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NVLAP Lab code: 200068-0
ISO/IEC 17025:1999, ISO 9002:1994

FCC CERTIFICATION RADIO MEASUREMENT TECHNICAL REPORT

On Model Name: UHF Reader

Model Numbers : RFS2212 / RFS2214

Trademark : Raifu

FCC ID : UAWRAIFU200691501

Prepared for Jiangsu Raifu Intelligent Tech. Co., Ltd.

According to FCC Part 15 (2006), Subpart C

Test Report #:	*JIA-0605-0396SH-FCC*
Prepared by:	*Chris Huang*
Reviewed by:	*Harry Zhao*
QC Manager:	*Paul Chen*

Test Report Released by: Paul J. Chen _____ *2006, June 14*

Paul Chen *Date*

Test Location

Tests performed at EMC Compliance Management Group (China) in a Certified ANSI Semi-Anechoic Chamber and Shielded Room performed testing.

Test Site Location:	*Jiangsu Electronic Products Supervision & Inspection Institute No 107 Ge lane ZhongQiao WuXi JiangSu, China*
Tel:	*86-510-85140038*
Fax:	*86-510-85140037*
Registration Number:	*399439*

Accreditation Bodies

EMC Compliance Management Group is a fully accredited Test Laboratory for ITE, ISM and Telecommunications Products.

In compliance with the site registration requirements of Section 2.948 of the FCC Rules to perform EMI measurements for the general public.

Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code # 200068-0.

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Opinions and Interpretations

This test report relates to the abovementioned equipment under test (EUT). Without the permission of EMC Compliance Management Group Test Lab this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. The manufacturer has sole responsibility of continued compliance of the device.

Statement of Measurement Uncertainty

The data and results referenced in the document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation.

Administrative Data

Test Sample : UHF Reader

Model Numbers : RFS2212 / RFS2214

Models Tested : RFS2212 / RFS2214

Trade Mark : Raifu

Date Tested : 2006, May 24 and June 28

Applicant : Jiangsu Raifu Intelligent Tech. Co., Ltd.
Sanbao Tech Park, 1 Huangzhuang Road,
Maqun Tech Park, Qixia District, Nanjing,
China

Telephone : 86-25-84356665

Fax : 86-25-84356669

Manufacturer : Jiangsu Raifu Intelligent Tech. Co., Ltd.
Sanbao Tech Park, 1 Huangzhuang Road,
Maqun Tech Park, Qixia District, Nanjing,
China

EUT Description

Jiangsu Raifu Intelligent Tech. Co., Ltd. Model numbers RFS2212 / RFS2214 (referred to as the EUT in this test report) are UHF Readers. RFS2212 has 2 antennas; RFS2214 has 4 antennas.

The antennas will be panel antennas, and the EUT must be professionally installed.

The technical parameters of the reader and the antenna are as below:

Name	*UHF Reader*
Model Numbers	*RFS2212/ RFS2214*
Frequency	*902.6 ~ 927.4 MHz*
Hopping Channels	*63*
Channel Spacing	*400 KHz*
Channel Dwell Time	*< 0.4 Seconds*
RF Transmitter	*20~ 30dBm*
Modulation Method	*ASK*
Power Consumption	*15 Watts*
Communications Interface	*RS-232, RS485*
Inputs/Outputs	*2 Weigand port,2 Trigger input,2 relay switch,2 com port, power*
Antenna Port	*2 coax antenna (RFS2212), 4 coax antenna (RFS2214)*
Dimensions	*(L) 21 cm (8.2 in) x (W) 20 cm (7.9 in) x (D) 5 cm (2 in)*
Weight	*Approximately 1.5 kg*
Operating Temperature	*0˚C to +50˚C (+32 ˚F to +122˚F)*

Panel antenna:

Name	*Panel antenna*
Model Number	*RFA-900E*
Frequency	*902MHz ~ 928 MHz*
Polarization	*Circular*
Horizontal 3dB Beamwidth	*62˚*
Vertical 3dB Beamwidth	*65˚*
Gain	*5.75dBi*
VSWR	*<1.3*
Input Impedance	*50 Ω*
Maximum Input Power	*200W*
Lightning Protection	*Direct Ground*
Dimensions (L×W×H)	*280x200x75(mm)*
Weight of Antenna	*2 kg*
Radome Material	*UPVC*

Type of Deriver

Model RFS 2212 and RFS 2214 are identical except the antenna ports: the RFS 2212 has 2 antenna ports and the RFS 2214 has 4 antenna ports, the only difference is the antenna switch.

Test Summary

The Electromagnetic Compatibility requirements on TAT-E for this test are stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.

EMC Test Items *Reference FCC Part 15 (2006), Subpart C*			
Specification	***Description***	***Test Results***	***Remark***
FCC Part 15.203	*Antenna Requirement*	*Compliance*	*See the antenna statement.*
FCC Part 15.205	*Restricted Band of Operation*	*Compliance*	*Refer to Attachment 1*
FCC Part 15.209	*Radiated Emission Limits*	*Compliance*	*Attachment 1*
FCC Part1.1307(b)(1) &2.1093	*RF Exposure*	*Compliance*	*Attachment 2*
FCC Part 15.207	*Conducted Limits*	*Compliance*	*Attachment 3*
FCC Part 15.247(a)	*Bandwidth*	*Compliance*	*Attachment 4*
FCC Part 15.247(d)	*Emissions at Antenna Port*	*Compliance*	*Attachment 5*
FCC Part 15.247 (b) (2)	*Maximum Peak Power*	*Compliance*	*Attachment 6*
FCC Part 15.247(d)	*Band Edge*	*Compliance*	*Attachment 7*
FCC Part 15.247(a) (1) (i)	*Number of Hopping Channels*	*Compliance*	*Attachment 8*
FCC Part 15.247(a) (1)	*Hopping Channel Separation*	*Compliance*	*Attachment 9*
FCC Part 15.247(a) (1) (i)	*Time of Occupying*	*Compliance*	*Attachment 10*

Test Mode Justification

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 interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Antenna Statement

Statement:
The antenna must be professionally installed. Only panel antenna described in the EUT description will be used with the reader.
Professional installers will be provided with antenna installation instructions.

EUT Exercise Software

Software "Reader 2200" was used in during the test.

Equipment Modification

Any modifications installed previous to testing by Jiangsu Raifu Intelligent Tech. Co., Ltd. will be incorporated in each production model sold or leased in United States.

There were no modifications installed by EMC Compliance Management Group (China) test personnel.

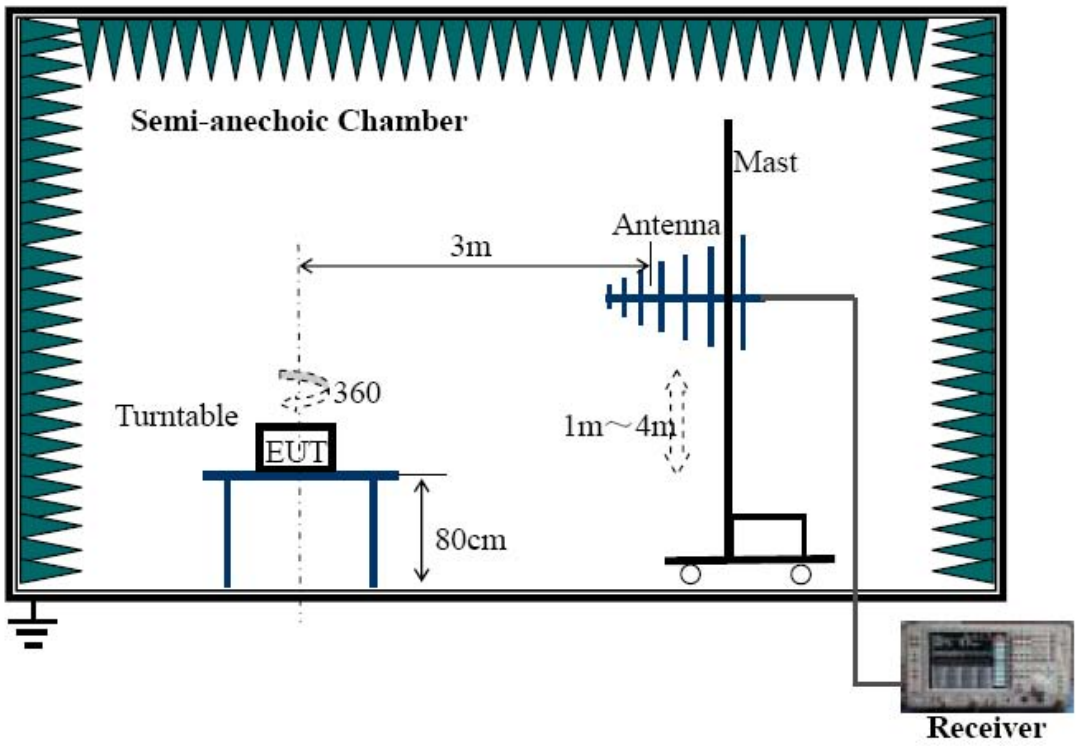
Test System Details

EUT	
Model Numbers:	RFS2212 / RFS2214
Models Tested:	RFS2212 / RFS2214
Trademark::	Raifu
Serial Number:	Engineering Sample
Input Voltage:	120V~ 60Hz
Description:	UHF Reader
Manufacturer:	Jiangsu Raifu Intelligent Tech. Co., Ltd.

Support Equipment				
Description	Model Number	Serial Number	Manufacturer	Power Cable Description (Meters)
NOTEBOOK	EVO N600C	3J26KZG1C17Y	COMPAQ	1.8M UNSHIELDED

Cable Description
None

Configuration of Tested System



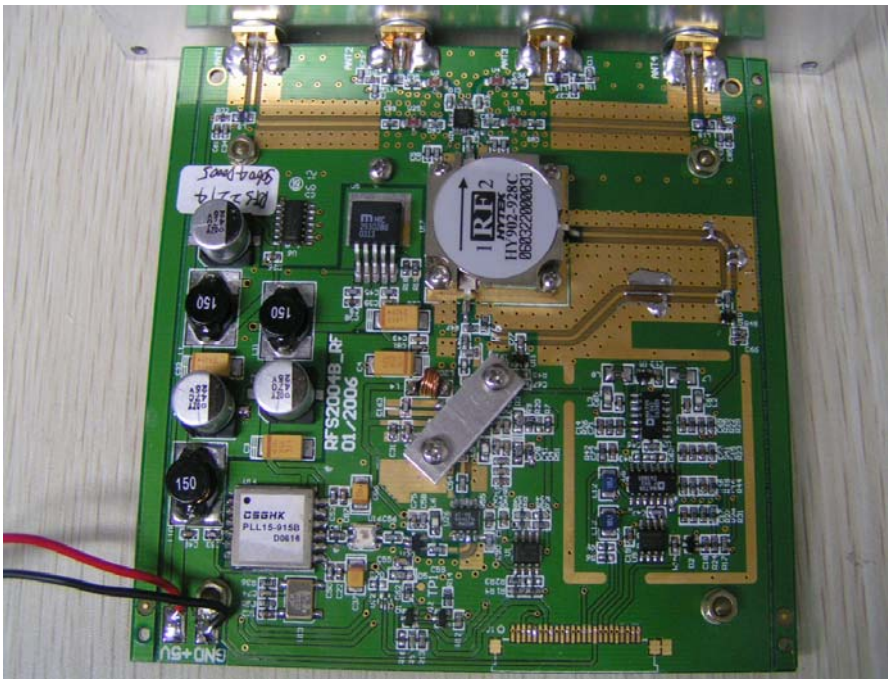
EUT Sample Photos of RFS2214 / RFS2212

RFS2214

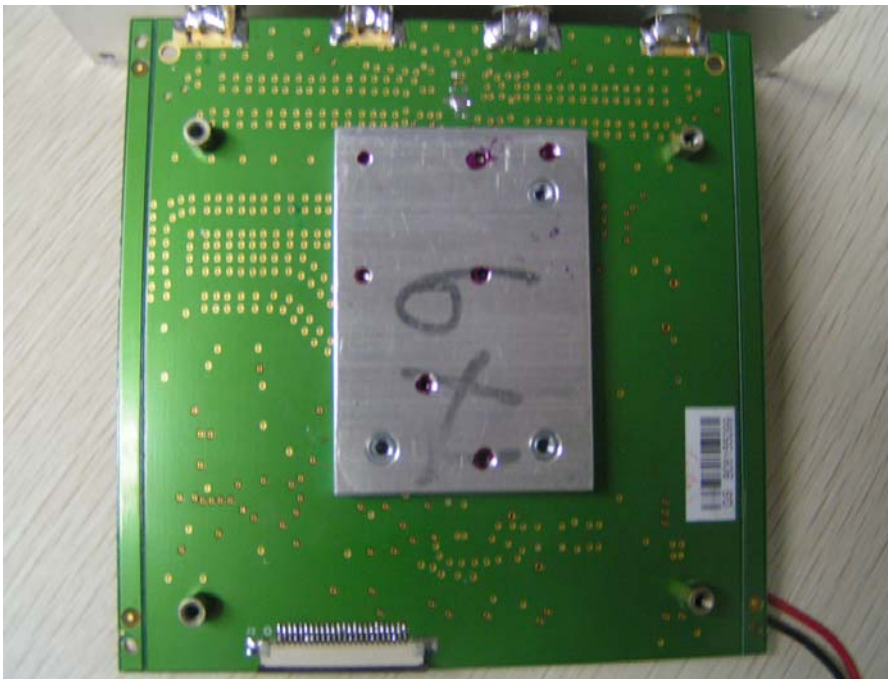
Front View

Rear View

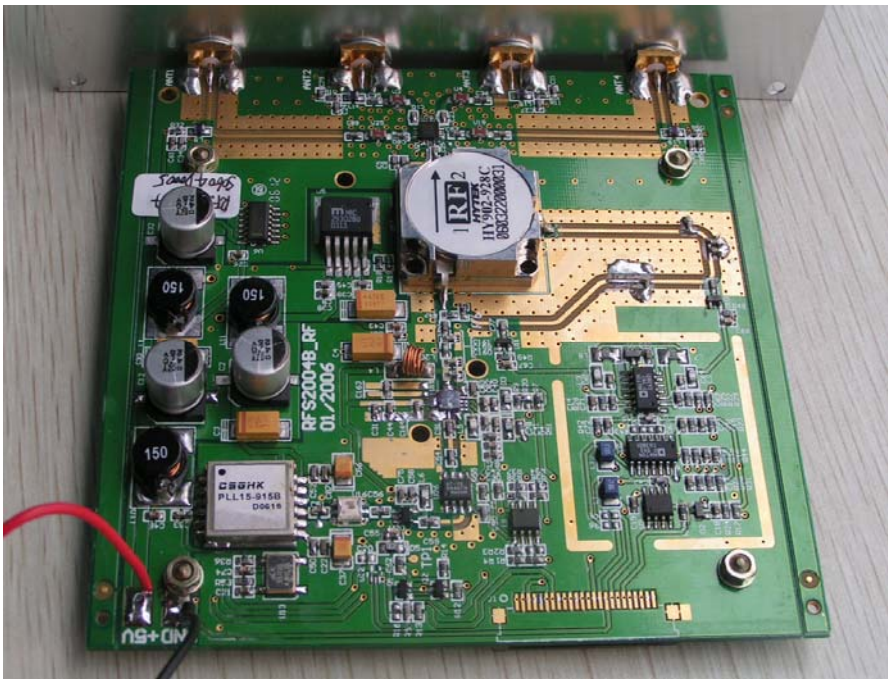
Uncovered



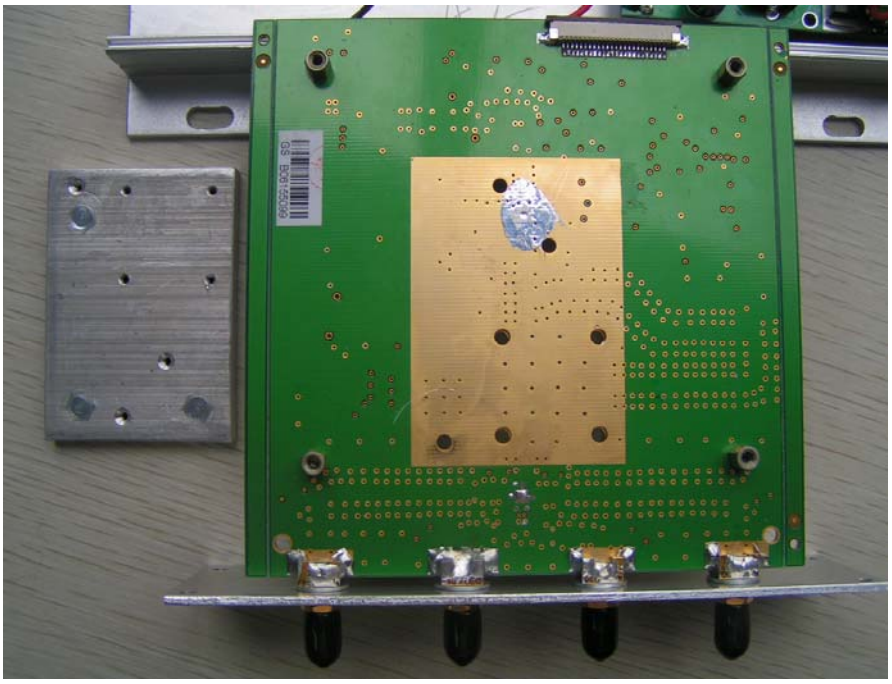
Main Board #1 Front View



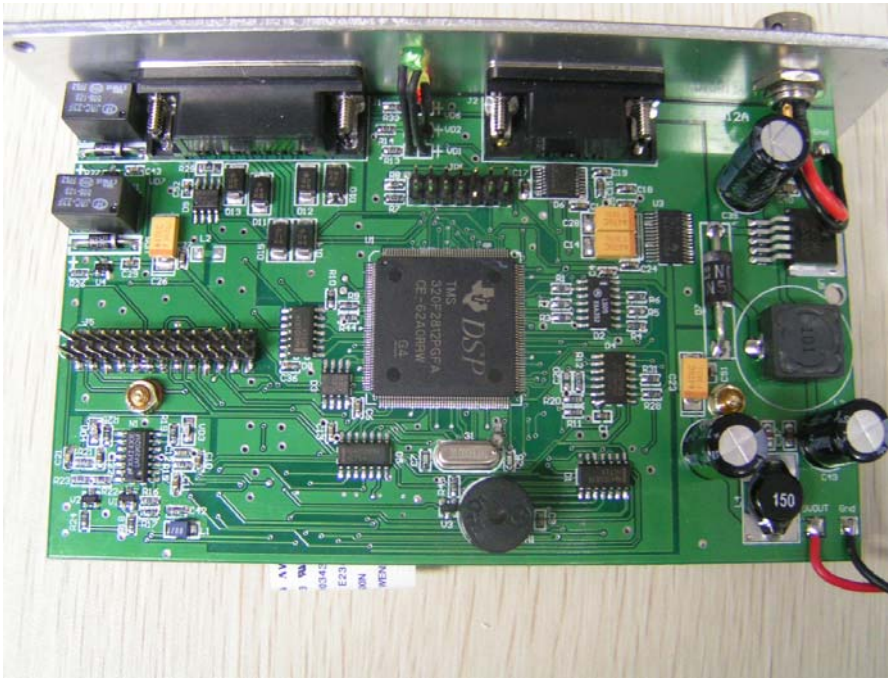
Main Board #1 Rear View



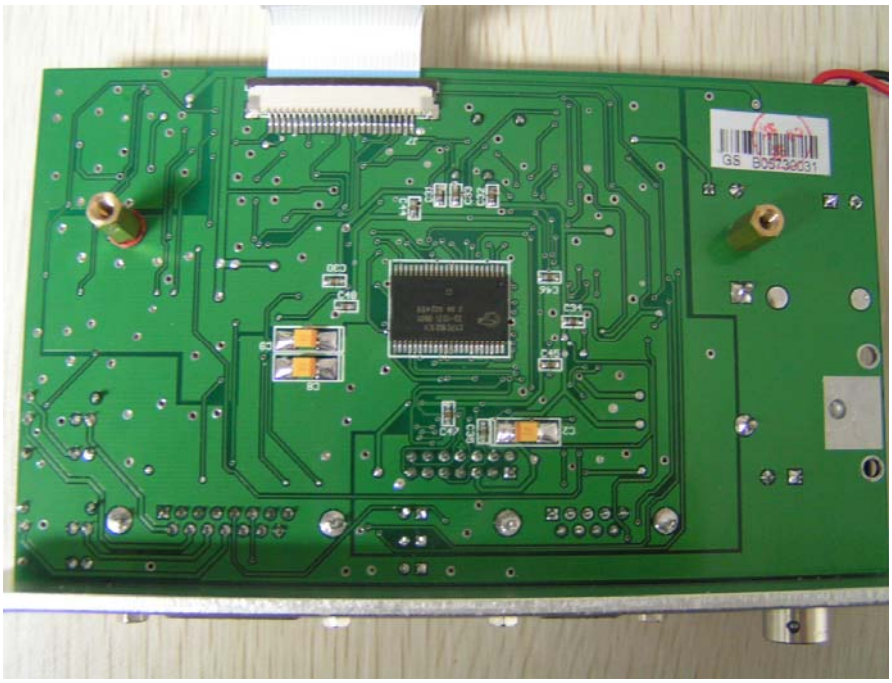
Main Board #1 Screw Holder Removed Front View



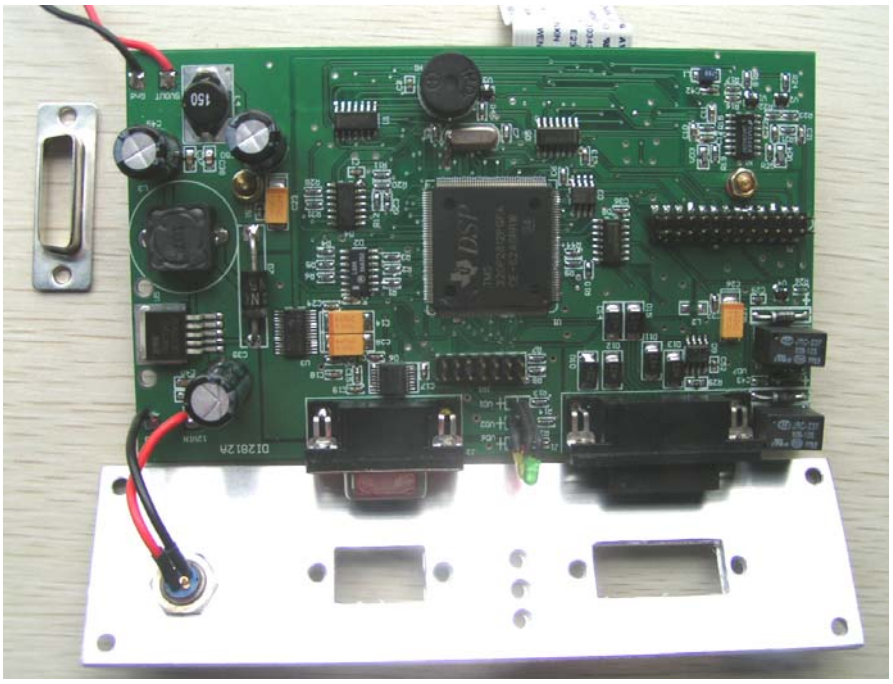
Main Board #1 Screw Holder Removed Rear View



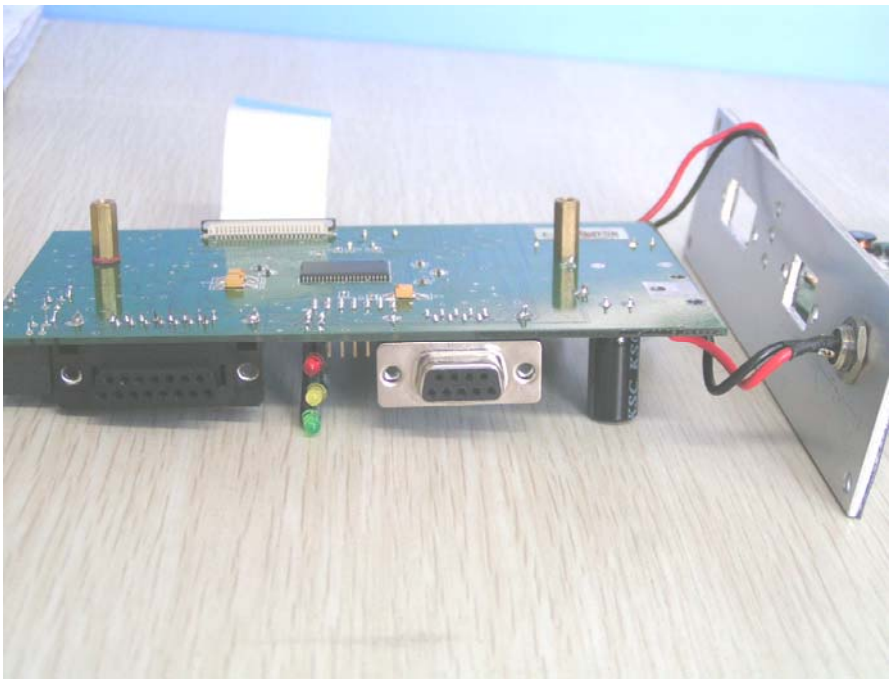
Main Board #2 Front View



Main Board #2 Rear View



Main Board #2 Side Shell removed



Main Board #2 Side Connector View

Main Chip and Crystal on the Main Board 2#

Serial Line

Panel antenna

Power Adapter Front View

Power Adapter Rear View

Power Adapter – Label View

RFS2212 Scanner
FCC ID:LMAWRAIFU200691601
This device comolies with Part 15 of the FCC rules.Operation is subject to the following two conditions:(1) This device may not cause harmfu interference.(2) This device must accept any interference received , including interference that may cause undesired operation.
Made in China by Jiangsu Raifu Intelligent Tech.Co., Ltd
DC +12V
RS-232
COM
ANT
PWR
I/O

Front View

ATTACHMENT 1 –FIELD STRENGTH OF FUNDAMENTAL AND SPURIOUS EMISSIONS

CLIENT:	Jiangsu Raifu Intelligent Tech. Co., Ltd.	**TEST STANDARD:**	FCC Part 15.209 FCC Part 15.205
MODEL NUMBERS:	RFS2212 / RFS2214	**PRODUCT:**	UHF Reader
MODEL TESTED:	RFS2214		
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, June 27

SETUP METHOD:	ANSI C63.4 : 2003
TEST PROCEDURE:	a. The EUT was placed on a rotatable table with 0.8 meters above ground. b. The EUT was set 3 meters from the interference-receiving antenna, which was mounted on the top of a variable height antenna tower. c. The antenna was varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna were set to make measurement. d. For each suspected emission the EUT was arranged to its worst case and then change the antenna tower height (from 1m to 4m) and turn table (from 0 degree to 360 degree) to find the maximum reading. e. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported. f. Broadband antenna (Calibrated antenna) was used as receiving antenna below 1000MHz. Horn antenna were used as receiving antenna above 1000MHz. g. The bandwidth is 120 kHz below 1000 MHz, and 1 MHz above 1000 MHz Explanation of the Correction Factor are given as follows: FS= RA + AF + CF - AG - DC Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain DC = Duty Cycle Correction Factor

CONTINUE ON THE NEXT PAGE…

TESTED RANGE:	30MHz to 10,000MHz
TEST VOLTAGE:	120V / 60Hz
TEST STATUS:	Keep Tx in continuous transmission mode, modulated, all antenna ports were connected by panel antenna
RESULTS:	The EUT meets the requirements of field strength test. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

For Channel 1

Test Results (30MHz~1GHz)

Horizontal								
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected QP Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
1	39.32	12.7	0.3	21.0	40.0	-19.0	25	100
2	200.00	8.6	1.5	36.0	43.5	-7.5	209	100
3	666.04	19.1	2.8	19.5	46.0	-26.5	219	288
4	902.60	20.3	3.7	112.6	---	---	178	163
Vertical								
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected QP Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
1	200.00	8.6	1.5	37.4	43.5	-6.1	309	120
2	400.60	15.5	1.8	37.5	46.0	-8.5	28	200
3	453.87	16.3	2.0	27.3	46.0	-18.7	208	199
4	902.60	20.3	3.7	111.9	---	---	176	100

Note: All readings are quasi-peak unless stated otherwise, using a QP bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.

For Channel 1

Test Results (1GHz~10GHz)

Horizontal									
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected AV Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Corrected PK Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**
1	1119.37	25.2	5.0	33.8	54.0	-20.2	40.8	74.0	-33.2
2	1904.65	29.7	6.9	39.7	54.0	-14.3	44.9	74.0	-29.1
3	2089.11	31.5	8.3	40.5	54.0	-13.5	50.1	74.0	-23.9
Vertical									
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected AV Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Corrected PK Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**
1	1119.25	25.2	5.0	36.8	54.0	-17.2	42.8	74.0	-31.2
2	1904.65	29.7	6.9	40.1	54.0	-13.9	44.0	74.0	-30.0
3	2089.11	31.5	8.3	40.8	54.0	-13.2	47.6	74.0	-26.4
Note: All readings are average and peak unless stated otherwise, using a bandwidth of 1000kHz, with a 30 ms sweep time. A video filter was not used.									

For Channel 32

Test Results (30MHz~1GHz)

Horizontal								
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected QP Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
1	42.98	11.5	0.4	23.6	40.0	-16.4	290	177
2	289.07	12.9	1.5	28.9	46.0	-17.1	209	189
3	398.11	15.5	1.8	30.6	46.0	-15.4	19	129
4	914.98	20.3	3.7	109.5	---	---	178	150
Vertical								
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected QP Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
1	87.09	8.6	0.7	28.5	40.0	-11.5	209	108
2	305.98	13.0	1.5	30.1	46.0	-15.9	187	119
3	672.33	19.0	2.8	32.1	46.0	-13.9	201	118
4	914.98	20.3	3.7	113.1	---	---	148	107

Note: All readings are quasi-peak unless stated otherwise, using a QP bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.

For Channel 32

Test Results (1GHz~10GHz)

Horizontal									
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected AV Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Corrected PK Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**
1	1830.00	29.3	7.0	37.2	54.0	-16.8	45.5	74.0	-28.5
2	2745.09	32.6	8.6	39.4	54.0	-14.6	49.8	74.0	-24.2
3	5636.40	33.1	11.2	41.7	54.0	-12.3	53.7	74.0	-20.3
Vertical									
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected AV Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Corrected PK Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**
1	1830.00	29.3	7.0	40.1	54.0	-13.9	50.1	74.0	-23.9
2	2745.09	32.6	8.6	44.3	54.0	-9.7	53.9	74.0	-20.1
3	5636.40	33.1	11.2	42.9	54.0	-11.1	52.6	74.0	-21.4

Note: All readings are average and peak unless stated otherwise, using a bandwidth of 1000kHz, with a 30 ms sweep time. A video filter was not used.

For Channel 63

Test Results (30MHz~1GHz)

Horizontal								
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected QP Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
1	67.90	5.2	0.7	30.5	40.0	-9.5	209	200
2	238.43	10.9	1.5	26.4	46.0	-19.6	315	199
3	701.99	18.8	3.0	28.7	46.0	-17.3	39	178
4	927.01	20.4	3.7	114.9	---	---	109	168
Vertical								
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected QP Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
1	40.23	12.7	0.4	29.4	40.0	-10.6	89	156
2	387.56	15.2	1.7	27.5	46.0	-18.5	109	149
3	409.22	15.5	1.8	28.8	46.0	-17.2	244	165
4	927.01	20.4	3.7	110.7	---	---	156	130
Note: All readings are quasi-peak unless stated otherwise, using a QP bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.								

For Channel 63

Test Results (1GHz~10GHz)

Horizontal									
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected AV Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Corrected PK Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**
1	1854.09	31.4	7.0	37.6	54.0	-16.4	42.3	74.0	-31.7
2	3987.40	32.9	9.6	39.2	54.0	-14.8	44.5	74.0	-29.5
3	5896.00	33.1	11.2	40.8	54.0	-13.2	51.2	74.0	-22.8
Vertical									
Signal	**Frequency (MHz)**	**Antenna Factor (dB)**	**Cable Factor (dB)**	**Corrected AV Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Corrected PK Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**
1	1854.09	31.4	7.0	38.9	54.0	-15.1	47.6	74.0	-26.4
2	3987.40	32.9	9.6	40.8	54.0	-13.2	51.2	74.0	-22.8
3	5896.00	33.1	11.2	41.1	54.0	-12.9	53.5	74.0	-20.5

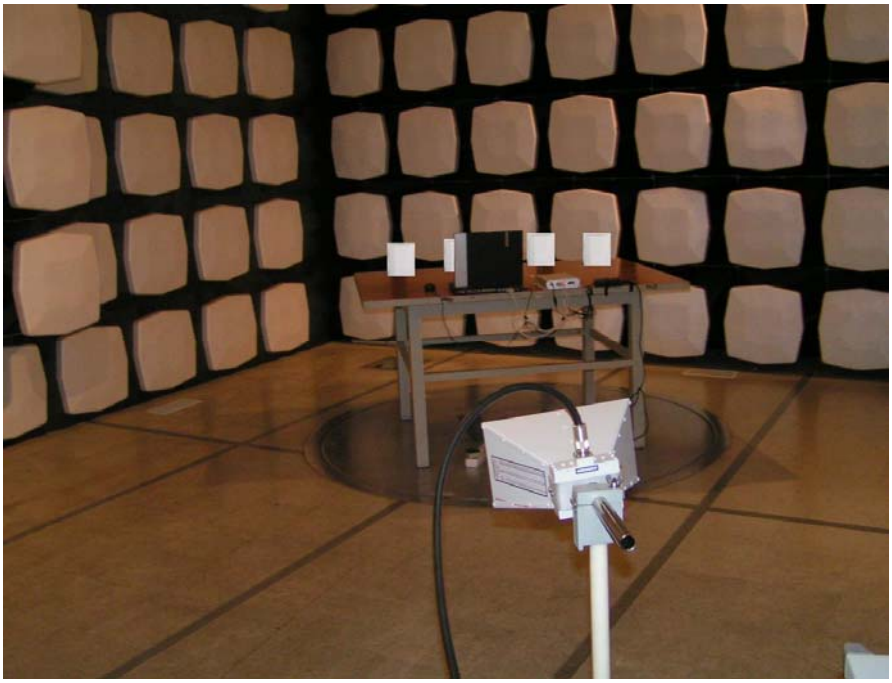
Note: All readings are average and peak unless stated otherwise, using a bandwidth of 1000kHz, with a 30 ms sweep time. A video filter was not used.

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/06	03/19/07
Bilog Antenna	CHASE	CBL6112	117.0800.20	02/17/06	02/16/07
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	513	03/20/06	03/19/07
Anechoic Chamber	LINDGREN	FACT-3	601	01/10/06	01/10/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hanyzhao _____

ENGINEER **SENIOR ENGINEER**

Radiated Emissions Test Set-up (Below 1GHz)



Radiated Emissions Test Set-up (Above 1GHz)

ATTACHMENT 2 – RF EXPOSURE CALCULATION

CLIENT:	Jiangsu Raifu Intelligent Tech. Co., Ltd.	**TEST STANDARD:**	FCC 1.1307(b)(1) FCC 2.1093
MODEL NUMBERS:	RFS2212 / RFS2214	**PRODUCT:**	UHF Reader
MODEL TESTED:	RFS2214		
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, May 24

SETUP METHOD:	N/A
TEST PROCEDURE:	According to § 15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter. According to § 1.1310 and § 2.1093 RF exposure is calculated. Limits for General Population/Uncontrolled Exposure

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f²)	6
30–300	61.4	0.163	1.0	6
300–1500	.....	.....	f/300	6
1500–100,000	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	30
30–300	27.5	0.073	0.2	30
300–1500	.....	.....	f/1500	30
1500–100,000	.....	.....	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

MPE PREDICTION:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R2$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

902.6MHz – 927.0MHz

Maximum peak output power at antenna input terminal: 30dBm=1000mW

Predication frequency: 900MHz

Antenna gain: 6dBi

Prediction distance: 30cm

Power density at predication frequency at 30cm: 0.53 mW/cm2

MPE limit for uncontrolled exposure at prediction frequency: 0.6mW/cm2

TEST RESULT:

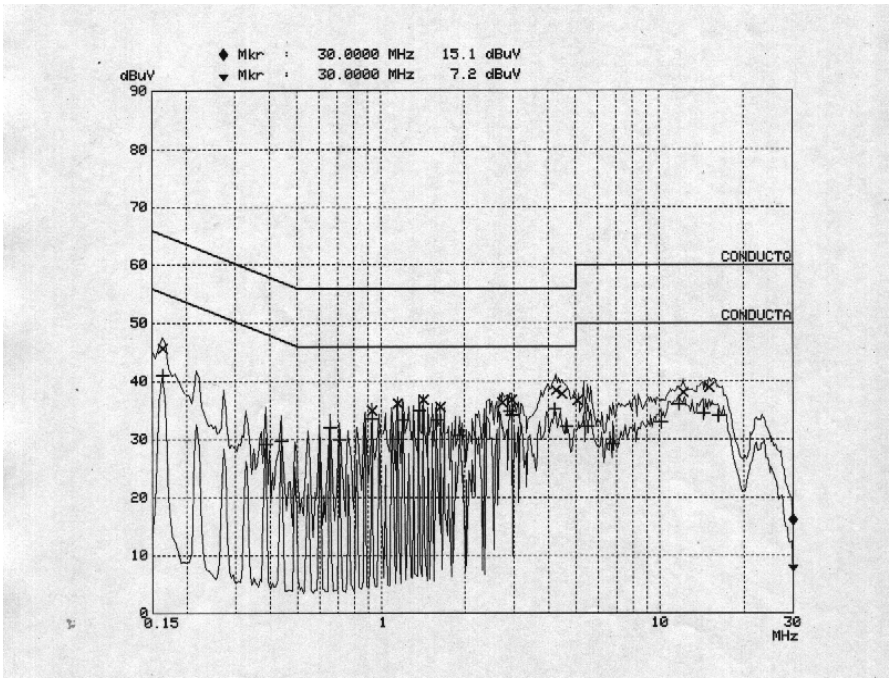
The EUT is a fixed outdoor device. 0.6mW/cm2 limit applies. The prediction distance is 30cm.

ATTACHMENT 3 – CONDUCTED EMISSION TEST RESULTS

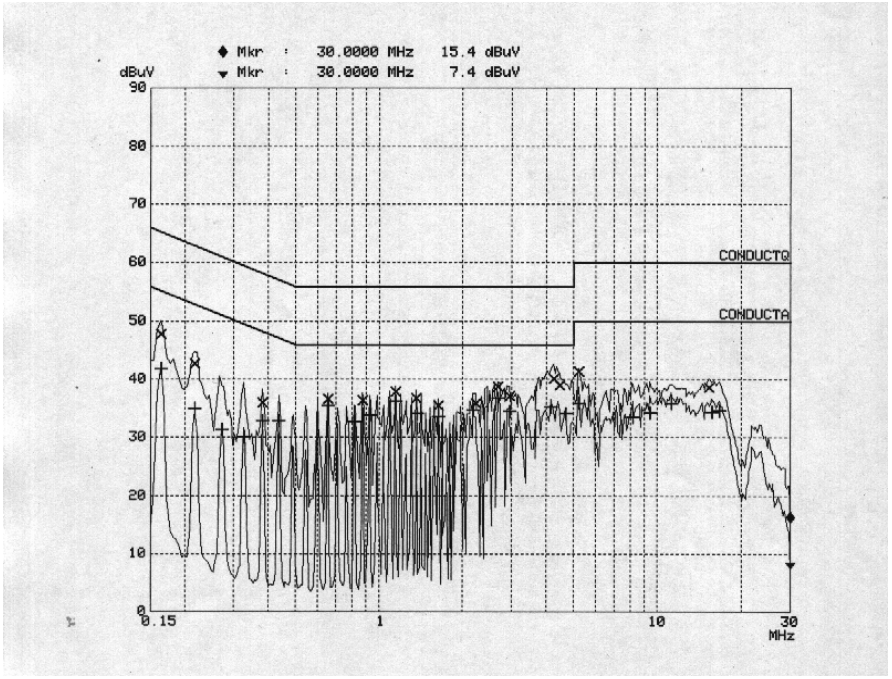
CLIENT:	Jiangsu Raifu Intelligent Tech. Co., Ltd.	**TEST STANDARD:**	FCC 15.107/207
MODEL NUMBERS:	RFS2212 / RFS2214	**PRODUCT:**	UHF Reader
MODEL TESTED:	RFS2212 / RFS2214		
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, May 24

SETUP METHOD:	ANSI C63.4 : 2003, FCC 15.107/207
TEST PROCEDURE:	a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface. b. Connect EUT to the power mains through a line impedance stabilization network (LISN) c. The LISN provides 50ohm coupling impedance for the measuring instrument d. Both sides of AC line were checked for maximum conduced interference. e. The frequency range from 150KHz to 30MHz was searched.. f. Set the test-receiver system to Peak Detect Function and Specified bandwidth. g. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported.
TESTED RANGE:	0.15MHz-30MHz
TEST VOLTAGE:	120V / 60Hz
TEST STATUS:	Keep Tx in continuous transmission mode, modulated, other antenna ports were terminated by 50ohm impendence.
RESULTS:	The EUT meets the requirements of test reference for Conducted Emissions on line N by 14.6 dB of Quasi-Peak detector and 11.6 dB of Average Detector. The EUT meets the requirements of test reference for Conducted Emissions on line N by 17.5 dB of Quasi-Peak detector and 10.9 dB of Average Detector. The test results relate only to the equipment under test provided by client.

CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

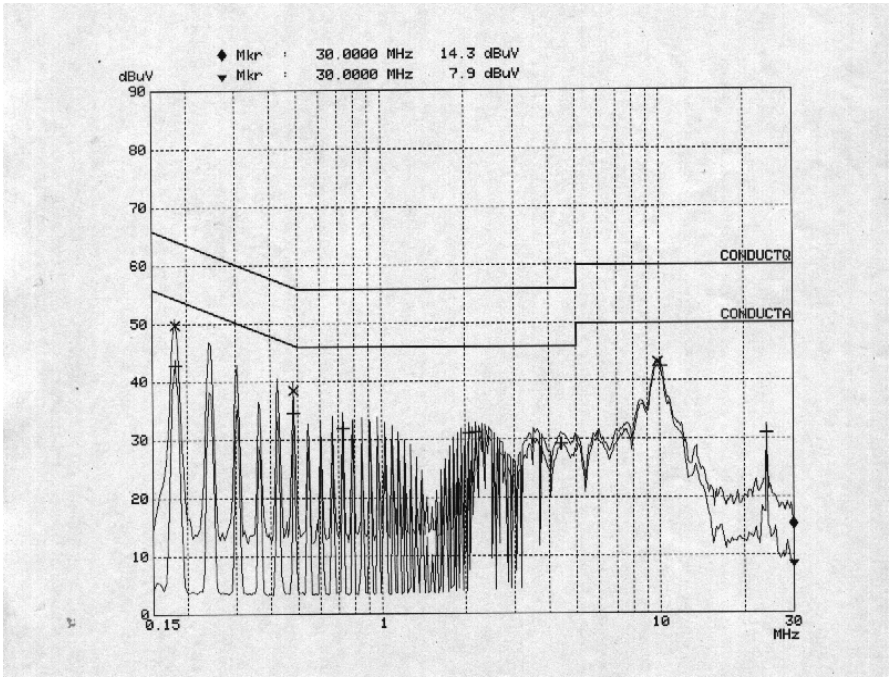


Line L Conducted Emission Graph

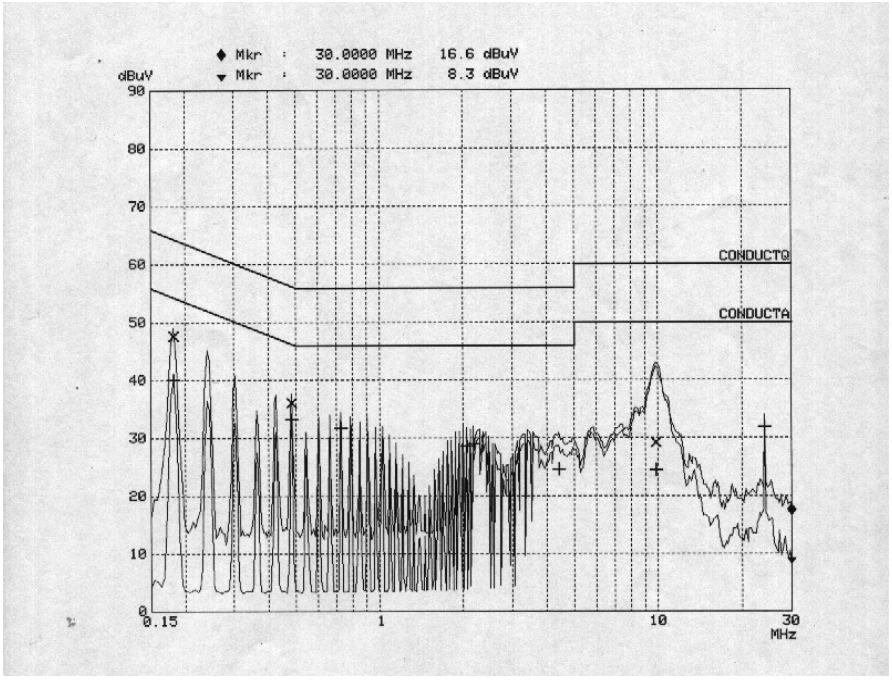


Line N Conducted Emission Graph

Line L (Hot Lead)								
Signal	**Frequency (MHz)**	**Corrected QP Level (d**	**Limits QP (dBuV)**	**Margin QP (dB)**	**Frequency (MHz)**	**Corrected AVE Level (dBuV)**	**Limits AVE (dBuV)**	**Margin AVE (dB)**
1	4.2542	38.5	56.0	-17.5	4.2540	35.1	46.0	-10.9
2	4.5700	37.9	56.0	-18.1	4.4700	32.3	46.0	-13.7
3	14.8965	39.0	60.0	-21.0	14.9945	34.5	50.0	-15.5
Line N (Neutral Lead)								
Signal	**Frequency (MHz)**	**Corrected QP Level (dBuV)**	**Limits QP (dBuV)**	**Margin QP (dB)**	**Frequency (MHz)**	**Corrected AVE Level (dBuV)**	**Limits AVE (dBuV)**	**Margin AVE (dB)**
1	1.4289	36.9	56.0	-19.1	1.4190	34.9	46.0	-11.1
2	2.6789	36.4	56.0	-19.6	2.7285	34.4	46.0	-11.6
3	2.9946	36.9	56.0	-19.1	2.9445	34.3	46.0	-11.7
Note: All readings are using a bandwidth of 9 kHz, with a 30 ms sweep time. A video filter was not used.								



Line L Conducted Emission Graph



Line N Conducted Emission Graph

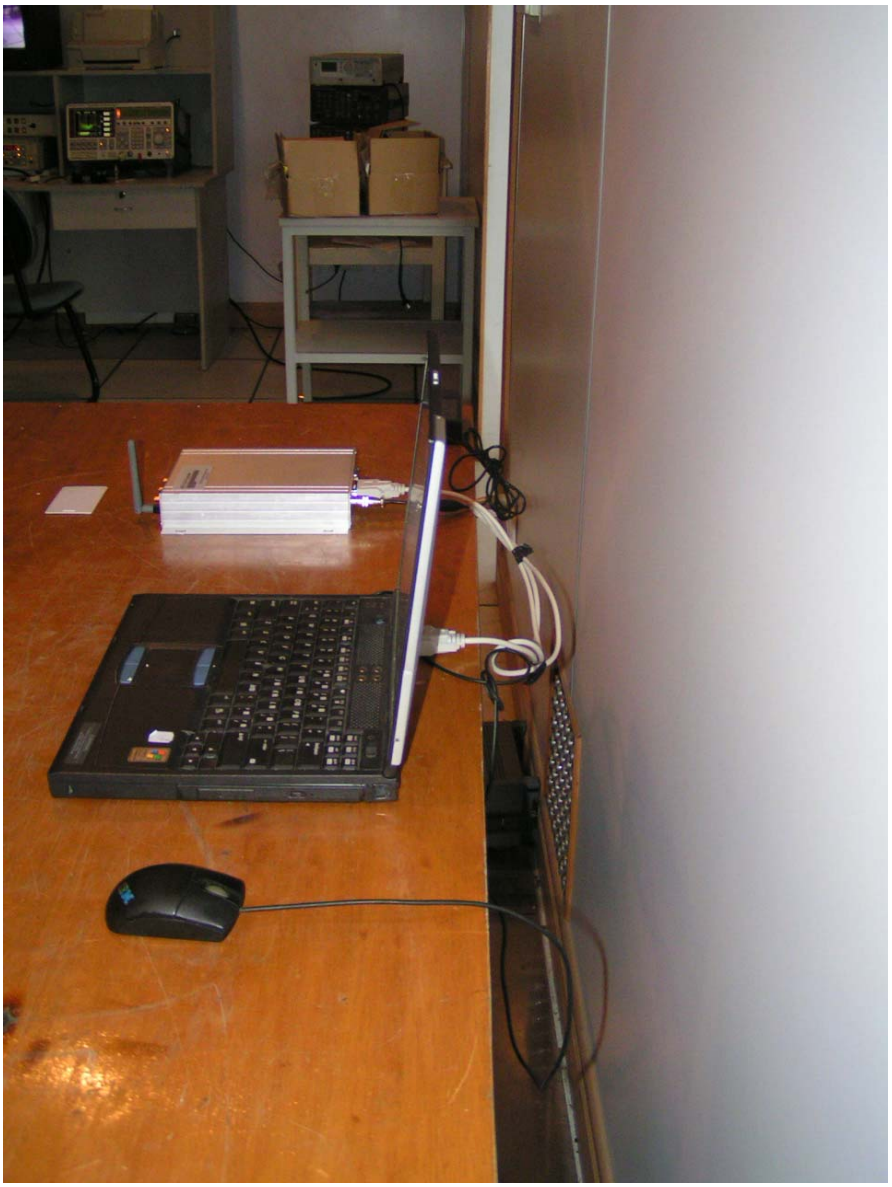
Line L (Hot Lead)								
Signal	**Frequency (MHz)**	**Corrected QP Level (dBuV)**	**Limits QP (dBuV)**	**Margin QP (dB)**	**Frequency (MHz)**	**Corrected AVE Level (dBuV)**	**Limits AVE (dBuV)**	**Margin AVE (dB)**
1	0.1815	49.8	64.4	-14.6	0.1815	42.8	54.4	-11.6
2	0.4830	38.4	56.2	-17.8	0.4830	34.6	46.2	-11.6
3	9.8105	43.2	60.0	-16.8	9.8105	42.1	50.0	-17.9
Line N (Neutral Lead)								
Signal	**Frequency (MHz)**	**Corrected QP Level (dBuV)**	**Limits QP (dBuV)**	**Margin QP (dB)**	**Frequency (MHz)**	**Corrected AVE Level (dBuV)**	**Limits AVE (dBuV)**	**Margin AVE (dB)**
1	0.1815	47.7	64.4	-16.7	0.1815	40.1	54.4	-14.3
2	0.4830	36.1	56.2	-20.1	0.4830	33.2	46.2	-13.0
3	9.7925	29.3	60.0	-30.7	9.7925	24.5	50.0	-25.5
Note: All readings are using a bandwidth of 9 kHz, with a 30 ms sweep time. A video filter was not used.								

Test Equipment	Model	Manufacturer	Serial No.	Last Cal.	Cal. Due
EMI receiver (9k-30M)	R&S	ESCS30	1102.4500.30	02/26/06	02/25/07
LISN	R&S	ESH3-Z5	831.5518.52	02/26/06	02/25/07
Shielded Room	---	P-22	---	02/20/06	02/19/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hanyzhao _____

ENGINEER **SENIOR ENGINEER**

Conducted Emission Test Set-up - Front View

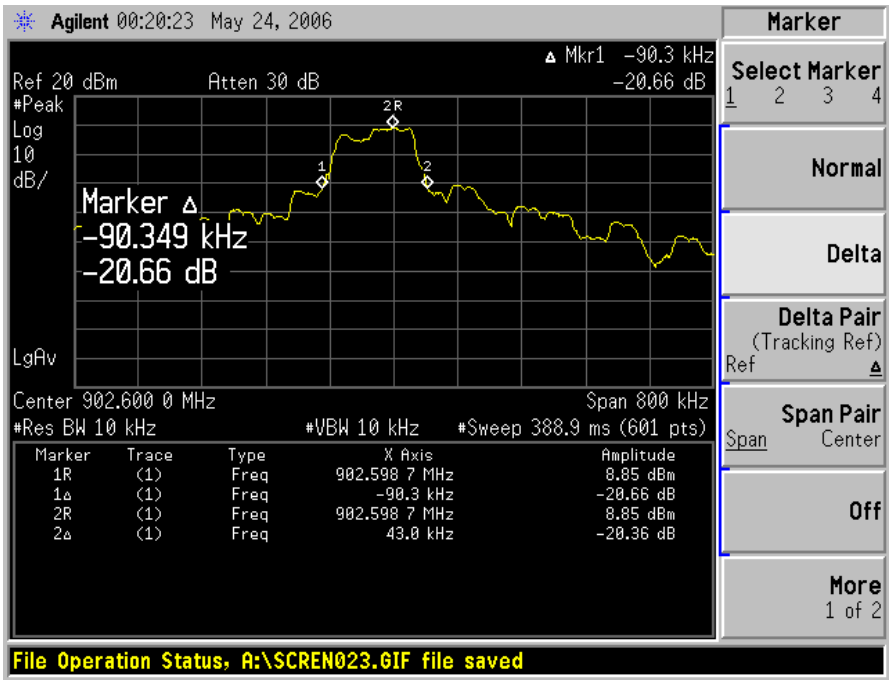


Conducted Emission Test Set-up - Side View

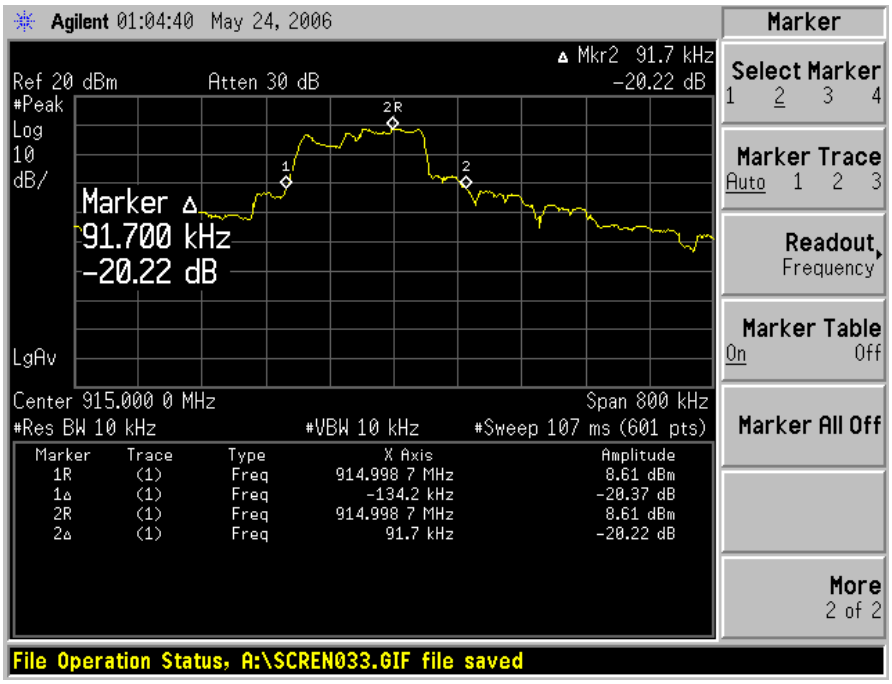
ATTACHMENT 4 – BANDWIDTH

CLIENT:	Jiangsu Raifu Intelligent Tech. Co., Ltd.	**TEST STANDARD:**	FCC Part 15.247 (a)
MODEL NUMBERS:	RFS2212 / RFS2214	**PRODUCT:**	UHF Reader
MODEL TESTED	RFS2214		
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Grounding
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, May 24

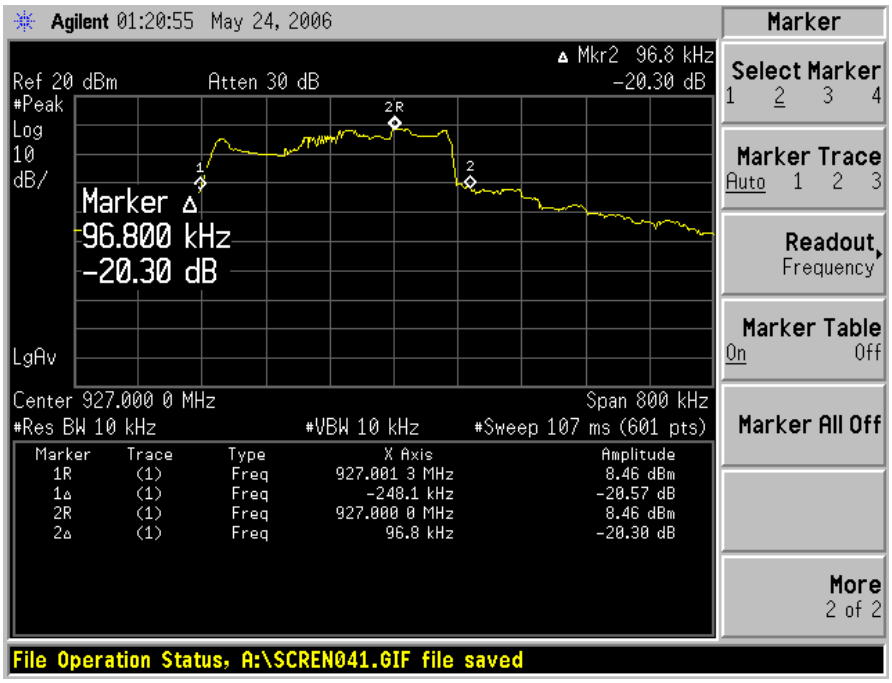
SETUP METHOD:	ANSI C63.4 - 2003
BANDWIDTH REQUIREMENT:	FCC 15.247 (a) (1) (i) The maximum allowed 20dB bandwidth of the hopping channel is 500kHz.
TEST PROCEDURE:	Set the spectrum as follow: Span=approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel; RBW=1% of the 20dB bandwidth; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Use the search peak function to set the marker to the peak of the emission; Use the delta-mark function to measure 20dB down to both sides of the emission; The 20dB BW is the delta reading between two 20dB down marker.
TEST VOLTAGE:	120V / 60Hz
TEST STATUS:	Hopping at channel 1, channel 32, channel 63
RESULTS:	The EUT meets the bandwidth requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



Channel 1



Channel 32



Channel 63

Test Result

Channel	20dB Bandwidth	Limit	Result
1	90.3+43.0=133.3kHz	500kHz	Pass
32	134.2+91.7=225.9kHz		Pass
63	248.1+96.8=344.9kHz		Pass

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/06	03/19/07
20dB Attenuator	SETP	50HF-020	---	03/20/06	03/19/07
Shielded Room	---	P-22	---	02/20/06	02/19/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hangzhao _____

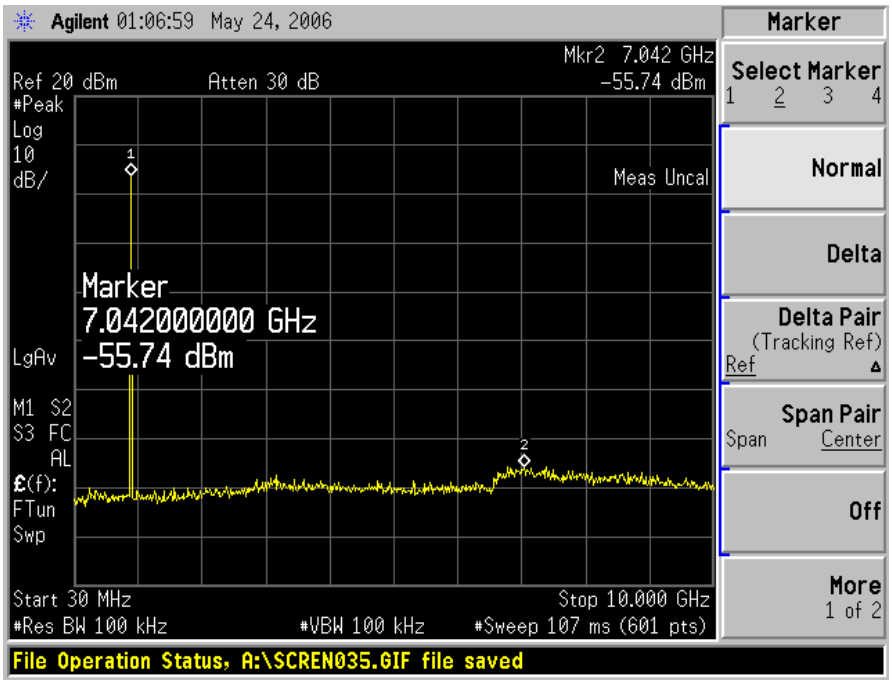
ENGINEER **SENIOR ENGINEER**

Bandwidth Test Set-up

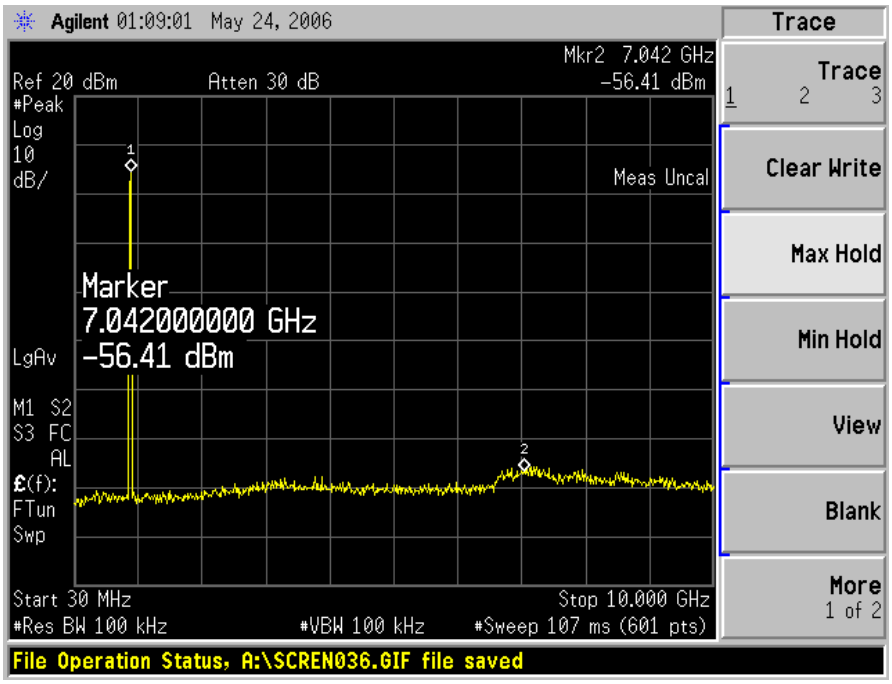
ATTACHMENT 5 – Emissions at Antenna Port

CLIENT:	Jiangsu Raifu Intelligent Tech. Co., Ltd.	**TEST STANDARD:**	FCC Part 15.247 (d)
MODEL NUMBERS:	RFS2212 / RFS2214	**PRODUCT:**	UHF Reader
MODEL TESTED	RFS2214		
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Grounding
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, May 24

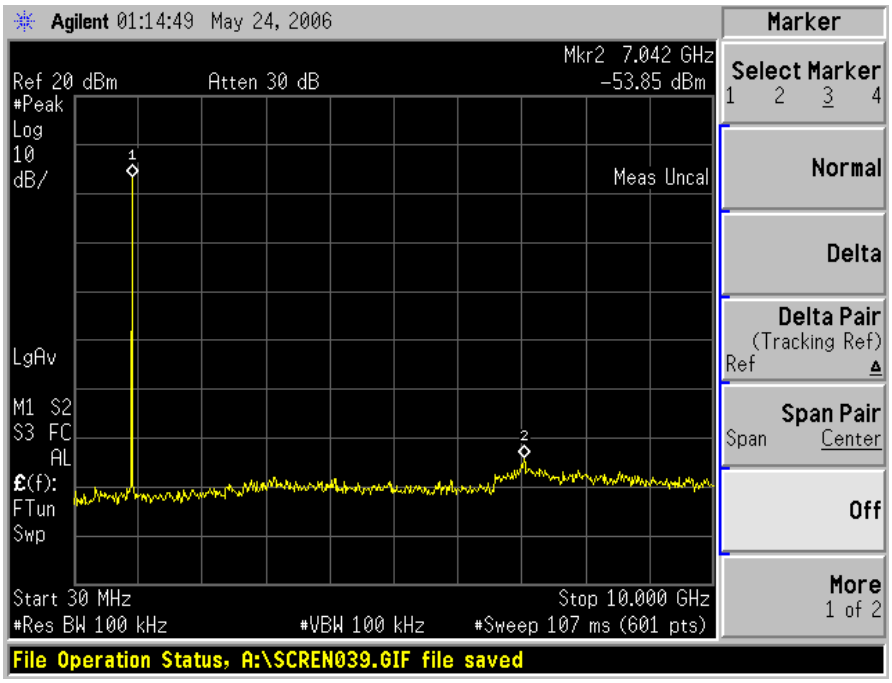
SETUP METHOD:	ANSI C63.4 – 2003
TEST REQUIREMENT:	FCC 15.247 (d) Radiation emissions which fall in the restricted bands, as defined in Section 15.205(a), must comply with the radiated emissions limites specified in 15.209(a).
TEST PROCEDURE:	Set the spectrum as follow: Span=from 30MHz to tenth harmonic frequency (10GHz); RBW=100kHz; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold
TEST VOLTAGE:	120V / 60Hz
TEST STATUS:	Hopping at channel 1, channel 32, channel 63
RESULTS:	The EUT meets the emissions at antenna port requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



Channel 1



Channel 32

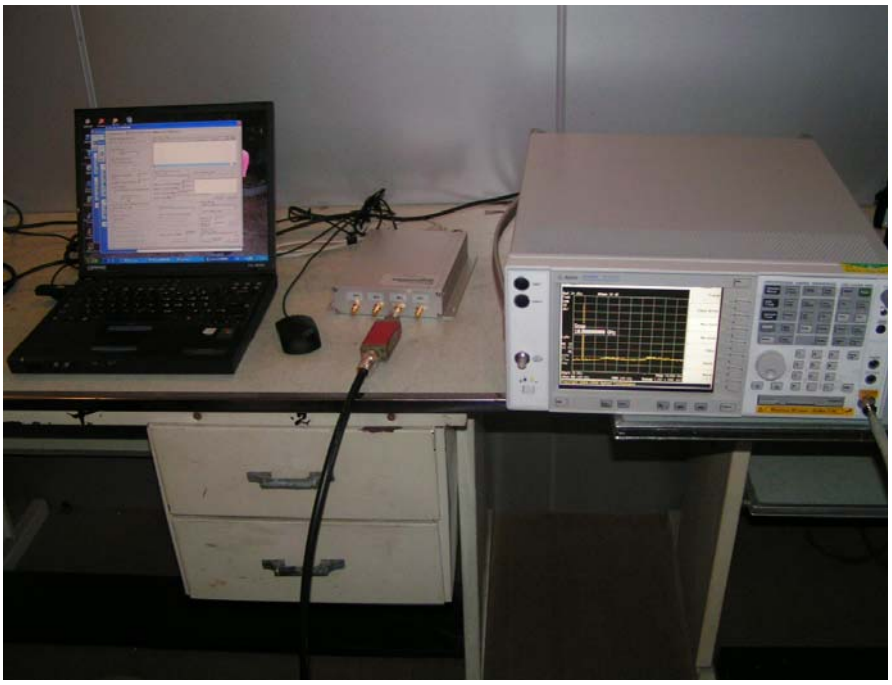

Agilent 01:14:49 May 24, 2006
Marker
Mkr2 7.042 GHz
Ref 20 dBm
Atten 30 dB
-53.85 dBm
#Peak
Log
10
dB/
Meas Uncal
LgAv
M1 S2
S3 FC
AL
£(f):
FTun
Swp
Start 30 MHz
Stop 10.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
#Sweep 107 ms (601 pts)
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
File Operation Status, A:\SCREN039.GIF file saved

Channel 63

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/06	03/19/07
20dB Attenuator	SETP	50HF-020	---	03/20/06	03/19/07
Shielded Room	---	P-22	---	02/20/06	02/19/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hangzhao _____

ENGINEER **SENIOR ENGINEER**

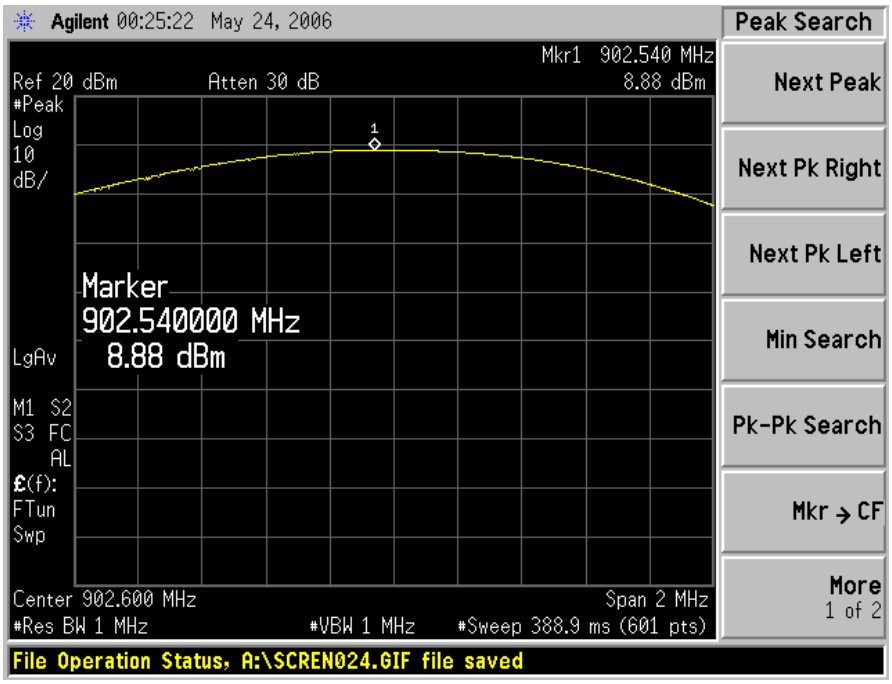


Emissions at Antenna Port Test Set-up

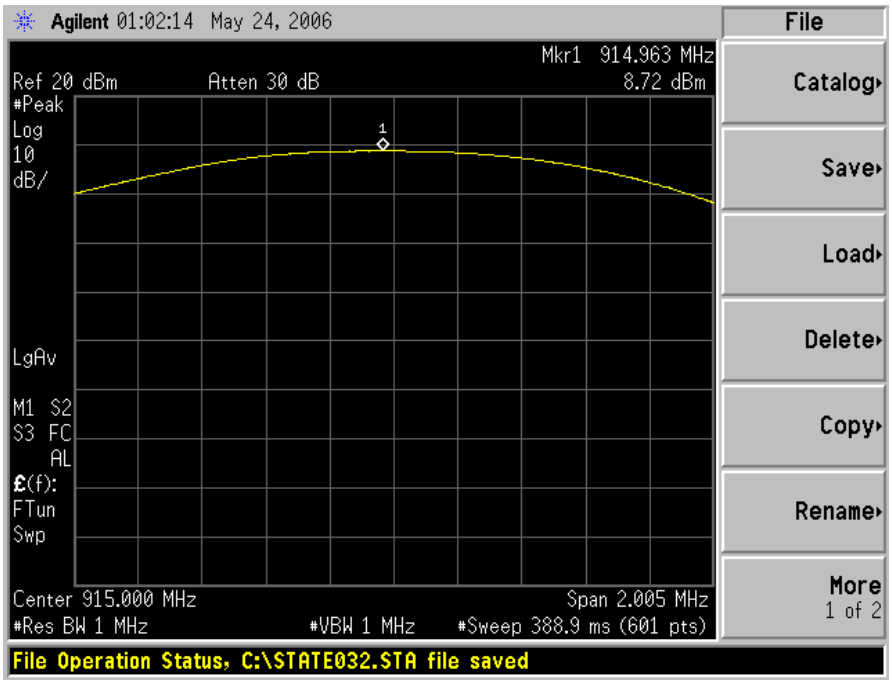
ATTACHMENT 6 – Maximum Peak Output Power Test

CLIENT:	Jiangsu Raifu Intelligent Tech. Co., Ltd.	**TEST STANDARD:**	FCC Part 15.247 (b) (2)
MODEL NUMBERS:	RFS2212 / RFS2214	**PRODUCT:**	UHF Reader
MODEL TESTED	RFS2212 / RFS2214		
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Grounding
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, May 24

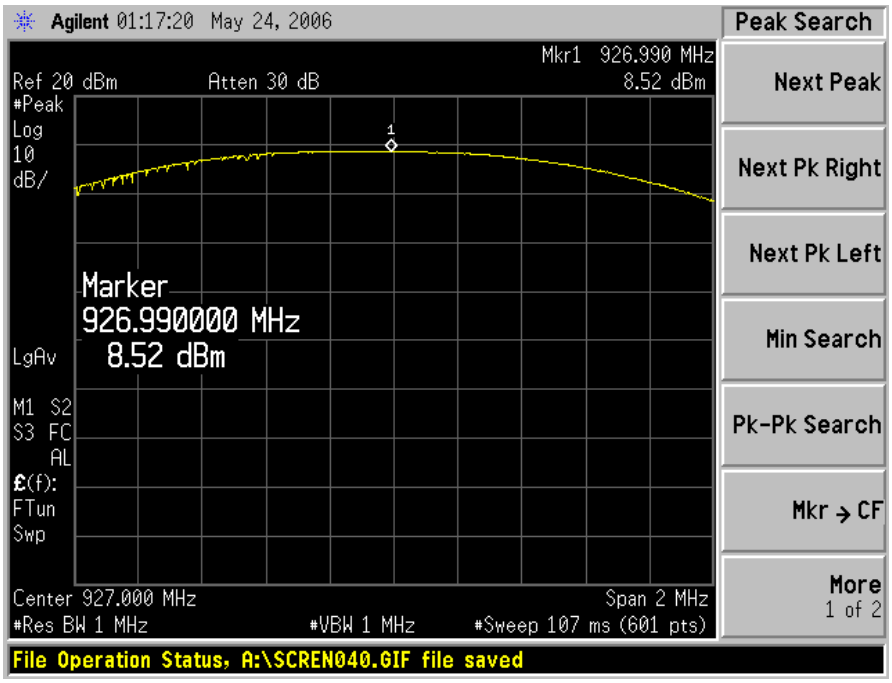
SETUP METHOD:	ANSI C63.4 - 2003
TEST REQUIREMENT:	FCC 15.247 (b) (2) For frequency hopping systems operating in the 902-928MHz band: 1 watt for system employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.
TEST PROCEDURE:	Set the spectrum as follow: Span=2MHz, centered on a hopping channel; RBW=1MHz; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Allow the trace to stabilize and use the search peak function to set the marker to the peak of the emission.
TEST VOLTAGE:	120V / 60Hz
TEST STATUS:	Hopping at channel 1, channel 32, channel 63
RESULTS:	The EUT meets the maximum peak conducted output power requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



Channel 1



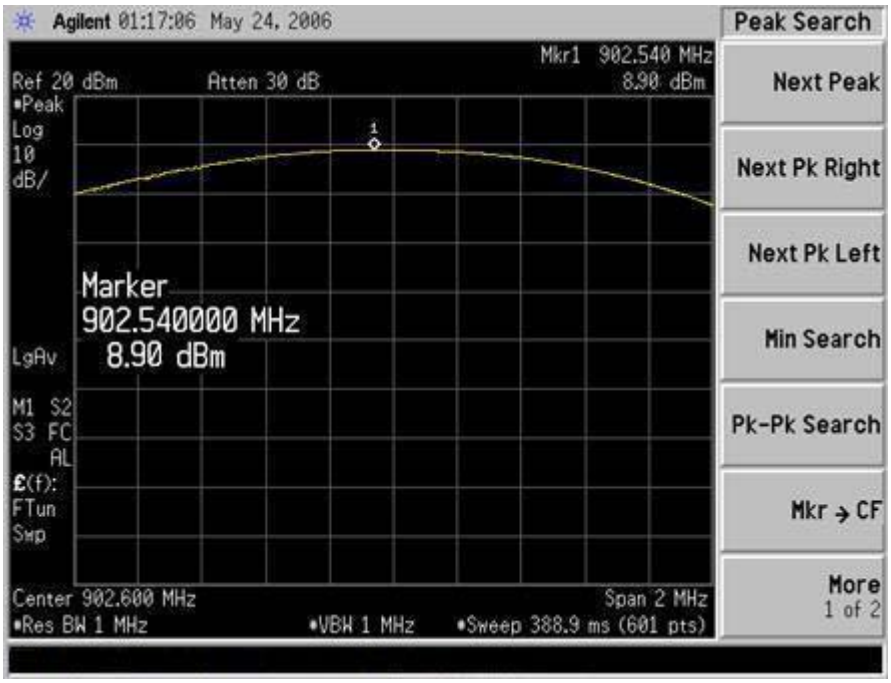
Channel 32



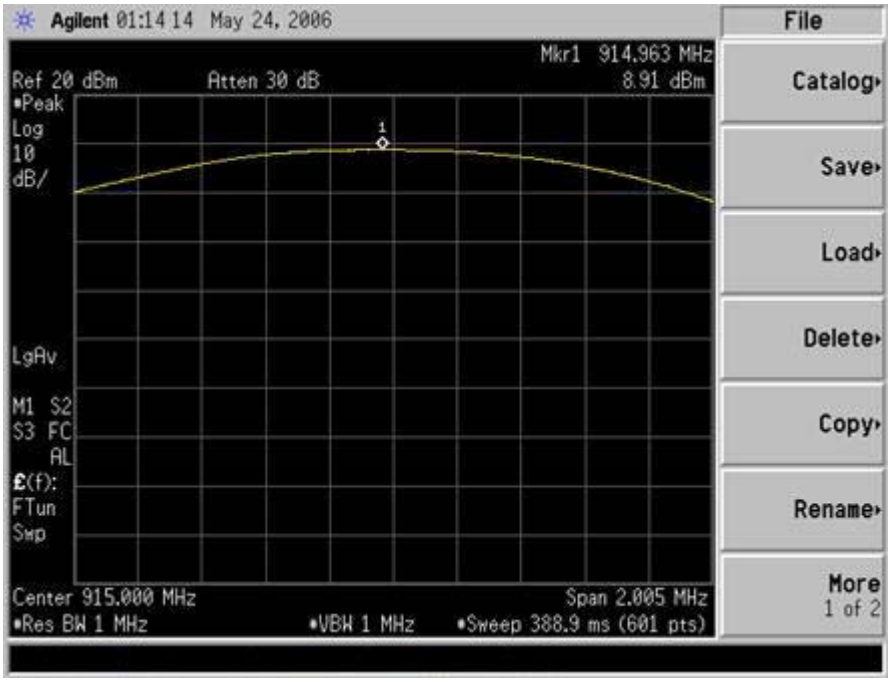
Channel 63

Test Result

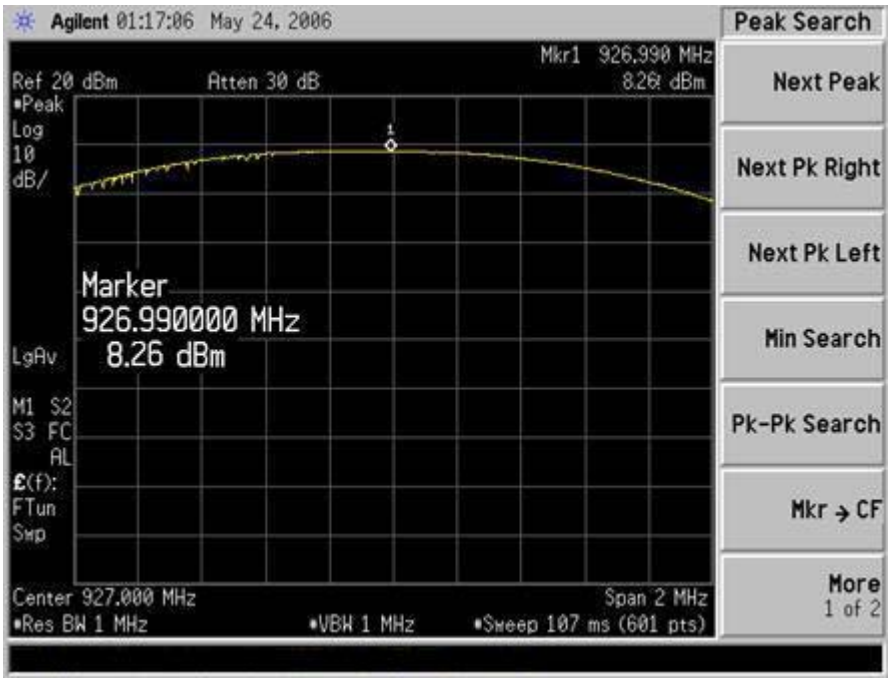
Channel	***Peak Power***	***Limit***	***Result***
1	*8.88+19.23=28.11dBm*	*30dBm*	*Pass*
32	*8.72+19.41=28.13dBm*		*Pass*
63	*8.52+19.59=28.11dBm*		*Pass*



Channel 1



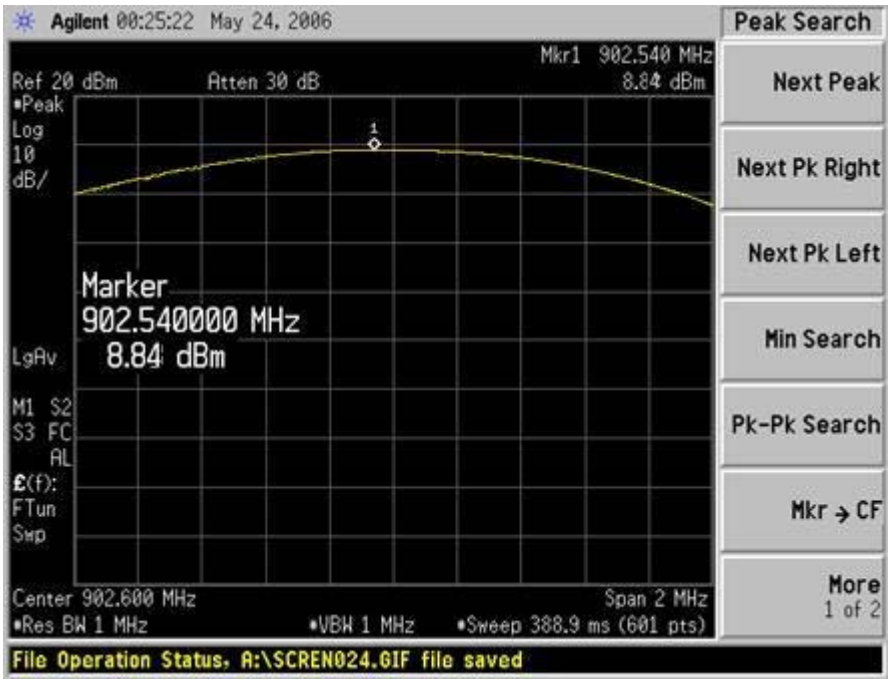
Channel 32



Channel 63

Test Result

Channel	***Peak Power***	***Limit***	***Result***
1	*8.90+19.23=28.13dBm*	*30dBm*	*Pass*
32	*8.91+19.41=28.32dBm*		*Pass*
63	*8.26+19.59=27.85dBm*		*Pass*



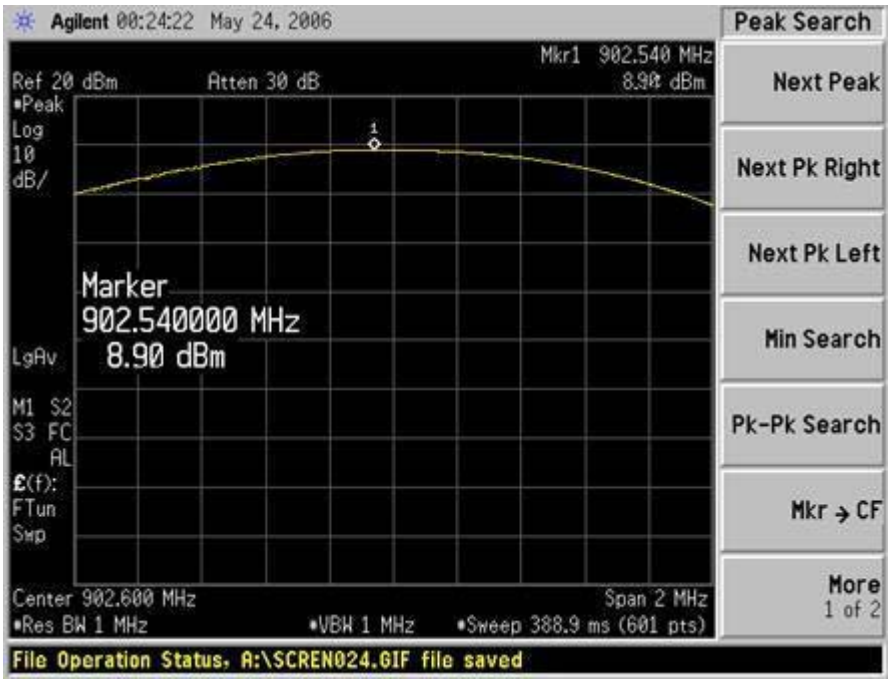
Channel 1

Channel 32

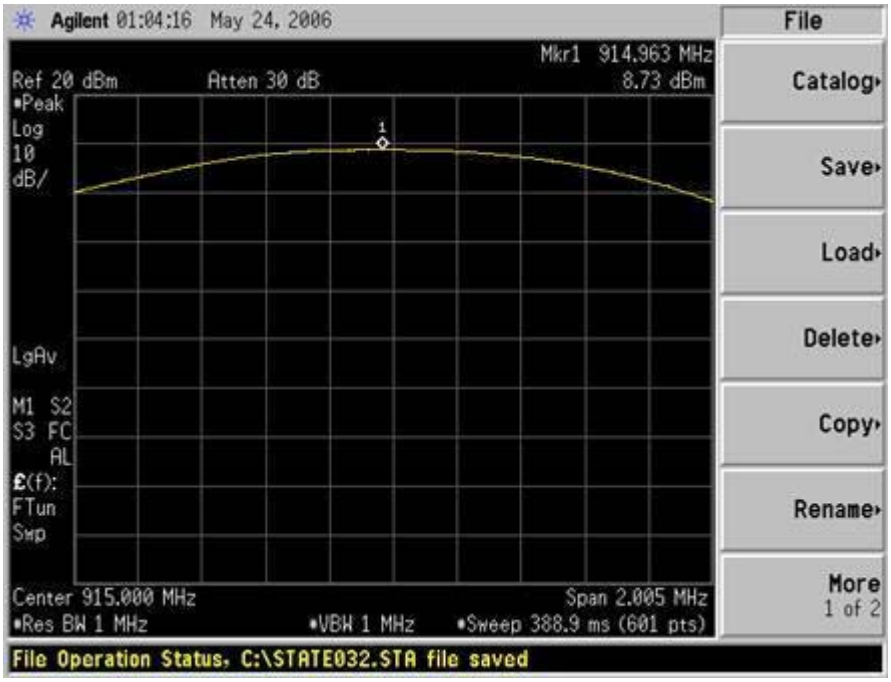
Channel 63

Test Result

Channel	***Peak Power***	***Limit***	***Result***
1	*8.84+19.23=28.07dBm*	*30dBm*	*Pass*
32	*8.73+19.41=28.14dBm*		*Pass*
63	*8.62+19.59=28.21dBm*		*Pass*



Channel 1



Channel 32

Channel 63

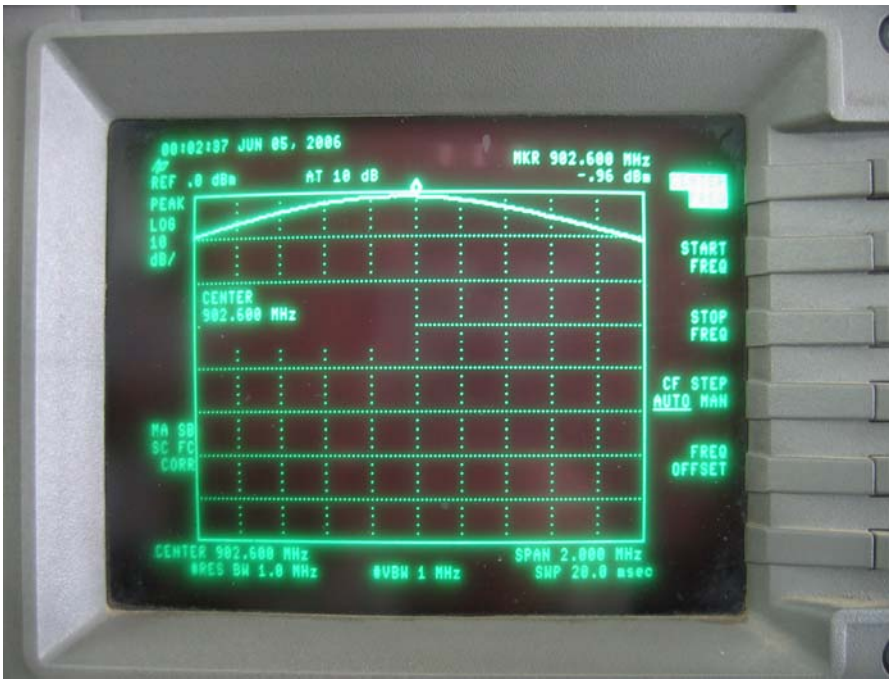
Test Result

Channel	***Peak Power***	***Limit***	***Result***
1	*8.90+19.23=28.13dBm*	*30dBm*	*Pass*
32	*8.73+19.41=28.14dBm*		*Pass*
63	*8.66+19.59=28.25dBm*		*Pass*

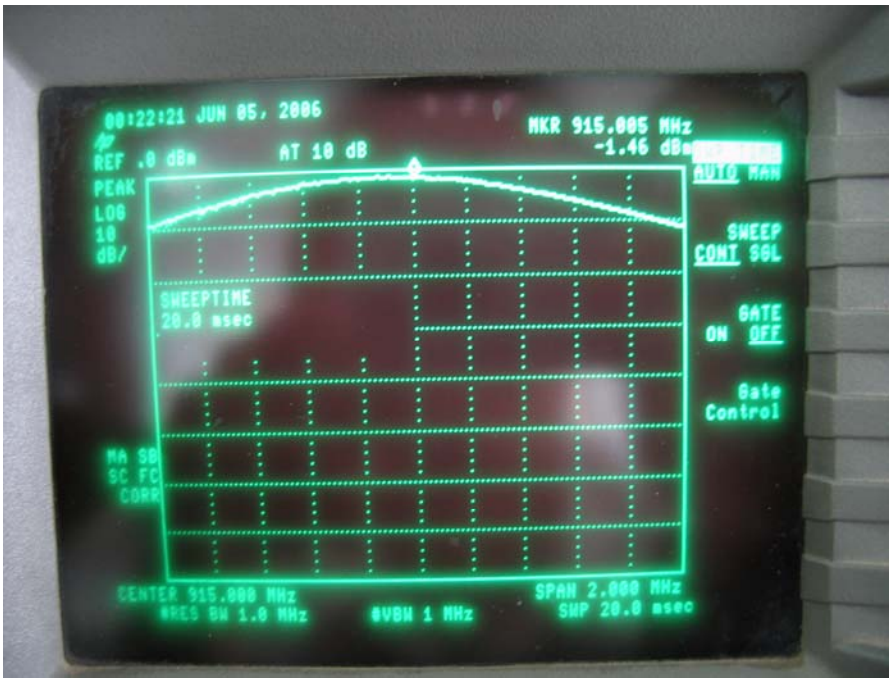
Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/06	03/19/07
20dB Attenuator	SETP	50HF-020	---	03/20/06	03/19/07
Shielded Room	---	P-22	---	02/20/06	02/19/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hangzhao _____

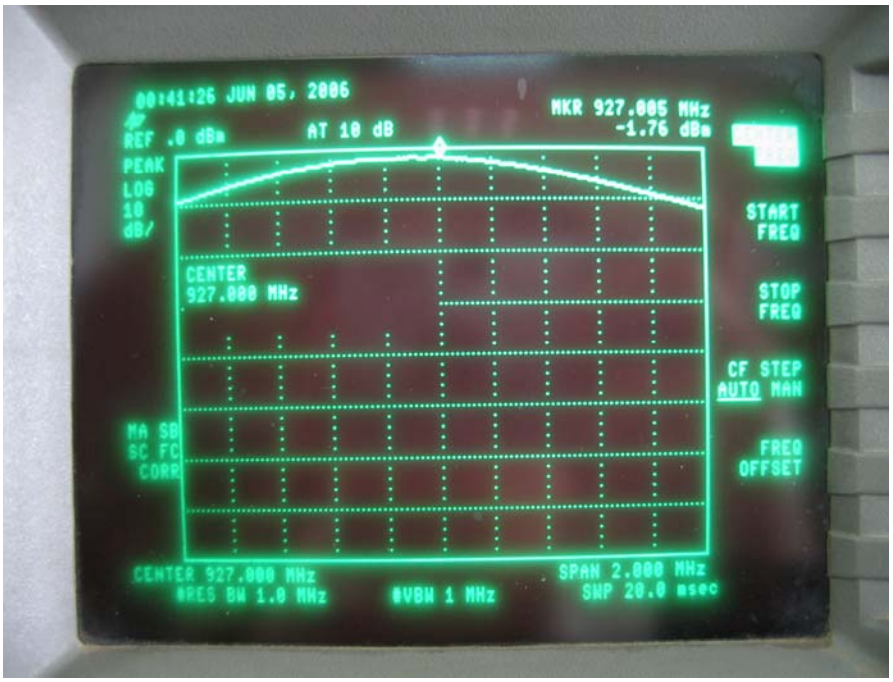
ENGINEER **SENIOR ENGINEER**



Channel 1



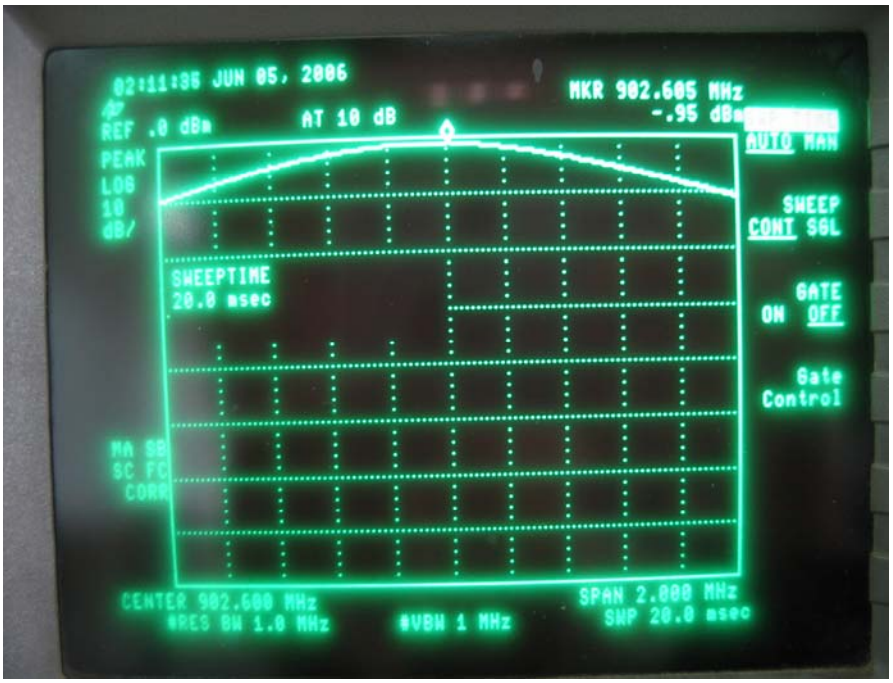
Channel 32



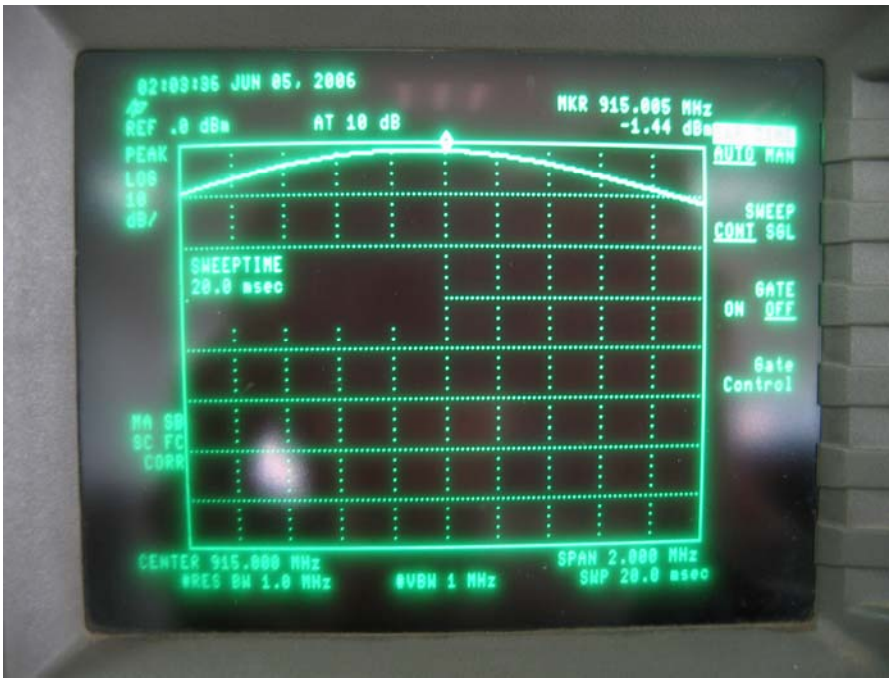
Channel 63

Test Result

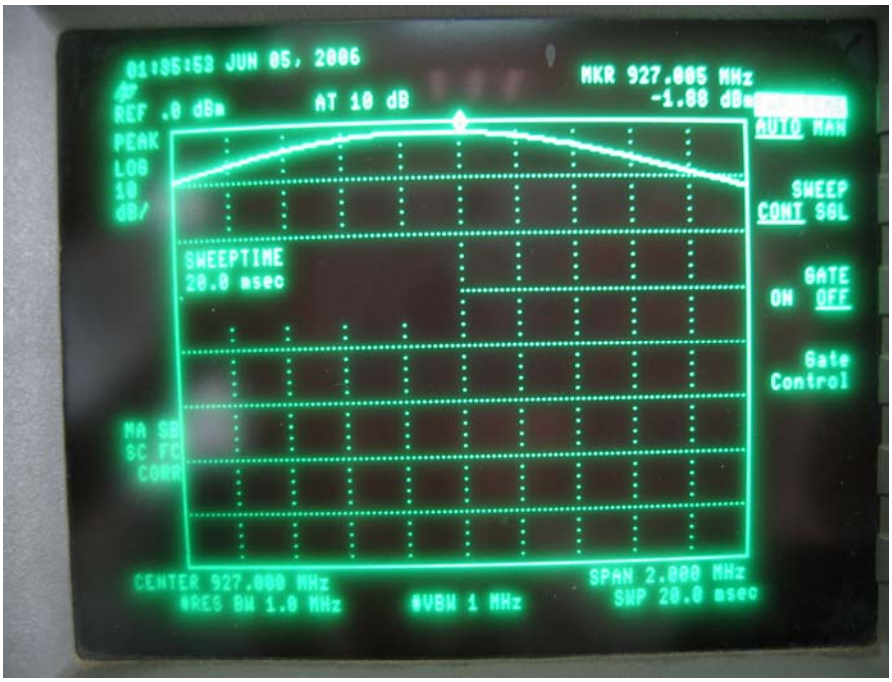
Channel	***Peak Power***	***Limit***	***Result***
1	*-0.96+29.35=28.39dBm*	*30dBm*	*Pass*
32	*-1.46+29.43=27.97dBm*		*Pass*
63	*-1.76+29.65=27.89dBm*		*Pass*



Channel 1



Channel 32



Channel 63

Test Result

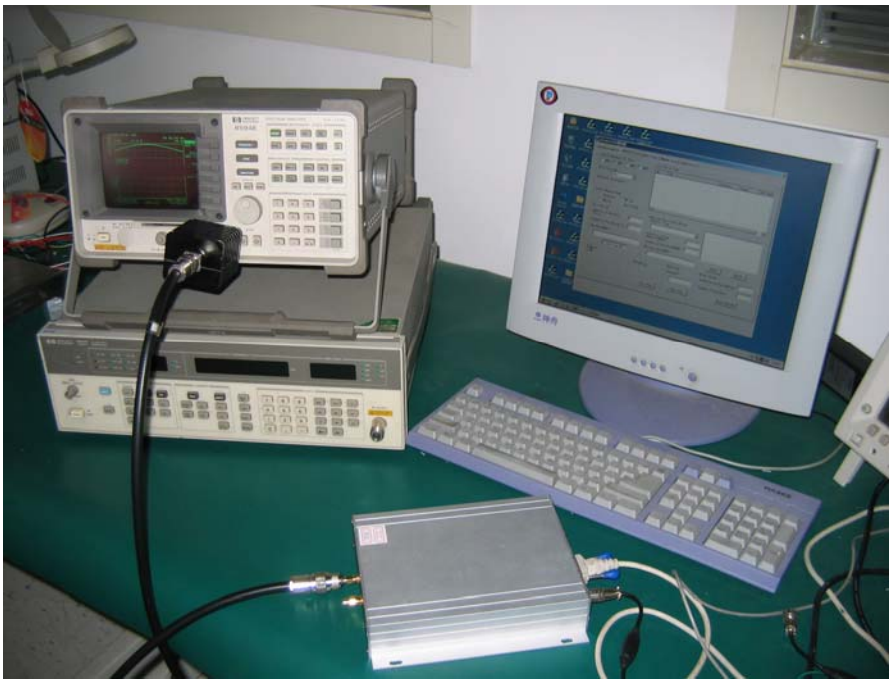
Channel	***Peak Power***	***Limit***	***Result***
1	*-0.95+29.35=28.40dBm*	*30dBm*	*Pass*
32	*-1.44+29.43=27.99dBm*		*Pass*
63	*-1.88+29.65=27.77dBm*		*Pass*

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	8593E	3628A00167	04/21/06	04/20/07
30dB Attenuator	SETP	50HF-030	---	03/20/06	03/19/07
Shielded Room	---	P-22	---	02/20/06	02/19/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hangzhao _____

ENGINEER **SENIOR ENGINEER**

Emissions at Antenna Port Test Set-up

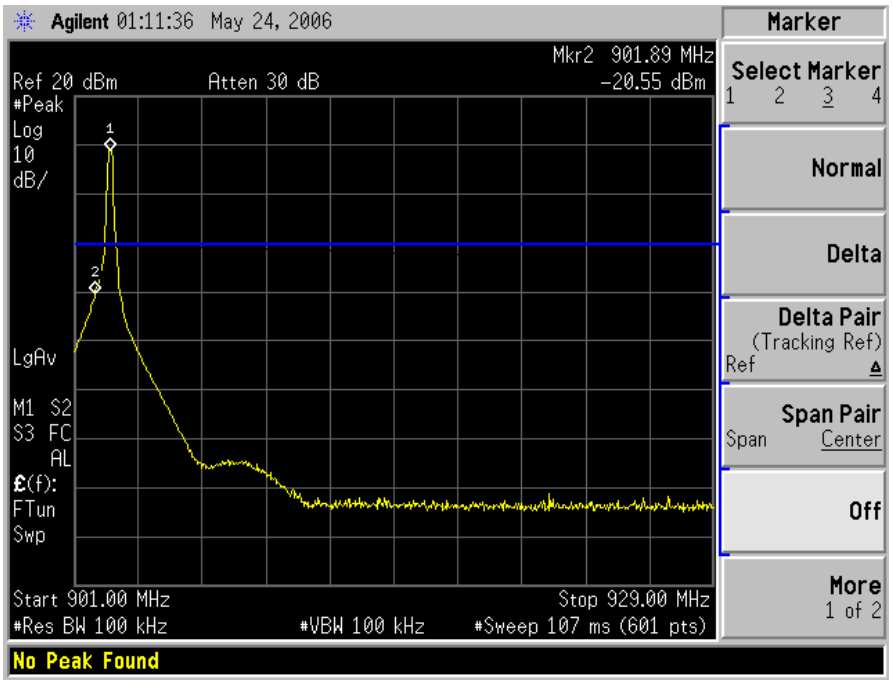


Emissions at Antenna Port Test Set-up

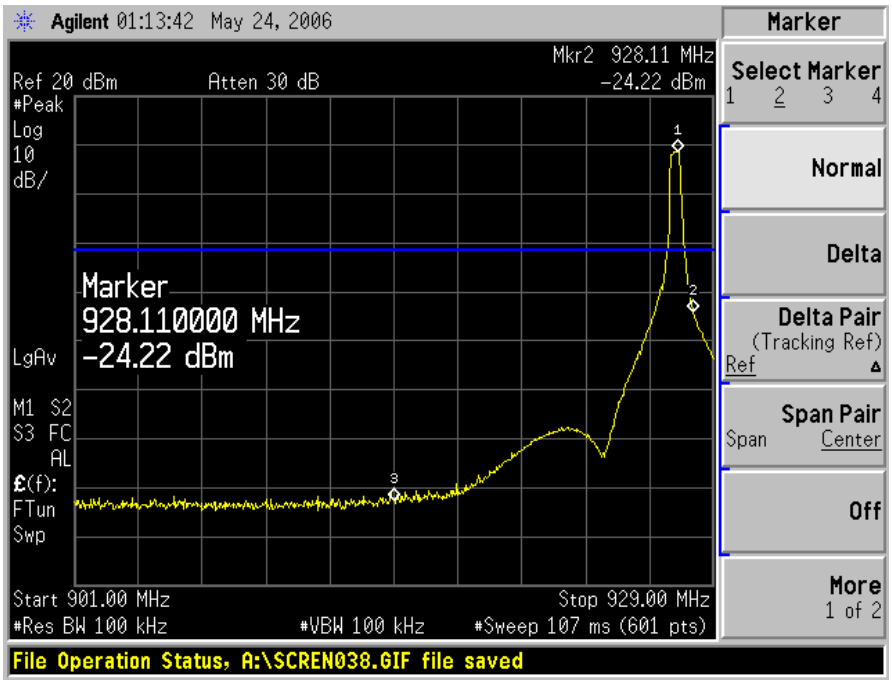
ATTACHMENT 7 – Band Edge Test

CLIENT:	Jiangsu Raifu Intelligent Tech. Co., Ltd.	**TEST STANDARD:**	FCC Part 15.247 (d)
MODEL NUMBERS:	RFS2212 / RFS2214	**PRODUCT:**	UHF Reader
MODEL TESTED	RFS2214		
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Grounding
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, May 24

SETUP METHOD:	ANSI C63.4 - 2003
BANDEDGE REQUIREMENT:	FCC 15.247 (d) In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiators shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.
TEST PROCEDURE:	Set the spectrum as follow: Span=wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation. RBW=100kHz; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Allow the trace to stabilize and use the search peak function to set the marker to the peak of the useful emission, then use delta-mark function to mark the maximum emission outside of the band, record the delta level to see if it's more than 20dB.
TEST VOLTAGE:	120V / 60Hz
TEST STATUS:	Hopping at channel 1, channel 32, channel 63
RESULTS:	The EUT meets band edge requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



Channel 1

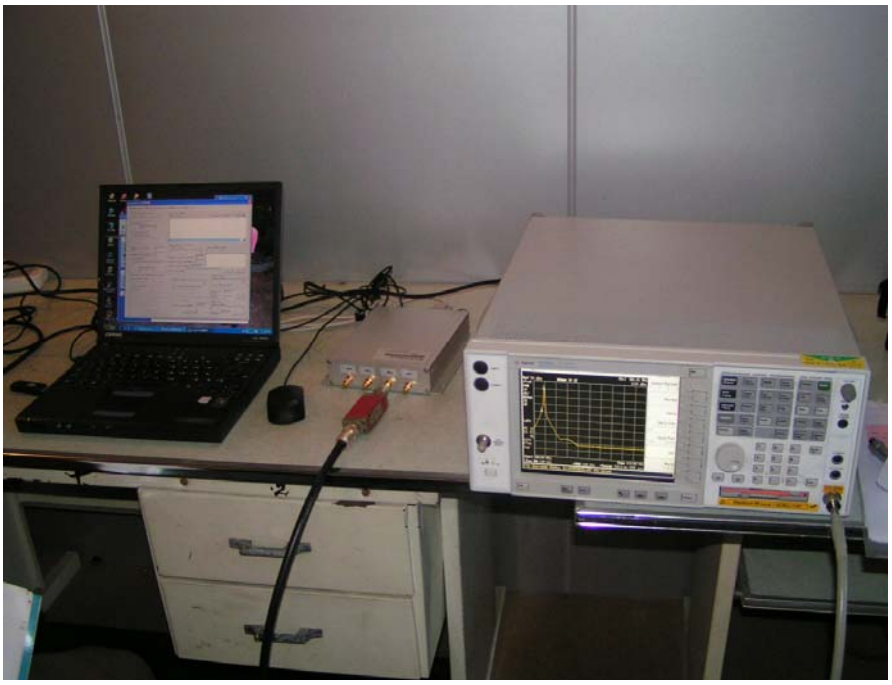


Channel 63

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/06	03/19/07
20dB Attenuator	SETP	50HF-020	---	03/20/06	03/19/07
Shielded Room	---	P-22	---	02/20/06	02/19/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hangzhao _____

ENGINEER **SENIOR ENGINEER**

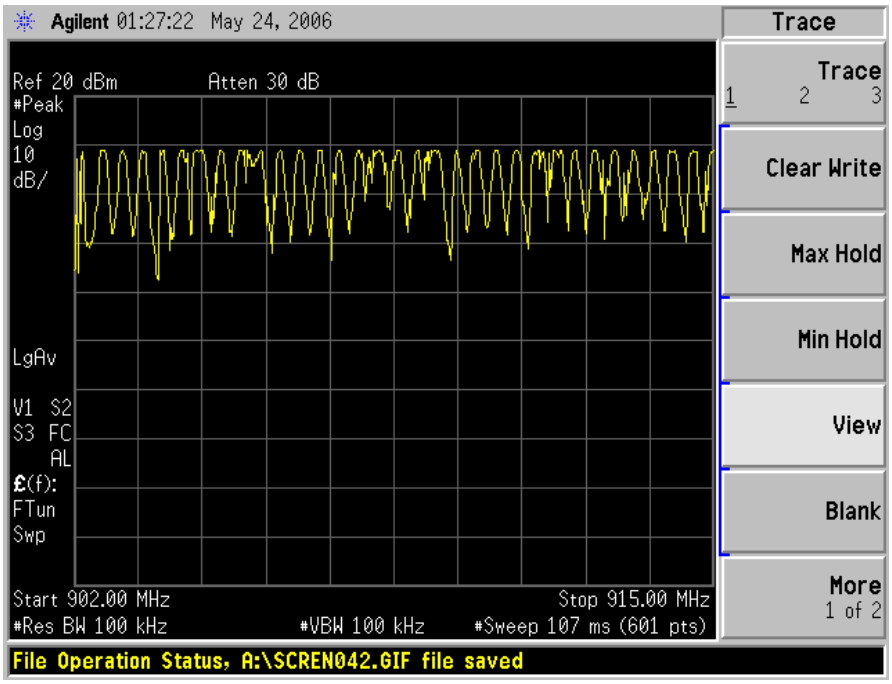


Emissions at Antenna Port Test Set-up

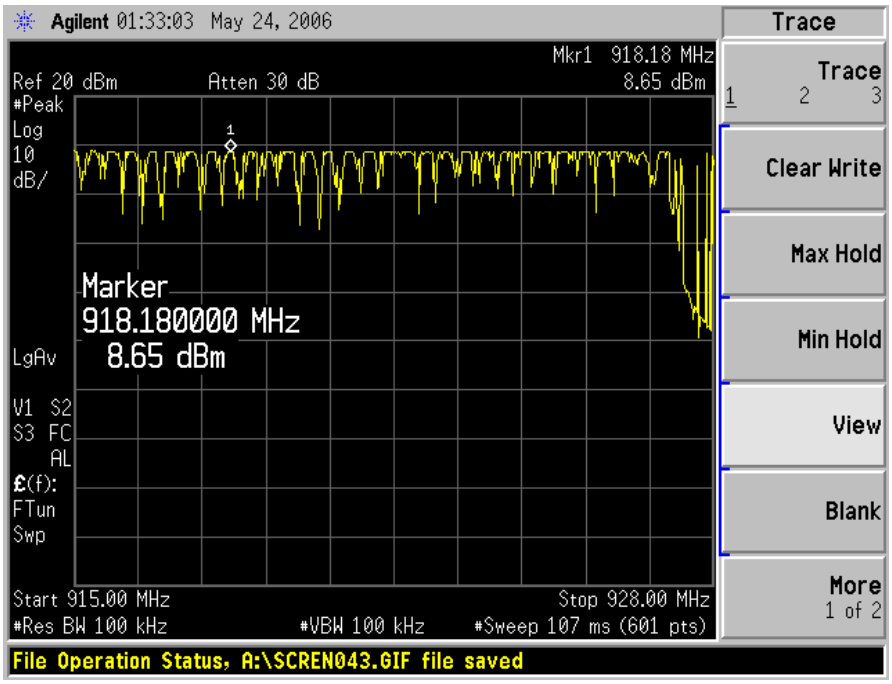
ATTACHMENT 8 – Number of Hopping Channels

CLIENT:	Jiangsu Raifu Intelligent Tech. Co., Ltd.	**TEST STANDARD:**	FCC Part 15.247 (a) (1) (i)
MODEL NUMBERS:	RFS2212 / RFS2214	**PRODUCT:**	UHF Reader
MODEL TESTED	RFS2214		
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Grounding
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, May 24

SETUP METHOD:	ANSI C63.4 - 2003
TEST REQUIREMENT:	FCC 15.247 (a) (1) (i) For frequency hopping systems operating in the 902-928MHz band: if the 20dB bandwidth of the hopping channel is less than 250kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20dB bandwidth of the hopping channel is 250kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 seconds period.
TEST PROCEDURE:	Set the spectrum as follow: Span=the frequency band of operation RBW=1% of the span; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Allow the trace to stabilize and count the number of hopping channels.
TEST VOLTAGE:	120V / 60Hz
TEST STATUS:	Hopping enable
RESULTS:	The EUT has 63 hopping numbers, it meets number of hopping channels requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



902-915MHz



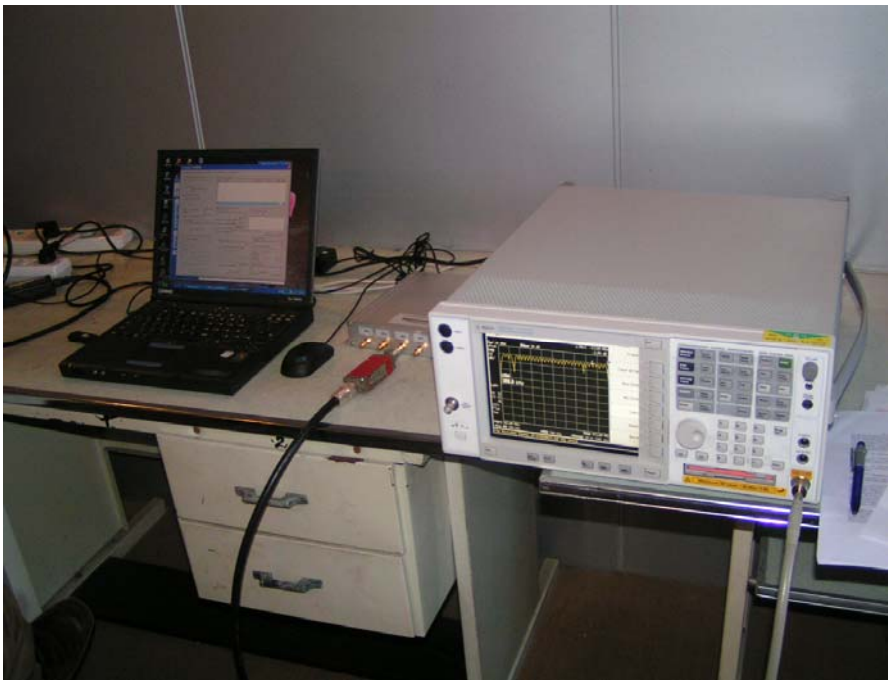
915-928MHz

Result: Total 63 Channels

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/06	03/19/07
20dB Attenuator	SETP	50HF-020	---	03/20/06	03/19/07
Shielded Room	---	P-22	---	02/20/06	02/19/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hanzhao _____

ENGINEER **SENIOR ENGINEER**

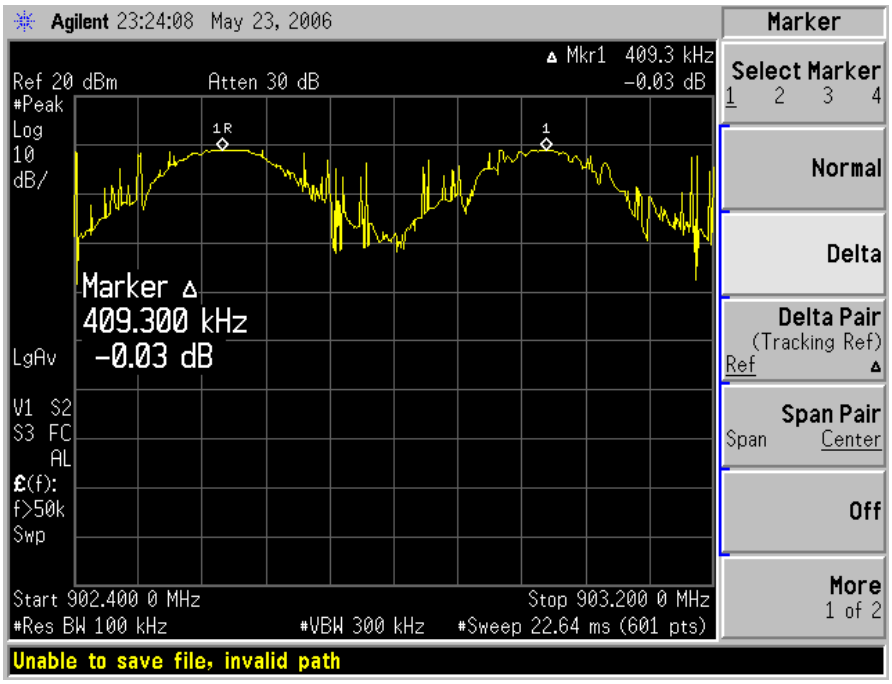


Number of Hopping Channels Test Set-up

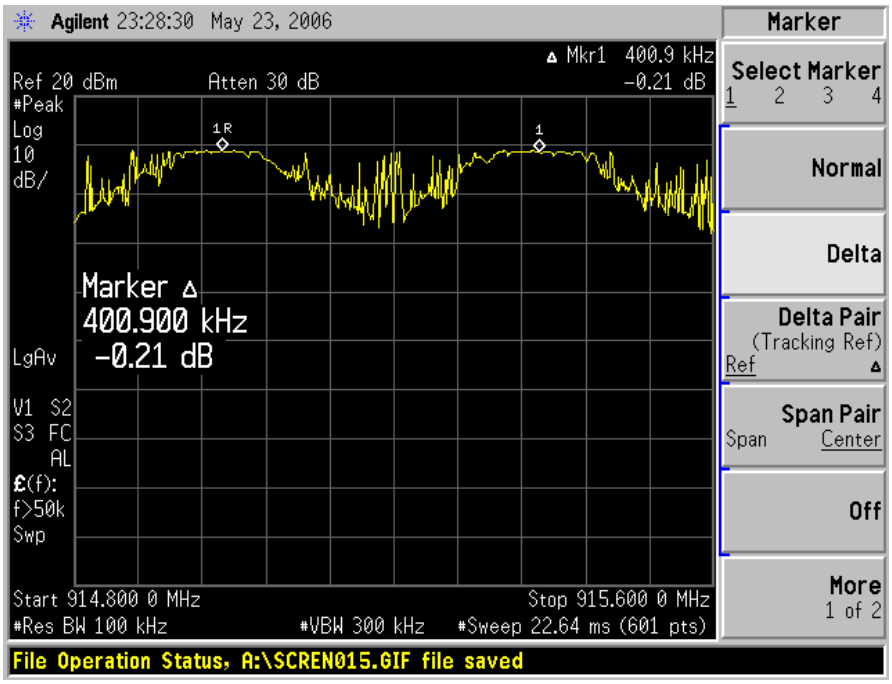
ATTACHMENT 9 – Hopping Channels Separation

CLIENT:	Jiangsu Raifu Intelligent Tech. Co., Ltd.	**TEST STANDARD:**	FCC Part 15.247 (a) (1)
MODEL NUMBERS:	RFS2212 / RFS2214	**PRODUCT:**	UHF Reader
MODEL TESTED	RFS2214		
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Grounding
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, May 24

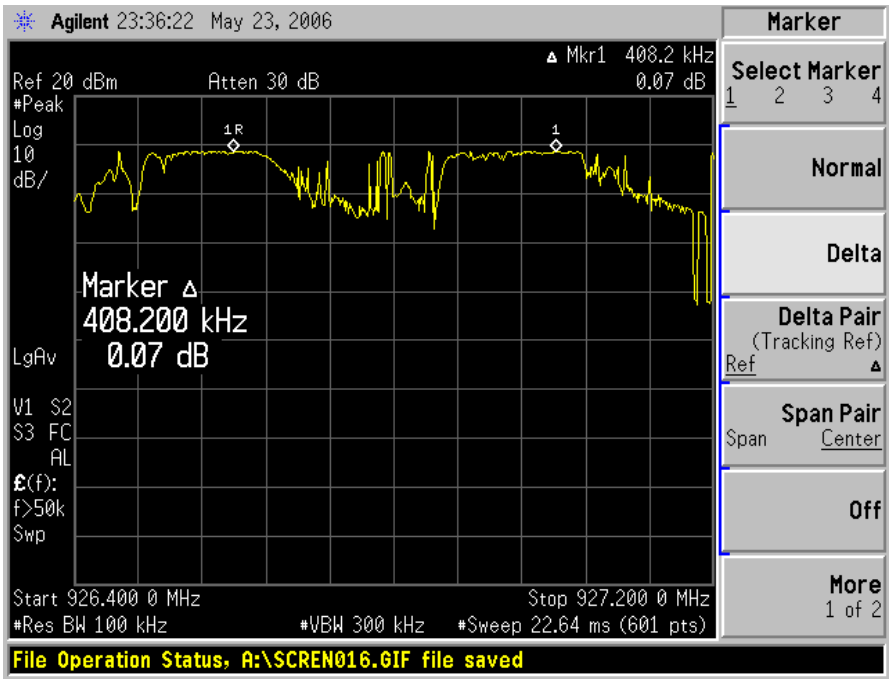
SETUP METHOD:	ANSI C63.4 - 2003
TEST REQUIREMENT:	FCC 15.247 (a) (1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.
TEST PROCEDURE:	Set the spectrum as follow: Span=wide enough to capture the peaks of two adjacent channels; RBW=1% of the span; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Allow the trace to stabilize and delta mark two channels peak emission, then record the frequency separation.
TEST VOLTAGE:	120V / 60Hz
TEST STATUS:	Hopping enable
RESULTS:	The EUT meets the hopping channels separation requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



Near Channel 1



Near Channel 32



Near Channel 63

Test Result:

Channel	*Channel Separation*	*Limit*	*Result*
Near 1	*409.3kHz*	*25kHz / 20dB Bandwidth=344.9kHz*	*Pass*
Near 32	*400.9kHz*		*Pass*
Near 63	*408.2kHz*		*Pass*

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/06	03/19/07
20dB Attenuator	SETP	50HF-020	---	03/20/06	03/19/07
Shielded Room	---	P-22	---	02/20/06	02/19/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hanzhao _____

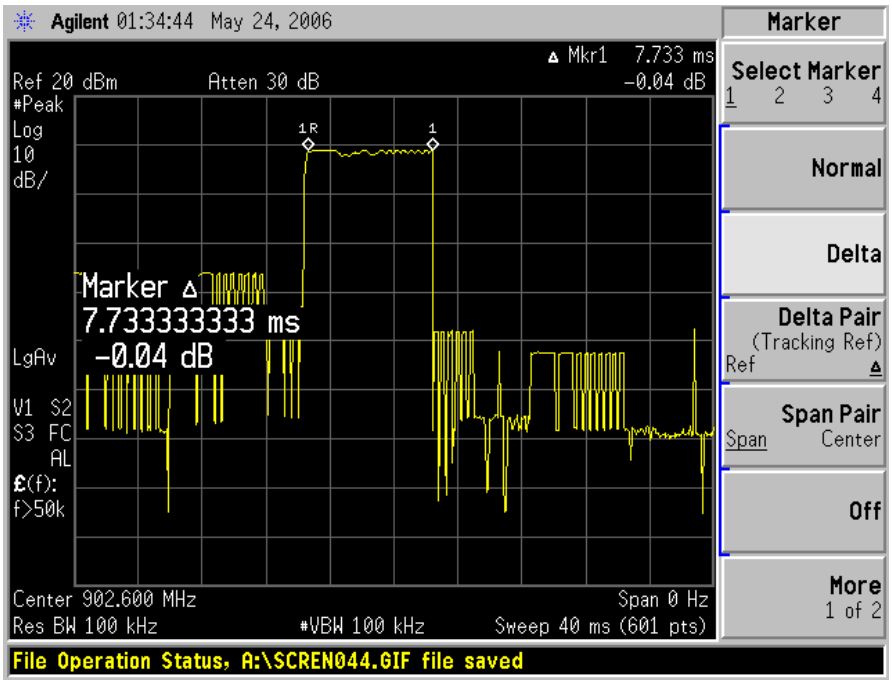
ENGINEER **SENIOR ENGINEER**

Hopping Channels Separation Test Set-up

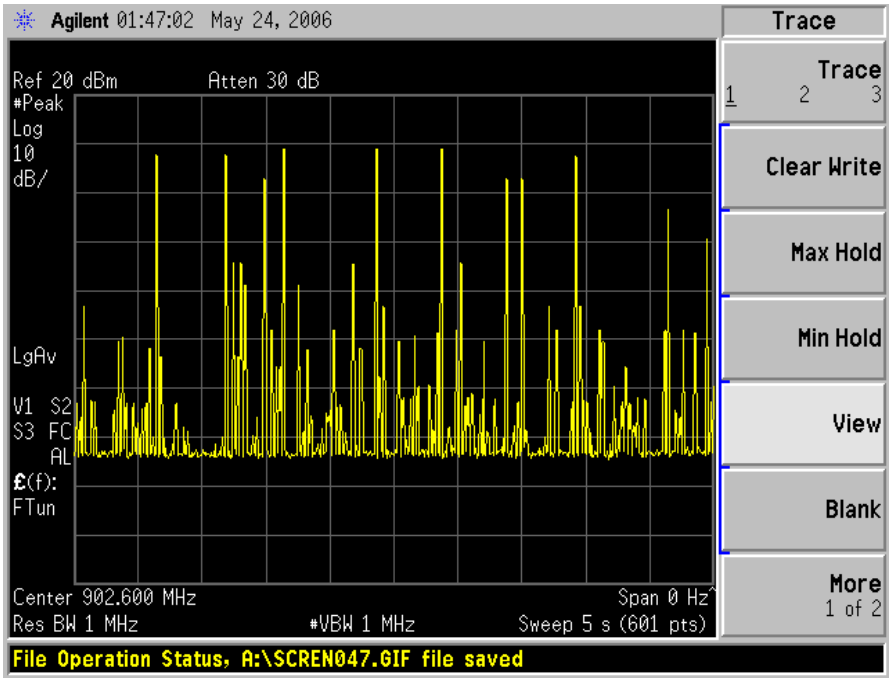
ATTACHMENT 10 – Time of Occupying Test

CLIENT:	Jiangsu Raifu Intelligent Tech. Co., Ltd.	**TEST STANDARD:**	FCC Part 15.247 (a) (1) (i)
MODEL NUMBERS:	RFS2212 / RFS2214	**PRODUCT:**	UHF Reader
MODEL TESTED	RFS2214		
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Grounding
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, May 24

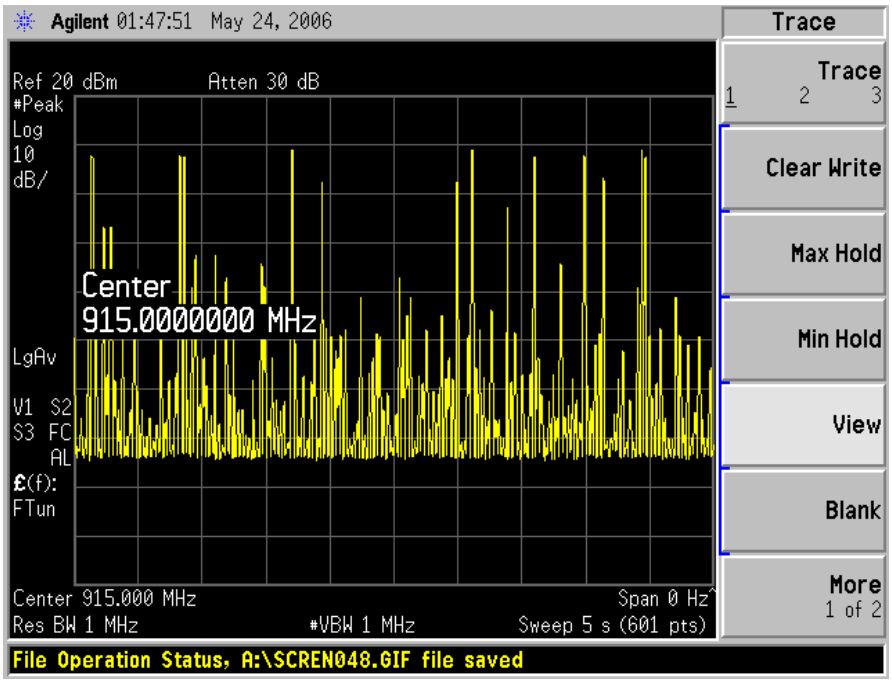
SETUP METHOD:	ANSI C63.4 - 2003
TEST REQUIREMENT:	FCC 15.247 (a) (1) (i) For frequency hopping systems operating in the 902-928MHz band: if the 20dB bandwidth of the hopping channel is less than 250kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20dB bandwidth of the hopping channel is 250kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 seconds period.
TEST PROCEDURE:	Set the spectrum as follow: Span=0Hz center on the hopping channel; RBW=100kHz; VBW≧RBW; Sweep=as necessary to capture the entire dwell time per hopping channel; Detector=Peak; Trace=Maxhold; Let the EUT transmit at its maximum data rate and allow the trace to stabilize ; record the total dwell time within the specified tiem.
TEST VOLTAGE:	120V / 60Hz
TEST STATUS:	Hopping enable
RESULTS:	The EUT meets the time of occupying requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



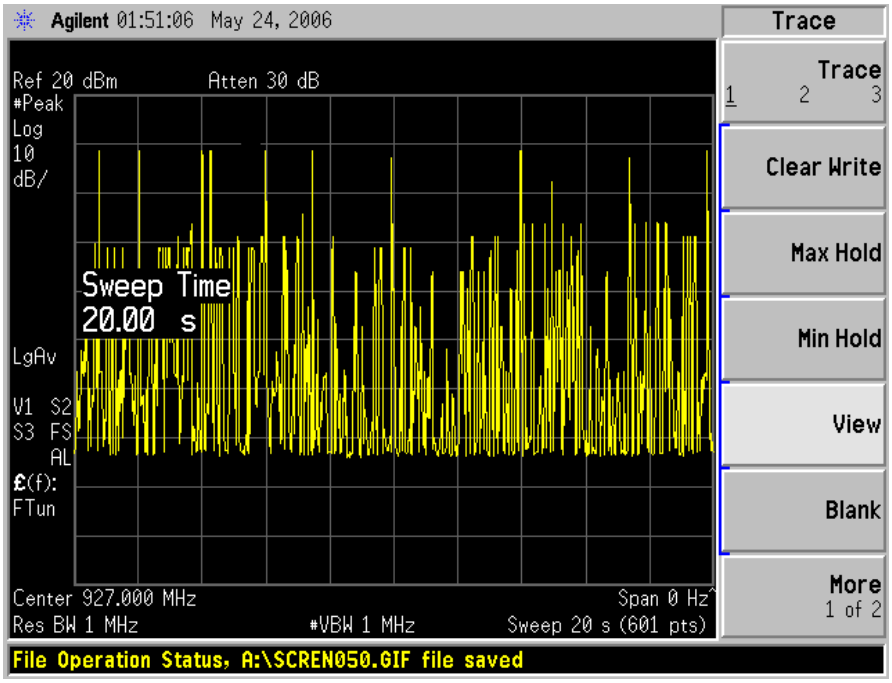
Single Occupying Time



Channel 1



Channel 32



Channel 63

Test Result:

Channel	*Time*	*Limit*	*Result*
1	*7.733ms*9=69.597ms within 5s, that is 69.597*4=0.278s within 20s*	*0.4s within 20s*	*Pass*
32	*7.733ms*10=77.33ms within 5s, that is 77.33*4=0.309s within 20s*	*0.4s within 20s*	*Pass*
63	*7.733ms*10=77.33ms within 20s*	*0.4s within 20s*	*Pass*

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/06	03/19/07
20dB Attenuator	SETP	50HF-020	---	03/20/06	03/19/07
Shielded Room	---	P-22	---	02/20/06	02/19/07
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hanzhao _____

ENGINEER **SENIOR ENGINEER**

Time of Occupying Test Set-up