FCC PART 15 SUBPART C CERTIFICATION REPORT

FOR LOW POWER TRANSMITTER

TEST REPORT No.: HM109298

Equipment Under Test [EUT]:	FM Wireless Mic.
Model Number:	303
Applicant:	Supreme Toys Hong Kong Limited.
FCC ID :	L2500303

CONTENT:

CONCLUSION

The submitted product was deemed to have COMPLIED after modification by customer with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

Verify by

Patrick Wong
for Chief Executive

1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd.
EMC Laboratory
10 Dai Wang Street, Taipo Industrial Estate
New Territories, Hong Kong

Telephone: 852 2666 1888
Fax: 852 2664 4353

1.2 Applicant Details

Applicant

SUPREME TOYS HONG KONG LIMITED.
Room 907-9, 9/F., Tower B, New Mandarin Plaza,
14 Science Museum Road, TST East, Kln., HK.

Telephone: 852 2317 5168
Fax: 852 2317 5607

HKSTC Code Number for Applicant **SUT001**

Manufacturer

JACKPOT PLASTIC & METAL MANUFACTORY
Feng Gang, Guan Jing Tou, Shur Ku District, Dongguan

Telephone: 86 769 7775081
Fax: 86 769 7774929

1.3 Equipment Under Test [EUT]

Description of Sample

Product:	FM Wireless Mic.
Manufacturer:	Jackpot Plastic & Metal Manufactory
Brand Name:	Jackpot Industrial Ltd.
Model Number:	303
Input Voltage:	3Vd.c (“AA” size battery x 2)

1.3.1 Description of EUT Operation

The Equipment Under Test(EUT) is an Supreme Toys Hong Kong Limited., FM Wireless Mic. The transmitter is a 2 button transmitter. The EUT continues to transmit while button is being pressed. It is voice transmission, Modulation by Mic. and tape is frequency modulation.

1.4 Date of Order

2002-11-15

1.5 Submitted Sample(s):

4 Samples per model

1.6 Test Duration

2003-01-24

1.7 Country of Origin

China

1.8 Additional Information of EUT

	Submitted	Not Available
User Manual	☒	☐
Part List	☒	☐
Circuit Diagram	☒	☐
Printed Circuit Board [PCB] Layout	☒	☐
Block diagram	☒	☐
FCC ID Label	☒	☐

2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.4: 2000 for FCC Certification.

2.2 Test Standards and Results Summary Tables

EMISSION Results Summary						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Failed	N/A
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.239	ANSI C63.4:2000	N/A	☒	☐	☐
Radiated Emissions, 30MHz to 1GHz	FCC 47CFR 15.209	ANSI C63.4:2000	Class B	☒	☐	☐
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.207	ANSI C63.4:2000	Class B	☐	☐	☒

Note: N/A - Not Applicable

3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions

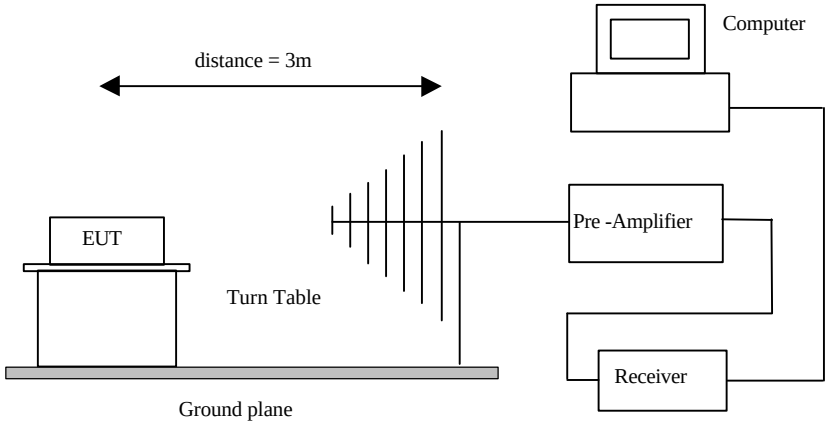
Test Requirement:	FCC 47CFR 15.239
Test Method:	ANSI C63.4:2000
Test Date:	2003-01-24
Mode of Operation:	On mode

Test Method:

The sample was placed 0.8m above the ground plane on the OATS *. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigate all operating modes, rotated about all 3 axis (X, Y & Z) to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

*: OATS [Open Area Test Site] located at HKSTC with a metal ground plane on filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 90657.

Test Setup:



Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.239]:

Frequency Range of Fundamental [MHz]	Peak Limits [µV/m]	Average Limits [µV/m]
88-108	2,500	250

Results:

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
88.90	35.4	10.3	45.7	192.8	2,500	Horizontal

Field Strength of Fundamental Emissions Average Value*						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
88.90	35.2	10.3	45.5	188.4	250	Horizontal

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty = 30MHz to 300MHz ±3.7dB

300MHz to 1GHz +3.0dB / -2.7dB

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

For effective averaging, the bandwidth of the video filter must be smaller than the resolution bandwidth. The higher the ratio of resolution bandwidth to video bandwidth, the greater the averaging will be. Below setting for HP8572A EMI Receiver.

Resolution Bandwidth = 3MHz

Video Bandwidth 1Hz

Limited for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [µV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results :

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
177.80	< 1.0	13.2	< 14.2	< 5.1	150	Vertical
266.70	< 1.0	9.8	< 10.8	< 3.5	150	Vertical
355.60	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
444.50	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
533.40	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
622.30	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
711.20	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
800.10	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
889.00	< 1.0	20.6	< 21.6	< 12.0	200	Vertical

Remarks:

*: Linear interpolations

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty = 30MHz to 300MHz ±3.7dB

300MHz to 1GHz +3.0dB / -2.7dB

Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.239]:

Frequency Range of Fundamental [MHz]	Peak Limits [µV/m]	Average Limits [µV/m]
88-108	2,500	250

Results:

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
90.30	34.5	10.4	44.9	175.8	2,500	Horizontal

Field Strength of Fundamental Emissions Average Value*						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
90.30	34.3	10.4	44.7	171.8	250	Horizontal

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty = 30MHz to 300MHz ±3.7dB

300MHz to 1GHz +3.0dB / -2.7dB

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

For effective averaging, the bandwidth of the video filter must be smaller than the resolution bandwidth. The higher the ratio of resolution bandwidth to video bandwidth, the greater the averaging will be. Below setting for HP8572A EMI Receiver.

Resolution Bandwidth = 3MHz

Video Bandwidth 1Hz

Limited for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [µV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results :

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
180.60	< 1.0	13.2	< 14.2	< 5.1	150	Vertical
270.90	< 1.0	9.8	< 10.8	< 3.5	150	Vertical
361.20	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
451.50	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
541.80	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
632.10	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
722.40	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
812.70	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
903.00	< 1.0	20.6	< 21.6	< 12.0	200	Vertical

Remarks:

*: Linear interpolations

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty = 30MHz to 300MHz ±3.7dB

300MHz to 1GHz +3.0dB / -2.7dB

Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.239]:

Frequency Range of Fundamental [MHz]	Peak Limits [µV/m]	Average Limits [µV/m]
88-108	2,500	250

Results:

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
91.70	32.2	10.4	42.6	134.9	2,500	Horizontal

Field Strength of Fundamental Emissions Average Value*						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
91.70	32.0	10.4	42.4	131.8	250	Horizontal

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty = 30MHz to 300MHz ±3.7dB

300MHz to 1GHz +3.0dB / -2.7dB

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

For effective averaging, the bandwidth of the video filter must be smaller than the resolution bandwidth. The higher the ratio of resolution bandwidth to video bandwidth, the greater the averaging will be. Below setting for HP8572A EMI Receiver.

Resolution Bandwidth = 3MHz

Video Bandwidth 1Hz

Limited for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [µV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results :

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	Antenna Polarity
183.40	< 1.0	13.2	< 14.2	< 5.1	150	Vertical
275.10	< 1.0	9.8	< 10.8	< 3.5	150	Vertical
366.80	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
458.50	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
550.20	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
641.90	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
733.60	< 1.0	18.8	< 19.8	< 9.8	200	Vertical
825.30	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
917.00	< 1.0	20.6	< 21.6	< 12.0	200	Vertical

Remarks:

*: Linear interpolations

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty = 30MHz to 300MHz ±3.7dB

300MHz to 1GHz +3.0dB / -2.7dB

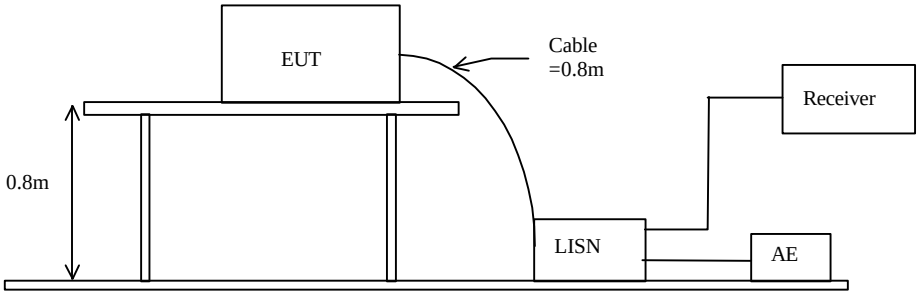
3.1.1 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.207
Test Method:	ANSI C63.4:2000
Test Date:	2003-01-24
Mode of Operation:	On mode

Test Method:

The test was performed in accordance with ANSI C63.4:2000, with the following: an initial measurement was performed in peak and average detection mode on the live line. Any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Test Setup:



Limit for Conducted Emissions (FCC 47 CFR 15.207):

Frequency Range [MHz]	Quasi-Peak Limits [µV/m]
0.15-30	250

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram labelled as (QP and AV).

Results: N/A

The EUT is operated by internal battery power only, therefore power line conducted emission was deemed unnecessary.

Remarks:

Calculated measurement uncertainty = ±2.3dB

3.2 26dB Bandwidth of Fundamental Emission

Test Requirement:	FCC 47 CFR 15.227
Test Method:	ANSI C63.4:2000 (Section 13.1.7)
Test Date:	2003-01-24
Mode of Operation:	On mode

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

Test Setup:

As Test Setup of clause 3.1.1 in this test report.

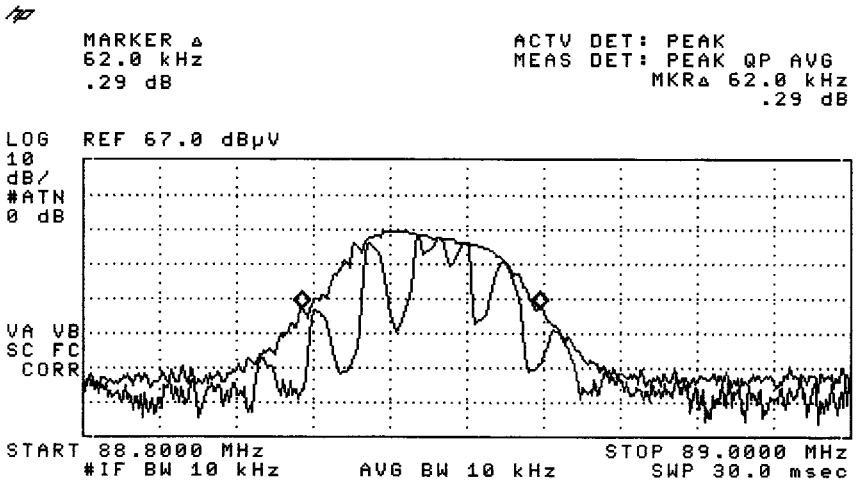
Limits for 26 dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	26dB Bandwidth [KHz]	FCC Limits * [KHz]
88.9	62	200

Result:

The following figure is the measured bandwidth of Fundamental Emission.

26dB Bandwidth of Fundamental Emission



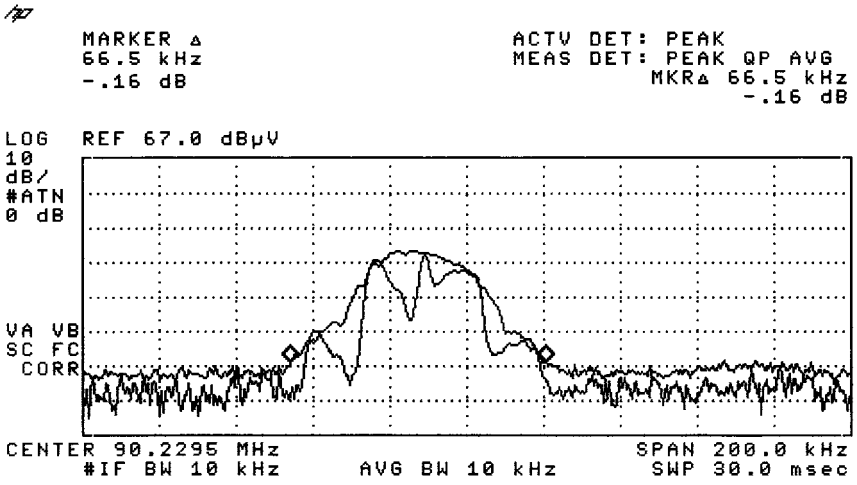
Limits for 26 dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	26dB Bandwidth [KHz]	FCC Limits * [KHz]
90.3	66.5	200

Result:

The following figure is the measured bandwidth of Fundamental Emission.

26dB Bandwidth of Fundamental Emission



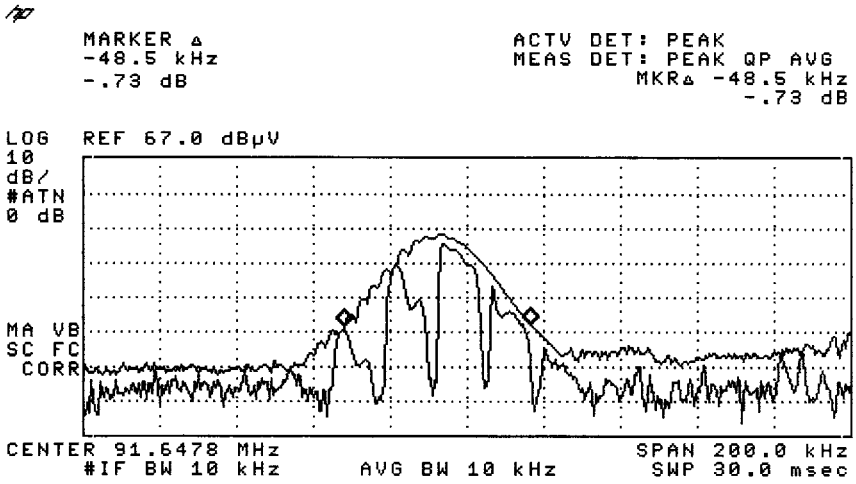
Limits for 26 dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	26dB Bandwidth [KHz]	FCC Limits * [KHz]
91.7	48.5	200

Result:

The following figure is the measured bandwidth of Fundamental Emission.

26dB Bandwidth of Fundamental Emission



Appendix A

Test Equipment Audit

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM007	SPECTRUM ANALYZER	HEWLETT PACKARD	HP85660B	3144A21192	07/09/01
EM008	SPECTRUM ANALYZER DISPLAY	HEWLETT PACKARD	HP85662A	3144A20514	07/09/01
EM009	QUASI PEAK ADAPTOR	HEWLETT PACKARD	HP85650A	3303A01702	07/09/01
EM010	RF PRESELECTOR	HEWLETT PACKARD	HP85685A	3221A01410	07/09/01
EM011	ATTENNUATOR/SWITCH	HEWLETT PACKARD	HP11713A	2508A10595	07/09/01
EM012	PRE-AMPLIFIER	HEWLETT PACKARD	HP8449B	3008A00262	07/09/01
EM013	CONTROLLER (COMPUTER), COLOR MONITOR, KEYBOARD & MOUSE FLOPPY DRIVE	HEWLETT PACKARD HEWLETT PACKARD HEWLETT PACKARD	HP9000 HP A1097C HP9133L	6226A60314 3151J39517 2623A02468	CM
EM020	HORN ANTENNA	EMCO	3115	4032	19/07/00
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	04/08/00
EM072	SIGNAL GENERATOR	HEWLETT PACKARD	8640B	1948A11892	N/A
EM083	HKSTC OPEN AREA TEST SITE	HKSTC	N/A	N/A	14/02/02
EM131	PORTABLE SPECTRUM ANALYSER	HEWLETT PACKARD	8595EM	3710A00155	18/12/01
EM145	EMI TEST RECEIVER	R & S	ESCS 30	830245/021	22/07/02
EM194	BICONILOG ANTENNA	EMCO	3142B	1795	14/05/02
EM195	ANTENNA POSITIONING MAST	EMCO	2075	2368	N/A
EM196	MULTI-DEVICE CONTROLLER	EMCO	2090	1662	N/A

Conducted Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM078	VARIAC	SHANGHAI VOLTAGE	TDGC-3/0.5	N/A	CM
EM081	SMALL SCREENED ROOM	MIKO INST HK	N/A	N/A	04/10/01
EM119	LISN	R & S	ESH3-Z5	0831.5518.52	31/08/00
EM127	ISOLATION TRANSFORMER 220 TO 300	WING SUN	N/A	N/A	CM
EM142	PULES LIMITER	R & S	ESH3Z2	357.8810.52	04/07/01
EM181	EMI TEST RECEIVER	R & S	ESIB7	100072	28/11/01
EM154	SHIELDING ROOM	SIEMENA MATSUSHITA COMPONENTS	N/A	803-740-057-99A	02/01/02
EM197	LISN	EMCO	4825/2	1193	28/03/02

Remarks:

CM Corrective Maintenance
N/A Not Applicable or Not Available
TBD To Be Determined

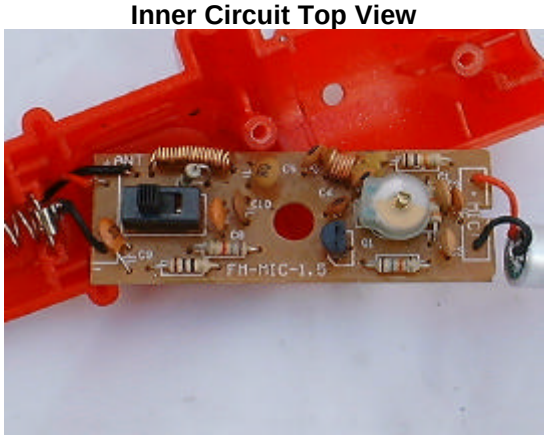
Appendix B

Photographs of EUT

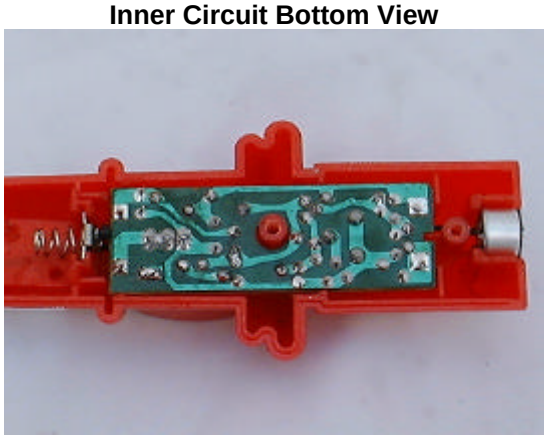
Front View of the product

Rear View of the product

Inner Circuit Top View



Inner Circuit Bottom View



Photographs of EUT

Measurement of Radiated Emission Test Set Up

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