

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

# INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

	OF
Product Name:	Upper Arm Automatic Digital Blood Pres- sure Monitor
Brand Name:	BP3GT1-6B-Super 3G
Model No.:	BP3GT1-6B
Model Difference:	N/A
FCC ID:	U7I-BP3GT1-6B
Report No.:	ER/2016/80138
Issue Date:	Sep. 5, 2016
FCC Rule Part:	§15.247, Cat: DTS
Prepared for:	Microlife Corporation 9F, 431, RuiGuang Road, Nei –Hi, Taipei, 114, Taiwan
Prepared by:	SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Indus- trial Park, Wuku District, New Taipei City, Taiwan 24803



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

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained to so days only. 除非另有說明,此報告結果僅對測试之樣品負責,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.



# VERIFICATION OF COMPLIANCE

Applicant:	Microlife Corporation 9F, 431, RuiGuang Road, Nei –Hi, Taipei, 114, Taiwan
Product Name:	Upper Arm Automatic Digital Blood Pressure Monitor
Brand Name:	BP3GT1-6B-Super 3G
Model No.:	BP3GT1-6B
Model Difference:	N/A
FCC ID:	U7I-BP3GT1-6B
Report Number:	ER/2016/80138
Date of test:	Aug. 16, 2016 ~ Sep. 2, 2016
Date of EUT Received:	Aug. 16, 2016

# 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 C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

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

Test By:	Cooper HSU	Date	Sep. 5, 2016
Prepared By:	Cooper Hsu/Engineer Allen Tsai	Date	Sep. 5, 2016
Approved By:	Allen Tsai / Engineer Jim Chang / Asst. Manager	Date	Sep. 5, 2016

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained to so days only. 除非另有說明,此報告結果僅對測试之樣品負責,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. SGS Taiwan Ltd.



# **Revision History**

Report Number	Revision	Description	Issue Date
ER/2016/80138 Rev.00		Initial creation of document	Sep. 5, 2016

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	GENE	ERAL INFORMATION	
	1.1	Product Description6	
	1.2	Product Feature of Equipment Under Test6	
	1.3	Test Methodology of Applied Standards7	
	1.4	Test Facility7	
	1.5	Special Accessories	
	1.6	Equipment Modifications7	
2	SYST	EM TEST CONFIGURATION8	
	2.1	EUT Configuration8	
	2.2	EUT Exercise8	
	2.3	Test Procedure8	
	2.4	Measurement Results Explanation Example8	
	2.5	Configuration of Tested System9	
3	SUM	MARY OF TEST RESULTS	
4	DESC	RIPTION OF TEST MODES10	
	4.1	Operated in 2400 ~ 2483.5MHz Band10	
	4.2	The Worst Test Modes and Channel Details11	
5	MEAS	SUREMENT UNCERTAINTY12	
5 6		SUREMENT UNCERTAINTY12 DUCTED EMISSION TEST13	
	CON	DUCTED EMISSION TEST13	
	<b>CONE</b> 6.1	DUCTED EMISSION TEST13 Standard Applicable:	
	<b>CONE</b> 6.1 6.2	DUCTED EMISSION TEST       13         Standard Applicable:       13         Measurement Equipment Used:       13	
	<b>CONE</b> 6.1 6.2 6.3	DUCTED EMISSION TEST       13         Standard Applicable:       13         Measurement Equipment Used:       13         EUT Setup:       13	
	CONE 6.1 6.2 6.3 6.4	DUCTED EMISSION TEST       13         Standard Applicable:       13         Measurement Equipment Used:       13         EUT Setup:       13         Test SET-UP (Block Diagram of Configuration)       14	
	CONE 6.1 6.2 6.3 6.4 6.5 6.6	DUCTED EMISSION TEST       13         Standard Applicable:       13         Measurement Equipment Used:       13         EUT Setup:       13         Test SET-UP (Block Diagram of Configuration)       14         Measurement Procedure:       14	
6	CONE 6.1 6.2 6.3 6.4 6.5 6.6	DUCTED EMISSION TEST       13         Standard Applicable:       13         Measurement Equipment Used:       13         EUT Setup:       13         Test SET-UP (Block Diagram of Configuration)       14         Measurement Procedure:       14         Measurement Result:       14	
6	CONE 6.1 6.2 6.3 6.4 6.5 6.6 PEAK	DUCTED EMISSION TEST       13         Standard Applicable:       13         Measurement Equipment Used:       13         EUT Setup:       13         Test SET-UP (Block Diagram of Configuration)       14         Measurement Procedure:       14         Measurement Result:       14         Measurement Result:       14	
6	CONE 6.1 6.2 6.3 6.4 6.5 6.6 PEAK 7.1	DUCTED EMISSION TEST       13         Standard Applicable:       13         Measurement Equipment Used:       13         EUT Setup:       13         Test SET-UP (Block Diagram of Configuration)       14         Measurement Procedure:       14         Measurement Result:       14         Standard Applicable:       14	
6	CONE 6.1 6.2 6.3 6.4 6.5 6.6 PEAK 7.1 7.2	DUCTED EMISSION TEST       13         Standard Applicable:       13         Measurement Equipment Used:       13         EUT Setup:       13         Test SET-UP (Block Diagram of Configuration)       14         Measurement Procedure:       14         Measurement Result:       14         Standard Applicable:       17         Standard Applicable:       17         Measurement Equipment Used:       17	
6	CONE 6.1 6.2 6.3 6.4 6.5 6.6 PEAK 7.1 7.2 7.3	DUCTED EMISSION TEST       13         Standard Applicable:       13         Measurement Equipment Used:       13         EUT Setup:       13         Test SET-UP (Block Diagram of Configuration)       14         Measurement Procedure:       14         Measurement Result:       14         Standard Applicable:       17         Standard Applicable:       17         Test Set-up:       17	
6	CONE 6.1 6.2 6.3 6.4 6.5 6.6 PEAK 7.1 7.2 7.3 7.4 7.5	DUCTED EMISSION TEST.       13         Standard Applicable:       13         Measurement Equipment Used:       13         EUT Setup:       13         Test SET-UP (Block Diagram of Configuration)       14         Measurement Procedure:       14         Measurement Result:       14         Measurement Procedure:       17         Measurement Equipment Used:       17         Measurement Procedure:       17         Measurement Procedure:       18	
6	CONE 6.1 6.2 6.3 6.4 6.5 6.6 PEAK 7.1 7.2 7.3 7.4 7.5	DUCTED EMISSION TEST13Standard Applicable:13Measurement Equipment Used:13EUT Setup:13Test SET-UP (Block Diagram of Configuration)14Measurement Procedure:14Measurement Result:14Measurement Result:14Totrput Power MEASUREMENT17Standard Applicable:17Measurement Equipment Used:17Measurement Result:17Measurement Result:17Measurement Result:17Measurement Equipment Used:17Measurement Result:17Measurement Result:17Measurement Result:17Measurement Result:17Measurement Result:17Measurement Result:19	



<ul> <li>8.3 Test Set-up:</li></ul>	
<ul> <li>8.5 Measurement Result:</li></ul>	20
9       CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT         9.1       Standard Applicable         9.2       Measurement Equipment Used:         9.3       Test SET-UP:         9.4       Measurement Procedure         9.5       Measurement Result         10       RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT         10.1       Standard Applicable         10.2       Measurement Equipment Used         10.3       Test SET-UP         10.4       Measurement Procedure         10.5       Field Strength Calculation         10.6       Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz         10.7       Measurement Result:         11       PEAK POWER SPECTRAL DENSITY         11.1       Standard Applicable:         11.2       Measurement Equipment Used:         11.3       Test Set-up:         11.4       Measurement Equipment Used:         11.5       Measurement Procedure:         11.4       Measurement Procedure:         11.5       Measurement Result:	21
9.1       Standard Applicable         9.2       Measurement Equipment Used:         9.3       Test SET-UP:         9.4       Measurement Procedure         9.5       Measurement Result         10       RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT         10.1       Standard Applicable         10.2       Measurement Equipment Used         10.3       Test SET-UP         10.4       Measurement Procedure         10.5       Field Strength Calculation         10.6       Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz         10.7       Measurement Result:         11       PEAK POWER SPECTRAL DENSITY         11.1       Standard Applicable:         11.2       Measurement Equipment Used:         11.3       Test Set-up:         11.4       Measurement Procedure:         11.5       Measurement Procedure:         11.5       Measurement Result:         12       ANTENNA REQUIREMENT	21
<ul> <li>9.2 Measurement Equipment Used:</li></ul>	24
<ul> <li>9.3 Test SET-UP:</li></ul>	24
<ul> <li>9.4 Measurement Procedure</li></ul>	24
<ul> <li>9.5 Measurement Result</li></ul>	24
<ul> <li>10 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT</li></ul>	25
<ul> <li>10.1 Standard Applicable</li></ul>	25
<ul> <li>10.2 Measurement Equipment Used</li></ul>	31
<ul> <li>10.3 Test SET-UP</li> <li>10.4 Measurement Procedure</li></ul>	31
<ul> <li>10.4 Measurement Procedure</li></ul>	32
<ul> <li>10.5 Field Strength Calculation</li></ul>	33
<ul> <li>10.6 Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz</li></ul>	34
<ul> <li>10.7 Measurement Result:</li> <li>11 PEAK POWER SPECTRAL DENSITY</li> <li>11.1 Standard Applicable:</li> <li>11.2 Measurement Equipment Used:</li> <li>11.3 Test Set-up:</li> <li>11.4 Measurement Procedure:</li> <li>11.5 Measurement Result:</li> <li>12 ANTENNA REQUIREMENT</li> </ul>	35
<ul> <li>11 PEAK POWER SPECTRAL DENSITY</li></ul>	35
<ul> <li>11.1 Standard Applicable:</li></ul>	35
<ul> <li>11.2 Measurement Equipment Used:</li></ul>	50
<ul> <li>11.3 Test Set-up:</li> <li>11.4 Measurement Procedure:</li> <li>11.5 Measurement Result:</li> <li>12 ANTENNA REQUIREMENT</li> </ul>	50
<ul> <li>11.4 Measurement Procedure:</li></ul>	50
11.5 Measurement Result:	50
12 ANTENNA REQUIREMENT	50
	51
12.1 Standard Applicable:	53
	53
12.2 Antenna Connected Construction:	53



# **1 GENERAL INFORMATION**

## 1.1 Product Description

#### General:

Product Name:	Upper Arm Automatic Digital Blood Pressure Monitor
Brand Name: BP3GT1-6B-Super 3G	
Marketing Name: Blood Pressure Monitor	
Model No.:	BP3GT1-6B
Model Difference:	N/A
Software version:	N/A
Hardware version:	N/A
Power Supply:	6V DC from adapter

### Bluetooth Low Energy.

Didetootin Low Energy.		
Frequency Range:	2402 – 2480MHz	
Bluetooth Version:	V4.0 single mode	
Channel number:	40 channels	
Modulation type:	GFSK	
Transmit Power:	6.84 dBm	
Antenna Designation:	PCB Antenna, Antenna Gain: -2.4dBi	

### **1.2 Product Feature of Equipment Under Test**

The equipment under Test (Hereafter Called: EUT) is supporting below features.

Product Feature	
Bluetooth Version	BT4.0 single mode

Note: The above EUT information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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.

でいたいでは、 除非另有就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留知天。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</u> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. 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



#### 1.3 **Test Methodology of Applied Standards**

FCC Part 15, Subpart C §15.247 FCC KDB 558074 D01 DTS Meas. Guidance ANSI C63.10:2013 Note:

1. All test items have been performed and record as per the above standards.

### 1.4 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803 (TAF code 0513)

FCC Registration Numbers are: 509634

### 1.5 Special Accessories

There are no special accessories used while test was conducted.

### 1.6 Equipment Modifications

There was no modification incorporated into the EUT.

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

でいたいでは、 除非另有就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留知天。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</u> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



# **2 SYSTEM TEST CONFIGURATION**

### 2.1 EUT Configuration

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

#### 2.2 EUT Exercise

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 plan. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz.. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plan. For emission measurements above 1 GHz, the table height shall be 1.5 m. 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.

#### 2.4 Measurement Results Explanation Example

#### For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

#### Note:

The spectrum analyzer offset is derived from RF cable loss 2.1dB.

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.

でいたいでは、 除非另有就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留知天。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</u> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



### 2.5 Configuration of Tested System

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



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

• •	and	No.	Series No.	Data Ca- ble	Power Cord
uetooth Test	N/A	N/A	N/A	N/A	N/A
	etooth Test oftware	N/A	N/A N/A	N/A N/A N/A	N/A N/A N/A N/A

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

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 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 unlawful and offenders may be prosecuted to the fullest extent 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 Emission	Compliant
§15.247(b) (3)	(3) Peak Output Power	
§15.247(a)(2)	6dB Bandwidth	Compliant
§15.247(d)	Conducted Band Edge and Spurious Emission	Compliant
§15.247(d)	Radiated Band Edge and Spurious Emission	Compliant
§15.247(e)	Peak Power Density	Compliant
§15.203 §15.247(b)	Antenna Requirement	Compliant

# **4 DESCRIPTION OF TEST MODES**

### 4.1 Operated in 2400 ~ 2483.5MHz Band

40 channels are provided for Bluetooth LE

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY	CHANNEL	FREQUENCY	
0	2402 MHz	14	2430 MHz	28	2458 MHz	
1	2404 MHz	15	2432 MHz	29	2460 MHz	
2	2406 MHz	16	2434 MHz	30	2462 MHz	
3	2408 MHz	17	2436 MHz	31	2464 MHz	
4	2410 MHz	18	2438 MHz	32	2466 MHz	
5	2412 MHz	19	2440 MHz	33	2468 MHz	
6	2414 MHz	20	2442 MHz	34	2470 MHz	
7	2416MHz	21	2444 MHz	35	2472 MHz	
8	2418 MHz	22	2446 MHz	36	2474 MHz	
9	2420 MHz	23	2448 MHz	37	2476 MHz	
10	2422 MHz	24	2450 MHz	38	2478 MHz	
11	2424 MHz	25	2452 MHz	39	2480 MHz	
12	2426 MHz	26	2454 MHz			
13	2428 MHz	27	2456 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.

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 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 unlawful and offenders may be prosecuted to the fullest extent of the law pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

## 4.2 The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

### **RADIATED EMISSION TEST:**

	RADI	ATED EMISSIO	N TEST (BELOW 1	GHz)		
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)		
Bluetooth LE         0 to 39         0,20,39         GFSK         1						
	RADI	ATED EMISSIC	N TEST (ABOVE 1	GHz)		
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)		
Bluetooth LE	0 to 39	0,20,39	GFSK	1		

#### Note:

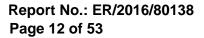
The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for Bluetooth LE Transmitter for channel Low, Mid and High, the worst case E2 position was reported.

### ANTENNA PORT CONDUCTED MEASUREMENT:

		COND	UCTED TEST	
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
Bluetooth LE	0 to 39	0,20,39	GFSK	1

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained to so days only. 除非另有說明,此報告結果僅對測试之樣品負責,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.





## **5 MEASUREMENT UNCERTAINTY**

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Peak Output Power	+/- 0.84 dB
6dB Bandwidth	+/- 51.33 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 0.84 dB
Peak Power Density	+/- 1.3 dB
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC= +/- 0.2%

Radiated Spurious Emission:

	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 180MHz: +/- 3.37dB
Measurement uncertainty	180MHz -417MHz: +/- 3.19dB
(Polarization : Vertical)	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 167MHz: +/- 4.22dB
Measurement uncertainty	167MHz -500MHz: +/- 3.44dB
(Polarization : Horizontal)	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.

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 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 CONDUCTED EMISSION TEST

## 6.1 Standard Applicable:

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 th	e transition frequencies				

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:

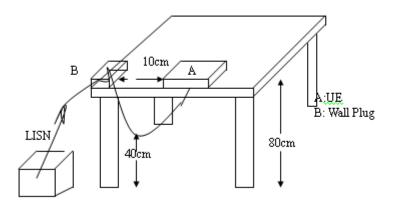
	Со	nducted Emission T	est Site	_	
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
EMI Test Receiver	R&S	ESCI7	100760	05/10/2016	05/09/2017
LISN	SCHWARZ BECK	NSLK 8127	8127-649	05/16/2016	05/15/2017
LISN	MESS TEC	FCC-LISN-50/250-25- 2-01	4034	05/16/2016	05/15/2017
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2015	11/25/2016

### 6.3 EUT Setup:

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
- 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.



## 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 plan.
- 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

#### 6.6 Measurement Result:

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.

でいたいでは、 除非另有就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留知天。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</u> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law 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



peration Mode: operation mode		Test By:	Tin	
Site Conduction Room	Phase:	L1		Temperature: 20 °C
Limit: FCC Class B Conduction(QP)	Power:	AC 120V/60Hz		Humidity: 58 %
Mode: Operation				
Note: Adapter: DSA-6E-05 US 060060				

	Conduc	ted Emission	
File :80138	Data :#2	Date: 2016/8/19	Time: 下午 09:19:37

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1	11 -	0.2380	23.81	0.08	23.89	62.17	-38.28	peak		
2	-	0.3420	28.13	0.09	28.22	59.15	-30.93	peak		
3		0.4060	29.34	0.10	29,44	57.73	-28.29	peak		
4	*	0.6140	28,66	0.11	28.77	56.00	-27.23	peak		
5	17.7	1.6940	24.27	0.14	24.41	56.00	-31.59	peak		
6	10.0	3.9900	22.82	0.24	23.06	56.00	-32.94	peak		

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.



Site Conduction Room	Phase:	N	Temperature: 20 °C
Limit: FCC Class B Conduction(QP)	Power	AC 120V/60Hz	Humidity: 58 %
Mode: Operation			
Note: Adapter: DSA-6E-05 US 060060			

File :80138

**Conducted Emission** Date: 2016/8/19

Data :#1

Time: 下午 09:19:00

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
1.0	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1	0.3420	32.77	0.09	32.86	59.15	-26.29	peak		
2 *	0.4020	35.49	0.10	35.59	57.81	-22.22	peak		
3	0.5220	29.18	0.10	29.28	56.00	-26.72	peak		
4	0.5980	31.02	0.11	31.13	56.00	-24.87	peak		
5	1.7020	27.68	0.14	27.82	56.00	-28.18	peak		
6	3.4260	27.50	0.21	27.71	56.00	-28.29	peak		

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:

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

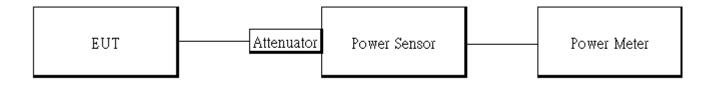
If the transmitting antenna of directional gain greater than 6dBi are used the peak output power form the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

.z measurement Lyupment Oseu.							
	Conducted Emission Test Site						
EQUIPMENT	EQUIPMENT MFR		SERIAL	LAST	CAL DUE.		
TYPE		NUMBER	NUMBER	CAL.			
Power Meter	Anritsu	ML2495A	1005007	12/09/2015	12/08/2016		
Power Sensor	Anritsu	MA2411B	917032	12/09/2015	12/08/2016		
EXA Spectrum Ana- lyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017		
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017		
Coaxial Cable	HUBER+SUHN ER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017		
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017		

#### 72 Measurement Equipment Used:

#### Test Set-up: 7.3



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.

でいたいでは、 除非另有就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留知天。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</u> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



### 7.4 Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

#### **Power Meter:**

It is used as the auxiliary test equipment to conduct the output power measurement.

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

### Formula:

Duty Cycle = Ton / (Ton+Toff)

### **Duty Factor:**

	Duty Cycle (%)	Duty Factor (dB)
BLE	18.63	7.30

Duty Cycle Factor:10\*log(1/18.63/100)=7.3

でいたいでは、 除非另有就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留知天。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</u> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

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.



#### 7.5 Measurement Result:

#### BT4.0 mode:

#### BLE mode:

СН	Frequency (MHz)	Peak Power Output (dBm)	Required Limit
0	2402	6.84	1 Watt = 30 dBm
19	2440	6.34	1 Watt = 30 dBm
39	2480	5.84	1 Watt = 30 dBm

#### Tune up tolerance ± dBm

СН	Frequency (MHz)	Max. Output include tune up tolerance Power (dBm)	Required Limit
0	2402	6.73	1 Watt = 30 dBm
19	2440	6.24	1 Watt = 30 dBm
39	2480	5.73	1 Watt = 30 dBm

\*Note: Measured by power meter, cable loss as 2.1 dB that offsets on the power meter in Peak \*Note: Measured by power meter, as cable loss + Duty cycle factor that offsets on the power meter

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

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 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 unlawful and offenders may be prosecuted to the fullest extent of the law pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



# 8 6dB BANDWIDTH MEASUREMENT

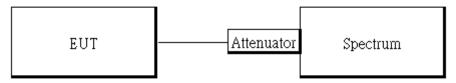
#### Standard Applicable 8.1

The minimum 6 dB bandwidth shall be at least 500 kHz.

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

Conducted Emission Test Site						
EQUIPMENT	MFR MODEL SERIAL		LAST	CAL DUE.		
TYPE		NUMBER	NUMBER	CAL.		
EXA Spectrum Ana- lyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017	
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017	
Coaxial Cable	HUBER+SUHN ER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017	
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017	

### 8.3 Test Set-up:



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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此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.



#### 8.4 Measurement Procedure:

- Place the EUT on the table and set it in transmitting mode. 1.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. For 6dB Bandwidth:

Set the spectrum analyzer as RBW=100 kHz, VBW= 3\*RBW, Span = 5MHz, Detector=Peak, Sweep=auto.

- 5. Mark the peak frequency and –6dB (upper and lower) frequency.
- 6. For 99% Bandwidth:

Set the spectrum analyzer as RBW=1%, VBW=3\*RBW, Span = 2MHz, Detector=Sample, Sweep=auto.

7. Turn on the 99% bandwidth function, max reading.

8. Repeat above procedures until all test default channel is completed

### 8.5 Measurement Result:

Frequency (MHz)	6d B BW (MHz)	BW (MHz)	Result
2402	0.6688	> 0.5	PASS
2440	0.6713	> 0.5	PASS
2480	0.6934	> 0.5	PASS

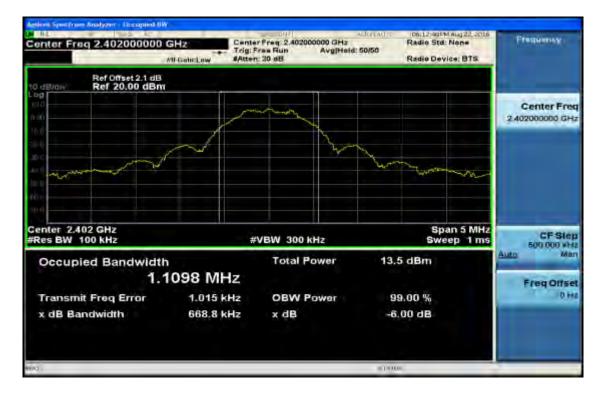
Note: Refer to next page for plots.

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

でいたいでは、 除非另有就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留知天。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</u> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



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



## 6dB Band Width Test Data CH-Mid

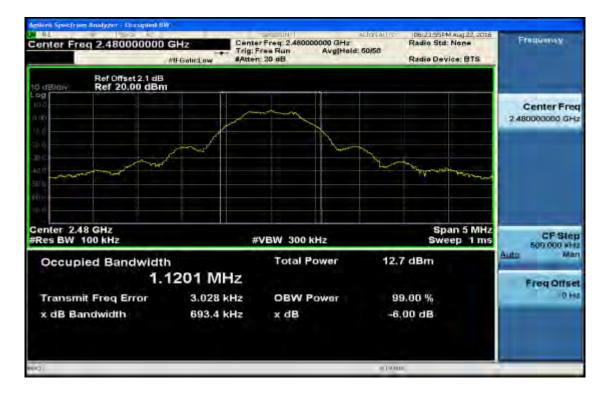


Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

Unless otherwise stated the results shown in this test report feiter only to the sample(s) tested and such sample(s) are relatined to so 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



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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有说明,此根告结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 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 ap-reparatore of this document is unaveruent is unaveruent to any be prosecuted to the fulle at vertex 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



# 9 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

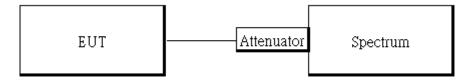
#### Standard Applicable 9.1

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. 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).

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

Conducted Emission Test Site						
EQUIPMENT	QUIPMENT MFR MODEL SERIA			LAST	CAL DUE.	
TYPE		NUMBER	NUMBER	CAL.		
EXA Spectrum Ana- lyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017	
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017	
Coaxial Cable	HUBER+SUHNE R	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017	
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017	

#### 9.3 Test SET-UP:



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

Re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元。本報告未經本公司書面許可,不可能份複製。 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 <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



### 9.4 Measurement Procedure

### **Conducted Band Edge:**

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
- 5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
- 6. Mark the highest reading of the emission as the reference level measurement.
- Set DL as the limit = reading on marker 1 20dBm
- 8. 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.
- 9. Repeat above procedures until all default test channel (low, middle, and high) was complete.

### **Conducted Spurious Emission:**

- To connect Antenna Port of EUT to Spectrum.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Set RBW = 100 kHz & VBW=300 kHz, Detector = Peak, Sweep = Auto
- 4. Allow trace to fully stabilize.
- 5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- 6. Repeat above procedures until all default test channel measured were complete.

### 9.5 Measurement Result

Band Edge	Band Edge Limit					
Frequency (MHz)	RF Power Density (dBm)	Bandedge Limit = PSD - 20dB (dBm)				
2402	6.87	-13.13				
2480	5.74	-14.26				

#### **Band Edgo Limit**

NOTE: cable loss as 2.1dB that offsets in the spectrum

NOTE: Refer to next page for plots.

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

でいたいでは、 除非另有就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留知天。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</u> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



### Power Spectral Density for Bandedge Limit (CH-Low)



# Power Spectral Density for Bandedge Limit (CH-High)

Center Freq 2.48000000	CH2 PHO: Wilde C Trig: Free Run IFGaint. sw #Atten: 20 dB	Avg Type: Log-Pwr	DB124.06FM.Aug.22, 2016 TRACE 12 25 TYPE Myseconder DB1 P.NH (2011)	Frequency
Ref Offset 2.1 dB Ref 12.10 dBm		Mkr1 2	479 998 5 GHz 5.74 dBm	Auto Tun
10	www.www.	South La sure	Murray Contraction	Center Fre 2.480000000 GH
20 martin martine			North States	Start Fre 2.479250000 GH
79				Stop Fre 2.490750000 GH
/ŋ				CF Ste 150.000 kH Auto Ma
14				Freq Offse 0 H
tart 2.4792500 GHz Res BW 100 kHz	#VBW 300 kHz	Sweep 1	op 2.4807500 GHz .000 ms (1001 pts)	

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

Unless otherwise stated the results shown in this test report feiter only to the sample(s) tested and such sample(s) are relatined to so 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.

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



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



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

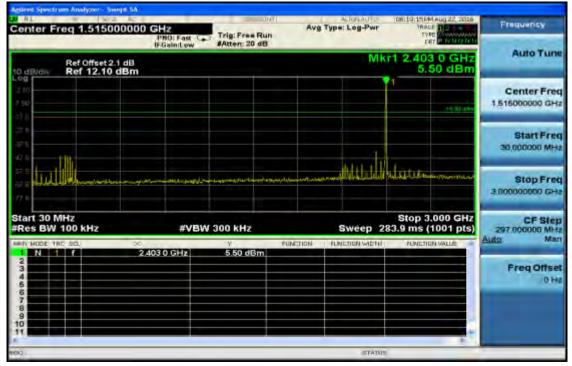


Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

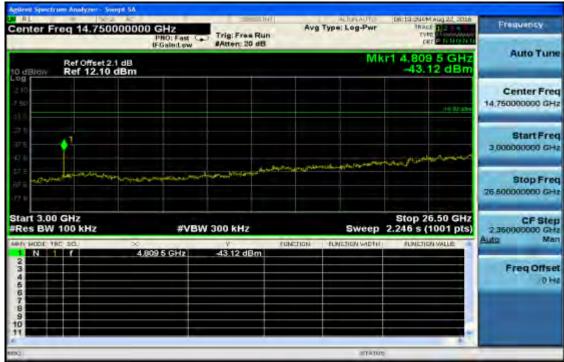
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留的天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, 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 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 that prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or ap-response of the document is unautifue and differences may 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.



# **Conducted Spurious Emission Measurement Result** CH-Low 30MHz - 3GHz



# CH-Low 3GHz - 26.5GHz



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

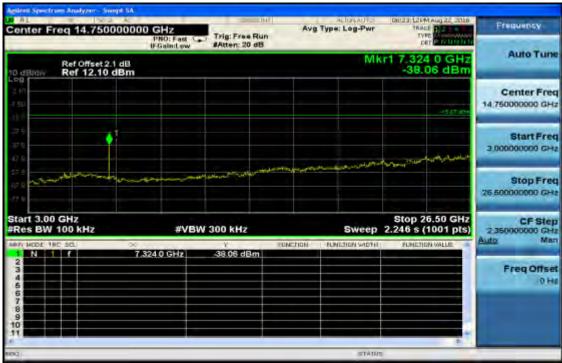
Unless otherwise stated the results shown in this test report feiter only to the sample(s) tested and such sample(s) are relatined to so days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, 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.



## CH-Mid 30MHz – 3GHz

N RL 0 502 AC	And and a second second	- Internet	ALTURAUTO	06:22:50PM Aug 22, 2016	Frequency
Center Freq 1.51500000	PNO: Fast C	Trig: Free Run #Atten: 20 dB	Avg Type: Log-Pwr	TYPE PARAMETER	Prequency
Ref Offset 2.1 dB			Mk	r1 2.441 6 GHz 4.33 dBm	Auto Tune
2 10 7 50				-1557.601	Center Freq 1,51600000 GHz
275 275 175					Start Freq 30,000000 MHz
	ungala disana dina mer	yázihiki a jeryyyy do teryyy ter		Hadalaha seringangan seri	Stop Freq 3 00000000 GHz
Start 30 MHz #Res BW 100 kHz	#VBW	300 kHz	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	CF Step 297.000000 MHz
	2.441 6 GHz	V Fu 4.33 dBm	NETION FUNCTION SOUTH	FUNCTION WALLE	Auto Man
2 3 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6					Freq Offset
7 8 9 10					
0 1931			STATUS	5.1	

# CH-Mid 3GHz – 26.5GHz



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

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. 除非另有说明,此根告结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 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 ap-reparatore of this document is unaveruent is unaveruent to any be prosecuted to the fulle at vertex of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

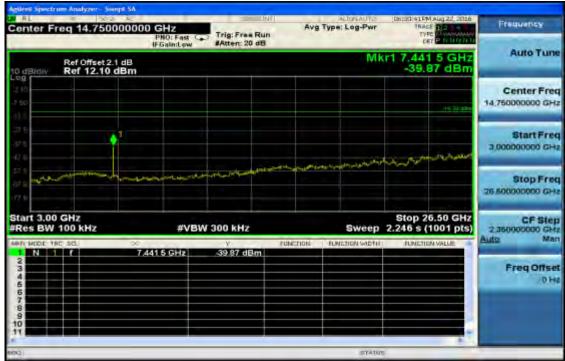
SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134號



# CH-High 30MHz – 3GHz

Agilient Spectrum Analyzer - Swept SA					
Center Freq 1.51500000	PND: Fast Call	Trig: Free Run	Avg Type: Log-Pwr	DECOMPAND 22, 2016 TRACE 1, 2 CONTRACT TYPE IN STREET	Frequency
Ref Offset 2.1 dB	in Ordenic pre		Mik	r1 2.480 3 GHz 5.68 dBm	Auto Tune
210 .7 50				04 28 400	Center Freq 1,51600000 GHz
27 E -27 E -17 E					Start Freq 30,000000 MHz
57 5 67 6 	ورزيه والمراجع والمراجع	an a	يبايا الجيزينية بعدم الم	Halithanenan	Stop Freq 3.00000000 GHz
Start 30 MHz #Res BW 100 kHz	#VBW (	300 KHZ	Sweep 2	Stop 3.000 GHz 83.9 ms (1001 pts)	CF Step 297.000000 MHz Auto Man
1 N 1 f 2 2 3 4 5	.480 3 GHz	5.69 dBm		TONLINEW WEDE	Freq Offset 0 Ha
6 7 8 9 9 10 11					
(DRM)			STATUS		

# CH- High 3GHz – 26.5GHz



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

Contention is 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.

# 10 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

## **10.1 Standard Applicable**

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. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 limit as below.

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.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

### Note:

- 1. The lower limit shall apply at the transition frequencies.
- Emission level (dBµV/m) = 20 log Emission level (dBµV/m)

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

Chine Source and a set of the s 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



#### **10.2 Measurement Equipment Used**

966 Chamber										
EQUIPMENT	EQUIPMENT MFR		SERIAL	LAST	CAL DUE.					
TYPE		NUMBER	NUMBER	CAL.						
Bi-log Antenna	SCHWAZBECK	VULB9168	300	12/12/2015	12/11/2016					
Horn antenna	ETS.LINDGREN	3117	123991	12/12/2015	12/11/2016					
Horn Antenna	Schwarzbeck	BBHA9170	185	07/25/2016	07/24/2017					
Spectrum Analyzer	R&S	FSV-30	101398	09/23/2015	09/22/2016					
Pre-Amplifier	HP	8447F	3113A06892	01/02/2016	01/01/2017					
Pre-Amplifier	Agilent	8447D	2944A07676	01/02/2016	01/01/2017					
Low Loss Cable	Huber Suhner	966_RX	9	01/02/2016	01/01/2017					
Turn Table	HD	DT420	N/A	N.C.R	N.C.R					
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R					
Controller	HD	HD100	N/A	N.C.R	N.C.R					
Site Cal	SGS	1166 chamber	N/A	01/02/2016	01/01/2017					
3m Site NSA	SGS	966 chamber	N/A	07/02/2016	07/01/2017					

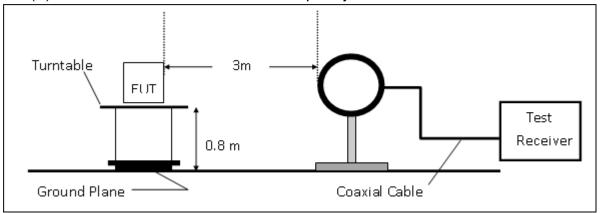
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測试之樣品負責,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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

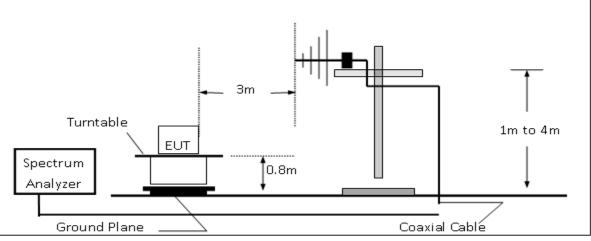


### 10.3 Test SET-UP

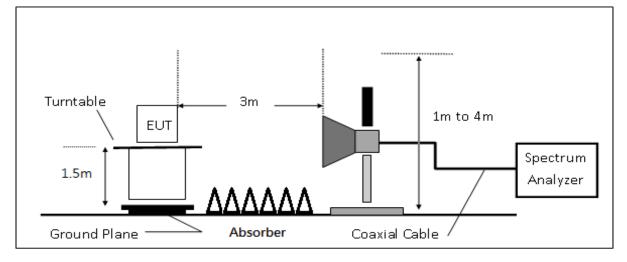
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



### (B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



(C) 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.

Contention is 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.



#### **10.4 Measurement Procedure**

- 1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 2. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 0.8m for frequency> 1GHz above ground plan.
- 3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 5. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
- 6. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
- 7. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
- 8. 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.
- 9. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 10. 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.
- 11. Repeat above procedures until all default test channel measured were complete.

Window and Mine State and State an 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

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



### **10.5 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	6	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

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.

## 10.6 Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

### **10.7 Measurement Result:**

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

でいたいでは、 除非另有就明,此報告結果僅對測試之樣品負責,同時此樣品僅保留知天。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</u> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law SGS Taiwan Ltd.

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



### Radiated Band Edge Measurement Result (BT4.0 mode)

Operation Mode : BLE		Test Date :		08/22/2016			
Fundamental Frequency: 2402 MHz		Temp. / Humi. :		22 deg_C / 61 RH			
Operation	Operation Band : Bandedge CH LC		ge CH LOW	Test Engineer :		Kane	
EUT Pol. : E2 Plane		Measurement Antenna Pol. :		VERTICAL			
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level FS			@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
2390.00	Е	Average	27.14	28.88	-1.74	54.00	-26.86
2390.00	Е	Peak	41.29	43.03	-1.74	74.00	-32.71
Operation Mode : BLE		Test Date :		08/22/2016			
Fundamen	Fundamental Frequency: 2402 MHz		Temp. / Humi. :		22 deg_C / 61 RH		
Operation Band : Bandedge CH L		ge CH LOW	Test Engineer :		Kane		
EUT Pol.: E2 Plane		Measurement Antenna Pol. :		HORIZONTAL			
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	/el FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
2390.00	E	Average	27.31	29.05	-1.74	54.00	-26.69
2390.00	Е	Peak	40.98	42.73	-1.74	74.00	-33.02

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測试之樣品負責,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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

2483.50

Е

Peak

54.61

-19.39

74.00

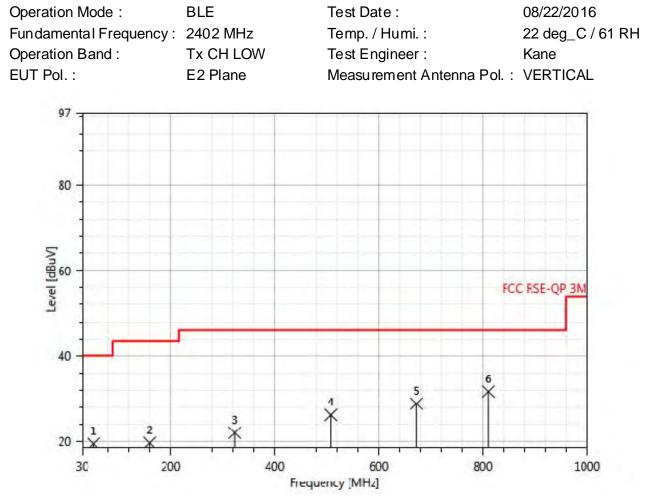
Operation	Mode :	BLE		Test Date :		08/22/2016	
Fundamer	ntal Frequen	ncy: 2480 MI	Hz	Temp. / Humi. :		22 deg_C / 61 RH	
Operation	Operation Band :		ge CH HIGH	Test Engineer :		Kane	
EUT Pol. :		E2 Plan	е	Measurement Ante	enna Pol. :	VERTICAL	
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	/el FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
2483.50	E	Average	27.17	28.79	-1.62	54.00	-26.83
2483.50	Е	Peak	43.01	44.62	-1.62	74.00	-30.99
Operation	Mode :	BLE		Test Date :		08/22/2016	
Fundamer	ntal Frequen	ncy: 2480 MI	Hz	Temp. / Humi. :		22 deg_C / 6	61 RH
Operation	Band :	Banded	ge CH HIGH	Test Engineer :		Kane	
EUT Pol. :		E2 Plan	е	Measurement Ante	enna Pol. :	HORIZONT	۹L
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Lev	/el FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
2483.50	E	Average	29.96	31.58	-1.62	54.00	-24.04

56.23

-1.62



### Radiated Spurious Emission Measurement Result (BT4.0 mode) For Frequency form 30MHz to 1000MHz



Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
52.31	S	Peak	19.48	27.25	-7.77	40.00	-20.52
159.98	S	Peak	19.69	27.07	-7.38	43.50	-23.81
322.94	S	Peak	22.04	27.56	-5.51	46.00	-23.96
508.21	S	Peak	26.21	28.55	-2.35	46.00	-19.79
672.14	S	Peak	28.85	28.55	0.30	46.00	-17.15
810.85	S	Peak	31.67	28.40	3.27	46.00	-14.33
322.94 508.21 672.14	S S S	Peak Peak Peak	22.04 26.21 28.85	27.56 28.55 28.55	-5.51 -2.35 0.30	46.00 46.00 46.00	-23.96 -19.79 -17.15

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.

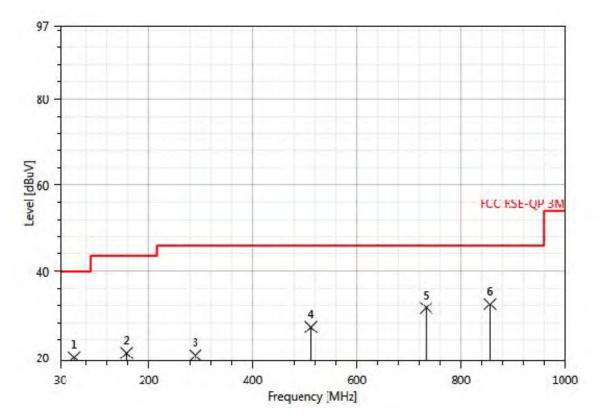
Contention is stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are relative for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, 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.

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



**Operation Mode :** BLE Fundamental Frequency: 2402 MHz **Operation Band :** Tx CH LOW EUT Pol. : E2 Plane

Test Date : 08/22/2016 Temp. / Humi. : 22 deg C / 61 RH Test Engineer : Kane Measurement Antenna Pol. : HORIZONTAL



Freq.	Note	Decetor	Actual	Spectrum	Factor	Lim it	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
57.16	S	Peak	20.04	28.01	-7.97	40.00	-19.96
158.04	S	Peak	21.03	28.48	-7.45	43.50	-22.47
289.96	S	Peak	20.45	26.53	-6.08	46.00	-25.55
512.09	S	Peak	27.07	29.05	-1.98	46.00	-18.93
733.25	S	Peak	31.48	29.52	1.96	46.00	-14.52
856.44	S	Peak	32.37	27.89	4.48	46.00	-13.63

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.



**Operation Mode :** BLE Test Date : 08/22/2016 Fundamental Frequency: 2442 MHz Temp. / Humi. : 22 deg C / 61 RH **Operation Band :** Tx CH MID Test Engineer : Kane EUT Pol. : E2 Plane Measurement Antenna Pol. : VERTICAL 97 80 Level [dBuV] FCC RSE-QP 3M 40 6 4 3 20 200 400 600 800 30 1000 Frequency [MHz]

Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
54.25	S	Peak	20.18	28.00	-7.82	40.00	-19.82
178.41	S	Peak	19.45	28.00	-8.55	43.50	-24.05
406.36	S	Peak	24.53	28.12	-3.59	46.00	-21.47
634.31	S	Peak	28.05	27.54	0.51	46.00	-17.95
726.46	S	Peak	29.48	27.74	1.74	46.00	-16.52
773.99	S	Peak	31.57	28.80	2.77	46.00	-14.43

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.



**Operation Mode :** BLE Test Date : 08/22/2016 Fundamental Frequency: 2442 MHz Temp. / Humi. : 22 deg C / 61 RH **Operation Band :** Tx CH MID Test Engineer : Kane EUT Pol. : E2 Plane Measurement Antenna Pol. : HORIZONTAL 97 80 Level [dBuV] FCC RSE-QP 3N 40 5 6 3 X 2 20 200 400 600 800 1000 30

Frequency [MHz]

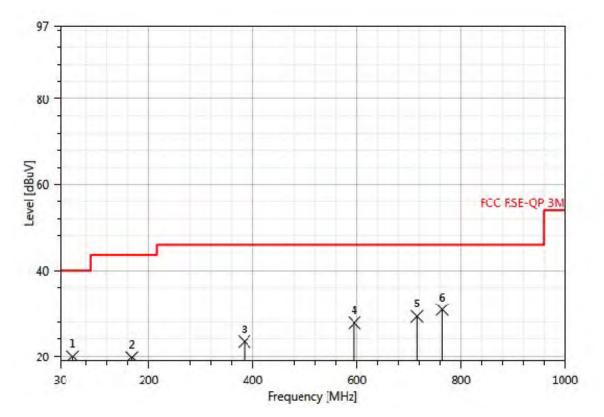
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
52.31	S	Peak	20.78	28.55	-7.77	40.00	-19.22
177.44	S	Peak	19.72	28.18	-8.46	43.50	-23.78
371.44	S	Peak	23.14	27.70	-4.56	46.00	-22.86
527.61	S	Peak	26.92	28.24	-1.32	46.00	-19.08
633.34	S	Peak	29.61	29.21	0.40	46.00	-16.39
774.96	S	Peak	30.08	27.32	2.76	46.00	-15.92

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.



**Operation Mode :** BLE Fundamental Frequency: 2480 MHz **Operation Band :** Tx CH HIGH EUT Pol. : E2 Plane

Test Date : 08/22/2016 Temp. / Humi. : 22 deg C / 61 RH Test Engineer : Kane Measurement Antenna Pol. : VERTICAL



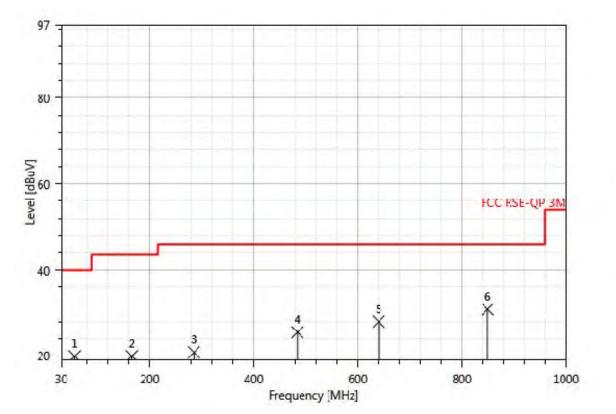
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
54.25	S	Peak	19.96	27.78	-7.82	40.00	-20.04
167.74	S	Peak	19.78	27.24	-7.46	43.50	-23.72
384.05	S	Peak	23.40	27.75	-4.35	46.00	-22.60
595.51	S	Peak	27.83	27.79	0.04	46.00	-18.17
715.79	S	Peak	29.29	27.86	1.43	46.00	-16.71
764.29	S	Peak	30.86	27.89	2.97	46.00	-15.14

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.



**Operation Mode :** BLE Fundamental Frequency: 2480 MHz **Operation Band :** Tx CH HIGH EUT Pol. : E2 Plane

Test Date : 08/22/2016 Temp. / Humi. : 22 deg C / 61 RH Test Engineer : Kane Measurement Antenna Pol. : HORIZONTAL

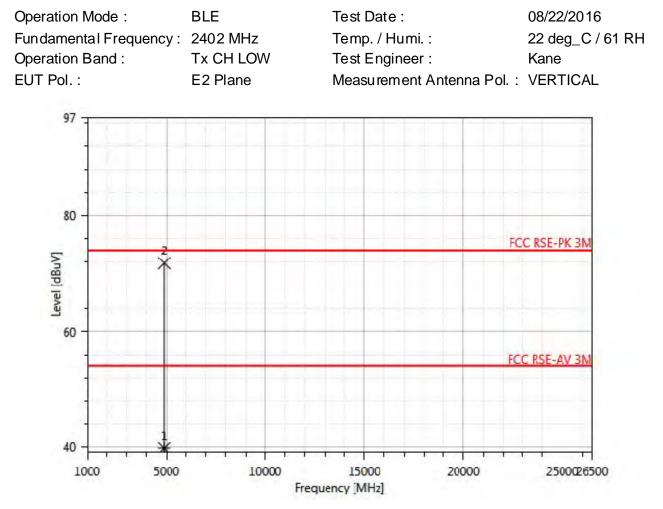


Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
56.19	S	Peak	19.95	27.87	-7.92	40.00	-20.05
165.80	S	Peak	19.99	27.38	-7.39	43.50	-23.51
285.11	S	Peak	20.87	27.11	-6.24	46.00	-25.13
483.96	S	Peak	25.51	27.98	-2.46	46.00	-20.49
640.13	S	Peak	28.00	27.56	0.43	46.00	-18.00
849.65	S	Peak	30.83	27.11	3.72	46.00	-15.17

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.



# **Radiated Spurious Emission Measurement Result (BT4.0 mode)** For Frequency above 1GHz



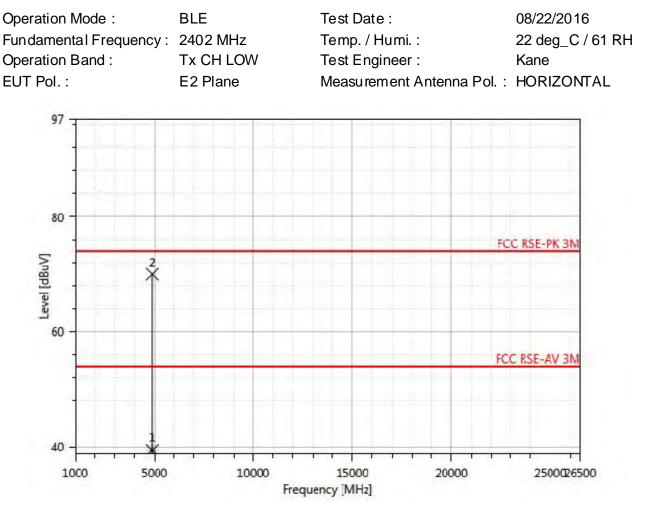
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4804.00	Н	Average	40.32	35.40	4.92	54.00	-13.68
4804.00	Н	Peak	71.75	66.83	4.92	74.00	-2.25

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

Unless otherwise stated the results shown in this test report feiter only to the sample(s) tested and such sample(s) are relatined to so 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.

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

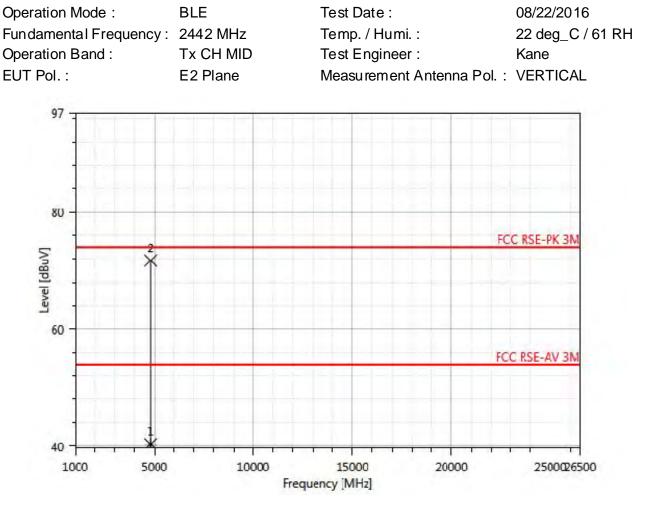




Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	
4804.00	Н	Average	39.80	34.88	4.92	54.00	-14.20	
4804.00	Н	Peak	69.47	64.55	4.92	74.00	-4.53	

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.





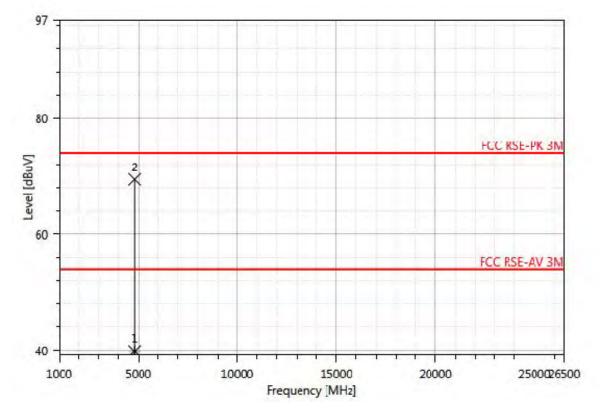
Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	_
4884.00	Н	Average	39.79	34.60	5.19	54.00	-14.21	
4884.00	Н	Peak	71.80	66.60	5.19	74.00	-2.20	

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.



**Operation Mode :** BLE Fundamental Frequency: 2442 MHz **Operation Band :** Tx CH MID EUT Pol. : E2 Plane

Test Date : 08/22/2016 Temp. / Humi. : 22 deg C / 61 RH Test Engineer : Kane Measurement Antenna Pol. : HORIZONTAL



Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4884.00	Н	Average	39.41	34.22	5.19	54.00	-14.59
4884.00	Н	Peak	69.98	64.79	5.19	74.00	-4.02

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.



**Operation Mode :** BLE Test Date : 08/22/2016 Fundamental Frequency: 2480 MHz Temp. / Humi. : 22 deg C / 61 RH **Operation Band :** Tx CH HIGH Test Engineer : Kane EUT Pol. : E2 Plane Measurement Antenna Pol. : VERTICAL 97 80 FCC RSE-PK 3M Level [dBuV] 2 60 FCC RSE-AV 3M 40 10000 20000 1000 5000 15000 2500@6500 Frequency [MHz]

Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin	
		Mode	Reading Level	FS		@3m		
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB	
4960.00	Н	Average	39.10	33.81	5.29	54.00	-14.90	
4960.00	Н	Peak	69.18	63.89	5.29	74.00	-4.82	

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.



**Operation Mode :** BLE Test Date : 08/22/2016 Fundamental Frequency: 2480 MHz Temp. / Humi. : 22 deg C / 61 RH **Operation Band :** Tx CH HIGH Test Engineer : Kane EUT Pol. : E2 Plane Measurement Antenna Pol. : HORIZONTAL 97 80 FCC RSE-PK 3N Level [dBuV] 2 60 FCC RSE-AV 3M 40 10000 20000 1000 5000 15000 2500@6500 Frequency [MHz]

Freq.	Note	Decetor	Actual	Spectrum	Factor	Limit	Margin
		Mode	Reading Level	FS		@3m	
MHz	F/H/E/S	QP/AV/PK	dBµV/m	dBµV/m	dB	dBuV/m	dB
4960.00	Н	Average	38.28	32.99	5.29	54.00	-15.72
4960.00	Н	Peak	64.15	58.87	5.29	74.00	-9.85

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 PEAK POWER SPECTRAL DENSITY**

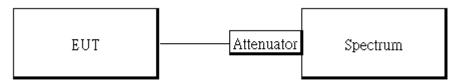
## 11.1 Standard Applicable:

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.

### 11.2 Measurement Equipment Used:

Conducted Emission Test Site								
EQUIPMENT MFR		MODEL	SERIAL	LAST	CAL DUE.			
TYPE		NUMBER	NUMBER	CAL.				
EXA Spectrum Ana- lyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017			
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017			
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017			
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017			

### 11.3 Test Set-up:



### **11.4 Measurement Procedure:**

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
- 3. Set the span to 1.5 times the DTS channel bandwidth.
- 4. Set the RBW = 3 kHz. & the VBW = 10 kHz
- For defining Restricted Band Edge Limit: Set the RBW = 100kHz & VBW = 300 kHz.
- 6. Detector = peak.
- 7. Sweep time = auto couple.
- 8. Trace mode = max hold.
- 9. Allow trace to fully stabilize.
- 10. Use the peak marker function to determine the maximum amplitude level.

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 document is unlawful and offenders may be prosecuted to the fullest extent of the law.



#### 11.5 Measurement Result:

#### BT4.0 mode

BLE mode						
Frequency (MHz)	RF Power Den sity (dBm)	Maximum Limit (dBm)	Result			
2402	-5.47	8	PASS			
2442	-6.52	8	PASS			
2480	-6.82	8	PASS			

NOTE: cable loss as 2.1dB that offsets in the spectrum





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

Unless otherwise stated the results shown in this test report feiter only to the sample(s) tested and such sample(s) are relatined to so 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.

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-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.

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



# **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.

If the transmitting antenna is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

In case of point-to-point operation, the power shall be reduced by the one dB for every 3 dB that the directional gain of antenna exceeds 6dBi.

## **12.2 Antenna Connected Construction:**

An embedded-in antenna design is used.

The antenna is designed with unique RF connector and has 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.