

# SAR TEST REPORT



The following samples were submitted and identified on behalf of the client as:

Product Name	GT78-V Rugged Android Tablet					
Brand Name	AMobile					
Model No.	GT78-V8					
Series Model No.	GT78-V7					
Prepared for	Hong Kong AMobile Intelligent Corp. Limited Taiwan					
	Branch					
	8F1, No.700, Zhongzheng Rd., Zhonghe Dist., New					
	Taipei City 235, Taiwan					
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013,					
	KDB248227D01v02r02,KDB865664D01v01r04,					
	KDB865664D02v01r02,KDB447498D01v06,					
	KDB616217D04v01r02,					
FCC ID	2AQ5W-GT78V8					
Date of Receipt	Aug. 02, 2018					
Date of Test(s)	Dec. 17, 2018 ~ Dec. 19, 2018					
Date of Issue	Jan. 16, 2019					
In the configuration tested, the EUT	Γ complied with the standards specified above.					

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Electronic & Communication Laboratory or testing done by SGS Taiwan Electronic & Communication Laboratory in connection with distribution or use of the product described in this report must be approved by SGS Taiwan Electronic & Communication Laboratory in writing.

#### Signed on behalf of SGS

Clerk / Ruby Ou	Engineer / Bond Tsai	Asst. Manager / John Yeh		
Kuby Ou	Bonditsai	John Teh		
		Date: Jan. 16, 2019		

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 www.tw.sas.com

Member of SGS Group

f (886-2) 2298-0488



Report No. : E5/2018/80006 Page: 2 of 103

## **Revision History**

Report Number	Revision	Description	Issue Date
E5/2018/80006	Rev.00	Initial creation of document	Jan. 04, 2019
E5/2018/80006	Rev.01	Modify ch 2/4	Jan. 16, 2019

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

```
www.tw.sgs.com
```



Report No. : E5/2018/80006 Page: 3 of 103

#### Contents

1. General Information	4
1.1 Testing Laboratory	
1.2 Details of Applicant	
1.3 Description of EUT	5
1.4 Test Environment	
1.5 Operation Description	9
1.6 The SAR Measurement System	11
1.7 System Components	
1.8 SAR System Verification	15
1.9 Tissue Simulant Fluid for the Frequency Band	17
1.10 Evaluation Procedures	
1.11 Probe Calibration Procedures	20
1.12 Test Standards and Limits	23
2. Summary of Results	25
3. Instruments List	26
4. Measurements	27
5. SAR System Performance Verification	
6. DAE & Probe Calibration Certificate	
7. Uncertainty Budget	
8. Phantom Description	
9. System Validation from Original Equipment Supplier	
3. System vandation nom original Equipment Supplier	

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.



## 1. General Information

#### 1.1 Testing Laboratory

SGS Taiwan Ltd. Electronics & Communication Laboratory					
No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 33383, Taiwan					
Tel	el +886-2-2299-3279				
Fax +886-2-2298-0488					
Internet	http://www.tw.sgs.com/				

#### **1.2 Details of Applicant**

Company Name	Hong Kong AMobile Intelligent Corp. Limited Taiwan Branch
Company Address	8F1, No.700, Zhongzheng Rd., Zhonghe Dist., New Taipei City 235, Taiwan

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

```
www.tw.sas.com
```



#### **1.3 Description of EUT**

Equipment Under Test	GT78-V Rugged Android Tablet								
Brand Name	AMobile								
Model No.	GT78-V8								
Series Model No.	GT78-V7								
FCC ID	2AQ5W-GT78V8								
Mode of Operation	⊠WLAN802.11 a/b/g/n(20M/40M) ⊠Bluetooth	-							
	WLAN802.11 a/b/g/n(20M/40M)		1						
Duty Cycle	Bluetooth		1						
	WLAN802.11 b/g/n(20M)	2412	_	2462					
	WLAN802.11 n(40M)	2422	_	2452					
	WLAN802.11 a/n(20M) 5.2G	5180	_	5240					
TX Frequency Range (MHz)	WLAN802.11 n(40M) 5.2G	5190	_	5230					
(	WLAN802.11 a/n(20M) 5.8G	5745	_	5825					
	WLAN802.11 n(40M) 5.8G	5755	—	5795					
	Bluetooth	2402	_	2480					
	WLAN802.11 b/g/n(20M)	1	_	11					
	WLAN802.11 n(40M)	3	_	9					
	WLAN802.11 a/n(20M) 5.2G		_	48					
Channel Number (ARFCN)	WLAN802.11 n(40M) 5.2G	38	_	46					
	WLAN802.11 a/n(20M) 5.8G	149	_	165					
	WLAN802.11 n(40M) 5.8G	151	_	159					
	Bluetooth	0	_	78					

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd. t (886-2) 2299-3279

f (886-2) 2298-0488



Max. SAR (1g) (Unit: W/Kg)						
Band	Measured	Reported	Channel	Position		
WLAN 802.11b	0.17	0.19	6	Back side		
Bluetooth(BLE)	0.00	0.01	39	Back side		
WLAN 802.11a 5.2G	1.23	1.23	44	Back side		
WLAN 802.11a 5.8	1.14	1.15	165	Back side		

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd. t (886-2) 2299-3279

```
www.tw.sgs.com
```



Main Antenna							
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	
		1	2412		12.71	12.42	
	802.11b	6	2437	1Mbps	13.65	13.35	
		11	2462		12.36	12.35	
	802.11g	1	2412	6Mbps	9.32	9.24	
		6	2437		13.54	11.63	
2450 MHz		11	2462		9.00	8.89	
2400 1011 12	802.11n20-HT0	1	2412		9.60	9.50	
		6	2437	MCS0	10.73	10.71	
		11	2462		9.52	9.49	
		3	2422		10.36	10.31	
	802.11n40-HT0	6	2437	MCS0	10.65	10.64	
		9	2452		9.85	9.62	
Main Antenna							
Max. Rated							

Frequency

Data Rate

#### WLAN802.11 a/b/g/n(20M/40M) conducted power table:

				(11112)		Tolerance	(dBm)
						(dBm)	, , , , , , , , , , , , , , , , , , ,
			36	5180		8.01	7.83
		802.11a	44	5220	6Mbps	8.32	8.31
5.15-5.25 GHz			48	5240		8.28	8.26
		802.11n20-HT0	36	5180	MCS0	7.95	7.93
	0.10-0.20 GHZ		44	5220		8.31	8.28
			48	5240		8.26	8.19
	802.11n40-HT0	38	5190	MCS0	7.14	7.11	
		002.11140-010	46	5230		7.38	7.37

Channel

Mode

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

t (886-2) 2299-3279

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

Band

f (886-2) 2298-0488

www.tw.sas.com

Avg. Power

+ Max.

Average

power



	Main Antenna								
Mode	Mode Mode		Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
	802.11a 802.11n-HT20	149	5745	6Mbps	9.04	9.02			
		157	5785		9.05	9.01			
		165	5825		9.13	9.08			
5800 MHz		149	5745		7.85	7.71			
5000 IVIT IZ		157	5785	MCS0	8.08	8.03			
		165	5825		8.21	8.12			
	802.11n-HT40	151	5755	MCS0	8.35	8.25			
	002.111 <b>-H</b> 140	159	5795	IVICSU	7.92	7.88			

#### Bluetooth conducted power table:

Mode	Channel	Frequency	Average	Output Pow	ver (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)
		(10112)	(MHz) 1Mbps		3Mbps	
	CH 00	2402	-4.63	-6.86	-6.88	
BR/EDR	CH 39	2441	-3.78	-6.27	-6.26	-2.5
	CH 78	2480	-2.68	-5.37	-5.37	

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Max. Rated Avg.		
			GFSK	Power + Max. Tolerance (dBm)		
	CH 00	2402	-3.47			
LE	CH 19	2440	-2.75	-1.5		
	CH 39	2480	-1.68			

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.



#### **1.4 Test Environment**

Ambient Temperature: 22±2° C Tissue Simulating Liquid: 22±2° C

#### **1.5 Operation Description**

Use chipset specific software to control the EUT, and makes it transmit in maximum power. Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s). The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.

EUT was tested as below,

Back/top/bottom/right/left sides 0mm.

Note:

802.11b DSSS SAR Test Requirements:

- 1. SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is  $\leq$ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 2. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

802.11g/n OFDM SAR Test Exclusion Requirements:

3. SAR is not required for 802.11g/n when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is  $\leq 1.2$  W/kg.

Initial Test Configuration:

4. An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band.

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

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



- SAR is measured using the highest measured maximum output power channel. When the reported SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the reported SAR is  $\leq 1.2$ W/kg or all required channels are tested.
- 6. Since the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for subsequent test configuration.
- 7. BT and WLAN use the same antenna path, but they can't transmit at the same time.
- 8. According to KDB447498 D01, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is  $\leq$  0.8 W/kg, when the transmission band is  $\leq$  100 MHz.
- 9. According to KDB865664 D01, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is  $\geq 0.8$  W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is  $\geq$  1.45 W/kg (~10% from the 1-g SAR limit)

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

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

f (886-2) 2298-0488



#### 1.6 The SAR Measurement System

A block diagram of the SAR measurement System is given in Fig. a. This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY 5 professional system). The model EX3DV4 field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR=  $\sigma$  (|Ei|<sup>2</sup>)/  $\rho$  where  $\sigma$  and  $\rho$  are the conductivity and mass density of the tissue-simulant.

The DASY 5 system for performing compliance tests consists of the following items:

- 1. A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
- 2. A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage intissue simulating liquid. The probe is equipped with an optical surface detector system.
- 3. A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

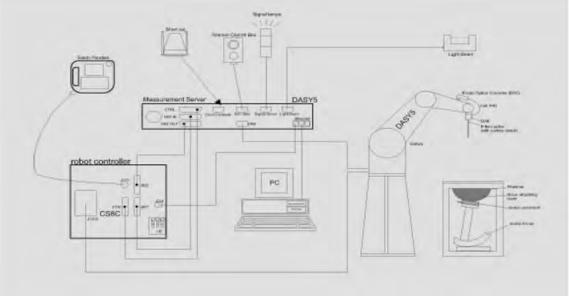


Fig. a The block diagram of SAR system

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

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

> No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.



- 4. The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- 5. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- 6. A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- 7. A computer operating Windows 7.
- 8. DASY 5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- Tissue simulating liquid mixed according to the given recipes. 10.
- 11. Validation dipole kits allowing to validate the proper functioning of the system.

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

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



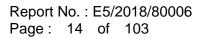
#### **1.7 System Components**

#### **EX3DV4 E-Field Probe**

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)						
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 2450/5200/5800 MHz Additional CF for other liquids and frequencies upon request						
Frequency	10 MHz to > 6 GHz						
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)						
Dynamic	$10 \mu\text{W/g}$ to > 100 mW/g						
Range	Linearity: $\pm 0.2$ dB (noise: typically < 1 $\mu$ W/g)						
Dimensions	Tip diameter: 2.5 mm						
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.						

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.





#### PHANTOM

Model	ELI
Construction	The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.
Shell	2 ± 0.2 mm
Thickness	
Filling Volume	Approx. 30 liters
Dimensions	Major axis: 600 mm
	Minor axis: 400 mm

#### **DEVICE HOLDER**

Construction	The device holder (Supporter) for Notebook is made by POM (polyoxymethylene resin ) , which is non-metal and non-conductive. The height can be adjusted to fit varies kind of notebooks.	
		Device Holder

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

f (886-2) 2298-0488



#### **1.8 SAR System Verification**

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. These tests were done at 2450/5200/5800 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the liquid depth above the ear reference points was  $\geq$  15 cm  $\pm$  5 mm (frequency  $\leq$  3 GHz) or  $\geq$  10 cm  $\pm$  5 mm (frequency > 3 G Hz) in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

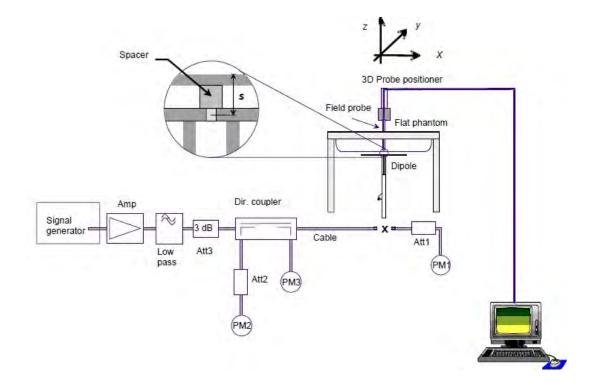


Fig. b The block diagram of system verification

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

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

> No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488



Validation Kit	S/N	Frequ (Mł	5	1W Target SAR-1g (mW/g)	(Pin=250mW) Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D2450V2	727	2450	Body	50.8	12.1	48.4	-4.72%	Dec. 17, 2018

Validation Kit	S/N	Frequency (MHz)		1W Target SAR-1g (mW/g)	(Pin=100mW) Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D5GHzV2	1023	5200	Body	70.9	7.09	70.9	0.00%	Dec. 18, 2018
DOGHZVZ	1023	5800	Body	74.1	7.49	74.9	1.08%	Dec. 19, 2018

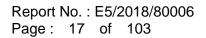
Table 1. Results of system validation

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

```
www.tw.sgs.com
```





#### 1.9 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this body-simulant fluid were measured by using the Agilent Model 85070E Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with Network Analyzer. All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The measured conductivity and permittivity are all within  $\pm 5\%$  of the target values.

The depth of the tissue simulant in the flat section of the phantom was  $\geq 15$  cm  $\pm 5$ mm (Frequency  $\leq$ 3G) or  $\geq$  10 cm  $\pm$  5 mm (Frequency >3G) during all tests. (Fig. 2)

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev ɛr	% dev σ
		2402	52.764	1.904	53.909	1.846	-2.17%	3.05%
		2412	52.751	1.914	53.895	1.854	-2.17%	3.12%
		2437	52.717	1.938	53.859	1.877	-2.17%	3.13%
	Dec, 17. 2018	2441	52.712	1.941	53.856	1.882	-2.17%	3.06%
		2450	52.700	1.950	53.851	1.889	-2.18%	3.13%
		2462	52.685	1.967	53.828	1.906	-2.17%	3.10%
		2480	52.662	1.993	53.794	1.930	-2.15%	3.14%
Body		5180	49.041	5.276	50.032	5.120	-2.02%	2.96%
	Dec, 18. 2018	5200	49.014	5.299	49.970	5.139	-1.95%	3.02%
	Dec, 16. 2016	5220	48.987	5.323	49.962	5.166	-1.99%	2.94%
		5240	48.960	5.346	49.954	5.188	-2.03%	2.96%
		5745	48.275	5.936	47.082	5.848	2.47%	1.48%
	Dec, 19. 2018	5785	48.220	5.982	47.020	5.892	2.49%	1.51%
	Dec, 19. 2016	5800	48.200	6.000	46.971	5.911	2.55%	1.48%
		5825	48.166	6.029	46.962	5.941	2.50%	1.46%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488



Report No. : E5/2018/80006 Page: 18 of 103

#### The composition of the tissue simulating liquid:

			Tetal					
Frequency (MHz)	Mode	DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	Total amount
2450M	Body	301.7ml	698.3ml		_	_	_	1.0L(Kg)

#### Body Simulating Liquids for 5 GHz. Manufactured by SPEAG:

Ingredients	Water	Esters, Emulsifiers, Inhibitors	Sodium and Salt
(% by weight)	60-80	20-40	0-1.5

Table 3. Recipes for Tissue Simulating Liquid

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

台灣檢驗科技股份有限公司 t (886-2) 2299-3279



#### 1.10 Evaluation Procedures

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- 1. The extraction of the measured data (grid and values) from the Zoom Scan.
- 2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- 3. The generation of a high-resolution mesh within the measured volume
- 4. The interpolation of all measured values from the measurement grid to the high-resolution grid
- 5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- 6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within -2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans. The routines are verified and optimized for the grid dimensions used in these cube measurements.

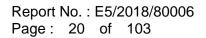
The measured volume of 30x30x30mm contains about 30g of tissue.

The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D

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.

t (886-2) 2299-3279

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.





interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found. If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

#### 1.11 Probe Calibration Procedures

For the calibration of E-field probes in lossy liquids, an electric field with an accurately known field strength must be produced within the measured liquid. For standardization purposes it would be desirable if all measurements which are necessary to assess the correct field strength would be traceable to standardized measurement procedures. In the following two different calibration techniques are summarized:

#### 1.11.1 Transfer Calibration with Temperature Probes

In lossy liquids the specific absorption rate (SAR) is related both to the electric field (E) and the temperature gradient ( $\delta T / \delta t$ ) in the liquid.

$$SAR = C \frac{\delta T}{\delta t}$$

whereby  $\sigma$  is the conductivity,  $\rho$  the density and c the heat capacity of the liquid.

Hence, the electric field in lossy liquid can be measured indirectly by measuring the temperature gradient in the liquid. Non-disturbing temperature probes (optical probes or thermistor probes with resistive lines) with high spatial resolution (<1-2 mm) and fast reaction time (<1 s) are available and can be easily calibrated with high precision [1]. The setup and the exciting source have no influence on the calibration; only the relative positioning uncertainties of the standard temperature probe and the E-field probe to be calibrated must be considered. However, several problems limit the available accuracy of probe calibrations with temperature probes:

f (886-2) 2298-0488

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



- The temperature gradient is not directly measurable but must be evaluated from temperature measurements at different time steps. Special precaution is necessary to avoid measurement errors caused by temperature gradients due to energy equalizing effects or convection currents in the liquid. Such effects cannot be completely avoided, as the measured field itself destroys the thermal equilibrium in the liquid. With a careful setup these errors can be kept small.
- The measured volume around the temperature probe is not well defined. It is difficult to calculate the energy transfer from a surrounding gradient temperature field into the probe. These effects must be considered, since temperature probes are calibrated in liquid with homogeneous temperatures. There is no traceable standard for temperature rise measurements.
- The calibration depends on the assessment of the specific density, the heat capacity and the conductivity of the medium. While the specific density and heat capacity can be measured accurately with standardized procedures (~ 2% for c; much better for  $\rho$ ), there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed  $\pm 5\%$ .
- Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

Considering these problems, the possible accuracy of the calibration of E-field probes with temperature gradient measurements in a carefully designed setup is about ±10% (RSS) [2]. Recently, a setup which is a combination of the waveguide techniques and the thermal measurements was presented in [3]. The estimated uncertainty of the setup is  $\pm 5\%$  (RSS) when the same liquid is used for the calibration and for actual measurements and ±7-9% (RSS) when not, which is in good agreement with the estimates given in [2].

#### 1.11.2 Calibration with Analytical Fields

In this method a technical setup is used in which the field can be calculated analytically from measurements of other physical magnitudes (e.g., input power). This corresponds to the standard field method for probe calibration in air; however, there is no standard defined for fields in lossy liquids.

When using calculated fields in lossy liquids for probe calibration, several points must be considered in the assessment of the uncertainty:

- The setup must enable accurate determination of the incident power.
- The accuracy of the calculated field strength will depend on the assessment of the dielectric parameters of the liquid.
- Due to the small wavelength in liquids with high permittivity, even small

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No. : E5/2018/80006 Page: 22 of 103

setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

#### References

- 1. N. Kuster, Q. Balzano, and J.C. Lin, Eds., Mobile Communications Safety, Chapman & Hall, London, 1997.
- 2. K. Meier, M. Burkhardt, T. Schmid, and N. Kuster, \Broadband calibration of E-field probes in lossy media", IEEE Transactions on Microwave Theory and Techniques, vol. 44, no. 10, pp. 1954{1962, Oct. 1996.
- 3. K. Jokela, P. Hyysalo, and L. Puranen, \Calibration of specific absorption rate (SAR) probes in waveguide at 900 MHz", IEEE Transactions on Instrumentation and Measurements, vol. 47, no. 2, pp. 432{438, Apr. 1998.

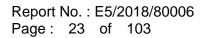
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

t (886-2) 2299-3279

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

```
www.tw.sas.com
```





#### **1.12 Test Standards and Limits**

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate ("SAR") in Section 4.2 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1, By the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter. Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

- Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the (1) whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over an 10 grams of tissue (defined as a tissue volume in the shape of a cube).
- Occupational/Controlled limits apply when persons are exposed as a (2) consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.
- Limits for General Population/Uncontrolled exposure: 0.08 W/kg as (3) averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not

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.

t (886-2) 2299-3279

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section. (Table 4.)

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational		
Spatial Peak SAR (Brain)	1.60 W/kg	8.00 W/kg		
Spatial Average SAR (Whole Body)	0.08 W/kg	0.40 W/kg		
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 W/kg	20.00 W/kg		

Table 4. RF exposure limits

Notes:

- 1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
- 2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

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

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

SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號



### 2. Summary of Results

#### WLAN Antenna

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling		SAR over 1g /kg)	Plot page
		()		(1011 12)	Tolerance (dBm)	(dBm)		Measured	Reported	. page
	Back side	0	6	2437	13.65	13.35	107.15%	0.173	0.185	27
	Top side	0	6	2437	13.65	13.35	107.15%	0.018	0.019	-
WLAN 802.11b	Bottom side	0	6	2437	13.65	13.35	107.15%	0.012	0.013	-
	Right side	0	6	2437	13.65	13.35	107.15%	0.039	0.042	-
	Left side	0	6	2437	13.65	13.35	107.15%	0.011	0.012	-
	Back side	0	39	2480	-1.50	-1.68	104.23%	0.004	0.005	28
	Top side	0	39	2480	-1.50	-1.68	104.23%	0.000	0.000	-
Bluetooth (BLE)	Bottom side	0	39	2480	-1.50	-1.68	104.23%	0.000	0.000	-
(DLL)	Right side	0	39	2480	-1.50	-1.68	104.23%	0.001	0.001	-
	Left side	0	39	2480	-1.50	-1.68	104.23%	0.000	0.000	-
	Back side	0	36	5180	8.01	7.83	104.23%	1.050	1.094	-
	Back side	0	44	5220	8.32	8.31	100.23%	1.230	1.233	29
	Back side*	0	44	5220	8.32	8.31	100.23%	1.210	1.213	-
WII AN 000 44 5 00	Back side	0	48	5240	8.28	8.26	100.46%	1.140	1.145	-
WLAN 802.11a 5.2G	Top side	0	44	5220	8.32	8.31	100.23%	0.133	0.133	-
	Bottom side	0	44	5220	8.32	8.31	100.23%	0.000	0.000	-
	Right side	0	44	5220	8.32	8.31	100.23%	0.069	0.069	-
	Left side	0	44	5220	8.32	8.31	100.23%	0.000	0.000	-
	Back side	0	149	5745	9.04	9.02	100.46%	0.994	0.999	-
	Back side	0	157	5785	9.05	9.01	100.93%	1.030	1.040	-
	Back side	0	165	5825	9.13	9.08	101.16%	1.140	1.153	30
	Back side*	0	165	5825	9.13	9.08	101.16%	1.090	1.103	-
WLAN 802.11a 5.8G	Top side	0	165	5825	9.13	9.08	101.16%	0.084	0.085	-
	Bottom side	0	165	5825	9.13	9.08	101.16%	0.000	0.000	-
	Right side	0	165	5825	9.13	9.08	101.16%	0.042	0.042	-
	Left side	0	165	5825	9.13	9.08	101.16%	0.000	0.000	-
ropostod at	مانه اما م	-+ 0 ^	D						00004	50

\* - repeated at the highest SAR measurement according to the KDB 865664 D01

Note:

Scaling =  $\frac{\text{reported SAR}}{\text{measured SAR}} = \frac{P2(mW)}{P1(mW)} = 10^{\left(\frac{P2-P1}{10}\right)(dBm)}$ Reported SAR = measured SAR \* (scaling)

Where P2 is maximum specified power, P1 is measured conducted power

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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.



### 3. Instruments List

Manufacturer	Device	Туре	Serial number	Date of last calibration	Date of next calibration
SPEAG	Dosimetric E-Field Probe	EX3DV4	3938	Oct.24,2018	Oct.23,2019
SPEAG	System Validation	D2450V2	727	Apr.24,2018	Apr.23,2019
SFEAG	Dipole	D5GHzV2	1023	Jan.25,2018	Jan.24,2019
SPEAG	Data acquisition Electronics	DAE4	1336	Aug.06,2018	Aug.05,2019
SPEAG	Software	DASY 52 V52.8.8	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	ELI	N/A	Calibration not required	Calibration not required
Agilent	Network Analyzer	E5071C	MY46107530	Feb.26,2018	Feb.25,2019
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional	772D	MY52180142	Jul.04,2018	Jul.03,2019
Aglient	coupler	778D	MY52180302	Jul.05,2018	Jul.04,2019
Agilent	RF Signal Generator	N5181A	MY50144143	Mar.15,2018	Mar.14,2019
Agilent	Power Meter	E4417A	MY52240003	Dec.21,2017	Dec.20,2018
Agilent	Power Sensor	E9301H	MY52200003	Dec.21,2017	Dec.20,2018
TECPEL	Digital thermometer	DTM-303A	TP130074	Mar.09,2018	Mar.08,2019

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.

t (886-2) 2299-3279

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd. 1

f (886-2) 2298-0488



### 4. Measurements

Date: 2018/12/17

#### WLAN802.11b\_Body\_Back side\_CH 6\_0mm

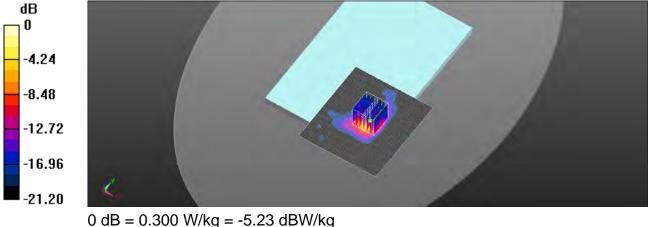
Communication System: WLAN 2.45G; Frequency: 2437 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2437 MHz;  $\sigma$  = 1.877 S/m;  $\epsilon_r$  = 53.859;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 SN3938; ConvF(7.3, 7.3, 7.3); Calibrated: 2018/10/24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/8/6 •
- Phantom: ELI
- DASY52 52.10.1(1476); SEMCAD X 14.6.10(7373)

Area Scan (91x101x1): Interpolated grid: dx=12 mm, dy=12 mm Maximum value of SAR (interpolated) = 0.313 W/kg

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 0 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.457 W/kg SAR(1 g) = 0.173 W/kg; SAR(10 g) = 0.062 W/kgMaximum value of SAR (measured) = 0.300 W/kg



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.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

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



Report No. : E5/2018/80006 Page: 28 of 103

Date: 2018/12/17

#### Bluetooth(BLE)\_Body\_Back side\_CH 39\_0mm

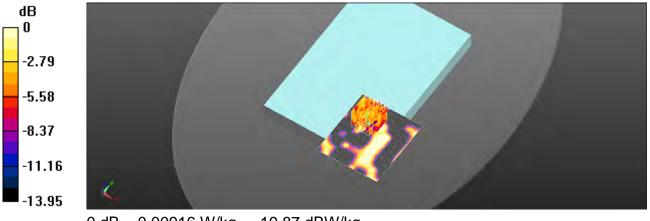
Communication System: Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2480 MHz;  $\sigma$  = 1.93 S/m;  $\epsilon_r$  = 53.794;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.3°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3938; ConvF(7.3, 7.3, 7.3); Calibrated: 2018/10/24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/8/6
- Phantom: ELI
- DASY52 52.10.1(1476); SEMCAD X 14.6.10(7373)

Area Scan (71x81x1): Interpolated grid: dx=12 mm, dy=12 mm Maximum value of SAR (interpolated) = 0.0259 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 0 V/m: Power Drift = 0.03 dB Peak SAR (extrapolated) = 0.0140 W/kg SAR(1 g) = 0.00433 W/kg; SAR(10 g) = 0.00088 W/kg Maximum value of SAR (measured) = 0.00916 W/kg



0 dB = 0.00916 W/kg = -19.87 dBW/kg

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488



Report No. : E5/2018/80006 Page: 29 of 103

Date: 2018/12/18

#### WLAN802.11a 5.2G\_ Body\_Back side\_CH 44\_0mm

Communication System: WLAN 5G; Frequency: 5220 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5220 MHz;  $\sigma$  = 5.166 S/m;  $\epsilon_r$  = 49.962;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

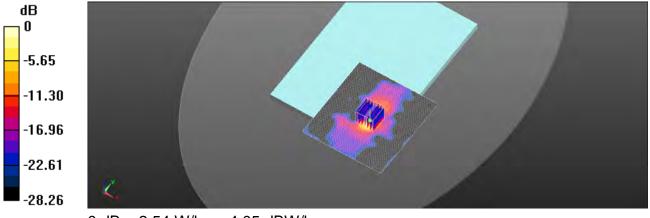
**DASY5** Configuration:

- Probe: EX3DV4 SN3938; ConvF(4.23, 4.23, 4.23); Calibrated: 2018/10/24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/8/6
- Phantom: ELI
- DASY52 52.10.1(1476); SEMCAD X 14.6.10(7373)

Area Scan (111x121x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 2.91 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.218 V/m: Power Drift = -0.08 dB Peak SAR (extrapolated) = 4.96 W/kg SAR(1 g) = 1.23 W/kg; SAR(10 g) = 0.313 W/kg

Maximum value of SAR (measured) = 2.54 W/kg



0 dB = 2.54 W/kg = 4.05 dBW/kg

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488

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

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



Report No. : E5/2018/80006 Page: 30 of 103

Date: 2018/12/19

#### WLAN802.11a 5.8G\_ Body\_Back side\_CH 165\_0mm

Communication System: WLAN 5G; Frequency: 5825 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5825 MHz;  $\sigma$  = 5.941 S/m;  $\epsilon_r$  = 46.962;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

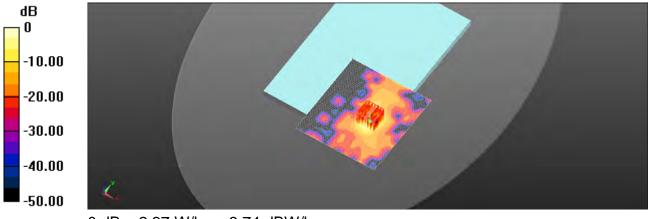
**DASY5** Configuration:

- Probe: EX3DV4 SN3938; ConvF(4, 4, 4); Calibrated: 2018/10/24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/8/6
- Phantom: ELI
- DASY52 52.10.1(1476); SEMCAD X 14.6.10(7373)

Area Scan (111x121x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 2.67 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.564 V/m: Power Drift = 0.05 dB Peak SAR (extrapolated) = 4.94 W/kg SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.326 W/kg

Maximum value of SAR (measured) = 2.37 W/kg



0 dB = 2.37 W/kg = 3.74 dBW/kg

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488



Report No. : E5/2018/80006 Page: 31 of 103

## 5. SAR System Performance Verification

Date: 2018/12/17

### Dipole 2450 MHz SN:727

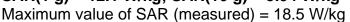
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz;  $\sigma$  = 1.889 S/m;  $\epsilon_r$  = 53.851;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.3°C

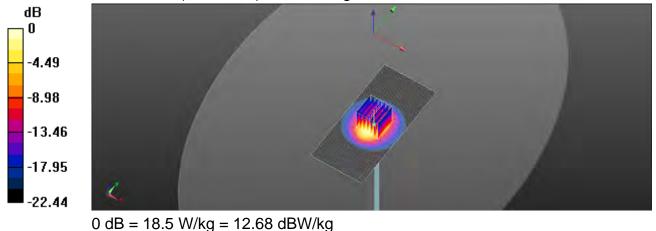
DASY5 Configuration:

- Probe: EX3DV4 SN3938; ConvF(7.3, 7.3, 7.3); Calibrated: 2018/10/24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/8/6 •
- Phantom: ELI
- DASY52 52.10.1(1476); SEMCAD X 14.6.10(7373)

Area Scan (61x131x1): Interpolated grid: dx=12 mm, dy=12 mm Maximum value of SAR (interpolated) = 19.5 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 99.32 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 25.1 W/kg SAR(1 g) = 12.1 W/kg; SAR(10 g) = 5.94 W/kg





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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.



Date: 2018/12/18

### Dipole 5200 MHz SN:1023

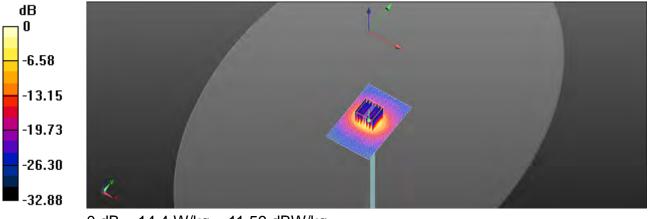
Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5200 MHz;  $\sigma$  = 5.139 S/m;  $\epsilon_r$  = 49.97;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3938; ConvF(4.23, 4.23, 4.23); Calibrated: 2018/10/24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/8/6
- Phantom: ELI
- DASY52 52.10.1(1476); SEMCAD X 14.6.10(7373)

Area Scan (61x91x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 14.8 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 56.12 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 27.5 W/kg SAR(1 g) = 7.09 W/kg; SAR(10 g) = 1.95 W/kg Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg = 11.59 dBW/kg

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

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

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



Date: 2018/12/19

### Dipole 5800 MHz SN:1023

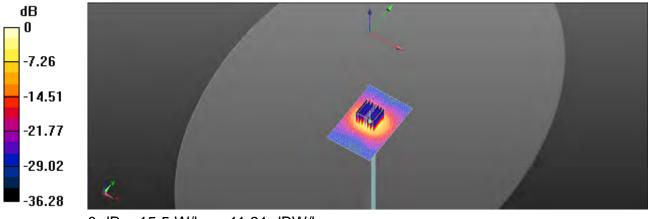
Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5800 MHz;  $\sigma$  = 5.911 S/m;  $\epsilon_r$  = 46.971;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3938; ConvF(4, 4, 4); Calibrated: 2018/10/24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/8/6
- Phantom: ELI
- DASY52 52.10.1(1476); SEMCAD X 14.6.10(7373)

Area Scan (61x91x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 15.4 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 53.97 V/m; Power Drift = -0.08 dB Peak SAR (extrapolated) = 31.5 W/kg SAR(1 g) = 7.49 W/kg; SAR(10 g) = 2.01 W/kg Maximum value of SAR (measured) = 15.5 W/kg



0 dB = 15.5 W/kg = 11.91 dBW/kg

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

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

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



### 6. DAE & Probe Calibration Certificate

	h, Switzerland	Kal s	Swiss Calibration Service
ocredited by the Swiss Accredit he Swiss Accreditation Servic witilateral Agreement for the r	e is one of the signatories	to the EA	No.: SCS 0108
lient SGS-TW (Aude	en)	Certificate to	: DAE4-1336_Aug18
CALIBRATION O	CERTIFICATE		
Xject	DAE4 - SD 000 D	04 BM - SN: 1336	
Celibration procedure(s)	OA CAL-05.v29 Calibration procedure for the data acquisition electronics (DAE)		
Calibration date:	August 06, 2018		
The measurements and the unce	etainties with confidence pr	nal standards, which realize the physical un obability are given on the following pages ar flacisity; environment temperature ( $22 \pm 3$ ) <sup>4</sup>	id are part of the certificate
The measurements and the unce All calibrations have been condu Calibration Equipment used (M&	etainties with confidence pr cled in the closed laboratory TE critical for calibration)	shability are given on the following pages at lacility; environment temperature (22 $\pm$ 3)*	id are part of the certificate. C and numidity < 70%.
The measurements and the units All calibrations have been condu- Calibration Equipment used (M& Primary Standards	etainties with confidence prices of the closed laboratory	obability are given on the following pages ar	id are part of the certificate
The measurements and the unor All culturations have been condu Calibration Equipment used (M& Primary Standards Kethley Multimeter Type 2001	etainlies with confidence pro- cted in the closed laboratory TE orifical for calibration) ED 4 SN: 0810278	clability are given on the following pages ar facility: environment temperature (22 ± 3)* Cal Date (Centificate No.) 31-Aug-17 (No:21002)	id are part of the certificate C and humidity < 70%. Scheduled Calibration Aug-18
The measurements and the units All calibrations have been condu Calibration Equipment used (M& Primary Standards Kerthley Multimeter Type 2001 Secondary Standards	International states of the state of the sta	chability are given on the following pages at facility: environment temperature (22 ± 3)* Cal Date (Centificate No.) 31-Aug-17 (No:21092) Check Date (in house)	id are part of the certificate. C and numidity < 70%. Scheduled Californition Aug-18 Scheduled Check
The measurements and the unce All calibrations have been condu- Calibration Equipment used (M& Primary Standards Kerthley Multimeter Type 2001 Secondary Standards Auto DAE Calibration Unit	Internities with confidence pro- cited in the closed laboratory TE ortical for calibration I D 4 I SN: 0810278 I D 4 I SE UWS 053 AA 1001	clability are given on the following pages ar facility: environment temperature (22 ± 3)* Cal Date (Centificate No.) 31-Aug-17 (No:21002)	id are part of the certificate C and humidity < 70%. Scheduled Calibration Aug-18
The measurements and the unce All calibrations have been condu- Calibration Equipment used (M& Primary Standards Kerthley Multimeter Type 2001 Secondary Standards Auto DAE Calibration Unit	Internities with confidence pro- cited in the closed laboratory TE ortical for calibration I D 4 I SN: 0810278 I D 4 I SE UWS 053 AA 1001	clability are given on the following pages at facility; environment temperature (22 ± 3)* <u>Cal Date (Centilicate No.)</u> 31-Aug-17 (No:21082) <u>Check Date (In house)</u> 04-Jan-18 (In house check)	nd are part of the certificate. C and humidity < 70%. Screeduled Califoration Aug-18 Scheduled Check in house check: Jan-19
The measurements and the unce All calibrations have been condu Calibration Equipment used (M& Primary Standards Kethley Multimeter Type 2001 Secondary Blandards Auto DAE Calibration Unit Calibrator Box V2.1	etainlies with confidence on cited in the closed laboratory TE ortical for calibration) D 4 SN: 0810278 D 4 SE UWS 053 AA 1001 SE UWS 055 AA 1002	sbability are given on the following pages at ( laciily: environment temperature (22 ± 3)* Cal Date (CentReate No.) 31-Aug-17 (No:21002) Check Data (in house) 04-Jan-18 (in house check) (04-Jan-18 (in house check)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Aug-18 Scheduled Check In house check: Jan-19 In house check: Jan-19
The measurements and the unce All calibrations have been condu Calibration Equipment used (M& Primary Standards Kerthley Multimeter Type 2001 Secondary Standards Auto DAE Calibraton Unit Calibrator Box V2.1	International Sector Se	Shability are given on the following pages at (lacility: environment temperature (22 ± 3)* Cal Date (CentReate No.) 31-Aug-17 (No:21002) Check Date (in house) 04-Jan-18 (in house check) 04-Jan-18 (in house check) 04-Jan-18 (in house check)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Aug-18 Scheduled Check In house check: Jan-19 In house check: Jan-19
The measurements and the unce	Internities with confidence pro- cited in the closed laboratory TE ortical for calibration D A SN: 0810278 D A SE UWS 053 AA 1001 SE UWS 005 AA 1002 Name Dominique Statler	Sability are given on the following pages at (lacility: environment temperature (22 ± d)* Cal Date (Centilicate No.) 31-Aug-17 (No:21092) Check Date (in house) 04-Jan-18 (in house) 04-Jan-18 (in house check) 04-Jan-18 (in house check) 04-Jan-18 (in house check) 04-Jan-18 (in house check)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Aug-18 Scheduled Check In house check: Jan-19 In house check: Jan-19

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

```
www.tw.sas.com
```



#### Report No. : E5/2018/80006 Page: 35 of 103

Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland



Schweizenscher Kallbrierdienet s Service suisse d'étalonnage C Servizio svizzero di taratura s Swiss Calibration Service

Accordination No.: SCS 0108

Accredited by the Smiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration cortification

#### Glossary

DAF Connector angle

data acquisition electronics

information used in DASY system to align probe sensor X to the robot coordinate system.

#### Methods Applied and Interpretation of Parameters.

- DC Voltage Measurement: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- · Connector angle. The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty
  - DC Voltage Measurement Linearity. Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - Common mode sensitivity: Influence of a positive or negative common mode voltage on . the differential measurement.
  - Channel separation: Influence of a voltage on the neighbor channels not subject to an ٠ input voltage.
  - AD Converter Values with inputs shorted: Values on the internal AD converter . corresponding to zero input voltage
  - Input Offset Measurement: Output voltage and statistical results over a large number of . zero voltage measurements.
  - Input Offset Current: Typical value for information; Maximum channel input offset ٠ current, not considering the input resistance.
  - Input resistance: Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - Low Battery Alarm Voltage: Typical value for information. Below this voltage, a battery alarm signal is generated.
  - Power consumption: Typical value for information. Supply currents in various operating modes.

Certificate No: DAE4-1336\_Aug18

Page 2 of 5

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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.

f (886-2) 2298-0488



### DC Voltage Measurement A/D - Converter Resolution nominal

High Flange: 1LSB full range = -100...+300 mV full range = -1.....+3mV 6.1µV. Low Range 1LSB = SINV DASY measurement parameters; Auto Zero Time: 3 sec; Measuring time: 3 sec

<b>Calibration Factors</b>	X	Y	z
High Range	403.344 ± 0.02% (k=2)	403.624 ± 0.02% (k=2)	403.107 ± 0.02% (k=2)
Low Range	3.95102 ± 1.50% (k=2)	3,98703 ± 1,50% (k=2)	3.99683 ± 1.50% (k=2)

#### **Connector Angle**

Connector Angle to be used in DASY system	287.0°±1°
---	-----------

Certilicate No: DAE4-1336\_Aug16

Page 3 of 5

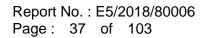
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

www.tw.sas.com

Member of SGS Group





## Appendix (Additional assessments outside the scope of SCS0108)

## 1. DC Voltage Linearity

High Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	200042.98	8.65	0.00
Channel X + Input	20006.34	1.71	0.01
Channel X - Input	-20005.65	-0.58	0.00
Channel Y + Input	200034.32	0.12	0.00
Channel Y + Input	20003.47	-1:57	0.01
Channel Y - Input	20008.39	-1.21	0,01
Channel Z + Input	200032.22	-2.05	-0.00
Channel Z + Input	20002.78	-2.14	-0.01
Channel Z - Input	-20007.34	-2.09	0.01
Low Range	Reading (jsV)	Difference (µV)	Error (%)
Channel X + Input	2001.47	0.30	0,01
Channel X + Input	201.92	0.79	0.39
Channel X - Input	-198.26	0.59	-0.30
Channel Y + Input	2001,55	0.37	50.0
Channel Y + Input	200.97	-0.11	-0.05
Channel Y - Input	-199.34	-0.43	0,22
Channel Z + Input	2001.12	0.04	0.00
Channel Z + Input	200.15	-0.89	-0.44
Channel Z - Input	-200.14	1.05	0.58

## 2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec. Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X	200	B:04	4.72
	- 200	4.13	-4.79
Channel Y	200	-3,65	-3,78
	200	2.68	2.45
Channel Z	200	22,40	22.16
	- 200	-24.83	-25.10

## 3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200	+1	6.12	+1,64
Channel Y	200	9.19		6.46
Channel Z	200	8.44	6.31	

Certificate No: DAE4-1336\_Aug18

Page 4 of 5

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

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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.

f (886-2) 2298-0488

# Report No. : E5/2018/80006 Page: 38 of 103



## 4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec. Measuring time: 3 sec.

	High Range (LSB)	Low Range (LSB)
Channel X	15666	16509
Channel Y	15907	15587
Channel Z	- 15855	15507

## 5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec: Measuring time: 3 sec OM01 funit

	Average (µV)	min. Offset (µV)	max. Offset (µV)	Std. Deviation (µV)
Channel X	0.87	-0.00	2.62	0.36
Channel Y	3.53	2.87	4.59	0.34
Channel Z	-0.18	-1.34	1.53	0.54

## 6. Input Offset Current

Nominal Input circuitry offset current on all channels <25fA

### 7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

## 8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)	
Supply (+ Vcc)	47.9	
Supply (- Vcc)	-7.6	

## 9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	36	+14
Supply (- Vcc)	-0.01	В	-9

Certificate No: DAE4-1336 Aug18

Page 5 of 5

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

f (886-2) 2298-0488



	rich, Switzerland	S S	Service suisse d'étaionnage Servizio evizzero di taneura Swise Calibration Service
ctredited by the Swiss Accrec he Swiss Accreditation Serv fulfilateral Agreement for the	Itation Service (SAS) rice is one of the signatories e recognition of calibration o	to the EA	creditation No.: SCS 0108
Ilient SGS-TW (Au	dan)	Carriente No.	EX3-3938_Oct18
CALIBRATION	CERTIFICATE		
Object	EX3DV4 - SN:393	и	
Coliferation procession(in)	CAL-25.V6	A GAL 12:v9: OA CAL-14:v4, QA lure for dosimetric E-lieta probes	
Calibration date	October 24, 2018		
This calibration certificate docu The measurements and the un	ments the traceability to nation containting with confidence pro	tal standards, which realize the physical units bability are given on the following pages and	of measurements (SI), are part of the certificate
All calibrations have been conc	lucied in the closed laboratory	facility anvironment temperature (22 = 3/°C =	and humidity < 70%
Saibrahan Espajonern used (M	875 ortical for calibration)	facility: anxironment temperature (22 $\pm$ 3)*C s $C_{\rm eff}(22) = 0.0000000000000000000000000000000000$	
Salibration Explorem used (M Permary Standards		Cal Date (Certificate No.)	Scheduled Calibration
Calibration Explorment used (M Permany Standards Power meller NRP	187E ortical for calibration)	Cal Deta (Certificate No.) 08-Apr-18 (No. 217-02672)(2673)	Scheduled Calibration Apr-19
Calibration Espaipment used (M Permany Standards Power meter NRP Power sensor NRP-281	ID SN: 104778	Gal Date (Dentificate No.) 08-Apri-18 (No. 217-03672/02673) 08-Apri-18 (No. 217-02672)	Scheduled Calibration Apr-16 Apr-19
Caldrukon Espiorment used (M Pentery Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291	ID SN: 104778 SN: 104244	Cal Dete (Centificate No.) 08-Apr-18 (No. 217-0267202673) 08-Apr-16 (No. 217-02672) 08-Apr-18 (No. 217-02673)	Scheduled Calibration Apr-19 Apr-19 Apr-19
Caldoulion Espionent used (M Pertery Standards Power meter NRP Power sensor NRP-281 Reference 20 dB Attenuator	ID SN: 104778 SN: 104778 SN: 103244 SN: 103245	Gal Date (Dentificate No.) 08-Apri-18 (No. 217-03672/02673) 08-Apri-18 (No. 217-02672)	Scheduled Calibration Apr-16 Apr-19
Caldwalion Explorment used (M Permany Standards Powers metier NRP- Power sensor NRP-ZB1 Power sensor NRP-ZB1 Reference 20 dB Attentiator Reference 20 dB Attentiator	ID SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 55277 (20x)	Cal Data (Centificate No.) 08-Apr-18 (No. 217-02672)02673) 09-Apr-18 (No. 217-02672) 08-Apr-18 (No. 217-02673) 09-Apr-18 (No. 217-02682)	Scheduled Calibration Apr-18 Apr-19 Apr-19 Apr-19
Caldration Explorment used (M Permany Standards Power meter NRSP Power sensor NRSP-ZB1 Power sensor NRSP-ZB1 Reference 20 dB Attenuator Reference Probe ES3CM2 DAE4	ID SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 55277 (206) SN: 3013	Cal Dete (Centificate No.) 08-April 8 (No. 217-02672/02673) 08-April 8 (No. 217-02672) 08-April 8 (No. 217-02673) 08-April 8 (No. 217-02673) 08-April 8 (No. 217-02682) 30-Dec-17 (No. ES3-3013_Dec17)	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Dec-18
Calibration Explorment used (M Permany Standards Powers encore NRP- Powers encore NRP-291 Power sencor NRP-291 Reference 20 dB Attenuator Reference 20 dB Attenuator Reference Probe ESSOV2 DAE4 Secondary Standards	ID SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x) SN: 55277 SN: 5527	Cal Dete (Certificate No.) 00-Apr-18 (No. 217-02672)02673) 04-Apr-16 (No. 217-02672) 04-Apr-16 (No. 217-02673) 04-Apr-18 (No. 217-02673) 20-Dec-17 (No. ES3-3013_Dec17) 21-Dec-17 (No. CAE4-660_Dec17)	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-18
Caldwalican Employment used (M Primary Standards Powes meter NRP Power sensor NRP-281 Reference 20 dB Attenuator Reference 20 dB	ID SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 55277 (20x) SN: 55277 SN: 560 ID	Cal Deta (Certificate No.) 08-Apr-18 (No. 217-0267202673) D8-Apr-18 (No. 217-02672) D8-Apr-18 (No. 217-02673) D8-Apr-18 (No. 217-02682) 30-Dec-17 (No. ES3-3013, Dec17) 21-Dec-17 (No. CAE4-660, Dec17) Check Date (In house)	Scheduled Calibration Apr-18 Apr-19 Apr-19 Apr-19 Dec-18 Dec-18 Dec-18 Scheduled Check
Saidralion Explorent used (M Perwer sensor NRP Power sensor NRP-281 Power sensor NRP-291 Reference 20 dB Attenuator Reference Probe ES305/2 DAE1 Secondary Standards Prever saler E44198 Power salers E44198	ID SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x) SN: 5513 SN: 560 ID SN: 66841253674	Cal Dete (CentRicate No.) 08-Apr-16 (No. 217-02672)02673) 09-Apr-16 (No. 217-02672) 09-Apr-18 (No. 217-02672) 09-Apr-18 (No. 217-02673) 09-Apr-18 (No. 217-02682) 20-Dec-17 (No. ES3-3013, Dec17) 21-Dec-17 (No. CAE4-660, Dec17) Check Date (In house) 06-Apr-16 (In house)	Scheduled Calibration Apr-18 Apr-19 Apr-19 Apr-19 Dec-18 Dec-18 Dec-18 Scheduled Check In house check: Jun 20
Calibration Explorment used (M Pentary Standards Powers motion NRP-291 Power sensor NRP-291 Reference 20 dB Attentiator Reference 20 dB Attentiator Power sensor E44152A Power sensor E44152A Ref generator HP 8648C	875 or Boat for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x) SN: 55013 SN: 560 ID SN: GB41253674 SN: (GB41253674 SN: MY41485087	Cal Data (Certificate No.) 08-April 8 (No. 217-0267202873) 09-April 8 (No. 217-02672) 04-April 8 (No. 217-02673) 04-April 8 (No. 217-02673) 20-Dec-17 (No. E33-3013, Dec17) 21-Dec-17 (No. E33-3013, Dec17) 21-Dec-17 (No. E33-3013, Dec17) Check Date (in house) 05-April 6 (in house) 05-April 6 (in house check Jun-13) 05-April 6 (in house check Jun-13)	Scheduled Calibration Apr-19 Apr-19 Apr-19 Dec-18 Dec-18 Dec-18 Scheduled Check In house check: Jun-20 In house check: Jun-20
Calibration Explorment used (M Permany Standards Powers motion NRP-291 Powers remove NRP-291 Power sensor NRP-291 Reference 20 dB Attennator Reference 20 dB Attennator Reference 20 dB Attennator DAE4 Secondary Standards Power mater E44198 Power tenstre E44198 Power tenstre E44198 Power tenstre E44198	875 onlice for calibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x) SN: 550 ID SN: 560 ID SN: 560 SN: 560 SN: 5041253674 SN: 409110210	Call Deta (Certificate No.) 08-Apri-18 (No. 217-02672/02873) 09-Apri-16 (No. 217-02672) 09-Apri-16 (No. 217-02673) 09-Apri-18 (No. 217-02673) 20-Dec-17 (No. 237-02682) 30-Dec-17 (No. 238-4-660 Dec17) 21-Dec-17 (No. CARE4-660 Dec17) 21-Dec-17 (No. CARE4-660 Dec17) Check Date (in house) 06-Apri-16 (in house) 06-Apri-18 (in house check Jun-18) 06-Apri-18 (in house check Jun-18)	Scheduled Calibration Apr-18 Apr-19 Apr-19 Apr-19 Dec-18 Dec-18 Scheduled Check In house check: Jun-20 In house check: Jun-20 In house check: Jun-20
Calibration Explorment used (M Permany Standards Powers moder NRP Powers renson NRP-281 Power senson NRP-281 Reference 20 dB Attenuator Reference 20 dB Attenuator Power sensor E44102A Prover sensor E44102A Prover sensor E44102A Reference Analyzer 28368A	ID SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 58277 (20x) SN: 58277 (20x) SN: 580 ID SN: 6841250674 SN: 6841250674 SN: 60110210 SN: 00110210 SN: 00110 SN: 00110	Cal Deta (Certificate No.) 08-Apr-18 (No. 217-0267202673) D8-Apr-18 (No. 217-02672) D8-Apr-18 (No. 217-02672) D9-Apr-18 (No. 217-02682) 30-Dec-17 (No. ES3-3013, Dec17) 21-Dec-17 (No. CAE4-660_Dec17) Check Date (in house) 06-Apr-16 (in house check Jun-18) 06-Apr-16 (in house check Jun-18) 06-Apr-16 (in house check Jun-18) 06-Apr-16 (in house check Jun-18)	Scheduled Calibration Apr-16 Apr-19 Apr-19 Dec-18 Dec-18 Dec-18 Dec-18 Scheduled Check In house check: Jun-20 In house check: Jun-20 In house check: Jun-20 In house check: Jun-20
Calibration Explorment used (M Permany Standards Powers moder NRP Powers renson NRP-281 Power senson NRP-281 Reference 20 dB Attenuator Reference 20 dB Attenuator Power sensor E44102A Prover sensor E44102A Prover sensor E44102A Reference Analyzer 28368A	ID           SN: 104778           SN: 103244           SN: 103245           SN: 35277 (20x)           SN: 35277 (20x)           SN: 355           SN: 360           ID           SN: 660           SN: 66041253674           SN: 600110210           SN: 000110210           SN: 000110210           SN: UB8421201700           SN: UB41260477	Carl Deta (Certificate No.) 00-Apri-16 (No. 217-02672/02673) 00-Apri-16 (No. 217-02672) 00-Apri-16 (No. 217-02673) 00-Apri-16 (No. 217-02673) 00-Dec-17 (No. ES3-3013_Dec17) 21-Dec-17 (No. ES3-3013_Dec17) 21-Dec17 (No. ES3-30	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Dec-18 Dec-18 Scheduled Check In house check: Jun-20 In house check: Oct-19
Salbrahon Explorem used (M Permary Standards Power meter NRP Power sensor NRP-281 Power sensor NRP-291 Reference 20 dB Attenuator Reference 20 dB Attenuator Reference Probe ES30/2 DAE4 Secondary Blandards Power mater E4410A Power sensor E4410A Prower sensor E4410A Prower kensor E4410A Reference HP 8040C Network Analyzer E8368A Salbrated by:	ID SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 58277 (20x) SN: 58277 (20x) SN: 580 ID SN: 6841250674 SN: 6841250674 SN: 60110210 SN: 00110210 SN: 00110 SN: 00110	Cal Dete (Certificate No.) 08-Apr-18 (No. 217-02672002673) 08-Apr-16 (No. 217-02672002673) 08-Apr-16 (No. 217-02673) 08-Apr-18 (No. 217-02673) 20-Dec-17 (No. ES3-3013_Dec17) 21-Dec-17 (No. ES3-3013_Dec17) 21-Dec17 (No. ES3-3013_Dec17) 21-Dec17 (No. ES3-3013_Dec17) 21-Dec17 (No	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Dec-18 Dec-18 Scheduled Check In house check: Jun-20 In house check: Oct-19
Calibration Explorment used (M Permany Standards Power meter NRP Power sensor NRP-281 Power sensor NRP-291 Reference 20 dB Attenuator Reference Probe ES30V2 DAE4 Secondary Blandards Power mater EA4108 Power sensor EA412A Reference C4412A Reference C441	875 ortical for calibration) 10 5%:104778 5%:103244 5%:103245 5%:35277 (20x) 5%:350 5%:360 10 5%:360 10 5%:36041253674 5%:30110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 3%:000110210 5%:0001100 5%:000110000 5%:0001000000000000000000000000000000000	Carl Dete (Certificate No.)           00-Apri-16 (No. 217-02672002673)           04-Apri-16 (No. 217-02672)           04-Apri-16 (No. 217-02672)           05-Apri-16 (No. 217-02673)           04-Apri-16 (No. 217-02673)           05-Apri-16 (No. 217-02673)           05-Apri-16 (No. 217-02673)           05-Apri-17 (No. ES3-3013_Dec17)           21-Darc-17 (No. ES3-3013_Dec17)           21-Darc-17 (No. ES4-660_Dec17)           Check Date (in house)           05-Apri-16 (in house)           05-Apri-16 (in house)           06-Apri-18 (in house check Aun-18)           06-Apri-14 (in house check Aun-18)           Function           Laberatery Timchricant	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Dec-18 Dec-18 Scheduled Check In house check: Jun-20 In house check: Jun-20 In house check: Jun-20 In house check: Jun-20 In house check: Oct-19

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.

t (886-2) 2299-3279

Company's sole 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,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 40 of 103

**Callbration Laboratory of** Sohweizurtschur Kalimienti \$ Schmid & Partner Service suisse d'étalormade BC-MR C Engineering AG Zoughtusstrasse 43, 8004 Zunch, Switzerland Servizio svizzero di Arramani S Swine Calibration Sorvice Ascrimited by the Swiss Accreditation Service (SAS) Accorditation No.: SCS 0108 The Swiss Accorditation Service is one of the signatories to the EA Multitateral Agreement for the recugnition of calibvalion currilicans Glossary: TSU tissue simulating liquid NORMK, y.z sensitivity in free space ConVE sensitivity in TSL / NORMx, y.z. DCP dicide compression point creat factor (1/duty, cycle) of the RF signal modulation dependent lineerization parameters CF A, B, C, D Poistization o protation around probe axis Polanization II. Is relation around an exis that is in the plane normal to probe axis (a) measurement center). i.e., S = 0 is normal to probe exis Connector Angle information used in DASY system to align proce sensel X to the robot coordinalin-system Calibration is Performed According to the Following Standards: IEEE Str 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial Averaged Spectry: Absorption Rate (SAR) in the Human Head from Witeless Communications Devices: Measurement Techniques: Jump 2013 IEC 62209-1, 1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from handb) neld and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
 EC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)\*, March 2010 U) KDB 865684, "SAR Measurement Requirements for 100 MHz to 6 GHz" Methods Applied and Interpretation of Parameters: NORMx, y.z. Assessed for E-field polarization # = 0 (f < 900 MHz in TEM-cell, / = 1800 MHz; R22 wavegode). NORMx, y.z. are only intermediate values, i.e., the uncertainties of NORMx, y.z. does not affect the E<sup>2</sup>-field uncertainty inside TSL (see below ConvF). NORM(()x,y,z = NORMx,y,z \* frequency\_response (see Frequency Response Chart), This Ineanzation is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF. DCPs, y/z: DCP are numerical insenzation parameters assessed based on the data of power sweep with CW signal (no unsurtainty required): DCP does not depend on frequency nor motion, PAR: PAR is the Real: to Average Ratio that is not calibrated but determined based on the signal characteristics

- Ax, y.z', Bx, y.z', Cx, y, z', Dx, y, z', VRx, y, z', A, B, C, D are numerical insanization parameters assessed beend on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nar-media. VR is the maximum calibration range expressed in RMS voltage across the diade.
- media, Wris the maximum caloration range expressed in MMS votage across the diade. ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f = 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f = 800 MHz. The same outupe are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy closes to the boundary. The aerolishing in TSL corresponds to NORMX, y, z \* ConvF whereby the uncertainty corresponds to fifth given for ConvF. A frequency dependent GowyF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz
- Schwincel isotropy (3D cieviation from Isotropy): In a field of low gradients realized using a flat pirantom exclosed by a patch antenna.
- Sensor Offset: The sensor offset corresponds to the offset of wildual measurement center from the probe to (on probe axe). No tolerance required:
- Connector Angle: The angle is assessed using the information gained by determining the NORMs (no . uncertainty required).

Certificate No: EX3-3938\_Oct18

Page 2 cf 39

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

> No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.



EX3DVA - SM:3508

Report No. : E5/2018/80006 Page: 41 of 103

Christer 24, 2848

# Probe EX3DV4

# SN:3938

Manufactured: Calibrated:

May 2, 2013 October 24, 2018

Calibrated for DASY/EASY Systems (Note: non-compatible with DASY2 system!)

Certificate No: EK3 3558/ DVHB

Page 3 of 30

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.

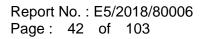
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488

www.tw.sas.com

Member of SGS Group





EXIDV4-SN adda

Optaber 24, 2018

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3938

## **Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm [uV/(V/m)*)*	0.51	0.57	0.33	± 10.7 %
DCP (mV) <sup>E</sup>	103.2	100.5	107.8	2 16-1 10

## Modulation Calibration Parameters

UID	Communication System Name		A dB	B dBõV	c	D dB	VR mV	Unc <sup>c</sup> (k=2)
0	CW	X	0.0	0,0	1.0	0.00	164.0	±3:5 %
		Y	0.0	0.0	1.0		1742	-
1		Z	0.0	0.0	1.0		176.3	

Note: For details on UID parameters see Appendix.

#### Sensor Model Parameters

	G1 fF	C2 IF	a V 1	T1 ms.V-2	T2 ms.V <sup>-1</sup>	T1 ms	T4 V1	75 V"	Tê
X	59.09	436.9	35.15	26.09	1.205	5,10	1.012	0.575	1.009
¥	53.22	40B.3	37.24	24.25	1.457	5.10	0.000	0.766	1.013
Z	46.65	332.5	32.92	15.26	1.153	4.98	2.000	0.225	1.005

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

The uncertainties of Norm X,Y,Z do republied the E<sup>4</sup>-fault uncertainty minute TSL (see Plages 5 and 6)

Numerical Insurication parameter: widentamy nonrequired. Uncenterny is determined using Therman, dentation from imper response wideying widentative dents to and is expressed for the source of the

Certificate No: Ex3-3938 Oct18

Page & of 30

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

> No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

```
www.tw.sas.com
```



EX3DV4--EN:3908

October 24, 2018

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3938

f (MHz) <sup>G</sup>	Relative Permittivity	Conductivity (S(m)	ConvF X	ConvF Y	ConvF Z	Alpha <sup>G</sup>	Depth <sup>a</sup> (mm)	Unc- (k=2)
750	41.9	0.89	9.82	9.82	9,62	0.45	0.80	± 12.0 %
835	41,5	0.90	9.50	9.50	9.50	0.50	0.85	± 12.0 %
900	41,5	0.97	9.25	9.25	9.25	0.33	1:04	+12.0%
1450	40.5	1.20	8.53	8.53	8.53	0.30	0,88	± 12.0 %
1750	40:1	1.37	8.32	8.32	8.32	0.36	0,90	± 12.0 %
1900	40.0	1.40	7.85	7.95	7 95	0.29	0,90	±12.0%
2000	40.0	1.40	7.93	7.93	7:93	0.35	0.80	± 12.0 %
2300	39.5	1.67	7.69	7.59	7.53	0.37	0.80	112.0%
2450	39.2	1.80	7.47	7,17	7.17	0.39	Ö.83	±12.0%
2603	39.0	1.96	7.11	7.11	7.11	0.38	0.87	± 12.0 %
5250	35.9	4.71	5.00	5.00	5.00	0.40	1,80	£ 13.1 %
5600	35.5	6.07	4.65	4.65	4.65	0,40	1.80	± 13.1 %
5750	35.4	6.22	4.76	4.76	4.76	0,40	1.80	±13.1 %

## Calibration Parameter Determined in Head Tissue Simulating Media

<sup>6</sup> Enclaimely which a box 300 MHz of ± 100 MHz anly applies for DASY v4.4 and ingles (see Page 2), each is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvE uncertainty at calibration frequency and the uncertainty for the initiational lequency tend. If requency and the uncertainty for the analysis of the ConvE uncertainty at calibration frequency and the uncertainty for the initiational lequency tend. If requency which is a standard to ± 50 MHz. The uncertainty is the RSS of the ConvE uncertainty at calibration frequency and the uncertainty for the initiational lequency tend. If requency which is a standard to ± 100 MHz.
<sup>6</sup> A trade particular to ±

Certificate No: EX3-3938\_Oct18-

Hage 5 rf 30

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.

t (886-2) 2299-3279

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



EX3DV4- SN:3935

October 24, 2018

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3938

Calibration Paramete	r Determined in Bod	y Tissue Simulating Media
----------------------	---------------------	---------------------------

F(MHz) <sup>12</sup>	Relative Permittivity	Conductivity (\$/m)	ConvF X	ConvF Y	ConvF Z	Alpha <sup>0</sup>	Depth <sup>is</sup> (mm)	Une (k=2)
750	55.5	0,96	9.72	9.72	9.72	0.46	0.87	± 12.0 %
835	55.2	0.97	9.56	9.56	9.55	0.41	0.92	± 12.0 %
5000	55.0	1,05	9.33	8.33	9.33	0.48	0.87	±12.0 %
1450	54.0	1,30	7,98	7,98	7.98	0.32	0.90	± 12.0 %
1760	53.4	1.49	7.83	7.83	7.83	0.43	0.90	+ 12.0 %
1900	53.3	1.52	7.52	7.52	7.52	0.33	0.96	± 12.0 %
2000	53.3	1.52	7.62	7,62	7:62	0,36	0.89	± 12.0 %
2300	52.9	1.81	7.35	7.33	7.33	0.42	11.87	= 12.0 %
2450	62.7	1.95	7.30	7.30	7.30	0.35	0.87	= 12.0 %
2600	52.5	2.16	7.15	7.15	7.15	0.33	0.95	± 12.0 %
5250	48,9	5,36	4.23	4.23	4,23	0.50	1.90	± 13.1.%
5600	48.5	5.77	3.77	3.77	3.77	0.50	1.90	±13.1%
5800	48.2	6.00	4.00	4.00	4,00	0.50	1.90	± 13.1 %

Curtinuate No. EX2 3938\_Oct18

Page 6 of 29

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

```
www.tw.sas.com
```

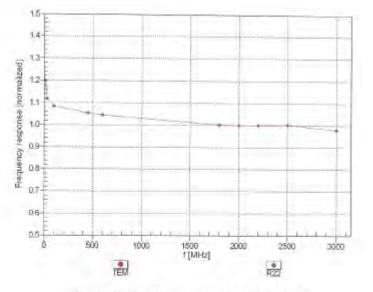


# Report No. : E5/2018/80006 Page: 45 of 103

EX3DV4- SN 3938

October 24, 2019

## Frequency Response of E-Field (TEM-Cell;ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Certificate No: EX3-3938 Oct18

Page 7 of 39

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488

```
www.tw.sas.com
```

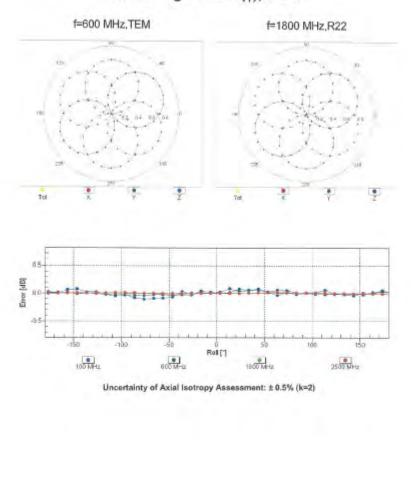
Member of SGS Group



Report No. : E5/2018/80006 Page: 46 of 103

EX3DV4- SN:3938

October 24, 2018



Receiving Pattern (\$), 9 = 0°

Certificate No: EX3-3938 Oct18 Page 8 of 39

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

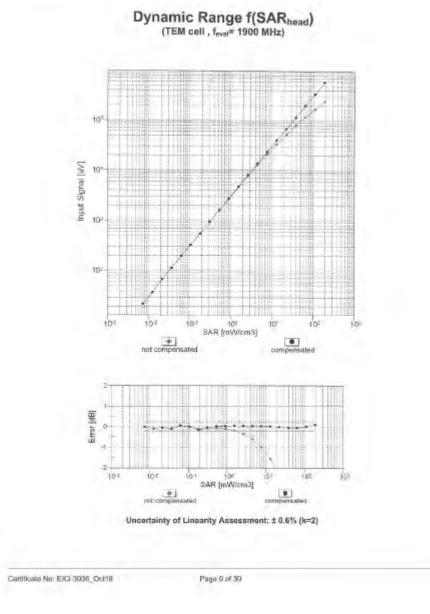
f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 47 of 103

EX3DV4- 5N.3938

October 24, 2018



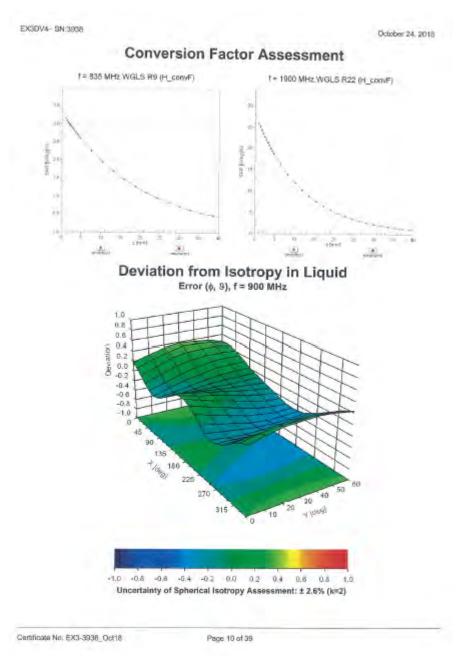
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488





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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

```
www.tw.sas.com
```



EX3DV4--SN:3838

Onicher 24, 2018

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3938

## Other Probe Parameters

Sensor Amangement	Trlangular
Connector Angle (*)	-26.4
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diamater	2.5 mm
Proba Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point.	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Massurement Distance from Surface	1.4 mm

Certificate No: EX3-3935\_Oci18

Page 11 of 39

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488

www.tw.sgs.com

Member of SGS Group



EX3DV4-SN:3935

# Report No. : E5/2018/80006 Page: 50 of 103

Ordnber 24, 2018

UID	Communication System Name		dB	dB iyV	c	tB	WR mV	Max Unc* (k=Z)
0	CW	X	0.00	0.00	1.00	0.00	164.0	± 3.5 %
	1	Y	0.00	0.00	1.00		174,2	
		Z	0.00	0.00	1.00		176.3	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	x	11.84	84.28	19.03	10.00	20.0	29.8%
1.0		Y	4.75	72.52	14.55	_	20.0	
-		7 X	2.70	65.86	10.62	·	20.0	
10011- CAB	UNITS-FED (WCDMA)	1.2	1,25	71.04	17.46	0,00	150,0	主导反称
		Y	0.87	65.19	13,50		150.0	_
		Z	1 10	69.84	16,56		150.0	
10012- CÁB	IEEE 802,11b WIFI 2.4 GHz (DSSS, 1 Wbps)	x	1.29	65.77	16.62	0.43	100.0	3.9,6 %
		Y Z	113	63,57	14.74		150.0	-
10000	and an excitation of an inclusion		1.17	64.77	15.66	1.20	100.0	1007
10013- CAB	IEEE 802.11g WIFI 2.4 GHz (DSSS- OFDM, 6 Mbps)	x	5.06	87.01	17.40	1.46	150.0	±9.6 %
		Y	4.93	66,63	17.09	_	100.0	
	Stored & Burght of States, and apply 1	Z	4.79	66.72	16.84	20.000	150.0	1000
10021- DAC	GBM-FOD (TDMA, GMSK)	×	100.00	118.51	30,68	9,39	50,0	19.8%
		Y	100.00	117.47	30.14		50.0	_
-	second while there of the second state	Z	9,68	81.65	18.25	0.04	50.0	2.0000.00
10023- DAC	CPRS-FDD (TDMA, GMSK, TN 0)	×	100.00	118,45	30.70	9.57	50.0	± 9.6 %
		Y.	100.00	117.42	30.17		50.0	
		Z	8.28	79.56	17.55		50.0	
10024- DAC	GPRS-FDD (TDMA; GMSK, TN 0-1)	×	100.00	116.27	28.62	6,56	60,0	± 9,6 %
		Y	100.00	113.88	27.38		60.0	
	The second second second second second	Z	17.36	88.43	18.89		60.0	
10025- DAC	EDGE-FDD (TDMA, IIPSK, TN U	×	14.85	105,19	41,16	12.57	50.0	#96%
		Y	6.69	80.08	30.32		50.0	_
		Z	5,13	73.32	26.13		50.0	
10026- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	×	28.61	116.31	40,38	9.56	60/0	20.6 %
		Ŷ	17.18	103.12	35.82	_	60.0	
		Z	10.76	82.22	31,22	1 100	ED.D	1000
10027- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	×	100,00	116.23	27.82	4,80	80.0	± 9.6 %
		Ŷ	100.00	112.20	25.80		80.0	
	and the second sec	Z	100.00	105.42	22.06	3.55	B0.0 100.0	±9.8%
10028- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	117.56	27.68	3.00	100.0	± 9.0 %
_		Y Z	100.00	111.19	24.62	-	100.0	
400.00	PROPERTY INC.		14.44	99.44	33.73	7.80	80.0	±9.6%
10029- DAC	EDGE-FDD (TDMA, BPSK, TN 0-1-2)	×	10.38	91.48	30.62	7.38d	80.0	1 8.0 %
_			6.98	83.31	26.90	-	0.06	
(nada)	House non all 4 bit sources (ODOM, Parta)	2	100.00	115.12	20.80	5.30	70.0	19.6%
10030- CAA	IEEE B02.15.1 Bluesonth (GFSK, DH1)	8	100.00	119.12	25.93	3,30	70.0	200.0
				85.08	17.21	-	70.0	
1.0.001	100 million and the state of the state of the	Z	13 15 100.00	120.41	27.44	1.88	100.0	± 9.6.N
10031- CAA	IBEE 802.15.1 Bluelooth (GFSK, DH3)	X		105.85	20.93	Citta	100.0	2 3.4 7
_			100.00	103.85	18.50	-	100.0	-
		Z	1 100.00	1012-30	10.93	-	100.0	

Certificate No: EX3-3938\_Oct78

Page 12 of 39

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.

t (886-2) 2299-3279

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 51 of 103

10032-	IEEE 802:15 1 Bluetooth (GESK, DH5)	T X	100.00	129.17	29.93	1.17	100.0	1 10 6 %
CA4	Gran Crist States (Concerned)	1.11			1.22			a state of
_		N.	100.00	101.34	18.33	-	100-0	
10033-	WER and it i thought the state in the	Z	100.00	104.25	18.92	1	100.0	-
CAA	IEEE 802.15.1 Blueibath (PIM-DQPSK. DH1)	×	100.00	128.01	35,11	5.30	70,0	19.6 W
_		Y	30.26	106.06	28.70		70.0	-
10034-	IEEE 802 15 1 Bluelooth (FW4-DOPSK	X	7.06	82.85	20.38	1.88	70,0	1000
GAA	DH3		4.94	81.70		1.88	100.0	= 9.6 %
		Z	3.36	77.14	15.61		100,0	
10035-	IEEE 802151 Bluelogth (PI/4-DOPSK	X	8.75	93.74	24.54	1.17	100.U 100.0	19.0%
CAA	DH5)	Ŷ	2.68	74.38	16.81	1.00		2 9.0 %
		2	2.45	74.78	16.51	-	100.0	
10035-	IEEE 802.15.1 Blueworth (B-DPSK, DH1)	x	100.00	128.23	35.27	5.30	70.0	19.8%
CAA	in the first second provide second second	×	49.55	114.02	30.85	0.00	1.000	1 3 1 7
-		Z	8,81	35.86	21.44	-	70.0	
10037- CAA	IEEE BIZ 15.1 Bilelooth (B-DPSK, DH3)	X	28.47	109:85	29.14	1,88	100.0	± 9.6 %
	-	Y	4.63	80.65	15.28	-	100.0	-
		Z	3.10	76:20	17.05	-	100.0	
10038- CAA	IEEE 802 16 1 Bluniooth (R-DPSK, DH5)	X	0.40	95,18	25.08	1.07	100.0	29.6%
		Y	2.66	74.97	16.94	-	100.0	
1000	in all and in the fact of the	Z	2.52	75.38	16.85		100.0	-
10039 CAB	CDMA2000 (1xRTT, RC1)	8	2.91	79.68	19,30	0.00	158.0	+96%
		Y	1.40	87.94	13.51		150.0	-
	Contraction of the second s	2	2.58	79.60	18.81		150.0	
10042- CAB	IS-54 / IS-136 FOD (TDMA/FDM, PI/4- DQPSK, Halirate)	×	100.00	114.29	27.89	7.78	50.0	±96%
		Y.	100.00	112.24	26.83		50.0	-
	a second s	Z	7.08	77.79	15.66		50.0	
10044- CAA	ds-B1/EIA/TIA-553 FOD (FDMA, FMI	×	0.00	111.10	2.98	0.00	150.0	19,6%
		Y	0.12	121.97	13.25		150.0	
10046-	Participation and the state of	Z	0.02	124.98	11.44		150.0	1
CAA	DECT (TDD, TDMA/FDM, GFSK, Full Skit 24)	x	100.00	120.31	32.96	13.60	25.0	19,8%
-		Y	26.80	98.60	27,12		25.0	
10045-	DECT (TDD. TDMA/FDM, GFSK, Double	Z	6.10	73.04	16.88		25.0	1000
TAA .	Slot 12	X	100.00	118.79	31,19	10.79	40.0	498%
		Ŷ	42.73	105.35	27.59		40,0	
10058-	UMTS-TOD (7D-SCDMA, 1-28 Mops)	X	6.52 59.92	75.70	16,44 32,89	9.03	40.0	± 9.8%
10 10		Y	20.27	96.61	126.04	-		1.1.1
-		T.	8,72	96.61	26.81	-	50.0	-
DAC.	EDGE-FDO (TDMA, BPSK, TN 0-1-2-3)	×.	3.95	90.34	29,75	6.55	30.0 100.0	19.6%
		Y	7.41	84.68	27.34	-	100.0	-
	Loop Transmission	Z	5.31	78.46	24.34		100.0	-
10059- CAB	IEEE 802 11b WIFI 2.4 GHz (DSSS, 2 Mbps)	x	1.45	68,16	17.83	0.67	118.0	28.6.1
		Y	1.24	65.28	15,64		110.0	-
(hann)	I PROPER AND A 1 COMPANY OF THE OWNER AND	2	1.24	66,08	15.24		110.0	
CAB	IEEE 802.11b WIFI 2.4 GHz (DSSS, 5.5 Mbps)	×	100.00	136.52	35.86	1,30	110.0	<b>#86%</b>
		Y	100.00	127.82	31.55		110.0	
	the second se	Z	75.11	127.04	31.74		110.0	

Certificare No: EX3-3888\_Oct18

Page 13 of 39

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 52 of 103

10061-	IEEE 802 11b WIFI 2 4 GHz (DSSS. 11	X	37.93	122.29	34.76	2.04	T10.0	±9.6 K
CAB	Mbps)	111		Trapecoulous and		-		
		Y	7.04	91.70	25,29	_	110,0	
		Z	3.71	82.53	21.92	-	110.0	
0062- AC	IEEE 802.11a/h WIFI 5 GHz (OFDM, 6 Mbps)	x	4.83	66.93	16.78	0.49	100.0	#96%
		Y	4.68	66.44	16.40	-	100.0	
0000	THE AND MALE INTER OUR INCOME IN	Z	4.61	66.82	16.41		100.0	
0063- CAC	IEEE 802,11a/h WIFI 5 GH2 (OFDM, 9 Mops)	x	4.86	87.07	16.91	0.72	100.0	⇒9.8.%
_		Y	4.71	66.58	16.52	-	100.0	_
		Z	4.62	86.89	16.47		100.0	
0054- CAC	IEEE 802.11a/h WIFI 5 GH2 (OFDM, 12 Mops)	×	5.19	67.38	17,15	0.86	100.0	±9.6%
		Y.	5.02	66.91	16.79		100.0	
		Z	4:90	67 10	16.66	_	100.0	
DOE5-	IEEE 802 11am WIFI 5 GHz (OFDM, 18 Mops)	x	5.07	67.37	17,30	1.21	100.0	± 9,8 %
_		Y	4.91	66.89	16.94		100.0	
		Z	4.77	66.99	96.73		100.0	
10086- SAC	IEEE 802.11a/n WiFi 5 GHz (OFDM, 24 Mbps)	×	5.11	67 44	17.51	1.48	100.0	±9.6 %
		Y.	4.95	66.98	17.15		100.0	
	The second s	Z	4,78	66.99	16.85	-	100.0	
10067- SAC	(EEE 802 11a/h WiFI 5 GHz (OFDM, 36 Mbps)	×	5,40	67.52	17.91	204	100.0	主用目标
		Y.	5.26	67.17	17.62		100.0	
		Z	5,06	67.09	17.23		100.0	
10068- DAC	IEEE 802.11a/h WIFI 5 GHz (OFDM, 48 Mbps)	X	5,51	67.80	18.25	2.55	100.0	± 9.6 %
		4	5.36	87.40	17.94		100,0	1.
		Z	5.11	67.14	17.41		100.0	
10069- CAC	IEEE 802 11a/h WIFI 5 GHz (OFDM, 54 Mbps)	x	5.58	67.69	18.40	2.67	100.0	19.0%
		Y	5.44	67.37	18.13		100.0	
	how were and it was	7	5.19	67.11	17.58		100.0	-
10071- CAB	EEE 802 11g W/FI 2.4 GHz (DSSS/OFDM, 9 Mops)	×	5.17	67.17	17.75	1.99	100.0	±9.6 %
		Y	5.05	66.81	17.46		100.0	
		Z	4.88	66.78	17.09		100.D	1.1.1.1.1
10072- CAB	(EEE 802.11g WFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	×	521	67.68	18.06	2.30	100,0	±9.6 %
		Y	5.08	67,27	17.74	· · · · · · · · · · · · · · · · · · ·	100.0	-
1	Constant of the local sector of the local sect	Z	4.87	莳.11	17.28		100.0	
10073- CAB	(EEE 802.11g WiFi 2.4 GHz (DSSS/OFOM, 18 Mbps)	×	5.30	67.92	18.44	2.83	100.0	298%
		1 Y	5.18	67.55	18:13		100.0	-
		Z	4.94	57.26	17.56		100.0	
10074- CAB	IEEE 802 11g WIFI 2.4 GHz (DSSS/OFDM, 24 Mbps)	x	5.29	67,90	18.65	3.30	100.0	±96%
		٠Y	5.19	67.54	18,34	-	100.0	
	I HARRY DATE OF THE OWNER.	Z	4.93	67.18	17.70	10.000	100.0	1010
10075- CAB	(EEE 802 11g WIFI 2.4 GHz (DSSS/OFDM, 36 Mbps)	×	5.40	68.28	19.10	3.82	ACCA.	7.0 F.W
100	and a second second	Y	5.28	67.86	18,77		90.0	-
		Z	4.98	67.33	17.99		90.0	
10076- CAB	(DSSS/OFDM, 48 Mbps)	X	5,38	67,97	19,17	4.15	.00.0	±96%
		Y	5.29	67.64	18.88		90.0	
		2	5.00	87.13	18,10	-	0.08	-
10077- CAB	(DSSS/OFDM, 54 Mbps)	x	5.A1	68.03	19.26	4,30	90.0	±9.6%
		¥.	5.32	67.72	18.96	-	90.0	
		2	5.93	67.21	18.19		80.0	

Certificate No: EX3-3938\_Ocl19

Page 14 of 39

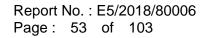
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488





EVorti/A childred

10081-	CDMA2000 (1xRTT, BC3)	X	1.20	70.94	15.87	0,00	1 150.0	19.5%
CAE		Y	0.66	63.33	10.59		1000	
		Z	0.97	69.12	14.01		150.0	
10082- CAB	IS-547 IS-138 FDD. (TDMA/FDM. PV4. DQPSK, Fulirate)	X	1.85	61,30	6.54	4.77	80.0	1 8.6 %
Correct Correct	Liner on, Hamaio)	Y	1.15	60.10	5.56		80.0	
		Z	0.90	60.00	4.82		80.0	
10890-	GPRS-FED (TDMA, GMSK, TN 0-4)	X	100.00	116.34	28.67	6.56	60.0	19.65
DAC	the state of the state of the state of the state	N		and the second	1224	0.00	020	2.9,0 %
			100.00	113.98	27.45		60.0	-
10097	UMTS-EDD (HSDPA)	ZX	16,90	88.08 69.10	18.81	1.00	80.0	
CAB	Ginto i De (mater re)	v				0.00	150.0	19.6%
		Z	1.88	66.14	14.64		\$50.0	
10098-	UMTS-FDD (HSUPA, Subleat 2)		1.92	60.38	16.52	0.05	180.0	-
CAB	divite FOD (Hadra, dablies) 2,	×	1.94	69.09	16.77	0.00	150,0	196%
		¥	182	66,08	14,59		150.0	
10099-	EDGE-FOD (TDMA, 8PSK, TN 0-41	2	1.87	69.33	16.49		150.0	in the
DAC	EADE-FUD (TDRM. 8-SK. ) N.0-4)	×	28.67	116,31	40,37	9.56	0.00	±9.6%
		Y	17:22	103.14	35.83		60.0	-
10100-	LTE-FOD (SC-FDWA- 100% RB- 20	2	10.80	92.24	31.22		60.0	-
CAE	MHz, QPSK)	X	3.51	72.21	17.62	0.00	159,0	±9.6 %
		Y	2.94	69.12	15,85	1	150.0	
10101-	LTE-FDD (SIC-FDMA, 100% RB, 20	2	3.29	71.84	17.33	1.00	150.0	
CAE	MH2_16-CIAMI	×	3,42	68.37	16.44	0.00	159/3	±96%
_		¥.	1.15	66.88	15.45		150.0	
Toins"	Law rate of a cost to come of	1Z	3.26	58 19	16.19		150.0	1
TOTOZ- CAE	L7E-FDD (8C-FDMA, 100% RB, 20 MHz, 64-DAM)	×	3.51	68.25	16.50	0,00	150.0	186%
		1 Y 1	3.25	55.87	15.57	1	158.0	-
		Z	3:35	88.16	18.28		150.0	
10103- GAG	LTE-TOD (SC-FDMA, 100% RB, 20 MHz, OPSK)	×	9.10	80,51	22.32	3:98	85.0	196%
		Y.	7.71	77.60	21.05	-	65.0	-
		2	6.72	75.88	19.85		65.0	
10108- CAG	LTE-TOD (SC-EDMA, 100% RE, 20 MH2_10-QAM)	X	8,36	77.67	22.08	3.98	85/0	+9.6%
		¥ .	7,66	75.78	21.18		65.0	
		Z	6.54	73.78	19,84		65.0	
10105- CAG	LTE-TOD (SC-FOMA, 100% RB, 20 MH2, F4-QAM)	×	8.22	77.35	.22.27.	3.98	65.0	± 9,8 %
		Y.	7.00	74.28	20.84		65.0	
lan a la		Z	E.41	73.36	19.96	-	65.0	
ianne- Cag	LTE-FDD (SC-FDMA, 100% RB, 17 MHz, QP5K)	3	3/17	71.32	17,44	0.00	150.0	±9.6 %
		Y	2.58	68.37	15.67		150.0	-
		- 2.	2.85	71.00	17.15	-	130.0	-
10109- CAG	LTE-FDD (SG-FDMA, 100% RE, 10 MHz, 16-QAM)	.X.	3.09	68,24	16,43	9.00	150.0	±86%
		Y	2.80	65.64	15.30		150.0	
		Z	2.62	68.15	16.17		150.0	-
10110- CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz. DPSK)	X	2.51	70.39	17,18	0.00	150.0	± 9/6 %
		Y	2.08	67.38	15.21		150.0	-
	States and the second second	Z	2.30	70.10	16.80		150.0	
10111- DAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-OAM)	X	2.83	69,15	16,90	11.00	150.0	±9.6%
		Y I	2.49	67.13	15.44		100.0	
		z	271	69.56	16.7E		150,0 750.0	

Centificate No. EX3-3938\_Dct18

Page 10 of 39

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.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.



# Report No. : E5/2018/80006 Page: 54 of 103

								be: 24, 20
10112- DAG	LTE-FOD (SC-FDMA, 100% RB, 10 MH2, 64-QAM)	×	3.20	88.93	16.43	0.00	150,0	主导剧系
		Y	2.93	80.85	15.39	-	150.0	_
10113-	A new possible based and and a strength from the based	Z	3.04	68 13	16.21	2010	150.0	
CAG	LTE-FIDD (SC-FIDMA: 100% RB, 5 MHz: 54-DAMI	x	2.58	69.16	16.96	a.ab	150,0	196%
-		Y	8.64	87.31	15,61		150.0	
		Z	2.87	69.6f	16.87		150.0	
10114- CAC	EEE B02-11n (HT Greentiald, 13.5 Mbps: BPSK)	х	5.21	87.32	16.54	u uu	150,0	1984
		Y	5.08	66.85	16 21		150.0	
		Ź	5,00	67.43	16.43	-	150.0	
10115- CAC	IEEE 802.11n (HT Grownfield, 81 Mbps, 16-QAM)	x	5.96	67.60	16.68	0.00	150.0	=9.8-N
		Y	5.42	67.15	16.37		150.0	
A	Province and an and and	Z	5:34	67.52	18.48		150.0	
10116- CAC	IEEE 802.11 n (HT Greenbeld, #35 Mope 64-QAM)	X	5,33	67.58	16.60	0.00	150.0	+48 e
		Y	5.19	67.09	16.26		150.0	
12.00		-Z	5.15	67.61	16.44	the second	150,0	302.7
10117- GAG	IEEE 802 110 (HT Mixed, 13.5 Mbbs, BPSK)	x	5.21	67.33	15.56	0,00	150.0	±9.6 ≤
Y		4	5,06	66,76	16.10		150.0	
		Z	5/03	67.31	15.39		150.0	1
10116- CAC	(EEE 802, 11n (HT Mored, 81 Mbps, 18- GAM)	×	5.63	67.75	16.76	0.00	150.0	\$9E =
		Y	5.56	07.54	15.45		150.0	
		Z	B.41	67.68	15.55		150.0	
10119- DAG	IEEE 802.11n (HT Mixed, 135 Mbpt, 64- QAM)	X	6,26	87,52	16.58	0,00	150,0	19.6%
		Y	5,16	67.02	16.24		150.0	
	La carra demanda	Z	0.13	87.55	16.43		150.0	
10140- CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 10-QAM)	×	3.55	60.24	16.42	0.00	150.0	296%
	Construction of the second sec	¥	5.29	60.88	15.49		150.0	
5.00 Mar.	and the second sec	Z	1.39	08.15	10.19		150.0	
10141- CAE	LTE-FDD (5C-FDMA, 100%-RB, 15 MHz, 64-QAM)	×	3.66	68,26	18.55	00,0	150.0	:0.5%
		.Y.	3.42	66.98	15.00		160.0	
	Concernance of the second seco	Z	3.52	68.25	16.36	- 1 M	150.0	1.000
10142- CAE	LTE-FDD (EC-FDMA, 100% RB, 3 MHz, DPSK)	x	2.31	70.61	17.10	0,00	150 0	196%
	12.11	×.	1 84	67.11	14.76		150.0	
		2	2.12	70.48	16.85	2.2.2.	150.0	1
10140- CAE	LTE-FOD (SC FOMA, 100% RB, 3 MHz, 16-DAM)	×	211	70.28	18.99	0.00	150.0	49.6 %
		X.	2.81	37.48	15.00	-	150.0	-
A		Z.	2.08	70.99	16.78		150.0	-
10144- GAE	LTE-FDD (SC-FDM), 100% RB, 3 MHz, 64-GAMI	X	2.51	67.88	15.37	0.00	150.0	± 9.6 %
		Y	234	85,60	13.59		150.0	
		.2	2.29	17,85	14 87		150.0	
10145- CAF	LTE-FED (SD-FDMA, 100% RB, 1.4 MHz, GPSK)	x	1.73	10.80	16.10	.0.50	160,0	±06%
		Y	. 1.11	03.06	10,90	100.0	150.0	
	a state of the second stat	2	133.	67.08	12 73		100.0	
10146- CAF	LTE FDD (SC-FUNA, 100% RE, 1.4 MHz, 16-QAM)	×	4.28	75,96		0.00	160.0	1945
		Y.	2.48	68.71	13.45		150.0	
		2	2.38	66.35	12.25	100	150.0	1.000
10147- DAF	LTE-FDD (SC-FDMA, 100% RB; 1.4 MHz, 64-QAM)	X	6,46	81,86	19,47	0.00	150.0	19,8 9
		Y.	0.10	7179	14.97		100.0	1
		Z	3.29	74.21	14.01		1000	

Certificate No EXS-3958\_Oct18

Paige 16 bill 39

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.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



± 9.6 %	150.0	0.00	16.47	68.31	3,10	× 1	LTE FDD (SC-FDMA, 50% RB, 20 MHz,	10149=
± 9,6 5	150.0	0.00	10.47	00.91	Partin	0	16-DAM)	DAE
-	150.0		15.35	66.69	2,81	Y.		
	150.0		16.22	68.23	2.93	. Z		
29.65	150.0	0,00	18,48	68,18	3.21	x	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 84-QAM)	10150- CAE
	150.0		15.43	66.70	2.94	Y.		_
1	150.0		16.26	68,20	3.05	Z		
29.65	85.0	3.98	23.67	83.77	10.13	×	LTE-TOD (SC-FDMA, 50% RB, 20 MHz, QPSK)	CAG
-	65.0		22.26	80.52	8.42 6.89	Y Z		
	65.0	3.96	20.59	77.61	0.04	X	LTE-TED ISC-FDMA 50% R8 20 MHz	10152-
\$9.63	65.0	-0,90	22.05	75.91	7 13	Y	16-QAM	CAG
_	65.0		19.44	73.58	6.04	Z		
19.6 9	85.0	3.98	22.75	78.92	8.44	X	LTE-TED (SC-FDMA, 50% RB, 20 MHz)	10153
1 3.0 9	00.0	3.00		College.	Mr. 1.1	1.0	64-QAMJ	CAG
	65.0	1.00	21.74	76.89	7.56	Y		
	65.0	and the	20.30	74.70	6.48	Z	The set of the later of the set	201224
± 9.6 %	150.0	0.00	17.50	70.97	2.59	x	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	10154- CAE
-	160.0		15:47	67.77	2.12	Y.		_
	150.0	-	17,16	70.74	2.38	Z	LTE-FDD (SC-FDMA, 50% RB) 10 MHz.	10155-
+9,6 S	150.0	0.00	16.90	69.15	2,83	×	16-QANU	CAG
	150,0		15.45	67.14	2.49	Y		_
±96%	160.0 150,0	0.00	16.78 17.23	89.67 71.19	2.71 2.21	Z X	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, OPSK)	10158- CAG
	1000	1	14.46	67.01	1.65	Y	Gran	UNC.
_	150.0	-	14.46	71.01	2.01	Z		
±96%	150.0 150.0	0.00	15.72	88.89	2.40	×	LTE-FDD (SC-FDMA, 50%, RB, 5 MHz 16-QAM)	10157- CAG
-	150.0	-	13.48	65.89	1.95	Y		
-	150.0		14.94	68.70	2.19	2		
1983	150.0	0.00	17.01	69.22	2.98	x	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 54-QAM)	10158- GAG
	150.0		15.65	67.36	2.65	Y.		_
	150.0		16.93	69.75	2.88	2	1 WE POOR SHOP POLICE PART OF THE	10159-
±06%	150.0	0.00	16.05	69.44	2.54	x	LTE-FOD (5C-FDMA, 50% RB, 5 MHz, 54-QAM)	CAG
	150.0		13.77	66.31	2.05	Y		
	150.0	-	15.34	69.42	2.34	X	LTE-FOD (SC-FDMA, 50% RB, 18 MHz)	10160-
196%	150.0	0,00	18.97	69.71	2.95	Y	OPSK)	CAE
	150.0		15.60	69.58	2.78	Z		1.1.1
土日,6 %	150.0	0.00	16.72 16:44	69,58	3.11	X	LTE-FDO (SC-FDMA: 50% RB, 15 MHz; 16-GAM)	ID161. CAE
	150.0		15:34	66.60	2.83	Y		
	150.0	-	16/22	68,19	2.95	2	Les and the second s	
±26%	150.0	0.00	16.50	68.15	3.21	x	LTE FDD (SC-FDMA, 50% RB, 15 MHz, 64-OAW)	10162- CAE
	150.0	1.00	10.46	66.74	2.94	9		
	150.0		16.32	68.32	3.08	2	TE EDD (20 DoktA BOD DO LOUGH	10198-
÷96%	150.0	3.01	19.91	71.03	4.07	X	LTE-FDD (SC-PDMA, 50% RB, 1.4 MHz, OPSK)	LAF
	150.0		19.36	69.95	3.79	Y		-
	150.0	-	19.76	71.38	3.83	7	LTE-FDD (SC-FDMA, 50% RE, 1 4 MHz	10187-
土印石物	150.0	3.01	20.07	74.80	5.42	X	TR-OAM)	CAF
	150.0		19.75	72.79	4.77	YZ		
	150.0		20.77	76.01	5.29	4		

Certificate No: EX3-3938\_Oct18

Page 17 of 39

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.



# Report No. : E5/2018/80006 Page: 56 of 103

10168-	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz,	X	6.05	77.17	21.98	3.01	150.0	±9.6%
CAF	64-QAM)		1.121		1000	3.01	1000	19.0 %
		Y	5.30	75.09	21.09	-	150.0	
		Z	6.36	79.86	22.71		150.0	
0169- XAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	×	3.85	72.93	20.70	3.01	150.0	± 9.6 %
		Y	3.33	70.15	19.41		150.0	_
		Z	3.47	72.51	20.23		150.0	
10170- CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	x	6.37	81.48	23.72	3.01	150.0	±9.6 %
2002 ( <u></u>		Y	4.75	78.10	21.63		150.0	
MARCH 1	Contraction and the second second second	Z	7.01	85.04	24.72		150.0	0.22
10171- VAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	x	4,87	75.76	20.53	3.01	150.0	±9.6 %
		Y	3.87	71.72	18.83		150.0	
		Z	4.54	76.13	20.23		150.0	
0172- CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	80.41	131,60	39.78	6.02	65.0	± 9.6 %
		Y.	18.51	103.18	32.14		65.0	
		Z	14.22	97.99	29.18		65.0	
10173- CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 18-QAM)	×	100.00	127.75	36.65	6.02	65.0	±9.6 %
22.05	20000 C 10	Y	30,31	107.15	31.45	-	65.0	
0.007-2	THE STREET STREET STREET STREET STREET	Z	25.08	102.02	28.13	and south	65.0	1.6027
10174- CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 54-QAM)	×	60.73	116.92	33.35	8.02	65.0	± 9.6 %
		Y	21.73	99.84	28.80		65.0	
		Z	17.08	94.57	25.40		65.0	
0175- IAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, OPSK)	X	3.78	72.50	20.41	3.01	150.0	± 9.6 %
and	ar arg	Y	3.29	69.80	19.15	_	150.0	
	-	Z	3.40	71.98	19.88		150.0	
10176- CAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	6.38	81.51	23.73	3,01	150.0	± 9.6 %
unu	10.0010	Y	4.76	76.12	21.65	-	150.0	
		ż	7.03	85.08	24,74		150.0	
10177- CAL	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	3.82	72.71	20.53	3.01	150.0	± 9.6 %
wrs.	(ar dis)	Y	3.32	69.97	19.25		150.0	
_		Z	3.44	72.23	20.02	-	150.0	-
10178- CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16- QAM)	X	6.26	81.12	23.55	3.04	150.0	± 9.6 %
	(aver)	Y	4.70	75.86	21.51		150.0	-
		Z	6.85	84.54	24.51		150.0	100 million (1990)
10179- CAG	LTE-FDD (SC-FDMA, 1 RE, 10 MHz, 64-QAM)	X	5.53	78.38	21.95	3.01	150.0	± 9.6 %
440	an an and	X	4.28	73,73	20.08		150.0	
		Z	5.53	80.03	22.20		150.0	
10180- CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64- QAM)	X	4.85	75.63	20.45	3.01	150.0	± 9.6 %
and	saring	Y	3.85	71.63	18.78		150.0	
		Z	4.51	75.97	20.14		150.0	
10181- CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	3.82	72.60	20.52	3.01	150.0	± 9.6 %
122	10000000	Y	3.31	69.95	19.24		150.0	
	Contraction and a second second	Z	3.44	72.20	20.01	10000	150.0	all the second
10182- CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	6.25	81.09	23.54	3.01	150.0	±9,6 %
		Y	4.70	75.84	21.50		150.0	
		Z	6.83	84.50	24.49		150.0	
10183- AAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	4.84	75.60	20.44	3.01	150.0	± 9.6 %
	and an only	Y	3.85	71.61	18.77		150.0	
		ź	4.50	75.94	20.13		150.0	

Certificate No: EX3-3938\_Oct18

Page 18 of 39

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.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488

Member of SGS Group

www.tw.sgs.com



# Report No. : E5/2018/80006 Page: 57 of 103

150.0 1 ± 9	.01	3.0	20.54	72.70	3.83	8	LTE-FDD (SC-FDMA, 1 RB. 3 MHz,	10184-
			-				QPSK)	GAE
150.0			19.27	70.00	3.82	Y		
150.0			20.04	72.28	3.45	Z	LTE-FDD (SIC-FDMA, 1 RB. 3 MHz 16-	10185-
150.0 ±8	-	30	23,58	81.18	6.29	×	QAM)	CAE
150.0		_	21.53	75.91	4.72	Y		
150.0		-	24.55	84.63	6.88	Z	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-	-01103-
150.0 2.9		:3.0	20,48	75.68	4.86	x	QAMI	AAE
150.0		-	18.80	71.68	3.87	Y		_
150.0		-	20.17	76.04	4.53	Z	LTE-FDD ISC-FDMA, 1 RB. 1.4 MHz	10187-
1000 ±9	-	3.0	20.60	72.79	3.84	×	QPSK)	CAF
150.0		-	19.38	70.05	3,33	Y		_
160.0			20.11	72.24	3.46	Z	LTE-FOD (SC-FOMA, 1 RB, 1.4 MHz,	10188-
150.0 = 9		3.0	24,08	82.17	6.59	8	16-CAM)	IZAF
150,0			21.93	76.63	4.88	Y.		
150.0		-	25.23	86.21	7.44	2	THE EDITING FRAME A DR. A A PR	10199
150.0 ±9		3.0	20.81	76.28	5,01	x	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 54-QAM)	AAF
150.0		_	19.08	72.12	3.96	Y		_
150.0			20.60	76.84	4,72	2	IEEE B0211n (HT Greenfield, 6.5 Mbps.	10193-
150.0 ± 3	91	0,0	16.35	66.78	4.64	X	BPSK)	GAE
150.0			15.91	65.22	4,48	Y		
150.0		2.2	16,19	66.93	4.48	Z	IECE ON ALL MAR PLANE PORT	10194-
150.0 ± 9	00	0.0	16.46	67.15	4.84	x	IESE 802 11n (HT Greenfield 39 Mops: 16-QAM)	CAC
160.0			15.03	66 55	4.66	Y		
150.0			16.31	67.23	4.65	2	THERE BAR ALL HUR A	10195-
150.0 ± 9.	00	0,0	16.47	67.16	4.88	X	IEEE 802 11n (HT Grounbeld, 55 Mbps, 64-QAM)	DAC:
150.0			18.05	66.68	4.70	Y		_
158.0			16.32	87.26	4.69	2	The second se	10404
150.0 ±9	00	0.0	15.38	88.88	4.66	8	IEEE 802 11n (HT Mixed, 5.5 Mbps, BRSK)	10190 CAC
150.0			15.93	66.29	4.49	Y		
150.0	1 1 1 1	1	16.21	66.99	4.48	Z		and the
150.0 ± 9:	00	0.0	16.47	57.17	4,85	X	EFE 802 11n HIT Model 30 Mbps. 16- GAM)	D1971 DAC
150.0		12	36.04	68.58	4,67	W.		
150.0		-	16.32	67.25	4.86	Z	WERE AND ALL AND	and other
150,0 ±92		0.00	16.48	67 18	4.89	X	IEEE 802.11n (HT Mixed, 86 Mbps, 64- QAMI	10196- DAC
150.0			16.06	66.60	4.70	Y		-
150.0			16.33	67.27	4.68	Z	IFTE ODD AN WHEN A DESCRIPTION	10219
150.0 ± 9.0	10 1	0,01	18,35	66.90	4.81	x	IEEE 802.11n (HT Maxed, 7.2 Mbps, BPSK)	CACI
150,0	1		15.89	fi6.30	4.43	Ŷ		
100.0			16.10	67.01	4.42	2	FFF 000 11. UN 11	0220-
150,0. ± 9.0	20 1	0.00	16.47	a7,15	4,86	×	EEE 802.11n (HT Maxed 43.3 Mopt, 16- GAM)	CAC
150.0	1	-	16.04	66,56	4.67	Y		-
150.0		-	16.31	67.22	4,65	2	IFFE DOG AND HAT ADDRESS THE ADDRESS	0221
150.0 ±94	20 7	0.00	16.46	67:10	4,89	x	IEEE R02.11n (HT Mixed) 72.2 Mbps, 64- QAM)	CAG
160.0	1		16.05	66.53	4.71	4		_
150.0		-	18.31	67.20	4.70	Z	INCOMPANY AND A DESCRIPTION OF A DESCRIP	0222-
150.0 ± 6.6		0.00	16.57	67.35	5,19	×	IEEE 302.11n (HT Mixed, 15 Mbps) BPSK)	0222- CAC
150.0	11	-	18.1#	06,77	5.03	Y		_
150.0			16.30	67.33	5.01	Z		_

Certificate No: EX3-3938\_Oct18

Page 19 of 39

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.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

f (886-2) 2298-0488



0223-	IEEE 802.11n (HT Mixed, 90 Mb/xs. 16-	X	5,54	67.61	16.71	0.00	150.0	土田市
CAC	QAMI	Y.	6.35	66.99	16.32		150.0	
_		Z	5,29	67.45	16.47		150.0	-
0224- CAC	JEEE 802.11n (HT Make: 150 Mops, 64- DAM)	x	5.24	67,46	16,55	0.00	150.0	1965
		Y	5.08	66.87	16.16		150.0	-
		2	5.06	87,45	16.38		150.0	
0225- 2AB	UMTS-FDO (HSPA+)	x	2,94	66.61	15,90	0.00	150.0	594%
-		¥.	2.72	65.45	14.90		150.0	
		Z	2,80	66.78	15.59		150.0	
10226- CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 18-QAM)	×	100.00	127.97	36.79	6.02	65.0	#9.6%
		Y	33.01	106.86	32.02		65.0	
		Z	28.60	104.35	28.88		65.0	
10227- CAA	LTE-TOD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	x	71.84	120.02	34.24	6.02	65.0	#90's
		Y	27.56	104.08	30,11		65.0	
		Z	21.67	.98.19	25.50	the second	85 D	
10228- CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, OPSK)	×	83,78	133,19	40,33	0.02	65.0	±9.6 %
	Marca and a second s	Y.	27.23	111,37	34.65	· · · · · ·	65.0	-
11 m	Contraction of the second seco	Z	14,92	99.20	29.65		65.0	
10229- CAC	LTE-TOD (SC-FDMA, 1 FIB, 3 MHz, 16- QAM)	x	100.00	127.75	36.66	6.02	65.0	19.0%
		Y	30.45	107.22	31.48		65.0	
		7	25.36	102.20	28.19	1 Summer 1	65.0	
10230- DAC	UTE-TOD (SC-FDMA, 1 RB.3 MHz. 64- GAM)	x	64.64	118.06	33.66	6.02	65.0	± 9,6%
		Y.	25,67	102,71	29.64	(	65,0	
		Z	19.55	96.45	25.91	11.01	55.0	
10231- CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, CPSK)	×	74.78	130.72	39.63	6.02	65.0	296%
-		Y	25.26	109.74	34.10		65.0	
· · · · ·	the second state of the second state of the	Z	13.84	97.69	29.10		65.0	1
10232- CAF	LTE-TOD (SC-FDMA, 1 RB, 5 MHz, 16- DAM)	x	100.00	127.76	36.66	8.02	65.0	296 W
		Y.	30.44	107.22	31.48	-	85.0	
		Z	25.32	102.18	28.18	1	85.0	Carrow
10233- CAF	LTE-TOD (SC-FDMA, 1 RE, 5 MHz, 54- DAM)	×	64.74	118.10	33.67	6,02	65.0	法自在制
		1	25.80	102.71	29.64	-	85.0	i
	Second a land of the second	Z.	19.51	96.43	25.91		65.0	
1023-1- CAF	LTE-TOD (SC-FDMA, 1 RB, 5 MHz. GPSK)	x	68.79	128.16	38.87	6.02	65.0	± 9,6 %,
		Y	23.59	108.16	33.53		65,0	-
-		Z	12.92	98.23	28.52		65.0	
10235- CAF	LTE-TOD (SC-FDMA, 1 RE, 10 MHz, 16-QAM)	×	100,00	127 77	36,66	6.02	65.0	196%
-		Y	30.53	107.29	31.50	-	65.0	-
	and some task work of the second second	2	25.37	102.23	28.19	12.01	65.0	1
10238- CAF	LTE-TDD (SC-FDMA, 1 RE, 18 MHz, 84-QAM)	x	65.78	118.34	33.37	0.02	05.0	196S
1.000		Y	25.93	102.87	29,68	-	65.D	
		Z	19.72	96.57	25.94	10.00	65.0	1000
10237- CAF	LTE-TOD (SC-FDMA, 1 RB, 10 MHz, QPSK)	×	78.22	131.13	39 74	6.02	85.0	19.6%
		Y.	25.46	109.93	34.16	-	65.0	
	and the second sec	Z	13.89	97.78	29.12	-	E5.0	
10238- CAF	LTE-TDB (SC-FDMA, 1 RB, 15 MHz, 16-DAM)	×	100.00	127.76	36,65	6.02	65.0	± 9.6 %
		Y	30.42	107.23	31,48	-	65.0	
		2	25.26	102.15	28.17		65.0	1

Certificate No: EX3-3938\_Oct18

Page 20 of 39

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the its client as a structure of the company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279

```
f (886-2) 2298-0488
```

Member of SGS Group



# Report No. : E5/2018/80006 Page: 59 of 103

10/2394	LTE-TDD (SE-FDMA, 1 RB, 15 MHz.	X	64.82	118:13	33.68	6.02	65.0	1 19.6%
CAF	64-CIAM)						1000	1.4.4.1
_		Y	25.62	102.71	.29.64		65.0	
DOM: NO	I AN OTHER THAT THE A TOWN IN AND	Z	19.45	196,40	35.90	-	65.0	
10240: CAF	LTE-TOD (SC-FDMA, 1 RE, 15 MHz, QP5K)	×	75.84	131.04	39,71	6.02	65.0	± 9.6 %
_		Y	25.37	109.88	34.14	6	65.0	-
10241-	I WE WERE SONT FRAME AND DO IN THE R.	2	13.84	97.74	29.11		65.0	
GAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	x	12.34	87.77	28.09	6.98	65,0	± 9.8%
		Y	10.07	84,69	26.80		65.0	
10242-	LTE-TOD (SC-FDMA, 50% RB, 1.4 MHz,	Z	9.45	E3.27	25.34	1.000	65.0	
CAA	54-QANI	x	11.90	66.96	27.68	6.98	65.0	2 9/6 %
		X	948	62.13	25.70		65.0	
10243	LTE-TOD (SC-FDMA, 50% RB, 1.4 MHz)	Z	8.88	82.07	24.81	-	66.0	
CAA	UPSK)	*	9,29	B3.62	27 37	6.96	85.0	=9.6 %
		4	7.60	79 19	25,41		65.0	1
10244	LTE-TOD (SC-FDMA, 50% R8, 3 MHz	Z	6.90	78.25	24:23	1.00	85.0	
CAC	16-QAM)	×	11.62	86.25	22.95	3,98	65.0	2.0.6 %
		Y.	9.05	81.02	21.07		85.0	
10:245-	LTE-TDD (SC-FDMA, 50% R9, 3 MHz	Z	5.90	74.19	17.01		65.0	
CAC	64-GAM)	×	11,21	84.37	22.59	3.98	85.0	19,6 %
		Y	8.74	80.23	20.72		85,0	
10246-	THE TRACTOR CONTRACTOR OF A DESCRIPTION	Z	5.76	73.60	16.72	A	65.0	11
CAC	LTE-TOD (SC-FDMA, 50% RB, 3 MHz, QPSK)	×	13,76	91.33	25.01	3.98	65.0	‡ 8.8 %
		Y	8.27	82.50	21.35		65.0	
		Z	5 24	75.79	17.95		65.0	
10247- 1AF	LTE-TOD (SC-FDMA, 50%, RB; 5 MHz, 16-QAM)	×	8.45	80.38	21.81	3.98	65.0	29.6%
		Y.	6.57	78.53	15,78		66.0	
	hand the second s	. Z	5.10	72.95	17.62	200	85.0	1.1
10248+ DAF	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-DAM)	8	7.96	79,46	21,43	3.98	65.0	1965
		Y.	6.50	75.86	19.49	-	85.0	
CONTRA A		Z	5.09	72.45	17.30	-	65.0	
10249- CAF	LTE-TOD (SC-FDWA 50% FIB 5 MHZ OPSK)	×	14.67	92.89	20.21	3.98	65,0	195%
	And the second s	Y	9.72	85.51	23.23		65.0	-
		2	8.59	79.52	20.29		65.0	
10250- CAF	LTE-TOD (SC-FDMA, SO% FB, 10 MHz, 15 QAM)	x	8.79	81.74	23.60	3.98	65.0	196%
-		1 Y .	7.53	78.89	22.19		65.0	-
0254-	1 THE MENT CONTRACTOR	2	6.20	76.02	20.42		65.0	
DAF	LTE-TOD (SC-FDMA, 50% RB, 19 MHz, 84-QAM)	×	8,02	78.77	22.12	3.98	65.0	<b>186</b> #
		X	7.01	78.38	20.84		65.0	
0252	Last store loss while a	2	5.03	78.77	19.14		05.0	
CAF	LTE-TOD (SC-FDMA, 50% RB, 10 MHz, OPSK)	×	12:21	89.16	25,66	3.96	65.0	19.6%
-		Y	8.34	84.33	23.66		85.0	-
0000	175 755 105 5545	Z	7.06	50.06	21.48		65.0	
0253- AF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 18-DAM)	×	7.75	17.29	21.77	3.98	85,0	19,61%
		Y	6.93	75.28	20.72		E5.0	-
0254	1 TE TER UND PROM PAGE AND	Z	5.92	73,10	19.25		65.0	-
0254- CAF	LTE-TOD (SC-FDMA; 50% RB; 15 MHz; 04-DAM)	×	9.1B	78.13	22.42	3,98	65.0	±9.6 %
_		N.	7.34	76.22	21.42	1.000	85.0	-
		Z	6.32	74:11	19.09		65.0	

Certificate No: Ex3-3838\_Oct18

Page 21 of 39

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the its client as a structure of the company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd. t (886-2) 2299-3279

f (886-2) 2298-0488



.....

10255+	LTE-TDD (SIC-FOMA, SOR RE. 15 MHz.	XI	9.52	62.95	21.60	3.58	65.0	+9.6%
AF	QPSK)	×		Lass.	- <u></u>		1.1.1.1.1.1	
_		Z	6.80	79 93	22.27		65,0	
0255-	LTE-TDD ISC-FDMA. 100% RB, 1.4	X	10.25	77.07	20.60	399	65,0	Inco
SAA	MHz, 16-DAM	-			-	3.90	05.0	土田市市
_			7,42	77.45	18.77		65.0	
0257-	LTE-TOD (SC-FOMA, 100%) RB, 1.4	Z	4.27	69.75	14.06	10.000	65 0	C H and
CAA	MHz, 64-GAM	8	11.67	81.35	20.00	3.98	65.0	±86%
_		Y.	7.07	76.38	13.24		65.0	
10258-	LEFTER INCOMING INCOME	Z	-4.27	69.13	13.71	10.00	65.0	
GAA.	LTE-TOD (SC-FDIMA: 100% RB, 1.4 MH2, GPSK)	x	11.24	87 41	23 95	3.90	65.0	1965
		Y	0.32	77,82	18.86	_	65,0	_
	175 155 (55 55) 4 4055 55 1445	Z	3.88	71,16	15.20	2.55	65.0	1000
10258- CAC	LTE-TDD (SC-FDMA, 100% R8, 3 MHz, 10-DAM)	x	8:37	80,75	22.38	3,98	65.0	188.6%
		4	11.95	11:37	20.63	-	55.0	
Det C	L'ET THE IDA PRIME MAIL THE SALE	Z	5.55	74,09	18.58	10.00	65.0	Lord
10260- CAC	CTE-TDD (SC-FDMA, 100% RB 3 MHz 64-DAM)	×	8.81	80.29	22.23	3.88	65,0	196%
		Y	6.94	27.04	20.51		65.0	-
		2	5.55	73.86	18.49	100	65.0	1000
10261- CAC	LTE-TOD (SC-FDMA_100% R8_3 MHz OPSK)	×	12.47	89,95	25.58	3,98	65.0	286%
		Y	0.00	84.05	-23.10		85.0	-
100.00		Z	6,47	78.99	20.51	-	45.0	222.0
10262- LIAE	LTE-TOD (SC-FDMA, 100% RB, 5 MHz 16-QAM)	×	678	81,89	23.56	3.98	65.0	68.6 W
	- Carlos and Carl	Y	7.52	78.83	22.15	-	65.0	
	Contraction Commentation	Z	有恆	75.95	20.38	-	65.0	
10263- CAF	LTE-TOD (SC-FDMA: 100% RB, 5 MHz) 64-GAM)	x	6.01	78.76	22.12	3.88	65.0	±9.6 %
		Y.	1.00	76.35	20.65		65.0	
	and the first state of the second state of the	Z.	5.12	73.75	12.13		65.0	
10264- CAF	LTE-TOD (SC-FDMA, 100%) RB, 5 MHz, QPSK)	3.	12.07	88.92	32,56	1.98	650	1985
		Y.	8.25	8411	23.56		65.0	
		Z	7,01	79.85	21.36		65.0	
10266- CAF	LIE-TOD (SC FDMA, 102% RE 10 MHZ 16-DAM)	X	8.7.4	77.00	22.05	3.93	65.0	± 9.0 %
	A CONTRACTOR OF A CONTRACTOR OFTA CONT	Y	7.13	75.81	20.97	1	65.0	
		Ż	6.04	73.58	19.44		0.619	
10205 CAF	LTE-TOD (SC-EDMA, 1005 RB 10 MHz, 54 QAM)	x	8.44	79.91	22.74	3.90	65.0	1963
		Y	7.55	76.88	21,73	1	85.0	
		Z	E.47	74.68	20.29	-	66.0	
10267- DAF	LTE-TDD (SC-FDMA: 100% RS 10 MHz QPSK)	×	10.11	02.13	23,66	-3,98	85,0	10.6.9
		¥	<b>前井1</b>	1111.47	22.26	-	85.0	-
-	Las has much as	Z	0.67	17.07	20.67	1.00	85.0	-
10268- CAF	L15-TOO (SIGFLIMA, TUTE HB, 15) MHz, 10-DAM)	2	8.39	77.18	22.02	3.96	88.0	292.0
	and a second second second	Y	7.65	75.61	21,20	-	85.0	-
1000		2	8.70	73.87	18.92	1.44	85.0	1000
10289- CAF	LITE-TOD (SC-FDMA, 100% RB, 15 MHz; 84-DAW)	×	0.26	76.65	21.88	3.98	85.0	+ 8,0 %
		V	7,58	75.05	21.07	-	66.0	
_	and a second statement of the state	Z	6.67	73,30	19.83		65/0	1000
10270- CAE	LITE-TEID (SC-FEIMA, 100% RB: 15 MHE (IPSK)	×	88.6	79.53	22.20	8.98	05:0	± 9.6 %
		Y	7.84	77.34	21,20		76H U	
		2	6.74	75,30	19.85		· 55.0	

Cartificate Nr: EK5-3936\_Der16

Page 22 of 38

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.

WinkS otherwise stated the states are both exactly and the state report report of the state and state and state and state and state and state and states are stated 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 overleat, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial advised in the induced is a structure, and the company's induced at the time of its rights and obligations under the transaction document. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd. t (886-2) 2299-3279

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 61 of 103

10274-	UMTS FDD (HSUPA Subtest 5, 30PP	8	2.69	67.00	15.83	0.00	150.0	E 8.0 %
CAB	Rel8.10	-			1			
_		Y	2.47	65.81	14.87	-	150.0	-
10275-	UMTS-FDD (HSUPA, Subtest 5, 3GPP	Z	2.60	67.27	15.58	10.00	150.0	
CAB	RelE 4		1.83	70.14	16.98	0.00	150.0	= B.6 %
		Y	1,44	66.20	14.31		150.0	1.00
10277-	DIS IODAU	Z	1,70	69.74	16.44		150.0	1.000
CAA	PHS (OPSK)	x	3,83	66.44	11.35	9.03	50.0	1.9,0 %
		Y	3.47	64.75	10.20		50.0	
10278.	Plan append the shake in a distant	2	2.82	62.17	7.82	-	50.0	
CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	×	14,82	89.25	23.47	\$.03	50.0	19.8%
		9	7.61	78.00	18.87	-	50.0	-
10279	PLUS COMPLET POLY OF VEHICLE POLY OF A SUL	Z	4.20	69.20	13.7B		50.0	
CAA	PHS (OPSK: BW 684MHz, Rolloff 0.38)	x	14,85	89.41	23.56	5.03	50.0	29.6%
_		2	7.77	76.24	18.99		50.0	
10290-	COM40000 001 001		4.39	69.44	13.93	-	50.0	·
10290- AAB	CDMA2000, RC1 SOS5, Full Rinkir	x	2.10	73.72	17.06	0.00	150,0	±9.6%
_		7	1.20	65.83	12.24		150.0	
in the local day	Laboration and states and	Z	1.79	72:49	15.56	1	150.0	
IEQ11-	CD4W2000, RC3, SO55, Full Rine	×	1 16	70.51	15.66	0.00	150.0	2.9.6 %
		Y	0.67	63.17	10.48	2	150.0	
		Z	0.94	38.71	13.80		158.0	
10252- AAB	CDMA2000, RC3, SO32, Full Rale	×	1.93	79.24	19.72	0.00	150/0	± 9.6 %
6 P - 4		Υ.	0.76	65.41	12.01		150.0	-
	Canto	Z	2.01	B0.04	18.65		150.0	
11293- \AB	COMA2000, RC3, SO3, Full Rate	×	4.24	91.88	24,62	0.00	150.0	2.9.8%
_		· ¥ ·	0.99	68.94	14.19	-	150.0	
	and the second s	2	16.88	110.82	28.51		150.0	-
10295- AAB	CDMA2000, RC1, SO3, 1/8th Role 25 h;	X	12.27	89,65	26,50	9,08	SD.C	÷06%
	1	Y	10.84	85.72	24.40		50.0	
	New York State State Street Street	Z	6.99	77.74	20,11		50.0	
AD	LTE-FDD (SC-FDMA, 50% RB 20 MHz. DPSK)	8	3.09	¥1.44	17.51	0.00	150.0	± 9.6 %
		Y	2.59	58.47	15.73		158.0	
_	the second second second	Z	2.87	71.14	17.24		150.0	
10298- 4AD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, OPSK)	x	2.03	71.15	16.52	0,00	150.0	18.6%
-		Y.	1.39	65.75	12.91	-	150.0	1
ab de	100000000000000000000000000000000000000	Z	1.75	70.22	15.26		150.0	-
10299- VAD	LTE-FOD (SC-FDMA, 50% RB. 3 MHz, 16-QAM)	x	4,86	77,12	18.36	0.00	150.0	19.8%
_		Y.	3.14	71.60	15.64	-	150.0	
COLUMN OF	I BE AND THE PROPERTY AND THE	6	8,75	74.00	15.70		150.0	-
0300- AD	LTE/FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	·X-	2.97	69.65	14.52	0.00	150.0	±9.6.%
_		Y	2.26	66.29	12.48		150.0	
8304	Internet could any strength of the second second	2	2.17	06.32	11.62		150.0	
0301- AA	IEEE 802 16n WWAX (29:10, 5ms, 10MHz, DPSK, PUSC)	X	6.32	86.98	15.36	4.17	50,0	土乐8%
_		Y.	8.22	66.88	18.11		50.0	
0000		2	4.67	65.61	17.38		50.0	-
0302- AAA	IEEE 802 IBe WIMAX (29:18, 5ms, 10MHz: OPSK, PUSC, 3 CTRL aymbols)	x	5,74	67.34	16.93	4:90	50.0	± 9.8 %
		Y	5,58	66.87	18.46	-	50.0	
		Z	5.16	68:25	18.09		50.0	

Certificate No. EX3-3938\_Dona

Page 23 (F.39)

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial advised in the induced is a structure, and the company's induced at the time of its rights and obligations under the transaction document. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 62 of 103

-E0601	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	X	5.54	67.22	18.91	4.95	50.0	±9.6 %
~~~	Tomate, organi, Polocy	Y	5.37	66.70	18.39	_	50.0	
		Z	4.93	65.95	17.95		50.0	
10304- AAA	IEEE 802.16e WIMAX (29:18, 5ms, 10MHz, 64CAM, PUSC)	x	5.28	66.83	18.25	4.17	50.0	±9.6 %
		Y	5.10	66.29	17.74		50.0	
		Z	4.73	65.82	17.46		50.0	
10305- NAA	IEEE 802.16e WIMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)	x	5.67	72.27	22.34	6.02	35.0	±9.6 %
	Second Statements (Second Statements) (Second Statements)	Y	5.72	72.48	21.90		35.0	
10306-	INTER BOD ARE MINING YOR AR ADDR	ZX	4.00	68.90 68.37	20.05	6.02	35.0 35.0	10000
AAA	IEEE 802.16s WIMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)	1.13		CONTROL .	07088770	6.02	40,000	±9.5 %
		Y Z	5.52	69.50 67.24	20.64		35.0 35.0	
10307-	IEEE 802.16e WIMAX (29:18, 10ms,	X	5.58	70.12	21.19	6.02	35.0	±9.6 %
AAA	10MHz, QPSK, PUSC, 18 symbols)					511 51 61		
		Y	5.54	70.11	20.79		35.0	
	in the second	Z	4.75	67.57	19.37		35.0	
10308- AAA	IEEE 802.16e WIMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	×	5,58	70.46	21.39	6,02	35.0	± 9.8 %
	and the second s	Y	5.56	70.49	21.00		35.0	
		Z	4.74	67.84	19.54	0.00	35.0	
10309- AAA	IEEE 802.16e WIMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols)	x	5.56	68,68	20.38	6.02	35.0	±9,6%
		Y	5.61	69.80 67.43	20.81		35.0 35.0	
10310- AAA	IEEE 802.16e WIMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)	X	4.87	69.67	21.04	6.02	35.0	± 9.6 %
nnn	TONE IC, G. ON, PIMO 200, TO SYMDODS)	Y	5.51	69.73	20.68		35.0	
		Z	4.78	67.38	19.33		35.0	
10311- AAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	×	3.47	70.67	17.10	0.00	150.0	± 9.5 %
		Y	2.93	67.81	15.46		150.0	
		Z	3.26	70.40	16.86		150.0	
10313- AAA	IDEN 1:3	X	10.55	84.71	20.54	6.99	70.0	±9.6 %
		Y	5.52	75.51	16.93	_	70.0	
	Constant of the second s	Z	3.35	69.99	14,11		70.0	1000
10314- AAA	IDEN 1:6	×	24.93	102.67	28.79	10.00	30.0	±9.6 %
		Y	8.40	84.46	22.81		30.0	
10315- AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)	X	4.59	75.67 65.40	18.98 16.44	0.17	150.0	± 9.6 %
140	mups, sope only ejenst	Y	1.01	63.11	14.44		150.0	
		Z	1.08	64.77	15.73		150.0	1
10316- AAB	IEEE 802.11g WiFi 2.4 GHz (ERP- OFDM, 6 Mbps, 96pc duty cycle)	X	4.72	66.92	16.53	0.17	150.0	± 9.6 %
Sec. 1		Y	4.56	66.38	16.12		150.0	
18855.01	and the second s	Z	4.51	66.86	16.22		150.0	
10317- AAC	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)	×	4.72	66.92	16.53	0.17	150.0	±9.6%
		Y.	4.56	66.38	16.12		150.0	-
10175	WERE AND ALCOHOF MARKING AN AVAIL	Z	4.51	66.86 87.20	16.22	0.00	150.0	±9.6 %
10400- AAD	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)	×	4.84	67.20	16.45	0.00	150.0	23.6%
_		Z	4.63	66.61	16.02	-	150.0	-
10401-	IEEE 802,11ac WiFi (40MHz, 64-QAM,	X	4.03	67.20	16.49	0.00	150.0	+9.6%
10401- AAD	99pc duty cycle)	Ŷ	5.35	66.85	16.49	0.00	150.0	

Certificate No: EX3-3938\_Oct18

Page 24 of 39

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.

t (886-2) 2299-3279

Company's sole except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 63 of 103

TUMPT	TEEE BUZ THAC WIFT (SOMH), 64-CIAM,	8	0.76	67.76	16.60	0.00	150.0	I make a
AAD	stopo duty cycle)	0	11.16	ev.va	10.0U	9.00	150.0	# 9,6 %
		Y	5.61	67.21	16.26		150.0	1
		Z	5.57	67.70	16.42		150 0	1
10403- AAB	CDMA2000 (IXEV-DD, Fiev. 0)	X	2.10	73.72	17.08	0.00	115.0	2 9.6
		·Y	1.20	65.83	12.24		115.0	
inter		Z	1.79	72.49	15,56	in the second se	115.0	
10404- AAS	CDMA2000 (1xEY-DD, Rev. A)	×	2:10	73.72	17.06	0.00	115.0	2.9.8
_		¥.,	1.20	65.83	12.24		115.0	
IDANG-	CBMA2000, RC3, SO32, SCH0, Full	Z	1.79	72.49	15.56		115.0	
AAE	Rate	×	100.00	122.19	31,29	0.00	100.0	19.61
		Ŷ	29.24	105.80	27.50		100.0	
10410-	LTE-TOD (SC-FDMA, 1 RB, 10 MHz)	Z	100.00	114.73	27.11		100.0	
AAF	OPSK, UI. Subkame=2.3,4,7,8,9, Subframe Conf=4)	×	100.00	121.06	30.81	3.23	90.0	1969
		Ŷ	100.00	121.88	31.03		80.0	
		Z	83,71	111.58	25.89		30.0	-
10415- AAA	IEEE 802.116 W Fr 2.4 GHz (DSS5. 1 Mbps, 99pc duty cycla)	×	1,63	63.90	15.54	0.00	150.0	±9.6-9
_		Y	0.91	61.92	13.65	-	150.0	-
	When you are a state of the sta	2	0.99	63.88	15.24	1.000	150.0	
10416- AAA	IEEE 802 11g WIFI 2.4 GHz (ERP OFDM, 8 Mbps, 99pc duty cyce)	×	4,84	06.82	18.39	0.00	150.0	±9.6 %
		×.	4.48	65.28	15.67		150.0	
10417-	HEFE BOARD & GREEP PROVIDENCE	2	-0,48	86.96	16.25		150.0	
AAB	IEEE 802.11 wh WIFI 5 GHz (OFDM; 6 Mbps, 99pc duty cycle)	×	4.84	66.82	16,39	0,00	150.0	29.65
		Y	4,48	66.26	15.97	1	150.0	
10418	IEEE 802 11g WIFI 2.4 GHz (DSSS-	ZX	4.48	66.9E	10,25		150.0	
AAA	OFDM, 6 Maps, PRoc (Way cycle, Long prosmoule)		4.63	68.97	10.41	0,00	150.0	±9.69
		Y	4.47	66.40	15.97		150.0	-
		Z	4.47	97.14	10.29		150.0	-
10419 AAA	EEE 802,11g WFI 2.4 GHz (DSSS OFDM, 6 Mitps, 99pc duty cycle, Short, greambule)	x	4,65	96.92	16.41	0.00	150.0	± 9.6 %
_		Y.	4.49	66.36	15.96		150.0	-
	Total And March 199	Z. 1	4,49	67.08	16.28		150.0	
10422- NAE	IEEE 802.11/1 (HT Greenfield, 7.2 Mbps- BPSK)	×	4 78	86.82	16.42	0.00	160.0	190%
		Y	4.51	68.37	16,01		150.0	
11423-	IFFE SOO HAND IN PROVIDE AND AND	Z	4.51	07,05	16.28		150.0	1.000
MAR	IEEE 802.11n UHT Greewfeld, 43.3 Mbos: 16-GAMI	x	4.98	67.29	16.55	0.00	150.0	± 9.8 %
		Y	4.79	08.71	16.13		150.0	
0424-	IEEE 802.11n (NT Greenfield, 72.2	- 5	0,77	67.36	16.39		150.0	10.00
VAB	Mbps; 64-QAM	X	4, 95	67.34	18.52	0.00	150.0	18/0 %
-		X	4.70	66.65	16.10		150.0	
0420-	IEEE 802.11n (HT Greenfield, 15 Mbps.	2	4.69	67.32	16.37	_	150.0	
UAB	BPSK)		1.1	-67.47	16.62	0,00	180,0	:9,9%
		Y Z	5.32	67.05	16.33		150.0	
0426	IEEE 802.11n (HT Grownfeld, 90 Milaus.	X		67.48	16,46	10	150.0	
AB	16-QAM)	1.	5.45	67,50	16.63	0.00	150.0	19.0 ¥
-		Y	5.32	87.06	16.33		150.0	
		Z	5.26	67,50	16.46		150.0	

Certificate No. EX3-3816\_Cetter

Page 25 of 39

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.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial advised in the induced is a structure, and the company's induced at the time of its rights and obligations under the transaction document. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 64 of 103

0427-	IEEE 802 11n (HT Greenheld, 150 Mbps,	X	5.47	87.62	16.61	00.0	150 0	7985
445	64-QAAN	-			1000	_		
		Y Z	533	87.64	15.31	_	150.0	1
D430-	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	8	4.44	70.94	18.69	11.00	150.0	±0.6%
AD	LIEPDO (OPDIAN, a MHZ; E/ M 3:1)	a V	4.14	19.17	10.00	100		5.9.6.2
		Z	4.53	70.00	15.04		150.0	
10231-	LTE-FOD (OFDMA, to MHz, E-TM 3.1)	X	4.03	72.71	16.50	0.00	150.0	± 9.6 %
AD	LIE-FUD (OFDMIC TO MHZ, BITM X.()	v	4,17	05.74	15.93	0.00	150.0	a no ye
_		Z	4.17	67.60	16.51		150.0	
0432-	LIE-FOD IOFDMA, 15 MHz, E-TM 211	X	4.87	87.30	16.51	0.00	150.0	29.0%
AAC	LIETED (OCDMR, ID MRS, C-1M 2-1)	Ŷ	4.47	06.55	10.03	0.00	150.0	± 9,0 m
		2	4.47	67.41	16:54		150.0	
10433-	LTE FOD (OFDMA, 20 MHz E-TN 3 I)	X	4.90	67.28	16.55	0.00	150.0	196%
AAC	LIEFOU (OF DAM, 20 WHE IF THE & T	1.1	1000			0,00		196.0
		-Y	4.72	66.69	16,12	_	150,0	-
10434-	W-CDMA (BS Test Model 1, 64 DPCH)	2	4 71	67.36 71.86	16.34	0.00	150.0	+06%
10434- AAA	AL-COUNTES LEER MODEL #, 04 DPCH)	x	4.06	A1.00	16.63	0.00	150.0	200.0
		Y.	4.21	70.69	17.87	-	150.0	
		Z	4.78	74.00	19.21		150.0	1
10435	LTE-TOD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subtrame=2 3,4,7,8,9)	×	100.00	120.88	30.73	3.53	80.0	39.6%
	Contraction of the second second second	Y.	100.00	(21.69	30.95	1000	80.0	
		Z.	66.38	108.66	25.18	1000	80.0	
10447- AAD	L1E-FDD (OFDMA: 5 MHz, E-TM 3.1. Globing 44%)	×	3,72	67.65	48,50	0.00	150.0	=0.6%
-	and the second s	Y.	3.44	66.58	15.18		150.0	
		2	3.50	67.81	15.74	- SC	150 D	
ID440-	LTE-FDD (OFDMA: 10 MHz; E-TM 3.1, Clippin 44%)	×	4.21	67.23	16.37	0.00	150.0	± 9.6 %
		N.	6.00	66.50	15.77	1000	150.0	
		Z	4.02	.67.40	1E.18		150.0	1.000
10448- AAC	LTE-FDD (OFDMA: 15 MHz, E-TM 3-1 Cliping 44%)	×	4,46	67.14	16.42	0.00	150.0	±9.6 %
1,00		Y	4.27	66.49	15.91		150.0	-
		Z	4.28	67.27	16.29		150.0	
10450- AAG	LTE-FDD (OFDMA, 20 MHz E-TM 3.1 Clipping 44%)	×	4.64	67.06	16.42	0.00	150.0	19.6 %
	Seddord Aler	Y	4.47	66,43	10.90		150.0	1.0
		Z	4.47	67.16	15.26		150.0	
10451- AAA	W-CDMA (BS Teal Model 1, 64 DPCH, Clipping 44%)	X	3.06	68.00	15,09	0.00	158.0	196%
		· . W	3.33	66,69	14.77	-	150.0	
	and the second second second	Z	3.40	68.00	15,28	1.1.1	150.0	
10458- AAB	IEEE 802.11ac W/O (160MHz 64-DAM 99pc duty cycle)	×	8.29	68.08	16.78	0.00	150.0	293%
		×	6.17	67.03	15.50	-	150.0	1
	A Test - end of a second second	XX	6.51	E8.01	16.58	1 1 1 1	150.0	
10457- AAA	UMTS-FDD (DC-HSOPA)	1	3.63	66,43	10.13	0.60	150.0	±0.£%
		Y.	3.72	64.49	15.67	-	150.0	
	1 commences and the	Z	3.74	65,60	15.95	1	150.0	-
10458- AAA	CDMA2000 (1xEV-DO, Rev B, 2 carries)	x	4.16	70.93	18,07	0.00	150.0	± 9.6 %
		Y	3.85	69.00	17.01		150.0	
		Z	4,20	73.12	18.40		150.0	
10459- AAA	CDMA2060 (1aEV-DO, Rev. B. 3 camera)	×	5.20	68.00	18:25	0.00	150.0	+5 <sup>0</sup> /4
		¥.	501	67.77	17.91		150.0	
		z.	0.25	09.00	18.70		150 D	1

Centrimite No: EX3-3938\_On118

Page 26 of 39

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.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial advised in the induced is a structure, and the company's induced at the time of its rights and obligations under the transaction document. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 65 of 103

10460-	LIMTS-FOD (WCOMA, AMR)	X	1.12	72.77	16.83	0.00	150.0	19.6%
AAA	and set and the protocol and	- 2	1.16	TELL	10.02	0.00	190.0	23.0.7
		Y	0.73	85.44	13.95	-	150.0	1.000
in lat	Column and the second of the little	15	1.01	71.76	19.00		150.0	1.000
10461- AAA	LTE-TDD/ (SC-FDMA: 1 RB; 1.4 MHz, OPSK, UL Subtrame=2.3,4,7,8,9)	x	100.00	126,43	33,93	3.29	80.0	29.6%
		Ŷ	100.00	125.87	32.93		80,0	-
104872-	LTE-TOD (SC-FDMA, 1'R5, 1.4 MHz.	ZX	90.37	116.03	27.82	1000	80.0	1000
MAA	15-GAM, UL Subframe=2.3,4,7,8,9)			1	25.58	3.23	80,0	主要医吗
_		2	100,00	109.45	25.28		80.0	
10463-	LTE-TOD (SC-FDMA, 1 RS, 1.4 MHz.	X	100.00	106.70	24.02	3.23	30.0	+ 9.6 %
AAA	64 QAM, UL Subframe=2.3.4,7.8.9)	N	49.13	98.79	22.03	62.6		3.8'0.8'
		Z	49.13	80.00	7.05		80.0 80.0	_
10464-	LTE-TDD (SC-FDMA, 1 RE, 3 MHz	X	100.00	124.44	32.24	3.23	80.0	+06%
AAB	DPSK, UL Subtrame=2.3,4,7,8,9)	1	100.00	123.71	1.2.5	9.40		100%
		Z	25.98	98.94	23.07		80.0	1
IGA60-	LTS-TOD (SC-FDMA, 1 RB, 3 MHz; 16- IGAM, UL Subframe=2.3,4,7,8,9)	X	100.00	109.41	25.30	3,23	80.0 80.0	= 0.6 %
and the second s	Second DE Contraine-E.S.T. (A.B.)	9	100.00	108.89	24:99		80.0	
		Z	1.05	80.34	7.60		80.0	-
10466- AAB	LTE-TDD (SC-FDMA, 1 RB, 3 MHz; 84 GAM, UL Subframe=2,3,4,7,8,9)	×	100.00	106,17	23.77	3.23	80.0	698%
C		Y	17.42	87.73	19.16		80.0	
		Z	1.03	60.00	7.00		80.0	
DAUT SAE	LTE-TDD (SC-FDWA, 1 RB, 5 MHz, OPSK, UL Subframe=2,3,4,7,9,9)	8	100.00	124.87	32.33	3.23	80.0	± 9,8 %
		Y	100.00	123.85	31.88	1	80.0	
		Z	34.96	102.47	23.96		0.06	
1040E- VAE	LTE-TOD (SC-FDMA, THE S MHz 16- OAM, UL Subtrame-2,3,4,7,8,9)	x	100,00	109.58	26.38	3.23	80.0	#98%
_		Y.	108.00	109.05	25.07		0.08	-
and the second		Z	1.06	60.45	7.67	1	80.0	-
NAE	LTE-TOD (SC-FDMA, 1 RB, 5 MHz, 64- QAM, UL Subframe=2.34 7.8;9)	×	100.00	106.18	23.77	3.23	80.0	±98.8
_		Y	18,04	88.11	19,26	-	80.0	
CMEWIG-	LTE-TED ISC-FDMA: 1 RB. 18 MHz	2	1.03	60.00	7.00	1.00	80.D	1.0
UNE	DPSK, UL Suktramo=2,3,4,7,8,0)	-8	100.00	124.71	32.35	3.23	90.0	⇒9.6%
		X	100.00	123.98	31,88	j	80.0	1000
0471-	LTE-TDD (SC #DMA, 1 RB, 10 MHz, 16-	X	35,24	102-56	23.97		50.0	_
AE	QAM, UL Subtramo=2,3,4,7,8,9)	Ŷ		109.53	25,35	3.23	80.0	19.8%
		Z	100.00	109.01	25.04	_	86.0	
0472+ AE	LTE-TOD (SC FDMA, 1 HB, 10 MHz, 64- QAM, UL Subframe-2.3.4,7 8,9)	*	100,00	106/13	7.64 23.74	3,23	80.0 80:0	土民在特
-		¥.	17.90	88.00	19,24	-	00.0	
		Z	1.03	60.00	8.09	-	80.0	_
0473 AE	LTE-TDO (SC-FDMA, 1 RB, 15 MHz, OPSK, UL SUbtrame=2,3,4,7,8,9)	x	100.00	124.67	32.34	3.23	86.0	:26%
		Y	100.00	123.95	31,87		380.0	
		Z	34.67	102:54	23.91		90,9	
0474- AE	LTE-TDD (SC-FDMA, 1 RE: 15 MHz, 16- QAM, UL Subframe=2.3,4,7,0,8)	x	100.00	103.54	25.35	3.23	80,0	+9.6%
		Y	100.00	109.01	25.04		80.0	1.
1475-	I BE BEAR AND PERMIT A LINE OF STREET	Z	1.05	60.39	7.63	2.00	0,08	
AE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64- GAM, UL Subframe=2.3,4,7,8,9)	×	100.00	106,14	23,74	3,23	80.0	196%
-		W.	17.52	67.78	19.16		80.0	
		Z	1.03	60.00	6,00	-	80.0	

Centricate No. EX3-3939\_Oct18

Page 27 st 39

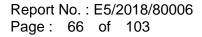
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial advised in the induced is a structure, and the company's induced at the time of its rights and obligations under the transaction document. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488





0877-	LTE-TOD (SC-FDMA, 1 R6 20 MHz 10-	8	100.00	109.37	25.27	3.23	80.0	± 9.6 %
VAF.	QAM, UL Subhame=2,3,4,7,8,9)	Y	100.00	*DE 64	24.96		BD 0	
-		1	1.00	80.28	7.55		80.0	-
111178- MF	LTE-TDD (SC-FDWA_LRE, 20 MHz, ed- QAM, UL Subtrame=2,3,4,7,8,9)	8	100,00	108,29	23.12	1.22	80.0	#9,8%
	the second second second	Y.	17:03	67.46	19.06		80.0	-
	and the second sec	Z	1.03	80.00	99.0		BDD	
10479- MA	LTE-TOD (SC-FDMA, 50% RB, 1.4 MHz OPSK, UL Subtrame=2,2,4,7,8,9)	3	32.A7	108.40	30.35	3.23	80.0	÷9.8 %
		· ¥.	23.42	102.56	26.35		80.0	
		2	8,33	85.84	29.97		BD.0	1.000
10480- AAA	LTE-TOD (SC-FDMA, 90% FB, 1.4 MHz, 18-GAM, UL Subframe=2,3,4,7,0,9)	x	42.90	105.02	27.50	3.25	80.0	39,8%
2		P.,	20,70	94.12	24.14		80.0	
	have been and the second secon	7	6/08	7674	17.00	A	80.0	in an is
10481- AAA	LTE-TOD (SC-FOMA 505, RB, 1.4 MHz, 04-QAM, UL Subframe=2,3,4,7,8,9)	×	33,63	100.01	25.80	3.23	80.0	10,6%
			15.07	39.36	22.38		80.0	
		Z	4.46	72.49	15.13		80.0	
10482- 人A白	LTE-TOD (SC-FDMA, 50% RB, 3 MHz, OPSA, UL Subframe=2,3,4,7,6,9)	x	0.20	87 36	23.04	2.23	\$0.0	10.6%
1000		Y.	3.94	74.35	17.85		60,0	
	A Description of a Description	Z.	2 70	20.00	15.33	-	30.0	1.000
10483- AAE	LTE-TOD (SC-FDMA, 50% RB, 3 MHz 16-CAM, UL Subframe=2.3.4,7.5(9)	*	15.24	90,75	23,81	2.23	80.0	10.6%
		- Y .	8.75	83.78	21:08		B0-0	
-		7	387	71,04	15.18		80.0	
10484- AAB	LTE-TDD (SC-FDMA, 50% RB, 3 MH) 64-DAM, UL Subfrante=2,3,4,7,8,9)	×	12.87	88.08	25.00	2.23	80.0	ene%
		Y.	8.49	81,59	20.35	-	- Đ0,0	_
	and the second	Z.	3.68	70,14	14.84		90.0	
10185- AAE	LTE-TOD (SC-FOMA 50% RB, 5 MHz QPSK, UL Subframe=2.3,4,7,8,9)	×	7.98	25.70	23.26	2.23	80.0	±9.0%
		W.	4.36	76,94	規格		80.0	-
	I have a serie of the day of the	2	3.55	12.55	17.26	-	80.0	
10498- AAE	LTE-TDD (SC-FOMA, 50% RB, 5 MHz) 15-GAM, UL Subirame#2,3,4,7,8,9)	8	5.38	76.17	19.55	2.23	80.0	±9.6%
		1	3.78	70.74	1E.72	2	80.0	-
		1	3.08	68.57	15.26		80.0	1000
10407- AAE	LTE-TOD (SC-FDMA, 50% RB, 5 MHz. 64-DAM, UL Subframe=2,3,4,7,6,9)	×	5.22	75.40	19.25	2.23	80.0	± 9:0.%
		Y	11.6	70.31	16.54	1	80.0	-
	A CONTRACTOR OF A CONTRACTOR OFTA CONTRACTOR O	2.8	3.08	68.23	15.40	1	80.0	-
10488- AAE	LTE-TOD (SC-FDIMA, 50% RB, 10 MHz, GPSK, UL Sobhame=2:3.4,7.6,91	12.	6.58	81.08	22.14	2.23	60.0	±.D.E %
_		Υ.	4.43	74.73	19.31	-	BOUL	-
10489-	LTE-TDD (SC-FDMA, 50% HB. 10 MHz.	X	1.88	72.12 73.47	17.94	2.23	80.0 90,0	±9.6%
AAE	16-QAM, UL Subframe=2.3,4,7,8,0)	Y	4.01	70.32	17.71	-	80.0	1
	-	2	3.48	08.92	16.70	-	50.0	
10490-	LTE-TDD (SC-FDMA, 50% F78, 19 MHz	12	430	72.95	10.70	2.25	80.0	+0.6%
AAE	64-QAM, UL Sobiramer2.3,4,7,8,8)	v	4.10	72.95	18.23	6.6.4	80.0	a goal in
-		I	4,10	68.77	16.66		60.0	-
10491- AAE	LTE-TOD ISC-FDMA, 50% RB, 15 MHz, OPSK, UL Subhamer(2,3,4,7,8,9)	X	5.95	76.95	20.70	2.25	80.0	±9.6 %
AV4E	Gran, Gradunan (Prz. A.A. (192)	1.Y	4.52	72.00	18.69		80.0	
		ź	3.62	70.84	17.60		80.0	
10482- AAE	LTE-TOD (SC-FDMA, 50% RE, 15 MHz; 16-DAM, UL Subframe=2,3,4,7,8,0)	X	4.04	71/68	18.90	2.23	30,0	1.8,61
ANE.	to which of onnicitions of the little	1 Y	4.21	09.40	17.83		0.05	
		Z	3.83	68.32	18.75	-	-80.0	-

Certilicale No: EX3-3938\_Och16

Page 25 of 58

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial advised in the induced is a structure, and the company's induced at the time of its rights and obligations under the transaction document. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd. t (886-2) 2299-3279



# Report No. : E5/2018/80006 Page: 67 of 103

10493-	LTE-TOD (SC-FDMA SD'S RE 15 MHz	8	4.97	71.38	18.79	2.23	80.0	1 29/65
AAE	84-QAM, LL Subframe=2.3,4,T,8,9)	1.1		1.1.66		-		
		X	4.37	69.24	17.58	-	80,0	_
10494-	ITT THE OF CTARS AND OF COMME	Z	3.90	68.20	16.76		80.0	
AAF	LTE-TDD (SC-FDMA, 50%, F08, 20 MHz, QPSR, UL Subhame=2,3,4,7,8,9)	×	6.95	79.86	21.50	2.23	80,0	196
		Y	4.99	74.37	19,18	_	80.0	_
10495	LTE-TOD (SC-FDMA: S0% RB: 20 Miltz	Z	4.13	72.26	18.02		80.0	
AAF	16-QAM, UL Subframe=2,3.4,7,8,3)	×	6.07	72,39	19,10	2.23	0.08	±969
_		Y	4.37	89.87	17-84		80.0	
10496-	LTE-TDD (SC #DMA, 50% RB; 20 MHz.	Z	3.87	88.70	16.98		80.0	
AAF	64-QAM, UL Subframer 2,3,4,7 8.9)	X	5.07	71.80	18,98	2.23	30.0	±969
_		Y	4,43	69.53	17.74		80.0	-
10497-	LTE-TOD (SC-FDMA, 100%, RB, 1.4	Z	3.96	68.45	16.92	2.00	80.0	
AAA	MHz, OPSK, UL Subframe=2.3,4,7,6,8		1 77	64.28	21.25	2.23	80.0	1963
		Y	2.76	69.51	14.83	-	80.0	-
10498-	LTE-TDD (SC-FDMA, 100% RB, 1.4	2	1.93	65.26	12.27		80.0	-
AAA	MHz, 16-QAM, UL Subframo=2,3,4,7,8,9)	×	-4.50	15.22	15:94	2.23	80.0	#86%
		Y	2:08	63.53	11.20	-	80.0	-
	and the second s	Z	1.49	60.84	9.11	-	80.0	-
10499 AAA	1TE-TDD (SC-FDMA, 100%, RB, 1.4 MHz, 64-QAM, LT, Skolrame=2,3,4,7,8,9)	×	3.86	73,30	15.38	2.23	80.0	196%
		N.	2.02	52.98	10.80		0.08	-
A 14	Contraction of States a	Z	1.45	60.40	8.75	-	80.0	-
-00ENE	LTE-TDD (SC-FDMA: 100% RB, 3 MHz, QPBK, UL Subframe=2.3,4,7,8,9)	x	6.85	\$2.59	Z2.44	2.23	0.08	+8.6%
_		Y	4.50	75.01	19.09		0.06	
1017		Z	3 32	71.99	17.48	-	80.0	1
10001- AAB	LTE-TOD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subfinime=2,3,4,7,8,9)	8	5.08	74.80	19.39	2.23	0.08	± 9.6 %
_		Y	3,90	70.59	17.11	2	88.6	
	and a second second second second	2	3.27	68.63	15.87		0.08	1
10502- AAB	L/E-TOD (SC-FDMA, 100% RB, 3 MHz, B4-DAM, UL Subframa=2,3,4,7,8,9)	8	5,08	74.42	10,19	2.23	80.0	±9,6 M
_		Y.	3.94	70.38	16.98	-	80.0	
inene .	1 Performance in the second seco	Z	3.32	56.58	15.78		80.0	
10503- AAE	LTE-TOD (SC-FDMA, 100% RB, 5 MHz QPSK, UL Subframe=2,3,4,7,8,9)	X	6.47	80.7E	22.03	2.23	80,0	± 9.8 %
		Y	W.42	74,51	19.24	_	50.0	
and the second	- Wet Minds Tools and the	Z .	3,53	71.90	17.84	5.00	80,0	
AAE	LTE-TDD (SC-FDMA, 100% RB.5 MHz 16-QAM, UL Subireme=2.3 4.7.8.9)	X	4 84	73.36	19.37	2.23	30,0	±9.6%
		8	3.59	70.22	17.65		60.0	-
10505-	TE TOD ANT COMA MADA DE A MA	Z	3.46	68.82	10.64	-	80.0	
AAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 84-QAM, UL Subirame=2,3,4,7,8,9)	*	4 85	72.84	19,17	2.23	0,08	± 8/6 %
		· Y.	4.07	69.98	17.58		80.0	1
10506	LTE-TOO ISC-FDMA, 100% R8, 10	2	3.55	68.67	16.80		80.0	100000
MAE	MHz QPSK UL Suvermer 2,3,4,7,8,5)	x	6.87	79.65	21.49	2,23	90.0	+98%
		Y	0.94	74.20	19.10		80.0	
0507-	LTE-TOD (SC-FDMA, 100% RB, 10	Z	4.10	72.10	17.94		80.0	
AAE	MHz, 16-QAM, UL Subframe=2.3.4 7,8,9)	×	5,05	72.32	19.14	2.23	80.0	工用。任当
		Y	4.35	69.81	17.80	_	60.0	
		2						

Certificate No: EX3-3938\_Oct18

Page 29 of 39

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.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial advised in the induced is a structure, and the company's induced at the time of its rights and obligations under the transaction document. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 68 of 103

10508- AAE	LTE-TDD (SC-FDMA, 100% RB, 10	X	5.05	71.72	18.93	2.23	80.0	±9.6 %
WE.	MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)							
		Y.	4.41	69.46	17.70		80.0	
		Z	3.93	68.38	16.87	2,418,624	80.0	-1312022
0609- VAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	×	6.42	76.31	20.23	2.23	80.0	±9.6%
		Y	5.10	72.45	18.45		80.0	
		Z	4,44	71.04	17.56		80.0	
10510- VAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	X	5.41	71.43	18.82	2.23	80.0	± 9.6 %
		Y.	4.81	69.39	17.73		80.0	
		Z	4.34	68.44	16.99	- ware	80.0	Sec. Sec.
10511- VAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	×	5.40	70.96	18.67	2.23	80.0	± 9.6 %
		Y	4.84	69.09	17.65		80.0	
		Z	4.39	68.21	16.94		80.0	
10512- VAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)	×	7,47	79.47	21.24	2.23	80.0	±9.6 %
		Y	5.46	74.25	18.99		80.0	
		Z	4.64	72.47	17.97		80.0	
10513- AAF	LTE-TDD (SC-FDMA, 100% R8, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)	x	5.39	72.08	19.07	2.23	80,0	±9.6 %
	a second the fraction of 2 looks	Y	4.72	69.76	17.86		80.0	
102007-		Z	4.23	68.69	17.07		80.0	1000.000
10514- NAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)	x	5.30	71.34	18.83	2.23	80.0	±9.6 %
		Y	4.71	69.27	17.73		80.0	
		Z	4.25	68.30	16.97		80.0	
10515- AAA	IEEE 802.11b WIFI 2.4 GHz (DSSS, 2 Mbps, 99pc duly cycle)	x	0.99	64.18	15.67	0.00	150.0	± 9.6 %
102408		Y	0.87	62.03	13.65		150.0	-
00.01		Z	0.96	64.13	15.35	- unait	150.0	10000000
10516- AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)	×	1.07	82.62	23.29	0.00	150.0	± 9.6 %
		Y	0.42	66.18	13.67		150.0	
		Z	0.79	78.03	21.08		150.0	
10517- AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)	X	0.89	67.34	17.01	0.00	150.0	± 9.6 %
		Y	0.70	63,35	13.75		150.0	-
	IEEE 802 11ah WIFi 5 GHz (OFDM, 9	X	0.83	66.82 66.90	16.43	0.00	150.0	±9.6%
10518- AAB	Mbps, 99pc duty cycle)	1.0	4.64	66.33	15.94	0.00	150.0	1 9.0 %
		YZ	4.47	67.04	16.24		150.0	
10519- AAB	IEEE 802.11a/h WIFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)	X	4.85	67.18	16.51	0.00	150.0	± 9.6 %
	ways, opposing strant	Y	4.67	66.59	16.08		150.0	
_		L	4.65	67.25	16.34		150.0	
10520- AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)	×	4.71	67.17	16.45	0.00	150.0	±9.6 %
		Y	4.52	66.54	15.99		150.0	-
		Z	4.51	67.23	16.28		150.0	
10521- AAB	IEEE 802.11e/h WIFI 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)	×	4.64	67.19	16.44	0.00	150.0	± 9.6 %
		Y	4.45	66.53	15.97		150.0	
		Z	4.44	67.24	16.27	0.00	150.0	± 9.6 %
10522- AAB	IEEE 802.11a/h WIFI 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)	X	4.69	67.17	16.48	0.00	150.0	20.0%
		Y	4.51	66.60			150.0	-
		Z	4.50	67.33	16.35		1.00.0	

Certificate No: EX3-3938\_Oct18

Page 30 of 39

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.

t (886-2) 2299-3279

Company's sole except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 69 of 103

18.6%	150.0	0.00	16.34	67.08	4.56	X	JEEE 802 11am WHFI 5 GHz (OFDM, 48	10523-
		Suga			-	-	Mops, 98ac duty cycla)	A/AB.
	150.0		15.88	66.45	4.28	9	-	
_	150.0		16.22	67.23	4.39	2	IPPP and as a little of site operation of	10524-
+9.6 %	150.0	0.00	16.48	67.13	4.64	8	IEEE 802 11a/n WiFi & GHz (OFDM, 54 Mbps, B8pc duby cycle)	AAEI
in the second se	150.0		16.01	66.57	4.45	Y		
	150.0	1000	16.32	67.24	4.44	2 8	IEEE 802,11ac WiFi (20MHz, MCSO)	10525-
± 9,8 %	150.0	0.00	16.06	06.17	4.60		Water Boz, Trac Wiler (20WHz, MCSO) Water outy cycle)	AAE
	150.0	-	15.60	65.55	4,43	Y		
_	150.0		15.94	66.33	4.80	X	IEEE 802.11ac WHI (20MHz, MCS1.	10526-
396.2	150.0	0.00	10.20	06.57		12.1	Selac that rytie)	AAE
-	150.0		15.75	85.93	19/1	Y		
1000	150.0		16.07	86.68	4.61		IEEE 802.11ac WFi (20MHz, MCS2)	10527-
398%	150.0	0.00	16.16	66.55	4.72	×.	99pc duty dyola)	AAB
	150.0	100 million (1990)	15,69	65.88	4.52	Ŷ		_
	150.0		16.02	96.66	4.53	2	JEET SPI 11 - LAIF MARKET LINE	10528-
1 B.B.S	150.0	CL.00	16,19	66,57	4.73	×	(EEE 802.11ac WIF (20MHz, MOS3, 99pc duty cycle)	AAB
	150,0		15.72	B5.90	4 54	Y		_
	150.0	-	16.05	88.87	4.55	Z	VERT DOV AN ALL MARY THREE CARD	10529-
± 9,8 %	150.0	0.00	16.19	66.57	4.73	X	IEEE 802.11ac WIFI (20MHz, MCS4, 99bc dudy cycle).	AAB
	150.0		15.72	05.90	4.54	X		_
	150.0	100	16.05	66.67	4.55	2		
19.6%	150.0	0,00	16,22	66.72	4.74	×	(EEE 802 11ac W/FI (20MHz, MC56, 90pc duty cycle)	10631- AAB
	150.0		15.73	68.01	4.53	Y		
	150.0		18.0E	66.77	4.53	Z		
296%	156.0	0,00	16.17	66.59	# 60	×	IEEE 802.11ac WFI (20MHz, MCS7, 99pc duty cycle)	10532+ AAB
-	150.0		15.88	65.86	4.39	Y		
	150.0		16.01	66.64	4,40	2		
±9.6%	150.0	0.00	16.17	66,60	4.75	×	(EEE 802.11ac WFr (20MHz, MCS8, 98pc duty cycla)	10533- AAB
	150.0		15.70	65.94	4.55	Y		1
	150.0		18.05	66.73	4.56	2	and the second se	
19.6%	150.0	0.00	16.21	66.67	5.24	×	EEE 802,11ac WiFI (40MHz, MCS0, 99bc duty cycle)	10634 AAB
-	150.0		15.82	66.08	5.08	Y		
	150.0		16.06	66.70	5.06	Z		
19.8 %	150.0	0.00	18.26	66.61	5.31	x	IEEE 802 11sc WiFr (4DMHz, MCS1, 99pc duly cycle)	10535- AAB
	150.0		15.89	66.24	5.14	Y		
	150.0	1000	16.13	66.85	5.12	Z	Tento	
19,8%	150.0	0.00	16.25	66.81	5.18	×	IEEE 802.11ec WiFr (4DMHz, MCS2, 99pc duly cycle)	10536- AAB
-	150.0		15.84	66.19	5,01	Y	N	
	130.0		1011	96.34	0.00	2		
主動情報	150.0	0.00	16.23	68,77	5.24	x	IEEE 802.11ac WiFi (40MHz, MCS3, S9pc duty cycle)	10637+ AAB
	150.0		15.84	66.17	5.07	Y		-
	150.0		16.08	66.79	5.08	Z.	1000 0 000 0 0 00000 0 00000 0 00000000	0835
19.6%	150.0	0,00	16.29	66.82	6.35	×	IEEE 002.11ac WIFI (40MHz, MCS4, BBps duty cycle)	AAB
	150.0		15.90	86,21	5.17	YI		_
_	150.0		16.12	66.79	8.14	2	In the same same same same same same same sam	Infest
196W	150.0	0.00	16.29	56,78	5.25	x	IEEE S02.11ac WIFI (40MH)z, MCSB, 99pc duty cycle)	10540 AAE
-	150.0	-	15.91	66.21	5.09	Y		
	150.0	_	16.13	66.78	5.07	Z		

Certificate No: EX3-3938\_Oct18

------

Page 31 of 39

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.

t (886-2) 2299-3279

WinkS otherwise stated the states are both exactly and the state report report of the state and state and state and state and state and state and states are stated 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 overleat, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial advised in the induced is a structure, and the company's induced at the time of its rights and obligations under the transaction document. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 70 of 103

10541-	IEEE 802.11ec WIFi (40MHz, MCS7,	TXI	5.24	66.69	16.24	0.00	150.0	1.9.8 %
AB	99ps duty cycle)	1.1	1000	10.000		a.mp.		1-910.10
		Y	5.06	66.05	15.84		150.0	-
aria		Z	5.05	66.69	16.08	10.00	150.0	
10542- AAB	(EEE 802,11ac.WFI (40MHz, MCS8, 99pc duty cycle)	×	5.30	66.72	16.27	0.00	150.0	±9.8 %
		Y	5.22	86.16	15.50		150.0	
Colo.		Z	5.20	66.74	16:12	-	150.0	
10543- AAB	IEEE 802.11ac WiFi (40MHz, MCS9) 99pc duty cycle)	x	5.47	66.74	16.29	0.00	150.0	±9.6 %
		Y	5.30	66.21	15.95	_	150.0	
	and the second second second second	Z	5.27	66.76	16.14		150.0	
10544- \A田	IEEE 802.11ec WIFI (80MH≥ MCS), 99pc duty cycle)	X	5.52	66,77	16.19	0.00	150.0	19.6%
		Y	5.38	56.20	15.82	1	750.0	
		Z	5.37	66.80	16.04		150.0	
10545- AAB	IEEE 802.11ac WIFI (80MHz, MCS1 99pc duty cycle)	X	5.72	67.14	16,31	0.00	150.0	主要政治
		Y	5.58	66.63	15.99	i	150,0	
		Z	5.53	67.12	16.15		150.0	
10546- AAB	IEEE 802.11ec WiFi (80MHz, MC62, 99pc duty syste)	×	5.61	67,04	16.28	0.00	150/0	±9.6%
-		Y	5.45	66.44	15.91		150.0	
	the second s	2	5,43	66.99	16.10		150,0	-
10547- AAB	IEEE 802.11ac WiFi (80MHz, MCB3, 99pc duty cycle)	x	5.70	67.12	16,31	0.00	150.0	± 9.6 %
		Y	5.53	66.49	15.92		150,0	
	and the state of the second	Z	5.50	67/02	16.11		150.0	
10548- AAB	IEEE 802 11ac WiFi (89MHz, MD84, 99pc duty cycle)	X	5.93	67.90	16.70	0.00	150.0	£9.6 %
		Y	5.82	87.53	16.41		150.0	
	P	2	5.64	67.E3	16.39		150.0	1.000
10550- AAB	IEEE 802 11ac WIFI (B0MHz, MCB6, 99pc duty cycla)	X	3.63	67.00	16.27	0,00	150.0	±9.6 %
		8	5.47	66.43	15.91		150.0	
		2	5,45	67.00	16.12		150.0	
10551- AAB	IEEE 802,11ac WIFI (BOMHz, MCS7, 99pc duty cycle)	x	5,65	67.07	18.26	0,00	150.0	± 9.6 %
1.0	aspe and officer	1 Y	5,48	65.43	15.89		150.0	
		2	5.46	67.04	18.10		150.0	
10552- AAB	IEEE 802 11ac WIFI (80MHz, MCS8 99pc duty c)icle)	x	9.50	66.66	18.18	0.00	150.0	19.8%
	nabe and item	Y	5.39	66.26	15.80		150.0	
		Z	5.39	65.89	16.04	-	150.0	1.0
10553- AAB	IEEE 802 T1ac WIFI (80MHz, MCS9, 99pc duty pycle)	X	5.00	66.91	16.22	0.00	150,0	± 9.6 %
-	and a first strengt	Y	5.48	58.32	15.86		100.0	
		Z	5.47	66.91	16.07		150.0	1.1.1.1
10554- AAC	IEEE 802 11ac WIFI (100MHz, MCS0, 99bc duty cycle)	X	6.92	67.13	16.27	0.00	150.0	±9.6%
	and and a strength	Y	5.78	68.58	15.93		150,0	
	the survey of the second se	Z	5.77	87.13	16.11		150.0	
10555- AAC	IEEE 802 11ac WiFi (100MHz, MCS1, 90pc duty upde)	х	6.06	67,44	16,39	0.00	150,0	± 8.6 %
	7.51.51	Y	5.92	66 89	16.06		150.0	1
	the second se	- 2	5.88	67.38	18.21	1000	150.0	
10006+ AAC	IEEE 502.11ac WiFi (180MHz, MCS2. 99pc duty cycle)	X	6,07	67.47	16.40	0.00	150,D	±0.6.%
		Y	5,94	66.94	16.07		150.D	
	and the second s	Z	5.90	67.42	16.23		150.0	
10557- AAC	IEEE 502.11ac WFT (160MHz, MCS3,- 99pc duty cycle)	×	8.08	67.43	16,40	0.00	150.0	±9.6 %
	and a first state	Y.	5.91	68.85	16.05		150.0	
		Z	5.87	67.38	16.22		150.0	

Certificate No: EX3-3838, Oct18

Page 32 of 39

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.

Company's sole except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 71 of 103

19.6%	150.0	0.00	16.50	67.60	6.11	X	IEEE BIZ 11ac WIFI (180MHz, MCS4,	10558
19/03	100	0.00	10.50	-		1.1	99pc duty syste)	AAC
	150.0	1	16.15	67.02	5.96	γ		
	150.0	1000	16.30	67.50	E-91	2		TARA
± 9.6 %	150.0	0.00	16,47	67.48	6.97	×	IEEE 802.11ab WIFI (160MHz, MCS8, 990croup cycle)	10560- AAG
	150.0	1	18,11	66.87	5.95	Υ.		
	150.0		16.28	67.38	5.92	2		
±9.6%	150.0	0.00	16.48	67.40	8.02	×	IEEE 802.11ad WIFI (160MHz MCS7, Stop duty cycle)	10581 AAC
_	150.0		16:13	EE BA	5.87	8		
-	150.0	1.000	15.29	67.33	5.84	2	IEEE 802 11sc WIFT 1100MHz, MCSB.	10562-
29,0%	150.0	0.00	16.69	67.82	6.16	х	99pc duty cycle)	AAS
	150,0		16.35	67.25	6.01	26		
	150.0	-	*6.44	67.63	5.03	2	IEEE 802.11/0: WIFI (160MHz, MCS3	10563-
2985	150.0	0.00	16,80	68,29	0,47	*	Bépic duty syste)	AAC:
	150.0		15.58	67.82	6.34	Y		_
	150.0	inter the	16.43	87.70	6.09	2	IN THE DOMESTIC A DOMESTIC AND ADDRESS	10564-
136 #	150.0	0,46	16.53	88.98	4.97	×	IEEE 802.11g WiFi 2.4 GHz (DSSS- DFDM, 9 Mops, 98pc duty cycle)	AAA
	150.0		15.14	66,45	4.81	Y		-
	150.0		信.32	67.02	4.78	2	IET and the milting of the second	10565-
196%	150.0	0.46	16.85	B7.46	5,23	8	IEEE 802.11g WIFi 2.4 GHz (DSSS- OFDM, 12 Mops, 38pc duty cycle)	AAA
	150.0		16.47	86.93	5,05	Y.		
	150.0		16.65	67.49	5.01	2	APPE AND HALLING A ROOM AND AND	10566-
19.6%	150,0	0.46	16 89	67.34	5.00	×	IEEE 802.11g Wi+i 2.4 GHz (DS85- OFDM, 18 Mbps, 90pc () (y cycle)	AAA
1	150.0		16.28	96.77	4.88	Ϋ́		
	150.0		16.46	87.32	4,84	Z		10567
19.6%	150.0	0.46	17.04	67.74	90.0	×	GEE 802.11g WF/ 2.4 GHz (DSSS- OFDM, 24 Mbps, 56pc duty cycle)	10567. AAA
	150.0		16.63	87.15	4,91	N.		
	150.0	11000	16:37	87.80	4.85	Z	Name of the other states o	Jak ed.
19.6 %	150.0	0.46	16,45	67 07	4.97)	×	IEEE 802 11g WIF 2.4 GHz (DSSS- OFDM, 38 Mbps, 95pc duly cycle)	10568- AAA
	150.0		16.05	68.54	4.80	Y		
	150.0	1	10.19	67.03	4.74	Z		
± 9,8 %	150,0	0.46	17.08	67.78	5.03	8	IEEE 802 11g WiFi 2.4 GHz (DSSS- OFDM 48 Mbps: 39pc date cycle)	10589+ AAA
	t50.0	-	18.68	67.22	4.86	Y I	-	
	150.0		10.95	67.93	4.85	Z.	Inter and a long strength	(Participation)
196 5	150.0	0.46	17,01	87 62	5.08	x	IEEE 802 11g WIFI 2.4 GHz (DSSS- OFDM, 54 Mpp), 39b5 duty cyclej	10570- AAA
	150.0		16.62	67.08	4.90	Ŷ		
1.000	150.0		16.86	67.73	4,88	2	many loop and the same of the same	10571-
± 0.8 %	130.0	0.46	17 12	66.77	1.32	×	IEEE 802,11b W/Fi 2:4 GHz (D588, 1 Mbpe: 90pc duty sycle)	10571- AAA
_	130.0		15.06	64.23	1.14	Y.		_
	130.0		15.80	05:20	1,17	- 2	INTER AND AND ADD & COLUMN	A DECIMAL
± 9.6 %	130.0	D.46	17.59	67.60	1,36	x	IEEE 802.11E WIFI 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)	10572- AAA
	120.0		15.38	64.80	1.16	Y		
	130.0	1.11	18.20	65.98	1.19	2	OTTO AND ANT INCOME AND AND AND	10573
± 0.6 %	130.0	0.46	40.35	100.25	100,00	×	IEEE 802.11b WIFI 2.4 GHz (DSSS, 5.6 / Mops, 90pc duty cycle)	AAR
	138.0	_	20.21	61,80	1.94	Y		
	130.0	2.12	27.76	101.40	5.37	Z	these and the talks of the same first	11574
±9.6%	130.0	0,46	22:17	77.53	1.88	x	IEEE 802,116 WIF12.4 GHz (DSSS, 11 Minos, 90pp duty cycle)	NVA.
	130.0		17.98	70.31	1,28	Y		_
	130.0		20.12	73.83	1,45	Z		

Certilicam No: EX3-3958\_Oct18

Page 33 tri 35

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial advised in the induced is a structure, and the company's induced at the time of its rights and obligations under the transaction document. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# Report No. : E5/2018/80006 Page: 72 of 103

10575-	IEEE 802.11g WFi 2.4 GHz (DSSS-	X	4,77	66.82	16.63	0.46	130.0	± 9.6 %
AAA	OFDM, 6 Mbps, 90pc duty cycle)	Y	4.62	66.32	16.23		130.0	
		Z	4.56	66.75	16.29		130.0	
10576-	IEEE 802.11g WIFI 2.4 GHz (DSSS-	X	4.80	66.99	16.69	0.46	130.0	± 9.6 %
AAA	OFDM, 9 Mbps, 90pc duty cycle)		- House				100.0	
	and the second	Y	4.64	66.47	16.29	-	130.0	
		Z	4.59	66.94	16.38		130.0	
10577- AAA	IEEE 802.11g WIFI 2.4 GHz (DSSS-	X	5.03	67.31	16.86	0.46	130.0	±9.6 %
	OFDM, 12 Mbps, 90pc duty cycle)		1.00		10.10		122.0	
		YZ	4.85	66.78 67.21	16.47 16.54	_	130.0	
10578-	IEEE 802.11g WiFi 2.4 GHz (DSSS-	X	4,93	67.50	16.96	0.46	130.0	±9.6 %
AAA	OFDM, 18 Mbps, 90pc duty cycle)	1 ^ I	4.83	01.00	10,90	0.40	130.0	19.0 3
	a and is under over any street	Y	4.75	66.94	16.57		130.0	
		Z	4.69	67.42	16.68		130.0	
10579-	IEEE 802.11g WiFi 2.4 GHz (DSSS-	X	4.69	66.84	16.33	0.46	130.0	±9.6 %
a,a,a	OFDM, 24 Mbps, 90pc duty cycle)	1.0	1.00	22.01	48.65		100.2	
-		Y	4.52	66.24	15.89		130.0	
10580-	IEEE 802.11g WIFi 2.4 GHz (DSSS-	X	4.43	66.61	15.89	0.46	130.0	± 9.6 %
AAA	OFDM, 36 Mbps, 90pc duty cycla)	1	4.14	00.01	10.32	0.40	1.50.00	2 8 6 2
	of and of maper only only of any	Y	4.57	66.26	15.90		130.0	
Sectors - C		Z	4.47	66.59	15.90		130.0	
10581- AAA	IEEE 802.11g WIFi 2.4 GHz (DSSS-	Х	4.83	67.59	16.95	0.46	130.0	±9.6 %
	OFDM, 48 Mbps, 90pc duty cycla)	Y	4.65	86.98	16.51		130.0	
		Z	4.59	67.47	16.62	-	130.0	
10682- AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS- OFDM, 54 Mbps, 90pc duty cycle)	X	4,64	66.58	16.12	0.46	130.0	±9.6 %
	of the of maps, supposing speak	Y	4.47	66.00	15.67		130.0	
		Z	4.36	66.28	15.65		130.0	
10583- AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)	×	4.77	66.82	16.63	0.46	130.0	±9.6 %
		Y	4.62	66.32	16.23		130.0	
		Z.	4.56	66.75	16.29		130.0	
10584- AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)	x	4.80	66.99	16.69	0.46	130.0	± 9.6 %
_		Y.	4.64	66.47	16.29		130.0	
		Z	4.59	66.94	16.38	0.10	130.0	
10585- AAB	IEEE 802.11a/h WIFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)	x	5.03	67.31	16.86	0.46	130.0	± 9.6 %
		Y	4.85	66.78	16.47	-	130.0	
10000	WERE AND THE MUST P ONLY INTERNAL OF	ZX	4.78	67.21	16.54	0.46	130.0	+9.6%
10586- AAB	IEEE 802.11a/h WIFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)	1.02	- 752	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	1807	0.40		23.0.3
		Y	4.75	66.94	16.57	-	130.0	
10.5.5.2	WERE AND ALCO MODIFIED ON A DOPEND OF	X	4.69	67.42 66.84	16.68	0.46	130.0	±9.6%
10587- AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)	~	4.99	00.84		0.40		2 3 0 7
		Y	4.52	66.24	15.89		130.0	
		Z	4.43	66.57	15.89		130.0	12
10588- AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM. 36 Mbps, 90pc duty cycle)	X	4.74	66.81	18.32	0.46	130.0	± 9.8 %
	- Process California (1996) Description	Y	4.57	66.26	15.90	-	130.0	
1.1.1		Z	4.47	66.59	15,90	0.45	130.0	1000
10589- AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)	1.00	4.83	67.59	16.95	0.46	130.0	± 9.6 %
		Y	4.65	66.98	16.51		130.0	1.1
		Z	4.59	67.47	16.62		130.0	
10590- AAB	IEEE 802.11a/h WIFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)	×	4.64	66.58	16.12	0.46	130.0	± 9.6 9
		Y	4.47	66.00	15.67		130.0	-
		Z	4.36	66.28	15.65		130.0	

Certificate No: EX3-3938\_Oct18

Page 34 of 39

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.

t (886-2) 2299-3279

Company's sole except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



## Report No. : E5/2018/80006 Page: 73 of 103

19.6.9	130.0	0.46	16.71	66.87	4,02	X	IEEE 802 #1n (HT Mound, 20MHz	10591-
120.3		u. Tu	1.11.1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-14	1.1	MCSE, stiss duty cycle)	AAB
	130.0		16.34	EE 38	4.11	4		
	130.0		16.40	66.82	4,71	- Z	ATTENDED AND AND AND A MARKED	10592-
19.6 %	130.0	0.46	16.84	67.22	5.09	8	IEEE 802.11h (HT Mixed, 20MHz, MCB1.90pt duty cycle)	AAB
1.1.1.	130.0		16.47	6672	4.93	· 9		_
	130.0		16.53	87.15	4.86	2	IEEE 802.11n (HT Missel, 20MHz)	10583-
29.6%	130.0	0.46	16,74	67.17	5,02		MCS2, 90pc duty cycle)	AAE
	130.0		16.36	88.64	4.85	Y		
	120.0		16.40	87.04	4.77	2	IFT data by a second second	10594-
19.64	130.0	0.46	16.89	67.32	5.07		IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle)	AVB.
	130,0		16,51	66.80	4.90	Y Z	-	
-	130.0	1	16.57	67.23	4.83		APPENDENT AND AND ADDRESS OF MANAGEMENT	10695-
1963	130.0	0.46	16.79	67.29	5,05	×	IEEE 802.11n (HT Mosid, 20MHz, MCS4, 90pc duty cycle)	AAB
-	130.0	ii	16.40	66.75	4.87	Y		_
See	150.0		16.45	67.17	4.80	2	THE BOARD AND A THE REAL	Inner
± 9,8 %	130.0	0.46	16.80	67 29	4,58	×	IEEE BO2:11n (HT Mixed, 20MHz MCS5, 90pc duty cycle)	10596- AAB
-	130.0	1	16,40	88.75	4.81	Y		
	130.0		16.45	57.16	4.73	Z	THE CONTRACTOR OF A	1010
196%	130.0	0.46	16,70	67.23	4.94	×	IEEE 802.11n (HT Mixed, 20MHz, MCSS, 900¢ (Ldy cycle)	10597- AAB
	130.0		16.29	66.66	4:76	Y		1.11.1
	130.0	1000	15.33	67.05	4,68	Z		
198%	130.0	0.46	18.98	67.49	4.82	*	IEEE 802.11n (HT Mixed, 26Miliz, MCS7, 90pc duty cycle)	
	130.0		18,55	86.90	4.74	14		
	130.0		16.63	67.34	4.68	Z I	And the second se	
±98%	130.0	0.46	19,88	67.43	5.58	x	IEEE 802.11n (HT Mixed, 40MHz, MOSO, 90pc duty cycle)	10599- AAB
	130.0		16.56	66.96	5.44	Y		
	130.0		16.55	67.25	5.34	Z		
±98%	130,0	0.46	17.07	67.88	5.74	x	IEEE 802.11n (HT Mixed, 40MHz MCS1, 90pc duty cycle)	AAB
	130.0	-	16.79	57.47	5,60	8		100 C
	130.0		16.64	67.51	5.43	2	A CONTRACT OF THE OWNER OF THE OWNER	
±10,8 %	130.0	0.46	16.95	67.61	5,81	*	IEEE 802.11n (HT Mixed, 40MHz; MCS2, 90pc duty cycle)	1060 II. NAB
	130.0		15.66	87.17	5.48	Y		
	130.0		15.60	67.37	5.35	2		
+86%	130.0	0.46	TEBE	87.58	5,70	X	IEEE 802 71h (HT Mixed, 40MHz, MCS3, 90pc duty cycle)	10602- NAB
	130.0		18.58	67.17	5.58	Y		
	130.0		16.52	67.40	5.45	Z		
± 9,6 %	130.0	9.46	17.16	67.83	5.BO	X	EEE 802 11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle)	10603- 4AB
	130.0		16.87	87.48	5,65	Y		
	130.0		10.01	67.69	5.62	2		
±96%	130.0	0.46	36,87	67.37	5.58	×	IEEE 902.11n (HT Mised, 30MHz, MCS6, 90pc duty cycle)	0504- ¥48
-	130.0		16.57	86.52	5.44	Y		
	130.0	-	16.58	67.27	5.37	2'		A.440
19.6%	130.0	0.46	17.00	67.64	E.68	8	IEEE 302.11n (HT Mixed, MMHz,, MCSB, 90pc duty cycle)	0005- VAB
	130.0	_	16.75	67,28	5,56	Y		
	130.0		16.88	67.44	5.48	Z	Instal and 1.5 county of the local	8444
± 9.6 %	150,0	0.46	16,84	57.15	5,46	x	IEEE B02 11n (HT Moved, 40MHz, MCS7, 90pc duty cycle)	DEOB-
	130.0	-	16.32	66.89	5.33	Y		_
	130.0	-	16.23	68.87	5.20	Z		_

Certificate No EX3 3928\_Dol18

Page 35 (#39)

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488



## Report No. : E5/2018/80006 Page: 74 of 103

1507-	TEEE 902 Thac WIFI (20MHz, MCS),	X	4.76	65.21	16.35	17.40	130.0	19.6%
AB.	BOpe duty cycle)						1000	1 80.0
_		8	4.60	35.66	15.94		130.0	-
008-	IEEE 802 11ac WIFI (20MHz MCS1)	7	435	56.17 55.64	16.05	0.46	130.0	
18	90pc duty cycley	x	4.97		0.000	U-40	130,0	796%
_		Y	4.79	65.07	16.11		130.0	
0005	REE BOS 11ac WIFE COMHz, MICS2.	Z	4.73	86.56 88.62	16.21	0.46	130.0	
AB	BOD a gold ( 100 A) ( 50 MHZ, ML32, BOD a gold ( 200 HZ )	X	100			0.46	130.0	393 %
_		Y	4.63	65.92	15,94	_	130.0	_
610-	and the second and states to the states of the	2	4,62	06.40	10.04		130.0	
AB	IEEE 802 11ac WFI (20MHz, MCSS, 90pt duty cycle)	100		88,68	T6.54	0.48	130.0	3966
-		Y	4.73	66.68	16:11	_	130.0	
-		2	\$47	86.58	16:22		130.0	
10611 IEEE 802,11ac WFP (20 AAB 900c duty cyclo)	IEEE 802,11ac WEI (20MHz, MCS4, 90pc duty cycla)	×	4 93	88.50	16,39	0.46	130.0	1988
-		Y	4,65	65.89	15.96		130,0	-
		Z	4.59	86.38	16.65		130.D	
	IEEE 802.11ac WIFI (20MHz, MCS5: 90pc duty cycle)	×	4.85	96.66	16.44	0.48	130.0	± 9.6 %
		Y	4.66	65.04	16.00	1	130.0	-
		Z	4.59	66.49	16.08	100.1	130.0	
AB	TEEE 802 11ac WIFI (20MHz, MCS6) 90pc duty cycla)	×	4,00	66.57	16.33	D.46	130.0	± 9.6 %
		TY.	4.67	65.94	15.89		750.0	1
		Z	4,69	65.36	15,95		130,0	-
1614- AE	(EEE 802.11ac WIFI (20MHz, MCS7, 90ac duty cycle)	x	4.80	68.77	16.57	0.48	130.0	±0.6 %
	2001200120030	Ť	4.00	66.11	18.11	1	130.0	1
		Z	4.55	66:63	18.24		130.0	
AB	TEEE BOZ 11mc WiF) (20MHz, MCS8, 90pc duty cycle)	×	4/83	66,31	16.17	0,48	130.0	±0,8%
-		4	4.65	65.72	15.74		130.0	-
		Z	4.57	66.14	15,79		130.0	-
AE	IEEE 302.1 (as WIFI (40MHz, MCSD, 90pc duly cyce)	8	5.40	66.72	16.51	0,46	130.0	= 9.6 %
<u></u>	Bolie and evices	-V	5.25	86:20	10.17	-	130.0	-
		2	5.18	66.58	16.21		136.0	
0617-	IEEE 902 that WiFI (30MHz, MCS1.	X	5.46	66.82	16.52	0.46	120.0	39.6%
AB	BOpc duty cycki)	Y	5.32	66.35	16.21		1300	
		2	5.23	68.70	1E.24		130.0	
AB AB	IEEE 802 11ac WiFi M0Miltz, MCS2, 90pc duty cycle)	X	5.36	66.91	16.59	0.46	130.0	19.6%
	Sector (and them)	Y	5.20	66.37	16.23		130.0	
		- 3	E.13	66.77	16.30		130.0	
AB	IEEE BUZ 11as WIFI (40MP12, MCS3, 900c duty cycle)	X	E.38	65.73	16.44	0,48	130.0	19.6%
140	come and chieft	Y	5.23	86.21	16.09	-	130.0	
		12	5.14	86.53	16.10		130.0	
0620- AB	IEEE 602,11ac WiFr (400Hz; MCS4, 90pc duty cycle)	X	540	66.81	16.52	11-48	130.0	主草植物
	and along	Y-	5.33	66.26	18.17		130.0	
_		2	5.23	66.56	16.17		130.0	
AB	TEEE 602.11ac WFs (40MHz; MCS5, D0pc doty civels)	×	5,47	66.89	18.68	0.46	130/0	198 N
	THE PART OF STREET	4	5.31	66.35	16.33		130.0	
		Z	5.24	66.76	16.40		130.0	
0622- AEI	IEEE 802.11ac WiFi (40MHz, MG56, 50pc mJy cycle)	×	5.47	67.00	18 72	0.46	130.0	±9.6 %
190	and a new ritrant	Y	5.33	66.52	16.41	-	130.0	-
		2	5.25	66.89	16.45	-	130.0	

Certificate No: EX3-3938, Oct18

Phys 36 of 38

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.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



## Report No. : E5/2018/80006 Page: 75 of 103

19.8%	130.0	6.46	16.41	68.59	5.38	TX I	IEEE 802.1 1ac WIFI (40//Hz, MCS7.	10823-
4.9.4.8		ACCESS.			4.44	1	90pc tluty cynlej	AAB.
	130.0		18.05	66.04	5.20	Y.		
	\$30.0		16.07	68.39	512	Z	IEEE 802 That WEI ROMHE MCSS	10634-
± 9.6 %	130.0	0,46	16.54	66,74	5.54	2	90pc duty syste)	AAB
	130.0		16.22	66.26	5,40	Y		_
	130.0		18.23	66.69	5.31	Z		
19.6%	130.0	1),46	17.05	67.68	5.91	x	IEEE S02 11ec WE( (AUMHz; MCSB, 30pc duty cycle)	TEH25- AAE
	130.0		16.82	67.35	5.81	Y		
_	130.0	1000	16.65	87.33	5.60	Z		
19.6%	130.0	0.46	16.44	86.70	5,66	x	IEEE 502.11 as W.Fr (50MHz, MCS0, 900c duty cycle)	
	130.0		16.12	68.25	6.54	Y		
	130.0		16.16	86.64	5.47	Z		
±96%	130.0	0.46	16,64	57.20	5.90	X	JEEE 802.11ab WIFI (80MHz, MCS1, 90bc duty cycle)	10627- AAB
	130.0		16.38	135.84	5.79	Y	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	
-	130.0	-	16.34	67.08	5.67	2	A A A STATE OF A A A A A A A A A A A A A A A A A A	
±96%	130.0	0,46	16.42	66.91	5.73	X	IEEE 802 1136 W/ITI (80MHz, MCS2, 9066 duty cycle)	10628- AAB
_	130.0		16.08	86.38	5.58	· ·	a straight s	
	130.0		18.06	68.66	6.49	Z		
主要剧情	130.0	0.46	18.43	68.97	5.81	X	IEEE 802.11ac WIFI (BOMH2, MCS3, BOpc daty cycle)	10629- AAB
	130.0		18.13	66.48	5.67	1	and an	1.000
	130.0	-	16.07	66.69	5.56	Ż	and the second second	
± 9.6 %	130.0	0,46	17.18	68,50	6.26	18	(EEE 882.11a); W/F) (80MHz, MCE4. 90pc duty cycle)	
_	130.0		18,98	88 17	6.18	Y	1001000/27002	+ 1 Children
_	130.0	-	18.58	67.70	5.63	Z	-	
+9.8 %	130.0	0.46	17.32	68.38	6.19	X	IEEE 802.11ac WFi (80MHz, MCS5, 30pt duty cycle)	10631- AAB
	130.0		18.99	67.83	8.03	Y	and the state of t	
-	130.0		15.89	67.92	5.86	Z		
1969	130.0	0.46	16,63	67:37	5,89	x	EEE 802 11ac WiFi (80MHz MCS6, 900c outy cycla)	10682 AAB
	130.0		16.63	B6.88	5.75	14		
-	130.0		16.67	67.23	5.87	12	and the second se	
±9/8 %	130.0	0,48	18.55	67.14	5.81	X	IEEE 802 11ac WiFi (SDMHz, MCS7 80pc duty cycla)	AAE
_	130.0		18.18	86.53	5.84	1.16		
	130.0	-	18.21 /	66.89	5.57	Z	have a second second	
主题图纸	130.0	0.48	16.62	67.15	5 79	x	IEEE 802,11ac WFI (80MHz, MCS8, 90pc duty cycle)	10834- AAE
	130.0		16.26	66.56	5.63	Y		
-	130.0		16.31	66.95	5.56	Z		
主导原始	130,0	800	16.03	86.48	0.68	х	IEEE 202.11ac WiFi (88MHz, MC89, 90pc duty cycle)	10635- AAB
-	130.0		15.67	65.92	5.52	Y		
	130.0		15.07	66.16	6.41	2		
+98%	130.0	<u>946</u>	18.52	67.13	6.07	X	IEEE 802, TLac WIFI (160WHz: MCSO, 90pc duty cycle)	10836- AAC
	130.0		16.23	86.65	5.85	Y.		
	130.0		16.23	68.97	5.87	21		
÷9.6%	130.0	9,46	16.68	67.50	6.23	X	IEEE.802.11ac/WIFI (160MHz, MCS1, 90pc daty cycle)	10037- AAC
_	130.0		15.40	67.04	6.11	Y		
-	130.0		16.35	57.28	6.00	Z		
±0.6%	130.0	0.46	16.65	67,47	6.23	X	IEEE 802.11ac WiFI (160MHz, MCS2, 90pc dulty cycle)	AAG
_	130.0		16.38	67.00	5.11	Y		-
	12011		16.34	67.28	8.01	Z		

Centrals No EX3-3938\_Oct18

Page 37 of 38.

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.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



## Report No. : E5/2018/80006 Page: 76 of 103

10639-	JEEE 802 T1ac WIFI (160MHz, MCS3.	X	6.25	67.49	18.70	0.46	1000	#96%
AAC-	90pc duty cycla)				100	chieft.	2008	5949.74
_		Y	6.09	66.87	16.39		130.0	1
0640	IEEE 802 11# WIFT (160MHz, MCS4,	Z	6.00	87.25	16.37		130.0	
W/C	Sobe enty cycle)	×	6.25	87.53	16.67	0.46	130.0	20.6%
		٧.	6.11	67,01	16.35	_	130.0	
10641-	PER NOT THE MAD WORKING MOOF	2	6.99	87.21	16.25	W 200	130.0	
AAC	EEE BO2 11ad WiFi (160MHz, MCS5, 90pcrouty cycle)	8	6.25	87.31	16.67	0,46	100 0	+88%
		Y	0.13	66.85	16,30		130.0	-
1064.2-	and and the submitted by the second	Z	6,03	87.11	16.26		1000	
MC:	IEEE 802,11ec WFI (160MHz, MCS6, 90pc duty cycle)	×	6.53	67.65	18,91	11.46	120.0	4 9.6 %
		Y	0.10	67 13	10.00	-	130,0	-
10643-	and the second s	Z	6,10	67.47	16.62	20.400	120.0	
AAC B0pc duty cycles	IEEE 802 11ac WFI (160MHz, MCS7 90pc duty cycle)	×	6.15	67.31	18:65	0.46	130.0	49.6%
_		· 9	0.02	05.62	10.04		120.0	-
		Z	5.91	67.08	16:30		130.0	
10644- IEEE 802,11ee WIFI AAC 90pc duty cycle)	IEEE 802,11ec WIFI (160MHz, MCSS, 90pc duty cycla)	×	8,35	67.93	16,98	<u>0,46</u>	135.0	19.0 M
		¥.	6.21	87.40	15.65		139.0	
CROTE		Z	6.05	67.49	16.53	-	136.0	
10645- AAC-	IEEE 802 11ac WFI (160MHz, MCS9, 80pc duly cycle)	×	8.71	88.51	17.21	11.46	130.0	土 9 倍 55
	- Charles	18	6.68	-68,36	17129		15010	
-	and the second second second	Z	6.29	67.70	16.50	20.00	130.0	1000
10646- LTE-TDD (SC-FDMA, AAF OPSK, UL Subframe	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, OPSK, UL Subframe=2,7)	x	86.17	140.32	45.40	5.30	60,0	土和新物
		Y.	39.64	122.44	40.63		60.0	
		.7.	18,19	104.43	-33/83	· · · · · ·	60.0	1
10647- AAF	LTE-TOD (SG-FDMA, 1 RB, 20 MHz. DPSK, UL Subframe=2.7)	X	80.45	139.77	45.45	9.30	60.0	1 8.F.%
		N.	36.72	121.04	40.86		63.0	
	Construction of the second sec	2	16.41	102.96	33.52		60.0	how we have
10648- AAA	COMA2000 (1# Advinishd)	X	15.87	66.51	13.20	0.00	150.0	1005
		Y -	0.58	81.72	9.15		150.0	1
	And the second sec	Z	0.69	64.HU	11.24	-	150.0	1
10652- AAD	( TE-TDB (OFDMA, E MHz, E-TM 3.1, Clipping 44%)	X	431	69.00	17.78	2.23	0,0,6	=96%
		Y	3.89	67.20	10.71		90.0	-
		Z	3.64	67,40	16,29	-	80,0	
10653- AAD	ETE-TDO (OFDMA, 10 MHz, E-TM 3.1, Dipping 44%)	×	4.72	07.91	17.64	2.22	80,0	398%
		Y	4.40	BE 72	16.87	1.000	ED D	
	and the second sec	Z.	4.16	66.48	10.48	1.5	80,0	1000
10654- AAD	LTE-TDD (OFDMA: 15 MHz E-TM-3.1 Clipping 44%)	x	4,64	67.52	17,60	2.25	80,0	19.6 %
		Y.	4.35	60.39	18.88		80.0	
	Contraction and the second	L	6.16	65.16	76.60		80.0	1.7.47
10855- AAE	LTE-TDO (GFOMA, 20 MHz, E-TM 3.1, Oligonig 44%)	×	4.69	67.54	17.64	2,23	60.0	3.0,6 %
		- Ý	4.42	66.40	16.92		80.0	
		7.	4.19	66.14	16.53		0.08	
10658- AAA	Pulso Weveform (200Hz, 10%)	8	100.00	116,82	30.15	10.00	50.0	+9.6 %
		Y	27.27	97.34	24.81		50,0	
		12	5.41	78.00	11.99	1000	60.0	
10ffflis-	False Waveform (200Hz, 20%)	8	100.00	114,08	97 78	6.90	60,0	÷D'e.4
		Y	100.00	111.99	26.70		0.00	-
	Z	5.06	74.98	14.50		eu u	-	

Centificaté No: EX3-3838\_Ect18

Page 36 of 38

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.

Company's sole except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



## Report No. : E5/2018/80006 Page: 77 of 103

#### EX30VA. SN-3838

#### October 24, 2018

10660- AAA	Pulse Waveform (200Hz, 40%)	×	100.00	113.57	26.20	3.98	80.0	± 9.6 %
		Y	100.00	108.48	23.71		80.0	
		Z	17,55	86.88	16.64		0.06	
10661- Pulse Wavefor AAA	Pulse Waveform (200Hz, 60%)	X	100.00	116.76	26.28	2.22	100.0	± 9.6 %
		Y	100.00	105.43	21.11	-	100.0	
_		Z	100.00	100.82	18.62		100.0	
10662- Pule AAA	Pulse Waveform (200Hz, 80%)	×	100.00	127.89	28.96	0.97	120.0	± 9.6 %
		Y	3.43	74.94	10.68	-	120.0	
and the second	The second s	Z.	100.00	98.67	16.42		120.0	
10670- AAA	Bluetooth Low Energy	×	100.00	117.22	26.83	2.19	100.0	± 9.6 %
		Y.	100.00	107.88	22.47		100.0	
_		Z	100.00	104.58	20.49		100.0	

<sup>6</sup> Uncertainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the field value

Certificate No: EX3-3938\_Oct18

Page 39 of 39

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

f (886-2) 2298-0488



# 7. Uncertainty Budget

A	с	D	е		f	g	h=c * f / e	i=c*g∕e	k
Source of Lineartainty	Tolerance/	Probability	Div		oi (1 a)		Standard	Standard	vi, or Veff
Source of Uncertainty	Uncertainty	Distributio	Div	Div Value	ci (1g)	ci (10g)	uncertainty	uncertainty	vi, or veir
Measurement system									
Probe calibration	6.55%	N	1	1	1	1	6.55%	6.55%	00
lsotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	00
lsotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	00
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	$\infty$
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	00
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	00
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	00
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	00
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	00
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	00
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	00
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	00
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	00
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	00
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	œ
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	00
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	00
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	œ
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	00
Liquid permittivity (mea.)	2.55%	N	1	1	0.64	0.43	1.63%	1.10%	м
Liquid Conductivity (mea.)	3.02%	N	1	1	0.6	0.49	1.81%	1.48%	М
Combined standard uncertainty		RSS					11.97%	11.85%	
Expant uncertainty (95% confidence interval), K=2							23.93%	23.70%	

Measurement Uncertainty evaluation template for DUT SAR test (3-6G)

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format 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.

```
www.tw.sas.com
```



A	с	D	е		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability Distributio	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.00%	Ν	1	1	1	1	6.00%	6.00%	8
lsotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	~
lsotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	8
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	8
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	8
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	8
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	8
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	8
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	~
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	~
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	~
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	8
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Test Sample related									
Test sample positioning	2.90%	Ν	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	Ν	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	8
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Liquid permittivity (mea.)	2.18%	N	1	1	0.64	0.43	1.40%	0.94%	М
Liquid Conductivity (mea.)	3.14%	N	1	1	0.6	0.49	1.88%	1.54%	М
Combined standard uncertainty		RSS					11.66%	11.55%	
Expant uncertainty (95% confidence interval), K=2							23.31%	23.10%	

Measurement Uncertainty evaluation template for DUT SAR test (0.3-3G)

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

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.



## 8. Phantom Description

Schmid & Partner Engineering AG

s e а D a

Zeughausstrasse 43, 8004 Zurich, Switzerland Phone +41 44 245 9700, Fax +41 44 245 9779 info@speag.com, http://www.speag.com

#### Certificate of Conformity / First Article Inspection

Item	Oval Flat Phantom ELI 5.0	
Type No	QD OVA 002 A	
Series No	1108 and higher	
Manufacturer	Untersee Composites Knebelstrasse 8, CH-8268 Mannenbach, Switzerland	

Tests

Complete tests were made on the prototype units QD OVA 001 A, pre-series units QD OVA 001 B as well as on some series units QD OVA 001 B. Some tests are made on all series units QD OVA 002 A.

Test	Requirement	Details	Units tested
Shape	Internal dimensions, depth and sagging are compatible with standards	Bottom elliptical 600 x 400 mm, Depth 190 mm, dimension compliant with [1] for f > 375 MHz	Prototypes
Material thickness	Bottom: 2.0mm +/- 0.2mm	dimension compliant with [3] for f > 800 MHz	all
Material parameters	rel. permittivity $2 - 5$ , loss tangent $\leq 0.05$ , at $f \leq 6$ GHz	rel. permittivity 3.5 +/- 0.5 loss tangent ≤ 0.05	Material samples
Material resistivity	Compatibility with tissue simulating liquids .	Compatible with SPEAG liquids. **	Phantoms, Material sample
Sagging	Sagging of the flat section in tolerance when filled with tissue simulating liquid.	within tolerance for filling height up to 155 mm	Prototypes, samples

Note: Compatibility restrictions apply certain liquid components mentioned in the standard, containing e.g. DGBE, DGMHE or Triton X-100. Observe technical note on material compatibility.

#### Standards

\*\*

- OET Bulletin 65, Supplement C, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", Edition 01-01
   IEEE 1528-2003, "Recommended Practice for Determining the Peak Spatial-Average Specific
- Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques, December 2003
- [3] IEC 62209-1 ed1.0, "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close
- proximity to the ear (frequency range of 300 MHz to 3 GHz)\*, 2005-02-18 [4] IEC 62209-2 ed1.0, "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", 2010-03-30

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of body-worn SAR measurements and system performance checks as specified in [1-4] and further standards

Date 25.7.2011

Signature / Stamp

eag s Schmid & Bertrier Engineering AG Zeugbarestrassa 43, 8004 Zuich, Schmitten Phone:441 44/25 9708, Fext-46, 645 9779

Doc No 881 - QD OVA 002 A - A

Page 1(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.

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

> No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

www.tw.sas.com

Member of SGS Group



## 9. System Validation from Original Equipment Supplier

Engineering AG ghausstrassa 43, 8004 Zurich	n, Switzerland		C Service suisse d'étaionnage Servizio svizzero di taratura S Swiss Calibration Service		
credited by the Swise Accredita le Swise Accreditation Service ultilateral Agreement for the re	is one of the signatorie		Accreditation No.: SCS 0108		
Int SGS-TW (Aude	~ *	- 10 M. P.	ne No: D2450V2-727_Apr18		
CALIBRATION C	ERTIFICATE				
06jext	D2450V2 - SN:73	27			
arbanion procedure(s)	QA CAL-05.v10 Calibration proce	dure for dipole validation kits	above 700 MHz		
Calibration date:	April 24, 2018				
All calibrations have been conduc	cled in the closed laborato	robability are given on the following pag ry tacility: environment temperature (22 :			
Calibration Equipment used (M&)	1		Surviva Politication		
mmary Standards	ID#	Cal Data (Certificate No.)	Scheduled Calibration		
Inmery Standards Power meter NRP	ID # SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19		
Inmary Standards Powar mater NRP Powar senace NRP-23h	ID # SN: 104778 SN: 103244	04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672)	Apr-19 Apr-19		
Primery Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291	ID # SN: 104778 SN: 103244 SN: 103245	04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672)	Apr-19 Apr-19 Apr-19		
Primary Standards Power maior /NRP Power searacr /NRP-Z3/1 Power seriescr /NRP-Z9/1 Reference 20 dB Attenuator	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k)	04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02682)	Арс-19 Арс-19 Арг-19 Арг-19 Арг-19		
hmary Standards hower mater NRP <sup>2</sup> hower sensor NRP-2011 hower sensor NRP-2011 eleference 20 dB Attenuator Type-N mismatch combination	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327	04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02632) 04-Apr-18 (No. 217-02862)	Арт-19 Арт-19 Арт-19 Арт-19 Арт-19		
Primary Standards Power mater NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX30V4	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k)	04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02682)	Арс-19 Арк-19 Арк-19 Арк-19 Арк-19		
Immery Standards Dower sector NRP - Power sector NRP-291 Power sector NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Taterance Probe EX30V4 DAE4 Secondary Standards	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7349 SN: 501 ID #	04-Apr-16 (No. 217-02672X02673) 04-Apr-16 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02682) 04-Apr-16 (No. 217-02682) 30-Dec-17 (No. EX3-7344_Dec17) 28-Oc-17 (No. DAE4-601_Dc117) Check Date (in bouse)	Apr-19 Apr-19 Apr-19 Apr-19 Apr-19 Disc-18 Oct-18 Scheduled Check		
hmany Standards hower mater NHP hower sensor NHP-2011 hower sensor NHP-2011 hower sensor NHP-2011 hower mismatch combination haterance Probe EX30V4 JAE4 Secondary Standards hower mater EPM-4424	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5047.2 / 06327 SN: 7349 SN: 501 ID # SN: GB37450704	04-Apr-16 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02632) 04-Apr-18 (No. 217-02632) 30-Dec-17 (No. EX3-7349_Dec17) 25-Oct-17 (No. DAE4-601_Dc17) Dheos Date (in house) 07-Oct-15 (in house check Oct-16)	Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Oct-18 Scheduled Check In ficuse check: Oct-18		
Primery Standards Power motor NRP Power sensor NRP-291 Reference 20 dB Attenuistor Type-Primer NRP-291 Reference 20 dB Attenuistor Tableance Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Yower sensor HP 0401A	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5055 (20k) SN: 5047.2 / 06327 SN: 5047 SN: 501 ID # SN: GB37450704 SN: UB372102783	04-Apr-16 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02683) 04-Apr-18 (No. 217-02683) 30-Dec-17 (No. EX3-7349_Dec17) 25-Oct-17 (No. DAE4-601_Dct17) Dhecs. Date (n: house) 07-Oct-15 (n: house check. Oct-16) 07-Oct-15 (n: house check. Oct-16)	Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Oct-18 Scheduled Check In focuse check: Oct-18 In focuse check: Oct-18		
Primary Standards Power sensor NRP-Z91 Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Atterustor ype-N mismatch combination Paterance Probe EX30V4 JAE4 Secondary Standards Power metar EPM-442A Power sensor HP 0481A Power sensor HP 0481A	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5053 (20K) SN: 5047.2 / 06327 SN: 5047.2 / 0637 SN: 5047.2 / 0637 SN: 5047.2 / 0637 SN: 5047 SN: 5047 S	04-Apr-16 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 05-Det-17 (No. DAE4-601_Det17) 25-Oct-17 (No. DAE4-601_Det17) Dhack Bate (pr-house) 07-Oct-15 (in house check Det-16) 07-Oct-15 (in house check Det-16) 07-Oct-15 (in house check Det-16)	Apr-19 Apr-19 Apr-19 Apr-19 Dac-18 Oct-18 Scheduled Check In focuse check: Oct-18 In focuse check: Oct-18 In focuse check: Oct-18 In focuse check: Oct-18		
Immery Standards Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reterence 20 dB Attenuator Type-N mismatch combination Tateance Probe EX30V4 DAE4 Secondary Saindards Power sensor HP 8401A Power sensor HP 8401A RF generator R&S SMT-06	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5055 (20k) SN: 5047.2 / 06327 SN: 5047 SN: 501 ID # SN: GB37450704 SN: UB372102783	04-Apr-16 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02683) 04-Apr-18 (No. 217-02683) 30-Dec-17 (No. EX3-7349_Dec17) 25-Oct-17 (No. DAE4-601_Dct17) Dhecs. Date (n: house) 07-Oct-15 (n: house check. Oct-16) 07-Oct-15 (n: house check. Oct-16)	Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Oct-18 Scheduled Check In focuse check: Oct-18 In focuse check: Oct-18		
Primery Standards Power mater NRP Power senaior NRP-Z91 Power senaior NRP-Z91	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5055 (20k) SN: 5047.2 / 06327 SN: 501 ID # SN: GB37450704 SN: GB37450704 SN: US3720285 SN: 100072 SN: 100072 SN: 103726085	04-Apr-16 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02633) 04-Apr-18 (No. 217-02632) 04-Apr-18 (No. 217-02632) 30-Dec-17 (No. DAE4-601, Der17) 25-Oct-17 (No. DAE4-601, Der17) Dheck Bate (in flouse) 07-Oct-15 (in flouse check Oct-16) 07-Oct-15 (in flouse check Oct-16) 07-Oct-15 (in flouse check Oct-16) 15-Jun-15 (in flouse check Oct-16) 18-Oct-01 (in flouse check Oct-17)	Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Oct-18 Scheduled Check In house check: Oct-18 In house check: Oct-18		
Primary Standards Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Atterustor type-N mismatch combination Reference Probe EX30V4 JAE4 Secondary Standards Power meter EPM-442A Power sensor HP 9481A Power sensor HP 9481A	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5053 (20K) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 501 ID # SN: 5037450704 SN: US37282783 SN: MY41082517 SN: 10537380585 Name	04-Apr-16 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 05-Det-17 (No. DAE4-601_Det17) 25-Oct-17 (No. DAE4-601_Det17) Dhack Bate (pr house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-17) Fünction	Apr-19 Apr-19 Apr-19 Apr-19 Disc-18 Oct-18 Scheduled Check In focuse check: Oct-18 In focuse check: Oct-18 In focuse check: Oct-18 In focuse check: Oct-18 In focuse check: Oct-18		
Primary Standards Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Atterustor type-N mismatch combination Reference Probe EX30V4 JAE4 Secondary Standards Power meter EPM-442A Power sensor HP 9481A Power sensor HP 9481A	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5055 (20k) SN: 5047.2 / 06327 SN: 501 ID # SN: GB37450704 SN: GB37450704 SN: US3720253 SN: 100072 SN: 100072 SN: 103726055	04-Apr-16 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02633) 04-Apr-18 (No. 217-02632) 04-Apr-18 (No. 217-02632) 30-Dec-17 (No. DAE4-601, Der17) 25-Oct-17 (No. DAE4-601, Der17) Dheck Bate (in flouse) 07-Oct-15 (in flouse check Oct-16) 07-Oct-15 (in flouse check Oct-16) 07-Oct-15 (in flouse check Oct-16) 15-Jun-15 (in flouse check Oct-16) 18-Oct-01 (in flouse check Oct-17)	Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Oct-18 Scheduled Check In house check: Oct-18 In house check: Oct-18		
Primary Standards Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination haterence Probe EX30V4 DAE4 Secondary Saindards Power sensor HP 0401A Power sensor HP 0401A RF generator R&S SMT-06	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5053 (20K) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 501 ID # SN: 5037450704 SN: US37282783 SN: MY41082517 SN: 10537380585 Name	04-Apr-16 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 05-Det-17 (No. DAE4-601_Det17) 25-Oct-17 (No. DAE4-601_Det17) Dhack Bate (pr house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-17) Fünction	Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Oct-18 Scheduled Check In fouse check: Oct-18 In fouse check: Oct-18		
Primisry Standards Power mater NRP Power senisor NRP-291 Reterence 20:46 Attenuator Reterence 20:46 Attenuator Reterence Probe EX30V4 DAE4 Secondary Standards Power mater EPM-442A Power senisor HP 9481A Power senisor HP 9481A RF genator P&S SMT-06 Network Anaryzen HP 8753E Calibrated by	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5055 (20k) SN: 5047.2 / 08327 SN: 501 ID # SN: GB37450704 SN: GB372102783 SN: US372102783 SN: WY41002517 SN: 400972 SN: US37390585 Nome Jacon Kastmil	04-Apr-16 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02633) 04-Apr-18 (No. 217-02633) 30-Dec-17 (No. EX3-7349_Dec17) 25-Oct-17 (No. DAE4-601_Dec17) 25-Oct-17 (No. DAE4-601_Dec17) D7-Oct-15 (in house check Dc1-16) 07-Oct-15 (in house check Dc1-16) 07-Oct-15 (in house check Dc1-16) 15-Jun-15 (in house check Dc1-16) 18-Dot-01 (in house check Dc1-17) Fünction	Apr-19 Apr-19 Apr-19 Apr-19 Apr-19 Dac-18 Oct-18 Scheduled Check In fouse check: Oct-18 In fouse check: Oct-18		
Ammany Standards Power senisor NRP-291 Power senisor NRP-291 Reference 20:06 Attenuator Type-N mismatch combination Reference 20:06 Attenuator Paterance Probe EX30V4 DAE4 Secondary Standards Power meter EPM-442A Power senisor HP 9481A Power senisor HP 9481A RP generator PAS SMT-06 Vetwork Analyzer HP 8753E Calibrated by Approved by:	ID # SN: 104778 SN: 103244 SN: 103245 SN: 5055 (20k) SN: 5047.2 / 08327 SN: 501 ID # SN: GB37450704 SN: U6372512783 SN: W441082517 SN: U037260595 Nome Jecor Kastinui Katga Pokovic	04-Apr-16 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02633) 04-Apr-18 (No. 217-02633) 30-Dec-17 (No. EX3-7349_Dec17) 25-Oct-17 (No. DAE4-601_Dec17) 25-Oct-17 (No. DAE4-601_Dec17) D7-Oct-15 (in house check Dc1-16) 07-Oct-15 (in house check Dc1-16) 07-Oct-15 (in house check Dc1-16) 15-Jun-15 (in house check Dc1-16) 18-Dot-01 (in house check Dc1-17) Fünction	Apr-19 Apr-19 Apr-19 Apr-19 Apr-19 Dac-18 Oct-18 Scheduled Check In fouse check: Oct-18 In fouse check: Oct-18		

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號



Sanweizerischer Kallbrierdi

Service suisse d'étalormagé

Servizio evizzoro di tarabura

Swiss Calibration Service

Accreditation No.: SCS 0108

s

C

Calibration Laboratory of Schmid & Partner



Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA

Multilateral Agreement for the recognition of caliberation coefficience Glossary:

tissue simulating liquid TSL sensitivity in TSL / NORM x,y,z ConvF N/A not applicable or not measured

### Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless

ac-MR/

- Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010.
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

e) DASY4/5 System Handbook

#### Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented. parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D2450V2-727\_Apr18

Page 2 of 6

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

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

> No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

f (886-2) 2298-0488



#### Measurement Conditions

DASY system configuration, as far as not given on page 1

DASY Version	DASYS	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	da, dy, dz. = 5 mm	
Frequency	2450 MHz = 1 MHz	

#### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 "C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.3 ± 6 %	1.86 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

#### SAR result with Head TSL

SAR averaged over 1 cm <sup>5</sup> (1 g) of Head TSL	Condition	
SAR measured	250 m/W input power	13,3 W/kg.
SAR for nominal Head TSL parameters	hormalized to 1W	52.1 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 250 mW input power	8.16 W/kg

#### **Body TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.5 ± 6 %	2.01 mhc/m = 6 %.
Body TSL temperature change during test	< 0,5 °C	_	

#### SAR result with Body TSL

SAR sveraged over 1 cm <sup>2</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.9 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	50.8 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Bbdy TSL SAR measured	condition 250 mW input power	6.00 W/kg

Certificale No: D2450V2-727\_Apr18

Page B of II

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.

t (886-2) 2299-3279

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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.



#### Appendix (Additional assessments outside the scope of SCS 0108)

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.2 Ω + 2.7 JΩ	
Return Loss	= 25.1 dB	

#### Antenna Parameters with Body TSL

Impiedance, transformed to lead point	51.2 Q + 5.8 Q
Fietum Loss	- 25.0 dB

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.149 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semingid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end capaare added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole emits, because they might bend or the soldered connections near the feedpoint may be damaged.

#### Additional EUT Data

Manufactured by	SPEAG	
Manufactured on	January 09, 2003	

Certificate No: D2450V2+727\_Apr18

Page 4 of 6

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

```
www.tw.sas.com
```



#### **DASY5 Validation Report for Head TSL**

Date: 24.04.2018

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:727

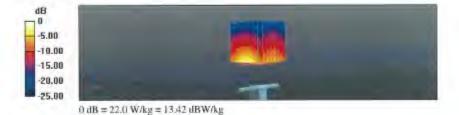
Communication System: UID 0 - CW; Frequency: 2450 MHz Medium parameters used: f = 2450 MHz;  $\sigma = 1.86 \text{ S/m}$ ;  $\epsilon_t = 38.3$ ;  $\rho = 1000 \text{ kg/m}^3$ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.88, 7.88, 7.88); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017 .
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001 ٠
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

#### Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid; dx=5mm, dy=5mm, dz=5mm

Reference Value = 116.0 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 26.7 W/kg SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.16 W/kg Maximum value of SAR (measured) = 22.0 W/kg



Centificate No: D2450V2-727\_April8

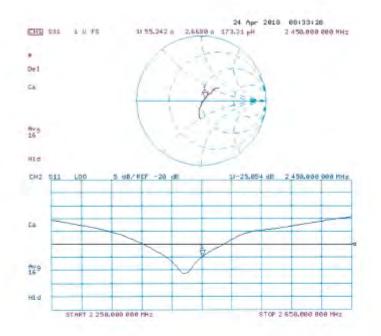
Page 5 of 8

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



#### Impedance Measurement Plot for Head TSL



Certificate No: D2450V2-727\_Apr18

Page 6 of 8

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488

www.tw.sas.com

Member of SGS Group



#### **DASY5 Validation Report for Body TSL**

Date: 24.04.2018

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:727

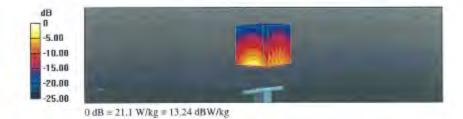
Communication System: UID 0 - CW; Frequency: 2450 MHz Medium parameters used: f = 2450 MHz;  $\sigma = 2.01$  S/m;  $v_r = 52.5$ ;  $\rho = 1000$  kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.01, 8.01, 8.01); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

#### Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 108.4 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 25.5 W/kg

SAR(1 g) = 12.9 W/kg; SAR(10 g) = 6 W/kg Maximum value of SAR (measured) = 21.1 W/kg



Certificate No: D2450V2-727 April8

Page 7 of 8

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.

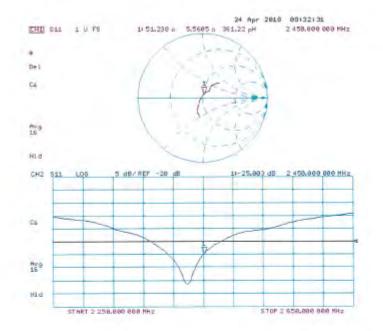
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號 SGS Taiwan Ltd.

```
www.tw.sas.com
```



#### Impedance Measurement Plot for Body TSL



Certificate No: D2450V2-727\_Apr18

Page 8 of 8

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.



coredited by the Swiss Accreditation Service with a swiss Accreditation Service ultilateral Agreement for the re	is one of the signatories	s to the EA certificates	creditation No.: SCS 0108
ient SGS-TW (Audo	n)	Certificate No	D5GHzV2-1023_Jan18
ALIBRATION C	ERTIFICATE		
ibjed	D5GHzV2 - SN:1	023	
Celibration procedure(5)	QA CAL-22.V2		
	Calibration proce	dure for dipole validation kits bet	ween 3-6 GHz
alibration date:	January 25, 2018	-	
be measurements and the unce	nainties with confidence p	ional standards, which realize the physical un robability-are given on the following pages of ry facility, environment temperature (22 ± 3)?	st are pert of the certificate
The measurements and the unce W calibrations have been conduc Calibration Equipment used (M&1	naimilas with confidence p ted in the closed laborator TE (nitical for calibration)	nobability are given on the holowing pages at ny facôly, environment temperature (22 ± 3)*	id and purp of the certificata C and humidity < 70%.
The measurements and the unce W calibrations have been conduc Calibration Equipment used (M&T Primery Standards	nainties with confidence p fed in the closed laborator TE critical for calibration ID #	robability are given on the following pages an ry facility, environment temperature (22 ± 3)* Cal Date (Certificate No.)	st ere pert of the certificata C and trumidity < 70%. Scheduled Calibration
The measurements and the unce W calibrations have been conduc Calibration Equipment used (M&T Primery Standards Power meter NRP	teinities with confidence p ted in the closed laborator TE critical for calibration ID # EN: 104776	robability are given on the following pages at ry (acting, environment temperature (22 ± 3)* Cal Date (Certificate No.) 04-Apr 17 (No. 217-02521/02522)	d and humidity < 70%. E and humidity < 70%. Scheduled Calibration Apr-18
The measurements and the unce Ni calibrations have been conduc Calibration Equipment used (M&T Primary Standards Tower mater NRP Tower setsor NRP 20wer setsor NRP	teinilies with confidence p ted in the closed laborator TE critical for calibration ID a EN: 104778 EN: 104778 EN: 105254	robability are given on the following pages at ry (actity, environment temperature (22 ± 3)* Gal Date (Certificate No.) 04-Apr-17 (No. 217-02521(02522) 04-Apr-17 (No. 217-02521)	d and purp of the certificate G and trumkity < 70%. Scheduled Calibration Apr-18 Apr-18
The measurements and the unce NI calibrations have been conduc Calibration Equipment used (M&T Primary Standards Primer mater NRP Priver sensor NRP-2291 Priver sensor NRP-2291	ted in the closed laborator Te critical for calibration() 1D a SN: 104778 SN: 105244 SN: 105245	robability are given on the following pages at ry (actity, environment temperature (22 ± 3)* Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521(02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522)	d ere pert of the certificate C and trumcity < 70%. Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18
The measurements and the uncer W calibrations have been conduct Calibration Equipment used (M&T Primary Standards Primary S	teinities with confidence p ted in the closed laborator TE entical for calibration) ID a BN: 104778 SN: 105245 SN: 105245 SN: 5058 (20k)	robability are given on the following pages at ry facility, environment temperature (22 ± 3)* Gal Date (Certificate No.) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528)	It are pert of the certificate C and humidity < 70%. <u>Boheduled Calibration</u> Apr-18 Apr-18 Apr-18 Apr-18
The measurements and the unce W calibrations have been conduct Calibration Equipment used (M&T Primary Standards Primary St	teinities with confidence p ted in the closed laborator TE critical for calibration ID # EN: 104778 EN: 105244 EN: 103246 EN: 103246 EN: 10368 (20k) EN: 5047.2 / 06327	robability are given on the following pages at ry facility, environment temperature (22 ± 3)*1 Cal Date (Certificate No.) D4-Apr-17 (No. 217-02521(02522) O4-Apr-17 (No. 217-02521) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528)	5 and trunktly < 70%. E and trunktly < 70%. Scheduled Calibration Apr-18 Apr-18 Apr-18
The measurements and the unce All calibrations have been conduct Calibration Equipment used (M&T Primery Standards Primer meter NRP Primer sensor NRP-291 Primer sensor NRP-291 Primer sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	teinities with confidence p ted in the closed laborator TE entical for calibration) ID a BN: 104778 SN: 105245 SN: 105245 SN: 5058 (20k)	robability are given on the following pages at ry facility, environment temperature (22 ± 3)* Gal Date (Certificate No.) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528)	It ere pert of the certificate C and trumidity < 70%. Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Apr-18
The measurements and the uncert Saltbrations have been conduct Calibration Equipment used (M&T Primary Standards Primary Standards Primary Standards Primary Standards Primary Standards Primary Standards Secondary Standards	teinities with confidence p ted in the closed laborator TE entical for calibration) ID # EN: 104778 EN: 105246 SN: 105246 SN: 5058 (20k) SN: 5058 (20k) SN: 5057 2 / 06327 SN: 507 SN: 601 ID #	robability are given on the following pages at ry facility, environment temperature (22 ± 3)*1 Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521)(02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529) 30-Dec-17 (No. 217-02529) 30-Dec-17 (No. 217-02529) 30-Dec-17 (No. 2X3-3503_Dec17) 25-Oct-17 (No. DAE4-601_Oct17) Check Date (in house)	It and purp of the certificate C and humidity < 70%. Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Cod-18 Scheduled Check
the measurements and the unce W calibrations have been conduct Calibration Equipment used (M&T Primary Standards Primer meter NRP Primer sensor NRP-201 Prover meter Probe EX3DV4 DAE4 Secondary Standards Prover meter EPM-442A	teinities with confidence p ted in the closed laboratory TE critical for calibrationy ID # EN: 104778 EN: 105244 SN: 105246 EN: 103246 SN: 0568 (20k) SN: 5047 2 / 06377 SN: 5047 2 / 06377 SN: 601 ID # SN: 6837480704	robability are given on the following peges at (acity, environment temperature (22 ± 3)/1 04-Apr-17 (No. 217-02521)(02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 07-Apr-17 (No. 217-02529) 07-Apr-17 (No. 217-02529) 00-Dec-17 (No. 217-02529) 00-	It are part of the certificate C and trumidity < 70%. Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Dec-18 Cxd-18 Scheduled Check In house check: Oct-18
the measurements and the unce will calibrations have been conduct Calibration Equipment used (M&T Primery Standards Primer meter NRP Primer meter NRP Primer sensor NRP-291 Primer meter EPM-442A Primer meter EPM-442A Primer sensor NRP 8481A	Initial with confidence p           ted in the closed laborator           TD #           BN: 104778           BN: 103244           SN: 103245           SN: 5035 (20k)           SN: 5047 2 / 08327           SN: 505 (20k)           SN: 5047 2 / 08327           SN: 5057 2 / 08327	Instability are given on the following peges at (acial bate (Certificate No.) D4-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 00-Dec-17 (No. 217-02529) 00-Dec-17	It are pert of the certificate C and trumidity < 70%. <u>Boheduled Calibration</u> Apr-18 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Dec-18 Cid-18 <u>Scheduled Check</u> In house check: Oct-18 In house check: Oct-18
the measurements and the unce III calibrations have been conduct Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-291 Prevention NRP-291 Preventi	tainlikes with confidence p           ted in the closed laboration           TD #           EN: 104778           EN: 103244           SN: 103245           SN: 5058 (20k)	robability are given on the following pages at (acting environment temperature (22 ± 3)** Cal Date (Certificate Na.) 04-Apr-17 (No. 217-02521(02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-18 (No. 217-0258) 07-Apr-19 (No. 2	It ere pert of the certificate C and formidity < 70%. Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Dec-18 Cct-18 Scheduled Check In house check: Occ-18 In house check: Occ-18 In house check: Occ-18
the measurements and the uncal satisfrations have been conduct satisfrations Equipment used (M&T Primary Standards "Went median NRP-291 Power sensor NRP-291 Power sensor NRP-291 Retenoice 20 dB Attenuator Type-N misimatich combination aderence Probe EX3DV4 DAE4 Secondary Standards Power motor EPM-442A Power motor EPM-442A Power sensor HIP 0401A Power sensor HIP 0401A Projects ensor HIP 0401A	Initial with confidence p           ted in the closed laborator           TD #           BN: 104778           BN: 103244           SN: 103245           SN: 5035 (20k)           SN: 5047 2 / 08327           SN: 505 (20k)           SN: 5047 2 / 08327	Instability are given on the following peges at (acial bate (Certificate No.) D4-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 00-Dec-17 (No. 217-02529) 00-Dec-17	It are pert of the certificate C and trumidity < 70%. <u>Boheduled Calibration</u> Apr-18 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Dec-18 Cid-18 <u>Scheduled Check</u> In house check: Oct-18 In house check: Oct-18
The measurements and the unca Saltbrations have been conduct Saltbration Equipment used (M&T Primary Standards Primary Stan	tainlike with confidence p ted in the closed laborator TE official for calibration) ID a EN: 104778 EN: 103245 SN: 5058 (20k) SN: 5058 (20k) SN: 5058 (20k) SN: 5058 (20k) SN: 5058 (20k) SN: 5058 (20k) SN: 5057 (20k) SN: 601 ID # SN: G837460704 SN: US37282783 SN: 100972	Instability are given on the following pages at (acity facility, environment temperature (22 ± 3)*1 Cal Date (Certificate No.) D4-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529) 30-Dec-17 (No. 217-0	It are pert of the certificate C and humidity < 70%. <u>Scheduled Calibration</u> Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Col-18 <u>Scheduled Check</u> In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
The measurements and the uncel All calibrations have been conduct Calibration Equipment used (M&T Primery Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Power meter EPM-442A Power meter EPM-442A Power meter EPM-442A Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 9461A Power sensor HP 9461A Power sensor HP 9461A Power sensor HP 9461A	Ibi Picker         Ibi Picker           Ibi Picker         Ibi Picker <t< td=""><td>robability are given on the following pages at           Cal Date (Certificate Na,)           D4-Apr-17 (No. 217-02521)(02522)           D4-Apr-17 (No. 217-02521)           D4-Apr-17 (No. 217-02521)           D4-Apr-17 (No. 217-02521)           D7-Apr-17 (No. 217-02529)           D7-Apr-17 (No. 217-02529)           D9-Dec-17 (No. 217-02529)           D9-Dec-15 (in house check Cd-16)           D7-Dch 15 (in house check Cd-16)</td><td>It ere pert of the certificate C and humidity &lt; 70%. Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Cot-18 Scheduled Check In house check: Oct-18 In house check: Oct-18</td></t<>	robability are given on the following pages at           Cal Date (Certificate Na,)           D4-Apr-17 (No. 217-02521)(02522)           D4-Apr-17 (No. 217-02521)           D4-Apr-17 (No. 217-02521)           D4-Apr-17 (No. 217-02521)           D7-Apr-17 (No. 217-02529)           D7-Apr-17 (No. 217-02529)           D9-Dec-17 (No. 217-02529)           D9-Dec-15 (in house check Cd-16)           D7-Dch 15 (in house check Cd-16)	It ere pert of the certificate C and humidity < 70%. Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Cot-18 Scheduled Check In house check: Oct-18 In house check: Oct-18
The measurements and the unce W calibrations have been conduc Calibration Equipment used (M&1	Ibi R         closed laborator           ID R         BN: 104778           BN: 104778         BN: 103244           SN: 103245         SN: 5058 (20k)           SN: 5058 (20k)         SN: 5058 (20k)           SN: 5058 (20k)         SN: 5047 2 / 08327           SN: 5047 2 / 08327         SN: 5047 2 / 08327           SN: 5047 2 / 08327         SN: 5047 2 / 08327           SN: 5047 2 / 08327         SN: 5047 2 / 08327           SN: 5047 2 / 083748070M         SN: 0837282783           SN: 0837282783         SN: MY41192317           SN: 106972         SN: 106972           SN: 106973806865         Name	Instability are given on the following pages at (acity facility, environment temperature (22 ± 3)*1 Cal Date (Certificate No.) D4-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529) 30-Dec-17 (No. 217-0	It ere pert of the certificate C and humidity < 70%. Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Cot-18 Scheduled Check In house check: Oct-18 In house check: Oct-18

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.

Company's sole 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,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號



Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich. Switzerland



Schweizerischer Kelibriertienst Service subse d'ataionnage Servizio evizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

S

C

S

Accretized by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates Gloseon

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x.y.z.
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless. Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Additional Documentation:

e) DASY4/5 System Handbook

#### Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna. connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%

Certificate No: D5GHzV2-1023 \_lan18

Page 2 of 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.

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

> No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

```
www.tw.sas.com
```



#### Measurement Conditions

DARV

DASY Version	DASY5	V52,10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	T0 mm	with Spacer
Zoom Scan Resolution	dx. dy = 4.0 mm, dz = 1,4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz	

#### Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	38.0	4.68 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.3 ± 6 %	4.50 mha/m ± 6 %
Head TSL temperature change during lest	<0.5 ℃	-	-

#### SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7:72 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	77.3 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	constition 100 mW input power	2.22 W/kg

Certilicate No: D5GHzV2-1023\_Jan18

Page 3 of 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.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.



#### Head TSL parameters at 5300 MHz

The following parameters and calculations were applied

Temperature	Permittivity	Conductivity
22.0 °C	35.9	4.76 mho/m
(22.0 ± 0.2) °C	35.2 ± 6 %	4.60 mho/m ± 6 %
< 0.5 °C	-	-
	22.0 °C (22.0 ± 0.2) °C	22.0 °C 35.9 (22.0 ± 0.2) °C 35.2 ± 6 %

#### SAR result with Head TSL at 5300 MHz

SAR averaged over 1 cm <sup>o</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	80.9 W / kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 100 mW input power	2.32 W/kg

## Head TSL parameters at 5600 MHz

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.8 ± 6 %	4.90 mhaim ± 6 %
Head TSL temperature change during test	< 0.5 °C	+	+

#### SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.19 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	81.9 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL SAR measured	condition	2.34 W/kg

Certilicate No: D5GHzV2-1023\_Jan18

Page 4 of 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.

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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

f (886-2) 2298-0488



#### Head TSL parameters at 5800 MHz

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.5±6%	5.11 mho/m ±⊚≋
Head TSL temperature change during test	< 0.5 °C	(text)	-

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW Input power	7.90 W/kg
SAR for nominal Head TSL parameters	WI of besilemon	79.0 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 100 mW input power	2,25 W/kg

Centificate No: D5GHzV2-1023\_Jan18

Page 5 of 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.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488



#### Body TSL parameters at 5200 MHz

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.3±6%	5.41 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		-

#### SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	70.9 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL SAR measured	condition 100 mW input power	2.00 W/kg

#### Body TSL parameters at 5300 MHz

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.42 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47 1 ± 6 %	5.54 mho/m = 6 %
Body TSL temperature change during test	< 0.5 °C	-	

#### SAR result with Body TSL at 5300 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.34 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	72.9 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL SAR messured	condition 100 mW input power	2.06 W/kg

Certificate No: D5GHzV2-1023\_Jan18

Page 6 of 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.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_ad\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

f (886-2) 2298-0488



#### Body TSL parameters at 5600 MHz

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.6±6%	5.94 mha/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	-mark	

#### SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.81 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	77.6 W/kg ± 19.9 % (k=2)
Contraction transmission and some processing		
	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL SAR measured	condition 100 mW input power	2.19 W/kg

#### Body TSL parameters at 5800 MHz

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mhoim
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.2 ± 6 %	6.22 mha/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	-	

#### SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.46 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	74.1 W/kg ± 19.9 % (k=2)
and the share the share the top	-	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL	condition	s anna -
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL SAR measured	condition 100 mW input power	2.07 W/kg

Certificate No: D5GHzV2-1023, Jan18

Page 7 of 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.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format 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 induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

f (886-2) 2298-0488



## Appendix (Additional assessments outside the scope of SCS 0108)

## Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	50.1 Ω - 8.1 jΩ	
Return Loss	- 21.9 dB	

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	50.5 Ω - 2,3 βλ
Return Loss	- 32.7 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	53.9 Ω - 0.7 jΩ
Return Loss	- 28.4 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.3 Ω + 2.6 jΩ
Return Loss	- 25.1 dB

## Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	49.8 Ω - 6.9 jΩ.
Return Loss	- 23.2 dB

## Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to leed point	50.9 Ω - 0.9 jΩ
Return Loss	- 37.9 dB

## Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	56.0 Ω + 0.5 jΩ
Return Loss	- 24,9 dB

## Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to leed point	56.6 Ω + 2.3 μΩ
Return Loss	- 23.7 dB

Certificate No: D5GHzV2-1023\_Jan18

Page 8 of 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.

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.



#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 ns
Electrical Delay (one direction)	1.10211a

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### **Additional EUT Data**

Manufactured by	SPEAG
Manufactured on	February 05, 2004

Certificate No: D5GHzV2-1023\_Jan18

Page 9 of 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.

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488

www.tw.sas.com

Member of SGS Group



#### **DASY5 Validation Report for Head TSL**

Date: 25.01.2018

Test Laboratory; SPEAG, Zurich, Switzerland

## DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1023

Communication System: UID 0 - CW/ Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz Medium parameters used: f = 5200 MHz;  $\sigma = 4.5$  S/m;  $\epsilon_c = 36.3$ ; p = 1000 kg/m<sup>2</sup>. Medium parameters used: f = 5300 MHz; o = 4.6 S/m; z, = 36.2; p = 1000 kg/m<sup>2</sup> Medium parameters used: f = 5600 MHz; o = 4.9 S/m; c, = 35.8; p = 1000 kg/m Medium parameters used: f = 5800 MHz;  $\sigma = 5.11$  S/m;  $e_r = 35.5$ ;  $\rho = 1000$  kg/m<sup>2</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(5.75, 5.75, 5.75); Calibrated: 30.12,2017, . ConvF(5.5, 5.5, 5.5); Calibraud: 30.12.2017; ConvF(5.05, 5.05, 5.05); Calibrated: 30.12.2017. ConvF(4.96, 4,96, 4,96); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electromics: DAE4 Sn601; Calibrated: 26.10.2017.
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 70.47 V/m; Power Drift = -0.04 dB Peak SAR (estrapolated) = 27.5 W/kg SAR(1 g) = 7.72 W/kg; SAR(10 g) = 2.22 W/kg Maximum value of SAR (measured) = 17.7 W/kg.

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm\_dz=1.4mm Reference Value = 74.63 V/m; Power Drift = 40.06 dB Peak SAR (extrapolated) = 29.6 W/kg SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.32 W/kg Maximum value of SAR (measured) = 18.6 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4rum, dy=4mm, dz=1.4mm Reference Value = 70.79 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 31,5 W/kg SAR(1 g) = 8.19 W/kg; SAR(10 g) = 2.34 W/kg Maximum value of SAR (measured) = 19.6 W/kg

Certificate Nor D5GHzV2-1023\_Jan18

Page 10 of 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.

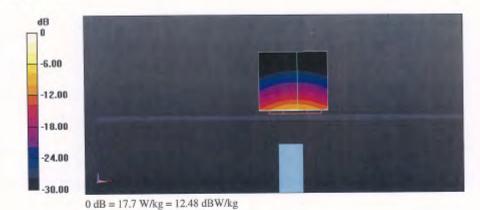
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司



Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 69.22 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 31.2 W/kg SAR(1 g) = 7.9 W/kg; SAR(10 g) = 2.25 W/kg Maximum value of SAR (measured) = 19.0 W/kg



Certificate No: D5GHzV2-1023\_Jan18

Page 11 of 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.

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

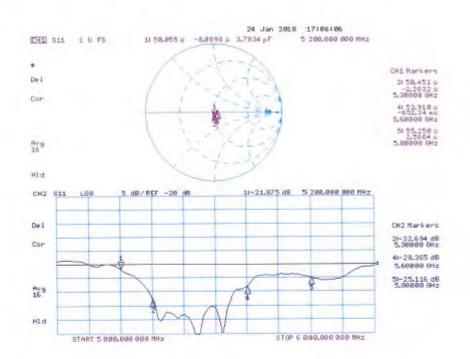
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488



#### Impedance Measurement Plot for Head TSL



Certificate No: D5GHzV2-1023\_Jan18

Page 12 of 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.

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

```
www.tw.sas.com
```



#### **DASY5 Validation Report for Body TSL**

Date: 23.01.2018

Test Laboratory: SPEAG, Zurich, Switzerland

## DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1023

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz Medium parameters used: f = 5200 MHz;  $\sigma = 5.41 \text{ S/m}$ ;  $\epsilon_c = 47.3$ ;  $\rho = 1000 \text{ kg/m}^3$ . Medium parameters used: f = 5300 MHz;  $\sigma = 5.54$  S/m;  $v_r = 47.1$ ; p = 1000 kg/m<sup>2</sup>. Medium parameters used: f = 5600 MHz;  $\sigma = 5.94 \text{ S/m}$ ;  $e_r = 46.6$ ;  $p = 1000 \text{ kg/m}^3$ . Medium parameters used: f = 5800 MHz; σ = 6.22 S/m; ε<sub>r</sub> = 46.2; ρ = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(5,35, 5.35, 5.35); Calibrated: 30.12.2017. ConvF(5.15, 5.15, 5.15); Calibrated: 30.12.2017, ConvF(4.65, 4.65, 4.65); Calibrated: 30.12.2017, ConvF(4.53, 4.53, 4.53); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52,10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 66.00 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 26.4 W/kg SAR(1 g) = 7.14 W/kg; SAR(10 g) = 2 W/kg Maximum value of SAR (measured) = 16.8 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1,4mm Reference Value = 65:19 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 28.4 W/kg SAR(1 g) - 7.34 W/kg; SAR(10 g) = 2.06 W/kg Maximum value of SAR (measured) = 17.6 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 66.21 V/m; Power Drift = -0.09 dB Peak SAR (extrapolated) = 32.8 W/kg SAR(1 g) = 7.81 W/kg; SAR(10 g) = 2.19 W/kg Maximum value of SAR (measured) = 19.1 W/kg

Certificate No: D5GHzV2-1023\_Jan18

Page 13 dl 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.

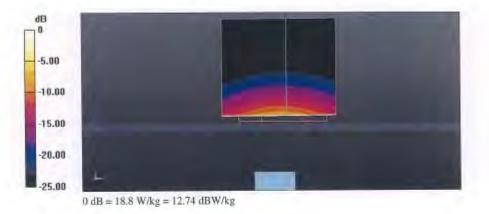
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms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

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

```
www.tw.sas.com
```



Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 64.05 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 32.3 W/kg SAR(1 g) = 7.46 W/kg; SAR(10 g) = 2.07 W/kg Maximum value of SAR (measured) = 18.8 W/kg



Certificate No: D5GHzV2-1023\_Jan18

Page 14 of 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.

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<sup>90</sup>天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

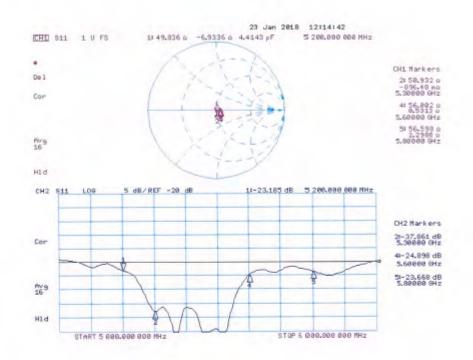
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd.

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

```
www.tw.sas.com
```



#### Impedance Measurement Plot for Body TSL



Certificate No: D5GHzV2-1023\_Jan18

Page 15 of 15

## - End of report -

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

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

t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488

```
www.tw.sas.com
```

Member of SGS Group