# APPLICATION CERTIFICATION FCC Part 15C On Behalf of Shenzhen Sungworld Electronics Co., Ltd.

MID Model No.: M7000XX

FCC ID: WI3-M7000XX

Prepared for : Shenzhen Sungworld Electronics Co., Ltd.

Address : 4#, North District, Shangxue Industrial Park, Bantian,

Long Gang District, Shenzhen, China

Prepared by : ACCURATE TECHNOLOGY CO., LTD

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Report Number : ATE20111831
Date of Test : August 27-31, 2011
Date of Report : September 3, 2011

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# **Test Report Certification**

Applicant : Shenzhen Sungworld Electronics Co., Ltd.

Manufacturer : Shenzhen Sungworld Electronics Co., Ltd.

**EUT Description**: MID

(A) MODEL NO.: M7000XX

(B) SERIAL NO.: N/A

(C) POWER SUPPLY: DC 7.4V (Li-polymer battery);

AC 120V/60Hz (Adaptor input)

Measurement Procedure Used:

#### FCC Rules and Regulations Part 15 Subpart C Section 15.247 ANSI C63.4: 2003

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test :	August 27-31, 2011	
Prepared by :	Apple Lu	
	(Engineer)	
Approved & Authorized Signer :	Lemb	
	(Manager)	

### 1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT : MID

Model Number : M7000XX

Frequency Band : 2412-2462MHz

Number of Channels : 11

Antenna Gain : 1dBi

Power Supply : DC 7.4V (Li-polymer battery);

AC 120V/60Hz (Adaptor input)

Adapter : Model number: JSK12-090150

Input: AC 100-240V; 50/60Hz 0.3A

Output: DC 9V; 1.5A

Output line: Non-shielded, Non-detachable, 1.4m

Data Rate : IEEE 802.11b: 11/5.5/2/1Mbps

IEEE 802.11g: 54/48/36/24/18/12/9/6Mbps

Applicant : Shenzhen Sungworld Electronics Co., Ltd.

Address : 4#, North District, Shangxue Industrial Park, Bantian,

Long Gang District, Shenzhen, China

Manufacturer : Shenzhen Sungworld Electronics Co., Ltd.

Address : 4#, North District, Shangxue Industrial Park, Bantian,

Long Gang District, Shenzhen, China

Date of sample received: August 27, 2011

Date of Test : August 27-31, 2011

### 1.2.Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC

The Registration Number is 752051

Listed by Industry Canada

The Registration Number is 5077A-2

Accredited by China National Accreditation Committee

for Laboratories

The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.

Science & Industry Park, Nanshan, Shenzhen, Guangdong

P.R. China

### 1.3. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2

(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2

(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2

(Above 1GHz)

# 2. MEASURING DEVICE AND TEST EQUIPMENT

**Table 1: List of Test and Measurement Equipment** 

Kind of equipment	Manufacturer	Type	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 15, 2012
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 15, 2012
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 15, 2012
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 15, 2012
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2012
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2012
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2012
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 15, 2012
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 15, 2012
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 15, 2012

# 3. OPERATION OF EUT DURING TESTING

# 3.1. Operating Mode

The mode is used: 802.11b Transmitting mode

Low Channel: 2412MHz Middle Channel: 2437MHz High Channel: 2462MHz

802.11g Transmitting mode

Low Channel: 2412MHz Middle Channel: 2437MHz High Channel: 2462MHz

# 3.2. Configuration and peripherals

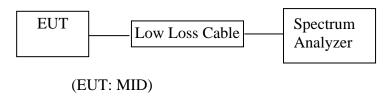
EUT
Figure 1 Setup: Transmitting mode

# 4. TEST PROCEDURES AND RESULTS

FCC Rules	<b>Description of Test</b>	Result
Section 15.247(a)(2)	6dB Bandwidth Test	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.247(b)(3)	Maximum Peak Output Power Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.247(d) Section 15.209	Radiated Spurious Emission Test	Compliant
Section 15.247(d)	Conducted Spurious Emission Test	Compliant
Section 15.207	AC Power Line Conducted Emission Test	Compliant
Section 15.203	Antenna Requirement	Compliant

### 5. 6DB BANDWIDTH MEASUREMENT

### 5.1.Block Diagram of Test Setup



### 5.2. The Requirement For Section 15.247(a)(2)

Section 15.247(a)(2): Systems using digital modulation techniques may operate in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### 5.3.EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 5.3.1.MID (EUT)

Model Number : M7000XX Serial Number : N/A

Manufacturer : Shenzhen Sungworld Electronics Co., Ltd.

#### 5.4. Operating Condition of EUT

- 5.4.1. Setup the EUT and simulator as shown as Section 5.1.
- 5.4.2. Turn on the power of all equipment.
- 5.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462MHz. We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

### 5.5.Test Procedure

- 5.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 5.5.2.Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.
- 5.5.3.The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

#### 5.6.Test Result

#### PASS.

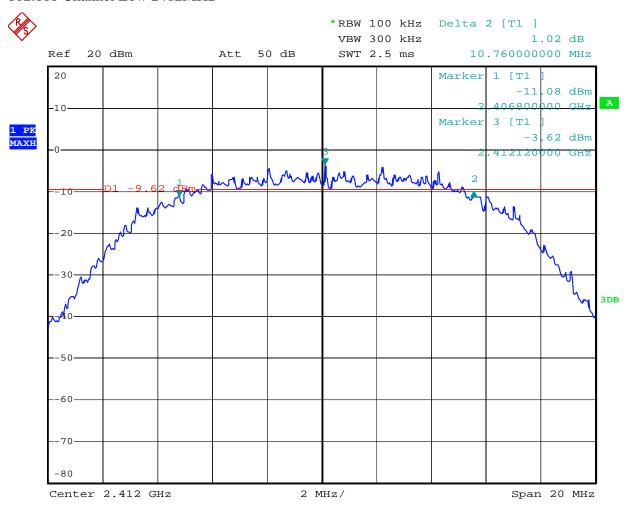
Date of Test:August 28, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:TXTest Engineer:Pei

The test was performed with 802.11b					
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)		
Low	2412	10.76	> 0.5MHz		
Middle	2437	10.60	> 0.5MHz		
High	2462	10.48	> 0.5MHz		

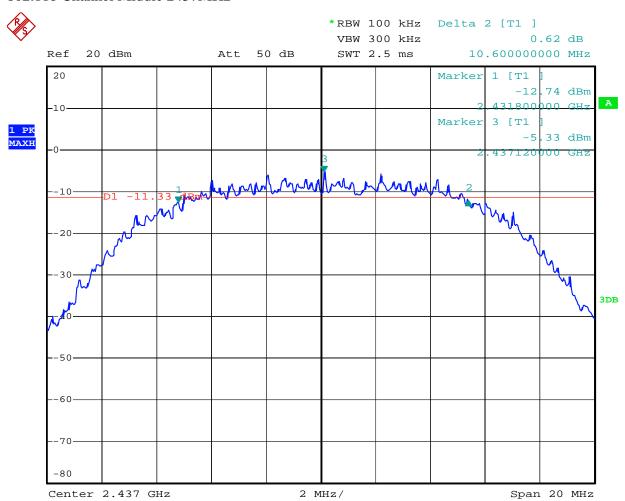
The test was performed with 802.11g					
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)		
Low	2412	16.60	> 0.5MHz		
Middle	2437	16.56	> 0.5MHz		
High	2462	16.56	> 0.5MHz		

The spectrum analyzer plots are attached as below.

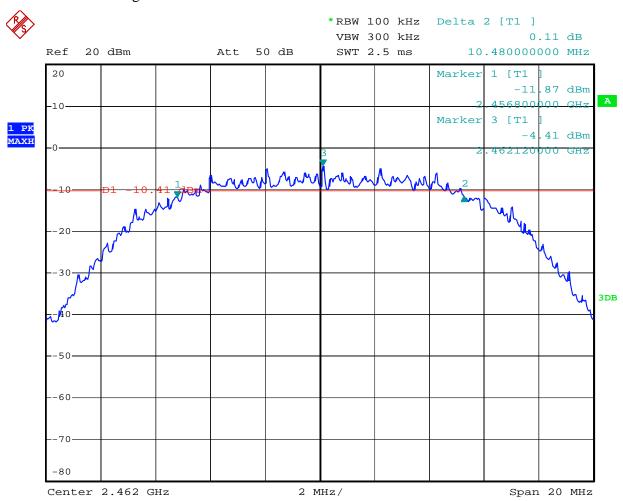
#### 802.11b Channel Low 2412MHz



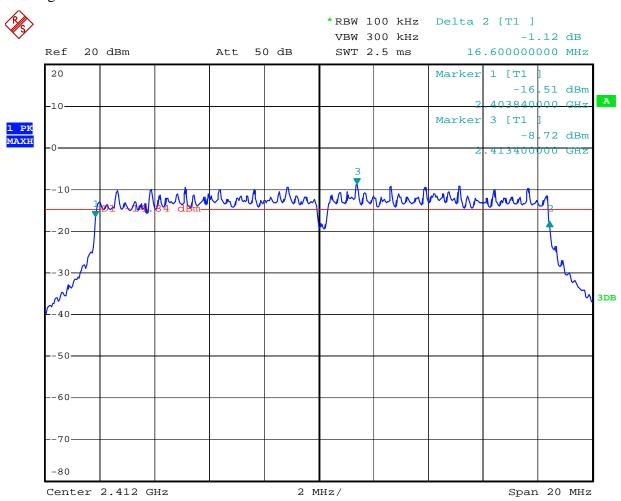
#### 802.11b Channel Middle 2437MHz



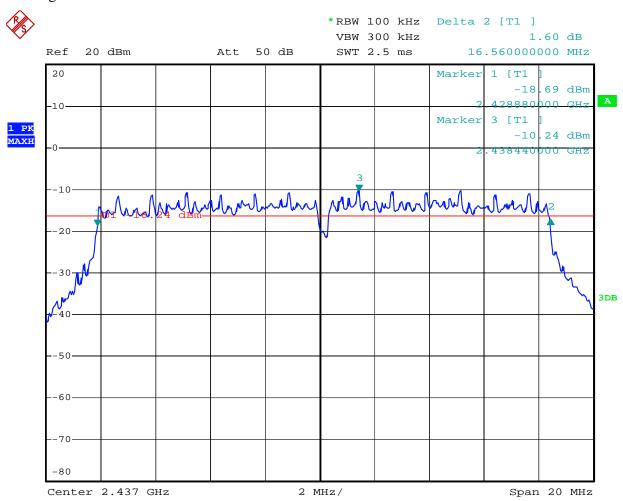
## 802.11b Channel High 2462MHz



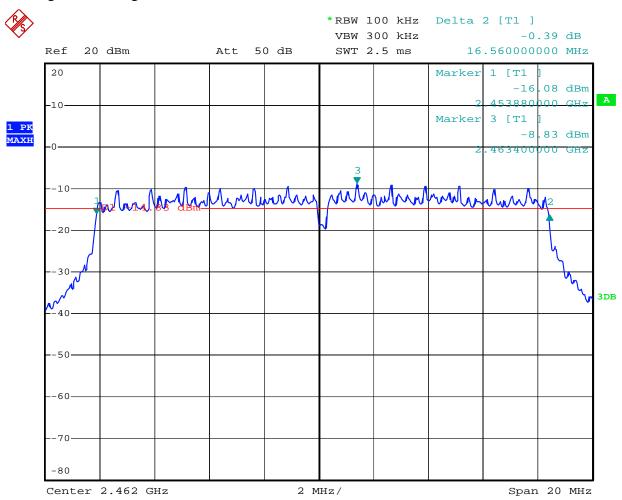
# 802.11g Channel Low 2412MHz



# 802.11g Channel Middle 2437MHz

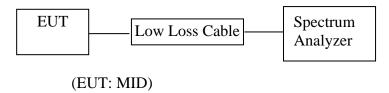


# 802.11g Channel High 2462MHz



### 6. MAXIMUM PEAK OUTPUT POWER

### 6.1.Block Diagram of Test Setup



### 6.2. The Requirement For Section 15.247(b)(3)

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

### 6.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 6.3.1.MID (EUT)

Model Number : M7000XX

Serial Number : N/A

Manufacturer : Shenzhen Sungworld Electronics Co., Ltd.

### 6.4. Operating Condition of EUT

- 6.4.1. Setup the EUT and simulator as shown as Section 6.1.
- 6.4.2. Turn on the power of all equipment.
- 6.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462MHz. We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

### 6.5.Test Procedure

- 6.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 6.5.2.Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz.
- 6.5.3. Measurement the maximum peak output power.

### 6.6.Test Result

PASS.

Date of Test:August 28, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:TXTest Engineer:Pei

The test was performed with 802.11b				
Channel Frequency (MHz) Peak Output Power (dBm) Peak Output Power (mW) Limits dBm / W				
Low	2412	10.95	12.45	30 dBm / 1 W
Middle	2437	9.68	9.29	30 dBm / 1 W
High	2462	10.58	11.43	30 dBm / 1 W

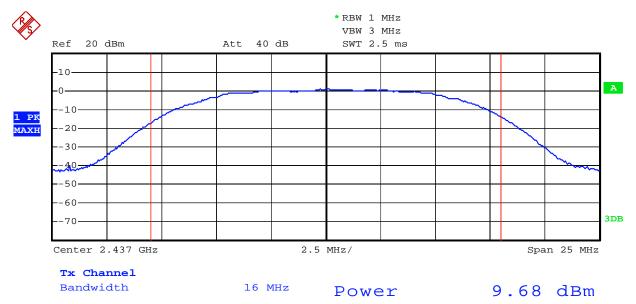
The test was performed with 802.11g				
Channel Frequency (MHz) Peak Output Power (dBm) Peak Output Power (mW) Limits dBm / W				
Low	2412	10.10	10.23	30 dBm / 1 W
Middle	2437	9.00	7.94	30  dBm / 1  W
High	2462	10.01	10.02	30  dBm / 1  W

The spectrum analyzer plots are attached as below.

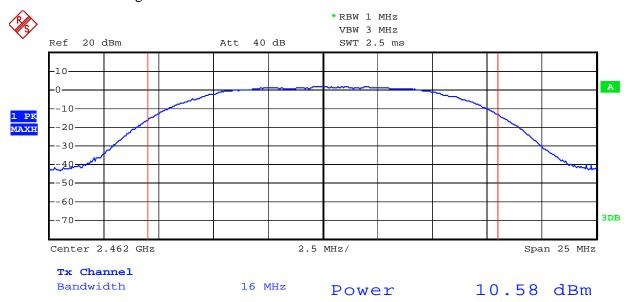
## 802.11b Channel Low 2412MHz



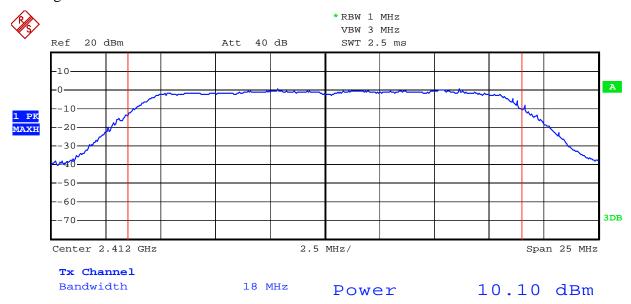
## 802.11b Channel Middle 2437MHz



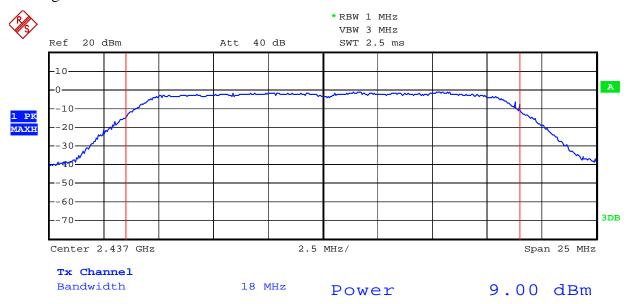
# 802.11b Channel High 2462MHz



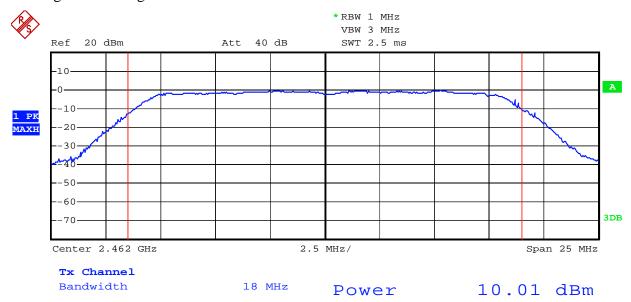
# 802.11g Channel Low 2412MHz



# 802.11g Channel Middle 2437MHz

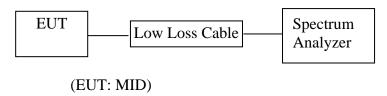


# 802.11g Channel High 2462MHz



### 7. POWER SPECTRAL DENSITY MEASUREMENT

### 7.1.Block Diagram of Test Setup



### 7.2. The Requirement For Section 15.247(e)

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 7.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 7.3.1.MID (EUT)

Model Number : M7000XX Serial Number : N/A

Manufacturer : Shenzhen Sungworld Electronics Co., Ltd.

#### 7.4. Operating Condition of EUT

- 7.4.1. Setup the EUT and simulator as shown as Section 7.1.
- 7.4.2. Turn on the power of all equipment.
- 7.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462MHz. We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

### 7.5.Test Procedure

- 7.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 7.5.2.Set RBW of spectrum analyzer to 3kHz and VBW to 10kHz, sweep time = Span/3kHz.
- 7.5.3. Measurement the maximum power spectral density.

### 7.6.Test Result

#### PASS.

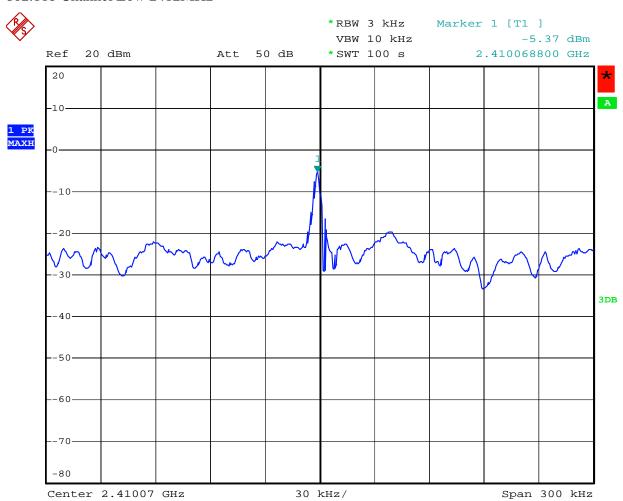
Date of Test:August 28, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:TXTest Engineer:Pei

The test was performed with 802.11b				
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	
Low	2412	-5.37	8 dBm	
Middle	2437	-6.61	8 dBm	
High	2462	-5.08	8 dBm	

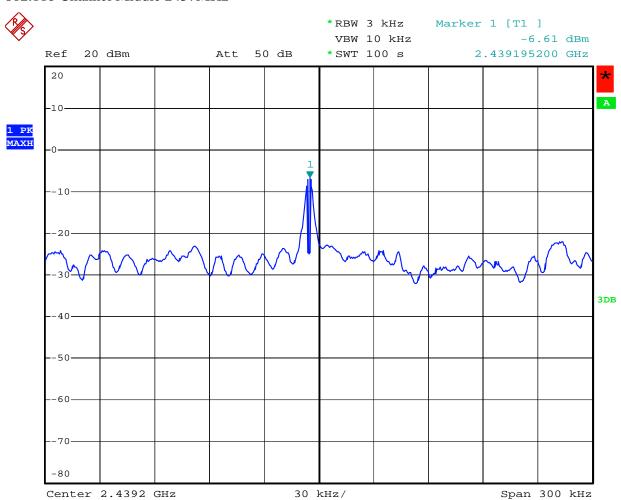
The test was performed with 802.11g				
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	
Low	2412	-24.95	8 dBm	
Middle	2437	-26.77	8 dBm	
High	2462	-24.99	8 dBm	

The spectrum analyzer plots are attached as below.

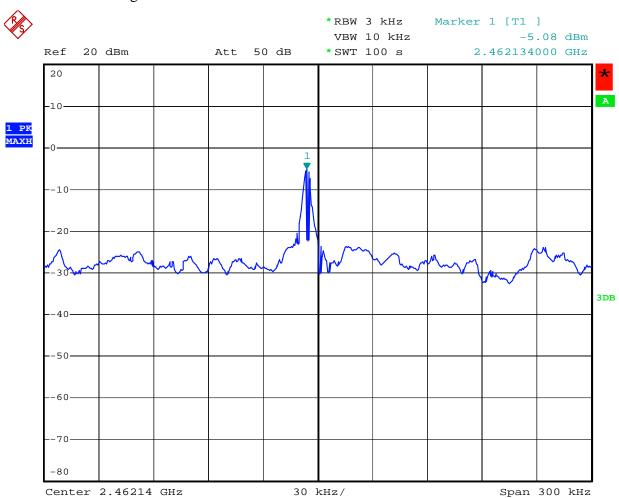
# 802.11b Channel Low 2412MHz



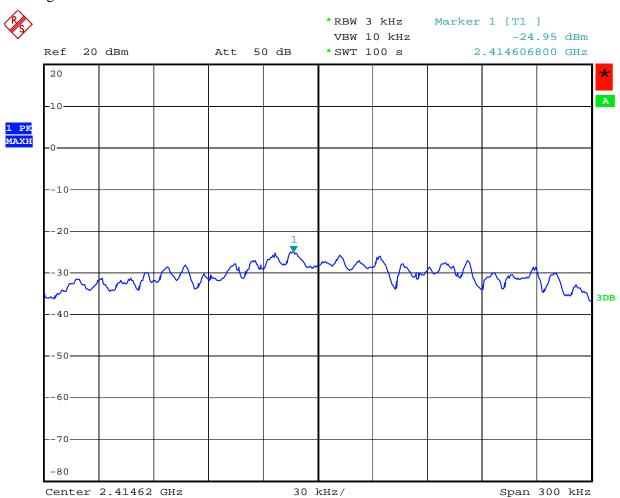
### 802.11b Channel Middle 2437MHz



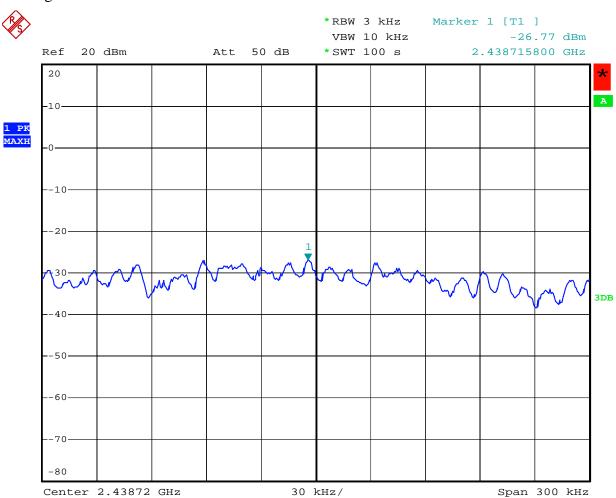
# 802.11b Channel High 2462MHz



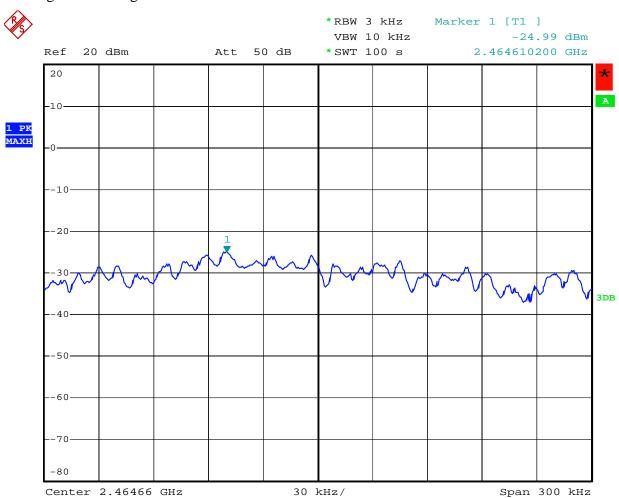
# 802.11g Channel Low 2412MHz



# 802.11g Channel Middle 2437MHz

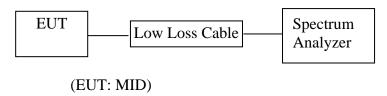


# 802.11g Channel High 2462MHz



#### 8. BAND EDGE COMPLIANCE TEST

### 8.1.Block Diagram of Test Setup



### 8.2. The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

#### 8.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 8.3.1.MID (EUT)

Model Number : M7000XX

Serial Number : N/A

Manufacturer : Shenzhen Sungworld Electronics Co., Ltd.

### 8.4. Operating Condition of EUT

- 8.4.1. Setup the EUT and simulator as shown as Section 8.1.
- 8.4.2. Turn on the power of all equipment.
- 8.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462MHz. We select 2412MHz, 2462MHz TX frequency to transmit.

#### 8.5.Test Procedure

### Conducted Band Edge:

- 8.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.
- 8.5.2.Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.

#### Radiate Band Edge:

- 8.5.3. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
- 8.5.4. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
- 8.5.5. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 8.5.6. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

8.5.7. The band edges was measured and recorded.

## 8.6.Test Result

#### Pass

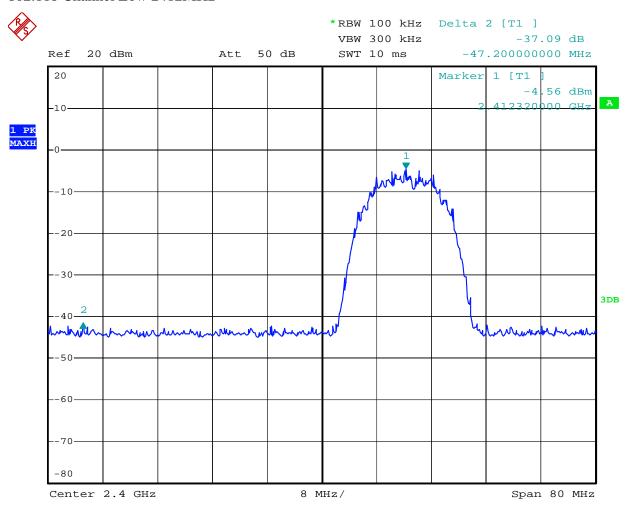
### **Conducted test**

Date of Test:August 29, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:TXTest Engineer:Pei

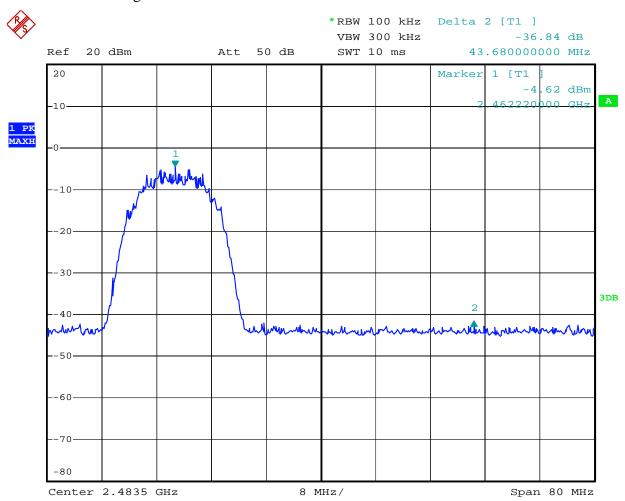
The test was performed with 802.11b				
Frequency	Result of Band Edge (dBc)	Limit of Band Edge (dBc)		
(MHz)	` '	, ,		
2412	37.09	> 20dBc		
2462	36.84	> 20dBc		

The test was performed with 802.11g				
Frequency	Result of Band Edge (dBc)	Limit of Band Edge (dBc)		
(MHz)	, ,	, ,		
2412	33.04	> 20dBc		
2462	32.23	> 20dBc		

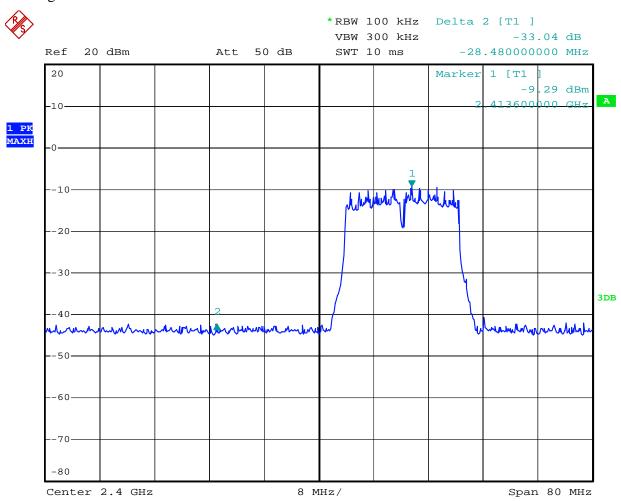
## 802.11b Channel Low 2412MHz



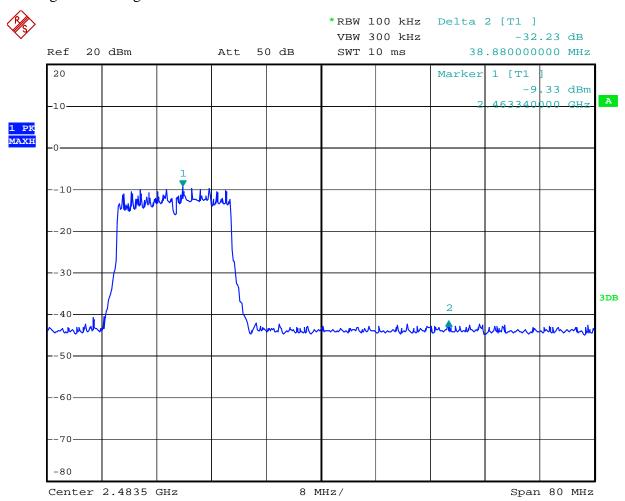
# 802.11b Channel High 2462MHz



# 802.11g Channel Low 2412MHz



# 802.11g Channel High 2462MHz



# **Radiated Band Edge Result**

Date of Test:	August 29, 2011	Temperature:	25°C
EUT:	MID	Humidity:	50%
Model No.:	M7000XX	Power Supply:	DC 7.4V
Test Mode:	802.11b Channel Low 2412MHz	Test Engineer:	Pei

Frequency	Reading(dBµV/m)		Factor(dB)	Result(dBµV/m)		Limit(dBµV/m)		Margin(dB)		Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
-	-	ı	-	-	-	-	-	ı	-	Vertical
-	_	1	-	-	_	-	-	-	_	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

3. Display the measurement of peak values.

Date of Test: August 29, 2011 Temperature: 25°C

EUT: MID Humidity: 50%

Model No.: M7000XX Power Supply: DC 7.4V

Test Mode: 802.11b Channel High 2462MHz Test Engineer: Pei

Frequency	Reading(dBµV/m)		Factor(dB)	Result(dBµV/m)		Limit(dBµV/m)		Margin(dB)		Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
-	-	-	-	-	-	-	-	-	-	Vertical
-	-	-	-	-	_	-	-	-	-	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

  Result = Reading + Corrected Factor
- 3. Display the measurement of peak values.

Date of Test:August 29, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:802.11g Channel Low 2412MHzTest Engineer:Pei

Frequency	Reading(dBµV/m)		Factor(dB)	Result(dBµV/m)		Limit(dBµV/m)		Margin(dB)		Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
-	_	-	-	-	_	-	_	-	-	Vertical
-	_	-	-	-	_	-	_	-	-	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

3. Display the measurement of peak values.

Date of Test:August 29, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:802.11g Channel High 2462MHzTest Engineer:Pei

Frequency	Reading(dBμV/m)		Factor(dB)	Result(dBµV/m)		Limit(dBµV/m)		Margin(dB)		Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
-	-	_	-	-	-	-	-	ı	-	Vertical
-	-	_	-	-	-	-	-	-	-	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

  Result = Reading + Corrected Factor
- 3. Display the measurement of peak values.



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.:

Standard: FCC Part 15 PEAK 2.4G

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 1 (802.11b)

Model: M7000XX

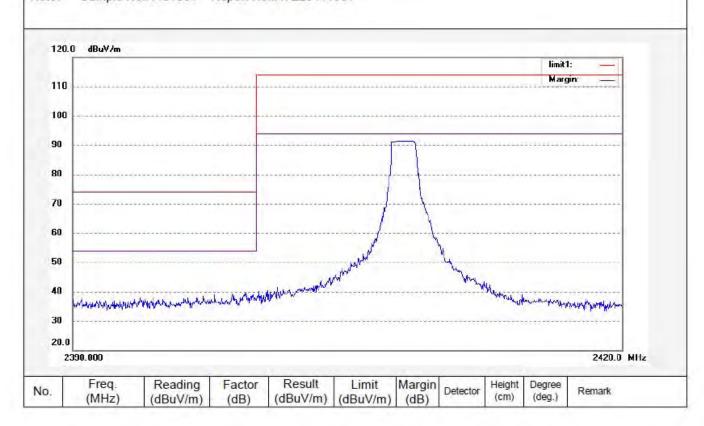
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831

Polarization: Horizontal Power Source: DC 7.4V

Date: 2011/08/31 Time: 8:33:11

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No .:

Standard: FCC Part 15 PEAK 2.4G

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

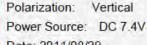
EUT: MID

Mode: TX Channel 1 (802.11b)

Model: M7000XX

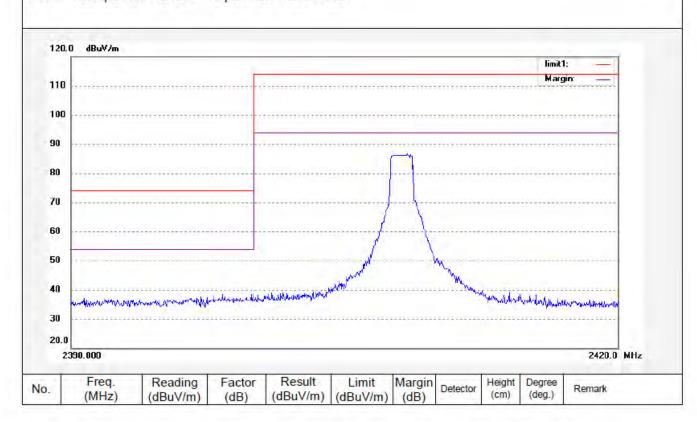
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/29 Time: 8:37:19

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No .:

Standard: FCC Part 15 PEAK 2.4G

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

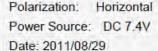
EUT: MID

Mode: TX Channel 11 (802.11b)

Model: M7000XX

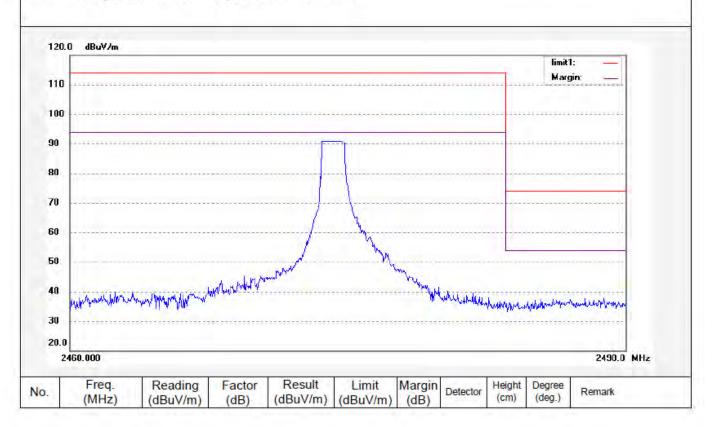
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/29 Time: 8:47:33

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

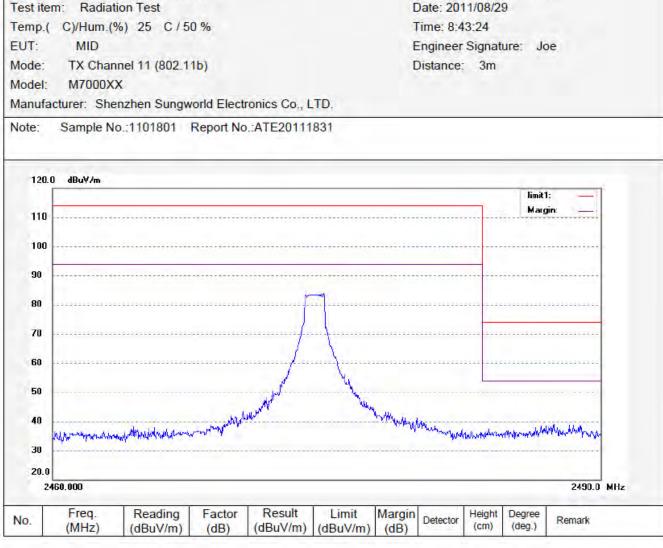
Polarization: Vertical

Power Source: DC 7.4V

Job No.:

Standard: FCC Part 15 PEAK 2.4G

Test item: Radiation Test





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Horizontal

Power Source: DC 7.4V

Engineer Signature: Joe

Date: 2011/08/29

Time: 16:32:35

Distance: 3m

Job No .: Standard: FCC Part 15 PEAK 2.4G

Test item: Radiation Test

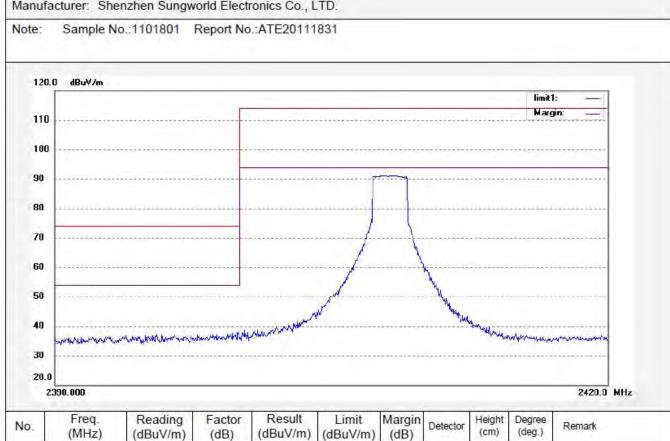
Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 1 (802.11g)

M7000XX Model:

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.:

Standard: FCC Part 15 PEAK 2.4G

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 1 (802.11g)

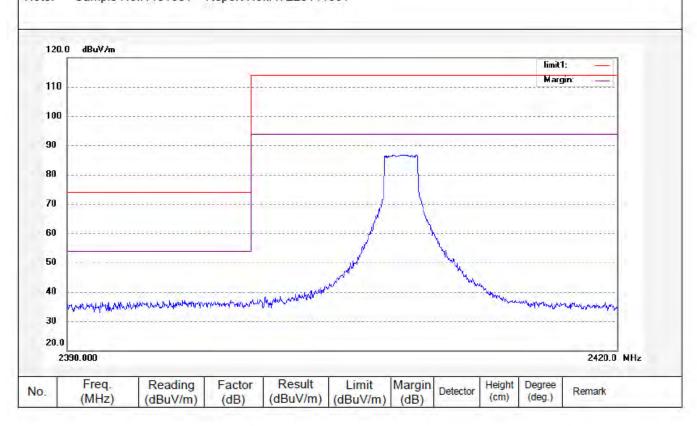
Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Polarization:

Date: 2011/08/29

Time: 16:46:39

Power Source: DC 7.4V

Engineer Signature: Joe

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Horizontal

Job No.:

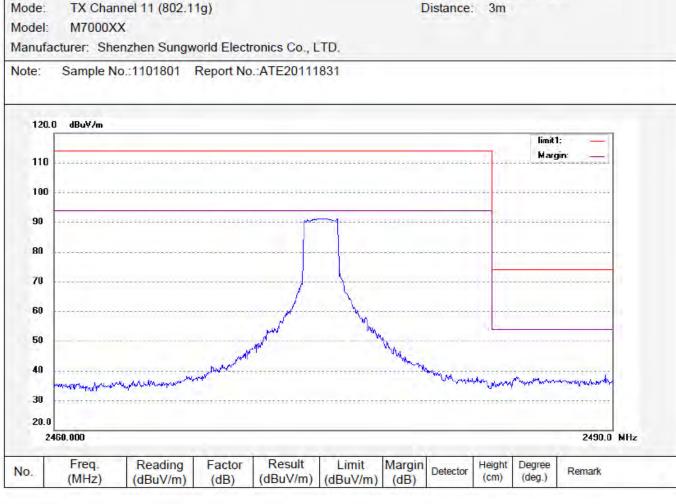
Standard: FCC Part 15 PEAK 2.4G

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 11 (802.11g)





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: Standard: FCC Part 15 PEAK 2.4G

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 11 (802.11g)

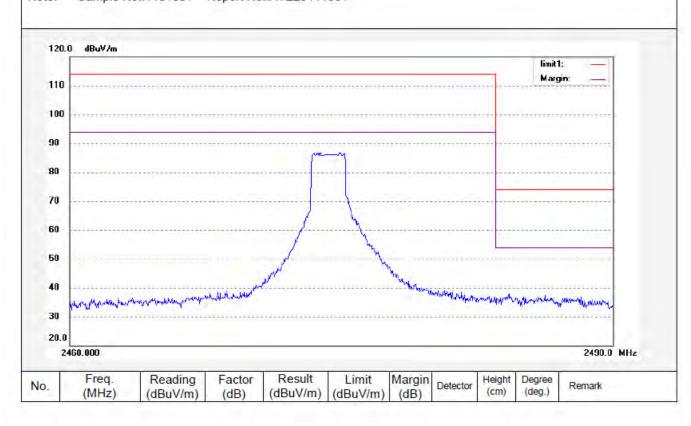
Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831

Polarization: Vertical Power Source: DC 7.4V Date: 2011/08/29 Time: 16:42:28

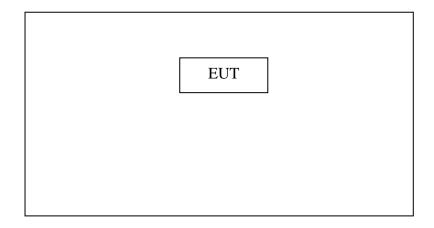
Engineer Signature: Joe



# 9. RADIATED SPURIOUS EMISSION TEST

# 9.1.Block Diagram of Test Setup

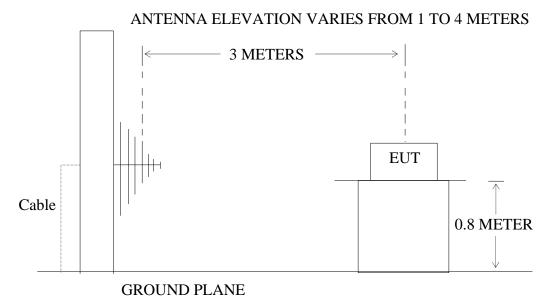
9.1.1.Block diagram of connection between the EUT and peripherals



Setup: Transmitting mode

(EUT: MID)

9.1.2.Semi-Anechoic Chamber Test Setup Diagram



(EUT: MID)

## 9.2. The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

## 9.3. Restricted bands of operation

#### 9.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
<sup>1</sup> 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	$(^2)$
13.36-13.41			

Until February 1, 1999, this restricted band shall be 0.490-0.510

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

<sup>&</sup>lt;sup>2</sup>Above 38.6

# 9.4. Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 9.4.1.MID (EUT)

Model Number : M7000XX

Serial Number : N/A

Manufacturer : Shenzhen Sungworld Electronics Co., Ltd.

# 9.5. Operating Condition of EUT

9.5.1. Setup the EUT and simulator as shown as Section 8.1.

9.5.2. Turn on the power of all equipment.

9.5.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462MHz. We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

### 9.6.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The worst-case data rate for this channel to be 11Mbps for 802.11b mode and 54Mbps for 802.11g mode, based on previous with 802.11 WLAN product design architectures.

The bandwidth of test receiver (R&S ESI26) is set at 120kHz in 30-1000MHz. and set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 25000MHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

# 9.7. The Field Strength of Radiation Emission Measurement Results **PASS.**

Date of Test: August 31, 2011 Temperature: 25°C

EUT: MID Humidity: 50%

Model No.: M7000XX Power Supply: DC 7.4V

Test Mode: 802.11b Channel Low 2412MHz Test Engineer: Pei

#### For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBµV/m)	Factor Corr.	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Polarization
	QP	(dB)	QP	QP	QP	
159.7340	22.04	14.60	36.64	43.50	-6.86	Vertical
184.3040	18.51	15.91	34.42	43.50	-9.08	Vertical
282.5960	16.10	18.37	34.47	46.00	-11.53	Vertical
959.9420	10.04	29.69	39.73	46.00	-6.27	Vertical
159.7340	19.50	14.60	34.10	43.50	-9.40	Horizontal
239.9850	15.47	16.76	32.23	46.00	-13.77	Horizontal
599.9560	10.06	25.53	35.59	46.00	-10.41	Horizontal
959.9420	10.09	29.69	39.78	46.00	-6.22	Horizontal

## For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

Cone	Corrected 1 actor = 7 interma 1 actor + Cable 2005 - 7 infpiriter Gain									
Frequency	Reading	(dBµV/m)	Factor	Result(dBµV/m)		Limit(dBµV/m)		Margin(dBµV/m)		Polarizati
(MHz)	AV	PEAK	Corr. (dB)	AV	PEAK	AV	PEAK	AV	PEAK	on
2400.000	37.59	43.58	-7.46	30.13	36.12	54	74	-23.87	-37.88	Vertical
2412.000	106.42	112.43	-7.43	98.99	105.00	-	-	-	-	Vertical
*4824.036	49.21	55.22	-0.19	49.02	55.03	54	74	-4.98	-18.97	Vertical
2400.000	37.52	43.48	-7.46	30.06	36.02	54	74	-23.94	-37.98	Horizontal
2412.000	105.59	111.56	-7.43	98.16	104.13	ı	-	-	-	Horizontal
*4824.036	48.22	54.22	-0.19	48.03	54.03	54	74	-5.97	-19.97	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

Date of Test:August 31, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:802.11b Channel Middle 2437MHzTest Engineer:Pei

## For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

Frequency	Reading	Factor	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP	(dB)	QP	QP	QP	
159.7340	22.36	14.60	36.96	43.50	-6.54	Vertical
184.3040	18.65	15.91	34.56	43.50	-8.94	Vertical
282.5960	16.04	18.37	34.41	46.00	-11.59	Vertical
959.9420	9.74	29.69	39.43	46.00	-6.57	Vertical
159.7340	20.01	14.60	34.61	43.50	-8.89	Horizontal
239.9850	14.44	16.76	31.20	46.00	-14.80	Horizontal
599.9560	9.36	25.53	34.89	46.00	-11.11	Horizontal
959.9420	9.33	29.69	39.02	46.00	-6.98	Horizontal

#### For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

Frequency	Reading(	dBμV/m)	Factor	Result(d	lBμV/m)	Limit(dBµV/m)		Margin(dBµV/m)		Polarizati
(MHz)	AV	PEAK	Corr. (dB)	AV	PEAK	AV	PEAK	AV	PEAK	on
2437.000	106.08	112.10	-7.36	98.72	104.74	-	-	-	-	Vertical
*4874.032	49.41	55.45	0.09	49.50	55.54	54	74	-4.50	-18.46	Vertical
2437.000	105.51	111.55	-7.36	98.15	104.19	-	-	-	-	Horizontal
*4874.032	48.16	54.20	0.09	48.25	54.29	54	74	-5.75	-19.71	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

Date of Test:August 31, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:802.11b Channel High 2462MHzTest Engineer:Pei

## For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

Frequency	Reading	Factor	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP	(dB)	QP	QP	QP	
159.7340	21.97	14.60	36.57	43.50	-6.93	Vertical
184.3040	18.48	15.91	34.39	43.50	-9.11	Vertical
282.5960	16.66	18.37	35.03	46.00	-10.97	Vertical
959.9420	8.92	29.69	38.61	46.00	-7.39	Vertical
159.7340	19.43	14.60	34.03	43.50	-9.47	Horizontal
239.9850	14.82	16.76	31.58	46.00	-14.42	Horizontal
599.9560	10.23	25.53	35.76	46.00	-10.24	Horizontal
959.9420	9.93	29.69	39.62	46.00	-6.38	Horizontal

#### For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

Corrected Factor – America Factor + Capic Loss – Ampriller Gam										
Frequency	Reading(	dBμV/m)	Factor	Result(c	Result(dBµV/m)		Limit(dBµV/m)		Margin(dBμV/m)	
(MHz)	AV	PEAK	Corr. (dB)	AV	PEAK	AV	PEAK	AV	PEAK	on
2462.000	105.77	111.79	-7.35	98.42	104.44	-	-	-	-	Vertical
2483.500	38.21	44.22	-7.37	30.84	36.85	54	74	-23.16	-37.15	Vertical
*4924.038	48.75	54.79	0.34	49.09	55.13	54	74	-4.91	-18.87	Vertical
2462.000	105.44	111.45	-7.35	98.04	104.10	-	-	-	-	Horizontal
2483.500	38.54	44.55	-7.37	31.17	37.18	54	74	-22.83	-36.82	Horizontal
*4924.038	47.93	53.96	0.34	48.27	54.30	54	74	-5.73	-19.70	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

Date of Test:August 31, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:802.11g Channel Low 2412MHzTest Engineer:Pei

## For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

Frequency	Reading	Factor	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP	(dB)	QP	QP	QP	
159.7340	22.23	14.60	36.83	43.50	-6.67	Vertical
184.3040	18.18	15.91	34.09	43.50	-9.41	Vertical
282.5960	16.86	18.37	35.23	46.00	-10.77	Vertical
959.9420	9.47	29.69	39.16	46.00	-6.84	Vertical
159.7340	18.34	14.60	32.94	43.50	-10.56	Horizontal
239.9850	15.63	16.76	32.39	46.00	-13.61	Horizontal
599.9560	9.57	25.53	35.10	46.00	-10.90	Horizontal
959.9420	9.57	29.69	39.26	46.00	-6.74	Horizontal

#### For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m		Factor Corr. (dB)	Result(dBµV/m)		Limit(dBµV/m)		Margin(dBμV/m)		Polarizati on
(14112)	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2400.000	38.92	44.95	-7.46	31.46	37.49	54	74	-22.54	-36.51	Vertical
2412.000	105.11	111.16	-7.43	97.68	103.73	-	-	-	-	Vertical
*4824.028	49.69	55.74	-0.19	49.50	55.55	54	74	-4.50	-18.45	Vertical
2400.000	37.72	43.71	-7.46	30.26	36.25	54	74	-23.74	-37.75	Horizontal
2412.000	104.82	110.86	-7.43	97.39	103.43	-	-	-	-	Horizontal
*4824.028	48.36	54.40	-0.19	48.17	54.21	54	74	-5.83	-19.79	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

Date of Test:August 31, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:802.11g Channel Middle 2437MHzTest Engineer:Pei

## For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency	Reading	Factor	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP	(dB)	QP	QP	QP	
159.7340	22.35	14.60	36.95	43.50	-6.55	Vertical
184.3040	18.14	15.91	34.05	43.50	-9.45	Vertical
282.5960	16.53	18.37	34.90	46.00	-11.10	Vertical
959.9420	8.74	29.69	38.43	46.00	-7.57	Vertical
159.7340	18.18	14.60	32.78	43.50	-10.72	Horizontal
239.9850	15.80	16.76	32.56	46.00	-13.44	Horizontal
599.9560	9.99	25.53	35.52	46.00	-10.48	Horizontal
959.9420	11.05	29.69	40.74	46.00	-5.26	Horizontal

#### For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

Frequency	Reading(dBµV/m) Factor		Result(c	lBμV/m)	Limit(d	BμV/m)	Margin(	dBμV/m)	Polarizati	
(MHz)	AV	PEAK	Corr. (dB)	AV	PEAK	AV	PEAK	AV	PEAK	on
2437.000	105.04	111.07	-7.36	97.68	103.71	-	-	-	-	Vertical
*4874.030	48.88	54.91	0.09	48.97	55.00	54	74	-5.03	-19.00	Vertical
2437.000	104.90	110.95	-7.36	97.54	103.59	-	-	-	-	Horizontal
*4874.030	48.28	54.32	0.09	48.37	54.41	54	74	-5.63	-19.59	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

Date of Test:August 31, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:DC 7.4VTest Mode:802.11g Channel High 2462MHzTest Engineer:Pei

## For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

Frequency	Reading	Factor	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP	(dB)	QP	QP	QP	
159.7340	21.99	14.60	36.59	43.50	-6.91	Vertical
184.3040	18.26	15.91	34.17	43.50	-9.33	Vertical
282.5960	16.36	18.37	34.73	46.00	-11.27	Vertical
959.9420	9.02	29.69	38.71	46.00	-7.29	Vertical
159.7340	17.66	14.60	32.26	43.50	-11.24	Horizontal
239.9850	15.65	16.76	32.41	46.00	-13.59	Horizontal
599.9560	9.22	25.53	34.75	46.00	-11.25	Horizontal
959.9420	8.06	29.69	37.75	46.00	-8.25	Horizontal

## For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Corrected Lactor - Fintennia Lactor   Capie Boss - Finipinter Gain										
Frequency	Reading(	dBμV/m)	Factor	Result(c	Result(dBµV/m)		Limit(dBµV/m)		Margin(dBμV/m)	
(MHz)	AV	PEAK	Corr. (dB)	AV	PEAK	AV	PEAK	AV	PEAK	on
2462.000	105.44	111.46	-7.35	98.09	104.11	-	-	-	-	Vertical
2483.500	39.19	45.18	-7.37	31.82	37.81	54	74	-22.18	-36.19	Vertical
*4924.031	48.90	54.92	0.34	49.24	55.26	54	74	-4.76	-18.74	Vertical
2462.000	104.57	110.60	-7.35	97.22	103.25	-	-	-	-	Horizontal
2483.500	39.56	45.61	-7.37	32.19	38.24	54	74	-21.81	-35.76	Horizontal
*4924.031	48.22	54.26	0.34	48.56	54.60	54	74	-5.44	-19.40	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1521

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT:

MID

Mode: TX Channel 1 (802.11b)

Model:

M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

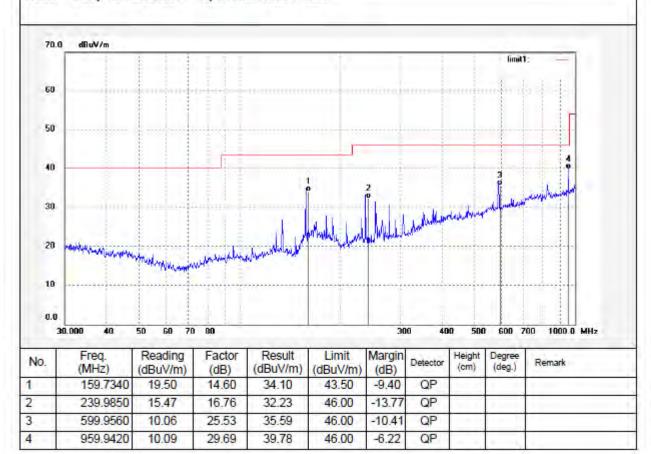
....

Sample No.:1101801 Report No.:ATE20111831

Polarization: Horizontal Power Source: DC 7.4V

Date: 2011/08/31 Time: 10:16:25

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1522

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 1 (802.11b)

Model: M7000XX

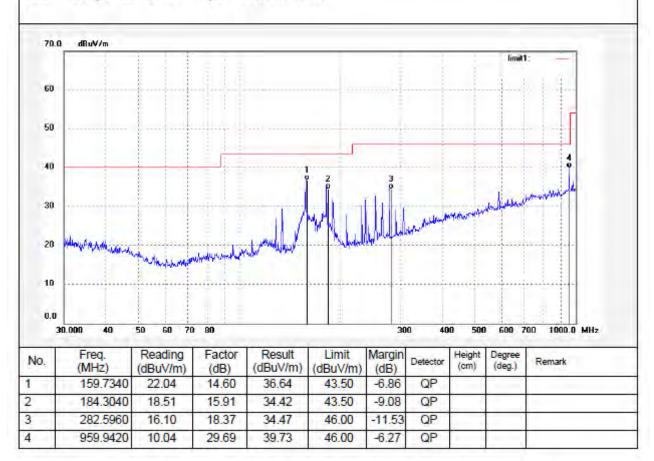
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831

Polarization: Vertical Power Source: DC 7.4V

Date: 2011/08/31 Time: 10:20:01

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1533

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

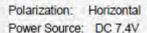
EUT: MID

Mode: TX Channel 1 (802.11b)

Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

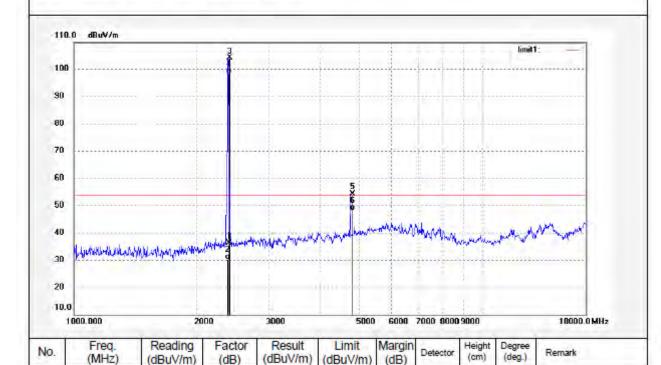
Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 14:02:59

Engineer Signature: Joe

Distance: 3m



74.00

54.00

74.00

54.00

-37.98

-23.94

-19.97

-5.97

peak

AVG

peak

AVG

peak

AVG

1

3

4

5

6

2400.000

2400.000

2412.000

2412.000

4824.036

4824.036

43.48

37.52

111.56

105.59

54.22

48.22

-7.46

-7.46

-7.43

-7.43

-0.19

-0.19

36.02

30.06

104.13

98.16

54.03

48.03



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1534

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 1 (802.11b)

Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

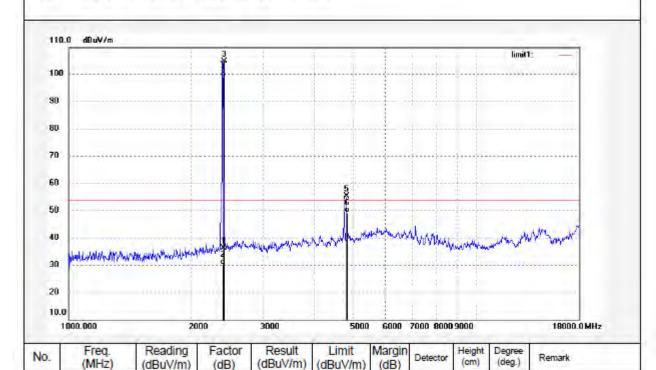
Note: Sample No.:1101801 Report No.:ATE20111831

Polarization: Vertical Power Source: DC 7.4V

Date: 2011/08/31 Time: 14:07:10

Engineer Signature: Joe

Distance: 3m



74.00

54.00

-

74.00

54.00

-37.88

-23.87

\_

-18.97

-4.98

peak

AVG

peak

AVG

peak

AVG

1

2

3

4

5

6

2400.000

2400.000

2412.000

2412.000

4824.036

4824.036

43.58

37.59

112.43

106.42

55.22

49.21

-7.46

-7.46

-7.43

-7.43

-0.19

-0.19

36.12

30.13

105.00

98.99

55.03

49.02



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1545



20000

0.0

18000.000

25000.0 MHz



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Vertical

Date: 2011/08/31

Time: 15:01:26

Distance: 3m

Power Source: DC 7.4V

Engineer Signature: Joe

Job No.: joe #1546

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

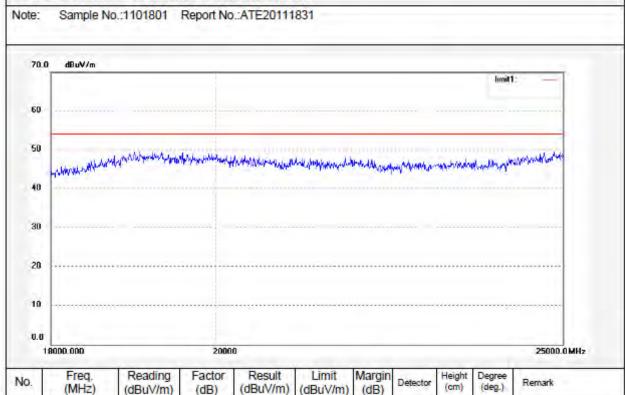
EUT: MID

Mode: TX Channel 1 (802.11b)

Model:

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

M7000XX





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1524

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 6 (802.11b)

Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831

Polarization: Horizontal Power Source: DC 7.4V Date: 2011/08/31 Time: 10:27:54

Engineer Signature: Joe

Distance: 3m

dBuV/m 70.0 60 50 40 30 20 0.0 30.000 40 60 70 80 300 400 500 600 700 1000.0 MHz Reading Factor Result Limit Margin Freq. Height Degree No. Detector Remark (deg.) (dBuV/m) (cm) (MHz) (dBuV/m) (dB) (dBuV/m) (dB) 1 159.7340 20.01 14.60 34.61 43.50 -8.89 QP 2 239.9850 14.44 16.76 31.20 46.00 -14.80QP 3 9.36 46.00 QP 599.9560 25.53 34.89 -11.11

46.00

-6.98

QP

4

959.9420

9.33

29.69

39.02



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1523

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

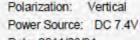
EUT: MID

Mode: TX Channel 6 (802.11b)

Model: M7000XX

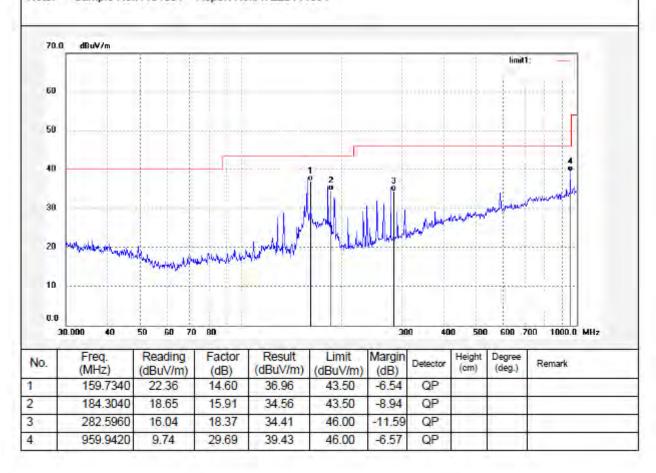
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 10:24:22

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1536

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C/50 %

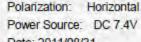
EUT: MID

Mode: TX Channel 6 (802.11b)

Model: M7000XX

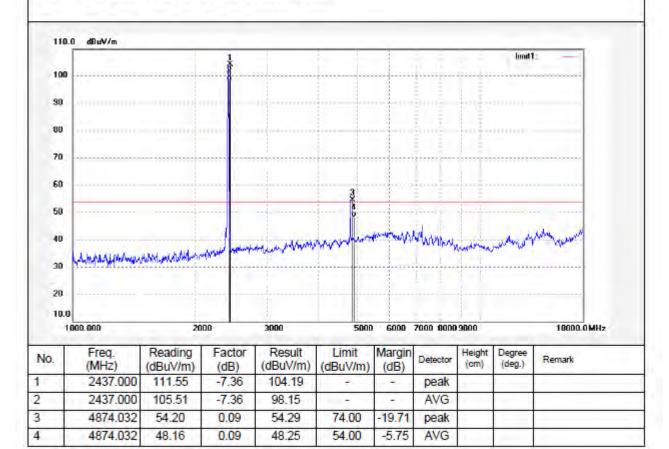
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 14:15:49

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1535

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

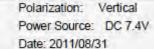
EUT: MID

Mode: TX Channel 6 (802.11b)

Model: M7000XX

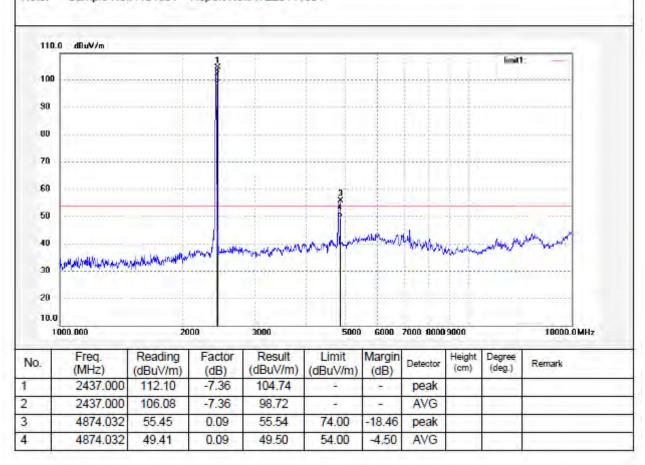
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 14:11:41

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Horizontal

Power Source: DC 7.4V

Engineer Signature: Joe

Date: 2011/08/31

Time: 15:09:14

Job No.: joe #1548

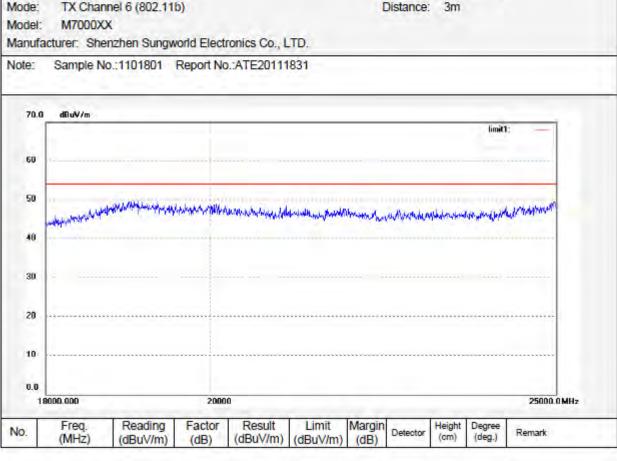
Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT:

Mode: TX Channel 6 (802.11b)





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1547

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 6 (802.11b)

Model: M7000XX

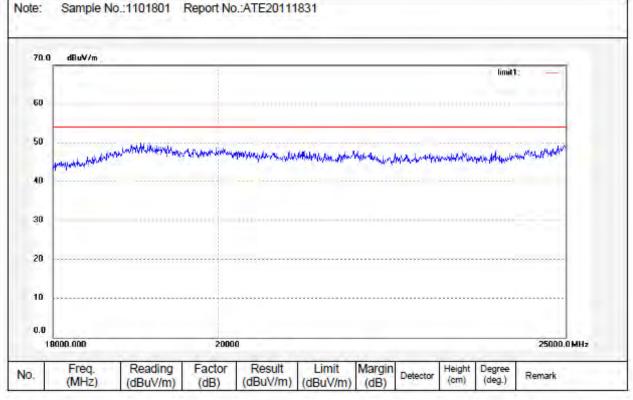
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

- - -

Polarization: Vertical Power Source: DC 7.4V

Date: 2011/08/31 Time: 15:05:40

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1525

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

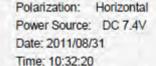
EUT: MID

Mode: TX Channel 11 (802.11b)

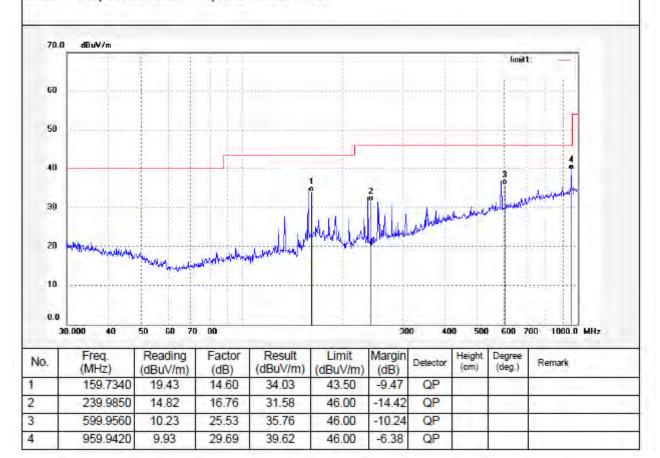
Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1526

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

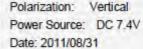
EUT: MID

Mode: TX Channel 11 (802.11b)

Model: M7000XX

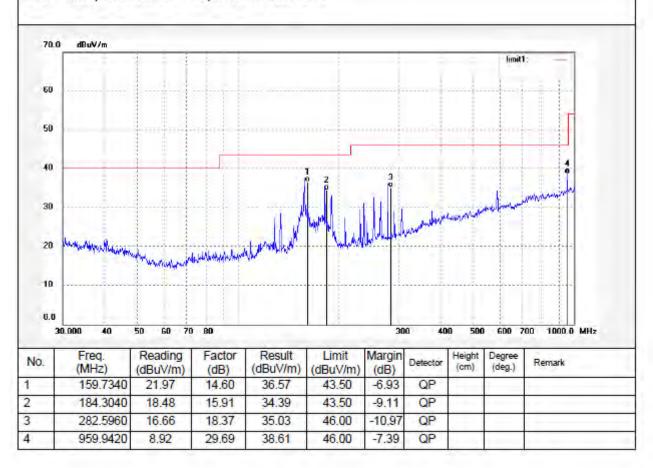
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Time: 10:35:53

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1537

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MIC

Mode: TX Channel 11 (802.11b)

Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

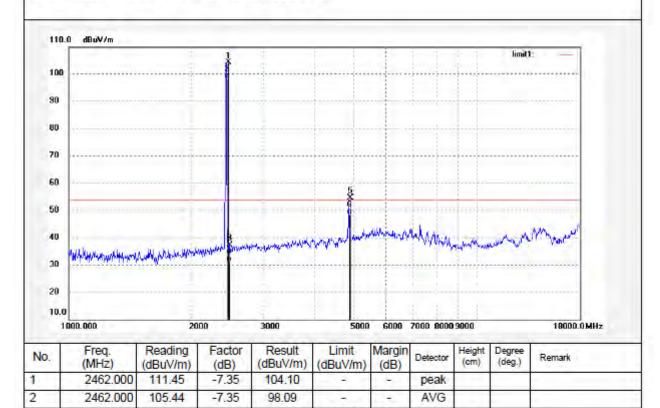
Note: Sample No.:1101801 Report No.:ATE20111831

Polarization: Horizontal Power Source: DC 7.4V

Date: 2011/08/31 Time: 14:20:24

Engineer Signature: Joe

Distance: 3m



74.00

54.00

74.00

54.00

-36.82

-22.83

-19.70

-5.73

peak

AVG

peak

AVG

3

4

5

6

2483.500

2483.500

4924.038

4924.038

44.55

38.54

53.96

47.93

-7.37

-7.37

0.34

0.34

37.18

31.17

54.30

48 27



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1538

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

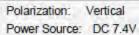
EUT: MID

Mode: TX Channel 11 (802.11b)

Model: M7000XX

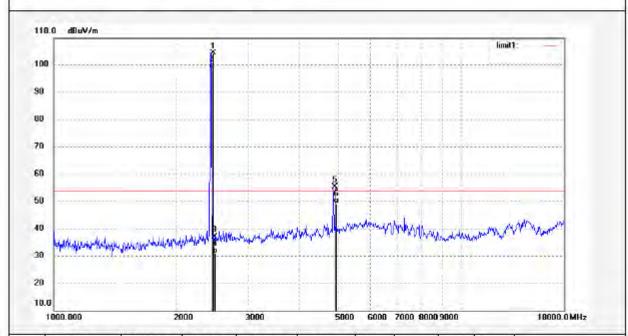
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 14:24:30

Engineer Signature: Joe



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2462.000	111.79	-7.35	104.44	14/	10.00	peak				
2	2462.000	105.77	-7.35	98.42	- 7		AVG				
3	2483.500	44.22	-7.37	36.85	74.00	-37.15	peak	4			
4	2483.500	38.21	-7.37	30.84	54.00	-23.16	AVG				
5	4924.038	54.79	0.34	55.13	74.00	-18.87	peak		_		
6	4924.038	48.75	0.34	49.09	54.00	-4.91	AVG				= 1



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Horizontal

Power Source: DC 7.4V

Date: 2011/08/31

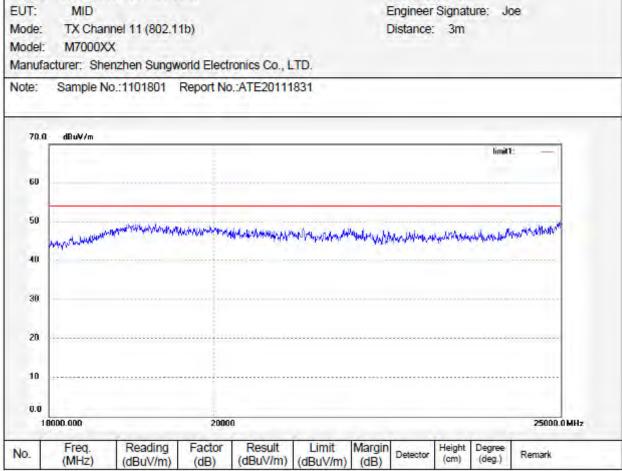
Time: 15:13:25

Job No.: joe #1549

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1550

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 11 (802.11b)

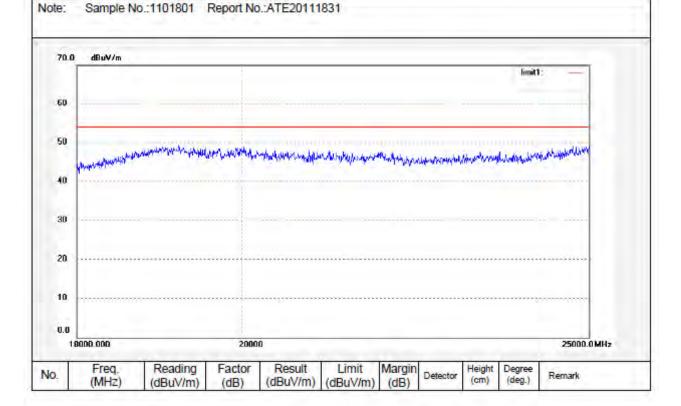
Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Polarization: Vertical Power Source: DC 7.4V Date: 2011/08/31

Time: 15:16:58

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1528

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT:

Mode: TX Channel 1 (802.11g)

M7000XX Model:

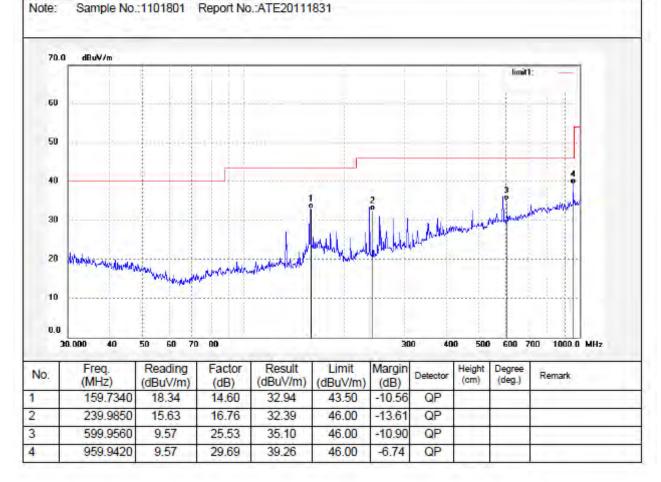
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Sample No.:1101801 Report No.:ATE20111831

Polarization: Horizontal Power Source: DC 7.4V

Date: 2011/08/31 Time: 10:44:45

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1527

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

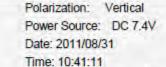
EUT: MID

Mode: TX Channel 1 (802.11g)

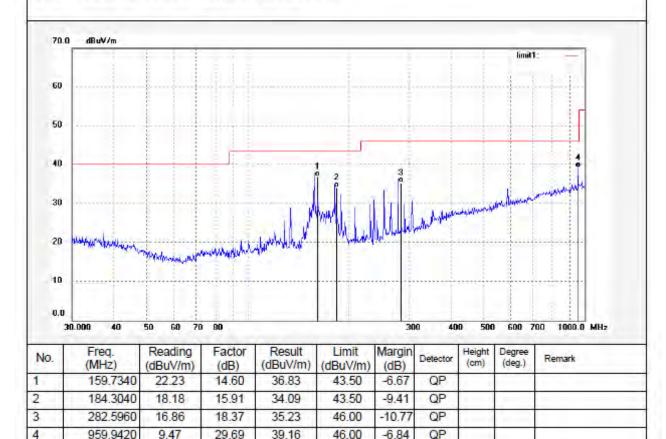
Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1540

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT:

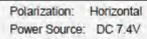
MID

Mode: TX Channel 1 (802.11g)

Model: M7000XX

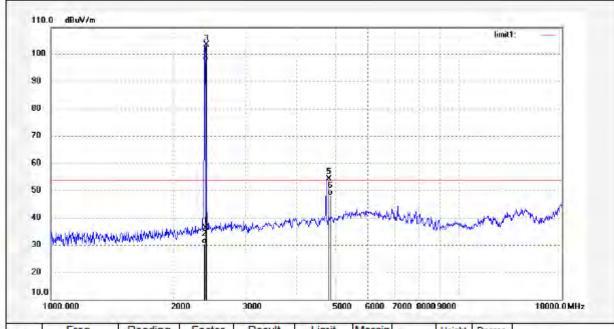
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 14:34:36

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1539

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C/50 %

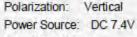
EUT: MID

Mode: TX Channel 1 (802.11g)

Model: M7000XX

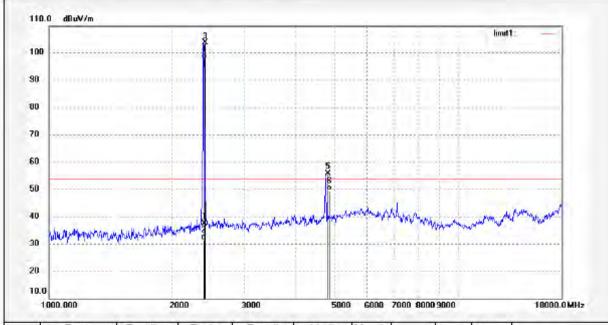
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 14:30:27

Engineer Signature: Joe



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2400.000	44.95	-7.46	37.49	74.00	-36.51	peak				
2	2400.000	38.92	-7.46	31.46	54.00	-22.54	AVG	1			
3	2412.000	111.16	-7.43	103.73		- 64	peak	+ - ;			
4	2412.000	105.11	-7.43	97.68		7.91	AVG	4			
5	4824.028	55.74	-0.19	55.55	74.00	-18.45	peak				
6	4824.028	49.69	-0.19	49.50	54.00	-4.50	AVG	1			



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

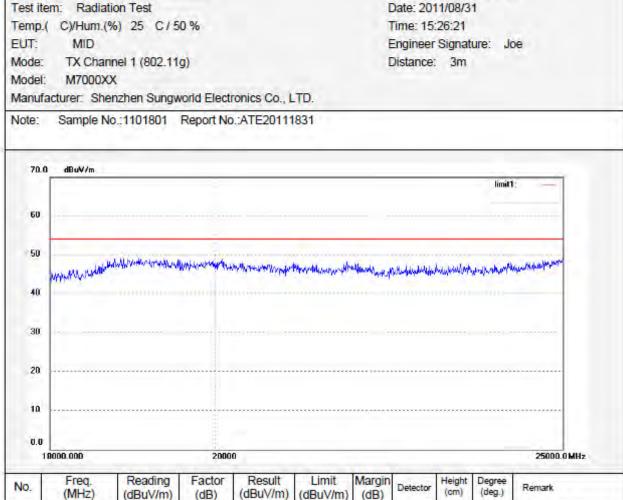
Polarization: Horizontal

Power Source: DC 7.4V

Job No.: joe #1552

Standard: FCC Class B 3M Radiated

Test item: Radiation Test





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Vertical

Date: 2011/08/31

Time: 15:22:46

Distance: 3m

Power Source: DC 7.4V

Engineer Signature: Joe

Job No.: joe #1551

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

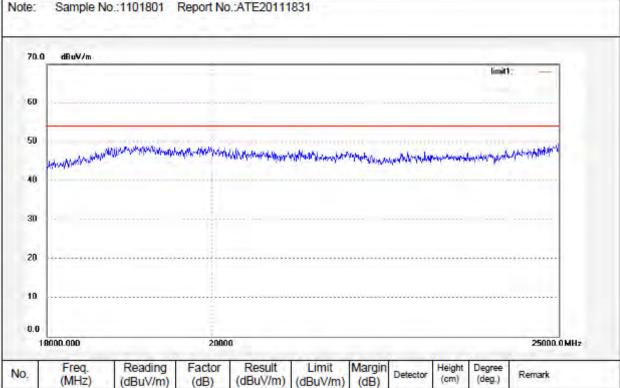
EUT: MID

Mode: TX Channel 1 (802.11g)

Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Sample No.:1101801 Report No.:ATE20111831





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1529

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 6 (802.11g)

Model: M7000XX

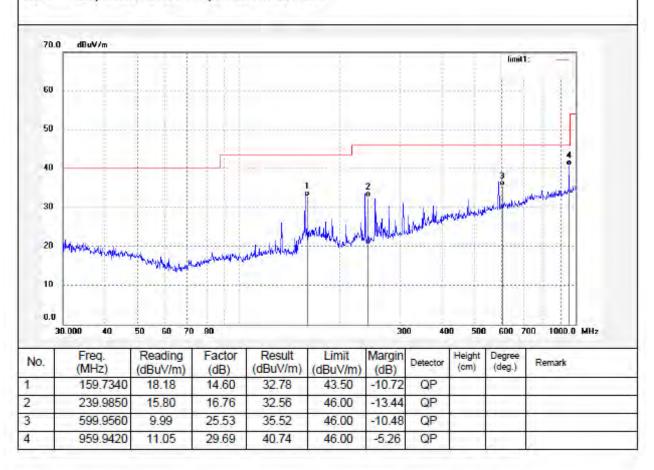
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831

Polarization: Horizontal Power Source: DC 7.4V

Date: 2011/08/31 Time: 10:49:22

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1530

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

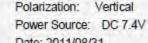
EUT: MID

Mode: TX Channel 6 (802.11g)

Model: M7000XX

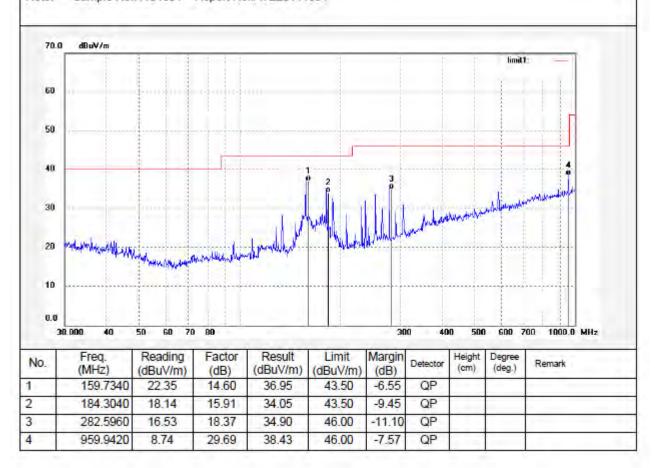
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 10:52:57

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1541

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: MID

Mode: TX Channel 6 (802.11g)

Model: M7000XX

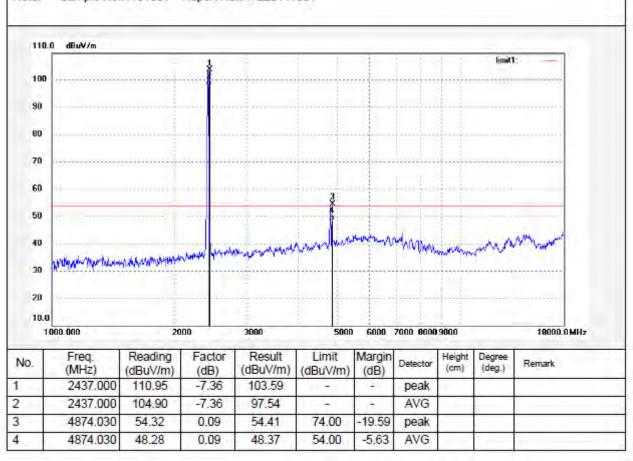
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831

Polarization: Horizontal Power Source: DC 7.4V

Date: 2011/08/31 Time: 14:38:58

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1542

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

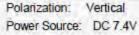
EUT: MID

Mode: TX Channel 6 (802.11g)

Model: M7000XX

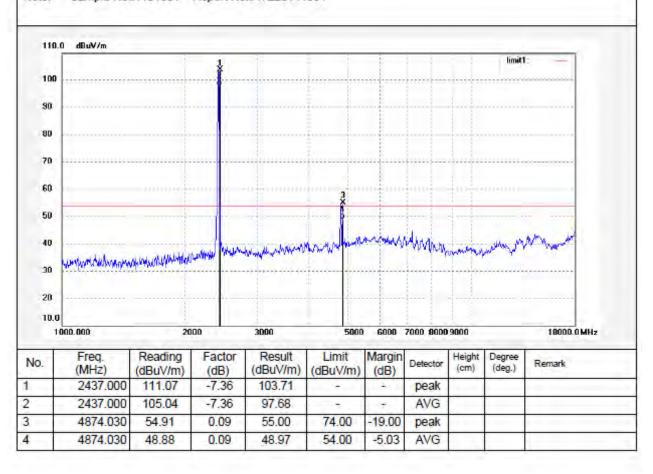
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 14:43:06

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Horizontal

Job No.: joe #1553

Standard: FCC Class B 3M Radiated



	18000.000		2000	0					25000.0 MHz
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1554

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT:

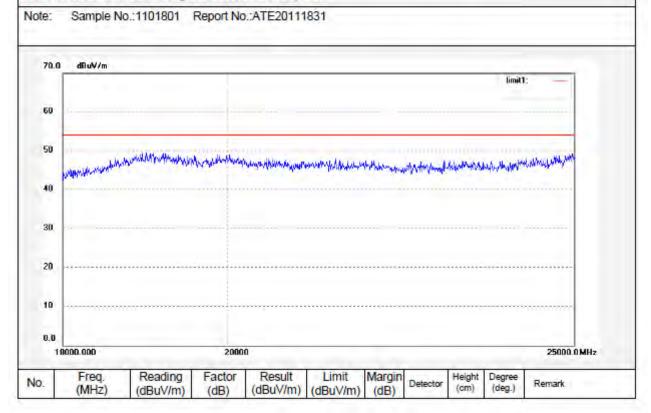
Mode: TX Channel 6 (802.11g)

Model: M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Power Source: DC 7.4V Date: 2011/08/31 Time: 15:34:11 Engineer Signature: Joe

Polarization: Vertical





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1532

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

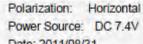
EUT: MID

Mode: TX Channel 11 (802.11g)

Model: M7000XX

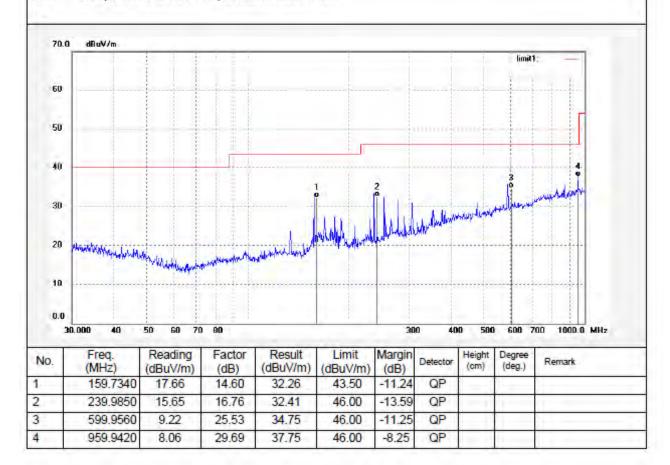
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 11:01:07

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1531

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

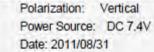
EUT: MID

Mode: TX Channel 11 (802.11g)

Model: M7000XX

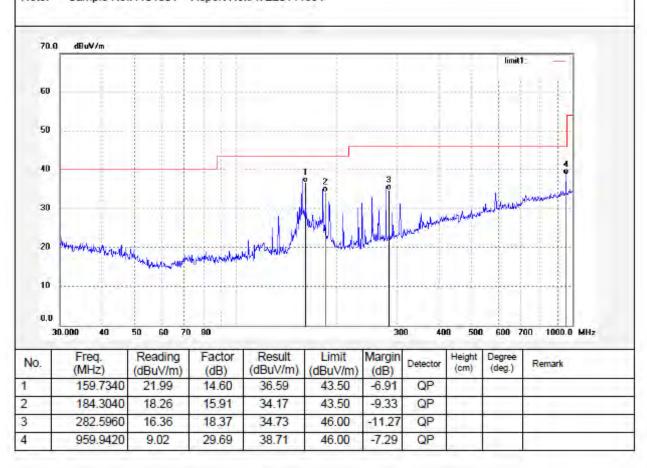
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 10:57:36

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1544

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

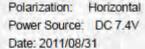
EUT: N

Mode: TX Channel 11 (802.11g)

Model: M7000XX

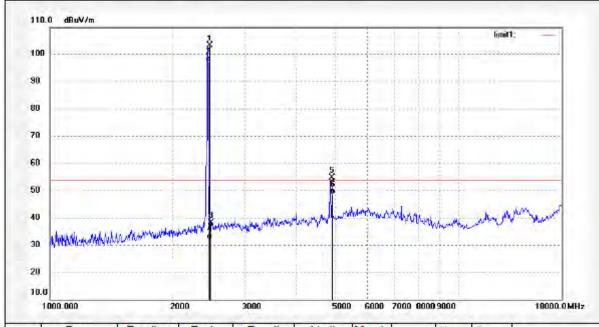
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 14:51:23

Engineer Signature: Joe



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1-	2462.000	110.60	-7.35	103.25	+	47	peak	-		
2	2462.000	104.57	-7.35	97.22	1.0	F.M.	AVG	-		
3	2483.500	45.61	-7.37	38.24	74.00	-35.76	peak			
4	2483.500	39,56	-7.37	32.19	54.00	-21.81	AVG			
5	4924.031	54.26	0.34	54.60	74.00	-19.40	peak			
6	4924.031	48.22	0.34	48.56	54.00	-5.44	AVG			



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1543

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

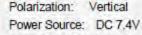
EUT: MID

Mode: TX Channel 11 (802.11g)

Model: M7000XX

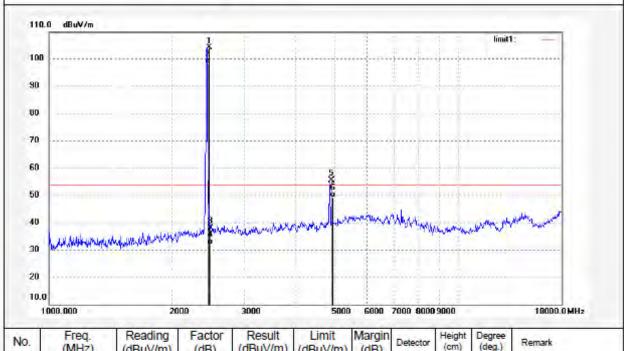
Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

Note: Sample No.:1101801 Report No.:ATE20111831



Date: 2011/08/31 Time: 14:47:17

Engineer Signature: Joe

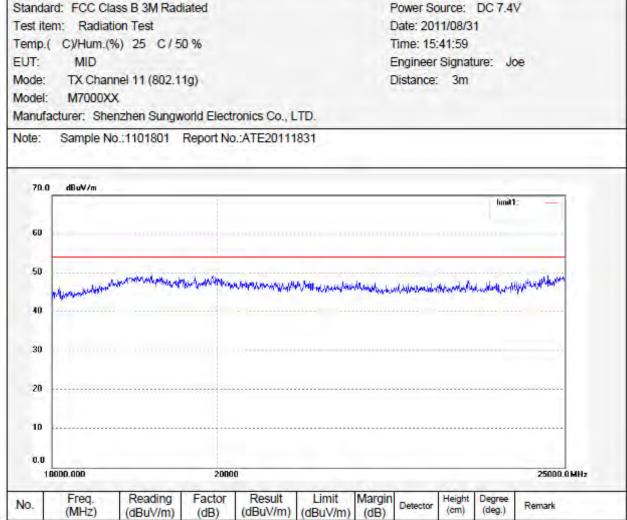




F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Horizontal

Job No.: joe #1556 Standard: ECC Class R 2M Ra





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: joe #1555

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT:

MID

Mode: TX Channel 11 (802.11g)

Model: 1

M7000XX

Manufacturer: Shenzhen Sungworld Electronics Co., LTD.

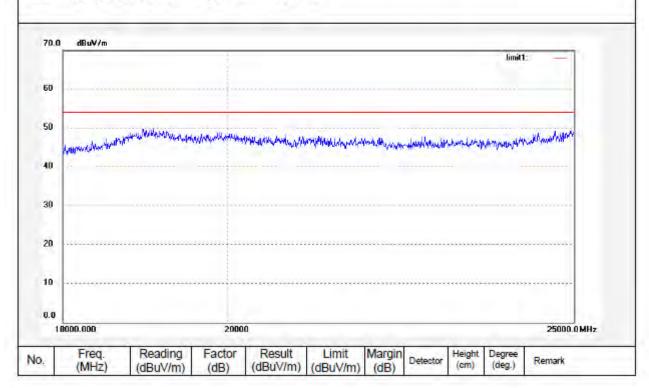
Note:

Sample No.:1101801 Report No.:ATE20111831

Polarization: Vertical Power Source: DC 7.4V Date: 2011/08/31

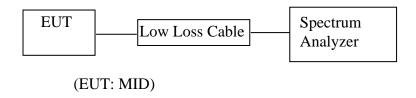
Date: 2011/08/31 Time: 15:38:24

Engineer Signature: Joe



### 10. CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

# 10.1.Block Diagram of Test Setup



## 10.2. The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

### 10.3.EUT Configuration on Measurement

The following equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 10.3.1.MID (EUT)

Model Number : M7000XX

Serial Number : N/A

Manufacturer : Shenzhen Sungworld Electronics Co., Ltd.

# 10.4. Operating Condition of EUT

- 10.4.1. Setup the EUT and simulator as shown as Section 10.1.
- 10.4.2. Turn on the power of all equipment.
- 10.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462MHz. We select 2412MHz, 2437MHz, 2462MHz TX frequency to transmit.

### 10.5.Test Procedure

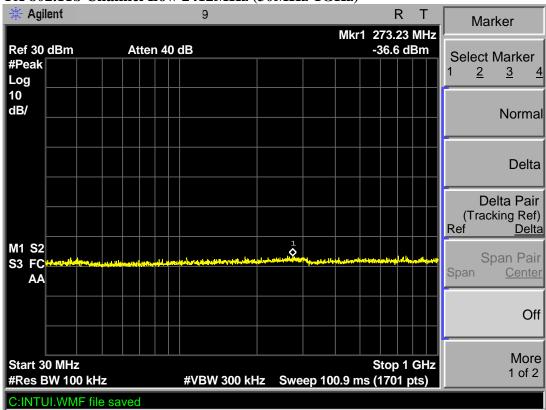
- 10.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.
- 10.5.2.Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.
- 10.5.3. The Conducted Spurious Emission was measured and recorded.

### 10.6.Test Result

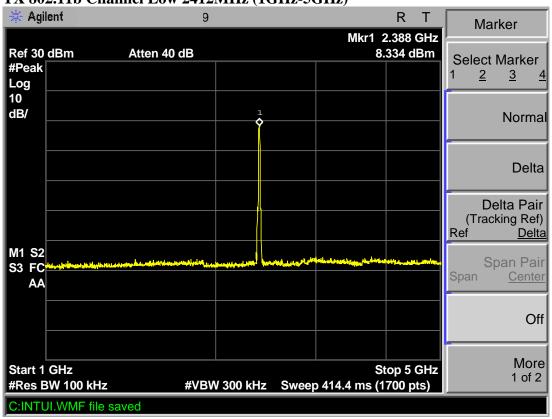
Pass.

The spectrum analyzer plots are attached as below.

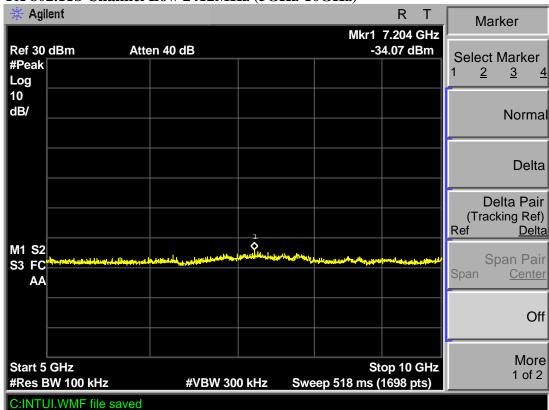




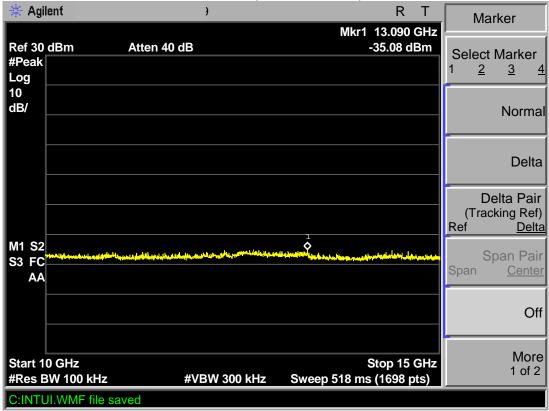
#### **TX 802.11b Channel Low 2412MHz (1GHz-5GHz)**

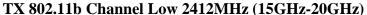


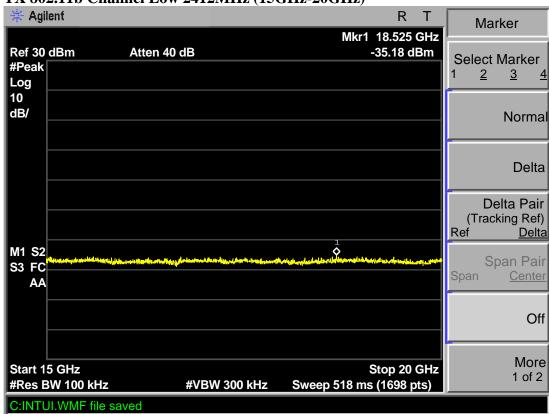




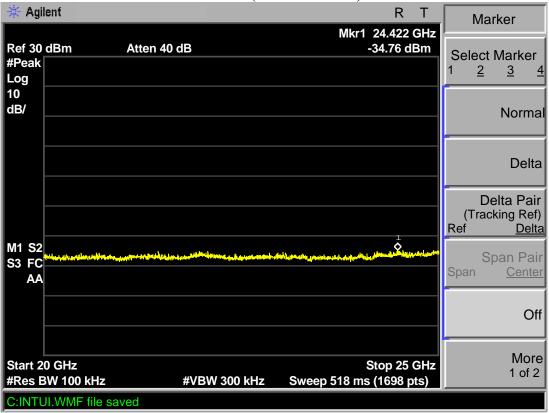
# **TX 802.11b Channel Low 2412MHz (10GHz-15GHz)**



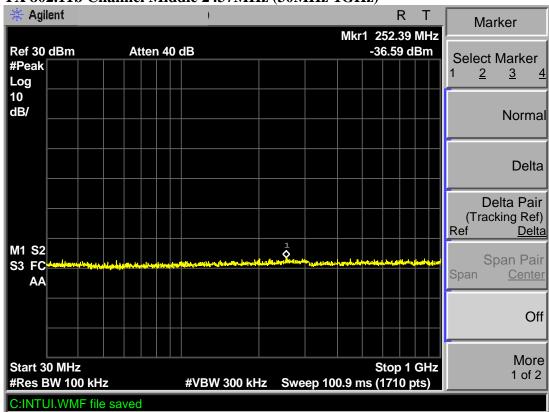




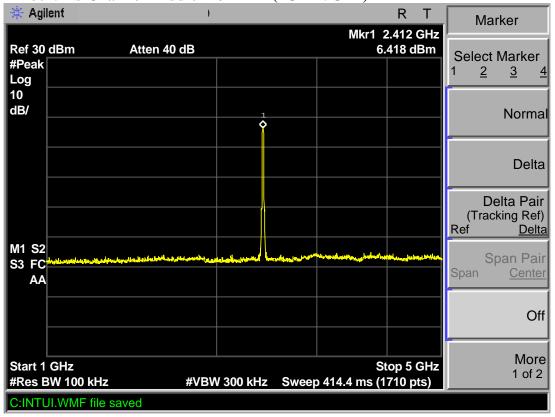
### **TX 802.11b Channel Low 2412MHz (20GHz-25GHz)**



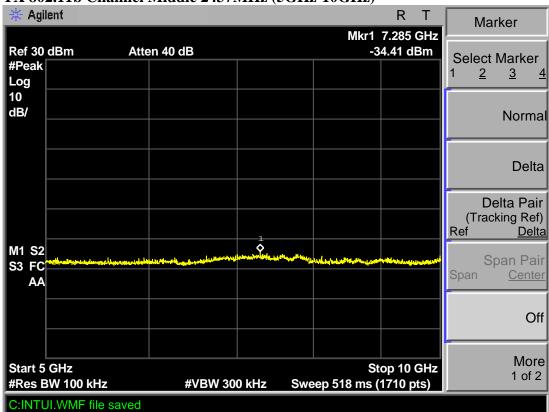




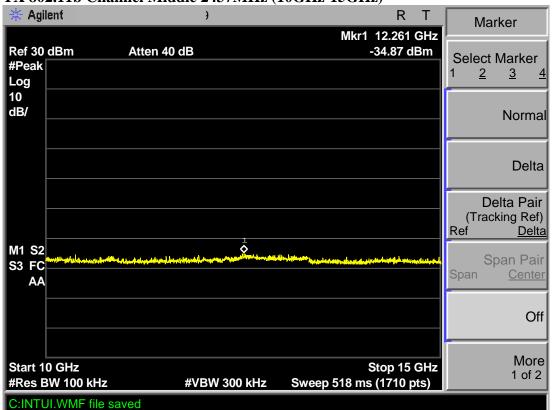
#### TX 802.11b Channel Middle 2437MHz (1GHz-5GHz)



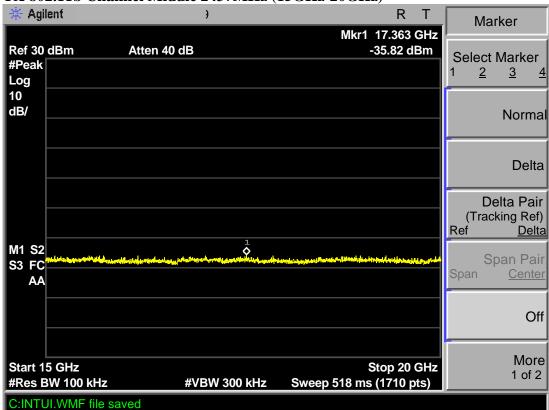




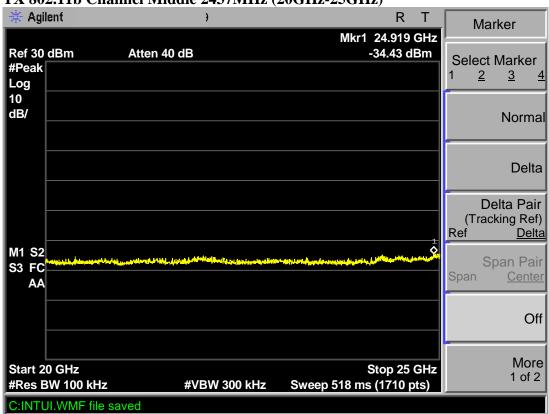
### TX 802.11b Channel Middle 2437MHz (10GHz-15GHz)

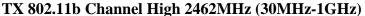


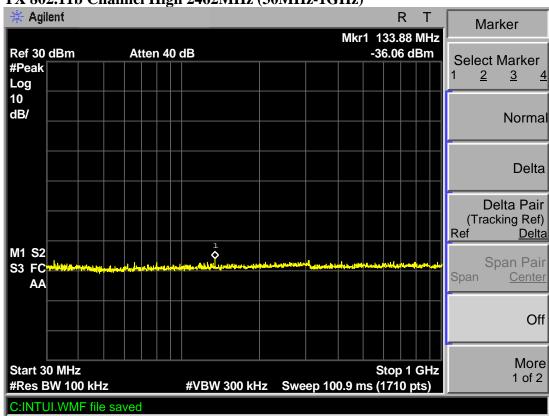




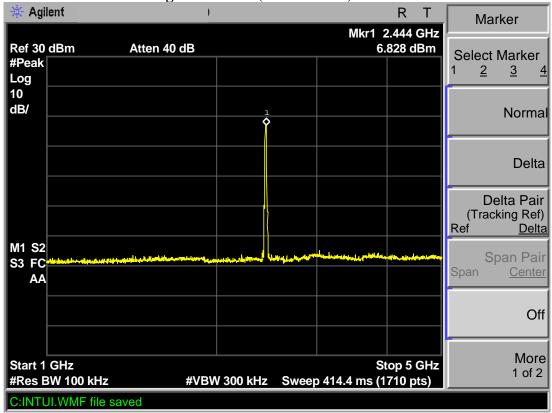
#### TX 802.11b Channel Middle 2437MHz (20GHz-25GHz)

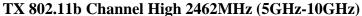


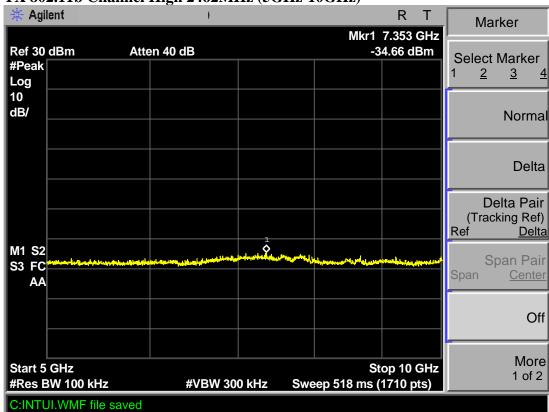




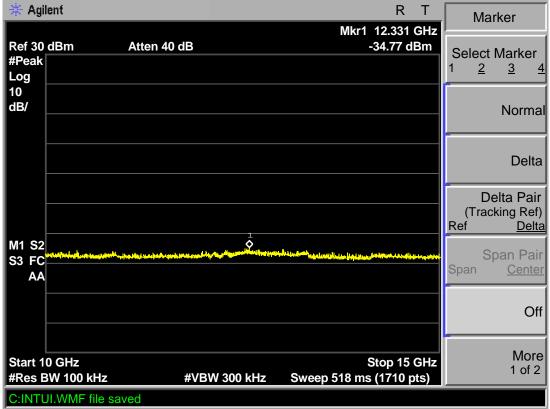
### TX 802.11b Channel High 2462MHz (1GHz-5GHz)

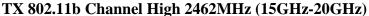


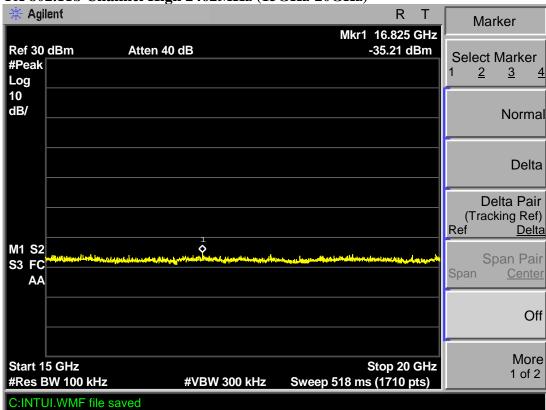




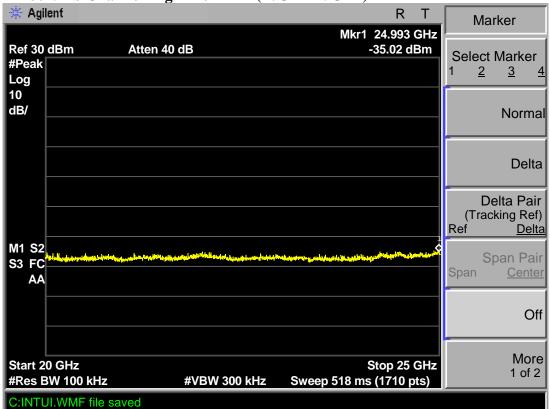
### **TX 802.11b Channel High 2462MHz (10GHz-15GHz)**

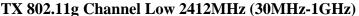


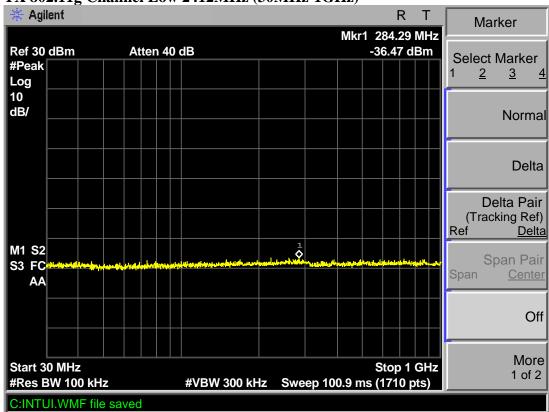




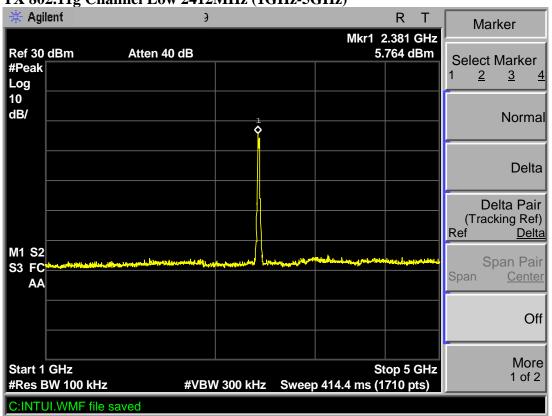
### **TX 802.11b Channel High 2462MHz (20GHz-25GHz)**

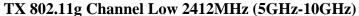


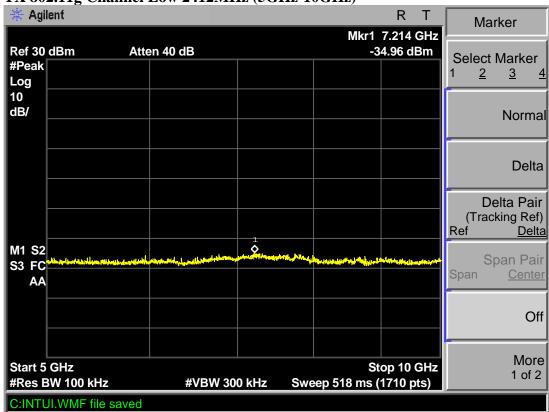




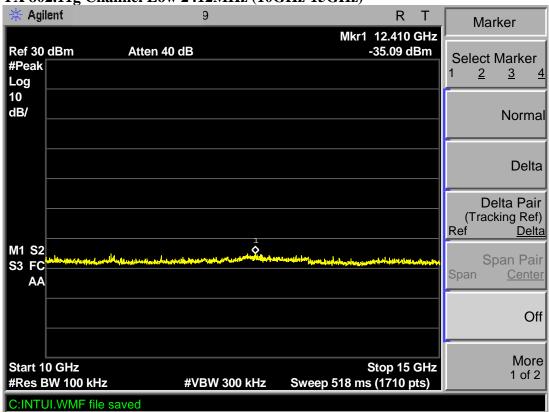
# TX 802.11g Channel Low 2412MHz (1GHz-5GHz)



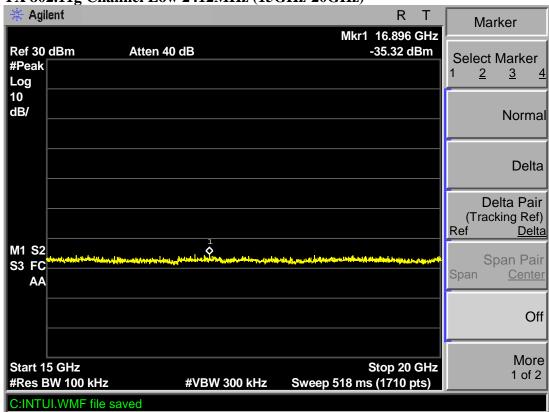




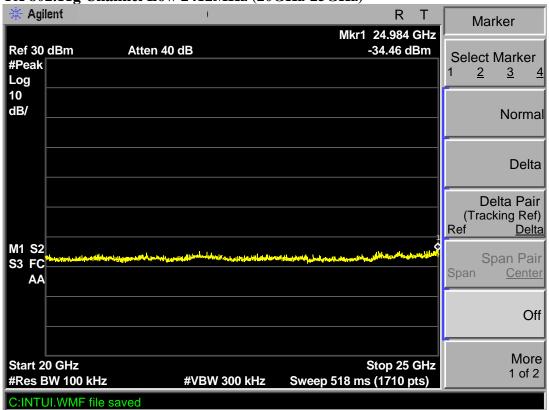
# **TX 802.11g Channel Low 2412MHz (10GHz-15GHz)**



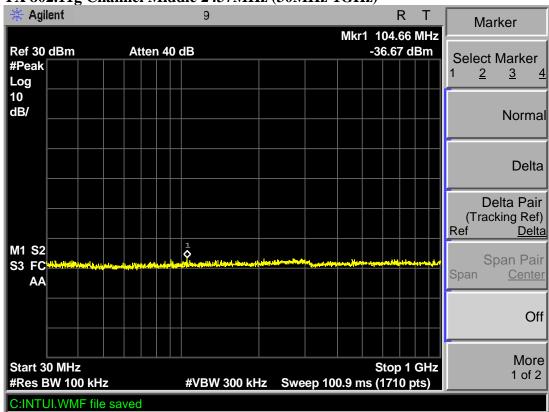
# **TX 802.11g Channel Low 2412MHz (15GHz-20GHz)**



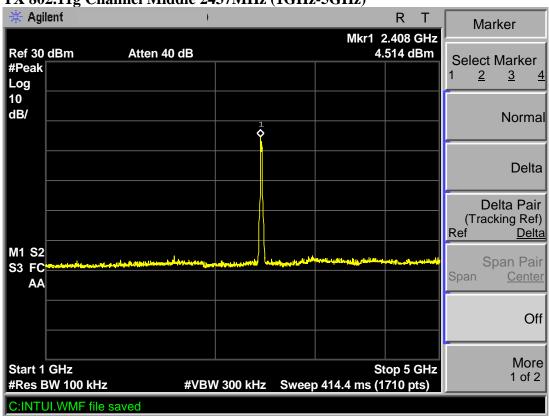
# **TX 802.11g Channel Low 2412MHz (20GHz-25GHz)**



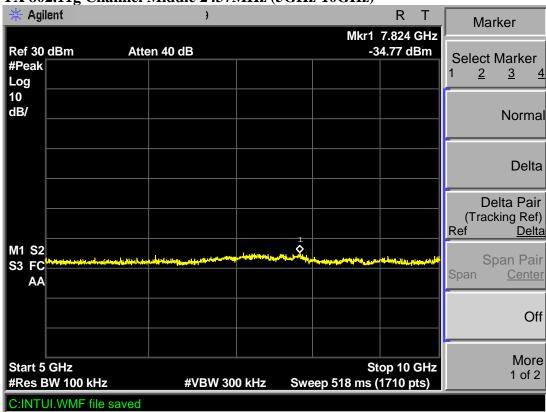




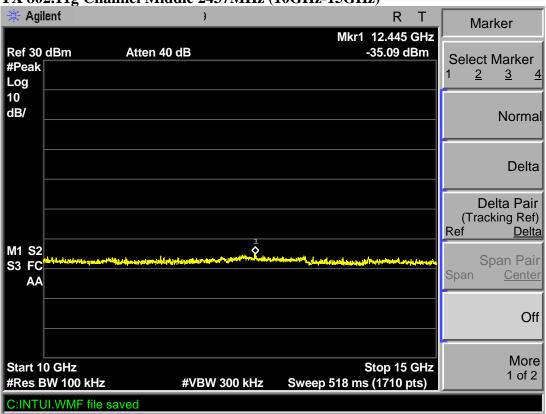
# TX 802.11g Channel Middle 2437MHz (1GHz-5GHz)



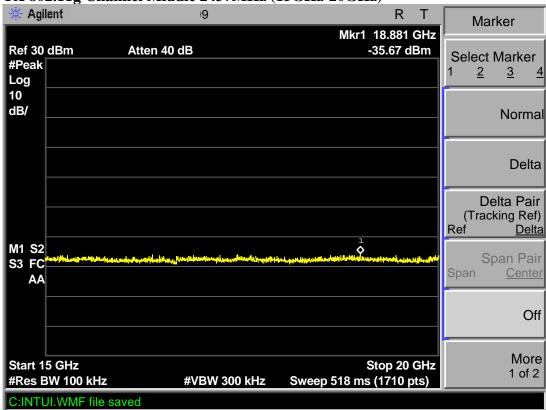




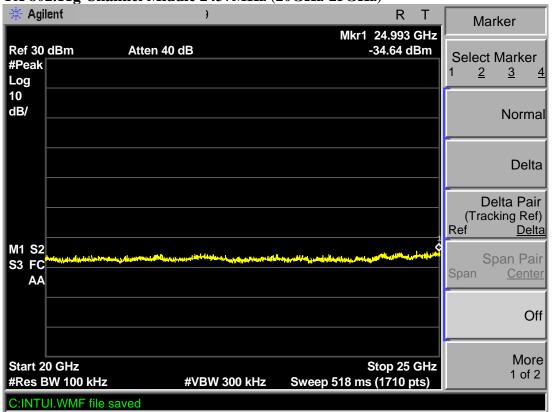
# TX 802.11g Channel Middle 2437MHz (10GHz-15GHz)

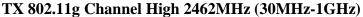


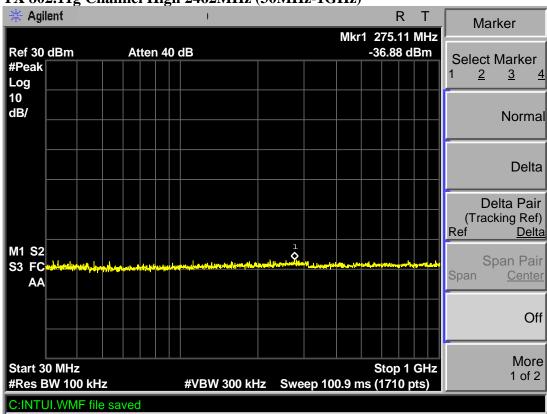




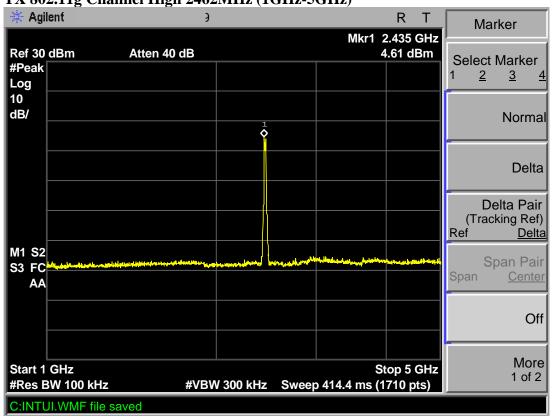
# TX 802.11g Channel Middle 2437MHz (20GHz-25GHz)

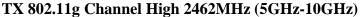


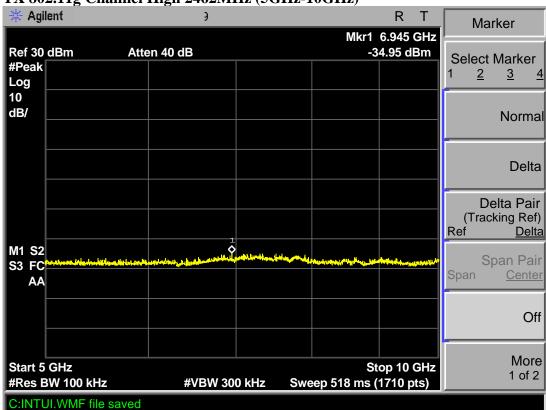




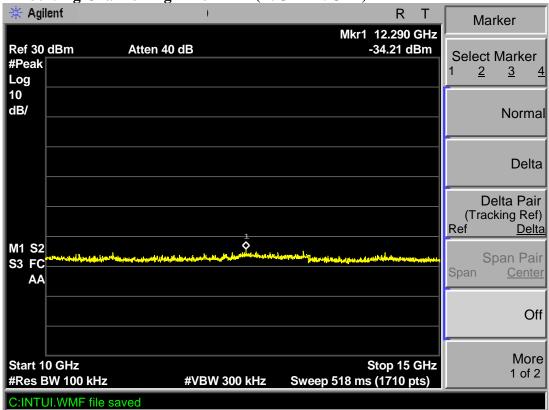
# TX 802.11g Channel High 2462MHz (1GHz-5GHz)

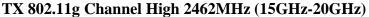


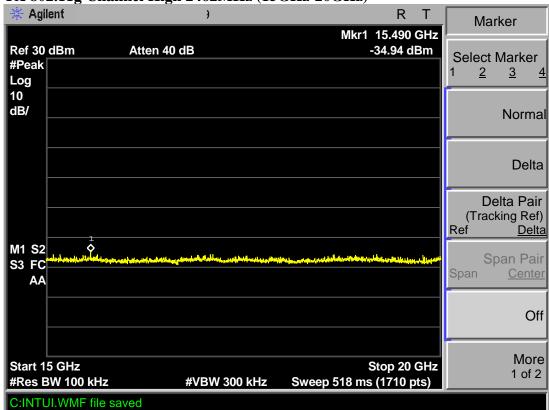




# **TX 802.11g Channel High 2462MHz (10GHz-15GHz)**







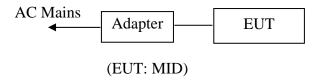
# **TX 802.11g Channel High 2462MHz (20GHz-25GHz)**



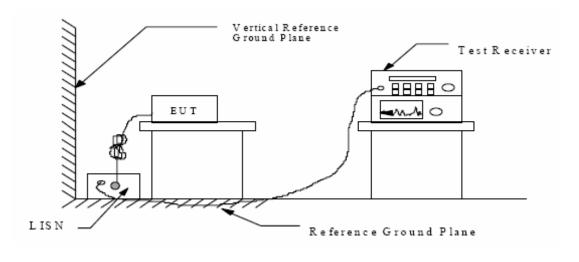
# 11.AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A)

# 11.1.Block Diagram of Test Setup

11.1.1.Block diagram of connection between the EUT and simulators



# 11.1.2.Shielding Room Test Setup Diagram



(EUT: MID)

# 11.2. The Emission Limit

# 11.2.1.Conducted Emission Measurement Limits According to Section 15.207(a)

Frequency	Limit dB(μV)					
(MHz)	Quasi-peak Level	Average Level				
0.15 - 0.50	66.0 - 56.0 *	56.0 – 46.0 *				
0.50 - 5.00	56.0	46.0				
5.00 - 30.00	60.0	50.0				

<sup>\*</sup> Decreases with the logarithm of the frequency.

# 11.3. Configuration of EUT on Measurement

The following equipment are installed on the Conducted Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 11.3.1.MID (EUT)

Model Number : M7000XX Serial Number : N/A

Manufacturer : Shenzhen Sungworld Electronics Co., Ltd.

# 11.4. Operating Condition of EUT

- 11.4.1. Setup the EUT and simulator as shown as Section 11.1.
- 11.4.2. Turn on the power of all equipment.
- 11.4.3.Let the EUT work in TX (802.11b Channel Middle, 802.11g Channel Middle) mode measure it.

## 11.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 500hm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2003 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

# 11.6.Power Line Conducted Emission Measurement Results

## PASS.

The frequency range from 150kHz to 30MHz is checked.

Date of Test:August 29, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:AC 120V/60HzTest Mode:TX 802.11b Channel MiddleTest Engineer:Pei

Frequency (MHz)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector	Line	
0.500809	49.10	56	-6.9	QP		
0.941021	47.30	56	-8.7	QP		
1.922798	46.30	56	-9.7	QP	N7 1	
0.479294	40.40	46.4	-6.0	AV	Neutral	
0.506843			-7.1	AV		
0.941021	34.80	46	-11.2	AV		
0.492876	50.20	56.1	-5.9	QP		
0.999091	46.20	56	-9.8	QP		
1.825557	46.20	56	-9.8	QP	<b>.</b> .	
0.492876	40.40	46.1	-5.7	AV	Live	
0.623773	35.90	46	-10.1	AV		
0.893431	35.20	46	-10.8	AV		

Emissions attenuated more than 20 dB below the permissible value are not reported. The spectral diagrams are attached as below.

Date of Test:August 29, 2011Temperature:25°CEUT:MIDHumidity:50%Model No.:M7000XXPower Supply:AC 120V/60HzTest Mode:TX 802.11g Channel MiddleTest Engineer:Pei

Frequency	Result	Limit	Margin	Detector	Line	
(MHz)	(dBµV)	(dBµV)	(dB)			
0.487008	48.70	56.2	-7.5	QP		
0.933537	47.80	56	-8.2	QP		
1.854942	46.90	56	-9.1	QP		
0.494848	42.50	46.1	-3.6	AV	Neutral	
0.861901			-9.1	AV		
1.854942	35.90	46	-10.1	AV		
0.487008	50.10	56.2	-6.1	QP		
0.941021	46.70	56	-9.3	QP		
1.922798	46.70	56	-9.3	QP	<b>.</b> .	
0.487008	39.50	46.2	-6.7	AV	Live	
0.621288	36.20	46	-9.8	AV		
1.899908	35.60	46	-10.4	AV		

Emissions attenuated more than 20 dB below the permissible value are not reported. The spectral diagrams are attached as below.

#### CONDUCTED EMISSION STANDARD FCC PART 15 B

MID M/N:M7000XX

Shenzhen Sungworld Electrinics Co., LTD. Manufacturer:

Operating Condition: TX Channel 6 (802.11b) 1#Shielding Room Test Site:

Operator: PEI

Test Specification: L 120V/60Hz

Report No.:ATE20111831 Sample No.:1101801 8/29/2011 / 7:54:09PM Comment:

Start of Test:

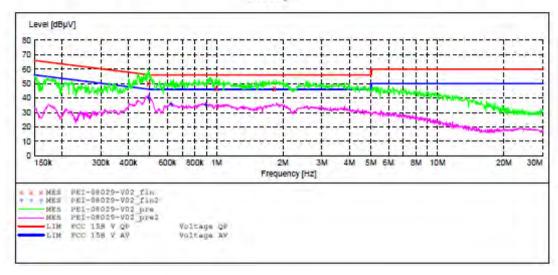
SCAN TABLE: "V 150K-30MHz fin"
Short Description: SUB\_STD\_VTERM2 1.70

Detector Meas. Stop Step IF Start Transducer

Frequency Frequency Width Bandw. Time

150.0 kHz 30.0 MHz QuasiPeak 1.0 s NSLK8126 200E 0.8 % 9 kHz

Average



#### MEASUREMENT RESULT: "PEI-0829-V02 fin"

8/29/2011 7:	56PM						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.492876	50.20	12.0	56.1	5.9	QP	Ll	GND
0.999091	46.20	11.8	56	9.8	QP	Ll	GND
1.825557	46.20	11.7	56	9.8	QP	Ll	GND

#### MEASUREMENT RESULT: "PEI-0829-V02 fin2"

8/29/2011 7:	56PM						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.492876	40.40	12.0	46.1	5.7	AV	LI	GND
0.623773	35.90	11.9	46	10.1	AV	LI	GND
0.893431	35.20	11.9	4.6	10.8	AV	Ll	GND

#### CONDUCTED EMISSION STANDARD FCC PART 15 B

MID M/N:M7000XX

Shenzhen Sungworld Electrinics Co.,LTD. Manufacturer:

Operating Condition: TX Channel 6 (802.11b) Test Site: 1#Shielding Room

Operator: Kai

Test Specification: N 120V/60Hz

Report No.:ATE20111831 Sample No.:1101801 8/29/2011 / 7:47:53PM Comment:

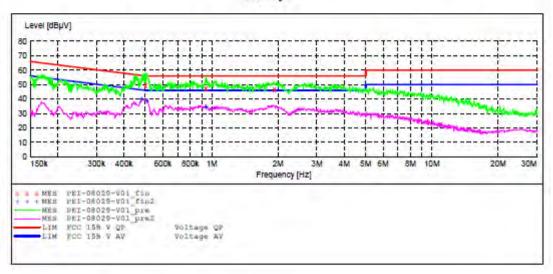
Start of Test:

SCAN TABLE: "V 150K-30MHz fin"
Short Description: SUB STD VIERM2 1.70

JB STD view...
Detector Meas. IF
Time Bandw. Transducer Start Stop Step

Frequency Frequency Width 150.0 kHz 30.0 MHz 0.8 % QuasiPeak 1.0 s 9 kHz NSLK8126 2008

Average



#### MEASUREMENT RESULT: "PEI-08029-V01 fin"

8/29/2011 7:	53PM						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.500809	49.10	12.0	56	6.9	QP	N	GND
0.941021	47.30	11.8	56	8.7	QP	N	GND
1.922798	46.30	11:7	56	9.7	QP	N	GND

# MEASUREMENT RESULT: "PEI-08029-V01 fin2"

8/29/2011 7:5	3PM						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.479294	40.40	12.0	46.4	6.0	AV	N	GND
0.506843	38.90	12.0	46	7.1	AV	N	GND
0.941021	34.80	11.8	46	11.2	AV	N	GND

#### CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: MID M/N:M7000XX

Manufacturer: Shenzhen Sungworld Electrinics Co., LTD.

Operating Condition: TX Channel 6 (802.11g)

Test Site: 1#Shielding Room

Operator: PEI

Sample No.:1101801

Operator: FEL | FEL | Test Specification: L 120V/60Hz | Comment: Report No.:ATE20111831 | Start of Test: 8/29/2011 / 7:57:07PM

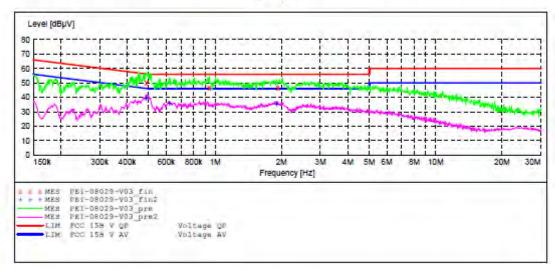
SCAN TABLE: "V 150K-30MHz fin" Short Description: \_SUB\_STD\_VTERM2 1:70

Step Start Detector Meas: IF Stop Transducer

Frequency Frequency Width Time Bandw.

150.0 kHz 30.0 MHz 0.8 % QuasiPeak 1:0 s 9 kHz NSLK8126 2008

Average



#### MEASUREMENT RESULT: "PEI-0829-V03 fin"

8/29/2011 7:5	9 PM						
Frequency MHz	Level dBuV	Transd dB		Margin dB	Detector	Line	PE
0.487008	50.10	12.0	56.2	6.1	QP	Ll	GND
0.941021	46.70	11.8	56	9.3	QF	L1	GND
1.922798	46.70	11.7	56	9.3	QP	Ll	GND

## MEASUREMENT RESULT: "PEI-0829-V03 fin2"

8/29/2011 7:	59PM						
Frequency MHz		Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.487008	39.50	12.0	46.2	6.7	AV	LI	GND
0.621288	36.20	11.9	46	9.8	AV	L1	GND
1.899908	35.60	11.7	46	10.4	AV	L1	GND

#### CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: MID M/N:M7000XX

Manufacturer: Shenzhen Sungworld Electrinics Co., LTD.

Operating Condition: TX Channel 6 (802.11g) Test Site: 1#Shielding Room

PEI Operator:

Test Specification: N 120V/60Hz

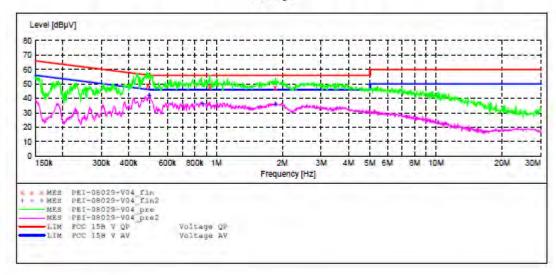
Report No.:ATE20111831 Sample No.:1101801 8/29/2011 / 8:00:19PM Comment:

Start of Test:

SCAN TABLE: "V 150K-30MHz fin"
Short Description: SUB\_STD\_VTERM2 1.70

IF Transducer Start Stop. Step Detector Meas. Bandw. Frequency Frequency Width Time 150.0 kHz 30.0 MHz 0.8 % QuasiPeak 1.0 s 9 kHz NSLK8126 2008

Average



# MEASUREMENT RESULT: "PEI-0829-V04 fin"

02PM						
Level dBµV			Margin dB	Detector	Line	PE
48.70	12.0	56.2	7.5	QP	N	GND
47.80	11.8	56	8.2	QP	N	GND
46.90	11.7	56	9.1	QP	N	GND
	dBµV 48.70 47.80	Level Transd dBµV dB 48.70 12.0 47.80 11.8	Level Transd Limit dBμV dB dBμV 48.70 12.0 56.2 47.80 11.8 56	Level Transd Limit Margin dBμV dB dBμV dB 48.70 12.0 56.2 7.5 47.80 11.8 56 8.2	Level Transd Limit Margin Detector dBμV dB dBμV dB 48.70 12.0 56.2 7.5 QP 47.80 11.8 56 8.2 QP	Level Transd Limit Margin Detector Line dBμV dB dBμV dB 48.70 12.0 56.2 7.5 QP N 47.80 11.8 56 8.2 QP N

#### MEASUREMENT RESULT: "PEI-0829-V04 fin2"

8/29/2011 8:	02PM						
Frequency MHz	Level dBuV			Margin dB	Detector	Line	PE
0.494848	42.50	12.0	46.1	3.6	AV	N	GND
0.861901	36.90	11.9	46	9.1	AV	N	GND
1.854942	35.90	11.7	46	10.1	AV	N	GND

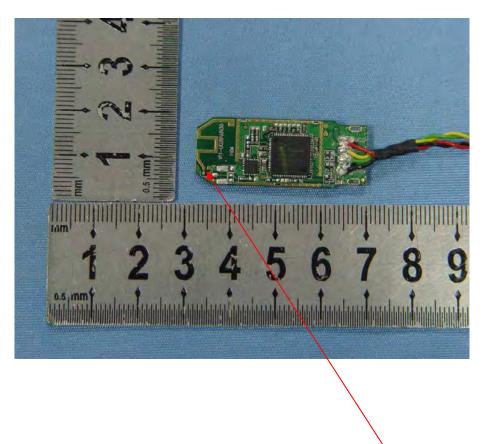
# 12.ANTENNA REQUIREMENT

# 12.1.The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

# 12.2.Antenna Construction

Antenna is formed by a copper trace on the PCB. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna