

FCC CERTIFICATION
On Behalf of
SHANGHAI CCLEE MODEL CO., LTD

RADIO CONTROL EQUIPMENT
Model No.: CCR/C-1.1F-CX/2-L

FCC ID: XWHCCRC

Prepared for : SHANGHAI CCLEE MODEL CO., LTD
Address : 1289# JIASONG [M], HUAXIN TOWN, QINGPU
DISTRICT, SHANGHAI, P.R.CHINA

Prepared by : ACCURATE TECHNOLOGY CO. LTD
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Report Number : ATE20111565
Date of Test : July 29-August 3, 2011
Date of Report : August 5, 2011

TABLE OF CONTENTS

Description	Page
Test Report Certification	
1. GENERAL INFORMATION	4
1.1. Description of Device (EUT).....	4
1.2. Description of Test Facility	4
1.3. Measurement Uncertainty	5
2. MEASURING DEVICE AND TEST EQUIPMENT	6
3. SUMMARY OF TEST RESULTS.....	7
4. HARMONICS AND SPURIOUS RADIATED EMISSION FOR FCC PART 15 SECTION 15.227(B)	8
4.1. Block Diagram of Test Setup.....	8
4.2. The Field Strength of Radiation Emission Measurement Limits.....	9
4.3. Configuration of EUT on Measurement	9
4.4. Operating Condition of EUT	10
4.5. Test Procedure	10
4.6. The Field Strength of Radiation Emission Measurement Results	11
5. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15 SECTION 15.227(A)	12
5.1. Block Diagram of Test Setup.....	12
5.2. The Emission Limit For Section 15.227(a)	12
5.3. EUT Configuration on Measurement	13
5.4. Operating Condition of EUT	13
5.5. Test Procedure	13
5.6. The Emission Measurement Result	14
6. BAND EDGES	15
6.1. The Requirement	15
6.2. EUT Configuration on Measurement	15
6.3. Operating Condition of EUT	15
6.4. Test Procedure	15
6.5. The Measurement Result	15

APPENDIX I (TEST CURVES) (3 pages)

Test Report Certification

Applicant : SHANGHAI CCLEE MODEL CO., LTD
Manufacturer : SHANGHAI CCLEE MODEL CO., LTD
EUT Description : RADIO CONTROL EQUIPMENT
(A) MODEL NO.: CCR/C-1.1F-CX/2-L
(B) SERIAL NO.: N/A
(C) POWER SUPPLY: DC 9V ("AA" batteries 6×)

Measurement Procedure Used:

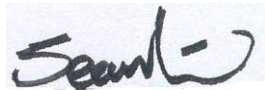
FCC Rules and Regulations Part 15 Subpart C Section 15.227
ANSI C63.4: 2003

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.227 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : July 29-August 3, 2011

Prepared by : Apple Lv
(Engineer)

Approved & Authorized Signer : 
(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : RADIO CONTROL EQUIPMENT

Model Number : CCR/C-1.1F-CX/2-L

Power Supply : DC 9V (“AA” batteries 6×)

Operation Frequency : 27.145MHz

Applicant : SHANGHAI CCLEE MODEL CO., LTD
Address : 1289# JIASONG [M], HUAXIN TOWN, QINGPU DISTRICT, SHANGHAI, P.R.CHINA

Manufacturer : SHANGHAI CCLEE MODEL CO., LTD
Address : 1289# JIASONG [M], HUAXIN TOWN, QINGPU DISTRICT, SHANGHAI, P.R.CHINA

Date of sample received : July 29, 2011

Date of Test : July 29-August 3, 2011

1.2. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC
The Registration Number is 752051

Listed by Industry Canada
The Registration Number is 5077A-2

Accredited by China National Accreditation Committee
for Laboratories
The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD
Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.
Science & Industry Park, Nanshan, Shenzhen, Guangdong
P.R. China

1.3.Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2
(Above 1GHz)

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 15, 2012
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 15, 2012
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 15, 2012
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 15, 2012
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2012
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2012
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2012
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 15, 2012
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 15, 2012
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 15, 2012

3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission	N/A
Section 15.209 Section 15.227(b)	Harmonics and Spurious Radiated Emission	Compliant
Section 15.227(a)	Fundamental Radiated Emission	Compliant
Section 15.227	Band Edge	Compliant

Remark: “N/A” means “Not applicable”.

4. HARMONICS AND SPURIOUS RADIATED EMISSION FOR FCC PART 15 SECTION 15.227(B)

4.1. Block Diagram of Test Setup

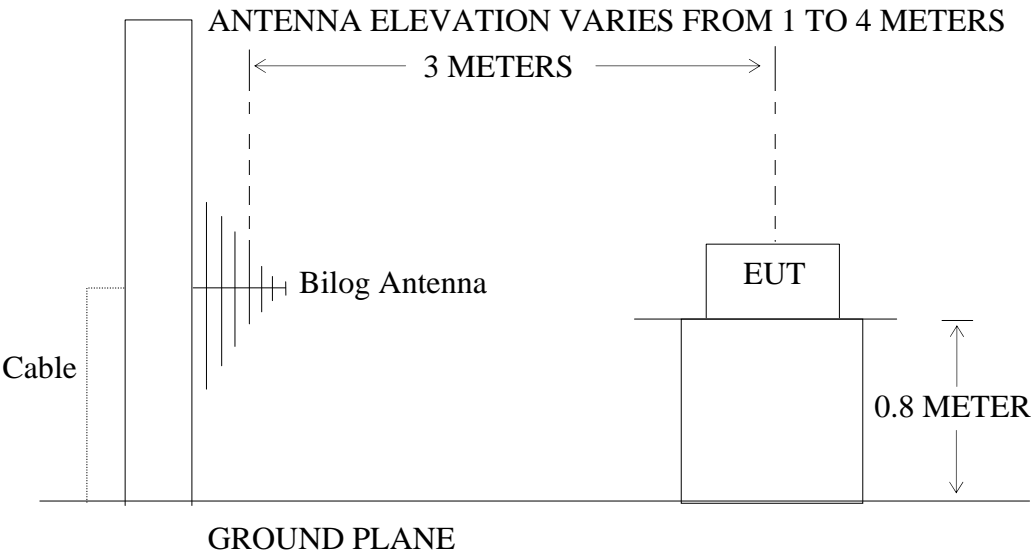
4.1.1. Block diagram of connection between the EUT and simulators



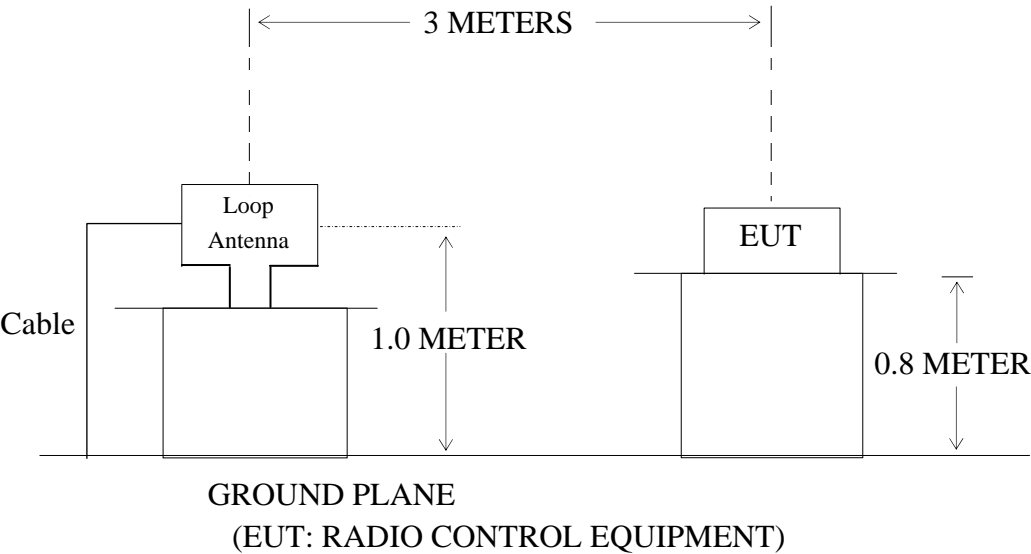
(EUT: RADIO CONTROL EQUIPMENT)

4.1.2. Semi-Anechoic Chamber Test Setup Diagram

4.1.2.1. Above 30MHz



4.1.2.2. Below 30MHz



4.2.The Field Strength of Radiation Emission Measurement Limits

4.2.1.The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209.

Radiation Emission Measurement Limits According to Section 15.209(a)

Below 30MHz

Frequency (fundamental or spurious)	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490kHz	2400/F (F in kHz)	2400/377(F in kHz)	300
490-1705kHz	24000/F (F in kHz)	24000/377(F in kHz)	30
1705-30MHz	30	N/A	30

Above 30MHz

Frequency (MHz)	Limit		The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dB μ V/m)	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	

4.3.Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.3.1. RADIO CONTROL EQUIPMENT (EUT)

Model Number : CCR/C-1.1F-CX/2-L
 Serial Number : N/A
 Manufacturer : SHANGHAI CCLEE MODEL CO., LTD

4.4. Operating Condition of EUT

4.4.1. Setup the EUT and simulator as shown as Section 4.1.

4.4.2. Turn on the power of all equipment.

4.4.3. Let the EUT work in TX modes and measure it.

4.5. Test Procedure

4.5.1. **Above 30MHz:** The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C 63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz.

The frequency range from 30MHz to 1000MHz is checked.

4.5.2. **Below 30MHz:** The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. calibrated Loop antenna is used as receiving antenna. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C 63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 9kHz in 9kHz-30MHz.

The frequency range from 9kHz to 30MHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

4.6. The Field Strength of Radiation Emission Measurement Results

PASS.

The frequency range 9kHz to 1000MHz is investigated.

Date of Test:	August 1, 2008	Temperature:	25°C
EUT:	RADIO CONTROL EQUIPMENT	Humidity:	50%
Model No.:	CCR/C-1.1F-CX/2-L	Power Supply:	DC 9V
Test Mode:	TX	Test Engineer:	Pei

Below 30MHz:

Polarization	Frequency (MHz)	Reading(dBμV/m) QP	Factor Corr.(dB)	Result(dBμV/m) QP	Limits(dBμV/m) QP	Margin(dBμV/m) QP
Horizontal	-	-	-	-	-	-
Vertical	-	-	-	-	-	-

Above 30MHz:

Polarization	Frequency (MHz)	Reading(dBμV/m) QP	Factor Corr.(dB)	Result(dBμV/m) QP	Limits(dBμV/m) QP	Margin(dBμV/m) QP
Horizontal	81.4515	22.97	13.48	36.45	40.00	-3.55
Horizontal	135.7515	24.21	14.65	38.86	43.50	-4.64
Horizontal	162.9093	25.06	14.63	39.69	43.50	-3.81
Horizontal	190.0495	24.32	16.07	40.39	43.50	-3.11
Horizontal	217.2123	23.91	16.60	40.51	46.00	-5.49
Horizontal	244.3580	25.38	17.05	42.43	46.00	-3.57
Horizontal	352.9299	21.32	20.98	42.30	46.00	-3.70
Vertical	54.3014	21.81	13.12	34.93	40.00	-5.07
Vertical	81.4540	22.76	13.82	36.58	40.00	-3.42
Vertical	108.6060	25.72	14.13	39.85	43.50	-3.65
Vertical	162.9080	23.91	14.63	38.54	43.50	-4.96
Vertical	190.0490	22.42	16.02	38.44	43.50	-5.06
Vertical	217.2131	23.26	16.60	39.86	46.00	-6.14
Vertical	244.3544	25.48	17.05	42.53	46.00	-3.47

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$

$$\text{Where Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} + \text{High Pass Filter Loss} - \text{Amplifier Gain}$$

3. The spectral diagrams in appendix I display the measurement of peak values.

5. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15

SECTION 15.227(A)

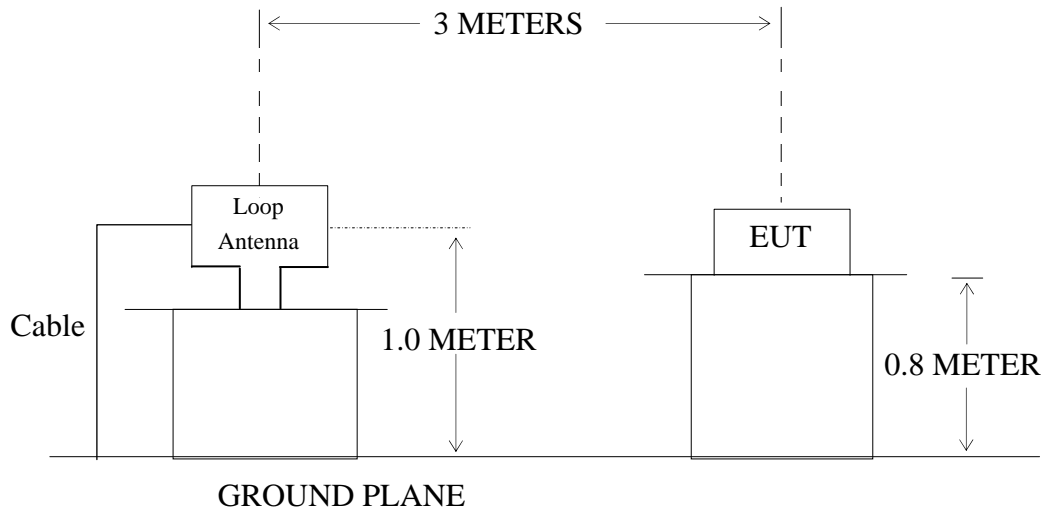
5.1. Block Diagram of Test Setup

5.1.1. Block diagram of connection between the EUT and simulators



(EUT: RADIO CONTROL EQUIPMENT)

5.1.2. Semi-Anechoic Chamber Test Setup Diagram



(EUT: RADIO CONTROL EQUIPMENT)

5.2. The Emission Limit For Section 15.227(a)

5.2.1. The field strength of any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emission apply.

5.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.3.1.RADIO CONTROL EQUIPMENT (EUT)

Model Number : CCR/C-1.1F-CX/2-L
Serial Number : N/A
Manufacturer : SHANGHAI CCLEE MODEL CO., LTD

5.4.Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 5.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in TX mode and measure it.

5.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. A calibrated Loop antenna is used as receiving antenna. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C 63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 9kHz in 9kHz-30MHz.

5.6.The Emission Measurement Result

PASS.

Date of Test:	August 1, 2011	Temperature:	25°C
EUT:	RADIO CONTROL EQUIPMENT	Humidity:	50%
Model No.:	CCR/C-1.1F-CX/2-L	Power Supply:	DC 9V
Test Mode:	TX	Test Engineer:	Pei

Fundamental Radiated Emissions

Test conditions		Fundamental Frequency	
		27.145MHz	
T _{nom} (25°C)	V _{nom} (DC 9V)	(dBμV/m)/ (μ V/m) PEAK	(dBμV/m)/(μ V/m) AV
		80.21/10244.72	78.44/8356.03
Limit		100/100,000	80/10,000
Note: Measurement was performed with modulated signal with average detector and peak detector.			

6. BAND EDGES

6.1.The Requirement

6.1.1.The wanted emission within the band 26.96-27.28MHz.

6.2.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.2.1.RADIO CONTROL EQUIPMENT (EUT)

Model Number : CCR/C-1.1F-CX/2-L
Serial Number : N/A
Manufacturer : SHANGHAI CCLEE MODEL CO., LTD

6.3.Operating Condition of EUT

6.3.1.Setup the EUT and simulator as shown as Section 6.1.

6.3.2.Turn on the power of all equipment.

6.3.3.Let the EUT work in TX mode and measure it.

6.4.Test Procedure

The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector. The vertical scale of is set to 10dB per division; the horizontal scale is set to 32kHz per division. Star frequency are 26.96MHz, stop frequency are 27.28MHz. RBW is set to 3kHz, VBW is set to 10kHz.

6.5.The Measurement Result

The EUT does meet the requirement.

The spectral diagrams attached in appendix 1.

APPENDIX I (Test Curves)



ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: pei #5103

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: RADIO CONTROL EQUIPMENT

Mode: TX

Model: CCR/C-1

Manufacturer: SHANGHAI C.C. LEE MODEL CO., LTD

Polarization: Horizontal

Power Source: DC 9V

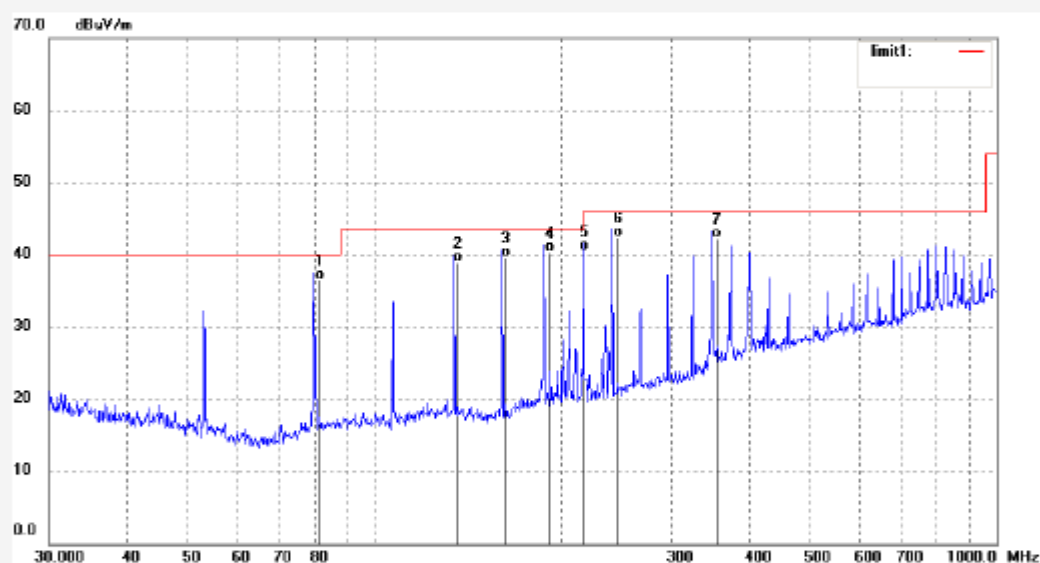
Date: 2011/08/01

Time: 21:58:00

Engineer Signature: PEI

Distance: 3m

Note: Report No.:ATE20111441



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	81.4515	22.97	13.48	36.45	40.00	-3.55	QP			
2	135.7515	24.21	14.65	38.86	43.50	-4.64	QP			
3	162.9093	25.06	14.63	39.69	43.50	-3.81	QP			
4	190.0495	24.32	16.07	40.39	43.50	-3.11	QP			
5	217.2123	23.91	16.60	40.51	46.00	-5.49	QP			
6	244.3580	25.38	17.05	42.43	46.00	-3.57	QP			
7	352.9599	21.32	20.98	42.30	46.00	-3.70	QP			



ACCURATE TECHNOLOGY CO., LTD.

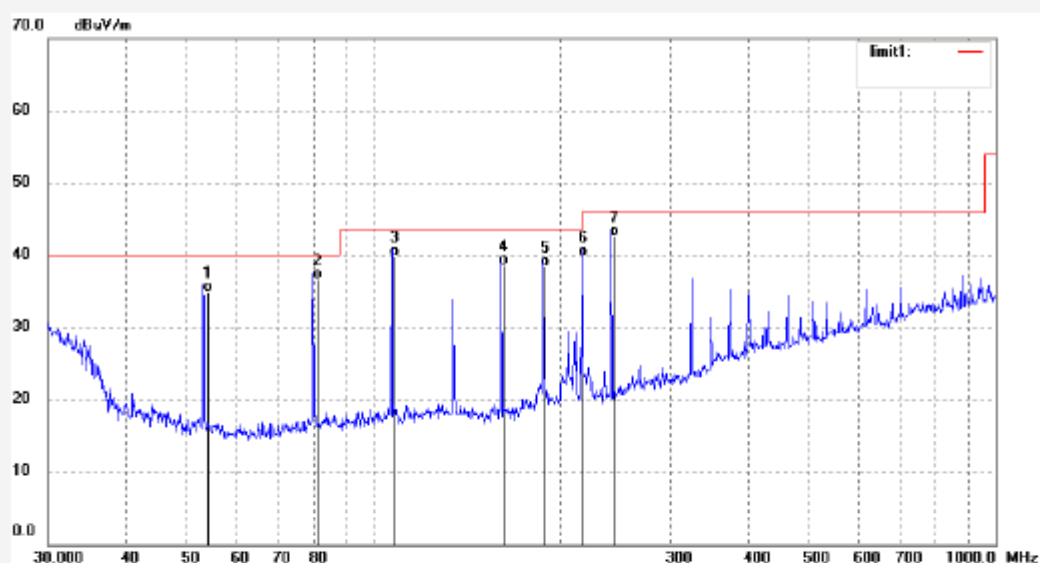
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: pei #5102
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 24 C / 48 %
EUT: RADIO CONTROL EQUIPMENT
Mode: TX
Model: CCR/C-1
Manufacturer: SHANGHAI C.C. LEE MODEL CO., LTD

Polarization: Vertical
Power Source: DC 9V
Date: 2011/08/01
Time: 21:40:10
Engineer Signature: PEI
Distance: 3m

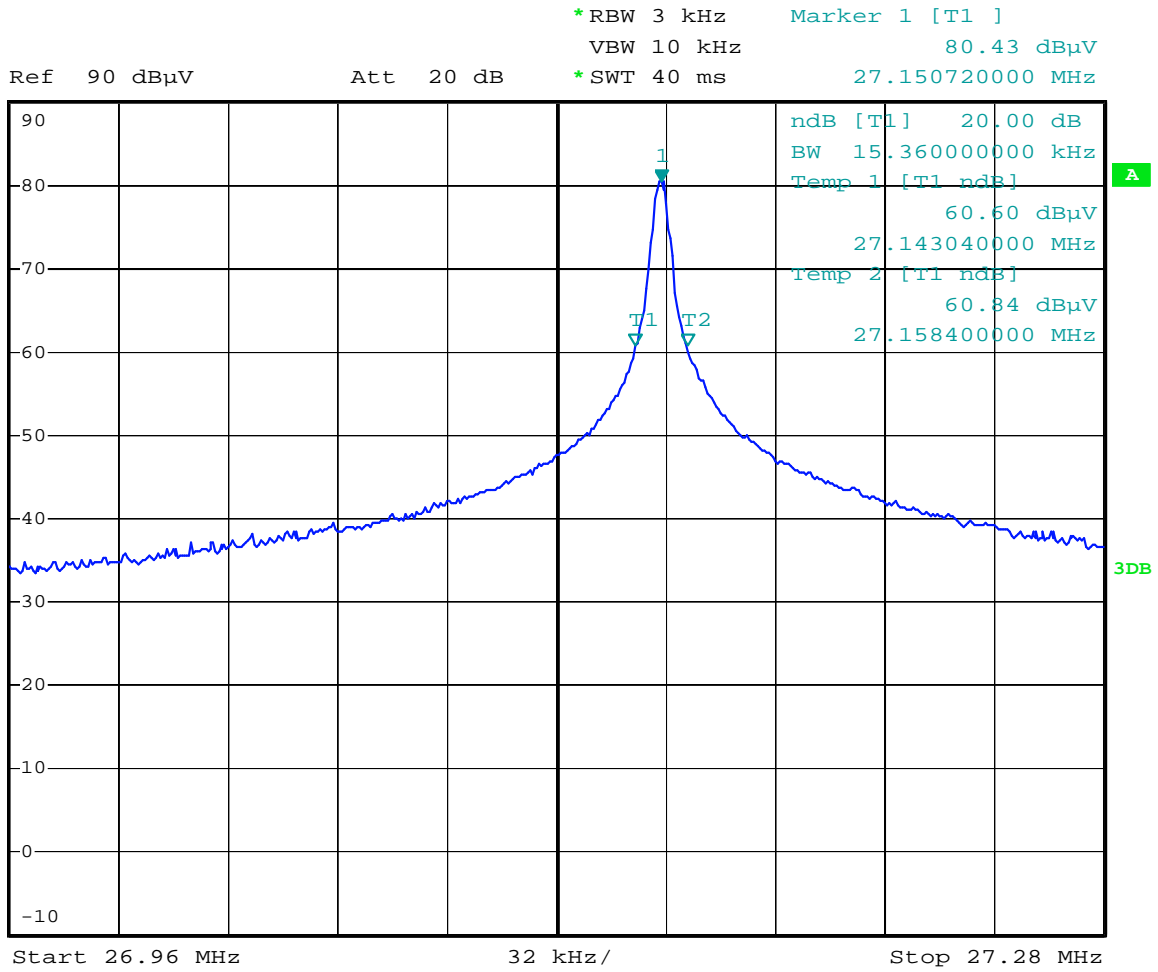
Note: Report No.: ATE20111441



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	54.3014	21.81	13.12	34.93	40.00	-5.07	QP			
2	81.4540	22.76	13.82	36.58	40.00	-3.42	QP			
3	108.6060	25.72	14.13	39.85	43.50	-3.65	QP			
4	162.9080	23.91	14.63	38.54	43.50	-4.96	QP			
5	190.0490	22.42	16.02	38.44	43.50	-5.06	QP			
6	217.2131	23.26	16.60	39.86	46.00	-6.14	QP			
7	244.3544	25.48	17.05	42.53	46.00	-3.47	QP			



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Date: 1.AUG.2011 13:48:52