



ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test Report No. : E04DR-044

Applicant : KTV GLOBAL CORPORATION

Address : 149, Gongdan 1-Dong, Gumi-City, Kyungbuk, 730-031, Korea

Manufacturer : KTV GLOBAL CORPORATION

Address : 149, Gongdan 1-Dong, Gumi-City, Kyungbuk, 730-031, Korea

Type of Equipment : LCD TV (FM Transmitter)

FCC ID : BRFLTD104DD

Model Name : LTD104DD

Multiple Model Name : LSMD104

Serial number : N/A

Total page of Report : 14 pages (including this page)

Date of Incoming : November 29, 2004


Date of Issuing : December 20, 2004


SUMMARY

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

This test report contains only the result 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

Reviewed by: 
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CONTENTS

	Page
1. VERIFICATION OF COMPLIANCE.....	3
2. GENERAL INFORMATION.....	4
2.1 PRODUCT DESCRIPTION.....	4
2.2 MODEL DIFFERENCES.....	4
2.3 RELATED SUBMITTAL(S) / GRANT(S)	4
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 NOISE SUPPRESSION PARTS ON CABLE	7
3.5 EQUIPMENT MODIFICATIONS	7
3.6 CONFIGURATION OF TEST SYSTEM	7
3.7 ANTENNA REQUIREMENT	7
4. PRELIMINARY TEST.....	8
4.1 AC POWER LINE CONDUCTED EMISSION TEST	8
4.2 RADIATED EMISSION TEST	8
5. FINAL RESULT OF MEASUREMENT	9
5.1 RADIATED EMISSION TEST (WITHIN THE PERMITTED 200 KHZ BAND)	9
5.2 RADIATED EMISSION TEST (OUTSIDE OF THE SPECIFIED 200 KHZ BAND).....	10
5.3 BANDWIDTH OF THE OPERATING FREQUENCY	11
6. FIELD STRENGTH CALCULATION	13
7. LIST OF TEST EQUIPMENT.....	14

**1. VERIFICATION OF COMPLIANCE**

APPLICANT : KTV GLOBAL CORPORATION
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CONTACT PERSON : Mr. Eui-Yeun, Kim / Team Leader
TELEPHONE NO : +82-54-467-3550
FCC ID : BRFLTD104DD
MODEL NO/NAME : LTD104DD
SERIAL NUMBER : N/A
DATE : December 20, 2004

DEVICE TYPE	Low Power Communication Device Transmitter
E.U.T. DESCRIPTION	LCD TV (FM Transmitter)
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	Chapter 13 of ANSI C63.4: 2001
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	No
FINAL TEST WAS CONDUCTED ON	3 METER 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 KTV GLOBAL CORPORATION, Model LTD104DD (referred to as the EUT in this report) is a LCD TV that is used in the car. 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.>=1MHz)	7.6 MHz, 18.432 MHz, 24 MHz and 27.0 MHz on the Main Board
NUMBER OF LAYERS	2 Layers : Main Board, Control Board, A/V Jack Board, Inverter Board, LED Board
TX FREQUENCY RANGE	88.3 ~ 90.3 MHz
ELECTRICAL RATING	DC 12V from a car battery
EXTERNAL TERMINALS	ANT EXT SPK Jack, A/V IN OUT Jack, FM ANT.

2.2 Model Differences

The difference(s) compared to the EUT is as follows:

	Model	Model Differences
Basic Model	LTD104DD	-
Multiple Model	LSMD104	Only type designation because of buyer's request.

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
LTD104DD	KTV GLOBAL CORPORATION.	BRFLTD104DD	LCD TV (EUT)	-
GHV-S9990	GoldStar	N/A	VCR	EUT
DC31	Delkor Co., Ltd.	N/A	Battery	EUT
-	-	N/A	External Antenna	EUT

2.5 Test Methodology

The radiated testing was performed according to the procedures in ANSI C63.4: 2001. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.6 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-City, Kyunggi-Do, 464-080, Korea. Description details of test facilities were submitted to the Commission on January 18, 2002. (Registration Number: 92819)

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	PLDM03	N/A
Tuner	SAMSUNG	TCMN3080DA29A(H)	N/A
LCD	AU OPTRONICS CORP	B104SN02	N/A
Inverter	P.L.S Corp	AT-1104NC	N/A
DVD	Tohei Ind. Co., Ltd.	DV-2004	N/A
Control Board	N/A	N/A	N/A
LED Board	N/A	N/A	N/A
Indicator Board	N/A	N/A	N/A
Remote Sensor Board	N/A	N/A	N/A

3.2 EUT exercise Software

The Model, LTD104DD is included a FM transmitter designed to operate on function in the 88.3 ~ 90.3 MHz. When a 12 VDC supply voltage is connected, the transmitter is activated and connected speaker of the LCD TV was set at maximum output mode.

The frequency, 90.3 MHz was measured as the highest output power. Data from this channel was determined to be worst case.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
LCD TV	N	N	1.5(P), 1.5(D)
VCR	N	N	1.5(P), 1.5(D)
BATTERY	N/A	N	1.5(D)
EXTERNAL NATENNA	N/A	N	1.5(D)

* The marked “(P)” means the Power Cable and “(D)” means Signal Cable.



3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
LCD TV	N	N/A	-	-
VCR	N	N/A	Y	BOTH END
BATTERY	N	N/A	N	N/A
EXTERNAL ANTENNA	N	N/A	N	N/A

3.5 Equipment Modifications

To achieve compliance to CLASS B levels, the following change(s) was made by ONETECH Corp. during compliance testing:

“There was no Modified items during EMI test”

3.6 Configuration of Test System

Line Conducted Test: It does not need to test this requirement, because of the power of the EUT is supplied from a DC battery.

Radiated Emission Test: Preliminary radiated emission test was conducted using the procedure in ANSI C63.4: 2001 8.3.1.1 and 13.1.4.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters 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.

3.7 Antenna Requirement

For intentional device, 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:

FM transmitter antenna of the EUT is fixed inside the EUT, 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 does not need to test this requirement, because of the power of the EUT is supplied from a DC 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	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 : 41 % Temperature: 19 °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 – 9.79 dB at 88.30 MHz

EUT : LCD TV Date: December 06, 2004
 Operating Condition : Transmit the RF signal.
 Distance : 3 Meter

Radiated Emission			Ant	Correction Factors		Total	Limit (dBuV/m)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)	Detect Mode	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)		
88.30	28.40	Peak	V	7.98	1.83	38.21	48.00	-9.79
88.30	26.40	Average	V	7.98	1.83	36.21	48.00	-11.79
90.30	26.20	Peak	H	8.46	1.89	36.55	48.00	-11.45
90.30	24.20	Average	H	8.46	1.89	34.55	48.00	-13.45

Radiated Emission Tabulated Data

Remark: Per 15.31(m), because the EUT's frequency range is between 1 MHz and 10 MHz, measurements were performed 1 near top and near bottom location in the frequency range of operation.

Tested by: In-Sub, Youn / Test 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 : 41 % Temperature: 19 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209 (c)
 Type of Test : Low Power Communication Device Transmitter
 Result : PASSED BY -5.19dB at 176.60MHz

EUT : LCD TV Date: December
 06, 2004
 Operating Condition : Transmit the RF signal.
 Frequency range : 30MHz – 1000MHz
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
 Distance : 3 Meter
 Remark : Other emissions

Radiated Emission		Ant	Correction Factors		Total	FCC	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
176.60	21.20	H	14.90	2.23	38.33	43.52	-5.19
270.80	18.10	H	17.49	2.68	38.27	46.02	-7.75
361.10	11.00	H	14.79	3.15	28.94	46.02	-17.08
451.40	8.40	V	17.00	3.46	28.86	46.02	-17.16

Tested by: In-Sub, Youn / Test Engineer

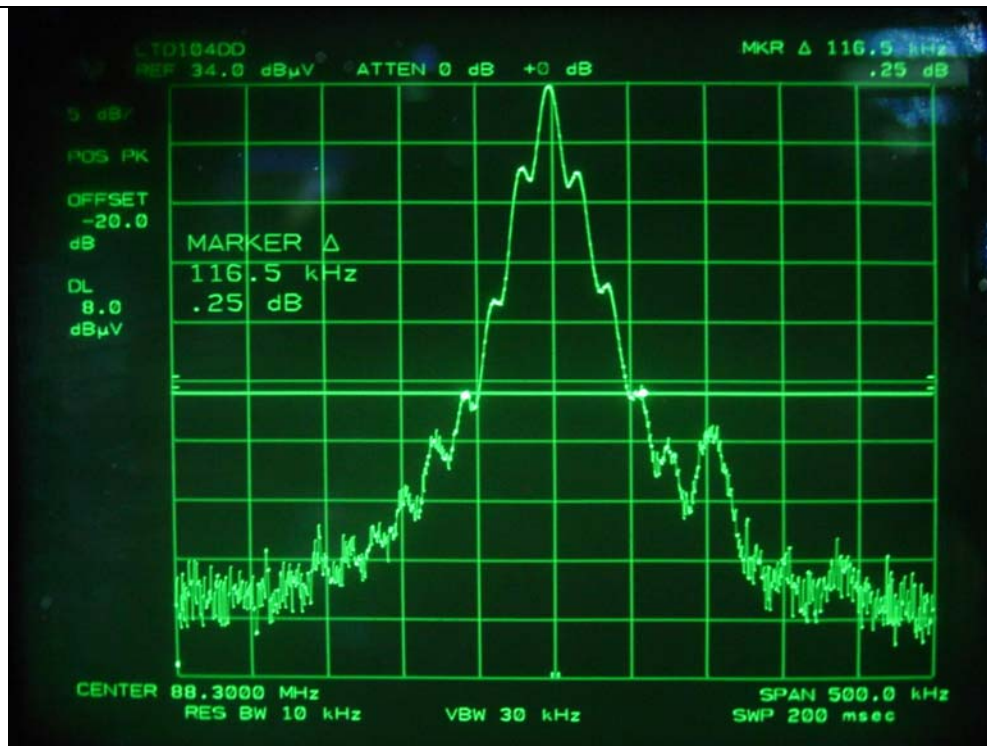


5.3 Bandwidth of the operating frequency

Humidity Level : 41 % Temperature: 19 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.239 (a)
Result : PASSED

EUT : LCD TV Date: December 06, 2004
Operating Condition : Transmit the RF signal.
Minimum Resolution
Bandwidth : 10 kHz
Remark : Refer to test data in next page.

Tested by: In-Sub, Youn / Test Engineer



Bottom Frequency (88.3MHz)



Top Frequency (90.3 MHz)



6. 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)



7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVD	838453/018	MAR/04	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	MAY/04	12MONTH	
3.	Spectrum analyzer	HP	8566B	3407A08547	JUL/04	12MONTH	
4.	Spectrum analyzer	HP	8568B	3109A05456	JUL/04	12MONTH	■
5.	RF preselector	HP	85685A	3107A01264	APR/04	12MONTH	■
6.	Quasi-Peak Adapter	HP	85650A	3107A01542	JUL/04	12MONTH	■
7.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	VULB9163 166	FEB/04	12MONTH	
8.	Biconical antenna	EMCO	3104C	9109-4443	MAY/04	12MONTH	
		Schwarzbeck	VHA9103	91031852	JAN/04		■
9.	Log Periodic antenna	EMCO	3146	9109-3213	FEB/04	12MONTH	
				9109-3217	MAY/04		
		Schwarzbeck	9108-A(494)	62281001	JAN/04		■
10.	LISN	EMCO	3825/2	9109-1867	JUL/04	12MONTH	
				9109-1869	OCT/04		
11.	Position Controller	HD GmbH	HD100	N/A	N/A	N/A	■
12.	Turn Table	HD GmbH	DS420S	N/A	N/A	N/A	■
13.	Antenna Master	HD GmbH	MA240	N/A	N/A	N/A	■