

FCC ID: XHFTK500ABGNTS500

IC: 8434A-500TS500

Report No.: EF/2011/10005 Issue Date: Mar. 25, 2011

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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

OF

Product Name: Tablet PC

Brand Name: Sahara, Tabletkiosk, PaceBlade

Model Name of Host: i500, TS500, SlimBook 240 Series

Model Difference: Different model for different market

Model No. of WLAN

Modular:

622ANHMW

IC: 8434A-500TS500

FCC ID: XHFTK500ABGNTS500

Report No.: EF/2011/10005

Issue Date: Mar. 24, 2011

§15.247, Cat: DSS **Rule Part:**

RSS-210 issue 8:2010, Annex 8

Tabletkiosk Prepared for:

2832 Columbia Street, Torrance, California 90503

SGS Taiwan Ltd. Prepared by:

Electronics & Communication Laboratory

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

Taipei County, Taiwan.





Testing Laboratory 0513

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CERTIFICATION OF COMPLIANCE

Applicant: Tabletkiosk

2832 Columbia Street, Torrance, California 90503

Product Name: Tablet PC

Brand Name: Sahara, Tabletkiosk, PaceBlade

IC: 8434A-500TS500

FCC ID: XHFTK500ABGNTS500

Model Name of Host: i500, TS500, SlimBook 240 Series

Model No. of WLAN

622ANHMW **Modular:**

Model Difference: Different model for different market

File Number: EF/2011/10005

Date of test: Jan. 28, 2011 ~ Mar. 23, 2011

Date of EUT Received: Jan. 28, 2011

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 RSS-Gen. issue 2:2007, 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:2007, §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 Lin	Date:	Mar. 25, 2011	
	Bondi Liu / Engineer			
Prepared By:	Gigi yeh	Date:	Mar. 25, 2011	
	Gigi Yeh / Clerk			
Approved By:	Jim Chang	Date:	Mar. 25, 2011	
_	Jim Chang / Supervisor	<u> </u>		

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Version

Version No.	Date	Description
00 Mar. 25, 2011		Initial creation of document

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

Member of SGS Group



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1. GENERAL INFORMATION

1.1. Product Description

General:

Product name:	Tablet PC		
Brand Name:	Sahara, Tabletkiosk, PaceBlade		
Model Name:	i500, TS500, SlimBook 240 Series		
Model Difference:	Different n	nodel for different market	
Bluetooth Module FCC ID:	: NLFGUBTCR42M		
Bluetooth Module IC:	4023A-BT	CR42MA	
	11.1Vdc Li-Ion battery or 20Vdc from AC/DC power adapter		
	Model: TSE57-3CLI,		
Power Supply:	Battery:	Supplier: T-Gee Electronics Co., LTD.	
		Model: PA-1650-68	
	Adapter:	Supplier: LITE-ON TECHNOLOGY CORPORA-	
		TION	

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Bluetooth:

Bluetooth FCC Modular Report:	Supplier: SPORTON International Inc. Report Owner: Billionton Systems Inc. Model: GUBTCR42M Report Number: FR590710-08
Bluetooth IC Modular Report:	Supplier: SPORTON International Inc. Report Owner: Billionton Systems Inc. Model: GUBTCR42M, GUBTCR42M-A, GUBTCR42M-NS Report Number: CR590710
Frequency Range:	2402 – 2480MHz
Bluetooth Version:	V2.1 + EDR (GFSK + /4DQPSK + 8DPSK)
Channel number:	79 channels
Modulation type:	Frequency Hopping Spread Spectrum
Transmit Power:	1.83 dBm
Dwell Time:	<= 0.4s
Operating Mode:	Point-to-Point
Antenna Designation:	PIFA Antenna / 0.83dBi
Type of Emission:	1M2D1D

The EUT is compliance with Bluetooth 2.1 + EDR Standard.

This report applies for Bluetooth.

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

This submittal(s) (test report) is intended for FCC ID: XHFTK500ABGNTS500 filing to comply with Section 15.247 of the FCC Part 15C, Subpart C Rules.

And IC: 8434A-500TS500 filing to comply with Industry Canada RSS-210 issue 8: 2010 Annex 8

Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003) and RSS-Gen: 2010.. Radiated testing was performed at an antenna to EUT distance 3 meters.

Tested in accordance with FCC Public Notice DA 00-705

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-4.

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 tested with a test program to fix the Tx/RX frequency that was for the purpose of the measurements. For more information please see test data and APPENDIX 1 for set-up photographs.

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: 2010. 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 of ANSI C63.4-2003 and DA 00-705..

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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.	AC Adaptor	LITE-ON	PA-1650-68	N/A
2.	Bluetooth Software	Billionton	InstallBlueSuite2.3	Version 2.3

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3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result	
§15.207(a)/	AC Power line Conducted Emission	Compliant	
RSS-Gen §7.2.2	AC Power fine Conducted Emission		
§15.247(b)(1)/	Paak Output Power	Compliant	
RSS-210 issue 7,§A8.4(2)	Peak Output Power	Compliant	
§15.247(d)	100 KHz Bandwidth Of	refer to module	
RSS-210 issue 7,§A8.5	Frequency Band Edges	report t	
§15.247(c)			
RSS-Gen §7.2.3	TX/RX Spurious Emission	Compliant	
RSS-210 issue 7,§A2.9			
§15.247(a)(1)/	Frequency Separation	refer to module	
RSS-210 issue 7,§A8.1(b)	Frequency Separation	report t	
§15.247(a)(1)(iii)/	Number of hopping frequency	refer to module	
RSS-210 issue 7,§A8.1(d)	Number of hopping frequency	report t	
§15.247(a)(1)(ii)/	Time of Occurrency	refer to module	
RSS-210 issue 7,§A8.1(d)	Time of Occupancy	report t	
§15.247/	Pools Possess Dongits	Compliant	
RSS-210 issue 7,§A8.2(b)	Peak Power Density	Compliant	
§15.247(a)(1)	20dB Bandwidth	refer to module	
RSS210 issue ,§A8.1(b)	& 99% Power Bandwidth	report t	
§15.203, §15.247(c)/			
RSS-GEN 7.1.4,	Antenna Requirement	Compliant	
RSS-210 issue 7,§A8.4			

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4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

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

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

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

In comparison between BDR and EDR, emission with EDR mode being enabled yields the higher power measurement, so that only measurement result with EDR mode are deemed to be representative, and documented on the report.

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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. 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	09/15/2010	09/14/2011	
LISN	Rolf-Heine	NNB-2/16Z	99012	02/02/2011	02/01/2012	
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	02/02/2011	02/01/2012	
Coaxial Cables	N/A	WK CE Cable	N/A	11/28/2010	11/27/2011	

5.3. 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 EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

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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 Procedure:

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all frequency measured were complete.

5.5. 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.

Note: Refer to next page for measurement data and plots.

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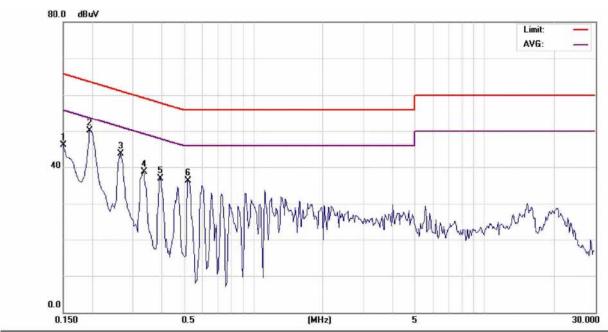


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AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	BT + WLAN Data Link – Adapter 1			Test Date:	Mar. 24, 2011
Temperature:	24	Humidity:	60%	Test By:	Bondi



Site SGS CONDUCTED#1

Limit: FCC Class B Conduction(QP)

EUT: TabletPC M/N: TK500

Note: BT + WLAN mode

Adaptor: LI SHIN / 0335A2065

Phase:	L1	Temperature:	23 ℃	
Power:	AC 120V/60Hz	Humidity: 59	9%	
Distance	:	Air Pressure:	hpa	

No. Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dΒ	dBuV	dBuV	dВ	Detector	Comment	
1	0.1500	45.99	0.14	46.13	66.00	-19.87	peak		
2 *	0.1950	49.99	0.12	50.11	63.82	-13.71	peak		
3	0.2650	43.65	0.12	43.77	61.27	-17.50	peak		
4	0.3350	38.57	0.12	38.69	59.33	-20.64	peak	_	
5	0.3950	36.88	0.12	37.00	57.96	-20.96	peak		
6	0.5200	36.12	0.12	36.24	56.00	-19.76	peak		

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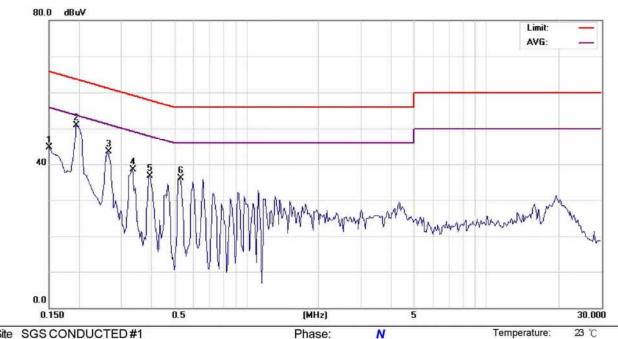
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Humidity:

Air Pressure:

hpa



Power:

Distance:

Site SGS CONDUCTED#1

Limit: FCC Class B Conduction(QP)

EUT: TabletPC M/N: TK500

Note: BT + WLAN mode

Adaptor: LI SHIN / 0335A2065

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dΒ	dBuV	dBuV	dВ	Detector	Comment	
1		0.1500	44.52	0.19	44.71	66.00	-21.29	peak		
2	*	0.1950	50.65	0.16	50.81	63.82	-13.01	peak		
3		0.2650	43.31	0.16	43.47	61.27	-17.80	peak		
4		0.3350	38.31	0.16	38.47	59.33	-20.86	peak		
5		0.3950	36.47	0.16	36.63	57.96	-21.33	peak		
6		0.5300	35.92	0.16	36.08	56.00	-19.92	peak		

AC 120V/60Hz

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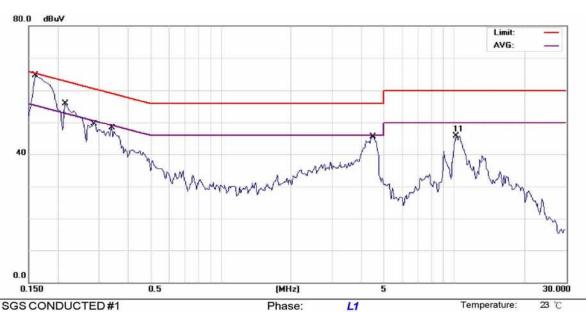
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Humidity:

Air Pressure:

hpa

Operation Mode:	BT + WLAN Dat	ta Link – Adapter 2	Test Date:	Mar. 24, 2011	
Temperature:	24	Humidity:	60%	Test By:	Arno



Power:

Distance:

AC 120V/60Hz

Site SGS CONDUCTED#1

Limit: FCC Class B Conduction(QP)

EUT: TabletPC M/N: TK500

Note: BT+WLANmode

Adaptor: LITE-ON/PA-1650-68

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dВ	dBuV	dBuV	dВ	Detector	Comment
1	*	0.1617	61.18	0.13	61.31	65.38	-4.07	QP	
2		0.1617	41.30	0.13	41.43	55.38	-13.95	AVG	
3		0.2160	51.50	0.12	51.62	62.97	-11.35	QP	
4		0.2160	29.37	0.12	29.49	52.97	-23.48	AVG	
5		0.2845	44.05	0.12	44.17	60.68	-16.51	QP	
6		0.2845	28.65	0.12	28.77	50.68	-21.91	AVG	
7		0.3387	42.28	0.12	42.40	59.24	-16.84	QP	
8		0.3387	25.74	0.12	25.86	49.24	-23.38	AVG	
9		4.4768	38.53	0.18	38.71	56.00	-17.29	QP	
10		4.4768	27.54	0.18	27.72	46.00	-18.28	AVG	
11		10.2000	45.22	0.45	45.67	60.00	-14.33	peak	

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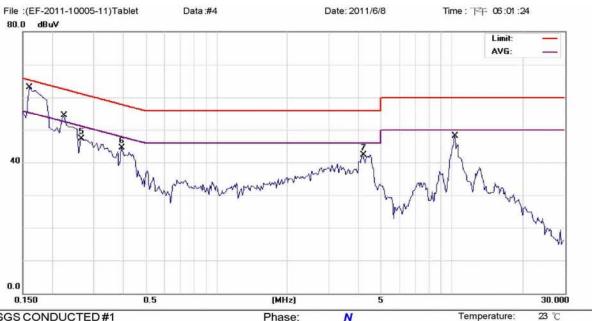
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Humidity:

Air Pressure:

59%

hpa



Site SGS CONDUCTED#1

Limit: FCC Class B Conduction(QP)

EUT: TabletPC M/N: TK500

Note: BT + WLANmode

Adaptor: LITE-ON/PA-1650-68

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dΒ	dBuV	dBuV	dВ	Detector	Comment	
1	*	0.1617	57.68	0.18	57.86	65.38	-7.52	QР		
2		0.1617	39.50	0.18	39.68	55.38	-15.70	AVG		
3		0.2243	48.43	0.16	48.59	62.66	-14.07	QР		
4		0.2243	31.86	0.16	32.02	52.66	-20.64	AVG		
5		0.2650	47.18	0.16	47.34	61.27	-13.93	peak		
6		0.3950	44.44	0.16	44.60	57.96	-13.36	peak		
7		4.2100	42.07	0.21	42.28	56.00	-13.72	peak		
8		10.3291	41.50	0.48	41.98	60.00	-18.02	QР		
9		10.3291	34.27	0.48	34.75	50.00	-15.25	AVG		

Power:

Distance:

AC 120V/60Hz

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6. PEAK OUTPUT POWER MEASUREMENT

6.1. Standard Applicable:

According to §15.247(b)(1), 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 Equipment Used:

iz. Wedsarement Eq											
	Conducted Emission Test Site										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.						
TYPE		NUMBER	NUMBER	CAL.							
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2010	04/18/2012						
Spectrum Analyzer	Agilent	E4440A	MY45304525	01/25/2010	01/24/2011						
DC Block	Agilent	BLK-18	155452	07/05/2010	07/04/2011						
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2014	01/04/2012						
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2010	07/04/2011						
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2010	07/04/2011						
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2010	07/04/2011						
Splitter	Agilent	11636B	N/A	07/05/2010	07/04/2011						

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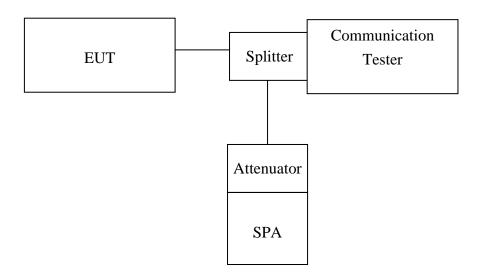
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6.3. .Test Set-up:



6.4. 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.

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6.5. Measurement Result:

EDR mode:

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2402.00	1.08	0.00	1.08	0.00128	1
2441.00	1.83	0.00	1.83	0.00152	1
2480.00	0.89	0.00	0.89	0.00123	1

BDR mode:

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2402.00	-2.15	0.00	-2.15	0.00061	1
2441.00	-1.86	0.00	-1.86	0.00065	1
2480.00	-1.23	0.00	-1.23	0.00075	1

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7. 100KHz BANDWIDTH OF BAND EDGES MEASUREMENT

7.1. Standard Applicable:

According to §15.247(d), 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 8,§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.

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7.2. Measurement Equipment Used:

7.2.1. Conducted Emission at antenna port:

Refer to section 6.2 for details.

7.2.2. Radiated emission:

	90	66 Chamber			
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
ТҮРЕ		NUMBER	NUMBER	CAL.	
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2011	02/11/2012
Bilog Antenna	SCHWAZBECK	VULB9160	3136	11/19/2010	11/18/2011
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	03/09/2011	03/08/2013
Pre-Amplifier	Agilent	8447D	1937A02834	11/28/2010	11/27/2011
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2011	01/04/2012
Radio Communication Analyzer	R & S	CMU200	102189	08/12/2010	08/11/2012
DC Block	Agilent	BLK-18	155452	07/05/2010	07/04/2011
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	01/05/2011	01/04/2012
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2011	01/04/2012
3m Site	SGS	966 chamber	N/A	09/06/2010	09/05/2011

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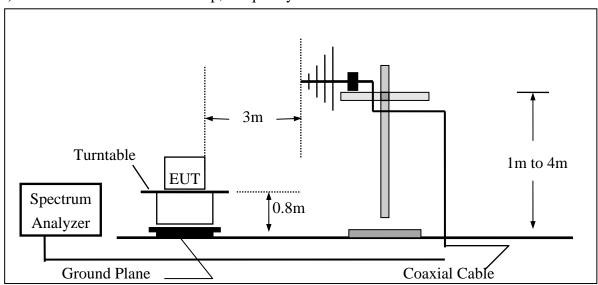
7.3. Test **SET-UP**:

7.3.1. Conducted Emission at antenna port:

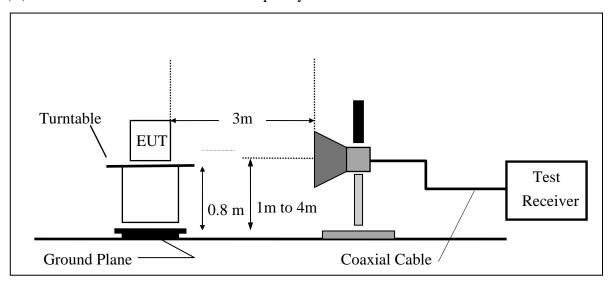
Refer to section 6.3 for details.

7.3.2. Radiated emission:

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



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



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7.4. 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.

7.5. 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	

7.6. Measurement Result:

For the measurement of conducted band edge, refer to the modular report: FCC: FR590710-08 IC: CR590710

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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Radiated Emission: (EDR mode)

Operation Mode TX CH Low Test Date Mar. 21, 2011

Fundamental Frequency 2402 MHz Test By Bondi **Temperature** 25 Pol Ver.

65 % Humidity

		Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
	Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
	(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	(dB)	
•	2390.00	42.00		-0.67	41.33		74.00	54.00	-12.67	Peak

Operation Mode TX CH Low Test Date Mar. 21, 2011

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

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{A}\mathbf{V}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2390.00	43.42		-0.67	42.75		74.00	54.00	-11.25	Peak

Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column_o
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.

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Radiated Emission:

TX CH High Operation Mode Test Date Mar. 21, 2011 Fundamental Frequency 2480 MHz Test By Bondi Pol Ver. Temperature 25 Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(d B)	
2483.50	49.42		-0.52	48.90		74.00	54.00	-5.10	Peak

Operation Mode TX CH High Test Date Mar. 21, 2011 Fundamental Frequency 2480 MHz Test By Bondi Temperature Pol Hor. 25

Humidity 65 %

	Peak	\mathbf{AV}		Actu	al FS	Peak	\mathbf{AV}		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	(dB)	
2483.50	53.00	43.95	-0.52	52.48	43.43	74.00	54.00	-10.57	Avg

Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column,
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.

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8. **SPURIOUS EMISSION TEST**

8.1. 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-Gen §7.2.3 and RSS-210 issue 8,§A2.9, 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 Equipment Used:

8.2.1. Conducted Emission at antenna port:

Refer to section 6.2 for details.

8.2.2. Radiated emission:

Refer to section 7.2 for details.

8.3. Test SET-UP:

8.3.1. Conducted Emission at antenna port:

Refer to section 6.3 for details.

8.3.2. Radiated emission:

Refer to section 7.3 for details.

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8.4. 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.

8.5. 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					

8.6. Measurement Result:

For the measurement of conducted spurious emission, refer to the modular report: FCC:

FR590710-08 IC: CR590710

Note: Refer to next page spectrum analyzer data chart and tabular data sheets for radiated spurious emission...

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

Operation Mode TX CH Low Test Date Mar. 21, 2011

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

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)
134.76	V	Peak	43.04	-13.41	29.63	43.50	-13.87
228.85	V	Peak	41.21	-14.56	26.65	46.00	-19.35
301.60	V	Peak	41.43	-12.41	29.02	46.00	-16.98
425.76	V	Peak	48.85	-10.33	38.52	46.00	-7.48
532.46	V	Peak	39.33	-8.48	30.85	46.00	-15.15
643.04	V	Peak	38.56	-6.12	32.44	46.00	-13.56
151.25	Н	Peak	39.89	-12.20	27.69	43.50	-15.81
212.36	Н	Peak	45.71	-15.58	30.13	43.50	-13.37
291.90	Н	Peak	47.03	-12.64	34.39	46.00	-11.61
247.70	Н	Peak	42.23	-10.29	31.94	46.00	-14.06
571.26	Н	Peak	35.80	-7.70	28.10	46.00	-17.90
668.26	Н	Peak	35.35	-5.70	29.65	46.00	-16.35

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)

TX CH Mid Operation Mode Test Date Mar. 21, 2011 Fundamental Frequency 2441MHz Test By Bondi Pol Temperature Ver./Hor. 25

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)	
128.94	V	Peak	44.80	-13.97	30.83	43.50	-12.67	
228.85	V	Peak	41.51	-14.56	26.95	46.00	-19.05	
301.60	V	Peak	42.64	-12.41	30.23	46.00	-15.77	
427.70	V	Peak	48.99	-10.29	38.70	46.00	-7.30	
534.40	V	Peak	40.27	-8.44	31.83	46.00	-14.17	
641.10	V	Peak	39.89	-6.15	33.74	46.00	-12.26	
151.25	Н	Peak	39.66	-12.20	27.46	43.50	-16.04	
216.24	Н	Peak	45.41	-15.33	30.08	46.00	-15.92	
267.65	Н	Peak	48.86	-13.30	35.56	46.00	-10.44	
427.70	Н	Peak	42.92	-10.29	32.63	46.00	-13.37	
571.26	Н	Peak	35.30	-7.70	27.60	46.00	-18.40	
643.04	Н	Peak	34.89	-6.12	28.77	46.00	-17.23	

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)

TX CH High Operation Mode Test Date Mar. 21, 2011

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

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)	
128.94	V	Peak	43.67	-13.97	29.70	43.50	-13.80	
224.00	V	Peak	41.78	-14.82	26.96	46.00	-19.04	
299.66	V	Peak	42.07	-12.45	29.62	46.00	-16.38	
427.70	V	Peak	48.97	-10.29	38.68	46.00	-7.32	
534.40	V	Peak	41.74	-8.44	33.30	46.00	-12.70	
641.10	V	Peak	39.23	-6.15	33.08	46.00	-12.92	
151.25	Н	Peak	39.55	-12.20	27.35	43.50	-16.15	
212.36	Н	Peak	46.07	-15.58	30.49	43.50	-13.01	
280.26	Н	Peak	47.76	-12.95	34.81	46.00	-11.19	
427.70	Н	Peak	42.46	-10.29	32.17	46.00	-13.83	
505.30	Н	Peak	40.78	-9.02	31.76	46.00	-14.24	
668.26	Н	Peak	35.47	-5.70	29.77	46.00	-16.23	

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 Mar. 21, 2011

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

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)	
4653.0	29.91		4.82	34.73		74.00	54.00	-19.27	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		
16814.0						74.00	54.00		
19216.0						74.00	54.00		
21618.0						74.00	54.00		
24020.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode TX CH Low Test Date Mar. 21, 2011 Fundamental Frequency 2402 MHz Test By Bondi Pol Temperature Hor. 25

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)	
-	4770.0	29.61		5.18	34.79		74.00	54.00	-19.21	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		
	16814.0						74.00	54.00		
	19216.0						74.00	54.00		
	21618.0						74.00	54.00		
	24020.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode TX CH Mid Test Date Mar. 21, 2011 Fundamental Frequency 2441 MHz Test By Bondi

Pol Ver. Temperature 25

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)	
4882.0	29.56		5.46	35.02		74.00	54.00	-18.98	Peak
7323.0						74.00	54.00		
9764.0						74.00	54.00		
12205.0						74.00	54.00		
14646.0						74.00	54.00		
17087.0						74.00	54.00		
19528.0						74.00	54.00		
21969.0						74.00	54.00		
24410.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode TX CH Mid Test Date Mar. 21, 2011 Fundamental Frequency 2441 MHz Test By Bondi

Pol Temperature Hor. 25

Humidity 65 %

	Peak	\mathbf{AV}		Actual 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)	
4705.0	29.89		5.00	34.89		74.00	54.00	-19.11	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		
17087.0						74.00	54.00		
19528.0						74.00	54.00		
21969.0						74.00	54.00		
24410.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH High Operation Mode Test Date Mar. 21, 2011 Fundamental Frequency 2480 MHz Test By Bondi Pol Ver. Temperature 25

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)	
4960.0	29.50		5.56	35.06		74.00	54.00	-18.94	Peak
7440.0						74.00	54.00		
9920.0						74.00	54.00		
12400.0						74.00	54.00		
14880.0						74.00	54.00		
17360.0						74.00	54.00		
19840.0						74.00	54.00		
22320.0						74.00	54.00		
24800.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH High Operation Mode Test Date Mar. 21, 2011 Fundamental Frequency 2480 MHz Test By Bondi Pol Temperature Hor. 25

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)	
4848.0	29.60		5.36	34.96		74.00	54.00	-19.04	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		
17360.0						74.00	54.00		
19840.0						74.00	54.00		
22320.0						74.00	54.00		
24800.0						74.00	54.00		

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- 5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (below 1GHz)

RX CH Low Operation Mode Test Date Mar. 21, 2011

Fundamental Frequency 2402MHz Test By Bondi Pol **Temperature** 25 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)
134.76	V	Peak	42.44	-13.41	29.03	43.50	-14.47
228.85	V	Peak	41.84	-14.56	27.28	46.00	-18.72
299.66	V	Peak	42.66	-12.45	30.21	46.00	-15.79
422.85	V	Peak	49.40	-10.42	38.98	46.00	-7.02
505.30	V	Peak	40.91	-9.02	31.89	46.00	-14.11
643.04	V	Peak	38.80	-6.12	32.68	46.00	-13.32
151.25	Н	Peak	39.54	-12.20	27.34	43.50	-16.16
212.36	Н	Peak	45.69	-15.58	30.11	43.50	-13.39
267.65	Н	Peak	47.67	-13.30	34.37	46.00	-11.63
386.96	Н	Peak	40.16	-11.07	29.09	46.00	-16.91
427.70	Н	Peak	42.59	-10.29	32.30	46.00	-13.70
677.96	Н	Peak	35.34	-5.57	29.77	46.00	-16.23

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.

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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (below 1GHz)

RX CH Mid Operation Mode Test Date Mar. 21, 2011 Fundamental Frequency 2441MHz Test By Bondi

Pol **Temperature** 25 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)
128.94	V	Peak	43.82	-13.97	29.85	43.50	-13.65
228.85	V	Peak	41.74	-14.56	27.18	46.00	-18.82
301.60	V	Peak	42.44	-12.41	30.03	46.00	-15.97
425.76	V	Peak	49.20	-10.33	38.87	46.00	-7.13
505.30	V	Peak	44.69	-9.02	35.67	46.00	-10.33
643.04	V	Peak	38.80	-6.12	32.68	46.00	-13.32
151.25	Н	Peak	39.64	-12.20	27.44	43.50	-16.06
212.36	Н	Peak	45.53	-15.58	29.95	43.50	-13.55
274.44	Н	Peak	47.40	-13.06	34.34	46.00	-11.66
427.70	Н	Peak	42.80	-10.29	32.51	46.00	-13.49
500.45	Н	Peak	37.02	-9.09	27.93	46.00	-18.07
643.04	Н	Peak	36.03	-6.12	29.91	46.00	-16.09

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.

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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode **RX CH High** Test Date Mar. 21, 2011 Fundamental Frequency 2480MHz Test By Bondi Pol **Temperature** 25 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)
134.76	V	Peak	42.86	-13.41	29.45	43.50	-14.05
228.85	V	Peak	41.83	-14.56	27.27	46.00	-18.73
301.60	V	Peak	41.98	-12.41	29.57	46.00	-16.43
422.85	V	Peak	48.96	-10.42	38.54	46.00	-7.46
536.34	V	Peak	40.11	-8.41	31.70	46.00	-14.30
643.04	V	Peak	38.33	-6.12	32.21	46.00	-13.79
158.04	Н	Peak	39.42	-12.00	27.42	43.50	-16.08
212.36	Н	Peak	45.58	-15.58	30.00	43.50	-13.50
282.20	Н	Peak	47.65	-12.90	34.75	46.00	-11.25
381.14	Н	Peak	42.22	-11.11	31.11	46.00	-14.89
427.70	Н	Peak	43.47	-10.29	33.18	46.00	-12.82
689.60	Н	Peak	34.68	-5.41	29.27	46.00	-16.73

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.

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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode **RX CH Low** Test Date Mar. 21, 2011 Fundamental Frequency 2402 MHz Test By Bondi Pol Ver. **Temperature** 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)	
4757.0	31.21		5.05	36.26		74.00	54.00	-17.74	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:

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

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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode **RX CH Low** Test Date Mar. 21, 2011 Fundamental Frequency 2402 MHz Test By Bondi Pol **Temperature** 25 Hor

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)	
4783.0	31.13		5.14	36.27		74.00	54.00	-17.73	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.
- 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.
- Spectrum AV Setting: 1GHz-40GHz, 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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode RX CH Mid Test Date Mar. 21, 2011 Fundamental Frequency 2441 MHz Test By Bondi Pol Ver **Temperature** 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)	
4783.0	30.83		5.14	35.97		74.00	54.00	-18.03	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.
- 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.
- Spectrum AV Setting: 1GHz-40GHz, 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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode RX CH Mid Test Date Mar. 21, 2011 Fundamental Frequency 2441 MHz Test By Bondi Pol **Temperature** 25 Hor

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)	
4757.0	31.17		5.05	36.22		74.00	54.00	-17.78	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.
- 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.
- Spectrum AV Setting: 1GHz-40GHz, 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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode **RX CH High** Test Date Mar. 21, 2011 Fundamental Frequency 2480 MHz Test By Bondi Pol Ver **Temperature** 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)	
4705.0	32.12		4.90	37.02		74.00	54.00	-16.98	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.
- 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.
- Spectrum AV Setting: 1GHz-40GHz, 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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode **RX CH High** Test Date Mar. 21, 2011 Fundamental Frequency 2480 MHz Test By Bondi Pol **Temperature** 25 Hor

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)	
4848.0	29.60		5.36	34.96		74.00	54.00	-19.04	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.
- 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.
- Spectrum AV Setting: 1GHz-40GHz, 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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。



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9. FREQUENCY SEPARATION

9.1. 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 8, A8.1(b), 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.

9.2. Measurement Equipment Used:

Refer to section 6.2 for details.

9.3. Test Set-up:

Refer to section 6.3 for details.

9.4. 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 3.0 MHz, Sweep = auto.
- 5. Max hold. Mark 3 Peaks of hopping channel and record the 3 peaks frequency.

9.5. Measurement Result:

For the measurement results, refer to the modular report: FCC: FR590710-08 IC: CR590710

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10. NUMBER OF HOPPING FREQUENCY

10.1. 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 8,§A8.1(d), 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.

10.2. Measurement Equipment Used:

Refer to section 6.2 for details.

10.3. Test Set-up:

Refer to section 6.3 for details.

10.4. 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=430KHz, VBW=1.3MHz,
- 5. Max hold, view and count how many channel in the band.

10.5. Measurement Result:

For the measurement results, refer to the modular report: FCC: FR590710-08 IC: CR590710

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11. TIME OF OCCUPANCY (DWELL TIME)

11.1. 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 8,§A8.1(d), 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.

11.2. Measurement Equipment Used:

Refer to section 6.2 for details.

11.3. Test Set-up:

Refer to section 6.3 for details.

11.4. 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=1MHz, VBW=3MHz, Span = 0Hz, Adjust Sweep = 15ms.
- 5. Repeat above procedures until all frequency measured were complete.

11.5. Measurement Result:

For the measurement results, refer to the modular report: FCC: FR590710-08 IC: CR590710

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12. Peak Power Spectral Density

12.1. 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 8, §A8.2(b) 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.

12.2. Measurement Equipment Used:

Refer to section 6.2 for details.

12.3. Test Set-up:

Refer to section 6.3 for details.

12.4. 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.

12.5. Measurement Result:

For the measurement results, refer to the modular report: FCC: FR590710-08 IC: CR590710

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13. 20dB Bandwidth & 99% Bandwidth

13.1. Standard Applicable:

According to §15.247(a)(1), and RSS210 A8.1(b) for frequency hopping systems operating in the 2400MHz-2483.5 MHz no limit for 20dB bandwidth.

13.2. Measurement Equipment Used:

Refer to section 6.2 for details.

13.3. Test Set-up:

Refer to section 6.3 for details.

13.4. 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 1 % of Bandwidth.VBW RBW, 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.

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13.5. Measurement Result:

20dB Bandwidth: BDR mode

СН	Bandwidth	
	(kHz)	
Lower	930.103	
Mid	926.697	
Higher	967.269	

20dB Bandwidth: EDR mode

СН	Bandwidth	2/3 Bandwidth
	(MHz)	(MHz)
Lower	1.271	0.847
Mid	1.327	0.885
Higher	1.315	0.877

99% Bandwidth: BDR Mode

СН	Bandwidth
	(kHz)
Lower	890.2101
Mid	893.6406
Higher	895.4230

99% Bandwidth: EDR Mode

СН	Bandwidth
	(MHz)
Lower	1.1929
Mid	1.1910
Higher	1.1947

Note: Refer to next page for plots.

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BDR Mode 20dB Bandwidth & 99% Bandwidth Test Data CH-Low



20dB Bandwidth & 99% Bandwidth Test Data CH-Mid



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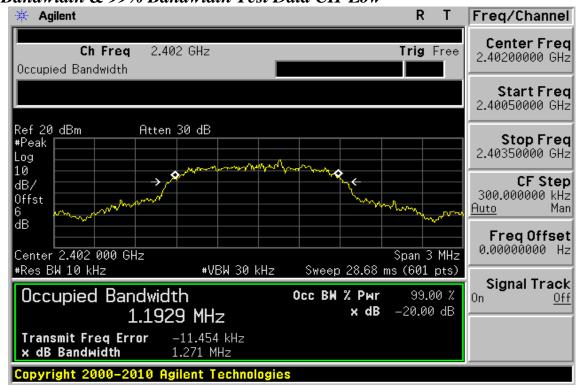
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20dB Bandwidth & 99% Bandwidth Test Data CH-High



EDR Mode

20dB Bandwidth & 99% Bandwidth Test Data CH-Low



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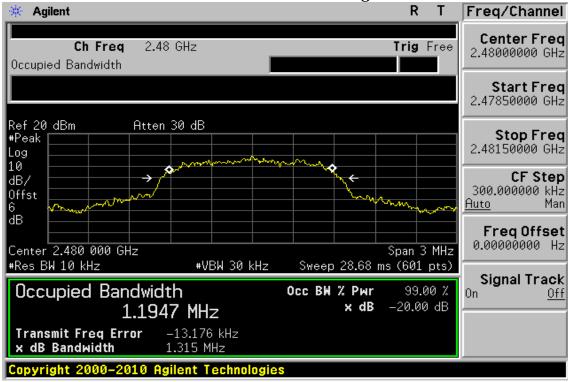
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20dB Bandwidth & 99% Bandwidth Test Data CH-Mid



20dB Bandwidth & 99% Bandwidth Test Data CH-High



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14. ANTENNA REQUIREMENT

14.1. 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.

14.2. Antenna Connected Construction:

The directional gains of antenna used for transmitting is 0.83dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

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