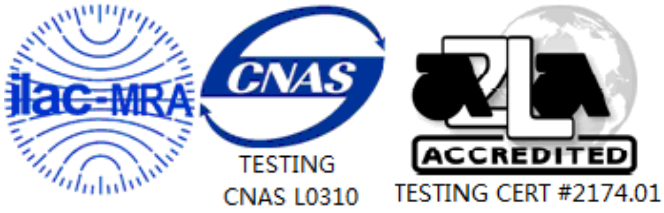


FCC
RF Test Report

Product Name: Mobile WiFi

Model Number: E5372s-32

Report No: SYBH(Z-RF)020022014-2001

FCC ID：QISE5372S-32

Reliability Laboratory of Huawei Technologies Co., Ltd.

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

Tel: +86 755 28780808 Fax: +86 755 89652518

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
Date of Receipt Sample:	2014-02-17
Start Date of Test:	2014-02-17
End Date of Test:	2014-02-20
Test Result:	Pass

Approved by Senior Engineer:	2014-02-21	Dai Linjun	
	Date	Name	Signature
Prepared by:	2014-02-21	Zhu Mingjing	
	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 47 CFR FCC Part 27: 2012
Test Method:	FCC KDB 971168 D01 Power Meas License Digital Systems v01

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
Effective Radiated Power Output Data	§2.1046, §22.913	ERP ≤ 7 W.	Appendix A	Pass
Modulation Characteristics	§2.1047	Digital modulation	Appendix C	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix D	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 E	Pass
Spurious Emission at Antenna Terminals	§2.1051, §22.917	≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Appendix F	Pass
Field Strength of Spurious Radiation	§2.1053, §22.917	≤ -13 dBm/100 kHz.	Appendix G	Pass
Frequency Stability	§2.1055, §22.355	≤ ±2.5ppm.	Appendix H	Pass

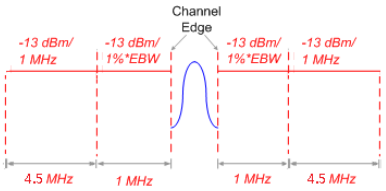
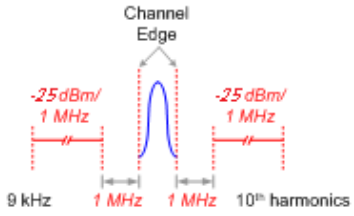
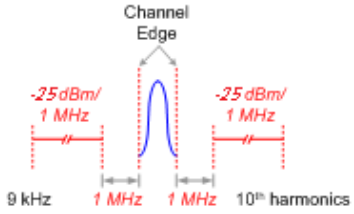
The test data of GSM850 ,WCDMA850 are the same with **NO.SYBH(Z-RF)024052013-2001** RF report of R215.

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

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective Radiated Power Output Data	§2.1046, §24.232	EIRP ≤ 2 W; PAR ≤ 13 dB.	Appendix A	Pass
Peak-Average Ratio	§2.1046, §24.232	Limit≤13 dB	Appendix B	Pass
Modulation Characteristics	§2.1047	Digital modulation	Appendix C	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix D	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 E	Pass
Spurious Emission at Antenna Terminals	§2.1051, §24.238	≤ -13 dBm/1 MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Appendix F	Pass
Field Strength of Spurious Radiation	§2.1053, §24.238	≤ -13 dBm/1 MHz.	Appendix G	Pass
Frequency Stability	§2.1055, §24.235	FCC: within authorized frequency block.	Appendix H	Pass

The test data of GSM1900 are the same with **NO.SYBH(Z-RF)024052013-2001** RF report of R215, and the WCDMA 1900 test data is new test of E5372s-32

2.3 BRS&EBS Band (2500-2570 MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective Radiated Power Output Data	§2.1046, §27.50(h)	FCC: EIRP ≤ 33 dBW + 10 lg(X/Y) dBW + 10 lg(360/beamwidth) dBW..	Appendix A	Pass
Peak-Average Ratio	§2.1046, §27.50(h)	Limit≤13 dB	Appendix B	Pass
Modulation Characteristics	§2.1047	Digital modulation	Appendix C	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix D	Pass
Band Edges Compliance	§2.1051, §27.53(m)	FCC: 	Appendix E	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)		Appendix F	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(m)		Appendix G	Pass
Frequency Stability	§2.1055, §27.54	Within authorized bands of operation/frequency block.	Appendix H	Pass

The test data of LTE Band 7 is the same with **NO.SYBH(Z-RF)024052013-2001** RF report of R215.

3 Description of the Equipment under Test (EUT)

3.1 General Description

E5372s-32 is a LTE/UMTS/GSM triple mode and WiFi Wireless mobile WiFi; it can be used as a WiFi hotspot based on standard of IEEE802.11a/b/g/n. It supports 3G WCDMA and 4G LTE wireless internet accessing function. About 3G WCDMA wireless mode, it supports WCDMA and HSDPA/HSUPA/HSPA+/DC-HSDPA, operating in Band2 and Band5; and the 4G LTE, operating in Band7; and EDGE Quad Band; The WiFi is 2X2 and the frequency are 2.4GHz and 5 GHz.

R215 is a LTE/UMTS/GSM triple mode and WiFi Wireless mobile WiFi; it can be used as a WiFi hotspot based on standard of IEEE802.11a/b/g/n. It supports 3G WCDMA and 4G LTE wireless internet accessing function. About 3G WCDMA wireless mode, it supports WCDMA and HSDPA/HSUPA/HSPA+/DC-HSDPA, operating in Band5; and the 4G LTE, operating in Band7; and EDGE Quad Band; The WiFi is 2X2 and the frequency are 2.4GHz and 5 GHz.
R215 supports 1Tx2Rx for 3G WCDMA and 4G LTE.

E5372s-32 supports 1Tx2Rx for 3G WCDMA and 4G LTE.
E5372s-32 and R215 have the same PCB and same antenna, the difference is E5372s-32 add LTE Band1 & Band 8 and WCDMA B2 by software from R215, and change Menu key component on the PCB board. E5372s-32 and R215 have the same size, the difference is the colour of appearance and the silk mark of the performance.

The following table shows the 2 Models.

	E5372s-32	R215
GSM four band	support	support
WCDMA 2100M/900M	support	support
WCDMA 850M	support	support
WCDMA 1900M	support	No
LTE Band3/Band7/ Band20	support	support
LTE Band1/Band8	support	No
WiFi 2.4G&5G	support	support
All antenna	The same	The same
PCB	The same	The same
Adapter	HW-050100U1W HW-050100U2W	HW-050100U1W
Size	90.5(length)×56(width)×14.4(height)(mm^3)	90.5(length)×56(width)×14.4(height)(mm^3)

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		
S oftware Version	Hardware Version	Description
21.221.05.00.00	CL1E5372SM	Main Board

3.2.2 Sub-Assembly

Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
Adapter	HW-050100U1W	HUAWEI	AC/DC adapter, 0degC-45degC,100V-240V,5.0V/1.0A, 2PIN/DC USB2.0 ,HUAWEI LOGO,
Adapter	HW-050100U2W	HUAWEI	Input Voltage : 100-240V ~50/60Hz, 0.2A Output Voltage: ⎓ 5.0V 1.0A
Li-ion Battery	HB554666RAW	HUAWEI	Rated capacity: 1500mAh Nominal Voltage: ⎓ +3.7V Charging Voltage: ⎓ +4.2V
Li-ion Battery	HB5F2H	HUAWEI	Rated capacity: 1780mAh Nominal Voltage: ⎓ +3.7V Charging Voltage: ⎓ +4.2V
USB Cable	/	HUAWIE	Terminal Accessory, Terminal Dedicated

3.3 Technical Specification

Characteristics	Description	
Radio System Type	☒ GSM ☒ UMTS ☒ LTE	
Supported Frequency Range	GSM850/ WCDMA850	Transmission (TX): 824 to 849 MHz
		Receiving (RX): 869 to 894 MHz
	GSM1900/ WCDMA1900	Transmission (TX): 1850 to 1910 MHz
		Receiving (RX): 1930 to 1990 MHz
	LTE BAND7	Transmission (TX): 2500 to 2570 MHz
		Receiving (RX): 2620 to 2690 MHz
TX and RX Antenna Ports	TX & RX port:	1
	TX-only port:	0
	RX-only port:	1
Target TX Output Power	GSM850: 32.5dBm GSM1900 29.0dBm UMTS850 22.5dBm UMTS1900: 22.6dBm LTE BAND7: 21.9dBm	
Supported Channel Bandwidth	GSM system:	☒ 200 kHz
	UMTS system:	☒ 5 MHz
	LTE band 7	☒ 5 MHz, ☒ 10 MHz, ☒ 15 MHz, ☒ 20 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:	251KGXW, 255KG7W
	GSM1900:	248KGXW, 249KG7W
	UMTS850:	4M16F9W
	UMTS1900:	4M15F9W
	LTE BAND7:	4M50G7D (5 MHz QPSK modulation), 4M50W7D (5 MHz 16QAM modulation) 8M97G7D (10 MHz QPSK modulation), 8M97W7D (10 MHz 16QAM modulation) 13M5G7D (15 MHz QPSK modulation), 13M5W7D (15 MHz 16QAM modulation) 18M0G7D (20 MHz QPSK modulation), 18M0W7D (20 MHz 16QAM modulation)

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
LTE/TM1	LTE system, QPSK modulation
LTE/TM2	LTE system, 16QAM modulation

4.2 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	3.6V
	VN	3.7V
	VH	4.2V

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)
GSM850	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
WCDMA850	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
Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
GSM1900	TX	Channel 512	Channel 661	Channel 810
		1850.2MHz	1880.0MHz	1909.8MHz
	RX	Channel 512	Channel 661	Channel 810
		1930.2 MHz	1960.0 MHz	1989.8 MHz
WCDMA1900	TX	Channel 9262	Channel9400	Channel9538
		1852.4MHz	1880.0MHz	1907.6MHz
	RX	Channel 9662	Channel 9800	Channel 9938
		1932.4 MHz	1960.0 MHz	1987.6 MHz

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 7	TX (5M)	Channel 20775	Channel 21100	Channel 21425
		2502.5 MHz	2535 MHz	2567.5 MHz
	TX (10M)	Channel 20800	Channel 21100	Channel 21400
		2505 MHz	2535 MHz	2565 MHz
	TX (15M)	Channel 20825	Channel 21100	Channel 21375
		2507.5 MHz	2535 MHz	2562.5 MHz
	TX (20M)	Channel 20850	Channel 21100	Channel 21350
		2510 MHz	2535 MHz	2560 MHz
	RX (5M)	Channel 2775	Channel 3100	Channel 3425
		2622.5 MHz	2655 MHz	2687.5 MHz
	RX (10M)	Channel 2800	Channel 3100	Channel 3400
		2625 MHz	2655 MHz	2685 MHz
	RX (15M)	Channel 2825	Channel 3100	Channel 3375
		2627.5 MHz	2655 MHz	2682.5 MHz
	RX (20M)	Channel 2850	Channel 3100	Channel 3350
		2630 MHz	2655 MHz	2680 MHz

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:

$$P_{d\ [dBm]} = P_{g\ [dBm]} - \text{cable loss}_{\ [dB]} + \text{antenna gain}_{\ [dBd/dBi]}$$

Where, P_d is the dipole equivalent power, P_g 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 $43 + 10\log_{10}(\text{Power}_{[\text{Watts}]})$.

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 10_{th} 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.

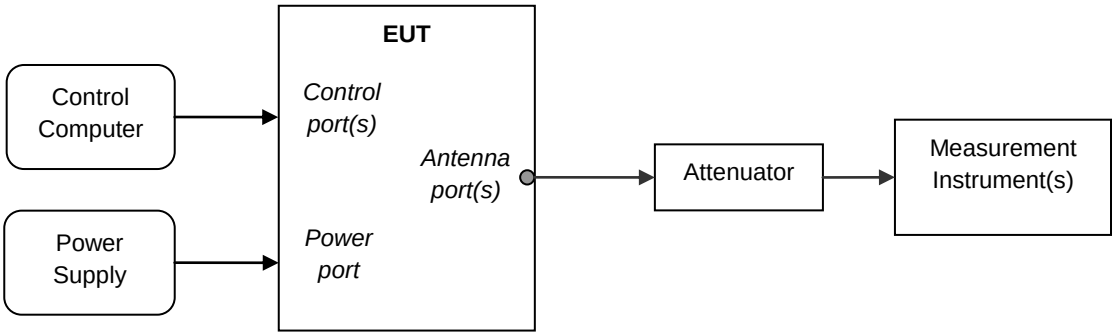
Time Period and Procedure:

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.

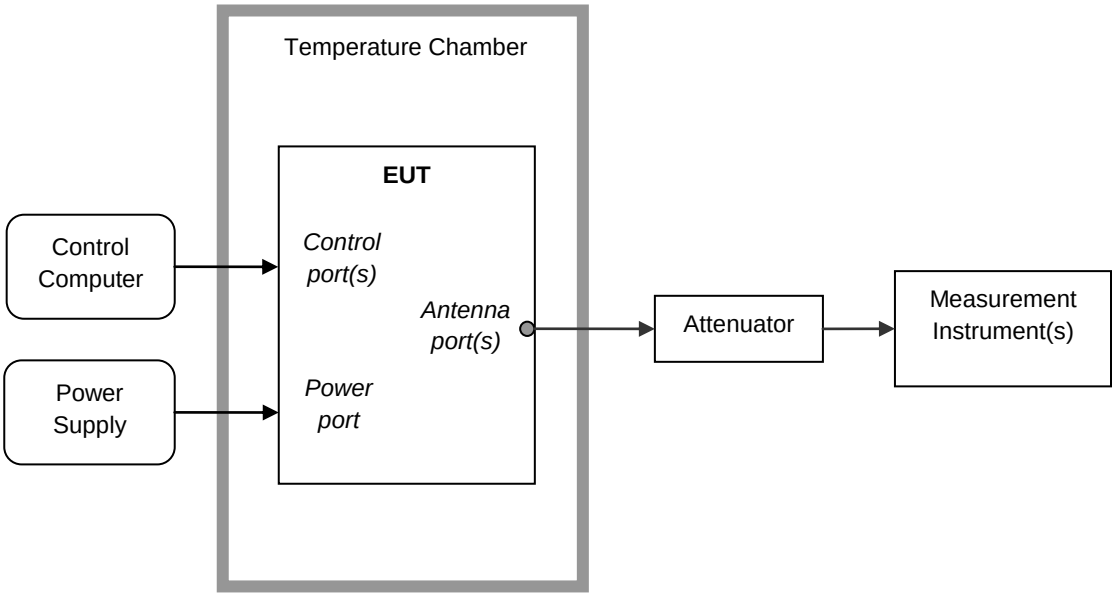
Note: Reference test setup 2.

4.5 Test Setups

4.5.1 Test Setup 1



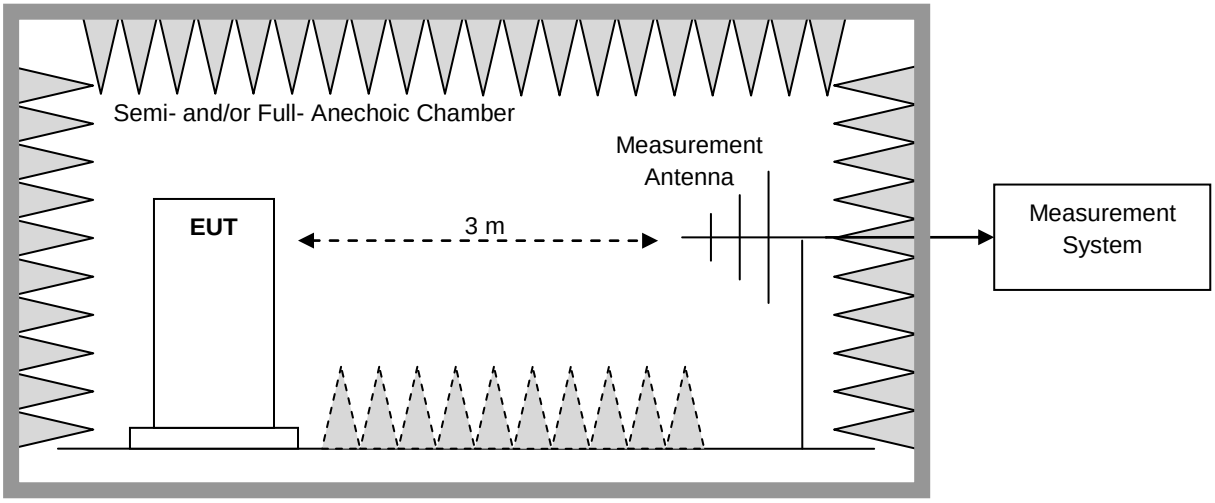
4.5.2 Test Setup 2



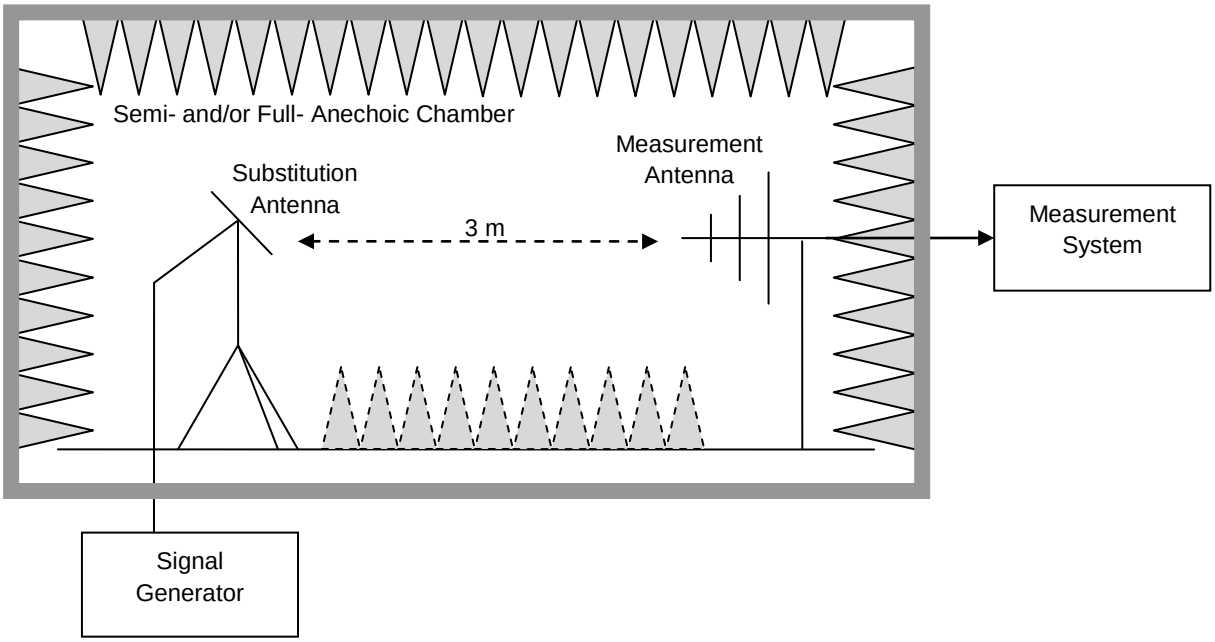
4.5.3 Test Setup 3

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	
Effective Radiated Power Output Data	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,LTE/TM1,LTE/TM2
	Average Power, Spectral Density (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,LTE/TM1,LTE/TM2
	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,LTE/TM1,LTE/TM2
Modulation Characteristics		Test Env.	Ambient Climate & Rated Voltage
		Test Setup	Test Seup 1
		RF Channels (TX)	M (L= low channel, M= middle channel, H= high channel)
		Test Mode	GSM/TM1,GSM/TM2,UMTS/TM1,LTE/TM1,LTE/TM2
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,LTE/TM1,LTE/TM2
	Emission Bandwidth (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,LTE/TM1,LTE/TM2
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,LTE/TM1,LTE/TM2
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 Case	Test Conditions	
	Test Mode	GSM/TM1,GSM/TM2,UMTS/TM1,LTE/TM1,LTE/TM2
Field Strength of Spurious Radiation	Test Env.	Ambient Climate & Rated Voltage
	Test Setup	Test Seup 3
	Test Mode	GSM/TM1,GSM/TM2,UMTS/TM1/TM2/TM3,LTE/TM1,LTE/TM2 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)
Frequency Stability	Test Env.	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage; (2) 85%, 100% and 115% 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,LTE/TM1,LTE/TM2

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
Wireless Communication Test set	Agilent	N4010A	MY49081592	2013-10-29	2014-10-28
Universal Radio Communication Tester	R&S	CMU200	113164	2013-07-18	2014-07-17
Universal Radio Communication Tester	R & S	CMW500	126855	2013-08-08	2015-08-09
Spectrum Analyzer	Agilent	E4440A	MY48250119	2013-08-09	2014-08-08
Signal Analyzer	R&S	FSQ31	200021	2013-10-29	2014-10-28
Spectrum Analyzer	Agilent	N9030A	MY49431698	2013-10-29	2014-10-28
Temperature Chamber	ESPEC	MW3030	06114003	2013-05-14	2014-05-13
Signal generator	Agilent	E8257D	MY51500314	2013-04-15	2014-04-14
Vector Signal Generator	R&S	SMU200A	104162	2013-10-29	2014-10-28
Test receiver	R&S	ESU26	100150	2013-05-15	2014-05-14
Spectrum analyzer	R&S	FSU3	200474	2013-12-24	2014-12-23
Spectrum analyzer	R&S	FSU43	100144	2013-12-24	2014-12-23
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	2013-02-02	2015-02-01
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-490	2013-02-02	2015-02-01
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100262	2013-03-23	2015-03-22
Pyramidal Horn Antenna(18GHz-26-5GHz)	ETS-LINDGREN	3160-09	5140299	2013-03-05	2015-03-04
Artificial Mains Network	R&S	ENV4200	100134	2013-12-24	2014-12-23
Artificial Mains Network	R&S	ENV216	100382	2013-12-24	2014-12-23

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
Transmit Output Power Data	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
Field Strength of Spurious Radiation	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: Effective Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	32.69	31.94	38.5	PASS
		MCH	32.73	31.98	38.5	PASS
		HCH	32.74	31.99	38.5	PASS
	GSM/TM2	LCH	27.14	26.39	38.5	PASS
		MCH	27.12	26.37	38.5	PASS
		HCH	27.02	26.27	38.5	PASS
WCDMA850	UMTS/TM1	LCH	22.64	21.89	38.5	PASS
		MCH	22.67	21.92	38.5	PASS
		HCH	22.75	22.00	38.5	PASS
Test Band	**Test Mode**	**Test Channel**	**Conducted Power [dBm]**	**EIRP [dBm]**	**Limit [dBm]**	**Verdict**
GSM1900	GSM/TM1	LCH	29.99	31.49	33	PASS
		MCH	29.14	31.64	33	PASS
		HCH	29.18	31.68	33	PASS
	GSM/TM2	LCH	26.23	28.73	33	PASS
		MCH	26.09	28.59	33	PASS
		HCH	26.04	28.54	33	PASS
WCDMA1900	UMTS/TM1	LCH	23.11	25.61	33	PASS
		MCH	23.07	25.57	33	PASS
		HCH	22.31	24.81	33	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test Channel	Test RB	Measured [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
BAND7	LTE/TM1	5	LCH	RB1#0	22.63	26.13	33	PASS
				RB1#13	22.50	26.00	33	PASS
				RB1#24	22.82	26.32	33	PASS
				RB12#0	21.25	24.75	33	PASS
				RB12#6	21.45	24.95	33	PASS
				RB12#13	21.33	24.83	33	PASS
				RB25#0	21.32	24.82	33	PASS
			MCH	RB1#0	22.86	26.36	33	PASS
				RB1#13	22.51	26.01	33	PASS
				RB1#24	22.78	26.28	33	PASS
				RB12#0	21.30	24.80	33	PASS
				RB12#6	21.37	24.87	33	PASS
				RB12#13	21.46	24.96	33	PASS
				RB25#0	21.49	24.99	33	PASS
			HCH	RB1#0	22.91	26.41	33	PASS
				RB1#13	22.62	26.12	33	PASS
				RB1#24	22.94	26.44	33	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test Channel	Test RB	Measured [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
				RB12#0	21.57	25.07	33	PASS
				RB12#6	21.62	25.12	33	PASS
				RB12#13	21.55	25.05	33	PASS
				RB25#0	21.60	25.10	33	PASS
		10	LCH	RB1#0	22.18	25.68	33	PASS
				RB1#25	22.36	25.86	33	PASS
				RB1#49	22.17	25.67	33	PASS
				RB25#0	20.98	24.48	33	PASS
				RB25#13	21.23	24.73	33	PASS
				RB25#25	21.08	24.58	33	PASS
				RB50#0	21.20	24.70	33	PASS
			MCH	RB1#0	22.51	26.01	33	PASS
				RB1#25	22.58	26.08	33	PASS
				RB1#49	22.35	25.85	33	PASS
				RB25#0	21.21	24.71	33	PASS
				RB25#13	21.48	24.98	33	PASS
				RB25#25	21.15	24.65	33	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test Channel	Test RB	Measured [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
				RB50#0	21.22	24.72	33	PASS
			HCH	RB1#0	22.58	26.08	33	PASS
				RB1#25	22.65	26.15	33	PASS
				RB1#49	22.51	26.01	33	PASS
				RB25#0	21.26	24.76	33	PASS
				RB25#13	21.53	25.03	33	PASS
				RB25#25	21.42	24.92	33	PASS
				RB50#0	21.39	24.89	33	PASS
		15	LCH	RB1#0	22.44	25.94	33	PASS
				RB1#38	22.45	25.95	33	PASS
				RB1#74	22.89	26.39	33	PASS
				RB36#0	21.22	24.72	33	PASS
				RB36#18	21.15	24.65	33	PASS
				RB36#39	21.14	24.64	33	PASS
				RB75#0	21.15	24.65	33	PASS
			MCH	RB1#0	22.67	26.17	33	PASS
				RB1#38	22.51	26.01	33	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test Channel	Test RB	Measured [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
				RB1#74	22.81	26.31	33	PASS
				RB36#0	21.32	24.82	33	PASS
				RB36#18	21.30	24.80	33	PASS
				RB36#39	21.26	24.76	33	PASS
				RB75#0	21.26	24.76	33	PASS
			HCH	RB1#0	22.60	26.10	33	PASS
				RB1#38	22.51	26.01	33	PASS
				RB1#74	22.95	26.45	33	PASS
				RB36#0	21.31	24.81	33	PASS
				RB36#18	21.42	24.92	33	PASS
				RB36#39	21.42	24.92	33	PASS
				RB75#0	21.34	24.84	33	PASS
		20	LCH	RB1#0	22.45	25.95	33	PASS
				RB1#50	22.35	25.85	33	PASS
				RB1#99	22.90	26.40	33	PASS
				RB50#0	21.04	24.54	33	PASS
				RB50#25	21.17	24.67	33	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test Channel	Test RB	Measured [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
				RB50#50	21.22	24.72	33	PASS
				RB100#0	21.19	24.69	33	PASS
			MCH	RB1#0	22.73	26.23	33	PASS
				RB1#50	22.55	26.05	33	PASS
				RB1#99	22.83	26.33	33	PASS
				RB50#0	21.44	24.94	33	PASS
				RB50#25	21.38	24.88	33	PASS
				RB50#50	21.17	24.67	33	PASS
				RB100#0	21.24	24.74	33	PASS
			HCH	RB1#0	22.56	26.06	33	PASS
				RB1#50	22.55	26.05	33	PASS
				RB1#99	22.82	26.32	33	PASS
				RB50#0	21.17	24.67	33	PASS
				RB50#25	21.39	24.89	33	PASS
				RB50#50	21.32	24.82	33	PASS
				RB100#0	21.31	24.81	33	PASS
	LTE/T	5	LCH	RB1#0	21.50	25.00	33	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test Channel	Test RB	Measured [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
	M2			RB1#13	21.37	24.87	33	PASS
				RB1#24	21.73	25.23	33	PASS
				RB12#0	20.04	23.54	33	PASS
				RB12#6	20.26	23.76	33	PASS
				RB12#13	20.10	23.60	33	PASS
				RB25#0	20.09	23.59	33	PASS
			MCH	RB1#0	21.74	25.24	33	PASS
				RB1#13	21.41	24.91	33	PASS
				RB1#24	21.67	25.17	33	PASS
				RB12#0	20.22	23.72	33	PASS
				RB12#6	20.29	23.79	33	PASS
				RB12#13	20.24	23.74	33	PASS
				RB25#0	20.27	23.77	33	PASS
			HCH	RB1#0	21.82	25.32	33	PASS
				RB1#13	21.55	25.05	33	PASS
				RB1#24	21.85	25.35	33	PASS
				RB12#0	20.36	23.86	33	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test Channel	Test RB	Measured [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
				RB12#6	20.40	23.90	33	PASS
				RB12#13	20.32	23.82	33	PASS
				RB25#0	20.34	23.84	33	PASS
		10	LCH	RB1#0	21.46	24.96	33	PASS
				RB1#25	21.67	25.17	33	PASS
				RB1#49	21.47	24.97	33	PASS
				RB25#0	19.86	23.36	33	PASS
				RB25#13	20.12	23.62	33	PASS
				RB25#25	19.86	23.36	33	PASS
				RB50#0	19.95	23.45	33	PASS
			MCH	RB1#0	21.59	25.09	33	PASS
				RB1#25	21.72	25.22	33	PASS
				RB1#49	21.43	24.93	33	PASS
				RB25#0	20.05	23.55	33	PASS
				RB25#13	20.32	23.82	33	PASS
				RB25#25	19.96	23.46	33	PASS
				RB50#0	20.04	23.54	33	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test Channel	Test RB	Measured [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
			HCH	RB1#0	21.58	25.08	33	PASS
				RB1#25	21.67	25.17	33	PASS
				RB1#49	21.51	25.01	33	PASS
				RB25#0	19.98	23.48	33	PASS
				RB25#13	20.38	23.88	33	PASS
				RB25#25	20.14	23.64	33	PASS
				RB50#0	20.08	23.58	33	PASS
		15	LCH	RB1#0	21.48	24.98	33	PASS
				RB1#38	21.52	25.02	33	PASS
				RB1#74	21.92	25.42	33	PASS
				RB36#0	19.99	23.49	33	PASS
				RB36#18	19.93	23.43	33	PASS
				RB36#39	19.89	23.39	33	PASS
				RB75#0	19.93	23.43	33	PASS
			MCH	RB1#0	21.72	25.22	33	PASS
				RB1#38	21.59	25.09	33	PASS
				RB1#74	21.88	25.38	33	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test Channel	Test RB	Measured [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
				RB36#0	20.01	23.51	33	PASS
				RB36#18	20.12	23.62	33	PASS
				RB36#39	19.94	23.44	33	PASS
				RB75#0	20.08	23.58	33	PASS
			HCH	RB1#0	21.66	25.16	33	PASS
				RB1#38	21.54	25.04	33	PASS
				RB1#74	21.92	25.42	33	PASS
				RB36#0	20.01	23.51	33	PASS
				RB36#18	20.23	23.73	33	PASS
				RB36#39	20.09	23.59	33	PASS
				RB75#0	20.16	23.66	33	PASS
		20	LCH	RB1#0	21.33	24.83	33	PASS
				RB1#50	21.23	24.73	33	PASS
				RB1#99	21.72	25.22	33	PASS
				RB50#0	19.65	23.15	33	PASS
				RB50#25	19.76	23.26	33	PASS
				RB50#50	19.80	23.30	33	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test Channel	Test RB	Measured [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
				RB100#0	19.83	23.33	33	PASS
			MCH	RB1#0	21.58	25.08	33	PASS
				RB1#50	21.42	24.92	33	PASS
				RB1#99	21.67	25.17	33	PASS
				RB50#0	19.95	23.45	33	PASS
				RB50#25	20.01	23.51	33	PASS
				RB50#50	19.69	23.19	33	PASS
				RB100#0	19.89	23.39	33	PASS
			HCH	RB1#0	21.29	24.79	33	PASS
				RB1#50	21.25	24.75	33	PASS
				RB1#99	21.41	24.91	33	PASS
				RB50#0	19.61	23.11	33	PASS
				RB50#25	19.90	23.40	33	PASS
				RB50#50	19.77	23.27	33	PASS
				RB100#0	19.76	23.26	33	PASS

Note1: a, For getting the ERP (Efficient Radiated Power) or EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

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

b, SGP=Signal Generator Level
Note2: RBW > emission bandwidth, VBW > 3 x RBW.

2Appendix_B: Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
GSM1900	GSM/TM1	LCH	0.14	13	PASS
		MCH	0.16	13	PASS
		HCH	0.15	13	PASS
	GSM/TM2	LCH	2.97	13	PASS
		MCH	2.94	13	PASS
		HCH	2.97	13	PASS
Test Band	**Test Mode**	Test Channel	Measured[dB]	Limit [dB]	Verdict
WCDMA1900	UMTS/TM1	LCH	3.31	13	PASS
		MCH	3.60	13	PASS
		HCH	3.39	13	PASS

Test Band(For LTE)	Test Mode	Test Bandwidth (MHz)	Test Channel	Test RB	Measured[dB]	Limit [dB]	Verdict
BAND7	LTE/TM1	5	LCH	RB1#0	3.35	13	PASS
				RB1#13	3.33	13	PASS
				RB1#24	3.22	13	PASS
				RB12#0	4.16	13	PASS
				RB12#6	4.12	13	PASS
				RB12#13	4.22	13	PASS
				RB25#0	4.56	13	PASS
			MCH	RB1#0	3.74	13	PASS
				RB1#13	3.63	13	PASS
				RB1#24	3.59	13	PASS
				RB12#0	4.36	13	PASS
				RB12#6	4.29	13	PASS
				RB12#13	4.32	13	PASS
				RB25#0	4.98	13	PASS
			HCH	RB1#0	3.48	13	PASS
				RB1#13	3.35	13	PASS
				RB1#24	3.22	13	PASS
				RB12#0	4.11	13	PASS
				RB12#6	4.14	13	PASS
				RB12#13	4.09	13	PASS
				RB25#0	4.83	13	PASS
		10	LCH	RB1#0	3.75	13	PASS
				RB1#25	3.44	13	PASS
				RB1#49	3.73	13	PASS
				RB25#0	4.27	13	PASS
				RB25#13	4.18	13	PASS
				RB25#25	4.32	13	PASS
				RB50#0	5.09	13	PASS
			MCH	RB1#0	3.62	13	PASS
				RB1#25	3.49	13	PASS
				RB1#49	3.87	13	PASS
				RB25#0	4.41	13	PASS
				RB25#13	4.30	13	PASS
				RB25#25	4.44	13	PASS
				RB50#0	4.97	13	PASS
			HCH	RB1#0	3.56	13	PASS
				RB1#25	3.41	13	PASS
				RB1#49	3.62	13	PASS

Test Band(For LTE)	Test Mode	Test Bandwidth (MHz)	Test Channel	Test RB	Measured[dB]	Limit [dB]	Verdict
				RB25#0	4.30	13	PASS
				RB25#13	4.04	13	PASS
				RB25#25	4.20	13	PASS
				RB50#0	5.25	13	PASS
		15	LCH	RB1#0	4.02	13	PASS
				RB1#38	3.44	13	PASS
				RB1#74	3.46	13	PASS
				RB36#0	4.24	13	PASS
				RB36#18	4.34	13	PASS
				RB36#39	4.34	13	PASS
				RB75#0	5.19	13	PASS
			MCH	RB1#0	3.81	13	PASS
				RB1#38	3.54	13	PASS
				RB1#74	3.75	13	PASS
				RB36#0	4.40	13	PASS
				RB36#18	4.47	13	PASS
				RB36#39	4.33	13	PASS
				RB75#0	5.28	13	PASS
			HCH	RB1#0	3.82	13	PASS
				RB1#38	3.41	13	PASS
				RB1#74	3.42	13	PASS
				RB36#0	4.25	13	PASS
				RB36#18	4.10	13	PASS
				RB36#39	4.15	13	PASS
				RB75#0	5.06	13	PASS
		20	LCH	RB1#0	3.63	13	PASS
				RB1#50	3.47	13	PASS
				RB1#99	3.69	13	PASS
				RB50#0	4.39	13	PASS
				RB50#25	4.22	13	PASS
				RB50#50	4.44	13	PASS
				RB100#0	5.33	13	PASS
			MCH	RB1#0	3.58	13	PASS
				RB1#50	3.52	13	PASS
				RB1#99	3.65	13	PASS
				RB50#0	4.41	13	PASS
				RB50#25	4.24	13	PASS
				RB50#50	4.42	13	PASS
				RB100#0	5.35	13	PASS

Test Band(For LTE)	Test Mode	Test Bandwidth (MHz)	Test Channel	Test RB	Measured[dB]	Limit [dB]	Verdict
			HCH	RB1#0	3.69	13	PASS
				RB1#50	3.45	13	PASS
				RB1#99	3.50	13	PASS
				RB50#0	4.35	13	PASS
				RB50#25	4.16	13	PASS
				RB50#50	4.27	13	PASS
				RB100#0	5.29	13	PASS
	LTE/TM2	5	LCH	RB1#0	4.65	13	PASS
				RB1#13	3.92	13	PASS
				RB1#24	4.01	13	PASS
				RB12#0	4.64	13	PASS
				RB12#6	4.42	13	PASS
				RB12#13	4.57	13	PASS
				RB25#0	5.33	13	PASS
			MCH	RB1#0	4.31	13	PASS
				RB1#13	4.27	13	PASS
				RB1#24	4.06	13	PASS
				RB12#0	4.76	13	PASS
				RB12#6	4.58	13	PASS
				RB12#13	4.57	13	PASS
				RB25#0	5.21	13	PASS
			HCH	RB1#0	4.21	13	PASS
				RB1#13	4.11	13	PASS
				RB1#24	3.96	13	PASS
				RB12#0	4.58	13	PASS
				RB12#6	4.44	13	PASS
				RB12#13	4.55	13	PASS
				RB25#0	5.20	13	PASS
		10	LCH	RB1#0	4.46	13	PASS
				RB1#25	3.77	13	PASS
				RB1#49	3.92	13	PASS
				RB25#0	4.71	13	PASS
				RB25#13	4.49	13	PASS
				RB25#25	4.77	13	PASS
				RB50#0	5.57	13	PASS
			MCH	RB1#0	4.35	13	PASS
				RB1#25	3.96	13	PASS
				RB1#49	4.14	13	PASS
				RB25#0	4.74	13	PASS

Test Band(For LTE)	Test Mode	Test Bandwidth (MHz)	Test Channel	Test RB	Measured[dB]	Limit [dB]	Verdict
				RB25#13	4.51	13	PASS
				RB25#25	4.70	13	PASS
				RB50#0	5.76	13	PASS
			HCH	RB1#0	4.11	13	PASS
				RB1#25	3.82	13	PASS
				RB1#49	3.84	13	PASS
				RB25#0	4.65	13	PASS
				RB25#13	4.43	13	PASS
				RB25#25	4.59	13	PASS
				RB50#0	5.56	13	PASS
		15	LCH	RB1#0	4.70	13	PASS
				RB1#38	3.73	13	PASS
				RB1#74	4.23	13	PASS
				RB36#0	4.64	13	PASS
				RB36#18	4.58	13	PASS
				RB36#39	4.70	13	PASS
				RB75#0	5.59	13	PASS
			MCH	RB1#0	4.65	13	PASS
				RB1#38	3.89	13	PASS
				RB1#74	4.22	13	PASS
				RB36#0	4.76	13	PASS
				RB36#18	4.59	13	PASS
				RB36#39	4.66	13	PASS
				RB75#0	5.51	13	PASS
			HCH	RB1#0	4.68	13	PASS
				RB1#38	4.01	13	PASS
				RB1#74	4.51	13	PASS
				RB36#0	4.66	13	PASS
				RB36#18	4.48	13	PASS
				RB36#39	4.54	13	PASS
				RB75#0	5.50	13	PASS
		20	LCH	RB1#0	3.70	13	PASS
				RB1#50	3.97	13	PASS
				RB1#99	3.62	13	PASS
				RB50#0	4.82	13	PASS
				RB50#25	4.61	13	PASS
				RB50#50	4.86	13	PASS
				RB100#0	5.46	13	PASS
			MCH	RB1#0	4.24	13	PASS

Test Band(For LTE)	Test Mode	Test Bandwidth (MHz)	Test Channel	Test RB	Measured[dB]	Limit [dB]	Verdict
				RB1#50	4.15	13	PASS
				RB1#99	4.08	13	PASS
				RB50#0	4.79	13	PASS
				RB50#25	4.53	13	PASS
				RB50#50	4.84	13	PASS
				RB100#0	5.63	13	PASS
			HCH	RB1#0	4.32	13	PASS
				RB1#50	3.83	13	PASS
				RB1#99	4.16	13	PASS
				RB50#0	4.65	13	PASS
				RB50#25	4.41	13	PASS
				RB50#50	4.61	13	PASS
				RB100#0	5.52	13	PASS

3Appendix_C: Modulation Characteristics

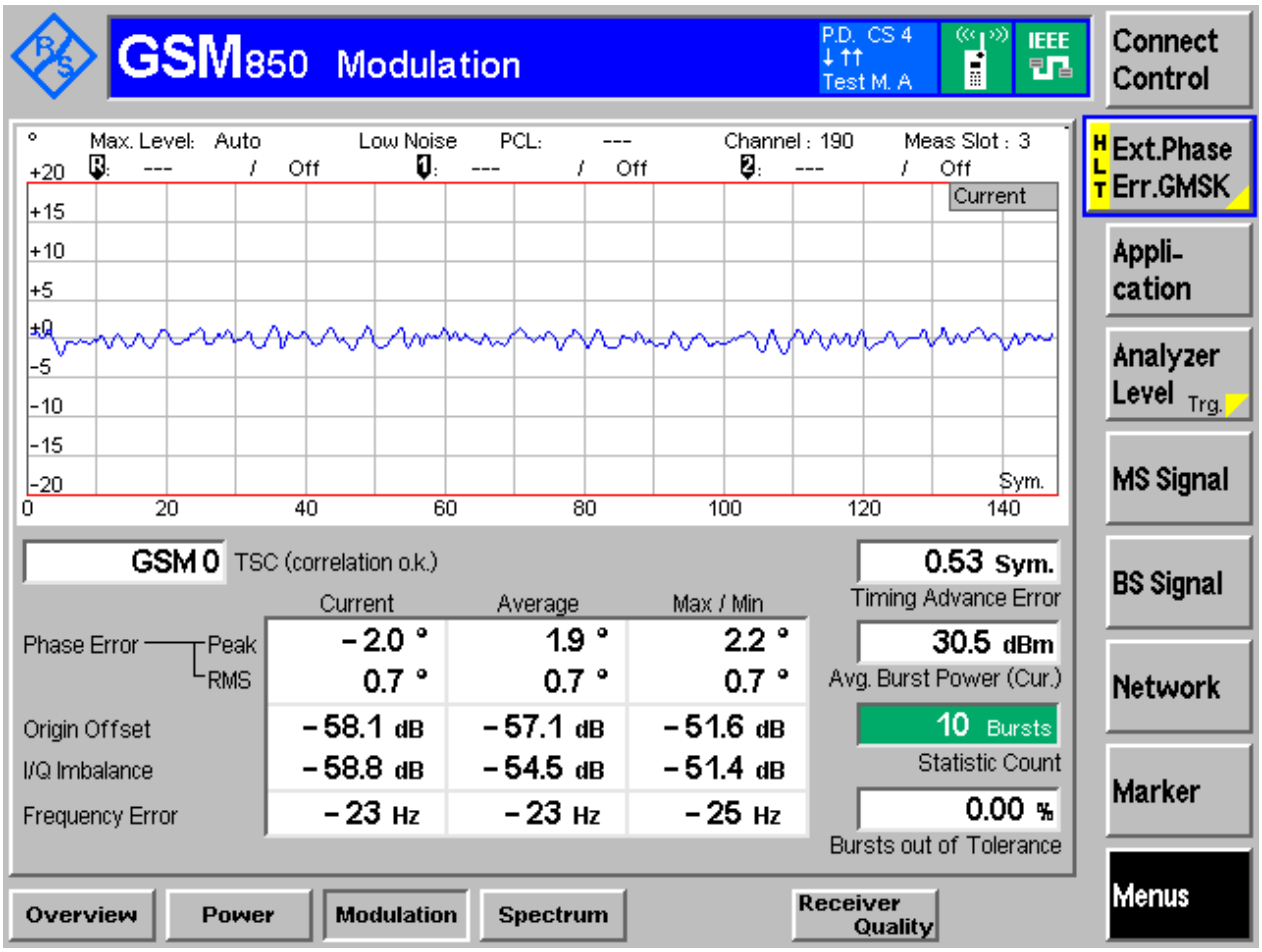
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

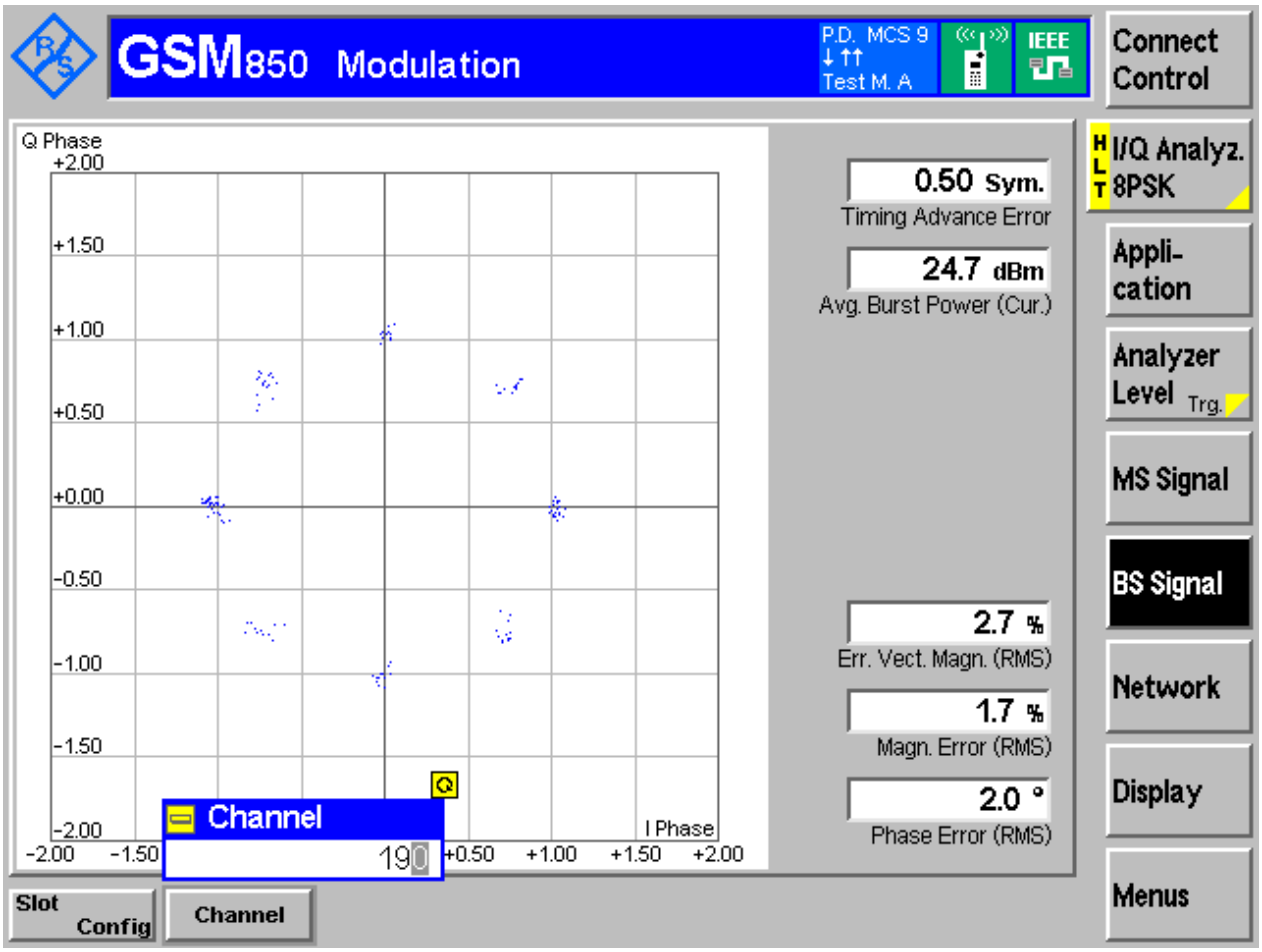
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

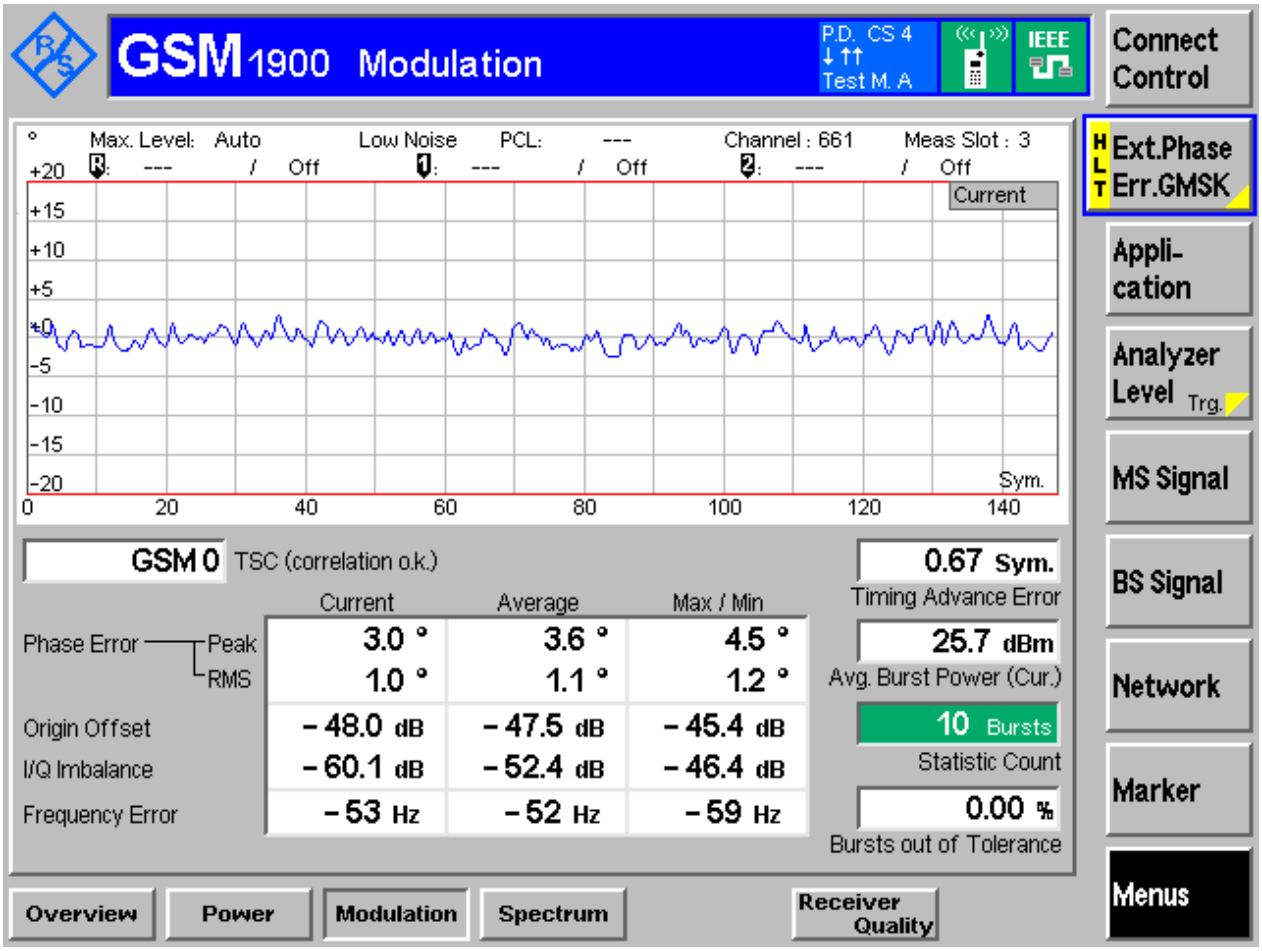
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

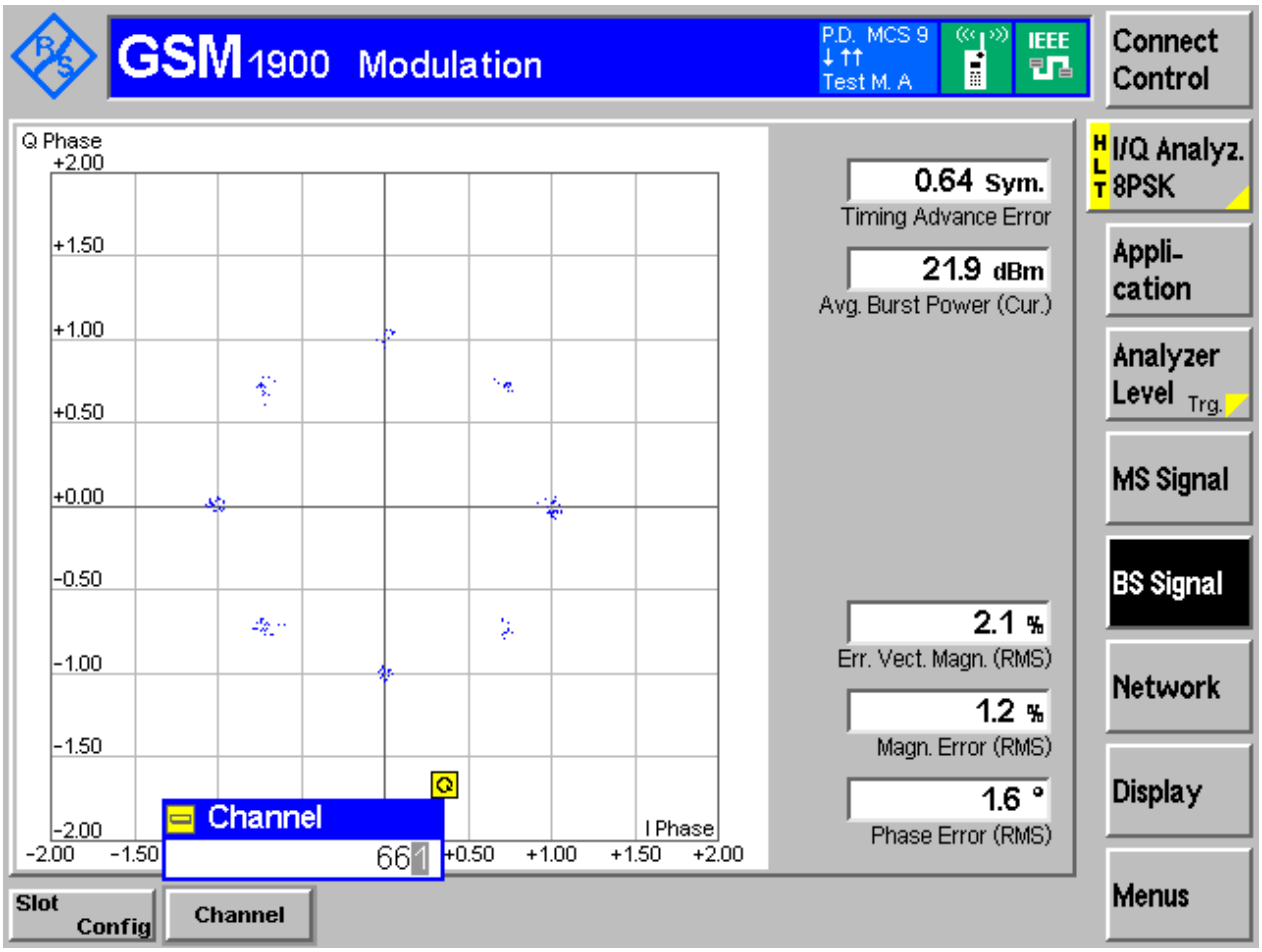
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH

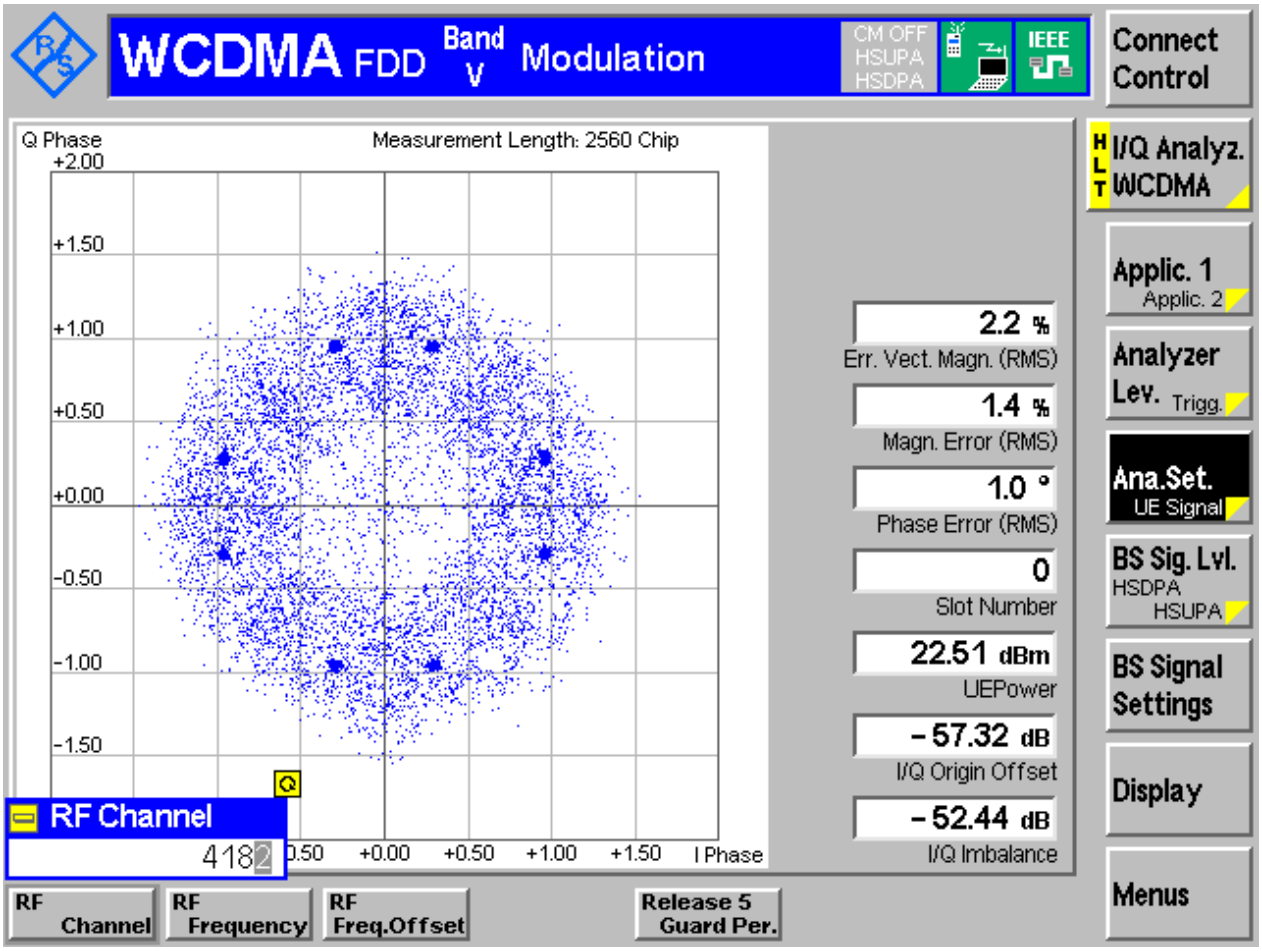


3.2 For UMTS

3.2.1 Test Band = WCDMA850

3.2.1.1 Test Mode = UMTS/TM1

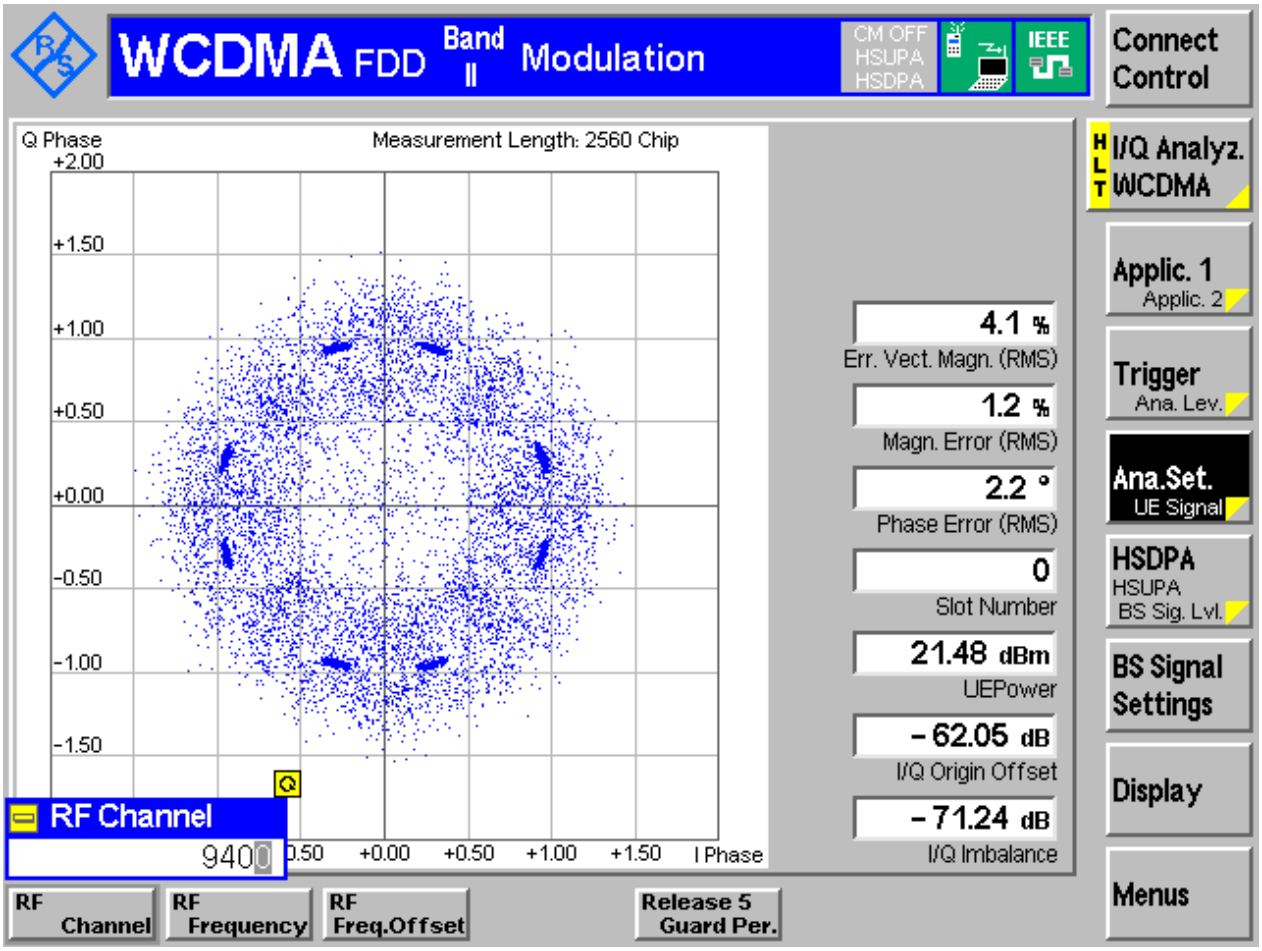
3.2.1.1.1 Test Channel = MCH



3.2.2 Test Band = WCDMA1900

3.2.2.1 Test Mode = UMTS/TM1

3.2.2.1.1 Test Channel = MCH



3.2 For LTE

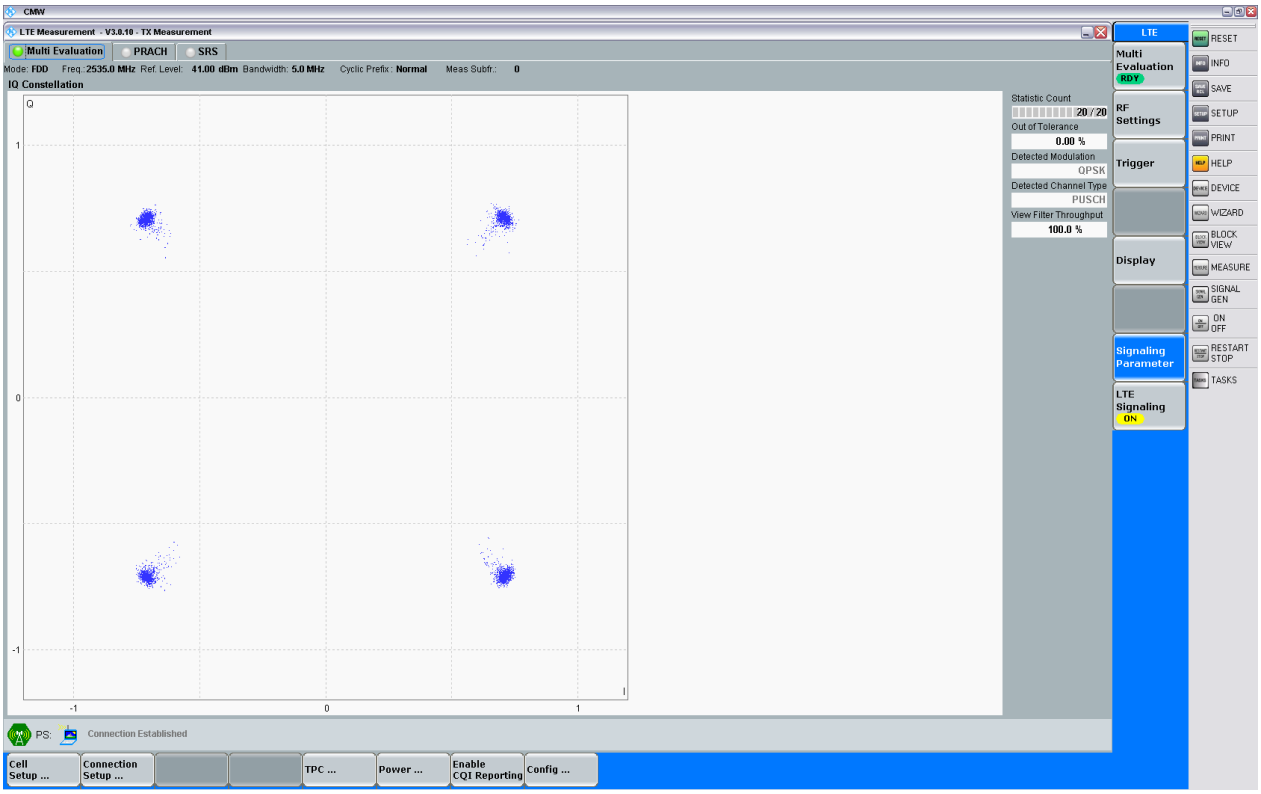
3.2.1 Test Band = BAND7

3.2.1.1 Test Mode = LTE/TM1

3.2.1.1.1 Test Bandwidth = 5MHz

####### 3.2.1.1.1.1 Test Channel = MCH

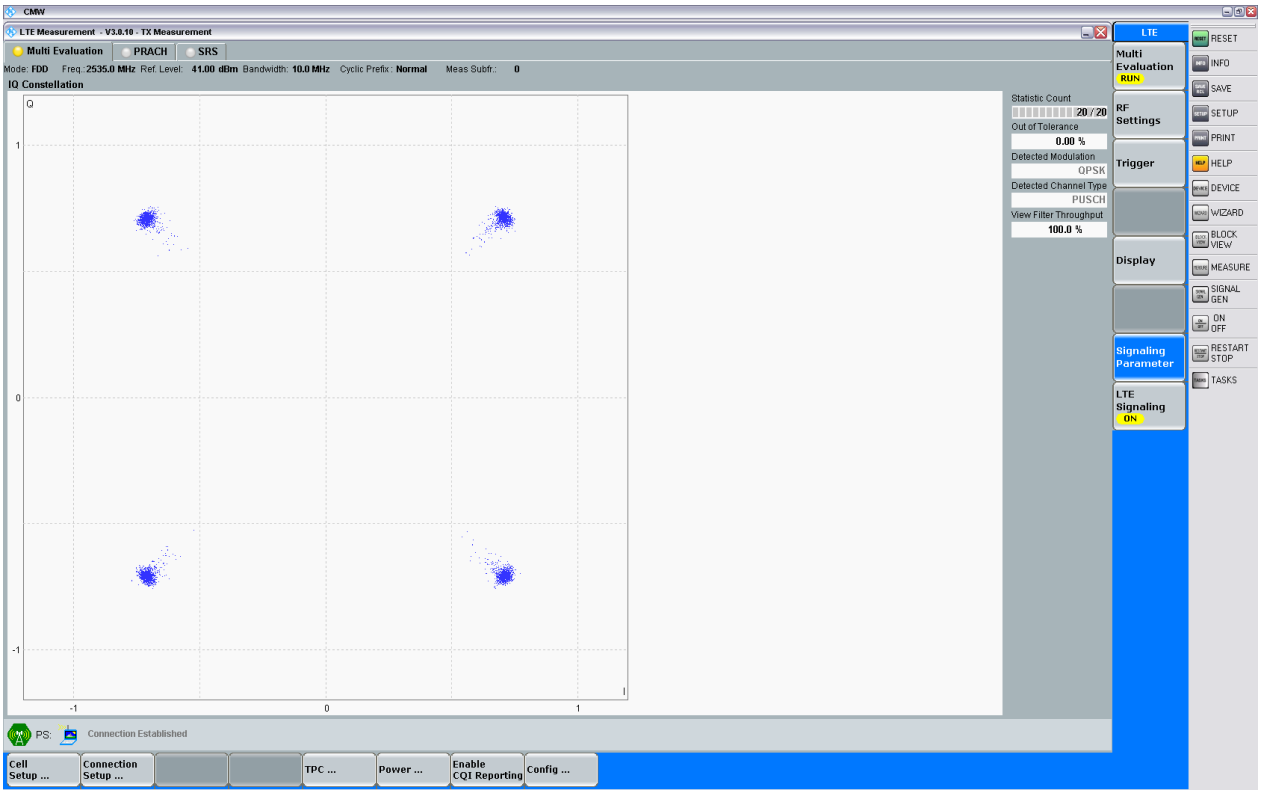
######## 3.2.1.1.1.1.1 Test RB = RB25#0



3.2.1.1.2 Test Bandwidth = 10MHz

3.2.1.1.2.1 Test Channel = MCH

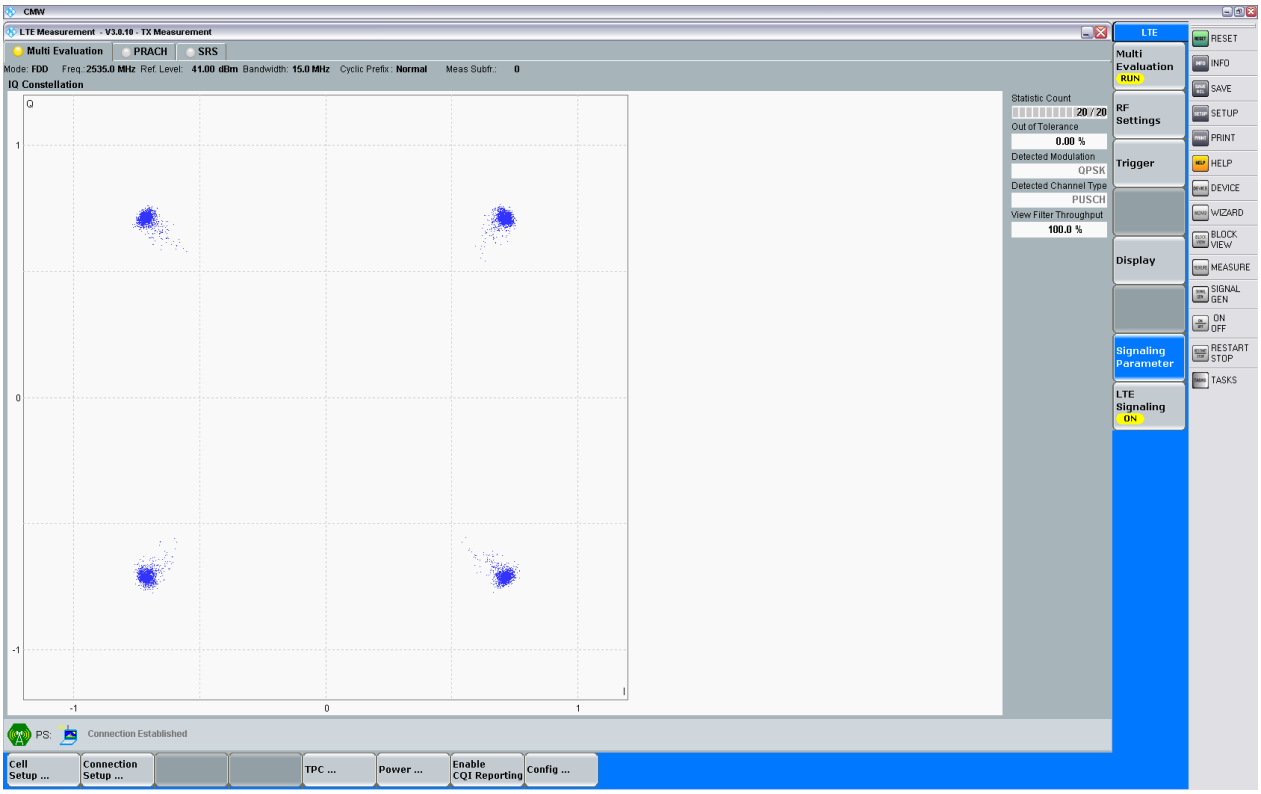
3.2.1.1.2.1.1 Test RB = RB50#0



3.2.1.1.3 Test Bandwidth =15MHz

3.2.1.1.3.1 Test Channel = MCH

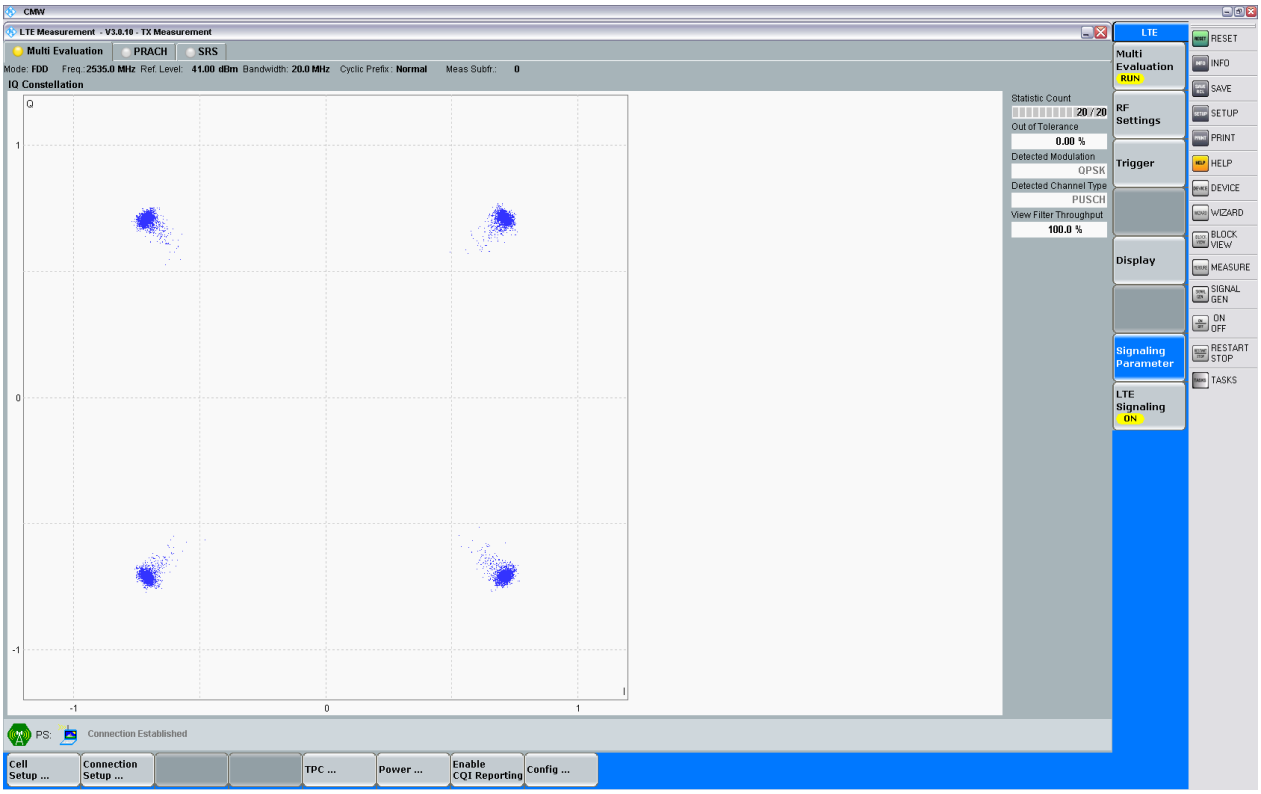
3.2.1.1.3.1.1 Test RB = RB75#0



3.2.1.1.4 Test Bandwidth = 20MHz

3.2.1.1.4.1 Test Channel = MCH

3.2.1.1.4.1.1 Test RB = RB100#0

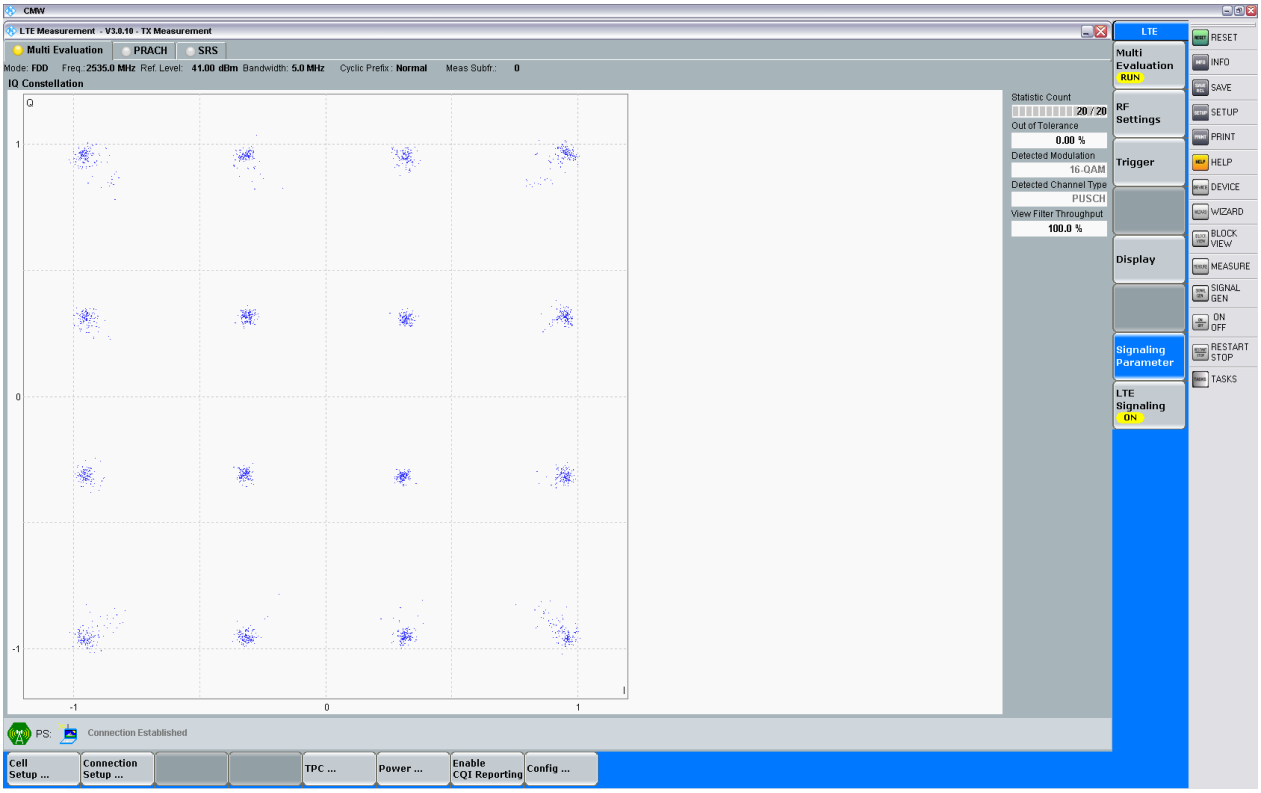


3.2.1.2 Test Mode = LTE/TM2

3.2.1. 2.1 Test Bandwidth = 5MHz

3.2.1. 2.1.1 Test Channel = MCH

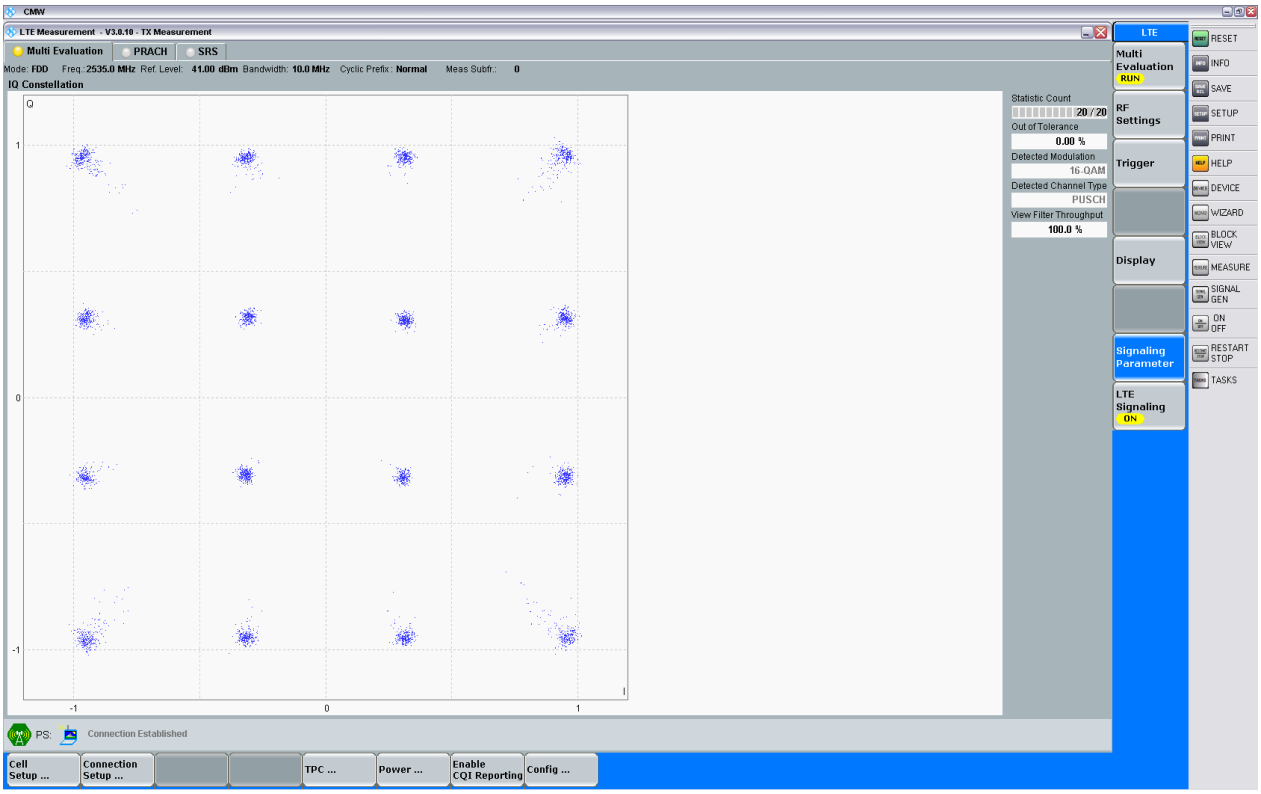
3.2.1. 2.1.1.1 Test RB = RB25#0



3.2.1. 2.2 Test Bandwidth = 10MHz

3.2.1. 2.2.1 Test Channel = MCH

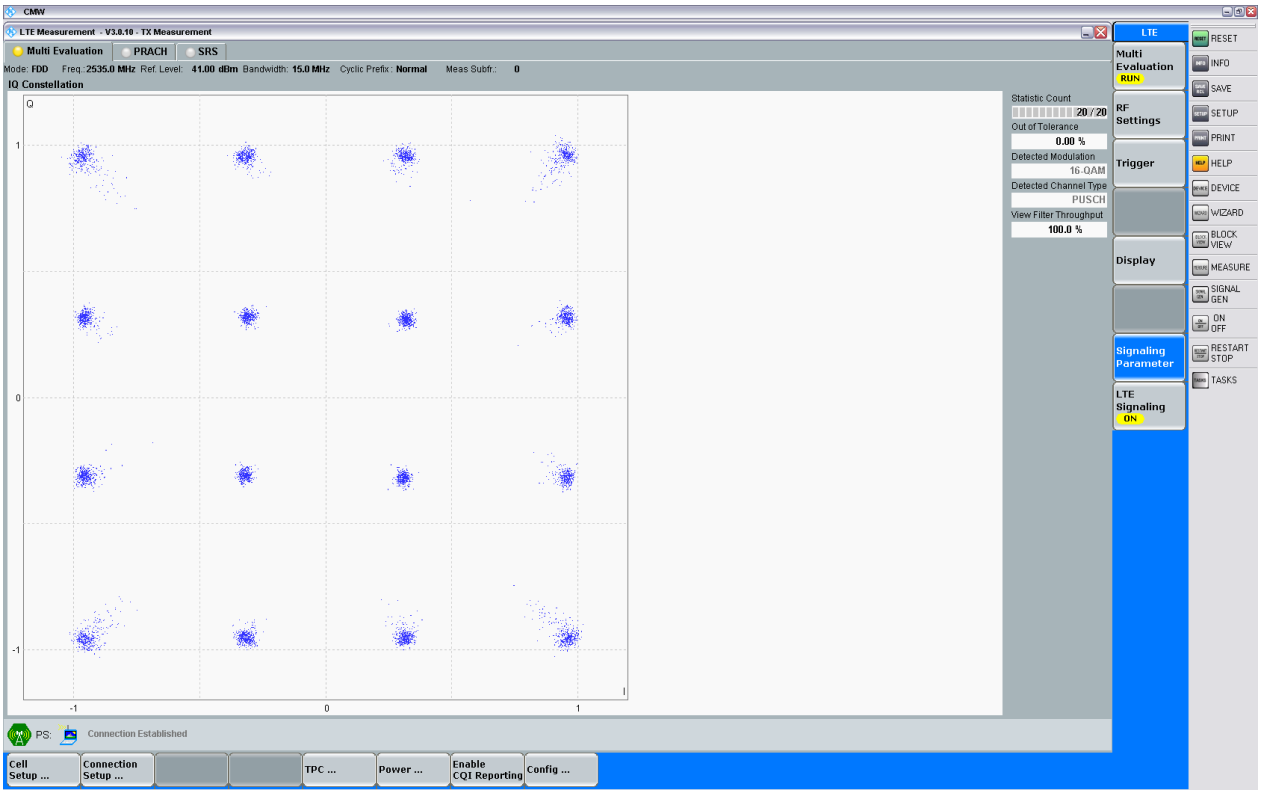
3.2.1. 2.2.1.1 Test RB = RB50#0



3.2.1. 2.3 Test Bandwidth = 15MHz

3.2.1. 2.3.1 Test Channel = MCH

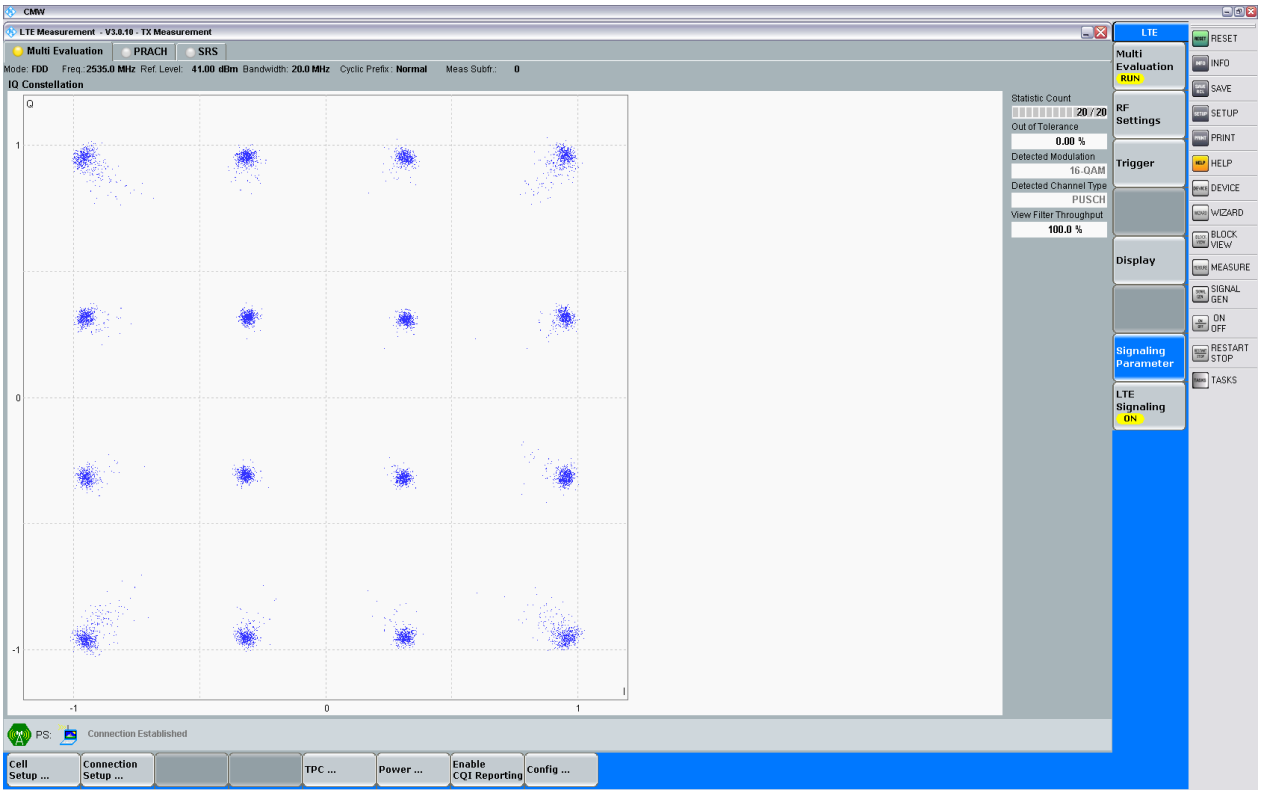
3.2.1. 2.3.1.1 Test RB = RB75#0



3.2.1. 2.4 Test Bandwidth = 20MHz

3.2.1. 2.4.1 Test Channel = MCH

3.2.1. 2.4.1.1 Test RB = RB50#0



4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM850	GSM/TM1	LCH	250.50	322.09	Pass
		MCH	248.82	321.73	Pass
		HCH	248.43	320.84	Pass
	GSM/TM2	LCH	253.74	323.60	Pass
		MCH	253.49	324.90	Pass
		HCH	254.87	317.78	Pass
GSM1900	GSM/TM1	LCH	245.66	317.39	Pass
		MCH	244.26	319.96	Pass
		HCH	247.80	322.47	Pass
	GSM/TM2	LCH	248.66	317.14	Pass
		MCH	247.62	315.57	Pass
		HCH	247.72	309.25	Pass
Test Band	**Test Mode**	**Test Channel**	**Occupied Bandwidth [MHz]**	**Emission Bandwidth [MHz]**	**Verdict**
WCDMA850	UMTS/TM1	LCH	4.14	4.71	Pass
		MCH	4.16	4.73	Pass
		HCH	4.15	4.72	Pass
WCDMA1900	UMTS/TM1	LCH	4.14	4.73	Pass
		MCH	4.14	4.74	Pass
		HCH	4.15	4.72	Pass

Test Band	Test Mode	Test Bandwidth	Test Channel	Test RB	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
BAND7	LTE/TM1	5	LCH	RB25#0	4.49	4.85	Pass
			MCH	RB25#0	4.50	4.86	Pass
			HCH	RB25#0	4.50	4.87	Pass
		10	LCH	RB50#0	8.96	9.54	Pass
			MCH	RB50#0	8.96	9.53	Pass
			HCH	RB50#0	8.97	9.56	Pass
		15	LCH	RB75#0	13.47	14.39	Pass
			MCH	RB75#0	13.48	14.39	Pass
			HCH	RB75#0	13.47	14.40	Pass
		20	LCH	RB100#0	17.95	19.13	Pass
			MCH	RB100#0	17.95	19.13	Pass
			HCH	RB100#0	17.95	19.06	Pass
	LTE/TM2	5	LCH	RB25#0	4.50	4.88	Pass
			MCH	RB25#0	4.50	4.87	Pass
			HCH	RB25#0	4.50	4.88	Pass
		10	LCH	RB50#0	8.97	9.60	Pass
			MCH	RB50#0	8.97	9.59	Pass
			HCH	RB50#0	8.97	9.62	Pass
		15	LCH	RB75#0	13.46	14.32	Pass
			MCH	RB75#0	13.48	14.43	Pass
			HCH	RB75#0	13.47	14.42	Pass
		20	LCH	RB100#0	17.95	19.14	Pass
			MCH	RB100#0	17.96	19.15	Pass
			HCH	RB100#0	17.95	19.09	Pass

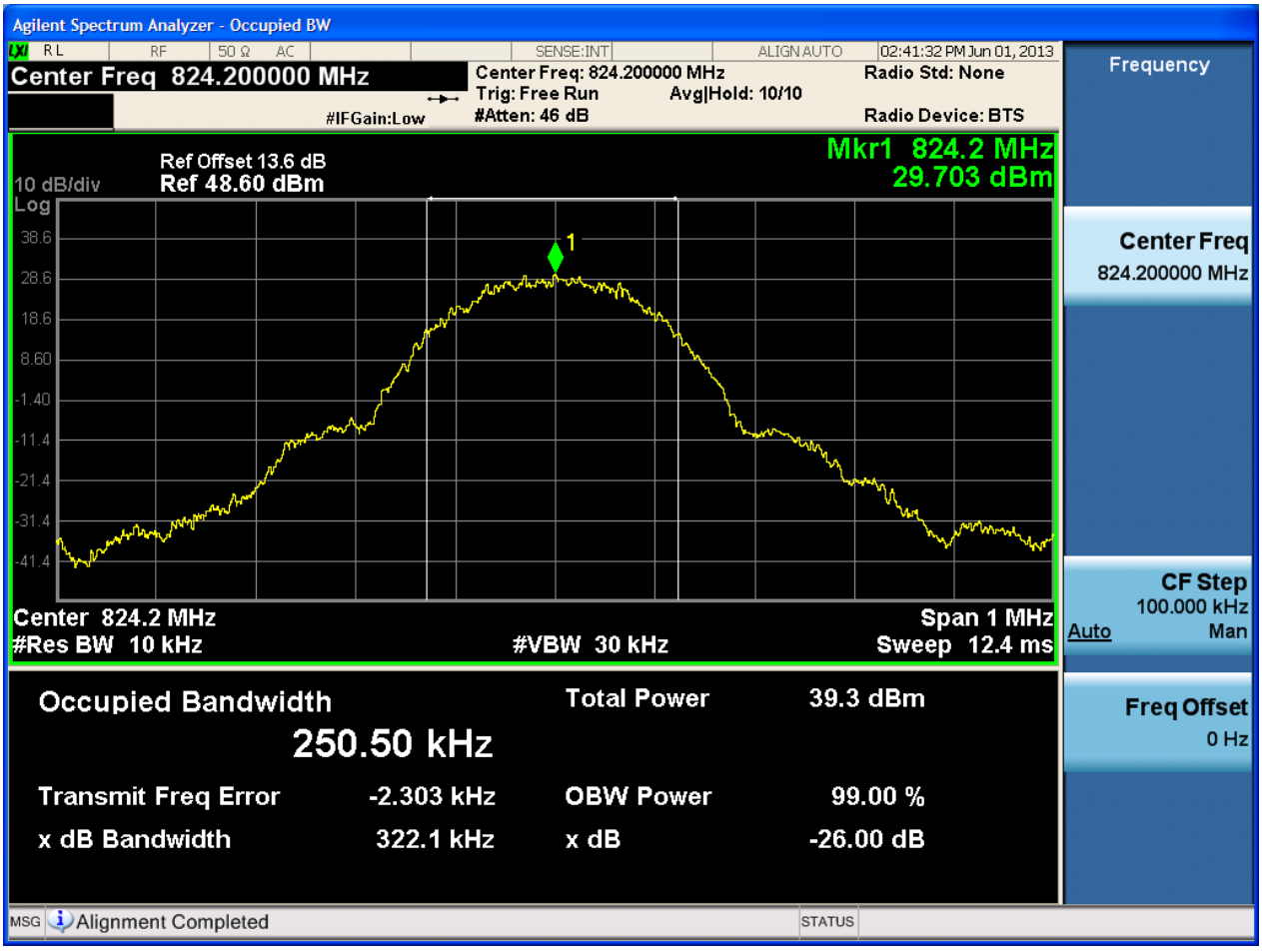
Part II - Test Plots

4.1 For GSM

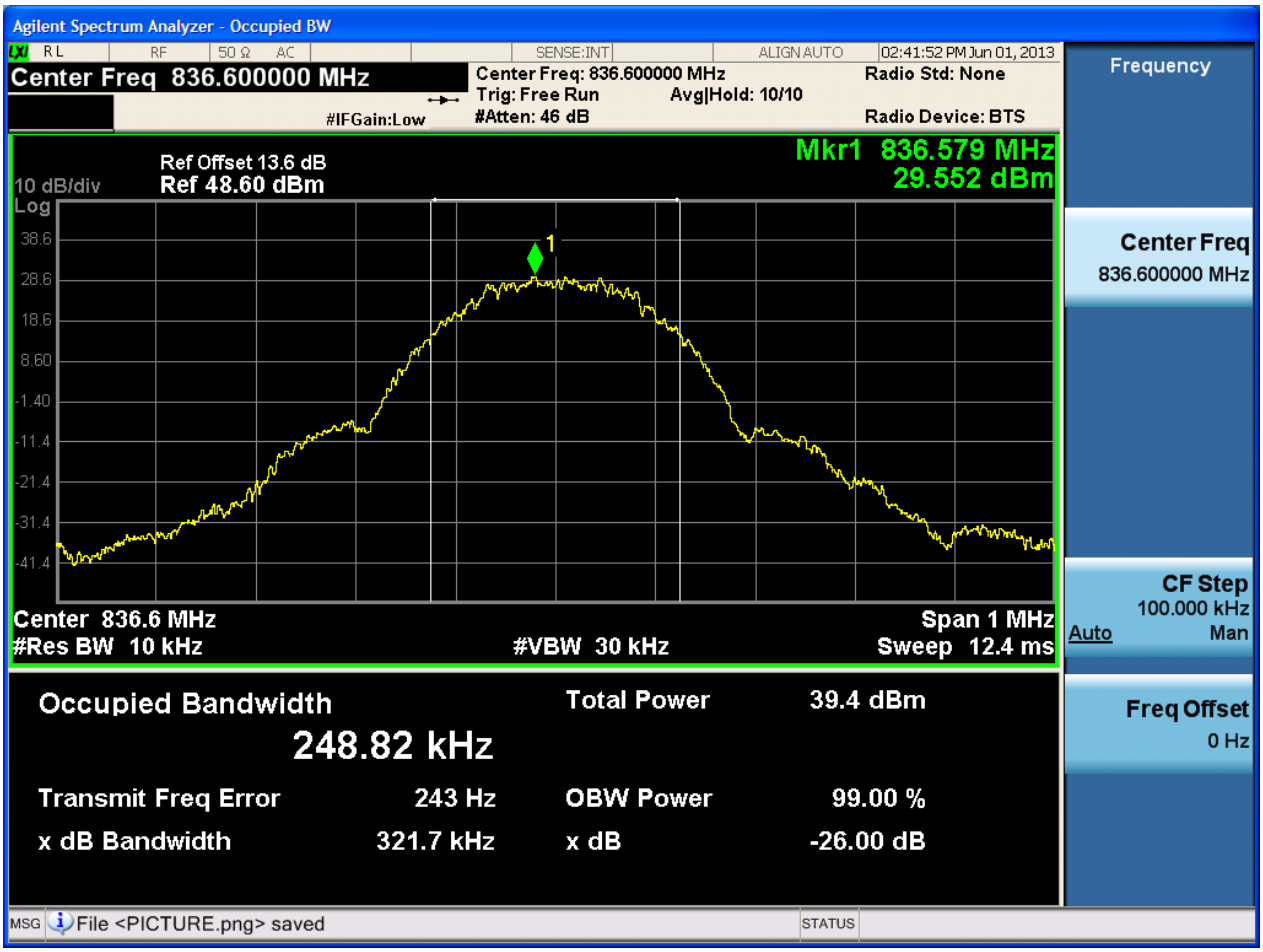
4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

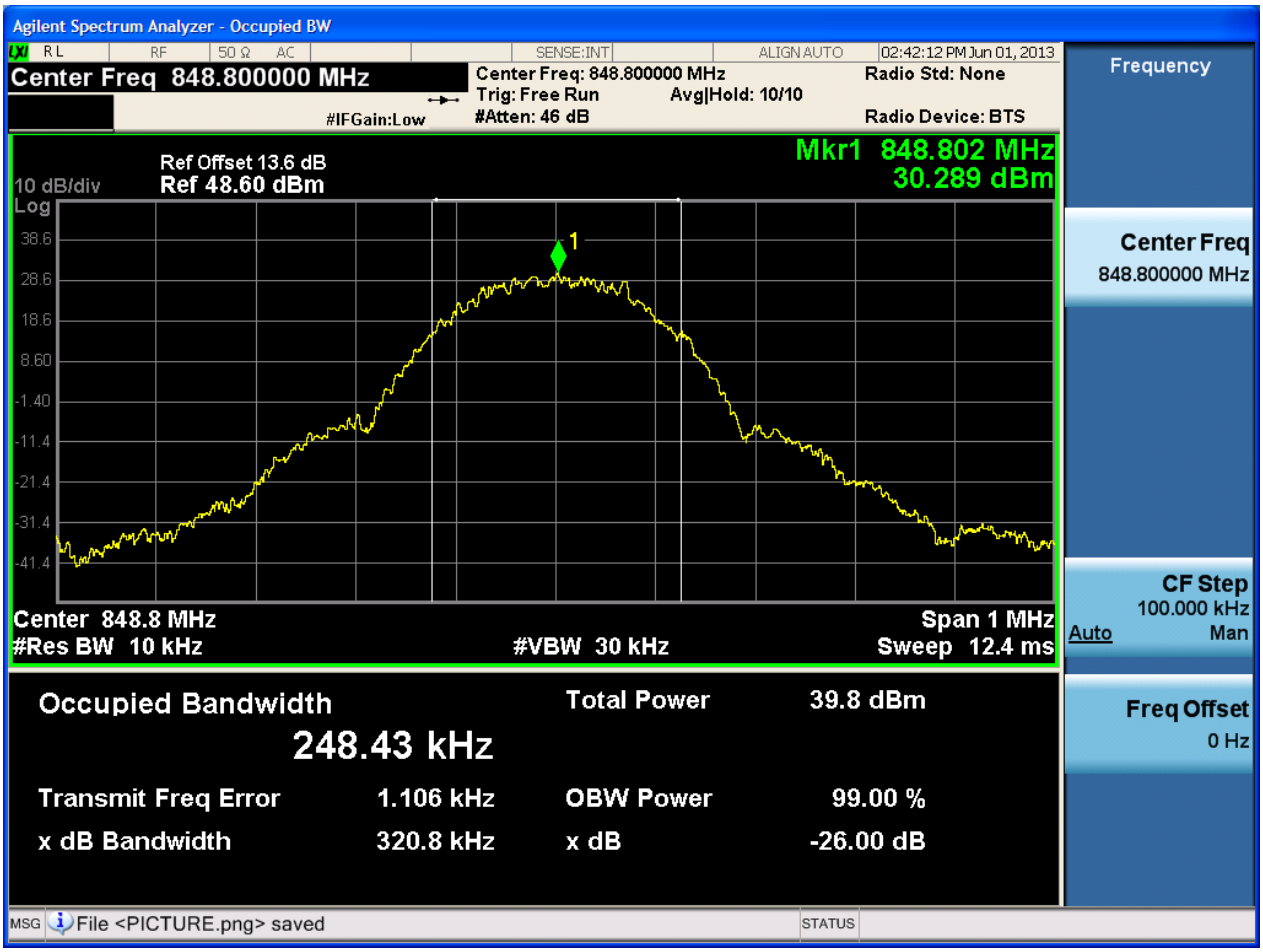
4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH

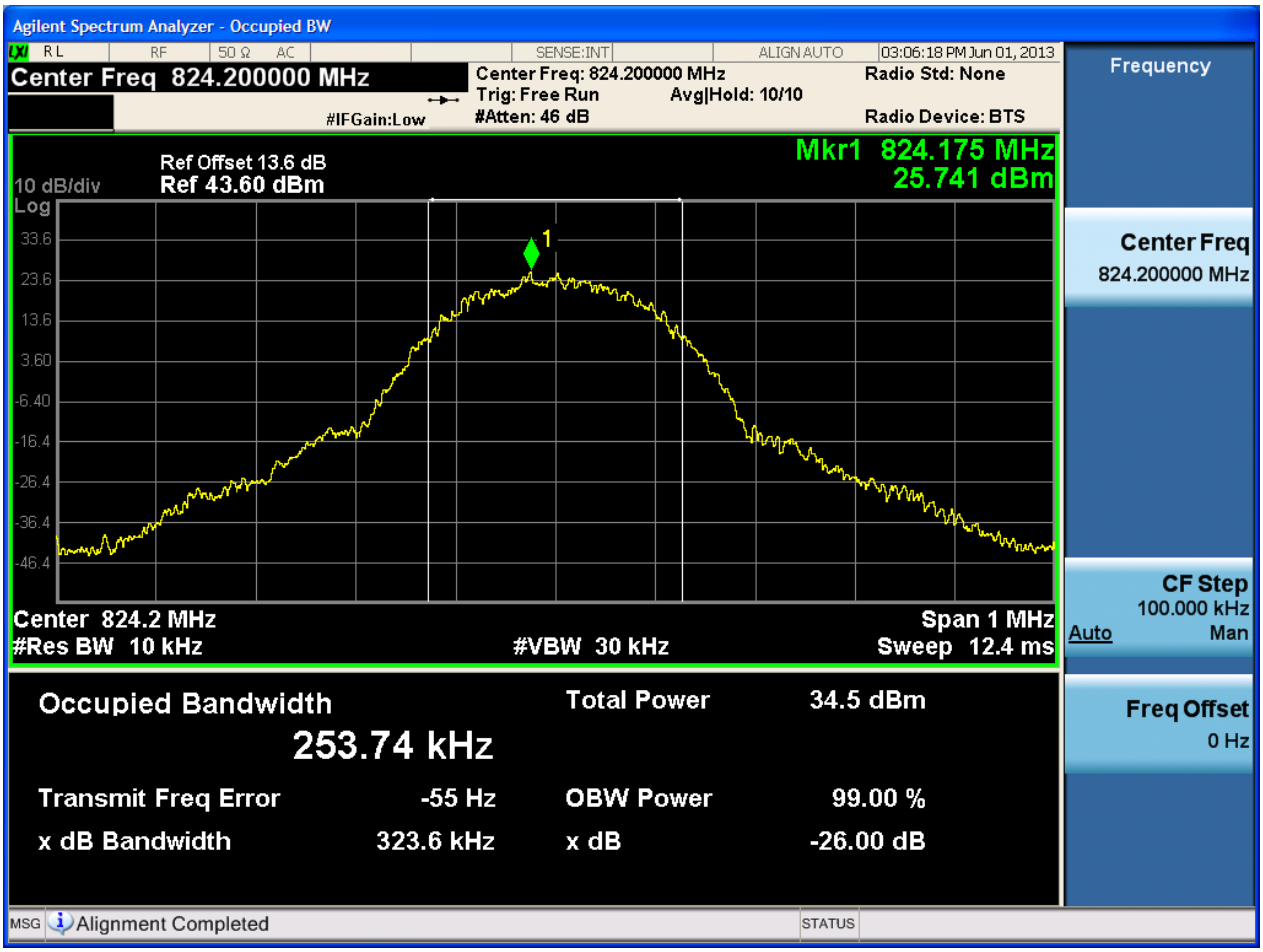


4.1.1.1.3 Test Channel = HCH

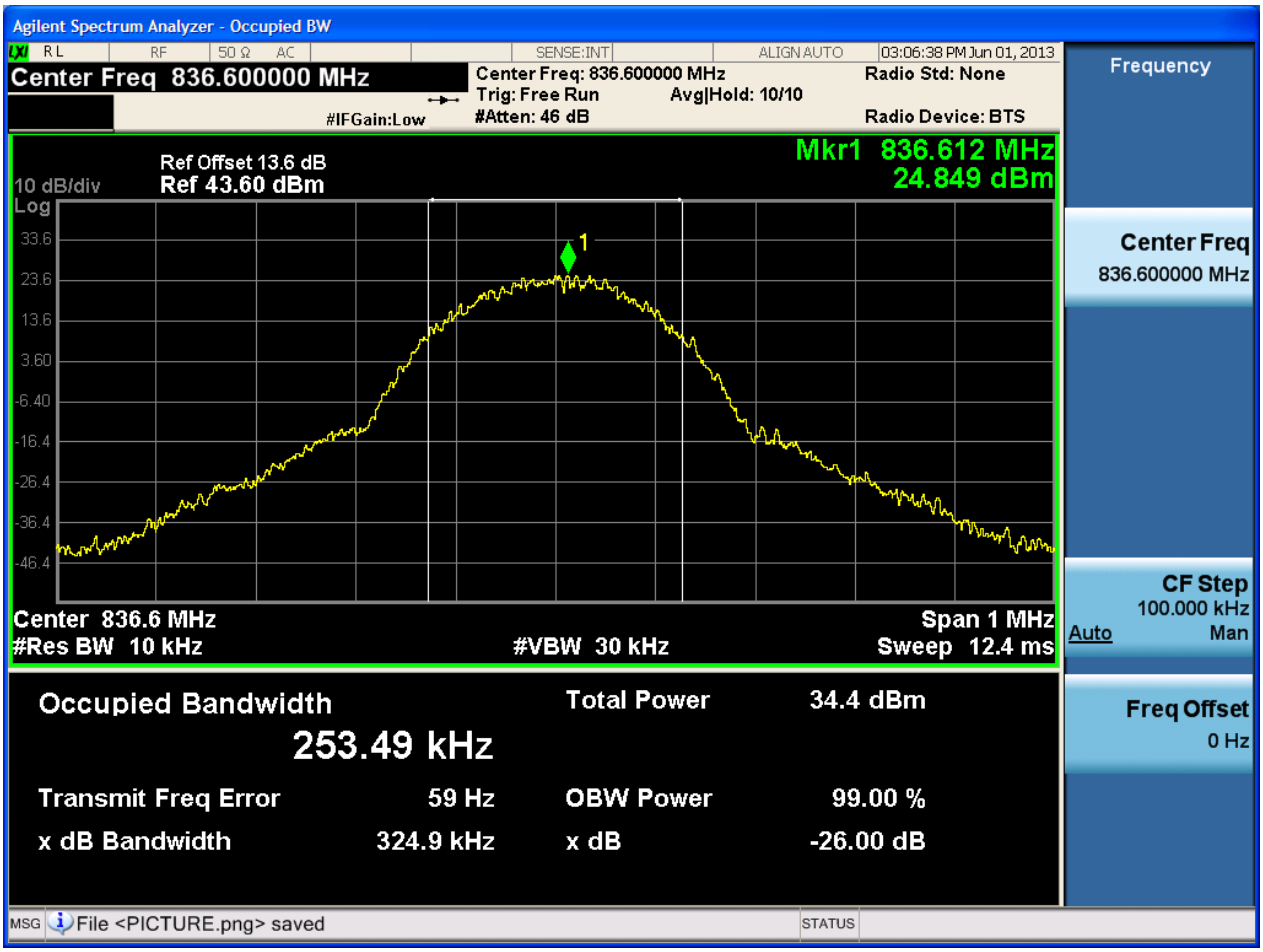


4.1.1.2 Test Mode = GSM/TM2

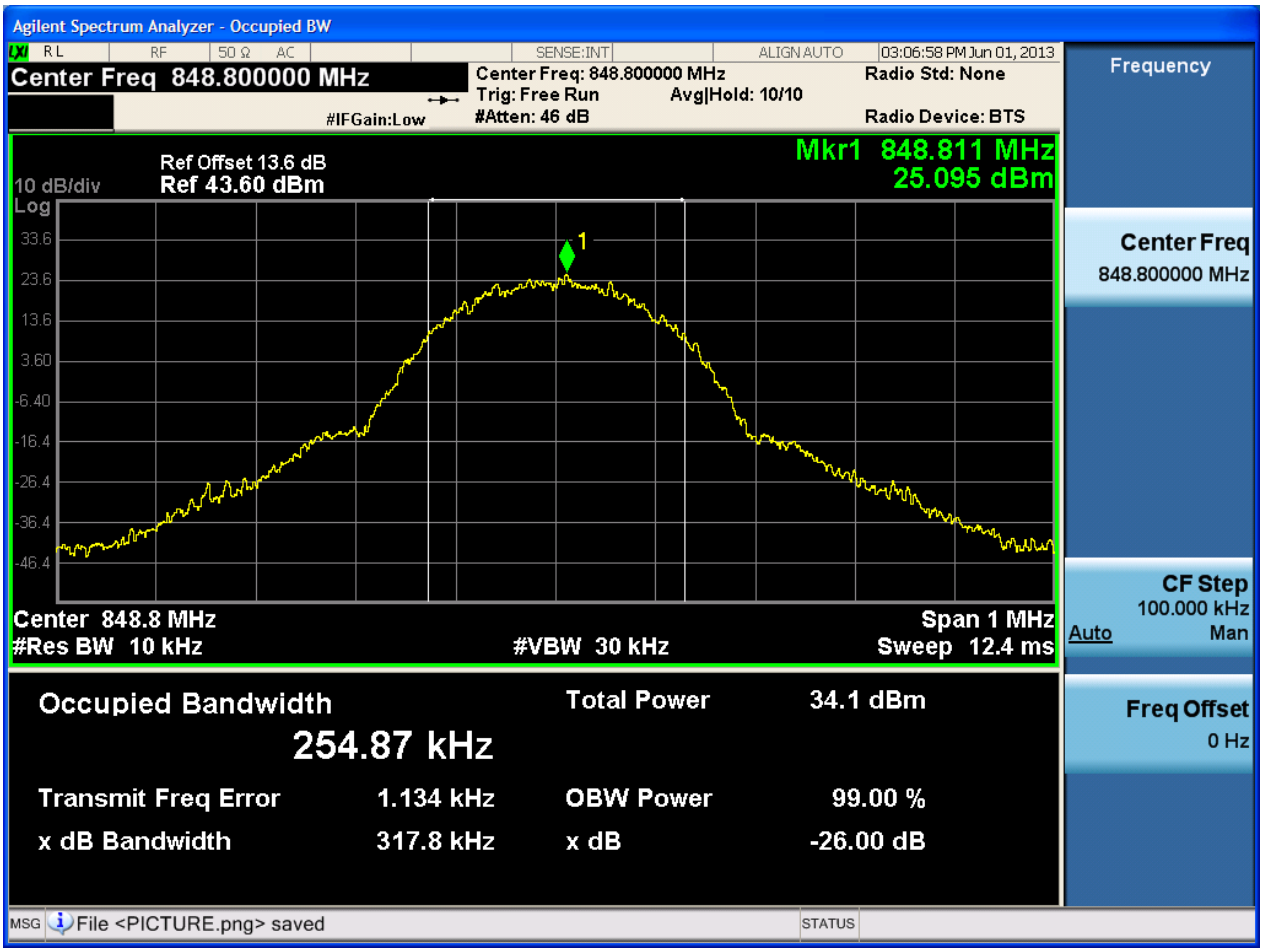
4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH



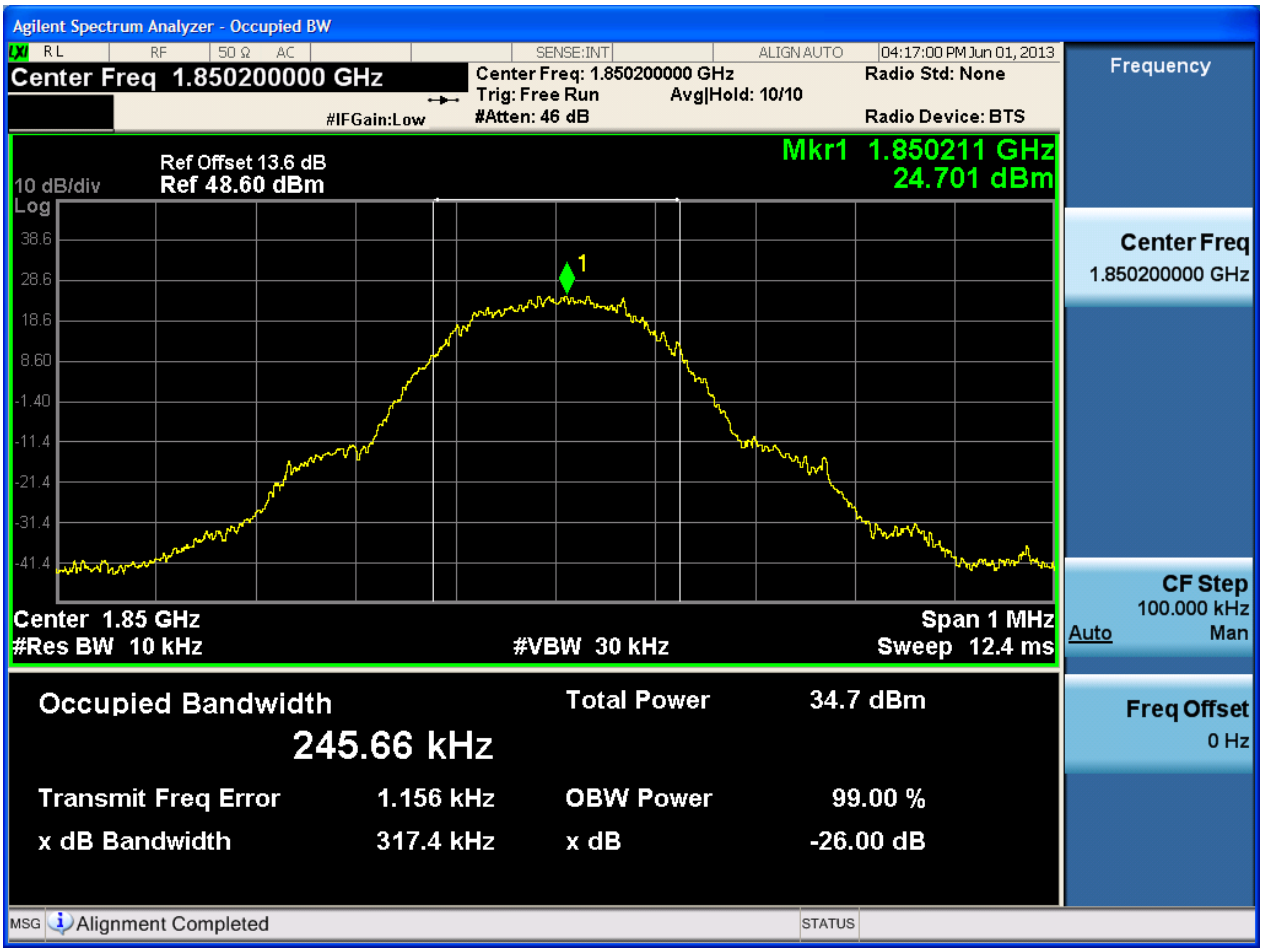
4.1.1.2.3 Test Channel = HCH



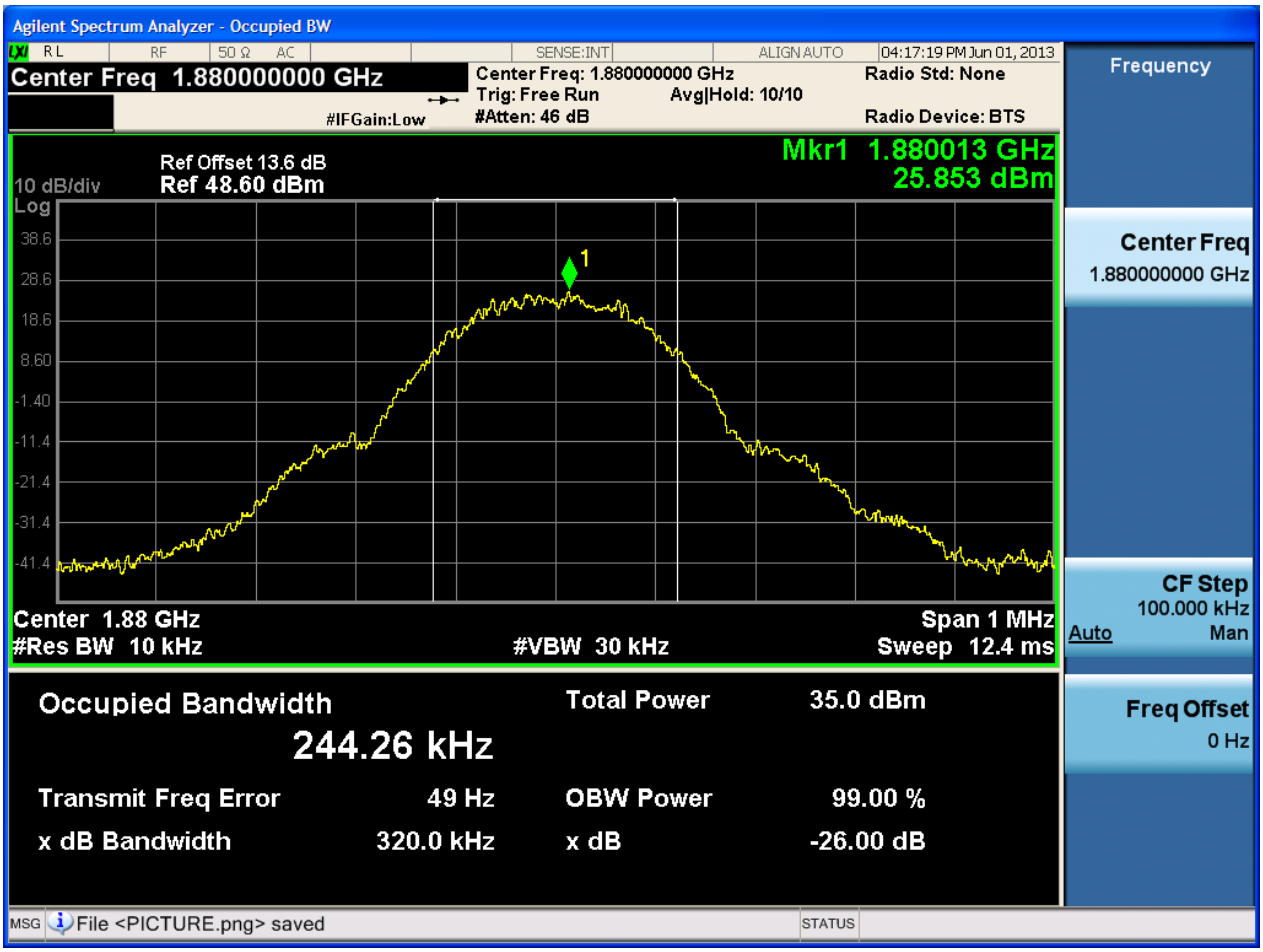
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

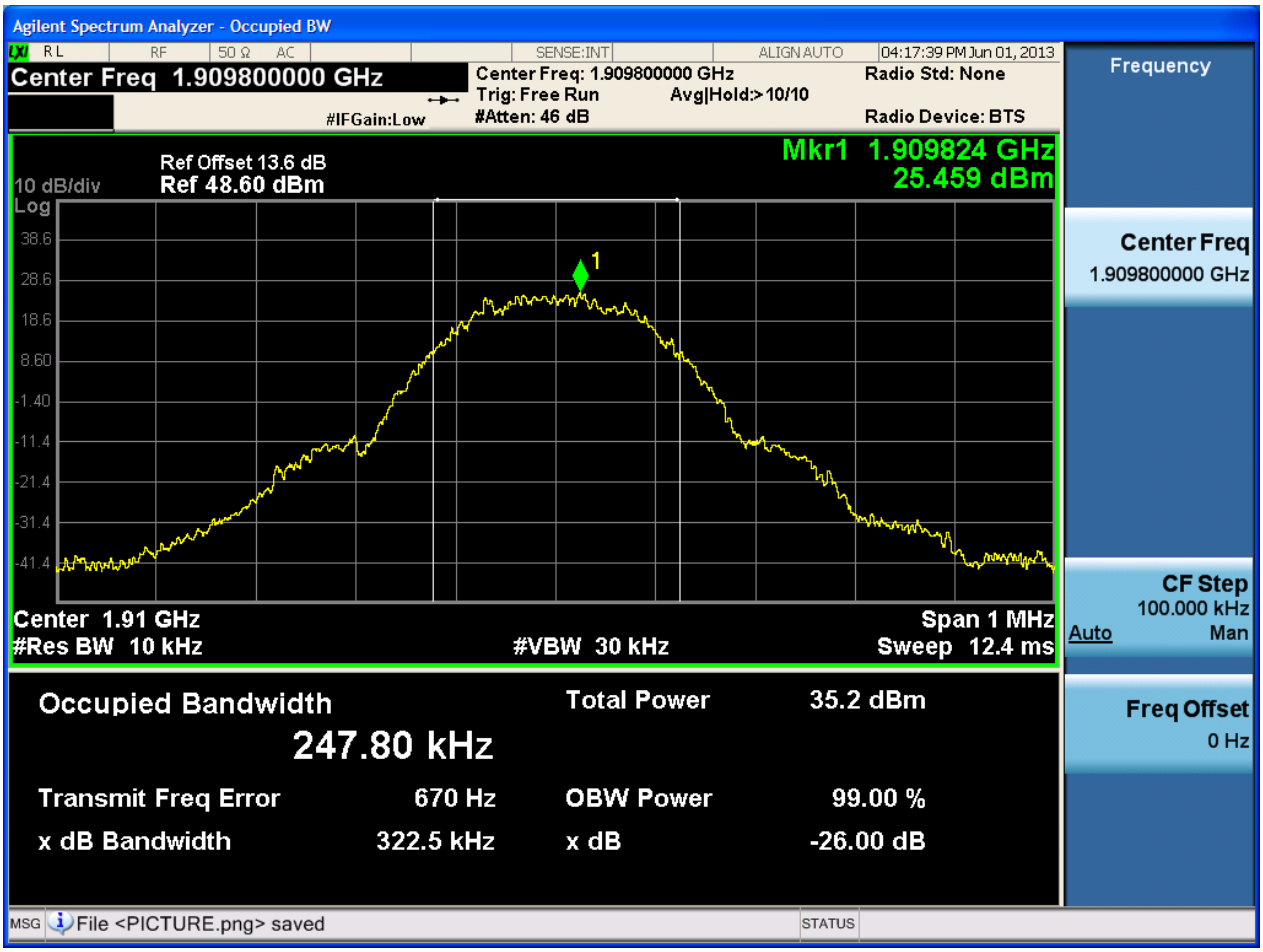
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH

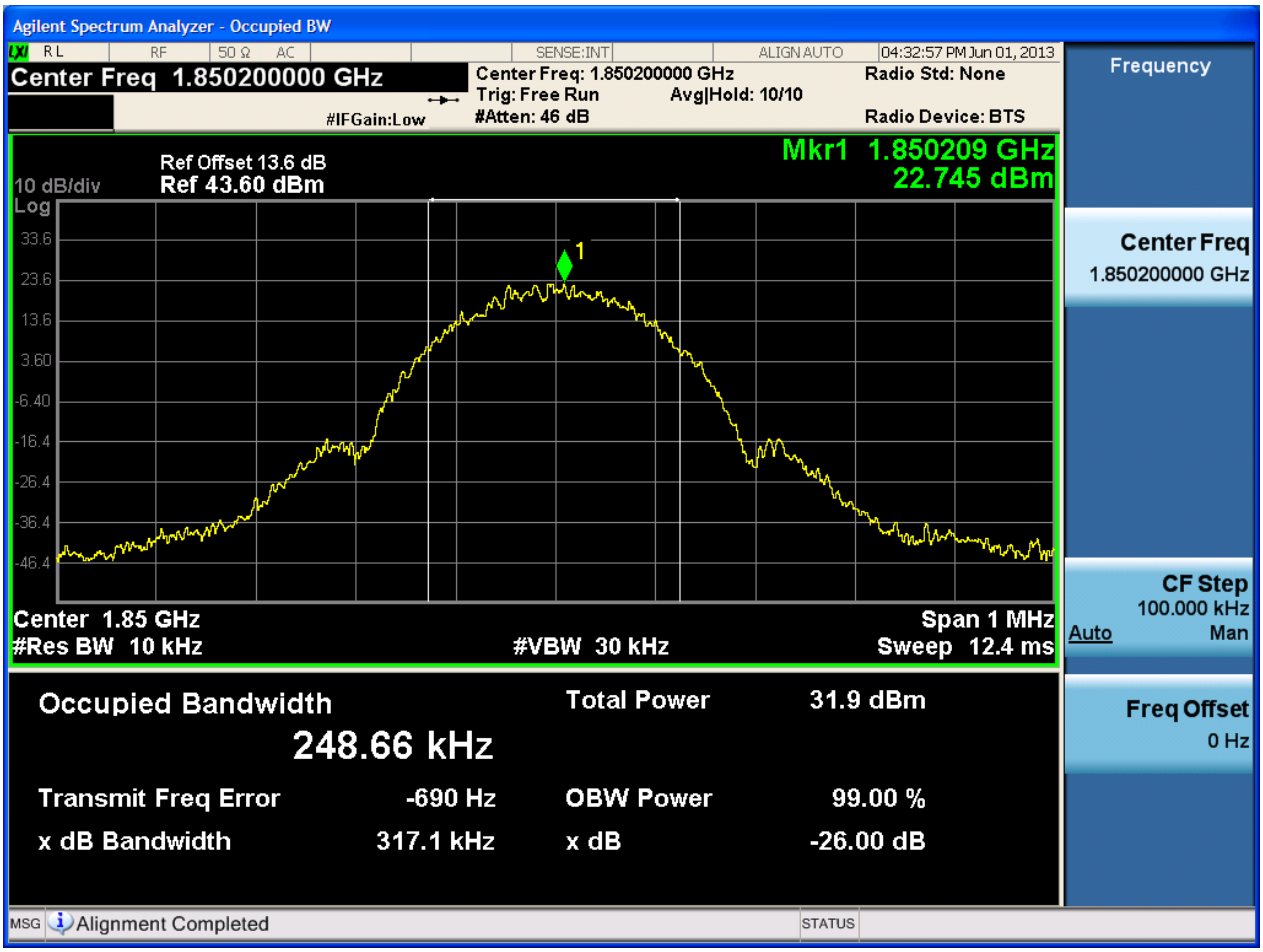


4.1.2.1.3 Test Channel = HCH

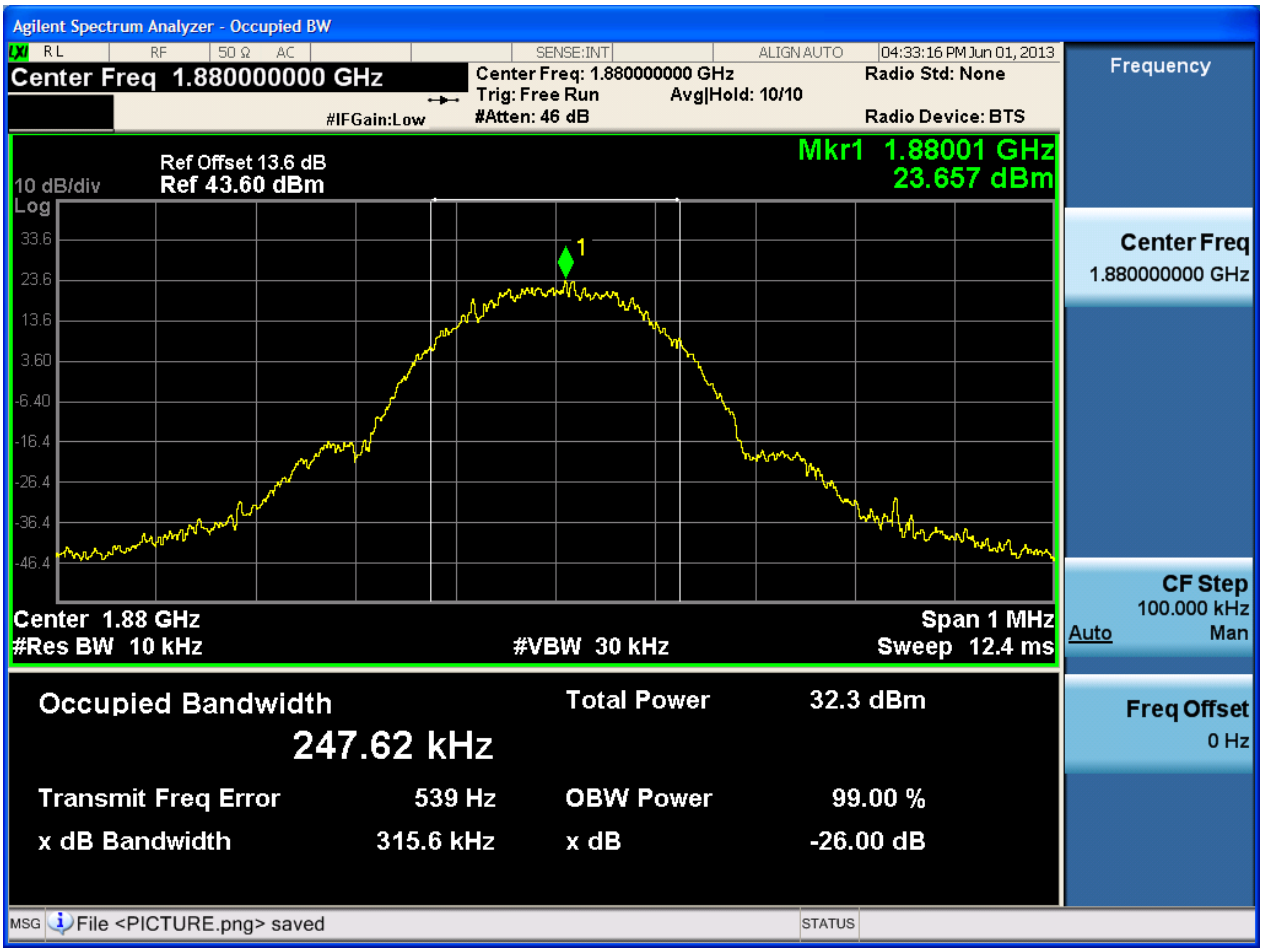


4.1.2.2 Test Mode = GSM/TM2

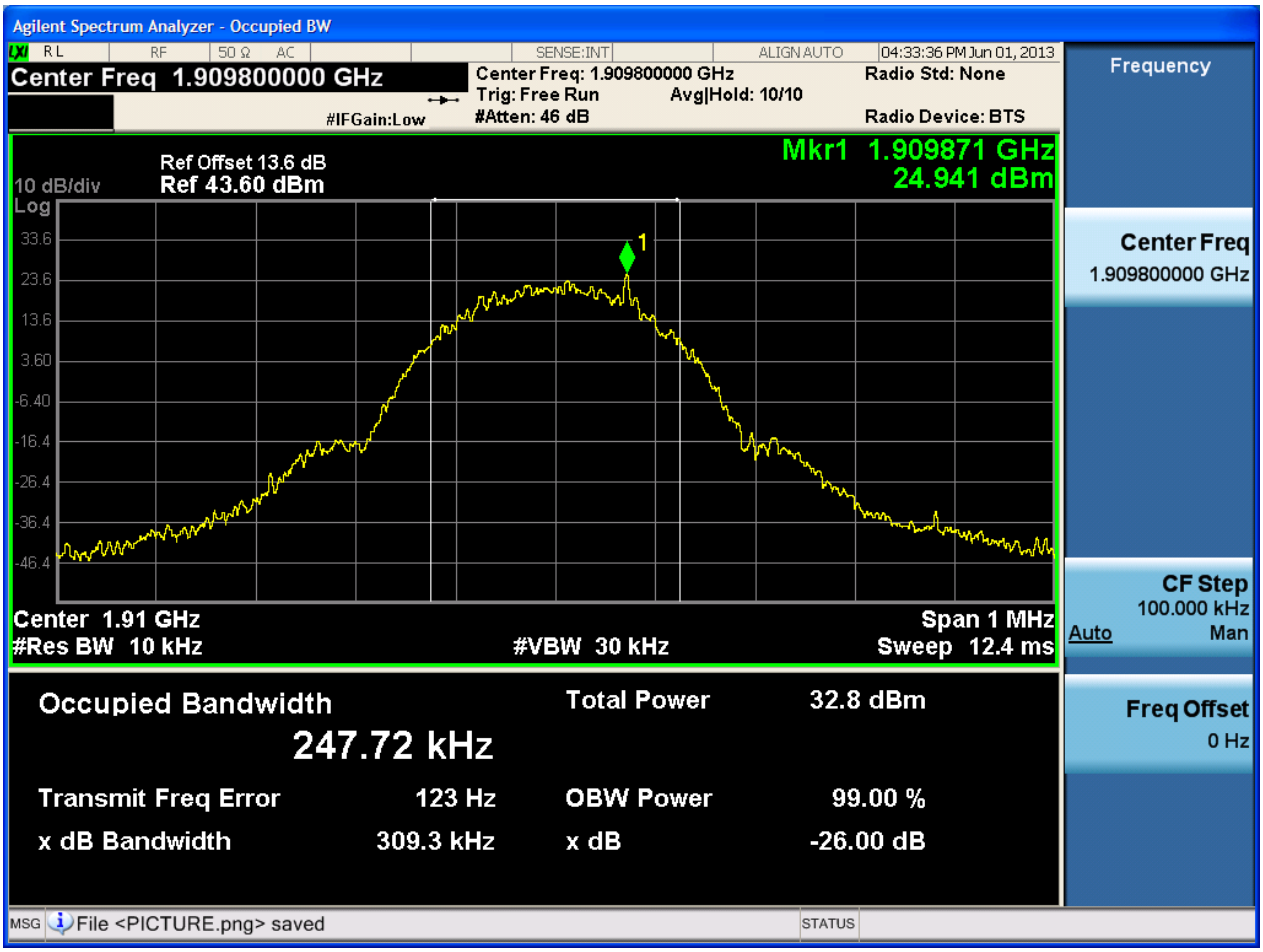
4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH

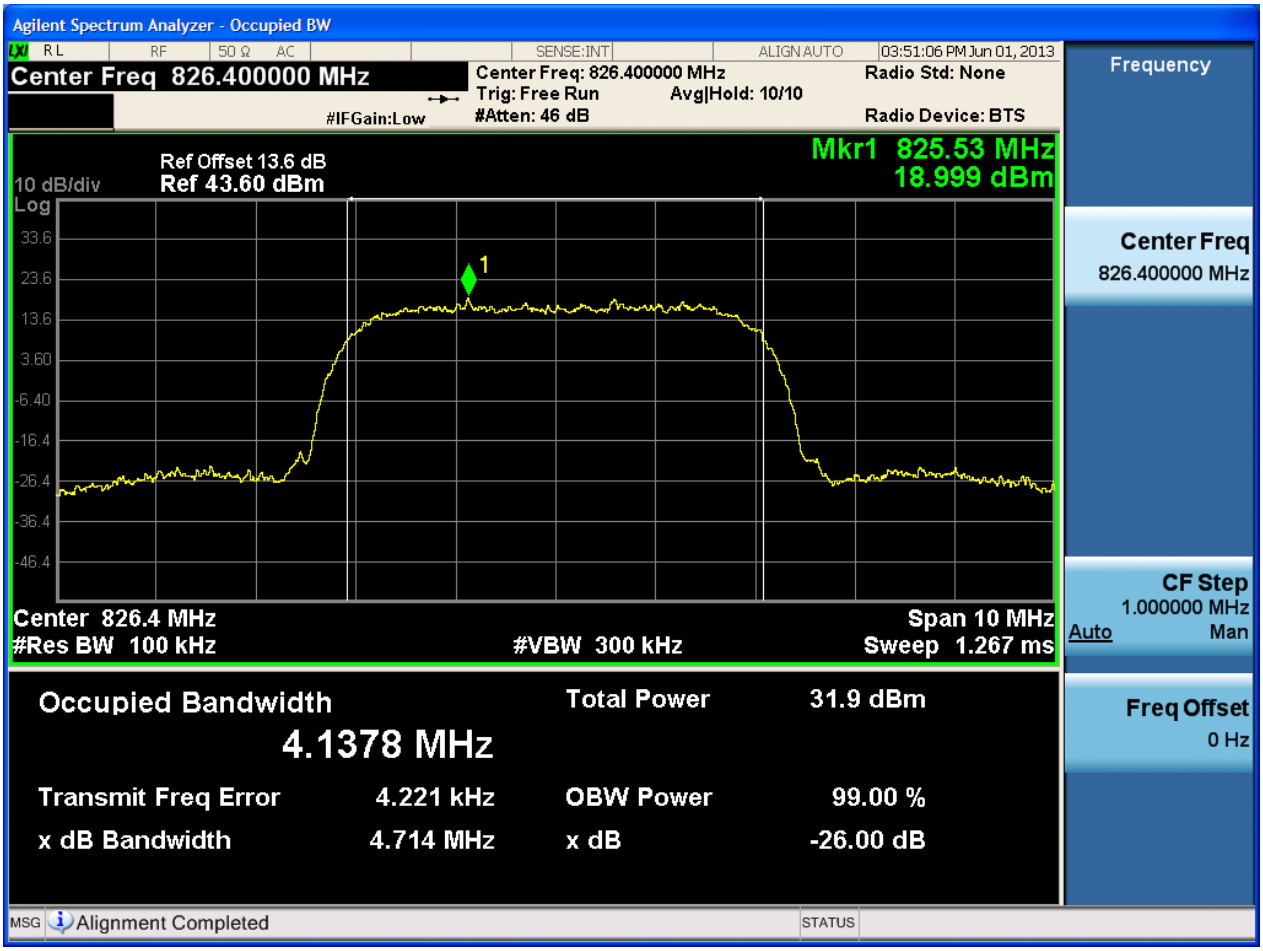


4.2 For UMTS

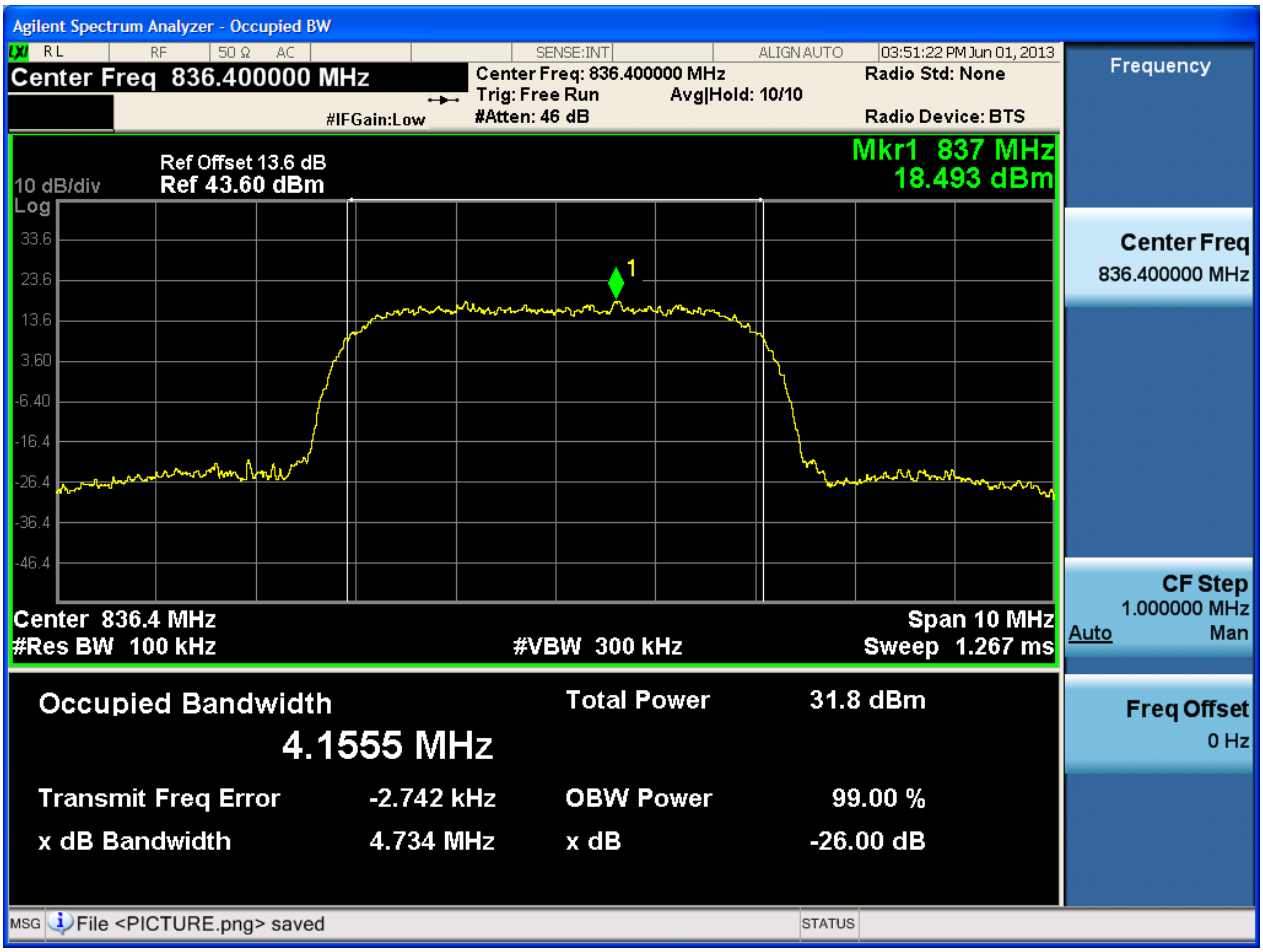
4.2.1 Test Band = WCDMA850

4.2.1.1 Test Mode = UMTS/TM1

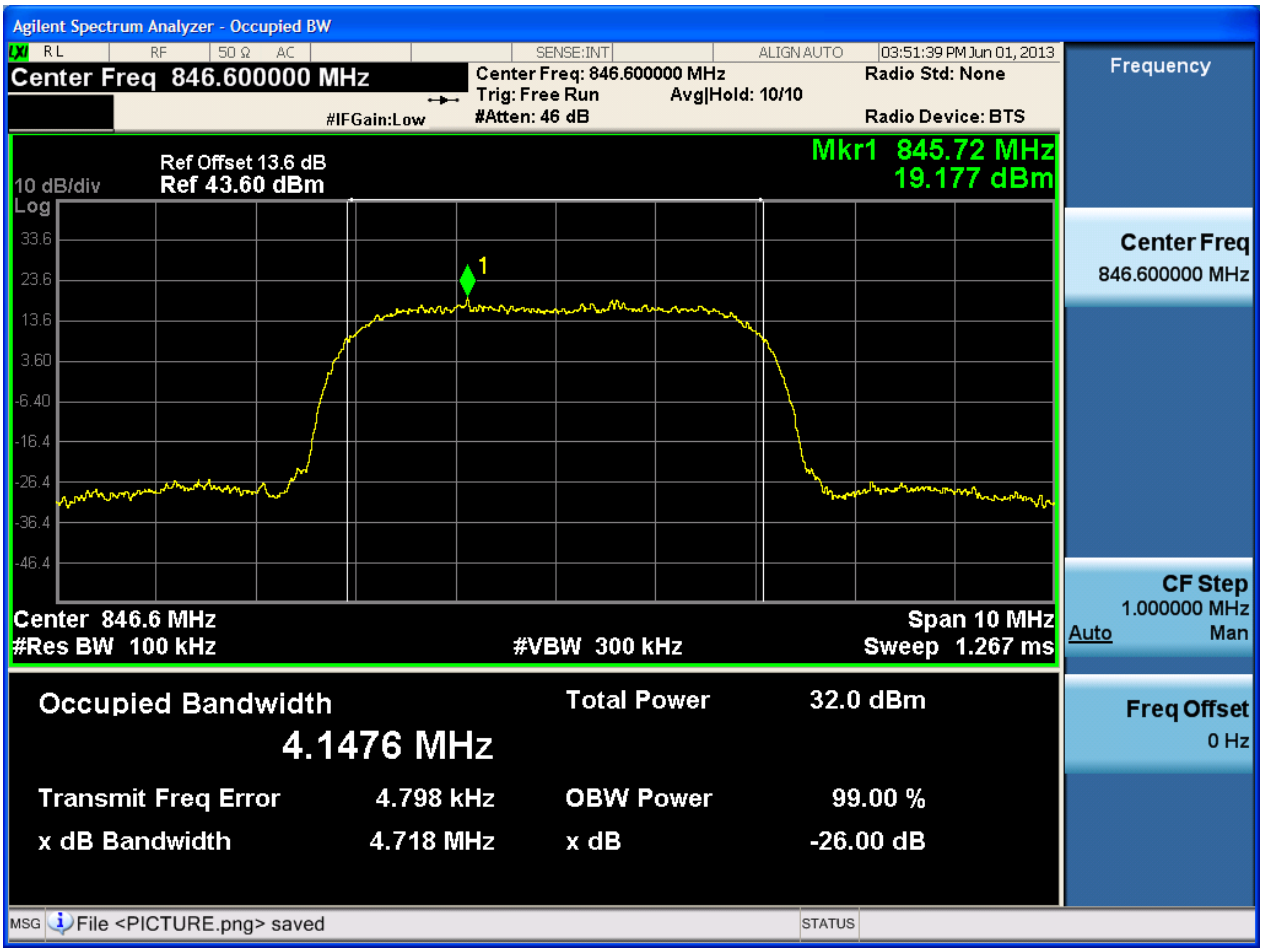
4.2.1.1.1 Test Channel = LCH



4.2.1.1.2 Test Channel = MCH



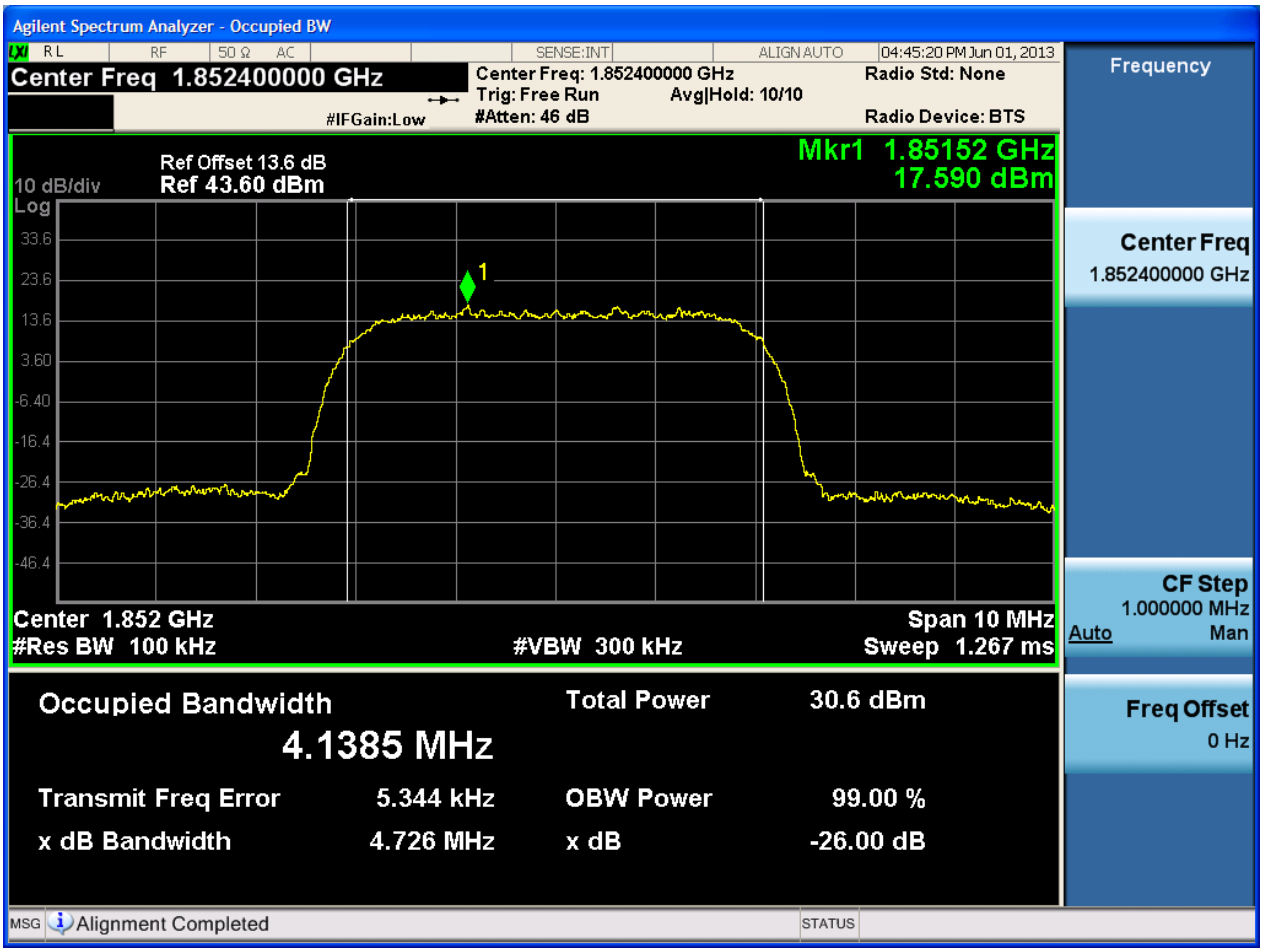
4.2.1.1.3 Test Channel = HCH



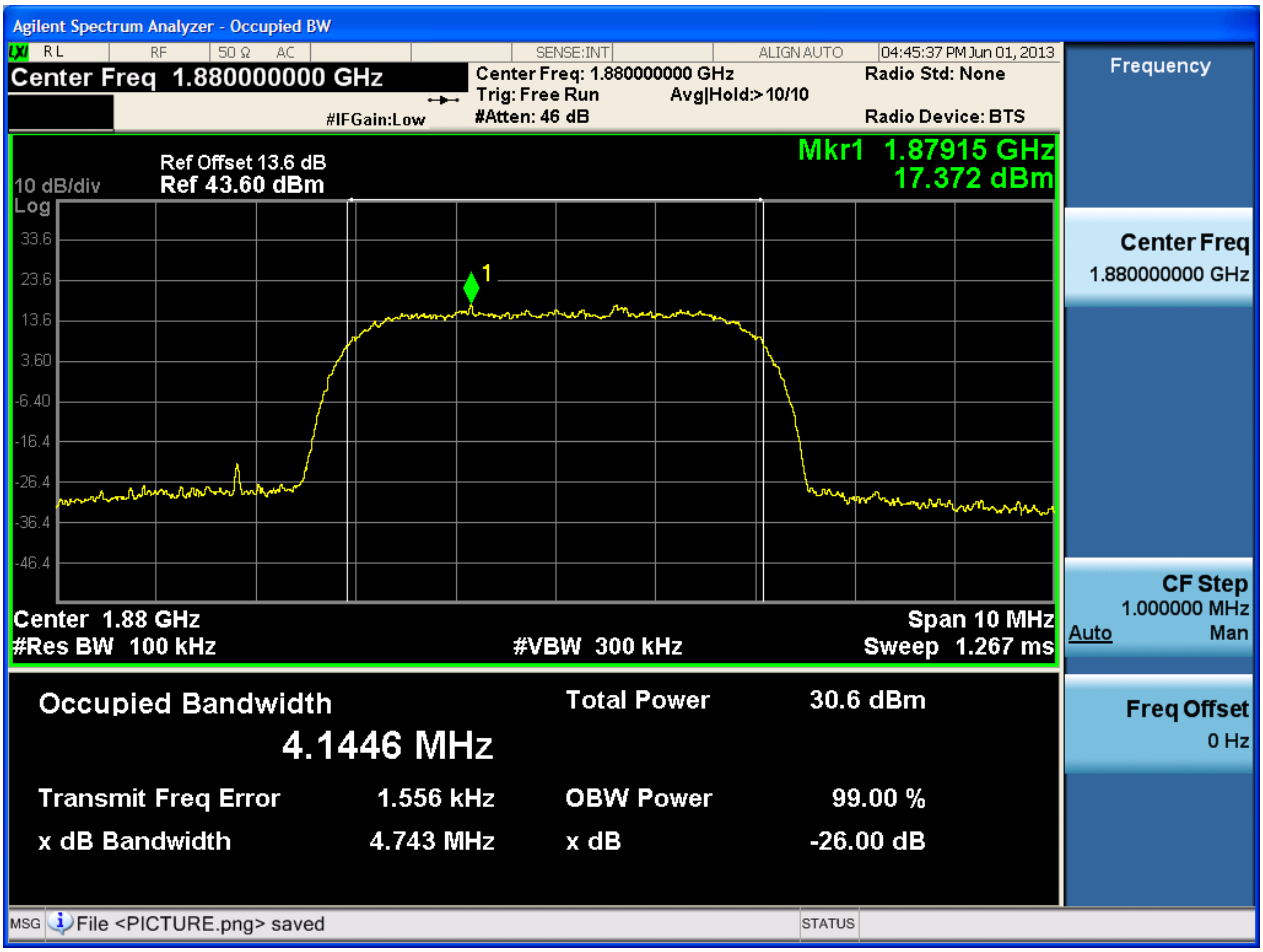
4.2.2 Test Band = WCDMA1900

4.2.2.1 Test Mode = UMTS/TM1

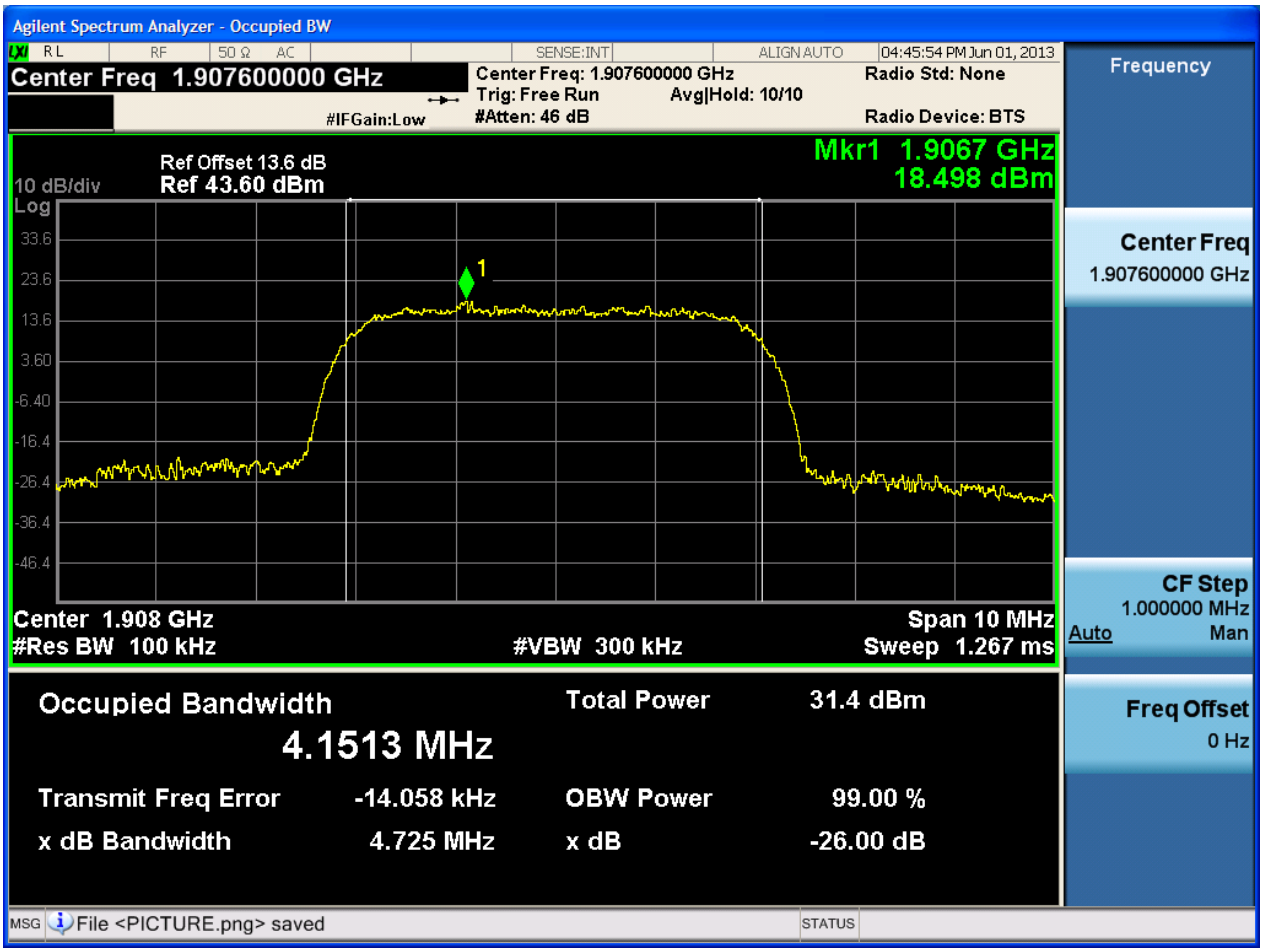
4.2.2.1.1 Test Channel = LCH



4.2.2.1.2 Test Channel = MCH



4.2.2.1.3 Test Channel = HCH



4.3 For LTE

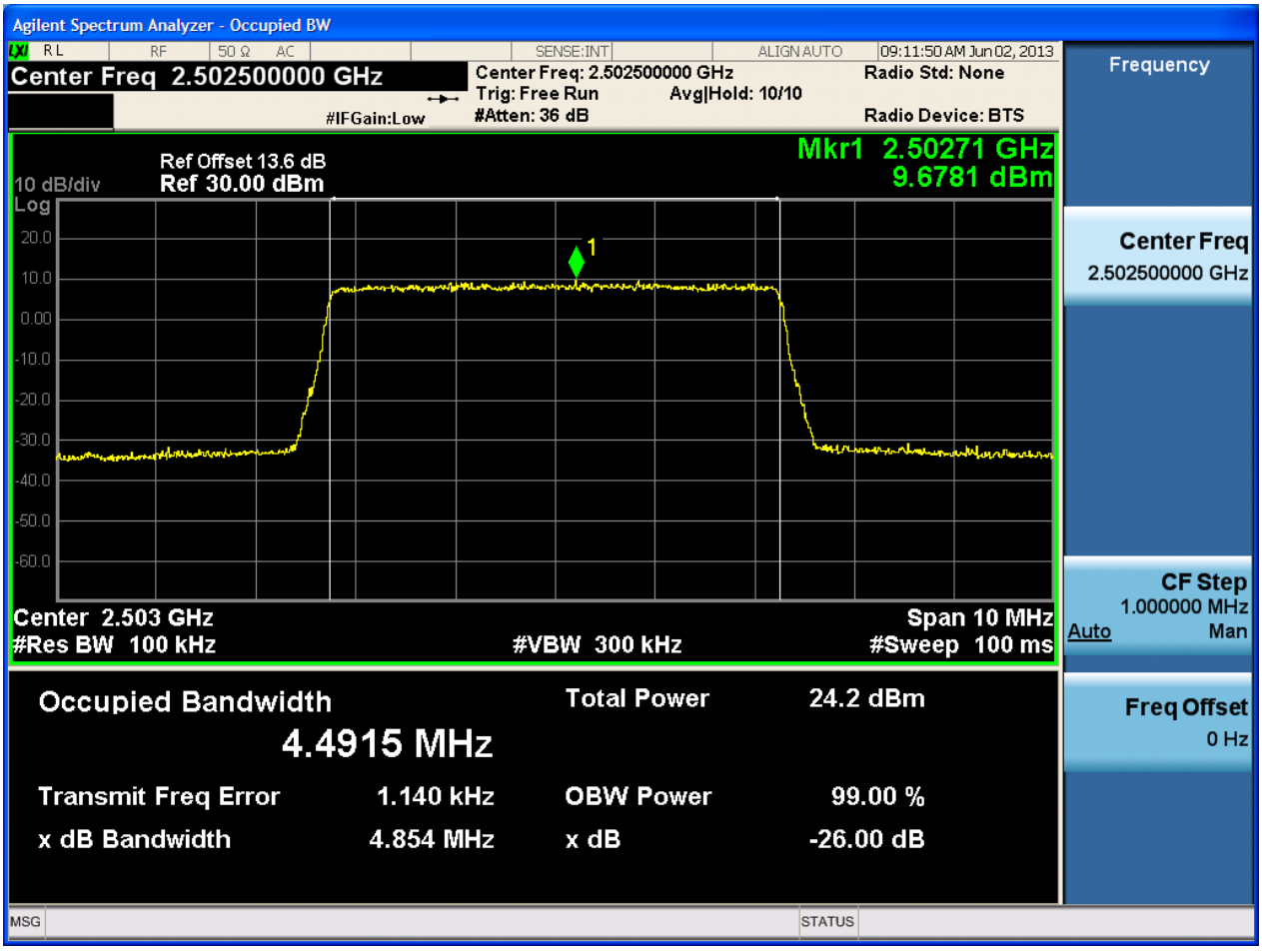
4.3.1 Test Band = BAND7

4.3.1.1 Test Mode = LTE/TM1

4.3.1.1.1 Test Bandwidth = 5

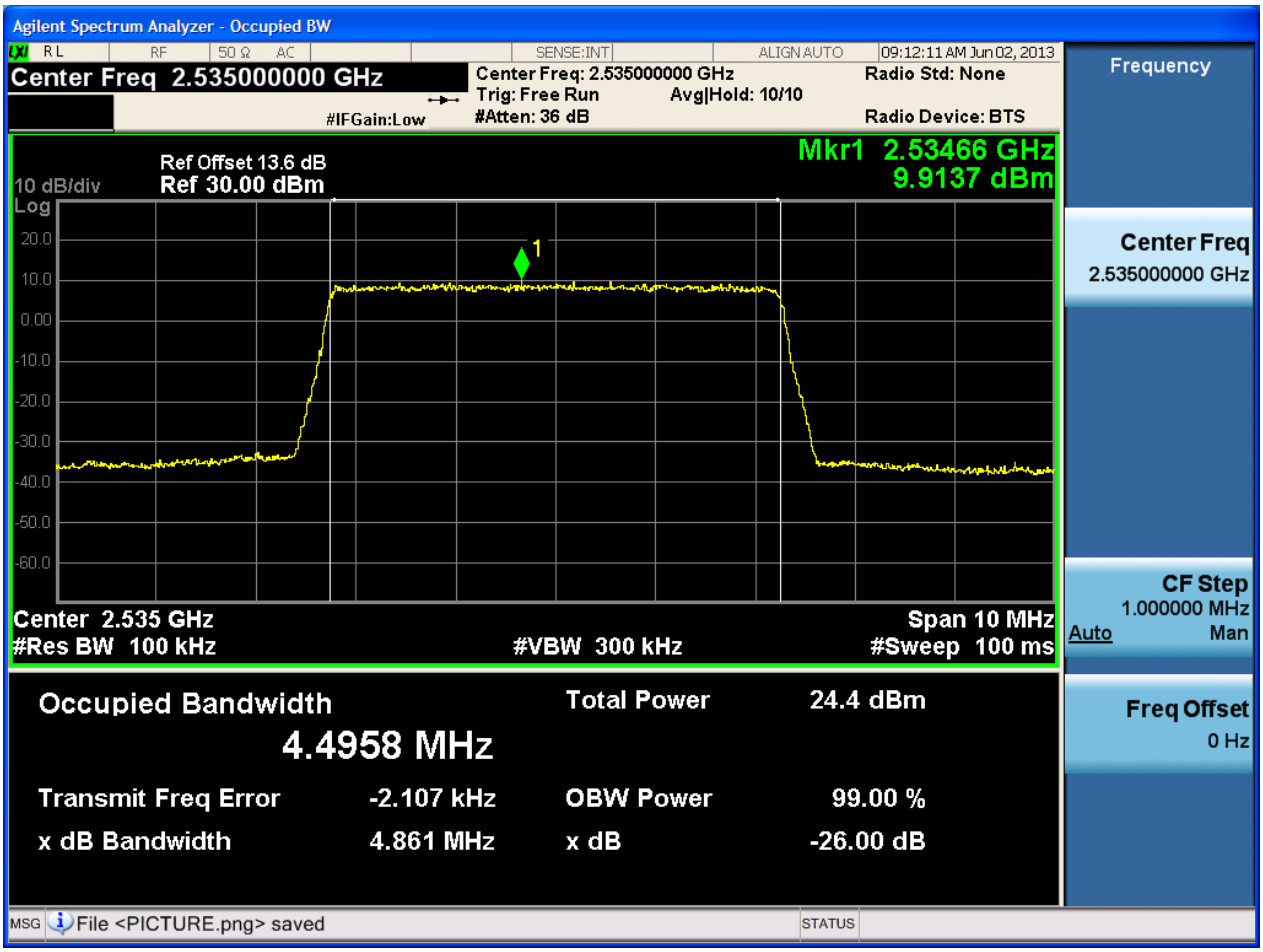
####### 4.3.1.1.1.1 Test Channel = LCH

######## 4.3.1.1.1.1.1 Test RB = RB25#0



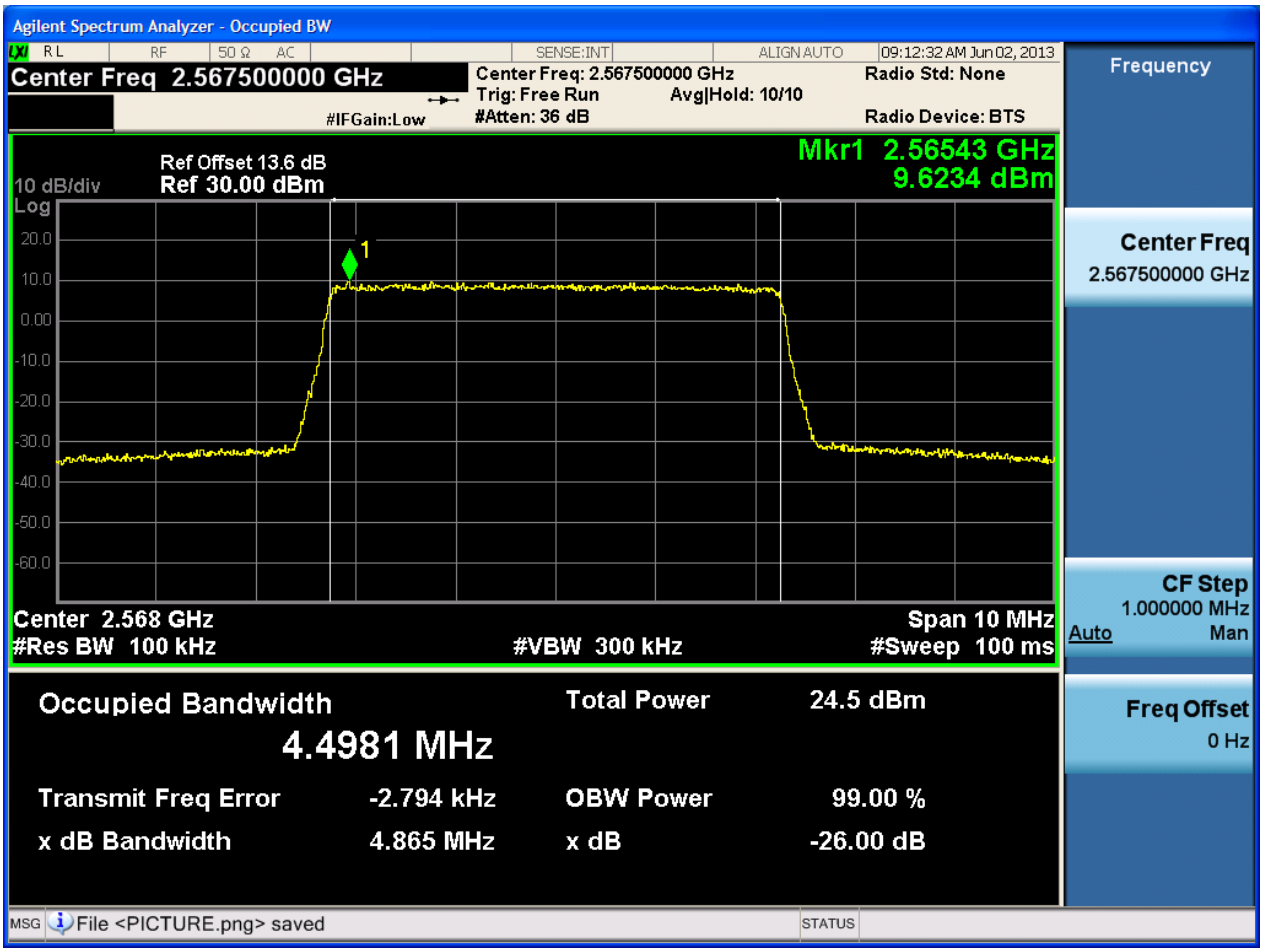
4.3.1.1.1.2 Test Channel = MCH

4.3.1.1.1.2.1 Test RB = RB25#0



4.3.1.1.1.3 Test Channel = HCH

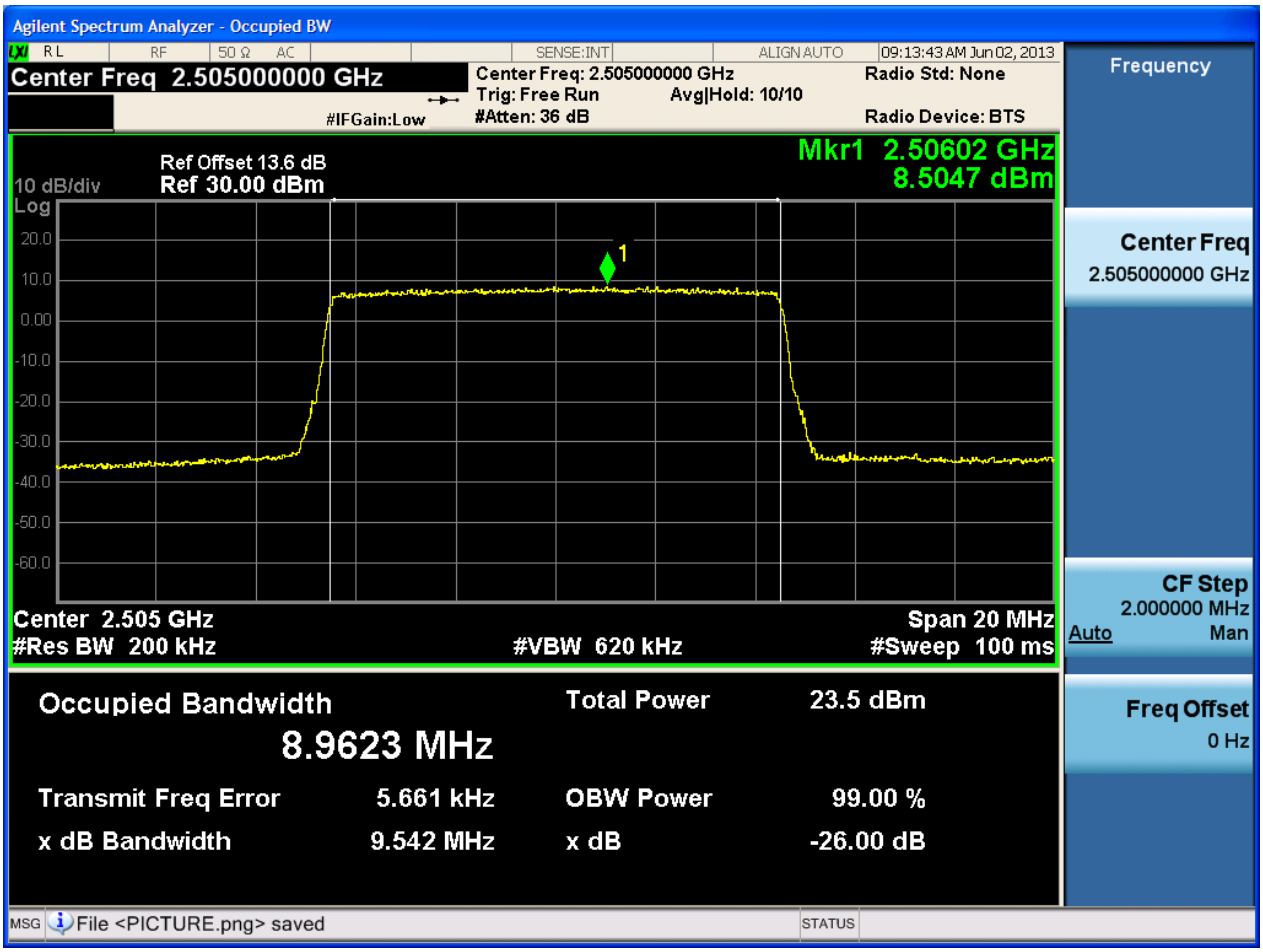
4.3.1.1.1.3.1 Test RB = RB25#0



4.3.1.1.2 Test Bandwidth = 10

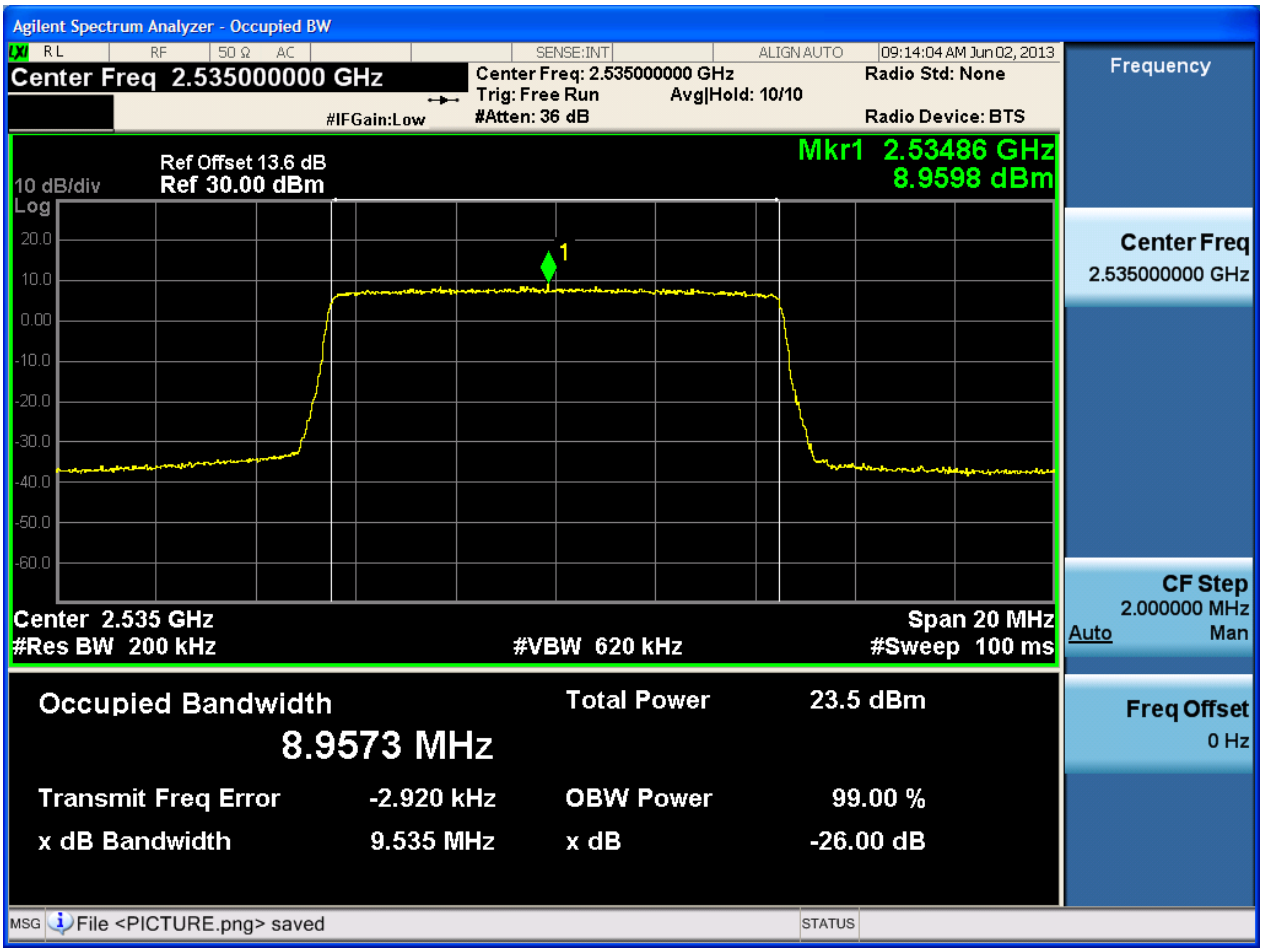
4.3.1.1.2.1 Test Channel = LCH

4.3.1.1.2.1.1 Test RB = RB50#0



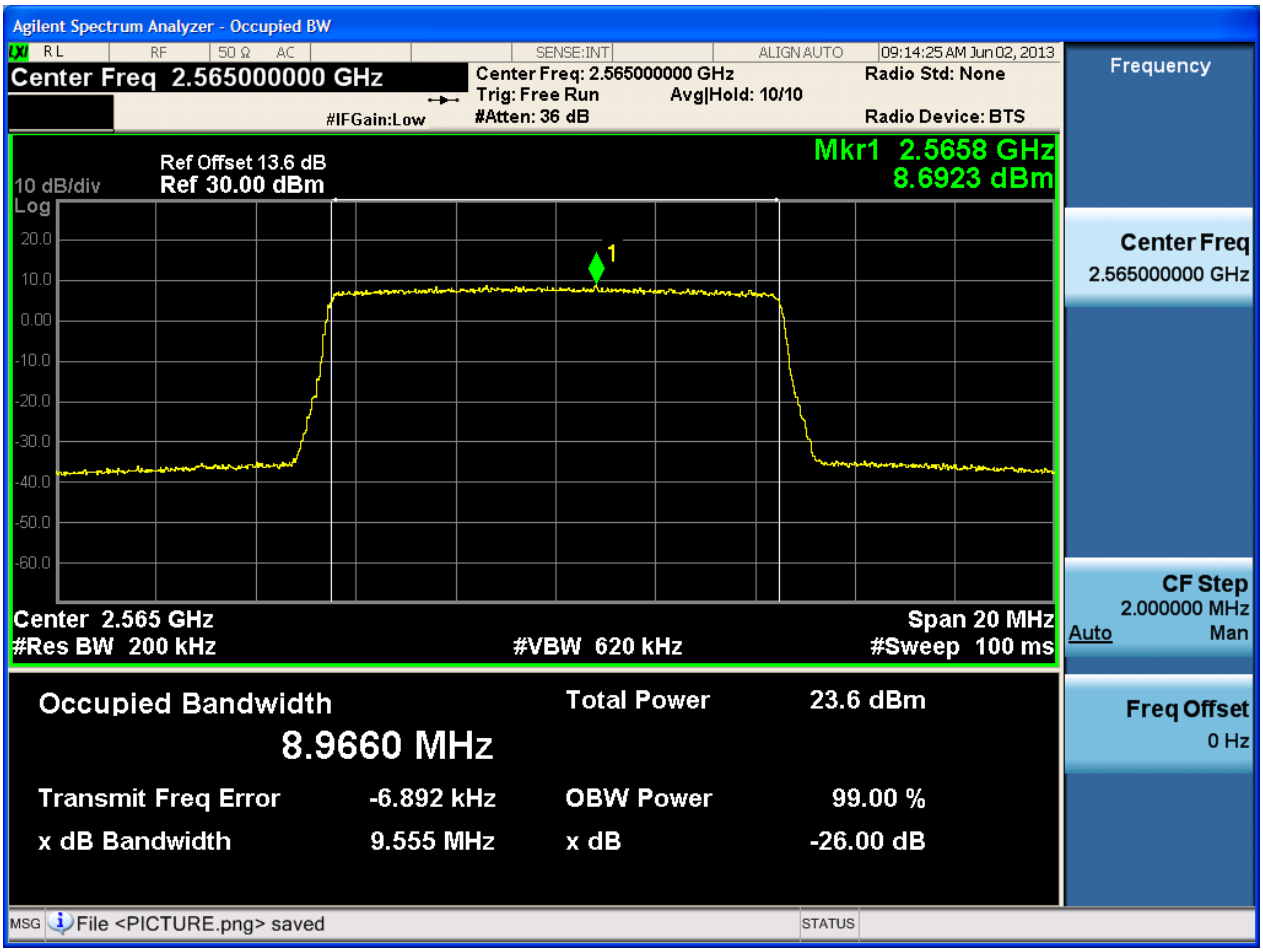
4.3.1.1.2.2 Test Channel = MCH

4.3.1.1.2.2.1 Test RB = RB50#0



4.3.1.1.2.3 Test Channel = HCH

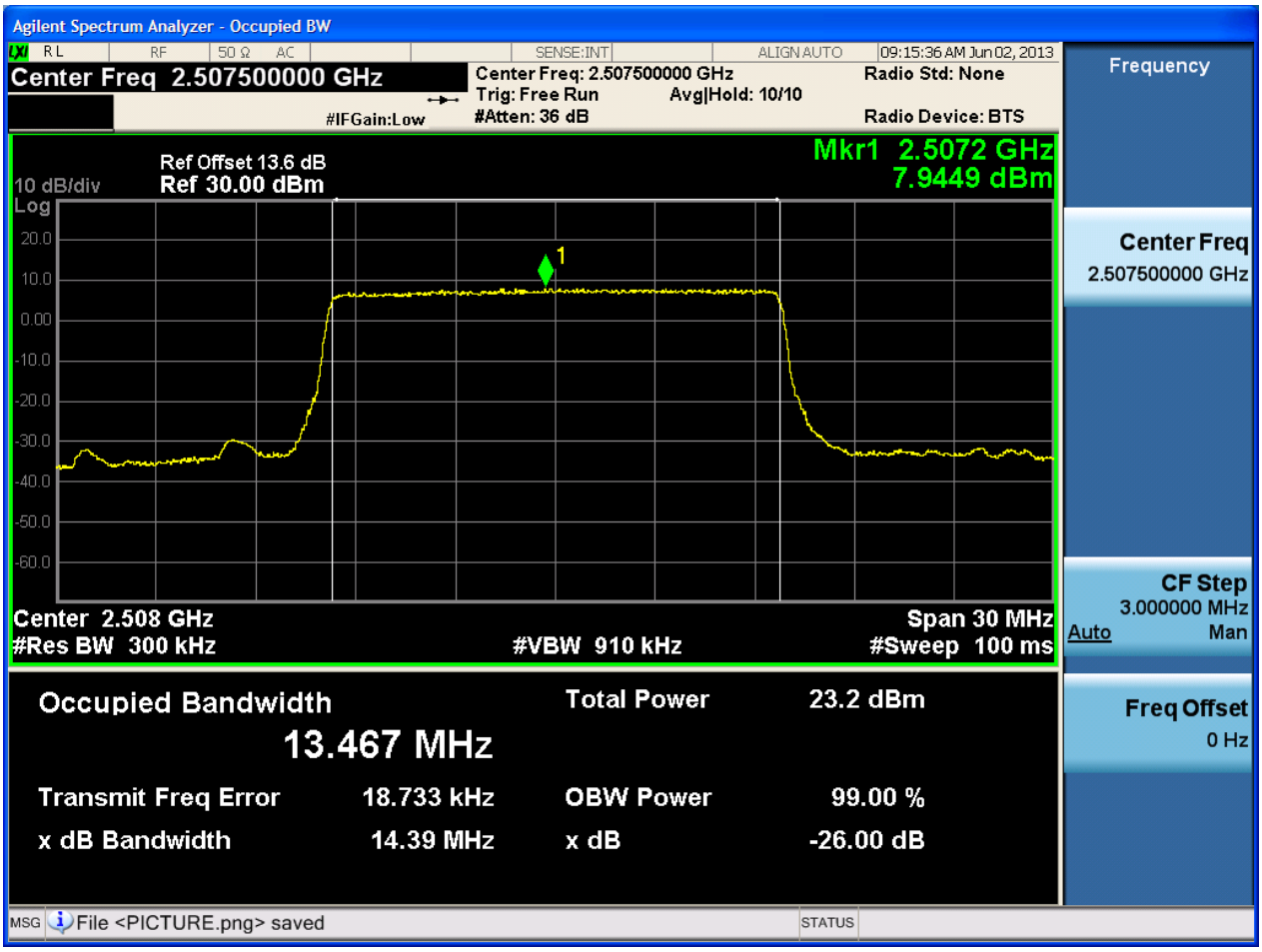
4.3.1.1.2.3.1 Test RB = RB50#0



4.3.1.1.3 Test Bandwidth = 15

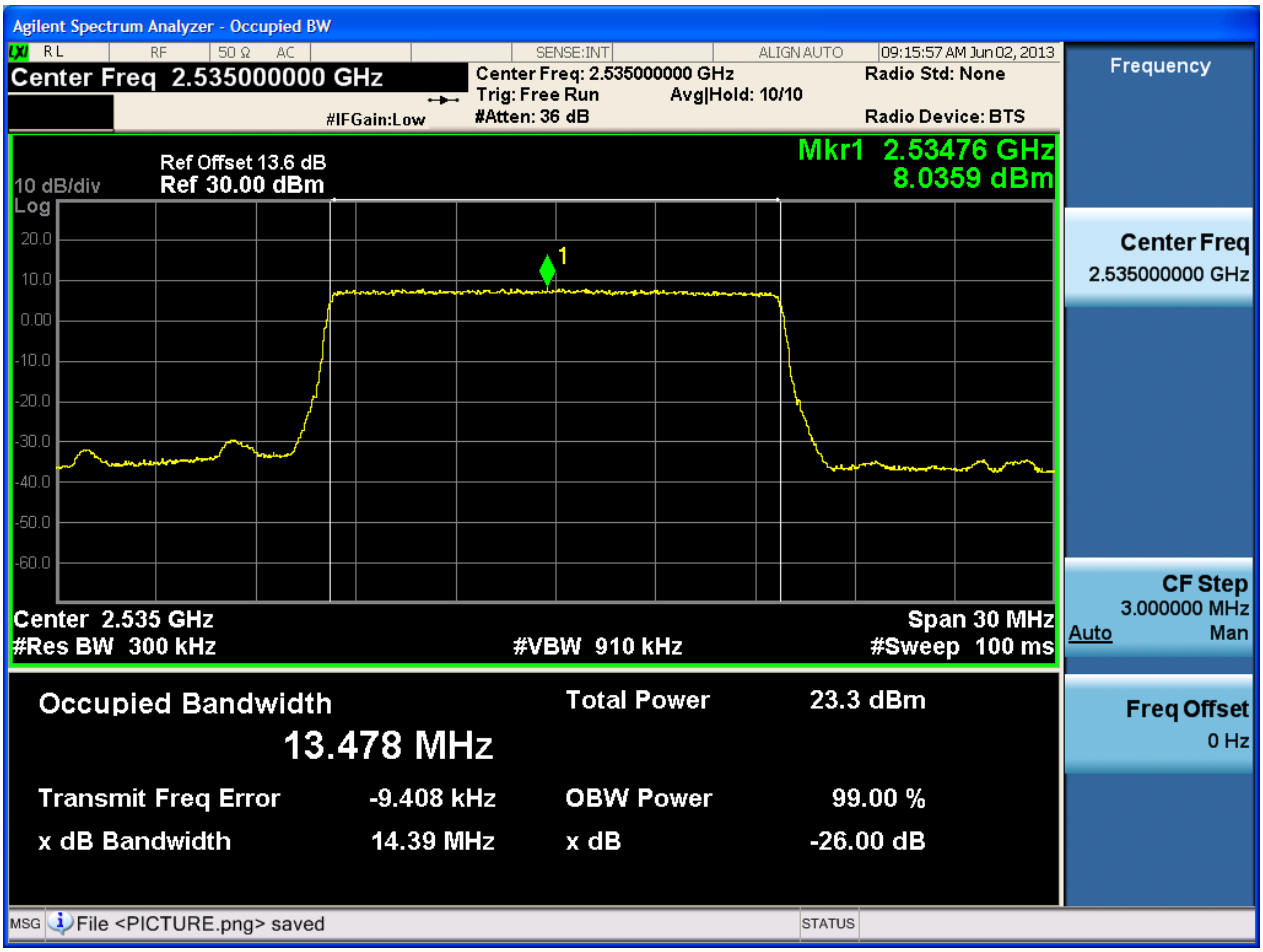
4.3.1.1.3.1 Test Channel = LCH

4.3.1.1.3.1.1 Test RB = RB75#0



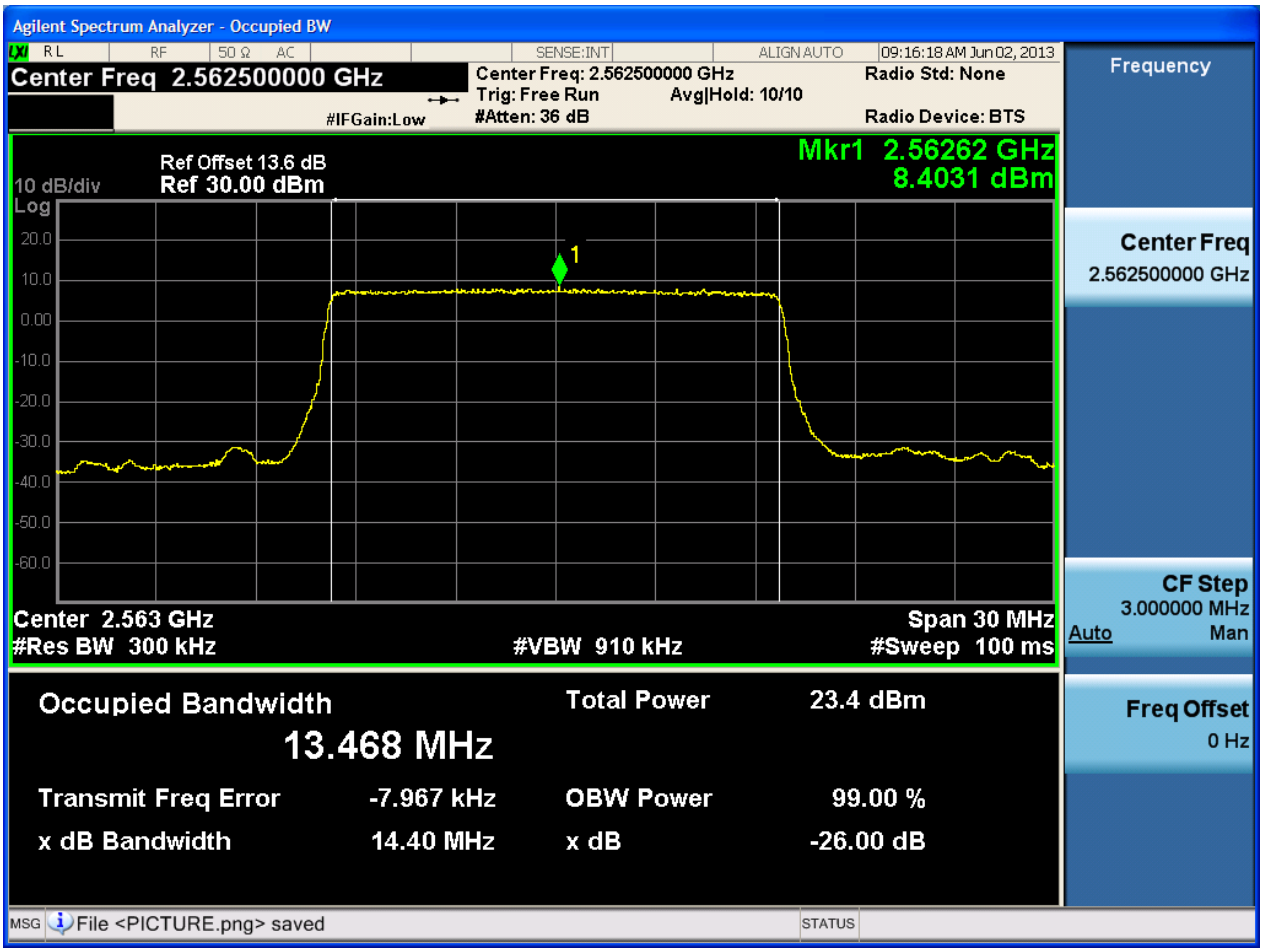
4.3.1.1.3.2 Test Channel = MCH

4.3.1.1.3.2.1 Test RB = RB75#0



4.3.1.1.3.3 Test Channel = HCH

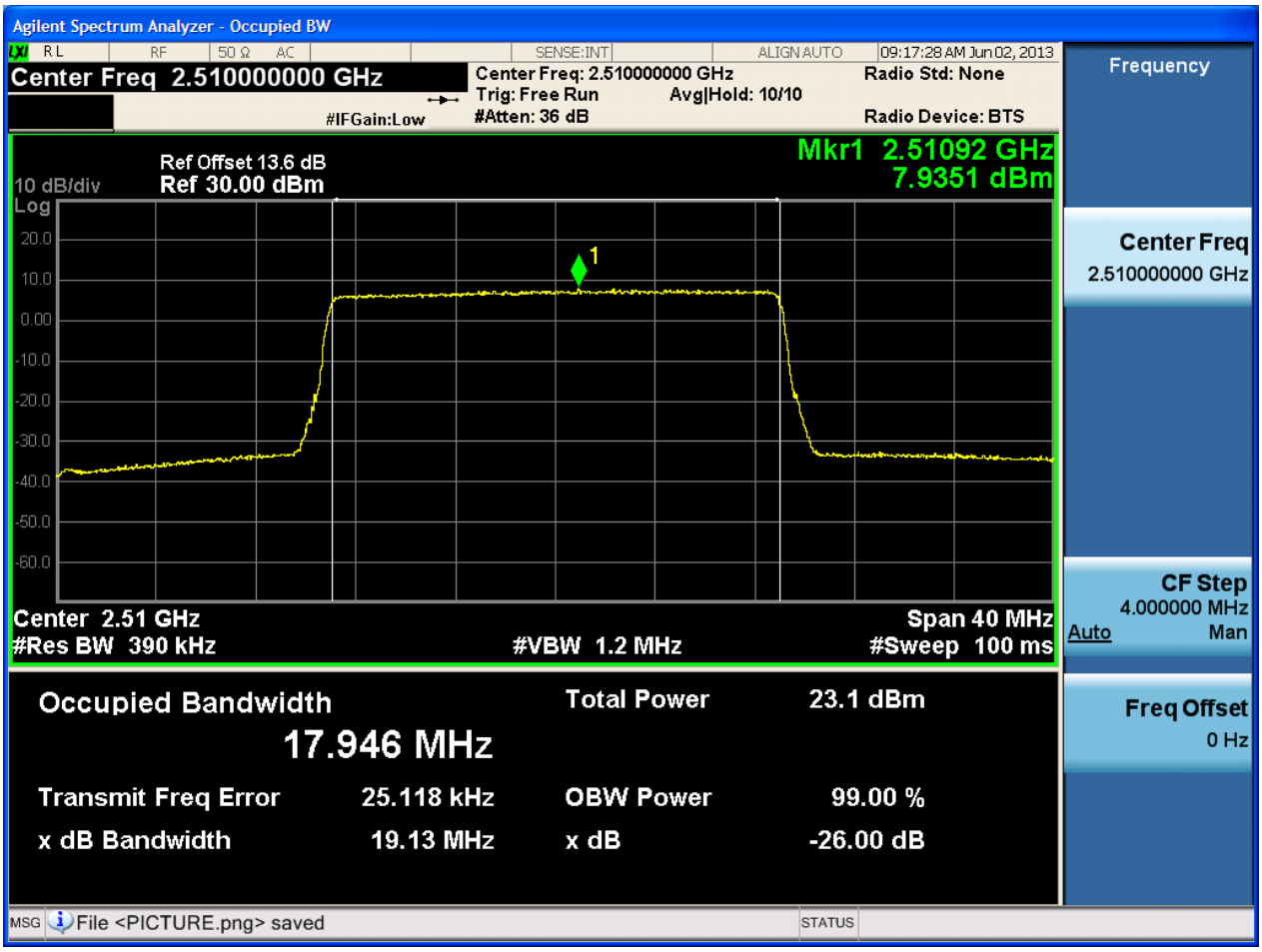
4.3.1.1.3.3.1 Test RB = RB75#0



4.3.1.1.4 Test Bandwidth = 20

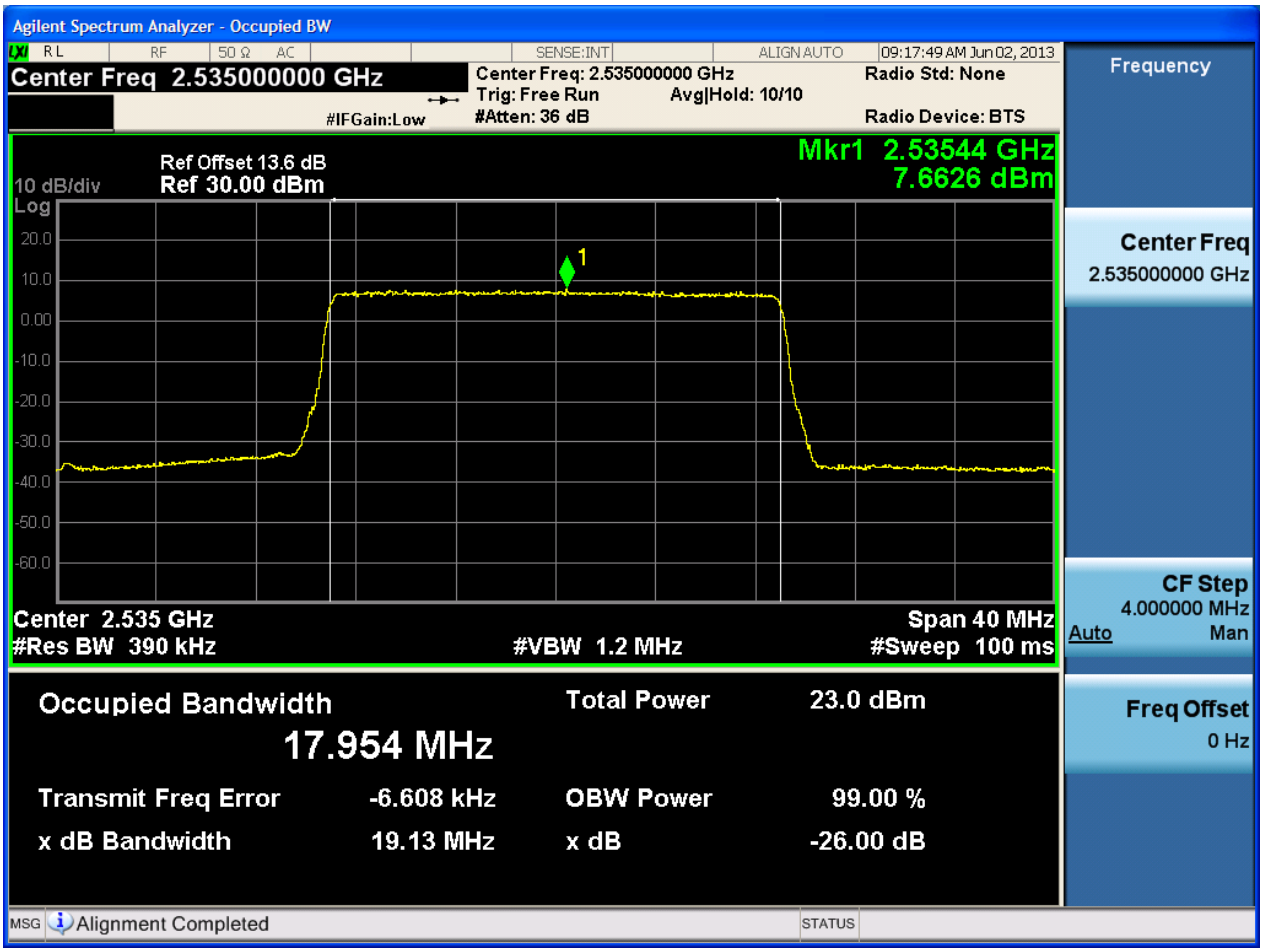
4.3.1.1.4.1 Test Channel = LCH

4.3.1.1.4.1.1 Test RB = RB100#0



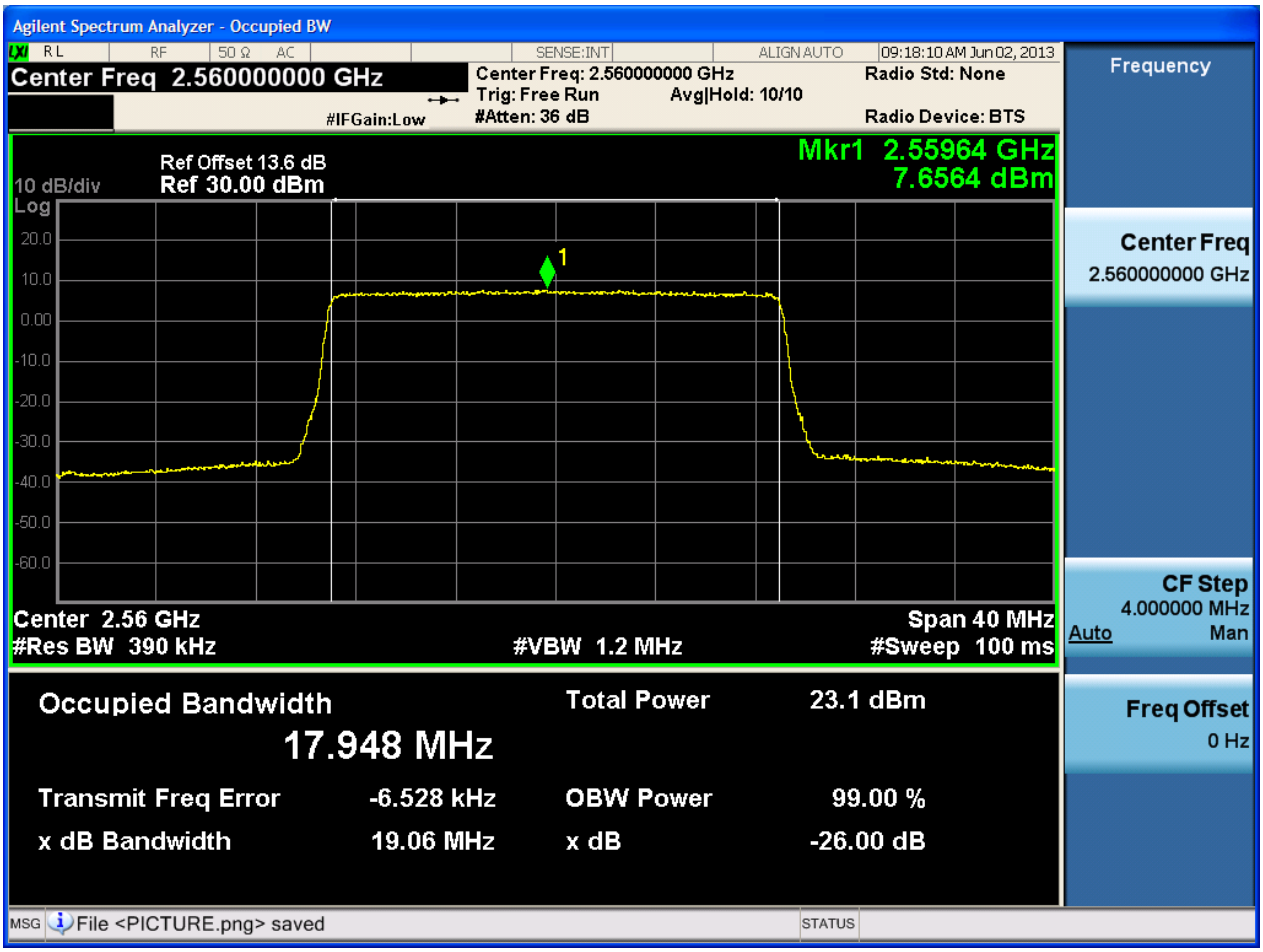
4.3.1.1.4.2 Test Channel = MCH

4.3.1.1.4.2.1 Test RB = RB100#0



4.3.1.1.4.3 Test Channel = HCH

4.3.1.1.4.3.1 Test RB = RB100#0

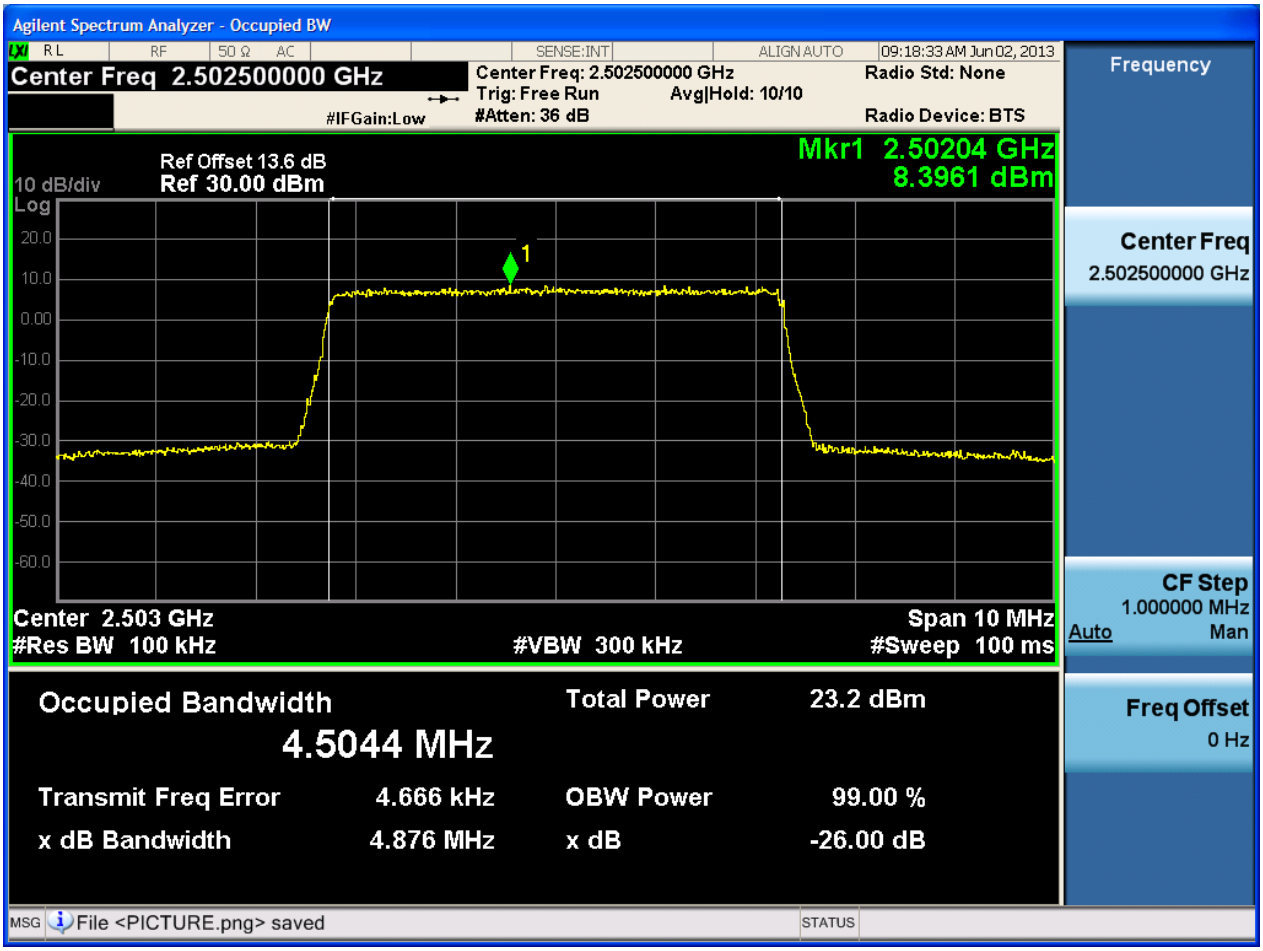


4.3.1.2 Test Mode = LTE/TM2

4.3.1.2.1 Test Bandwidth = 5

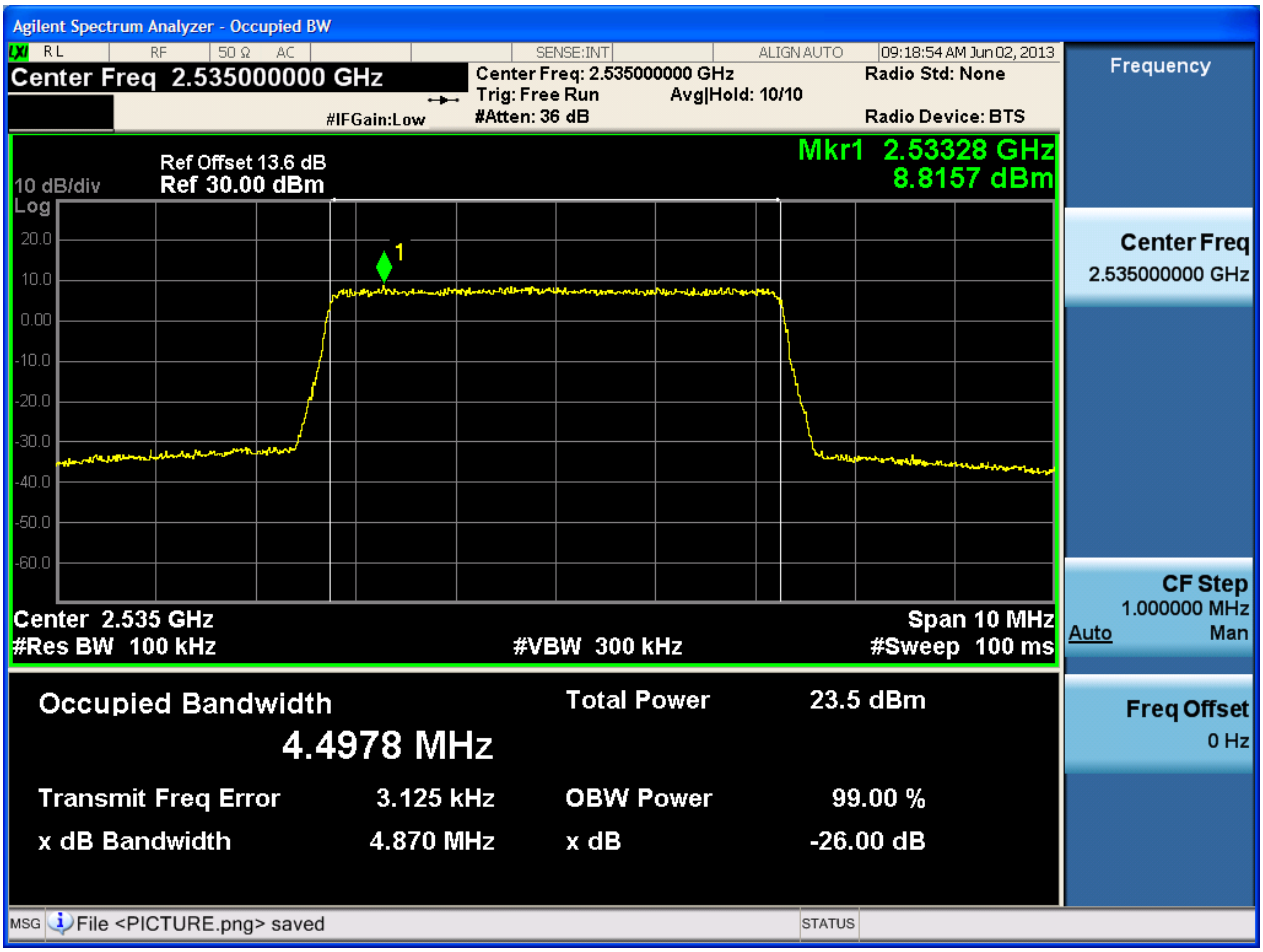
4.3.1.2.1.1 Test Channel = LCH

####### 4.3.1.2.1.1.1 Test RB = RB25#0



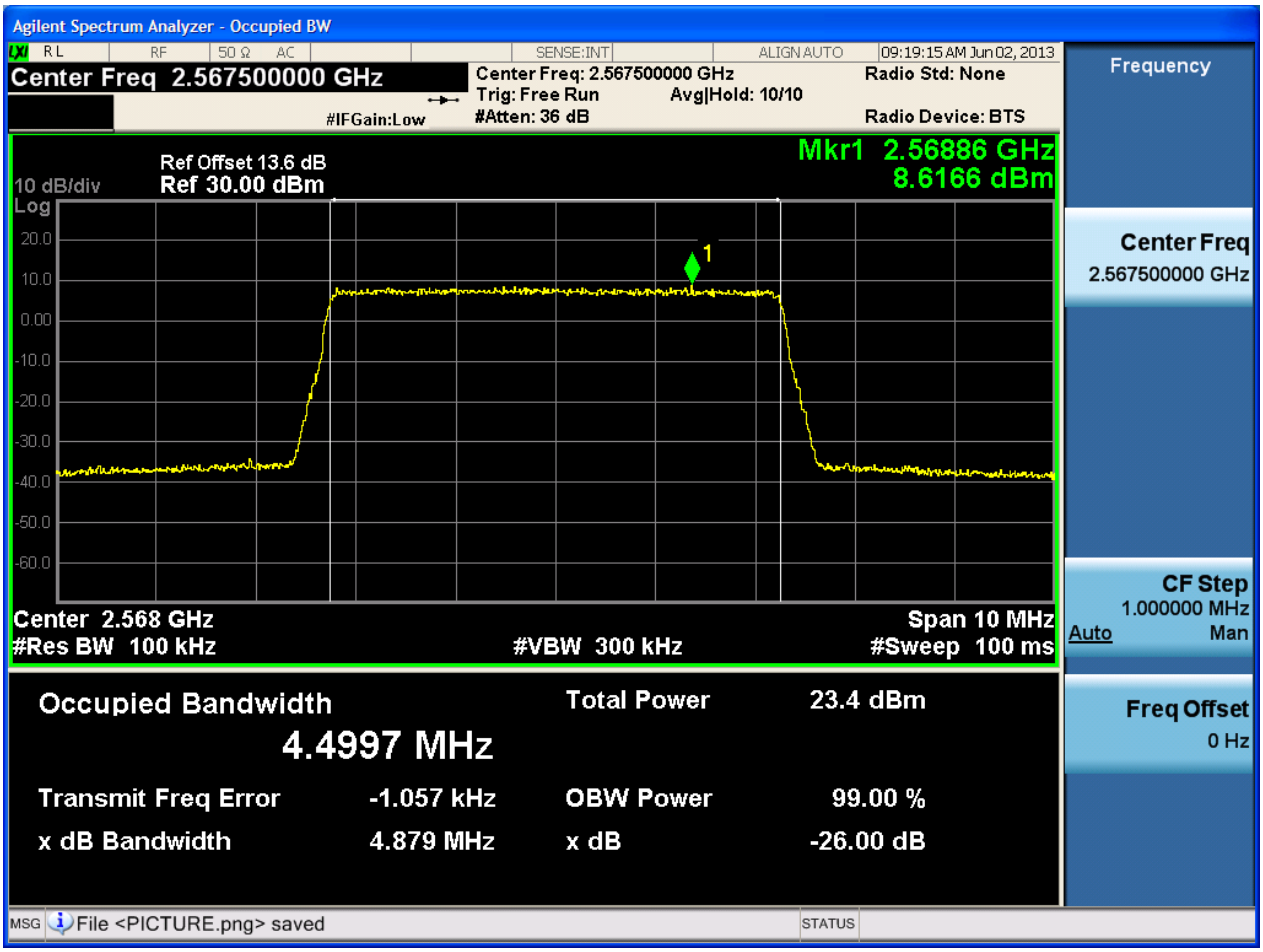
4.3.1.2.1.2 Test Channel = MCH

4.3.1.2.1.2.1 Test RB = RB25#0



4.3.1.2.1.3 Test Channel = HCH

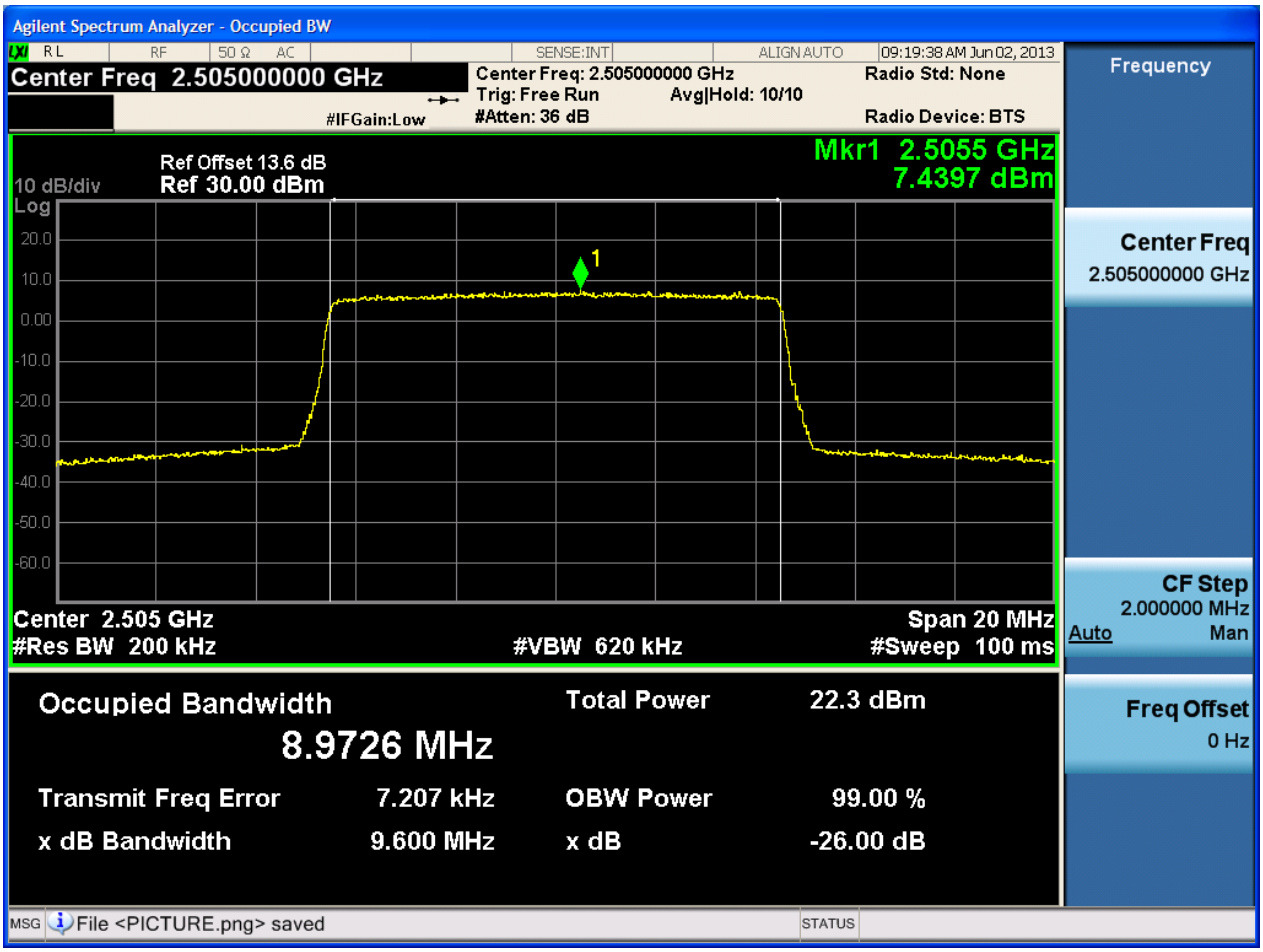
4.3.1.2.1.3.1 Test RB = RB25#0



4.3.1.2.2 Test Bandwidth = 10

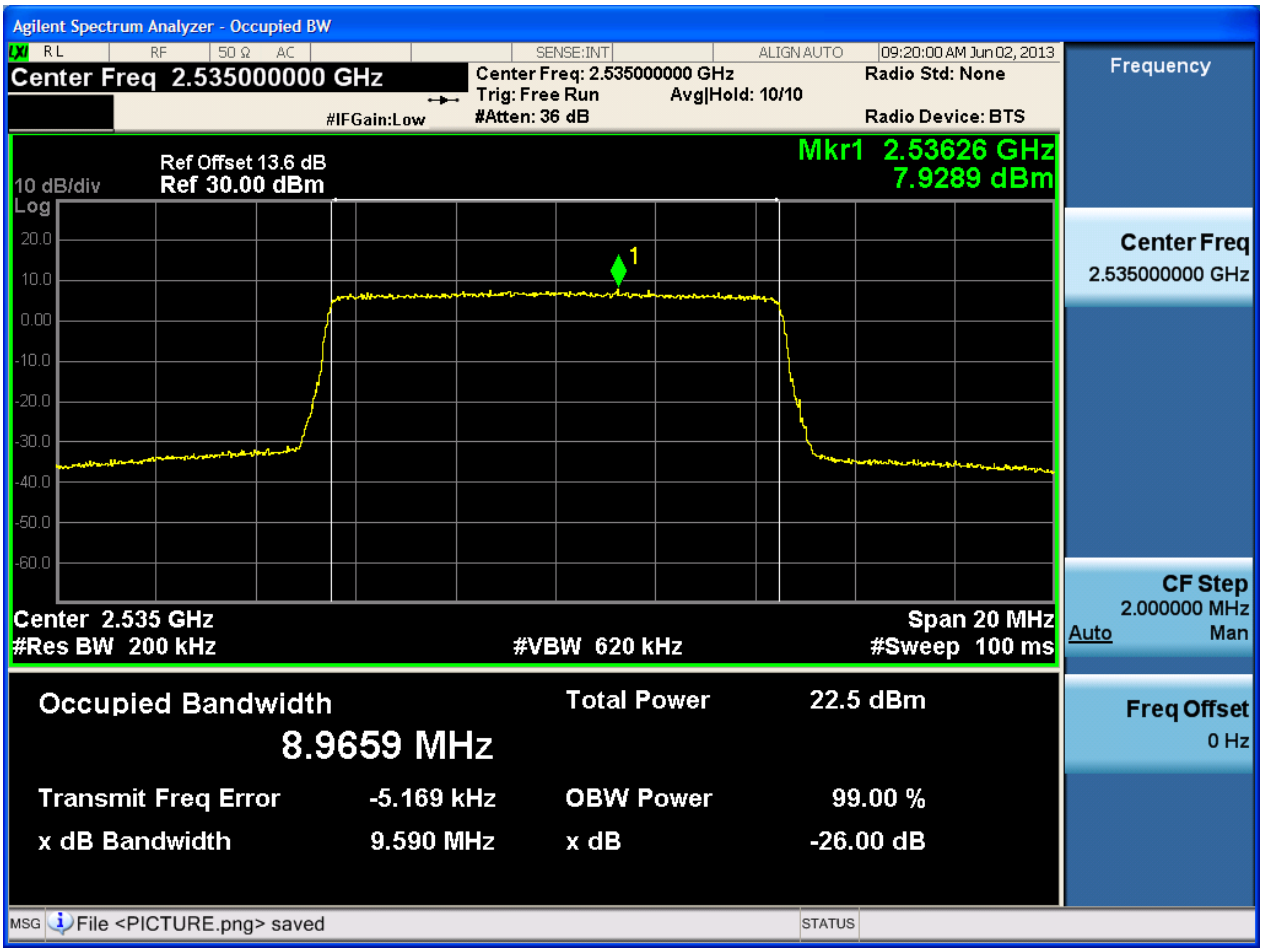
4.3.1.2.2.1 Test Channel = LCH

4.3.1.2.2.1.1 Test RB = RB50#0



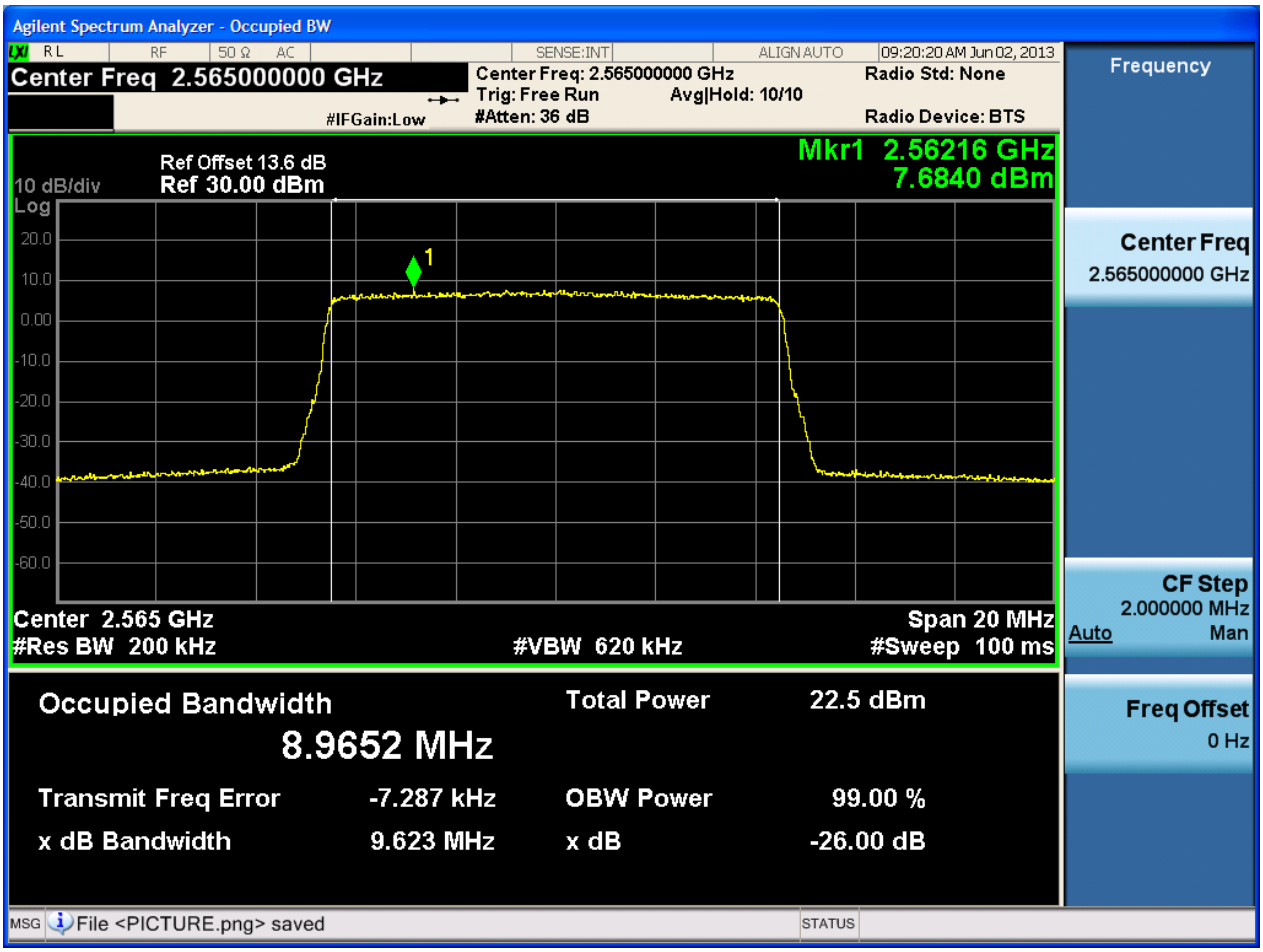
4.3.1.2.2.2 Test Channel = MCH

4.3.1.2.2.2.1 Test RB = RB50#0



4.3.1.2.2.3 Test Channel = HCH

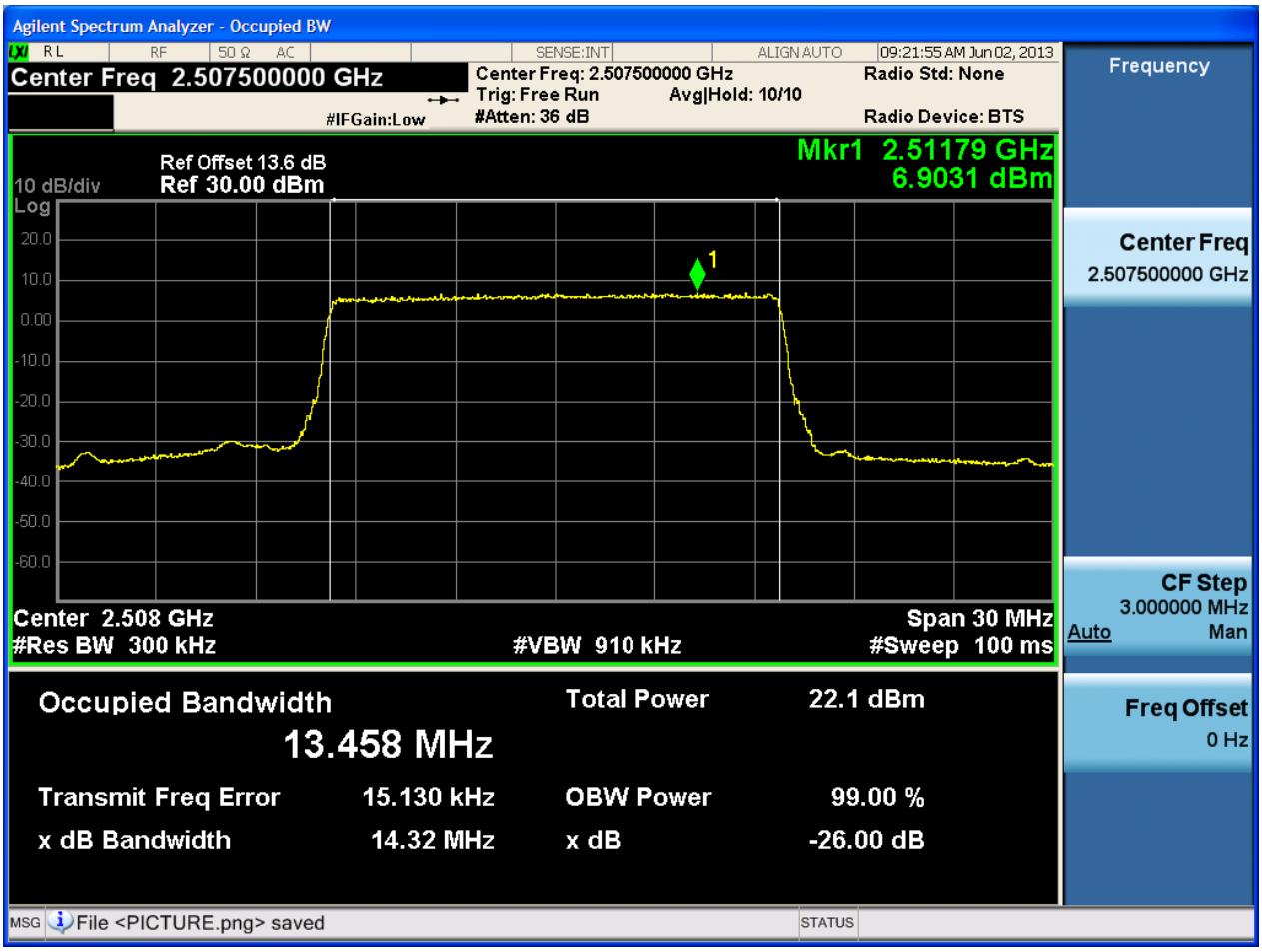
4.3.1.2.2.3.1 Test RB = RB50#0



4.3.1.2.3 Test Bandwidth = 15

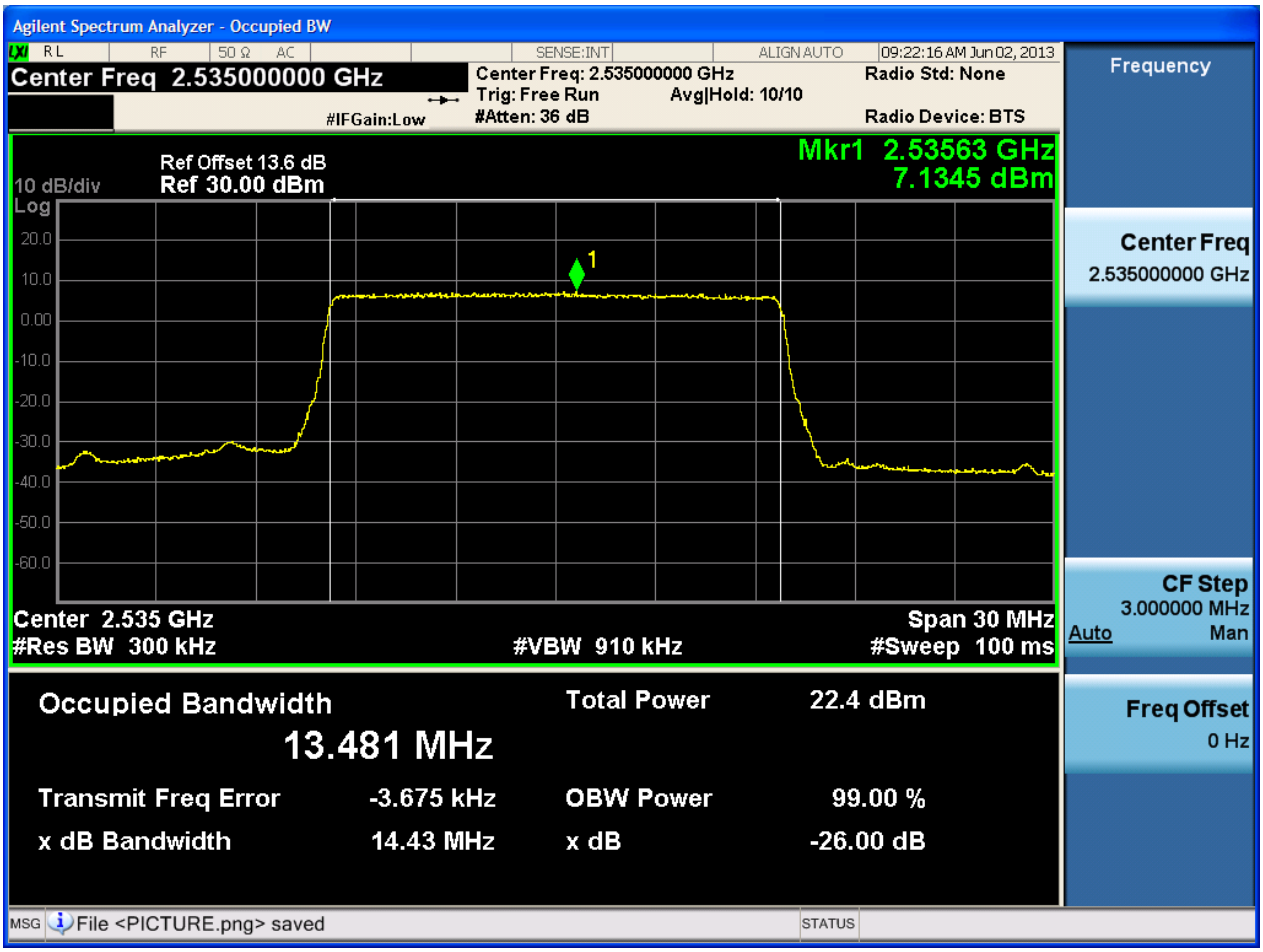
4.3.1.2.3.1 Test Channel = LCH

4.3.1.2.3.1.1 Test RB = RB75#0



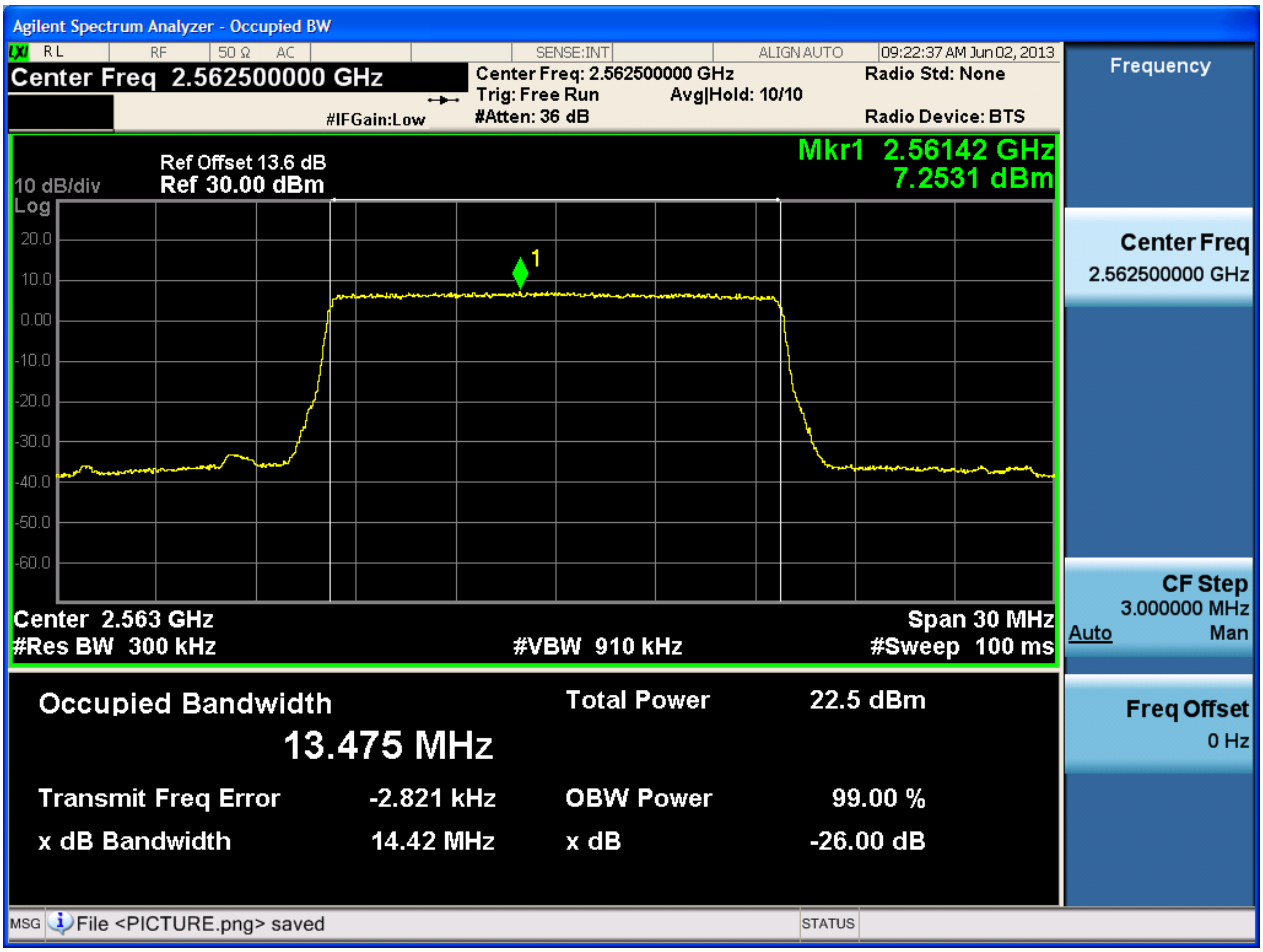
4.3.1.2.3.2 Test Channel = MCH

4.3.1.2.3.2.1 Test RB = RB75#0



4.3.1.2.3.3 Test Channel = HCH

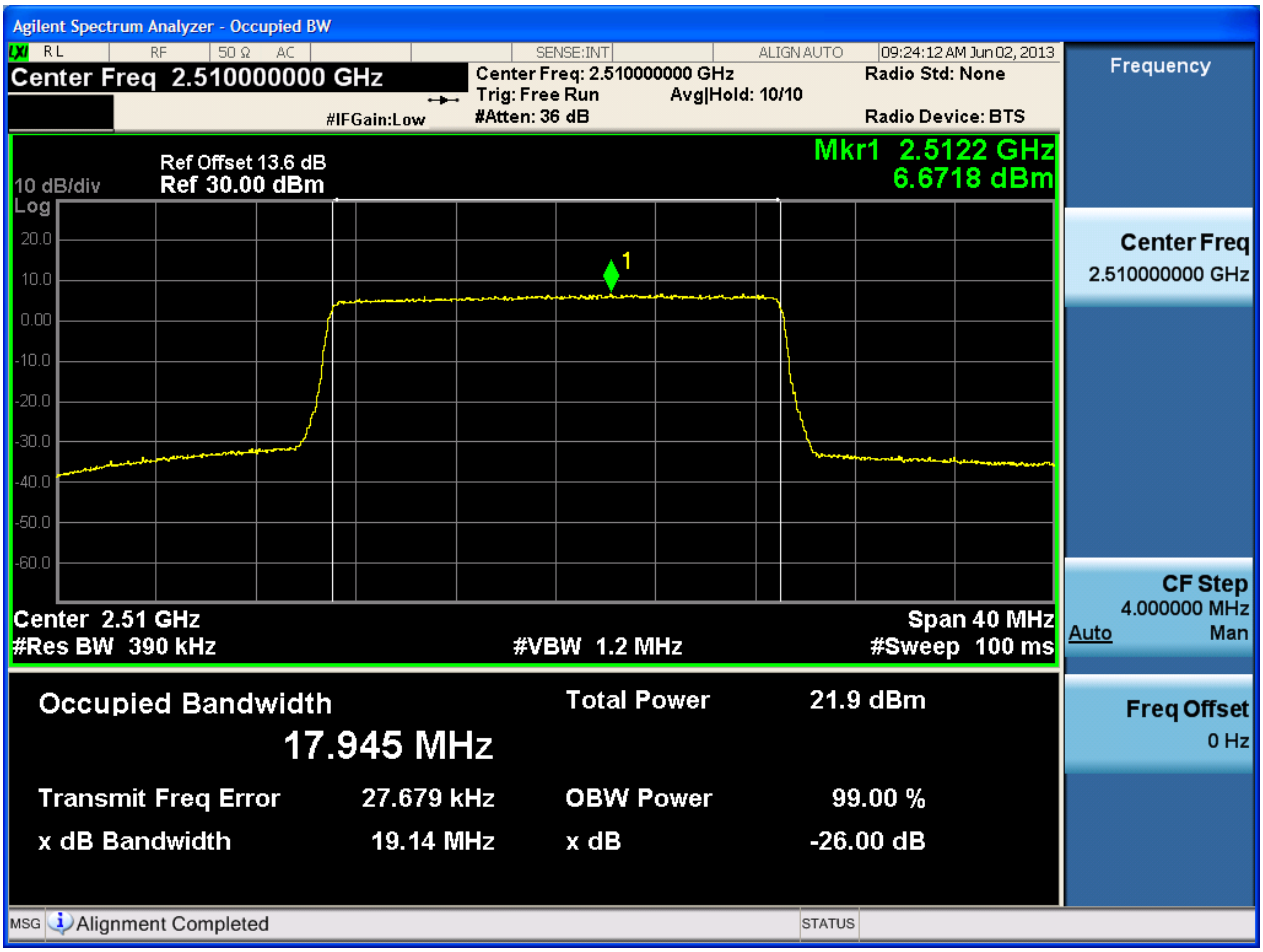
4.3.1.2.3.3.1 Test RB = RB75#0



4.3.1.2.4 Test Bandwidth = 20

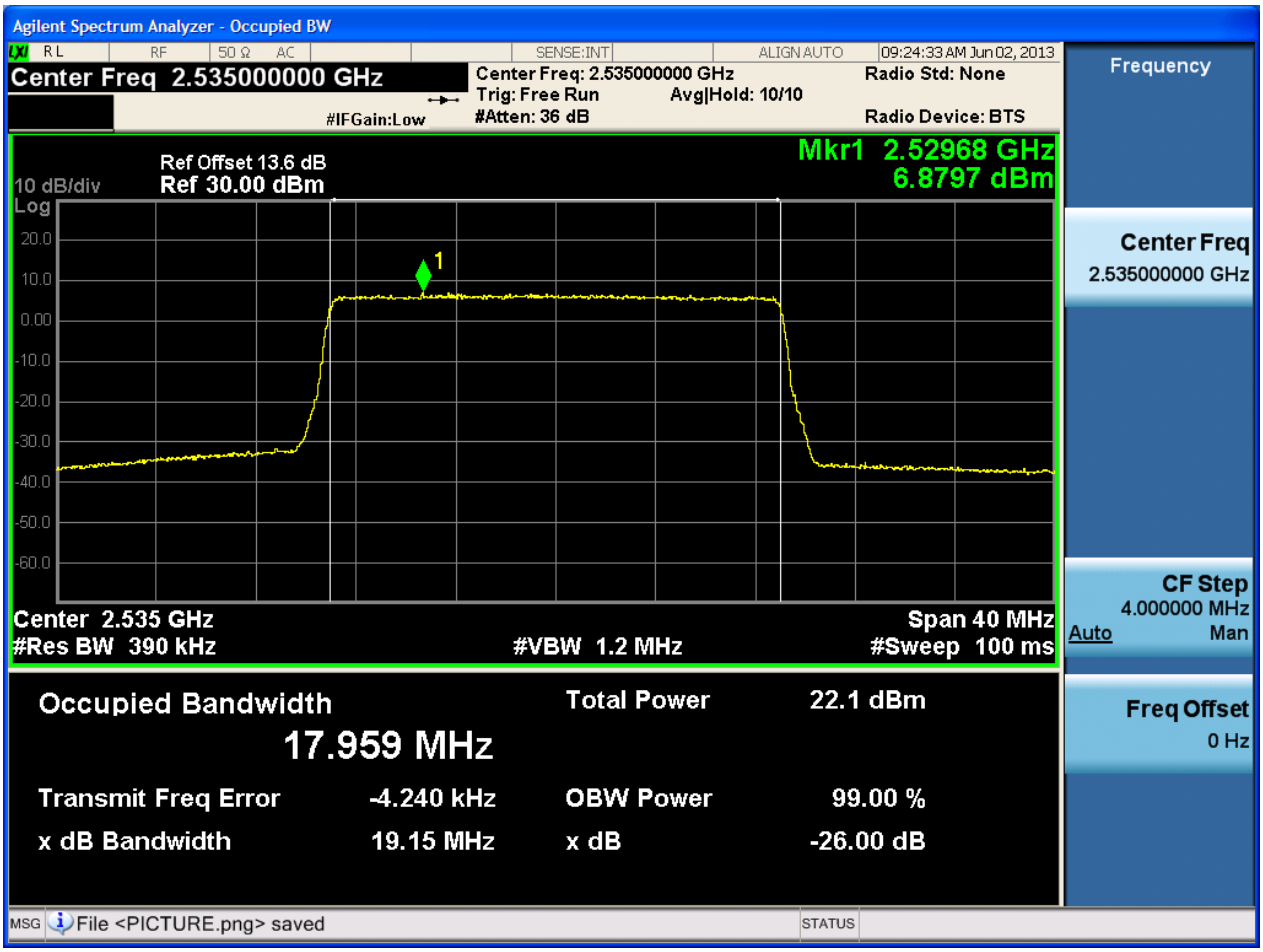
4.3.1.2.4.1 Test Channel = LCH

4.3.1.2.4.1.1 Test RB = RB100#0



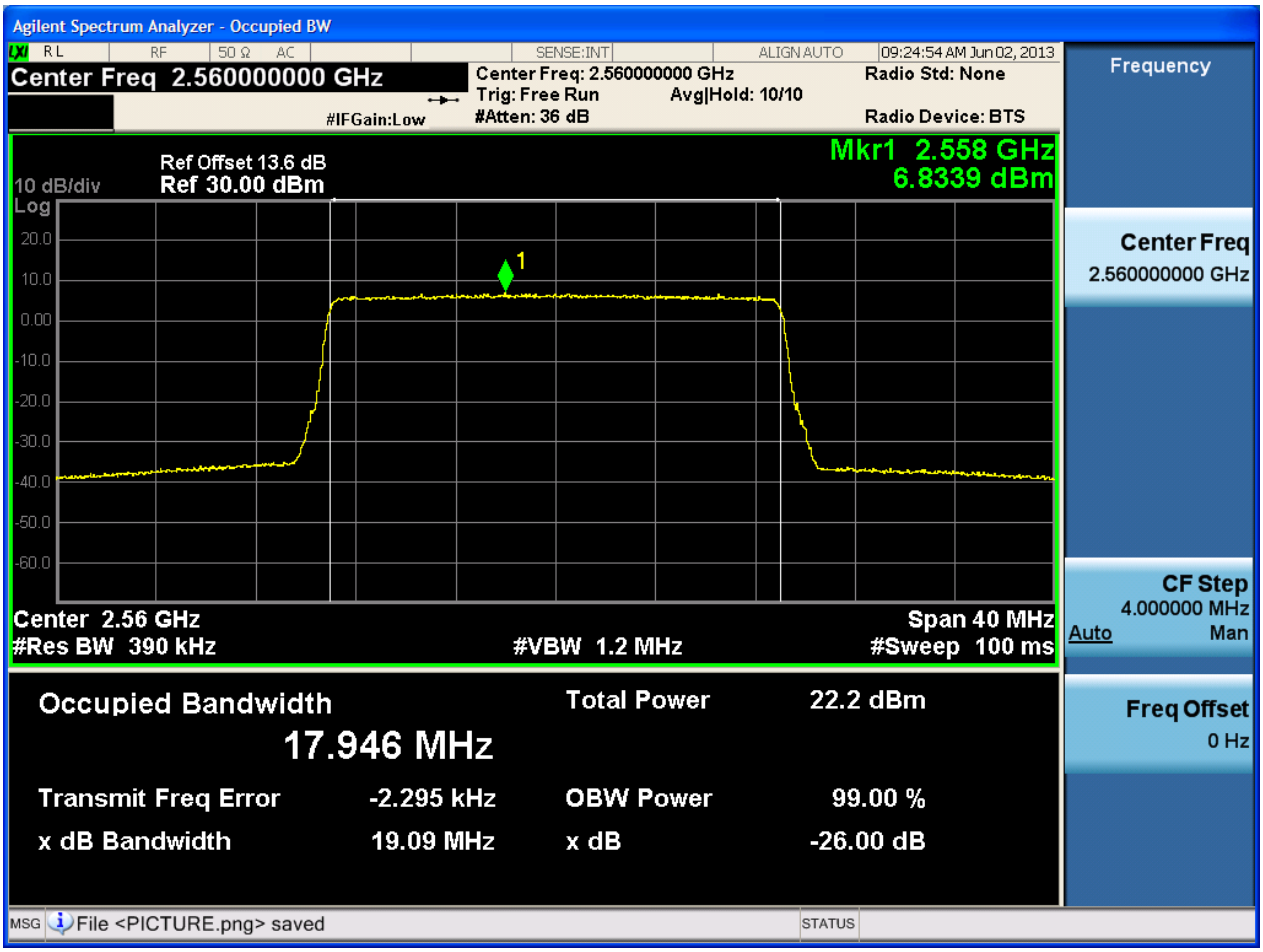
4.3.1.2.4.2 Test Channel = MCH

4.3.1.2.4.2.1 Test RB = RB100#0



4.3.1.2.4.3 Test Channel = HCH

4.3.1.2.4.3.1 Test RB = RB100#0



5Appendix_E: Band Edges Compliance

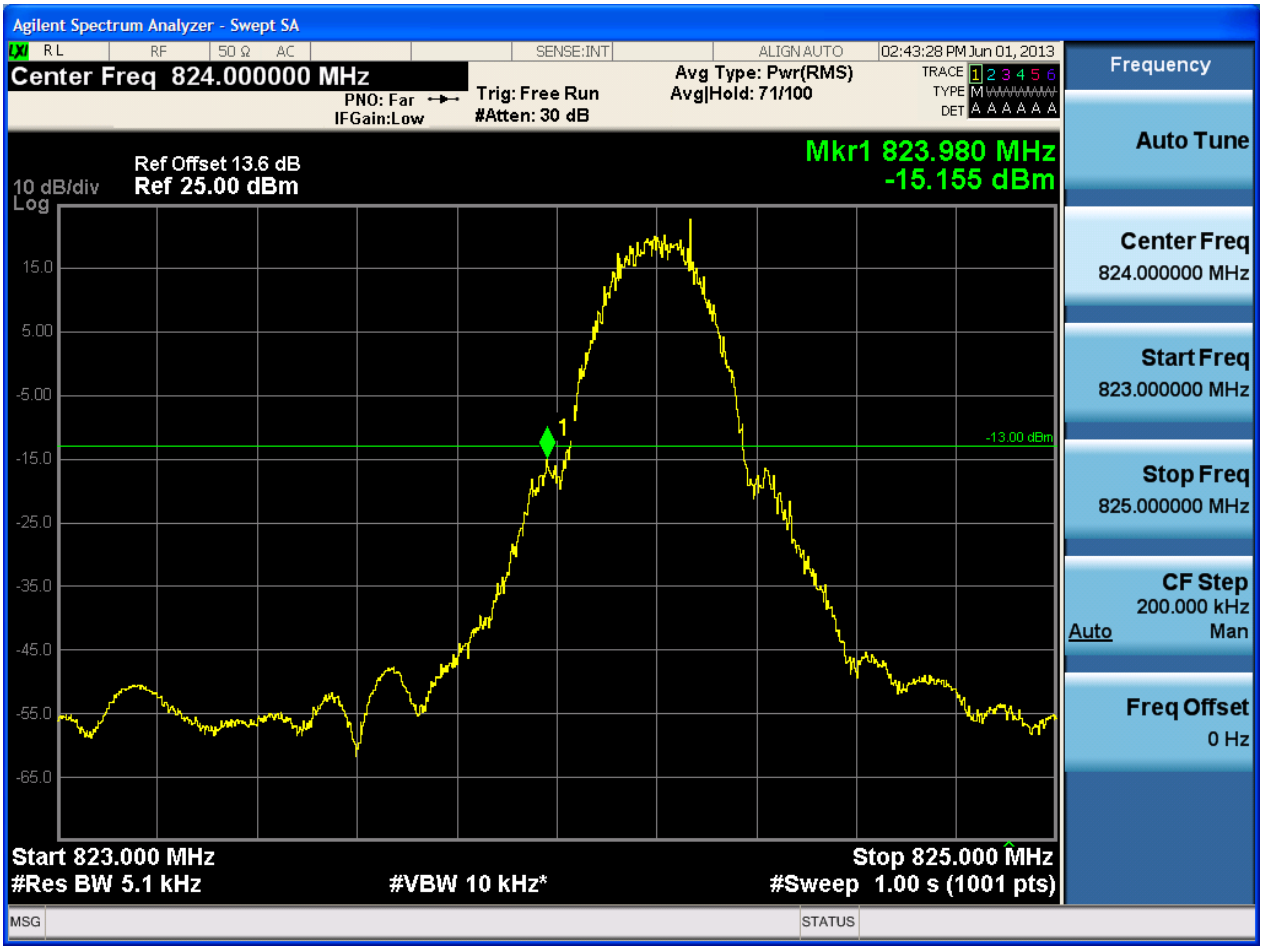
Part I - Test Plots

5.1 For GSM

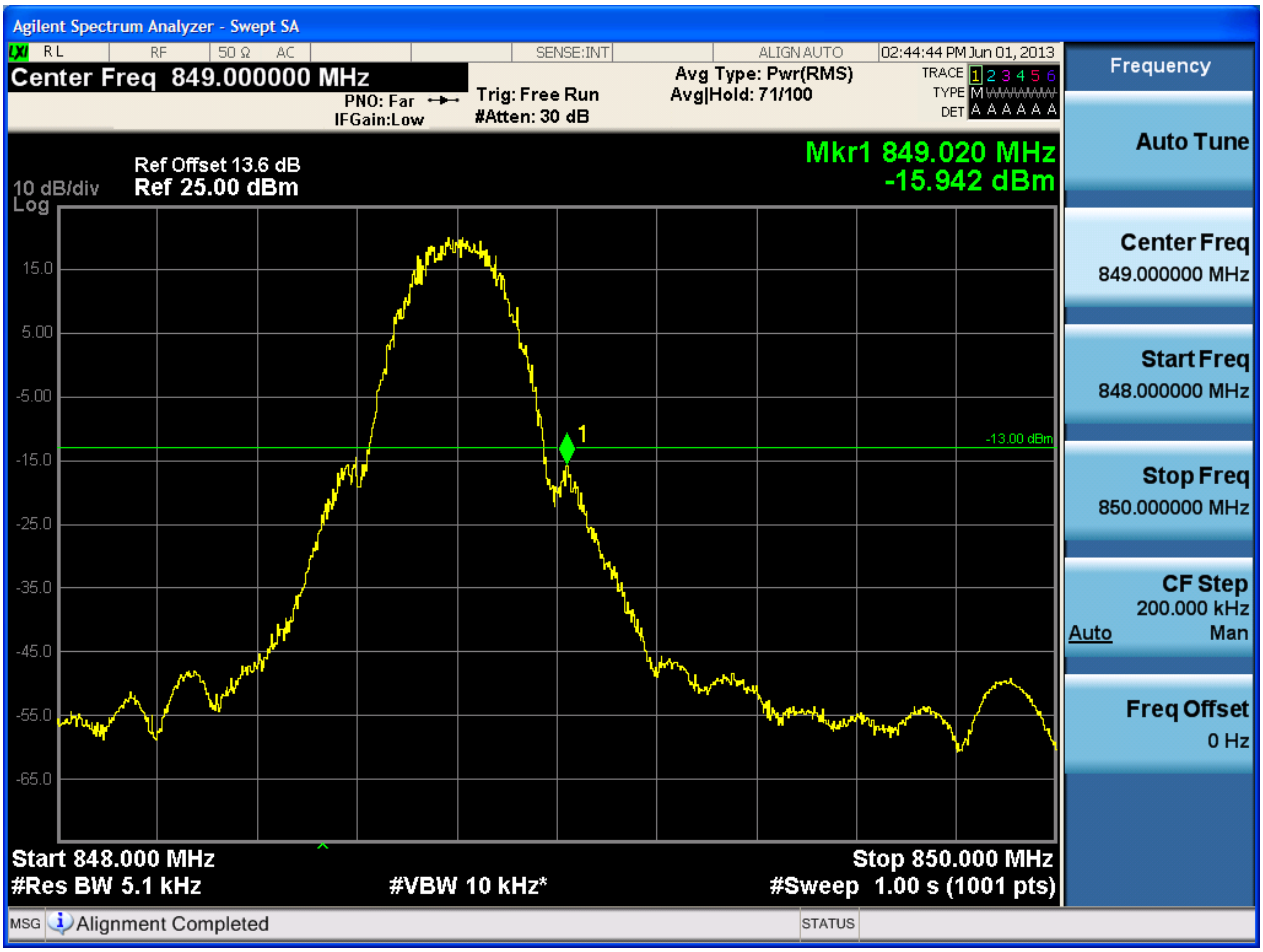
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

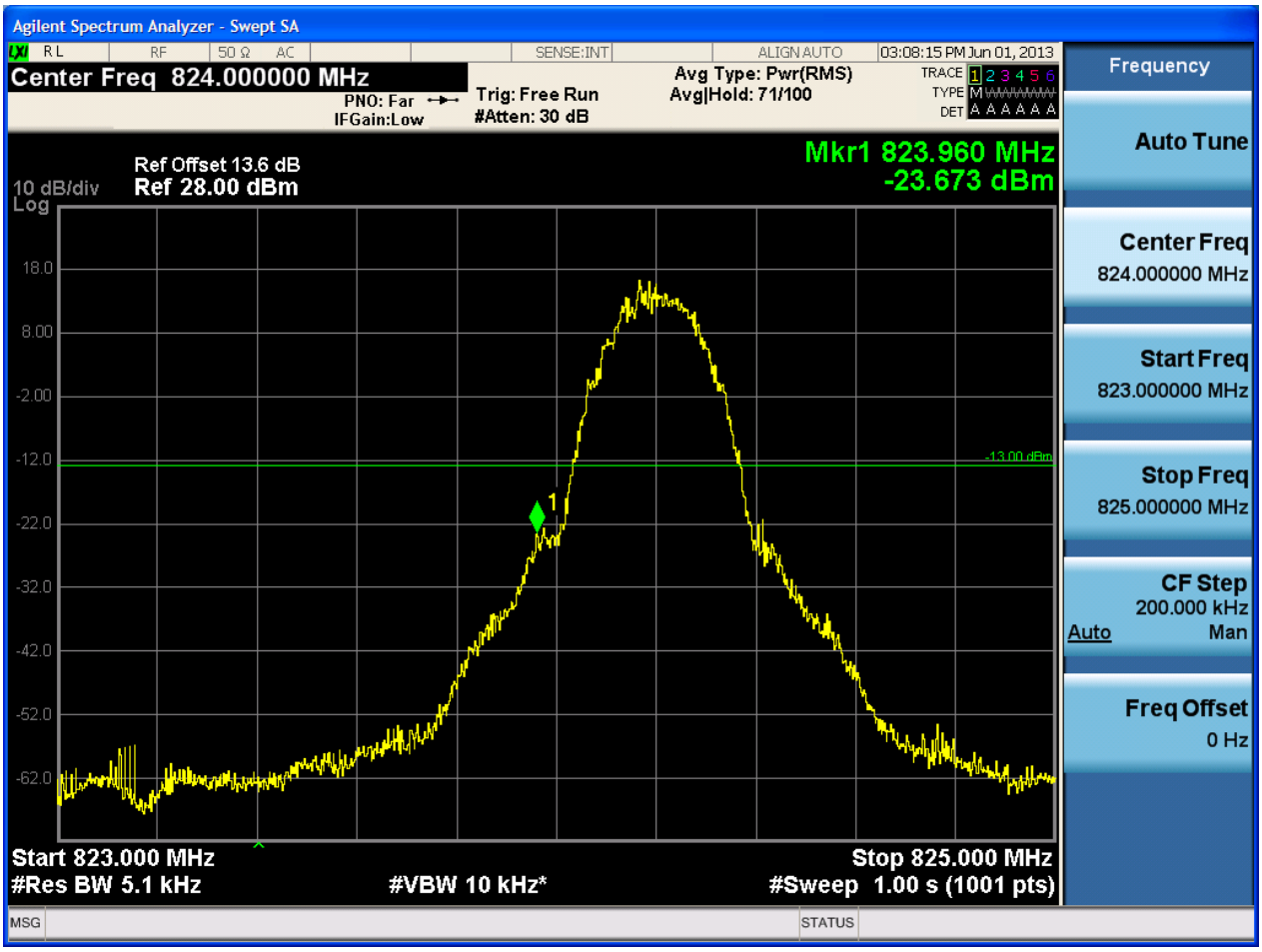


5.1.1.1.2 Test Channel = HCH

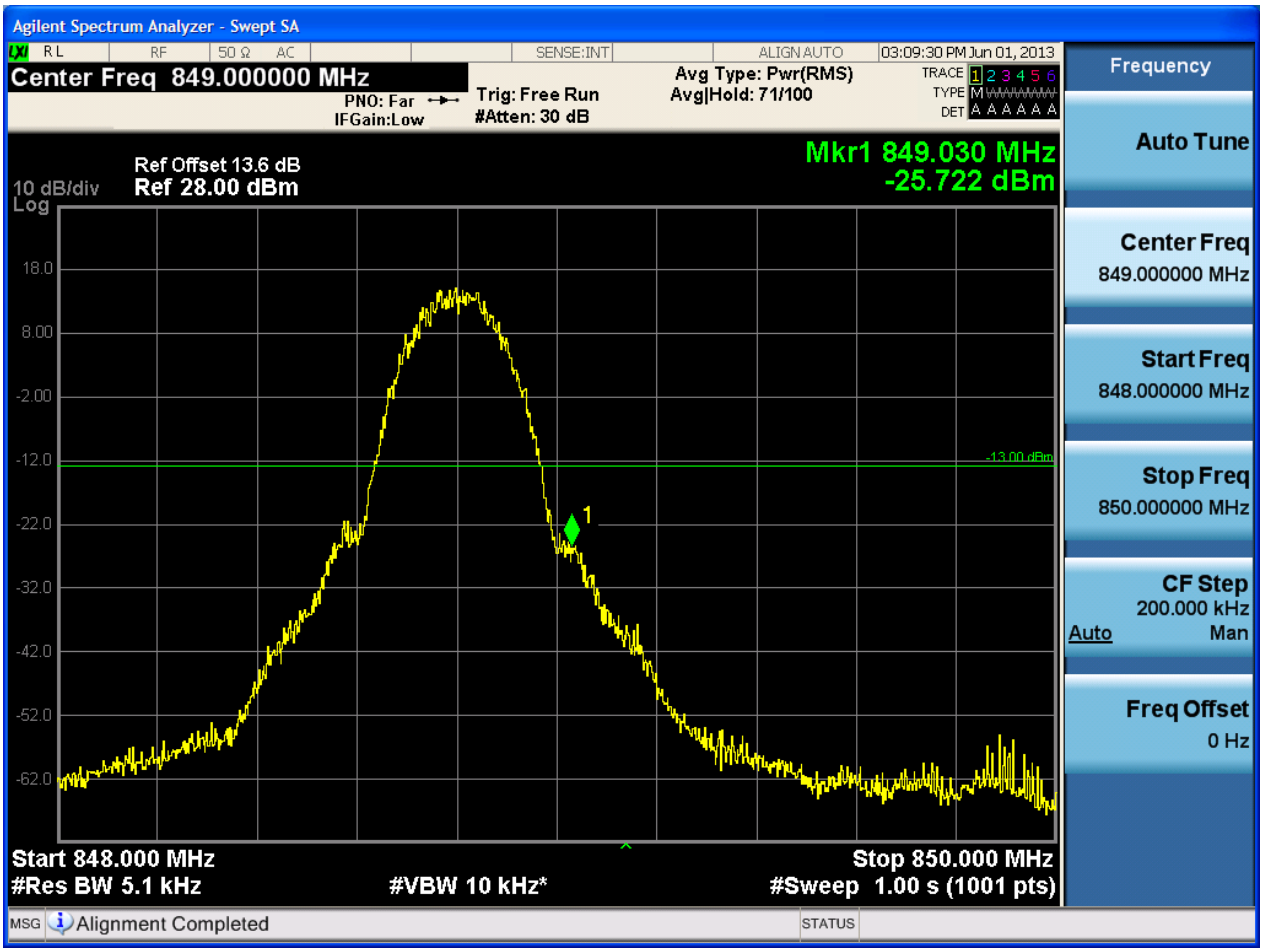


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



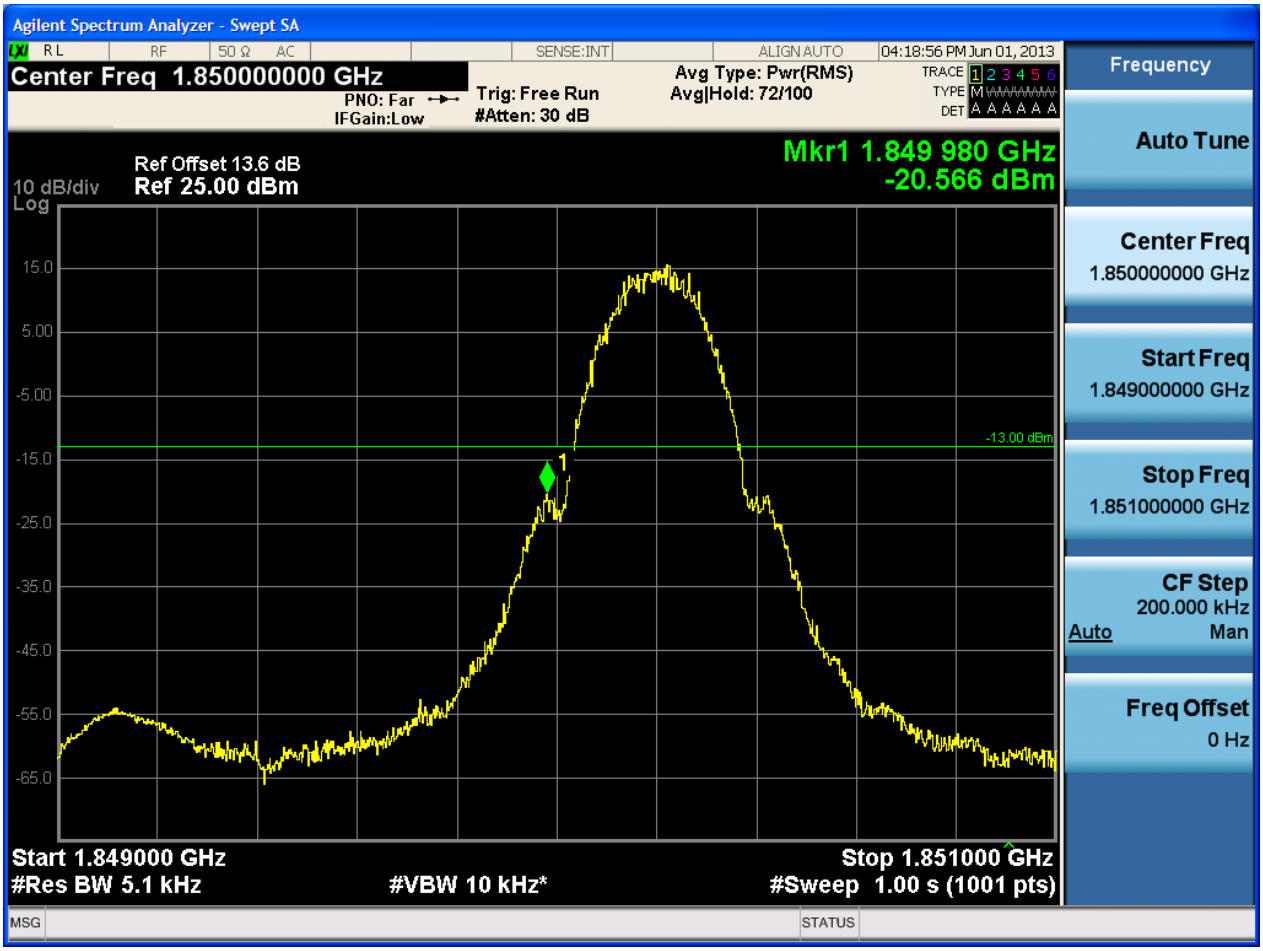
5.1.1.2.2 Test Channel = HCH



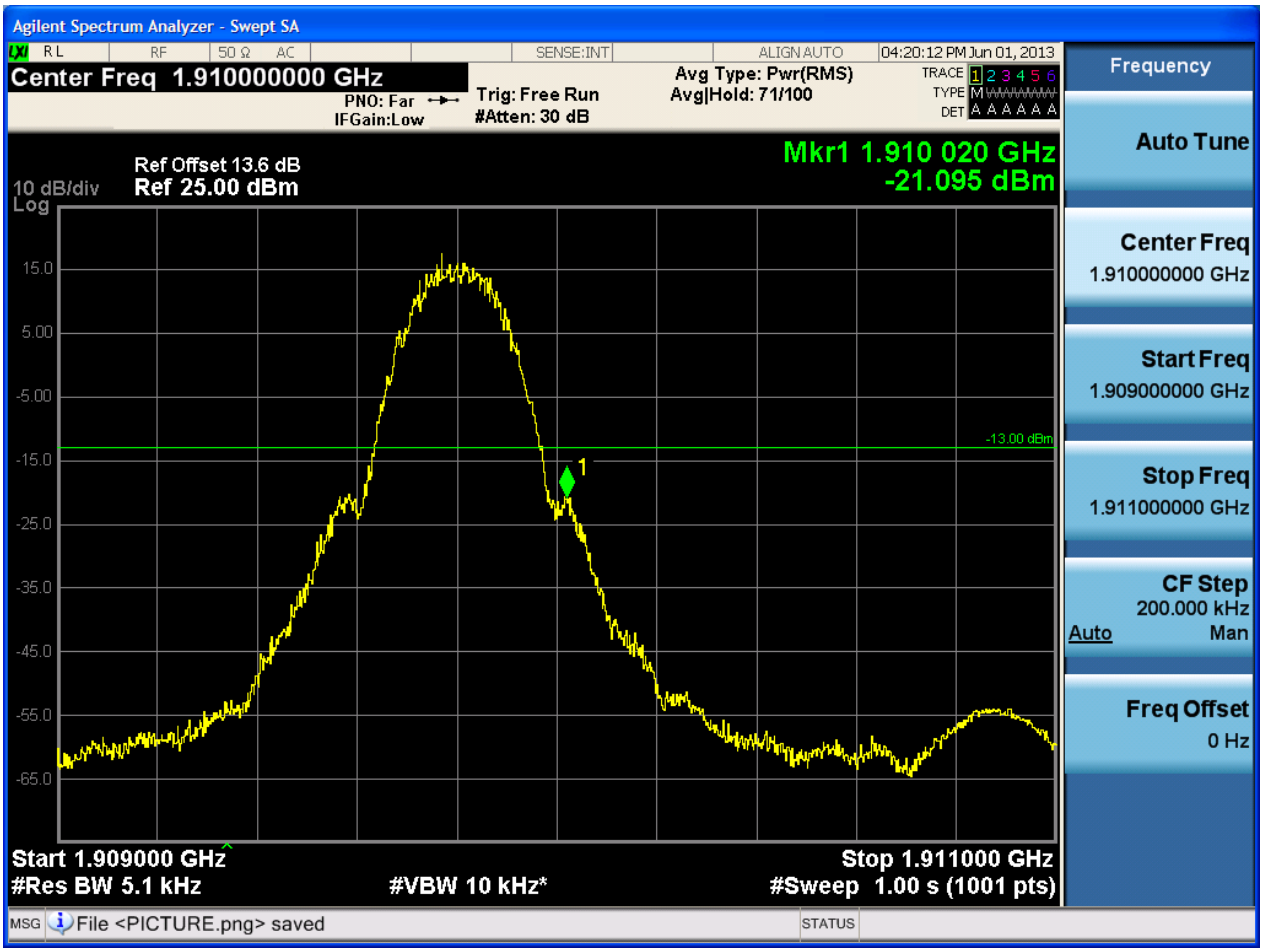
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

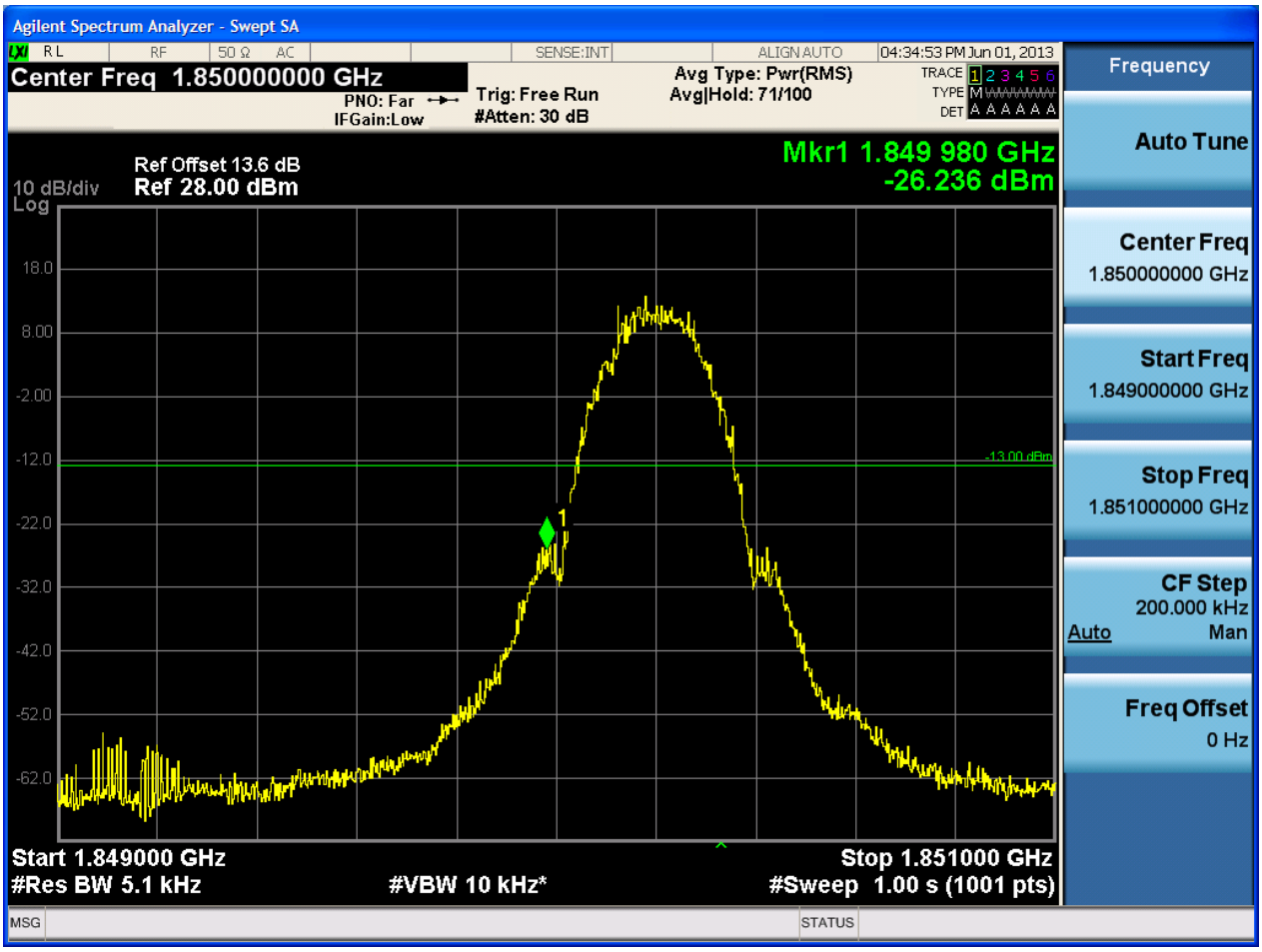


5.1.2.1.2 Test Channel = HCH

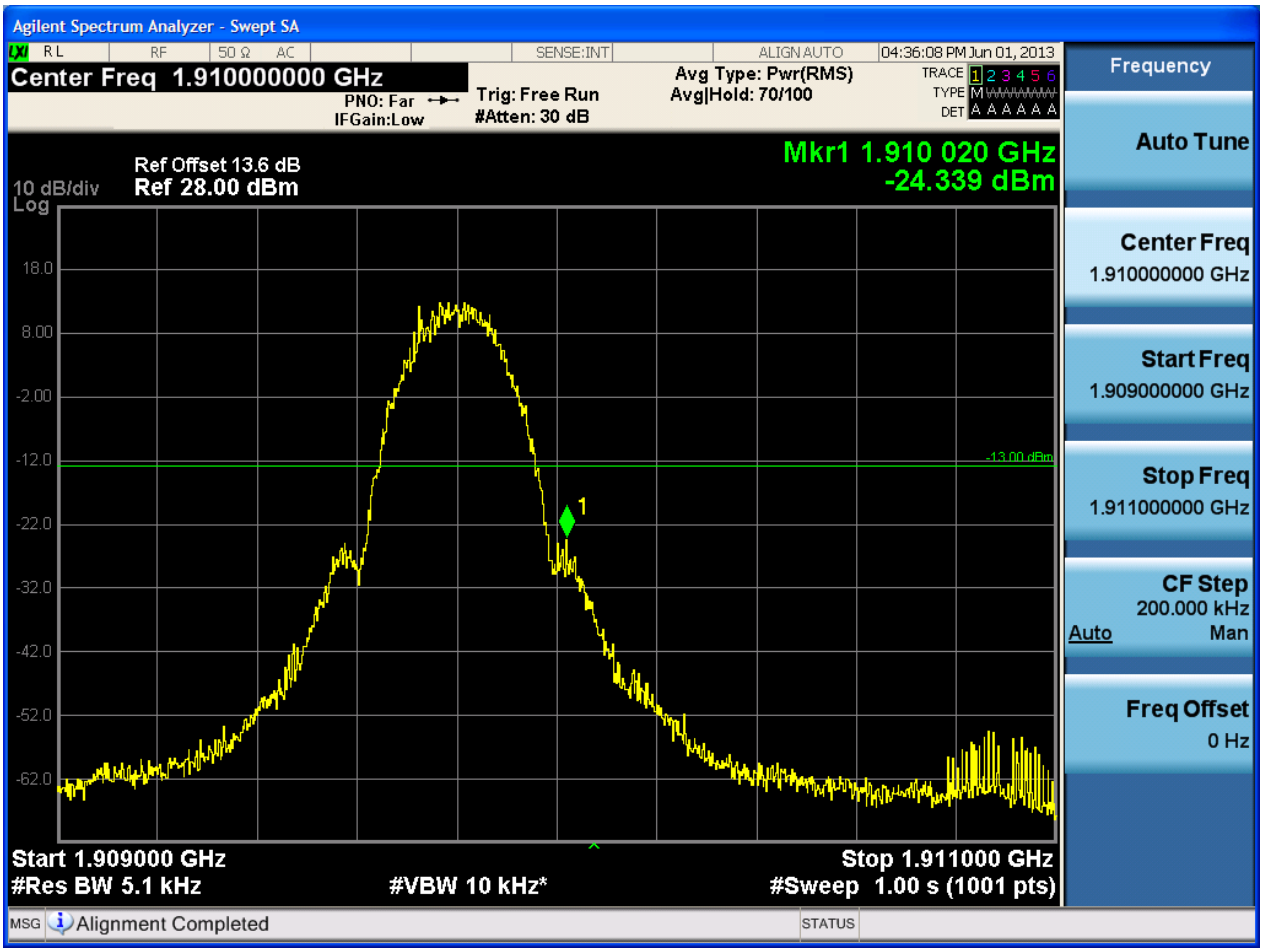


5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



5.1.2.2.2 Test Channel = HCH



5.2 For UMTS

5.2.1 Test Band = WCDMA850

5.2.1.1 Test Mode = UMTS/TM1

5.2.1.1.1 Test Channel = LCH