

TEST REPORT

Ref. Report No.

05-341-031

Name and address of the applicant

Sinew System Co.
4F, Myeongjin B/D, 978-8, Yeongtong-dong,
Yeongtong-gu, Suwon-si, 442-812, Korea

Standard / Test regulation

FCC Part 15, Subpart B

Test result

Pass

Incoming date : July 27, 2005

Test date : September 12, 2005

Test item(s) ;

Superregenerative Receiver
(Car Alarm System)

Model/type ref. ;

CR-3000

Manufacturer ;

Sinew System Co.

Additional information ;

-Required Authorization : Certification
-FCC ID. : TIF1CROWN05-M

Issue date : September 13, 2005

This test report only responds to the tested sample and shall not be reproduced except in full without written approval of the Korea Testing Laboratory.

Tested and reported by



Jeong-Min Kim, Senior Engineer

Reviewed by



Won-Seo Cho, Telecommunication Team
Manager

KOREA TESTING LABORATORY

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. GENERAL INFORMATION

1. Grantee's Name and Mailing Address : Sinew System Co.
4F, Myeongjin B/D, 978-8, Yeongtong-dong,
Yeongtong-gu, Suwon-si, 442-812, Korea

2. Manufacturer's Name and Mailing Address : Sinew System Co.
4F, Myeongjin B/D, 978-8, Yeongtong-dong,
Yeongtong-gu, Suwon-si, 442-812, Korea

3. Equipment Descriptions

3.1 Tuning Frequency : 433.9 MHz
3.2 Detect Method : Superregenerative Detector
3.3 Power Supply : DC 12V(Car Battery)

4. Rules and Regulations : FCC Part 15, Subpart B

5. Measuring Procedure : ANSI C63.4-2003

6. Place of Measurement : Absorber-lined Room (KTL)

7. Date of Measurement

7.1 Conducted Emission : Not Applicable
7.2 Radiated Emission : September 12, 2005

. GENERAL REQUIREMENTS OF THE EUT

1. Labeling Requirement (Section 15.19)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interface, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1.1 Location of Label : User's Guide Manual

1.2 How Applied : Printed

2. Information to User (Section 15.21)

The following or similar statements were provided in the manual for user instruction.

Please refer page 1 of the attached manual for details.

CAUTION : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

3. Special Accessories (Section 15.27)

3.1 Were the special Accessories provided? [] yes, [x] no

3.2 If yes, details for the special accessories are as follows :

3.3 If yes, were the appropriate instructions provided on the first page of the text concerned with the installation of the device?

[] yes, [] no

3.4 Are these accessories provided of the type which can be readily obtained from multiple retail outlets ?

[] yes, [] no

And therefore does the manual specify what additional components or accessories are required to used in order to comply with the Rules?

[] yes, [] no

. RADIATED EMISSION MEASUREMENT (Section 15.109)

1. Test Procedure

1.1 Preliminary Testing for Reference

Preliminary testing was performed in a KTL absorber-lined room to determine the emission characteristics of the EUT. The EUT was placed on the wooden table which has dimensions of 0.8 meters in height, 1 meter in length and 1.5 meters in width. Receiving antenna (Biconi-Log antenna : 30 to 1000 MHz or Horn Antenna : 1 to 18 GHz) was placed at the distance of 1 meter from the EUT.

In order to cohere the individual components of the characteristic broadband emission from the receiver(EUT), a RF generator(CW signal) and a log-periodic antenna were used. The frequency and output level of the generator were adjusted for highest observed coherent receiver emissions on the spectrum analyzer with RF amplifier.

An attempt was made to maximize the emission level with the various configurations of the EUT. Emission levels from the EUT with various configurations were examined on a spectrum analyzer connected with a RF amplifier and graphed by a plotter.

1.2 Final Radiated Emission Test at an Absorber-Lined Room

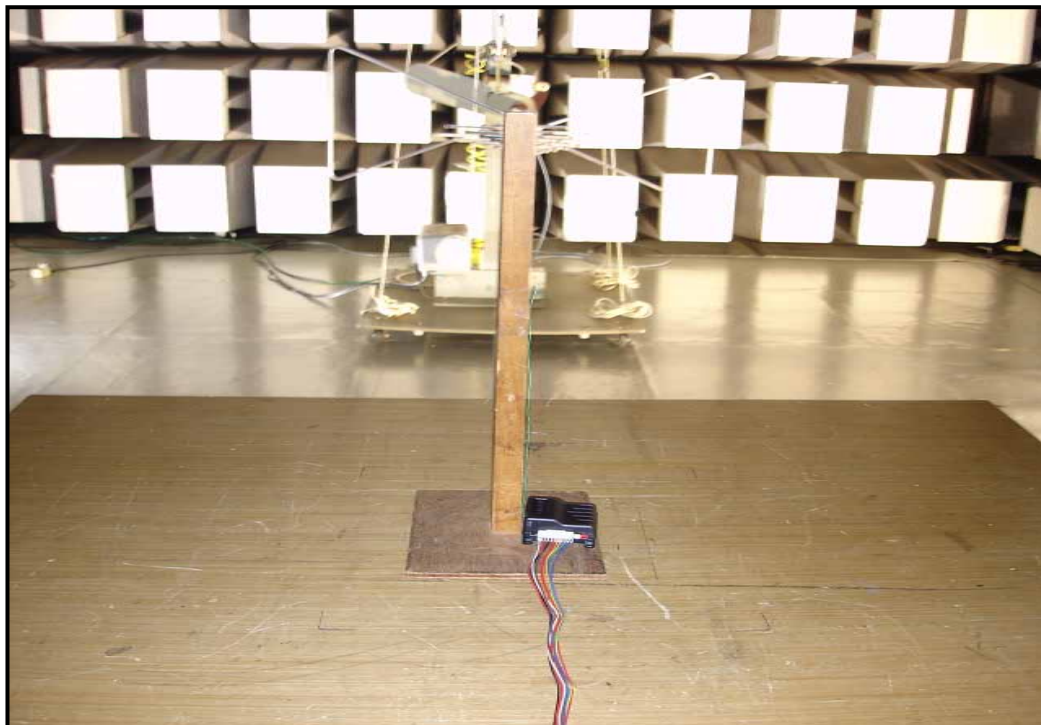
The final measurement of radiated field strength was carried out in a KTL Absorber-Lined Room that was listed up at FCC according to the "Radiated Emissions Testing" procedure specified by ANSI C63.4.

Based on the test results in preliminary test, measurement was made in same test set up and configuration which produced maximum emission level. Receiving antenna was installed at 3-meter distance from the EUT, and was connected to an EMI receiver or spectrum analyzer with a RF amplifier.

Turntable was rotated through 360 degrees and receiving antenna height was varied from 1 to 4 meters above the ground plane to read maximum emission level.

The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

2. Photograph of the test configuration



3. Sample Calculation

The emission level measured in decibels above one microvolt (dB μV) was converted into microvolt per meter ($\mu V/m$) as shown in following sample calculation.

For example :

Measured Value at	<u>437.0 MHz</u>	< 35.0 dB μV
+ Antenna Factor		16.1 dB/m
+ Cable Loss		4.0 dB
- Preamplifier		30.0 dB
- Distance Correction Factor *		0.0 dB

= Radiated Emission		< 25.1 dB $\mu V/m$ (= < 18.0 $\mu V/m$)

* Extrapolated from the measured distance to the specified distance by an inverse linear distance extrapolation.

4. Measurement Data

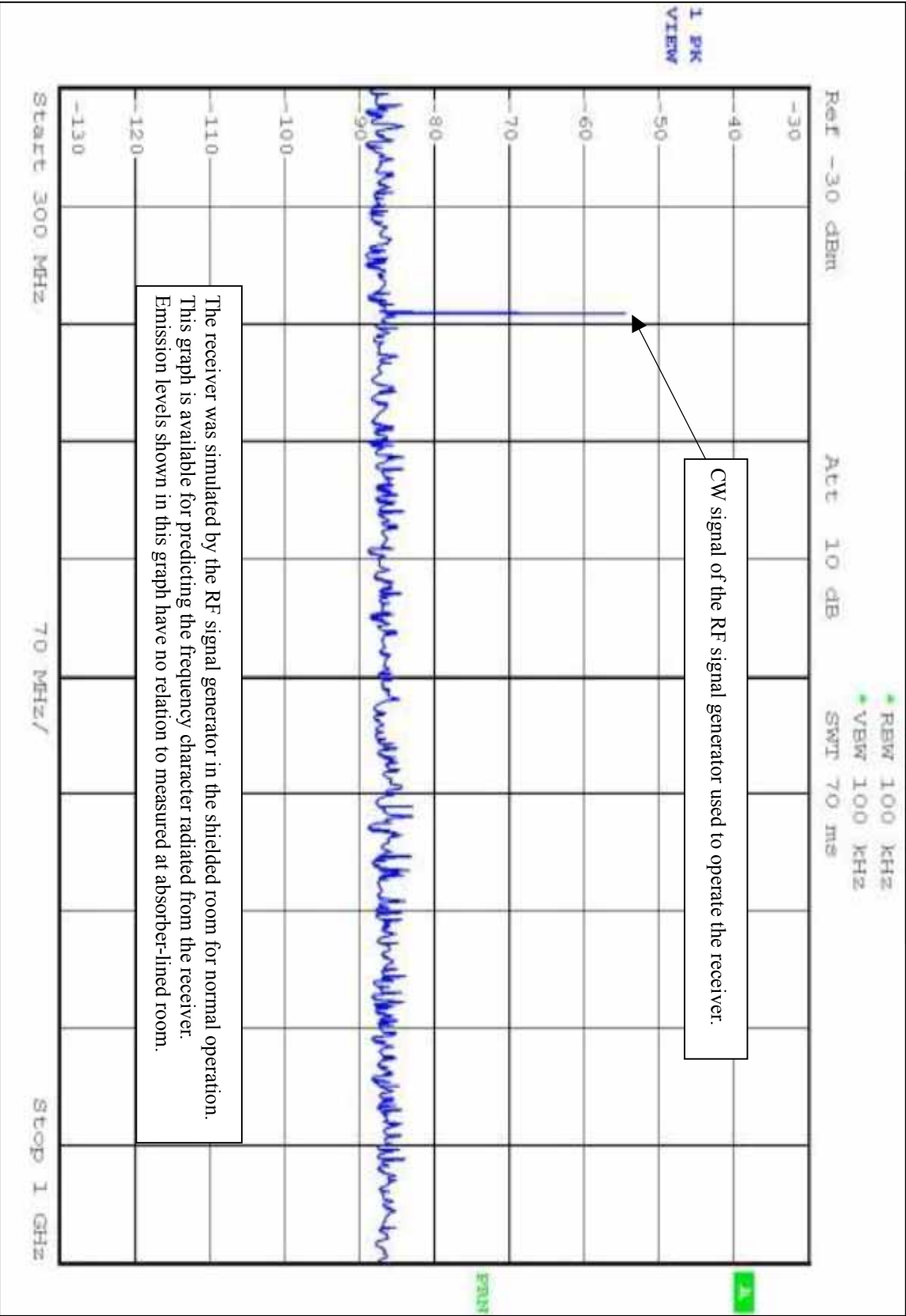
- Detect Mode and Resolution Bandwidth :

Quasi-Peak (6dB Bandwidth: 120kHz for ranges below 1GHz, 1MHz for above 1GHz)

- Measurement Distance : 3 Meter

Frequency (MHz)	* D.M.	* A.P.	Measured Value (dB μ V)	* A.F. + C.L. (dB)	* A.G. (dB)	* D.C.F. (dB)	Emission Level		Limit (μ V/m)	** Margin (dB)
							(dB μ V/m)	(μ V/m)		
437.0	P	H/V	< 35.0	20.1	-30.0	--	< 25.1	< 18.0	200	< -20.9
--	--	--	--	--	--	--	--	--	--	--
<p>Note</p> <p>The observed spectrum analyzer noise floor level with RF preamplifier (30dB) was 35.0 dBμV(below 1000 MHz) and 45.0 dBμV(above 1000MHz). And all other emissions not reported on data were more than 25dB below the permitted level.</p> <p>* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average) A.P. : Antenna Polarization (H : Horizontal, V : Vertical) A.F. : Antenna Factor C.L. : Cable Loss A.G. : Amplifier Gain D.C.F. : Distance Correction Factor < : Less than</p> <p>** Margin (dB) = Emission Level (dB) - Limit (dB)</p>										

5. Reference Data (Frequency spectrum data on radiated emission form the receiver.)



. TEST EQUIPMENT USED FOR MEASUREMENTS

<u>Equipment</u>	<u>Model No.</u>	<u>Manufacturer</u>	<u>Serial No.</u>	<u>Effective Cal. Duration</u>
[x] EMI Receiver (20 MHz-1 GHz)	ESVS30	R & S	830516/002	03/14/05-03/14/06
[x] EMI Receiver (20 Hz-7 GHz)	ESI	R & S	835571/004	10/18/04-10/18/05
[x] Spectrum Analyzer (9 kHz-26.5 GHz)	8563A	H. P.	3222A02069	03/16/05-03/16/06
[x] Spectrum Analyzer (3 Hz-50 GHz)	E4448A	Agilent	MY43360322	03/16/05-03/16/06
[x] Pre-Amplifier (0.1-3000 MHz, 30 dB)	8347A	H. P.	2834A00543	05/19/05-05/19/06
[x] Pre-Amplifier (1-26.5 GHz, 35 dB)	8449B	H. P.	3008A00302	06/14/05-06/14/06
[x] Signal Generator (250 kHz-20 GHz)	E8257D	Agilent	MY44320379	12/27/04-12/27/05
[] LISN(50 Ω , 50 μ H) (10 kHz-100 MHz)	ESH3-Z5	R & S	826789/009	05/16/05-05/16/06
[] Plotter	7470A	H. P.	3104A21292	-
[] Tuned Dipole Ant. (30 MHz-300 MHz)	VHA 9103	Schwarzbeck	-	*
[] Tuned Dipole Ant. (300 MHz-1 GHz)	UHA 9105	Schwarzbeck	-	*
[x] Log Periodic Ant. (200 MHz-1 GHz)	3146	EMCO	-	*
[x] BiConi-Log Ant. (30 MHz -1 GHz)	VULB9168	Schwarzbeck	9168-167	*
[x] Horn Ant. (1 GHz-18 GHz)	3115	EMCO	-	*
[] Horn Ant. (18 GHz-40 GHz)	3116	EMCO	-	*
[] Active Loop Ant. (9 kHz-30 MHz)	6502	EMCO	2532	*
[x] DC Power Supply	6260B	H.P.	1145A04822	-
[] Shielded Room (5.0 m x 4.5 m)	-	SIN-MYUNG	-	-

* Each set of antennas has been calibrated to ensure correlation with ANSI C63.5 standard. The calibration of antennas is traceable to Korea Standard Research Institute(KSRI)