

## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

### INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT OF

**Product Name:** KITTY-B

**Brand Name:** GPLUS

**Model Name:** GB110

**Marketing Name:** GPLUS

**Model Difference:** N/A

**FCC ID:** VPV-KITTY

**Report No.:** EH/2008/A0009

**Issue Date:** Nov. 17, 2008

**FCC Rule Part:** §15.247

**Prepared for:** Total Light Enterprise Co., Ltd.  
5F., No.62, Zhouzi St., Neihu District, Taipei  
City 114, Taiwan (R.O.C.)

**Prepared by:** SGS Taiwan Ltd.  
Electronics & Communication Laboratory  
No. 134, Wu Kung Rd., Wuku Industrial  
Zone, Taipei County, Taiwan



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## VERIFICATION OF COMPLIANCE

**Applicant:** Total Light Enterprise Co., Ltd.  
5F., No.62, Zhouzi St., Neihu District, Taipei City 114, Taiwan  
(R.O.C.)

**Equipment Under Test:** KITTY-B

**Brand Name:** GPLUS

**FCC ID Number:** VPV-KITTY

**Model No.:** GB110

**Marketing Name:** GPLUS

**Model Difference:** N/A

**File Number:** EH/2008/A0009

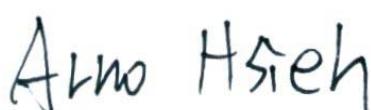
**Date of test:** Oct. 15, 2008 ~ Nov. 03, 2008

**Date of EUT Received:** Oct. 15, 2008

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. 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 15.247.

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

**Test By:****Date:**

Nov. 17, 2008

*Arno Hsieh/Sr. Engineer***Prepared By:****Date:**

Nov. 17, 2008

*Elisa Chen / Asst. Supervisor***Approved By:****Date:**

Nov. 17, 2008

*Vincent Su / Manager*

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FCC ID: VPV-KITTY

Report No.: EH/2008/A0009  
Issue Date: Nov. 17, 2008  
Page: 3 of 54

## Version

Version No.	Date	Description
00	Nov. 17, 2008	Initial creation of document

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## 1. GENERAL INFORMATION

Product Name:	KITTY-B		
Brand Name:	GPLUS		
Model Name:	GB110		
Model Difference:	N/A		
	3.7 Vdc re-chargeable battery or 5Vdc by AC/DC power adapter		
Power Supply	Battery:	Model: GB100/GB110; Supplier: G-PLUS	
	Adapter:	Model: N/A	

### GSM:

Cellular Phone Standards	GSM/GPRS 850, class 12	824 MHz – 849MHz	33 dBm
Frequency Range and Power	GSM/GPRS 1900, class 12	1850MHz – 1910MHz	30 dBm
final amplifier voltage and current information		DC voltage (V)	DC current (mA)
	GSM 850	5Vdc	411
	GSM 1900	5Vdc	423
Type of Emission	GSM: 300KGXW		
IMEI	135790246811220		

### Bluetooth:

Frequency Range	2402 – 2480MHz
Channel number	79 channels
Rated Power	2.30Bm (Peak)
Modulation type	Frequency Hopping Spread Spectrum (FHSS) (GFSK)
Antenna Designation	Chip Antenna, 2.0dBi
Type of Emission	880KF1D

The EUT is compliance with Bluetooth 2.0 Standard.

This test report applies for Bluetooth.

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## 1.1. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: VPV-KITTY** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules. The composite system (digital device) is compliance with Subpart B is authorized under a Doc procedure.

## 1.2. 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.

## 1.3. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A.

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 & 10 meters) and FCC Registration Number: 94644.

## 1.4. Special Accessories

Not available for this EUT intended for grant.

## 1.5. Equipment Modifications

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 EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

### 2.3. Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is placed on a 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.

#### 2.3.2 Radiated Emissions

The EUT is placed on a 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 and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna. according to the requirements in Section 8 and 13 and Subclause 8.3.1.2 of ANSI C63.4-2003.

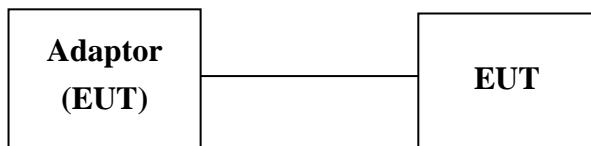
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## 2.4. Configuration of Tested System

**Fig. 2-1 Configuration of Tested System**



**Table 2-1 Equipment Used in Tested System**

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

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### 3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207(a)	Conducted Emission	Compliant
§15.247(b)(1)	Peak Output Power	Compliant
§15.247(a)	20dB Bandwidth	No Limit
§15.247I	100 KHz Bandwidth Of Frequency Band Edges	Compliant
§15.209(a) (f)	Spurious Emission	Compliant
§15.247(a)(1)	Frequency Separation	Compliant
§15.247(a)(1)(iii)	Number of hopping frequency	Compliant
§15.247(a)(1)(iii)	Time of Occupancy	Compliant
§15.247	Peak Power Density	Compliant
§15.203, §15.247(b)(4)(i)	Antenna Requirement	Compliant

### 4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low (2402MHz) 、 mid (2441MHz) and high (2480MHz) with highest data rate are chosen for full testing.

The Radiated Spurious Emission was performed at X. Y. and Z. axle. The worst case Y axle was reported.

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## 5. CONDUCTED EMISSION TEST

### 5.1. Standard Applicable

According to §15.207. frequency within 150KHz to 30MHz shall not exceed the limit table as below.

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

### 5.2. EUT Setup

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4-2003.
2. The EUT was plug-in the AC/DC Power adapter. The host system was placed on the center of the back edge on the test table. The peripherals was placed on the side of the host PC system. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The spacing between the peripherals was 10 centimeters.
4. External I/O cables were draped along the edge of the test table and bundle when necessary.
5. The host system was connected with 110Vac/60Hz power source.

### 5.3. 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.

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#### 5.4. Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCS30	828985/004	09/15/2008	09/14/2009
LISN	Rolf-Heine	NNB-2/16Z	99012	02/18/2008	02/17/2009
LISN	FCC	FCC-LISN-50/250-2 5-2-01	04034	02/18/2008	02/17/2009
Coaxial Cables	N/A	WK CE Cable	N/A	10/30/2007	10/29/2008

#### 5.5. Measurement Result

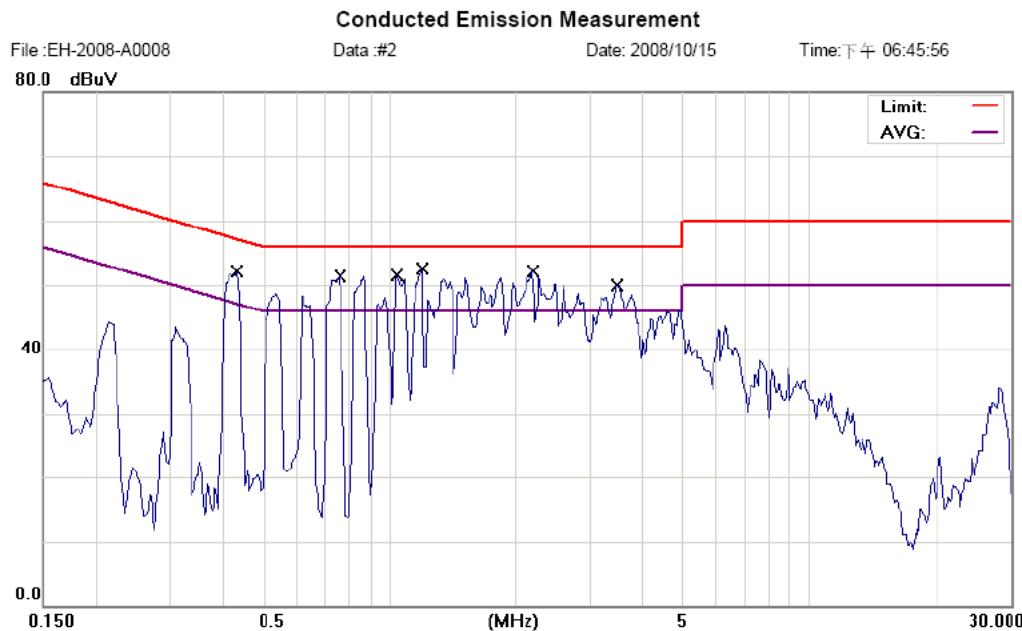
The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

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## AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	GSM+Earphone			Test Date:	Oct. 15, 2008
Temperature:	26 °C	Humidity:	62%	Test By:	Arno



Site SGS CONDUCTED #1 Phase: **L1** Temperature: 26 °C  
 Limit: CISPR22 Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 62 %  
 EUT: KITTY A Distance: Air Pressure: hpa  
 M/N: KITTY A  
 Note: GSM+EARPHONE

No.	Mk.	Freq.	Reading	Factor	Measure-	Limit	Over	Detector	Comment
			Level		ment				
MHz		dBuV	dB		dBuV	dBuV	dB		
1		0.4300	49.06	0.08	49.14	57.25	-8.11	QP	
2		0.4300	33.24	0.08	33.32	47.25	-13.93	AVG	
3		0.7600	48.77	0.05	48.82	56.00	-7.18	QP	
4		0.7600	30.35	0.05	30.40	46.00	-15.60	AVG	
5		1.0329	48.56	0.04	48.60	56.00	-7.40	QP	
6		1.0329	21.75	0.04	21.79	46.00	-24.21	AVG	
7	*	1.2014	50.30	0.04	50.34	56.00	-5.66	QP	
8		1.2014	27.20	0.04	27.24	46.00	-18.76	AVG	
9		2.1900	44.11	0.04	44.15	56.00	-11.85	QP	
10		2.1900	26.03	0.04	26.07	46.00	-19.93	AVG	
11		3.4798	43.88	0.05	43.93	56.00	-12.07	QP	
12		3.4798	22.94	0.05	22.99	46.00	-23.01	AVG	

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**Conducted Emission Measurement**

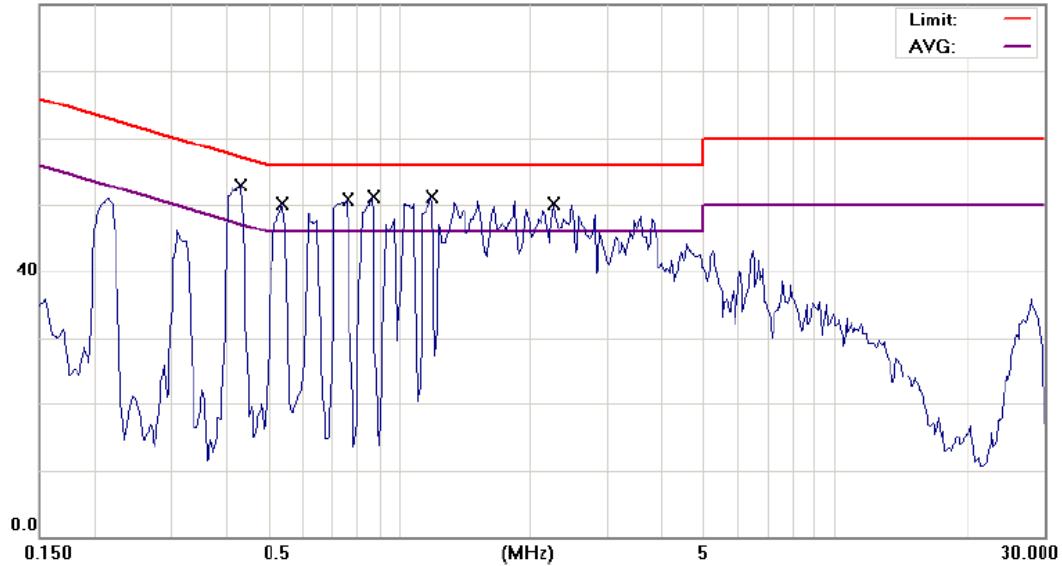
File :EH-2008-A0008

Data #:1

Date: 2008/10/15

Time:下午 06:37:58

80.0 dBuV



Site SGS CONDUCTED #1      Phase: **N**      Temperature: 26 °C  
 Limit: CISPR22 Class B Conduction(QP)      Power: AC 120V/60Hz      Humidity: 62 %  
 EUT: KITTY A      Distance:      Air Pressure: hpa  
 M/N: KITTY A  
 Note: GSM+EARPHONE

No.	Mk.	Freq.	Reading	Factor	Measure-	Limit	Over		
			Level		ment		dB	dBuV	Detector
1	*	0.4350	51.55	0.07	51.62	57.16	-5.54	QP	
2		0.4350	29.46	0.07	29.53	47.16	-17.63	AVG	
3		0.5425	48.88	0.05	48.93	56.00	-7.07	QP	
4		0.5425	33.71	0.05	33.76	46.00	-12.24	AVG	
5		0.7605	49.47	0.04	49.51	56.00	-6.49	QP	
6		0.7605	28.90	0.04	28.94	46.00	-17.06	AVG	
7		0.8714	50.16	0.04	50.20	56.00	-5.80	QP	
8		0.8714	30.64	0.04	30.68	46.00	-15.32	AVG	
9		1.1798	46.71	0.03	46.74	56.00	-9.26	QP	
10		1.1798	15.31	0.03	15.34	46.00	-30.66	AVG	
11		2.2844	46.00	0.03	46.03	56.00	-9.97	QP	
12		2.2844	29.29	0.03	29.32	46.00	-16.68	AVG	

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## 6. PEAK OUTPUT POWER MEASUREMENT

### 6.1. Standard Applicable

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850MHz band: 1Watt. For all other frequency hopping systems in the 2400 – 2483.5MHz band: 0.125 Watts.

### 6.2. Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter or spectrum. (Channel power function, RBW, VBW = 1MHz)
3. Record the max. reading.
4. Repeat above procedures until all frequency measured were complete.

### 6.3. Measurement Result

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2402.00	2.30	0.00	2.30	0.00170	1
2441.00	1.33	0.00	1.33	0.00136	1
2480.00	1.72	0.00	1.72	0.00149	1

\*Note: Offset 8dB

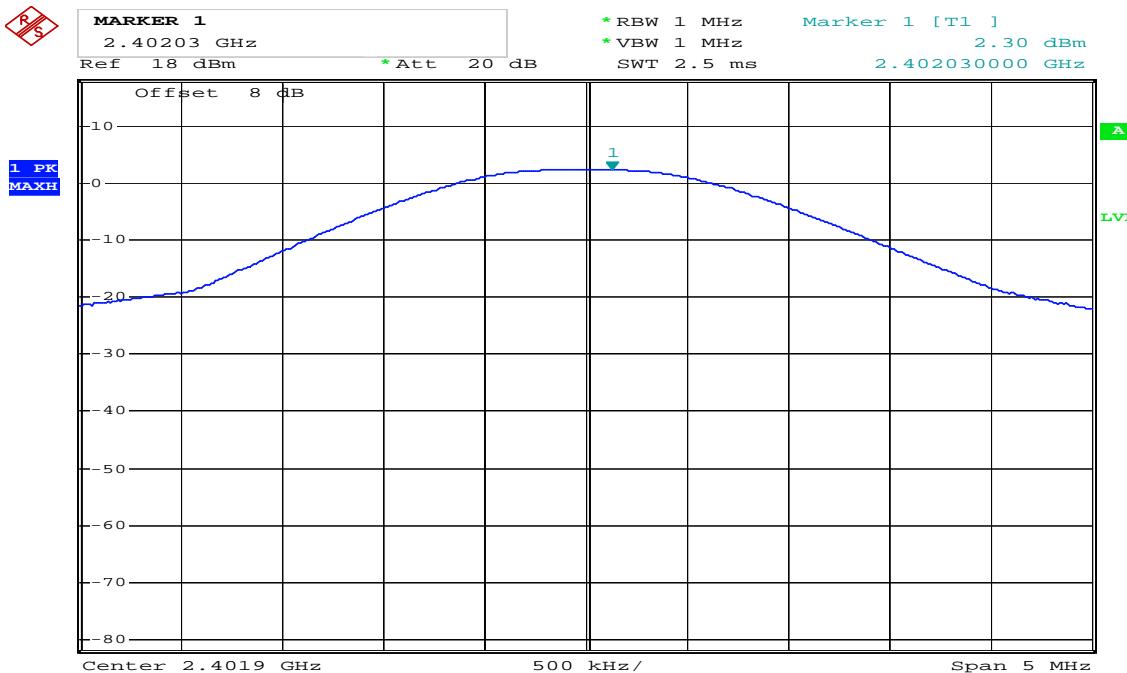
### 6.4. Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2009
Spectrum Analyzer	R&S	FSP 40	100034	02/22/2008	02/21/2009
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	02/13/2008	02/12/2009
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009

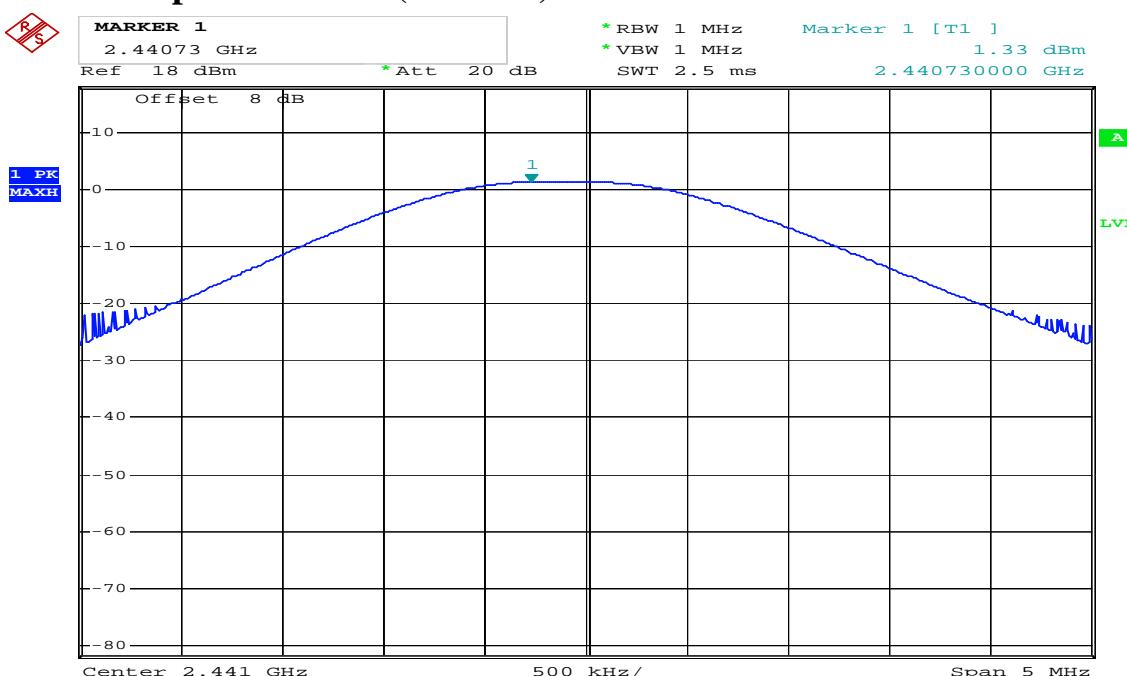
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## Peak Power Output Data Plot (CH Low)



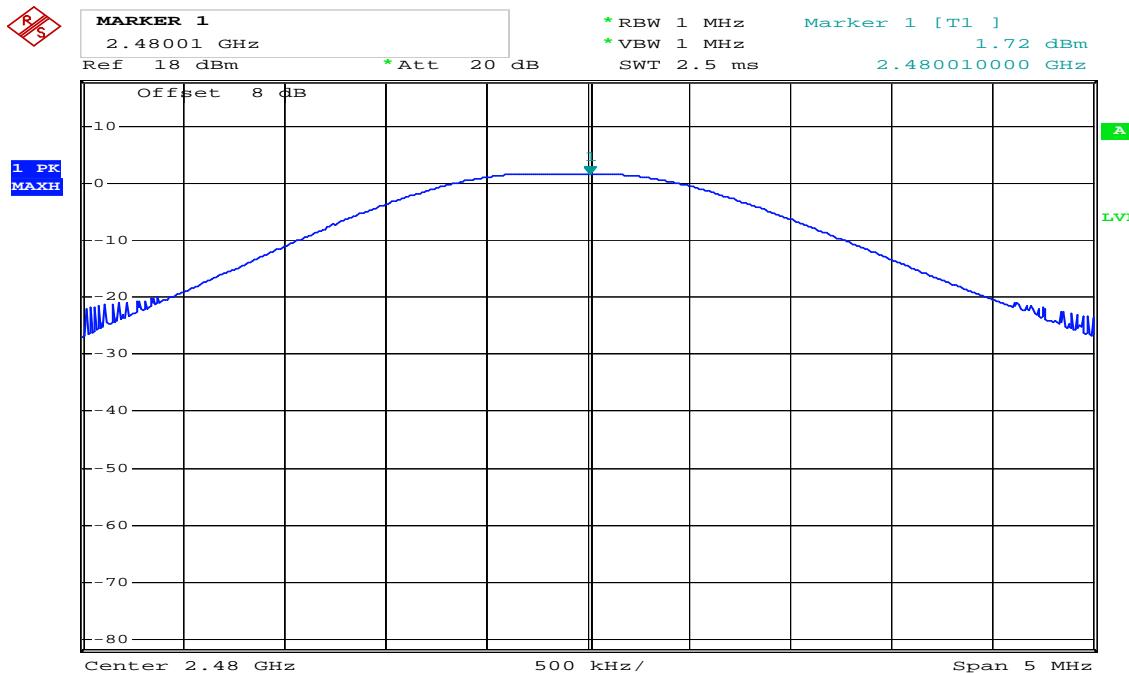
## Peak Power Output Data Plot (CH Mid)



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## Peak Power Output Data Plot (CH High)



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## 7. 20dB BAND WIDTH

### 7.1. Standard Applicable

For frequency hopping systems operating in the 2400MHz-2483.5 MHz no limit for 20dB bandwidth.

### 7.2. Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=10KHz (1 % of Bandwidth.), Span= 3MHz, Sweep=auto
4. Mark the peak frequency and -20dB (upper and lower) frequency.
5. Repeat above procedures until all frequency measured were complete.

### 7.3. Measurement Result

CH	Bandwidth (kHz)
Lower	920.00
Mid	920.00
Higher	920.00

\*Note: Offset 8dB

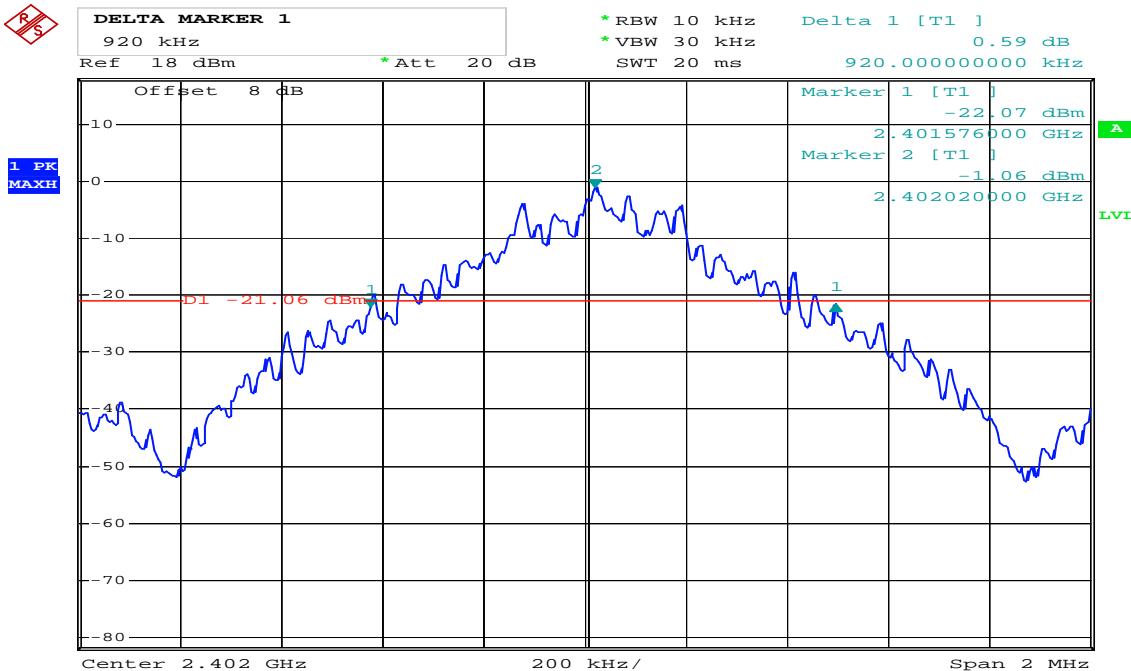
### 7.4. Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2008	07/03/2009
Spectrum Analyzer	R&S	FSP 40	100034	02/22/2008	02/21/2009
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	02/13/2008	02/12/2009
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009

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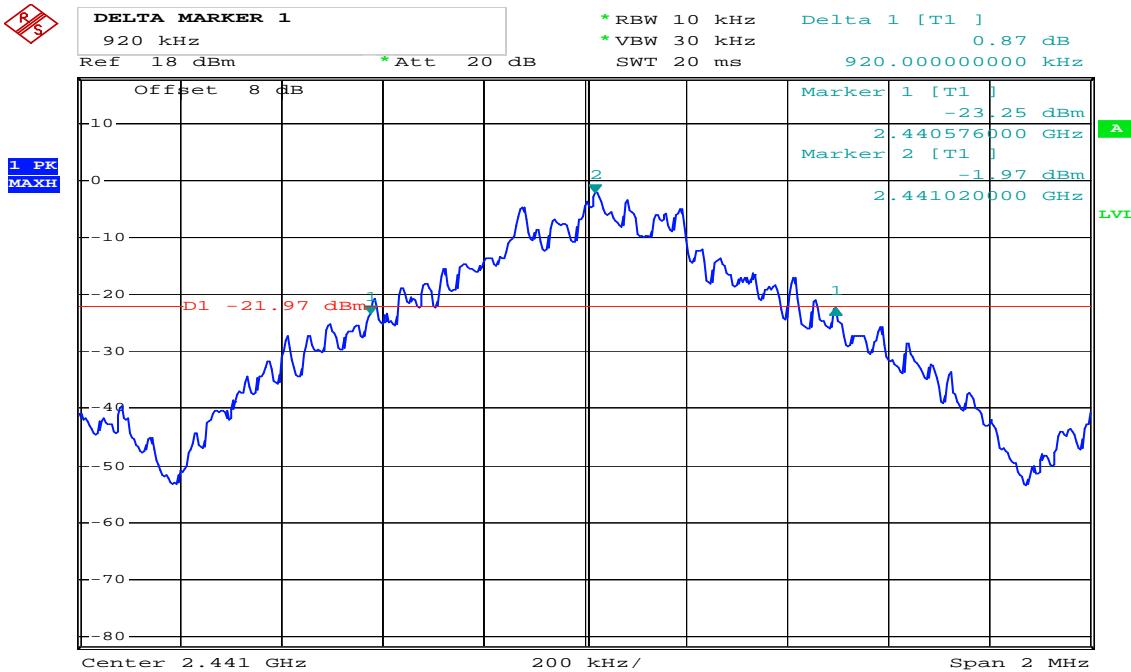
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## 20dB Band Width Test Data CH-Low



Comment: 1  
Date: 31.OCT.2008 18:44:33

## 20dB Bandwidth Test Data CH-Mid

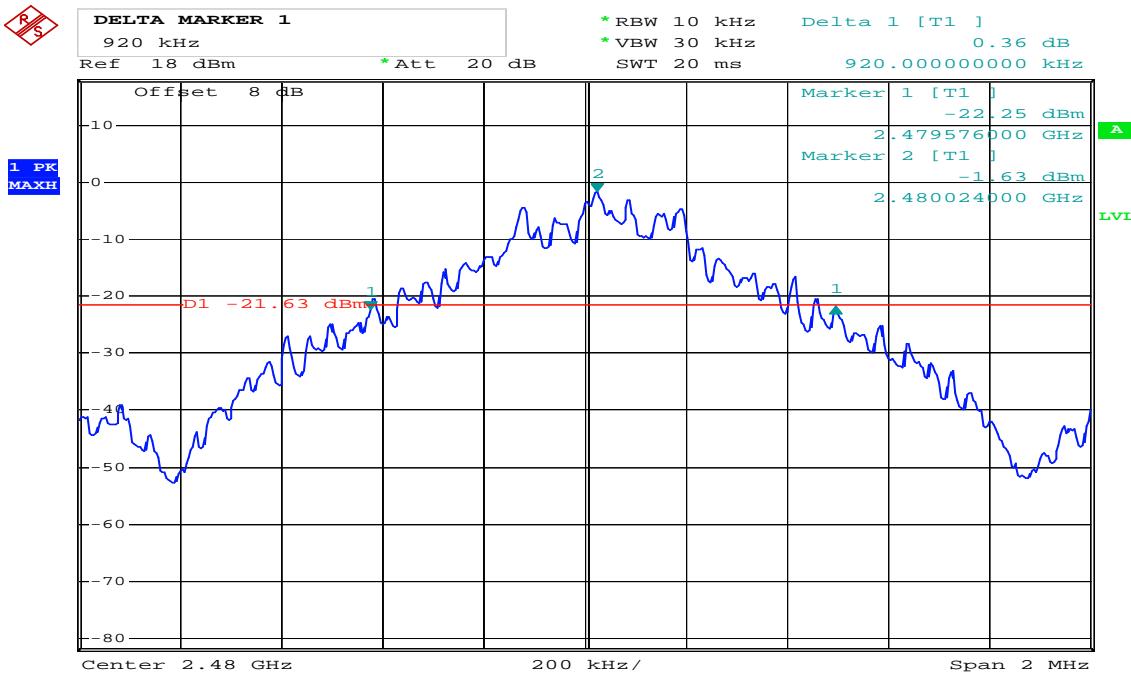


Comment: 1  
Date: 31.OCT.2008 18:42:44

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## 20dB Bandwidth Test Data CH-High



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## 8. 100KHz BANDWIDTH OF BAND EDGES MEASUREMENT

### 8.1. Standard Applicable

According to §15.247(c), in any 100 KHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

### 8.2. Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW, VBW=100KHz, Span=25MHz, Sweep = auto
5. Mark Peak, 2.390GHz and 2.4835GHz and record the max. level.
6. Repeat above procedures until all frequency measured were complete.
7. Radiated Emission refer to section 9.

### 8.3. Measurement Result

Refer to attach spectrum analyzer data chart.

### 8.4. Measurement Equipment Used:

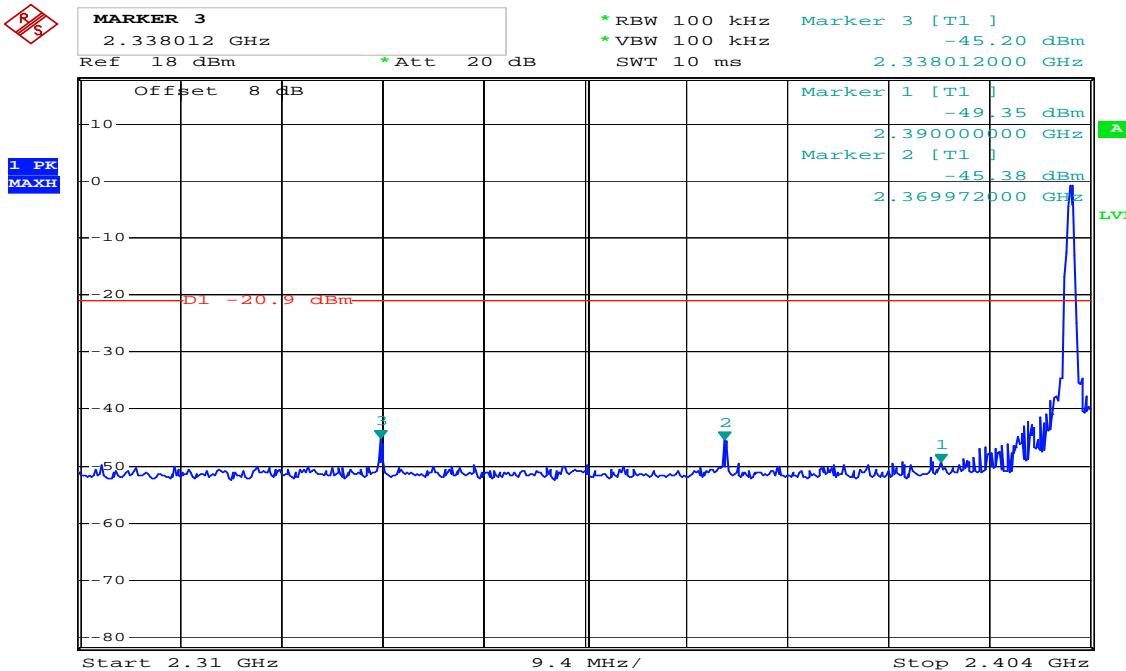
Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2008	07/03/2009
Spectrum Analyzer	R&S	FSP 40	100034	02/22/2008	02/21/2009
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	02/13/2008	02/12/2009
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009

Note: Measurement Equipment for radiated emission refers to section 9.

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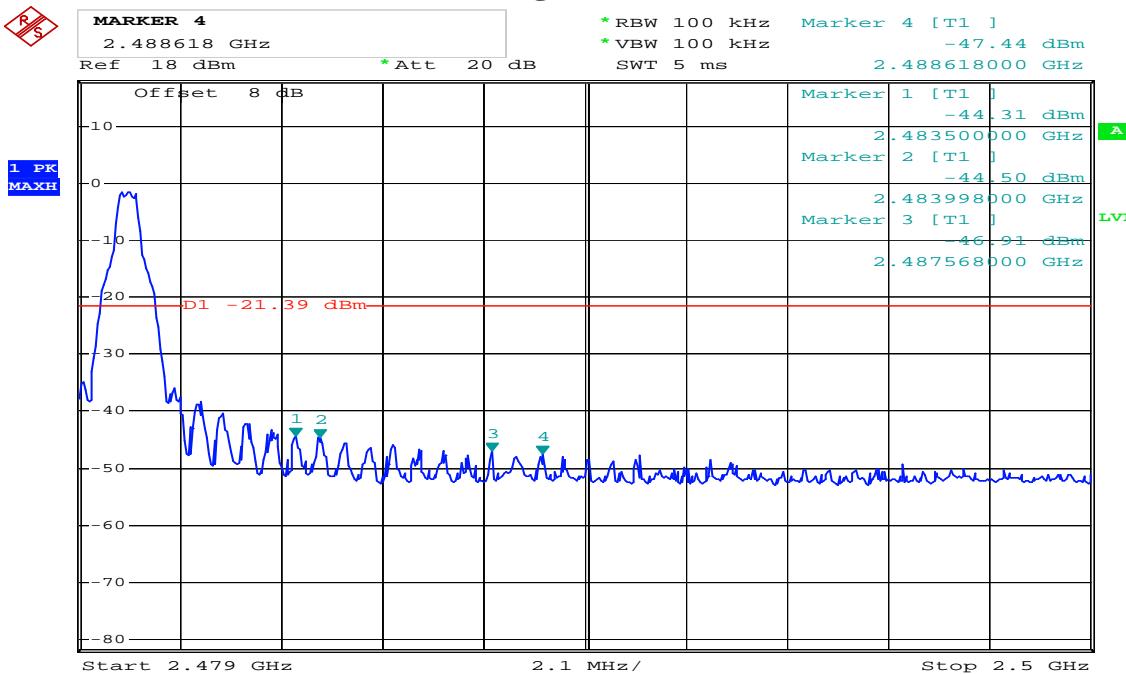
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## Conducted Emission: Test Data CH-Low



Comment: 1  
Date: 3.NOV.2008 12:10:05

## Conducted Emission: Test Data CH-High



Comment: 1  
Date: 3.NOV.2008 12:08:07

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## Radiated Emission:

Operation Mode TX CH Low  
Fundamental Frequency 2402 MHz  
Temperature 25 °C  
Humidity 65 %

Test Date Oct. 31, 2008  
Test By Arno  
Pol Ver.

Freq. (MHz)	Peak	AV	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)			
2390.00	42.23			-10.76	31.47		74.00	54.00 -22.53 Peak

Operation Mode TX CH Low  
Fundamental Frequency 2402 MHz  
Temperature 25 °C  
Humidity 65 %

Test Date Oct. 31, 2008  
Test By Arno  
Pol Hor.

Freq. (MHz)	Peak	AV	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)			
2390.00	42.77			-10.76	32.01		74.00	54.00 -21.99 Peak

## Remark :

- (1) 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.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column ◦
- (3) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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**Radiated Emission:**

Operation Mode	TX CH High	Test Date	Oct. 31, 2008
Fundamental Frequency	2480 MHz	Test By	Arno
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)		
2483.50	42.11		-10.46	31.65		74.00	54.00	-22.35 Peak
2484.43	45.43		-10.46	34.97		74.00	54.00	-19.03 Peak

Operation Mode	TX CH High	Test Date	Oct. 31, 2008
Fundamental Frequency	2480 MHz	Test By	Arno
Temperature	25 °C	Pol	Hor.
Humidity	65 %		

Freq. (MHz)	Peak	AV	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)		
2483.50	49.29		-10.46	38.83		74.00	54.00	-15.17 Peak
2483.93	49.67		-10.46	39.21		74.00	54.00	-14.79 Peak

**Remark :**

- (1) 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.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column ◎
- (3) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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## 9. SPURIOUS RADIATED EMISSION TEST

### 9.1. Standard Applicable

According to §15.247(c), all other emissions outside these bands shall not exceed the general radiated emission limits specified in §15.209(a). And according to §15.33(a)(1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

### 9.2. EUT Setup

1. The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.4-2003.
2. The EUT was put in the front of the test table. The peripherals was placed on the side of the host system. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The spacing between the peripherals was 10 centimeters.
4. External I/O cables were draped along the edge of the test table and bundle when necessary.
5. The host PC system was connected with 110Vac/60Hz power source.

### 9.3. Measurement Procedure

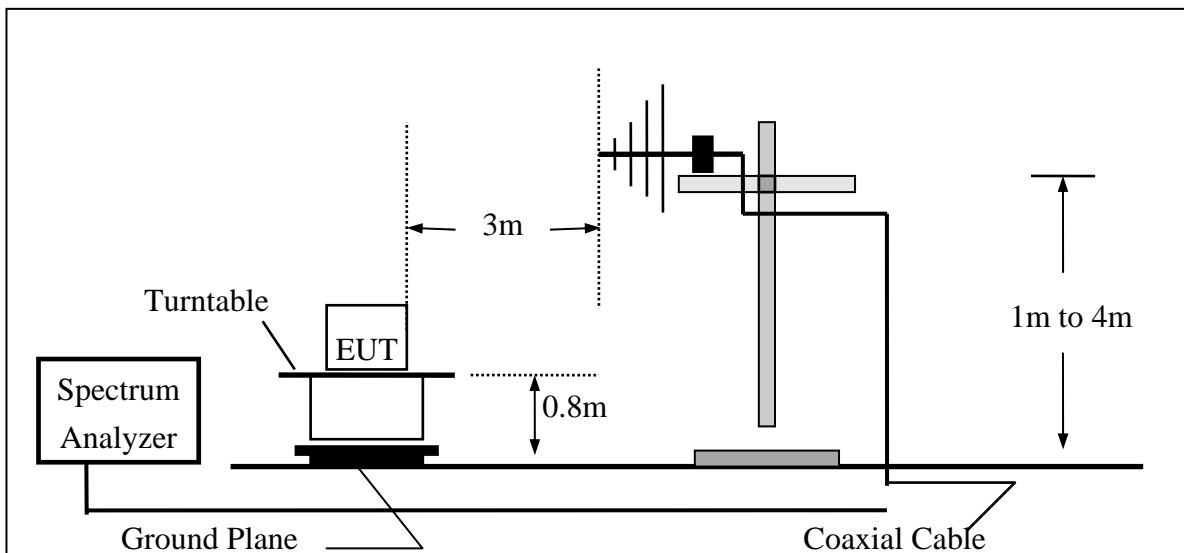
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
4. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. Repeat above procedures until all frequency measured were complete.

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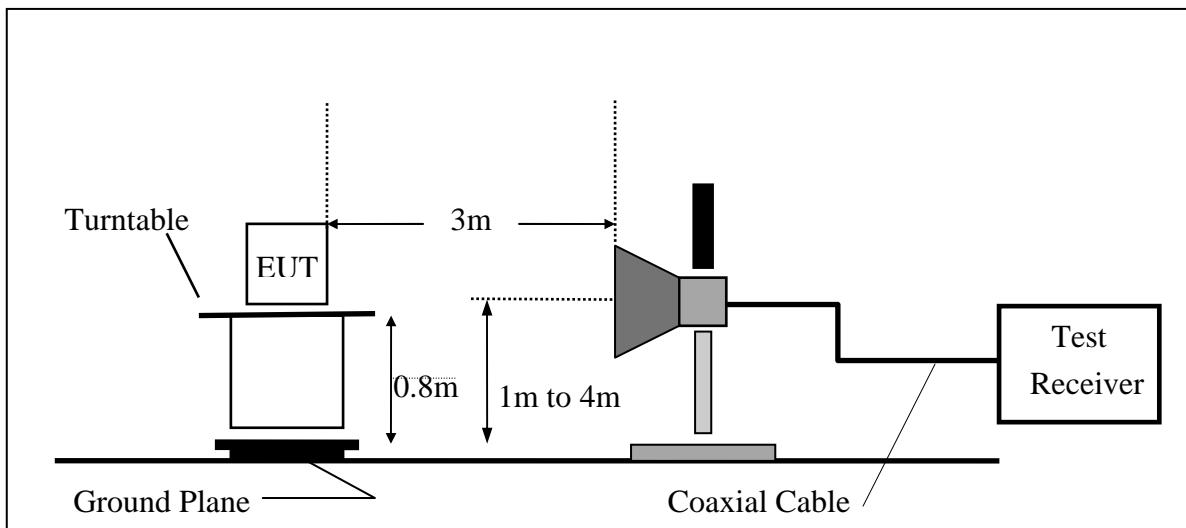
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#### 9.4. Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1GHz



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



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## 9.5. Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	R&S	FSP 40	100034	02/22/2008	02/21/2009
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2009
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3158	11/29/2007	11/28/2008
Horn antenna	Schwarzbeck	BBHA 9120D	9120D-673	05/09/2008	05/10/2010
Horn antenna	Schwarzbeck	BBHA 9170	184/185	12/31/2007	12/30/2008
Pre-Amplifier	HP	8447F	3113A06892	01/05/2008	01/04/2009
Pre-Amplifier	HP	8449B	3008A01973	01/05/2008	01/04/2009
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	01/05/2008	01/04/2009
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2008	01/04/2009

## 9.6. 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	

## 9.7. Measurement Result

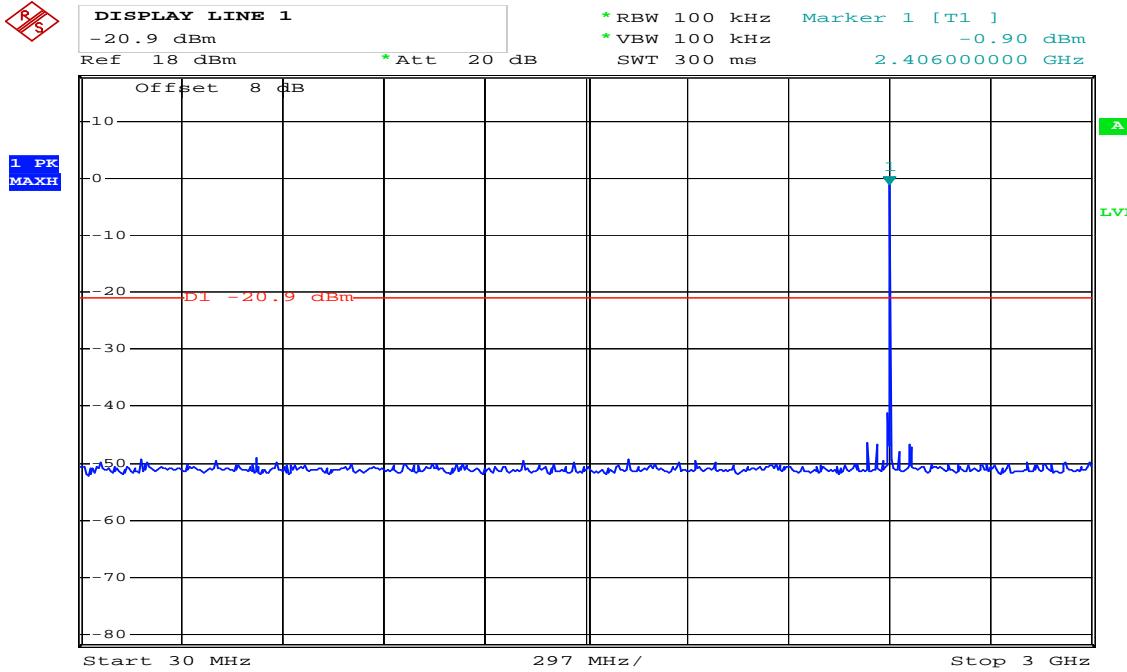
Refer to attach tabular data sheets.

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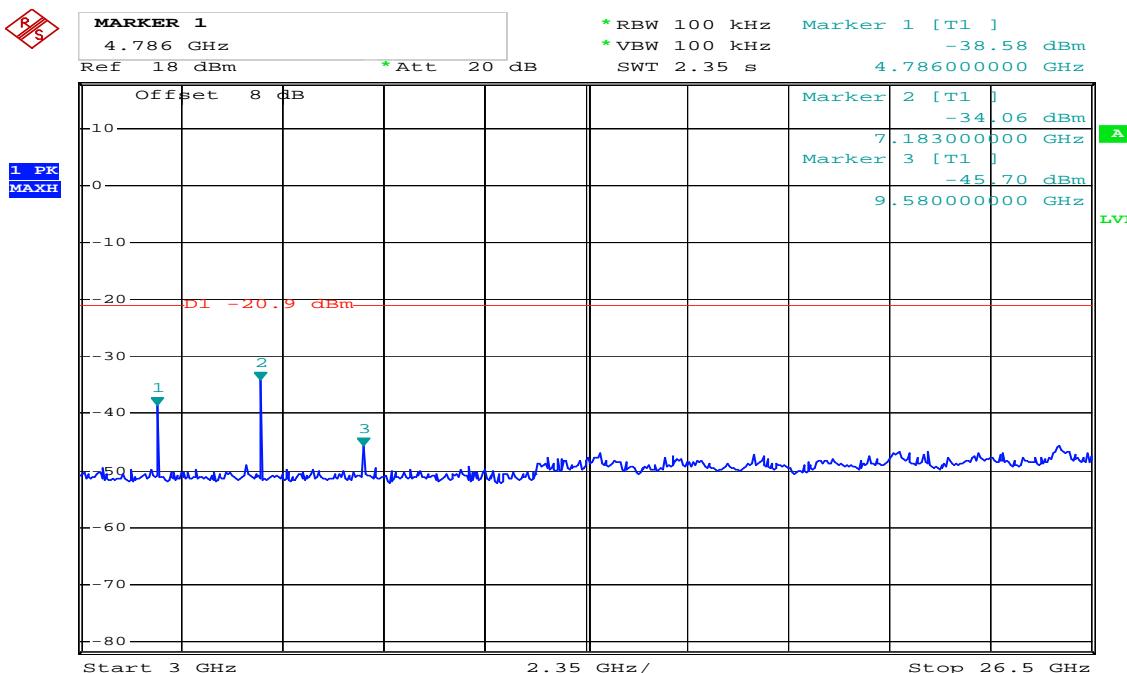
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## Conducted Spurious Emission Measurement Result

### Ch Low 30MHz – 3GHz



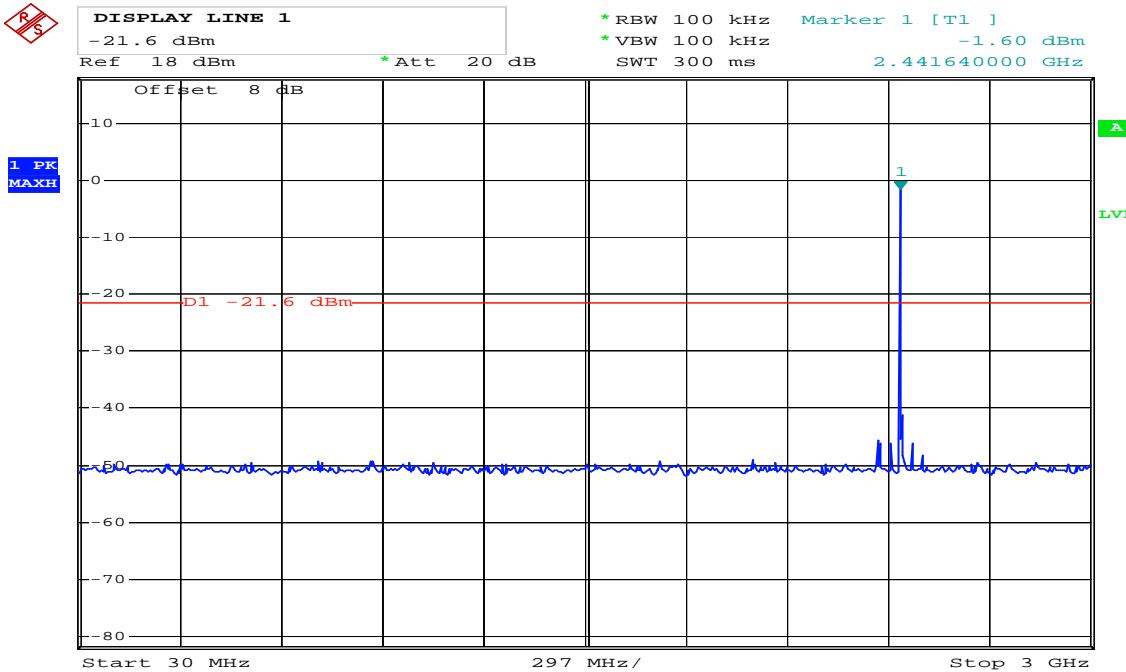
### Ch Low 3GHz – 26.5GHz



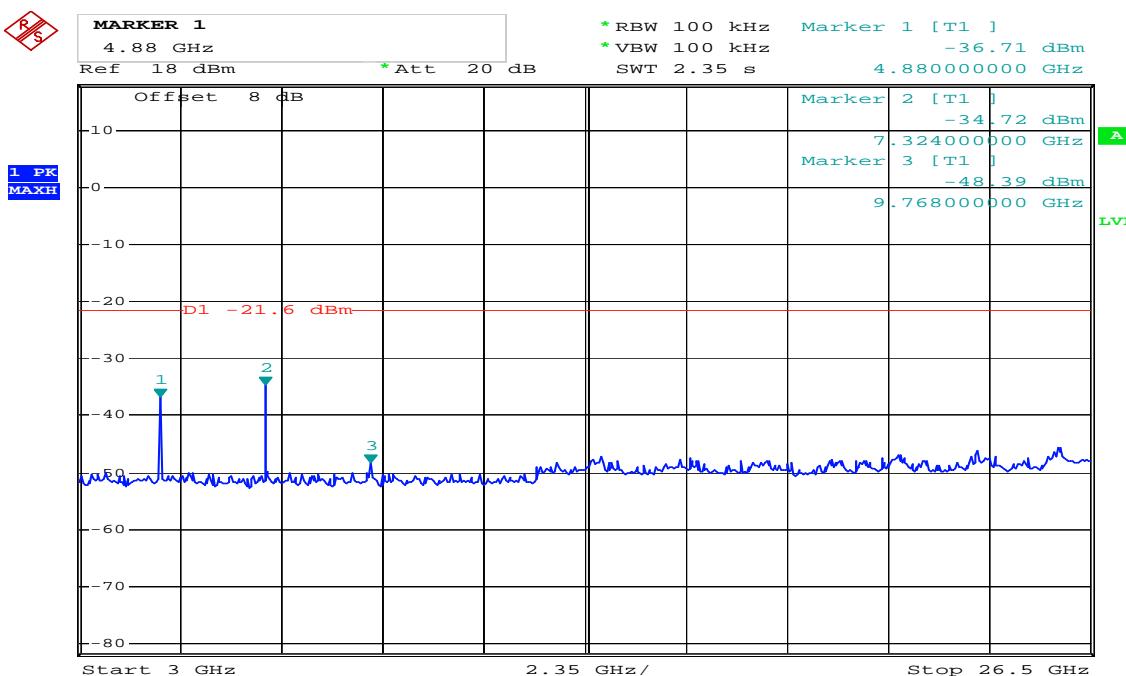
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## Ch Mid 30MHz – 3GHz



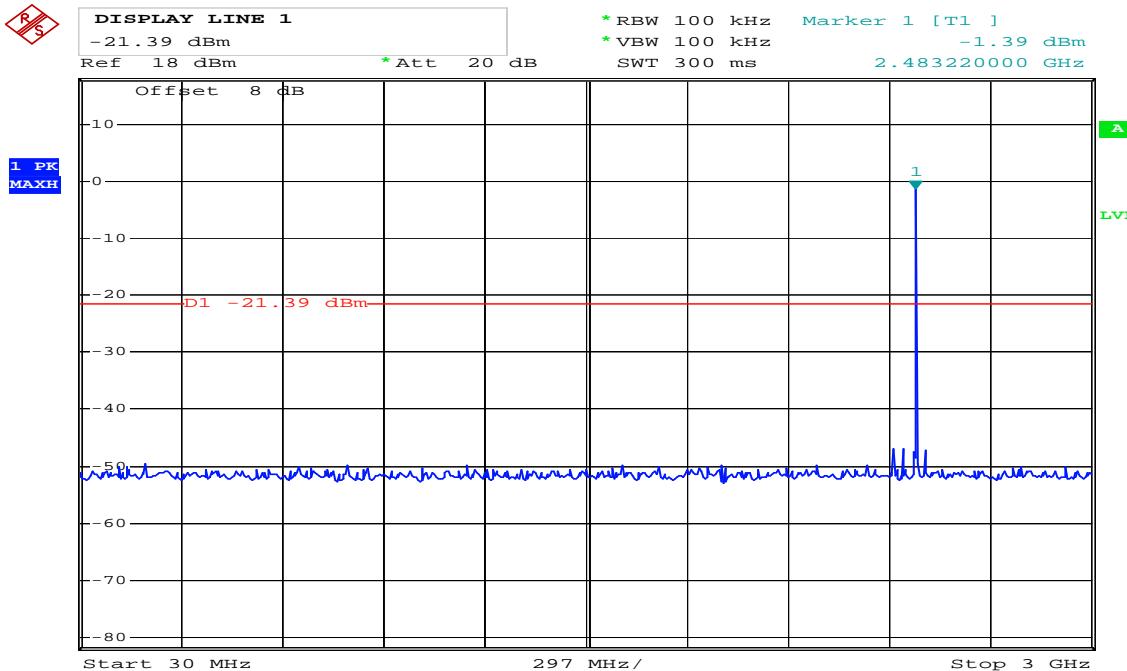
## Ch Mid 3GHz – 26.5GHz



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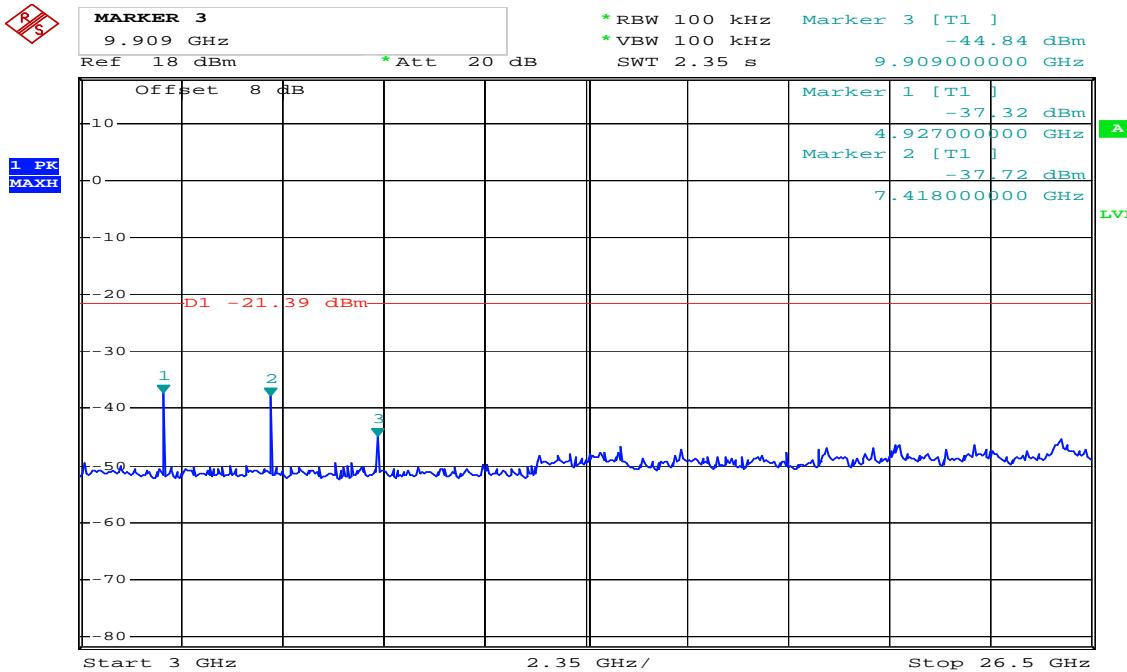
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## Ch High 30MHz – 3GHz



Comment: 1  
Date: 3.NOV.2008 12:05:31

## Ch High 3GHz – 26.5GHz



Comment: 1  
Date: 3.NOV.2008 12:06:26

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**Radiated Spurious Emission Measurement Result (below 1GHz)**

Operation Mode	TX CH Low	Test Date	Oct. 31, 2008
Fundamental Frequency	2402MHz	Test By	Arno
Temperature	25 °C	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)
58.13	V	Peak	56.51	-26.67	29.84	40.00	-10.16
286.08	V	Peak	56.76	-28.84	27.92	46.00	-18.08
383.08	V	Peak	45.72	-26.33	19.39	46.00	-26.61
449.04	V	Peak	46.30	-25.00	21.30	46.00	-24.70
877.78	V	Peak	53.86	-19.36	34.50	46.00	-11.50
950.53	V	Peak	58.58	-18.39	40.19	46.00	-5.81
96.93	H	Peak	53.26	-30.63	22.63	43.50	-20.87
286.08	H	Peak	57.87	-28.84	29.03	46.00	-16.97
383.08	H	Peak	47.99	-26.33	21.66	46.00	-24.34
512.09	H	Peak	49.60	-24.54	25.06	46.00	-20.94
877.78	H	Peak	58.29	-19.36	38.93	46.00	-7.07
945.68	H	Peak	57.94	-18.42	39.52	46.00	-6.48

**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 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.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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**Radiated Spurious Emission Measurement Result (below 1GHz)**

Operation Mode	TX CH Mid	Test Date	Oct. 31, 2008
Fundamental Frequency	2441MHz	Test By	Arno
Temperature	25 °C	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)
58.13	V	Peak	56.20	-26.67	29.53	40.00	-10.47
96.93	V	Peak	53.97	-30.63	23.34	43.50	-20.16
286.08	V	Peak	56.75	-28.84	27.91	46.00	-18.09
383.08	V	Peak	46.73	-26.33	20.40	46.00	-25.60
877.78	V	Peak	54.43	-19.36	35.07	46.00	-10.93
950.53	V	Peak	58.53	-18.39	40.14	46.00	-5.86
96.93	H	Peak	54.76	-30.63	24.13	43.50	-19.37
286.08	H	Peak	56.48	-28.84	27.64	46.00	-18.36
383.08	H	Peak	44.41	-26.33	18.08	46.00	-27.92
555.74	H	Peak	45.76	-23.61	22.15	46.00	-23.85
877.78	H	Peak	55.33	-19.36	35.97	46.00	-10.03
953.44	H	Peak	57.34	-18.38	38.96	46.00	-7.04

**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 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.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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**Radiated Spurious Emission Measurement Result (below 1GHz)**

Operation Mode	TX CH High	Test Date	Oct. 31, 2008
Fundamental Frequency	2480MHz	Test By	Arno
Temperature	25 °C	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)
58.13	V	Peak	56.20	-26.67	29.53	40.00	-10.47
104.69	V	Peak	53.95	-29.90	24.05	43.50	-19.45
286.08	V	Peak	55.49	-28.84	26.65	46.00	-19.35
555.74	V	Peak	45.27	-23.61	21.66	46.00	-24.34
877.78	V	Peak	53.89	-19.36	34.53	46.00	-11.47
950.53	V	Peak	59.01	-18.39	40.62	46.00	-5.38
96.93	H	Peak	53.29	-30.63	22.66	43.50	-20.84
286.08	H	Peak	56.36	-28.84	27.52	46.00	-18.48
352.04	H	Peak	46.13	-27.15	18.98	46.00	-27.02
512.09	H	Peak	49.00	-24.54	24.46	46.00	-21.54
877.78	H	Peak	54.69	-19.36	35.33	46.00	-10.67
950.53	H	Peak	58.06	-18.39	39.67	46.00	-6.33

**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 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.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode TX CH Low  
 Fundamental Frequency 2402 MHz  
 Temperature 25 °C  
 Humidity 65 %

Test Date Oct. 31, 2008  
 Test By Arno  
 Pol Ver.

Freq. (MHz)	Peak	AV	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)		
4804.0	45.64	---	-8.11	37.53	---	74.00	54.00	-16.47 Peak
7206.0	----					74.00	54.00	
9608.0	----					74.00	54.00	
12010.0	----					74.00	54.00	
14412.0	----					74.00	54.00	
16814.0	----					74.00	54.00	
19216.0	----					74.00	54.00	
21618.0	----					74.00	54.00	
24020.0	----					74.00	54.00	

**Remark :**

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) 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.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode TX CH Low Test Date Oct. 31, 2008  
Fundamental Frequency 2402 MHz Test By Arno  
Temperature 25 °C Pol Hor.  
Humidity 65 %

Freq. (MHz)	Peak	AV	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)			
4804.0	45.21	---	-8.11	37.10	---	74.00	54.00	-16.90 Peak
7206.0	----					74.00	54.00	
9608.0	----					74.00	54.00	
12010.0	----					74.00	54.00	
14412.0	----					74.00	54.00	
16814.0	----					74.00	54.00	
19216.0	----					74.00	54.00	
21618.0	----					74.00	54.00	
24020.0	----					74.00	54.00	

**Remark :**

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) 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.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode TX CH Mid Test Date Oct. 31, 2008  
Fundamental Frequency 2441 MHz Test By Arno  
Temperature 25 °C Pol Ver.  
Humidity 65 %

Freq. (MHz)	Peak	AV	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)			
4882.0	42.60	---	-8.02	34.58	---	74.00	54.00	-19.42 Peak
7323.0	----					74.00	54.00	
9764.0	----					74.00	54.00	
12205.0	----					74.00	54.00	
14646.0	----					74.00	54.00	
17087.0	----					74.00	54.00	
19528.0	----					74.00	54.00	
21969.0	----					74.00	54.00	
24410.0	----					74.00	54.00	

**Remark :**

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) 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.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode TX CH Mid Test Date Oct. 31, 2008  
Fundamental Frequency 2441 MHz Test By Arno  
Temperature 25 °C Pol Hor.  
Humidity 65 %

Freq. (MHz)	Peak	AV	Actual FS		Peak	AV	Margin (dB)	Remark
	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)		
4882.0	42.39	---	-8.02	34.37	---	74.00	54.00	-19.63 Peak
7323.0	----					74.00	54.00	
9764.0	----					74.00	54.00	
12205.0	----					74.00	54.00	
14646.0	----					74.00	54.00	
17087.0	----					74.00	54.00	
19528.0	----					74.00	54.00	
21969.0	----					74.00	54.00	
24410.0	----					74.00	54.00	

**Remark :**

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) 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.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode TX CH High Test Date Oct. 31, 2008  
Fundamental Frequency 2480 MHz Test By Arno  
Temperature 25 °C Pol Ver.  
Humidity 65 %

Freq. (MHz)	Peak	AV	Actual FS		Peak	AV	Margin	(dB)	Remark
	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)				
4960.0	42.53	---	-5.87	36.66	---	74.00	54.00	-17.34	Peak
7440.0	----					74.00	54.00		
9920.0	----					74.00	54.00		
12400.0	----					74.00	54.00		
14880.0	----					74.00	54.00		
17360.0	----					74.00	54.00		
19840.0	----					74.00	54.00		
22320.0	----					74.00	54.00		
24800.0	----					74.00	54.00		

**Remark :**

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) 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.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode TX CH High Test Date Oct. 31, 2008  
Fundamental Frequency 2480 MHz Test By Arno  
Temperature 25 °C Pol Hor.  
Humidity 65 %

Freq. (MHz)	Peak	AV	Actual FS		Peak	AV	Margin	(dB)	Remark
	Reading (dBuV)	Reading (dBuV)	Ant./CL CF(dB)	Peak (dBuV/m)	AV (dBuV/m)				
4960.0	42.43	---	-5.87	36.56	---	74.00	54.00	-17.44	Peak
7440.0	----					74.00	54.00		
9920.0	----					74.00	54.00		
12400.0	----					74.00	54.00		
14880.0	----					74.00	54.00		
17360.0	----					74.00	54.00		
19840.0	----					74.00	54.00		
22320.0	----					74.00	54.00		
24800.0	----					74.00	54.00		

**Remark :**

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) 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.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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## 10. FREQUENCY SEPARATION

### 10.1. Standard Applicable

According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by minimum of 25KHz or the 2/3\*20dB bandwidth of the hopping channel, whichever is greater.

### 10.2. Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = middle of hopping channel .
4. Set the spectrum analyzer as RBW,VBW=100KHz, Adjust Span to 5 MHz, Sweep = auto.
5. Max hold. Mark 3 Peaks of hopping channel and record the 3 peaks frequency.

### 10.3. Measurement Result

Channel separation	Limit	Result
MHz	kHz	
1	>=25KHz or 2/3* 20 dB bandwidth	PASS

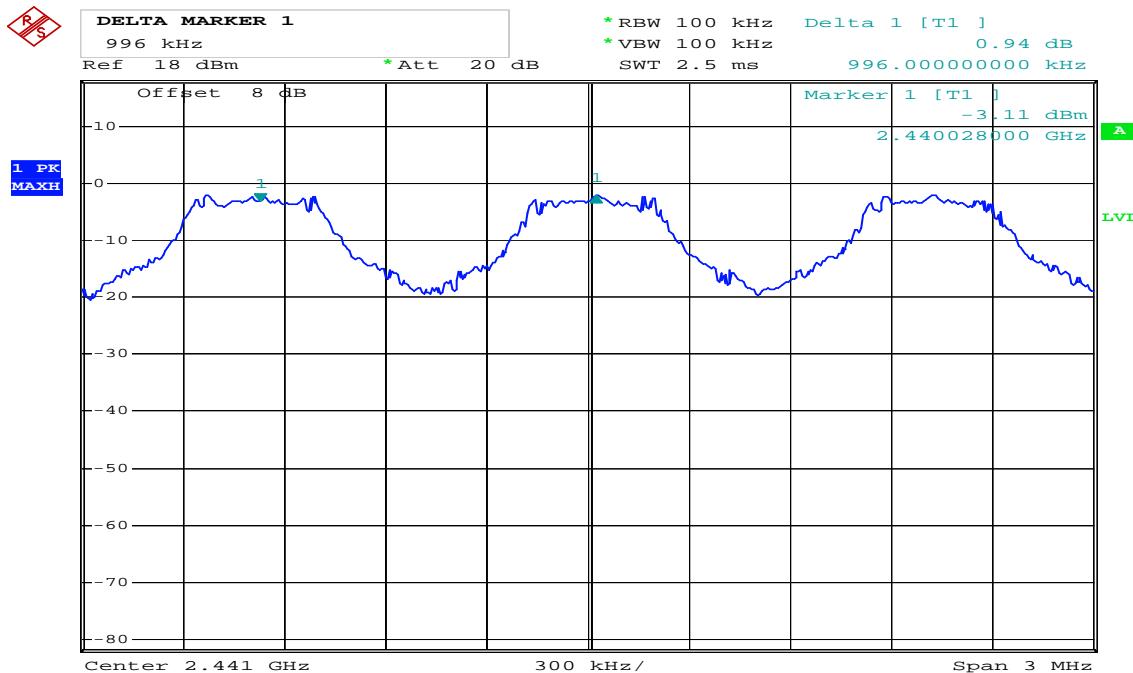
### 10.4. Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2008	07/03/2009
Spectrum Analyzer	R&S	FSP 40	100034	02/22/2008	02/21/2009
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	02/13/2008	02/12/2009
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009

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## Frequency Separation Test Data



Comment: 1  
Date: 31.OCT.2008 18:51:07

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## 11. NUMBER OF HOPPING FREQUENCY

### 11.1. Standard Applicable

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands shall use at least 15 hopping frequencies.

### 11.2. Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set spectrum analyzer Start=2400MHz, Stop = 2483.5MHz, Sweep = auto.
4. Set the spectrum analyzer as RBW,VBW=100KHz,
5. Max hold, view and count how many channel in the band.

### 11.3. Measurement Result

Total No of hopping channel	Limit (CH)	Measurement result (CH)	Result
	15	79	Pass

### 11.4. Measurement Equipment Used:

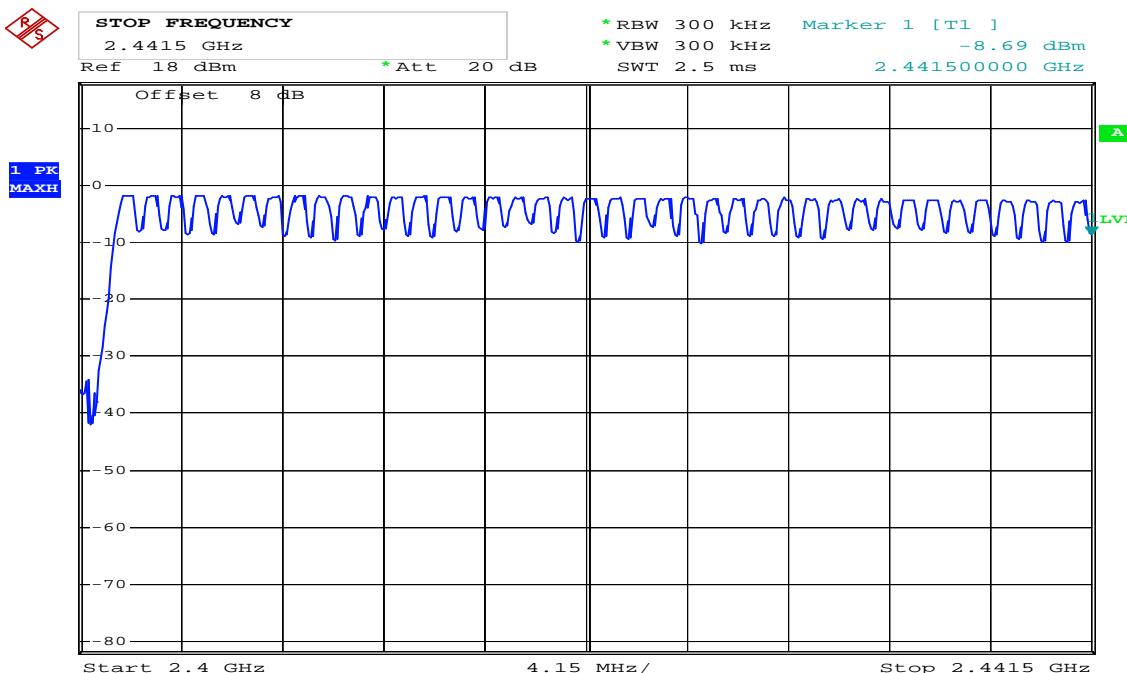
Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2008	07/03/2009
Spectrum Analyzer	R&S	FSP 40	100034	02/22/2008	02/21/2009
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	02/13/2008	02/12/2009
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009

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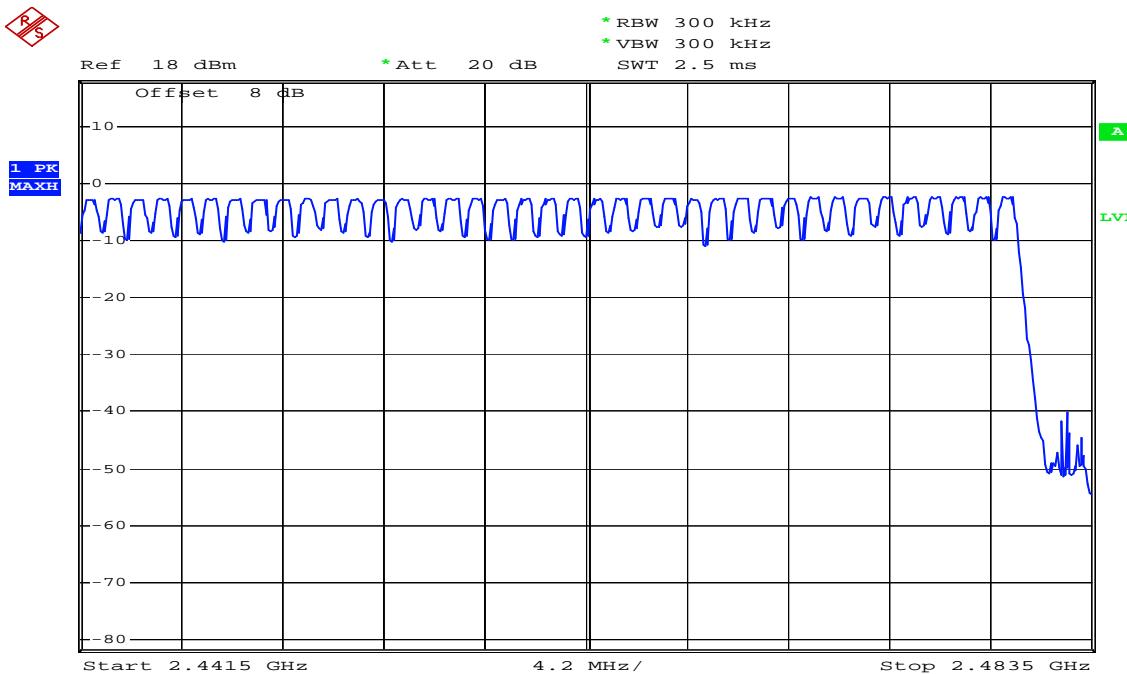
## Channel Number

### 2.4 GHz - 2.441GHz



Comment: 1  
Date: 31.OCT.2008 18:32:44

### 2.441 GHz - 2.4835GHz



Comment: 1  
Date: 31.OCT.2008 18:33:23

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## 12. TIME OF OCCUPANCY (DWELL TIME)

### 12.1. Standard Applicable

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz. The average time of occupancy on any frequency shall not greater than 0.4 s within period of 0.4 seconds multiplied by the number of hopping channel employed.

### 12.2. Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW,VBW=100KHz, Span = 0Hz , Adjust Sweep = 30s.
5. Repeat above procedures until all frequency measured were complete.

### 12.3. Measurement Result

A period time = 0.4 (ms) \* 79 = 31.6 (s)

CH Low:      DH1 time slot = 0.405 (ms) \* (1600/(1\*79)) \* 31.6 = 259.2 (ms)  
                  DH3 time slot = 1.675 (ms) \* (1600/(3\*79)) \* 31.6 = 357.3 (ms)  
                  DH5 time slot = 2.925 (ms) \* (1600/(5\*79)) \* 31.6 = 374.4 (ms)

CH Mid:      DH1 time slot = 0.405 (ms) \* (1600/(1\*79)) \* 31.6 = 259.2 (ms)  
                  DH3 time slot = 1.675 (ms) \* (1600/(3\*79)) \* 31.6 = 357.3 (ms)  
                  DH5 time slot = 2.906 (ms) \* (1600/(5\*79)) \* 31.6 = 371.9 (ms)

CH High:      DH1 time slot = 0.405 (ms) \* (1600/(1\*79)) \* 31.6 = 259.2 (ms)  
                  DH3 time slot = 1.662 (ms) \* (1600/(3\*79)) \* 31.6 = 354.5 (ms)  
                  DH5 time slot = 2.906 (ms) \* (1600/(5\*79)) \* 31.6 = 371.9 (ms)

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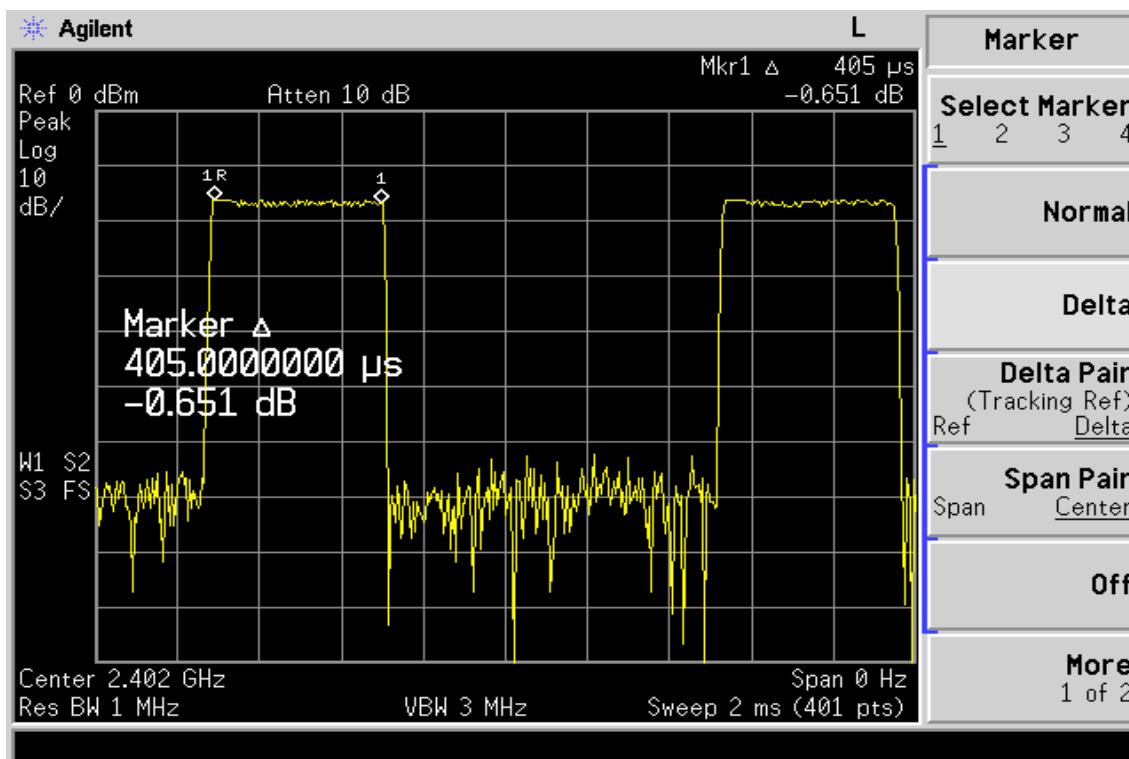
## 12.4. Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2008	07/03/2009
Spectrum Analyzer	R&S	FSP 40	100034	02/22/2008	02/21/2009
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	02/13/2008	02/12/2009
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009

## Dwell Time Test Data

*CH-Low*

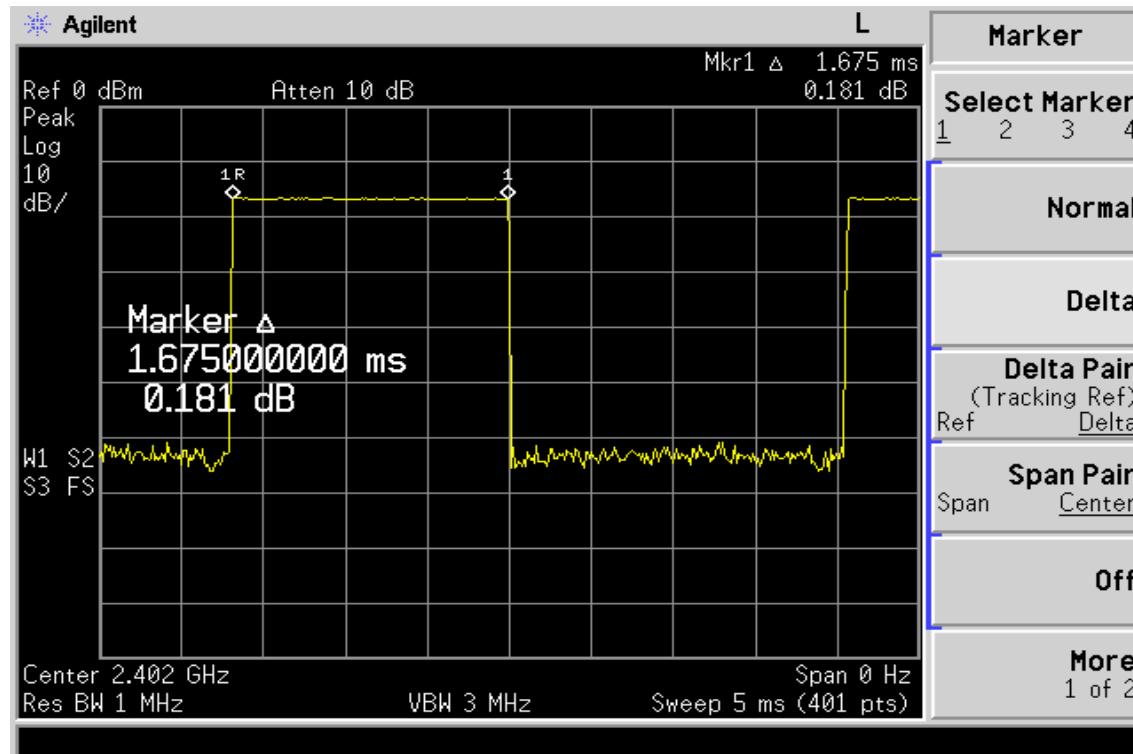
*DH1*



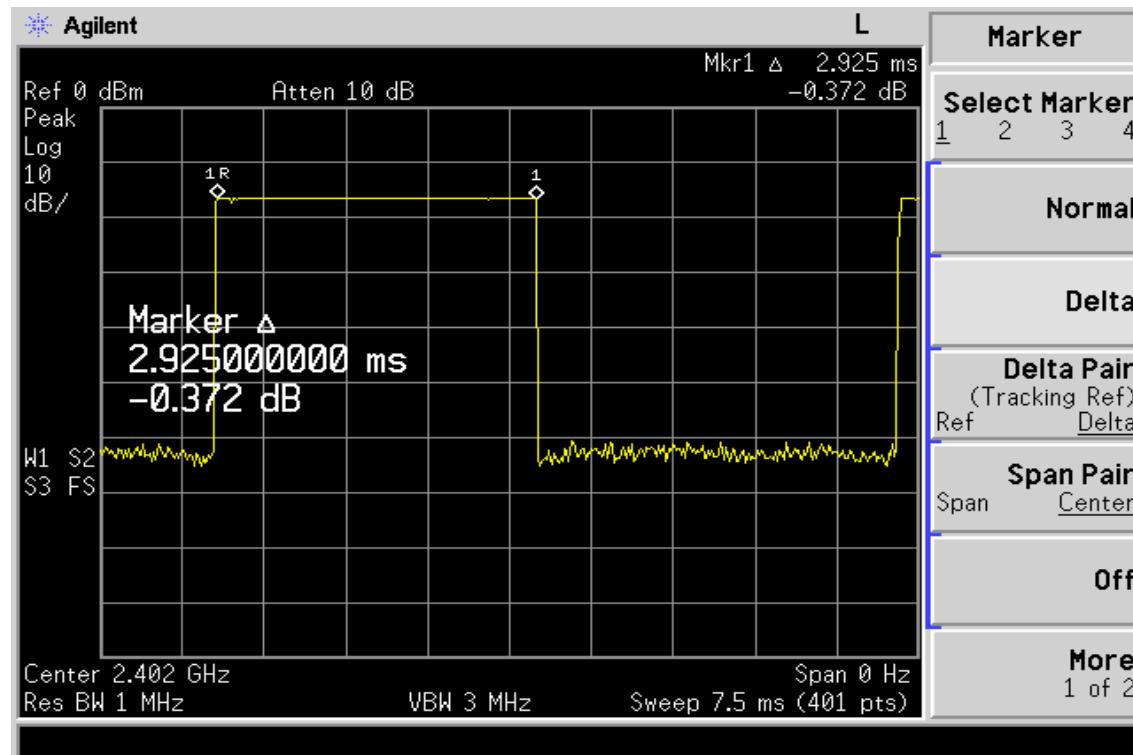
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### DH3

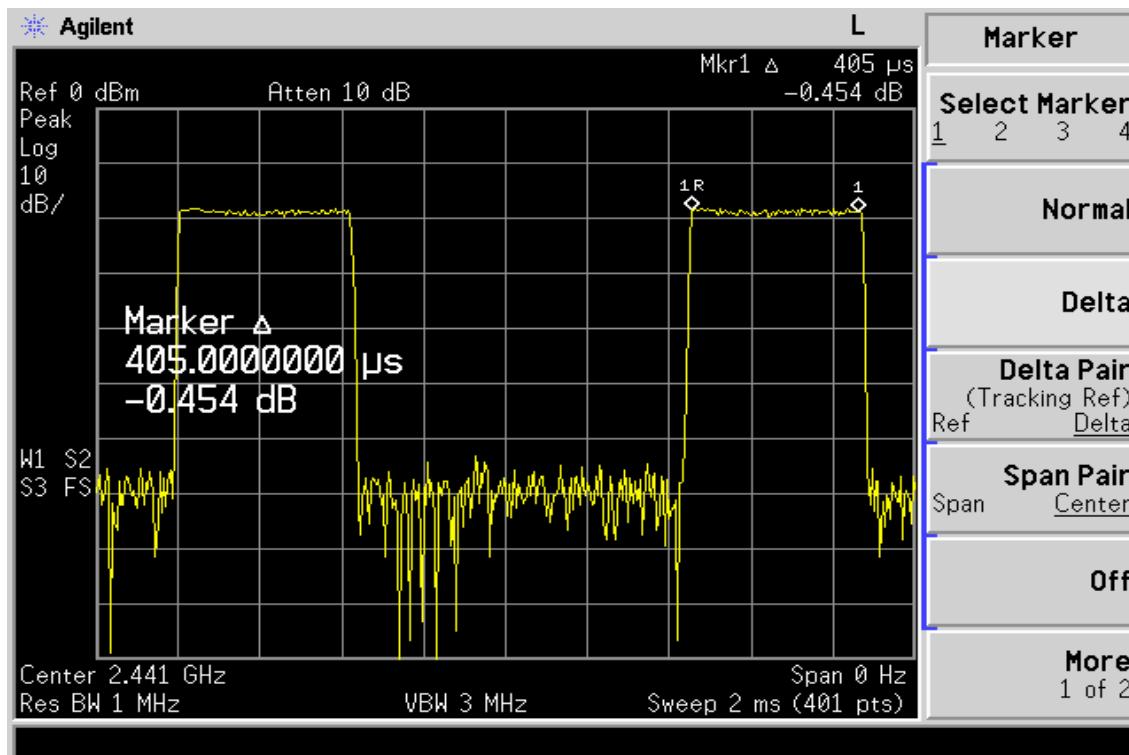
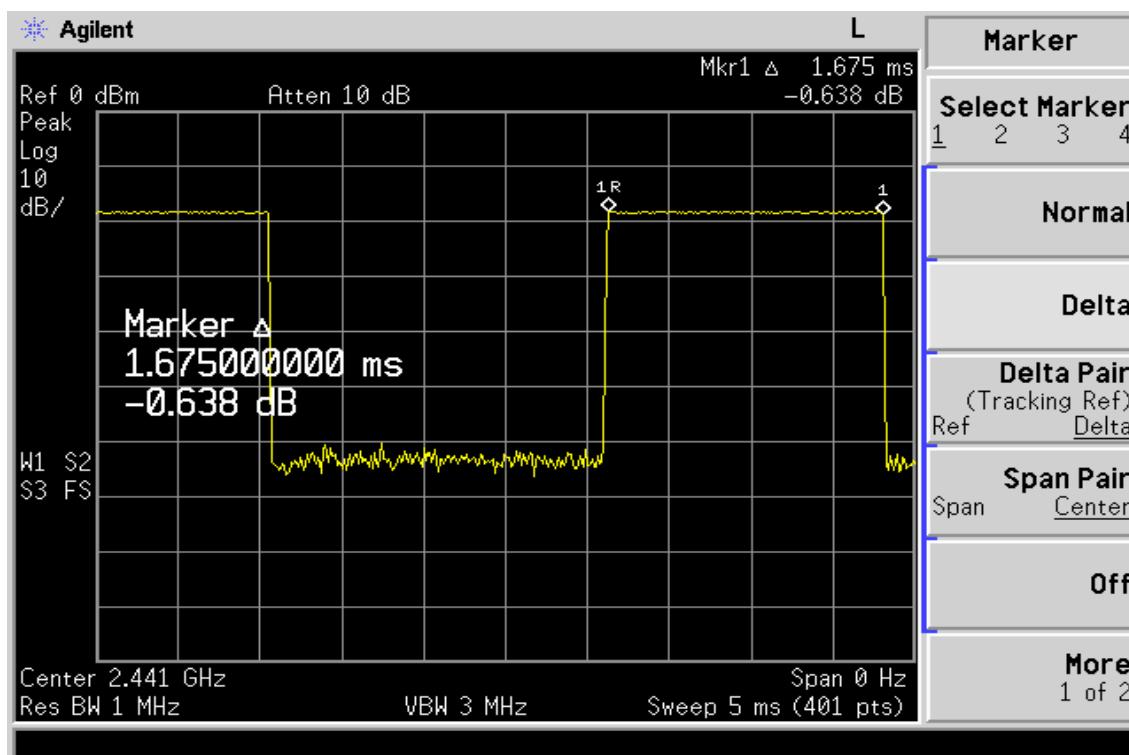


### DH5



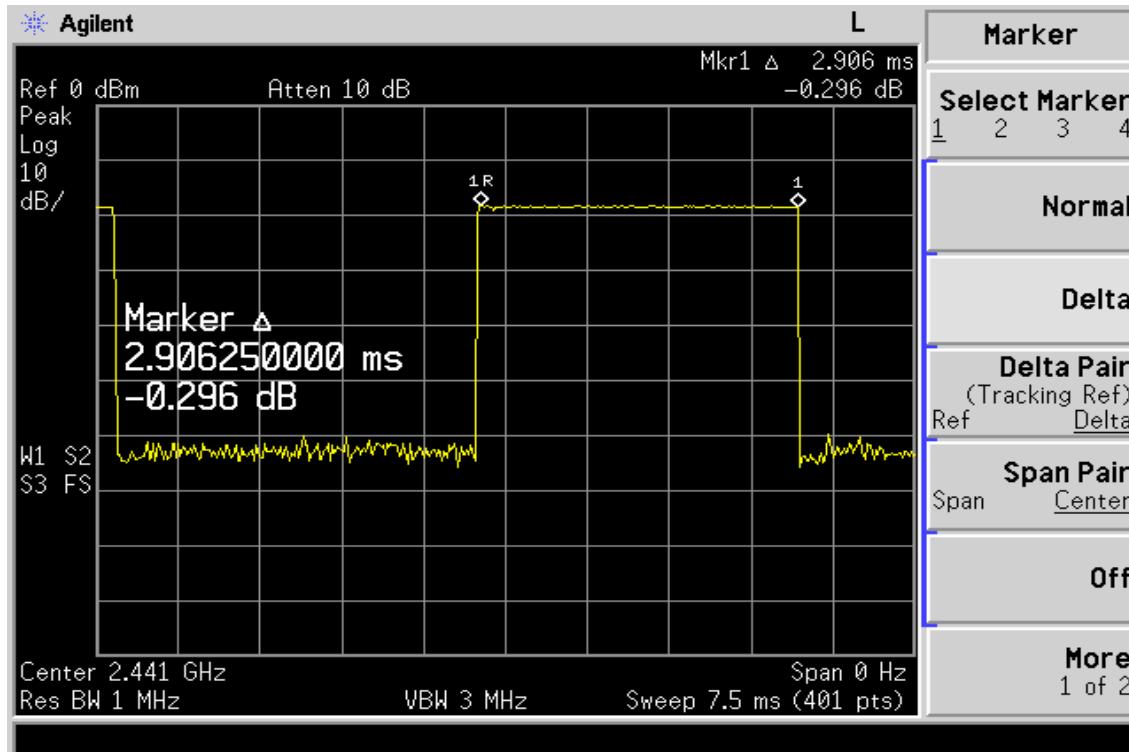
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**CH-Mid**
**DH1**

**DH3**


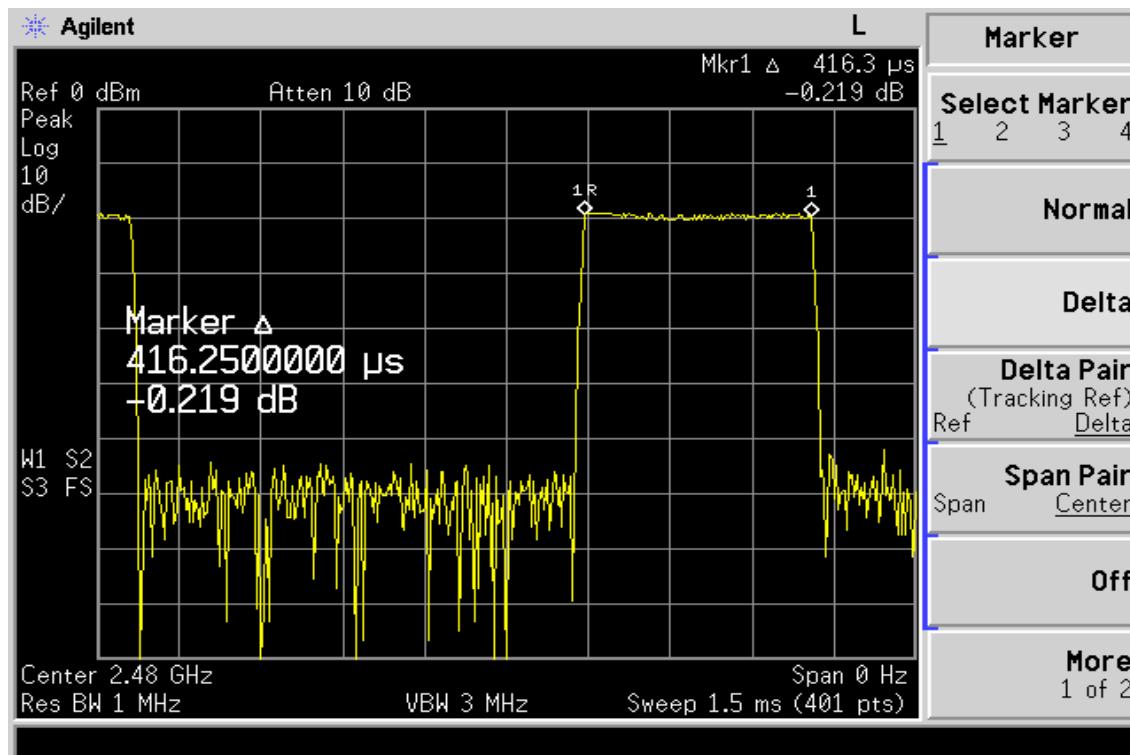
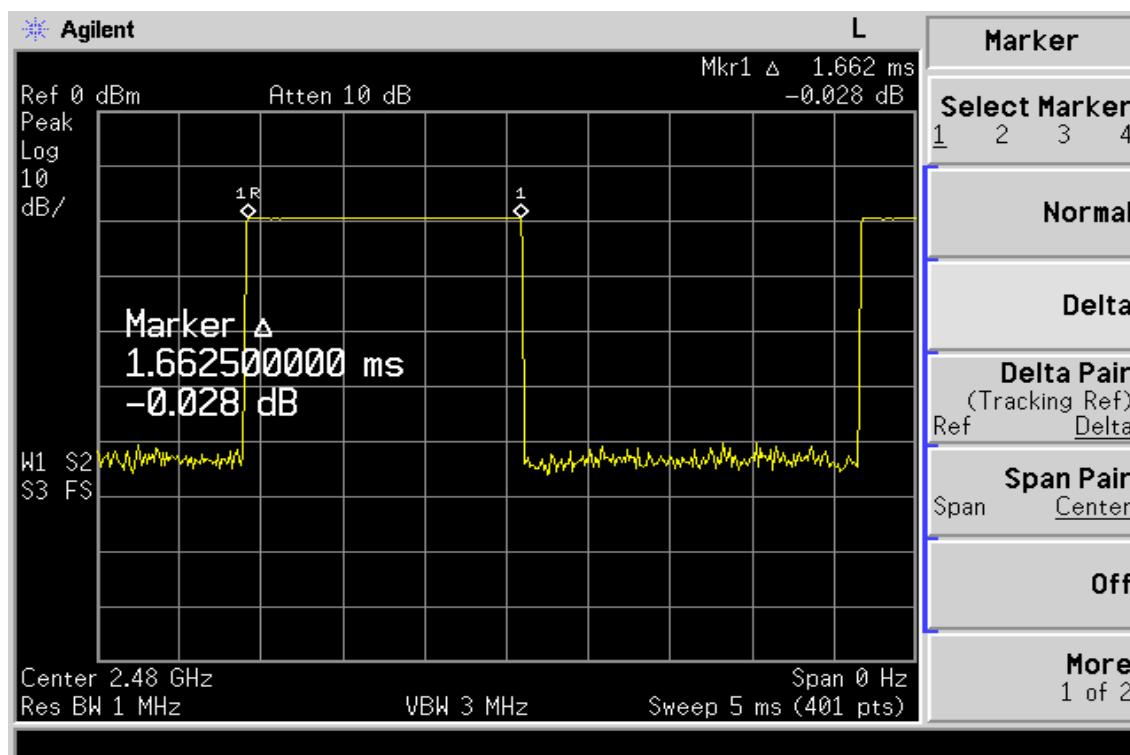
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**DH5**

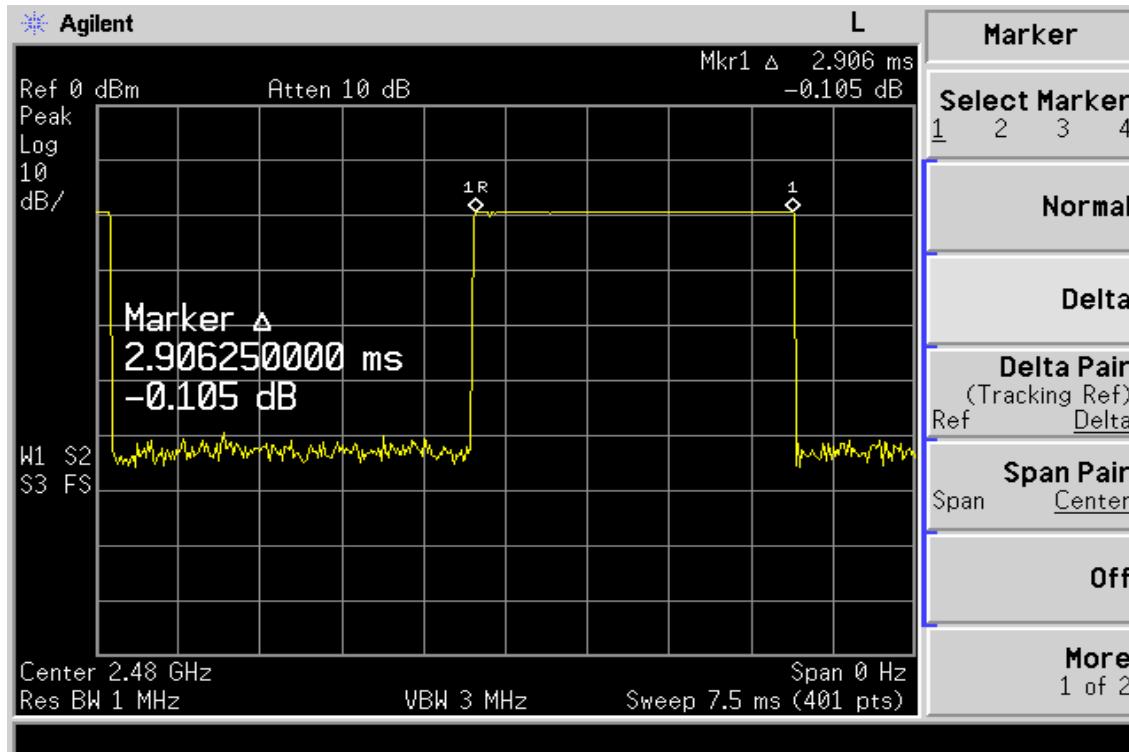
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**CH-High**
**DH1**

**DH3**


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**DH5**

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## 13. Peak Power Spectral Density

### 13.1. Standard Applicable

According to §15.247(d), for direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3kHz band during any time interval of continuous transmission.

### 13.2. Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 3KHz, VBW = 10KHz, Span = 300KHz, Sweep=100s
4. Record the max. reading.
5. Repeat above procedures until all frequency measured were complete.

### 13.3. Measurement Result (EDR Mode)

CH	RF Power Density Reading (dBm)	Cable loss (dB)	RF Power Density Level (dBm)	Maximum Limit (dBm)
Low	-7.61	0.10	-7.51	8
Mid	-8.43	0.10	-8.33	8
High	-8.19	0.10	-8.09	8

\*Note: Offset 8dB

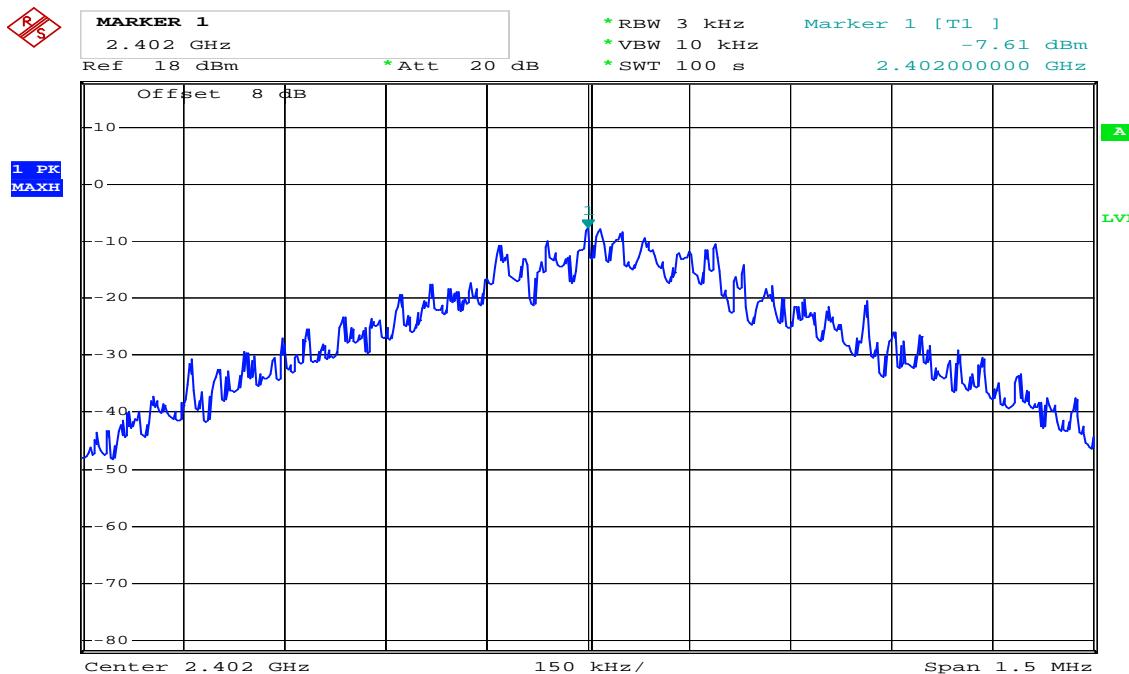
### 13.4. Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2008	07/03/2009
Spectrum Analyzer	R&S	FSP 40	100034	02/22/2008	02/21/2009
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	02/13/2008	02/12/2009
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009

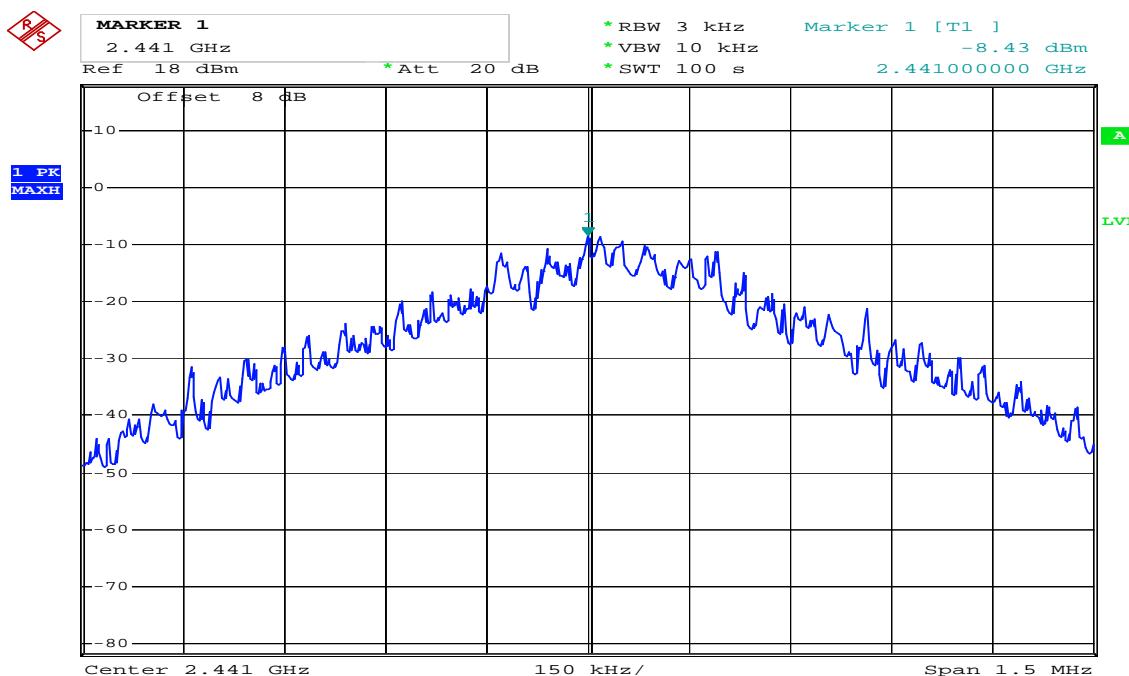
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## Power Spectral Density Test Plot (CH-Low)

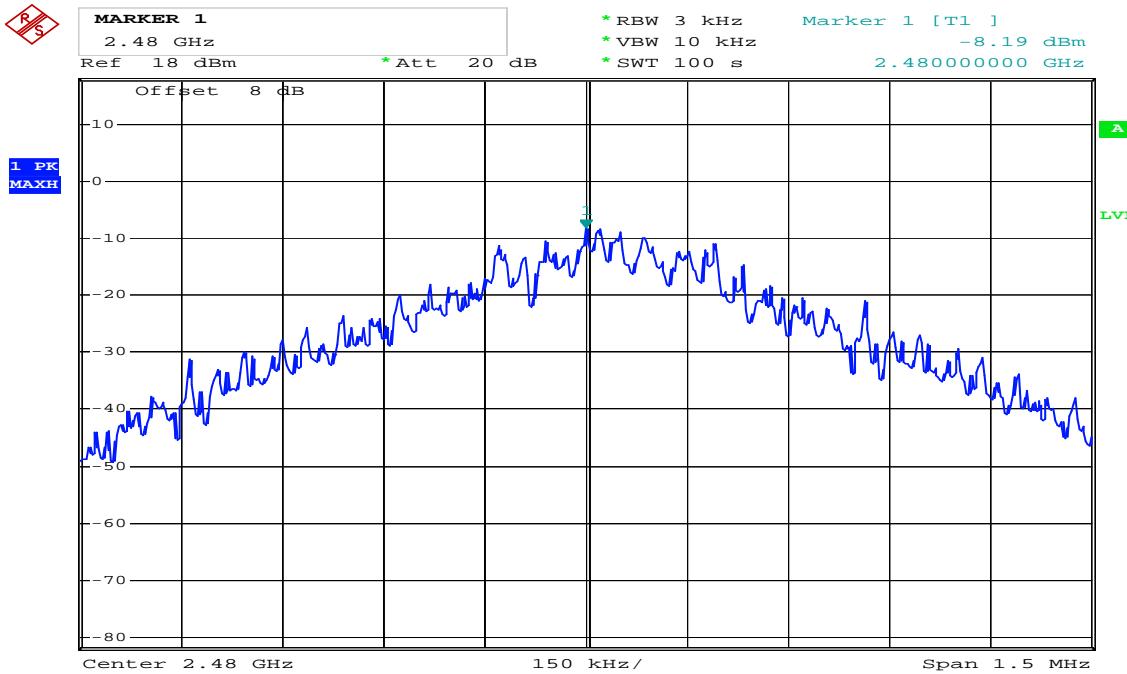


## Power Spectral Density Test Plot (CH-Mid)



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**Power Spectral Density Test Plot (CH-High)**

Comment: 1  
Date: 31.OCT.2008 19:06:08

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## 14. ANTENNA REQUIREMENT

### 14.1. Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

And according to §15.247(4)(1), system operating in the 2400-2483.5MHz bands that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

### 14.2. Antenna Connected Construction

The directional gains of antenna used for transmitting is 2.0dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

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