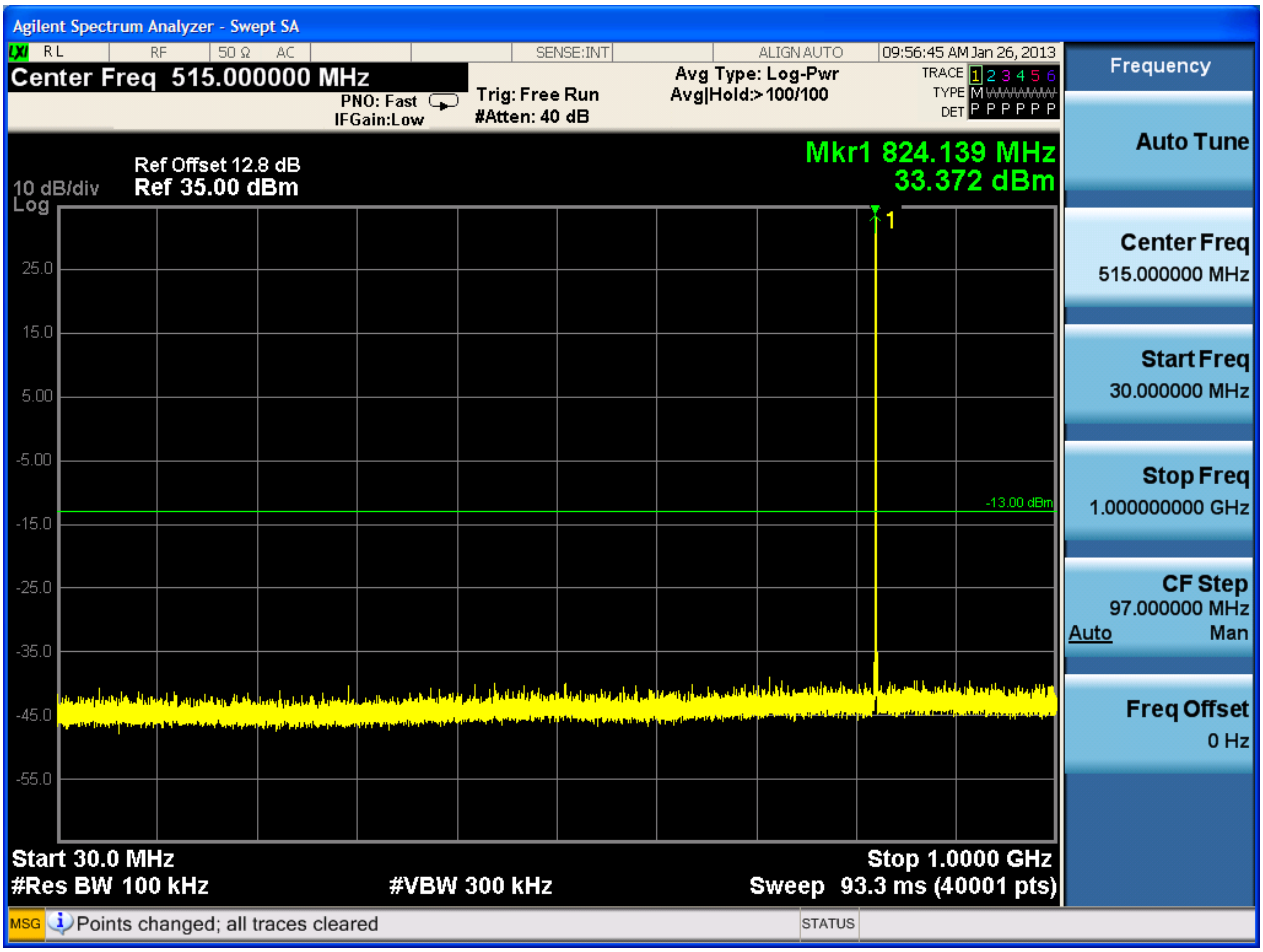
4.1.1 Test Band = GSM850

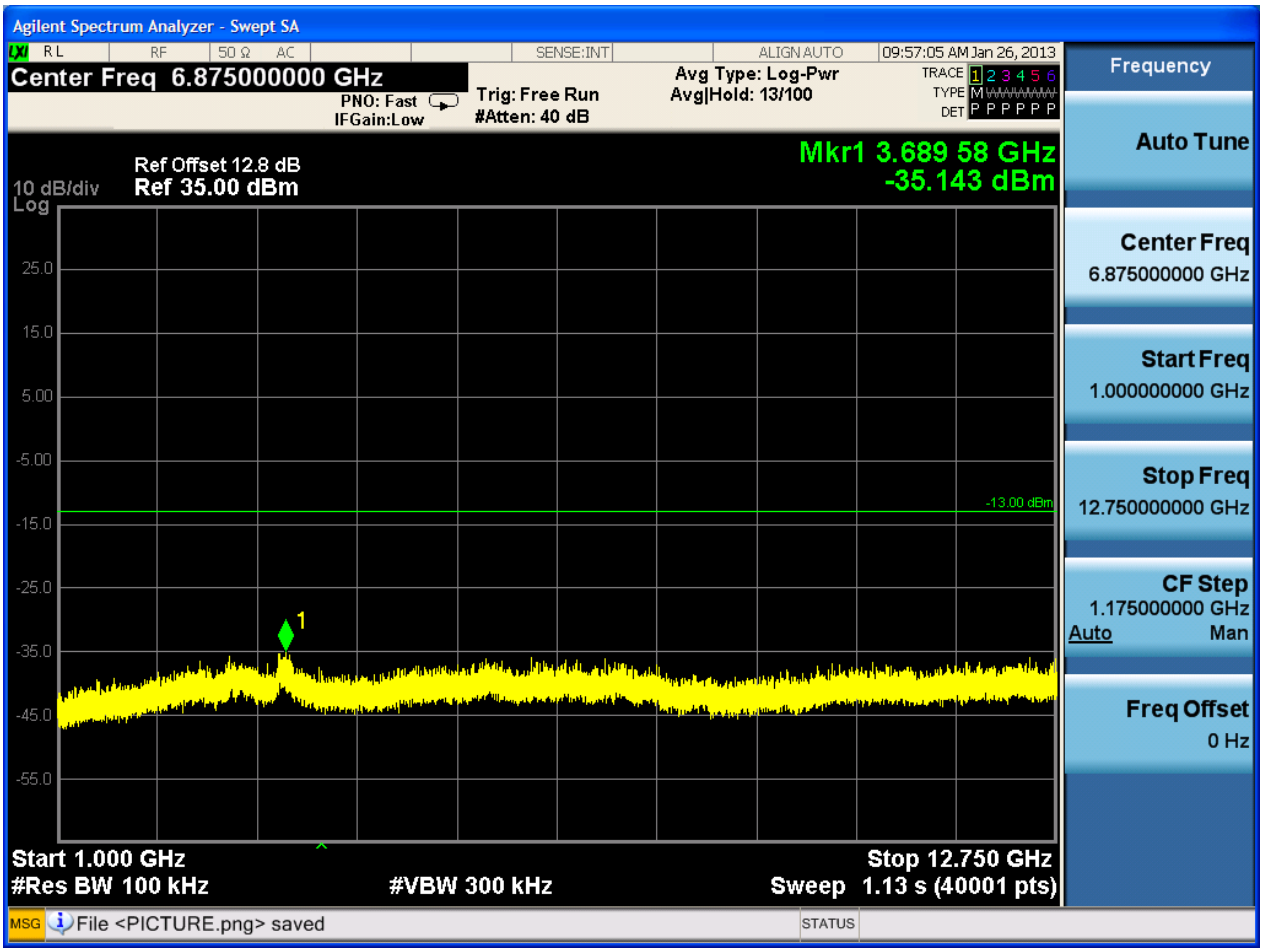
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH

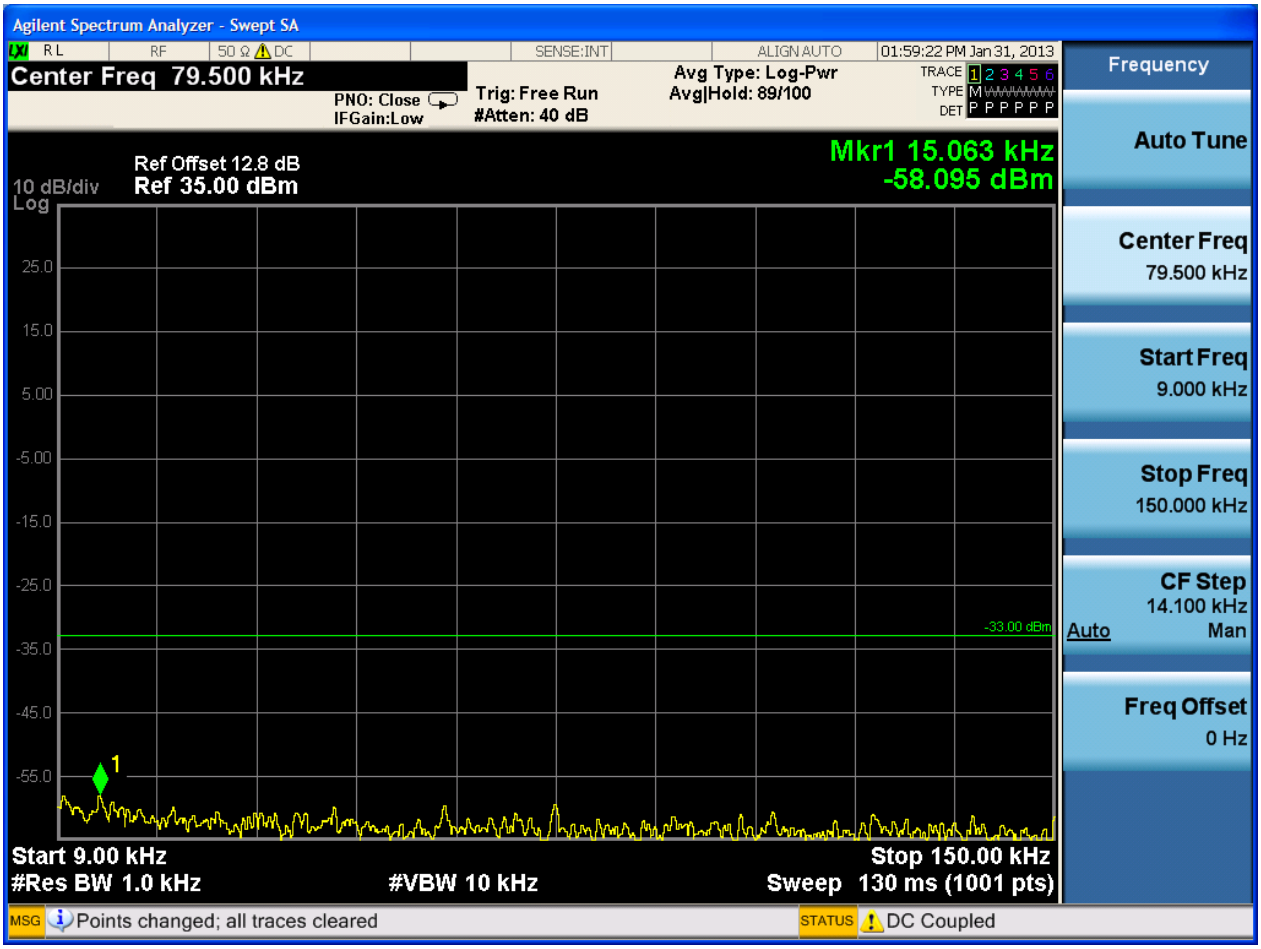


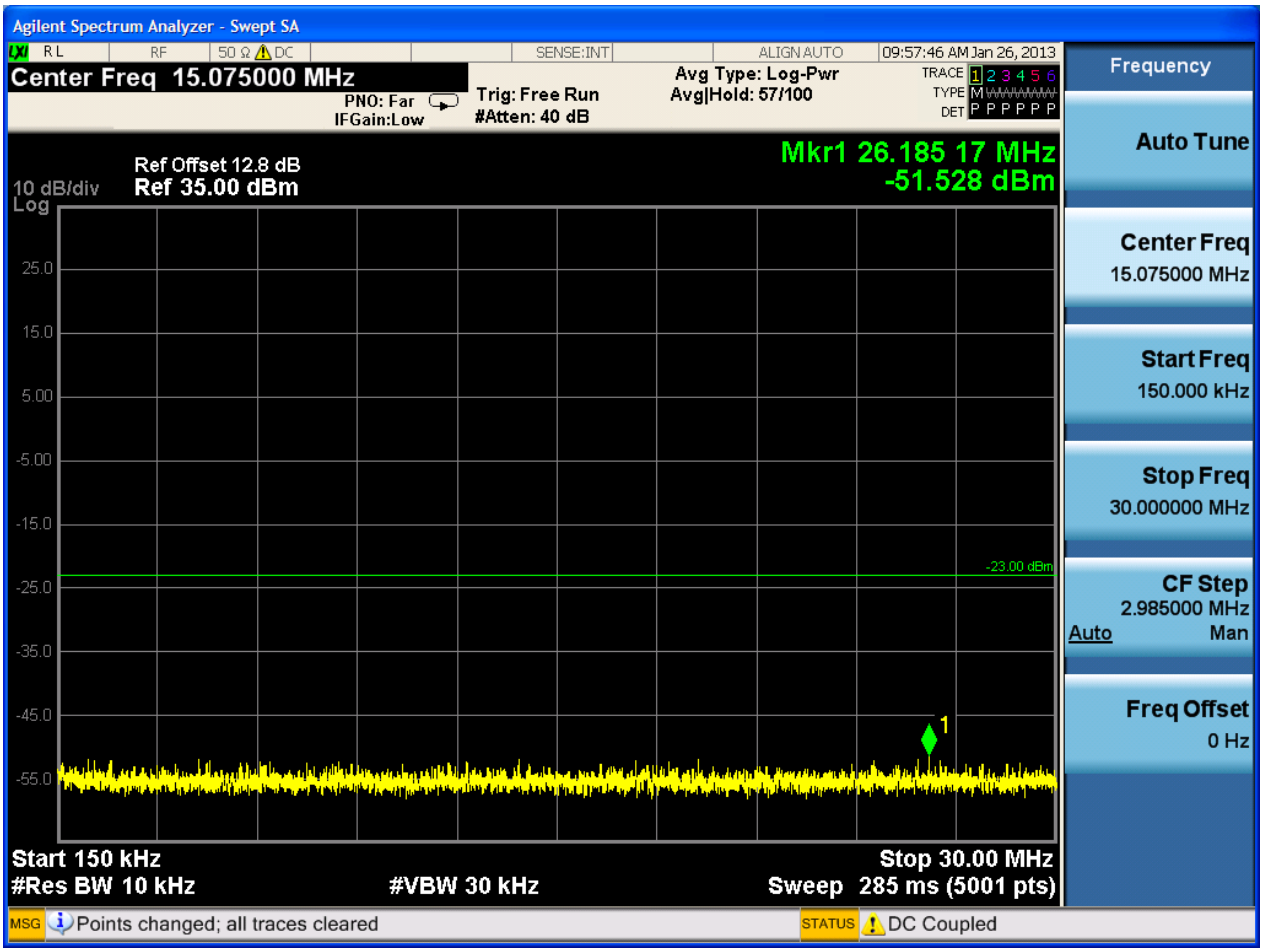


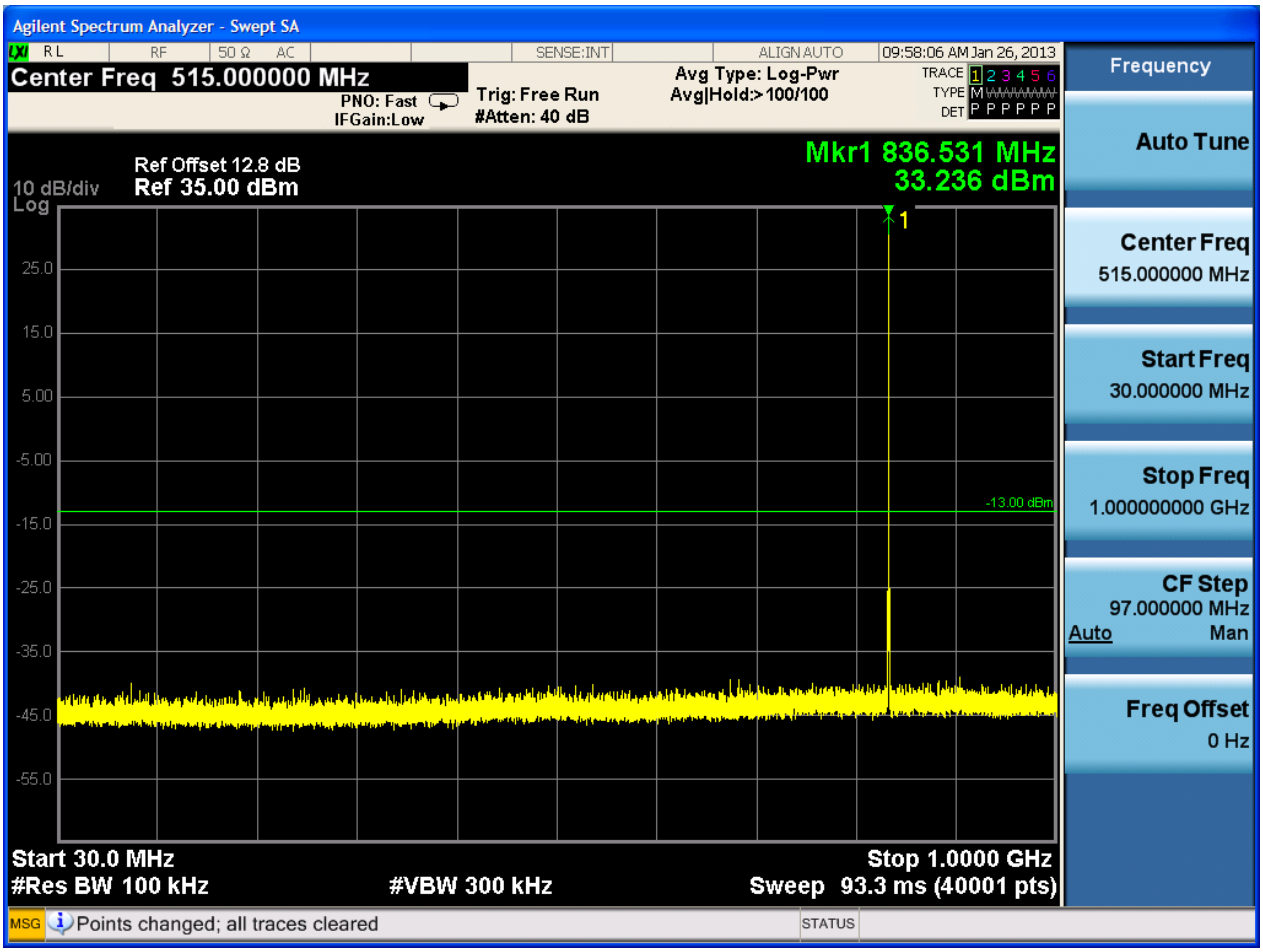


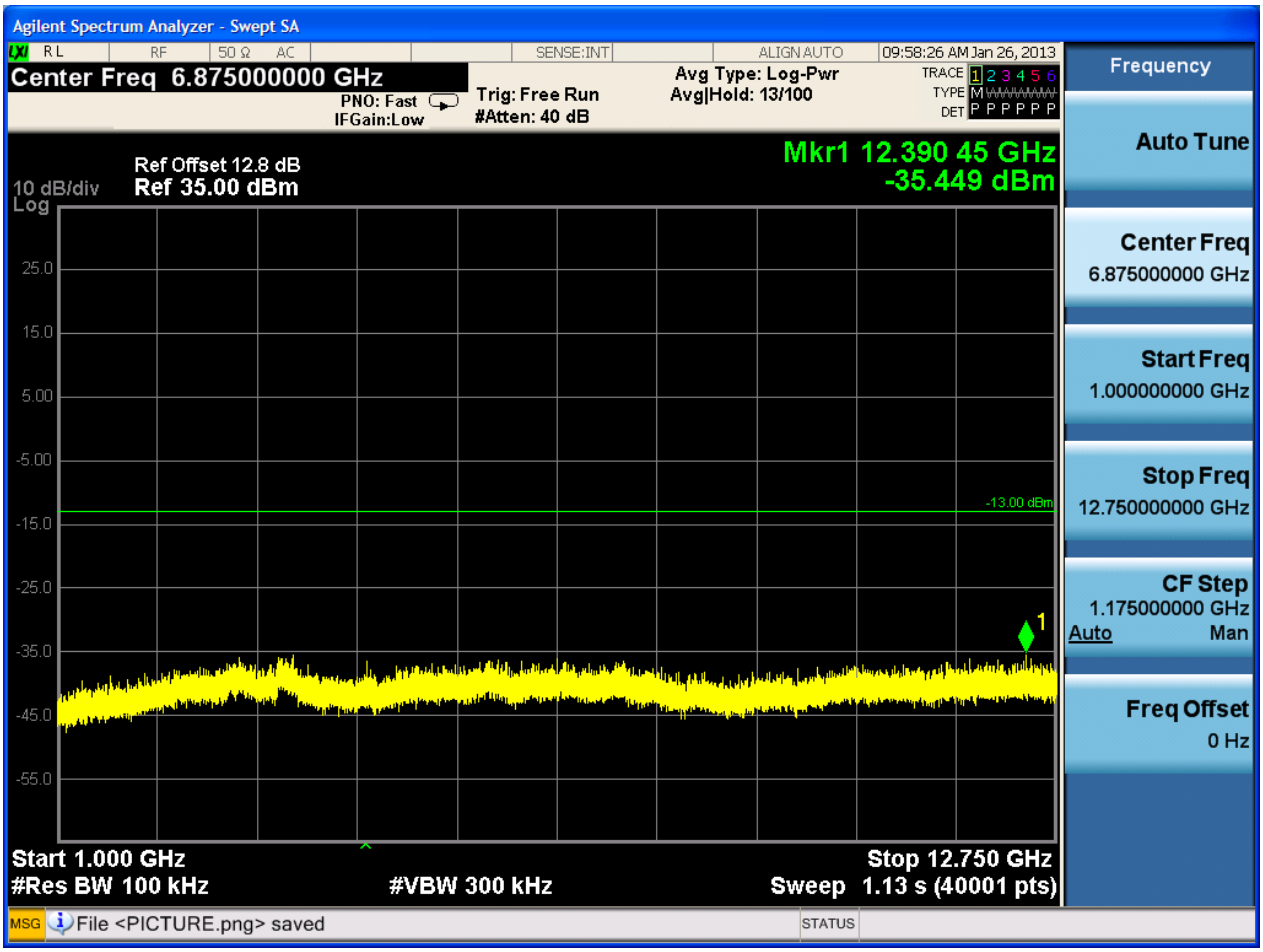


4.1.1.1.2 Test Channel = MCH

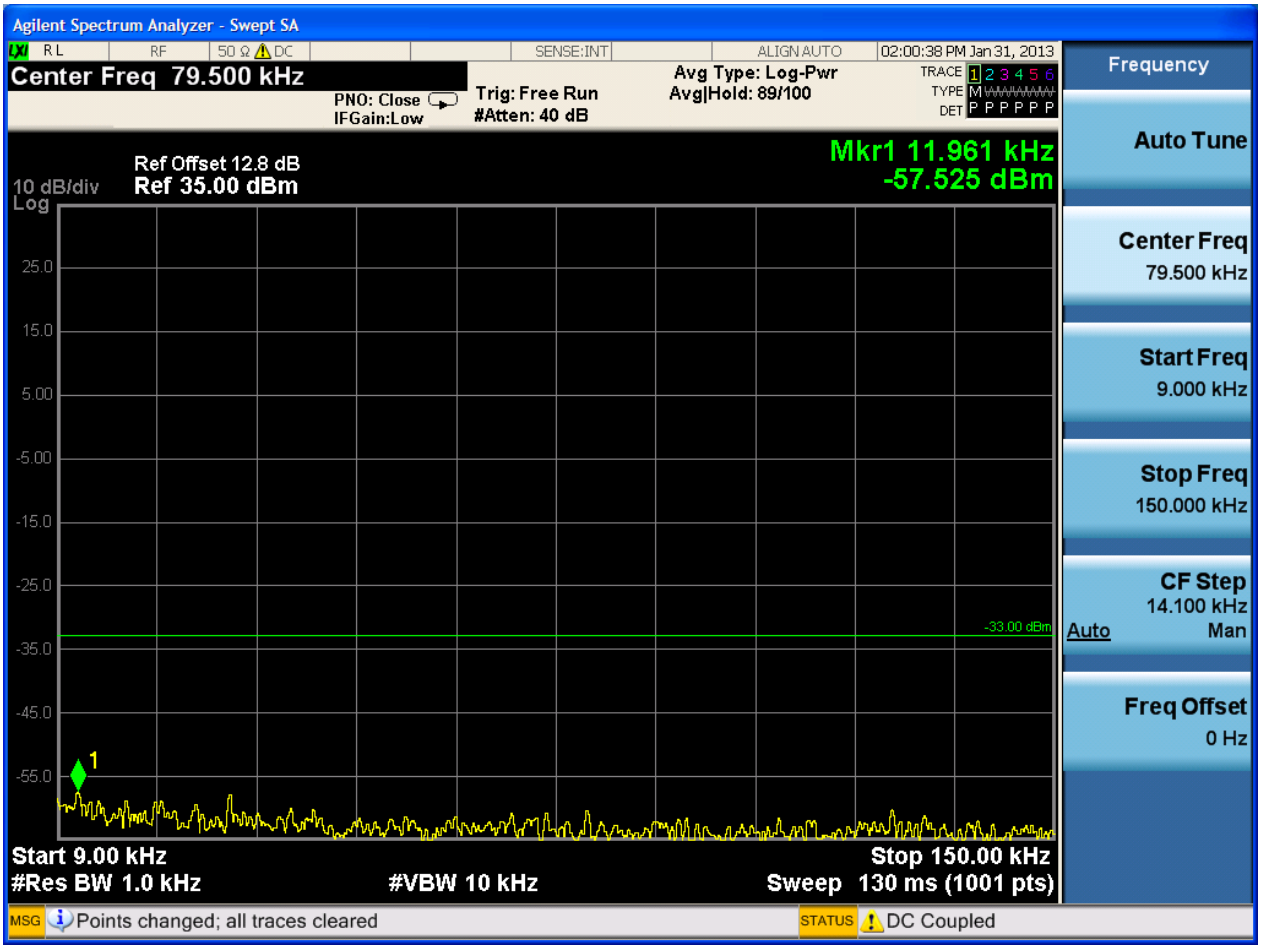


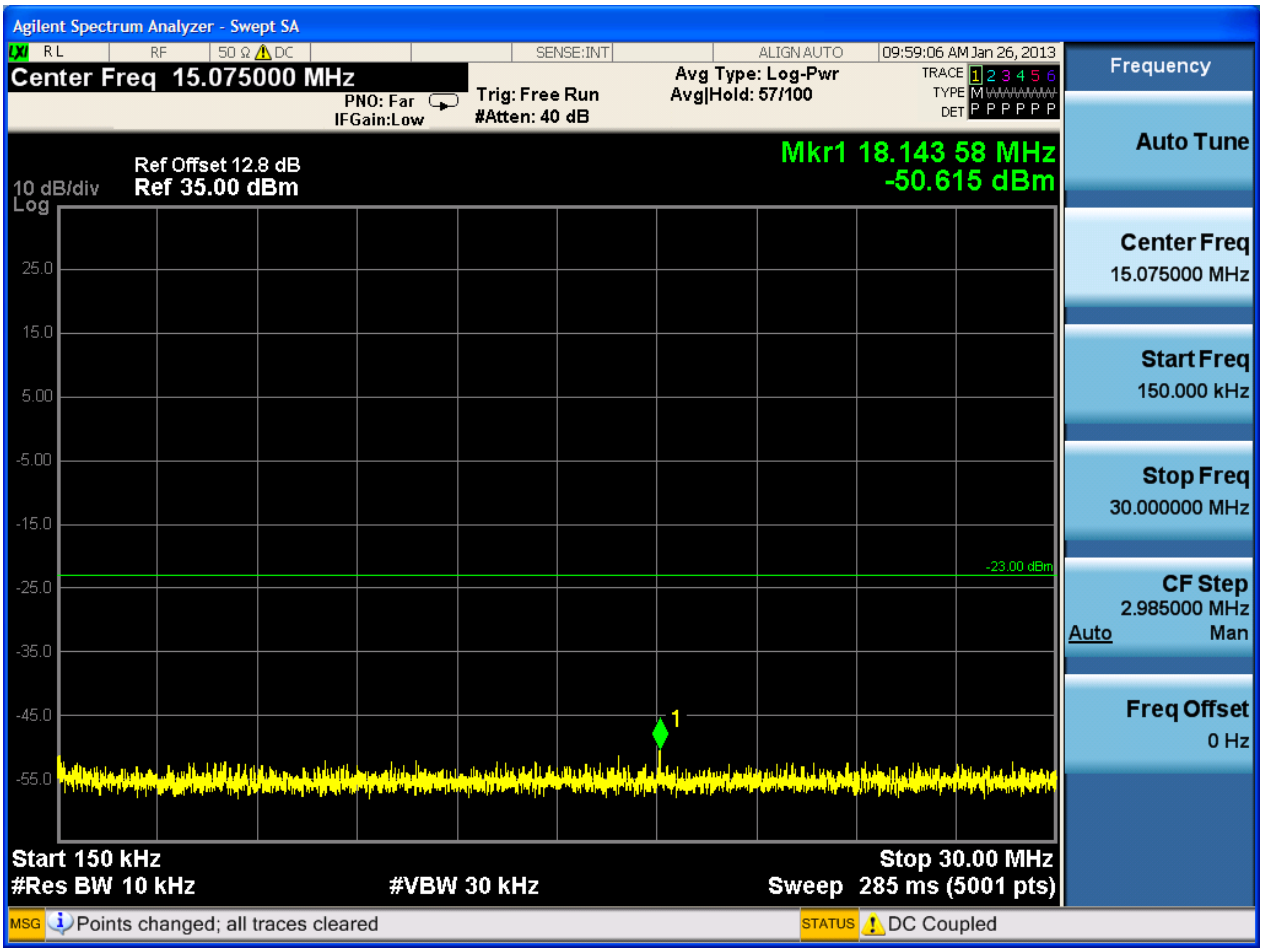


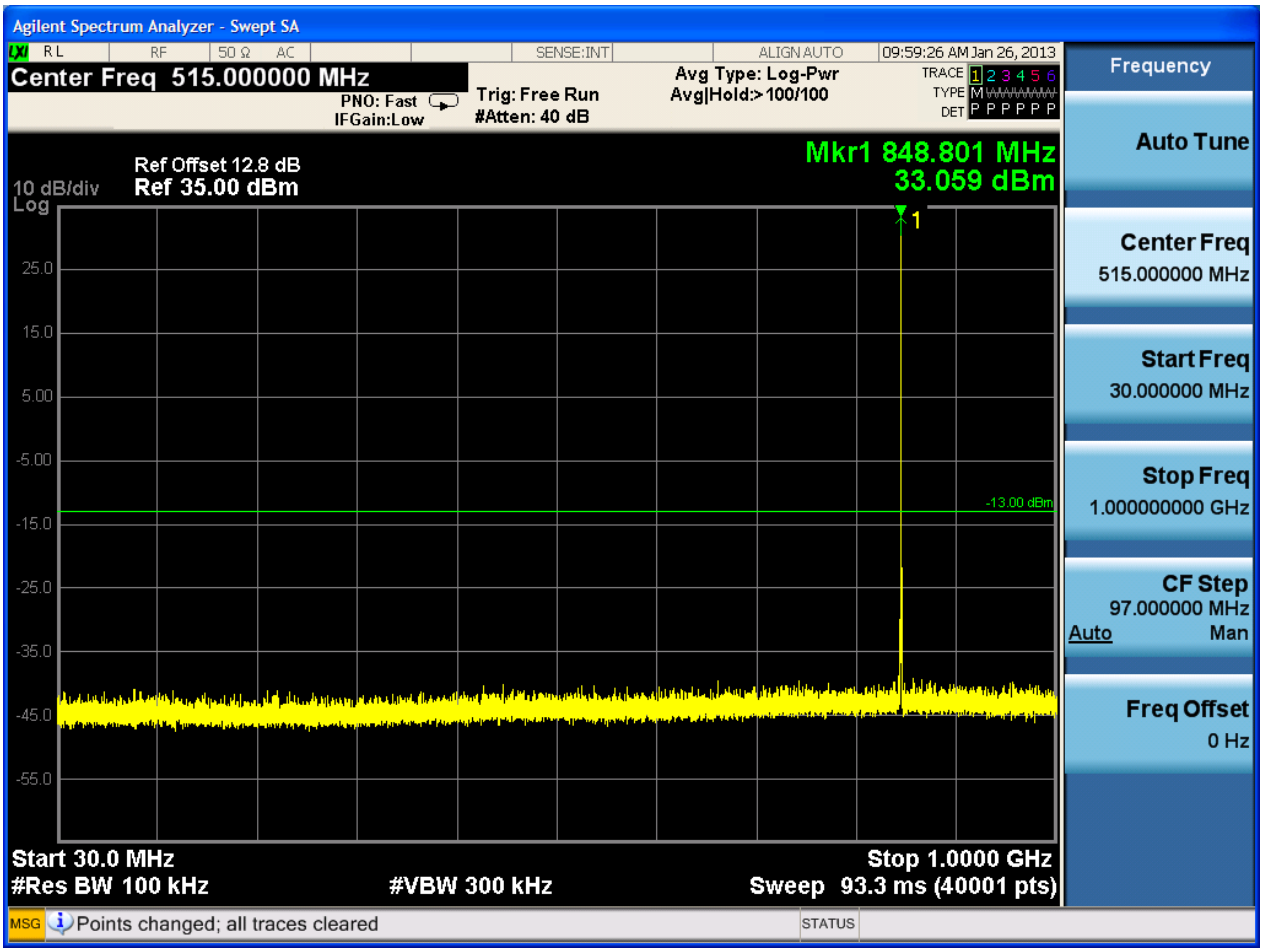


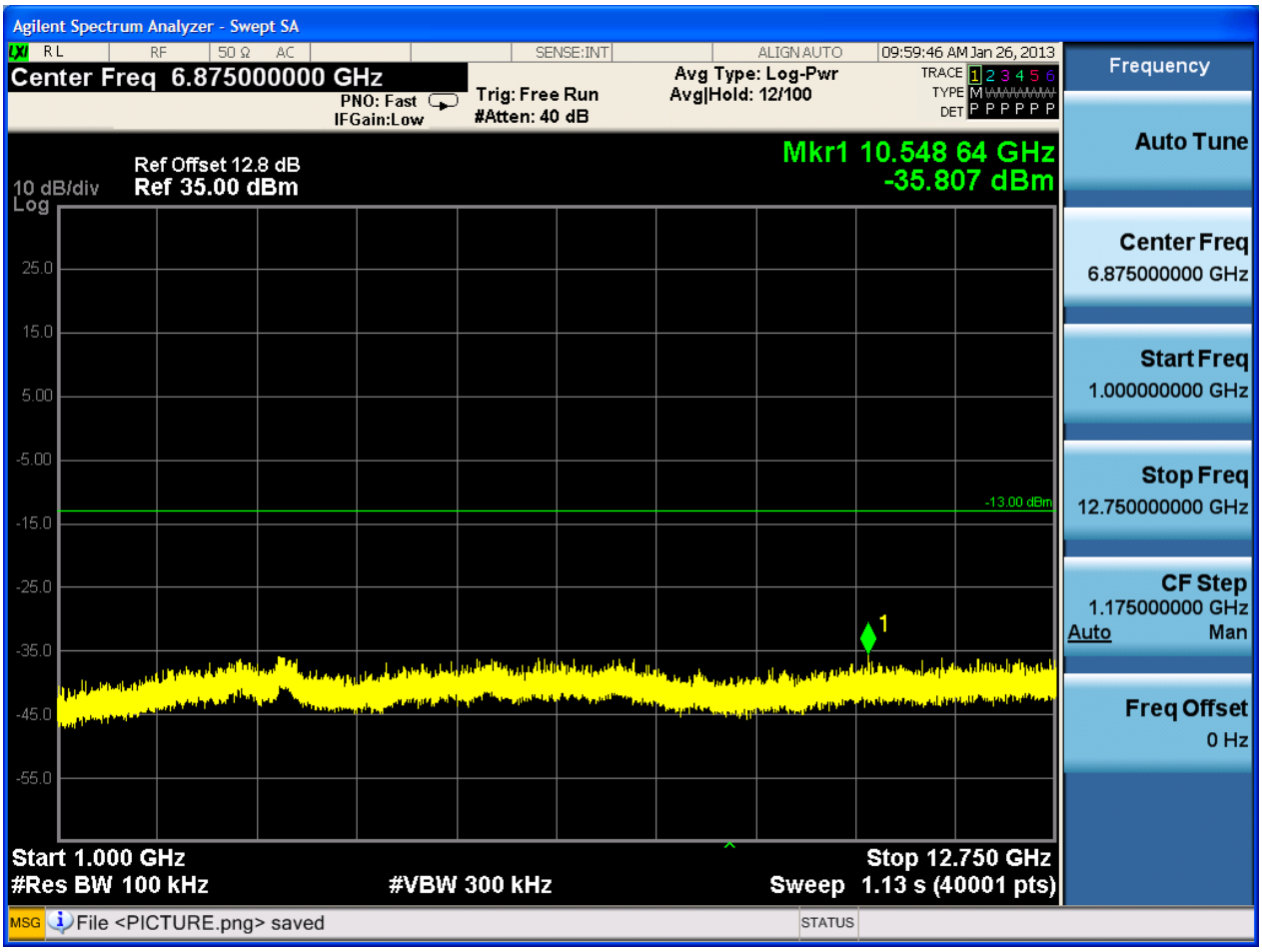


4.1.1.1.3 Test Channel = HCH



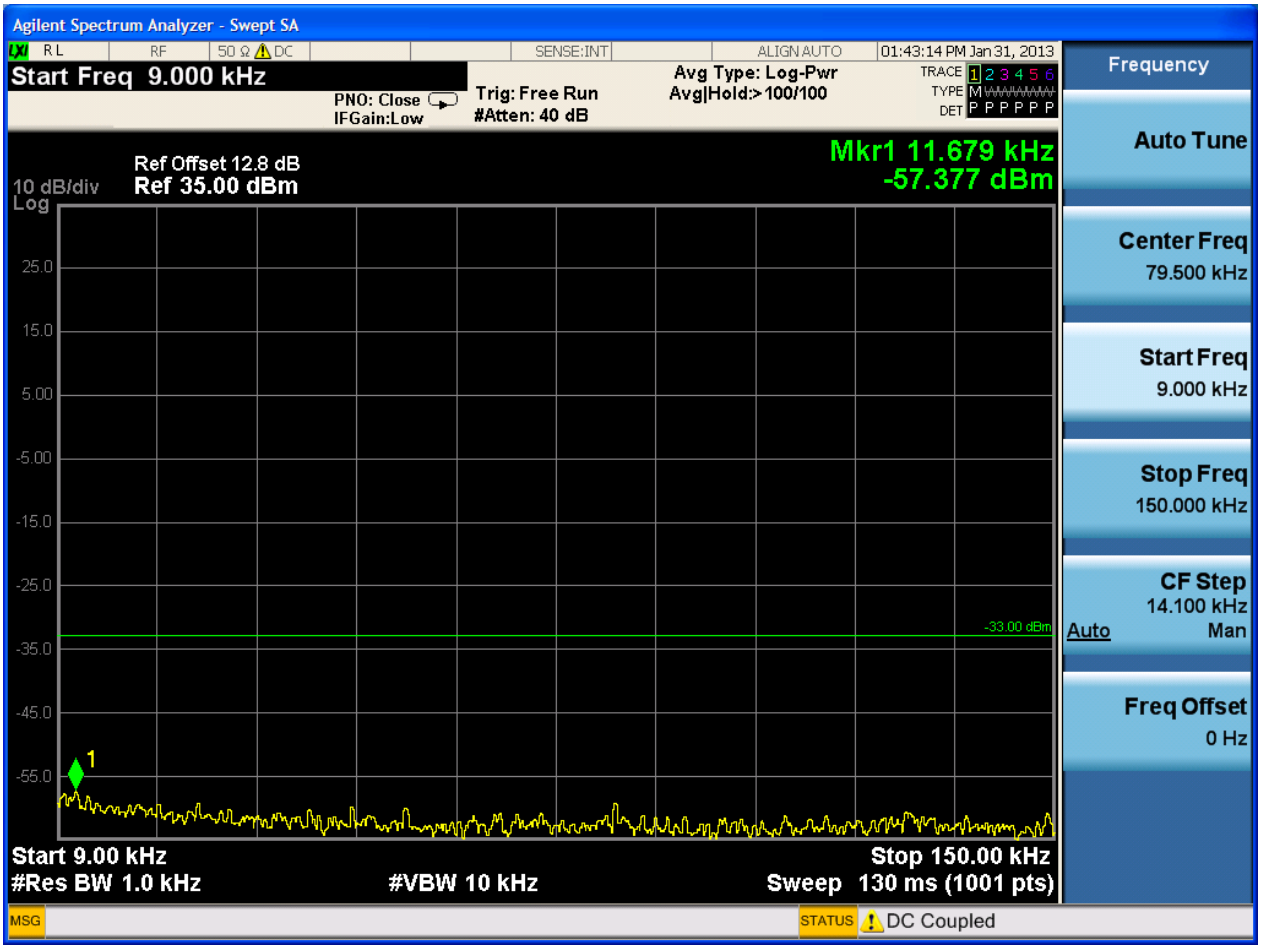


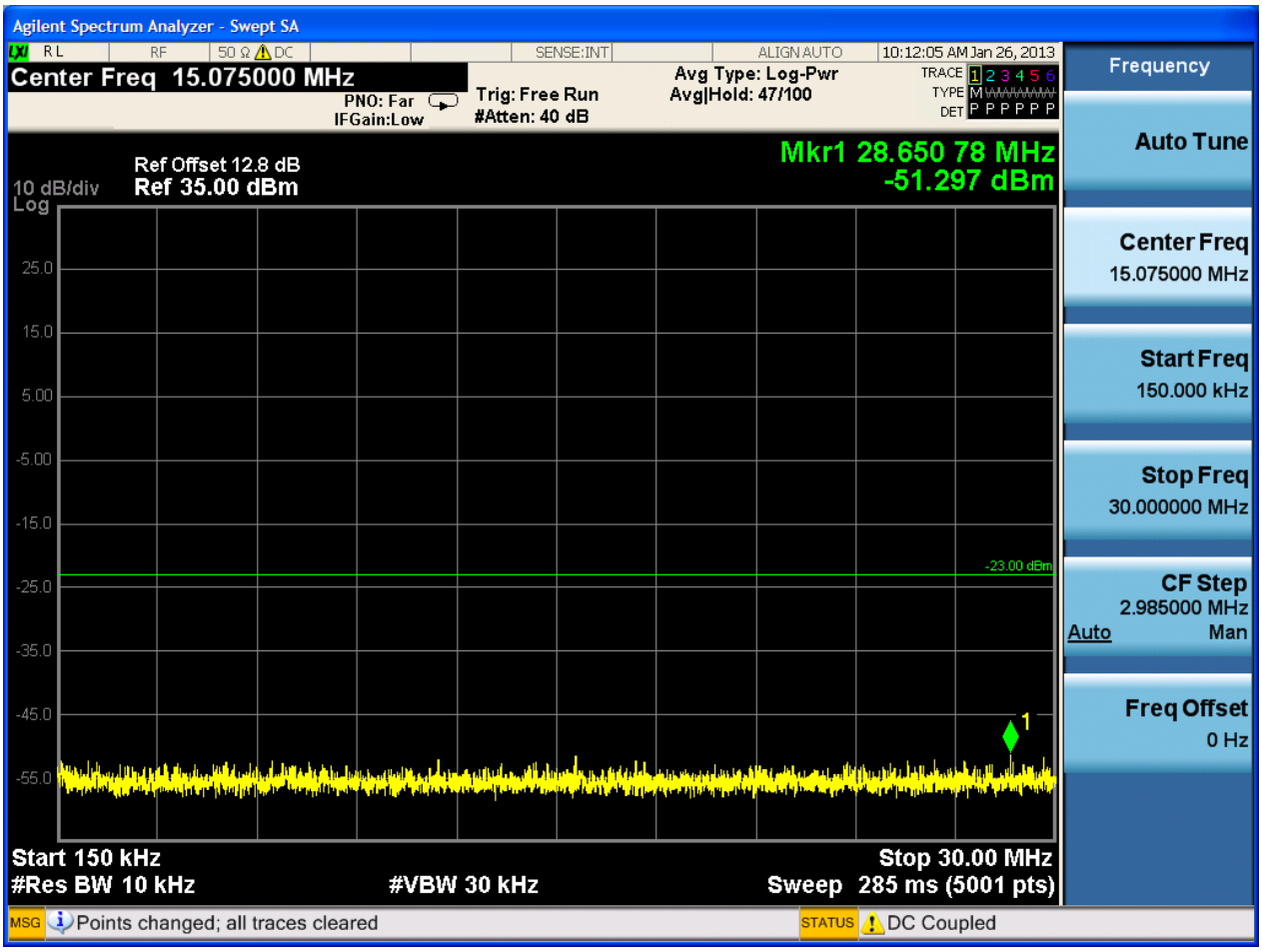


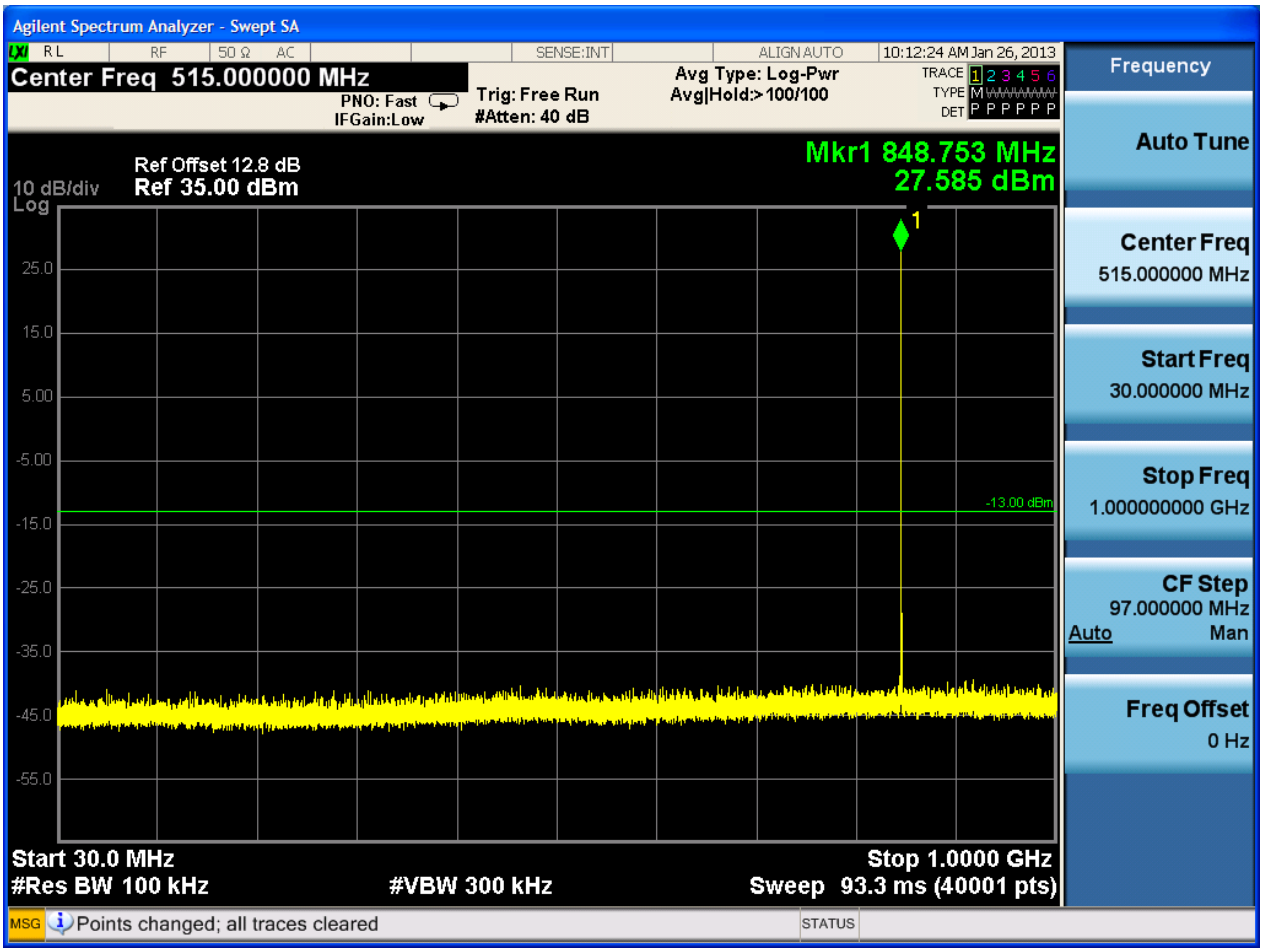


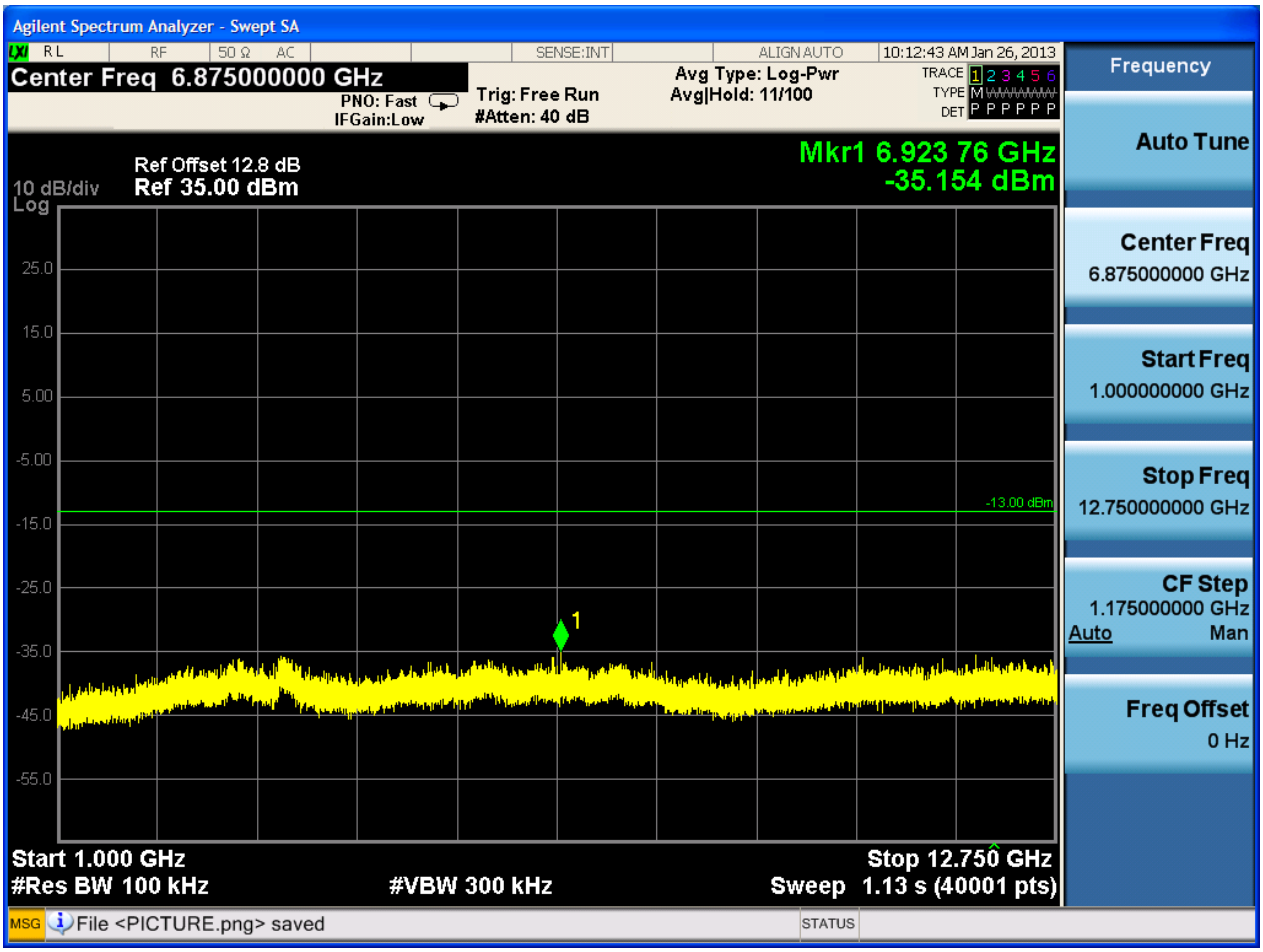
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH

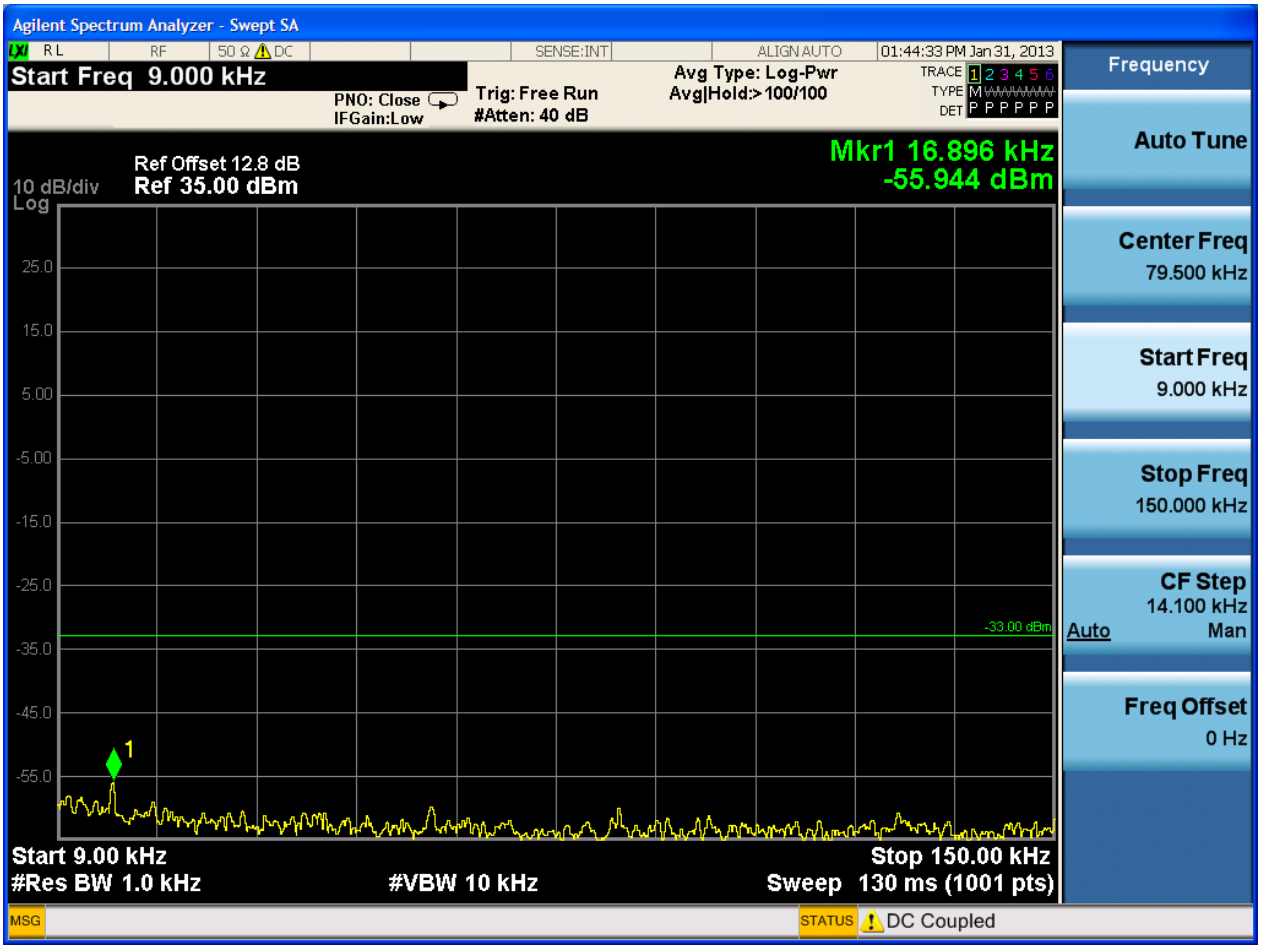


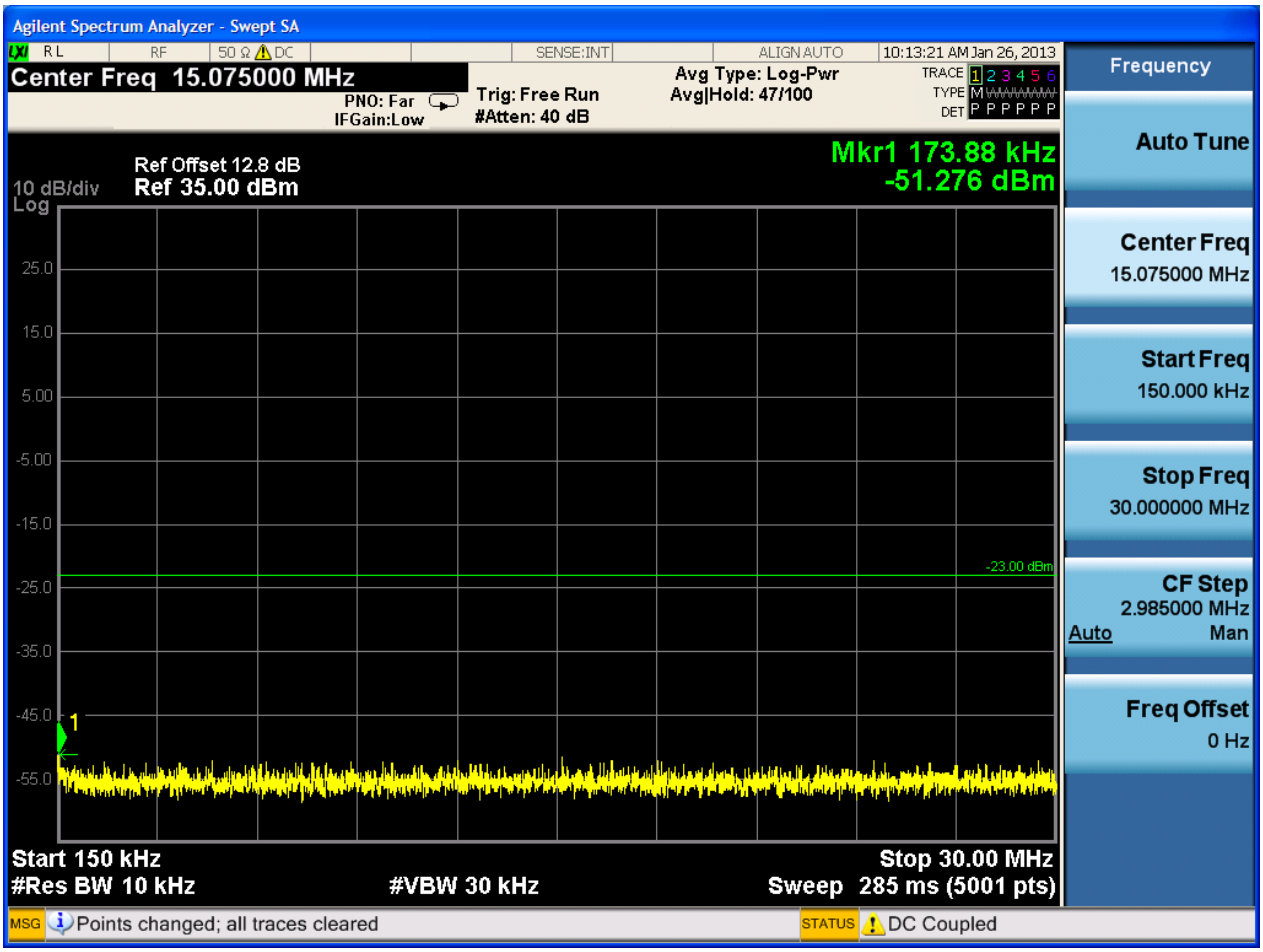


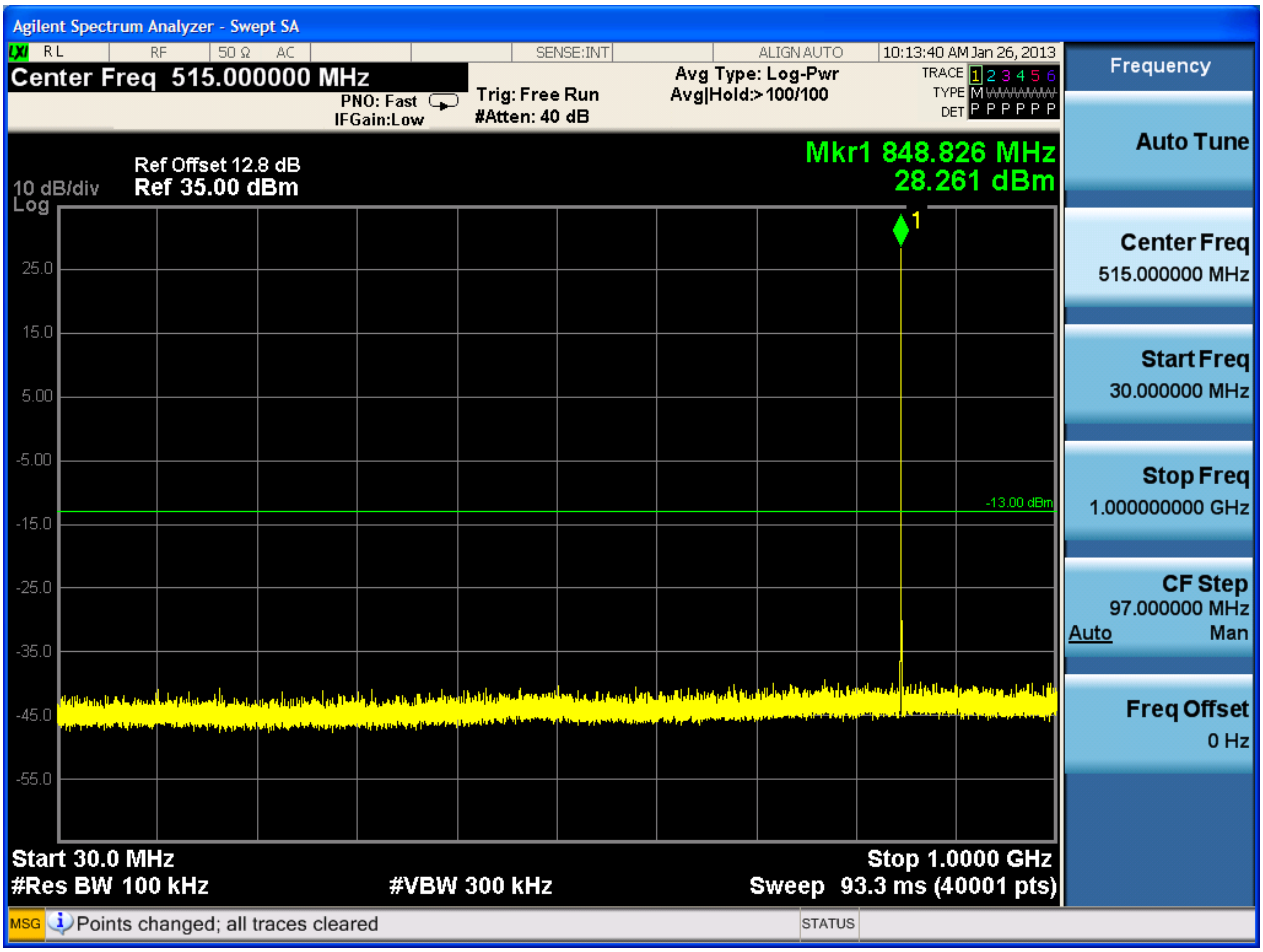


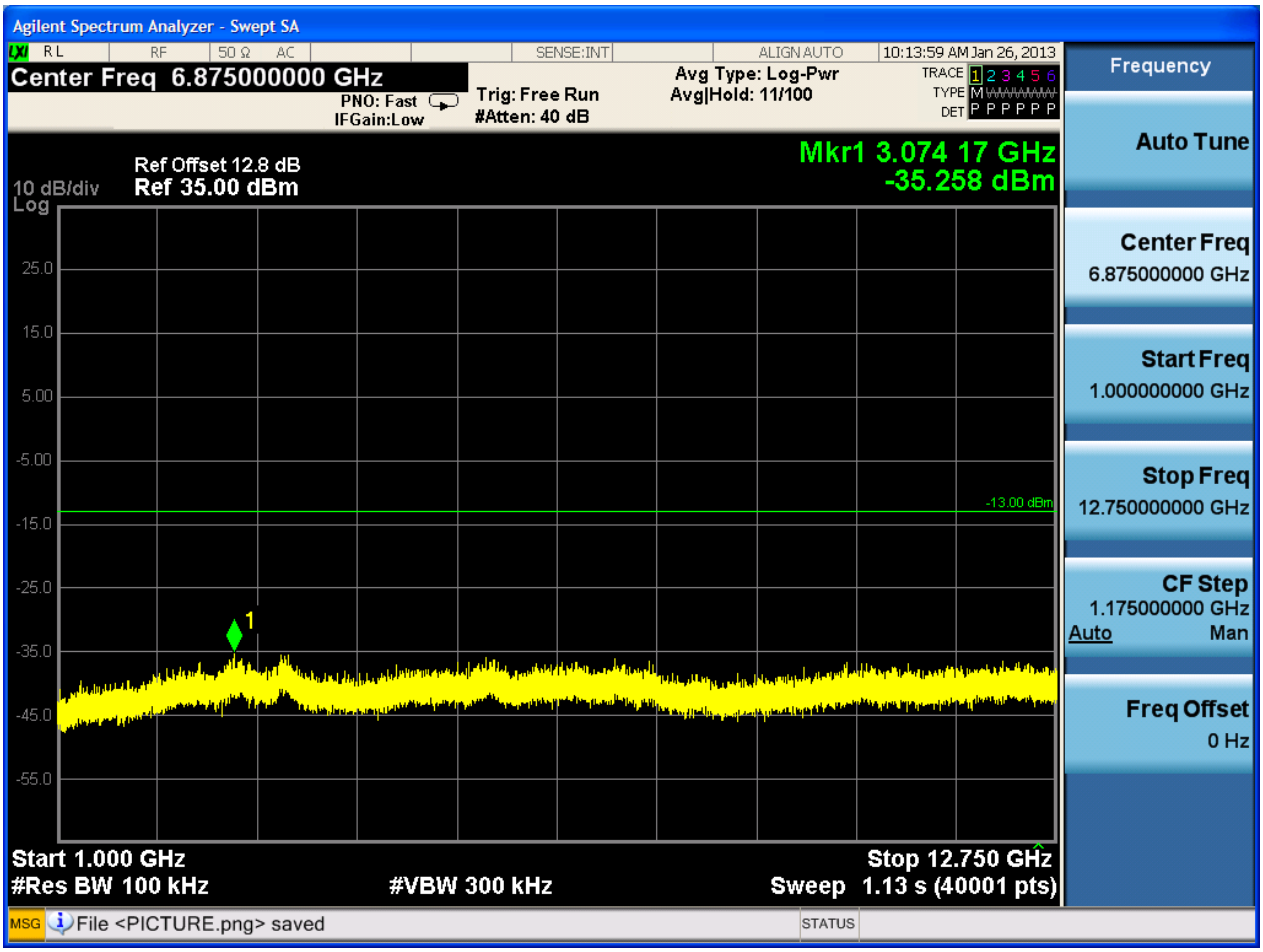


4.1.1.2.2 Test Channel = MCH

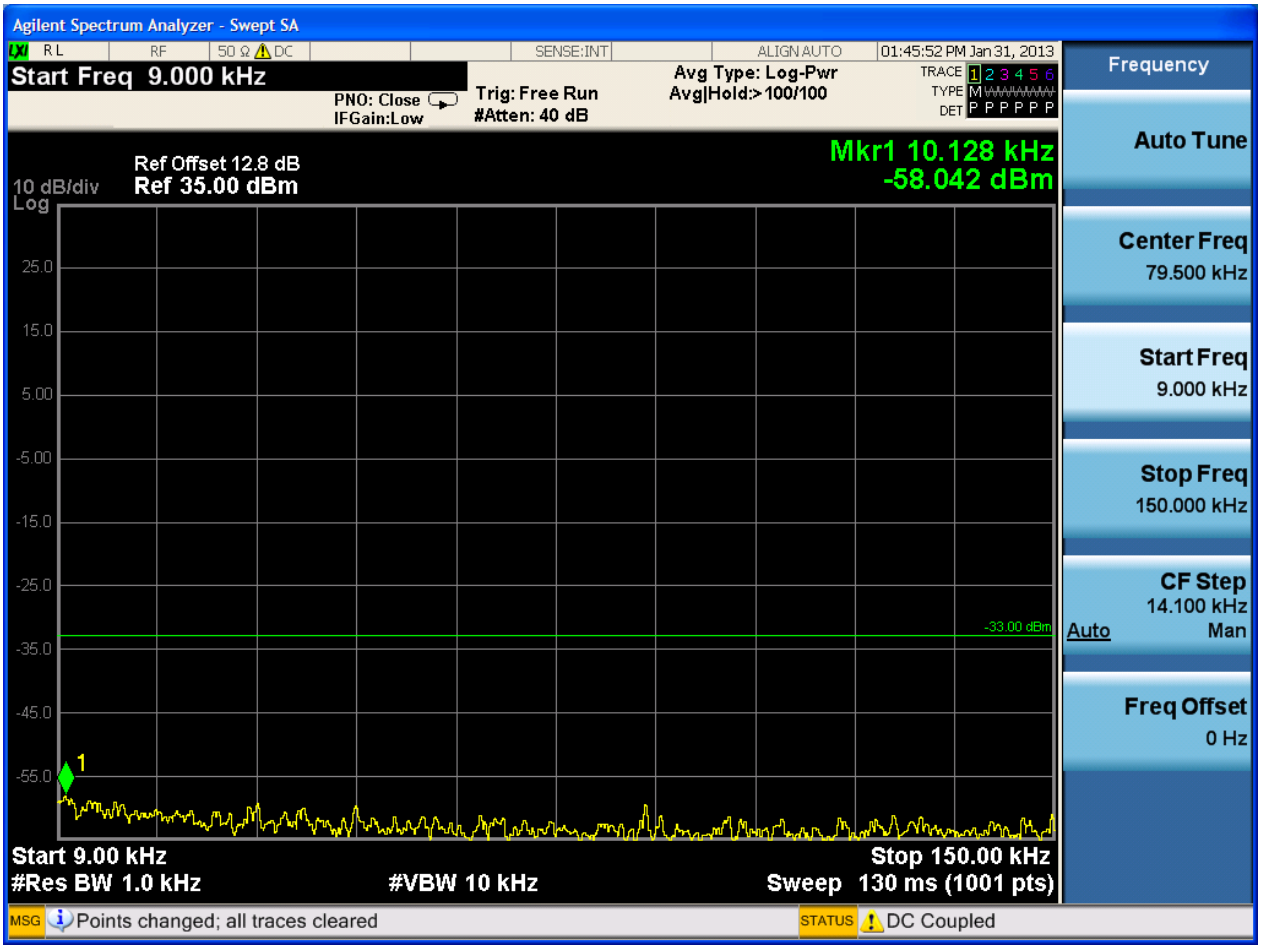


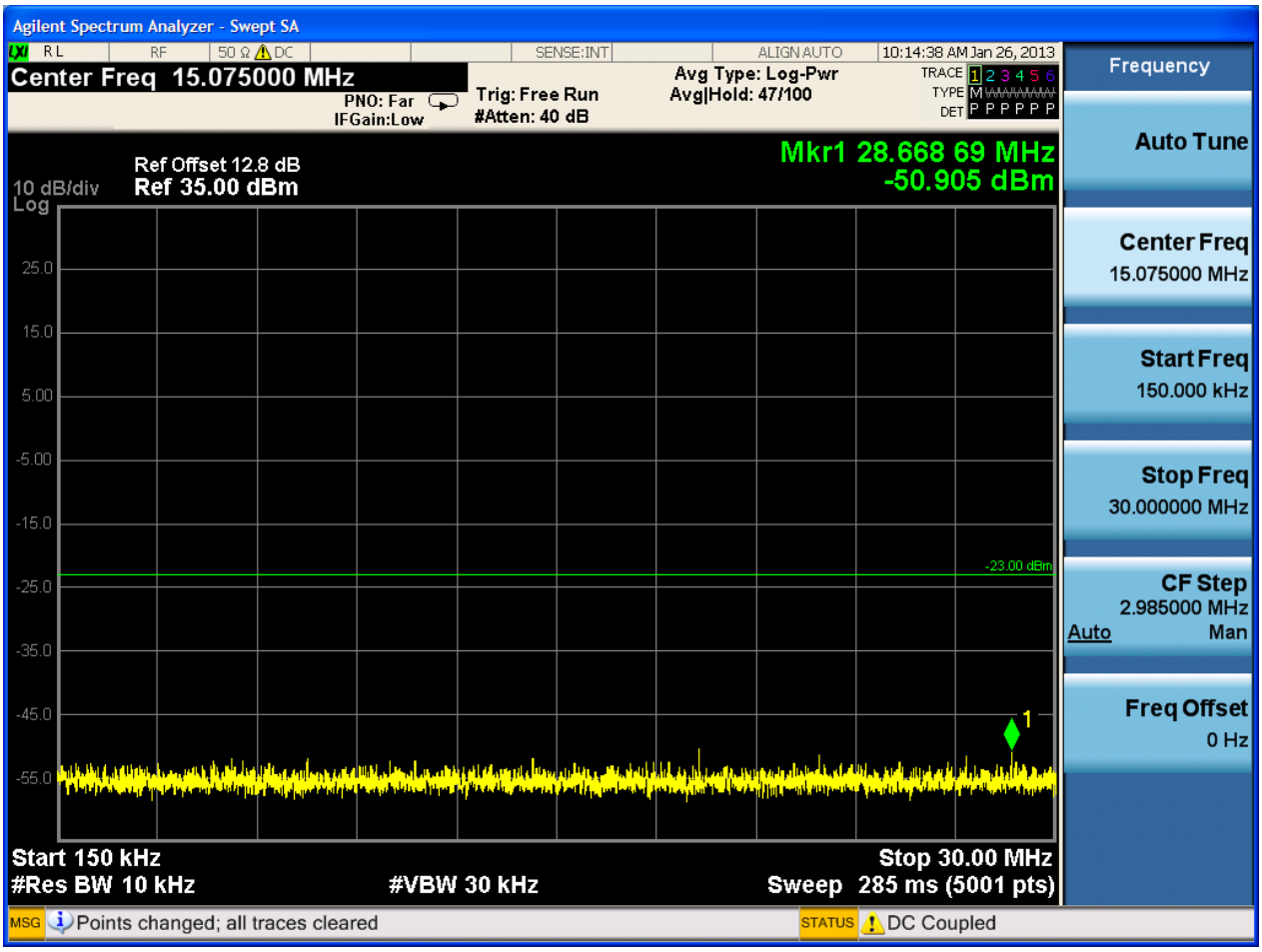


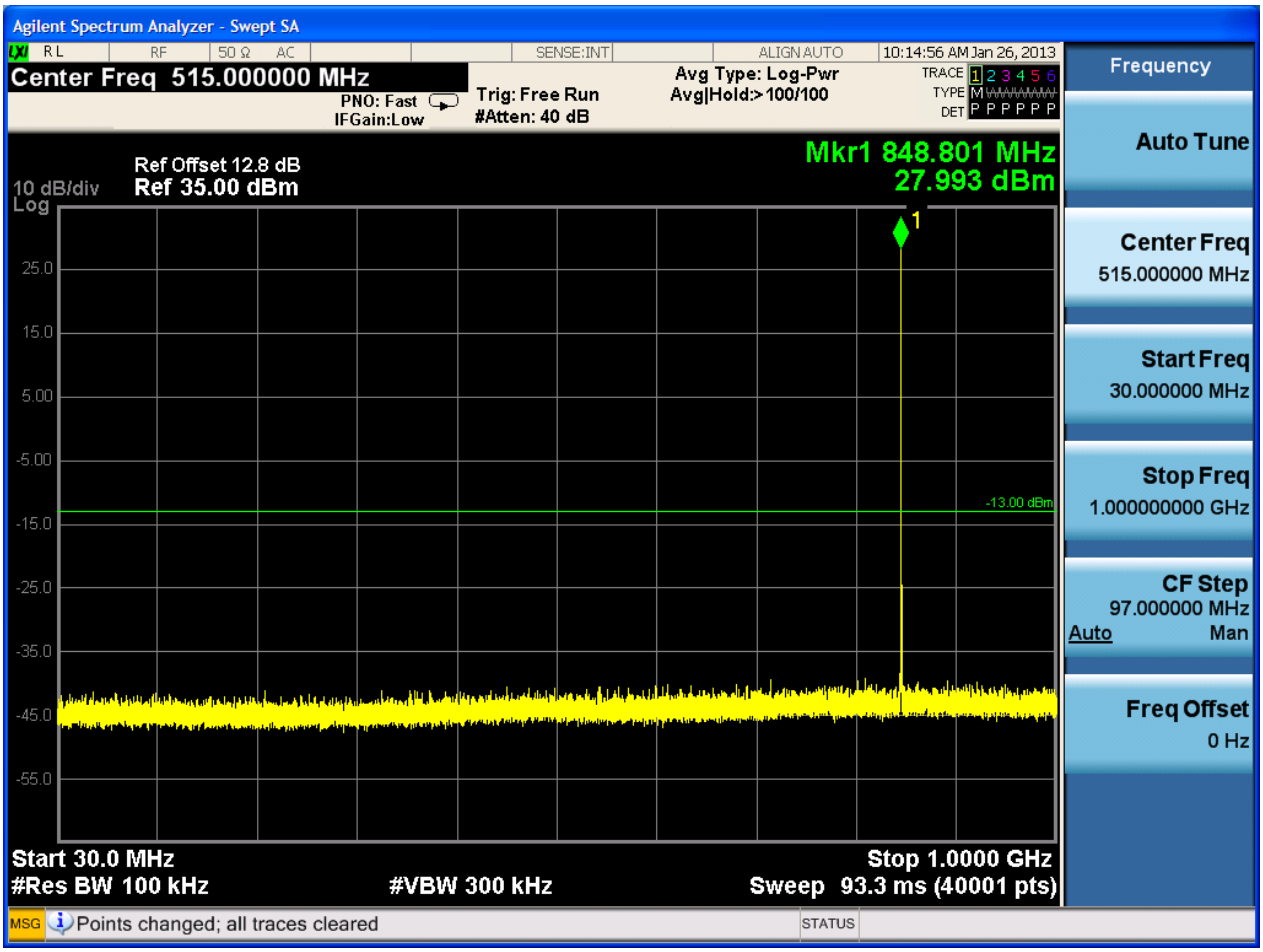


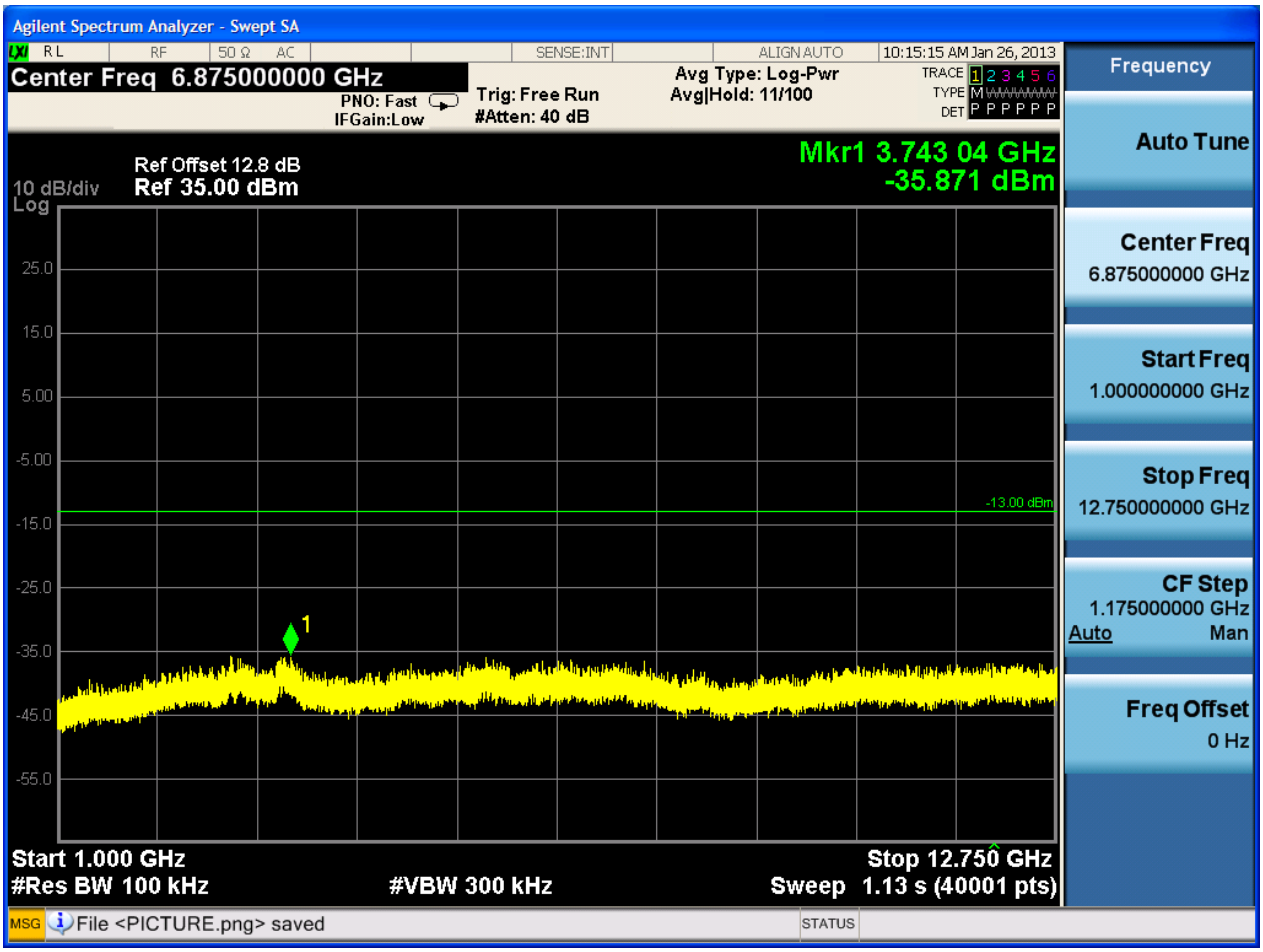


4.1.1.2.3 Test Channel = HCH





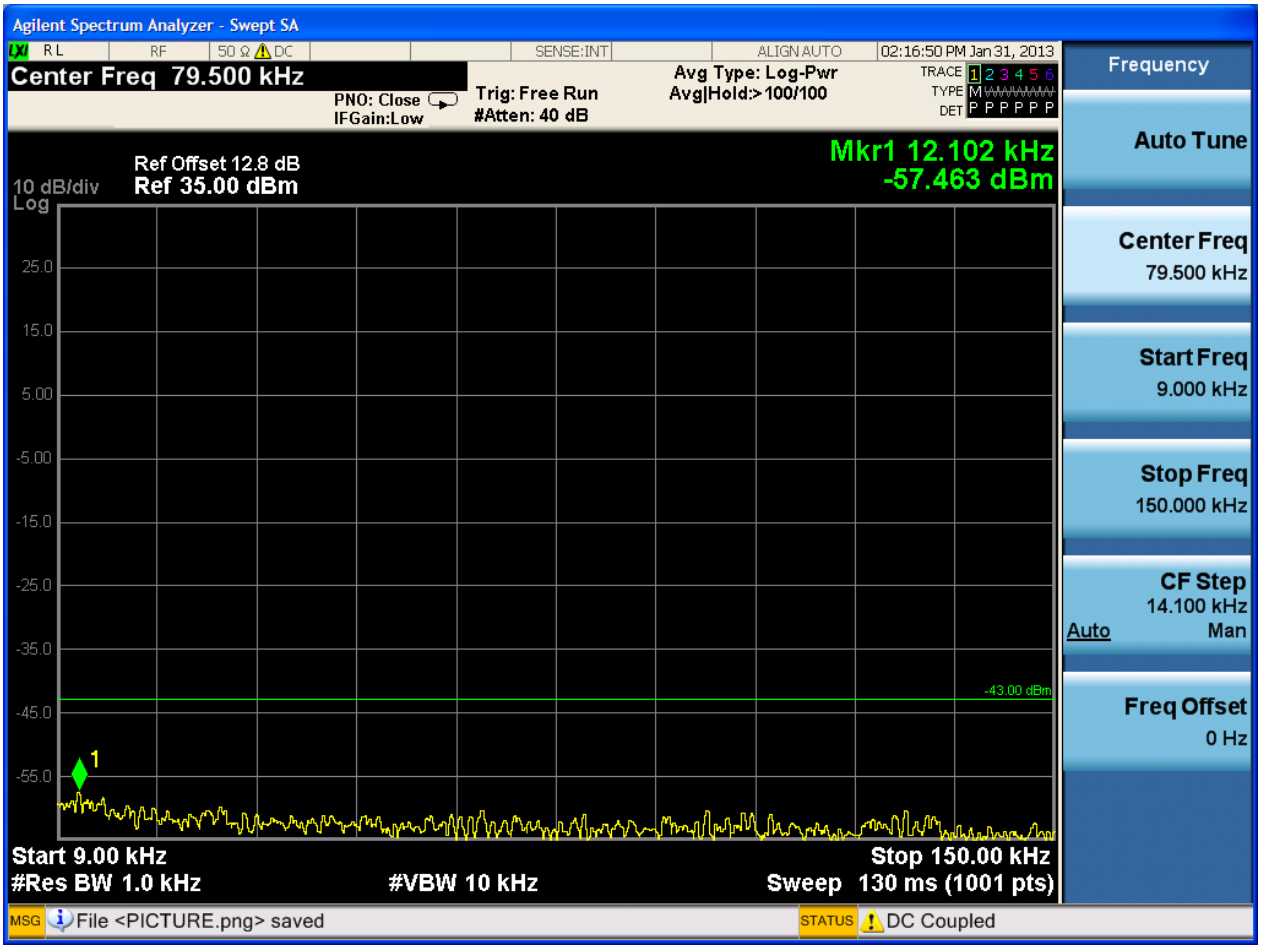

Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:14:56 AM Jan 26, 2013
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P P
Ref Offset 12.8 dB
10 dB/div
Log
Ref 35.00 dBm
Mkr1 848.801 MHz
27.993 dBm
25.0
15.0
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (40001 pts)
Points changed; all traces cleared
MSG
STATUS
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

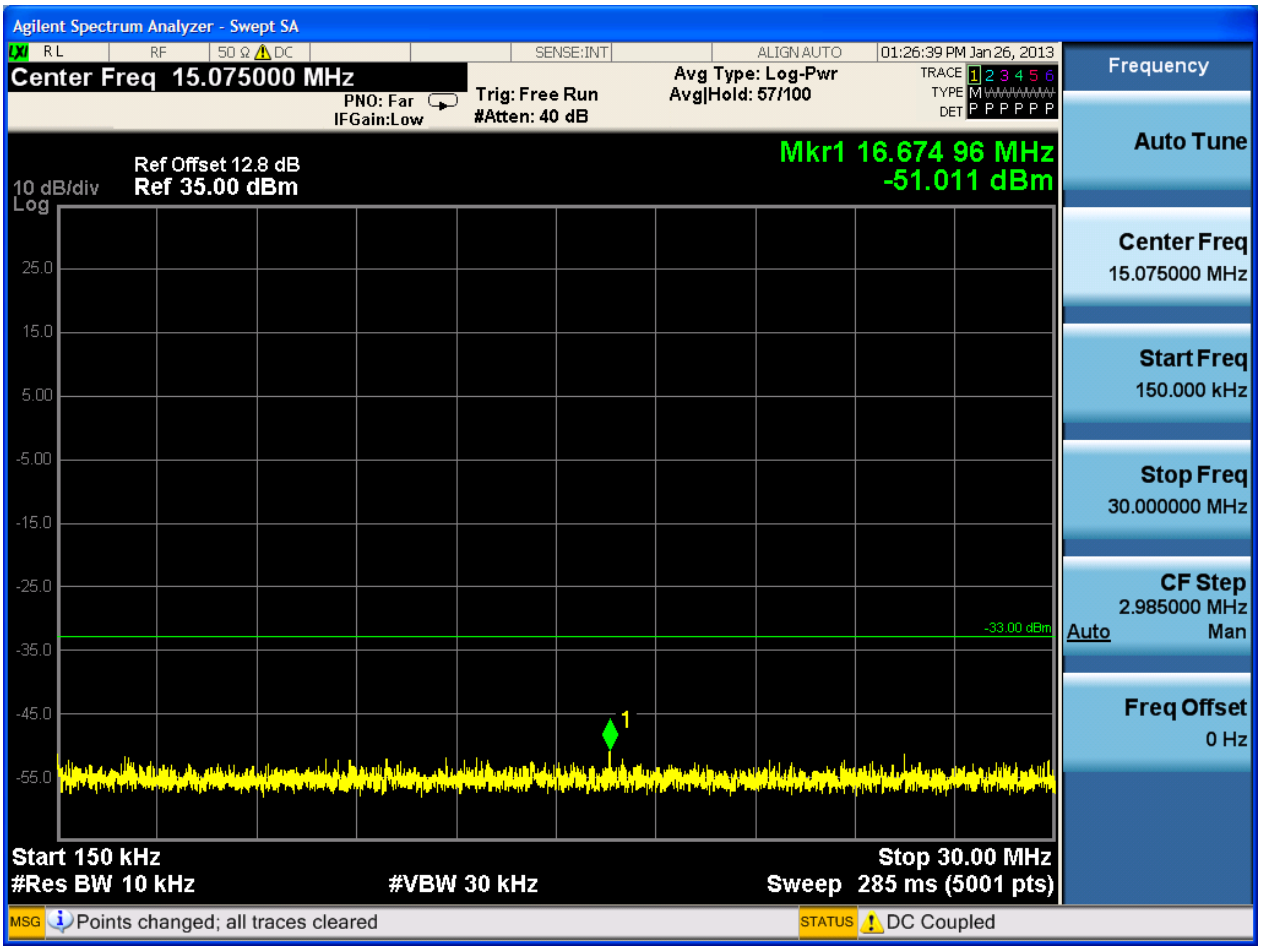


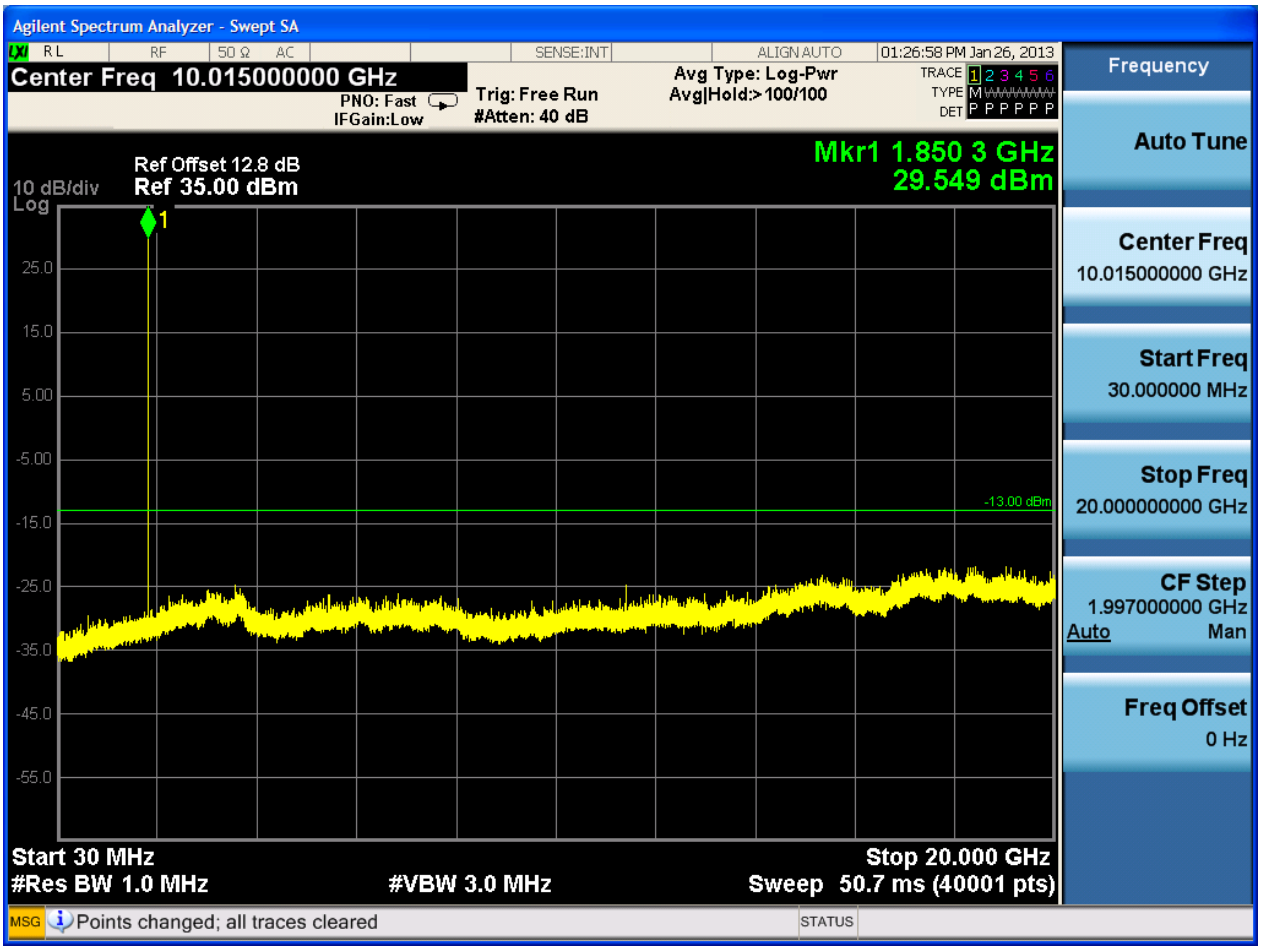
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH







4.1.2.1.2 Test Channel = MCH