Korea Technology Institute Co., Ltd.

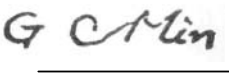
Test Report

Test Report No.:	**KTI02EF05002**		
Registration No.:	**99058**		
Applicant:	**RF TECH CO., LTD.**		
Applicant Address:	**3F DuckWoo B/D, 69-4 Munjeong-Dong, Songpa-Ku, Seoul, Korea**		
Product:	**Paging Receiver**	**Frequency Range:**	**929 –932MHz**
FCC ID:	**QERRFD-1000**	**Model No.**	**RFD-1000**
Receipt No.:	**02-0430**	**Date of receipt:**	**April 27, 2002**
Date of Issue:	**May 18, 2002**		
Testing location	**Korea Technology Institute Co., Ltd.** **51-19, Sanglim3-Ri, Docheok-Myeun, Gwangju-Shi, Gyeungki-Do, Korea**		
Test Standards:	**ANSI. C63.4 : 1992**		
Rule Parts:	**FCC Part 15, Subpart B**		
Equipment Class:	**Paging Receiver**		
Test Result:	**The above mentioned product has been tested and passed.**		

Tested by: M. H. Jang/ Engineer

Signature Date

Approved by: G. C. Min/ President



Signature Date

Other Aspects :	
Abbreviations :	**• OK, Pass=passed • Fail=failed • N/A=not applicable**

- **This test report is not permitted to copy partly without our permission.**
- **This test result is dependent on only equipment to be used.**
- **This test result is based on a single evaluation of one sample of the above mentioned.**
- **This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S Government.**
- **We certify this test report has been based on the measurement standards that is traceable to the national or international standards.**

Contents

List of Tables

List of Photographs

1. General

This equipment has been shown to be capable of compliance with the applicable technical standards and was tested in accordance with the measurement procedures as indicated in this report.

We attest to the accuracy of data. All measurements reported herein were performed by Korea Technology Institute Co., LTD. And were made under Chief Engineer's supervision.
We assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

2. Test Site

Korea Technology Institute Co., LTD

2.1 Location

51-19, Sanglim3-Ri, Docheok-Myeun, Gwangju-Shi, Gyeungki-Do, Korea

The Test Site is in compliance with ANSI C63.4/1992 for measurement of radio Interference.

2.2 List of Test and Measurement Instruments

Table 1 : List of Test and Measurement Equipment

- **Conducted Emissions**

Kind of Equipment	Type	S/N	Calibrated until
Spectrum Analyzer	R3261C	61720417	11.2002
Field Strength Meter	ESPC	832827/011	9.2002
LISN	KNW407	8-1157-2	10.2002
LISN	ESH2-Z5	8254601019	6.2002
Conducted Cable	N/A	N/A	11.2002

- **Radiated Emissions**

Kind of Equipment	Type	S/N	Calibrated until
Field Strength Meter	ESPC	832827/011	9.2002
Spectrum Analyzer	R3261C	61720417	11.2002
Pre Amplifier	HP 8447D	2944A06874	11.2002
BiconiLog Antenna	EMCO 3142B	1705	12.2002
Bilog Antenna	SchaffnerCBL6140A	1217	5.2002
Open Site Cable	N/A	N/A	11.2002
Antenna Mast	DETT-03	N/A	N/A
Antenna & Turntable controller	DETT-04	91X519	N/A
Horn Antenna	EMCO 3115	6443	6.2002
Signal generator	HP 8657A	3430U0710	5.2002

2.3 Test Date

Date of Application : April 27, 2002

Date of Test : May 8, 2002

2.4 Test Environment

See each test item's description.

3. Description of the tested samples

The EUT is Paging Receiver.

3.1 Rating and Physical Characteristics

- **Frequency range : 929□932MHz**
- **Using battery:1.5VDC(AAA size Alkaline)**
- **Bit Rate(s): 1600/3200/6400 bps**
- **Local Oscillator(s): 75.633MHz**
- **Antenna: Loop**
- **Receiving System: Double superheterodyne, Crystal**
- **Signal System: FLEX**
- **Dimensions: 76□53□18 mm**
- **Weight: 70g(including battery)**

3.2 Submitted Documents

- **User's Guide**
- **Block Diagram**

4. Measurement Conditions

Testing Input Voltage : DC 1.5V(AAA size)

4.1 Modes of Operation

The EUT was set to the normal receiving mode during the radiated emission testing in a manner similar to typical use. The two typical frequencies as bottom and top were tunned for the testing.

4.2 Uncertainty

1) Radiated disturbance

UC (Combined standard Uncertainty) = ± 1.8dB

Expanded uncertainty U=KUc

K = 2

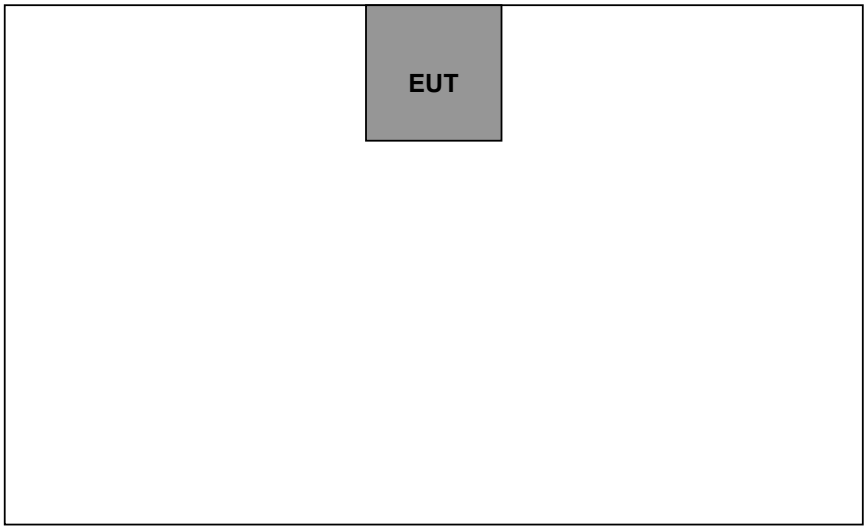
U = ± 3.6dB

2) Conducted disturbance

UC = ± 0.88dB

U = KUc=2xUc = ± 1.8dB

4.3 Test setup



5. Emission Test

5.1 Conducted Emissions

Not applicable. The EUT is only a battery operated device.

5.2 Radiated Emissions

Result: **Pass**

Preliminary measurements were made indoors at 1 meter using broadband antennas, broadband Amplifier, and spectrum analyzer to determine the frequency producing the maximum EME. Appropriate precaution was taken to ensure that all EME from the EUT were maximized and Investigated. The system configurations, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna were noted for each frequency found.
The spectrum was scanned from 30 to 1000 MHz using BiconiLog Antenna.
Above 1 GHz, linearly polarized double ridge horn antennas were used.

Final measurements were made outdoors at 3meter test range using EMCO antennas. The test equipment was placed on a wooden table situated on a 4x4 meter area adjacent to the measurement area. Turntable was to protect from weather in the dome that made with Polyethylene film. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined and investigated using EMI Field Intensity Meter. The detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120kHz or 1 MHz depending on the frequency or type or signal.

The EUT, support equipment and interconnecting cables were re-configured to the set-up producing the maximum emission for the frequency and were placed on top of a 0.8meter high non-metallic 1 x 1.5 meter table.
The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each EME emission. The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission through three orthogonal positions. Each emission was maximized by: varying the mode of operation or resolution; clock or data exchange speed, and/or support equipment, if applicable; and changing the polarity of the antenna, whichever determined the worst-case emission.
Photographs of the worst-case emission can be seen in photograph of radiated emission test.

Table 2 : Test Data, Radiated Emissions (Test Frequency : 929.2125MHz)

FREQ. (MHz)	POL	Height [m]	Azimuth [°]	(1) Reading (dBμV)	(2) AFCL (dB/m)	(3) Actual (dBμV/m)	(4) Limit (dBμV/m)	(5) Margin (dB)
75.63	H	3.23	70	11.2	14.7	25.9	43.5	-17.9
151.76	H	2.85	120	4.8	18.1	22.9		-20.6
227.39	H	2.23	130	4.4	19.9	25.3	46	-20.7
303.03	-	-	-	-	-	-		-
-								

Table. Radiated Measurements at 3-meters

Notes:

1. The antenna is manipulated through typical positions and/or three orthogonal positions during the tests.
2. The emissions are maximized by changing polarity of the antenna.
3. All other emissions not reported above 300MHz were more than 25dB below the permitted limit.
4. The EUT is supplied with a new/fully charged battery.
5. AFCL = Antenna factor and cable loss
6. H = Horizontal, V = Vertical Polarization
7. HA=Horn Antenna used above 1GHz Limit 54.0 dBμV above 1GHz
8. The limit for Class B digital device is 100uV(40dBuV) from 30MHz to 88MHz, 150 uV (43.5dBuV) from 88MHz to 216MHz, 200uV(46dBuV) from 216MHz to 960MHz and 500 uV (54dBuV) from above 960MHz.
9. Measurements using CISPR quasi-peak mode.

♠ Margin Calculation

(5)Margin = (4)Limit – (3)Actual

[(3)Actual = (1)Reading + (2)AFCL]

Table 3 : Test Data, Radiated Emissions (Test Frequency : 931.9625MHz)

FREQ. (MHz)	POL	Height [m]	Azimuth [°]	(1) Reading (dBμV)	(2) AFCL (dB/m)	(3) Actual (dBμV/m)	(4) Limit (dBμV/m)	(5) Margin (dB)
75.88	H	3.54	90	12.4	14.7	27.1	43.5	-16.4
151.76	H	3.22	800	4.6	18.1	23.7		-19.8
227.64	H	2.28	120	4.2	19.9	24.1	46	-21.9
303.52	-	-	-	-	-	-		-
-								

Table. Radiated Measurements at 3-meters

Notes:

1. The antenna is manipulated through typical positions and/or three orthogonal positions during the tests.
2. The emissions are maximized by changing polarity of the antenna.
3. All other emissions not reported above 300MHz were more than 25dB below the permitted limit.
4. The EUT is supplied with a new/fully charged battery.
5. AFCL = Antenna factor and cable loss
6. H = Horizontal, V = Vertical Polarization
7. HA=Horn Antenna used above 1GHz Limit 54.0 dBμV above 1GHz
8. The limit for Class B digital device is 100uV(40dBuV) from 30MHz to 88MHz, 150 uV (43.5dBuV) from 88MHz to 216MHz, 200uV(46dBuV) from 216MHz to 960MHz and 500 uV (54dBuV) from above 960MHz.
9. Measurements using CISPR quasi-peak mode.

♠ Margin Calculation

(5)Margin = (4)Limit – (3)Actual

[(3)Actual = (1)Reading + (2)AFCL]