

## FCC 47 CFR PART 22H and 24E

Product Type : PDA phone

Applicant : ModeLabs manufacture

Address : 11 Bis, RUE ROQUEPINE, 75008, PARIS, FRANCE

Trade Name : TAG Heuer

Model Number : TH02M

Test Specification : FCC 47 CFR PART 22H: Oct, 2009  
FCC 47 CFR PART 24E: Oct, 2009  
ANSI/TIA-603-C 2004

Issue Date : Apr. 14, 2011

### Issue by

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Taiwan Accreditation Foundation accreditation number: 1330

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**Revision History**

Rev.	Issue Date	Revisions	Revised By
00	Apr. 14, 2011	Initial Issue	

## Verification of Compliance

Issued Date: 2011/04/14

Product Type : PDA phone  
Applicant : ModeLabs manufacture  
Address : 11 Bis, RUE ROQUEPINE, 75008, PARIS, FRANCE  
Trade Name : TAG Heuer  
Model Number : TH02M  
FCC ID : WCKTH02M  
EUT Rated Voltage : DC 5.0V, 1.0A  
Test Voltage : 120 Vac / 60 Hz  
Applicable : FCC 47 CFR PART 22H: Oct, 2009  
Standard : FCC 47 CFR PART 24E: Oct, 2009  
ANSI/TIA-603-C 2004

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.

No. 140-1, Changan Street, Bade City

Taoyuan County 334, Taiwan R.O.C.

Tel : +886-3-2710188 / Fax : +886-3-2710190

Taiwan Accreditation Foundation accreditation number:  
1330



<http://www.atl-lab.com.tw/e-index.htm>

The above equipment was tested by A Test Lab Techno Corp. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 22H, Part 24E.  
The test results of this report relate only to the tested sample identified in this report.

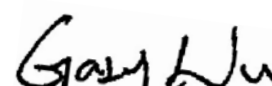
Approved By :



(Manager)

(Miller Lee )

Reviewed By :



(Testing Engineer)

(Gary Wu)

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# 1 General Information

## 1.1. EUT Description

Applicant	ModeLabs manufacture				
Applicant Address	11 Bis, RUE ROQUEPINE, 75008, PARIS, FRANCE				
Manufacturer	ModeLabs manufacture				
Manufacturer Address	11 Bis, RUE ROQUEPINE, 75008, PARIS, FRANCE				
Product Type	PDA phone				
Trade Name	TAG Heuer				
Model Number	TH02M				
FCC ID	WCKTH02M				
IMEI NO	357631040015514				
Mode	GSM/GPRS/EGPRS	Band	UL Frequency (MHz)	DL Frequency (MHz)	Modulation
		850	824.2 ~ 848.8	869.2 ~ 893.8	GMSK/8PSK
		1900	1850.2 ~ 1909.8	1930.2 ~ 1989.8	GMSK/8PSK
	WCDMA/HSDPA/HSUPA	Band	UL Frequency (MHz)	DL Frequency (MHz)	Modulation
		II	1852.4 ~ 1907.6	1932.4 ~ 1987.6	QPSK
		V	826.4 ~ 846.6	871.4 ~ 891.6	QPSK
Channel Control	Auto				
Type of Antenna	Internal Type				
Antenna Gain (dBi)	GSM/GPRS/EGPRS 850: -6.2 dBi GSM/GPRS/EGPRS 1900: -2.0 dBi WCDMA/ HSDPA/ HSUPA Band II: -2.0 dBi WCDMA/ HSDPA/ HSUPA Band V: -6.2 dBi				
Max. RF Output power	GSM/GPRS/EGPRS 850: 32.70 dBm / 1.862 W GSM/GPRS/EGPRS 1900: 30.10 dBm / 1.023 W WCDMA/HSDPA/ HSUPA Band II: 27.70 dBm / 0.589 W WCDMA/HSDPA/ HSUPA Band V: 28.07 dBm / 0.641 W				
Max. ERP/EIRP	GSM 850: 27.30 dBm / 0.537 W GPRS 850: 27.47 dBm / 0.558 W EGPRS 850: 24.02 dBm / 0.252 W GSM 1900: 26.54 dBm / 0.451 W GPRS 1900: 26.48 dBm / 0.445 W EGPRS 1900: 26.39 dBm / 0.436W WCDMA Band II: 25.50 dBm / 0.355 W WCDMA Band V: 19.84 dBm / 0.096 W				
Emission Designator	GSM 850: 245KGXW GPRS 850: 249KGXW EGPRS 850: 245KG7W GSM 1900: 245KGXW GPRS 1900: 248KGXW EGPRS 1900: 245KG7W WCDMA Band II: 4M07F9W WCDMA Band V: 4M04F9W				

## 1.2. Mode of Operation

ATL 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: GSM 1900 Link
Mode 3: WCDMA Band II Link
Mode 4: WCDMA Band V Link
Mode 5: GPRS 850 Link
Mode 6: GPRS 1900 Link
Mode 7: EGPRS 850 Link
Mode 8: EGPRS 1900 Link

Note: 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.

### WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. Based on the investigation results, the highest peak power and enhanced data rate is the worst-case scenario for all measurements.

Worst case modes:

- Cellular & PCS bands for GSM and WCDMA

For the fundamental investigation, since the EUT is a portable device that has three orientations; therefore XY, YZ and ZX orientations have been investigated, also with AC/DC adapter and headset and the worst case was found to be on EUT only at ZX orientation for both Cell and for PCS band.

### Tested System Details

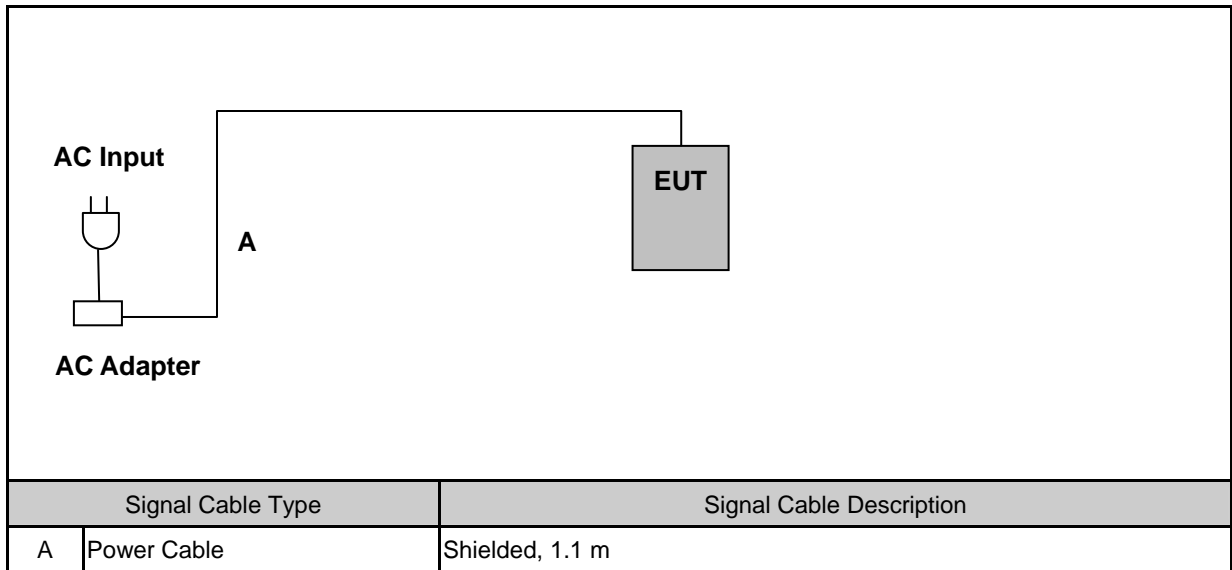
The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model Number	Serial Number	Power Cord
1.	Universal Radio Communication Tester	R&S	CMU200	109369	N/A

## 1.3. EUT Exercise Software

1.	Setup the EUT and Base Station (CMU200) as shown on 1.4.
2.	Turn on the power of all equipment.

#### 1.4. Configuration of Test System Details



#### 1.5. Test Site Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	25
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950

#### 1.6. Summary of Test Result

Description	FCC Rule	IC Rule	Limit	Result
Conducted Output Power	§2.1046	N/A	N/A	Pass
Effective Radiated Power	§22.913(a)(2)	RSS-132(4.4) SRSP-503(5.1.3)	< 7 Watts for FCC (<6.3 Watts for IC)	Pass
Equivalent Isotropic Radiated Power	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	< 2 Watts	Pass
Occupied Bandwidth	§2.1049 §22.917(a) §24.238(a)	N/A	N/A	Pass
Band Edge Measurement	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1)RSS-133 (6.5.1)	< 43+10log <sub>10</sub> (P[Watts])	Pass
Conducted Emission	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	< 43+10log <sub>10</sub> (P[Watts])	Pass
Field Strength of Spurious Radiation	§2.1053 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	< 43+10log <sub>10</sub> (P[Watts])	Pass
Frequency Stability for Temperature & Voltage	§2.1055 §22.355 §24.235	RSS-132(4.3) RSS-133(6.3)	< 2.5 ppm	Pass



## 2 RF Output Power Test

### 2.1. Limit

N/A

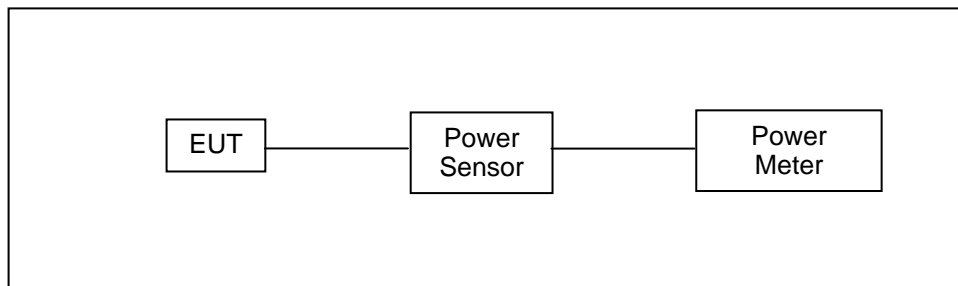
### 2.2. Test Instruments

Describe	Manufacturer	Model No.	Serial No.	Cal. Date	Remark
Universal Radio Communication Tester	ROHDE & SCHWARZ	CMU200	109369	07/29/2009	(2)
Single Channel PK Power Sensor	Agilent	N1911A	MY45101619	07/19/2010	(1)
Wideband Power Meter	Agilent	N1921A	MY45241957	07/19/2010	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: <sup>(1)</sup> Calibration period 1 year. <sup>(2)</sup> Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

### 2.3. Test Setup



### 2.4. Test Procedure

The measurement is made according to ANSI/TIA-603-C-2004 as follows:

1. The transmitter output was connected to power meter and base station through power divider.
2. Set base station for EUT at GSM 850: PCL=5 and PCS 1900: PCL=0.
3. Set base station for EUT at WCDMA Band V and WCDMA Band II, power level was set to maximum.
4. Select lowest, middle, and highest channels for each band.

## 2.5. Uncertainty

The measurement uncertainty is defined as for RF output power measurement is 1.2 dB.

## 2.6. Test Result

Model Number	TH02M					
Test Item	RF Output Power					
Date of Test	01/31/2011			Test Site	TE02	
Bands	Data Rate	Frequency (MHz)	Average Power		Peak Power	
			(dBm)	(W)	(dBm)	(W)
GSM 850	-----	824.2	32.40	1.738	32.60	1.820
		836.4	32.50	1.778	<b>32.70</b>	<b>1.862</b>
		848.8	32.40	1.738	32.60	1.820
GRRS 850	4Down1Up	824.2	32.50	1.778	32.60	1.820
		836.4	32.50	1.778	32.70	1.862
		848.8	32.50	1.778	32.70	1.862
	3Down2Up	824.2	32.50	1.778	32.70	1.862
		836.4	32.50	1.778	32.70	1.862
		848.8	32.50	1.778	32.60	1.820
	2Down3Up	824.2	32.20	1.660	32.40	1.738
		836.4	32.30	1.698	32.50	1.778
		848.8	32.20	1.660	32.40	1.738
	1Down4Up	824.2	31.30	1.349	31.50	1.413
		836.4	31.40	1.380	31.60	1.445
		848.8	31.30	1.349	31.50	1.413
EGPRS 850	4Down1Up	824.2	27.70	0.589	30.40	1.096
		836.4	27.80	0.603	30.60	1.148
		848.8	27.70	0.589	30.50	1.122
	3Down2Up	824.2	27.70	0.589	30.50	1.122
		836.4	27.80	0.603	30.60	1.148
		848.8	27.70	0.589	30.50	1.122
	2Down3Up	824.2	26.90	0.490	29.70	0.933
		836.4	27.00	0.501	29.80	0.955
		848.8	26.90	0.490	29.70	0.933
	1Down4Up	824.2	25.70	0.372	28.50	0.708
		836.4	25.80	0.380	28.60	0.724
		848.8	25.70	0.372	28.60	0.724

Note: The peak power testing result was used peak detector.

Model Number	TH02M					
Test Item	RF Output Power					
Date of Test	01/31/2011			Test Site	TE02	
Bands	Data Rate	Frequency (MHz)	Average Power		Peak Power	
			(dBm)	(W)	(dBm)	(W)
GSM 1900	-----	1850.20	30.00	1.000	<b>30.10</b>	<b>1.023</b>
		1880.00	29.90	0.977	30.00	1.000
		1909.80	29.90	0.977	30.00	1.000
GRRS 1900	4Down1Up	1850.20	30.00	1.000	30.10	1.023
		1880.00	30.00	1.000	30.10	1.023
		1909.80	29.90	0.977	30.10	1.023
	3Down2Up	1850.20	30.00	1.000	30.20	1.047
		1880.00	30.00	1.000	30.20	1.047
		1909.80	29.90	0.977	30.10	1.023
	2Down3Up	1850.20	29.70	0.933	29.90	0.977
		1880.00	29.70	0.933	29.90	0.977
		1909.80	29.60	0.912	29.80	0.955
	1Down4Up	1850.20	28.70	0.741	28.90	0.776
		1880.00	28.60	0.724	28.70	0.741
		1909.80	28.60	0.724	28.80	0.759
EGPRS 1900	4Down1Up	1850.20	26.40	0.437	29.50	0.891
		1880.00	26.40	0.437	29.40	0.871
		1909.80	26.40	0.437	29.30	0.851
	3Down2Up	1850.20	26.50	0.447	29.60	0.912
		1880.00	26.40	0.437	29.50	0.891
		1909.80	26.40	0.437	29.40	0.871
	2Down3Up	1850.20	26.20	0.417	29.30	0.851
		1880.00	26.20	0.417	29.20	0.832
		1909.80	26.20	0.417	29.30	0.851
	1Down4Up	1850.20	25.00	0.316	28.20	0.661
		1880.00	25.10	0.324	28.30	0.676
		1909.80	25.00	0.316	28.20	0.661

Note: The peak power testing result was used peak detector.

Model Number	TH02M					
Test Item	RF Output Power					
Date of Test	01/31/2011			Test Site	TE02	
Bands	Sub-Test	Frequency (MHz)	Average Power		Peak Power	
			(dBm)	(W)	(dBm)	(W)
WCDMA Band II	-----	1852.4	23.98	0.250	<b>27.70</b>	<b>0.589</b>
		1880.0	23.81	0.240	27.48	0.560
		1907.6	23.75	0.237	27.68	0.586
HSDPA Band II	1	1852.4	21.97	0.157	25.69	0.371
		1880.0	21.85	0.153	25.52	0.356
		1907.6	22.00	0.158	25.93	0.392
	2	1852.4	21.90	0.155	25.62	0.365
		1880.0	21.85	0.153	25.52	0.356
		1907.6	21.97	0.157	25.90	0.389
	3	1852.4	21.47	0.140	25.17	0.329
		1880.0	21.33	0.136	24.96	0.313
		1907.6	21.50	0.141	25.42	0.348
	4	1852.4	21.43	0.139	25.18	0.330
		1880.0	21.34	0.136	25.00	0.316
		1907.6	21.44	0.139	25.41	0.348
HSUPA Band II	1	1852.4	21.91	0.155	25.63	0.366
		1880.0	21.91	0.155	25.58	0.361
		1907.6	21.97	0.157	25.90	0.389
	2	1852.4	19.89	0.097	23.57	0.228
		1880.0	19.90	0.098	23.54	0.226
		1907.6	19.96	0.099	23.84	0.242
	3	1852.4	20.90	0.123	24.59	0.288
		1880.0	20.88	0.122	24.55	0.285
		1907.6	20.89	0.123	24.88	0.308
	4	1852.4	19.88	0.097	23.56	0.227
		1880.0	19.84	0.096	23.55	0.226
		1907.6	19.93	0.098	23.81	0.240
	5	1852.4	21.83	0.152	25.57	0.361
		1880.0	21.83	0.152	25.51	0.356
		1907.6	21.95	0.157	25.88	0.387

Note: The peak power testing result was used peak detector.

Model Number	TH02M					
Test Item	RF Output Power					
Date of Test	01/31/2011			Test Site	TE02	
Bands	Sub-Test	Frequency (MHz)	Average Power		Peak Power	
			(dBm)	(W)	(dBm)	(W)
WCDMA Band V	-----	826.4	24.24	0.265	<b>28.07</b>	<b>0.641</b>
		836.4	24.07	0.255	27.71	0.590
		846.4	23.97	0.249	27.75	0.596
HSDPA Band V	1	826.4	22.55	0.180	26.33	0.430
		836.4	22.23	0.167	25.87	0.386
		846.4	22.50	0.178	26.18	0.415
	2	826.4	22.50	0.178	26.33	0.430
		836.4	22.31	0.170	25.92	0.391
		846.4	22.48	0.177	26.18	0.415
	3	826.4	22.50	0.178	26.37	0.434
		836.4	22.30	0.170	25.90	0.389
		846.4	22.46	0.176	26.18	0.415
	4	826.4	22.50	0.178	26.33	0.430
		836.4	22.31	0.170	25.92	0.391
		846.4	22.43	0.175	26.15	0.412
HSUPA Band V	1	826.4	21.69	0.148	25.52	0.356
		836.4	21.65	0.146	25.29	0.338
		846.4	21.63	0.146	25.41	0.348
	2	826.4	19.68	0.093	23.48	0.223
		836.4	19.60	0.091	23.21	0.209
		846.4	19.57	0.091	23.36	0.217
	3	826.4	20.61	0.115	24.52	0.283
		836.4	20.61	0.115	24.24	0.265
		846.4	20.58	0.114	24.36	0.273
	4	826.4	19.61	0.091	23.44	0.221
		836.4	19.59	0.091	23.25	0.211
		846.4	19.62	0.092	23.40	0.219
	5	826.4	21.66	0.147	25.44	0.350
		836.4	21.63	0.146	25.22	0.333
		846.4	21.61	0.145	25.38	0.345

Note: The peak power testing result was used peak detector.

### 3 Effective Radiated Power / Equivalent Isotropic Radiated Power Test

#### 3.1. 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.

#### 3.2. Test Instruments

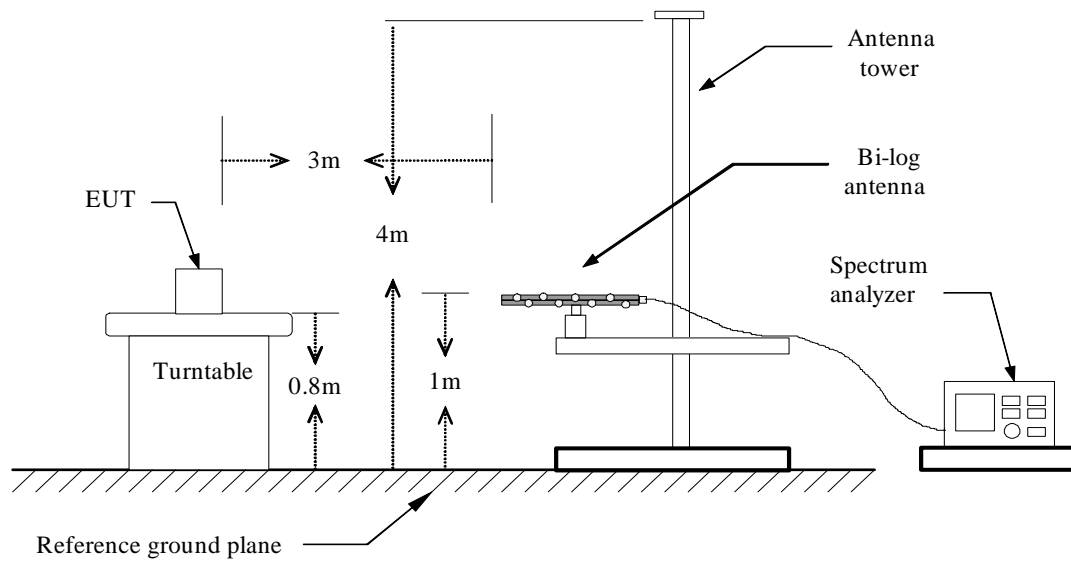
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/17/2011	(2)
Spectrum Analyzer	Agilent	E4446A	MY46180578	02/24/2010	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/24/2010	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/24/2010	(1)
Bi-log Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	08/02/2010	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/29/2010	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/29/2010	(1)
Test Site	ATL	TE01	888001	07/30/2010	(1)

Remark: <sup>(1)</sup> Calibration period 1 year. <sup>(2)</sup> Calibration period 2 years.

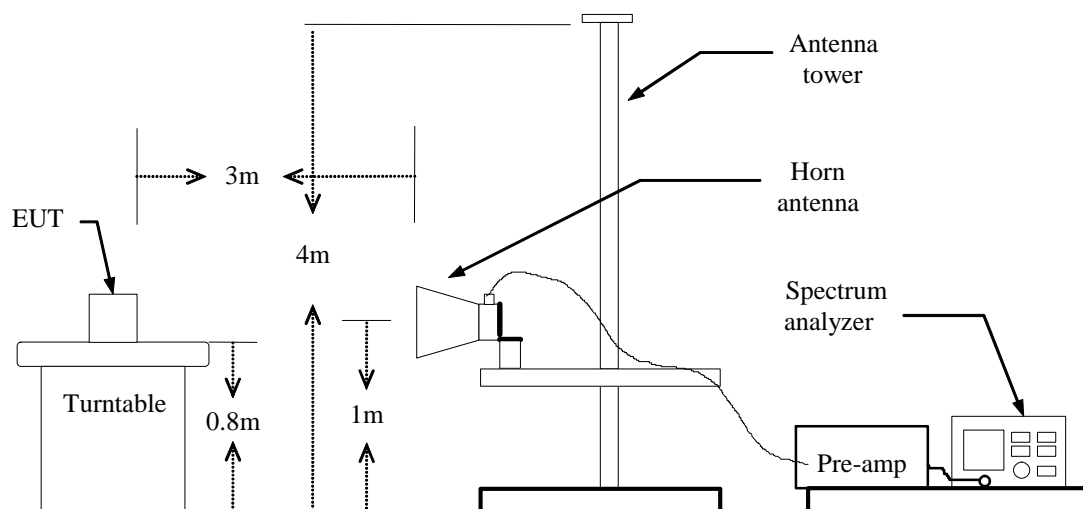
NOTE: N.C.R. = No Calibration Request.

### 3.3. Setup

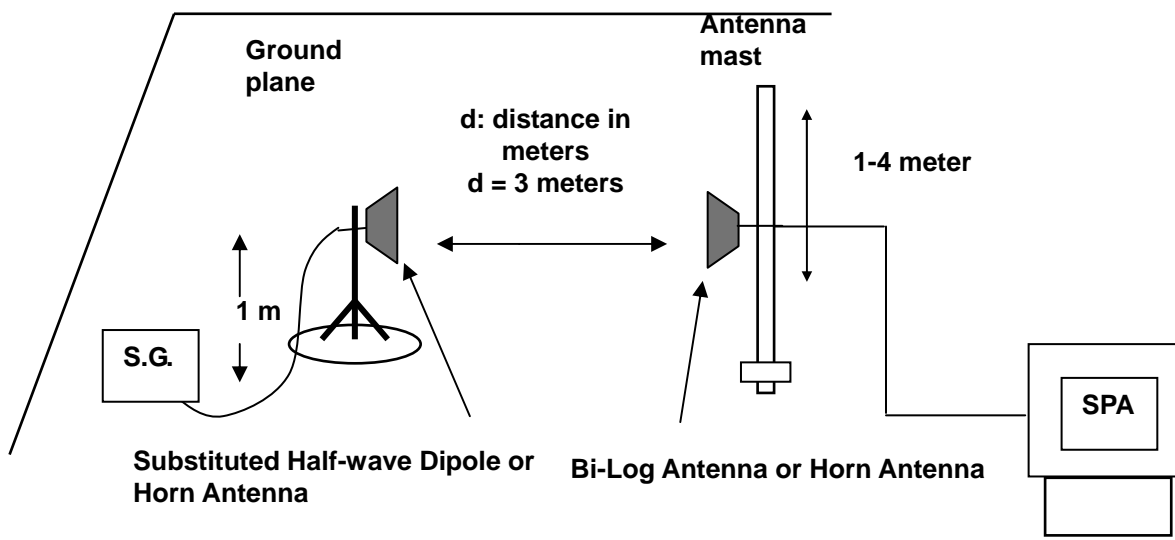
#### Below 1 GHz



#### Above 1 GHz



#### For Substituted Method Test Set-UP



### 3.4. Test Procedure

The measurement is made according to ANSI/TIA-603-C-2004 as follows:

The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement of the EUT, the resolution bandwidth was set to 3MHz and the average bandwidth was set to 3MHz. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824-849MHz, and EIRP in frequency band 1851.25 –1910MHz were measured using a substitution method. The EUT was replaced by half-wave dipole (824-849MHz) or horn antenna (1851.25-1910MHz) connected to a signal generator. The spectrum analyzer reading was recorded and ERP/EIRP was calculated as follows:

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable (dB)}$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)}$$

### 3.5. Uncertainty

The measurement uncertainty is defined as for Field Strength of Spurious Radiation measurement is  $\pm 3.072$  dB.



### 3.6. Test Result

Model Number	TH02M						
Test Item	ERP/EIRP						
Date of Test	01/31/2011				Test Site	TE01	
Bands	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction factor (dBm)	ERP		Limit
					(dBm)	(W)	
GSM 850	824.2	H	8.31	11.95	20.26	0.106	< 7W
		V	12.90	11.29	24.19	0.262	< 7W
	836.4	H	8.82	12.07	20.89	0.123	< 7W
		V	13.58	11.34	24.92	0.310	< 7W
	848.8	H	8.59	12.50	21.09	0.129	< 7W
		V	15.83	11.47	<b>27.30</b>	<b>0.537</b>	< 7W
GPRS 850	824.2	H	10.83	11.96	22.79	0.190	< 7W
		V	14.29	11.29	25.58	0.361	< 7W
	836.4	H	10.77	12.07	22.84	0.192	< 7W
		V	14.88	11.34	26.22	0.419	< 7W
	848.8	H	11.05	12.50	23.55	0.226	< 7W
		V	16.00	11.47	<b>27.47</b>	<b>0.558</b>	< 7W
EGPRS 850	824.2	H	9.05	11.95	21.00	0.126	< 7W
		V	10.24	11.30	21.54	0.143	< 7W
	836.4	H	8.48	12.07	20.55	0.114	< 7W
		V	11.39	11.34	22.73	0.187	< 7W
	848.8	H	8.58	12.52	21.10	0.129	< 7W
		V	12.55	11.47	<b>24.02</b>	<b>0.252</b>	< 7W

Note: 1. ERP/EIRP = Read Level + Correction factor.

2. For WCDMA signals, a peak detector is used with RBW = VBW = 5MHz.

3. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW= 1 MHz.

Model Number	TH02M						
Test Item	ERP/EIRP						
Date of Test	01/31/2011				Test Site	TE01	
Bands	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction factor (dBm)	EIRP		Limit
					(dBm)	(W)	
GSM 1900	1850.20	H	11.64	10.42	22.06	0.161	< 2W
		V	18.01	8.26	26.27	0.424	< 2W
	1880.00	H	11.70	10.44	22.14	0.164	< 2W
		V	18.00	8.50	26.50	0.447	< 2W
	1909.80	H	12.18	10.44	22.62	0.183	< 2W
		V	17.82	8.72	<b>26.54</b>	<b>0.451</b>	< 2W
GPRS 1900	1850.20	H	13.34	10.42	23.76	0.238	< 2W
		V	17.98	8.26	26.24	0.421	< 2W
	1880.00	H	13.43	10.44	23.87	0.244	< 2W
		V	17.94	8.50	26.44	0.441	< 2W
	1909.80	H	14.60	10.43	25.03	0.318	< 2W
		V	17.76	8.72	<b>26.48</b>	<b>0.445</b>	< 2W
EGPRS 1900	1850.20	H	10.57	10.42	20.99	0.126	< 2W
		V	17.90	8.26	26.16	0.413	< 2W
	1880.00	H	11.35	10.44	21.79	0.151	< 2W
		V	17.87	8.50	26.37	0.434	< 2W
	1909.80	H	11.45	10.43	21.88	0.154	< 2W
		V	17.66	8.73	<b>26.39</b>	<b>0.436</b>	< 2W

Note: 1. ERP/EIRP = Read Level + Correction factor.

2. For WCDMA signals, a peak detector is used with RBW = VBW = 5MHz.

3. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW= 1 MHz.

Model Number	TH02M						
Test Item	ERP/EIRP						
Date of Test	07/05/2010				Test Site	TE01	
Bands	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction factor (dBm)	EIRP		Limit
					(dBm)	(W)	
WCDMA Band II	1852.4	H	9.57	10.43	20.00	0.100	< 2W
		V	17.21	8.29	<b>25.50</b>	<b>0.355</b>	< 2W
	1880.0	H	9.01	10.44	19.45	0.088	< 2W
		V	16.99	8.48	25.47	0.352	< 2W
	1907.6	H	10.16	10.44	20.60	0.115	< 2W
		V	16.56	8.70	25.26	0.336	< 2W

Model Number	TH02M						
Test Item	ERP/EIRP						
Date of Test	07/05/2010				Test Site	TE01	
Bands	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction factor (dBm)	ERP		Limit
					(dBm)	(W)	
WCDMA Band V	826.4	H	5.34	11.97	17.31	0.054	< 7W
		V	7.50	11.30	18.80	0.076	< 7W
	836.4	H	4.61	12.06	16.67	0.046	< 7W
		V	7.65	11.33	18.98	0.079	< 7W
	846.4	H	3.35	12.38	15.73	0.037	< 7W
		V	8.42	11.42	<b>19.84</b>	<b>0.096</b>	< 7W

Note: 1. ERP/EIRP = Read Level + Correction factor.

2. For WCDMA signals, a peak detector is used with RBW = VBW = 5MHz.

3. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW= 1 MHz.

## 4 Occupied Bandwidth Test

### 4.1. Limit

**The Occupied Bandwidth Limit:**

N/A.

**The Band Edge 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  $43 + 10\log(P)$  dB.

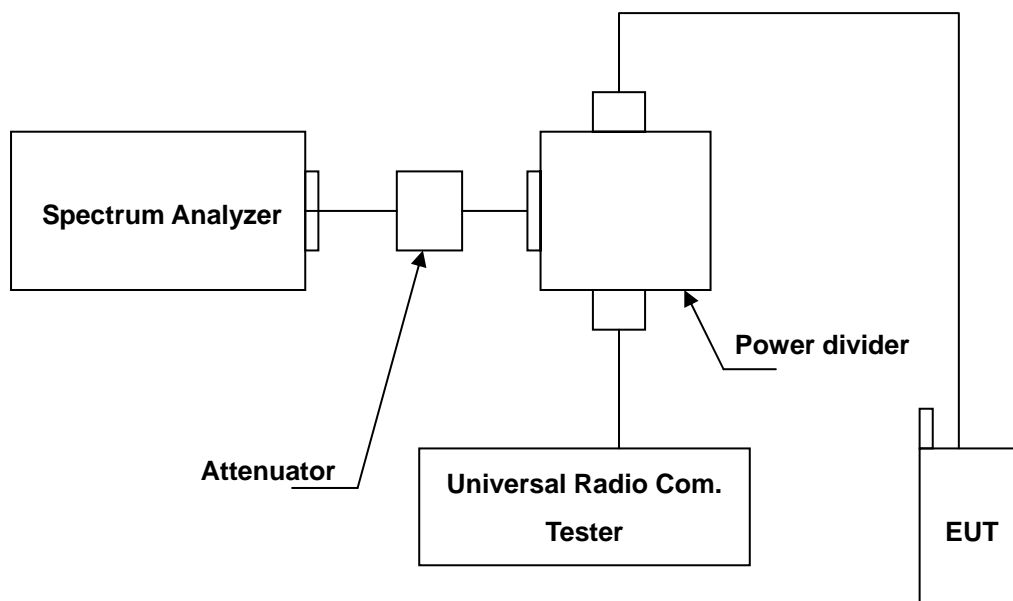
### 4.2. Test Instruments

Describe	Manufacturer	Model No.	Serial No.	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	(2)
Universal Radio Communication Tester	ROHDE & SCHWARZ	CMU200	109369	07/29/2009	(2)
Attenuator	RADIALL	R41572000	0603033073	N.C.R.	-----
Power divider	Agilent	87302C	3239A00760	N.C.R.	-----
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: <sup>(1)</sup> Calibration period 1 year. <sup>(2)</sup> Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

### 4.3. Setup



#### **4.4. Test Procedure**

The measurement is made according to FCC rules part 22 and 24:

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The occupied bandwidth of middle channel for the highest and lowest RF powers was measured.
3. The band edge of low and high channels for the highest RF powers within the transmitting frequency band were measured. Setting RBW as roughly BW/100.
4. The band edge setting:
  - a. RB=3 kHz; VB=3 kHz for GSM 850 and PCS 1900.
  - b. RB=100 kHz; VB=100 kHz for WCDMA Band V and WCDMA Band II.

#### **4.5. Uncertainty**

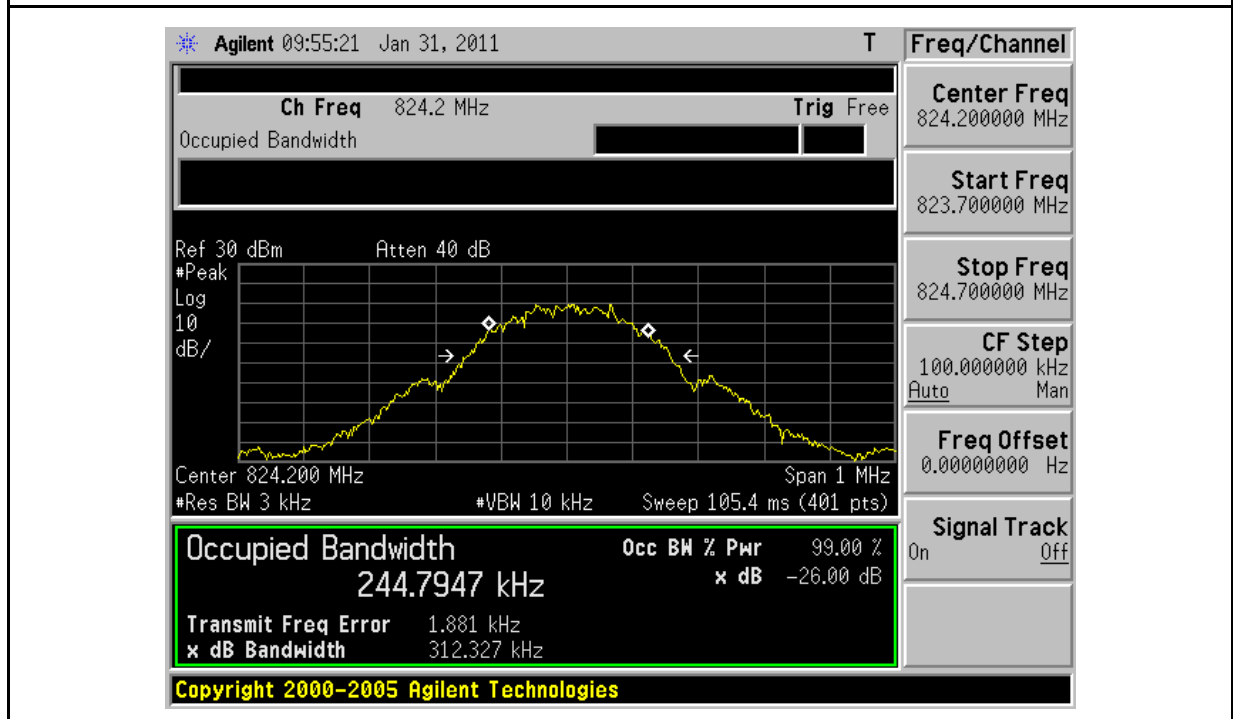
The measurement uncertainty is defined as  $\pm 10\text{Hz}$

## 4.6. Test Result

### 99% Occupied Bandwidth

Model Number	TH02M		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: GSM 850 Link		
Date of Test	01/31/2011	Test Site	TE02
Channel No.	Frequency (MHz)	99% Bandwidth (kHz)	Note
128	824.2	244.7947	RBW:3KHz , VBW:10KHz
190	836.4	245.0474	RBW:3KHz , VBW:10KHz
251	848.8	244.7650	RBW:3KHz , VBW:10KHz

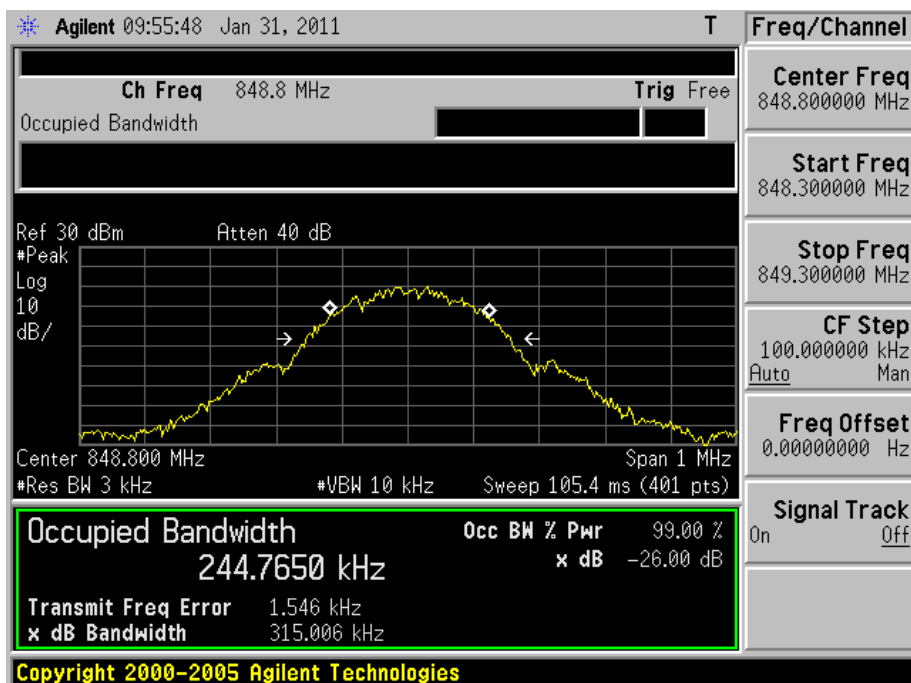
#### Channel 128



Channel 190

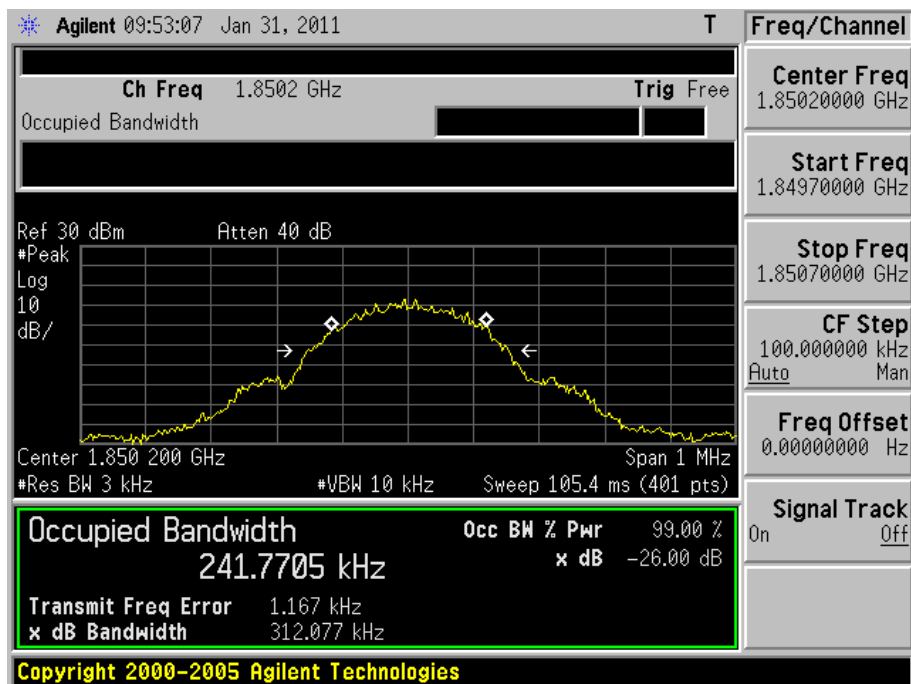


Channel 251



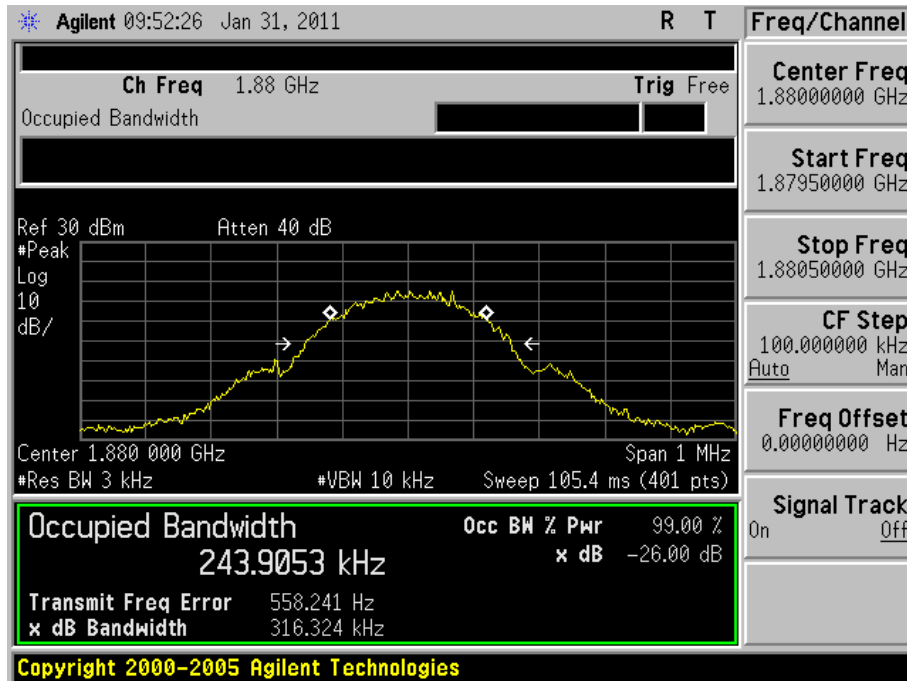
Model Number	TH02M		
Test Item	Occupied Bandwidth		
Test Mode	Mode 2: GSM 1900 Link		
Date of Test	01/31/2011	Test Site	TE02
Channel No.	Frequency (MHz)	99% Bandwidth (kHz)	Note
512	1850.20	241.7705	RBW:3KHz , VBW:10KHz
661	1880.00	243.9053	RBW:3KHz , VBW:10KHz
810	1909.80	244.7901	RBW:3KHz , VBW:10KHz

## Channel 512

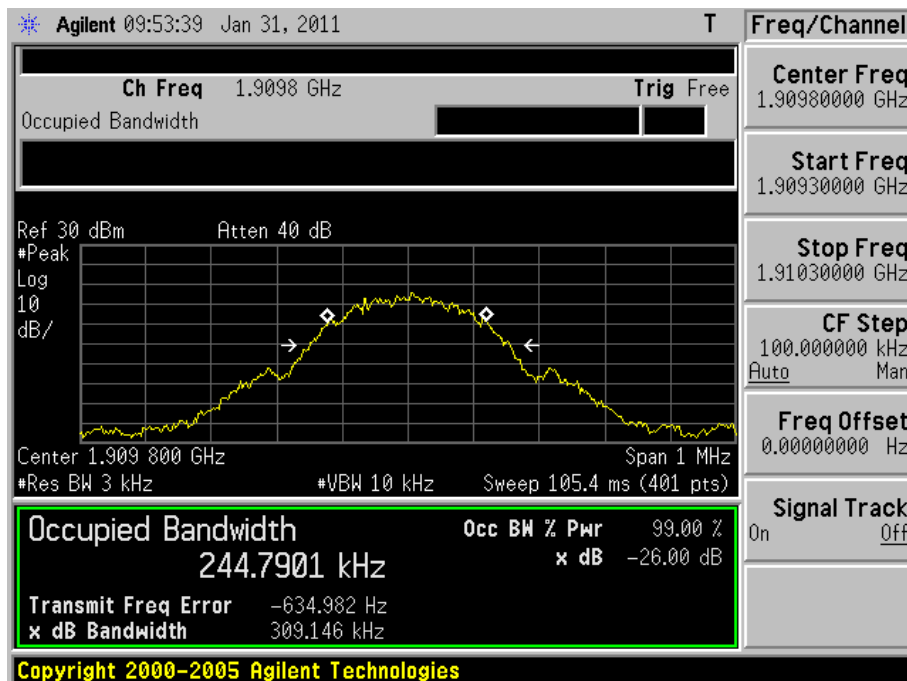




Channel 661

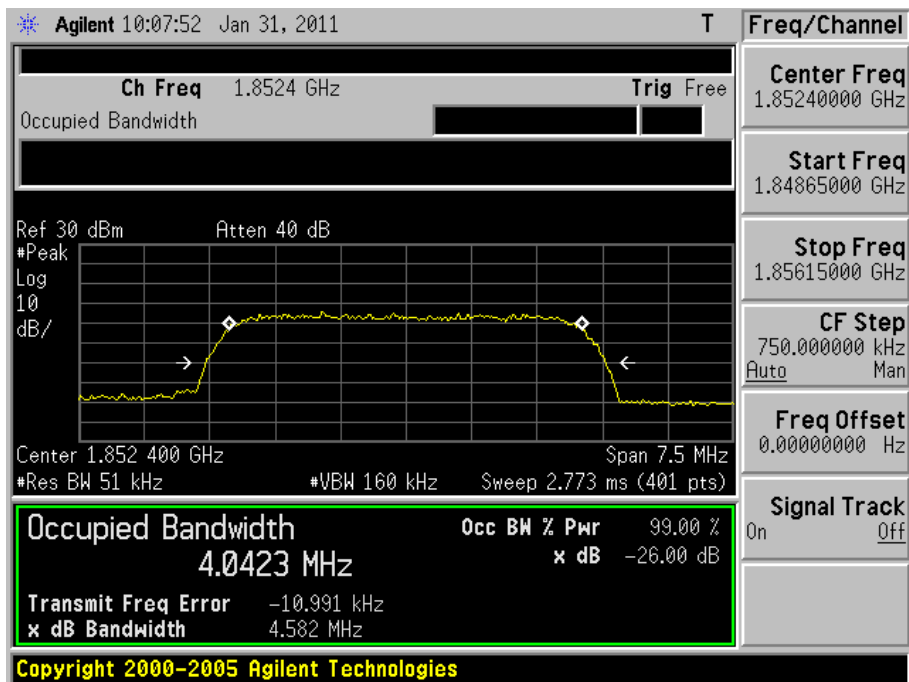


Channel 810

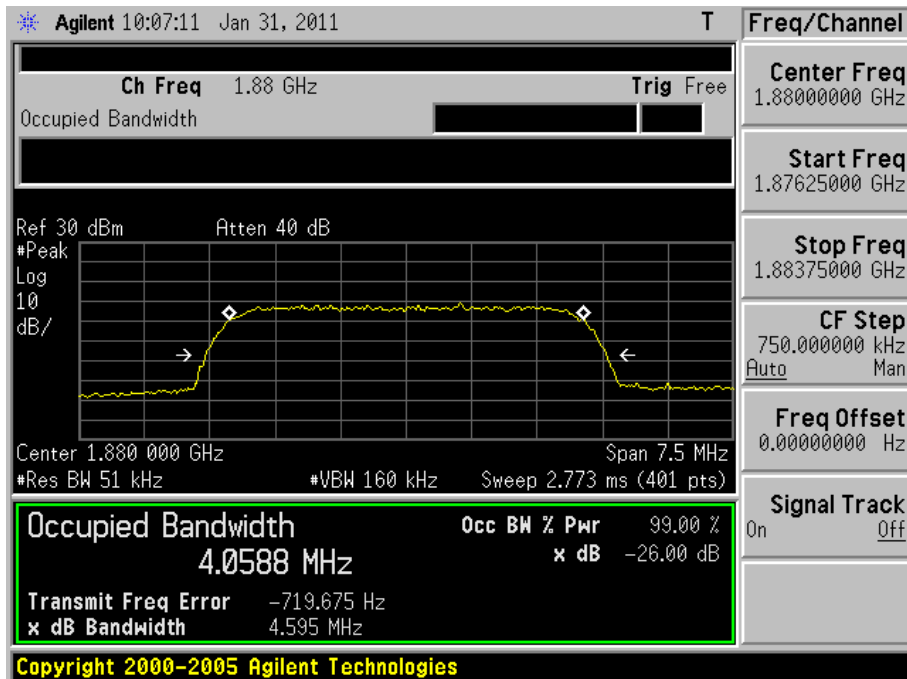


Model Number	TH02M		
Test Item	Occupied Bandwidth		
Test Mode	Mode 3: WCDMA Band II Link		
Date of Test	01/31/2011	Test Site	TE02
Channel No.	Frequency (MHz)	99% Bandwidth (MHz)	Note
9262	1852.4	4.0423	RBW:51KHz , VBW:160KHz
9400	1880.0	4.0588	RBW:51KHz , VBW:160KHz
9538	1907.6	4.0672	RBW:51KHz , VBW:160KHz

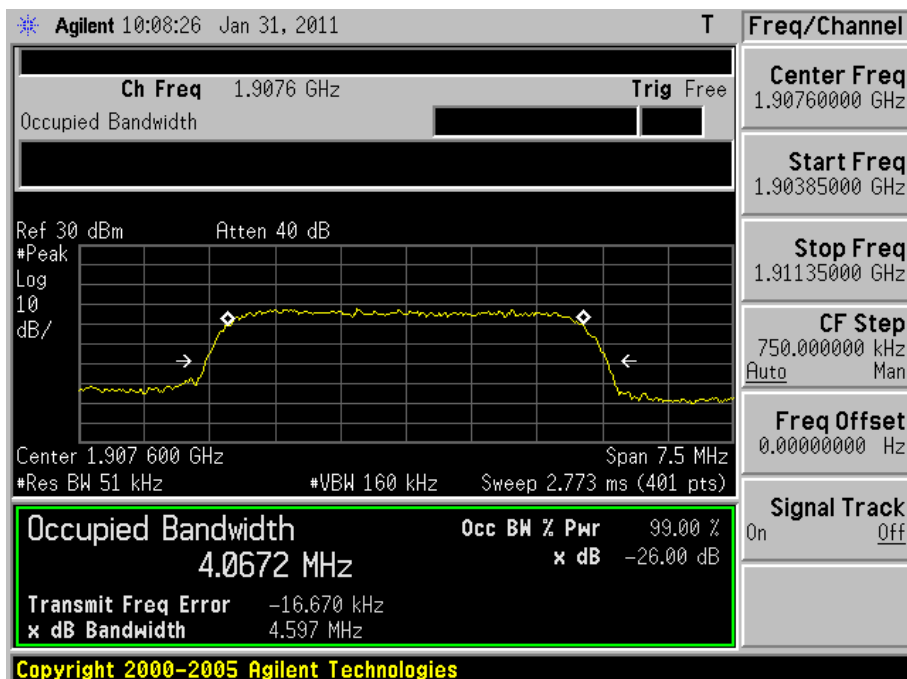
## Channel 9262



Channel 9400

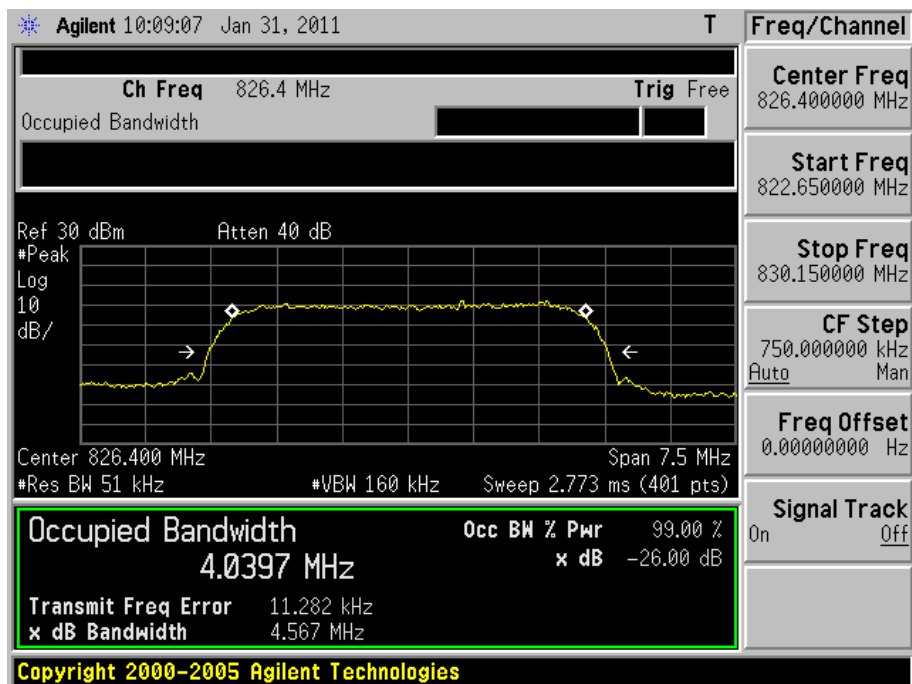


Channel 9538

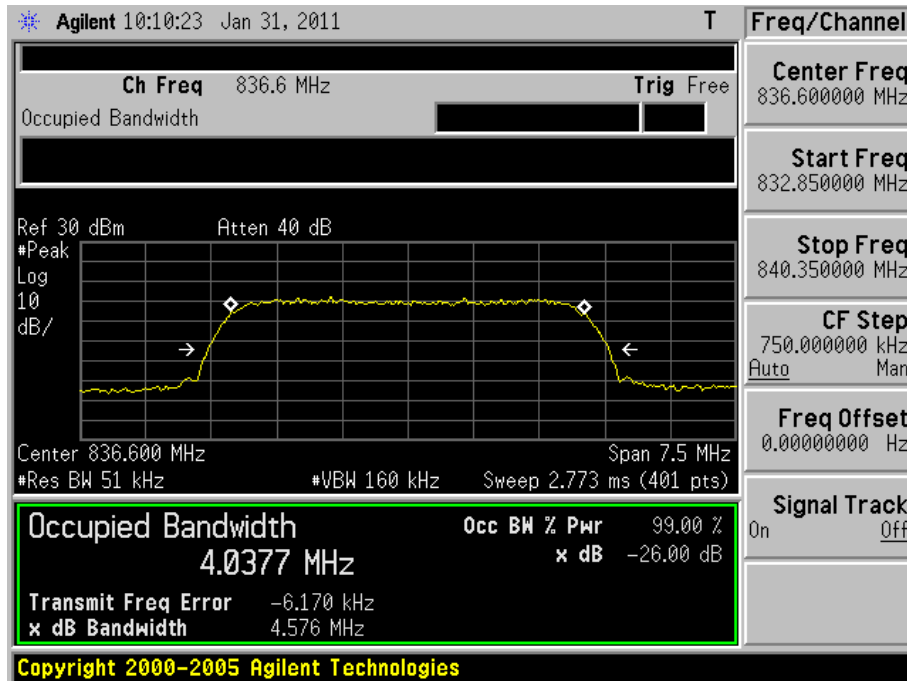


Model Number	TH02M		
Test Item	Occupied Bandwidth		
Test Mode	Mode 4: WCDMA Band V Link		
Date of Test	01/31/2011	Test Site	TE02
Channel No.	Frequency (MHz)	99% Bandwidth (kHz)	Note
4132	826.4	4.0397	RBW:51KHz , VBW:160KHz
4182	836.4	4.0377	RBW:51KHz , VBW:160KHz
4233	846.4	4.0436	RBW:51KHz , VBW:160KHz

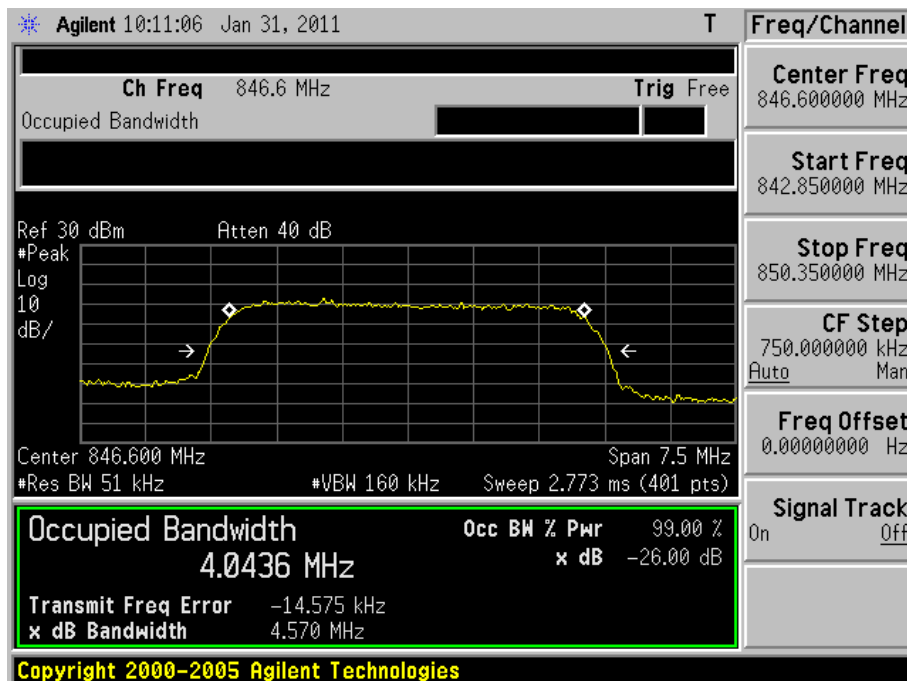
## Channel 4132



Channel 4182

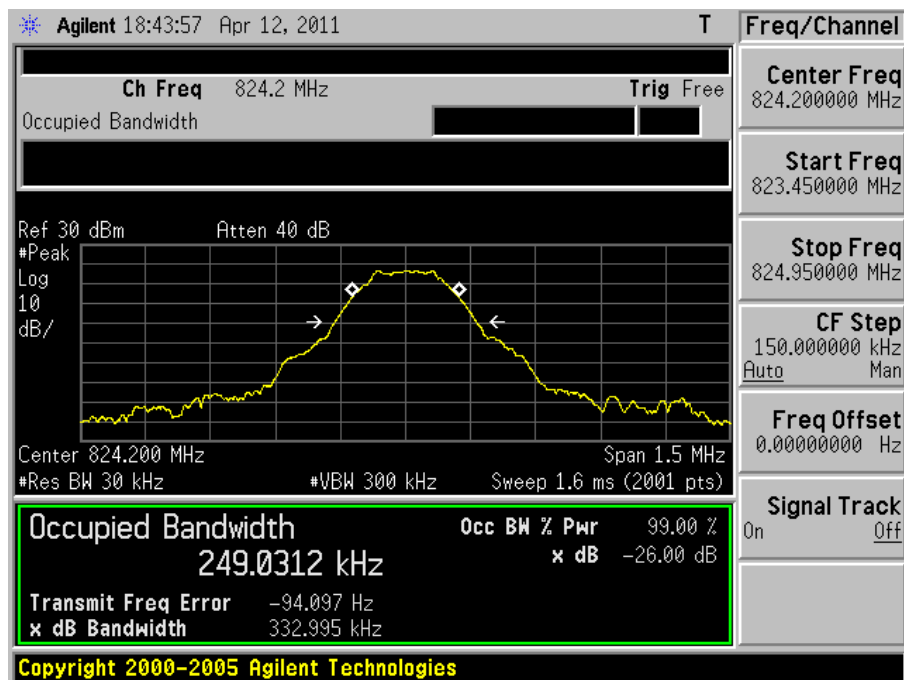


Channel 4233

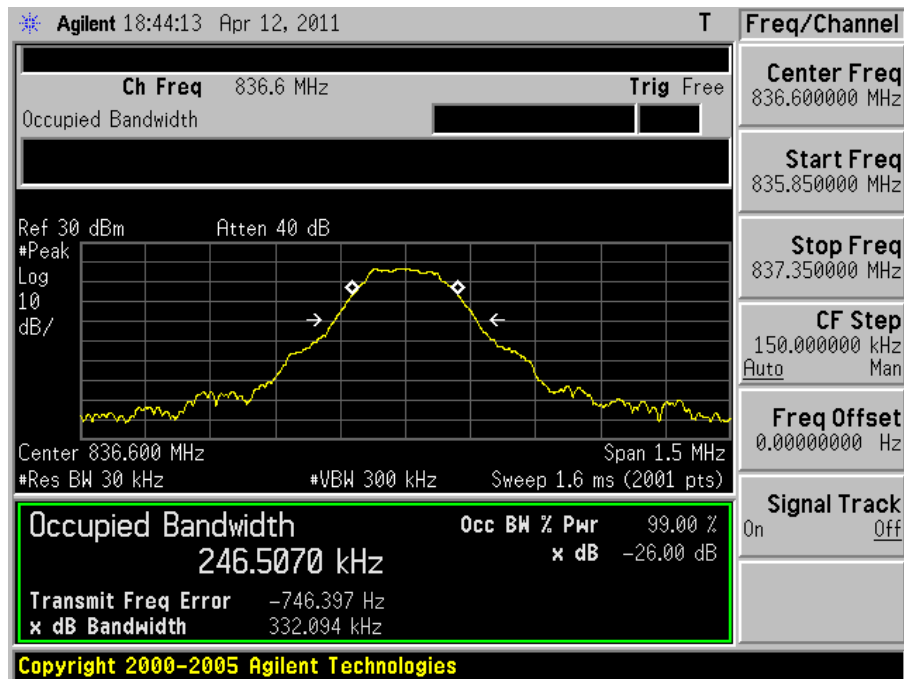


Model Number	TH02M		
Test Item	Occupied Bandwidth		
Test Mode	Mode 5: GPRS 850 Link		
Date of Test	04/12/2011	Test Site	TE02
Channel No.	Frequency (MHz)	99% Bandwidth (kHz)	Note
128	824.2	249.0312	RBW:3KHz , VBW:10KHz
190	836.4	246.5070	RBW:3KHz , VBW:10KHz
251	848.8	248.6562	RBW:3KHz , VBW:10KHz

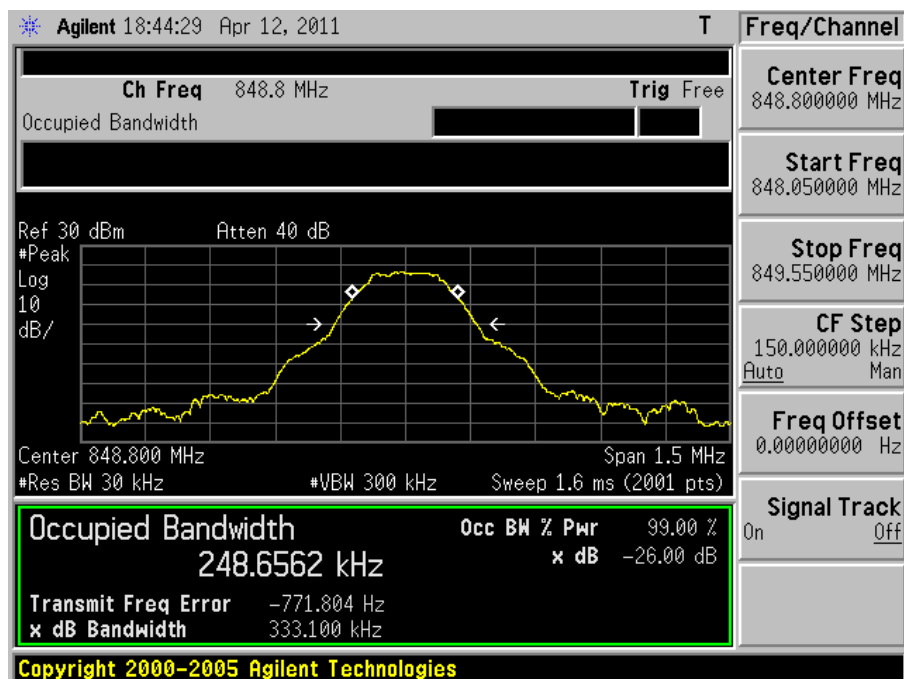
## Channel 128



Channel 190

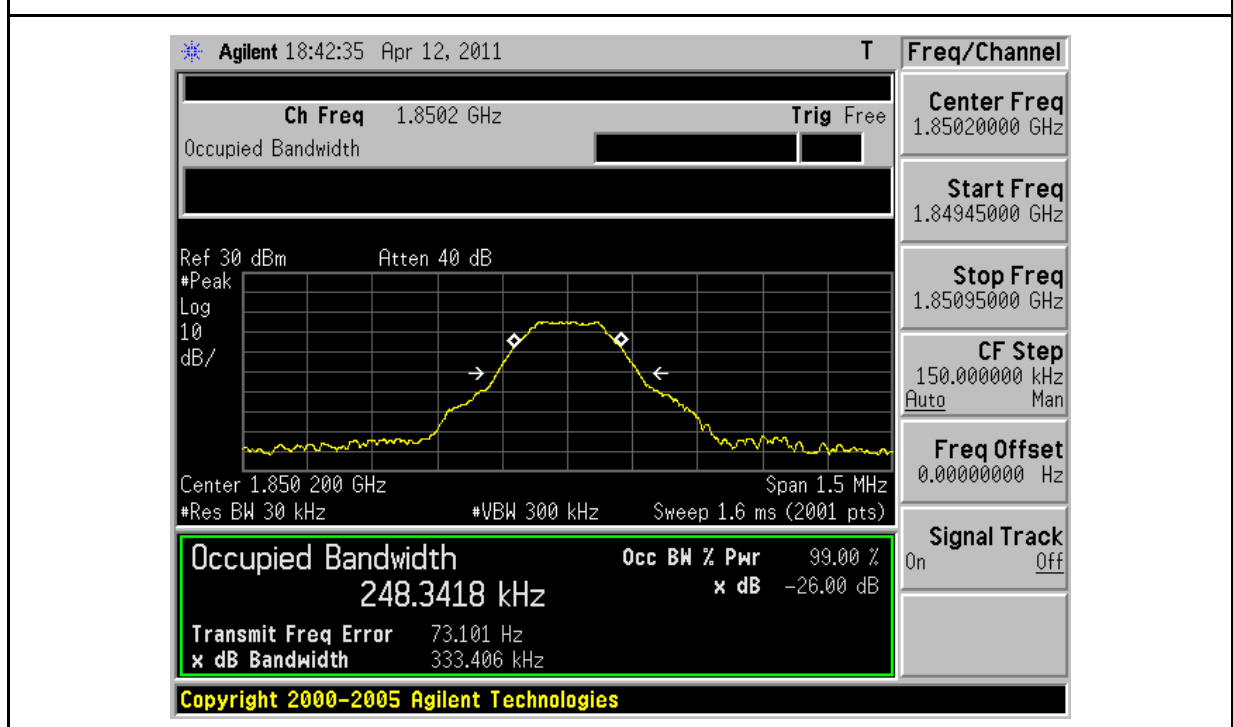


Channel 251



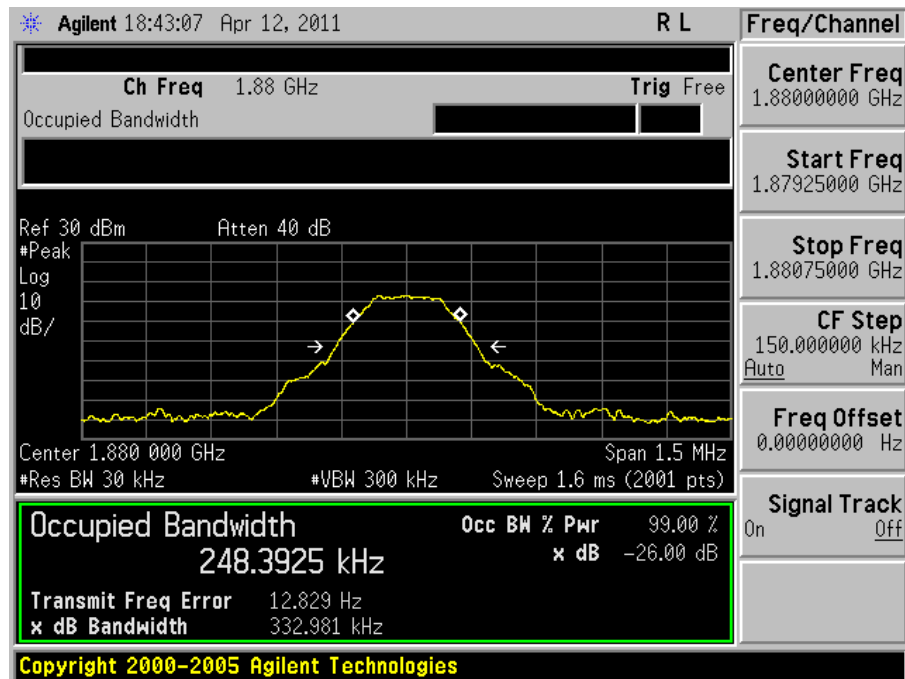
Model Number	TH02M		
Test Item	Occupied Bandwidth		
Test Mode	Mode 6: GPRS 1900 Link		
Date of Test	04/12/2011	Test Site	TE02
Channel No.	Frequency (MHz)	99% Bandwidth (kHz)	Note
512	1850.20	248.3418	RBW:3KHz , VBW:10KHz
661	1880.00	248.3925	RBW:3KHz , VBW:10KHz
810	1909.80	246.1950	RBW:3KHz , VBW:10KHz

## Channel 512

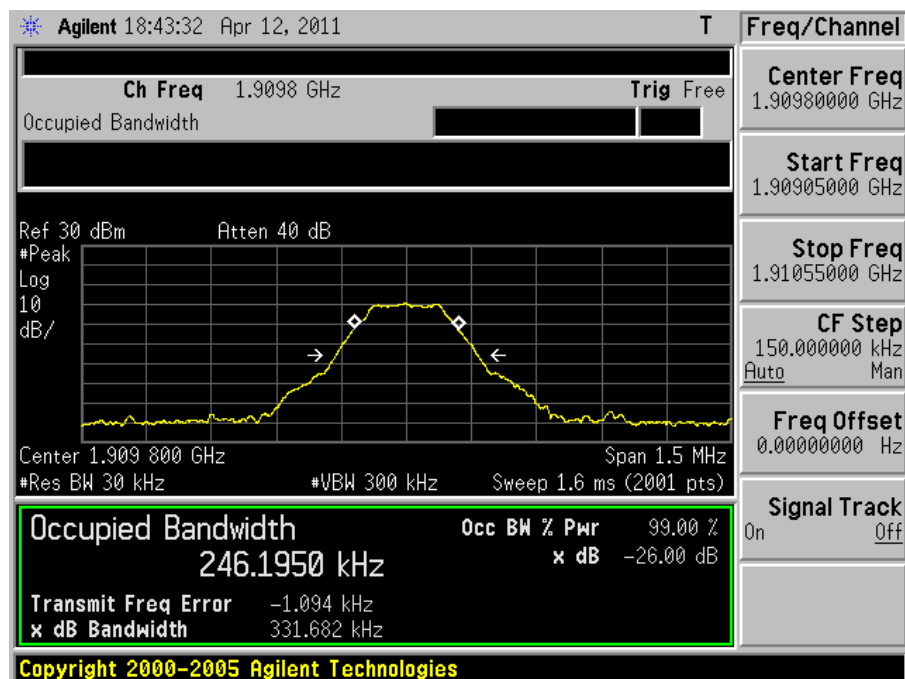




Channel 661

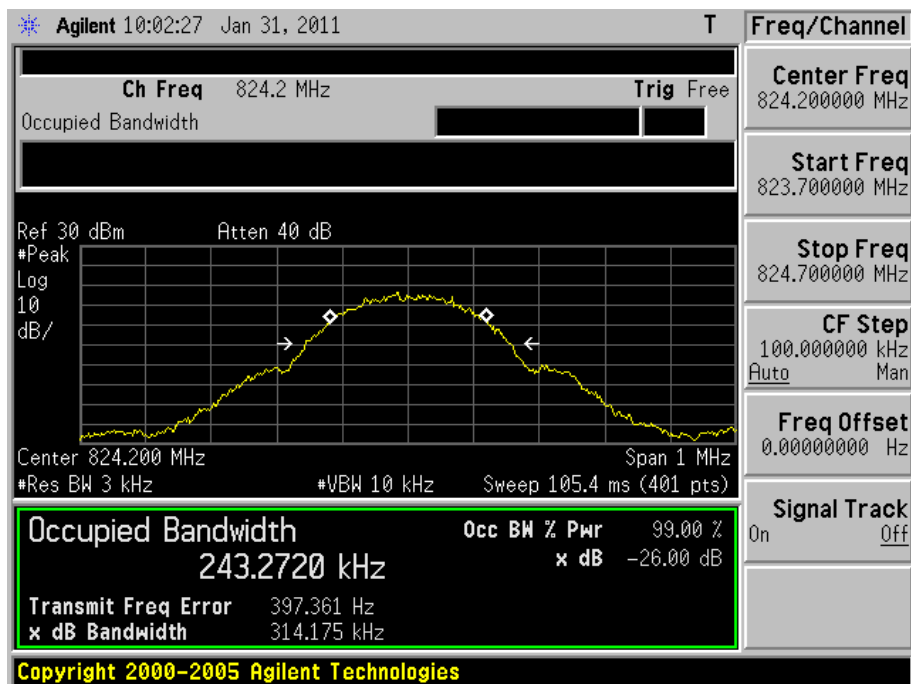


Channel 810

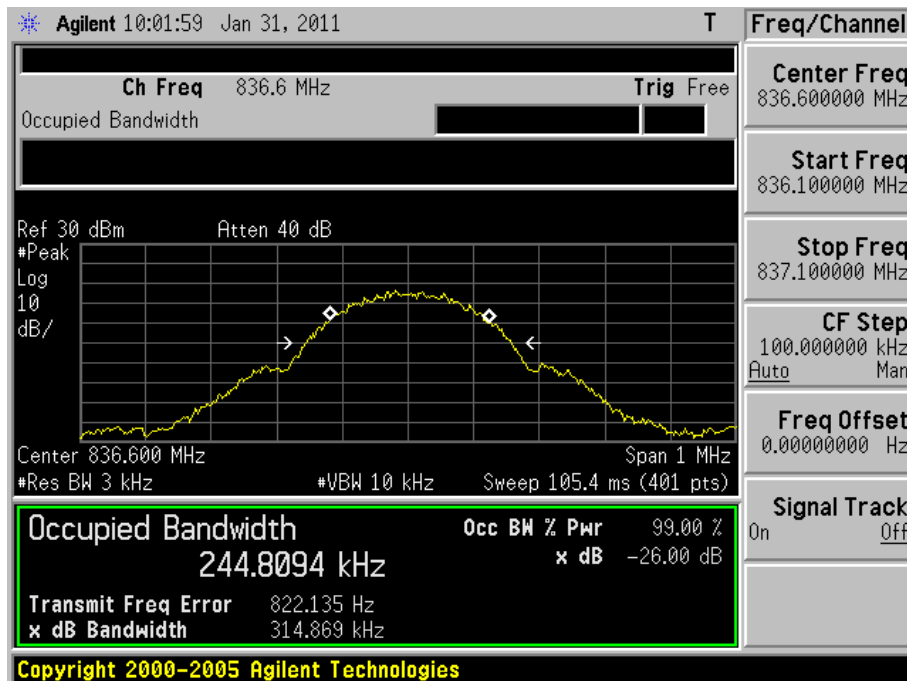


Model Number	TH02M		
Test Item	Occupied Bandwidth		
Test Mode	Mode 7: EGPRS 850 Link		
Date of Test	01/31/2011	Test Site	TE02
Channel No.	Frequency (MHz)	99% Bandwidth (kHz)	Note
128	824.2	243.2720	RBW:3KHz , VBW:10KHz
190	836.4	244.8094	RBW:3KHz , VBW:10KHz
251	848.8	242.8587	RBW:3KHz , VBW:10KHz

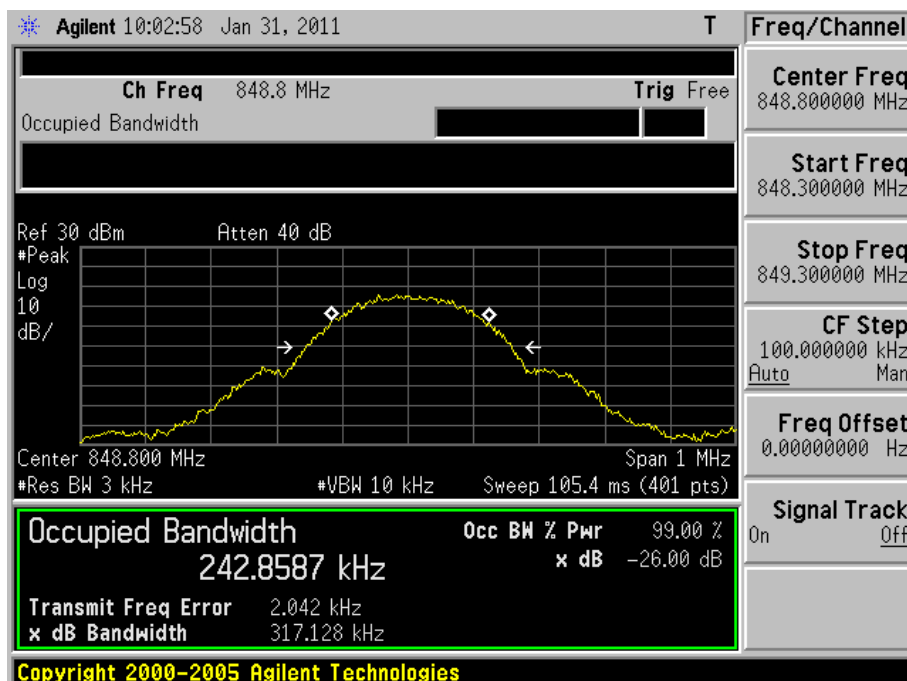
## Channel 128



Channel 190

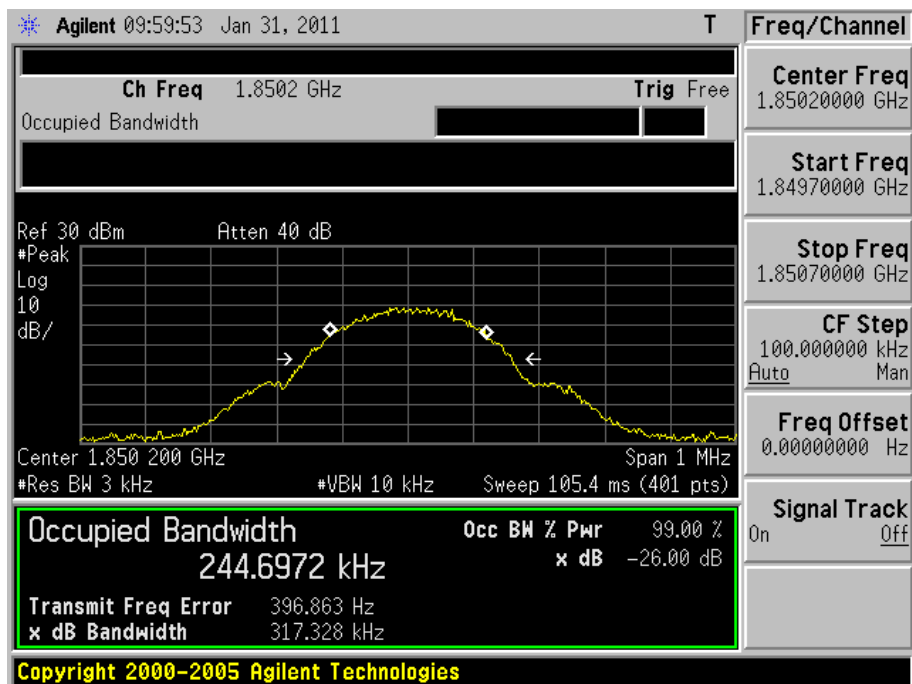


Channel 251

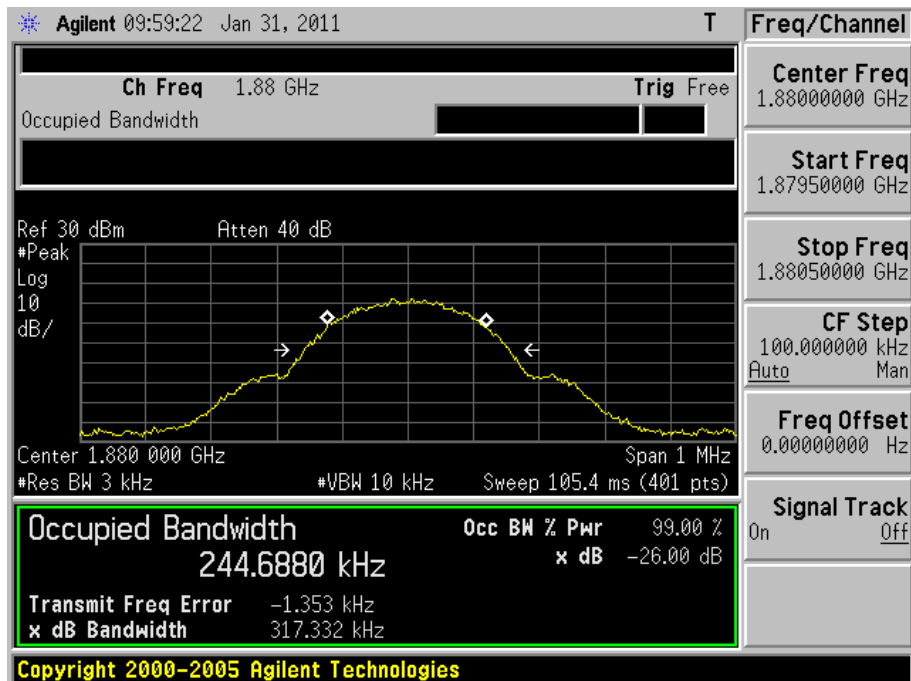


Model Number	TH02M		
Test Item	Occupied Bandwidth		
Test Mode	Mode 8: EGPRS 1900 Link		
Date of Test	01/31/2011	Test Site	TE02
Channel No.	Frequency (MHz)	99% Bandwidth (kHz)	Note
512	1850.20	244.6972	RBW:3KHz , VBW:10KHz
661	1880.00	244.6880	RBW:3KHz , VBW:10KHz
810	1909.80	238.5596	RBW:3KHz , VBW:10KHz

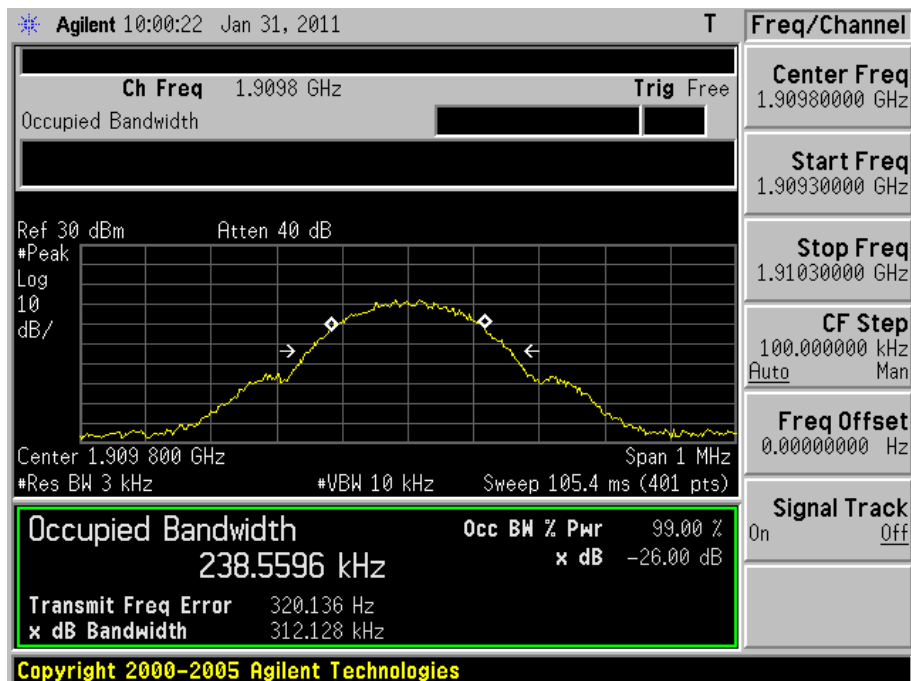
## Channel 512



Channel 661



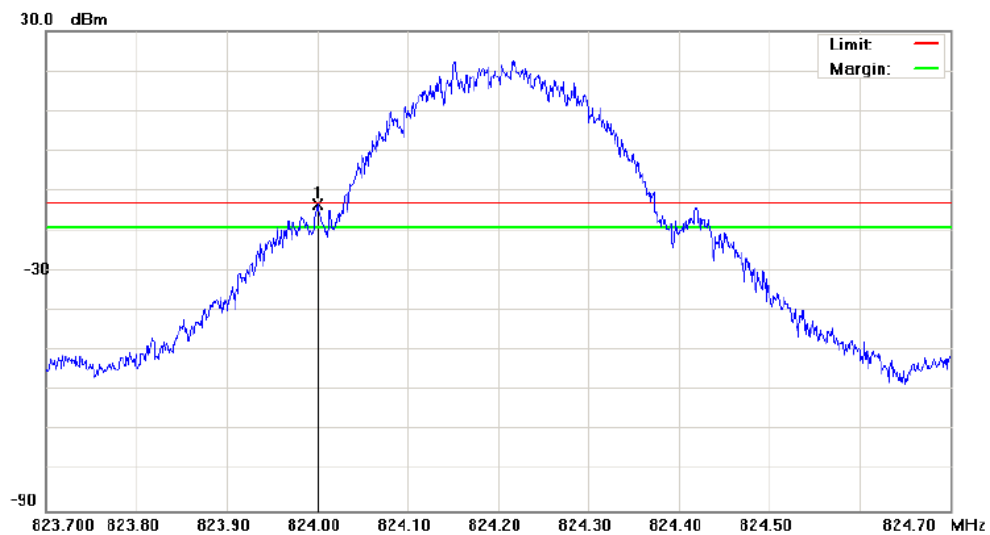
Channel 810



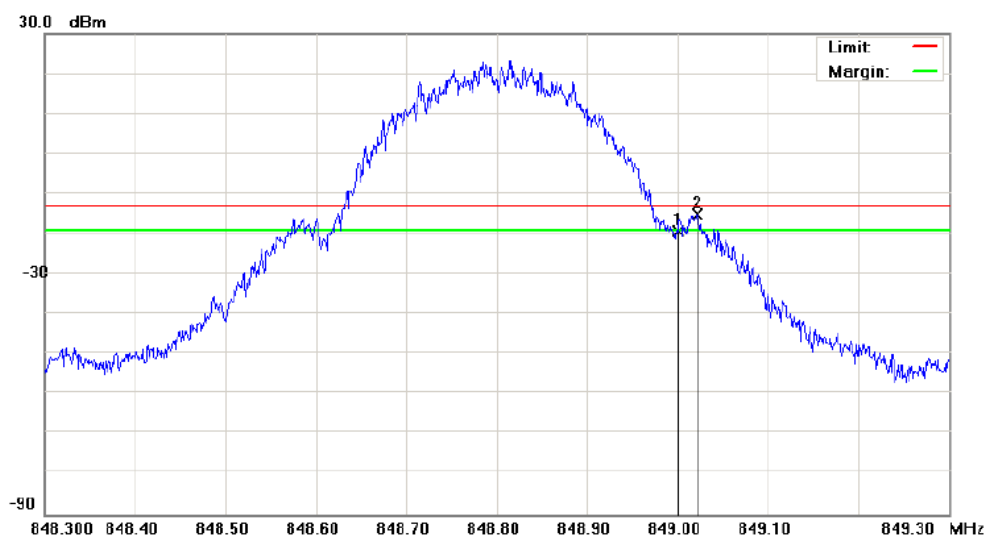
### Band Edge

Model Number	TH02M				
Test Item	Band Edge				
Test Mode	Mode 1: GSM 850 Link				
Date of Test	01/31/2011		Test Site	TE02	
Band	Channel	Frequency (MHz)	Bandwidth (dBm)	Limit (dBm)	Result
Lower	128	824.0000	-13.26	-13	Pass
Higher	251	849.0000	-19.41	-13	Pass

Lower Band

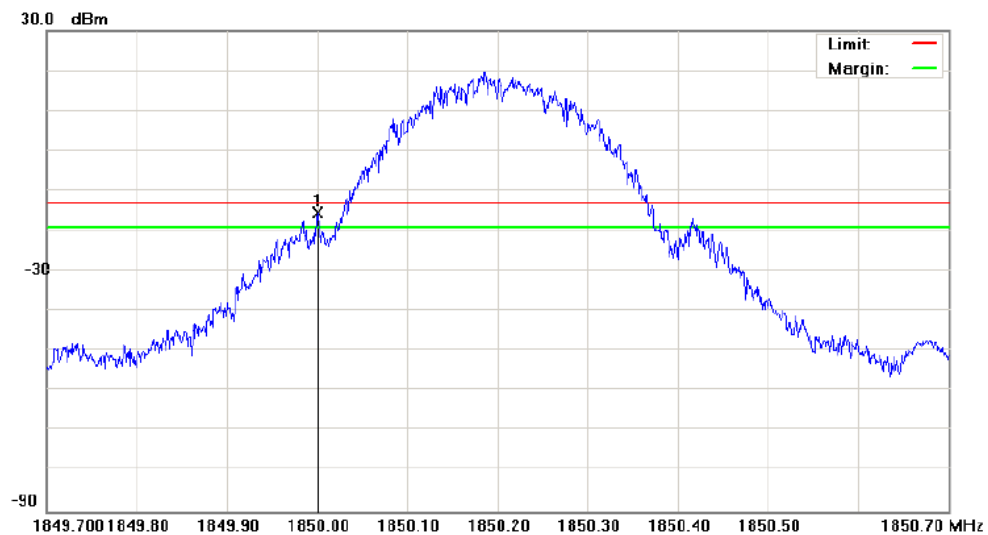


Higher Band

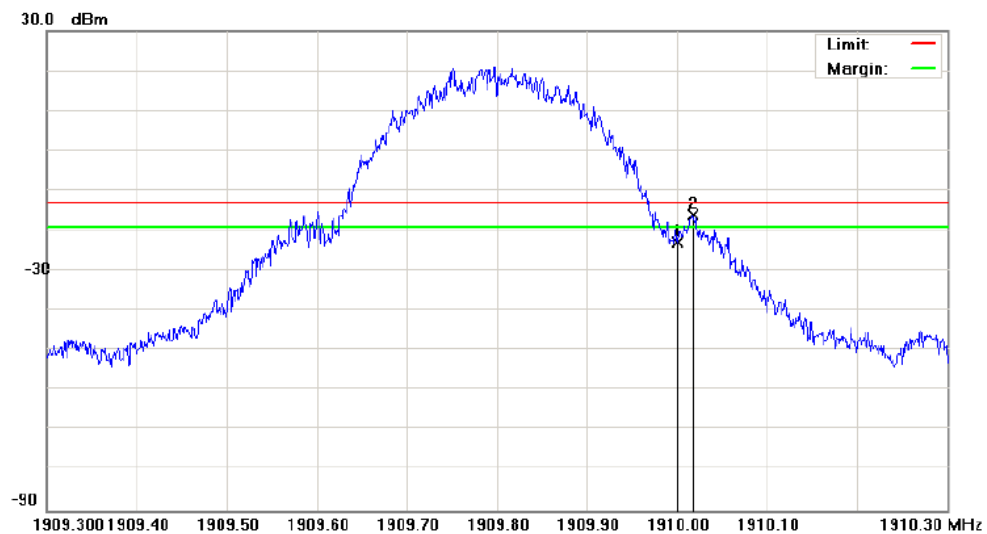


Model Number	TH02M				
Test Item	Band Edge				
Test Mode	Mode 2: GSM 1900 Link				
Date of Test	01/31/2011		Test Site	TE02	
Band	Channel	Frequency (MHz)	Bandwidth (dBm)	Limit (dBm)	Result
Lower	512	1850.000	-15.46	-13	Pass
Higher	810	1910.000	-23.01	-13	Pass

Lower Band

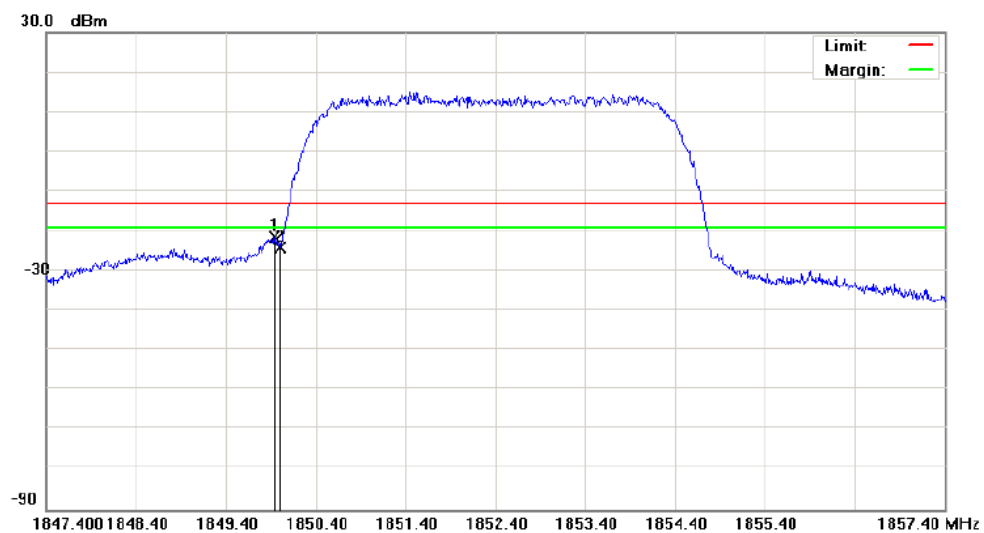


Higher Band

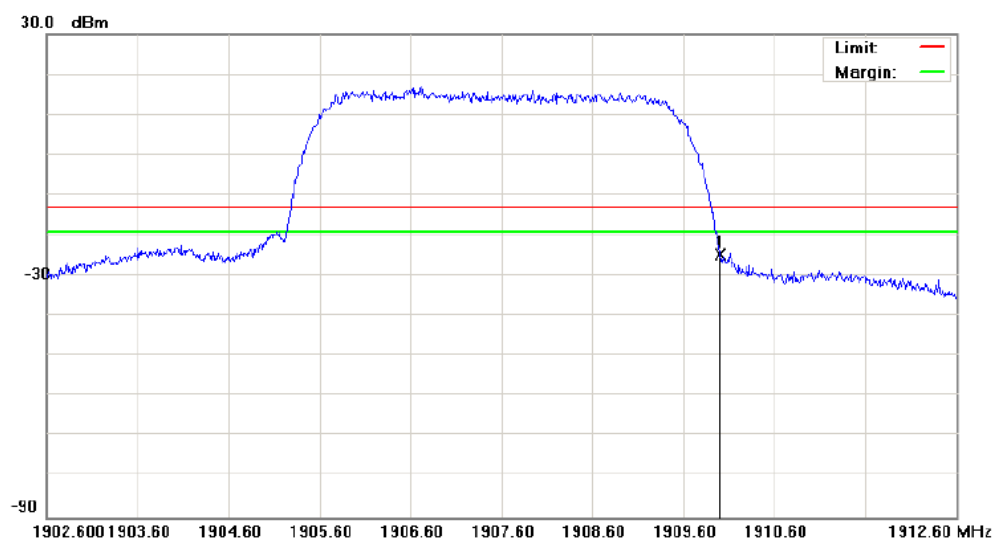


Model Number	TH02M				
Test Item	Band Edge				
Test Mode	Mode 3: WCDMA Band II Link				
Date of Test	01/31/2011		Test Site	TE02	
Band	Channel	Frequency (MHz)	Bandwidth (dBm)	Limit (dBm)	Result
Lower	9262	1850.000	-24.22	-13	Pass
Higher	9538	1910.000	-24.67	-13	Pass

Lower Band



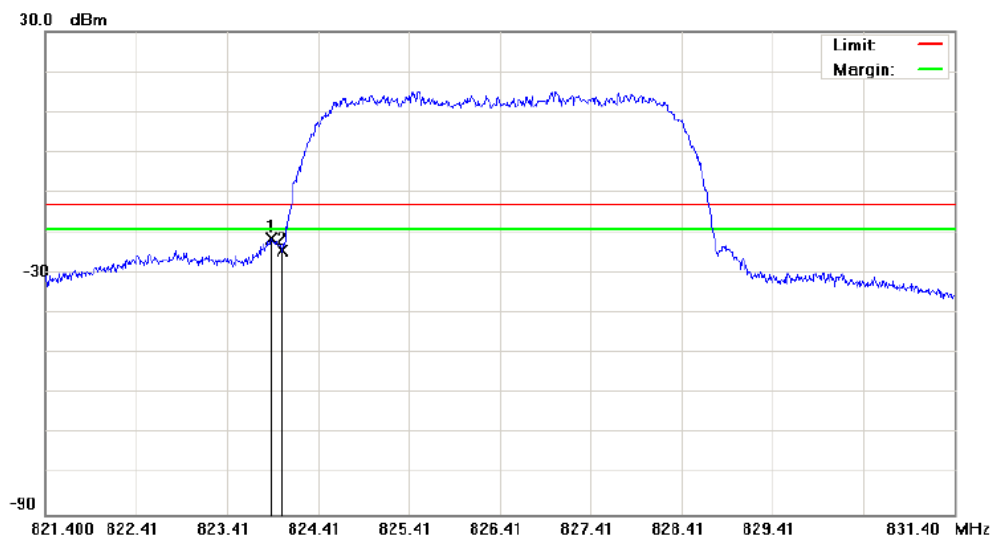
Higher Band



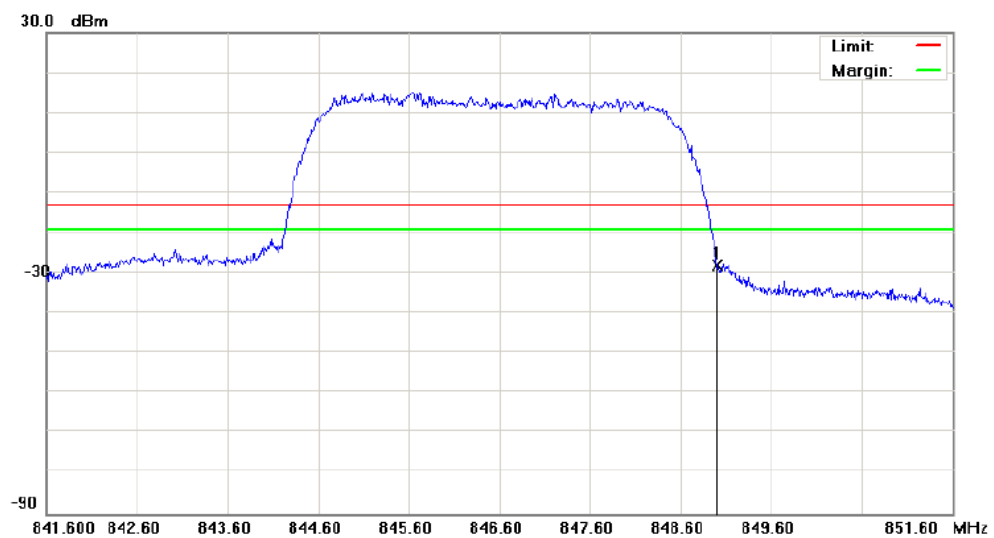


Model Number	TH02M				
Test Item	Band Edge				
Test Mode	Mode 4: WCDMA Band V Link				
Date of Test	01/31/2011		Test Site	TE02	
Band	Channel	Frequency (MHz)	Bandwidth (dBm)	Limit (dBm)	Result
Lower	4132	824.0000	-24.47	-13	Pass
Higher	4233	849.0000	-28.05	-13	Pass

Lower Band



Higher Band



## 5 Conducted Emission Test

### 5.1. 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  $43 + 10\log(P)$  dB.

### 5.2. Test Instruments

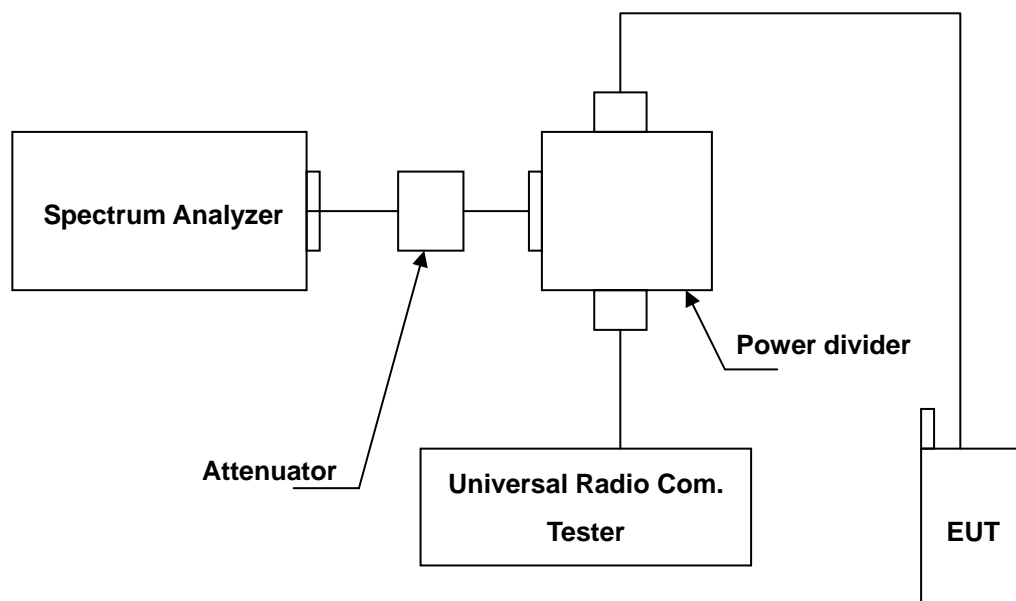
Describe	Manufacturer	Model No.	Serial No.	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	(2)
Universal Radio Communication Tester	ROHDE & SCHWARZ	CMU200	109369	07/29/2009	(2)
Attenuator	RADIALL	R41572000	0603033073	N.C.R.	-----
Power divider	Agilent	87302C	3239A00760	N.C.R.	-----
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: <sup>(1)</sup> Calibration period 1 year. <sup>(2)</sup> Calibration period 2 years.

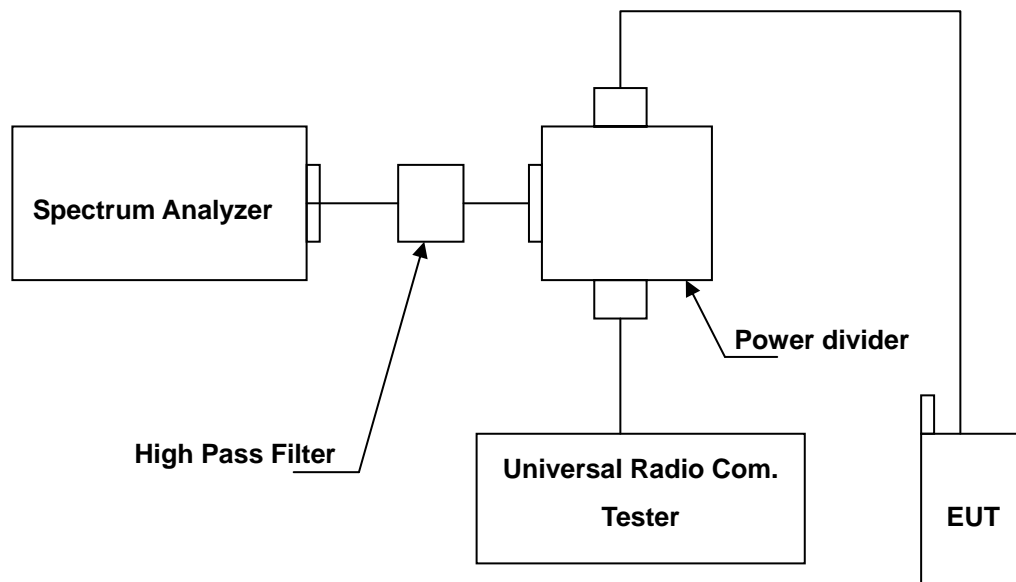
NOTE: N.C.R. = No Calibration Request.

### 5.3. Setup

**Below 2.8GHz**



**Above 2.8GHz**



#### 5.4. Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.
4. Test setting at GSM 850 RB>100 kHz, VB>100 kHz; PCS 1900 RB>1MHz, VB>1MHz.

#### 5.5. Uncertainty

The measurement uncertainty is evaluated as  $\pm 2.24$  dB.

#### 5.6. Test Result

Model Number	TH02M		
Test Item	Conducted Emission		
Mode	Mode 1: GSM 850 Link Mode 2: GSM 1900 Link Mode 3: WCDMA Band II Link Mode 4: WCDMA Band V Link		
Date of Test	01/31/2011	Test Site	TE02

## 6 Field Strength of Spurious Radiation Test

### 6.1. 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  $43 + 10\log(P)$  dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10<sup>th</sup> harmonic.

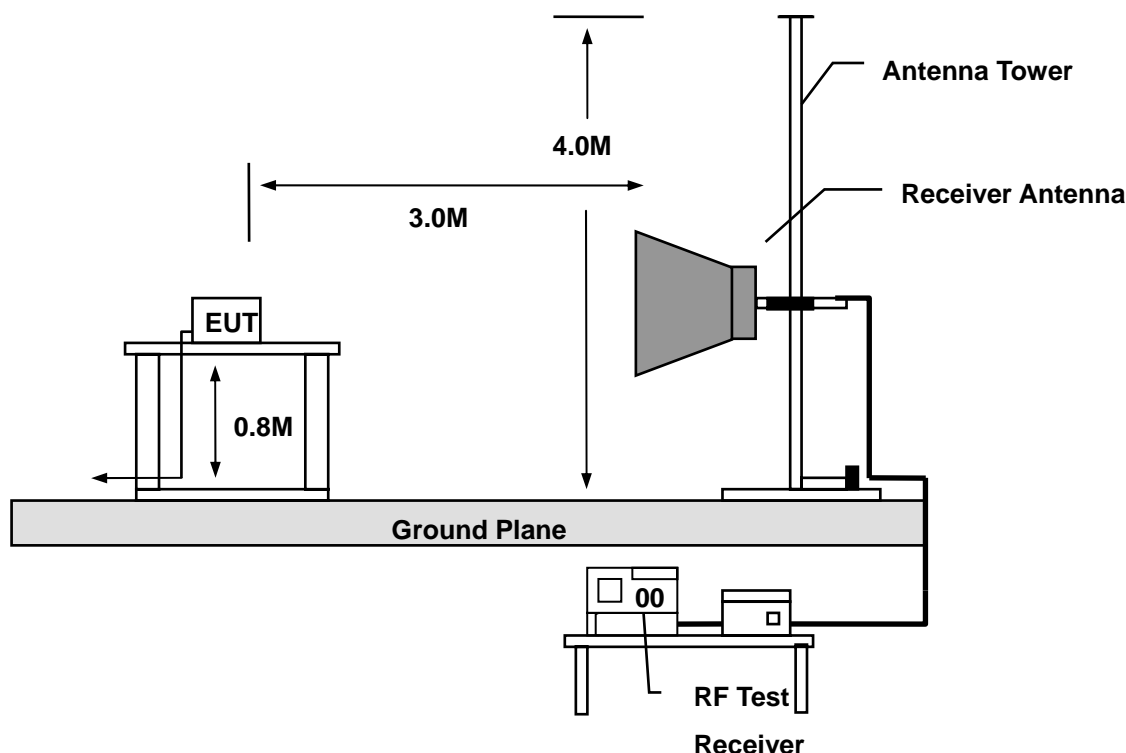
### 6.2. Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/17/2011	(2)
Spectrum Analyzer	Agilent	E4446A	MY46180578	02/24/2010	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/24/2010	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/24/2010	(1)
Bi-log Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	08/02/2010	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/29/2010	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/29/2010	(1)
Test Site	ATL	TE01	888001	07/30/2010	(1)

Remark: <sup>(1)</sup> Calibration period 1 year. <sup>(2)</sup> Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

### 6.3. Setup



### 6.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 30 MHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (model VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts per meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in decibels referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

$$(1) \text{ Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)}$$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

$$(2) \text{ Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)}$$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

## 6.5. Uncertainty

The measurement uncertainty is defined as for Field Strength of Spurious Radiation measurement is  $\pm 3.072$  dB.

## 6.6. Test Result

Standard:	FCC Part 22	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	2011/01/31
Frequency:	824.2 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	40.0000	-40.88	9.64	-31.24	-13.00	-18.24	peak	H
2	159.0000	-41.38	1.13	-40.25	-13.00	-27.25	peak	H
3	200.5000	-42.69	2.83	-39.86	-13.00	-26.86	peak	H
4	538.0000	-37.86	8.19	-29.67	-13.00	-16.67	peak	H
5	631.5000	-36.24	7.20	-29.04	-13.00	-16.04	peak	H
6	962.0000	-36.08	14.79	-21.29	-13.00	-8.29	peak	H
7	2476.000	-47.91	11.92	-35.99	-13.00	-22.99	peak	H
8	4948.000	-61.86	19.59	-42.27	-13.00	-29.27	peak	H
9	9064.000	-68.80	26.84	-41.96	-13.00	-28.96	peak	H
1	130.5000	-41.17	14.09	-27.08	-13.00	-14.08	peak	V
2	161.0000	-42.00	11.75	-30.25	-13.00	-17.25	peak	V
3	201.0000	-42.73	10.04	-32.69	-13.00	-19.69	peak	V
4	630.5000	-37.27	8.76	-28.51	-13.00	-15.51	peak	V
5	732.0000	-37.44	10.63	-26.81	-13.00	-13.81	peak	V
6	996.0000	-36.74	13.09	-23.65	-13.00	-10.65	peak	V
7	2476.000	-44.31	12.00	-32.31	-13.00	-19.31	peak	V
8	5764.000	-62.35	23.05	-39.30	-13.00	-26.30	peak	V
9	10216.000	-72.31	31.83	-40.48	-13.00	-27.48	peak	V

Standard:	FCC Part 22	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	2011/01/31
Frequency:	836.4 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	40.5000	-41.77	9.56	-32.21	-13.00	-19.21	peak	H
2	200.5000	-42.53	2.83	-39.70	-13.00	-26.70	peak	H
3	534.5000	-38.59	8.10	-30.49	-13.00	-17.49	peak	H
4	630.5000	-35.97	7.25	-28.72	-13.00	-15.72	peak	H
5	791.0000	-37.54	10.76	-26.78	-13.00	-13.78	peak	H
6	984.0000	-36.11	14.36	-21.75	-13.00	-8.75	peak	H
7	2512.000	-48.10	12.04	-36.06	-13.00	-23.06	peak	H
8	5020.000	-65.10	19.97	-45.13	-13.00	-32.13	peak	H
9	9208.000	-68.43	27.94	-40.49	-13.00	-27.49	peak	H
1	130.0000	-42.16	14.37	-27.79	-13.00	-14.79	peak	V
2	160.5000	-42.44	12.20	-30.24	-13.00	-17.24	peak	V
3	201.5000	-41.77	9.97	-31.80	-13.00	-18.80	peak	V
4	538.5000	-38.37	4.16	-34.21	-13.00	-21.21	peak	V
5	737.0000	-37.19	10.54	-26.65	-13.00	-13.65	peak	V
6	988.5000	-36.84	12.82	-24.02	-13.00	-11.02	peak	V
7	1672.000	-46.86	6.88	-39.98	-13.00	-26.98	peak	V
8	2512.000	-45.13	12.23	-32.90	-13.00	-19.90	peak	V
9	5020.000	-63.59	23.26	-40.33	-13.00	-27.33	peak	V



Standard:	FCC Part 22	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	2011/01/31
Frequency:	848.8 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	43.0000	-39.50	9.12	-30.38	-13.00	-17.38	peak	H
2	200.5000	-42.47	2.83	-39.64	-13.00	-26.64	peak	H
3	540.5000	-38.49	8.25	-30.24	-13.00	-17.24	peak	H
4	665.0000	-36.76	7.13	-29.63	-13.00	-16.63	peak	H
5	817.5000	-37.52	11.84	-25.68	-13.00	-12.68	peak	H
6	965.0000	-35.56	14.71	-20.85	-13.00	-7.85	peak	H
7	2548.000	-47.47	12.16	-35.31	-13.00	-22.31	peak	H
8	5944.000	-68.11	22.81	-45.30	-13.00	-32.30	peak	H
9	9340.000	-68.24	28.92	-39.32	-13.00	-26.32	peak	H
1	130.5000	-41.44	14.09	-27.35	-13.00	-14.35	peak	V
2	160.5000	-41.47	12.20	-29.27	-13.00	-16.27	peak	V
3	210.5000	-40.43	8.76	-31.67	-13.00	-18.67	peak	V
4	630.0000	-36.36	8.76	-27.60	-13.00	-14.60	peak	V
5	738.0000	-35.83	10.52	-25.31	-13.00	-12.31	peak	V
6	996.0000	-36.04	13.09	-22.95	-13.00	-9.95	peak	V
7	1696.000	-47.85	7.07	-40.78	-13.00	-27.78	peak	V
8	2548.000	-44.89	12.53	-32.36	-13.00	-19.36	peak	V
9	5092.000	-65.34	23.29	-42.05	-13.00	-29.05	peak	V

Standard:	FCC Part 24	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	2011/01/31
Frequency:	1850.2 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	39.5000	-41.39	9.50	-31.89	-13.00	-18.89	peak	H
2	158.5000	-41.59	0.97	-40.62	-13.00	-27.62	peak	H
3	201.0000	-41.00	2.73	-38.27	-13.00	-25.27	peak	H
4	534.0000	-37.97	8.09	-29.88	-13.00	-16.88	peak	H
5	816.5000	-37.36	11.80	-25.56	-13.00	-12.56	peak	H
6	961.5000	-36.27	14.80	-21.47	-13.00	-8.47	peak	H
7	3700.000	-61.83	15.75	-46.08	-13.00	-33.08	peak	H
8	5548.000	-55.89	21.80	-34.09	-13.00	-21.09	peak	H
9	9256.000	-65.57	28.28	-37.29	-13.00	-24.29	peak	H
1	133.0000	-40.82	12.74	-28.08	-13.00	-15.08	peak	V
2	160.0000	-42.13	12.68	-29.45	-13.00	-16.45	peak	V
3	201.5000	-41.31	9.97	-31.34	-13.00	-18.34	peak	V
4	630.0000	-36.52	8.76	-27.76	-13.00	-14.76	peak	V
5	791.0000	-37.49	11.60	-25.89	-13.00	-12.89	peak	V
6	995.0000	-36.57	13.05	-23.52	-13.00	-10.52	peak	V
7	3700.000	-62.27	19.81	-42.46	-13.00	-29.46	peak	V
8	5548.000	-56.05	23.40	-32.65	-13.00	-19.65	peak	V
9	9256.000	-71.32	26.43	-44.89	-13.00	-31.89	peak	V

Standard:	FCC Part 24	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	2011/01/31
Frequency:	1880.0 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	42.0000	-41.28	9.28	-32.00	-13.00	-19.00	peak	H
2	90.0000	-40.27	0.02	-40.25	-13.00	-27.25	peak	H
3	157.0000	-41.45	0.49	-40.96	-13.00	-27.96	peak	H
4	200.5000	-42.62	2.83	-39.79	-13.00	-26.79	peak	H
5	623.0000	-36.96	7.56	-29.40	-13.00	-16.40	peak	H
6	959.0000	-36.53	14.83	-21.70	-13.00	-8.70	peak	H
7	3760.000	-64.67	15.89	-48.78	-13.00	-35.78	peak	H
8	5644.000	-54.37	22.05	-32.32	-13.00	-19.32	peak	H
9	9400.000	-64.64	29.36	-35.28	-13.00	-22.28	peak	H
1	130.5000	-41.04	14.09	-26.95	-13.00	-13.95	peak	V
2	156.5000	-40.36	11.00	-29.36	-13.00	-16.36	peak	V
3	203.5000	-41.20	9.73	-31.47	-13.00	-18.47	peak	V
4	651.5000	-36.78	9.07	-27.71	-13.00	-14.71	peak	V
5	869.0000	-36.61	11.28	-25.33	-13.00	-12.33	peak	V
6	985.5000	-36.22	12.71	-23.51	-13.00	-10.51	peak	V
7	3760.000	-62.13	19.98	-42.15	-13.00	-29.15	peak	V
8	5644.000	-53.42	23.25	-30.17	-13.00	-17.17	peak	V
9	9400.000	-74.25	27.59	-46.66	-13.00	-33.66	peak	V

Standard:	FCC Part 24	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	2011/01/23
Frequency:	1909.8 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	38.5000	-40.63	9.20	-31.43	-13.00	-18.43	peak	H
2	201.5000	-42.70	2.61	-40.09	-13.00	-27.09	peak	H
3	410.0000	-38.53	3.00	-35.53	-13.00	-22.53	peak	H
4	544.0000	-37.95	8.17	-29.78	-13.00	-16.78	peak	H
5	791.0000	-37.20	10.76	-26.44	-13.00	-13.44	peak	H
6	951.0000	-35.99	14.85	-21.14	-13.00	-8.14	peak	H
7	3820.000	-59.87	16.03	-43.84	-13.00	-30.84	peak	H
8	5728.000	-54.40	22.26	-32.14	-13.00	-19.14	peak	H
9	9544.000	-62.84	30.33	-32.51	-13.00	-19.51	peak	H
1	130.0000	-42.78	14.37	-28.41	-13.00	-15.41	peak	V
2	159.5000	-41.66	12.45	-29.21	-13.00	-16.21	peak	V
3	204.5000	-41.60	9.62	-31.98	-13.00	-18.98	peak	V
4	631.0000	-35.75	8.74	-27.01	-13.00	-14.01	peak	V
5	798.0000	-37.63	11.81	-25.82	-13.00	-12.82	peak	V
6	992.5000	-36.45	12.95	-23.50	-13.00	-10.50	peak	V
7	3820.000	-59.76	20.13	-39.63	-13.00	-26.63	peak	V
8	5728.000	-52.48	23.11	-29.37	-13.00	-16.37	peak	V
9	9544.000	-70.15	28.61	-41.54	-13.00	-28.54	peak	V

Standard:	FCC Part 24	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 3	Date:	2011/01/31
Frequency:	1852.4 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	41.0000	-40.89	9.47	-31.42	-13.00	-18.42	peak	H
2	160.5000	-41.90	1.05	-40.85	-13.00	-27.85	peak	H
3	200.5000	-41.45	2.83	-38.62	-13.00	-25.62	peak	H
4	551.0000	-38.58	8.01	-30.57	-13.00	-17.57	peak	H
5	629.5000	-36.91	7.27	-29.64	-13.00	-16.64	peak	H
6	943.5000	-36.87	14.85	-22.02	-13.00	-9.02	peak	H
7	1852.000	-64.59	10.42	-54.17	-13.00	-41.17	peak	H
8	3700.000	-67.47	15.75	-51.72	-13.00	-38.72	peak	H
9	6940.000	-70.06	27.48	-42.58	-13.00	-29.58	peak	H
1	130.5000	-41.26	14.10	-27.16	-13.00	-14.16	peak	V
2	159.5000	-42.83	12.45	-30.38	-13.00	-17.38	peak	V
3	207.5000	-41.20	9.25	-31.95	-13.00	-18.95	peak	V
4	631.0000	-37.39	8.74	-28.65	-13.00	-15.65	peak	V
5	789.5000	-37.25	11.57	-25.68	-13.00	-12.68	peak	V
6	942.5000	-36.26	12.69	-23.57	-13.00	-10.57	peak	V
7	1852.000	-60.62	8.27	-52.35	-13.00	-39.35	peak	V
8	4276.000	-68.52	21.41	-47.11	-13.00	-34.11	peak	V
9	7216.000	-70.75	25.94	-44.81	-13.00	-31.81	peak	V

Standard:	FCC Part 24	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 3	Date:	2011/01/31
Frequency:	1880.0 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	46.5000	-39.52	8.49	-31.03	-13.00	-18.03	peak	H
2	158.5000	-42.07	0.97	-41.10	-13.00	-28.10	peak	H
3	200.0000	-41.91	2.95	-38.96	-13.00	-25.96	peak	H
4	541.5000	-37.54	8.24	-29.30	-13.00	-16.30	peak	H
5	847.5000	-37.70	12.44	-25.26	-13.00	-12.26	peak	H
6	973.5000	-35.94	14.50	-21.44	-13.00	-8.44	peak	H
7	1876.000	-61.07	10.43	-50.64	-13.00	-37.64	peak	H
8	4948.000	-69.72	19.59	-50.13	-13.00	-37.13	peak	H
9	7672.000	-71.52	29.35	-42.17	-13.00	-29.17	peak	H
1	130.5000	-42.46	14.10	-28.36	-13.00	-15.36	peak	V
2	160.5000	-41.90	12.20	-29.70	-13.00	-16.70	peak	V
3	200.0000	-41.57	10.15	-31.42	-13.00	-18.42	peak	V
4	628.5000	-35.86	8.77	-27.09	-13.00	-14.09	peak	V
5	791.5000	-37.35	11.61	-25.74	-13.00	-12.74	peak	V
6	999.0000	-36.91	13.19	-23.72	-13.00	-10.72	peak	V
7	1876.000	-61.04	8.46	-52.58	-13.00	-39.58	peak	V
8	3712.000	-67.65	19.85	-47.80	-13.00	-34.80	peak	V
9	7204.000	-70.28	25.92	-44.36	-13.00	-31.36	peak	V

Standard:	FCC Part 24	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 3	Date:	2011/01/31
Frequency:	1907.6 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	44.0000	-40.81	8.94	-31.87	-13.00	-18.87	peak	H
2	160.5000	-41.62	1.05	-40.57	-13.00	-27.57	peak	H
3	200.5000	-42.37	2.83	-39.54	-13.00	-26.54	peak	H
4	541.5000	-38.68	8.24	-30.44	-13.00	-17.44	peak	H
5	820.5000	-36.06	11.92	-24.14	-13.00	-11.14	peak	H
6	964.5000	-35.97	14.72	-21.25	-13.00	-8.25	peak	H
7	1912.000	-58.74	10.43	-48.31	-13.00	-35.31	peak	H
8	5080.000	-70.67	20.18	-50.49	-13.00	-37.49	peak	H
9	9544.000	-69.40	30.33	-39.07	-13.00	-26.07	peak	H
1	130.5000	-42.60	14.10	-28.50	-13.00	-15.50	peak	V
2	200.0000	-42.18	10.15	-32.03	-13.00	-19.03	peak	V
3	310.5000	-37.45	1.84	-35.61	-13.00	-22.61	peak	V
4	646.5000	-36.98	8.87	-28.11	-13.00	-15.11	peak	V
5	791.5000	-37.19	11.61	-25.58	-13.00	-12.58	peak	V
6	969.5000	-35.56	12.44	-23.12	-13.00	-10.12	peak	V
7	1912.000	-56.54	8.74	-47.80	-13.00	-34.80	peak	V
8	4720.000	-69.10	22.60	-46.50	-13.00	-33.50	peak	V
9	7216.000	-70.64	25.94	-44.70	-13.00	-31.70	peak	V

Standard:	FCC Part 22	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	2011/01/31
Frequency:	826.4 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	45.5000	-40.48	8.67	-31.81	-13.00	-18.81	peak	H
2	158.0000	-42.04	0.82	-41.22	-13.00	-28.22	peak	H
3	201.0000	-42.37	2.73	-39.64	-13.00	-26.64	peak	H
4	547.0000	-38.02	8.10	-29.92	-13.00	-16.92	peak	H
5	781.5000	-37.15	10.26	-26.89	-13.00	-13.89	peak	H
6	985.5000	-35.29	14.38	-20.91	-13.00	-7.91	peak	H
7	1648.000	-50.72	10.39	-40.33	-13.00	-27.33	peak	H
8	2476.000	-60.39	11.92	-48.47	-13.00	-35.47	peak	H
9	5776.000	-69.97	22.39	-47.58	-13.00	-34.58	peak	H
1	130.5000	-41.50	14.10	-27.40	-13.00	-14.40	peak	V
2	160.0000	-43.29	12.68	-30.61	-13.00	-17.61	peak	V
3	203.0000	-41.01	9.79	-31.22	-13.00	-18.22	peak	V
4	629.5000	-37.16	8.75	-28.41	-13.00	-15.41	peak	V
5	787.0000	-36.80	11.48	-25.32	-13.00	-12.32	peak	V
6	950.0000	-35.53	12.57	-22.96	-13.00	-9.96	peak	V
7	1648.000	-46.70	6.70	-40.00	-13.00	-27.00	peak	V
8	2476.000	-58.89	12.00	-46.89	-13.00	-33.89	peak	V
9	5776.000	-68.07	23.03	-45.04	-13.00	-32.04	peak	V



Standard:	FCC Part 22	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	2011/01/31
Frequency:	836.4 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	43.0000	-40.59	9.12	-31.47	-13.00	-18.47	peak	H
2	160.0000	-41.87	1.45	-40.42	-13.00	-27.42	peak	H
3	201.5000	-42.06	2.61	-39.45	-13.00	-26.45	peak	H
4	537.5000	-38.08	8.18	-29.90	-13.00	-16.90	peak	H
5	791.0000	-36.58	10.76	-25.82	-13.00	-12.82	peak	H
6	930.5000	-37.02	14.81	-22.21	-13.00	-9.21	peak	H
7	1672.000	-56.21	10.39	-45.82	-13.00	-32.82	peak	H
8	2512.000	-60.94	12.04	-48.90	-13.00	-35.90	peak	H
9	5824.000	-70.66	22.51	-48.15	-13.00	-35.15	peak	H
1	130.0000	-42.45	14.37	-28.08	-13.00	-15.08	peak	V
2	158.5000	-42.03	11.96	-30.07	-13.00	-17.07	peak	V
3	200.0000	-40.56	10.15	-30.41	-13.00	-17.41	peak	V
4	628.0000	-36.91	8.79	-28.12	-13.00	-15.12	peak	V
5	765.5000	-37.52	11.04	-26.48	-13.00	-13.48	peak	V
6	999.0000	-36.74	13.19	-23.55	-13.00	-10.55	peak	V
7	1672.000	-50.00	6.88	-43.12	-13.00	-30.12	peak	V
8	2512.000	-59.82	12.23	-47.59	-13.00	-34.59	peak	V
9	5020.000	-70.25	23.26	-46.99	-13.00	-33.99	peak	V

Standard:	FCC Part 22	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	2011/01/31
Frequency:	846.4 MHz	Test By:	Gary Wu

No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Ant.Polar. H / V
1	40.5000	-40.76	9.56	-31.20	-13.00	-18.20	peak	H
2	160.5000	-42.39	1.05	-41.34	-13.00	-28.34	peak	H
3	205.5000	-40.94	1.67	-39.27	-13.00	-26.27	peak	H
4	627.0000	-37.07	7.39	-29.68	-13.00	-16.68	peak	H
5	805.0000	-37.20	11.41	-25.79	-13.00	-12.79	peak	H
6	985.5000	-35.56	14.38	-21.18	-13.00	-8.18	peak	H
7	1696.000	-53.47	10.40	-43.07	-13.00	-30.07	peak	H
8	2536.000	-57.45	12.13	-45.32	-13.00	-32.32	peak	H
9	5920.000	-67.11	22.75	-44.36	-13.00	-31.36	peak	H
1	131.5000	-41.54	13.57	-27.97	-13.00	-14.97	peak	V
2	160.0000	-42.13	12.68	-29.45	-13.00	-16.45	peak	V
3	203.0000	-42.68	9.79	-32.89	-13.00	-19.89	peak	V
4	717.5000	-37.09	10.78	-26.31	-13.00	-13.31	peak	V
5	799.5000	-36.32	11.86	-24.46	-13.00	-11.46	peak	V
6	974.5000	-36.81	12.48	-24.33	-13.00	-11.33	peak	V
7	1696.000	-48.34	7.07	-41.27	-13.00	-28.27	peak	V
8	2536.000	-53.90	12.44	-41.46	-13.00	-28.46	peak	V
9	5920.000	-65.32	22.79	-42.53	-13.00	-29.53	peak	V

## 7 Frequency Stability (Temperature Variation) Test

### 7.1. Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block.

The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5\text{ppm}$ ) of the center frequency.

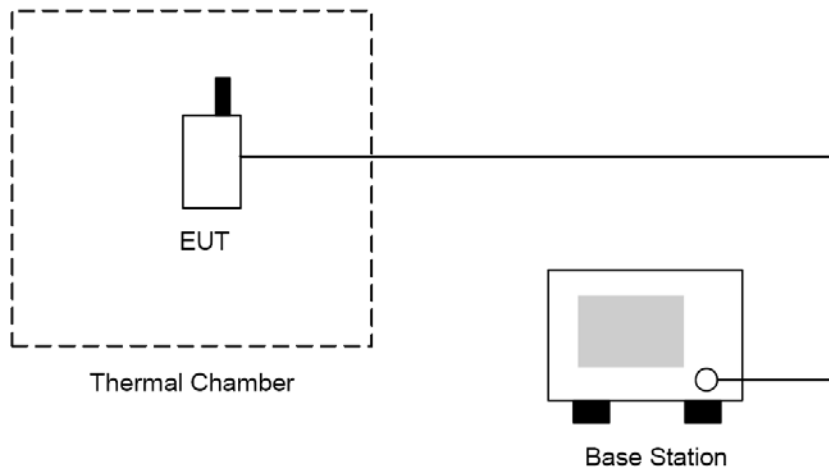
### 7.2. Test Instruments

Describe	Manufacturer	Model No.	Serial No.	Cal. Date	Remark
Universal Radio Communication Tester	ROHDE & SCHWARZ	CMU200	109369	07/29/2009	(2)
Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	08/26/2009	(2)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: <sup>(1)</sup> Calibration period 1 year. <sup>(2)</sup> Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

### 7.3. Setup



#### **7.4. Test Procedure**

The measurement is made according to FCC rules part 22 and 24:

1. The EUT and test equipment were set up as shown on the following section.
2. With all power removed, the temperature was decreased to  $-30^{\circ}\text{C}$  and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was note within one minute.
3. With power OFF, the temperature was raised in  $10^{\circ}\text{C}$  steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The temperature tests were performed for the worst case.
5. Test data was recorded.

#### **7.5. Uncertainty**

The measurement uncertainty is defined as for Frequency Stability (Temperature Variation) measurement is  $\pm 10\text{Hz}$ .

## 7.6. Test Result

Model Number	TH02M			
Test Item	Frequency Stability (Temperature Variation)			
Test Mode	Mode 1: GSM 850 Link			
Date of Test	01/31/2011		Test Site	TE02
Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Result
-30	-15.00	-0.018	±2.5	Pass
-20	-14.00	-0.017	±2.5	Pass
-10	-13.00	-0.016	±2.5	Pass
0	-15.00	-0.018	±2.5	Pass
10	-14.00	-0.017	±2.5	Pass
20	-12.00	-0.014	±2.5	Pass
30	-16.00	-0.019	±2.5	Pass
40	-15.00	-0.018	±2.5	Pass
50	-13.00	-0.016	±2.5	Pass

Model Number	TH02M			
Test Item	Frequency Stability (Temperature Variation)			
Test Mode	Mode 2: GSM 1900 Link			
Date of Test	01/31/2011		Test Site	TE02
Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Result
-30	-28.00	-0.015	±2.5	Pass
-20	-25.00	-0.013	±2.5	Pass
-10	-27.00	-0.014	±2.5	Pass
0	-30.00	-0.016	±2.5	Pass
10	-26.00	-0.014	±2.5	Pass
20	-25.00	-0.013	±2.5	Pass
30	-26.00	-0.014	±2.5	Pass
40	-23.00	-0.012	±2.5	Pass
50	-31.00	-0.016	±2.5	Pass

Model Number	TH02M			
Test Item	Frequency Stability (Temperature Variation)			
Test Mode	Mode 3: WCDMA Band II Link			
Date of Test	01/31/2011		Test Site	TE02
Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Result
-30	11.00	0.006	±2.5	Pass
-20	13.00	0.007	±2.5	Pass
-10	-10.00	-0.005	±2.5	Pass
0	7.00	0.004	±2.5	Pass
10	12.00	0.006	±2.5	Pass
20	12.00	0.006	±2.5	Pass
30	11.00	0.006	±2.5	Pass
40	11.00	0.006	±2.5	Pass
50	9.00	0.005	±2.5	Pass

Model Number	TH02M			
Test Item	Frequency Stability (Temperature Variation)			
Test Mode	Mode 4: WCDMA Band V Link			
Date of Test	01/31/2011		Test Site	TE02
Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Result
-30	7.00	0.008	±2.5	Pass
-20	9.00	0.011	±2.5	Pass
-10	10.00	0.012	±2.5	Pass
0	8.00	0.010	±2.5	Pass
10	8.00	0.010	±2.5	Pass
20	11.00	0.013	±2.5	Pass
30	13.00	0.016	±2.5	Pass
40	14.00	0.017	±2.5	Pass
50	11.00	0.013	±2.5	Pass

## 8 Frequency Stability (Voltage Variation) Test

### 8.1. Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block.

The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5\text{ppm}$ ) of the center frequency.

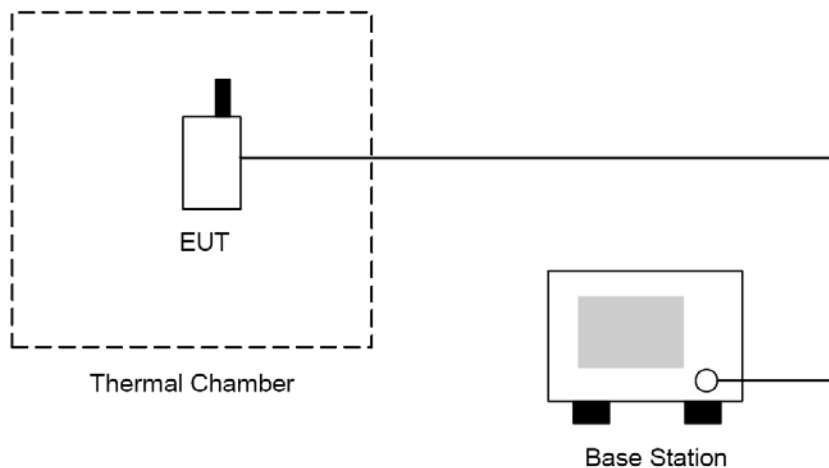
### 8.2. Test Instruments

Describe	Manufacturer	Model No.	Serial No.	Cal. Date	Remark
Universal Radio Communication Tester	ROHDE & SCHWARZ	CMU200	109369	07/29/2009	(2)
Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	08/26/2009	(2)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: <sup>(1)</sup> Calibration period 1 year. <sup>(2)</sup> Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

### 8.3. Setup



### 8.4. Test Procedure

1. The EUT was placed in a temperature chamber at  $25 \pm 5^\circ\text{C}$  and connected as the following section.
2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

## 8.5. Uncertainty

The measurement uncertainty is defined as for Frequency Stability (Voltage Variation) measurement is  $\pm 10\text{Hz}$ .

## 8.6. Test Result

Model Number	TH02M				
Test Item	Frequency Stability (Voltage Variation)				
Test Mode	Mode 1: GSM 850 Link				
Date of Test	01/31/2011		Test Site	TE02	
Level	Voltage [V]	Deviation [Hz]	Deviation [ppm]	Limit [ppm]	Result
Battery full point	4.07	-11.00	-0.013	$\pm 2.5$	Pass
Normal	3.70	-18.00	-0.022	$\pm 2.5$	Pass
Battery cut-off point	3.33	-19.00	-0.023	$\pm 2.5$	Pass

Model Number	TH02M				
Test Item	Frequency Stability (Voltage Variation)				
Test Mode	Mode 2: GSM 1900 Link				
Date of Test	01/31/2011		Test Site	TE02	
Level	Voltage [V]	Deviation [Hz]	Deviation [ppm]	Limit [ppm]	Result
Battery full point	4.07	-28.00	-0.015	$\pm 2.5$	Pass
Normal	3.70	-25.00	-0.013	$\pm 2.5$	Pass
Battery cut-off point	3.33	-26.00	-0.014	$\pm 2.5$	Pass

Model Number	TH02M				
Test Item	Frequency Stability (Voltage Variation)				
Test Mode	Mode 3: WCDMA Band II Link				
Date of Test	01/31/2011		Test Site	TE02	
Level	Voltage [V]	Deviation [Hz]	Deviation [ppm]	Limit [ppm]	Result
Battery full point	4.07	11.00	0.006	$\pm 2.5$	Pass
Normal	3.70	13.00	0.007	$\pm 2.5$	Pass
Battery cut-off point	3.33	10.00	0.005	$\pm 2.5$	Pass



Model Number	TH02M				
Test Item	Frequency Stability (Voltage Variation)				
Test Mode	Mode 4: WCDMA Band V Link				
Date of Test	01/31/2011		Test Site	TE02	
Level	Voltage [V]	Deviation [Hz]	Deviation [ppm]	Limit [ppm]	Result
Battery full point	4.07	10.00	0.012	±2.5	Pass
Normal	3.70	12.00	0.014	±2.5	Pass
Battery cut-off point	3.33	9.00	0.011	±2.5	Pass

## 9 AC Power Conducted Emissions Test

### 9.1. Limit

Frequency range (MHz)	Limits (dBuV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5.0	56	46
5.0 to 30	60	50

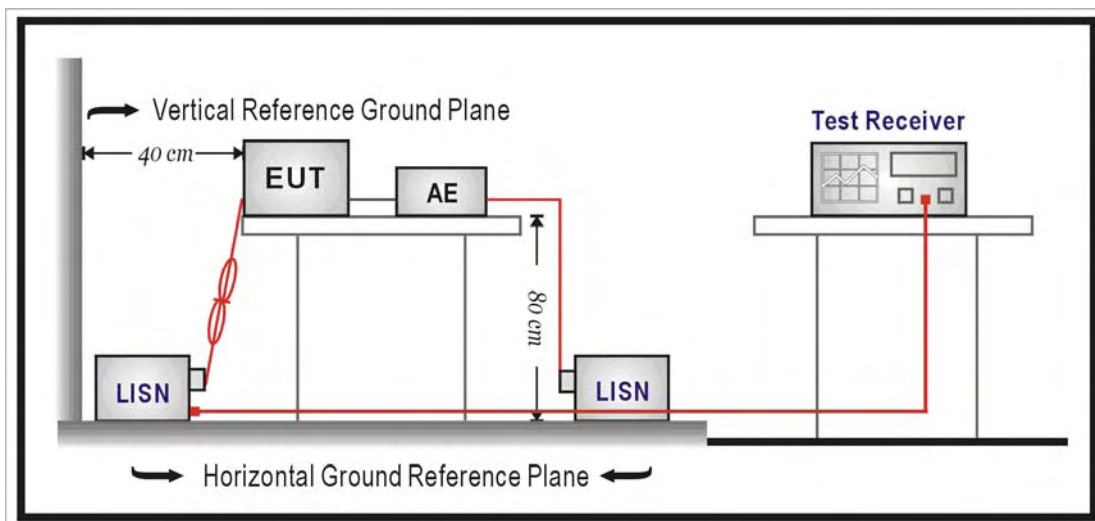
### 9.2. Test Instruments

Describe	Manufacturer	Model No.	Serial No.	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	07/01/2009	(1)
LISN	R&S	ENV216	101040	03/02/2010	(1)
LISN	R&S	ENV216	101041	03/02/2010	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: <sup>(1)</sup> Calibration period 1 year. <sup>(2)</sup> Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

### 9.3. Setup



#### **9.4. Test Procedure**

The measurement is made according to FCC rules 15.207:

The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

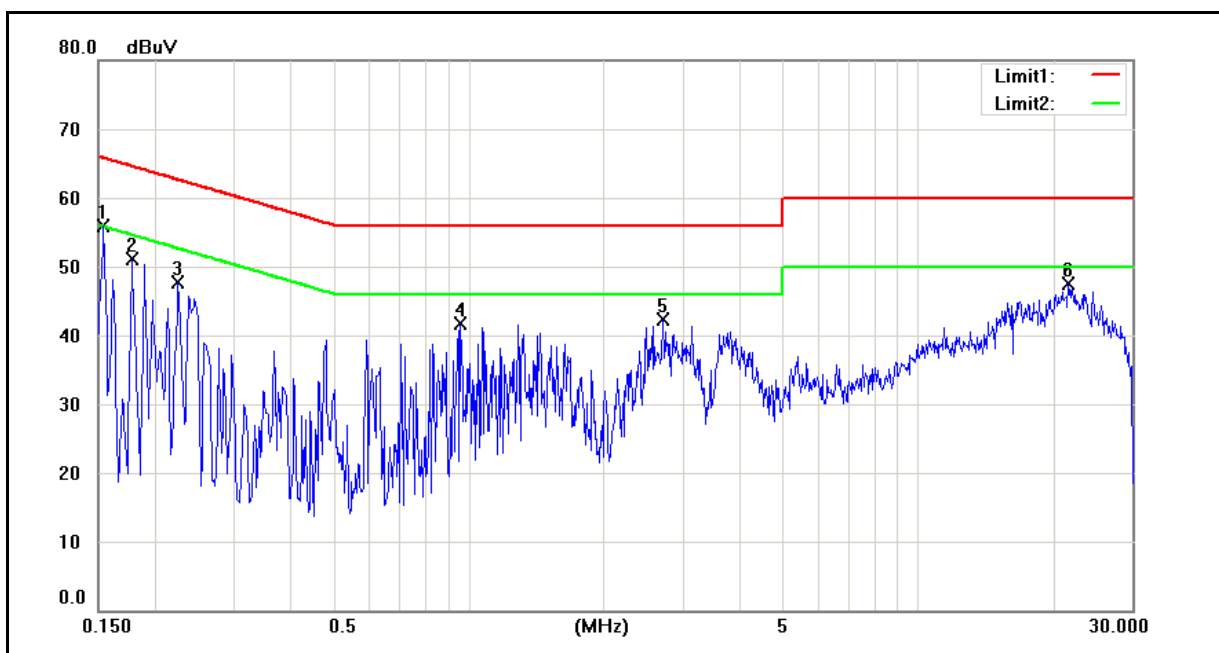
The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in section 10.6.

#### **9.5. Uncertainty**

The measurement uncertainty is defined as for AC power conducted emission measurement is  $\pm 2.24$  dB.

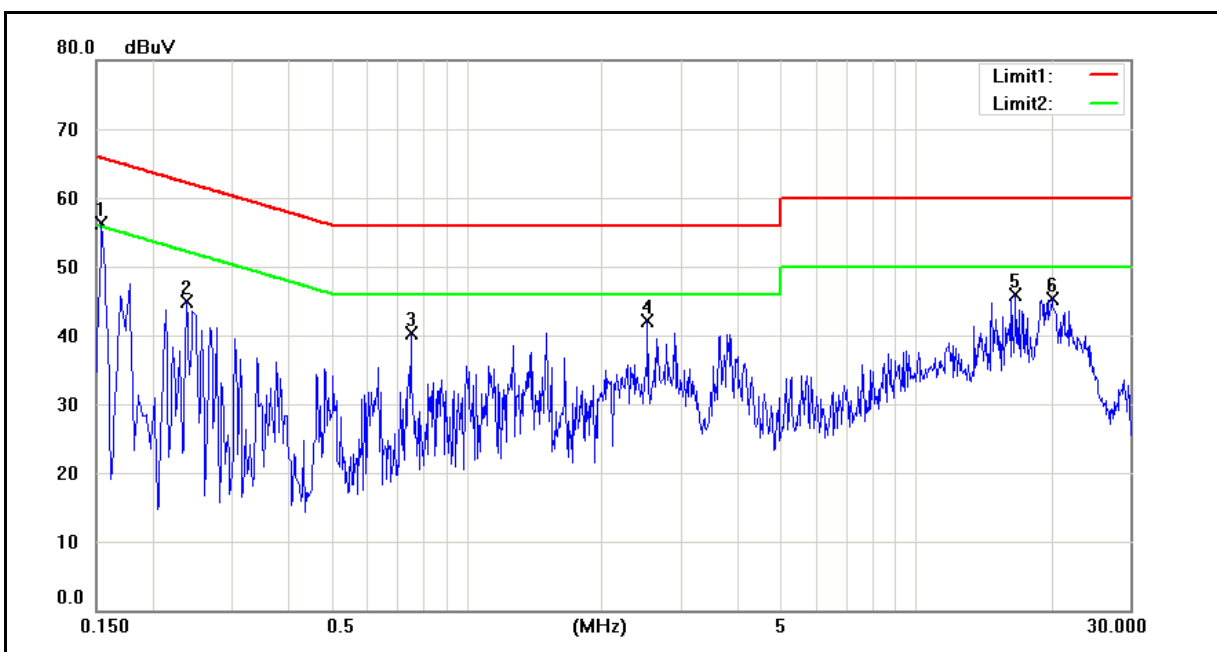
## 9.6. Test Result

Standard:	FCC Part 22H	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	2011/02/01
		Test By:	Gary Wu
Description:			



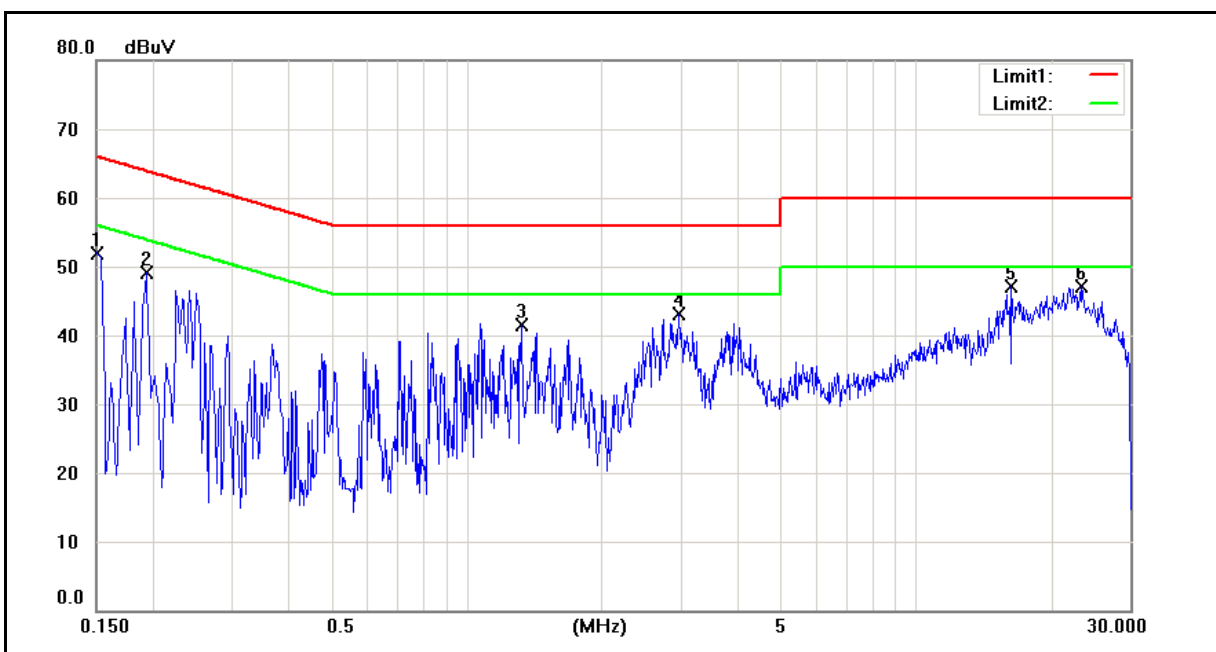
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1540	37.64	13.36	10.11	47.75	23.47	65.78	55.78	-18.03	-32.31	Pass
2	0.1780	32.47	7.27	10.09	42.56	17.36	64.58	54.58	-22.02	-37.22	Pass
3	0.2260	29.63	8.74	10.07	39.70	18.81	62.60	52.60	-22.90	-33.79	Pass
4	0.9620	27.55	12.01	9.78	37.33	21.79	56.00	46.00	-18.67	-24.21	Pass
5	2.7180	25.27	14.94	9.81	35.08	24.75	56.00	46.00	-20.92	-21.25	Pass
6	21.6500	29.70	20.19	10.68	40.38	30.87	60.00	50.00	-19.62	-19.13	Pass

Standard:	FCC Part 22H	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 1	Date:	2011/02/01
		Test By:	Gary Wu
Description:			



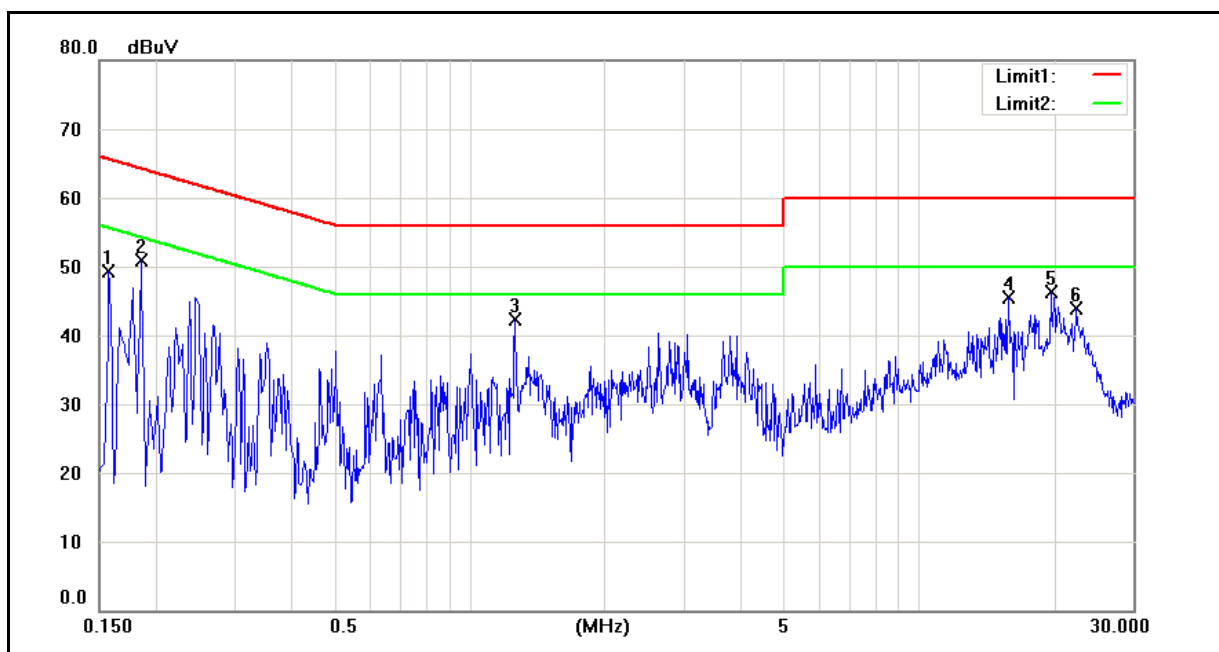
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1540	38.41	13.59	10.10	48.51	23.69	65.78	55.78	-17.27	-32.09	Pass
2	0.2380	33.24	16.59	10.06	43.30	26.65	62.17	52.17	-18.87	-25.52	Pass
3	0.7540	23.78	13.97	9.85	33.63	23.82	56.00	46.00	-22.37	-22.18	Pass
4	2.5340	23.24	13.22	9.77	33.01	22.99	56.00	46.00	-22.99	-23.01	Pass
5	16.7180	27.92	18.06	10.32	38.24	28.38	60.00	50.00	-21.76	-21.62	Pass
6	20.0580	24.78	16.57	10.68	35.46	27.25	60.00	50.00	-24.54	-22.75	Pass

Standard:	FCC Part 24E	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	2011/02/01
		Test By:	Gary Wu
Description:			



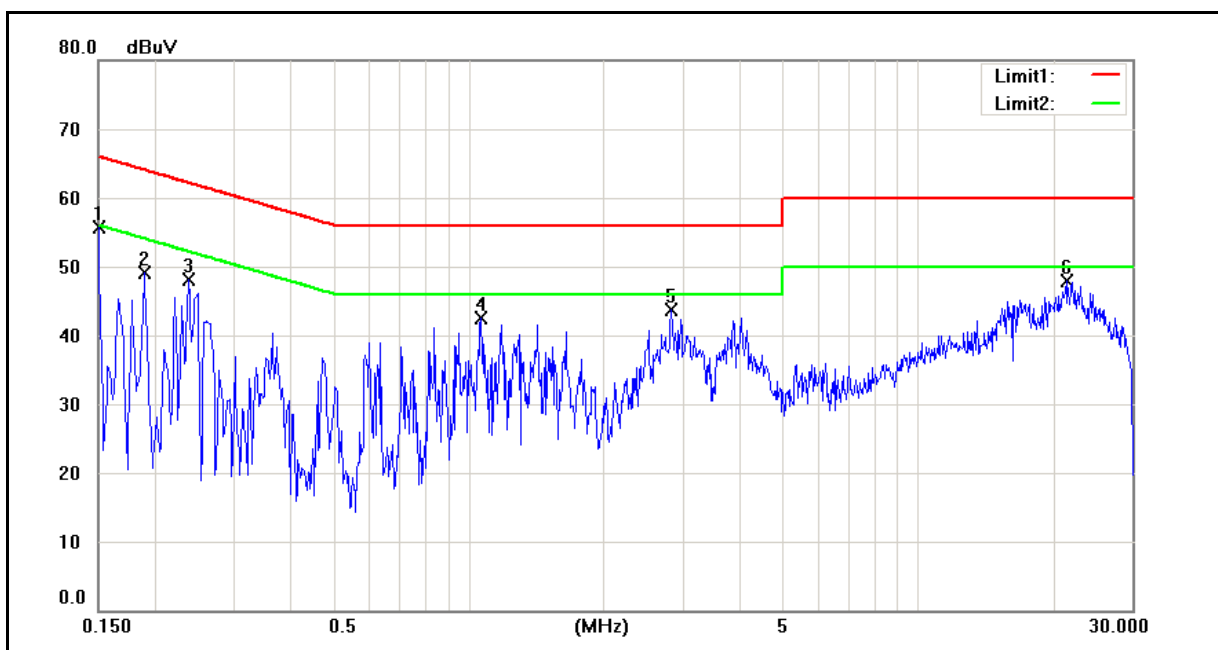
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1524	38.14	13.77	10.11	48.25	23.88	65.87	55.87	-17.62	-31.99	Pass
2	0.1940	31.11	7.87	10.08	41.19	17.95	63.86	53.86	-22.67	-35.91	Pass
3	1.3300	27.05	13.14	9.73	36.78	22.87	56.00	46.00	-19.22	-23.13	Pass
4	2.9740	26.11	16.24	9.84	35.95	26.08	56.00	46.00	-20.05	-19.92	Pass
5	16.3340	34.23	28.42	10.25	44.48	38.67	60.00	50.00	-15.52	-11.33	Pass
6	23.3620	28.64	19.46	10.62	39.26	30.08	60.00	50.00	-20.74	-19.92	Pass

Standard:	FCC Part 24E	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 2	Date:	2011/02/01
		Test By:	Gary Wu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1580	35.76	11.43	10.10	45.86	21.53	65.57	55.57	-19.71	-34.04	Pass
2	0.1860	32.80	10.38	10.08	42.88	20.46	64.21	54.21	-21.33	-33.75	Pass
3	1.2660	24.67	14.86	9.72	34.39	24.58	56.00	46.00	-21.61	-21.42	Pass
4	15.8260	28.60	18.95	10.29	38.89	29.24	60.00	50.00	-21.11	-20.76	Pass
5	19.6620	24.71	16.26	10.65	35.36	26.91	60.00	50.00	-24.64	-23.09	Pass
6	22.4220	23.90	16.63	10.78	34.68	27.41	60.00	50.00	-25.32	-22.59	Pass

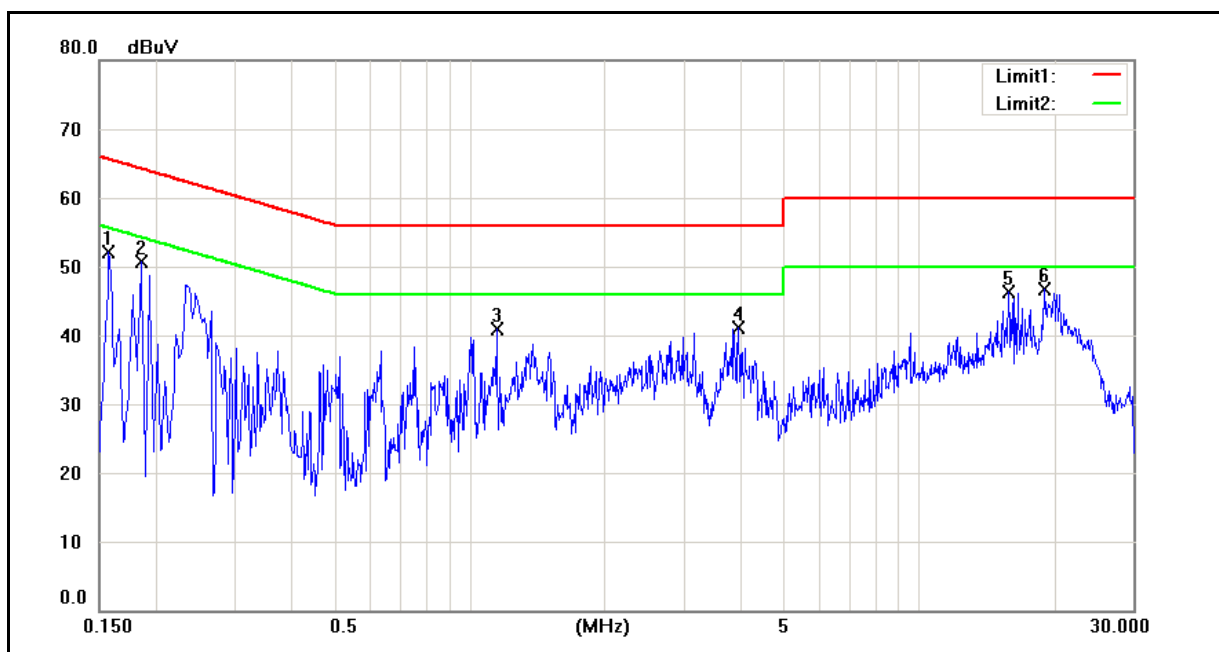
Standard:	FCC Part 24E	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 3	Date:	2011/02/01
		Test By:	Gary Wu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1500	36.94	13.86	10.11	47.05	23.97	66.00	56.00	-18.95	-32.03	Pass
2	0.1900	32.36	8.04	10.09	42.45	18.13	64.04	54.04	-21.59	-35.91	Pass
3	0.2380	35.88	20.22	10.07	45.95	30.29	62.17	52.17	-16.22	-21.88	Pass
4	1.0700	28.59	12.51	9.75	38.34	22.26	56.00	46.00	-17.66	-23.74	Pass
5	2.8340	27.07	16.77	9.82	36.89	26.59	56.00	46.00	-19.11	-19.41	Pass
6	21.4700	29.77	20.22	10.67	40.44	30.89	60.00	50.00	-19.56	-19.11	Pass

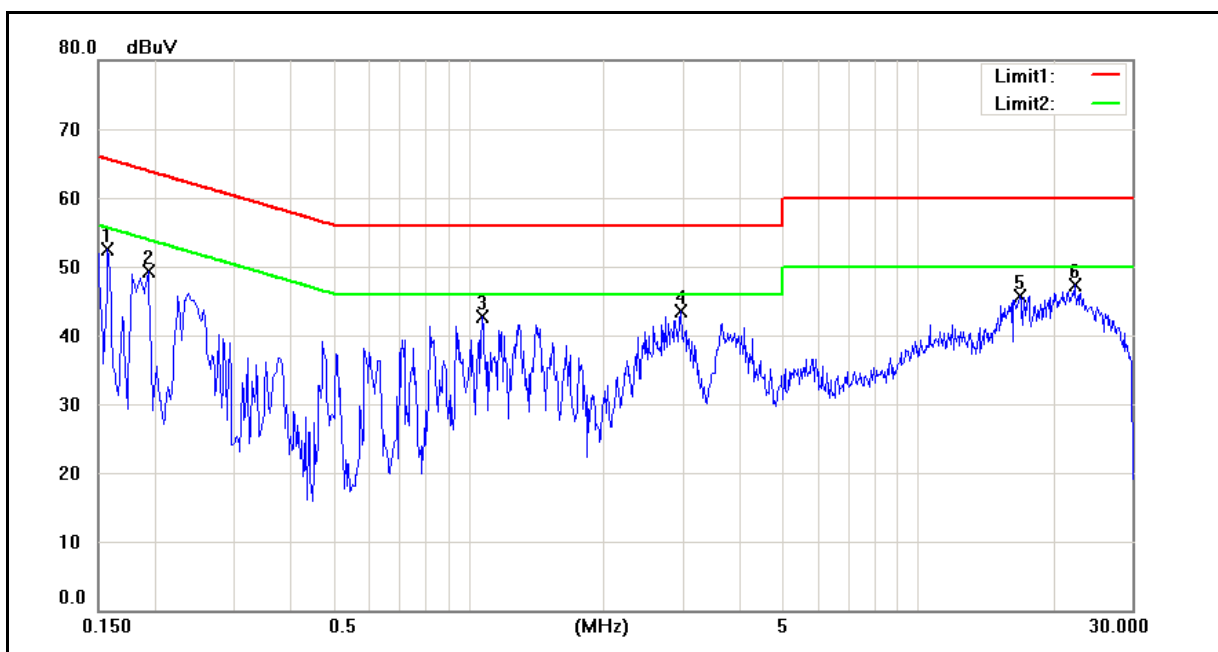


Standard:	FCC Part 24E	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 3	Date:	2011/02/01
		Test By:	Gary Wu
Description:			



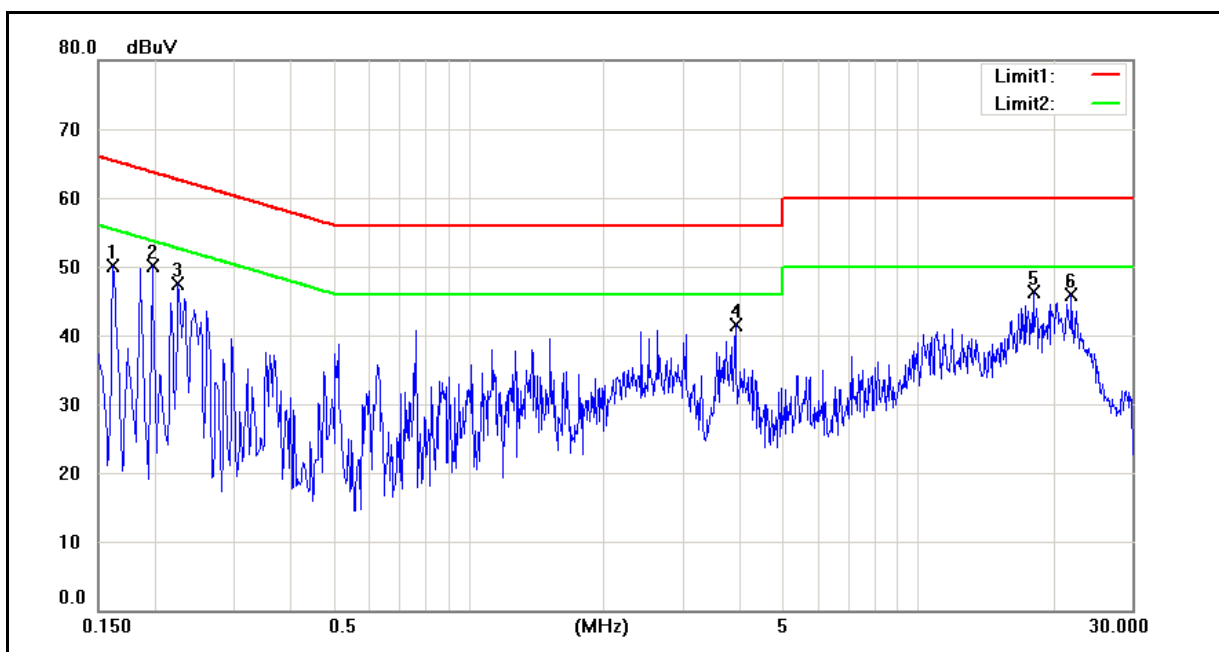
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1580	35.50	11.61	10.10	45.60	21.71	65.57	55.57	-19.97	-33.86	Pass
2	0.1860	32.92	10.02	10.08	43.00	20.10	64.21	54.21	-21.21	-34.11	Pass
3	1.1500	22.77	10.85	9.74	32.51	20.59	56.00	46.00	-23.49	-25.41	Pass
4	3.9660	20.72	12.92	9.84	30.56	22.76	56.00	46.00	-25.44	-23.24	Pass
5	15.8260	28.36	18.77	10.29	38.65	29.06	60.00	50.00	-21.35	-20.94	Pass
6	19.0860	24.02	15.96	10.59	34.61	26.55	60.00	50.00	-25.39	-23.45	Pass

Standard:	FCC Part 22H	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	2011/02/01
		Test By:	Gary Wu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1580	35.56	10.78	10.11	45.67	20.89	65.57	55.57	-19.90	-34.68	Pass
2	0.1940	31.87	7.42	10.08	41.95	17.50	63.86	53.86	-21.91	-36.36	Pass
3	1.0740	28.61	13.06	9.75	38.36	22.81	56.00	46.00	-17.64	-23.19	Pass
4	2.9740	25.53	15.60	9.84	35.37	25.44	56.00	46.00	-20.63	-20.56	Pass
5	16.8460	30.75	19.26	10.27	41.02	29.53	60.00	50.00	-18.98	-20.47	Pass
6	22.4020	29.34	20.09	10.66	40.00	30.75	60.00	50.00	-20.00	-19.25	Pass

Standard:	FCC Part 22H	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model:	TH02M	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	Mode 4	Date:	2011/02/01
		Test By:	Gary Wu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1620	32.71	8.51	10.10	42.81	18.61	65.36	55.36	-22.55	-36.75	Pass
2	0.1980	29.73	10.11	10.07	39.80	20.18	63.69	53.69	-23.89	-33.51	Pass
3	0.2260	27.83	8.69	10.06	37.89	18.75	62.60	52.60	-24.71	-33.85	Pass
4	3.9420	20.64	12.88	9.84	30.48	22.72	56.00	46.00	-25.52	-23.28	Pass
5	18.1180	25.07	15.76	10.46	35.53	26.22	60.00	50.00	-24.47	-23.78	Pass
6	22.0420	24.60	16.72	10.79	35.39	27.51	60.00	50.00	-24.61	-22.49	Pass