



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Applicant : Dongguan Changping Shinemay Plastic Electronic Factory

Address : Nanmen Industrial Park, Qiaoli Village, Changping Town, Dongguan, P.R.C

Product Name : WALKIE TALKES

Model Name : SM-2509, SM-2009

Brand Name : N/A

FCC ID : YDGSM-2509

Report No. : MOST100406F1

Date of Issue : April 24, 2010

Issued by : Most Technology Service Co., Ltd.

Address : No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China

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1. VERIFICATION OF CONFORMITY

Equipment Under Test: WALKIE TALKES
Brand Name: N/A
Model Number: SM-2509, SM-2009
FCC ID: YDGSM-2509
Applicant: Dongguan Changping Shinemay Plastic Electronic Factory
Nanmen Industrial Park, Qiaoli Village, Changping Town, Dongguan, P.R.C
Manufacturer: Dongguan Changping Shinemay Plastic Electronic Factory
Nanmen Industrial Park, Qiaoli Village, Changping Town, Dongguan, P.R.C
Technical Standards: 47 CFR Part 15 Subpart C
File Number: MOST100406F1
Date of test: April 13, 2010– April 24, 2010
Deviation: None
Condition of Test Sample: Normal
Test Result: PASS

The above equipment was tested by Most Technology Service Co., Ltd. for compliance with the requirements set forth in FCC rules and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Tested by (+ signature):



Candy Zhang

April. 24, 2010

Review by (+ signature):



Sam Zhong

April. 24, 2010

Approved by (+ signature):



Yvette Zhou

April. 24, 2010



2. GENERAL INFORMATION

2.1 Product Information

Product	WALKIE TALKES
Brand Name	N/A
Model Number	SM-2509
Series Model Name:	SM-2009
Series Model Difference description:	The same PCB, only the appearance and model name is different
Power Supply	DC 9V by battery
Frequency Range	49.86 MHz
Modulation Technique	AM
Antenna Gain	1.0 dBi
Temperature Range	-10°C-50°C

NOTE:

1. Please refer to Appendix I for the photographs of the EUT. For a more detailed features description about the EUT, please refer to User's Manual.

2.2 Objective

The objective of the report is to perform tests according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-05 Edition)	Radio Frequency Devices

2.3 Test Standards and Results

Test items and the results are as bellow:

No.	Section	Description	Result	Date of Test
1	15.235	Radiated Emission	PASS	2010-04-13
2	15.235	Band Edge	PASS	2010-04-13
3	15.203	Antenna Requirement	PASS	2010-04-13

Note: 1. The test result judgment is decided by the limit of measurement standard
2. The information of measurement uncertainty is available upon the customer's request.

2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

3. TEST METHODOLOGY

3.1 TEST FACILITY

Test Site:	Most Technology Service Co.,Ltd
Location:	No.5, Langshan 2nd Rd., North Hi-Tech Industrial park , Nanshan Shenzhen, Guangdong ,China
Description:	There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2003 and CISPR 16 requirements. The FCC Registration Number is 490827 .
Site Filing:	The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4:2003 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna.

3.2 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4:2003,Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4:2003.

4 SETUP OF EQUIPMENT UNDER TEST

4.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

4.2 SUPPORT EQUIPMENT

Device Type	Brand	Model	FCC ID	Series No.	Audio Cable	Power Cord
N/A						

Remark:

All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4. 3 TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at Most for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

No.	Equipment	Manufacturer	Model No.	S/N	Calibration due date
1	Test Receiver	Rohde & Schwarz	ESCI	100492	2011/03/14
2	L.I.S.N.	Rohde & Schwarz	ENV216	100093	2011/03/14
3	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2011/03/14
4	Terminator	Hubersuhner	50Ω	No.1	2011/03/14
5	RF Cable	SchwarzBeck	N/A	No.1	2011/03/14
6	Test Receiver	Rohde & Schwarz	ESPI	101202	2011/03/14
7	Bilog Antenna	Sunol	JB3	A121206	2011/03/14
8	Test Antenna - Horn	Schwarzbeck	BBHA 9120C	--	2011/03/14
9	Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	--	2011/03/14
10	Cable	Resenberger	N/A	NO.1	2011/03/14
11	Cable	SchwarzBeck	N/A	NO.2	2011/03/14
12	Cable	SchwarzBeck	N/A	NO.3	2011/03/14
13	DC Power Filter	DuoJi	DL2×30B	N/A	2011/03/14
14	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	2011/03/14
15	3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	2011/03/14
16	Test Receiver	Rohde & Schwarz	ESCI	100492	2011/03/14
17	Absorbing Clamp	Luthi	MDS21	3635	2011/03/14
18	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2011/03/14
19	AC Power Source	Kikusui	AC40MA	LM003232	2011/03/14
20	Test Analyzer	Kikusui	KHA1000	LM003720	2011/03/14
21	Line Impedence Network	Kikusui	LIN40MA-PCR-L	LM002352	2011/03/14
22	ESD Tester	Kikusui	KES4021	LM003537	2011/03/14
23	EMC PRO System	EM Test	UCS-500-M4	V0648102026	2011/03/14
24	Signal Generator	IFR	2032	203002/100	2011/03/14
25	Amplifier	A&R	150W1000	301584	2011/03/14
26	CDN	FCC	FCC-801-M2-25	47	2011/03/14
27	CDN	FCC	FCC-801-M3-25	107	2011/03/14
28	EM Injection Clamp	FCC	F-203I-23mm	403	2011/03/14
29	RF Cable	MIYAZAKI	N/A	No.1/No.2	2011/03/14
30	Universal Radio Communication Tester	ROHDE&SCHWARZ	CMU200	0304789	2011/03/14
31	Telecommunication Antenna	European Antennas	PSA 75301R/170	0304213	2011/03/14
32	Test Antenna - Loop	Schwarzbeck	BBHA 9120D	--	2011/03/14

NOTE: Equipments listed above have been calibrated and are in the period of validation.

5. 47 CFR Part 15 C Requirements

5.1 Radiated Emission

5.1.1 Definition

The field strength of any emission within this band shall not exceed 10000 micro volts /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 emissions apply.

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(Intentional Radiators general limit), as below.

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Measurement Distance (m)
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

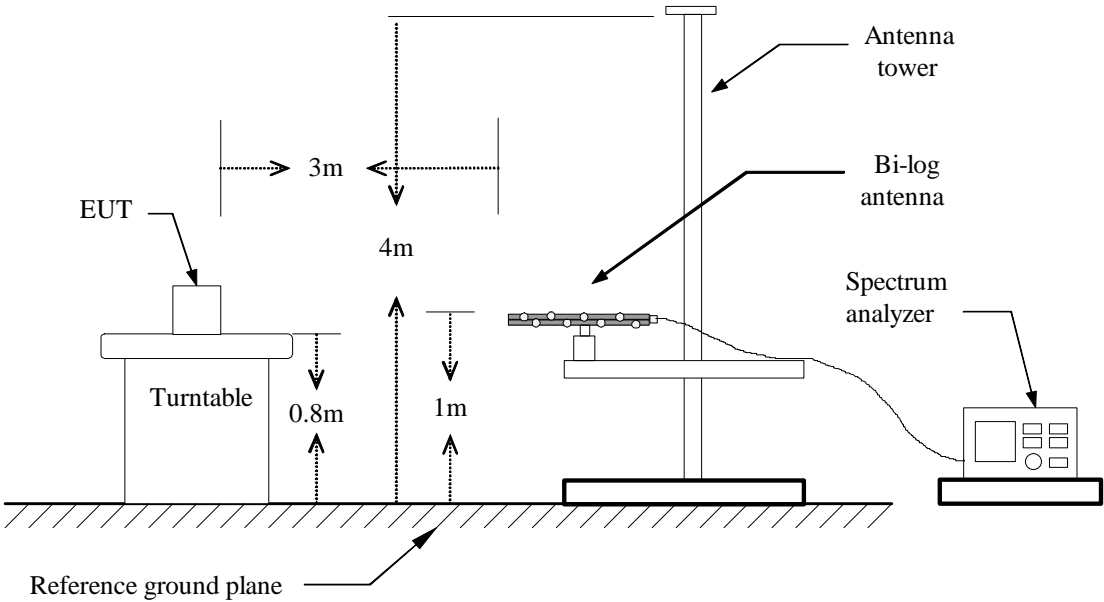
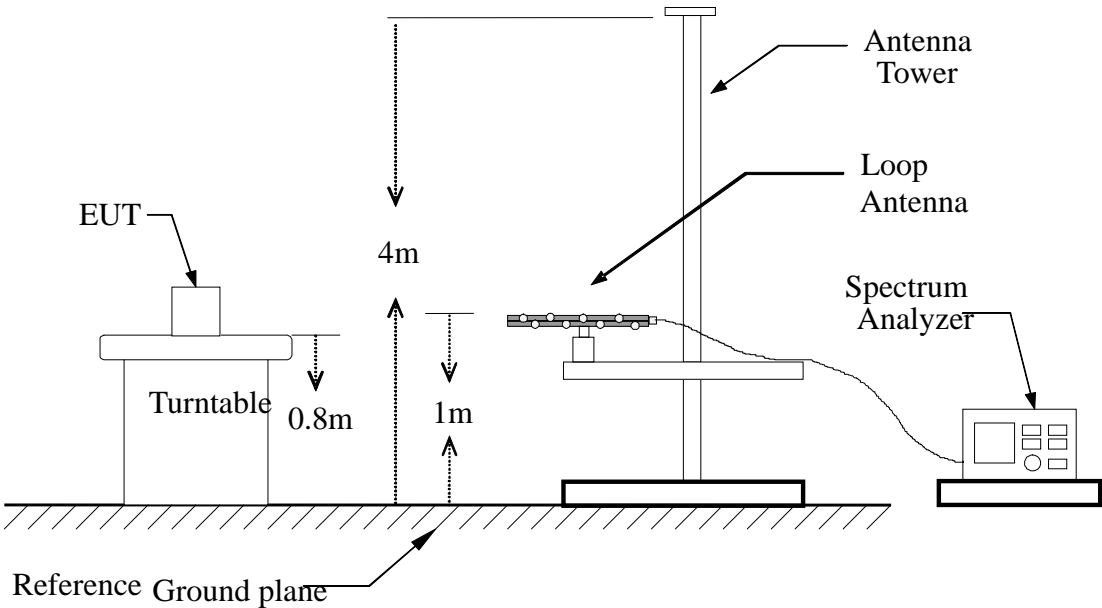
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

2. In the above emission table, the tighter limit applies at the band edges.

Frequency (Hz)	Field Strength ($\mu\text{V}/\text{m}$ at 3-meter)	Test Distance (m)	Field Strength ($\text{dB}\mu\text{V}/\text{m}$ at 3-meter)
1.705-30	30	3	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54
Fundamental	250	3	48

5.1.2 Test Configuration

Test Setup:



5.1.3 Test Description

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
Below 1GHz: RBW=100 kHz / VBW=300 kHz / Sweep=AUTO
Above 1GHz : (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

5.1.4 Test Result

Operation Mode: TX mode

Test Date: 2010-04-13

Temperature: 20°C

Tested by: Petter Ping

Humidity: 70 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Ant. Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
49.860	V	Peak	41.11	11.58	52.69	80.00	-27.31
--						--	>10
--							
49.860	H	Peak	27.99	11.58	39.57	80.00	-40.43
--						--	>10
--							

Notes:

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits or the field strength is too small to be measured.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100 kHz.



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Radiated Emission Measurement

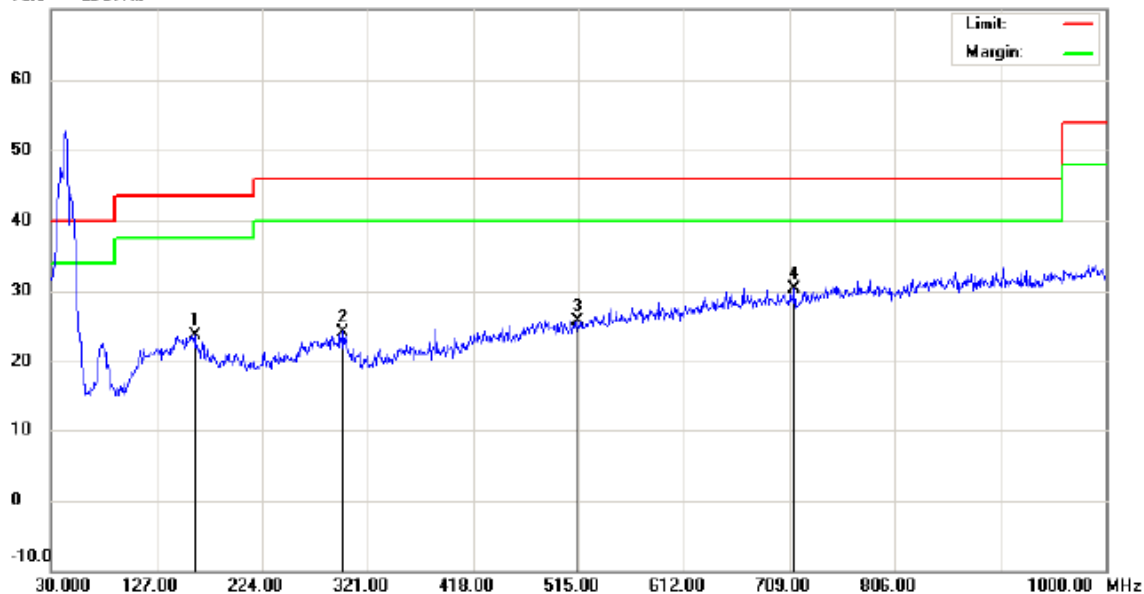
File: HM-2509

Data: #2

Date: 2010-4-13

Time: 20:19:45

70.0 dBuV/m



Site: site MOST 3M

Polarization: **Vertical**

Temperature: 26

Limit: FCC Part15 B 3M Radiation

Power: DC 9V

Humidity: 60 %

EUT: WALKIE TALKES

Distance:

M/N: SM-2509

Mode: Normal Working

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		161.9200	6.50	17.26	23.76	43.50	-19.74	peak		
2		298.6900	4.90	19.30	24.20	46.00	-21.80	peak		
3		514.0300	4.14	21.58	25.72	46.00	-20.28	peak		
4	*	713.8500	5.62	24.66	30.28	46.00	-15.72	peak		

*:Maximum data x:Over limit !:over margin



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Radiated Emission Measurement

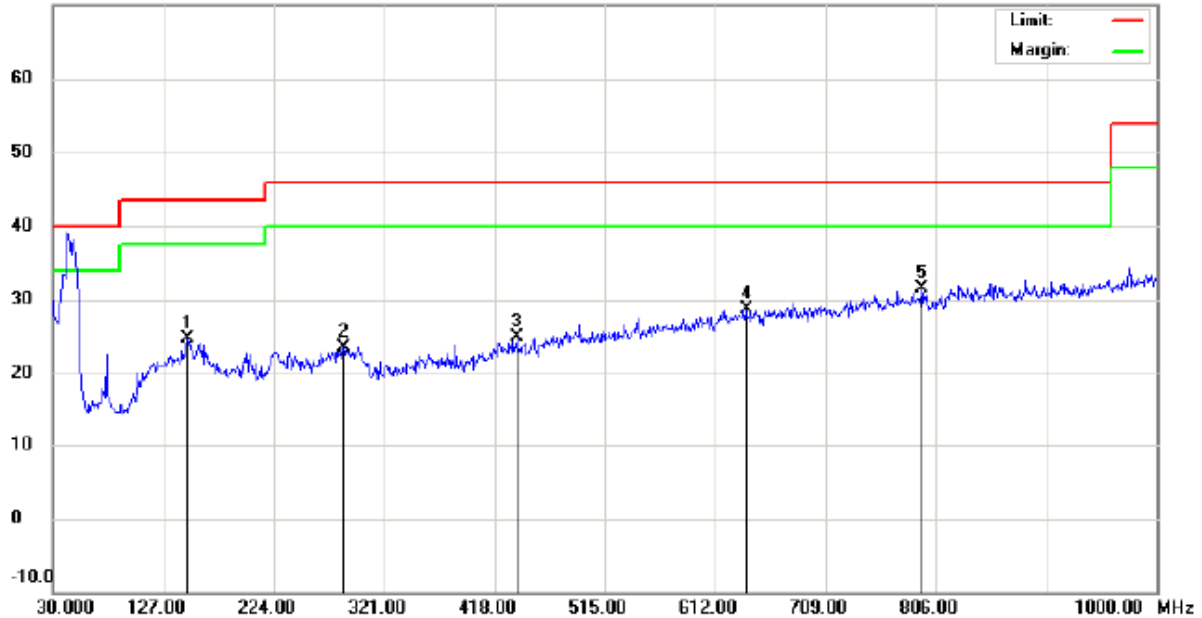
File : SM-2509

Data : #3

Date: 2010-4-13

Time: 20:21:01

70.0 dBuV/m



Site site MOST 3M

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Part15 B 3M Radiation

Power: DC 9V

Humidity: 60 %

EUT: WALKIE TALKES

Distance:

M/N: SM-2509

Mode: Normal Working

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		148.3400	8.14	16.63	24.77	43.50	-18.73	peak		
2		285.1100	4.09	19.45	23.54	46.00	-22.46	peak		
3		437.4000	4.50	20.32	24.82	46.00	-21.18	peak		
4		639.1600	4.76	23.97	28.73	46.00	-17.27	peak		
5	*	793.3900	5.48	25.96	31.44	46.00	-14.56	peak		

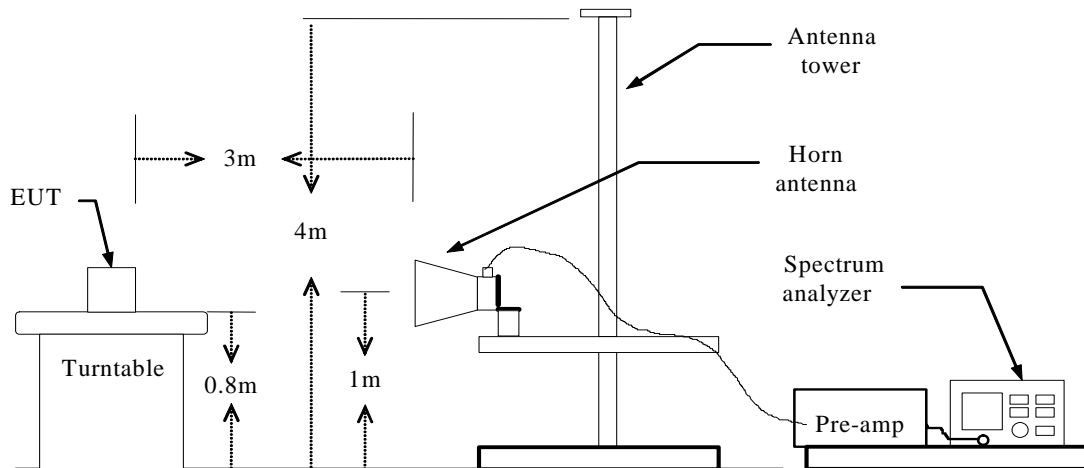
*:Maximum data x:Over limit !:over margin

5.2 Band Edge

5.2.1 Requirement

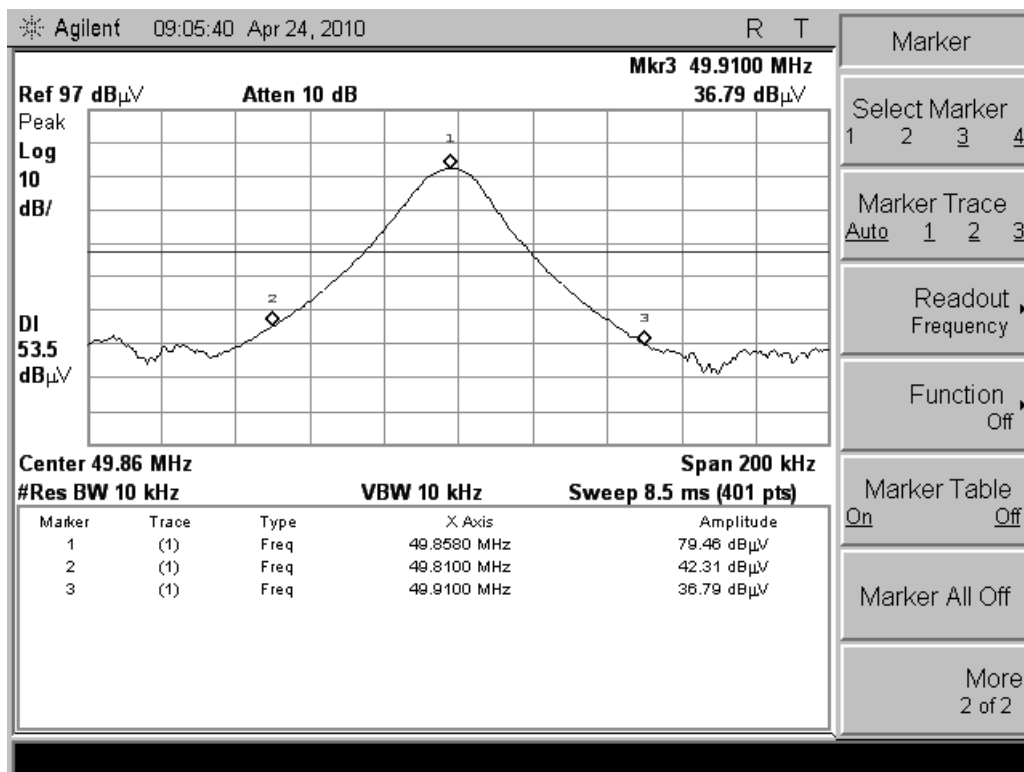
According to FCC section 15.235(b), the field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits in Section 15.209, whichever permits the higher emission levels.

5.2.2 Test Description



5.2.3 Test Result

Test Plot:



5.3 Antenna Requirement

5.3.1 Definition

An analysis of the SM-2509 was performed to determine compliance with FCC Section 15.203. This section requires specific handling and control of antennas used for devices subject to regulations.

5.3.2 Evaluation Procedure

The structure and application of the SM-2509 was analyzed with respect to the rules. The antenna is an internal antenna, and is not accessible to the user. An auxiliary antenna port is not present.

5.3.3 Evaluation Criteria

Section 15.203 of the rules states that the subject device must meet at least one of the following criteria:

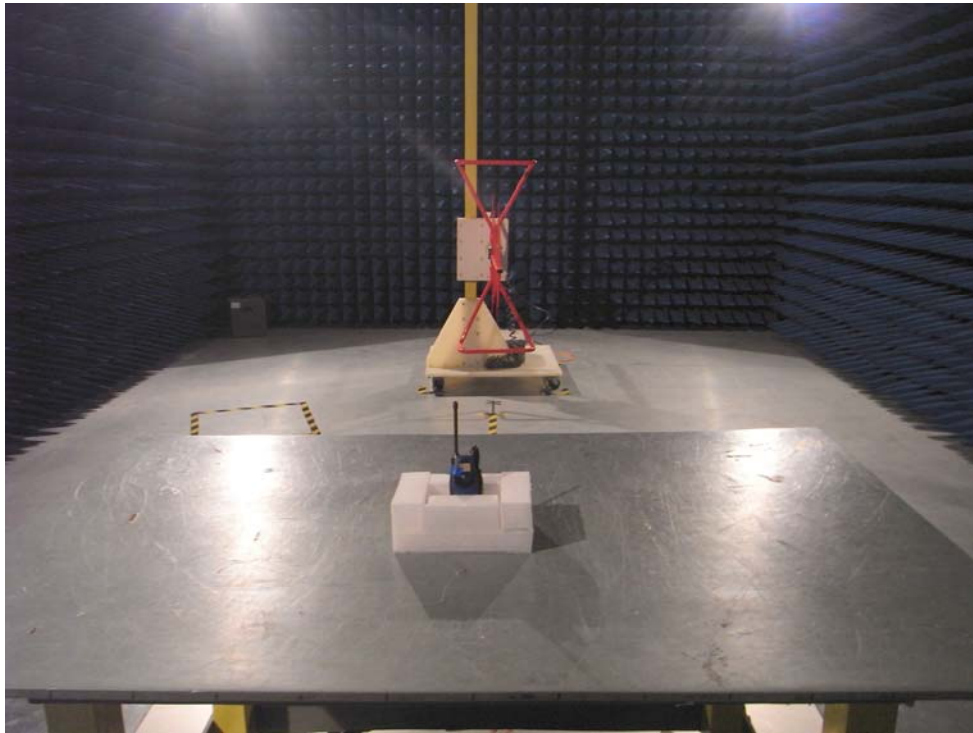
- (a) Antenna must be permanently attached to the unit.
- (b) Antenna must use a unique type of connector to attach to the EUT.
- (c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

5.3.4 Evaluation Results

The SM-2509 meets the criteria of this rule by virtue of having an internal antenna inaccessible to the user. The EUT is therefore compliant.

APPENDIX 1
PHOTOGRAPHS OF TEST SETUP

Radiated Emission Test Setup



APPENDIX 2
PHOTOGRAPHS OF EUT

FRONT VIEW OF SAMPLE



BACK VIEW OF SAMPLE



LEFT VIEW OF SAMPLE



RIGHT VIEW OF SAMPLE



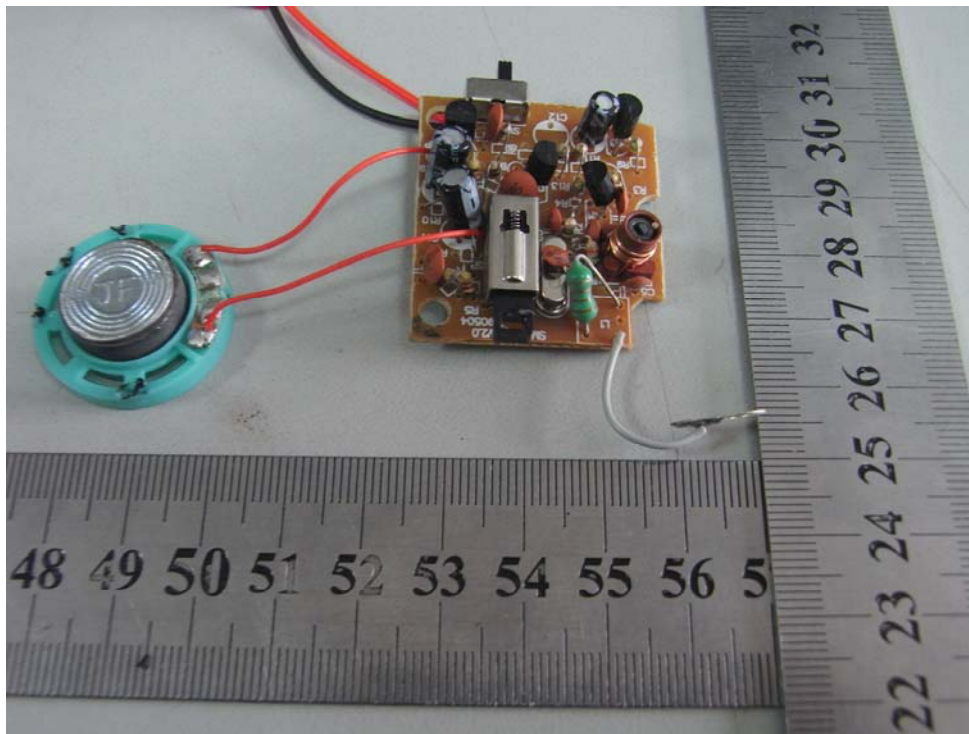
TOP VIEW OF SAMPLE



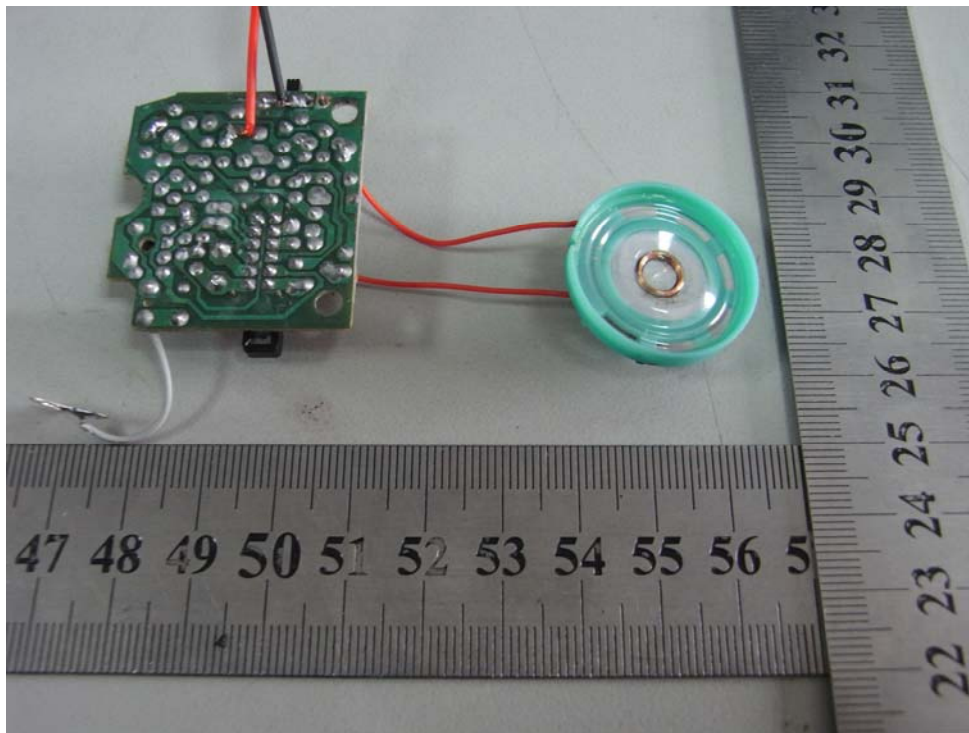
BOTTOM VIEW OF SAMPLE



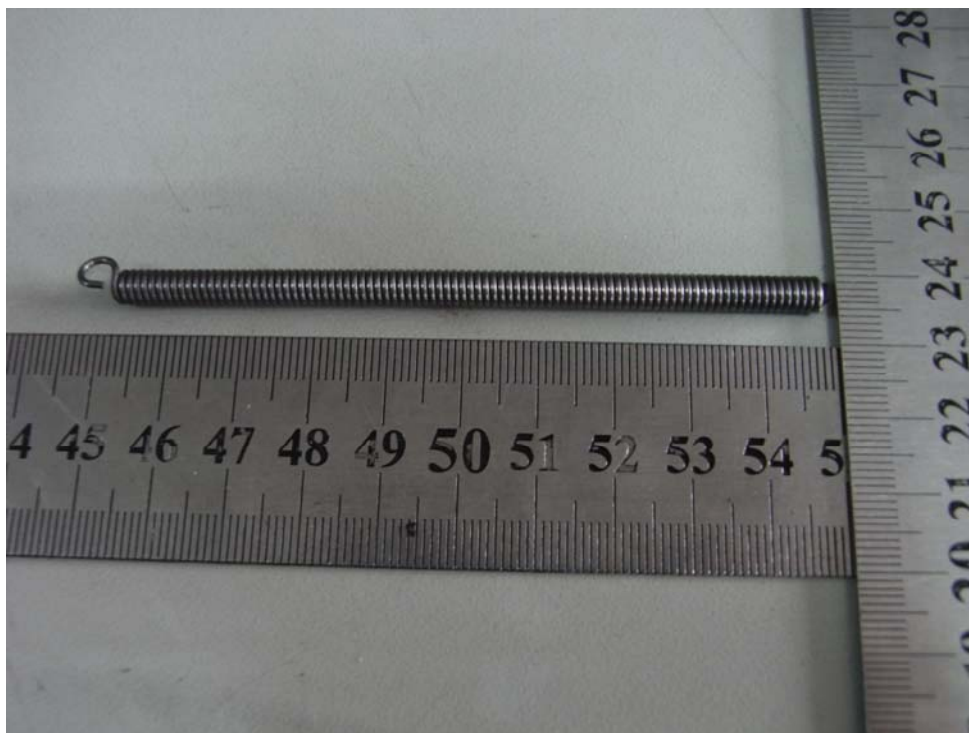
INTERNAL PHOTO OF SAMPLE - 1



INTERNAL PHOTO OF SAMPLE - 2



Antenna Photo



-----END OF REPORT-----