



TEST REPORT  
ELECTROMAGNETIC EMISSION EVALUATION  
OF THE  
WORLDGATE  
MODEL CFT2200I  
SET TOP BOX  
FCC PART 15 CLASS B CERTIFICATION

JANUARY 1998

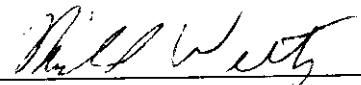
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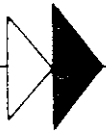
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Daniel J. Signore  
President



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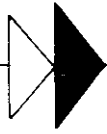


LIST OF FIGURES/TABLE

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TABLE 1	GRAPH/DATA SHEET IDENTIFICATION	5

The following Figures present graph results of Radiated Electric Field (RE) and Power Line Conducted Emission (CE) with various INPUT CHANNELS AND OUTPUT CHANNELS exercised.

	<u>INPUT CHANNELS</u>	<u>OUTPUT CHANNELS</u>	<u>PAGE</u>
FIGURE 1 CE	2, 20, 67	3	6
FIGURE 2 RE	2	3	9
FIGURE 3 RE	20	3	11
FIGURE 4 RE	67	3	13
FIGURE 5 RE	2	3	15
FIGURE 6 RE	20	3	17
FIGURE 7 RE	67	3	19
FIGURE 8 CE	2, 20, 67	4	21
FIGURE 9 RE	2	4	24
FIGURE 10 RE	20	4	26
FIGURE 11 RE	67	4	28
FIGURE 12 RE	2	4	30
FIGURE 13 RE	20	4	32
FIGURE 14 RE	67	4	34



ADMINISTRATIVE DATA

TEST PERFORMED:

Measurements of radiated, power line conducted and RF output radio noise.

PURPOSE OF TEST:

To evaluate the ElectroMagnetic Emission (EME) characteristics of the Equipment Under Test with respect to Subpart B of Part 15 of the Federal Communications Commission (FCC) Rules for Class "B" TV interface devices.

EQUIPMENT UNDER TEST (EUT):

WORLDGATE SET TOP BOX

Model Number: CFT2200I  
Serial Number: C7K1320532HK (Channel 3)  
CK1317684HK (Channel 4)

CONTRACT:

Purchase Order Number: 2100575

TEST PERIOD:

6-18 March 1998

TEST FACILITY:

Radiation Sciences Incorporated (RSI), EMC Test Laboratory,  
located at: 651 North Cannon Avenue, Lansdale, PA 19446.

TEST PERSONNEL AND COORDINATORS:

Radiation Sciences Inc.

M. Welty

General Instrument Corp.

J. DiBiase



SUMMARY OF TEST RESULTS

The WORLDGATE, Model CFT2200I SET TOP BOX, configured as described herein, FULLY COMPLIES WITH THE REQUIREMENTS SET FORTH IN SUBPART B OF PART 15 OF THE FEDERAL COMMUNICATION (FCC) RULES FOR CLASS "B" TV INTERFACE DEVICES.



## 1.0 INTRODUCTION

This document is a report of tests to determine the ElectroMagnetic Interference (EMI) characteristics of the **Model CFT2200I** with respect to Subpart B of Part 15 of the **FCC** Rules for Class "B" TV interface devices.

Test setups and procedures are described in **RSI's Test Procedure 3211E** (see Appendix A) and test results are summarized herein on graphs.

All test procedures used meet the requirements of the American National Standards Institute Procedure C63-4: "Methods of Measurements of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz", dated 17 July 1992 and MP-3: "Measurements of Output Signal Level, Output Terminal Conducted Spurious Emissions, Transfer Switch Characteristics, and Radio-Noise Emission from TV Interface Devices", dated 1985.



**2.0 DESCRIPTION OF THE TEST SAMPLE (EUT):**

The **WORLDGATE, Model CFT2200I** is a Cable System Terminal Device (RF Converter).

The **World Gate** Option is used to provide internet access through the cable system.

Primary power to the test sample was 115 volts AC, 60Hz.

The RF Converter was exercised with the following equipment:

Tektronix Model TSG-95 Signal Generator

Sharp Model 14BNIA

C6M Modulator

All cables were supplied by the manufacturer.

Maximum interface signals were recorded and compared to Class "B" FCC limits. A photograph of the test setup is shown in Figure A.

Since the **Model CFT2200I** is a Cable System Terminal Device, it is considered a Class "B" device with respect to the FCC Rules.



### 3.0 TEST RESULTS

#### 3.1 Conducted Power Line Measurements

Conducted power line measurements were recorded for the **Model CFT2200I**. The results of line-to-ground radio noise voltage measurements are identified on Table 1. Measurements were conducted on both the phase and neutral lines.

**ALL LEVELS ARE BELOW THE APPLICABLE LIMITS.**

#### 3.2 Radiated Emission Measurements

Radiated emission measurements were recorded for the **Model CFT2200I**. The results of field strength measurements are identified in Table 1. Radiated emission were measured with the antenna in both the horizontal and vertical planes at a distance of 3 meters. No signals were detected above 544.1Mhz.

**ALL LEVELS ARE BELOW THE APPLICABLE LIMITS.**



TABLE 1

Graph/Data Sheet Identification

Input Channel	Output Channel	Input Level	Conducted Graph	Conducted Data Sheets	Radiated Graph	Radiated Data Sheets
2	3	25dBmV	1	1/2	2	3
20	3	25dBmV			3	4
67	3	25dBmV			4	5
2	3	0dBmV			5	6
20	3	0dBmV			6	7
67	3	0dBmV			7	8
2	4	25dBmV	8	9/10	9	11
20	4	25dBmV			10	12
67	4	25dBmV			11	13
2	4	0dBmV			12	14
20	4	0dBmV			13	15
67	4	0dBmV			14	16

# FCC CLASS B CONDUCTED EMISSION

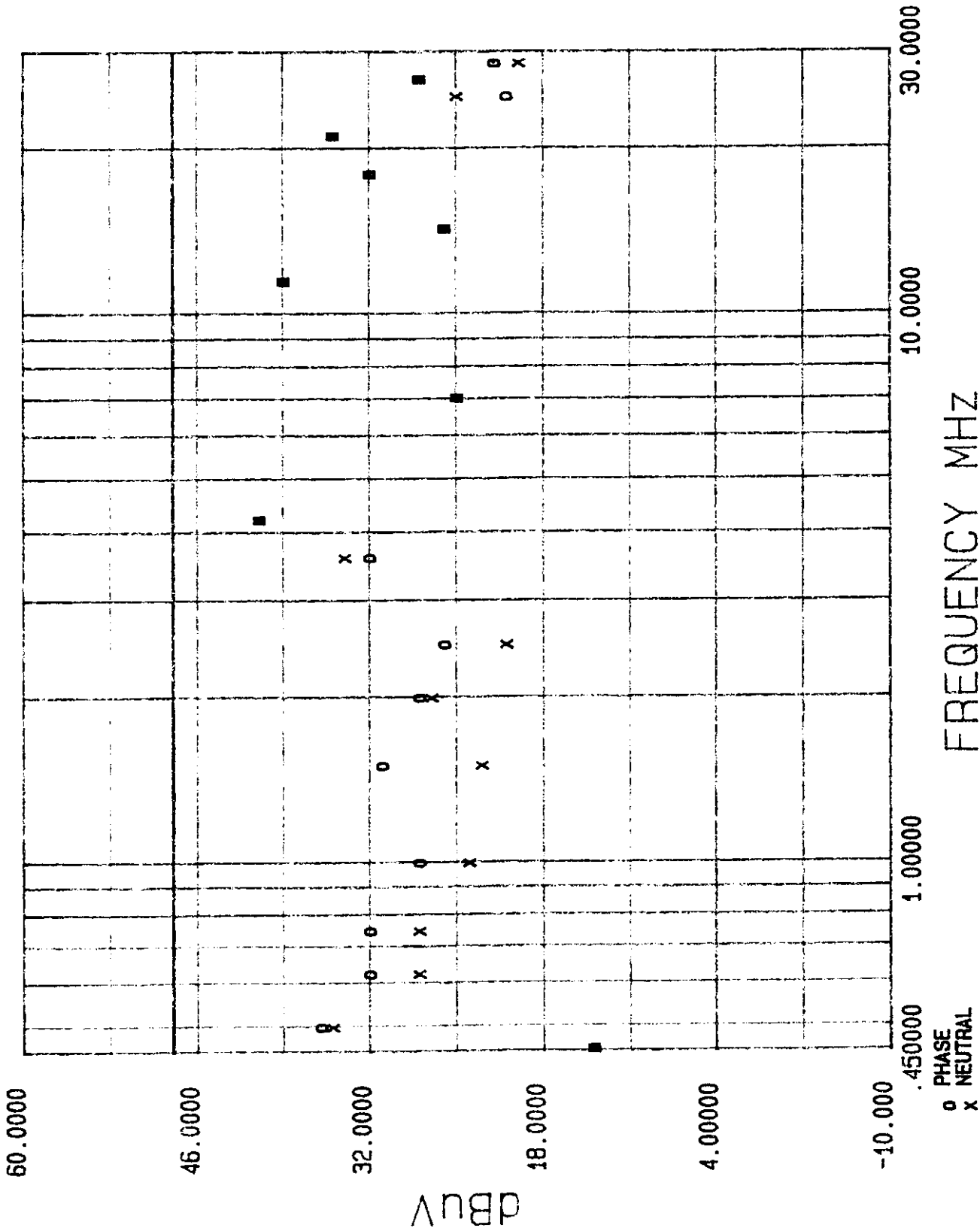


FIGURE 1



<b>E U T</b>	MANUFACTURER: <i>GI</i>	DATE: <i>3-6-98</i>	TEST CODE <i>CE</i>
	MODEL NO. - <i>CFT2254/HAA/700/R2/IN</i>	RECEIVER: <i>R+S</i>	TECHNICIAN
	SERIAL NO. - <i>C7K1320532HK</i>	SERIAL NO.	<i>MW</i>
	MODE -	FREQ. RANGE <i>.45-30MHz</i>	ENGINEER <i>MWELTY</i>

ADDITIONAL INFO.: <i>INPUT CH 2/20/67 OUTPUT CH 3</i>	TEST SPEC.: <i>FULL</i>
---	----------------------------

RADIATED <input type="checkbox"/> BB <input type="checkbox"/> NB	CONDUCTED <input type="checkbox"/> BB
DISTANCE:	LINE: <i>Ø</i>
ANTENNA: <input type="checkbox"/> H <input type="checkbox"/> E	PICK-UP DEVICE: <input type="checkbox"/> NB

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
<i>MHz</i>							<i>dK<sub>av</sub></i>		
<i>.456</i>							<i>14</i>		
<i>.50</i>							<i>36</i>		
<i>.625</i>							<i>32</i>		
<i>.75</i>							<i>32</i>		
<i>1.0</i>							<i>28</i>		
<i>1.5</i>							<i>31</i>		
<i>2.0</i>							<i>28</i>		
<i>2.5</i>							<i>26</i>		
<i>3.6</i>							<i>32</i>		
<i>4.23</i>							<i>41</i>		
<i>7.05</i>							<i>25</i>		
<i>11.5</i>							<i>39</i>		
<i>14.32</i>							<i>26</i>		
<i>18</i>							<i>32</i>		
<i>21.17</i>							<i>35</i>		
<i>25</i>							<i>21</i>		
<i>26.8</i>							<i>28</i>		
<i>28.63</i>							<i>22</i>		

E U T	MANUFACTURER: <b>GI</b>	DATE: <b>3-6-98</b>	TEST CODE <b>CE</b>
	MODEL NO. - <b>CFT2254/HAA/700/R2/I2</b>	RECEIVER: <b>R+S</b>	TECHNICIAN
	SERIAL NO. - <b>C7K1320532MK</b>	SERIAL NO.	<b>MW</b>
	MODE -	FREQ. RANGE <b>.45-30MHz</b>	ENGINEER <b>MWELTY</b>

ADDITIONAL INFO.: <b>1-PUT CN 2/20/67 OUTSIDE CN 3</b>	TEST SPEC.: <b>FCC B</b>
--	-----------------------------

RADIATED <input type="checkbox"/> BB <input type="checkbox"/> NB	CONDUCTED <input type="checkbox"/> BB
DISTANCE:	LINE: <b>N</b>
ANTENNA: <input type="checkbox"/> H <input type="checkbox"/> E	FUNCTION:
	PICK-UP DEVICE: <input type="checkbox"/> NB

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
<b>MHz</b>							<b>dBµV</b>		
<b>.456</b>							<b>17</b>		
<b>.50</b>							<b>35</b>		
<b>.625</b>							<b>28</b>		
<b>.75</b>							<b>28</b>		
<b>1.0</b>							<b>24</b>		
<b>1.5</b>							<b>23</b>		
<b>2.0</b>							<b>27</b>		
<b>2.5</b>							<b>21</b>		
<b>3.6</b>							<b>34</b>		
<b>4.23</b>							<b>41</b>		
<b>7.05</b>							<b>25</b>		
<b>11.5</b>							<b>39</b>		
<b>14.32</b>							<b>26</b>		
<b>19</b>							<b>32</b>		
<b>21.17</b>							<b>35</b>		
<b>25</b>							<b>25</b>		
<b>26.8</b>							<b>28</b>		
<b>29.63</b>							<b>20</b>		

# FCC CLASS B RADIATED EMISSION

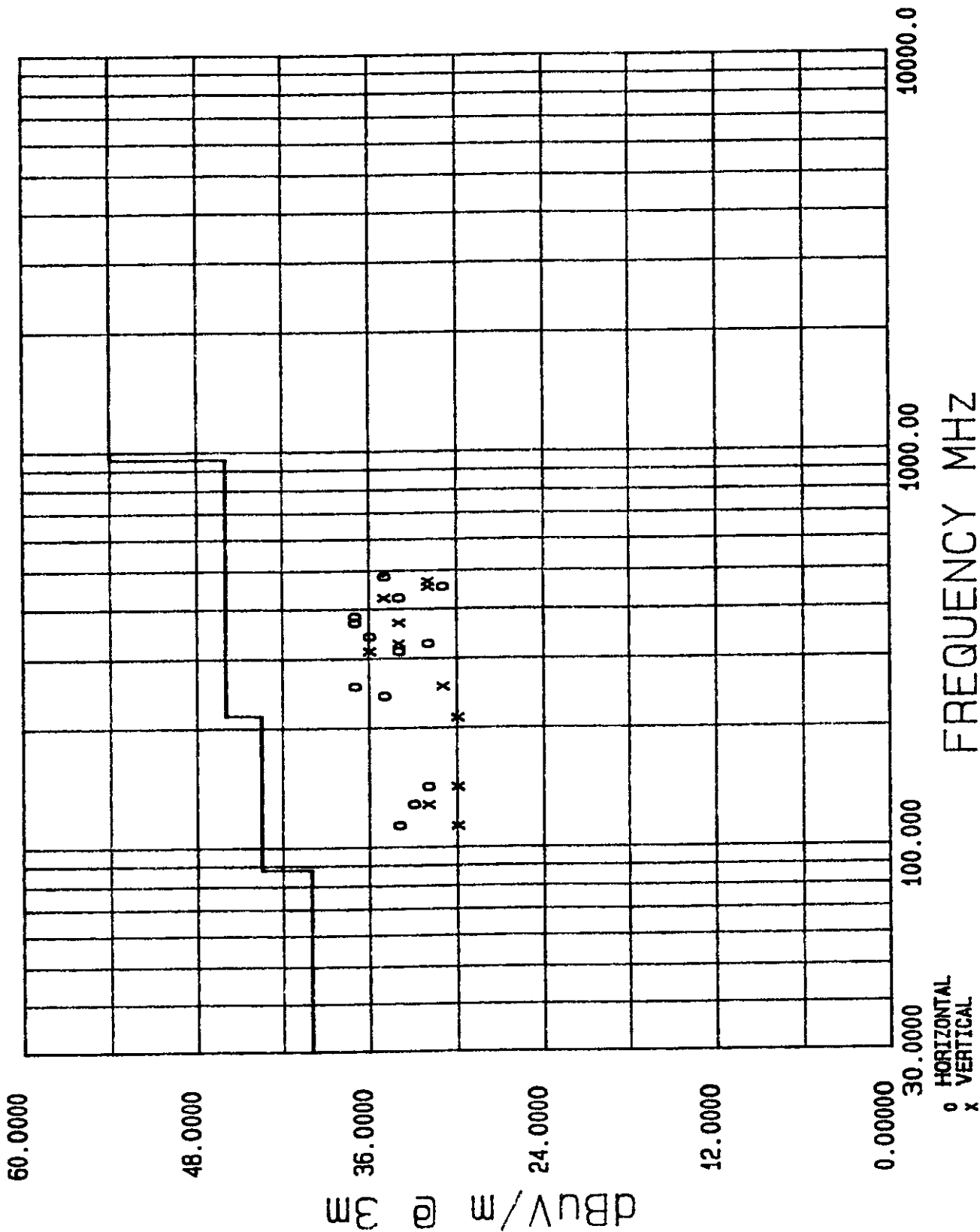


FIGURE 2



# RADIATION SCIENCES INC.

# ELECTROMAGNETIC EMISSION TEST

<b>E U T</b>	MANUFACTURER: <b>GI</b>	DATE: <b>3-12-99</b>	TEST CODE <b>RE</b>
	MODEL NO. - <b>CFT2254/HAA/700/R2/12</b>	RECEIVER: <b>R+S</b>	TECHNICIAN <b>MW</b>
	SERIAL NO. - <b>C7K1320532HK</b>	SERIAL NO.	ENGINEER <b>MWELLY</b>
	MODE - <b>WORLD GATE OPTION</b>	FREQ. RANGE <b>30-10000MHz</b>	

ADDITIONAL INFO.: <b>INPUT CH 2 +25dBmV</b> <b>OUTPUT CH 3</b>	TEST SPEC.: <b>FULL B</b>
---	------------------------------

<b>RADIATED</b> DISTANCE: <b>3M</b> ANTENNA:	<input type="checkbox"/> BB <input type="checkbox"/> H	<input checked="" type="checkbox"/> NB <input checked="" type="checkbox"/> E	<b>CONDUCTED</b> LINE: FUNCTION: PICK-UP DEVICE:	<input type="checkbox"/> BB <input type="checkbox"/> NB
--	---	---	---	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz	dBmV			dB			dBmV/m		
114.5	19			11			30	VERTICAL	
128.9	20			12			32		
143.2	18			12			30		
214.8	15			15			30		
257.7	13			18			31		
315	21			15			36		
329.3	18			16			34		
372.3	18			16			34		
429.5	18			17			35		
458	14			18			32		
472.5	14			18			32		
114.5	23			11			34	HORIZONTAL	
128.9	21			12			33		
143.2	20			12			32		
243.4	18			17			35		
257.7	19			18			37		
315	19			15			34		
329.3	16			16			32		
343.6	20			16			36		
372.3	21			16			37		
386.6	21			16			37		
429.5	17			17			34		
458	13			18			31		
486.8	16			19			35		

# FCC CLASS B RADIATED EMISSION

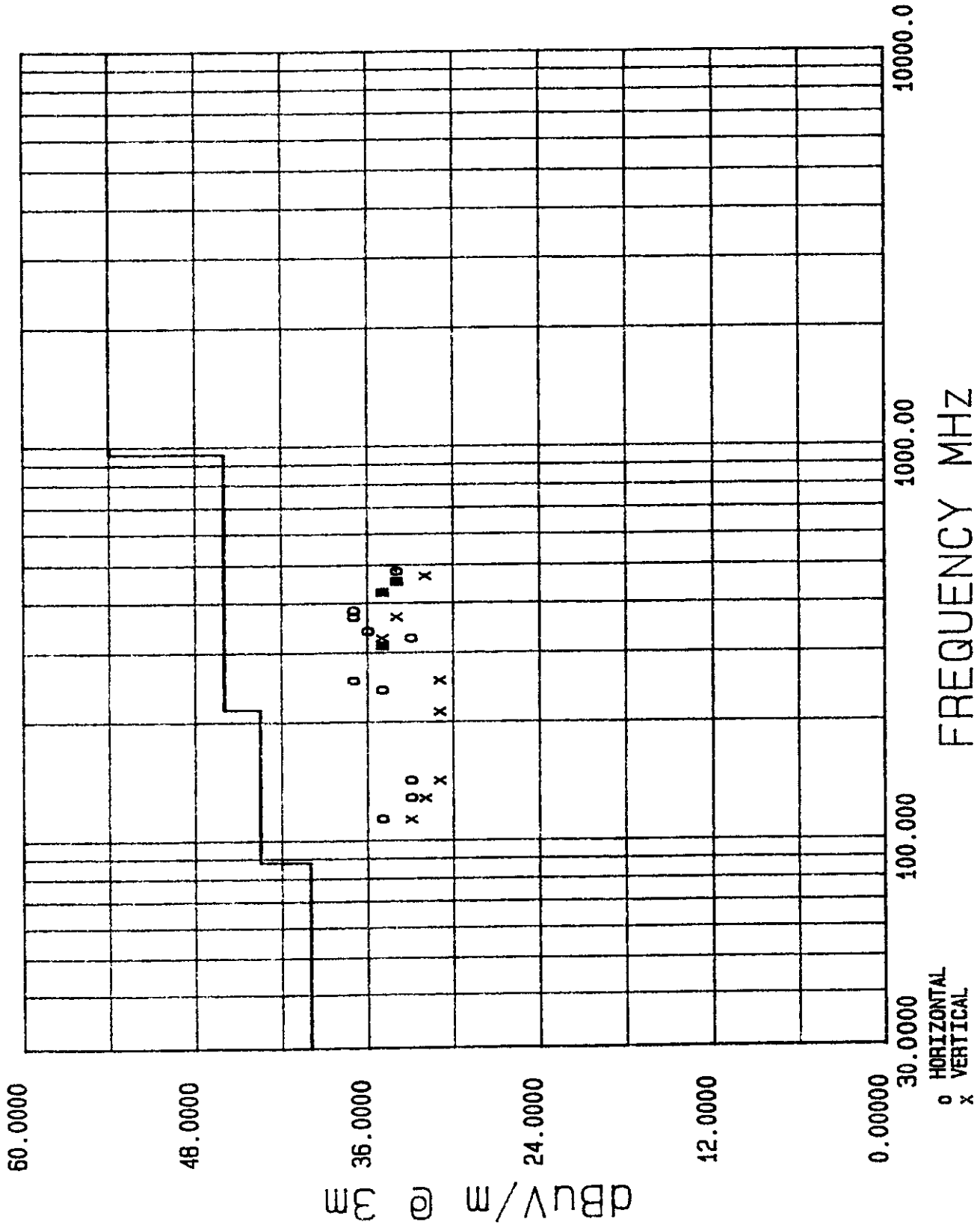


FIGURE 3



<b>E U T</b>	MANUFACTURER: <b>GI</b>		DATE: <b>3-16-98</b>	TEST CODE	
	MODEL NO. - <b>CFT2254/NAA/700/R2/J2</b>		RECEIVER: <b>R+S</b>	<b>RE</b>	
	SERIAL NO. - <b>C7K1320532NK</b>		SERIAL NO.	TECHNICIAN	
	MODE - <b>WORLD GATE OPTION</b>		FREQ. RANGE <b>30-10000 MHz</b>	<b>MW</b>	
ADDITIONAL INFO.: <b>1-OUT CH 20 +25dBmV</b> <b>OUTANT CH 3</b>			TEST SPEC.: <b>FULL D</b>		
RADIATED <input type="checkbox"/> BB <input checked="" type="checkbox"/> NB DISTANCE: <b>3M</b> ANTENNA: <input type="checkbox"/> H <input checked="" type="checkbox"/> E			CONDUCTED <input type="checkbox"/> BB LINE: FUNCTION: PICK-UP DEVICE: <input type="checkbox"/> NB		

ADDITIONAL INFO.: <b>1-OUT CH 20 +25dBmV</b> <b>OUTANT CH 3</b>	TEST SPEC.: <b>FULL D</b>
--	------------------------------

RADIATED <input type="checkbox"/> BB <input checked="" type="checkbox"/> NB DISTANCE: <b>3M</b> ANTENNA: <input type="checkbox"/> H <input checked="" type="checkbox"/> E	CONDUCTED <input type="checkbox"/> BB LINE: FUNCTION: PICK-UP DEVICE: <input type="checkbox"/> NB
---	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz	dB <sub>μV</sub>			dB			dB <sub>μV/m</sub>		
114.5	22			11			33	VERTICAL	
128.9	20			12			32		
143.2	19			12			31		
214.8	16			15			31		
257.7	13			18			31		
315	20			15			35		
329.3	19			16			35		
372.3	18			16			34		
429.5	18			17			35		
458	15			18			34		
472.5	14			18			32		
114.5	24			11			35	HORIZONTAL	
128.9	21			12			33		
143.2	21			12			33		
214.8	18			17			35		
257.7	19			18			37		
315	20			15			35		
329.3	17			16			33		
343.6	20			16			36		
372.3	21			16			37		
386.6	21			16			37		
429.5	18			17			35		
458	15			18			34		
486.8	15			19			34		



# FCC CLASS B RADIATED EMISSION

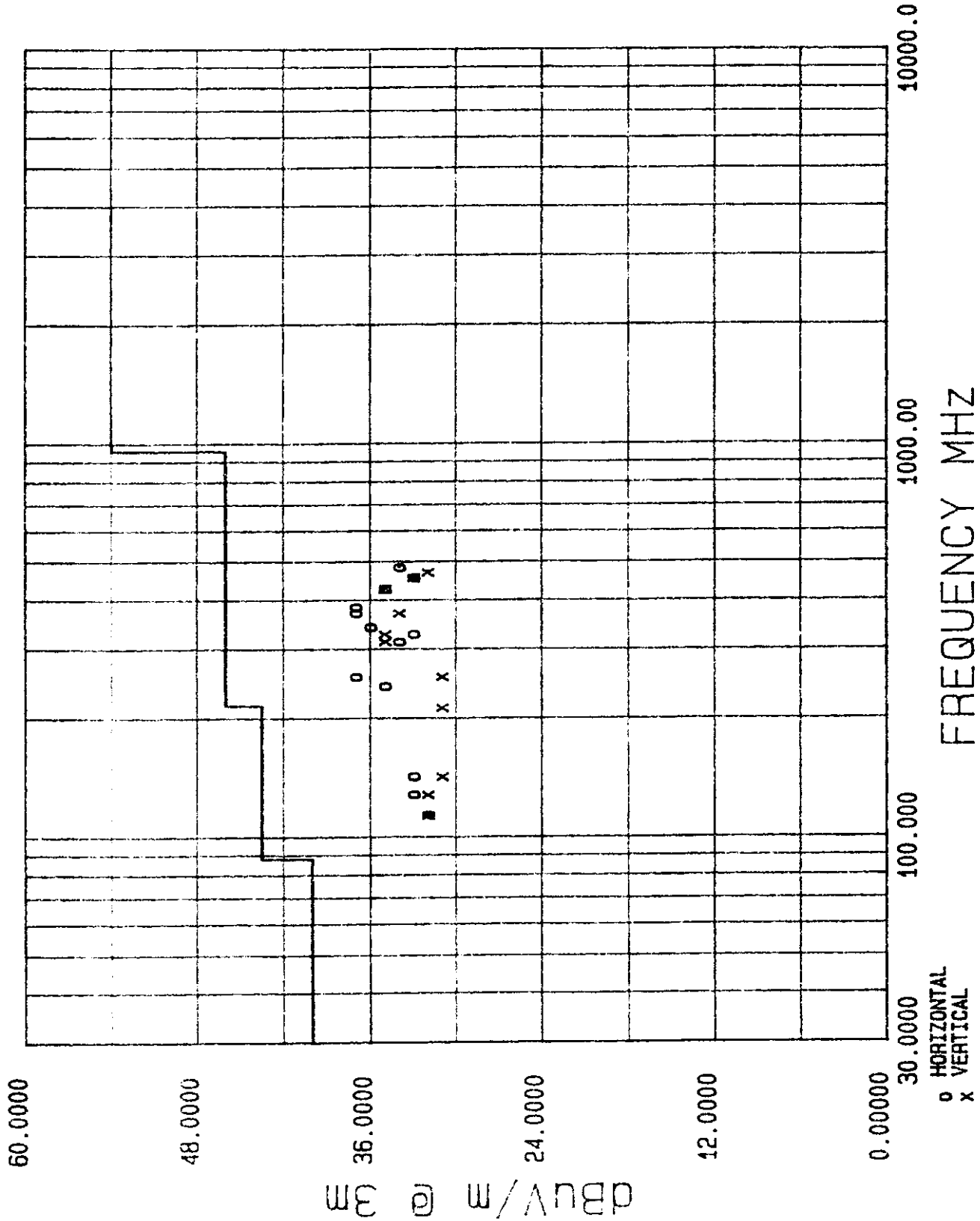


FIGURE 4

E U T	MANUFACTURER: <u>GI</u>	DATE: <u>3-16-99</u>	TEST CODE <u>RE</u>
	MODEL NO. - <u>CFT2254 / NAA / 700 / R2 / I2</u>	RECEIVER: <u>R+S</u>	TECHNICIAN
	SERIAL NO. - <u>C7K1320532HK</u>	SERIAL NO.	<u>MW</u>
	MODE - <u>WORLDGATE OPTION</u>	FREQ. RANGE <u>30-10000MHz</u>	ENGINEER <u>MWELTY</u>

ADDITIONAL INFO.: <u>INPUT CH 67 +21dBmV</u> <u>OUTPUT CH 3</u>	TEST SPEC.: <u>Full B</u>
--	------------------------------

RADIATED DISTANCE: <u>3M</u> ANTENNA:	<input type="checkbox"/> BB <input type="checkbox"/> H	<input type="checkbox"/> NB <input type="checkbox"/> E	CONDUCTED LINE: FUNCTION: PICK-UP DEVICE:	<input type="checkbox"/> BB <input type="checkbox"/> NB
---	---	---	--	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS			FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE			
MHz	dB <sub>mV</sub>			dB		dB <sub>mV/m</sub>		
114.5	21			11		32	VERTICAL	
128.9	20			12		32		
143.2	19			12		31		
214.8	16			15		31		
257.7	13			18		31		
315	20			15		35		
329.3	19			16		35		
372.3	18			16		34		
429.5	18			17		35		
458	15			18		33		
472.5	14			18		32		
114.5	21			11		32	HORIZONTAL	
128.9	21			12		33		
143.2	21			12		33		
243.4	18			17		35		
257.7	19			18		37		
315	19			15		34		
329.3	17			16		33		
343.6	20			16		36		
372.3	21			16		37		
386.6	21			16		37		
429.5	18			17		35		
458	15			18		33		
456.8	15			19		34		

# FCC CLASS B RADIATED EMISSION

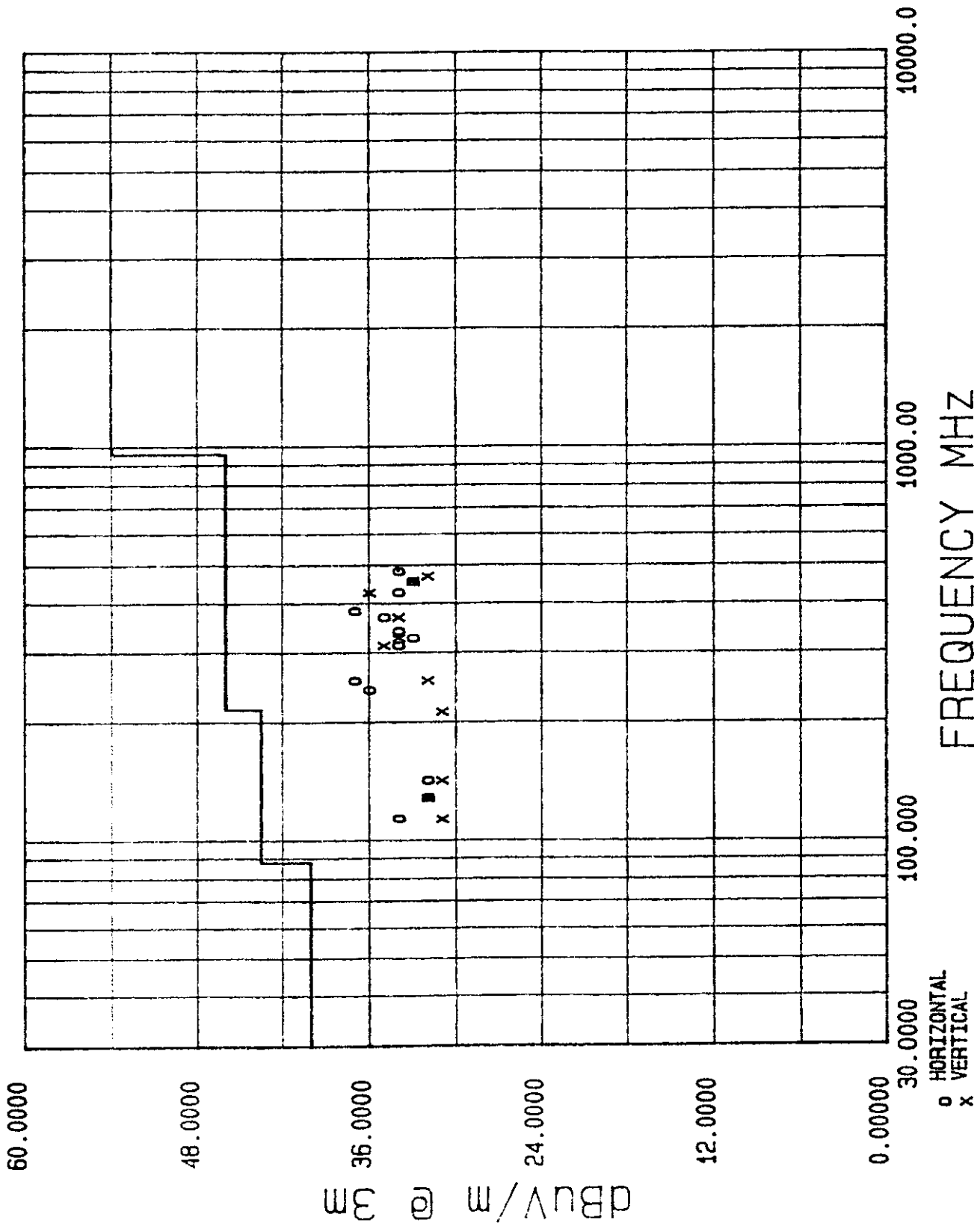


FIGURE 5

E U T	MANUFACTURER: <b>G1</b>		DATE: <b>3-12-98</b>	TEST CODE <b>RE</b>
	MODEL NO. - <b>CFT2254/HAA/700/R2/I2</b>		RECEIVER: <b>R+S</b>	TECHNICIAN
	SERIAL NO. - <b>C7K1320532HK</b>		SERIAL NO.	<b>MW</b>
	MODE - <b>WORLDGATE OPTION</b>		FREQ. RANGE <b>30-10000MHz</b>	ENGINEER <b>MWELTY</b>

ADDITIONAL INFO.: <b>INPUT CH 2 0dBmV</b> <b>OUTPUT CH 3</b>	TEST SPEC.: <b>FCC B</b>
---	-----------------------------

<b>RADIATED</b> <input type="checkbox"/> BB <input checked="" type="checkbox"/> NB DISTANCE: <b>3M</b> ANTENNA: <input type="checkbox"/> H <input checked="" type="checkbox"/> E	<b>CONDUCTED</b> <input type="checkbox"/> BB LINE: FUNCTION: PICK-UP DEVICE: <input type="checkbox"/> NB
---	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz	dBmV			dB			dBmV/m		
114.5	20			11			31	VERTICAL	
128.9	20			12			32		
143.2	19			12			31		
214.8	16			15			31		
257.7	14			18			32		
315	20			15			35		
329.3	18			16			34		
372.3	18			16			34		
429.5	19			17			36		
458	15			18			33		
472.5	14			18			32		
114.5	23			11			34	HORIZONTAL	
128.9	20			12			32		
143.2	20			12			32		
243.4	19			17			36		
257.7	19			18			37		
315	19			15			34		
329.3	17			16			33		
343.6	18			16			34		
372.3	19			16			35		
386.6	21			16			37		
429.5	17			17			34		
458	15			18			33		
486.8	15			19			34		

# FCC CLASS B RADIATED EMISSION

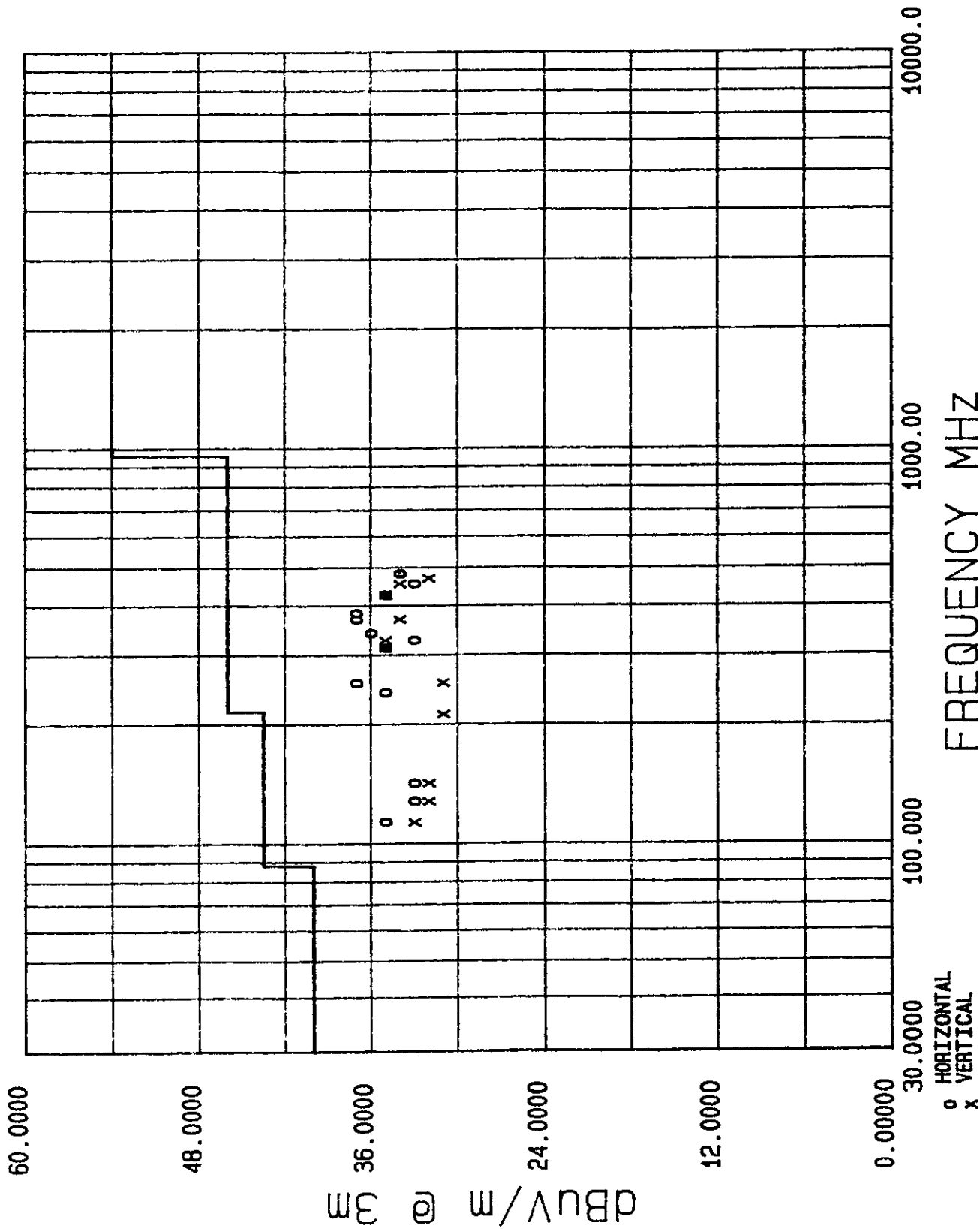


FIGURE 6

# RADIATION SCIENCES INC.

# ELECTROMAGNETIC EMISSION TEST

E U T	MANUFACTURER: <b>GI</b>	DATE: <b>3-16-98</b>	TEST CODE <b>RE</b>
	MODEL NO. - <b>CFT2254/HM/700/R2/I2</b>	RECEIVER: <b>R+S</b>	TECHNICIAN <b>MW</b>
	SERIAL NO. - <b>C7K1320532HK</b>	SERIAL NO.	ENGINEER <b>MWELTY</b>
	MODE - <b>WORLDGATE OPTION</b>	FREQ. RANGE <b>30-10000MHz</b>	

ADDITIONAL INFO.: <b>INPUT CH 20 0dBmV</b> <b>OUTPUT CH 3</b>	TEST SPEC.: <b>FLL B</b>
--	-----------------------------

<b>RADIATED</b> <input type="checkbox"/> BB <input checked="" type="checkbox"/> NB DISTANCE: <b>3M</b> ANTENNA: <input type="checkbox"/> H <input checked="" type="checkbox"/> E	<b>CONDUCTED</b> <input type="checkbox"/> BB LINE: FUNCTION: PICK-UP DEVICE: <input type="checkbox"/> NB
--	---

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz	dB <sub>mV</sub>			dB			dB <sub>mV/m</sub>		
114.5	22			11			33	VERTICAL	
128.9	20			12			32		
143.2	20			12			32		
214.8	16			15			31		
257.7	13			18			31		
315	20			15			35		
329.3	19			16			35		
372.3	18			16			34		
429.5	18			17			35		
458	16			18			34		
472.5	14			18			32		
114.5	24			11			35	HORIZONTAL	
128.9	21			12			33		
143.2	21			12			33		
243.4	18			17			35		
257.7	19			18			37		
315	20			15			35		
329.3	17			16			33		
343.6	20			16			36		
372.3	21			16			37		
386.6	21			16			37		
429.5	18			17			35		
458	15			18			33		
486.8	15			19			34		

# FCC CLASS B RADIATED EMISSION

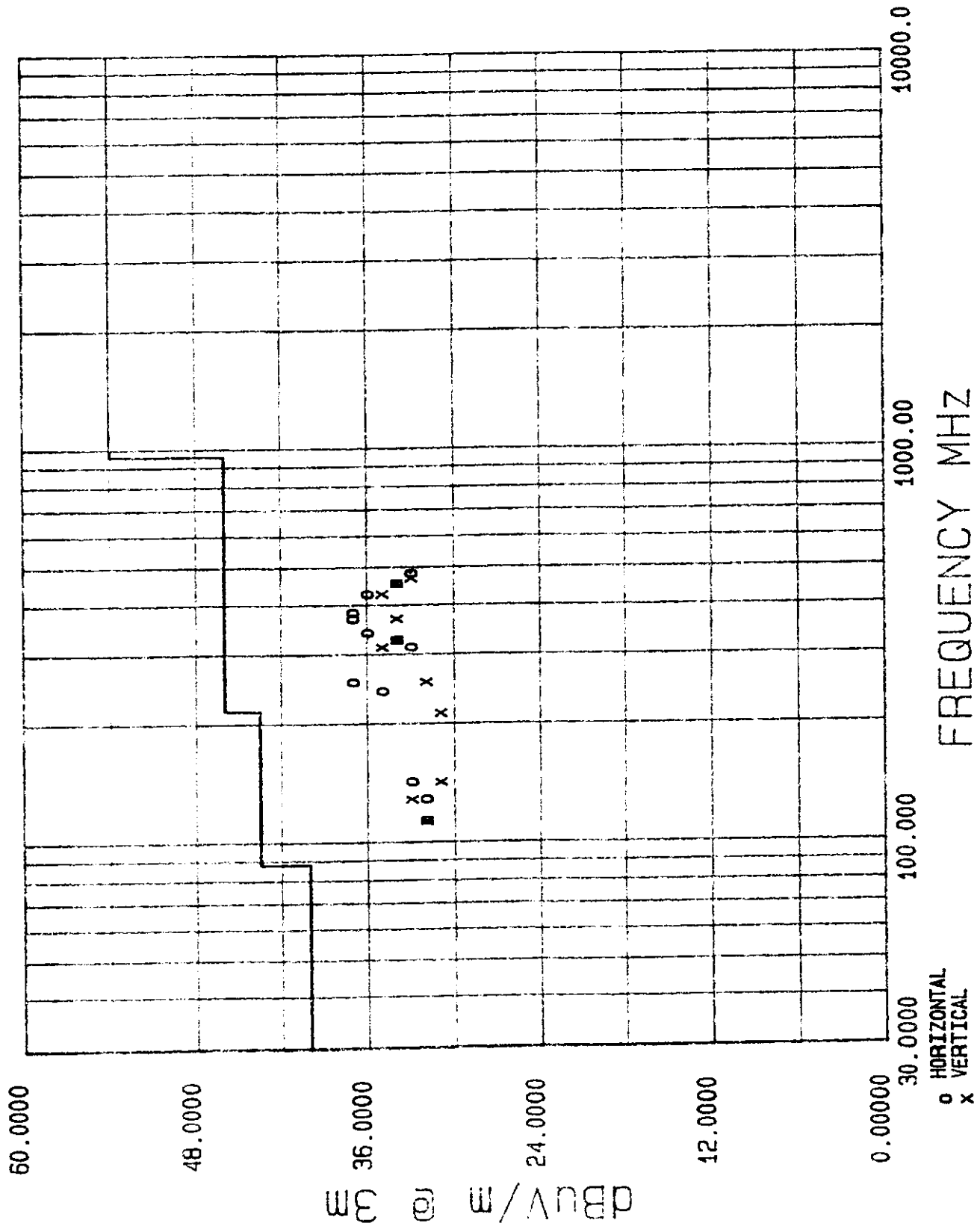


FIGURE 7

E U T	MANUFACTURER: <i>GJ</i>	DATE: <i>3-16-98</i>	TEST CODE <i>RE</i>
	MODEL NO. - <i>CFT2254/WAA/700/R2/IS</i>	RECEIVER: <i>R+S</i>	TECHNICIAN <i>MW</i>
	SERIAL NO. - <i>C7K1320532NK</i>	SERIAL NO.	ENGINEER <i>MWELTY</i>
	MODE - <i>WORLDGATE OPTION</i>	FREQ. RANGE <i>30-10000MHz</i>	

ADDITIONAL INFO.: <i>INPUT CH 67 0dBmV</i> <i>OUTPUT CH 3</i>	TEST SPEC.: <i>FCU B</i>
--	-----------------------------

RADIATED <input type="checkbox"/> BB <input type="checkbox"/> NB DISTANCE: <i>3M</i> ANTENNA: <input type="checkbox"/> H <input type="checkbox"/> E	CONDUCTED <input type="checkbox"/> BB LINE: FUNCTION: PICK-UP DEVICE: <input type="checkbox"/> NB
---	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS			FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE			
<i>MHz</i>	<i>dBμV</i>			<i>dB</i>		<i>dBμV/m</i>		
<i>114.5</i>	<i>21</i>			<i>11</i>		<i>32</i>	<i>VERTICAL</i>	
<i>128.9</i>	<i>21</i>			<i>12</i>		<i>33</i>		
<i>143.2</i>	<i>19</i>			<i>12</i>		<i>31</i>		
<i>214.8</i>	<i>16</i>			<i>15</i>		<i>31</i>		
<i>257.7</i>	<i>14</i>			<i>18</i>		<i>32</i>		
<i>315</i>	<i>20</i>			<i>15</i>		<i>35</i>		
<i>329.3</i>	<i>18</i>			<i>16</i>		<i>34</i>		
<i>372.3</i>	<i>18</i>			<i>16</i>		<i>34</i>		
<i>429.5</i>	<i>18</i>			<i>17</i>		<i>35</i>		
<i>458</i>	<i>16</i>			<i>18</i>		<i>34</i>		
<i>472.5</i>	<i>15</i>			<i>18</i>		<i>33</i>		
<i>114.5</i>	<i>21</i>			<i>11</i>		<i>32</i>	<i>HORIZONTAL</i>	
<i>128.9</i>	<i>20</i>			<i>12</i>		<i>32</i>		
<i>143.2</i>	<i>21</i>			<i>12</i>		<i>33</i>		
<i>243.4</i>	<i>18</i>			<i>17</i>		<i>35</i>		
<i>257.7</i>	<i>19</i>			<i>18</i>		<i>37</i>		
<i>315</i>	<i>18</i>			<i>15</i>		<i>33</i>		
<i>329.3</i>	<i>18</i>			<i>16</i>		<i>34</i>		
<i>343.6</i>	<i>20</i>			<i>16</i>		<i>36</i>		
<i>372.3</i>	<i>21</i>			<i>16</i>		<i>37</i>		
<i>386.6</i>	<i>21</i>			<i>16</i>		<i>37</i>		
<i>429.5</i>	<i>19</i>			<i>17</i>		<i>36</i>		
<i>458</i>	<i>16</i>			<i>18</i>		<i>34</i>		
<i>486.8</i>	<i>14</i>			<i>19</i>		<i>33</i>		



# FCC CLASS B CONDUCTED EMISSION

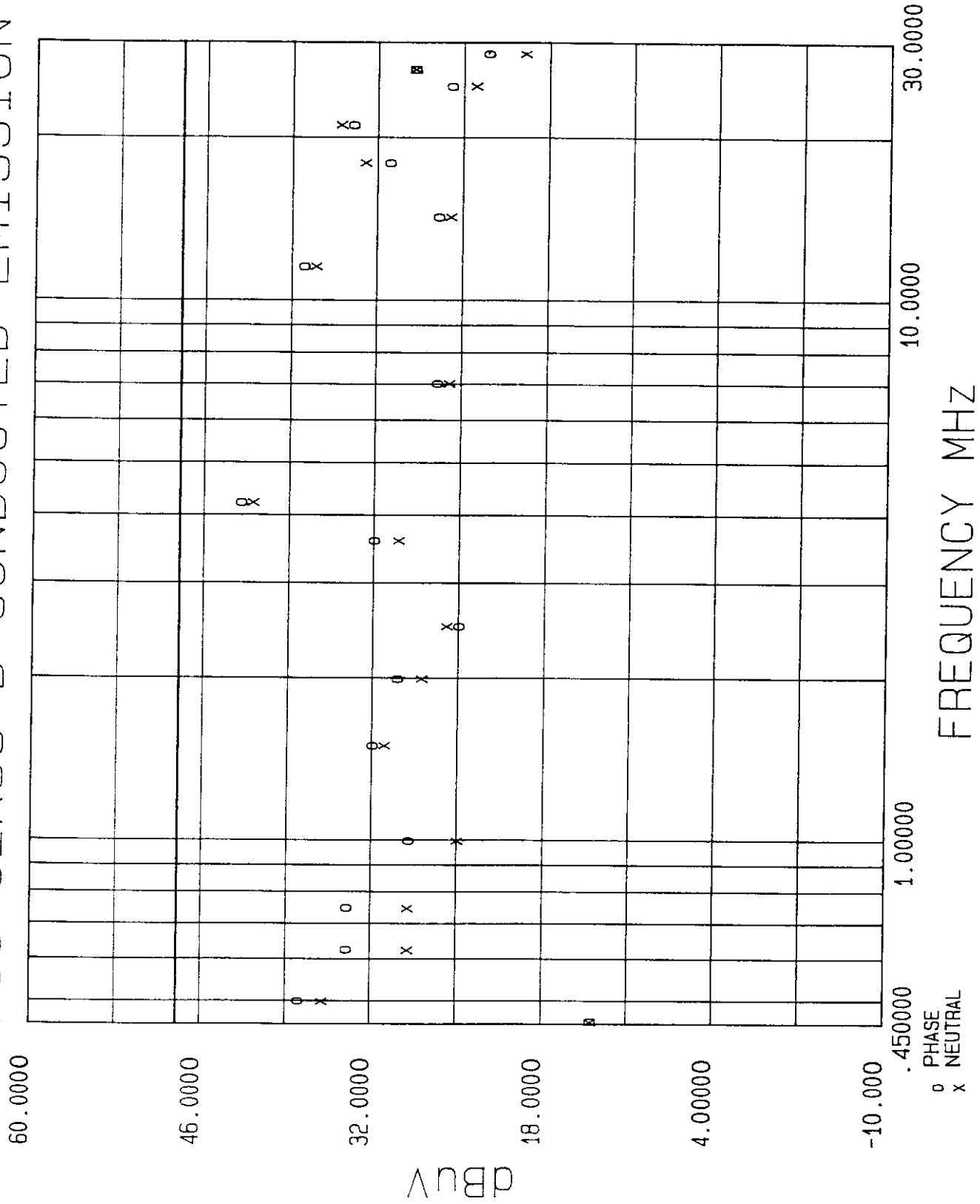


FIGURE 8

<b>E U T</b>	MANUFACTURER: <b>GI</b>	DATE: <b>3-6-98</b>	TEST CODE <b>CE</b>
	MODEL NO. - <b>CF12254/AAA/700/R2/12</b>	RECEIVER: <b>R+S</b>	TECHNICIAN <b>MW</b>
	SERIAL NO. - <b>CK1317684HK</b>	SERIAL NO.	ENGINEER <b>M WELTY</b>
	MODE -	FREQ. RANGE <b>.45-30MHz</b>	

ADDITIONAL INFO.: <b>INPUT CN 2/20/67</b> <b>OUTPUT CN 3</b>	TEST SPEC.: <b>FCC B</b>
---	-----------------------------

<b>RADIATED</b> <input type="checkbox"/> BB <input type="checkbox"/> NB DISTANCE: ANTENNA: <input type="checkbox"/> H <input type="checkbox"/> E	<b>CONDUCTED</b> <input type="checkbox"/> BB LINE: FUNCTION: <b>Ø</b> PICK-UP DEVICE: <input type="checkbox"/> NB
--	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz							<b>dBmV</b>		
.456							14		
.50							38		
.625							34		
.75							34		
1.0							29		
1.5							32		
2.0							30		
2.5							25		
3.6							32		
4.23							43		
7.05							27		
11.6							38		
14.32							27		
18							31		
21.17							34		
25							26		
26.8							29		
28.63							23		



# RADIATION SCIENCES INC.

# ELECTROMAGNETIC EMISSION TEST

E U T	MANUFACTURER: <b>GI</b>	DATE: <b>3-6-98</b>	TEST CODE <b>CE</b>
	MODEL NO. - <b>CFT2254/NA1/700/R2/I2</b>	RECEIVER: <b>R+S</b>	TECHNICIAN <b>MW</b>
	SERIAL NO. - <b>CK1317684HK</b>	SERIAL NO.	ENGINEER <b>MWELTY</b>
	MODE -	FREQ. RANGE <b>.45-30MHz</b>	

ADDITIONAL INFO.: <b>INPUT CM 2/20/67</b> <b>OUTPUT CM 4</b>	TEST SPEC.: <b>FCC B</b>
---	-----------------------------

RADIATED <input type="checkbox"/> BB <input type="checkbox"/> NB	CONDUCTED <input type="checkbox"/> BB
DISTANCE: ANTENNA: <input type="checkbox"/> H <input type="checkbox"/> E	LINE: <b>N</b> FUNCTION: PICK-UP DEVICE: <input type="checkbox"/> NB

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz							<b>dB<sub>uV</sub></b>		
.456							14		
.50							36		
.625							29		
.75							29		
1.0							25		
1.5							31		
2.0							28		
2.5							26		
3.6							30		
4.23							42		
7.05							26		
11.6							37		
14.32							26		
18							33		
21.17							35		
25							24		
26.9							29		
29.83							20		

# FCC CLASS B RADIATED EMISSION

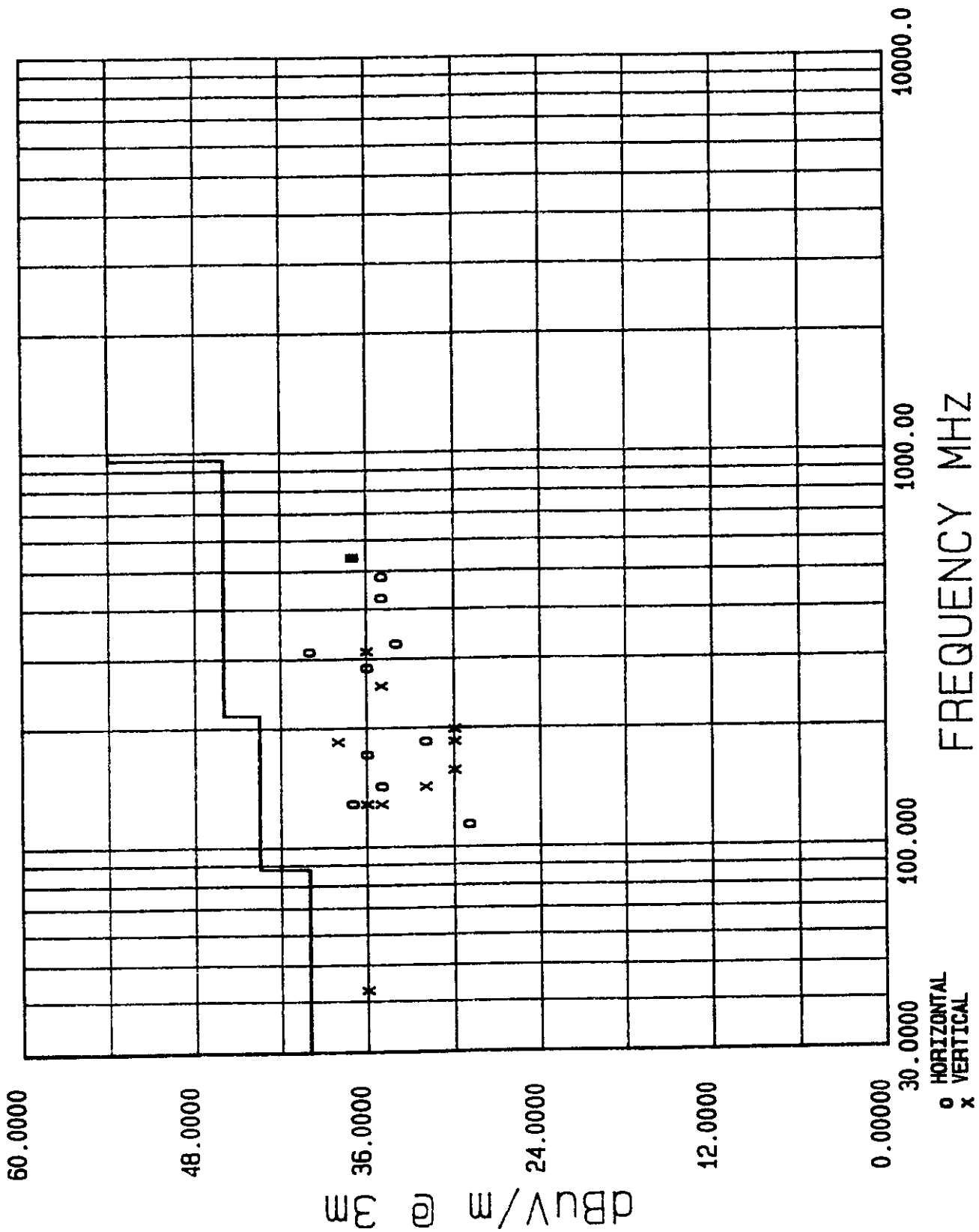


FIGURE 9



RADIATION SCIENCES INC.

ELECTROMAGNETIC EMISSION TEST

<b>E U T</b>	MANUFACTURER: <b>GI</b>	DATE: <b>3-19-99</b>	TEST CODE <b>RE</b>
	MODEL NO. - <b>CF12254/HM/100/R2/I2</b>	RECEIVER: <b>R+S</b>	TECHNICIAN
	SERIAL NO. - <b>CK1317684NK</b>	SERIAL NO.	<b>MW</b>
	MODE - <b>WORLDGATE OPTIM</b>	FREQ. RANGE <b>30-10000MHz</b>	ENGINEER <b>MWELTY</b>

ADDITIONAL INFO.: <b>INPUT CN 2 +25dBmV</b> <b>OUTPUT CN 4</b>	TEST SPEC.: <b>FLL B</b>
---	-----------------------------

RADIATED <input type="checkbox"/> BB <input checked="" type="checkbox"/> NB	CONDUCTED <input type="checkbox"/> BB
DISTANCE: <b>3M</b>	LINE:
ANTENNA: <input type="checkbox"/> H <input checked="" type="checkbox"/> E	FUNCTION:
	PICK-UP DEVICE: <input type="checkbox"/> NB

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz	dBmV			dB			dBmV/M		
43	24			12			36	VERTICAL	
128.9	23			12			35		
143.2	20			12			32		
157.5	17			13			30		
186.1	17			13			30		
200.4	16			14			30		
257.7	17			18			35		
315	21			15			36		
429.5	19			17			36		
486.8	20			18			38		
544.1	18			19			37		
114.5	18			11			29	HORIZONTAL	
128.9	25			12			37		
143.2	23			12			35		
171.8	23			13			36		
186.1	19			13			32		
286.4	17			19			36		
315	25			15			40		
329.3	18			16			34		
429.5	18			17			35		
486.8	21			18			39		
544.1	18			19			37		

# FCC CLASS B RADIATED EMISSION

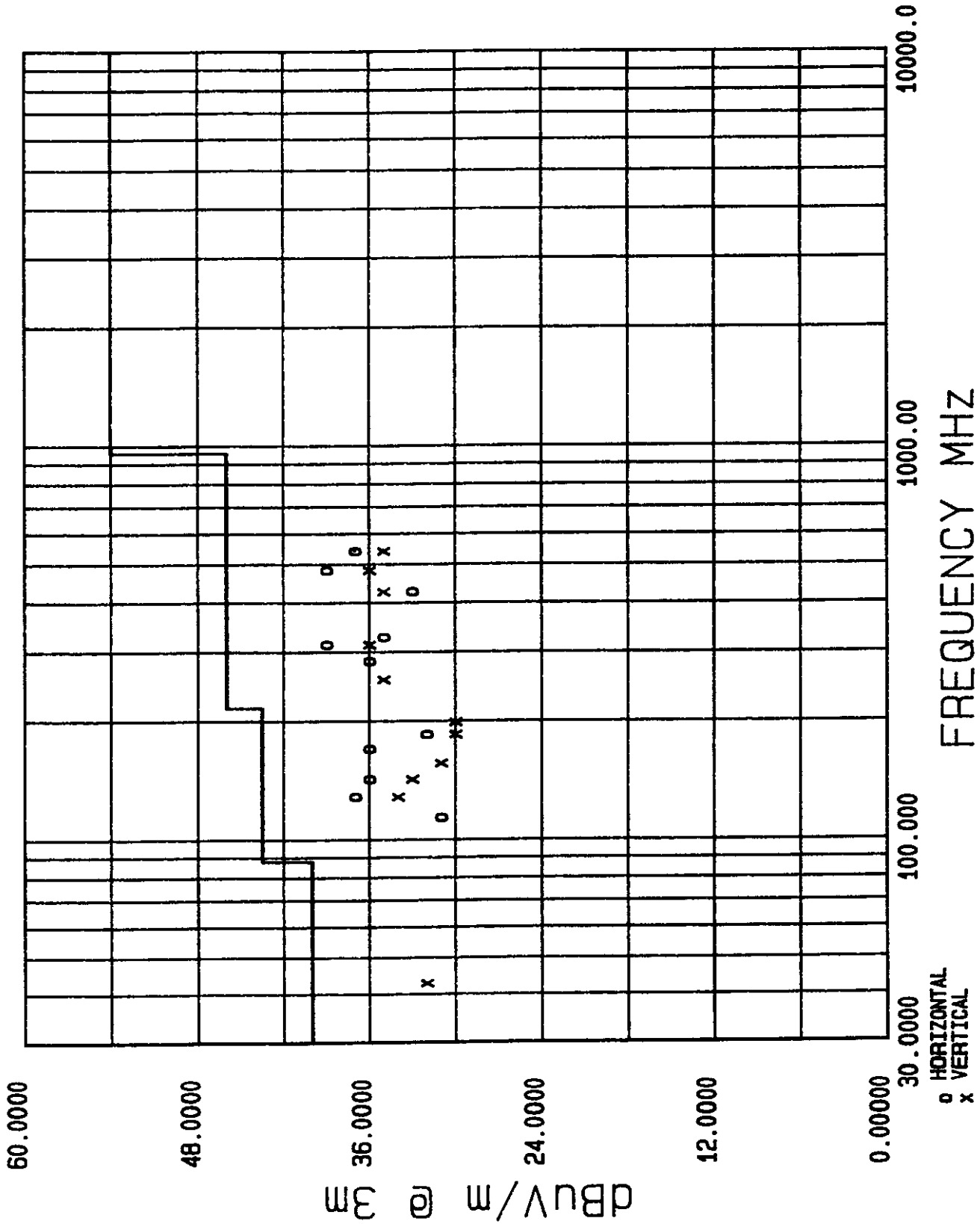


FIGURE 10



<b>E U T</b>	MANUFACTURER: <b>GI</b>	DATE: <b>3-18-98</b>	TEST CODE <b>RE</b>
	MODEL NO. - <b>CPT2254/HAA/700/R2/32</b>	RECEIVER: <b>R+S</b>	TECHNICIAN
	SERIAL NO. - <b>CK1317684HK</b>	SERIAL NO.	<b>MW</b>
	MODE - <b>WORLDGATE OPTION</b>	FREQ. RANGE <b>30-10000 MHz</b>	ENGINEER <b>MWELTY</b>

ADDITIONAL INFO: <b>INPUT CN 20 +25dBmV OUTPUT CN 4</b>	TEST SPEC.: <b>FLC B</b>
---	-----------------------------

RADIATED <input type="checkbox"/> BB <input checked="" type="checkbox"/> NB	CONDUCTED <input type="checkbox"/> BB
DISTANCE: <b>3M</b>	LINE:
ANTENNA: <input type="checkbox"/> H <input checked="" type="checkbox"/> E	FUNCTION:
	PICK-UP DEVICE: <input type="checkbox"/> NB

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz	dBmV			dB			dBmV/m		
43	20			12			32	VERTICAL	
128.9	22			12			34		
143.2	21			12			33		
157.5	18			13			31		
186.1	17			13			30		
200.4	16			14			30		
257.7	17			18			35		
315	21			15			36		
429.5	18			17			35		
486.8	18			18			36		
544.1	16			19			35		
114.5	20			11			31	HORIZONTAL	
128.9	25			12			37		
143.2	24			12			36		
171.8	23			13			36		
186.1	19			13			32		
286.4	17			19			36		
315	24			15			39		
329.3	19			16			35		
429.5	16			17			33		
486.8	21			18			39		
544.1	18			19			37		

# FCC CLASS B RADIATED EMISSION

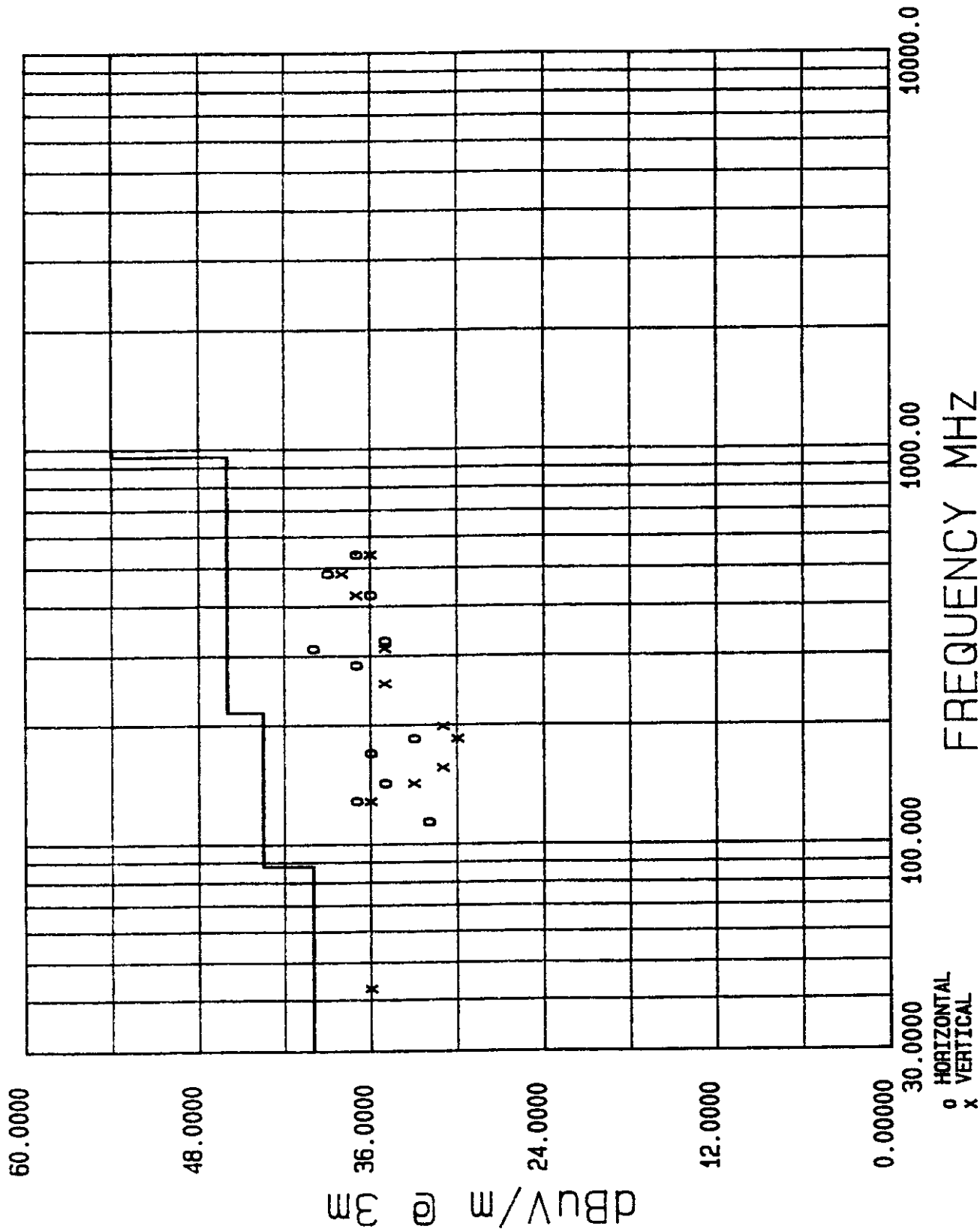


FIGURE 11





<b>E U T</b>	MANUFACTURER: <b>GI</b>	DATE: <b>3-18-98</b>	TEST CODE <b>RE</b>
	MODEL NO. - <b>CFT227/HAM/700/R2/I2</b>	RECEIVER: <b>R+S</b>	TECHNICIAN
	SERIAL NO. - <b>CK1317684NK</b>	SERIAL NO.	<b>MW</b>
	MODE - <b>WORLDGATE OPTION</b>	FREQ. RANGE <b>30-10000KHz</b>	ENGINEER <b>MWELTY</b>

ADDITIONAL INFO: <b>INPUT CH 67 +25dBmV OUTPUT CH 4</b>	TEST SPEC.: <b>FCC B</b>
---	-----------------------------

<b>RADIATED</b> DISTANCE: <b>3M</b> ANTENNA:	<input type="checkbox"/> BB <input type="checkbox"/> H	<input checked="" type="checkbox"/> NB <input checked="" type="checkbox"/> E	<b>CONDUCTED</b> LINE: FUNCTION: PICK-UP DEVICE:	<input type="checkbox"/> BB <input type="checkbox"/> NB
--	---	---	---	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS			FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE			
MHz	dBμV			dB		dBμV/m		
43	24			12		36	VERTICAL	
128.9	24			12		36		
143.2	21			12		33		
157.5	18			13		31		
186.1	17			13		30		
200.4	17			14		31		
257.7	17			18		35		
315	20			15		35		
429.5	20			17		37		
486.8	20			18		38		
544.1	17			19		36		
114.5	21			11		32	HORIZONTAL	
128.9	25			12		37		
143.2	23			12		35		
171.8	23			13		36		
186.1	20			13		33		
286.4	18			19		37		
315	25			15		40		
329.3	19			16		35		
429.5	19			17		36		
486.8	21			18		39		
544.1	18			19		37		

# FCC CLASS B RADIATED EMISSION

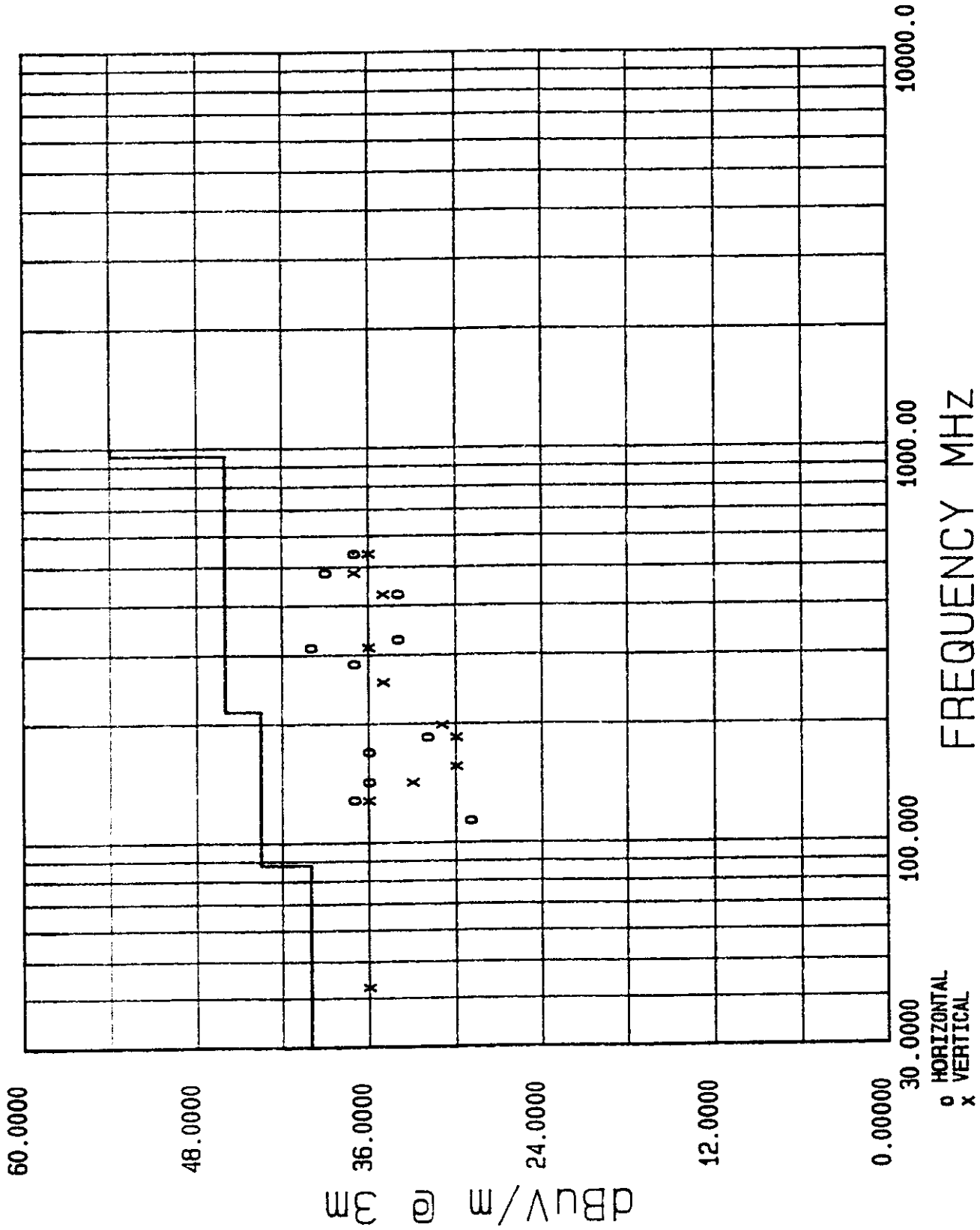


FIGURE 12



# RADIATION SCIENCES INC.

# ELECTROMAGNETIC EMISSION TEST

E U T	MANUFACTURER: <b>GI</b>	DATE: <b>3-18-98</b>	TEST CODE <b>RE</b>
	MODEL NO. - <b>CFT254/HM/700/R2/I2</b>	RECEIVER: <b>R+S</b>	TECHNICIAN <b>MW</b>
	SERIAL NO. - <b>CK1317684HK</b>	SERIAL NO.	ENGINEER <b>MWELTY</b>
	MODE - <b>WORLDGATE OPTION</b>	FREQ. RANGE <b>30-10000MHz</b>	

ADDITIONAL INFO.: <b>INPUT CN 2 0dBmV</b> <b>OUTPUT CN 4</b>	TEST SPEC.: <b>FCC B</b>
---	-----------------------------

RADIATED DISTANCE: <b>3M</b> ANTENNA:	<input type="checkbox"/> BB <input type="checkbox"/> H	<input checked="" type="checkbox"/> NB <input checked="" type="checkbox"/> E	CONDUCTED LINE: FUNCTION: PICK-UP DEVICE:	<input type="checkbox"/> BB <input type="checkbox"/> NB
---	---	---	--	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz	dBmV			dB			dBmV		
43	24			12			36	VERTICAL	
128.9	24			12			36		
143.2	21			12			33		
157.5	17			13			30		
186.1	17			13			30		
200.4	17			14			31		
257.7	17			18			35		
315	21			15			36		
429.5	18			17			35		
486.8	19			18			37		
544.1	17			19			36		
114.5	18			11			29	HORIZONTAL	
128.9	25			12			37		
143.2	24			12			36		
171.8	23			13			36		
186.1	19			13			32		
286.4	18			19			37		
315	25			15			40		
329.3	18			16			34		
429.5	17			17			34		
486.8	21			18			39		
544.1	18			19			37		

# FCC CLASS B RADIATED EMISSION

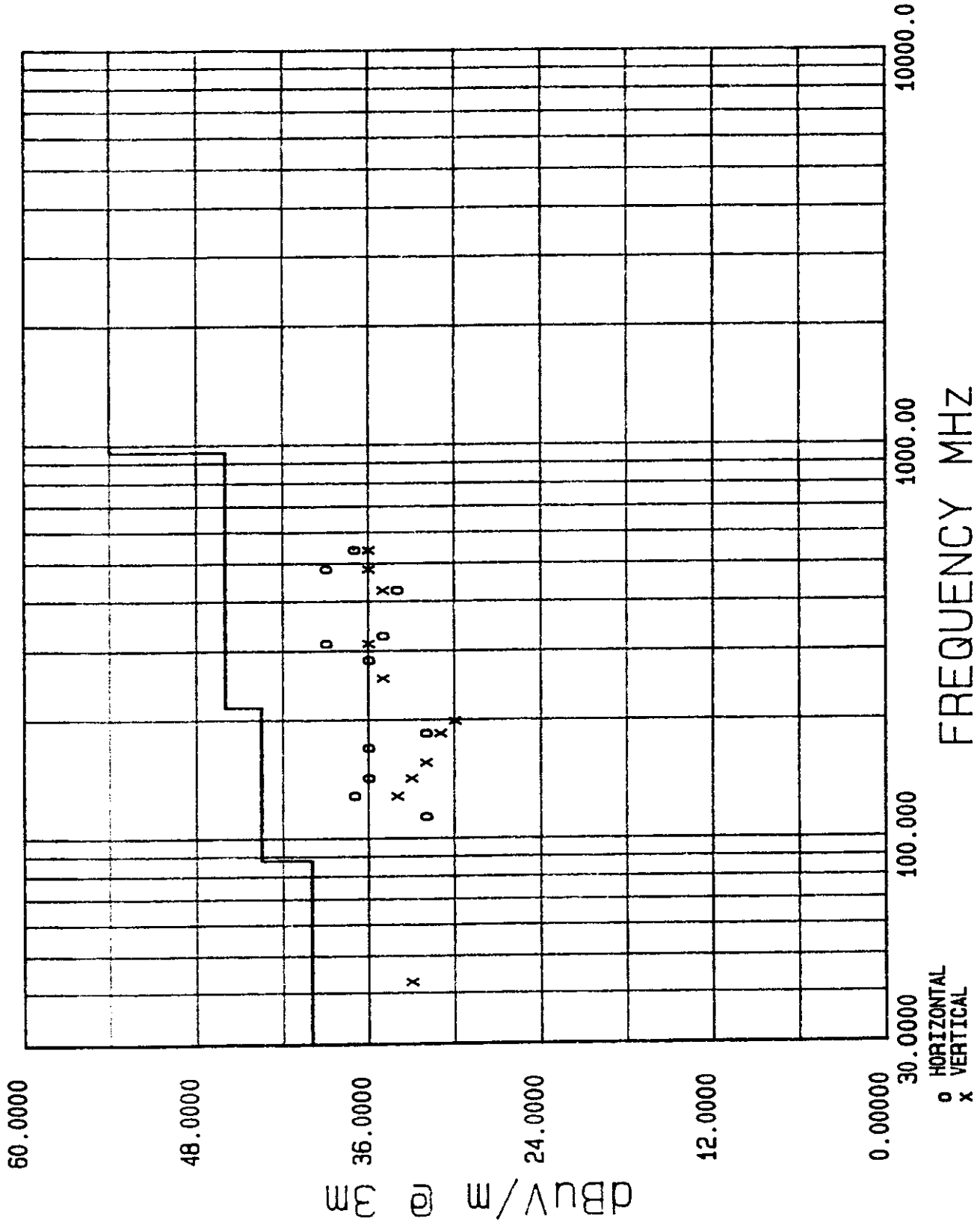


FIGURE 13



<b>E U T</b>	MANUFACTURER: <b>GJ</b>	DATE: <b>3-18-98</b>	TEST CODE <b>RE</b>
	MODEL NO. - <b>CF12254/HM/700/R2/I2</b>	RECEIVER: <b>R+S</b>	TECHNICIAN
	SERIAL NO. - <b>CK1317684HK</b>	SERIAL NO.	<b>MW</b>
	MODE - <b>WORLDGATE OPTION</b>	FREQ. RANGE <b>30-10000MHz</b>	ENGINEER <b>MWELTY</b>

ADDITIONAL INFO.: <b>INPUT CH 20 0dBmV OUTPUT CH 4</b>	TEST SPEC.: <b>FULL B</b>
--	------------------------------

<b>RADIATED</b> DISTANCE: <b>3M</b> ANTENNA:	<input type="checkbox"/> BB <input type="checkbox"/> H	<input checked="" type="checkbox"/> NB <input checked="" type="checkbox"/> E	<b>CONDUCTED</b> LINE: FUNCTION: PICK-UP DEVICE:	<input type="checkbox"/> BB <input type="checkbox"/> NB
--	---	---	---	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz	dBmV			dB			dBmV <sub>h</sub>		
43	21			12			33	VERTICAL	
128.9	22			12			34		
143.2	21			12			33		
157.5	19			13			32		
186.1	18			13			31		
200.4	16			14			30		
257.7	17			18			35		
315	21			15			36		
429.5	18			17			35		
486.8	18			18			36		
544.1	17			19			36		
114.5	21			11			32	HORIZONTAL	
128.9	25			12			37		
143.2	24			12			36		
171.8	23			13			36		
186.1	19			13			32		
286.4	17			19			36		
315	24			15			39		
329.3	19			16			35		
429.5	17			17			34		
486.8	21			18			39		
544.1	18			19			37		

# FCC CLASS B RADIATED EMISSION

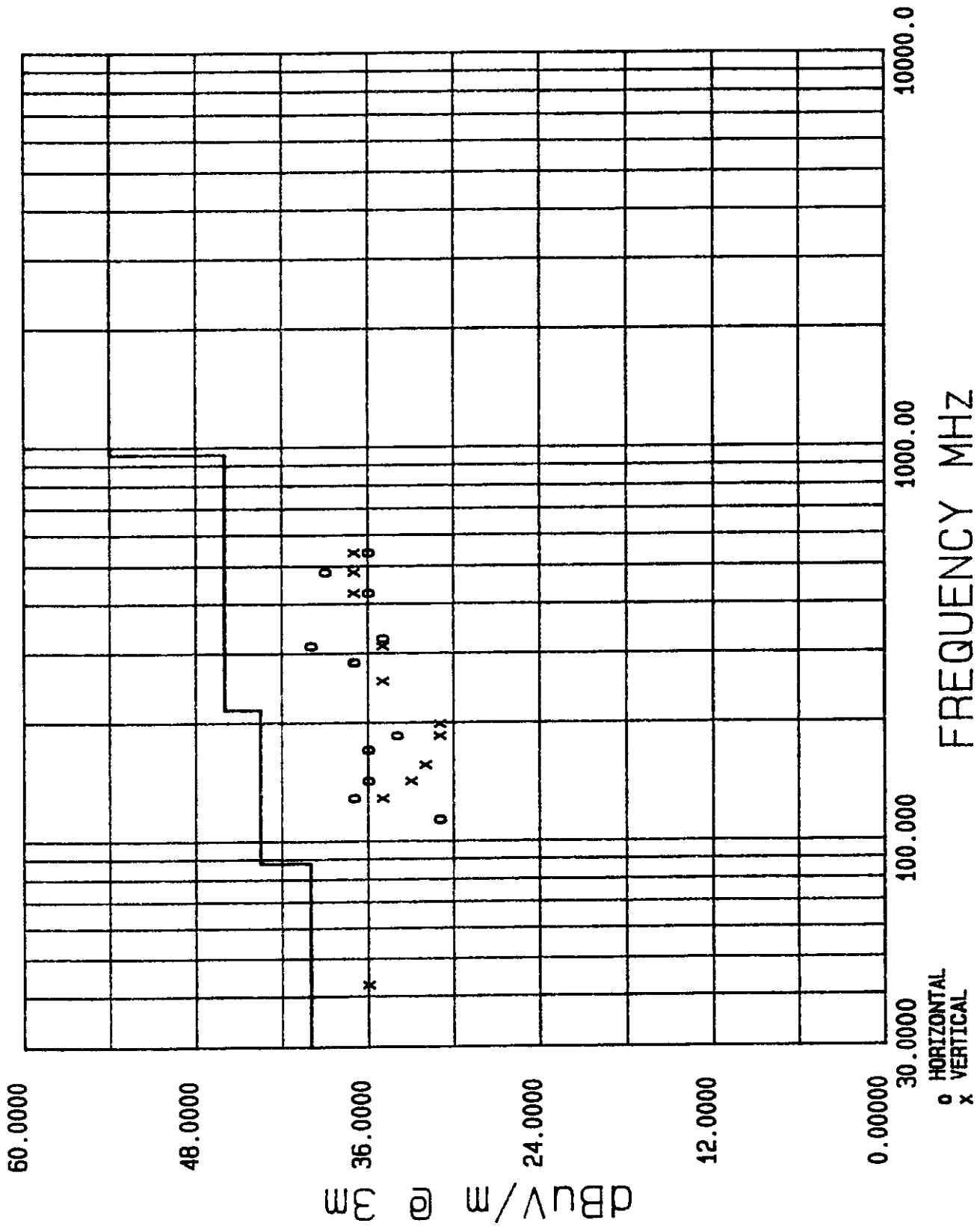


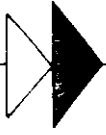
FIGURE 14

E U T	MANUFACTURER: <b>GI</b>		DATE: <b>3-18-98</b>	TEST CODE <b>RE</b>
	MODEL NO. - <b>CFT2254/HAM/700/R2/I2</b>		RECEIVER: <b>R+S</b>	TECHNICIAN
	SERIAL NO. - <b>CK1317684HK</b>		SERIAL NO.	<b>MW</b>
	MODE - <b>WORLDGATE OPTION</b>		FREQ. RANGE <b>30-10000MHz</b>	ENGINEER <b>MWELTY</b>

ADDITIONAL INFO.: <b>INPUT CH 67 0dBmV</b> <b>OUTPUT CH 4</b>	TEST SPEC.: <b>FLL B</b>
--	-----------------------------

<b>RADIATED</b> <input type="checkbox"/> BB <input checked="" type="checkbox"/> NB DISTANCE: <b>3M</b> ANTENNA: <input type="checkbox"/> H <input checked="" type="checkbox"/> E	<b>CONDUCTED</b> <input type="checkbox"/> BB LINE: FUNCTION: PICK-UP DEVICE: <input type="checkbox"/> NB
---	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS				FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE				
MHz	dBmV			dB			dBmV/m		
43	24			12			36	VERTICAL	
128.9	23			12			35		
143.2	21			12			33		
157.5	19			13			32		
186.1	18			13			31		
200.4	17			14			31		
257.7	17			18			35		
315	20			15			35		
429.5	20			17			37		
486.8	19			18			37		
544.1	18			19			37		
114.5	20			11			31	HORIZONTAL	
128.9	25			12			37		
143.2	24			12			36		
171.8	23			13			36		
186.1	21			13			34		
286.4	18			19			37		
315	25			15			40		
329.3	19			16			35		
429.5	19			17			36		
486.8	21			18			39		
544.1	17			19			36		



### 3.3 Output Signal Level

Output signal levels were recorded for the test sample with a channel 2, 20 and 67 input levels of 0dBmV and +25dBmV video and audio level 15dBmV below the video. The results of the signal strengths are recorded on data sheets 17 and 18. The carrier limit was  $6000\mu\text{V}$  for the video and  $1342\mu\text{V}$  for the audio. No additional signals were detected within the specification of frequency range measured.

**ALL LEVELS COMPLY WITH APPLICABLE LIMITS.**





# RADIATION SCIENCES INC.

# ELECTROMAGNETIC EMISSION TEST

E U T	MANUFACTURER: <b>GI</b>	DATE: <b>3-16-98</b>	TEST CODE
	MODEL NO. - <b>CFT2254/HAA/700/R2/I2</b>	RECEIVER: <b>R3271</b>	<b>OUTPUT</b>
	SERIAL NO. - <b>C7K1320532PK</b>	SERIAL NO.	TECHNICIAN
	MODE -	FREQ. RANGE	<b>MW</b>
			ENGINEER
			<b>MWELTY</b>

ADDITIONAL INFO.:	TEST SPEC.:
-------------------	-------------

RADIATED <input type="checkbox"/> BB <input type="checkbox"/> NB DISTANCE: ANTENNA: <input type="checkbox"/> H <input type="checkbox"/> E	CONDUCTED <input type="checkbox"/> BB LINE: FUNCTION: PICK-UP DEVICE: <input type="checkbox"/> NB
---	--

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS			FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE			
Hz				dB <sub>m</sub> V	dB <sub>m</sub> V	μV	LIMIT	
INPUT	CH 2	+25dBmV						
	OUTPUT	CH 3	(V)	5.3	65.3	1841	6000	
			(A)	-6.8	53.2	457	1342	
INPUT	CH 2	0dBmV						
	OUTPUT	CH 3	(V)	5.4	65.4	1862	6000	
			(A)	-6.7	53.3	462	1342	
INPUT	CH 20	+25dBmV						
	OUTPUT	CH 3	(V)	4.4	64.4	1660	6000	
			(A)	-6.8	53.2	457	1342	
INPUT	CH 20	0dBmV						
	OUTPUT	CH 3	(V)	4.6	64.6	1699	6000	
			(A)	-6.6	53.4	468	1342	
INPUT	CH 67	+25dBmV						
	OUTPUT	CH 3	(V)	4.3	64.3	1641	6000	
			(A)	-6.2	53.8	490	1342	
INPUT	CH 67	0dBmV						
	OUTPUT	CH 3	(V)	4.2	64.2	1622	6000	
			(A)	-6.3	53.7	484	1342	
NO SIGNALS DETECTED WITHIN 10dB OF 50								



E U T	MANUFACTURER: <b>GI</b>	DATE: <b>3-18-98</b>	TEST CODE
	MODEL NO. - <b>CFT2254/HAA/700/R2/I2</b>	RECEIVER: <b>R3271</b>	<b>OUTPUT</b>
	SERIAL NO. - <b>CK1317684HK</b>	SERIAL NO.	TECHNICIAN
	MODE -	FREQ. RANGE	<b>MW</b> ENGINEER
			<b>M WELTY</b>

ADDITIONAL INFO.:	TEST SPEC.:
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RADIATED <input type="checkbox"/> BB <input type="checkbox"/> NB	CONDUCTED <input type="checkbox"/> BB
DISTANCE:	LINE:
ANTENNA: <input type="checkbox"/> H <input type="checkbox"/> E	FUNCTION:
	PICK-UP DEVICE: <input type="checkbox"/> NB

FREQ.	IND. LEVEL	ATTN.	CORRECTION FACTORS			FINAL LEVEL	REMARKS	Rx B.W.
			B.W.	ANT.	PROBE			
Hz				dBmV	dBmV	uV	LIMIT	
INPUT	CH 2	+25 dBmV						
	OUTPUT	CH 4	(V)	4.3	64.3	1641	6000	
			(A)	-8.4	51.6	380	1342	
INPUT	CH 2	0 dBmV						
	OUTPUT	CH 4	(V)	4.2	64.2	1622	6000	
			(A)	-8.4	51.6	380	1342	
INPUT	CH 20	+25 dBmV						
	OUTPUT	CH 4	(V)	5.5	65.5	1884	6000	
			(A)	-8.4	51.6	380	1342	
INPUT	CH 20	0 dBmV						
	OUTPUT	CH 4	(V)	4.8	64.8	1738	6000	
			(A)	-8.4	51.6	380	1342	
INPUT	CH 67	+25 dBmV						
	OUTPUT	CH 4	(V)	4.5	64.5	1679	6000	
			(A)	-8.4	51.6	380	1342	
INPUT	CH 67	0 dBmV						
	OUTPUT	CH 4	(V)	4.5	64.5	1679	6000	
			(A)	-8.4	51.6	380	1342	
NO SIGNALS DETECTED WITHIN 10dB OF 50								



#### 4.0 CONCLUSIONS

The evaluation of the **WORLDGATE, Model CFT2200I SET TOP BOX** configured as described herein, indicated that the unit complies with the requirements set forth in Subpart B of Part 15 of the Federal Communications Commission (FCC) Rules for Class "B" TV interface devices.



APPENDIX A

RSI's TEST PROCEDURE 3211E