

Report No.: EH/2006/40007 **Issue Date: May. 23, 2006**

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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

Product Name: Triband 900/1800/1900 handset

Brand Name: Sagem

Model Name: E2006

Market Name: N/A

FCC ID: M9HE2006

Report No.: EH/2006/40007

Issue Date: May. 23, 2006

FCC Rule Part: §15.247

Sagem Communication Prepared for

2, rue du Petit Albi, 95800 Cergy

Saint-Christophe, France

SGS Taiwan Ltd. Prepared by:

No. 134, Wu Kung Rd., Wuku Industrial

Zone, Taipei County, Taiwan.

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VERIFICATION OF COMPLIANCE

Sagem Communication **Applicant:**

2, rue du Petit Albi, 95800 Cergy Saint-Christophe, France

Triband 900/1800/1900 handset **Equipment Under Test:**

Brand Name: Sagem

Market Name: N/A

FCC ID Number: M9HE2006

Model No.: E2006

Model Difference: N/A

File Number: EH/2006/40007

Apr. 29, 2006 ~ May. 12, 2006 Date of test:

Date of EUT Received: Apr. 28, 2006

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.247.

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

Test By:	Sky Wang	Date	May. 23, 2006	
Prepared By:	Sky Wang Gigi yeh	Date	May. 23, 2006	
Approved By:	Gigi Yeh Timent Su Vincent Su	Date	May. 23, 2006	



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00	May. 23, 2006



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1. GENERAL INFORMATION

1.1. Product Description

Product	Triband 900/1800/1900 handset		
Model Name	E2006		
Model Difference:	N/A		
Trade Name	Sagem		
	3.7V DC by rechargeable battery or 5VDC by AC/DC power adapter		
Power Supply	Adaptor Trade Name: SAGEM Supplier: Astec Model Name: DCH3-050US / 18 919 495-9		

GSM:

	GSM 900, TX: 880MHz – 915MHz	33 dBm	
Frequency Range and Power	GSM 1800, TX:1710MHz-1785MHz	30 dBm	
	GSM 1900, TX: 1850MHz –1910MHz	30 dBm	
Type of Emission	300KGXW		
Software Version	L,K02		
Hardware Version	V01X		
IMEI	359243000000219		
IIVILI	359243000000326		



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Bluetooth:

Frequency Range	2402 – 2480MHz
Channel number	79 channels
Rated Power	-0.04 dBm
Modulation type	Frequency Hopping Spread Spectrum (FHSS)
Antenna Designation	Metal Antenna, -2.83 dBi Non-User Replaceable (Fixed)

The EUT is compliance with Bluetooth Standard.

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

This submittal(s) (test report) is intended for FCC ID: M9HE2006 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.

1.3. Test Methodology

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

1.4. Test Facility

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

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 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 according to the requirements in Section 8 and 13 of ANSI C63.4-2003.



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2.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System

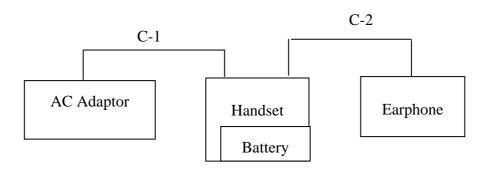
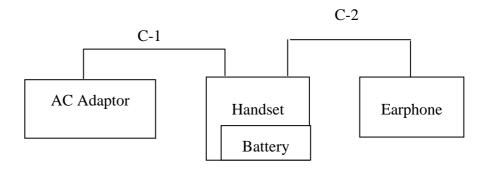


Fig. 2-2 Configuration of AC Power Line Conducted Emission



Remote Side(on the corner)





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Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	FCC ID	Series No.	Data Cable	Power Cord
1	Earphone, C2	Sagem	18916164-5	N/A	N/A	1.2m Shielded	N/A
2.	Battery	Sagem	28707385-1	N/A	N/A	N/A	N/A
3	AC Adaptor,	Sagem	DCH3-050US 18 919 521-1	N/A	N/A	1.5m, Un-Shielded	Un-shielded

Table 2-2 Support Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	FCC ID	Series No.	Data Cable	Power Cord
1.	BT headset	Sagem	189033747	M9H189033747	N/A	N/A	N/A
2.	Communica- tion Tester	R&S	CMU200	N/A	102189	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	Compliant
§15.247(c)	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 for each type band with rated data rate 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 E2 mode was reported.

The field strength of co-located spurious radiation emission was measured as worst case of EUT at E2 position at Bluetooth with GSM 1900 at channel Mid mode 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	Lin dB(nits 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.

^{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.								
EMC Analyzer	HP	8594EM	3624A00203	09/02/2005	09/03/2006							
EMI Test Receiver	R&S	ESCS30	828985/004	06/09/2005	06/10/2006							
Transient Limiter	HP	11947A	3107A02062	09/02/2005	09/03/2006							
LISN	Rolf-Heine	NNB-2/16Z	99012	12/31/2005	12/30/2006							
LISN	Rolf-Heine	NNB-2/16Z	99013	12/24/2005	12/23/2006							
Coaxial Cables	N/A	No. 3, 4	N/A	12/01/2005	12/01/2206							

5.5. **Measurement Result**

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



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AC POWER LINE CONDUCTED EMISSION TEST DATA

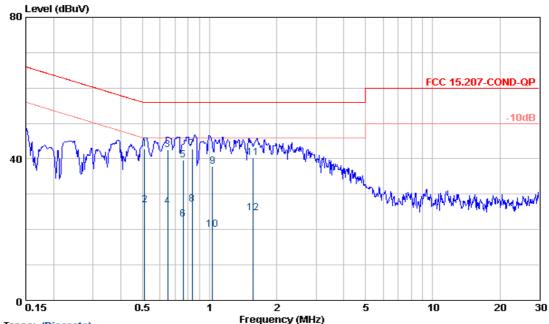
Operation Mode : Normal Operating Test Date May. 04, 2006

Fundamental Frequency: N/A Test By Willis

Temperature Pol Line/Neutral : 25℃ Adaptor Model DCH3-050US Humidity : 65%

Test Voltage :120Vac Supplier: Astec





Trace: (Discrete)

Site : RF Site

Condition : FCC 15.207-COND-QP NNB-2/16Z(99012) LINE

Project No. : EI/2006/40004

Applicant :SAGEM

: Triband 900/1800/1900 headset EUT Description

EUT Model : E2006//ADAPTER MODEL:DCH3-050US

Test Mode : GSM1900 LINK

Temp./Humid. : 25/65 : WILLIS Operator

Freq	Pol/Phase	Read Level	Factor	Level	Limit Line	Over Limit	Remark
MHz		dBu₹	dB	dBu₹	dBuV	dB	
2 0.51 3 0.65 4 0.65 5 0.76 6 0.76 7 0.83 8 0.83 9 1.03 10 1.03 11 1.57	LINE LINE LINE LINE LINE LINE LINE LINE	42.48 26.81 42.27 26.36 39.43 22.77 42.60 26.88 37.73 19.93 40.23 24.44	0.20 0.20 0.21 0.21 0.21 0.21 0.21 0.21	42.68 27.01 42.48 26.57 39.64 42.81 27.09 37.94 40.14 40.44 24.65	56.00 56.00 56.00 56.00 56.00 56.00 56.00 56.00	-13.52 -29.43 -16.36 -33.02 -13.19 -28.91 -18.06 -35.86 -15.56	ÄVERAGE QP AVERAGE QP AVERAGE QP AVERAGE QP AVERAGE



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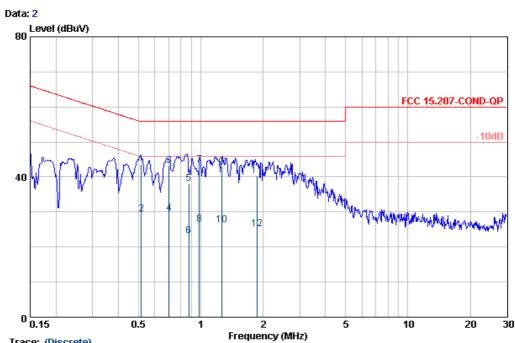
AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode : Normal Operating Test Date May. 04, 2006

Fundamental Frequency: N/A Test By Willis

Pol Line/Neutral Temperature : 25℃ Humidity : 65% Adaptor Model DCH3-050US

Test Voltage :120Vac Supplier: Astec



Trace: (Discrete)

: FCC 15.207-COND-QP NNB-2/16Z(99012) NEUTRAL Condition

Project No. : EI/2006/40004

Applicant :SAGEM

EUT Description : Triband 900/1800/1900 headset

: E2006//ADAPTER MODEL:DCH3-050US EUT Model

: GSM1900 LINK Test Mode

Temp./Humid. : 25/65 · 37/11 LTS Operator

Site

heraror	. WILLIA		ъ 1			+	_	
	Freq	Pol/Phase	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz		dBu₹	dB	dBu∀	dBu₹	dB	
1 2 3 4 5 6 7 8 9 10	0.52 0.70 0.70 0.88 0.88 0.98 1.26	NEUTRAL	43.42 29.16 43.13 29.35 37.90 22.89 43.34 26.41 42.50 40.16	0.20 0.20 0.21 0.21 0.21 0.21 0.21 0.21	43.62 29.36 43.34 29.56 38.11 23.10 43.55 26.62 42.71 26.30	56.00 56.00 56.00 56.00 56.00 56.00 56.00 56.00	-12.66 -26.44 -17.89 -32.90 -12.45 -29.38 -13.29	ÄVERAGE OP AVERAGE OP AVERAGE OP AVERAGE OP AVERAGE
12	1.86	NEUTRAL	24.92	0.22	25.14	56.00	-30.86	AVERAGE



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6. PEAK OUTPUT POWER MEASUREMENT

6.1. Standard Applicable

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

6.2. Measurement Procedure

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

6.3. Measurement Result

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2402.00	-0.04	0.00	-0.04	0.00099	1
2441.00	-2.59	0.00	-2.59	0.00055	1
2480.00	-2.77	0.00	-2.77	0.00053	1

6.4. Measurement Equipment Used:

- Tyleasarement	Conducted Emission Test Site											
EQUIPMENT	MFR	MODEL			CAL DUE.							
TYPE		NUMBER	NUMBER	CAL.								
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2006	03/28/2007							
Spectrum Analyzer	Agilent	7405A	US41160416	06/28/2005	06/29/2006							
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2005	11/10/2006							
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A							
Attenuator	Mini-Circult	BW-S10W5	N/A	10/07/2005	10/06/2006							
Attenuator	Mini-Circult	BW-S6W5	N/A	10/07/2005	10/06/2006							
Splitter	Agilent	Power Biviber	51818	01/05/2006	01104/2007							



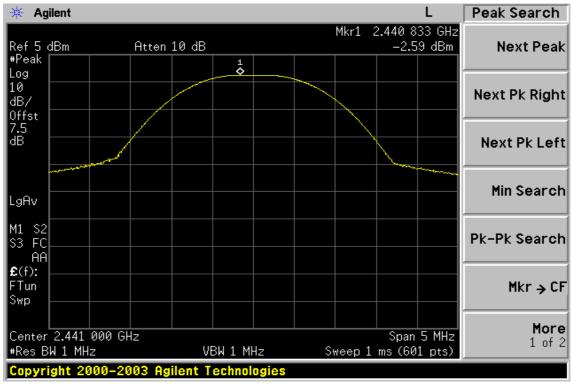
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Peak Power Output Data Plot (CH Low)



Peak Power Output Data Plot (CH Mid)

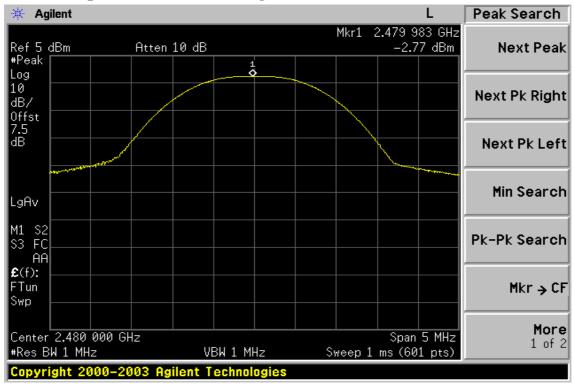




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Peak Power Output Data Plot (CH High)





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7. 20dB BAND WIDTH

7.1. Standard Applicable

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

7.2. Measurement Procedure

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

7.3. Measurement Result

СН	Bandwidth	2/3 Bandwidth		
	(MHz)	(MHz)		
Lower	0.887	0.591		
Mid	0.887	0.591		
Higher	0.923	0.615		

7.4. Measurement Equipment Used:

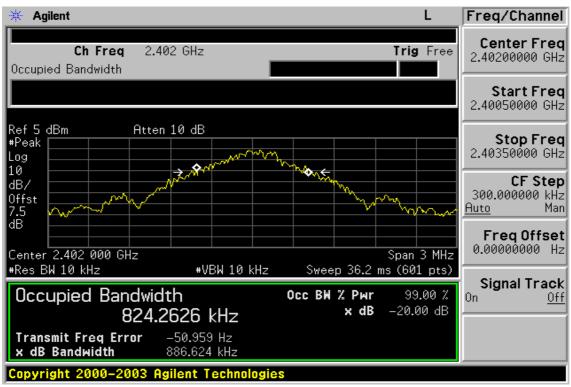
7.4. Measurement Equipment escu.													
	Conducted Emission Test Site												
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.								
TYPE		NUMBER	NUMBER	CAL.									
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2006	03/28/2007								
Spectrum Analyzer	Agilent	7405A	US41160416	06/28/2005	06/29/2006								
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2005	11/10/2006								
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A								
Attenuator	Mini-Circult	BW-S10W5	N/A	10/07/2005	10/06/2006								
Attenuator	Mini-Circult	BW-S6W5	N/A	10/07/2005	10/06/2006								
Splitter	Agilent	Power Biviber	51818	01/05/2006	01104/2007								



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20dB Band Width Test Data CH-Low



20dB Band Width Test Data CH-Mid





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20dB Band Width 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).

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	MODEL SERIAL		CAL DUE.							
TYPE		NUMBER	NUMBER	CAL.								
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2006	03/28/2007							
Spectrum Analyzer	Agilent	7405A	US41160416	06/28/2005	06/29/2006							
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2005	11/10/2006							
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A							
Attenuator	Mini-Circult	BW-S10W5	N/A	10/07/2005	10/06/2006							
Attenuator	Mini-Circult	BW-S6W5	N/A	10/07/2005	10/06/2006							
Splitter	Agilent	Power Biviber	51818	01/05/2006	01104/2007							

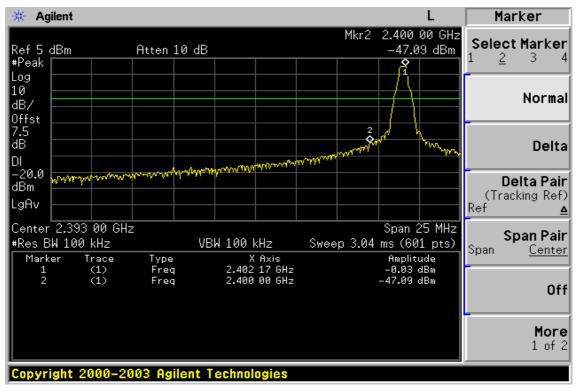
Note: Measurement Equipment for radiated emission refers to section 9.

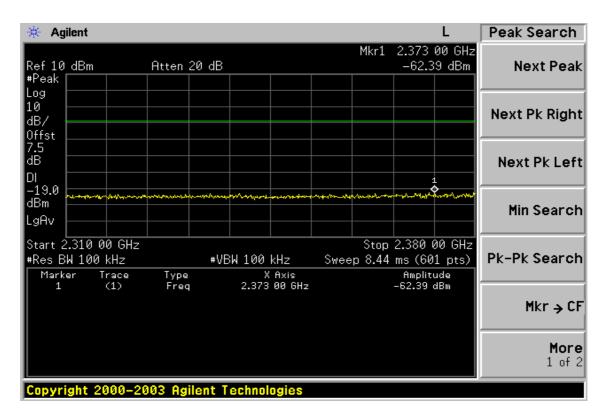


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Conducted Emission: Test Data CH-Low



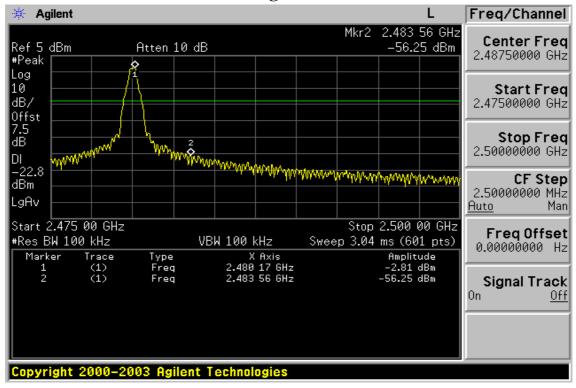




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Conducted Emission: Test Data CH-High





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Radiated Emission:

Operation ModeTX CH LowTest DateMay. 04, 2006Fundamental Frequency2402 MHzTest BySkyTemperature25 ℃PolVer.

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)	
2	373.00	34.20		-3.49	30.71		74.00	54.00	-23.29	Peak
2	390.00	42.40		-3.40	39.00		74.00	54.00	-15.00	Peak

Operation Mode TX CH Low Test Date May. 04, 2006 Fundamental Frequency 2402 MHz Test By Sky 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	Remark
_	(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
•	2373.00	33.89		-3.49	30.40		74.00	54.00	-23.60	Peak
	2400.00	43.10		-3.40	39.70		74.00	54.00	-14.30	Peak

Remark:

- (1) 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.
- (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:

Humidity

TX CH High Test Date May. 04, 2006 Operation Mode

Fundamental Frequency 2480 MHz Test By Sky **Temperature** 25 °C Pol Ver.

65 %

AV \mathbf{AV} Peak **Actual FS Peak** Reading Reading Ant./CL Limit **Peak** AVLimit Margin Remark Freq. CF(dB) (dBuV/m) (dBuV/m) (dBuV/m)(MHz) (dBuV) (dBuV) (dB) 2483.56 40.77 -3.04 37.73 74.00 54.00 -16.27 Peak

Operation Mode TX CH High Test Date May. 04, 2006

Fundamental Frequency 2480 MHz Test By Sky Temperature 25 °C Hor. Pol

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)	
2483.56	41.70		-3.04	38.66		74.00	54.00	-15.34	Peak

Remark:

- (1) 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.
- (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.

SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan. / 台北縣五股工業區五工路134號



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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. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until all frequency measured were complete.

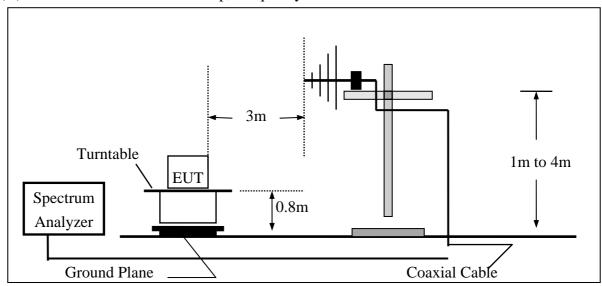


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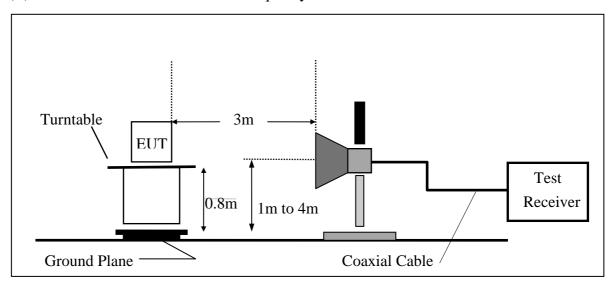
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9.4. Test SET-UP (Block Diagram of Configuration)

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



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





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9.5. **Measurement Equipment Used:**

	966 Chamber										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.						
TYPE		NUMBER	NUMBER	CAL.							
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2006	03/28/2007						
Spectrum Analyzer	Agilent	E7405A	US41160416	08/27/2005	08/26/2006						
Bilog Antenna	SCHWAZBECK	VULB9160	152	06/03/2005	06/02/2006						
Horn antenna	Schwarzbeck	BBHA 9120D	309/320	08/16/2005	08/15/2006						
Horn antenna	Schwarzbeck	BBHA 9170	184/185	07/04/2005	07/03/2006						
Pre-Amplifier	HP	8447D	2944A09469	07/19/2005	07/18/2006						
Pre-Amplifier	HP	8494B	3008A00578	02/26/2006	02/25/2007						
Turn Table	HD	DT420	N/A	N.C.R	N.C.R						
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R						
Controller	HD	HD100	N/A	N.C.R	N.C.R						
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	10/09/2005	10/08/2006						
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/09/2005	10/08/2006						
Site NSA	SGS	966 chamber	N/A	11/17/2005	11/16/2006						

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

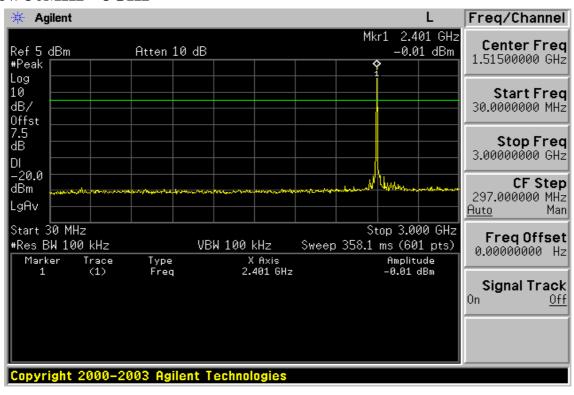
Refer to attach tabular data sheets.



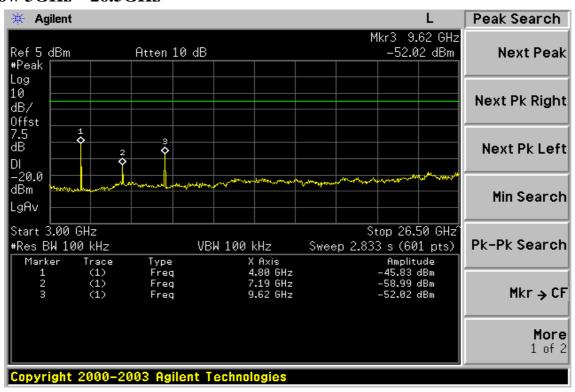
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Conducted Spurious Emission Measurement Result Ch Low 30MHz - 3GHz



Ch Low 3GHz – 26.5GHz

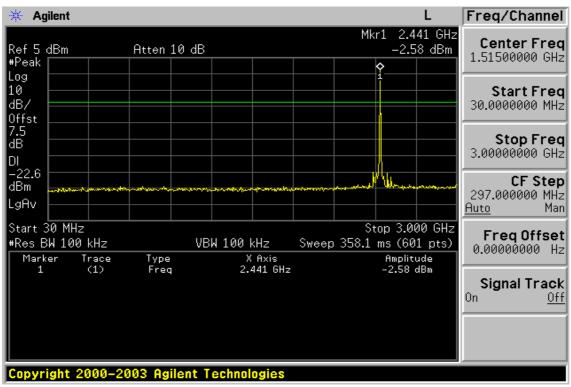




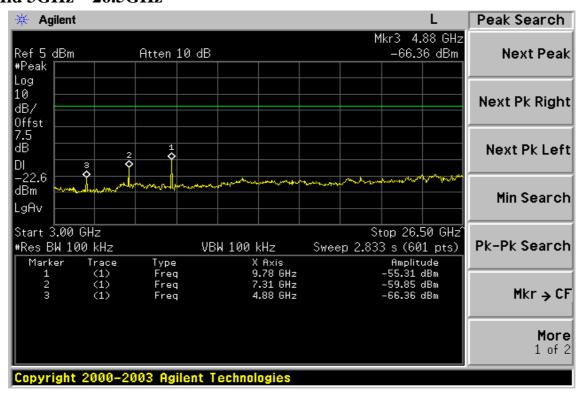
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Ch Mid 30MHz - 3GHz



Ch Mid 3GHz – 26.5GHz

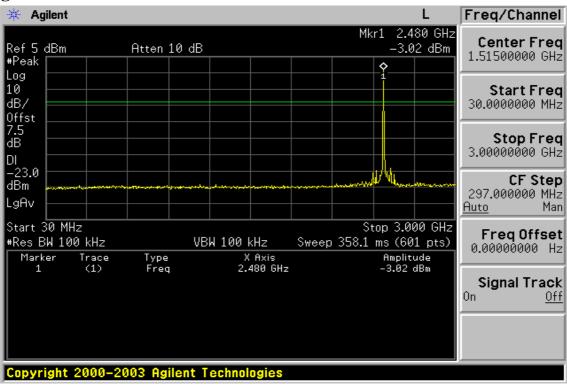




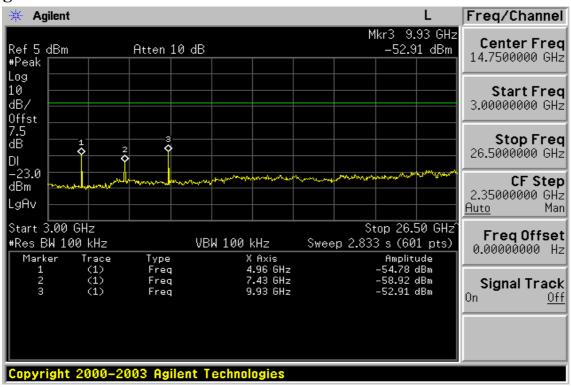
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Ch High 30MHz - 3GHz



Ch High 3GHz - 26.5GHz





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Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode TX CH Low (E2 Position) Test Date May. 04, 2006

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

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Mar- gin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
33.88	V	Peak	45.67	-15.12	30.55	40.00	-9.45
46.49	V	Peak	41.53	-14.63	26.90	40.00	-13.10
104.69	V	Peak	37.22	-16.82	20.40	43.50	-23.10
31.94	H	Peak	39.03	-15.22	23.81	40.00	-16.19
46.49	Н	Peak	41.68	-14.63	27.05	40.00	-12.95
65.89	Н	Peak	39.27	-15.35	23.92	40.00	-16.08

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 TX CH Mid (E2 Position) Test Date May. 04, 2006

Fundamental Frequency 2441MHz Test By Sky
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)
31.94	V	Peak	43.45	-15.22	28.23	40.00	-11.77
46.49	V	Peak	42.07	-14.63	27.44	40.00	-12.56
106.63	V	Peak	38.59	-16.66	21.93	43.50	-21.57
33.88	Н	Peak	45.93	-15.12	30.81	40.00	-9.19
56.19	Н	Peak	43.81	-14.95	28.86	40.00	-11.14
90.14	Н	Peak	42.50	-17.89	24.61	43.50	-18.89

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 TX CH High (E2 Position) Test Date May. 04, 2006

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

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	46.93	-15.12	31.81	40.00	-8.19
V	Peak	42.74	-14.95	27.79	40.00	-12.21
V	Peak	38.72	-16.66	22.06	43.50	-21.44
Н	Peak	44.12	-15.12	29.00	40.00	-11.00
Н	Peak	42.74	-14.83	27.91	40.00	-12.09
Н	Peak	40.10	-17.89	22.21	43.50	-21.29
	H/V V V H H	Ant.Pol. Mode H/V (PK/QP) V Peak V Peak V Peak H Peak H Peak	Ant.Pol. Mode Reading H/V (PK/QP) (dBuV) V Peak 46.93 V Peak 42.74 V Peak 38.72 H Peak 44.12 H Peak 42.74	Ant.Pol. Mode Reading Factor H/V (PK/QP) (dBuV) (dB) V Peak 46.93 -15.12 V Peak 42.74 -14.95 V Peak 38.72 -16.66 H Peak 44.12 -15.12 H Peak 42.74 -14.83	Ant.Pol. Mode Mode Mode Mode Reading Mode Mode Mode Mode Mode Mode Mode Mode	Ant.Pol. Mode Mode Mode Mode Reading Mode Mode Mode Mode Mode Mode Mode Mode

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) (Co-Location mode)

Operation Mode BT E2 TX Low / GSM 1900 Mid **Test Date** May. 04, 2006

Fundamental Frequency 2402MHz / 1880.00MHz Test By Sky

Temperature Pol Ver./Hor. 25

Humidity 65 %

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
	V	Peak		, ,			
	Н	Peak					

- 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)

TX CH Low (E2 Position) Operation Mode Test Date May. 04, 2006

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

65 % Humidity

	Peak	\mathbf{AV}		Actu	ıal FS	Peak	\mathbf{AV}	
Freq.	U	U	Ant./CL	Peak	AV	Limit	Limit	Margin
(MHz)	(aBuv)	(dBuV)	CF(dB)	(aBuv/m	(dBuV/m)	abuv/m	(aBuv/m)	(dB)
40040	12.01		0.00	20.21		7 4 00	7 4 00	4.4.50
4804.0	42.84		-3.63	39.21		74.00	54.00	-14.79
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	

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency_o
- (2) 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.
- (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)

TX CH Low (E2 Position) Operation Mode Test Date May. 04, 2006

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

Humidity 65 %

	Peak	\mathbf{AV}		Actu	ıal 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	41.62		-3.63	37.99		74.00	54.00	-16.01
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	
24020.0						74.00	54.00	

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) 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.
- (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)

TX CH Mid (E2 Position) Operation Mode Test Date May. 04, 2006

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

Humidity 65 %

Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}	
Reading	Reading	Ant./CL	Peak	\mathbf{AV}	Limit	Limit	Margin
(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
42.20		-3.47	38.73		74.00	54.00	-15.27
					74.00	54.00	
					74.00	54.00	
					74.00	54.00	
					74.00	54.00	
					74.00	54.00	
					74.00	54.00	
					74.00	54.00	
					74.00	54.00	
	Reading (dBuV)	Reading Reading (dBuV)	Reading Reading Ant./CL (dBuV) (dBuV) CF(dB)	Reading Reading Ant./CL Peak (dBuV) (dBuV) CF(dB) (dBuV/m)	ReadingReadingAnt./CLPeakAV(dBuV)(dBuV)(dBuV/m) (dBuV/m)	Reading (dBuV) Ant./CL (dBuV) Peak (dBuV/m) AV (dBuV/m) Limit (dBuV/m) 42.20 -3.47 38.73 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00 74.00	Reading (dBuV) Ant./CL (dBuV) Peak (dBuV) AV (dBuV) Limit (dBuV) Limit (dBuV/m) 42.20 -3.47 38.73 74.00 54.00 74.00 54.00 54.00 74.00 54.00 74.00 54.00 54.00 74.00 54.00 54.00 74.00 54.00 54.00 74.00 54.00 54.00 74.00 54.00 54.00 74.00 54.00 54.00 74.00 54.00 54.00

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) 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.
- (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)

TX CH Mid (E2 Position) Operation Mode **Test Date** May. 04, 2006

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

65 % Humidity

	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)
4882.0	43.66		-3.47	40.19		74.00	54.00	-13.81
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	

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) 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.
- (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 (E2 Position) **Test Date** May. 04, 2006

Fundamental Frequency 2480 MHz Test By Sky 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)
4960.0	43.25		-3.31	39.94		74.00	54.00	-14.06
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	

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) 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.
- (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



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Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH High (E2 Position) Operation Mode Test Date May. 04, 2006

Fundamental Frequency 2480 MHz Test By Sky 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)
4960.0	38.61		-3.31	35.30		74.00	54.00	-18.70
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	

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) 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.
- (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) (Co-Location)

Operation Mode BT E2 TX Low / GSM 1900 Mid **Test Date** May. 04, 2006

Fundamental Frequency 2402MHz / 1880.00MHz Test By Sky **Temperature** 25 °C Pol Ver.

65 % Humidity

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq. (MHz)	Reading (dBuV)	Reading (dBuV)			AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
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		
16814.0						74.00	54.00		
19216.0						74.00	54.00		
21618.0						74.00	54.00		
24020.0						74.00	54.00		
2390.0	43.60		-7.87	35.73		74.00	54.00	-18.27	Peak
2386.2	47.15		-7.87	39.28		74.00	54.00	-14.72	Peak
3700.4						74.00	54.00		
5550.6						74.00	54.00		
7400.8						74.00	54.00		
9251.0						74.00	54.00		

Remark:

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- (2) 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.
- (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=1MHz, 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) (Co-Location)

Operation Mode BT E2 TX High / GSM 1900 Mid Test Date May. 04, 2006

Fundamental Frequency 2402MHz /1880.00MHz Test By Sky 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	Note
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1058.5	41.26		-12.08	29.18		74.00	54.00	-24.82	Peak
1273.0	39.47		-11.34	28.13		74.00	54.00	-25.87	Peak
4804.0						74.00	54.00		
4958.5	35.83		-3.31	32.52		74.00	54.00	-21.48	Peak
7206.0						74.00	54.00		
9608.0						74.00	54.00		
12010.0						74.00	54.00		
14412.0						74.00	54.00		
16814.0						74.00	54.00		
19216.0						74.00	54.00		
21618.0						74.00	54.00		
24020.0						74.00	54.00		
2390.0	43.60		-3.31	40.29		74.00	54.00	-13.71	Peak
2386.2						74.00	54.00		
3700.4						74.00	54.00		
5550.6						74.00	54.00		
7400.8						74.00	54.00		

Remark:

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency_o
- (2) 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.
- (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=1MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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10. FREQUENCY SEPARATION

10.1. Standard Applicable

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

10.2. Measurement Procedure

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

10.3. Measurement Result

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

10.4. Measurement Equipment Used:

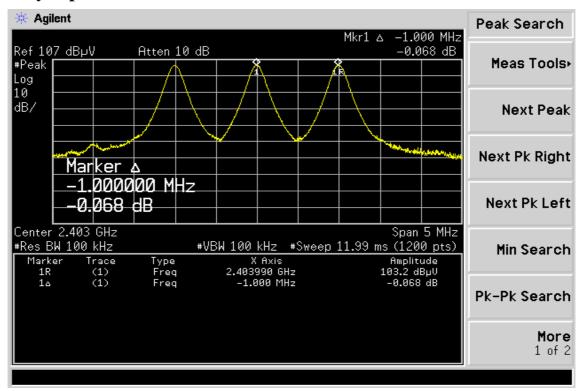
Conducted Emission Test Site										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.					
TYPE		NUMBER	NUMBER	CAL.						
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2006	03/28/2007					
Spectrum Analyzer	Agilent	7405A	US41160416	06/28/2005	06/29/2006					
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2005	11/10/2006					
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A					
Attenuator	Mini-Circult	BW-S10W5	N/A	10/07/2005	10/06/2006					
Attenuator	Mini-Circult	BW-S6W5	N/A	10/07/2005	10/06/2006					
Splitter	Agilent	Power Biviber	51818	01/05/2006	01104/2007					



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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.	
TYPE		NUMBER	NUMBER	CAL.		
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2006	03/28/2007	
Spectrum Analyzer	Agilent	7405A	US41160416	06/28/2005	06/29/2006	
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2005	11/10/2006	
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A	
Attenuator	Mini-Circult	BW-S10W5	N/A	10/07/2005	10/06/2006	
Attenuator	Mini-Circult	BW-S6W5	N/A	10/07/2005	10/06/2006	
Splitter	Agilent	Power Biviber	51818	01/05/2006	01104/2007	

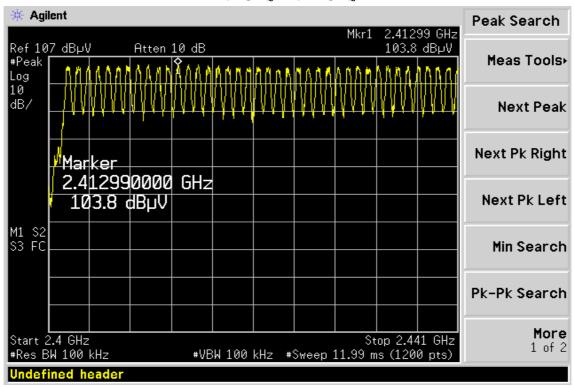


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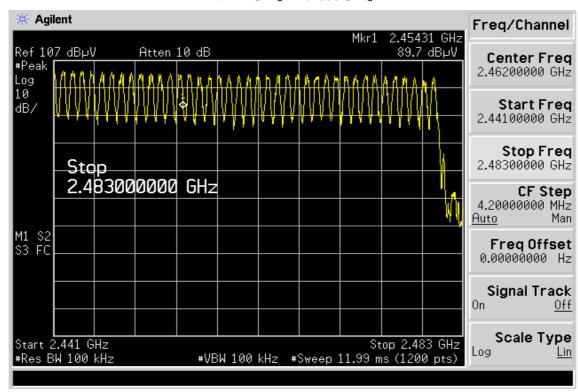
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Channel Number

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/(2*79)) * 31.6 = 129.6 (ms)

DH3 time slot = 1.675 (ms) * (1600/(4*79)) * 31.6 = 268.0 (ms)

DH5 time slot = 2.925 (ms) * (1600/(6*79)) * 31.6 = 312.0 (ms)

CH Mid: DH1 time slot = 0.405 (ms) * (1600/(2*79)) * 31.6 = 129.6 (ms)

DH3 time slot = 1.675 (ms) * (1600/(4*79)) * 31.6 = 268.0 (ms)

DH5 time slot = 2.906 (ms) * (1600/(6*79)) * 31.6 = 309.9 (ms)

CH High: DH1 time slot = 0.416 (ms) * (1600/(2*79)) * 31.6 = 133.12 (ms)

DH3 time slot = 1.662 (ms) * (1600/(4*79)) * 31.6 = 265.92 (ms)

DH5 time slot = 2.906 (ms) * (1600/(6*79)) * 31.6 = 309.97 (ms)

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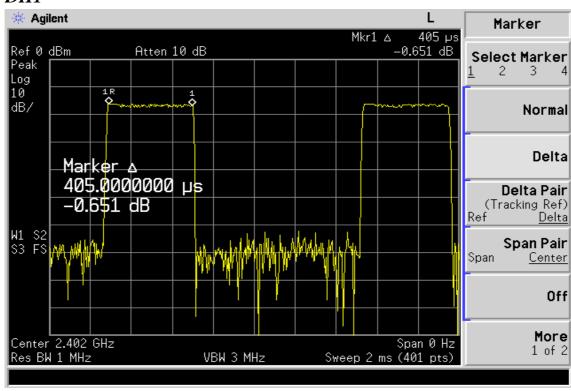
12.4. Measurement Equipment Used:

Conducted Emission Test Site						
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.	
TYPE		NUMBER	NUMBER	CAL.		
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2006	03/28/2007	
Spectrum Analyzer	Agilent	7405A	US41160416	06/28/2005	06/29/2006	
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2005	11/10/2006	
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A	
Attenuator	Mini-Circult	BW-S10W5	N/A	10/07/2005	10/06/2006	
Attenuator	Mini-Circult	BW-S6W5	N/A	10/07/2005	10/06/2006	
Splitter	Agilent	Power Biviber	51818	01/05/2006	01104/2007	

Dwell Time Test Data

CH-Low

DH1



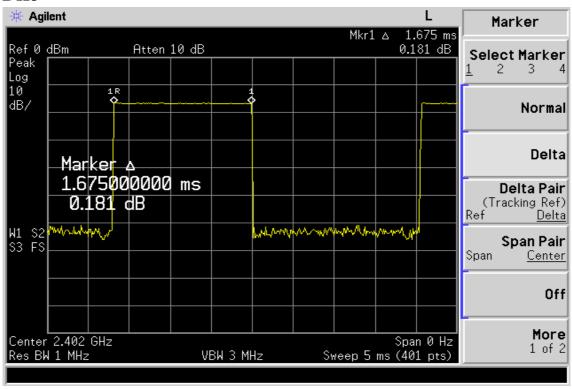
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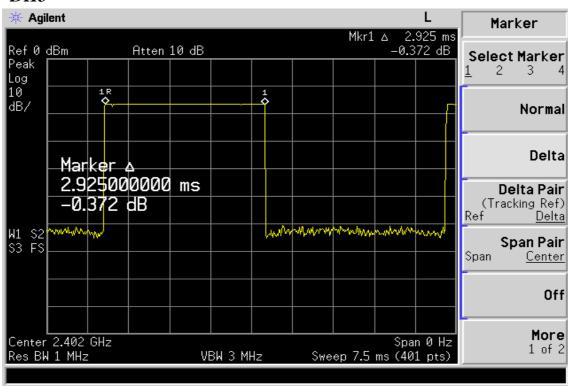
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DH3



DH5



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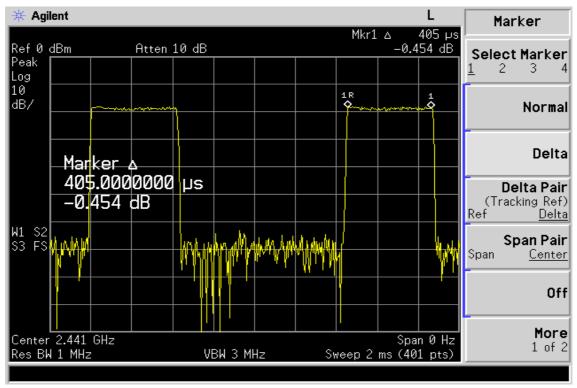


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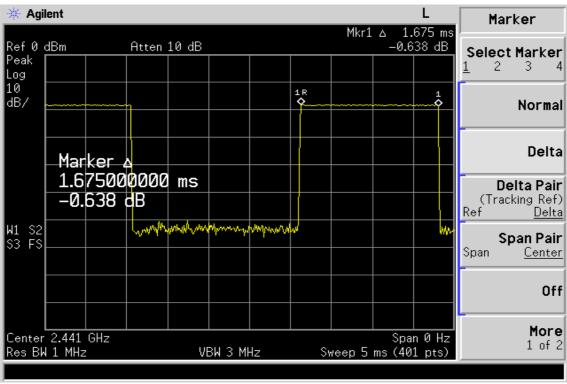
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CH-Mid

DH1



DH3



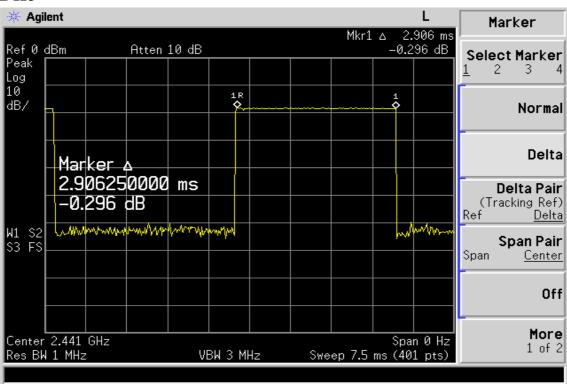
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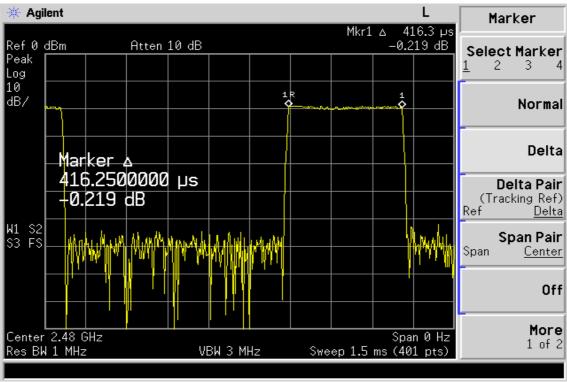
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DH5



CH-High

DH1



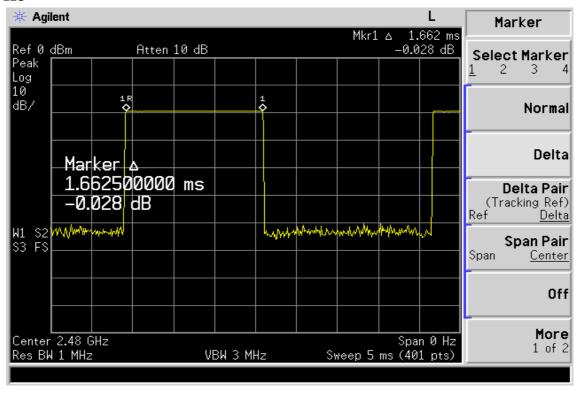
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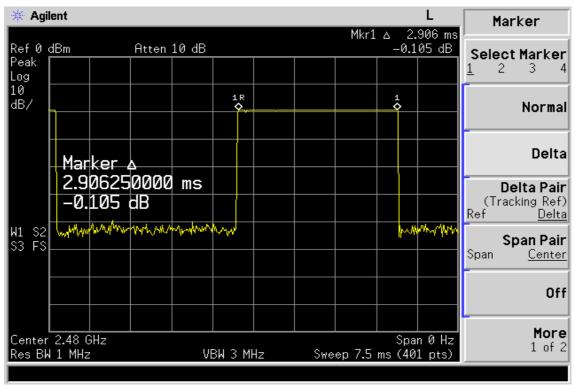
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DH3



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.

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	-10.39	0.00	-10.39	8
Mid	-13.02	0.00	-13.02	8
High	-12.96	0.00	-12.96	8

13.4. Measurement Equipment Used:

Conducted Emission Test Site						
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.	
ТҮРЕ		NUMBER	NUMBER	CAL.		
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2006	03/28/2007	
Spectrum Analyzer	Agilent	7405A	US41160416	06/28/2005	06/29/2006	
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2005	11/10/2006	
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A	
Attenuator	Mini-Circult	BW-S10W5	N/A	10/07/2005	10/06/2006	
Attenuator	Mini-Circult	BW-S6W5	N/A	10/07/2005	10/06/2006	
Splitter	Agilent	Power Biviber	51818	01/05/2006	01104/2007	

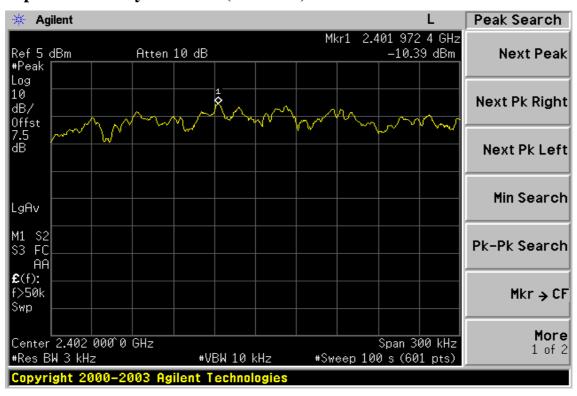
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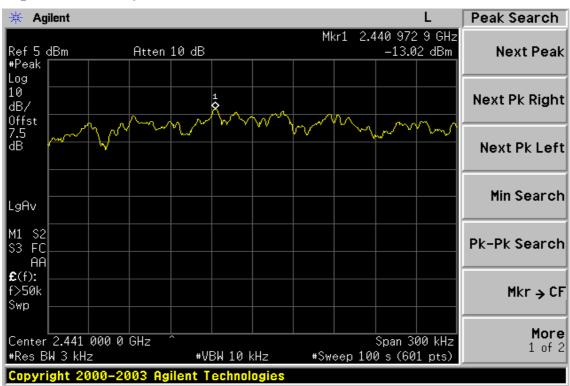
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Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)



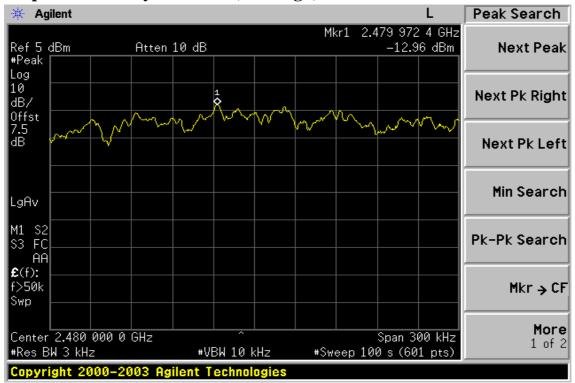
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Power Spectral Density Test Plot (CH-High)



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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 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

14.2. Antenna Connected Construction

The directional gains of antenna used for transmitting is 2.83dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.



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APPENDIX 1

PHOTOGRAPHS OF SET UP

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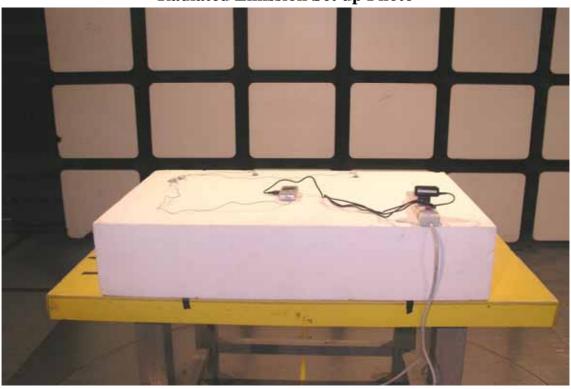
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Radiated Emission Set up Photo



Radiated Emission Set up Photo



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Conducted Emission Set up Photo





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APPENDIX 2

PHOTOGRAPHS OF EUT

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All View of EUT



Front View of EUT



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Back View of EUT



Right View of EUT



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Left View of EUT



Top View of EUT



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Bottom View of EUT



Adaptor-SN Number: 189195229



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Earphone (18916164-5)



Battery (28 707 385-1)



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Open View of EUT - 1



Open View of EUT - 3



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Open View of EUT – 4



Open View of EUT – 5



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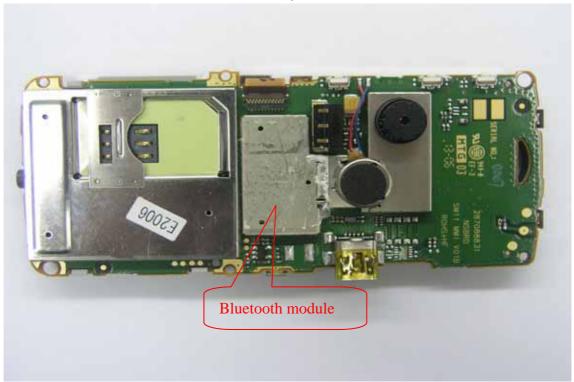
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Internal of EUT-1



Internal of EUT-2



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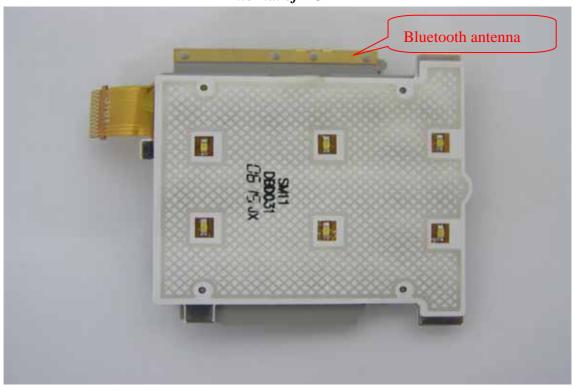
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Internal of EUT-3



Internal of EUT-4



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