ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

Test report file number	**: E034R-032**
Applicant	**: Korea First Telecom Co., Ltd.**
Address	**: Hanwon Bldg., Moonjung-Dong 57, Songpa-Gu, Seoul, 138-200, Korea**
Manufacturer	**: Korea First Telecom Co., Ltd.**
Address	**: Hanwon Bldg., Moonjung-Dong 57, Songpa-Gu, Seoul, 138-200, Korea**
Type of Equipment	**: 7" Wide TFT-LCD Color TV**
FCC ID.	**: Q2TKFT-2289**
Model Name	**: KF-2289T**
Multiple Model Name	**: N/A**
Serial number	**: N/A**
Total page of Report	**: 15 pages (including this page)**
Date of Incoming	**: March 20, 2003**
Date of Issuing	**: April 09, 2003**

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.

Prepared by: G. W. Lee/ Chief Engineer
EMC Div.
ONETECH Corp.

Reviewed by: Y. K. Kwon/ Director
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ONETECH Corp.

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1. VERIFICATION OF COMPLIANCE

-. APPLICANT : Korea First Telecom Co., Ltd.

-. ADDRESS : Hanwon Bldg., Moonjung-Dong 57, Songpa-Gu, Seoul, 138-200, Korea

-. CONTACT PERSON : Mr. Jong-Ho, Shin / Manager

-. TELEPHONE NO : +82-2-3400-4014

-. FCC ID : Q2TKFT-2289

-. MODEL NO/NAME : KF-2289T

-. SERIAL NUMBER : N/A

-. DATE : April 09, 2003

DEVICE TYPE	Low Power Communication Device Transmitter
E.U.T. DESCRIPTION	7" Wide TFT-LCD Color TV
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	Charter 13 of 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)	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.

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2. GENERAL INFORMATION

2.1 Product Description

The Korea First Telecom Co., Ltd., Model KF-2289T (referred to as the EUT in this report) is 7" Wide TFT-LCD Color TV that can transmit from 89.0 MHz to 91.9 MHz for audio signal of FM radio receiver. 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)	3.579MHz, 7.6MHz, 16MHz
POWER REQUIREMENT	DC12.5V, 9W from a Car Battery
TX FREQUENCY RANGE	89.0 MHz ~ 91.9 MHz in 100 kHz Steps
NUMBER OF LAYERS	4 Layers
EXTERNAL CONNECTOR	External ANT., Diversity, AV-IN (1,2), RGB-In, Safety

Model Differences:

-. The difference(s) compared to the EUT is as follows: none

2.2 Related Submittal(s) / Grant(s)

-. Original submittal only

2.3 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
KF-2289T	Korea First Telecom Co., Ltd.	Q2TKFT-2289	7" Wide TFT-LCD Color TV(EUT)	-
GLOBAL 300L	SEBANG	N/A	BATTERY	EUT
GHV-S9990	GoldStar	DOC	VCR	EUT
-	-	-	External Antenna	EUT
KF-2285DU	Korea First Telecom Co., Ltd.	N/A	Diversity Car Antenna System	EUT

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2.4 Test Methodology

Radiated testing was performed according to the procedures in chapter 13 of ANSI C63.4/1992. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

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

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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 B'D	Korea First Telecom Co., Ltd.	PLAM05	N/A
LCD PANEL	TORISAN	TM070WA-22L06	N/A
TV TUNER	LG Innotek	TALN-H200T	N/A

3.2 EUT exercise Software

The LCD TV Receiver with transmitter under test continuously transmitted set RF signal for the purpose of the measurements.

3.2 Cable Description

Product Name	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
7" Wide TFT-LCD Color TV(EUT)	N	-	1.2(P)
VTR	N	N	1.5(P), 1.2(D)
Diversity	N/A	N	1.5(D)
External Antenna	N/A	N	1.5(D)
Battery	N/A	N (DC Out)	1.2(D)

* The marked "(D)" means the Data Cable and "(P)" means the Power Cable.

3.4 Noise Suppression Parts on Cable

Product Name	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
7" Wide TFT-LCD Color TV(EUT)	N	N/A	Y	BOTH END
VTR	N	N/A	Y	BOTH END
Diversity	N	N/A	Y	EUT END
External Antenna	N	N/A	Y	EUT END
Battery	N	N/A	Y	EUT END

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3.5 Equipment Modifications

To achieve compliance to FCC part 15 rules, 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 needs not to test this requirement, because the EUT supplies from a car battery.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.4/1992 8.3.1.1 and 13.1.4.1 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter 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 image is taken at 100kHz/division frequency span, 10kHz resolution bandwidth and 10dB/division logarithmic display from an 8568B 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 in the EUT, no consideration of replacement by the user.

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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)
N/A	N/A
It is not need to test this requirement, because the power of the EUT is supplied from a 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 RF Signal continuously	X

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5. FINAL RESULT OF MEASURMENT

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 200kHz band)

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

Humidity Level : 51 % Temperature : 19 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.239
Type of Test : Low Power Communication Device Transmitter
Result : PASSED BY – 4.50 dB at 91.90 MHz

EUT : 7" Wide TFT-LCD Color TV Date: April 07, 2003
Operating Condition : Transmit the audio signal.
Distance : 3 Meter

Radiated Emission			Ant	Correction Factors		Total	Limit	Margin
Freq. (MHz)	Amp. (dBuV)	Detector Mode	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	(dBuV/m)	(dB)
89.00	31.60	Peak	H	8.10	1.10	40.80	48.00	-7.20
89.00	30.50	Average	H	8.10	1.10	39.70	48.00	-8.30
91.90	33.45	Peak	H	8.94	1.11	43.50	48.00	-4.50
91.90	30.75	Average	H	8.94	1.11	40.80	48.00	-7.20

Radiated Emission Tabulated Data

Remark: Measurements were performed 1 near top and 1 near bottom location in the frequency range of operation according to the section 15.31 (m).

Tested by: Young-Min, Choi/ Project Engineer

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

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

Humidity Level : 51 % Temperature : 18 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.209
Type of Test : Low Power Communication Device Transmitter
Result : PASSED BY –5.85dB at 177.97MHz

EUT : 7" Wide TFT-LCD Color TV Date: April 09, 2003
Operating Condition : Transmit the audio signal.
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
Distance : 3 Meter

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)
177.97	20.20	H	16.00	1.45	37.65	43.50	-5.85
267.00	16.00	H	12.64	1.87	30.51	46.00	-15.49
356.00	13.40	V	14.49	2.31	30.20	46.00	-15.80
445.00	8.20	H	16.19	2.54	26.93	46.00	-19.07

-. Above test values are the harmonics of the 89.0MHz

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)
183.80	14.90	H	16.27	1.47	32.64	43.50	-10.86
275.70	16.30	H	12.96	1.89	31.15	46.00	-14.85
367.60	14.10	V	14.56	2.36	31.02	46.00	-14.98
459.50	8.80	H	16.55	2.57	27.92	46.00	-18.08

-. Above test values are the harmonics of the 91.9 MHz

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Date: March 21, 2003

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)
101.80	16.36	V	12.38	1.16	29.90	43.50	-13.60
120.20	14.11	V	13.46	1.23	28.80	43.50	-14.70
130.90	14.33	V	12.94	1.27	28.54	43.50	-14.96
140.60	15.51	V	12.61	1.31	29.43	43.50	-14.07
157.10	11.19	V	15.02	1.37	27.58	43.50	-15.92
190.10	11.33	H	16.51	1.50	29.34	43.50	-14.16
210.40	17.41	H	10.93	1.62	29.96	43.50	-13.54
225.00	19.34	H	10.93	1.70	31.97	46.00	-14.03
232.70	14.65	H	11.28	1.74	27.67	46.00	-18.33
287.10	11.09	H	13.97	1.94	27.00	46.00	-19.00
381.10	10.75	H	14.75	2.40	27.90	46.00	-18.10
405.40	10.74	V	15.33	2.44	28.51	46.00	-17.49
507.20	7.86	V	17.52	2.69	28.07	46.00	-17.93
608.10	12.98	V	18.90	2.93	34.81	46.00	-11.19
710.00	9.99	V	20.81	3.37	34.17	46.00	-11.83
911.70	9.62	V	22.61	3.98	36.21	46.00	-9.79

-. Above test values are the other emissions.

Tested by: Young-Min, Choi/ Project Engineer

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5.3 Bandwidth of the operating frequency

Humidity Level	: 53 %	Temperature : 19 °C
Limits apply to	: FCC CFR 47, PART 15, SUBPART C, SECTION 15.239	
Result	: PASSED	

EUT	: 7" Wide TFT-LCD Color TV	Date: April 07, 2003
Operating Condition	: Transmit the audio signal.	
Minimum Resolution Bandwidth	: 10 kHz	

Remark: Measurements were performed 1 near top and 1 near bottom location in the frequency range of operation according to the section 15.31 (m).

Refer to test data in next page.

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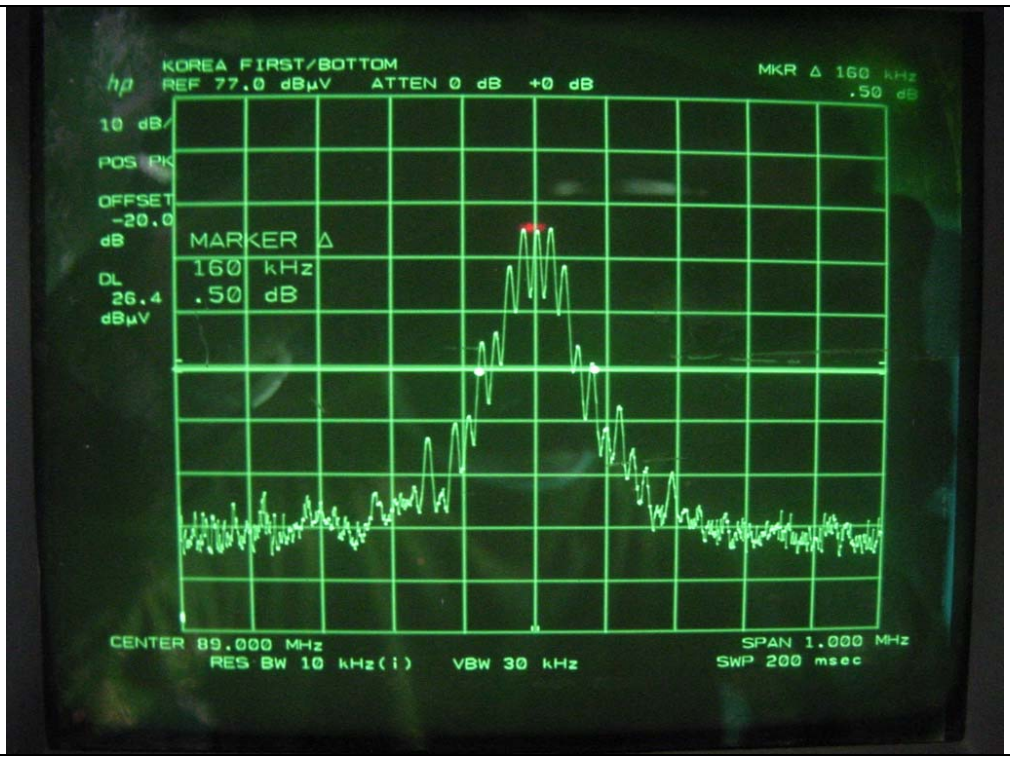
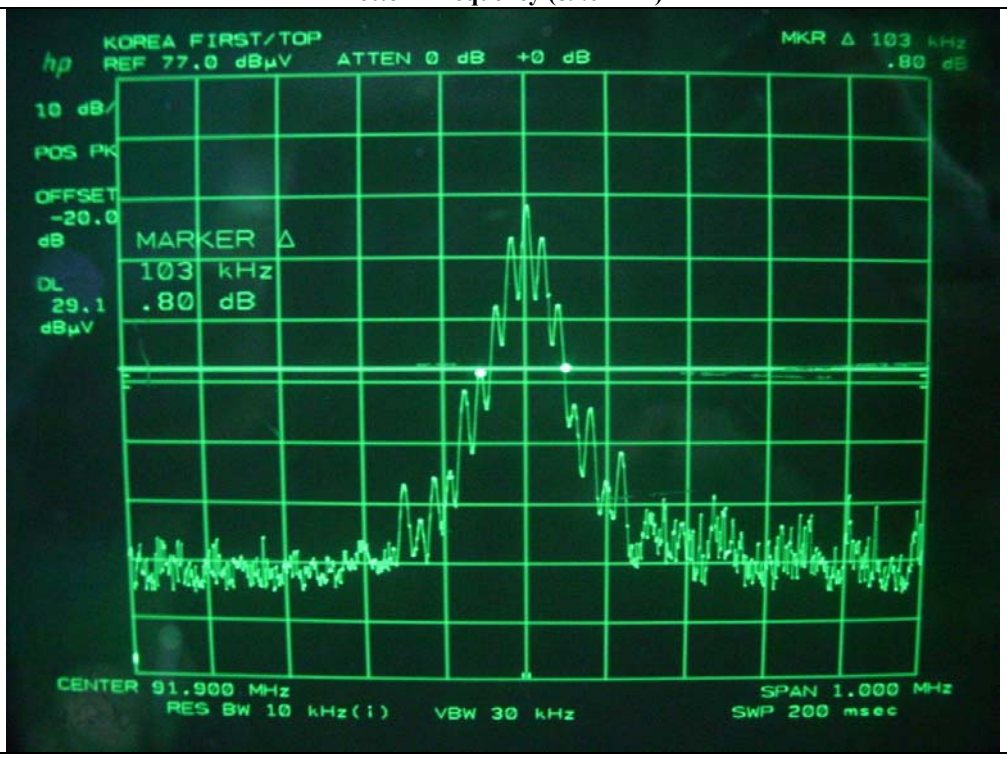


Bottom Frequency (89.0MHz)



Top Frequency (91.9MHz)

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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)

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7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	APR/02	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	NOV/02	12MONTH	
3.	Spectrum analyzer	HP	8566B	3407A08547	AUG/02	12MONTH	■
4.	Spectrum analyzer	HP	8568B	3109A05456	APR/02	12MONTH	■
5.	RF preselector	HP	85685A	3107A01264	APR/02	12MONTH	■
6.	Quasi-Peak Adapter	HP	85650A	3107A01542	APR/02	12MONTH	■
7.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	VULB9163 166	FEB/03	12MONTH	■
8.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	APR/02	12MONTH	■
9.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	APR/02	12MONTH	■
10.	LISN	EMCO	3825/2	9109-1867 9109-1869	AUG/02	12MONTH	
11.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
12.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
13.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■

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