

Report No.: EF/2008/90002~3-02

Issue Date: Jan. 22, 2010

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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

Product Name: scala rider Q2

Brand Name: Cardo

scala rider Q2, scala rider TeamSet Pro **Model Name:**

Model Difference: N/A

IC: 4668A-ER08

FCC ID: **Q95ER11**

EF/2008/90002~3-02 **Report No.:**

Issue Date: Jan. 22, 2010

Rule Part: FCC Part 15C:2005, §15.247,

RSS-210 issue 7:2007, Annex 8

Prepared for: Cardo System Inc.

100 High Tower St., Pittsburgh PA15205, USA

Prepared by: SGS Taiwan Ltd.

Electronics & Communication Laboratory

No. 134, Wu Kung Rd., Wuku Industrial Zone,

Taipei County, Taiwan.





Testing Laboratory 0513

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VERIFICATION OF COMPLIANCE

Applicant: Cardo System Inc.

100 High Tower St., Pittsburgh PA15205, USA

Product Name: scala rider Q2

Brand Name: Cardo

IC: 4668A-ER08 FCC ID: O95ER11

Model No.: scala rider Q2, scala rider TeamSet Pro

Model Difference: N/A

File Number: EF/2008/90002~3-02

Date of test: Sep. 10, 2008 ~ Jan. 06, 2010

Date of EUT Received: Sep. 09, 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 15C:2005, §15.247 and RSS-210 issue 7: 2007 Annex 8.

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

Test By:	Bondi Jin	Date	Jan. 22, 2010	
Prepared By:	Bondi Liu / Engineer Gigi yek	Date	Jan. 22, 2010	
Approved By:	Gigi Yeh / Clerk Tinulit Su Vincent Su / Manager	Date	Jan. 22, 2010	

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Version No.	Date	Description
00	Jan. 22, 2010	Initial creation of document

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GENERAL INFORMATION

1.1. Product Description

General:

Product Name:	scala rider Q2		
Brand Name:	Cardo		
Model Name:	scala rider Q2, scala rider TeamSet Pro		
Model Difference:	N/A		
Data Cable (USB):	N/A		
Down Cymply	3.7Vdc re-chargeable battery or 5Vdc form AC adapter		
Power Supply	Adapter:	Model: KSCFB0900030W1EU	

Bluetooth:

Diuctootii.	
Frequency Range	2402 – 2480MHz
Channel number	79 channels
Rated Power	13.79 dBm (Peak)
Modulation type	Frequency Hopping Spread Spectrum (FHSS) (GFSK)
Dwell Time	<= 0.4s
Operating Mode	Point-to-Point
Antenna Designation	Micro-Strip Antenna, 1dBi

The EUT is compliance with Bluetooth Standard.

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1.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: Q95ER11** filing to comply with Section 15.247 of the FCC Part 15C, Subpart C Rules. And IC: **4668A-ER08** filing to comply with Industry Canada RSS-210 issue 7: 2007 Annex 8.

1.3. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003) and RSS-Gen: 2007. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4. 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. 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. 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.

1.5. Special Accessories

Not available for this EUT intended for grant.

1.6. 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, 13 of ANSI C63.4-2003 and RSS-Gen:2007. 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 Configuration of Tested System (Fixed channel)

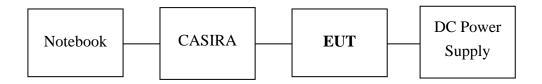


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.
1.	Notebook	Compaq	Presarlo 2100	CNF345Q1R
2.	DC Power Supply	Topward	3303D	981327
3.	CASIRA	CSR	BCES301199/1	7383070403
4.	Software	BlueSuite 1.22	CSR	Version 1.22

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SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207(a)/	Conducted Emission	Compliant
RSS-Gen §7.2.2		
§15.247(b)/	Peak Output Power	Compliant
RSS-210 issue 7,§A8.4(2)		
§15.247(c)	100 KHz Bandwidth Of	Compliant
RSS-210 issue 7,§A8.5	Frequency Band Edges	
§15.247(c)	TX/RX Spurious Emission	Compliant
RSS-210 issue 7,§A8.5		
§15.247(a)(1)/	Frequency Separation	Compliant
RSS-210 issue 7,§A8.1(2)		
§15.247(a)(1)(iii)/	Number of hopping frequency	Compliant
RSS-210 issue 7,§A8.4(2)		
§15.247(a)(1)(ii)/	Time of Occupancy	Compliant
RSS-210 issue 7,§A8.1(4)		
§15.247/	Peak Power Density	Compliant
RSS-210 issue 7,§A8.3(2)		
RSS-Gen §4.4.1	99% Power Bandwidth	Compliant
§15.203, §15.247(c)/	Antenna Requirement	Compliant
RSS-GEN 7.1.4,		
RSS-210 issue 7,§A8.4		
	20dB Bandwidth	No Limit

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 TX 2402MHz is not simultaneous with BT.

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5. AC POWER LINE CONDUCTED EMISSION TEST

5.1. Standard Applicable

According to §15.207 and RSS-Gen §7.2.2, frequency range within 150KHz to 30MHz shall not exceed the Limit table as below.

Frequency range		mits (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 AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The LISN 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	09/15/2007	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	10/30/2007	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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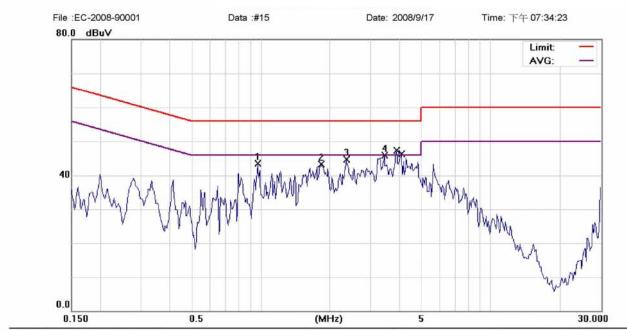
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AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Charger mode			Test Date:	Sep. 17, 2008
Temperature:	25	Humidity:	62%	Test By:	Bondi



Site SGS CONDUCTED #1

Limit: CISPR22 Class B Conduction(QP)

EUT: Cardo Rider Q2 M/N: Cardo Rider Q2 Note: BT+Charge

Phase:	L1	Temperature:	26 °C
Power:	AC 120V/60Hz	Humidity:	62 %
Distance	:	Air Pressure:	hpa

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.9700	43.54	0.04	43.58	56.00	-12.42	peak	
2		1.8300	43.18	0.04	43.22	56.00	-12.78	peak	
3		2.3600	44.67	0.04	44.71	56.00	-11.29	peak	
4	*	3.4600	45.82	0.05	45.87	56.00	-10.13	peak	
5		3.8897	39.23	0.05	39.28	56.00	-16.72	QP	
6		3.8897	30.25	0.05	30.30	46.00	-15.70	AVG	
7		4.1013	39.60	0.05	39.65	56.00	-16.35	QP	
8		4.1013	30.47	0.05	30.52	46.00	-15.48	AVG	

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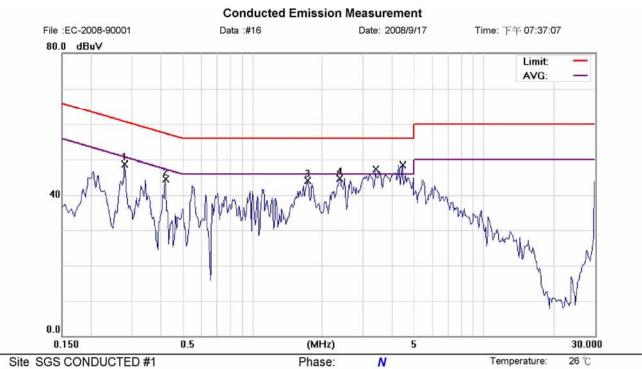
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Power:

Distance:

AC 120V/60Hz

Limit: CISPR22 Class B Conduction(QP)

EUT: Cardo Rider Q2 M/N: Cardo Rider Q2

Note: BT+Charge

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2800	48.55	0.12	48.67	60.82	-12.15	peak	
2		0.4200	44.50	0.07	44.57	57.45	-12.88	peak	
3		1.7300	43.98	0.03	44.01	56.00	-11.99	peak	
4	*	2.3800	44.77	0.03	44.80	56.00	-11.20	peak	
5		3.3975	38.62	0.04	38.66	56.00	-17.34	QP	
6		3.3975	29.95	0.04	29.99	46.00	-16.01	AVG	
7		4.4492	39.77	0.05	39.82	56.00	-16.18	QP	
8		4.4492	30.10	0.05	30.15	46.00	-15.85	AVG	

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Humidity:

Air Pressure:

hpa



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PEAK OUTPUT POWER MEASUREMENT

6.1. Standard Applicable

According to §15.247(b), 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.

According to RSS-210 issue 7,§A8.4(2), For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels, the maximum conducted output power shall not exceed 1 W. For all other frequency hopping systems, the maximum peak conducted output power shall not exceed 0.125 W.

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	13.71	0.10	13.81	0.02404	1
2441.00	13.79	0.10	13.89	0.02449	1
2480.00	13.62	0.10	13.72	0.02355	1

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6.4. Measurement Equipment Used:

	Conduct	ted Emission T	est 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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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 Bandwidth

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

СН	Bandwidth			
	(kHz)			
Lower	912.929			
Mid	919.305			
Higher	919.445			

7.4. Measurement Equipment Used:

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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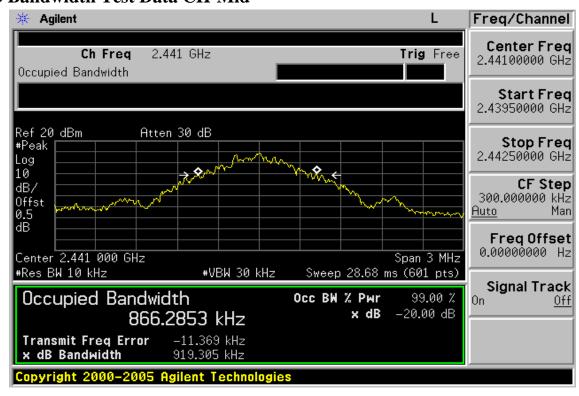
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20dB Band Width Test Data CH-Low



20dB Bandwidth Test Data CH-Mid



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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 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).

According to RSS-210 issue 7,§A8.5, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required. In addition, radiated emissions which fall in the restricted bands of Table 1 must also comply with the radiated emission limits specified in Tables 2 and 3.

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.

8.3. Measurement Result

Refer to attach spectrum analyzer data chart.

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8.4. Measurement Equipment Used:

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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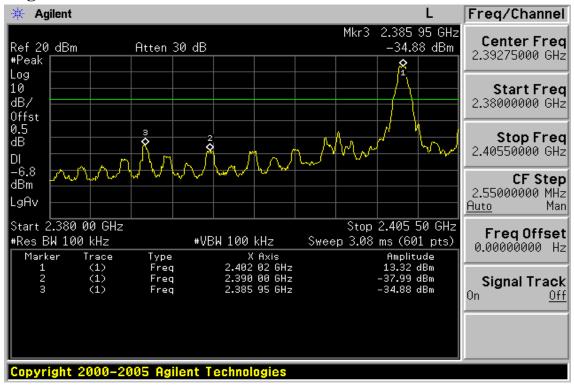


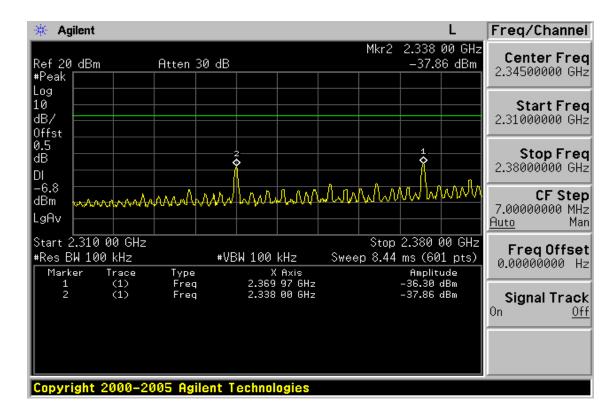
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Band Edges Test Data CH-Low





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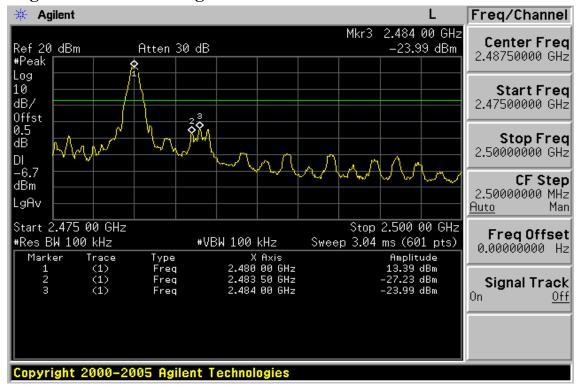


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Band Edges Test Data CH-High



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Radiated Emission:

Operation Mode TX CH Low Test Date Sep. 17, 2008

Fundamental Frequency 2402 MHz Test By Bondi Temperature 25 $^{\circ}\mathrm{C}$ Pol Ver. Humidity 65 $^{\circ}\mathrm{C}$

	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/n	(dB)	
2385.95	57.79		-10.76	47.03		74.00	54.00	-6.97	Peak
2390.00	57.89		-10.76	47.13		74.00	54.00	-6.87	Peak
Operation	Mode	TX C	CH Low			Test	t Date	Aug. 11, 2	008
Fundamen	tal Freque	ncy 2402	MHz			Test	t By	Bondi	
Temperatu	ıre	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	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2385.95	61.76	51.83	-10.76	51.00	41.07	74.00	54.00	-12.93	AV
2390.00	62.42	52.46	-10.76	51.66	41.70	74.00	54.00	-12.30	AV

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:

Operation Mode TX CH High Test Date Sep. 17, 2008
Fundamental Frequency 2480 MHz Test By Bondi
Temperature 25 Pol Ver.
Humidity 65 %

	Peak	\mathbf{AV}		Actu	ıal 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)	
2483.50	70.01	58.21	-10.46	59.55	47.75	74.00	54.00	-6.25	AV
2484.00	69.25	59.33	-10.46	58.79	48.87	74.00	54.00	-5.13	AV
Operation	Mode	TX C	CH High			Tes	t Date	Aug. 11, 2	800
Fundamental Frequency 2480			MHz			Test By I		Bondi	
Temperatu	ıre	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	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2483.50	74.91	62.00	-10.46	64.45	51.54	74.00	54.00	-2.46	AV
2484.00	73.61	61.05	-10.46	63.15	50.59	74.00	54.00	-3.41	AV

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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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.

According to RSS-210 issue 7,§A8.5, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required. In addition, radiated emissions which fall in the restricted bands of Table 1 must also comply with the radiated emission limits specified in Tables 2 and 3.

9.2. EUT Setup

- The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.4-2003.
- The EUT was put in the front of the test table. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- The spacing between the peripherals was 10 centimeters.
- External I/O cables were draped along the edge of the test table and bundle when necessary.

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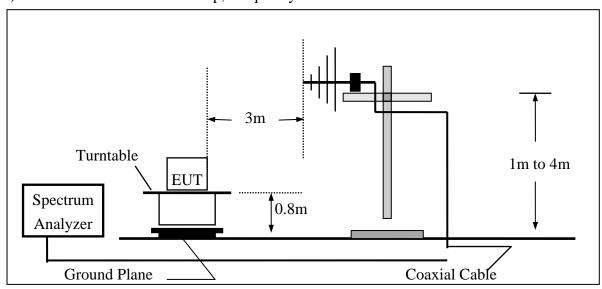
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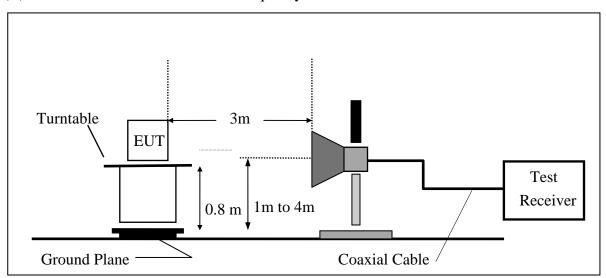
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9.1. Test SET-UP (Block Diagram of Configuration)

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



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



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9.2. Measurement Equipment Used:

966 Chamber									
EQUIPMENT MFR		MODEL	SERIAL	LAST	CAL DUE.				
TYPE	ТҮРЕ		NUMBER	CAL.					
Spectrum Analyzer	Spectrum Analyzer R&S Spectrum Analyzer Agilent Spectrum Analyzer Agilent		100034	02/22/2008	02/21/2009				
Spectrum Analyzer			US41160416	07/04/2007	07/03/2009				
Spectrum Analyzer			MY43360126	04/19/2008	04/18/2010				
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3158	11/29/2007	11/28/2008				
Horn antenna			9120D-673	05/09/2008	05/10/2010				
Horn antenna			184/185	12/31/2007	12/30/2008				
Pre-Amplifier			3113A06892	01/05/2008	01/04/2009				
Pre-Amplifier			3008A01973	01/05/2008	01/04/2009				
Turn Table	HD	DT420	N/A	N.C.R	N.C.R				
Antenna Tower	Antenna Tower HD Controller HD		240/657	N.C.R	N.C.R				
Controller			N/A	N.C.R	N.C.R				
Low Loss Cable HUBER+SUHNER Low Loss Cable HUBER+SUHNER		SUCOFLEX 104PEA-10M	10m	01/05/2008	01/04/2009				
		SUCOFLEX 104PEA-3M	3m	01/05/2008	01/04/2009				

9.3. 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				

9.4. Measurement Result

Refer to attach tabular data sheets.

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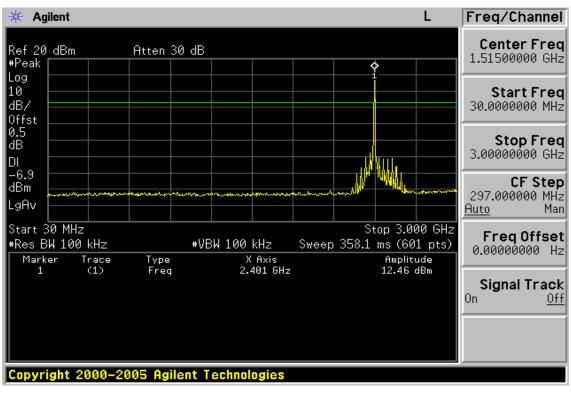


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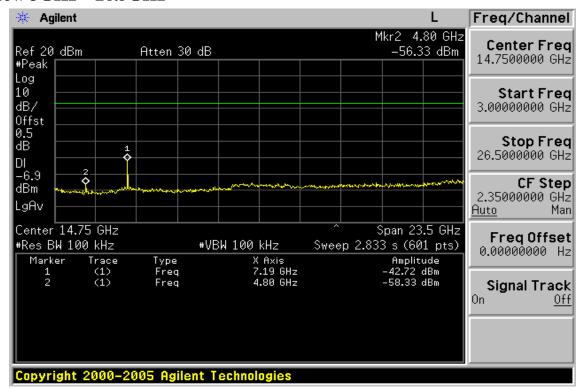
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Conducted Spurious Emission Measurement Result Ch Low 30MHz – 3GHz



Ch Low 3GHz - 26.5GHz



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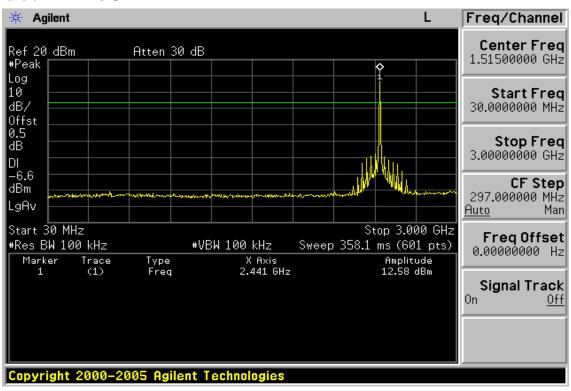


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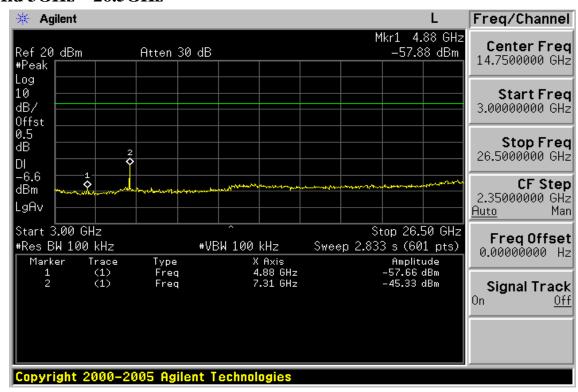
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Ch Mid 30MHz - 3GHz



Ch Mid 3GHz – 26.5GHz



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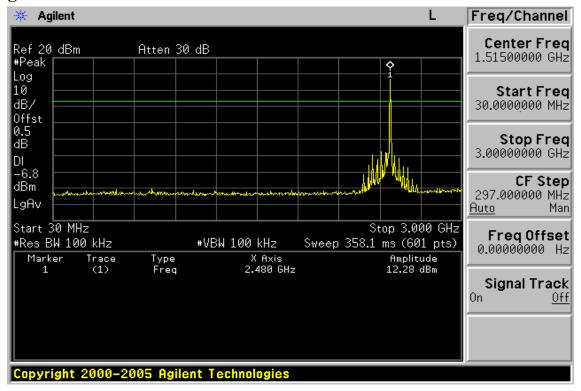


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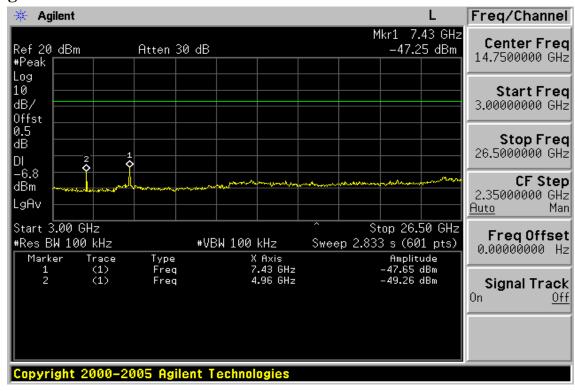
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Ch High 30MHz – 3GHz



Ch High 3GHz - 26.5GHz



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Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode TX CH Low Test Date Sep. 17, 2008 Fundamental Frequency 2402MHz Test By Bondi Temperature 25 °C 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	57.27	-26.67	30.60	40.00	-9.40
85.29	V	Peak	57.89	-30.75	27.14	40.00	-12.86
104.69	V	Peak	57.43	-29.90	27.53	43.50	-15.97
318.09	V	Peak	54.40	-27.86	26.54	46.00	-19.46
412.18	V	Peak	65.18	-25.78	39.40	46.00	-6.60
514.03	V	Peak	58.96	-24.50	34.46	46.00	-11.54
99.84	H	Peak	53.95	-30.49	23.46	43.50	-20.04
145.43	H	Peak	49.25	-27.36	21.89	43.50	-21.61
230.79	Н	Peak	62.11	-30.13	31.98	46.00	-14.02
329.73	Н	Peak	69.64	-27.53	42.11	46.00	-3.89
421.83	Н	Peak	67.95	-25.54	42.41	46.00	-3.59
557.68	Н	Peak	57.38	-23.57	33.81	46.00	-12.19

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 ModeTX CH MidTest DateSep. 17, 2008Fundamental Frequency2441MHzTest ByBondiTemperature25 °CPolVer./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)
99.84	V	Peak	54.54	-30.49	24.05	43.50	-19.45
138.64	V	Peak	51.51	-27.58	23.93	43.50	-19.57
227.88	V	Peak	63.10	-30.24	32.86	46.00	-13.14
308.39	V	Peak	68.42	-28.10	40.32	46.00	-5.68
371.44	V	Peak	68.13	-26.66	41.47	46.00	-4.53
446.13	V	Peak	67.22	-25.10	42.12	46.00	-3.88
99.84	H	Peak	54.09	-30.49	23.60	43.50	-19.90
189.08	H	Peak	48.54	-30.49	18.05	43.50	-25.45
281.23	H	Peak	56.90	-28.93	27.97	46.00	-18.03
412.18	H	Peak	67.04	-25.78	41.26	46.00	-4.74
516.94	H	Peak	66.53	-24.37	42.16	46.00	-3.84
708.03	H	Peak	51.28	-21.14	30.14	46.00	-15.86

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 Sep. 17, 2008 Fundamental Frequency 2480MHz Test By Bondi Temperature 25 °C 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	57.47	-26.67	30.80	40.00	-9.20
85.29	V	Peak	57.73	-30.75	26.98	40.00	-13.02
99.84	V	Peak	55.59	-30.49	25.10	43.50	-18.40
133.79	V	Peak	46.79	-28.02	18.77	43.50	-24.73
412.18	V	Peak	65.15	-25.78	39.37	46.00	-6.63
514.03	V	Peak	58.57	-24.50	34.07	46.00	-11.93
105.69	Н	Peak	52.55	-29.90	22.65	43.50	-20.85
133.79	H	Peak	46.79	-28.02	18.77	43.50	-24.73
308.39	Н	Peak	56.39	-28.10	28.29	46.00	-17.71
415.09	Н	Peak	64.21	-25.69	38.52	46.00	-7.48
514.03	Н	Peak	65.24	-24.50	40.74	46.00	-5.26
708.03	Н	Peak	50.50	-21.14	29.36	46.00	-16.64

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 Test Date Sep. 17, 2008 Fundamental Frequency 2402 MHz Test By Bondi Temperature 25 $^{\circ}$ 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	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1598.0	61.12		-13.95	47.17		74.00	54.00	-6.83	Peak
4804.0	52.99		-6.01	46.98		74.00	54.00	-7.02	Peak
7206.0	53.45	46.88	1.57	55.02	48.45	74.00	54.00	-5.55	AV
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 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 Sep. 17, 2008 Fundamental Frequency 2402 MHz Test By Bondi Temperature 25 $^{\circ}$ C 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)	
1598.0	63.24		-13.95	49.29		74.00	54.00	-4.71	Peak
4804.0	54.07		-6.01	48.06		74.00	54.00	-5.94	Peak
7206.0	53.69	47.12	1.57	55.26	48.69	74.00	54.00	-5.31	AV
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 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 Sep. 17, 2008 Fundamental Frequency 2441 MHz Test By Bondi Temperature 25 $^{\circ}$ 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	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1630.5	58.60		-13.80	44.80		74.00	54.00	-9.20	Peak
4882.0	50.03		-5.93	44.10		74.00	54.00	-9.90	Peak
7323.0	49.20	44.53	1.76	50.96	46.29	74.00	54.00	-7.71	AV
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 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 Sep. 17, 2008 Fundamental Frequency 2441 MHz Test By Bondi Temperature 25 $^{\circ}$ C 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)	
1630.5	61.06		-13.80	47.26		74.00	54.00	-6.74	Peak
4882.0	48.70		-5.93	42.77		74.00	54.00	-11.23	Peak
7323.0	48.42	43.84	1.76	50.18	45.60	74.00	54.00	-8.40	AV
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 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** Sep. 17, 2008 Fundamental Frequency 2480 MHz Test By Bondi Pol Ver. Temperature 25 °C

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)	
1643.5	59.87		-13.76	46.11		74.00	54.00	-7.89	Peak
4960.0	55.69		-5.87	49.82		74.00	54.00	-4.18	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_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.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode TX CH High Test Date Sep. 17, 2008 Fundamental Frequency 2480 MHz Test By Bondi Temperature 25 $^{\circ}$ C 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)	
1643.5	58.12		-13.76	44.36		74.00	54.00	-9.64	Peak
4960.0	53.86		-5.87	47.99		74.00	54.00	-6.01	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_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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Radiated Spurious Emission Measurement Result (below 1GHz)

Operation ModeRX CH LowTest DateSep. 17, 2008Fundamental Frequency2402MHzTest ByBondiTemperature25 °CPolVer./Hor

Humidity 65 %

Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
V	Peak	56.77	-26.67	30.10	40.00	-9.90
V	Peak	58.77	-30.75	28.02	40.00	-11.98
V	Peak	57.97	-30.49	27.48	43.50	-16.02
V	Peak	49.57	-27.44	22.13	43.50	-21.37
V	Peak	66.59	-25.84	40.75	46.00	-5.25
V	Peak	64.60	-24.54	40.06	46.00	-5.94
Н	Peak	53.28	-30.49	22.79	43.50	-20.71
H	Peak	45.90	-28.02	17.88	43.50	-25.62
H	Peak	58.18	-28.54	29.64	46.00	-16.36
H	Peak	64.39	-25.83	38.56	46.00	-7.44
H	Peak	65.49	-24.54	40.95	46.00	-5.05
Н	Peak	53.71	-22.44	31.27	46.00	-14.73
	H/V V V V V V H H H H	Ant.Pol. Mode H/V (PK/QP) V Peak V Peak V Peak V Peak V Peak V Peak H Peak	Ant.Pol. Mode Reading H/V (PK/QP) (dBuV) V Peak 56.77 V Peak 58.77 V Peak 57.97 V Peak 49.57 V Peak 66.59 V Peak 64.60 H Peak 45.90 H Peak 58.18 H Peak 64.39 H Peak 65.49	Ant.Pol. Mode Reading Factor H/V (PK/QP) (dBuV) (dB) V Peak 56.77 -26.67 V Peak 58.77 -30.75 V Peak 57.97 -30.49 V Peak 49.57 -27.44 V Peak 66.59 -25.84 V Peak 64.60 -24.54 H Peak 53.28 -30.49 H Peak 45.90 -28.02 H Peak 58.18 -28.54 H Peak 64.39 -25.83 H Peak 65.49 -24.54	Ant.Pol.Mode ModeReading (dBuV)Factor (dB)Actual FSH/V(PK/QP)(dBuV)(dB)(dBuV/m)VPeak56.77-26.6730.10VPeak58.77-30.7528.02VPeak57.97-30.4927.48VPeak49.57-27.4422.13VPeak66.59-25.8440.75VPeak64.60-24.5440.06HPeak53.28-30.4922.79HPeak45.90-28.0217.88HPeak58.18-28.5429.64HPeak64.39-25.8338.56HPeak65.49-24.5440.95	Ant.Pol. Mode Reading Factor Actual FS Limit3m H/V (PK/QP) (dBuV) (dB) (dBuV/m) (dBuV/m) V Peak 56.77 -26.67 30.10 40.00 V Peak 58.77 -30.75 28.02 40.00 V Peak 57.97 -30.49 27.48 43.50 V Peak 49.57 -27.44 22.13 43.50 V Peak 66.59 -25.84 40.75 46.00 V Peak 64.60 -24.54 40.06 46.00 H Peak 45.90 -28.02 17.88 43.50 H Peak 58.18 -28.54 29.64 46.00 H Peak 64.39 -25.83 38.56 46.00 H Peak 65.49 -24.54 40.95 46.00

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 Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode RX CH Mid Test Date Sep. 17, 2008 Fundamental Frequency 2441MHz Test By Bondi Temperature 25 $^{\circ}$ C 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)
298.69	V	Peak	58.18	-28.54	29.64	46.00	-16.36
410.24	V	Peak	64.39	-25.83	38.56	46.00	-7.44
512.09	V	Peak	65.49	-24.54	40.95	46.00	-5.05
620.73	V	Peak	53.71	-22.44	31.27	46.00	-14.73
298.69	Н	Peak	58.18	-28.54	29.64	46.00	-16.36
410.24	Н	Peak	64.39	-25.83	38.56	46.00	-7.44
512.09	Н	Peak	65.49	-24.54	40.95	46.00	-5.05
620.73	Н	Peak	53.71	-22.44	31.27	46.00	-14.73
298.69	V	Peak	58.18	-28.54	29.64	46.00	-16.36

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 Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode RX CH High Test Date Sep. 17, 2008 Fundamental Frequency 2480MHz Test By Bondi Temperature 25 $^{\circ}$ C 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	56.23	-26.67	29.56	40.00	-10.44
85.29	V	Peak	57.70	-30.75	26.95	40.00	-13.05
99.84	V	Peak	56.88	-30.49	26.39	43.50	-17.11
318.09	V	Peak	52.82	-27.86	24.96	46.00	-21.04
410.24	V	Peak	66.23	-25.83	40.40	46.00	-5.60
504.33	V	Peak	64.44	-24.68	39.76	46.00	-6.24
290.93	Н	Peak	59.15	-28.72	30.43	46.00	-15.57
410.24	Н	Peak	66.33	-25.83	40.50	46.00	-5.50
509.18	Н	Peak	65.78	-24.61	41.17	46.00	-4.83

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 Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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Radiated Spurious Emission Measurement Result (above 1GHz)

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)	
1598.0	62.11		-13.95	48.16		74.00	54.00	-5.84	Peak
4804.0						74.00	54.00		
7206.0						74.00	54.00		
9608.0						74.00	54.00		
12010.0						74.00	54.00		
14412.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned 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-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode RX CH Low Test Date Sep. 17, 2008 Fundamental Frequency 2402 MHz Test By Bondi Temperature 25 $^{\circ}$ C 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)	
1598.0	62.54		-13.95	48.59		74.00	54.00	-5.41	Peak
4804.0						74.00	54.00		
7206.0						74.00	54.00		
9608.0						74.00	54.00		
12010.0						74.00	54.00		
14412.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned 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-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode RX CH Mid Test Date Sep. 17, 2008 Fundamental Frequency 2441 MHz Test By Bondi Temperature 25 $^{\circ}$ 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	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1630.5	59.91		-13.80	46.11		74.00	54.00	-7.89	Peak
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		

Remark:

- (1) Measuring frequencies scanned 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-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode RX CH Mid Test Date Sep. 17, 2008 Fundamental Frequency 2441 MHz Test By Bondi Temperature 25 °C 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)	
1630.5	62.03		-13.80	48.23		74.00	54.00	-5.77	Peak
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		

Remark:

- (1) Measuring frequencies scanned 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-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode RX CH High Test Date Sep. 17, 2008 Fundamental Frequency 2480 MHz Test By Bondi Temperature 25 $^{\circ}$ 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	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1643.5	58.02		-13.76	44.26		74.00	54.00	-9.74	Peak
4960.0						74.00	54.00		
7440.0						74.00	54.00		
9920.0						74.00	54.00		
12400.0						74.00	54.00		
14880.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned 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-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode RX CH High Test Date Sep. 17, 2008 Fundamental Frequency 2480 MHz Test By Bondi Temperature 25 $^{\circ}$ C 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)	
1643.5	60.82		-13.76	47.06		74.00	54.00	-6.94	Peak
4960.0						74.00	54.00		
7440.0						74.00	54.00		
9920.0						74.00	54.00		
12400.0						74.00	54.00		
14880.0						74.00	54.00		

Remark:

- (1) Measuring frequencies scanned 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-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting: 1GHz-40GHz, 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 20dB bandwidth of the hopping channel, whichever is greater.

According to RSS 210 issue 6, A8.1(2), frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB 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=3KHz, Adjust Span to 3.0 MHz, Sweep = auto.
- 5. Max hold. Mark 3 Peaks of hopping channel and record the 3 peaks frequency.

10.3. Measurement Result

Channel separation (MHz)	Limit	Result
	>=25KHz or	
1	2/3 times 20dB 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	04/27/2008	04/27/2009			
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2008	07/03/2009			
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2007	11/08/2008			
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A			
Attenuator	Mini-Circuit	BW-S6W5	N/A	01/05/2008	01/04/2009			

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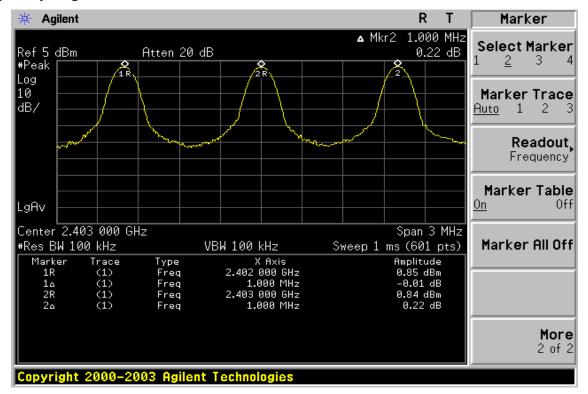


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Frequency Separation Test Data



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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.

According to RSS-210 issue 7,§A8.4(2), For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels, the maximum conducted output power shall not exceed 1 W. For all other frequency hopping systems, the maximum peak conducted output power shall not exceed 0.125 W.

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

Refer to next page for the plots.

11.4. Measurement Equipment Used:

	zquipinent eseut								
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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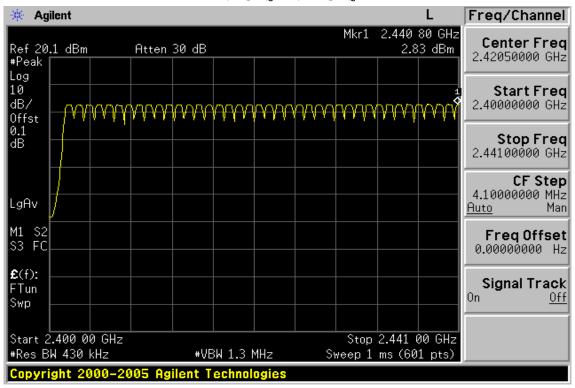
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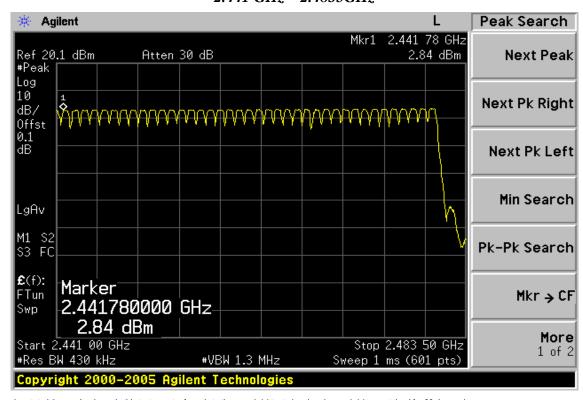
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Channel Number

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.

According to RSS-210 issue 7,§A8.1(4), Frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that a minimum of 15 hopping channels are used.

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 = 0.417 (ms) * (1600/(1*79)) * 31.6 = 266.9 (ms)

DH3 time slot = 1.667 (ms) * (1600/(3*79)) * 31.6 = 355.6 (ms)

DH5 time slot = 2.925 (ms) * (1600/(5*79)) * 31.6 = 374.4 (ms)

CH Mid: DH1 time slot = 0.417 (ms) * (1600/(1*79)) * 31.6 = 266.9 (ms)

DH3 time slot = 1.667 (ms) * (1600/(3*79)) * 31.6 = 355.6 (ms)

DH5 time slot = 2.925 (ms) * (1600/(5*79)) * 31.6 = 374.4 (ms)

CH High: DH1 time slot = 0.417 (ms) * (1600/(1*79)) * 31.6 = 266.9 (ms)

DH3 time slot = 1.667 (ms) * (1600/(3*79)) * 31.6 = 355.6 (ms)

DH5 time slot = 2.925 (ms) * (1600/(5*79)) * 31.6 = 374.4 (ms)

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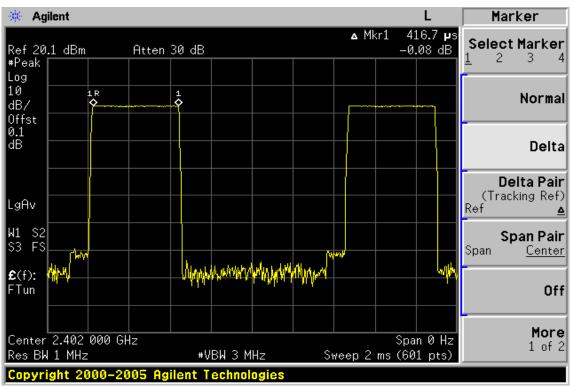
12.4. Measurement Equipment Used:

22. William Edulphicit esca.								
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			

Dwell Time Test Data

CH-Low

DH1



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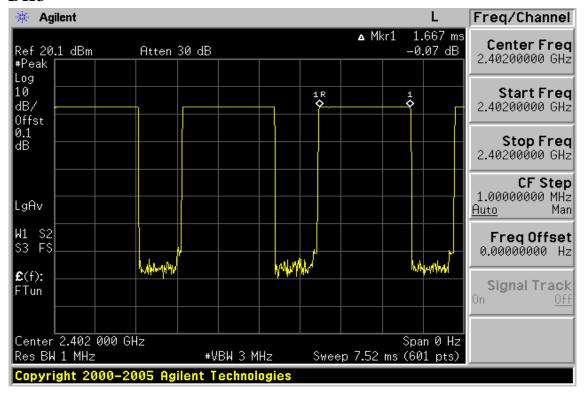


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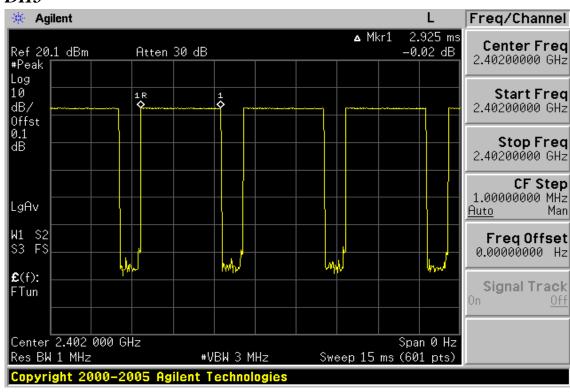
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DH3



DH5



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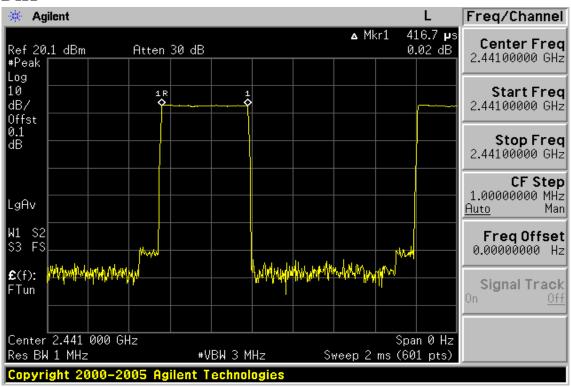
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Issue Date: Jan. 22, 2010

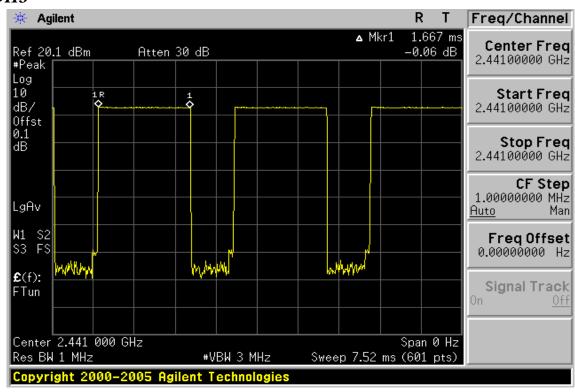
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CH-Mid

DH1



DH3



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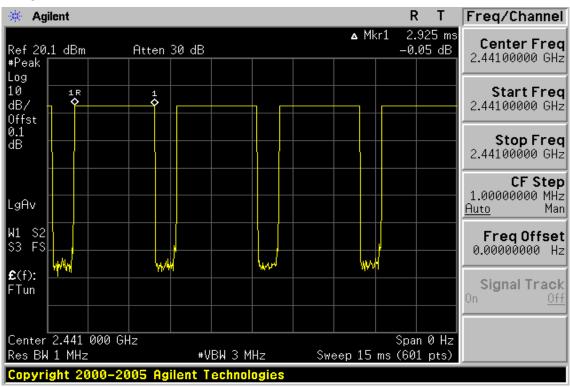


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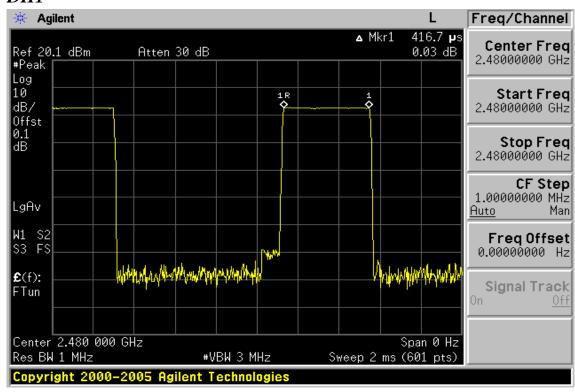
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DH5



CH-High

DH1



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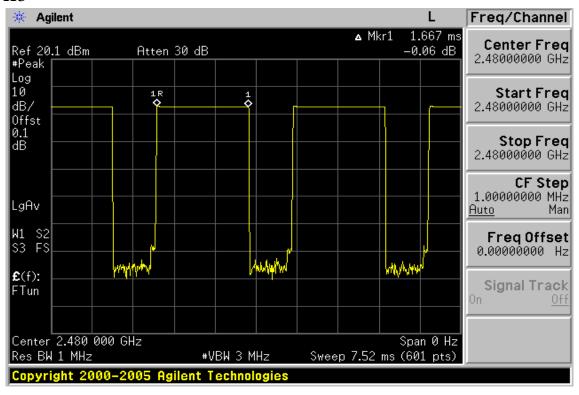


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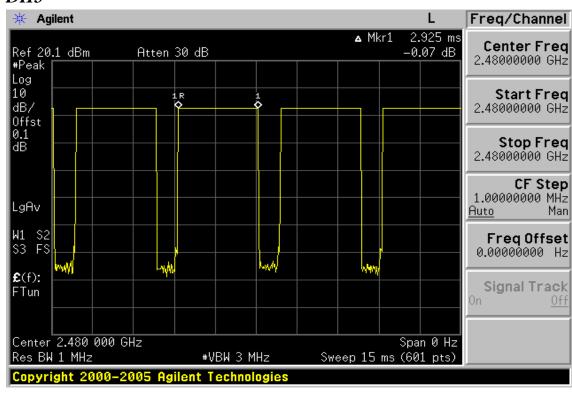
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DH3



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.

According to RSS-210 issue 7, §A8.2(2) and §A8.3(2), The transmitter power spectral density (into the antenna) shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0-second duration.

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 = 1.5MHz, 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	0.82	0.10	0.92	8
Mid	1.09	0.10	1.19	8
High	0.98	0.10	1.08	8

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13.4. Measurement Equipment Used:

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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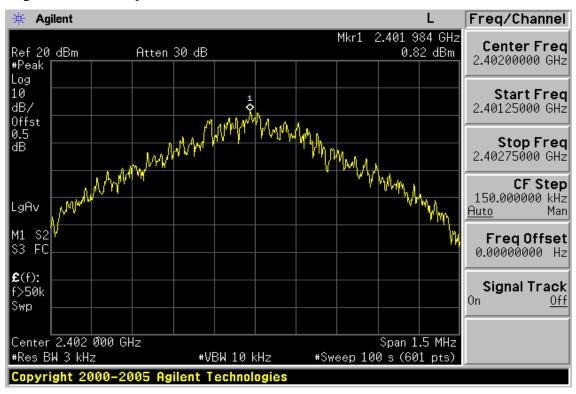


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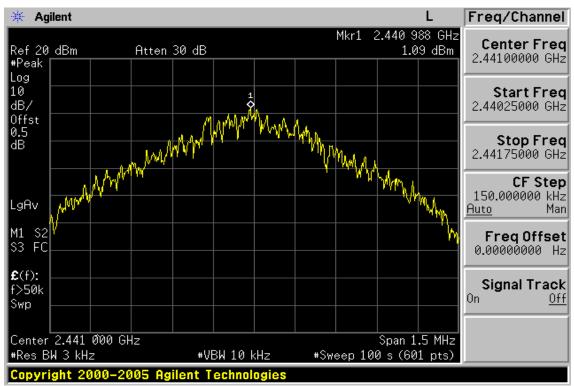
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Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



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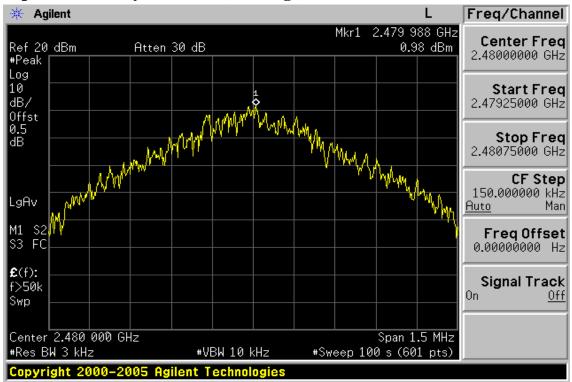


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Power Spectral Density Test Plot (CH-High)



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14. 99% Bandwidth Measurement

14.1. Standard Applicable

RSS-Gen §4.4.1, the transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

The span between the two recorded frequencies is the occupied bandwidth.

14.2. 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				

14.3. Test Set-up:

Refer to section 2.4.

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14.4. **Measurement Procedure**

- Place the EUT on the table and set it in transmitting mode. 1.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- Set the spectrum analyzer as RBW=1% of the approximate emission bandwidth, VBW = 3 times 3. RBW, Span= approximately 20dB below the peak level. Sweep=auto
- 4. Turn on the 99% bandwidth function, max reading...
- 5. Repeat above procedures until all frequency measured were complete.

14.5. **Measurement Result**

ACSUIT	
СН	Bandwidth (kHz)
Lower	836.6264
Mid	866.2853
Higher	856.6901

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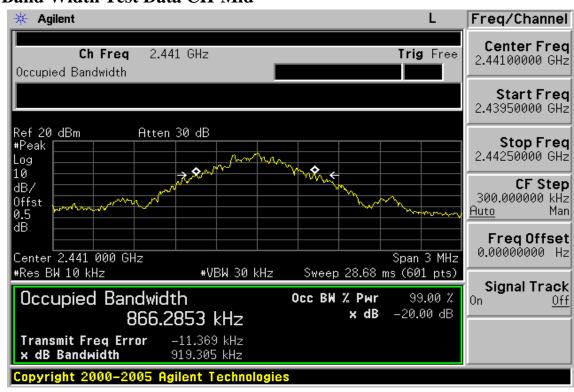
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99% Band Width Test Data CH-Low



99% Band Width Test Data CH-Mid



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 险非只有给明,此想生结用摄影测默之样具色素,同時此样具属是现现不完,未想生主概未公司事而实可,不可知必短剩。

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99% Band Width Test Data CH-High



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15. ANTENNA REQUIREMENT

15.1. Standard Applicable

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 §15.246(1), if transmitting antennas of directional gain greater than 6dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to RSS-GEN 7.1.4, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.

When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in RSS-210 or RSS-310 for devices of RF output powers of 10 milliwatts or less. For devices of output powers greater than 10 milliwatts, except devices subject to RSS-210 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands) or RSS-210 Annex 9 (Local Area Network Devices), the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.

15.2. Antenna Connected Construction

The directional gains of antenna used for transmitting is 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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