

深圳华通威国际检验有限公司
SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION Co., Ltd

FC TEST REPORT

Report number: TR04060009

Issue date: June 21, 2004

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of:

FCC Rules and Regulations Part 15 Subpart C

Applicant: SHENZHEN GALLOP INDUSTRY CO., LTD
2F, 1 wing, No. 8, Linyuan Road East, Futian Borough, Shenzhen,
Guangdong Province, China
Tel: 86-755-83112512 Fax: 86-755-83104083

Manufacturer: SHENZHEN GALLOP INDUSTRY CO., LTD
2F, 1 wing, No. 8, Linyuan Road East, Futian Borough, Shenzhen,
Guangdong Province, China
Tel: 86-755-83112512 Fax: 86-755-83104083

Equipment under test: Battery Radio Control

Model number: C101(GIA02) Remark: representative sample for test

Listed Model: C121(GIA01), C102(GIA03), C103(GIA05), C181(GIA06),
C182(GIA07), C081(GIA08)

FCC ID No.: R8ZSZGALLOPRC-002

Laboratory Name: Shenzhen Huatongwei International Inspection Co., Ltd
FCC Registration Number: 662850

Laboratory Address: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Tel: 86-755-26748099 Fax: 86-755-26748089

The results in this report are applicable only to the equipment tested.

This report shall not be re-produced except in full without the written approval of Shenzhen Huatongwei International Inspection Co., Ltd.

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1. General Information

1.1 FCC ID No.: R8ZSZGALLOPRC-002

1.2 Test Standards

All the test Procedure are strictly according to the requirement of the following standards:

FCC Rules and Regulations Part 15 Subpart C –Intentional Radiators

1.3 EUT(Equipment Under Test) Information

1.3.1 Client Information

Applicant:	SHENZHEN GALLOP INDUSTRY CO., LTD		
Address of applicant:	2F, 1 wing, No.8, Linyuan Road East, Futian Borough, Shenzhen, Guangdong Province, China		
	Tel: 86-755-83112512	Fax: 86-755-83104083	
Manufacturer:	SHENZHEN GALLOP INDUSTRY CO., LTD		
Address of manufacturer:	2F, 1 wing, No.8, Linyuan Road East, Futian Borough, Shenzhen, Guangdong Province, China		
	Tel: 86-755-83112512	Fax: 86-755-83104083	

1.3.2 General Description of E.U.T.

Name:	Battery Radio Control
Model No.:	C101(GIA02)
	Remark: Representative sample for test
Listed Model:	C121(GIA01), C102(GIA03), C103(GIA05), C181(GIA06), C182(GIA07), C081(GIA08)
Power Supply:	DC 9.6V
Product Class:	Low Power Communication Device Transmitter
Working Frequency:	27.145MHz

1.4 Test Uncertainty

Radiated Emission Test:	$\pm 4.22\text{dB}$
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1.4 Ambient condition for test

Item	Required	Actual
Temperature (°C)	15~35	22~23
Humidity (%RH)	25~75	50~54
Barometric Pressure (mbar)	860~1060	950~1000

1.5. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.6 Test Summary

Test Items	Test Result
Conducted Emission	N/A
Radiated Emission	Pass
Emissions within Band Edges	Pass

1.7 Test Location

The device described above is tested by Shenzhen Huatongwei International Inspection Co., Ltd at: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

(FCC Registration Number: 662850)

The maximum emission levels emanating from the device are compared to the FCC Rules and Regulations Part 15 Subpart C –Intentional Radiators limits for radiated emissions and the measurement results contained in this test report show that EUT is to be technically compliant with FCC requirements.

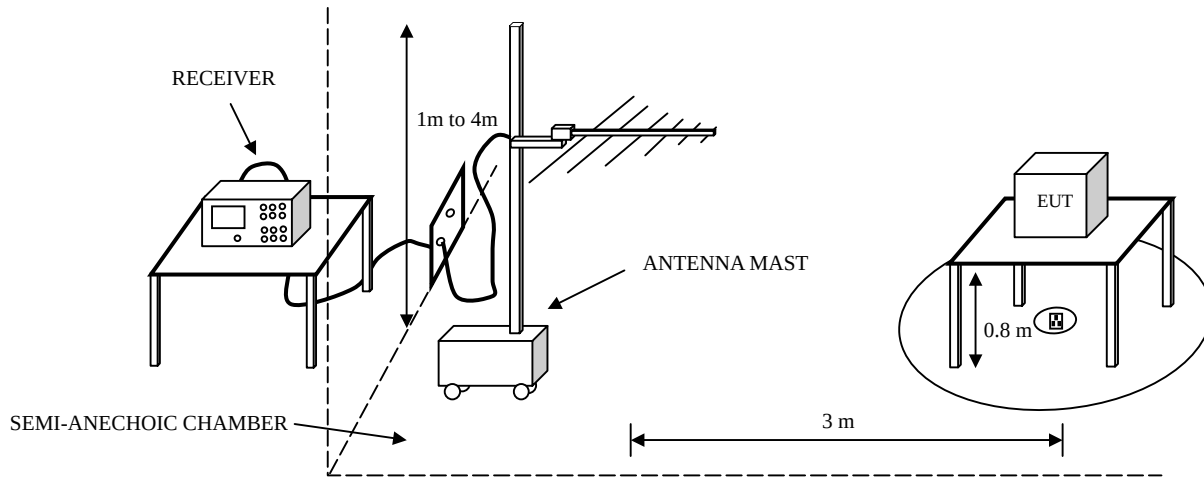
Shenzhen Huatongwei International Inspection Co., Ltd will assumed full responsibility for the accuracy and completeness of these measurements.

2 Radiated Emission Test

2.1 Test Standards

FCC Rules and Regulations Part 15 Subpart C –Intentional Radiators

2.2 Diagram of Test Setup



2.3 Test Equipments Used

EQP. Description	Manufacturer	Model No.	Serial No.	Last Cal
ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2003/11
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2003/11
RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	N/A
TURNTABLE	ETS	2088	2149	N/A
ANTENNA MAST	ETS	2075	2346	N/A
EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	NA	N/A

2.4 Test Description

2.4.1 Configuration of Instruments

Test Receiver Setting:

- Detector: Quasi-Peak
- Band Width:120KHz

—Frequency Range: 30MHz to 1000MHz

Remark: Because the intentional radiator operates below 10GHz, the scanned frequency range is only set from 30MHz to 1000MHz. (Refer to FCC Rules and Regulations Part 15 Subpart A section 15.33)

—Turntable Rotated: 0 to 360 degrees

Antenna Position:

—Height: 1m to 4m

—Polarity: Horizontal and Vertical

Arrangement of EUT:

—During the test, EUT was operated at rating power supply voltage. Maximum emission configuration was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

2.4.2 Radiated Emission Limit

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
960~1000	3	54

Remark: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

2.4.3 Test Procedure

EUT is tested in Semi-Anechoic Chamber. EUT is placed on a nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level. EUT is set 3 meters away from the center of receiving antenna, The antenna can move up and down from 1 to 4 meter to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna are set on the test. (Details refer to the relevant sections of the standard ANSI C63.4-1992 ‘Methods of Measurement of Radio Noise Emissions from Low –Voltage Electrical and Electronic Equipment in the Range of 9KHz to 40GHz’.)

2.5 Test Results

Test Results: PASS

Test data see following pages

Remark: When PK reading is less than relevant limit 20dB, the QP reading will not be recorded.

Radiation Measurement below 30MHz

a. Fundamental Frequency

Frequency (MHz)	Maximum Test Result (dB(μ V/m))		FCC Limit (dB(μ V/m))	
	Peak	Average*	Peak	Average
27.147294	79.69	68.8	100	80

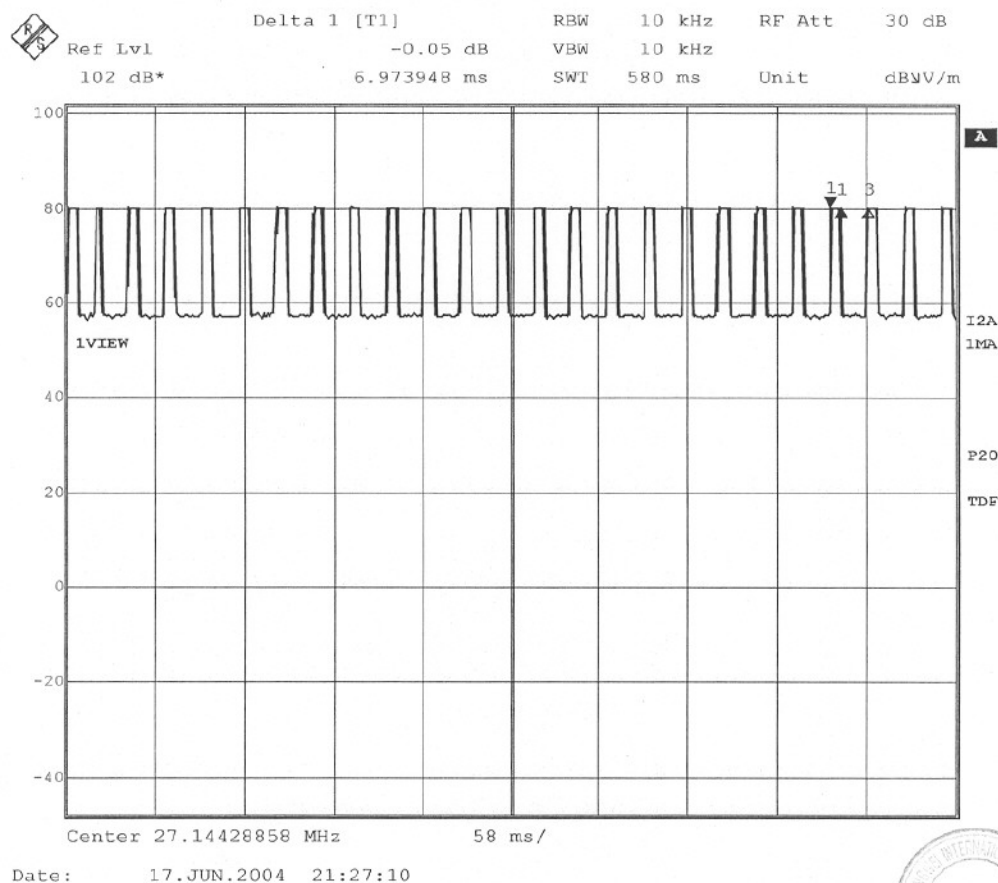
Remark : 1)The above peak value is the maximum value of the measurement in 3 orthogonal planes

2)* Caculation for radiation(average) from the below time domain plot:

Measured duty cycle(average) = $6.973948 / 24.408818 = 0.286$

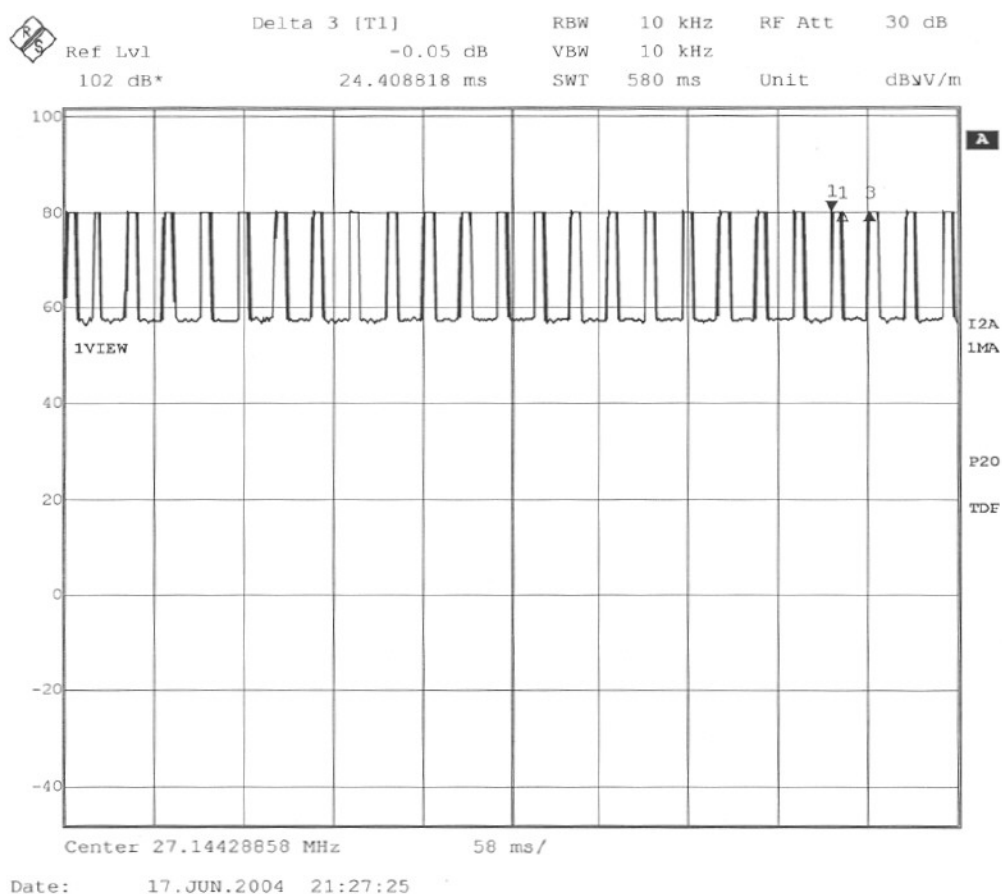
Radiation(average) = $79.69 + 20 * \log(0.286) = 68.8 \text{ dB}(\mu \text{ V/m})$

Transmitter Emission-Time domain Plot



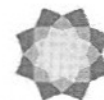
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b. The measured radiation outside the operation band were negligible.



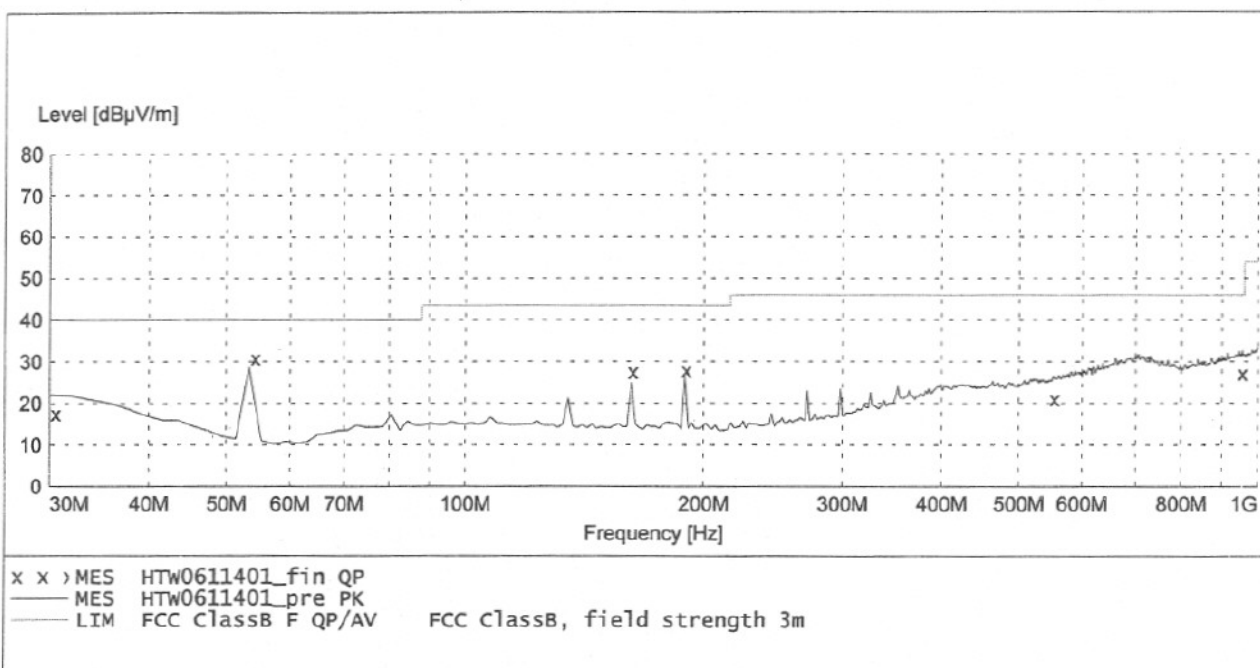


Radiated Emission FCC Part 15C

EUT: Battery Radio Contrl M/N:C121(GIA01)
 Manufacturer: SHENZHEN GALLOP
 Operating Condition: TX On
 Test Site: 3m CHAMBER
 Operator: JACKY
 Test Specification: DC 9.6V
 Comment: Polarisation:H
 Temp:22'C Humi:50%

SCAN TABLE: "test Field(30M-1G)"

Short Description: Field Strength(30M-1G)
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency width Time Bandw.
 30.0 MHz 1.0 GHz 60.0 kHz QuasiPeak 1.0 s 120 kHz HL562new



MEASUREMENT RESULT: "HTW0611401_fin QP"

6/11/04 8:59AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
30.540000	17.60	20.9	40.0	22.4	250.0	2.00	HORIZONTAL
54.300000	30.80	8.0	40.0	9.2	345.0	90.00	HORIZONTAL
162.840000	27.60	10.7	43.5	15.9	149.0	58.00	HORIZONTAL
190.020000	28.00	10.7	43.5	15.5	150.0	63.00	HORIZONTAL
553.800000	21.10	21.6	46.0	24.9	343.0	160.00	HORIZONTAL
955.380000	27.20	26.4	46.0	18.8	331.0	21.00	HORIZONTAL



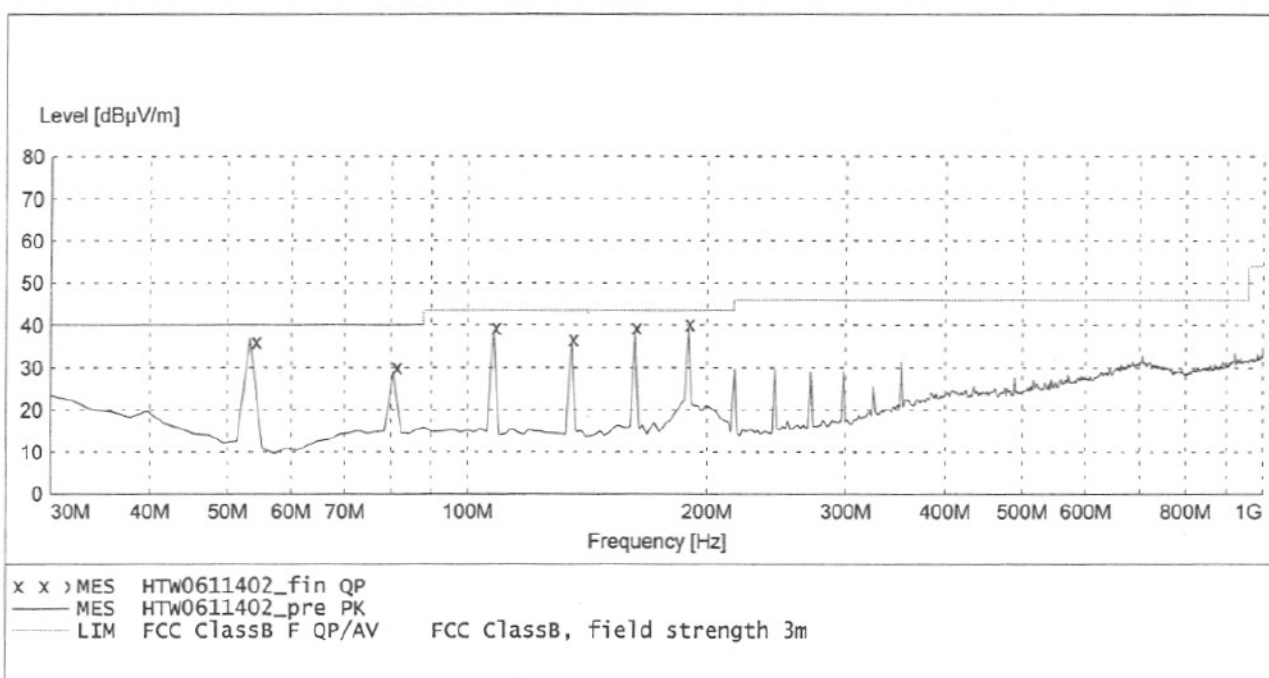


Radiated Emission FCC Part 15C

EUT: Battery Radio Contrl M/N:C121(GIA01)
 Manufacturer: SHENZHEN GALLOP
 Operating Condition: TX On
 Test Site: 3m CHAMBER
 Operator: JACKY
 Test Specification: DC 9.6V
 Comment: Polarisation:V
 Temp:22'C Humi:50%

SCAN TABLE: "test Field(30M-1G)"

Short Description: Field Strength(30M-1G)
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 30.0 MHz 1.0 GHz 60.0 kHz QuasiPeak 1.0 s 120 kHz HL562new



MEASUREMENT RESULT: "HTW0611402_fin QP"

6/11/04 9:17AM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisation
54.300000	36.20	8.0	40.0	3.8	140.0	181.00	VERTICAL
81.420000	30.10	11.5	40.0	9.9	100.0	19.00	VERTICAL
108.600000	39.50	11.6	43.5	4.0	100.0	359.00	VERTICAL
135.720000	36.70	11.1	43.5	6.8	100.0	252.00	VERTICAL
162.840000	39.50	10.7	43.5	4.0	100.0	82.00	VERTICAL
190.020000	40.40	10.7	43.5	3.1	100.0	312.00	VERTICAL

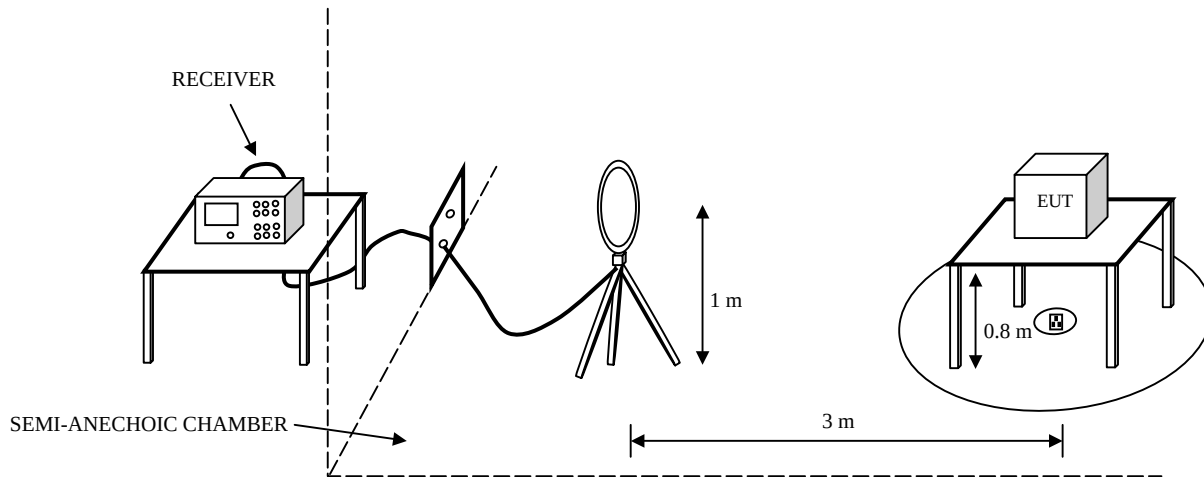


3 Emissions within Band Edges

3.1 Test Standards

FCC Rules and Regulations Part 15 Subpart C –Intentional Radiators

3.2 Diagram of Test Setup



3.3 Test Equipments Used

EQP.	Description	Manufacturer	Model No.	Serial No.	Last Cal
	LOOP ANTENNA	ROHDE & SCHWARZ	HFH2-Z2	100020	2003/11
	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2003/11
	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	N/A
	TURNTABLE	ETS	2088	2149	N/A
	ANTENNA MAST	ETS	2075	2346	N/A
	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	NA	N/A

3.4 Test Description

3.4.1 Configuration of Instruments

3.4.1.1 Test Receiver Setting:

- Detector: Peak and Average
- Band Width: 9KHz
- Frequency Range: 9KHz to 30MHz
- Turntable Rotated: 0 to 360 degrees

3.4.1.2 Arrangement of EUT:

- During the test, EUT was operated at rating power supply voltage. Maximum emission configuration was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

3.4.2 Test Procedure

EUT is tested in Semi-Anechoic Chamber. Place the EUT on a nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level. Positioned the loop antenna with its plane vertical at the specified distance of 3 meters between its center and the EUT. The center of the loop antenna is set with 1m above the grounded plane. Then rotated about its vertical axis for finding out the maximum emission level of the EUT. (Details refer to the relevant sections of the standard ANSI C63.4-1992 'Methods of Measurement of Radio Noise Emissions from Low –Voltage Electrical and Electronic Equipment in the Range of 9KHz to 40GHz'.)

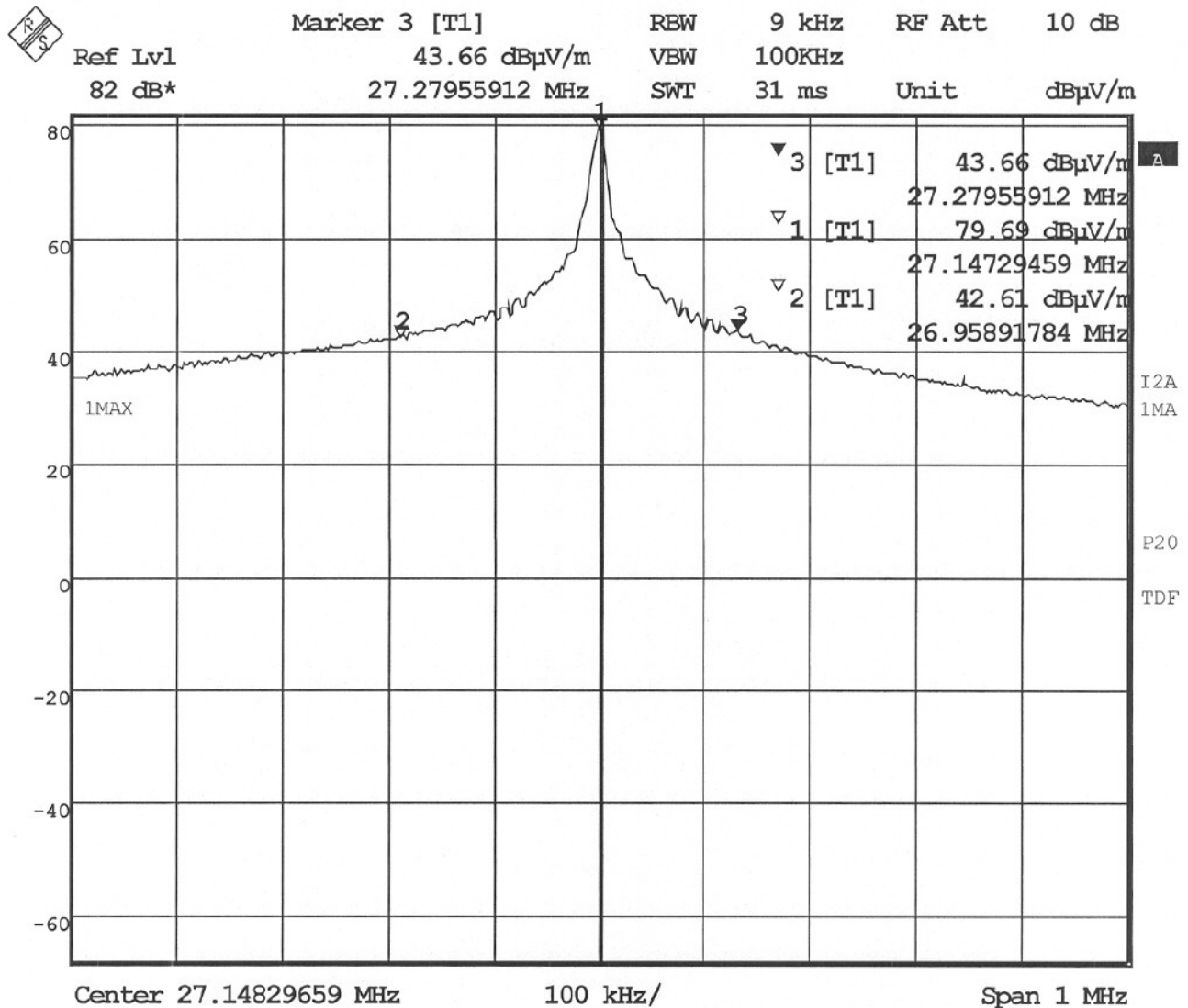
3.5 Test Results

Test Results: PASS

Test data see following pages



Measurement Data of Emissions within Band Edges



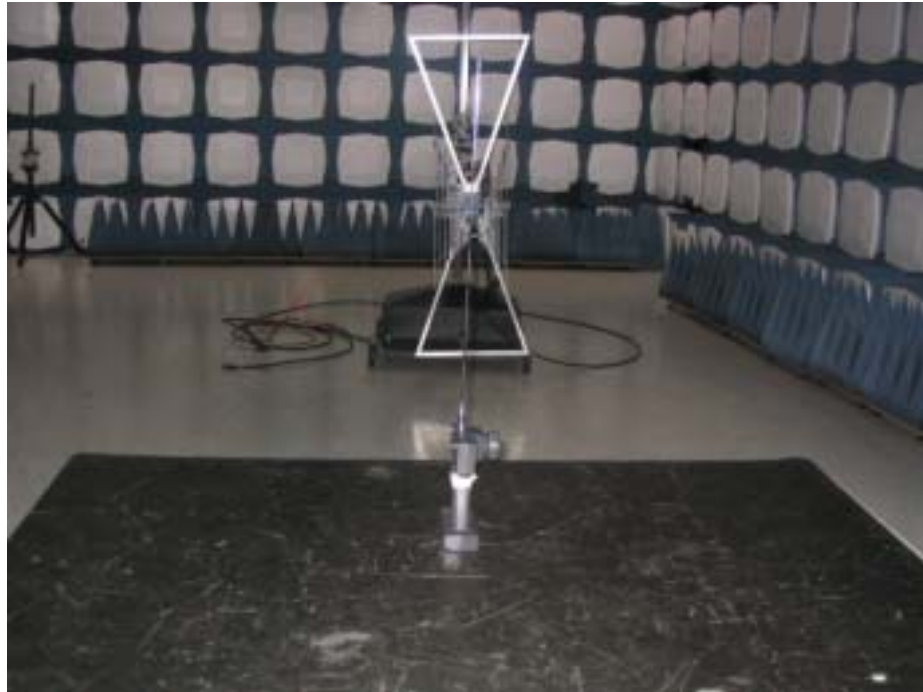
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Result: The field strength of any emission within the operation band did not exceed 80dB(μ V/m) for average value or 100 dB(μ V/m) for peak value.



4. Configuration Photographs

4.1 Photo of Radiated Emission Test



4.2 Photo of Emissions within Band Edges Test





4.3 Outline, framework and Components photos of EUT

4.3.1 Front view of EUT



4.3.2 Rear view of EUT





4.3.3 Top view of EUT



4.3.4 Bottom view of EUT



4.4 PCB outline photo of EUT



.....REPORT END.....