

Report No.: EH/2008/C0032 Issue Date: Jan. 09, 2009

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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

Product Name: PDA Phone

Brand Name: HTC

Model Name: HT-03A

Model Difference: N/A

FCC ID: NM8SPRD

EH/2008/C0032 **Report No.:**

Issue Date: Jan. 09, 2009

FCC Rule Part: §15.247, Cat: DSS

Prepared for: HTC Corporation

No. 23 Xinghua Rd., Taoyuan City, Taoyuan

County 330, Taiwan, ROC

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: HTC Corporation

No. 23 Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan,

ROC

Equipment Under Test: PDA Phone

Brand Name: HTC

Model No.: HT-03A

Model Difference: N/A

FCC ID: NM8SPRD

File Number: EH/2008/C0032

Date of test: Dec. 22, 2008 ~ Jan. 08, 2009

Date of EUT Received: Dec. 22, 2008

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 15.247.

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

Test By:	Brean Chang	Date:	Jan. 09, 2009	
	Brian Chang / Engineer			
Prepared By:	Gigi yeh	Date:	Jan. 09, 2009	
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Approved By:	Timent Su	Date:	Jan. 09, 2009	
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Version

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1. GENERAL INFORMATION

General:

Jenerui.			
Product Name	PDA Phone		
Brand Name	HTC		
Model Name	HT-03A		
Model Difference	N/A		
Data Cable (USB)	Model No.: DC U200, Supplier: ACON, MEC		
3.5mm Audio adapter Cable	Model No.: AC A100, Supplier: Cotron		
Mini USB ARIB converter	Model: No: AC J001, Supplier: MEC		
	3.7 Vdc re-cl	hargeable battery or 5Vdc by AC/DC power adapter	
Power Supply	Battery:	Model: SAPP160 Supplier: Total Wireless Solutions(TWS), WELLDONE	
	Adapter:	Model No(US).: PSAA05A-050 Supplier: PHIHONG	

GSM and WCDMA:

USIVI and WEDIVIA.	Operating Frequency				
	GSM/GPRS/EDGE 850 Class 12	824.2 MHz– 848.8 MHz	33 dBm		
	GSM/GPRS/EDGE 900 Class 12	880.2MHz – 914.8MHz	33 dBm		
Cellular Phone Standards	GSM/GPRS/EDGE 1800 Class 12	/EDGE 1800 1710.2MHz-1784.8MHz	30 dBm		
Frequency Range and Power	GSM/GPRS/EDGE 1900 Class 12	1850.2MHz – 1909.8MHz	30 dBm		
	WCDMA/HSUPA/HSDPA Band I	1922.4MHz – 1977.6MHz	24 dBm		
	WCDMA/HSUPA/HSDPA Band VI	830MHz – 840MHz	24 dBm		
	GSM 850: 246KGXW				
Type of Emission	GSM 1900 :247KGXW				
Type of Emission	EDGE 850: 245KG7W				
	EDGE 1900:246KG7W	EDGE 1900:246KG7W			
IMEI	3580980200150550				

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WL	Δ	N	•
* * L	⊿∕	LN	

Frequency Range:	2412 – 2462 MHz
Channel number:	11 channels
Max. Output Power:	802.11 b: 17.05 dBm (Peak) 802.11 g: 17.04dBm (Peak)
Modulation Technology:	DSSS, OFDM
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM. 16QAM, QPSK, BPSK for OFDM
Transition Rate:	802.11 b: 1/2/5.5/11 Mbps; 802.11 g: 6/9/12/18/24/36/48/54 Mbps
Antenna Designation:	PIFA Antenna / 1.1dBi.
Type of Emission	16M4M5D

The EUT is compliance with IEEE 802.11 b/g Standard.

Bluetooth:

Bluetooth Ver.sion	 □ V1.1 (GFSK) □ V1.2 (GFSK) □ V2.0 (GFSK) □ V2.0 + EDR (GFSK + /4DQPSK + 8DPSK) □ V2.1 + EDR (GFSK + /4DQPSK + 8DPSK) 		
Frequency Range	2402 – 2480MHz		
Channel number	79 channels max.		
Rated Power	0.05 dBm (Peak)		
Modulation type	Frequency Hopping Spread Spectrum		
Antenna Designation	PIFA Antenna / 1.1dBi.		
Type of Emission	1M38F2D		

The EUT is compliance with Bluetooth 2.0 Standard. This 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: NM8SPRD 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-1

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 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.

2.3.2 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 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 AC Power line and Radiated Emission Configuration

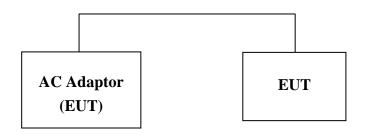


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1	BT Software	N/A	BT Test	N/A	N/A	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 Fre-	Compliant
	quency Band Edges	
§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,	Antenna Requirement	Compliant
§15.247(b)(4)(i)		

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, Mid and High with BDR / EDR modes were chosen for full testing.

The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for Bluetooth Transmitter for channel Low, Mid and High the worst case H position 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	Limits dB(uV)				
MHz	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

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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^{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.



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5.4. Measurement Equipment Used:

Conducted Emission Test Site									
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
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-50/250-25-2-01	04034	02/18/2008	02/17/2009				
Coaxial Cables	N/A	WK CE Cable	N/A	10/30/2008	10/29/2009				

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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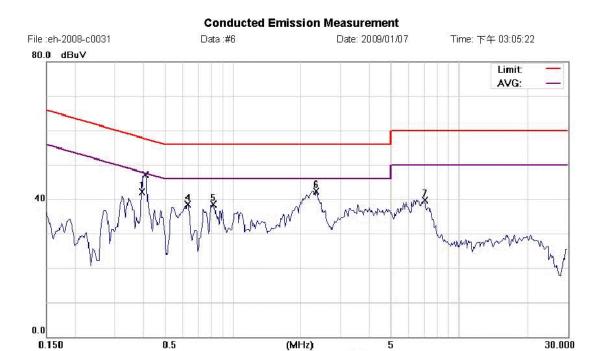


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AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	BT+ WLAN			Test Date:	Jan. 07, 2009
Temperature:	23	Humidity:	56 %	Test By:	Brian



Site SGS CONDUCTED #1

Limit: CISPR22/11 Class B Conduction(QP)

EUT: PDA Phone M/N: SAPP200

Note: WIFI+BTLINK MODE

Phase: L1 AC120V/60Hz Power: Humidity: 56 % Distance: Air Pressure: hpa

Temperature:

23 °C

No. Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBu∀	dBuV	dB	Detector	Comment
1	0.3950	41.93	0.09	42.02	57.96	-15.94	peak	
2	0.4100	42.10	0.09	42.19	57.65	-15.46	QP	
3	0.4100	29.80	0.09	29.89	47.65	-17.76	AVG	
4	0.6300	38.46	0.05	38.51	56.00	-17.49	peak	
5	0.8200	38.55	0.05	38.60	56.00	-17.40	peak	
6 *	2.3300	42.26	0.04	42.30	56.00	-13.70	peak	
7	7.0400	39.69	0.10	39.79	60.00	-20.21	peak	

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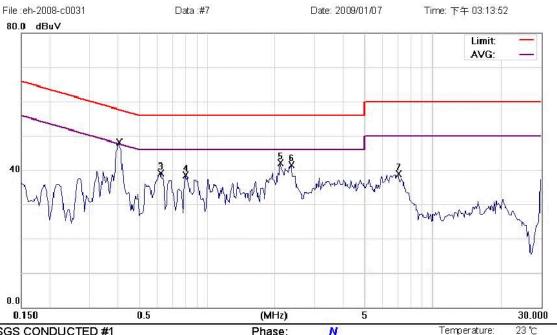
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Humidity: Air Pressure:

hpa

Conducted Emission Measurement



Site SGS CONDUCTED #1

Limit: CISPR22/11 Class B Conduction(QP)

EUT: PDA Phone M/N: SAPP200

Note: WIFI+BTLINK MODE

No. MI	lk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBu∀	dBuV	dB	Detector	Comment
1 *	ž	0.4050	45.80	0.08	45.88	57.75	-11.87	QP	
2	3	0.4050	35.80	0.08	35.88	47.75	-11.87	AVG	
3	3	0.6200	39.03	0.05	39.08	56.00	-16.92	peak	
4	3	0.8000	38.39	0.04	38.43	56.00	-17.57	peak	
5		2.1000	42.12	0.03	42.15	56.00	-13.85	peak	
6	i i	2.3600	41.45	0.03	41.48	56.00	-14.52	peak	
7	13	7.0400	38.80	0.14	38.94	60.00	-21.06	peak	

Power:

Distance:

AC120V/60Hz

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PEAK OUTPUT POWER MEASUREMENT **6.**

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

BDR mode:

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2402.00	-0.01	0.00	-0.01	0.00100	1
2441.00	0.02	0.00	0.02	0.00100	1
2480.00	0.05	0.00	0.05	0.00101	1

EDR mode:

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2402.00	0.00	0.00	0.00	0.00100	1
2441.00	0.01	0.00	0.01	0.00100	1
2480.00	0.03	0.00	0.03	0.00101	1

NOTE: offset: 0.1dB

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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	07/04/2008	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	01/05/2009	01/04/2010			
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009			

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Peak Power Output Data Plot (CH Low) (BDR mode)



Peak Power Output Data Plot (CH Mid) (BDR mode)



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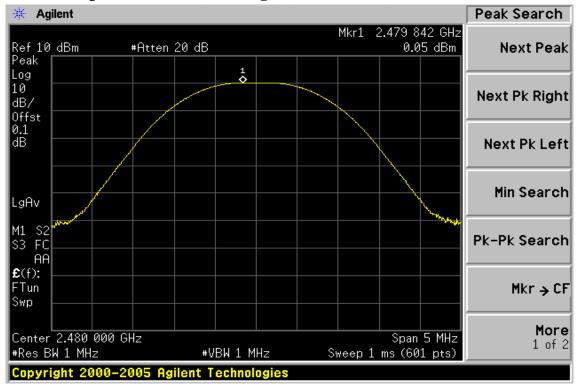
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Peak Power Output Data Plot (CH High) (BDR mode)



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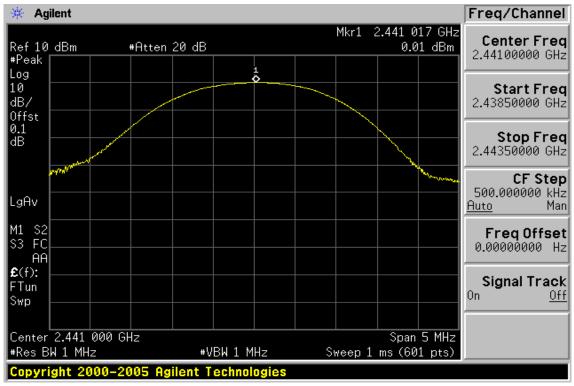
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Peak Power Output Data Plot (CH Low) (EDR mode)



Peak Power Output Data Plot (CH Mid) (EDR mode)



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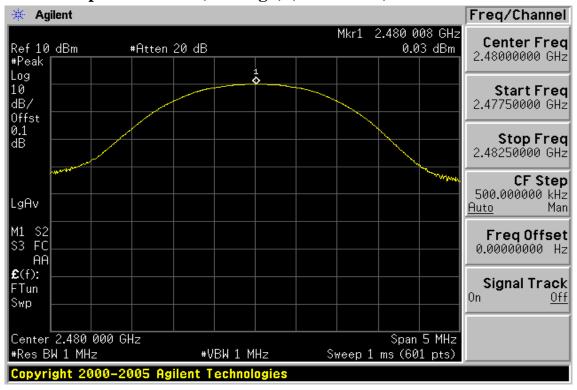
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Peak Power Output Data Plot (CH High) (EDR mode)



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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

BDR mode:

СН	20dB Bandwidth
	(MHz)
Lower	0.921
Mid	0.922
Higher	0.923

EDR mode:

СН	20dB Bandwidth	2/3 *20dB Bandwidth
	(MHz)	(MHz)
Lower	1.377	0.918
Mid	1.377	0.918
Higher	1.382	0.921

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7.4. Measurement Equipment Used:

77 I Transaction Equipment Court								
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	01/05/2009	01/04/2010			
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009			

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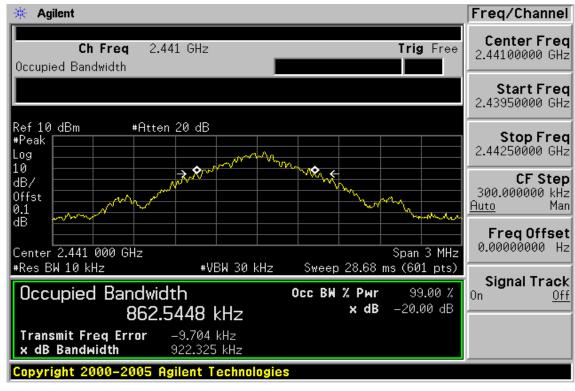
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20dB Band Width Test Data CH-Low (BDR mode)



20dB Band Width Test Data CH-Mid (BDR mode)



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20dB Band Width Test Data CH-High (BDR mode)



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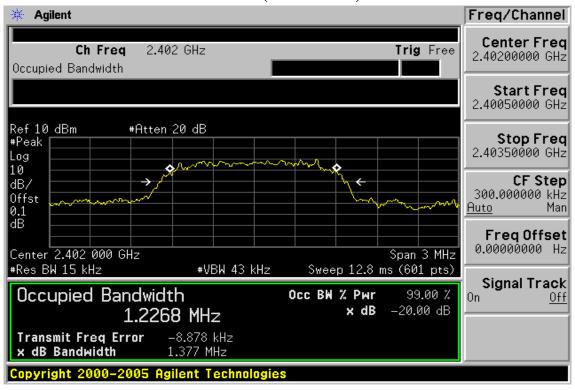
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20dB Band Width Test Data CH-Low (EDR mode)



20dB Band Width Test Data CH-Mid (EDR mode)



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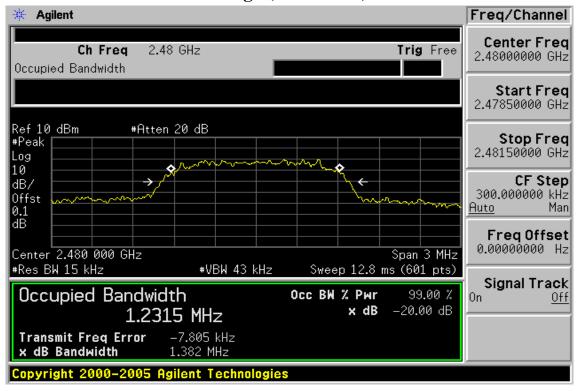
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20dB Band Width Test Data CH-High (EDR mode)



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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 in 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	MFR	MODEL	SERIAL	LAST	CAL DUE.			
ТҮРЕ		NUMBER	NUMBER	CAL.				
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	01/05/2009	01/04/2010			
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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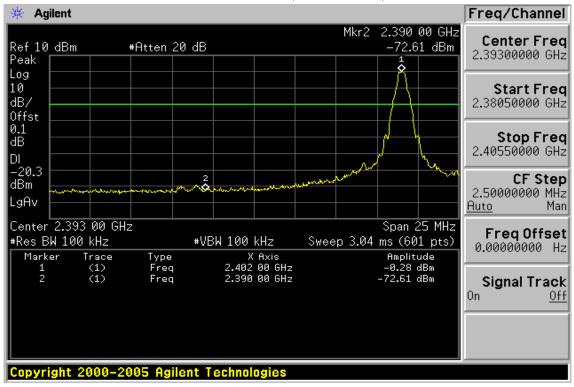
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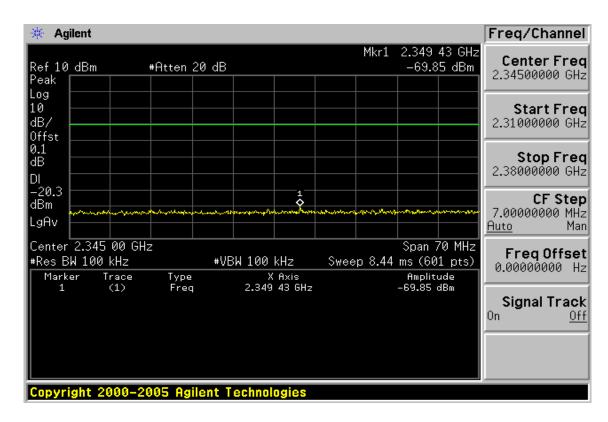


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Conducted Emission: Test Data CH-Low (BDR mode)





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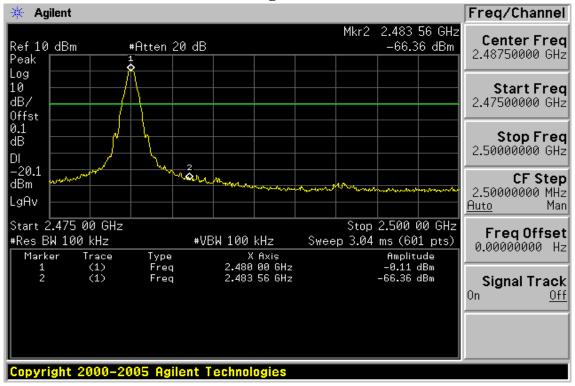
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Conducted Emission: Test Data CH-High



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Radiated Emission: (BDR mode)

Operation Mode TX CH Low Test Date Jan. 06, 2009

Fundamental Frequency 2402 MHz Test By Brian Temperature 25 °C Pol Ver.

Humidity 65 %

	Peak	$\mathbf{A}\mathbf{V}$		A ctu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	$(d\mathbf{p}_{\mathbf{u}}\mathbf{V})$	$(\mathbf{JD}_{\mathbf{u}}\mathbf{U})$	CE(AD)	(dDuV/m)	$(d\mathbf{p}_{11}\mathbf{V}/\mathbf{m})$	(dRuV/m)(dBuV/m	(dB)	
(WIII Z)	(ubuv)	(ubuv)	Cr (ub)	(uDu v /III)	(ubu v/III)	(uDu v/III)(ubu v/m	, (ub)	

Operation Mode TX CH Low Test Date Jan. 06, 2009

Fundamental Frequency 2402 MHz Test By Brian Temperature 25 Pol Hor.

Humidity 65 %

	Peak	$\mathbf{A}\mathbf{V}$		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{A}\mathbf{V}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m	(dBuV/m	(dB)	
2390.00	41.88		-10.76	31.12		74.00	54.00	-22.88	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_o
- (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: (BDR mode)

Operation Mode TX CH High Test Date Jan. 06, 2009

Fundamental Frequency 2480 MHz Test By Brian Temperature 25 Pol Ver.

Humidity 65 %

	Peak	$\mathbf{A}\mathbf{V}$		Actu	al FS	Peak	\mathbf{AV}		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m	O	Remark
2483.56	41.75		-10.46	31.29		74.00	54.00	-22.71	Peak
Operation	Mode	TX C	CH High			Test	Date	Jan. 06, 20	009
Fundamen	tal Freque	ncy 2480	MHz			Test	By	Brian	
Temperatu	re	25				Pol		Hor.	
Humidity		65 %							

		Peak	$\mathbf{A}\mathbf{V}$		Actu	al FS	Peak	$\mathbf{A}\mathbf{V}$		
	Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{A}\mathbf{V}$	Limit	Limit	Margin	Remark
	(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.56	41.60		-10.46	31.14		74.00	54.00	-22.86	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_o
- (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.

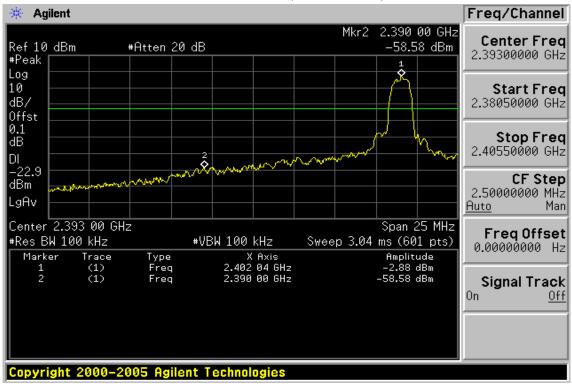
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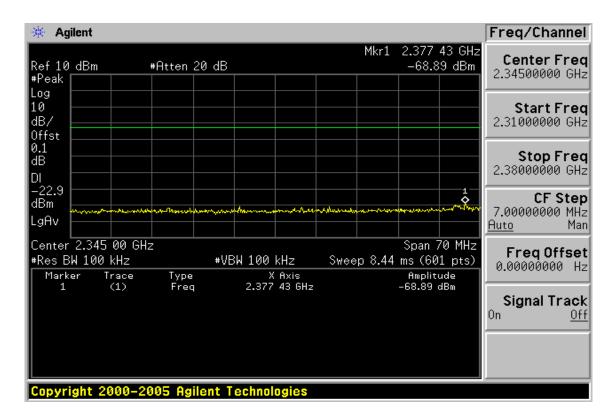


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Conducted Emission: Test Data CH-Low (EDR mode)





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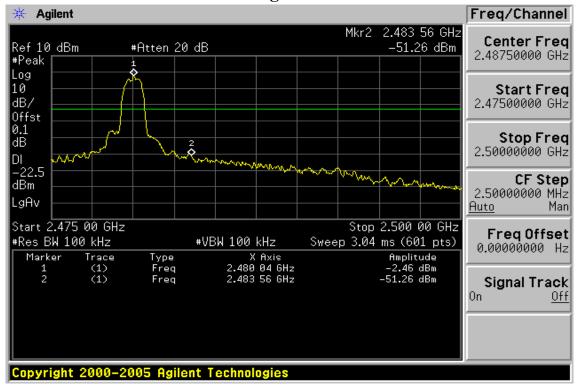
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Conducted Emission: Test Data CH-High



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Radiated Emission: (EDR mode)

Operation Mode TX CH Low Test Date Jan. 06, 2009

Fundamental Frequency 2402 MHz Test By Brian Temperature 25 $^{\circ}\text{C}$ Pol Ver.

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	(dB)	
2390.00	42.42		-10.76	31.66		74.00	54.00	-22.34	Peak

Operation Mode TX CH Low Test Date Jan. 06, 2009

Fundamental Frequency 2402 MHz Test By Brian Temperature 25 Pol Hor.

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{A}\mathbf{V}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	(dB)	
2390.00	42.43		-10.76	31.67		74.00	54.00	-22.33	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_o
- (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: (EDR mode)

Operation Mode TX CH High Test Date Jan. 06, 2009

Fundamental Frequency 2480 MHz Test By Brian Temperature 25 Pol Ver.

Humidity 65 %

	Peak	$\mathbf{A}\mathbf{V}$		Actu	al FS	Peak	$\mathbf{A}\mathbf{V}$		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dRuV/m)	Limit (dRuV/m)	Limit	O	Remark
2483.56	42.84		-10.46	32.38		74.00	54.00	-21.62	Peak
2.00.00			10110	02.00		,	2 00	21102	1 0011
Operation	Mode	TX C	CH High			Test	Date	Jan. 06, 20	009
Fundamen	tal Freque	ncy 2480	MHz			Test	By	Brian	
Temperatu	re	25				Pol		Hor.	
Humidity		65 %							

	Peak	AV		Actu	al FS	Peak	$\mathbf{A}\mathbf{V}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{A}\mathbf{V}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	(dB)	
2483.56	42.19		-10.46	31.73		74.00	54.00	-22.27	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_o
- (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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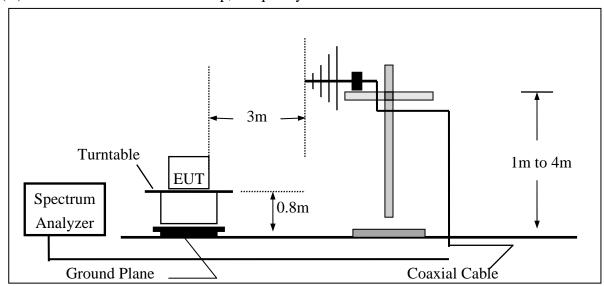


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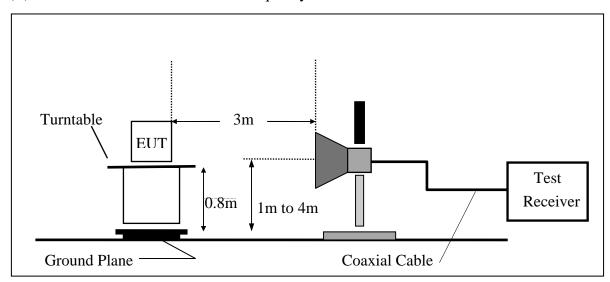
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9.4. Test SET-UP (Block Diagram of Configuration)

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



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



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Measurement Equipment Used:

	966 Chamber											
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.							
TYPE		NUMBER	NUMBER	CAL.								
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	11/29/2008	11/28/2009							
Horn antenna	Schwarzbeck	BBHA 9120D	9120D-673	05/09/2008	05/10/2010							
Horn antenna	Schwarzbeck	BBHA 9170	184/185	12/31/2008	12/30/2009							
Pre-Amplifier	HP	8447F	3113A06892	01/05/2009	01/04/2010							
Pre-Amplifier	HP	8449B	3008A01973	01/05/2009	01/04/2010							
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	01/05/2009	01/04/2010							
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2009	01/04/2010							

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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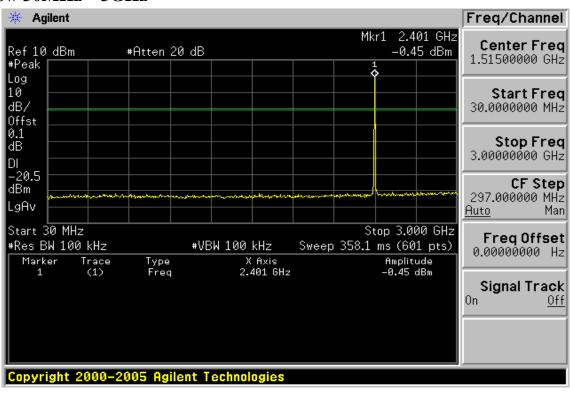
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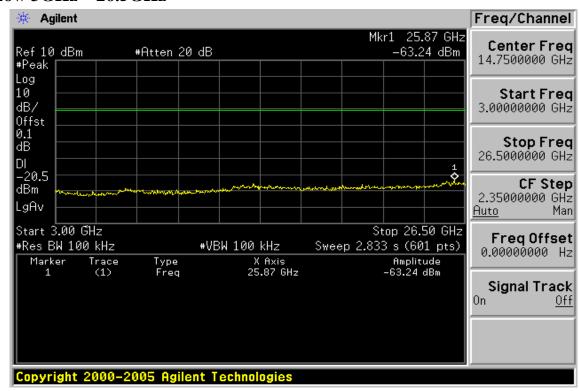
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Conducted Spurious Emission Measurement Result (BDR mode) Ch Low 30MHz – 3GHz



Ch Low 3GHz – 26.5GHz



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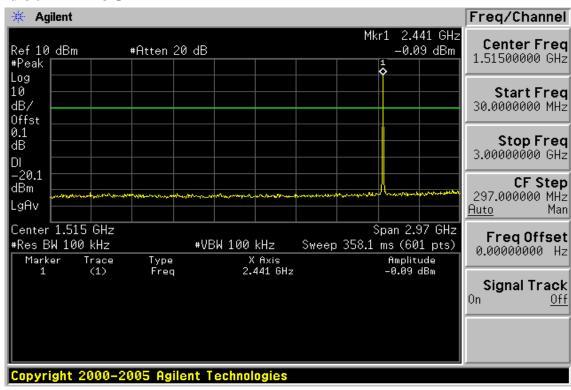
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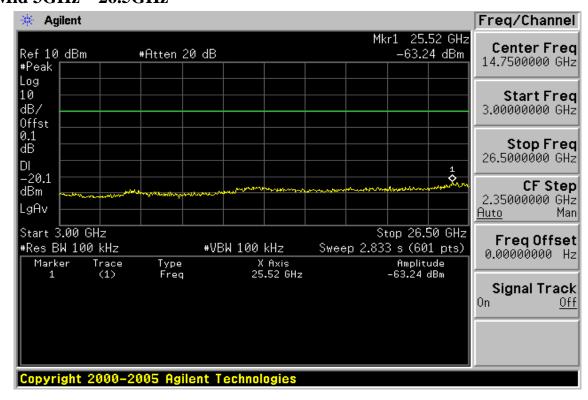
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Ch Mid 30MHz - 3GHz



Ch Mid 3GHz – 26.5GHz



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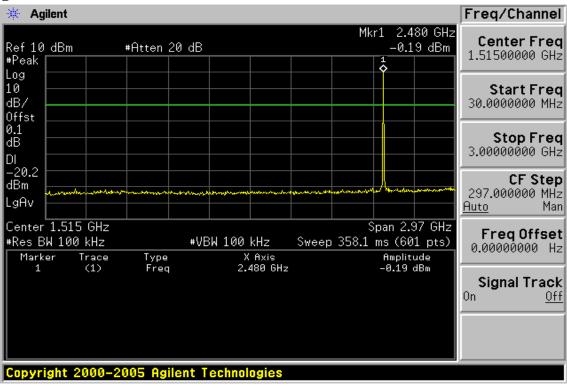
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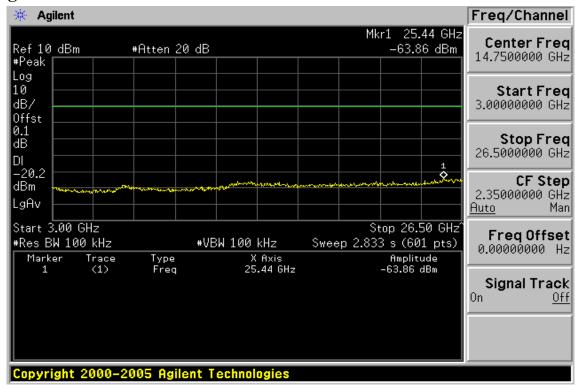
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Ch High 30MHz – 3GHz



Ch High 3GHz - 26.5GHz



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Radiated Spurious Emission Measurement Result (below 1GHz) (BDR mode)

Operation Mode TX CH Low Test Date Jan. 06, 2009

Fundamental Frequency 2402MHz Test By Brian
Temperature 25 Pol Ver./Hor.

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
58.13	V	Peak	55.17	-26.67	28.50	40.00	-11.50
85.29	V	Peak	55.66	-30.75	24.91	40.00	-15.09
383.08	V	Peak	51.88	-26.33	25.55	46.00	-20.45
640.13	V	Peak	48.10	-22.16	25.94	46.00	-20.06
92.08	Н	Peak	59.47	-31.06	28.41	43.50	-15.09
174.53	Н	Peak	60.57	-28.62	31.95	43.50	-11.55
735.19	Н	Peak	49.25	-20.84	28.41	46.00	-17.59
984.48	Н	Peak	47.09	-18.36	28.73	54.00	-25.27

Remark:

- 1 Measuring frequencies from 30 MHz to the 1GHz_o
- 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 Jan. 06, 2009

Fundamental Frequency 2441MHz Test By Brian
Temperature 25 Pol Ver./Hor.

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
59.10	V	Peak	53.77	-26.83	26.94	40.00	-13.06
383.08	V	Peak	53.24	-26.33	26.91	46.00	-19.09
640.13	V	Peak	50.26	-22.16	28.10	46.00	-17.90
686.69	V	Peak	47.95	-21.38	26.57	46.00	-19.43
118.27	H	Peak	51.02	-28.89	22.13	43.50	-21.37
191.99	H	Peak	60.22	-30.84	29.38	43.50	-14.12
640.13	Н	Peak	52.01	-22.16	29.85	46.00	-16.15

Remark:

- 1 Measuring frequencies from 30 MHz to the 1GHz_o
- 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 Jan. 06, 2009

Fundamental Frequency 2480MHz Test By Brian
Temperature 25 Pol Ver./Hor.

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
58.13	V	Peak	55.11	-26.67	28.44	40.00	-11.56
85.29	V	Peak	56.02	-30.75	25.27	40.00	-14.73
315.18	V	Peak	54.96	-27.95	27.01	46.00	-18.99
116.33	H	Peak	50.81	-28.77	22.04	43.50	-21.46
383.08	H	Peak	50.60	-26.33	24.27	46.00	-21.73
640.13	Н	Peak	47.88	-22.16	25.72	46.00	-20.28

Remark:

- 1 Measuring frequencies from 30 MHz to the 1GHz_o
- 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 Jan. 06, 2009 Test Date

Fundamental Frequency 2402 MHz Test By Brian Temperature Pol Ver. 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}	
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
4804.0	42.52		-6.01	36.51		74.00	54.00	-17.49
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_o
- (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_o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200
- (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 Jan. 06, 2009 Test Date

Fundamental Frequency 2402 MHz Test By Brian Temperature Pol Hor. 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	Actual FS		\mathbf{AV}	
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
4804.0	44.01		-6.01	38.00		74.00	54.00	-16.00
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_o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200
- (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 Jan. 06, 2009 Test Date

Fundamental Frequency 2441 MHz Test By Brian Temperature Pol Ver. 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	Actual FS		\mathbf{AV}	
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
4882.0	42.95		-5.93	37.02		74.00	54.00	-16.98
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_o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200
- (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 Jan. 06, 2009 Test Date

Fundamental Frequency 2441 MHz Test By Brian Temperature Pol Hor. 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}	
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
4861.0	44.40		-5.97	38.43		74.00	54.00	-15.57
4882.0						74.00	54.00	
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_o
- (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_o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200
- (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 Jan. 06, 2009 Test Date

Fundamental Frequency 2480 MHz Test By Brian Temperature Pol Ver. 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	Actual FS		\mathbf{AV}	
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
4960.0	44.09		-5.87	38.22		74.00	54.00	-15.78
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_o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200
- (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 Jan. 06, 2009

Fundamental Frequency 2480 MHz Test By Brian Temperature 25 Pol Hor.

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}	
Freq.	Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
4960.0	42.40		-5.87	36.53		74.00	54.00	-17.47
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_o
- (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_o
- (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:

10.4. Measurement Equipment Oscu.							
Conducted Emission Test Site							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.		
TYPE		NUMBER	NUMBER	CAL.			
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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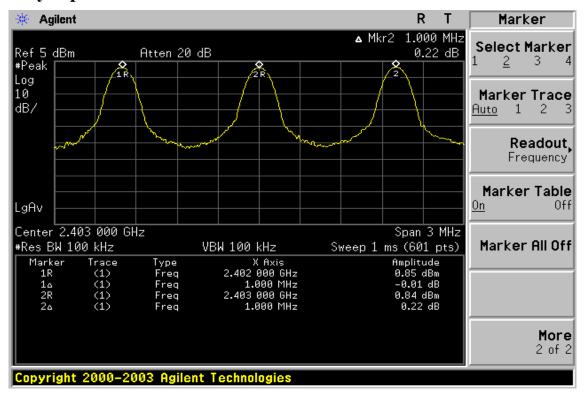
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Frequency Separation Test Data



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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	Limit (CH)	Measurement result (CH)	Result	
hopping channel	15	79	Pass	

11.4. Measurement Equipment Used:

Conducted Emission Test Site							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.		
ТҮРЕ		NUMBER	NUMBER	CAL.			
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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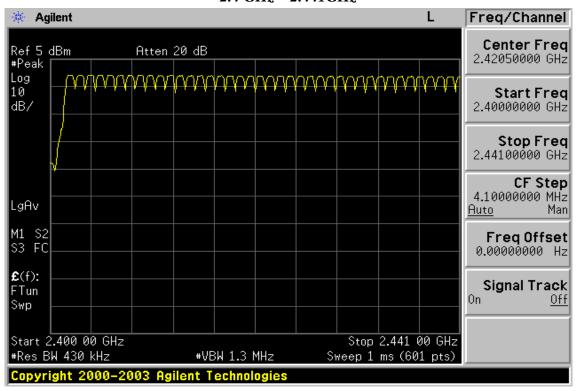


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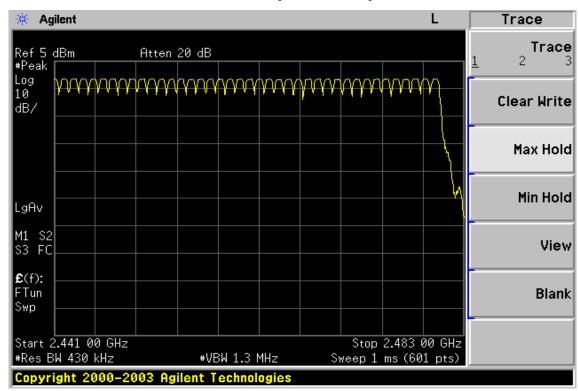
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Channel Number

2.4 GHz - 2.441GHz



2.441 GHz - 2.4835GHz



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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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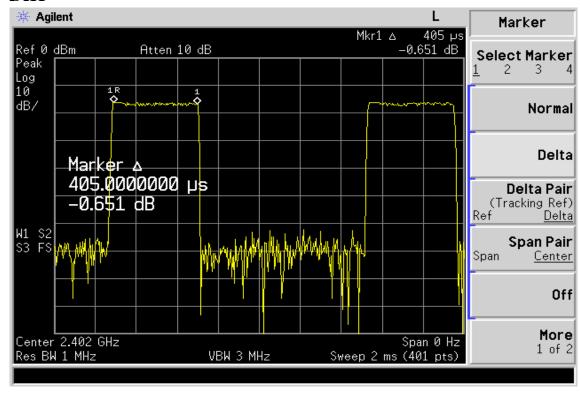
12.4. Measurement Equipment Used:

Conducted Emission Test Site							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.		
ТҮРЕ		NUMBER	NUMBER	CAL.			
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	01/05/2009	01/04/2010		
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009		

Dwell Time Test Data

CH-Low

DH1



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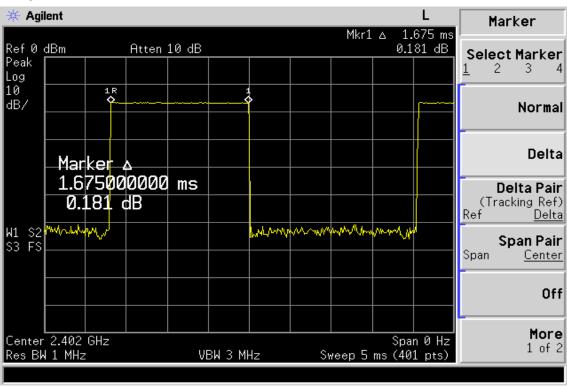
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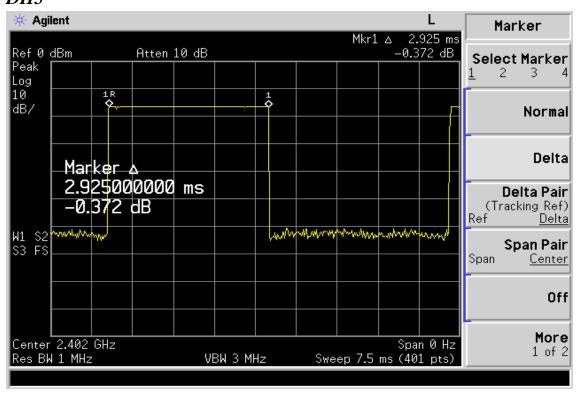
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DH3



DH5



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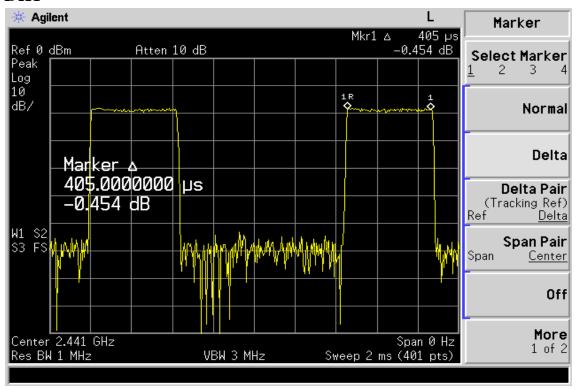


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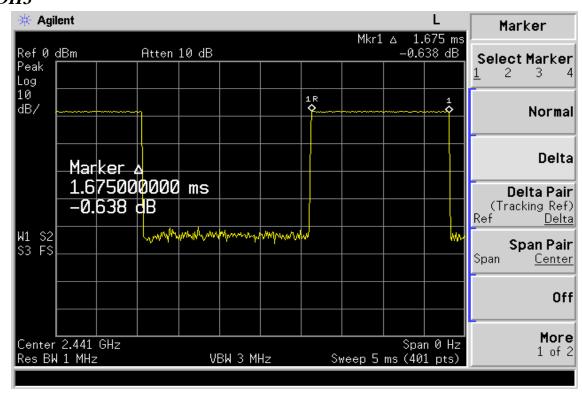
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CH-Mid

DH1



DH3



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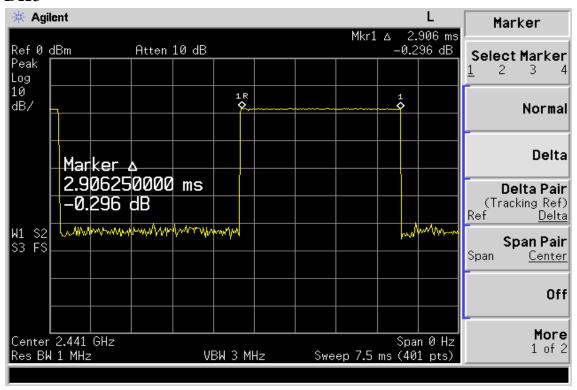
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DH5



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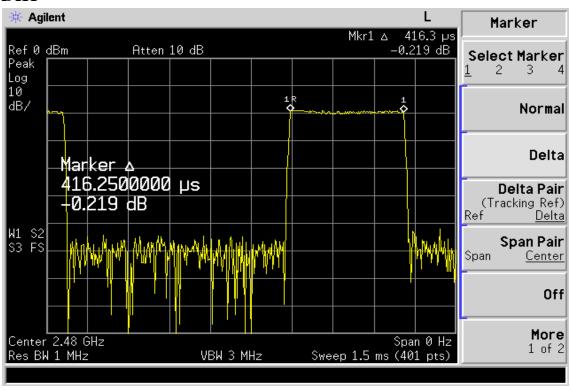


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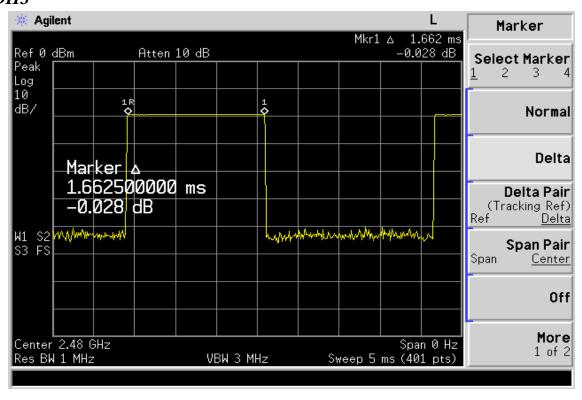
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CH-High

DH1



DH3



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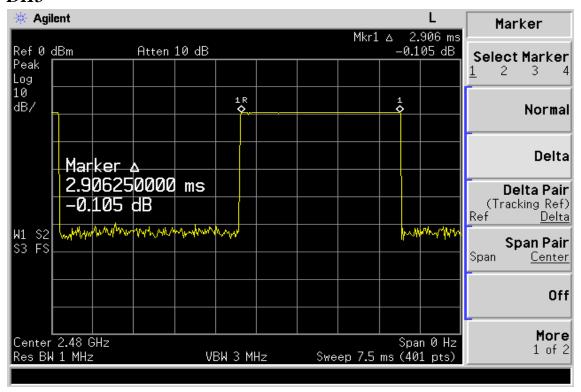
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DH5



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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

СН	RF Power Density	Cable loss RF Power Density		Maximum Limit	
	Reading (dBm)	(dB)	Level (dBm)	(dBm)	
Low	-11.24	0.00	-11.24	8	
Mid	-10.92	0.00	-10.92	8	
High	-11.23	0.00	-11.23	8	

NOTE: offset: 0.1dB

13.4. Measurement Equipment Used:

15. 1. Wedstrement Equipment eset.							
Conducted Emission Test Site							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.		
TYPE		NUMBER	NUMBER	CAL.			
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	01/05/2009	01/04/2010		
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2008	07/04/2009		

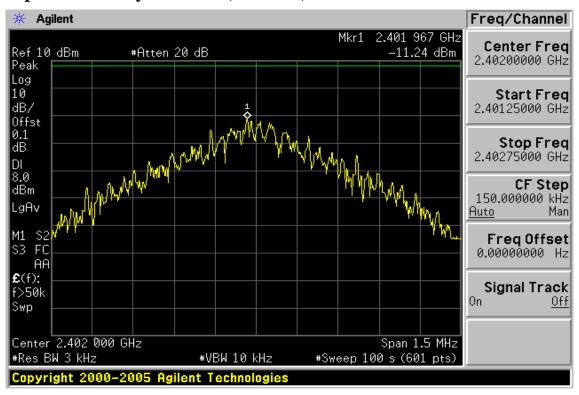
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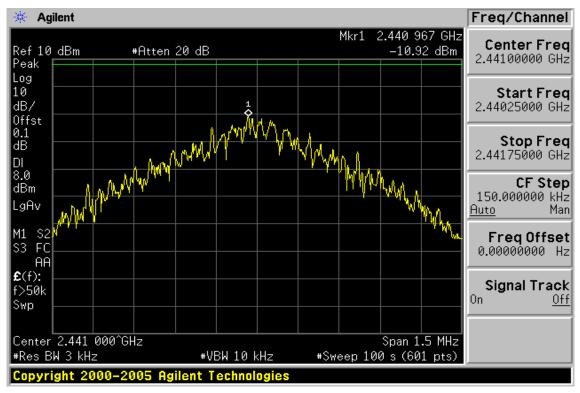
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Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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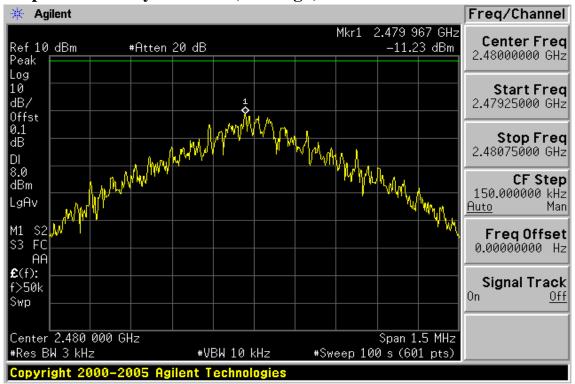
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Power Spectral Density Test Plot (CH-High)



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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 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 1.1dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

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