



CTK Co., Ltd.  
The Prime Leader of Global Regulatory Certification

## CTK Co., Ltd.

386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea  
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# TEST REPORT For FCC

Test Report No. : 2007050079  
Date of Issue : May 30, 2007  
FCC ID : UZCGFT-4000  
Model/Type No. : GFT-4000  
Kind of Product : FM Transmitter  
Applicant : GT Telecom Co., Ltd.  
Applicant Address : 848-16, Gupyeong-Dong, Gumi-City, Gyeongbuk, Korea  
Manufacturer : GT Telecom Co., Ltd.  
Manufacturer Address : 848-16, Gupyeong-Dong, Gumi-City, Gyeongbuk, Korea  
Contact Person : LEE HYO JIN / Junior Engineer  
Telephone : +82-54-474-2246  
Received Date : May 16, 2007  
Test Date : May 30, 2007  
Test Results : ☒ In Compliance ☐ Not in Compliance

The test results presented in this report relate only to the object tested.

CTK Co., Ltd. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the above test item(s) and test method(s).

Tested by

*Y. J. Park*

Young-Joon, Park  
EMC Test Engineer  
Date: May 30, 2007

Reviewed by

*J. H. Hong*

James Hong  
EMC Technical Manager  
Date: May 30, 2007



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### REPORT REVISION HISTORY

Date	Revision	Page No
May 30, 2007	Issued (2007050079)	All

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### 1.0 General Product Description

Product	: FM Transmitter
Equipment model name	: GFT-4000
Serial number	: Prototype
Antenna designation	: Fixed Antenna, which is built in EUT
Antenna type	: Wire antenna (UL1571 #30, 130mm)
Frequency Range	: 88.1MHz - 107.9MHz
Number of channels	: 199
Type of Modulation	: F3E
Operating Voltage	: DC 12V - 24V
Modulation Technique	: FM

Note:

1. The product is a Transmitter. This submittal(s) (test report) is intended for FCC ID: UZCGFT-4000 filing to comply with Section 15.239 of the FCC Part 15 Subpart C Rules.
2. The composite system (digital device) is compliance with subpart B is authorized under a DOC procedure.
3. The lowest channel is 88.1MHz, and the highest channel is 107.9MHz. The tuning controls were manually adjusted to verify maximum tuning range.

### 1.1 Model Differences

Not applicable

### 1.2 Device Modifications

Not applicable

### 1.3 EUT Configuration(s)

The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

Device	Manufacturer	Model No.	Serial No.	FCC ID or DoC
MP3 Player	iRiver China Ltd.	N11MT 256MB	291370051101926	DoC
Bluetooth Headset	GT Telecom Co., Ltd.	GBH-100	-	UZCGBH-M100
Ciga Socket	-	-	-	-
Dual-Tracking DC Power Supply	Topward Electric Instruments Co.,Ltd.	6303D	711196	-

☒ Cable Description

#	Description	Ferrite Core	Length (m)	Other Details
0	Audio In cable, Unshielded	-	0.4 m	Between the EUT and MP3 Player
1	Bluetooth Headset	-	-	Direct connect to the EUT
2	Ciga Socket	-	-	Direct connect to the EUT
3	Ciga Socket cable, Unshielded	-	1.0 m	Between the EUT and DC Power Supply
4	AC power cable, Unshielded	-	2.0 m	Connect to AC power

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

### 1.4 EUT Exercise

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

### 1.5 Test Software

- ☐ EMC Test V 1.0
- ☐ Display Test Patterns – V1.5
- ☐ Ping.exe
- ☒ Not applicable



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### 1.6 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

- |  |  |
|--|--|
| <input type="checkbox"/> Standby                       | <input type="checkbox"/> Scrolling 'H' |
| <input type="checkbox"/> Display circles pattern       | <input type="checkbox"/> Read / Write  |
| <input checked="" type="checkbox"/> Practice operation |  |

1. The following test mode(s) were scanned during the preliminary test Mode(s):

- 1) Bluetooth handsfree Mode
- 2) Audio Mode

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

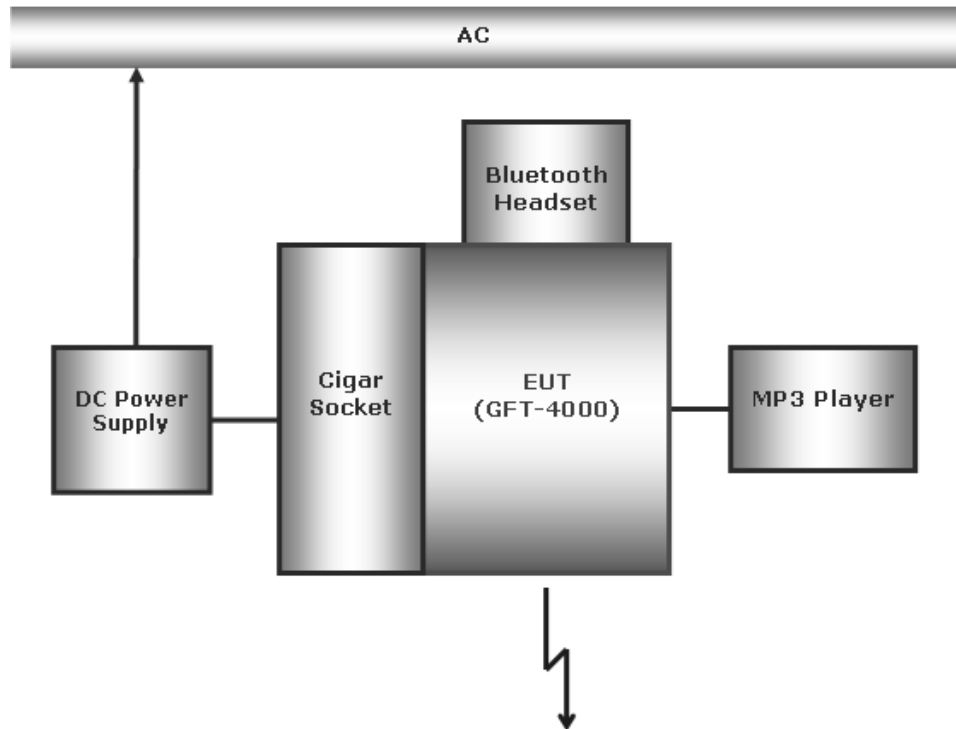
Mode 2) Audio Mode

Then, the EUT configuration and cable configuration of the above highest emission mode was recorded for all final test items. The MP3 Player played a music MP3 and set the volume to Max.

(Note: The tuning range was checked by physically adjusting the tuning controls by artificial during test.)

There are 199 channels on EUT. All 199 channels are pre-tested and choose three channels, low (88.1MHz), middle (98.0MHz), high (107.9MHz), for final test.

## 1.7 Configuration





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### 1.8 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

### 1.9 Test Facility

The measurement facility is located at 386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### 1.10 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested. Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)  
Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.






Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

\* Measurement procedures was In accordance with ANSI C63.4-2003 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2



## 1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	 93250
JAPAN	VCCI	10 meter Open Area Test Site and one conducted site.	 R-948, C-986
KOREA	MIC	EMI (10 meter Open Area Test Site and two conducted sites) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 No. 51, KR0025
International	KOLAS	EMC	
Europe	GLAS	EMC EN 55011, EN 55022, EN 61000-6-3, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 50130-4, EN 55024, EN 61204-3, EN 60601-1-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11	 No.13000796-02



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## 2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> EN 61000-6-3: 2001                    | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |
| <input type="checkbox"/> EN 61000-6-4: 2001                    | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |
| <input type="checkbox"/> EN 50083-2: 2001                      |  |  |
| <input type="checkbox"/> EN 55011: 1998 +A1: 1999 +A2: 2002    | <input type="checkbox"/> Group 1<br><input type="checkbox"/> Class A | <input type="checkbox"/> Group 2<br><input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55013: 2001 +A1: 2003              |  |  |
| <input type="checkbox"/> EN 55014-1: 2000 +A1: 2001 +A2: 2002  |  |  |
| <input type="checkbox"/> EN 55015: 2000 +A1: 2001 +A2: 2002    |  |  |
| <input type="checkbox"/> EN 61204-3: 2000                      | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |
| <input type="checkbox"/> EN 55022: 1994 +A1: 1995 +A2: 1997    | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |
| <input type="checkbox"/> EN 55022: 1998                        | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |
| <input type="checkbox"/> EN 55022: 1998 +A1: 2000              | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |
| <input type="checkbox"/> EN 55022: 1998 +A1: 2000 +A2: 2003    | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |
| <input type="checkbox"/> EN 61000-3-2: 2000                    |  |  |
| <input type="checkbox"/> EN 61000-3-3: 1995 +A1: 2001          |  |  |
| <input type="checkbox"/> VCCI V-3/2004.04                      | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |
| <input type="checkbox"/> AS/NZS 3548: 1995 +A1: 1997 +A2: 1997 | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |
| <input checked="" type="checkbox"/> FCC Part 15 Subpart C      |  |  |
| <input type="checkbox"/> CISPR 22: 1997                        | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |
| <input type="checkbox"/> CISPR 22: 1997 +A1: 2000              | <input type="checkbox"/> Class A                                     | <input type="checkbox"/> Class B                                     |

The unit was tested to CISPR 22 and complied with the alternate methods allowed by FCC under paragraphs 15.107 and 15.109.



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## 2.1 Radiated Electric Field Emissions - #1

### Reference Standard

FCC Part 15.239

### Test Date

May 27, 2007

### Test Location

☒ EMI-OATS: Testing was performed at a test distance of 3 m

### Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input checked="" type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESVS30	829673/015	2008-01-12
<input checked="" type="checkbox"/>	ULTRA Broadband Antenna	Rohde & Schwarz	HL562	361324/014	2008-06-12

### Frequency Range of Measurement

88.1 MHz to 107.9 MHz

### Instrument Settings

IF Band Width: 120 kHz

### Test Results

The requirements are:

- ☒ MET  
☐ NOT MET  
☐ NOT APPLICABLE

### Remarks

We have tested three modes (X, Y, Z). The worst mode (Y axis) for final test.

See Appendix A for test data



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## 2.2 Radiated Electric Field Emissions - #2

### Reference Standard

FCC Part 15.239

### Test Date

May 27, 2007

### Test Location

☒ EMI-OATS: Testing was performed at a test distance of 3 m

### Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input checked="" type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESVS30	829673/015	2008-01-12
<input checked="" type="checkbox"/>	ULTRA Broadband Antenna	Rohde & Schwarz	HL562	361324/014	2008-06-12

### Frequency Range of Measurement

30 MHz to 1000 MHz,

### Instrument Settings

IF Band Width: 120 kHz

### Test Results

The requirements are:

- ☒ MET  
☐ NOT MET  
☐ NOT APPLICABLE

### Remarks

See Appendix A for test data

Emissions 20dB's below the limit were not necessarily recorded.

## 2.3 200kHz Bandwidth

### Reference Standard

FCC Part 15.239

### Test Date

May 28, 2007

### Test Equipment

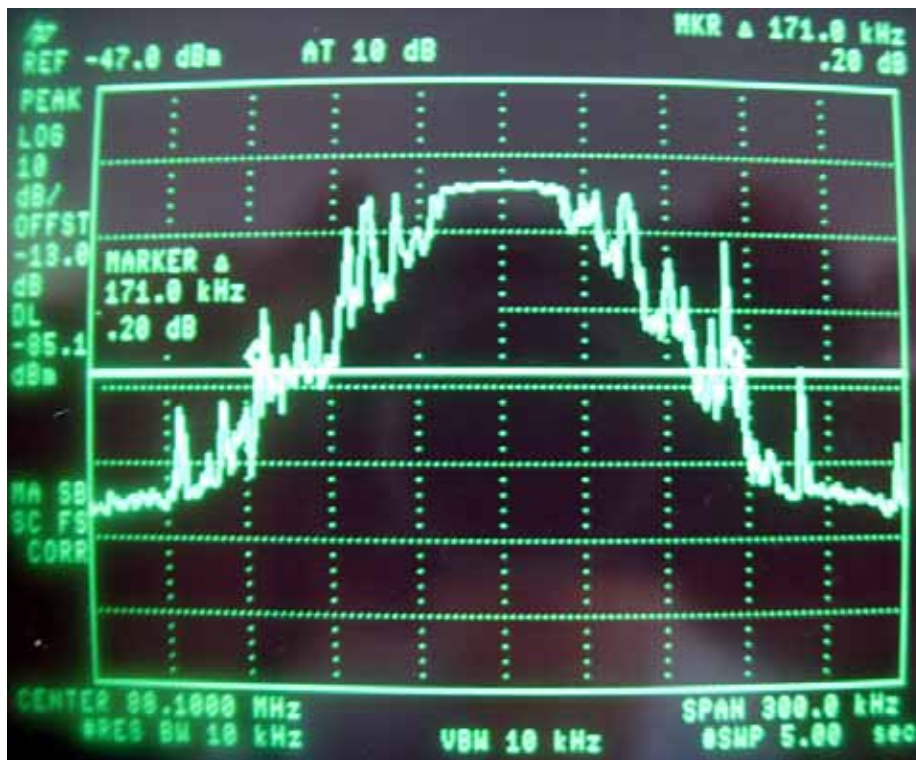
	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input checked="" type="checkbox"/>	Spectrum Analyzer	HP	8564E	3551A00410	2007-11-03
<input checked="" type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESVS30	829673/015	2008-01-12
<input checked="" type="checkbox"/>	ULTRA Broadband Antenna	Rohde & Schwarz	HL562	361324/014	2008-06-12

### Test Results

The requirements are:

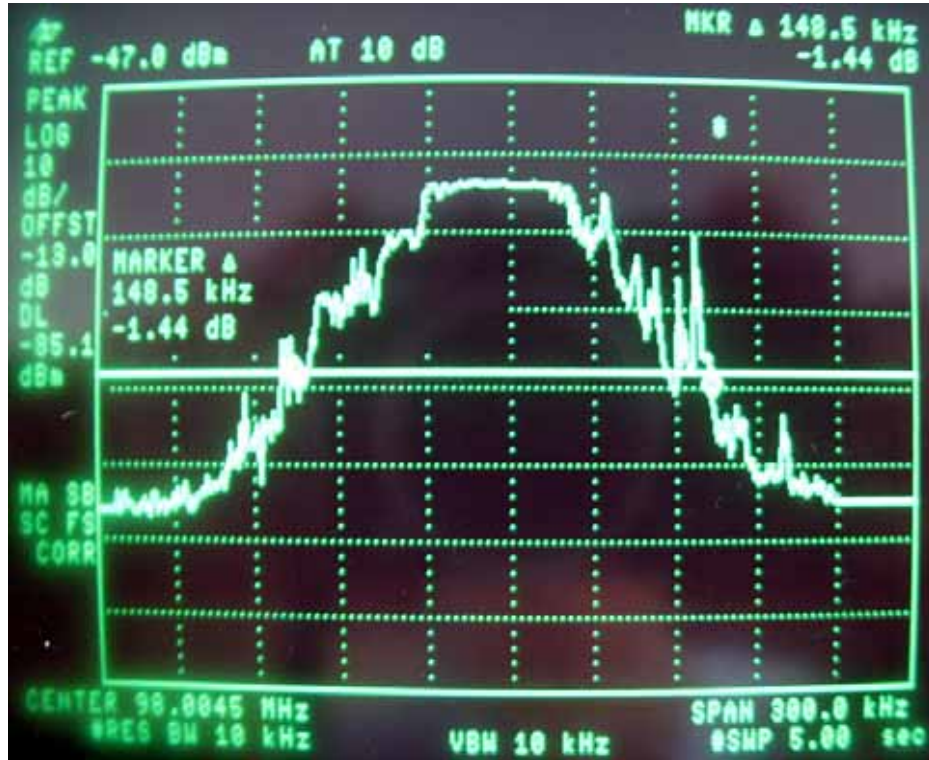
- ☒ MET  
☐ NOT MET  
☐ NOT APPLICABLE

[88.1 MHz]

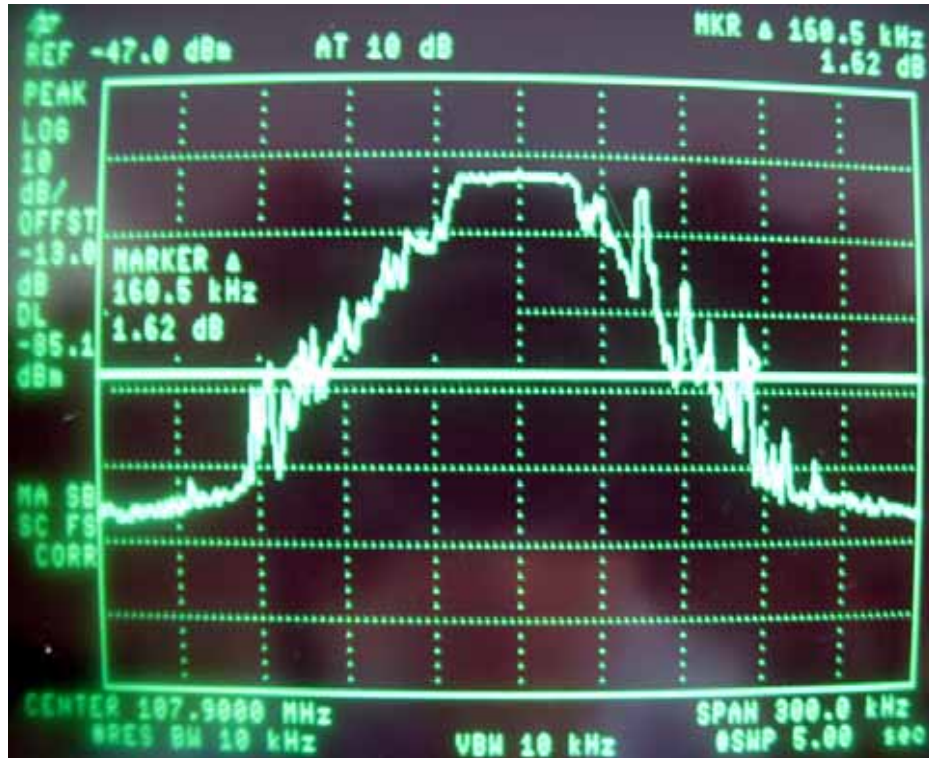




[98.0 MHz]



[107.9 MHz]





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## 2.4 Conducted Voltage Emissions – 15.207

### Reference Standard

FCC Part 15.207

### Test Date

Not Applicable

### Test Location

Shielded Room

### Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
<input type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002	2008-02-15
<input type="checkbox"/>	LISN	EMCO	3825/2	9607-2574	2007-09-01
<input type="checkbox"/>	LISN	EMCO	3825/2	9409-2246	2007-09-01
<input type="checkbox"/>	Field Strength Meter	Rohde & Schwarz	ESHS30	862024/001	2008-03-07
<input type="checkbox"/>	LISN	Rohde & Schwarz	ESH3-Z5	100207	2007-12-15
<input type="checkbox"/>	LISN	EMCO	3825/2	9206-1971	2007-12-15

### Frequency Range of Measurement

150 kHz to 30 MHz

### Conducted Emission limits

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

### Test Results

The requirements are:

- ☐ MET  
☐ NOT MET  
☒ NOT APPLICABLE

### Remarks



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## APPENDIX A – TEST DATA

### Radiated Electric Field Emissions - #1

Frequency [MHz]	Reading [dBuV/m]	Pol.	Detect	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
88.10	28.3	H	Peak	8.8	1.0	68.0	38.1	29.9
88.10	26.8	H	Average	8.8	1.0	48.0	36.6	11.4
98.00	27.5	H	Peak	9.5	0.9	68.0	37.9	30.1
98.00	25.2	H	Average	9.5	0.9	48.0	35.6	12.4
107.90	26.0	H	Peak	9.9	1.1	68.0	37.0	31.0
107.90	24.8	H	Average	9.9	1.1	48.0	35.8	12.2

### Radiated Electric Field Emissions - #2

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
36.00	7.4	V	1.0	17.4	0.5	40.0	25.3	14.7
41.47	10.6	H	4.0	12.9	0.6	43.5	24.1	19.4
50.90	12.3	V	1.0	8.2	0.6	43.5	21.1	22.4
175.12	12.2	H	4.0	7.0	1.6	46.0	20.8	25.2
204.82	11.9	V	1.0	7.7	1.7	40.0	21.3	18.7
239.92	18.1	H	4.0	9.3	1.9	40.0	29.3	10.7