ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR SUPERHETRODYNE RECEIVER

Test report file number	**: E031R-036**
Applicant	**: BANGSAN TECHNOLOGIES, INC.**
Address	**: RM 401 1486-9, Seocho-Dong, Seocho-Gu, Seoul, Korea**
Manufacturer	**: Dae Kyong ENG.**
Address	**: RM 201 237-98, Gasan-Dong, Geumcheon-Gu, Seoul, 137-070, Korea**
Type of Equipment	**: REMOTE CONTROLLER for EMERGENCY SITUATION**
FCC ID	**: QU5SEVARE-R00**
Model / Type No.	**: SEVA RE-R00**
Serial number	**: N/A**
Total page of Report	**: 9 pages (including this page)**
Date of Incoming	**: Auguat 24, 2002**
Date of issuing	**: January 16, 2003**

SUMMARY

The equipment complies with the regulation; **PART 15 Subpart B §15.101, All Other Receiver.**

This test report contains only the result of a single test of the sample supplied for the examination. It is not a generally valid assessment of the features of the respective products of the mass-production.

Prepared by:
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Reviewed by:
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EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

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1. VERIFICATION OF COMPLIANCE

APPLICANT	: BANGSAN TECHNOLOGIES, INC.
ADDRESS	: RM 401 1486-9, Seocho-Dong, Seocho-Gu, Seoul, Korea
CONTACT PERSON	: Mr. D. I. Lee / Manager
TELEPHONE NO	: 82-2-585-0971
FCC ID	: QU5SEVARE-R00
MODEL NO/NAME	: SEVA RE-R00
SERIAL NUMBER	: N/A
DATE	: January 16, 2003

DEVICE TYPE	UNINTENTIONAL RADIATOR
E.U.T. DESCRIPTION	REMOTE CONTROLLER for EMERGENCY SITUATION -SUPERHETRODYNE RECEIVER
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/1992
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART (S)	PART 15 §15.101, All Other Receiver
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. GENERAL INFORMATION

2.1 Product Description

The BANGSAN Technologies Inc., Model Remote controller (referred to as the EUT in this report) is a receiver that is fixed inside the controller for Weapon Detector System that distinguishes weapons such as rifles, handguns & sizable knives from harmless metal device, such as cellular phones, pocket organizers, keys, beverage cans & coins. The receiver receives the signal from the transmitter, Model: SEVA RE-T00, FCC ID: QU5SEVARE-T00 which was manufactured by Dae Kyung ENG. The product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	N/A
RECEIVING FREQUENCY	447.725 MHz
SENSITIVITY	Min –98dBm
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	24.576, 14.31818
RATED SUPPLY VOLTAGE	DC 5V
NUMBER OF LAYERS	2 LAYERS

Model Differences:

-. No other model differences have been mentioned.

2.2 Related Submittal(s) / Grant(s)

Original submittal only.

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2.3 Test System Details

The EUT was tested with the following all equipment used in the tested systems are:

Model	Manufacturer	FCC ID	Description	Connected to
SEVA RE-R00	BANGSAN TECHNOLOGIES, INC.	QU5SEVARE-R00	RECEIVER (EUT)	DC Power
N/A	N/A	N/A	DC Power Supply	EUT
8657A	HP	N/A	Signal Generator	N/A

2.4 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4/1992. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Myun, Gwangju-Kun, Gyunggi-Do 464-080 Korea. Description details of test facilities were submitted to the Commission on October 02, 2002. (Registration Number: 529838)

3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
MAIN BOARD	DAE KYONG ENG.	BS-SLIM	QU5SEVARE-R00

3.2 EUT exercise Software

Set the signal generator to transmit at 447.70 MHz and then the EUT receives the signal.

To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes.

3.3 Equipment Modifications

None

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3.4 Configuration of Test System

Line Conducted Emission Test:

It is not need to test this requirement, because the power of the EUT supplies from a car battery.

Radiated Emission Test:

Preliminary radiated emissions tests were conducted using the procedure in ANSI C63.4/1992, 8.3.1.1 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meters open area test site.

Coherent Test:

During Radiated Emission Tests, H.P. signal generator model no: 8657A was used to radiate an unmodulated CW signal to the EUT at 447.70 MHz in order to cohere the individual components of the characteristic broadband emissions from EUT.

Antenna Power Conduction Test:

This equipment was only with a permanently attached antenna, so the radiated emission measurement was performed with the antenna attached.

4. PRELIMINARY TEST

4.1 AC Power line Conducted Emissions Tests

During Preliminary Tests, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
RX mode	X

4.2 Radiated Emissions Tests

During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
RX mode	X

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5. FINAL RESULT OF MEASURMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level.

5.1 Conducted Emission Test

Humidity Level : 40% Temperature : 19°C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107

Type of Test : CLASS B

Result : PASSED BY –11.04 dB at 12.145 MHz when used with Peak detector mode

EUT : REMOTE CONTROLLER for EMERGENCY SITUATION Date : January 11, 2002

Operating Condition : Rx Mode

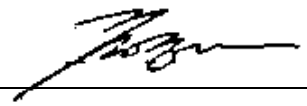
Detector : CISPR Quasi-Peak and Average(6 dB Bandwidth: 9 kHz)

Frequency (MHz)	Line	Quasi-Peak (dBuV)			Margin (dB)	Average (dBuV)		Margin (dB)
		Emission Level	Detector Mode	Limits		Emission level	Limits	
0.17	N	40.51	P	64.96	-24.45	-	-	-
0.34	N	40.35	P	59.20	-18.85	-	-	-
1.015	H	39.83	P	56.00	-16.17	-	-	-
1.675	H	37.27	P	56.00	-18.73	-	-	-
2.31	H	35.86	P	56.00	-20.14	-	-	-
12.145	N	48.96	P	60.00	-11.04	36.56	50.00	-13.65
27.00	N	29.98	P	60.00	-30.02	-	-	-

Line Conducted Emission Tabulated Data

Remark : "H": Hot Line, "N": Neutral line, "P": Peak detector, "Q.P.": Quasi-Peak Detector Mode

See Appendix I for an overview sweep performed with peak and average detector.



Tested by: Young-Min, Choi / Project Engineer

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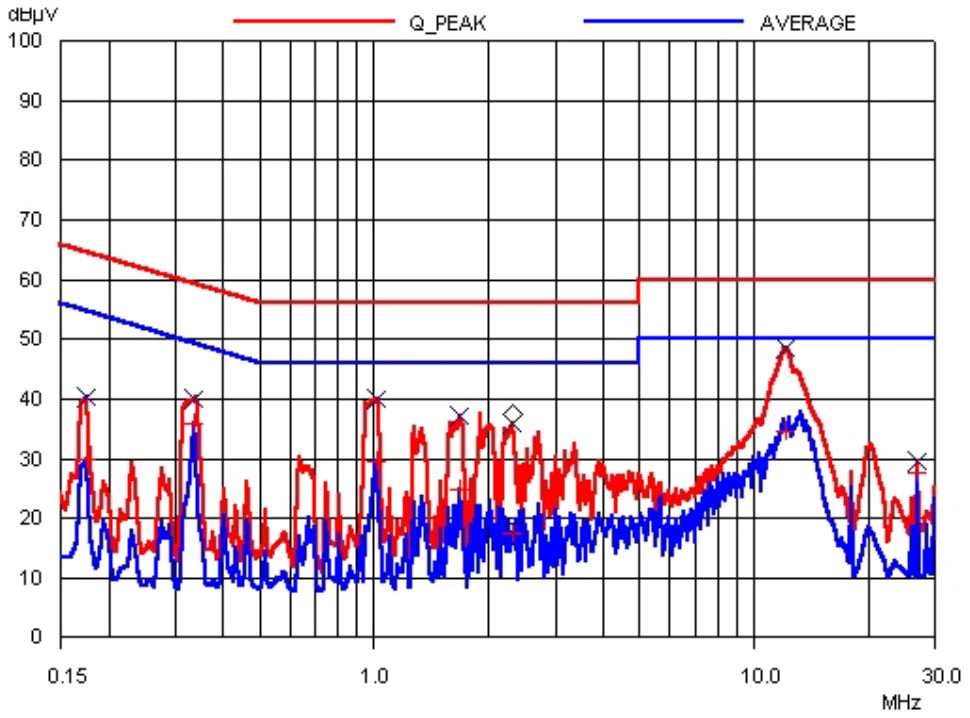
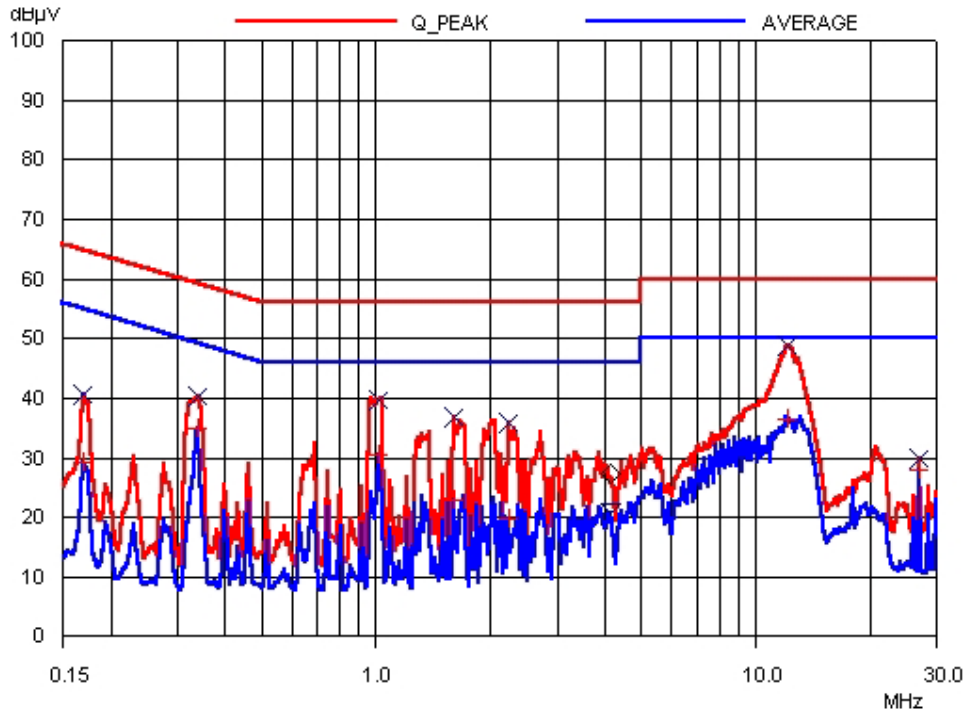


HOT LINE



NEUTRAL LINE

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5.2 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 47 % Temperature : 13 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B (Section: 15.109)

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)

Type of Test : Unintentional Radiator

Result : PASSED BY –6.09 dB at 437.10 MHz

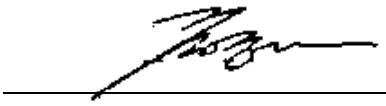
EUT : REMOTE CONTROLLER for EMERGENCY SITUATION Date: December 27, 2002

Operating Condition : RX mode

Distance : 3 Meter

Radiated Emission		Ant	Correction Factors		Total	FCC LIMIT	
Freq. (MHz)	Amp. (dBuV)	Pol.	Antenna (dBuV/m)	Cable (dB)	Amplitude (dBuV/m)	Limit (dBuV/m)	Margin (Db)
145.90	21.20	H	13.01	1.30	35.51	43.50	-7.99
291.90	20.00	H	14.26	1.84	36.10	46.00	-9.90
389.50	10.50	V	15.61	2.10	28.21	46.00	-17.79
437.10	21.20	H	16.46	2.25	39.91	46.00	-6.09
583.20	5.60	V	18.51	2.83	26.94	46.00	-19.06
876.20	5.10	H	22.48	3.80	31.38	46.00	-14.62
Other frequencies are more than 20dB below the limit up to 2GHz.							

Radiated Emission Tabulated Data



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6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+	Meter reading	(dBuV)
+	Cable Loss	(dB)
+	Antenna Factor (Loss)	(dB/meter)
=	Corrected Reading	(dBuV/meter)
-	Specification Limit	(dBuV/meter)
=	dB Relative to Spec	(+/- dB)

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7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	NOV/02	12MONTH	■
2.	Test receiver	R/S	ESHS10	834467/007	APR/02	12MONTH	■
3.	Spectrum analyzer	HP	8567A	3021A00773	JUL/02	12MONTH	■
4.	RF preselector	HP	85685A	3107A01268	JUL/02	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01550	JUL/02	12MONTH	■
6.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	JUL/02	12MONTH	■
7.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	JUL/02	12MONTH	■
8.	Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA9120D294	JUN/02	12MONTH	■
9.	LISN	EMCO	3825/2	9109-1867 9109-1869	AUG/02	12MONTH	■
10.	RF Amplifier	HP	8347F	3307A01354	JUN/02	N/A	
11	Spectrum Analyzer	HP	8564E	3650A00756	JUL/02	12MONTH	■
12.	Spectrum Analyzer	HP	8566B	3407A08547	AUG/02	12MONTH	
13.	Plotter	HP	7475A	30052 22986	N/A	N/A	■
14.	Position Controller	HD	HD100	100/788	N/A	N/A	■
15.	Turn Table	HD	DS420S	N/A	N/A	N/A	■
16.	Antenna Master	HD	HD240	N/A	N/A	N/A	■
17.	Isolation Transformer	Digitek Power	DPT	DPF-22027	N/A	N/A	■
18.	Isolation Transformer	Digitek Power	DPT	DPF-22028	N/A	N/A	■
19.	Frequency Converter	Digitek Power	VFS/DEFC	N/A	N/A	N/A	■

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