ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

Product Name:	**Response Receiver**
Brand Name:	**Interwrite Learning**
Model Name:	**R2**
FCC ID:	**CTW-R2**
Report No.:	**ER/2007/50012**
Issue Date:	**Jun. 25, 2007**
FCC Rule Part:	**§15.249**
Prepared for	**GTCO Corporation** **7125 Riverwood Drive Columbia Maryland 21046 United States**
Prepared by	**SGS Taiwan Ltd.** **No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.**

VERIFICATION OF COMPLIANCE

Applicant:	GTCO Corporation 7125 Riverwood Drive Columbia Maryland 21046 United States
Product Description:	Response Receiver
Brand Name:	Interwrite Learning
FCC ID Number:	CTW-R2
Model No.:	R2
Model Difference:	N/A
File Number:	ER/2007/50012
Date of test:	Jun. 01, 2007 ~ Jun. 20, 2007
Date of EUT Received:	Jun. 01, 2007

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.249.

The test results of this report relate only to the tested sample identified in this report.

Test By:	Danny Yeh	***Date***	Jun. 25, 2007
	Danny Yeh / Engineer		
Prepared By:	Elisa Chen	***Date***	Jun. 25, 2007
	Elisa Chen / Asst. Supervisor		
Approved By:	Vincent Su	***Date***	Jun. 25, 2007
	Vincent Su / Manager		

Version

Version No.	Date
00	Jun. 25, 2007

Table of Contents

1. GENERAL INFORMATION 5

1.1 PRODUCT DESCRIPTION 5
1.2 RELATED SUBMITTAL(S) / GRANT (S) 5
1.3 TEST METHODOLOGY 5
1.4 TEST FACILITY 6
1.5 SPECIAL ACCESSORIES 6
1.6 EQUIPMENT MODIFICATIONS 6

2. SYSTEM TEST CONFIGURATION 7

2.1 EUT CONFIGURATION 7
2.2 EUT EXERCISE 7
2.3 TEST PROCEDURE 7
2.4 LIMITATION 8
2.5 CONFIGURATION OF TESTED SYSTEM 10

3. SUMMARY OF TEST RESULTS 11

4. CONDUCTED EMISSIONS TEST 12

4.1 MEASUREMENT PROCEDURE: 12
4.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 12
4.3 MEASUREMENT EQUIPMENT USED: 12
4.4 MEASUREMENT RESULT: 12

5. RADIATED EMISSION TEST 13

5.1 MEASUREMENT PROCEDURE 13
5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 13
5.3 MEASUREMENT EQUIPMENT USED: 14
5.4 FIELD STRENGTH CALCULATION 14
5.5 MEASUREMENT RESULT 15

6. 26 DB BAND WIDTH MEASUREMENT 24

6.1 MEASUREMENT PROCEDURE 24
6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 24
6.3 MEASUREMENT EQUIPMENT USED: 24
6.4 MEASUREMENT RESULTS: 24

1. GENERAL INFORMATION

1.1 Product Description

The GTCO Corporation, Model: R2 (referred to as the EUT in this report) is a Response Receiver.

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 2402~2479MHz, 78 channels, 1MHz step

B). Modulation Type: DSSS (GFSK)

C). Power Supply: 3.0Vdc from AAA Battery*2

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **CTW-R2** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the address of SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003 and CISPR 22/EN 55022 requirements. Site No. 1(3 &10 meters) Registration Number: 94644, Both OATS and Anechoic chamber (3 meters) was accredited by TAF (0513). Canada Registration Number: 4620A-1

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

Not available for this EUT intended for grant.

2. System Test Configuration

2.1 EUT Configuration

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

2.2 EUT Exercise

The Transmitter was operated in the engineering operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4-2003.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

2.3.2Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 8 and 13 of ANSI C63.4-2003.

2.4 Limitation

(1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 – 0.5	66 - 56	56 - 46
0.5 – 5	56	46
5 - 30	60	50

(2) Radiated Emission 15.249(a)

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following.

Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 - 928	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
2400 – 2483.5	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
5725 – 5875	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
24.0 – 24.25 GHz	250 mV/m (107.95dBuV/m)	2500 uV/m (67.95dBuV/m)	3

(3) Radiated Emission15.249 (d)

Emission Radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209 as below, whichever is the lesser attenuation.

Frequency (MHz)	Field strength μV/m	Distance (m)	Field strength at 3m dBμV/m
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

(4) Radiated Emission 15.249(e)

For frequencies above 1000MHz, the above field strength limits are based on average limits. The peak filed strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20dB under any condition of modulation.

Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205
4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of ξ15.205, then the general radiated emission limits in ξ 15.209 apply.

2.5 Configuration of Tested System

Fig. 2-1 Configuration of TX

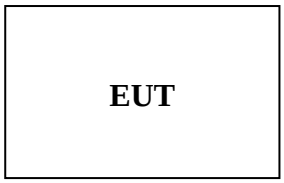


Table 2-2 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	FCC ID	Series No.	Data Cable	Power Cord
1.	N/A						

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

3. Summary of Test Results

FCC Rules	Description Of Test	Result
§15.207	Conducted Emission	N/A
§15.249(a)(e)	Radiated Emission	Compliant
§15.249(d)	26dB band width Measurement	Compliant

Description of test modes

Frequency 2402MHz, 2441MHz and 2479MHz are chosen for full testing.

The X, Y and Z-axis of EUT were pre-test; X mode is the worst case and reported.

4. Conducted Emissions Test

4.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

4.2 Test SET-UP (Block Diagram of Configuration)

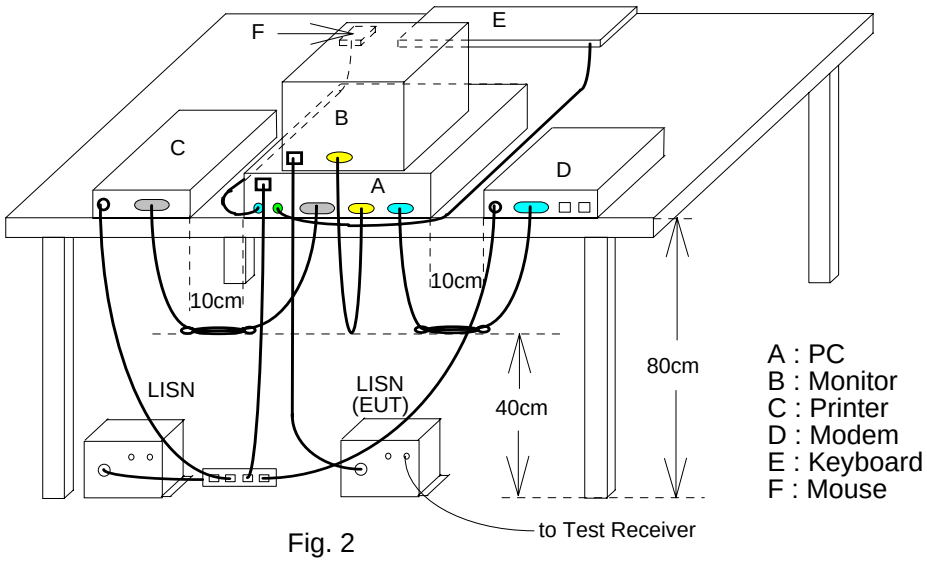


Fig. 2

4.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
EMC Analyzer	HP	8594EM	3624A00203	09/02/2006	09/03/2007
EMI Test Receiver	R&S	ESCS30	828985/004	06/09/2007	06/10/2008
Transient Limiter	HP	11947A	3107A02062	09/02/2006	09/03/2007
LISN	Rolf-Heine	NNB-2/16Z	99012	12/31/2006	12/30/2007
LISN	Rolf-Heine	NNB-2/16Z	99013	12/24/2006	12/23/2007
Coaxial Cables	N/A	No. 3, 4	N/A	12/01/2006	12/01/2207

4.4 Measurement Result:

N/A

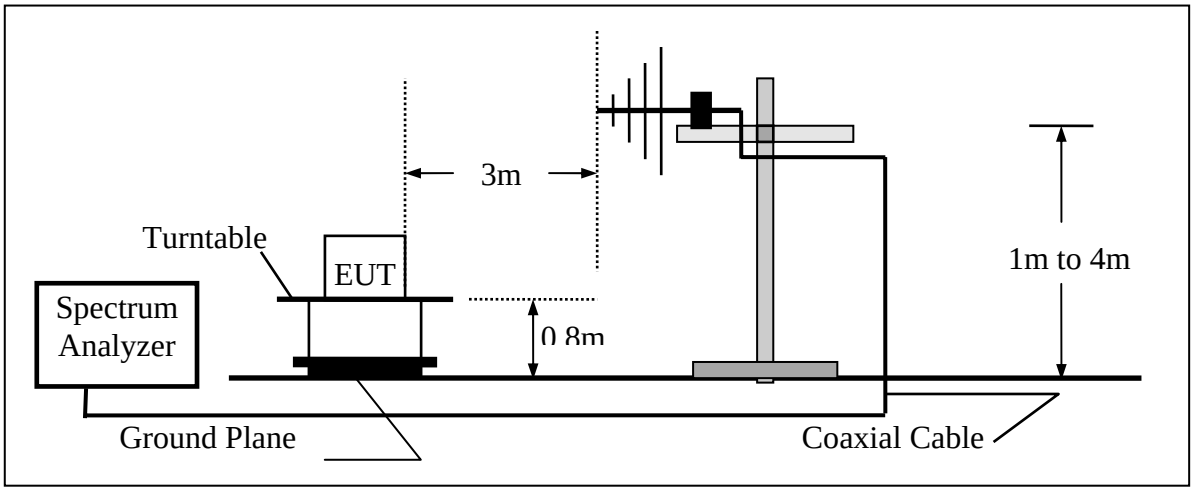
5. Radiated Emission Test

5.1 Measurement Procedure

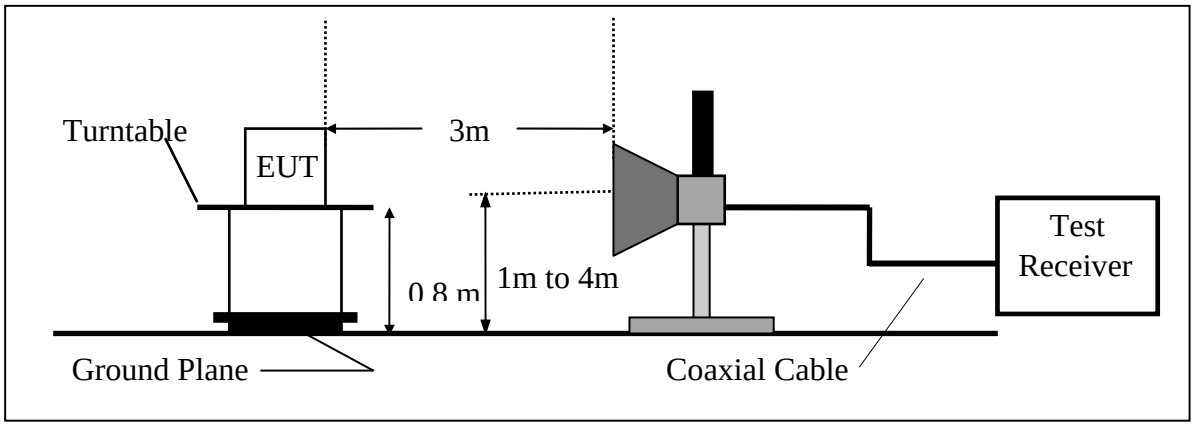
1. The EUT was placed on a turntable that is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



5.3 Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2007	03/28/2007
Spectrum Analyzer	Agilent	E7405A	US41160416	08/27/2006	08/26/2007
Bilog Antenna	SCHWAZBECK	VULB9163	152	06/03/2007	06/02/2008
Horn antenna	Schwarzbeck	BBHA 9120D	309/320	08/16/2006	08/15/2007
Horn antenna	Schwarzbeck	BBHA 9170	184/185	07/04/2006	07/03/2007
Pre-Amplifier	HP	8447D	2944A09469	07/19/2006	07/18/2007
Pre-Amplifier	HP	8449B	3008A00578	02/26/2007	02/25/2008
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	10/09/2006	10/08/2007
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/09/2006	10/08/2007
Site NSA	SGS	966 chamber	N/A	11/17/2006	11/16/2007

5.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

5.5 Measurement Result

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX Low	Test Date	Jun. 12, 2007
Fundamental Frequency	2402MHz	Test By	Danny
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
30.00	V	Peak	50.25	-14.97	35.28	40.00	-4.72
58.13	V	Peak	41.96	-14.66	27.30	40.00	-12.70
96.93	V	Peak	40.62	-17.16	23.46	43.50	-20.04
30.00	H	Peak	48.31	-14.97	33.34	40.00	-6.66
65.89	H	Peak	43.08	-15.09	27.99	40.00	-12.01
101.78	H	Peak	43.12	-16.87	26.25	43.50	-17.25

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

(3) Datas of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz, VBW=300KHz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX Mid	Test Date	Jun. 12, 2007
Fundamental Frequency	2441MHz	Test By	Danny
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
30.00	V	Peak	50.23	-14.97	35.26	40.00	-4.74
58.13	V	Peak	42.31	-14.66	27.65	40.00	-12.35
96.93	V	Peak	40.75	-17.16	23.59	43.50	-19.91
30.00	H	Peak	47.83	-14.97	32.86	40.00	-7.14
41.64	H	Peak	45.88	-13.76	32.12	40.00	-7.88
67.83	H	Peak	43.40	-15.60	27.80	40.00	-12.20
101.78	H	Peak	43.14	-16.87	26.27	43.50	-17.23

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

(3) Datas of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz, VBW=300KHz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX High	Test Date	Jun. 12, 2007
Fundamental Frequency	2479MHz	Test By	Danny
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
30.00	V	Peak	50.52	-14.97	35.55	40.00	-4.45
58.13	V	Peak	42.54	-14.66	27.88	40.00	-12.12
101.78	V	Peak	41.67	-16.87	24.80	43.50	-18.70
30.00	H	Peak	48.63	-14.97	33.66	40.00	-6.34
41.64	H	Peak	45.83	-13.76	32.07	40.00	-7.93
67.83	H	Peak	43.15	-15.60	27.55	40.00	-12.45
101.78	H	Peak	42.64	-16.87	25.77	43.50	-17.73

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

(3) Datas of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz, VBW=300KHz.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX Low	Test Date :	Jun. 12, 2007
Fundamental Frequency:	2402MHz	Test By:	Danny
Temperature :	25 ℃	Pol:	Vertical
Humidity :	65 %		

Freq. (MHz)	Ant.Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Factor (dB)	Actual Peak FS (dBuV/m)	Actual AV FS (dBuV/m)	Peak Limit at 3m (dBuV/m)	AV Limit at 3m (dBuV/m)	Margin (dB)	
2402.0	V	68.92	--	-1.36	67.56	--	114.00	94.00	-26.44	F
2400.0	V	37.36	--	-1.36	36.00	--	74.00	54.00	-18.00	S
4804.0	V	--	--			--	74.00	54.00		H
7206.0	V	--	--			--	74.00	54.00		H
9608.0	V	--	--			--	74.00	54.00		H
12010.0	V	--	--			--	74.00	54.00		H
14412.0	V	--	--			--	74.00	54.00		H
16814.0	V	--	--			--	74.00	54.00		H
19216.0	V	--	--			--	74.00	54.00		H
21618.0	V	--	--			--	74.00	54.00		H
24020.0	V	--	--			--	74.00	54.00		H

Remark：

(1) Measuring frequencies from 30MHz to the 10tth of fundamental frequency。

(2) Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB

(3) “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

(6) Spectrum AV mode IF B bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX Low	Test Date :	Jun. 12, 2007
Fundamental Frequency:	2402MHz	Test By:	Danny
Temperature :	25 ℃	Pol:	Horizontal
Humidity :	65 %		

Freq. (MHz)	Ant.Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Factor (dB)	Actual Peak FS (dBuV/m)	Actual AV FS (dBuV/m)	Peak Limit at 3m (dBuV/m)	AV Limit at 3m (dBuV/m)	Margin (dB)	
2402.0	H	84.14	--	-1.36	82.78	--	114.00	94.00	-11.22	F
2400.0	H	50.37	--	-1.36	49.01	--	74.00	54.00	-4.99	S
4804.0	H	36.93	--	5.99	42.92	--	74.00	54.00	-11.08	H
7206.0	H	--	--			--	74.00	54.00		H
9608.0	H	--	--			--	74.00	54.00		H
12010.0	H	--	--			--	74.00	54.00		H
14412.0	H	--	--			--	74.00	54.00		H
16814.0	H	--	--			--	74.00	54.00		H
19216.0	H	--	--			--	74.00	54.00		H
21618.0	H	--	--			--	74.00	54.00		H
24020.0	H	--	--			--	74.00	54.00		H

Remark:

(1) Measuring frequencies from 30MHz to the 10tth of fundamental frequency。

(2) Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB

(3) “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

(6) Spectrum AV mode IF B bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX Mid	Test Date :	Jun. 12, 2007
Fundamental Frequency:	2441MHz	Test By:	Danny
Temperature :	25 ℃	Pol:	Vertical
Humidity :	65 %		

Freq. (MHz)	Ant.Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Factor (dB)	Actual Peak FS (dBuV/m)	Actual AV FS (dBuV/m)	Peak Limit at 3m (dBuV/m)	AV Limit at 3m (dBuV/m)	Margin (dB)	
2441.0	V	67.07	--	-1.12	65.95	--	114.00	94.00	-28.05	F
4882.0	V	--	--			--	74.00	54.00		H
7323.0	V	--	--			--	74.00	54.00		H
9764.0	V	--	--			--	74.00	54.00		H
12205.0	V	--	--			--	74.00	54.00		H
14646.0	V	--	--			--	74.00	54.00		H
17087.0	V	--	--			--	74.00	54.00		H
19528.0	V	--	--			--	74.00	54.00		H
21969.0	V	--	--			--	74.00	54.00		H
24410.0	V	--	--			--	74.00	54.00		H

Remark:

(1) Measuring frequencies from 30MHz to the 10tth of fundamental frequency。

(2) Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB

(3) “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

(6) Spectrum AV mode IF B bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX Mid	Test Date :	Jun. 12, 2007
Fundamental Frequency:	2441MHz	Test By:	Danny
Temperature :	25 ℃	Pol:	Horizontal
Humidity :	65 %		

Freq. (MHz)	Ant.Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Factor (dB)	Actual Peak FS (dBuV/m)	Actual AV FS (dBuV/m)	Peak Limit at 3m (dBuV/m)	AV Limit at 3m (dBuV/m)	Margin (dB)	
2441.0	H	82.51	--	-1.12	81.39	--	114.00	94.00	-12.61	F
4882.0	H	36.71	--	6.17	42.88	--	74.00	54.00	-11.12	H
7323.0	H	--	--			--	74.00	54.00		H
9764.0	H	--	--			--	74.00	54.00		H
12205.0	H	--	--			--	74.00	54.00		H
14646.0	H	--	--			--	74.00	54.00		H
17087.0	H	--	--			--	74.00	54.00		H
19528.0	H	--	--			--	74.00	54.00		H
21969.0	H	--	--			--	74.00	54.00		H
24410.0	H	--	--			--	74.00	54.00		H

Remark：

(1) Measuring frequencies from 30MHz to the 10tth of fundamental frequency。

(2) Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB

(3) “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

(6) Spectrum AV mode IF B bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX High	Test Date :	Jun. 12, 2007
Fundamental Frequency:	2479MHz	Test By:	Danny
Temperature :	25 ℃	Pol:	Vertical
Humidity :	65 %		

Freq. (MHz)	Ant.Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Factor (dB)	Actual Peak FS (dBuV/m)	Actual AV FS (dBuV/m)	Peak Limit at 3m (dBuV/m)	AV Limit at 3m (dBuV/m)	Margin (dB)	
2479.0	V	66.14	--	-0.92	65.22	--	114.00	94.00	-28.78	F
2483.5	V	34.59	--	-0.92	33.67	--	74.00	54.00	-20.33	S
4958.0	V	--	--			--	74.00	54.00		H
7437.0	V	--	--			--	74.00	54.00		H
9916.0	V	--	--			--	74.00	54.00		H
12395.0	V	--	--			--	74.00	54.00		H
14874.0	V	--	--			--	74.00	54.00		H
17353.0	V	--	--			--	74.00	54.00		H
19832.0	V	--	--			--	74.00	54.00		H
22311.0	V	--	--			--	74.00	54.00		H
24790.0	V	--	--			--	74.00	54.00		H

Remark：

(1) Measuring frequencies from 30MHz to the 10tth of fundamental frequency。

(2) Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB

(3) “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

(6) Spectrum AV mode IF B bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX High	Test Date :	Jun. 12, 2007
Fundamental Frequency:	2479MHz	Test By:	Danny
Temperature :	25 ℃	Pol:	Horizontal
Humidity :	65 %		

Freq. (MHz)	Ant.Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Factor (dB)	Actual Peak FS (dBuV/m)	Actual AV FS (dBuV/m)	Peak Limit at 3m (dBuV/m)	AV Limit at 3m (dBuV/m)	Margin (dB)	
2479.0	H	81.29	--	-0.92	80.37	--	114.00	94.00	-13.63	F
2483.5	H	51.18	--	-0.92	50.26	--	74.00	54.00	-3.74	S
4958.0	H	37.05	--	6.36	43.41	--	74.00	54.00	-10.59	H
7437.0	H	--	--			--	74.00	54.00		H
9916.0	H	--	--			--	74.00	54.00		H
12395.0	H	--	--			--	74.00	54.00		H
14874.0	H	--	--			--	74.00	54.00		H
17353.0	H	--	--			--	74.00	54.00		H
19832.0	H	--	--			--	74.00	54.00		H
22311.0	H	--	--			--	74.00	54.00		H
24790.0	H	--	--			--	74.00	54.00		H

Remark：

(1) Measuring frequencies from 30MHz to the 10tth of fundamental frequency。

(2) Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB

(3) “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

(4) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

(6) Spectrum AV mode IF B bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

6. 26 dB Band Width Measurement

6.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set ETU normal operating mode.
3. Set SPA Center Frequency = fundamental frequency, RBW, VBW = 100KHz, Span =3MHz.
4. Set SPA Max hold. Mark peak, -26dB.

6.2 Test SET-UP (Block Diagram of Configuration)

Same as 4.2 Radiated Emission Measurement.

6.3 Measurement Equipment Used:

Same as 4.2 Radiated Emission Measurement.

6.4 Measurement Results:

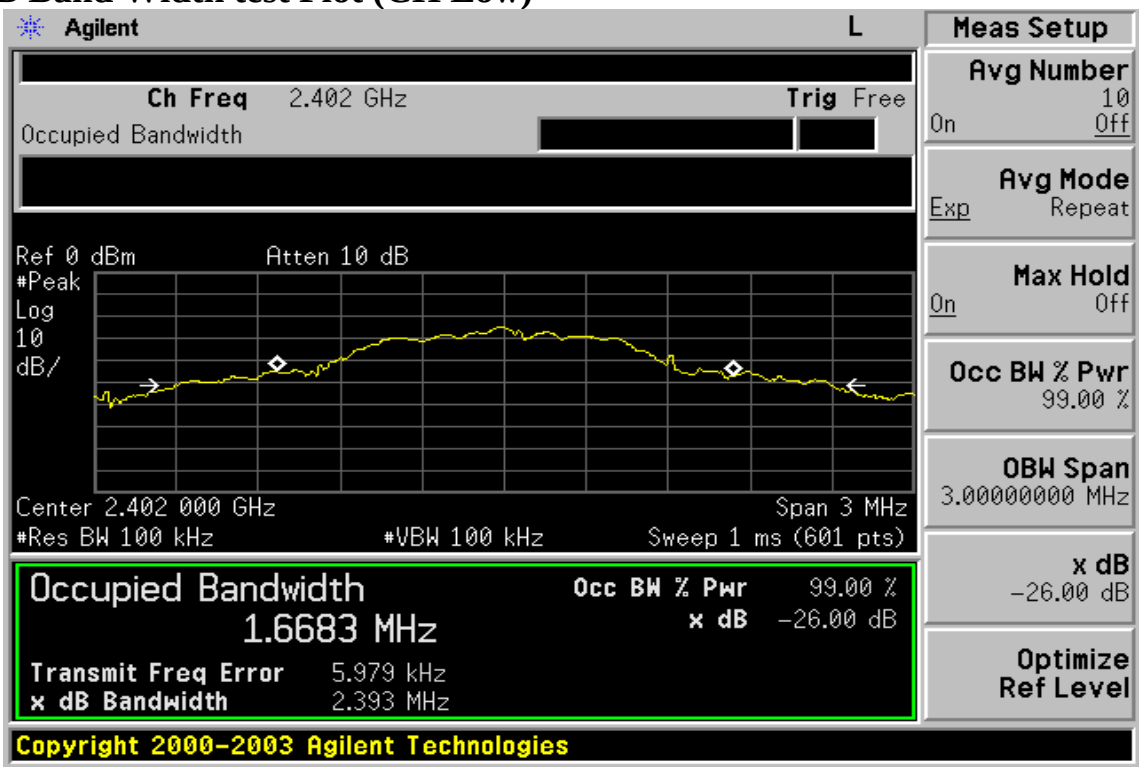
Channel Lowest = 2.393MHz

Channel Mid = 2.383MHz

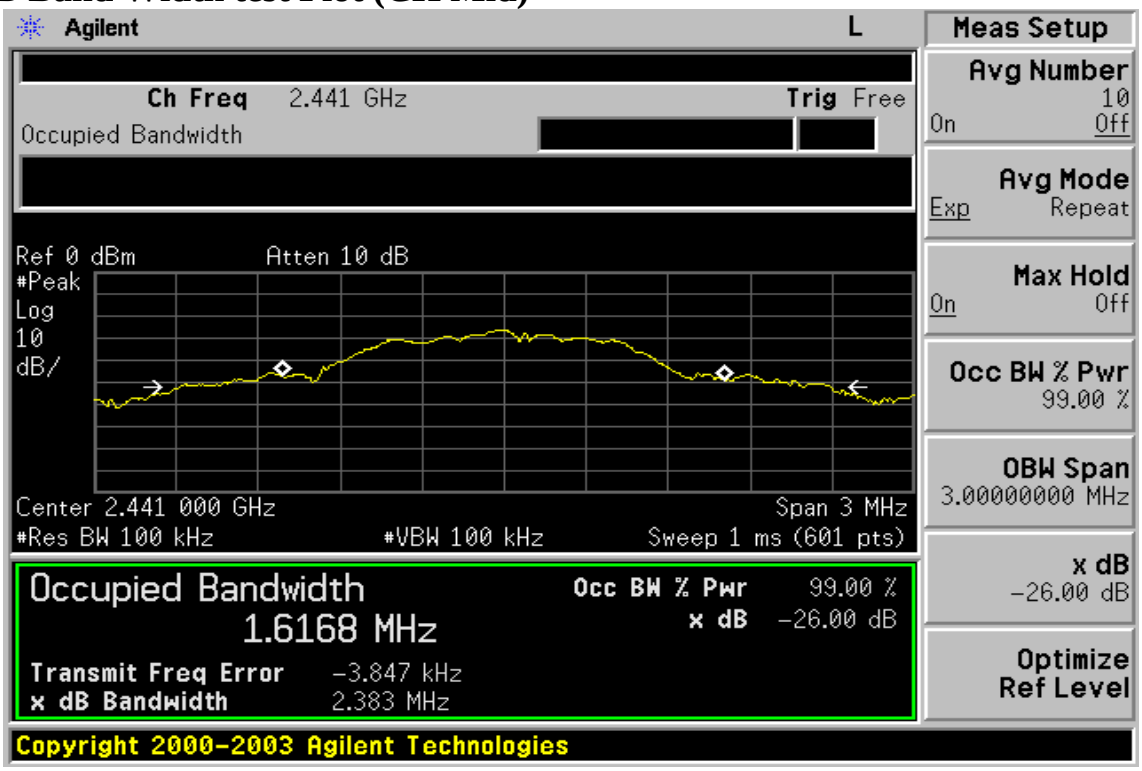
Channel Highest = 2.303MHz

Refer to attached data chart.

26dB Band Width test Plot (CH Low)



26dB Band Width test Plot (CH Mid)



26dB Band Width test Plot (CH High)