

FCC ID: P5A-CL0023

Report No.: ER/2011/90015 Issue Date: Sep. 16, 2011 Page: 1 of 28

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

	OF				
Product Name:	2.4GHz Wireless Dongle				
Brand Name:	N/A				
Model No.:	C55				
Model Difference:	N/A				
FCC ID:	P5A-CL0023				
Report No.:	ER/2011/90015				
Issue Date:	Sep. 16, 2011				
FCC Rule Part:	§15.249				
Prepared for:	ARESON Technology Corp.				
	11F, No.646, Sec.5, Chongsin Rd., San Chung Dist., New Taipei City 241,Taiwan (R.O.C.)				
Prepared by:	SGS Taiwan Ltd.				
	Electronics & Communication Laboratory				
	No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.				



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VERIFICATION OF COMPLIANCE

Applicant:	ARESON Technology Corp. 11F, No.646, Sec.5, Chongsin Rd., San Chung Dist., New Taipei City 241, Taiwan (R.O.C.).
Product Description:	2.4GHz Wireless Dongle
Brand Name:	N/A
Model No.:	C55
FCC ID:	P5A-CL0023
Model Difference:	N/A
File Number:	ER/2011/90015
Date of test:	Aug. 20, 2011 ~ Aug. 29, 2011
Date of EUT Received:	Aug. 20, 2011

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd., Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.249.

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

Test By:	Fin Su	Date:	Sep. 16, 2011
	Eric Su / Asst. Supervisor		
Prepared By:	littany Kao	Date:	Sep. 16, 2011
Approved By:	Tiffany Kao / Clerk	Date:	Sep. 16, 2011

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Version

Version No.	Date	Description
00	Sep. 16, 2011	Initial creation of document

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台灣檢驗科技股份有限公司	t (886-2) 2299-3279	f (886-2) 2298-0488	www.tw.sgs.com
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GENERAL INFORMATION 1.

1.1 Product Description

Product Name:	2.4GHz Wireless Dongle
Brand Name:	N/A
Model No.:	C55
Model Difference:	N/A
Hardware Version	N/A
Software Version	N/A
Operation Frequency:	2408~2474MHz, Step: 1MHz
Channel number:	67 channels
Modulation Type:	GFSK
Power Supply	DC 5Vdc from USB Port
Antenna Designation:	Printed Antenna

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1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **P5A-CL0023** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

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

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

1.5 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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System Test Configuration 2.

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 Transmitter was operated in the engineering operating mode. the Tx frequency was fixed which 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 Limitation

(1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency	Conducted Limit (dBuV)		
(MHz)	Quasi-Peak	Average	
0.15 - 0.5	66 - 56	56 - 46	
0.5 - 5	56	46	
5 - 30	60	50	

(2) Radiated Emission 15.249(a)

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following.

Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 - 928	50 mV/m	500 uV/m	3
	(94dBuV/m)	(54dBuV/m)	
2400 - 2483.5	50 mV/m	500 uV/m	3
	(94dBuV/m)	(54dBuV/m)	
5725 - 5875	50 mV/m	500 uV/m	3
	(94dBuV/m)	(54dBuV/m)	
24.0 – 24.25 GHz	250 mV/m	2500 uV/m	3
	(107.95dBuV/m)	(67.95dBuV/m)	

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(3) Radiated Emission15.249 (d)

Emission Radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209 as below, whichever is the lesser attenuation.

Frequency	Field strength	Distance (m)	Field strength at 3m
(MHz)	μV/m		dBµV/m
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

(4) Radiated Emission 15.249(e)

For frequencies above 1000MHz, the above field strength limits are based on average limits. The peak filed strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20dB under any condition of modulation.

- Remark: 1. Emission level in $dBuV/m=20 \log (uV/m)$
 - 2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 - 3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205
 - 4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of ξ 15.205, then the general radiated emission limits in ξ 15.209 apply.

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2.5 **Configuration of Tested System**

Fig. 2-1 Configuration

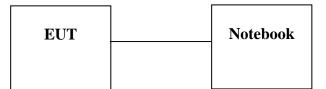


Table 2-2 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Notebook	DELL	E5400	3704625136	shielding	Un-shielding

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

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Summary of Test Results 3.

FCC Rules	Description Of Test	Result
§15.207	Conducted Emission	N/A
§15.249(a)(e)	Radiated Emission	Compliant
§15.249(d)	20dB band width Measurement	Compliant

Description of test modes 4.

The EUT has been tested under operating condition. The EUT is staying in continuous transmitting mode.

Channel low (2408MHz) · mid (2441MHz) and high (2474MHz) with highest data rate are chosen for full testing.

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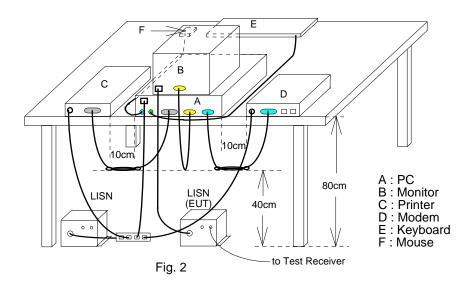
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Conducted Emissions Test 5.

5.1 **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.

5.2 Test SET-UP (Block Diagram of Configuration)



Measurement Equipment Used: 5.3

Conducted Emission Test Site										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.					
ТҮРЕ		NUMBER	NUMBER	CAL.						
EMI Test Receiver	R&S	ESCS30	828985/004	09/23/2010	09/22/2012					
LISN	Rolf-Heine	NNB-2/16Z	99012	03/31/2011	03/30/2012					
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	03/31/2011	03/30/2012					
Coaxial Cables	N/A	WK CE Cable	N/A	11/28/2010	11/27/2011					

5.4 **Measurement Result:**

Refer to next page for measurement data and plots.

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

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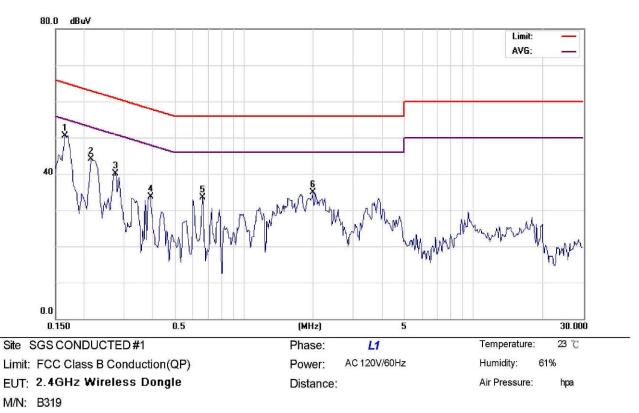
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AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Charger Mode			Test Date:	Aug. 22, 2011
Temperature:	23 °C	Humidity:	61 %	Test By:	Bondi



Note: Operation mode

Dongle

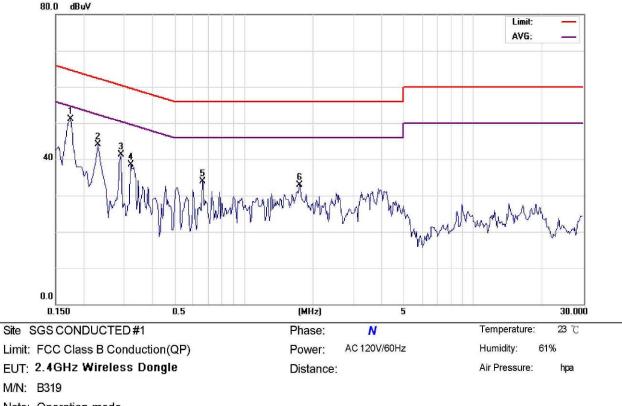
No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1	*	0.1650	50.40	0.13	50.53	65.21	-14.68	peak		
2		0.2150	44.07	0.12	44.19	63.01	-18.82	peak		
3		0.2750	39.92	0.12	40.04	60.97	-20.93	peak		
4		0.3900	33.61	0.12	33.73	58.06	-24.33	peak		
5		0.6600	33.35	0.12	33.47	56.00	-22.53	peak		
6		2.0000	34.74	0.15	34.89	56.00	-21.11	peak		

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Note: Operation mode

Dongle

No. Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1 *	0.1750	50.86	0.17	51.03	64.72	-13.69	peak		
2	0.2300	43.98	0.16	44.14	62.45	-18.31	peak		
3	0.2900	41.17	0.16	41.33	60.52	-19.19	peak		
4	0.3200	38.43	0.15	38.58	59.71	-21.13	peak		
5	0.6600	33.71	0.16	33.87	56.00	-22.13	peak		
6	1.7500	32.72	0.17	32.89	56.00	-23.11	peak		

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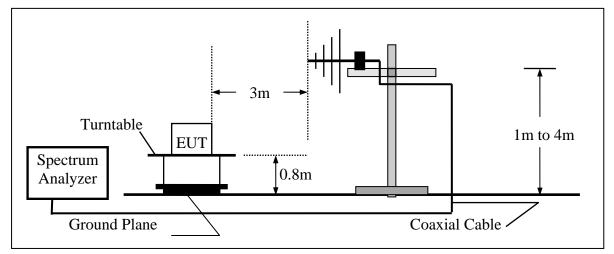
Radiated Emission Test 6.

6.1 **Measurement Procedure**

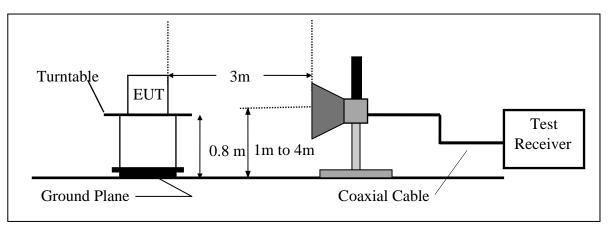
- The EUT was placed on a turntable that is 0.8m above ground plane. 1.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- And also, each emission was to be maximized by changing the polarization of receiving 3. antenna both horizontal and vertical.
- Repeat above procedures until all frequency measured were complete. 4.

Test SET-UP (Block Diagram of Configuration) 6.2

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



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



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台灣檢驗科技股份有限公司	t (886-2) 2299-3279	f (886-2) 2298-0488	www.tw.sgs.com					
			NA 1 (000.0					



6.3 **Measurement Equipment Used:**

966 Chamber									
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.				
ТҮРЕ		NUMBER	NUMBER	CAL.					
Spectrum Analyzer	R&S	FSP 40	100034	03/30/2011	03/29/2012				
Bilog Antenna	SCHWAZBECK	VULB9160	3136	11/19/2010	11/18/2011				
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	01/22/2010	01/21/2012				
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	111787	10/31/2010	10/30/202				
DC Block	Agilent	BLK-18	155452	01/05/2011	01/04/2012				
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	Loss Cable HUBER+SUHNER		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	09/06/2011	09/05/2012				

6.4 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:

$$\mathbf{FS} = \mathbf{RA} + \mathbf{AF} + \mathbf{CL} - \mathbf{AG}$$

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

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Measurement Result 6.5

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX CH Low	Test Date	Aug. 22, 2011
Fundamental Frequency	2408MHz	Test By	Eric
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
94.99	V	Peak	49.58	-17.01	32.57	43.50	-10.93
265.71	V	Peak	46.35	-13.37	32.98	46.00	-13.02
388.90	V	Peak	42.49	-11.05	31.44	46.00	-14.56
500.45	V	Peak	44.32	-9.09	35.23	46.00	-10.77
664.38	V	Peak	39.95	-5.74	34.21	46.00	-11.79
833.16	V	Peak	39.37	-3.35	36.02	46.00	-9.98
299.66	Н	Peak	48.99	-12.45	36.54	46.00	-9.46
365.62	Н	Peak	44.16	-11.34	32.82	46.00	-13.18
431.58	Н	Peak	40.74	-10.20	30.54	46.00	-15.46
666.32	Н	Peak	40.15	-5.72	34.43	46.00	-11.57
700.27	Н	Peak	40.93	-4.51	36.42	46.00	-9.58
740.04	Н	Peak	40.54	-4.51	36.03	46.00	-9.97
833.16	Н	Peak	41.74	-3.35	38.39	46.00	-7.61

Remark:

- 1 No further spurious emissions detected from the lowest internal frequency and 30MHz.
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak / QP detector mode.
- Measurement result within this frequency range shown "-" in the table above means 4 the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz, VBW=300KHz.

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Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX CH Mid	Test Date	Aug. 22, 2011
Fundamental Frequency	2441MHz	Test By	Eric
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
95.96	V	Peak	47.71	-17.01	30.70	43.50	-12.80
278.32	V	Peak	54.26	-13.01	41.25	46.00	-4.75
299.66	V	Peak	48.91	-12.45	36.46	46.00	-9.54
367.56	V	Peak	43.68	-11.31	32.37	46.00	-13.63
665.35	V	Peak	40.36	-5.72	34.64	46.00	-11.36
740.04	V	Peak	39.99	-4.51	35.48	46.00	-10.52
834.13	V	Peak	39.17	-3.36	35.81	46.00	-10.19
97.90	Н	Peak	48.06	-16.85	31.21	43.50	-12.29
387.93	Н	Peak	39.90	-11.04	28.86	46.00	-17.14
431.58	Н	Peak	39.46	-10.20	29.26	46.00	-16.74
499.48	Н	Peak	42.00	-9.16	32.84	46.00	-13.16
664.38	Н	Peak	39.90	-5.74	34.16	46.00	-11.84
832.19	Н	Peak	39.77	-3.37	36.40	46.00	-9.60

Remark:

- 1 No further spurious emissions detected from the lowest internal frequency and 30MHz.
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak / QP detector mode.
- 4 Measurement result 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.
- 5 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz, VBW=300KHz.

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Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX CH High	Test Date	Aug. 22, 2011
Fundamental Frequency	2474MHz	Test By	Eric
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		
1		Pol	Ver./Hor

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
95.96	V	Peak	48.15	-17.01	31.14	43.50	-12.36
222.06	V	Peak	47.93	-14.95	32.98	46.00	-13.02
265.71	V	Peak	44.38	-13.37	31.01	46.00	-14.99
499.48	V	Peak	44.78	-9.16	35.62	46.00	-10.38
664.38	V	Peak	40.62	-5.74	34.88	46.00	-11.12
833.16	V	Peak	41.35	-3.35	38.00	46.00	-8.00
199.75	Н	Peak	50.35	-15.99	34.36	43.50	-9.14
278.32	Н	Peak	51.26	-13.01	38.25	46.00	-7.75
367.56	Н	Peak	46.68	-11.31	35.37	46.00	-10.63
527.61	Н	Peak	40.15	-8.58	31.57	46.00	-14.43
700.27	Н	Peak	42.30	-5.28	37.02	46.00	-8.98
740.04	Н	Peak	40.99	-4.51	36.48	46.00	-9.52

Remark:

- 1 No further spurious emissions detected from the lowest internal frequency and 30MHz.
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak / QP detector mode.
- 4 Measurement result 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.
- 5 The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz, VBW=300KHz.

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX CH Low	Test Date :	Aug. 22, 2011
Fundamental Frequency:	2408MHz	Test By:	Eric
Temperature :	25 °C	Pol:	Vertical
Humidity :	65 %		

	Peak	AV		Actual	Actual	Peak Limit	AV Limit		
Ant.Pol.	Reading	Reading	Factor	Peak FS	AV FS	at 3m	at 3m	Margin	
H/V	(dBuV)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
V	89.58	89.38	-0.98	88.60	88.40	114.00	94.00	-5.60	F
V	46.33		-5.69	40.64		74.00	54.00	-13.36	Η
V	43.82		-4.78	39.04		74.00	54.00	-14.96	Н
V	44.92		-4.13	40.79		74.00	54.00	-13.21	Н
V						74.00	54.00		Н
V						74.00	54.00		Η
V						74.00	54.00		Η
V						74.00	54.00		Η
V						74.00	54.00		Н
V						74.00	54.00		Н
V						74.00	54.00		Н
V						74.00	54.00		Η
V						74.00	54.00		Н
	H/V V V V V V V V V V V V V V	Ant.Poi Reading H/V (dBuV) V 89.58 V 46.33 V 43.82 V 44.92 V <tr tr=""></tr>	Ant.Poi Reading Reading H/V (dBuV) (dBuV) V 89.58 89.38 V 46.33 V 46.33 V 44.92 V V V V V V V V V V V V V V V V V <tr tr=""> <td< td=""><td>Ant.Poi Reading Reading Factor IV (dBuV) (dBuV) (dBuV) V 89.58 89.38 -0.98 V 89.58 89.38 -0.98 V 46.33 </td><td>Ant.Poil Reading Reading Factor Peak FS H/V (dBuV) (dBuV) (dB) (dB) V 89.58 89.38 -0.98 88.60 V 46.33 </td><td>Ant.PoiReading (dBuV)FactorPeak FSAV FSH/V(dBuV)(dBuV)(dBuV/m)(dBuV/m)V89.5889.38-0.9888.6088.40V46.335.6940.64V43.824.1339.04V44.924.1340.79$V$$V$$V$$V$$V$$V$$V$$V$$V$$V$$V$$V$$V$$V$$V$$V$$V$$V$$V$<td< td=""><td>AntPoiReadingReadingFactorPeak FSAV FSAt 30HV(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)V89.5889.38-0.9888.6088.40114.00V89.5889.38-0.9888.6088.40114.00V46.335.6940.6474.00V43.824.1339.0474.00V44.924.1340.7974.00V44.924.1340.7974.00V44.9274.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V<!--</td--><td>Ant.Poi.Reading (dBuV)FactorPeak FSAV FSat 3mat 3mHV(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)V89.5889.38-0.9888.6088.40114.0094.00V46.33</td><td>Ant.PoiReadingReadingFactorPeak FSAV FSat 3mit 3mMarginHV(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)V89.5889.380.9.8888.6088.40114.0094.005.500V46.33</td></td></td<></td></td<></tr>	Ant.Poi Reading Reading Factor IV (dBuV) (dBuV) (dBuV) V 89.58 89.38 -0.98 V 89.58 89.38 -0.98 V 46.33	Ant.Poil Reading Reading Factor Peak FS H/V (dBuV) (dBuV) (dB) (dB) V 89.58 89.38 -0.98 88.60 V 46.33	Ant.PoiReading (dBuV)FactorPeak FSAV FS H/V (dBuV)(dBuV)(dBuV/m)(dBuV/m) V 89.5889.38-0.9888.6088.40 V 46.335.6940.64 V 43.824.1339.04 V 44.924.1340.79 V <td< td=""><td>AntPoiReadingReadingFactorPeak FSAV FSAt 30HV(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)V89.5889.38-0.9888.6088.40114.00V89.5889.38-0.9888.6088.40114.00V46.335.6940.6474.00V43.824.1339.0474.00V44.924.1340.7974.00V44.924.1340.7974.00V44.9274.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V<!--</td--><td>Ant.Poi.Reading (dBuV)FactorPeak FSAV FSat 3mat 3mHV(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)V89.5889.38-0.9888.6088.40114.0094.00V46.33</td><td>Ant.PoiReadingReadingFactorPeak FSAV FSat 3mit 3mMarginHV(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)V89.5889.380.9.8888.6088.40114.0094.005.500V46.33</td></td></td<>	AntPoiReadingReadingFactorPeak FSAV FSAt 30HV(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)V89.5889.38-0.9888.6088.40114.00V89.5889.38-0.9888.6088.40114.00V46.335.6940.6474.00V43.824.1339.0474.00V44.924.1340.7974.00V44.924.1340.7974.00V44.9274.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V74.00V </td <td>Ant.Poi.Reading (dBuV)FactorPeak FSAV FSat 3mat 3mHV(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)V89.5889.38-0.9888.6088.40114.0094.00V46.33</td> <td>Ant.PoiReadingReadingFactorPeak FSAV FSat 3mit 3mMarginHV(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)V89.5889.380.9.8888.6088.40114.0094.005.500V46.33</td>	Ant.Poi.Reading (dBuV)FactorPeak FSAV FSat 3mat 3mHV(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)V89.5889.38-0.9888.6088.40114.0094.00V46.33	Ant.PoiReadingReadingFactorPeak FSAV FSat 3mit 3mMarginHV(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)(HBUV)V89.5889.380.9.8888.6088.40114.0094.005.500V46.33
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- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 "F" denotes fundamental frequency; "H" denotes harmonics frequency. "S" denotes spurious frequency.
- 4 Measurement of data 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.
- 5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX CH Low	Test Date :	Aug. 22, 2011
Fundamental Frequency:	2408MHz	Test By:	Eric
Temperature :	25 °C	Pol:	Horizontal
Humidity :	65 %		

		Peak	AV		Actual	Actual	Peak Limit	AV Limit		
Freq.	Ant.Pol.	Reading	Reading	Factor	Peak FS	AV FS	at 3m	at 3m	Margin	
(MHz)	H/V	(dBuV)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2408.0	Н	87.98	87.56	-0.98	87.00	86.58	114.00	94.00	-7.42	F
1331.5	Н	48.97		-4.78	44.19		74.00	54.00	-9.81	Н
1500.5	Н	42.02		-4.58	37.44		74.00	54.00	-16.56	Η
1663.0	Н	41.66		-4.13	37.53		74.00	54.00	-16.47	Н
4816.0	Н						74.00	54.00		Н
7224.0	Н						74.00	54.00		Н
9632.0	Н						74.00	54.00		Н
12040.0	Н						74.00	54.00		Н
14448.0	Н						74.00	54.00		Н
16856.0	Н						74.00	54.00		Н
19264.0	Н						74.00	54.00		Н
21672.0	Н						74.00	54.00		Н
24080.0	Н						74.00	54.00		Н

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 "F" denotes fundamental frequency; "H" denotes harmonics frequency. "S" denotes spurious frequency.
- 4 Measurement of data 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.
- 5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX CH Mid	Test Date :	Aug. 22, 2011
Fundamental Frequency:	2441MHz	Test By:	Eric
Temperature :	25 °C	Pol:	Vertical
Humidity :	65 %		

		Peak	AV		Actual	Actual	Peak Limit	AV Limit		
Freq.	Ant.Pol.	Reading	Reading	Factor	Peak FS	AV FS	at 3m	at 3m	Margin	
(MHz)	H/V	(dBuV)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2441.0	V	89.97	89.57	-0.49	89.48	89.08	114.00	94.00	-4.92	F
1331.5	V	46.73		-4.78	41.95		74.00	54.00	-12.05	Н
1663.0	V	44.48		-4.13	40.35		74.00	54.00	-13.65	Н
4882.0	V	39.98		5.38	45.36		74.00	54.00	-8.64	Η
7323.0	V						74.00	54.00		Η
9764.0	V						74.00	54.00		Н
12205.0	V						74.00	54.00		Н
14646.0	V						74.00	54.00		Н
17087.0	V						74.00	54.00		Η
19528.0	V						74.00	54.00		Η
21969.0	V						74.00	54.00		Н
24410.0	V						74.00	54.00		Н

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 "F" denotes fundamental frequency; "H" denotes harmonics frequency. "S" denotes spurious frequency.
- 4 Measurement of data 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.
- 5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX CH Mid	Test Date :	Aug. 22, 2011
Fundamental Frequency:	2441MHz	Test By:	Eric
Temperature :	25 °C	Pol:	Horizontal
Humidity :	65 %		

	Peak	AV		Actual	Actual	Peak Limit	AV Limit		
Ant.Pol.	Reading	Reading	Factor	Peak FS	AV FS	at 3m	at 3m	Margin	
H/V	(dBuV)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
Н	89.56	89.18	-0.49	99.71	88.69	114.00	94.00	-5.31	F
Н	49.13		-4.78	44.35		74.00	54.00	-9.65	Η
Н	42.66		-4.58	38.08		74.00	54.00	-15.92	Н
Н	42.67		-4.13	38.54		74.00	54.00	-15.46	Н
Н						74.00	54.00		Н
Н						74.00	54.00		Н
Н						74.00	54.00		Н
Н						74.00	54.00		Н
Н						74.00	54.00		Н
Н						74.00	54.00		Н
Н						74.00	54.00		Н
Н						74.00	54.00		Н
Н						74.00	54.00		Η
	H/V H H H H H H H H H H H H H	Ant.Poi Reading H/V (dBuV) H 89.56 H 49.13 H 49.13 H 42.66 H 42.67 H <tr tr=""> <tr tr=""> H </tr></tr>	Ant.PoiReadingReadingHV(MBuV)(MBuV)A89.5689.18H49.13H42.66H42.67HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH	Ant.PoiReadingReadingFactorHV(dBuV)(dBuV)(dBuV)A89.5689.18-0.49H49.134.78H42.664.58H42.674.13H4.13HHHHHHHHHHHHHHHHHHHHHHHHHHH	Ant.PoiReading (dBuV)FactorPeak FS (dBuV/n)HV(dBuV)(dBuV)(dB)(dB)H89.5689.18-0.4999.71H49.134.7844.35H42.664.5838.08H42.674.1338.54H4.1338.54HHHHHHHHHHHHHHHHHHHHHHHHH <td>Ant.PoiReading (dBuV)FactorPeak FS (dBuV)AV FS (dBuV)HV(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)H89.5689.18-0.4999.7188.69H49.134.7844.35H42.664.5838.08H42.674.1338.54HHHHHHHHHHHHHHHHHHH<</td> <td>Ant.Poi H/VReading (dBuV)Factor (dBuV)Peak FSAV FSAt 3mH89.5089.18-0.4999.7188.69114.00H49.134.7844.3574.00H42.664.7838.0874.00H42.674.1338.5474.00H42.674.1338.5474.00H42.6774.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H<!--</td--><td>Ant.PoiReading (dBuy)Factor (dBuy)Peak FSAV FSAt 3mAt 3mHV(dBuy)(dBuy)(dBuy)(dBuy)(dBuy)(dBuy)(dBuy)H89.5689.18-0.4999.7188.69114.0094.00H49.134.7844.3574.0054.00H42.664.5838.0874.0054.00H42.674.1338.5474.0054.00H74.0054.00H74.0054.00H74.0054.00H74.0054.00H54.00H54.00H54.00H54.00H54.00H54.00H54.00H54.00H54.00H</td><td>Ant.PoiReading (dBuv)Factor (dBuv)Peak FS (dBuVm)AV FS (dBuVm)at 3m (dBuVm)Margin (dBuVm)H89.5689.18-0.4999.7188.69114.0094.00-5.31H49.13-0.4099.7188.69114.0094.00-5.31H49.13-0.4044.3574.0054.00-9.65H42.664.5838.0874.0054.00-15.92H42.674.1338.5474.0054.00-15.92H42.674.1338.5474.0054.00-15.92H42.6774.0054.00-15.92H74.0054.00HHHHHHHHH</td></td>	Ant.PoiReading (dBuV)FactorPeak FS (dBuV)AV FS (dBuV)HV(dBuV)(dBuV)(dBuV)(dBuV)(dBuV)H89.5689.18-0.4999.7188.69H49.134.7844.35H42.664.5838.08H42.674.1338.54HHHHHHHHHHHHHHHHHHH<	Ant.Poi H/VReading (dBuV)Factor (dBuV)Peak FSAV FSAt 3mH89.5089.18-0.4999.7188.69114.00H49.134.7844.3574.00H42.664.7838.0874.00H42.674.1338.5474.00H42.674.1338.5474.00H42.6774.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H74.00H </td <td>Ant.PoiReading (dBuy)Factor (dBuy)Peak FSAV FSAt 3mAt 3mHV(dBuy)(dBuy)(dBuy)(dBuy)(dBuy)(dBuy)(dBuy)H89.5689.18-0.4999.7188.69114.0094.00H49.134.7844.3574.0054.00H42.664.5838.0874.0054.00H42.674.1338.5474.0054.00H74.0054.00H74.0054.00H74.0054.00H74.0054.00H54.00H54.00H54.00H54.00H54.00H54.00H54.00H54.00H54.00H</td> <td>Ant.PoiReading (dBuv)Factor (dBuv)Peak FS (dBuVm)AV FS (dBuVm)at 3m (dBuVm)Margin (dBuVm)H89.5689.18-0.4999.7188.69114.0094.00-5.31H49.13-0.4099.7188.69114.0094.00-5.31H49.13-0.4044.3574.0054.00-9.65H42.664.5838.0874.0054.00-15.92H42.674.1338.5474.0054.00-15.92H42.674.1338.5474.0054.00-15.92H42.6774.0054.00-15.92H74.0054.00HHHHHHHHH</td>	Ant.PoiReading (dBuy)Factor (dBuy)Peak FSAV FSAt 3mAt 3mHV(dBuy)(dBuy)(dBuy)(dBuy)(dBuy)(dBuy)(dBuy)H89.5689.18-0.4999.7188.69114.0094.00H49.134.7844.3574.0054.00H42.664.5838.0874.0054.00H42.674.1338.5474.0054.00H74.0054.00H74.0054.00H74.0054.00H74.0054.00H54.00H54.00H54.00H54.00H54.00H54.00H54.00H54.00H54.00H	Ant.PoiReading (dBuv)Factor (dBuv)Peak FS (dBuVm)AV FS (dBuVm)at 3m (dBuVm)Margin (dBuVm)H89.5689.18-0.4999.7188.69114.0094.00-5.31H49.13-0.4099.7188.69114.0094.00-5.31H49.13-0.4044.3574.0054.00-9.65H42.664.5838.0874.0054.00-15.92H42.674.1338.5474.0054.00-15.92H42.674.1338.5474.0054.00-15.92H42.6774.0054.00-15.92H74.0054.00HHHHHHHHH

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
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- 4 Measurement of data 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.
- 5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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FCC ID: P5A-CL0023

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Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX CH High	Test Date :	Aug. 22, 2011
Fundamental Frequency:	: 2474MHz	Test By:	Eric
Temperature :	25 °C	Pol:	Vertical
Humidity :	65 %		

		Peak	AV		Actual	Actual	Peak Limit	AV Limit		
Freq.	Ant.Pol.	Reading	Reading	Factor	Peak FS	AV FS	at 3m	at 3m	Margin	
(MHz)	H/V	(dBuV)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2474.0	V	88.78	87.95	-0.59	88.19	87.36	114.00	94.00	-6.64	F
1662.5	V	43.34		-5.54	37.80		74.00	54.00	-16.20	Н
1331.5	V	47.21		-4.78	42.43		74.00	54.00	-11.57	Н
1663.0	V	44.91		-4.13	40.78		74.00	54.00	-13.22	Н
1994.5	V	41.64		-2.98	38.66		74.00	54.00	-15.34	Н
4948.0	V	42.21		5.56	47.77		74.00	54.00	-6.23	Н
7422.0	V						74.00	54.00		Н
9896.0	V						74.00	54.00		Н
12370.0	V						74.00	54.00		Н
14844.0	V						74.00	54.00		Н
17318.0	V						74.00	54.00		Н
19792.0	V						74.00	54.00		Н
22266.0	V						74.00	54.00		Н
24740.0	V						74.00	54.00		Н

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 "F" denotes fundamental frequency; "H" denotes harmonics frequency. "S" denotes spurious frequency.
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- 6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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FCC ID: P5A-CL0023

Report No.: ER/2011/90015 Issue Date: Sep. 16, 2011 Page: 25 of 28

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode:	TX CH High	Test Date :	Aug. 22, 2011
Fundamental Frequency:	2474MHz	Test By:	Eric
Temperature :	25 °C	Pol:	Horizontal
Humidity :	65 %		

		Peak	AV		Actual	Actual	Peak Limit	AV Limit		
Freq.	Ant.Pol.	Reading	Reading	Factor	Peak FS	AV FS	at 3m	at 3m	Margin	
(MHz)	H/V	(dBuV)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
2474.0	Н	88.49	87.44	-0.59	99.71	86.85	114.00	94.00	-7.15	F
1331.5	Н	50.09		-4.78	45.31		74.00	54.00	-8.69	Н
1500.5	Н	43.02		-4.58	38.44		74.00	54.00	-15.56	Н
1598.0	Н	41.15		-4.11	37.04		74.00	54.00	-16.96	Н
1663.0	Н	41.76		-4.13	37.63		74.00	54.00	-16.37	Н
4948.0	Н						74.00	54.00		Н
7422.0	Н						74.00	54.00		Н
9896.0	Н						74.00	54.00		Н
12370.0	Н						74.00	54.00		Н
14844.0	Н						74.00	54.00		Н
17318.0	Н						74.00	54.00		Н
19792.0	Н						74.00	54.00		Н
22266.0	Н						74.00	54.00		Н
24740.0	Н						74.00	54.00		Н

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
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- 5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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7. 20 dB Band Width Measurement

7.1 Measurement Procedure

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Set ETU normal operating mode.
- 3. Set SPA Center Frequency = fundamental frequency, RBW = 100kHz, VBW = 300kHz, Span =1MHz.
- 4. Set SPA Max hold. Mark peak, -20dB.

7.2 Test SET-UP (Block Diagram of Configuration)

Same as 4.2 Radiated Emission Measurement.

7.3 Measurement Equipment Used:

Same as 4.2 Radiated Emission Measurement.

7.4 Measurement Results:

- 2408 Channel = 1.431 MHz
- 2441 Channel = 1.438 MHz
- 2474 Channel = 1.611MHz

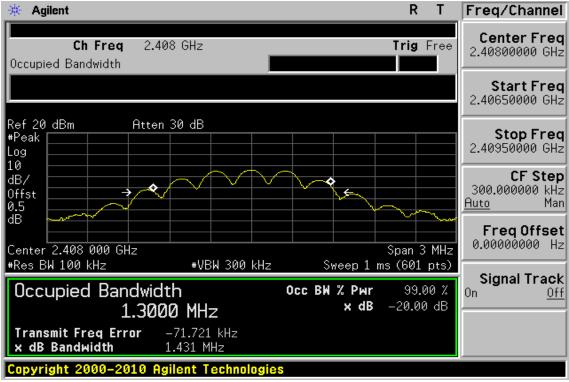
Refer to attached data chart.

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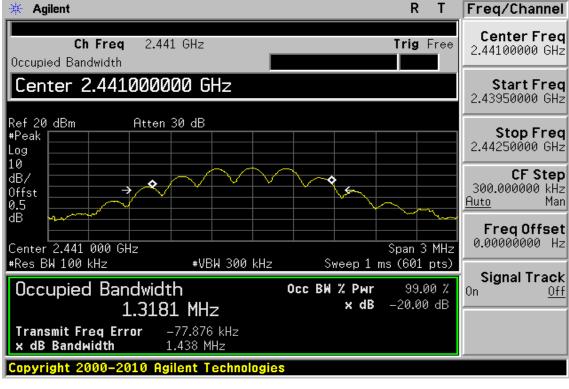


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20dB Bandwidth Test Data CH-Low



20dB Bandwidth Test Data CH-Mid



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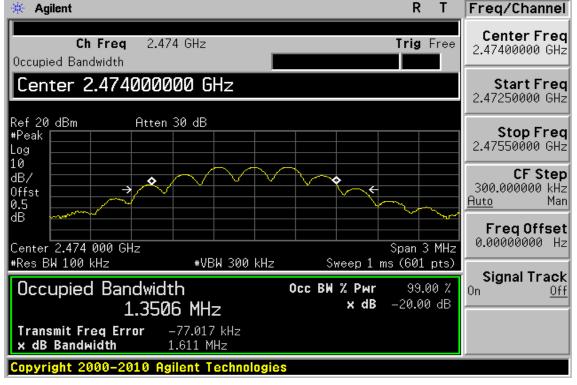
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           GS Taiwan Ltd.
台灣檢驗科技股份有限公司 t (886-2) 2299-3279
                                                     f (886-2) 2298-0488
                                                                                  www.tw.sqs.com
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20dB Bandwidth Test Data CH-High



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