

1111

# **ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT**

# INTENTIONAL RADIATOR CERTIFICATION TO **FCC PART 15 SUBPART C REQUIREMENT**

	OF
Product Name:	PeopleNet Connected Tablet
Brand Name:	PeopleNet
Model No.:	MS5
Model Difference:	N/A
FCC ID:	NKS-MS5N2
Report No.:	E2/2015/10035-03
Issue Date:	Aug. 22, 2018
FCC Rule Part:	§15.247, Cat: DTS
Prepared for:	PEOPLENET 4400 Baker Road, Minnetonka, MN 55343, USA
Prepared by:	SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333
BIS OF TAFE	<b>Note:</b> This report shall not be reproduced except in full, without the written approval of SGS Taiwan Ltd. This document may be altered or revised by SGS Taiwan Ltd. personnel only, and shall be noted in the revision section of the document.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



# VERIFICATION OF COMPLIANCE

Applicant:	PEOPLENET 4400 Baker Road, Minnetonka, MN 55343, USA
Product Name:	PeopleNet Connected Tablet
Brand Name:	PeopleNet
Model No.:	MS5
Model Difference:	N/A
FCC ID:	NKS-MS5N2
File Number:	E2/2015/10035-03
Date of test:	Jan. 30, 2015 ~ Mar. 11, 2015
Date of EUT Received:	Jan. 30, 2015

## 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 C63.4:2014 the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.247.

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

Test By:	Vite, 1	Pe	Date	Aug. 22, 2018	
_	Vito Pei / En	gineer			
Prepared By:	Yuni -	Isai	Date	Aug. 22, 2018	
 Approved By: 	Yuri Tsai / Jim Chang / M	h ang	Date	Aug. 22, 2018	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留切天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sqs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



# **Revision History**

Report Number	Revision	Description	Issue Date
E2/2015/10035-01	Rev.00	Initial creation of document	Jan. 04, 2017
E2/2015/10035-02	Rev.01	Change Tablet Docking Station	Jul. 30, 2018
E2/2015/10035-03	Rev.02	Change of NFC Chip	Aug. 22, 2018

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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



## **Table of Contents**

1	GENERAL INFORMATION	5
2	SYSTEM TEST CONFIGURATION	9
3	SUMMARY OF TEST RESULTS	11
4	DESCRIPTION OF TEST MODES	12
5	MEASUREMENT UNCERTAINTY	13
6	CONDUCTED EMISSION TEST	14
7	PEAK OUTPUT POWER MEASUREMENT	18
8	6dB BANDWIDTH	25
9	BAND EDGES MEASUREMENT	32
10	SPURIOUS EMISSION TEST	52
11	PEAK POWER SPECTRAL DENSITY	82
12	ANTENNA REQUIREMENT	89

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



#### **GENERAL INFORMATION** 1

## 1.1 Product description

General:

Product Name:	PeopleNet Connected Tablet				
Brand Name:	PeopleNet				
Model No.:	MS5				
Model difference:	By customer	named			
Hardware Version:	N/A				
Software Version:	N/A				
Tablet Docking Station:	Model No.: MS-57603, Supplier: MSI				
Power Cable	P/N: L016-0576, Supplier: ELECTRI-CORD MFG.CO.				
Power Supply:	7.4Vdc from LITHIUM-ION rechargeable battery or 12/24Vdc from DC Car battery				
	Battery:	Model No.: MS5760 , Supplier: Getac			

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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



#### WLAN 2.4GHz:

Wi-Fi	Frequency Range	Chan- nels	Rated Power (Peak)	Modulation Technology	
11b/g	2412-2462	11	b: 19.23dBm g: 21.10dBm	DSSS OFDM	
11n (2.4GHz )	HT20 2412-2462	11	n: 20.75dBm	OFDM	
Antenna	a Designation:		PIFA Antenna, Antenna Gain: 0.76dBi.		
Modula	tion type		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM		
Transiti	on Rate:		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 – 65Mbps		

This report applies for WLAN, and complies with FCC rule part 15C.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



### IEEE 802.11n Spec:

MCS	MCS				NG	DDO	ND			Datarat	e(Mbps)	
Index	Nss	Modulation	R	NBPSC	NC	BPS	ND	BPS	800	nsGI	400nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.200	15
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.400	30
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.700	45
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.900	60
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.300	90
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.800	120
6	1	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.000	135
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.200	150

Symbol	Explanation			
NSS	Number of spatial streams			
R	Code rate			
NBPSC	Number of coded bite per single carrier			
NCBPS	Number of coded bite per symbol			
NDBPS	Number of data bite per symbol			
GI	Guard interval			

### 802.11n HT20 MCS8 -15

MCG								Data rate (Mb/s)		
MCS Index	Modulation	R	N <sub>BPSCS</sub> (i <sub>SS</sub> )	N <sub>SD</sub>	N <sub>SP</sub>	N <sub>CBPS</sub>	N <sub>DBPS</sub>	800 ns GI	400 ns GI (see NOTE)	
8	BPSK	1/2	1	52	4	104	52	13.0	14.4	
9	QPSK	1/2	2	52	4	208	104	26.0	28.9	
10	QPSK	3/4	2	52	4	208	156	39.0	43.3	
11	16-QAM	1/2	4	52	4	416	208	52.0	57.8	
12	16-QAM	3/4	4	52	4	416	312	78.0	86.7	
13	64-QAM	2/3	6	52	4	624	416	104.0	115.6	
14	64-QAM	3/4	6	52	4	624	468	117.0	130.0	
15	64-QAM	5/6	6	52	4	624	520	130.0	144.4	
NOTE-T	The 400 ns GI rate	values	are rounded to 1	decima	l place.					

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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

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

This submittal(s) (test report) is intended for FCC ID: NKS-MS5N2 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules. The composite system (digital device) is compliance with Subpart B under the DoC procedure.

#### 1.3 **Test Methodology**

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4:2014 and ANSI C63.10:2013. Radiated testing was performed at an antenna to EUT distance 3 meters.

Tested in accordance with Jun 2014 KDB558074 D01 V03r02 ompliance to FCC 47CFR 15.247 requirements.

#### 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.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan, which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2014 & ANSI C63.10:2013. FCC Registration Number is: 628985, Canada Registration Number: 4620A-4.

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Township, Taoyuan County, Taiwan which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. FCC Registration Number: 735305 / TW0002.

#### 1.5 Special Accessories

There are no special accessories used while test was conducted.

#### **Equipment Modifications** 1.6

There was no modification incorporated into the EUT.

Weif S date weight and the results and the results and set of the results and results Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

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



#### SYSTEM TEST CONFIGURATION 2

#### **EUT Configuration** 2.1

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

### 2.2 EUT Exercise

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

#### 2.3 Test Procedure

### 2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the general criterion in Section 7.1 of ANSI C63.4:2014 & 6.2 ANSI C63.10:2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz, and the measurement procedure 7.3 in ANSI C63.4:2014 & 6.2.2, and 6.2.3 in ANSI C63.10:2013 is followed to carry out the test. The CISPR Quasi-Peak and Average detector mode is employed according to §15.107

#### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna. according to the requirements Section 8 and 13 and of ANSI C63.4:2014, & Section 6.3, 6.4, 6.5, and 6.6 of ANSI C63.10:2013.

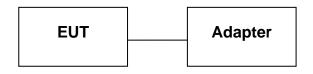
Weif S date weight and the results and the results and set of the results and results Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

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



## 2.4 Configuration of Tested System

## Fig. 2-1 Radiated Emission & Conduction Emission Configuration



### Fig. 2-2 Conducted (Antenna Port) Configuration



Table 2-1 Equipment Used in Tested System

ltem	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2.	Notebook	Lenovo	L430	R9-YYG88	N/A	Unshielded

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



#### SUMMARY OF TEST RESULTS 3

FCC Rules	Description Of Test	Result
§15.207(a)	AC Power Line Conducted Emis- sion	Compliant
§15.247(b) (3)	Peak Output Power	Compliant
§15.247(a)(2)	6dB Bandwidth	Compliant
§15.247(d)	100 KHz Bandwidth Of Frequency Band Edges	Compliant
§15.247(d)	Spurious Emission	Compliant
§15.247(e)	Peak Power Density	Compliant
§15.203	Antenna Requirement	Compliant

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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



## 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.

802.11 b mode: Channel low (2412MHz), mid (2437MHz) and high (2462MHz) with 1Mbps lowest data rate are chosen for full testing.

802.11 g mode: Channel low (2412MHz), mid (2437MHz) and high (2462MHz) with 6Mbps lowest data rate are chosen for full testing.

802.11 n\_20MHz mode: Channel low (2412MHz), mid (2437MHz) and high (2462MHz) with 6.5Mbps lowest data rate are chosen for full testing.

The worst case is determined by the output power that generates the highest emission. As examined in the section of output power measurement, the section 7.5, the lowest data rate at b/g/n resulted the highest level of fundamental emission, and therefore, the lowest data rate is chosen as the worst-case to conduct the remaining of other mandatory test cases.

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 802.11b/g/n WLAN Transmitter for channel Low, Mid and High, the worst case E2 Position was tested as resulted in pre-scanned measurement with respect to 2.4GHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

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



#### **MEASUREMENT UNCERTAINTY** 5

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

Radiated Spurious Emission:

	30MHz - 180MHz: +/- 3.37dB
Macaurament uncortainty	180MHz -417MHz: +/- 3.19dB
Measurement uncertainty (Polarization : <b>Vertical</b> )	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

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

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. SGS Taiwan Ltd.



## **6 CONDUCTED EMISSION TEST**

## 6.1 Standard Applicable:

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

Frequency range	Limits 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									
1. The lower limit shall apply at the	1. The lower limit shall apply at the transition frequencies								
2 The limit decreases linearly wit	h the logarithm of the frequency in	the range 0.15 MHz to 0.50							

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

## 6.2 Measurement Equipment Used:

Conducted Emission Test Site													
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.								
TYPE		NUMBER	NUMBER	CAL.									
EMI Test Receiver	R&S	ESCI 3	101311	06/20/2014	06/19/2015								
Coaxial Cables	N/A	N30N30-1042-150 cm	N/A	01/06/2015	01/07/2016								
LISN Schwarz beck		NSLK 8127	8127-648	06/10/2014	06/09/2015								
LISN Rolf-Hein		NNB-2/16Z	99012	03/26/2014	03/25/2015								
Test Software	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.								

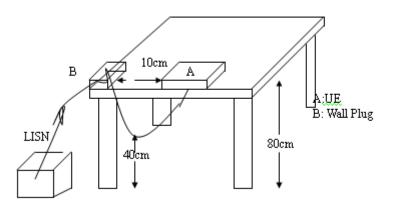
### 6.3 EUT Setup:

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4:2014.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions of Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is analwing the fullest extent of the law. SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



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



#### 6.5 Measurement Procedure:

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all phases of power being supplied by given UE are completed

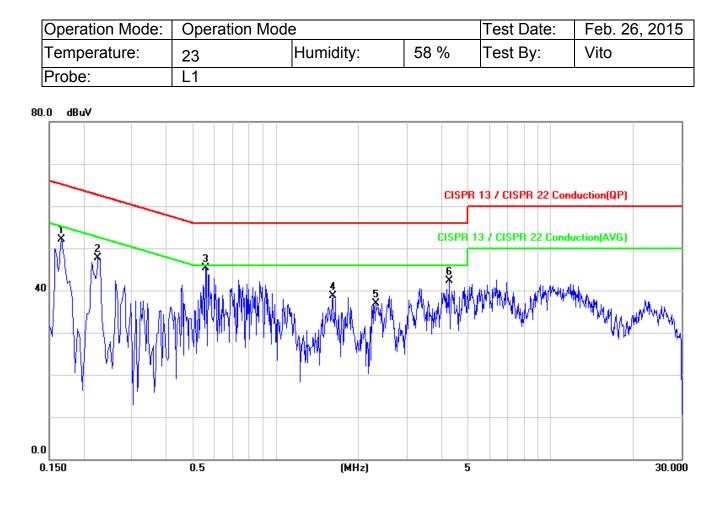
#### **Measurement Result:** 6.6

Note: Refer to next page for measurement data and plots. Note2: The \* reveals the worst-case results that closet to the limit

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sqs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms\_e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



## AC POWER LINE CONDUCTED EMISSION TEST DATA



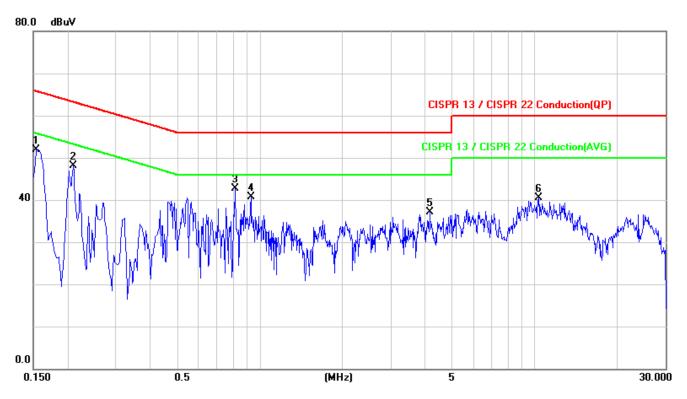
No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Comment
		(MHz)	dBuV	(dB)	(dBuV)	(dBuV)	(dB)		
1		0.1660	52.15	0.05	52.20	65.16	-12.96	peak	
2		0.2260	47.72	0.05	47.77	62.60	-14.83	peak	
- 3	*	0.5580	45.17	0.20	45.37	56.00	-10.63	peak	
4		1.6140	38.24	0.45	38.69	56.00	-17.31	peak	
- 5		2.3180	36.43	0.51	36.94	56.00	-19.06	peak	
6		4.2860	41.89	0.50	42.39	56.00	-13.61	peak	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Cleart's intervention. Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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



Operation Mode:	Operation Mode	е	Test Date:	Feb. 26, 2015	
Temperature:	23	Humidity:	58 %	Test By:	Vito
Probe:	Ν	•		•	



No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Comment
		(MHz)	dBuV	(dB)	(dBuV)	(dBuV)	(dB)		
1		0.1540	51.84	0.05	51.89	65.78	-13.89	peak	
2		0.2100	48.04	0.04	48.08	63.21	-15.13	peak	
3	*	0.8140	42.47	0.30	42.77	56.00	-13.23	peak	
4		0.9300	40.35	0.34	40.69	56.00	-15.31	peak	
- 5		4.1660	36.51	0.51	37.02	56.00	-18.98	peak	
6		10.3620	39.97	0.47	40.44	60.00	-19.56	peak	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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



## 7 PEAK OUTPUT POWER MEASUREMENT

## 7.1 Standard Applicable:

According to §15.247 (b)

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

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

Conducted Emission Test Site												
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.							
TYPE		NUMBER	NUMBER	CAL.								
Spectrum Analyzer	Agilent	N9010A	MY53400256	10/15/2014	10/14/2015							
Power Meter	Anritsu	ML2496A	1326001	06/21/2014	06/20/2015							
Power Sensor	Anritsu	MA2411B	1315048	06/21/2014	06/20/2015							
Power Sensor	Anritsu	MA2411B	1315049	06/21/2014	06/20/2015							
Coaxial Cable 30cm	WOKEN	00100A1F1A1 95C	RF01	12/19/2014	12/18/2015							
DC Block	PASTERNACK	PE8210	RF29	12/19/2014	12/18/2015							
Splitter	RF-LAMBAD	RFLT2W1G18 G	RF35	12/19/2014	12/18/2015							
Attenuator	WOKEN	218FS-10	RF23	12/19/2014	12/18/2015							
DC Power Supply	Agilent	E3640A	MY53140006	05/31/2014	05/30/2015							

### 7.2 Measurement Equipment Used:

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

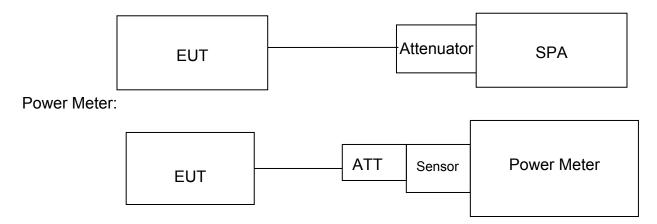
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

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



### 7.3 Test Set-up:

Spectrum:



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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



### 7.4 Measurement Procedure:

1. Place the EUT on the table and set it in transmitting mode.

2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter or spectrum. (Peak power setting on Spectrum: Channel power function, RBW = 1MHz, VBW = 3MHz, Span: 30/60MHz, Detector =peak, Sweep = Auto.

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

3. Record the max. Reading as observed from Spectrum or Power Meter.

4. Repeat above procedures until all frequency of interest measured was complete.

### Formula:

Duty Cycle = Ton / (Ton+Toff)

### Test Procedure:

Set span = 0, RBW = 8MHz, VBW = 8MHz, Detector = Peak Duty Cycle:

	Duty Cycle	Duty Factor (dBm)
802.11b	0.985	0.07
802.11g	0.986	0.06
802.11n_20 (2.4G)	0.985	0.07

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

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



## **Duty Factor:**

#### 802.11 b

	ctrum Ar	nalyzer - Swep										
CM RL	RF	50 Ω	DC				SE:INT	Avg	ALIGN AUTO Type: Log-Pwr	TR	7 PM Feb 12, 2015 ACE 1 2 3 4 5 (	Frequency
10 dB/div		Offset 11. 5 30.00 d		PNO: Fas IFGain:Lo		#Atten: 30			1		1.330 ms 0.85 dB	Auto Tune
20.0 10.0 0.00	~~y.n	eliya Mara	"Xr	u.	≜ <sub>4</sub> ⊷ <sub>24</sub> 6		بىرارمى <u>،</u>	-	www.	www	3∆4 1	Center Freq 2.437000000 GHz
-10.0 -20.0 -30.0												Start Freq 2.437000000 GHz
-40.0 -50.0 -60.0												Stop Freq 2.437000000 GHz
Center 2. Res BW 8	3 MH	Z	Hz	#	VBW	8.0 MHz		JNCTION	Sweep	2.000 m	Span 0 Hz s (401 pts)	
1 Δ2 1 2 F 1 3 Δ4 1 4 F 1 5 6	t t	(Δ) (Δ)		1.310 ms 455.0 µs 1.330 ms 455.0 µs	; ; ; ; (A)	1.31 c 14.45 dB 0.85 c 14.45 dB	IB m IB	INCTION .	PONCTION WOTP	PONC		Freq Offset 0 Hz
7 8 9 10 11												
MSG 🤳 Aligr	ment	Complete	d						STATU	IS		

### 802.11 g

📕 Agilent Spec	ctrum Analyzer -	Swept SA							
CM RL	RF	50 Q DC		SENSE		ALIGN AUTO		1 Feb 12, 2015	Frequency
			PNO: Fast HIFGain:Low	Trig: Free R #Atten: 30 d	un	g type. Logit in	TYPE	PNNNN	
10 dB/div	Ref Offse Ref 30.0	t 11.05 dB 00 dBm					ΔMkr3 1.4 -0	415 ms ).30 dB	Auto Tune
20.0 10.0 0.00	penantere	X	mphoneth	nadar Manural V	Warner	๛๛๛๛๛		3 <u>∆4</u> 	Center Freq 2.437000000 GHz
-10.0 -20.0 -30.0									Start Freq 2.437000000 GHz
-40.0 -50.0 -60.0									Stop Freq 2.437000000 GHz
Center 2. Res BW 8	43700000 3 MHz	0 GHz	#VB	W 8.0 MHz		Sweep	Sp 2.000 ms	pan 0 Hz (401 pts)	CF Step 8.000000 MHz Auto Man
MKR MODE TH		×		Y	FUNCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	Auto Mari
1 Δ2 2 F 3 Δ4 4 F	t t (Δ)		1.395 ms (Δ 390.0 μs 1.415 ms (Δ 390.0 μs	15.65 dBm	1				Freq Offset 0 Hz
6 7 8 9 10 11									
MSG						STAT	JS	,	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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



#### 802.11 n 20 MHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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



#### 7.5 Measurement Result:

#### 802.11b

		Peak Power Output (dBm)				
сн	Frequency	Data Rate	Poquirod Limit			
СП	(MHz)	5.5	- Required Limit			
1	2412	19.11	1 Watt = 30 dBm			
6	2437	19.23	1 Watt = 30 dBm			
11	2462	19	1 Watt = 30 dBm			

#### Max. Rated Avg. Power + Max. Tolerance (dBm): 17dBm

		Average Power Output (dBm)				
	Frequency	Data Rate	Doguirod Limit			
СН	Frequency (MHz)	5.5	Required Limit			
1	2412	16.75	1 Watt = 30 dBm			
6	2437	16.88	1 Watt = 30 dBm			
11	2462	16.59	1 Watt = 30 dBm			

#### 802.11g

		Peak Power Output(dBm)			
	Fre-	Data Rate			
СН	quency (MHz)	6	Required Limit		
1	2412	20.89	1 Watt = 30 dBm		
6	2437	21.10	1 Watt = 30 dBm		
11	2462	20.69	1 Watt = 30 dBm		

#### Max. Rated Avg. Power + Max. Tolerance (dBm): 14dBm

	J	Average Power Output(dBm)				
СП	Frequency	Data Rate	Poquirod Limit			
СН	Frequency (MHz)	6	Required Limit			
1	2412	13.01	1 Watt = 30 dBm			
6	2437	13.89	1 Watt = 30 dBm			
11	2462	12.31	1 Watt = 30 dBm			

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



#### 802.11n\_20M

		Peak Power Output(dBm)				
СН	Fre- quency (MHz)	Data Rate MCS0	Required Limit			
1	2412	20.75	1 Watt = 30 dBm			
6	2437	20.67	1 Watt = 30 dBm			
11	2462	20.15	1 Watt = 30 dBm			

### Max. Rated Avg. Power + Max. Tolerance (dBm): 13dBm

		Average Power Output	(dBm)
СН	Fre- quency (MHz)	Data Rate MCS0	Required Limit
1	2412	12.61	1 Watt = 30 dBm
6	2437	12.62	1 Watt = 30 dBm
11	2462	11.21	1 Watt = 30 dBm

\* Note: The duty cycle factor is compensated back to obtain the maximum value of the measurement in average.

\* Note: Offset 11.05dB for 2.4G 802.11b/g/n\_20

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



## 8 6dB BANDWIDTH

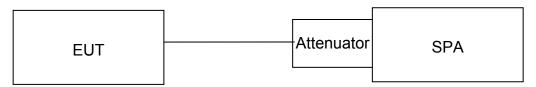
## 8.1 Standard Applicable:

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

## 8.2 Measurement Equipment Used:

Refer to section 7.2 for details.

### 8.3 Test Set-up:



### 8.4 Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3\*RBW, Span = 30M/50MHz, Detector=Peak,

Sweep=auto, the setting on spectrum is adjusted based on the procedure as guide in 8.1 option 1 of KDB558074.

- 4. Mark the peak frequency and –6dB (upper and lower) frequency.
- 5. Repeat above procedures until all frequency of interest measured was complete.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

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



#### 8.5 Measurement Result:

#### 802.11b

Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
2412	7.86	> 500	PASS
2437	8.34	> 500	PASS
2462	7.13	> 500	PASS

#### 802.11g

Frequency	Bandwidth	Limit	Result
(MHz)	(MHz)	(kHz)	
2412	16.39	> 500	PASS
2437	16.40	> 500	PASS
2462	16.39	> 500	PASS

#### 802.11n 20M

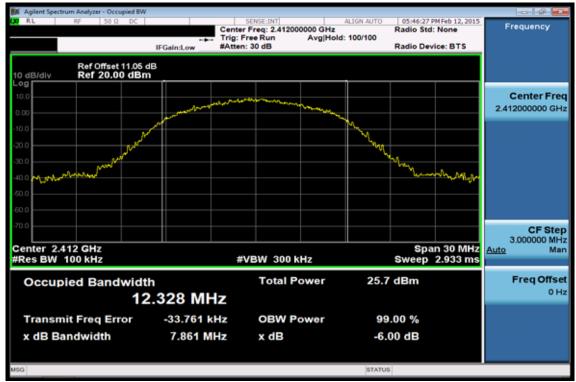
Frequency	Bandwidth	Limit	Result
(MHz)	(MHz)	(kHz)	
2412	17.62	> 500	PASS
2437	17.62	> 500	PASS
2462	17.62	> 500	PASS

\* Note: Offset 11.2dB for 2.4G 802.11b/g/n\_20, and the diamond reveals X decibel level \*Refer to next page for plots

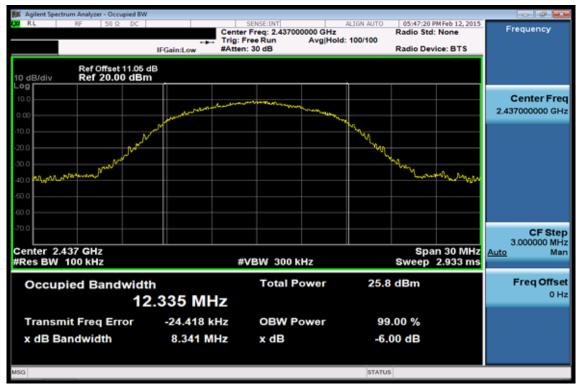
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



# 802.11b 6dB Band Width Test Data CH-Low



## 6dB Band Width Test Data CH-Mid

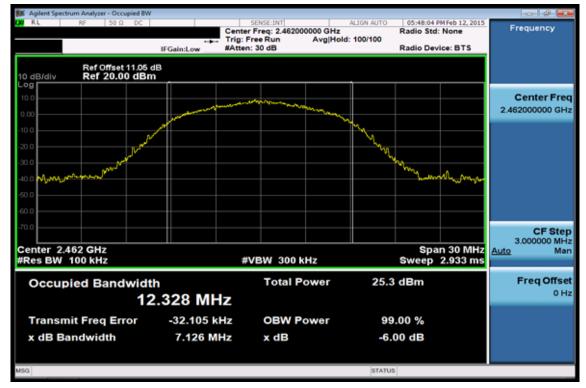


Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

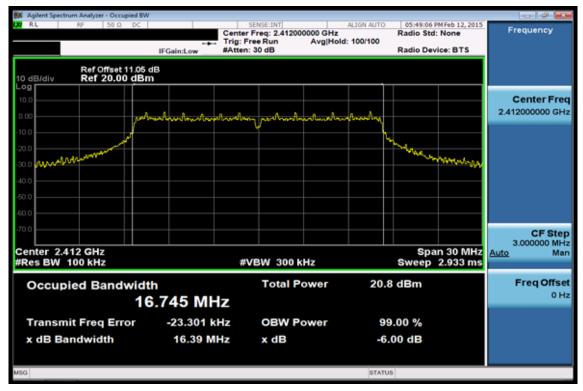
WeikBS otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are relative for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



## 6dB Band Width Test Data CH-High



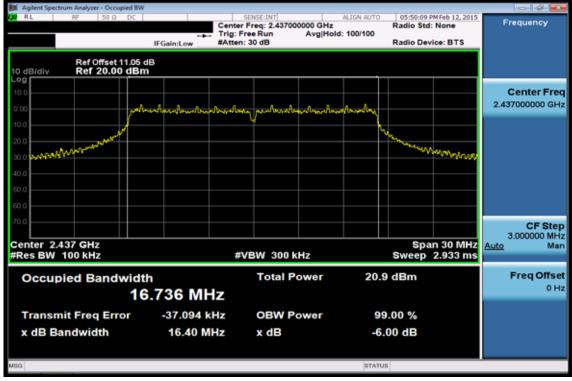
## 802.11g 6dB Band Width Test Data CH-Low



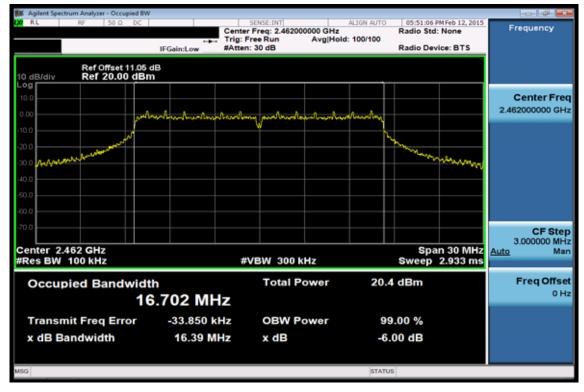
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留的天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions of Electronic Documents at <u>www.sgs.com/terms</u> and conditions of leability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Clearly independent of the company is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



## 6dB Band Width Test Data CH-Mid

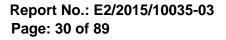


## 6dB Band Width Test Data CH-High



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

WeikBS otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are relative for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

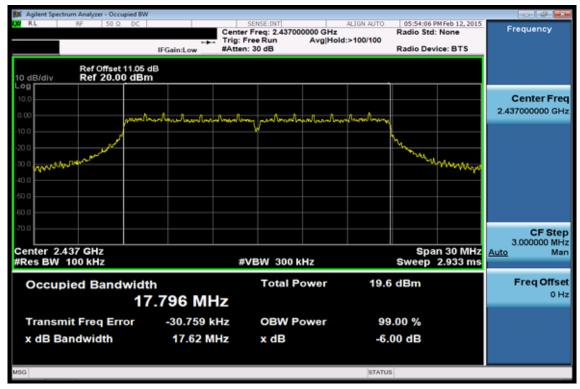




# 802.11n\_20M 6dB Band Width Test Data CH-Low

M Agilent Spectrum Analyzer - Occupied BV					- 0 🜌
🗱 RE 50 Ω DC		SENSE:INT Freq: 2.412000000 GHz	ALIGN AUTO 05:53:11 Radio Sto	PM Feb 12, 2015 : None	Frequency
		ree Run Avg Hold : 30 dB	: 100/100 Radio De	vice: BTS	
	. Gameen				
10 dB/div Ref 20.00 dB					
10.0					Center Freq
					2.412000000 GHz
	halandan lun malm	Surgenpergraph	hambren		
-10.0			· .		
-20.0 WAYNAMMMANN			and the second		
				and more the party of the	
+40.0					
-50.0					
-60.0					
-70.0					CF Step
Center 2.412 GHz			Spa	an 30 MHz	3.000000 MHz Auto Man
#Res BW 100 kHz	#\	/BW 300 kHz	Sweep	2.933 ms	
Occupied Bandwid	th	Total Power	20.0 dBm		Freq Offset
	7.804 MHz				0 Hz
Transmit Freq Error	-30.652 kHz	OBW Power	99.00 %		
x dB Bandwidth	17.62 MHz	x dB	-6.00 dB		
MSG			STATUS		

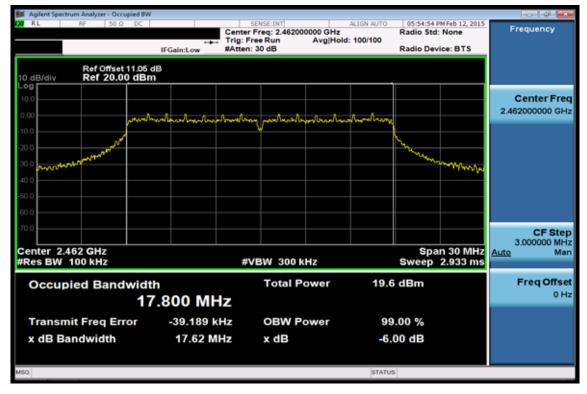
## 6dB Band Width Test Data CH-Mid



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留的天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions of Electronic Documents at <u>www.sgs.com/terms</u> and conditions of leability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Clearly independent of the company is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



# 6dB Band Width Test Data CH-High



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or ap-

pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134號



#### BAND EDGES MEASUREMENT 9

#### 9.1 **Standard Applicable:**

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in15.209(a).

## 9.2 Measurement Equipment Used:

### 9.2.1 Conducted Emission at antenna port:

Refer to section 7.2 for details.

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

Weif S date weight and the results and the results and set of the results and results Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

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



#### 9.2.2 Radiated emission:

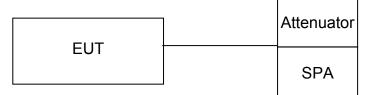
	966 Chamber				
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
EMI Test Receiver	R&S	ESU 40	100363	04/12/2014	04/11/2015
Loop Antenna	ETS-Lindgren	6502	00143303	12/09/2014	12/08/2015
Broadband Antenna	TESEQ	CBL 6112D	35240	12/05/2014	12/04/2015
Horn Antenna	ETS-Lindgren	3117	00143272	12/08/2014	12/07/2015
Horn Antenna	ETS-Lindgren	3160-09	00117911	11/13/2014	11/12/2015
Horn Antenna	ETS-Lindgren	3160-10	00117783	11/13/2014	11/12/2015
Pre Amplifier	EMC Instruments	EMC330	980096	12/19/2014	12/18/2015
Pre Amplifier	EMC Instruments	EMC0011830	980199	12/19/2014	12/18/2015
Pre Amplifier	R&S	SCU-18	10204	12/19/2014	12/18/2015
Pre Amplifier	R&S	SCU-26	100780	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	RG 214/U	966Rx 9K-30M	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	RG 214/U SUCOFLEX 104	966Rx 30M-3G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Rx 1G-18G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	mini 141-12 SUCOFLEX 104	966Rx 18G-40G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Tx 30M-18G	12/19/2014	12/18/2015
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	966Tx 18G-40G	12/19/2014	12/18/2015
Attenuator	WOKEN	218FS-10	RF27	12/19/2014	12/18/2015
Site NSA	SGS	966 Chamber C	SAC-C	03/04/2015	03/03/2016
Site VSWR	SGS	966 Chamber C	SAC-C	03/04/2015	03/03/2016
DC Power Supply	HOLA	DP-3003	D7070035	05/31/2014	05/30/2015
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Test Software	World-Pallas	Dr. E	V 3.0 Lite	N.C.R.	N.C.R.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document is advised any be prosecuted to the fulle at vent of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



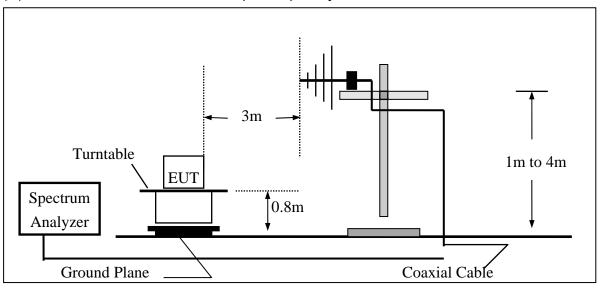
#### 9.3 Test SET-UP:

## 9.3.1 Conducted Emission at antenna port:

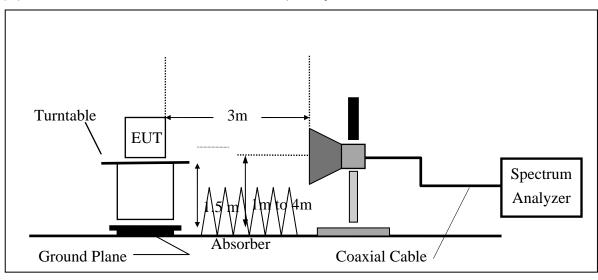


#### 9.3.2 Radiated emission:

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



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



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Cleart's intervention. Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



## 9.4 Measurement Procedure:

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

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

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

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 4. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
- 5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- On spectrum, following 8.1.2, and RBW = 1MHz, VBW = 3MHz, & Marker 2390MHz, and 2483.5MHz (Peak Measurement). Average Measurement: following 8.2 with the modification span to 1MHz, &RBW = 1MHz, VBW = 3MHz and peak marker function to obtain the highest reading on 2390, and 2483.5MHz.
- 8. Repeat above procedures until all default test channel (low, middle, and high) was complete



### 9.5 Field Strength Calculation:

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

## FS = RA + AF + CL - AG

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

#### 9.6 Measurement Result:

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

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

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

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

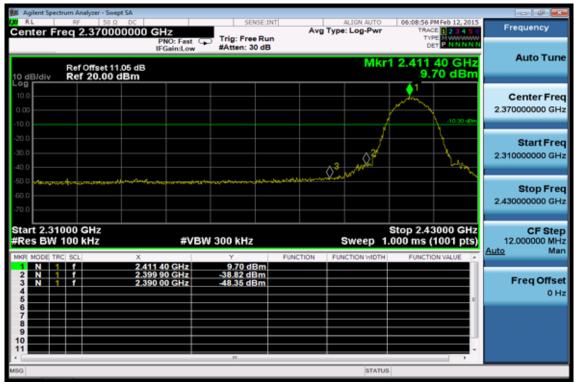
"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

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

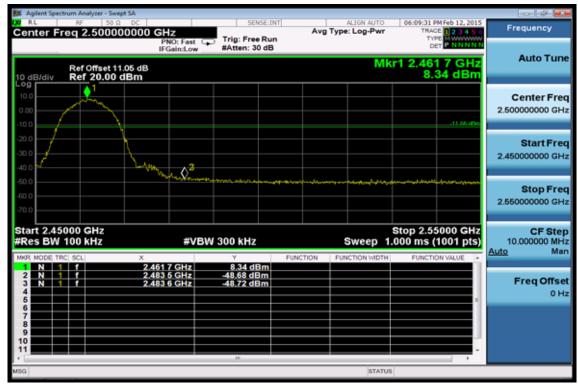
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留別天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sqs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



# 802.11b - Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



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

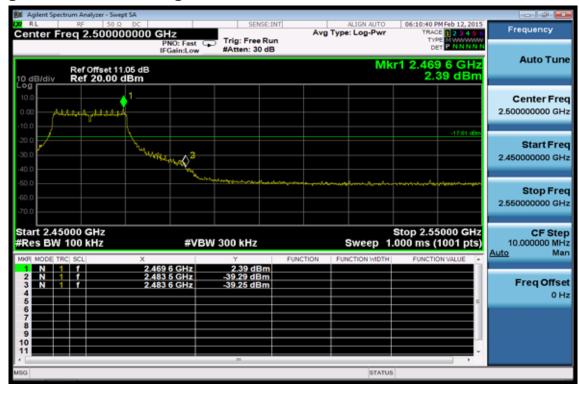




# 802.11g - Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



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





# 802.11n\_20M- Unwanted Emissions into Non-Restricted Frequency Bands **Band Edges Test Data CH-Low**



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

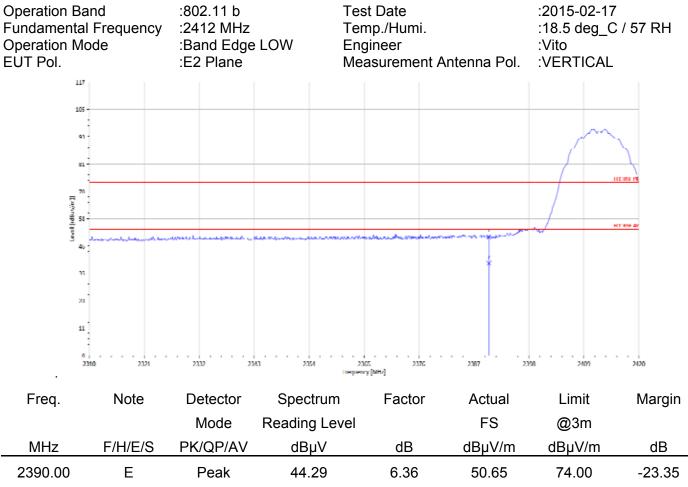




#### **Radiated Emission:**

2390.00

Е



32.95

Average

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

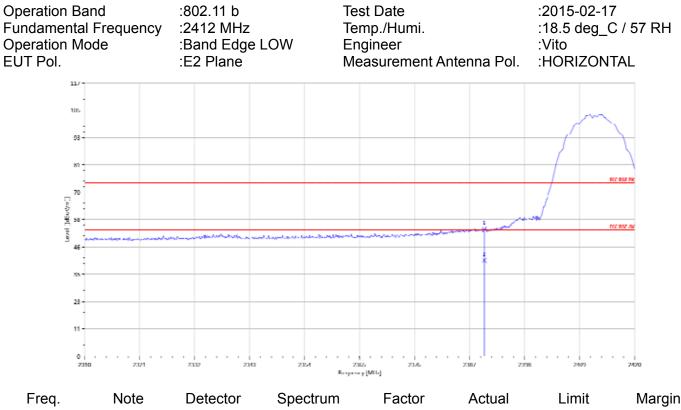
6.36

39.31

54.00

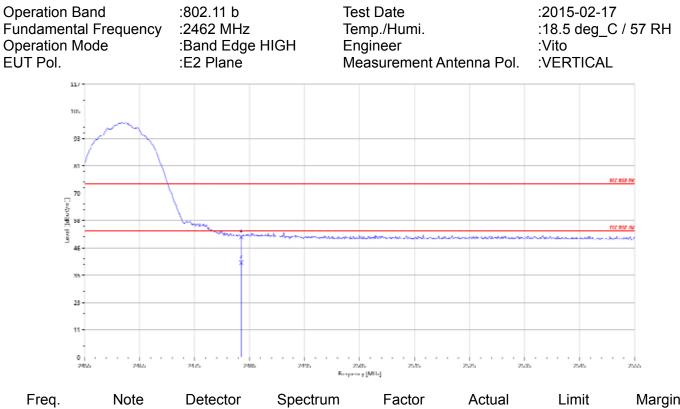
-14.69





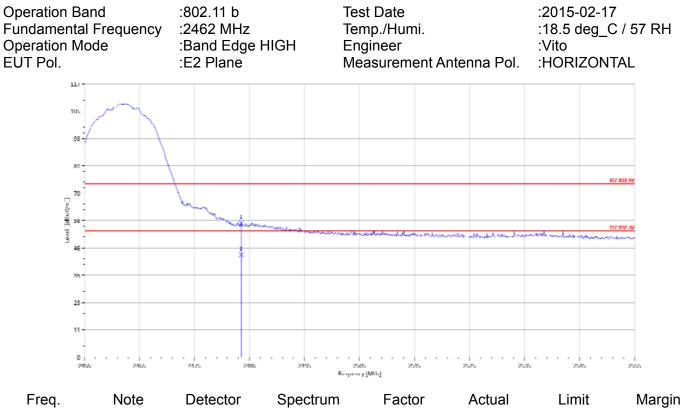
rieq.	NOLE	Delector	Spectrum	T actor	Actual	LIIIII	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Peak	48.05	6.36	54.41	74.00	-19.59
2390.00	Е	Average	34.57	6.36	40.93	54.00	-13.07





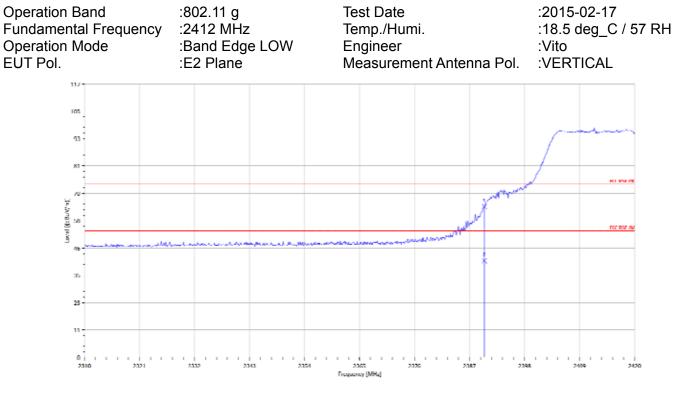
Fleq.	note	Delector	Spectrum	Facior	Actual	LIIIII	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Е	Peak	44.29	7.14	51.43	74.00	-22.57
2483.50	Е	Average	33.27	7.14	40.41	54.00	-13.59
	MHz 2483.50	MHz F/H/E/S 2483.50 E	Mode MHz F/H/E/S PK/QP/AV 2483.50 E Peak	ModeReading LevelMHzF/H/E/SPK/QP/AVdBµV2483.50EPeak44.29	ModeReading LevelMHzF/H/E/SPK/QP/AVdBµVdB2483.50EPeak44.297.14	ModeReading LevelFSMHzF/H/E/SPK/QP/AVdBµVdBdBµV/m2483.50EPeak44.297.1451.43	Mode         Reading Level         FS         @3m           MHz         F/H/E/S         PK/QP/AV         dBµV         dB         dBµV/m         dBµV/m           2483.50         E         Peak         44.29         7.14         51.43         74.00





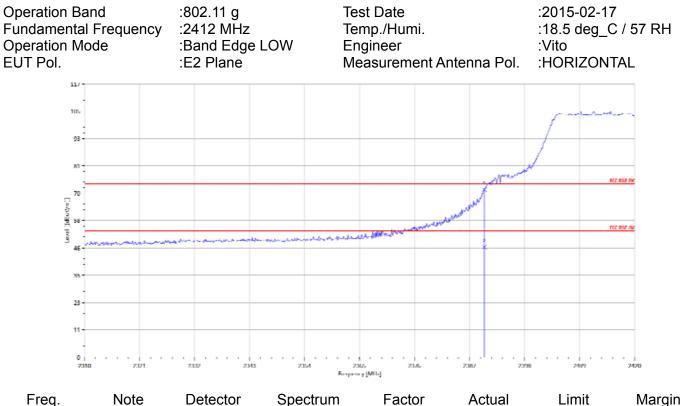
	margin
@3m	
dBµV/m	dB
74.00	-16.64
54.00	-10.17
	@3m dBµV/m 74.00





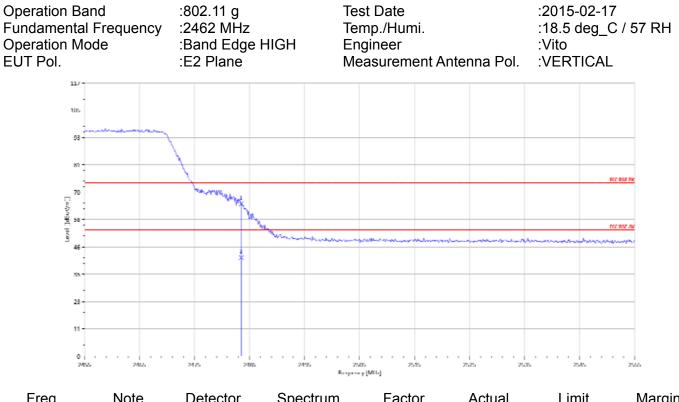
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Peak	58.14	6.36	64.49	74.00	-9.51
2390.00	E	Average	34.92	6.36	41.28	54.00	-12.72





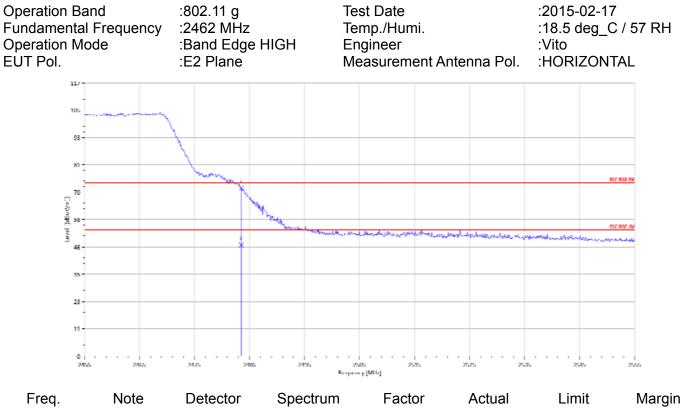
rieq.	Note	Delector	Spectrum	Facior	Actual	LIIIII	Margin	
		Mode	Reading Level		FS	@3m		
 MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2390.00	Е	Peak	65.38	6.36	71.74	74.00	-2.26	
2390.00	Е	Average	40.74	6.36	47.10	54.00	-6.90	





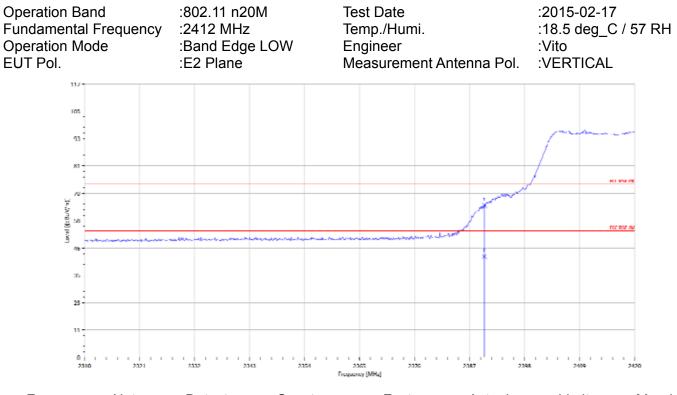
⊢req.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Е	Peak	58.11	7.14	65.25	74.00	-8.75
2483.50	Е	Average	35.01	7.14	42.15	54.00	-11.85





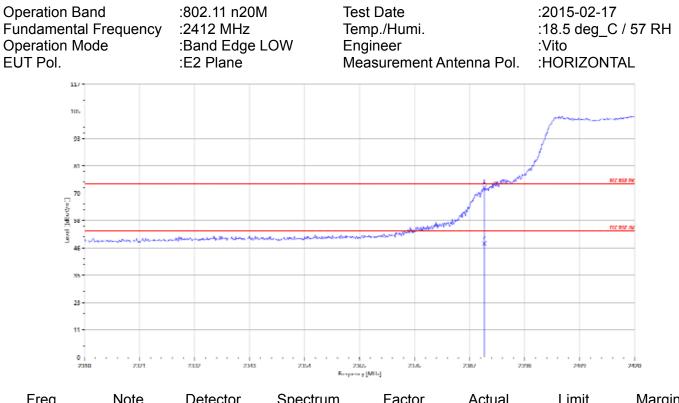
		20100101	opeenani	, actor	, 1010101		mangin	
		Mode	Reading Level		FS	@3m		
 MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2483.50	Е	Peak	64.79	7.14	71.93	74.00	-2.07	
2483.50	Е	Average	40.49	7.14	47.63	54.00	-6.37	





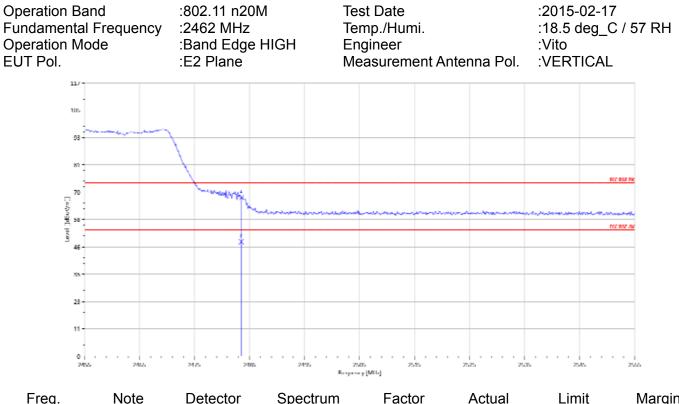
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Average	58.67	6.36	65.03	74.00	-8.97
2390.00	E	Peak	36.81	6.36	43.17	54.00	-10.83





⊢req.	Note	Detector	Spectrum	Factor	Actual	Limit	wargin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	_
2390.00	Е	Average	66.22	6.36	72.58	74.00	-1.42	
2390.00	Е	Peak	42.23	6.36	48.59	54.00	-5.41	

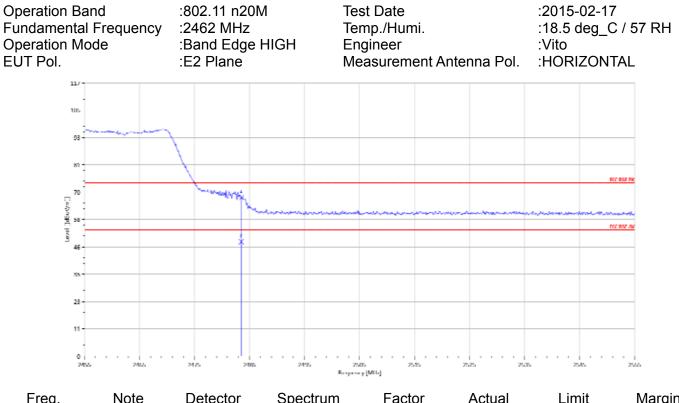




Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	wargin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2483.50	Е	Average	60.70	7.14	67.84	74.00	-6.16	
2483.50	Е	Peak	41.83	7.14	48.97	54.00	-5.03	

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





Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	wargin	
		Mode	Reading Level		FS	@3m		
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2483.50	Е	Average	65.95	7.14	73.08	74.00	-0.92	
2483.50	Е	Peak	42.47	7.14	49.61	54.00	-4.39	

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



## **10 SPURIOUS EMISSION TEST 10.1 Standard Applicable**

# According to §15.247(d),

Emission at antenna port:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

### **Radiated Spurious Emission**

Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

And according to §15.33(a) (1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

## **10.2 Measurement Equipment Used:**

#### 10.2.1 Conducted Emission at antenna port:

Refer to section 7.2 for details.

#### 10.2.2 Radiated emission:

Refer to section 9.2.2 for details.

#### 10.3 Test SET-UP:

#### 10.3.1 Conducted Emission at antenna port:

Refer to section 7.3 for details.

#### 10.3.2 Radiated emission:

Refer to section 9.3.2 for details.

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



### **10.4 Measurement Procedure:**

### **Radiated Emission:**

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 4. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
- 5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
- 7. Repeat above procedures until all default test channel measured were complete.

## **Conducted Emission:**

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

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

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



#### **10.5 Field Strength Calculation**

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

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

Where	0	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

#### **10.6 Measurement Result:**

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

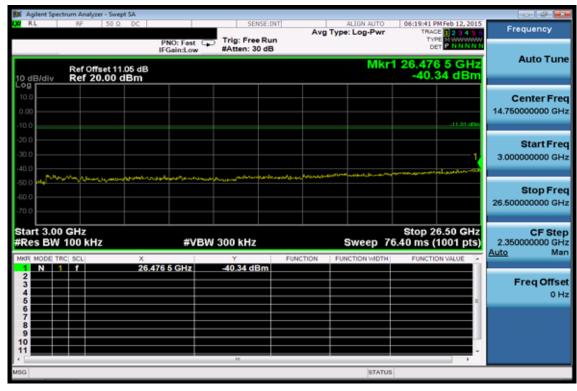
SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



# **Conducted Spurious Emission Measurement Result (802.11b)** Ch Low 30MHz - 3GHz

	ctrum Analyzer - Swept SA							0 <b></b>
Center F	req 1.51500000		Trig: Free Ru	Avg	ALIGN AUTO Type: Log-Pwr	06:19:18 PM Feb 12, TRACE 2 3 4 TYPE 5	Ső Fr	equency
10 dB/div	Ref Offset 11.05 dE Ref 20.00 dBm	PNO: Fast G IFGain:Low	#Atten: 30 dB		Mk	r1 2.411 9 G 8.19 dE	HZ	Auto Tune
10.0 0.00 -10.0						1 	1.51	Center Freq 5000000 GHz
-20.0							30	Start Freq
-50.0	artanan manana darah	unded in 1997, directory of		235	yn de ar de genere en	Antonia antonia antonia antonia di seria	3.000	Stop Freq
Start 30 F #Res BW	100 kHz		N 300 kHz	FUNCTION	Sweep 9.	Stop 3.000 G 667 ms (1001 p	Hz ts) 297 Auto	CF Step .000000 MHz Man
		2.411 9 GHz	8.19 dBm	PONCTON	Porton more	POINT HOME WADE	ĺ	Freq Offset 0 Hz
7 8 9 10 11								
MSG					STATUS			

#### Ch Low 3GHz – 26.5GHz





### Ch Mid 30MHz – 3GHz

🔰 Agilent Spectrum Analyzer - Swept SA	1				- 0 <b>0</b>
Center Freq 1.5150000		SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	06:20:15 PM Feb 12, 2015 TRACE 2 3 4 5 6	Frequency
Ref Offset 11.05 10 dB/div Ref 20.00 dB	dB	Trig: Free Run #Atten: 30 dB	M	kr1 2.438 7 GHz 8.68 dBm	Auto Tune
10.0 0.00 -10.0				1 .11.32 dBm	Center Freq 1.515000000 GHz
-20.0					Start Freq 30.000000 MHz
-50.0 -60.0 -70.0	and the second	and a second	an a	an Alexandra and a second and a second and a second as a second	Stop Freq 3.000000000 GHz
Start 30 MHz #Res BW 100 kHz	#VBW 3		Sweep s	Stop 3.000 GHz 9.667 ms (1001 pts)	CF Step 297.000000 MHz Auto Man
1 N 1 7 2 3 3 4 6	2.438 7 GHz	8.68 dBm			Freq Offset 0 Hz
7 8 9 10 11					
MSG		11	STATU	15	

### Ch Mid 3GHz – 26.5GHz

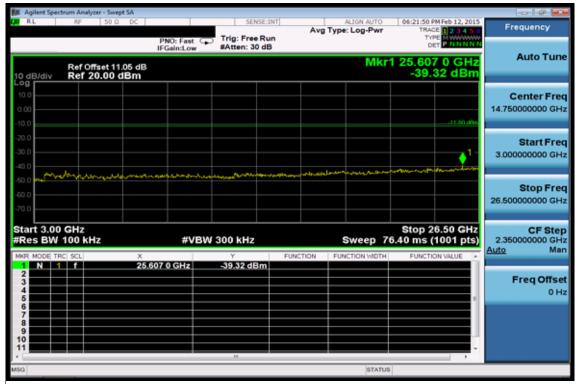
🚺 Agilent Spectrum Analyzer - Swep	pt SA					
💭 RL RF 50Ω		SENSE:17	Avg	ALIGN AUTO	06:20:43 PM Feb 12, 2015 TRACE 12, 04 5	Frequency
Ref Offset 11 10 dB/div Ref 20.00 d				Mkr	1 26.100 5 GHz -40.01 dBm	
Log 10.0 .000					-11.32 dBm	Center Freq 14.75000000 GHz
-20.0			استعر الملك أورج حرام الحر	an data sana ataun an da		Start Freq 3.000000000 GHz
-50.0						Stop Freq 26.50000000 GHz
Start 3.00 GHz #Res BW 100 kHz	#V	BW 300 kHz -40.01 dBm	FUNCTION	Sweep 7	Stop 26.50 GHz 5.40 ms (1001 pts) FUNCTION VALUE	CF Step 2.350000000 GHz Auto Man
2 3 4 5 7 8 9 9 10	26.100 5 GHZ	-40.01 dBm				Freq Offset 0 Hz
MSG				STATUS		



## Ch High 30MHz – 3GHz

Mi Agilent Spectrum Analyzer - Swept SA			- # <b>-</b>
Center Freq 1.5150000	00 GHz	Avg Type: Log-Pwr TRACE 123456	Frequency
Ref Offset 11.05	IFGain:Low #Atten: 30 dB	Mkr1 2.462 4 GHz 8.20 dBm	Auto Tune
10.0 0.00 -t0.0			Center Freq 1.51500000 GHz
-20.0			Start Freq 30.000000 MHz
-50.0 -60.0 -70.0			Stop Freq 3.000000000 GHz
	#VBW 300 kHz	Stop 3.000 GHz Sweep 9.667 ms (1001 pts)	CF Step 297.000000 MH2 Auto Man
1         N         1         f           2         1         1         1           3         1         1         1           3         1         1         1           3         1         1         1           3         1         1         1           4         1         1         1           6         1         1         1           7         1         1         1           9         1         1         1           10         1         1         1	2.462 4 GHz 8.20 dBm		Freq Offset 0 Hz
11 •	17	STATUS	

## Ch High 3GHz – 26.5GHz





## **Conducted Spurious Emission Measurement Result (802.11g)** Ch Low 30MHz - 3GHz

	ctrum Analyzer - Swept SA						- 0 ×
Center F	RF 50 Ω DC reg 1.51500000	0 GHz	SENSE:IN		ALIGN AUTO Type: Log-Pwr	06:22:23 PM Feb 12, 201 TRACE	6 Frequency
10 dB/div	Ref Offset 11.05 dl Ref 20.00 dBm	PNO: Fast G	Trig: Free Run #Atten: 30 dB		Mk	r1 2.420 9 GH; 2.77 dBn	Auto Tune
10.0 0.00 -10.0						1	Center Freq 1.515000000 GHz
-20.0 -30.0 -40.0 -50.0						-17.23 dB	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0	adaa	۵۹، «میدید) <sub>ایرو</sub> و در مطاهداتین			an gelander an sea an	Martine Andrew Contract of Contract	Stop Freq 3.000000000 GHz
Start 30 M #Res BW	100 kHz		/ 300 kHz	FUNCTION	Sweep 9.	Stop 3.000 GH 667 ms (1001 pts	
2 3 4 5		2.420 9 GHz	2.77 dBm				Freq Offset 0 Hz
6 7 8 9 10 11			17				
MSG					STATUS	,	

#### Ch Low 3GHz - 26.5GHz

M Agilent Spectrum Analyzer - Swept SA				- 0 ×
(X RL RF 50Ω DC	SENSE:IN	Avg Type: Log-Pwr	06:22:47 PM Feb 12, 2015 TRACE 2 3 4 5 0 TYPE NUMBER	Frequency
Ref Offset 11.05 dB	PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB		1 26.359 0 GHz -40.48 dBm	Auto Tune
10.0 0.00 -10.0				Center Freq 14.750000000 GHz
-20.0		مى بى مەرىپى يېرىم يېرى	-17.23 dibn	Start Freq 3.000000000 GHz
-50.0				Stop Freq 26.50000000 GHz
Start 3.00 GHz #Res BW 100 kHz	#VBW 300 kHz	Sweep 7	Stop 26.50 GHz 5.40 ms (1001 pts)	CF Step 2.35000000 GHz Auto Man
	359 0 GHz40.48 dBm		POINC HOW VALUE	Freq Offset 0 Hz
MSG		STATUS		



### Ch Mid 30MHz – 3GHz

📕 Agilent Spectrum Analyzer - Swept	SA						
Center Freq 1.515000	DC 0000 GHz	SENSE:IN		ALIGN AUTO Type: Log-Pwr	TRAC	M Feb 12, 2015	Frequency
Ref Offset 11.0		#Atten: 30 dB		Mk	r1 2.429	8 GHz 87 dBm	Auto Tune
10.0 0.00 -10.0					•1		Center Freq 1.515000000 GHz
-20.0						-17.13 dBm	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0	alan an an trainin an trainin		aun ann an an ann an ann ann ann ann ann	اسلام او موجود معمد و برسو العن	( halanna		Stop Freq 3.000000000 GHz
Start 30 MHz #Res BW 100 kHz	#VB	W 300 kHz	FUNCTION	Sweep 9	.667 ms (	.000 GHz 1001 pts)	CF Step 297.000000 MHz Auto Man
1 N 1 f 2 3 4 4 6	2.429 8 GHz	2.87 dBm					Freq Offset 0 Hz
7 9 10 11		17					
MSG				STATUS	ł.		

### Ch Mid 3GHz – 26.5GHz

M Agilent Spectrum	Analyzer - Swept SA						
(X) RL F	8F 50 Ω DC		SENSE:I	Avg	ALIGN AUTO Type: Log-Pwr	06:23:46 PM Feb 12, 201 TRACE 2 3 4 5	5 Frequency
10 dB/div R	ef Offset 11.05 dB ef 20.00 dBm	PNO: Fast G	Trig: Free Ru #Atten: 30 dE		Mkr	1 26.241 5 GH: -39.44 dBn	Auto Tune
10.0 0.00 -10.0							Center Freq 14.750000000 GHz
-20.0 -30.0 -40.0					Lander Room and Alicenter	-17.13 dB	Start Freq 3.000000000 GHz
-50.0		Alexa Part Contractor Anna Contra					<b>Stop Freq</b> 26.500000000 GHz
Start 3.00 GH #Res BW 100	D KHZ		300 kHz	FUNCTION	Sweep 7	Stop 26.50 GH2 6.40 ms (1001 pts FUNCTION VALUE	CF Step 2.350000000 GHz <u>Auto</u> Man
1         N         1         f           3	26.2	41 5 GHz	-39.44 dBm				Freq Offset 0 Hz
NSG					STATUS	•	



## Ch High 30MHz – 3GHz

🔰 Agilent Spectrum Analyzer - Swept SA			
Center Freq 1.51500000	) GHz		26 PM Feb 12, 2015 RACE 2 2 3 4 5 6 Type Ministry
Ref Offset 11.05 dB	PNO: Fast The Run IFGain:Low #Atten: 30 dB		56 5 GHz Auto Tune 2.16 dBm
10.0 0.00 -10.0		↓ ↓ ↓	Center Freq 1.515000000 GHz
-20.0			30.000000 MHz
-50.0 -50.0 -70.0	and a state of the	موادر به <sup>السر</sup> الموادر بين	Stop Freq 3.00000000 GHz
Start 30 MHz #Res BW 100 kHz MKR MODE TRC SCL X		Sweep 9.667 m	3.000 GHz         CF Step           s (1001 pts)         297.000000 MHz           Auto         Man
1         N         1         1         2         2         2         3         3         3         4         4         5         6         6         6         7	2.16 dBm		Freq Offset 0 Hz
8 9 10 11			-

## Ch High 3GHz – 26.5GHz

📕 Agilent Spectrum Analyzer - Swept SA						
2 RL RF 50Ω DC		SENSE:INT	Avg Typ	ALIGN AUTO	06:24:52 PM Feb 12, 2015 TRACE 2 3 4 5 6 TYPE N 4 5 6	Frequency
Ref Offset 11.05 di 10 dB/div Ref 20.00 dBm	PNO: Fast IFGain:Low	#Atten: 30 dB		Mkr	1 26.194 5 GHz -39.89 dBm	Auto Tune
Log 10.0 0.00						Center Free 14.750000000 GH
-20.0			ali a contra de la c		-17.84 dbm	Start Fre 3.000000000 GH
-50.0		and and an and an and a				Stop Fre 26.500000000 GH
Start 3.00 GHz #Res BW 100 kHz MKR MODE TRC SCL X				Sweep 70	Stop 26.50 GHz 5.40 ms (1001 pts) FUNCTION VALUE	CF Step 2.350000000 GH Auto Ma
1         N         1         f         2:           2         3         3         3         3         3         5	6.194 5 GHz	-39.89 dBm				Freq Offse 0 H
< [				STATUS	•	



## Conducted Spurious Emission Measurement Result (802.11n\_20M) Ch Low 30MHz - 3GHz

Agilent Spect	trum Analyzer - Swept SA RF 50 Q DC			-		06:25:57 PM Fe		- 4 <b>- 5</b>
	req 1.51500000	0 GHz PNO: Fast	SENSE:IN	Avg	ALIGN AUTO Type: Log-Pwr	TRACE		Frequency
10 dB/div	Ref Offset 11.05 di Ref 20.00 dBm	IFGain:Low	#Atten: 30 dB		Mk	r1 2.406 0		Auto Tune
10.0 0.00						1		Center Freq 1.515000000 GHz
-20.0 -30.0 -40.0							10.17 dDn	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0	to make a second state of the second state			gogoogeg afwijeerie	-Jugo-seconorod			Stop Freq 3.000000000 GHz
Start 30 M #Res BW	100 kHz		/ 300 kHz	FUNCTION	Sweep 9.	Stop 3.00 667 ms (100	01 pts)	CF Step 297.000000 MHz Auto Man
1 N 1 2 3 4 5		2.406 0 GHz	1.83 dBm					Freq Offset 0 Hz
6 7 8 9 10								
MSG					STATUS		•	

#### Ch Low 3GHz - 26.5GHz

	trum Analyzer - Sv							
CM RL	RF 50	Ω DC			E:INT	ALIGN AUTO	06:26:20 PM Feb 12, 2015 TRACE 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 1 Ref 20.00		PNO: Fast ( IFGain:Low	<ul> <li>Trig: Free I #Atten: 30</li> </ul>	dB	Mkr	1 26.500 0 GHz -39.85 dBm	Auto Tune
10.0 0.00 -10.0								Center Freq 14.75000000 GHz
-20.0 -30.0 -40.0						مىرىدىن بىرىدىن بىرىدا يا <sup>رىر</sup> ىدى بىرىدا		Start Freq 3.000000000 GHz
-50.0 ••••(*** -60.0 -70.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	14		han harayatan da katala ka				Stop Freq 26.50000000 GHz
Start 3.00 #Res BW	100 kHz		#VB	W 300 kHz			Stop 26.50 GHz 6.40 ms (1001 pts)	CF Step 2.35000000 GHz Auto Man
MKR MODE TR		× 26.5	00 0 GHz	Υ -39.85 dBt	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
MSG						STATU	5	



### Ch Mid 30MHz – 3GHz

M Agilent Spec	ctrum Analyzer - Swept SA							
Center F	RF 50 Ω D req 1.5150000	00 GHz	Trig: Free Run	Avg	ALIGN AUTO Type: Log-Pwr	TRAC	M Feb 12, 2015	Frequency
10 dB/div	Ref Offset 11.05 Ref 20.00 dBr		#Atten: 30 dB		Mk	r1 2.43	PNNNN	Auto Tune
10.0						• <sup>1</sup>		Center Freq 1.515000000 GHz
-20.0 -30.0 -40.0							-10.91 dBm	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0	الله معلمين المراجع معلمي وروا يعرفها الله المعلم المراجع المراجع المراجع المراجع المراجع المراجع الم		<u>alanan ana</u> ara	(1.18) - 14 - 15 - 15 - 14 - 15 - 14 - 14 - 14	an a		1997 Dan <sub>19</sub> 97 y 1997 B 1	Stop Freq 3.000000000 GHz
Start 30 M #Res BW	100 kHz	#VB	W 300 kHz	FUNCTION	Sweep 9	.667 ms (	.000 GHz 1001 pts)	CF Step 297.000000 MHz Auto Man
1 N 1 2 3 4 5 6		2.435 7 GHz	1.09 dBm					Freq Offset 0 Hz
7 8 9 10 11			19				, ·	
MSG					STATUS	3		

### Ch Mid 3GHz – 26.5GHz

🚺 Agilent Spec	trum Analyzer - Sw									
CM RL	RF 50	Ω DC					ALIGN AUTO	TRACE	Feb 12, 2015	Frequency
			PNO: Fast C IFGain:Low	Trig: Free #Atten: 30			Mire	TYPE DET 1 26.382	P NNNNN	Auto Tune
10 dB/div	Ref Offset 1 Ref 20.00						WIKI	-39.4	8 dBm	
10.0										Center Freq 14.750000000 GHz
-10.0									-10.91 dBm	
-20.0 -30.0 -40.0								ىلەردىر يېرىز بەر 1944	1	Start Freq 3.000000000 GHz
-50.0	Maria		nder for the second	and a second	dên zerynater, hen	16198au 1924	haisenderter frank f			Stop Freq 26.500000000 GHz
Start 3.00 #Res BW	100 kHz		#VB	W 300 kHz				6.40 ms (1		CF Step 2.35000000 GHz Auto Man
MKR MODE TR		× 26.3	82 5 GHz	۲ -39.48 dB	FUNCTIO	N FUN	CTION WIDTH	FUNCTION	VALUE A	
2 3 4 5										Freq Offset 0 Hz
6 7 8 9										
10 11										
MSG						_	STATUS	6		



## Ch High 30MHz – 3GHz

🛤 Agilent Spec	ctrum Analyzer - Swept SA						- 4	9 <b>X</b>
Center F	req 1.5150000	00 GHz	SENSE:IN	Avg	ALIGN AUTO Type: Log-Pwr	06:29:08 PM Feb 12, 20 TRACE 1 2 3 4 TYPE MWWW	5 6 Frequenc	cy
10 dB/div	Ref Offset 11.05 Ref 20.00 dBr		Trig: Free Run #Atten: 30 dB		Mk	r1 2.471 3 GH 1.44 dBi	Auto	Tune
10.0 0.00						•1 ■	Center 1.51500000	
-20.0 -30.0 -40.0						-18.56 d	Start 30.00000	
-50.0 -60.0 -70.0		antagan artin terip dan parta dan dari		νντον γουργουργουργουργουργουργουργουργουργουρ	an a	J Name (Inder Arma)	Stop 3.00000000	
Start 30 M #Res BW	100 kHz	x	W 300 kHz	FUNCTION	Sweep 9.	Stop 3.000 GH 667 ms (1001 pt FUNCTION VALUE	1z CF s) 297.00000 Auto	Step 0 MH Mar
2 3 4 5 6 7 8		2.471 3 GHz	1.44 dBm				Freq C	Offsel 0 Hz
9 10 11 •			19		STATUS	,	-	

## Ch High 3GHz – 26.5GHz

	trum Analyzer									- d 🛋
X RL	RF	50 Ω DC			ISE:INT	Avg Typ	ALIGN AUTO e: Log-Pwr	06:30:16 PM Feb TRACE		Frequency
10 dB/div		et 11.05 dB 00 dBm	PNO: Fast IFGain:Low	#Atten: 3			Mkr	1 26.100 5 -40.16	GHz	Auto Tune
10.0 0.00										Center Fre 14.750000000 GH
-20.0 -30.0 -40.0						مبعر ومندا مددو			18.56 dBm	Start Free 3.000000000 GH
-50.0	//***/\/######	~~~~								Stop Fre 26.50000000 GH
Start 3.00 #Res BW	100 kHz	×		W 300 kHz Y	FUNC		Sweep 7	Stop 26.50 6.40 ms (100 FUNCTION VA	1 pts)	CF Stej 2.350000000 GH <u>Auto</u> Ma
1 N 1 2 3 4 5 6 7 8 9 9 10		26.1	00 5 GHz	-40.16 dE	3m					Freq Offse 0 H
•							STATUS		•	



#### Radiated Spurious Emission Measurement Result (802.11b)

Operation Band	:802.11 b	Test Date	:2015-02-17
Fundamental Frequency	:2412 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Actual FS(dBµV/m) = SPA. Reading level(dBµV) + Factor(dB)

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

24120.00

Н

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
32.91	S	Peak	39.55	-14.69	24.86	40.00	-15.14
101.78	S	Peak	52.66	-23.54	29.12	43.50	-14.38
445.16	S	Peak	42.42	-15.18	27.24	46.00	-18.76
720.64	S	Peak	35.33	-10.77	24.56	46.00	-21.44
768.17	S	Peak	35.42	-10.10	25.32	46.00	-20.68
937.92	S	Peak	34.25	-7.62	26.63	46.00	-19.37
4824.00	Н	Peak	38.79	10.97	49.76	74.00	-24.24
4824.00	Н	Average	26.42	10.97	37.39	54.00	-16.61
7236.00	Н	Peak	47.15	15.28	62.43	74.00	-11.57
7236.00	Н	Average	29.18	15.28	44.46	54.00	-9.54
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					

Peak



Operation Band	:802.11 b	Test Date	:2015-02-17
Fundamental Frequency	:2412 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

24120.00

н

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
101.78	S	Peak	52.32	-23.54	28.77	43.50	-14.73
145.43	S	Peak	62.36	-22.29	40.07	43.50	-3.43
352.04	S	Peak	42.64	-17.31	25.32	46.00	-20.68
445.16	S	Peak	42.45	-15.18	27.27	46.00	-18.73
576.11	S	Peak	40.27	-12.45	27.81	46.00	-18.19
720.64	S	Peak	38.97	-10.77	28.19	46.00	-17.81
4824.00	Н	Peak	37.57	10.97	48.54	74.00	-25.46
4824.00	Н	Average	27.13	10.97	38.10	54.00	-15.90
7236.00	Н	Peak	41.57	15.28	56.86	74.00	-17.14
7236.00	Н	Average	30.30	15.28	45.58	54.00	-8.42
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					

Peak



Operation Band	:802.11 b	Test Date	:2015-02-17
Fundamental Frequency	:2437 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

24370.00

Н

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
36.79	S	Peak	48.00	-16.96	31.04	40.00	-8.96
71.71	S	Peak	51.64	-27.63	24.02	40.00	-15.99
101.78	S	Peak	50.99	-23.54	27.45	43.50	-16.05
352.04	S	Peak	41.66	-17.31	24.35	46.00	-21.65
445.16	S	Peak	41.10	-15.18	25.92	46.00	-20.08
551.86	S	Peak	36.90	-13.23	23.67	46.00	-22.33
4874.00	Н	Peak	38.46	10.89	49.35	74.00	-24.65
4874.00	Н	Average	26.70	10.89	37.59	54.00	-16.41
7311.00	Н	Peak	48.85	15.31	64.16	74.00	-9.84
7311.00	Н	Average	37.62	15.31	52.93	54.00	-1.07
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					

Peak



Operation Band	:802.11 b	Test Date	:2015-02-17
Fundamental Frequency	:2437 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

24370.00

н

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
61.04	S	Peak	57.61	-28.42	29.19	40.00	-10.81
101.78	S	Peak	51.87	-23.54	28.32	43.50	-15.18
167.74	S	Peak	51.21	-23.65	27.55	43.50	-15.95
445.16	S	Peak	42.58	-15.18	27.40	46.00	-18.60
647.89	S	Peak	40.63	-11.08	29.56	46.00	-16.44
720.64	S	Peak	38.87	-10.77	28.10	46.00	-17.90
4874.00	Н	Peak	38.39	10.89	49.28	74.00	-24.72
4874.00	Н	Average	27.15	10.89	38.04	54.00	-15.96
7311.00	Н	Peak	42.22	15.31	57.53	74.00	-16.47
7311.00	Н	Average	29.90	15.31	45.21	54.00	-8.79
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					

Peak



Operation Band	:802.11 b	Test Date	:2015-02-17
Fundamental Frequency	:2462 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

_			<b>a</b> ,				
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
71.71	S	Peak	52.82	-27.63	25.19	40.00	-14.81
101.78	S	Peak	52.92	-23.54	29.38	43.50	-14.12
167.74	S	Peak	45.38	-23.65	21.72	43.50	-21.78
352.04	S	Peak	41.77	-17.31	24.46	46.00	-21.54
445.16	S	Peak	40.21	-15.18	25.03	46.00	-20.97
528.58	S	Peak	37.46	-13.16	24.29	46.00	-21.71
768.17	S	Peak	36.45	-10.10	26.35	46.00	-19.65
4924.00	Н	Peak	38.37	10.98	49.34	74.00	-24.66
4924.00	Н	Average	27.05	10.98	38.03	54.00	-15.97
7386.00	Н	Peak	47.08	15.51	62.58	74.00	-11.42
7386.00	Н	Average	36.15	15.51	51.66	54.00	-2.34
9848.00	Н	Peak					
12310.00	Н	Peak					
14772.00	Н	Peak					
17234.00	Н	Peak					
19696.00	Н	Peak					
22158.00	Н	Peak					

Peak

24620.00

Н



Operation Band Fundamental Frequency	:802.11 b :2462 MHz	Test Date Temp./Humi.	:2015-02-17 :18.5 deg_C / 57 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

24620.00

Н

Гиа a	Niete	Detector	Ora e etas ura	Feeter	A at a l	1 :	Manain
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
101.78	S	Peak	53.38	-23.54	29.84	43.50	-13.66
169.68	S	Peak	51.16	-23.70	27.46	43.50	-16.04
445.16	S	Peak	42.73	-15.18	27.55	46.00	-18.45
528.58	S	Peak	39.80	-13.16	26.64	46.00	-19.36
647.89	S	Peak	39.59	-11.08	28.51	46.00	-17.49
720.64	S	Peak	38.97	-10.77	28.20	46.00	-17.80
4924.00	Н	Peak	39.00	10.98	49.98	74.00	-24.02
4924.00	Н	Average	25.55	10.98	36.53	54.00	-17.47
7386.00	Н	Peak	41.83	15.51	57.34	74.00	-16.66
7386.00	Н	Average	30.28	15.51	45.79	54.00	-8.21
9848.00	Н	Peak					
12310.00	Н	Peak					
14772.00	Н	Peak					
17234.00	Н	Peak					
19696.00	Н	Peak					
22158.00	Н	Peak					

Peak



#### Radiated Spurious Emission Measurement Result (802.11g)

Operation Band	:802.11 g
Fundamental Frequency	:2412 MHz
Operation Mode	:TX LOW
EUT Pol.	:E2 Plane

Test Date Temp./Humi. Engineer Measurement Antenna Pol.

:2015-02-17 :18.5 deg\_C / 57 RH :Vito :VERTICAL

Actual FS(dBµV/m) = SPA. Reading level(dBµV) + Factor(dB)

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
63.95	S	Peak	61.03	-28.21	32.82	40.00	-7.18
106.63	S	Peak	60.04	-22.83	37.22	43.50	-6.28
122.15	S	Peak	58.75	-21.40	37.35	43.50	-6.15
158.04	S	Peak	48.84	-23.05	25.79	43.50	-17.71
352.04	S	Peak	42.50	-17.31	25.18	46.00	-20.82
503.36	S	Peak	39.39	-14.15	25.25	46.00	-20.75
4824.00	Н	Peak	38.19	10.97	49.16	74.00	-24.84
4824.00	Н	Average	26.12	10.97	37.09	54.00	-16.91
7236.00	Н	Peak	43.35	15.32	58.67	74.00	-15.33
7236.00	Н	Average	29.80	15.32	45.12	54.00	-8.88
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					

Peak

24120.00

Н



Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
101.78	S	Peak	50.06	-23.54	26.52	43.50	-16.98
167.74	S	Peak	51.49	-23.65	27.84	43.50	-15.66
445.16	S	Peak	42.10	-15.18	26.91	46.00	-19.09
528.58	S	Peak	40.33	-13.16	27.17	46.00	-18.83
624.61	S	Peak	39.45	-12.15	27.30	46.00	-18.70
696.39	S	Peak	38.63	-11.04	27.59	46.00	-18.41
4824.00	Н	Peak	37.60	10.97	48.57	74.00	-25.43
4824.00	Н	Average	29.10	10.97	40.07	54.00	-13.93
7236.00	Н	Peak					
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					
24120.00	Н	Peak					



Operation Band	:802.11 g	Test Date	:2015-02-17
Fundamental Frequency	:2437 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
64.92	S	Peak	57.53	-28.16	29.37	40.00	-10.63
101.78	S	Peak	51.82	-23.54	28.28	43.50	-15.22
269.59	S	Peak	49.33	-19.68	29.65	46.00	-16.35
345.25	S	Peak	42.79	-17.54	25.26	46.00	-20.74
445.16	S	Peak	40.21	-15.18	25.03	46.00	-20.97
528.58	S	Peak	37.57	-13.16	24.40	46.00	-21.60
4874.00	Н	Peak	37.45	10.89	48.34	74.00	-25.66
4874.00	Н	Average	26.83	10.89	37.72	54.00	-16.28
7311.00	Н	Peak	46.04	15.31	61.34	74.00	-12.66
7311.00	Н	Average	31.30	15.31	46.61	54.00	-7.39
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					



Operation Band	:802.11 g	Test Date	:2015-02-17
Fundamental Frequency	:2437 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
63.95	S	Peak	58.03	-28.21	29.82	40.00	-10.18
100.81	S	Peak	53.03	-23.69	29.34	43.50	-14.16
173.56	S	Peak	51.44	-23.99	27.45	43.50	-16.05
528.58	S	Peak	39.85	-13.16	26.69	46.00	-19.31
672.14	S	Peak	40.22	-11.68	28.54	46.00	-17.46
696.39	S	Peak	38.81	-11.04	27.77	46.00	-18.23
4874.00	Н	Peak	37.91	10.89	48.80	74.00	-25.20
4874.00	Н	Average	27.30	10.89	38.19	54.00	-15.81
7311.00	Н	Peak					
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					



Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
32.91	S	Peak	39.84	-14.69	25.15	40.00	-14.85
71.71	S	Peak	52.01	-27.63	24.38	40.00	-15.62
101.78	S	Peak	51.50	-23.54	27.96	43.50	-15.54
503.36	S	Peak	38.64	-14.15	24.49	46.00	-21.51
600.36	S	Peak	36.09	-12.45	23.64	46.00	-22.36
768.17	S	Peak	36.05	-10.10	25.94	46.00	-20.06
4924.00	Н	Peak	38.04	10.98	49.02	74.00	-24.98
4924.00	Н	Average	26.73	10.98	37.71	54.00	-16.29
7386.00	Н	Average	29.78	15.57	45.35	54.00	-8.65
7386.00	Н	Peak	42.90	15.57	58.47	74.00	-15.53
9848.00	Н	Peak					
12310.00	Н	Peak					
14772.00	Н	Peak					
17234.00	Н	Peak					
19696.00	Н	Peak					
22158.00	Н	Peak					
24620.00	Н	Peak					



:802.11 g :2462 MHz :TX HIGH :E2 Plane	Test Date Temp./Humi. Engineer Measurement Antenna Pol.	:2015-02-17 :18.5 deg_C / 57 RH :Vito :HORIZONTAL
:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL
	:2462 MHz	:2462 MHz Temp./Humi. :TX HIGH Engineer

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
35.82	S	Peak	45.14	-16.34	28.80	40.00	-11.20
99.84	S	Peak	52.29	-23.84	28.46	43.50	-15.04
528.58	S	Peak	39.69	-13.16	26.53	46.00	-19.47
600.36	S	Peak	38.89	-12.45	26.44	46.00	-19.56
672.14	S	Peak	39.36	-11.68	27.68	46.00	-18.32
720.64	S	Peak	38.18	-10.77	27.41	46.00	-18.59
4924.00	Н	Peak	37.05	10.98	48.02	74.00	-25.98
4924.00	Н	Average	26.53	10.98	37.51	54.00	-16.49
7386.00	Н	Peak					
9848.00	Н	Peak					
12310.00	Н	Peak					
14772.00	Н	Peak					
17234.00	Н	Peak					
19696.00	Н	Peak					
22158.00	Н	Peak					
24620.00	Н	Peak					



### Radiated Spurious Emission Measurement Result (802.11n\_20M)

:802.11 n20M	Test Date	:2015-02-17
:2412 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
:TX LOW	Engineer	:Vito
:E2 Plane	Measurement Antenna Pol.	:VERTICAL
	:2412 MHz :TX LOW	:2412 MHz Temp./Humi. :TX LOW Engineer

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

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

21708.00

24120.00

н

Н

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
32.91	S	Peak	39.24	-14.69	24.54	40.00	-15.46
99.84	S	Peak	49.26	-23.84	25.42	43.50	-18.08
251.16	S	Peak	42.46	-20.34	22.12	46.00	-23.88
528.58	S	Peak	38.42	-13.16	25.26	46.00	-20.74
768.17	S	Peak	35.26	-10.10	25.16	46.00	-20.84
938.89	S	Peak	34.60	-7.63	26.97	46.00	-19.03
4824.00	Н	Peak	37.23	10.97	48.20	74.00	-25.80
4824.00	Н	Average	26.50	10.97	37.47	54.00	-16.53
7236.00	Н	Peak	43.64	15.28	58.93	74.00	-15.07
7236.00	Н	Average	28.18	15.28	43.46	54.00	-10.54
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					

Peak

Peak



Operation Band :802	2.11 n20M Test Da	ite :20	015-02-17
Fundamental Frequency :241	12 MHz Temp./I	-lumi. :18	3.5 deg_C / 57 RH
Operation Mode :TX	LOW Engine	er :Vi	to
EUT Pol. :E2	Plane Measur	rement Antenna Pol. :He	ORIZONTAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
			•			-	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
34.85	S	Peak	46.58	-15.75	30.83	40.00	-9.17
99.84	S	Peak	52.62	-23.84	28.78	43.50	-14.72
169.68	S	Peak	50.90	-23.70	27.20	43.50	-16.30
528.58	S	Peak	40.00	-13.16	26.84	46.00	-19.16
647.89	S	Peak	38.85	-11.08	27.78	46.00	-18.22
696.39	S	Peak	38.78	-11.04	27.75	46.00	-18.25
4824.00	Н	Peak	38.01	10.97	48.98	74.00	-25.02
4824.00	Н	Average	26.30	10.97	37.27	54.00	-16.73
7236.00	Н	Peak					
9648.00	Н	Peak					
12060.00	Н	Peak					
14472.00	Н	Peak					
16884.00	Н	Peak					
19296.00	Н	Peak					
21708.00	Н	Peak					
24120.00	Н	Peak					



Operation Band	:802.11 n20M	Test Date	:2015-02-17
Fundamental Frequency	:2437 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

21933.00

Н

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
60.07	S	Peak	57.72	-28.50	29.22	40.00	-10.78
100.81	S	Peak	48.88	-23.69	25.19	43.50	-18.31
151.25	S	Peak	47.55	-22.79	24.76	43.50	-18.74
352.04	S	Peak	40.65	-17.31	23.34	46.00	-22.66
445.16	S	Peak	42.00	-15.18	26.82	46.00	-19.18
528.58	S	Peak	37.87	-13.16	24.71	46.00	-21.29
4874.00	Н	Peak	38.10	10.89	48.99	74.00	-25.01
4874.00	Н	Average	26.23	10.89	37.12	54.00	-16.88
7311.00	Н	Peak	42.75	15.41	58.15	74.00	-15.85
7311.00	Н	Average	28.83	15.41	44.24	54.00	-9.76
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					

Peak



Operation Band	:802.11 n20M	Test Date	:2015-02-17
Fundamental Frequency	:2437 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
63.95	S	Peak	53.76	-28.21	25.54	40.00	-14.46
167.74	S	Peak	49.71	-23.65	26.05	43.50	-17.45
445.16	S	Peak	43.50	-15.18	28.32	46.00	-17.68
528.58	S	Peak	39.96	-13.16	26.80	46.00	-19.20
576.11	S	Peak	38.40	-12.45	25.95	46.00	-20.05
720.64	S	Peak	39.22	-10.77	28.44	46.00	-17.56
4874.00	Н	Peak	37.87	10.89	48.76	74.00	-25.24
4874.00	Н	Average	26.80	10.89	37.69	54.00	-16.31
7311.00	Н	Peak					
9748.00	Н	Peak					
12185.00	Н	Peak					
14622.00	Н	Peak					
17059.00	Н	Peak					
19496.00	Н	Peak					
21933.00	Н	Peak					
24370.00	Н	Peak					



Operation Band	:802.11 n20M	Test Date	:2015-02-17
Fundamental Frequency	:2462 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:VERTICAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
34.85	S	Peak	44.55	-15.75	28.79	40.00	-11.21
71.71	S	Peak	52.02	-27.63	24.39	40.00	-15.61
101.78	S	Peak	49.72	-23.54	26.18	43.50	-17.32
528.58	S	Peak	38.60	-13.16	25.44	46.00	-20.56
600.36	S	Peak	37.44	-12.45	24.99	46.00	-21.01
720.64	S	Peak	35.06	-10.77	24.29	46.00	-21.71
4924.00	Н	Peak	37.20	10.98	48.18	74.00	-25.82
4924.00	Н	Average	26.80	10.98	37.78	54.00	-16.22
7386.00	Н	Peak					
9848.00	Н	Peak					
12310.00	Н	Peak					
14772.00	Н	Peak					
17234.00	Н	Peak					
19696.00	Н	Peak					
22158.00	Н	Peak					
24620.00	Н	Peak					



Operation Band	:802.11 n20M	Test Date	:2015-02-17
Fundamental Frequency	:2462 MHz	Temp./Humi.	:18.5 deg_C / 57 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E2 Plane	Measurement Antenna Pol.	:HORIZONTAL

Factor(dB) = Antenna Factor(dBµV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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

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

"---" : denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
100.81	S	Peak	50.46	-23.69	26.77	43.50	-16.73
167.74	S	Peak	49.38	-23.65	25.73	43.50	-17.77
445.16	S	Peak	43.07	-15.18	27.89	46.00	-18.11
528.58	S	Peak	39.73	-13.16	26.57	46.00	-19.43
647.89	S	Peak	38.82	-11.08	27.74	46.00	-18.26
720.64	S	Peak	38.94	-10.77	28.16	46.00	-17.84
4924.00	Н	Peak	38.11	10.98	49.08	74.00	-24.92
4924.00	Н	Average	26.10	10.98	37.08	54.00	-16.92
7386.00	Н	Peak					
9848.00	Н	Peak					
12310.00	Н	Peak					
14772.00	Н	Peak					
17234.00	Н	Peak					
19696.00	Н	Peak					
22158.00	Н	Peak					
24620.00	Н	Peak					



# **11 PEAK POWER SPECTRAL DENSITY**

## 11.1 Standard Applicable:

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

## **11.2 Measurement Equipment Used:**

Refer to section 7.2 for details.

## 11.3 Test Set-up:

Refer to section 7.3 for details. (Spectrum Option)

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

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

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

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

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



### **11.5 Measurement Result:**

### 802.11b

MHz	Reading (dBm)	(dBm)
2412	-4.360	8
2437	-4.520	8
2462	-5.780	8

#### 802.11g

Frequency	<b>RF</b> Power Density	Maximum Limit
MHz	Reading (dBm)	(dBm)
2412	-10.680	8
2437	-10.220	8
2462	-11.480	8

#### 802.11n 20M

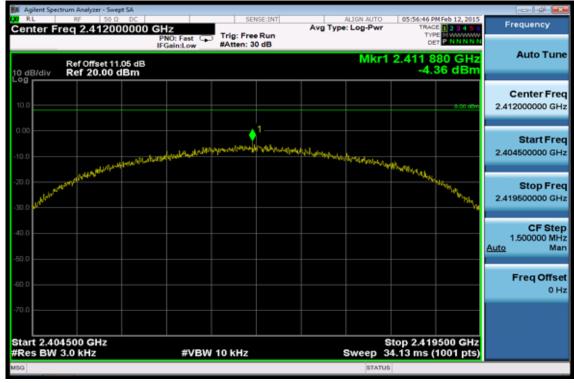
MHz	Reading (dBm)	(dBm)
2412	-11.485	8
2437	-11.500	8
2462	-11.260	8

\* Note: Offset 11.05dB for 2.4G 802.11b/g/n\_20

\*Refer to next page for plots



# 802.11b **Power Spectral Density Test Plot (CH-Low)**



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



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Cleart's intervention. Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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

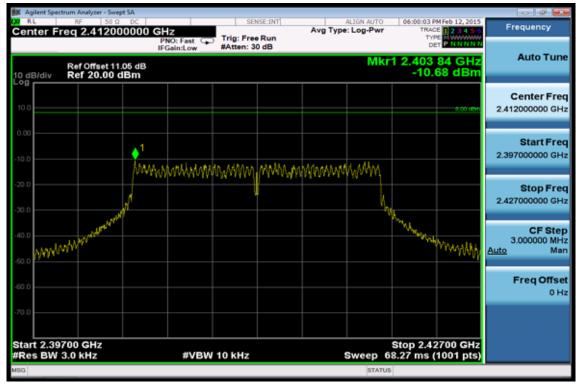


# **Power Spectral Density Test Plot (CH-High)**



### 802.11q

# Power Spectral Density Test Plot (CH-Low)

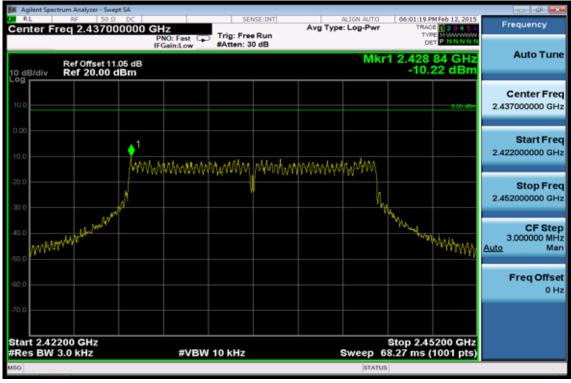


Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Cleart's intervention. Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

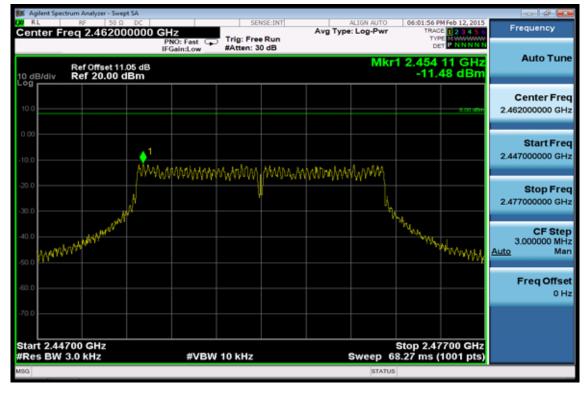
GS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134號



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



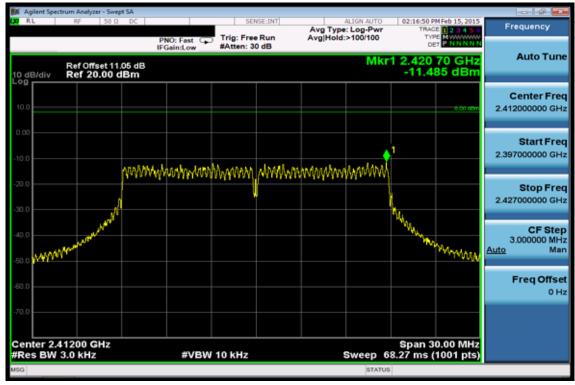
## Power Spectral Density Test Plot (CH-High)



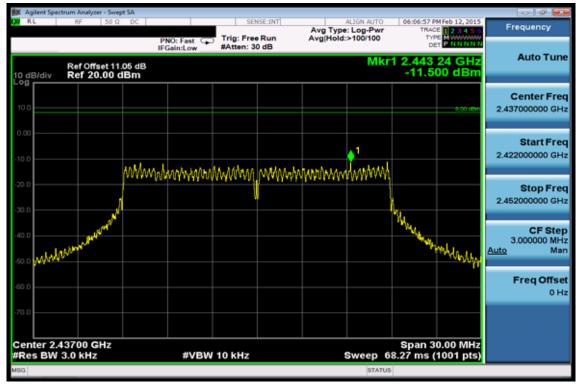
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



# 802.11n 20M **Power Spectral Density Test Plot (CH-Low)**

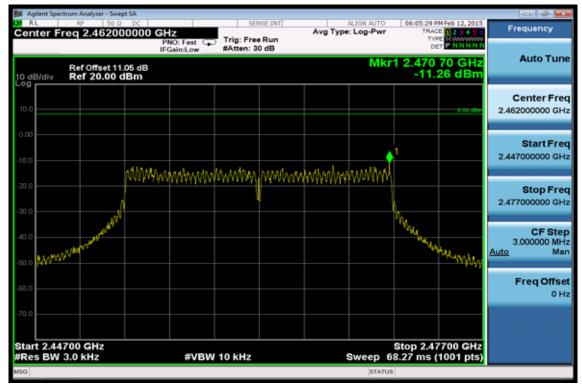


# **Power Spectral Density Test Plot (CH-Mid)**





# Power Spectral Density Test Plot (CH-High)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u></u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or ap-

pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134號



# **12 ANTENNA REQUIREMENT**

## 12.1 Standard Applicable:

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

## 12.2 Antenna Connected Construction:

The directional gains of antenna used for transmitting is 0.76dBi. In addition, the antenna connector is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.

~ End of Report ~

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sqs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms\_and\_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms\_e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

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