


TEST REPORT

Product : Mobile Data Terminal
Trade mark : 
Model/Type reference : Hero-MDT-AT2, Hero-MDT-AT1,
Hero-MDT-WT1, Hero-MDT-WT2,
Hero-MDT Series
Serial Number : N/A
Report Number : EED32H00105103
FCC ID : 2AGBD-HERO-MDT
Date of Issue : Oct. 22, 2015
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:

Howen Technologies Co., Ltd.

**No. 201, 2/F, B Zone, Hivac Building, Langshan 2nd Rd., North Zone of
Technology Park, Nanshan, Shenzhen, Guangdong, China**

Prepared by:

Centre Testing International Group Co., Ltd.

Hongwei Industrial Zone, Bao'an 70 District,

Shenzhen, Guangdong, China

TEL: +86-755-3368 3668

FAX: +86-755-3368 3385



Tested by:

Ware Xin

Reviewed by:

Eman-Li

Approved by:

Sheek, Luo

Date:

Oct. 22, 2015

Sheek Luo

Lab supervisor

Check No.:2211408689

2 Version

Version No.	Date	Description
00	Oct. 22, 2015	Original

3 Test Summary

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

Remark:

The tested sample(s) and the sample information are provided by the client.

Model No.: Hero-MDT-AT2, Hero-MDT-AT1, Hero-MDT-WT1, Hero-MDT-WT2, Hero-MDT Series

Only the model Hero-MDT-AT2 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being model name.

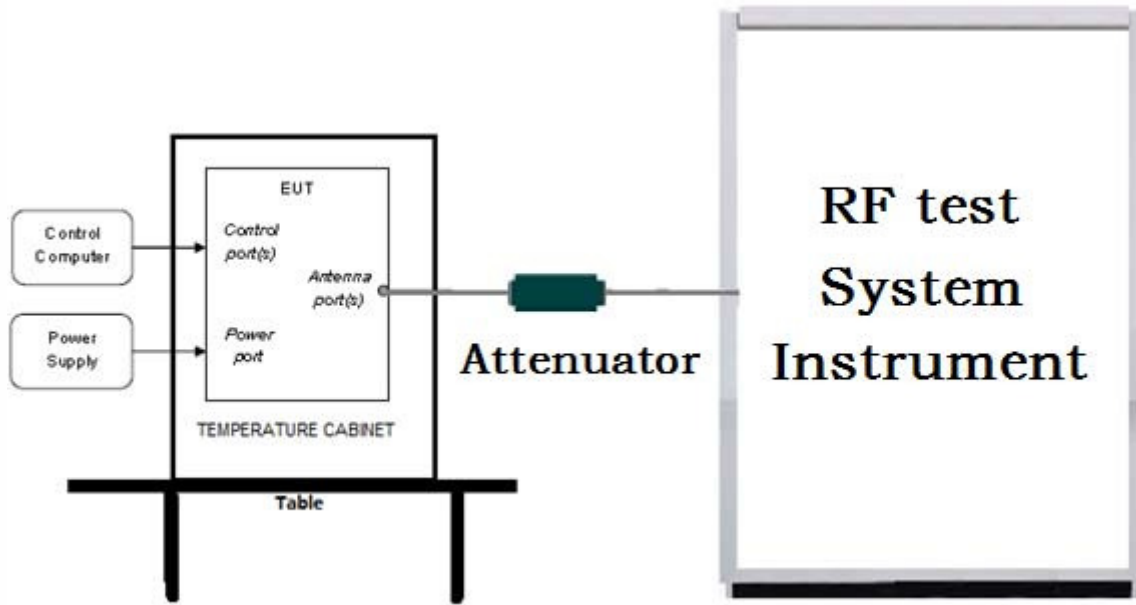
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5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

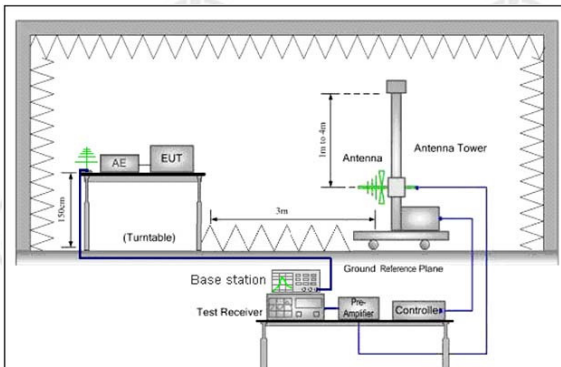


Figure 1. 30MHz to 1GHz

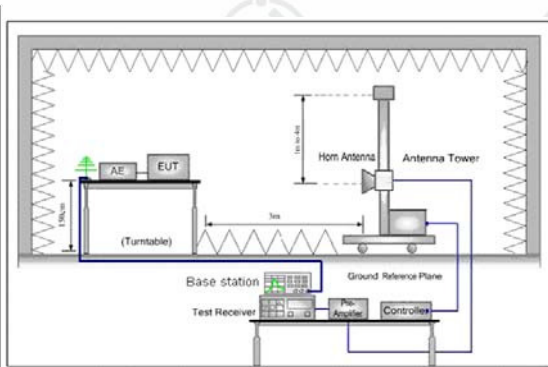


Figure 2. above 1GHz

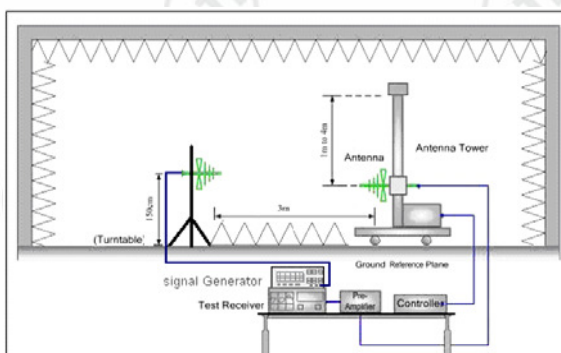


Figure 1. 30MHz to 1GHz

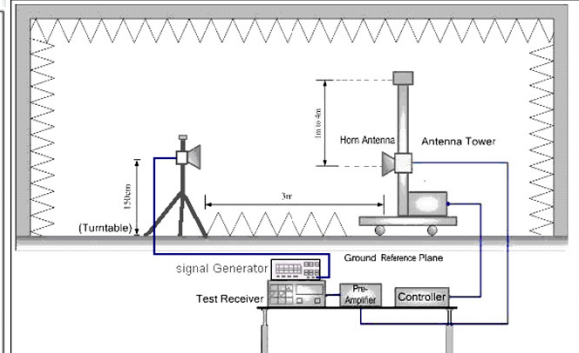


Figure 2. above 1GHz

5.2 Test Environment

Operating Environment:	
Temperature:	25.0 °C
Humidity:	53 % RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
GSM/GPRE	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/GPRE	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:

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


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

6 General Information

6.1 Client Information

Applicant:	Howen Technologies Co., Ltd.
Address of Applicant:	No. 201, 2/F, B Zone, Hivac Building, Langshan 2nd Rd., North Zone of Technology Park, Nanshan, Shenzhen, Guangdong, China
Manufacturer:	Howen Technologies Co., Ltd.
Address of Manufacturer:	No. 201, 2/F, B Zone, Hivac Building, Langshan 2nd Rd., North Zone of Technology Park, Nanshan, Shenzhen, Guangdong, China
Factory:	Howen Technologies Co., Ltd.
Address of Factory:	No. 201, 2/F, B Zone, Hivac Building, Langshan 2nd Rd., North Zone of Technology Park, Nanshan, Shenzhen, Guangdong, China

6.2 General Description of EUT

Product Name:	Mobile Data Terminal
Model No.:	Hero-MDT-AT2, Hero-MDT-AT1, Hero-MDT-WT1, Hero-MDT-WT2, Hero-MDT Series
Test Model No.:	Hero-MDT-AT2
Trade Mark:	
EUT Supports Radios application:	GSM/GPRS 900/1800 WCDMA/HSDPA 850/1900
Power Supply:	DC 12V
Sample Received Date:	Aug. 04, 2015
Sample tested Date:	Aug. 04, 2015 to Oct. 22, 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:	Fixed production
Antenna Type and Gain:	Type: Integral antenna Gain:0dBi
Test Voltage:	DC 12V

6.4 Description of Support Units

The EUT has been tested independently.

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China518101

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

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 Group 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 Group 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.: 565659

Centre Testing International Group 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 565659.

IC-Registration No.: 7408A

The 3m Alternate Test Site of Centre Testing International Group 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 Group 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 Group 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 Group 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 Group 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 Group 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 Group 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.

6.10 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.31dB (30MHz-1GHz)
		0.57dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-12.75GHz)
4	Conduction emission	3.6dB (9kHz to 150kHz)
		3.2dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	2.8%
7	DC power voltages	0.025%

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	07-13-2015	07-29-2016
Microwave Preamplifier	Agilent	8449B	3008A02425	02-05-2015	02-04-2016
Horn Antenna	ETS-LINDGREN	3117	00057410	06-30-2015	06-28-2018
Loop Antenna	ETS	6502	00071730	07-30-2015	07-28-2017
Spectrum Analyzer	R&S	FSP40	100416	06-30-2015	06-28-2016
Receiver	R&S	ESCI	100435	06-30-2015	06-28-2016
Multi device Controller	matur	NCD/070/10711112	---	01-13-2015	01-12-2016
LISN	schwarzbeck	NNBM8125	81251547	06-30-2015	06-28-2016
LISN	schwarzbeck	NNBM8125	81251548	06-30-2015	06-28-2016
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	1905	07-08-2015	07-06-2016
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 PerformanceStandards
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-averageratio	PASS	Appendix B)
Part 2.1049(h)	Part 22.917(b)/ Part 24.238(b)&KDB 971168 D01v02r02	99% &26dBOccupied 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 ofspurious radiation	PASS	AppendixG)
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	AppendixH)

Appendix A) RF Power Output

Test Band	Test Mode	Test Channel	Measured(dbm)	Limit(dbm)	Verdict
GSM850	GSM/TM1	LCH	32.22	38.5	PASS
		MCH	32.07	38.5	PASS
		HCH	31.91	38.5	PASS
	GSM/TM2	LCH	32.60	38.5	PASS
		MCH	32.41	38.5	PASS
		HCH	32.25	38.5	PASS
Test Band	Test Mode	Test Channel	Measured(dbm)	Limit(dbm)	Verdict
GSM1900	GSM/TM1	LCH	28.04	33	PASS
		MCH	28.03	33	PASS
		HCH	26.47	33	PASS
	GSM/TM2	LCH	28.12	33	PASS
		MCH	28.07	33	PASS
		HCH	26.54	33	PASS

Test Band	Test Mode	Test Channel	Measured(dbm)	Limit(dbm)	Verdict
WCDMA850	UMTS/TM1	LCH	22.47	38.5	PASS
		MCH	22.16	38.5	PASS
		HCH	22.08	38.5	PASS
Test Band	Test Mode	Test Channel	Measured(dbm)	Limit (dbm)	Verdict
WCDMA850	UMTS/TM2	LCH_SubTest-1	21.85	38.5	PASS
		LCH_SubTest-2	20.69	38.5	PASS
		LCH_SubTest-3	20.61	38.5	PASS
		LCH_SubTest-4	19.50	38.5	PASS
		MCH_SubTest-1	21.76	38.5	PASS
		MCH_SubTest-2	20.47	38.5	PASS
		MCH_SubTest-3	20.47	38.5	PASS
		MCH_SubTest-4	19.40	38.5	PASS
		HCH_SubTest-1	21.58	38.5	PASS
		HCH_SubTest-2	20.47	38.5	PASS
		HCH_SubTest-3	20.42	38.5	PASS
		HCH_SubTest-4	19.51	38.5	PASS

Test Band	Test Mode	Test Channel	Measured(dbm)	Limit(dbm)	Verdict
WCDMA1900	UMTS/TM1	LCH	20.39	33	PASS
		MCH	21.34	33	PASS
		HCH	19.79	33	PASS
Test Band	Test Mode	Test Channel	Measured(dbm)	Limit(dbm)	Verdict
WCDMA1900	UMTS/TM2	LCH_SubTest-1	20.62	33	PASS
		LCH_SubTest-2	19.33	33	PASS
		LCH_SubTest-3	19.34	33	PASS
		LCH_SubTest-4	18.26	33	PASS
		MCH_SubTest-1	20.29	33	PASS
		MCH_SubTest-2	19.01	33	PASS
		MCH_SubTest-3	18.98	33	PASS
		MCH_SubTest-4	17.97	33	PASS
		HCH_SubTest-1	19.57	33	PASS
		HCH_SubTest-2	18.44	33	PASS
		HCH_SubTest-3	18.38	33	PASS
		HCH_SubTest-4	17.32	33	PASS

Appendix B) Peak-to-Average Ratio

Test Band	Test Mode	Test Channel	Measured (dbm)	Limit (dbm)	Verdict
GSM1900	GSM/TM1	LCH	0.15	13	PASS
		MCH	0.14	13	PASS
		HCH	0.13	13	PASS
	GSM/TM2	LCH	0.13	13	PASS
		MCH	0.15	13	PASS
		HCH	0.13	13	PASS

Test Band	Test Mode	Test Channel	Measured (db)	Limit (db)	Verdict
WCDMA1900	UMTS/TM1	LCH	2.39	13	PASS
		MCH	2.95	13	PASS
		HCH	3.10	13	PASS

Appendix C) BandWidth

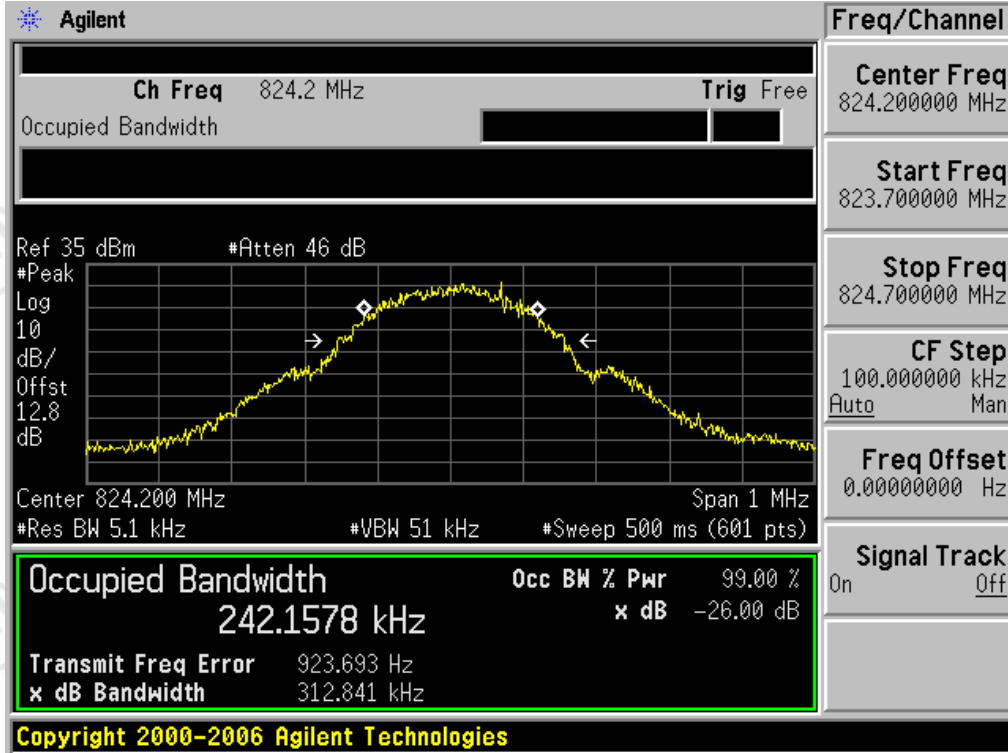
Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
GSM850	GSM/TM1	LCH	242.16	312.84	PASS
		MCH	242.06	309.47	PASS
		HCH	242.37	313.81	PASS
	GSM/TM2	LCH	242.03	310.24	PASS
		MCH	244.16	310.85	PASS
		HCH	242.12	311.97	PASS

Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
GSM1900	GSM/TM1	LCH	241.90	310.81	PASS
		MCH	244.08	313.78	PASS
		HCH	245.32	313.05	PASS
	GSM/TM2	LCH	241.61	311.20	PASS
		MCH	244.63	316.94	PASS
		HCH	244.23	311.11	PASS

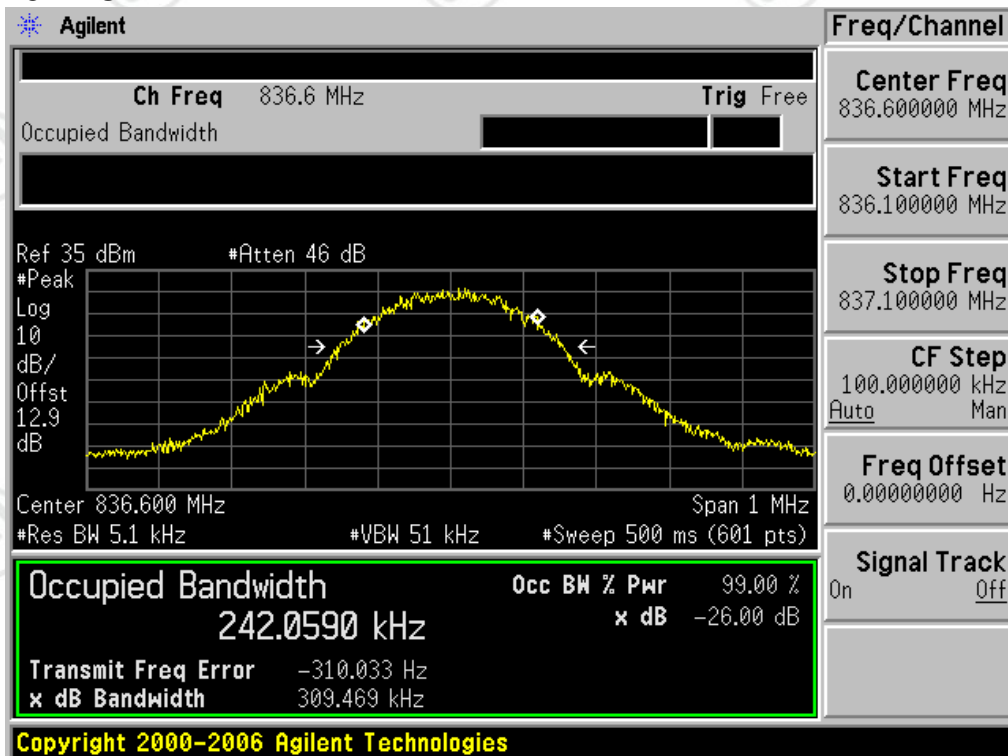
Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
WCDMA850	UMTS/TM1	LCH	4157.0	4688	PASS
		MCH	4183.8	4691	PASS
		HCH	4156.4	4645	PASS

Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
WCDMA1900	UMTS/TM1	LCH	4198.9	4726	PASS
		MCH	4139.6	4675	PASS
		HCH	4159.2	4677	PASS

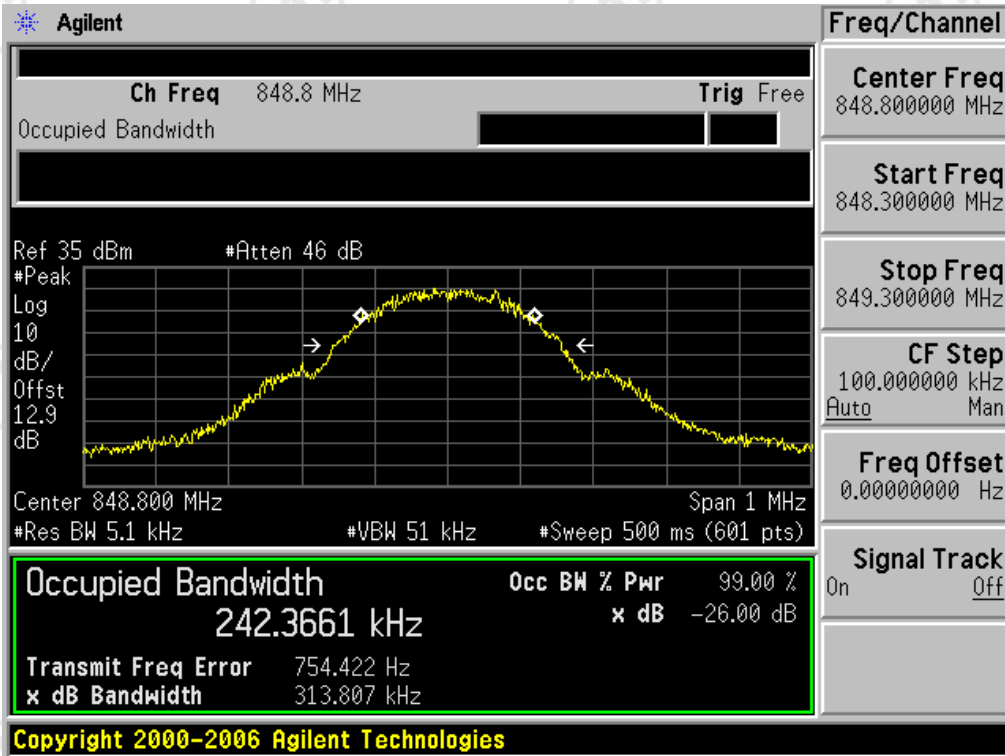
For GSM
Test Band=GSM850
Test Mode=GSM/TM1
Test Channel=LCH



Test Channel=MCH



Test Channel=HCH

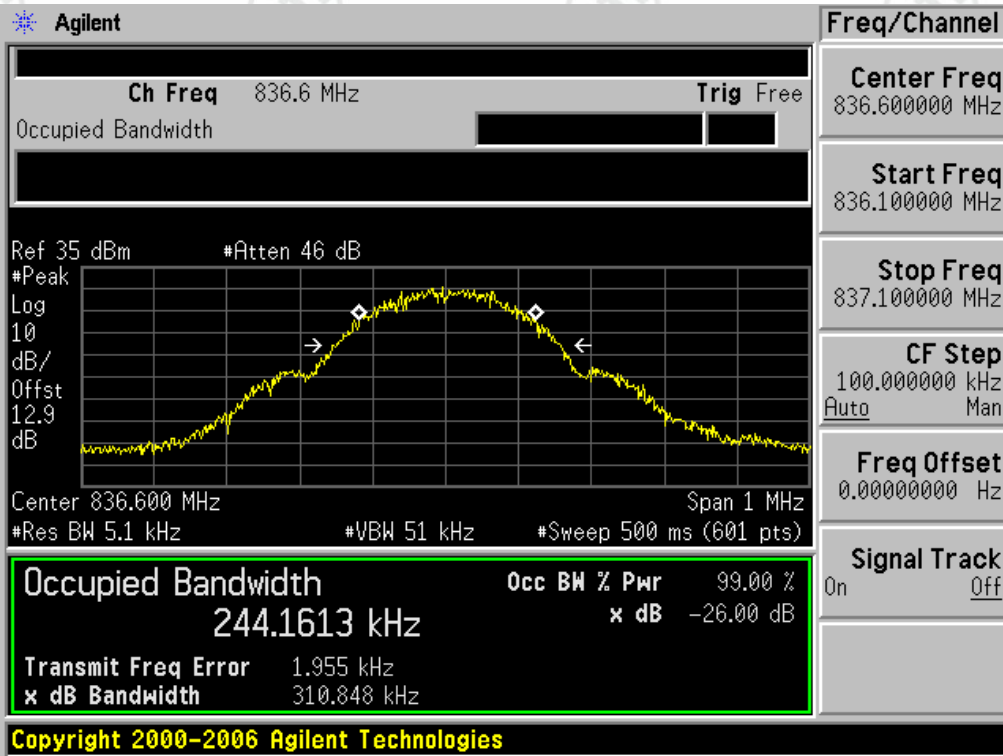


Test Mode=GSM/TM2

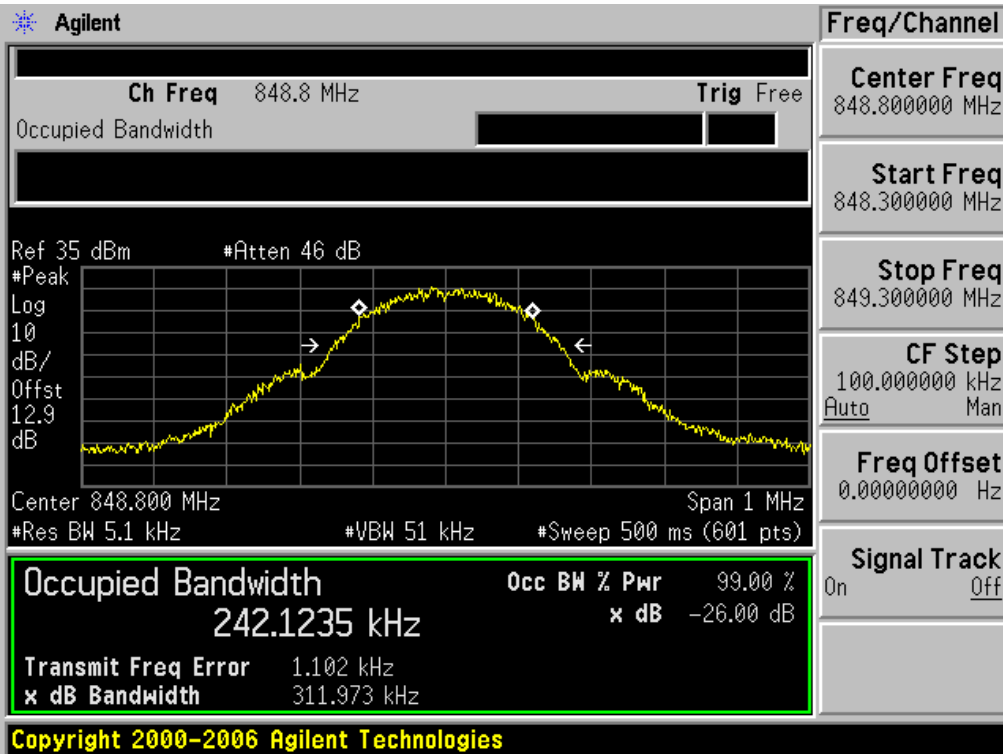
Test Channel=LCH



Test Channel=MCH



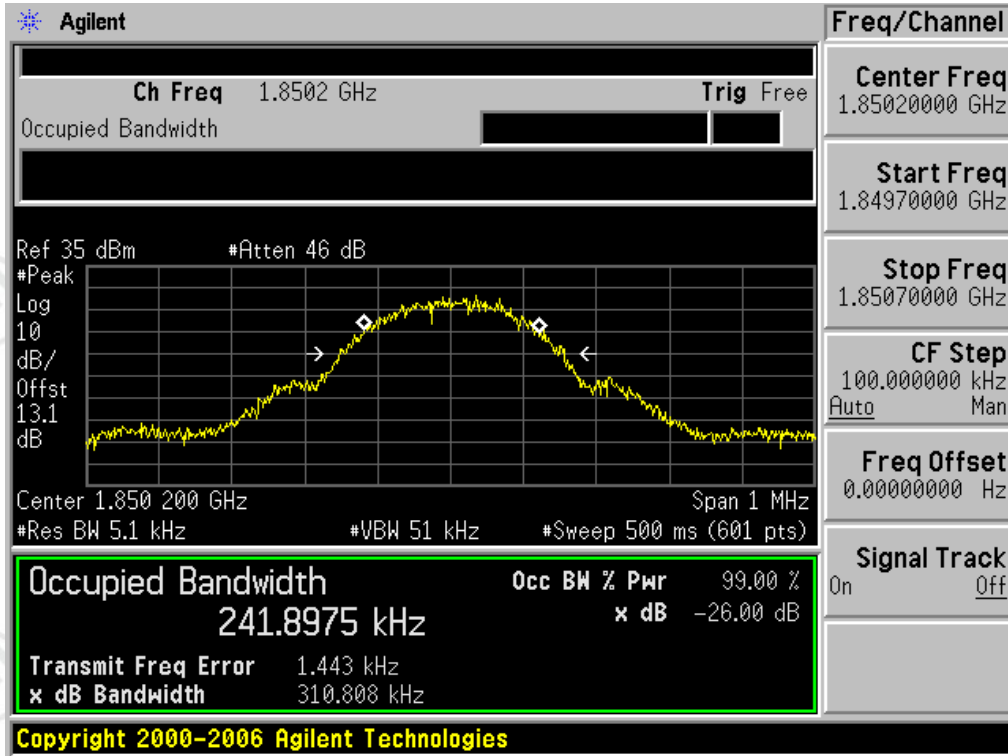
Test Channel=HCH



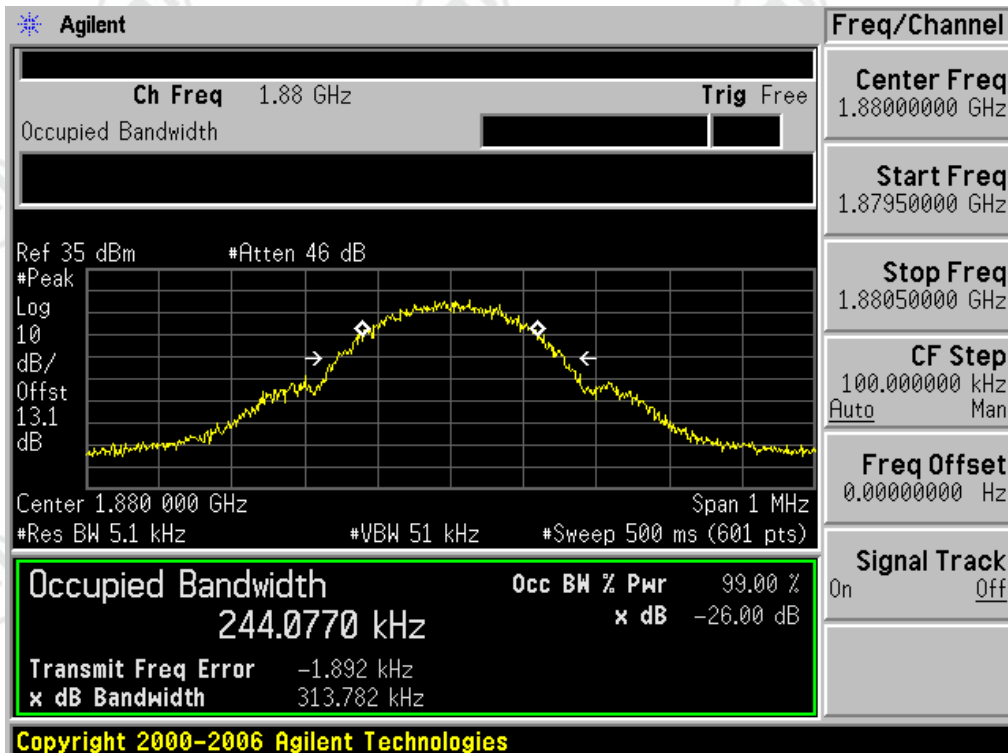
Test Band=GSM1900

Test Mode=GSM/TM1

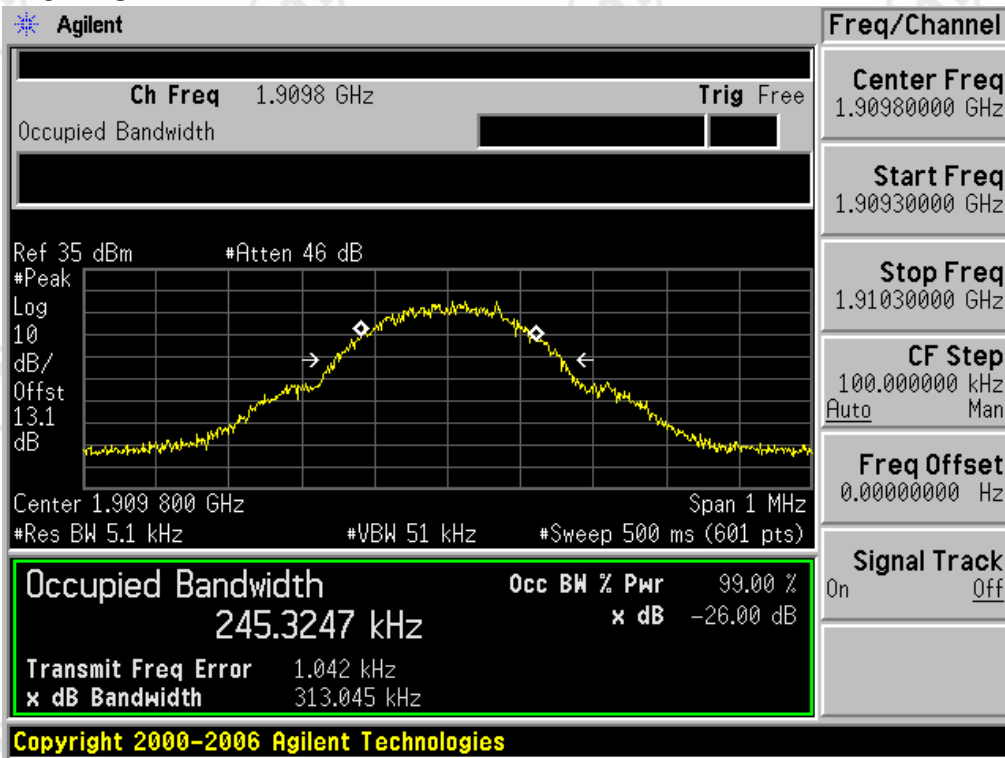
Test Channel=LCH



Test Channel=MCH

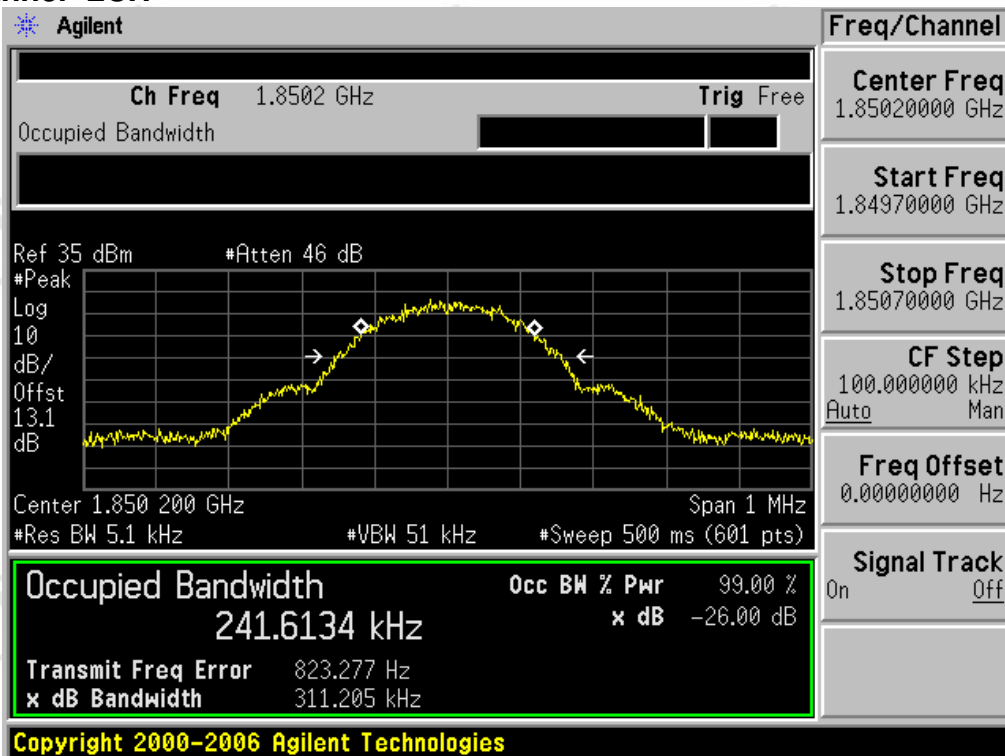


Test Channel=HCH

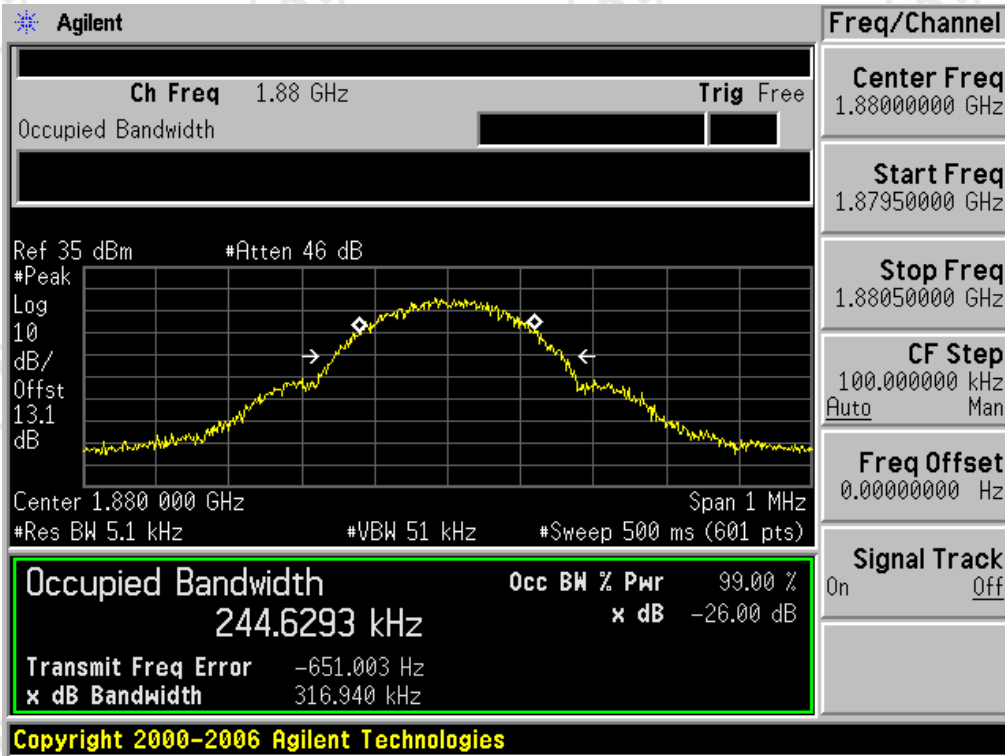


Test Mode=GSM/TM2

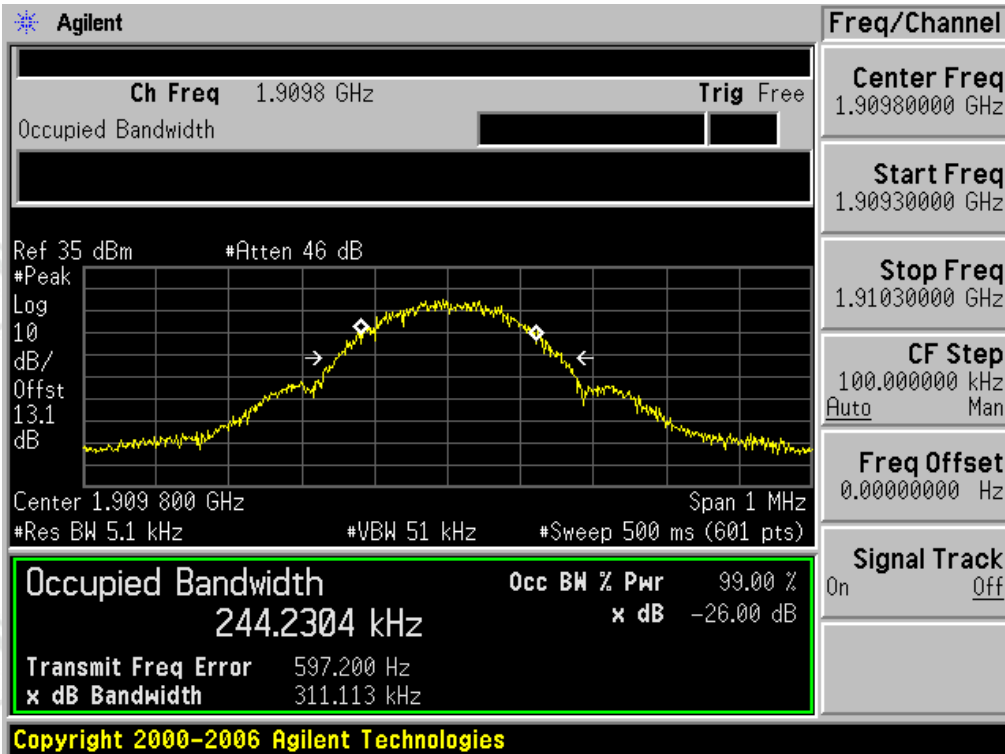
Test Channel=LCH



Test Channel=MCH



Test Channel=HCH

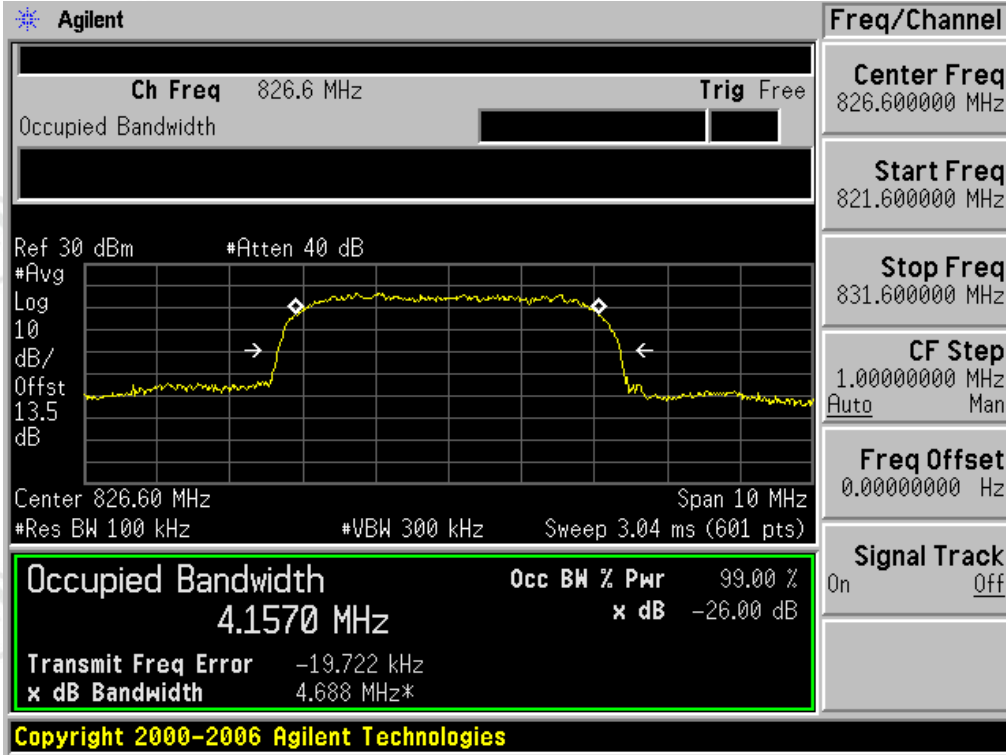


For WCDMA

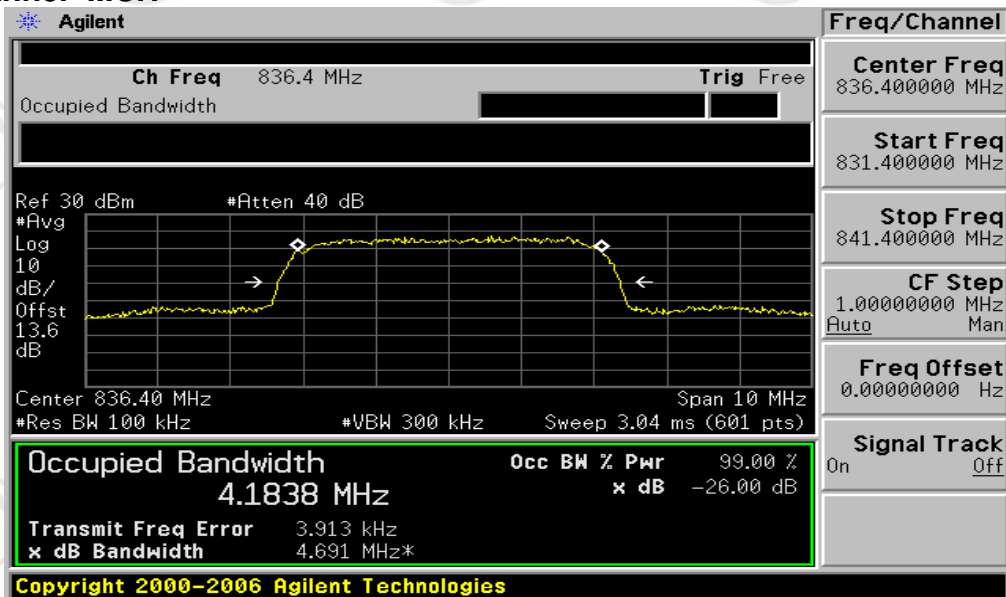
Test Band=WCDMA850

Test Mode=UMTS/TM1

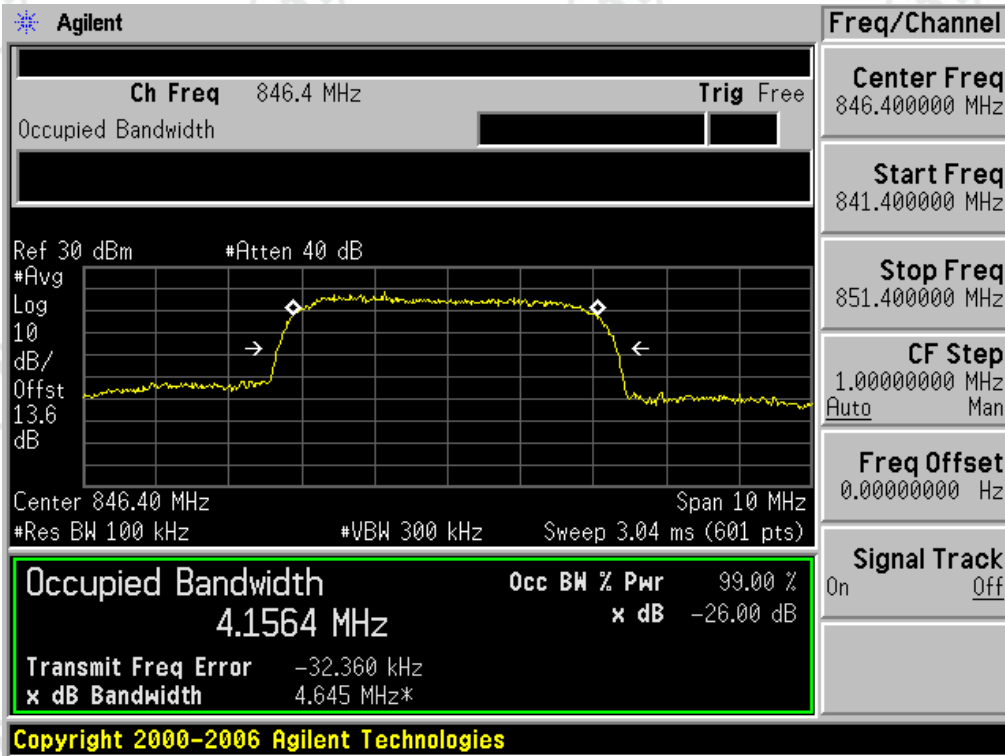
Test Channel=LCH



Test Channel=MCH



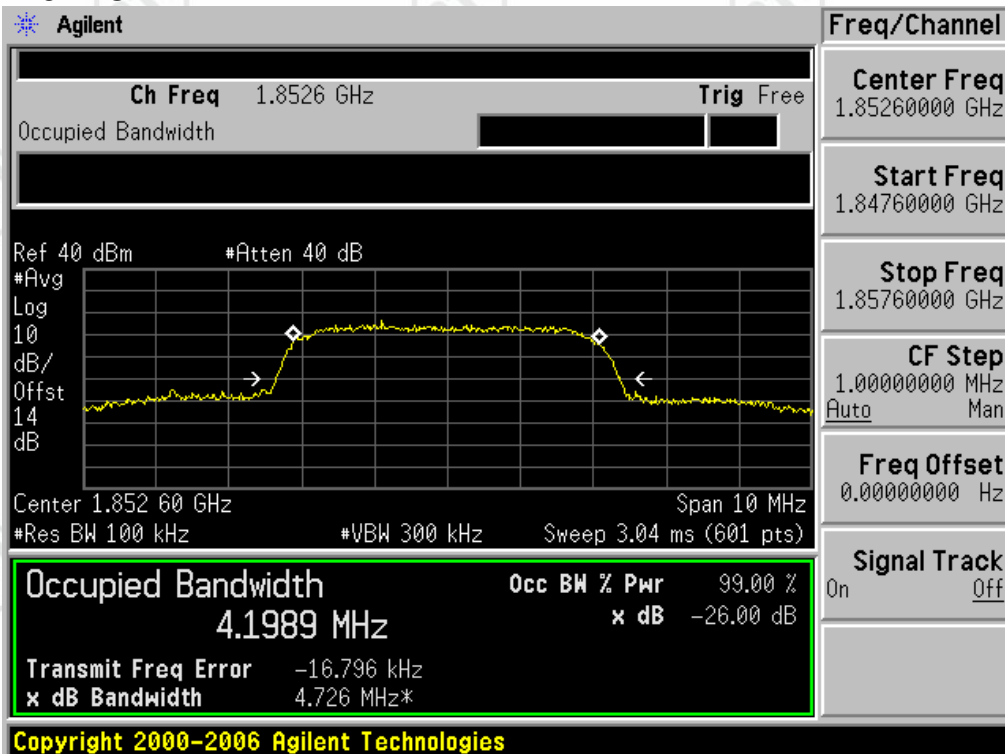
Test Channel=HCH



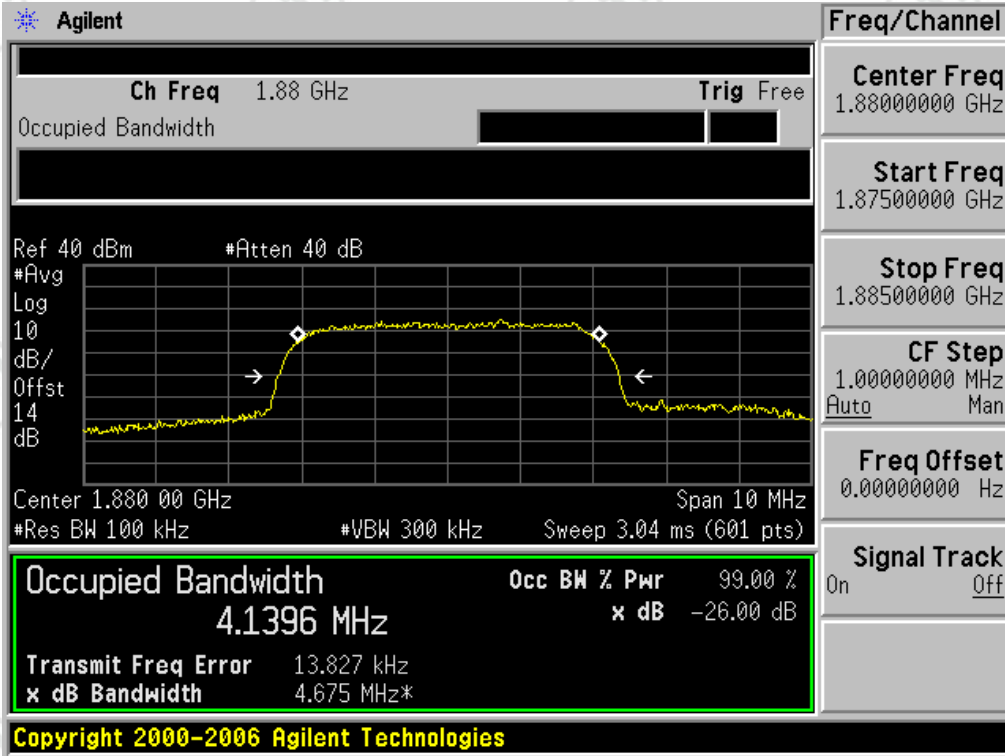
Test Band=WCDMA1900

Test Mode=UMTS/TM1

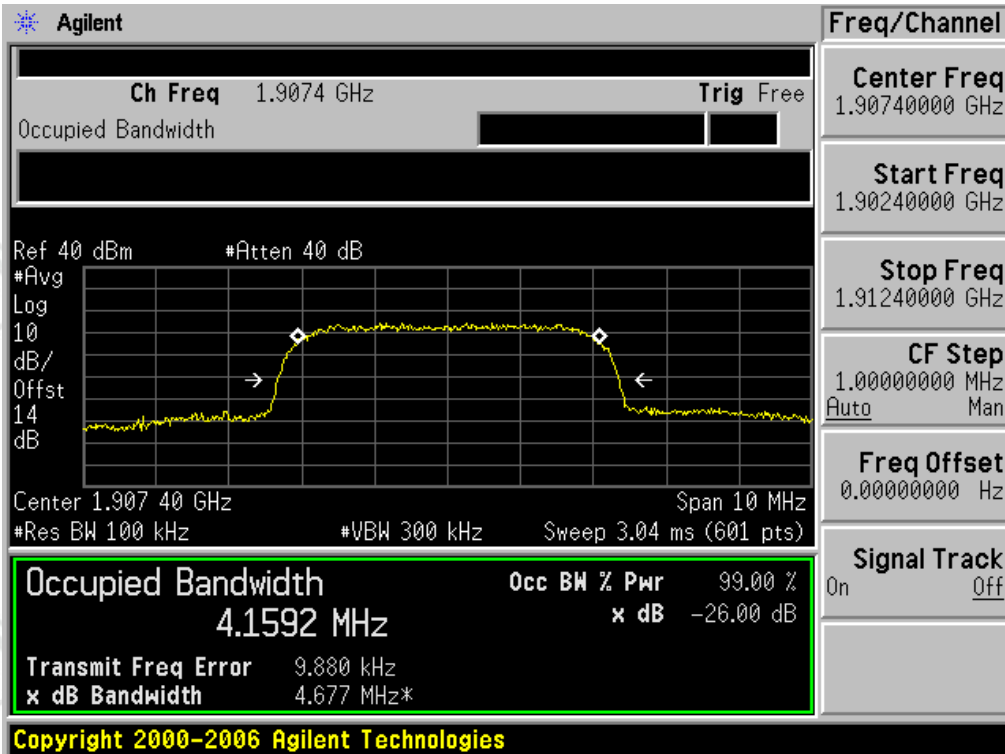
Test Channel=LCH



Test Channel=MCH



Test Channel=HCH



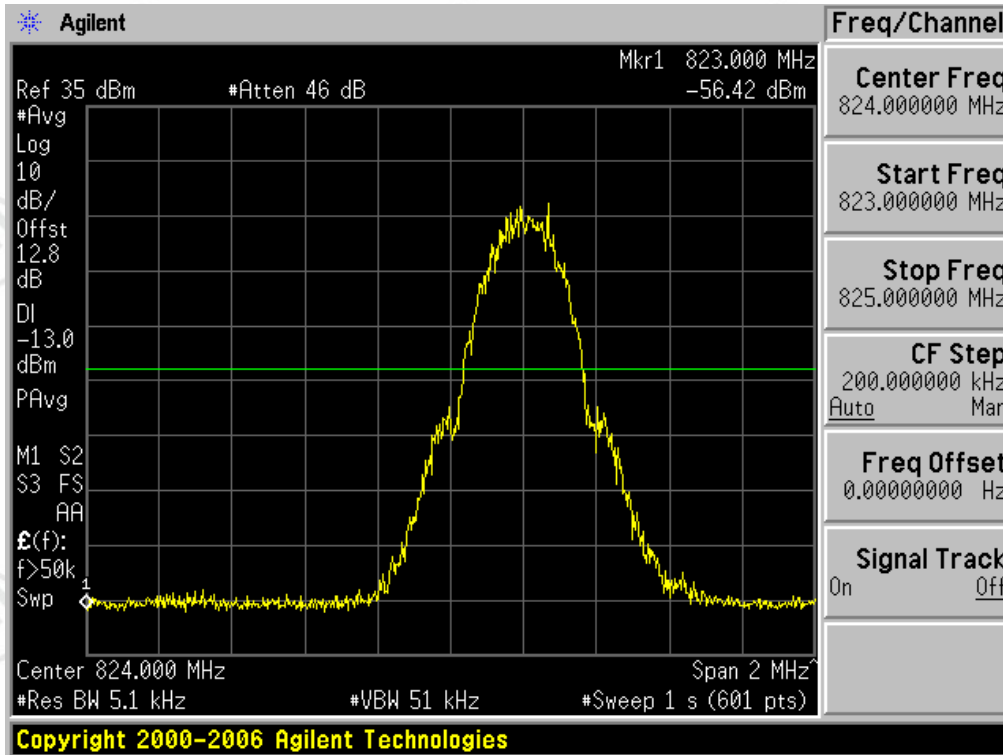
Appendix D) Band Edges Compliance

For GSM

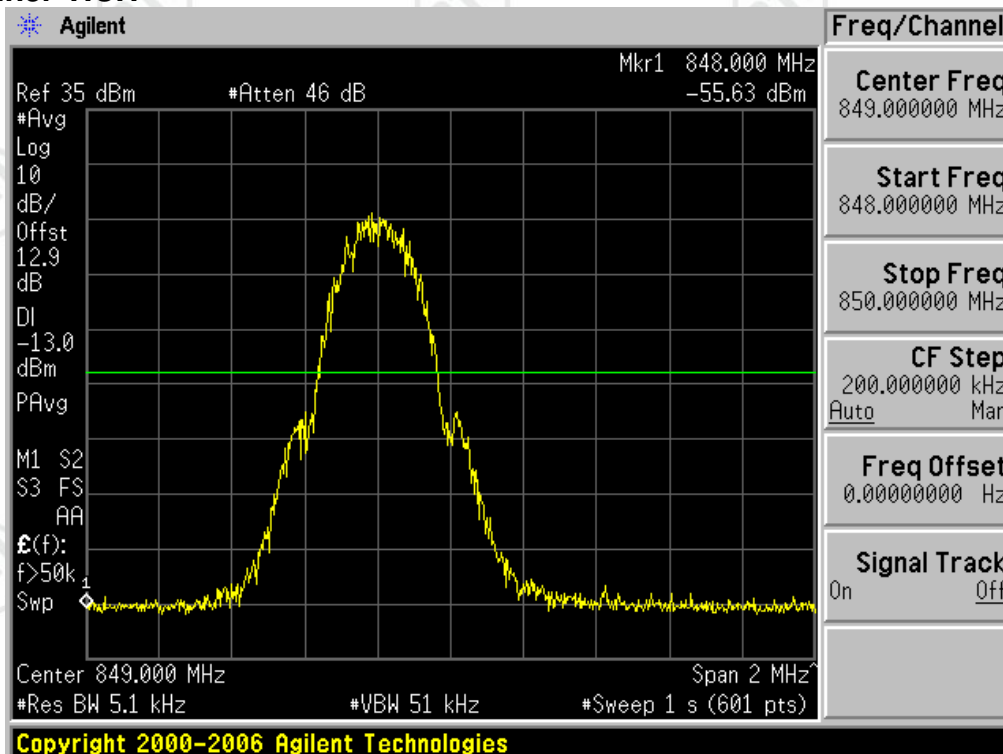
Test Band=GSM850

Test Mode=GSM/TM1

Test Channel=LCH

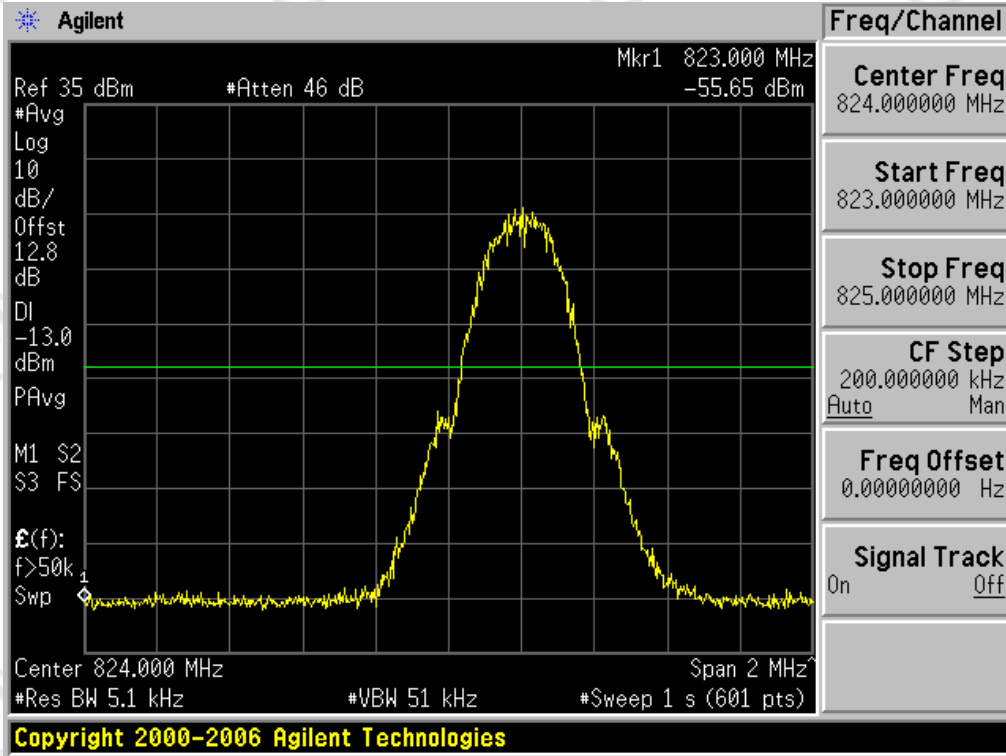


Test Channel=HCH

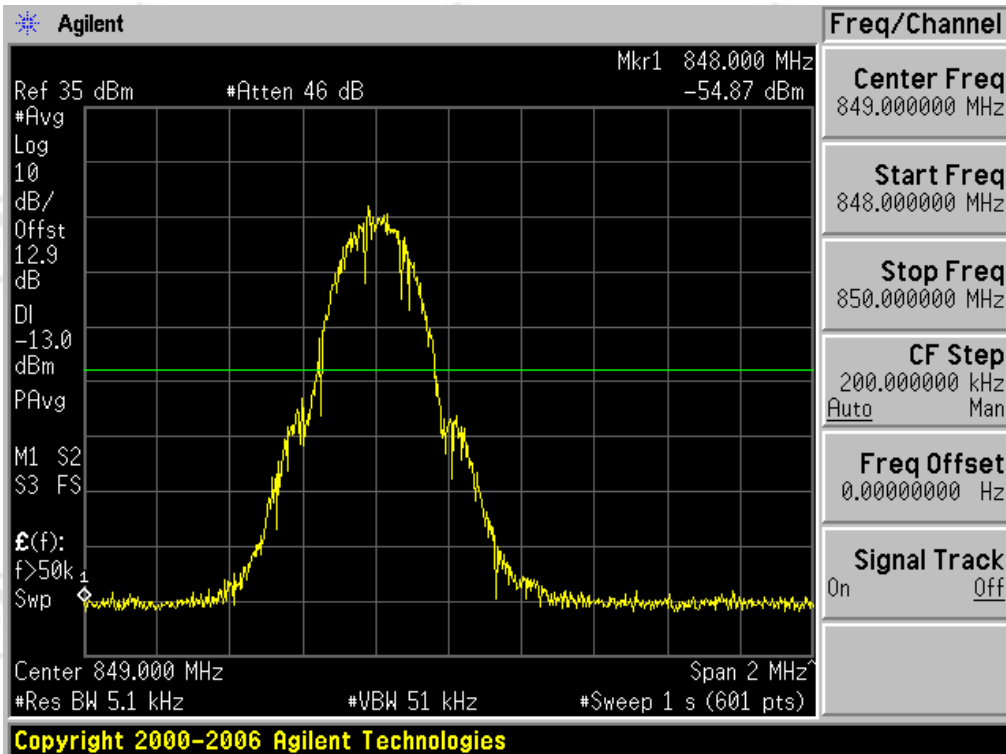


Test Mode=GSM/TM2

Test Channel=LCH



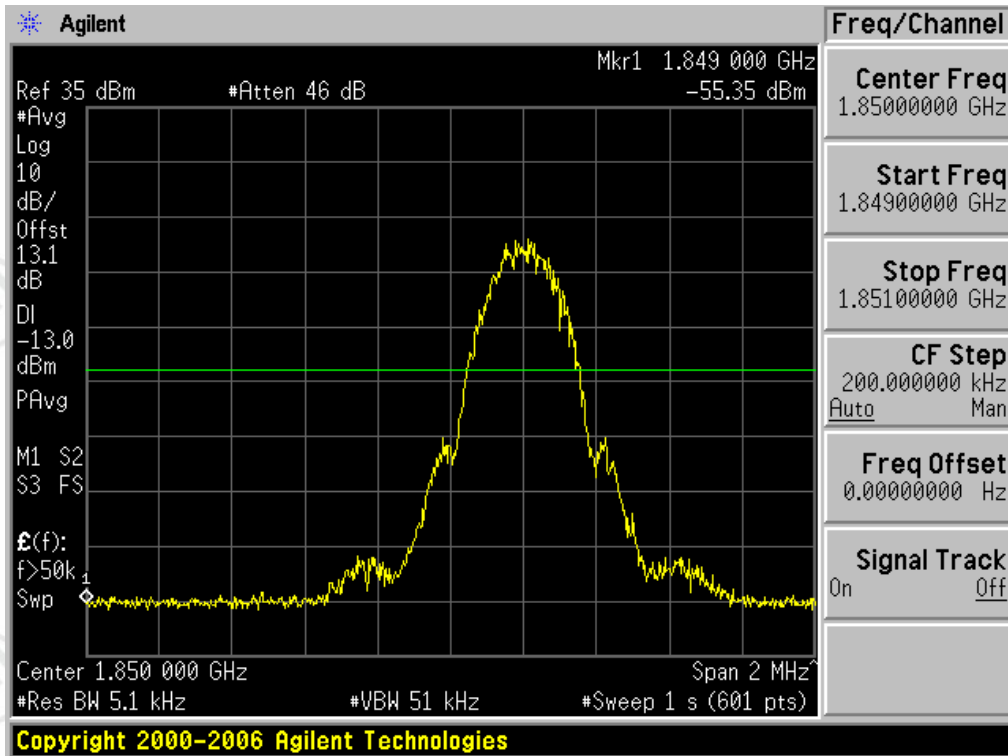
Test Channel=HCH



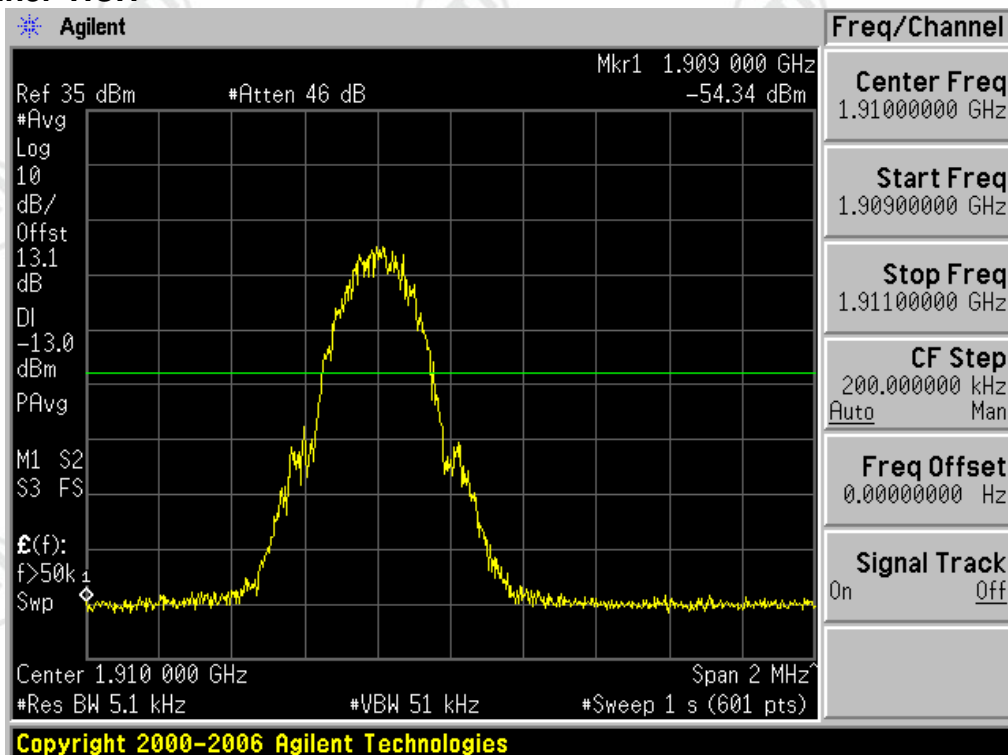
Test Band=GSM1900

Test Mode=GSM/TM1

Test Channel=LCH

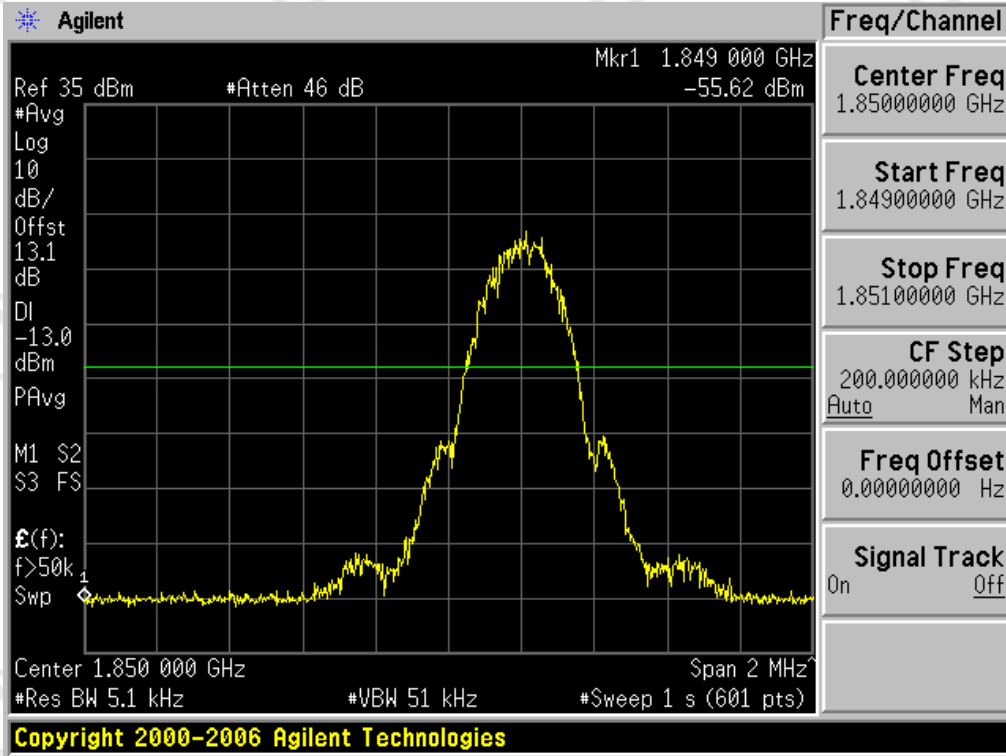


Test Channel=HCH

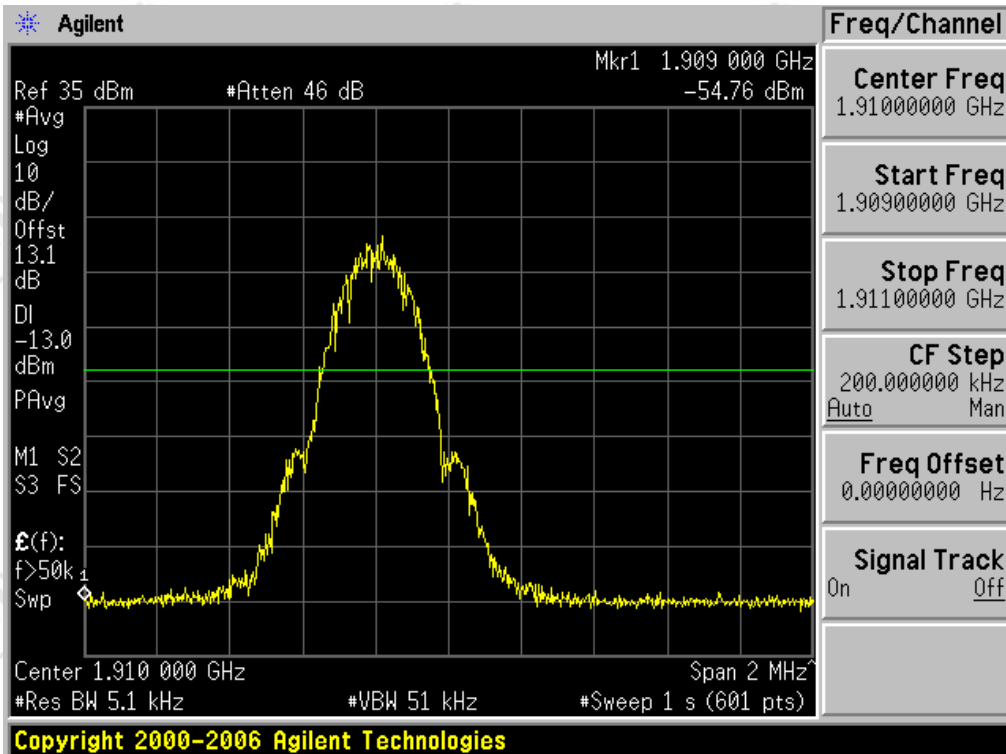


Test Mode=GSM/TM2

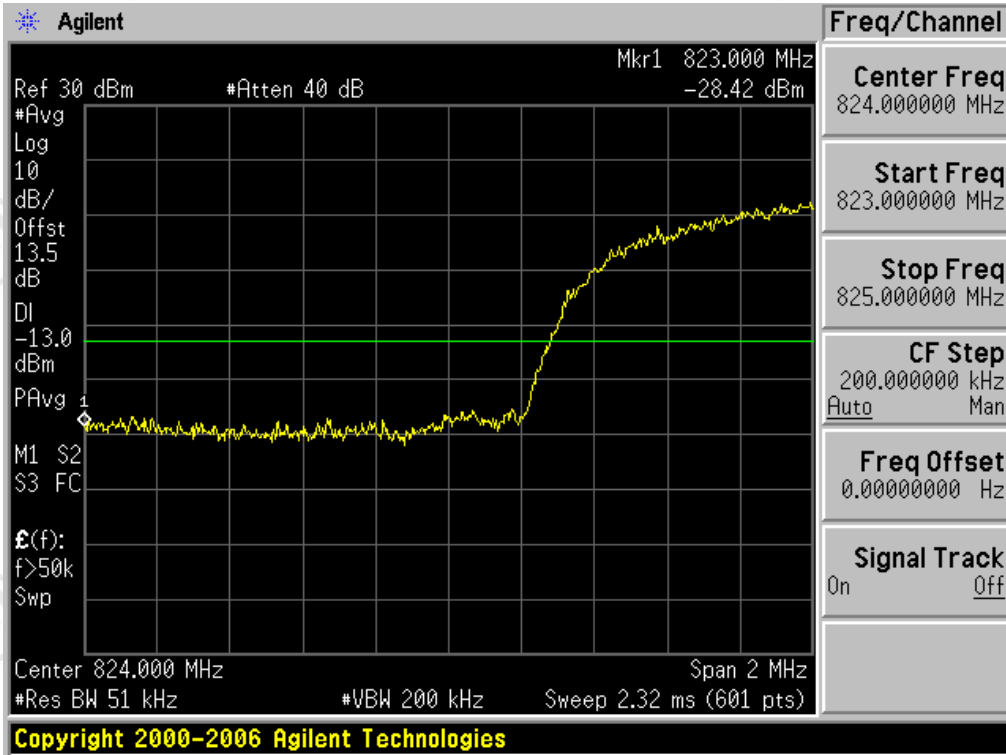
Test Channel=LCH



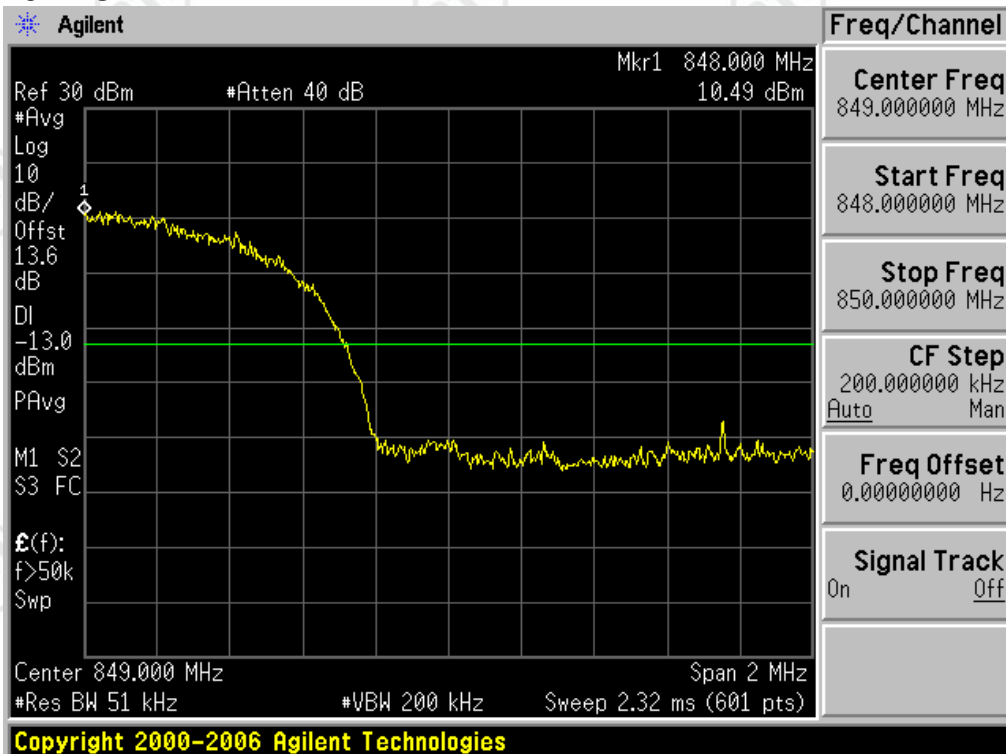
Test Channel=HCH



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



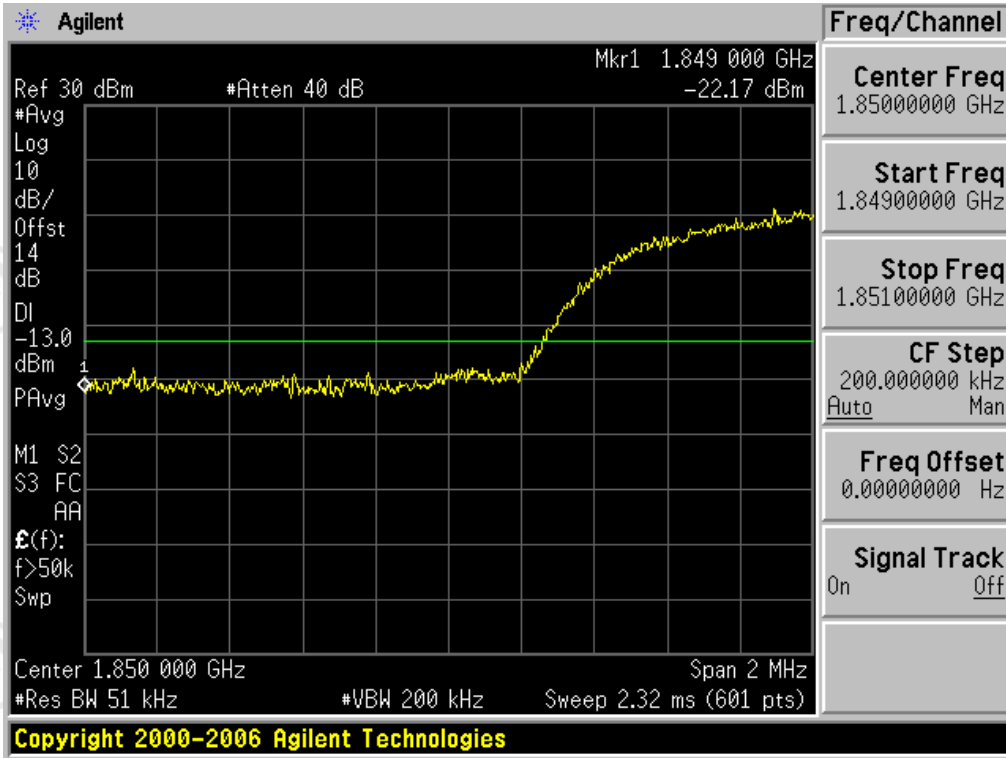
Test Channel=HCH



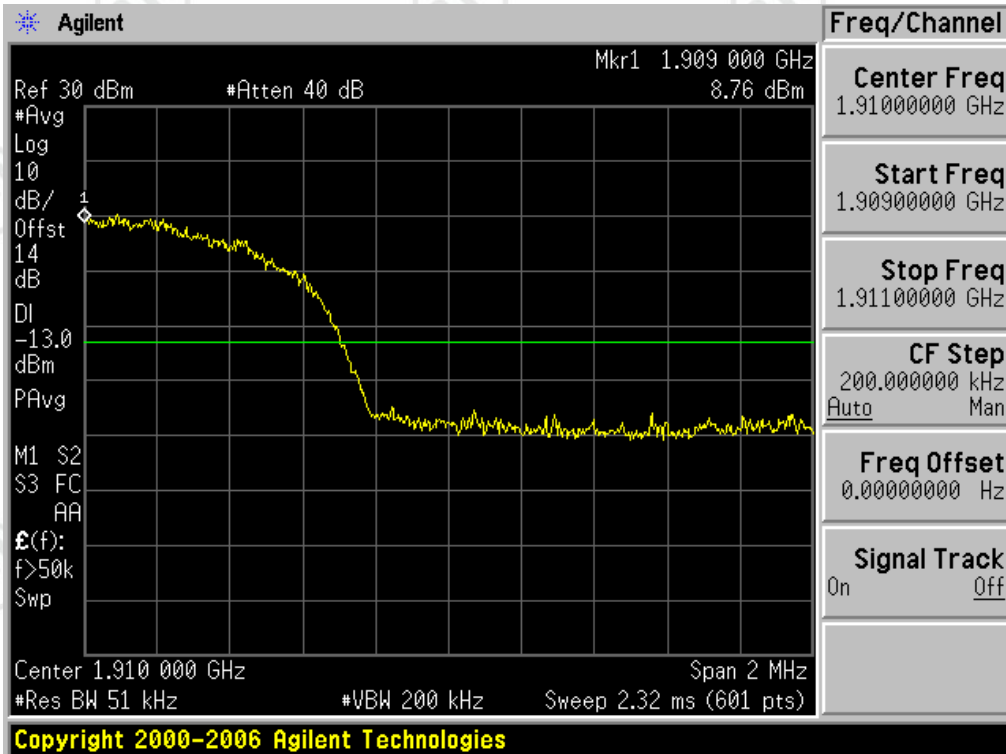
Test Band=WCDMA1900

Test Mode=UMTSTM1

Test Channel=LCH



Test Channel=HCH



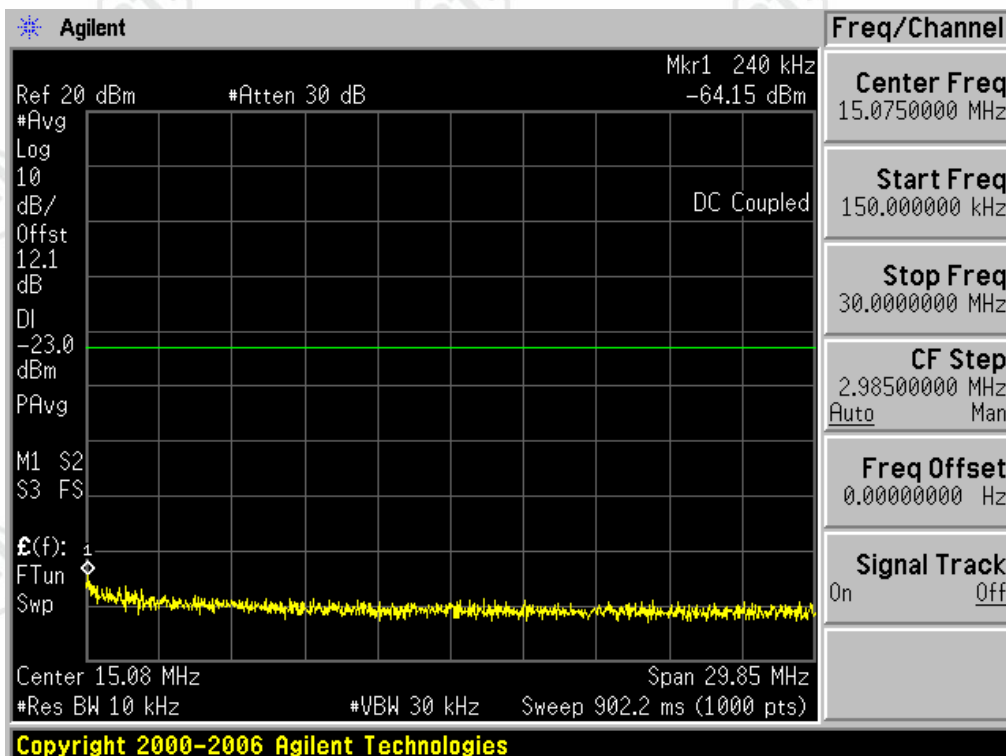
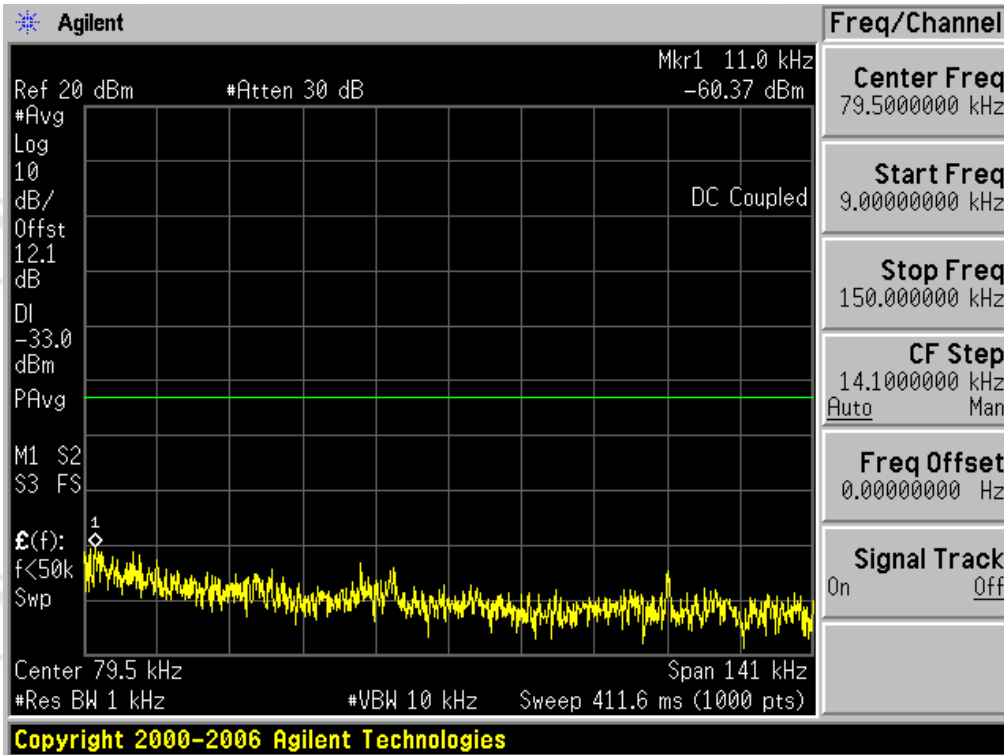
Appendix E) Spurious Emission at Antenna Terminal

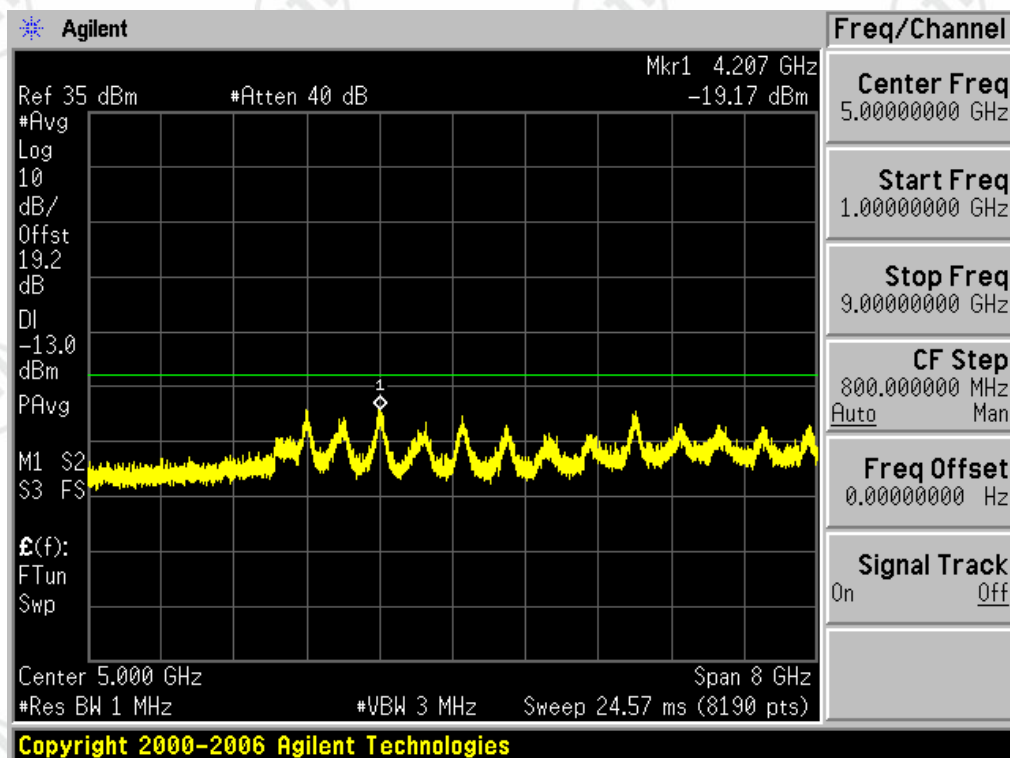
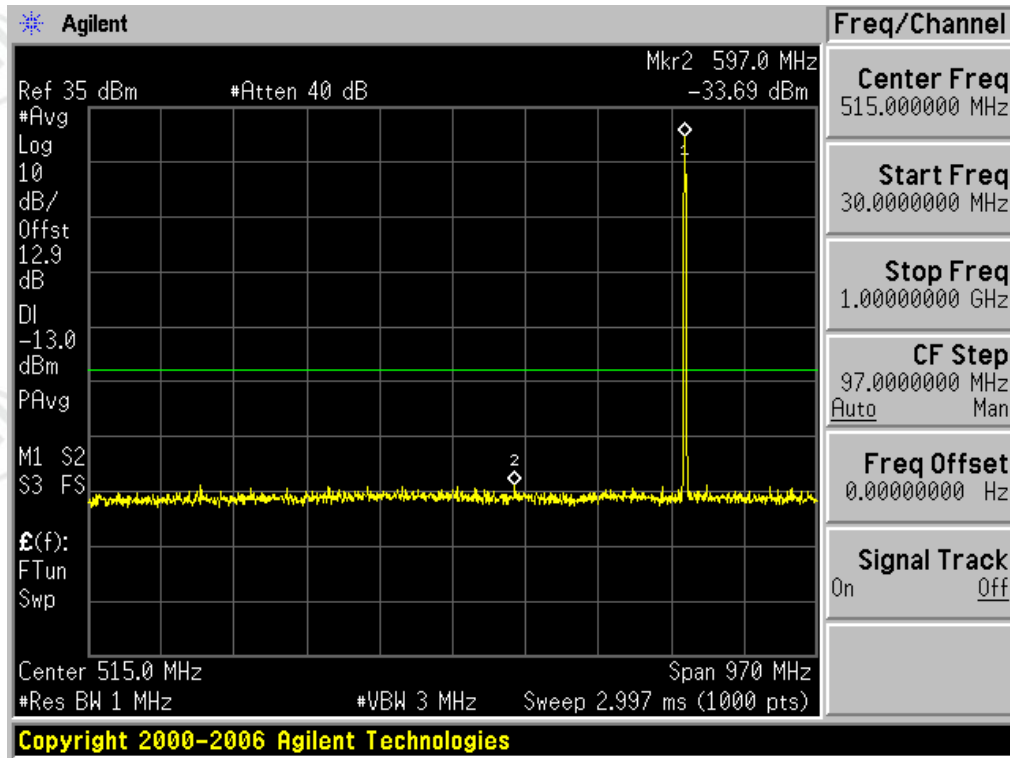
For GSM

Test Band=GSM850

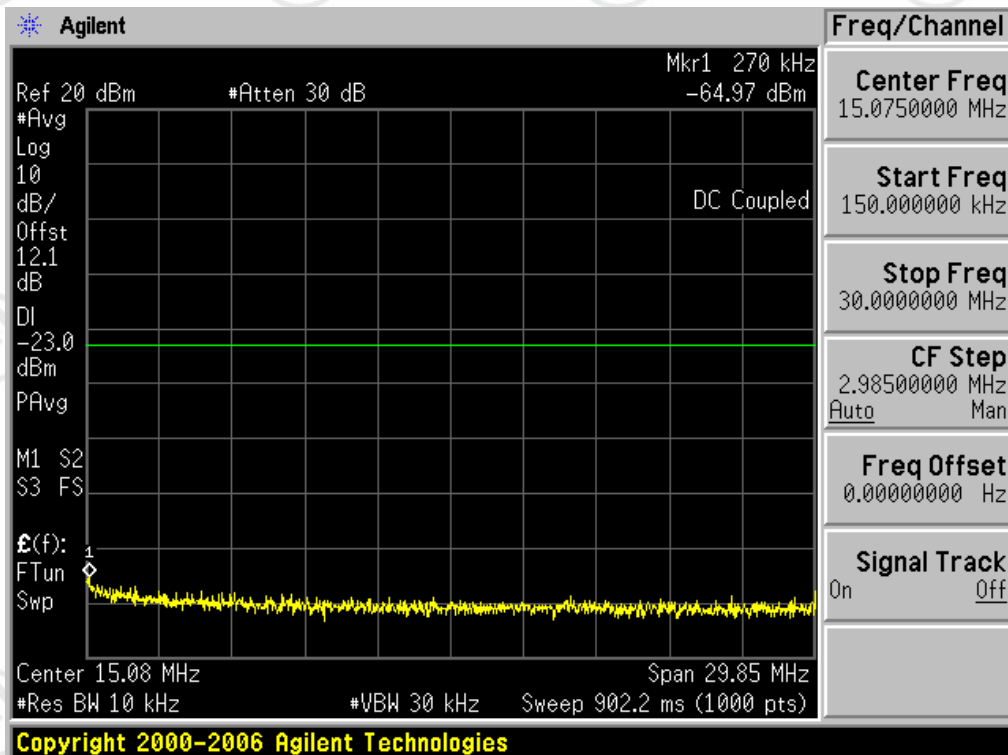
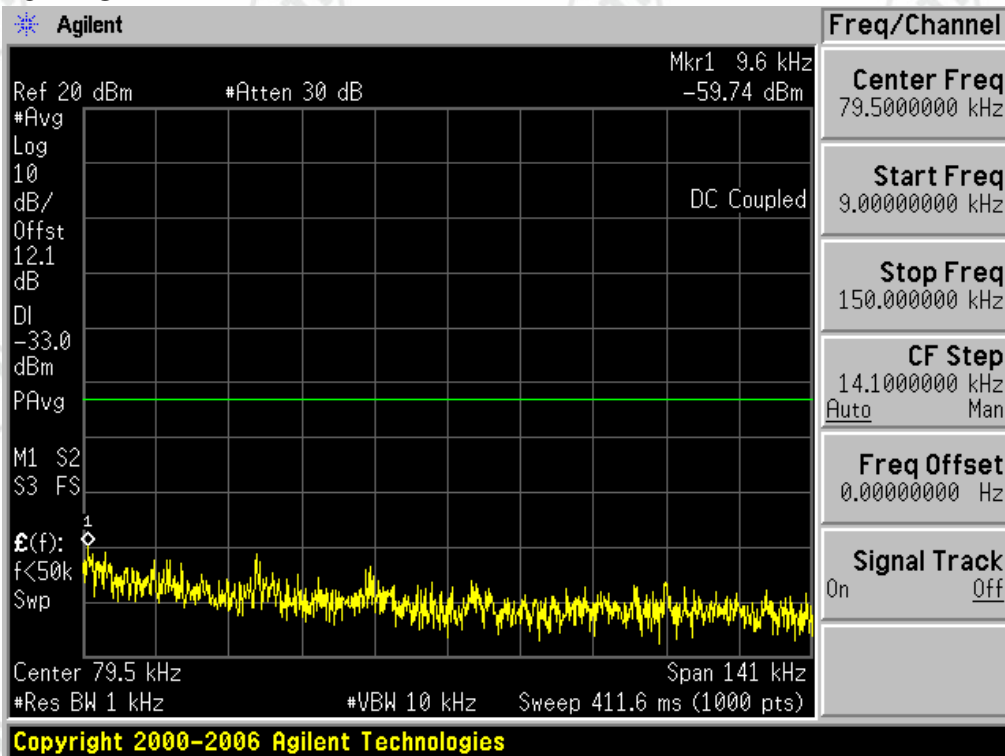
Test Mode=GSM/TM1

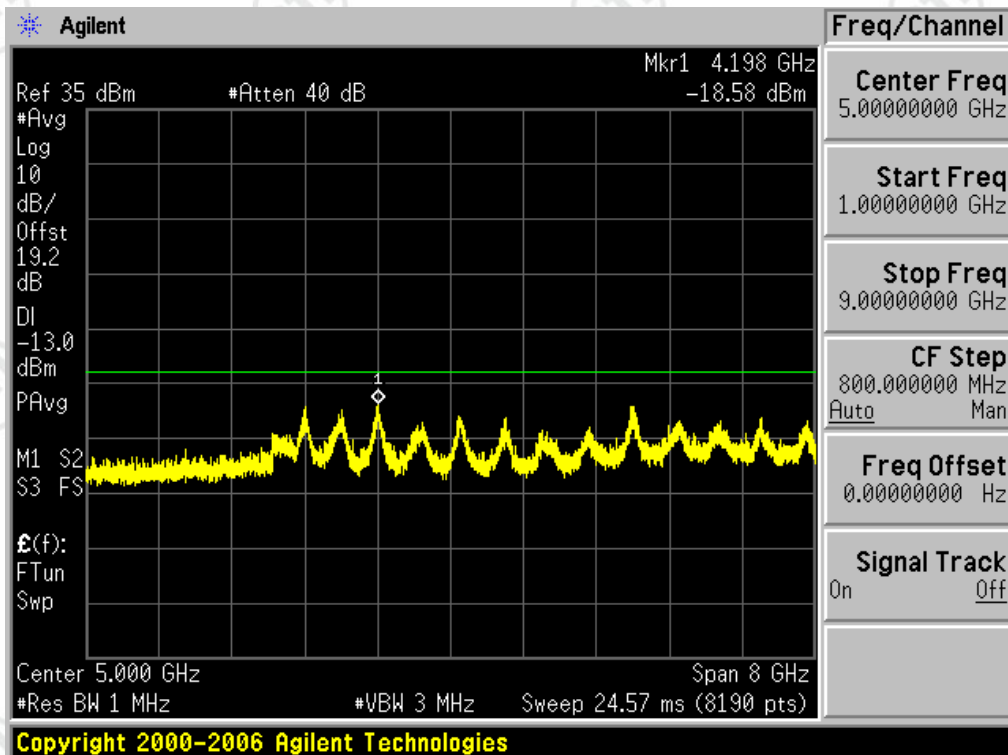
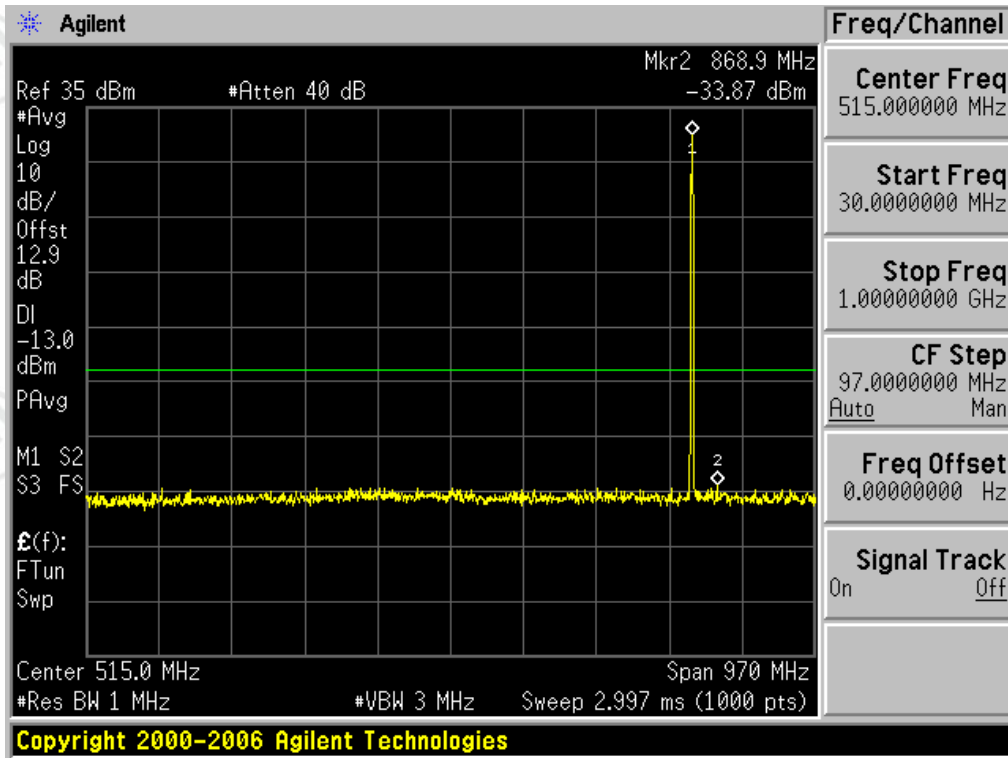
Test Channel=LCH



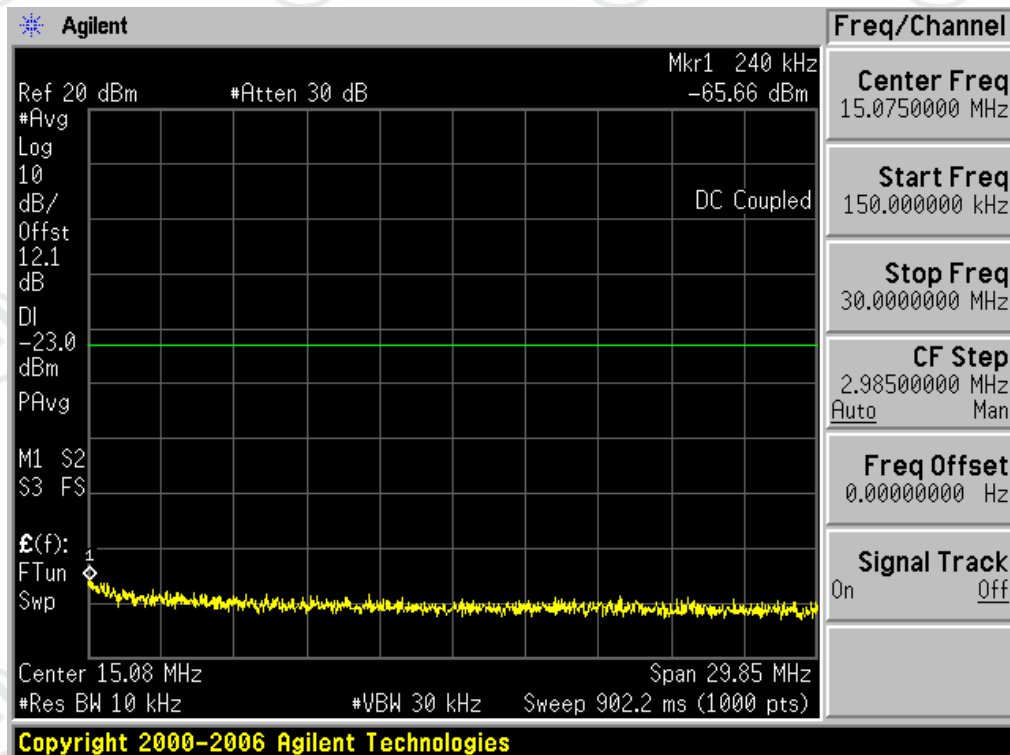
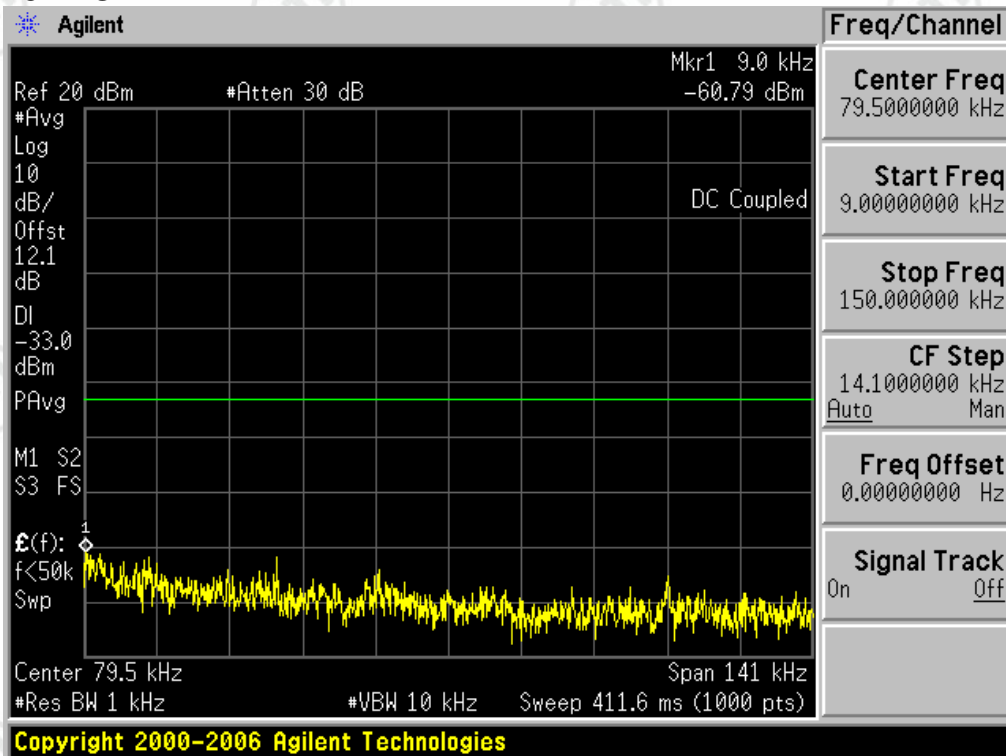


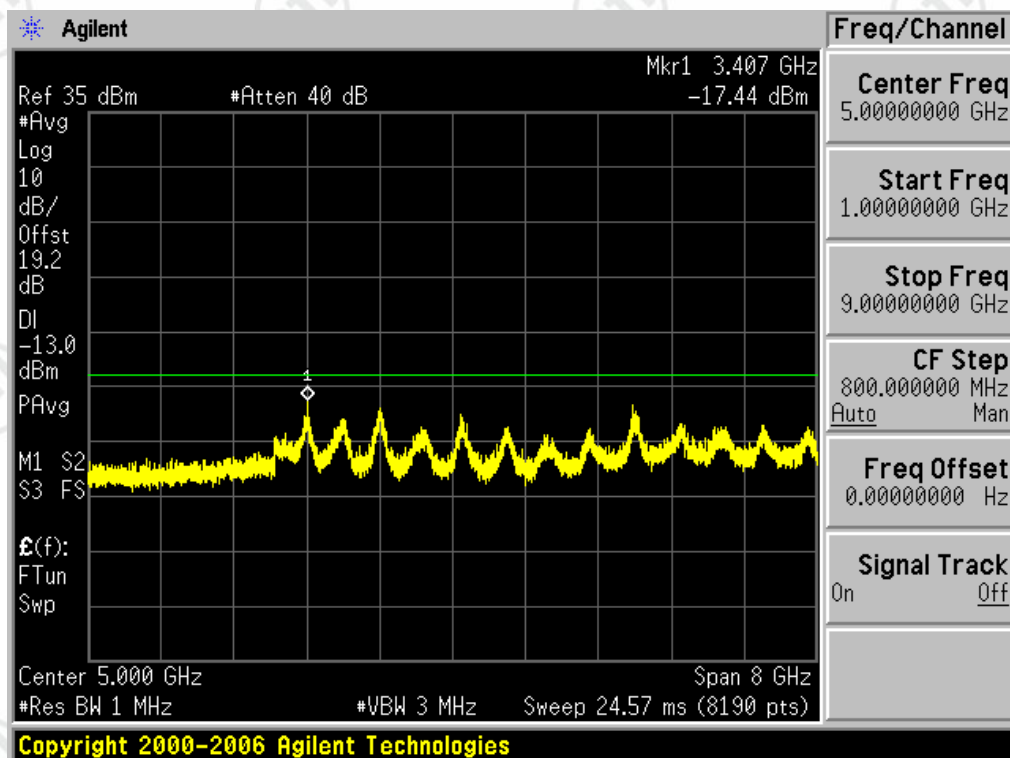
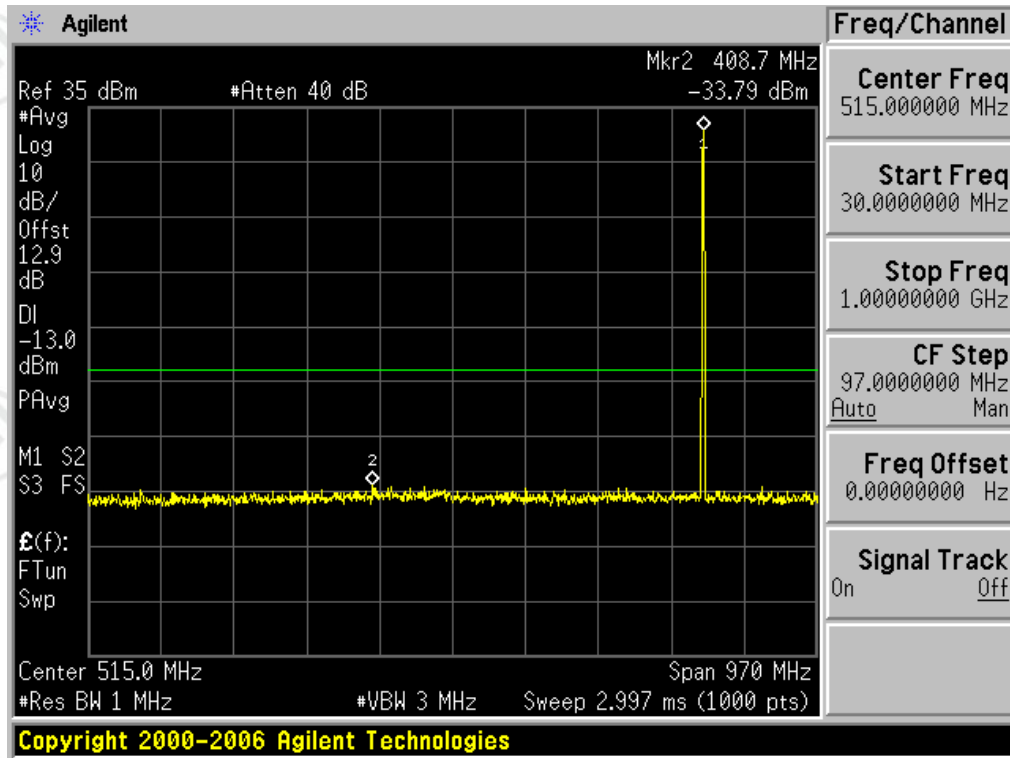
Test Channel=MCH





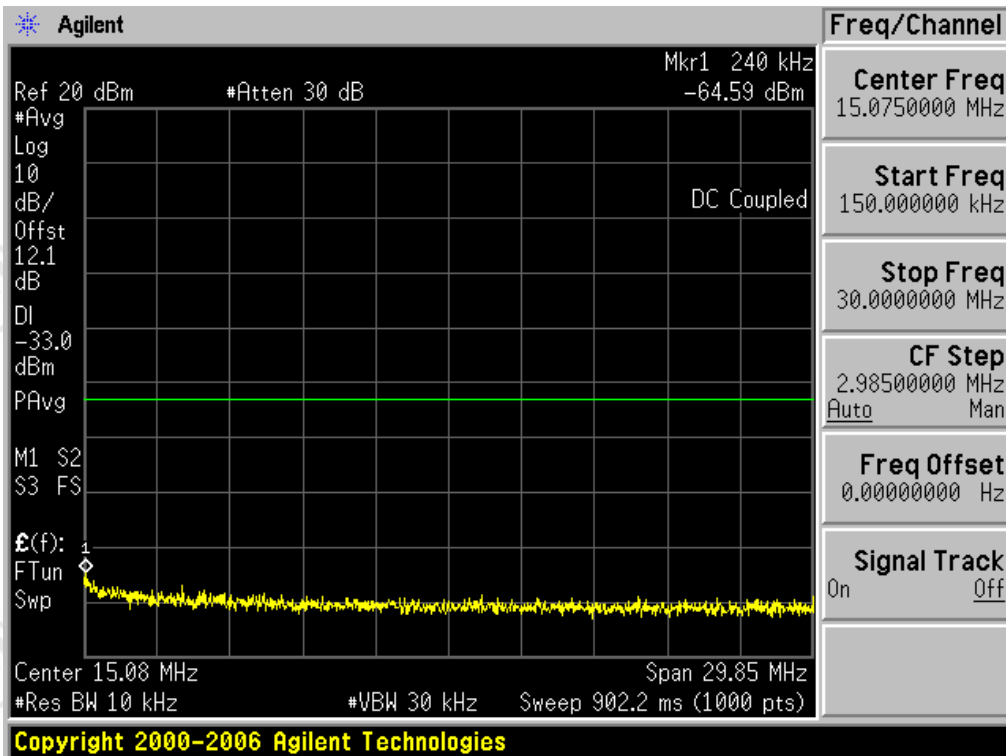
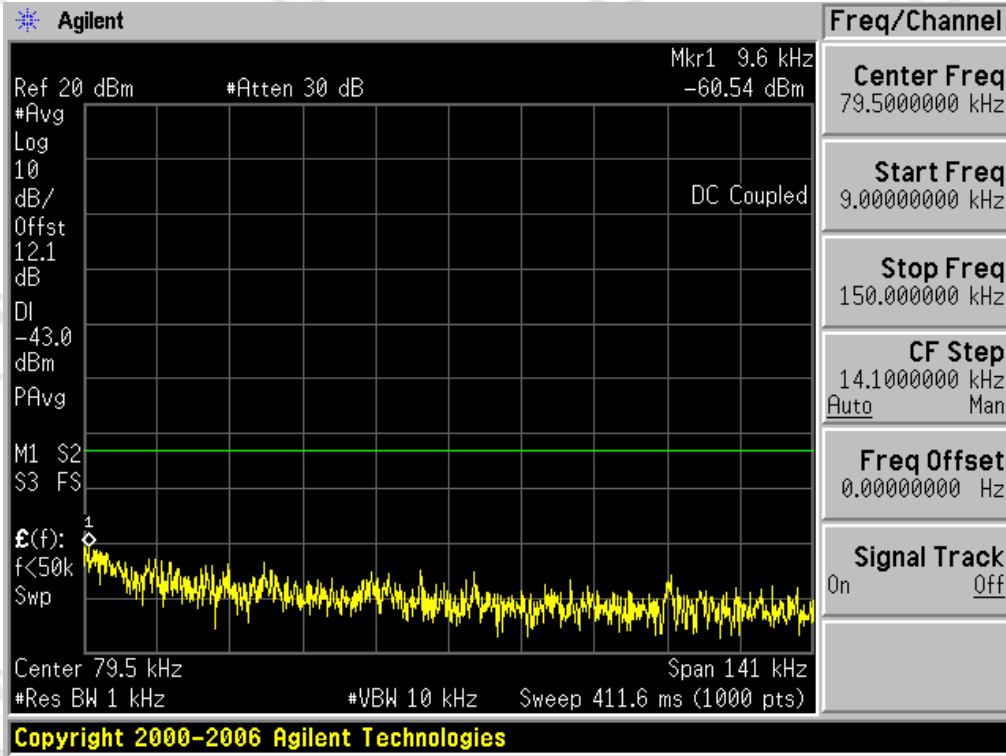
Test Channel=HCH

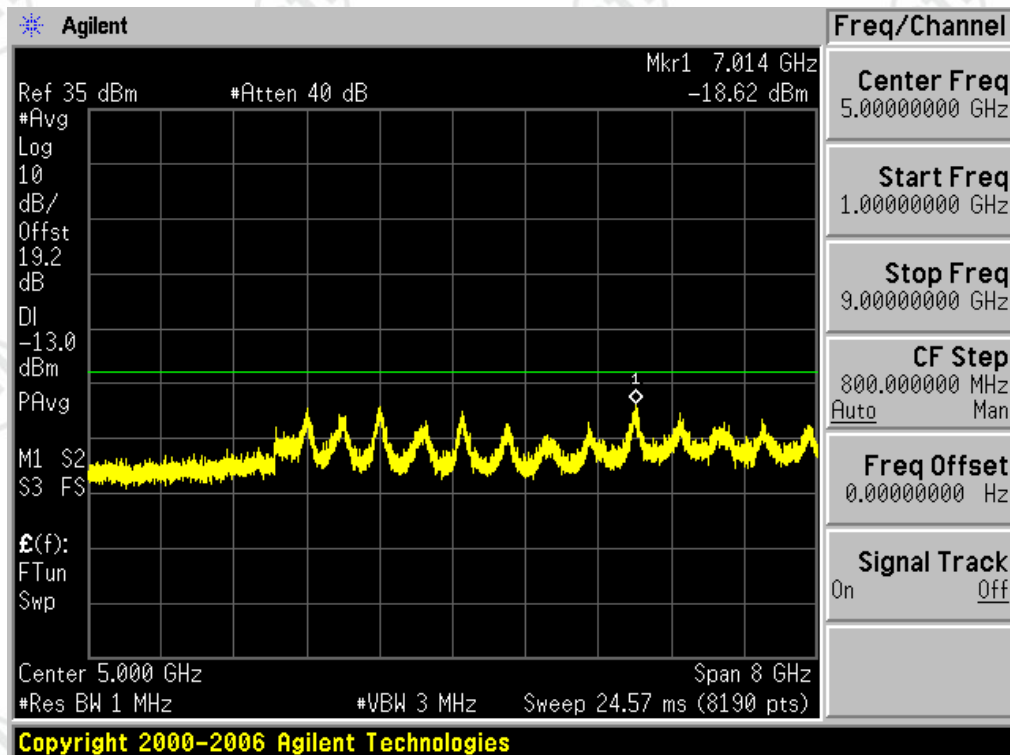
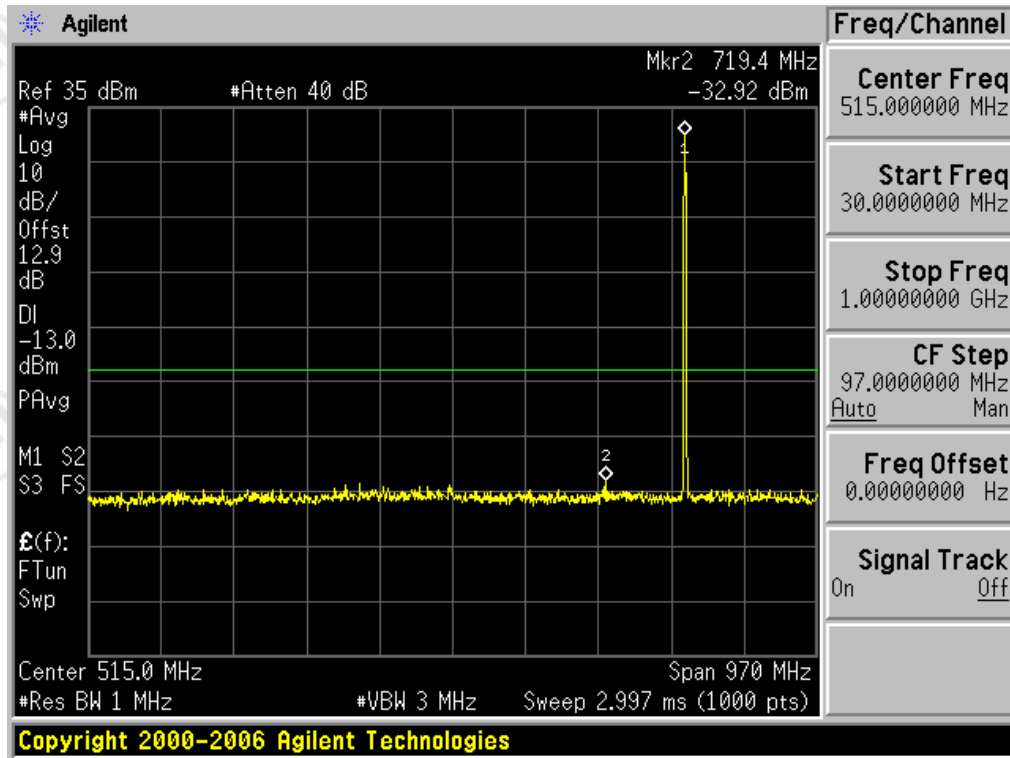




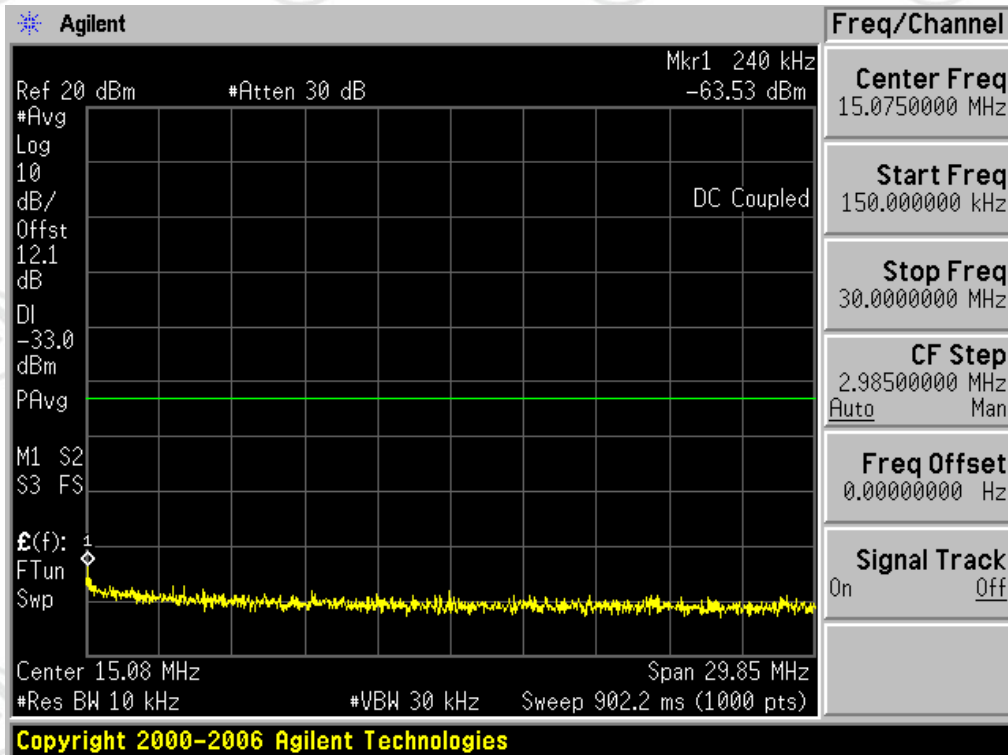
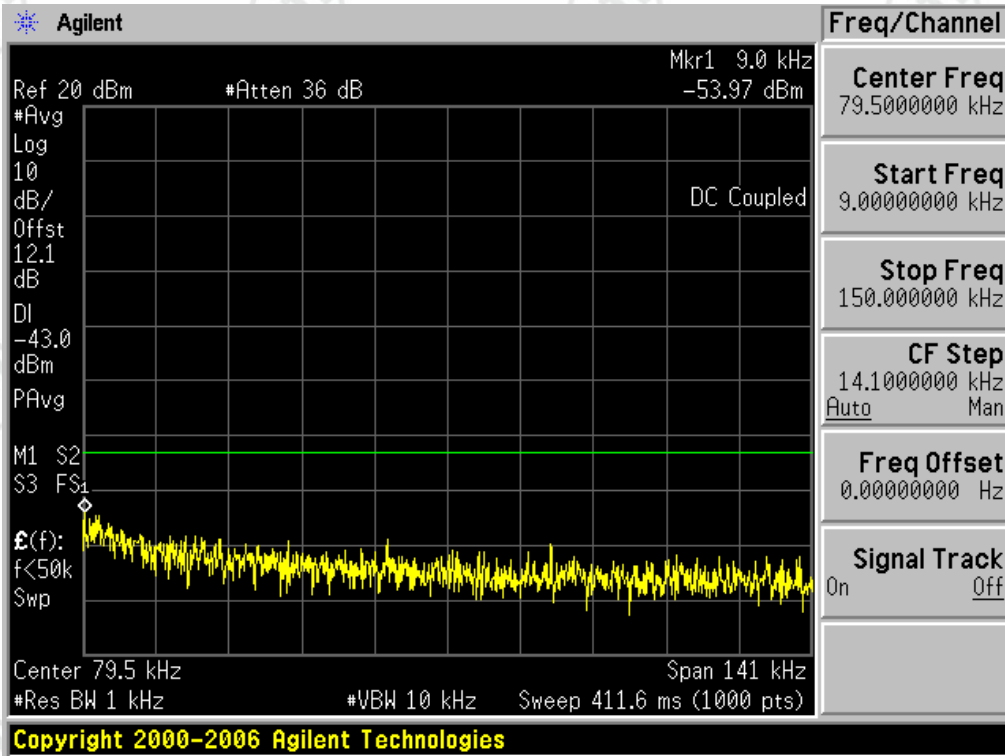
Test Mode=GSM/TM2

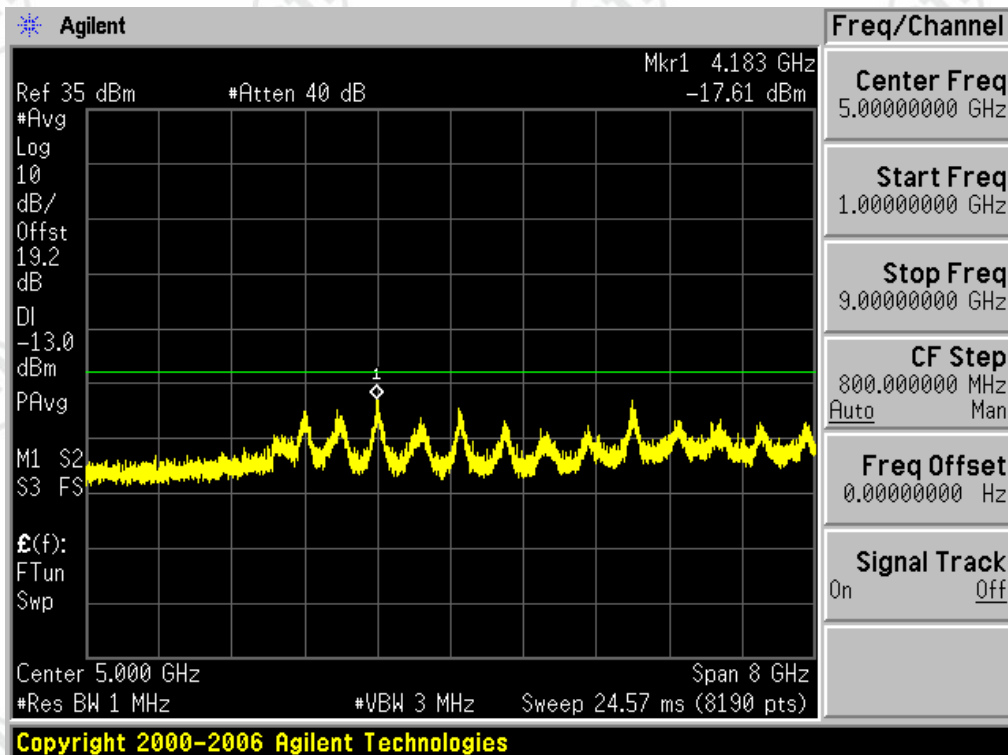
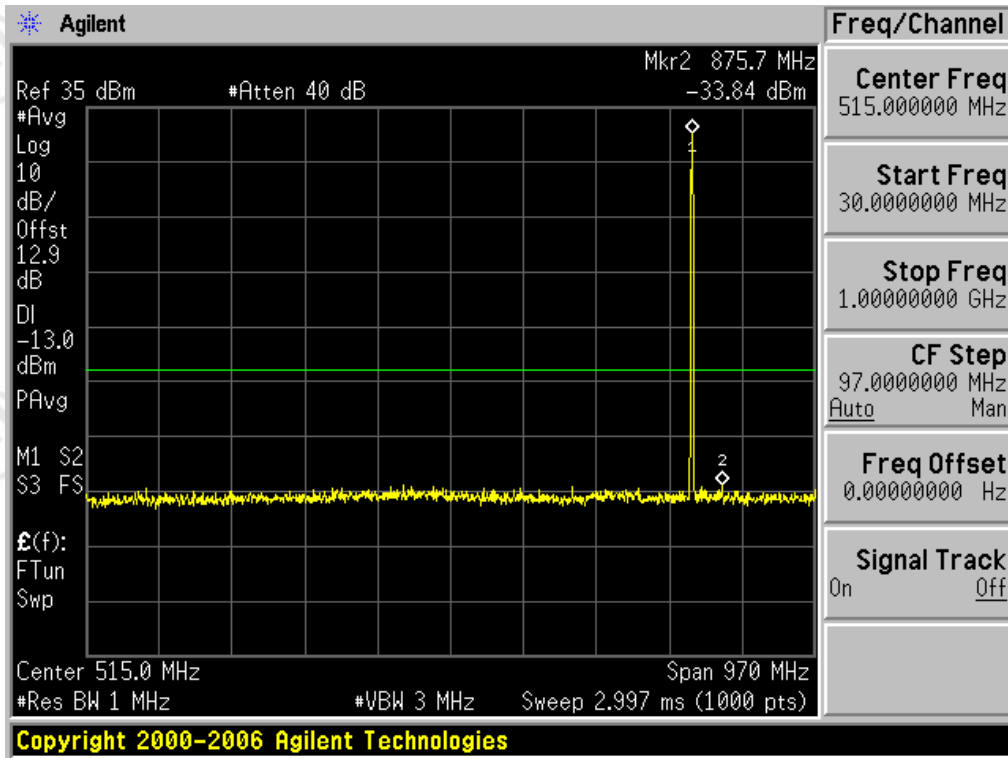
Test Channel=LCH



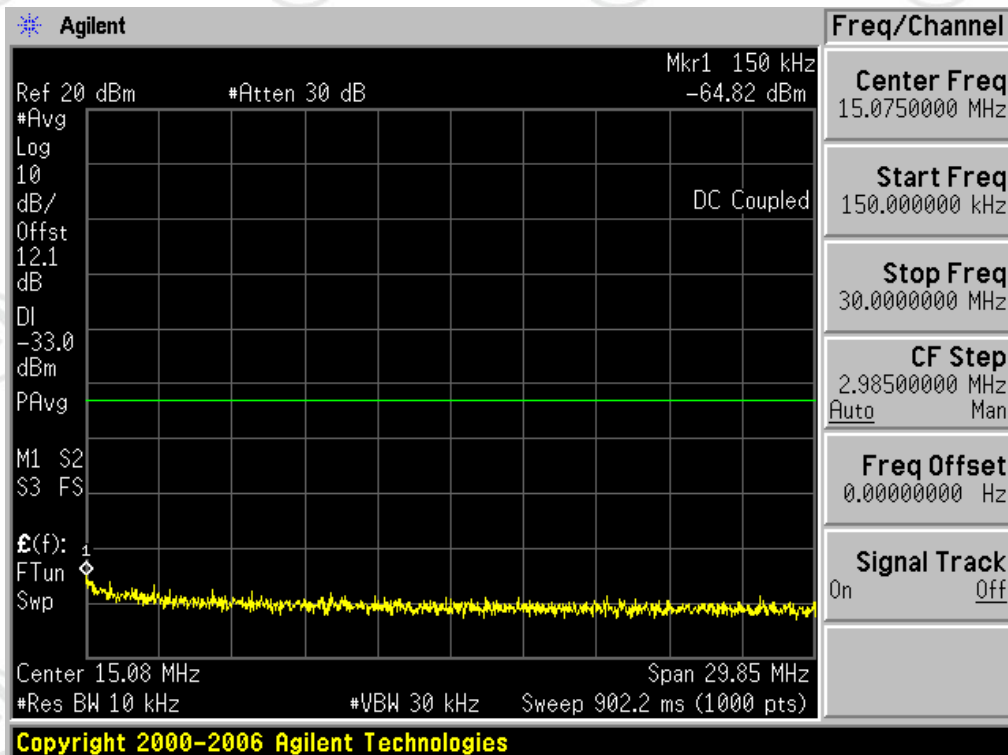
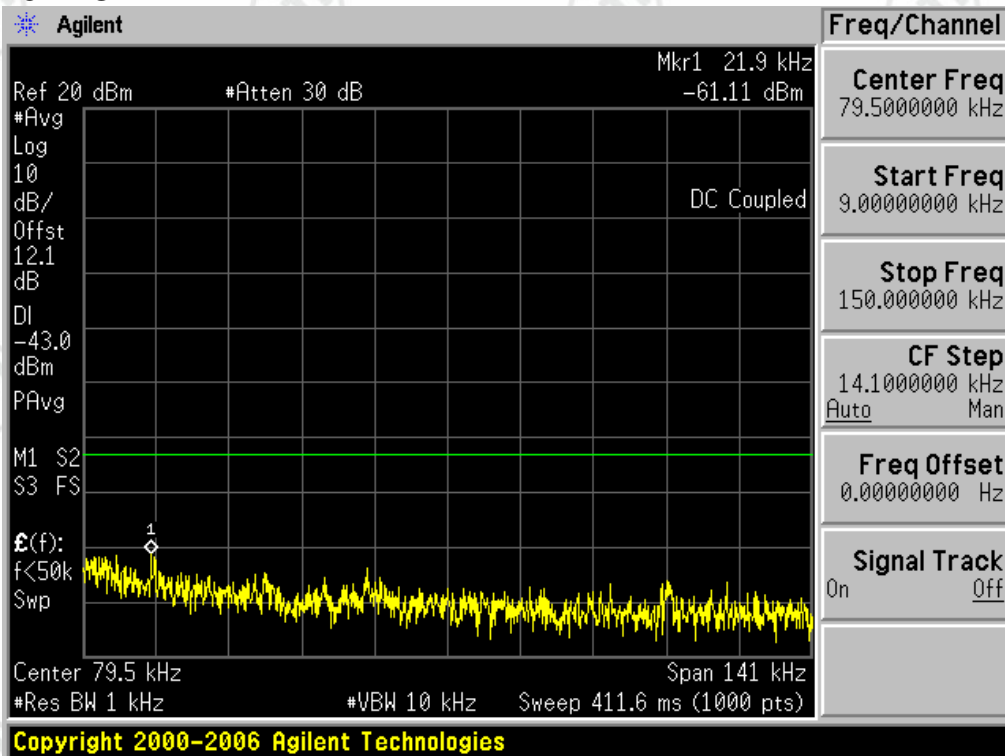


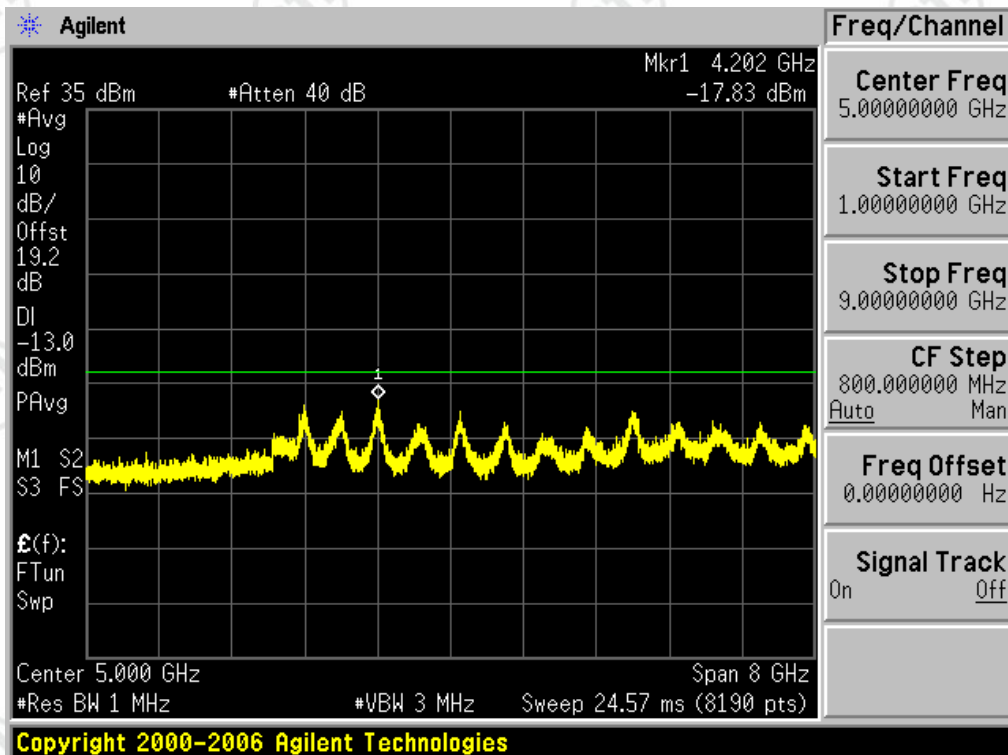
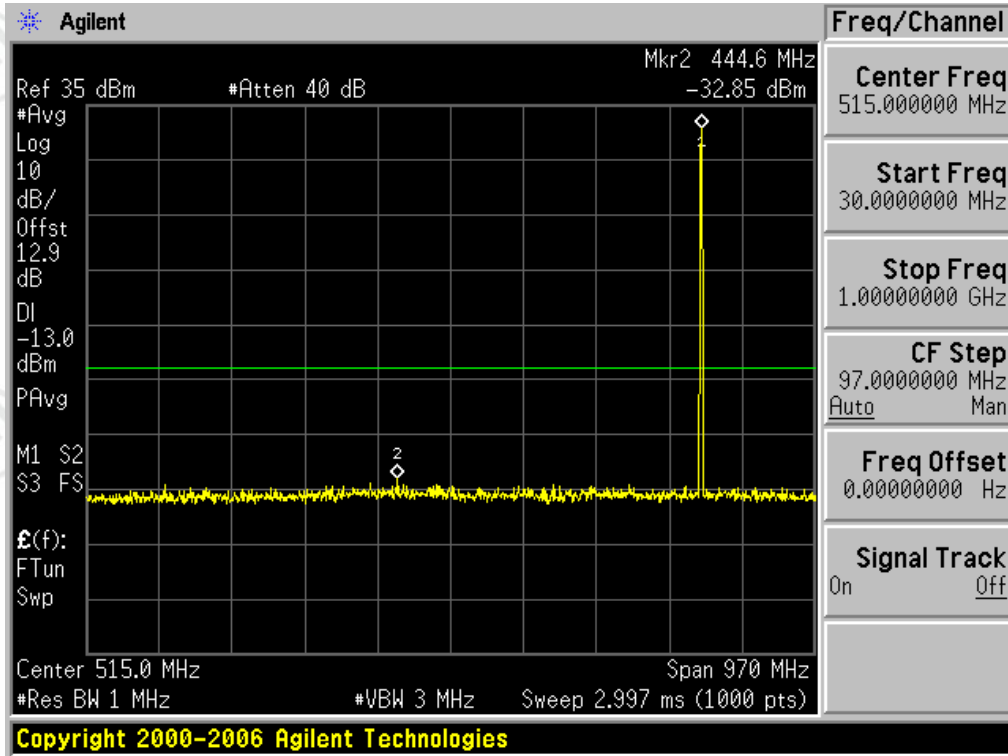
Test Channel=MCH





Test Channel=HCH

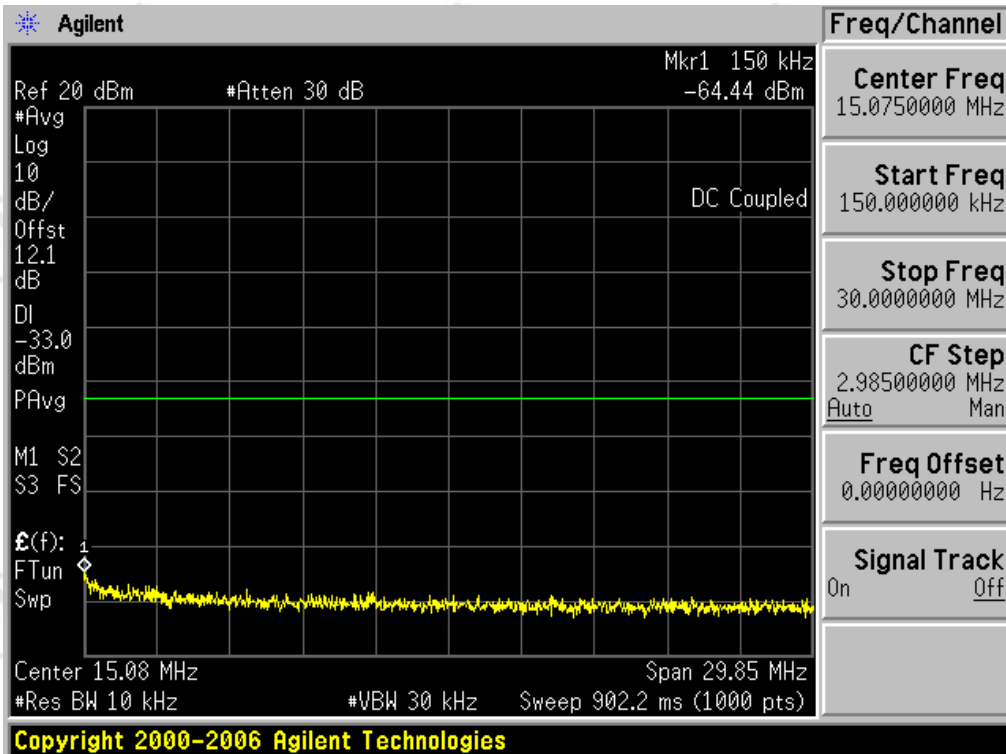
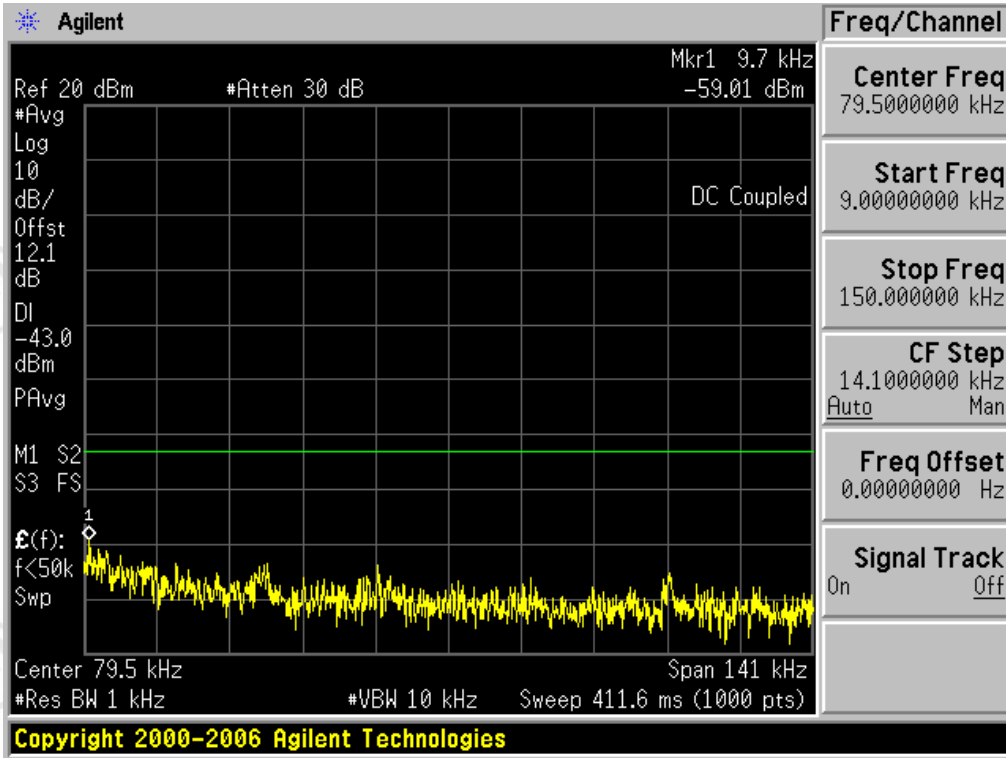


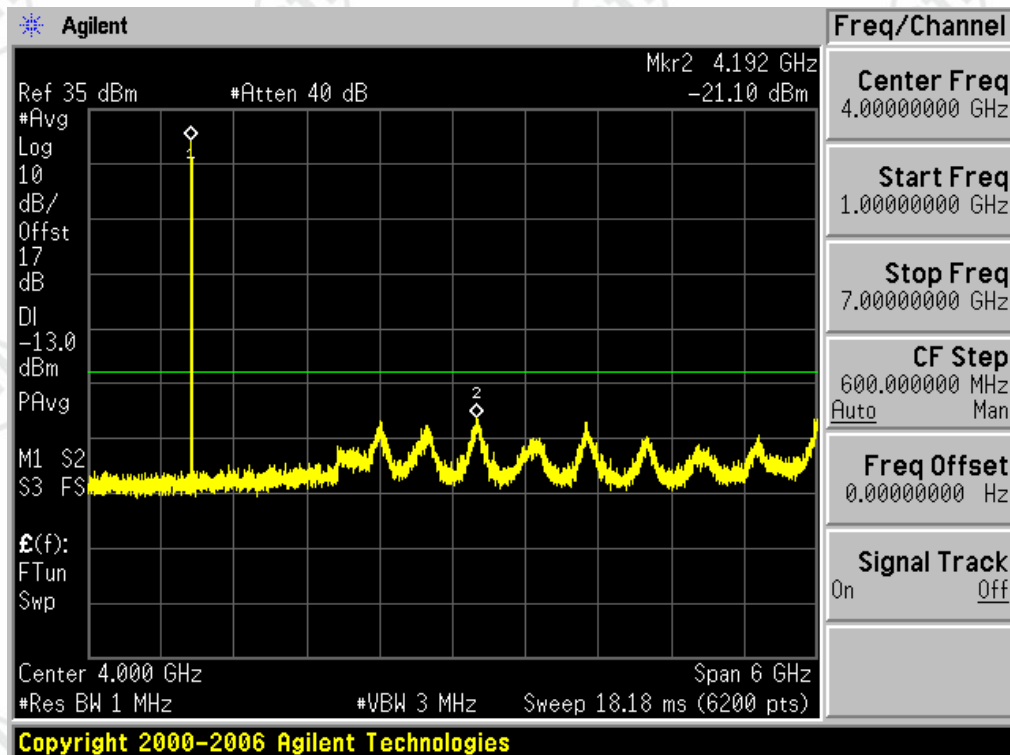
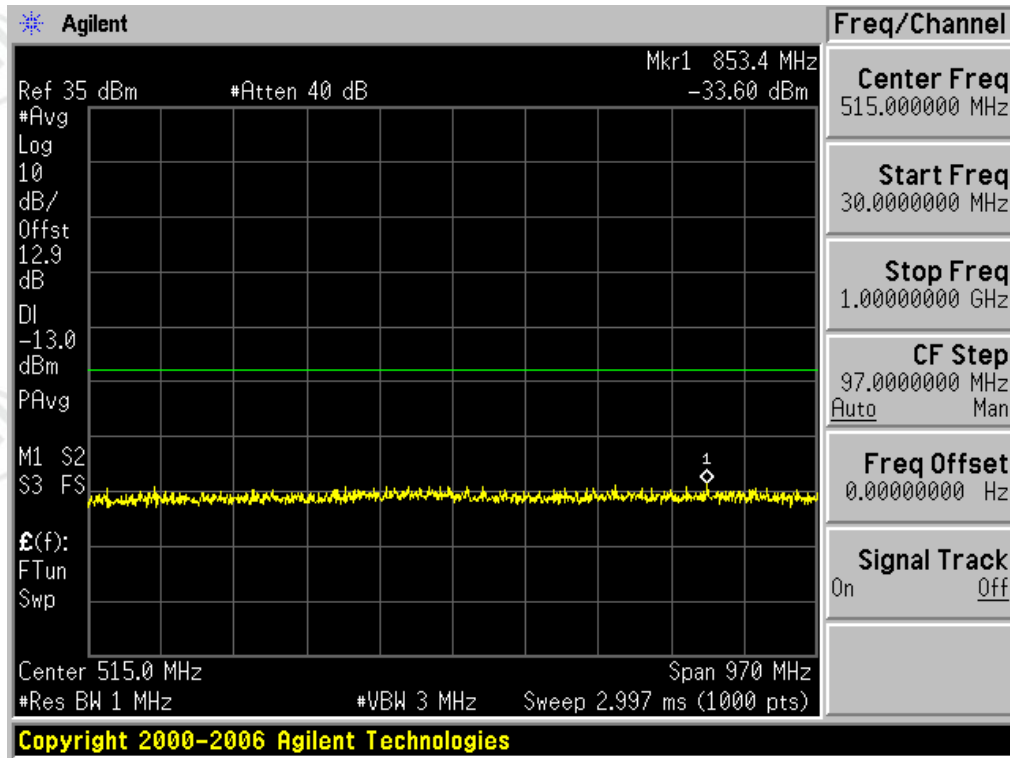


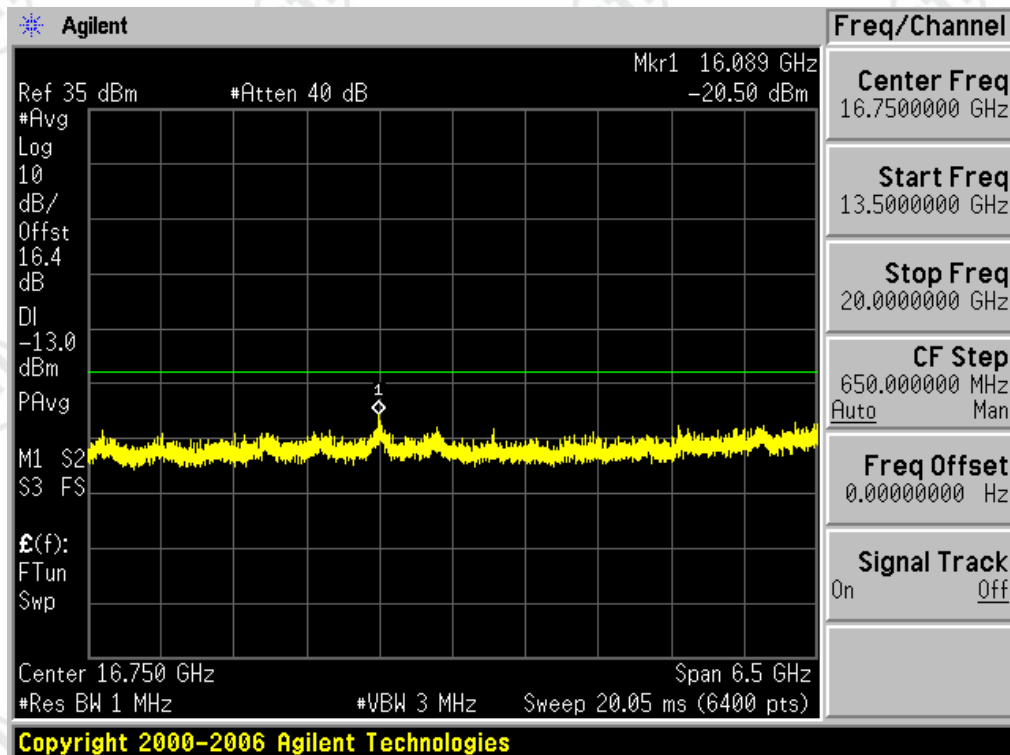
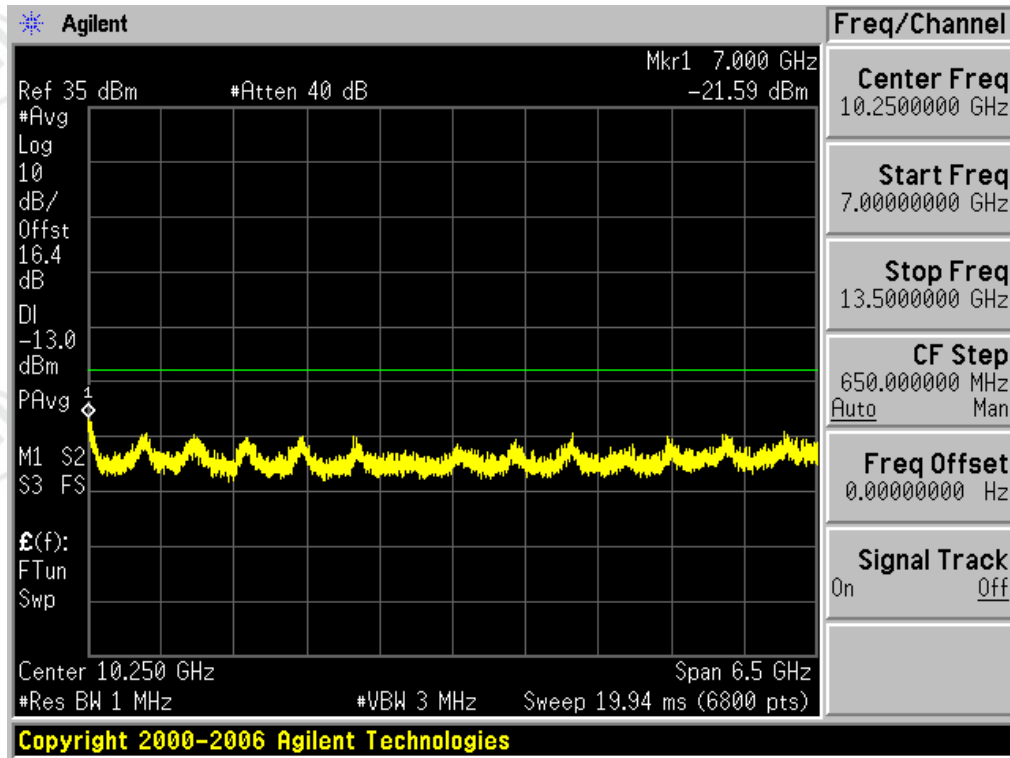
Test Band=GSM1900

Test Mode=GSM/TM1

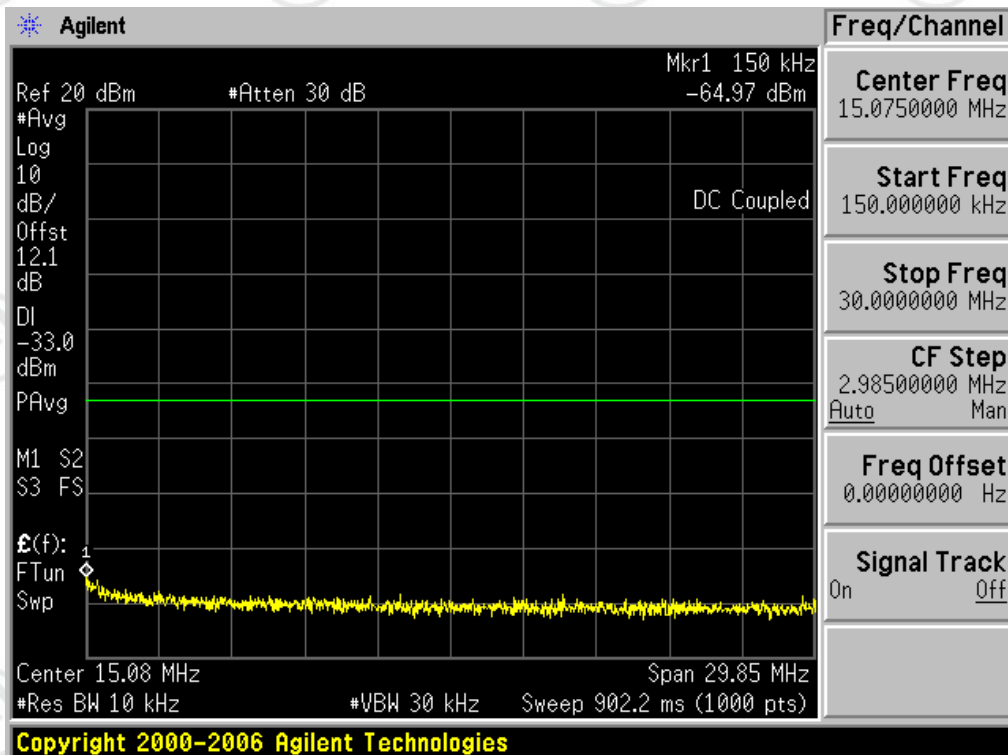
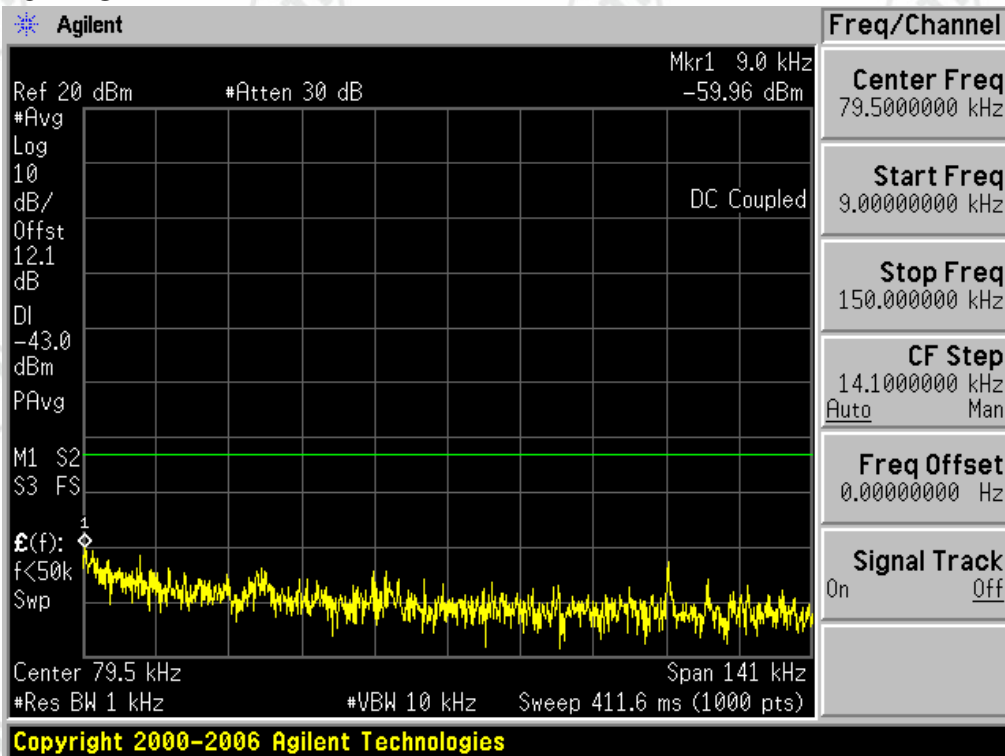
Test Channel=LCH

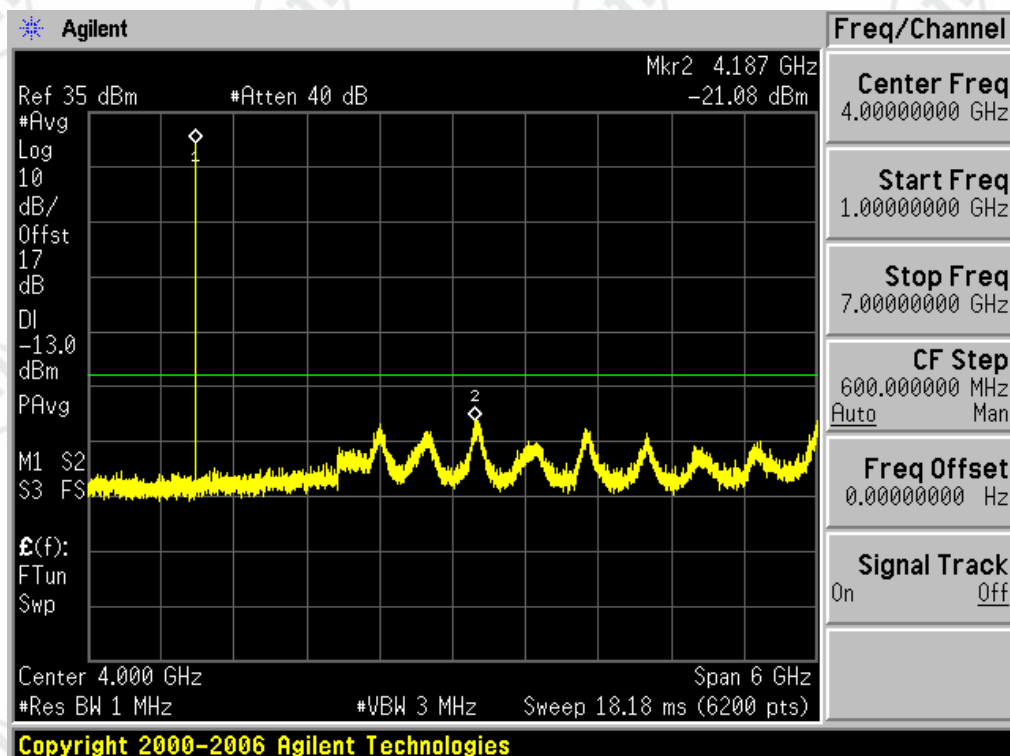
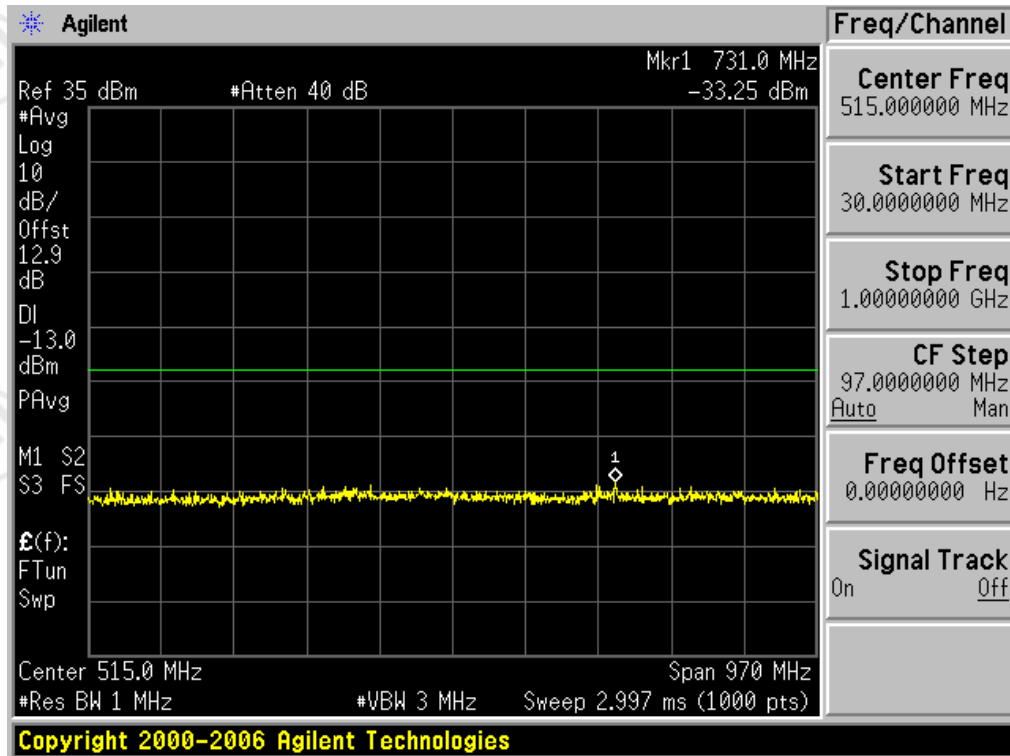


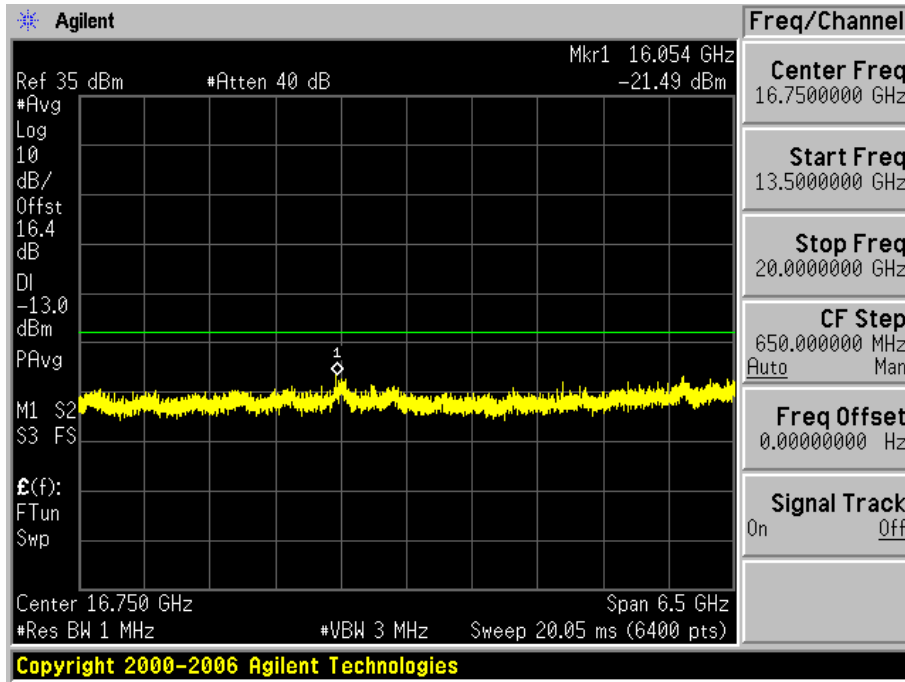
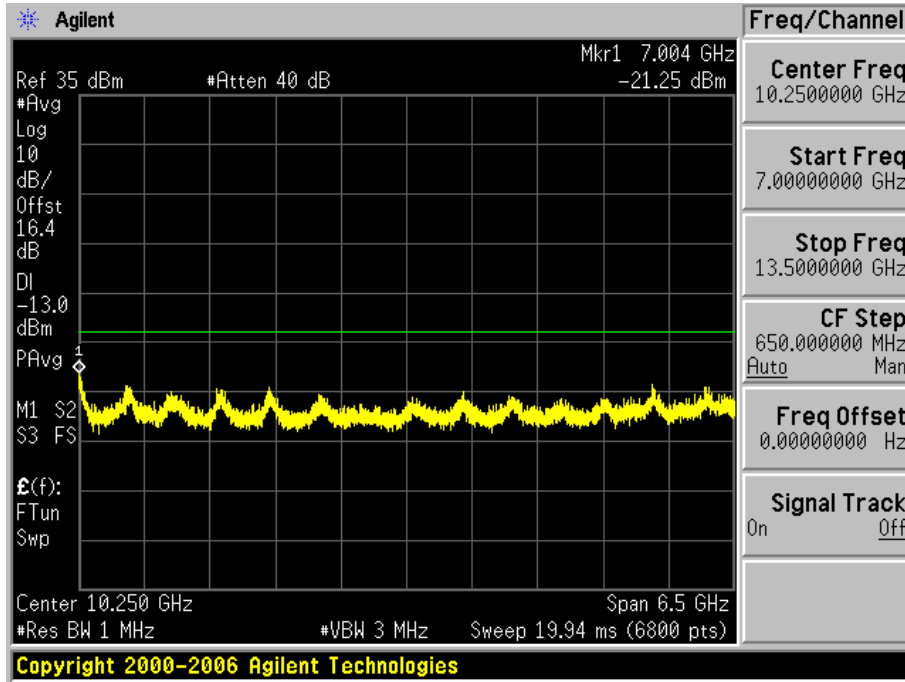




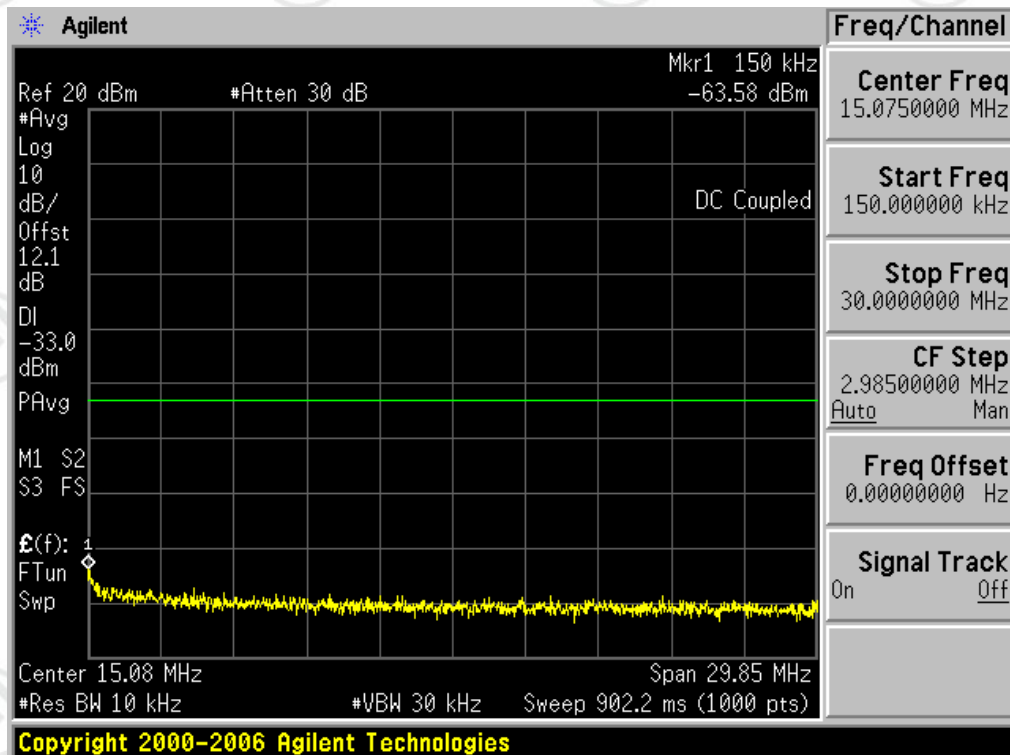
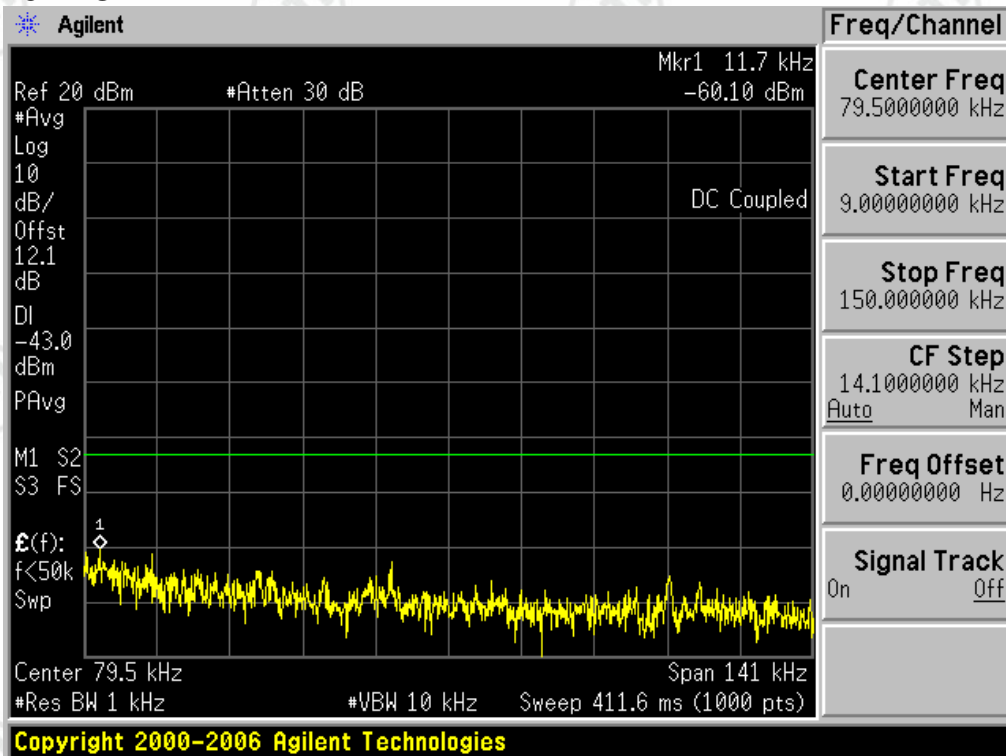
Test Channel=MCH

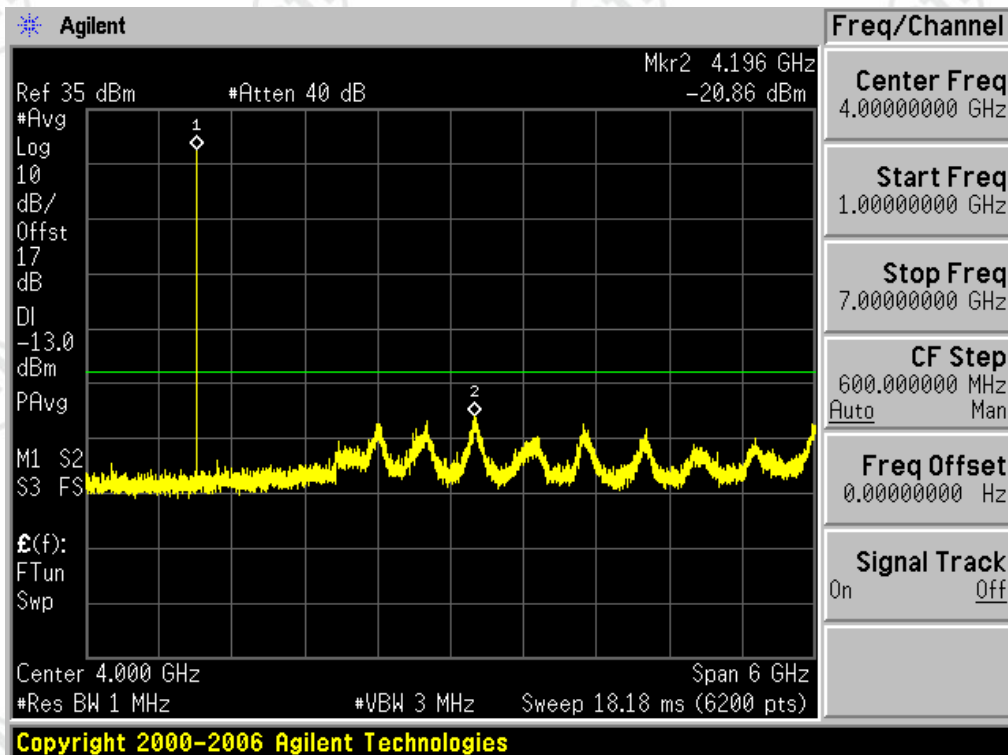
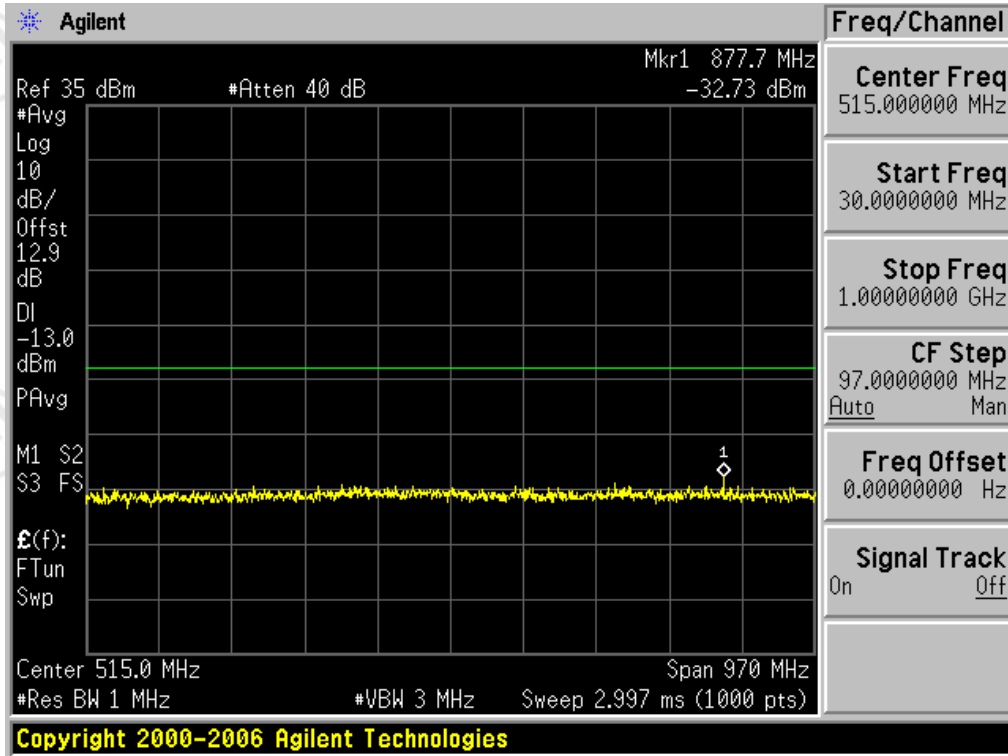


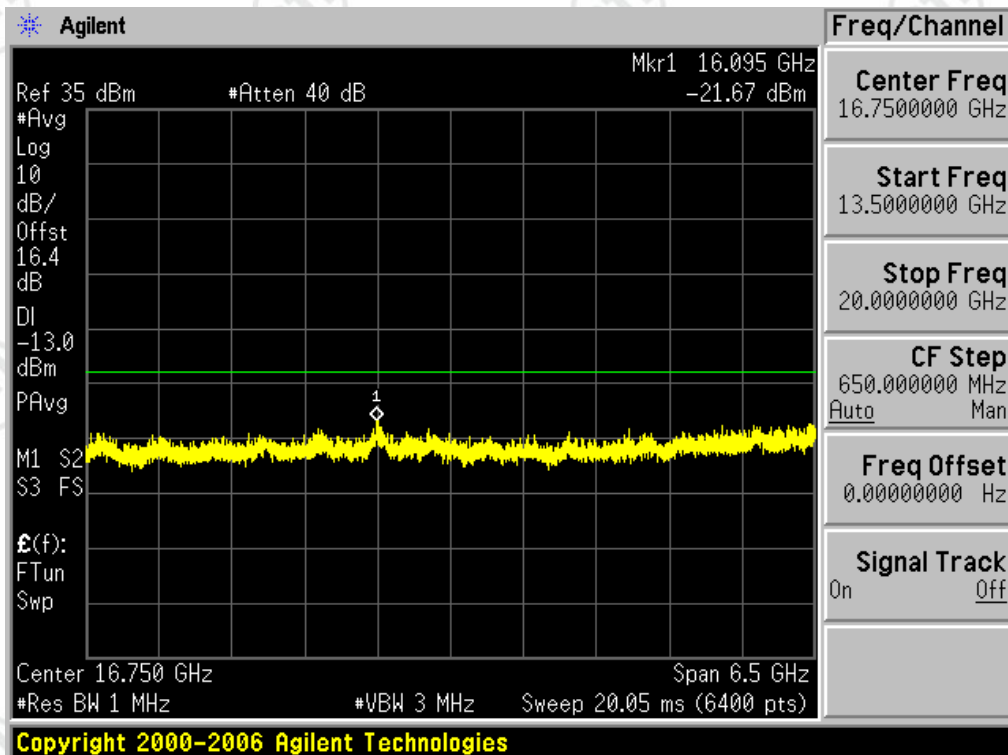
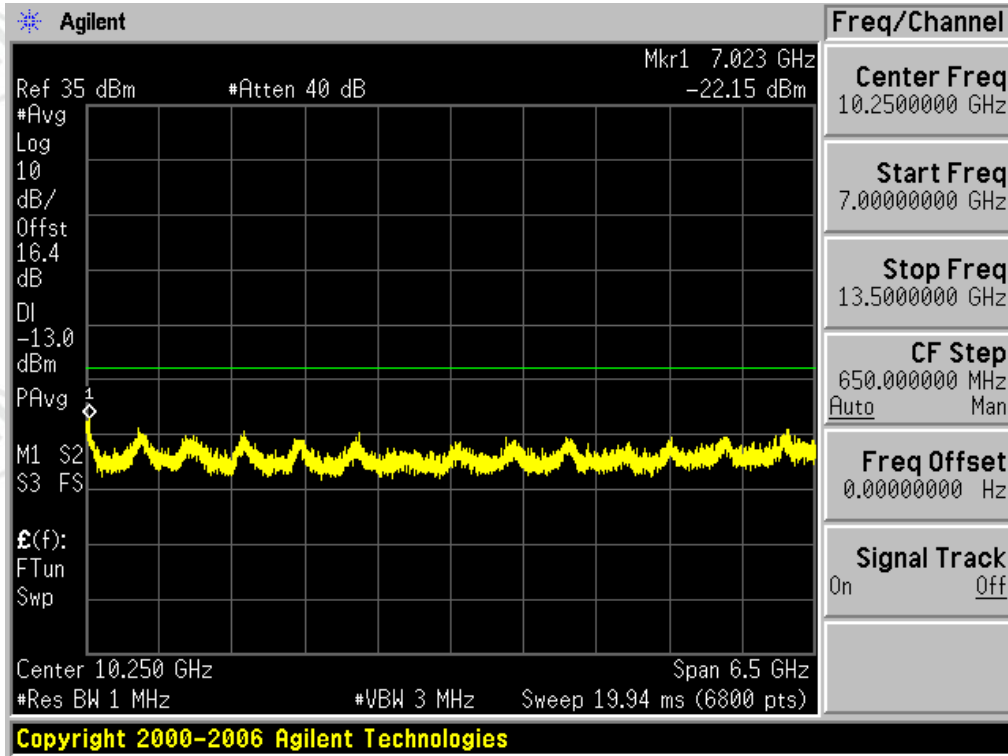




Test Channel=HCH

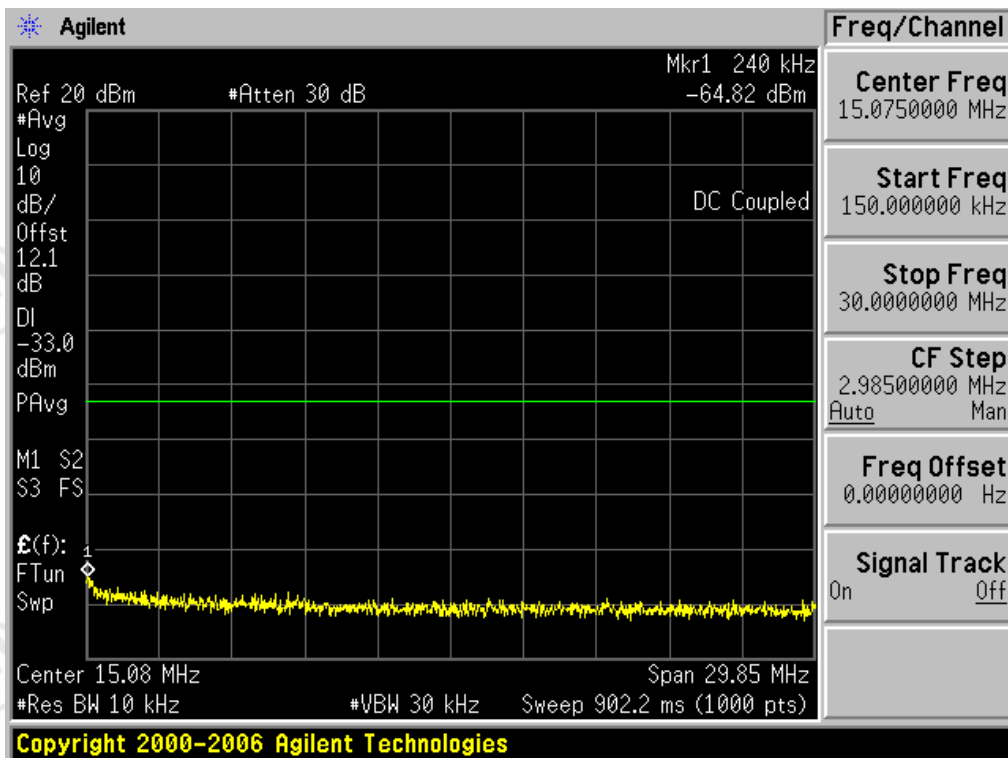
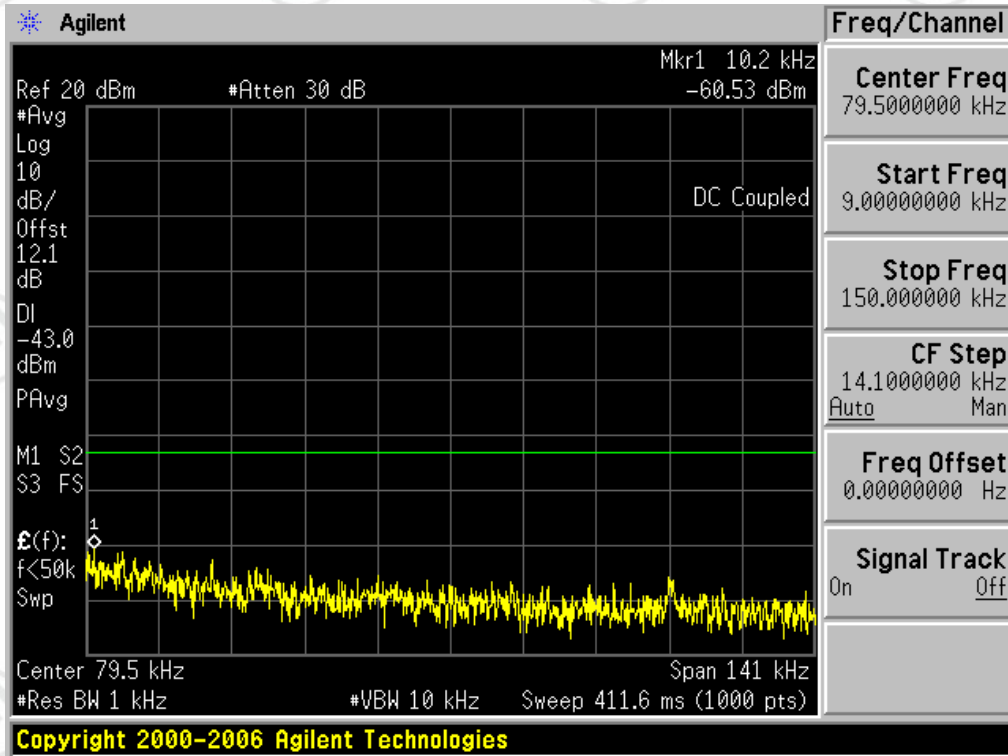


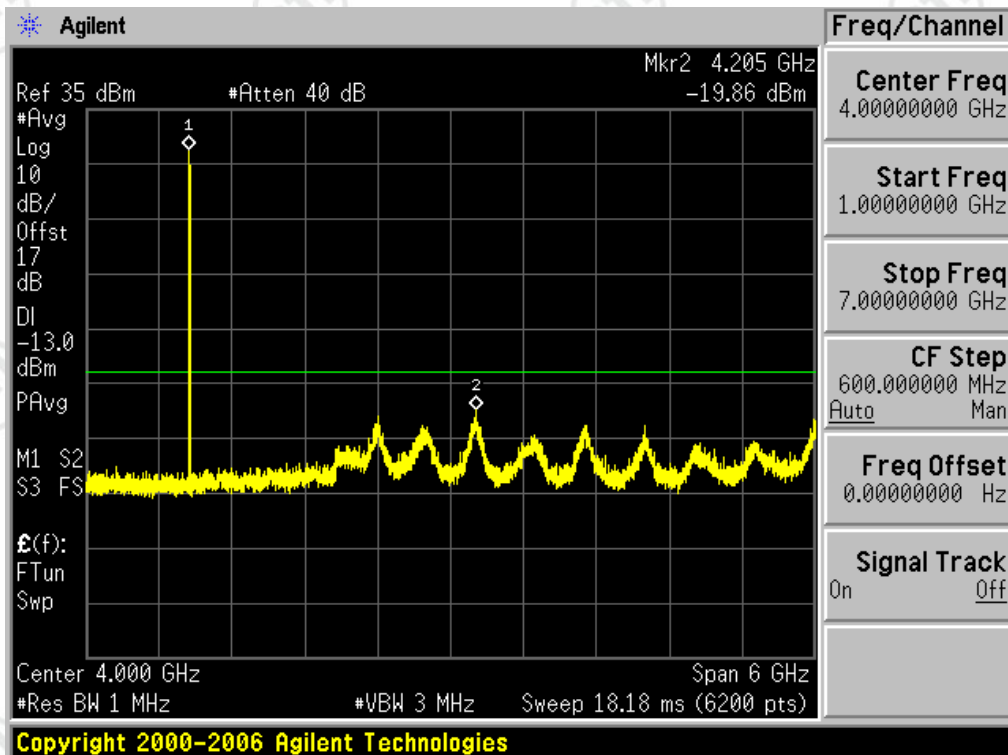
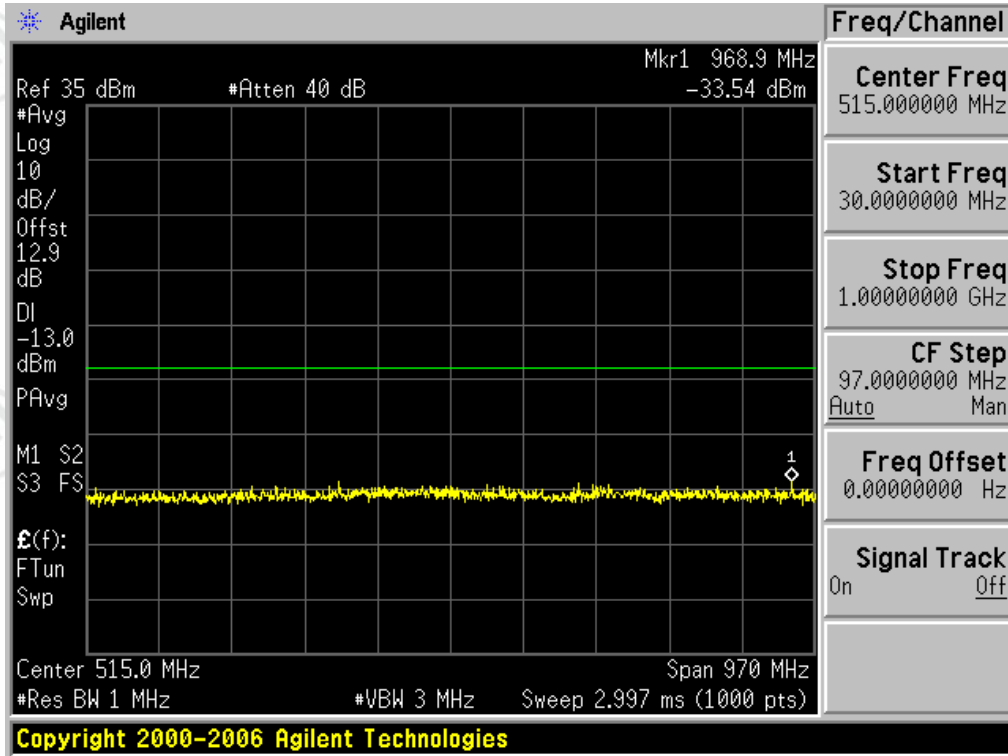


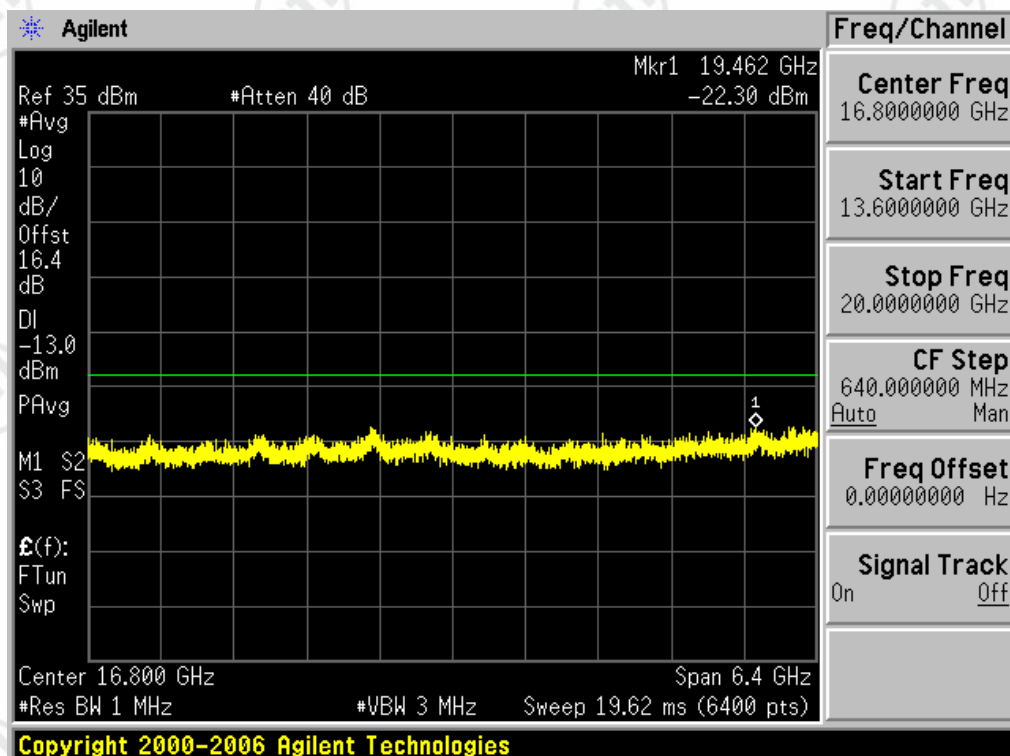
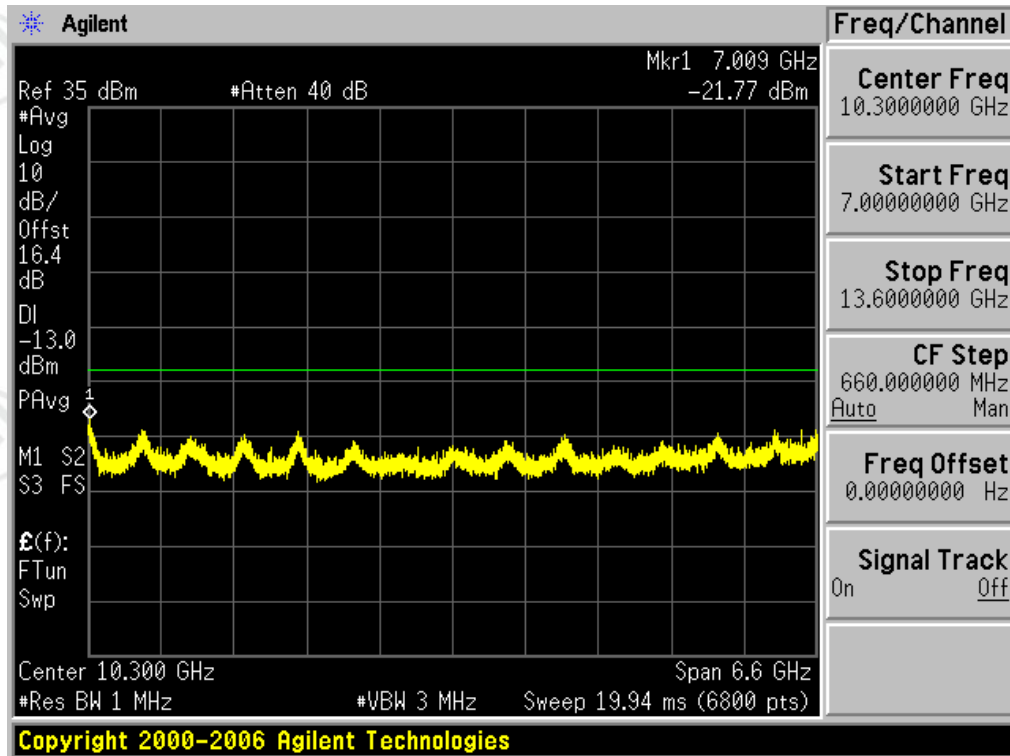


Test Mode=GSM/TM2

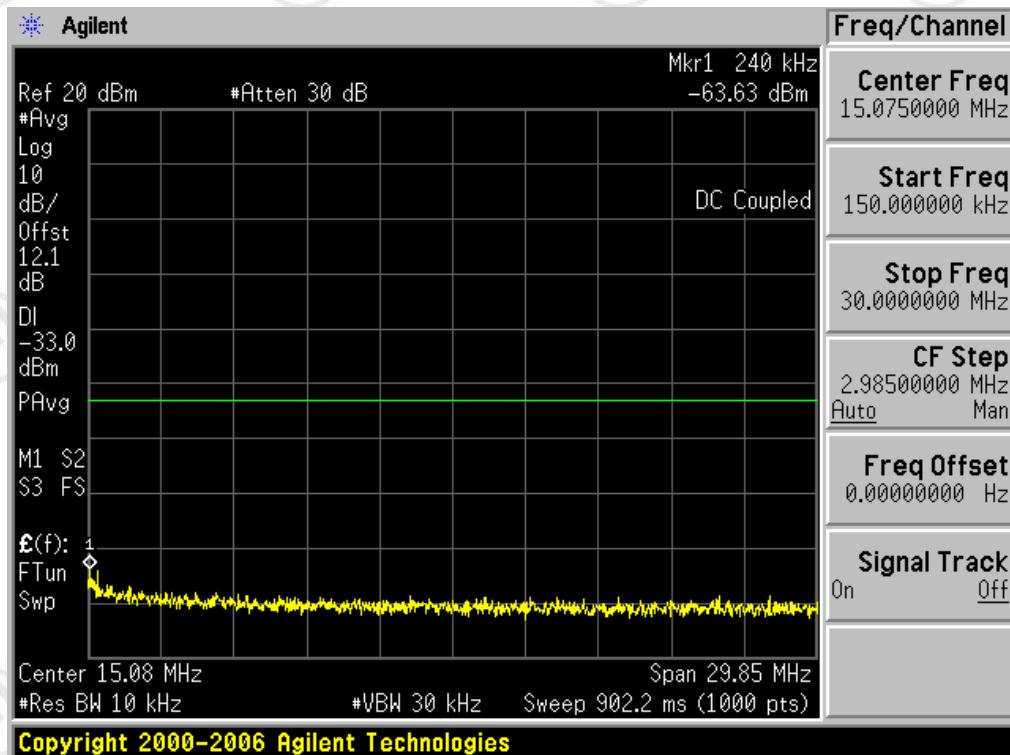
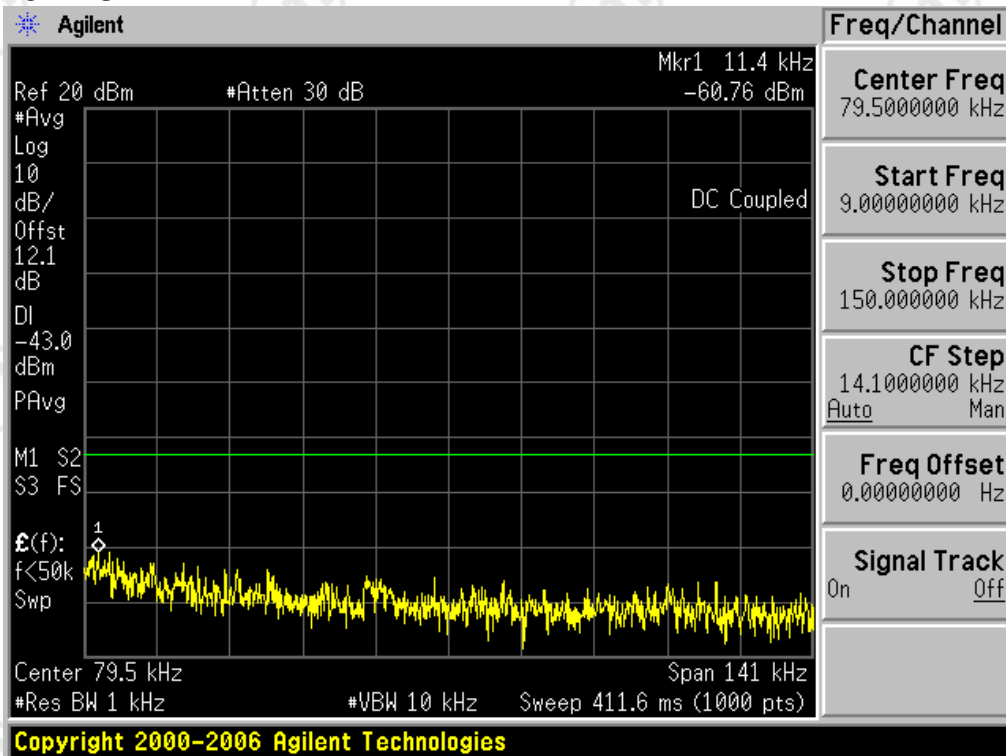
Test Channel=LCH

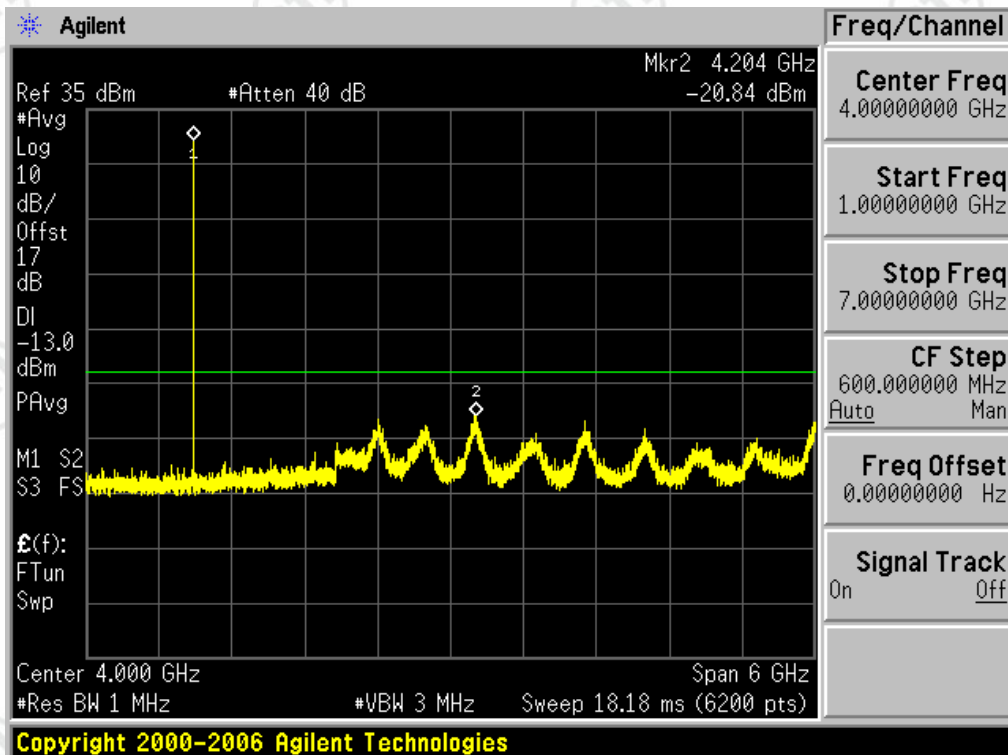
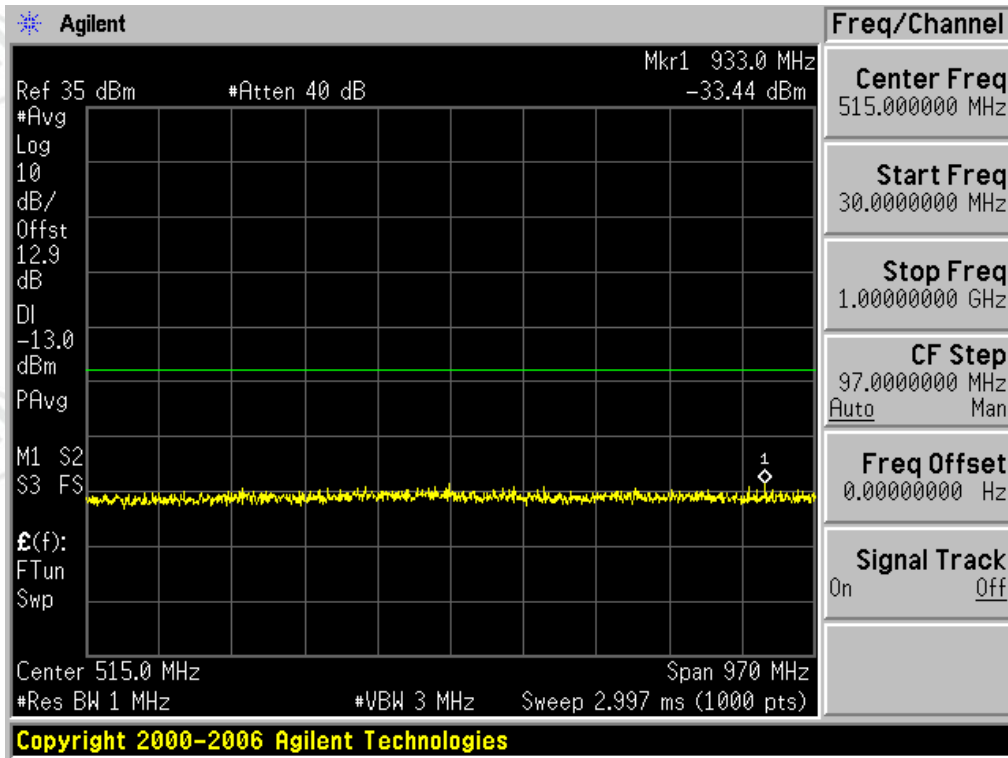


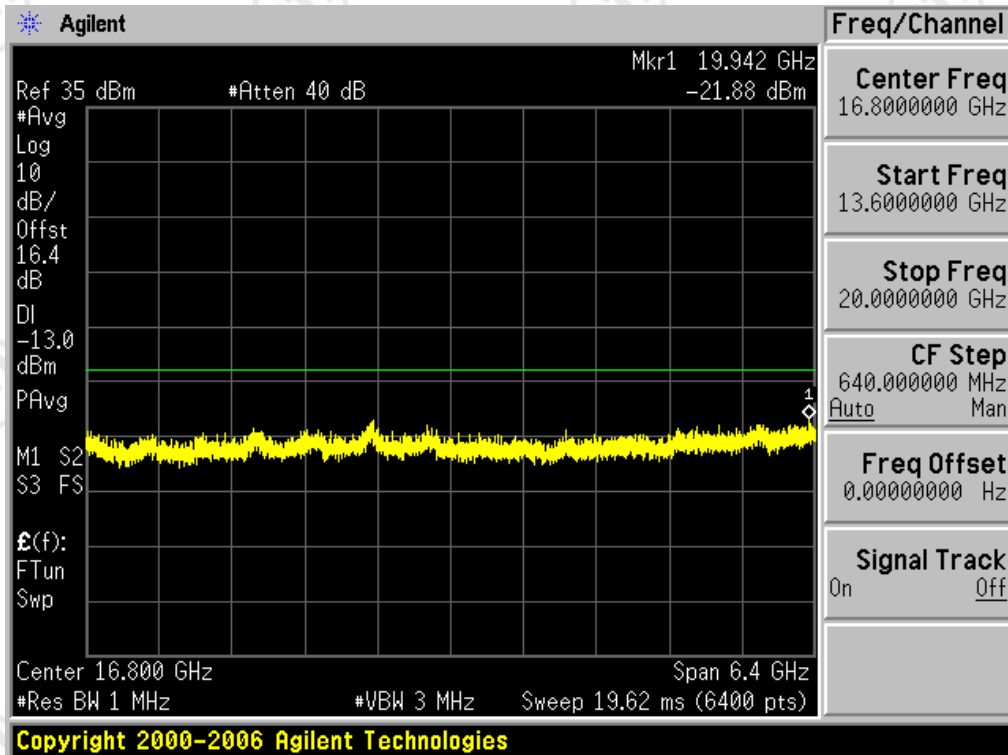
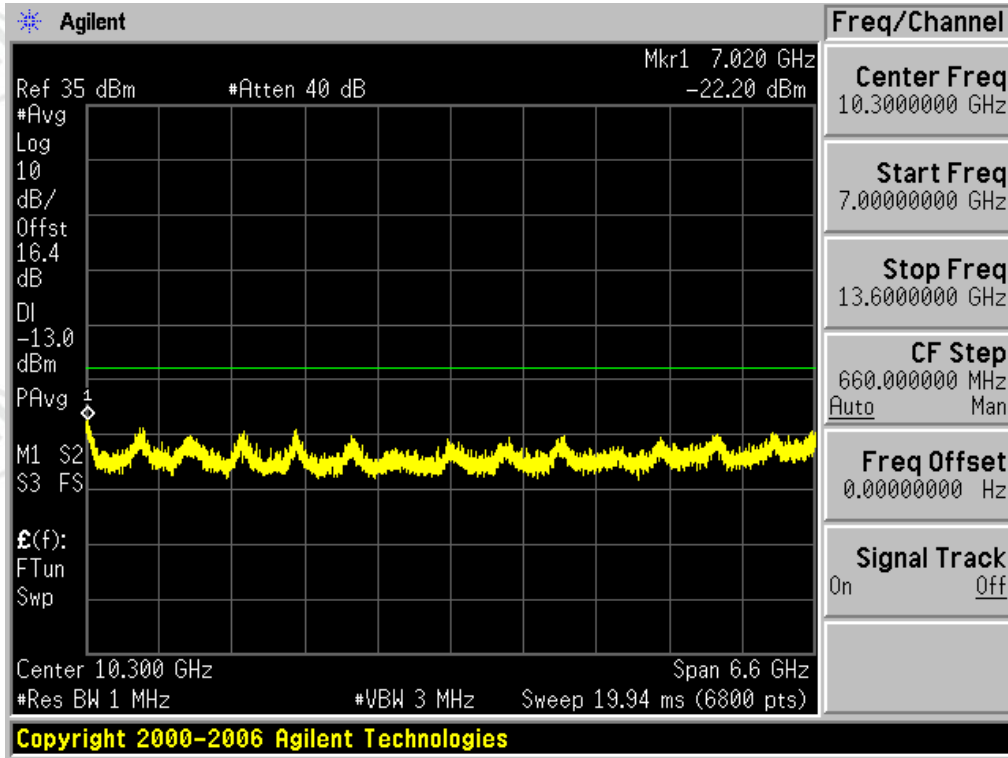




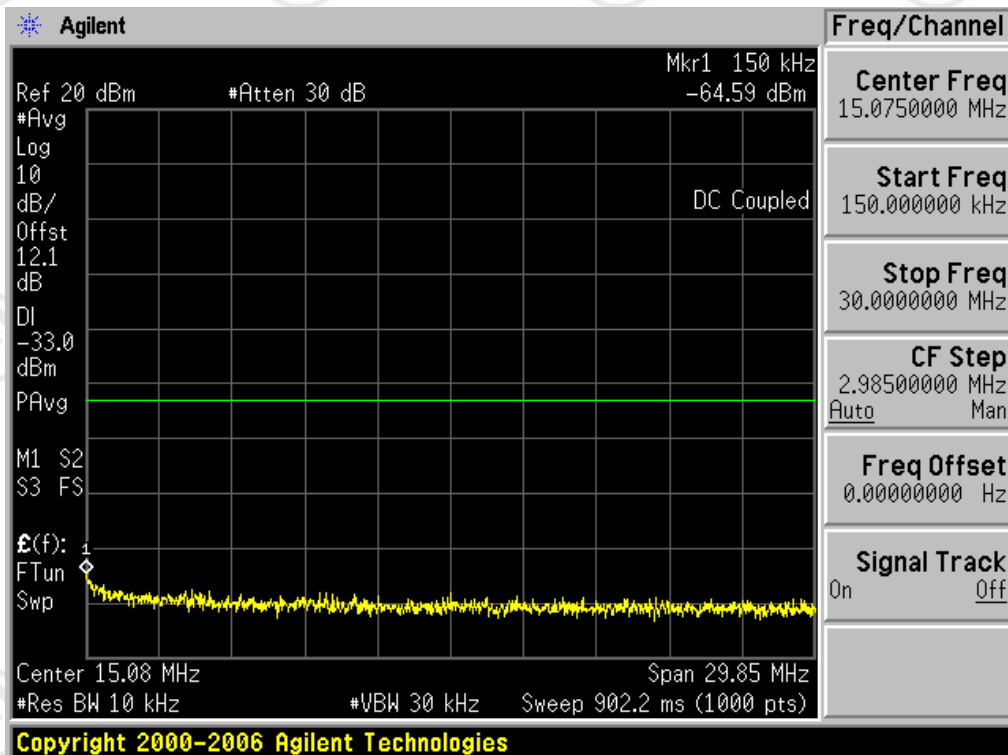
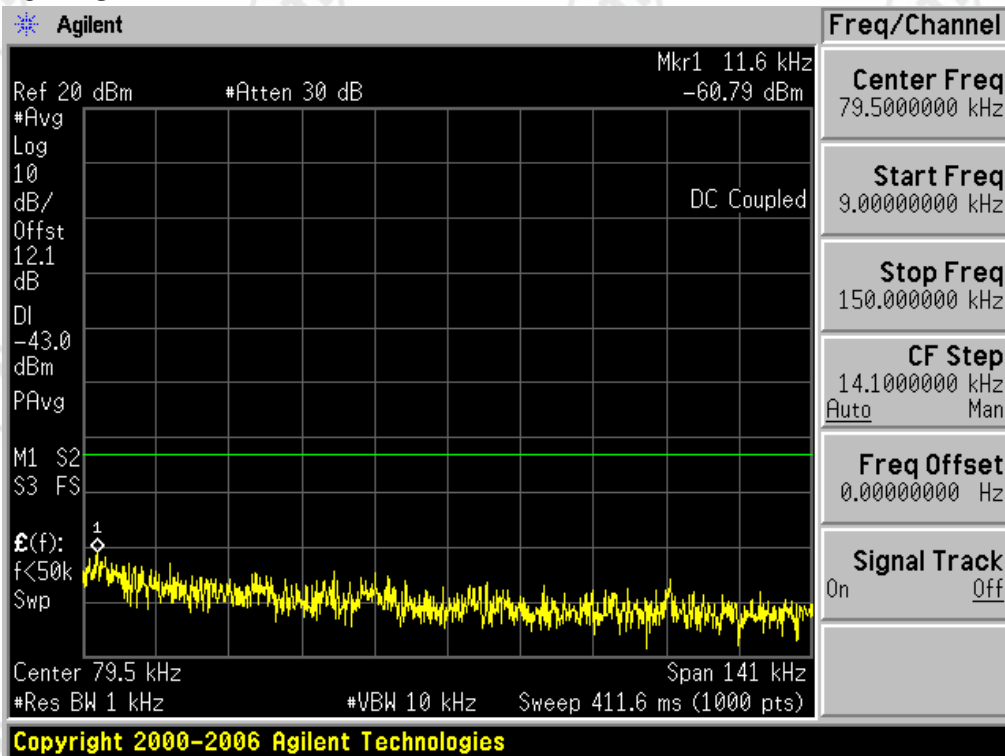
Test Channel=MCH

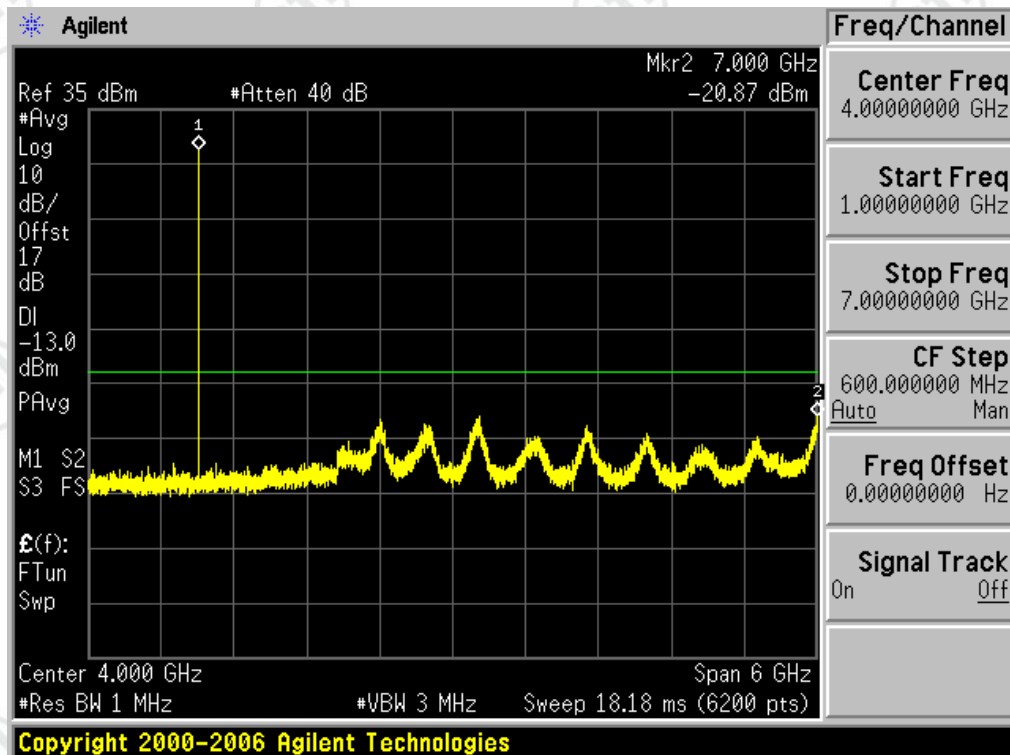
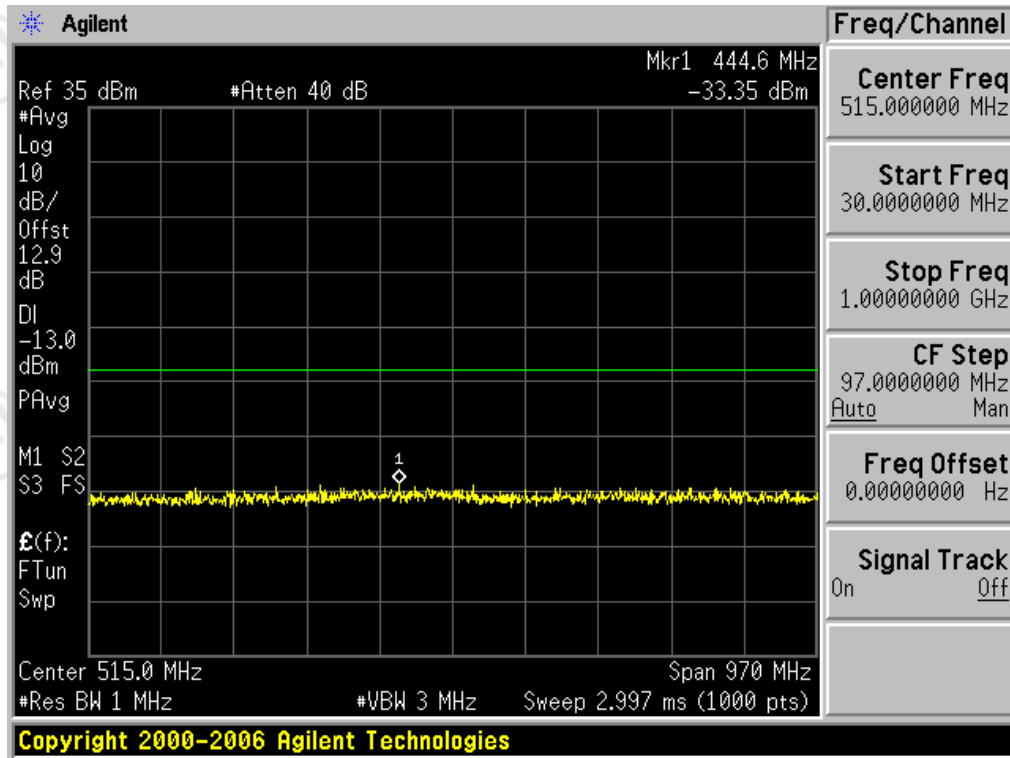


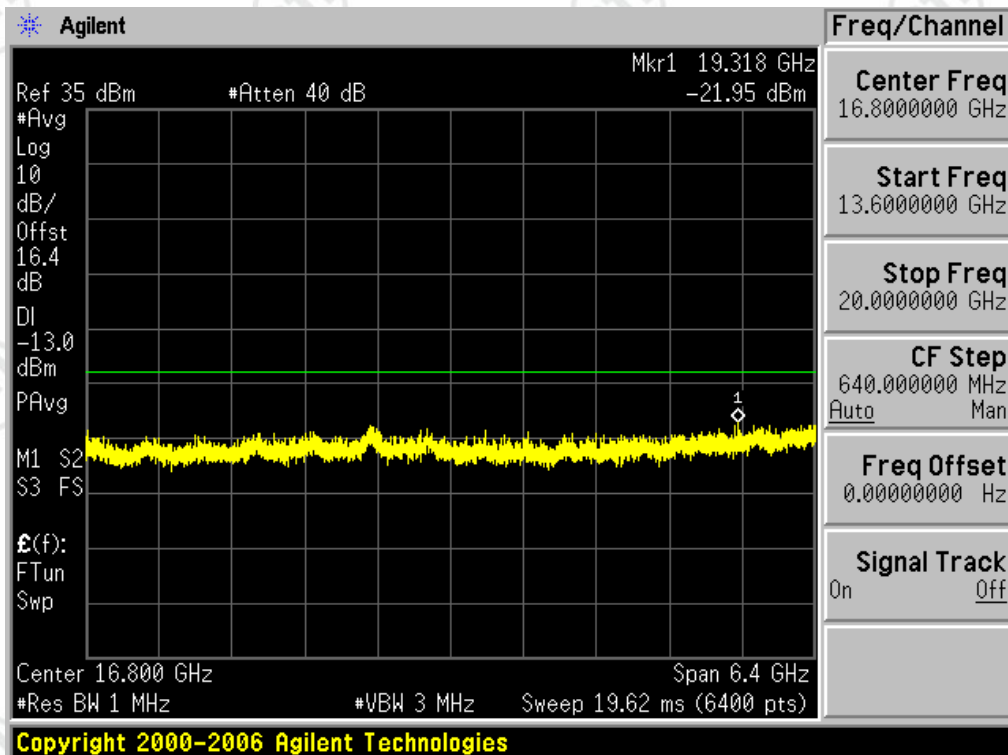
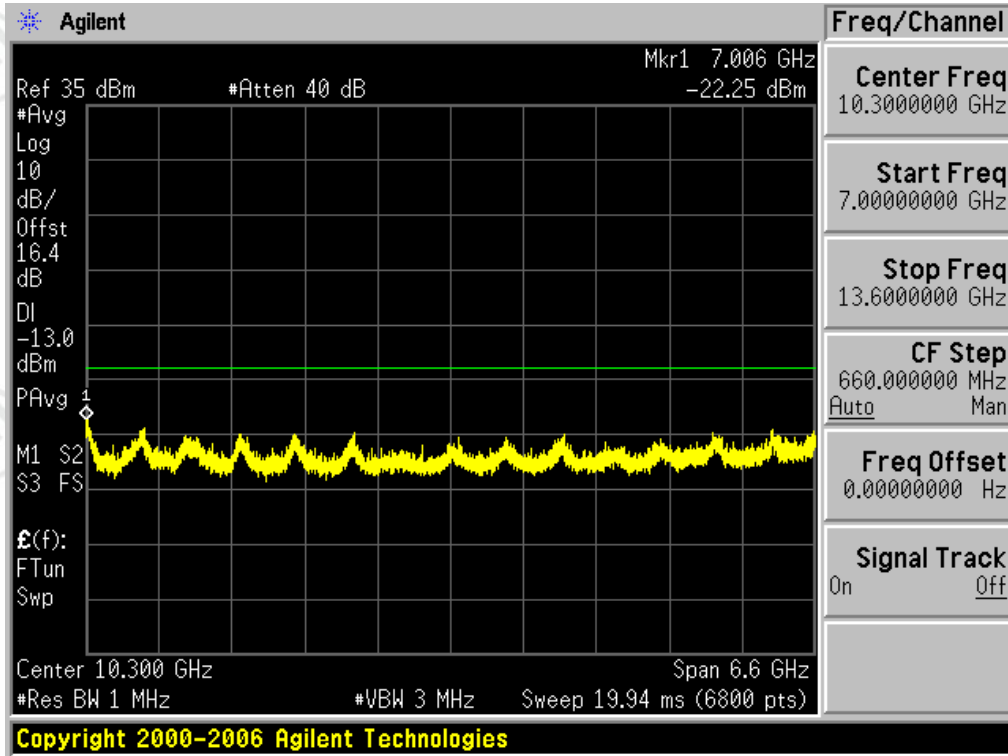




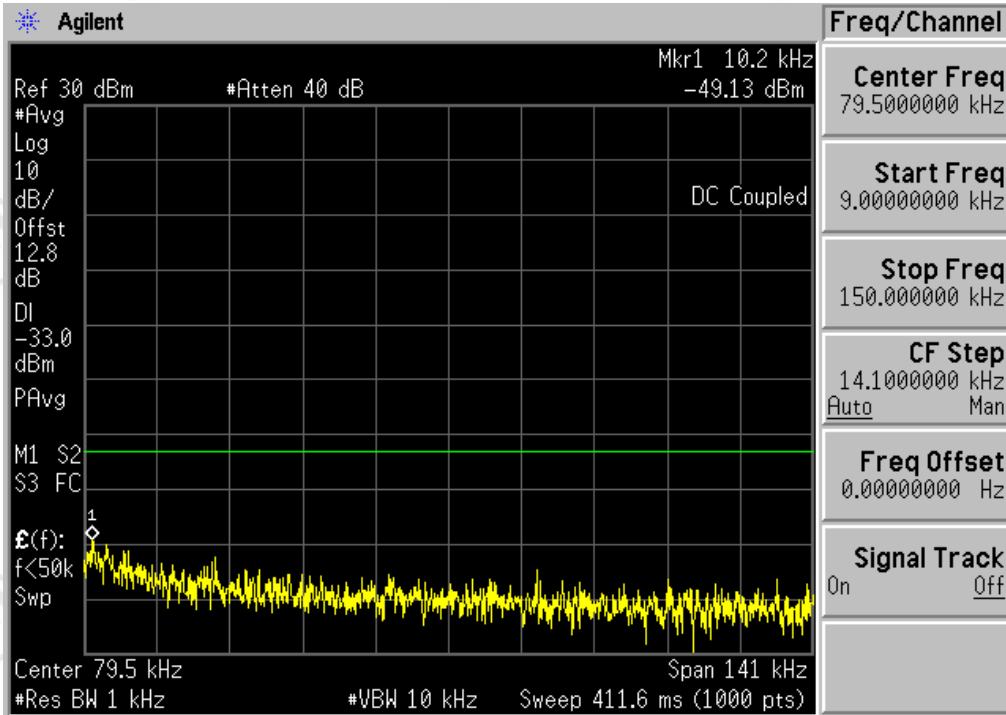
Test Channel=HCH



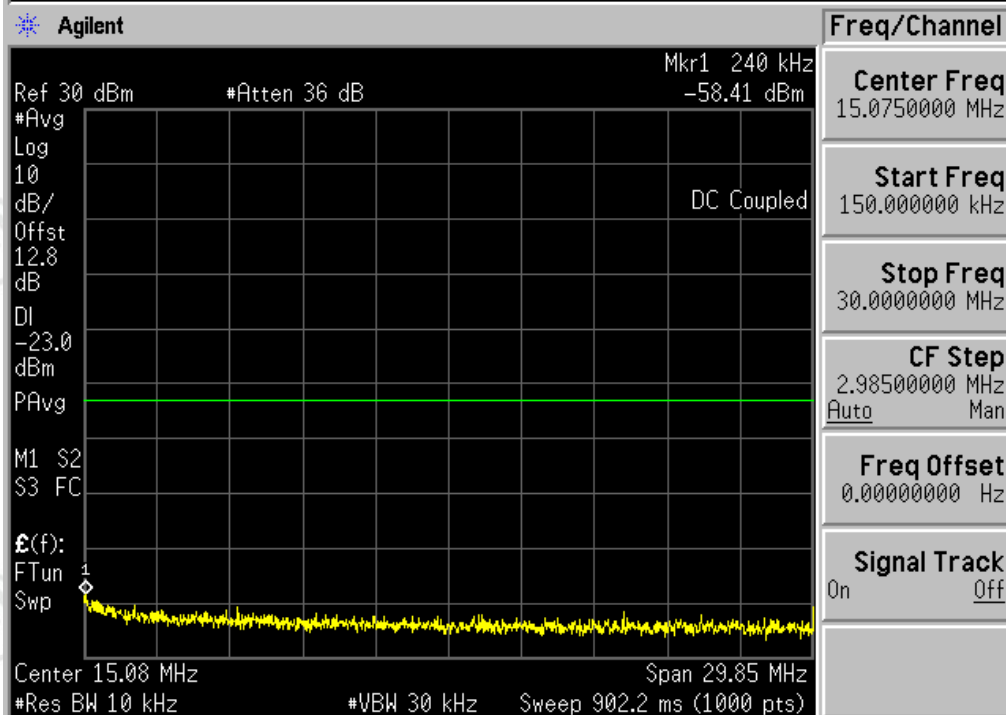




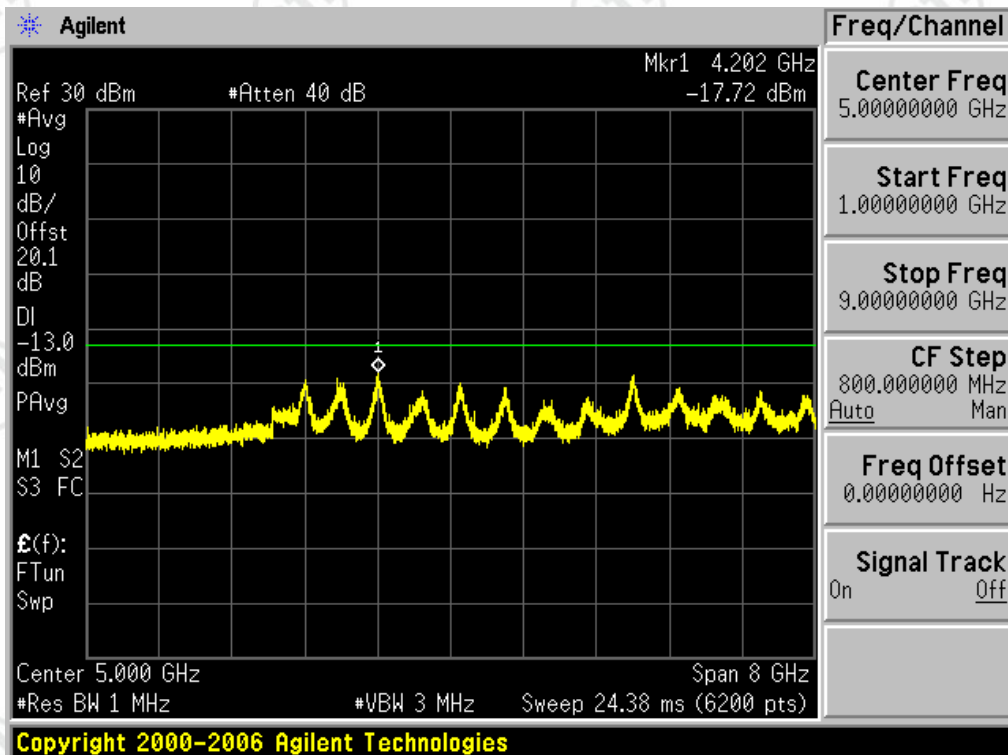
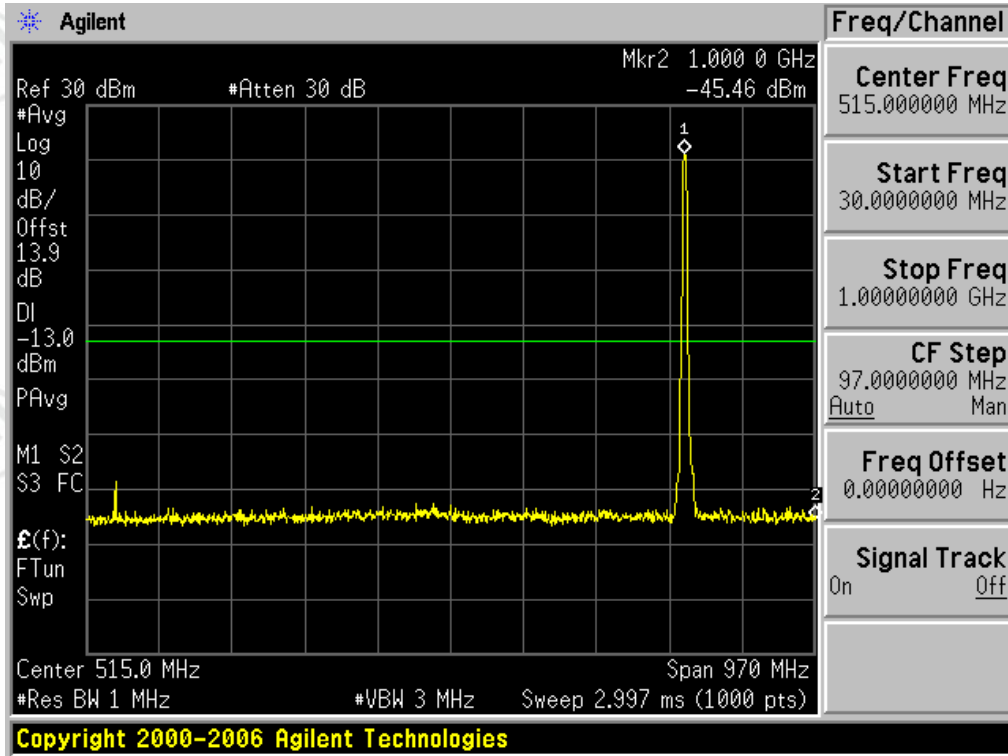
For WCDMA
Test Band=WCDMA850
Test Mode=UMTS/TM1
Test Channel=LCH



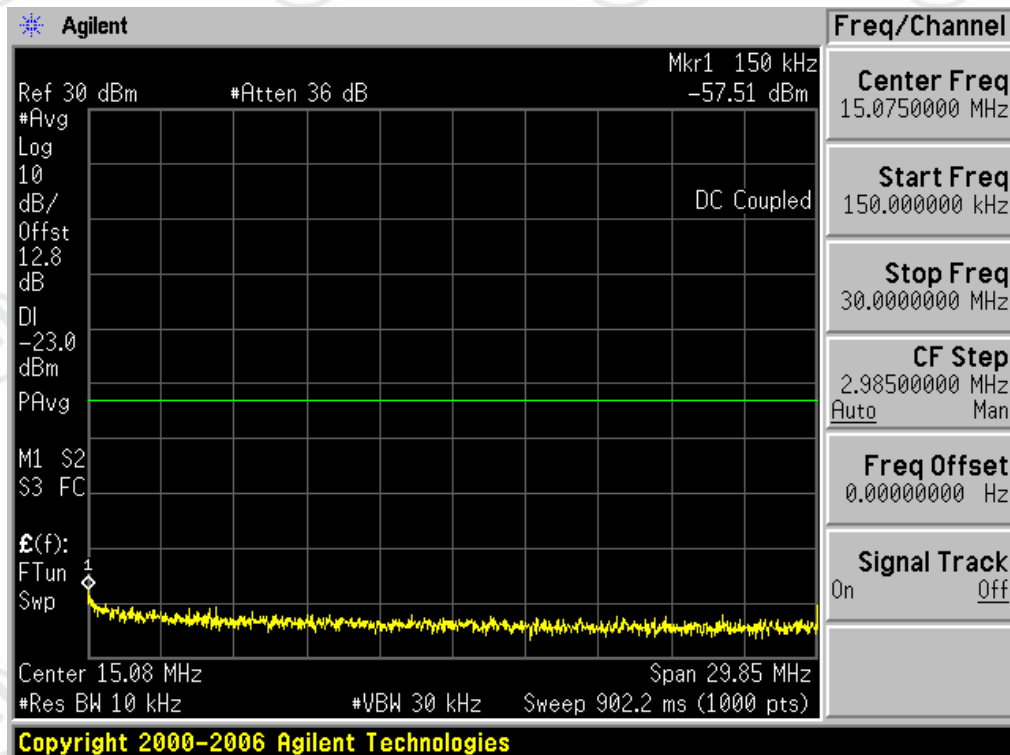
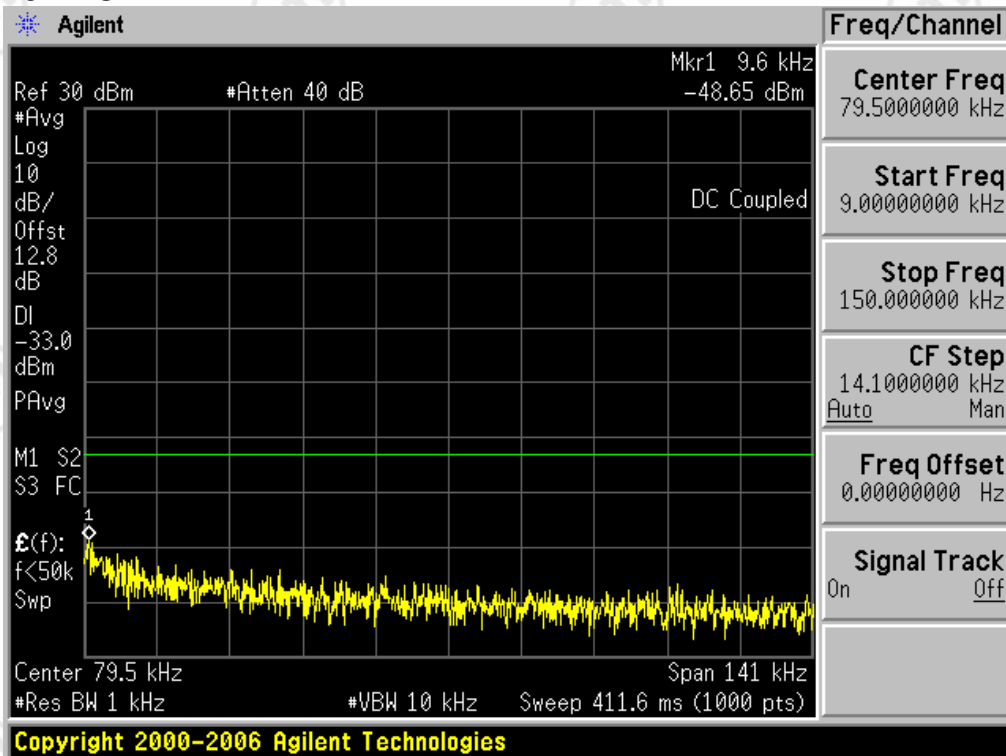
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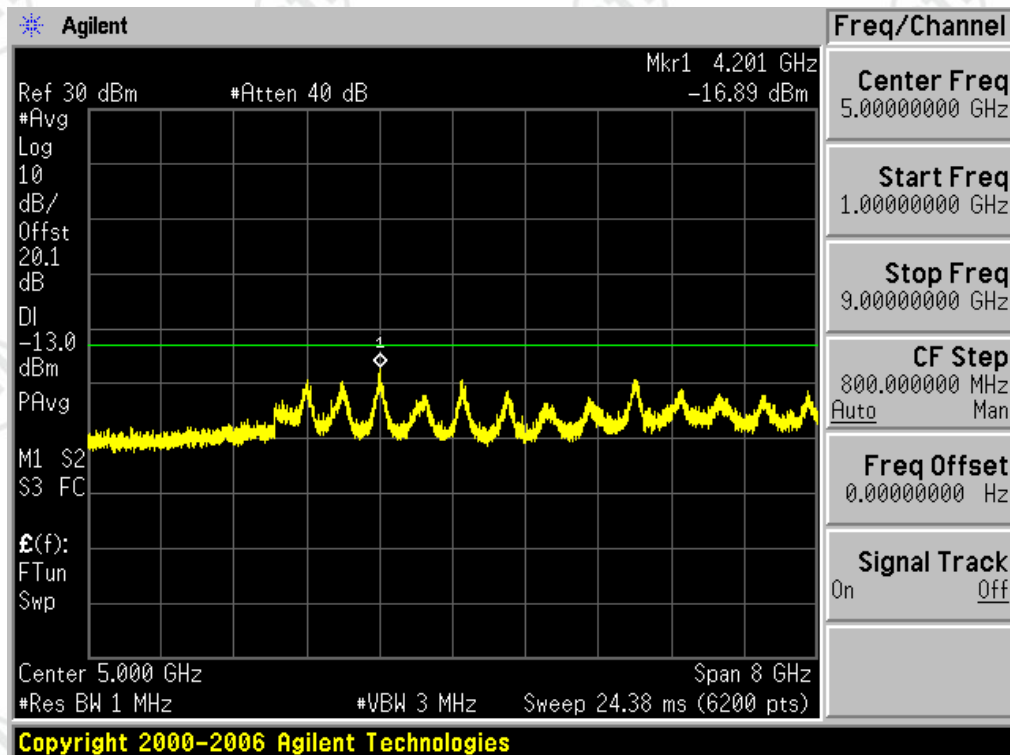
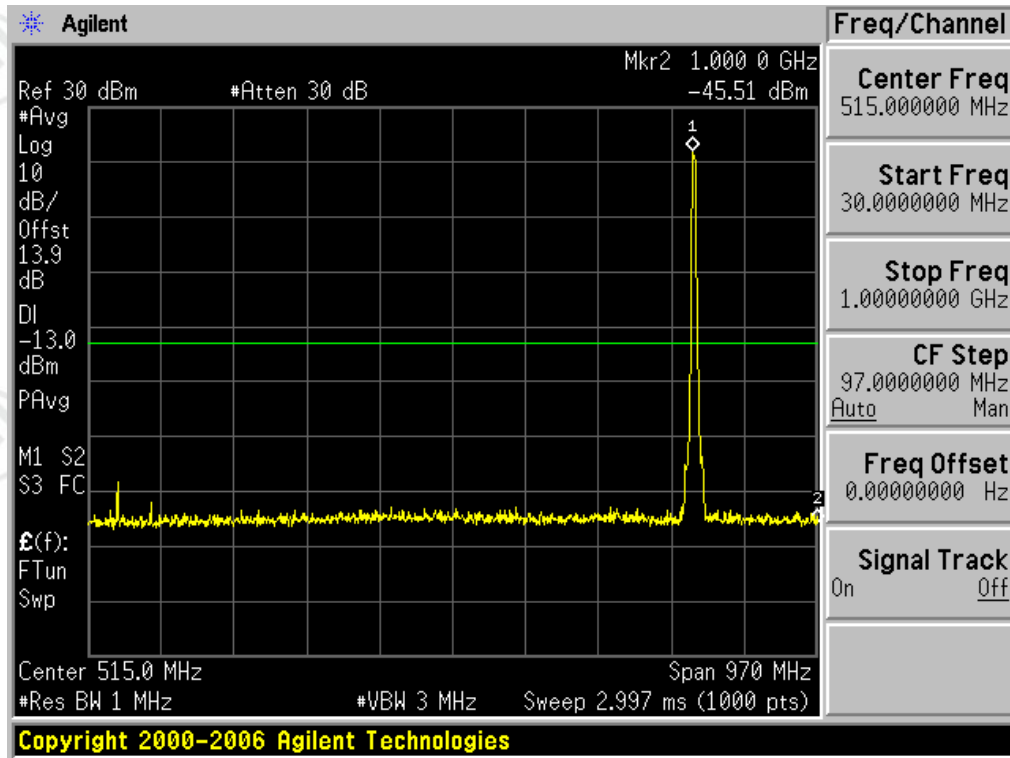


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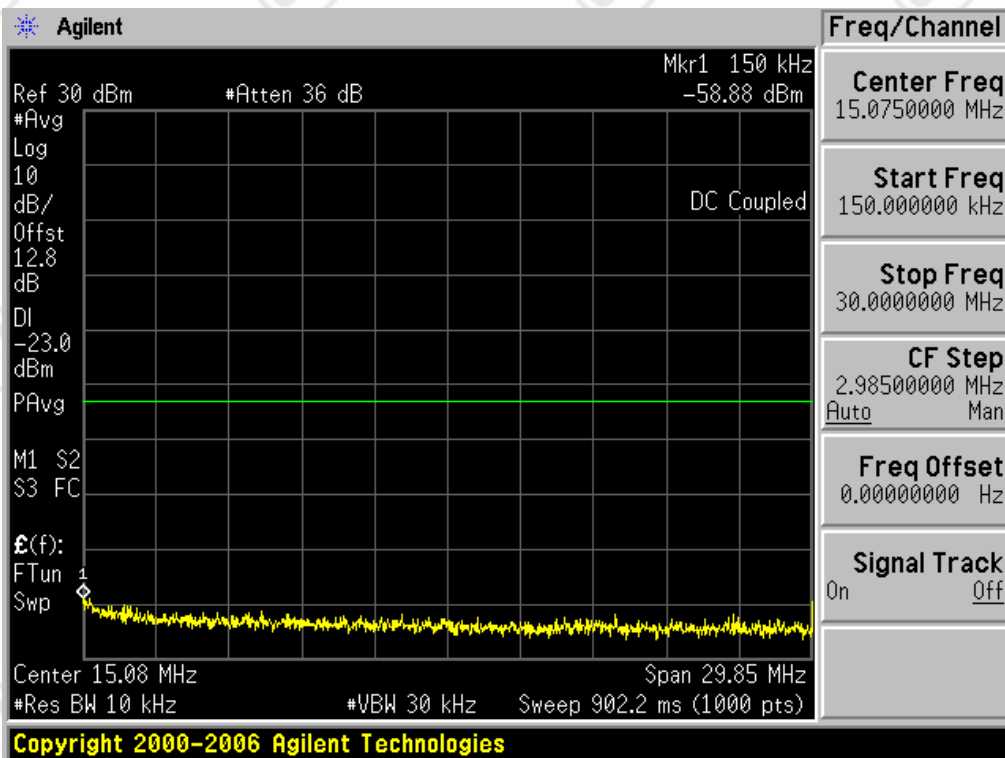
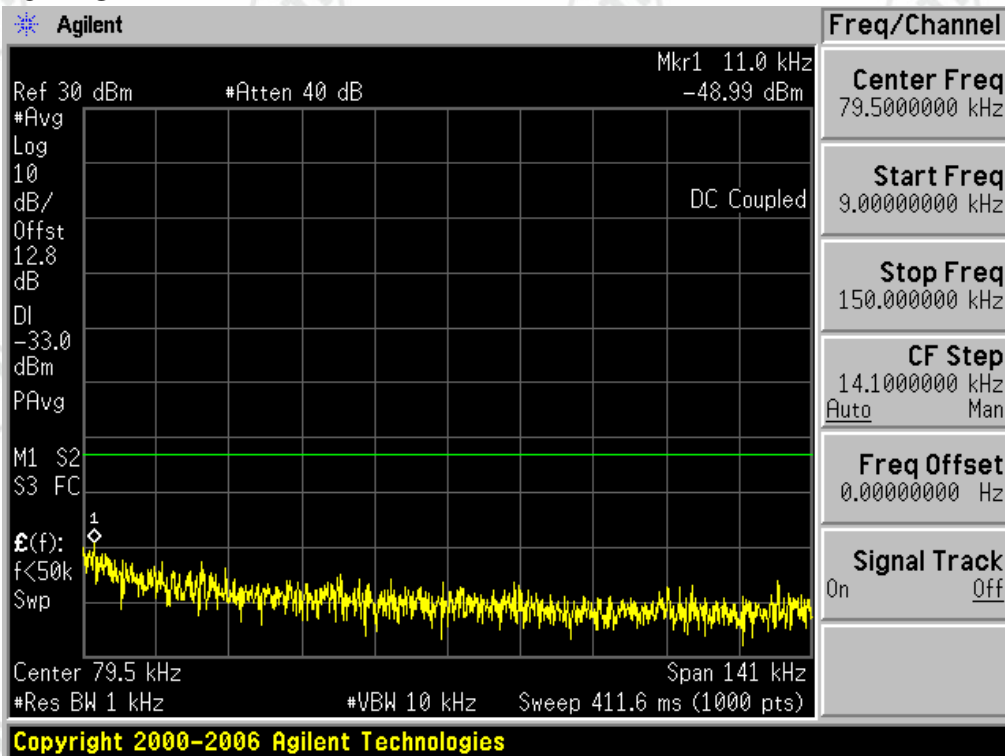


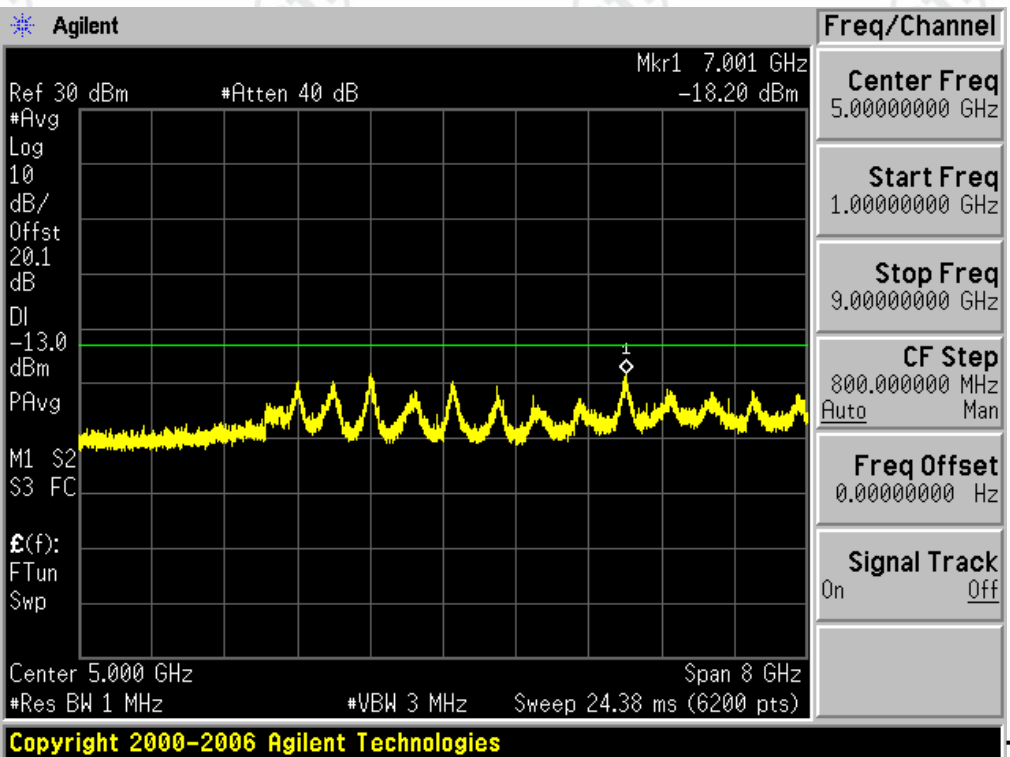
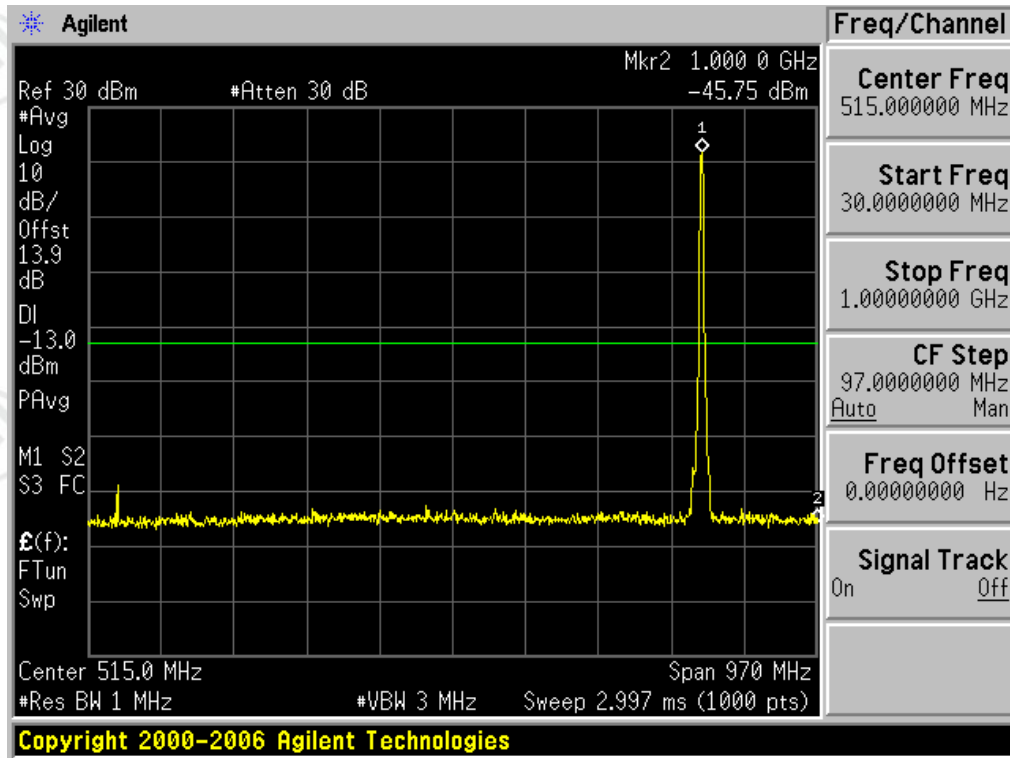
Test Channel=MCH





Test Channel=HCH

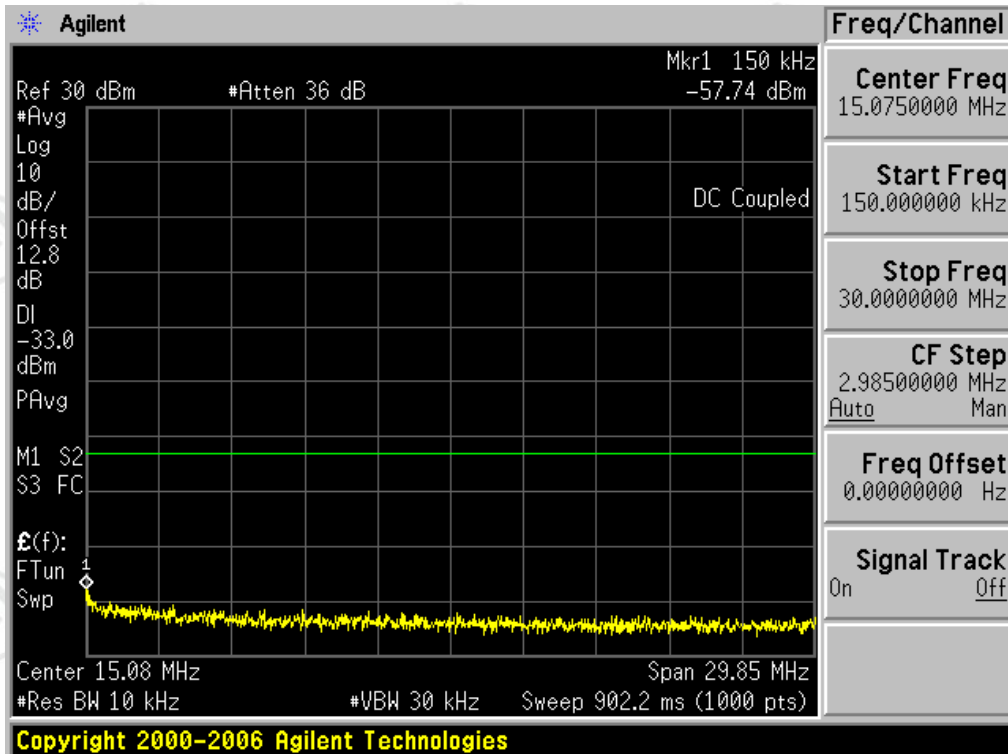
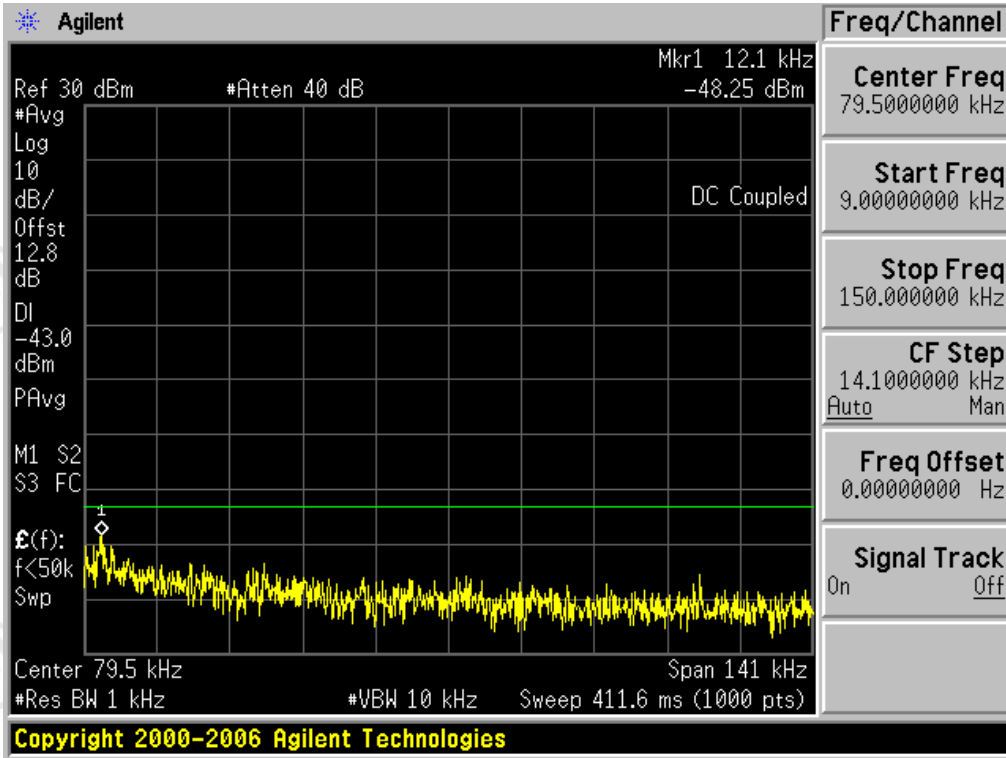


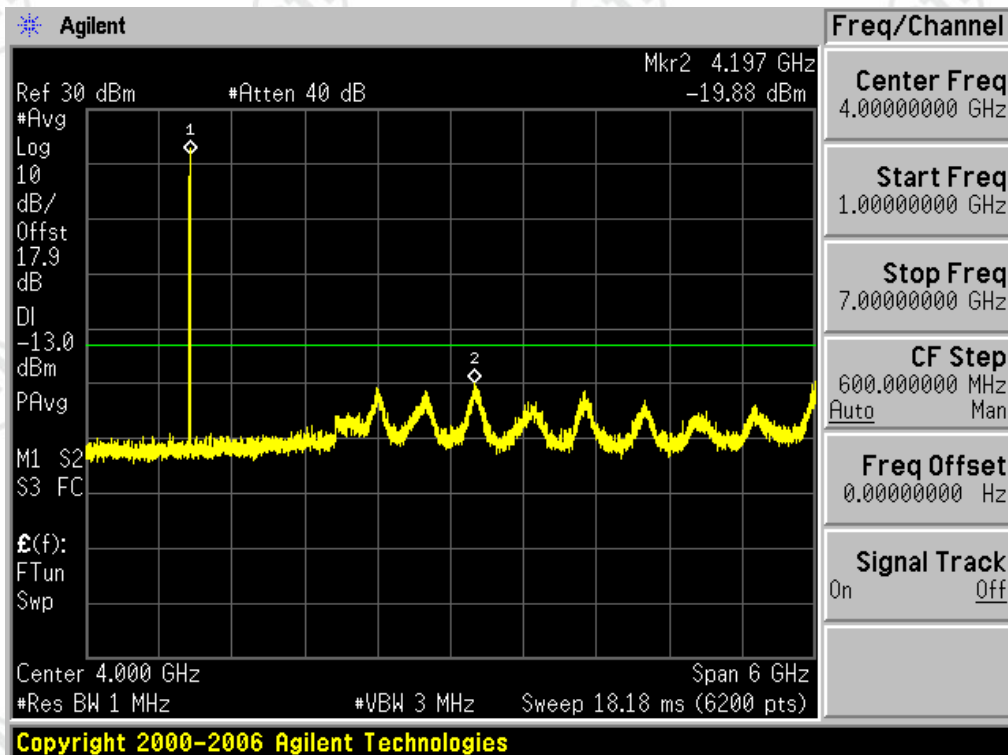
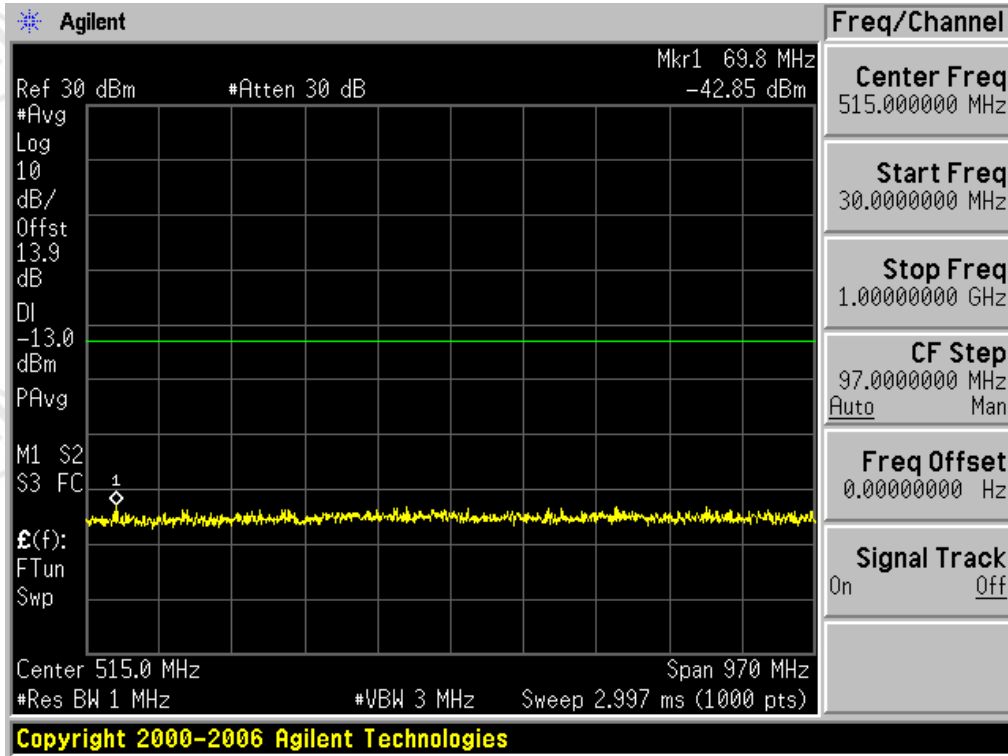


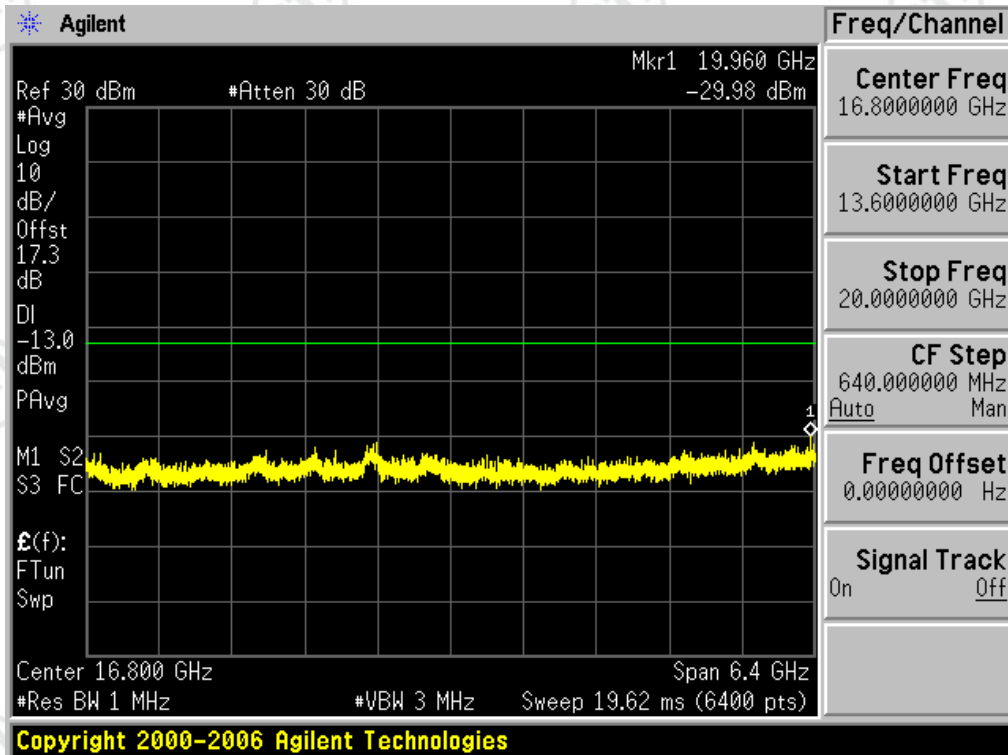
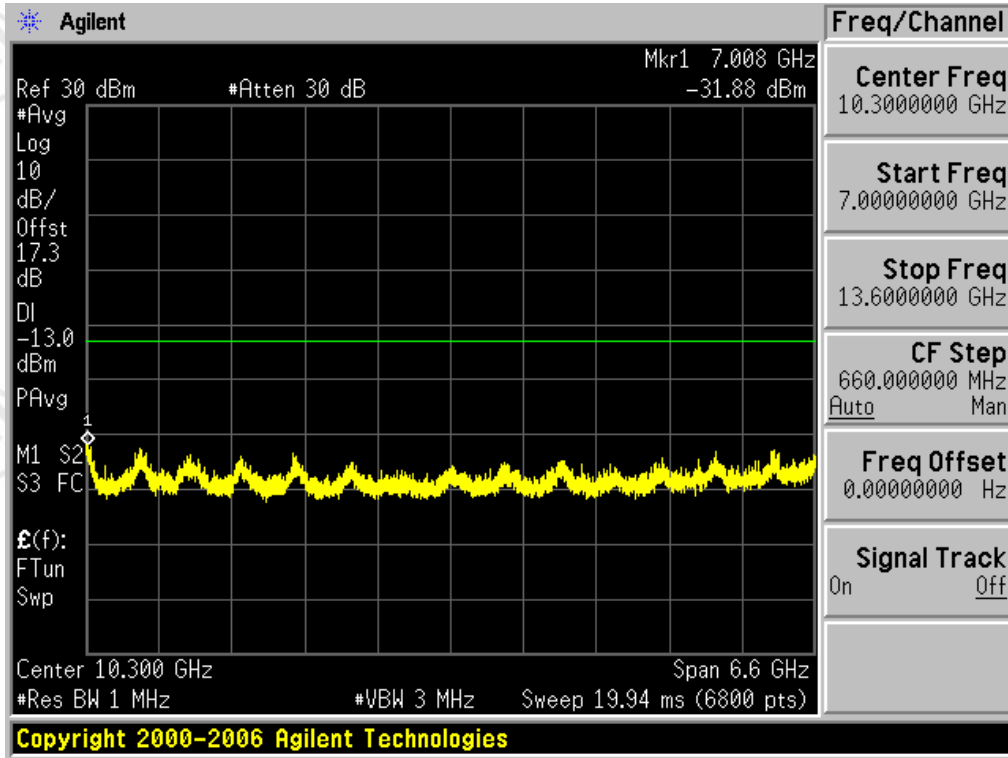
Test Band=WCDMA1900

Test Mode=UMTS/TM1

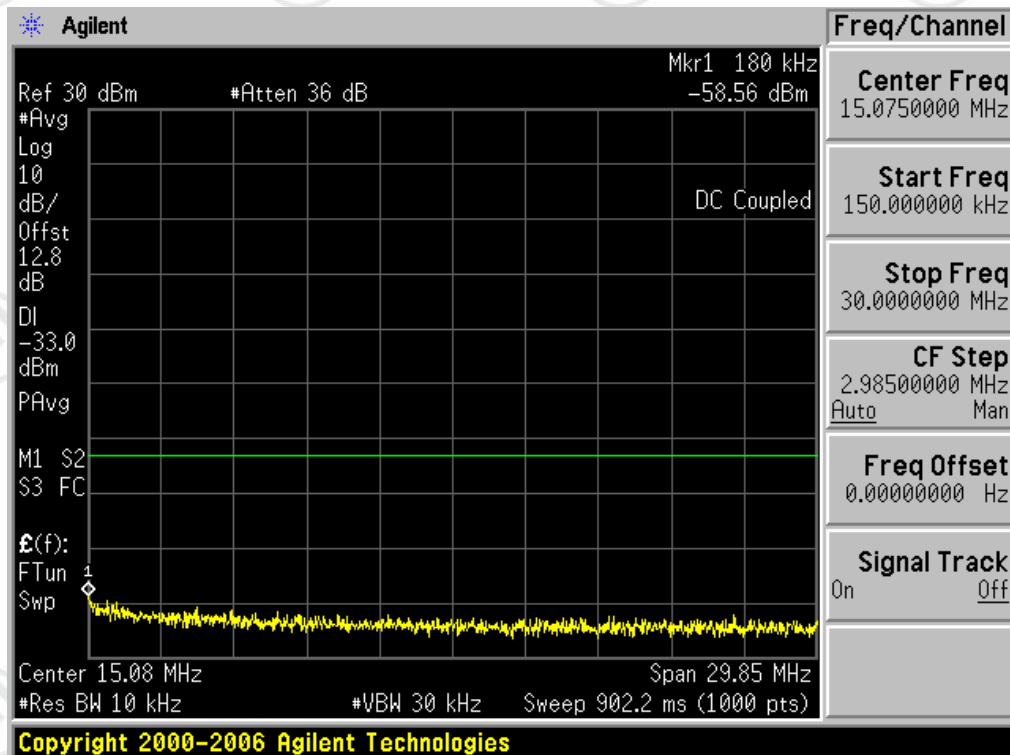
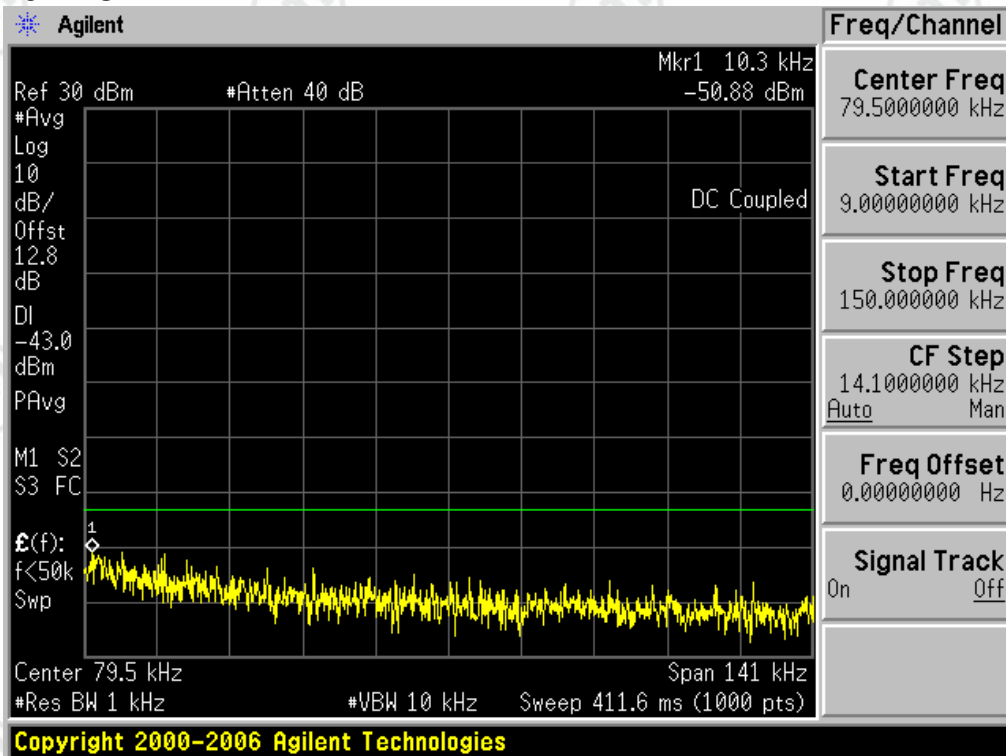
Test Channel=LCH

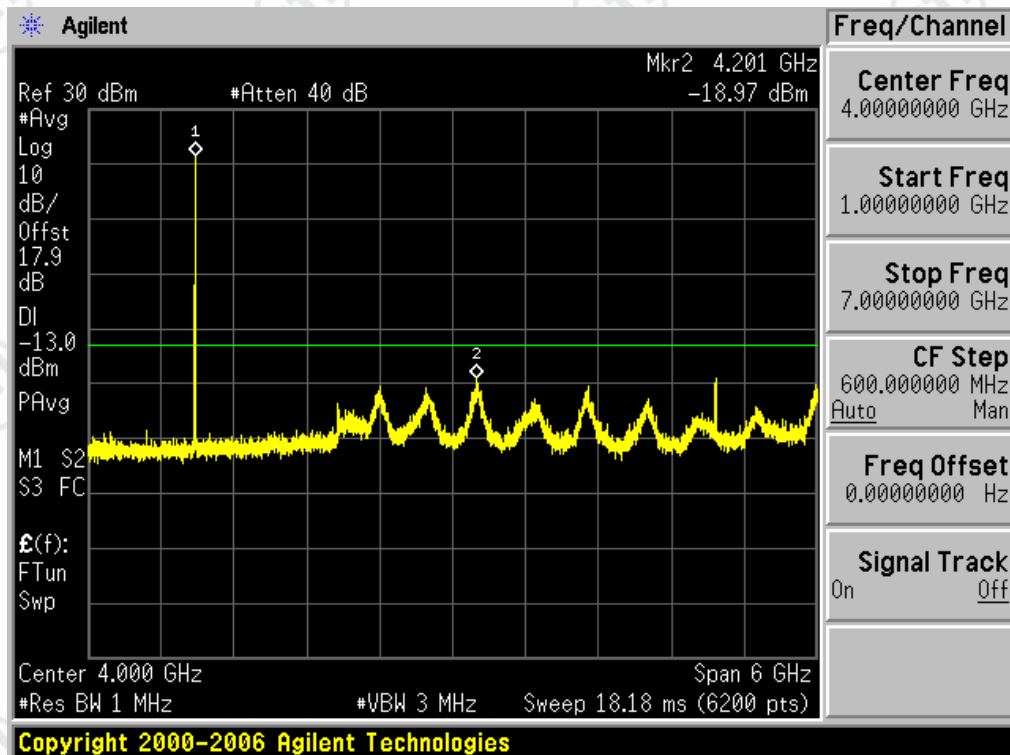
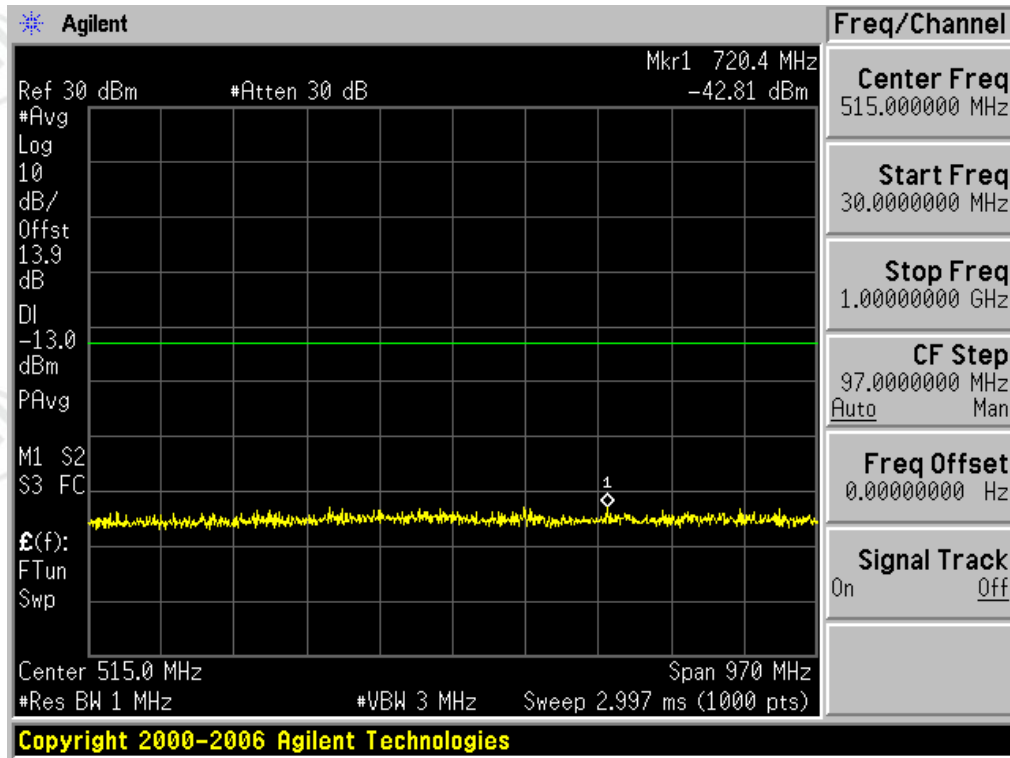


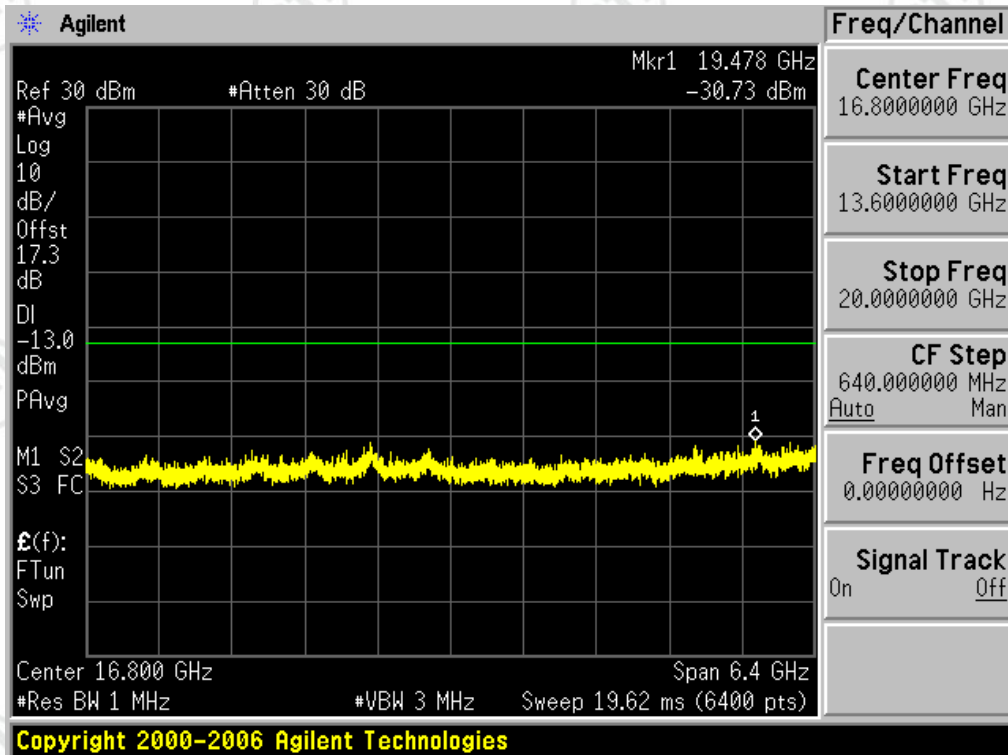
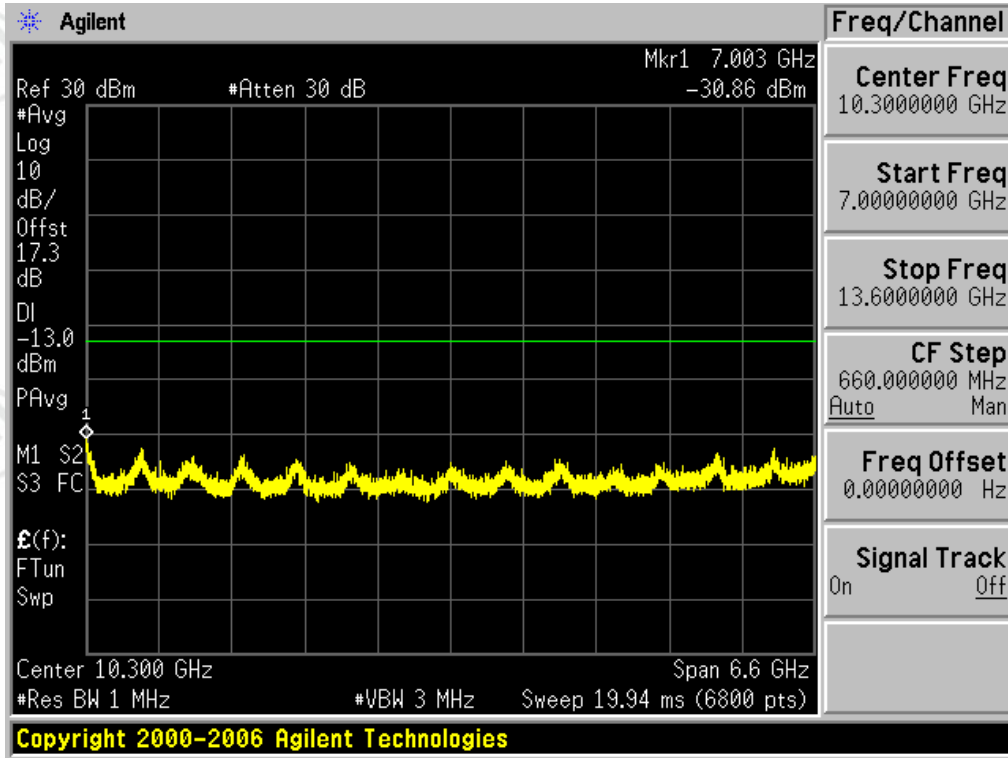




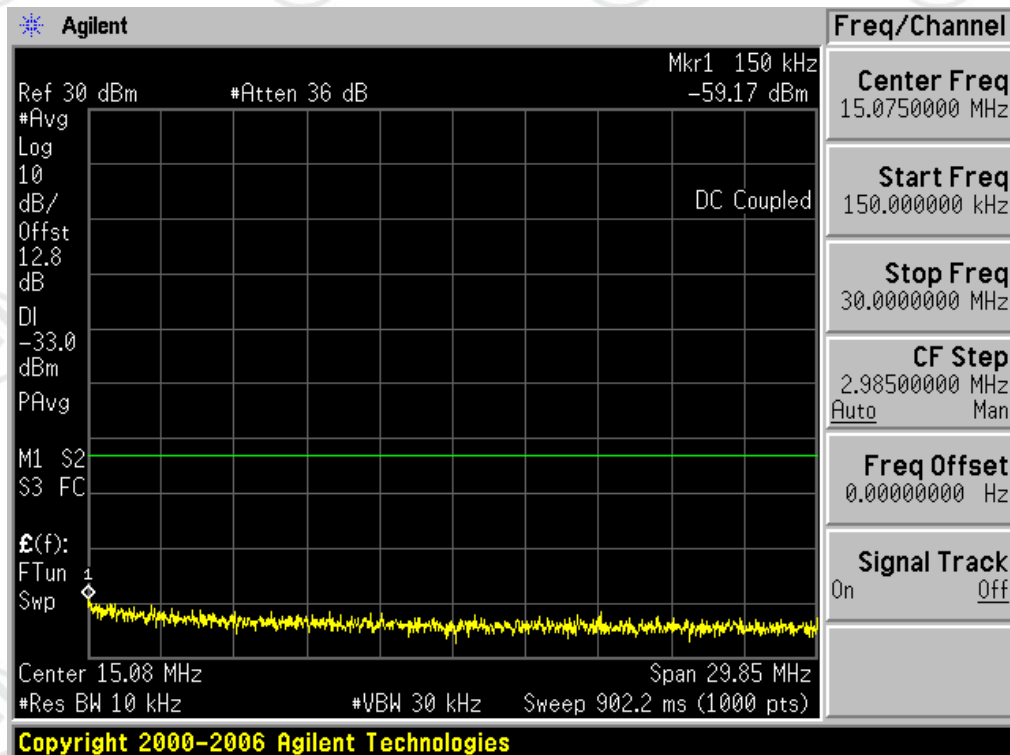
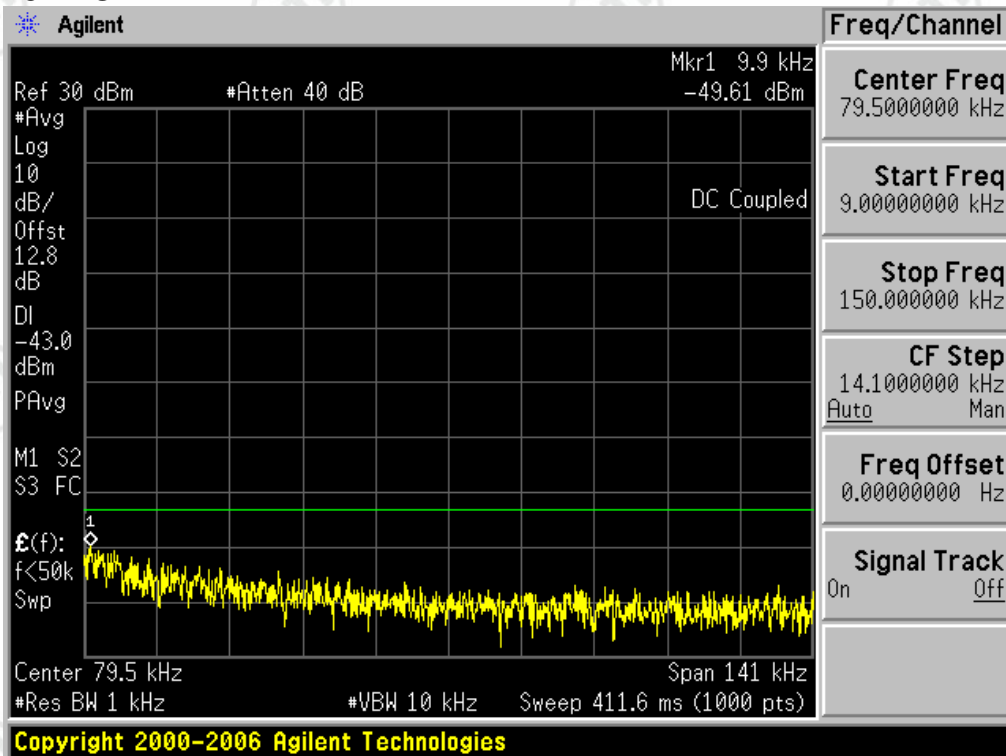
Test Channel=MCH

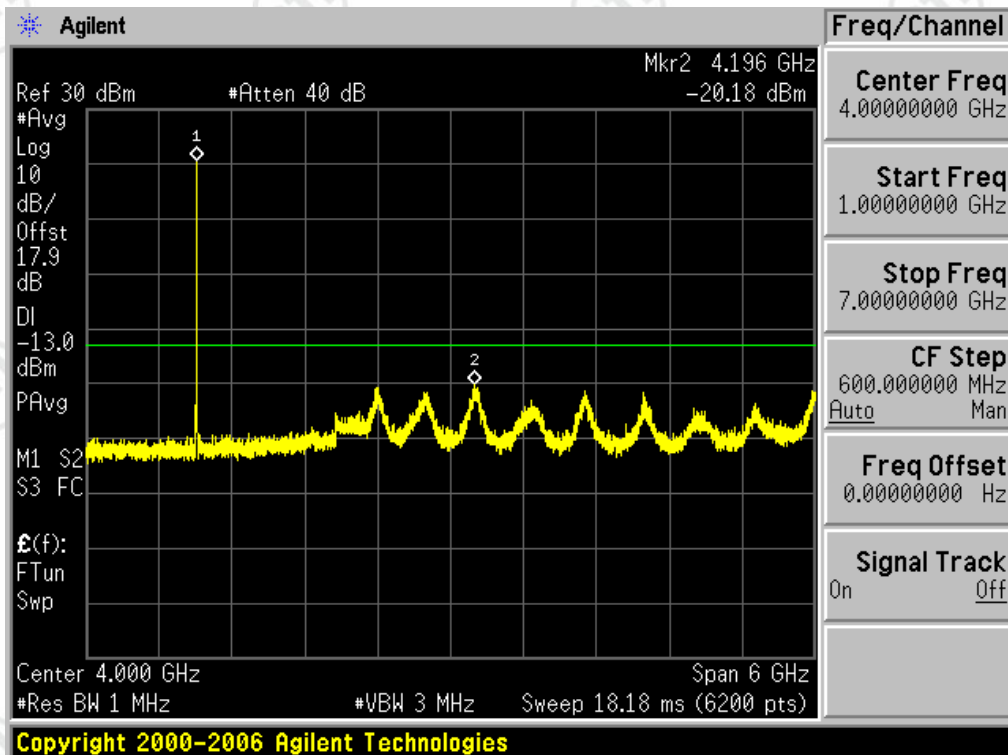
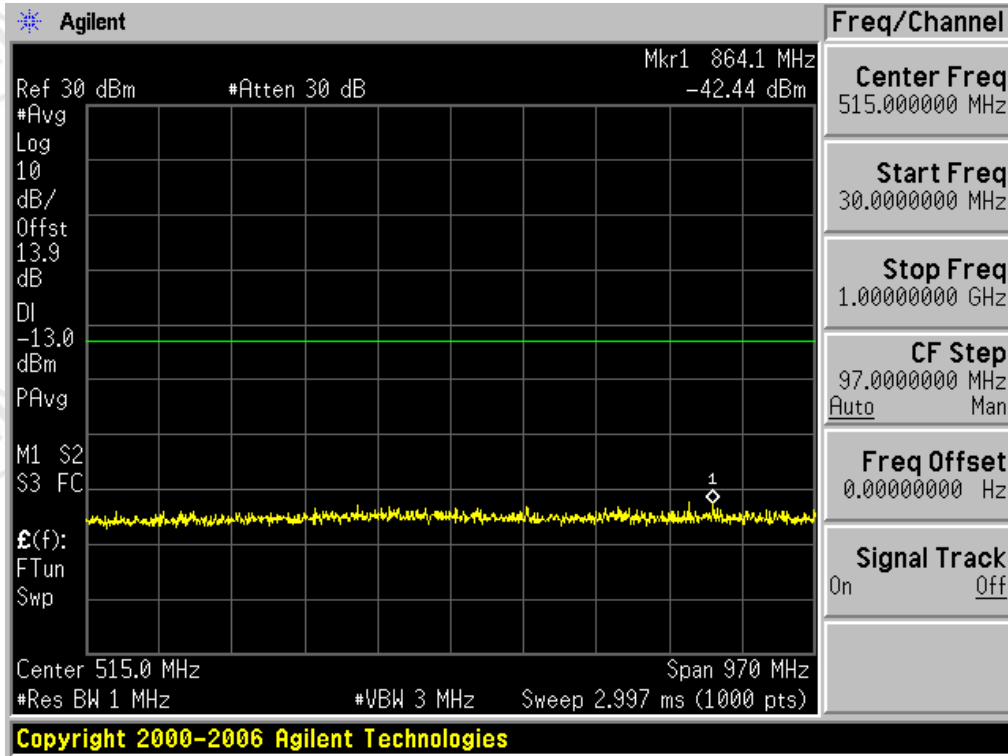


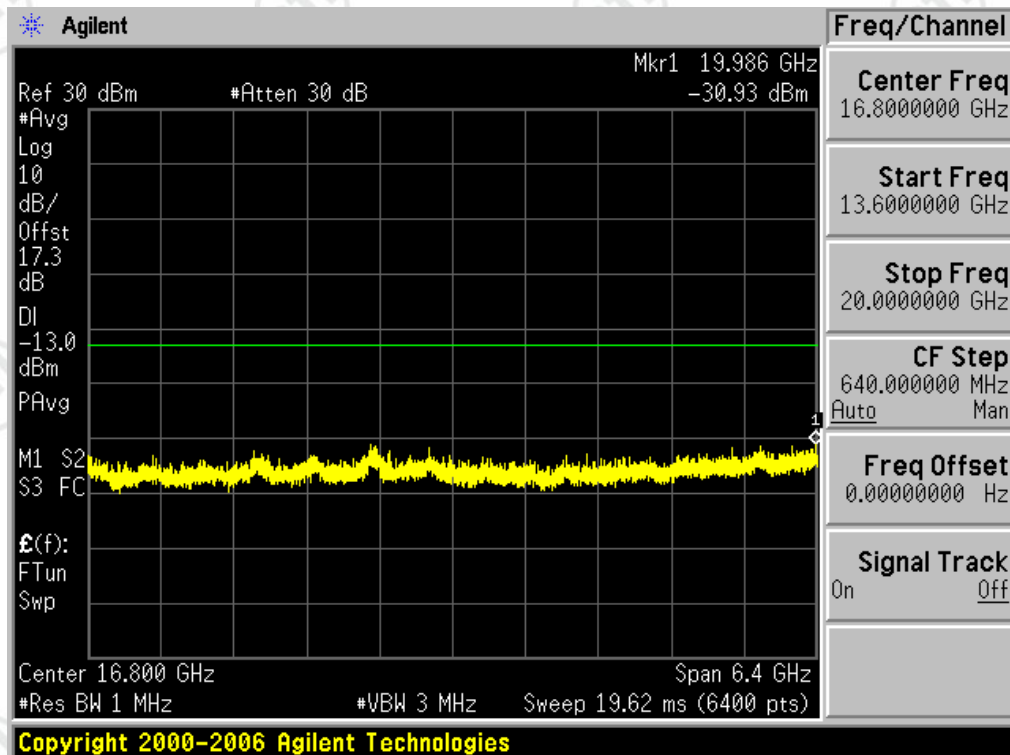
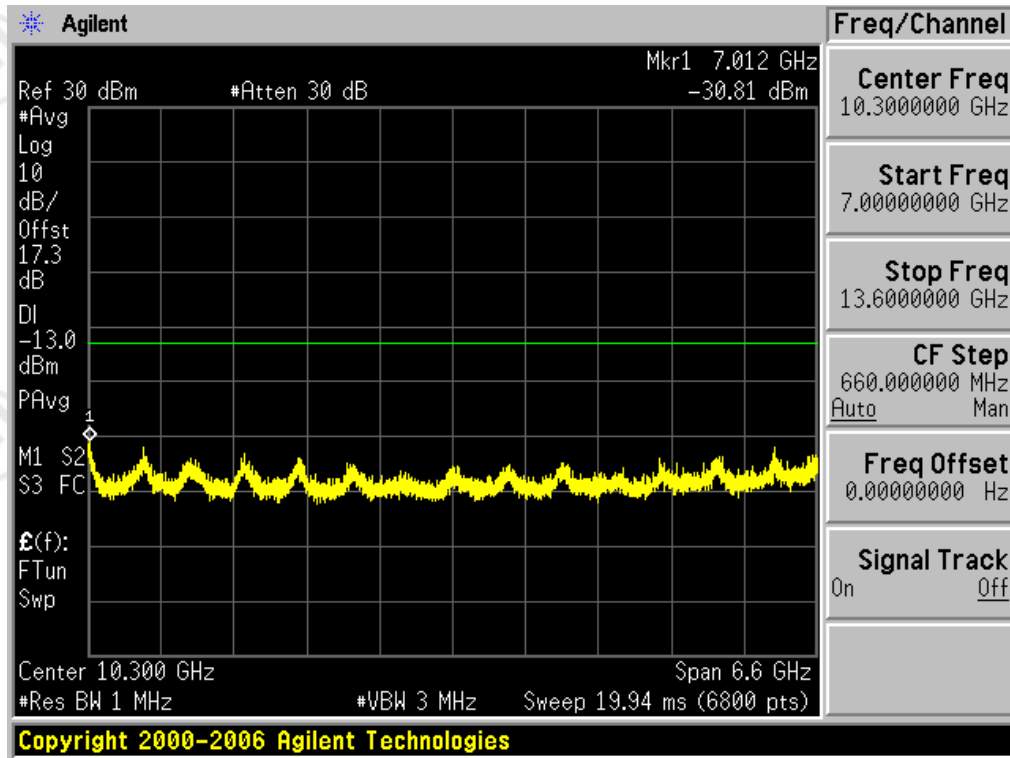




Test Channel=HCH







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	-12.91	-0.02	±2.5	PASS
			TN	VN	-13.04	-0.02	±2.5	PASS
			TN	VH	-10.33	-0.01	±2.5	PASS
		MCH	TN	VL	-3.16	0.00	±2.5	PASS
			TN	VN	-7.36	-0.01	±2.5	PASS
			TN	VH	-0.97	0.00	±2.5	PASS
		HCH	TN	VL	-5.55	-0.01	±2.5	PASS
			TN	VN	-7.17	-0.01	±2.5	PASS
			TN	VH	-5.68	-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	-14.27	-0.02	±2.5	PASS
			TN	VN	-14.01	-0.02	±2.5	PASS
			TN	VH	6.07	0.01	±2.5	PASS
		MCH	TN	VL	0.84	0.00	±2.5	PASS
			TN	VN	9.81	0.01	±2.5	PASS
			TN	VH	7.04	0.01	±2.5	PASS
		HCH	TN	VL	-4.39	-0.01	±2.5	PASS
			TN	VN	-7.43	-0.01	±2.5	PASS
			TN	VH	-8.46	-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	TM1	LCH	TN	VL	0.97	0.00	±2.5	PASS
			TN	VN	4.33	0.00	±2.5	PASS
			TN	VH	1.81	0.00	±2.5	PASS
		MCH	TN	VL	17.18	0.01	±2.5	PASS
			TN	VN	10.72	0.01	±2.5	PASS
			TN	VH	16.01	0.01	±2.5	PASS
		HCH	TN	VL	-15.11	-0.01	±2.5	PASS
			TN	VN	-2.52	0.00	±2.5	PASS
			TN	VH	10.59	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	7.23	0.00	±2.5	PASS
			TN	VN	9.75	0.01	±2.5	PASS
			TN	VH	24.21	0.01	±2.5	PASS
		MCH	TN	VL	11.17	0.01	±2.5	PASS
			TN	VN	-1.61	0.00	±2.5	PASS
			TN	VH	16.21	0.01	±2.5	PASS
		HCH	TN	VL	22.79	0.01	±2.5	PASS
			TN	VN	18.27	0.01	±2.5	PASS
			TN	VH	7.30	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
WCDMA8 50	TM1	LCH	TN	VL	18.54	0.02	±2.5	PASS
			TN	VN	-11.44	-0.01	±2.5	PASS
			TN	VH	26.32	0.03	±2.5	PASS
		MCH	TN	VL	-16.48	-0.02	±2.5	PASS
			TN	VN	-11.44	-0.02	±2.5	PASS
			TN	VH	-17.40	-0.02	±2.5	PASS
		HCH	TN	VL	30.74	0.04	±2.5	PASS
			TN	VN	-11.44	-0.02	±2.5	PASS
			TN	VH	12.44	0.01	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (p1212pm)	Limit (ppm)	Verdict
WCDMA1 900	TM1	LCH	TN	VL	41.43	0.02	±2.5	PASS
			TN	VN	-36.85	-0.02	±2.5	PASS
			TN	VH	61.80	0.03	±2.5	PASS
		MCH	TN	VL	-72.56	-0.04	±2.5	PASS
			TN	VN	-36.85	-0.03	±2.5	PASS
			TN	VH	-56.08	-0.03	±2.5	PASS
		HCH	TN	VL	37.77	0.02	±2.5	PASS
			TN	VN	-36.85	0.01	±2.5	PASS
			TN	VH	45.09	0.02	±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	-9.62	-0.01	±2.5	PASS
			VN	-20	-3.87	0.00	±2.5	PASS
			VN	-10	-14.21	-0.02	±2.5	PASS
			VN	0	-22.28	-0.03	±2.5	PASS
			VN	10	-6.59	-0.01	±2.5	PASS
			VN	20	-7.68	-0.01	±2.5	PASS
			VN	30	-3.36	0.00	±2.5	PASS
			VN	40	-1.94	0.00	±2.5	PASS
			VN	50	0.13	0.00	±2.5	PASS
GSM850	TM1	MCH	VN	-30	1.74	0.00	±2.5	PASS
			VN	-20	-15.88	-0.02	±2.5	PASS
			VN	-10	-8.33	-0.01	±2.5	PASS
			VN	0	-6.46	-0.01	±2.5	PASS
			VN	10	-7.36	-0.01	±2.5	PASS
			VN	20	-16.21	-0.02	±2.5	PASS
			VN	30	-10.53	-0.01	±2.5	PASS
			VN	40	-6.84	-0.01	±2.5	PASS
			VN	50	-13.24	-0.02	±2.5	PASS
GSM850	TM1	HCH	VN	-30	-4.46	-0.01	±2.5	PASS
			VN	-20	-8.52	-0.01	±2.5	PASS
			VN	-10	-9.62	-0.01	±2.5	PASS
			VN	0	-10.07	-0.01	±2.5	PASS
			VN	10	-13.37	-0.02	±2.5	PASS
			VN	20	-6.84	-0.01	±2.5	PASS
			VN	30	-11.82	-0.01	±2.5	PASS
			VN	40	-11.43	-0.01	±2.5	PASS
			VN	50	-23.25	-0.03	±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	-2.45	0.00	±2.5	PASS
			VN	-20	6.65	0.01	±2.5	PASS
			VN	-10	9.94	0.01	±2.5	PASS
			VN	0	14.01	0.02	±2.5	PASS
			VN	10	15.17	0.02	±2.5	PASS
			VN	20	11.95	0.01	±2.5	PASS
			VN	30	-1.81	0.00	±2.5	PASS
			VN	40	1.49	0.00	±2.5	PASS
			VN	50	2.20	0.00	±2.5	PASS
GSM850	TM2	MCH	VN	-30	-0.84	0.00	±2.5	PASS
			VN	-20	2.52	0.00	±2.5	PASS
			VN	-10	8.07	0.01	±2.5	PASS
			VN	0	-4.26	-0.01	±2.5	PASS
			VN	10	6.97	0.01	±2.5	PASS
			VN	20	1.23	0.00	±2.5	PASS
			VN	30	10.65	0.01	±2.5	PASS
			VN	40	-0.13	0.00	±2.5	PASS
			VN	50	-7.75	-0.01	±2.5	PASS
GSM850	TM2	HCH	VN	-30	-2.07	0.00	±2.5	PASS
			VN	-20	0.77	0.00	±2.5	PASS
			VN	-10	-18.92	-0.02	±2.5	PASS
			VN	0	-27.57	-0.03	±2.5	PASS
			VN	10	-12.40	-0.01	±2.5	PASS
			VN	20	-18.14	-0.02	±2.5	PASS
			VN	30	-13.62	-0.02	±2.5	PASS
			VN	40	-11.04	-0.01	±2.5	PASS
			VN	50	-3.62	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
GSM1900	TM1	LCH	VN	-30	15.76	0.01	±2.5	PASS
			VN	-20	8.91	0.00	±2.5	PASS
			VN	-10	13.95	0.01	±2.5	PASS
			VN	0	16.53	0.01	±2.5	PASS
			VN	10	21.37	0.01	±2.5	PASS
			VN	20	8.59	0.00	±2.5	PASS
			VN	30	18.02	0.01	±2.5	PASS
			VN	40	8.78	0.00	±2.5	PASS
			VN	50	17.76	0.01	±2.5	PASS
GSM1900	TM1	MCH	VN	-30	17.50	0.01	±2.5	PASS
			VN	-20	0.58	0.00	±2.5	PASS
			VN	-10	14.33	0.01	±2.5	PASS
			VN	0	-1.49	0.00	±2.5	PASS
			VN	10	26.80	0.01	±2.5	PASS
			VN	20	13.37	0.01	±2.5	PASS
			VN	30	12.85	0.01	±2.5	PASS
			VN	40	1.36	0.00	±2.5	PASS
			VN	50	-1.03	0.00	±2.5	PASS
GSM1900	TM1	HCH	VN	-30	18.47	0.01	±2.5	PASS
			VN	-20	6.13	0.00	±2.5	PASS
			VN	-10	2.45	0.00	±2.5	PASS
			VN	0	3.68	0.00	±2.5	PASS
			VN	10	0.19	0.00	±2.5	PASS
			VN	20	5.17	0.00	±2.5	PASS
			VN	30	9.30	0.00	±2.5	PASS
			VN	40	4.84	0.00	±2.5	PASS
			VN	50	3.23	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
GSM1900	TM2	LCH	VN	-30	1.49	0.00	±2.5	PASS
			VN	-20	20.60	0.01	±2.5	PASS
			VN	-10	12.27	0.01	±2.5	PASS
			VN	0	29.57	0.02	±2.5	PASS
			VN	10	22.02	0.01	±2.5	PASS
			VN	20	22.86	0.01	±2.5	PASS
			VN	30	1.03	0.00	±2.5	PASS
			VN	40	21.76	0.01	±2.5	PASS
			VN	50	23.70	0.01	±2.5	PASS
GSM1900	TM2	MCH	VN	-30	17.76	0.01	±2.5	PASS
			VN	-20	20.08	0.01	±2.5	PASS
			VN	-10	11.88	0.01	±2.5	PASS
			VN	0	17.24	0.01	±2.5	PASS
			VN	10	14.21	0.01	±2.5	PASS
			VN	20	12.91	0.01	±2.5	PASS
			VN	30	20.79	0.01	±2.5	PASS
			VN	40	14.40	0.01	±2.5	PASS
			VN	50	12.33	0.01	±2.5	PASS
GSM1900	TM2	HCH	VN	-30	13.24	0.01	±2.5	PASS
			VN	-20	13.62	0.01	±2.5	PASS
			VN	-10	-4.26	0.00	±2.5	PASS
			VN	0	15.82	0.01	±2.5	PASS
			VN	10	-4.78	0.00	±2.5	PASS
			VN	20	-2.32	0.00	±2.5	PASS
			VN	30	-12.01	-0.01	±2.5	PASS
			VN	40	11.69	0.01	±2.5	PASS
			VN	50	7.68	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
WCDMA8 50	TM1	LCH	VN	-30	-18.54	-0.02	±2.5	PASS
			VN	-20	-12.36	-0.01	±2.5	PASS
			VN	-10	-11.90	-0.01	±2.5	PASS
			VN	0	15.79	0.02	±2.5	PASS
			VN	10	17.40	0.02	±2.5	PASS
			VN	20	22.89	0.03	±2.5	PASS
			VN	30	-18.08	-0.02	±2.5	PASS
			VN	40	-25.63	-0.03	±2.5	PASS
			VN	50	17.17	0.02	±2.5	PASS
WCDMA8 50	TM1	MCH	VN	-30	-24.26	-0.03	±2.5	PASS
			VN	-20	-18.31	-0.02	±2.5	PASS
			VN	-10	-22.43	-0.03	±2.5	PASS
			VN	0	-22.66	-0.03	±2.5	PASS
			VN	10	11.44	0.01	±2.5	PASS
			VN	20	-25.63	-0.03	±2.5	PASS
			VN	30	-21.97	-0.03	±2.5	PASS
			VN	40	-21.74	-0.03	±2.5	PASS
			VN	50	-15.79	-0.02	±2.5	PASS
WCDMA8 50	TM1	HCH	VN	-30	10.36	0.01	±2.5	PASS
			VN	-20	33.67	0.04	±2.5	PASS
			VN	-10	-14.42	-0.02	±2.5	PASS
			VN	0	12.04	0.01	±2.5	PASS
			VN	10	20.63	0.02	±2.5	PASS
			VN	20	-31.13	-0.04	±2.5	PASS
			VN	30	-26.32	-0.03	±2.5	PASS
			VN	40	27.70	0.03	±2.5	PASS
			VN	50	22.87	0.03	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA1 900	TM1	LCH	VN	-30	-38.91	-0.02	±2.5	PASS
			VN	-20	-15.94	-0.02	±2.5	PASS
			VN	-10	30.67	0.02	±2.5	PASS
			VN	0	-34.10	-0.02	±2.5	PASS
			VN	10	59.51	0.03	±2.5	PASS
			VN	20	33.19	0.02	±2.5	PASS
			VN	30	-46.92	-0.03	±2.5	PASS
			VN	40	-51.50	-0.03	±2.5	PASS
			VN	50	-46.92	-0.03	±2.5	PASS
WCDMA1 900	TM1	MCH	VN	-30	-28.84	-0.02	±2.5	PASS
			VN	-20	-50.35	-0.03	±2.5	PASS
			VN	-10	-35.48	-0.02	±2.5	PASS
			VN	0	46.46	0.02	±2.5	PASS
			VN	10	-32.04	-0.02	±2.5	PASS
			VN	20	46.92	0.02	±2.5	PASS
			VN	30	-64.32	-0.03	±2.5	PASS
			VN	40	28.84	0.02	±2.5	PASS
			VN	50	40.74	0.02	±2.5	PASS
WCDMA1 900	TM1	HCH	VN	-30	-27.69	-0.01	±2.5	PASS
			VN	-20	-51.04	-0.03	±2.5	PASS
			VN	-10	-54.47	-0.03	±2.5	PASS
			VN	0	-46.23	-0.02	±2.5	PASS
			VN	10	-45.09	-0.02	±2.5	PASS
			VN	20	-60.88	-0.03	±2.5	PASS
			VN	30	58.36	0.03	±2.5	PASS
			VN	40	27.69	0.01	±2.5	PASS
			VN	50	-50.81	-0.03	±2.5	PASS

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

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	peak	100kHz	300kHz	Peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
Measurement Procedure:	<p>Test procedure as below:</p> <ol style="list-style-type: none"> The EUT was powered ON and placed on a 0.8m 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. 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. 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. Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization. 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. 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. The output power into the substitution antenna was then measured. Steps 6) and 7) were repeated with both antennas polarized. Calculate power in dBm by the following formula: $ERP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$ $EIRP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBi)}$ $EIRP = ERP + 2.15dB$ where: Pg is the generator output power into the substitution antenna. Test the EUT in the lowest channel, the middle channel the Highest channel 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. Repeat above procedures until all frequencies measured was complete. 				
Limit:	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 (m)	Azimuth (deg)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
128/824.2	150	36	30.21	38.45	-8.24	Pass	H
	150	127	29.31	38.45	-9.14	Pass	V
190/836.6	150	147	30.33	38.45	-8.12	Pass	H
	150	29	30.18	38.45	-8.27	Pass	V
251/848.8	150	82	29.83	38.45	-8.62	Pass	H
	150	42	30.15	38.45	-8.30	Pass	V

GPRS 850							
Channel/fc (MHz)	Height (m)	Azimuth (deg)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
128/824.2	150	74	30.53	38.45	-7.92	Pass	H
	150	27	30.14	38.45	-8.31	Pass	V
190/836.6	150	82	30.11	38.45	-8.34	Pass	H
	150	63	29.84	38.45	-8.61	Pass	V
251/848.8	150	129	30.27	38.45	-8.18	Pass	H
	150	31	30.11	38.45	-8.34	Pass	V

WCDMA band V RMC							
Channel/fc (MHz)	Height (m)	Azimuth (deg)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4132/826.4	150	53	20.41	38.45	-18.04	Pass	H
	150	132	21.02	38.45	-17.43	Pass	V
4183/836.6	150	89	20.98	38.45	-17.47	Pass	H
	150	102	20.69	38.45	-17.76	Pass	V
4233/846.6	150	35	20.51	38.45	-17.94	Pass	H
	150	82	20.55	38.45	-17.90	Pass	V

GSM 1900 (Voice)							
Channel/fc (MHz)	Height (m)	Azimuth (deg)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
512/1850.2	150	92	31.78	33.01	-1.23	Pass	H
	150	18	30.04	33.01	-2.97	Pass	V
661/1880.0	150	51	30.81	33.01	-2.20	Pass	H
	150	83	31.02	33.01	-1.99	Pass	V
810/1909.8	150	176	31.16	33.01	-1.85	Pass	H
	150	142	30.68	33.01	-2.33	Pass	V

GPRS 1900							
Channel/fc (MHz)	Height (cm)	Azimuth (deg)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
512/1850.2	150	69	30.11	33.01	-2.90	Pass	H
	150	88	31.89	33.01	-1.12	Pass	V
661/1880.0	150	51	30.19	33.01	-2.82	Pass	H
	150	152	31.89	33.01	-1.12	Pass	V
810/1909.8	150	112	30.31	33.01	-2.70	Pass	H
	150	103	31.86	33.01	-1.15	Pass	V

WCDMA band IIRCM							
Channel/fc (MHz)	Height (cm)	Azimuth (deg)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
9262/1852.4	150	167	23.68	33.01	-9.33	Pass	H
	150	158	24.01	33.01	-9.00	Pass	V
9400/1880.0	150	32	23.93	33.01	-9.08	Pass	H
	150	58	23.67	33.01	-9.34	Pass	V
9538/1907.6	150	74	24.08	33.01	-8.93	Pass	H
	150	59	24.16	33.01	-8.85	Pass	V

Appendix H) Field strength of spurious radiation

Receiver Setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>0.009MHz-30MHz</td> <td>Peak</td> <td>10kHz</td> <td>30kHz</td> <td>Peak</td> </tr> <tr> <td>30MHz-1GHz</td> <td>Peak</td> <td>100kHz</td> <td>300kHz</td> <td>Peak</td> </tr> <tr> <td>Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak</td> </tr> </tbody> </table>	Frequency	Detector	RBW	VBW	Remark	0.009MHz-30MHz	Peak	10kHz	30kHz	Peak	30MHz-1GHz	Peak	100kHz	300kHz	Peak	Above 1GHz	Peak	1MHz	3MHz	Peak
Frequency	Detector	RBW	VBW	Remark																	
0.009MHz-30MHz	Peak	10kHz	30kHz	Peak																	
30MHz-1GHz	Peak	100kHz	300kHz	Peak																	
Above 1GHz	Peak	1MHz	3MHz	Peak																	
Measurement Procedure:	<ol style="list-style-type: none"> 1. Scan up to 10th harmonic, find the maximum radiation frequency to measure. 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>Test procedure as below:</p> <ol style="list-style-type: none"> 1) The EUT was powered ON and placed on a 0.8m 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. 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. 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. 4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization. 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. 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. 7) The output power into the substitution antenna was then measured. 8) Steps 6) and 7) were repeated with both antennas polarized. 9) Calculate power in dBm by the following formula: $\text{ERP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBd)}$ $\text{EIRP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$ $\text{EIRP} = \text{ERP} + 2.15\text{dB}$ where: Pg is the generator output power into the substitution antenna. 10) Test the EUT in the lowest channel, the middle channel the Highest channel 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. 12) Repeat above procedures until all frequencies measured was complete. 																				
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.
1673.200	150	120	-20.75	-13	-7.75	Pass	H
2509.800	150	302	-41.58	-13	-28.58	Pass	H
4183.000	150	172	-49.64	-13	-36.64	Pass	H
1673.200	150	38	-26.75	-13	-13.75	Pass	V
2509.800	150	132	-47.47	-13	-34.47	Pass	V
4183.000	150	85	-59.39	-13	-34.21	Pass	V
GPRS 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.
1673.200	150	167	-33.62	-13	-20.62	Pass	H
3346.400	150	106	-47.63	-13	-34.63	Pass	H
5019.600	150	39	-47.09	-13	-34.09	Pass	H
1673.200	150	89	-28.94	-13	-15.94	Pass	V
3346.400	150	62	-47.78	-13	-34.78	Pass	V
5019.600	150	195	-46.99	-13	-33.99	Pass	V

WCDMA band V 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.
1648.400	150	271	-33.43	-13	-20.43	Pass	H
2472.600	150	206	-45.35	-13	-32.35	Pass	H
3296.800	150	84	-47.39	-13	-34.39	Pass	H
1648.400	150	39	-29.45	-13	-16.45	Pass	V
2472.600	150	218	-49.64	-13	-36.64	Pass	V
3296.800	150	263	-48.40	-13	-35.40	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.
3760.000	150	36	-41.09	-13	-28.09	Pass	H
5640.000	150	93	-42.85	-13	-29.85	Pass	H
7520.000	150	321	-42.60	-13	-29.60	Pass	H
3760.000	150	152	-45.09	-13	-32.09	Pass	V
5640.000	150	182	-42.63	-13	-29.63	Pass	V
7520.000	150	168	-42.44	-13	-29.44	Pass	V

GPRS 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.
3760.000	150	82	-42.21	-13	-29.21	Pass	H
5640.000	150	150	-39.21	-13	-26.21	Pass	H
7520.000	150	108	-33.45	-13	-20.45	Pass	H
3760.000	150	193	-43.31	-13	-30.31	Pass	V
5640.000	150	215	-42.02	-13	-29.02	Pass	V
7520.000	150	223	-38.80	-13	-25.80	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.
3819.600	150	215	-41.47	-13	-28.47	Pass	H
5726.400	150	31	-37.78	-13	-24.78	Pass	H
7636.200	150	65	-33.73	-13	-20.73	Pass	H
3819.600	150	08	-42.57	-13	-29.57	Pass	V
5726.400	150	95	-41.17	-13	-28.17	Pass	V
7636.200	150	102	-37.98	-13	-24.98	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.

2) Pretest was performed at the EUT in low, middle, high channel, but only the worst test channel)and the data of the worst case show in the test report.

PHOTOGRAPHS OF TEST SETUP

Test mode No.: Hero-MDT-AT2



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



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

PHOTOGRAPHS OF EUT Constructional Details

Test mode No.: Hero-MDT-AT2



View of Product-1



View of Product-2



View of Product-3



View of Product-4



View of Product-5



View of Product-6



View of Product-7



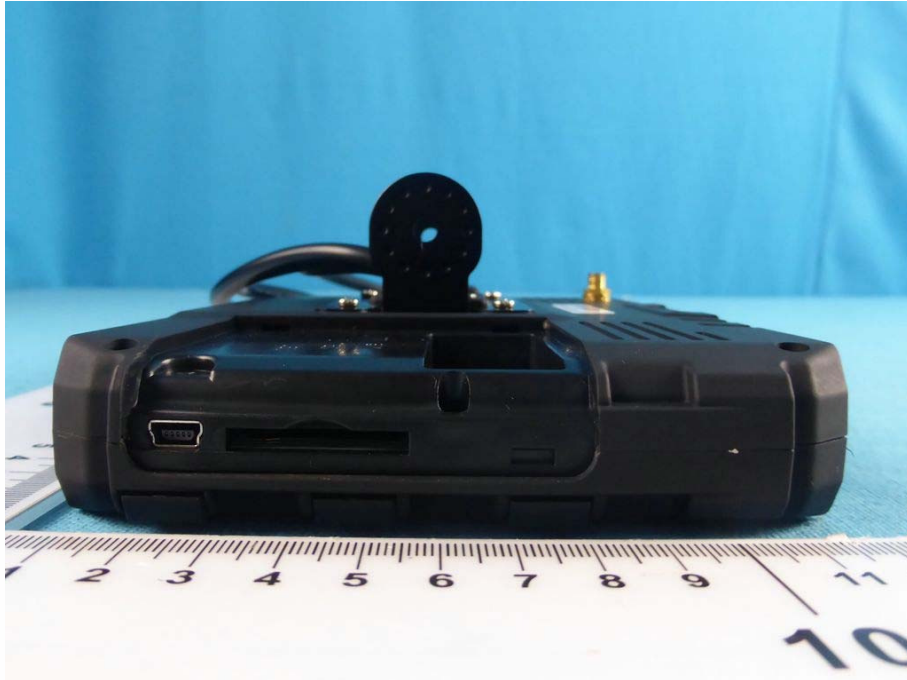
View of Product-8



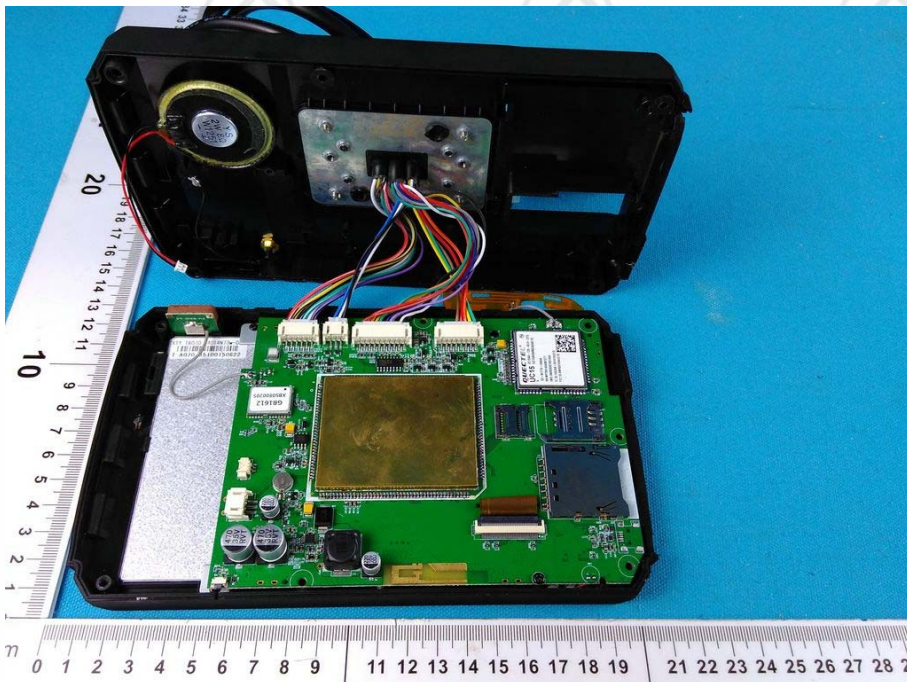
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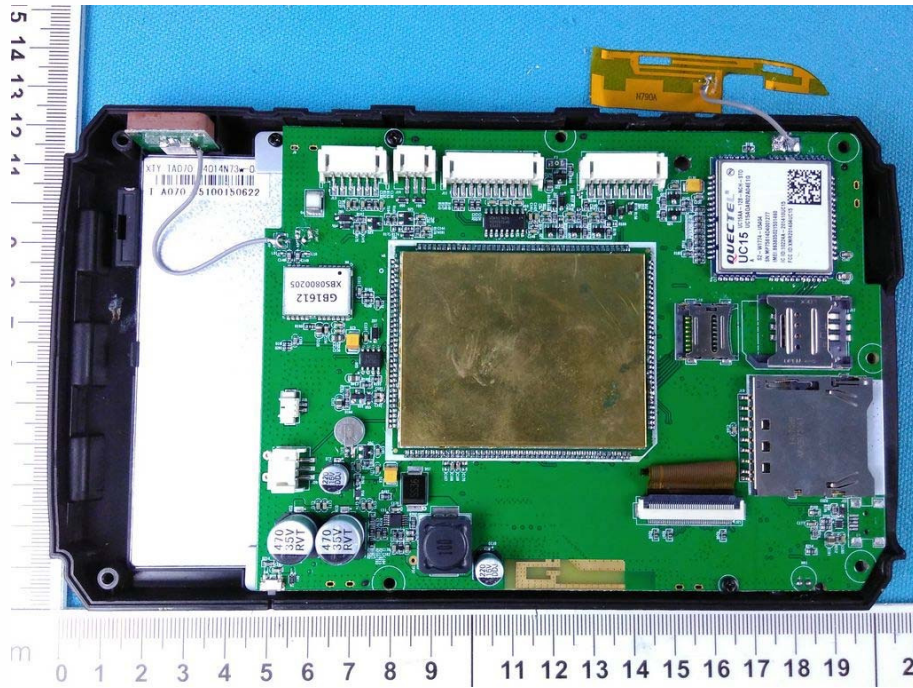
View of Product-10



View of Product-11



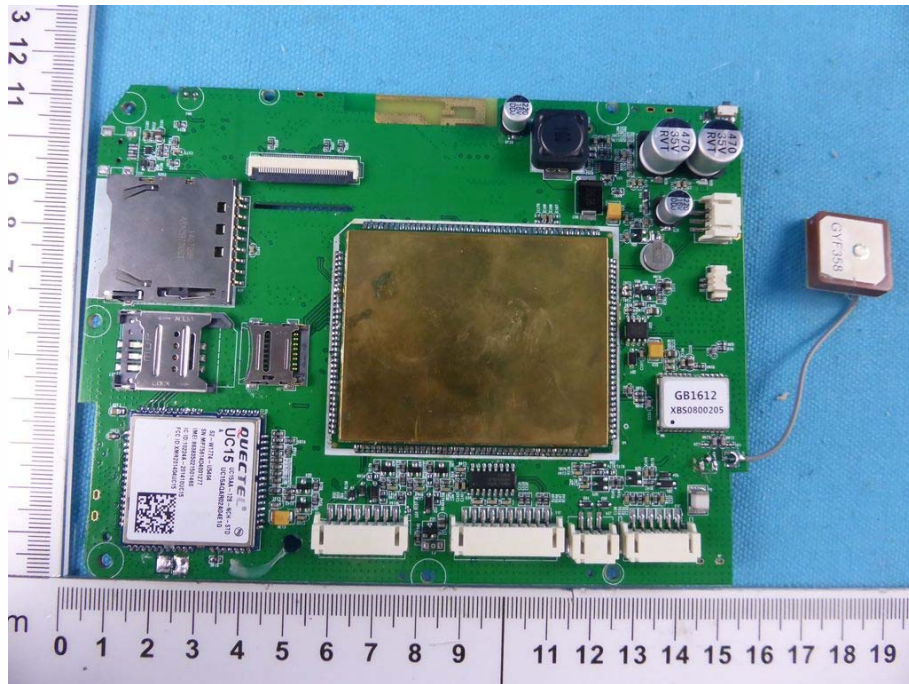
View of Product-12



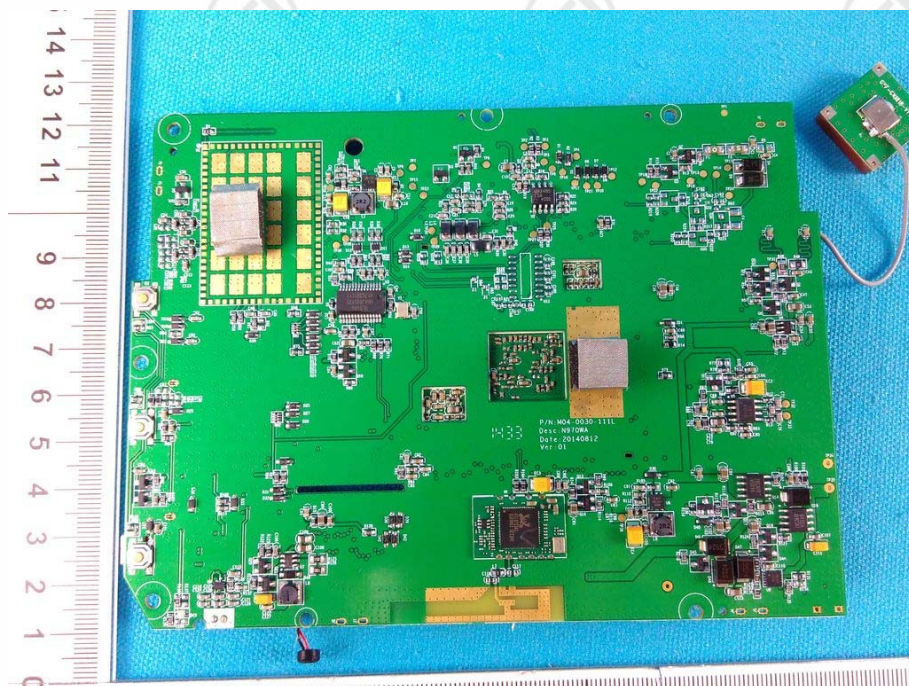
View of Product-13



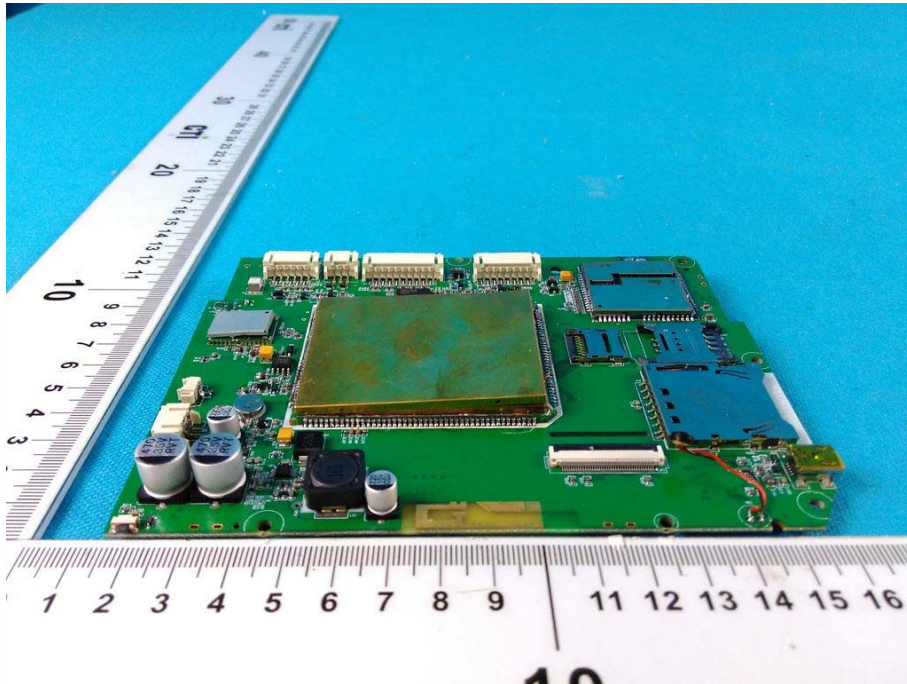
View of Product-14



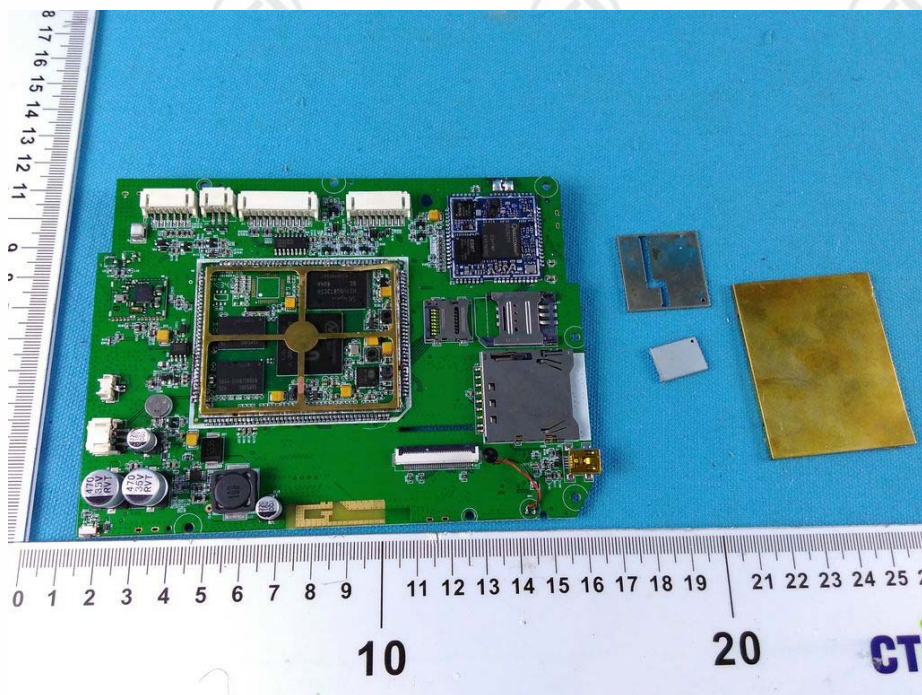
View of Product-15



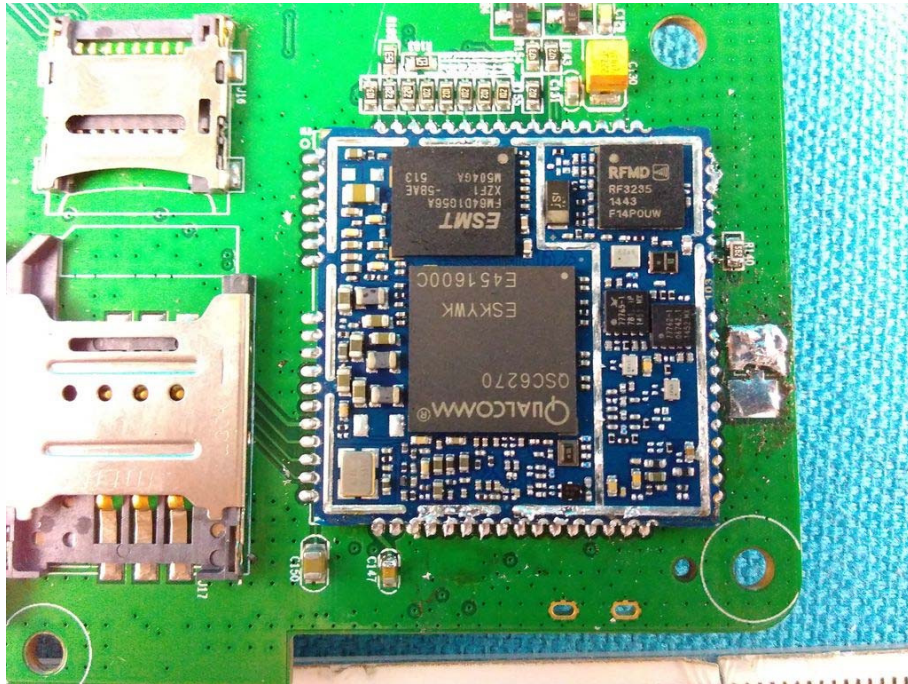
View of Product-16



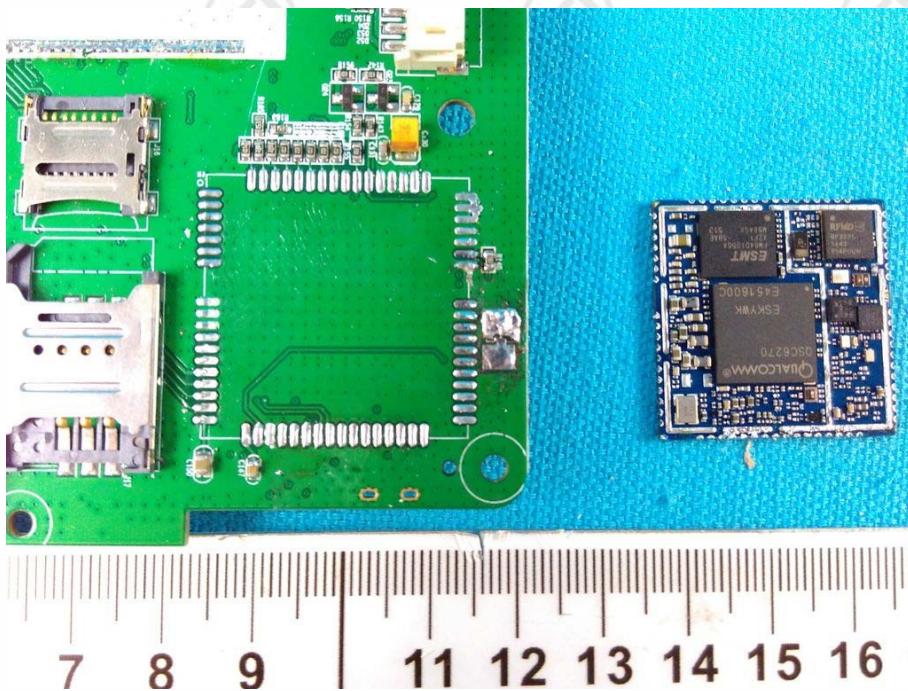
View of Product-17



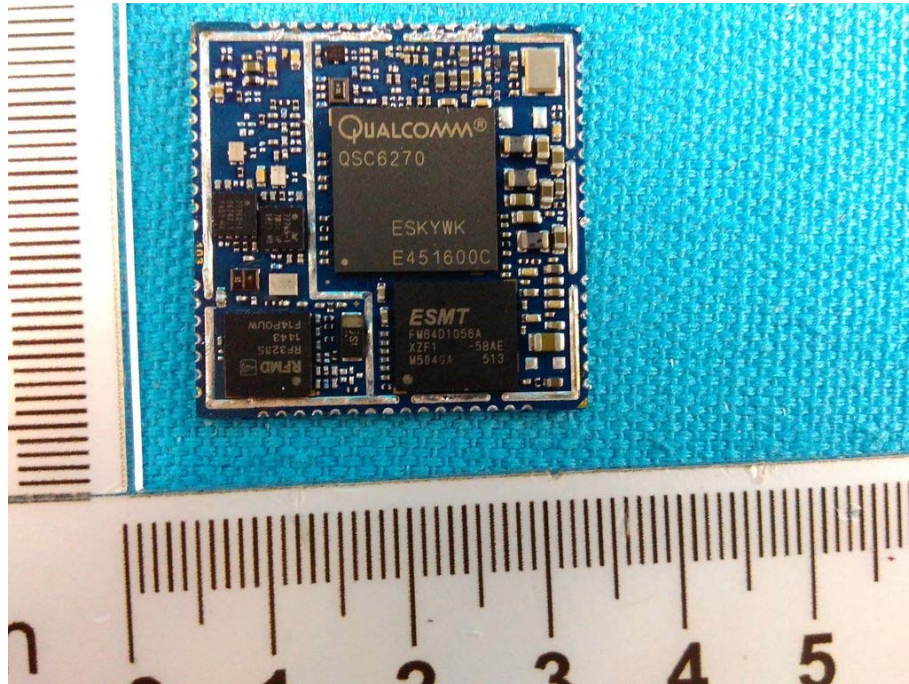
View of Product-18



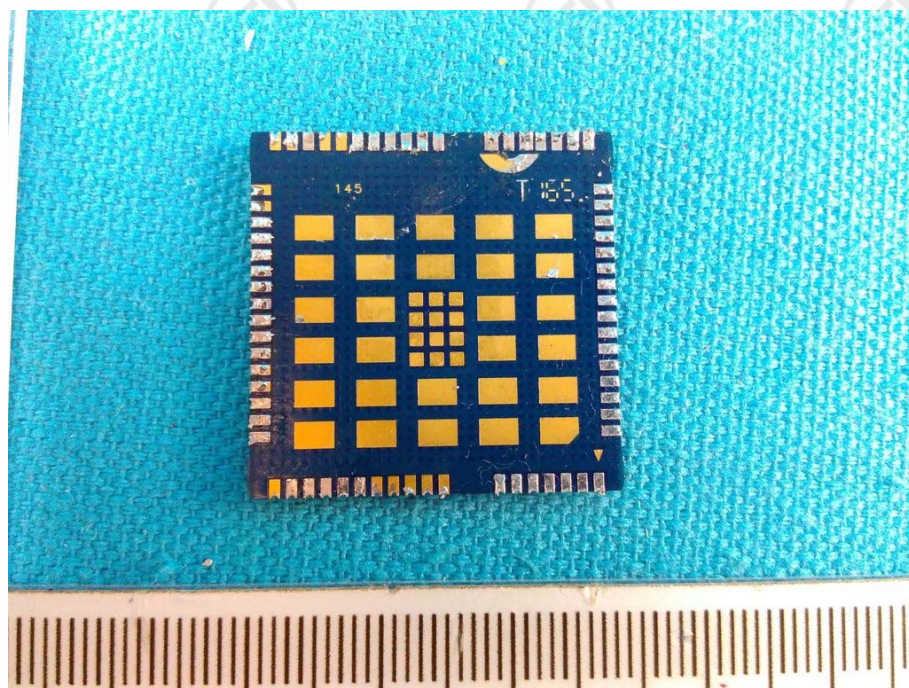
View of Product-19



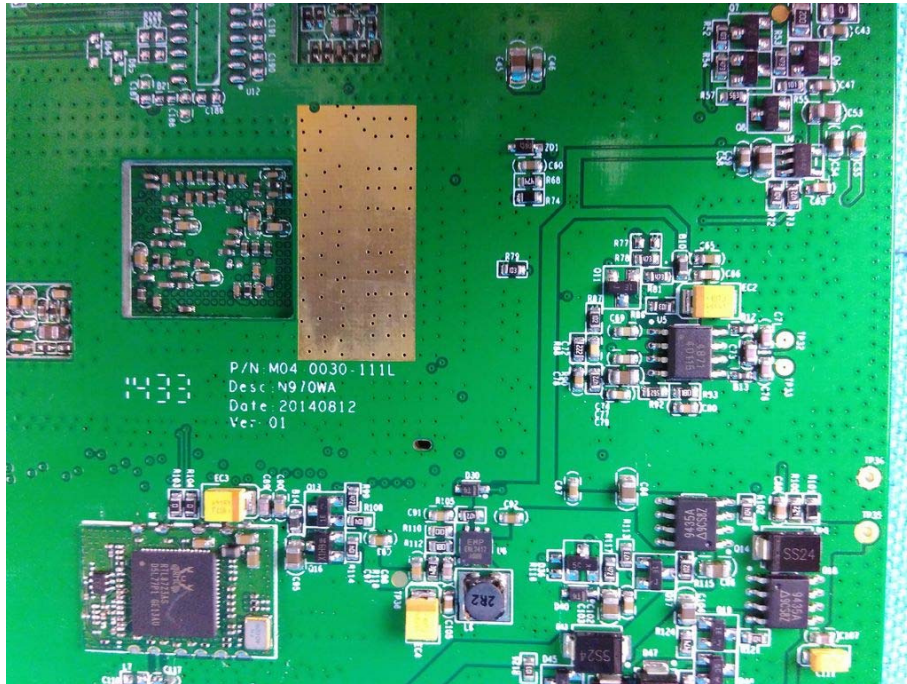
View of Product-20



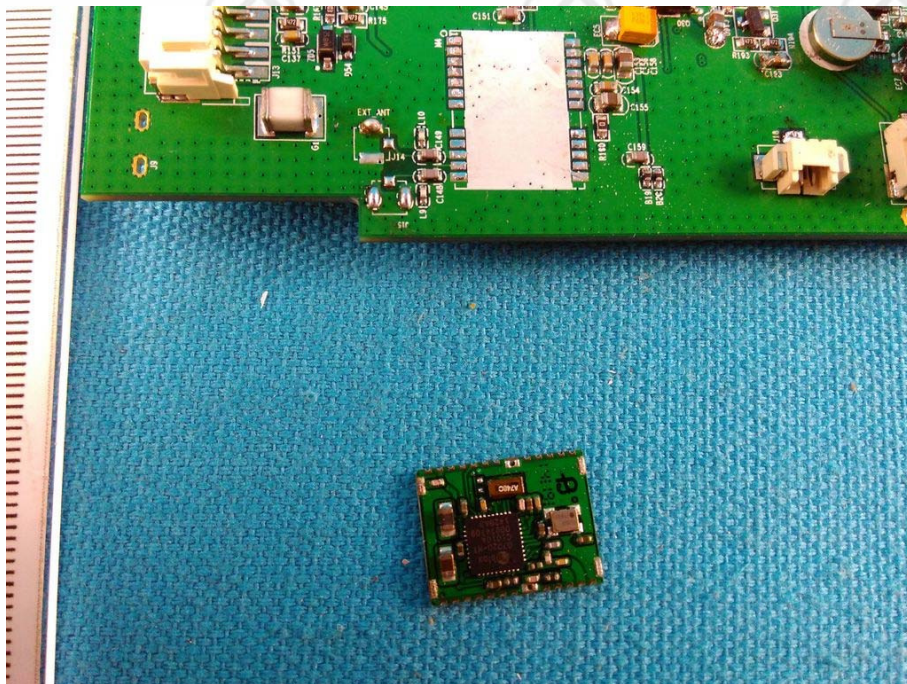
View of Product-21



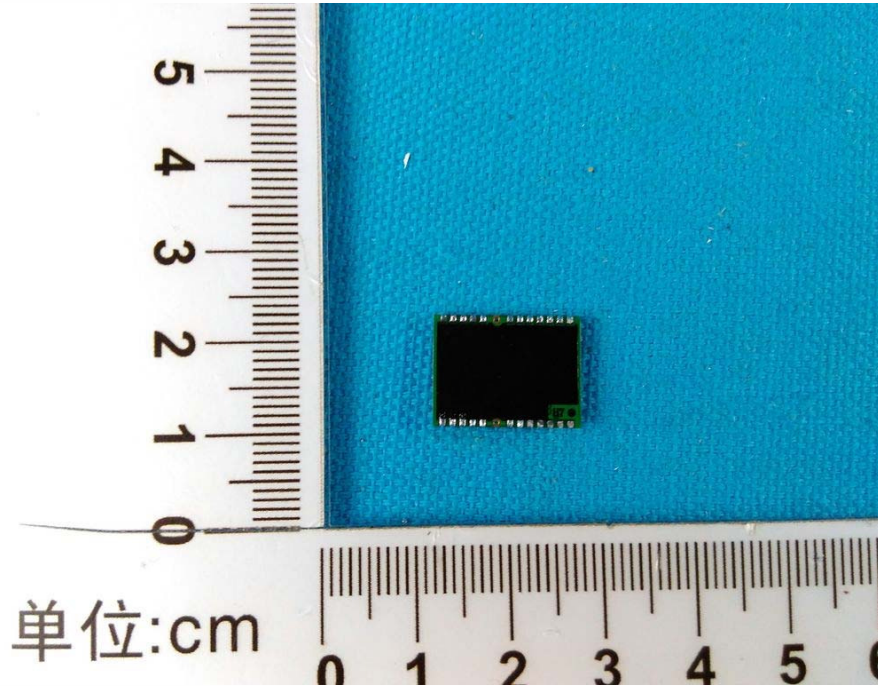
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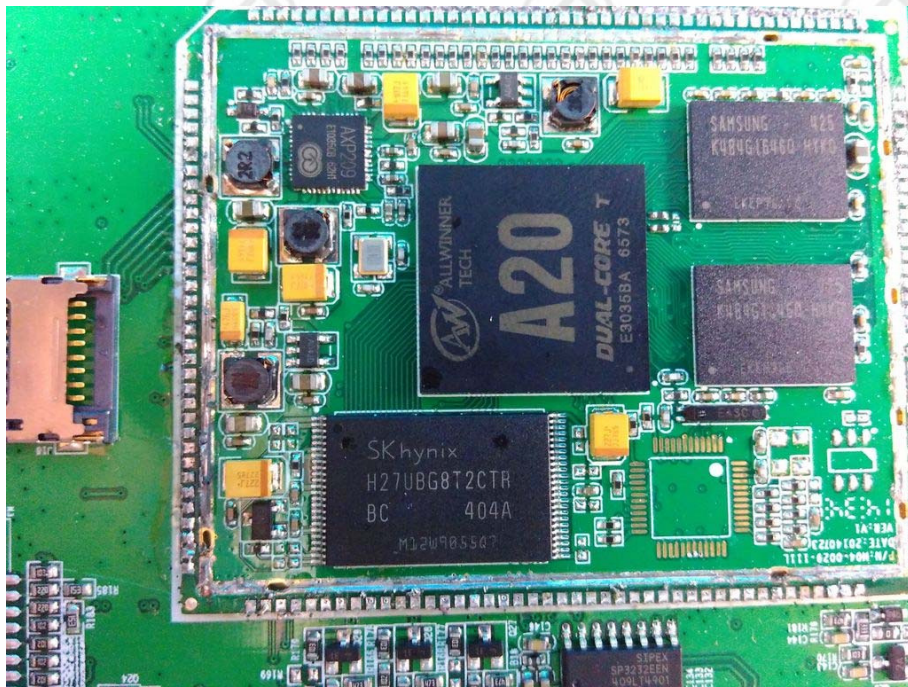
View of Product-23



View of Product-24



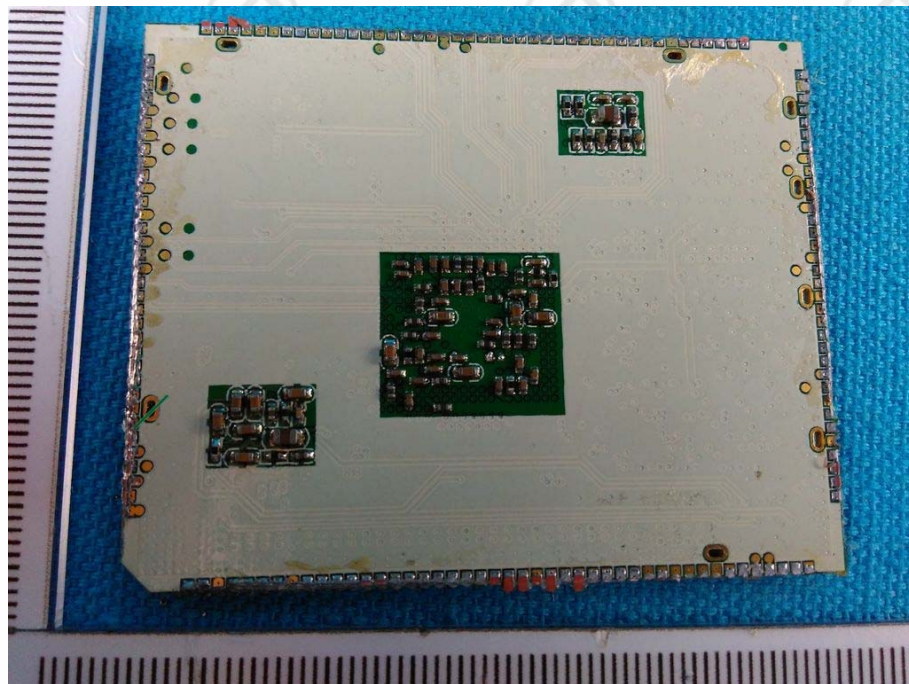
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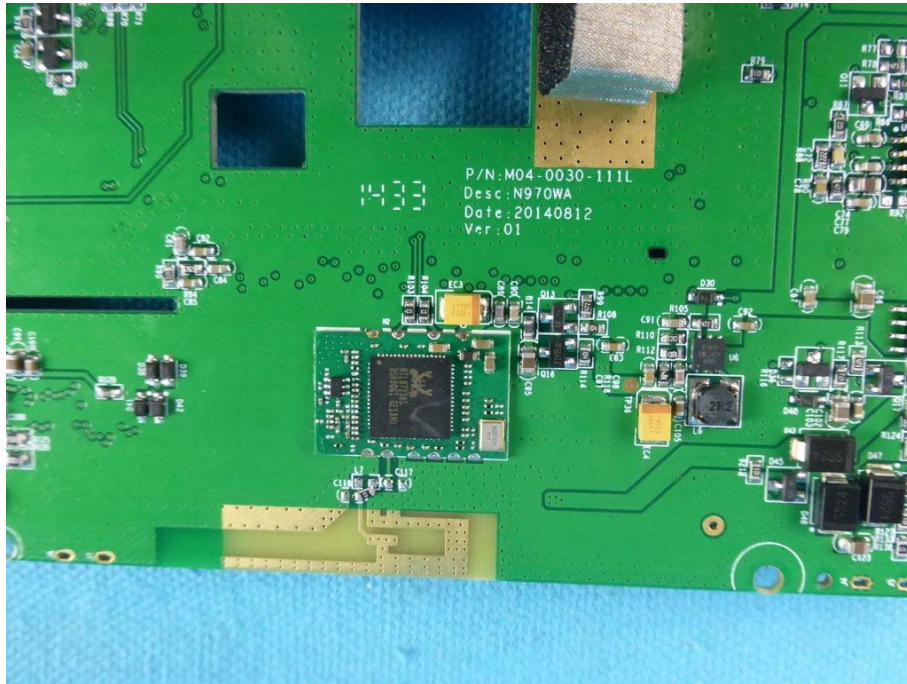
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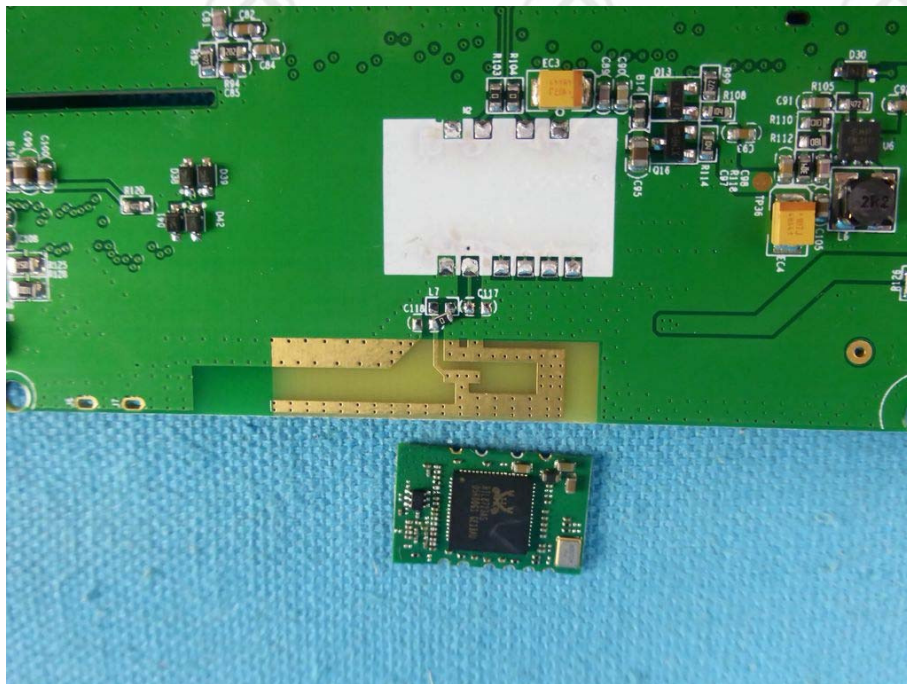
View of Product-27



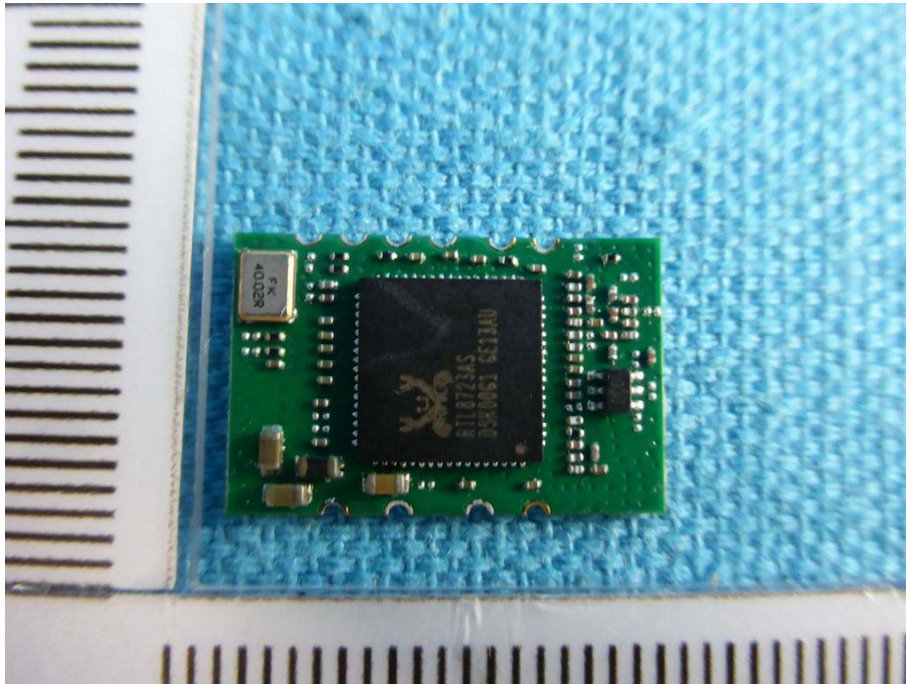
View of Product-28



View of Product-29



View of Product-30



View of Product-31



View of Product-32

*** End of Report ***

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