FCC Part22H&24E Test Report

Product Name	：	Dual band GSM mobile phone
Model No.	：	Bird S160
FCC ID	：	SNMS160

Applicant	：	NINGBO BIRD Co., LTD.
Address	：	No.999 Dacheng East Road, Fenghua City, Zhejiang, China

Date of Receipt	：	2009/09/04
Issued Date	：	2009/09/14
Report No.	：	099S015R-HP-US-P07V01
Report Version	：	V3.1

Test Report Certification

Issued Date : 2009/09/14
Report No. : 099S015R-HP-US-P07V01

Product Name	:	Dual band GSM mobile phone
Applicant	:	NINGBO BIRD Co., LTD.
Address	:	No.999 Dacheng East Road, Fenghua City, Zhejiang, China
Manufacturer	:	NINGBO BIRD Co., LTD.
Address	:	No.999 Dacheng East Road, Fenghua City, Zhejiang, China
Model No.	:	Bird S160
FCC ID	:	SNMS160
EUT Voltage	:	DC 3.7V
Trade Name	:	BiRD
Applicable Standard	:	FCC Part22 Subpart H, FCC Part24 Subpart E FCC CFR Title 47 Part 2, TIA/EIA 603-C
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; IC Lab Code: 4075B

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(Alice Ni)

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(Marlin Chen)

Approved By : Gene Chang
(Gene Chang)

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 by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

Taiwan R.O.C.	**:**	**BSMI, DGT, CNLA**
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://tw.quietek.com/modules/myalbum/
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 :

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TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

NVLAP Lab Code : 200347-0 1313

LinKou Testing Laboratory :

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NVLAP Lab Code: 200533-0 0914

Suzhou 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 1596

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1. General Information

1.1. EUT Description

Product Name	Dual band GSM mobile phone
Trade Name	BiRD
Model No.	Bird S160
FCC ID	SNMS160
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
Channel Number	GSM 850: 124 PCS 1900: 299
Type of Modulation	GMSK
Channel Control	Auto
Antenna type	Fixed

Component	
AC Adapter	Manufacturer: BiRD Model: U5050 Input: 100-240V~, 50~60Hz, 100mA Output: 5V, 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: GPRS850
Mode 2: GPRS1900

Note:

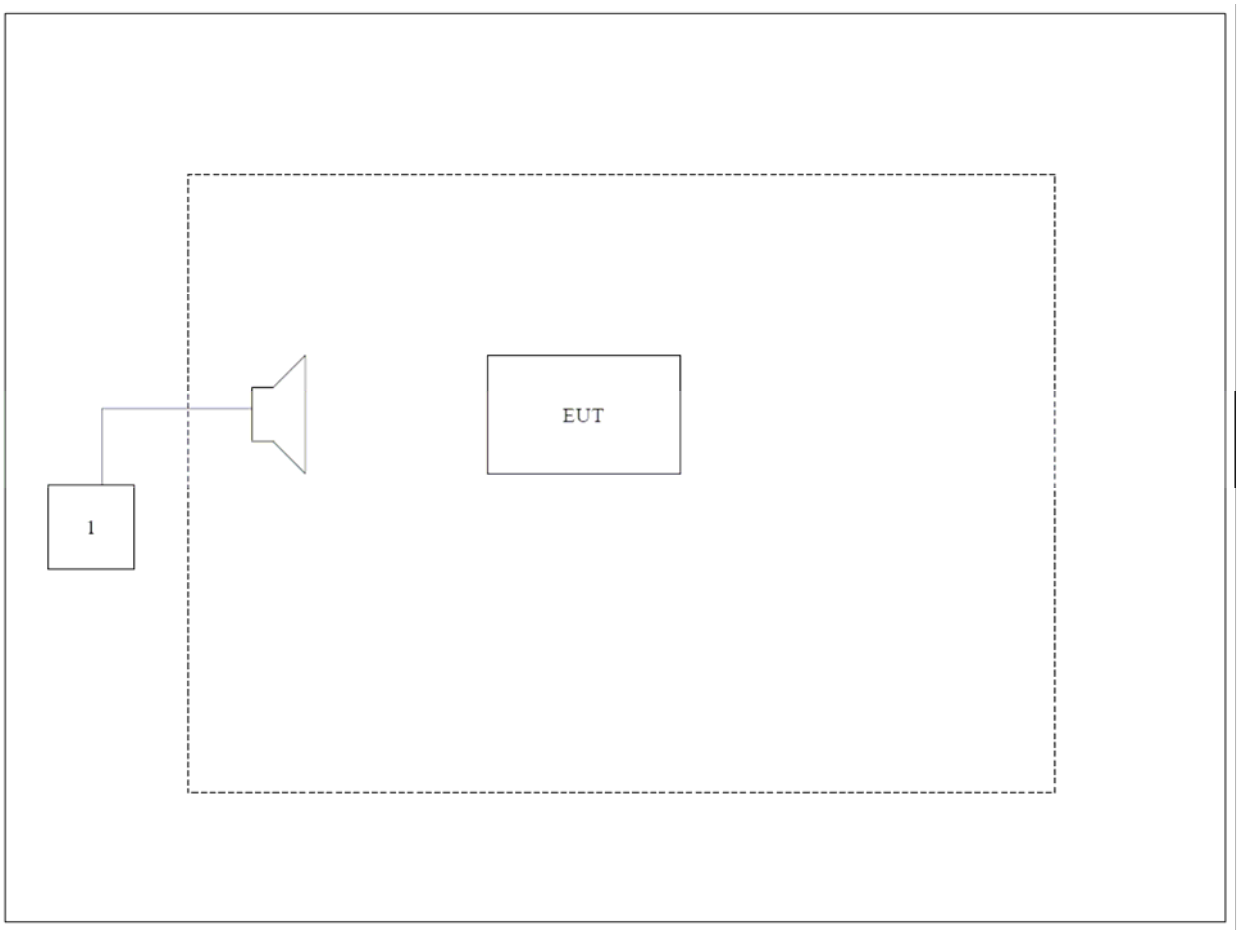
1. Regards to the frequency band operation: the lowest、middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. This device is a composite device in accordance with Part 15 Subpart B regulations.
3. ERP, EIPR and spurious emission test were explored over three orthogonal planes for this portable device, and the worst axis was shown in this report.

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

1.3. Configuration of Tested System

Connection Diagram	
	
Signal Cable Type	Signal cable Description

1.4. 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 GSM850 (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 PCS1900 (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

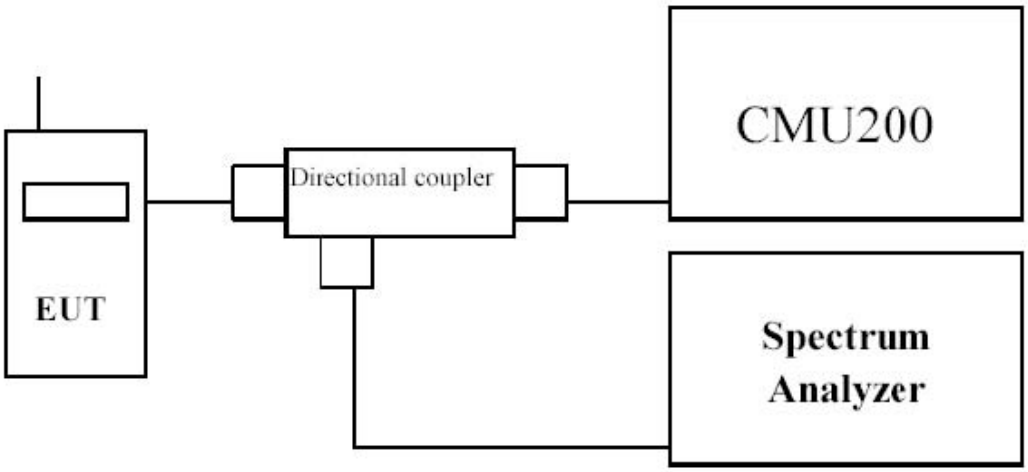
3.1. Test Equipment

Peak Output Power / AC-6

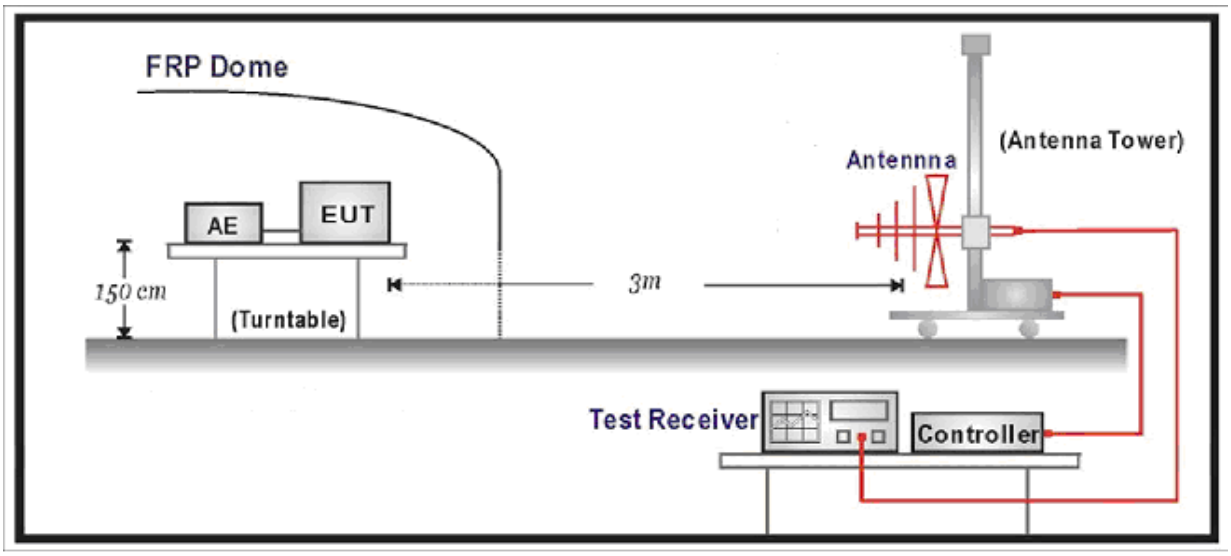
Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2009/06/10
Radio Communication Tester	R&S	CMU 200	106388	2008/10/21
Dual Directional Coupler	Agilent	778D	20160	2009/04/20
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2009/04/20
PSG Analog S.G.	Agilent	E8257D	MY44321116	2009/06/11
Preamplifier	QuieTek	AP-025C	QT-AP005	2008/11/24
Preamplifier	QuieTek	AP-180C	CHM-0602013	2008/11/24
Bilog Type Antenna	Schaffner	CBL6141A	4278	2008/11/24
Half Wave Tuned Dipole Antenna	COM-POWER	AD-100	40137	2008/11/24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2008/11/24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2008/11/24
Coaxial Cable	Huber+Suhner	AC4-RL	06	2008/11/24
Coaxial Cable	Huber+Suhner	AC4-RH	07	2008/11/24
Coaxial Cable	Huber+Suhner	AC4-T	09	2008/11/24
Coaxial Cable	Huber+Suhner	AC4-RF-H	10	2008/11/24
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2009/03/31

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.

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	32.27	22.775	38.50
189	836.4	GMSK	32.34	24.567	38.50
251	848.8	GMSK	32.52	**26.981**	38.50

PCS1900

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	EIRP (dBm)	Limit (dBm)
512	1850.2	GMSK	29.37	**26.461**	33.00
661	1880.0	GMSK	29.10	25.735	33.00
810	1909.8	GMSK	29.10	25.309	33.00

GPRS 850

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	ERP (dBm)	Limit (dBm)
128	824.2	GMSK	32.28	22.918	38.50
189	836.4	GMSK	32.34	23.957	38.50
251	848.8	GMSK	32.52	**27.045**	38.50

GPRS 1900

Channel No.	Frequency (MHz)	Modulation	Conducted Output Power (dBm)	EIRP (dBm)	Limit (dBm)
512	1850.2	GMSK	29.41	**26.640**	33.00
661	1880.0	GMSK	29.15	25.617	33.00
810	1909.8	GMSK	29.06	25.408	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)								
824.20	-2.932	H	11.788	2.56	-0.02	9.208	38.50	-29.292
824.20	11.588	V	25.355	2.56	-0.02	22.775	38.50	-15.725
Middle Channel 189 (836.40MHz)								
836.40	-1.006	H	13.644	2.59	0.10	11.154	38.50	-27.346
836.40	13.162	V	27.057	2.59	0.10	24.567	38.50	-13.933
High Channel 251 (848.80MHz)								
848.80	-0.554	H	14.026	2.54	0.13	11.616	38.50	-26.884
848.80	15.352	V	29.391	2.54	0.13	26.981	38.50	-11.519

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)								
1850.20	33.108	H	18.479	3.55	10.40	25.329	33.00	-7.671
1850.20	34.339	V	19.611	3.55	10.40	26.461	33.00	-6.539
Middle Channel 661 (1880.00MHz)								
1880.00	30.957	H	16.313	3.53	10.43	23.213	33.00	-9.787
1880.00	33.553	V	18.835	3.53	10.43	25.735	33.00	-7.265
High Channel 810 (1909.80MHz)								
1909.80	30.379	H	15.764	3.56	10.44	22.644	33.00	-10.356
1909.80	33.110	V	18.429	3.56	10.44	25.309	33.00	-7.691

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)								
824.20	-1.072	H	13.648	2.56	-0.02	11.068	38.50	-27.432
824.20	11.730	V	25.498	2.56	-0.02	22.918	38.50	-15.582
Middle Channel 189 (836.40MHz)								
836.40	-1.045	H	13.605	2.59	0.10	11.115	38.50	-27.385
836.40	12.551	V	26.447	2.59	0.10	23.957	38.50	-14.543
High Channel 251 (848.80MHz)								
848.80	-0.604	H	13.976	2.54	0.13	11.566	38.50	-26.934
848.80	15.415	V	29.455	2.54	0.13	27.045	38.50	-11.455

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)								
1850.20	32.622	H	17.993	3.55	10.40	24.843	33.00	-8.157
1850.20	34.518	V	19.790	3.55	10.40	26.640	33.00	-6.360
Middle Channel 661 (1880.00MHz)								
1880.00	32.536	H	17.892	3.53	10.43	24.792	33.00	-8.208
1880.00	33.436	V	18.717	3.53	10.43	25.617	33.00	-7.383
High Channel 810 (1909.80MHz)								
1909.80	31.628	H	17.013	3.56	10.44	23.893	33.00	-9.107
1909.80	33.209	V	18.528	3.56	10.44	25.408	33.00	-7.592

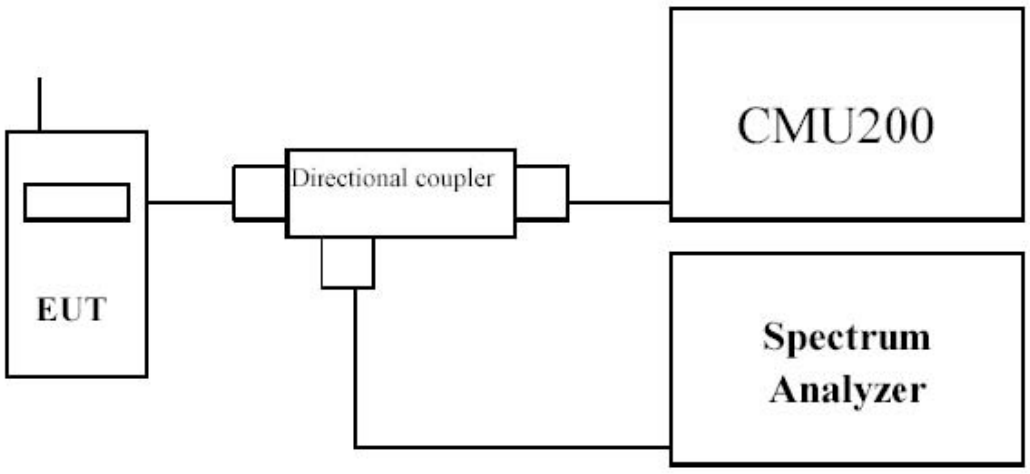
4. Modulation Characteristic

4.1. Test Equipment

Modulation Characteristic / AC-6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2009/06/11
Radio Communication Tester	R&S	CMU 200	106388	2008/10/21
Dual Directional Coupler	Agilent	778D	20160	2009/04/20
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2009/04/20
Coaxial Cable	Huber+Suhner	AC4-RF-H	10	2008/11/24
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2009/03/31

4.2. Test Setup



4.3. Limit

N/A

4.4. Test Procedure

GMSK is a form of binary signaling schemes which represent digital states as a shift between discrete sinusoidal frequencies called Frequency Shift Keying (FSK). Minimum Shift Keying (MSK) is continuous phase FSK with the smallest possible modulation index h. Modulation index is defined as: h = 2*F*Tb
where F = Peak frequency deviation in Hz and Tb = Bit period in seconds

Two discrete frequencies, representing two distinct digital states, with equal phases at switch time t = 0 requires a minimum value of h = 0.5. The Gaussian part of GMSK describes the fact that the digital pulses are filtered in the time domain. This results in bits which are sinusoidal rather than square. The effective spectrum is then compressed with the average carrier frequency in the center of the passband. This is a great advantage because of the significantly reduced bandwidth. GMSK is utilized because of these bandwidth conservation properties.

The bandwidth for GSM is a 60 MHz up-link at 1850-1910 MHz and down-link at 1930-1990 MHz. The 65 MHz is divided into 299 channels, each of which is 200 kHz wide. Slight spectral spillage is allowed into neighboring channels (which is minimized by GMSK). This separated transmit/receive frequencies scheme under GSM enables easier duplex filtering.

Within the bandwidth, individual channels are subdivided into multiframes (made of 26 frames), frames (made of 8 time slots), and time slots (made of 8 fields). The time slots are 0.57 ms long allowing 156.25 bits of information including overhead.

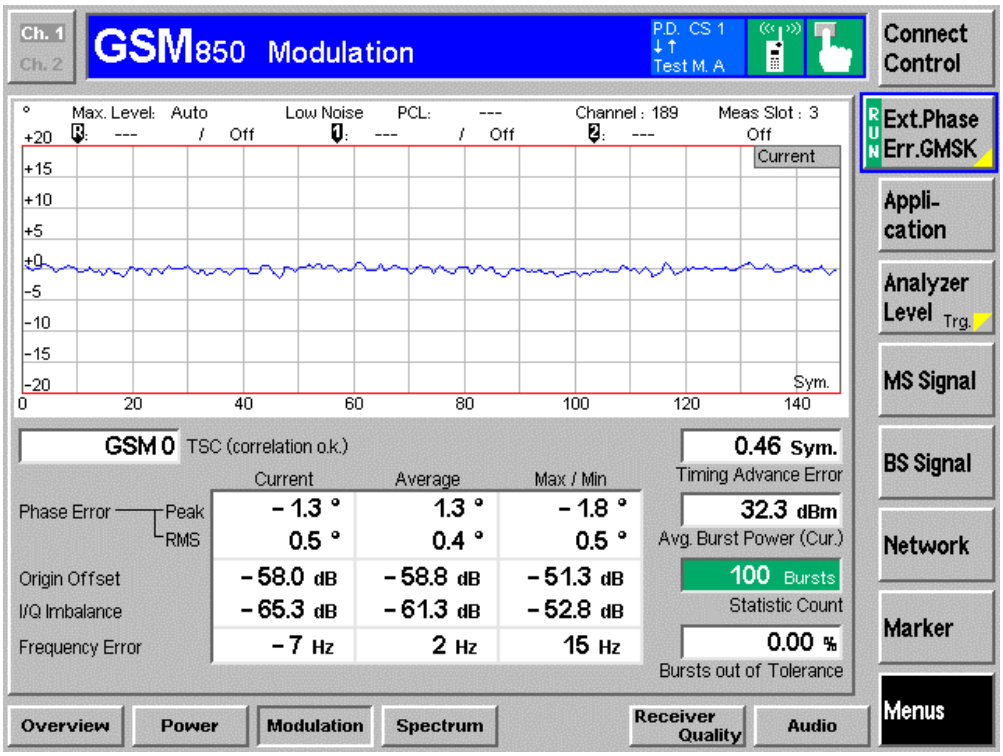
The modulation used in GPRS is the same used in GSM. A GSM channel contains eight timeslots, each timeslot is dedicated to one circuit switched call. For GPRS the timeslots are assigned on an as needed basis, and more than one timeslot can be assigned for a particular transmission depending on the network and the device.

4.5. Uncertainty

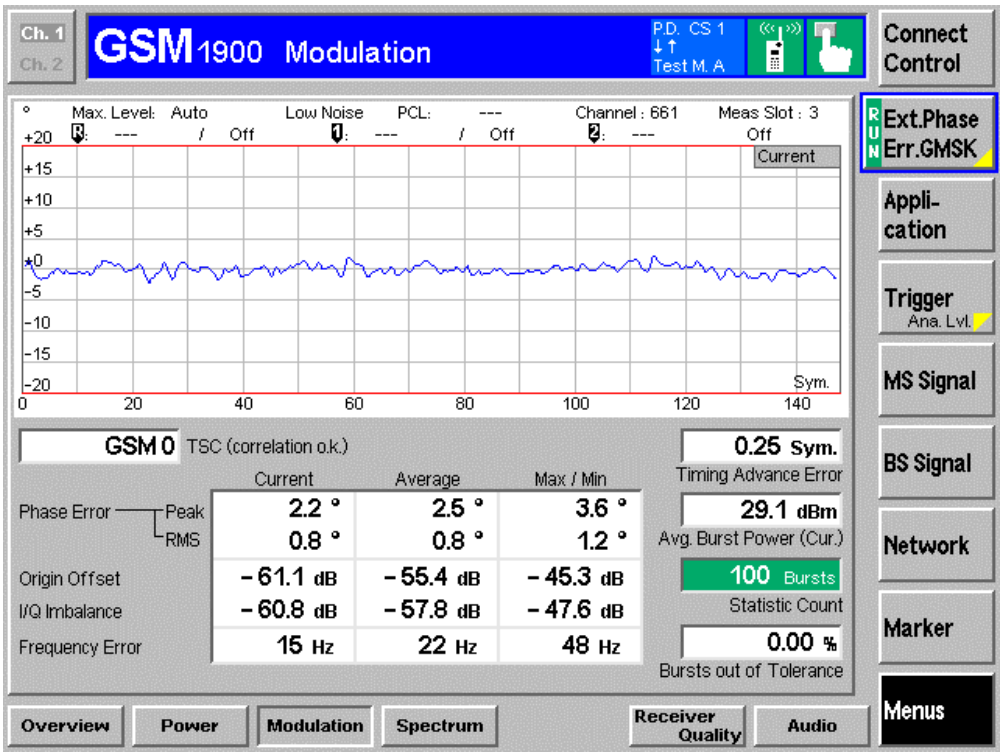
The measurement uncertainty is defined as 0.1%

4.6. Test Result

GPRS 850



GPRS 1900



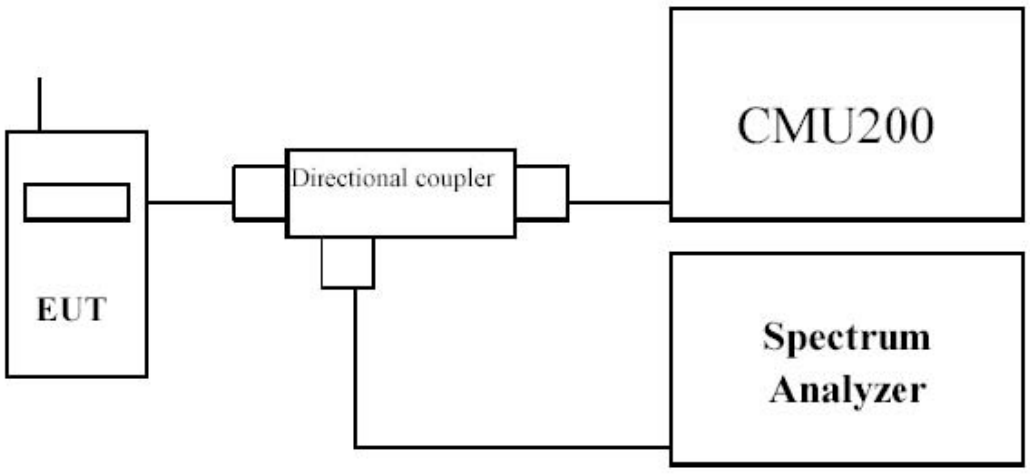
5. Occupied Bandwidth

5.1. Test Equipment

Occupied Bandwidth / AC-6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2009/06/11
Radio Communication Tester	R&S	CMU 200	106388	2008/10/21
Dual Directional Coupler	Agilent	778D	20160	2009/04/20
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2009/04/20
Coaxial Cable	Huber+Suhner	AC4-RF-H	10	2008/11/24
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2009/03/31

5.2. Test Setup



5.3. Limit

N/A

5.4. Test Procedure

Using Occupied Bandwidth measurement function of spectrum analyzer, and setting as follows:
For GPRS/EDGE 850/1900 test --- RBW = 3 kHz and VBW = 10 kHz
For WCDMA/HSDPA FDD Band II/V test --- RBW = 50 kHz and VBW = 200 kHz
For CDMA2000 1X EV-DO BC0/BC1 test --- RBW = 30 kHz and VBW = 100 kHz.

5.5. Uncertainty

The measurement uncertainty is defined as ± 10 Hz

5.6. Test Result

Product	Dual band GSM mobile phone		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: GSM850 GPRS Link		
Date of Test	2009/09/10	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
128	824.20	313.599	244.5472
189	836.40	317.475	246.5814
251	848.80	315.569	242.3384

Figure Channel 128 (824.20MHz)

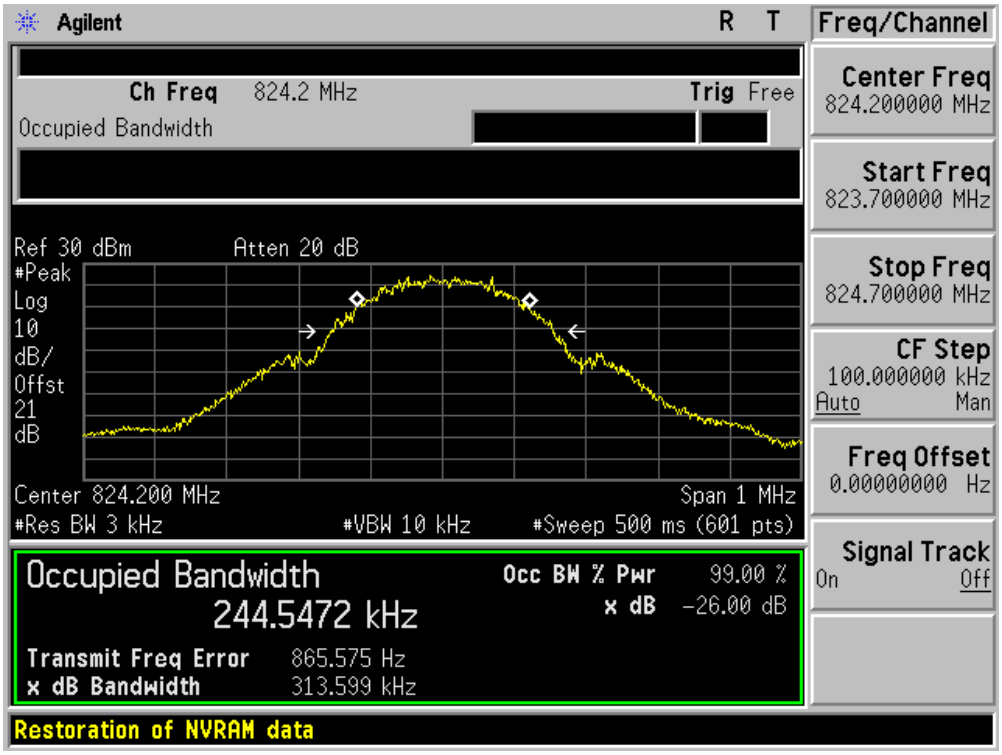


Figure Channel 189 (836.40MHz)

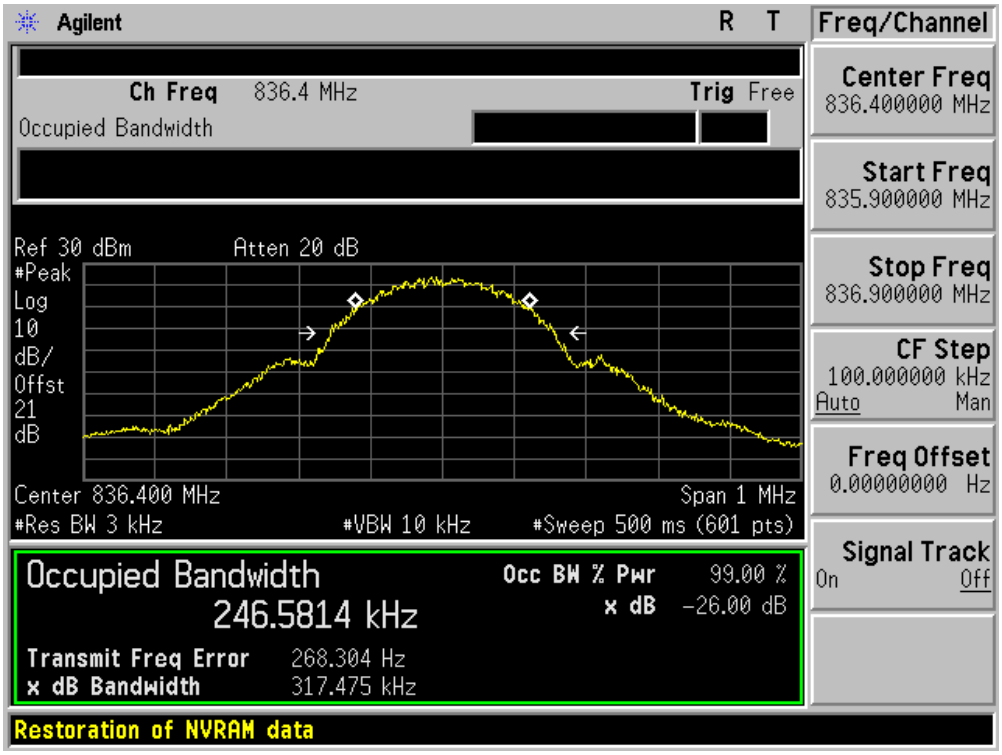
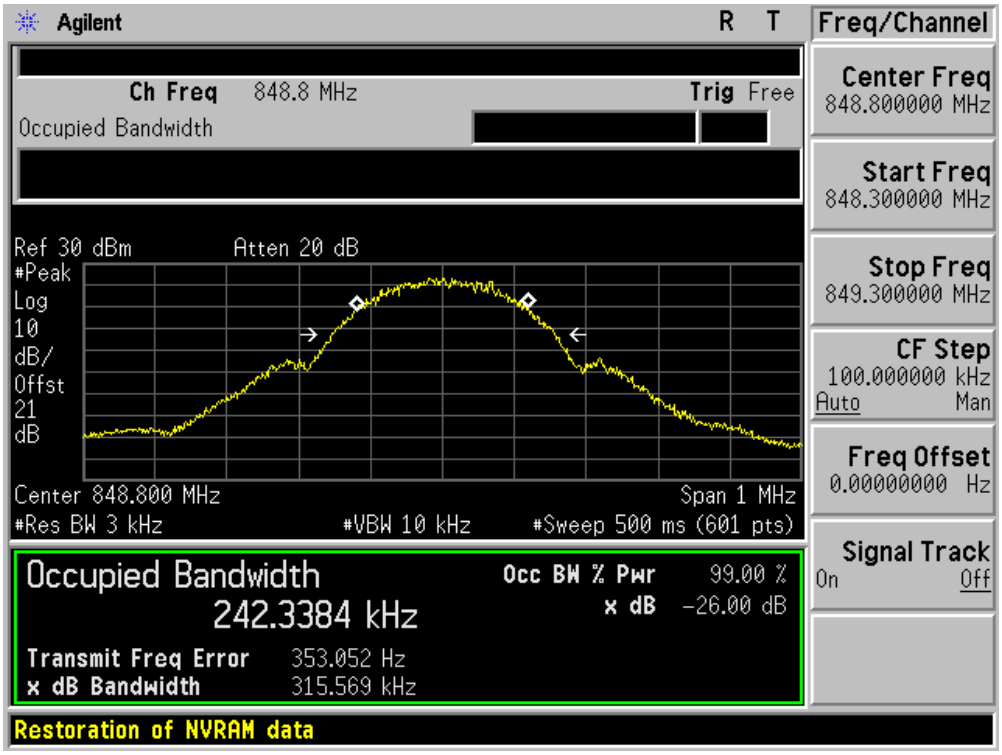


Figure Channel 251 (848.80MHz)



Product	Dual band GSM mobile phone		
Test Item	Occupied Bandwidth		
Test Mode	Mode 2: PCS1900 GPRS Link		
Date of Test	2009/09/10	Test Site	AC-6

Channel No.	Frequency (MHz)	-26dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
512	1850.20	314.011	237.3146
661	1880.00	324.116	249.6188
810	1909.80	322.251	245.4301

Figure Channel 512 (1850.20MHz)

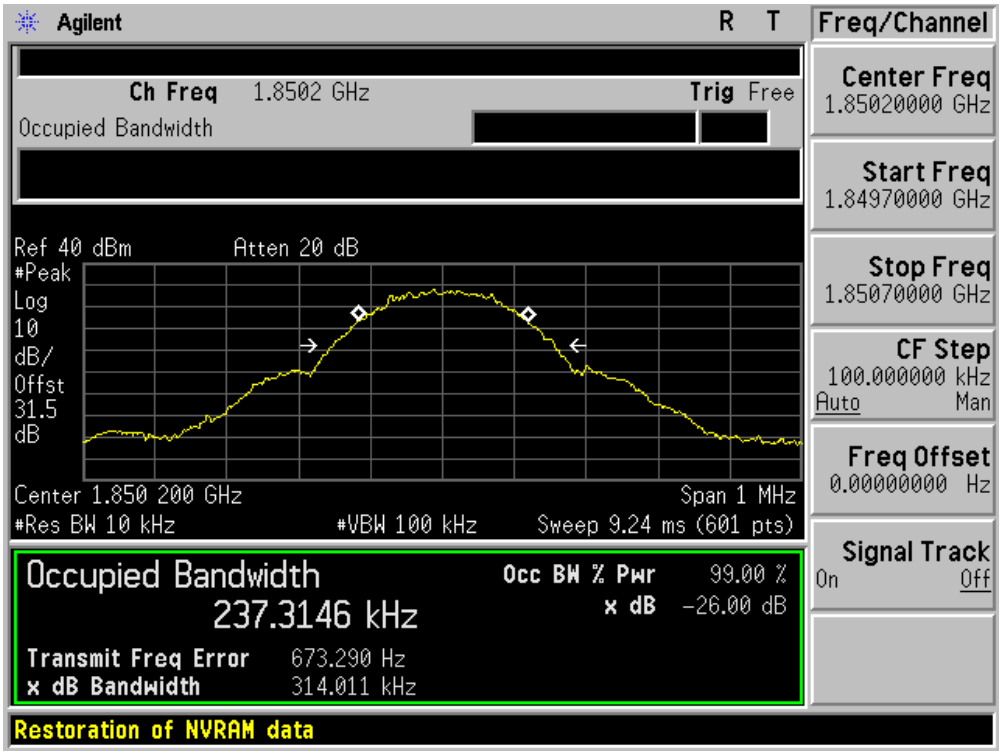


Figure Channel 661 (1880.00MHz)

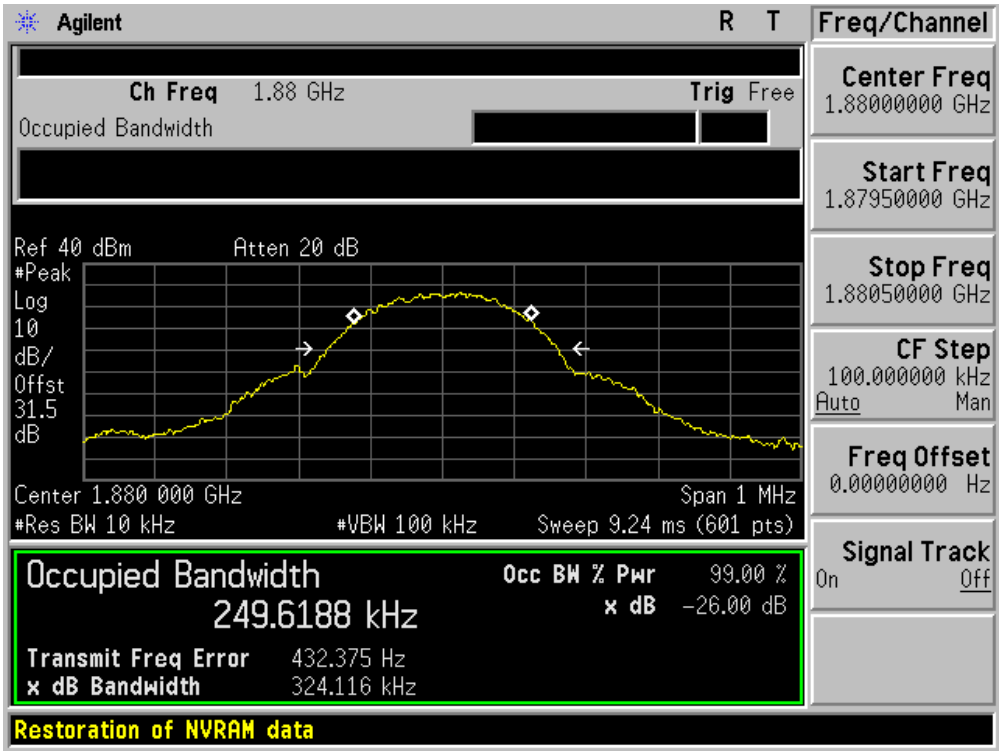
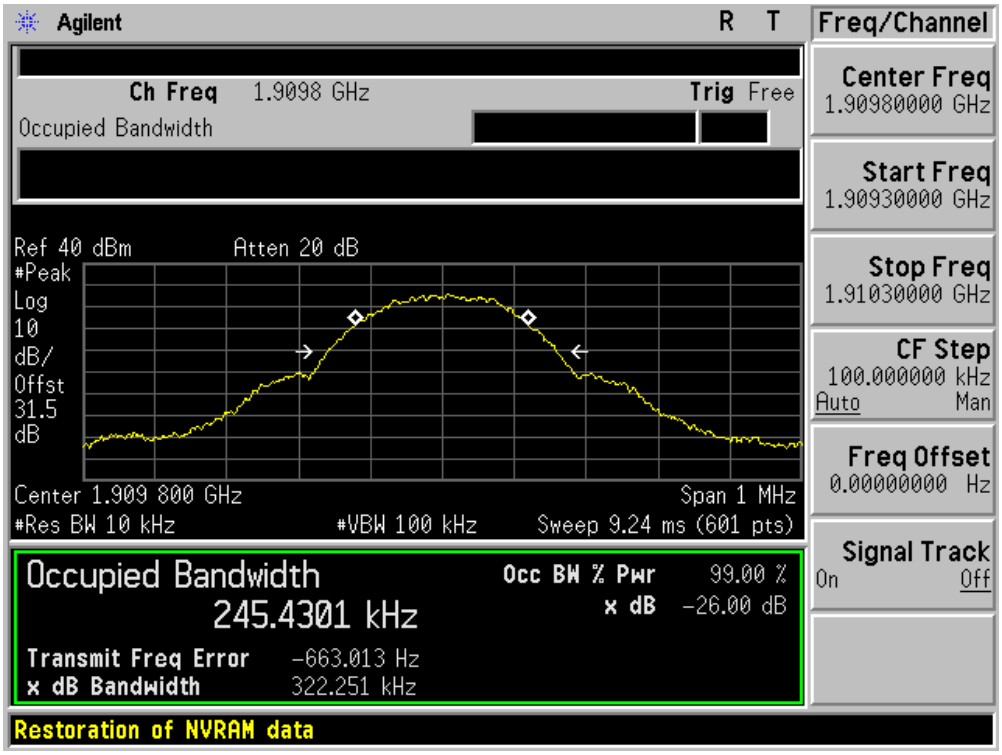


Figure Channel 810 (1909.80MHz)



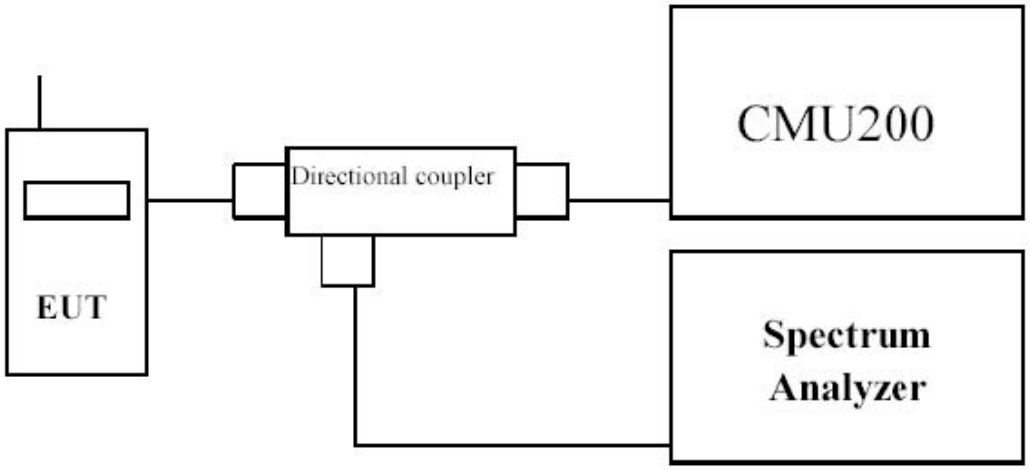
6. Spurious Emission At Antenna Terminals (+/- 1MHz)

6.1. Test Equipment

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

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2009/06/11
Radio Communication Tester	R&S	CMU 200	106388	2008/10/21
Dual Directional Coupler	Agilent	778D	20160	2009/04/20
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2009/04/20
Coaxial Cable	Huber+Suhner	AC4-RF-H	10	2008/11/24
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2009/03/31

6.2. Test Setup



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

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.

6.5. Uncertainty

The measurement uncertainty is defined as ± 1.2 dB.

6.6. Test Result

Product	Dual band GSM mobile phone		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 1: GSM850 GPRS Link		
Date of Test	2009/09/10	Test Site	AC-6

Figure Channel 128 (824.20MHz)

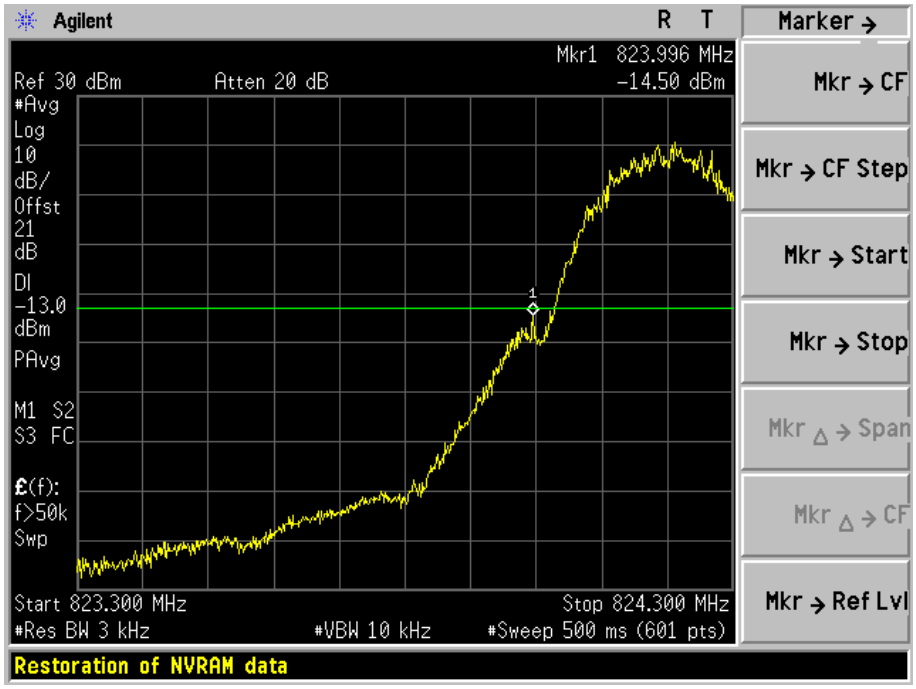
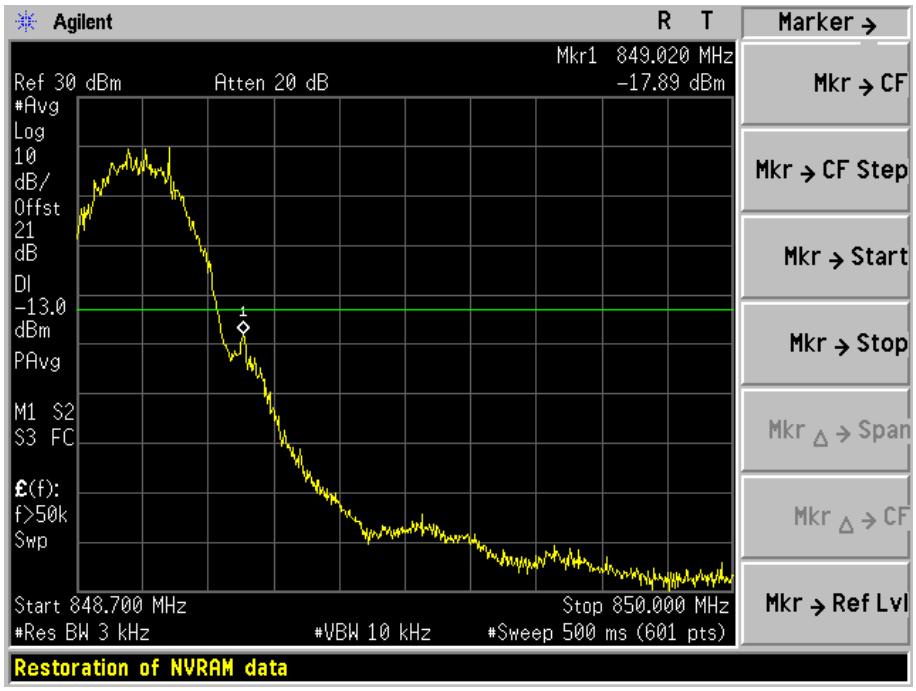


Figure Channel 251 (848.80MHz)



Product	Dual band GSM mobile phone		
Test Item	Spurious Emission At Antenna Terminals (+/- 1MHz)		
Test Mode	Mode 2: PCS1900 GPRS Link		
Date of Test	2009/09/10	Test Site	AC-6

Figure Channel 512 (1850.20MHz)

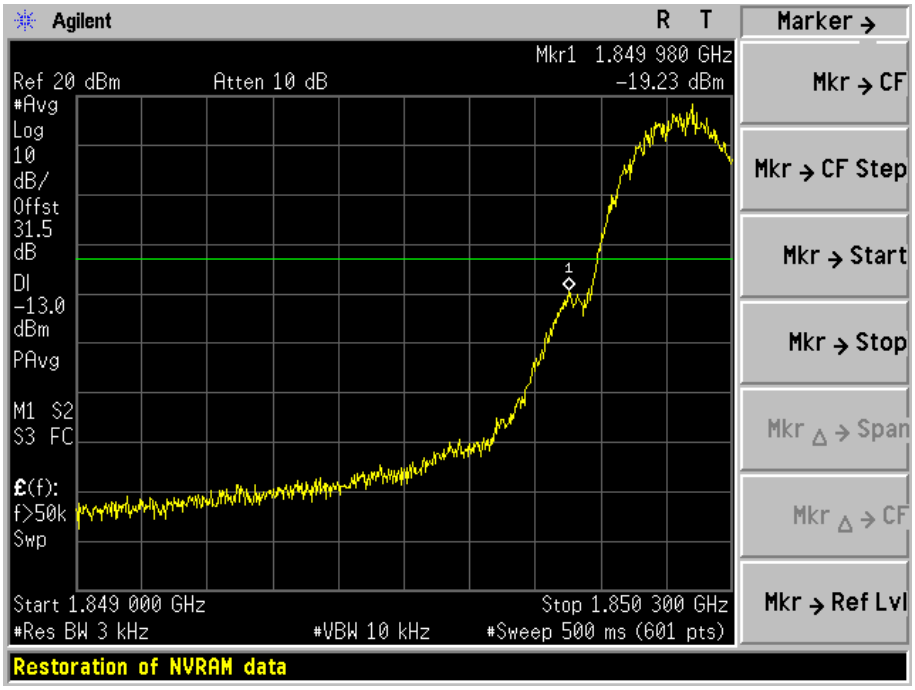
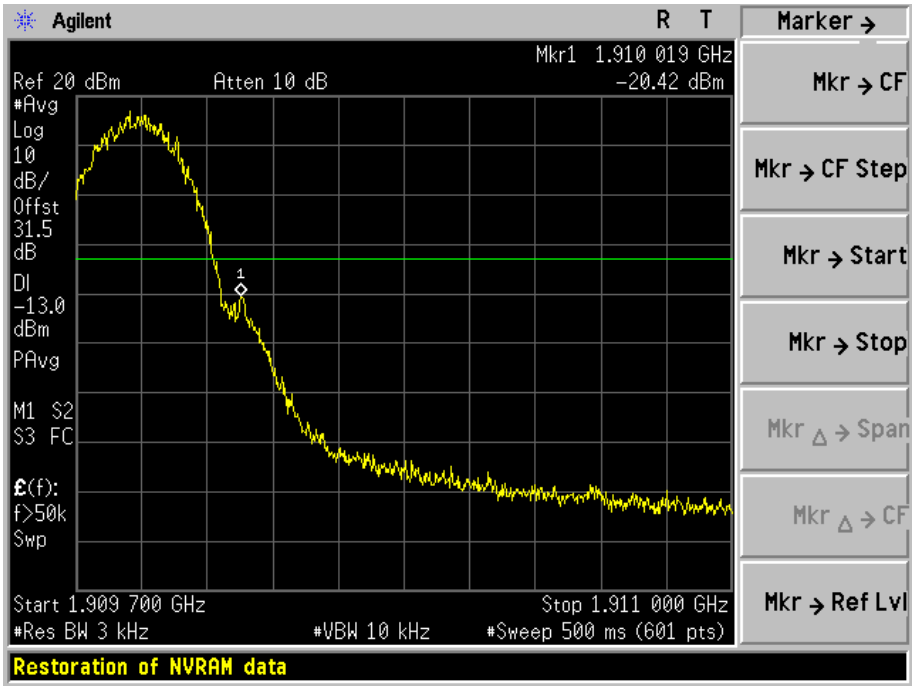


Figure Channel 810 (1909.80MHz)



7. Spurious Emission

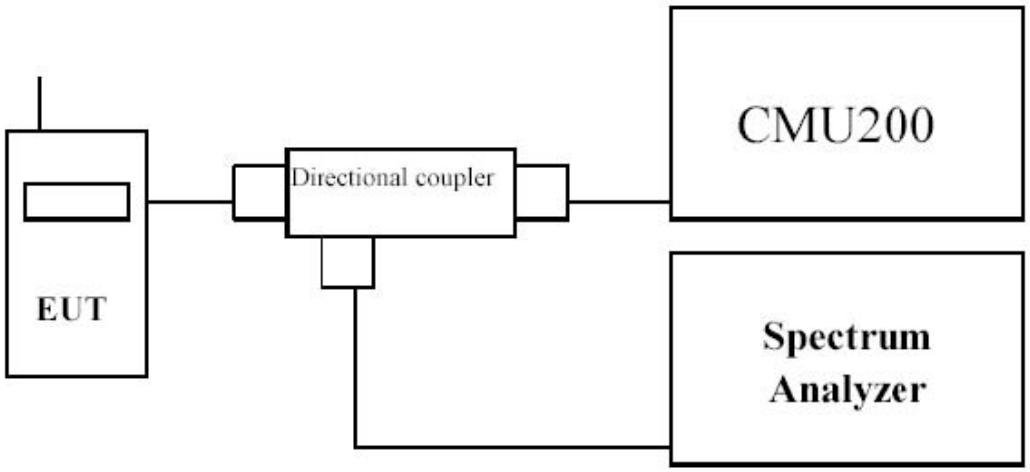
7.1. Test Equipment

Spurious Emission / AC-5

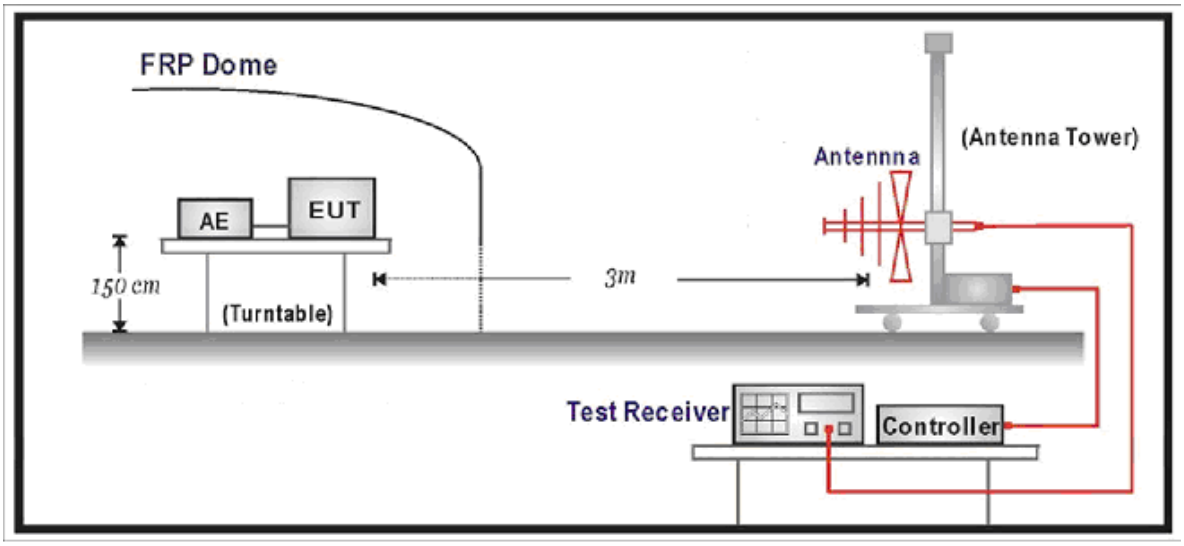
Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2009.04.23
Radio Communication Tester	R&S	CMU 200	106388	2008/10/21
PSG Analog S.G.	Agilent	E8257D	MY44321116	2009/06/10
Preamplifier	QuieTek	AP-025C	QT-AP005	2008/11/24
Preamplifier	Miteq	NSP1800-25	1364185	2009.05.25
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2009.02.25
Half Wave Tuned Dipole Antenna	COM-POWER	AD-100	40137	2008/11/24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2008/11/24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2008/11/24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2008/11/24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	295	2008/11/24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2009.05.25
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C2	2009.05.25
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2009.03.31

7.2. Test Setup

Conducted Spurious Measurement:



Radiated Spurious Measurement:



7.3. 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.

7.4. 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.
u) 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.

7.5. Uncertainty

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

7.6. Test Result

Product	Dual band GSM mobile phone		
Test Item	Spurious Emission		
Test Mode	Mode 1: GSM850 GPRS Link		
Date of Test	2009/09/10	Test Site	AC-6

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)								
1648.40	-41.887	V	-57.735	3.28	9.75	-51.265	-13.00	-38.265
2472.60	-45.209	V	-57.013	4.10	10.48	-50.633	-13.00	-37.633
1648.40	-42.394	H	-58.251	3.28	9.75	-51.781	-13.00	-38.781
2472.60	-46.845	H	-58.668	4.10	10.48	-52.288	-13.00	-39.288
Middle Channel 189 (836.40MHz)								
1672.80	-45.467	V	-61.211	3.32	9.95	-54.581	-13.00	-41.581
2509.20	-43.271	V	-55.588	3.81	10.62	-48.778	-13.00	-35.778
1672.80	-43.855	H	-59.542	3.32	9.95	-52.912	-13.00	-39.912
2509.20	-46.291	H	-56.700	3.81	10.62	-49.890	-13.00	-36.890
High Channel 251 (848.80MHz)								
1697.60	-43.780	V	-59.340	3.35	10.06	-52.630	-13.00	-39.630
2546.40	-43.591	V	-55.623	4.19	10.68	-49.133	-13.00	-36.133
1697.60	-41.830	H	-57.284	3.35	10.06	-50.574	-13.00	-37.574
2546.40	-44.881	H	-55.180	4.19	10.68	-48.690	-13.00	-35.690

Product	Dual band GSM mobile phone		
Test Item	Spurious Emission		
Test Mode	Mode 2: GSM1900 GPRS Link		
Date of Test	2009/09/10	Test Site	AC-6

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)								
3700.40	-41.031	V	-51.832	4.78	12.69	-43.922	-13.00	-30.922
5550.60	-40.878	V	-46.309	6.03	13.15	-39.189	-13.00	-26.189
3700.40	-40.089	H	-50.504	4.78	12.69	-42.594	-13.00	-29.594
5550.60	-39.693	H	-45.226	6.03	13.15	-38.106	-13.00	-25.106
Middle Channel 661 (1880.00MHz)								
3760.00	-40.800	V	-50.776	5.03	12.72	-43.086	-13.00	-30.086
5640.00	-40.453	V	-45.886	5.93	13.14	-38.676	-13.00	-25.676
3760.00	-40.802	H	-50.711	5.03	12.72	-43.021	-13.00	-30.021
5640.00	-38.784	H	-44.344	5.93	13.14	-37.134	-13.00	-24.134
High Channel 810 (1909.80MHz)								
3819.60	-40.222	V	-50.813	5.03	12.73	-43.113	-13.00	-30.113
5729.40	-41.575	V	-46.796	6.20	13.11	-39.886	-13.00	-26.886
3819.60	-40.502	H	-50.707	5.03	12.73	-43.007	-13.00	-30.007
5729.40	-37.821	H	-43.144	6.20	13.11	-36.234	-13.00	-23.234

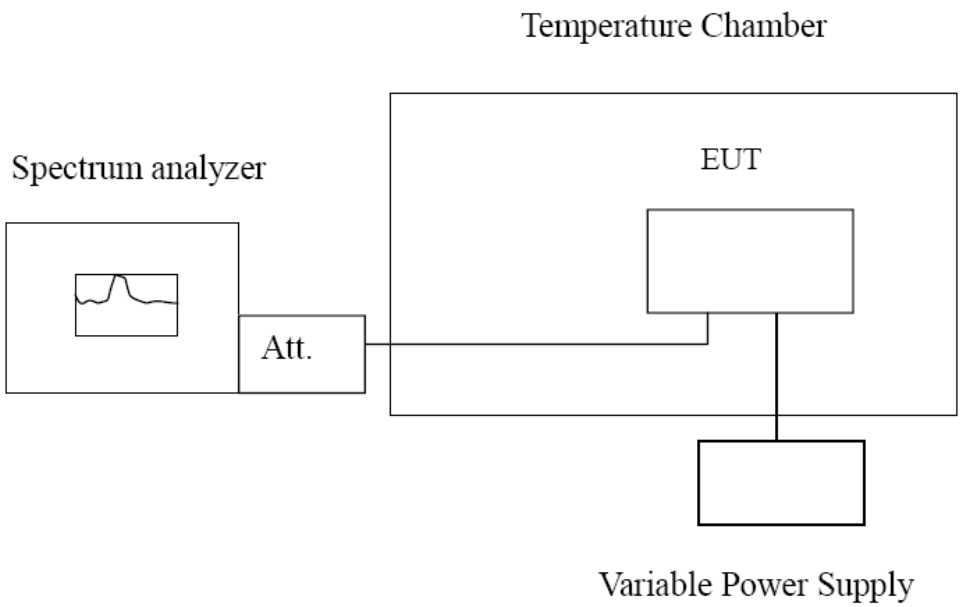
8. Frequency Stability Under Temperature & Voltage Variations

8.1. Test Equipment

Frequency Stability Under Temperature & Voltage Variations / AC-6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2009/06/11
Radio Communication Tester	R&S	CMU 200	106388	2008/11/22
Dual Directional Coupler	Agilent	778D	20160	2009/04/20
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2009/04/20
Coaxial Cable	Huber+Suhner	AC3-RF	08	2008/11/24
AC Power Supply	IDRC	CF-500TP	979422	2009/03/09
DC Power Supply	IDRC	CD-035-020PR	977272	2009/02/02
Programmable Temperature & Humidity Chamber	Gaoyu	TH-1P-B	WIT-05121302	2009/01/19
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH003	2009/03/31

8.2. Test Setup



8.3. Limit

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

Limit	< ± 2.5 ppm

8.4. 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.

8.5. Uncertainty

The measurement uncertainty is defined as ± 10 Hz.

8.6. Test Result

Product	Dual band GSM mobile phone		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: GSM850 GPRS Link		
Date of Test	2009/09/10	Test Site	AC-6

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (kHz)
-30	836.40	-55	± 2091
-20	836.40	-49	± 2091
-10	836.40	-24	± 2091
0	836.40	-37	± 2091
10	836.40	-29	± 2091
20	836.40	-18	± 2091
30	836.40	-22	± 2091
40	836.40	-36	± 2091
50	836.40	-42	± 2091

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
3.14	836.40	-47	± 2091
3.70	836.40	-35	± 2091
4.25	836.40	-52	± 2091

Product	Dual band GSM mobile phone		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 2: PCS1900 GPRS Link		
Date of Test	2009/09/10	Test Site	AC-6

Frequency Stability under Temperature

Temperature Interval (℃)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	1880.00	-52	± 4700
-20	1880.00	-46	± 4700
-10	1880.00	-30	± 4700
0	1880.00	-35	± 4700
10	1880.00	-31	± 4700
20	1880.00	-24	± 4700
30	1880.00	-27	± 4700
40	1880.00	-36	± 4700
50	1880.00	-49	± 4700

Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (KHz)
3.14	1880.00	-43	± 4700
3.70	1880.00	-37	± 4700
4.25	1880.00	-50	± 4700