



Product Name : Wireless Monitor Controller

Model No : M2M-W02

FCC ID : X7H-M2MW02

Applicant: Commtiva Technology Taiwan Ltd

Address : 4F, No.408, Rueiguang Rd, Neihu District, Taipei, Taiwan

Date of Receipt : 2010/07/01

Issued Date : 2010/07/08

Report No. : 107071R-HPUSP07V01

Report Version : V 1.0

The test results relate only to the samples tested.

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# Test Report Certification

Issued Date: 2010/07/08

Report No.: 107071R-HPUSP07V01



#### Accredited by NIST (NVLAP) NVLAP Lab Code: 200533-0

**Product Name** : Wireless Monitor Controller

: Commtiva Technology Taiwan Ltd **Applicant** 

Address : 4F, No.408, Rueiguang Rd, Neihu District, Taipei, Taiwan

Manufacturer : Commtiva Technology Corp.

Trade Name : Commtiva

Model No. : M2M-W02

**EUT Rated Voltage** : AC 120V/60Hz

**EUT Test Voltage** : AC 120V/60Hz

Measurement Standard: FCC CFR Title 47 Part 2 22 24

Measurement

: TIA/EIA 603-C

Reference

Test Result : Complied

Test results relate only to the samples tested.

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Anny Chou Documented By

(Adm. Assistant / Anny Chou)

Tested By

(Engineer / Vorana Chen)

Voyana Chen

Approved By

(Manager / Vincent Lin)



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Attachment 1: EUT Test Photographs

**Attachment 2: EUT Detailed Photographs** 



# 1. GENERAL INFORMATION

# 1.1. EUT Description

Product Name	Wireless Monitor Controller		
Model No.	M2M-W02		
Trade Name	Commtiva		
IMEI No.	358713-xx-xxxxxx-x		
FCC ID.	X7H-M2MW02		
Antenna Type	PIFA		
Antenna Kit	MFR: FOXLINK, M/N: 619E-1009-0180		
Antenna Gain	2.76 dBi for GSM 850		
	2.48 dBi for PCS 1900		
TX Frequency	824MHz~849MHz(GSM 850)		
	1850MHz ~ 1910MHz(PCS 1900)		
Rx Frequency	869MHz~894MHz(GSM 850)		
	1930MHz ~ 1990MHz(PCS 1900)		



### 1.2. Operational Description

The information contained within this report is intended to show verification of compliance of the 850/1900MHz Notebook to the requirements of 47CFR2, 22 and 24.

The EUT provide all functions described as above. The EUT is tested with maximum rated TX power via the Base Station simulator.

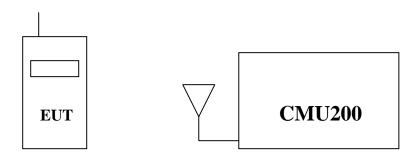
Quie Tek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Toot Mode:	GSM 850 GPRS
Test Mode:	PCS 1900 GPRS

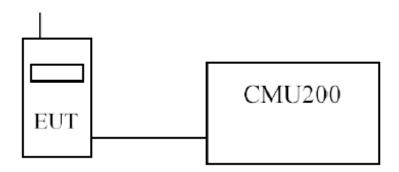


## 1.3. Configuration of tested System

(a) Configuration of Radiated measurement



(b) Configuration of Conducted measurement



### 1.4. EUT Setup Procedures

- (1) Setup the EUT and simulators as shown on 1.3
- (2) Turn on the power of all equipments.
- (3) The EUT was set to communicate with CMU200.
- (4) Repeat the above procedure (3).



#### 1.5. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	982

Site Description: File on

Federal Communications Commission

FCC Engineering Laboratory

7435 Oakland Mills Road

Columbia, MD 21046

FCC Registration Number :92195

July 03, 2001 Accreditation on NVLAP

NVLAP Lab Code: 200533-0

NVLAP Lab Code: 200533-0

Site Name: Quie Tek Corporation

LinKou Testing Laboratory:

No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,

Lin-Kou Shiang, Taipei,

Taiwan, R.O.C.

TEL: 886-2-8601-3788 / FAX: 886-2-8601-3789

E-Mail: service@quietek.com

FCC Accreditation Number: TW1014







# 1.6. Type of Emission

GPRS: 300KGXW

# 1.7. DC voltages and DC currents

GSM 850 GPRS	
EUT Transmitting (in maximum power):	DC voltage: 3.7V, DC current: 0.33A
EUT Standby :	DC voltage: 3.7V, DC current: 0.04A
PCS 1900 GPRS	
EUT Transmitting (in maximum power):	DC voltage: 3.7V, DC current: 0.26A
EUT Standby :	DC voltage: 3.7V, DC current: 0.06A



## 2. Peak Power Output

## 2.1. Test Equipment

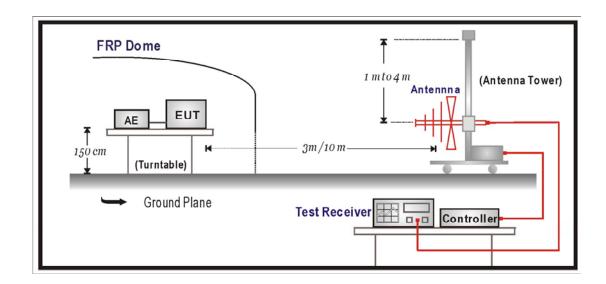
The following test equipments are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
⊠OATS 1	Test Receiver	R&S	ESCS 30 / 100122	Feb., 2010
	Universal Radio	R&S	CMU200 / 104846	May., 2010
	Communication Tester			
	Spectrum Analyzer	Agilent	E4408B/ MY45102743	Aug., 2009
	Microwave Amplifier (0.5GHZ-26.5GHZ)	Agilent	83017A/ MY39500682	Aug ., 2009
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May., 2010
	Horn Antenna	ETS	3115 / 0005-6160	Jul., 2010
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	Jul., 2010

Note: 1. All equipments that need to be calibrated are with calibration period of 1 year.

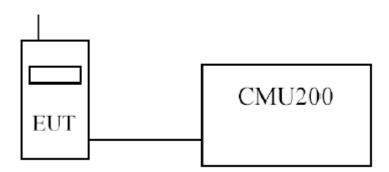
## 2.2. Test Setup

#### **Radiated Power Measurement**





#### **Conducted Power Measurement**



#### 2.3. Limits

Cellular Band 850	<7W
PCS Band 1900	<2W or +33dBm

#### 2.4. Test Procedure

#### ➤RF Out Power (Radiated)

The Spectrum Analyzer was tuned to the test frequency. The device was put into Transmit mode then rotated through 360 degrees until the highest power level was observed in both horizontal and vertical polarization. The device was then replaced with a substitution antenna, which input signal was adjusted until the received level matched that of the previously detected emission.

The EUT is tested with maximum rated TX power via the Base Station simulator.

#### ➤RF Out Power (Conducted)

The EUT is tested with maximum rated TX power via the Base Station simulator, and the output power was measured at the antenna terminals of the EUT.

#### 2.5. Test Specification

According to Part 2.1046, 22.913,24.232.



# 2.6. Test Result of Peak Power Output

Product	Wireless Monitor Controller		
Test Mode	RF Output Power (Conducted)		
Date of Test	2010/07/01	Test Site	CTR

GSM 850 GPRS						
Frequency	Output Power	Path Loss	Result	Result		
(MHz)	(dBm)	(dB)	(dBm)	(W)		
824.2	31.52	0.6	32.12	1.63		
836.4	31.74	0.6	32.34	1.71		
848.8	31.93	0.6	32.53	1.79		
		PCS 1900 GPRS				
Frequency	Output Power	Path Loss	Result	Result		
(MHz)	(dBm)	(dB)	(dBm)	(W)		
1850.2	29.30	1.0	30.30	1.07		
1880	29.13	1.0	30.13	1.03		
1909.8	28.81	1.0	29.81	0.96		



Product	Wireless Monitor Controller		
Test Mode	RF Output Power (Radiated)		
Date of Test	2010/07/01	Test Site	OATS 1
Test Condition	GSM 850 GPRS		

#### **Maximum Power-GSM 850 GPRS**

Frequency	Reading	Substitution	Substitution	Cable	Result	Result
(MHz)	Level	Level	Antenna	Loss	ERP	ERP
	(dBm)	(dBm)	Gain (dBd)	(dB)	(dBm)	(W)
824.2	24.85	27.87	4.45	0.51	31.81	1.52
836.4	24.34	27.35	4.45	0.51	31.29	1.35
848.8	23.2	26.19	4.45	0.51	30.13	1.03

#### Note:

- 1. The EUT meets the requirements of FCC CFR 47: Part 22, Section 22.913(a) for Effective Radiated Power.
- 2. Receiver setting (Peak Detector): RBW:3MHz; VBW:3MHz
- 3. Result ERP = Substitution Level + Substitution Antenna Gain Cable Loss



Product	Wireless Monitor Controller		
Test Mode	RF Output Power (Radiated)		
Date of Test	2010/07/01	Test Site	OATS 1
Test Condition	PCS 1900 GPRS		

#### **Maximum Power-PCS 1900 GPRS**

Frequency	Reading	Substitution	Substitution	Cable	Result	Result
(MHz)	Level	Level	Antenna	Loss	EIRP	EIRP
	(dBm)	(dBm)	Gain (dBi)	(dB)	(dBm)	(W)
1850.2	-10.570	21.617	10.4	1.02	30.997	1.26
1880.0	-10.930	21.472	10.4	1.02	30.852	1.22
1909.8	-11.780	20.661	10.4	1.02	30.041	1.01

#### Note:

- 1. The EUT meets the requirements of FCC CFR 47: Part 24, Section 24.232(b) for Effective Isotropically Radiated Power.
- 2. Receiver setting (Peak Detector): RBW:3MHz; VBW:3MHz
- 3. Result EIRP = Substitution Level + Substitution Antenna Gain Cable Loss



#### 3. Occupied Bandwidth

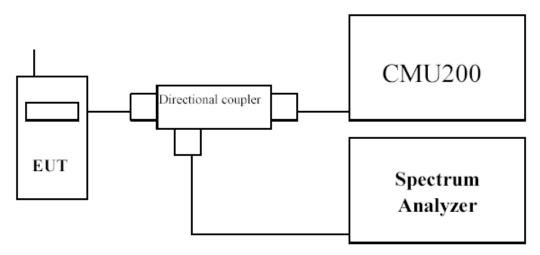
### 3.1. Test Equipment

The following test equipments are used during the occupied bandwidth tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	Agilent	N9020A/ MY48010570	Apr., 2010
Universal Radio Communication Tester	R&S	CMU200 / 104846	May., 2010
Directional coupler	Agilent	87300C / MY44300353	Aug., 2009
Directional coupler	Agilent	778D-012/ 50550	Aug., 2009

Note: All equipments upon which need to be calibrated are with calibration period of 1 year.

#### 3.2. Test Setup



#### 3.3. Test Procedure

The EUT is tested with maximum rated TX power via the Base Station simulator, and the occupied bandwidth was measured at the antenna terminals of the EUT.

The Resolution BW of the analyzer is set to 1 % of the emission bandwidth. The EUT's occupied bandwidth is measured as the width of the signal between two points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The plots below show the resultant display from the Spectrum Analyser.



# 3.4. Test Specification

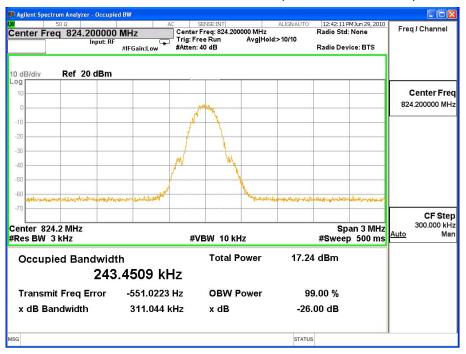
According to Part 2.1049, 22.917(b), 24.238(b).



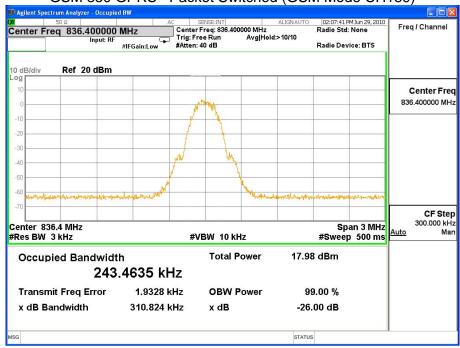
#### 3.5. Test Result of Occupied Bandwidth

Product	Wireless Monitor Controller		
Test Mode	Occupied Bandwidth		
Date of Test	2010/07/01	Test Site	CTR
Test Condition	GSM 850 GPRS		

#### GSM 850 GPRS - Packet Switched (GSM Mode CH 128)



GSM 850 GPRS - Packet Switched (GSM Mode CH189)

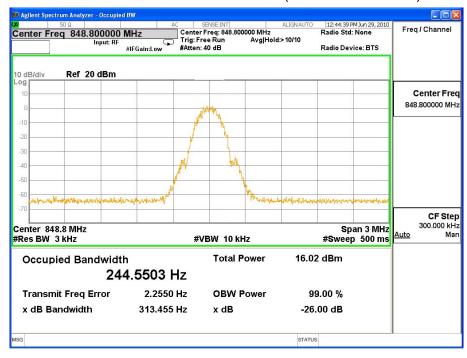


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Product	Wireless Monitor Controller		
Test Mode	Occupied Bandwidth		
Date of Test	2010/07/01	Test Site	CTR
Test Condition	GSM 850 GPRS		

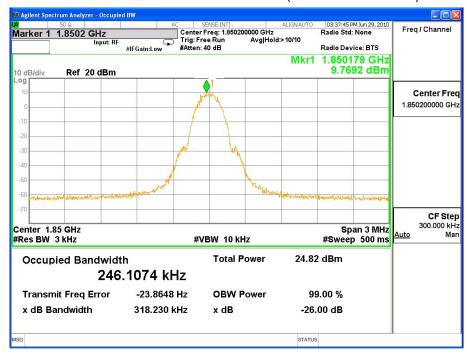
## GSM 850 GPRS - Packet Switched (GSM Mode CH 251)



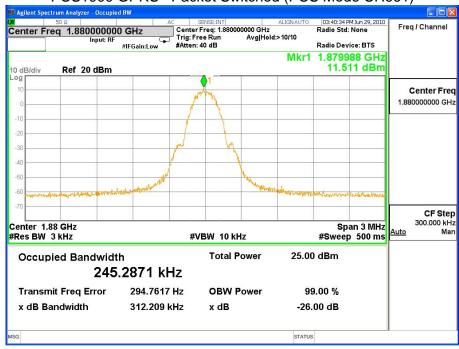


Product	Wireless Monitor Controller		
Test Mode	Occupied Bandwidth		
Date of Test	2010/07/01	Test Site	CTR
Test Condition	PCS1900 GPRS		

## PCS1900 GPRS - Packet Switched (PCS Mode CH 512)



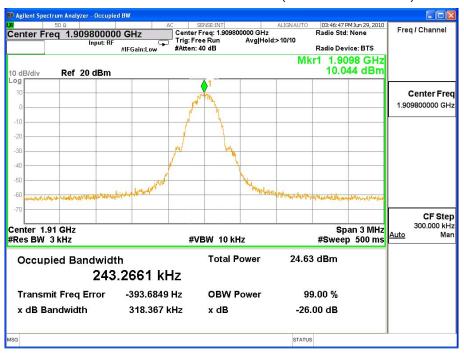
#### PCS1900 GPRS - Packet Switched (PCS Mode CH661)





Product	Wireless Monitor Controller		
Test Mode	Occupied Bandwidth		
Date of Test	2010/07/01	Test Site	CTR
Test Condition	PCS1900 GPRS		

#### PCS1900 GPRS - Packet Switched (PCS Mode CH 810)





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

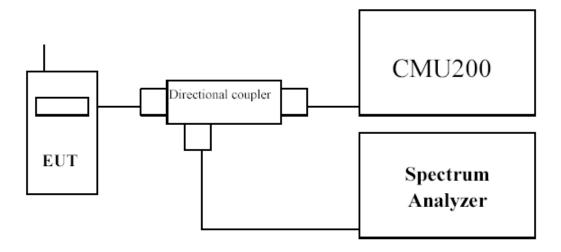
## 4.1. Test Equipment

The following test equipments are used during the spurious emission test

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	Agilent	N9020A/ MY48010570	Apr., 2010
Universal Radio Communication Tester	R&S	CMU200 / 104846	May., 2010
Directional coupler	Agilent	87300C / MY44300353	Aug., 2009
Directional coupler	Agilent	778D-012/ 50550	Aug., 2009

Note: All equipments upon which need to be calibrated are with calibration period of 1 year.

## 4.2. Setup





#### 4.3. Limits

Cellular Band Transmitter limits for narrowband spurious emission

Lower Block Edge Test Frequencies	Upper Block Edge Test Frequencies
Block A	Block B
Channel : 128	Channel : 251
Frequency: 824.2 MHz	Frequency : 848.8 MHz

#### PCS Band Transmitter limits for narrowband spurious emission

Lower Block Edge Test Channels/Frequencies	Upper Block Edge Test Channels/Frequencies
Block A	Block C
Channel : 512	Channel : 810
Frequency: 1850.2 MHz	Frequency : 1909.8 MHz

#### 4.4. Test Procedure

In accordance with Part 22.917 and 24.238, at least 1% of the emission bandwidth was used for the resolution and video bandwidths up to 1MHz away from the Block Edge. At greater than 1MHz, the resolution and video bandwidth were increased to 1MHz.

The reference power and path losses of all channels used for testing in each frequency block were measured.

#### 4.5. Test Specification

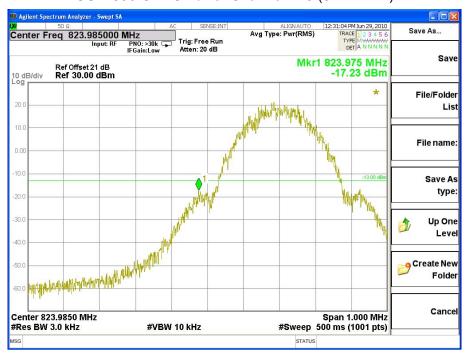
According to Part 2.1049, 22.917,24.238.



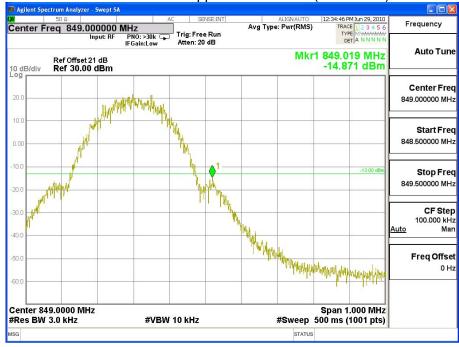
### 4.6. Test Result of Spurious Emission At Antenna Terminals (+/-1MHz)

Product	Wireless Monitor Controller			
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)			
Date of Test	2010/07/01 Test Site CTR			
Test Condition	Block Edge Test (GSM 850 GPRS)			

#### GSM 850 GPRS Lower Channel 128 (824.2MHz)



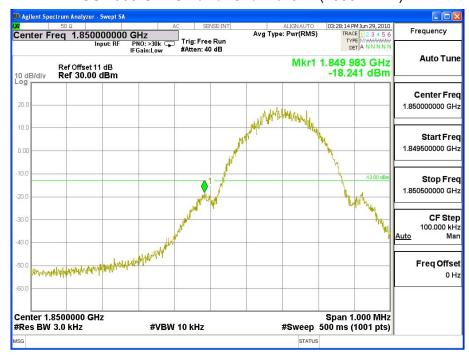
GSM 850 GPRS Upper Channel 251(848.8MHz)



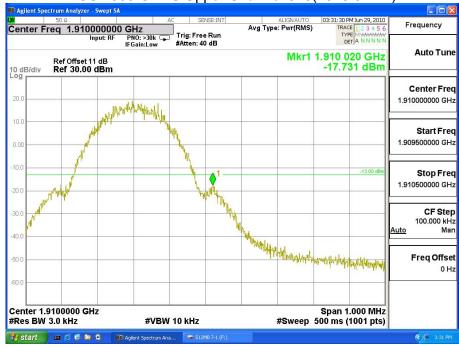


Product	Wireless Monitor Controller			
Test Mode	Spurious Emission At Antenna Terminals (+/-1MHz)			
Date of Test	2010/07/01 Test Site CTR			
Test Condition	Block Edge Test (PCS 1900 GPRS)			

#### PCS 1900 GPRS Lower Channel 512 (1850.2MHz)









## 5. Spurious Emission

## 5.1. Test Equipment

The following test equipments are used during the radiated emission test:

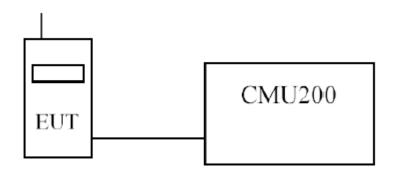
Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
⊠CTR	Spectrum Analyzer	Agilent	N9020A/ MY48010570	Apr., 2010
	Dual Directional couple	Agilent	778D-012/50550	Aug , 2009
	Directional coupler	Agilent	87300C/ MY44300353	Aug ., 2009
⊠SITE1	Test Receiver	R&S	ESCS 30 / 100122	Feb., 2010
	Universal Radio	R&S	CMU200 / 104846	May., 2010
	Communication Tester			
	Spectrum Analyzer	Agilent	E4408B/ MY45102743	Aug., 2009
	Microwave Amplifier (0.5GHZ-26.5GHZ)	Agilent	83017A/ MY39500682	Aug ., 2009
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May., 2010
	Horn Antenna	ETS	3115 / 0005-6160	Jul., 2010
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	Jul., 2010

Note: 1. All equipments that need to be calibrated are with calibration period of 1 year.

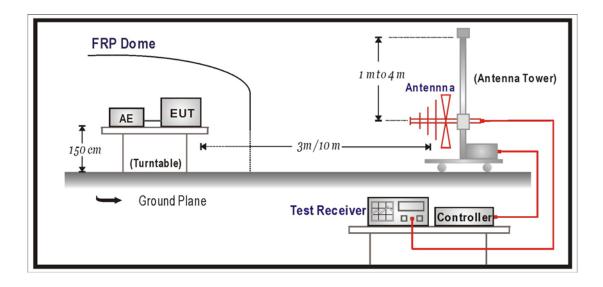


## 5.2. Test Setup

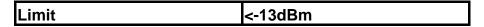
## 5.2.1.1 Spurious emissions at antenna terminals.



## 5.2.1.2 Field strength of spurious radiation.



#### 5.3. Limits



43 + 10Log(P) down on the carrier where P is the power in Watts.



#### 5.4. Test Procedure

In accordance with Part 2.1051, the spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using a combination of filters and attenuators and the frequency spectrum investigated from 30MHz to 20GHz. The EUT was set to transmit on full power. The EUT was tested on Low, middle and High channels for both power levels. The resolution and video bandwidth was set to 3MHz in accordance with Part 22.917&24.238. The spectrum analyzer detector was set to Max Hold.

In addition, measurements were made up to the 10<sup>th</sup> harmonic of the fundamental.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to TIA/EIA 603-C on radiated measurement.

#### 5.5. Test Specification

According to Part 2.1051, 2.1053, 22.917(a), 24.238(b).

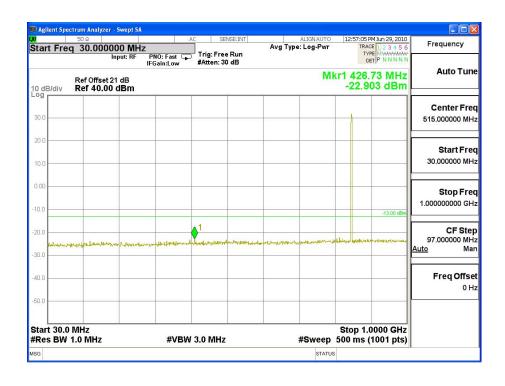


## 5.6. Test Result of Spurious Emission

Product	Wireless Monitor Controller					
Test Mode	Spurious Emission (Conducted)					
Date of Test	2010/07/02	Test Site	CTR			
Test Condition	GSM 850 GPRS	Test Range	30MHz~10GHz			

#### **GSM 850 GPRS High-Channel 251**

Frequency	Reading Level	Path Loss	Emission Level	Limit
(MHz)	(dBm)	(dB)	(dBm)	(dBm)
1697.6	-41.510	0.58	-40.930	-13
2546.4	-56.678	0.7	-55.978	-13
3395.2	-50.074	1.01	-49.064	-13
4244	-48.294	1.18	-47.114	-13
5092.8	-60.692	1.23	-59.462	-13
5491.6	-50.907	1.45	-49.457	-13
6790.4	-39.098	1.56	-37.538	-13
7639.2	-60.544	1.59	-58.954	-13
8488	-64.687	1.82	-62.867	-13

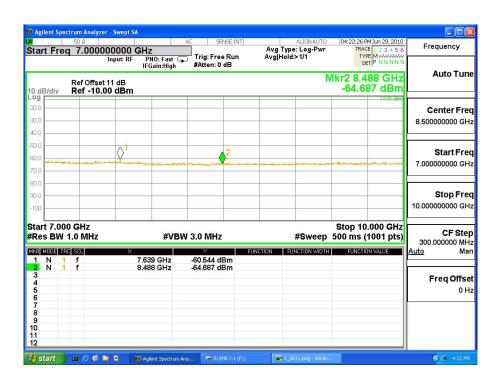










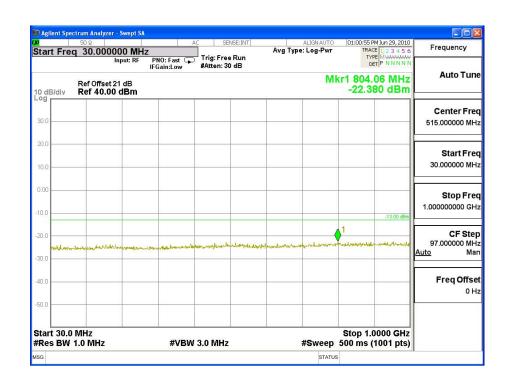




Product	Wireless Monitor Controller				
Test Mode	Spurious Emission (Conducted)				
Date of Test	2010/07/02	Test Site	CTR		
Test Condition	PCS 1900 GPRS	Test Range	30MHz~20GHz		

#### PCS 1900 GPRS Low-Channel 512

Frequency	Reading Level	Path Loss	Path Loss Emission Level	
(MHz)	(dBm)	(dB)	(dBm)	(dBm)
3700.4	-48.042	1.1	-46.942	-13
5550.6	-60.649	1.23	-59.419	-13
7400.8	-56.045	1.59	-54.455	-13
9251	-61.617	1.89	-59.727	-13
11101.2	-63.550	2.07	-61.480	-13
12951.4	-57.073	2.26	-54.813	-13
14801.6	-59.767	2.64	-57.127	-13
16651.8	-59.068	3.5	-55.568	-13
18502	-58.860	3.7	-55.160	-13

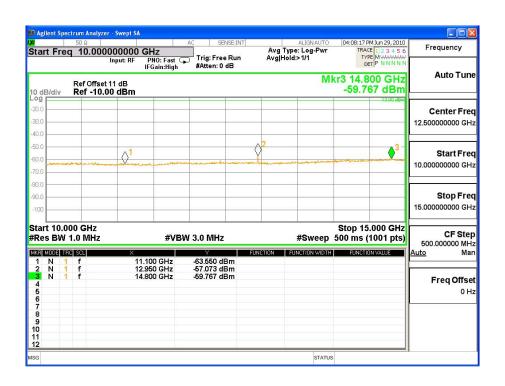
















Product	Wireless Monitor Controller					
Test Mode	Spurious Emission (Radiated)					
Date of Test	2010/07/01	Test Site	OATS 1			
Test Condition	Channel 128 (GSM 850 GPRS)	Test Range	30MHz~10GHz			

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

#### **Horizontal Emissions**

1648.4	-30.010	-33.338	1.630	9.800	-25.168	-13
2472.6	-42.210	-42.566	2.100	10.600	-34.066	-13
3296.8	-49.940	-51.622	2.350	12.300	-41.672	-13
4121	-52.660	-51.654	2.700	12.600	-41.754	-13
4945.2	-55.020	-50.923	2.830	12.700	-41.053	-13
5769.4	-55.370	-53.314	3.200	13.000	-43.514	-13

#### **Vertical Emissions**

				l		
1648.4	-34.010	-37.026	1.630	9.800	-28.856	-13
2472.6	-43.290	-43.370	2.100	10.600	-34.870	-13
3296.8	-49.880	-50.508	2.350	12.300	-40.558	-13
4121	-51.570	-48.865	2.700	12.600	-38.965	-13
4945.2	-55.220	-50.580	2.830	12.700	-40.710	-13
5769.4	-55.180	-52.999	3.200	13.000	-43.199	-13

#### Note:

- 1. Receiver setting (Peak Detector): RBW:3MHz; VBW:3MHz
- 2. EIRP Value = Signal Generator Level + Antenna Gain Cable Loss
- 3. Spurious emissions past 6 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.



Product	Wireless Monitor Controller					
Test Mode	Spurious Emission (Radiated)					
Date of Test	2010/07/01	Test Site	OATS 1			
Test Condition	Channel 512 (PCS1900 GPRS)	Test Range	30MHz~20GHz			

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

#### **Horizontal Emissions**

3700.400	-50.550	-51.178	2.530	12.600	-41.108	-13
5550.600	-54.980	-51.601	3.050	13.100	-41.551	-13
7400.800	-53.340	-38.660	3.650	11.500	-30.810	-13
9251.000	-54.120	-39.285	3.850	12.000	-31.135	-13
11101.200	-55.560	-38.018	4.580	12.000	-30.598	-13

#### **Vertical Emissions**

3700.400	-48.690	-47.067	2.530	12.600	-36.997	-13
5550.600	-52.590	-48.608	3.050	13.100	-38.558	-13
7400.800	-53.430	-38.349	3.650	11.500	-30.499	-13
9251.000	-53.750	-38.325	3.850	12.000	-30.175	-13
11101.200	-55.410	-37.670	4.580	12.000	-30.250	-13

#### Note:

- 1. Receiver setting (Peak Detector): RBW:3MHz; VBW:3MHz
- 2. EIRP Value = Signal Generator Level + Antenna Gain Cable Loss
- 3. Spurious emissions past 12GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.



# 6. Frequency Stability Under Temperature & Voltage Variations

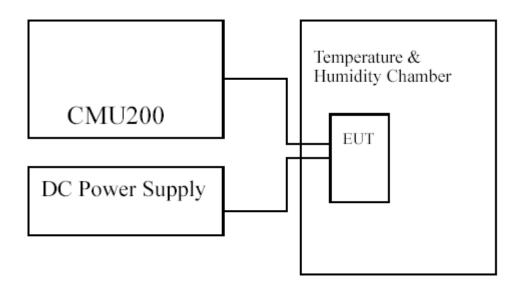
## 6.1. Test Equipment

The following test equipments are used during the frequency stability test:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.	
Universal Radio	R&S	CMU200 / 104846	May., 2010	
Communication Tester	κασ		3 /	
Standard Temperature	WIT	TH 40 D / 400040	Aug. 2000	
& Humidity Chamber	VVII	TH-1S-B / 108210	Aug., 2009	
DC Power Supply	Agilent	87421A / MY44350304	Apr., 2010	

Note: All equipments upon which need to be calibrated are with calibration period of 1 year

#### 6.2. Test Setup



#### 6.3. Limits

Limit	< <u>+</u> 2.5ppm



#### 6.4. Test Procedure

The frequency stability of transmitter is measured by:

- (a) Temperature: The temperature is varied from -30 °C to 50 °C in 10 °C increament using a standard temperature & Humidity chamber.
- (b) Primary Supply Voltage: The primary supply voltage is varied 85% to 115% of the nominal value for non hand-carried equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating endpoint which shall be specified by the manufacturer.

The EUT was connected via the base station simulator. Universal Radio Communication Tester, (CMU200), was used to measure The Frequency Error. The maximum result of measurements was recorded.

### 6.5. Test Specification

According to Part 2.1055,22.355,24.235



# 6.6. Test Result of Frequency Stability Under Temperature Variations

Product	Wireless Monitor Controller			
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations			
Date of Test	2010/07/05	Test Site	CTR	
Test	GSM 850 GPRS / Channel 189	Test Range	-30℃~+50℃	
Condition				

## Frequency Stability Under Temperature Variations

Temperature	Test Frequency	Deviation	Limit
Interval(°C)	(GHz)	(Hz)	(KHz)
-30	0.836	52	±2.09
-20	0.836	38	±2.09
-10	0.836	-34	±2.09
0	0.836	-38	±2.09
10	0.836	-47	±2.09
20	0.836	-47	±2.09
30	0.836	-38	±2.09
40	0.836	-43	±2.09
50	0.836	-41	±2.09

## Voltage Variations

DC Voltage	Test Frequency	Deviation	Limit
(V)	(GHz)	(Hz)	(KHz)
4.2	0.836	-56	±2.09
3.7	0.836	-90	±2.09
3.4	0.836	-115	±2.09



Product	Wireless Monitor Controller				
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations				
Date of Test	st 2010/07/01 Test Site CTR				
Test	PCS 1900 GPRS / Channel 698	Test Range	-30°C ~+50°C		
Condition					

## Frequency Stability Under Temperature Variations

Temperature	Test Frequency	Deviation	Limit
Interval(°C)	(GHz)	(Hz)	(KHz)
-30	1.88	64	±2.09
-20	1.88	49	±2.09
-10	1.88	-37	±2.09
0	1.88	-42	±2.09
10	1.88	-64	±2.09
20	1.88	-71	±2.09
30	1.88	-74	±2.09
40	1.88	-76	±2.09
50	1.88	-87	±2.09

## Voltage Variations

DC Voltage	Test Frequency	Deviation	Limit
(V)	(GHz)	(Hz)	(KHz)
4.2	1.88	-165	±2.09
3.7	1.88	-59	<u>+</u> 2.09
3.2	1.88	-63	<u>+</u> 2.09



# 7. EMI Reduction Method During Compliance Testing

No modification was made during testing.



# **Attachment 1: EUT Test Photographs**



# **Attachment 2: EUT Detailed Photographs**