FCC Part22H&24E Test Report

Product Name	:	GSM Mobile Phone
Model No.	:	NX188
FCC ID	:	YSENX188

Applicant	:	Nexus telecom inc
Address	:	2 calle 21-12 zona 15 VH2 Guatemala, Guatemala

Date of Receipt	:	Sep. 26, 2010
Test Date	:	Sep. 26, 2010 ~ Oct. 07, 2010
Issued Date	:	Oct. 08, 2010
Report No.	:	109S032R-HP-US-P07V01
Report Version	:	V 1.0

Test Report Certification

Issued Date : Oct. 08, 2010
Report No. : 109S032R-HP-US-P07V01

QuieTek

Product Name	:	GSM Mobile Phone
Applicant	:	Nexus telecom inc
Address	:	2 calle 21-12 zona 15 VH2 Guatemala, Guatemala
Manufacturer	:	Nexus telecom inc
Address	:	2 calle 21-12 zona 15 VH2 Guatemala, Guatemala
Model No.	:	NX188
FCC ID	:	YSENX188
EUT Voltage	:	DC 3.7V
Trade Name	:	NEXUS
Applicable Standard	:	FCC Part22 Subpart H, FCC Part24 Subpart E TIA-EIA 603C: 2004
Test Result	:	Complied
Performed Location	:	SuZhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., SuZhou, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392

Documented By : Alice Ni

(Engineering ADM: Alice Ni)

Reviewed By : Marlin Chen

(Engineering Supervisor: Marlin Chen)

Approved By : Dream Cao

(Engineering Manager: Dream Cao)

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC, NVLAP**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

NVLAP Lab Code : 200347-0

Testing Laboratory 1313

LinKou Testing Laboratory :
No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen, Lin-Kou Shiang, Taipei, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

NVLAP Lab Code: 200533-0

Testing Laboratory 0914

Suzhou (China) Testing Laboratory :
No. 99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou,China.
TEL : +86-512-6251-5088 / FAX : +86-512-6251-5098 E-Mail : service@quietek.com

NVLAP Lab Code : 200743-0

Testing Laboratory 1596

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1. General Information

1.1. EUT Description

Product Name	GSM Mobile Phone
FCC ID	YSENX188
Trade Name	NEXUS
Model No.	NX188
SW Version	ZL75D_38A0_V1_0_1
HW Version	V4.0
Working Voltage	DC 3.7V
Support Band	GSM850/PCS1900
Tx Frequency Range	GSM 850: 824MHz to 849MHz PCS 1900: 1850MHz to 1910MHz
Rx Frequency Range	GSM 850: 869MHz to 894MHz PCS 1900: 1930MHz to 1990MHz
Type of modulation	GMSK for GSM&GPRS
Peak Antenna Gain	0.3dBi for 820~915MHz 0.8dBi for 1710~1910MHz
AC Adapter	Manufacturer: NEXUS M/N: ZT-666-E0500 Input: 100-300V~50/60Hz 0.15A Output: 5Vdc, 500mA

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: GSM 850 Link
Mode 2: PCS 1900 Link
Mode 3: GPRS 850 Link
Mode 4: GPRS 1900 Link

Note:

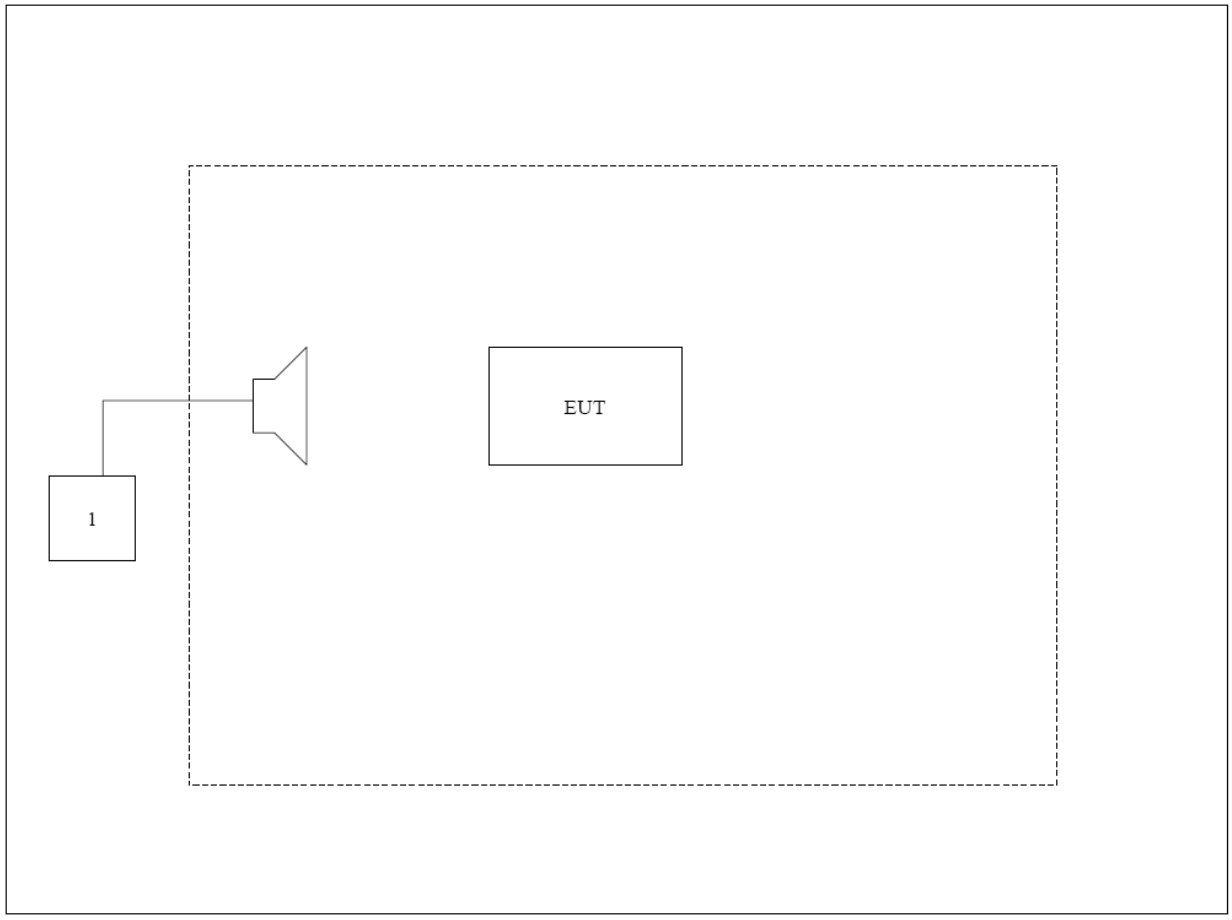
1. Regards to the frequency band operation: the lowest、middle and highest frequency of channel were selected to perform the test, then shown on this report.

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	CMU200	R&S	CMU200	N/A	N/A

1.4. Configuration of Tested System

Connection Diagram	
	
Signal Cable Type	Signal cable Description

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	EUT Communicate with CMU200, then select channel to test.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

For GSM/GPRS 850 (FCC Part 22H & Part 2)

Emission			
Performed Item	Normative References	Test Performed	Deviation
Peak Output Power	FCC Part 22.913(a)(2) and Part 2.1046	Yes	No
Modulation Characteristic	FCC Part 2.1047(d)	Yes	No
Occupied Bandwidth	FCC Part 2.1049	Yes	No
Spurious Emission At Antenna Terminals (+/- 1MHz)	FCC Part 22.917(a) and Part 2.1049	Yes	No
Spurious Emission	FCC Part 22.917(b) and Part 2.1051, 2.1053	Yes	No
Frequency Stability Under Temperature & Voltage Variations	FCC Part 22.355 and 2.1055	Yes	No

For PCS/GPRS 1900 (FCC Part 24E & Part 2)

Emission			
Performed Item	Normative References	Test Performed	Deviation
Peak Output Power	FCC Part 24.232(b) and Part 2.1046	Yes	No
Modulation Characteristic	FCC Part 2.1047(d)	Yes	No
Occupied Bandwidth	FCC Part 24.238(b) and Part 2.1049	Yes	No
Spurious Emission At Antenna Terminals (+/- 1MHz)	FCC Part 24.238(a) and Part 2.1049	Yes	No
Spurious Emission	FCC Part 24.238(b) and Part 2.1051, 2.1053	Yes	No
Frequency Stability Under Temperature & Voltage Variations	FCC Part 24.235 and 2.1055	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	23
Humidity (%RH)	25-75	52
Barometric pressure (mbar)	860-1060	950-1000

3. Peak Output Power

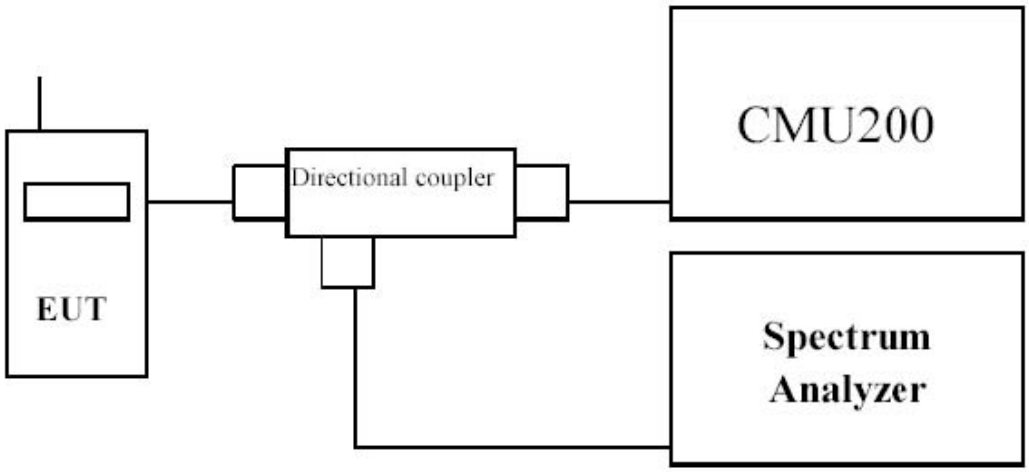
3.1. Test Equipment

Peak Output Power / AC-5

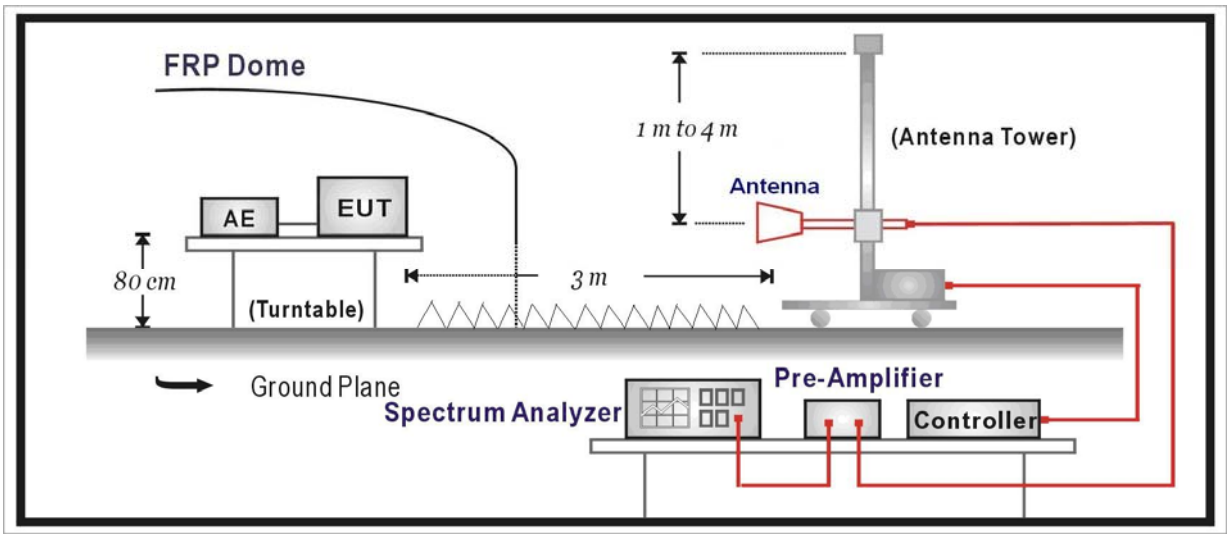
Instrument	Manufacturer	Type No.	Serial No	Cal. Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2010.04.10
Radio Communication Tester	R&S	CMU 200	117088	2010.07.12
Dual Directional Coupler	Agilent	778D	20160	2010.04.20
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2010.04.20
PSG Analog Signal Generator	Agilent	E8257D	MY44321116	2010.04.23
Preamplifier	QuieTek	AP-025C	CHM-0503006	2010.05.05
Preamplifier	Miteq	NSP1800-25	1364185	2010.05.05
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2009.11.12
Half Wave Tuned Dipole Antenna	COM-POWER	AD-100	40137	2009.11.24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	737	2009.11.24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2010.06.11
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2010.01.14

3.2. Test Setup

Conducted Power Measurement:



Radiated Power Measurement:



3.3. Limit

For FCC Part 22.913(a)(2):

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

For FCC Part 24.232(b):

The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 2 Watts.

3.4. Test Procedure

Conducted Power Measurement:

a) Place the EUT on a bench and set it in transmitting mode.

b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
c) EUT Communicate with CMU200, then selects a channel for testing.
d) Add a correction factor to the display of spectrum, and then test.

Radiated Power Measurement:

e) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
f) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
g) The output of the test antenna shall be connected to the measuring receiver.
h) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
i) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
j) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
k) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
l) The maximum signal level detected by the measuring receiver shall be noted.
m) The transmitter shall be replaced by a substitution antenna.
n) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
o) The substitution antenna shall be connected to a calibrated signal generator.
p) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
q) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
r) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
s) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
t) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
u) Test site anechoic chamber refer to ANSI C63.4: 2009.

3.5. Uncertainty

The measurement uncertainty is defined as for Conducted Power Measurement ± 1.2 dB, for Radiated Power Measurement ± 3.2 dB

3.6. Test Result

GSM 850

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	ERP (dBm)	Limit (dBm)
128	824.2	GMSK	32.35	30.01	38.50
189	836.4	GMSK	32.40	29.97	38.50
251	848.8	GMSK	32.26	**31.19**	38.50

PCS1900

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	EIRP (dBm)	Limit (dBm)
512	1850.2	GMSK	29.13	**29.04**	33.00
661	1880.0	GMSK	29.13	28.37	33.00
810	1909.8	GMSK	29.10	26.98	33.00

GPRS 850 (max power output for 1slot)

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	ERP (dBm)	Limit (dBm)
128	824.2	GPRS	32.33	28.81	38.50
189	836.4	GPRS	32.38	28.83	38.50
251	848.8	GPRS	32.24	29.88	38.50

GPRS 1900 (max power output for 1slot)

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	EIRP (dBm)	Limit (dBm)
512	1850.2	GPRS	29.09	28.97	33.00
661	1880.0	GPRS	29.10	28.35	33.00
810	1909.8	GPRS	29.08	26.84	33.00

Note: All conducted measurements are based on a peak detector.

Radiated Measurement

GSM850

Frequency (MHz)	SA Reading (dBm)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
824.2	4.74	H	18.66	1.76	-0.02	16.88	38.50	-21.62
824.2	18.82	V	31.79	1.76	-0.02	30.01	38.50	-8.49
Middle Channel 189 (836.40MHz)								
836.4	4.99	H	18.80	1.75	0.10	17.15	38.50	-21.35
836.4	18.57	V	31.62	1.75	0.10	29.97	38.50	-8.53
High Channel 251 (848.80MHz)								
848.8	6.10	H	19.92	1.78	0.13	18.27	38.50	-20.23
848.8	19.56	V	32.84	1.78	0.13	31.19	38.50	-7.31

PCS1900

Frequency (MHz)	SA Reading (dBm)	Ant .Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
1850.2	32.30	H	16.80	2.68	10.40	24.52	33.00	-8.48
1850.2	35.78	V	21.32	2.68	10.40	29.04	33.00	-3.96
Middle Channel 661 (1880.00MHz)								
1880	30.57	H	15.07	2.68	10.43	22.82	33.00	-10.18
1880	35.09	V	20.62	2.68	10.43	28.37	33.00	-4.63
High Channel 810 (1909.80MHz)								
1909.8	29.94	H	14.47	2.70	10.44	22.21	33.00	-10.79
1909.8	33.78	V	19.24	2.70	10.44	26.98	33.00	-6.02

GPRS850

Frequency (MHz)	SA Reading (dBm)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
824.2	3.08	H	16.84	1.76	-0.02	15.06	38.50	-23.44
824.2	17.63	V	30.59	1.76	-0.02	28.81	38.50	-9.69
Middle Channel 189 (836.40MHz)								
836.4	4.67	H	18.48	1.75	0.10	16.83	38.50	-21.67
836.4	17.42	V	30.48	1.75	0.10	28.83	38.50	-9.67
High Channel 251 (848.80MHz)								
848.8	6.05	H	19.87	1.78	0.13	18.22	38.50	-20.28
848.8	18.26	V	31.53	1.78	0.13	29.88	38.50	-8.62

GPRS1900

Frequency (MHz)	SA Reading (dBm)	Ant. Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
1850.2	33.53	H	18.03	2.68	10.4	25.75	33	-7.25
1850.2	36.85	V	21.25	2.68	10.4	28.97	33	-4.03
Middle Channel 661 (1880.00MHz)								
1880	31.16	H	15.67	2.68	10.43	23.42	33	-9.58
1880	36.17	V	20.60	2.68	10.43	28.35	33	-4.65
High Channel 810 (1909.80MHz)								
1909.8	31.40	H	15.93	2.70	10.44	23.67	33	-9.33
1909.8	34.64	V	19.10	2.70	10.44	26.84	33	-6.16

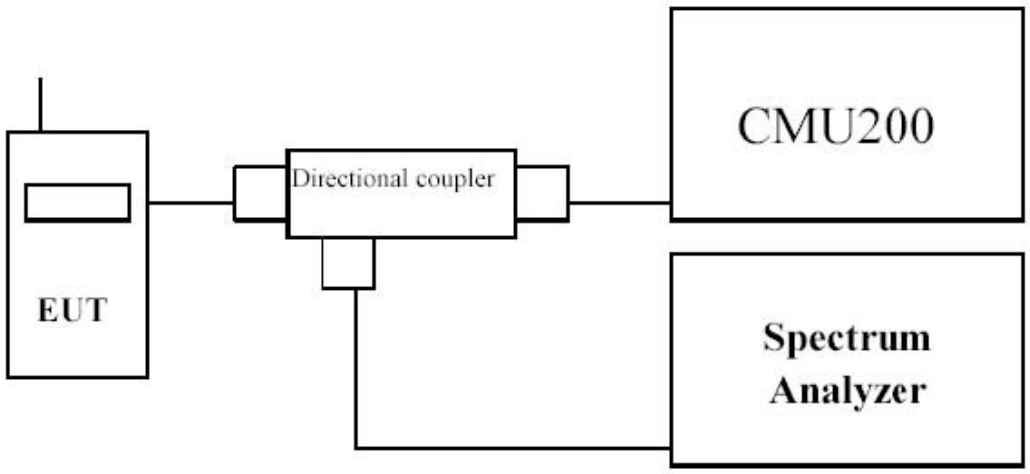
4. Occupied Bandwidth

4.1. Test Equipment

Occupied Bandwidth / AC-6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2010.04.10
Radio Communication Tester	R&S	CMU 200	117088	2010.07.12
Dual Directional Coupler	Agilent	778D	20160	2010.04.20
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2010.04.20
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC6-TH	2010.01.14

4.2. Test Setup



4.3. Limit

N/A

4.4. Test Procedure

Using Occupied Bandwidth measurement function of spectrum analyzer, and setting as follows:
For GSM/GPRS 850/1900 test --- RBW = 3 kHz and VBW = 10 kHz

4.5. Uncertainty

The measurement uncertainty is defined as ± 10 Hz

4.6. Test Result

Product	GSM Mobile Phone		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: GSM850 Link		
Date of Test	2010/09/30	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
128	824.20	314.15	246.70
189	836.40	311.64	249.57
251	848.80	313.37	246.95

Figure Channel 128 (824.20MHz)

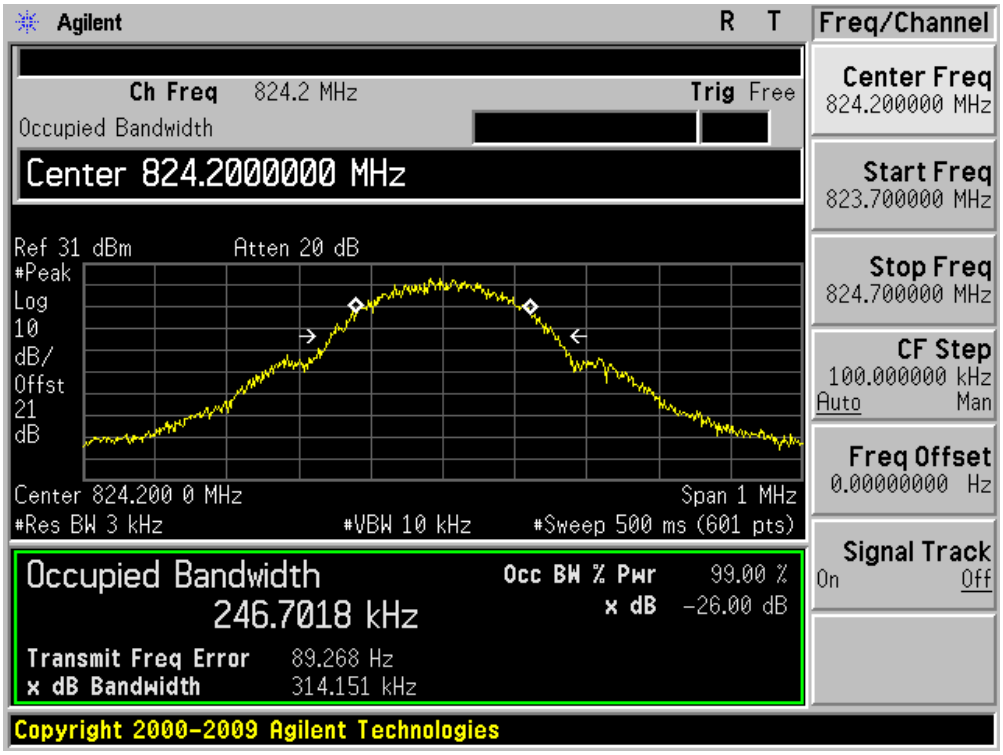


Figure Channel 189 (836.40MHz)

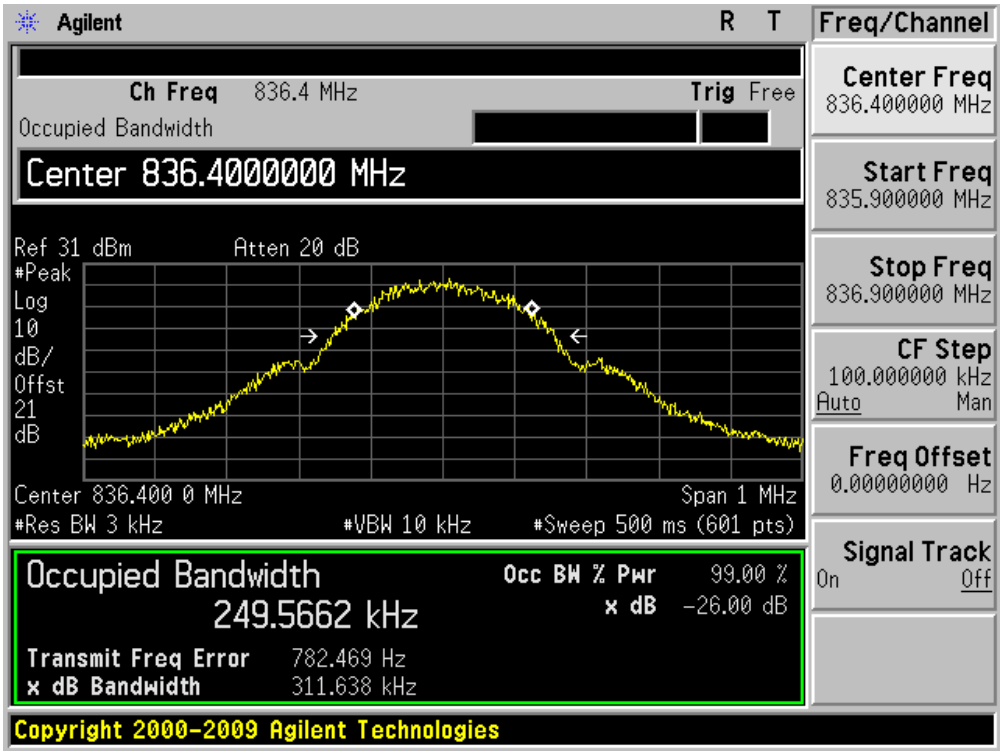
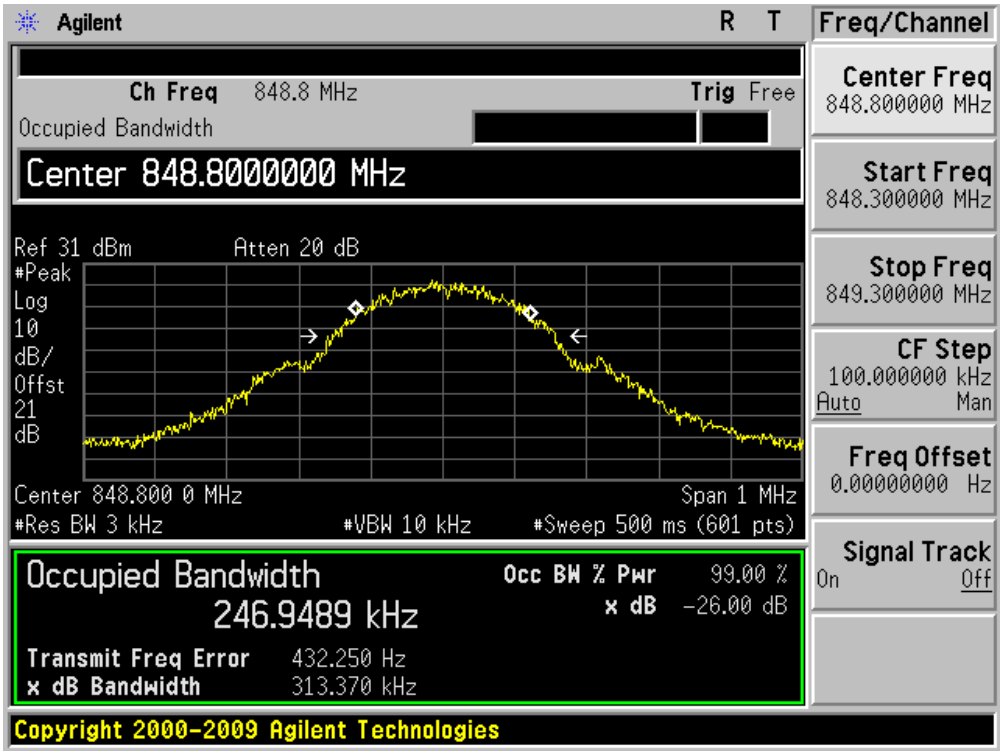


Figure Channel 251 (848.80MHz)



Product	GSM Mobile Phone		
Test Item	Occupied Bandwidth		
Test Mode	Mode 2: PCS 1900 Link		
Date of Test	2010/09/30	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
512	1850.20	318.46	246.30
661	1880.00	313.71	248.14
810	1909.80	315.05	246.68

Figure Channel 512 (1850.20MHz)

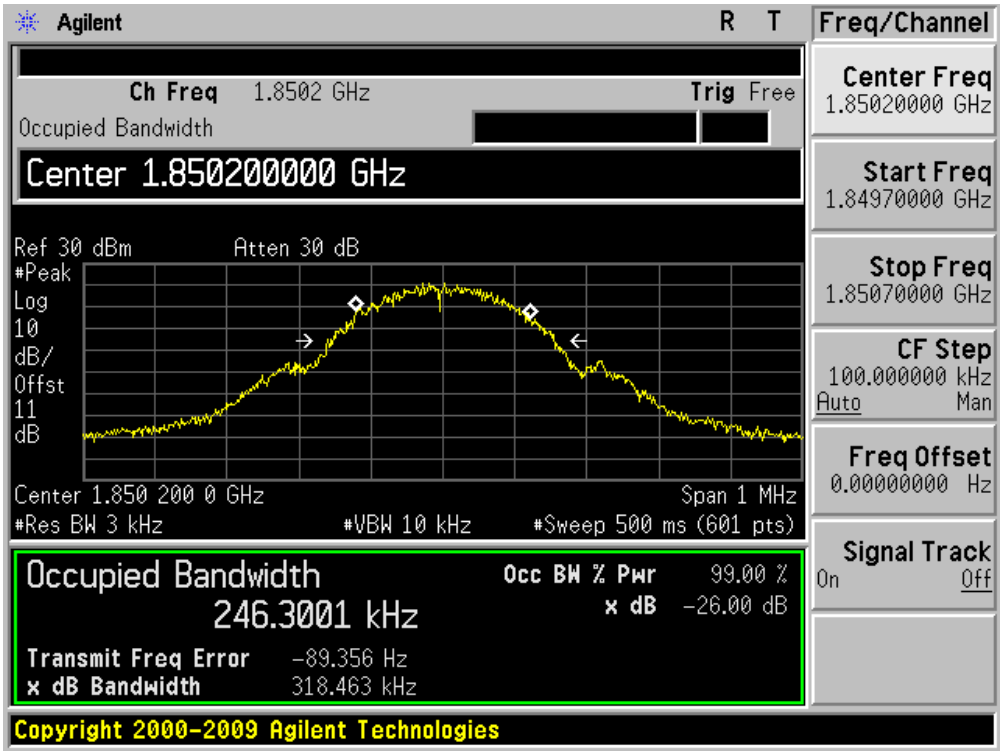


Figure Channel 661 (1880.00MHz)

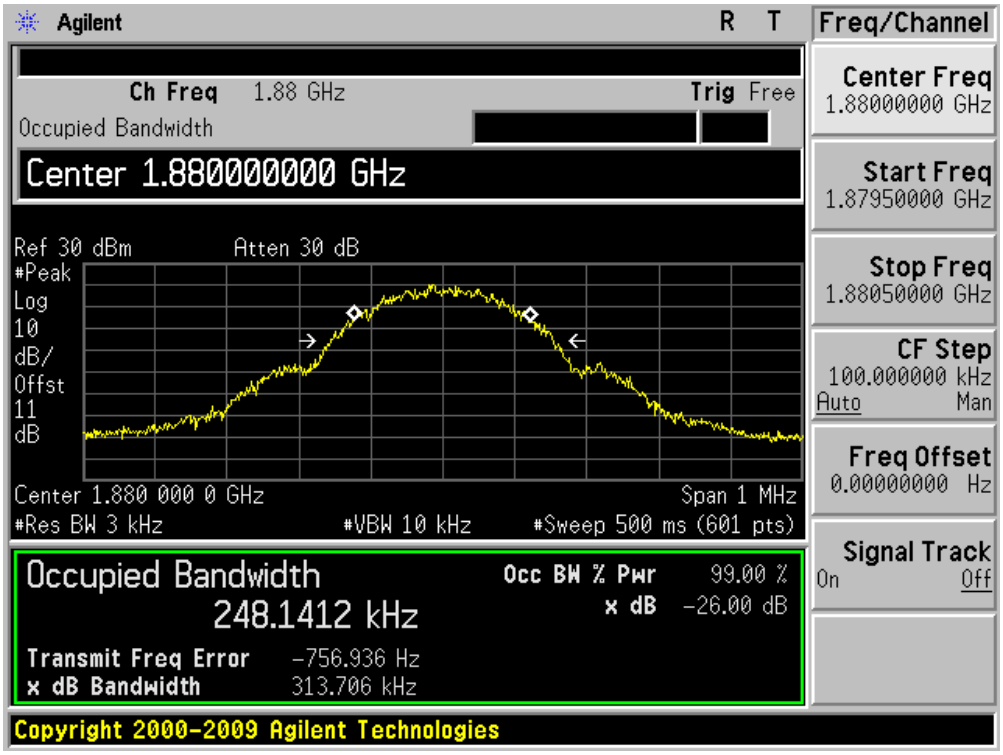
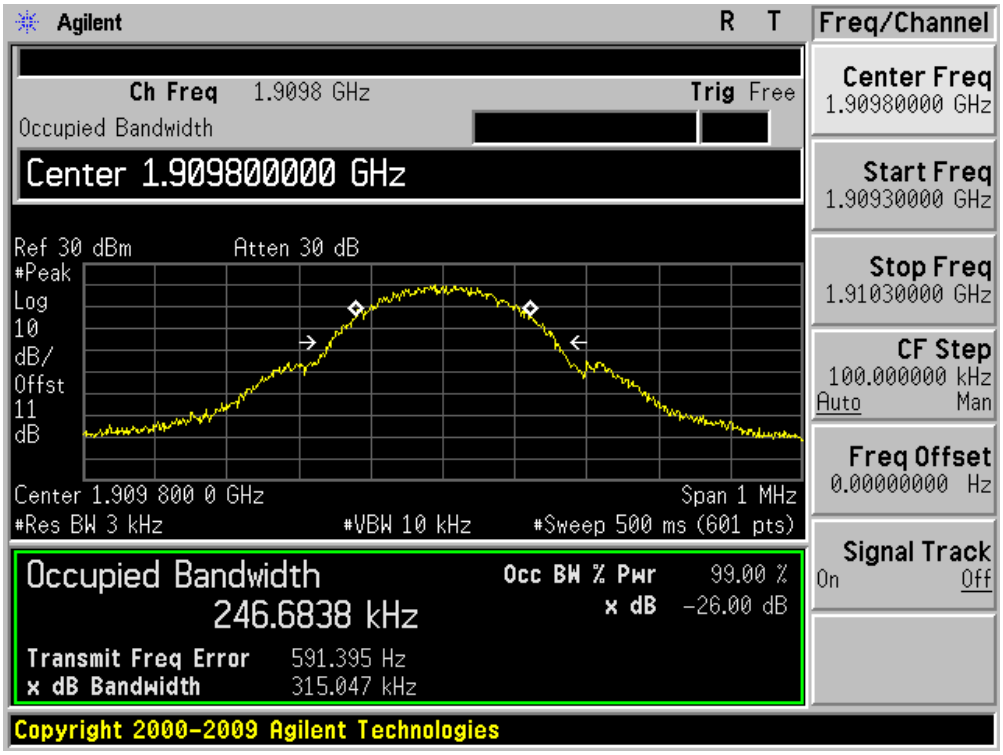


Figure Channel 810 (1909.80MHz)



Product	GSM Mobile Phone		
Test Item	Occupied Bandwidth		
Test Mode	Mode 3: GPRS850 Link		
Date of Test	2010/09/30	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
128	824.20	312.75	247.25
189	836.40	313.41	245.33
251	848.80	314.62	248.24

Figure Channel 128 (824.20MHz)

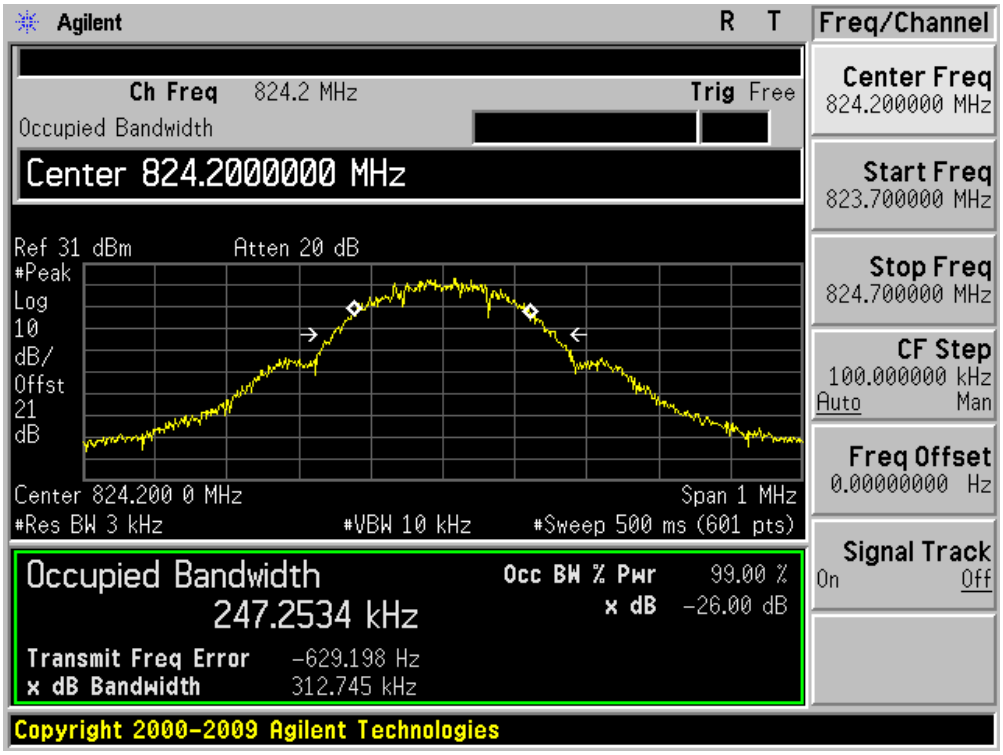


Figure Channel 189 (836.40MHz)

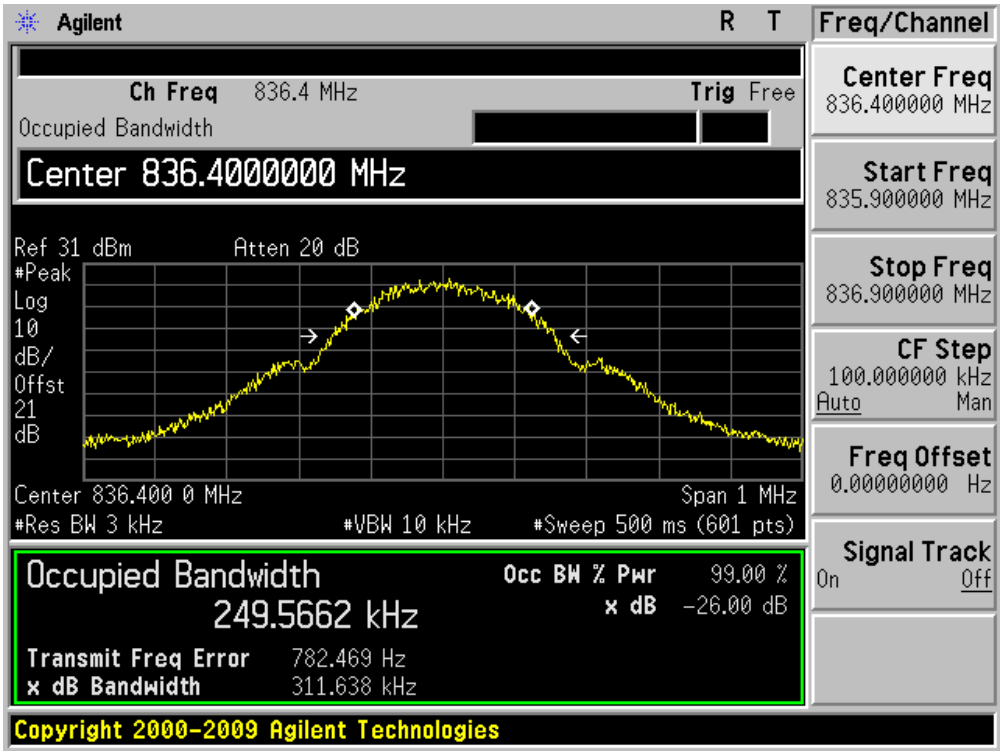
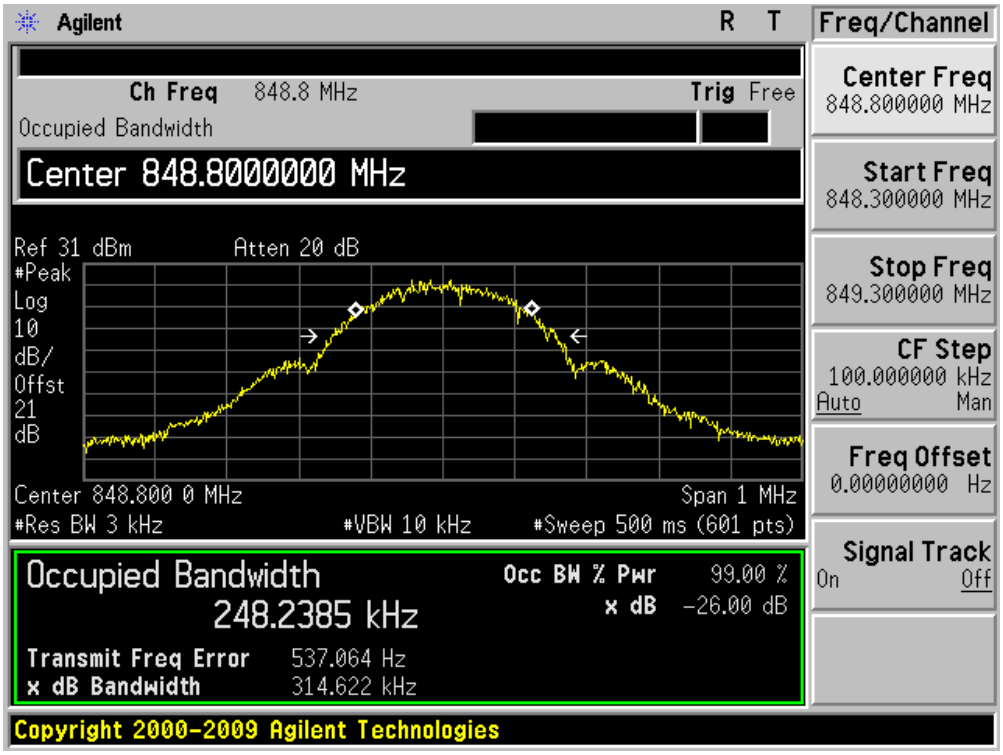


Figure Channel 251 (848.80MHz)



Product	GSM Mobile Phone		
Test Item	Occupied Bandwidth		
Test Mode	Mode 4: GPRS 1900 Link		
Date of Test	2010/09/30	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
512	1850.20	318.74	247.39
661	1880.00	313.74	245.22
810	1909.80	309.80	246.92

Figure Channel 512 (1850.20MHz)

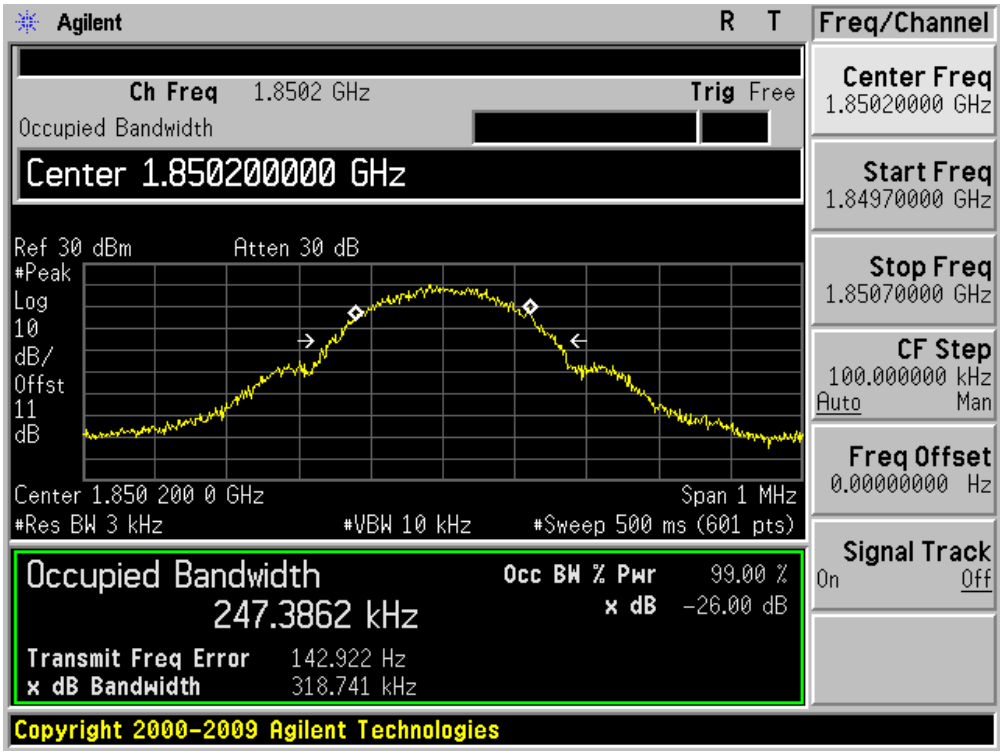


Figure Channel 661 (1880.00MHz)

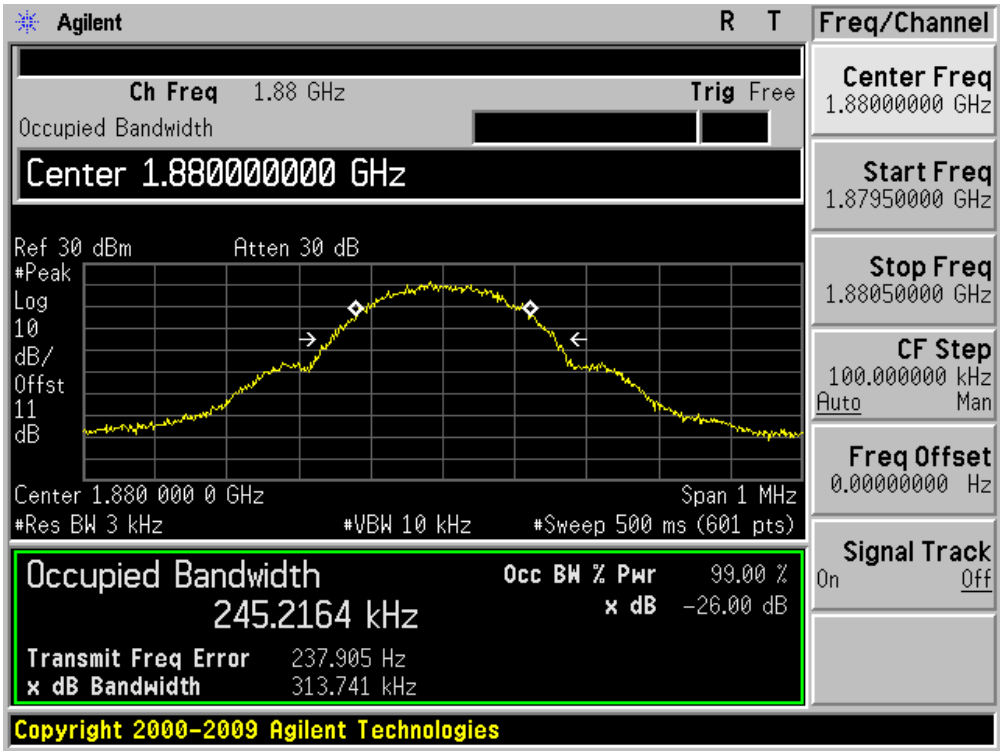
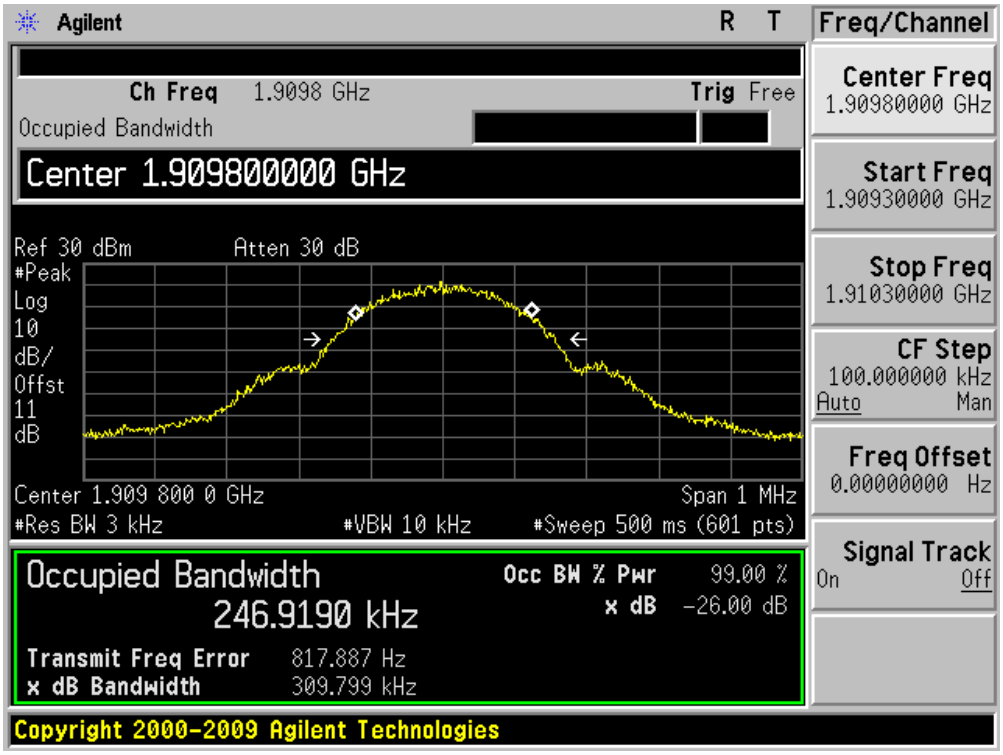


Figure Channel 810 (1909.80MHz)



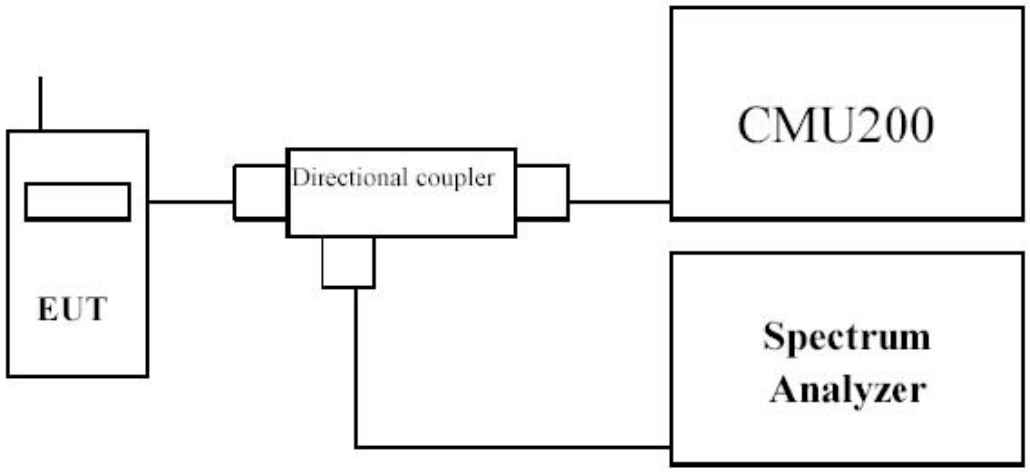
5. Spurious Emission At Antenna Terminals (+/- 1MHz)

5.1. Test Equipment

Spurious Emission At Antenna Terminals (+/- 1MHz) / AC-6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2010.04.10
Radio Communication Tester	R&S	CMU 200	117088	2010.07.12
Dual Directional Coupler	Agilent	778D	20160	2010.04.20
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2010.04.20
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC6-TH	2010.01.14

5.2. Test Setup



5.3. Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

5.4. Test Procedure

In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

5.5. Uncertainty

The measurement uncertainty is defined as ± 1.2 dB.

5.6. Test Result

Product	GSM Mobile Phone		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 1: GSM 850 Link		
Date of Test	2010/09/30	Test Site	AC-6

Figure Channel 128 (824.20MHz)

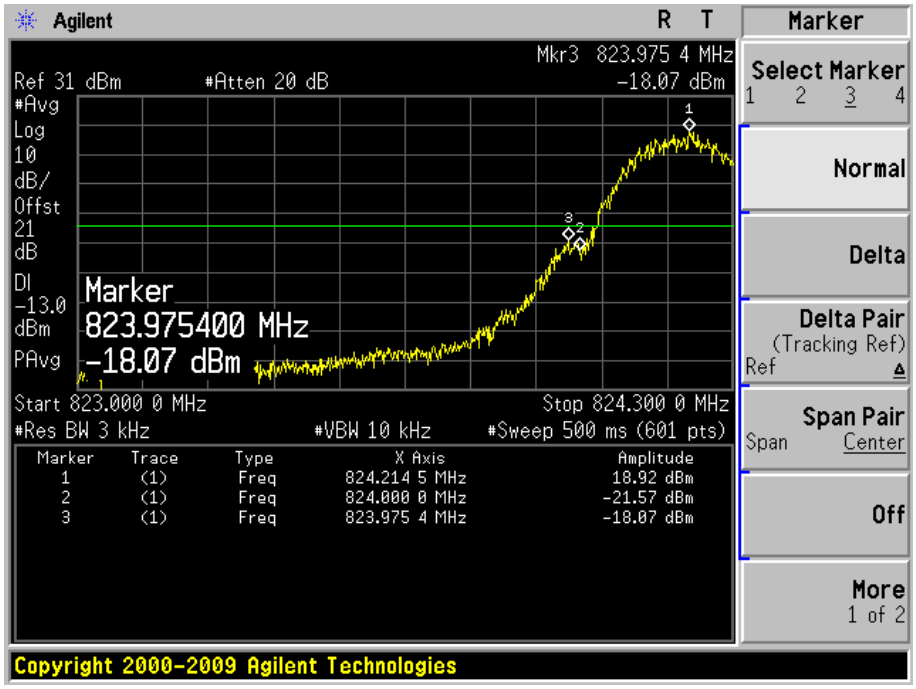
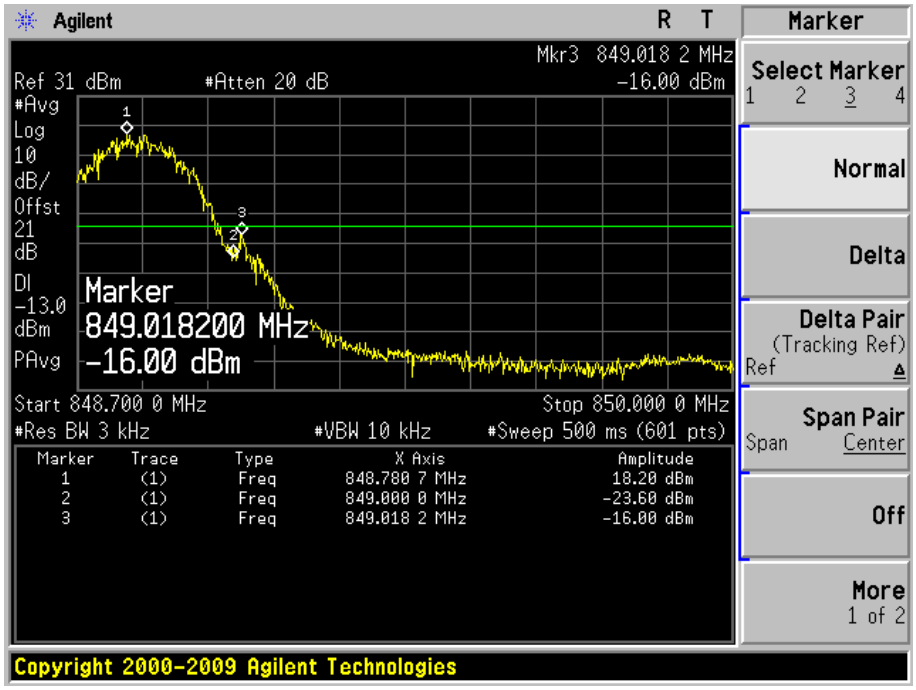


Figure Channel 251 (848.80MHz)



Product	GSM Mobile Phone		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 2: PCS1900 Link		
Date of Test	2010/09/30	Test Site	AC-6

Figure Channel 512 (1850.20MHz)

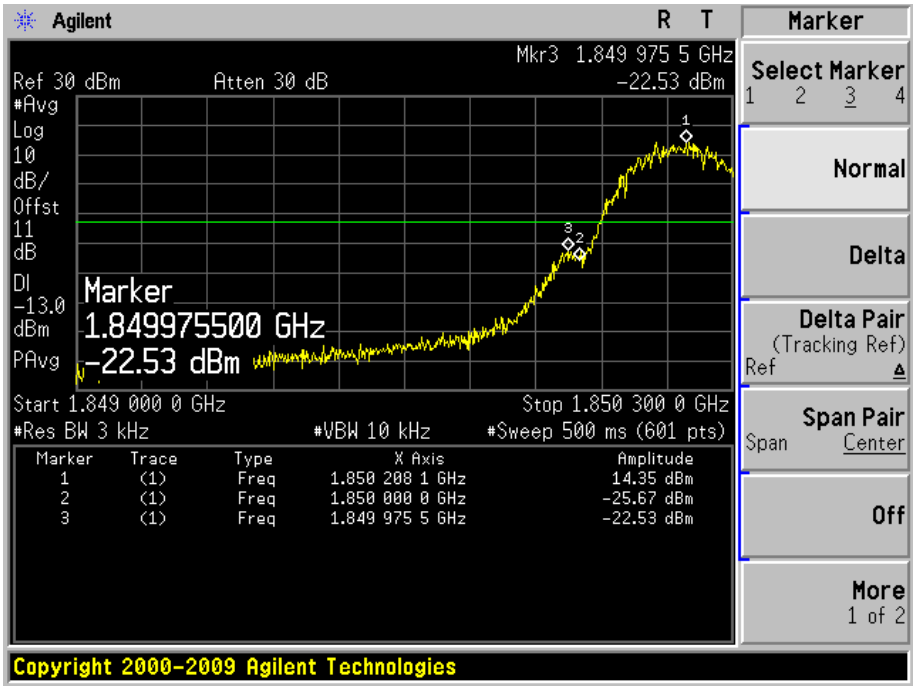
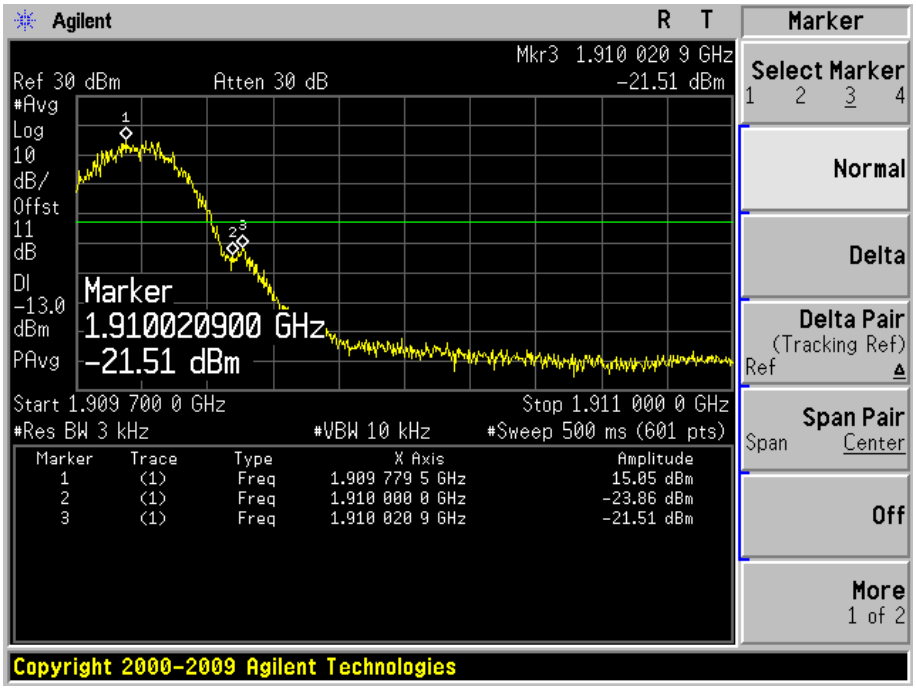


Figure Channel 810 (1909.80MHz)



Product	GSM Mobile Phone		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 3: GPRS 850 Link		
Date of Test	2010/09/30	Test Site	AC-6

Figure Channel 128 (824.20MHz)

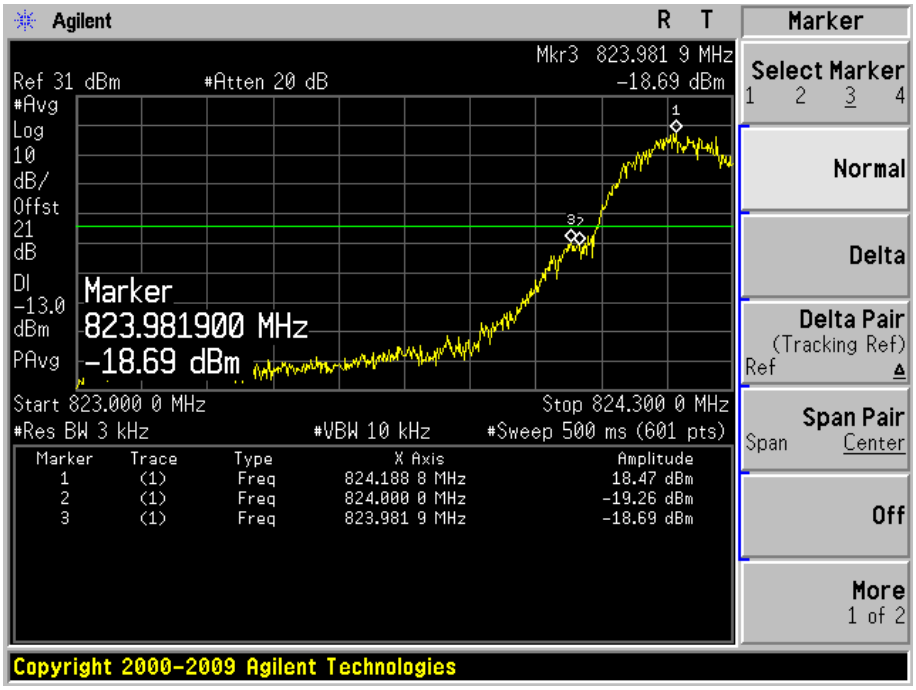
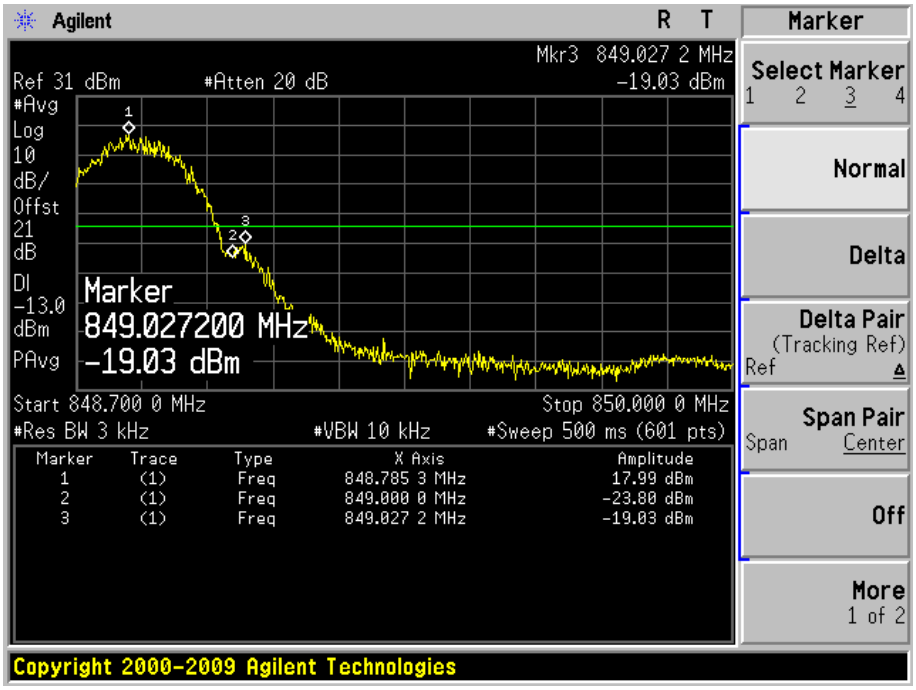


Figure Channel 251 (848.80MHz)



Product	GSM Mobile Phone		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 4: GPRS1900 Link		
Date of Test	2010/09/30	Test Site	AC-6

Figure Channel 512 (1850.20MHz)

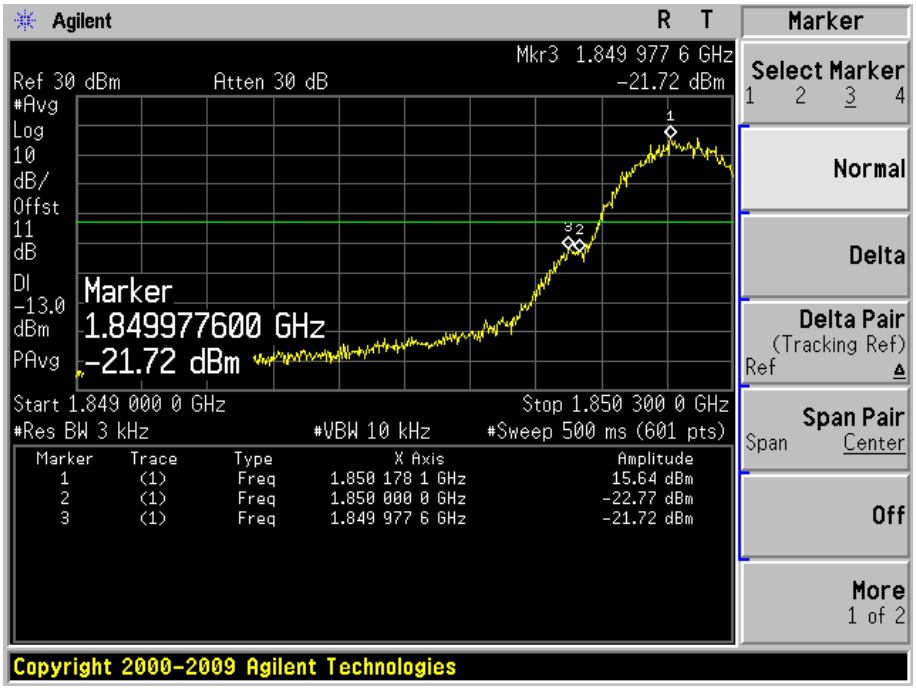
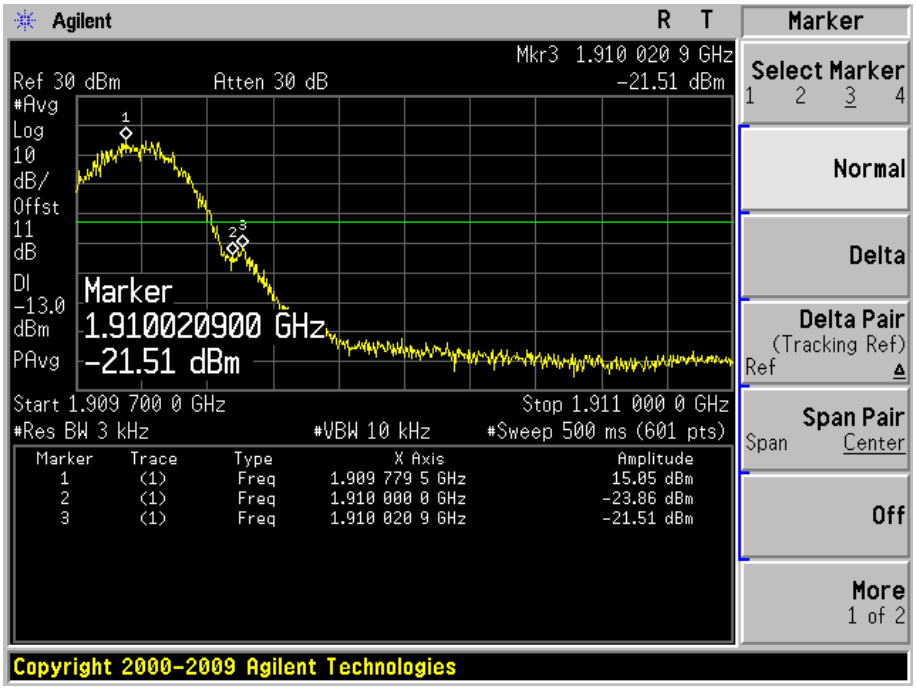


Figure Channel 810 (1909.80MHz)



6. Spurious Emission

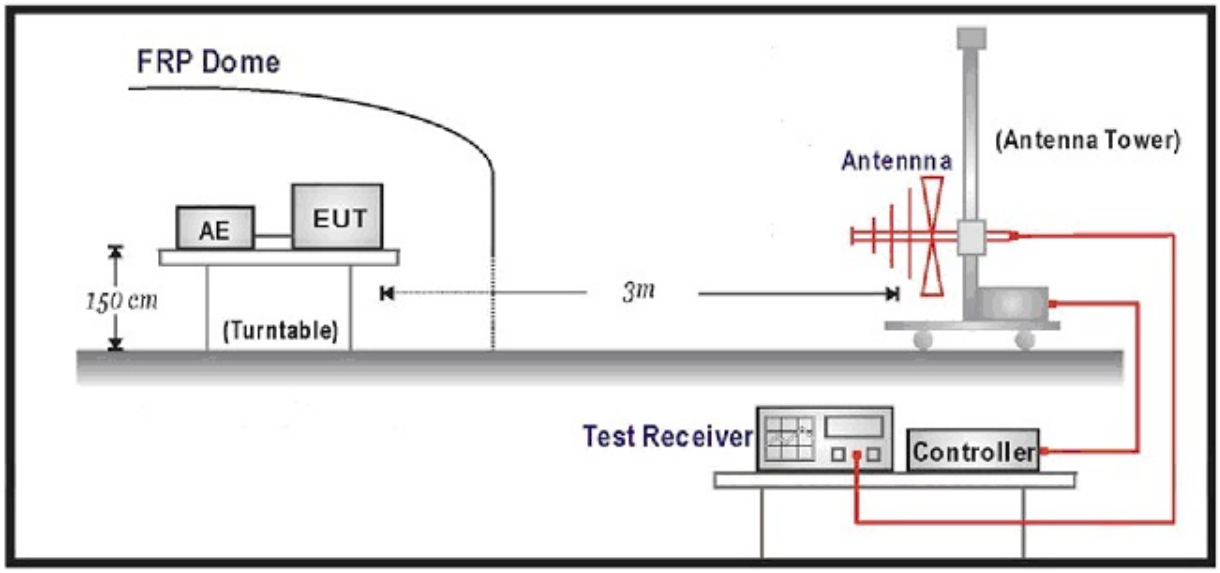
6.1. Test Equipment

Spurious Emission / AC-5

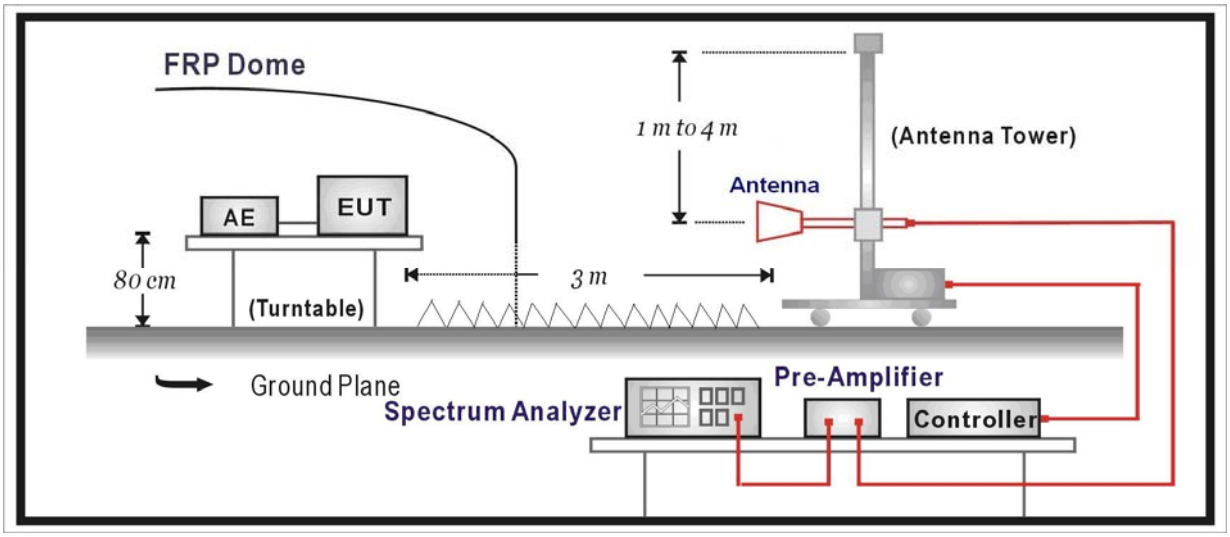
Instrument	Manufacturer	Type No.	Serial No	Cal. Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2010.04.10
Radio Communication Tester	R&S	CMU 200	117088	2010.07.12
Dual Directional Coupler	Agilent	778D	20160	2010.04.20
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2010.04.20
PSG Analog Signal Generator	Agilent	E8257D	MY44321116	2010.04.23
Preamplifier	QuieTek	AP-025C	CHM-0503006	2010.05.05
Preamplifier	Miteq	NSP1800-25	1364185	2010.05.05
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2009.11.12
Half Wave Tuned Dipole Antenna	COM-POWER	AD-100	40137	2009.11.24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	737	2009.11.24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2010.06.11
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2010.01.14

6.2. Test Setup

Radiated Spurious Measurement: below 1GHz



Radiated Spurious Measurement: above 1GHz



6.3. Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

6.4. Test Procedure

Conducted Spurious Measurement:

a) Place the EUT on a bench and set it in transmitting mode.
b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
c) EUT Communicate with CMU200, then select a channel for testing.
d) Add a correction factor to the display of spectrum, and then test.
e) The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

Radiated Spurious Measurement:

a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
c) The output of the test antenna shall be connected to the measuring receiver.
d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
v) The maximum signal level detected by the measuring receiver shall be noted.
h) The transmitter shall be replaced by a substitution antenna.
i) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
j) The substitution antenna shall be connected to a calibrated signal generator.
k) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
l) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
m) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
n) The measurement shall be repeated with the test antenna and the substitution antenna

orientated for horizontal polarization.

o) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

p) The frequency range was checked up to 10th harmonic.

q) Test site anechoic chamber refer to ANSI C63.4: 2009

6.5. Uncertainty

The measurement uncertainty is defined as 3.2 dB for Radiated Power Measurement.

6.6. Test Result

GSM 850

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
1646.00	-26.28	V	-42.96	2.50	9.75	-35.71	-13.00	-22.71
2470.50	-42.18	V	-55.09	3.12	10.48	-47.73	-13.00	-34.73
1646.00	-36.66	H	-53.37	2.50	9.75	-46.12	-13.00	-33.12
2470.50	-44.56	H	-57.36	3.12	10.48	-50.00	-13.00	-37.00
Middle Channel 189 (836.40MHz)								
1671.50	-29.66	V	-46.29	2.52	9.95	-38.86	-13.00	-25.86
2513.00	-42.91	V	-55.90	3.18	10.62	-48.46	-13.00	-35.46
1671.50	-38.57	H	-55.15	2.52	9.95	-47.72	-13.00	-34.72
2513.00	-44.30	H	-57.17	3.18	10.62	-49.73	-13.00	-36.73
High Channel 251 (848.80MHz)								
1697.00	-36.29	V	-52.67	2.54	10.06	-45.15	-13.00	-32.15
2547.00	-45.02	V	-57.94	3.14	10.68	-50.40	-13.00	-37.40
1697.00	-26.24	H	-42.72	2.54	10.06	-35.20	-13.00	-22.20
2547.00	-42.63	H	-55.72	3.14	10.68	-48.18	-13.00	-35.18

PCS 1900

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
3703.00	-31.71	V	-45.60	3.84	12.69	-36.75	-13.00	-23.75
5547.50	-39.25	V	-48.09	4.82	13.15	-39.76	-13.00	-26.76
3703.00	-27.06	H	-40.54	3.84	12.69	-31.69	-13.00	-18.69
5547.50	-38.76	H	-47.67	4.82	13.15	-39.34	-13.00	-26.34
Middle Channel 661 (1880.00MHz)								
3762.50	-33.80	V	-47.02	3.73	12.72	-38.03	-13.00	-25.03
5641.00	-36.11	V	-44.69	4.93	13.14	-36.48	-13.00	-23.48
3762.50	-31.71	H	-44.98	3.73	12.72	-35.99	-13.00	-22.99
5641.00	-35.19	H	-43.90	4.93	13.14	-35.69	-13.00	-22.69
High Channel 810 (1909.80MHz)								
3822.00	-37.49	V	-49.97	4.02	12.73	-41.26	-13.00	-28.26
5726.00	-35.14	V	-43.87	4.87	13.11	-35.63	-13.00	-22.63
3822.00	-37.54	H	-50.39	4.02	12.73	-41.68	-13.00	-28.68
5726.00	-33.05	H	-41.77	4.87	13.11	-33.53	-13.00	-20.53

GPRS850

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	ERIP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
1646.00	-29.20	V	-45.88	2.50	9.75	-38.63	-13.00	-25.63
2470.50	-42.23	V	-55.14	3.12	10.48	-47.78	-13.00	-34.78
1646.00	-39.90	H	-56.60	2.50	9.75	-49.35	-13.00	-36.35
2470.50	-46.91	H	-59.62	3.12	10.48	-52.26	-13.00	-39.26
Middle Channel 189 (836.40MHz)								
1671.50	-34.40	V	-51.02	2.52	9.95	-43.59	-13.00	-30.59
2513.00	-42.76	V	-55.75	3.18	10.62	-48.31	-13.00	-35.31
1671.50	-42.73	H	-59.32	2.52	9.95	-51.89	-13.00	-38.89
2513.00	-46.89	H	-59.68	3.18	10.62	-52.24	-13.00	-39.24
High Channel 251 (848.80MHz)								
1697.00	-33.12	V	-49.59	2.54	10.06	-42.07	-13.00	-29.07
2547.00	-42.63	V	-55.72	3.14	10.68	-48.18	-13.00	-35.18
1697.00	-43.53	H	-59.91	2.54	10.06	-52.39	-13.00	-39.39
2547.00	-45.79	H	-58.68	3.14	10.68	-51.14	-13.00	-38.14

GPRS1900

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
3703.00	-45.43	V	-59.33	3.84	12.69	-50.48	-13.00	-37.48
5547.50	-43.32	V	-52.17	4.82	13.15	-43.84	-13.00	-30.84
3703.00	-33.87	H	-47.35	3.84	12.69	-38.50	-13.00	-25.50
5547.50	-38.42	H	-47.33	4.82	13.15	-39.00	-13.00	-26.00
Middle Channel 661 (1880.00MHz)								
3762.50	-38.69	V	-51.91	3.73	12.72	-42.92	-13.00	-29.92
5641.00	-38.92	V	-47.49	4.93	13.14	-39.28	-13.00	-26.28
3762.50	-37.24	H	-50.51	3.73	12.72	-41.52	-13.00	-28.52
5641.00	-41.64	H	-50.35	4.93	13.14	-42.14	-13.00	-29.14
High Channel 810 (1909.80MHz)								
3822.00	-42.60	V	-55.08	4.02	12.73	-46.37	-13.00	-33.37
5726.00	-36.16	V	-44.90	4.87	13.11	-36.66	-13.00	-23.66
3822.00	-39.10	H	-51.95	4.02	12.73	-43.24	-13.00	-30.24
5726.00	-36.75	H	-45.47	4.87	13.11	-37.23	-13.00	-24.23

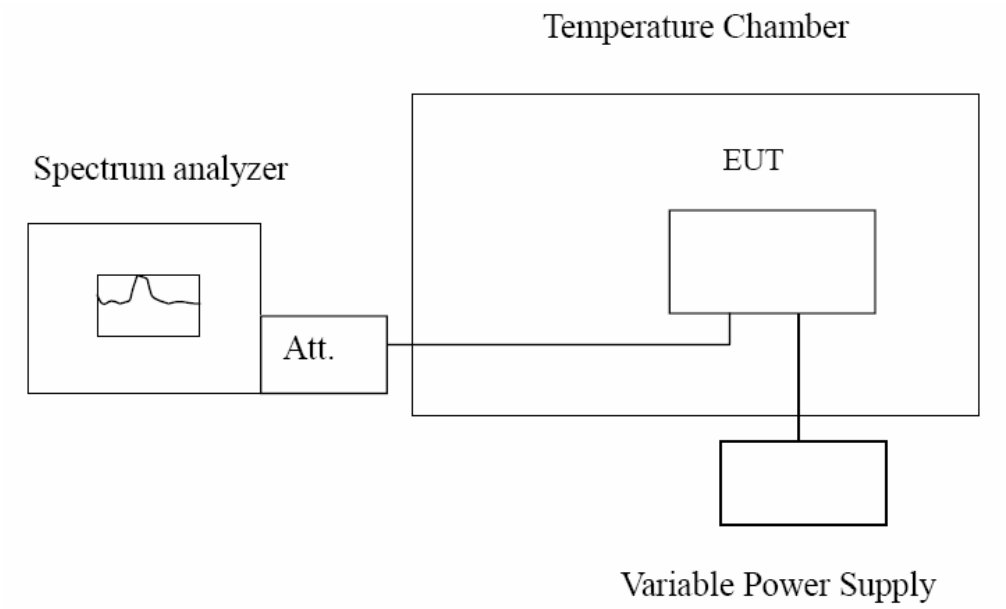
7. Frequency Stability Under Temperature & Voltage Variations

7.1. Test Equipment

Frequency Stability Under Temperature & Voltage Variations / AC-6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2010.04.10
Radio Communication Tester	R&S	CMU 200	117088	2010.07.12
Dual Directional Coupler	Agilent	778D	20160	2010.04.20
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2010.04.20
DC Power Supply	IDRC	CD-035-020PR	977272	2010.09.27
Temperature & Humidity Chamber	Gaoyu	TH-1P-B	WIT-05121302	2010.01.19
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC6-TH	2010.01.14

7.2. Test Setup



7.3. Limit

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Limit	< ± 2.5 ppm

7.4. Test Procedure

Frequency Stability Under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20℃. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

7.5. Uncertainty

The measurement uncertainty is defined as ± 10 Hz.

7.6. Test Result

Product	GSM Mobile Phone		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: GSM 850 Link		
Date of Test	2010/09/30	Test Site	AC6

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (kHz)
-30	836.40	-31	± 2091
-20	836.40	-32	± 2091
-10	836.40	-14	± 2091
0	836.40	-16	± 2091
10	836.40	-23	± 2091
20	836.40	-19	± 2091
30	836.40	-21	± 2091
40	836.40	-36	± 2091
50	836.40	-41	± 2091

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
3.60	836.40	-33	± 2091
3.70	836.40	-19	± 2091
4.20	836.40	-44	± 2091

Product	GSM Mobile Phone		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 2: PCS1900 Link		
Date of Test	2010/09/30	Test Site	AC6

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (kHz)
-30	1880.00	-22	± 2091
-20	1880.00	-53	± 2091
-10	1880.00	-16	± 2091
0	1880.00	-17	± 2091
10	1880.00	-21	± 2091
20	1880.00	-13	± 2091
30	1880.00	-20	± 2091
40	1880.00	-12	± 2091
50	1880.00	-13	± 2091

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
3.60	1880.00	-31	± 2091
3.70	1880.00	-28	± 2091
4.20	1880.00	-15	± 2091

Product	GSM Mobile Phone		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 3: GPRS 850 Link		
Date of Test	2010/09/30	Test Site	AC6

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	836.40	-33	± 4700
-20	836.40	-22	± 4700
-10	836.40	-24	± 4700
0	836.40	-31	± 4700
10	836.40	-35	± 4700
20	836.40	-16	± 4700
30	836.40	-25	± 4700
40	836.40	-29	± 4700
50	836.40	-37	± 4700

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
3.60	836.40	-24	± 4700
3.70	836.40	-33	± 4700
4.20	836.40	-41	± 4700

Product	GSM Mobile Phone		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 4: GPRS1900 Link		
Date of Test	2010/09/30	Test Site	AC6

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	1880.00	-43	± 4700
-20	1880.00	-55	± 4700
-10	1880.00	-18	± 4700
0	1880.00	-25	± 4700
10	1880.00	-31	± 4700
20	1880.00	-53	± 4700
30	1880.00	-34	± 4700
40	1880.00	-39	± 4700
50	1880.00	-25	± 4700

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
3.60	1880.00	-57	± 4700
3.70	1880.00	-46	± 4700
4.20	1880.00	-61	± 4700