

## TEST REPORT

**Product** : 3G smart phone  
**Trade mark** : N/A  
**Model/Type reference** : SP4541  
**Serial Number** : N/A  
**Report Number** : EED32H000601-3  
**FCC ID** : 2AETNSP4541  
**Test Standards** : 47 CFR Part 2(2014)  
47 CFR Part 22 subpart H(2014)  
47 CFR Part 24 subpart E(2014)  
**Test result** : PASS

Prepared for:

**WOO GLOBAL MARKETS, S.L.**

**Camino de Vinateros, 10. Bajo (Oficinas) 28030 MADRID - SPAIN**

Prepared by:

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Jun. 03, 2015



Sheek Luo

Lab supervisor

Check No.: 1727844581

2 Version

Version No.	Date	Description
00	2015-04-01	Original

### 3 Test Summary

Test Item	Test Requirement	Test method	Result
<b>GSM 850, WCDMA (Band V)</b>			
<b>Conducted output power</b>	Part 2.1046(a)/Part 22.913(a)	ITA-603-C-2004 & KDB 971168 D01v02r02	PASS
<b>Effective Radiated Power of Transmitter(ERP)</b>	Part 2.1046(a)/Part 22.913(a)	ITA-603-C-2004 & KDB 971168 D01v02r02	PASS
<b>99%&amp;26dB Occupied Bandwidth</b>	Part 2.1049(h)	Part 22.917(b) & KDB 971168 D01v02r02	PASS
<b>Band Edge at antenna terminals</b>	Part 2.1051/Part 22.917(a)	Part 22.917(b) & KDB 971168 D01v02r02	PASS
<b>Spurious emissions at antenna terminals</b>	Part 2.1051/ Part 2.1057/ Part 22.917(a)(b)	ITA-603-C-2004 & KDB 971168 D01v02r02	PASS
<b>Field strength of spurious radiation</b>	Part 2.1053/ Part 2.1057/ Part 22.917(a)(b)	ITA-603-C-2004 & KDB 971168 D01v02r02	PASS
<b>Frequency stability</b>	Part 2.1055/ Part 22.355	ITA-603-C-2004 & KDB 971168 D01v02r02	PASS
<b>GSM 1900,WCDMA (Band II)</b>			
<b>Conducted output power</b>	Part 2.1046(a) /Part 24.232(c)	ITA-603-C-2004& KDB 971168 D01v02r02	PASS
<b>Effective Radiated Power of Transmitter(EIRP)</b>	Part 2.1046(a) / Part 24.232(c)	ITA-603-C-2004 & KDB 971168 D01v02r02	PASS
<b>peak-to-average ratio</b>	Part 24.232(d)	KDB 971168 D01v02r02	PASS
<b>99% &amp;26dB Occupied Bandwidth</b>	Part 2.1049(h)	Part 24.238(b) & KDB 971168 D01v02r02	PASS
<b>Band Edge at antenna terminals</b>	Part 2.1051/ Part 24.238(a)	Part 24.238(b) & KDB 971168 D01v02r02	PASS
<b>Spurious emissions at antenna terminals</b>	Part 2.1051/ Part 2.1057/ Part 24.238(a)(b)	ITA-603-C-2004 & KDB 971168 D01v02r02	PASS
<b>Field strength of spurious radiation</b>	Part 2.1053 /Part 2.1057 / Part 24.238(a)(b)	ITA-603-C-2004 & KDB 971168 D01v02r02	PASS
<b>Frequency stability</b>	Part 2.1055/Part 24.235	ITA-603-C-2004 & KDB 971168 D01v02r02	PASS

Remark:

Tx: In this whole report Tx (or tx) means transmitter. Rx: In this whole report Rx (or rx) means receiver.

LCH: In this whole report LCH means low channel. MCH: In this whole report LCH means middle channel.

HCH: In this whole report LCH means high channel.

VL: In this whole report Volt means low voltage. (DC 3.2V)

VN: In this whole report Volt means normal voltage. (DC 3.7V)

VH: In this whole report Volt means high voltage. (DC 4.2V)

TN: In this whole report Temp means normal temperature. (25°C)

Humid: In this whole report Humid means humidity.

N/A: In this whole report not application.

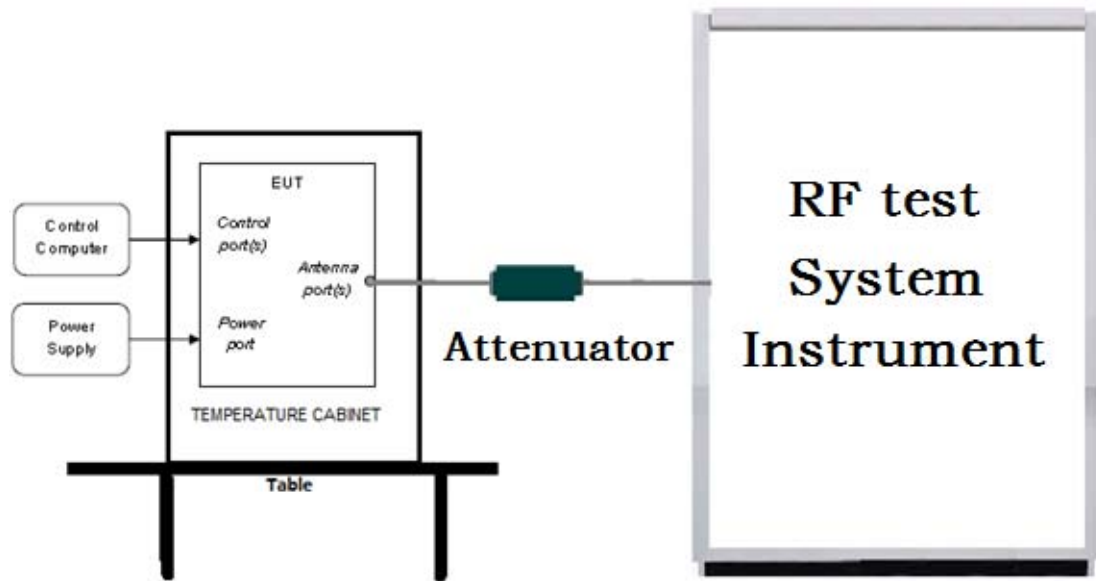
## 4 Content

1	COVER PAGE .....	1
2	VERSION .....	2
3	TEST SUMMARY .....	3
4	CONTENT .....	4
5	TEST REQUIREMENT .....	5
5.1	TEST SETUP .....	5
5.1.1	For Conducted test setup .....	5
5.1.2	For Radiated Emissions test setup .....	5
5.2	TEST ENVIRONMENT .....	6
5.3	TEST CONDITION .....	6
6	GENERAL INFORMATION .....	10
6.1	CLIENT INFORMATION .....	10
6.2	GENERAL DESCRIPTION OF EUT .....	10
6.3	PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD .....	10
6.4	DESCRIPTION OF SUPPORT UNITS .....	11
6.5	TEST LOCATION .....	11
6.6	TEST FACILITY .....	11
6.7	DEVIATION FROM STANDARDS .....	12
6.8	ABNORMALITIES FROM STANDARD CONDITIONS .....	12
6.9	OTHER INFORMATION REQUESTED BY THE CUSTOMER .....	12
7	EQUIPMENT LIST .....	13
8	RADIO TECHNICAL REQUIREMENTS SPECIFICATION .....	15
	Appendix A) RF Power Output .....	17
	Appendix B) Peak-to-Average Ratio .....	18
	Appendix C) BandWidth .....	19
	Appendix D) Band Edges Compliance .....	29
	Appendix E) Spurious Emission at Antenna Terminal .....	35
	Appendix F) Frequency Stability .....	81
	Appendix G) Effective Radiated Power of Transmitter (ERP/EIRP) .....	90
	Appendix H) Field strength of spurious radiation .....	93
	PHOTOGRAPHS OF TEST SETUP .....	100
	PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS .....	101

5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

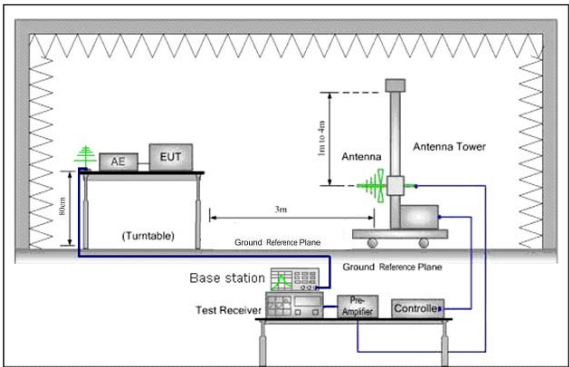


Figure 1. 30MHz to 1GHz

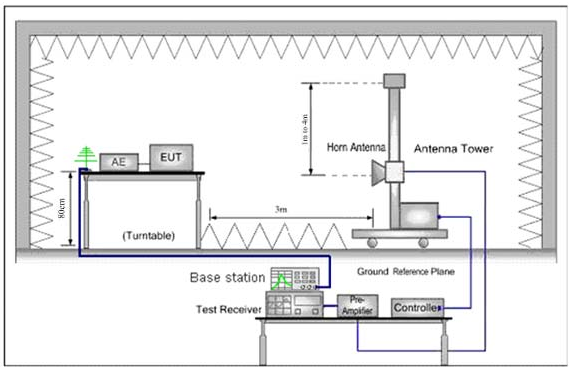


Figure 2. above 1GHz

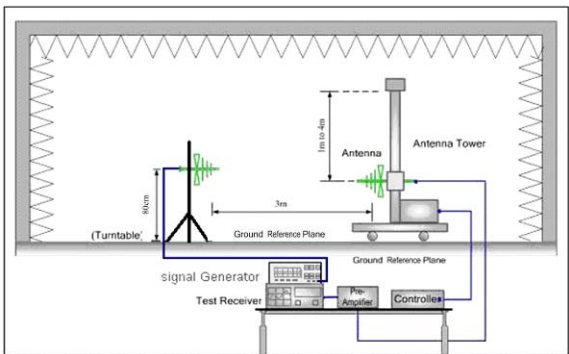


Figure 1. 30MHz to 1GHz

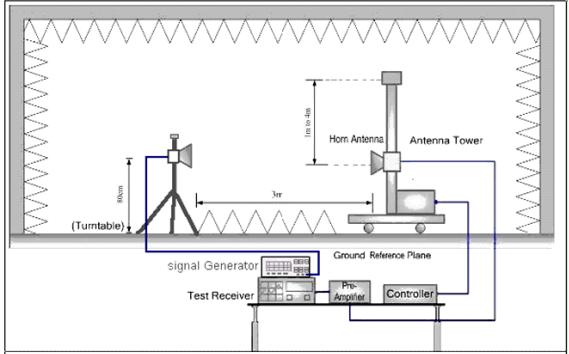


Figure 2. above 1GHz

## 5.2 Test Environment

Operating Environment:	
Temperature:	25.0 °C
Humidity:	53 % RH
Atmospheric Pressure:	995mbar

## 5.3 Test Condition

### Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
GSM/GPRS850	Tx ( 824 MHz ~849 MHz )	Channel 128	Channel 190	Channel 251
		824.2MHz	836.6 MHz	848.8 MHz
	Rx ( 869 MHz ~894 MHz )	Channel 128	Channel 190	Channel 251
		869.2 MHz	881.6 MHz	893.8 MHz
WCDMA band V	Tx ( 824 MHz ~849 MHz )	Channel 4132	Channel 4182	Channel 4233
		826.4 MHz	836.4 MHz	846.6 MHz
	Rx ( 869 MHz ~894 MHz )	Channel 4357	Channel 4407	Channel 4458
		871.4 MHz	881.4 MHz	891.6 MHz
GSM/GPRS 1900	Tx ( 1850 MHz ~1910 MHz )	Channel 512	Channel 661	Channel 810
		1850.2MHz	1880.0 MHz	1909.8 MHz
	Rx ( 1930 MHz ~1990 MHz )	Channel 512	Channel 661	Channel 810
		1930.2 MHz	1960.0 MHz	1989.8 MHz
WCDMA Band II	Tx ( 1850 MHz ~1910 MHz )	Channel 9262	Channel 9400	Channel 9538
		1852.4 MHz	1880.0 MHz	1907.6 MHz
	Rx ( 1930 MHz ~1990 MHz )	Channel 9662	Channel 9800	Channel 9938
		1932.4 MHz	1960.0 MHz	1987.6 MHz

Test mode:

**Pre-scan under all rate at lowest, middle and highest channel, find the transmitter power as below:**

SIM 1 Card Conducted transmitter power measurement result.

GSM850		Burst-Averaged output Power (dBm)		
		128CH	190CH	251CH
GSM		31.95	31.95	31.82
GPRS (GMSK)	1 Tx Slot	31.88	31.92	31.80
	2 Tx Slots	30.16	30.36	29.99
	3 Tx Slots	28.09	28.59	27.93
	4 Tx Slots	26.55	26.63	26.00

GSM1900		Burst-Averaged output Power (dBm)		
		512CH	661CH	810CH
GSM		29.87	29.40	29.48
GPRS (GMSK)	1 Tx Slot	29.90	29.49	29.58
	2 Tx Slots	27.65	27.77	27.76
	3 Tx Slots	25.53	25.64	25.55
	4 Tx Slots	23.84	24.23	24.37

UMTS Band II		Conducted Power (dBm)		
		9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	23.02	22.80	22.66
	64kbps RMC	22.65	22.58	22.43
	144kbps RMC	22.55	22.49	22.36
	384kbps RMC	22.56	22.52	22.32
HSDPA	Subtest 1	22.23	22.25	22.32
	Subtest 2	22.33	22.35	22.36
	Subtest 3	22.46	22.48	22.45
	Subtest 4	22.44	22.44	22.39

UMTS Band V		Conducted Power (dBm)		
		4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	22.81	22.94	22.99
	64kbps RMC	22.56	22.69	22.62
	144kbps RMC	22.60	22.71	22.61
	384kbps RMC	22.59	22.72	22.59
HSDPA	Subtest 1	22.65	22.76	22.59
	Subtest 2	22.68	22.77	22.58
	Subtest 3	22.70	22.75	22.64
	Subtest 4	22.65	22.71	22.59

## SIM 2 Card Conducted transmitter power measurement result.

GSM850		Burst-Averaged output Power (dBm)		
		128CH	190CH	251CH
GSM		31.74	31.70	31.63
GPRS (GMSK)	1 Tx Slot	31.69	31.73	31.61
	2 Tx Slots	29.97	30.17	29.81
	3 Tx Slots	27.94	28.45	27.74
	4 Tx Slots	26.36	26.44	25.81

GSM1900		Burst-Averaged output Power (dBm)		
		512CH	661CH	810CH
GSM		29.68	29.21	29.29
GPRS (GMSK)	1 Tx Slot	29.78	29.33	29.39
	2 Tx Slots	27.46	27.58	27.50
	3 Tx Slots	25.35	25.46	25.36
	4 Tx Slots	23.65	24.04	24.18

UMTS Band II		Conducted Power (dBm)		
		9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	22.83	22.61	22.47
	64kbps RMC	22.46	22.39	22.29
	144kbps RMC	22.31	22.34	22.17
	384kbps RMC	22.37	22.33	22.13
HSDPA	Subtest 1	22.02	22.06	22.13
	Subtest 2	22.14	22.16	22.17
	Subtest 3	22.25	22.29	22.26
	Subtest 4	22.25	22.25	22.25

UMTS Band V		Conducted Power (dBm)		
		4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	22.62	22.71	22.81
	64kbps RMC	22.37	22.53	22.43
	144kbps RMC	22.41	22.52	22.42
	384kbps RMC	22.44	22.53	22.44
HSDPA	Subtest 1	22.42	22.57	22.48
	Subtest 2	22.49	22.58	22.39
	Subtest 3	22.51	22.56	22.45
	Subtest 4	22.46	22.52	22.46



Pre-scan all mode and data rates and positions,find worse case mode are chosen to the report ,the warse case mode as below:

band	Radiated	Conducted
GSM/GPRS 850	1) GSM Link 2) GPRS 8 Link	1) GSM Link 2) GPRS 8 Link
GSM/GPRS 1900	1)GSM Link 2) GPRS 8 Link	1) GSM Link 2) GPRS 8 Link
WCDMA Band V	RMC 12.2Kbps Link	RMC 12.2Kbps Link
WCDMA Band II	RMC 12.2Kbps Link	RMC 12.2Kbps Link

## 6 General Information

### 6.1 Client Information

Applicant:	WOO GLOBAL MARKETS, S.L.
Address of Applicant:	Camino de Vinateros, 10. Bajo (Oficinas) 28030 MADRID - SPAIN
Manufacturer:	WOO GLOBAL MARKETS, S.L.
Address of Manufacturer:	Camino de Vinateros, 10. Bajo (Oficinas) 28030 MADRID - SPAIN

### 6.2 General Description of EUT

Product Name:	3G smart phone	
Model No.(EUT):	SP4541	
Tark mark:	N/A	
EUT Supports Radios application	GSM/GPRS 850: Tx:824.20 - 848.80MHz;Rx: 869.20 – 893.80MHz GSM/GPRS 1900: Tx:1850.20 – 1909.80MHz; Rx:1930.20 – 1989.80MHz WCDMA/HSDPA Band V: Tx:826.40 -846.60MHz;Rx: 871.40 – 891.60MHz WCDMA/HSDPA Band II: Tx:1852.40 – 1907.60MHz;Rx:1932.40 – 1987.60MHz BT3.0+EDR: 2402 – 2480MHz IEEE 802.11b/g/n(HT20): 2412 – 2462MHz	
Power Supply:	Adapter:	Input: AC 100V-240V 50-60Hz 0.4A Output: DC 5.0V 1000mA
	Battery:	DC3.7V (Li-on Rechargeable Battery )
Sample Received Date:	May 12, 2015	
Sample tested Date:	May 12,2015 to Jun. 03, 2015	

### 6.3 Product Specification subjective to this standard

Frequency Band:	GSM/GPRS 850: Tx:824.20 -848.80MHz;Rx: 869.20 – 893.80MHz GSM/GPRS 1900: Tx:1850.20 – 1909.80MHz; Rx:1930.20 – 1989.80MHz WCDMA/HSDPA Band V: Tx:826.40 -846.60MHz;Rx: 871.40 – 891.60MHz WCDMA/HSDPA Band II: Tx:1852.40 – 1907.60MHz;Rx:1932.40 – 1987.60MHz
Modulation Type:	GSM/GPRS Mode with GMSK Modulation WCDMA Mode with QPSK Modulation
Sample Type:	Portable production
Antenna Type:	Integral
Antenna Gain:	0dBi

## 6.4 Description of Support Units

The EUT has been tested independently.

## 6.5 Test Location

All tests were performed at:

Centre Testing International (Shenzhen) Corporation

Building C, Scientific Innovation Park, Tiegang Reservoir, Xixiang, Baoan District, Shenzhen, China

TEL: +86-755-3368 3919

FAX: +86-755-3368 3385

No tests were sub-contracted.

## 6.6 Test Facility

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

### **CNAS-Lab Code: L1910**

Centre Testing International (Shenzhen) Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories. .

### **A2LA-Lab Cert. No. 3061.01**

Centre Testing International (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

### **FCC-Registration No.: 756231**

Centre Testing International (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 756231.

### **IC-Registration No.: 7408A**

The 3m Alternate Test Site of Centre Testing International (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408A .

### **IC-Registration No.: 7408B**

The 10m Alternate Test Site of Centre Testing International (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408B.

**NEMKO-Aut. No.: ELA503**

Centre Testing International (Shenzhen) Co., Ltd. has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

**VCCI**

The Radiation 3 &10 meters site of Centre Testing International (Shenzhen) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-4096.

Main Ports Conducted Interference Measurement of Centre Testing International (Shenzhen) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-4563.

Telecommunication Ports Conducted Disturbance Measurement of Centre Testing International (Shenzhen) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-2146.

The Radiation 3 meters site of Centre Testing International (Shenzhen) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-758

## **6.7 Deviation from Standards**

None.

## **6.8 Abnormalities from Standard Conditions**

None.

## **6.9 Other Information Requested by the Customer**

None.

## 7 Equipment List

Communication RF test system instrument					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Spectrum Analyzer	Agilent	E4440A	MY46185649	12-18-2014	12-17-2015
Signal Generator	Agilent	E4438C	MY45095744	04-19-2015	04-18-2016
Communication test set	Agilent	E5515C	GB47050533	01-13-2015	01-12-2016
Signal Generator	Keysight	E8257D	MY53401106	04-14-2015	04-13-2016
Communication test set	R&S	CMW500	152394	04-19-2015	04-18-2016
High-pass filter(3-18GHz)	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-13-2015	01-12-2016
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA09C L12-0395-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA08C L12-0393-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX02CA04C L12-0396-002	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX02CA03C L12-0394-001	---	01-13-2015	01-12-2016
DC Power	Keysight	E3642A	MY54426112	03-31-2015	03-30-2016
DC Power	Keysight	E3642A	MY54426115	03-31-2015	03-30-2016
PC-2	Lenovo	R4960d	---	04-01-2015	03-31-2016
PC-3	Lenovo	R4960d	---	04-01-2015	03-31-2016
RF control unit	JS Tonscend	JS0806-1	20158060004	04-01-2015	03-31-2016
DC power Box	JS Tonscend	JS0806-4	20158060007	04-01-2015	03-31-2016
LTE Automatic test software	JS Tonscend	JSTS1120-1	---	04-01-2015	03-31-2016
WCDMA Automatic test software	JS Tonscend	JSTS1120-3	---	04-01-2015	03-31-2016
GSM Automatic test software	JS Tonscend	JSTS1120-3	---	04-01-2015	03-31-2016

Radiated Spurious Emission & Radiated Emission					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06-02-2013	06-01-2016
TRILOG Broadband Antenna	SCHWARZBECK	VULB9163	9163-617	07-14-2014	07-13-2015
Microwave Preamplifier	Agilent	8449B	3008A02425	02-05-2015	02-04-2016
Horn Antenna	ETS-LINDGREN	3117	00057410	07-08-2012	07-07-2015
Loop Antenna	ETS	6502	00071730	07-23-2013	07-22-2015
Spectrum Analyzer	R&S	FSP40	100416	07-09-2014	07-08-2015
Receiver	R&S	ESCI	100435	07-09-2014	07-08-2015
Multi device Controller	maturo	NCD/070/10711112	---	01-13-2015	01-12-2016
LISN	schwarzbeck	NNBM8125	81251547	07-09-2014	07-08-2015
LISN	schwarzbeck	NNBM8125	81251546	07-09-2014	07-08-2015
Signal Generator	Agilent	E4438C	MY45095744	04-19-2015	04-18-2016
Signal Generator	Keysight	E8257D	MY53401106	04-14-2015	04-13-2016
Temperature/ Humidity Indicator	TAYLOR	1451	5190	07-10-2014	07-09-2015
Communication test set	Agilent	E5515C	GB47050533	01-13-2015	01-12-2016
Cable line	Fulai(7M)	SF106	5219/6A	01-13-2015	01-12-2016
Cable line	Fulai(6M)	SF106	5220/6A	01-13-2015	01-12-2016
Cable line	Fulai(3M)	SF106	5216/6A	01-13-2015	01-12-2016
Cable line	Fulai(3M)	SF106	5217/6A	01-13-2015	01-12-2016
Communication test set	R&S	CMW500	152394	04-19-2015	04-18-2016
High-pass filter(3-18GHz)	Sinoscite	FL3CX03WG18NM12-0398-002	---	01-13-2015	01-12-2016
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA09CL12-0395-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA08CL12-0393-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX02CA04CL12-0396-002	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX02CA03CL12-0394-001	---	01-13-2015	01-12-2016

## 8 Radio Technical Requirements Specification

### Reference documents for testing:

No.	Identity	Document Title
1	PART 22 (2014)	PART 22 – PUBLIC MOBILE SERVICES Subpart H – Cellular Radiotelephone Service
2	PART 24 (2014)	PART 24 – PERSONAL COMMUNICATIONS SERVICES Subpart E – Broadband PCS
3	PART 2 (2014)	Frequency allocations and radio treaty matters; general rules and regulations
4	TIA-603-C-2004	Land Mobile FM or PM - Communications Equipment -Measurement and Performance Standards
5	KDB971168 D01	KDB971168 D01 Power Meas License Digital Systems v02r02

### Test Results List:

Test Requirement	Test method	Test item	Verdict	Note
Part 2.1046(a)/Part 22.913(a)/ part 24.232(c)	ITA-603-C& KDB 971168 D01v02r02	Conducted output power	PASS	Appendix A)
Part 24.232(d)	KDB 971168 D01v02r02	peak-to-average ratio	PASS	Appendix B)
Part 2.1049(h)	Part 22.917(b)/ Part 24.238(b) & KDB 971168 D01v02r02	99% &26dB Occupied Bandwidth	PASS	Appendix C)
Part 2.1051/Part 22.917(a)/ Part 24.238(a)	Part 22.917(b)/ Part 24.238(b) & KDB 971168 D01v02r02	Band Edge at antenna terminals	PASS	Appendix D)
Part 2.1051/ Part 2.1057/ Part 22.917(a)(b)/ Part 24.238(a)(b)	ITA-603-C & KDB 971168 D01v02r02	Spurious emissions at antenna terminals	PASS	Appendix E)
Part 2.1055/ Part 22.355/ Part 24.235	ITA-603-C & KDB 971168 D01v02r02	Frequency stability	PASS	Appendix F)
Part 2.1053/ Part 2.1057/ Part 22.917(a)(b)/ Part 24.238(a)(b)	ITA-603-C & KDB 971168 D01v02r02	Field strength of spurious radiation	PASS	Appendix G)
Part 2.1046(a)/Part 22.913(a)/ Part 24.232(c)	ITA-603-C & KDB 971168 D01v02r02	Effective Radiated Power of Transmitter(ERP)	PASS	Appendix H)

Test Mode	Test Modes description
GSM/TM1	GSM system,GSM,GMSK modulation
GSM/TM2	GSM system,GPRS,GMSK modulation
Test Mode	Test Modes description
UMTS/TM1	WCDMA system,QPSK modulation



## Appendix A) RF Power Output

Test Band	Test Mode	Test Channel	Measured(dBm)	Limit (dBm)	Verdict
GSM850	GSM/TM1	LCH	31.95	38.5	PASS
		MCH	31.95	38.5	PASS
		HCH	31.82	38.5	PASS
	GSM/TM2	LCH	31.88	38.5	PASS
		MCH	31.92	38.5	PASS
		HCH	31.80	38.5	PASS

Test Band	Test Mode	Test Channel	Measured(dBm)	Limit (dBm)	Verdict
GSM1900	GSM/TM1	LCH	29.87	33	PASS
		MCH	29.40	33	PASS
		HCH	29.48	33	PASS
	GSM/TM2	LCH	29.90	33	PASS
		MCH	29.49	33	PASS
		HCH	29.58	33	PASS

Test Band	Test Mode	Test Channel	Measured(dBm)	Limit (dBm)	Verdict
WCDMA850	UMTS/TM1	LCH	23.02	38.5	PASS
		MCH	22.80	38.5	PASS
		HCH	22.66	38.5	PASS

Test Band	Test Mode	Test Channel	Measured(dBm)	Limit (dBm)	Verdict
WCDMA1900	UMTS/TM1	LCH	22.81	33	PASS
		MCH	22.94	33	PASS
		HCH	22.99	33	PASS

**Appendix B) Peak-to-Average Ratio**

Test Band	Test Mode	Test Channel	Measured (dBm)	Limit (dBm)	Verdict
GSM1900	GSM/TM1	LCH	7.41	13	PASS
		MCH	8.07	13	PASS
		HCH	9.82	13	PASS
	GSM/TM2	LCH	8.50	13	PASS
		MCH	9.85	13	PASS
		HCH	11.30	13	PASS

Test Band	Test Mode	Test Channel	Measured (dBm)	Limit (dBm)	Verdict
WCDMA1900	UMTS/TM1	LCH	3.36	13	PASS
		MCH	3.37	13	PASS
		HCH	3.20	13	PASS

**Appendix C) BandWidth**

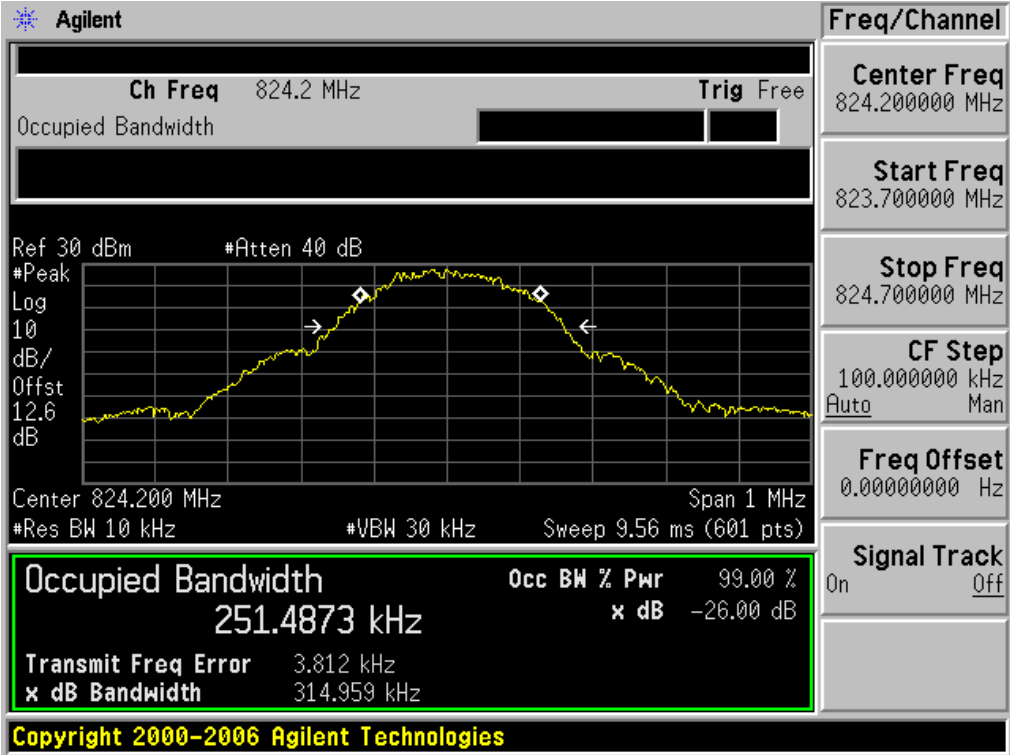
Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
GSM850	GSM/TM1	LCH	251.49	314.96	PASS
		MCH	251.47	315.20	PASS
		HCH	243.04	321.66	PASS
	GSM/TM2	LCH	240.37	299.23	PASS
		MCH	244.42	304.59	PASS
		HCH	251.33	321.95	PASS

Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
GSM1900	GSM/TM1	LCH	244.80	311.77	PASS
		MCH	242.03	313.65	PASS
		HCH	246.59	312.37	PASS
	GSM/TM2	LCH	240.15	305.70	PASS
		MCH	252.49	321.40	PASS
		HCH	250.73	325.11	PASS

Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
WCDMA 850	UMTS/TM1	LCH	4103.5	4663	PASS
		MCH	4087.5	4659	PASS
		HCH	4095.3	4676	PASS

Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
WCDMA 1900	UMTS/TM1	LCH	4090.7	4652	PASS
		MCH	4116.9	4689	PASS
		HCH	4112.7	4661	PASS

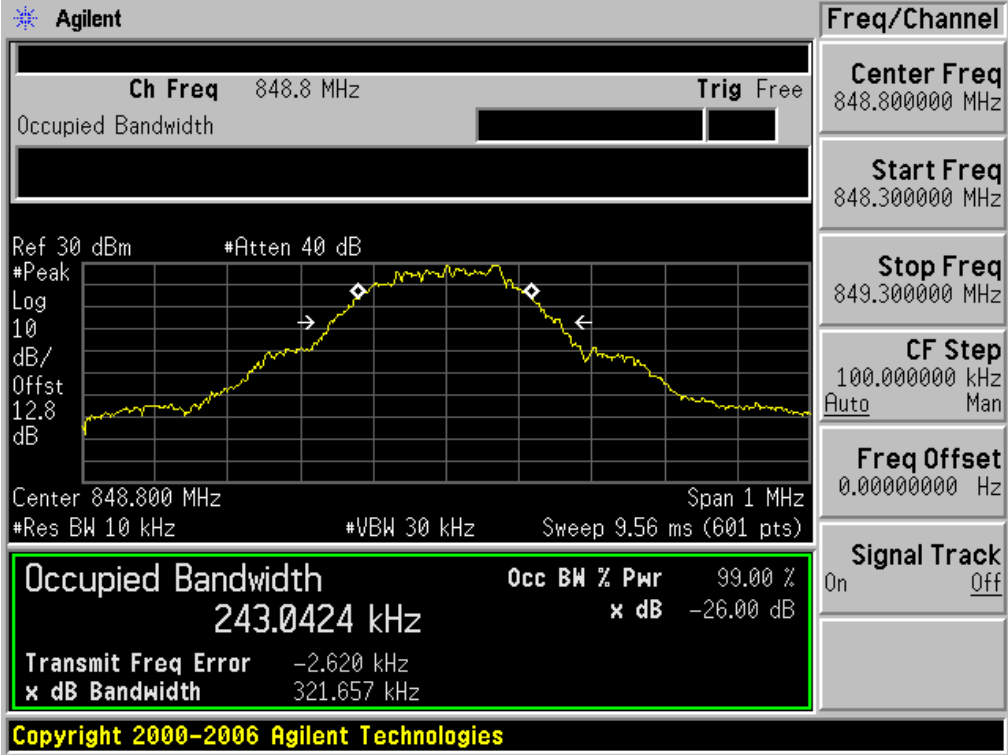
For GSM  
Test Band=GSM850  
Test Mode=GSM/TM1  
Test Channel=LCH



Test Channel=MCH

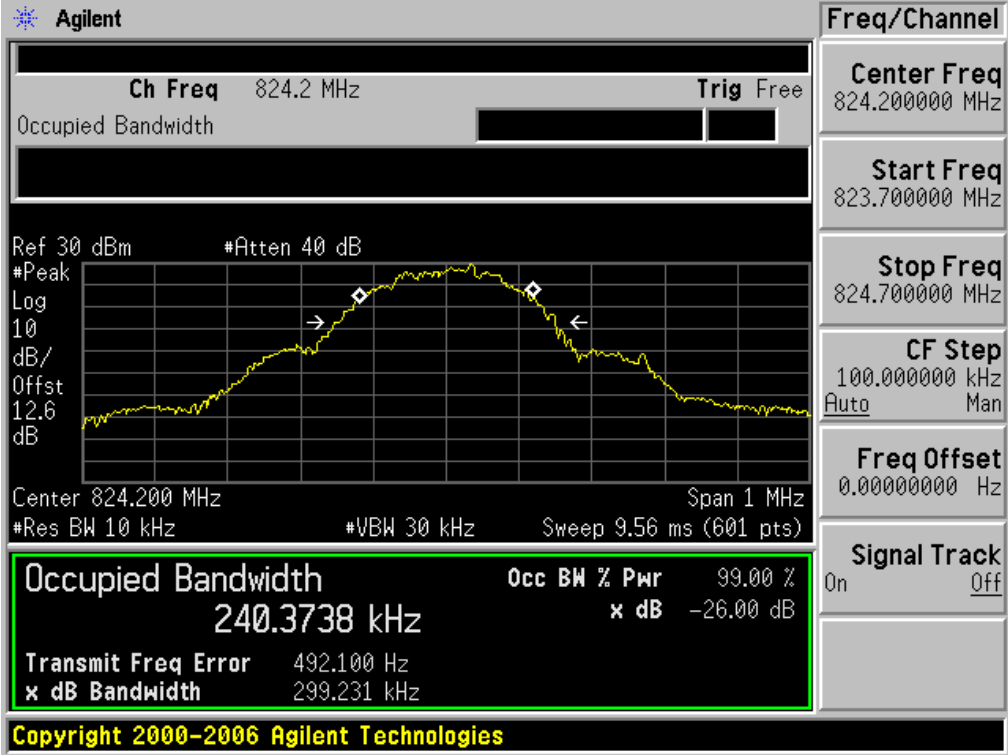


Test Channel=HCH

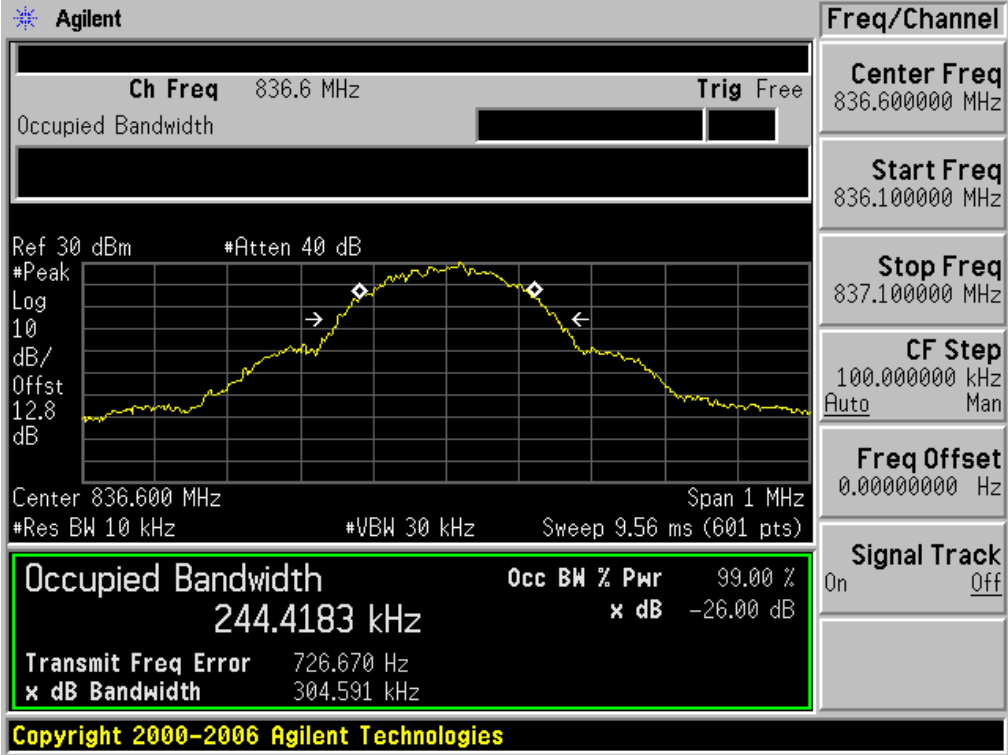


Test Mode=GSM/TM2

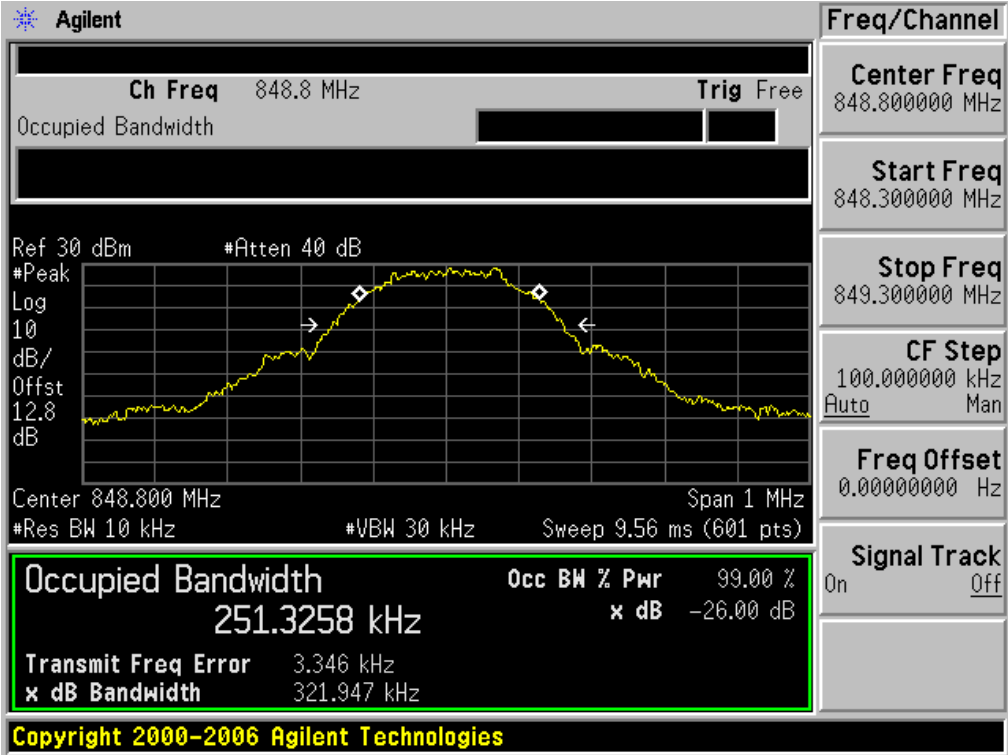
Test Channel=LCH



Test Channel=MCH



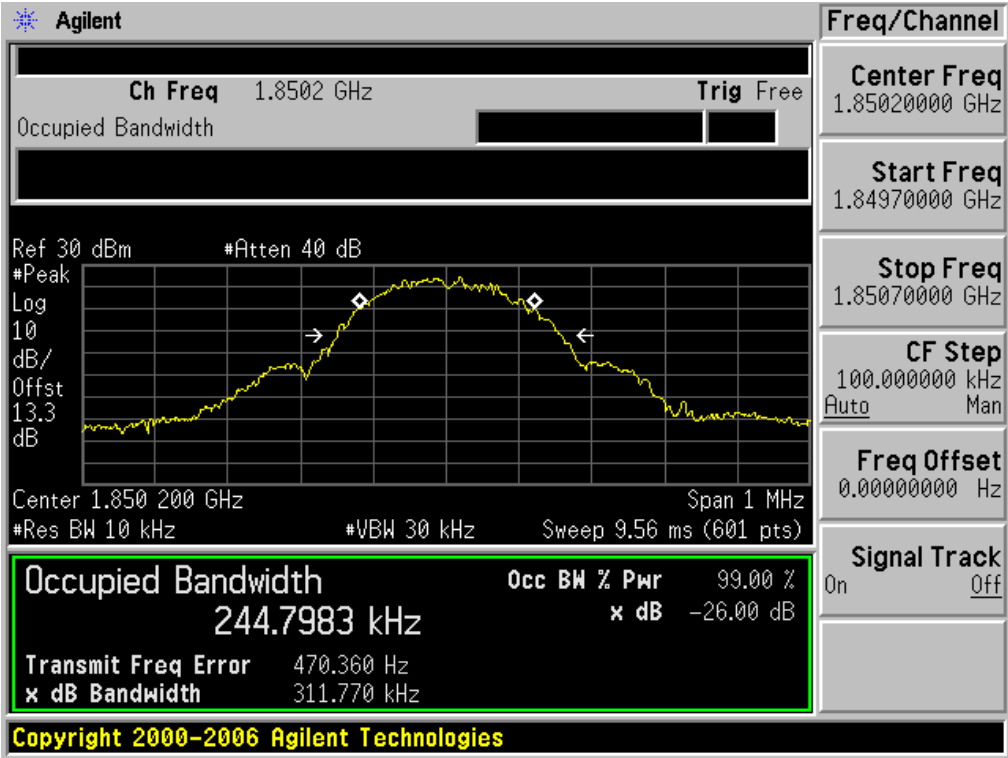
Test Channel=HCH



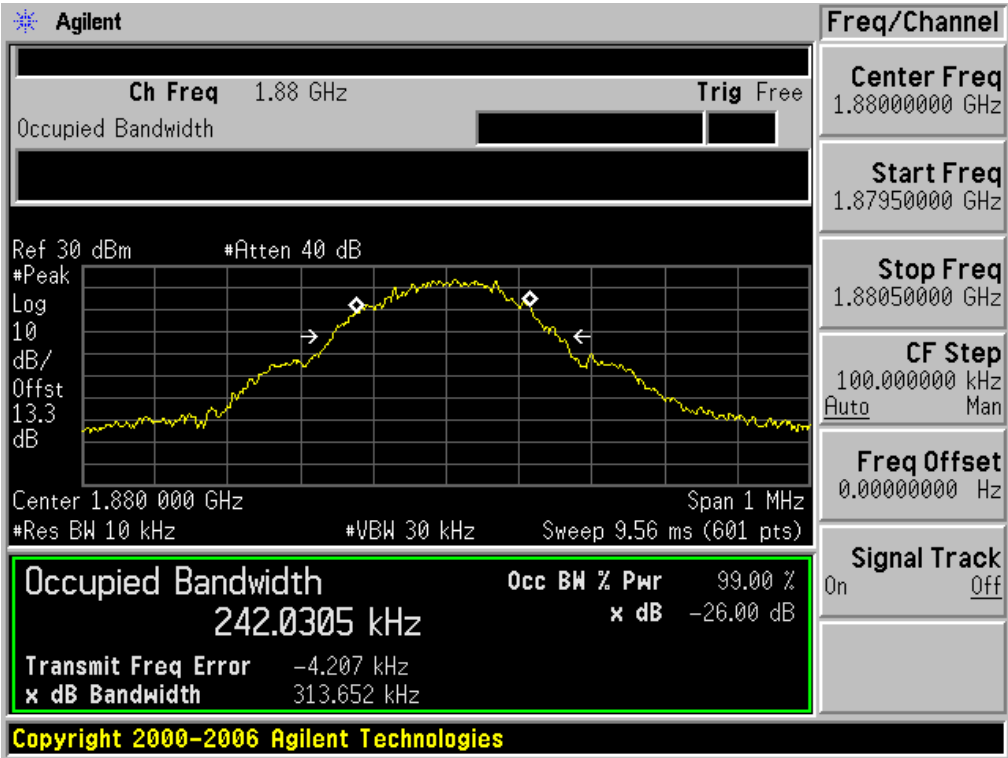
Test Band=GSM1900

Test Mode=GSM/TM1

Test Channel=LCH



Test Channel=MCH

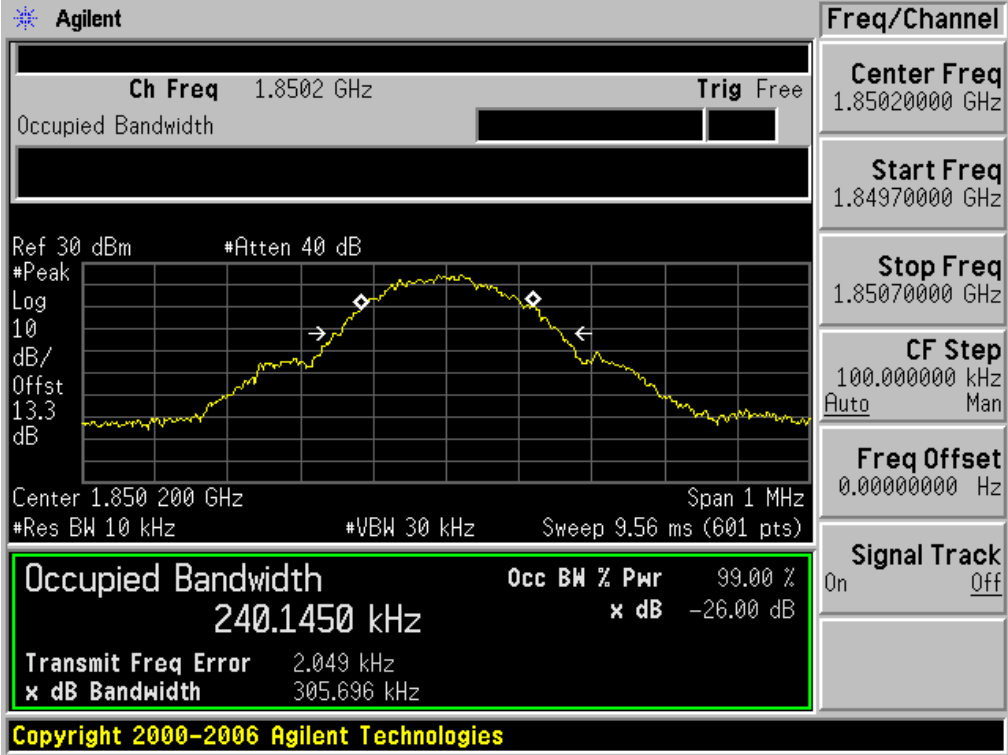


Test Channel=HCH



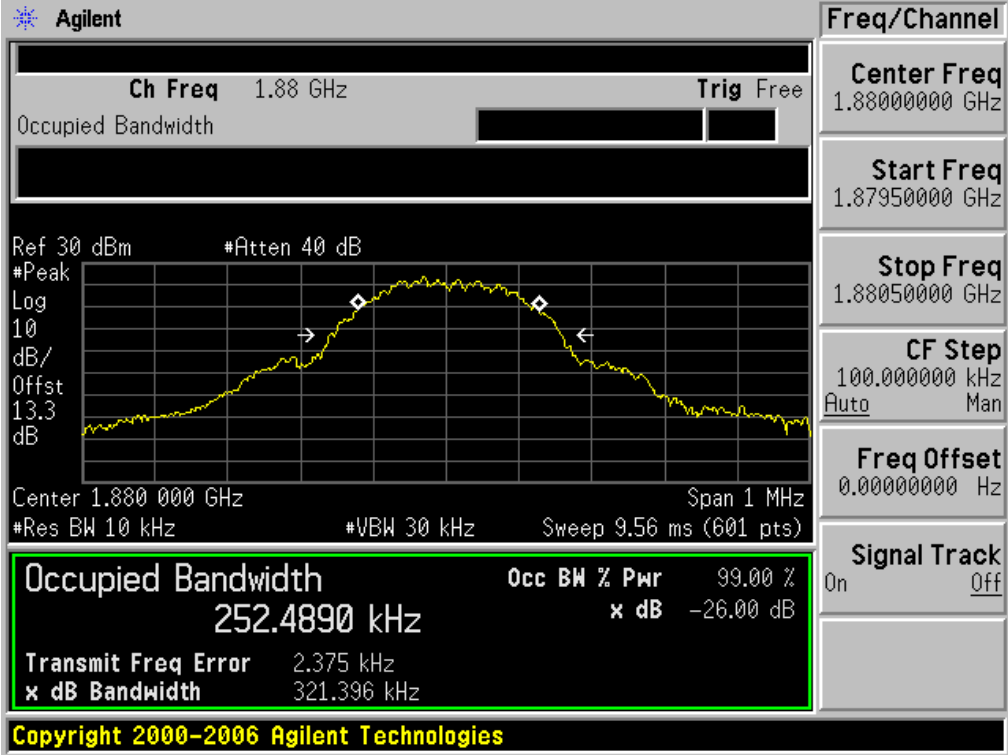
Test Mode=GSM/TM2

Test Channel=LCH





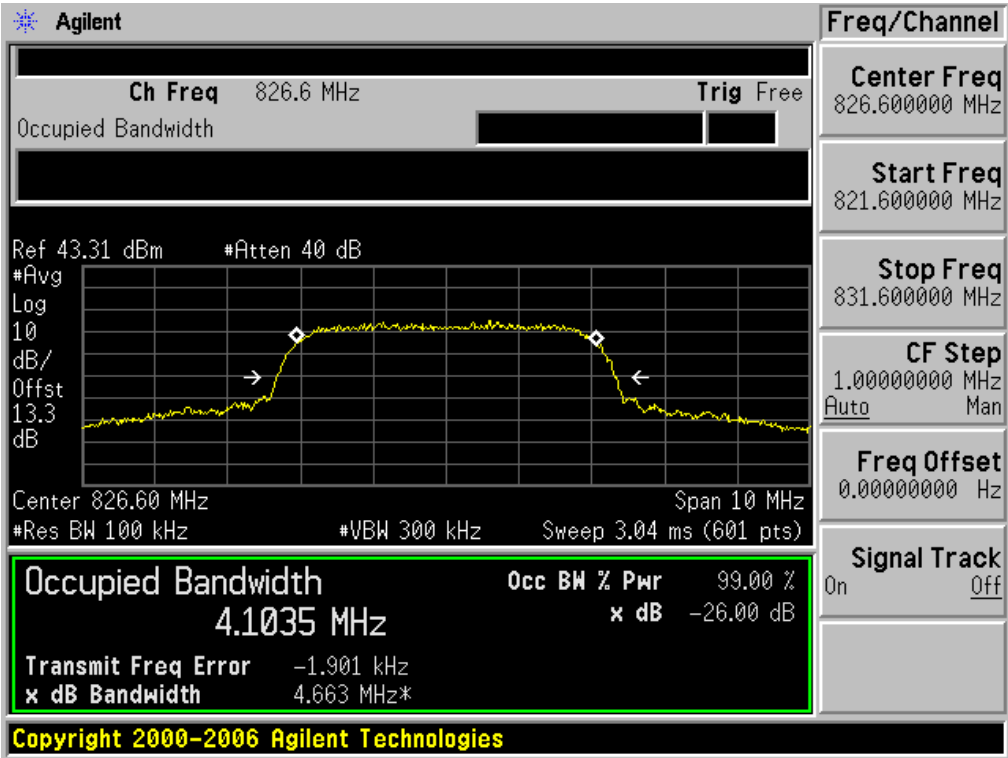
Test Channel=MCH



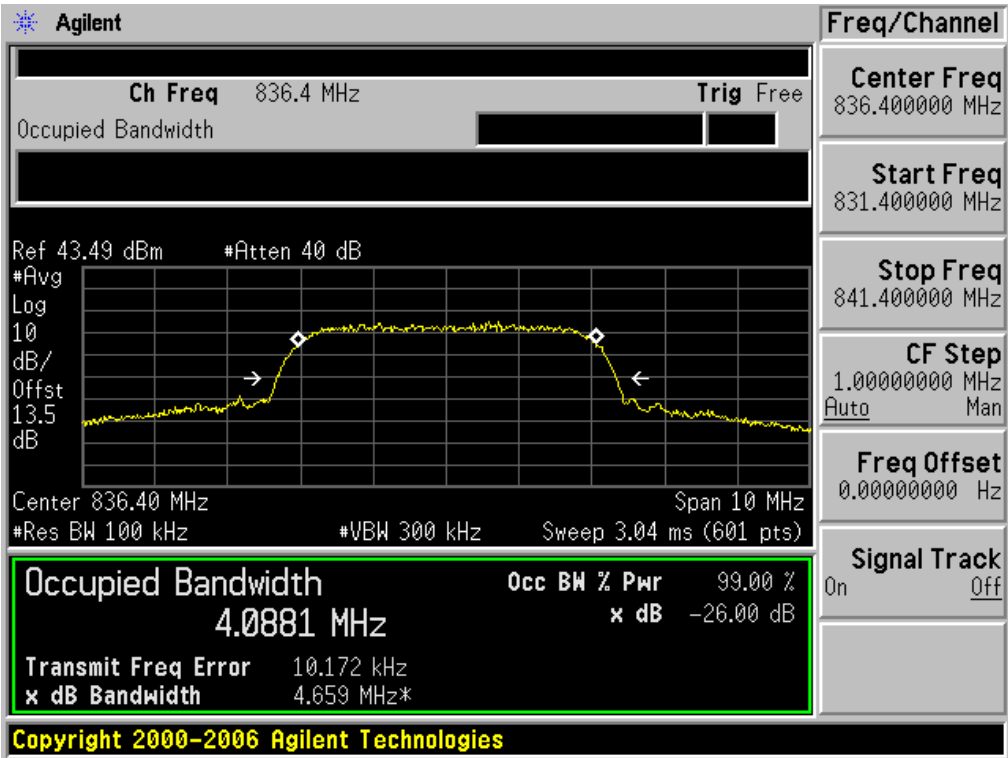
Test Channel=HCH



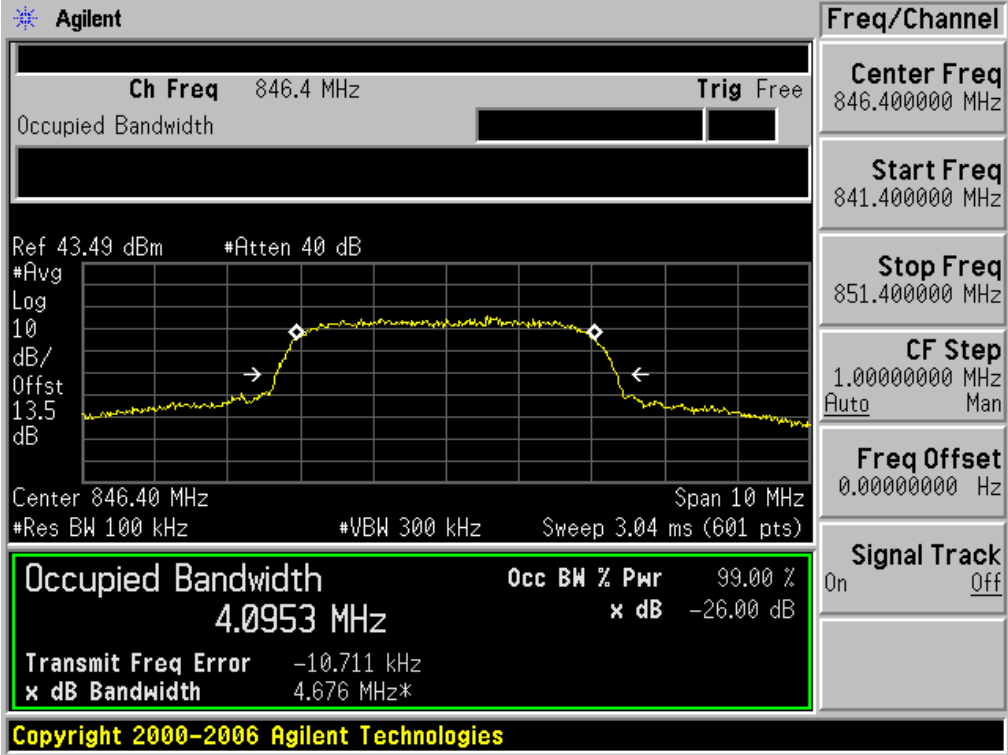
For WCDMA  
Test Band=WCDMA850  
Test Mode=UMTS/TM1  
Test Channel=LCH



Test Channel=MCH



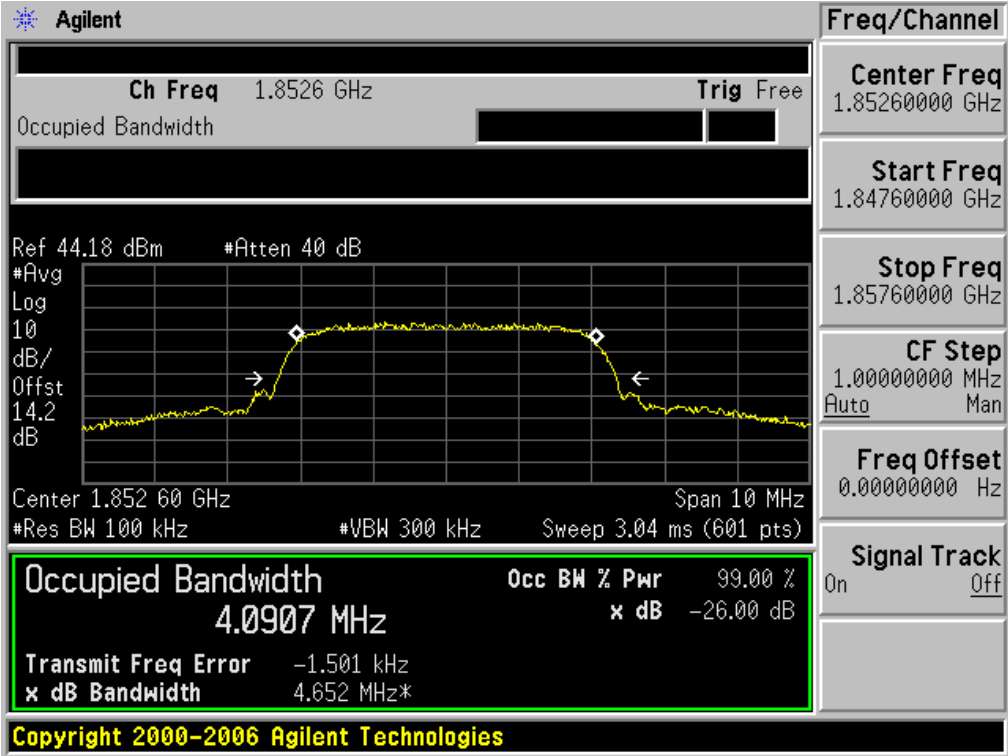
Test Channel=HCH



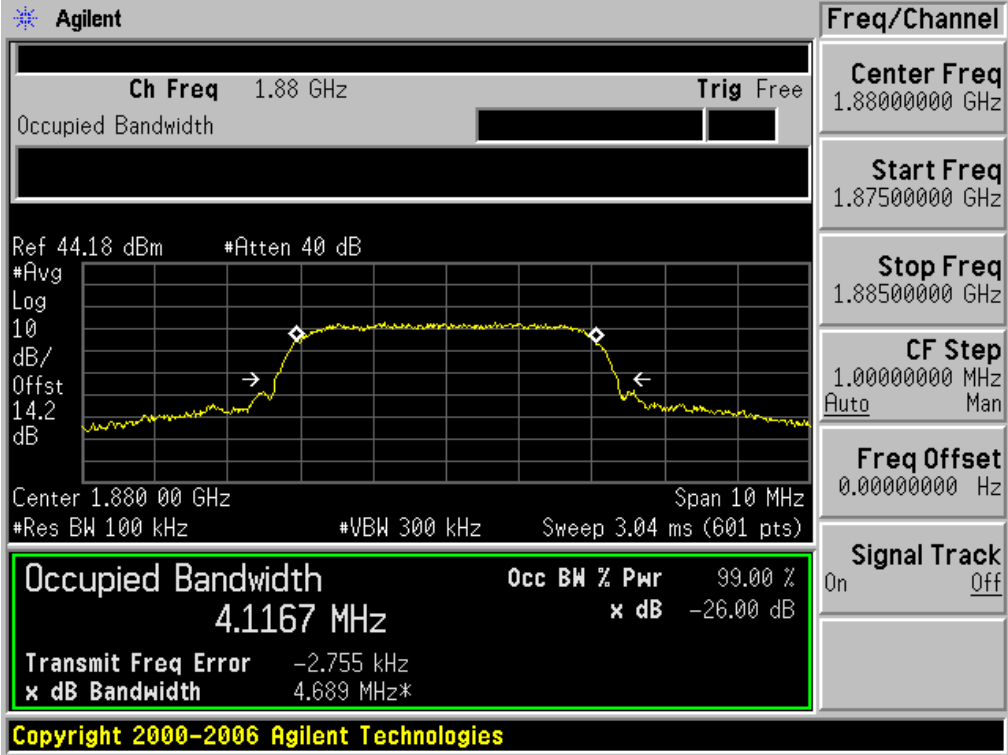
Test Band=WCDMA1900

Test Mode=UMTS/TM1

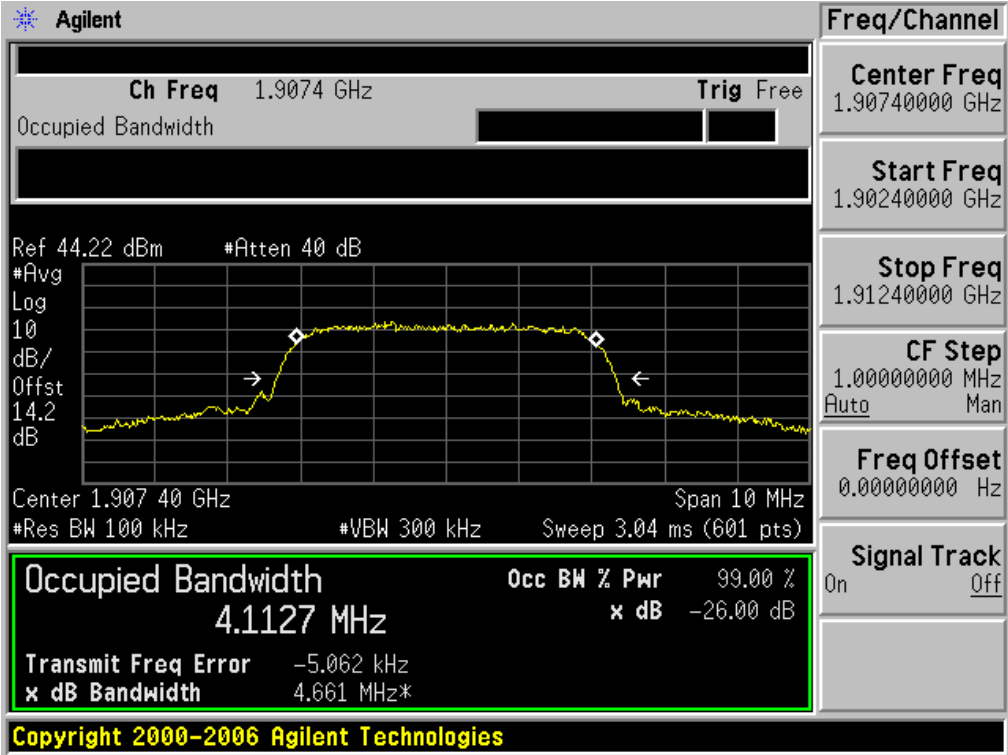
Test Channel=LCH



Test Channel=MCH

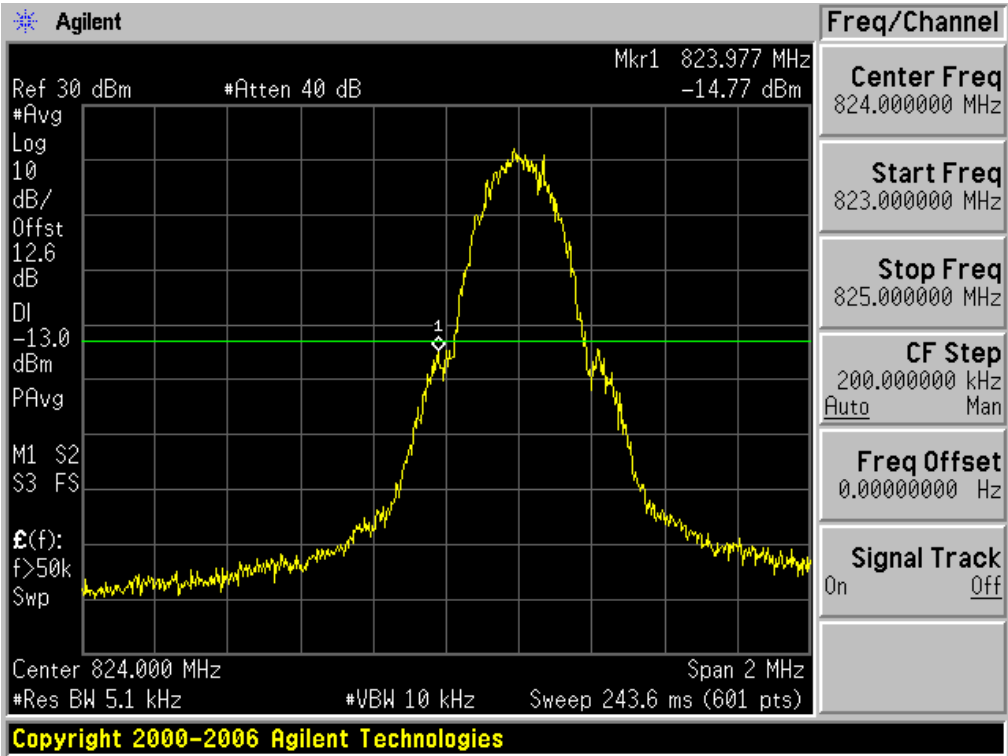


Test Channel=HCH

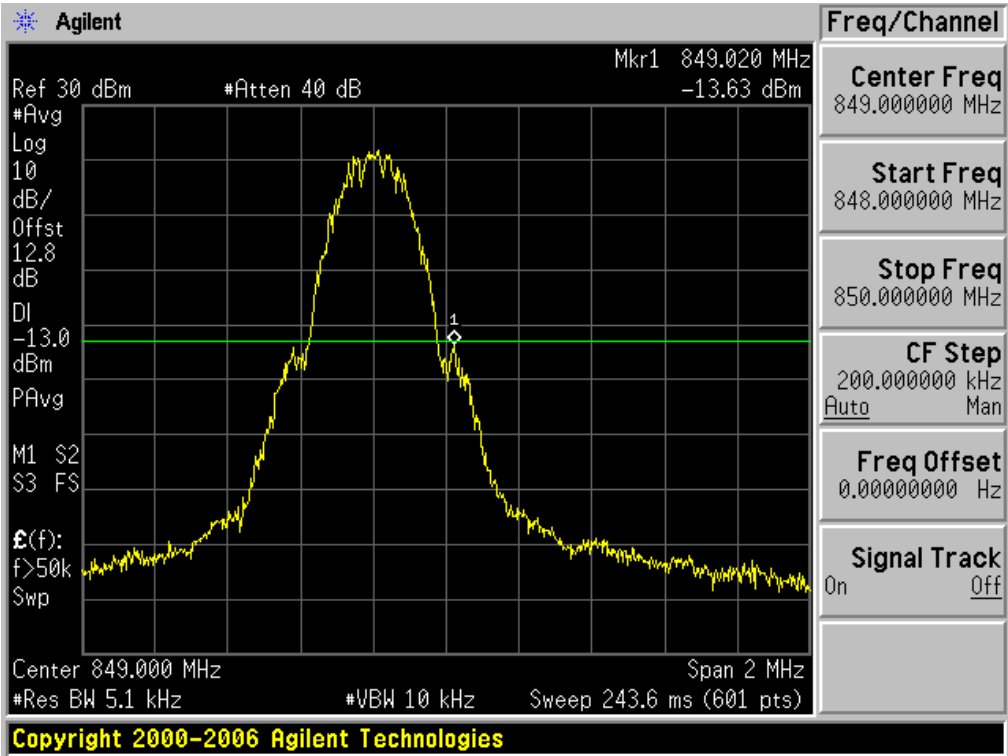


Appendix D) Band Edges Compliance

For GSM  
Test Band=GSM850  
Test Mode=GSM/TM1  
Test Channel=LCH

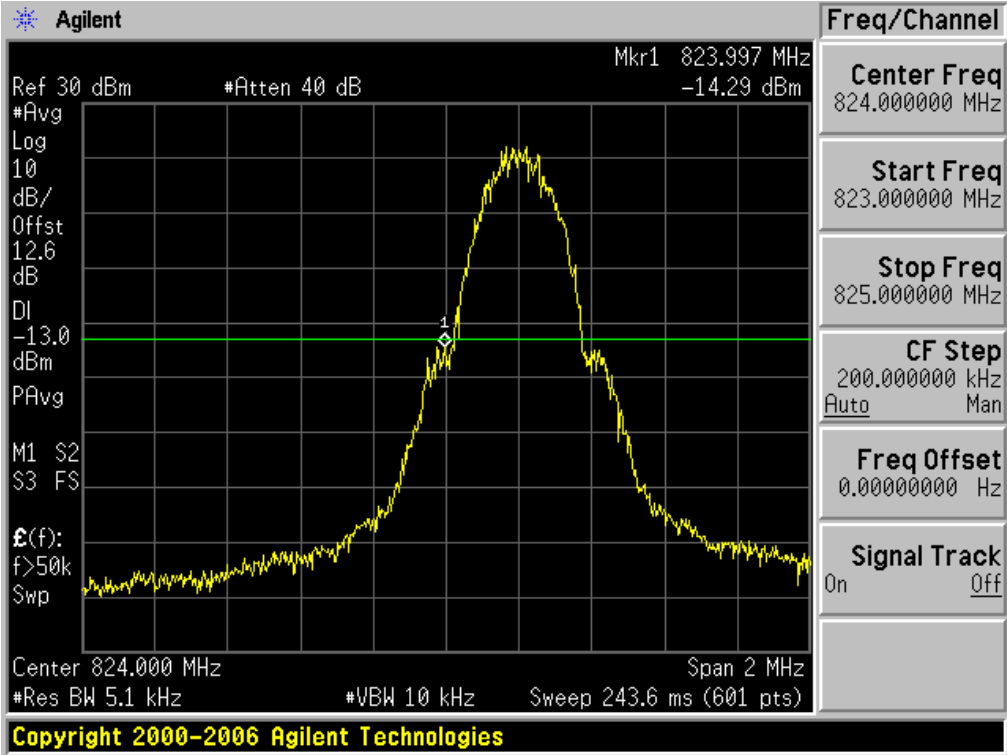


Test Channel=HCH

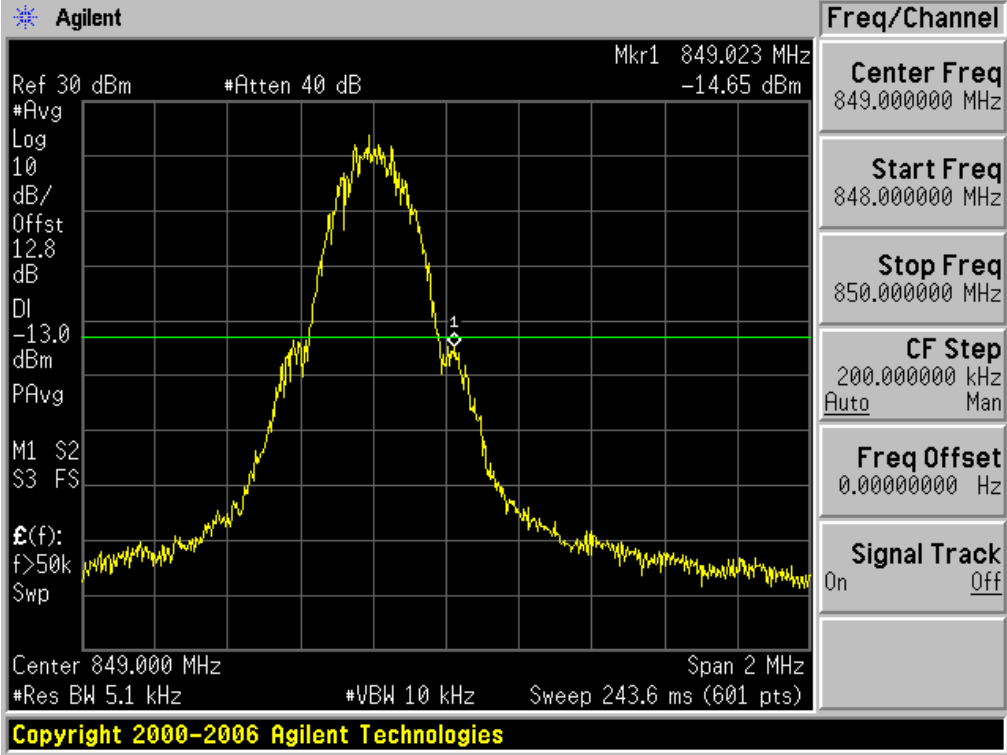


Test Mode=GSM/TM2

Test Channel=LCH



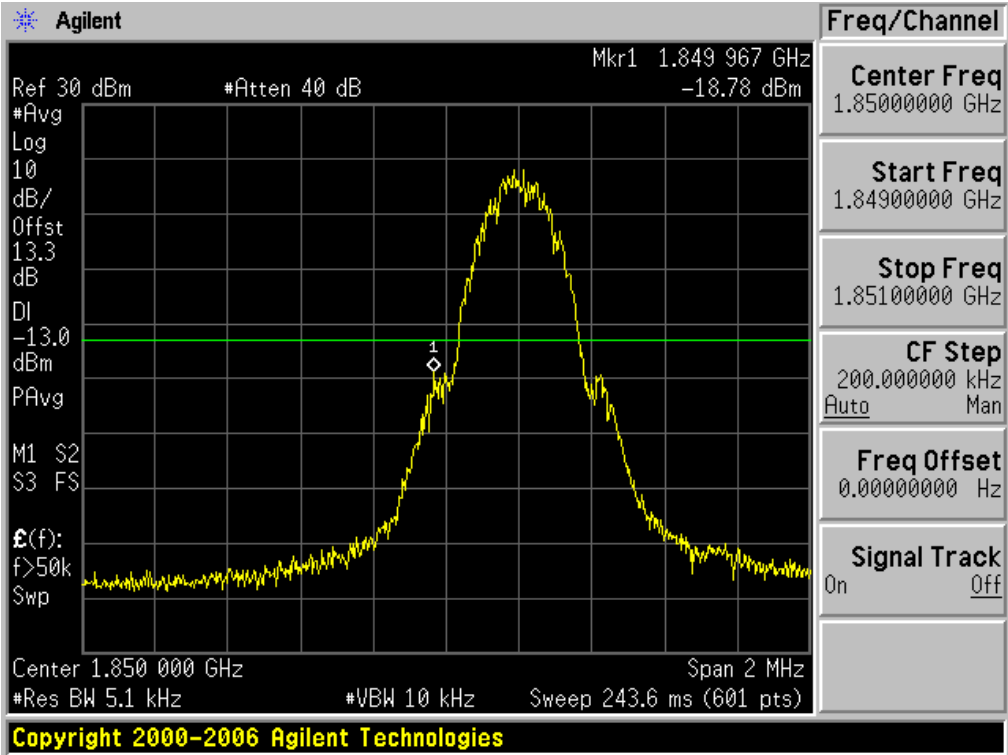
Test Channel=HCH



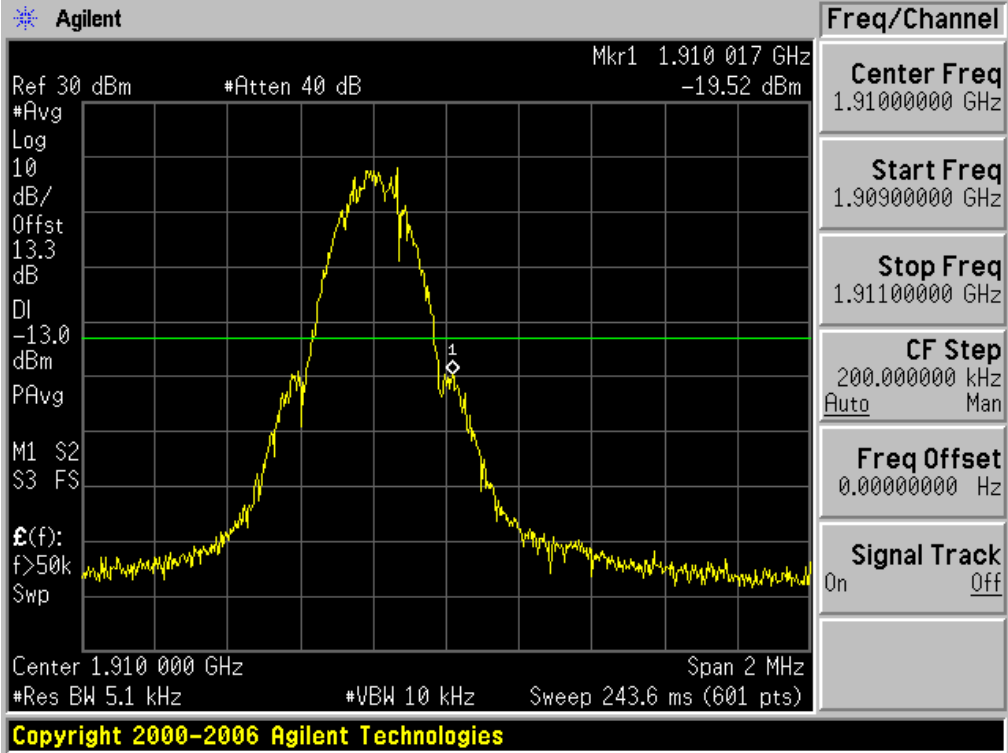
Test Band=GSM1900

Test Mode=GSM/TM1

Test Channel=LCH

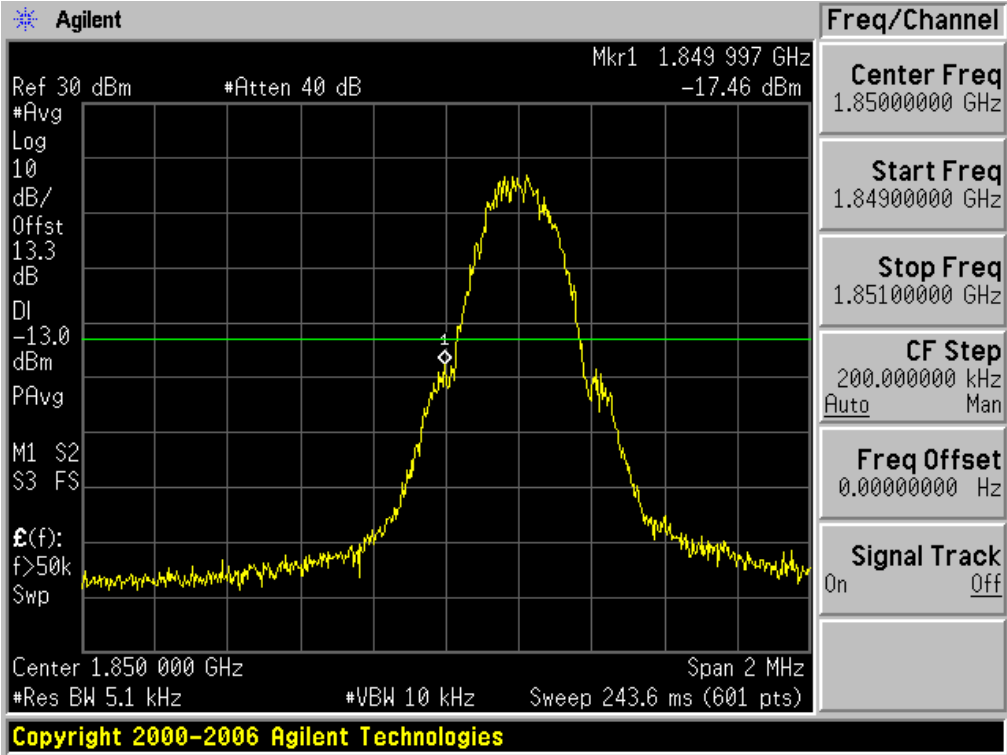


Test Channel=HCH

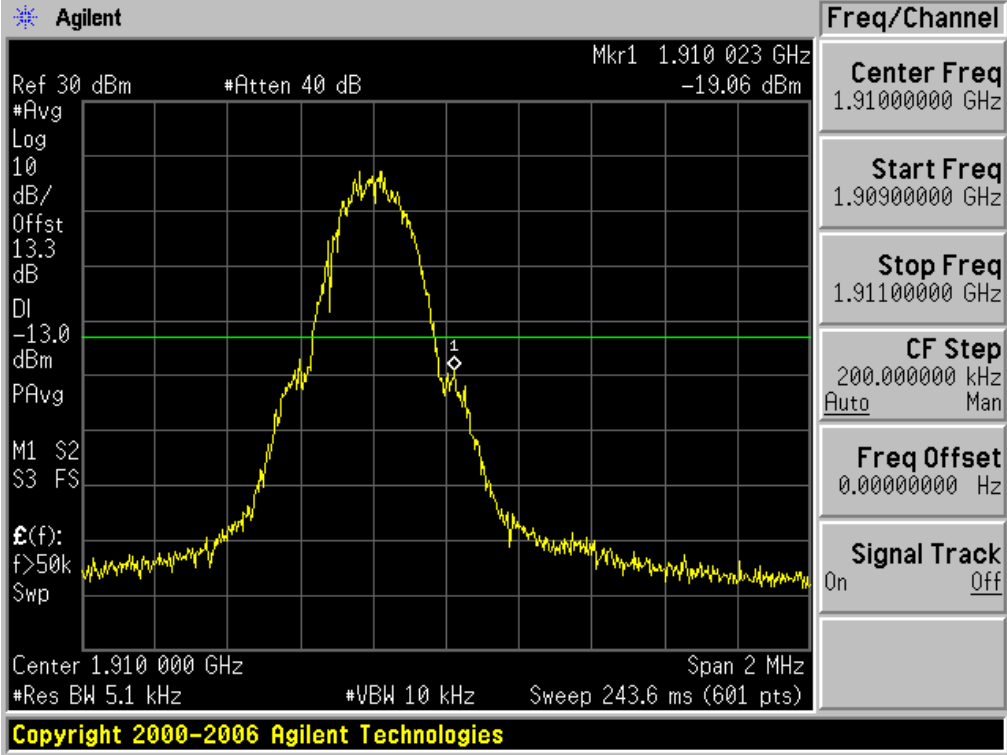


Test Mode=GSM/TM2

Test Channel=LCH

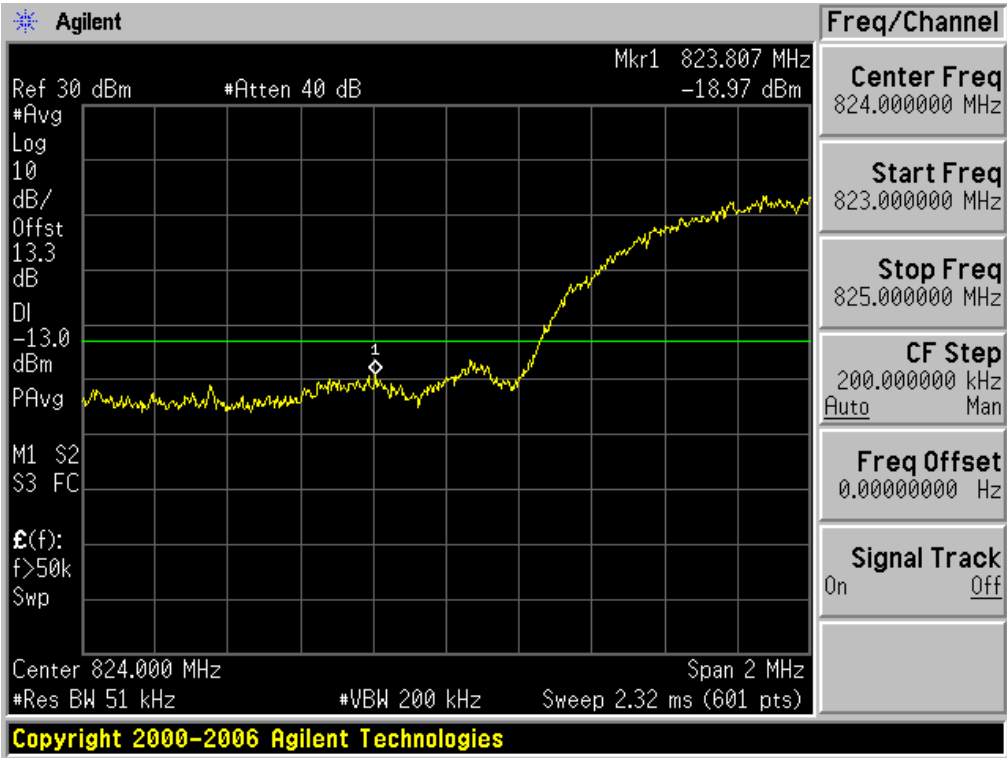


Test Channel=HCH

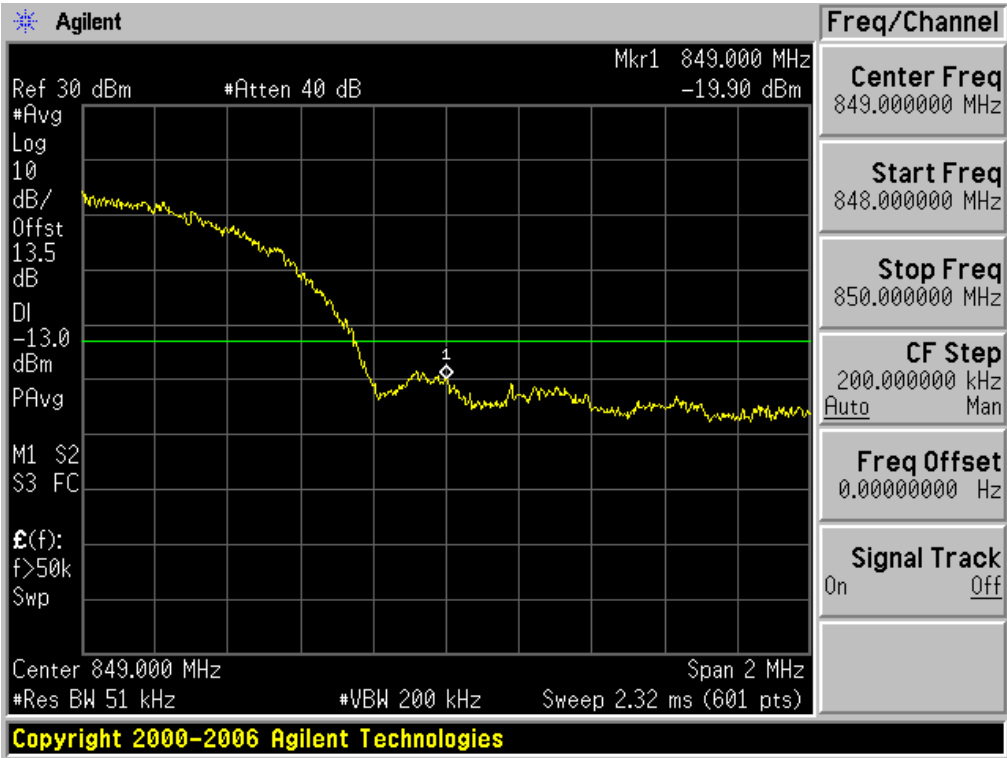




For WCDMA  
Test Band=WCDMA850  
Test Mode=UMTS/TM1  
Test Channel=LCH



Test Channel=HCH



Test Band=WCDMA1700

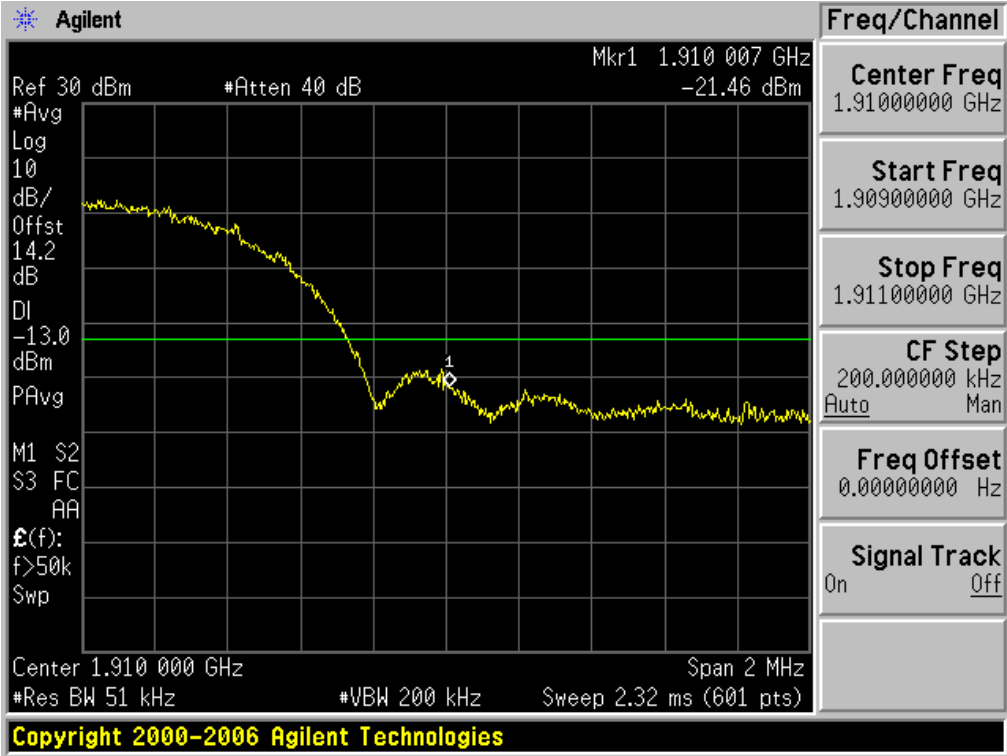
Test Band=WCDMA1900

Test Mode=UMTSTM1

Test Channel=LCH

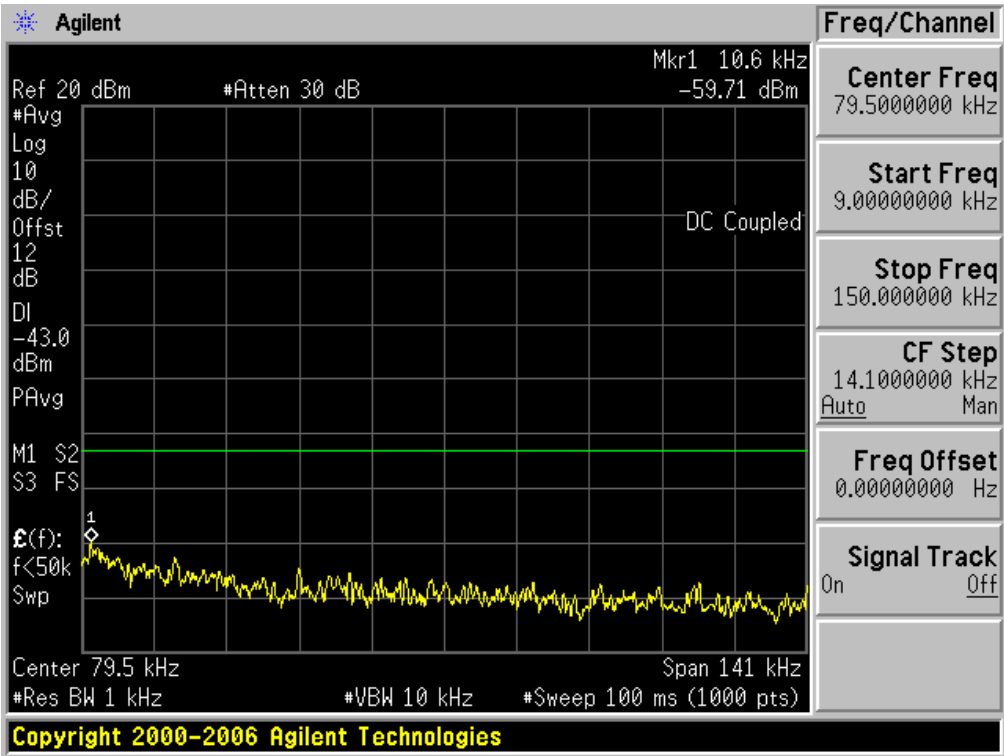


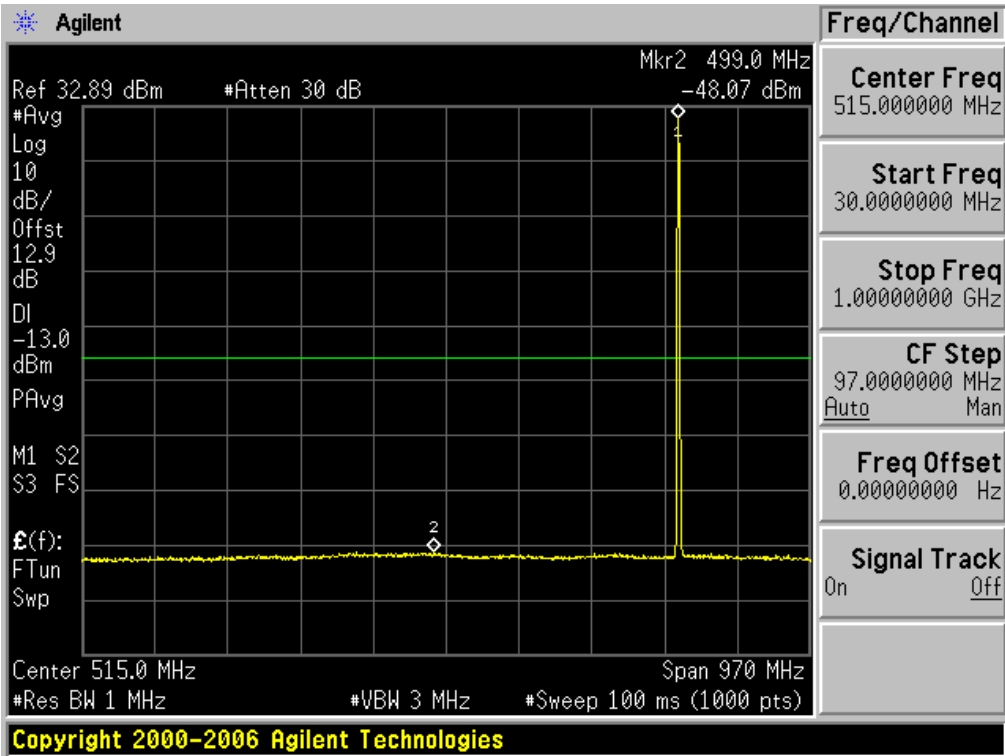
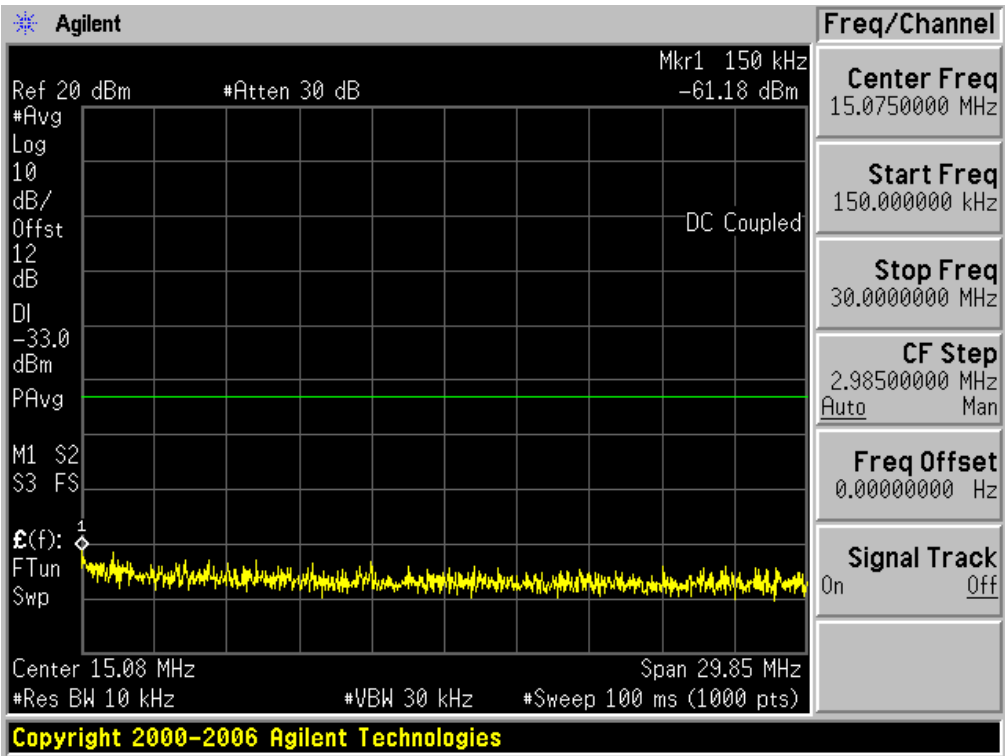
Test Channel=HCH

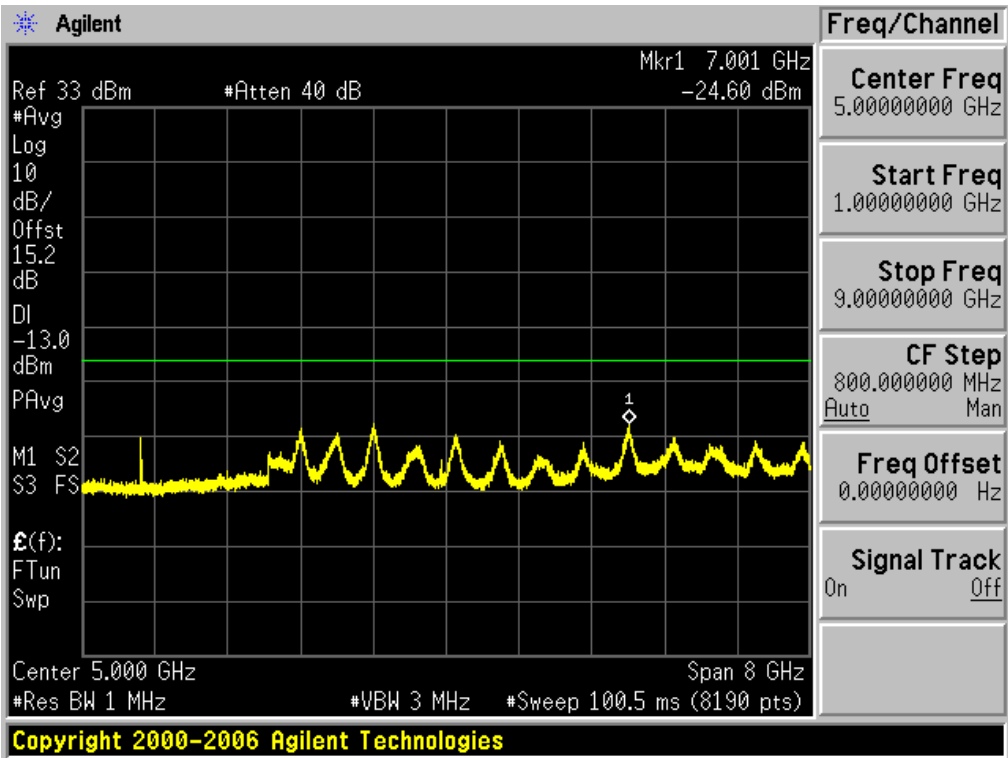


Appendix E) Spurious Emission at Antenna Terminal

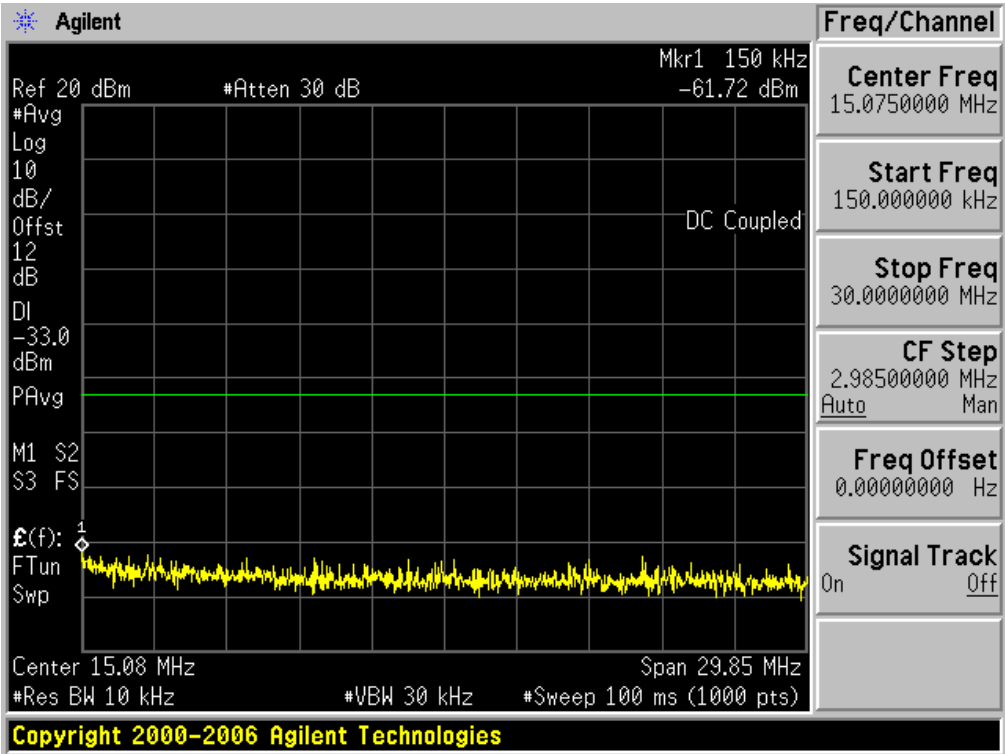
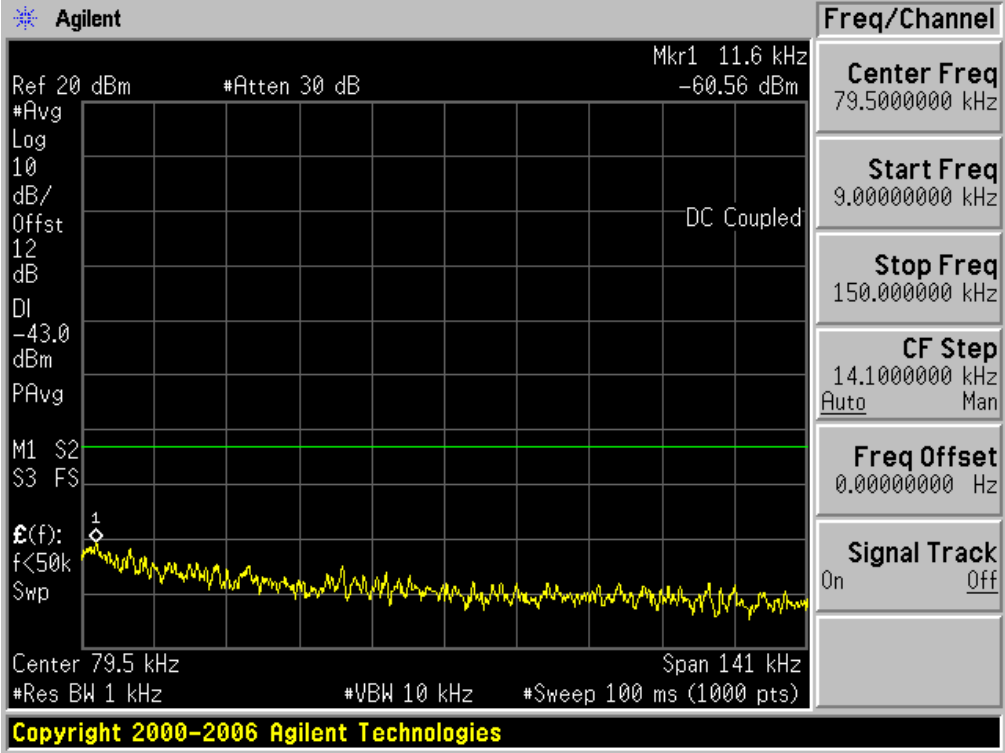
For GSM  
Test Band=GSM850  
Test Mode=GSM/TM1  
Test Channel=LCH

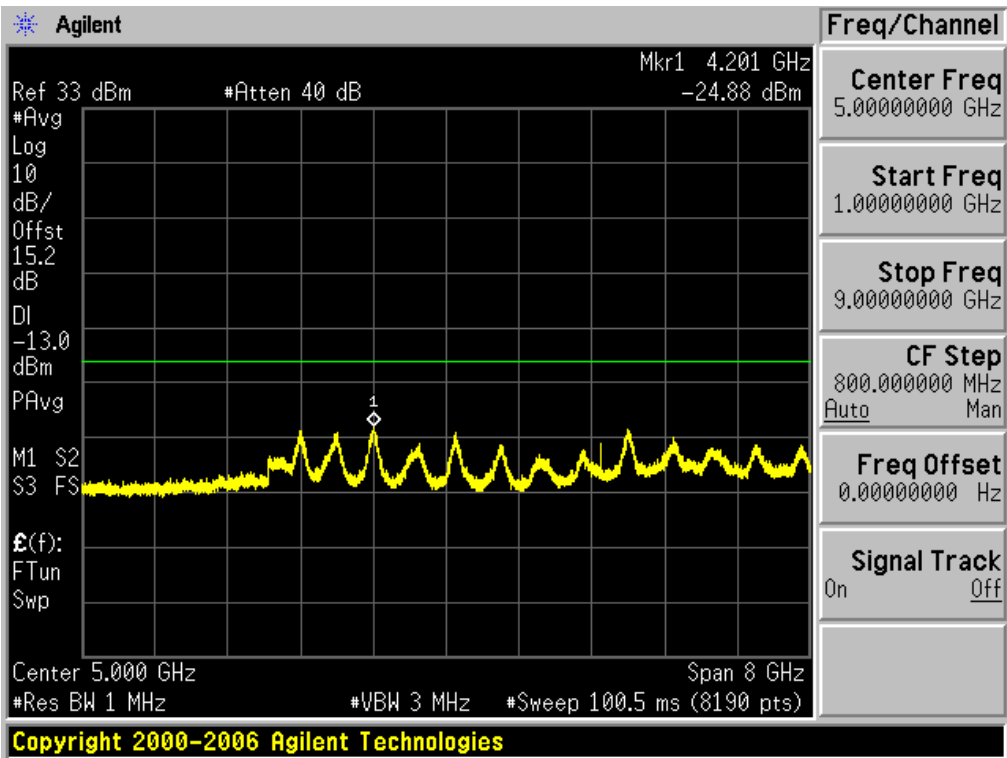
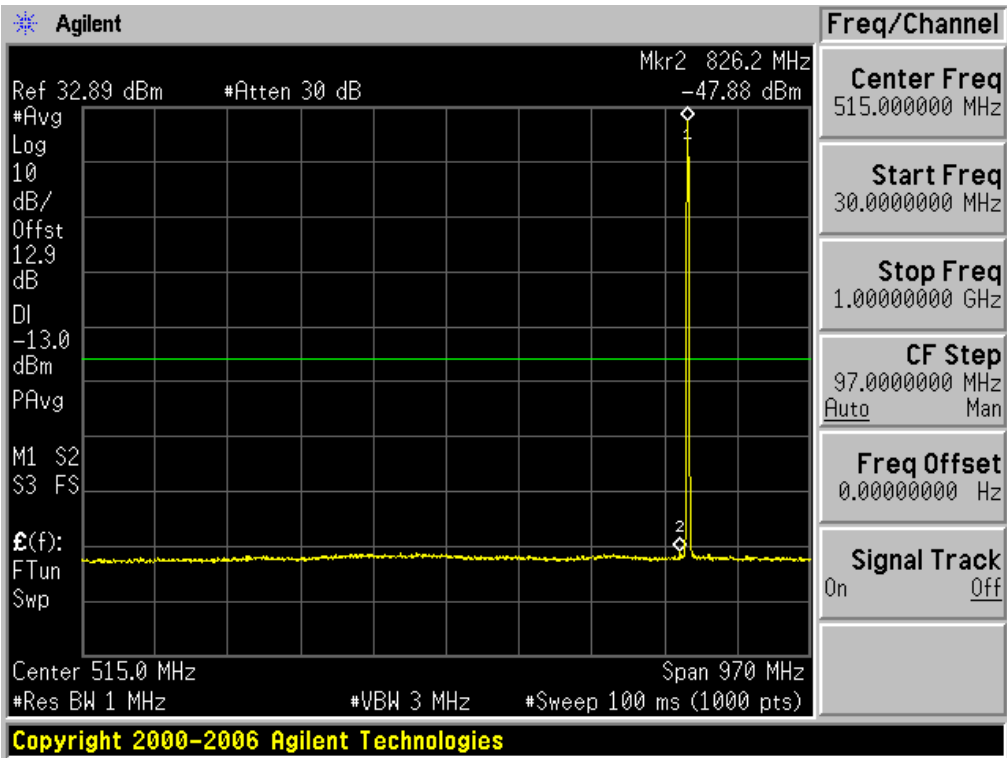




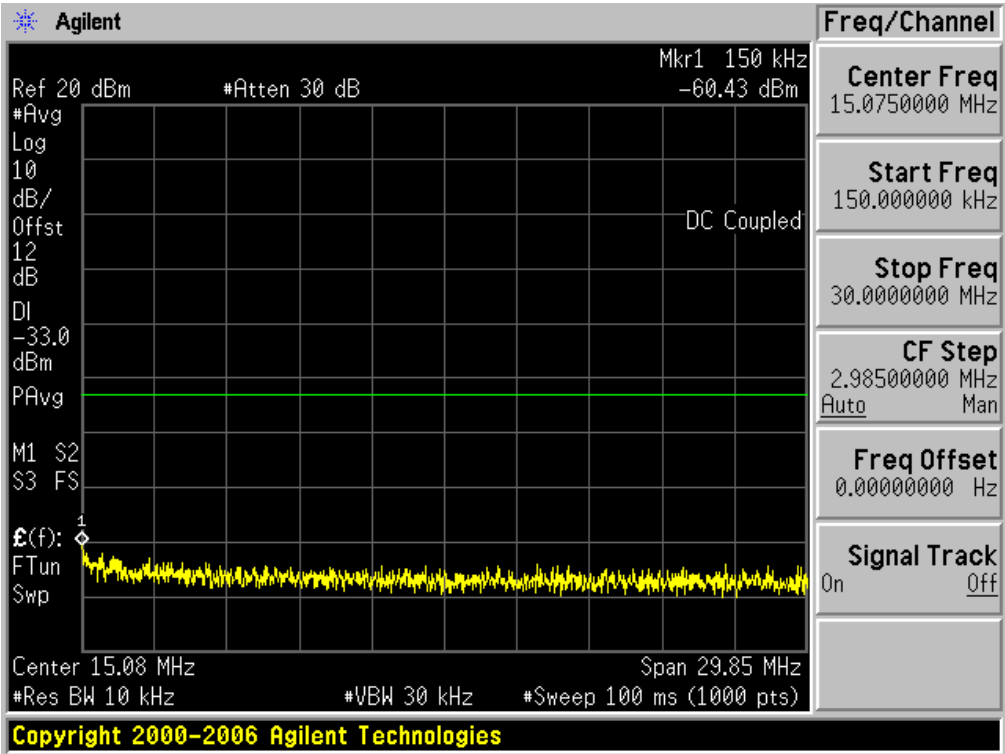
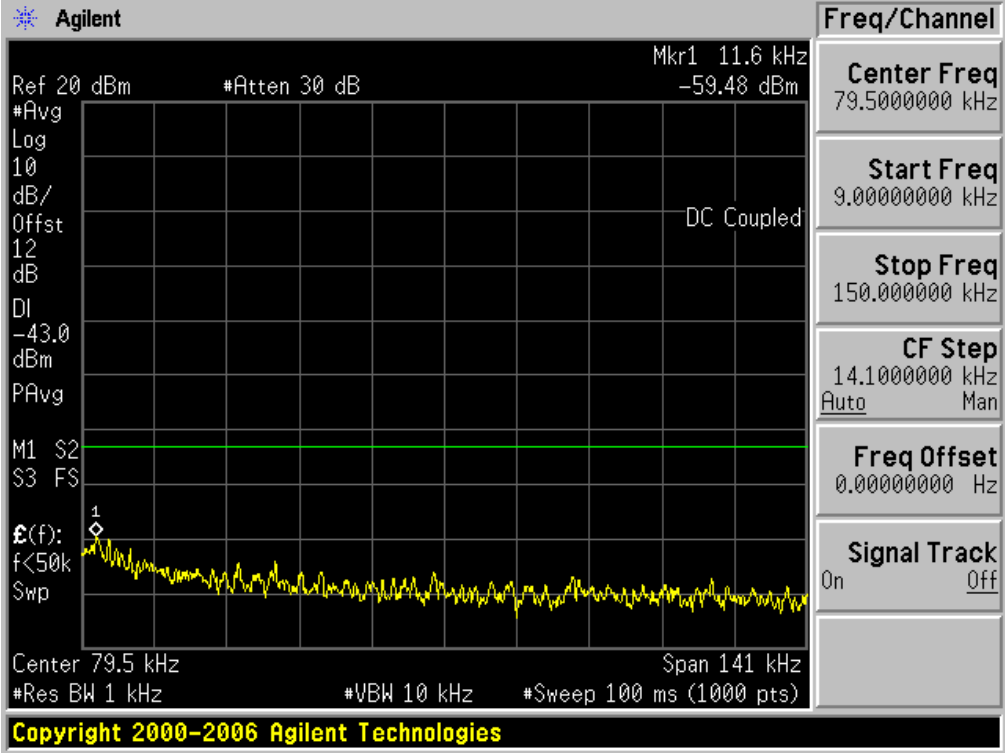


Test Channel=MCH

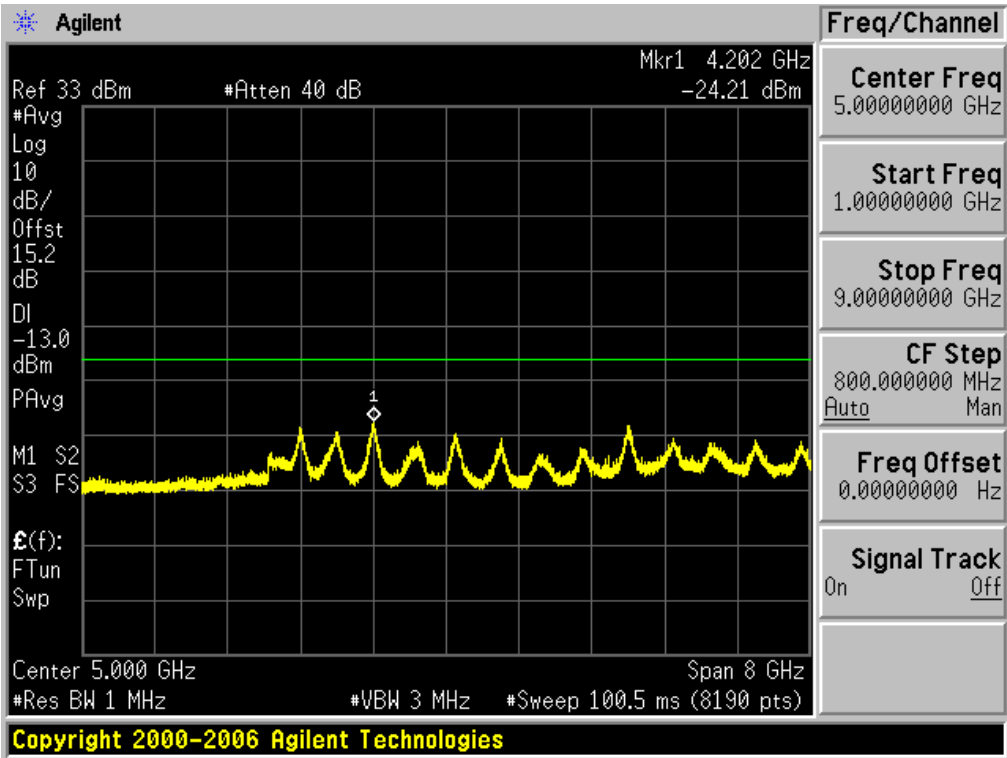
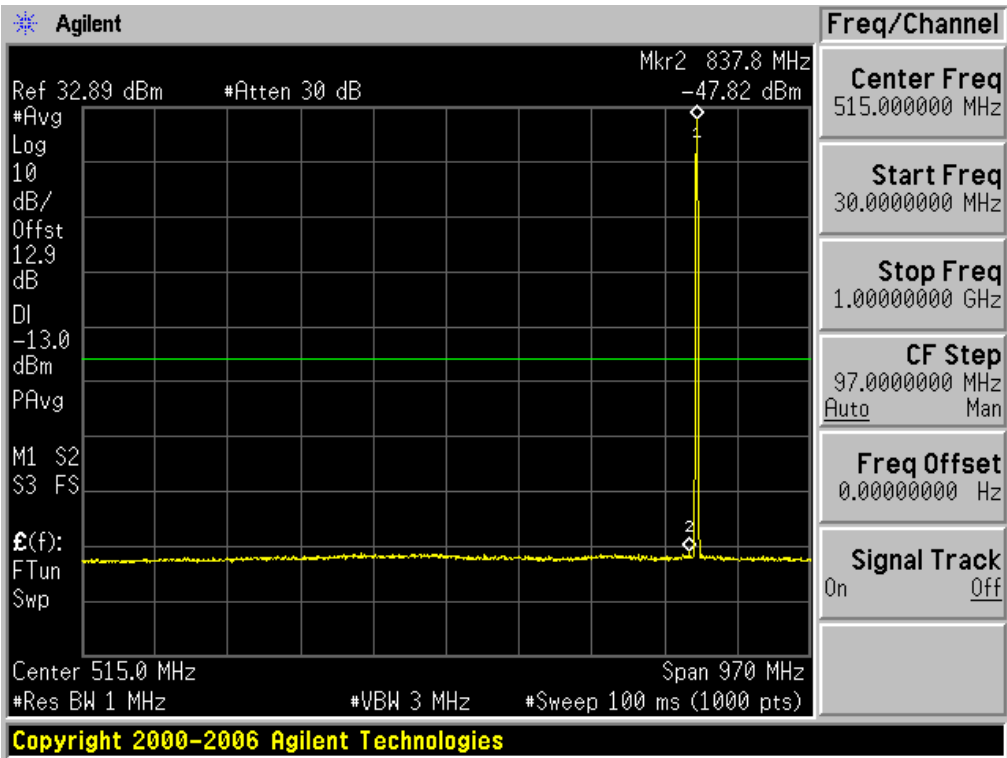




Test Channel=HCH

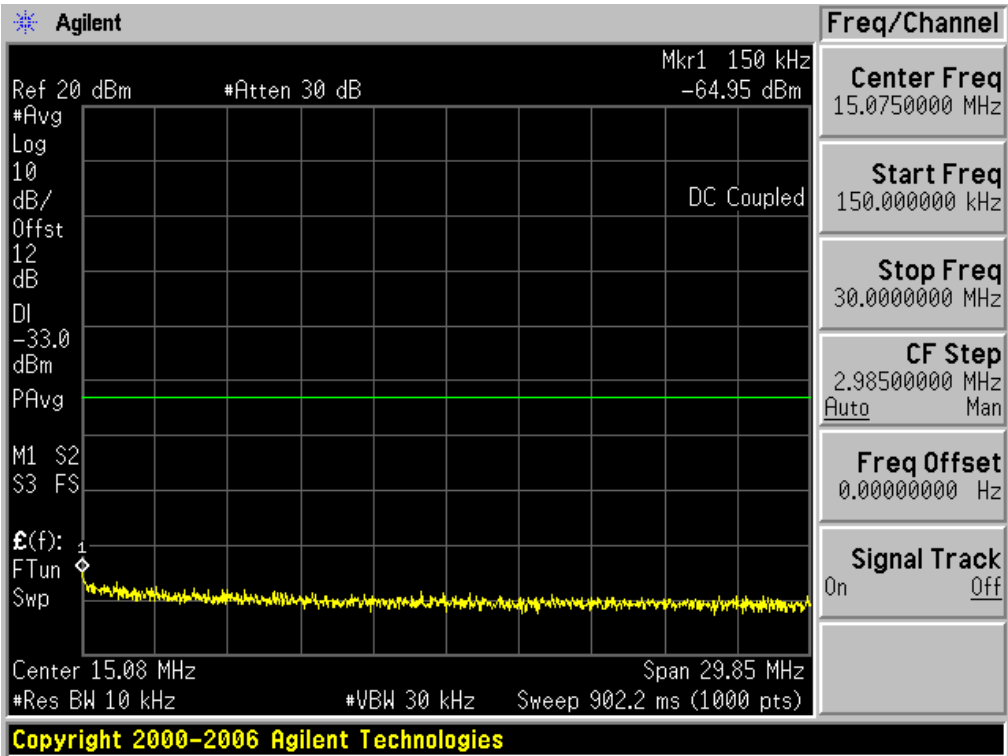
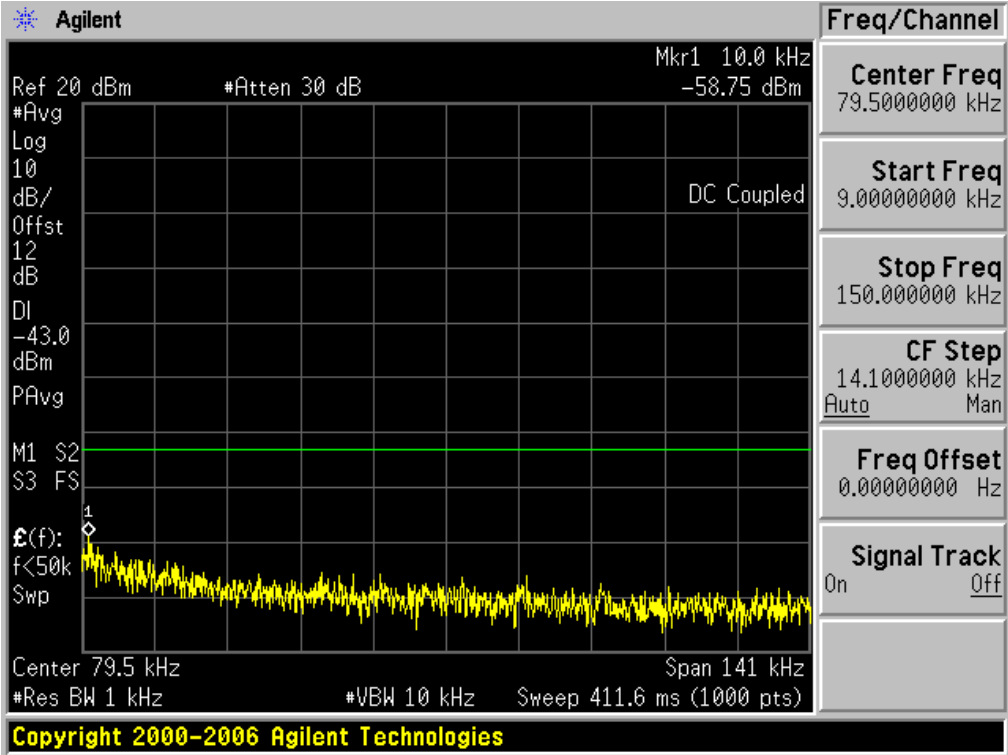


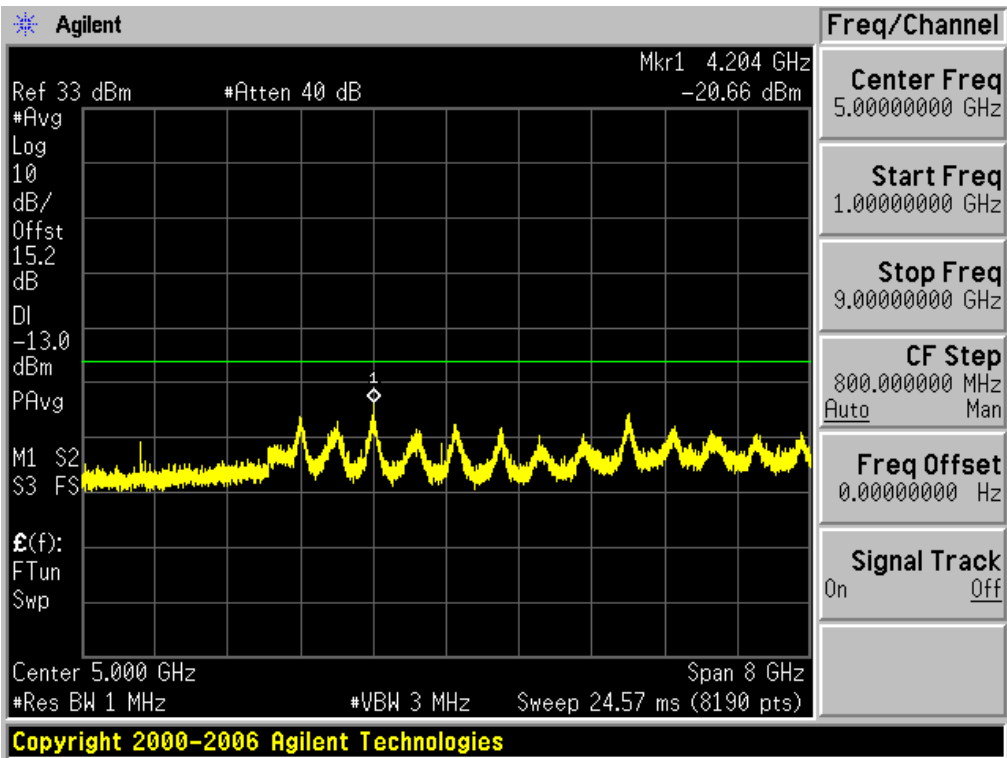
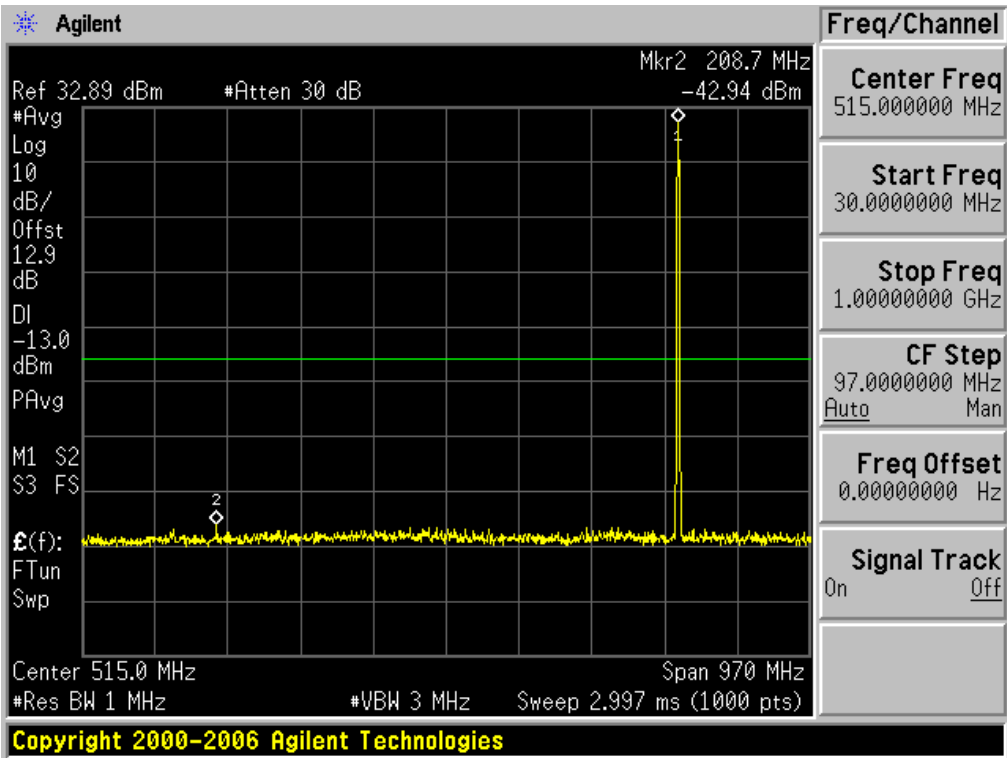




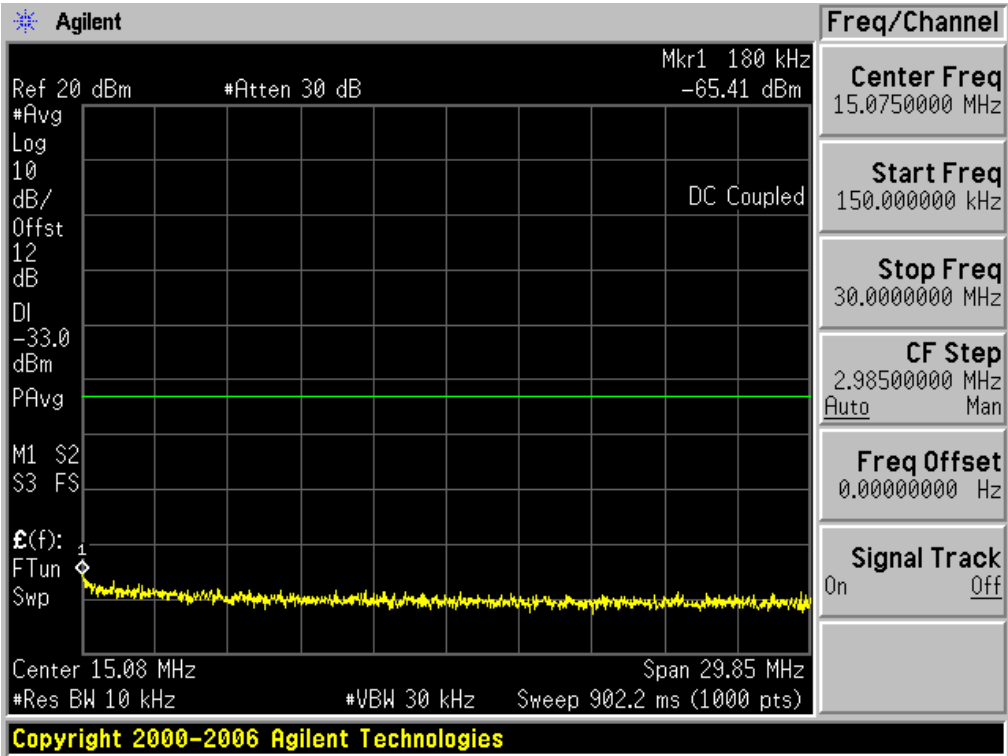
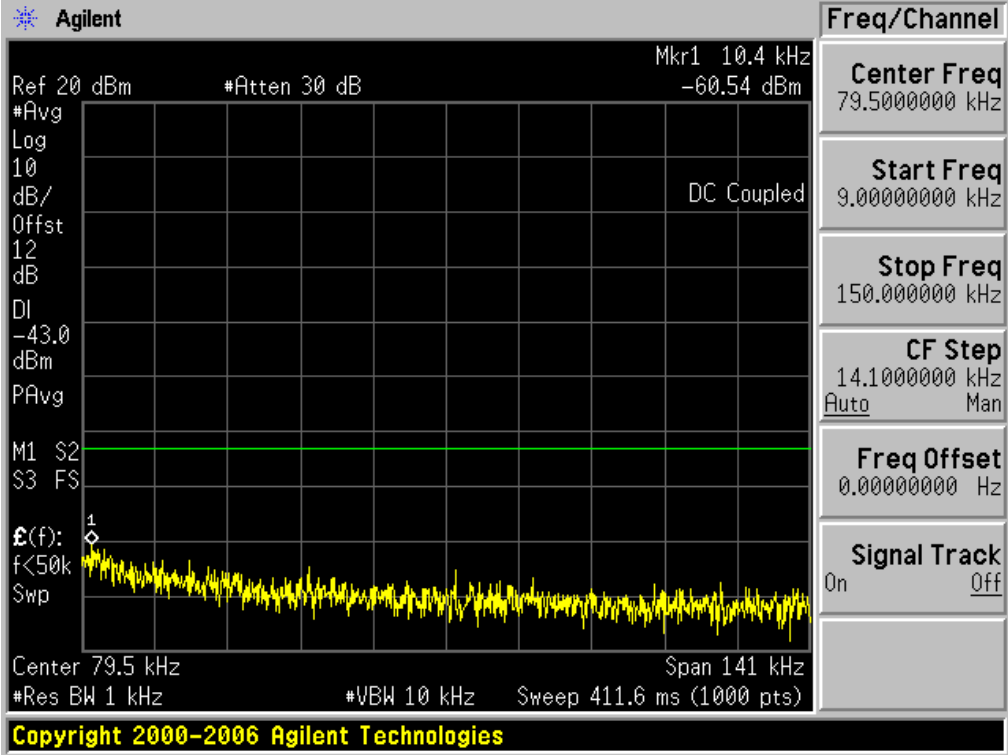
Test Mode=GSM/TM2

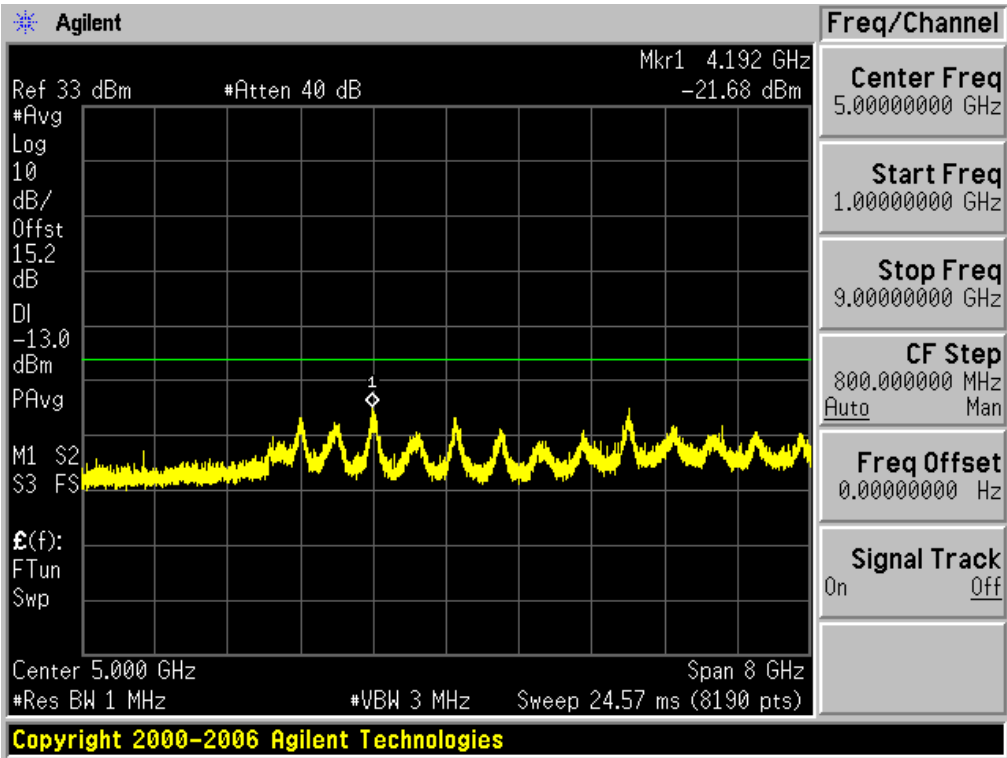
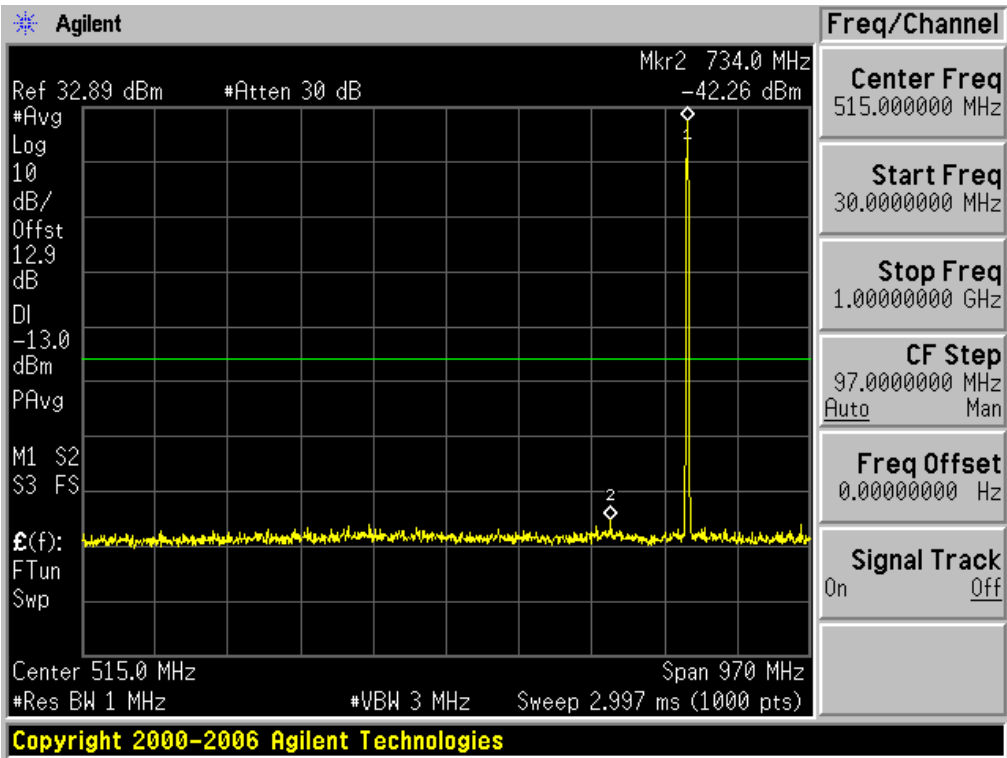
Test Channel=LCH



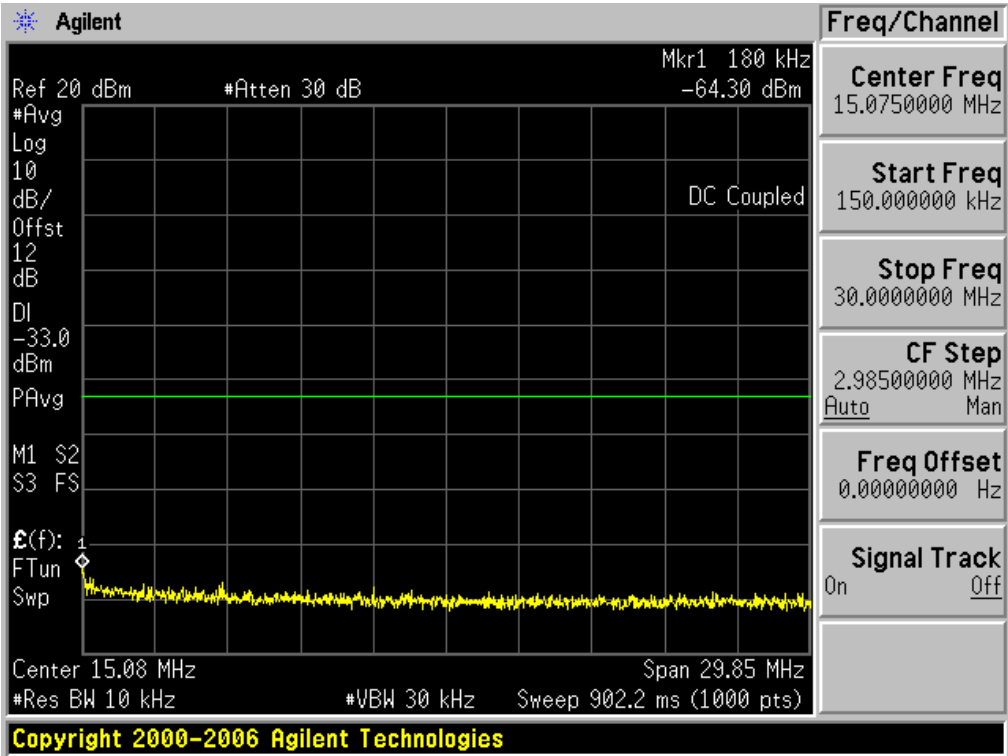
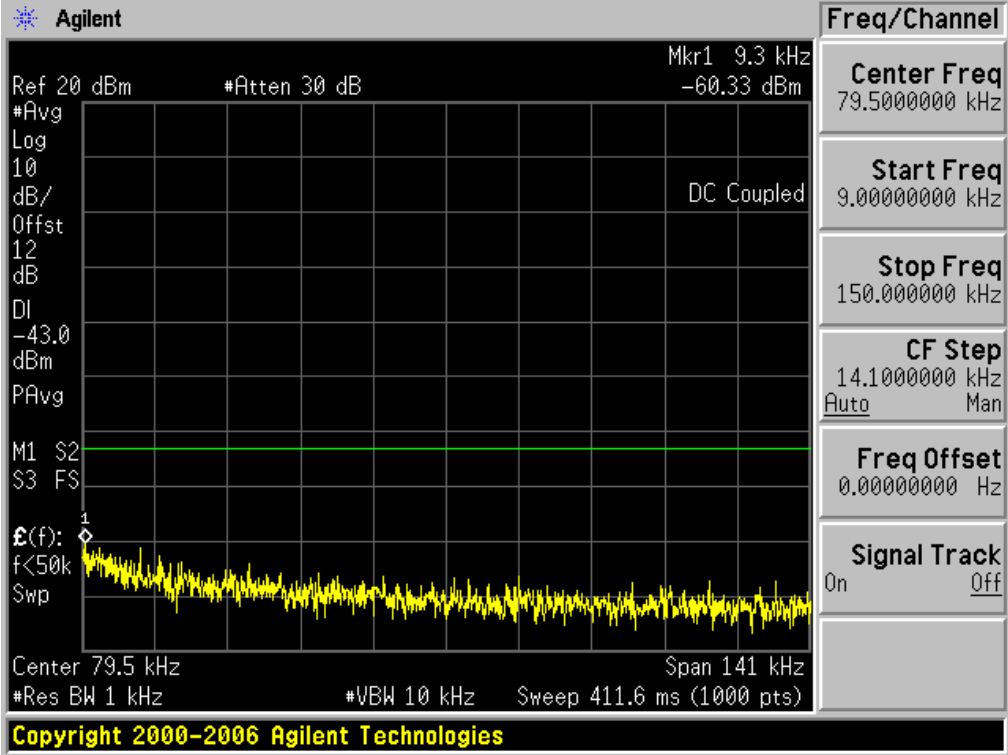


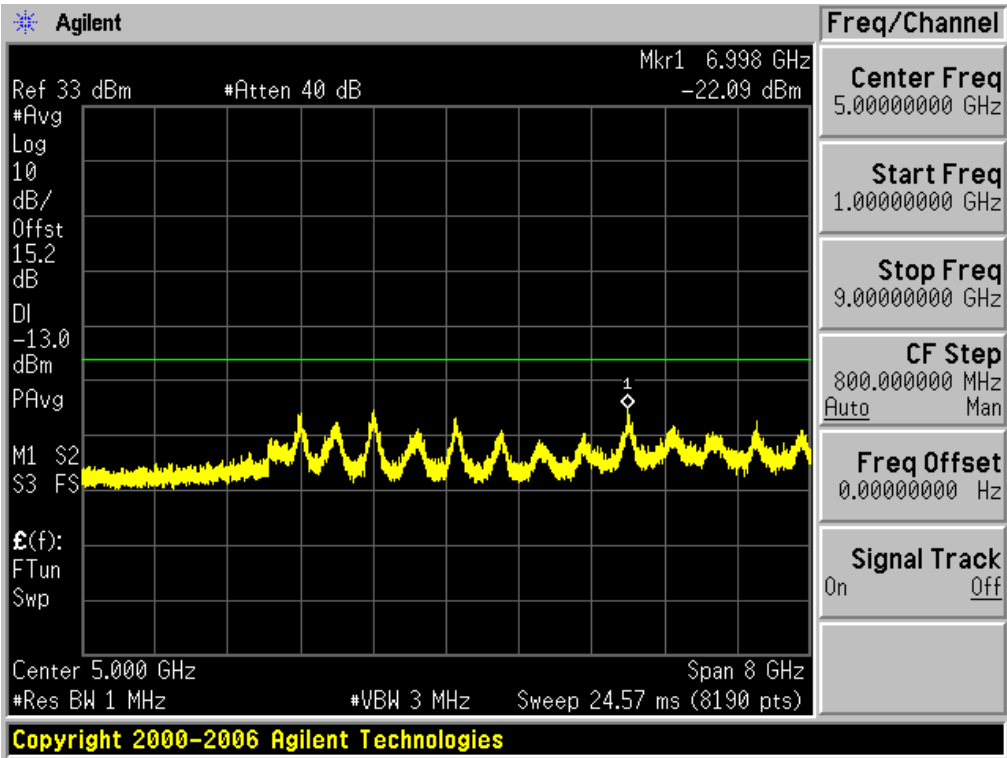
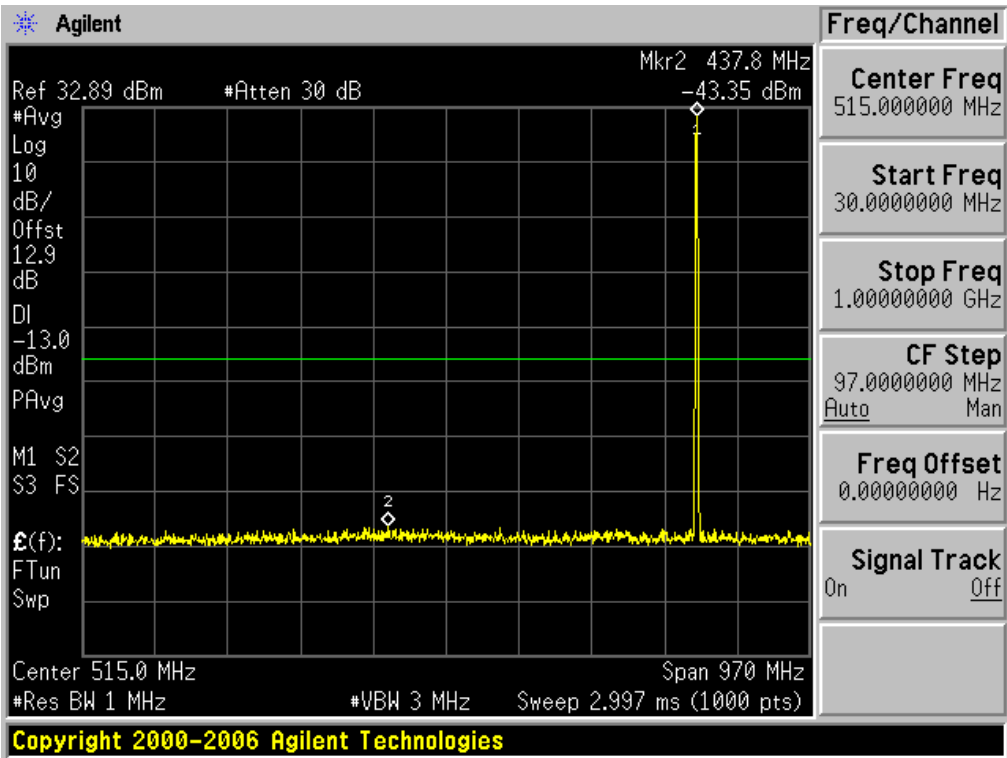
Test Channel=MCH





Test Channel=HCH

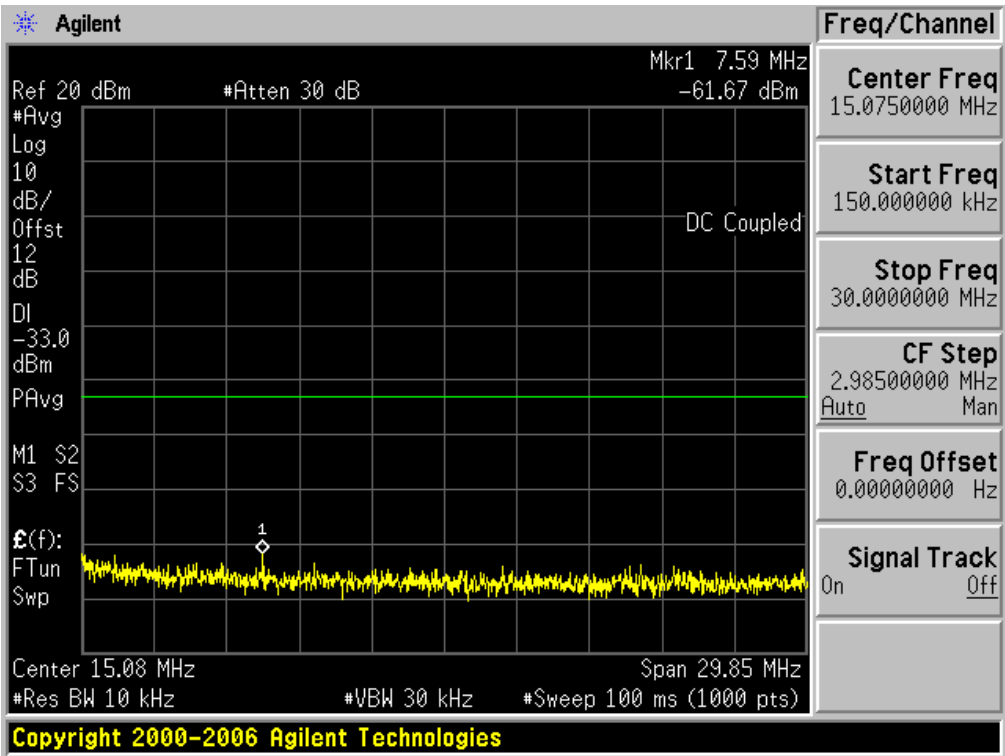
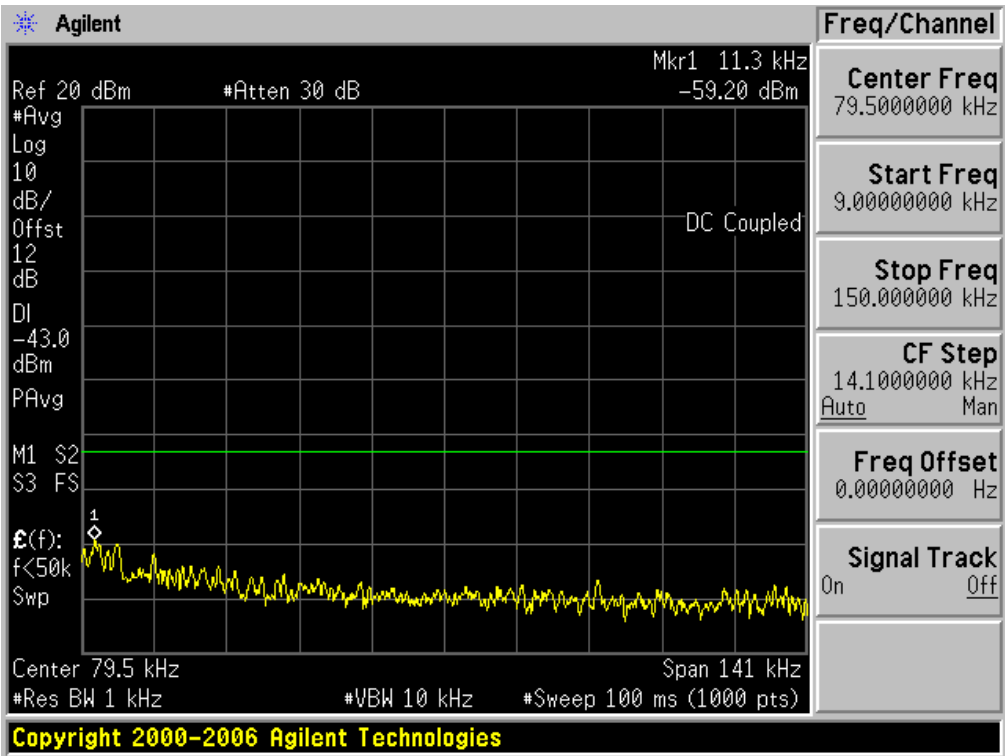




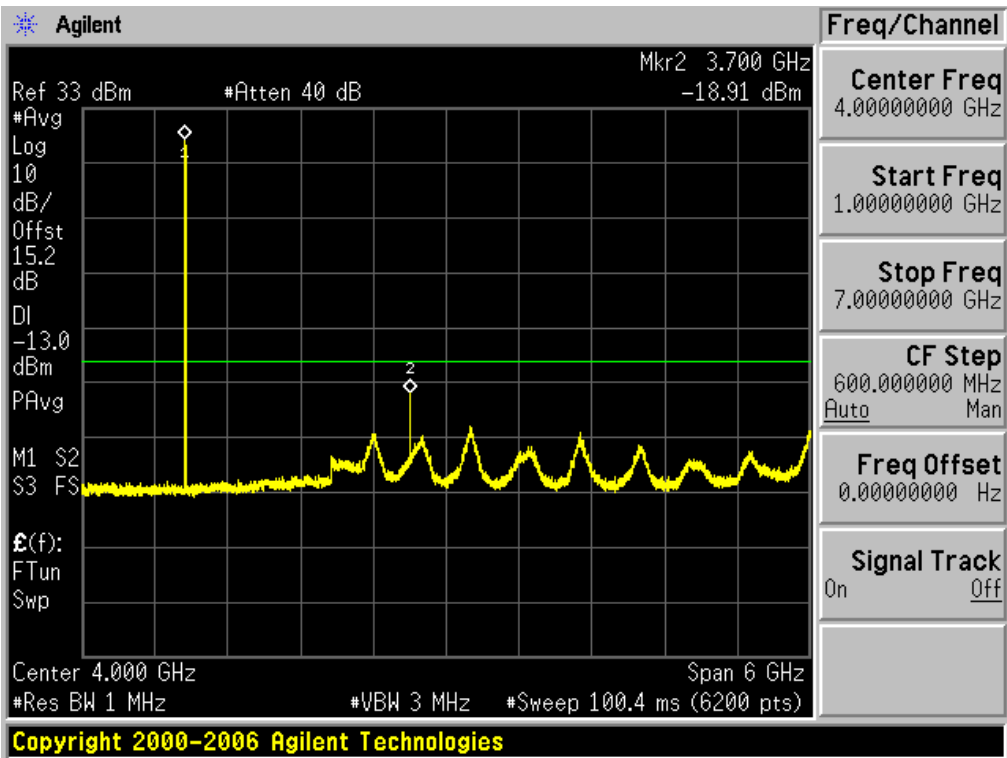
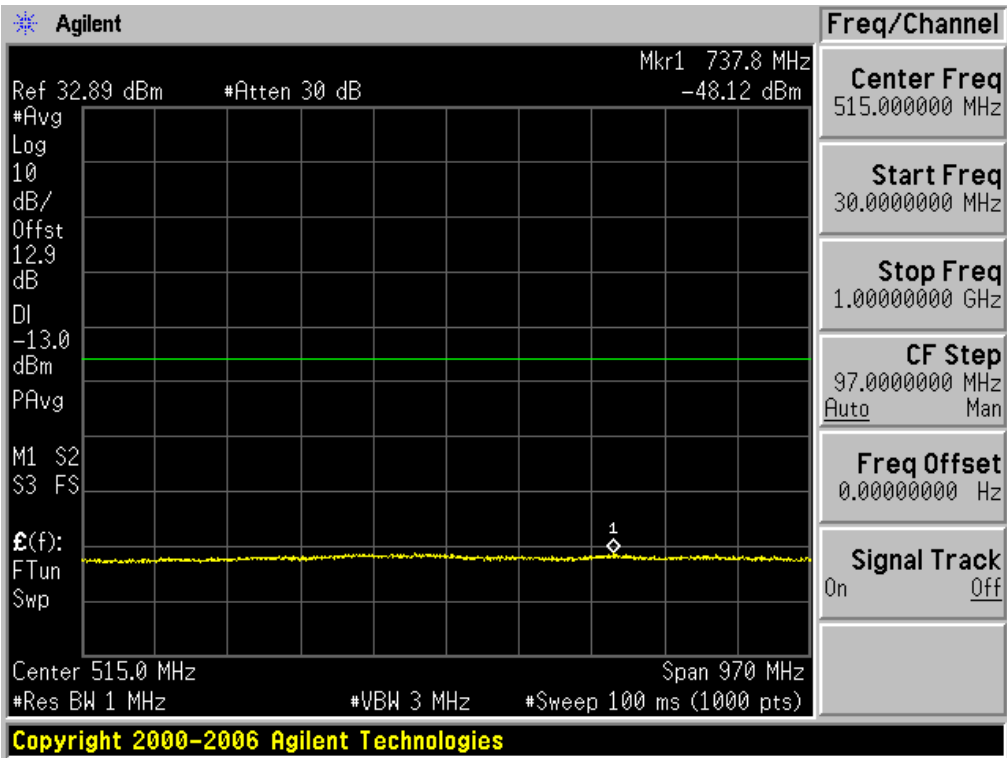
Test Band=GSM1900

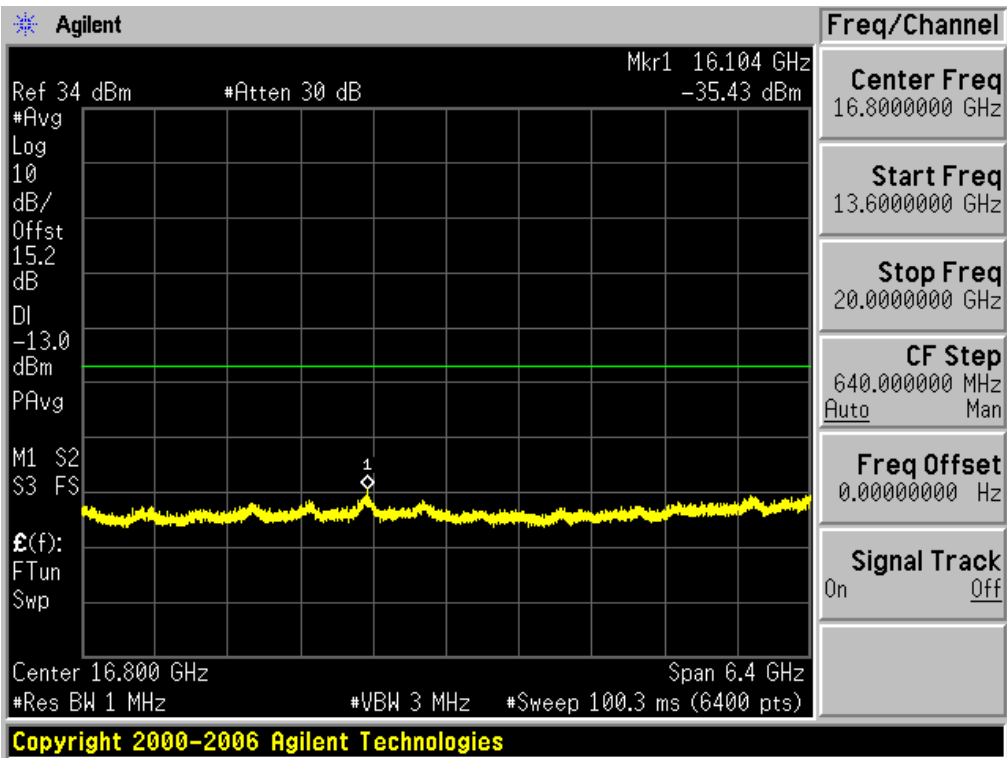
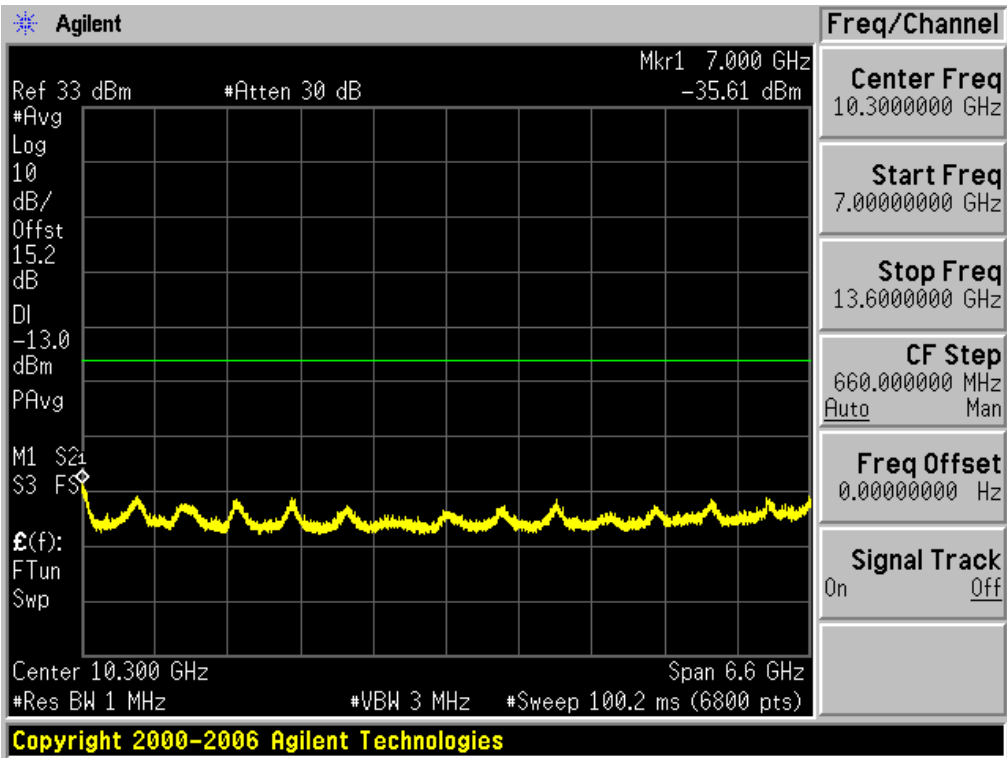
Test Mode=GSM/TM1

Test Channel=LCH

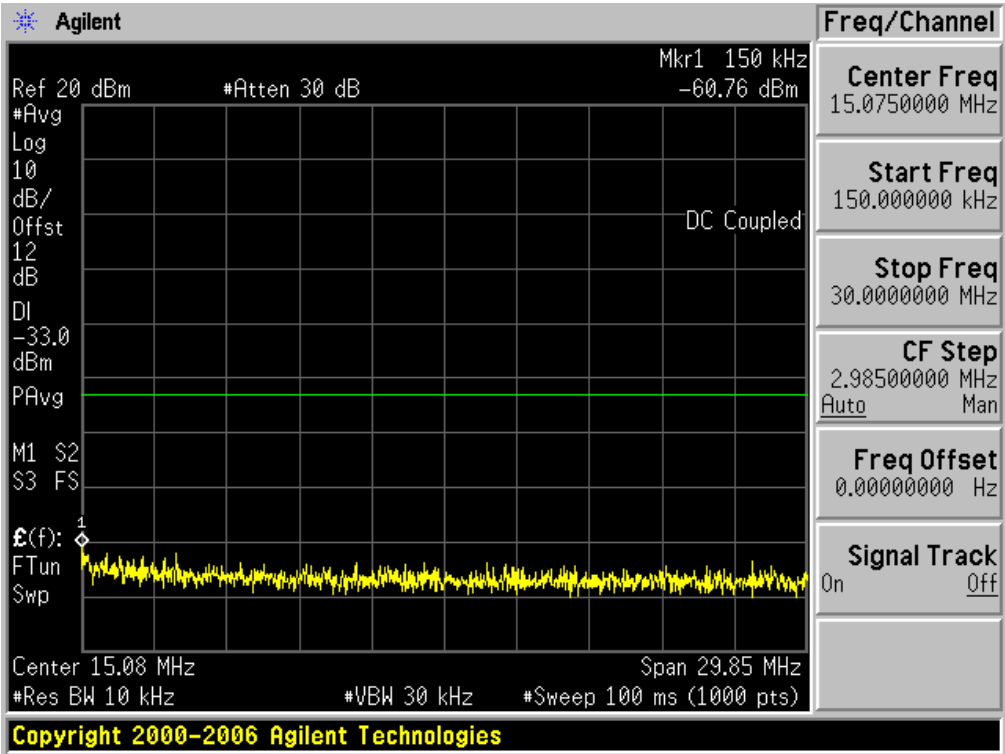
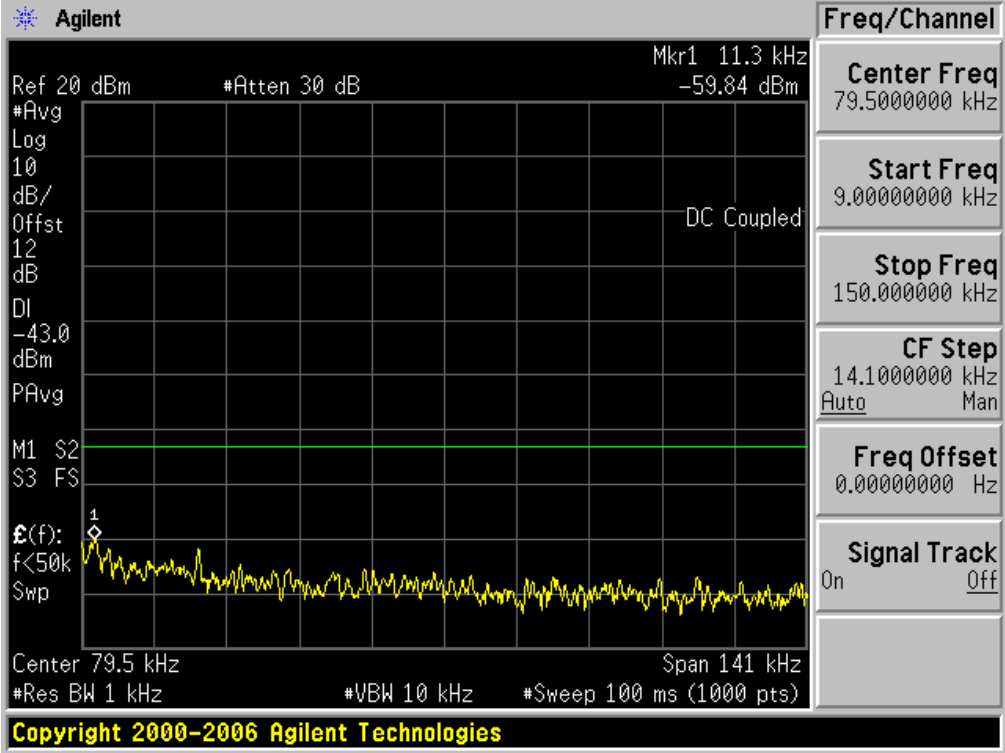


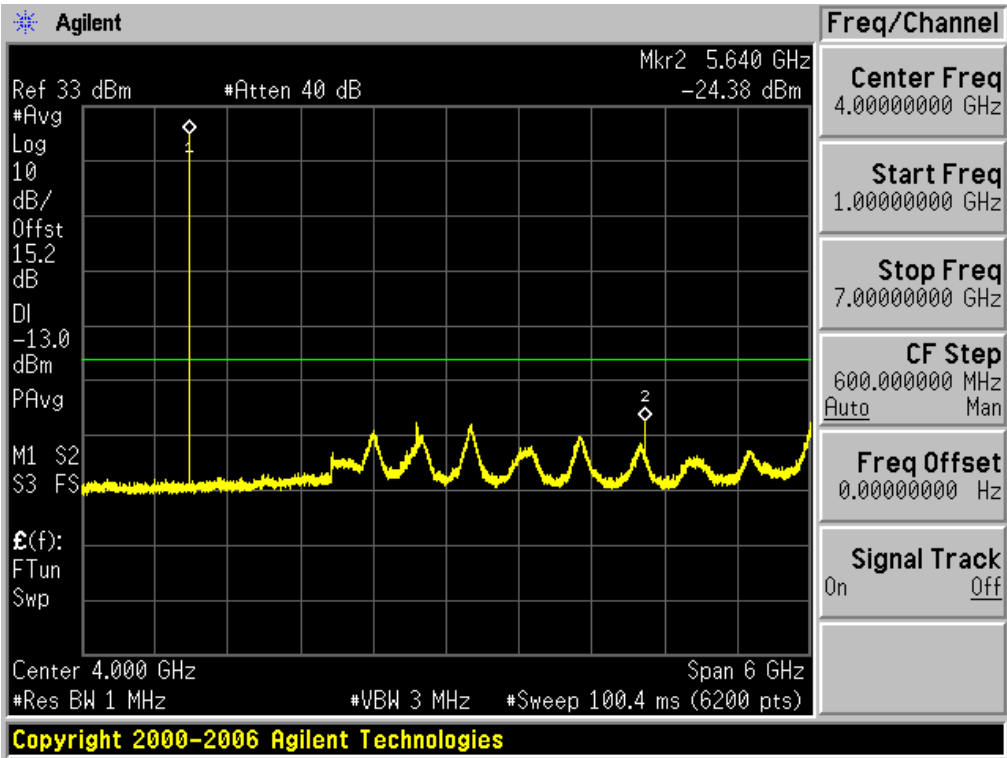
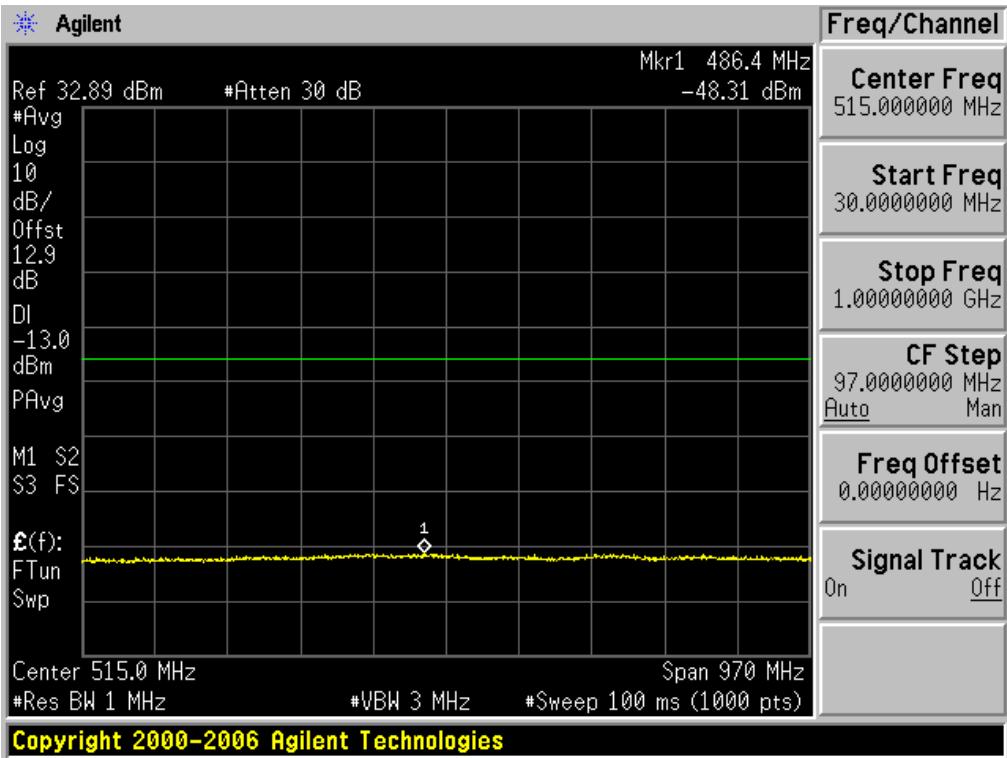


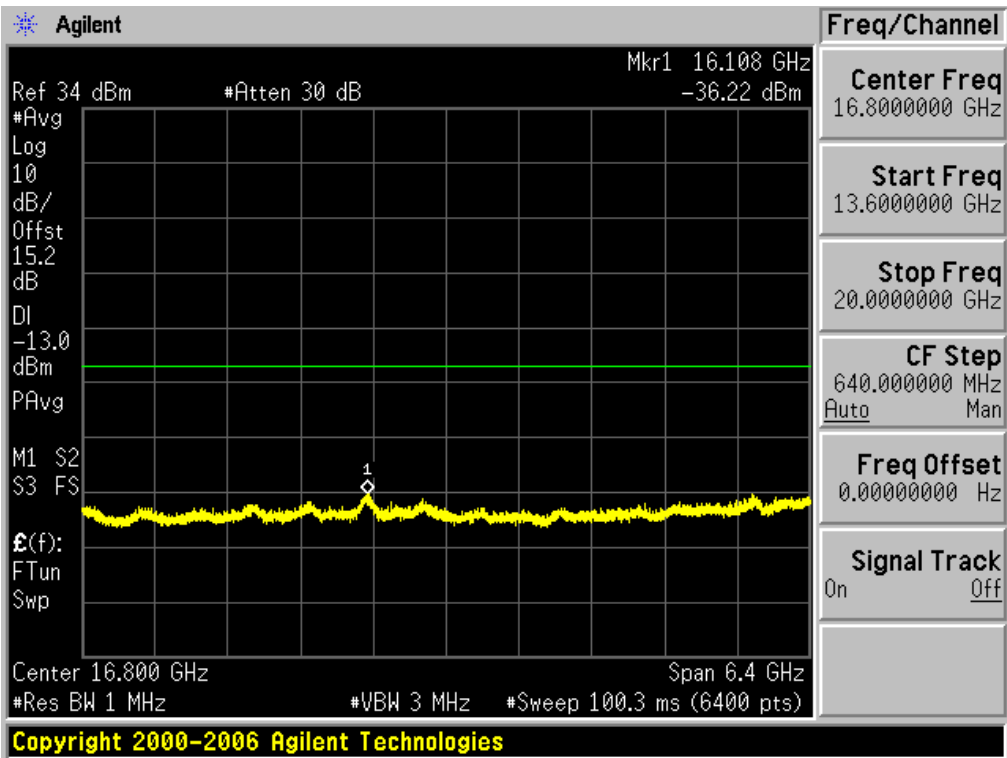
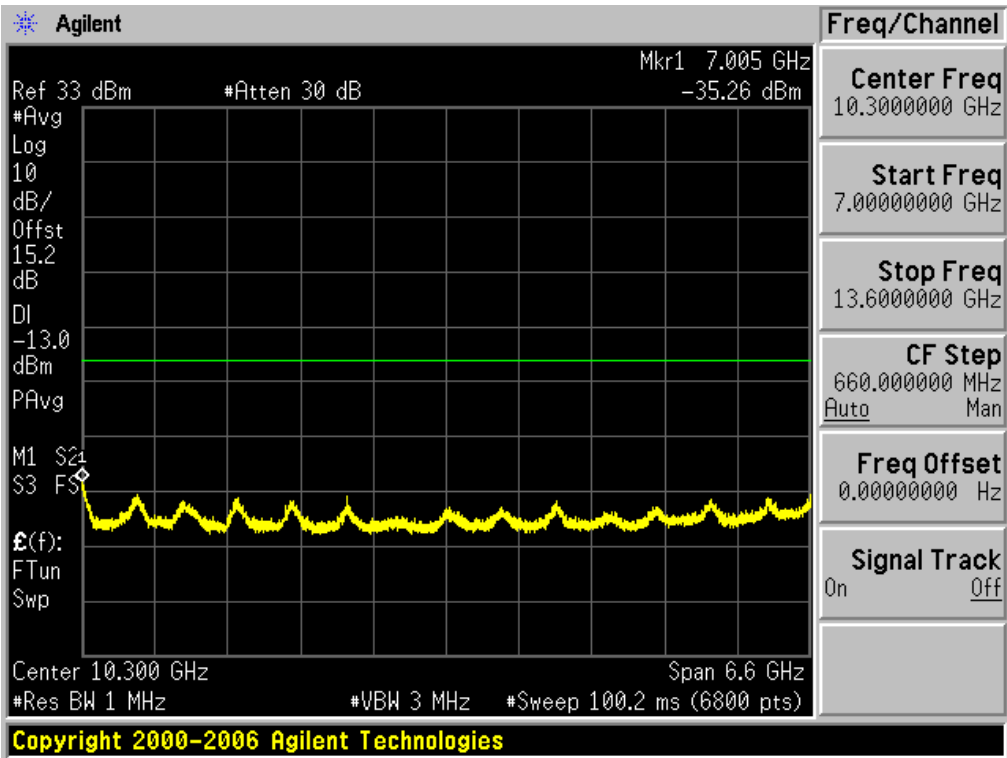




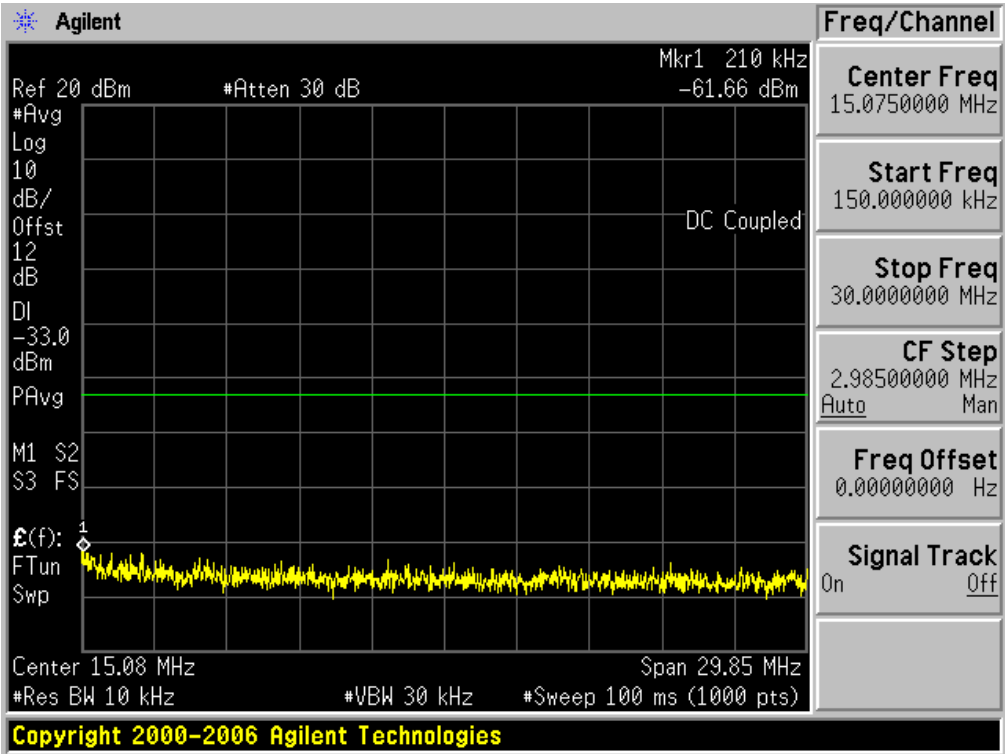
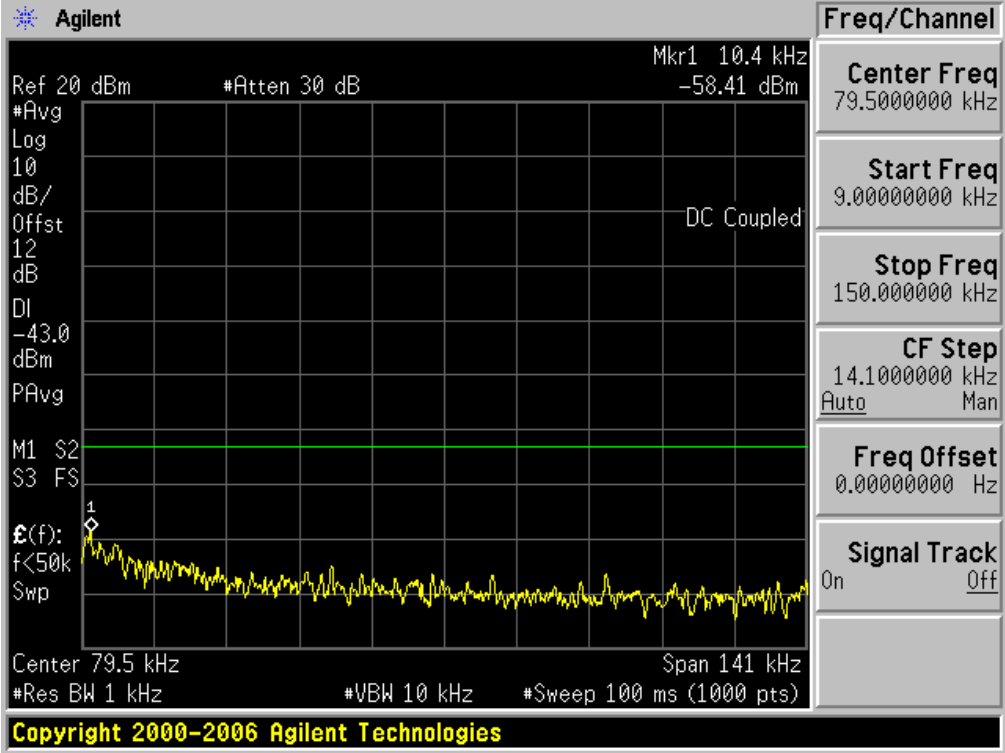
Test Channel=MCH

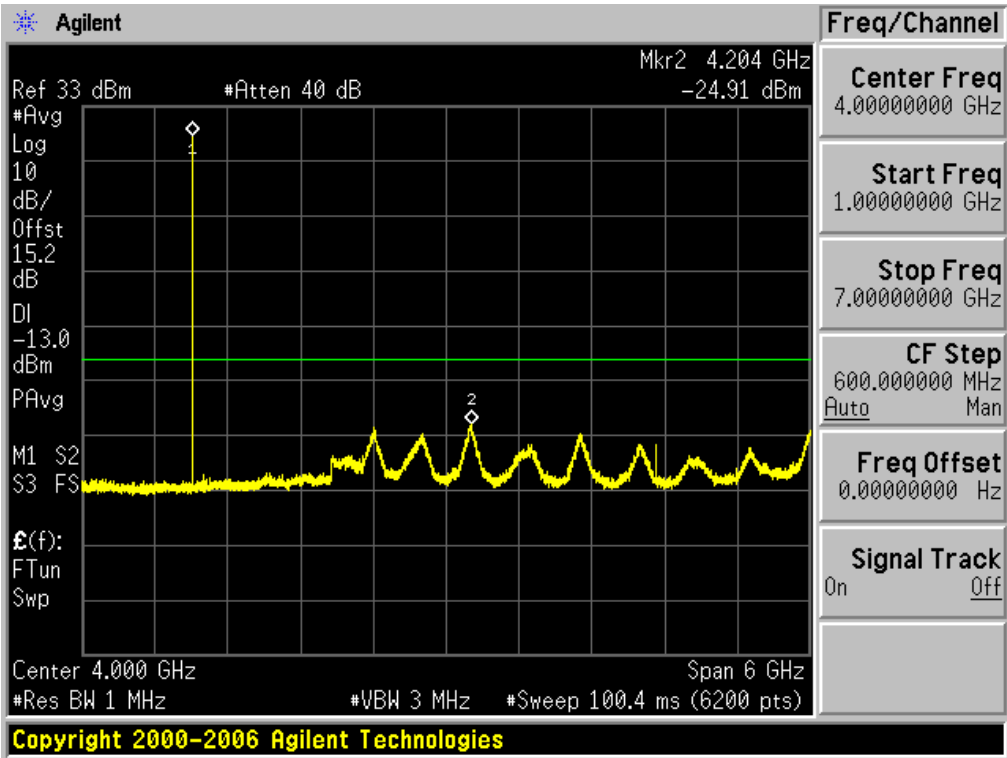
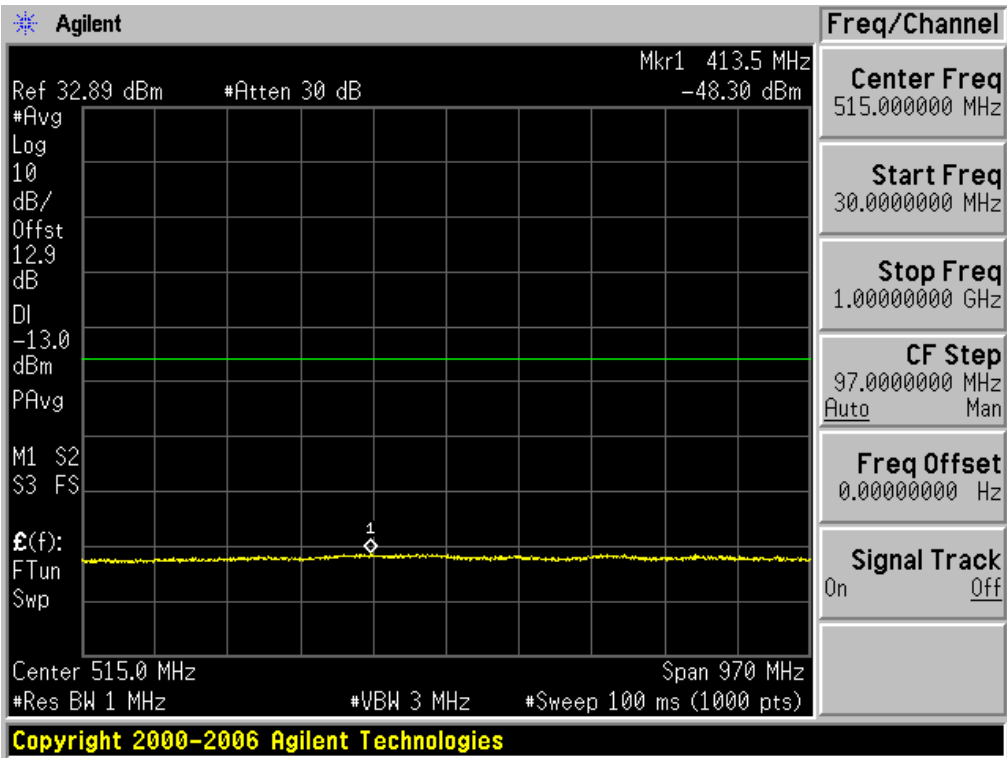


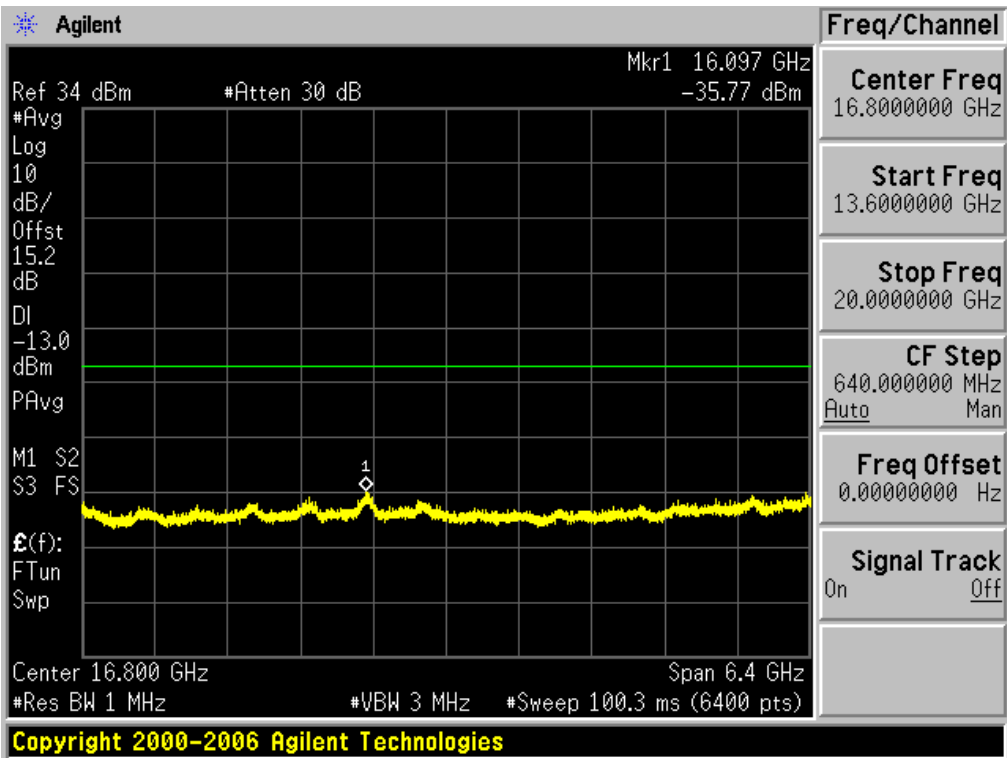
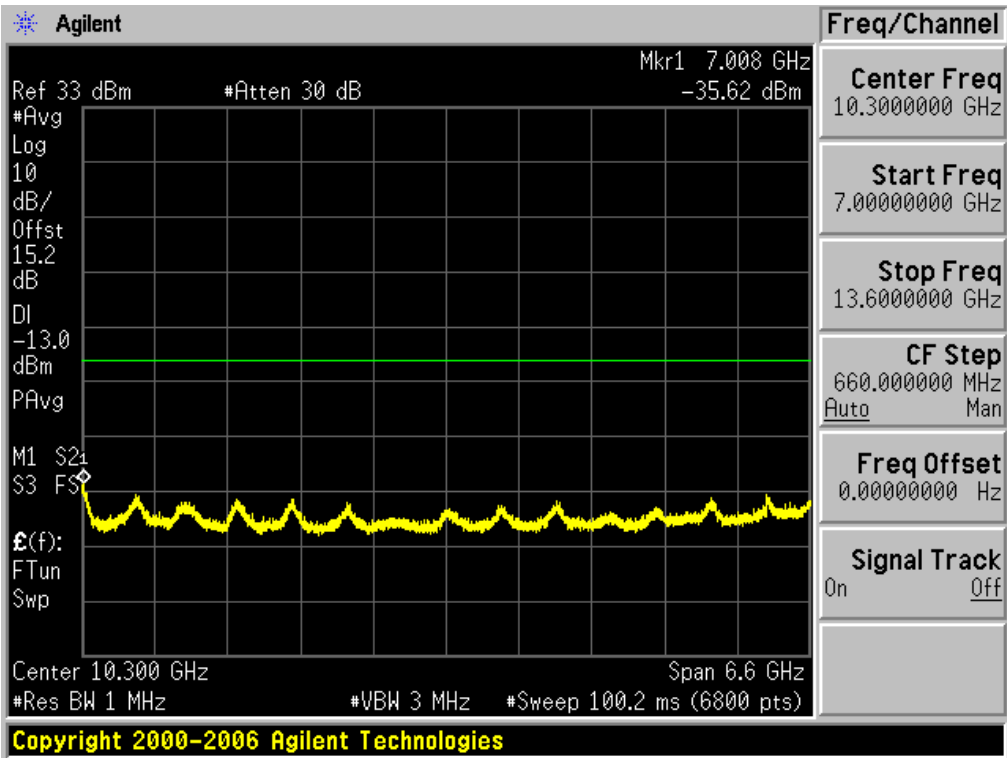




Test Channel=HCH



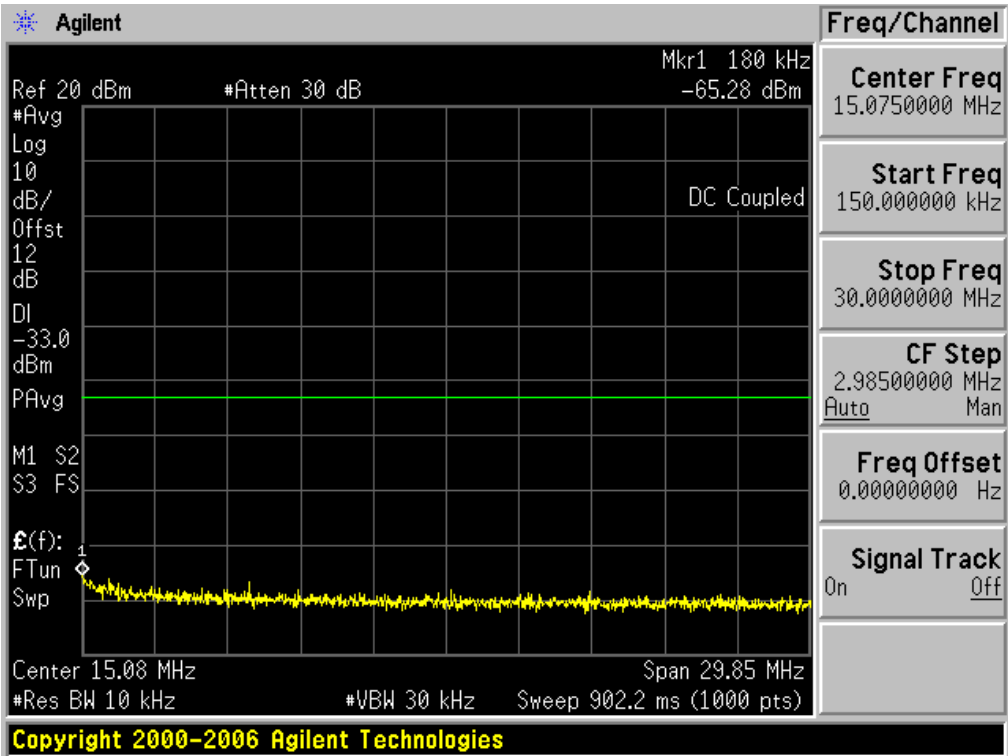
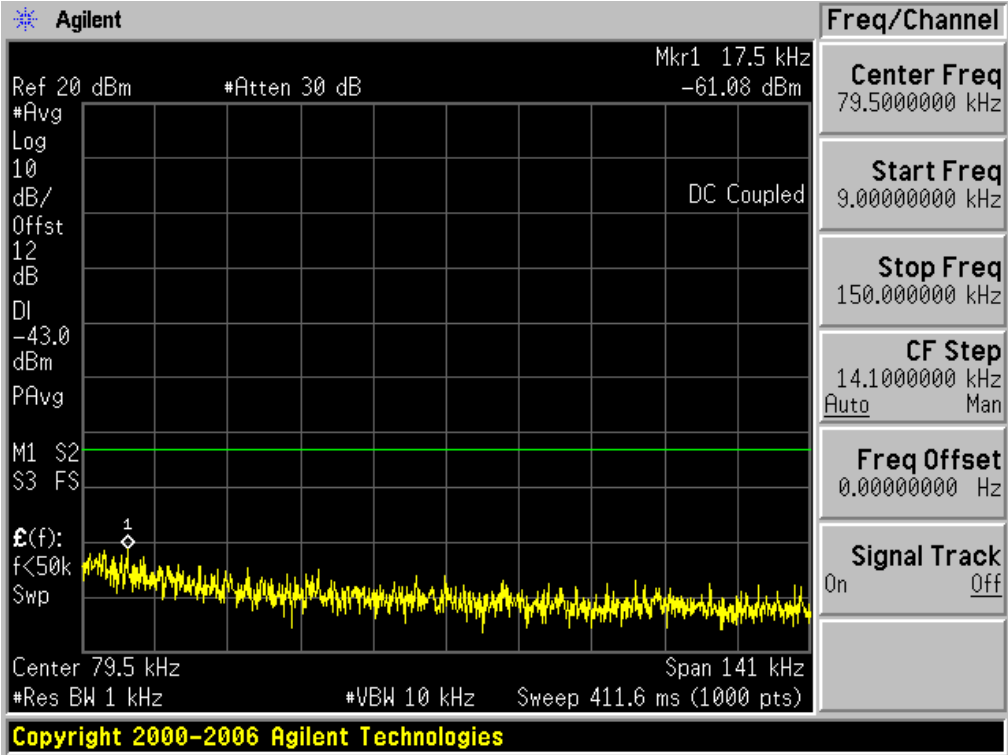


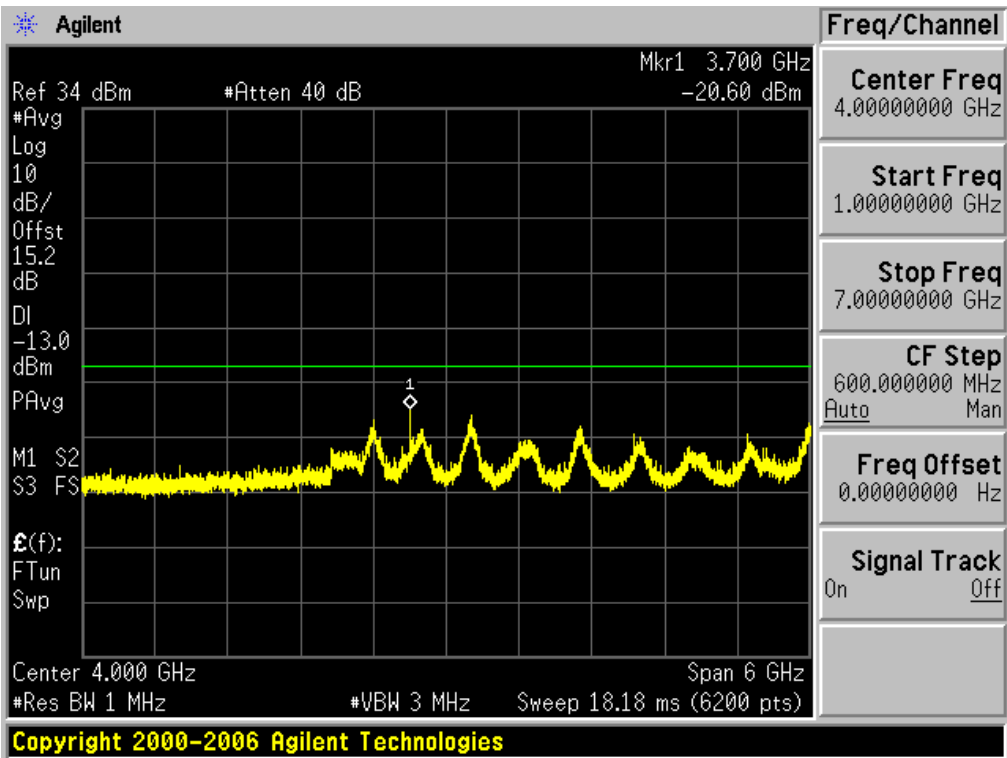
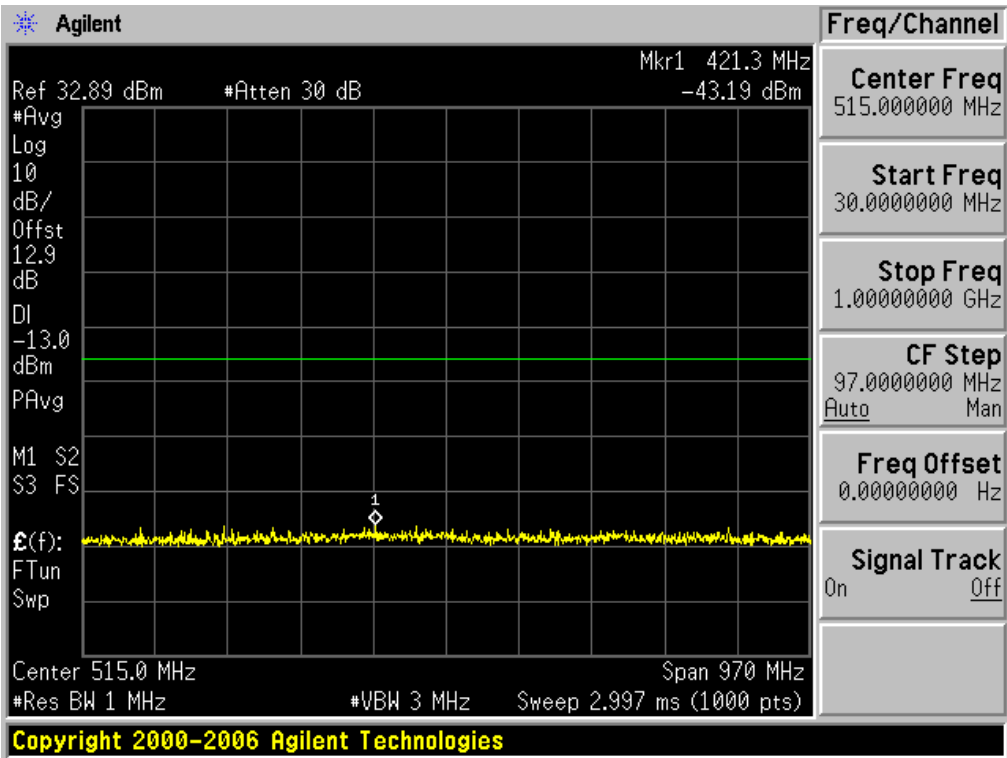


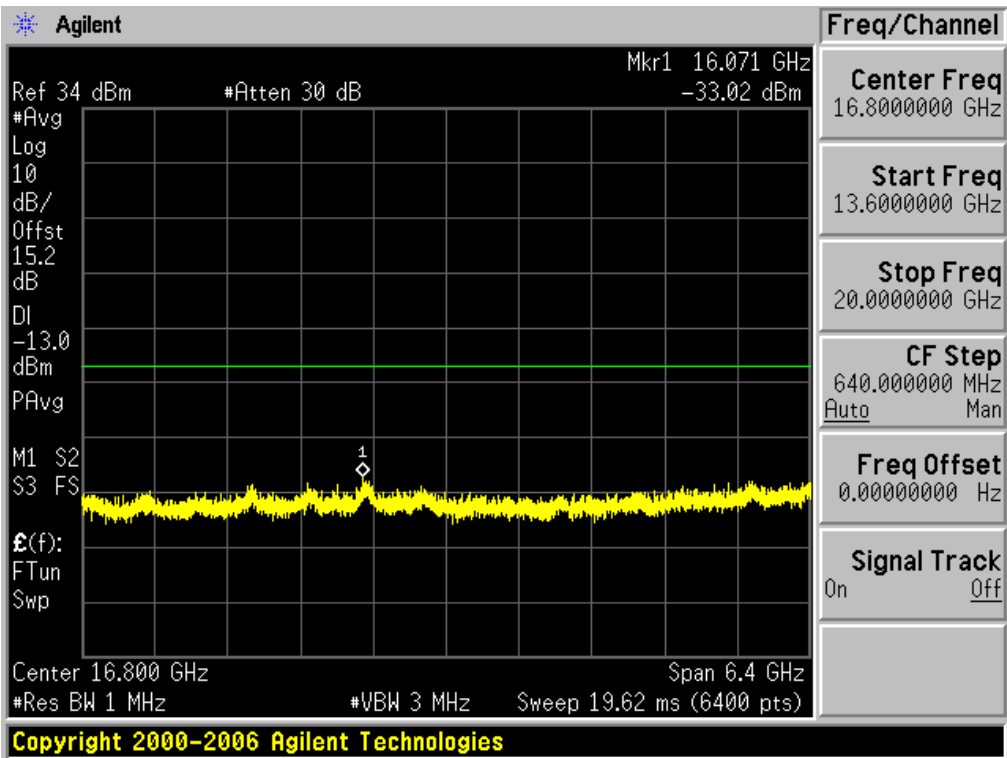
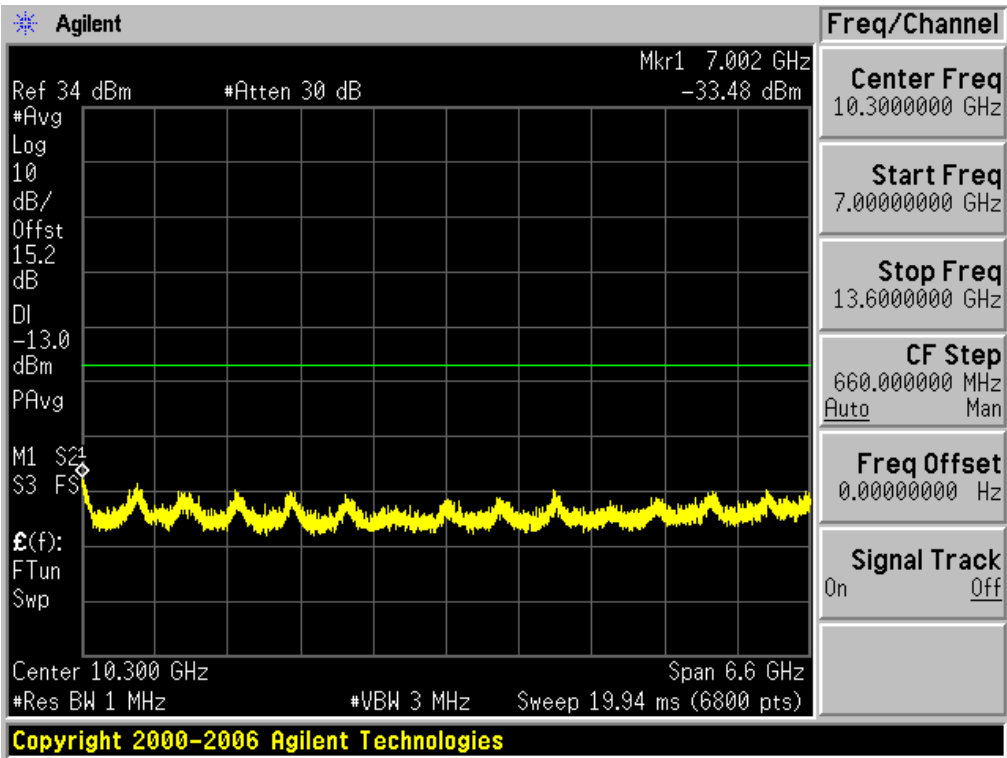


Test Mode=GSM/TM2

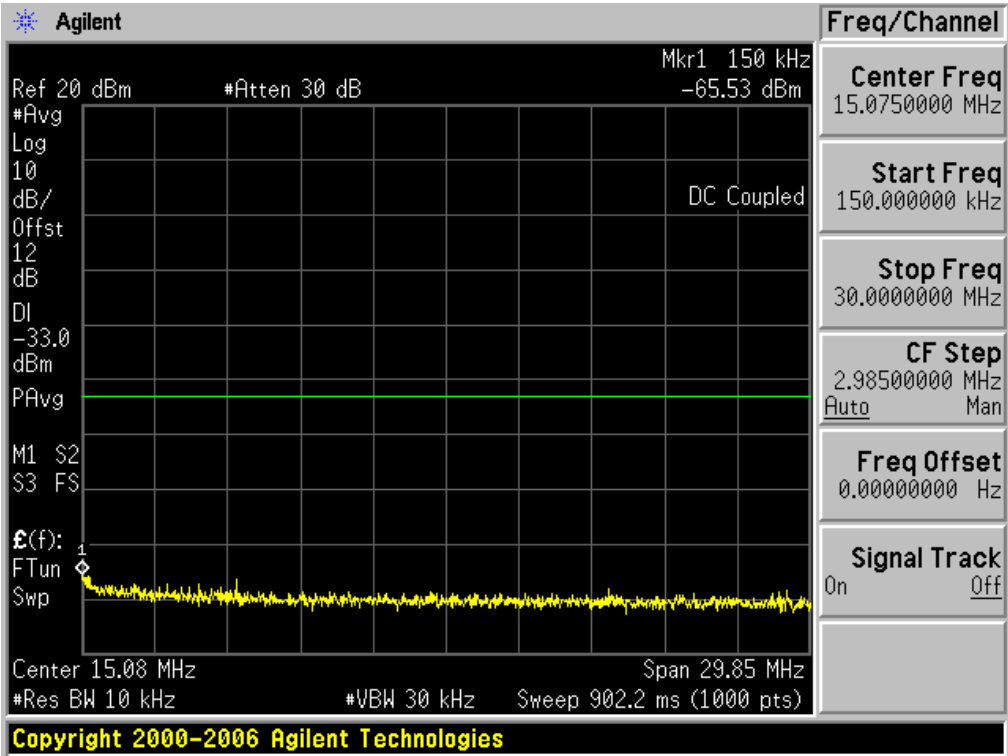
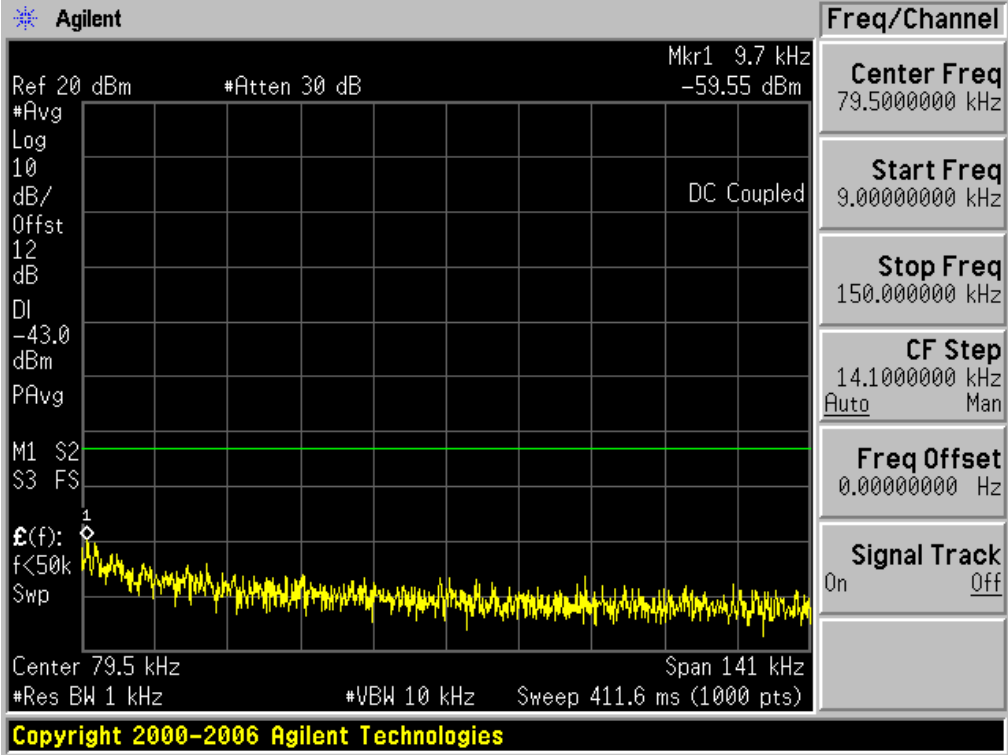
Test Channel=LCH

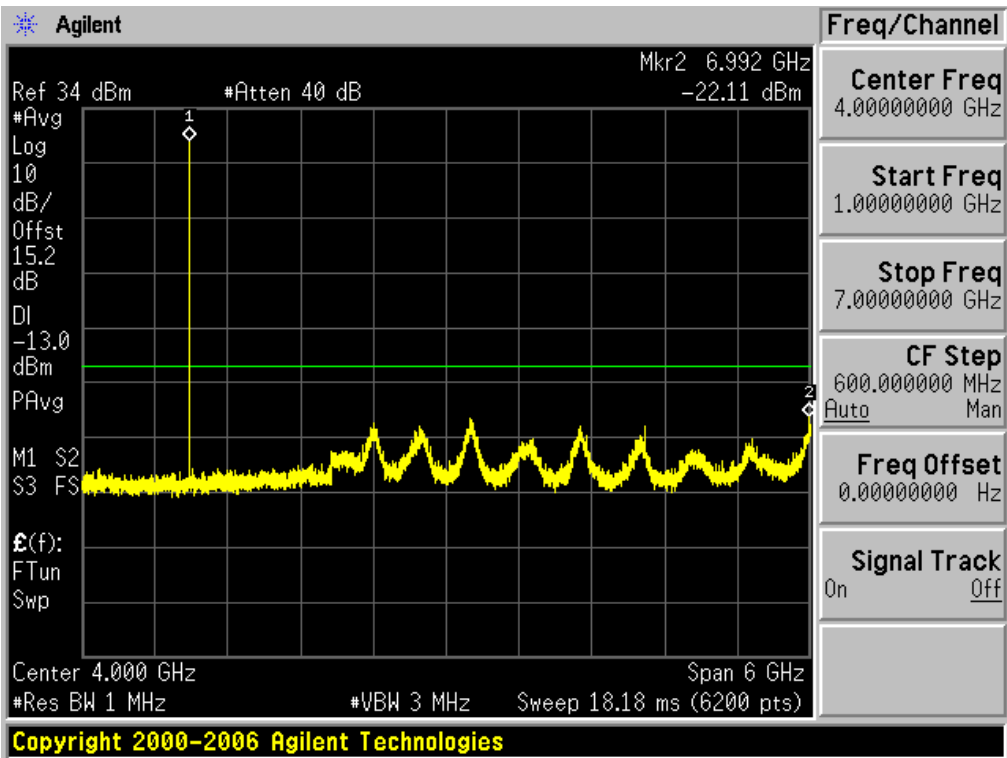
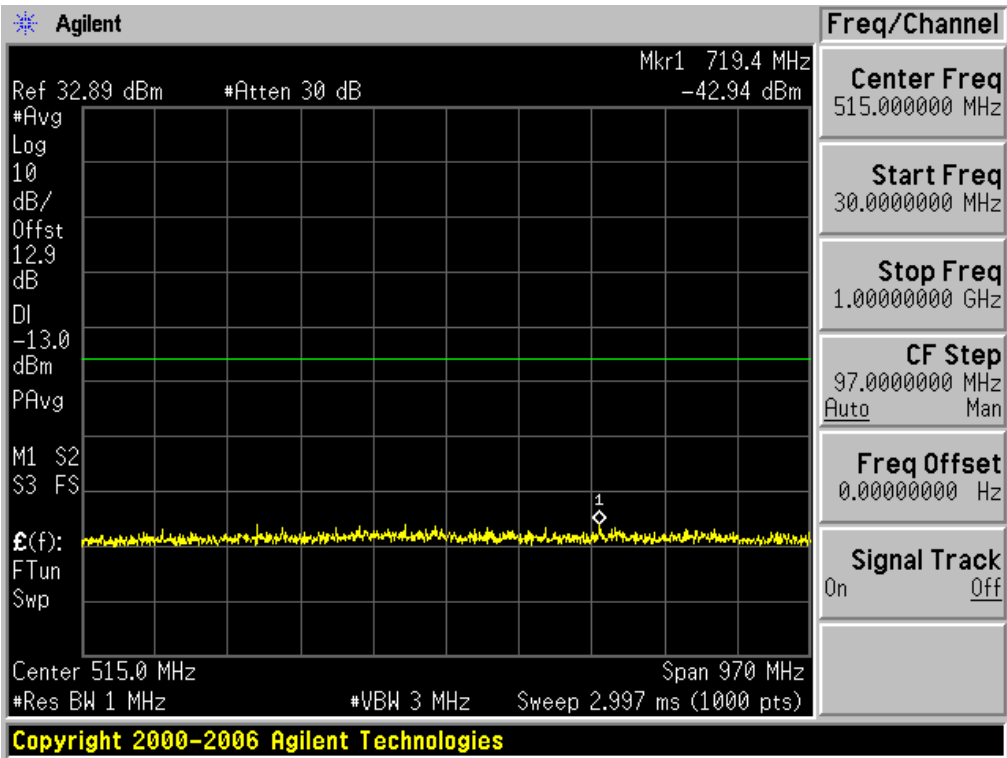


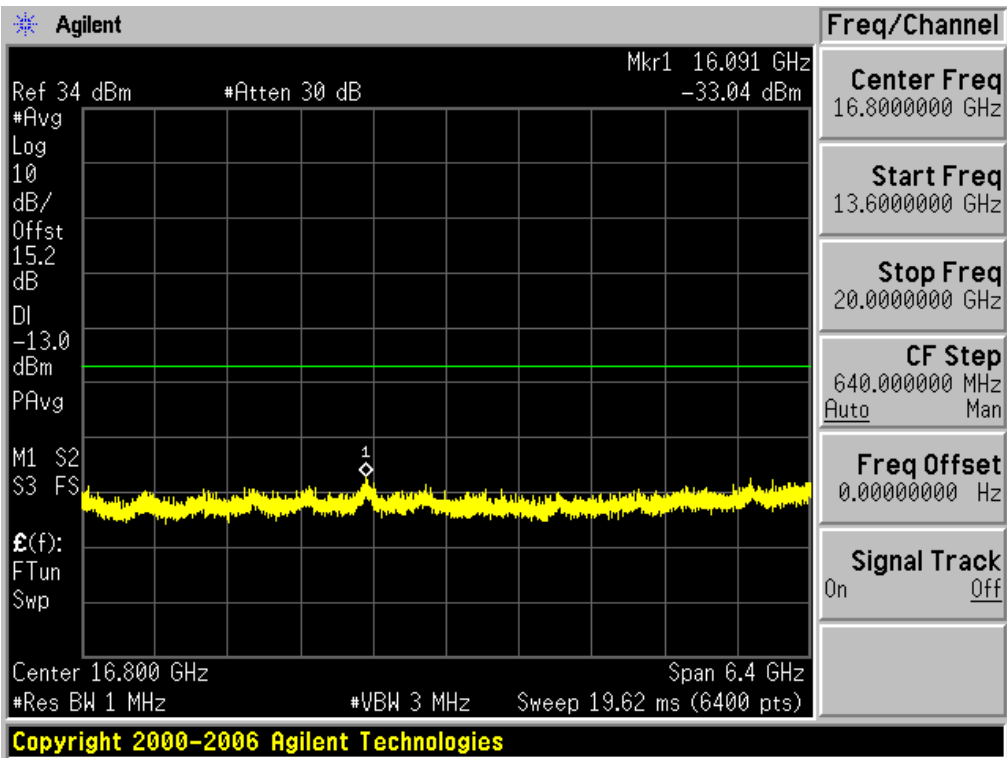
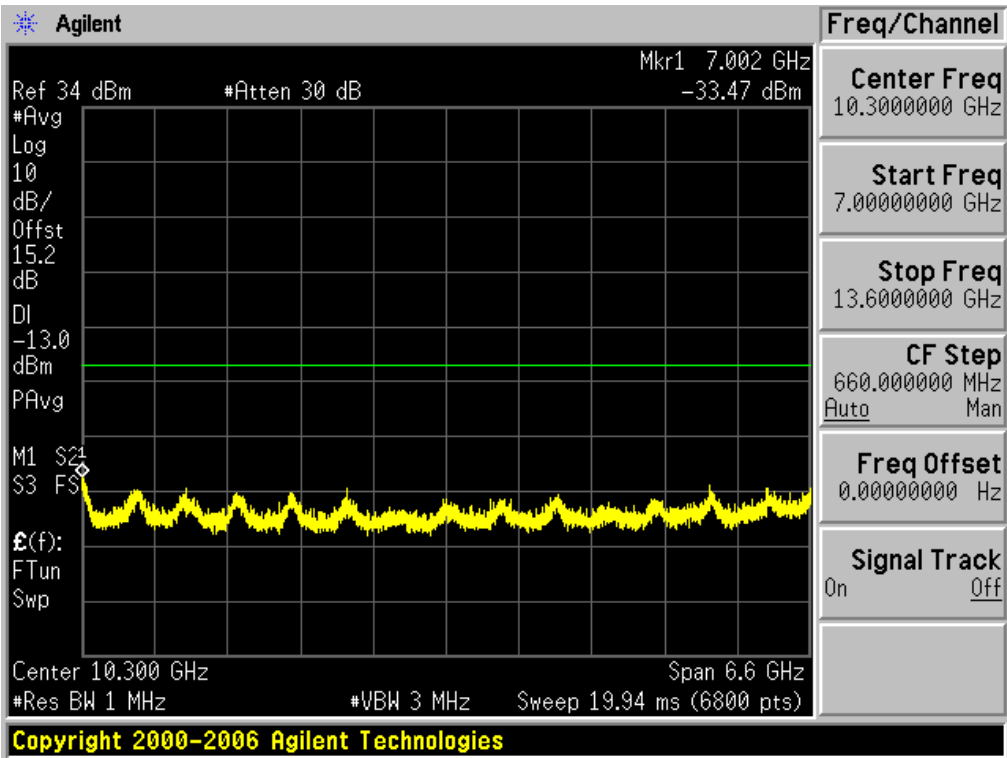




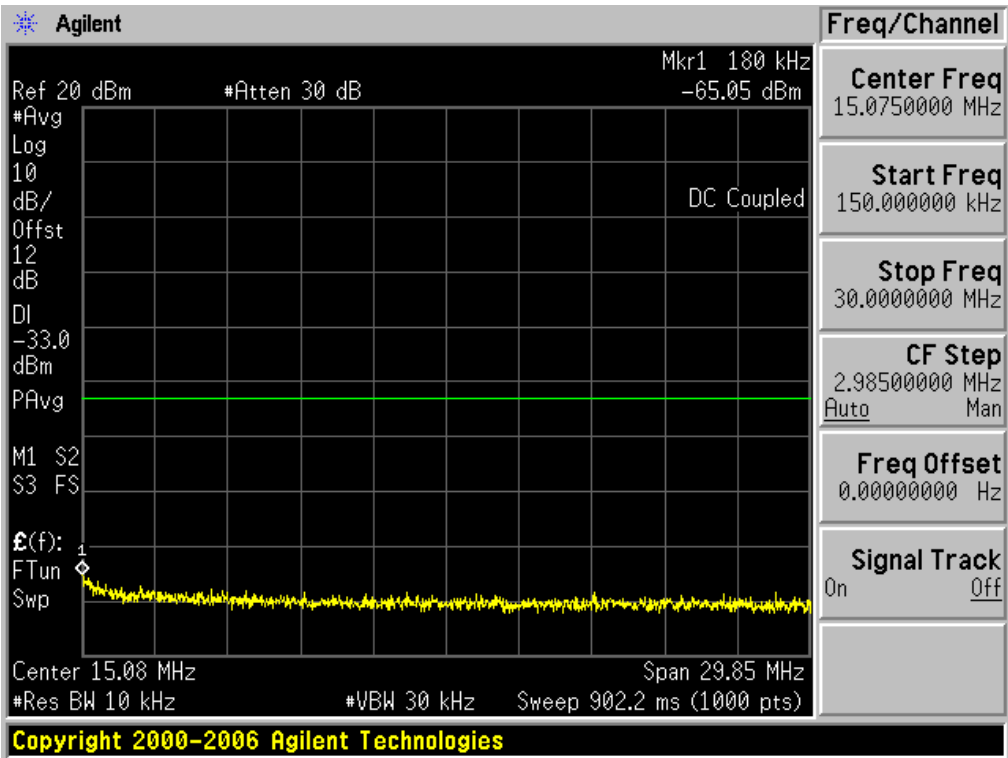
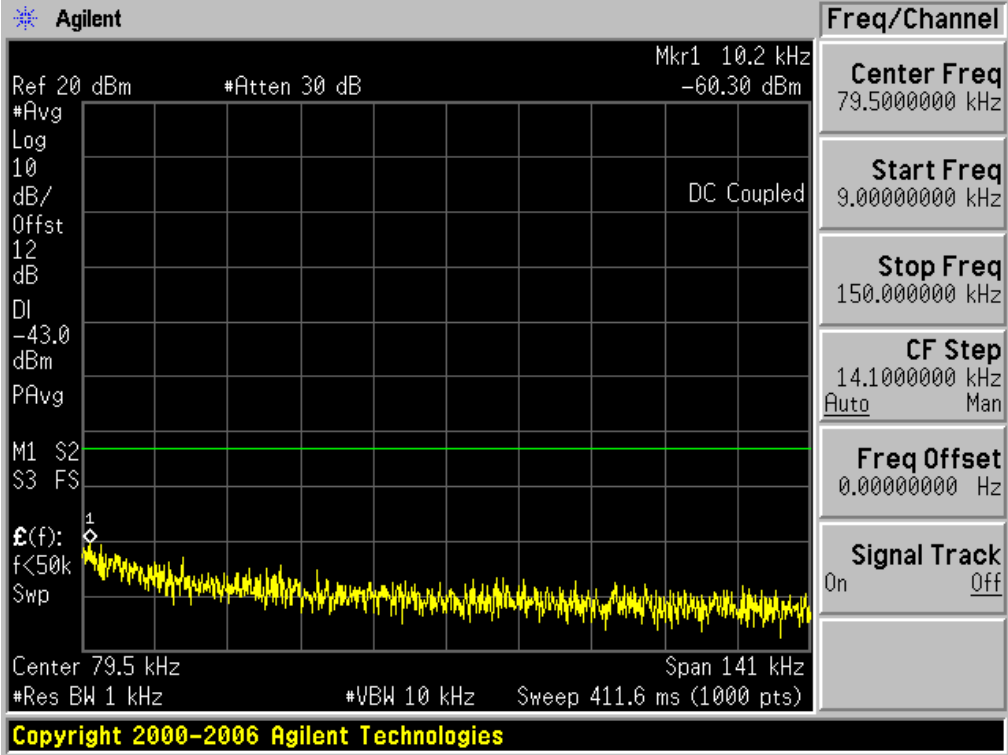
Test Channel=MCH

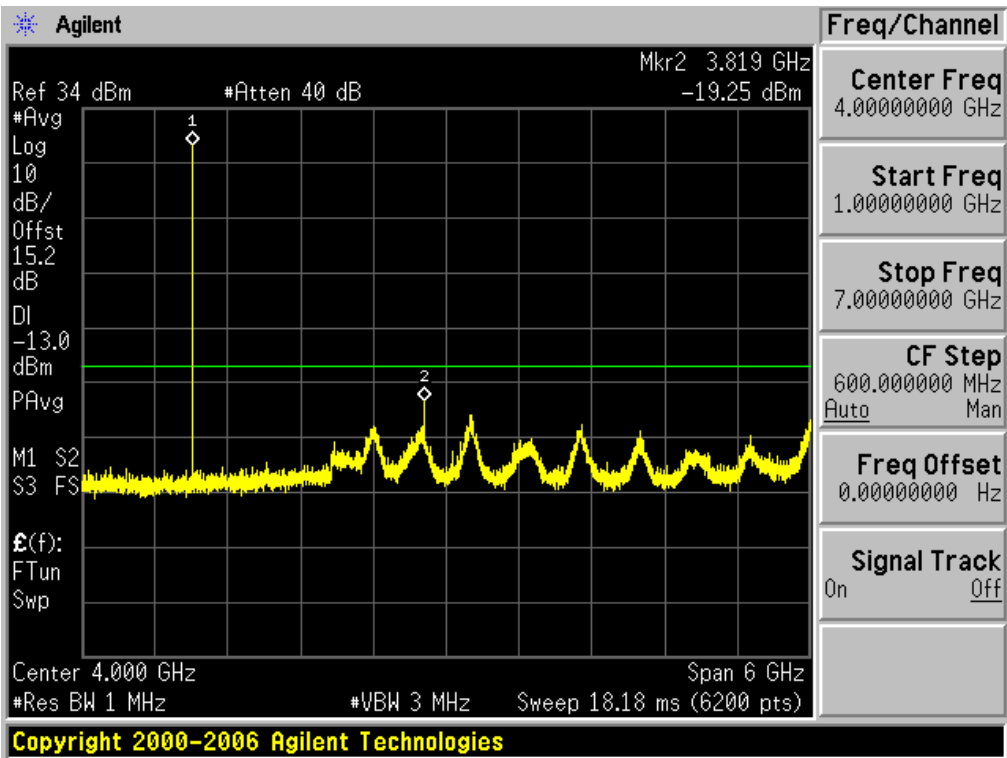
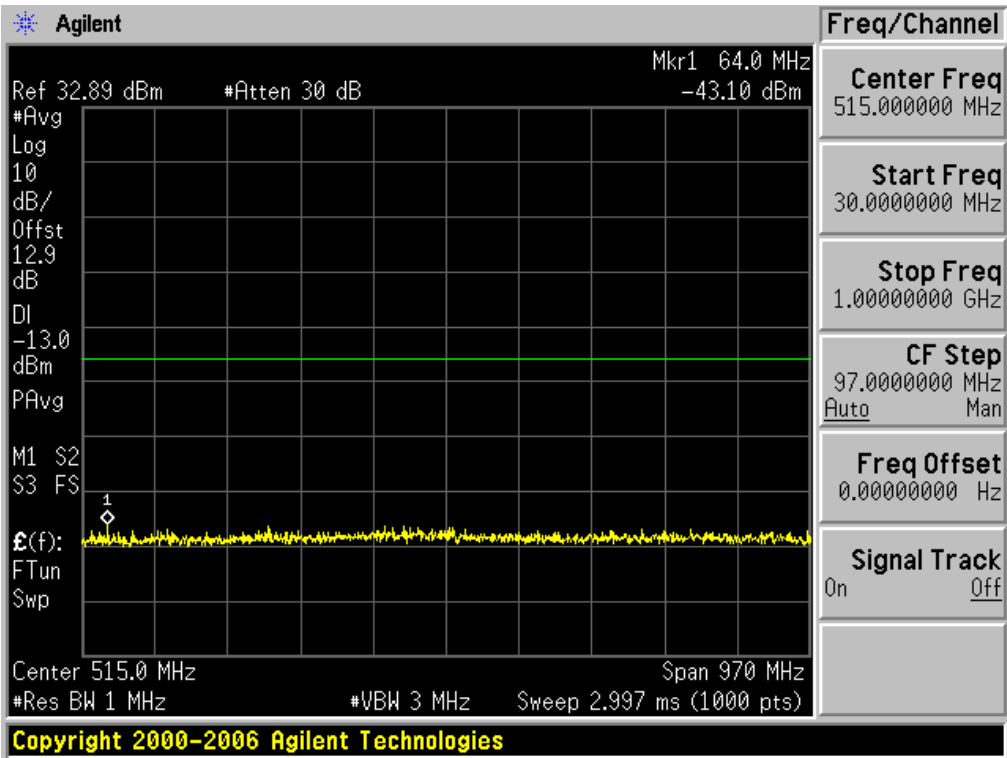




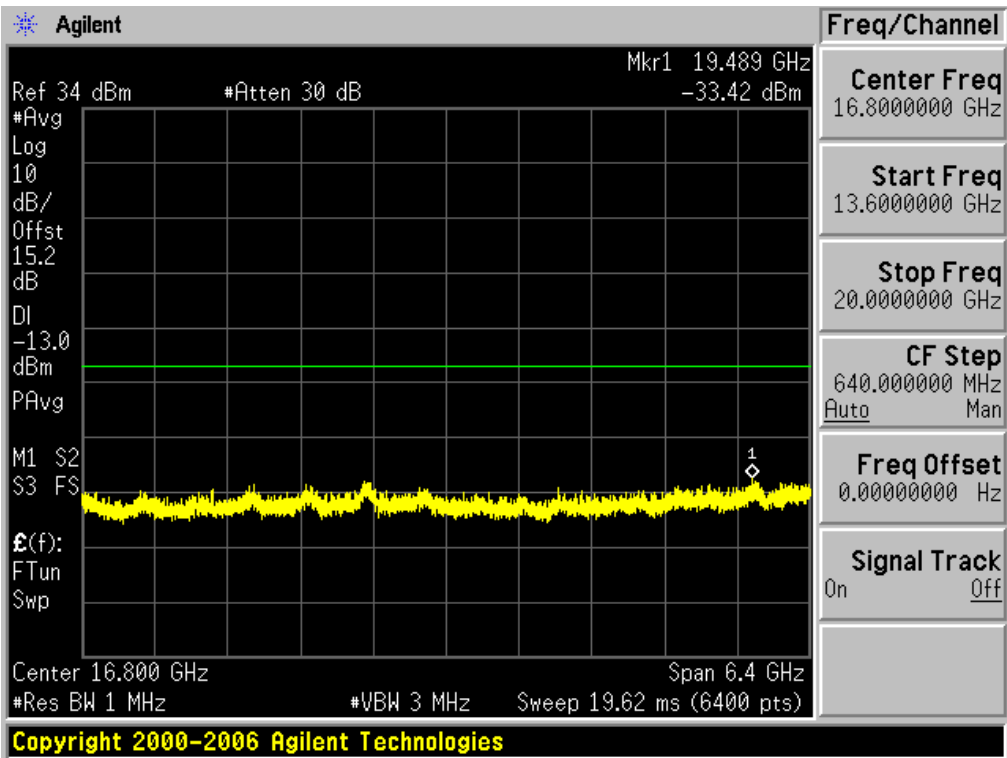
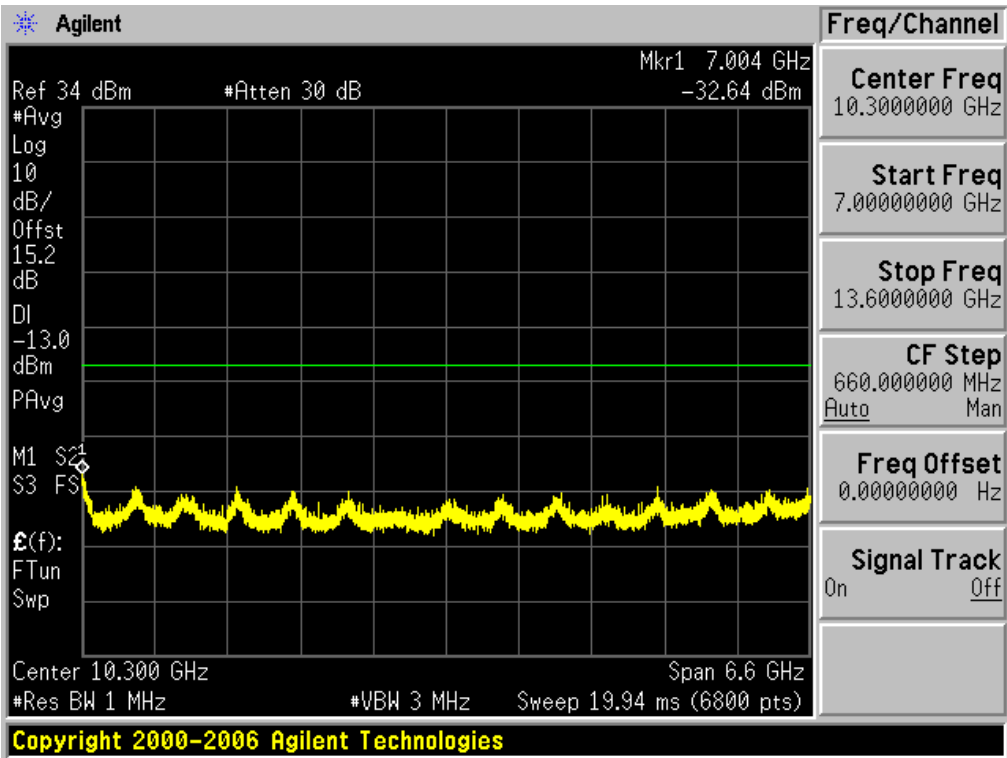


Test Channel=HCH

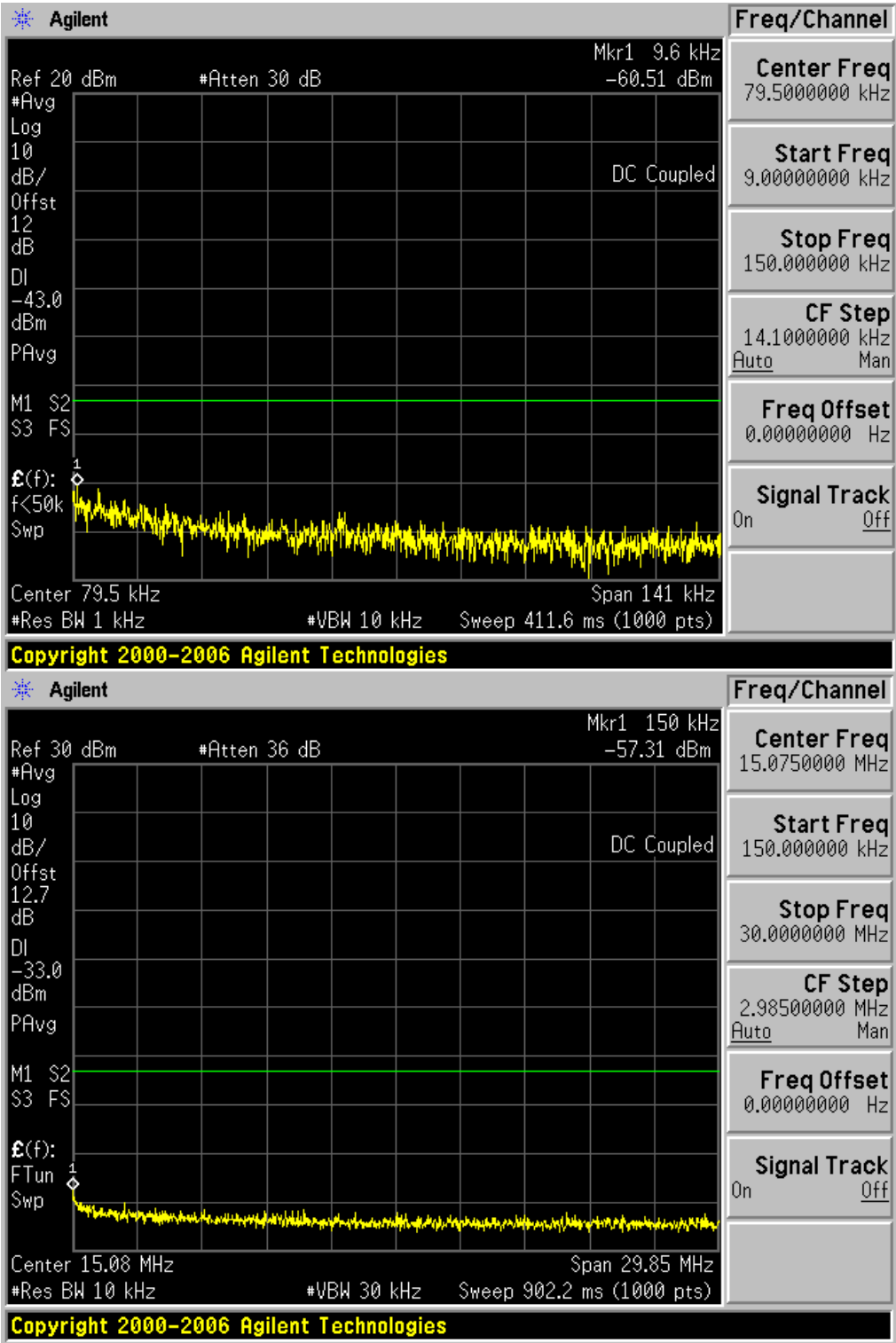


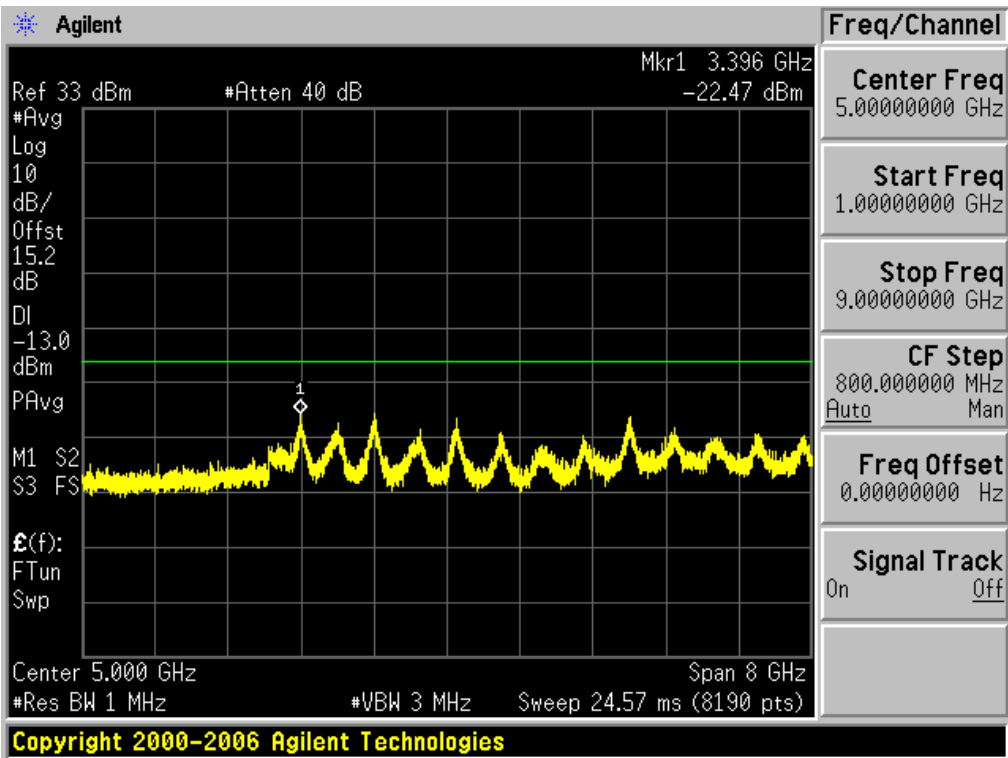
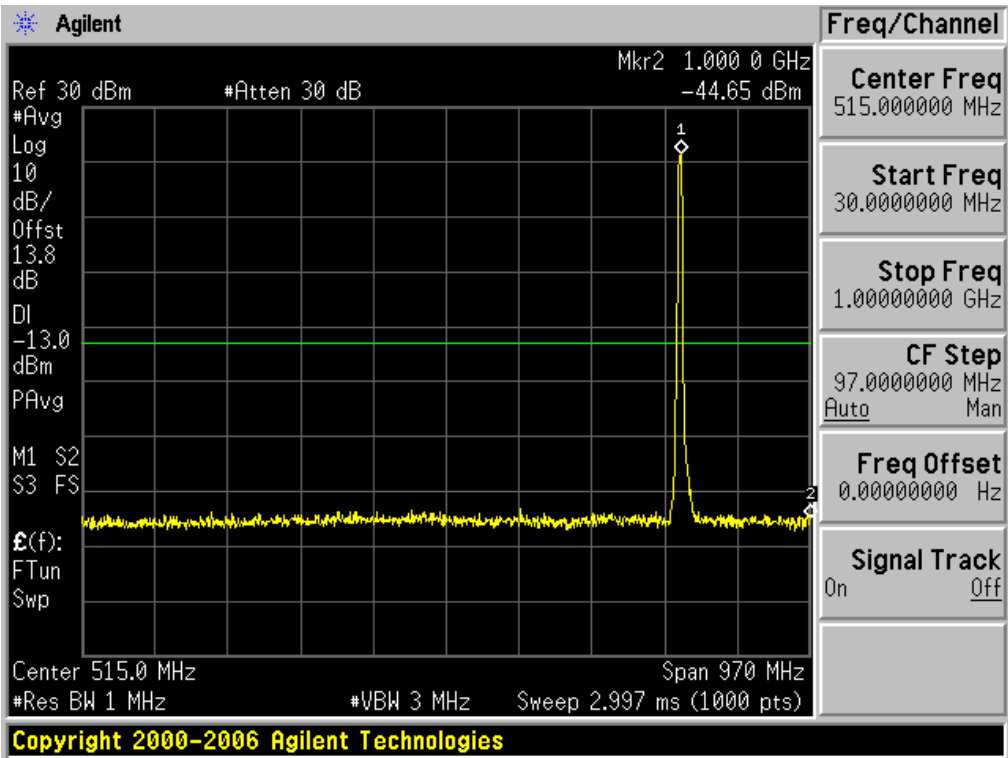




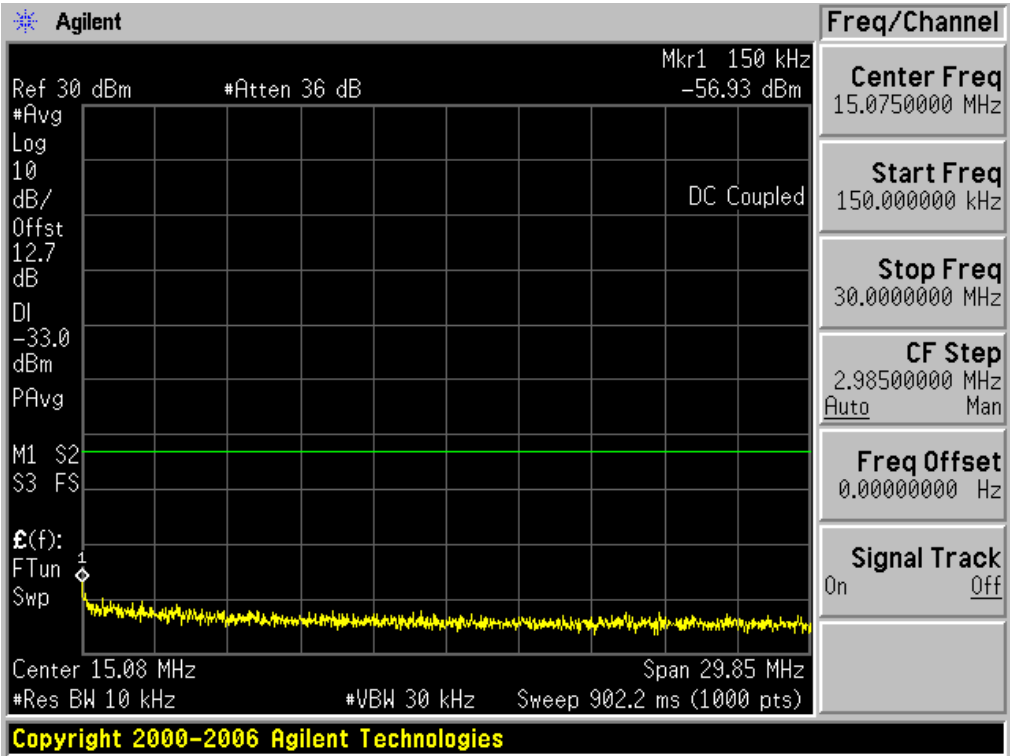
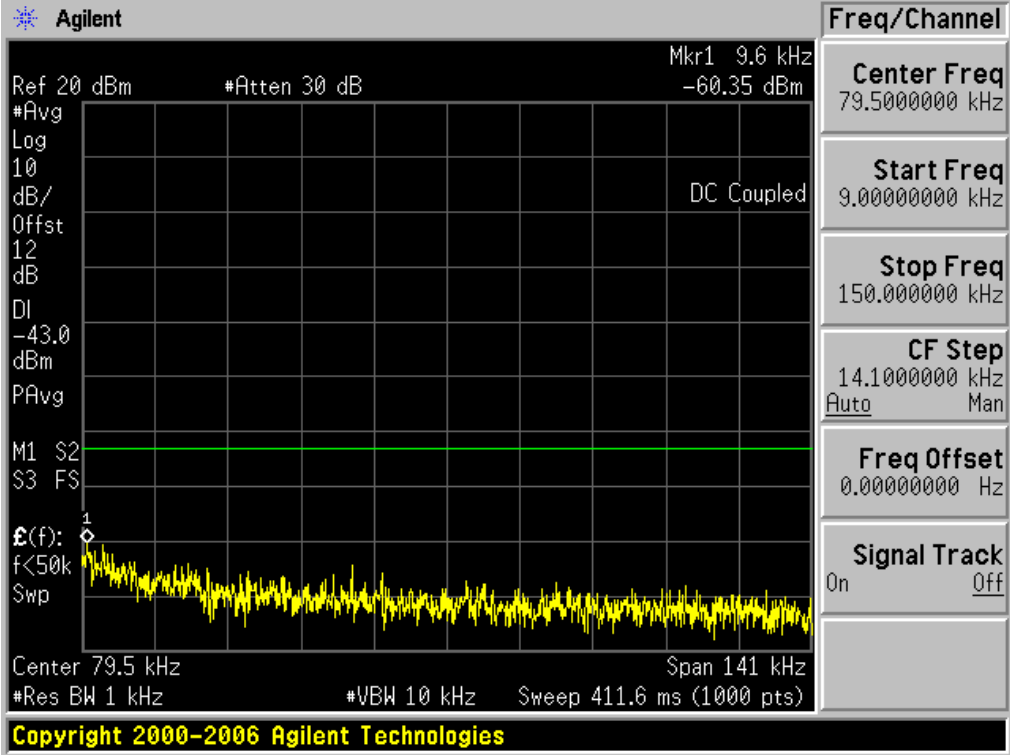


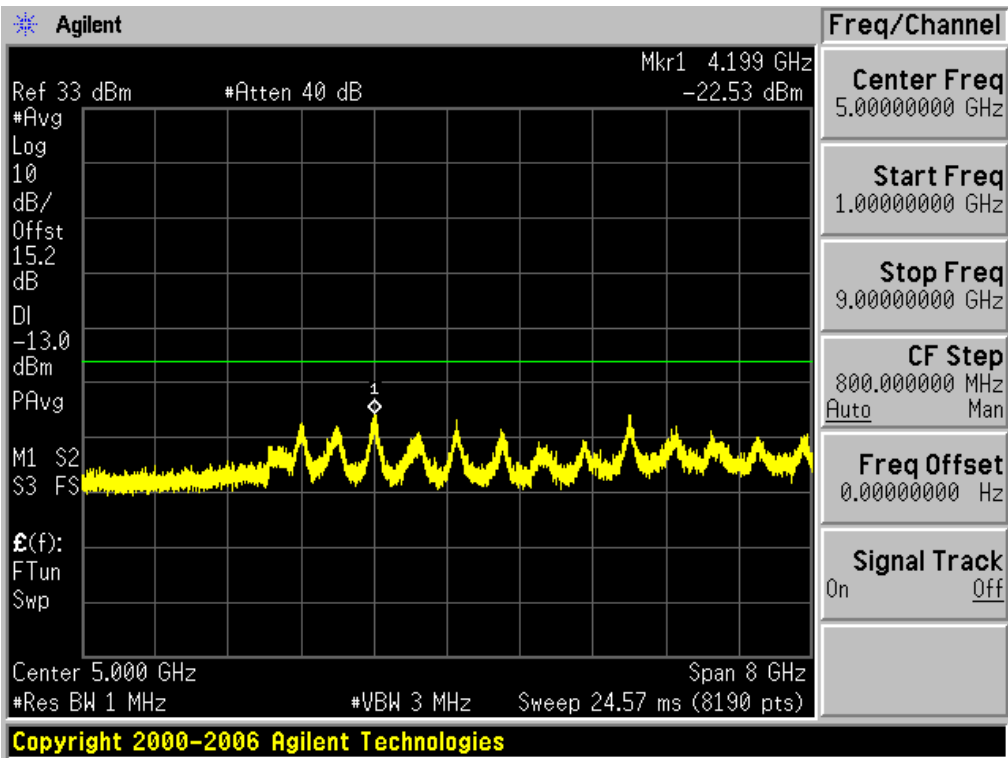
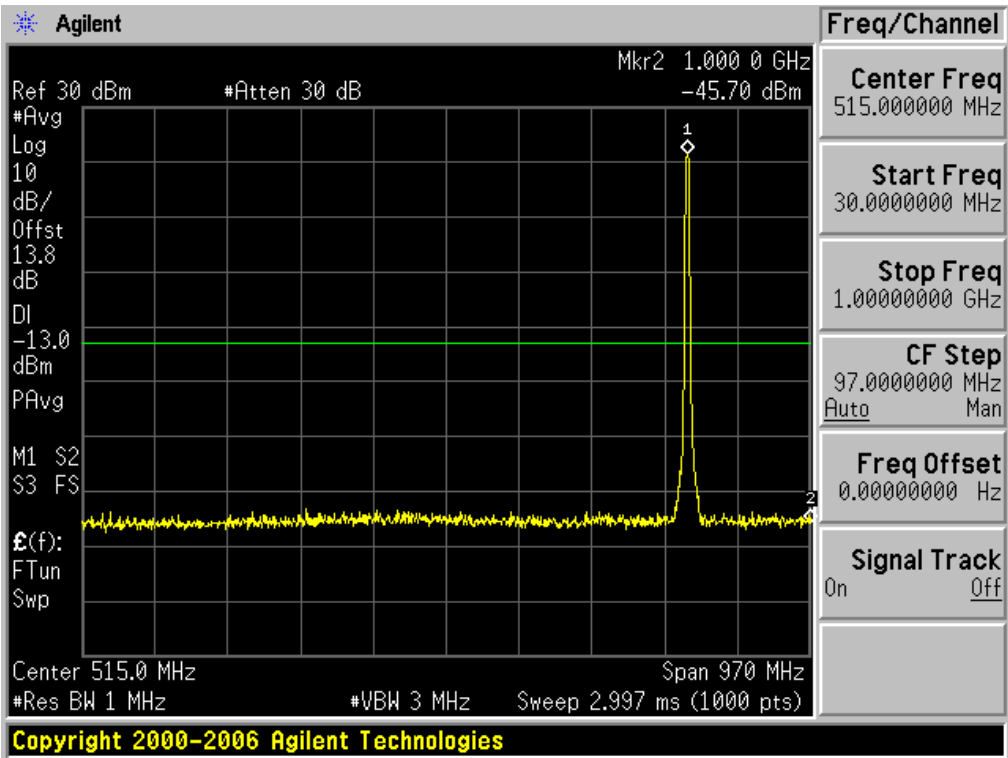
For WCDMA  
Test Band=WCDMA850  
Test Mode=UMTS/TM1  
Test Channel=LCH



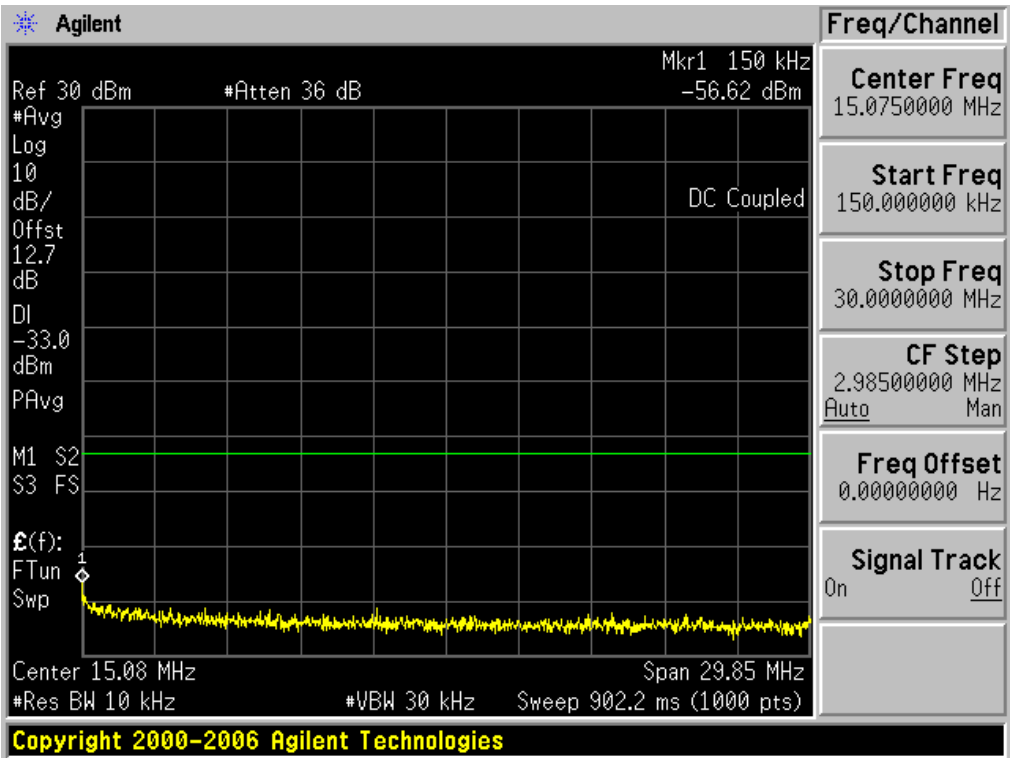
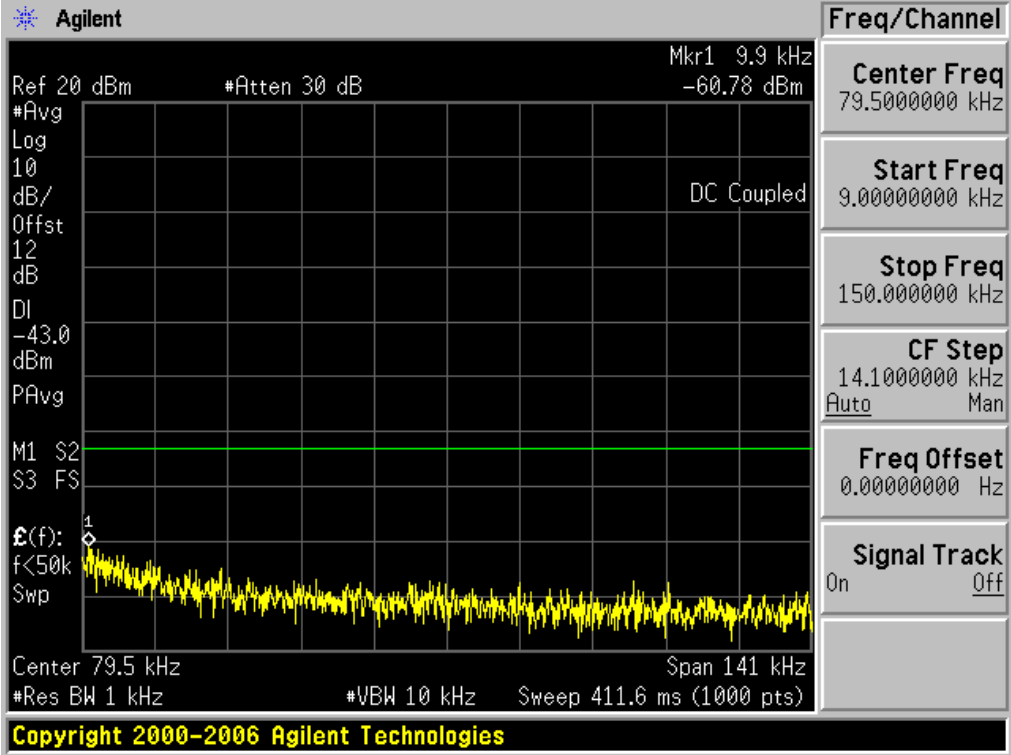


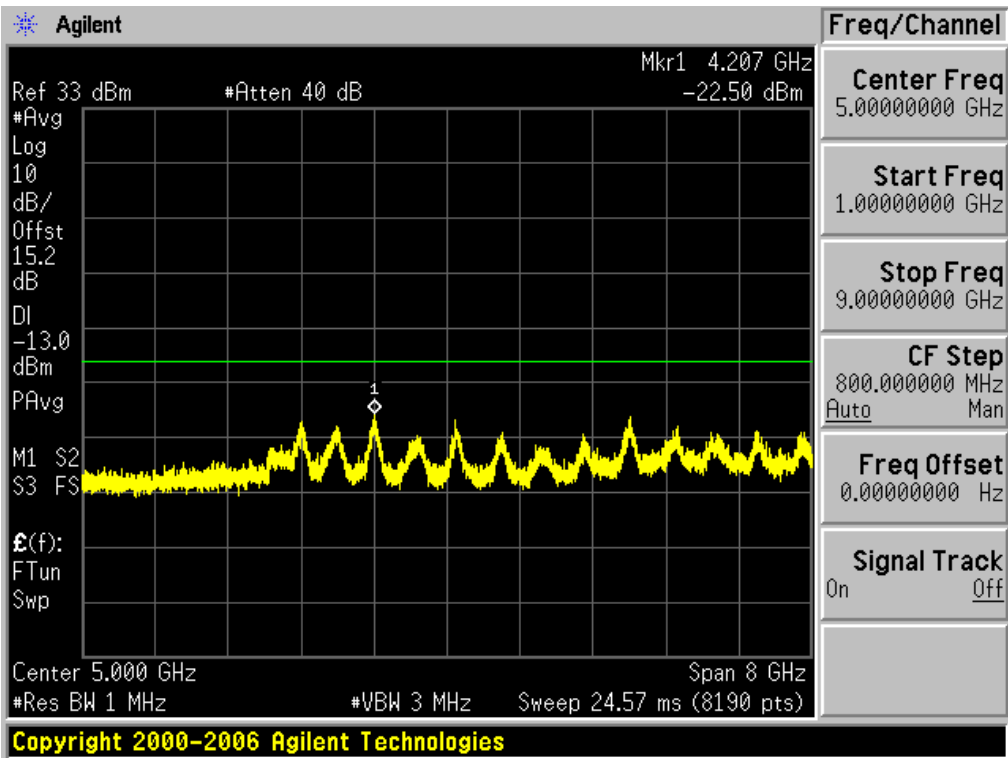
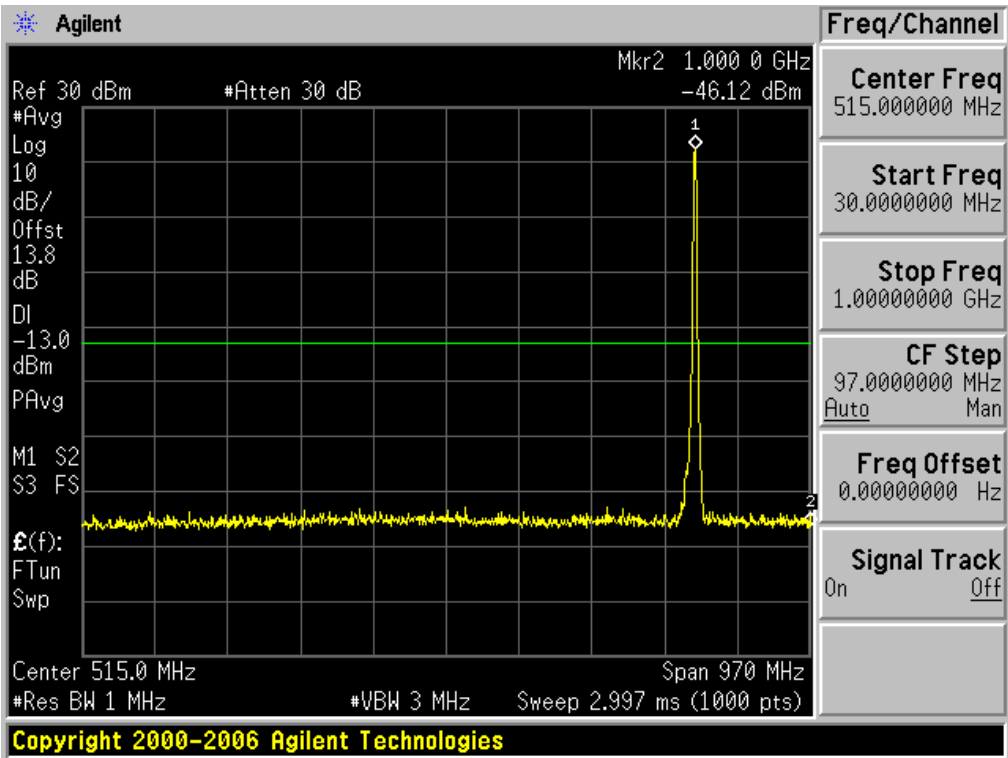
Test Channel=MCH





Test Channel=HCH

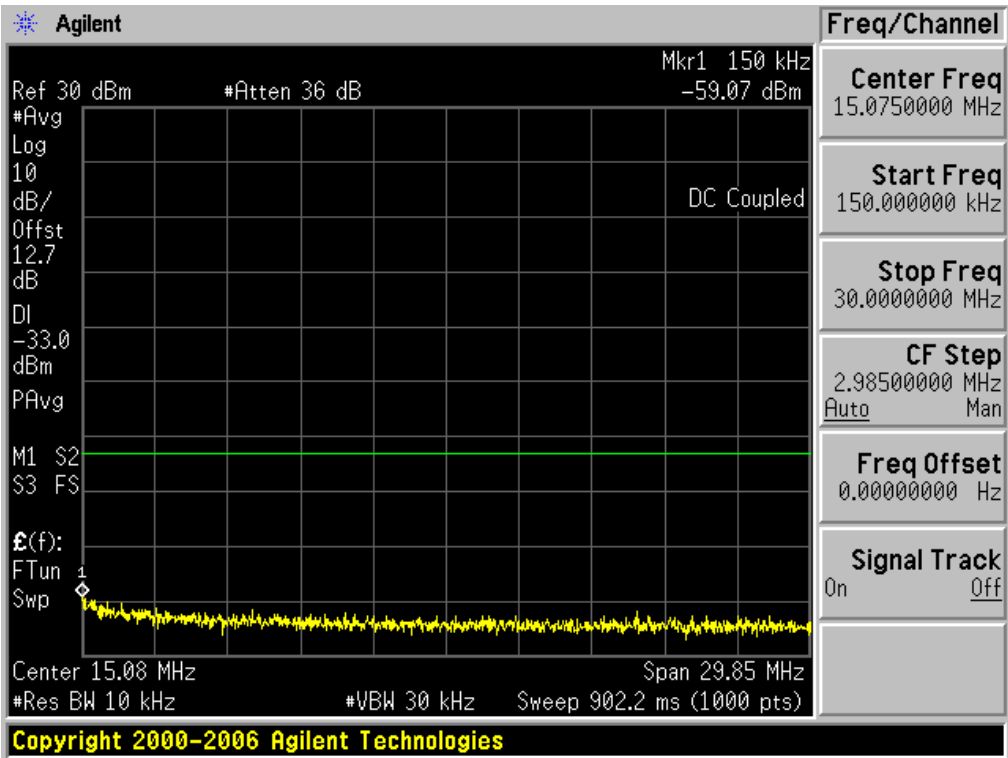
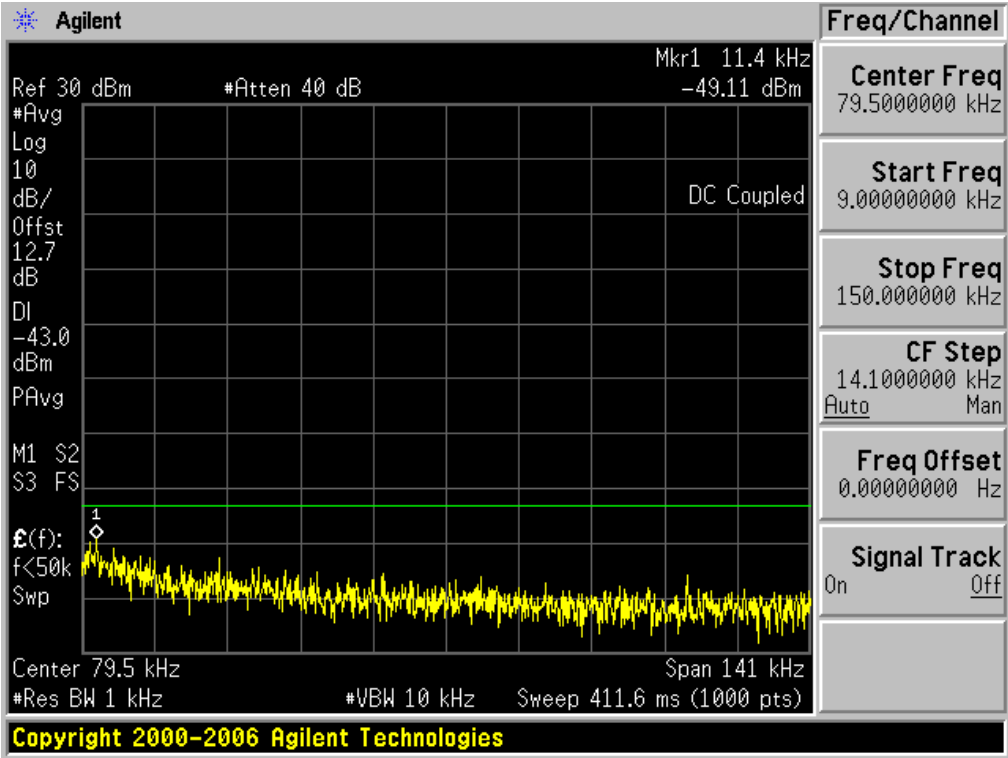




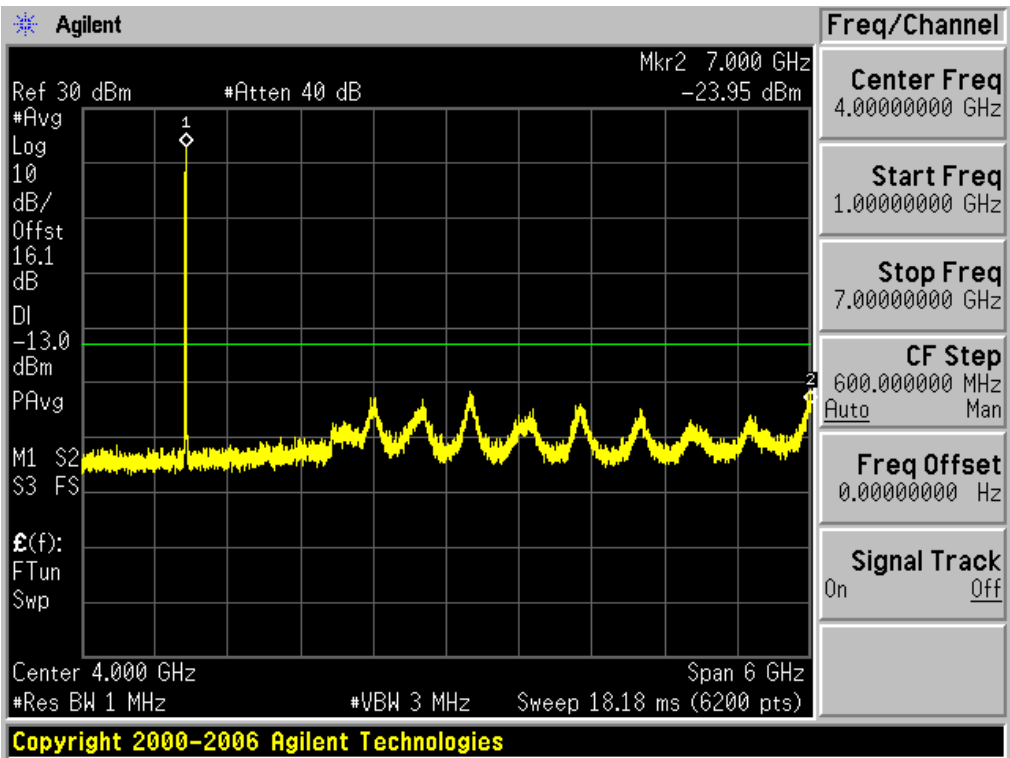
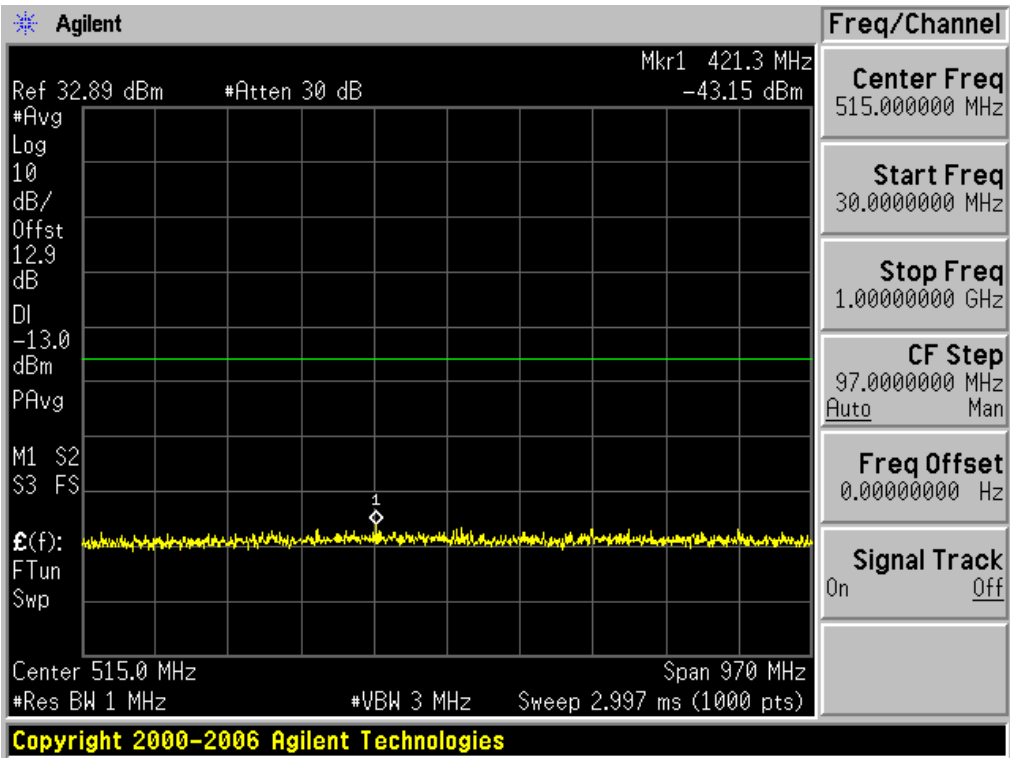
Test Band=WCDMA1900

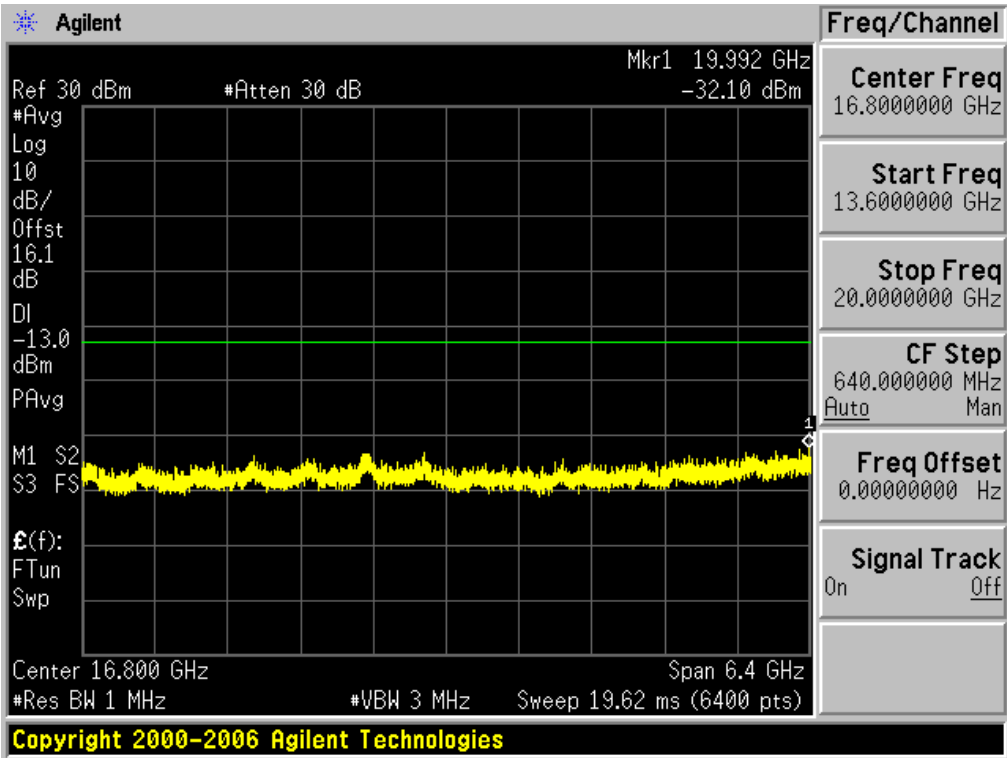
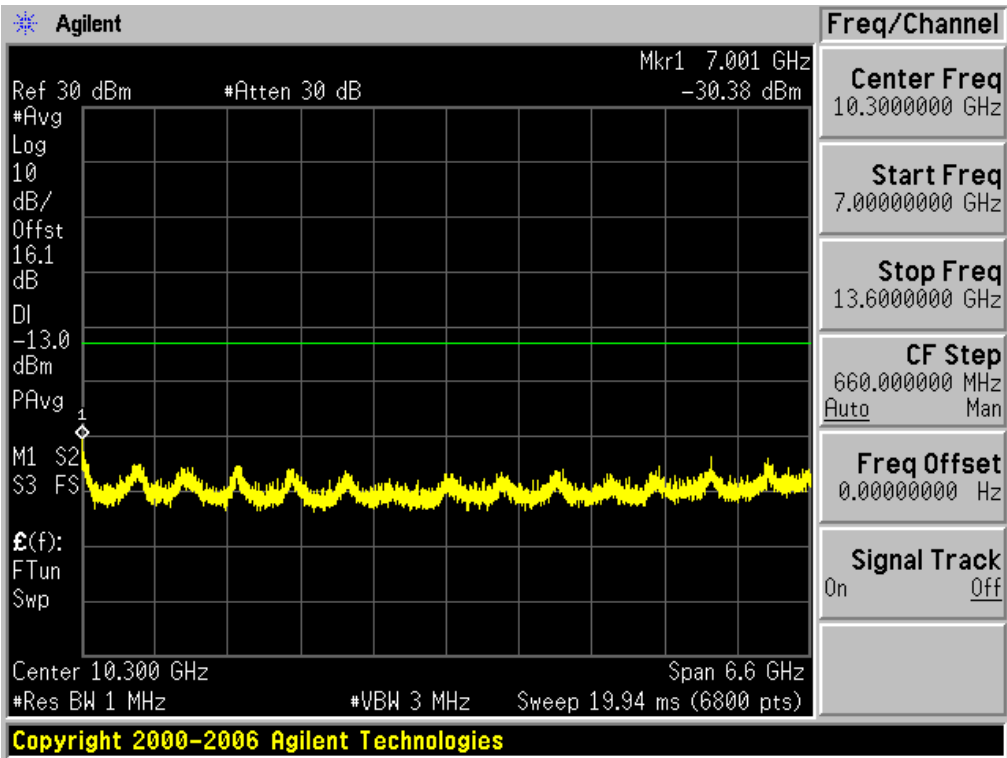
Test Mode=UMTS/TM1

Test Channel=LCH

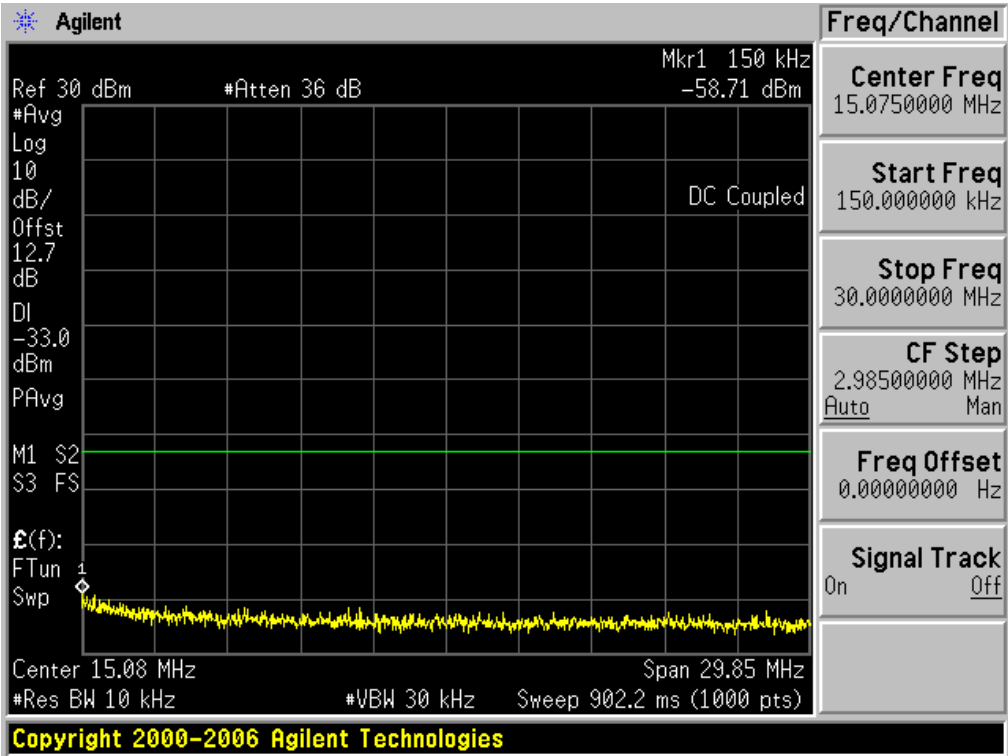
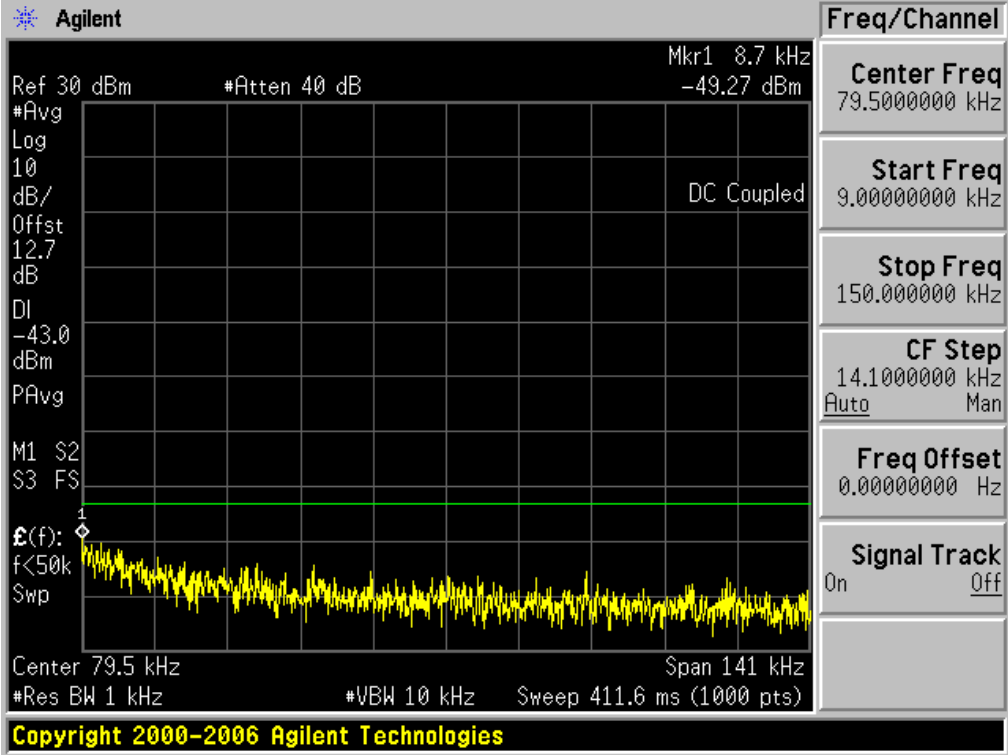


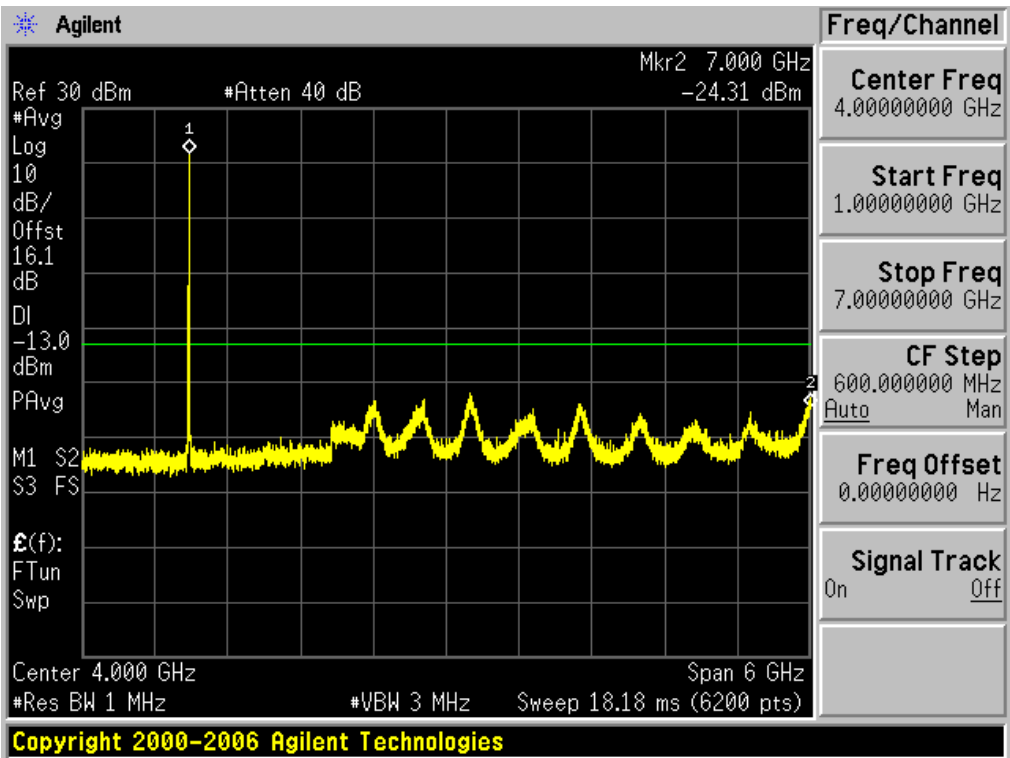
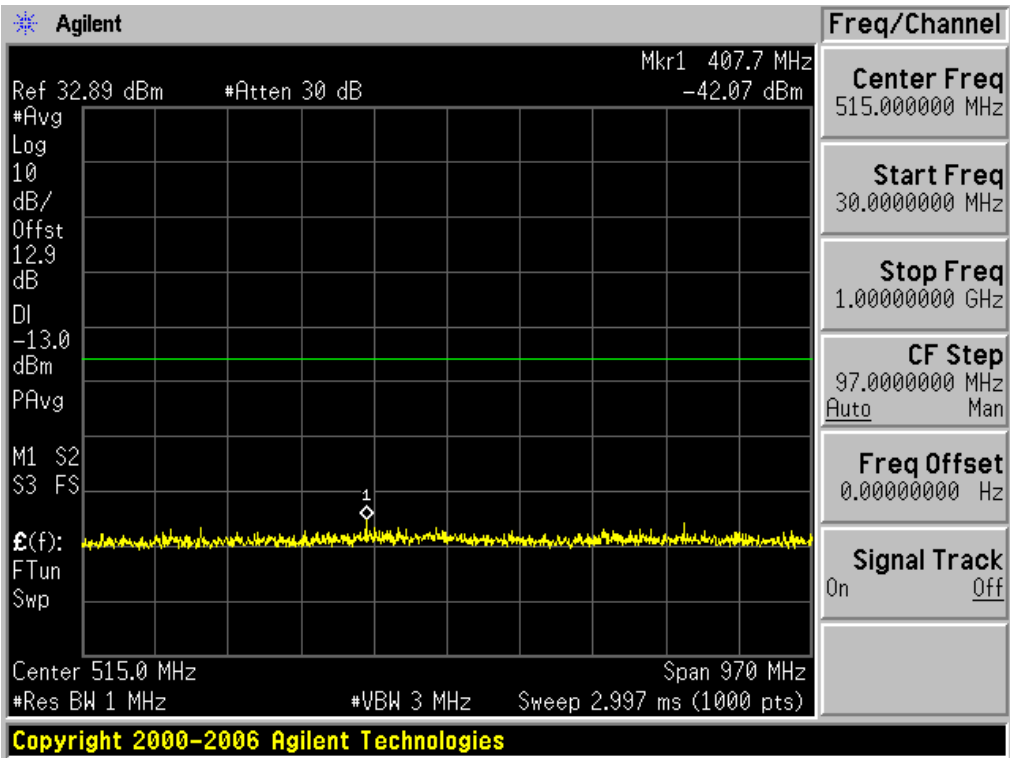


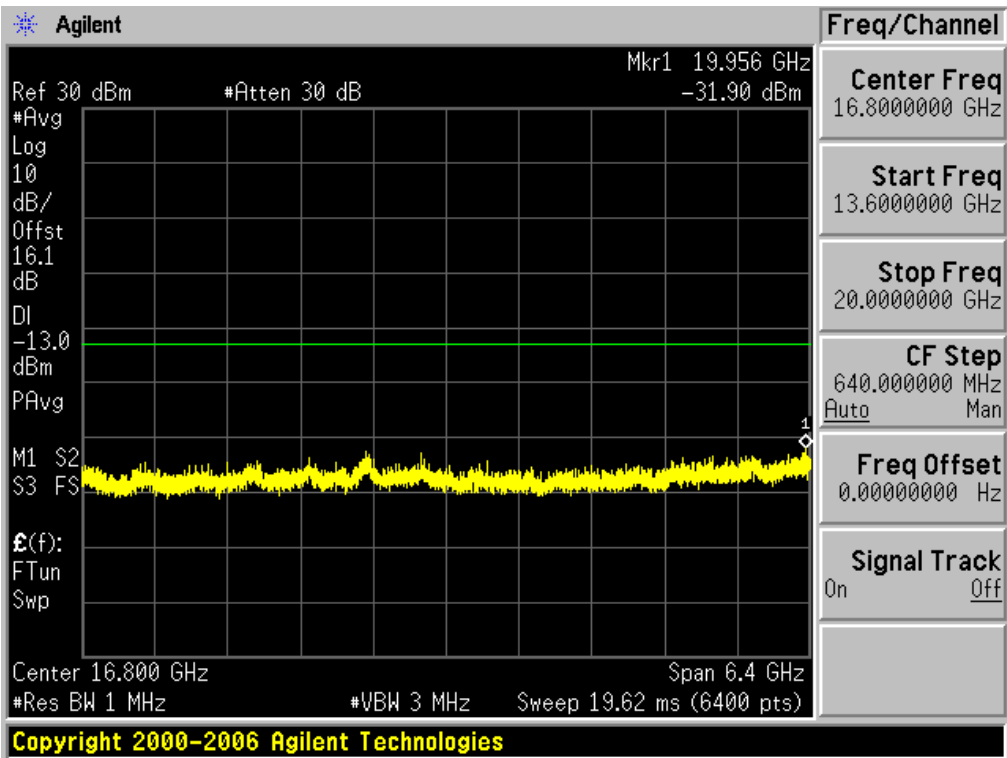
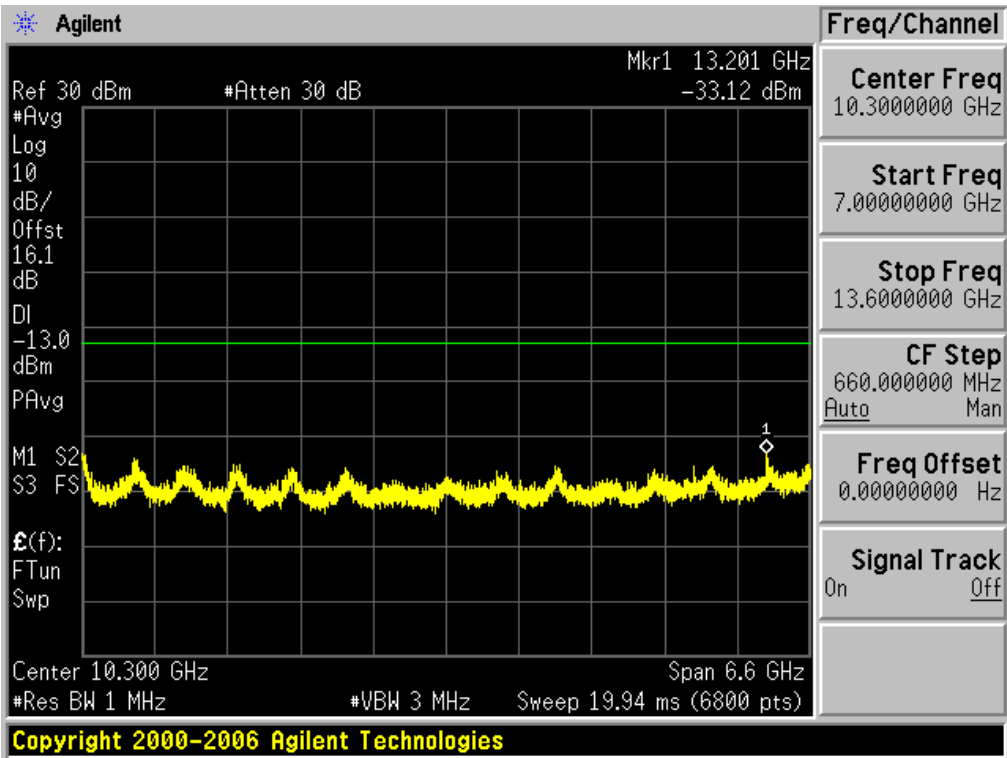




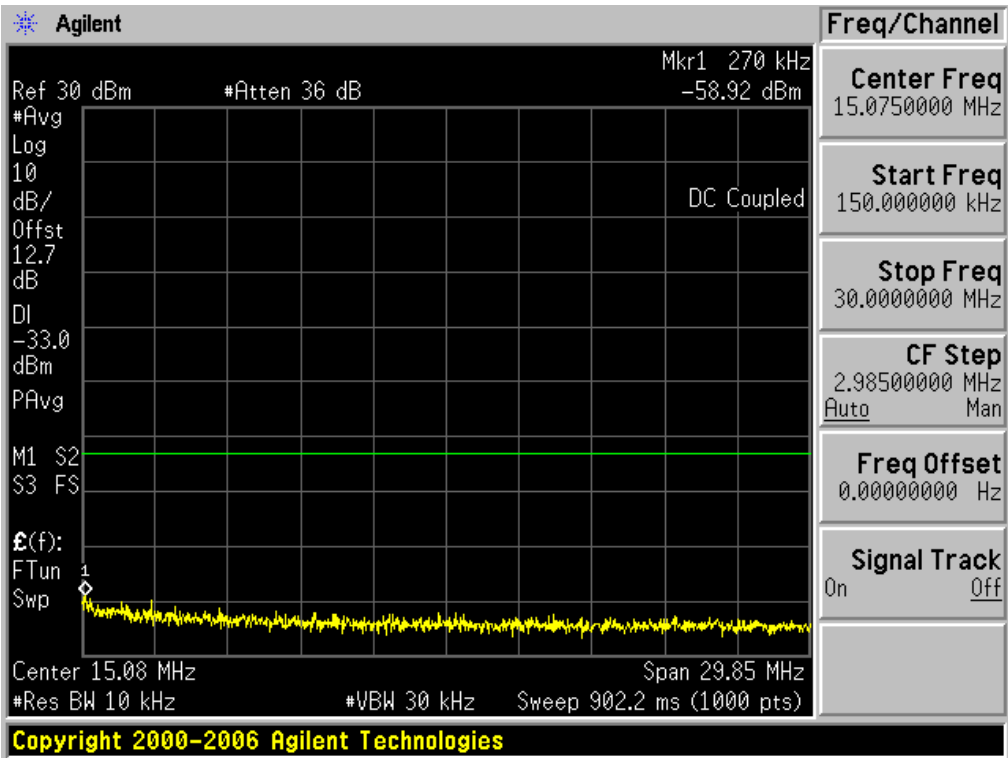
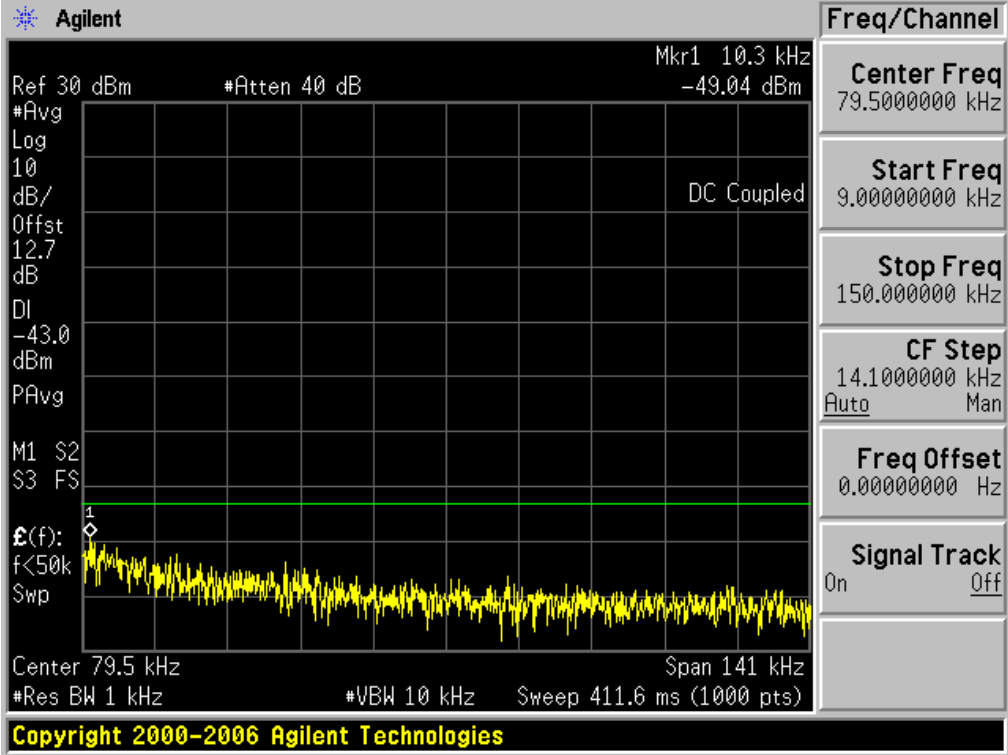
Test Channel=MCH

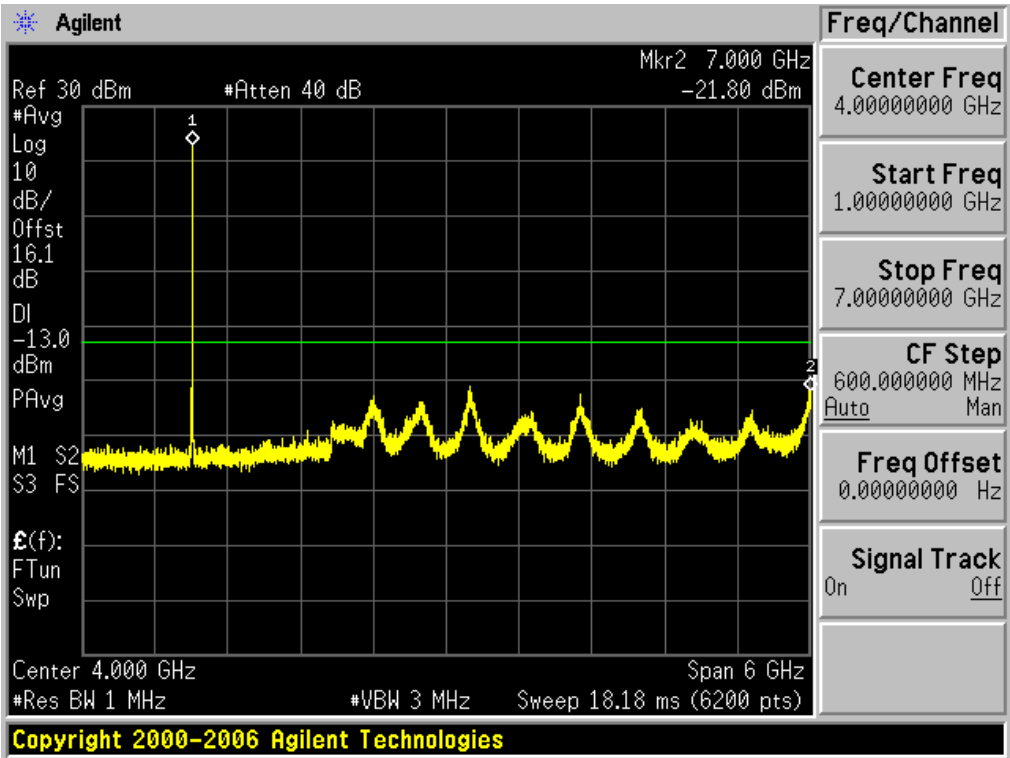
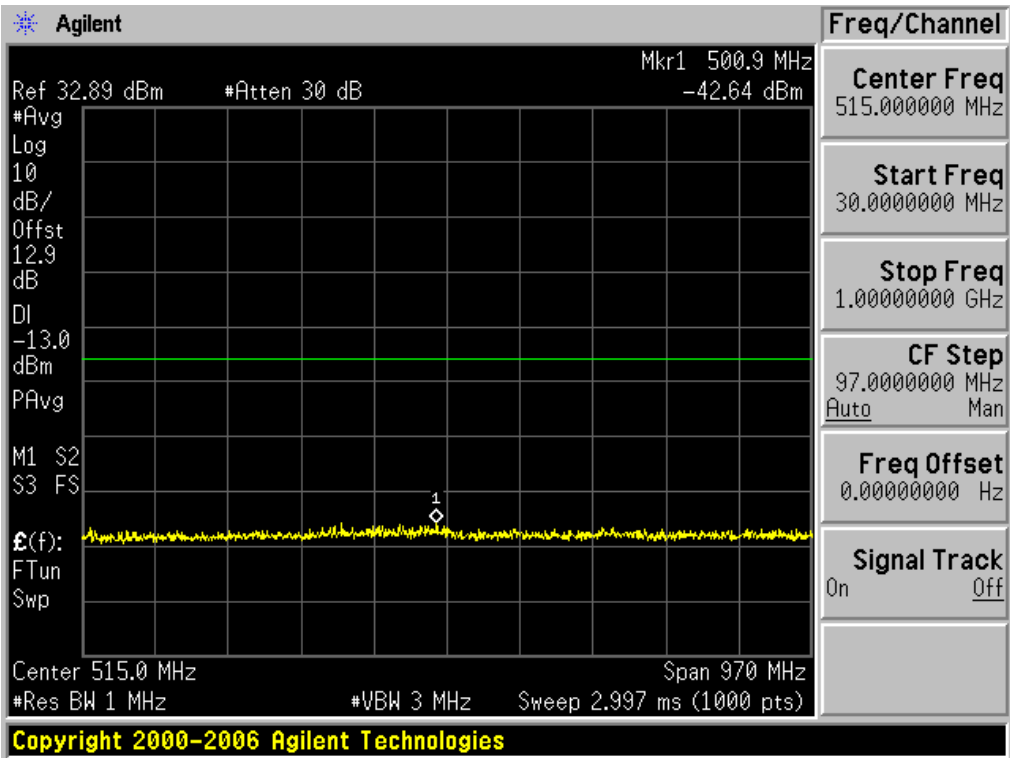


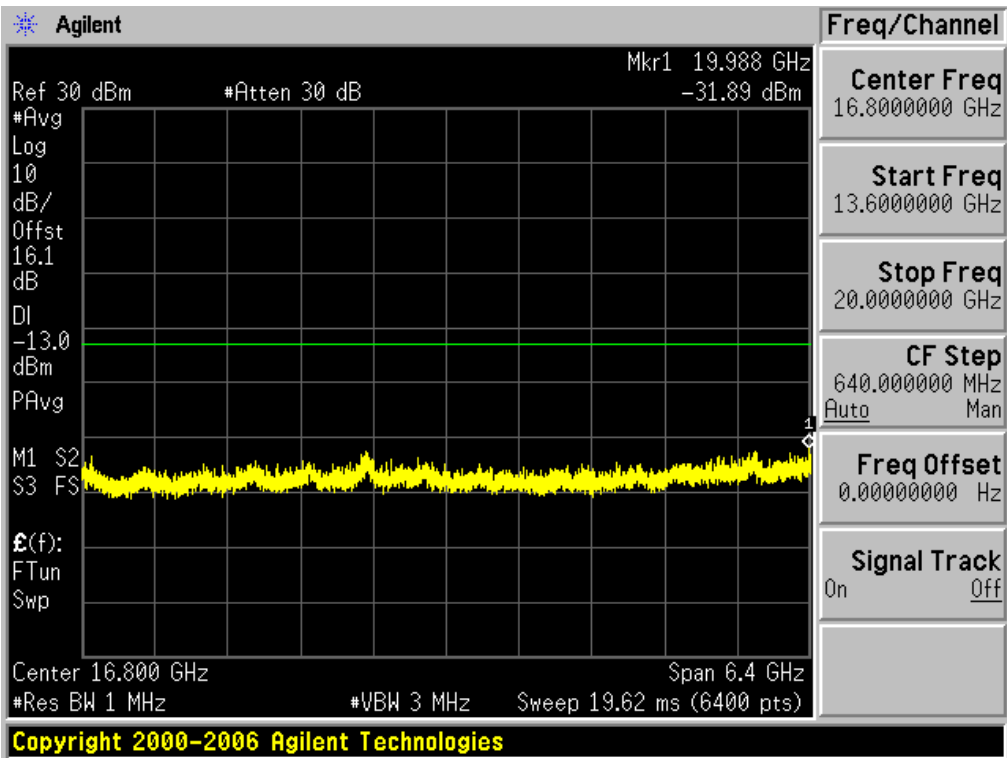
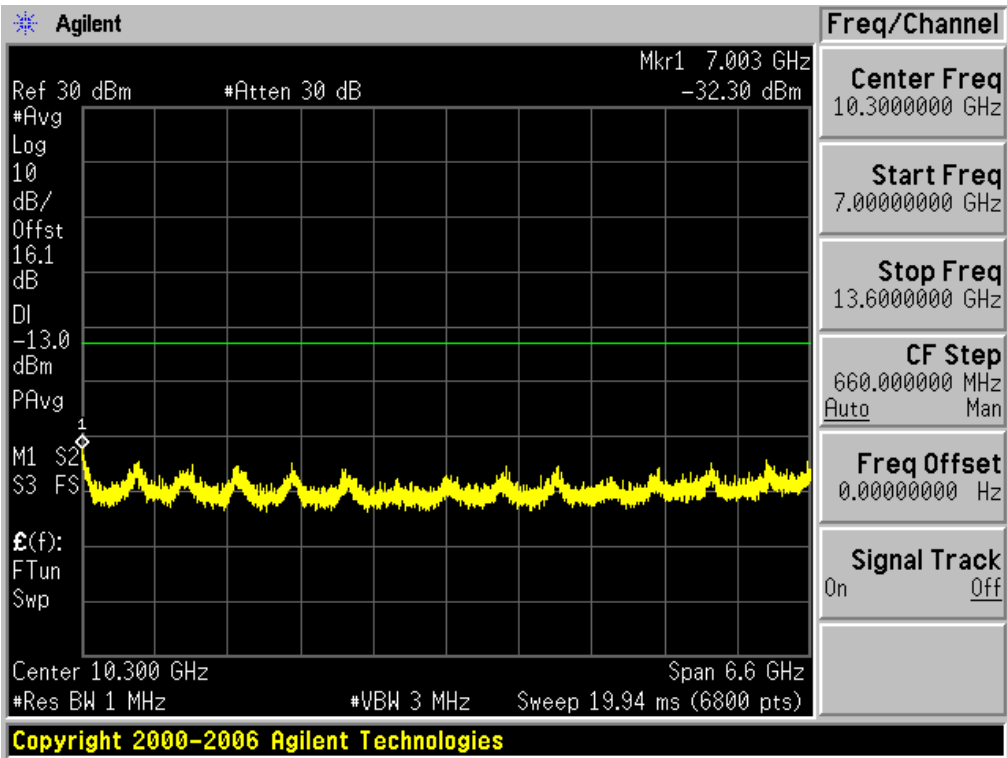




Test Channel=HCH









## Appendix F) Frequency Stability

### Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM1	LCH	TN	VL	-4.74	-0.01	±2.5	PASS
			TN	VN	-6.62	-0.01	±2.5	PASS
			TN	VH	-8.16	-0.01	±2.5	PASS
		MCH	TN	VL	-11.77	-0.01	±2.5	PASS
			TN	VN	-9.55	-0.01	±2.5	PASS
			TN	VH	-11.98	-0.01	±2.5	PASS
		HCH	TN	VL	-13.02	-0.02	±2.5	PASS
			TN	VN	-12.79	-0.02	±2.5	PASS
			TN	VH	-10.78	-0.01	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM2	LCH	TN	VL	-12.06	-0.01	±2.5	PASS
			TN	VN	-6.14	-0.01	±2.5	PASS
			TN	VH	-7.00	-0.01	±2.5	PASS
		MCH	TN	VL	-14.23	-0.02	±2.5	PASS
			TN	VN	-9.66	-0.01	±2.5	PASS
			TN	VH	-12.99	-0.02	±2.5	PASS
		HCH	TN	VL	-10.90	-0.01	±2.5	PASS
			TN	VN	-14.82	-0.02	±2.5	PASS
			TN	VH	-13.37	-0.02	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM1	LCH	TN	VL	-1.54	0.00	±2.5	PASS
			TN	VN	-9.59	-0.01	±2.5	PASS
			TN	VH	-13.01	-0.01	±2.5	PASS
		MCH	TN	VL	-3.97	0.00	±2.5	PASS
			TN	VN	-16.29	-0.01	±2.5	PASS
			TN	VH	-7.80	0.00	±2.5	PASS
		HCH	TN	VL	-19.25	-0.01	±2.5	PASS
			TN	VN	-20.66	-0.01	±2.5	PASS
			TN	VH	-15.95	-0.01	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM2	LCH	TN	VL	-4.79	0.00	±2.5	PASS
			TN	VN	2.08	0.00	±2.5	PASS
			TN	VH	-8.78	0.00	±2.5	PASS
		MCH	TN	VL	-7.67	0.00	±2.5	PASS
			TN	VN	-2.64	0.00	±2.5	PASS
			TN	VH	-11.59	-0.01	±2.5	PASS
		HCH	TN	VL	-16.05	-0.01	±2.5	PASS
			TN	VN	-22.18	-0.01	±2.5	PASS
			TN	VH	-24.55	-0.01	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA 850	TM1	LCH	TN	VL	-5.63	-0.01	±2.5	PASS
			TN	VN	-2.86	0.00	±2.5	PASS
			TN	VH	-4.14	-0.01	±2.5	PASS
		MCH	TN	VL	-4.40	-0.01	±2.5	PASS
			TN	VN	-2.86	-0.01	±2.5	PASS
			TN	VH	-4.84	-0.01	±2.5	PASS
		HCH	TN	VL	1.22	0.00	±2.5	PASS
			TN	VN	-2.86	0.00	±2.5	PASS
			TN	VH	0.94	0.00	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA 1900	TM1	LCH	TN	VL	4.70	0.00	±2.5	PASS
			TN	VN	3.71	0.00	±2.5	PASS
			TN	VH	3.61	0.00	±2.5	PASS
		MCH	TN	VL	8.47	0.00	±2.5	PASS
			TN	VN	3.71	0.00	±2.5	PASS
			TN	VH	1.63	0.00	±2.5	PASS
		HCH	TN	VL	0.46	0.00	±2.5	PASS
			TN	VN	3.71	0.00	±2.5	PASS
			TN	VH	4.18	0.00	±2.5	PASS

**Frequency Error vs. Temperature:**

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM1	LCH	VN	-30	-9.66	-0.01	±2.5	PASS
			VN	-20	-6.06	-0.01	±2.5	PASS
			VN	-10	-4.78	-0.01	±2.5	PASS
			VN	0	-14.15	-0.02	±2.5	PASS
			VN	10	-15.12	-0.02	±2.5	PASS
			VN	20	-16.00	-0.02	±2.5	PASS
			VN	30	-10.52	-0.01	±2.5	PASS
			VN	40	-11.10	-0.01	±2.5	PASS
			VN	50	-6.93	-0.01	±2.5	PASS
GSM850	TM1	MCH	VN	-30	-12.72	-0.02	±2.5	PASS
			VN	-20	-7.74	-0.01	±2.5	PASS
			VN	-10	-9.25	-0.01	±2.5	PASS
			VN	0	-12.29	-0.01	±2.5	PASS
			VN	10	-9.60	-0.01	±2.5	PASS
			VN	20	-13.09	-0.02	±2.5	PASS
			VN	30	-12.89	-0.02	±2.5	PASS
			VN	40	-18.66	-0.02	±2.5	PASS
			VN	50	-10.45	-0.01	±2.5	PASS
GSM850	TM1	HCH	VN	-30	-16.60	-0.02	±2.5	PASS
			VN	-20	-11.01	-0.01	±2.5	PASS
			VN	-10	-6.03	-0.01	±2.5	PASS
			VN	0	-15.63	-0.02	±2.5	PASS
			VN	10	-13.56	-0.02	±2.5	PASS
			VN	20	-10.86	-0.01	±2.5	PASS
			VN	30	-9.12	-0.01	±2.5	PASS
			VN	40	-9.64	-0.01	±2.5	PASS
			VN	50	-17.26	-0.02	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM2	LCH	VN	-30	-11.28	-0.01	±2.5	PASS
			VN	-20	-11.10	-0.01	±2.5	PASS
			VN	-10	-12.34	-0.01	±2.5	PASS
			VN	0	-9.41	-0.01	±2.5	PASS
			VN	10	-12.25	-0.01	±2.5	PASS
			VN	20	-14.79	-0.02	±2.5	PASS
			VN	30	-10.58	-0.01	±2.5	PASS
			VN	40	-13.54	-0.02	±2.5	PASS
			VN	50	-10.75	-0.01	±2.5	PASS
GSM850	TM2	MCH	VN	-30	-5.32	-0.01	±2.5	PASS
			VN	-20	-10.73	-0.01	±2.5	PASS
			VN	-10	-10.11	-0.01	±2.5	PASS
			VN	0	-14.77	-0.02	±2.5	PASS
			VN	10	-13.39	-0.02	±2.5	PASS
			VN	20	-12.30	-0.01	±2.5	PASS
			VN	30	-9.06	-0.01	±2.5	PASS
			VN	40	-11.22	-0.01	±2.5	PASS
			VN	50	-8.03	-0.01	±2.5	PASS
GSM850	TM2	HCH	VN	-30	-10.84	-0.01	±2.5	PASS
			VN	-20	-8.06	-0.01	±2.5	PASS
			VN	-10	-13.68	-0.02	±2.5	PASS
			VN	0	-17.06	-0.02	±2.5	PASS
			VN	10	-11.68	-0.01	±2.5	PASS
			VN	20	-8.74	-0.01	±2.5	PASS
			VN	30	-12.04	-0.01	±2.5	PASS
			VN	40	-8.22	-0.01	±2.5	PASS
			VN	50	-13.03	-0.02	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM1	LCH	VN	-30	-14.69	-0.01	±2.5	PASS
			VN	-20	-2.53	0.00	±2.5	PASS
			VN	-10	-4.70	0.00	±2.5	PASS
			VN	0	-5.76	0.00	±2.5	PASS
			VN	10	-13.57	-0.01	±2.5	PASS
			VN	20	-4.12	0.00	±2.5	PASS
			VN	30	-4.36	0.00	±2.5	PASS
			VN	40	-11.71	-0.01	±2.5	PASS
			VN	50	-6.44	0.00	±2.5	PASS
GSM1900	TM1	MCH	VN	-30	-11.25	-0.01	±2.5	PASS
			VN	-20	-10.21	-0.01	±2.5	PASS
			VN	-10	-8.94	0.00	±2.5	PASS
			VN	0	-13.33	-0.01	±2.5	PASS
			VN	10	-15.22	-0.01	±2.5	PASS
			VN	20	-6.40	0.00	±2.5	PASS
			VN	30	-5.51	0.00	±2.5	PASS
			VN	40	-6.38	0.00	±2.5	PASS
			VN	50	-6.29	0.00	±2.5	PASS
GSM1900	TM1	HCH	VN	-30	-24.49	-0.01	±2.5	PASS
			VN	-20	-18.70	-0.01	±2.5	PASS
			VN	-10	-26.69	-0.01	±2.5	PASS
			VN	0	-12.83	-0.01	±2.5	PASS
			VN	10	-12.18	-0.01	±2.5	PASS
			VN	20	-16.02	-0.01	±2.5	PASS
			VN	30	-29.47	-0.02	±2.5	PASS
			VN	40	-27.25	-0.01	±2.5	PASS
			VN	50	-14.53	-0.01	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM2	LCH	VN	-30	-11.34	-0.01	±2.5	PASS
			VN	-20	-17.71	-0.01	±2.5	PASS
			VN	-10	0.79	0.00	±2.5	PASS
			VN	0	-5.38	0.00	±2.5	PASS
			VN	10	-11.31	-0.01	±2.5	PASS
			VN	20	-6.43	0.00	±2.5	PASS
			VN	30	0.24	0.00	±2.5	PASS
			VN	40	-17.77	-0.01	±2.5	PASS
			VN	50	-9.13	0.00	±2.5	PASS
GSM1900	TM2	MCH	VN	-30	1.82	0.00	±2.5	PASS
			VN	-20	2.24	0.00	±2.5	PASS
			VN	-10	7.28	0.00	±2.5	PASS
			VN	0	-18.50	-0.01	±2.5	PASS
			VN	10	-4.61	0.00	±2.5	PASS
			VN	20	2.34	0.00	±2.5	PASS
			VN	30	-7.31	0.00	±2.5	PASS
			VN	40	-7.80	0.00	±2.5	PASS
			VN	50	-1.39	0.00	±2.5	PASS
GSM1900	TM2	HCH	VN	-30	-29.17	-0.02	±2.5	PASS
			VN	-20	-22.89	-0.01	±2.5	PASS
			VN	-10	-26.52	-0.01	±2.5	PASS
			VN	0	-22.67	-0.01	±2.5	PASS
			VN	10	-14.97	-0.01	±2.5	PASS
			VN	20	-21.93	-0.01	±2.5	PASS
			VN	30	-23.28	-0.01	±2.5	PASS
			VN	40	-19.08	-0.01	±2.5	PASS
			VN	50	-19.95	-0.01	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA 850	TM1	LCH	VN	-30	-4.43	-0.01	±2.5	PASS
			VN	-20	-5.20	-0.01	±2.5	PASS
			VN	-10	11.39	0.01	±2.5	PASS
			VN	0	-4.33	-0.01	±2.5	PASS
			VN	10	9.63	0.01	±2.5	PASS
			VN	20	0.86	0.00	±2.5	PASS
			VN	30	-4.20	-0.01	±2.5	PASS
			VN	40	-4.55	-0.01	±2.5	PASS
			VN	50	-4.46	-0.01	±2.5	PASS
WCDMA 850	TM1	MCH	VN	-30	11.79	0.01	±2.5	PASS
			VN	-20	-5.28	-0.01	±2.5	PASS
			VN	-10	-4.56	-0.01	±2.5	PASS
			VN	0	-4.49	-0.01	±2.5	PASS
			VN	10	-4.78	-0.01	±2.5	PASS
			VN	20	-5.14	-0.01	±2.5	PASS
			VN	30	-5.14	-0.01	±2.5	PASS
			VN	40	-4.62	-0.01	±2.5	PASS
			VN	50	-4.38	-0.01	±2.5	PASS
WCDMA 850	TM1	HCH	VN	-30	1.00	0.00	±2.5	PASS
			VN	-20	-0.20	0.00	±2.5	PASS
			VN	-10	1.16	0.00	±2.5	PASS
			VN	0	0.93	0.00	±2.5	PASS
			VN	10	1.35	0.00	±2.5	PASS
			VN	20	1.79	0.00	±2.5	PASS
			VN	30	1.16	0.00	±2.5	PASS
			VN	40	2.14	0.00	±2.5	PASS
			VN	50	1.20	0.00	±2.5	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA 1900	TM1	LCH	VN	-30	4.39	0.00	±2.5	PASS
			VN	-20	3.34	0.00	±2.5	PASS
			VN	-10	4.16	0.00	±2.5	PASS
			VN	0	8.47	0.00	±2.5	PASS
			VN	10	3.54	0.00	±2.5	PASS
			VN	20	5.87	0.00	±2.5	PASS
			VN	30	1.15	0.00	±2.5	PASS
			VN	40	-6.78	0.00	±2.5	PASS
			VN	50	5.11	0.00	±2.5	PASS
WCDMA 1900	TM1	MCH	VN	-30	8.81	0.00	±2.5	PASS
			VN	-20	3.98	0.00	±2.5	PASS
			VN	-10	5.14	0.00	±2.5	PASS
			VN	0	4.32	0.00	±2.5	PASS
			VN	10	3.85	0.00	±2.5	PASS
			VN	20	7.20	0.00	±2.5	PASS
			VN	30	-4.78	0.00	±2.5	PASS
			VN	40	5.18	0.00	±2.5	PASS
			VN	50	-33.79	-0.02	±2.5	PASS
WCDMA 1900	TM1	HCH	VN	-30	4.04	0.00	±2.5	PASS
			VN	-20	-0.32	0.00	±2.5	PASS
			VN	-10	4.77	0.00	±2.5	PASS
			VN	0	2.18	0.00	±2.5	PASS
			VN	10	3.28	0.00	±2.5	PASS
			VN	20	-6.14	0.00	±2.5	PASS
			VN	30	8.18	0.00	±2.5	PASS
			VN	40	1.24	0.00	±2.5	PASS
			VN	50	4.42	0.00	±2.5	PASS

## Appendix G) Effective Radiated Power of Transmitter (ERP/EIRP)

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark									
	30MHz-1GHz	peak	100 kHz	300kHz	Peak									
	Above 1GHz	Peak	1MHz	3MHz	Peak									
Measurement Procedure:	<p>Test procedure as below:</p> <p>1) The EUT was powered ON and placed on a 1.5m high table at a 3 meter fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.</p> <p>2) The EUT was set 3 meters(above 18GHz the distance is 1 meter) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.</p> <p>4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.</p> <p>5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.</p> <p>6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.</p> <p>7) The output power into the substitution antenna was then measured.</p> <p>8) Steps 6) and 7)were repeated with both antennas polarized.</p> <p>9) Calculate power in dBm by the following formula: ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd) EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi) EIRP=ERP+2.15dB where:</p> <p>Pg is the generator output power into the substitution antenna.</p> <p>10) Test the EUT in the lowest channel, the middle channel the Highest channel</p> <p>11) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode,And found the X axis positioning which it is worse case.</p> <p>12) Repeat above procedures until all frequencies measured was complete.</p>													
Limit:	<table><tr><td>Mode</td><td>GSM 850/WCDMA/HSDPA /HSUPA Band V</td><td>GSM 1900/WCDMA/HSDPA /HSUPA Band V</td></tr><tr><td>Frequency</td><td>824 – 849MHz</td><td>1850 – 1910MHz</td></tr><tr><td>Limit</td><td>38.45dBm ( 7W )</td><td>33.01dBm ( 2W )</td></tr></table>					Mode	GSM 850/WCDMA/HSDPA /HSUPA Band V	GSM 1900/WCDMA/HSDPA /HSUPA Band V	Frequency	824 – 849MHz	1850 – 1910MHz	Limit	38.45dBm ( 7W )	33.01dBm ( 2W )
Mode	GSM 850/WCDMA/HSDPA /HSUPA Band V	GSM 1900/WCDMA/HSDPA /HSUPA Band V												
Frequency	824 – 849MHz	1850 – 1910MHz												
Limit	38.45dBm ( 7W )	33.01dBm ( 2W )												

**Measurement Data**

GSM 850 (Voice)							
Channel/fc (MHz)	Height (cm)	Azimuth (deg)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
128/824.2	150	100	31.45	38.45	-7	Pass	H
	150	124	30.18	38.45	-8.27	Pass	V
190/836.6	150	180	31.67	38.45	-6.78	Pass	H
	150	148	30.18	38.45	-8.27	Pass	V
251/848.8	150	200	31.39	38.45	-7.06	Pass	H
	150	210	30.09	38.45	-8.36	Pass	V

GPRS 850 Class 8							
Channel/fc (MHz)	Height (cm)	Azimuth (deg)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
128/824.2	150	100	31.29	38.45	-7.16	Pass	H
	150	245	30.09	38.45	-8.36	Pass	V
190/836.6	150	167	31.32	38.45	-7.13	Pass	H
	150	200	30.61	38.45	-7.84	Pass	V
251/848.8	150	180	31.76	38.45	-6.69	Pass	H
	150	155	30.18	38.45	-8.27	Pass	V

WCDMA band V RMC 12.2K							
Channel/fc (MHz)	Height (cm)	Azimuth (deg)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4132/826.4	150	100	22.45	38.45	-16	Pass	H
	150	245	21.09	38.45	-17.36	Pass	V
4183/836.6	150	170	22.32	38.45	-16.13	Pass	H
	150	124	21.87	38.45	-16.58	Pass	V
4233/846.6	150	100	22.42	38.45	-16.03	Pass	H
	150	150	21.13	38.45	-17.32	Pass	V

GSM 1900 (Voice)							
Channel/fc (MHz)	Height (cm)	Azimuth (deg)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
512/1850.2	150	100	28.78	33.01	-4.23	Pass	H
	150	190	27.19	33.01	-5.82	Pass	V
661/1880.0	150	189	28.67	33.01	-4.34	Pass	H
	150	133	27.87	33.01	-5.14	Pass	V
810/1909.8	150	155	28.56	33.01	-4.45	Pass	H
	150	180	27.65	33.01	-5.36	Pass	V

GPRS 1900 Class 8							
Channel/fc (MHz)	Height (cm)	Azimuth (deg)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
512/1850.2	150	100	28.78	33.01	-4.23	Pass	H
	150	150	27.78	33.01	-5.23	Pass	V
661/1880.0	150	155	28.56	33.01	-4.45	Pass	H
	150	180	27.67	33.01	-5.34	Pass	V
810/1909.8	150	198	28.66	33.01	-4.35	Pass	H
	150	100	27.67	33.01	-5.34	Pass	V

WCDMA band II RCM 12.2K							
Channel/fc (MHz)	Height (cm)	Azimuth (deg)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
9262/1852.4	150	100	21.89	33.01	-11.12	Pass	H
	150	150	20.98	33.01	-12.03	Pass	V
9400/1880.0	150	145	21.78	33.01	-11.23	Pass	H
	150	123	20.78	33.01	-12.23	Pass	V
9538/1907.6	150	350	21.67	33.01	-11.34	Pass	H
	150	180	20.88	33.01	-12.13	Pass	V

## Appendix H) Field strength of spurious radiation

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-30MHz	Peak	10kHz	30kHz	Peak
	30MHz-1GHz	Peak	100 kHz	300kHz	Peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
Measurement Procedure:	<p>1. Scan up to 10<sup>th</sup> harmonic, find the maximum radiation frequency to measure.</p> <p>2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT.</p> <p>Test procedure as below:</p> <p>1) The EUT was powered ON and placed on a 1.5m high table at a 3 meter fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.</p> <p>2) The EUT was set 3 meters(above 18GHz the distance is 1 meter) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.</p> <p>4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.</p> <p>5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.</p> <p>6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.</p> <p>7) The output power into the substitution antenna was then measured.</p> <p>8) Steps 6) and 7) were repeated with both antennas polarized.</p> <p>9) Calculate power in dBm by the following formula:  <math display="block">\text{ERP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBd)}</math> <math display="block">\text{EIRP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}</math> <math display="block">\text{EIRP} = \text{ERP} + 2.15\text{dB}</math>           where:            Pg is the generator output power into the substitution antenna.</p> <p>10) Test the EUT in the lowest channel, the middle channel the Highest channel</p> <p>11) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode, And found the X axis positioning which it is worse case.</p> <p>12) Repeat above procedures until all frequencies measured was complete.</p>				
Limit:	Attenuated at least 43+10log(P)				

GSM 850, 128 channel/824.2 MHz(lower channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1648.4	150	200	-42.17	-13	-29.17	Pass	H
2472.6	150	150	-38.90	-13	-25.90	Pass	H
---				-13		Pass	H
1648.4	150	248	-41.87	-13	-28.87	Pass	V
2472.6	150	143	-36.09	-13	-23.09	Pass	V
---				-13		Pass	V
GSM 850, 190 channel/836.6MHz (middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1673.2	200	198	-43.19	-13	-30.19	Pass	H
2509.8	150	200	-39.08	-13	-26.08	Pass	H
---				-13		Pass	H
1673.2	150	124	-42.88	-13	-29.88	Pass	V
2509.8	150	180	-37.10	-13	-24.10	Pass	V
---				-13		Pass	V

GSM 850, 251 channel/848.8MHz(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1697.6	150	200	-42.67	-13	-29.67	Pass	H
2546.4	200	150	-37.90	-13	-24.90	Pass	H
---				-13		Pass	H
1697.6	150	145	-41.89	-13	-28.89	Pass	V
2546.4	150	155	-36.98	-13	-23.98	Pass	V
---				-13		Pass	V

GPRS 850 (Class 8), 128 channel/824.2 MHz(lower channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1648.4	150	245	-44.18	-13	-31.18	Pass	H
2472.6	150	125	-38.09	-13	-25.09	Pass	H
---				-13		Pass	H
1648.4	150	200	-43.89	-13	-30.89	Pass	V
2472.6	150	167	-38.89	-13	-25.89	Pass	V
---				-13		Pass	V

GPRS 850 (Class 8), 190 channel/836.6MHz (middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1673.2	150	245	-46.29	-13	-33.29	Pass	H
2509.8	150	127	-40.29	-13	-27.29	Pass	H
---				-13		Pass	H
1673.2	150	100	-45.89	-13	-32.89	Pass	V
2509.8	150	180	-39.89	-13	-26.89	Pass	V
---				-13		Pass	V

GPRS 850 (Class 8), 251 channel/848.8MHz(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1697.6	200	200	-44.29	-13	-31.29	Pass	H
2546.4	150	145	-39.09	-13	-26.09	Pass	H
---				-13		Pass	H
1697.6	150	143	-43.89	-13	-30.89	Pass	V
2546.4	150	167	-40.01	-13	-27.01	Pass	V
---				-13		Pass	V

WCDMA band V (RMC 122.2K), 4132 channel/826.4 MHz(lower channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1652.8	150	123	-48.90	-13	-35.90	Pass	H
2479.2	150	145	-40.87	-13	-27.87	Pass	H
---				-13		Pass	H
1652.8	150	180	-47.88	-13	-34.88	Pass	V
2479.2	150	277	-42.98	-13	-29.98	Pass	V
--				-13		Pass	V

WCDMA band V (RMC 122.2K), 4183 channel/836.6 MHz(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1673.2	150	300	-47.87	-13	-34.87	Pass	H
2509.8	150	120	-42.11	-13	-29.11	Pass	H
---				-13		Pass	H
1673.2	150	155	-46.09	-13	-33.09	Pass	V
2509.8	150	129	-40.89	-13	-27.89	Pass	V
---				-13		Pass	V

WCDMA band V (RMC 122.2K), 4233 channel/846.6 MHz(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1693.2	150	100	-46.09	-13	-33.09	Pass	H
2539.8	150	167	-41.19	-13	-28.19	Pass	H
---				-13		Pass	H
1693.2	150	234	-48.11	-13	-35.11	Pass	V
2539.8	150	200	-42.89	-13	-29.89	Pass	V
---				-13		Pass	V



GSM 1900, 512 channel/1850.2MHz(lower channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
3700.4	150	189	-42.16	-13	-29.16	Pass	H
5550.6	150	234	-48.12	-13	-35.12	Pass	H
---				-13		Pass	H
3700.4	150	100	-41.28	-13	-28.28	Pass	V
5550.6	150	220	-48.82	-13	-35.82	Pass	V
---				-13		Pass	V

GSM 1900, 661 channel/1880.0MHz(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
3760.0	150	200	-42.09	-13	-29.09	Pass	H
5640.0	150	120	-49.11	-13	-36.11	Pass	H
---				-13		Pass	H
3760.0	150	100	-41.98	-13	-28.98	Pass	V
5640.0	150	120	-48.98	-13	-35.98	Pass	V
---				-13		Pass	V

GSM 1900, 810 channel/1909.8MHz(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
3819.6	150	100	-42.78	-13	-29.78	Pass	H
5729.4	150	120	-48.09	-13	-35.09	Pass	H
---				-13		Pass	H
3819.6	150	180	-41.09	-13	-28.09	Pass	V
5729.4	150	220	-49.09	-13	-36.09	Pass	V
---				-13		Pass	V

GPRS 1900 (Class 8), 512 channel/1850.2MHz(lower channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
3700.4	150	126	-45.18	-13	-32.18	Pass	H
5550.6	150	145	-50.34	-13	-37.34	Pass	H
---				-13		Pass	H
3700.4	150	169	-44.28	-13	-31.28	Pass	V
5550.6	150	178	-51.23	-13	-38.23	Pass	V
---				-13		Pass	V

GPRS 1900(Class 8), 661 channel/1880.0MHz(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
3760.0	150	309	-45.09	-13	-32.09	Pass	H
5640.0	150	133	-50.19	-13	-37.19	Pass	H
---				-13		Pass	H
3760.0	150	155	-43.09	-13	-30.09	Pass	V
5640.0	150	142	-48.09	-13	-35.09	Pass	V
---				-13		Pass	V

GPRS 1900(Class 8), 810 channel/1909.8MHz(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
3819.6	150	129	-46.89	-13	-33.89	Pass	H
5729.4	150	100	-50.09	-13	-37.09	Pass	H
---				-13		Pass	H
3819.6	150	145	-47.11	-13	-34.11	Pass	V
5729.4	150	150	-49.09	-13	-36.09	Pass	V
---				-13		Pass	V

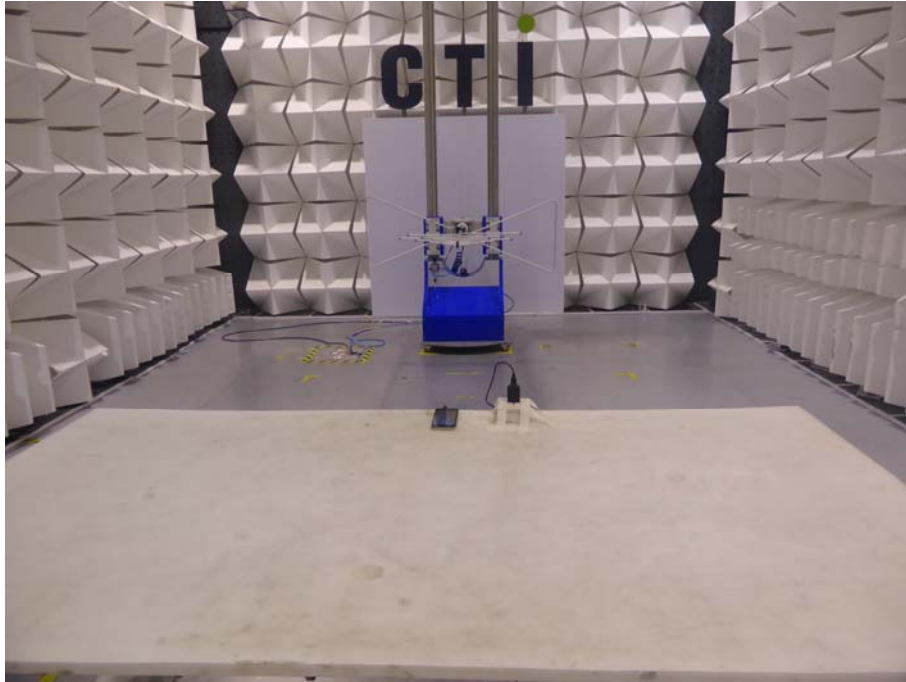
WCDMA band II(RMC 12.2K), 9262 channel/1852.4MHz(lower channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
3704.8	150	190	-47.89	-13	-34.89	Pass	H
5557.2	150	200	-52.09	-13	-39.09	Pass	H
---				-13		Pass	H
3704.8	150	145	-48.99	-13	-35.99	Pass	V
5557.2	150	155	-51.09	-13	-38.09	Pass	V
---				-13		Pass	V
WCDMA band II (RMC 12.2K), 9400 channel/1880.0MHz(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
3760.0	150	189	-49.09	-13	-36.09	Pass	H
5640.0	150	127	-52.10	-13	-39.10	Pass	H
---				-13		Pass	H
3760.0	150	167	-48.11	-13	-35.11	Pass	V
5640.0	150	100	-51.09	-13	-38.09	Pass	V
---				-13		Pass	V

WCDMA band II (RMC 12.2K), 9538 channel/1907.6MHz(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
3815.2	150	100	-48.09	-13	-35.09	Pass	H
5722.8	150	256	-52.11	-13	-39.11	Pass	H
				-13		Pass	H
3815.2	150	157	-49.18	-13	-36.18	Pass	V
5722.8	150	189	-52.87	-13	-39.87	Pass	V
				-13		Pass	V

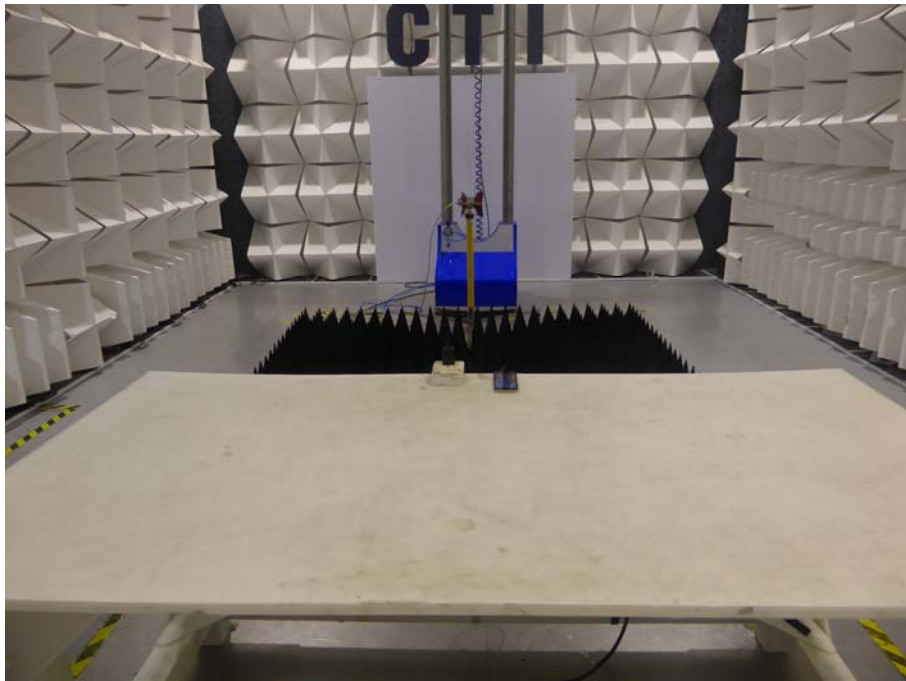
**Note:**

1) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

## PHOTOGRAPHS OF TEST SETUP



**Radiated spurious emission Test Setup-1 (Below 1GHz)**



**Radiated spurious emission Test Setup-2(Above 1GHz)**

**PHOTOGRAPHS OF EUT Constructional Details**



View of external EUT-1



View of external EUT-2



View of external EUT-3



View of external EUT-4





View of external EUT-5



View of external EUT-6



View of internal EUT-1

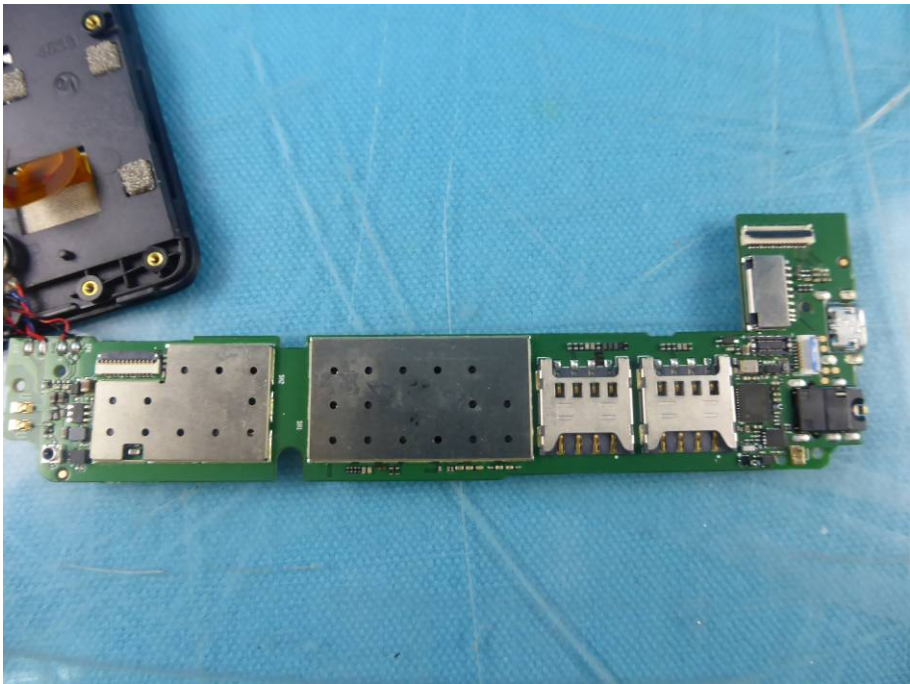


View of internal EUT-2

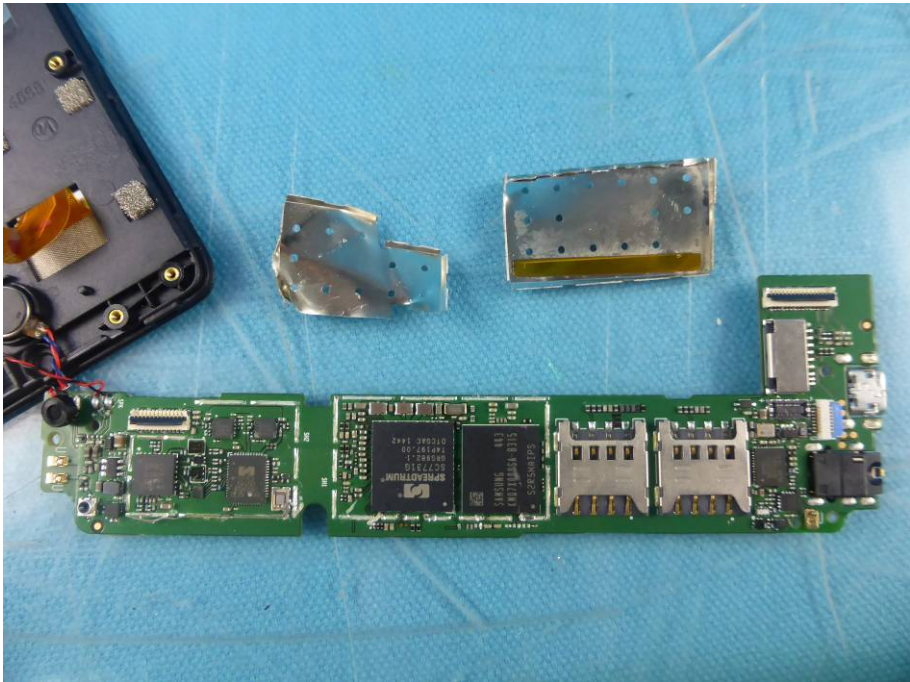




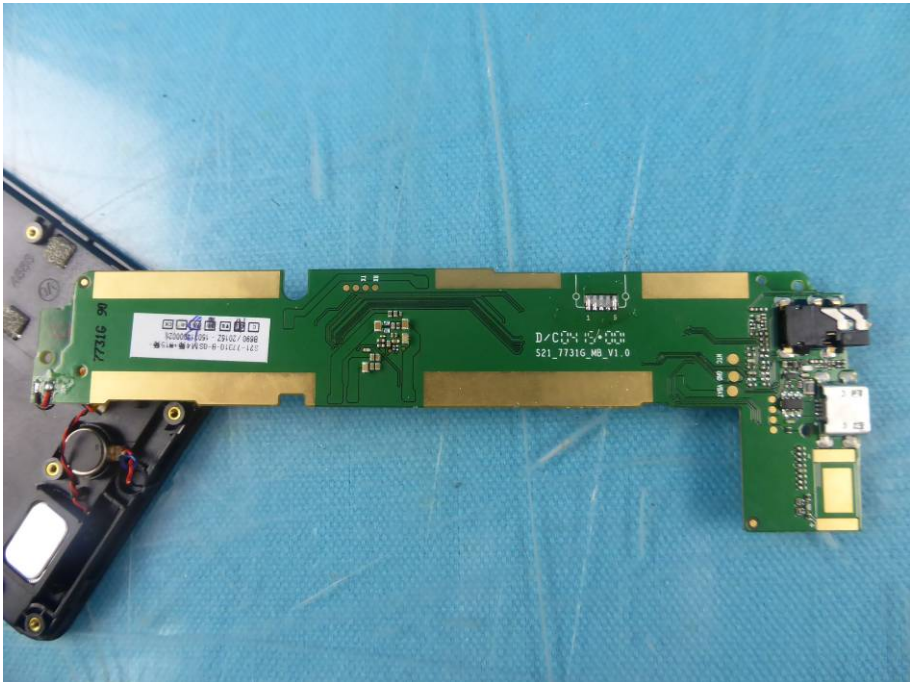
View of internal EUT-3



View of internal EUT-4

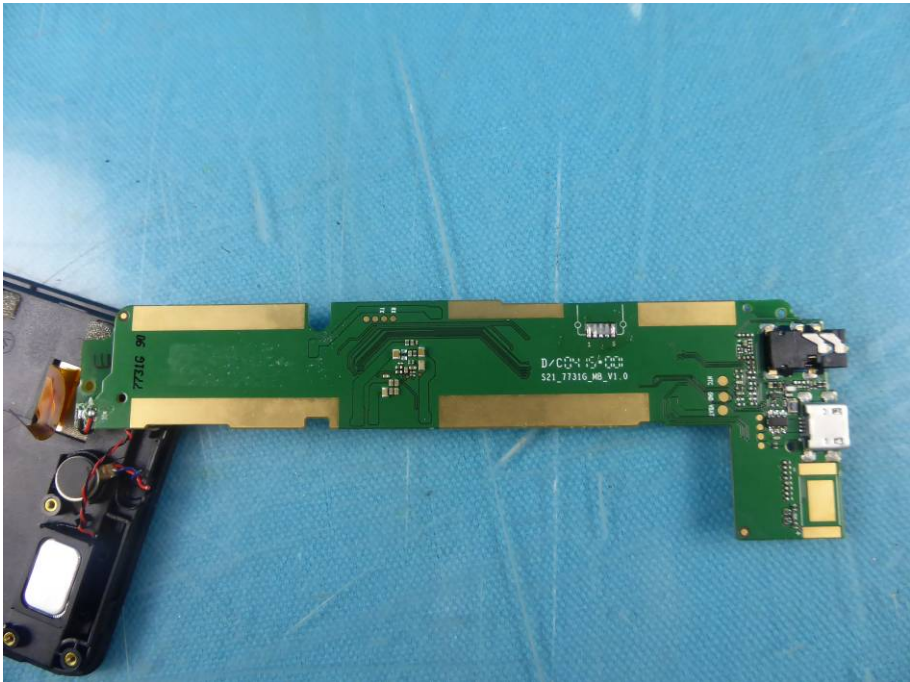


View of internal EUT-5

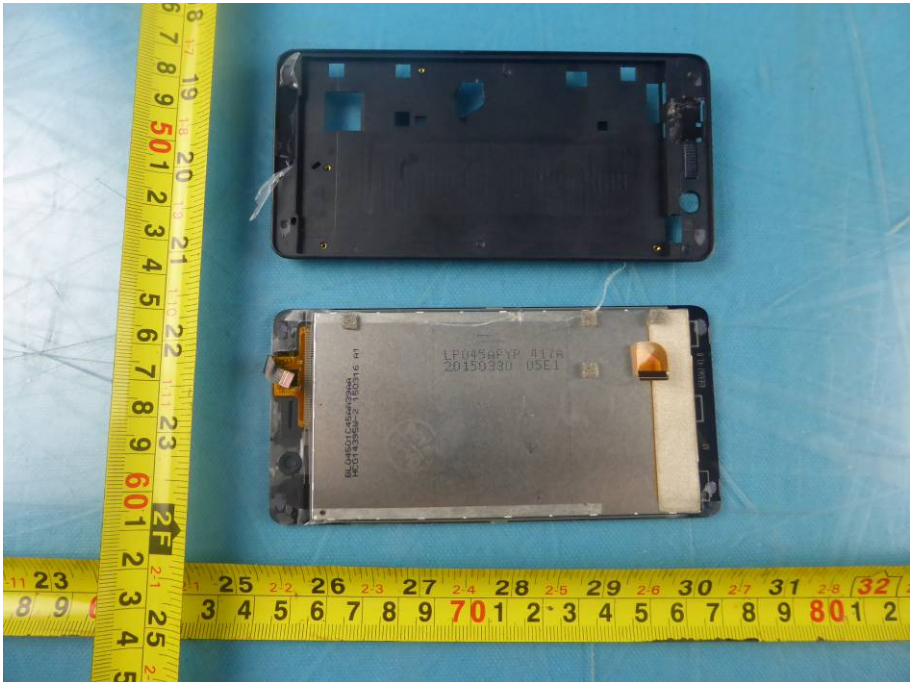


View of internal EUT-6





View of internal EUT-7



View of internal EUT-8



View of internal EUT-9



View of internal EUT-10

\*\*\* End of Report \*\*\*

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