

Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 1 of 55

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

OF

**Product Name: Tablet Computer** 

**Brand Name:** acer

ICONIA W4-820; ICONIA W4-820P **Marketing Name:** 

Different name for market segmentation

**Model No.:** EE6

**Model Difference:** N/A

FCC ID: **HLZEE6** 

IC: 1754F-EE6

**Report No.:** ER/2013/80068

**Issue Date:** Sep. 26, 2013

**FCC Rule Part:** §15.247, Cat: DTS

**IC Rule Part:** RSS-210 issue 8 :2010, Annex 8

**Acer Incorporated** 

**Prepared for:** 8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi, New

Taipei City 22181, Taiwan (R.O.C)

SGS Taiwan Ltd.

**Electronics & Communication Laboratory** 

Prepared by: No.134, Wu Kung Road, New Taipei Industrial

Park, Wuku District, New Taipei City, Taiwan

24803





0513

*Note:* This report shall not be reproduced except in full, without the written approval of SGS Taiwan Ltd. This document may be altered or revised by SGS Taiwan Ltd. personnel only, and shall be noted in the revision section of the document.

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and <a href="https://www.sgs.com/t jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 2 of 55

# VERIFICATION OF COMPLIANCE

Acer Incorporated **Applicant:** 

8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City 22181, Taiwan

(R.O.C)

**Tablet Computer Product Name:** 

acer **Brand Name:** 

ICONIA W4-820; ICONIA W4-820P **Marketing Name:** 

Different name for market segmentation

**Model No.:** EE6

**Model Difference:** N/A

FCC ID: HLZEE6

IC: 1754F-EE6

ER/2013/80068 **File Number:** 

Aug. 29, 2013 ~ Sep. 18, 2013 Date of test:

Aug. 29, 2013 **Date of EUT Received:** 

# 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 C63.4:2009 and RSS-Gen. issue 3 the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.247 and IC RSS 210 issue 8: 2010 Annex 8.

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

Test By:	Marcus Iseng	Date	Sep. 26, 2013
Prepared By:	Marcus Tseng/Engineer Vooletta Tang	Date	Sep. 26, 2013
Approved By:	Violetta Tang / Clerk  Lang  Jim Chang / Supervisor	Date	Sep. 26, 2013

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and <a href="https://www.sgs.com/terms">conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sgs.com

SGS Taiwan Ltd.



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 3 of 55

# Version

Version No.	Date	Description
00	Sep. 26, 2013	Initial creation of document

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.

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,此根告结果僅對測述之樣品負責,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。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

\*\*SCENTER LINE 3.43 \*\*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*

\*\*

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sgs.com

台灣檢驗科技股份有限公司

t (886-2) 2299-3279 f (886-2) 2298-0488



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 4 of 55

# **Table of Contents**

1	GEN	NERAL INFORMATION	6
	1.1	Product Description	6
	1.2	Related Submittal(s) / Grant (s)	7
	1.3	Test Methodology	7
	1.4	Test Facility	7
	1.5	Special Accessories	7
	1.6	Equipment Modifications	7
2	SYS	TEM TEST CONFIGURATION	8
	2.1	EUT Configuration	8
	2.2	EUT Exercise	8
	2.3	Test Procedure	8
	2.4	Configuration of Tested System	9
3	SUM	IMARY OF TEST RESULTS	10
4	DES	CRIPTION OF TEST MODES	10
5	MEA	ASUREMENT UNCERTAINTY	11
6	CON	NDUCTED EMISSION TEST	12
	6.1	Standard Applicable:	12
	6.2	Measurement Equipment Used:	12
	6.3	EUT Setup:	12
	6.4	Test SET-UP (Block Diagram of Configuration)	13
	6.5	Measurement Procedure:	13
	6.6	Measurement Result:	13
7	PEA	K OUTPUT POWER MEASUREMENT	20
	7.1	Standard Applicable:	20
	7.2	Measurement Equipment Used:	21
	7.3	Test Set-up:	21
	7.4	Measurement Procedure:	22
	7.5	Measurement Result:	23
8	6dB	BANDWIDTH	24
	8.1	Standard Applicable:	24
	8.2	Measurement Equipment Used:	24
	8.3	Test Set-up:	24
	8.4	Measurement Procedure:	24
	8.5	Measurement Result:	25

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.

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,此根告结果僅對測述之樣品負責,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。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

\*\*SCENTER LINE 3.43 \*\*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*

\*\*



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 5 of 55

9	BAN	D EDGES MEASUREMENT	28
	9.1	Standard Applicable:	28
	9.2	Measurement Equipment Used:	28
	9.3	Test SET-UP:	30
	9.4	Measurement Procedure:	31
	9.5	Field Strength Calculation:	32
	9.6	Measurement Result:	32
10	SPUF	RIOUS RADIATED EMISSION TEST	36
	10.1	Standard Applicable	36
	10.2	Measurement Equipment Used:	37
	10.3	Test SET-UP:	37
	10.4	Measurement Procedure:	38
	10.5	Field Strength Calculation	38
	10.6	Measurement Result:	38
11	PEAL	K POWER SPECTRAL DENSITY	48
	11.1	Standard Applicable:	48
	11.2	Measurement Equipment Used:	48
	11.3	Test Set-up:	48
	11.4	Measurement Procedure: (following the measurement procedure 10.2 of KDB558074):	48
	11.5	Measurement Result:	49
12	ANT	ENNA REQUIREMENT	52
	12.1	Standard Applicable:	52
	12.2	Antenna Connected Construction:	52
13	99%	BANDWIDTH MEASUREMENT	53
	13.1	Standard Applicable:	53
	13.2	Measurement Equipment Used:	53
	13.3	Test Set-up:	53
	13.4	Measurement Procedure:	53
	13.5	Measurement Result:	54

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.

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,此根告结果僅對測述之樣品負責,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。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

\*\*SCENTER LINE 3.43 \*\*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*

\*\*



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 6 of 55

# **GENERAL INFORMATION**

# **Product Description**

# General:

Product Name:	Tablet Computer		
Brand Name:	acer		
Marketing Name:	ICONIA W4-820; ICONIA W4-820P Different name for market segmentation		
Model No.:	EE6		
Model difference:	N/A		
Hardware Version:	B3B		
Software Version:	BIOS v012		
		chargeable Li-polymer battery pack from AC/DC adapter	
	D 44	1.Model No.: AC13F3L Supplier: Sanyo Electric Co., Ltd.	
Power Supply:	Battery:	2. Model No.: AC13F8L Supplier: LG CHEMICAL LTD	
1 ower suppry.	Adapter:	1. Model No.: W12-010N3A, Supplier: Chicony	
		2. Model No.: PSAI10R-050Q, Supplier: Phihong Technology Co., Ltd.	
		3. Model No.: DELTA ADP-10HW AA, Supplier: DELTA-SINGAPORE	

# Bluetooth V4.0:

Frequency Range:	2402 – 2480MHz
Bluetooth Version:	V4.0 dual mode
Channel number:	40 channels
Modulation type:	GFSK
Transmit Power:	2.52dBm (Peak)
Antenna Designation:	PIFA Antenna, 0.34dBi
Type of Emission:	1M05F1D

This test report applies for Bluetooth V4.0 function.

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.

transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 7 of 55

### 1.2 **Related Submittal(s) / Grant (s)**

This submittal(s) (test report) is intended for FCC ID: HLZEE6 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules. And IC: 1754F-EE6 filing to comply with Industry Canada RSS-210 issue 8: 2010 Annex 8. The composite system (digital device) is compliance with Subpart B is authorized under a DoC procedure.

### 1.3 **Test Methodology**

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4:2009 and RSS-Gen: 2010. Radiated testing was performed at an antenna to EUT distance 3 meters.

Tested in accordance with Apr 2013 KDB558074 D01 V03 for compliance to FCC 47CFR 15.247 requirements.

### **Test Facility** 1.4

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 Road, Wuku Industrial Zone, Taipei County, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009. FCC Registration Number is: 990257, 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**

There are no special accessories used while test was conducted.

### **Equipment Modifications** 1.6

There was no modification incorporated into the EUT.

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 8 of 55

## 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**

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

#### 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 general criterion in Section 7.1 of ANSI C63.4:2009. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz, and the measurement procedure 7.3 in ANSI 63.4:2009 & 6.2.2 is followed to carry out the test. The CISPR Quasi-Peak and Average detector mode is employed according to §15.107

## 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna. according to the requirements in Section 8 and 13 and of ANSI C63.4:2009, & Section 6.3, 6.4, 6.5.

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 9 of 55

# **Configuration of Tested System**

Fig. 2-1 Radiated Emission & Conducted (Antenna Port) Configuration

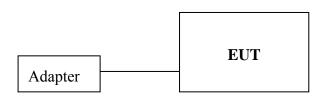
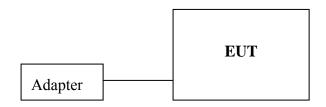


Fig. 2-2 AC Power Line Conducted Emission



**Table 2-2 Equipment Used in Tested System** 

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	<b>Power Cord</b>
1.	BT 4.0 Test Software	N/A	N/A	N/A	N/A	N/A

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

所形分列就可能被害的不能可能可能以及。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_and\_conditions.htm</a> and jurisdiction is default to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 f (886-2) 2298-0488

台灣檢驗科技股份有限公司



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 10 of 55

## SUMMARY OF TEST RESULTS

FCC/IC Rules	Description Of Test	Result
§15.207(a) RSS-Gen §7.2.4	AC Power Line Conducted Emission	Compliant
§15.247(b) (3) RSS-210 §A8.4(4)	Peak Output Power	Compliant
§15.247(a)(2) RSS-210 §A8.2(a) RSS-Gen §4.6.2	6dB Bandwidth	Compliant
§15.247(d) RSS-210 §A8.5	100 KHz Bandwidth Of Frequency Band Edges	Compliant
§15.247(d) RSS-210 §A8.5	Spurious Emission	Compliant
§15.247(e) RSS-210 §A8.2(b)	Peak Power Density	Compliant
\$15.203 RSS-GEN \$7.1.2,	Antenna Requirement	Compliant
RSS-Gen §4.6.1	99% Power Bandwidth	Compliant

# **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 (2442MHz) and high (2480MHz) with BT 4.0 mode is 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 BT 4.0 mode Transmitter for channel Low, Mid and High, the worst case E2 position was reported.

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 11 of 55

## **MEASUREMENT UNCERTAINTY**

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Peak Output Power	+/- 1.42 dB
6dB Bandwidth	+/- 123.36 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 1.55 dB
Peak Power Density	+/- 1.55 dB
99% Power Bandwidth	+/- 123.36 Hz
Temperature	+/- 0.8 °C
Humidity	+/- 4.7 %
DC / AC Power Source	DC= +/- 1%, AC=+/- 0.2%

# Radiated Spurious Emission:

	30MHz - 180MHz: +/- 3.37dB	
Magazaran ant un aantaintu	180MHz -417MHz: +/- 3.19dB	
Measurement uncertainty (Polarization: <b>Vertical</b> )	0.417GHz-1GHz: +/- 3.19dB	
(1 olulization : Vertical)	1GHz - 18GHz: +/- 4.04dB	
	18GHz - 40GHz: +/- 4.04dB	

	30MHz - 167MHz: +/- 4.22dB
Measurement uncertainty	167MHz -500MHz: +/- 3.44dB
(Polarization : <b>Horizontal</b> )	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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.



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 12 of 55

# **CONDUCTED EMISSION TEST**

### 6.1 **Standard Applicable:**

According to §15.207 and RSS-Gen §7.2.4, frequency range within 150KHz to 30MHz shall not exceed the Limit table as below.

Frequency range	Lir. dB(	nits (uV)
MHz	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

## Note

### 6.2 **Measurement Equipment Used:**

	Conducted Emission Test Site										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.						
TYPE		NUMBER	NUMBER	CAL.							
EMI Test Receiver	R&S	ESCI7	100759	02/08/2013	02/07/2014						
EMI Receiver	R&S	ESCS 30	828985/004	09/23/2012	09/22/2013						
LISN	Rolf-Heine	NNB-2/16Z	99012	03/23/2013	03/22/2014						
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	03/23/2013	03/22/2014						
Coaxial Cables	N/A	WK CE Cable	N/A	01/05/2013	01/04/2014						

# **EUT Setup:**

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4:2009.
- 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.

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

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and <a href="https://www.sgs.com/terms">conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exponent a parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

<sup>1.</sup> The lower limit shall apply at the transition frequencies

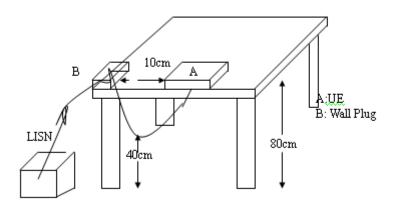
The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 13 of 55

# 6.4 Test SET-UP (Block Diagram of Configuration)



### 6.5 **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 phases of power being supplied by given UE are completed

## **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.

Note2: The \* reveals the worst-case results that closet to the limit.

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 14 of 55

# AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	Sep. 18, 2013
Temperature:	26	Humidity:	60 %	Test By:	Marcus
Adapter Model:	W12-010N3A (Cł	nicony)	•	Probe:	L1/N

Site ConductionRoom

Limit: FCC Class B Conduction(QP)

EUT: Tablet Computer

M/N: EE6

Note: Chicony W12-010N3A

Phase: L1

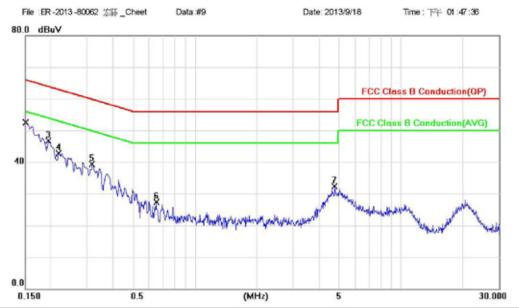
Power: AC 120V/ Distance:

Mode: Operationmode

AC 120V/60Hz Humidity: 60%

Temperature:

## **Conducted Emission**



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dΒ	dBuV	dBuV	dΒ	Detector	Comment	
1		0.1500	36.13	9.96	46.09	66.00	-19.91	QP		
2		0.1500	17.42	9.96	27.38	56.00	-28.62	AVG		
3	*	0.1940	36.65	9.96	46.61	63.86	-17.25	peak		
4		0.2180	32.74	9.97	42.71	62.89	-20.18	peak		
5		0.3180	29.38	10.01	39.39	59.76	-20.37	peak		
6		0.6500	17.38	10.02	27.40	56.00	-28.60	peak		
7		4.7780	22.21	10.16	32.37	56.00	-23.63	peak		

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

26 10

Page: 15 of 55

Temperature:

Humidity:

Site ConductionRoom

Limit: FCC Class B Conduction(QP)

EUT: Tablet Computer

M/N: EE6

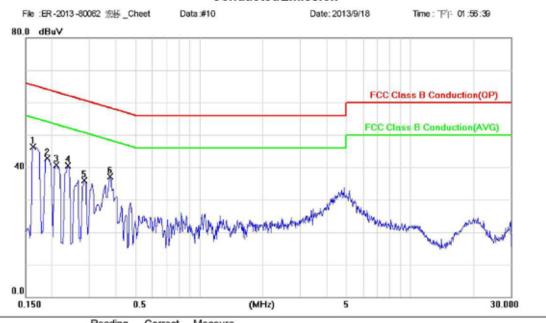
Note: Chicony W12-010N3A

Phase: AC 120V/60Hz Power:

Distance:

Mode: Operationmode

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dΒ	dBuV	dBuV	dΒ	Detector	Comment
1	*	0.1620	36.35	9.98	46.33	65.36	-19.03	peak	
2		0.1900	32.78	9.99	42.77	64.04	-21.27	peak	
3		0.2100	30.69	9.99	40.68	63.21	-22.53	peak	
4		0.2380	30.53	10.01	40.54	62.17	-21.63	peak	
5		0.2860	25.81	10.03	35.84	60.64	-24.80	peak	
6		0.3780	27.07	10.05	37.12	58.32	-21.20	peak	

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.

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,此根告结果僅對測述之樣品負責,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。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

\*\*SCENTER LINE 3.43 \*\*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*

\*\*

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 16 of 55

# AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	Sep. 03, 2013
Temperature:	26	Humidity:	60 %	Test By:	Marcus
Adapter Model:	PSAI10R-050Q (F	Phihong)		Probe:	L1/N

Site ConductionRoom

Limit: FCC Class B Conduction(QP)

EUT: Tablet Computer

M/N: EE6

Note:

Phase: L1 Power:

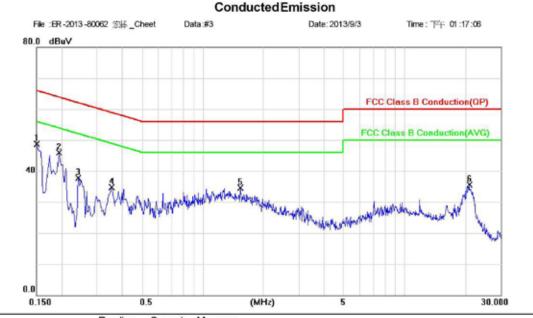
AC 120V/60Hz

Mode: Operationmode

Temperature: 26 °C Humidity:



Distance:



Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
MHz	MHz dBuV	dBuV	dΒ	dBuV	dBuV	dBuV dB	Detector	Comment
*	0.1500	38.73	9.96	48.69	66.00	-17.31	peak	
	0.1940	35.95	9.96	45.91	63.86	-17.95	peak	
	0.2420	27.76	9.98	37.74	62.03	-24.29	peak	
	0.3540	24.72	10.02	34.74	58.87	-24.13	peak	
	1.5420	24.37	10.08	34.45	56.00	-21.55	peak	
	20.9540	25.19	10.39	35.58	60.00	-24.42	peak	
	•	MHz * 0.1500 0.1940 0.2420 0.3540	Mk. Freq. Level  MH≥ dBuV  * 0.1500 38.73  0.1940 35.95  0.2420 27.76  0.3540 24.72  1.5420 24.37	Mk.         Freq.         Level dBuV         Factor dBuV           *         0.1500         38.73         9.96           0.1940         35.95         9.96           0.2420         27.76         9.98           0.3540         24.72         10.02           1.5420         24.37         10.08	Mk.         Freq.         Level         Factor         ment           MHz         dBuV         dB         dBuV           *         0.1500         38.73         9.96         48.69           0.1940         35.95         9.96         45.91           0.2420         27.76         9.98         37.74           0.3540         24.72         10.02         34.74           1.5420         24.37         10.08         34.45	Mk.         Freq.         Level         Factor         ment         Limit           MH₂         dBuV         dB         dBuV         dBuV           *         0.1500         38.73         9.96         48.69         66.00           0.1940         35.95         9.96         45.91         63.86           0.2420         27.76         9.98         37.74         62.03           0.3540         24.72         10.02         34.74         58.87           1.5420         24.37         10.08         34.45         56.00	Mk.         Freq.         Level         Factor         ment         Limit         Over           MHz         dBuV         dB         dBuV         dBuV         dB           *         0.1500         38.73         9.96         48.69         66.00         -17.31           0.1940         35.95         9.96         45.91         63.86         -17.95           0.2420         27.76         9.98         37.74         62.03         -24.29           0.3540         24.72         10.02         34.74         58.87         -24.13           1.5420         24.37         10.08         34.45         56.00         -21.55	Mk.         Freq.         Level         Factor         ment         Limit         Over           MHz         dBuV         dB         dBuV         dBuV         dB         Detector           *         0.1500         38.73         9.96         48.69         66.00         -17.31         peak           0.1940         35.95         9.96         45.91         63.86         -17.95         peak           0.2420         27.76         9.98         37.74         62.03         -24.29         peak           0.3540         24.72         10.02         34.74         58.87         -24.13         peak           1.5420         24.37         10.08         34.45         56.00         -21.55         peak

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.

Offices 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. 

\*\*Ref A f 就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留到天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the company and the properties of the parties of the content of the company and the properties of the parties of the content of the company and the properties of the parties of the content of the conten transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 17 of 55

Site ConductionRoom

Limit: FCC Class B Conduction(QP)

EUT: Tablet Computer

M/N: EE6

Note:

Phase:

AC 120V/60Hz

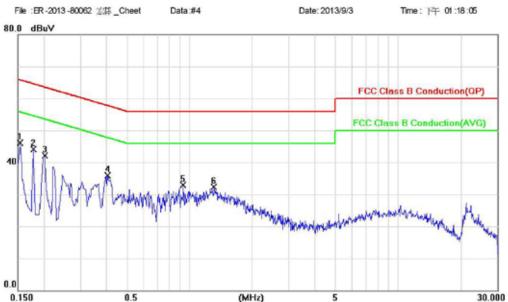
Power: Distance:

Mode: Operationmode

Temperature:

Humidity: 60%





Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dΒ	dBuV	dBuV	dΒ	Detector	Comment
*	0.1540	36.16	9.98	46.14	65.78	-19.64	peak	
	0.1780	34.03	9.99	44.02	64.58	-20.56	peak	
	0.2020	32.18	9.99	42.17	63.53	-21.36	peak	
	0.4060	25.83	10.05	35.88	57.73	-21.85	peak	
	0.9380	22.83	10.09	32.92	56.00	-23.08	peak	
	1.3140	22.29	10.09	32.38	56.00	-23.62	peak	
	Mk.	* 0.1540 0.1780 0.2020 0.4060 0.9380	MHz dBuV  * 0.1540 36.16  0.1780 34.03  0.2020 32.18  0.4060 25.83  0.9380 22.83	Mk.         Freq.         Level         Factor           MHz         dBuV         dB           *         0.1540         36.16         9.98           0.1780         34.03         9.99           0.2020         32.18         9.99           0.4060         25.83         10.05           0.9380         22.83         10.09	Mk.         Freq.         Level         Factor         ment           MHz         dBuV         dB         dBuV           *         0.1540         36.16         9.98         46.14           0.1780         34.03         9.99         44.02           0.2020         32.18         9.99         42.17           0.4060         25.83         10.05         35.88           0.9380         22.83         10.09         32.92	Mk.         Freq.         Level         Factor         ment         Limit           MHz         dBuV         dB         dBuV         dBuV           *         0.1540         36.16         9.98         46.14         65.78           0.1780         34.03         9.99         44.02         64.58           0.2020         32.18         9.99         42.17         63.53           0.4060         25.83         10.05         35.88         57.73           0.9380         22.83         10.09         32.92         56.00	Mk.         Freq.         Level         Factor         ment         Limit         Over           MHz         dBuV         dB         dBuV         dBuV         dB           *         0.1540         36.16         9.98         46.14         65.78         -19.64           0.1780         34.03         9.99         44.02         64.58         -20.56           0.2020         32.18         9.99         42.17         63.53         -21.36           0.4060         25.83         10.05         35.88         57.73         -21.85           0.9380         22.83         10.09         32.92         56.00         -23.08	Mk.         Freq.         Level         Factor         ment         Limit         Over           MHz         dBuV         dB         dBuV         dBuV         dB         Detector           *         0.1540         36.16         9.98         46.14         65.78         -19.64         peak           0.1780         34.03         9.99         44.02         64.58         -20.56         peak           0.2020         32.18         9.99         42.17         63.53         -21.36         peak           0.4060         25.83         10.05         35.88         57.73         -21.85         peak           0.9380         22.83         10.09         32.92         56.00         -23.08         peak

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.

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,此根告结果僅對測述之樣品負責,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。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

\*\*SCENTER LINE 3.43 \*\*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*

\*\*

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 18 of 55

Temperature:

Humidity:

28 10

# AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	Sep. 18, 2013
Temperature:	26	Humidity:	60 %	Test By:	Marcus
Adapter Model:	DELTAADP-10H	W AA (Delta)		Probe:	L1/N

Site ConductionRoom

Limit: FCC Class B Conduction(QP)

EUT: Tablet Computer

M/N: EE6

0.0

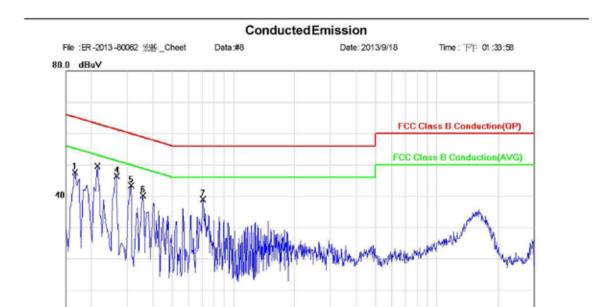
Note: Delta ADP-10HW AA

Phase: L1

Power: AC 120V/60Hz

Distance:

Mode: Operationmode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dΒ	dBuV	dBuV	dΒ	Detector	Comment	
1		0.1660	37.62	9.96	47.58	65.16	-17.58	peak		
2		0.2140	32.35	9.97	42.32	63.05	-20.73	QP		
3		0.2140	18.55	9.97	28.52	53.05	-24.53	AVG		
4	•	0.2660	36.31	10.00	46.31	61.24	-14.93	peak		
5		0.3140	33.20	10.01	43.21	59.86	-16.65	peak		
6		0.3580	30.07	10.02	40.09	58.77	-18.68	peak		
7		0.7100	28.84	10.04	38.88	56.00	-17.12	peak		

(MHz)

5

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。

0.5

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279

f (886-2) 2298-0488

30 000



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 19 of 55

Site ConductionRoom

Limit: FCC Class B Conduction(QP)

EUT: Tablet Computer

Note: Delta ADP-10HW AA

M/N: EE6

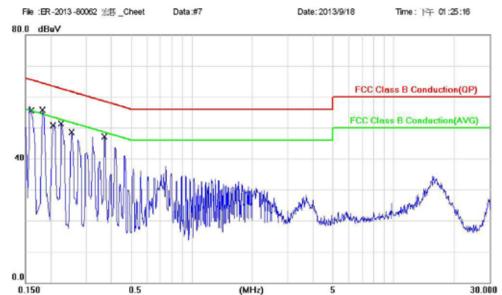
Phase: N Power:

AC 120V/60Hz

Temperature: Humidity: 60%

Mode: Operationmode

# Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dΒ	dBuV	dBuV	dΒ	Detector	Comment
1		0.1620	35.84	9.98	45.82	65.36	-19.54	QP	
2		0.1620	15.73	9.98	25.71	55.36	-29.65	AVG	
3		0.1820	36.83	9.99	46.82	64.39	-17.57	QP	
4		0.1820	19.76	9.99	29.75	54.39	-24.64	AVG	
5		0.2060	35.10	9.99	45.09	63.37	-18.28	QP	
6		0.2060	16.14	9.99	26.13	53.37	-27.24	AVG	
7	*	0.2260	36.72	10.00	46.72	62.60	-15.88	QΡ	
8		0.2260	20.25	10.00	30.25	52.60	-22.35	AVG	
9		0.2540	31.48	10.02	41.50	61.63	-20.13	QP	
10		0.2540	12.73	10.02	22.75	51.63	-28.88	AVG	
11		0.3700	27.26	10.05	37.31	58.50	-21.19	QP	
12		0.3700	8.95	10.05	19.00	48.50	-29.50	AVG	

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.

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,此根告结果僅對測述之樣品負責,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。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

\*\*SCENTER LINE 3.43 \*\*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*

\*\*



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 20 of 55

## PEAK OUTPUT POWER MEASUREMENT

# **Standard Applicable:**

According to §15.247 (b)

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and

5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to RSS-210 issue 8,§A8.4(4), for systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W. Except as provided in Section A8.4 (5), the e.i.r.p. shall not exceed 4 W.

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or transmitting at a reduced power level. If multiple modes of operation are implemented, the maximum conducted output power is the highest total transmit power occurring in any mode.

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 21 of 55

# **Measurement Equipment Used:**

	Conducted Emission Test Site									
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.					
TYPE		NUMBER	NUMBER	CAL.						
Power Meter	Anritsu	ML2495A	1005007	02/08/2012	02/07/2014					
Power Sensor	Anritsu	MA2411B	917032	02/08/2012	02/07/2014					
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/30/2013	05/29/2014					
Spectrum Analyzer	Agilent	E4440A	MY45304525	03/15/2013	03/14/2014					
DC Block	Mini-Circuits	BLK-18-S+	1	02/28/2013	02/27/2014					
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2013	01/04/2014					
Attenuator	Mini-Circuit	BW-S10W2+	002	02/28/2013	02/27/2014					
Splitter	Agilent	11636B	N/A	02/28/2013	02/27/2014					

### 7.3 **Test Set-up:**



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.

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,此根告结果僅對測述之樣品負責,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。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

\*\*SCENTER LINE 3.43 \*\*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*

\*\*

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 22 of 55

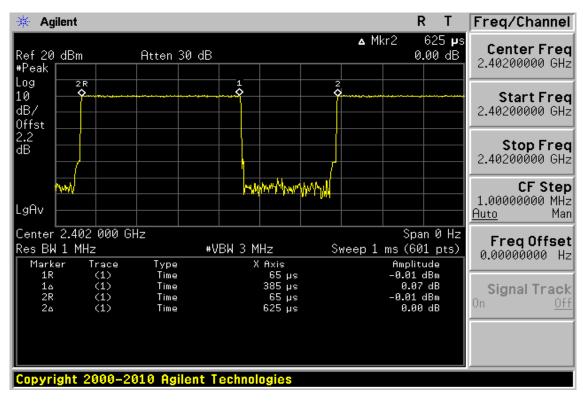
#### 7.4 **Measurement Procedure:**

- 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 power meter or spectrum. (**Peak power setting on Spectrum:** Channel power function, RBW = 1MHz, VBW = 3MHz, Span: 30/60MHz, Detector =peak, Sweep = Auto. Setting on spectrum is adjusted based on the mandatory procedure in 9.1.2 of the KDB558074). Power Meter is used as the auxiliary test equipment to conduct the output power measurement. 9.1.3 in KDB558074 is followed.

(Avg. power setting on Spectrum: Channel power function, RBW = 1MHz, VBW = 3MHz, Span: 30/60MHz, Detector =Avg., Trace avg =100, Sweep = Auto, Setting on spectrum is adjusted based on the mandatory procedure in 9.2.2.4 of the KDB558074). Power Meter is used as the auxiliary test equipment to conduct the output power measurement. 9.2.3, option 3 in KDB558074 is followed.

- 3. Record the max. Reading as observed from Spectrum or Power Meter.
- 4. Repeat above procedures until all test default channel measured was complete.

# **Duty Factor:**



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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 23 of 55

## **Measurement Result:**

## BT4.0 mode:

СН	Frequency	Peak Power Output(dBm)	Required Limit
	(MHz)		
0	2402	1.51	1  Watt = 30  dBm
20	2442	2.38	1  Watt = 30  dBm
39	2480	2.52	1  Watt = 30  dBm

		, D	
СН	Frequency	Average Power Output(dBm)	Required Limit
	(MHz)		
0	2402	-0.69	1  Watt = 30  dBm
20	2442	0.02	1  Watt = 30  dBm
39	2480	0.23	1  Watt = 30  dBm

\*Note: Measured by power meter, cable loss as 1dB that offsets on the power meter in Peak

\*Note: Measured by power meter, as cable loss+ Duty cycle factor that offsets on the power meter

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.

Offices 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. 

\*\*Ref A f 就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留到天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the company and the properties of the parties of the content of the company and the properties of the parties of the content of the company and the properties of the parties of the content of the conten transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com

台灣檢驗科技股份有限公司



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 24 of 55

## 6dB BANDWIDTH

# **Standard Applicable:**

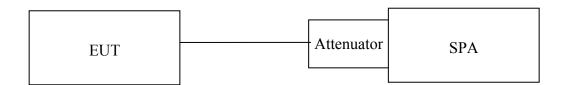
According to §15.247(a)(2), Systems using digital modulation techniques may operate in the 902 - 928 MHz,2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500kHz.

According to RSS 210 issue 8: 2010 Annex 8.2. Systems employing digital modulation techniques (which includes direct sequence) can now be certified under RSS-210 provided they comply with the following requirements: The minimum 6 dB bandwidth shall be at least 500 kHz.

### **Measurement Equipment Used:** 8.2

Refer to section 7.2 for details.

### **Test Set-up:** 8.3



## **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 = 100 kHz, VBW = 3\*RBW, Span = 5MHz, Detector=Peak, Sweep=auto, the setting on spectrum is adjusted based on the procedure as guide in 8.1 option 1 of
- 4. Mark the peak frequency and –6dB (upper and lower) frequency.
- 5. Repeat above procedures until all test default channel measured were complete.

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

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms \_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms\_e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or approval of the Company. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 25 of 55

## **Measurement Result:**

### RT4.0 mode

D14.0 IIIOUC		I	
Frequency (MHz)	Bandwidth (kHz)	Bandwidth (kHz)	Result
2402	699.022	> 500	PASS
2442	702.490	> 500	PASS
2480	702.882	> 500	PASS

<sup>\*</sup> Cable loss as 2.2dB that offsets on the spectrum.

\* Note: The arrow "->" reveals X decibel level

Note: Refer to next page for plots.

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.

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,此根告结果僅對測述之樣品負責,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。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

\*\*SCENTER LINE 3.43 \*\*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*

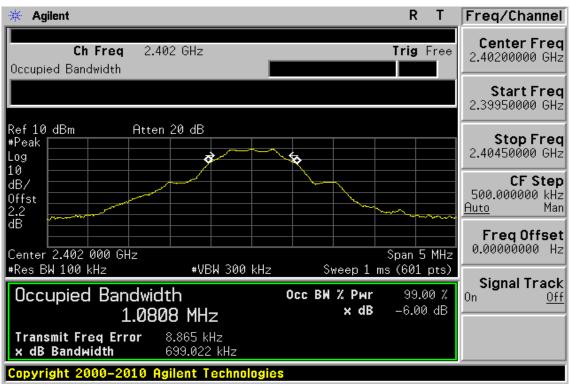
\*\*



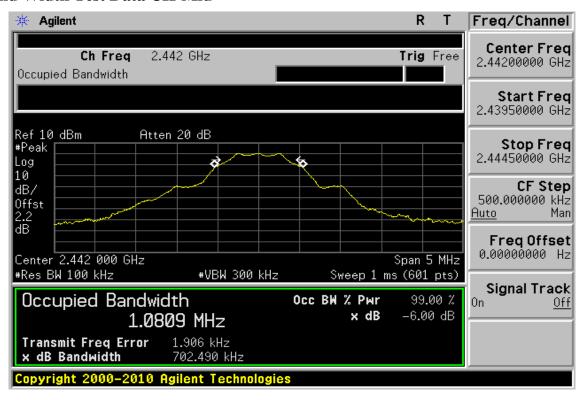
Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 26 of 55

# BT4.0 mode 6dB Band Width Test Data CH-Low



## 6dB Band Width Test Data CH-Mid



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

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms-e-document.htm">www.sgs.com/terms-e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 f (886-2) 2298-0488

台灣檢驗科技股份有限公司

t (886-2) 2299-3279

www.tw.sgs.com



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 27 of 55

# 6dB Band Width Test Data CH-High



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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and <a href="conditions.htm">conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 28 of 55

## BAND EDGES MEASUREMENT

# **Standard Applicable:**

According to §15.247(c), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

According to RSS-Gen §7.2.5 and 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 5 and 6 is not required. In addition, radiated emissions which fall in the restricted bands of Table 3 must also comply with the radiated emission limits specified in Tables 5 and 6.

### **Measurement Equipment Used:** 9.2

## 9.2.1 Conducted Emission at antenna port:

Refer to section 7.2 for details.

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。



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 29 of 55

## 9.2.2 Radiated emission:

966 Chamber									
EQUIPMENT	MFR	MFR MODEL		LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
EMI Test Receiver	R&S	ESCI7	100759	02/08/2013	02/07/2014				
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/30/2013	05/29/2014				
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	02/06/2013	02/07/2014				
Spectrum Analyzer	R&S	FSV-30	101398	10/18/2011	10/17/2013				
Bilog Antenna	SCHWAZBECK	VULB9168	378	01/10/2012	01/09/2014				
Horn antenna	ETS.LINDGREN	3117	123995	05/31/2013	05/30/2014				
Horn Antenna	Schwarzbeck	BBHA9170	184	01/17/2012	01/16/2014				
Pre-Amplifier	Agilent	8447D	2944A07676	01/04/2013	01/03/2014				
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/04/2013	01/03/2014				
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M2	02/28/2013	02/28/2014				
Attenuator	Mini-Circuit	BW-S10W2+	004	02/28/2013	02/27/2014				
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	966_Rx	9	01/04/2013	01/03/2014				
3m Site NSA	SGS	966 chamber	N/A	07/15/2013	07/14/2014				

NOTE: N.C.R refers to Not Calibrated Required.

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.

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,此根告结果僅對測述之樣品負責,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。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

\*\*SCENTER LINE 3.43 \*\*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*\*

\*\*INDICATE AND 1.44 \*\*

\*\*

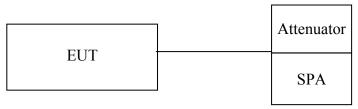


Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 30 of 55

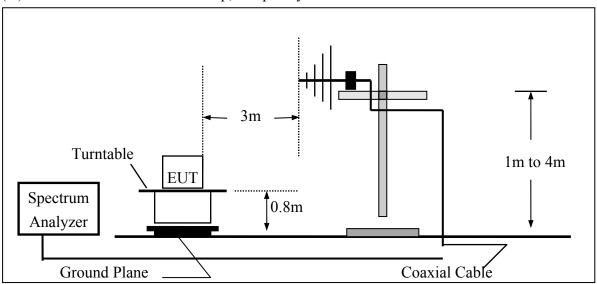
# 9.3 Test SET-UP:

# 9.3.1 Conducted Emission at antenna port:

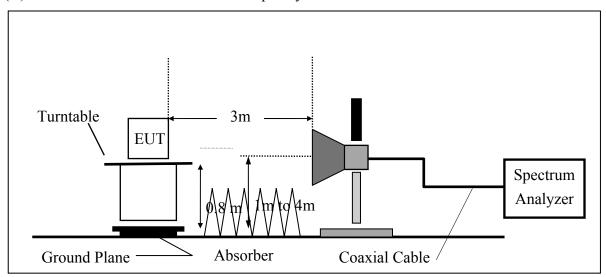


# 9.3.2 Radiated emission:

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



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



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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and <a href="https://www.sgs.com/terms">conditions.htm</a> and <a href="https://www.sgs.com/terms">conditions.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 31 of 55

## **Measurement Procedure:**

Unwanted Emissions into Non-Restricted Frequency Bands, Measurement Procedure followed by 11.1 of KDB558074 D01

- 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 start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
- 4. Set the spectrum analyzer as RBW, VBW=300KHz, Detector = Peak, Sweep = auto
- 5. Mark the highest reading of the emission as the reference level measurement.
- 6. Set DL as the limit = reading on marker 1 20dBm
- 7. Marker on frequency, 2.3999GHz and 2.4836GHz, and examine shall 100 KHz immediately outside the authorized (2400~2483.5) be attenuated by 20dB at least relative to the maximum emission of power.
- 8. Repeat above procedures until all default test channel (low, middle, and high) was complete.

Unwanted Emission falling into Restricted Frequency Bands, Measurement Procedure followed by 12.1 of KDB558074 D01:

- 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.On spectrum, following 8.1.2, and RBW = 1MHz, VBW = 3MHz, & Marker 2390MHz, and 2483.5MHz (Peak Measurement). Average Measurement: following 8.2 with the modification span to 1MHz, &RBW = 1MHz, VBW = 3MHz and peak marker function to obtain the highest reading on 2390, and 2483.5MHz.

Repeat above procedures until all default test channel (low, middle, and high) was complete

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 32 of 55

### 9.5 **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	

## **Measurement Result:**

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

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。

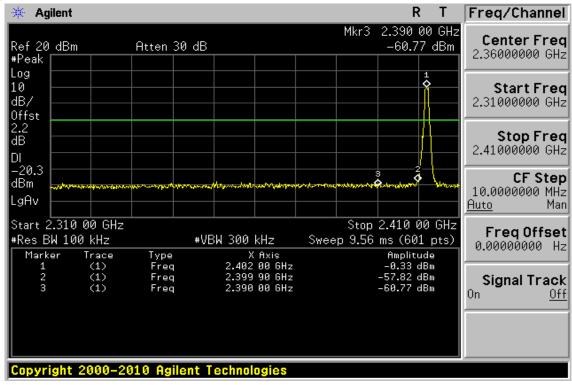
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



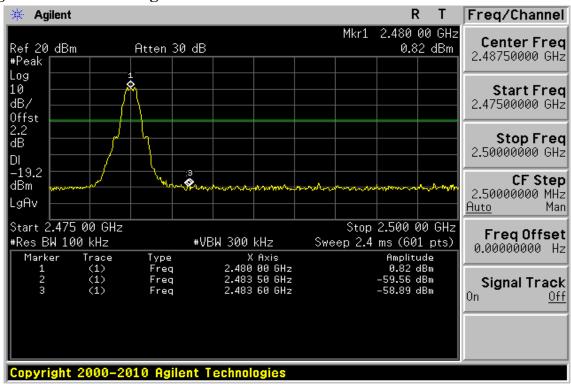
Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 33 of 55

BT4.0 mode **Band Edges Test Data CH-Low** 



# **Band Edges Test Data CH-High**



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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms-e-document.htm">www.sgs.com/terms-e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sgs.com

台灣檢驗科技股份有限公司

t (886-2) 2299-3279 f (886-2) 2298-0488



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 34 of 55

## Radiated Emission: BT4.0 mode:

Operation Band :BT 4.0 Test Date :2013-09-12

Fundamental Frequency :2402 MHz Temp./Humi. :25.4 deg\_C / 57 RH

Operation Mode :Bandedge LOW Engineer :Allen EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

Actual  $FS(dB\mu V/m) = SPA$ . Reading level $(dB\mu V) + Factor(dB)$ 

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

Note: "F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2390.00	E	Average	30.74	2.51	33.25	54.00	-20.75
2390.00	E	Peak	44.90	2.51	47.41	74.00	-26.59

Operation Band :BT 4.0 Test Date :2013-09-12

Fundamental Frequency :2402 MHz Temp./Humi. :25.4 deg\_C / 57 RH

Operation Mode :Bandedge LOW Engineer :Allen

EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

Actual  $FS(dB\mu V/m) = SPA$ . Reading level $(dB\mu V) + Factor(dB)$ 

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

Note: "F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	dBμV/m	dBμV/m	dB
2390.00	E	Average	31.83	3.13	34.96	54.00	-19.04
2390.00	E	Peak	45.25	3.13	48.38	74.00	-25.62

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms.and.conditions.htm">www.sgs.com/terms.and.conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms.e-document.htm">www.sgs.com/terms.e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 35 of 55

**Operation Band** :BT 4.0 Test Date :2013-09-12

Fundamental Frequency :2480 MHz Temp./Humi. :25.4 deg C / 57 RH

Operation Mode :Bandedge HIGH Engineer :Allen EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

Actual  $FS(dB\mu V/m) = SPA$ . Reading level $(dB\mu V) + Factor(dB)$ 

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

"F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2483.50	E	Average	31.25	2.87	34.12	54.00	-19.88
2483.50	E	Peak	46.55	2.87	49.42	74.00	-24.58

Operation Band :BT 4.0 Test Date :2013-09-12

Fundamental Frequency :2480 MHz Temp./Humi. :25.4 deg C / 57 RH

Operation Mode :Bandedge HIGH Engineer :Allen

EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

Actual  $FS(dB\mu V/m) = SPA$ . Reading level $(dB\mu V) + Factor(dB)$ 

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

"F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency. Note:

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2483.50	E	Average	32.37	3.90	36.27	54.00	-17.73
2483.50	E	Peak	48.94	3.90	52.84	74.00	-21.16

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and <a href="https://www.sgs.com/terms">conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 36 of 55

## 10 SPURIOUS RADIATED EMISSION TEST

# 10.1 Standard Applicable

According to §15.247(d),

Emission at antenna port:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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 paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

## **Radiated Spurious Emission**

Attenuation below the general limits specified in § 15.209(a) is not required. 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) (see § 15.205(c)).

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 §7.2.5 and 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 5 and 6 is not required. In addition, radiated emissions which fall in the restricted bands of Table 3 must also comply with the radiated emission limits specified in Tables 5 and 6 of RSS-GEN.

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 37 of 55

# 10.2 Measurement Equipment Used:

### 10.2.1 Conducted Emission at antenna port:

Refer to section 7.2 for details.

### 10.2.2 Radiated emission:

Refer to section 9.2.2 for details.

### 10.3 Test SET-UP:

# 10.3.1 Conducted Emission at antenna port:

Refer to section 8.3 for details.

### 10.3.2 Radiated emission:

Refer to section 9.3.2 for details.

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sgs.com

台灣檢驗科技股份有限公司

SGS Taiwan Ltd.

t (886-2) 2299-3279 f (886-2) 2298-0488



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 38 of 55

#### **10.4 Measurement Procedure:**

### **Radiated Emission:**

- 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. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
- 7. Repeat above procedures until all default test channel measured were complete.

#### **Conducted Emission:**

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. Set RBW = 100K & VBW = 300K on Spectrum.
- 3. Sweep the frequency to determine spurious emission as seen on spectrum from span of 30 to 3G, 3G to 8G, 8G to 13G, 13G to 18G and 18G to 26.5GHz, 18G to 40GHz (applicable if operation mode is 5GHz)
- 4. Via Software, combine 5 spans of frequency range into one plot
- 5. Repeat above procedures until all default test channel measured were complete.

# 10.5 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	

### 10.6 Measurement Result:

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

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

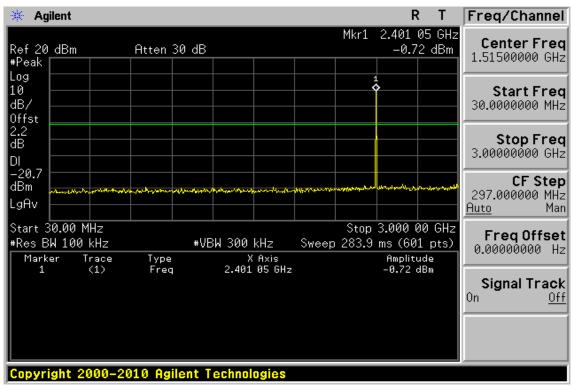
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



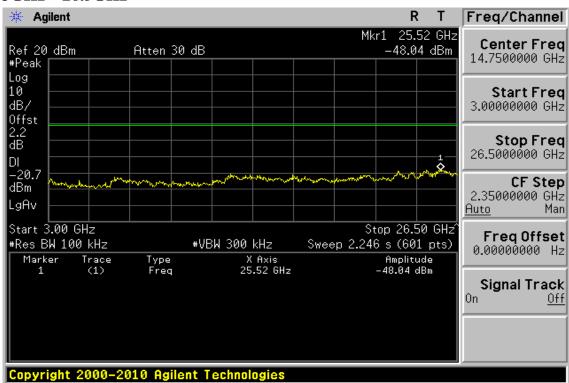
Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 39 of 55

# **Conducted Spurious Emission Measurement Result (BT4.0 mode)** Ch Low 30MHz - 3GHz



### Ch Low 3GHz – 26.5GHz



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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms-e-document.htm">www.sgs.com/terms-e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sgs.com

台灣檢驗科技股份有限公司

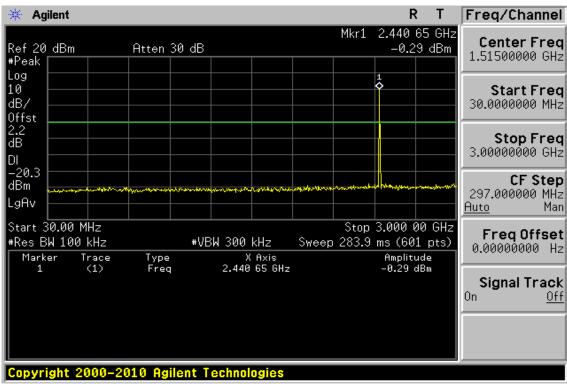
t (886-2) 2299-3279



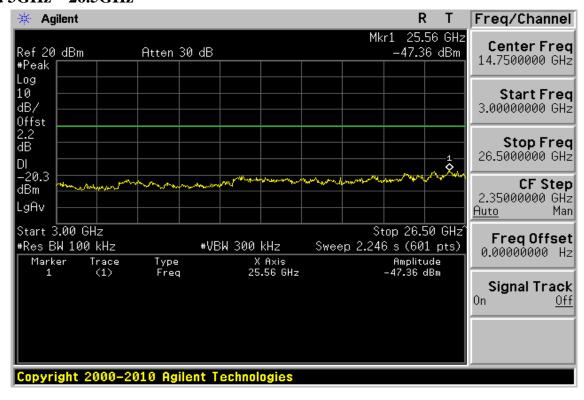
Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 40 of 55

### Ch Mid 30MHz – 3GHz



### Ch Mid 3GHz – 26.5GHz



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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms-e-document.htm">www.sgs.com/terms-e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

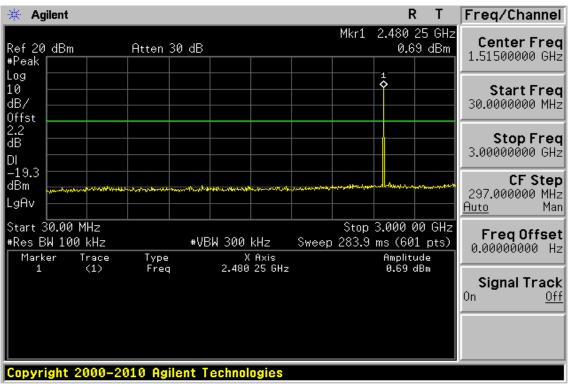
t (886-2) 2299-3279



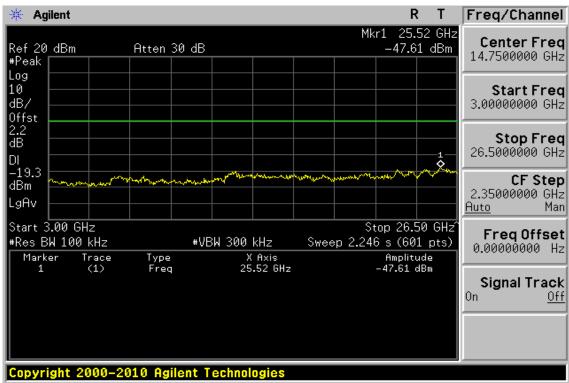
Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 41 of 55

# Ch High 30MHz - 3GHz



# Ch High 3GHz - 26.5GHz



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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and <a href="conditions.htm">conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279 f (886-2) 2298-0488



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 42 of 55

### Radiated Spurious Emission Measurement Result (BT4.0 mode)

Operation Band :BT 4.0 Test Date :2013-09-12

**Fundamental Frequency** :2402 MHz Temp./Humi. :25.4 deg C / 57 RH

Operation Mode :TX LOW Engineer :Allen EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

Note: "F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
39.70	S	Peak	43.04	-13.43	29.61	40.00	-10.39
116.33	S	Peak	35.89	-14.70	21.19	43.50	-22.31
311.30	S	Peak	36.47	-12.03	24.44	46.00	-21.56
466.50	S	Peak	30.03	-9.37	20.66	46.00	-25.34
622.67	S	Peak	37.05	-6.11	30.94	46.00	-15.06
949.56	S	Peak	27.41	-1.76	25.65	46.00	-20.35
4804.00	Н	Average	26.82	7.24	34.06	54.00	-19.94
4804.00	Н	Peak	37.36	7.24	44.60	74.00	-29.40
7206.00	Н						
9608.00	Н						
12010.00	Н						
14412.00	Н						
16814.00	Н						
19216.00	Н						
21618.00	Н						
24020.00	Н						

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sgs.com

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



EUT Pol.

FCC ID: HLZEE6 IC: 1754F-EE6

Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

:HORIZONTAL

Page: 43 of 55

Operation Band :BT 4.0 Test Date :2013-09-12

Fundamental Frequency :2402 MHz Temp./Humi. :25.4 deg\_C / 57 RH

Measurement Antenna Pol.

Operation Mode :TX LOW Engineer :Allen

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

:E2 Plan

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

Note: "F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	dBμV/m	$dB\mu V/m$	dB
73.65	S	Peak	37.48	-16.79	20.69	40.00	-19.31
305.48	S	Peak	43.56	-12.16	31.40	46.00	-14.60
415.09	S	Peak	31.08	-10.36	20.72	46.00	-25.28
622.67	S	Peak	35.09	-6.11	28.98	46.00	-17.02
749.74	S	Peak	30.32	-4.19	26.13	46.00	-19.87
931.13	S	Peak	26.97	-1.97	25.00	46.00	-21.00
4804.00	Н	Average	25.33	7.28	32.61	54.00	-21.39
4804.00	Н	Peak	37.50	7.28	44.78	74.00	-29.22
7206.00	Н						
9608.00	Н						
12010.00	Н						
14412.00	Н						
16814.00	Н						
19216.00	Н						
21618.00	Н						
24020.00	Н						

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 44 of 55

Operation Band :BT 4.0 Test Date :2013-09-12

Fundamental Frequency :2442 MHz Temp./Humi. :25.4 deg\_C / 57 RH

Operation Mode :TX MID Engineer :Allen EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

Note: "F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
39.70	S	Peak	43.62	-13.43	30.19	40.00	-9.81
99.84	S	Peak	36.49	-16.61	19.88	43.50	-23.62
305.48	S	Peak	36.10	-12.16	23.94	46.00	-22.06
483.96	S	Peak	29.31	-9.18	20.13	46.00	-25.87
622.67	S	Peak	37.19	-6.11	31.08	46.00	-14.92
942.77	S	Peak	27.21	-1.84	25.37	46.00	-20.63
4884.00	Н	Average	27.57	7.50	35.07	54.00	-18.93
4884.00	Н	Peak	38.12	7.50	45.62	74.00	-28.38
7326.00	Н						
9768.00	Н						
12210.00	Н						
14652.00	Н						
17094.00	Н						
19536.00	Н						
21978.00	Н						
24420.00	Н						

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



EUT Pol.

FCC ID: HLZEE6 IC: 1754F-EE6

Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

:HORIZONTAL

Page: 45 of 55

Operation Band :BT 4.0 **Test Date** :2013-09-12

Fundamental Frequency :2442 MHz Temp./Humi. :25.4 deg\_C / 57 RH

Measurement Antenna Pol.

Operation Mode :TX MID Engineer

Actual  $FS(dB\mu V/m) = SPA$ . Reading level $(dB\mu V) + Factor(dB)$ 

:E2 Plan

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

"F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
73.65	S	Peak	36.86	-16.79	20.07	40.00	-19.93
305.48	S	Peak	44.54	-12.16	32.38	46.00	-13.62
415.09	S	Peak	30.42	-10.36	20.06	46.00	-25.94
622.67	S	Peak	36.22	-6.11	30.11	46.00	-15.89
749.74	S	Peak	28.93	-4.19	24.74	46.00	-21.26
944.71	S	Peak	27.82	-1.82	26.00	46.00	-20.00
4884.00	Н	Average	25.57	7.44	33.01	54.00	-20.99
4884.00	Н	Peak	37.26	7.44	44.70	74.00	-29.30
7326.00	Н						
9768.00	Н						
12210.00	Н						
14652.00	Н						
17094.00	Н						
19536.00	Н						
21978.00	Н						
24420.00	Н						

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 46 of 55

Operation Band :BT 4.0 Test Date :2013-09-12

Fundamental Frequency :2480 MHz Temp./Humi. :25.4 deg\_C / 57 RH

Operation Mode :TX HIGH Engineer :Allen
EUT Pol. :E2 Plan Measurement Antenna Pol. :VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note: "F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	dBμV/m	$dB\mu V/m$	dB
39.70	S	Peak	42.92	-13.43	29.49	40.00	-10.51
118.27	S	Peak	34.74	-14.46	20.28	43.50	-23.22
302.57	S	Peak	35.78	-12.22	23.56	46.00	-22.44
549.92	S	Peak	29.61	-7.84	21.77	46.00	-24.23
622.67	S	Peak	37.29	-6.11	31.18	46.00	-14.82
776.90	S	Peak	27.94	-3.90	24.04	46.00	-21.96
4960.00	Н	Average	27.35	7.64	34.99	54.00	-19.01
4960.00	Н	Peak	36.64	7.64	44.28	74.00	-29.72
7440.00	Н						
9920.00	Н						
12400.00	Н						
14880.00	Н						
17360.00	Н						
19840.00	Н						
22320.00	Н						
24800.00	Н						

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 47 of 55

Operation Band :BT 4.0 **Test Date** :2013-09-12

Fundamental Frequency :2480 MHz Temp./Humi. :25.4 deg\_C / 57 RH

Operation Mode :TX HIGH Engineer

EUT Pol. :E2 Plan Measurement Antenna Pol. :HORIZONTAL

Actual  $FS(dB\mu V/m) = SPA$ . Reading level $(dB\mu V) + Factor(dB)$ 

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

"F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	${ m d} B \mu V$	dB	dBμV/m	$dB\mu V/m$	dB
73.65	S	Peak	36.27	-16.79	19.48	40.00	-20.52
300.63	S	Peak	43.81	-12.25	31.56	46.00	-14.44
466.50	S	Peak	30.78	-9.37	21.41	46.00	-24.59
622.67	S	Peak	35.38	-6.11	29.27	46.00	-16.73
749.74	S	Peak	29.93	-4.19	25.74	46.00	-20.26
880.69	S	Peak	27.73	-2.79	24.94	46.00	-21.06
4960.00	Н	Average	24.35	7.49	31.84	54.00	-22.16
4960.00	Н	Peak	36.42	7.49	43.91	74.00	-30.09
7440.00	Н						
9920.00	Н						
12400.00	Н						
14880.00	Н						
17360.00	Н						
19840.00	Н						
22320.00	Н						
24800.00	Н						

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sgs.com

台灣檢驗科技股份有限公司



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 48 of 55

### 11 PEAK POWER SPECTRAL DENSITY

# 11.1 Standard Applicable:

According to §15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

According to RSS-210 issue 8, §A8.2(b) 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.

### 11.2 Measurement Equipment Used:

Refer to section 7.2 for details.

## 11.3 Test Set-up:

Refer to section 8.3 for details.

# 11.4 Measurement Procedure: (following the measurement procedure 10.2 of KDB558074):

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. Set the span to 1.5 times the DTS channel bandwidth.
- 3. Set the RBW > 3 kHz.
- 4. Set the  $VBW > 3 \times RBW$ .
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and <a href="https://www.sgs.com/terms">conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm.

Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 49 of 55

#### 11.5 Measurement Result:

### BT4.0 mode

Frequency	<b>RF Power Density</b>	Maximum Limit	Result
MHz	Reading (dBm)	(dBm)	
2402	-13.91	8	PASS
2442	-13.35	8	PASS
2480	-12.67	8	PASS

NOTE: cable loss as 2.2dB that offsets in the spectrum

Note: Refer to next page for plots.

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.

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,此根告结果僅對測述之樣品負責,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。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms\_e-document.htm">www.sgs.com/terms\_e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

\*\*SCENTER LINE 3.43 \*\*\*\*\*

\*\*INDICATE AND ACCOUNTS AND ACCOU

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

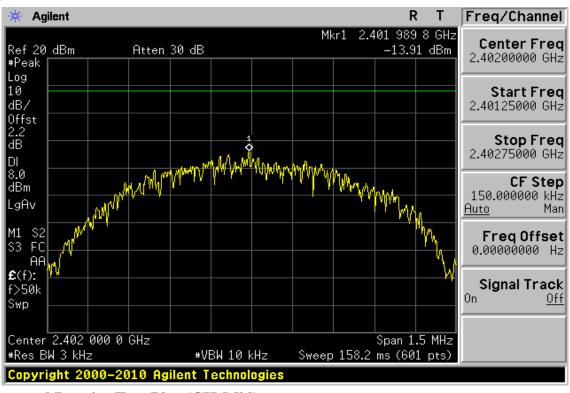
t (886-2) 2299-3279



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 50 of 55

BT4.0 mode **Power Spectral Density Test Plot (CH-Low)** 



# **Power Spectral Density Test Plot (CH-Mid)**



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

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms-e-document.htm">www.sgs.com/terms-e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sgs.com

台灣檢驗科技股份有限公司

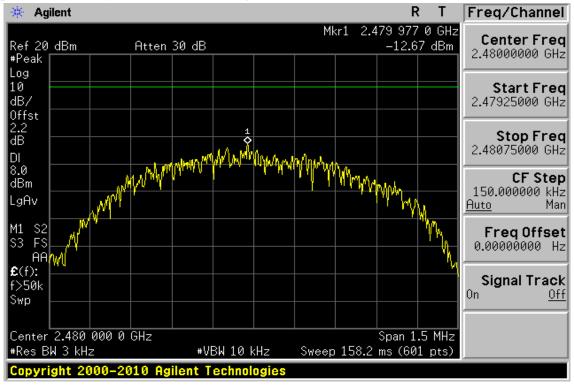
t (886-2) 2299-3279 f (886-2) 2298-0488



Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 51 of 55

# **Power Spectral Density Test Plot (CH-High)**



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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms-e-document.htm">www.sgs.com/terms-e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sgs.com

台灣檢驗科技股份有限公司

t (886-2) 2299-3279



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 52 of 55

# 12 ANTENNA REQUIREMENT

# 12.1 Standard Applicable:

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

According to RSS-GEN 7.1.2, 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.

#### 12.2 Antenna Connected Construction:

The directional gains of antenna used for transmitting is 0.34dBi, and the antenna connector is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.

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。



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

Page: 53 of 55

### 13 99% BANDWIDTH MEASUREMENT

# 13.1 Standard Applicable:

RSS-Gen §4.6.1, the transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

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

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

# 13.2 Measurement Equipment Used:

Refer to section 7.2 for details.

## 13.3 Test Set-up:

Refer to section 8.3 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 the Span, VBW = 3 times RBW, Span= 2MHz.
- 4. Turn on the 99% bandwidth function, max reading.
- 5. Repeat above procedures until all frequency measured were complete.

NOTE: cable loss as 2dB that offsets in the spectrum

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: ER/2013/80068 **Issue Date: Sep. 26, 2013** 

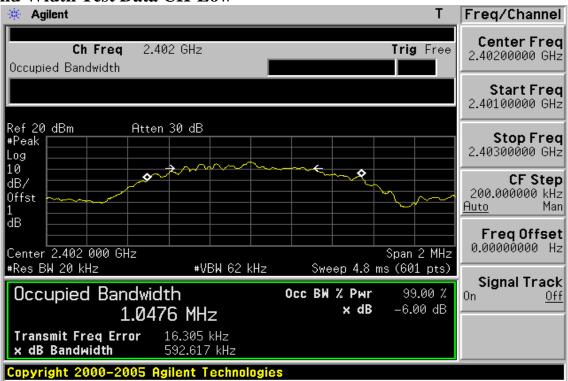
Page: 54 of 55

### 13.5 Measurement Result:

BT4.0 mode

Frequency	99%Bandwidth
MHz	(MHz)
2402	1.0476
2442	1.0472
2480	1.0479

BT4.0 mode 99% Band Width Test Data CH-Low



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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms-e-document.htm">www.sgs.com/terms-e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sgs.com

台灣檢驗科技股份有限公司

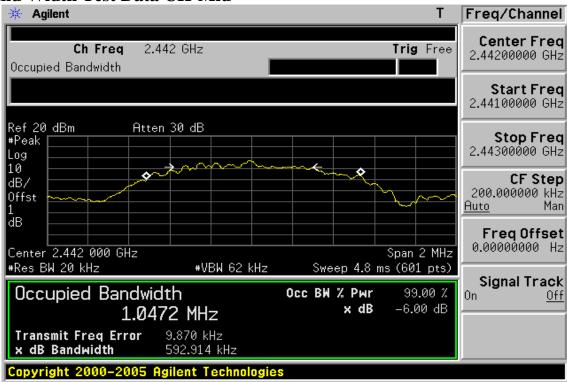
t (886-2) 2299-3279



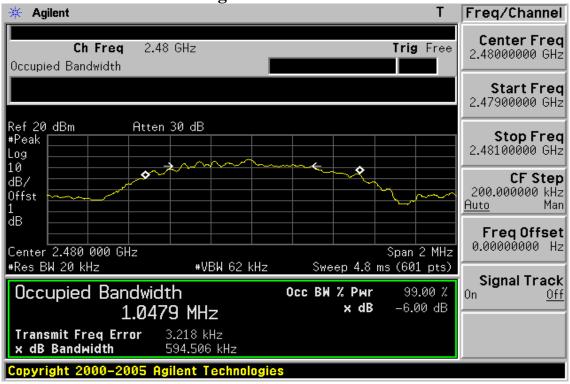
Report No.: ER/2013/80068 Issue Date: Sep. 26, 2013

Page: 55 of 55

### 99% Band Width Test Data CH-Mid



# 99% Band Width Test Data CH-High



~ End of Report ~

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。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms-e-document.htm">www.sgs.com/terms-e-document.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.