TEST REPORT

Product	:	Smart Pet Tracker
Trade mark	:	小毛球
Model/Type reference	:	TK001
Serial Number	:	N/A
Report Number	:	EED32J00245402
FCC ID	:	2AOGH-TK001
Date of Issue	:	Apr. 24, 2018
Test Standards	:	47 CFR Part 2 47 CFR Part 22 subpart H 47 CFR Part 24 subpart E
Test result	:	PASS

Prepared for:

Guangzhou Xiaomaoqiu Intellectual Technology Co., Ltd
Room 801, No.240, Tianhe East Road,
Tianhe District Guangzhou, Guangdong

Prepared by:

Centre Testing International Group Co., Ltd.
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Tested By:	Tom chen (Test Project)	Compiled by:	Max Liang (Project Engineer)
Reviewed by:	Kevin yang (Reviewer)	Approved by:	Sheek Luo (Lab supervisor)
Date:	Apr. 24, 2018		Check No.:3043873907

2 Version

Version No.	Date	Description
00	Apr. 24, 2018	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
GSM 850			
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% &26dBOccupied 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			
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-average ratio	Part 24.232(d)	KDB 971168 D01v02r02	PASS
99% &26dBOccupied 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.

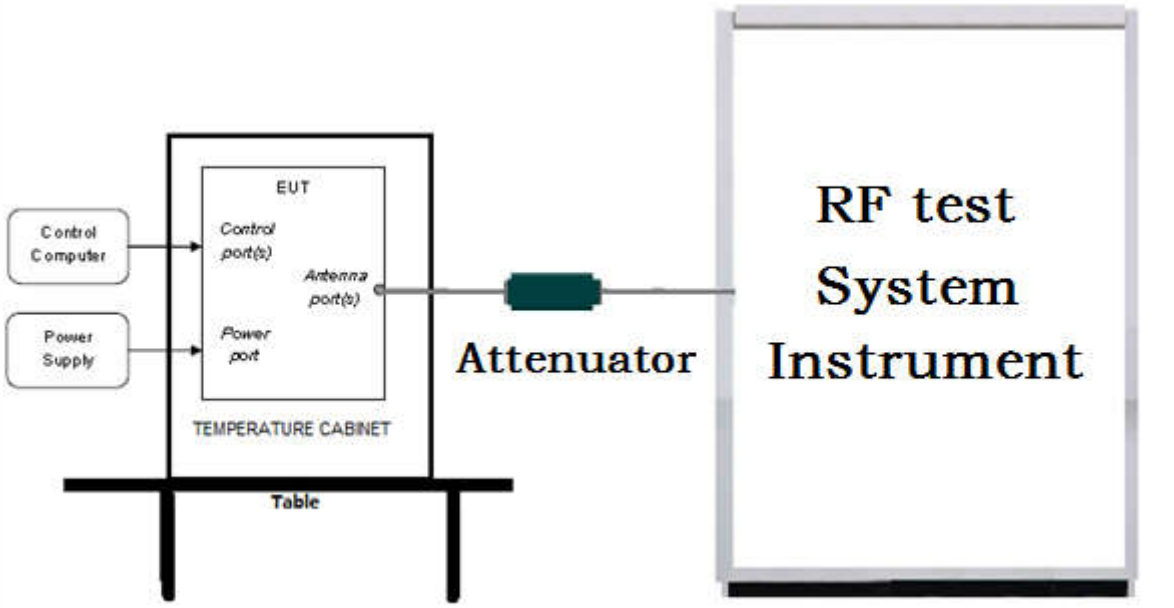
Only the black of decoration sample is tested, since the model:TK001 samples have two kinds of decoration, and the decoration has two colors, but their decorative material, electrical circuit design, layout, components used, interface and firmware are identical, only the outer decoration and colors of decoration are different.

4 Content

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:

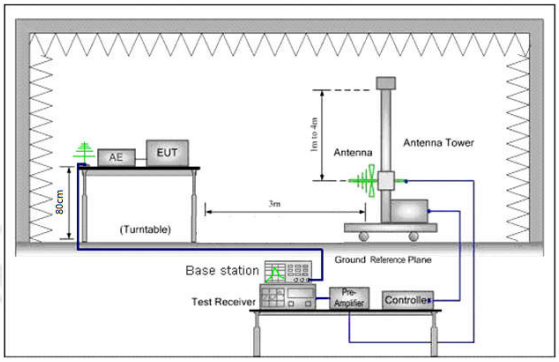


Figure 1. 30MHz to 1GHz

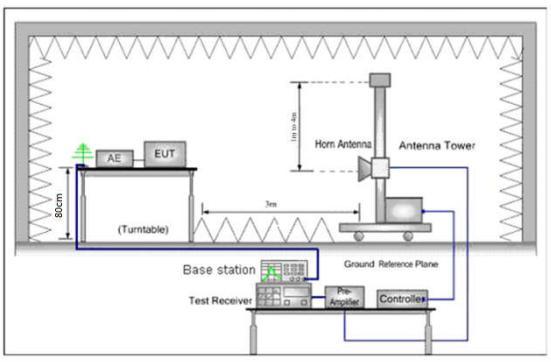


Figure 2. above 1GHz

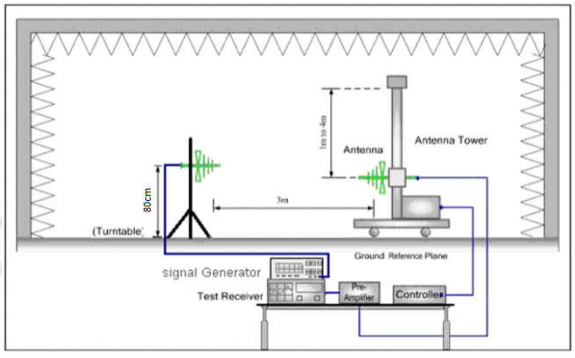


Figure 1. 30MHz to 1GHz

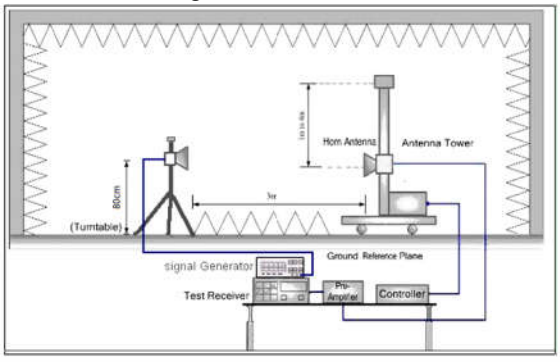


Figure 2. above 1GHz

5.2 Test Environment

Operating Environment:	
Temperature:	24.0 °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)
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
GPRS1900	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

Pre-scan data rates and positions,find the worse case mode as below:

band	**Radiated**	**Conducted**
GPRS850	GPRS 8 Link	GPRS 8 Link
GPRS1900	GPRS 8 Link	GPRS 8 Link

Test mode:

Test Mode	Test Modes description
GSM/TM2	GSM system, GPRS, GMSK modulation

6 General Information

6.1 Client Information

Applicant:	Guangzhou Xiaomaoqiu Intellectual Technology Co., Ltd
Address of Applicant:	Room 801, No.240, Tianhe East Road, Tianhe District Guangzhou, Guangdong
Manufacturer:	Guangzhou Xiaomaoqiu Intellectual Technology Co., Ltd
Address of Manufacturer:	Room 801, No.240, Tianhe East Road, Tianhe District Guangzhou, Guangdong
Factory 1:	SIRTEC (DongGuan) Plastics & Electronics CO., Ltd
Factory 2:	Dongguan Xiesheng Plastic Electronic Co., Ltd
Address of Factory:	Building E, No.111, Shaxin Road, Tangxia Town, Dongguan, Guangdong

6.2 General Description of EUT

Product Name:	Smart Pet Tracker
Model No.(EUT):	TK001
Trade Mark:	小毛球
EUT Supports Radios application:	GSM850/1900(GPRS); GPS: L1: 1575.42MHz.
Power Supply:	DC 3.7V, 400mAh by lithium battery DC 5V by USB port
Firmware version:	X2_64X32_A_170821 (manufacturer declare)
Hardware version:	V1.2 (manufacturer declare)
Sample Received Date:	Nov. 01, 2017
Sample tested Date:	Nov. 01, 2017 to Apr. 23, 2018

6.3 Product Specification subjective to this standard

Frequency Band:	GPRS 850: Tx:824.20 – 848.80MHz, Rx: 869.20 – 893.80MHz GPRS 1900: Tx:1850.20 – 1909.80MHz, Rx:1930.20 – 1989.80MHz
Modulation Type:	GMSK
Antenna Type:	FPC Antenna
Antenna Gain:	GSM850MHz: -1dBi GSM1900MHz: -1.5dBi
Test Voltage:	AC 120V, 60Hz

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.

Building C, Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101

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

No tests were sub-contracted.

6.6 Deviation from Standards

None.

6.7 Abnormalities from Standard Conditions

None.

6.8 Other Information Requested by the Customer

None.

6.9 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					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Spectrum Analyzer	Agilent	E4440A	MY46185649	11-16-2017	11-15-2018
Signal Generator	Agilent	E4438C	MY45095744	03-13-2018	03-12-2019
Communication test set	Agilent	E5515C	GB47050534	03-16-2018	03-15-2019
Signal Generator	Keysight	E8257D	MY53401106	03-13-2018	03-12-2019
Communication test set	R&S	CMW500	152394	03-16-2018	03-15-2019
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA09C L12-0395-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA08C L12-0393-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA04C L12-0396-002	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA03C L12-0394-001	---	01-10-2018	01-09-2019
DC Power	Keysight	E3642A	MY54426112	03-13-2018	03-12-2019
DC Power	Keysight	E3642A	MY54426115	03-13-2018	03-12-2019
RF control unit	JS Tonscend	JS0806-1	158060004	03-13-2018	03-12-2019
DC power Box	JS Tonscend	JS0806-4	158060007	03-31-2018	03-30-2019

Radiated Spurious Emission & Radiated Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06-04-2016	06-03-2019
TRILOG Broadband Antenna	SCHWARZBECK	VULB9163	9163-484	06-09-2017	06-08-2018
Preamplifier	JS Tonscend	EMC051845SE	980380	01-19-2018	01-18-2019
Horn Antenna	ETS-LINDGREN	3117	00057407	07-20-2015	07-18-2018
Loop Antenna	ETS	6502	00071730	06-22-2017	06-21-2019
Spectrum Analyzer	R&S	FSP40	100416	06-13-2017	06-12-2018
Receiver	R&S	ESCI	100435	06-14-2017	06-13-2018
LISN	schwarzbeck	NNBM8125	81251547	06-13-2017	06-12-2018
LISN	schwarzbeck	NNBM8125	81251548	06-13-2017	06-12-2018
Signal Generator	Agilent	E4438C	MY45095744	03-13-2018	03-12-2019
Signal Generator	Keysight	E8257D	MY53401106	03-13-2018	03-12-2019
Temperature/ Humidity Indicator	TAYLOR	1451	1905	05-08-2017	05-07-2018
Communication test set	Agilent	E5515C	GB47050534	03-16-2018	03-15-2019
Cable line	Fulai(7M)	SF106	5219/6A	01-10-2018	01-09-2019
Cable line	Fulai(6M)	SF106	5220/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5216/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5217/6A	01-10-2018	01-09-2019
Communication test set	R&S	CMW500	152394	03-16-2018	03-15-2019
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA09C L12-0395-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA08C L12-0393-001	---	01-10-2018	01-09-2019

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	PART 22	PART 22 – PUBLIC MOBILE SERVICES Subpart H – Cellular Radiotelephone Service
2	PART 24	PART 24 – PERSONAL COMMUNICATIONS SERVICES Subpart E – Broadband PCS
3	PART 2	Frequency allocations and radio treaty matters; general rules and regulations
4	TIA-603-E-2016	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% &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 of spurious radiation	PASS	Appendix H)
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 G)

Appendix A)RF Power Output

<table>
<tr><td>Test Requirement:</td><td>Part 2.1046(a)</td></tr>
<tr><td>Test Method:</td><td>TIA-603-E-2016 Clause 2.2.1</td></tr>
<tr><td>Test Setup:</td><td>Refer to section 5 for details</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Mode</td><td>GSM 850/WCDMA/HSDPA /HSUPA 850 Band V</td><td>GSM 1900/WCDMA/HSDPA /HSUPA 1900 Band II</td></tr>
<tr><td>Frequency</td><td>824 – 849MHz</td><td>1850 – 1910MHz</td></tr>
<tr><td>Limit</td><td>38.45dBm（ERP）</td><td>33.01dBm（EIRP）</td></tr>
</table>
</td></tr>
<tr><td>Measurement Procedure:</td><td>The transmitter output was connected to a calibrated coaxial cable, attenuator and power meter, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The power output at the transmitter antenna port was determined by adding the value of the cable insertion loss to the power reading. The tests were performed at three frequencies (low channel, middle channel and high channel) and on the highest power levels, which can be setup on the transmitters.</td></tr>
<tr><td>Instruments Used:</td><td>Refer to section 7 for details</td></tr>
<tr><td>Test Results:</td><td>Pass</td></tr>
</table>

Test Data:

Test Band	Test Mode	Test Channel	Measured(dbm)	Limit (dbm)	Verdict
GSM850	GSM/TM2	LCH	31.22	38.5	PASS
		MCH	31.50	38.5	PASS
		HCH	31.98	38.5	PASS
Test Band	Test Mode	Test Channel	Measured(dbm)	Limit (dbm)	Verdict
GSM1900	GSM/TM2	LCH	29.25	33	PASS
		MCH	28.88	33	PASS
		HCH	28.62	33	PASS

Appendix B)Peak-to-Average Ratio

Test Requirement:	Part 24.232(d)
Test Method:	KDB 971168 D01
Test Setup:	Refer to section 5 for details
Limit:	13dB
Measurement Procedure:	Use one of the procedures to measure the total peak power and record as PPk. Use one of the applicable procedures to measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from: PAPR (dB) = PPk (dBm) - PAvg (dBm).
Instruments Used:	Refer to section 7 for details
Test Results:	Pass

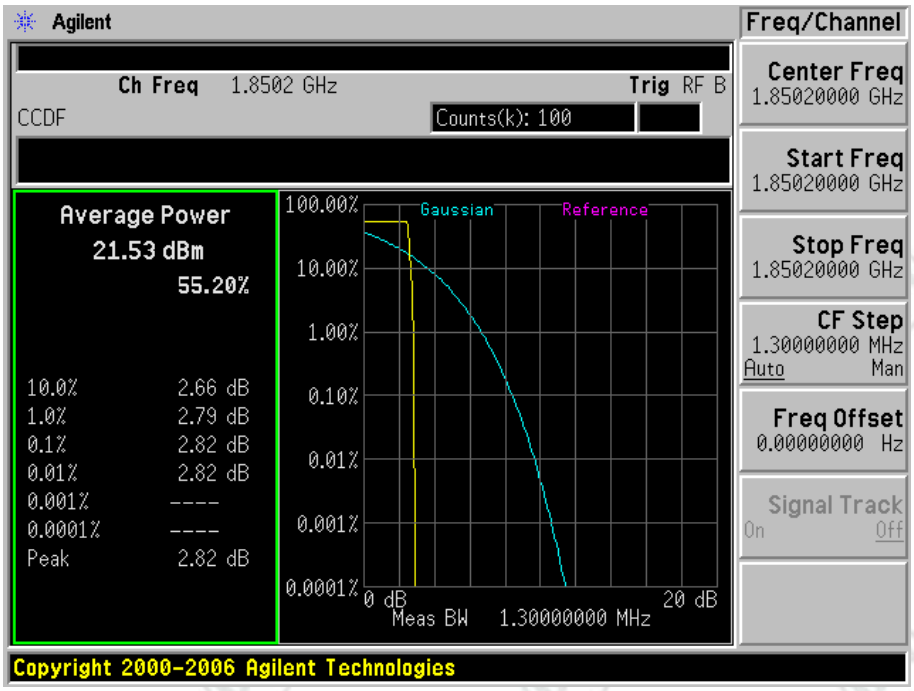
Test Data:

Test Band	Test Mode	Test Channel	Measured (dbm)	Limit (dbm)	Verdict
GSM1900	GSM/TM2	LCH	0.29	13	PASS
		MCH	0.38	13	PASS
		HCH	0.40	13	PASS

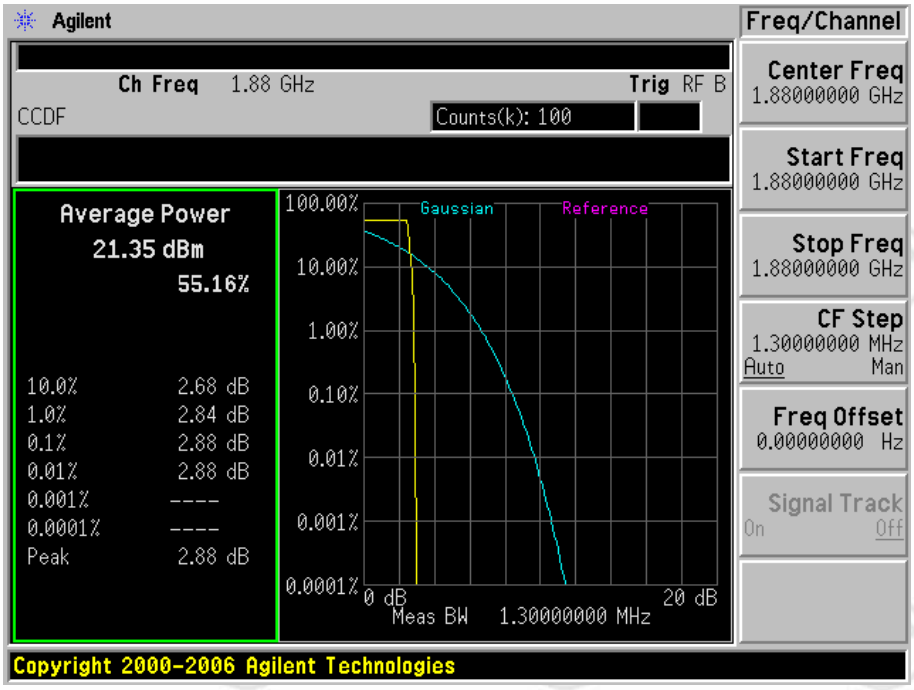
1.1 Test GSM 1900

1.1.1 Test Mode=GSM/TM2

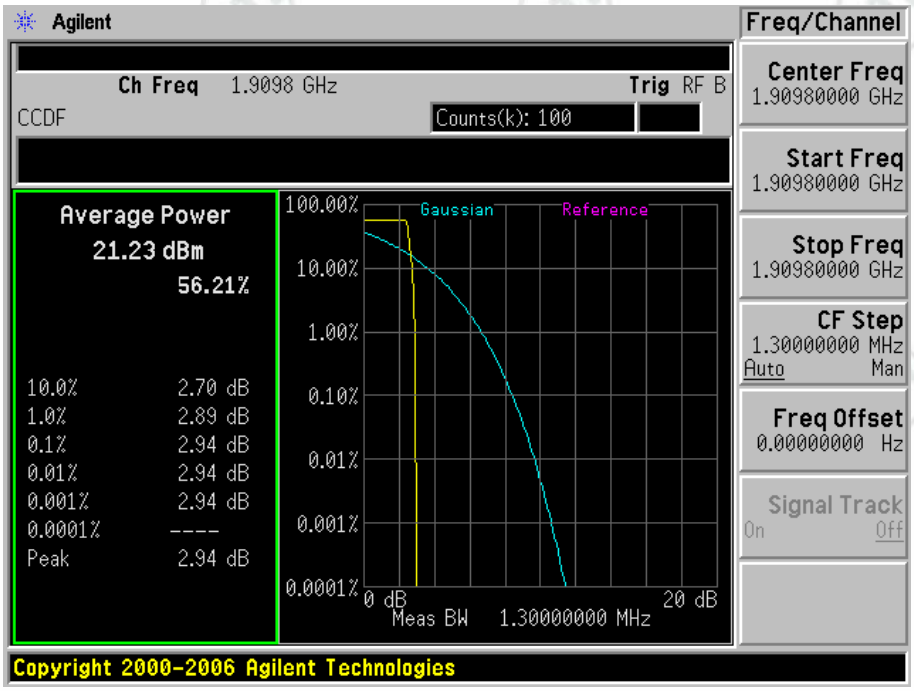
1.1.1.1 Test Channel=LCH



1.1.1.2 Test Channel=MCH



1.1.1.3 Test Channel=HCH



Appendix C)BandWidth

Test Requirement:	Part 2.1049(h)
Test Method:	Part 22.917(b)/Part 24.238(b)
Test Setup:	Refer to section 5 for details
Limit:	N/A
Measurement Procedure:	The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel, middle channel and high channel).the resolution bandwidth of the analyser is set to 100kHz or 1% of the emission bandwidth, the EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emission are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to peak or peak hold power.
Instruments Used:	Refer to section 7 for details
Test Results:	Pass

Test data:

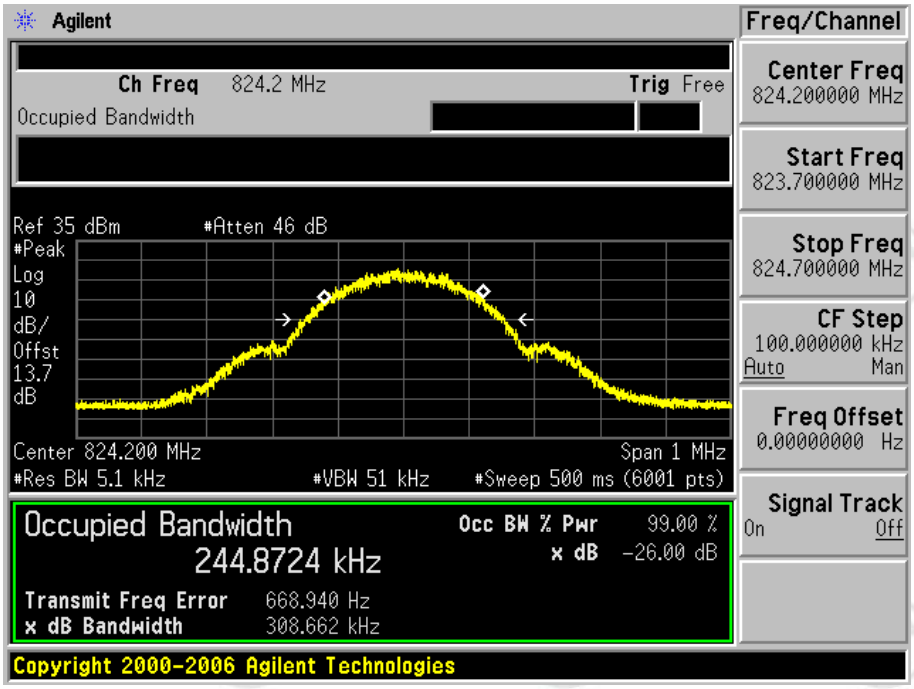
Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
GSM850	GSM/TM2	LCH	244.87	308.66	PASS
		MCH	245.40	314.29	PASS
		HCH	244.94	318.29	PASS

Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
GSM1900	GSM/TM2	LCH	245.21	317.26	PASS
		MCH	245.30	316.57	PASS
		HCH	244.82	310.99	PASS

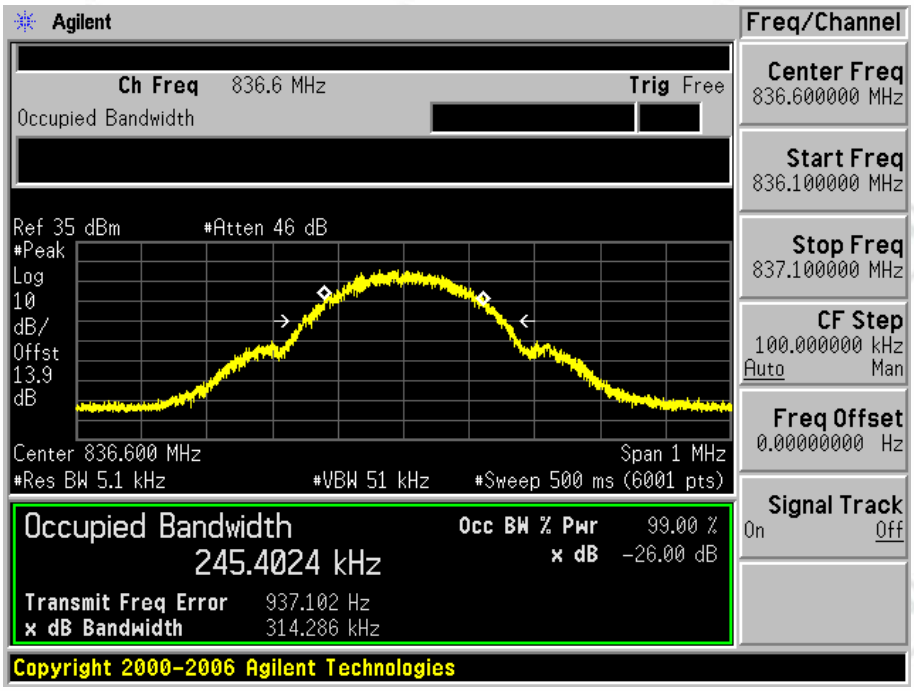
1.1 Test GSM 850

1.1.1 Test Mode=GSM/TM2

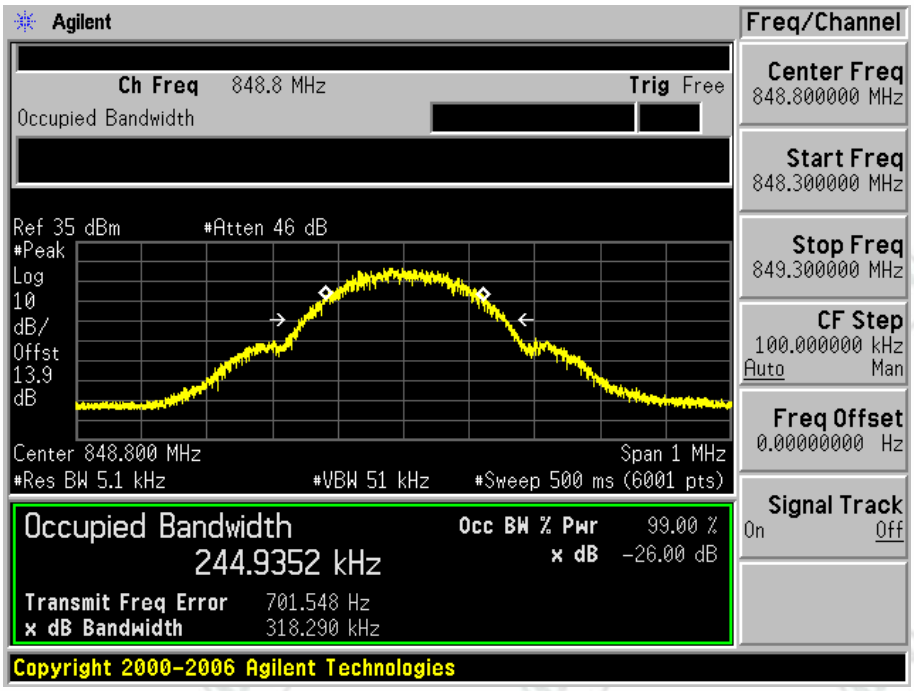
1.1.1.1 Test Channel=LCH



1.1.1.2 Test Channel=MCH



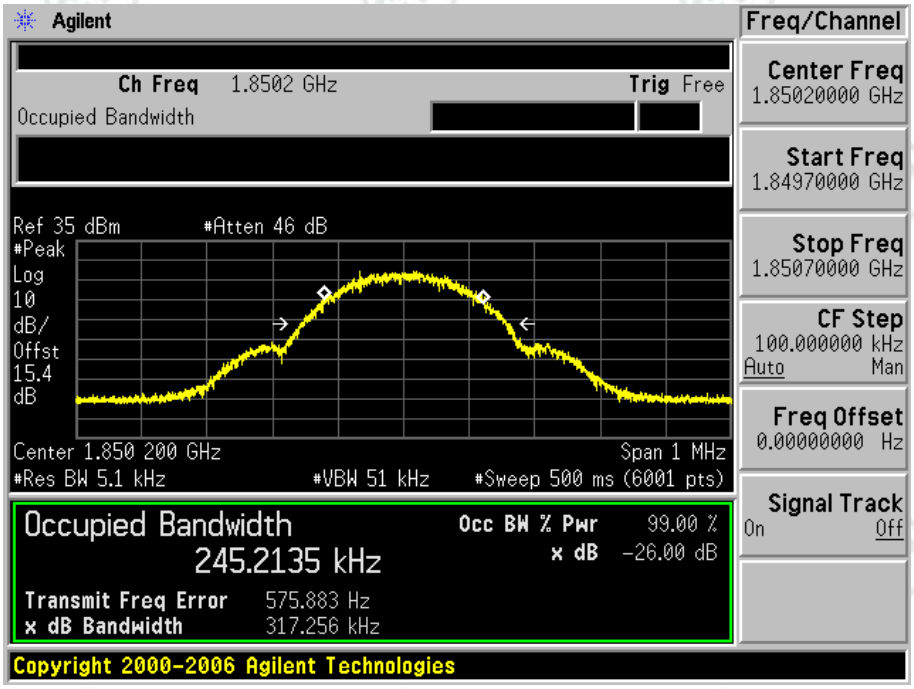
1.1.1.3 Test Channel=HCH



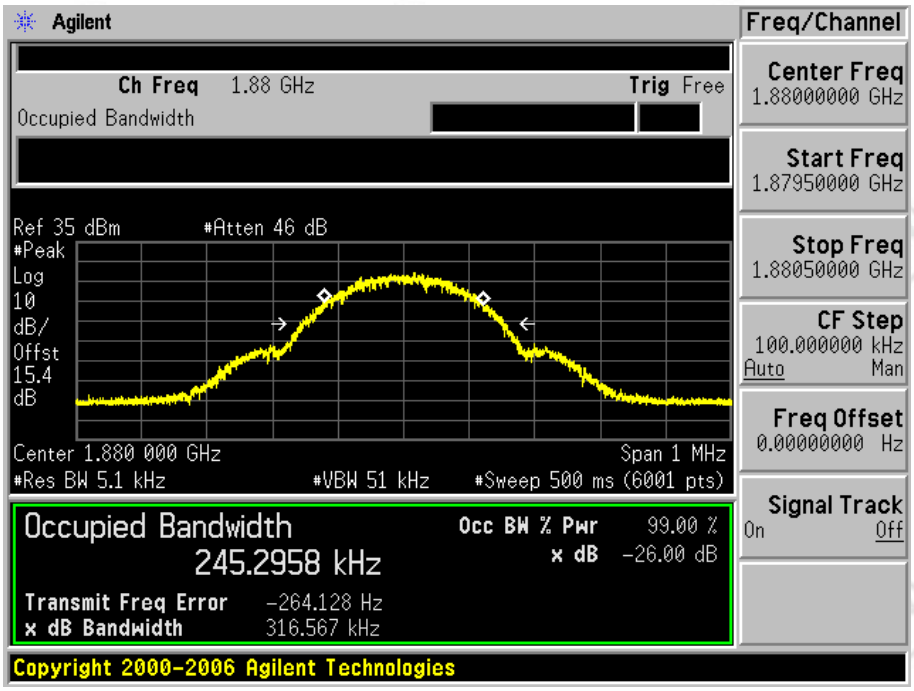
1.2 Test GSM 1900

1.2.1 Test Mode=GSM/TM2

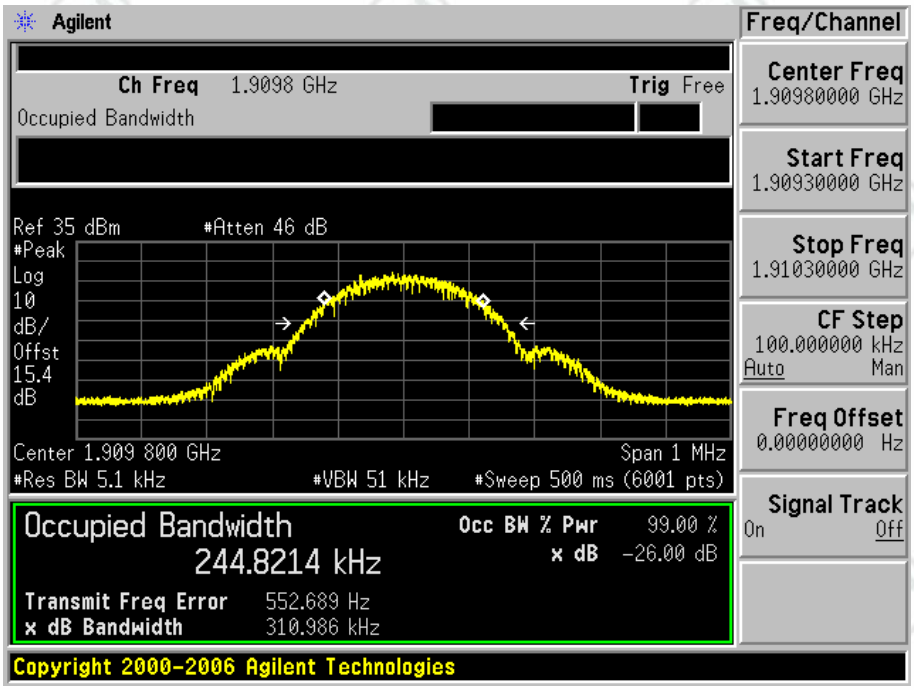
1.2.1.1 Test Channel=LCH



1.2.1.2 Test Channel=MCH



1.2.1.3 Test Channel=HCH



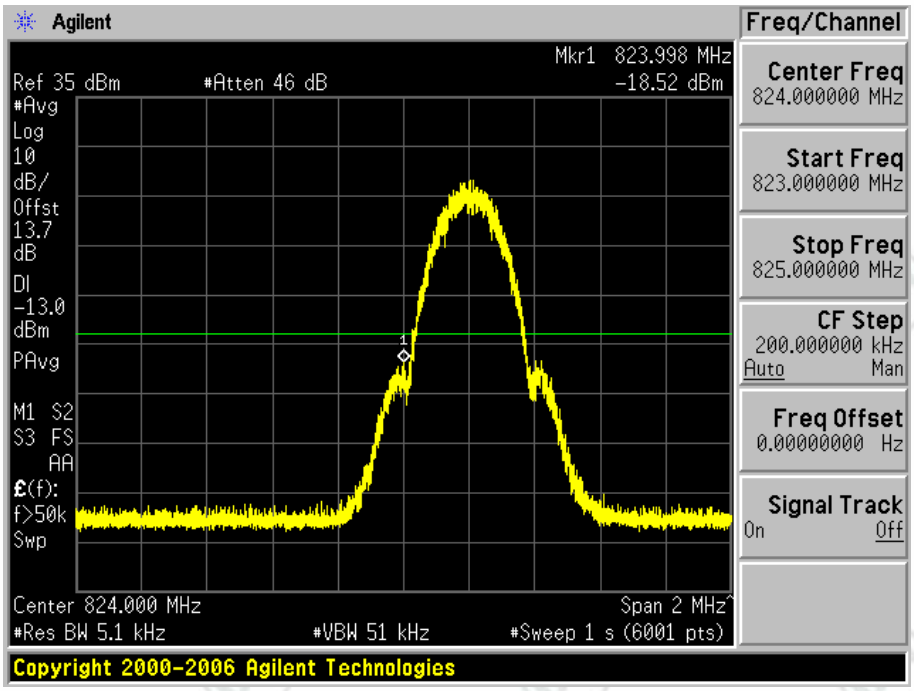
Appendix D)Band Edges Compliance

<table>
<tr><td>Test Requirement:</td><td>Part 2.1051</td></tr>
<tr><td>Test Method:</td><td>Part 22.917(b)/Part 24.238(b)</td></tr>
<tr><td>Test Setup:</td><td>Refer to section 5 for details</td></tr>
<tr><td>Measurement Procedure:</td><td>The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel).in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of 100kHz or 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed. The EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emission are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to peak or peak hold power.</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Operation Band</td><td>Frequency Range (MHz)</td><td>Limit</td></tr>
<tr><td>GPRS/EDGE/ WCDMA 850</td><td>Below 824 and above 849</td><td>Attenuated at least 43+10log(P)</td></tr>
<tr><td>GPRS/EDGE/ WCDMA 1900</td><td>Below 1850 and above 1910</td><td>Attenuated at least 43+10log(P)</td></tr>
</table>
</td></tr>
<tr><td>Instruments Used:</td><td>Refer to section 7 for details</td></tr>
<tr><td>Test Results:</td><td>Pass</td></tr>
</table>

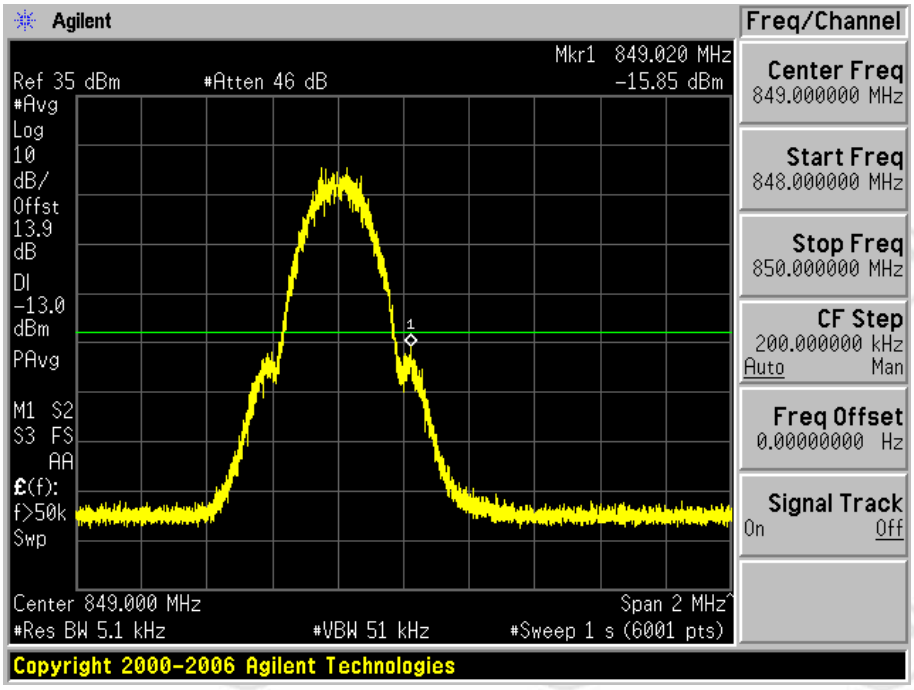
1.1 Test Band=GSM850

1.1.1 Test Mode=GSM/TM2

1.1.1.1 Test Channel=LCH



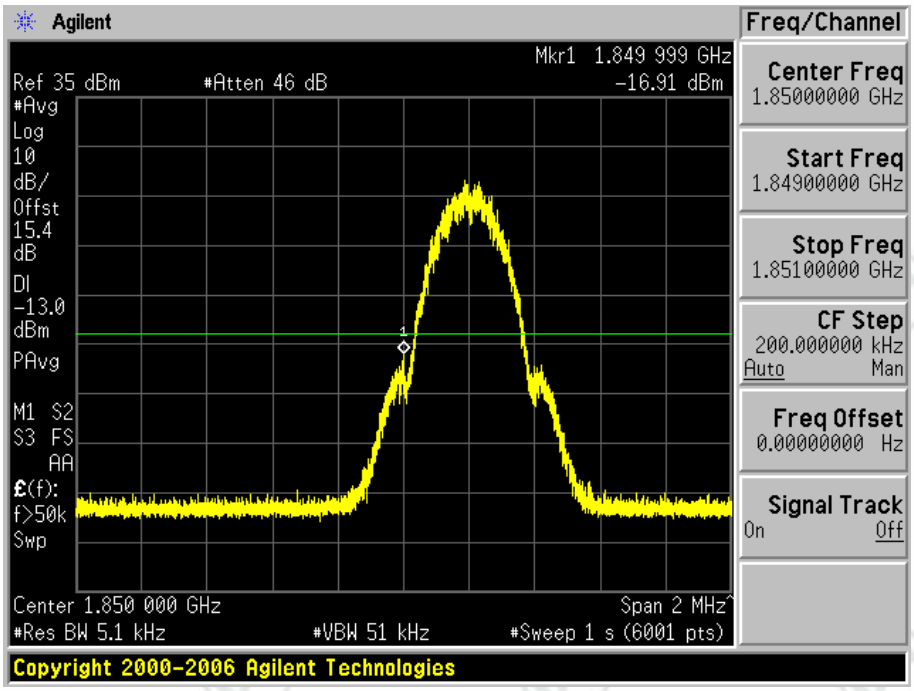
1.1.1.2 Test Channel=HCH



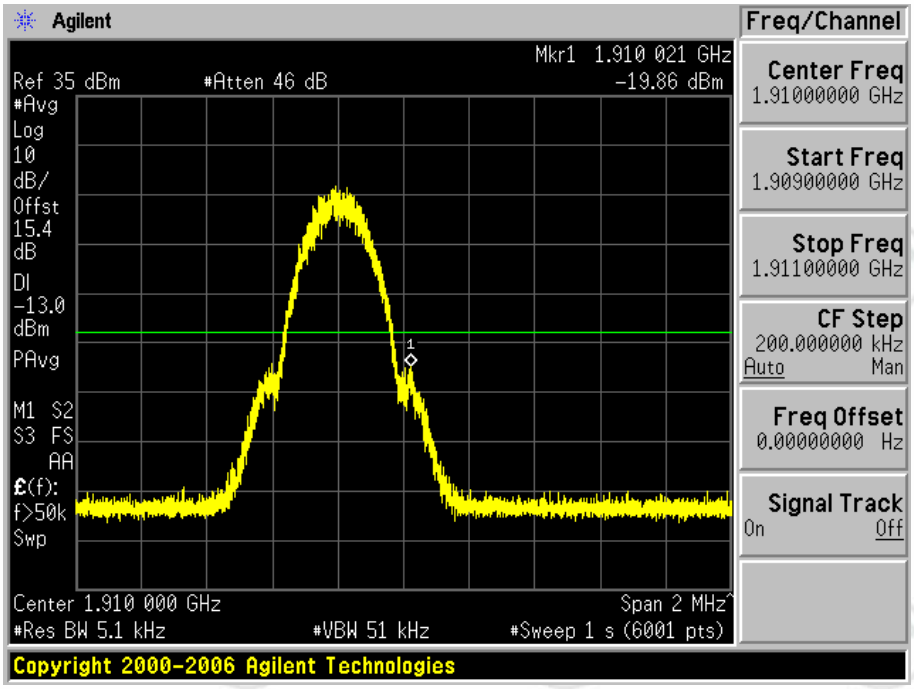
1.2 Test Band=GSM1900

1.2.1 Test Mode=GSM/TM2

1.2.1.1 Test Channel=LCH



1.2.1.2 Test Channel=HCH



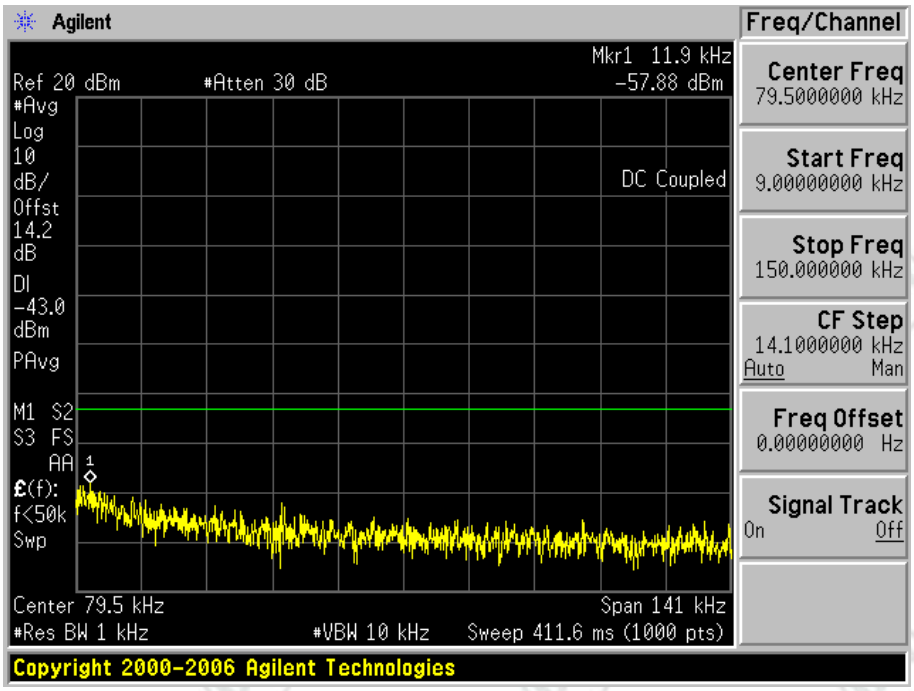
Appendix E)Spurious Emission at Antenna Terminal

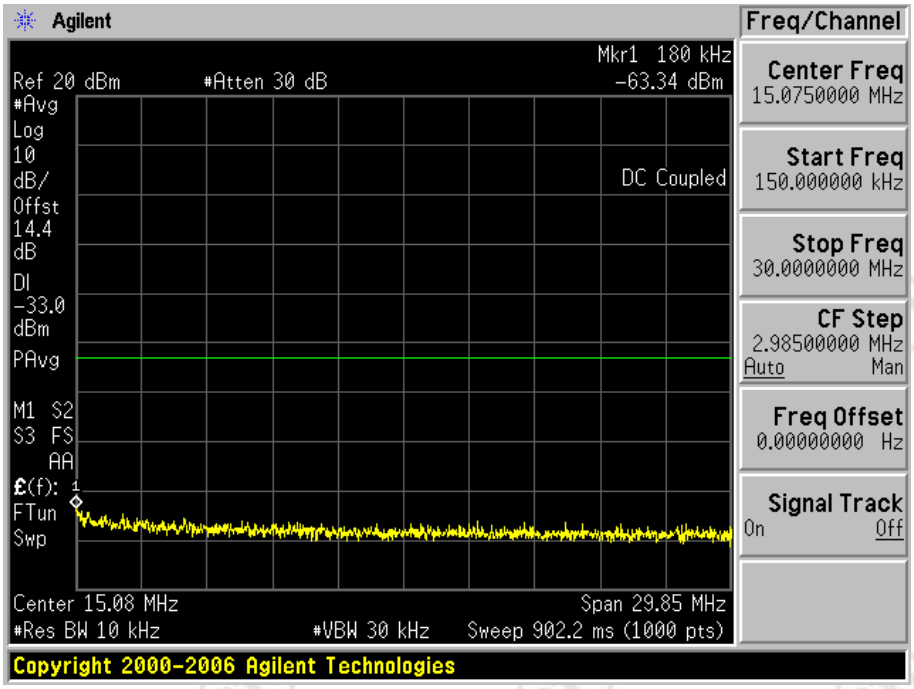
Test Requirement:	Part 2.1051/Part 2.1057
Test Method:	TIA-603-E-2016 Clause 2.2.13
Test Setup:	Refer to section 5 for details
Measurement Procedure:	The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyzer, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel).the equipment operates below 10GHz: to the tenth harmonic of the highest fundamental frequency or to 40GHz.whichever is lower, the resolution bandwidth of the spectrum analyzer was set at 100kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1GHz.the video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to mean or average power.
Instruments Used:	Refer to section 7 for details
Limit:	Attenuated at least 43+10log(P)
Test Results:	Pass

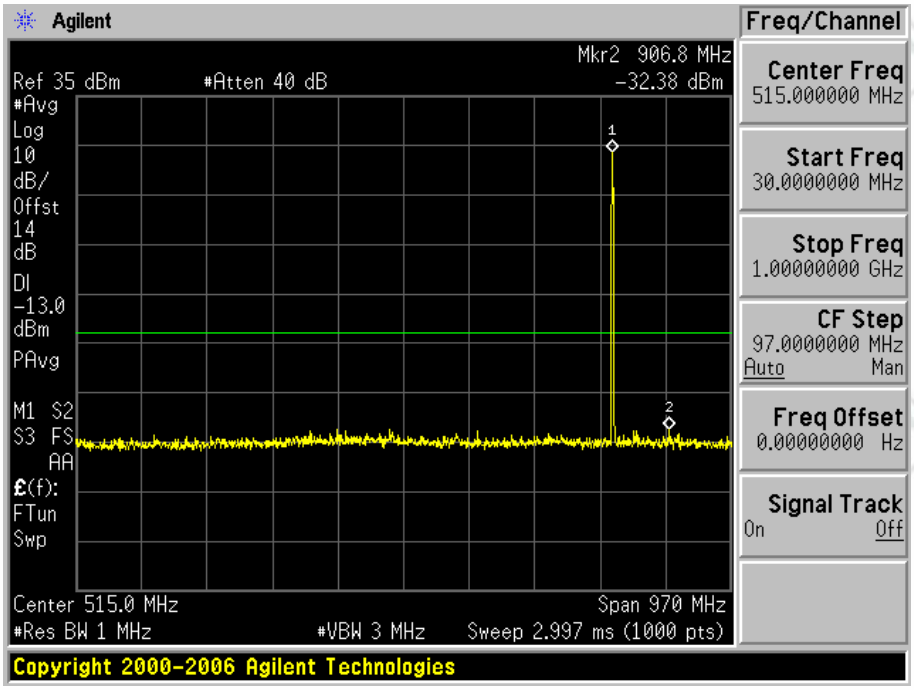
1.1 Test Band=GSM850

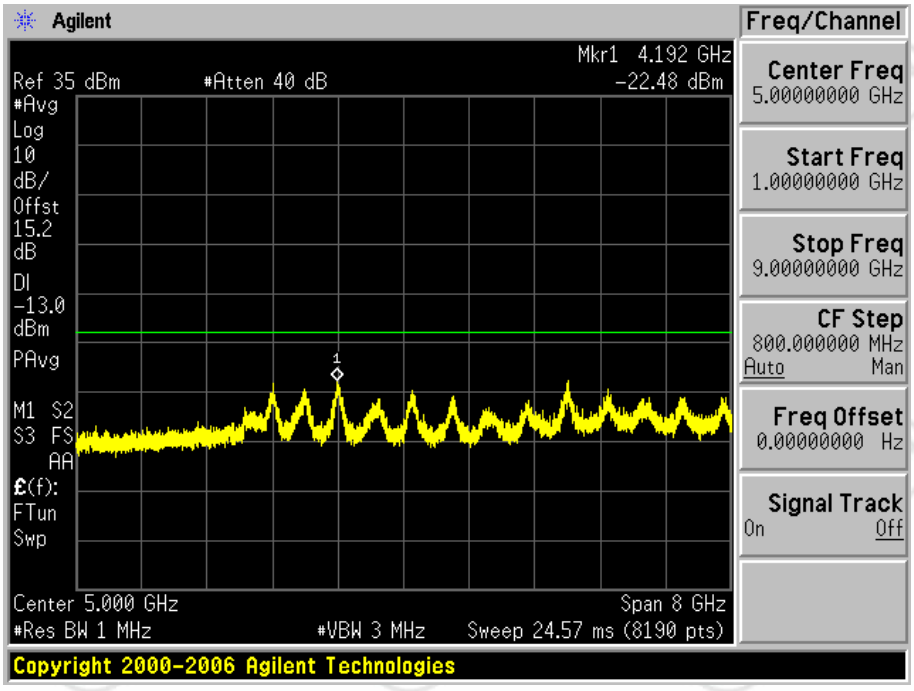
1.1.1 Test Mode=GSM/TM2

1.1.1.1 Test Channel=LCH

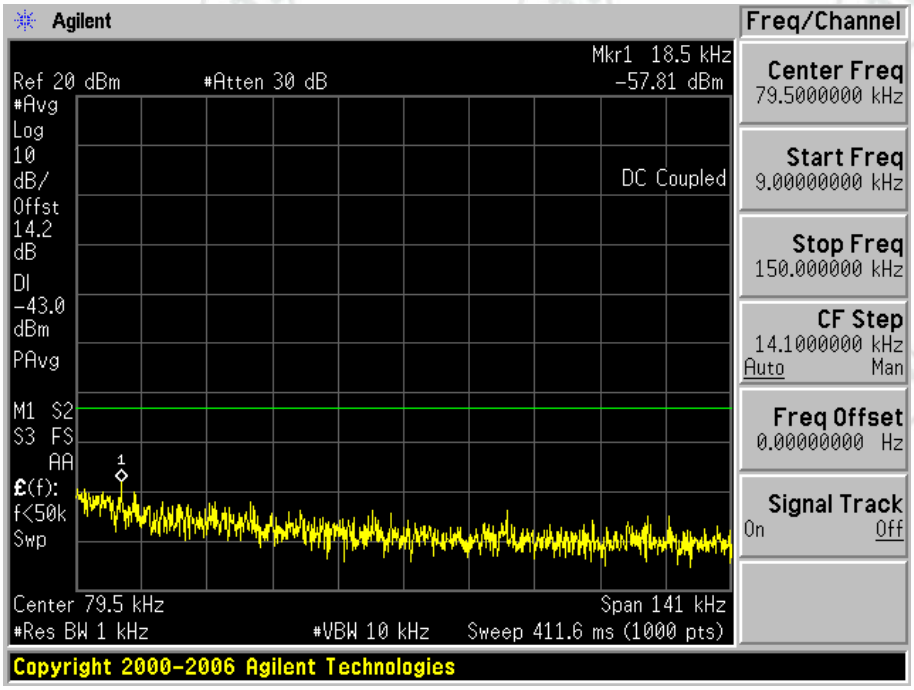


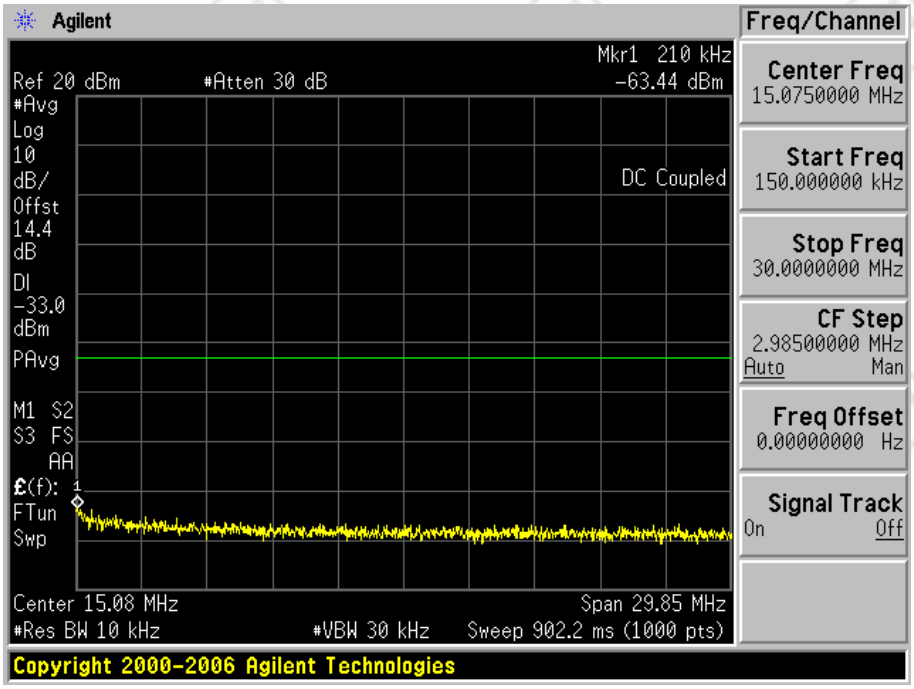


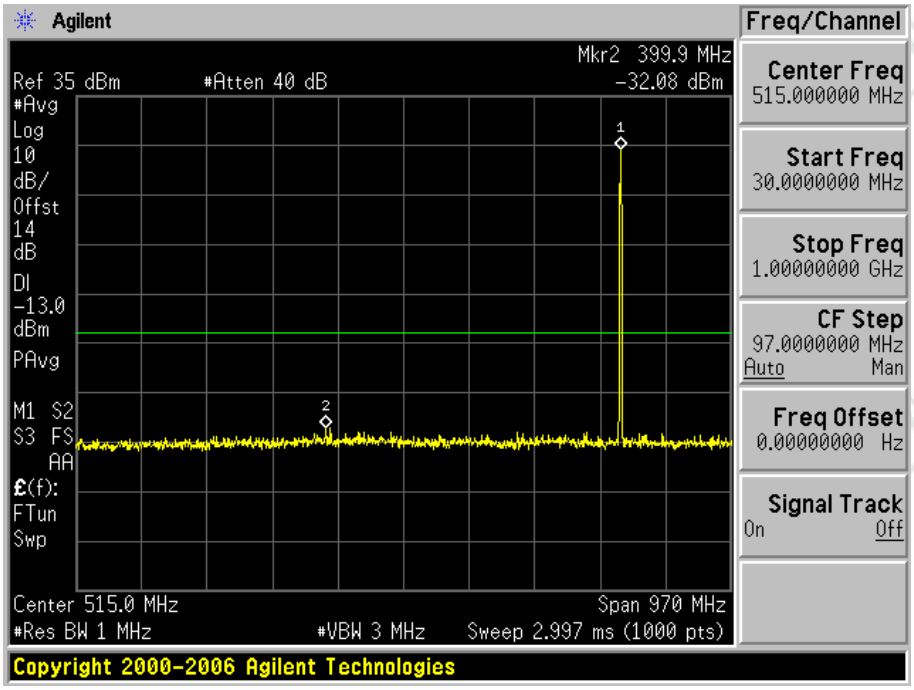

Agilent
Freq/Channel
Mkr2 906.8 MHz
Ref 35 dBm
#Atten 40 dB
-32.38 dBm
#Avg
Log
10
dB/
Offst
14
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 515.0 MHz
Span 970 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 2.997 ms (1000 pts)
Copyright 2000-2006 Agilent Technologies

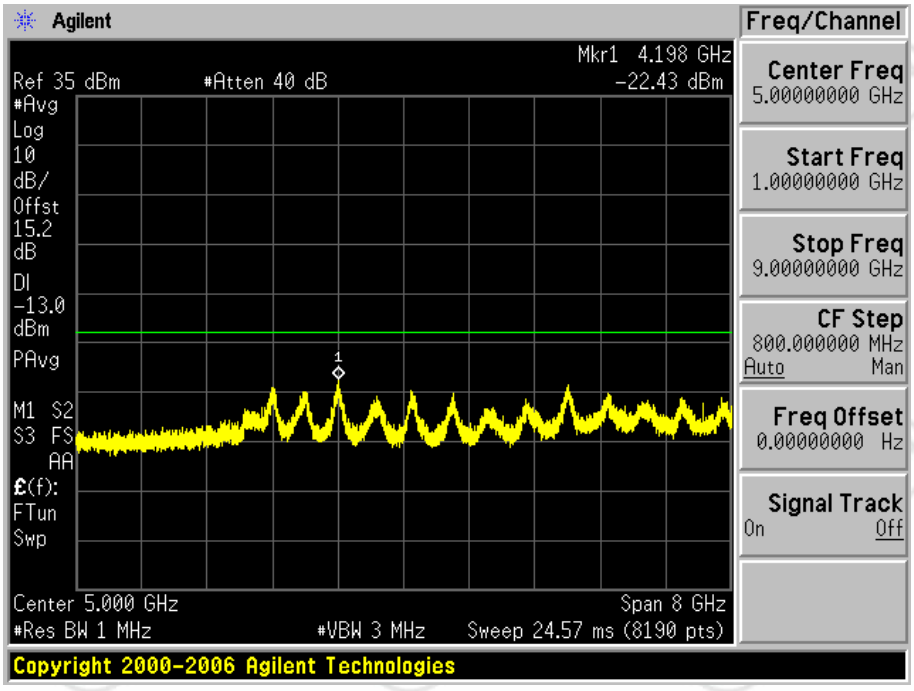

Agilent
Freq/Channel
Mkr1 4.192 GHz
Ref 35 dBm
#Atten 40 dB
-22.48 dBm
#Avg
Log
10
dB/
Offst
15.2
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
5.00000000 GHz
Start Freq
1.00000000 GHz
Stop Freq
9.00000000 GHz
CF Step
800.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 5.000 GHz
Span 8 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 24.57 ms (8190 pts)
Copyright 2000-2006 Agilent Technologies

1.1.1.2 Test Channel=MCH

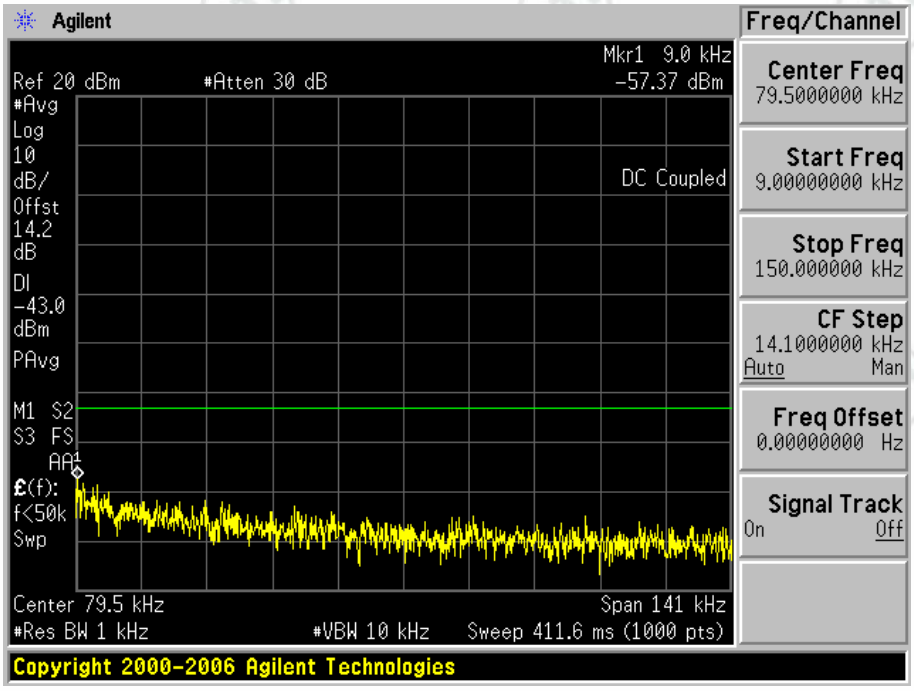


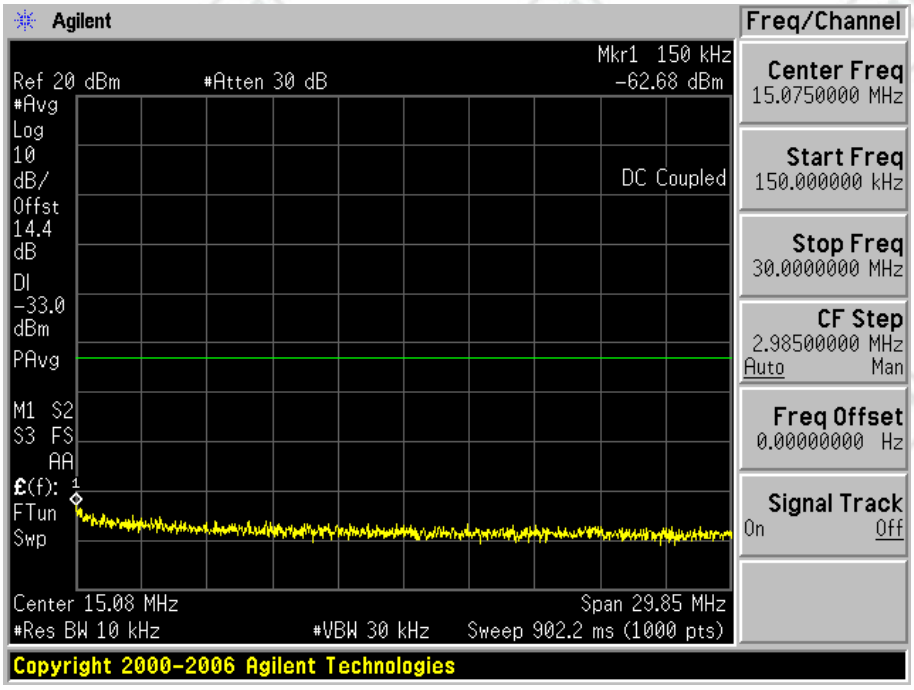


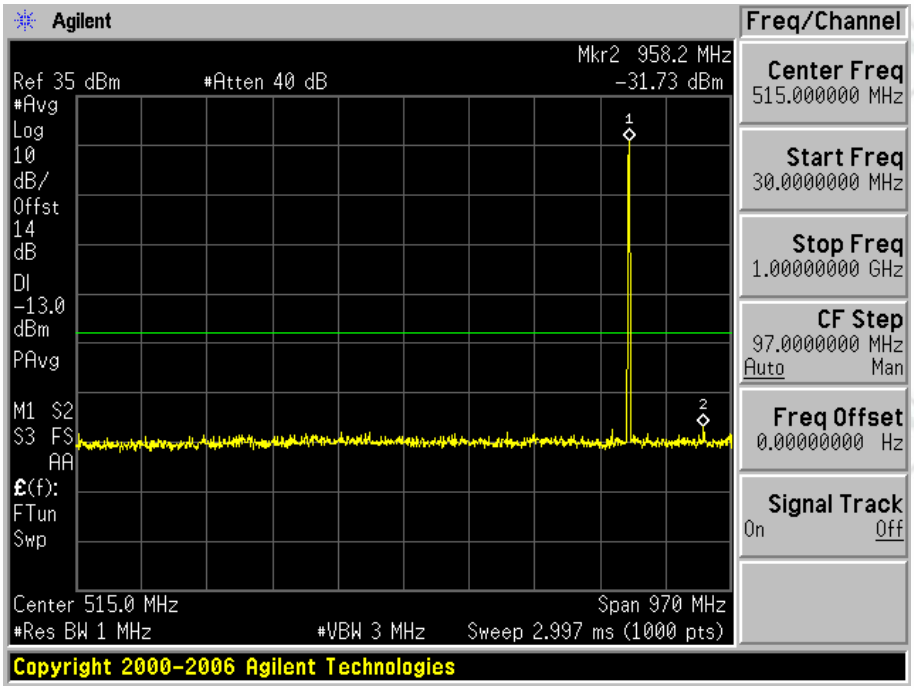

Agilent
Freq/Channel
Mkr2 399.9 MHz
Ref 35 dBm
#Atten 40 dB
-32.08 dBm
#Avg
Log
10
dB/
Offst
14
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 515.0 MHz
Span 970 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 2.997 ms (1000 pts)
Copyright 2000-2006 Agilent Technologies

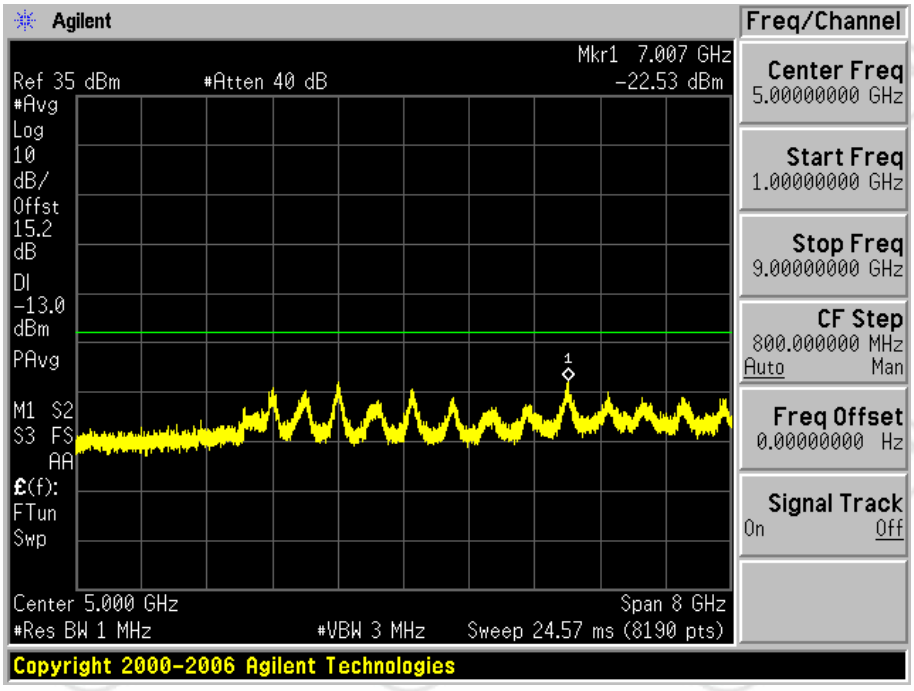

Agilent
Freq/Channel
Mkr1 4.198 GHz
Ref 35 dBm
#Atten 40 dB
-22.43 dBm
#Avg
Log
10
dB/
Offst
15.2
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
5.00000000 GHz
Start Freq
1.00000000 GHz
Stop Freq
9.00000000 GHz
CF Step
800.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 5.000 GHz
Span 8 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 24.57 ms (8190 pts)
Copyright 2000-2006 Agilent Technologies

1.1.1.3 Test Channel=HCH





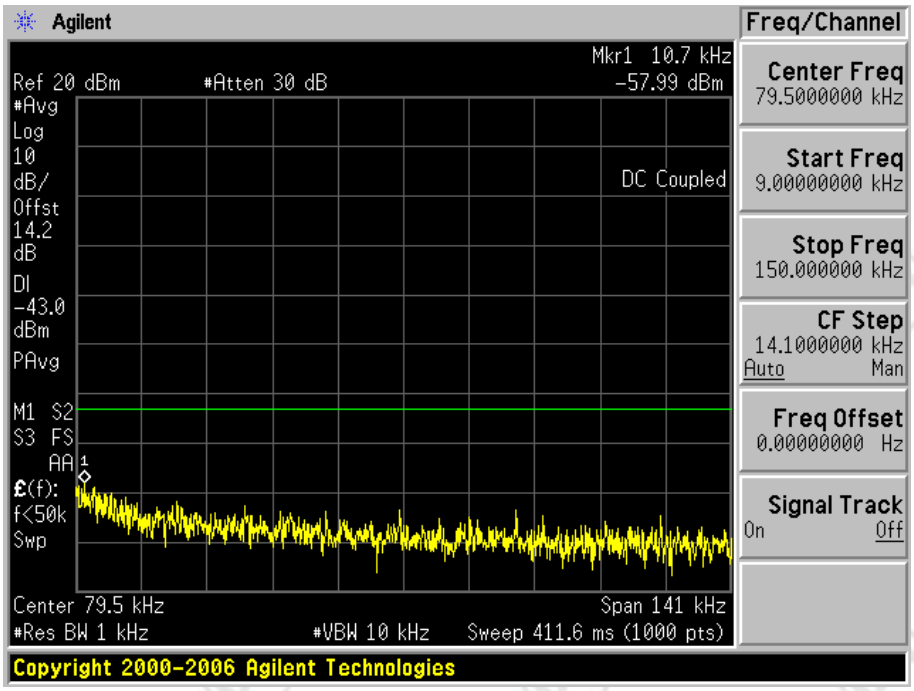

Agilent
Freq/Channel
Mkr2 958.2 MHz
Ref 35 dBm
#Atten 40 dB
-31.73 dBm
#Avg
Log
10
dB/
Offst
14
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 515.0 MHz
Span 970 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 2.997 ms (1000 pts)
Copyright 2000-2006 Agilent Technologies

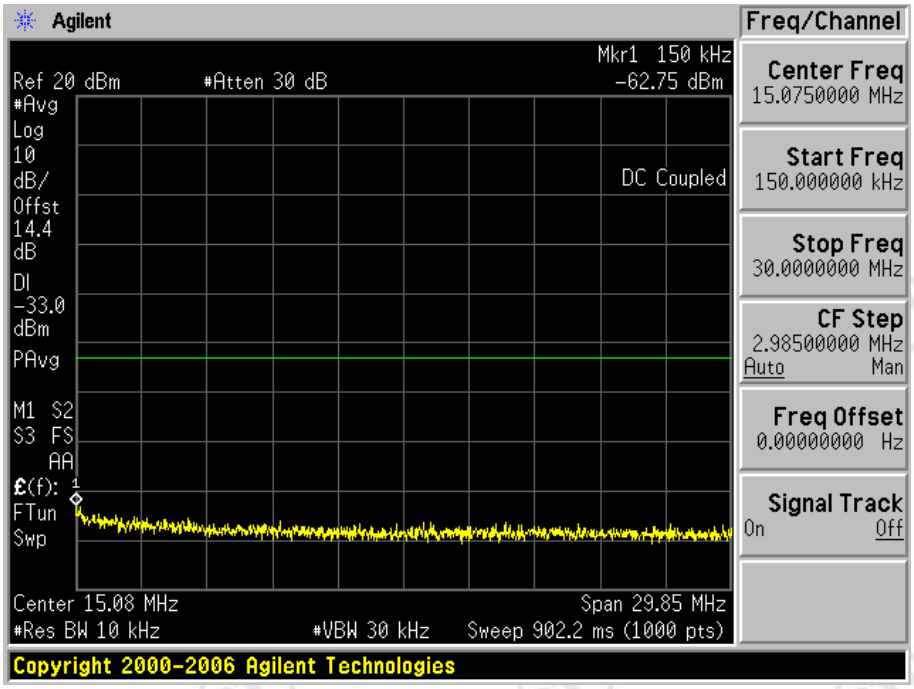

Agilent
Freq/Channel
Mkr1 7.007 GHz
Ref 35 dBm
#Atten 40 dB
-22.53 dBm
#Avg
Log
10
dB/
Offst
15.2
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
5.00000000 GHz
Start Freq
1.00000000 GHz
Stop Freq
9.00000000 GHz
CF Step
800.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 5.000 GHz
Span 8 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 24.57 ms (8190 pts)
Copyright 2000-2006 Agilent Technologies

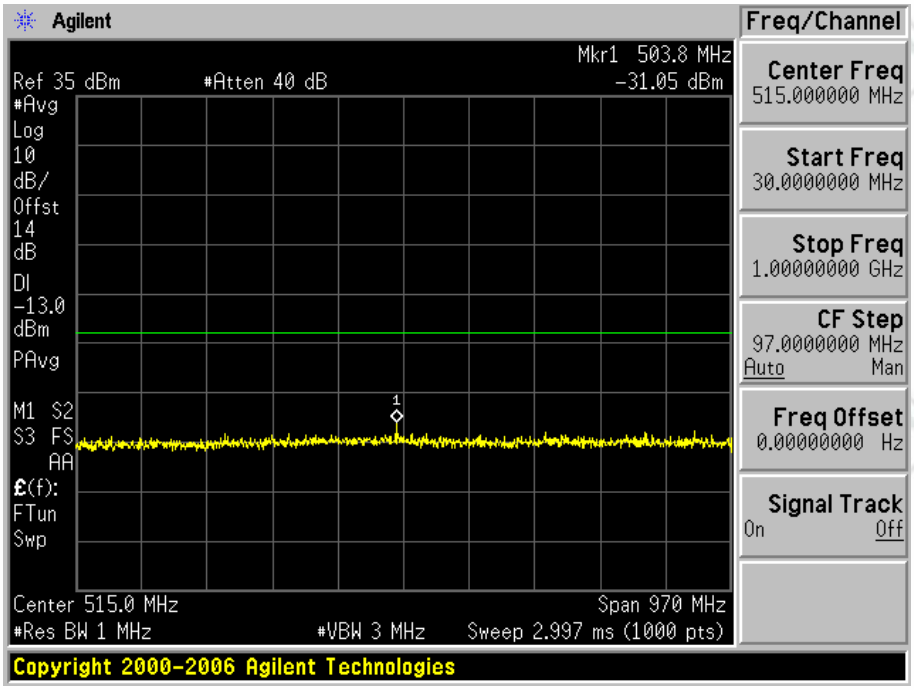
1.2 Test Band=GSM1900

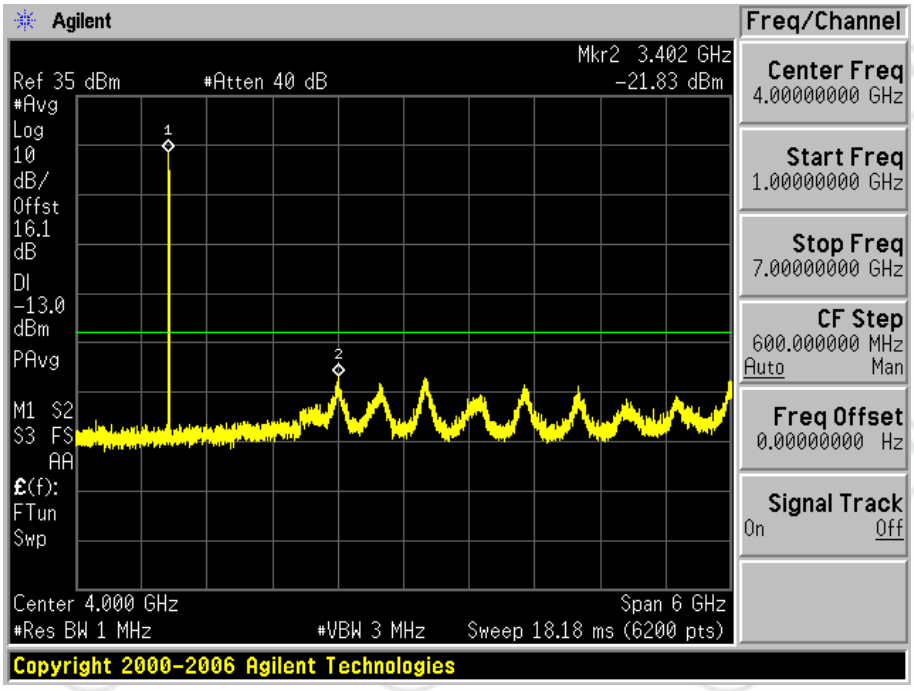
1.2.1 Test Mode=GSM/TM2

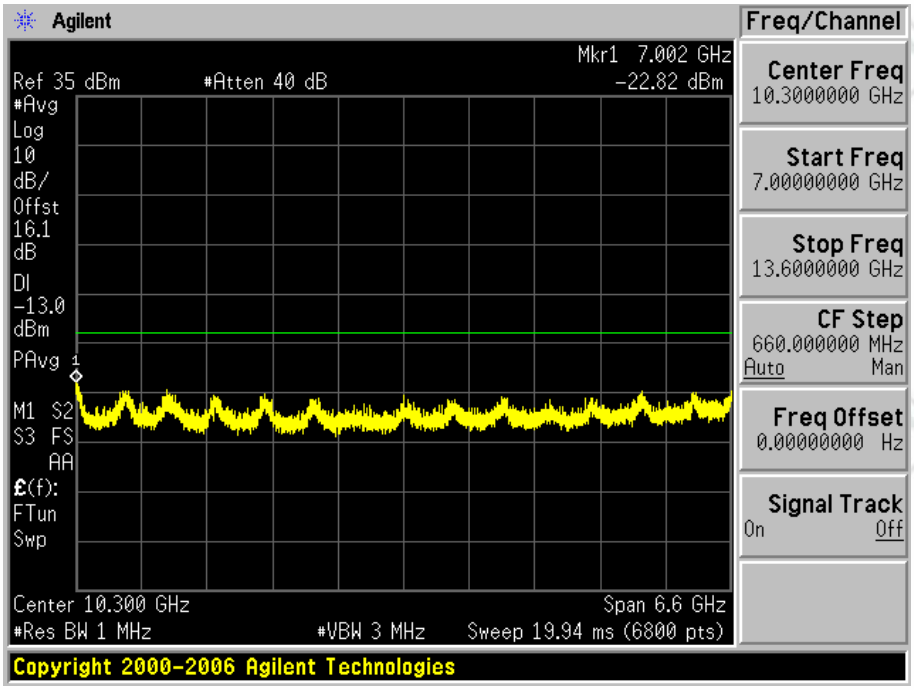
1.2.1.1 Test Channel=LCH

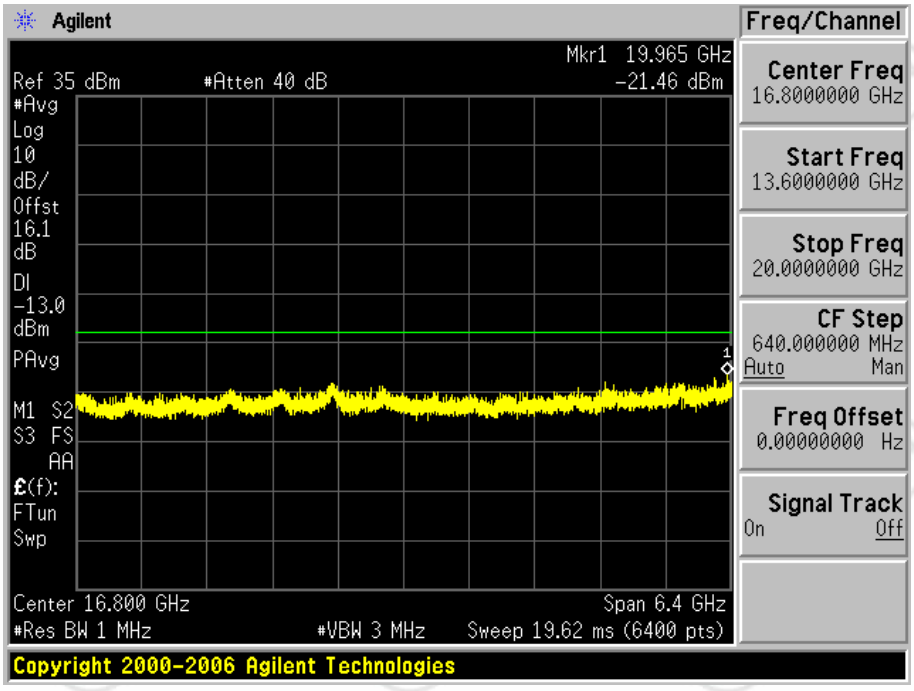




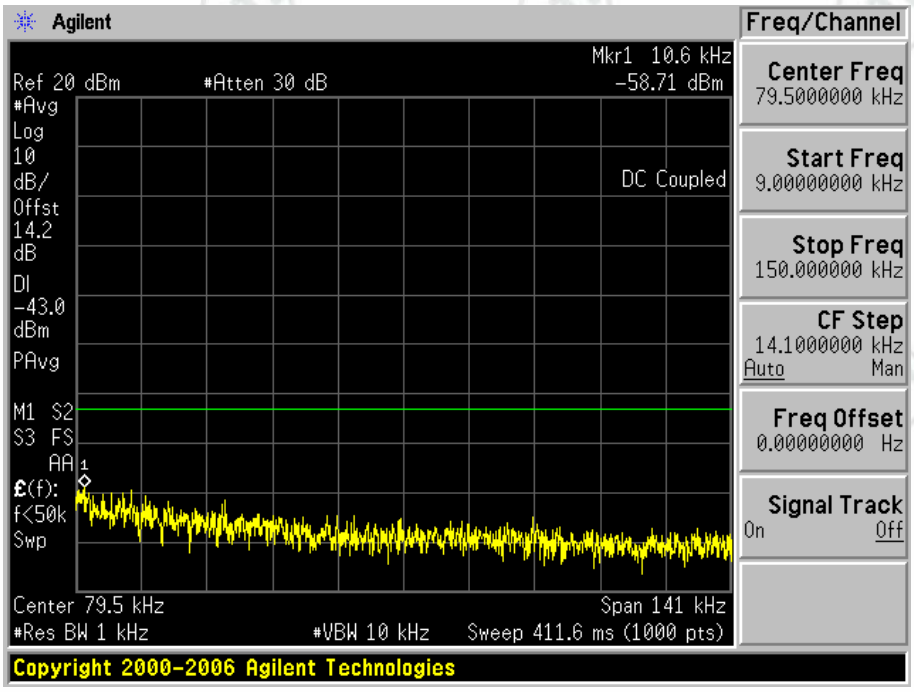

Agilent
Freq/Channel
Mkr1 503.8 MHz
Ref 35 dBm
#Atten 40 dB
-31.05 dBm
#Avg
Log
10
dB/
Offst
14
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 515.0 MHz
Span 970 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 2.997 ms (1000 pts)
Copyright 2000-2006 Agilent Technologies

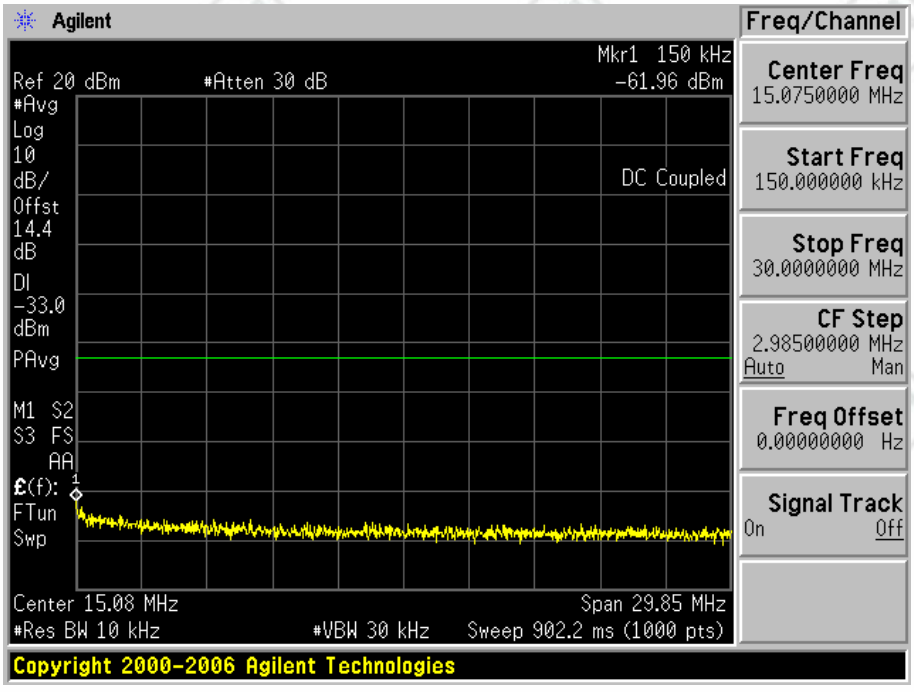

Agilent
Freq/Channel
Mkr2 3.402 GHz
Ref 35 dBm
#Atten 40 dB
-21.83 dBm
#Avg
Log
10
dB/
Offst
16.1
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
4.00000000 GHz
Start Freq
1.00000000 GHz
Stop Freq
7.00000000 GHz
CF Step
600.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 4.000 GHz
Span 6 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 18.18 ms (6200 pts)
Copyright 2000-2006 Agilent Technologies

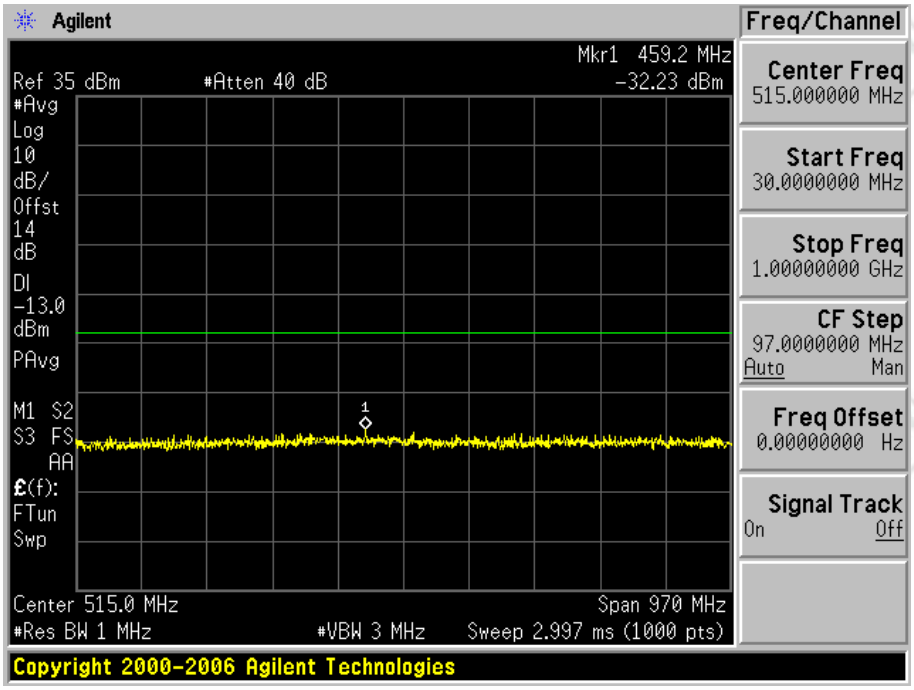

Agilent
Freq/Channel
Mkr1 7.002 GHz
Ref 35 dBm
#Atten 40 dB
-22.82 dBm
#Avg
Log
10
dB/
Offst
16.1
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
10.3000000 GHz
Start Freq
7.00000000 GHz
Stop Freq
13.6000000 GHz
CF Step
660.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 10.300 GHz
Span 6.6 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 19.94 ms (6800 pts)
Copyright 2000-2006 Agilent Technologies

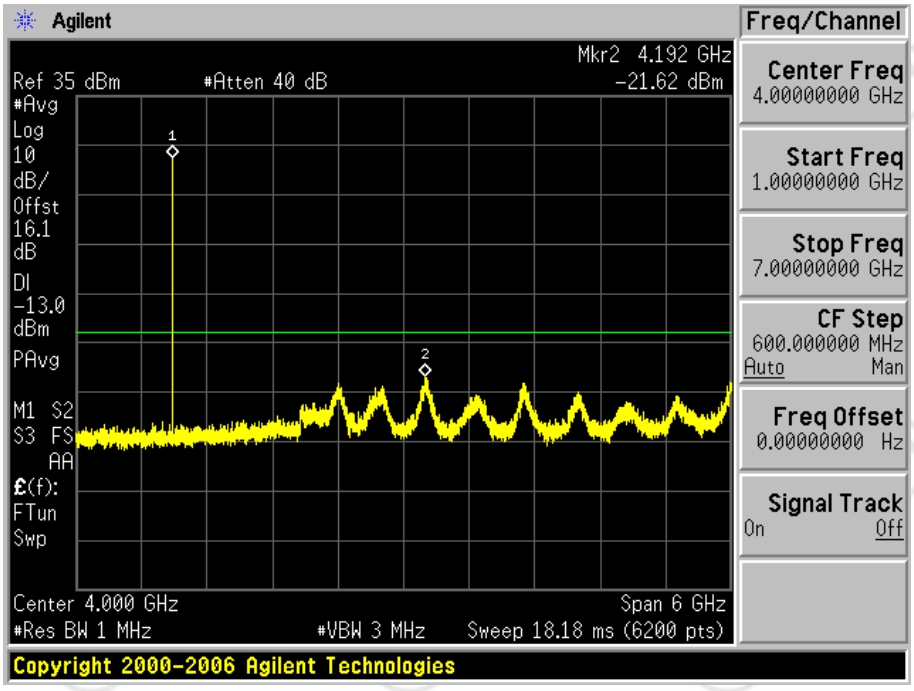

Agilent
Freq/Channel
Mkr1 19.965 GHz
Ref 35 dBm
#Atten 40 dB
-21.46 dBm
#Avg
Log
10
dB/
Offst
16.1
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
16.8000000 GHz
Start Freq
13.6000000 GHz
Stop Freq
20.0000000 GHz
CF Step
640.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 16.800 GHz
Span 6.4 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 19.62 ms (6400 pts)
Copyright 2000-2006 Agilent Technologies

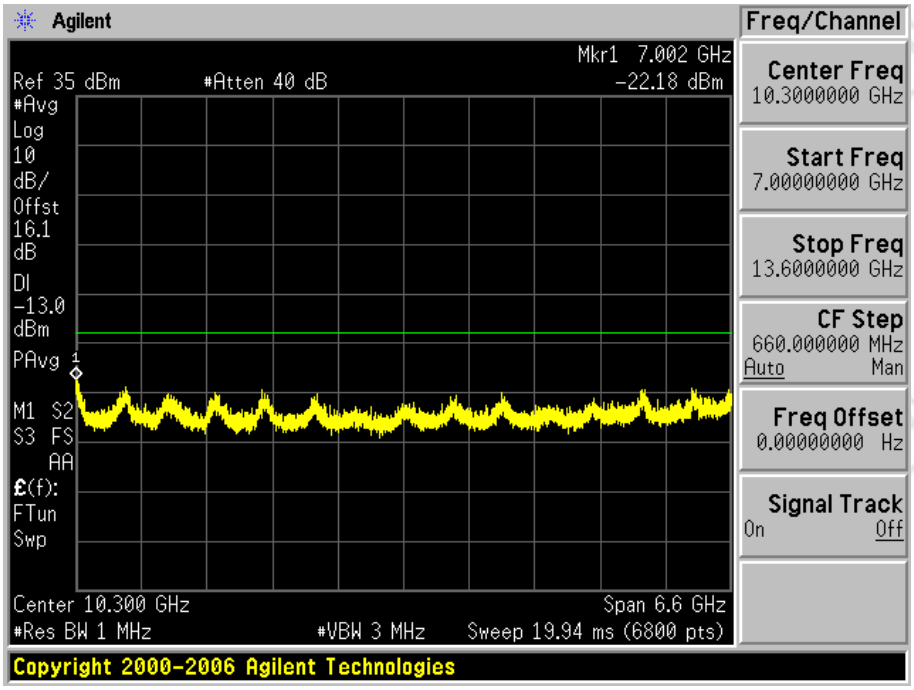
1.2.1.2 Test Channel=MCH

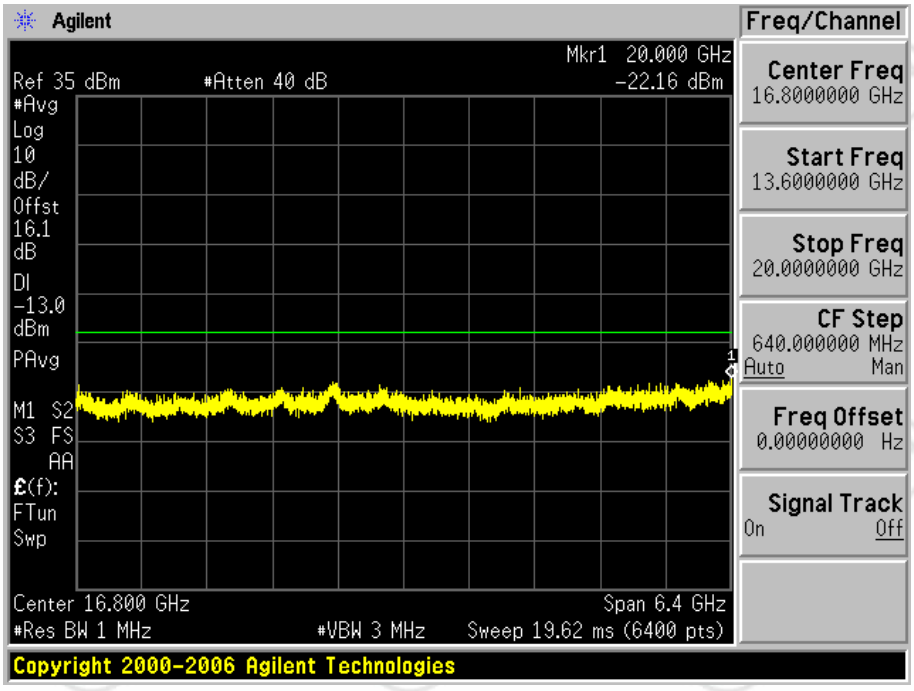




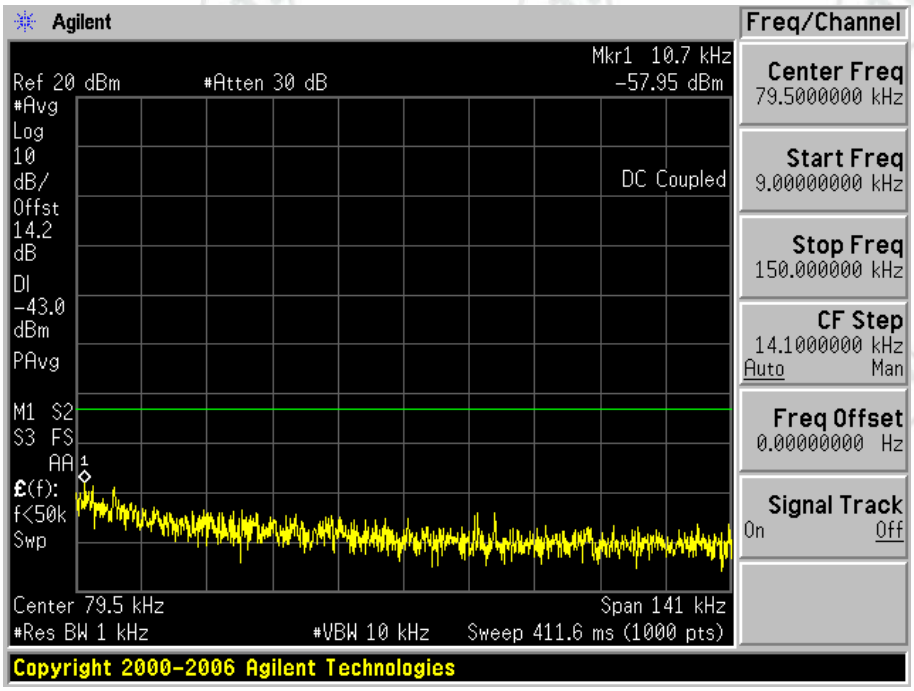

Agilent
Freq/Channel
Mkr1 459.2 MHz
Ref 35 dBm
#Atten 40 dB
-32.23 dBm
#Avg
Log
10
dB/
Offst
14
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 515.0 MHz
Span 970 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 2.997 ms (1000 pts)
Copyright 2000-2006 Agilent Technologies

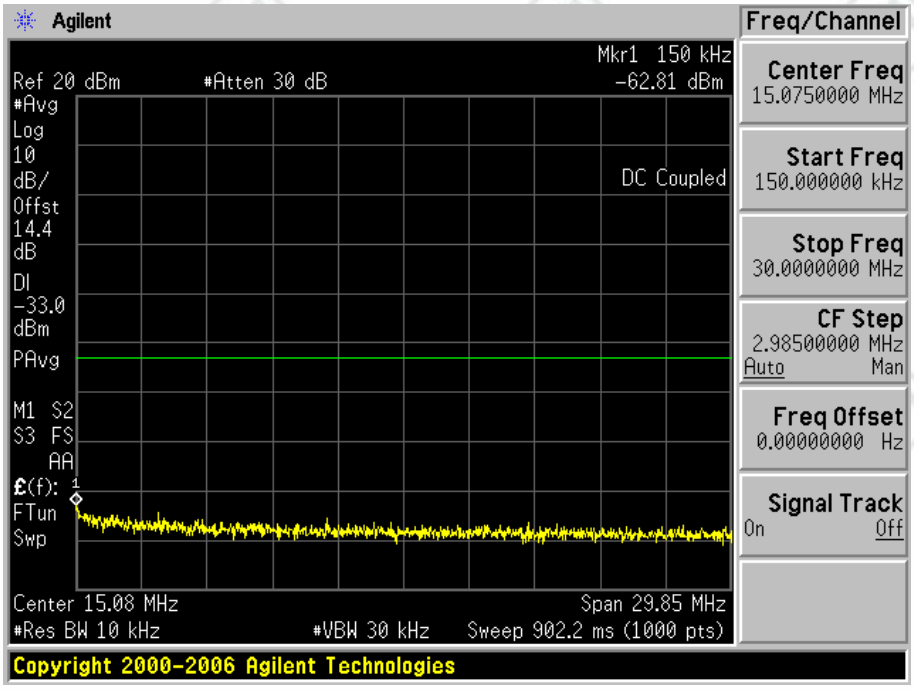

Agilent
Freq/Channel
Mkr2 4.192 GHz
Ref 35 dBm
#Atten 40 dB
-21.62 dBm
#Avg
Log
10
dB/
Offst
16.1
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
4.00000000 GHz
Start Freq
1.00000000 GHz
Stop Freq
7.00000000 GHz
CF Step
600.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 4.000 GHz
Span 6 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 18.18 ms (6200 pts)
Copyright 2000-2006 Agilent Technologies

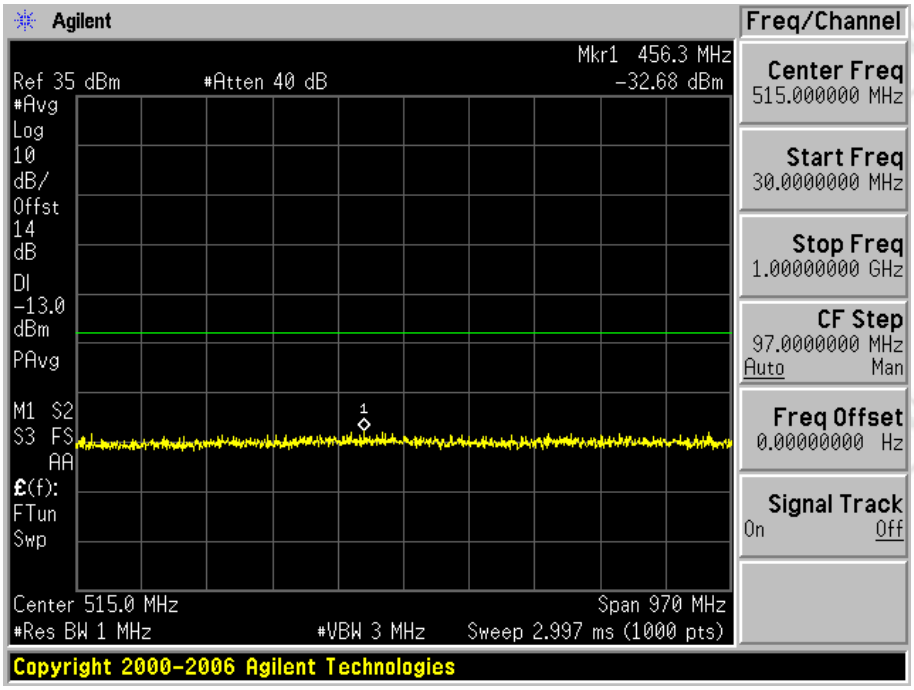

Agilent
Freq/Channel
Mkr1 7.002 GHz
Ref 35 dBm
#Atten 40 dB
-22.18 dBm
#Avg
Log
10
dB/
Offst
16.1
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
10.3000000 GHz
Start Freq
7.00000000 GHz
Stop Freq
13.6000000 GHz
CF Step
660.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 10.300 GHz
Span 6.6 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 19.94 ms (6800 pts)
Copyright 2000-2006 Agilent Technologies

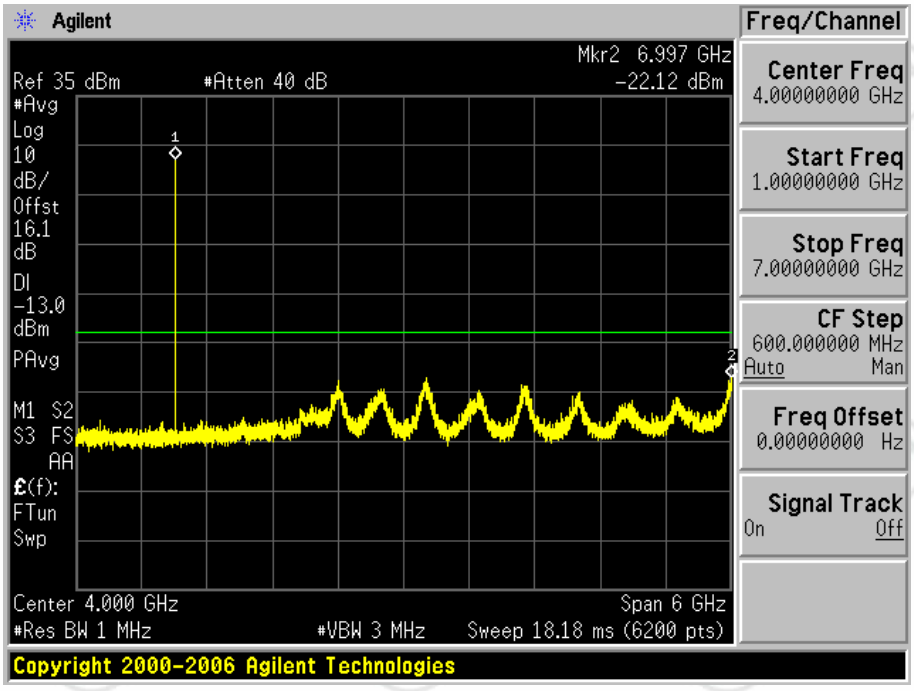

Agilent
Freq/Channel
Mkr1 20.000 GHz
Ref 35 dBm
#Atten 40 dB
-22.16 dBm
#Avg
Log
10
dB/
Offst
16.1
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
16.8000000 GHz
Start Freq
13.6000000 GHz
Stop Freq
20.0000000 GHz
CF Step
640.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 16.800 GHz
Span 6.4 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 19.62 ms (6400 pts)
Copyright 2000-2006 Agilent Technologies

1.2.1.3 Test Channel=HCH






Agilent
Freq/Channel
Mkr1 456.3 MHz
Ref 35 dBm
#Atten 40 dB
-32.68 dBm
#Avg
Log
10
dB/
Offst
14
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 515.0 MHz
Span 970 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 2.997 ms (1000 pts)
Copyright 2000-2006 Agilent Technologies


Agilent
Freq/Channel
Mkr2 6.997 GHz
Ref 35 dBm
#Atten 40 dB
-22.12 dBm
#Avg
Log
10
dB/
Offst
16.1
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center Freq
4.00000000 GHz
Start Freq
1.00000000 GHz
Stop Freq
7.00000000 GHz
CF Step
600.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 4.000 GHz
Span 6 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 18.18 ms (6200 pts)
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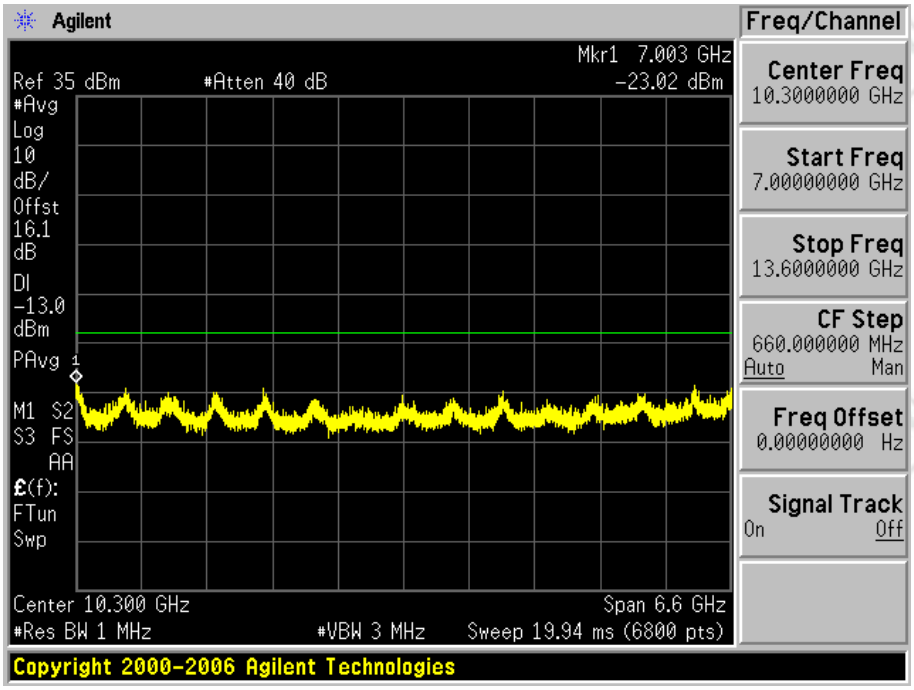
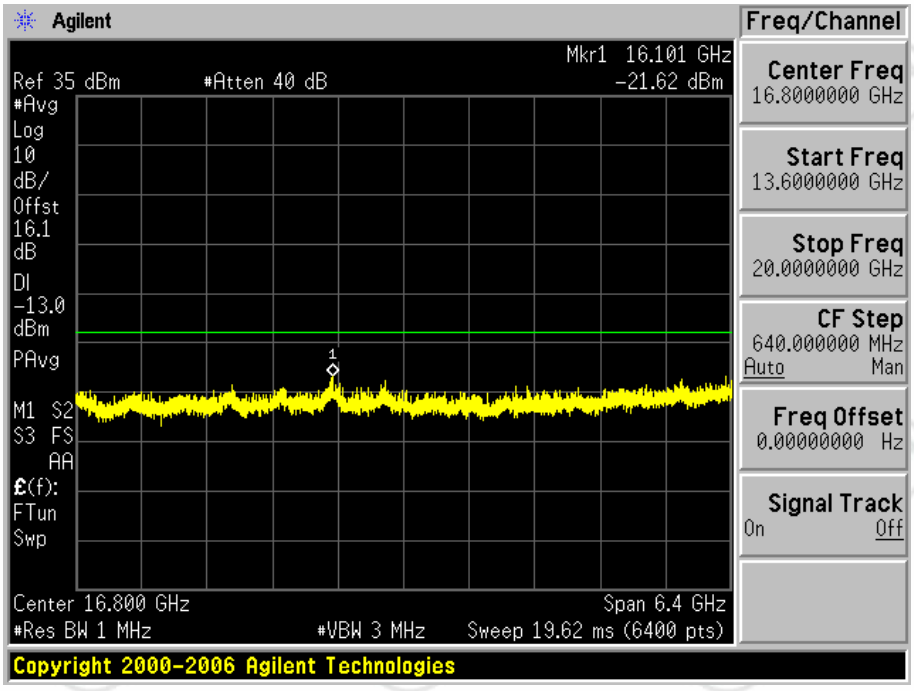

Agilent
Freq/Channel
Mkr1 7.003 GHz
Ref 35 dBm
#Atten 40 dB
-23.02 dBm
#Avg
Log
10
dB/
Offst
16.1
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center 10.300 GHz
Span 6.6 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 19.94 ms (6800 pts)
Center Freq
10.3000000 GHz
Start Freq
7.00000000 GHz
Stop Freq
13.6000000 GHz
CF Step
660.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2006 Agilent Technologies


Agilent
Freq/Channel
Mkr1 16.101 GHz
Ref 35 dBm
#Atten 40 dB
-21.62 dBm
#Avg
Log
10
dB/
Offst
16.1
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FS
AA
£(f):
FTun
Swp
Center 16.800 GHz
Span 6.4 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 19.62 ms (6400 pts)
Center Freq
16.8000000 GHz
Start Freq
13.6000000 GHz
Stop Freq
20.0000000 GHz
CF Step
640.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
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Appendix F)Frequency Stability

Test Requirement:	Part 2.1055
Test Method:	TIA-603-E-2016 Clause 2.2.2
Test Setup:	Refer to section 5 for details
Measurement Procedure:	The transmitter output was connected to a calibrated coaxial cable and a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel).The EUT was place in the temperature chamber, the DC leads and RF output cable exited the chamber though an opening made for that purpose. After Operate the equipment in standby conditions for 15 minutes before proceeding. The temperature was varied from -30°C to +55°C at intervals of not more than 10°C The frequency stability was read from the base station.Since the EUT is hand carried,battery powered equipment,at 25°C the input voltage was reduced from 3.7V(primary supply voltage) to 3.1V(end point voltage), the frequency stability and input voltage was record.
Instruments Used:	Refer to section 7 for details
Limit:	Operation Band: Frequency stability Limit(ppm) GPRS/EDGE/WCDMA 850: ±2.5ppm GPRS/EDGE/WCDMA 1900: ---
Test Results:	Pass

Test Data:
Frequency Error vs. Voltage:

(VL is 3.3V, VN is 3.7V, VH is 4.2V)

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	-14.21	-0.017241	±2.5	PASS
			TN	VN	-9.75	-0.011830	±2.5	PASS
			TN	VH	-12.27	-0.014887	±2.5	PASS
		MCH	TN	VL	-7.68	-0.009180	±2.5	PASS
			TN	VN	-8.72	-0.010423	±2.5	PASS
			TN	VH	-3.29	-0.003933	±2.5	PASS
		HCH	TN	VL	-1.74	-0.002050	±2.5	PASS
			TN	VN	27.31	0.032175	±2.5	PASS
			TN	VH	-4.65	-0.005478	±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	-31.25	-0.016890	±2.5	PASS
			TN	VN	-28.80	-0.015566	±2.5	PASS
			TN	VH	-29.06	-0.015706	±2.5	PASS
		MCH	TN	VL	-36.55	-0.019441	±2.5	PASS
			TN	VN	-33.06	-0.017585	±2.5	PASS
			TN	VH	-33.51	-0.017824	±2.5	PASS
		HCH	TN	VL	-30.35	-0.015892	±2.5	PASS
			TN	VN	-29.51	-0.015452	±2.5	PASS
			TN	VH	-30.93	-0.016195	±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	TM2	LCH	VN	-30	-11.43	-0.013868	±2.5	PASS
			VN	-20	-18.34	-0.022252	±2.5	PASS
			VN	-10	-18.53	-0.022482	±2.5	PASS
			VN	0	-15.30	-0.018563	±2.5	PASS
			VN	10	-16.79	-0.020371	±2.5	PASS
			VN	20	-15.56	-0.018879	±2.5	PASS
			VN	30	-19.76	-0.023975	±2.5	PASS
			VN	40	-15.82	-0.019194	±2.5	PASS
			VN	50	-17.31	-0.021002	±2.5	PASS
GSM850	TM2	MCH	VN	-30	-7.30	-0.008726	±2.5	PASS
			VN	-20	-13.62	-0.016280	±2.5	PASS
			VN	-10	-15.37	-0.018372	±2.5	PASS
			VN	0	-9.75	-0.011654	±2.5	PASS
			VN	10	-10.01	-0.011965	±2.5	PASS
			VN	20	-11.49	-0.013734	±2.5	PASS
			VN	30	-12.46	-0.014894	±2.5	PASS
			VN	40	-14.85	-0.017750	±2.5	PASS
			VN	50	-8.27	-0.009885	±2.5	PASS
GSM850	TM2	HCH	VN	-30	-6.52	-0.007681	±2.5	PASS
			VN	-20	-2.13	-0.002509	±2.5	PASS
			VN	-10	-7.81	-0.009201	±2.5	PASS
			VN	0	-9.94	-0.011711	±2.5	PASS
			VN	10	-8.27	-0.009743	±2.5	PASS
			VN	20	-7.49	-0.008824	±2.5	PASS
			VN	30	-8.59	-0.010120	±2.5	PASS
			VN	40	-7.94	-0.009354	±2.5	PASS
			VN	50	-10.27	-0.012099	±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	-34.93	-0.018879	±2.5	PASS
			VN	-20	-32.80	-0.017728	±2.5	PASS
			VN	-10	-10.27	-0.005551	±2.5	PASS
			VN	0	-12.40	-0.006702	±2.5	PASS
			VN	10	-32.48	-0.017555	±2.5	PASS
			VN	20	-38.48	-0.020798	±2.5	PASS
			VN	30	-25.51	-0.013788	±2.5	PASS
			VN	40	-35.90	-0.019403	±2.5	PASS
			VN	50	-28.15	-0.015215	±2.5	PASS
GSM1900	TM2	MCH	VN	-30	-32.54	-0.017309	±2.5	PASS
			VN	-20	-34.09	-0.018133	±2.5	PASS
			VN	-10	-28.99	-0.015420	±2.5	PASS
			VN	0	-24.02	-0.012777	±2.5	PASS
			VN	10	-35.84	-0.019064	±2.5	PASS
			VN	20	-30.35	-0.016144	±2.5	PASS
			VN	30	-23.50	-0.012500	±2.5	PASS
			VN	40	-42.62	-0.022670	±2.5	PASS
			VN	50	-33.13	-0.017622	±2.5	PASS
GSM1900	TM2	HCH	VN	-30	-39.71	-0.020793	±2.5	PASS
			VN	-20	-49.01	-0.025662	±2.5	PASS
			VN	-10	-38.42	-0.020117	±2.5	PASS
			VN	0	-33.71	-0.017651	±2.5	PASS
			VN	10	-30.74	-0.016096	±2.5	PASS
			VN	20	-34.68	-0.018159	±2.5	PASS
			VN	30	-31.12	-0.016295	±2.5	PASS
			VN	40	-53.14	-0.027825	±2.5	PASS
			VN	50	-28.80	-0.015080	±2.5	PASS

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

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	peak	120kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

Measurement Procedure:

Below 1GHz test procedure as below:

1). The EUT was powered ON and placed on a 0.8m high table in the chamber.,mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer.The antenna of the transmitter was extended to its maximum length.

2). 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.

3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4). 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.

5). 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 2) is obtained for this set of conditions.

6). The output power into the substitution antenna was then measured.

7). Steps 5) and 6) were repeated with both antennas polarization.

8). Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)

where:

Pg is the generator output power into the substitution antenna.

Above 1GHz test procedure as below:

1). Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber ; up to 18GHz a measurement distance of 3 meters is used, Above 18GHz the distance is 1 meter.

2). Calculate power in dBm by the following formula:

EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

EIRP=ERP+2.15dB

where:

Pg is the generator output power into the substitution antenna.

3).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	GSM 1900
Frequency	824 – 849MHz	1850 – 1910MHz
Limit	38.45dBm（7W）	33.01dBm（2W）

Measurement Data:

GSM 850							
Channel/fc (MHz)	Height (cm)	Azimuth (deg)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
128/824.2	150	157	28.11	38.45	-10.34	Pass	H
	150	211	30.15	38.45	-8.30	Pass	V
190/836.6	150	235	27.68	38.45	-10.77	Pass	H
	150	116	29.37	38.45	-9.08	Pass	V
251/848.8	150	179	27.33	38.45	-11.12	Pass	H
	150	138	28.91	38.45	-9.54	Pass	V

GSM 1900							
Channel/fc (MHz)	Height (cm)	Azimuth (deg)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
512/1850.2	150	211	26.92	33.01	-6.09	Pass	H
	150	130	27.53	33.01	-5.48	Pass	V
661/1880.0	150	150	25.88	33.01	-7.13	Pass	H
	150	163	27.75	33.01	-5.26	Pass	V
810/1909.8	150	174	25.53	33.01	-7.48	Pass	H
	150	179	26.89	33.01	-6.12	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	120kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

Measurement Procedure:

Below 1GHz test procedure as below:

1). The EUT was powered ON and placed on a 0.8m high table in the chamber, mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer.The antenna of the transmitter was extended to its maximum length.

2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made(the radiation measurements are performed in X, Y, Z axis positioning be lower 30 MHz.)

3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4). 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.

5). 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 2) is obtained for this set of conditions.

6). The output power into the substitution antenna was then measured.

7). Steps 5) and 6) were repeated with both antennas polarized and EUT .

8) Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)

where:

Pg is the generator output power into the substitution antenna.

Above 1GHz test procedure as below:

1)Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber ; up to 18GHz a measurement distance of 3 meters is used, Above 18GHz the distance is 1 meter.

2) Calculate power in dBm by the following formula:

EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

EIRP=ERP+2.15dB

where:

Pg is the generator output power into the substitution antenna.

3.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: Attenuated at least 43+10log(P)

Test data:

GSM 850 128channel/824.2MHz(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1195.049	149	14	-55.83	-13.00	-42.83	Pass	H
1884.829	150	124	-50.15	-13.00	-37.15	Pass	H
3299.775	150	360	-51.18	-13.00	-38.18	Pass	H
3480.968	150	359	-51.00	-13.00	-38.00	Pass	H
4117.785	151	147	-47.65	-13.00	-34.65	Pass	H
7413.726	150	124	-43.05	-13.00	-30.05	Pass	H
1195.049	151	78	-56.53	-13.00	-43.53	Pass	V
1646.948	150	99	-55.98	-13.00	-42.98	Pass	V
2358.071	150	147	-56.31	-13.00	-43.31	Pass	V
4117.785	149	154	-49.19	-13.00	-36.19	Pass	V
6094.137	150	167	-48.93	-13.00	-35.93	Pass	V
7432.622	150	347	-45.33	-13.00	-32.33	Pass	V

GSM 850 190channel/836.6MHz(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1195.049	151	226	-55.13	-13.00	-42.13	Pass	H
1672.296	150	21	-55.79	-13.00	-42.79	Pass	H
3507.652	150	360	-51.05	-13.00	-38.05	Pass	H
4181.159	151	70	-51.81	-13.00	-38.81	Pass	H
5880.782	150	148	-48.92	-13.00	-35.92	Pass	H
7527.826	149	97	-46.80	-13.00	-33.80	Pass	H
1195.049	149	27	-56.57	-13.00	-43.57	Pass	V
1630.264	150	100	-57.62	-13.00	-44.62	Pass	V
3525.555	151	359	-53.15	-13.00	-40.15	Pass	V
4181.159	150	20	-48.92	-13.00	-35.92	Pass	V
5865.832	150	147	-48.73	-13.00	-35.73	Pass	V
7527.826	150	100	-46.32	-13.00	-33.32	Pass	V

GSM 850 251channel/848.8MHz(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1195.049	151	351	-55.78	-13.00	-42.78	Pass	H
1711.050	150	200	-55.09	-13.00	-42.09	Pass	H
3570.714	149	316	-52.19	-13.00	-39.19	Pass	H
4245.509	149	100	-51.20	-13.00	-38.20	Pass	H
6017.064	150	79	-49.00	-13.00	-36.00	Pass	H
7643.683	151	10	-49.02	-13.00	-36.02	Pass	H
1195.049	150	47	-56.90	-13.00	-43.90	Pass	V
1958.189	150	100	-55.23	-13.00	-42.23	Pass	V
3507.652	149	360	-52.19	-13.00	-39.19	Pass	V
4245.509	149	70	-47.33	-13.00	-34.33	Pass	V
4594.102	150	27	-54.86	-13.00	-41.86	Pass	V
6799.064	151	210	-45.56	-13.00	-32.56	Pass	V

GSM1900 512channel/1850.2MHz(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1260.67	151	360	-60.54	-13.00	-47.54	Pass	H
3003.173	150	121	-55.84	-13.00	-42.84	Pass	H
4343.896	150	110	-54.48	-13.00	-41.48	Pass	H
5646.079	150	11	-50.92	-13.00	-37.92	Pass	H
6094.137	150	169	-49.43	-13.00	-36.43	Pass	H
7413.726	149	64	-47.86	-13.00	-34.86	Pass	H
1254.268	150	278	-60.04	-13.00	-47.04	Pass	V
1605.554	151	200	-58.01	-13.00	-45.01	Pass	V
3480.968	150	220	-55.59	-13.00	-42.59	Pass	V
5910.798	152	360	-49.38	-13.00	-36.38	Pass	V
7413.726	149	359	-44.67	-13.00	-31.67	Pass	V
9251.58	150	341	-51.19	-13.00	-38.19	Pass	V

GSM1900 661channel/1880MHz(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1127.091	151	39	-60.81	-13.00	-47.81	Pass	H
1319.777	150	360	-59.61	-13.00	-46.61	Pass	H
3010.828	150	70	-55.52	-13.00	-42.52	Pass	H
4617.55	149	61	-54.43	-13.00	-41.43	Pass	H
5986.509	150	359	-48.53	-13.00	-35.53	Pass	H
7527.826	151	241	-47.3	-13.00	-34.3	Pass	H
1316.422	150	289	-59.9	-13.00	-46.9	Pass	V
3010.828	150	10	-55.99	-13.00	-42.99	Pass	V
4128.28	151	100	-55.55	-13.00	-42.55	Pass	V
5420.742	150	110	-51.99	-13.00	-38.99	Pass	V
6511.117	149	79	-49.67	-13.00	-36.67	Pass	V
7527.826	151	64	-48.6	-13.00	-35.6	Pass	V

GSM1900 810channel/1909.8MHz(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1273.572	151	79	-60.35	-13.00	-47.35	Pass	H
1506.563	149	146	-59.27	-13.00	-46.27	Pass	H
3561.636	150	100	-55.44	-13.00	-42.44	Pass	H
4343.896	150	255	-53.63	-13.00	-40.63	Pass	H
6078.644	151	10	-48.99	-13.00	-35.99	Pass	H
7009.956	150	360	-51.57	-13.00	-38.57	Pass	H
1192.011	150	79	-60.17	-13.00	-47.17	Pass	V
1646.948	150	51	-57.71	-13.00	-44.71	Pass	V
3291.385	151	200	-55.35	-13.00	-42.35	Pass	V
4354.967	150	249	-54.08	-13.00	-41.08	Pass	V
6078.644	149	78	-48.49	-13.00	-35.49	Pass	V
9562.854	150	100	-49.51	-13.00	-36.51	Pass	V

Note:

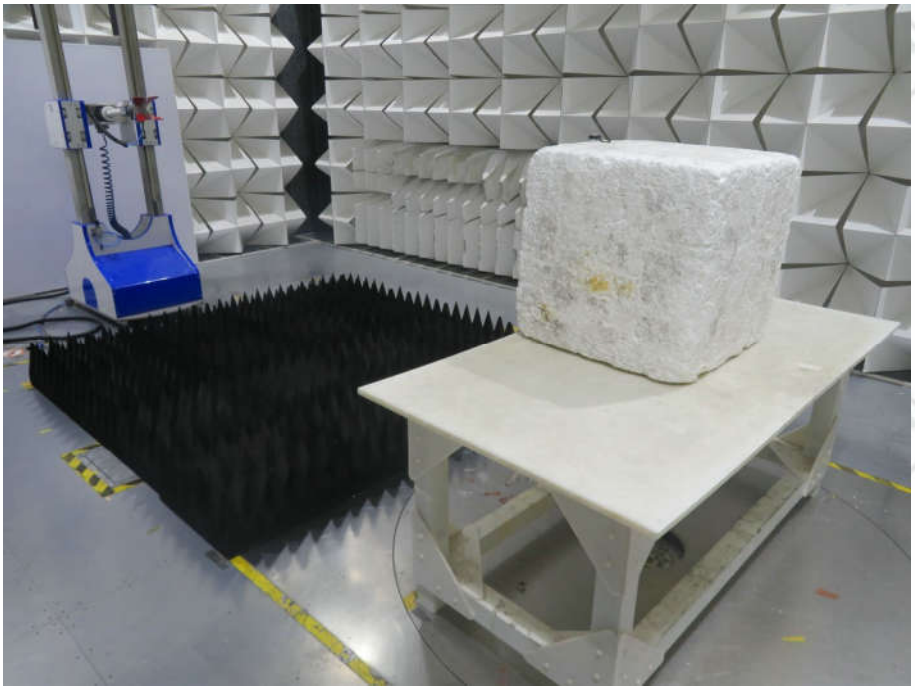
1) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below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

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Test model No.: TK001

Radiated spurious emission Test Setup-1(9kHz-30MHz)

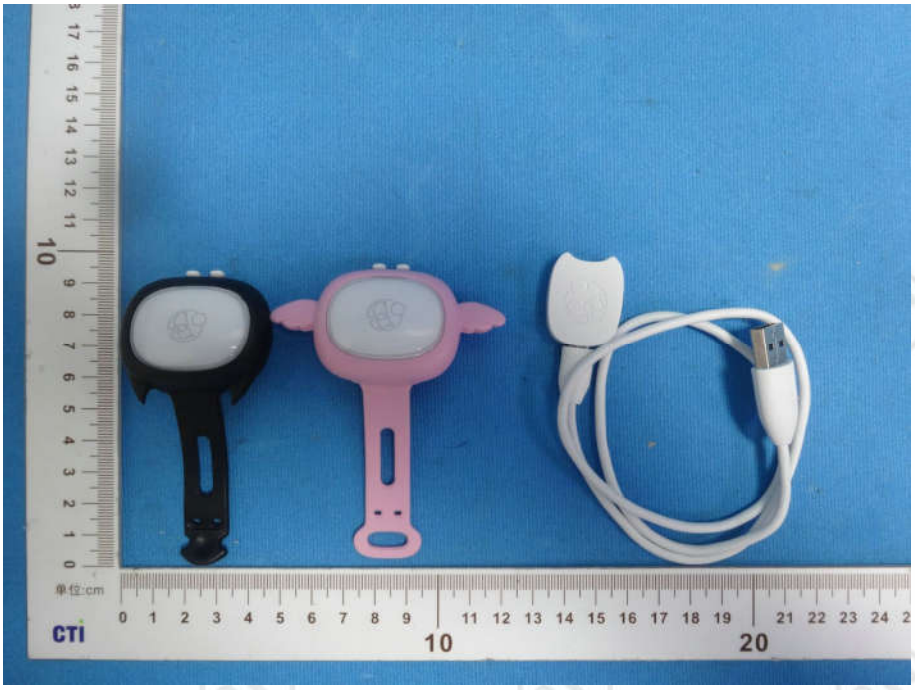
Radiated spurious emission Test Setup-2(Below 1GHz)



Radiated spurious emission Test Setup-3(Above 1GHz)

APPENDIX 2 PHOTOGRAPHS OF EUT

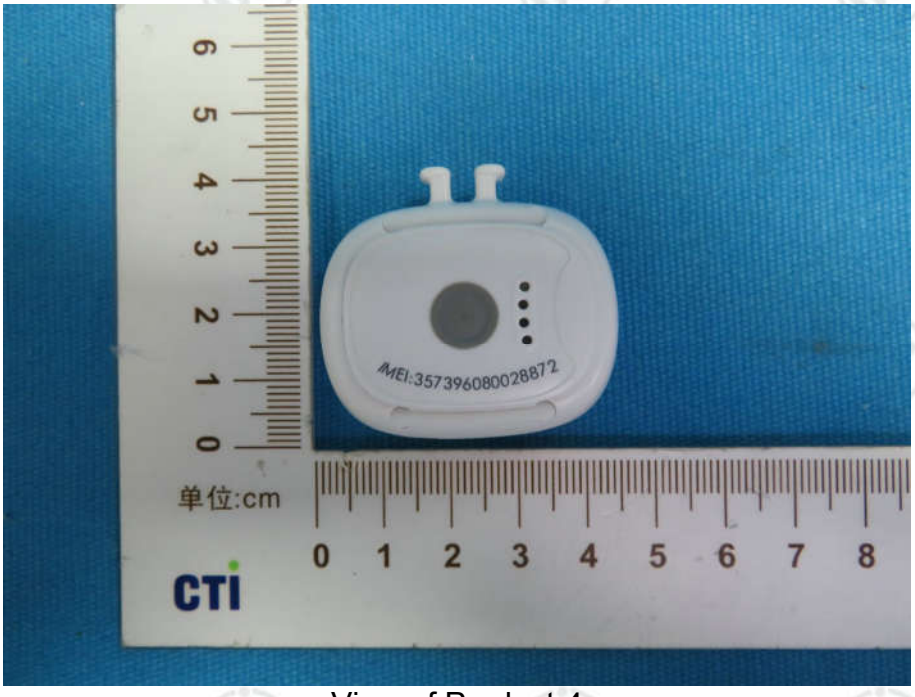
Test model No.: TK001



View of Product-1

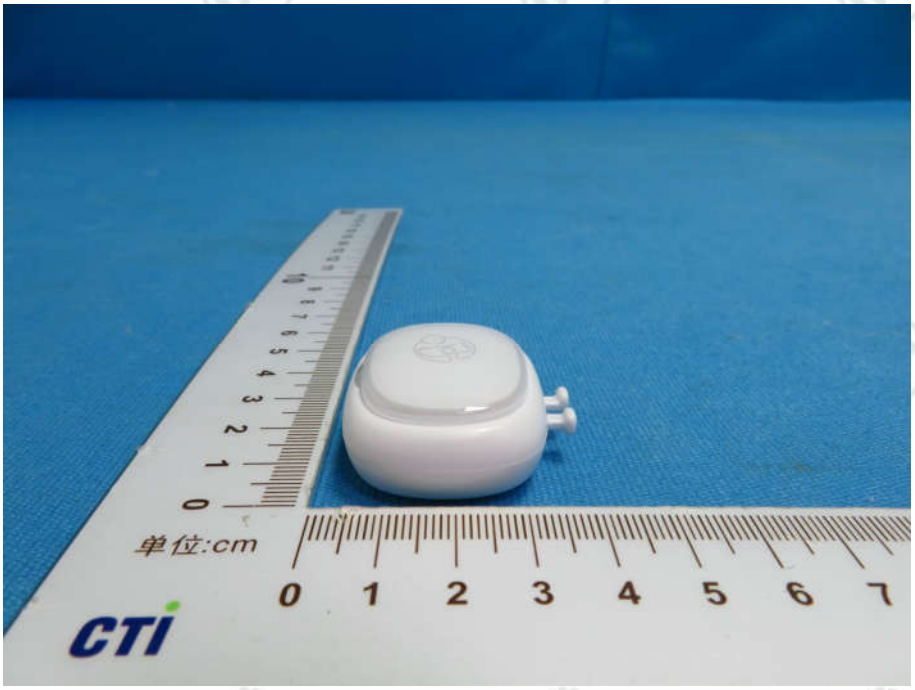
View of Product-2

View of Product-3



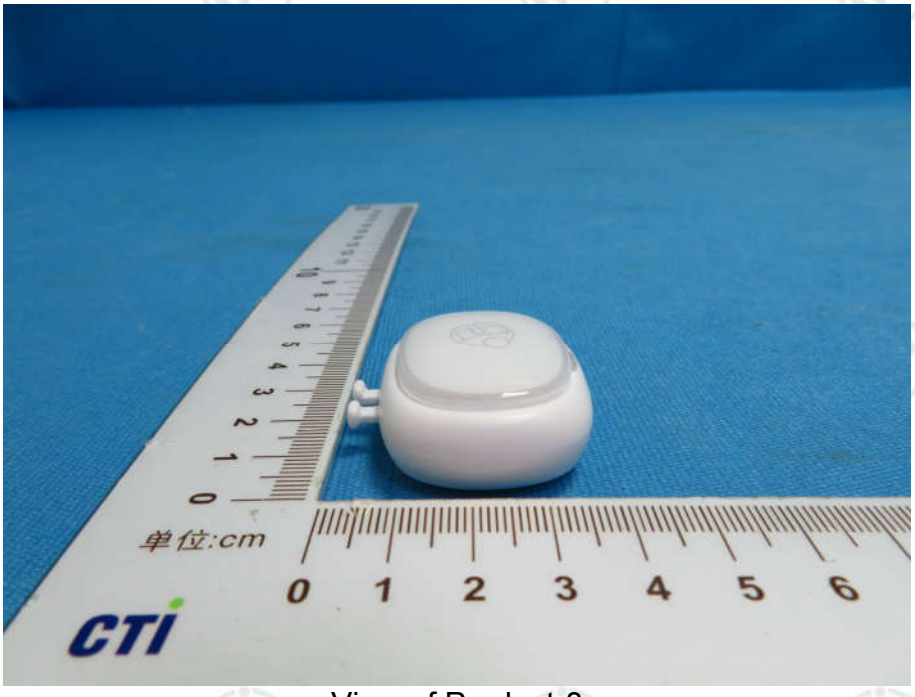
View of Product-4

View of Product-5

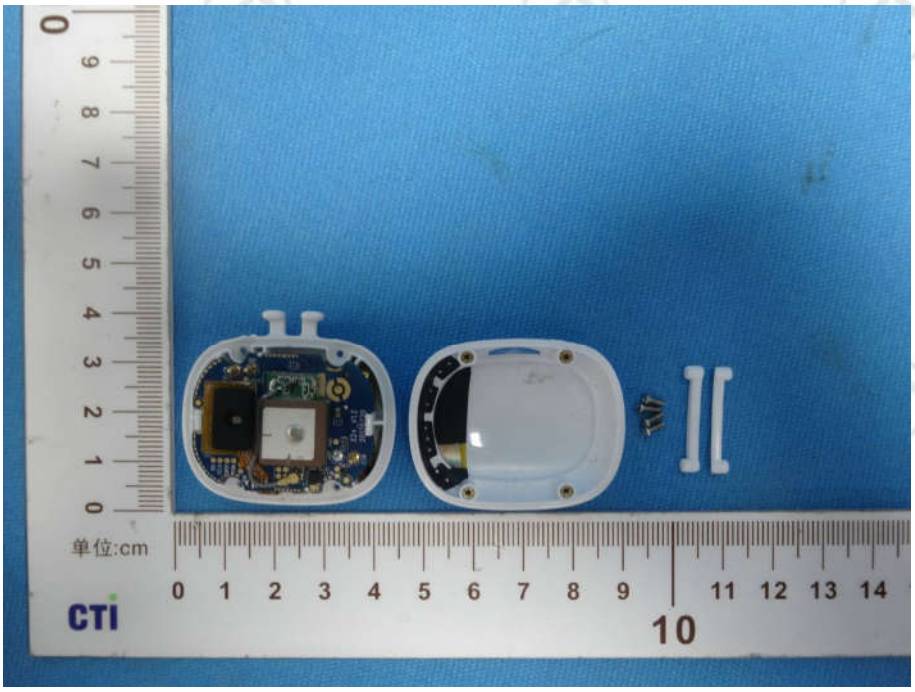


View of Product-6

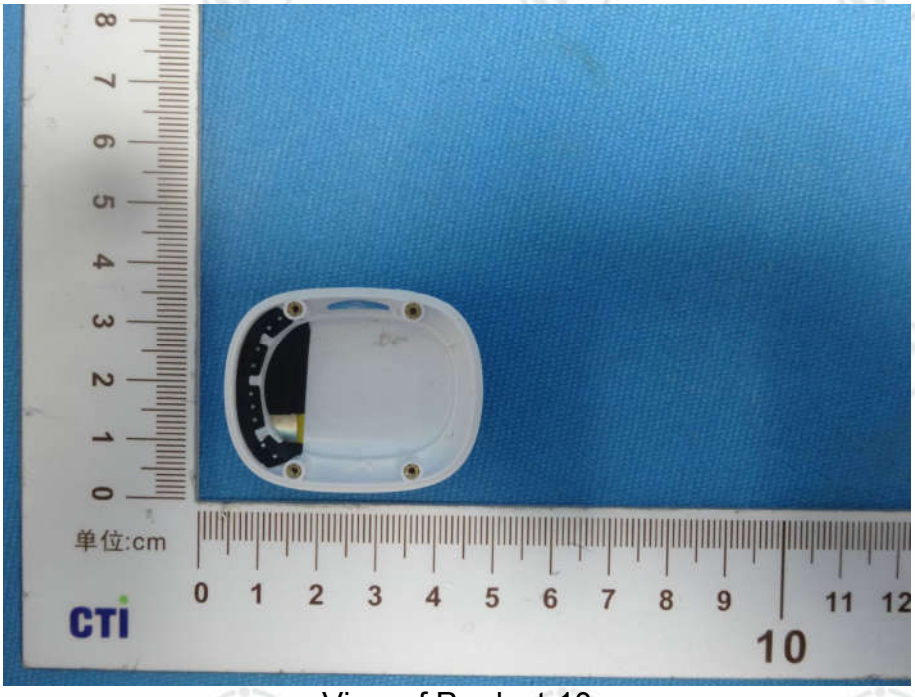
View of Product-7



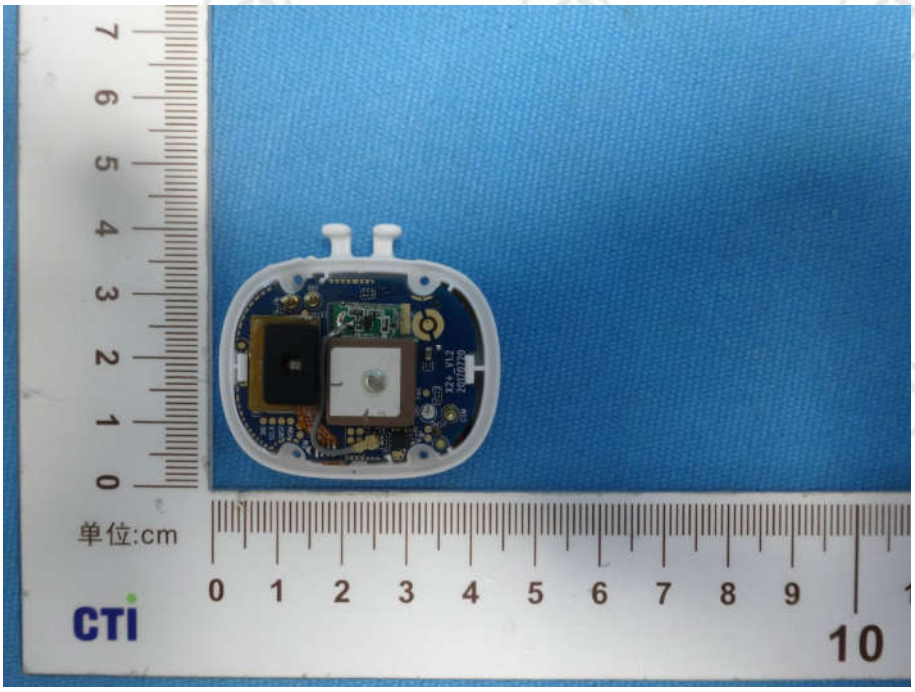
View of Product-8



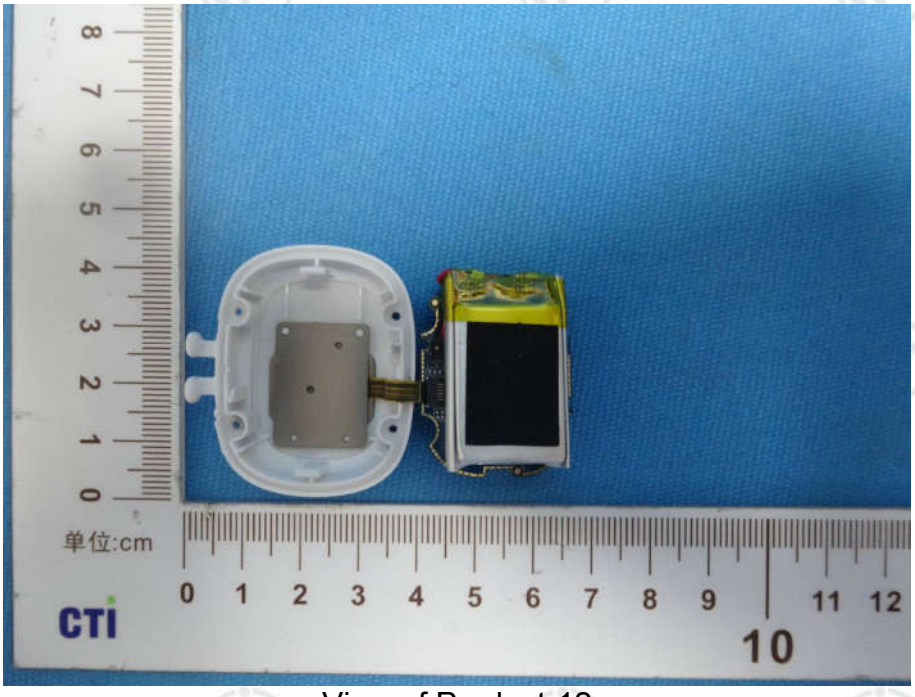
View of Product-9



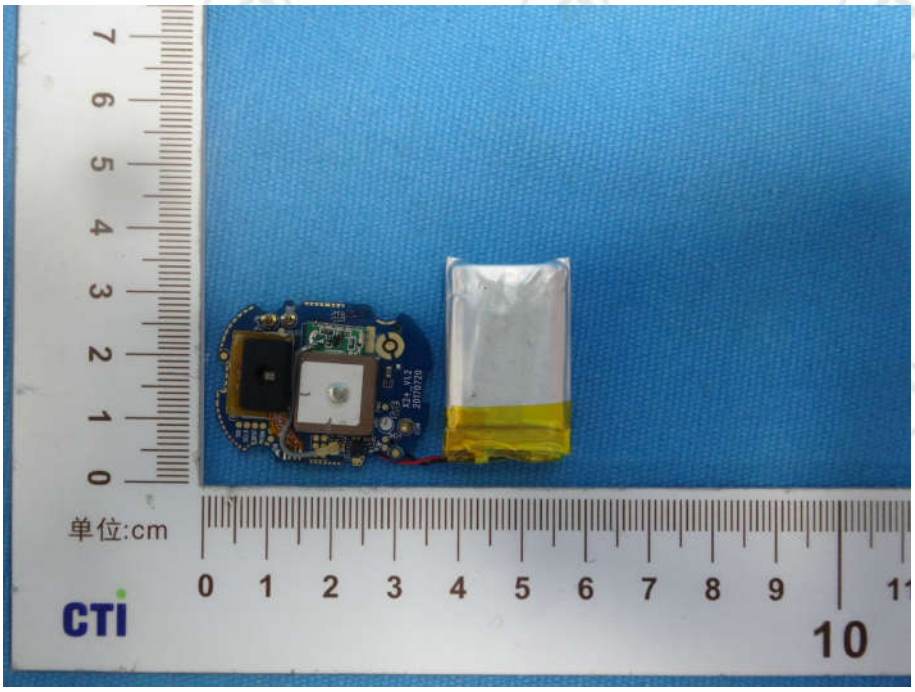
View of Product-10



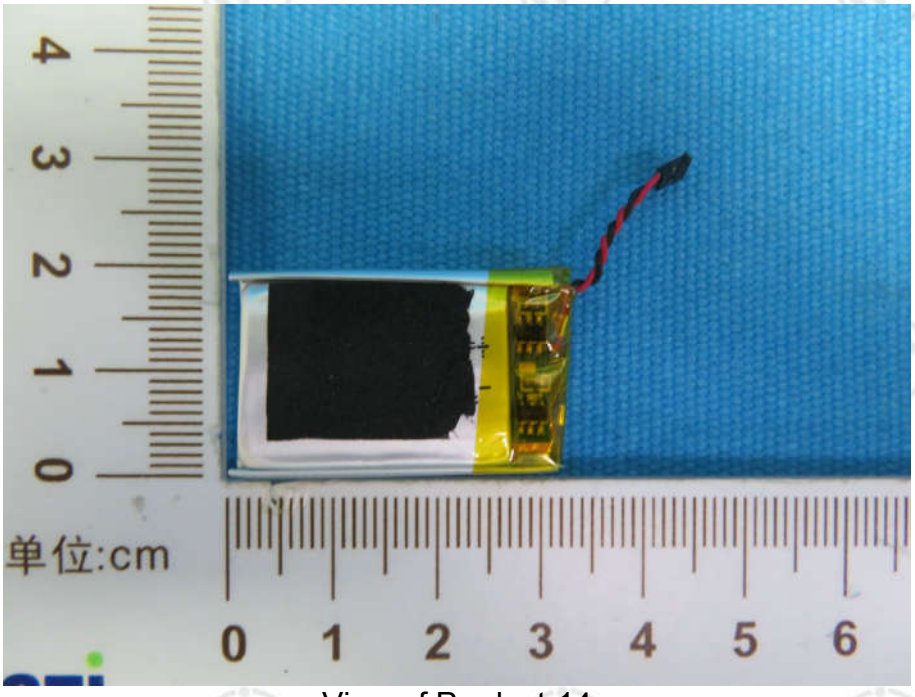
View of Product-11



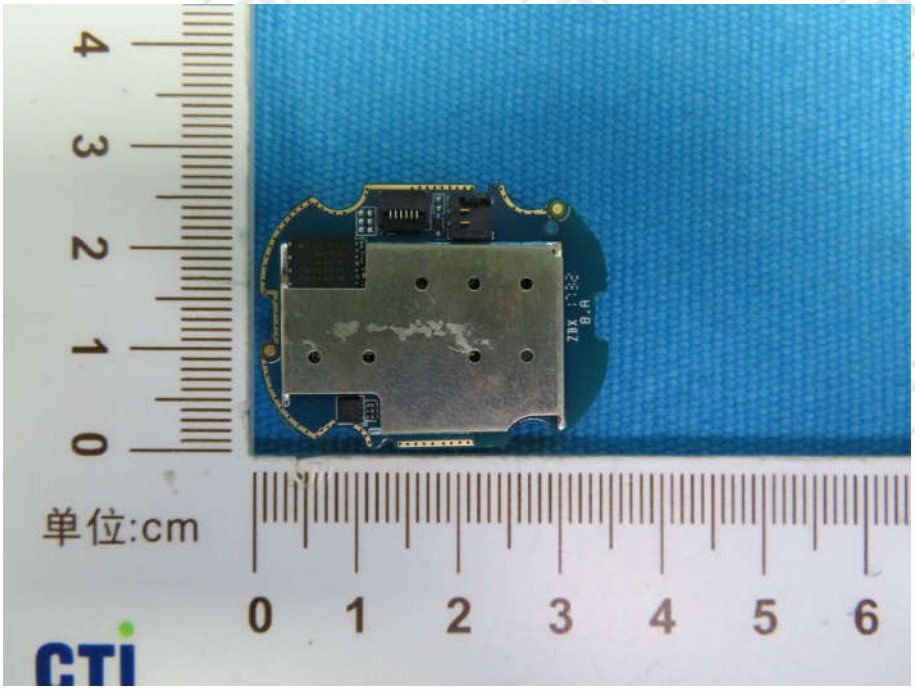
View of Product-12



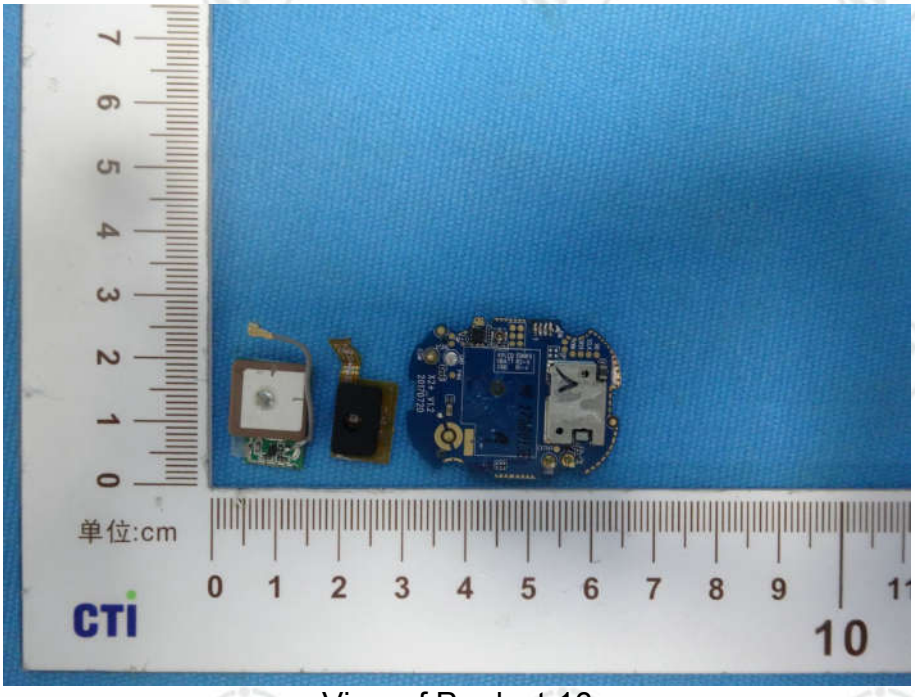
View of Product-13



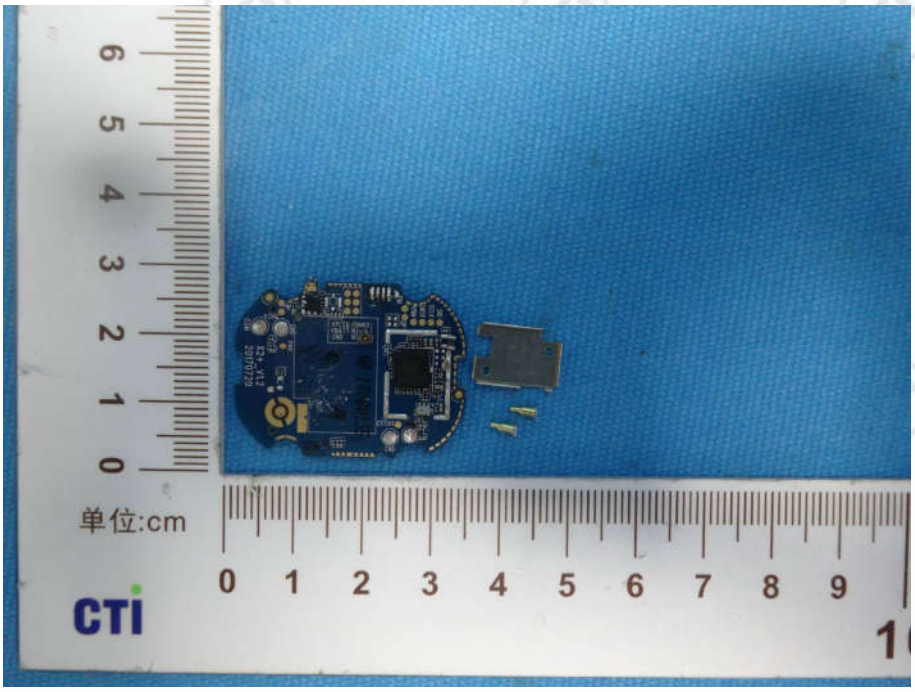
View of Product-14



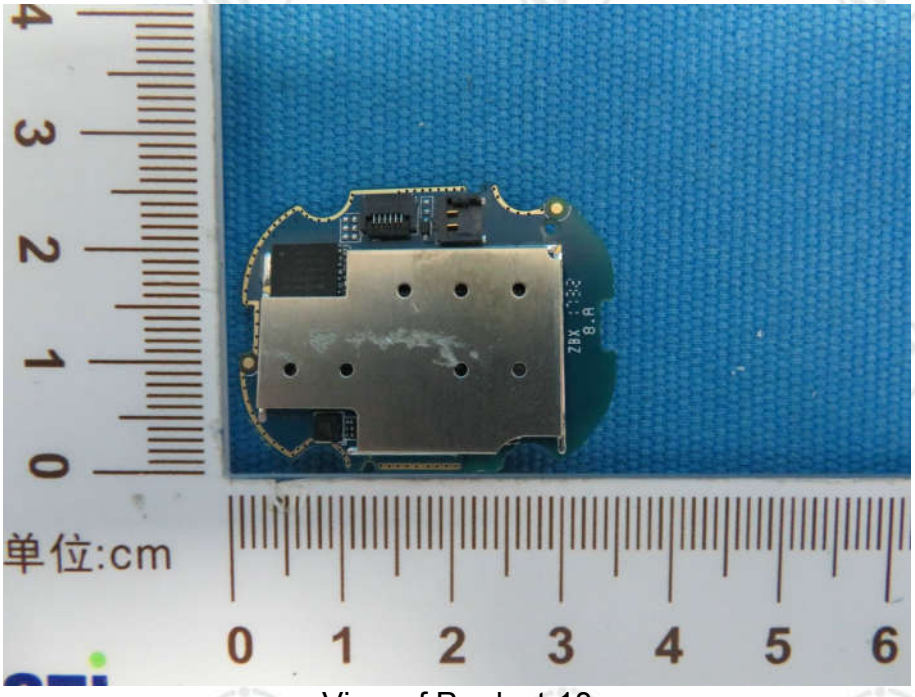
View of Product-15



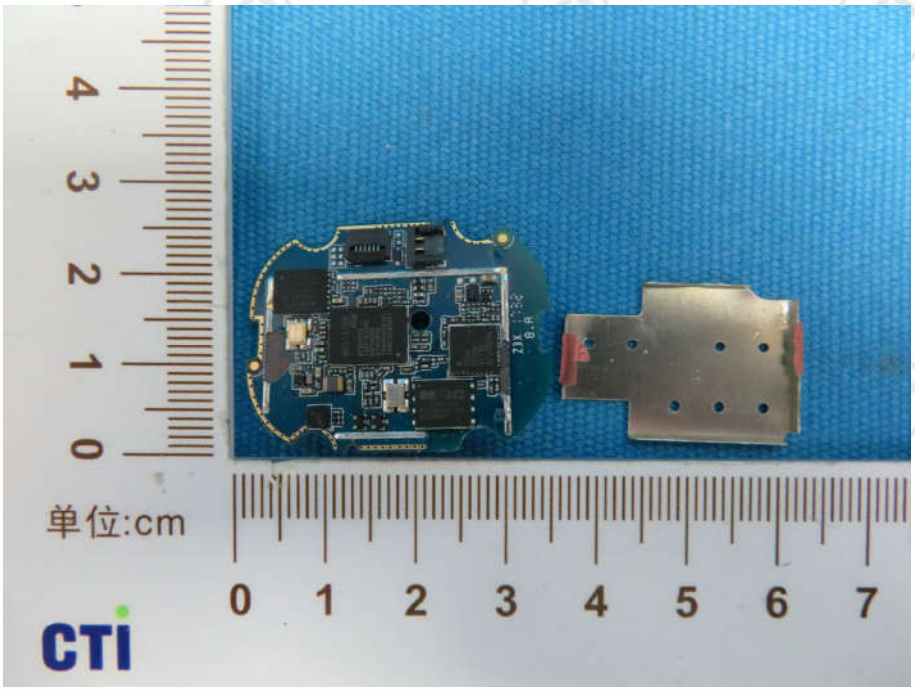
View of Product-16



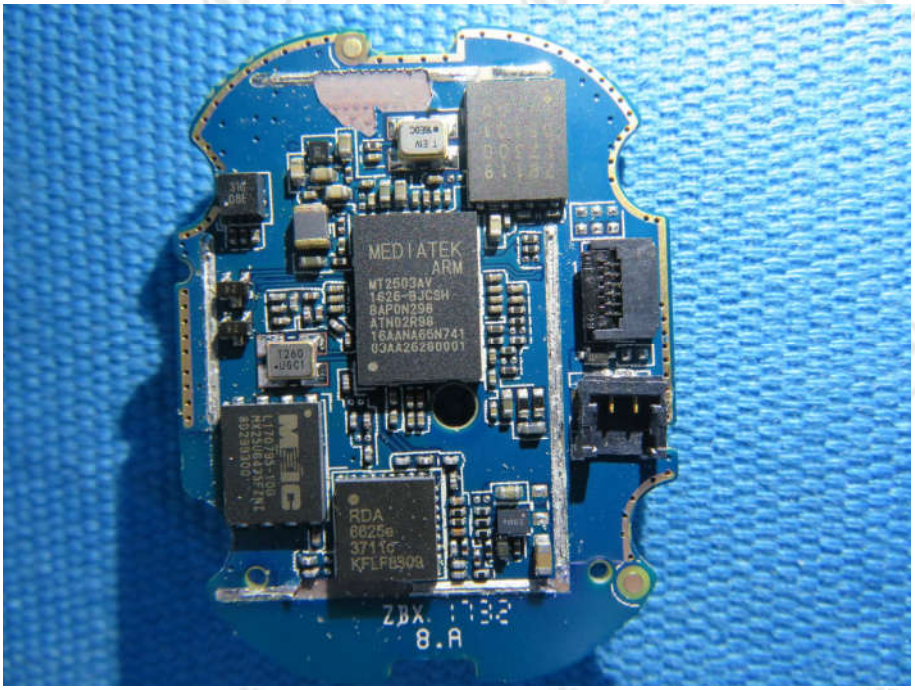
View of Product-17



View of Product-18



View of Product-19



View of Product-20

*** End of Report ***