



ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT AND INDUSTRY CANADA RSS 210

OF

Product Name: Full Spectrum FM Transmitter

Brand Name: Philips

Model Name: G2G303

Model Differences: N/A

IC Number: 135V-G2G303

FCC ID Number: TTJG2G303

Report No.: ER/2005/60017 ~ 18

Issue Date: Nov. 22, 2005

Rule Part: FCC §15.239, RSS 210, issue 6:2005, Annex 2

Prepared for Philips Accessories and Computer Peripherals
North America

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Prepared by SGS Taiwan Ltd.
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Taipei County, Taiwan.

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**VERIFICATION OF COMPLIANCE**

Applicant: Philips Accessories and Computer Peripherals North America
215 Entin Road, Clifton, NJ 07014 USA

Product Description: Full Spectrum FM Transmitter

FCC ID Number: TTJG2G303

IC Number: 135V-G2G303

Brand Name: Philips

Model No.: G2G303

Model Difference: N/A

File Number: ER/2005/60017 ~ 18

Date of test: Jan. 17, 2006 ~ Jan. 19, 2006

Date of EUT received: Jan. 16, 2006

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 15.239 and IC RSS 210 issue 6: 2005 Annex 2.

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

Test By:**Date**

Jan. 20, 2006

Prepared By:**Date**

Jan. 20, 2006

Approved By:**Date**

Jan. 20, 2006

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Version

Version No.	Date
00	Jan. 20, 2006

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1. GENERAL INFORMATION

1.1 Product Description

The Philips Accessories and Computer Peripherals North America, Model: G2G303 (referred to as the EUT in this report) is a short range, lower power, Full Spectrum FM Transmitter. It is designed by way of utilizing the FM modulation achieves the system operating.

A major technical descriptions of EUT is described as following:

- A). Operation Frequency: 88.1 – 107.9 MHz.
- B). Modulation: Frequency Modulation
- C). Antenna Designation: Non-User Replaceable (Fixed), the antenna was included in Audio in cable, refer to picture.
- D). Power Supply: 3Vdc AAA battery*2 or 12 Vdc from car battery.

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID:**TTJG2G303** filing to comply with Section 15.239 of the FCC Part 15:2005, Subpart C Rules. IC:**135V-G2G303**, filing to comply with section 6.2.2 (K) of RSS 210 issue 6: 2005 Annex 2. The composite system (receiver) is compliance with FCC Subpart B is authorized under a DoC procedure.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003) and RSS-Gen: 2005. 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 CNLA(0513) and NVLAP (200704-0).

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

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FCC ID:TTJG2G303
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Not available for this EUT intended for grant.

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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 normal operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7, 13 of ANSI C63.4-2003 and RSS-Gen:2005. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

2.3.2 Radiated 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, 13 of ANSI C63.4-2003 and RSS-Gen:2005.

2.4 Limitation

(1) Conducted Emission (Not applicable in this report)

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

Frequency range MHz	Limits dB (uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46

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0.50 to 5	56	46
5 to 30	60	50

Note

1. The lower limit shall apply at the transition frequencies
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

(2) Radiated Emission

- a. Emission from the intentional radiator shall be confined with a band 200kHz wide centered on the operation frequency. The 200kHz band shall lie wholly within the frequency range of 88-108 MHz.
- b. The field strength of any emission within the permitted 200kHz band shall not exceed 250 micro volts/meter at 3 meters. (48dB μ V at 3m) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in section 15.35 for limiting peak emissions apply.
- c. The field strength of any emissions radiated on any frequency outside of the specified 200kHz band shall not exceed the general radiated emission limits in section 15.209(Intentional Radiators general limit).as below.

Frequency (MHz)	Field strength μ V/m	Distance (m)	Field strength at 3m dB μ V/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

Remark:

1. Emission level in dB μ V/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 ξ 15.205, then the general radiated emission limits in ξ 15.209 apply.

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2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

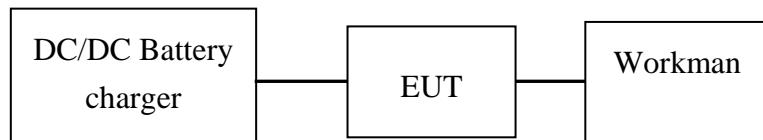


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	FCC ID	Series No.	Data Cable	Power Cord
1.	Workman	Panasonic	SN7878	N/A	N/A		N/A

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3. Summary Of Test Results

FCC/ IC Rules	Description of Test	Result
§15.207)/ RSS-Gen §7.2.2	Conducted Emission	N/A
§15.239 RSS-210, A2.8	Radiated Emission	Compliant
§15.239 RSS-210, A2.8	26 dB Bandwidth	Compliant
RSS-Gen §4.4.1	99% Occupied Bandwidth	

4. Description of test modes

The frequencies 88.1 MHz, 98.1 MHz, 107.9 MHz are chosen with audio signal for full testing. And the EUT stay in continuous transmitting mode with a audio-in.

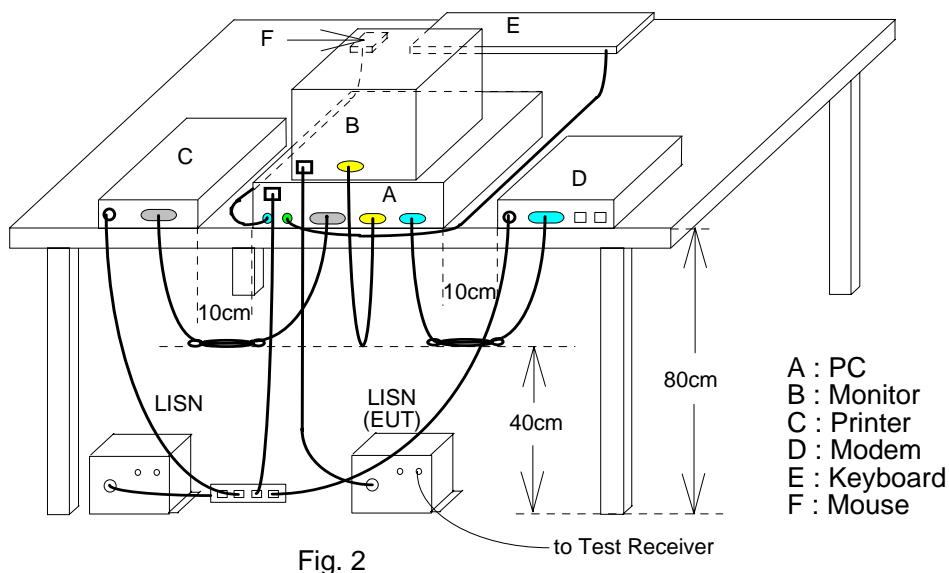
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5. Conducted Emissions Test (Not apply in the report)

5.1 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.

5.2 Test SET-UP (Block Diagram of Configuration)



5.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMC Analyzer	HP	8594EM	3624A00203	09/02/2005	09/03/2006
EMI Test Receiver	R&S	ESCS30	828985/004	06/09/2005	06/10/2006
Transient Limiter	HP	11947A	3107A02062	09/02/2005	09/03/2006
LISN	Rolf-Heine	NNB-2/16Z	99012	12/31/2004	12/30/2005
LISN	Rolf-Heine	NNB-2/16Z	99013	12/24/2004	12/23/2005
Coaxial Cables	N/A	No. 3, 4	N/A	12/01/2004	12/01/2205

5.4 Measurement Result:

N/A, the device is powered by 3V dc battery or car charger.

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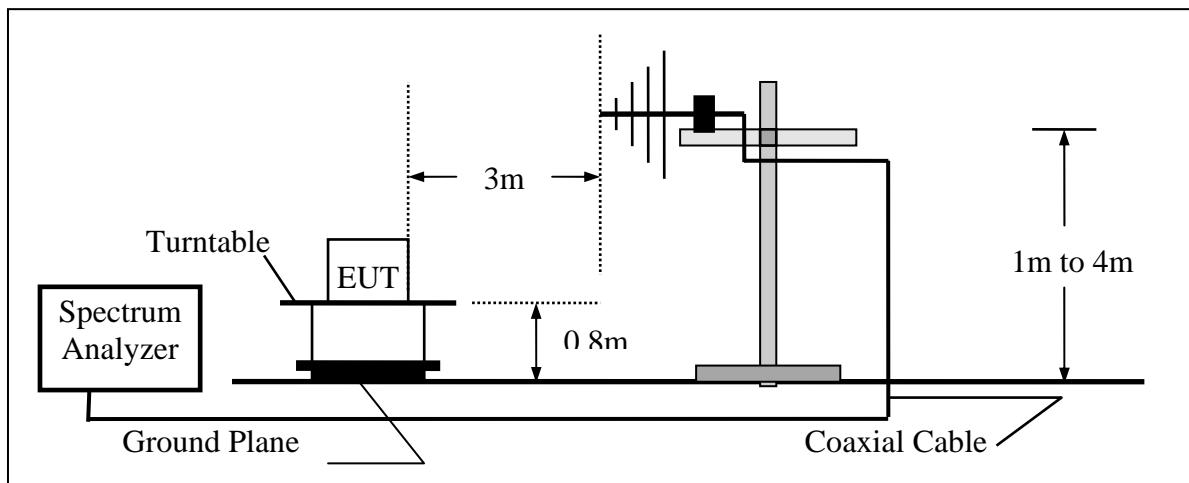
6. Radiated Emission Test

6.1 Measurement Procedure

1. The EUT was placed on a turn table which 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.

6.2 Test SET-UP (Block Diagram of Configuration)

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



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6.3 Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	R&S	FSP 40	100034	05/27/2005	05/26/2006
Spectrum Analyzer	Agilent	E7405A	US41160416	08/27/2005	08/27/2006
Loop Antenna	Messtec	FLA30	03/10086	03/06/2005	03/05/2006
Bilog Antenna	SCHWAZBECK	VULB9163	152	06/03/2005	06/02/2006
Bilog Antenna	SCHWAZBECK	VULB9160		06/03/2005	06/02/2006
Pre-Amplifier	HP	8447D	2944A09469	07/19/2005	07/18/2006
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	10/9/2005	10/08/2006
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/9/2005	10/08/2006
Site NSA	SGS	966 chamber	N/A	11/17/2004	11/16/2005
Site NSA	SGS	10m Open-Site	N/A	10/02/2005	10/01/2006

6.4 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:

$$FS = RA + AF + CL - AG$$

Average Value = Peak Value + 20 Log (Ton/Tp) Pulse Modulation(if applicable)

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

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6.5 Measurement Result

Operation Mode: Transmitting Mode
Fundamental Frequency: 88.1 MHz
Temperature : 25
Humidity : 65 %

Test Date: Jan. 19, 2006
Test By: Sky
Pol: Vertical

Freq. (MHz)	Ant.Pol. H/V	Detector		Factor (dB)	Actual FS (dBuV/m)	<u>Limit@3m</u> (dBuV/m)	Safe Margin (dB)	Note
		Mode (PK/AV/QP)	Reading (dBuV)					
88.10	V	Peak	59.32	-18.14	41.18	48.00	-6.82	F
176.20	V	Peak	45.04	-15.02	30.02	43.50	-13.48	H
264.30	V	Peak	42.17	-14.79	27.38	46.00	-18.62	H
352.40	V	Peak	--			46.00		H
440.50	V	Peak	--			46.00		H
528.60	V	Peak	--			46.00		H
616.70	V	Peak	--			46.00		H
704.80	V	Peak	--			46.00		H
792.90	V	Peak	--			46.00		H
881.00	V	Peak	--			46.00		H

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, Average or QP detector mode .
- (3) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (4) Data 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) The IF bandwidth of SPA 30MHz to 1GHz was 100KHz. VBW= 300KHz

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

Operation Mode: Transmitting Mode
Fundamental Frequency: 88.1 MHz
Temperature : 25
Humidity : 65 %

Test Date: Jan. 19, 2006
Test By: Sky
Pol: Horizontal

Freq. (MHz)	Ant.Pol. H/V	Detector			Actual FS (dBuV/m)	<u>Limit@3m</u> (dBuV/m)	Safe Margin (dB)	Note
		Mode (PK/AV/QP)	Reading (dBuV)	Factor (dB)				
88.10	H	Peak	59.71	-18.14	41.57	48.00	-6.43	F
176.20	H	Peak	46.18	-15.02	31.16	43.50	-12.34	H
264.30	H	Peak	45.48	-14.79	30.69	46.00	-15.31	H
352.40	H	Peak	--			46.00		H
440.50	H	Peak	--			46.00		H
528.60	H	Peak	--			46.00		H
616.70	H	Peak	--			46.00		H
704.80	H	Peak	--			46.00		H
792.90	H	Peak	--			46.00		H
881.00	H	Peak	--			46.00		H

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, Average or QP detector mode .
- (3) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (4) Data 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) The IF bandwidth of SPA 30MHz to 1GHz was 100KHz. VBW= 300KHz

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

Operation Mode: Transmitting Mode
Fundamental Frequency: 98.1 MHz
Temperature : 25
Humidity : 65 %

Test Date: Jan. 19, 2006
Test By: Sky
Pol: Vertical

Detector							Safe	
Freq. (MHz)	Ant.Pol. H/V	Mode (PK/AV/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	<u>Limit@3m</u> (dBuV/m)	Margin (dB)	Note
98.10	V	Peak	62.70	-17.38	45.32	48.00	-2.68	F
196.20	V	Peak	47.56	-16.37	31.19	43.50	-12.31	H
294.30	V	Peak	42.03	-13.62	28.41	46.00	-17.59	H
392.40	V	Peak	--			46.00		H
490.50	V	Peak	--			46.00		H
588.60	V	Peak	--			46.00		H
686.70	V	Peak	--			46.00		H
784.80	V	Peak	--			46.00		H
882.90	V	Peak	--			46.00		H
981.00	V	Peak	--			54.00		H

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, Average or QP detector mode .
- (3) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (4) Data 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) The IF bandwidth of SPA 30MHz to 1GHz was 100KHz. VBW= 300KHz

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Operation Mode: Transmitting Mode
Fundamental Frequency: 98.1 MHz
Temperature : 25
Humidity : 65 %

Test Date: Jan. 19, 2006
Test By: Sky
Pol: Horizontal

Detector						Safe		
Freq. (MHz)	Ant.Pol. H/V	Mode (PK/AV/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)	Note
98.10	H	Peak	60.92	-17.38	43.54	48.00	-4.46	F
196.20	H	Peak	55.72	-16.37	39.35	43.50	-4.15	H
294.30	H	Peak	46.99	-16.37	30.62	46.00	-15.38	H
392.40	H	Peak	--			46.00		H
490.50	H	Peak	--			46.00		H
588.60	H	Peak	--			46.00		H
686.70	H	Peak	--			46.00		H
784.80	H	Peak	--			46.00		H
882.90	H	Peak	--			46.00		H
981.00	H	Peak	--			54.00		H

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, Average or QP detector mode .
- (3) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (4) Data 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) The IF bandwidth of SPA 30MHz to 1GHz was 100KHz. VBW= 300KHz

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Operation Mode: Transmitting Mode
Fundamental Frequency: 107.9 MHz
Temperature : 25
Humidity : 65 %

Test Date : Jan. 19, 2006
Test By: Sky
Pol: Vertical

Freq. (MHz)	Ant.Pol. H/V	Detector			Actual FS (dBuV/m)	<u>Limit@3m</u> (dBuV/m)	Safe Margin (dB)	Note
		Mode (PK/AV/QP)	Reading (dBuV)	Factor (dB)				
107.90	H	Peak	58.24	-16.58	41.66	48.00	-6.34	F
215.80	H	Peak	45.58	-16.25	29.33	43.50	-14.17	H
323.70	H	Peak	34.12	-12.71	21.41	46.00	-24.59	H
431.60	H	Peak	--			46.00		H
539.50	H	Peak	--			46.00		H
647.40	H	Peak	--			46.00		H
755.30	H	Peak	--			46.00		H
863.20	H	Peak	--			46.00		H
971.10	H	Peak	--			54.00		H
1079.00	H	Peak	--			54.00		H

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, Average or QP detector mode .
- (3) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
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- (5) The IF bandwidth of SPA 30MHz to 1GHz was 100KHz. VBW= 300KHz

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Operation Mode: Transmitting Mode
 Fundamental Frequency: 107.9 MHz
 Temperature : 25
 Humidity : 65 %

Test Date : Jan. 19, 2006
 Test By: Sky
 Pol: Horizontal

Freq. (MHz)	Ant.Pol. H/V	Detector			Factor (dB)	Actual FS (dBuV/m)	<u>Limit@3m</u> (dBuV/m)	Safe Margin (dB)	Note
		Mode (PK/AV/QP)	Reading (dBuV)						
107.90	H	Peak	59.02	-16.58	42.44	48.00	-5.56	F	
215.80	H	Peak	54.67	-16.25	38.42	43.50	-5.08	H	
323.70	H	Peak	36.56	-12.71	23.85	46.00	-22.15	H	
431.60	H	Peak	--			46.00		H	
539.50	H	Peak	--			46.00		H	
647.40	H	Peak	--			46.00		H	
755.30	H	Peak	--			46.00		H	
863.20	H	Peak	--			46.00		H	
971.10	H	Peak	--			54.00		H	
1079.00	H	Peak	--			54.00		H	

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, Average or QP detector mode .
- (3) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (4) Data 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) The IF bandwidth of SPA 30MHz to 1GHz was 100KHz. VBW= 300KHz

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7. 26dB Occupied Bandwidth

7.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Set SPA Center Frequency = fundamental frequency, RBW, VBW= 10KHz, Span =500KHz.
4. Set SPA Max hold. Mark peak, -26dB.

7.2 Test SET-UP (Block Diagram of Configuration)

Same as 6.2 Radiated Emission Measurement.

7.3 Measurement Equipment Used:

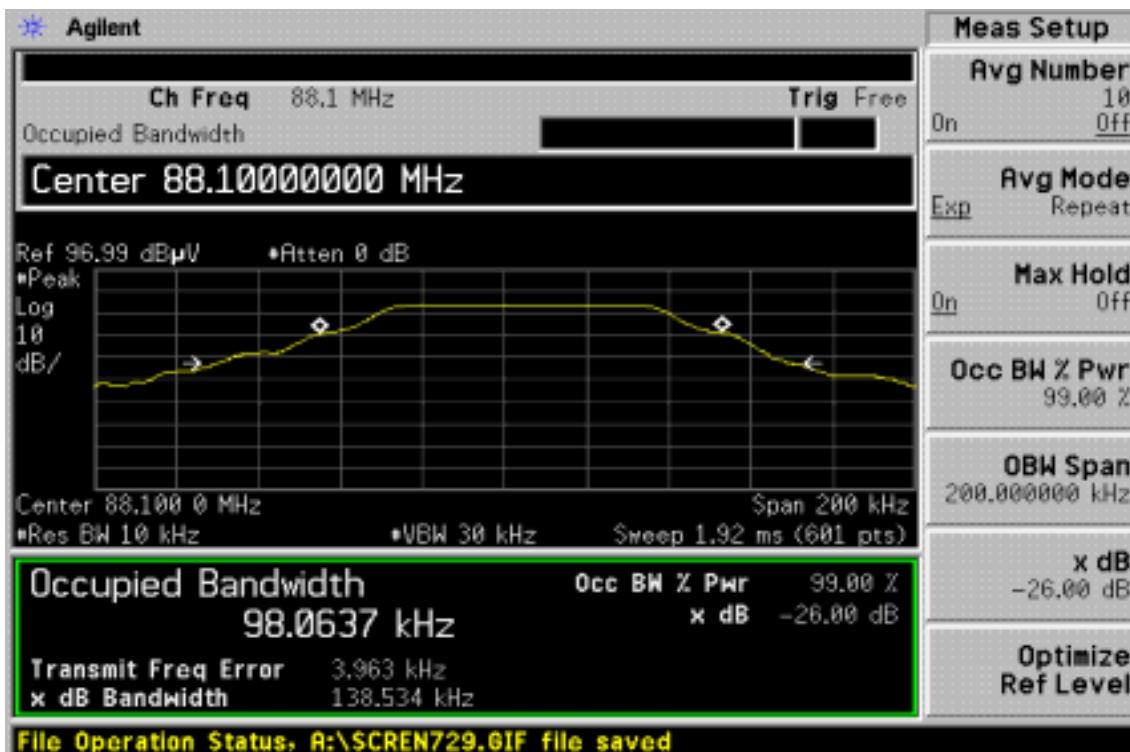
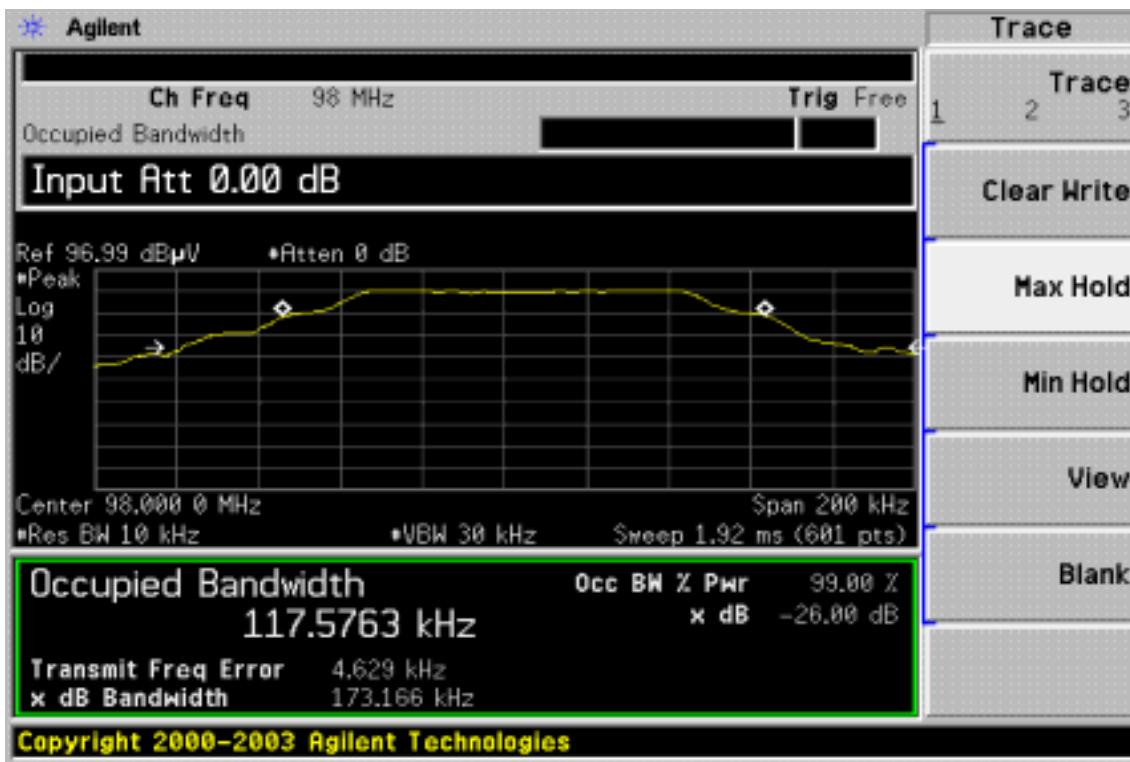
Same as 6.3 Radiated Emission Measurement.

7.4 Measurement Results

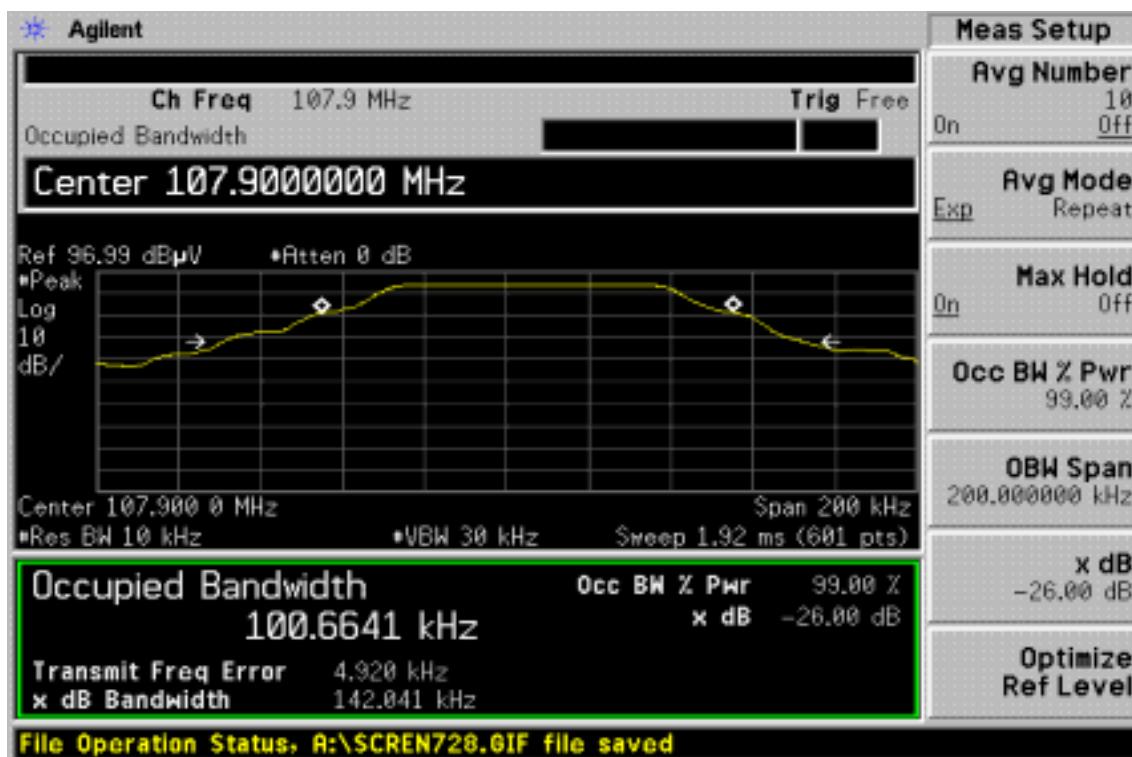
CH	26dB Bandwidth (KHz)	Limit (KHz)
Lower	138.53	200
Mid	173.16	200
Higher	142.04	200

Refer to attached data chart.

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26dB Band Width Test Data (Low)**26dB Band Width Test Data (Mid)**

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26dB Band Width Test Data (High)

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8. 99% Bandwidth Measurement

8.1 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Set the spectrum analyzer as RBW=1% of the approximate emission bandwidth, VBW = 3 times RBW, Span= approximately 20dB below the peak level. Sweep=auto
3. Turn on the 99% bandwidth function, max reading..
4. Repeat above procedures until all frequency measured were complete.

8.2 Test SET-UP (Block Diagram of Configuration)

Same as 6.2 Radiated Emission Measurement.

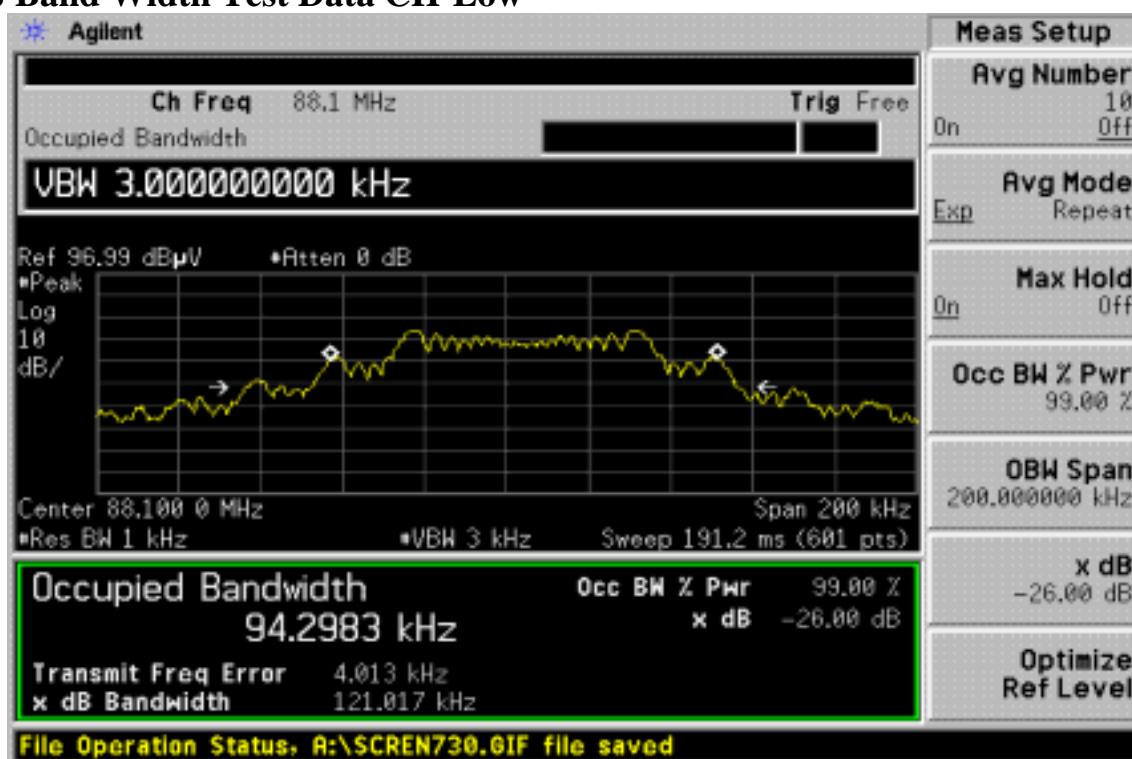
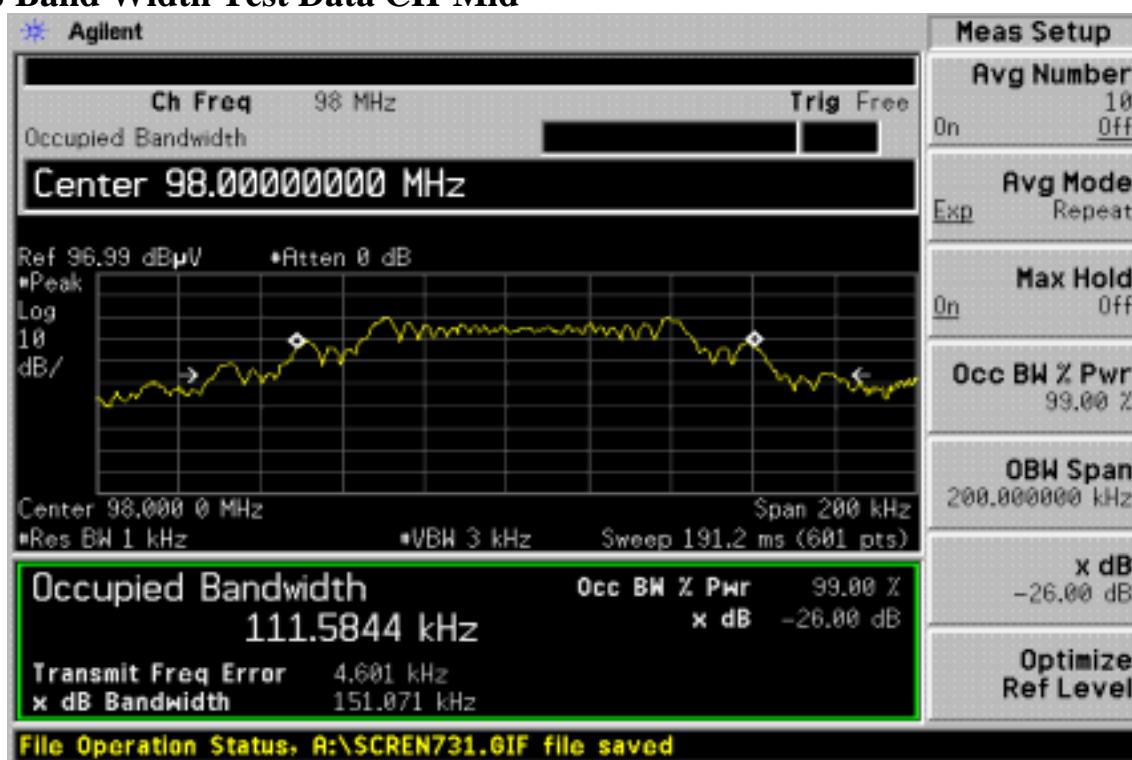
8.3 Measurement Equipment Used:

Same as 6.3 Radiated Emission Measurement.

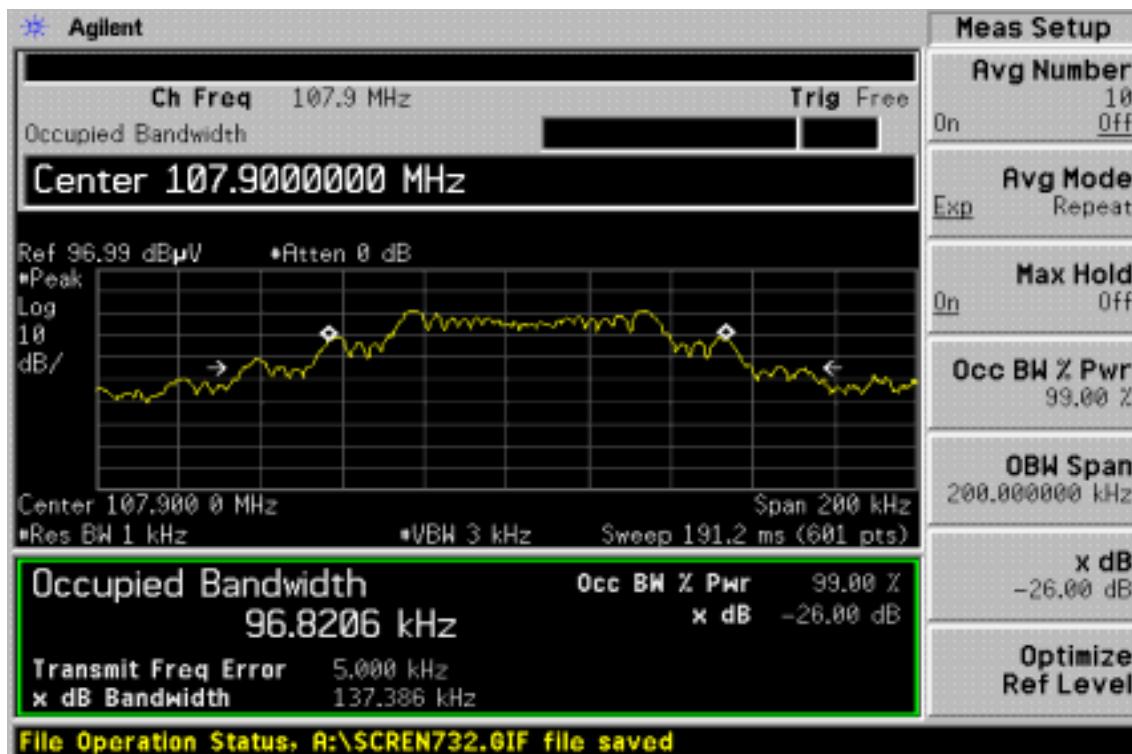
8.4 Measurement Results

CH	Bandwidth (KHz)
Lower	94.29
Mid	111.58
Higher	96.82

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99% Band Width Test Data CH-Low**99% Band Width Test Data CH-Mid**

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99% Band Width Test Data CH-HIGH

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