



FCC Part22H&24E Test Report Industry Canada RSS-132/RSS-133

Product Name : Wireless Module
Model No. : SL8084T
FCC ID : N7NSL8084T
IC : 2417C-SL8084T

Applicant : Sierra Wireless Inc.

Address : 13811 Wireless Way Richmond, British Columbia,
Canada, V6V 3A4.

Date of Receipt : 19/12/2012
Test Date : 19/12/2012~24/12/2012
Issued Date : 25/12/2012
Report No. : 12CS047R-HP-US-P07V01
Report Version : V 1.2

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF, CNAS or any agency of the Government.

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Test Report Certification

Issued Date : 25/12/2012

Report No. : 12CS047R-HP-US-P07V01



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Applicant : Sierra Wireless Inc.

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Manufacturer : Sierra Wireless Inc.

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V6V 3A4.

Model No. : SL8084T

FCC ID : N7NSL8084T

IC : 2417C-SL8084T

EUT Voltage : DC 3.6V

Brand Name : Sierra Wireless

Applicable Standard : FCC CFR Title 47 Part 2, TIA/EIA 603-C
FCC Part 22.917(b), FCC Part 24.238(b)
Industry Canada RSS-132, Issue 2 Clause 4.5&4.6
Industry Canada RSS-133, Issue 5 Clause 6.5&6.6

Test Result : Complied

Performed Location : Suzhou EMC Laboratory
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TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
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(Manager: Marlin Chen)

Laboratory Information

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

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

The related certificate for our laboratories about the test site and management system can be downloaded from QuietTek Corporation's Web Site :<http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of QuietTek Corporation's laboratories can be founded in our Web site :
<http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	Wireless Module
Model No.	SL8084T
RF Exposure Environment	Uncontrolled
Antenna Type	External
2G	
Support Band	GSM850 /PCS1900/GSM900/DCS1800
GPRS Type	Class B
GPRS Class	Class 12
Uplink	GSM 850: 824~849MHz PCS 1900: 1850~1910MHz GSM 900: 880 ~ 915 MHz DCS 1800: 1710 ~ 1785 MHz
Downlink	GSM 850: 869~894MHz PCS 1900: 1930~1990MHz GSM 900: 925 ~ 960 MHz DCS 1800: 1805 ~ 1875 MHz
Release Version	R99
Type of modulation	GMSK For GPRS 8PSK For EDGE
3G	
Support Band	WCDMA Band I/WCDMA Band V/WCDMA Band VI
Uplink	WCDMA Band I: 1920 ~ 1980MHz WCDMA Band V: 824 ~ 849MHz WCDMA Band VI: 830 ~ 840MHz
Downlink	WCDMA Band I: 2110 ~ 2170MHz WCDMA Band V: 869 ~ 894MHz WCDMA Band VI: 875 ~ 885MHz
Release Version	Rel-5
Type of modulation	QPSK

1.2. Mode of Operation

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

Test Mode
Mode 1: GPRS 850 Link
Mode 2: GPRS 1900 Link
Mode 3: EDGE 850 Link
Mode 4: EDGE 1900 Link
Mode 5: WCDMA Band V

Note:

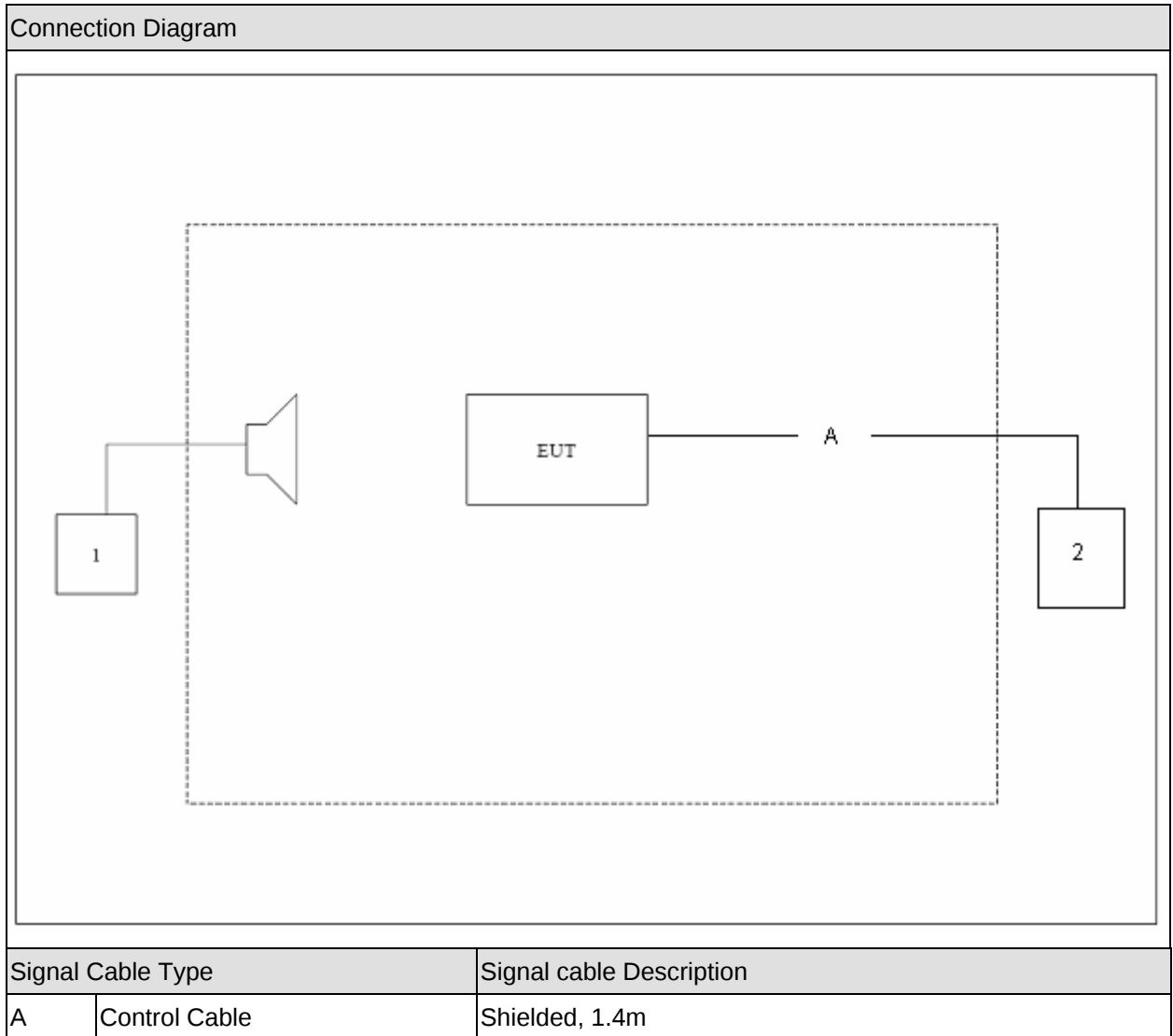
1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

1.3. Tested System Details

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

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	CMU200	R&S	CMU200	N/A	N/A
2	DC Power Supply	INSTEK	GPS-3030D	EK855344	N/A

1.4. Configuration of Tested System



1.5. EUT Exercise Software

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

2. Technical Test

2.1. Summary of Test Result

- ☒ No deviations from the test standards
☐ Deviations from the test standards as below description:

For GSM 850/WCDMA Band V (FCC Part 22H & Part 2)

Emission			
Performed Item	Normative References	Test Performed	Deviation
Spurious Emission	FCC Part 22.917(b) and Part 2.1051, 2.1053 Industry Canada RSS-133, Issue 5 Clause 4.5&4.6	Yes	No

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

Emission			
Performed Item	Normative References	Test Performed	Deviation
Spurious Emission	FCC Part 24.238(b) and Part 2.1051, 2.1053 Industry Canada RSS-133, Issue 5 Clause 6.5&6.6	Yes	No

2.2. Test Environment

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

3. Spurious Emission

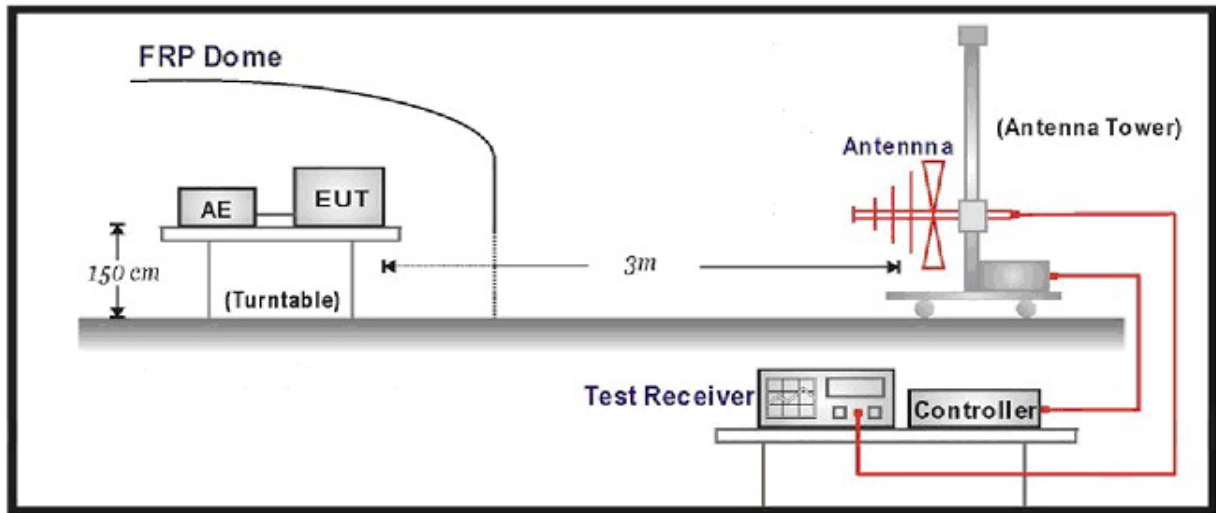
3.1. Test Equipment

Spurious Emission / AC-5

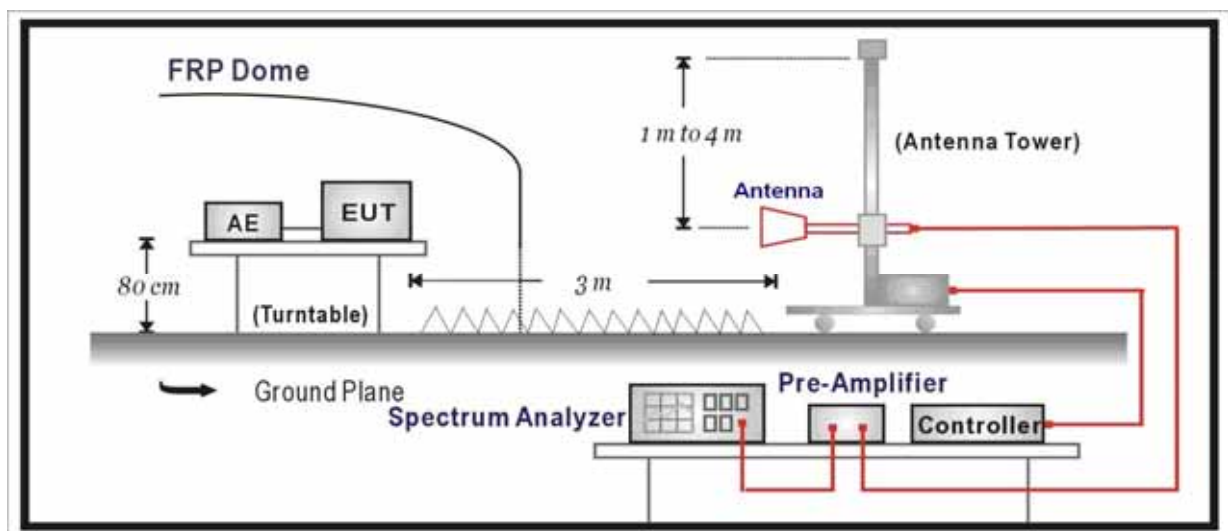
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2013.04.10
Radio Communication Tester	R&S	CMU 200	117088	2013.04.18
Dual Directional Coupler	Agilent	778D	20160	2013.04.18
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2013.04.18
PSG Analog Signal Generator	Agilent	E8257D	MY44321116	2013.04.18
Preamplifier	Quietek	AP-025C	CHM-0503006	2013.05.04
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.10.15
Half Wave Tuned Dipole Antenna	COM-POWER	AD-100	40137	2013.11.24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	737	2013.11.24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2014.06.08
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2013.01.10

3.2. Test Setup

Radiated Spurious Measurement: below 1GHz



Radiated Spurious Measurement: above 1GHz



3.3. Limit

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

3.4. Test Procedure

Radiated Spurious Measurement:

- a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- c) The output of the test antenna shall be connected to the measuring receiver.
- d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- a) The maximum signal level detected by the measuring receiver shall be noted.
- h) The transmitter shall be replaced by a substitution antenna.
- i) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- j) The substitution antenna shall be connected to a calibrated signal generator.
- k) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- l) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- m) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- n) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- o) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- p) The frequency range was checked up to 10th harmonic.
- q) Test site anechoic chamber refer to ANSI C63.4: 2009

3.5. Uncertainty

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

3.6. Test Result

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: GPRS 850 Link		
Date of Test	2012/12/24	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
1646.00	-44.89	V	-47.45	2.50	9.75	-40.20	-13.00	-27.20
2470.50	-57.89	V	-56.93	3.12	10.48	-49.57	-13.00	-36.57
1646.00	-44.70	H	-47.36	2.50	9.75	-40.11	-13.00	-27.11
2470.50	-58.92	H	-57.81	3.12	10.48	-50.45	-13.00	-37.45
Middle Channel 189 (836.40MHz)								
1671.50	-46.94	V	-49.61	2.52	9.95	-42.18	-13.00	-29.18
2513.00	-59.85	V	-59.17	3.18	10.62	-51.73	-13.00	-38.73
1671.50	-47.61	H	-50.03	2.52	9.95	-42.60	-13.00	-29.60
2513.00	-59.72	H	-58.65	3.18	10.62	-51.21	-13.00	-38.21
High Channel 251 (848.80MHz)								
1697.00	-48.39	V	-51.13	2.54	10.06	-43.61	-13.00	-30.61
2547.00	-56.44	V	-54.87	3.14	10.68	-47.33	-13.00	-34.33
1697.00	-50.48	H	-52.48	2.54	10.06	-44.96	-13.00	-31.96
2547.00	-56.83	H	-55.01	3.14	10.68	-47.47	-13.00	-34.47

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 2: GPRS1900 Link		
Date of Test	2012/12/24	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
3700.00	-62.11	V	-58.66	3.84	12.69	-49.81	-13.00	-36.81
5550.00	-55.09	V	-46.59	4.82	13.15	-38.26	-13.00	-25.26
3700.00	-61.77	H	-58.40	3.84	12.69	-49.55	-13.00	-36.55
5550.00	-59.17	H	-51.28	4.82	13.15	-42.95	-13.00	-29.95
Middle Channel 661 (1880.00MHz)								
3760.00	-61.81	V	-58.59	3.73	12.72	-49.60	-13.00	-36.60
5640.00	-58.08	V	-50.15	4.93	13.14	-41.94	-13.00	-28.94
3760.00	-64.16	H	-60.89	3.73	12.72	-51.90	-13.00	-38.90
5640.00	-61.90	H	-54.29	4.93	13.14	-46.08	-13.00	-33.08
High Channel 810 (1909.80MHz)								
3818.00	-64.24	V	-60.52	4.02	12.73	-51.81	-13.00	-38.81
5727.00	-56.97	V	-48.35	4.87	13.11	-40.11	-13.00	-27.11
3818.00	-61.98	H	-58.11	4.02	12.73	-49.40	-13.00	-36.40
5727.00	-63.98	H	-55.74	4.87	13.11	-47.50	-13.00	-34.50

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 3: EDGE 850 Link		
Date of Test	2012/12/24	Test Site	AC5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
1646.00	-48.95	V	-51.61	2.50	9.75	-44.36	-13.00	-31.36
2470.50	-63.17	V	-62.08	3.12	10.48	-54.72	-13.00	-41.72
1646.00	-52.82	H	-55.48	2.50	9.75	-48.23	-13.00	-35.23
2470.50	-63.41	H	-62.32	3.12	10.48	-54.96	-13.00	-41.96
Middle Channel 189 (836.40MHz)								
1671.50	-52.28	V	-54.95	2.52	9.95	-47.52	-13.00	-34.52
2513.00	-60.66	V	-59.98	3.18	10.62	-52.54	-13.00	-39.54
1671.50	-55.59	H	-58.01	2.52	9.95	-50.58	-13.00	-37.58
2513.00	-63.69	H	-62.68	3.18	10.62	-55.24	-13.00	-42.24
High Channel 251 (848.80MHz)								
1697.00	-53.18	V	-55.91	2.54	10.06	-48.39	-13.00	-35.39
2547.00	-62.06	V	-60.50	3.14	10.68	-52.96	-13.00	-39.96
1697.00	-56.74	H	-58.74	2.54	10.06	-51.22	-13.00	-38.22
2547.00	-63.12	H	-61.32	3.14	10.68	-53.78	-13.00	-40.78

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 4: EDGE1900 Link		
Date of Test	2012/12/24	Test Site	AC5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
3700.00	-61.15	V	-57.69	3.84	12.69	-48.84	-13.00	-35.84
5550.00	-54.24	V	-45.74	4.82	13.15	-37.41	-13.00	-24.41
3700.00	-62.11	H	-58.73	3.84	12.69	-49.88	-13.00	-36.88
5550.00	-62.67	H	-54.79	4.82	13.15	-46.46	-13.00	-33.46
Middle Channel 661 (1880.00MHz)								
3760.00	-64.25	V	-61.04	3.73	12.72	-52.05	-13.00	-39.05
5640.00	-58.64	V	-50.71	4.93	13.14	-42.50	-13.00	-29.50
3760.00	-64.81	H	-61.53	3.73	12.72	-52.54	-13.00	-39.54
5640.00	-64.41	H	-56.79	4.93	13.14	-48.58	-13.00	-35.58
High Channel 810 (1909.80MHz)								
3818.00	-64.75	V	-61.03	4.02	12.73	-52.32	-13.00	-39.32
5727.00	-61.38	V	-52.77	4.87	13.11	-44.53	-13.00	-31.53
3818.00	-64.93	H	-61.06	4.02	12.73	-52.35	-13.00	-39.35
5727.00	-66.17	H	-57.90	4.87	13.11	-49.66	-13.00	-36.66

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 5: WCDMA Band V Traffic		
Date of Test	2012/12/25	Test Site	AC5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 4132 (826.40MHz)								
1654.50	-49.87	V	-51.62	3.28	9.75	-45.15	-13.00	-32.15
2479.20	-59.28	V	-57.28	4.10	10.48	-50.90	-13.00	-37.90
1654.50	-48.99	H	-50.74	3.28	9.75	-44.27	-13.00	-31.27
2479.00	-60.63	H	-58.29	4.10	10.48	-51.91	-13.00	-38.91
Middle Channel 4182 (836.40MHz)								
1671.50	-49.19	V	-51.05	3.32	9.95	-44.42	-13.00	-31.42
2513.00	-59.47	V	-57.41	4.31	10.62	-51.10	-13.00	-38.10
1671.50	-48.56	H	-50.18	3.32	9.95	-43.55	-13.00	-30.55
2513.00	-60.05	H	-57.64	4.31	10.62	-51.33	-13.00	-38.33
High Channel 4233 (846.60MHz)								
1697.00	-48.46	V	-50.38	3.35	10.06	-43.67	-13.00	-30.67
2539.80	-59.77	V	-57.75	3.91	10.33	-51.33	-13.00	-38.33
1697.00	-46.49	H	-47.46	4.19	10.68	-40.97	-13.00	-27.97
2538.50	-60.46	H	-57.77	4.33	10.79	-51.31	-13.00	-38.31