

ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR LOW POWER, NON-LICENSED TRANSMITTER

Test Report No. : E109R-072

AGR No. : A108A148

Applicant : Gaon-Int Co., LTD.

Address : Daelim Bldg., Suite 1501, 592-5, Dohwa1-dong, Nam-gu, Incheon, Korea

Manufacturer : RUIHUA ELECTRONICS FACTORY

Address : Xianxi Industrial Zone, Shatou Village, Changan Town, Dongguan City,
Guangdong Province, China

Type of Equipment : FM Transmitter

FCC ID. : UP4-GWT-T80

Model Name : GWT-T80

Serial number : N/A

Total page of Report : 16 pages (including this page)

Date of Incoming : September 17, 2010

Date of Issuing : September 27, 2010

SUMMARY

The equipment complies with the regulation of *FCC CRF 47 PART 15, SUBPART C, SECTION 15.239*.

This test report contains only the results of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production.

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CONTENTS

Page

1. VERIFICATION OF COMPLIANCE	4
2. GENERAL INFORMATION.....	5
2.1 PRODUCT DESCRIPTION.....	5
2.2 MODEL DIFFERENCES.....	5
2.3 RELATED SUBMITTAL(S) / GRANT(S)	5
2.4 TEST SYSTEM DETAILS	5
2.5 TEST METHODOLOGY.....	5
2.6 TEST FACILITY	5
3. SYSTEM TEST CONFIGURATION.....	6
3.1 JUSTIFICATION	6
3.2 EUT EXERCISE SOFTWARE.....	6
3.3 CABLE DESCRIPTION	6
3.4 EQUIPMENT MODIFICATIONS	6
3.5 CONFIGURATION OF TEST SYSTEM	6
3.6 ANTENNA REQUIREMENT	7
4. PRELIMINARY TEST	7
4.1 AC POWER LINE CONDUCTED EMISSION TEST	7
4.2 RADIATED EMISSION TEST	7
5. FINAL RESULT OF MEASUREMENT	8
5.1 RADIATED EMISSION TEST (WITHIN THE PERMITTED 200 KHZ BAND).....	8
5.2 RADIATED EMISSION TEST (OUTSIDE OF THE SPECIFIED 200 KHZ BAND).....	9
5.3 BANDWIDTH OF THE OPERATING FREQUENCY	10
5.4 TUNING RANGE OF THE OPERATING FREQUENCY	13
6. FIELD STRENGTH CALCULATION	15
7. LIST OF TEST EQUIPMENT.....	16

Revision History

Issue Report No.	Issued Date	Revisions	Effect Section
E109R-072	September 27, 2010	Initial Release	All

1. VERIFICATION OF COMPLIANCE

-. APPLICANT : Gaon-Int Co., LTD.
-. ADDRESS : Daelim Bldg., Suite 1501, 592-5, Dohwal-dong, Nam-gu, Incheon, Korea
-. CONTACT PERSON : Mr. Taejun, Kim / Director
-. TELEPHONE NO : +82-32-246-1800
-. FCC ID : UP4-GWT-T80
-. MODEL NAME : GWT-T80
-. BRAND NAME : SOUNDFLY AUX
-. SERIAL NUMBER : N/A
-. DATE : September 27, 2010

DEVICE TYPE	DDX – Part 15 Low Power Communication Device Transmitter
E.U.T. DESCRIPTION	FM Transmitter
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	Charter 7 and 13 of ANSI C63.4: 2009
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SECTION 15.239
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	Yes
FINAL TEST WAS CONDUCTED ON	3 m open area 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.

2. GENERAL INFORMATION

2.1 Product Description

The Gaon-Int Co., LTD., Model GWT-T80 (referred to as the EUT in this report) is a FM Transmitter that can listen to portable audio devices such as MP3 player, CD player, portable DVD player, or mobile phone through any FM radio speaker. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic
LIST OF EACH OSC. OR CRY. FREQ.(FREQ. \geq 1 MHz)	7.60 MHz, 12.00 MHz and 16.934 4 MHz
FREQUENCY RANGE	88.1 MHz ~ 107.9 MHz (range into 100 kHz Step)
USED ANTENNA	Integral Antenna (No Antenna Socket)
NUMBER OF LAYER	2 Layers: Main Board
EXTERNAL CONNECTOR	Audio Input, Aux Out, USB Port, SD Slot

2.2 Model Differences

-. None

2.3 Related Submittal(s) / Grant(s)

-. Original submittal only

2.4 Test System Details

The model numbers for all the equipments which were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
GWT-T80	Gaon-Int Co., LTD.	UP4-GWT-T80	FM Transmitter (EUT)	-
ORC-200	ORACOM	DoC	MP3 Player	EUT
GPF-100	PCFLY	DoC	USB memory	EUT
N/A	SanDisk	N/A	SD Card	EUT
KY-1050	J.R. Electronics	N/A	Speaker	EUT
N/A	N/A	N/A	Battery	EUT

2.5 Test Methodology

The radiated testing was performed according to the procedures in chapter 7, 13 of ANSI C63.4: 2009 and performed at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The open area test site and conducted measurement facilities are located on at 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do, 464-862, Korea. Description details of test facilities were submitted to the Commission on August 21, 2008. (Registration Number: 340658)

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EMC-003 (Rev.1)

HEAD OFFICE : #505 SK Apt. Factory, 223-28 Sangdaewon1-dong, Jungwon-gu, Seongnam-si, Gyeonggi-do 462-705 Korea
(TEL: +82-31-746-8500, FAX: +82-31-746-8700)

EMC Testing Dept : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea. (TEL: +82-31-765-8289, FAX: +82-31-766-2904)

3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	N/A	GWT-800	N/A
RF Board	N/A	GWT-T60	N/A
Power Board	N/A	N/A	N/A

3.2 EUT exercise Software

-. The Model, GWT-T80 is included a FM transmitter designed to operate on function in the 88.1 MHz ~ 107.9 MHz. The EUT has 3 audio input ports, so each port was connected to applicable peripheral device and than the EUT was transmitted MP3 music files which was saved in USB memory or SD card or MP3 Player (Audio Input) with maximum audio output level during the test. The worst case data (USB memory) was recorded in this report.

3.3 Cable Description

Ports Name	Shielded	Ferrite Bead	Metal Hood	Length (m)	Connected to
AUX IN	N	Y(EUT END)	N	0.3	MP3 Player
AUX OUT	N	N	N	1.5	Speaker

3.4 Equipment Modifications

For meeting the regulation, following modifications were implemented into the EUT by the applicant.

- . The R32, R33, R35, R36 were changed from resistor (100R) to bead (CIM05U102NE).
- . The B6 (bead, CIM05U102NE) was added.
- . The B7 (bead, CIM05U102NE) was added.
- . The C68 (capacitor, 47 pF) was deleted.

3.5 Configuration of Test System

Line Conducted Test: It is not need to test this requirement, because the EUT shall be operated by car battery.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.4: 2009 8.3.1.1 and 13.1.4.1 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 m open area test site.

Occupied Bandwidth Measurement:

This measurement is performed with the antenna located close enough to give a full-scale deflection of the modulated carrier on the spectrum analyzer. The EUT has 3 audio input ports, so each port was connected to applicable peripheral device and then the EUT was transmitted MP3 music files which was saved in USB memory or SD card or MP3 Player (Audio Input) with maximum audio output level during the test.

3.6 Antenna Requirement

According to section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Construction:

The FM transmitter antenna of the EUT is included in a VCC of power line, no consideration of replacement by the user.

4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
It is not need to test this requirement, because the EUT shall be operated by car battery.	

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Transmit the RF Signal continuously from audio input port using MP3 Player	-
Transmit the RF Signal continuously from SD port	-
Transmit the RF Signal continuously from USB port	X

5. FINAL RESULT OF MEASUREMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level

5.1 Radiated Emission Test (Within the permitted 200 kHz band)

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

Humidity Level : 44 % R.H. Temperature: 20 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.239 (b)
Type of Test : Low Power Communication Device Transmitter
Result : PASSED BY -5.23 dB at 88.1 MHz under average mode

EUT : FM Transmitter Date: September 18, 2010
Distance : 3 m

Radiated Emission			Ant		Turn	Correction Factors		Total	Limit	Margin
Freq. (MHz)	Amplitude (dBμV)	Detect Mode	Pol.	Height (m)	Table (°)	Ant. (dBμV/m)	Cable (dB)	Amplitude (dBμV/m)	(dBμV/m)	(dB)
88.10	34.70	Peak	H	2.10	180.00	7.51	2.16	44.37	68.00	-23.63
	33.90	Peak	V	1.00	120.00	7.51	2.16	43.57	68.00	-24.43
	33.10	Average	H	2.10	180.00	7.51	2.16	42.77	48.00	-5.23
	31.70	Average	V	1.00	120.00	7.51	2.16	41.37	48.00	-6.63
97.90	29.00	Peak	H	1.80	185.00	9.93	2.26	41.19	68.00	-26.81
	23.60	Peak	V	1.00	105.00	9.93	2.26	35.79	68.00	-32.21
	26.20	Average	H	1.80	185.00	9.93	2.26	38.39	48.00	-9.61
	21.10	Average	V	1.00	105.00	9.93	2.26	33.29	48.00	-14.71
107.90	26.00	Peak	H	1.80	170.00	11.62	2.38	40.00	68.00	-28.00
	22.40	Peak	V	1.00	110.00	11.62	2.38	36.40	68.00	-31.60
	24.20	Average	H	1.80	170.00	11.62	2.38	38.20	48.00	-9.80
	20.50	Average	V	1.00	110.00	11.62	2.38	34.50	48.00	-13.50

Radiated Emission Tabulated Data



Tested by: In-Sub, Youn / Project Engineer


5.2 Radiated Emission Test (Outside of the specified 200 kHz band)

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

Humidity Level : 44 %R.H. Temperature: 20 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.239 (a)
Type of Test : Low Power Communication Device Transmitter
Result : PASSED BY -7.35 dB at 360.00 MHz

EUT : FM Transmitter Date: September 18, 2010
Frequency range : 30 MHz ~ 1 000 MHz
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
Distance : 3 m
Remark : Other emissions

Radiated Emission		Antenna		Turn	Correction Factors		Total	Limit	Margin
Freq. (MHz)	Amplitude (dBμV)	Pol.	Height (m)	Table (°)	Ant. (dBμV/m)	Cable (dB)	Amplitude (dBμV/m)	(dBμV/m)	(dB)
240.00	14.70	H	1.00	270.00	17.32	3.36	35.38	46.02	-10.64
360.00	18.90	H	1.00	330.00	16.07	3.70	38.67	46.02	-7.35
384.00	15.60	H	1.00	360.00	16.90	3.94	36.44	46.02	-9.58
480.00	13.50	H	1.00	290.00	19.00	4.56	37.06	46.02	-8.96
492.00	12.40	H	1.00	280.00	19.23	4.58	36.21	46.02	-9.81
504.82	13.80	H	1.00	270.00	19.40	4.64	37.84	46.02	-8.18


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5.3 Bandwidth of the operating frequency

Humidity Level : 44 % R.H. Temperature: 20 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.239 (a)
Result : PASSED

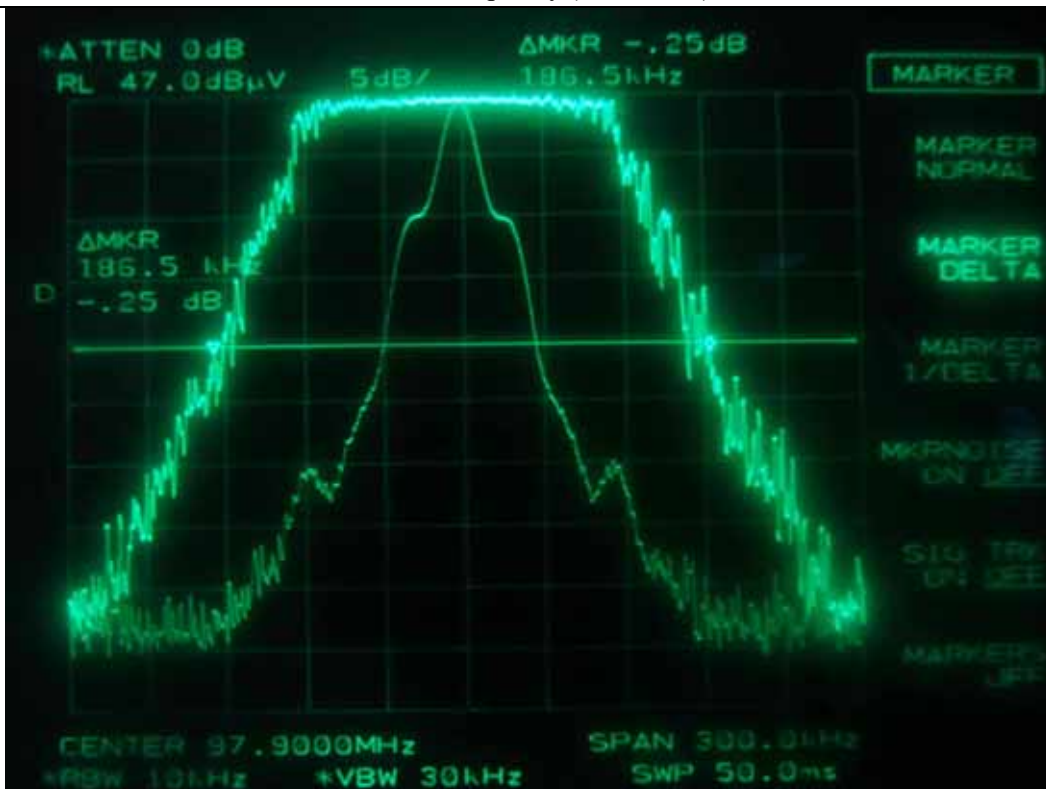
EUT : FM Transmitter Date: September 18, 2010
Operating Condition : Transmit the RF signal.
Minimum Resolution
Bandwidth : 10 kHz
Remark : Refer to test data in next page.

Frequency (MHz)	Measured Value (kHz)	Limit (kHz)	Margin (kHz)
88.10	184.5	200	-15.5
97.90	186.5		-13.5
107.90	185.5		-14.5

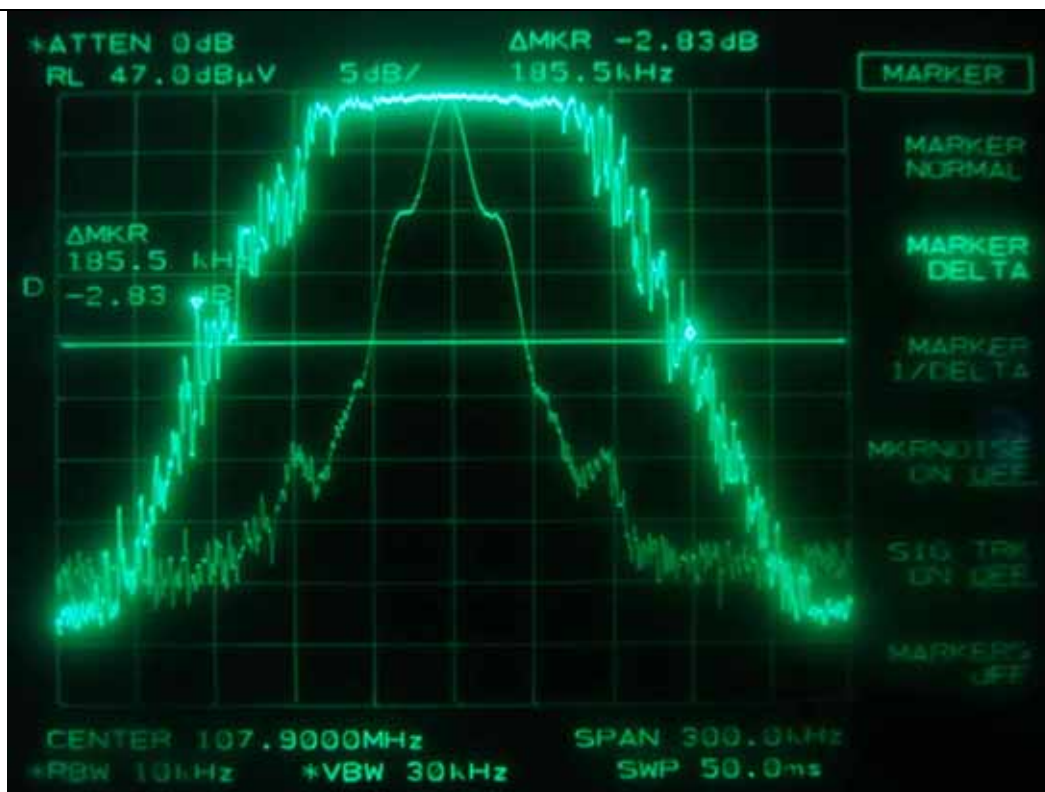

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Bottom Frequency (88.10 MHz)



Middle Frequency (97.90 MHz)



Top Frequency(107.90 MHz)

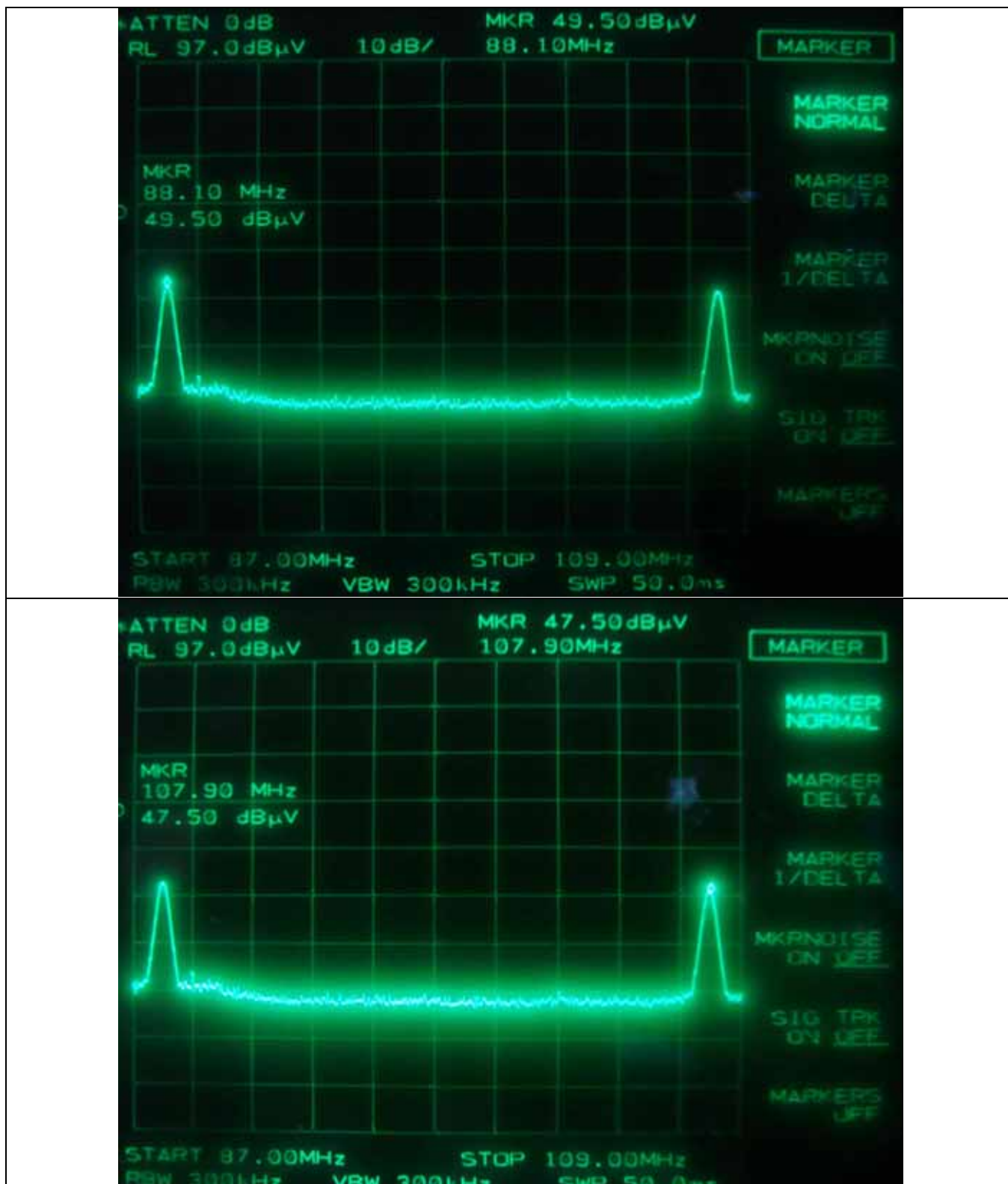
5.4 Tuning Range of the operating frequency

Humidity Level : 44 % R.H. Temperature: 20 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.239 (a)
Result : PASSED

EUT : FM Transmitter Date: September 18, 2010
Operating Condition : The lowest and highest frequency was adjusted by manual using up/down button on the
EUT and the spectrum was in max hold mode for capturing the spectrum.
Test Result : Met the requirement. Refer to test data in next page.



Tested by: In-Sub, Youn / Project Engineer



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6. FIELD STRENGTH CALCULATION

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

+ Meter reading (dB μ V)

+ Cable Loss (dB)

+ Antenna Factor (Loss) (dB/m)

= Corrected Reading (dB μ V/m)

- Specification Limit (dB μ V/m)

= dB Relative to Spec (\pm dB)

7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVD	838453/018	NOV/09	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	MAY/10	12MONTH	
3.	Spectrum analyzer	HP	8566B	2421A00473	NOV/09	12MONTH	■
4.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	VULB9163 202	MAY/10	24MONTH	
5.	Biconical antenna	EMCO	3110	9003-1121	FEB/10	24MONTH	
		Schwarzbeck	VHA9103	91031852	MAR/10		■
6.	Log Periodic antenna	Schwarzbeck	9108-A(494)	62281001	MAR/10	24MONTH	■
7.	LISN	EMCO	3825/2	9109-1867	JUN/10	12MONTH	
				9109-1869	JUN/10		
		Schwarzbeck	NSLK 8128	8128-216	JUN/10		
8.	Position Controller	HD GmbH	HD100	N/A	N/A	N/A	■
9.	Turn Table	HD GmbH	DS420S	N/A	N/A	N/A	■
10.	Antenna Master	HD GmbH	MA240	N/A	N/A	N/A	■