ONETECH Corp.

#505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea. (TEL: 82-342-746-8500 FAX: 82-342-746-8700)

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

LOW POWER COMMUNICATIONS DEVICE TRANSMITTER
CERTIFICATION TO FCC PART 15 REQUIREMENT

PRODUCT	900 MHz WIRELESS SPEAKER SYSTEM		
FCC ID	OSRESTAW5154TX		
MODEL NO.	AW-5154	SERIAL NO.	N/A
APPLICANT & ADDRESS	EASTERN ACOUSTIC CORPORATION 5F, OLYMPIA BLDG, 196, JAMSHIL BON-DONG, SONGPA-KU, SEOUL, KOREA		

REPORT NO.	E99NR-024	ISSUE DATE	November 16, 1999
PREPARED BY: ONETECH CORP. #505 SK APT. FACTORY 223-28, SANGDAEWON 1 DONG, JUNGWON-GU, SEONGNAM-CITY, KYUNGGI-DO, 462-121, KOREA. (TEL: 82-342-746-8500 FAX: 82-342-746-8700)			

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1. VERIFICATION OF COMPLIANCE

APPLICANT : EASTERN ACOUSTIC CORPORATION

ADDRESS : 5F, OLYMPIA BLDG, 196, JAMSHIL BON-DONG, SONGPA-KU, SEOUL, KOREA

CONTACT PERSON : Y. R. SONG / MANAGER

TELEPHONE NO : 82-2-424-0541(EXT. 430)

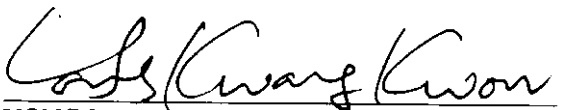
FCC ID : OSRESTAW5154TX MODEL NO/NAME: AW-5154

SERIAL NUMBER : N/A

DATE : November 16, 1999

DEVICE TYPE	INTENTIONAL RADIATOR: LOW POWER COMMUNICATIONS DEVICE TRANSMITTER
E.U.T. DESCRIPTION	900MHz WIRELESS SPEAKER SYSTEM
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/1992
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	PART 15 SUBPART C §15.249
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	NO
FINAL TESTS WERE CONDUCTED ON	3 METER OPEN TEST SITE

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.



YONG KWANG, KWON / CHIEF ENGINEER
EMC TESTING DEPARTMENT
ONETECH Testing & Eval. Lab.
SEOUL KOREA

2. GENERAL INFORMATION

2.1 Product Description

The EASTERN ACOUSTIC CORPORATION, LTD., Model AW-5154 (referred to as the EUT in this report) is a 900 MHz wireless speaker system whitch can deliver high-quality stereo sound to almost anywhere in or around home. The product specification information described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic
TX FREQUENCY RANGE	CH-1: 910.1, 913.1 MHz, CH-2: 910.3, 913.3 MHz, CH-3: 910.5, 913.5 MHz, CH-4: 910.7, 913.7 MHz
MODULATION	FM
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	8 MHz
ANTENNA TYPE	Built-in on the PCB in the EUT
POWER REQUIREMENTS	DC 9V, 0.2A from the AC/DC Adapter
NUMBER OF LAYERS	1 LAYER
NO. OF EXTERNAL CONNECTOR	Audio Input L/R-CH, DC IN Jack

Model Differences:

No other model differences have been mentioned.

2.2 Related Submittal(s) / Grant(s)

ORIGINAL SUBMITTAL ONLY

2.3 Test System Details

The EUT was tested with the following all equipment used in the tested system are:

Model	Manufacturer	FCC ID	Description	Connected to
AW-5154	EASTERN ACOUSTIC CORP.	OSRESTAW5154TX	EUT	N/A
AW-5154	EASTERN ACOUSTIC CORP.	OSRESTAW5154RX	Speaker (Receiver)	N/A
SJ-0907A	SEUNG JIN ELECTRONICS	N/A	AC/DC ADAPTER	Receiver
SJ-0902A	SEUNG JIN ELECTRONICS	N/A	AC/DC ADAPTER	EUT
AMI-516DP	DAEWOO ELECTRONICS	N/A	Music Center	EUT

2.4 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4/1992. The radiated testing was performed at an antenna to EUT distance of 3 meters.

2.5 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on at 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-080 Korea. Detailed description of test facility was submitted to the Commission on January 12, 1999. (Registration Number: 92819)

3. SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the following components inside the EUT were installed.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
MAIN BOARD	EASTERN ACOUSTIC CORPORATION	-	N/A

3.2 Equipment Modifications

To achieve compliance to FCC part 15 rule, the following change(s) were made by EASTERN Acoustic Corporation during compliance testing:

"There was no Modified items during EMI test"

3.3 Mode of operation during the test

A series of music from CD player were continuously transmittered to the speaker through the transmitter during the testing.

3.4 Configuration of Test System

Line Conducted Emission Test:

EUT was connected to AC adapter and the adapter was connected to LISN, all supporting equipments were connected to another LISN. Preliminary Powerline Conducted Emission tests were performed by using the procedure in ANSI C63.4/1992 7.2.3 to determine the worse operating conditions.

Radiated Emission Test:

Preliminary radiated emissions tests were conducted using the procedure in ANSI C63.4/1992, 8.3.1.1 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meters open area test site.

4. PRELIMINARY TESTS

4.1 AC Power line Conducted Emissions Tests

During Preliminary Tests, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
TX mode	X

4.2 Radiated Emissions Tests

During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
TX mode	X

5. CONDUCTED AND RADIATED MEASUREMENT PHOTOS

<Conducted Measurement Photos>

<Radiated Measurement Photos>

6. FINAL RESULT OF MEASUREMENT

Per preliminary tests, the following TX mode of operations were selected which shown the maximum emissions level.

6.1 Conducted Emissions Tests

Humidity Level : 55 % Temperature : 20

Limits apply to : FCC CFR 47, PART 15, SUBPART C (Section 15.207)

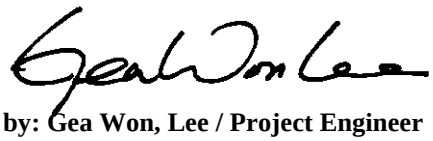
Result : PASSED BY -15.70dB at 6.07 MHz

Operating Condition : TX mode Date: October 22, 1999

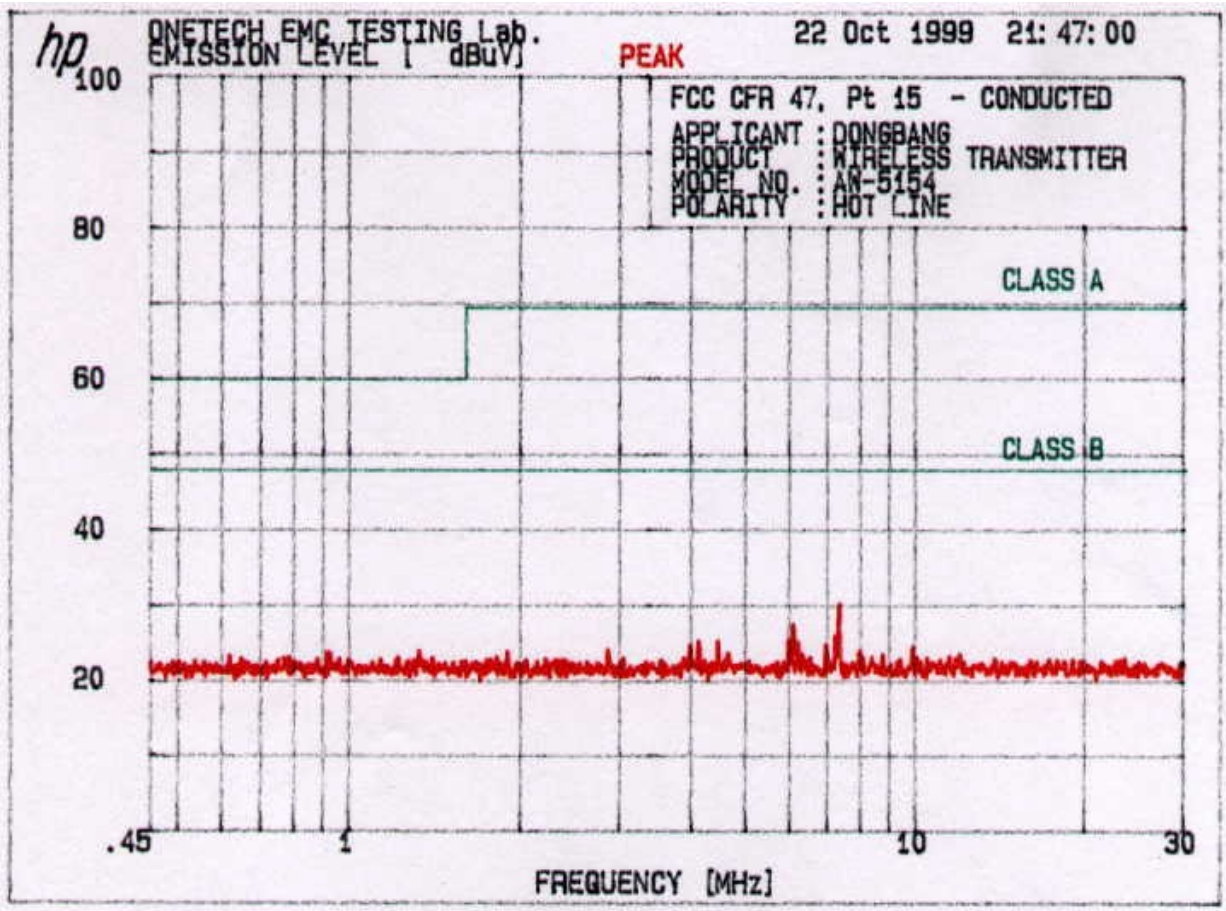
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

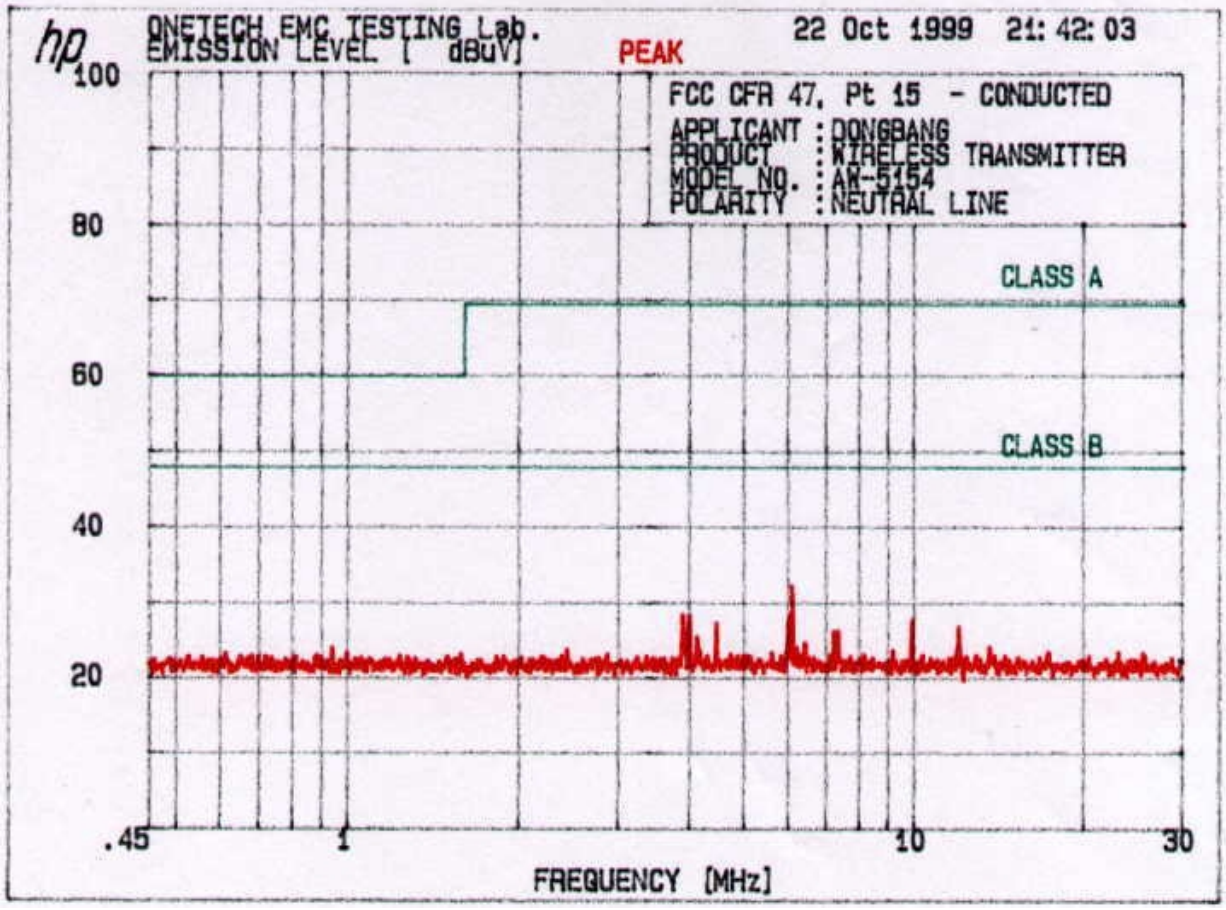
Power Line Conducted Emissions			**FCC CLASS B**	
Frequency (MHz)	**Amplitude (dBuV)**	**Conductor**	**Limit (dBuV)**	**Margin (dB)**
3.89	28.5	N	48.00	-19.50
3.99	28.3	N	48.00	-19.70
4.47	27.3	N	48.00	-20.70
6.02	28.4	N	48.00	-19.60
6.07	32.3	N	48.00	-15.70
9.91	27.9	N	48.00	-20.10

Line Conducted Emissions Tabulated Data



Measuring by: Gea Won, Lee / Project Engineer


ONETECH EMC TESTING Lab.
EMISSION LEVEL [dBuV]
22 Oct 1999 21:47:00
PEAK
FCC CFR 47, Pt 15 - CONDUCTED
APPLICANT : DONGBANG
PRODUCT : WIRELESS TRANSMITTER
MODEL NO. : AR-5154
POLARITY : HOT LINE
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]


ONETECH EMC TESTING Lab.
EMISSION LEVEL [dBuV]
22 Oct 1999 21:42:03
PEAK
FCC CFR 47, Pt 15 - CONDUCTED
APPLICANT : DONGBANG
PRODUCT : WIRELESS TRANSMITTER
MODEL NO. : AR-5154
POLARITY : NEUTRAL LINE
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

6.2 Field Strength of the Carrier Test

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 53 % Temperature : 19

Limits apply to : FCC CFR 47, PART 15, SUBPART C (Section: 15.249)

Result : PASSED BY –13.03 dB at 913.7 MHz

Operating Condition : TX mode Date: November 12, 1999

Distance : 3 Meter

Radiated Emissions				Ant	Correction Factors		Total	FCC Limit	
Channel	**Carrier Freq. (MHz)**	**Ampl. (dBuV)**	**Detect Mode**	**Pol.**	**Ant. (dBuV)**	**Cable (dB)**	**Ampl (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**
CH-1	910.00	40.8	Peak	V	22.62	7.70	71.12	93.98	-22.86
	913.10	49.6	Peak	H	22.64	7.70	79.94	93.98	-14.04
CH-2	910.20	41.2	Peak	V	22.62	7.70	71.52	93.98	-22.46
	913.30	50.0	Peak	H	22.65	7.70	80.35	93.98	-13.63
CH-3	910.40	41.5	Peak	V	22.62	7.70	71.82	93.98	-22.16
	913.50	50.5	Peak	H	22.65	7.70	80.85	93.98	-13.13
CH-4	910.60	42.0	Peak	V	22.62	7.70	72.32	93.98	-21.66
	913.70	50.6	Peak	H	22.65	7.70	80.95	93.98	-13.03

*Remark: FCC Limit: 50 mV/m to 902 ~ 928 MHz (Section: 15.249(a))

Limit calculation: 20Log (50,000uV/m) = 93.98 dBuV/m

Measuring by: Gea Won, Lee / Project Engineer

6.3 Harmonics Emission Test

Humidity Level : 53 % Temperature : 21

Limits apply to : FCC CFR 47, PART 15, SUBPART C (Section: 15.249)

Result : PASSED

Operating Condition : TX mode Date: November 12, 1999

Distance : 3 Meter

Radiated Emissions			Ant	Correction Factors		Total(dBuV/m)		FCC Limit(dBuV/m)		
Freq. (MHz)	Amp. (dBuV)	Detect Mode	Pol.	Ant. (dBuV)	Cable (dB)	Average	Peak	Limit	Margin(dB)	
									Average	Peak
-	-	Peak		-	-	-	-	53.97	-	-
-	-	Peak		-	-	-	-	53.97	-	-
-	-	Peak		-	-	-	-	53.97	-	-
The harmonics frequencies were not found from 1000 MHz to 9000 MHz.										

*Remark: FCC Limit: 500uV/m to 902 ~ 928MHz (Section: 15.249(a))

Limit calculation: 20Log (500uV/m) = 53.97 dBuV/m

Measuring by: Gea Won, Lee / Project Engineer

6.4 Spurious Emission Test

Humidity Level : 53 % Temperature : 22

Limits apply to : FCC CFR 47, PART 15, SUBPART C (Section: 15.249)

Result : PASSED

Operating Condition : TX mode Date: November 12, 1999

Distance : 3 Meter

Radiated Emissions			Ant	Correction Factors		Total(dBuV/m)		FCC Limit(dBuV/m)		
Freq. (MHz)	Amp. (dBuV)	Detect Mode	Pol.	Ant. (dBuV)	Cable (dB)	Average	Peak	Limit	Margin(dB) Average	Margin(dB) Peak
The spurious frequencies were not found from 30 MHz to 9000 MHz.										

*Remark: FCC Limit: 200uV/m to 216 ~ 960MHz (Section: 15.209(a))

Limit calculation: 20Log (200uV/m) = 46.02 dBuV/m

Measuring by: Gea Won, Lee / Project Engineer

7. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+ Meter reading	(dBuV)
+ Cable Loss	(dB)
+ Antenna Factor (Loss)	(dB/meter)
= Corrected Reading	(dBuV/meter)
- Specification Limit	(dBuV/meter)
= dB Relative to Spec	(+/- dB)

8. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	SEP/99	12MONTH	■
2.	Spectrum analyzer	HP	8568B	3026A0226	SEP/99	12MONTH	■
3.	RF preselector	HP	85685A	3107A01264	SEP/99	12MONTH	■
4.	Quasi-Peak Adapter	HP	85650A	3107A01542	SEP/99	12MONTH	■
5	Signal Generator	Philips	PM5518-TX	N/A	APR./99	12MONTH	
6.	Pattern generator	N/A	LCG-401	SG-0010126	N/A	N/A	
7.	Dipole Antenna	EMCO	3121C	9107-745	FEB/99	12MONTH	
8.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	MAR/99	12MONTH	■
9.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	MAR/99	12MONTH	■
10.	Horn Antenna	EMCO	3115	92023805	FEB/99	12MONTH	■
11.	LISN	EMCO	3825/2	9109-1867 9109-1869	MAR/99	12MONTH	■
12.	RF Amplifier	HP	8447F	3113A04554	AUG/99	N/A	
13.	Spectrum Analyzer	ADVANTEST	R4131BN	91520070	FEB/99	12MONTH	■
14.	Computer System Hard disk drive	HP	98581C 9153C	98543A CMC762Z9153	N/A N/A	N/A N/A	■ ■
15.	Plotter	HP	7475A	30052 22986	N/A	N/A	■
16.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
17.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
18.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■