

Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 1 of 167

## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

# INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART E REQUIREMENT **INDUSTRY CANADA RSS-210**

**Product Name:** Wi-Fi Dongle

**Brand Name:** LG

**Model Name: AN-WF100** 

**Model Different:** N/A

FCC ID: **BEJ-WF100** 

IC: 2703H-WF100

**Report No.:** ER/2009/A0040

**Issue Date:** Nov. 30, 2009

**FCC Rule Part: §15.407** 

**IC Rule Part:** RSS-210 issue 7:2007, Annex 9

**Prepared for: LG Electronics USA** 

1000 Sylvan Avenue Englewood Cliffs, Nj

07632

Prepared by: SGS Taiwan Ltd.

> **Electronics & Communication Laboratory** No. 134, Wu Kung Rd., Wuku Industrial

Zone, Taipei County, Taiwan.





Testing Laboratory

*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. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 2 of 167

## VERIFICATION OF COMPLIANCE

**Applicant:** LG Electronics USA

1000 Sylvan Avenue Englewood Cliffs, Nj 07632

**Product Name:** Wi-Fi Dongle

**Brand Name:** LG

 FCC ID:
 BEJ-WF100

 IC:
 2703H-WF100

 Model No.:
 AN-WF100

**Model Difference:** N/A

**File Number:** ER/2009/A0040

**Date of test:** Oct. 19, 2009 ~ Nov. 25, 2009

**Date of EUT Received:** Oct. 19, 2009

## We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.407 and RSS-210 issue 7: 2007 Annex 9. The test results of this report relate only to the tested sample identified in this report.

Test By:	Jim Chang	Date:	Nov. 30, 2009	
	Jim Chan / Supervisor			
Prepared By:	Gigi yeh	Date:	Nov. 30, 2009	
Approved By:	Gigi Yeh/Clerk Timent Su	Date:	Nov. 30, 2009	
	Vincent Su / Manager			

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。

Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

Member of SGS Group



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 3 of 167

## Version

Version No.	Date	Description
00	Nov. 30, 2009	Initial creation of document

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 4 of 167

## **Table of Contents**

.1.		
	Product Description	
.2.	Related Submittal(s) / Grant (s)	
1.3.	Test Methodology	
.4.	Test Facility	8
.5.	Special Accessories	8
.6.	Equipment Modifications.	8
YST	TEM TEST CONFIGURATION	9
2.1.	EUT Configuration	9
2.2.	EUT Exercise	9
2.3.	Test Procedure	9
2.4.	Configuration of Tested System	10
UM	MARY OF TEST RESULT	1
)ES(	CRIPTION OF TEST MODES	11
C P	OWER LINE CONDUCTED EMISSION TEST	12
5.1.	Standard Applicable	12
5.2.	EUT Setup	12
5.3.	Measurement Procedure	12
5.4.	Measurement Equipment Used:	13
5.5.	Measurement Result.	13
6dB	and 99% EMISSION BANDWIDTH MEASUREMENT	16
5.1	Standard Applicable	16
5.2	Measurement Procedure	16
5.3	Measurement Equipment Used:	17
5.4	Measurement Result.	18
EAl	K OUTPUT POWER MEASUREMENT	3
7.1	Standard Applicable	31
7.2	Measurement Procedure	32
7.3	Measurement Equipment Used:	33
7.4	Measurement Result.	33
EAl	K POWER SPECTRAL DENSITY	47
3.1	Standard Applicable	47
3.2	Measurement Procedure	48
3.3	Measurement Equipment Used:	49
3.4	Measurement Result.	49
	.23456. <b>YST</b> .123456. <b>UM</b> .1234561 .2 .3 .4 .1 .2 .3 .4 <b>EAI</b> .1 .2 .3 .4	2. Related Submittal(s) / Grant (s) 3. Test Methodology 4. Test Facility 5. Special Accessories 6. Equipment Modifications  YSTEM TEST CONFIGURATION 1. EUT Configuration 2. EUT Exercise 3. Test Procedure 4. Configuration of Tested System  UMMARY OF TEST RESULT  ESCRIPTION OF TEST MODES  C POWER LINE CONDUCTED EMISSION TEST 1. Standard Applicable 2. EUT Setup 3. Measurement Procedure 4. Measurement Equipment Used: 5. Measurement Result 6dB and 99% EMISSION BANDWIDTH MEASUREMENT 6dB and 99% EMISSION BANDWIDTH MEASUREMENT 6.1 Standard Applicable 6.2 Measurement Result 6dB AND ASSUREMENT 6dB ASSUREMENT RESULT 6dB



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 5 of 167

9.	PEAL	K EXCURSION MEASUREMENT	62
	9.1	Standard Applicable	62
	9.2	Measurement Procedure	62
	9.3	Measurement Equipment Used:	63
	9.4	Test Results:	64
10.	UND	ESIRABLE EMISSION - CONDUCTED MEASUREMENT	77
	10.1	Standard Applicable	77
	10.2	Measurement Procedure	78
	10.3	Measurement Equipment Used:	78
11.	UND	ESIRABLE EMISSION - RADICTED MEASUREMENT	108
	11.1	Standard Applicable	108
	11.2	EUT Setup	111
	11.3	Measurement Procedure	112
	11.4	Test SET-UP (Block Diagram of Configuration)	113
	11.5	Measurement Equipment Used:	114
	11.6	Field Strength Calculation	114
	11.7	Measurement Result	114
12.	TRA	NSMISSION IN THE ABSENCE OF DATA	163
	12.1	Standard Applicable	163
	12.2	Result:	163
13.	FRE	QUENCY STABILITY	164
	13.1	Standard Applicable	164
	13.2	Result:	164
14.	ANT	ENNA REQUIREMENT	165
	14.1	Standard Applicable	165
	14.2	Antenna Connected Construction	165
15.	Maxi	mum Permissible Exposure (MPE)	166
	15.1	Standard Applicable	166
	15.2	Maximum Permissible Exposure (MPE) Evaluation	167



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 6 of 167

## GENERAL INFORMATION

## 1.1. Product Description

#### General:

generui:	
Product Name:	Wi-Fi Dongle
Brand Name:	LG
Model Name:	AN-WF100
Model Difference:	N/A
Power Supply:	5Vdc form USB port

WLAN: 802.11 a/b/g/n (2TX / 2RX)

Wi-Fi	Frequency Range	Channels	Rated Power	Modulation Technology	Type of Emission
11b/g	2412-2462	11	b : 16.70dBm g : 14.28dBm	DSSS, OFDM	b : 13M1G1D g : 16M5G1D
11	HT20 2412-2462	11	n : 13.65 dBm	OEDM	17M6G1D
11n	HT40 2422-2452	9	n : 13.63 dBm	OFDM	36M1DG1D



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 7 of 167

Wi-Fi	Frequency Range	Channels	Rated Power	Modulation Technology	Type of Emission
5180-5240 4				16M5G1D	
11a	HT20 5180-5240	4	a : 14.03dBm	OFDM	17M6G1D
	HT40 5190-5230	2			36M2G1D
	5745-5825	5			17M6G1D
11a	HT20 5745-5825	5	a : 14.29 dBm	OFDM	17M6G1D
	HT40 5755-5795	2			36M1G1D
Antenna Designation		2.4G: Antenna 1: -0.22dBi / Antenna 2: -0.50 dBi 5G: Antenna 1: 5.53dBi / Antenna 2: 4.18 dBi			
Modulation type		CCK, DQPSK, DBPSK for DSSS 64QAM. 16QAM, QPSK, BPSK for OFDM			
Transition Rate:			802.11 a: 6/9/12/18/24/36/48/54 Mbps; 802.11 b: 1/2/5.5/11 Mbps; 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 72.2Mbps 802.11 n_40MHz: 13.5 – 300Mbps		

The 2.4G max antenna gain is -0.22dBi which was choosing for Radiated Spurious Emission test. The 5G max antenna gain is 5.53dBi which was choosing for Radiated Spurious Emission test. The EUT is compliance with IEEE 802.11 a/b/g /n Standard. This report applies for frequency bands 5180 MHz- 5240 MHz

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 8 of 167

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

This submittal(s) (test report) is intended for FCC ID: BEJ-WF100 filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules and IC: 2703H-WF100 filing to comply with Industry Canada RSS-210 issue 7: 2007 Annex 9. The composite system (digital device) is compliance with Subpart B is authorized under a DoC procedure.

## 1.3. Test Methodology

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

### 1.4. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-1.

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

#### 1.5. Special Accessories

Not available for this EUT intended for grant.

#### 1.6. Equipment Modifications

Not available for this EUT intended for grant.



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 9 of 167

#### 2. SYSTEM TEST CONFIGURATION

## 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2. EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

### 2.3. Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and Average detector mode.

#### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." Is still within the 3Db illumination BW of the measurement antenna. According to the requirements in Section 8 and 13 and Subclause 8.3.1.2 of ANSI C63.4-2003.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

Member of SGS Group

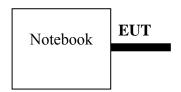


Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 10 of 167

## 2.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



**Table 2-1 Equipment Used in Tested System** 

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.
1.	Notebook	IBM	T43	L3LHHN6
2.	WiFi Software	N/A	WLAN eMapi	N/A

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

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

This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan. / 台標后股工業品五工路134號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.sqs.com.tw



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 11 of 167

#### 3. SUMMARY OF TEST RESULT

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted	Compliant
RSS-Gen §7.2.2	Emission	
§15.407(a)	26 Db and 99% Emission Band-	Compliant
RSS 210 A9.2	width	
RSS-Gen §4.4.1		
§15.407(a)	Peak Output Power Measurement	Compliant
RSS 210 A9.2(1)		
§15.407(a)	Peak Power Spectral Density	Compliant
RSS 210 A9.2(1)	Measurement	
15.407(a)(6)	Peak Excursion Measurement	Compliant
§15.407(b)	Undesirable Emission – Con-	Compliant
RSS 210 A9.3	ducted Measurement	
§15.407(b)	Undesirable Emission – Radiated	Compliant
RSS 210 A9.3	Measurement	
§15.407©	Transmission in case of Absence	Compliant
RSS 210 A9.5(4)	of Information	
§15.407(g); RSS 210	Frequency Stability	Compliant
A9.5(5)		
§15.407(d)	Antenna Requirement	Compliant
RSS-210 issue 7,§A8.4		
MPE	Maximum Permissible Exposure	Compliant

#### 4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

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

a mode: Channel lowest(5180MHz) · Mid(5220MHz) and Highest(5240MHz) with 6Mbps data rate are chosen for full testing.

a /n HT 20 mode: Channel lowest(5180MHz) \cdot Mid(5220MHz) and Highest(5240MHz) with 6.5Mbps data rate are chosen for full testing

a/n HT 40 mode: Channel lowest(5190MHz)  $\cdot$  Highest(5230MHz) with 13.5Mbps data rate are chosen for full testing

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 12 of 167

#### 5. AC POWER LINE CONDUCTED EMISSION TEST

## 5.1. Standard Applicable

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

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

#### Note

## 5.2. EUT Setup

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4-2003.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The LISN was connected with 120Vac/60Hz power source.

#### 5.3. Measurement Procedure

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

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

<sup>2.</sup> The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 13 of 167

## 5.4. Measurement Equipment Used:

Conducted Emission Test Site							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.		
TYPE		NUMBER	NUMBER	CAL.			
EMI Test Receiver	R&S	ESCS30	828985/004	09/16/2009	09/15/2010		
LISN	Rolf-Heine	NNB-2/16Z	99012	02/02/2009	02/01/2010		
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	02/02/2009	02/01/2010		
Coaxial Cables	N/A	WK CE Cable	N/A	10/30/2009	10/29/2010		

#### 5.5. Measurement Result

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

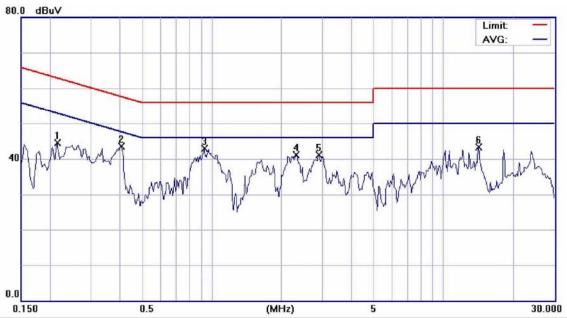


Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 14 of 167

### AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	WLAN Link			Test Date:	Nov. 25, 2009
Temperature:	23 °C	Humidity:	58 %	Test By:	Jim



Site SGS CONDUCTED #1

Limit: CISPR22/11/EN55022 Class B

EUT: Wi-Fi Dongle M/N: AN-WF100 Note: Operation mode

riiase.		LI	remperature.	25 (
Power:	AC	120V/60Hz	Humidity:	58 %
Distance	:		Air Pressure:	hpa

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1		0.2150	44.37	0.12	44.49	63.01	-18.52	peak		
2		0.4050	43.38	0.08	43.46	57.75	-14.29	peak		
3	*	0.9300	42.90	0.09	42.99	56.00	-13.01	peak		
4		2.3200	40.88	0.13	41.01	56.00	-14.99	peak		
5		2.8900	40.97	0.14	41.11	56.00	-14.89	peak		
6		14.2000	42.99	0.40	43.39	60.00	-16.61	peak		

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

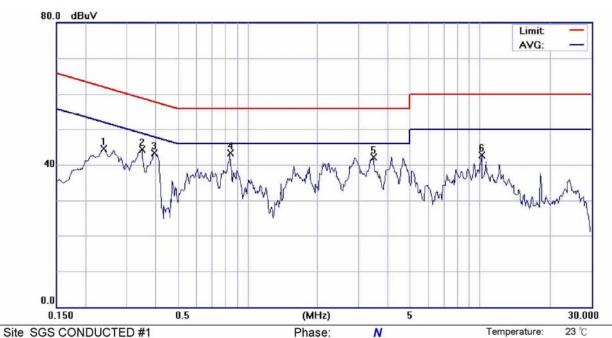
Page 15 of 167

Humidity:

Air Pressure:

58 %

hpa



Limit: CISPR22/11/EN55022 Class B

EUT: Wi-Fi Dongle

M/N: AN-WF100 Note: Operation mode

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1		0.2400	44.46	0.13	44.59	62.10	-17.51	peak		
2		0.3500	44.23	0.12	44.35	58.96	-14.61	peak		
3		0.3950	43.18	0.11	43.29	57.96	-14.67	peak		
4	*	0.8400	43.10	0.11	43.21	56.00	-12.79	peak		
5		3.4800	42.03	0.16	42.19	56.00	-13.81	peak		
6		10.2000	42.23	0.45	42.68	60.00	-17.32	peak		

Power:

Distance:

AC 120V/60Hz

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 16 of 167

## 6. 26dB and 99% EMISSION BANDWIDTH MEASUREMENT

## **6.1 Standard Applicable**

According to §15.407(a). No Limit required. According to RSS 210 A9.2(1), No Limit required.

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

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

#### **6.2** Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the 3.antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as RBW=100KHz, VBW =3\* RBW, Span= 50MHz, Sweep=auto
- 4. Mark the peak frequency and –26dB (upper and lower) frequency.
- 5. Repeat above procedures until all frequency measured were complete.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 17 of 167

## **6.3** Measurement Equipment Used:

Conducted Emission Test Site								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
TYPE		NUMBER	NUMBER	CAL.				
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010			
Spectrum Analyzer	Agilent	E4440A	MY45304525	01/23/2008	01/22/2010			
DC Block	Agilent	BLK-18	155452	07/05/2009	07/04/2010			
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2009	01/04/2010			
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2009	07/04/2010			
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2009	07/04/2010			
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2009	07/04/2010			
Splitter	Agilent	11636B	N/A	07/05/2009	07/04/2010			



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 18 of 167

#### **6.4** Measurement Result

#### **UNII**

Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log (B) (dB)	99% Bandwidth (MHz)
5180	19.84	12.98	16.49
5220	19.45	12.89	16.51
5240	19.78	12.96	16.57

## UNII HT20, Chain0

Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log (B) (dB)	99% Bandwidth (MHz)	
5180	19.94	13.00	17.68	
5220	19.94	13.00	17.67	
5240	19.86	12.98	17.71	

### UNII HT20, Chain1

Frequency (MHz)	<b>-</b>		99% Bandwidth (MHz)	
5180	19.85	12.98	17.68	
5220	19.85	12.98	17.65	
5240	19.83	12.97	17.68	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 19 of 167

## UNII HT20, Combine, Chain0, Chain1

Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log (B) (dB)	99% Bandwidth (MHz)
5180	19.62	12.93	17.62
5220	23.15	13.65	17.63
5240	19.83	12.97	17.61

### UNII HT40, Chain0

Frequency (MHz)			99% Bandwidth (MHz)	
5190	39.513	15.97	36.27	
5230	39.05	15.92	36.22	

#### UNII HT40, Chain1

Frequency (MHz)	26dB Bandwidth (B) (MHz)	10 Log (B) (dB)	99% Bandwidth (MHz)
5190	39.71	15.99	36.22
5230	40.05	16.03	36.16

#### UNII HT40, Combine, Chain0, Chain1

Frequency (MHz)	<b>-</b> • • • • • • • • • • • • • • • • • • •		99% Bandwidth (MHz)	
5190	39.37	15.95	35.95	
5230	39.25	15.94	35.98	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

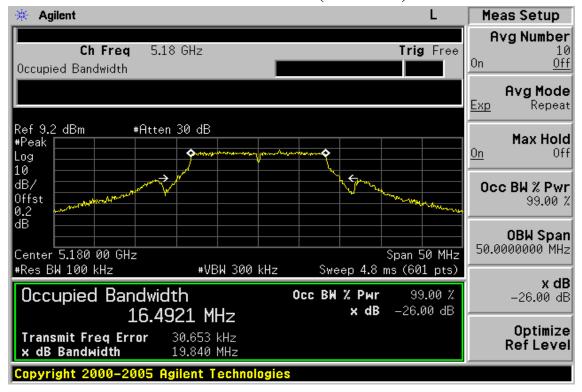


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

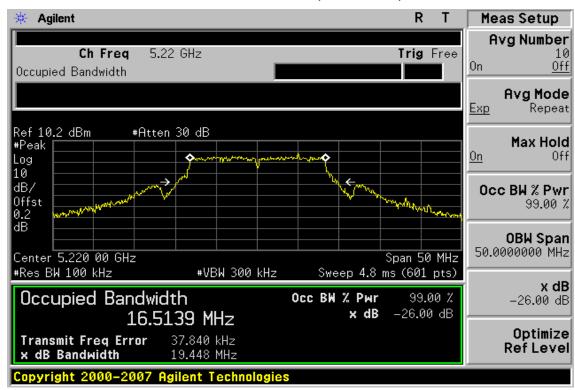
Page 20 of 167

#### **UNII**

### 26dB / 99% Band Width Test Data CH-Low (5180MHz)



## 26dB / 99% Band Width Test Data CH-Mid (5220MHz)



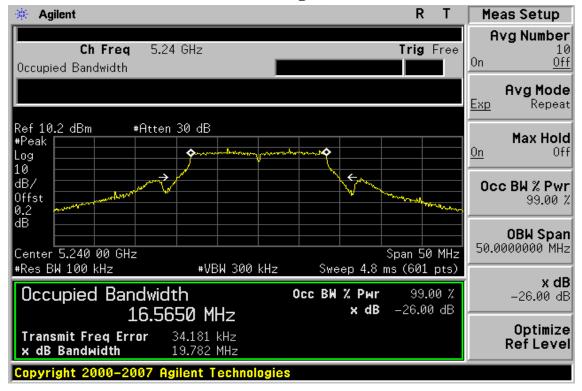
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 21 of 167

## 26dB / 99% Band Width Test Data CH-High (5240MHz)



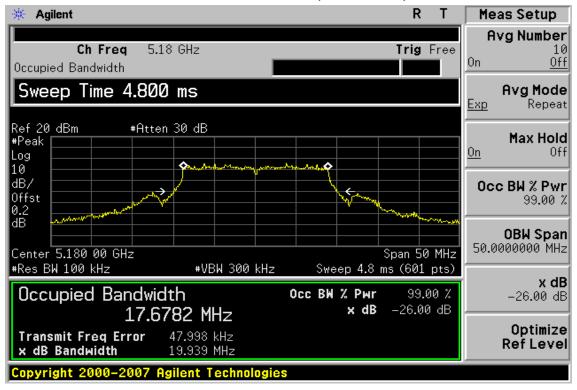
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



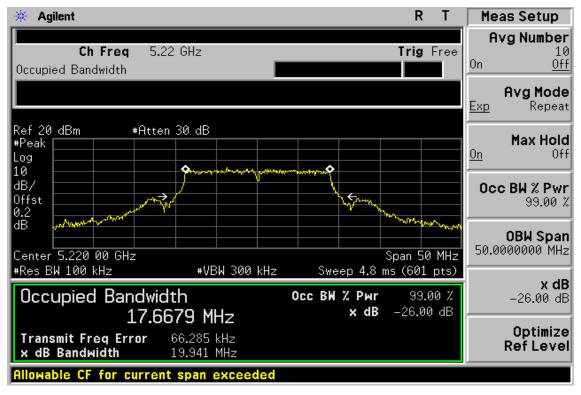
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 22 of 167

# UNII, HT 20, Chain 0 26dB / 99% Band Width Test Data CH-Low (5180 MHz)



## 26dB / 99% Band Width Test Data CH-Mid (5220 MHz)



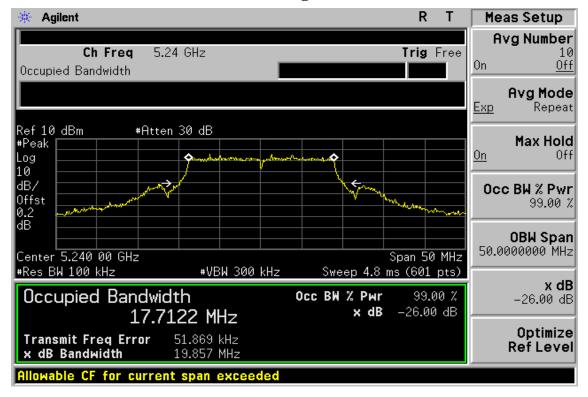
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 23 of 167

# 26dB / 99% Band Width Test Data CH-High (5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

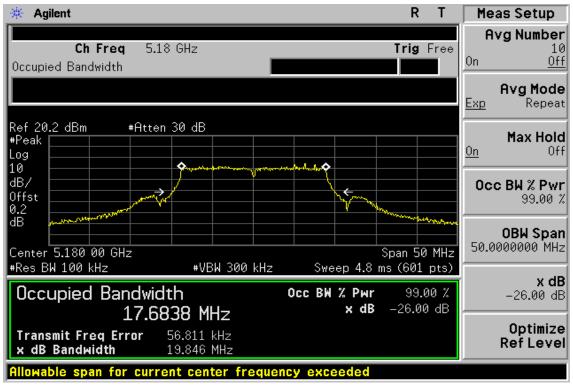
is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The 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. 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.



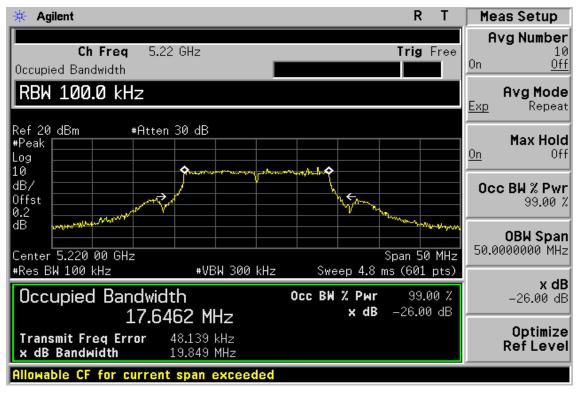
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 24 of 167

# UNII, HT 20, Chain 1 26dB / 99% Band Width Test Data CH-Low (5180 MHz)



## 26dB / 99% Band Width Test Data CH-Mid (5220 MHz)



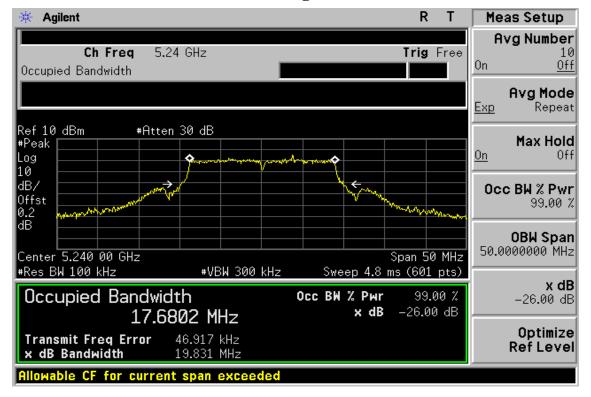
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 25 of 167

# 26dB / 99% Band Width Test Data CH-High (5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 26 of 167

# UNII, HT 20, Comp 26dB / 99% Band Width Test Data CH-Low (5180 MHz)



## 26dB / 99% Band Width Test Data CH-Mid (5220 MHz)



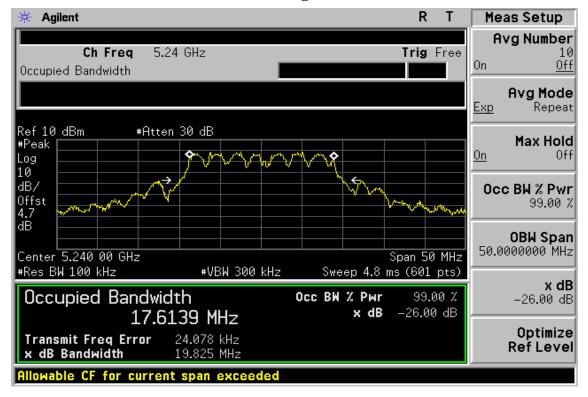
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 27 of 167

## 26dB / 99% Band Width Test Data CH-High (5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



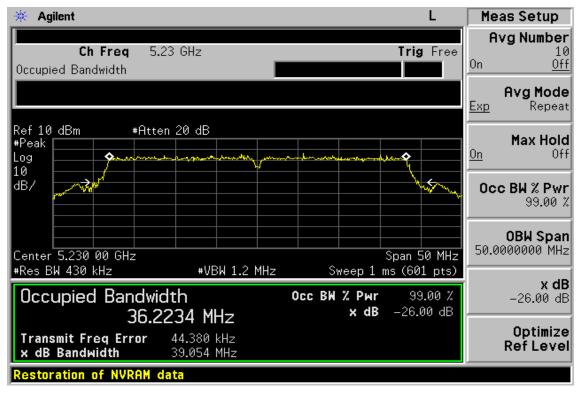
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 28 of 167

# UNII, HT 40, Chain 0 26dB / 99% Band Width Test Data CH-Low (5190 MHz)



## 26dB / 99% Band Width Test Data CH-High (5230 MHz)



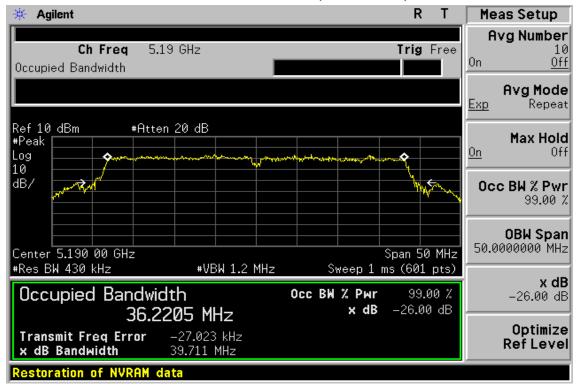
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



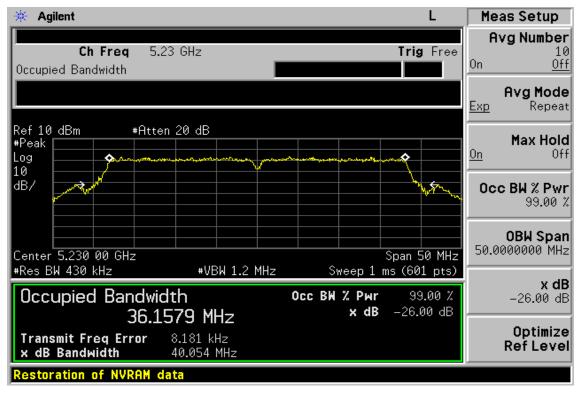
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 29 of 167

# UNII, HT 40, Chain 1 26dB / 99% Band Width Test Data CH-Low (5190 MHz)



## 26dB / 99% Band Width Test Data CH-High (5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



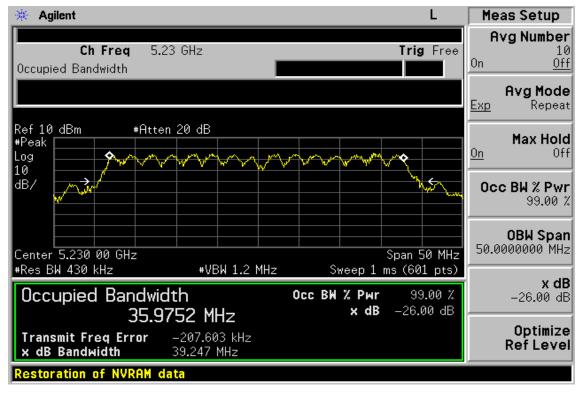
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 30 of 167

# UNII, HT 40, Comp 26dB / 99% Band Width Test Data CH-Low (5190 MHz)



## 26dB / 99% Band Width Test Data CH-High (5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 31 of 167

#### 7. PEAK OUTPUT POWER MEASUREMENT

## 7.1 Standard Applicable

According to §15.407(a)

- 1. For the band 5.15-5.25 GHz, the maximum conducted power over the frequency of operation shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B.
- 2. For the band 5.25-5.35 GHz and 5.47-5.725GMHz, the maximum conducted power over the frequency of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log B.
- 3. For the band 5.725-5.825 GHz, the maximum conducted power over the frequency of operation shall not exceed the lesser of 1W (30dBm) or 17 dBm + 10log B.

#### According to RSS-210 A9.2

SGS Taiwan Ltd. 台灣檢驗科技股份有限公司

- 1. For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (e.i.r.p.) shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.
- 2. For the bands 5250-5350 MHz and 5470-5725 MHz, the maximum conducted output power shall not exceed 250 mW or 11 + 10 log10 B, dBm, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or

17 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

In addition, devices with maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

In addition to the above requirements, devices operating in the band 5250-5350 MHz with maximum e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. elevation mask where  $\theta$  is the angle above the local horizontal plane (of the earth) as shown below:



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 32 of 167

- (i) -13 dB(W/MHz) for  $0o \le \theta < 8o$
- (ii) -13 0.716 ( $\theta$ -8) dB(W/MHz) for  $80 \le \theta < 400$
- (iii) -35.9 1.22 ( $\theta$ -40) dB(W/MHz) for  $40o \le \theta \le 45o$
- (iv) -42 dB(W/MHz) for  $\theta > 45$ o
- 3. For the band 5725-5825 MHz, the maximum conducted output power shall not exceed 1.0 W or

17 + 10 log10 B, dBm, whichever power is less. The power spectral density shall not exceed 17 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 4.0 W or 23 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

Fixed point-to-point systems for this band are permitted to have an e.i.r.p. greater than 4 W, provided that the higher e.i.r.p. is achieved by employing higher gain antennas, but not higher transmitter output powers. Point-to-multipoint systems, omni-directional applications and multiple co-located transmitters transmitting the same information are prohibited from exceeding 4 W e.i.r.p. However, remote stations of point-to-multipoint systems shall be permitted to operate at greater than 4 W e.i.r.p, under the same conditions as for point-to-point systems.

where B is the 26dB emission bandwidth in MHz.

#### 7.2 Measurement Procedure

- Place the EUT on the table and set it in transmitting mode. 1.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter or spectrum. (Channel Power Function, RBW=1MHz, VBW=3MHz, ACP Bandwidth = 26dB Emission Bandwidth)
- 3. Record the max. reading.
- 4. Repeat above procedures until all frequency measured were complete.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 33 of 167

## 7.3 Measurement Equipment Used:

Conducted Emission Test Site								
<b>EQUIPMENT</b>	MFR	MODEL	SERIAL	LAST	CAL DUE.			
ТҮРЕ		NUMBER	NUMBER	CAL.				
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2009	04/27/2010			
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2009	07/03/2010			
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2009	11/08/2010			
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A			
Attenuator	Mini-Circuit	BW-S6W5	N/A	01/05/2009	01/04/2010			

#### 7.4 Measurement Result

UNII

Frequency (MHz)	ACP Power (dBm)	Limit (dBm)	Margin (dB)
5180	14.03	17.00	-2.97
5220	14.00	17.00	-3.00
5240	14.03	17.00	-2.97

### UNII HT20, Chain0

Frequency (MHz)	ACP Power (dBm)	Limit (dBm)	Margin (dB)
5180	10.27	17.00	-6.73
5220	10.04	17.00	-6.96
5240	10.12	17.00	-6.88

Member of SGS Group



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 34 of 167

## UNII HT20, Chain1

Frequency (MHz)	ACP Power (dBm)	Limit (dBm)	Margin (dB)
5180	9.80	17.00	-7.20
5220	9.56	17.00	-7.44
5240	9.55	17.00	-7.45

## UNII HT20 Combine, Chain0, Chain1

Frequency (MHz)	ACP Power (dBm)	Limit (dBm)	Margin (dB)
5180	13.66	17.00	-3.34
5220	13.52	17.00	-3.48
5240	13.52	17.00	-3.48



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 35 of 167

### UNII HT40, Chain0

Frequency (MHz)	ACP Power (dBm)	Limit (dBm)	Margin (dB)
5190	11.09	17.00	-5.91
5230	10.20	17.00	-6.80

### UNII HT40, Chain1

Frequency (MHz)	ACP Power (dBm)	Limit (dBm)	Margin (dB)
5190	9.17	17.00	-7.83
5230	8.61	17.00	-8.39

## UNII HT40 Combine, Chain0, Chain1

Frequency (MHz)	ACP Power (dBm)	Limit (dBm)	Margin (dB)
5190	13.60	17.00	-3.40
5230	13.52	17.00	-3.48

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

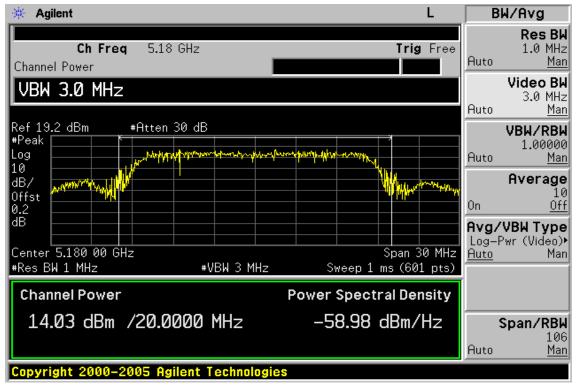


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

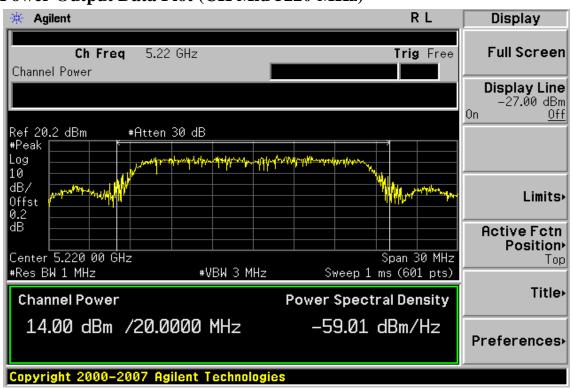
Page 36 of 167

#### UNII

## Peak Power Output Data Plot (CH Low 5180 MHz)



## Peak Power Output Data Plot (CH Mid 5220 MHz)



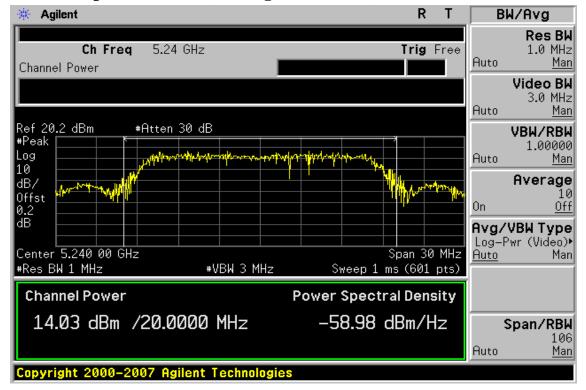
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 37 of 167

### Peak Power Output Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

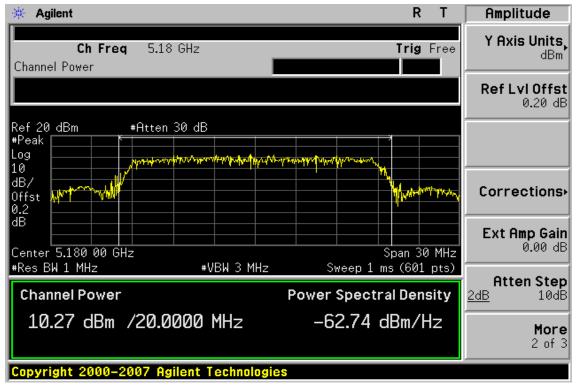


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

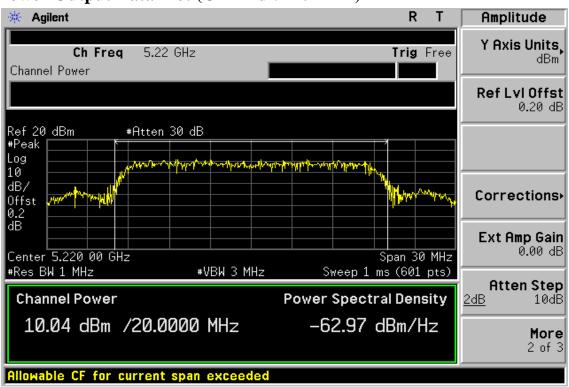
Page 38 of 167

#### UNII HT20, Chain 0

### Peak Power Output Data Plot (CH Low 5180 MHz)



#### Peak Power Output Data Plot (CH Mid 5220 MHz)



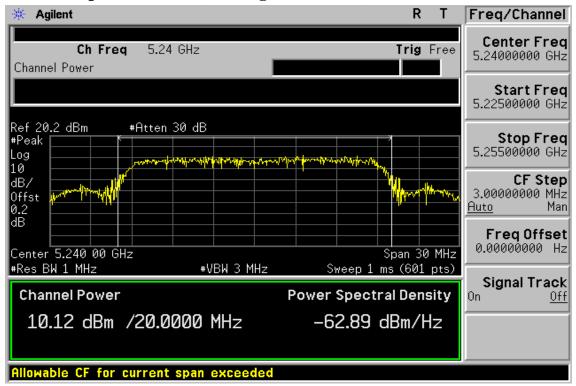
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 39 of 167

### Peak Power Output Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

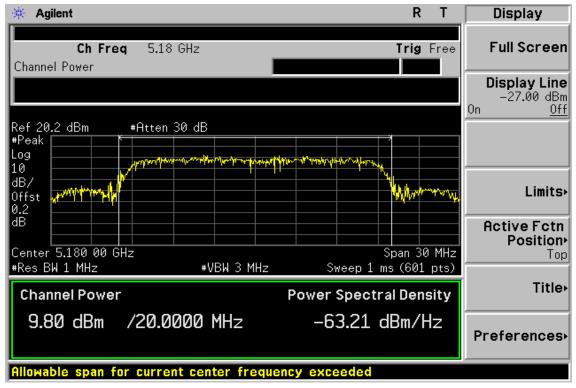


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

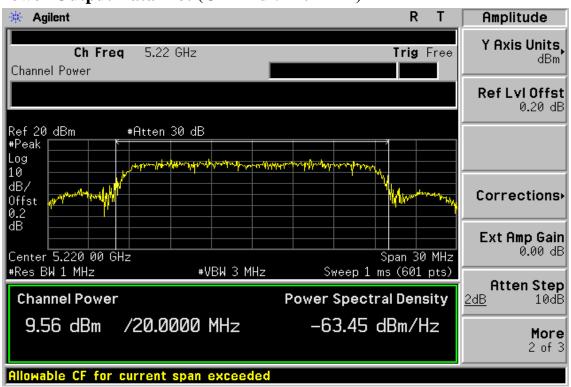
Page 40 of 167

### UNII HT20, Chain 1

### Peak Power Output Data Plot (CH Low 5180 MHz)



#### Peak Power Output Data Plot (CH Mid 5220 MHz)



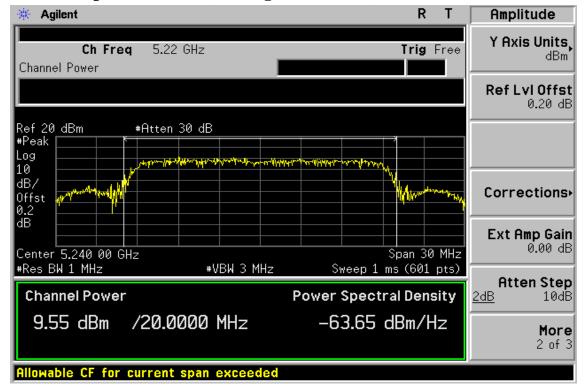
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 41 of 167

### Peak Power Output Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

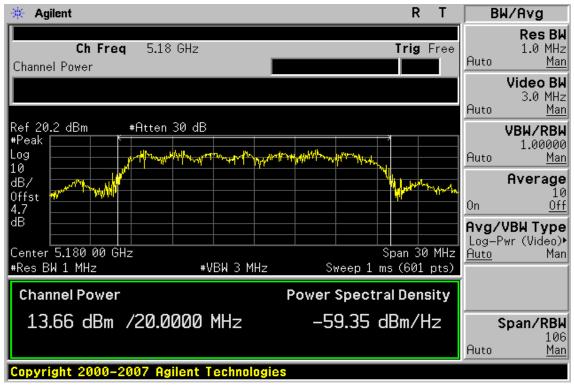


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

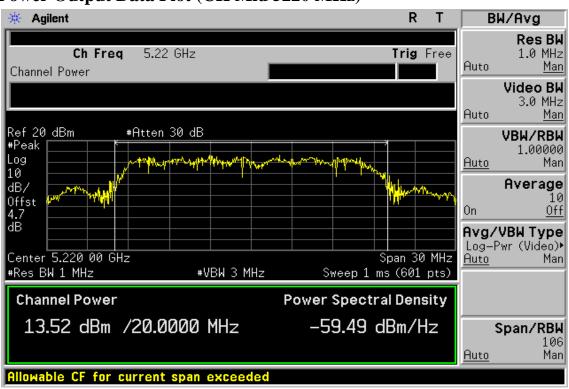
Page 42 of 167

### UNII HT20, Comp

#### Peak Power Output Data Plot (CH Low 5180 MHz)



#### Peak Power Output Data Plot (CH Mid 5220 MHz)



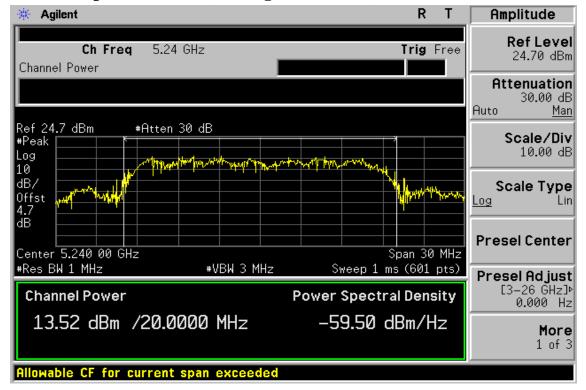
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 43 of 167

### Peak Power Output Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

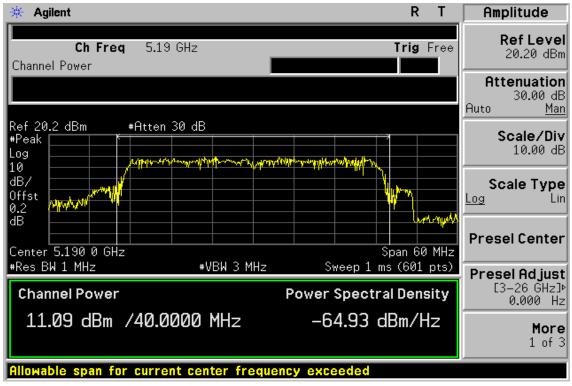


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 44 of 167

#### UNII HT40, Chain 0

## Peak Power Output Data Plot (CH Low 5190 MHz)



### Peak Power Output Data Plot (CH High 5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

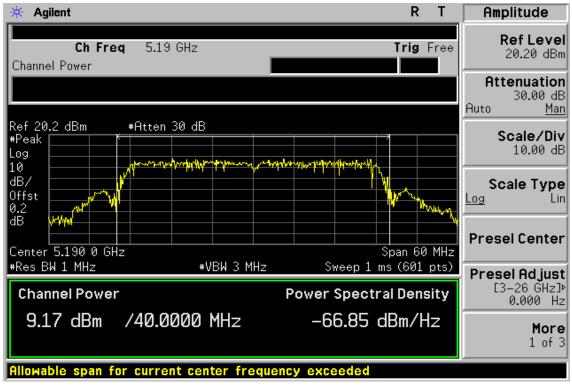


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

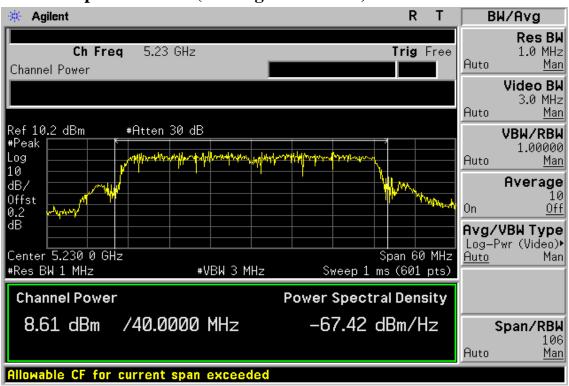
Page 45 of 167

## UNII HT40, Chain 1

### Peak Power Output Data Plot (CH Low 5190 MHz)



### Peak Power Output Data Plot (CH High 5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

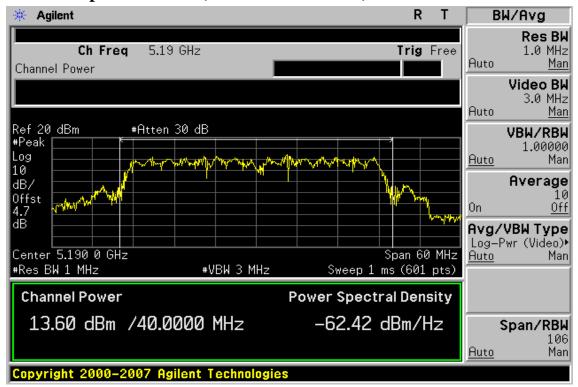


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

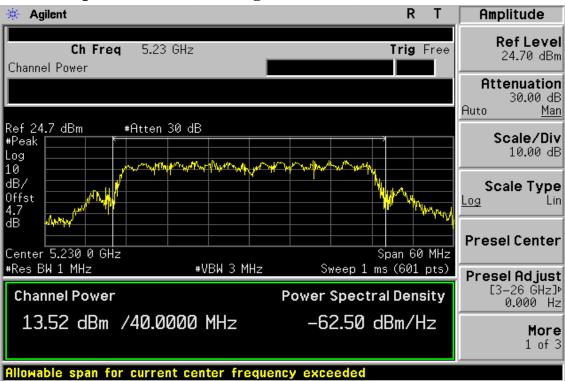
Page 46 of 167

### UNII HT40, Camp

#### Peak Power Output Data Plot (CH Low 5190 MHz)



## Peak Power Output Data Plot (CH High 5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 47 of 167

#### 8. PEAK POWER SPECTRAL DENSITY

### 8.1 Standard Applicable

According to §15.407(a)

- 1. For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band.
- 2. For the band 5.25-5.35 GHz and 5.47-5.725GMHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band.
- 3. For the band 5.725-5.825 GHz, the peak power spectral density shall not exceed 17 dBm in any 1-MHz band.

Where B is the -26dBc emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### According to RSS-210 A9.2

- 1. For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (e.i.r.p.) shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.
- 2. For the bands 5250-5350 MHz and 5470-5725 MHz, the maximum conducted output power shall not exceed 250 mW or 11 + 10 log10 B, dBm, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or

17 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

In addition, devices with maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

In addition to the above requirements, devices operating in the band 5250-5350 MHz with maximum e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. elevation mask where  $\theta$  is the angle above the local horizontal plane (of the earth) as shown below:



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 48 of 167

- (i) -13 dB(W/MHz) for  $0o \le \theta \le 8o$
- (ii) -13 0.716 ( $\theta$ -8) dB(W/MHz) for  $80 \le \theta < 400$
- (iii) -35.9 1.22 ( $\theta$ -40) dB(W/MHz) for  $40o \le \theta \le 45o$
- (iv) -42 dB(W/MHz) for  $\theta > 45$ o
- 3. For the band 5725-5825 MHz, the maximum conducted output power shall not exceed 1.0 W or

17 + 10 log10 B, dBm, whichever power is less. The power spectral density shall not exceed 17 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 4.0 W or 23 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

Fixed point-to-point systems for this band are permitted to have an e.i.r.p. greater than 4 W, provided that the higher e.i.r.p. is achieved by employing higher gain antennas, but not higher transmitter output powers. Point-to-multipoint systems, omni-directional applications and multiple co-located transmitters transmitting the same information are prohibited from exceeding 4 W e.i.r.p. However, remote stations of point-to-multipoint systems shall be permitted to operate at greater than 4 W e.i.r.p, under the same conditions as for point-to-point systems.

B is the 99% emission bandwidth in MHz.

#### **8.2** Measurement Procedure

- Place the EUT on the table and set it in transmitting mode. 1.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
- Set RBW=1MHz, VBW=3MHz, Span=50MHz (Base Mode), Sweep time = Auto, traces 100 3. sweeps of video averaging.
- 4. Record the max. reading.
- Repeat above procedures until all frequency measured were complete. 5.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 49 of 167

### 8.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E4440A	MY45304525	01/23/2008	01/22/2010
DC Block	Agilent	BLK-18	155452	07/05/2009	07/04/2010
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2009	01/04/2010
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2009	07/04/2010
Splitter	Agilent	11636B	N/A	07/05/2009	07/04/2010

#### 8.4 Measurement Result

UNII

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5180	-6.30	4.00	-10.30
5220	-10.55	4.00	-14.55
5240	-8.01	4.00	-12.01

#### UNII HT20, Chain0

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5180	-10.46	4.00	-14.46
5220	-11.70	4.00	-15.70
5240	-13.73	4.00	-17.73

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 50 of 167

#### UNII HT20, Chain1

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5180	-13.92	4.00	-17.92
5220	-12.88	4.00	-16.88
5240	-11.81	4.00	-15.81

#### UNII HT20, Combine, Chain0, Chain1

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5180	-9.69	4.00	-13.69
5220	-6.34	4.00	-10.34
5240	-7.78	4.00	-11.78

#### UNII HT40, Chain0

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5190	-23.86	4.00	-27.86
5230	-23.93	4.00	-27.93

#### UNII HT40, Chain1

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5190	-24.98	4.00	-28.98
5230	-23.03	4.00	-27.03

#### UNII HT40, Combine, Chain0, Chain1

Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
5190	-20.19	4.00	-24.19
5230	-20.54	4.00	-24.54

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

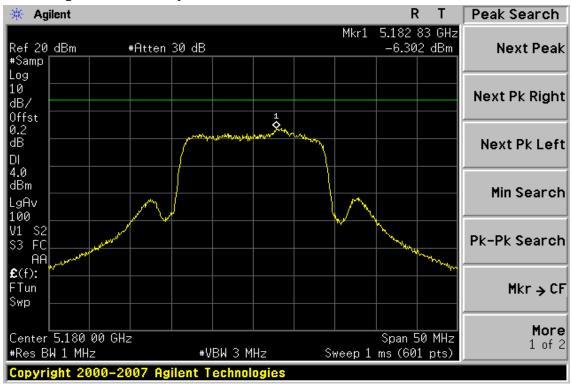


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

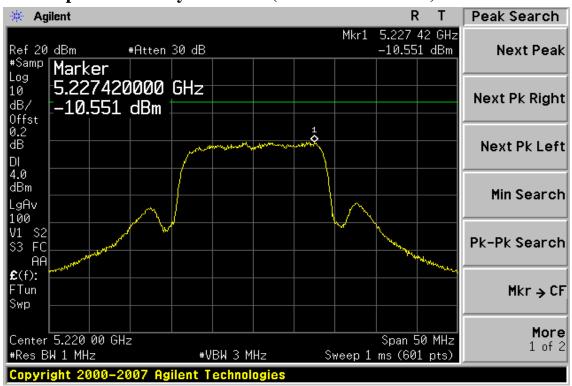
Page 51 of 167

#### UNII1

### Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



### Peak Power Spectral Density Data Plot (CH Mid 5220 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

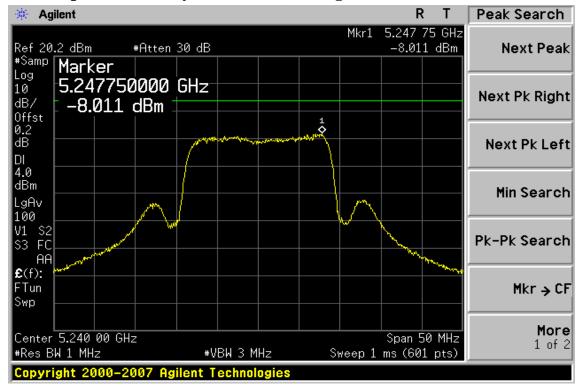
Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 52 of 167

### Peak Power Spectral Density Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

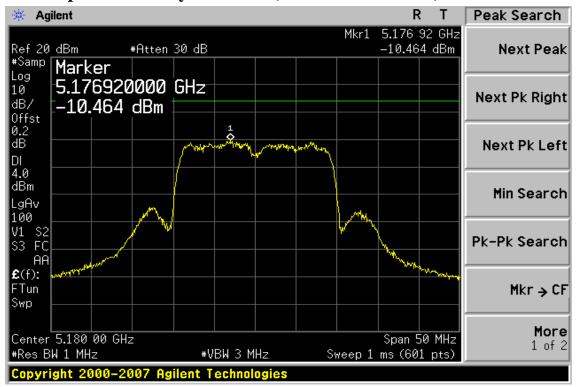


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

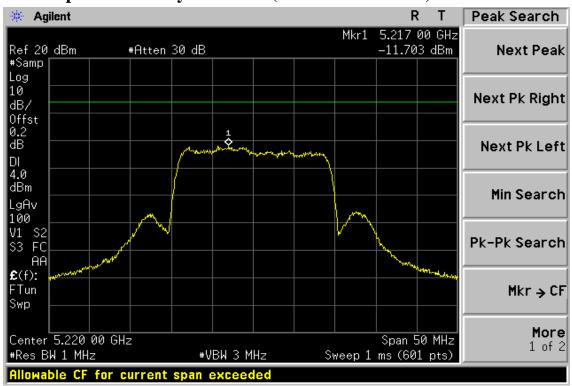
Page 53 of 167

#### UNII HT20, Chain 0

#### Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



### Peak Power Spectral Density Data Plot (CH Mid 5220MHz)



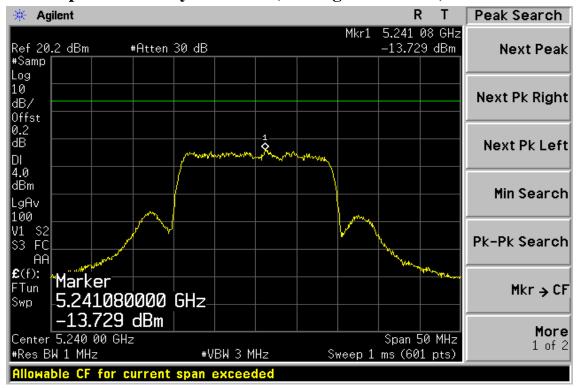
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 54 of 167

### Peak Power Spectral Density Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

Member of SGS Group

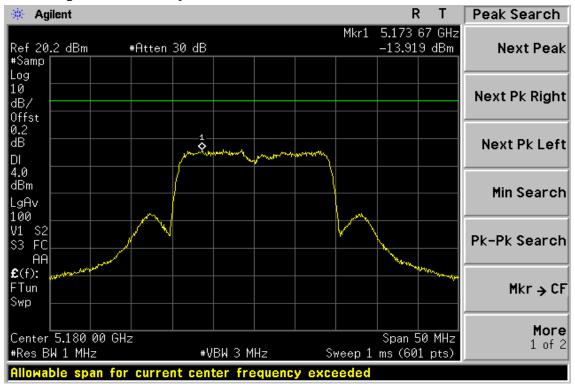


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

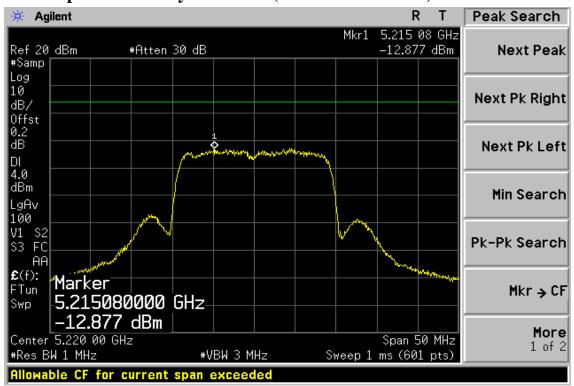
Page 55 of 167

#### UNII HT20, Chain 1

### Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



### Peak Power Spectral Density Data Plot (CH Mid 5220MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

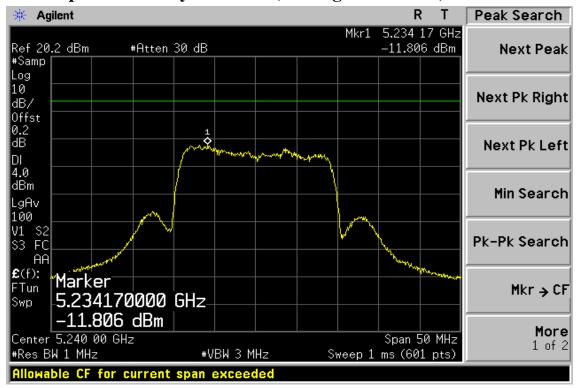
Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 56 of 167

### Peak Power Spectral Density Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

Member of SGS Group

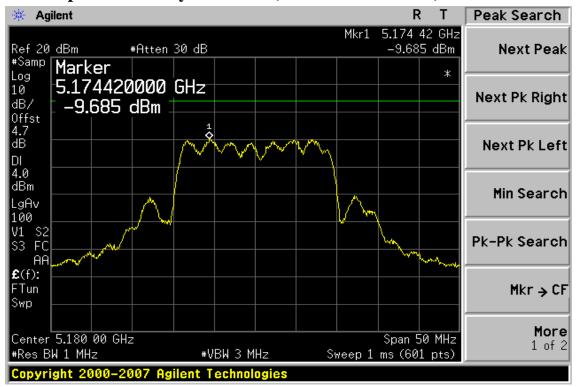


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

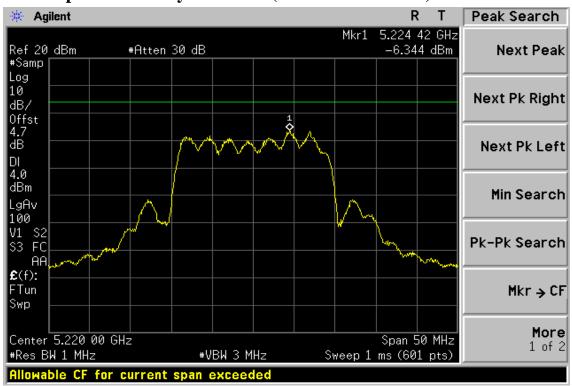
Page 57 of 167

### UNII HT20, Comp

#### Peak Power Spectral Density Data Plot (CH Low 5180 MHz)



### Peak Power Spectral Density Data Plot (CH Mid 5220MHz)



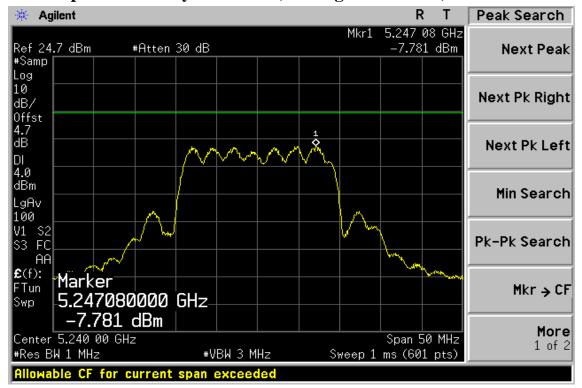
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 58 of 167

### Peak Power Spectral Density Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

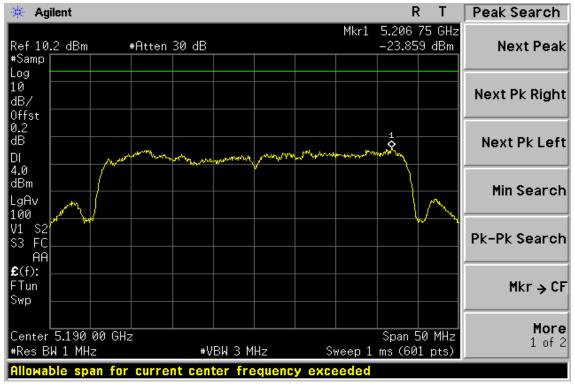


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

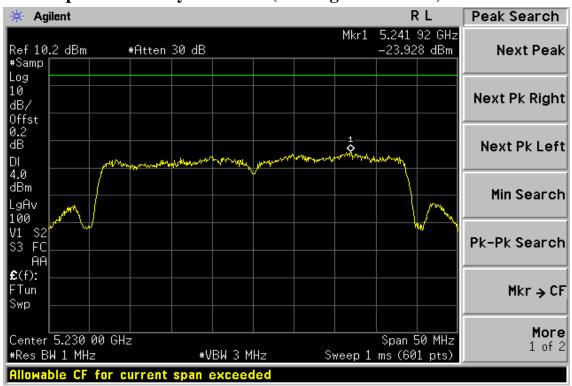
Page 59 of 167

#### UNII HT40, Chain 0

#### Peak Power Spectral Density Data Plot (CH Low 5190 MHz)



### Peak Power Spectral Density Data Plot (CH High 5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

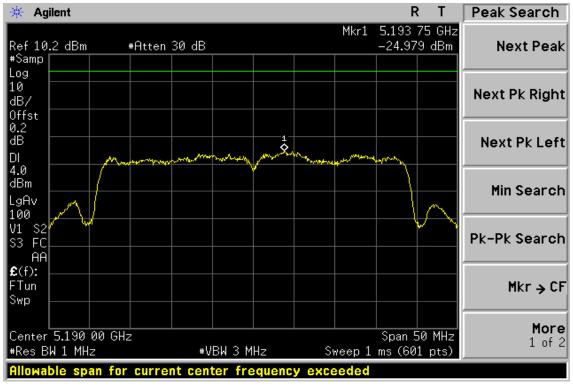


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

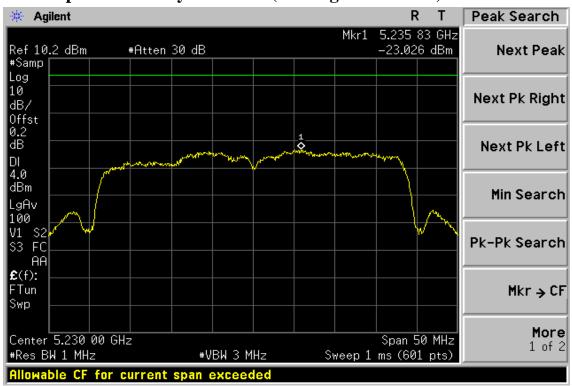
Page 60 of 167

#### UNII HT40, Chain 1

### Peak Power Spectral Density Data Plot (CH Low 5190 MHz)



### Peak Power Spectral Density Data Plot (CH High 5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

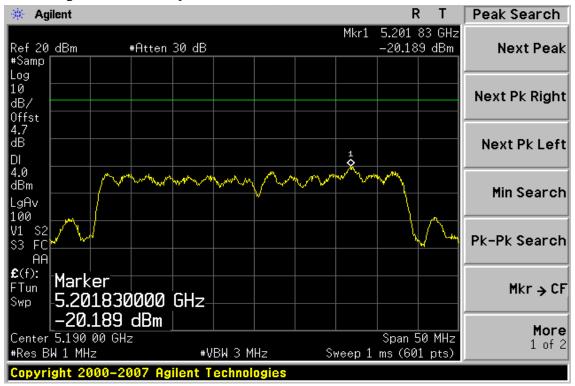


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

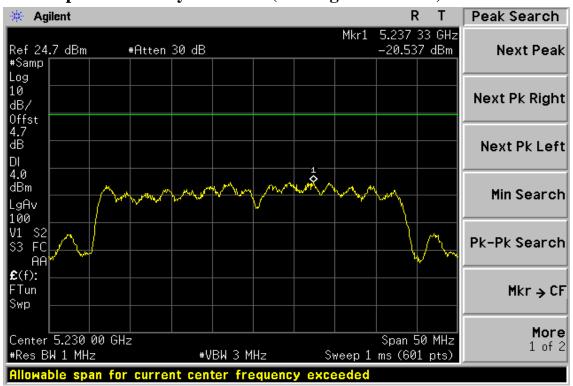
Page 61 of 167

### UNII HT40, Comp

### Peak Power Spectral Density Data Plot (CH Low 5190 MHz)



### Peak Power Spectral Density Data Plot (CH High 5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 62 of 167

#### 9. PEAK EXCURSION MEASUREMENT

## 9.1 Standard Applicable

15.407(a)(6) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

#### 9.2 Measurement Procedure

台灣檢驗科技股份有限公司

- 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 spectrum.
- 3. Trace A, Set RBW=1MHz, VBW = 3MHz, Span = 26dBc, Max. hold.
- 4. Trace B, Set RBW=1MHz, VBW = 30KHz, Span = 26dBc, Max. hold...
- 5. Delta Mark trace A center frequency and trace B center frequency.
- 6. Repeat above procedures until all frequency measured were complete.

Member of SGS Group



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 63 of 167

## 9.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E4440A	MY45304525	01/23/2008	01/22/2010
DC Block	Agilent	BLK-18	155452	07/05/2009	07/04/2010
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2009	01/04/2010
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2009	07/04/2010
Splitter	Agilent	11636B	N/A	07/05/2009	07/04/2010



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 64 of 167

#### 9.4 Test Results:

UNII

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5180	7.54	13.00	-5.46
Mid	5220	5.95	13.00	-7.05
High	5240	8.08	13.00	-4.92

#### UNII HT20, Chain 0

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5180	7.91	13.00	-5.09
Mid	5220	6.82	13.00	-6.18
High	5240	6.84	13.00	-6.16

#### UNII HT20, Chain 1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5180	5.71	13.00	-7.29
Mid	5220	5.78	13.00	-7.22
High	5240	6.80	13.00	-6.20

#### UNII HT20, Combine, Chain0, Chain1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5180	8.41	13.00	-4.59
Mid	5220	6.89	13.00	-6.11
High	5240	7.23	13.00	-5.77

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 65 of 167

#### UNII HT40, Chain 0

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5190	9.08	13.00	-3.92
High	5230	9.16	13.00	-3.84

#### UNII HT40, Chain 1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5190	8.81	13.00	-4.19
High	5230	7.49	13.00	-5.51

#### UNII HT40, Combine, Chain0, Chain1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5190	6.00	13.00	-7.00
High	5230	6.96	13.00	-6.04

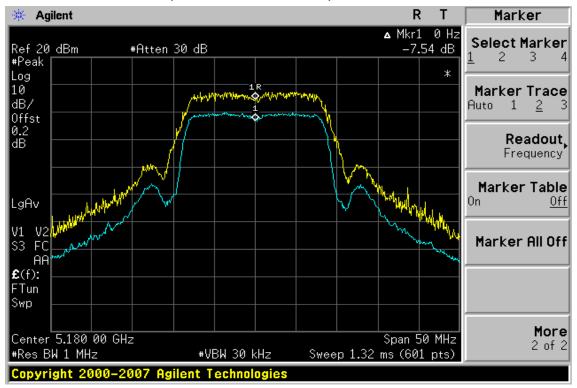


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

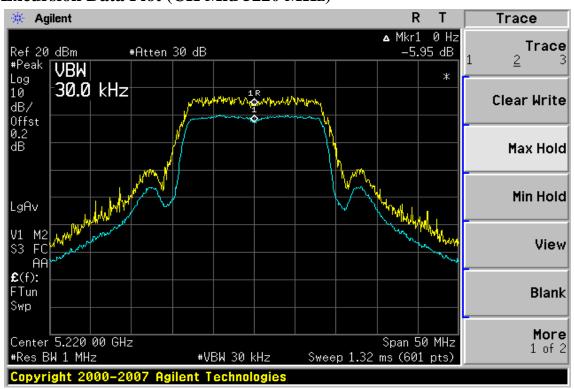
Page 66 of 167

#### UNII

### Peak Excursion Data Plot (CH Low 5180 MHz)



#### Peak Excursion Data Plot (CH Mid 5220 MHz)



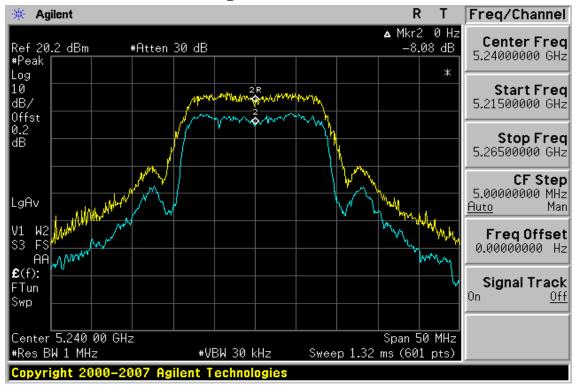
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 67 of 167

## Peak Excursion Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

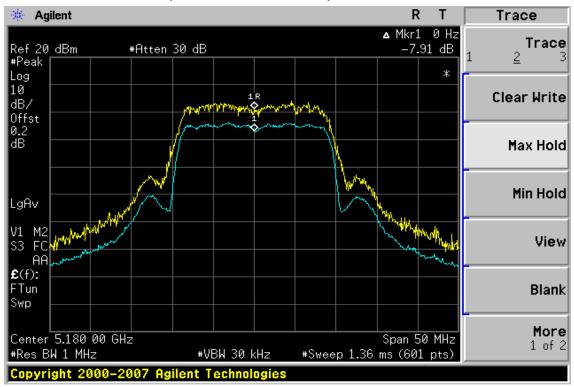


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

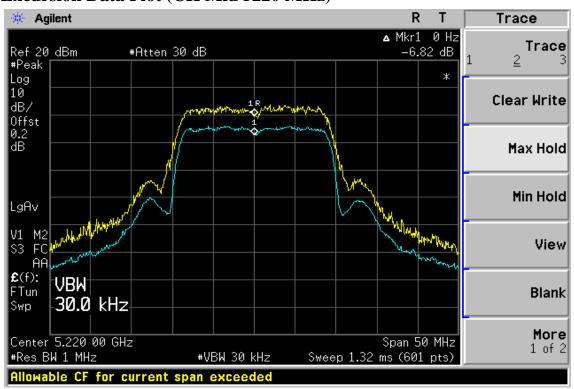
Page 68 of 167

#### UNII, HT20, Chain 0

#### Peak Excursion Data Plot (CH Low 5180 MHz)



#### Peak Excursion Data Plot (CH Mid 5220 MHz)



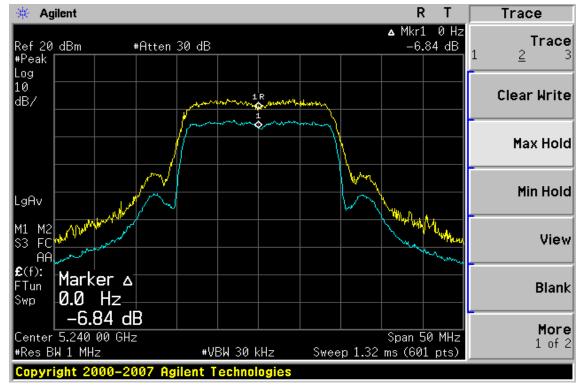
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 69 of 167

# Peak Excursion Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

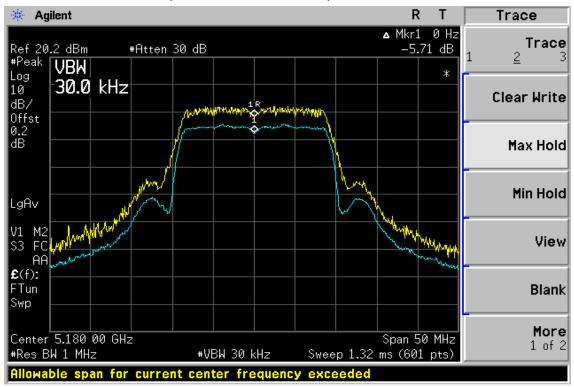


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

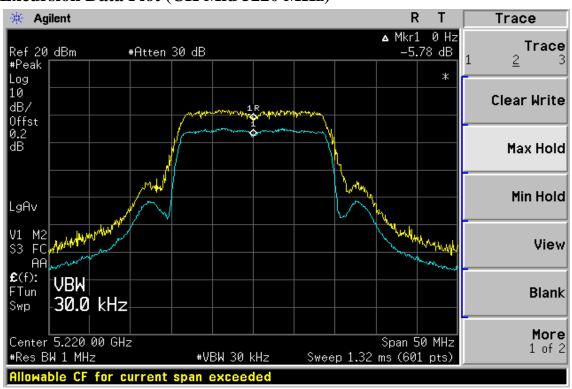
Page 70 of 167

#### UNII HT20, Chain 1

#### Peak Excursion Data Plot (CH Low 5180 MHz)



#### Peak Excursion Data Plot (CH Mid 5220 MHz)



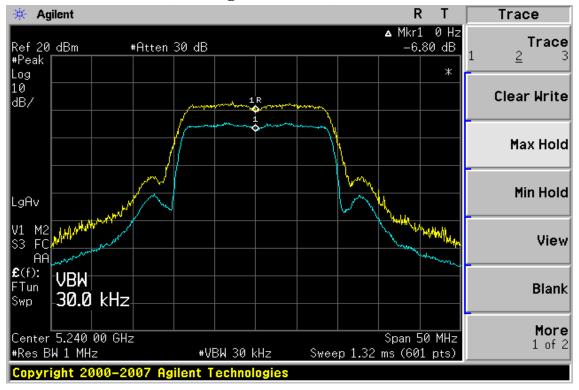
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 71 of 167

## Peak Excursion Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

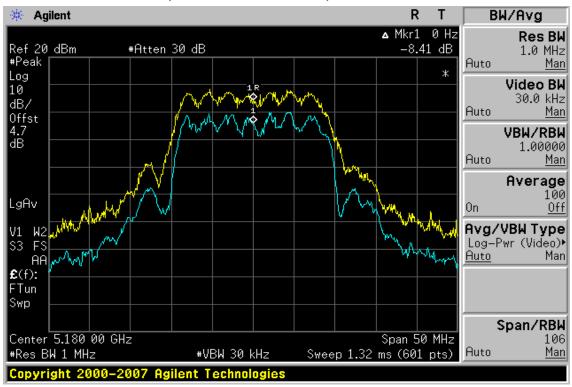


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

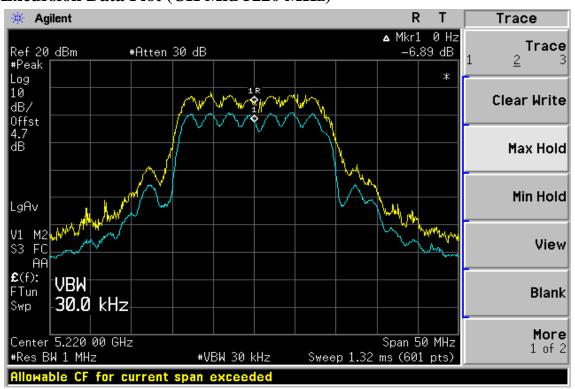
Page 72 of 167

#### UNII HT20, Comp

#### Peak Excursion Data Plot (CH Low 5180 MHz)



#### Peak Excursion Data Plot (CH Mid 5220 MHz)



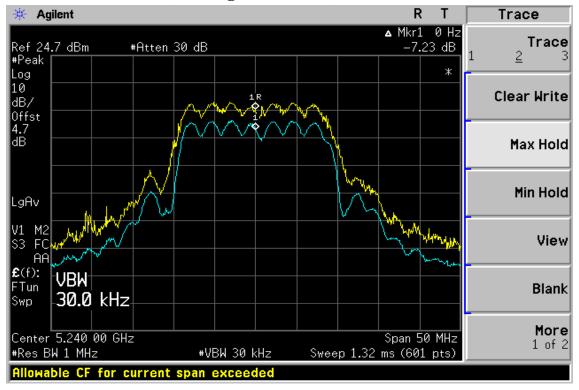
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 73 of 167

# Peak Excursion Data Plot (CH High 5240 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

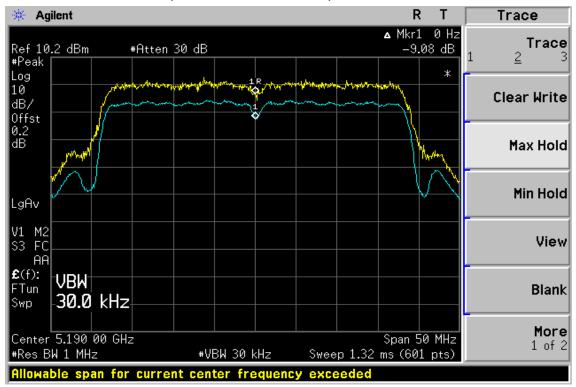


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

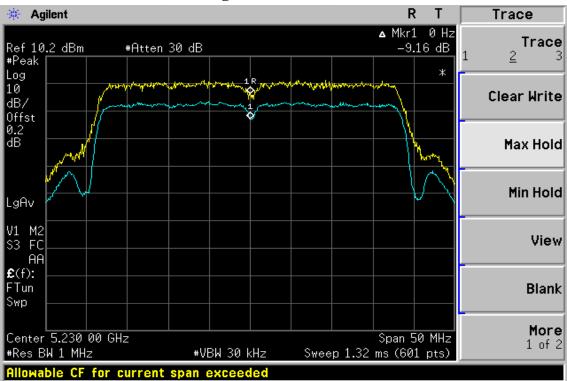
Page 74 of 167

### UNII HT40, Chain 0

## Peak Excursion Data Plot (CH Low 5190 MHz)



## Peak Excursion Data Plot (CH High 5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

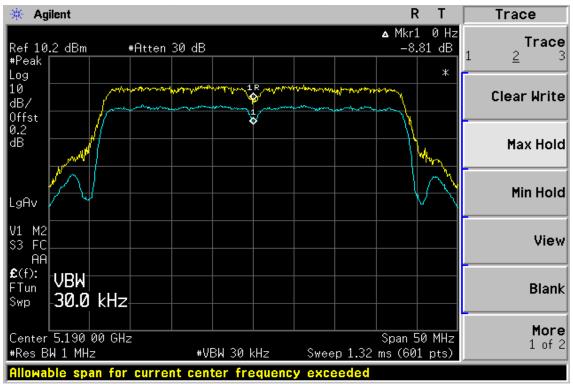


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

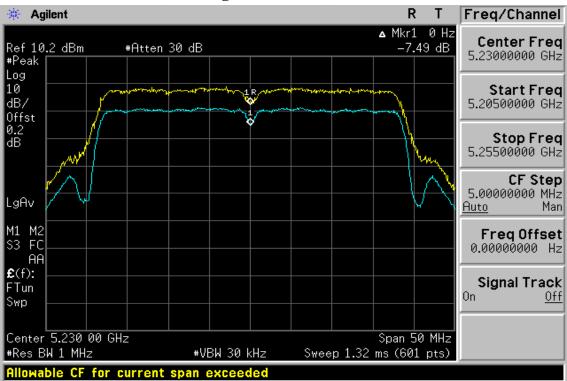
Page 75 of 167

## UNII HT40, Chain 1

## Peak Excursion Data Plot (CH Low 5190 MHz)



## Peak Excursion Data Plot (CH High 5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

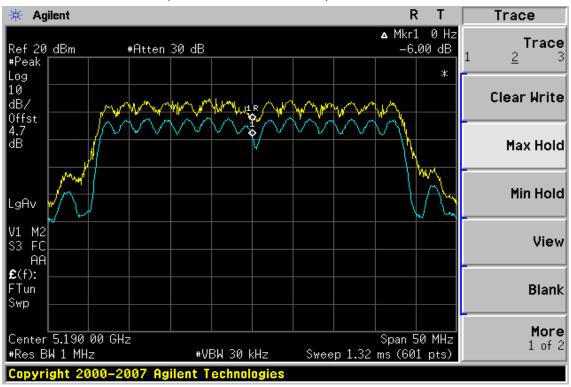


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

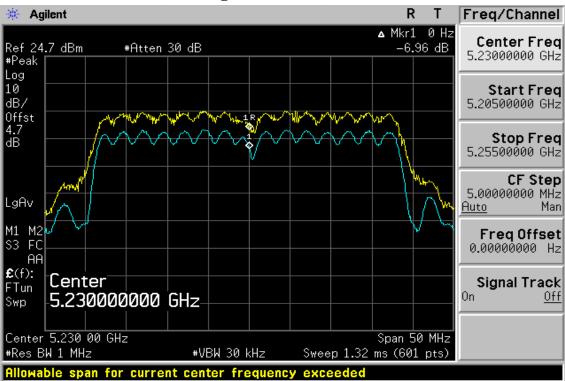
Page 76 of 167

## **UNII HT40, Comp**

## Peak Excursion Data Plot (CH Low 5190 MHz)



## Peak Excursion Data Plot (CH High 5230 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 77 of 167

#### 10. UNDESIRABLE EMISSION - CONDUCTED MEASUREMENT

### 10.1 Standard Applicable

According to §15.407(b),

- (b) Undesirable Emission Limits: Except as shown in Paragraph (b)(6) of this section, the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
  - (1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
  - (2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.
  - (3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
  - (4) For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.
  - (5) The above emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
  - (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.
  - (7) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
  - (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 78 of 167

#### 10.2 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to spectrum.
- Set Spectrum RBW=1MHz, VBW = 1MHz for peak measurement and 10Hz for average measurement.
- Set Spectrum at lower/upper band edge and the restricted band adjacent to the lower/upper edge of the authorized band, with the transmitter set to the lowest/highest channel.
- Set Spectrum over the 30MHz to 40GHz range with the transmitter set to the lowest, middle, 5. and highest channels.

Conducted RF measurements of the transmitter output were made at the band edges and the adjacent restricted bands.

Also, conducted RF measurements of the transmitter output over the 30 MHz to 40 GHz band were made in order to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

10.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E4440A	MY45304525	01/23/2008	01/22/2010
DC Block	Agilent	BLK-18	155452	07/05/2009	07/04/2010
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	01/05/2009	01/04/2010
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2009	07/04/2010
Splitter	Agilent	11636B	N/A	07/05/2009	07/04/2010

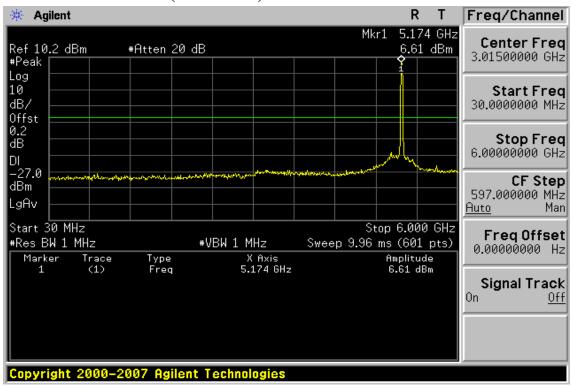


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

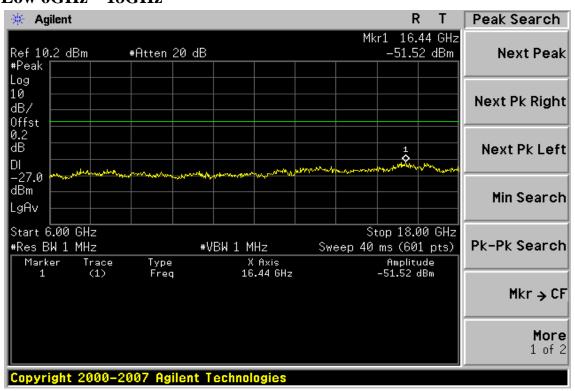
Page 79 of 167

### **UNII**

### Ch Low 30MHz – 6GHz (5180 MHz)



### Ch Low 6GHz - 18GHz



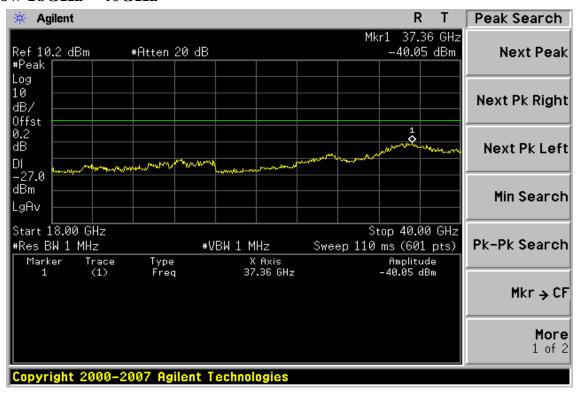
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



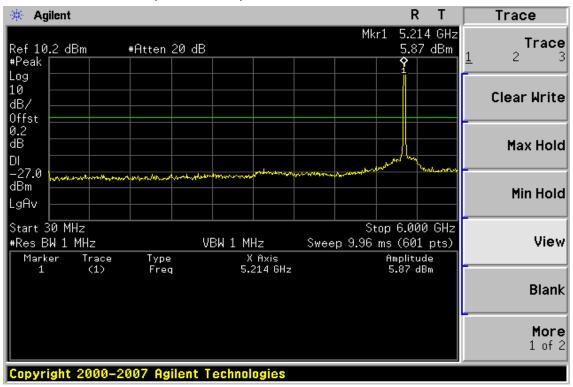
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 80 of 167

### Ch Low 18GHz - 40GHz



### **Ch Mid 30MHz – 6GHz (5220 MHz)**



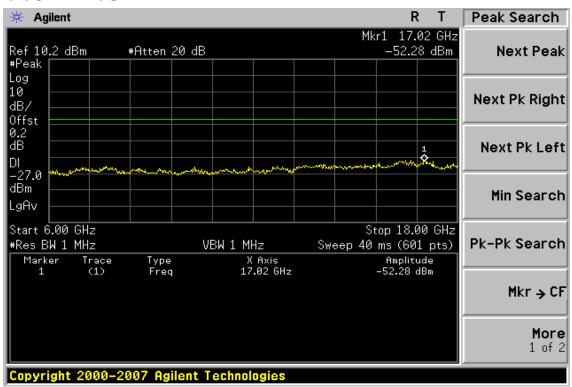
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



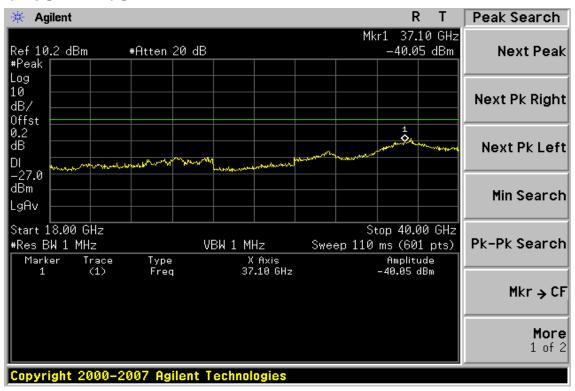
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 81 of 167

### Ch Mid 6GHz – 18GHz



### Ch Mid 18GHz – 40GHz



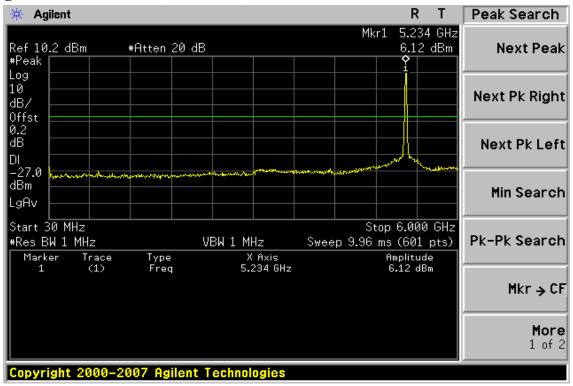
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



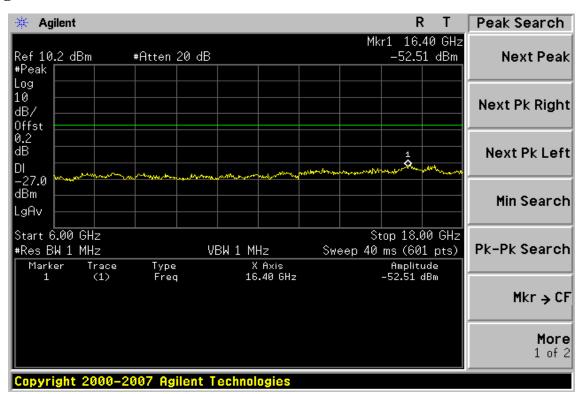
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 82 of 167

## **Ch High 30MHz – 6GHz (5240 MHz)**



## Ch High 6GHz – 18GHz



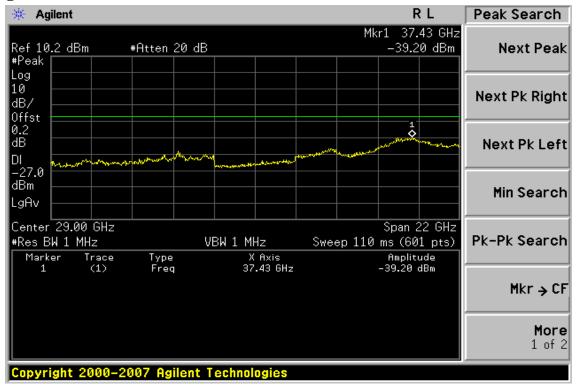
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 83 of 167

## Ch High 18GHz – 40GHz



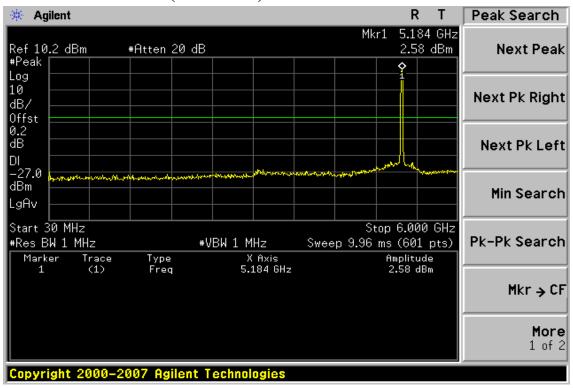
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention



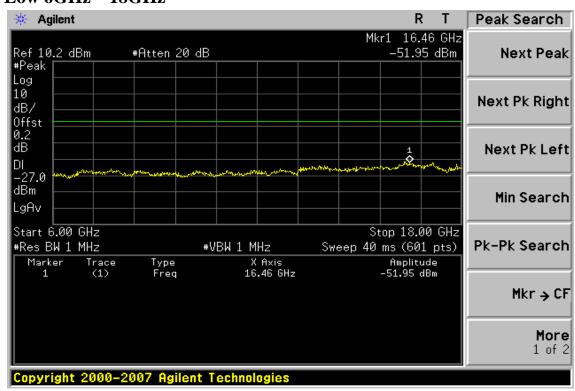
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 84 of 167

# UNII HT20, Chain 0 Ch Low 30MHz – 6GHz (5180 MHz)



### Ch Low 6GHz - 18GHz



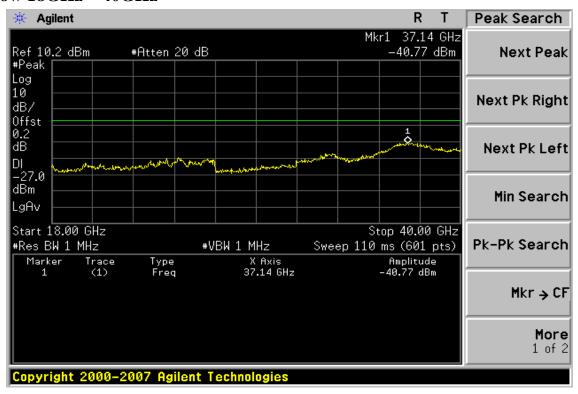
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



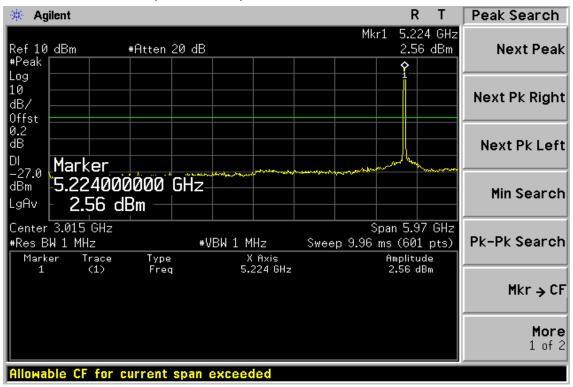
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 85 of 167

#### Ch Low 18GHz – 40GHz



### Ch Mid 30MHz – 6GHz (5220 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



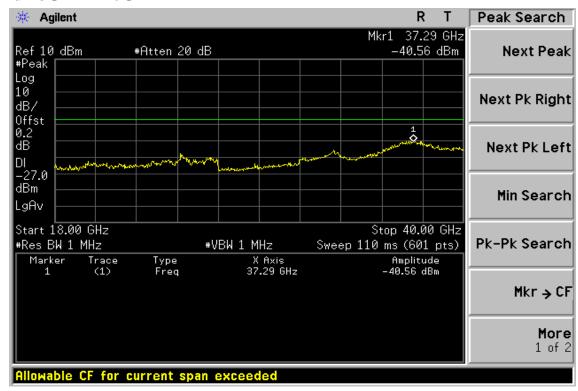
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 86 of 167

### Ch Mid 6GHz – 18GHz



### Ch Mid 18GHz – 40GHz



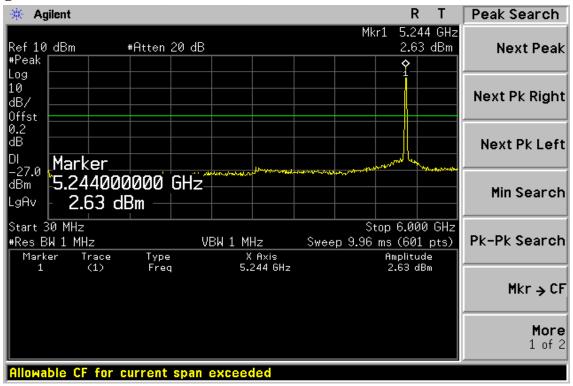
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



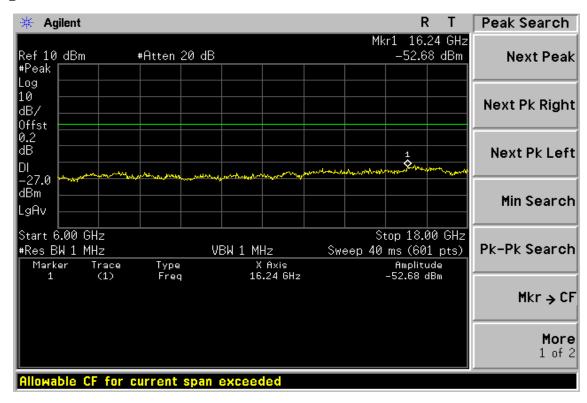
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 87 of 167

## **Ch High 30MHz – 6GHz (5240 MHz)**



## Ch High 6GHz – 18GHz



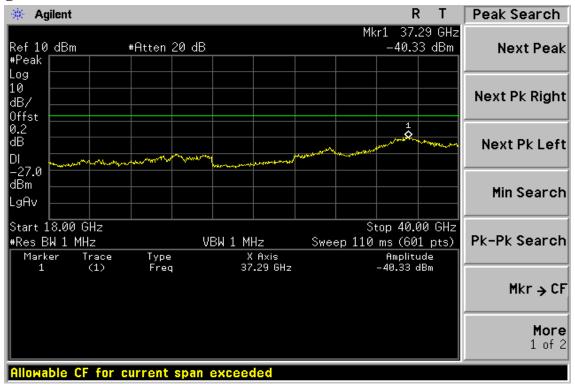
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 88 of 167

## Ch High 18GHz – 40GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

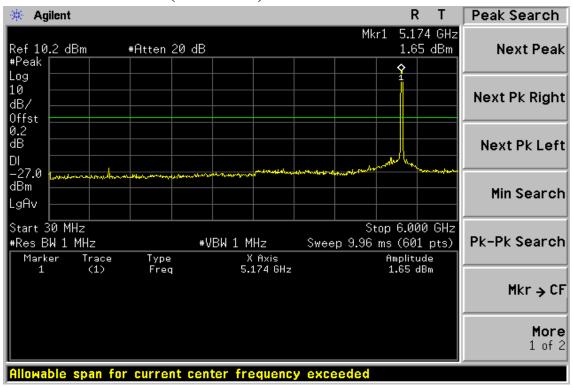
is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The 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. 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.



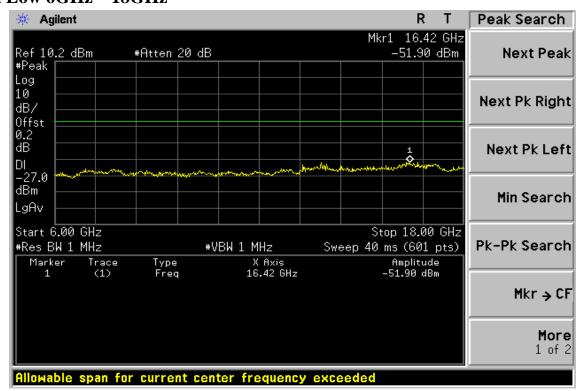
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 89 of 167

# UNII HT20, Chain 1 **Ch Low 30MHz – 6GHz (5180 MHz)**



### Ch Low 6GHz – 18GHz



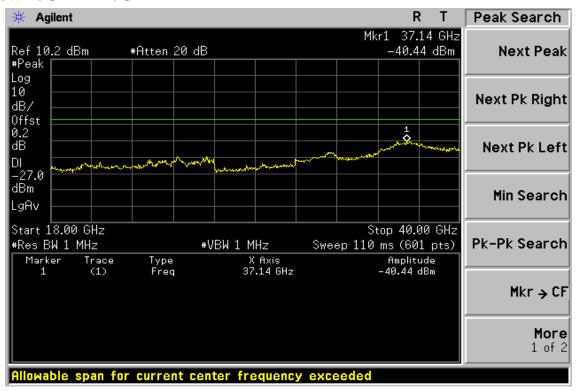
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



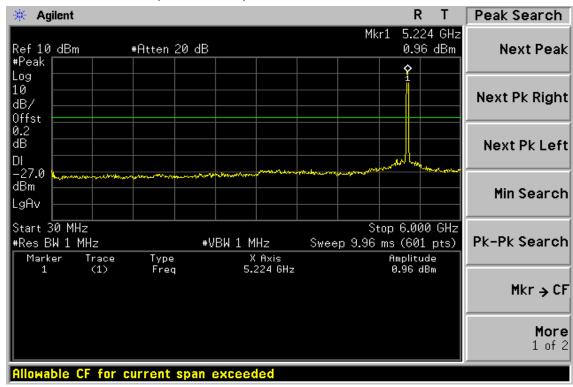
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 90 of 167

### Ch Low 18GHz – 40GHz



### Ch Mid 30MHz – 6GHz (5220 MHz)



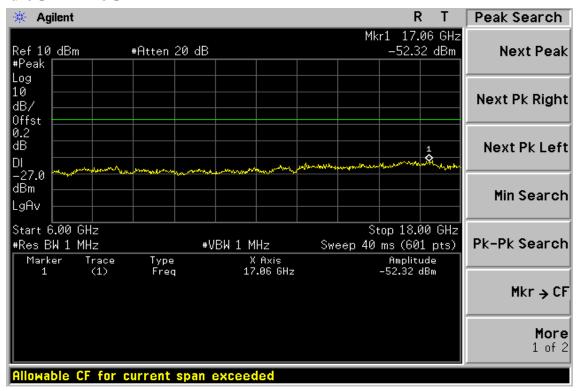
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



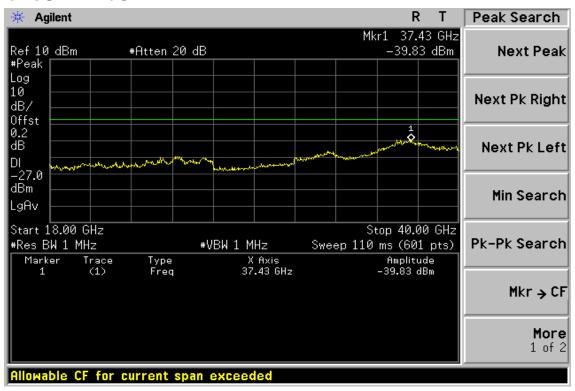
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 91 of 167

### Ch Mid 6GHz – 18GHz



### Ch Mid 18GHz – 40GHz



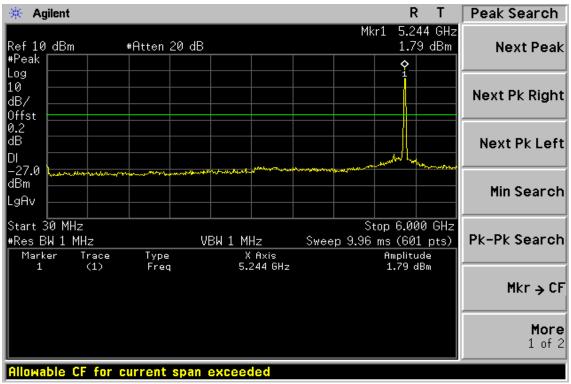
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



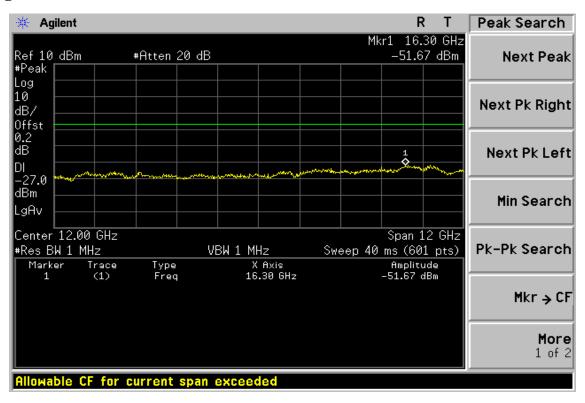
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 92 of 167

## **Ch High 30MHz – 6GHz (5240 MHz)**



## Ch High 6GHz – 18GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

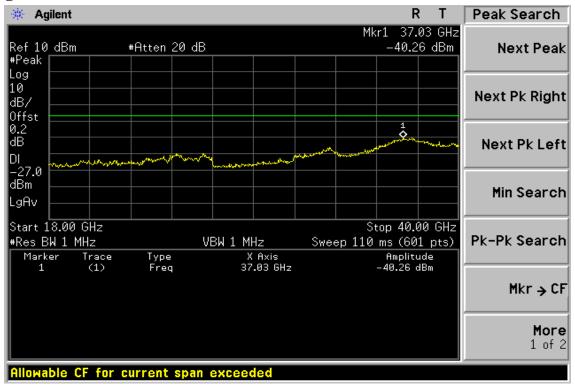
is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 93 of 167

## Ch High 18GHz – 40GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

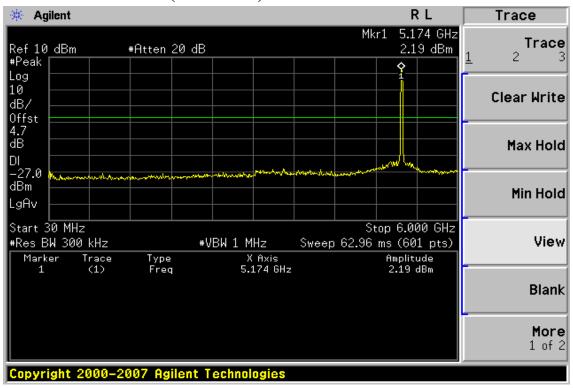
is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The 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. 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.



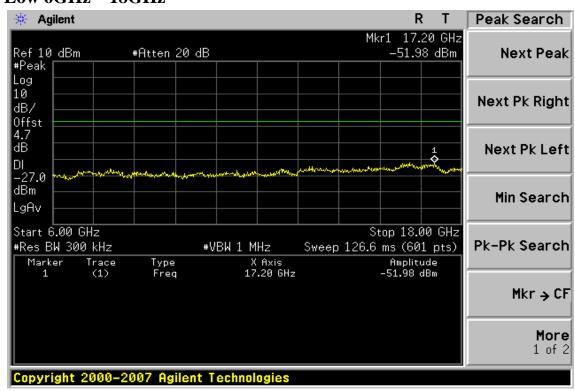
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 94 of 167

# UNII HT20, Comp Ch Low 30MHz – 6GHz (5180 MHz)



### Ch Low 6GHz - 18GHz



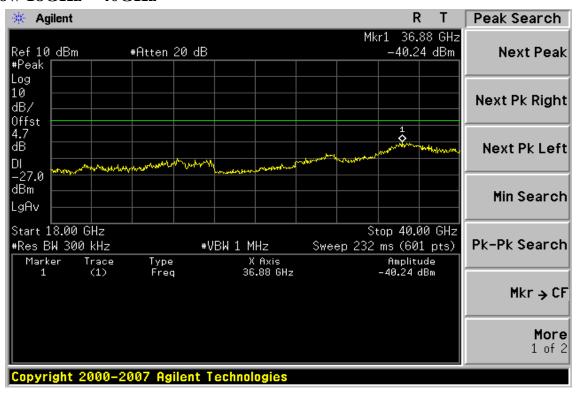
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



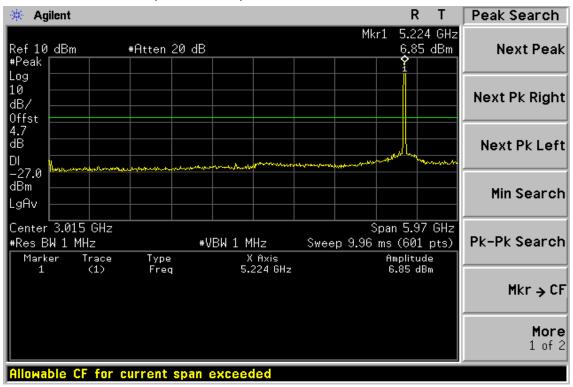
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 95 of 167

### Ch Low 18GHz - 40GHz



### Ch Mid 30MHz – 6GHz (5220 MHz)



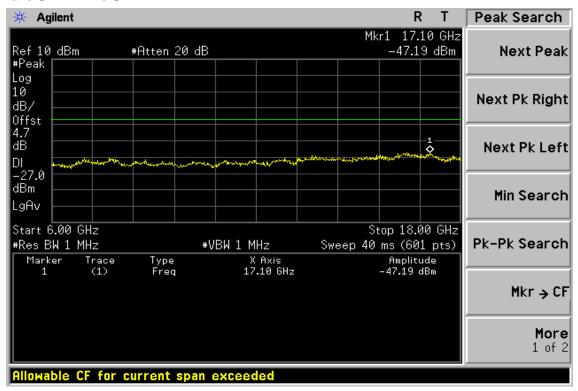
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



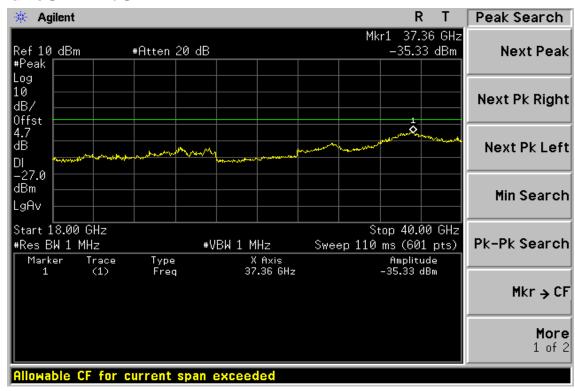
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 96 of 167

### Ch Mid 6GHz – 18GHz



### Ch Mid 18GHz – 40GHz



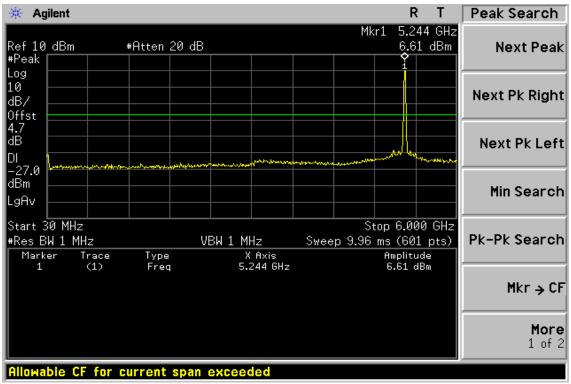
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



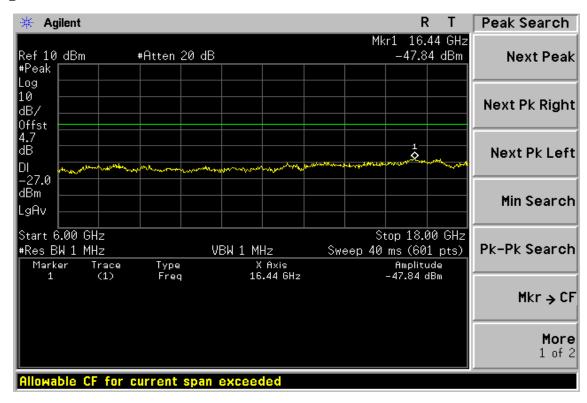
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 97 of 167

## **Ch High 30MHz – 6GHz (5240 MHz)**



## Ch High 6GHz – 18GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

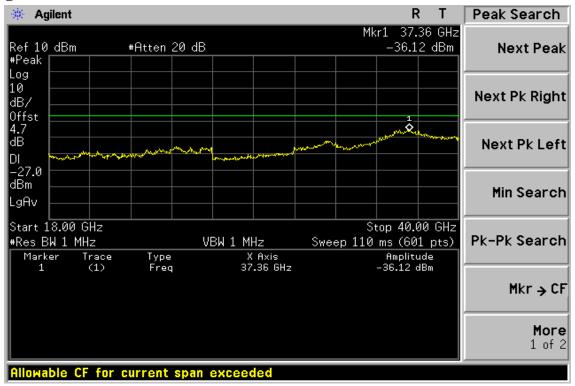
is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 98 of 167

## Ch High 18GHz – 40GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

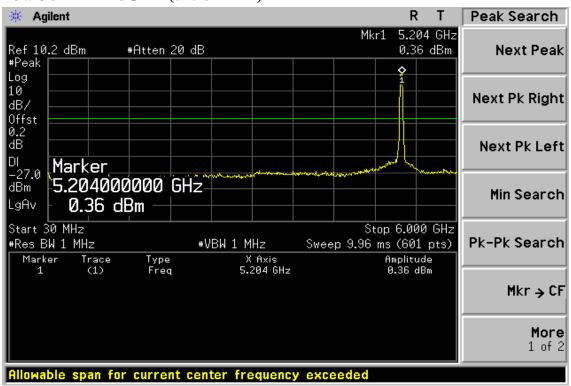
is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The 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. 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.



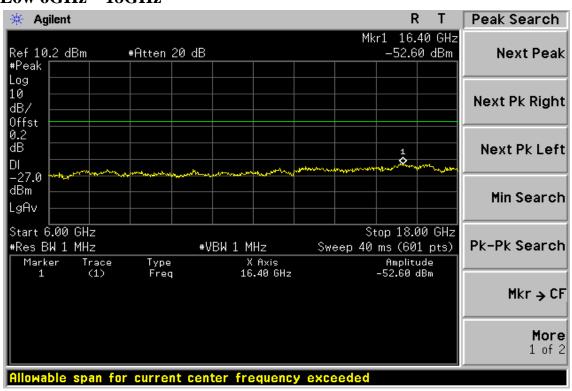
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 99 of 167

# UNII HT40, Chain 0 Ch Low 30MHz - 6GHz (5190 MHz)



### Ch Low 6GHz – 18GHz



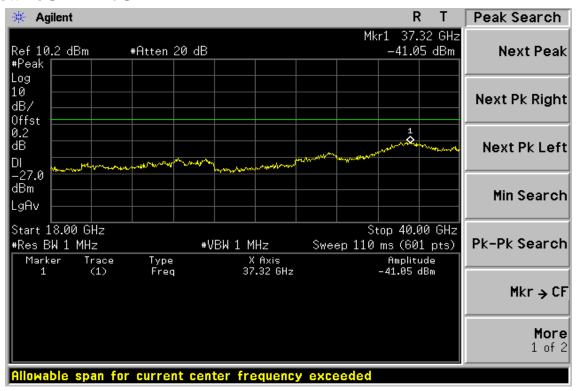
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



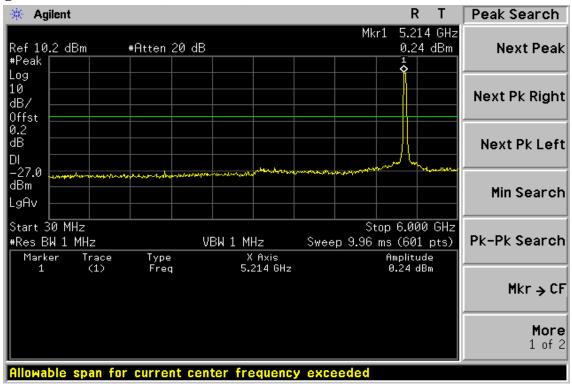
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 100 of 167

### Ch Low 18GHz – 40GHz



## **Ch High 30MHz – 6GHz (5230 MHz)**



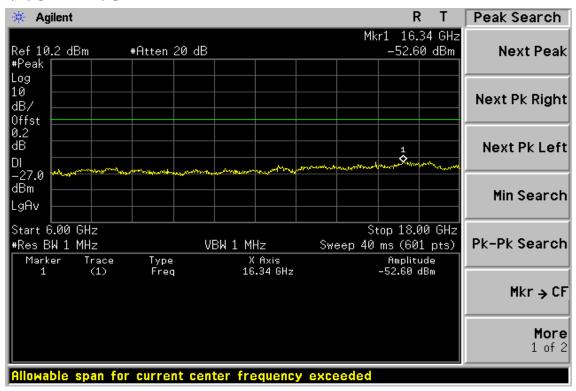
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



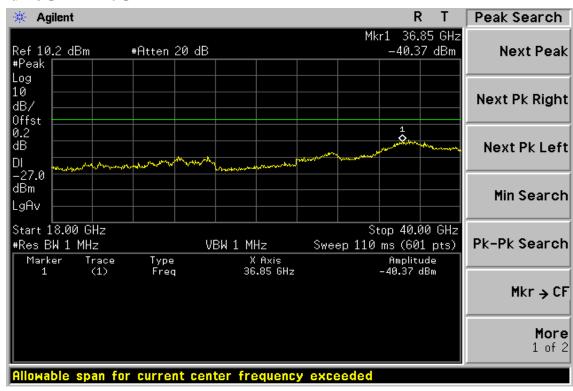
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 101 of 167

### Ch Mid 6GHz – 18GHz



### Ch Mid 18GHz – 40GHz



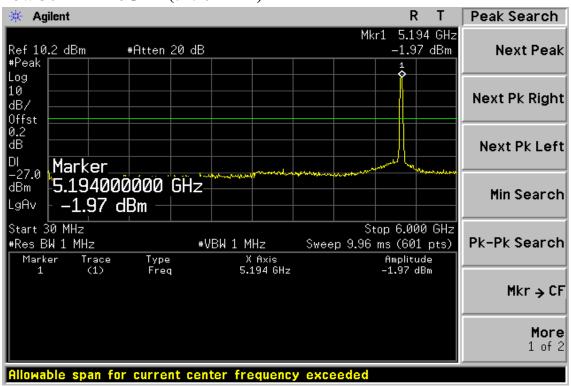
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



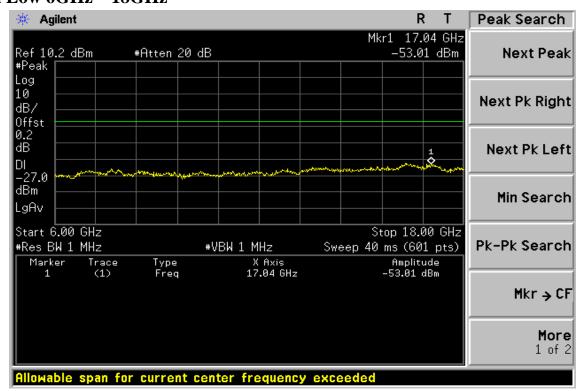
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 102 of 167

# UNII HT40, Chain 1 Ch Low 30MHz - 6GHz (5190 MHz)



### Ch Low 6GHz – 18GHz



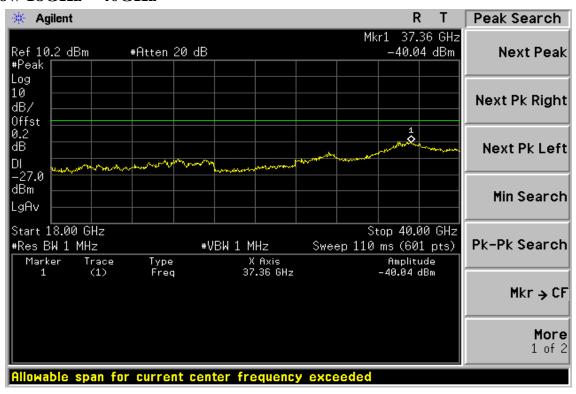
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



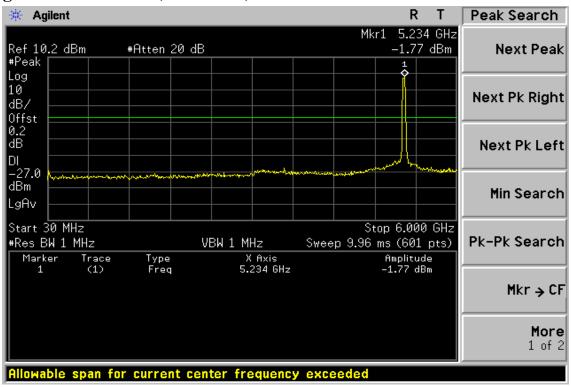
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 103 of 167

#### Ch Low 18GHz – 40GHz



### **Ch High 30MHz – 6GHz (5230 MHz)**



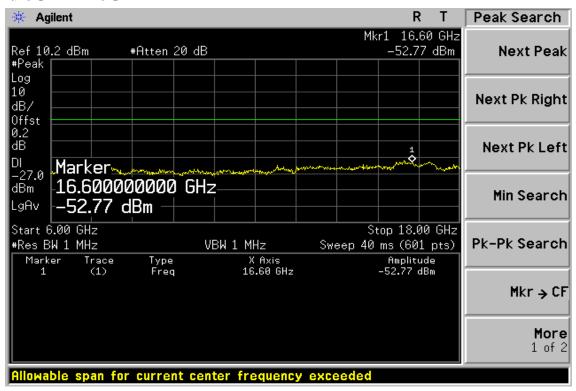
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



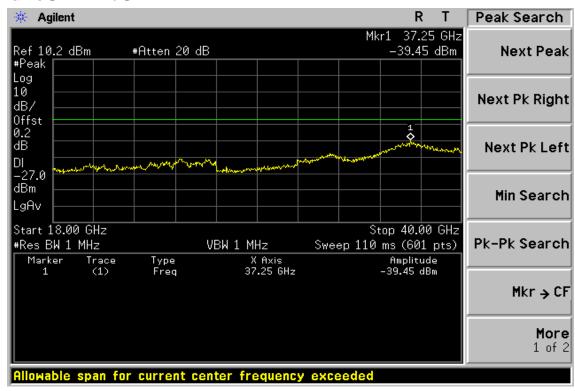
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 104 of 167

### Ch Mid 6GHz – 18GHz



### Ch Mid 18GHz - 40GHz



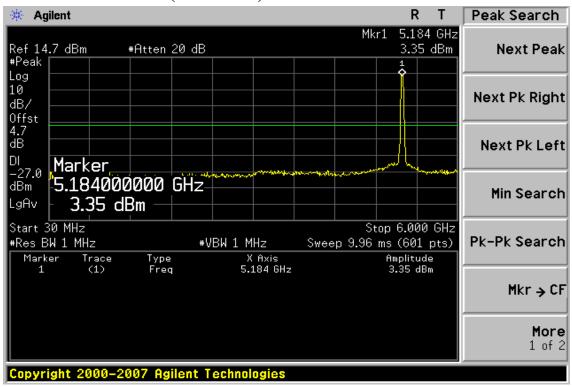
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



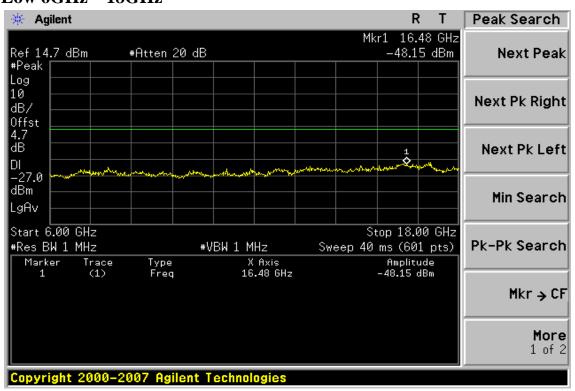
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 105 of 167

# **UNII HT40, Comp** Ch Low 30MHz – 6GHz (5190 MHz)



### Ch Low 6GHz - 18GHz



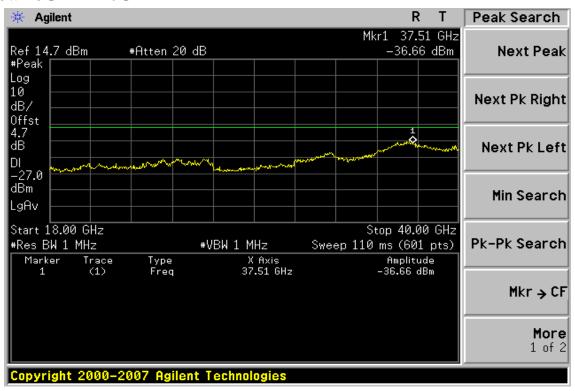
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



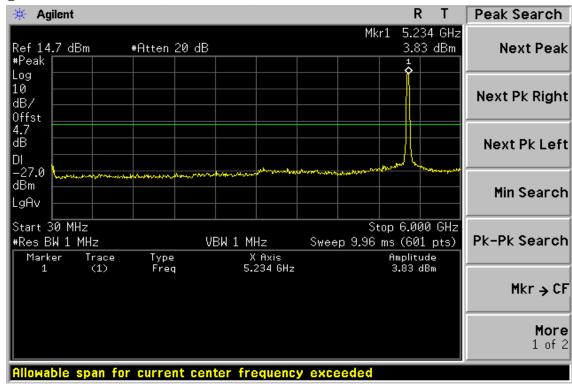
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 106 of 167

### Ch Low 18GHz – 40GHz



## **Ch High 30MHz – 6GHz (5230 MHz)**



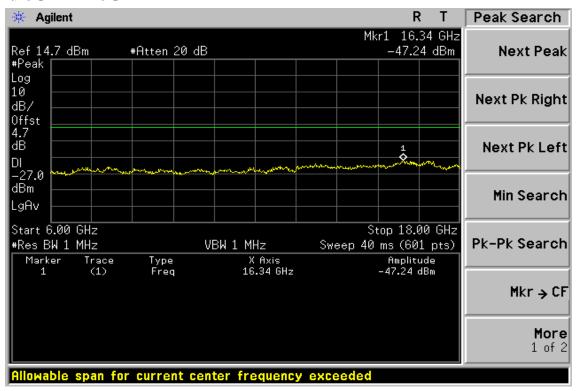
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



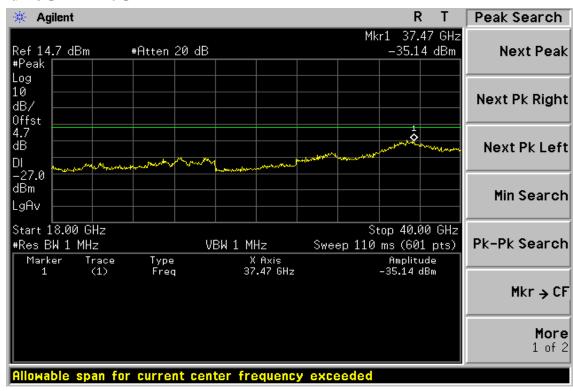
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 107 of 167

### Ch Mid 6GHz – 18GHz



### Ch Mid 18GHz – 40GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 108 of 167

### 11. UNDESIRABLE EMISSION - RADICTED MEASUREMENT

### 11.1 Standard Applicable

### According to §15.407(b),

(b) Undesirable Emission Limits: Except as shown in Paragraph (b)(6) of this section, the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.
- (3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.
- (5) The above emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.
- (7) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 109 of 167

## According to RSS-210 A9.3

- For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.
- 2. For transmitters operating in the band 5250-5350 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Devices operating in the band 5250-5350 MHz that generate emissions in the band 5150-5250 MHz shall not exceed an out-of-band emission limit of -27 dBm/MHz e.i.r.p. in the band 5150-5250 MHz in order to operate indoor/outdoor, or alternatively shall comply with the spectral power density for operation within the band 5150-5250 MHz and shall be labelled "for indoor use only".
- 3. For transmitters operating in the band 5470-5725 MHz, all emissions outside that band shall not exceed -27 dBm/MHz e.i.r.p.
- For transmitters operating in the band 5725-5825 MHz, all emissions within the frequency range from the band edges to 10 MHz above or below the band edges shall not exceed -17 dBm/MHz e.i.r.p. For frequencies more than 10 MHz above or below the band edges, emissions shall not exceed -27 dBm/MHz.

Member of SGS Group



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 110 of 167

## §15.205- RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz MHz		GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(2)
13.36 - 13.41	322 - 335.4		

<sup>&</sup>lt;sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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>&</sup>lt;sup>2</sup> Above 38.6



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 111 of 167

## §15.209- RADIATED EMISSION LIMITS: GENERAL REQUIREMENTS

#### FCC PART 15.209

MEASURING DISTANCE OF 3 METER							
FREQUENCY RANGE	FIELD STRENGTH	FIELD STRENGTH					
(MHz)	(Microvolts/m)	(dBuV/m)					
30-88	100	40					
88-216	150	43.5					
216-960	200	46					
Above 960	500	54					

# 11.2 EUT Setup

- 1. The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.4-1992.
- 2. The EUT was put in the front of the test table. The host PC system was placed on the center of the back edge on the test table. The peripherals like modem, monitor printer, K/B, and mouse were placed on the side of the host PC system. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The keyboard was placed directly in the front of the monitor, flushed with the front tabletop. The mouse was placed next to the Keyboard, flushed with the back of keyboard.
- 4. The spacing between the peripherals was 10 centimeters.
- 5. External I/O cables were draped along the edge of the test table and bundle when necessary.
- 6. The host PC system was connected with 110Vac/60Hz power source.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 112 of 167

## 11.3 Measurement Procedure

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until all frequency measured were complete.

Member of SGS Group

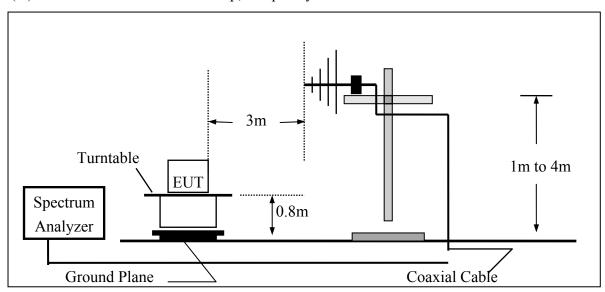


Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

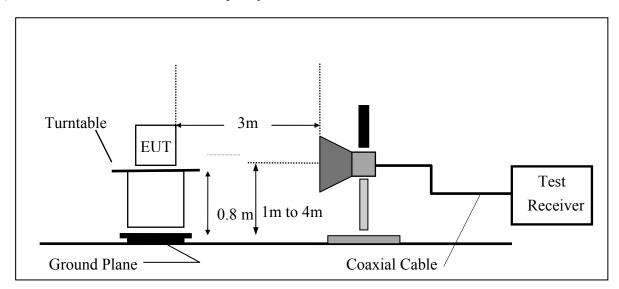
Page 113 of 167

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

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



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



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the

Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 114 of 167

# 11.5 Measurement Equipment Used:

966 Chamber									
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2009	02/11/2010				
Loop antenna	MESSTEC	FLA30	03/10086	07/08/2009	07/07/2011				
Bilog Antenna	SCHWAZBECK	VULB9160	3158	11/29/2009	11/28/2011				
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2008	05/08/2010				
Pre-Amplifier	Agilent	8447D	1937A02834	11/30/2008	11/29/2009				
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2009	01/04/2010				
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	Low Loss Cable HUBER+SUHNER		10m	01/05/2009	01/04/2010				
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2009	01/04/2010				
3m Site	SGS	966 chamber	N/A	11/08/2009	11/09/2011				

# 11.6 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

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

### 11.7 Measurement Result

Refer to attach tabular data sheets.

### **NOTE:**

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 100kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

Member of SGS Group



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 115 of 167

## Radiated Spurious Emission Measurement Result (below 1GHz) UNII

Operation Mode TX CH Low **Test Date** Nov. 15, 2009

Fundamental Frequency 5180MHz Test By Jim Temperature Pol Ver./Hor 25 °C

65 % Humidity

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Mar- gin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
36.79	V	Peak	51.02	-14.36	36.66	40.00	-3.34
64.92	V	Peak	45.15	-14.83	30.32	40.00	-9.68
250.19	V	Peak	46.84	-13.74	33.10	46.00	-12.90
293.84	V	Peak	51.13	-13.19	37.94	46.00	-8.06
397.63	V	Peak	39.83	-10.09	29.74	46.00	-16.26
533.43	V	Peak	37.79	-7.96	29.83	46.00	-16.17
36.79	Н	Peak	47.17	-14.36	32.81	40.00	-7.19
75.59	Н	Peak	44.00	-17.13	26.87	40.00	-13.13
218.18	Н	Peak	43.59	-14.99	28.60	46.00	-17.40
256.98	Н	Peak	45.92	-13.67	32.25	46.00	-13.75
293.84	Н	Peak	48.72	-13.19	35.53	46.00	-10.47
358.83	Н	Peak	40.72	-11.43	29.29	46.00	-16.71

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 116 of 167

## Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode TX CH Mid Nov. 15, 2009 **Test Date** 

Fundamental Frequency 5220MHz Test By Jim Temperature Pol Ver./Hor 25 °C

65 % Humidity

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Mar- gin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
38.73	V	Peak	47.08	-13.84	33.24	40.00	-6.76
62.98	V	Peak	45.15	-14.85	30.30	40.00	-9.70
153.19	V	Peak	41.68	-13.00	28.68	43.50	-14.82
213.33	V	Peak	45.36	-15.16	30.20	43.50	-13.30
255.04	V	Peak	44.34	-13.69	30.65	46.00	-15.35
290.93	V	Peak	51.19	-13.21	37.98	46.00	-8.02
38.73	Н	Peak	46.11	-13.84	32.27	40.00	-7.73
70.74	Н	Peak	43.66	-16.27	27.39	40.00	-12.61
216.24	Н	Peak	44.44	-15.05	29.39	46.00	-16.61
252.13	Н	Peak	41.91	-13.72	28.19	46.00	-17.81
290.93	Н	Peak	49.99	-13.21	36.78	46.00	-9.22
366.59	Н	Peak	41.37	-11.17	30.20	46.00	-15.80

## Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/OP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 117 of 167

## Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode TX CH High Test Date Nov. 15, 2009

Fundamental Frequency 5240MHz Temperature 5240MHz Temperature 25  $^{\circ}$  Pol Ver./Hor

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Mar- gin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
36.79	V	Peak	50.47	-14.36	36.11	40.00	-3.89
62.98	V	Peak	45.70	-14.85	30.85	40.00	-9.15
97.90	V	Peak	45.30	-17.11	28.19	43.50	-15.31
290.93	V	Peak	50.89	-13.21	37.68	46.00	-8.32
533.43	V	Peak	39.93	-7.96	31.97	46.00	-14.03
599.39	V	Peak	39.06	-6.03	33.03	46.00	-12.97
36.79	Н	Peak	47.21	-14.36	32.85	40.00	-7.15
71.71	Н	Peak	43.98	-16.45	27.53	40.00	-12.47
216.24	Н	Peak	44.80	-15.05	29.75	46.00	-16.25
250.19	Н	Peak	46.86	-13.74	33.12	46.00	-12.88
293.84	Н	Peak	49.65	-13.19	36.46	46.00	-9.54
664.38	Н	Peak	36.36	-5.01	31.35	46.00	-14.65

## Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 118 of 167

# Radiated Spurious Emission Measurement Result (below 1GHz) UNII HT20, Comp

Operation Mode TX CH Low Test Date Nov. 15, 2009

Fundamental Frequency 5180MHz Test By Jim Temperature Pol Ver./Hor 25 °C

65 % Humidity

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Mar- gin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
36.79	V	Peak	50.52	-14.36	36.16	40.00	-3.84
65.89	V	Peak	45.36	-15.09	30.27	40.00	-9.73
96.93	V	Peak	45.27	-17.16	28.11	43.50	-15.39
252.13	V	Peak	42.93	-13.72	29.21	46.00	-16.79
290.93	V	Peak	47.46	-13.21	34.25	46.00	-11.75
599.39	V	Peak	34.78	-6.03	28.75	46.00	-17.25
38.79	Н	Peak	45.76	-13.84	31.92	40.00	-8.08
70.74	Н	Peak	42.83	-16.27	26.56	40.00	-13.44
217.21	Н	Peak	45.17	-15.02	30.15	46.00	-15.85
250.19	Н	Peak	42.28	-13.74	28.54	46.00	-17.46
290.93	Н	Peak	49.50	-13.21	36.29	46.00	-9.71
358.83	Н	Peak	41.50	-11.43	30.07	46.00	-15.93

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 119 of 167

## Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode TX CH Mid Test Date Nov. 15, 2009

Fundamental Frequency 5220MHz Temperature 5220MHz Temperature Test By Jim Pol Ver./Hor

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Mar- gin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
36.79	V	Peak	49.92	-14.36	35.56	40.00	-4.44
62.98	V	Peak	45.40	-14.85	30.55	40.00	-9.45
90.14	V	Peak	46.76	-17.62	29.14	43.50	-14.36
256.98	V	Peak	44.99	-13.67	31.32	46.00	-14.68
286.08	V	Peak	48.47	-13.26	35.21	46.00	-10.79
730.34	V	Peak	34.26	-4.54	29.72	46.00	-16.28
36.79	Н	Peak	46.10	-14.36	31.74	40.00	-8.26
70.74	Н	Peak	42.61	-16.27	26.34	40.00	-13.66
218.18	Н	Peak	45.84	-14.99	30.85	46.00	-15.15
255.04	Н	Peak	45.79	-13.69	32.10	46.00	-13.90
290.93	Н	Peak	49.34	-13.21	36.13	46.00	-9.87
870.99	Н	Peak	33.08	-1.58	31.50	46.00	-14.50

### Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attentio is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 120 of 167

## Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode TX CH High Test Date Nov. 15, 2009

Fundamental Frequency 5240MHz Test By Jim Temperature 25  $^{\circ}$ C Pol Ver./Hor

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Mar- gin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
37.76	V	Peak	48.98	-14.24	34.74	40.00	-5.26
64.92	V	Peak	45.59	-14.83	30.76	40.00	-9.24
96.93	V	Peak	45.01	-17.16	27.85	43.50	-15.65
179.38	V	Peak	41.93	-14.49	27.44	43.50	-16.06
255.04	V	Peak	41.36	-13.69	27.67	46.00	-18.33
286.08	V	Peak	47.36	-13.26	34.10	46.00	-11.90
36.79	Н	Peak	46.20	-14.36	31.84	40.00	-8.16
70.74	Н	Peak	42.85	-16.27	26.58	40.00	-13.42
150.28	Н	Peak	38.30	-12.83	25.47	43.50	-18.03
218.18	Н	Peak	45.83	-14.99	30.84	46.00	-15.16
290.93	Н	Peak	50.21	-13.21	37.00	46.00	-9.00
366.59	Н	Peak	40.28	-11.17	29.11	46.00	-16.89

## Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attentio is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 121 of 167

# Radiated Spurious Emission Measurement Result (below 1GHz) UNII HT40, Comp

Operation Mode TX CH Low Test Date Nov. 15, 2009

Fundamental Frequency 5190MHz Test By Jim Temperature 25  $^{\circ}$  Pol Ver./Hor

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Mar- gin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
36.79	V	Peak	49.75	-14.36	35.39	40.00	-4.61
64.92	V	Peak	44.23	-14.83	29.40	40.00	-10.60
90.14	V	Peak	45.46	-17.62	27.84	43.50	-15.66
101.78	V	Peak	44.15	-16.87	27.28	43.50	-16.22
290.93	V	Peak	50.25	-13.21	37.04	46.00	-8.96
599.39	V	Peak	36.80	-6.03	30.77	46.00	-15.23
41.64	Н	Peak	44.68	-13.76	30.92	40.00	-9.08
70.74	Н	Peak	44.08	-16.27	27.81	40.00	-12.19
143.49	Н	Peak	41.09	-13.42	27.67	43.50	-15.83
218.18	Н	Peak	45.27	-14.99	30.28	46.00	-15.72
255.04	Н	Peak	45.43	-13.69	31.74	46.00	-14.26
293.84	Н	Peak	49.53	-13.19	36.34	46.00	-9.66

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 122 of 167

## Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode TX CH High Test Date Nov. 15, 2009

Fundamental Frequency 5230MHz Test By Jim Temperature 25  $^{\circ}$ C Pol Ver./Hor

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Mar- gin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
36.79	V	Peak	50.28	-14.36	35.92	40.00	-4.08
64.92	V	Peak	44.36	-14.83	29.53	40.00	-10.47
101.78	V	Peak	44.05	-16.87	27.18	43.50	-16.32
255.04	V	Peak	44.05	-13.69	30.36	46.00	-15.64
293.84	V	Peak	50.51	-13.19	37.32	46.00	-8.68
667.29	V	Peak	37.79	-5.02	32.77	46.00	-13.23
36.79	Н	Peak	47.78	-14.36	33.42	40.00	-6.58
70.74	Н	Peak	44.21	-16.27	27.94	40.00	-12.06
218.18	Н	Peak	45.48	-14.99	30.49	46.00	-15.51
286.08	Н	Peak	48.60	-13.26	35.34	46.00	-10.66
293.84	Н	Peak	48.14	-13.19	34.95	46.00	-11.05
366.59	Н	Peak	40.67	-11.17	29.50	46.00	-16.50

## Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 123 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz) UNII

Operation Mode TX CH Low **Test Date** Nov. 15, 2009

Fundamental Frequency 5180MHz Test By Jim Temperature Pol Ver. 25 °C

60 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3445.0	40.62		1.89	42.51		74.00	54.00	-11.49	Peak
10360.0	24.09		17.47	41.56		75.00	54.00	-12.44	Peak
15540.0						74.00	54.00		
20720.0						74.00	54.00		
25900.0						74.00	54.00		
31080.0						74.00	54.00		
36260.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 124 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH Low Nov. 15, 2009 Operation Mode **Test Date** 

Fundamental Frequency 5180MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1435.0	52.15		-6.22	45.93		74.00	54.00	-8.07	Peak
10360.0	24.73		17.47	42.20		74.00	54.00	-11.80	Peak
15540.0						74.00	54.00		
20720.0						74.00	54.00		
25900.0						74.00	54.00		
31080.0						74.00	54.00		
36260.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 125 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH Mid Operation Mode Test Date Nov. 15, 2009

Fundamental Frequency 5220MHz Test By Jim Temperature Pol Ver 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3460.0	40.75		1.93	42.68		74.00	54.00	-11.32	Peak
10440.0	23.21		17.63	40.84		74.00	54.00	-13.16	Peak
15660.0						74.00	54.00		
20880.0						74.00	54.00		
26100.0						74.00	54.00		
31320.0						74.00	54.00		
36540.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 126 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH Mid Operation Mode Test Date Nov. 15, 2009

Fundamental Frequency 5220MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3460.0	42.14		1.93	44.07		74.00	54.00	-9.93	Peak
10440.0	24.77		17.63	42.40		75.00	54.00	-11.60	Peak
15660.0						74.00	54.00		
20880.0						74.00	54.00		
26100.0						74.00	54.00		
31320.0						74.00	54.00		
36540.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 127 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH High Nov. 15, 2009 Operation Mode **Test Date** 

Fundamental Frequency 5240MHz Test By Jim Temperature Pol Ver 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1435.0	47.85		-6.22	41.63		74.00	54.00	-12.37	Peak
10480.0	24.39		17.74	42.13		74.00	54.00	-11.87	Peak
15720.0						74.00	54.00		
20960.0						74.00	54.00		
26200.0						74.00	54.00		
31440.0						74.00	54.00		
36680.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 128 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode TX CH High Test Date Nov. 15, 2009

Fundamental Frequency 5240MHz Test By Jim Temperature 25  $^{\circ}$ C Pol Hor

Humidity 65 %

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3495.0	41.33		2.06	43.39		74.00	54.00	-10.61	Peak
10480.0	24.21		17.74	41.95		74.00	54.00	-12.05	Peak
15720.0						74.00	54.00		
20960.0						74.00	54.00		
26200.0						74.00	54.00		
31440.0						74.00	54.00		
36680.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 129 of 167

# Radiated Spurious Emission Measurement Result (above 1GHz) UNII HT20, Comp

Operation Mode TX CH Low Test Date Nov. 15, 2009

Fundamental Frequency 5180MHz Test By Jim Temperature 25  $^{\circ}$  Pol Ver.

Humidity 60 %

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3445.0	40.37		1.89	42.26		74.00	54.00	-11.74	Peak
10360.0	24.84		17.47	42.31		75.00	54.00	-11.69	Peak
15540.0						74.00	54.00		
20720.0						74.00	54.00		
25900.0						74.00	54.00		
31080.0						74.00	54.00		
36260.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 130 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH Low Nov. 15, 2009 Operation Mode **Test Date** 

Fundamental Frequency 5180MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1435.0	47.95		-6.22	41.73		74.00	54.00	-12.27	Peak
10360.0	24.43		17.47	41.90		74.00	54.00	-12.10	Peak
15540.0						74.00	54.00		
20720.0						74.00	54.00		
25900.0						74.00	54.00		
31080.0						74.00	54.00		
36260.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 131 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH Mid Operation Mode Test Date Nov. 15, 2009

Fundamental Frequency 5220MHz Test By Jim Temperature Pol Ver 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1995.0	44.82		-3.44	41.38		74.00	54.00	-12.62	Peak
10440.0	24.79		17.63	42.42		74.00	54.00	-11.58	Peak
15660.0						74.00	54.00		
20880.0						74.00	54.00		
26100.0						74.00	54.00		
31320.0						74.00	54.00		
36540.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 132 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH Mid Operation Mode Test Date Nov. 15, 2009

Fundamental Frequency 5220MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1435.0	49.98		-6.22	43.76		74.00	54.00	-10.24	Peak
10440.0	24.89		17.63	42.52		75.00	54.00	-11.48	Peak
15660.0						74.00	54.00		
20880.0						74.00	54.00		
26100.0						74.00	54.00		
31320.0						74.00	54.00		
36540.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 133 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH High Nov. 15, 2009 Operation Mode **Test Date** 

Fundamental Frequency 5240MHz Test By Jim Temperature Pol Ver 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3460.0	40.19		1.93	42.12		74.00	54.00	-11.88	Peak
10480.0	24.43		17.74	42.17		74.00	54.00	-11.83	Peak
15720.0						74.00	54.00		
20960.0						74.00	54.00		
26200.0						74.00	54.00		
31440.0						74.00	54.00		
36680.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 134 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH High Operation Mode **Test Date** Nov. 15, 2009

Fundamental Frequency 5240MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1435.0	52.06		-6.22	45.84		74.00	54.00	-8.16	Peak
10480.0	24.22		17.74	41.96		74.00	54.00	-12.04	Peak
15720.0						74.00	54.00		
20960.0						74.00	54.00		
26200.0						74.00	54.00		
31440.0						74.00	54.00		
36680.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 135 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz) UNII HT40, Comp

Operation Mode TX CH Low Test Date Nov. 15, 2009

Fundamental Frequency 5190MHz Test By Jim Temperature Pol Ver. 25 °C

60 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1245.0	47.38		-7.04	40.34		74.00	54.00	-13.66	Peak
10380.0	24.98		17.52	42.50		74.00	54.00	-11.50	Peak
15570.0						74.00	54.00		
20760.0						74.00	54.00		
25950.0						74.00	54.00		
31140.0						74.00	54.00		
36330.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 136 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH Low Nov. 15, 2009 Operation Mode **Test Date** 

Fundamental Frequency 5190MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1435.0	52.05		-6.22	45.83		74.00	54.00	-8.17	Peak
10380.0	24.59		17.52	42.11		74.00	54.00	-11.89	Peak
15570.0						74.00	54.00		
20760.0						74.00	54.00		
25950.0						74.00	54.00		
31140.0						74.00	54.00		
36330.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 137 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH High Nov. 15, 2009 Operation Mode **Test Date** 

Fundamental Frequency 5230MHz Test By Jim Temperature Pol Ver 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1985.0	45.44		-3.47	41.97		74.00	54.00	-12.03	Peak
10460.0	25.33		17.67	43.00		74.00	54.00	-11.00	Peak
15690.0						74.00	54.00		
20920.0						74.00	54.00		
26150.0						74.00	54.00		
31380.0						74.00	54.00		
36610.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 138 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH High Operation Mode **Test Date** Nov. 15, 2009

Fundamental Frequency 5230MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1435.0	51.85		-6.22	45.63		74.00	54.00	-8.37	Peak
10460.0	24.62		17.67	42.29		74.00	54.00	-11.71	Peak
15690.0						74.00	54.00		
20920.0						74.00	54.00		
26150.0						74.00	54.00		
31380.0						74.00	54.00		
36610.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 139 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH High Nov. 15, 2009 Operation Mode **Test Date** 

Fundamental Frequency 5240MHz Test By Jim Temperature Pol Ver 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3460.0	40.19		1.93	42.12		74.00	54.00	-11.88	Peak
10480.0	24.43		17.74	42.17		74.00	54.00	-11.83	Peak
15720.0						74.00	54.00		
20960.0						74.00	54.00		
26200.0						74.00	54.00		
31440.0						74.00	54.00		
36680.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 140 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz)

TX CH High Operation Mode **Test Date** Nov. 15, 2009

Fundamental Frequency 5240MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1435.0	52.06		-6.22	45.84		74.00	54.00	-8.16	Peak
10480.0	24.22		17.74	41.96		74.00	54.00	-12.04	Peak
15720.0						74.00	54.00		
20960.0						74.00	54.00		
26200.0						74.00	54.00		
31440.0						74.00	54.00		
36680.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency o
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 141 of 167

# Radiated Spurious Emission Measurement Result (below 1GHz) UNII HT20 (Worse case)

Operation Mode **RX CH Low** Test Date Nov. 15, 2009

Fundamental Frequency 5180MHz Test By Jim Temperature Pol Ver./Hor 25 °C

65 % Humidity

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
36.79	V	Peak	50.90	-14.36	36.54	40.00	-3.46
62.98	V	Peak	45.35	-14.85	30.50	40.00	-9.50
90.14	V	Peak	46.81	-17.62	29.19	43.50	-14.31
101.78	V	Peak	45.69	-16.87	28.82	43.50	-14.68
177.44	V	Peak	41.71	-14.38	27.33	43.50	-16.17
245.34	V	Peak	38.71	-13.98	24.73	46.00	-21.27
39.70	Н	Peak	45.36	-13.73	31.63	40.00	-8.37
58.13	H	Peak	40.61	-14.66	25.95	40.00	-14.05
67.83	Н	Peak	42.17	-15.60	26.57	40.00	-13.43
245.34	Н	Peak	43.94	-13.98	29.96	46.00	-16.04
606.18	Н	Peak	40.63	-5.88	34.75	46.00	-11.25
659.53	Н	Peak	40.06	-4.99	35.07	46.00	-10.93

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 142 of 167

## **Radiated Spurious Emission Measurement Result (below 1GHz)**

Operation Mode RX CH Mid Test Date Nov. 15, 2009

Fundamental Frequency 5220MHz Test By Jim Temperature 25  $^{\circ}$ C Pol Ver./Hor

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	<b>Actual FS</b>	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
36.79	V	Peak	51.61	-14.36	37.25	40.00	-2.75
64.92	V	Peak	45.45	-14.83	30.62	40.00	-9.38
90.14	V	Peak	46.92	-17.62	29.30	43.50	-14.20
101.78	V	Peak	47.18	-16.87	30.31	43.50	-13.19
182.29	V	Peak	42.67	-14.67	28.00	43.50	-15.50
627.52	V	Peak	34.35	-5.43	28.92	46.00	-17.08
40.67	Н	Peak	43.94	-13.74	30.20	40.00	-9.80
58.13	Н	Peak	40.10	-14.66	25.44	40.00	-14.56
67.83	Н	Peak	41.25	-15.60	25.65	40.00	-14.35
150.28	Н	Peak	37.29	-12.83	24.46	43.50	-19.04
245.34	Н	Peak	44.42	-13.98	30.44	46.00	-15.56
653.71	Н	Peak	39.99	-4.97	35.02	46.00	-10.98

## Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attentio is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 143 of 167

## Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode RX CH High Test Date Nov. 15, 2009

Fundamental Frequency 5240MHz Test By Jim Temperature 25  $^{\circ}\text{C}$  Pol Ver./Hor

Humidity 65 %

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
36.79	V	Peak	50.51	-14.36	36.15	40.00	-3.85
62.98	V	Peak	45.53	-14.85	30.68	40.00	-9.32
90.14	V	Peak	46.23	-17.62	28.61	43.50	-14.89
101.78	V	Peak	44.75	-16.87	27.88	43.50	-15.62
180.35	V	Peak	41.34	-14.55	26.79	43.50	-16.71
647.89	V	Peak	33.49	-4.99	28.50	46.00	-17.50
38.73	Н	Peak	44.78	-13.84	30.94	40.00	-9.06
58.13	Н	Peak	39.51	-14.66	24.85	40.00	-15.15
70.74	Н	Peak	41.73	-16.27	25.46	40.00	-14.54
150.28	Н	Peak	37.29	-12.83	24.46	43.50	-19.04
247.28	Н	Peak	42.99	-13.93	29.06	46.00	-16.94
647.89	Н	Peak	38.63	-4.99	33.64	46.00	-12.36

## Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attentio is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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/2009/A0040 Issue Date: Nov. 30, 2009

Page 144 of 167

## Radiated Spurious Emission Measurement Result (above 1GHz) UNII HT20 (Worse case)

Operation Mode RX CH Low Test Date Nov. 15, 2009

Fundamental Frequency 5180MHz Test By Jim Temperature 25  $^{\circ}$ C Pol Ver.

Humidity 65 %

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3460.0	40.56		1.92	42.48		74.00	54.00	-11.52	Peak
10360.0	24.48		17.47	41.95		74.00	54.00	-12.05	Peak
15540.0						74.00	54.00		
20720.0						74.00	54.00		
25900.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 145 of 167

### Radiated Spurious Emission Measurement Result (above 1GHz)

RX CH Low Nov. 15, 2009 Operation Mode **Test Date** 

Fundamental Frequency 5180MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3460.0	42.16		1.93	44.09		74.00	54.00	-9.91	Peak
10360.0	25.79		17.47	43.26		74.00	54.00	-10.74	Peak
15540.0						74.00	54.00		
20720.0						74.00	54.00		
25900.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental fre-
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 146 of 167

### Radiated Spurious Emission Measurement Result (above 1GHz)

RX CH Mid Nov. 15, 2009 Operation Mode Test Date

Fundamental Frequency 5220MHz Test By Jim Temperature Pol Ver 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3502.0	34.04		2.06	36.10		74.00	54.00	-17.90	Peak
10440.0	22.94		17.63	40.57		74.00	54.00	-13.43	Peak
15660.0						74.00	54.00		
21000.0						74.00	54.00		
26100.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental fre-
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 147 of 167

### Radiated Spurious Emission Measurement Result (above 1GHz)

RX CH Mid Nov. 15, 2009 Operation Mode **Test Date** 

Fundamental Frequency 5220MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3502.0	42.44		1.93	44.37		74.00	54.00	-9.63	Peak
10440.0	23.79		17.63	41.42		74.00	54.00	-12.58	Peak
15660.0						74.00	54.00		
21000.0						74.00	54.00		
26100.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental fre-
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 148 of 167

### Radiated Spurious Emission Measurement Result (above 1GHz)

RX CH High Nov. 15, 2009 Operation Mode Test Date

Fundamental Frequency 5240MHz Test By Jim Temperature Pol Ver 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3460.0	41.67		1.93	43.60		74.00	54.00	-10.40	Peak
10480.0	23.31		17.74	41.05		74.00	54.00	-12.95	Peak
15720.0						74.00	54.00		
20960.0						74.00	54.00		
26200.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental fre-
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 149 of 167

### Radiated Spurious Emission Measurement Result (above 1GHz)

RX CH High Nov. 15, 2009 Operation Mode Test Date

Fundamental Frequency 5240MHz Test By Jim Temperature Pol Hor 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3460.0	43.48		1.93	45.41		74.00	54.00	-8.59	Peak
10480.0	23.40		17.74	41.14		74.00	54.00	-12.86	Peak
15720.0						74.00	54.00		
20960.0						74.00	54.00		
26200.0						74.00	54.00		

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental fre-
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

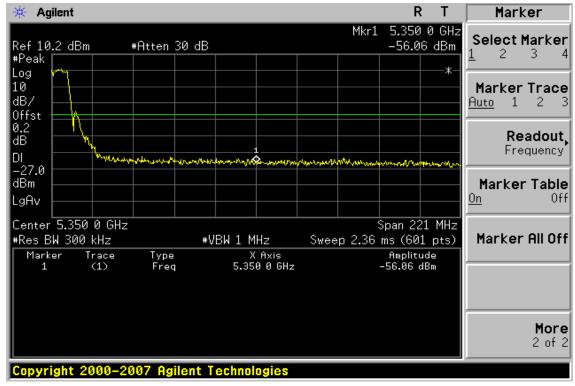
Page 150 of 167

### **UNII**

# **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. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 151 of 167

### **Radiated Emission:**

Operation Mode TX CH Low Test Date Nov. 15, 2009

Fundamental Frequency 5180 MHz Test By Jim Tmperature 25  $^{\circ}$ C Pol Ver.

Humidity 65 %

	Peak	$\mathbf{AV}$		Actu	ıal FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBu V/n	<b>n</b> ) ( <b>dB</b> )	
5150.00	49.85	38.56	6.76	56.61	45.32	74.00	54.00	-8.68	AV
Operation 1	Mode	TX C	H Low			Test	Date	Nov. 15, 2	009
Fundament	tal Frequer	ncy 5180	MHz			Test	By	Jim	
Temperatu	re	25 °C				Pol		Hor.	
Humidity		65 %							

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	( <b>dB</b> )	
5150.00	50.19	41.25	6.76	56.95	48.01	74.00	54.00	-5.99	ΑV

### Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attentio is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

Member of SGS Group



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 152 of 167

### **Radiated Emission:**

Operation Mode TX CH High Test Date Nov. 15, 2009

Fundamental Frequency 5240MHz Test By Jim Temperature 25  $^{\circ}$ C Pol Ver.

Humidity 65 %

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBu V/n	<b>1</b> ) ( <b>dB</b> )	
5350.00	49.32	38.76	7.18	56.50	45.94	74.00	54.00	-8.06	AV
Operation :			CH High MHz			Test Test		Nov. 15, 2 Jim	.009
Temperatu	re	25 °C				Pol	J	Hor.	
Humidity		65 %							

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	( <b>dB</b> )	
5350.00	49.51	40.38	7.18	56.69	47.56	74.00	54.00	-6.44	ΑV

### Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

ranks rest report is issued by the Company drider is defined to service which is available on request or accessible at <a href="http://www.sgs.com/remrs and Conditions.nim">http://www.sgs.com/remrs and Conditions.nim</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan. / 台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.sgs.com.tw

Member of SGS Group



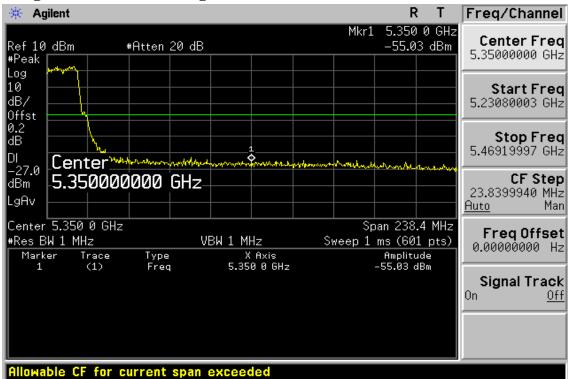
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 153 of 167

# UNII HT20, Chain 0 **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. This test report cannot be reproduced, except in full, without prior written permission of the



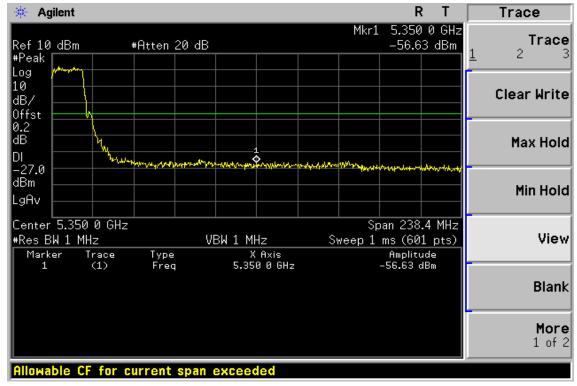
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 154 of 167

# UNII HT20, Chain 1 **Band Edges Test Data CH-Low**



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



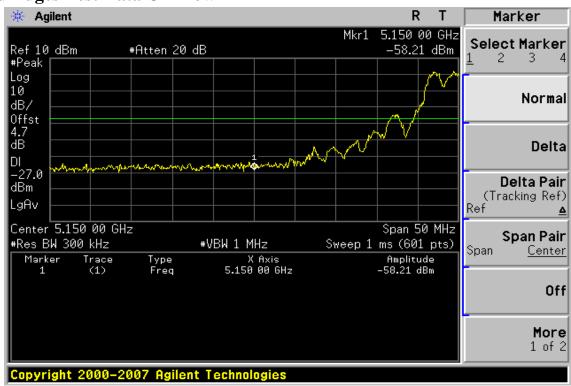
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



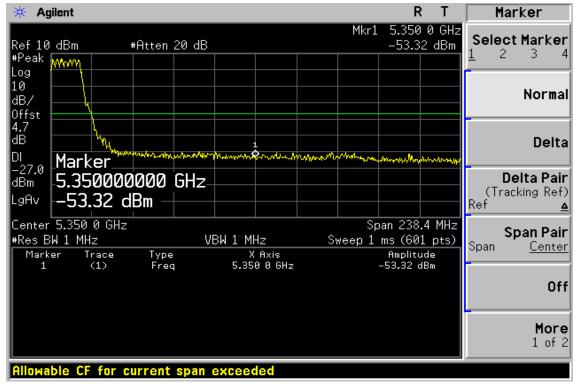
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 155 of 167

# UNII HT20, Comp **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. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 156 of 167

### **Radiated Emission: HT20**

Operation Mode TX CH Low Test Date Nov. 15, 2009

Fundamental Frequency 5180MHz Test By Jim Tmperature 25  $^{\circ}$ C Pol Ver.

Humidity 65 %

	Peak	$\mathbf{AV}$		Acti	ual FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m	) (dBuV/m)	(dBuV/m)	(dBuV/r	<b>n</b> ) ( <b>dB</b> )	
5150.00	50.54	40.89	6.76	57.30	47.65	74.00	54.00	-6.35	AV
Operation 1	Mode	TX C	H Low			Tes	Date	Nov. 15, 2	009
Fundament	al Frequer	ncy 5180	MHz			Test	By	Jim	
Temperatu	re	25 °C				Pol		Hor.	
Humidity		65 %							

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	( <b>dB</b> )	
5150.00	50.42	41.39	6.76	57.18	48.15	74.00	54.00	-5.85	ΑV

### Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

ranks rest report is issued by the Company drider is defined to service which is available on request or accessible at <a href="http://www.sgs.com/remrs and Conditions.nim">http://www.sgs.com/remrs and Conditions.nim</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan. / 台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.sgs.com.tw

Member of SGS Group



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 157 of 167

### **Radiated Emission: HT20**

Nov. 15, 2009 Operation Mode TX CH High Test Date

Fundamental Frequency 5240 MHz Test By Jim Pol Ver. Temperature 25 °C

65 % Humidity

	Peak	$\mathbf{AV}$		Actu	ıal FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBu V/n	(dB)	
5350.00	50.49	39.55	7.18	57.67	46.73	74.00	54.00	-7.27	AV
Operation 1	Mode	TX C	H High			Test	Date	Nov. 15, 2	009
Fundament	tal Frequer	ncy 5240	MHz			Test	By	Jim	
Temperatu	re	25 °C				Pol		Hor.	
Humidity		65 %							

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m	( <b>dB</b> )	
5350.00	50.59	41.03	7.18	57.77	48.21	74.00	54.00	-5.79	ΑV

### Remark:

- Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

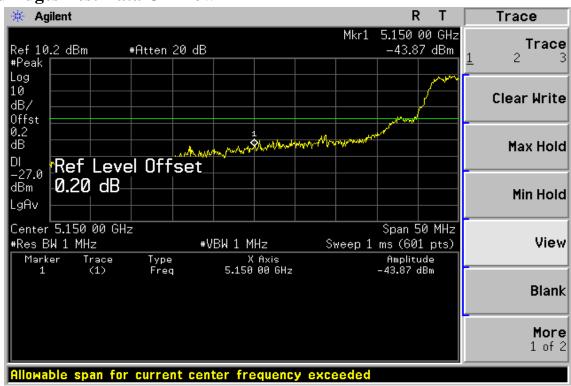
is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The 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. 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.



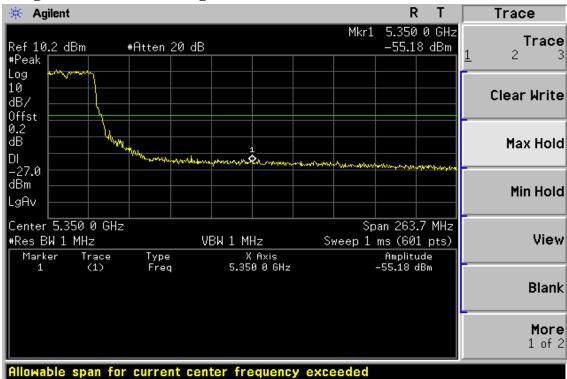
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 158 of 167

# **UNII HT40 Chain 0 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. This test report cannot be reproduced, except in full, without prior written permission of the



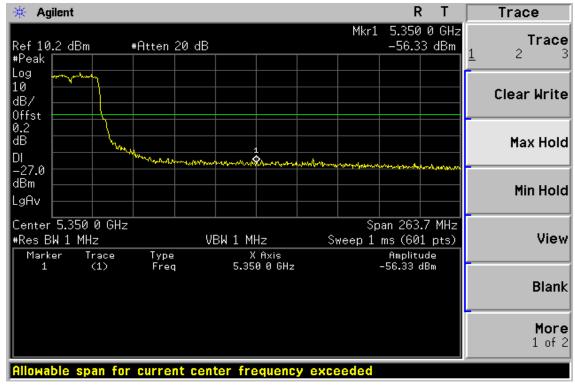
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 159 of 167

# **UNII HT40 Chain 1 Band Edges Test Data CH-Low**



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



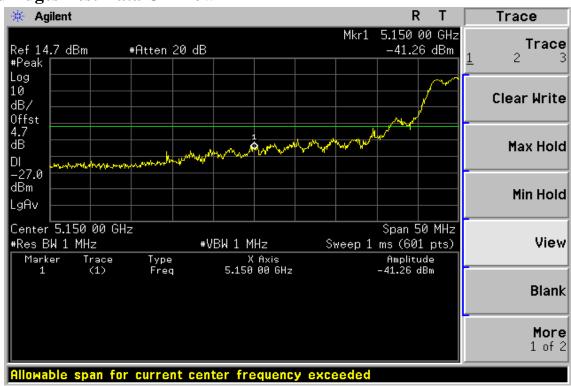
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



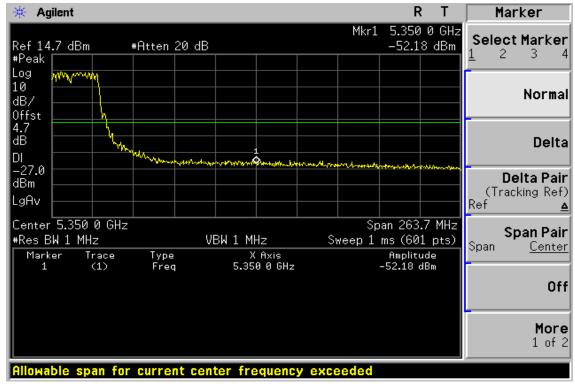
Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 160 of 167

# **UNII HT40 Comp 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. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 161 of 167

### **Radiated Emission: HT40**

Operation Mode TX CH Low Test Date Nov. 15, 2009

Fundamental Frequency 5190MHz Test By Jim Tmperature 25  $^{\circ}$ C Pol Ver.

Humidity 65 %

	Peak	$\mathbf{AV}$		Actu	ıal FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBu V/n	<b>n</b> ) ( <b>dB</b> )	
5150.00	50.32	41.31	6.76	57.08	48.07	74.00	54.00	-5.93	AV
Operation 1	Mode	TX C	H Low			Test	Date	Nov. 15, 2	009
Fundament	tal Frequer	ncy 5190	MHz			Test	By	Jim	
Temperatu	re	25 °C				Pol		Hor.	
Humidity		65 %							

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
5150.00	51.29	42.43	6.76	58.05	49.19	74.00	54.00	-4.81	ΑV

### Remark:

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms\_and\_conditions.htm">http://www.sgs.com/terms\_and\_conditions.htm</a>. Attention

This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attentio is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report 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. 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.

Member of SGS Group



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 162 of 167

**Radiated Emission: HT40** 

Nov. 15, 2009 Operation Mode TX CH High Test Date

Fundamental Frequency 5230 MHz Test By Jim Pol Ver. Temperature 25 °C

Humidity 65 %

	Peak	$\mathbf{AV}$		Actu	al FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	dBuV/m	( <b>dB</b> )	
5350.00	49.62	40.28	7.18	56.80	47.46	74.00	54.00	-6.54	AV
Operation 1	Mode	TX C	H High			Test	Date	Nov. 15, 2	009
Fundament	tal Frequer	ncy 5230	MHz			Test	By	Jim	
Temperatu	re	25 °C	· ·			Pol		Hor.	
Humidity		65 %							

	Peak	$\mathbf{AV}$		Actu	ıal FS	Peak	$\mathbf{AV}$		
Freq.	Reading	Reading	Ant./CL	Peak	$\mathbf{AV}$	Limit	Limit	Margin	Remark
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m	)(dBuV/m)	(dB)	
5350.00	49.65	41.37	7.18	56.83	48.55	74.00	54.00	-5.45	ΑV

### Remark:

- Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (3) Spectrum Peak Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
- (4) Spectrum AV Setting: 1GHz-40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 163 of 167

#### **12.** TRANSMISSION IN THE ABSENCE OF DATA

### 12.1 Standard Applicable

According to §15.407(c)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

### According to RSS-210 A9.5

The device shall automatically discontinue transmission in case of absence of information to transmit, or operational failure. A description on how this is done shall accompany the application for equipment certification. Note that this is not intended to prohibit transmission of control or signalling information or the use of repetitive codes where required by the technology.

### **12.2 Result:**

No non-compliance noted:

Refer to the theory of operation.



Report No.: ER/2009/A0040 Issue Date: Nov. 30, 2009

Page 164 of 167

## 13. FREQUENCY STABILITY

### 13.1 Standard Applicable

According to §15.407 (g) Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

### According to A9.5

(5) The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual.

### **13.2** Result:

No non-compliance noted:

±20ppm ppm was defined in product specification.



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 165 of 167

### 14. ANTENNA REQUIREMENT

### 14.1 Standard Applicable

According to §15.203, Antenna requirement.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

### 14.2 Antenna Connected Construction

The directional gins of antenna used for transmitting is -0.22dBi for 2.4GHz, 5.53dBi for 5GHz, 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. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 166 of 167

### 15. Maximum Permissible Exposure (MPE)

## 15.1Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range	Electric Field	Magnetic Field	Power Density	Averaging Time			
(MHz)	Strength (V/m)	Strength (A/m)	$(mW/cm^2)$	(minute)			
Limits for General Population/Uncontrolled Exposure							
0.3-1.34	614	1.63	*(100)	30			
1.34-30	824/f	2.19/f	$*(180/f^2)$	30			
30-300	27.5	0.073	0.2	30			
300-1500	/	/	F/1500	30			
1500-15000	/	/	1.0	30			

F = frequency in MHz

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明,此報告結果僅對測試之樣品負責。本報告未經本公司書面許可,不可部份複製。
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at <a href="http://www.sgs.com/terms">http://www.sgs.com/terms</a> and conditions.htm. Attention

<sup>\* =</sup> Plane-wave equipment power density



Report No.: ER/2009/A0040 **Issue Date: Nov. 30, 2009** 

Page 167 of 167

### 15.2 Maximum Permissible Exposure (MPE) Evaluation

### The worse case of UNII mode Power Table

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
5180.00	14.03	0.00	14.03	0.02529	1
5220.00	14.00	0.00	14.00	0.02512	1
5240.00	14.03	0.00	14.03	0.02529	1

### MPE Prediction (802.11a)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

 $S=PG/4 \pi R^2$ 

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal:	14.03	(dBm)
Maximum peak output power at antenna input terminal:	25.29297996	(mW)
Duty cycle:	100	(%)
Maximum Pav :	25.29297996	(mW)
Antenna gain (typical):	5.53	(dBi)
Maximum antenna gain:	3.572728382	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5180	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0179867	(mW/cm^2)

### **Measurement Result**

The predicted power density level at 20 cm is 0.01799 mW/cm<sup>2</sup>. This is below the uncontrolled exposure limit of 1 mW/cm<sup>2</sup> at 5180MHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the