



Test Report

Product Name	TR MODULE
Model No.	TR009
FCC ID.	FU5TR009

Applicant	EVERSPRING INDUSTRY CO., LTD
Address	7th fl. 609 Wan Shou Road Sec. 1, Kweishan, Taoyuan Hsien 333, Taiwan, R.O.C.

Date of Receipt	Dec. 12, 2008
Issued Date	Mar. 24, 2009
Report No.	08C209R-RFUSP07V01
Version	V1.0

The Test Results relate only to the samples tested.

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Test Report Certification

Issued Date: Mar. 24, 2009

Report No. : 08C209R-RFUSP07V01



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Applicant	EVERSPRING INDUSTRY CO., LTD
Address	7th fl. 609 Wan Shou Road Sec. 1, Kweishan, Taoyuan Hsien 333, Taiwan, R.O.C.
Manufacturer	Dong-Guan Li Yuan Electronics Co., Ltd
Model No.	TR009
FCC ID.	FU5TR009
Host of combine	SC801-2, SA801-2
Rated Voltage	SC801-2,: AC 120V / 60Hz
	SA801-2: DC 4.5V(Battery 1.5V*3)
Working Voltage	DC 3.3V
Trade Name	EVERSPRING
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007
	ANSI C63.4: 2003
Test Result	Complied 

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Documented By : Leven Huang
 (Adm. Specialist / Leven Huang)



Tested By : Dino Chen
 (Engineer / Dino Chen)

Approved By : Vincent Lin
 (Manager / Vincent Lin)



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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	TR MODULE
Trade Name	EVERSPRING
FCC ID.	FU5TR009
Model No.	TR009
Frequency Range	922.985-923.015MHz
Type of Modulation	FSK
Number of Channels	1
Channel Control	Auto
Antenna Type	SC801-2: Helical Antenna SA801-2: Monopole Antenna
Antenna Gain	Refer to the table "Antenna List"
Power Adapter For SC801-2,	MFR: Ktec, M/N: KSAC0900100W1US Input: AC 100-240V,50-60Hz,0.4A Output: DC 9V,1.0A Cable Out: Non-Shielded,1.7m

Antenna List

No.	Manufacturer	Antenna Type	Antenna Configuration	Model Number of Host	Peak Gain
1	EVERSPRING	Monopole	Winding	SC801-2	-2.4dBi for 923MHz
2	EVERSPRING	Monopole	Curve	SA801-2	-6.2dBi for 923MHz

Center Frequency of Each Channel:

Channel	Frequency
Channel 1:	923 MHz

Note:

1. The EUT is a TR MODULE with a built-in transceiver module.
2. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249.
3. The EUT is certification Limit Modular Approval and combine in host for test, the host model number is SC801-2 and SA801-2.
4. The EUT will combine below Host and sell in the market.

Model Number	Description
SC801-2	4 AREA ZONE LED CONTROL PANEL
SA801-2	Digital Keypad

5. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
6. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

EMI Test Mode	Mode 1: Transmitter (with winding antenna) Mode 2: Transmitter (with curve antenna)
---------------	--

1.2. Operation Description

The EUT is a TR MODULE, The EUT operation frequency is 923MHz. The signals modulated by FSK are transmitted from the Monopole Antenna of the EUT. The Antenna have two kind of configuration one is winding another is curve.

This Wireless Keypad and Control Panel is suitable for use with a series of Everspring Wireless Intruder Alarm Systems.

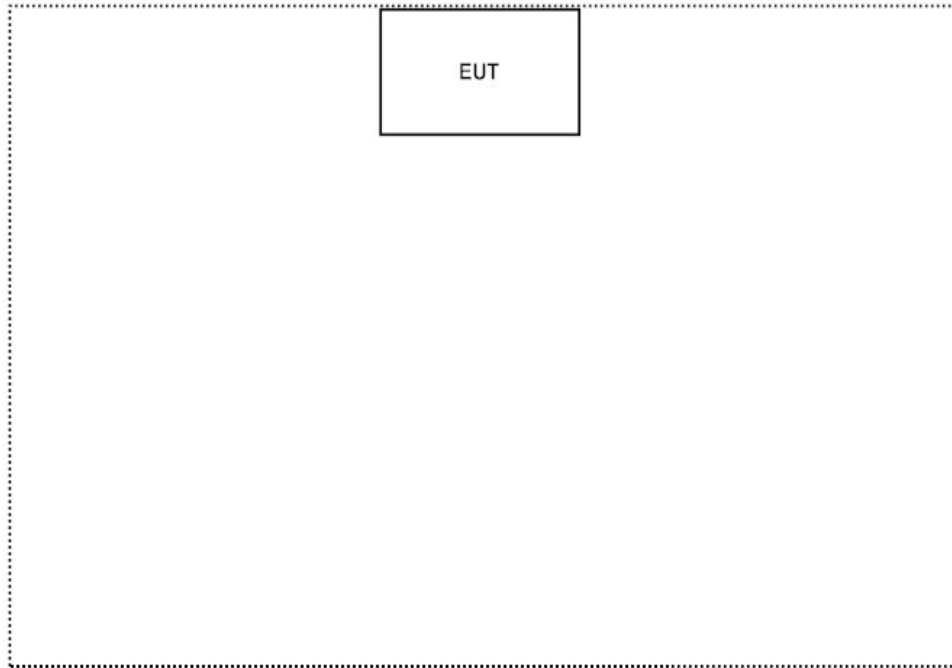
1.3. Tested System Details

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

Product	Manufacturer	Model No.	Serial No.	Power Cord
N/A				

Signal Cable Type	Signal cable Description
N/A	

1.4. Configuration of Test System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in section 1.4.
- (2) Open the EUT power.
- (3) Start the continuous transmit.
- (4) Verify that the EUT works correctly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation’s Web Site : <http://tw.quietek.com/modules/myalbum/>
 The address and introduction of Quietek Corporation’s laboratories can be founded in our Web site : <http://www.quietek.com/>

Site Description: File on
 Federal Communications Commission
 FCC Engineering Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046
 Registration Number: 92195



Accreditation on NVLAP
 NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation

Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
 Lin-Kou Shiang, Taipei,
 Taiwan, R.O.C.
 TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
 E-Mail : service@quietek.com

FCC Accreditation Number: TW1014



2. Conducted Emission

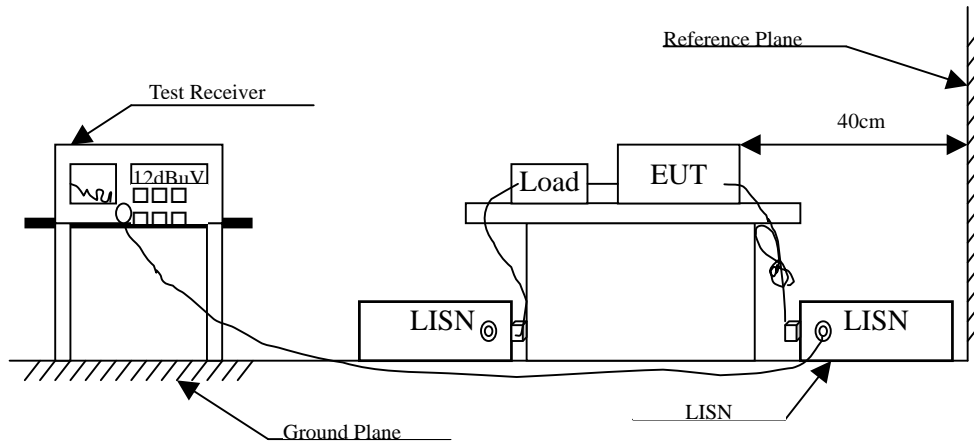
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2008	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2008	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2008	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2008	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : TR MODULE
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 1: Transmitter (with winding antenna)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
Line 1					
Quasi-Peak					
0.205	9.703	28.700	38.403	-26.026	64.429
0.267	9.665	28.080	37.745	-24.912	62.657
0.338	9.650	30.800	40.450	-20.179	60.629
0.435	9.640	30.680	40.320	-17.537	57.857
0.982	9.670	21.570	31.240	-24.760	56.000
6.736	9.750	19.750	29.500	-30.500	60.000
Average					
0.205	9.703	14.060	23.763	-30.666	54.429
0.267	9.665	12.840	22.505	-30.152	52.657
0.338	9.650	16.980	26.630	-23.999	50.629
0.435	9.640	16.670	26.310	-21.547	47.857
0.982	9.670	7.030	16.700	-29.300	46.000
6.736	9.750	7.170	16.920	-33.080	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : TR MODULE
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 1: Transmitter (with winding antenna)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
Line 2					
Quasi-Peak					
0.212	9.708	28.930	38.638	-25.591	64.229
0.275	9.669	28.010	37.679	-24.750	62.429
0.353	9.655	29.560	39.215	-20.985	60.200
0.466	9.640	25.170	34.810	-22.161	56.971
0.986	9.670	22.970	32.640	-23.360	56.000
6.048	9.720	18.580	28.300	-31.700	60.000
Average					
0.212	9.708	14.540	24.248	-29.981	54.229
0.275	9.669	16.080	25.749	-26.680	52.429
0.353	9.655	16.540	26.195	-24.005	50.200
0.466	9.640	8.260	17.900	-29.071	46.971
0.986	9.670	7.460	17.130	-28.870	46.000
6.048	9.720	8.020	17.740	-32.260	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Radiated Emission

3.1. Test Equipment

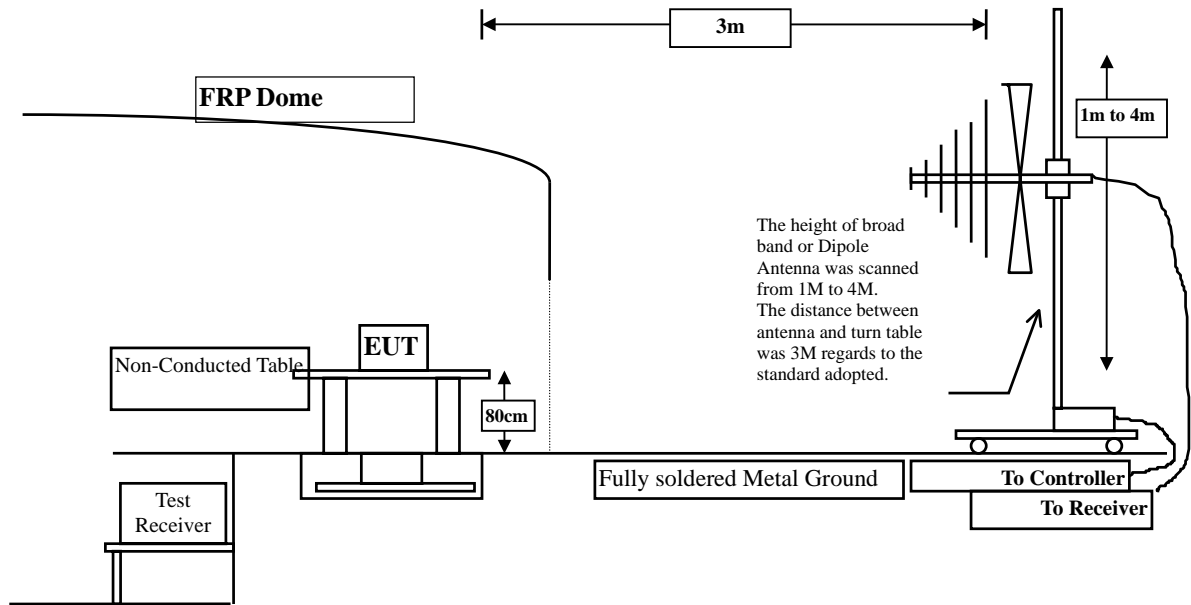
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input type="checkbox"/> Site # 1		Test Receiver	R & S	ESVS 10 / 834468/003	May, 2008
		Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2008
		Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2008
		Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Sep., 2008
<input type="checkbox"/> Site # 2		Test Receiver	R & S	ESCS 30 / 836858 / 022	May, 2008
		Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2008
		Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2008
		Bilog Antenna	SCHAFFNER	CBL6112B / 2705	May, 2008
		Horn Antenna	ETS	3115 / 0005-6160	Sep., 2008
		Pre-Amplifier	QTK	QTK-AMP-01/ 0001	May, 2008
<input checked="" type="checkbox"/> Site # 3	X	Test Receiver	R & S	ESI 26 / 838786/004	May, 2008
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
	X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2008
	X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2008
	X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2008
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
	X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2008

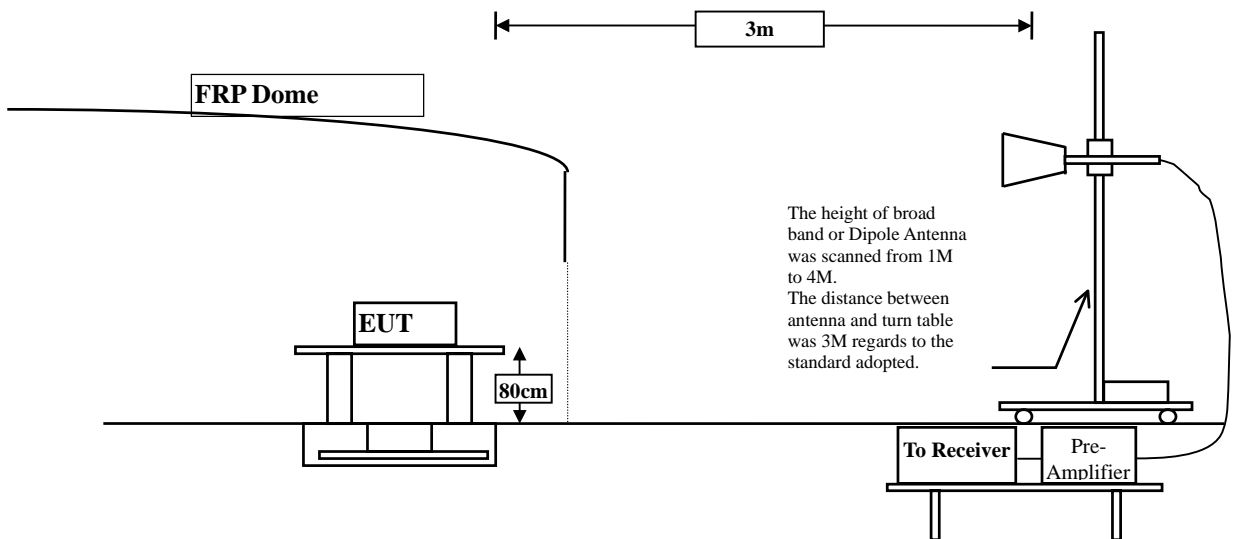
- Note:
1. All equipments are calibrated every one year.
 2. Test equipments marked by "X" are used to measure the final test results.

3.2. Test Setup

Below 1GHz



Above 1GHz



3.3. Limits

➤ Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.249 Limits				
Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	(mV/m @3m)	(dBuV/m @3m)	(uV/m @3m)	(dBuV/m @3m)
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54

- Remarks :
1. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

- Remarks :
1. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

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

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB beamwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The frequency range from 30MHz to 10th harmonics is checked.

3.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

3.6. Test Result of Radiated Emission

Product : TR MODULE
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter (with winding antenna)

Peak Detector:

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
923.000	5.816	99.910	105.726	-8.274	114.000
Vertical					
923.000	5.053	96.170	101.223	-12.777	114.000

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Average Detector:

Frequency MHz	Peak Measurement dBuV/m	Duty Cycle Factor dB	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
923	105.726	-16.773	88.953	5.407	94.000
Vertical					
923	101.223	-16.773	84.450	9.550	94.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle
2. The Duty Cycle is refer to section 5.
3. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Product : TR MODULE
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter (with curve antenna)

Peak Detector:

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
923.000	5.816	98.470	104.286	-9.714	114.000
Vertical					
923.000	5.053	98.120	103.173	-10.827	114.000

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Average Detector:

Frequency MHz	Peak Measurement dBuV/m	Duty Cycle Factor dB	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
923	104.286	-16.773	87.513	6.487	94.000
Vertical					
923	103.173	-16.773	86.400	7.600	94.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle
2. The Duty Cycle is refer to section 5.
3. If Duty Cycle is smaller than -20dB,based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Product : TR MODULE
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter (with winding antenna) (923MHz)

Peak Detector:

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Peak Limit dBuV/m
Horizontal					
1846.000	-4.994	52.060	47.066	-26.904	73.970
2769.000	-1.370	38.650	37.281	-36.689	73.970
3692.000	0.335	43.380	43.716	-30.254	73.970
4615.000	3.070	40.150	43.221	-30.749	73.970
5538.000	4.560	44.010	48.569	-25.401	73.970
6461.000	6.716	40.530	47.246	-26.724	73.970
Vertical					
1846.000	-4.994	55.010	50.016	-23.954	73.970
2769.000	-1.370	38.720	37.351	-36.619	73.970
3692.000	0.335	42.550	42.886	-31.084	73.970
4615.000	3.070	38.820	41.891	-32.079	73.970
5538.000	4.560	43.510	48.069	-25.901	73.970
6461.000	6.716	41.450	48.166	-25.804	73.970

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : TR MODULE
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter (with curve antenna) (923MHz)

Peak Detector:

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Peak Limit dBuV/m
Horizontal					
1846.000	-4.994	53.900	48.906	-25.064	73.970
2769.000	-1.370	40.530	39.161	-34.809	73.970
3692.000	0.335	46.650	46.986	-26.984	73.970
4615.000	3.070	42.200	45.271	-28.699	73.970
5538.000	4.560	43.610	48.169	-25.801	73.970
6461.000	6.716	41.650	48.366	-25.604	73.970
7384.000	9.568	35.760	45.327	-28.643	73.970
8307.000	11.184	35.990	47.173	-26.797	73.970
9230.000	11.352	36.010	47.362	-26.608	73.970
Vertical					
1846.000	-4.994	51.470	46.476	-27.494	73.970
2769.000	-1.370	39.480	38.111	-35.859	73.970
3692.000	0.335	42.260	42.596	-31.374	73.970
4615.000	3.070	43.380	46.451	-27.519	73.970
5538.000	4.560	45.370	49.929	-24.041	73.970
6461.000	6.716	40.270	46.986	-26.984	73.970
7384.000	9.568	37.040	46.607	-27.363	73.970
8307.000	11.184	37.550	48.733	-25.237	73.970
9230.000	11.352	37.080	48.432	-25.538	73.970

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the too weak instrument of signal is unable to test.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : TR MODULE
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter (with winding antenna) (923 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
30.000	-0.230	21.315	21.085	-18.915	40.000
148.340	-7.965	27.776	19.811	-23.689	43.500
540.220	3.300	26.060	29.360	-16.640	46.000
594.540	3.321	28.198	31.519	-14.481	46.000
757.500	4.899	22.829	27.728	-18.272	46.000
1000.000	9.390	20.638	30.028	-23.972	54.000
Vertical					
30.000	-3.090	25.486	22.396	-17.604	40.000
177.440	-1.400	21.813	20.413	-23.087	43.500
276.380	-6.160	28.800	22.640	-23.360	46.000
379.200	0.786	22.925	23.711	-22.289	46.000
604.240	1.966	29.850	31.817	-14.183	46.000
963.140	3.382	21.318	24.700	-29.300	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “■” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : TR MODULE
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter (with curve antenna) (923 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level	dB	dBuV/m
Horizontal					
353.980	-2.867	23.407	20.540	-25.460	46.000
425.760	-3.542	24.727	21.185	-24.815	46.000
515.000	1.104	26.111	27.215	-18.785	46.000
544.100	2.992	24.352	27.344	-18.656	46.000
745.860	2.793	23.316	26.110	-19.890	46.000
866.140	5.197	23.202	28.399	-17.601	46.000
Vertical					
344.280	-3.485	23.319	19.834	-26.166	46.000
458.740	-4.343	24.344	20.001	-25.999	46.000
544.100	-1.208	24.358	23.150	-22.850	46.000
691.540	1.975	22.532	24.507	-21.493	46.000
747.800	1.653	29.002	30.655	-15.345	46.000
842.860	2.683	26.167	28.850	-17.150	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

4. Band Edge

4.1. Test Equipment

The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786/004	May, 2008
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2008
X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2008
X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2008
X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2008

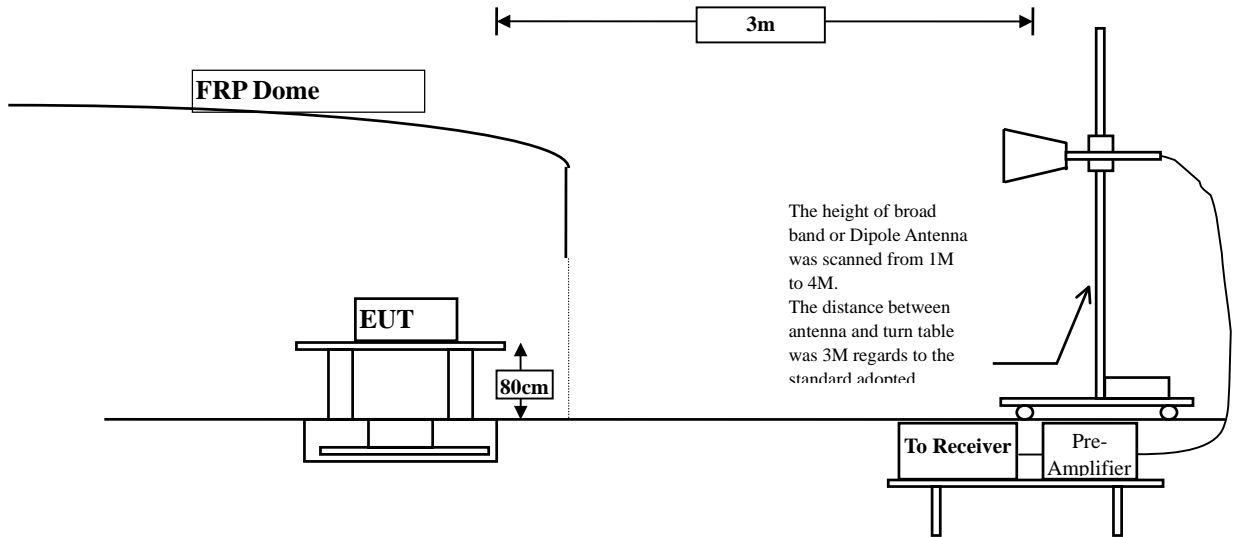
OATS No.3

- Note:
1. All equipments are calibrated every one year.
 2. The test equipments marked by "X" are used to measure the final test results.

4.2. Test Setup

RF Radiated Measurement:

Above 1GHz



4.3. Limit

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) (see Section 15.205(c)).

4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

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

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30)is 120 kHz, above 1GHz are 1 MHz.

4.5. Uncertainty

Conducted is ± 1.27 dB

Radiated is ± 3.9 dB.

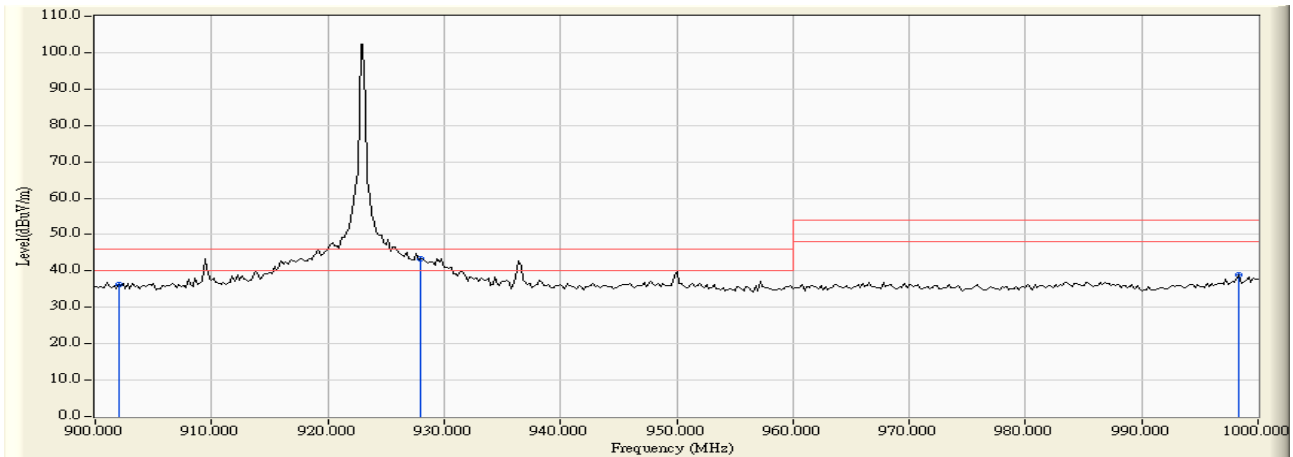
4.6. Test Result of Band Edge

Product : TR MODULE
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter (with winding antenna) (923MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Quasi-Peak Limit (dBuV/m)	Result
01(Quasi-Peak)	902.000	5.169	31.173	36.342	46.000	Pass
01(Quasi-Peak)	928.000	6.365	37.013	43.378	46.000	Pass
01(Quasi-Peak)	998.400	8.033	30.842	38.875	54.000	Pass

Figure Channel 01: Horizontal (Quasi-Peak)



Note:

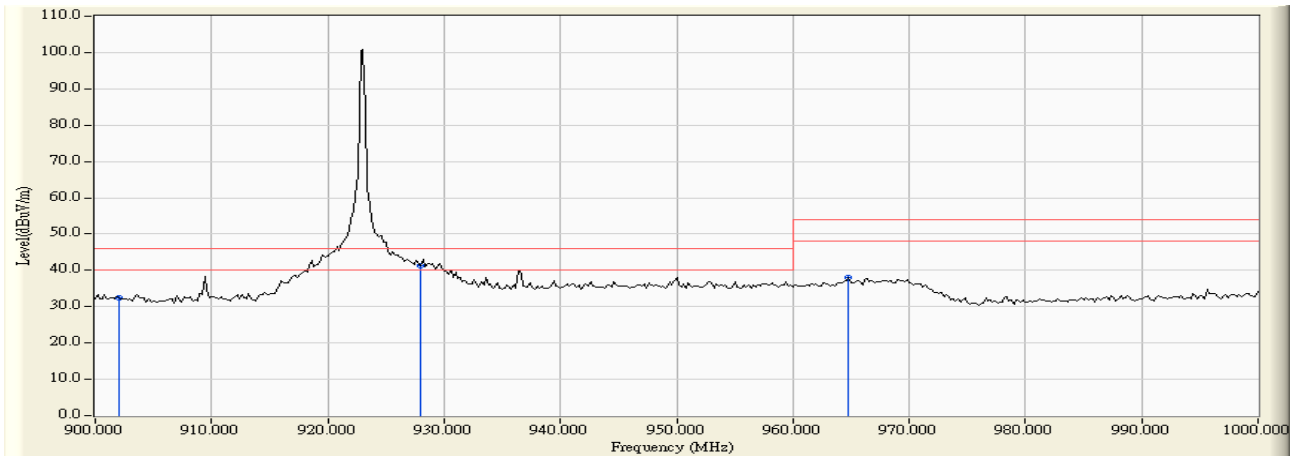
1. Quasi-Peak measurements: RBW=100kHz,VBW=1MHz,Sweep: Auto.
2. “*”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : TR MODULE
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter (with winding antenna) (923MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Quasi-Peak Limit (dBuV/m)	Result
01(Quasi-Peak)	902.000	2.696	29.798	32.494	46.000	Pass
01(Quasi-Peak)	928.000	5.677	35.663	41.340	46.000	Pass
01(Quasi-Peak)	964.800	7.355	30.686	38.040	54.000	Pass

Figure Channel 01: Vertical (Quasi-Peak)



Note:

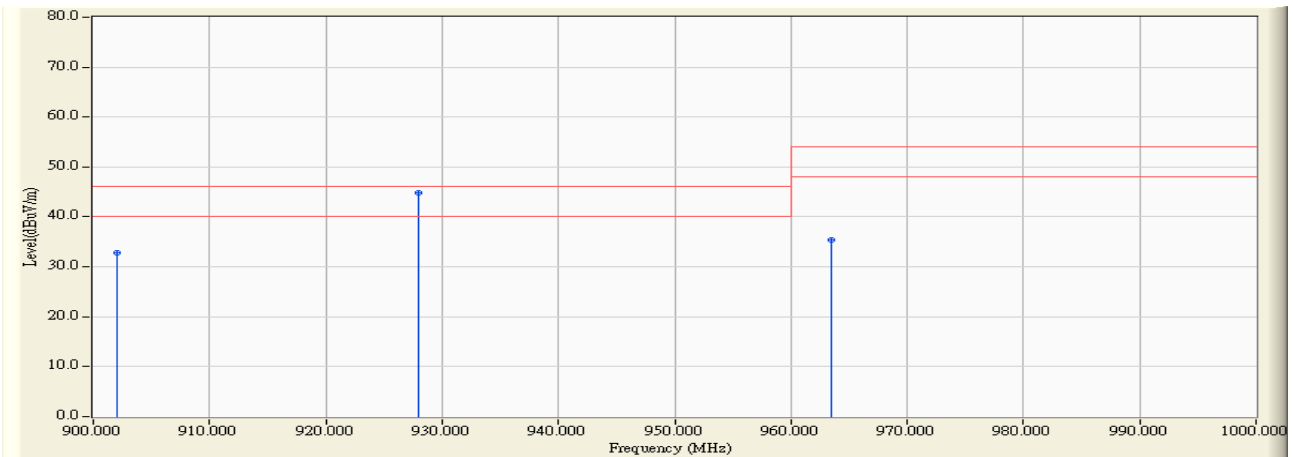
1. Quasi-Peak measurements: RBW=100kHz,VBW=1MHz,Sweep: Auto.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : TR MODULE
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter (with curve antenna) (923MHz)

RF Radiated Measurement (Horizontal):

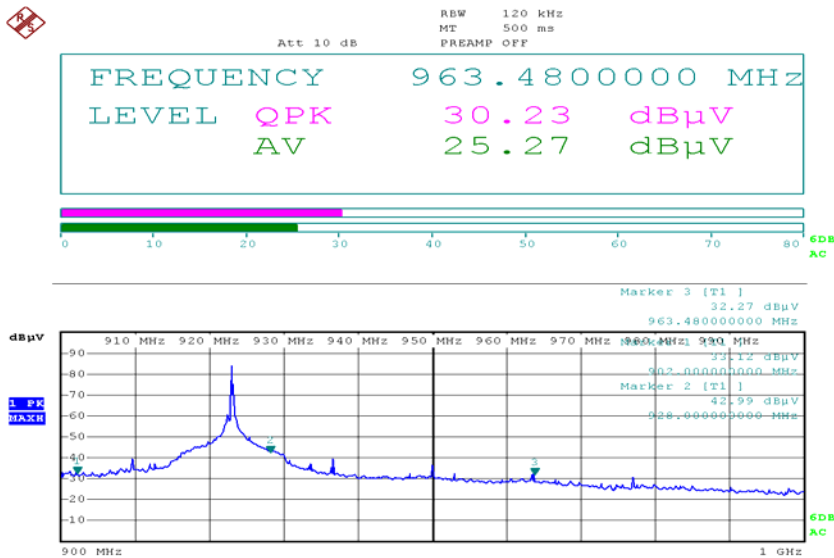
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Quasi-Peak Limit (dBuV/m)	Result
01(Quasi-Peak)	902.000	4.106	28.610	32.715	46.000	Pass
01(Quasi-Peak)	928.000	4.622	40.270	44.891	46.000	Pass
01(Quasi-Peak)	963.480	5.234	30.230	35.464	54.000	Pass

Figure Channel 01: Horizontal (Quasi-Peak)



Note:

1. Quasi-Peak measurements: RBW=100kHz,VBW=1MHz,Sweep: Auto.
2. “*”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.



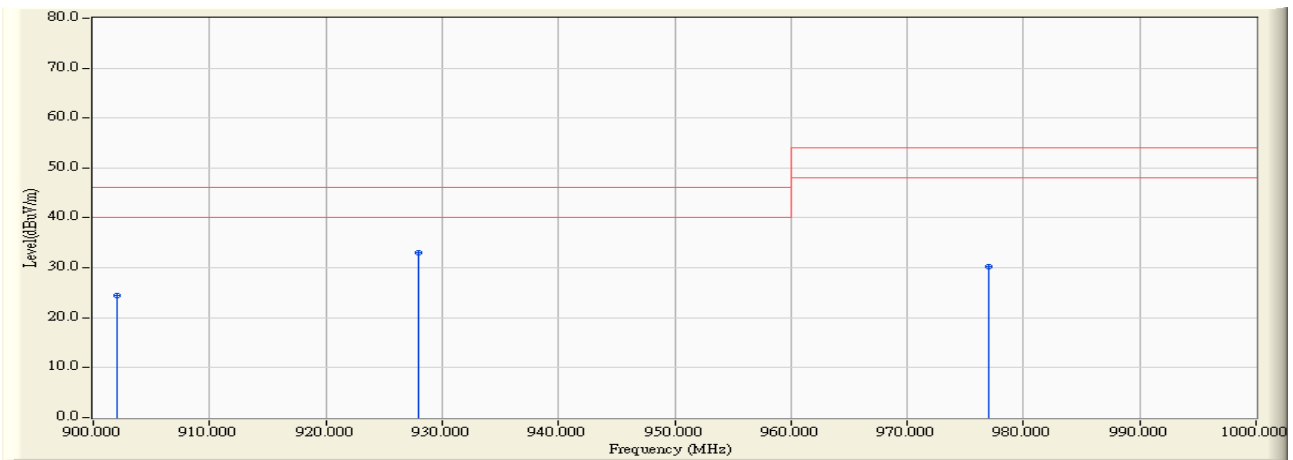
Date: 13.MAR.2009 19:28:31

Product : TR MODULE
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter (with curve antenna) (923MHz)

RF Radiated Measurement (Vertical):

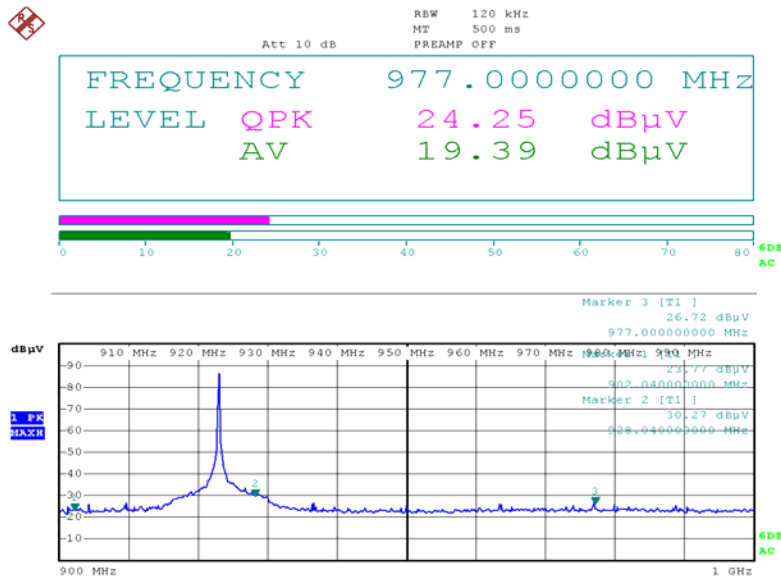
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Quasi-Peak Limit (dBuV/m)	Result
01(Quasi-Peak)	902.000	5.256	19.240	24.496	46.000	Pass
01(Quasi-Peak)	928.000	5.602	27.510	33.111	46.000	Pass
01(Quasi-Peak)	977.000	6.030	24.250	30.280	54.000	Pass

Figure Channel 01: Vertical (Quasi-Peak)



Note:

1. Quasi-Peak measurements: RBW=100kHz,VBW=1MHz,Sweep: Auto.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.



Date: 13.MAR.2009 19:30:36

5. Duty Cycle

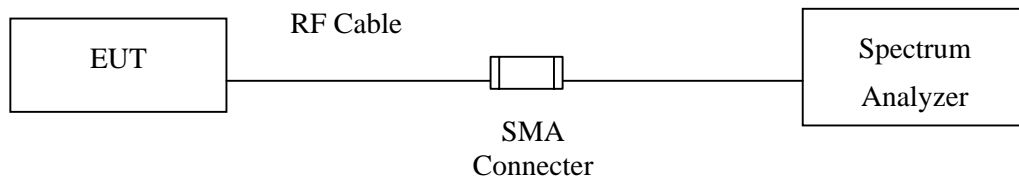
5.1 Test Equipment

The following test equipments are used during the band edge tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100339	Jun, 2008
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2008
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2008

- Note:
1. All equipments are calibrated every one year.
 2. The test equipments marked by “X” are used to measure the final test results.

5.2 Test Setup

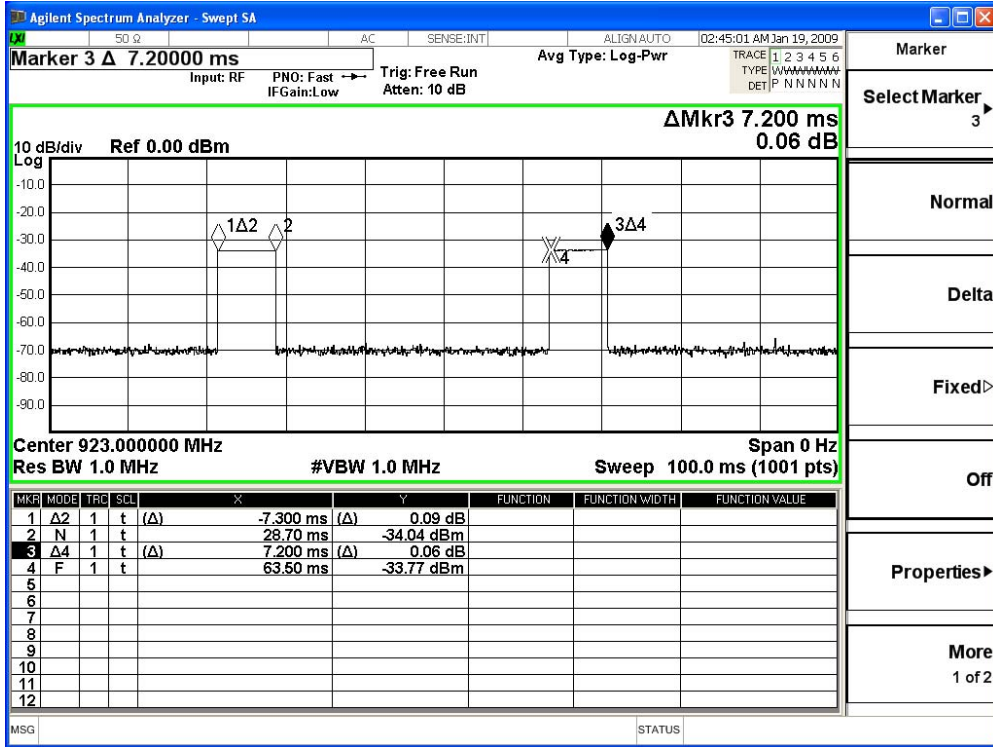


5.3 Uncertainty

± 150Hz

Test Result of Duty Cycle

Product : TR MODULE
 Test Item : Duty Cycle Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter (with winding antenna)



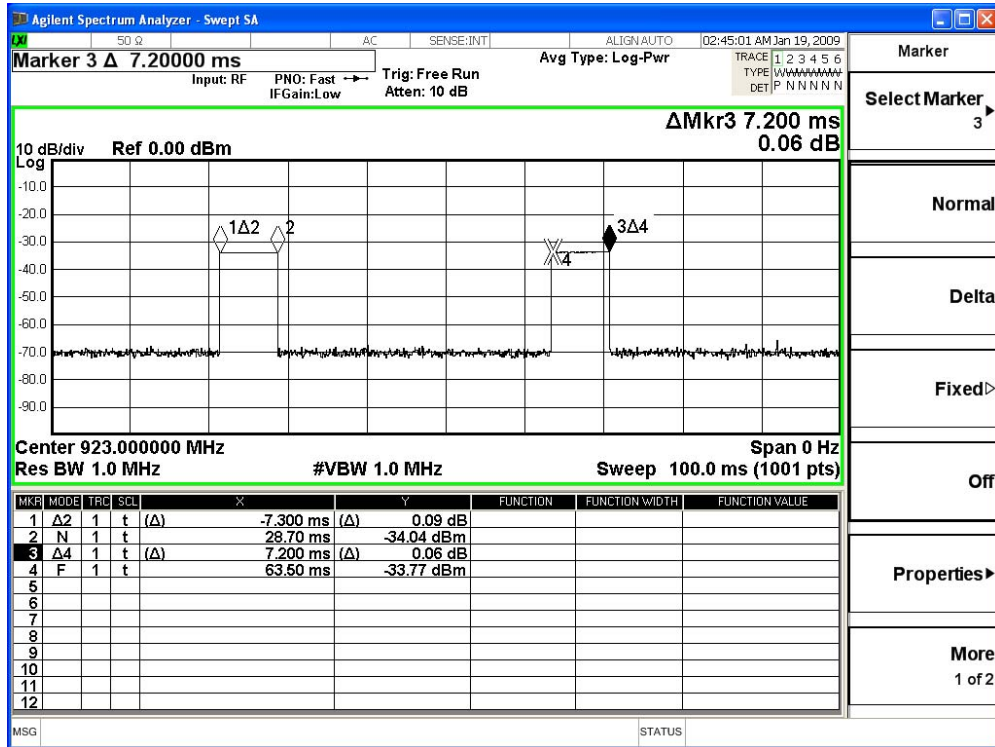
Time on of 100ms= 7.2ms+7.3ms=14.500 ms
 Duty Cycle= 14.5ms / 100ms= 0.145
 Duty Cycle correction factor= 20 LOG 0.145 = -16.773 dB

Duty Cycle correction factor	-16.773	dB
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Remark:

1. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

Product : TR MODULE
 Test Item : Duty Cycle Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter (with curve antenna)



Time on of 100ms= 7.2ms+7.3ms=14.500 ms

Duty Cycle= 14.5ms / 100ms= 0.145

Duty Cycle correction factor= 20 LOG 0.145 = -16.773 dB

Duty Cycle correction factor	-16.773	dB
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Remark:

1. If Duty Cycle is smaller than -20dB, based on FCC part15 the duty cycle correction factor is -20dB for calculating average emission.

6 EMI Reduction Method During Compliance Testing

No modification was made during testing.