

TEST REPORT

Based On SGS EMC Test Report No. :MH/2018/80192

Applicant : Advantech Co., Ltd

Address : No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.

Manufacturer : Advantech Co., Ltd

Address : No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.

Equipment Under Test (EUT) :

Name : Computer

Brand Name : Advantech

Model No.: DS-200GB-T0A1E

Added Model(s) : Kingston Creek HXXXXXXXXXXXXXXXXX, DS-200GB-U5A1E, DS-200GB-U4A1E, DS200GBXXXXXXXX (X=0~9, A~Z, -, *, /)

Standards:

EN 55032 : 2015+AC:2016-07	AS/NZS CISPR 32:2015
EN 55011 : 2009+A1:2010	EN 61000-6-3 : 2007+A1:2011+AC:2012
CISPR 16-2-1 : 2014	CISPR 16-2-3 : 2016
EN 61000-3-2 : 2014	EN 61000-3-3 : 2013
EN 55024 : 2010+A1:2015	EN 61000-6-1 : 2007
IEC 61000-4-2 : 2008	IEC 61000-4-3 : 2006+A1:2007+A2:2010
IEC 61000-4-4 : 2012	IEC 61000-4-5 : 2014+A1:2017
IEC 61000-4-6 : 2013	IEC 61000-4-8 : 2009
IEC 61000-4-11 : 2004+A1:2017	

In the configuration tested, the EUT complied with the standards specified above.

Date of Sample Receipt : Aug. 29, 2019

Date of Test : Sep. 19 ~ 20, 2019

Date of Issue : Oct. 09, 2019

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.

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Tested By:

David Lee

Date

Oct. 09, 2019

David Lee (Engineer)

Approved By

Eddy Cheng

Date

Oct. 09, 2019

Eddy Cheng (Asst. Supervisor)

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Revision History

Revision	Description	Issue Date	Remark
00	Original.	Sep. 26, 2018	MH/2018/80192
01	See the following note Rev.(01)	Oct. 09, 2019	MH/2019/80136

Note:

Rev.(01):

1. Applicant adds keypart (CPU) to re-test. According to EMC technical Judgement, these variations could affect EMC characteristic, perform full test.
2. Remove Model : DS-200GB-U5A1E, DS-200GB-T0A1E and Kingston Creek H.
3. Add Model : DS-200GB-U4A1E, DS200GBXXXXXX (X=0~9, A~Z, -, *, /). The variant description is written in chapter 1.1.
4. Use model Kingston Creek H tested, Kingston Creek H body identical to other model samples, based on manufacturer's market segmentation.
5. Applicant changes model numbers as per customer requested.

	Original	Modified
Model No.	Kingston Creek H	DS-200GB-T0A1E
Added Model(s)	Kingston Creek H, DS-200GB-U5A1E, DS-200GB-U5A1E, DS-200GB-T0A1E, DS-200GB-T0A1E	Kingston Creek H, DS-200GB-U5A1E, DS-200GB-U4A1E, DS200GBXXXXXX (X=0~9, A~Z, -, *, /)

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1. General Description

1.1 General Description of EUT

Name of EUT	: Computer
Brand Name	: Advantech
Model No.(s)	: DS-200GB-T0A1E
Added Model(s)	: Kingston Creek HXXXXXXXXXXXXXXXXX, DS-200GB-U5A1E, DS-200GB-U4A1E, DS200GBXXXXXXXX (X=0~9, A~Z, -, *, /)
Variant Description	: Market segmentation According to EMC technical judgement, above variations could not affect EMC characteristic, no necessary to perform added model spot check test.

1.2 Details of EUT

Power Supply	: AC 100~240V, 50~60Hz
Modes/Function	: Mode 1. EUT Full System + BT Link + Wifi 2.4G Link Mode 2. EUT Full System + BT Link + Wifi 5G Link Mode 3. EUT Full System + BT Standby + Wifi Idle Mode 4. EUT Full System + 2nd heat sink + Worst mode(1~3) Function Rev.01 Mode 5. EUT Change CPU + Full System
Adapter	: Model No.: STD-12090 Supplier : Adapter Technology Co., Ltd. I/P : AC 100-240V, 47~63Hz, 1.6A O/P : DC 12V, 9A
Highest operate description	: 4.20 GHz
Product covered	: 1. Mother Board: Advantech, DS-200 2. Power Supply: Adapter Technology Co., Ltd., STD-12090, 12V@9A 3. CPU: Intel, I5 8400H 4. Memory: Advantech, AQD-SD4U4GN24-SG, DDR4 4GB 2400 5. HDD or SSD: Advantech, SQF-SM4M2-128G-S9C, 128GB 6. WIFI model: Intel, 9560NGW 7. 2.4 / 5.0 GHz External Antenna: Invax, R-AN2450-5701RS Antenna Gain : +2.5 ± 0.7 dBi @ 2400 MHz +1.0 ± 0.7 dBi @ 2500 MHz - 1.5 ± 0.7 dBi @ 4900 MHz +0.5 ± 0.7 dBi @ 5900 MHz (Depends on Product Mechanical Environment) Rev.01 1. CPU: Intel, Celeron G4930E, 2.4GHz

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1.3 Description of Support Units

PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
BT Speaker	Creative	MF8090	YFMF8090245R00855Y
AP	TP-Link	TL-WDR4300	13359808437
Mouse	Logitech	M90	1738HS05FHF8
Keyboard	Logitech	Y-U0009	1243MG0015H
USB 3.0 HDD 01	Transcend	TS1TSJ25M3E	D70569-3491
USB 3.0 HDD 02	Transcend	TS1TSJ25M3E	D69088-0432
USB 3.0 HDD 03	Transcend	TS1TSJ25M3E	D69088-0071
Notebook (EMI)(Win8)	DELL	P37G	H55Z0Z1
Notebook (EMS)	DELL	P56F	287TJ72
Earphone(EMS)	SONY	N/A	N/A
Earphone (RE)	HTC	N/A	N/A
Earphone (HRE.CE)	Songwin	MU-800	N/A
Monitor 01	DELL	P2415Qb	CN-0GTTPW-74261-559-0AUL
Monitor 02	ViewSonic	VX2475Smhl-4K	U92152900125
Monitor 03	ViewSonic	VS12408-NT-1P	R6Q102010432
Monitor(EMS)	DELL	P2415Qb	CN-0GTTPW-74261-559-0AUL
Monitor(EMS)	DELL	P2415Qb	CN-0GTTPW-74261-559-0C5L
Monitor(EMS)	DELL	P2415Qb	CN-0GTTPW-74261-559-0A9L
Monitor(EMS)	DELL	P2415Qb	CN-OCGDGY-74445-4AU-252L
Monitor 01 (RE)	ASUS	MX27U	H5LMRS055326
Monitor 02 (RE)	ViewSonic	VP2780-4K	U8K164900003
Monitor 03 (RE)	ViewSonic	VP2780-4K	U8K164900168
Terminal (EMI)	N/A	N/A	N/A

Support Equipment Used in Tested Cable

Cable Type	Core	Length	Shielding/Non-shielding
HDMI cable	N/A	1.8m	Shielding
Display cable*2	N/A	1.8m	Shielding
RJ45 cable	N/A	>10m	Non-shielding
USB cable*2	N/A	1.8m	Shielding
USB cable*3	N/A	1m	Shielding
Audio cable	N/A	1.8m	Non-shielding
RS 232 cable	N/A	1.5m	Shielding

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1.4 Operation Procedure

Mode 1, 2

1. Let EUT connect to the transformer and turn it on.
2. EUT Full System, HDMI, DP, Mini DP, Earphone, Ethernet, Mouse, Keyboard, HDD, RS232 Terminal.
3. Wifi 2.4G or 5G Link, BT Link.
4. Execute the test and start testing.

Mode 3

1. Let EUT connect to the transformer, press the black button to power up, and turn it on.
2. EUT Full System, HDMI, DP, Mini DP, Earphone, Ethernet, Mouse, Keyboard, HDD, RS232 Terminal.
3. Wifi Idle, Standby.
4. Execute the test and start testing.

Mode 4

1. Change the 2nd heat sink.
2. Let EUT connect to the transformer, press the black button to power up, and turn it on.
3. EUT Full System, HDMI, DP, Mini DP, Earphone, Ethernet, Mouse, Keyboard, HDD, RS232 Terminal.
4. Worst mode (1~3) Function.
5. Execute the test and start testing.

Rev.01

Mode 5

1. Let EUT connect to the transformer, press the black button to power up, and turn it on.
2. EUT Full System, HDMI, DP, Mini DP, Earphone, Ethernet, Mouse, Keyboard, HDD, RS232 Terminal.
3. Execute BurnIn Test.exe.
4. Start testing.

1.5 The worst case of the EUT

EUT will be carried out in the worst case as followings:

Worst Case :

CE, ISN, Below / Above RE worst case :

Mode 5. EUT Change CPU + Full System

1.6 Modification List

No modification by SGS Taiwan Electronics & Communication Laboratory.

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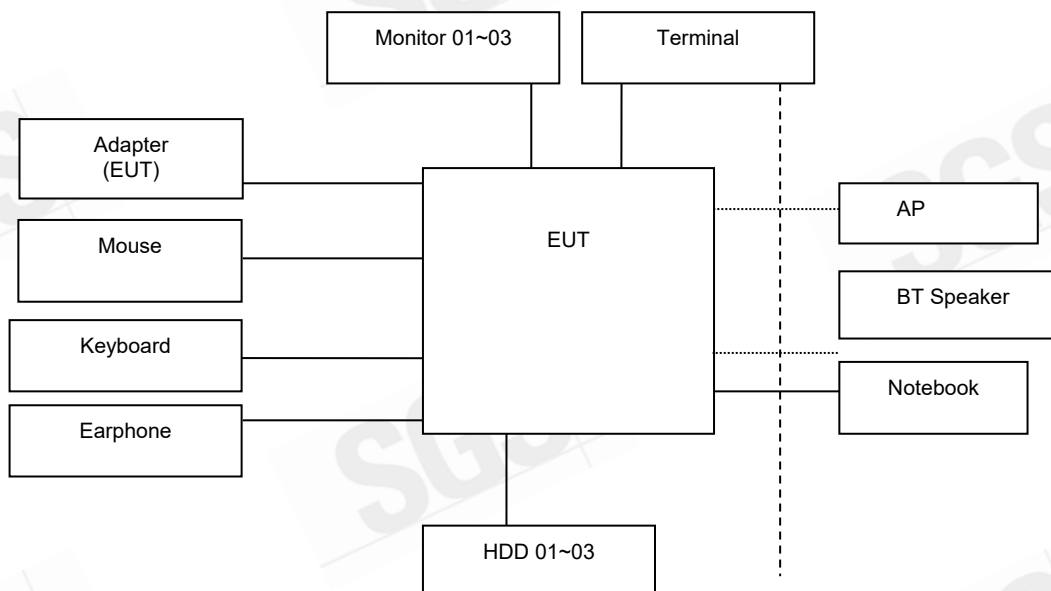
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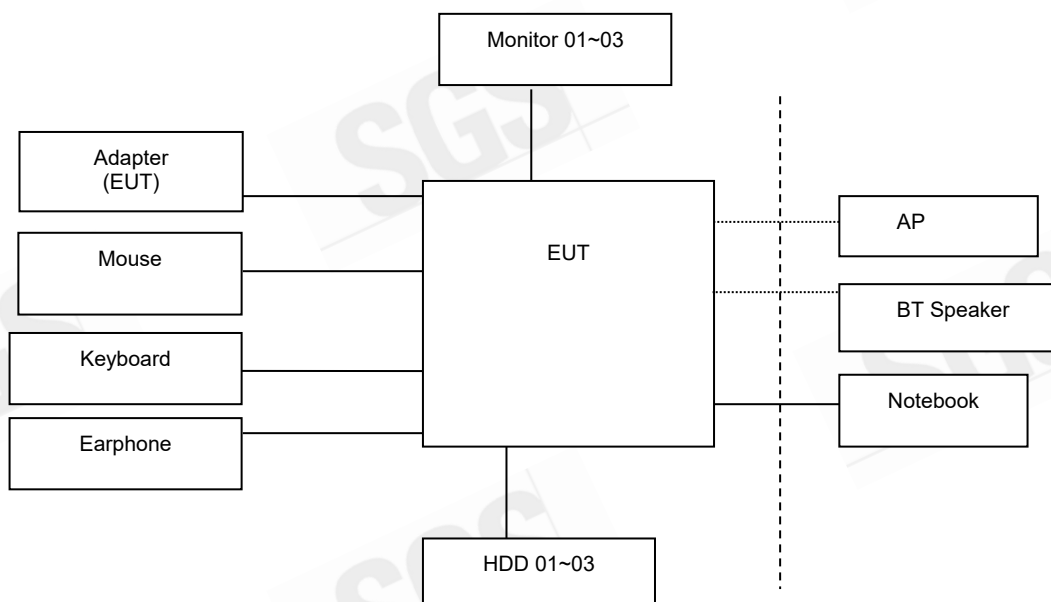
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1.7 Configuration of Tested System

EMI



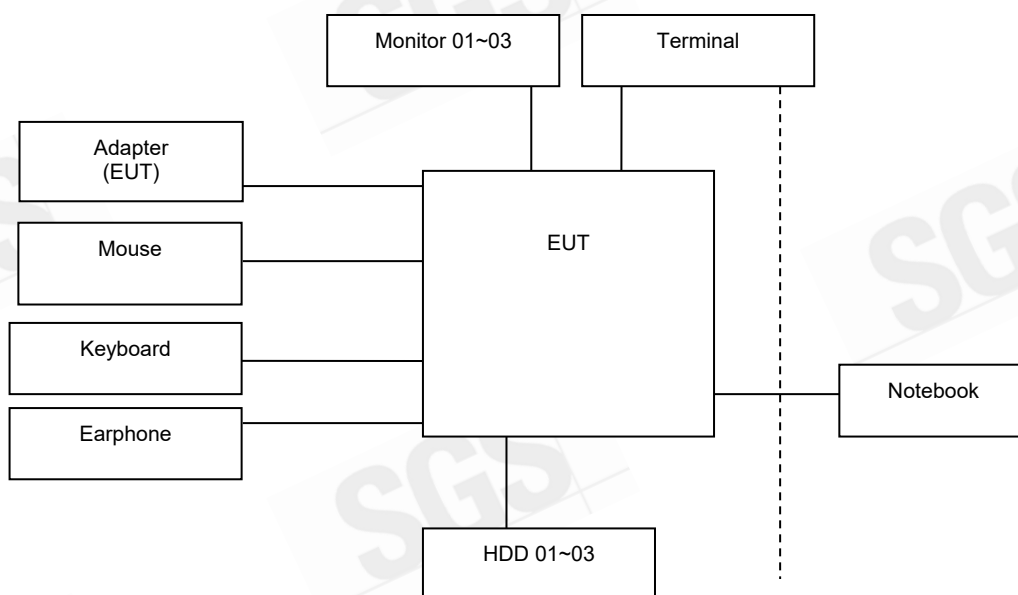
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Mode 5



1.8 Accessories Cable List

Cable Type	Core	Length	Shielding/Non-shielding
DC power cable	Near EUT	1m	Non-shielding
AC power cable	N/A	1.8m	Non-shielding

1.9 Decision Rules of Results

Reported measurement data comply with EN 55032: 2015+AC: 2016-07
Measurement instrumentation uncertainty shall not be taken into account in the determination of compliance.

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1.10 Summary of Results

Highest Emission					
Standard	Test Type	Result	Phase/Pol.	Frequency(MHz)	Margin(dB)
EN 55032:2015+AC:2016-07 AS/NZS CISPR 32:2015 EN 55011:2009+A1:2010 EN 61000-6-3 : 2007+A1:2011+AC:2012 CISPR 16-2-1 : 2014 CISPR 16-2-3 :2016	Conducted Emission	PASS	Line	0.3940	-10.08 (QP)
			Neutral	0.4060	-7.70 (QP)
		ISN	PASS	1G	1.5700
	Radiated Emission	PASS	Hor.	532.7270	-2.42 (QP)
EN 61000-3-2 2014	Harmonic current emissions	PASS	Meet the requirements		
EN 61000-3-3:2013	Voltage changes, voltage fluctuations & flicker	PASS	Meet the requirements		

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Highest Emission					
Standard	Test Type	Result	Phase/Pol.	Frequency(MHz)	Margin(dB)
EN 55032:2015+AC:2016-07 AS/NZS CISPR 32:2015 EN 55011:2009+A1:2010 EN 61000-6-3 : 2007+A1:2011+AC:2012 CISPR 16-2-1 : 2014 CISPR 16-2-3 :2016	Conducted Emission	PASS	Line	0.4540	-11.15 (AVG)
			Neutral	0.4540	-15.34 (AVG)
		ISN	PASS	1G	23.1300
	Radiated Emission	PASS	Hor.	805.4100	-2.05 (QP)
EN 61000-3-2 2014	Harmonic current emissions	PASS	Meet the requirements		
EN 61000-3-3:2013	Voltage changes, voltage fluctuations & flicker	PASS	Meet the requirements		

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Immunity (EN 55024:2010+A1:2015)					
Standard	Test Type	Result	Level	Performance Criteria	Test Judgment
IEC 61000-4-2:2008	ESD test	PASS	Air Level 3 Contact :Level 2	Criterion B	Meets the requirements of Performance Criterion B
IEC 61000-4-3: 2006+A1:2007+A2:2010	RS Test	PASS	Level :2	Criterion A	Meets the requirements of Performance Criterion A
IEC 61000-4-4:2012	EFT Test	PASS	AC Power: Level 2 DC Power: Level 2 Signal :Level 2	Criterion B	Meets the requirements of Performance Criterion A
IEC 61000-4-5: 2014+A1:2017	Surge Test	PASS	AC Power: Level 3 DC Power: Level 2 Signal :Level 2	Criterion B	Meets the requirements of Performance Criterion A
IEC 61000-4-6:2013	CS Test	PASS	AC Power: Level 2 DC Power: Level 2 Signal :Level 2	Criterion A	Meets the requirements of Performance Criterion A
IEC 61000-4-8:2009	PMF test	PASS	Level 1	Criterion A	Meets the requirements of Performance Criterion A
IEC 61000-4-11: 2004+A1:2017	DIP Test	PASS	Class 2	Criterion C/C/B	Meets the requirements of Performance Criterion C/A/A

EN 61000-6-1

Immunity (EN 61000-6-1: 2007)					
Standard	Test Type	Result	Level	Performance Criteria	Test Judgment
IEC 61000-4-2 : 2008	ESD test	PASS	Air Level 3 Contact :Level 2	Criterion B	Meets the requirements of Performance Criterion B
IEC 61000-4-3 : 2006+ A1: 2007+A2:2010	RS test	PASS	Level :2	Criterion A	Meets the requirements of Performance Criterion A
IEC 61000-4-4 : 2012	EFT Test	PASS	AC Power: Level 2 DC Power: Level 2 Signal :Level 2	Criterion B	Meets the requirements of Performance Criterion A
IEC 61000-4-5 : 2014+A1:2017	Surge Test	PASS	AC Power: Level 3 DC Power: Level 2	Criterion B	Meets the requirements of Performance Criterion A
IEC 61000-4-6 : 2013	CS Test	PASS	AC Power: Level 2 DC Power: Level 2 Signal :Level 2	Criterion A	Meets the requirements of Performance Criterion A
IEC 61000-4-8 : 2009	PMF Test	PASS	Level 2	Criterion A	Meets the requirements of Performance Criterion A
IEC 61000-4-11 : 2004+A1:2017	Interruptions, Dips Test	PASS	Class 2	Criterion C/B/B/C	Meets the requirements of Performance Criterion C/A/A/A

1.11 Reporting Statements of Conformity

The conformity statement in this report is based solely on the test results, measurement uncertainty is excluded.

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2. EMISSION

EN 55032 : 2015+AC:2016-07
AS/NZS CISPR 32:2015
EN 55011:2009+A1:2010
EN 61000-6-3 : 2007+A1:2011+AC:2012

2.1 Test Results

EN 55032 Class B	Result
Conducted Emission	PASS
Radiated Emission	PASS

2.2 Limit

Maximum permissible level of Line Conducted Emission

FREQUENCY (MHz)	Class A(dBuV)		Class B(dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note : The lower limit shall apply at the transition frequency.

Maximum permissible level of Common Mode Conducted Emission (Telecommunication Ports)

CLASS A

FREQUENCY (MHz)	Voltage Limit(dBuV)		Current Limit(dBuA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	97 - 87	84 - 74	53 - 43	40 - 30
0.5 - 30.0	87	74	43	30

CLASS B

FREQUENCY (MHz)	Voltage Limit(dBuV)		Current Limit(dBuA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	84 - 74	74 - 64	40 - 30	30 - 20
0.5 - 30.0	74	64	30	20

Note : The lower limit shall apply at the transition frequency.

Maximum permissible level of Radiated Emission measured at 10 meter

FREQUENCY (MHz)	Class A(dBuV/m)	Class B(dBuV/m)
	Quasi - peak	Quasi - peak
30 - 230	40	30
230 - 1000	47	37

Note : The lower limit shall apply at the transition frequency.

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Maximum permissible level of Radiated Emission measured at 3 meter

FREQUENCY (MHz)	Class A(dBuV/m)	Class B(dBuV/m)
	Quasi - peak	Quasi - peak
30 - 230	50	40
230 - 1000	57	47

Note : The lower limit shall apply at the transition frequency.

Limits above 1 GHz**Limits for radiated disturbance of Class A ITE at a measurement distance of 3m**

Frequency range GHz	Average Limit dB(μV/m)	Peak Limit dB(μV/m)
1 to 3	56	76
3 to 6	60	80

Note : The lower limit applies at the transition frequency.

Limits for radiated disturbance of Class B ITE at a measurement distance of 3m

Frequency range GHz	Average Limit dB(μV/m)	Peak Limit dB(μV/m)
1 to 3	50	70
3 to 6	54	74

Note : The lower limit applies at the transition frequency.

Requirements for radiated emissions from FM receivers

Frequency range (MHz)	Measurement				Harmonics
	Facility	Distance m	Detector type / Bandwidth	Fundamental	
30 to 230	OATS/SAC	10	Quasi Peak / 120 kHz	50	42
230 to 300	OATS/SAC				42
300 to 1000	OATS/SAC				46
30 to 230	OATS/SAC	3	Quasi Peak / 120 kHz	60	52
230 to 300	OATS/SAC				52
300 to 1000	OATS/SAC				56

These relaxed limits apply only to emissions at the fundamental and harmonic frequencies of the LO. Signals at all other frequencies shall be compliant with the limits

Note : SAC : Semi Anechoic Chamber
OATS : Open Area Test Site

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2.3 Methods and Procedures

Standard	Edition	Description
EN 55032	2015 +AC:2016-07	Electromagnetic compatibility of multimedia equipment -Emission requirements

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2.4 Test of Conducted Emission & ISN

2.4.1 Test Instruments

SGS Conducted Emission HWAYA Conducted Room No.B EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI 3	101300	2017/11/1	2018/10/31
Coaxial Cable	EMC Instruments Corp.	EMC5D-BM-BM-3000	1401004	2018/5/25	2019/5/24
LISN	TESEQ	NNB 51	36061	2018/2/26	2019/2/25
Pulse Limiter	R&S	ESH3Z2	102099	2018/6/8	2019/6/7
LISN	TESEQ	NNB 51	36062	2018/3/30	2019/3/29
ISN	TESEQ	ISN T800	30842	2018/8/9	2019/8/8
ISN	TESEQ	ISN ST08	36271	2017/9/30	2018/9/29
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.

SGS Taiwan LTD. Electronics & Communication Laboratory
No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
Measurement Uncertainty of Conducted Emission
Expanded uncertainty U_{lab} (K=2) of conducted emission is 2.25 dB
Expanded uncertainty U_{lab} (K=2) of ISN conducted emission is 2.57 dB
Theory values uncertainty U_{cispr} 16-4-2:2011+A1:2014 (K=2) of AC mains Conducted Emission is 3.44dB
Theory values uncertainty U_{cispr} 16-4-2:2011+A1:2014 (K=2) of ISN Conducted Emission is 4.59dB

Rev.01

SGS Conducted Emission HWAYA Conducted Room No.A EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI 3	101311	2019/7/2	2020/7/1
Coaxial Cables	EMC Instruments Corp	EMCRG58-BM-BM-3000	160812	2019/8/12	2020/8/11
LISN	Schwarzbeck	NSLK 8127	8127-648	2019/7/12	2020/7/11
Pulse Limiter	Narda S.T.S.	PMM PL01	1110X30602	2019/8/12	2020/8/11
LISN	Schwarzbeck	NSLK 8128	NSLK8128-300	2019/9/16	2020/9/15
ISN	TESEQ	ISN T800	30842	2019/4/23	2020/4/22
ISN	TESEQ	ISN ST08	36271	2018/10/4	2019/10/3
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.

SGS Taiwan LTD. Electronics & Communication Laboratory
No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)
Measurement Uncertainty of Conducted Emission
Expanded uncertainty U_{lab}(K=2) of conducted emission is 2.25 dB
Expanded uncertainty U_{lab}(K=2) of ISN conducted emission is 2.57 dB
Theory values uncertainty U_{cispr} 16-4-2 :2011+A1_2014 (K=2) of AC mains conducted Emission is 3.44dB
Theory values uncertainty U_{cispr} 16-4-2 :2011+A1_2014 (K=2) of ISN conducted Emission is 4.59dB

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2.4.2 EUT Operating Condition

Environment :

Temperature	Humidity
25 °C	63 %RH

Test setup : Please refer to photo of CE, ISN testing set-up

2.4.3 Measurement Level Calculation

Factor = LISN insertion loss + Cable loss + Pulse Limiter Insertion Loss

Measurement Level = Reading Level + Factor

Over (Margin) = Measurement Level – Limit

2.4.4 Measurement Level Calculation

Factor = ISN insertion loss + Cable loss + Pulse Limiter Insertion Loss

Measurement Level = Reading Level + Factor

Over (Margin) = Measurement Level – Limit

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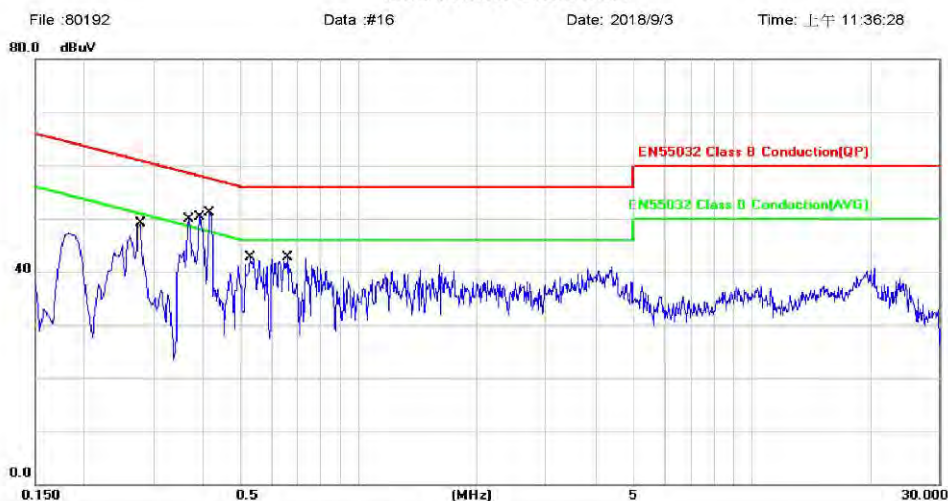
2.4.5 Measurement Data(CE)

Model No.:DS-200GB-T0A1E

Mode_1_L

Site : Conduction Room Phase: L1 Temperature: 25 °C
Limit: EN55032 Class B Conduction(QP) Power: AC 230V/50Hz Humidity: 63 %
Mode: Mode_1
Note:

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.2780	25.45	19.87	45.32	60.88	-15.56	QP	
2		0.2780	15.75	19.87	35.62	50.88	-15.26	AVG	
3		0.3700	27.49	20.01	47.50	58.50	-11.00	QP	
4		0.3700	12.66	20.01	32.67	48.50	-15.83	AVG	
5 *		0.3940	27.85	20.05	47.90	57.98	-10.08	QP	
6		0.3940	11.38	20.05	31.43	47.98	-16.55	AVG	
7		0.4180	25.58	20.09	45.67	57.49	-11.82	QP	
8		0.4180	6.80	20.09	26.89	47.49	-20.60	AVG	
9		0.5300	19.08	20.21	39.29	56.00	-16.71	QP	
10		0.5300	7.10	20.21	27.31	46.00	-18.69	AVG	
11		0.6580	19.28	20.10	39.38	56.00	-16.62	QP	
12		0.6580	11.29	20.10	31.39	46.00	-14.61	AVG	

*:Maximum data x:Over limit l:over margin

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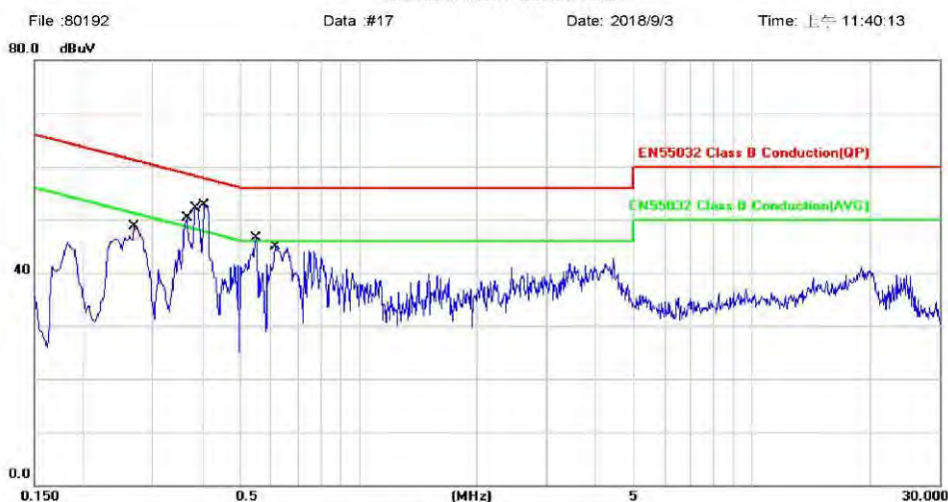
Mode_1_N

Site : Conduction Room
Limit: EN55032 Class B Conduction(QP)
Mode: Mode_1
Note:

Phase: N
Power: AC 230V/50Hz

Temperature: 25 °C
Humidity: 63 %

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2700	25.51	19.84	45.35	61.12	-15.77	QP	
2		0.2700	15.39	19.84	35.23	51.12	-15.89	AVG	
3		0.3660	27.64	20.00	47.64	58.59	-10.95	QP	
4		0.3660	11.35	20.00	31.35	48.59	-17.24	AVG	
5		0.3860	29.40	20.03	49.43	58.15	-8.72	QP	
6		0.3860	13.75	20.03	33.78	48.15	-14.37	AVG	
7 *		0.4060	29.97	20.06	50.03	57.73	-7.70	QP	
8		0.4060	14.50	20.06	34.56	47.73	-13.17	AVG	
9		0.5500	23.28	20.18	43.46	56.00	-12.54	QP	
10		0.5500	9.59	20.18	29.77	46.00	-16.23	AVG	
11		0.6140	19.78	20.13	39.91	56.00	-16.09	QP	
12		0.6140	6.30	20.13	26.43	46.00	-19.57	AVG	

*:Maximum data x:Over limit !:over margin

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Rev.01

Mode_5_L

Site : Conduction Room A

Phase: L1

Temperature: 21 °C

Limit: EN 55032 Class B Conduction(QP)

Power: AC 230V/50Hz

Humidity: 67 %

Mode: Mode 5

Note:

Conducted Emission

File :MH-2019-80136

Data :#2

Date: 2019/9/19

Time: 下午 09:21:25



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.4540	40.05	0.13	40.18	56.80	-16.62	QP	
2	*	0.4540	35.52	0.13	35.65	46.80	-11.15	AVG	
3		0.5580	35.79	0.14	35.93	56.00	-20.07	QP	
4		0.5580	32.12	0.14	32.26	46.00	-13.74	AVG	
5		0.9460	33.71	0.23	33.94	56.00	-22.06	QP	
6		0.9460	27.09	0.23	27.32	46.00	-18.68	AVG	
7		1.2940	33.70	0.25	33.95	56.00	-22.05	QP	
8		1.2940	22.83	0.25	23.08	46.00	-22.92	AVG	
9		1.6940	34.99	0.25	35.24	56.00	-20.76	QP	
10		1.6940	21.14	0.25	21.39	46.00	-24.61	AVG	
11		4.0660	37.01	0.31	37.32	56.00	-18.68	QP	
12		4.0660	25.60	0.31	25.91	46.00	-20.09	AVG	

*:Maximum data x:Over limit !:over margin

File :MH-2019-80136\Data :#2

Page: 1

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Mode_5_N

Site : Conduction Room A

Phase: N

Temperature: 21 °C

Limit: EN 55032 Class B Conduction(QP)

Power: AC 230V/50Hz

Humidity: 67 %

Mode: Mode 5

Note:

Conducted Emission

File :MH-2019-80136

Data :#1

Date: 2019/9/19

Time: 下午 09:17:59



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	40.17	0.02	40.19	66.00	-25.81	QP	
2		0.1500	24.77	0.02	24.79	56.00	-31.21	AVG	
3		0.4540	36.17	0.11	36.28	56.80	-20.52	QP	
4 *		0.4540	31.35	0.11	31.46	46.80	-15.34	AVG	
5		0.5540	32.04	0.13	32.17	56.00	-23.83	QP	
6		0.5540	27.19	0.13	27.32	46.00	-18.68	AVG	
7		2.5940	33.68	0.25	33.93	56.00	-22.07	QP	
8		2.5940	22.58	0.25	22.83	46.00	-23.17	AVG	
9		3.2060	28.78	0.26	29.04	56.00	-26.96	QP	
10		3.2060	12.89	0.26	13.15	46.00	-32.85	AVG	
11		4.3500	34.39	0.28	34.67	56.00	-21.33	QP	
12		4.3500	24.01	0.28	24.29	46.00	-21.71	AVG	

*:Maximum data x:Over limit l:over margin

File :MH-2019-80136\Data :#1

Page: 1

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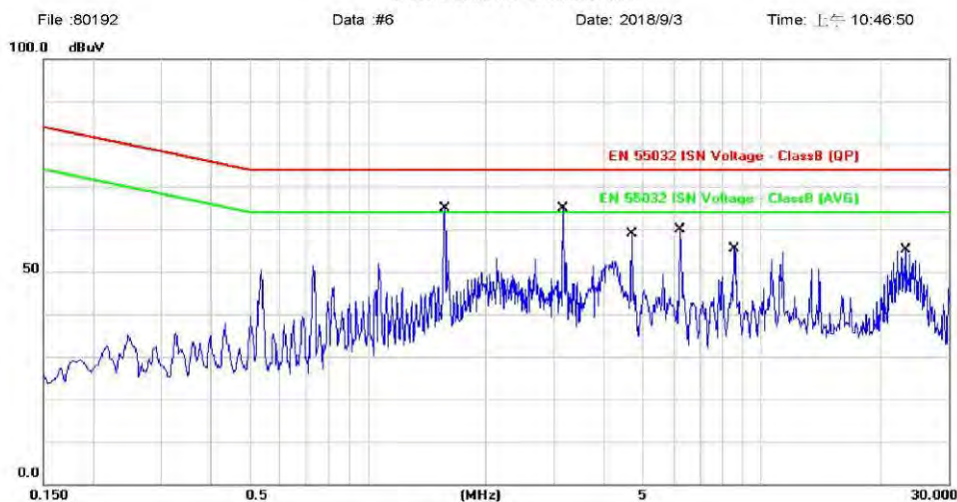
2.4.6 Measurement Data(ISN)

Model No.:DS-200GB-T0A1E

Mode_1_10M

Site : Conduction Room Phase: Temperature: 25 °C
Limit: EN 55032 ISN Voltage - ClassB (QP) Power: AC 230V/50Hz Humidity: 63 %
Mode: Mode_1
Note: LAN PORT-10Mbps 10% 250ms

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		1.5700	41.76	20.16	61.92	74.00	-12.08	QP	
2		1.5700	22.76	20.16	42.92	64.00	-21.08	AVG	
3		3.1420	40.94	20.26	61.20	74.00	-12.80	QP	
4		3.1420	23.04	20.26	43.30	64.00	-20.70	AVG	
5		4.7100	35.91	19.98	55.89	74.00	-18.11	QP	
6		4.7100	17.61	19.98	37.59	64.00	-26.41	AVG	
7		6.2500	32.43	19.91	52.34	74.00	-21.66	QP	
8		6.2500	18.83	19.91	38.74	64.00	-25.26	AVG	
9		8.5860	28.23	19.91	48.14	74.00	-25.86	QP	
10		8.5860	14.86	19.91	34.77	64.00	-29.23	AVG	
11		23.4900	34.28	20.17	54.45	74.00	-19.55	QP	
12 *		23.4900	33.66	20.17	53.83	64.00	-10.17	AVG	

*:Maximum data x:Over limit !:over margin

File :80192\Date :#6

Page: 1

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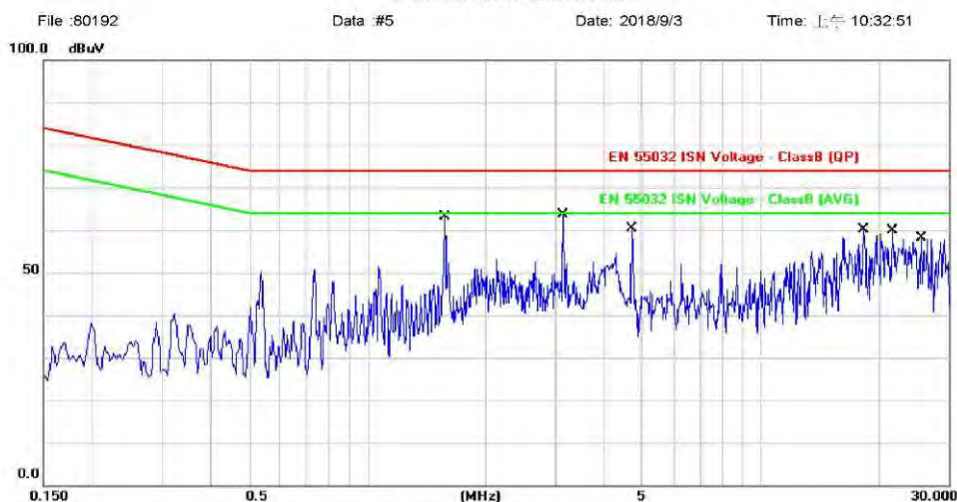
Mode_1_100M

Site : Conduction Room
Limit: EN 55032 ISN Voltage - ClassB (QP)
Mode: Mode_1
Note: LAN PORT-100Mbps 10% 250ms

Phase:
Power: AC 230V/50Hz

Temperature: 25 °C
Humidity: 63 %

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		1.5740	42.45	20.16	62.61	74.00	-11.39	QP	
2		1.5740	28.19	20.16	48.35	64.00	-15.65	AVG	
3		3.1420	43.14	20.26	63.40	74.00	-10.60	QP	
4		3.1420	28.10	20.26	48.36	64.00	-15.64	AVG	
5		4.7140	38.28	19.98	58.26	74.00	-15.74	QP	
6		4.7140	24.42	19.98	44.40	64.00	-19.60	AVG	
7		18.2420	39.16	20.13	59.29	74.00	-14.71	QP	
8 *		18.2420	36.40	20.13	56.53	64.00	-7.47	AVG	
9		21.6620	38.47	20.18	58.65	74.00	-15.35	QP	
10		21.6620	35.67	20.18	55.85	64.00	-8.15	AVG	
11		25.6940	36.71	20.18	56.89	74.00	-17.11	QP	
12		25.6940	32.34	20.18	52.52	64.00	-11.48	AVG	

*:Maximum data x:Over limit !:over margin

File :80192\Data :#5

Page: 1

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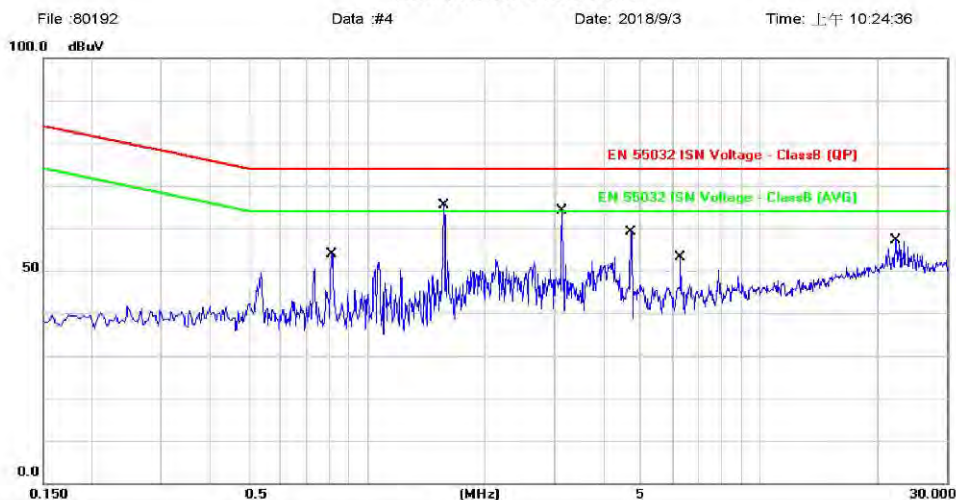
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Mode_1_1G

Site : Conduction Room Phase: Temperature: 25 °C
Limit: EN 55032 ISM Voltage - ClassB (QP) Power: AC 230V/50Hz Humidity: 63 %
Mode: Mode_1
Note: LAN PORT-1Gbps 10% 250ms

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.8140	27.60	19.92	47.52	74.00	-26.48	QP	
2		0.8140	26.60	19.92	46.52	64.00	-17.48	AVG	
3		1.5700	44.86	20.16	65.02	74.00	-8.98	QP	
4 *		1.5700	38.34	20.16	58.50	64.00	-5.50	AVG	
5		3.1500	40.33	20.26	60.59	74.00	-13.41	QP	
6		3.1500	31.36	20.26	51.62	64.00	-12.38	AVG	
7		4.7140	38.38	19.98	58.36	74.00	-15.64	QP	
8		4.7140	31.00	19.98	50.98	64.00	-13.02	AVG	
9		6.2980	24.91	19.91	44.82	74.00	-29.18	QP	
10		6.2980	17.33	19.91	37.24	64.00	-26.76	AVG	
11		22.2700	33.74	20.18	53.92	74.00	-20.08	QP	
12		22.2700	30.64	20.18	50.82	64.00	-13.18	AVG	

*:Maximum data x:Over limit !:over margin

File :80192\Data :#4

Page: 1

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Rev.01

Mode_5_10M

Site : Conduction Room A
Limit: EN 55032 AAN - Class B (QP)
Mode: Mode 5
Note: LAN Port 10Mbps;10%;250ms

Phase:
Power: AC 230V/50Hz

Temperature: 21 °C
Humidity: 67 %

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		1.0540	46.65	9.81	56.46	74.00	-17.54	QP	
2		1.0540	42.72	9.81	52.53	64.00	-11.47	AVG	
3		2.0900	47.44	9.74	57.18	74.00	-16.82	QP	
4		2.0900	36.24	9.74	45.98	64.00	-18.02	AVG	
5		3.1460	48.23	9.72	57.95	74.00	-16.05	QP	
6		3.1460	36.35	9.72	46.07	64.00	-17.93	AVG	
7 *		4.0620	55.44	9.70	65.14	74.00	-8.86	QP	
8		4.0620	44.73	9.70	54.43	64.00	-9.57	AVG	
9		5.0020	45.51	9.69	55.20	74.00	-18.80	QP	
10		5.0020	34.02	9.69	43.71	64.00	-20.29	AVG	
11		10.0000	44.37	9.68	54.05	74.00	-19.95	QP	
12		10.0000	31.60	9.68	41.28	64.00	-22.72	AVG	

*:Maximum data x:Over limit !:over margin

File :MH-2019-80136\Data :#5

Page: 1

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Mode_5_100M

Site : Conduction Room A
Limit: EN 55032 AAN - Class B (QP)
Mode: Mode 5
Note: LAN Port 100Mbps;10%;250ms

Phase:
Power: AC 230V/50Hz

Temperature: 21 °C
Humidity: 67 %

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		1.5740	45.63	9.77	55.40	74.00	-18.60	QP	
2		1.5740	32.14	9.77	41.91	64.00	-22.09	AVG	
3		1.8180	50.21	9.75	59.96	74.00	-14.04	QP	
4		1.8180	44.85	9.75	54.60	64.00	-9.40	AVG	
5		2.1220	49.90	9.74	59.64	74.00	-14.36	QP	
6		2.1220	42.05	9.74	51.79	64.00	-12.21	AVG	
7		3.0460	51.52	9.72	61.24	74.00	-12.76	QP	
8		3.0460	40.38	9.72	50.10	64.00	-13.90	AVG	
9		4.0620	56.10	9.70	65.80	74.00	-8.20	QP	
10		4.0620	45.90	9.70	55.60	64.00	-8.40	AVG	
11		23.1300	50.44	10.00	60.44	74.00	-13.56	QP	
12 *		23.1300	48.52	10.00	58.52	64.00	-5.48	AVG	

*:Maximum data x:Over limit l:over margin

File :MH-2019-80136\Data :#4

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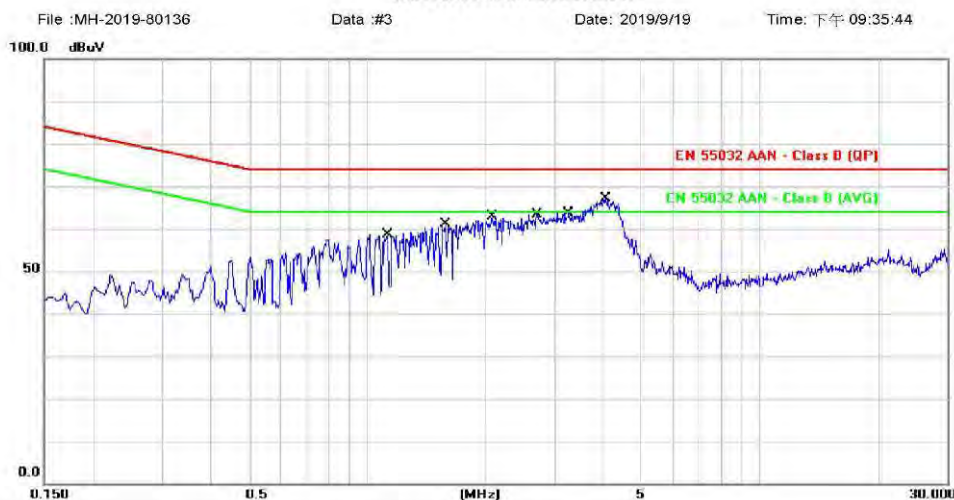
Mode_5_1G

Site : Conduction Room A
Limit: EN 55032 AAN - Class B (QP)
Mode: Mode 5
Note: LAN Port 1Gbps;10%;250ms

Phase:
Power: AC 230V/50Hz

Temperature: 21 °C
Humidity: 67 %

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		1.1260	45.73	9.80	55.53	74.00	-18.47	QP	
2		1.1260	30.62	9.80	40.42	64.00	-23.58	AVG	
3		1.5780	47.07	9.77	56.84	74.00	-17.16	QP	
4		1.5780	32.62	9.77	42.39	64.00	-21.61	AVG	
5		2.0900	49.77	9.74	59.51	74.00	-14.49	QP	
6		2.0900	38.99	9.74	48.73	64.00	-15.27	AVG	
7		2.7100	51.59	9.73	61.32	74.00	-12.68	QP	
8		2.7100	41.48	9.73	51.21	64.00	-12.79	AVG	
9		3.2740	52.35	9.71	62.06	74.00	-11.94	QP	
10		3.2740	45.74	9.71	55.45	64.00	-8.55	AVG	
11		4.0540	55.50	9.70	65.20	74.00	-8.80	QP	
12 *		4.0540	47.10	9.70	56.80	64.00	-7.20	AVG	

*:Maximum data x:Over limit l:over margin

File :MH-2019-80136\Data :#3

Page: 1

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2.5 Test of Radiated Emission

2.5.1 Test Instruments

Below 1GHz

SGS Radiated Below 1GHz HWAYA 10m EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI 7	100950	2017/12/12	2018/12/11
EMI Test Receiver	R&S	ESCI 3	101343	2018/1/31	2019/1/30
Broadband Antenna	SCHWAZBECK	VULB9168	9168-628	2017/9/8	2018/9/7
Broadband Antenna	SCHWAZBECK	VULB9168	9168-629	2017/9/12	2018/9/11
Pre Amplifier	EMC Instruments Corp.	EMC330	980178	2018/3/31	2019/3/30
Pre Amplifier	EMC Instruments Corp.	EMC330	980179	2018/3/31	2019/3/30
Coaxial Cable	EMC Instruments	EMCCFD400-NM-N M	150917	2017/9/18	2018/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-N M	150919	2017/9/18	2018/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-N M	150820	2017/9/18	2018/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-N M	150918	2017/9/18	2018/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-N M	150821	2017/9/18	2018/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-N M	150822	2017/9/18	2018/9/17
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Site NSA	Chance Most	10M Chamber	10M SAC	2017/12/31	2018/12/30
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.

SGS Taiwan LTD. Electronics & Communication Laboratory
 No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
 Measurement Uncertainty of Radiated Emission
 Expanded uncertainty U_{lab} (K=2) of radiated emission is 4.09 dB. (30MHz ~ 1000MHz)
 Theory values uncertainty U_{cispr} 16-4-2:2011+A1:2014 (K=2) of radiated emission is 5.22 dB. (30MHz ~ 1000MHz)

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Above 1GHz

SGS Radiated Above 1GHz HWAYA 966A EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	R&S	FSV 40	101419	2018/5/15	2019/5/14
EMI Test Receiver	R&S	ESR 7	101459	2018/2/21	2019/2/20
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA9120D673	2017/10/16	2018/10/15
Pre Amplifier	EMC Instruments Corp.	EMC012645B	980216	2018/3/31	2019/3/30
Coaxial Cable	JUNFLOW	MWX221-NMSNM S	J0778929	2018/4/23	2019/4/22
Coaxial Cable	Huber+Suhner	SUCCOFLEX 104PEA	30255/4PEA	2018/4/23	2019/4/22
Coaxial Cable	EMC Instruments	EMC104-SM-SM	140927	2018/4/23	2019/4/22
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	MY 2651/2	2018/6/5	2019/6/4
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	MY 2153/2	2018/6/5	2019/6/4
Controller	MF	MF-7802	N.C.R.	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Site VSWR	SGS	966 Chamber A	SAC-A	2018/1/12	2019/1/11
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) Measurement Uncertainty of Radiated Emission Expanded uncertainty (k=2) of radiated emission measurement is 5.05 dB. (1-6GHz) Theory values uncertainty Ucispr 16-4-2:2011+A1:2014 (K=2) of radiated emission measurement is 5.18 dB.(1-6GHz)					

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Rev.01
Below 1GHz

SGS Radiated_Below_1GHz HWAYA 10m EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI 7	100924	2018/10/23	2019/10/22
EMI Test Receiver	R&S	ESCI 3	101343	2019/2/1	2020/1/31
Broadband Antenna	SCHWAZBECK	VULB9168	9168-628	2019/9/9	2020/9/8
Broadband Antenna	SCHWAZBECK	VULB9168	9168-629	2019/9/9	2020/9/8
Pre Amplifier	EMC Instruments Corp.	EMC330	980178	2019/3/31	2020/3/30
Pre Amplifier	EMC Instruments Corp.	EMC330	980179	2019/3/31	2020/3/30
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150917	2018/9/18	2019/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150919	2018/9/18	2019/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150820	2018/9/18	2019/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150918	2018/9/18	2019/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150821	2018/9/18	2019/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150822	2018/9/18	2019/9/17
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Site NSA	Chance Most	10M Chamber	10M SAC	2018/12/31	2019/12/30
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.

SGS Taiwan LTD. Electronics & Communication Laboratory
No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)
Measurement Uncertainty of Radiated Emission
Expanded uncertainty U_{lab} (K=2) of radiated emission is 4.09 dB. (30MHz ~ 1000MHz)
Theory values uncertainty U_{cispr} 16-4-2:2011+A1:2014 (K=2) of radiated emission is 5.22 dB. (30MHz ~ 1000MHz)

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Above 1GHz

SGS Radiated Above 1GHz HWAYA 966A EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	R&S	FSV 40	101419	2019/5/22	2020/5/21
EMI Test Receiver	R&S	ESR 7	101459	2019/2/25	2020/2/24
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA9120D285	2019/4/30	2020/4/29
Pre Amplifier	EMC Instruments Corp.	EMC012645B	980216	2019/4/25	2020/4/24
Coaxial Cable	JUNFLOW	MWX221-NMSNM S	J0778929	2019/4/23	2020/4/22
Coaxial Cable	Huber+Suhner	SUCCOFLEX 104PEA	30255/4PEA	2019/4/23	2020/4/22
Coaxial Cable	EMC Instruments	EMC104-SM-SM	140927	2019/4/23	2020/4/22
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	MY 2651/2	2019/6/5	2020/6/4
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	MY 2153/2	2019/6/5	2020/6/4
Controller	MF	MF-7802	N.C.R.	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Site VSWR	SGS	966 Chamber A	SAC-A	2019/1/12	2020/1/11
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.) Measurement Uncertainty of Radiated Emission Expanded uncertainty (k=2) of radiated emission measurement is 5.05 dB. (1-6GHz) Theory values uncertainty Ucispr 16-4-2:2011+A1:2014 (K=2) of radiated emission measurement is 5.18 dB.(1-6GHz)					

2.5.2 EUT Operating Condition

Environment :

Temperature	Humidity
24 °C	66 %RH

Test setup : Please refer to photo of RE testing set-up

2.5.3 Measurement Level Calculation

Correction Factor = Antenna Factor + Cable loss- Amplifier Gain
 Measurement Level = Reading Level + Correction Factor
 Over (Margin) = Measurement Level – Limit

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2.5.4 Measurement Data

Below 1GHz

Model No.:DS-200GB-T0A1E

Mode_1_H

Site: SGS 10m Chamber
Limit: EN55032 Class B 10M Radiation
Mode: Mode_1
Note:

Polarization: **Horizontal**
Power: AC 230V/50Hz
Distance: 10m

Temperature: 24 °C
Humidity: 66 %

Radiated Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measurement dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	!	188.4400	38.25	-13.59	24.66	30.00	-5.34	QP	
2		199.7500	38.08	-14.18	23.90	30.00	-6.10	QP	
3	*	532.7270	39.48	-4.90	34.58	37.00	-2.42	QP	
4		631.4000	33.07	-3.00	30.07	37.00	-6.93	QP	
5		642.0700	31.67	-2.83	28.84	37.00	-8.16	QP	
6		800.1800	29.46	-0.10	29.36	37.00	-7.64	QP	
7	!	932.2690	32.79	1.57	34.36	37.00	-2.64	QP	

*: Maximum data x: Over limit !: over margin

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Mode_1_V

Site: SGS 10m Chamber
Limit: EN55032 Class B 10M Radiation
Mode: Mode_1
Note:

Polarization: **Vertical**
Power: AC 230V/50Hz
Distance: 10m

Temperature: 24 °C
Humidity: 66 %

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		140.5800	35.55	-11.93	23.62	30.00	-6.38	QP	
2		193.7300	36.67	-14.08	22.59	30.00	-7.41	QP	
3		377.5800	38.09	-8.22	29.87	37.00	-7.13	QP	
4	*	532.7400	36.93	-5.04	31.89	37.00	-5.11	QP	
5		630.4300	30.53	-3.06	27.47	37.00	-9.53	QP	
6		805.0100	28.18	0.27	28.45	37.00	-8.55	QP	
7	!	932.2720	30.36	1.36	31.72	37.00	-5.28	QP	

*:Maximum data x:Over limit !:over margin

File: MH-2018-80192\Data: #7

Page: 1

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Mode_4_H

Site: SGS 10m Chamber
Limit: EN55032 Class B 10M Radiation
Mode: Mode_4
Note:

Polarization: **Horizontal**
Power: AC 230V/50Hz
Distance: 10m

Temperature: 24 °C
Humidity: 66 %

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	!	189.0800	39.40	-13.67	25.73	30.00	-4.27	QP	
2	!	199.7500	39.54	-14.18	25.36	30.00	-4.64	QP	
3	*	532.4600	37.78	-4.91	32.87	37.00	-4.13	QP	
4		631.4000	32.53	-3.00	29.53	37.00	-7.47	QP	
5		800.1800	30.52	-0.10	30.42	37.00	-6.58	QP	
6	!	933.0700	31.18	1.60	32.78	37.00	-4.22	QP	

!: Maximum data x: Over limit !: over margin

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Page: 1

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Mode_4_V

Site: SGS 10m Chamber
Limit: EN55032 Class B 10M Radiation
Mode: Mode_4
Note:

Polarization: **Vertical**
Power: AC 230V/50Hz
Distance: 10m

Temperature: 24 °C
Humidity: 66 %

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment				
			dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		140.5800	34.98	-11.93	23.05	30.00	-6.95	QP	
2	*	218.1800	39.59	-14.30	25.29	30.00	-4.71	QP	
3		377.2600	37.68	-8.23	29.45	37.00	-7.55	QP	
4		630.4300	31.73	-3.06	28.67	37.00	-8.33	QP	
5		805.0300	28.86	0.27	29.13	37.00	-7.87	QP	
6	!	933.1600	29.69	1.36	31.05	37.00	-5.95	QP	

*: Maximum data x: Over limit !: over margin

File: MH-2018-80192\Data: #11

Page: 1

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Above 1GHz

Model No.:DS-200GB-T0A1E

Mode_1_H

Site: SGS 966 Chamber A

Polarization: **Horizontal**

Temperature: 21 °C

Limit: EN 55032 ClassB Radiation 1G-6G(Peak)

Power: AC 230V/50Hz

Humidity: 71 %

Mode: Mode 1

Distance:

Note:

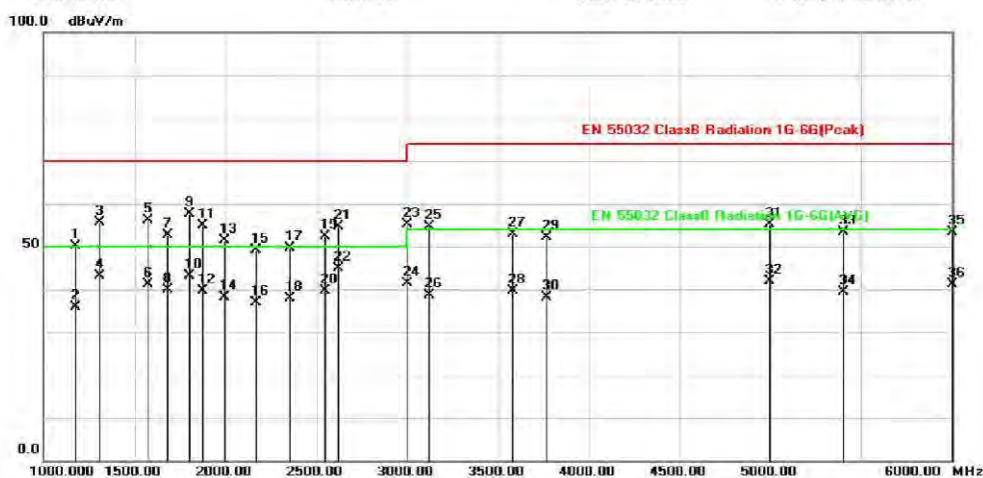
Radiated Emission

File :80192

Data :#6

Date: 2018/9/3

Time: 下午 07:10:10



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		1175.000	70.74	-20.69	50.05	70.00	-19.95	peak	
2		1175.000	56.65	-20.69	35.96	50.00	-14.04	AVG	
3		1310.000	75.55	-19.91	55.64	70.00	-14.36	peak	
4		1310.000	62.96	-19.91	43.05	50.00	-6.95	AVG	
5		1575.000	74.61	-18.45	56.16	70.00	-13.84	peak	
6		1575.000	59.62	-18.45	41.17	50.00	-8.83	AVG	
7		1680.000	70.53	-17.97	52.56	70.00	-17.44	peak	
8		1680.000	57.79	-17.97	39.82	50.00	-10.18	AVG	
9		1800.000	75.03	-17.42	57.61	70.00	-12.39	peak	
10		1800.000	60.59	-17.42	43.17	50.00	-6.83	AVG	
11		1875.000	71.88	-17.07	54.81	70.00	-15.19	peak	
12		1875.000	56.63	-17.07	39.56	50.00	-10.44	AVG	
13		1995.000	67.79	-16.53	51.26	70.00	-18.74	peak	

*:Maximum data x:Over limit l:over margin

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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
14		1995.000	54.77	-16.53	38.24	50.00	-11.76	AVG	
15		2170.000	64.14	-14.95	49.19	70.00	-20.81	peak	
16		2170.000	51.72	-14.95	36.77	50.00	-13.23	AVG	
17		2355.000	63.08	-13.44	49.64	70.00	-20.36	peak	
18		2355.000	51.27	-13.44	37.83	50.00	-12.17	AVG	
19		2550.000	63.66	-11.29	52.37	70.00	-17.63	peak	
20		2550.000	50.85	-11.29	39.56	50.00	-10.44	AVG	
21		2625.000	66.16	-11.42	54.74	70.00	-15.26	peak	
22 *		2625.000	56.25	-11.42	44.83	50.00	-5.17	AVG	
23		3000.000	67.23	-12.10	55.13	70.00	-14.87	peak	
24		3000.000	53.51	-12.10	41.41	50.00	-8.59	AVG	
25		3120.000	66.43	-11.74	54.69	74.00	-19.31	peak	
26		3120.000	50.26	-11.74	38.52	54.00	-15.48	AVG	
27		3585.000	63.08	-10.20	52.88	74.00	-21.12	peak	
28		3585.000	49.83	-10.20	39.63	54.00	-14.37	AVG	
29		3770.000	61.56	-9.36	52.20	74.00	-21.80	peak	
30		3770.000	47.56	-9.36	38.20	54.00	-15.80	AVG	
31		4995.000	62.20	-7.10	55.10	74.00	-18.90	peak	
32		4995.000	48.94	-7.10	41.84	54.00	-12.16	AVG	
33		5400.000	59.76	-6.30	53.46	74.00	-20.54	peak	
34		5400.000	45.57	-6.30	39.27	54.00	-14.73	AVG	
35		6000.000	57.94	-4.60	53.34	74.00	-20.66	peak	
36		6000.000	45.71	-4.60	41.11	54.00	-12.89	AVG	

*:Maximum data x:Over limit f:over margin

File :80192\Data :#6

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Mode_1_V

Site: SGS 966 Chamber A

Polarization: **Vertical**

Temperature: 21 °C

Limit: EN 55032 ClassB Radiation 1G-6G(Peak)

Power: AC 230V/50Hz

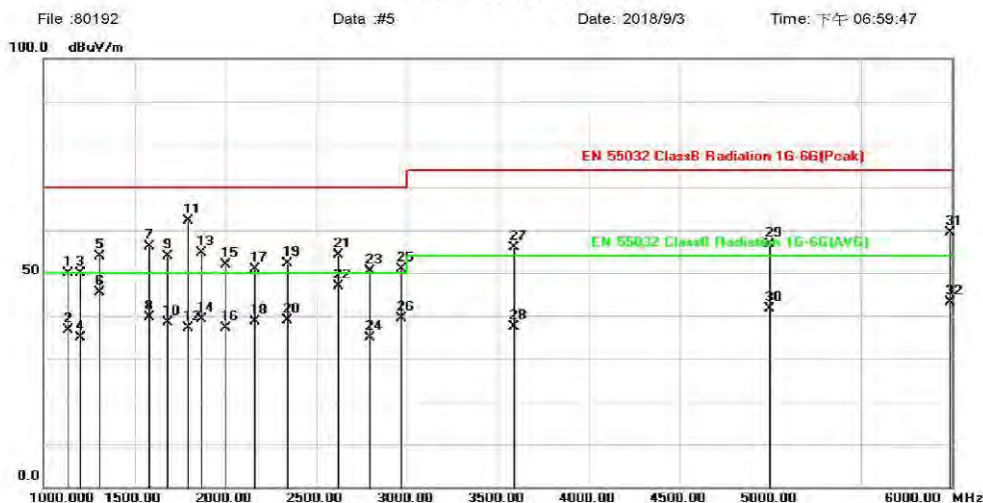
Humidity: 71 %

Mode: Mode 1

Distance:

Note:

Radiated Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1135.000	70.84	-20.91	49.93	70.00	-20.07	peak	
2		1135.000	57.50	-20.91	36.59	50.00	-13.41	AVG	
3		1200.000	70.53	-20.54	49.99	70.00	-20.01	peak	
4		1200.000	55.42	-20.54	34.88	50.00	-15.12	AVG	
5		1310.000	73.86	-19.91	53.95	70.00	-16.05	peak	
6		1310.000	65.41	-19.91	45.50	50.00	-4.50	AVG	
7		1585.000	74.63	-18.41	56.22	70.00	-13.78	peak	
8		1585.000	58.02	-18.41	39.61	50.00	-10.39	AVG	
9		1685.000	71.86	-17.95	53.91	70.00	-16.09	peak	
10		1685.000	56.39	-17.95	38.44	50.00	-11.56	AVG	
11		1795.000	79.48	-17.45	62.03	70.00	-7.97	peak	
12		1795.000	54.66	-17.45	37.21	50.00	-12.79	AVG	
13		1870.000	71.69	-17.10	54.59	70.00	-15.41	peak	

*:Maximum data x:Over limit l:over margin

File :80192\Data :#5

Page: 1

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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
14		1870.000	56.21	-17.10	39.11	50.00	-10.89	AVG	
15		2000.000	68.48	-16.50	51.98	70.00	-18.02	peak	
16		2000.000	53.73	-16.50	37.23	50.00	-12.77	AVG	
17		2160.000	65.95	-15.04	50.91	70.00	-19.09	peak	
18		2160.000	53.56	-15.04	38.52	50.00	-11.48	AVG	
19		2340.000	65.48	-13.46	52.02	70.00	-17.98	peak	
20		2340.000	52.27	-13.46	38.81	50.00	-11.19	AVG	
21		2625.000	65.45	-11.42	54.03	70.00	-15.97	peak	
22 *		2625.000	58.39	-11.42	46.97	50.00	-3.03	AVG	
23		2795.000	62.18	-11.74	50.44	70.00	-19.56	peak	
24		2795.000	46.60	-11.74	34.86	50.00	-15.14	AVG	
25		2970.000	62.83	-12.05	50.78	70.00	-19.22	peak	
26		2970.000	51.40	-12.05	39.35	50.00	-10.65	AVG	
27		3590.000	66.05	-10.18	55.87	74.00	-18.13	peak	
28		3590.000	47.46	-10.18	37.28	54.00	-16.72	AVG	
29		4995.000	63.73	-7.10	56.63	74.00	-17.37	peak	
30		4995.000	48.72	-7.10	41.62	54.00	-12.38	AVG	
31		5990.000	63.92	-4.62	59.30	74.00	-14.70	peak	
32		5990.000	47.65	-4.62	43.03	54.00	-10.97	AVG	

*:Maximum data x:Over limit f:over margin

File :80192\Data :#5

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Mode_4_H

Site: SGS 966 Chamber A

Polarization: **Horizontal**

Temperature: 21 °C

Limit: EN 55032 ClassB Radiation 1G-6G(Peak)

Power: AC 230V/50Hz

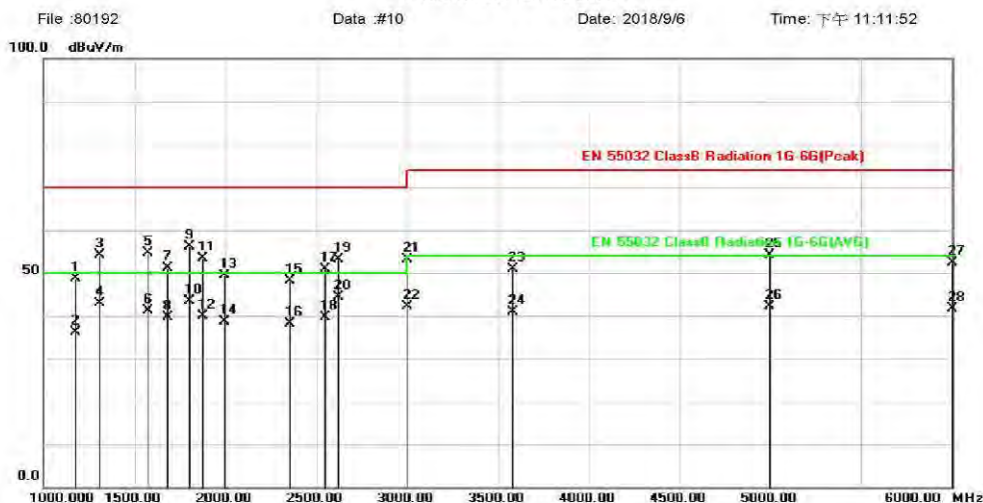
Humidity: 71 %

Mode: Mode 4

Distance:

Note:

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment			Detector	Comment
1		1175.000	69.24	-20.69	48.55	70.00	-21.45	peak	
2		1175.000	56.76	-20.69	36.07	50.00	-13.93	AVG	
3		1310.000	74.05	-19.91	54.14	70.00	-15.86	peak	
4		1310.000	62.74	-19.91	42.83	50.00	-7.17	AVG	
5		1575.000	73.11	-18.45	54.66	70.00	-15.34	peak	
6		1575.000	59.67	-18.45	41.22	50.00	-8.78	AVG	
7		1680.000	69.03	-17.97	51.06	70.00	-18.94	peak	
8		1680.000	57.53	-17.97	39.56	50.00	-10.44	AVG	
9		1800.000	73.53	-17.42	56.11	70.00	-13.89	peak	
10		1800.000	60.86	-17.42	43.44	50.00	-6.56	AVG	
11		1875.000	70.38	-17.07	53.31	70.00	-16.69	peak	
12		1875.000	56.89	-17.07	39.82	50.00	-10.18	AVG	
13		1995.000	65.79	-16.53	49.26	70.00	-20.74	peak	

*:Maximum data x:Over limit l:over margin

File :80192\Data :#10

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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
14		1995.000	55.14	-16.53	38.61	50.00	-11.39	AVG	
15		2355.000	61.58	-13.44	48.14	70.00	-21.86	peak	
16		2355.000	51.66	-13.44	38.22	50.00	-11.78	AVG	
17		2550.000	62.16	-11.29	50.87	70.00	-19.13	peak	
18		2550.000	50.96	-11.29	39.67	50.00	-10.33	AVG	
19		2625.000	64.66	-11.42	53.24	70.00	-16.76	peak	
20 *		2625.000	55.68	-11.42	44.26	50.00	-5.74	AVG	
21		3000.000	65.23	-12.10	53.13	70.00	-16.87	peak	
22		3000.000	54.17	-12.10	42.07	50.00	-7.93	AVG	
23		3585.000	61.08	-10.20	50.88	74.00	-23.12	peak	
24		3585.000	51.06	-10.20	40.86	54.00	-13.14	AVG	
25		4995.000	61.20	-7.10	54.10	74.00	-19.90	peak	
26		4995.000	49.21	-7.10	42.11	54.00	-11.89	AVG	
27		6000.000	56.94	-4.60	52.34	74.00	-21.66	peak	
28		6000.000	46.19	-4.60	41.59	54.00	-12.41	AVG	

*:Maximum data x:Over limit f:over margin

File :80192\Data :#10

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Mode_4_V

Site: SGS 966 Chamber A

Polarization: **Vertical**

Temperature: 21 °C

Limit: EN 55032 ClassB Radiation 1G-6G(Peak)

Power: AC 230V/50Hz

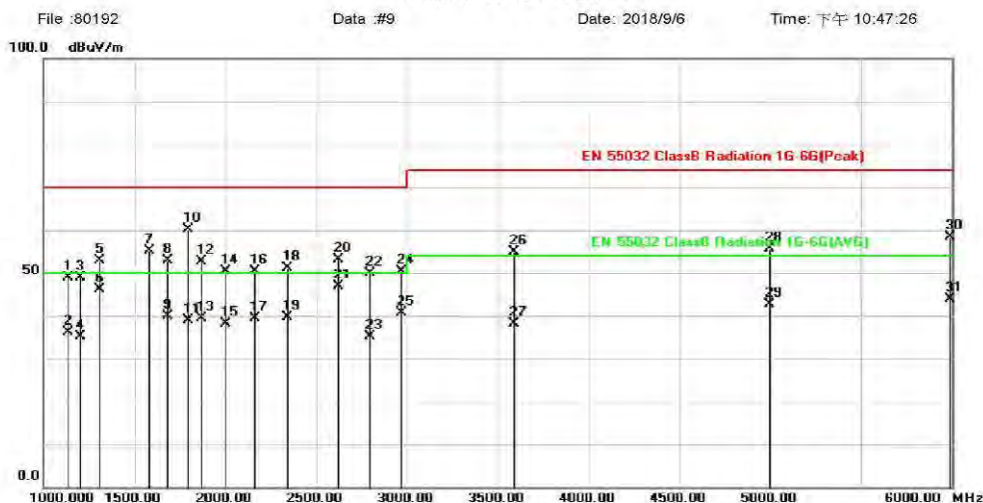
Humidity: 71 %

Mode: Mode 4

Distance:

Note:

Radiated Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1135.000	69.84	-20.91	48.93	70.00	-21.07	peak	
2		1135.000	57.09	-20.91	36.18	50.00	-13.82	AVG	
3		1200.000	69.53	-20.54	48.99	70.00	-21.01	peak	
4		1200.000	55.78	-20.54	35.24	50.00	-14.76	AVG	
5		1310.000	72.86	-19.91	52.95	70.00	-17.05	peak	
6		1310.000	65.94	-19.91	46.03	50.00	-3.97	AVG	
7		1585.000	73.63	-18.41	55.22	70.00	-14.78	peak	
8		1685.000	70.86	-17.95	52.91	70.00	-17.09	peak	
9		1685.000	57.83	-17.95	39.88	50.00	-10.12	AVG	
10		1795.000	77.48	-17.45	60.03	70.00	-9.97	peak	
11		1795.000	56.42	-17.45	38.97	50.00	-11.03	AVG	
12		1870.000	69.69	-17.10	52.59	70.00	-17.41	peak	
13		1870.000	56.45	-17.10	39.35	50.00	-10.65	AVG	

*:Maximum data x:Over limit !:over margin

File :80192\Data :#9

Page: 1

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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dBm	dBuV/m	dBuV/m	dB		
14		2000.000	66.98	-16.50	50.48	70.00	-19.52	peak	
15		2000.000	54.66	-16.50	38.16	50.00	-11.84	AVG	
16		2160.000	65.45	-15.04	50.41	70.00	-19.59	peak	
17		2160.000	54.48	-15.04	39.44	50.00	-10.56	AVG	
18		2340.000	64.48	-13.46	51.02	70.00	-18.98	peak	
19		2340.000	53.11	-13.46	39.65	50.00	-10.35	AVG	
20		2625.000	64.45	-11.42	53.03	70.00	-16.97	peak	
21	*	2625.000	58.30	-11.42	46.88	50.00	-3.12	AVG	
22		2795.000	61.68	-11.74	49.94	70.00	-20.06	peak	
23		2795.000	46.98	-11.74	35.24	50.00	-14.76	AVG	
24		2970.000	62.33	-12.05	50.28	70.00	-19.72	peak	
25		2970.000	52.67	-12.05	40.62	50.00	-9.38	AVG	
26		3590.000	65.05	-10.18	54.87	74.00	-19.13	peak	
27		3590.000	48.36	-10.18	38.18	54.00	-15.82	AVG	
28		4995.000	62.73	-7.10	55.63	74.00	-18.37	peak	
29		4995.000	49.77	-7.10	42.67	54.00	-11.33	AVG	
30		5990.000	62.92	-4.62	58.30	74.00	-15.70	peak	
31		5990.000	48.47	-4.62	43.85	54.00	-10.15	AVG	

*:Maximum data x:Over limit f:over margin

File :80192\Data :#9

Page: 2

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Rev.01

Below 1GHz

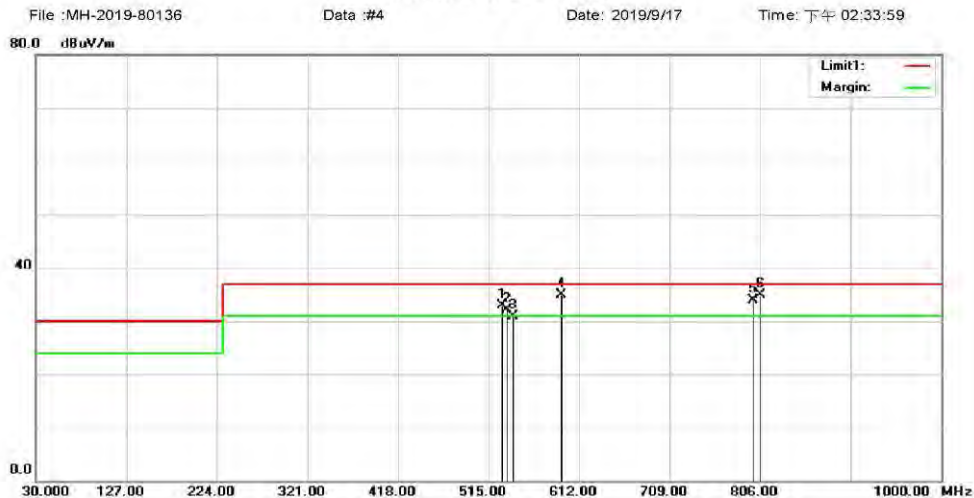
Mode_5_H

Site: SGS 10m Chamber
Limit: EN55032 Class B 10m Radiation
Mode: Mode_5
Note:

Polarization: **Horizontal**
Power: AC 230V/50Hz
Distance: 10m

Temperature: 22 °C
Humidity: 67 %

Radiated Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1	!	529.5500	37.36	-4.52	32.84	37.00	-4.16	QP			
2	!	535.3700	36.53	-4.48	32.05	37.00	-4.95	QP			
3		541.1900	35.30	-4.36	30.94	37.00	-6.06	QP			
4	!	593.4180	37.33	-2.52	34.81	37.00	-2.19	QP			
5	!	799.2100	33.21	0.70	33.91	37.00	-3.09	QP			
6	*	805.4100	34.31	0.64	34.95	37.00	-2.05	QP	136	150	

*:Maximum data x:Over limit !:over margin

File: MH-2019-80136\Data: #4

Page: 1

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Mode_5_V

Site: SGS 10m Chamber
Limit: EN55032 Class B 10m Radiation
Mode: Mode_5
Note:

Polarization: **Vertical**
Power: AC 230V/50Hz
Distance: 10m

Temperature: 22 °C
Humidity: 67 %

Radiated Emission

File: MH-2019-80136 Data: #3 Date: 2019/9/17 Time: 下午 02:33:57



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		30.5000	35.48	-11.95	23.53	30.00	-6.47	QP		
2		147.4900	31.99	-11.30	20.69	30.00	-9.31	QP		
3	*	219.2300	40.85	-14.11	26.74	30.00	-3.26	QP	110	0
4	l	593.4100	36.75	-3.16	33.59	37.00	-3.41	QP		
5		801.2100	29.08	0.40	29.48	37.00	-7.52	QP		
6		815.2400	26.98	0.57	27.55	37.00	-9.45	QP		

*:Maximum data x:Over limit l:over margin

File: MH-2019-80136\Data: #3

Page: 1

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Above 1GHz

Mode_5_H

Site: SGS 966 Chamber A
Limit: EN 55032 Class B 1G-6G(Peak)
Mode: Mode 5
Note:

Polarization: **Horizontal**
Power: AC 230V/50Hz
Distance: 3m

Temperature: 22 °C
Humidity: 67 %

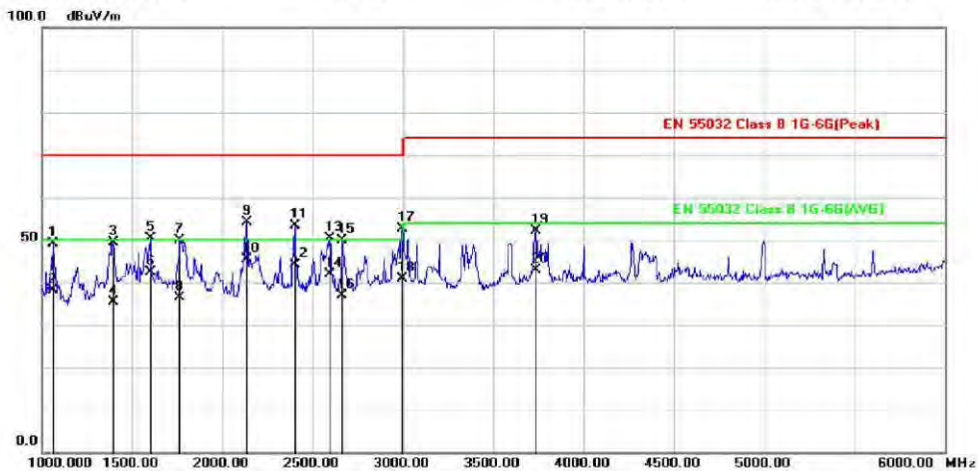
Radiated Emission

File :MH-2019-80136

Data :#2

Date: 2019/9/19

Time: 下午 02:05:45



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	dBuV	Factor	ment			Height	Degree	
			dBuV		dBuV/m	dBuV/m	dB	cm	degree	Comment
1		1060.000	71.05	-21.89	49.16	70.00	-20.84	peak		
2		1060.000	59.97	-21.89	38.08	50.00	-11.92	AVG		
3		1395.000	68.44	-19.06	49.38	70.00	-20.62	peak		
4		1395.000	54.36	-19.06	35.30	50.00	-14.70	AVG		
5		1600.000	69.07	-18.72	50.35	70.00	-19.65	peak		
6		1600.000	61.11	-18.72	42.39	50.00	-7.61	AVG		
7		1765.000	67.63	-17.76	49.87	70.00	-20.13	peak		
8		1765.000	54.14	-17.76	36.38	50.00	-13.62	AVG		
9		2135.000	67.59	-13.38	54.21	70.00	-15.79	peak	100	199
10	*	2135.000	58.78	-13.38	45.40	50.00	-4.60	AVG	100	199
11		2400.000	65.62	-12.34	53.28	70.00	-16.72	peak		
12		2400.000	56.56	-12.34	44.22	50.00	-5.78	AVG		
13		2595.000	62.39	-11.98	50.41	70.00	-19.59	peak		

*:Maximum data x:Over limit !:over margin

File :MH-2019-80136\Data :#2

Page: 1

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No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree
14		2595.000	53.75	-11.98	41.77	50.00	-8.23	AVG		
15		2665.000	61.55	-11.61	49.94	70.00	-20.06	peak		
16		2665.000	48.42	-11.61	36.81	50.00	-13.19	AVG		
17		2995.000	63.20	-10.61	52.59	70.00	-17.41	peak		
18		2995.000	51.43	-10.61	40.82	50.00	-9.18	AVG		
19		3735.000	61.36	-9.32	52.04	74.00	-21.96	peak		
20		3735.000	52.09	-9.32	42.77	54.00	-11.23	AVG		

*:Maximum data x:Over limit l:over margin

File :MH-2019-80136\Data :#2

Page: 2

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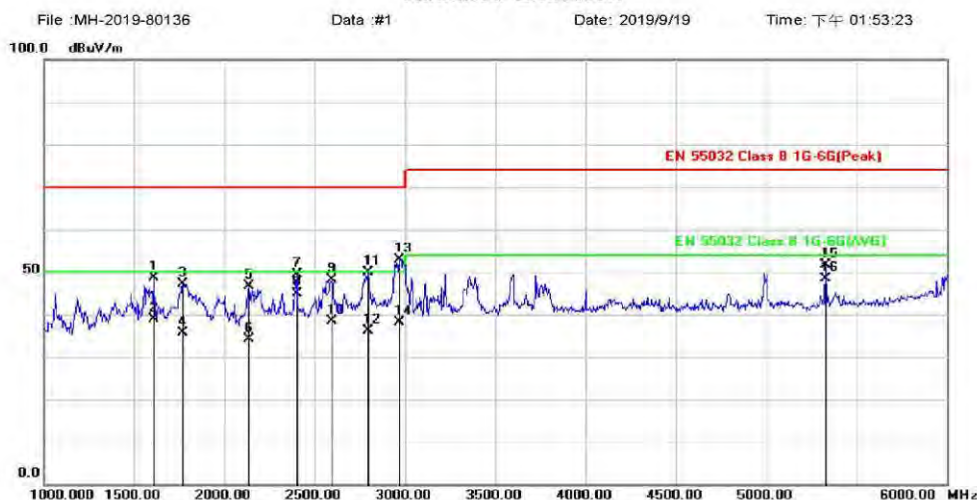
Mode_5_V

Site: SGS 966 Chamber A
Limit: EN 55032 Class B 1G-6G(Peak)
Mode: Mode 5
Note:

Polarization: **Vertical**
Power: AC 230V/50Hz
Distance: 3m

Temperature: 22 °C
Humidity: 67 %

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	dBuV	Factor	ment	dBuV/m	dB	Height	Degree	
					dBuV/m			cm	degree	Comment
1		1610.000	67.34	-18.64	48.70	70.00	-21.30	peak		
2		1610.000	57.60	-18.64	38.96	50.00	-11.04	AVG		
3		1770.000	64.88	-17.74	47.14	70.00	-22.86	peak		
4		1770.000	53.39	-17.74	35.65	50.00	-14.35	AVG		
5		2135.000	59.89	-13.38	46.51	70.00	-23.49	peak		
6		2135.000	47.45	-13.38	34.07	50.00	-15.93	AVG		
7		2400.000	61.76	-12.34	49.42	70.00	-20.58	peak	110	214
8 *		2400.000	57.22	-12.34	44.88	50.00	-5.12	AVG	110	214
9		2595.000	59.99	-11.98	48.01	70.00	-21.99	peak		
10		2595.000	50.34	-11.98	38.36	50.00	-11.64	AVG		
11		2795.000	60.82	-11.01	49.81	70.00	-20.19	peak		
12		2795.000	47.26	-11.01	36.25	50.00	-13.75	AVG		
13		2970.000	63.58	-10.64	52.94	70.00	-17.06	peak		

*:Maximum data x:Over limit !:over margin

File: MH-2019-80136\Data: #1

Page: 1

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No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree
14		2970.000	48.69	-10.64	38.05	50.00	-11.95	AVG		
15		5330.000	58.40	-6.67	51.73	74.00	-22.27	peak		
16		5330.000	55.12	-6.67	48.45	54.00	-5.55	AVG		

*:Maximum data x:Over limit !:over margin

File :MH-2019-80136\Data :#1

Page: 2

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3. Harmonics

EN 61000-3-2:2014

3.1 Test Results

EN 61000-3-2:2014	PASS
-------------------	-------------

3.2 Methods and Procedures

Standard	Edition	Description
EN 61000-3-2	2014	Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase).

3.3 Test Instruments

SGS Harmonic EN61000-3-2 HWAYA EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Power Analyzer	TESEQ	CCN 1000-1	1504A02654	2018/3/23	2019/3/22
AC Power Source	TESEQ	NSG 1007	1504A02654	2018/3/23	2019/3/22
Test Software	TESEQ	Win2100 V4	Ver. 4.14.0	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

Rev.01

SGS Harmonic EN61000-3-2 HWAYA EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Power Analyzer	TESEQ	CCN 1000-1	1504A02654	2019/3/20	2020/3/19
AC Power Source	TESEQ	NSG 1007	1504A02654	2019/3/20	2020/3/19
Test Software	TESEQ	Win2100 V4	Ver. 4.14.0	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)					

3.4 EUT Operating Condition

Environment :

Temperature	Humidity
25 °C	63 %RH

Test setup : Please refer to photo of HARMONICS testing set-up

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3.5 Measurement Data

Model No.:DS-200GB-T0A1E

Mode_1

Teseq Profile
4542 Luterbach, Switzerland9/5/2018
11:50 AM

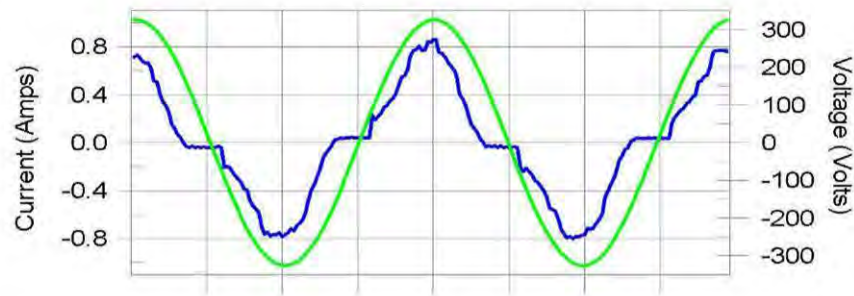
Harmonics – Class-D per Ed. 4.0 (2014)(Run time) incl. inter-harmonics

EUT: Equipment Under Test
Test category: Class-D per Ed. 4.0 (2014) (European limits)
Test date: 2018/9/5
Test duration (min): 10
Comment: Comments
Customer: Customer

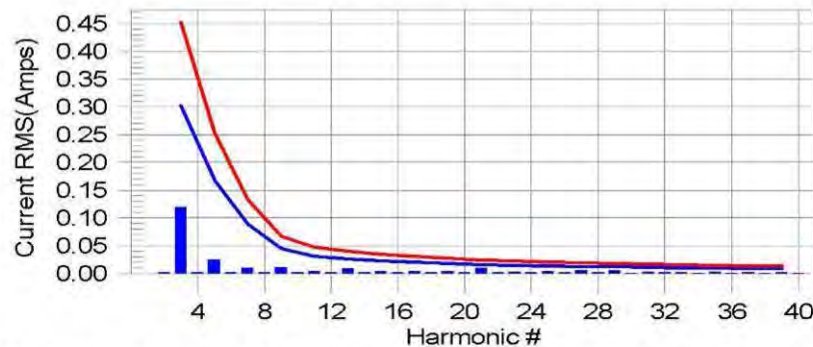
Tested by: Test Operator
Test Margin: 100
Start time: 上午 11:37:19
End time: 上午 11:47:30
Data file name: H-000270.cts_data

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class D limit line European Limits



Test result: Pass Worst harmonics H21-44.8% of 150% limit, H21-62.9% of 100% limit

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Teseq Profile
4542 Luterbach, Switzerland9/5/2018
11:50 AM

Current Test Result Summary (Run time)

EUT: Equipment Under Test
 Test category: Class-D per Ed. 4.0 (2014) (European limits)
 Test date: 2018/9/5
 Test duration (min): 10
 Comment: Comments
 Customer: Customer

Tested by: Test Operator
 Test Margin: 100
 Start time: 上午 11:37:19
 End time: 上午 11:47:30
 Data file name: H-000270.cts_data

Test Result: Pass Source qualification: Normal
 THC(A): 0.125 I-THD(%): 31.7 POHC(A): 0.014 POHC Limit(A): 0.038

Highest parameter values during test:

V_{RMS} (Volts): 230.91
 I_{Peak} (Amps): 0.884
 I_{Fund} (Amps): 0.393
 Power (Watts): 88.6

Frequency(Hz): 50.00
 I_{RMS} (Amps): 0.424
 Crest Factor: 2.139
 Power Factor: 0.930

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.000	N/A	0.002	0.000	N/A	Pass
3	0.120	0.301	39.7	0.123	0.452	27.3	Pass
4	0.002	0.000	N/A	0.002	0.000	N/A	Pass
5	0.025	0.168	14.8	0.026	0.253	10.3	Pass
6	0.001	0.000	N/A	0.002	0.000	N/A	Pass
7	0.010	0.089	11.3	0.011	0.133	8.0	Pass
8	0.001	0.000	N/A	0.002	0.000	N/A	Pass
9	0.011	0.044	24.7	0.012	0.066	18.0	Pass
10	0.001	0.000	N/A	0.002	0.000	N/A	Pass
11	0.004	0.031	N/A	0.004	0.047	N/A	Pass
12	0.001	0.000	N/A	0.002	0.000	N/A	Pass
13	0.008	0.027	31.0	0.009	0.040	21.7	Pass
14	0.001	0.000	N/A	0.002	0.000	N/A	Pass
15	0.005	0.023	N/A	0.005	0.035	N/A	Pass
16	0.001	0.000	N/A	0.002	0.000	N/A	Pass
17	0.004	0.020	N/A	0.005	0.031	N/A	Pass
18	0.001	0.000	N/A	0.002	0.000	N/A	Pass
19	0.004	0.018	N/A	0.005	0.027	N/A	Pass
20	0.001	0.000	N/A	0.002	0.000	N/A	Pass
21	0.010	0.016	62.9	0.011	0.024	44.8	Pass
22	0.001	0.000	N/A	0.002	0.000	N/A	Pass
23	0.003	0.015	N/A	0.004	0.022	N/A	Pass
24	0.001	0.000	N/A	0.002	0.000	N/A	Pass
25	0.004	0.014	N/A	0.004	0.020	N/A	Pass
26	0.001	0.000	N/A	0.002	0.000	N/A	Pass
27	0.005	0.013	39.5	0.006	0.019	31.4	Pass
28	0.001	0.000	N/A	0.002	0.000	N/A	Pass
29	0.005	0.012	43.4	0.006	0.018	32.7	Pass
30	0.001	0.000	N/A	0.001	0.000	N/A	Pass
31	0.003	0.011	N/A	0.004	0.016	N/A	Pass
32	0.001	0.000	N/A	0.001	0.000	N/A	Pass
33	0.002	0.010	N/A	0.002	0.015	N/A	Pass
34	0.001	0.000	N/A	0.001	0.000	N/A	Pass
35	0.003	0.010	N/A	0.003	0.015	N/A	Pass
36	0.001	0.000	N/A	0.001	0.000	N/A	Pass
37	0.002	0.009	N/A	0.002	0.014	N/A	Pass
38	0.001	0.000	N/A	0.001	0.000	N/A	Pass
39	0.002	0.009	N/A	0.002	0.013	N/A	Pass
40	0.001	0.000	N/A	0.001	0.000	N/A	Pass

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

Teseq AG Win2100 V4.14.0

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Member of SGS Group

Teseq Profile
4542 Luterbach, Switzerland9/5/2018
11:50 AM

Voltage Source Verification Data (Run time)

EUT: Equipment Under Test
Test category: Class-D per Ed. 4.0 (2014) (European limits)
Test date: 2018/9/5
Test duration (min): 10
Comment: Comments
Customer: Customer

Tested by: Test Operator
Test Margin: 100
Start time: 上午 11:37:19
End time: 上午 11:47:30
Data file name: H-000270.cts_data

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	230.91	Frequency(Hz):	50.00
I_Peak (Amps):	0.884	I_RMS (Amps):	0.424
I_Fund (Amps):	0.393	Crest Factor:	2.139
Power (Watts):	88.6	Power Factor:	0.930

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.021	0.462	4.60	OK
3	0.450	2.078	21.67	OK
4	0.018	0.462	3.85	OK
5	0.039	0.924	4.24	OK
6	0.020	0.462	4.38	OK
7	0.038	0.693	5.46	OK
8	0.015	0.462	3.27	OK
9	0.012	0.462	2.60	OK
10	0.011	0.462	2.40	OK
11	0.010	0.231	4.20	OK
12	0.009	0.231	4.10	OK
13	0.006	0.231	2.55	OK
14	0.005	0.231	2.30	OK
15	0.013	0.231	5.68	OK
16	0.004	0.231	1.89	OK
17	0.007	0.231	2.86	OK
18	0.010	0.231	4.21	OK
19	0.006	0.231	2.74	OK
20	0.015	0.231	6.65	OK
21	0.014	0.231	6.20	OK
22	0.005	0.231	2.30	OK
23	0.005	0.231	2.08	OK
24	0.004	0.231	1.93	OK
25	0.005	0.231	1.99	OK
26	0.004	0.231	1.94	OK
27	0.008	0.231	3.28	OK
28	0.004	0.231	1.71	OK
29	0.008	0.231	3.29	OK
30	0.004	0.231	1.87	OK
31	0.005	0.231	2.11	OK
32	0.004	0.231	1.55	OK
33	0.003	0.231	1.27	OK
34	0.003	0.231	1.30	OK
35	0.004	0.231	1.67	OK
36	0.004	0.231	1.54	OK
37	0.006	0.231	2.44	OK
38	0.003	0.231	1.31	OK
39	0.006	0.231	2.47	OK
40	0.014	0.231	6.00	OK

Teseq AG Win2100 V4.14.0

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Mode_5

Teseq Profile
4542 Luterbach, Switzerland

9/19/2019
10:37 PM

Harmonics – Class-D per Ed. 4.0 (2014)(Run time) incl. inter-harmonics

EUT:

Test category: Class-D per Ed. 4.0 (2014) (European limits)

Tested by:

Test Margin: 100

Test date: 2019/9/19

Start time: 下午 10:20:50

End time: 下午 10:31:02

Test duration (min): 10

Data file name: H-000355.cts_data

Comment:

Customer:

Test Result: N/L

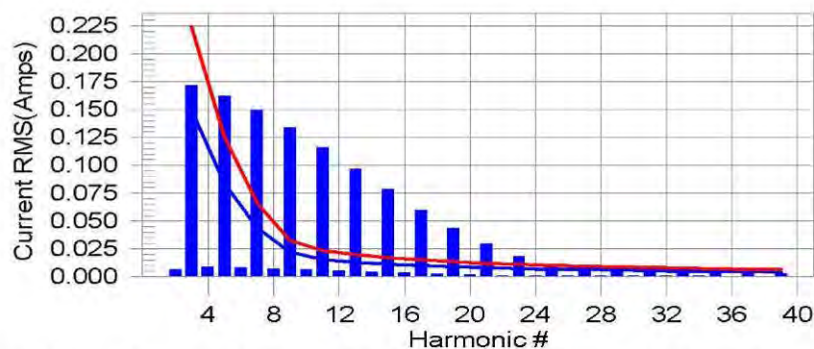
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class D limit line

European Limits



Test result: N/L Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit

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Teseq Profile
4542 Luterbach, Switzerland9/19/2019
10:37 PM

Current Test Result Summary (Run time)

EUT: Tested by:
 Test category: Class-D per Ed. 4.0 (2014) (European limits) Test Margin: 100
 Test date: 2019/9/19 Start time: 下午 10:20:50 End time: 下午 10:31:02
 Test duration (min): 10 Data file name: H-000355.cts_data
 Comment:
 Customer:

Test Result: N/L Source qualification: Normal
 THC(A): 0.365 I-THD(%): 189.6 POHC(A): 0.041 POHC Limit(A): 0.019

Highest parameter values during test:

V_RMS (Volts): 231.02 Frequency(Hz): 50.00
 I_Peak (Amps): 2.117 I_RMS (Amps): 0.451
 I_Fund (Amps): 0.192 Crest Factor: 5.220
 Power (Watts): 44.0 Power Factor: 0.439

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.007	0.000	N/A	0.009	0.000	N/A	N/L
3	0.172	0.150	N/A	0.186	0.225	N/A	N/L
4	0.009	0.000	N/A	0.012	0.000	N/A	N/L
5	0.163	0.084	N/A	0.176	0.126	N/A	N/L
6	0.008	0.000	N/A	0.012	0.000	N/A	N/L
7	0.150	0.044	N/A	0.162	0.066	N/A	N/L
8	0.007	0.000	N/A	0.010	0.000	N/A	N/L
9	0.134	0.022	N/A	0.144	0.033	N/A	N/L
10	0.006	0.000	N/A	0.009	0.000	N/A	N/L
11	0.116	0.015	N/A	0.124	0.023	N/A	N/L
12	0.005	0.000	N/A	0.008	0.000	N/A	N/L
13	0.097	0.013	N/A	0.104	0.020	N/A	N/L
14	0.004	0.000	N/A	0.006	0.000	N/A	N/L
15	0.078	0.011	N/A	0.083	0.017	N/A	N/L
16	0.003	0.000	N/A	0.005	0.000	N/A	N/L
17	0.060	0.010	N/A	0.063	0.015	N/A	N/L
18	0.002	0.000	N/A	0.003	0.000	N/A	N/L
19	0.044	0.009	N/A	0.045	0.013	N/A	N/L
20	0.002	0.000	N/A	0.002	0.000	N/A	N/L
21	0.030	0.008	N/A	0.030	0.012	N/A	N/L
22	0.001	0.000	N/A	0.002	0.000	N/A	N/L
23	0.018	0.007	N/A	0.019	0.011	N/A	N/L
24	0.001	0.000	N/A	0.001	0.000	N/A	N/L
25	0.011	0.007	N/A	0.011	0.010	N/A	N/L
26	0.000	0.000	N/A	0.001	0.000	N/A	N/L
27	0.007	0.006	N/A	0.008	0.009	N/A	N/L
28	0.001	0.000	N/A	0.001	0.000	N/A	N/L
29	0.008	0.006	N/A	0.008	0.009	N/A	N/L
30	0.001	0.000	N/A	0.001	0.000	N/A	N/L
31	0.008	0.005	N/A	0.009	0.008	N/A	N/L
32	0.001	0.000	N/A	0.001	0.000	N/A	N/L
33	0.008	0.005	N/A	0.008	0.008	N/A	N/L
34	0.001	0.000	N/A	0.001	0.000	N/A	N/L
35	0.007	0.005	N/A	0.007	0.007	N/A	N/L
36	0.000	0.000	N/A	0.001	0.000	N/A	N/L
37	0.005	0.005	N/A	0.006	0.007	N/A	N/L
38	0.000	0.000	N/A	0.001	0.000	N/A	N/L
39	0.003	0.004	N/A	0.004	0.007	N/A	N/L
40	0.000	0.000	N/A	0.001	0.000	N/A	N/L

Note: The EUT power level is below 75.0 Watts and therefore has no defined limits

Teseq AG Win2100 V4.14.0

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Teseq Profile
4542 Luterbach, Switzerland9/19/2019
10:37 PM

Voltage Source Verification Data (Run time)

EUT:
Test category: Class-D per Ed. 4.0 (2014) (European limits) Tested by:
Test date: 2019/9/19 Start time: 下午 10:20:50 Test Margin: 100
Test duration (min): 10 Data file name: H-000355.cts_data End time: 下午 10:31:02
Comment:
Customer:

Test Result: N/L Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	231.02	Frequency(Hz):	50.00
I_Peak (Amps):	2.117	I_RMS (Amps):	0.451
I_Fund (Amps):	0.192	Crest Factor:	5.220
Power (Watts):	44.0	Power Factor:	0.439

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.022	0.462	4.80	OK
3	0.439	2.079	21.11	OK
4	0.019	0.462	4.02	OK
5	0.020	0.924	2.14	OK
6	0.018	0.462	3.87	OK
7	0.024	0.693	3.45	OK
8	0.014	0.462	2.93	OK
9	0.072	0.462	15.55	OK
10	0.011	0.462	2.36	OK
11	0.057	0.231	24.72	OK
12	0.009	0.231	3.90	OK
13	0.066	0.231	28.42	OK
14	0.005	0.231	2.08	OK
15	0.051	0.231	22.01	OK
16	0.004	0.231	1.79	OK
17	0.048	0.231	20.92	OK
18	0.011	0.231	4.94	OK
19	0.041	0.231	17.87	OK
20	0.015	0.231	6.29	OK
21	0.029	0.231	12.47	OK
22	0.004	0.231	1.71	OK
23	0.019	0.231	8.04	OK
24	0.004	0.231	1.92	OK
25	0.014	0.231	6.00	OK
26	0.003	0.231	1.37	OK
27	0.014	0.231	5.99	OK
28	0.002	0.231	1.04	OK
29	0.010	0.231	4.47	OK
30	0.005	0.231	2.28	OK
31	0.012	0.231	5.00	OK
32	0.003	0.231	1.28	OK
33	0.013	0.231	5.63	OK
34	0.003	0.231	1.10	OK
35	0.012	0.231	5.16	OK
36	0.002	0.231	1.03	OK
37	0.010	0.231	4.29	OK
38	0.002	0.231	0.82	OK
39	0.010	0.231	4.32	OK
40	0.013	0.231	5.63	OK

Note : Equipment with a rated power of 75 W or less other than lighting equipment, the limits are not specified in this edition of the standard.

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4. Flicker

EN 61000-3-3:2013

4.1 Test Results

EN 61000-3-3:2013	PASS
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4.2 Methods and Procedures

Standard	Edition	Description
EN 61000-3-3	2013	Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.

4.3 Test Instruments

SGS Flicker EN61000-3-3 HWAYA EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Power Analyzer	TESEQ	CCN 1000-1	1504A02654	2018/3/23	2019/3/22
AC Power Source	TESEQ	NSG 1007	1504A02654	2018/3/23	2019/3/22
Test Software	TESEQ	Win2100 V4	Ver. 4.14.0	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

Rev.01

SGS Flicker EN61000-3-3 HwaYa EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Power Analyzer	TESEQ	CCN 1000-1	1504A02654	2019/3/20	2020/3/19
AC Power Source	TESEQ	NSG 1007	1504A02654	2019/3/20	2020/3/19
Test Software	TESEQ	Win2100 V4	Ver. 4.14.0	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)					

4.4 EUT Operating Condition

Environment :

Temperature	Humidity
25 °C	63 %RH

Test setup : Please refer to photo of FLICKER testing set-up

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4.5 Measurement Data

Model No.:DS-200GB-T0A1E

Mode_1

Teseq Proflite
4542 Luterbach, Switzerland9/5/2018
12:00 PM

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

EUT: Equipment Under Test
Test category: All parameters (European limits)
Test date: 2018/9/5
Test duration (min): 10
Comment: Comments
Customer: Customer

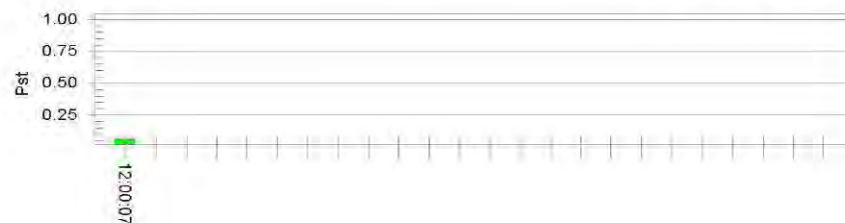
Tested by: Test Operator
Test Margin: 100
Start time: 上午 11:49:46
End time: 下午 12:00:13
Data file name: F-000271.cts_data

Test Result: Pass

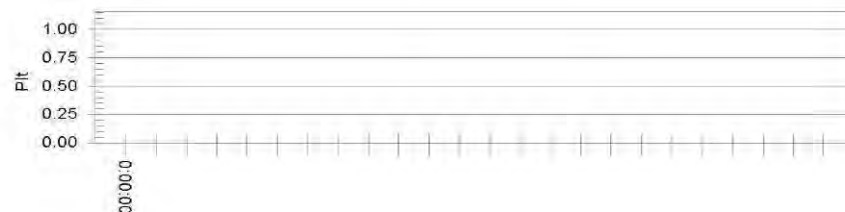
Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	230.74		
Highest dt (%):	0.00	Test limit (%):	N/A
T-max (mS):	0	Test limit (mS):	500.0
Highest dc (%):	0.00	Test limit (%):	3.30
Highest dmax (%):	0.00	Test limit (%):	4.00
Highest Pst (10 min. period):	0.064	Test limit:	1.000
Highest Plt (2 hr. period):	0.028	Test limit:	0.650

Teseq AG Win2100 V4.14.0

Page 1 of 1

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Mode_5

Teseq Profile
4542 Luterbach, Switzerland

9/19/2019
10:58 PM

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

EUT:

Test category: All parameters (European limits)

Tested by:

Test Margin: 100

Test date: 2019/9/19

Start time: 下午 10:38:22

End time: 下午 10:48:49

Test duration (min): 10

Data file name: F-000356.cts_data

Comment:

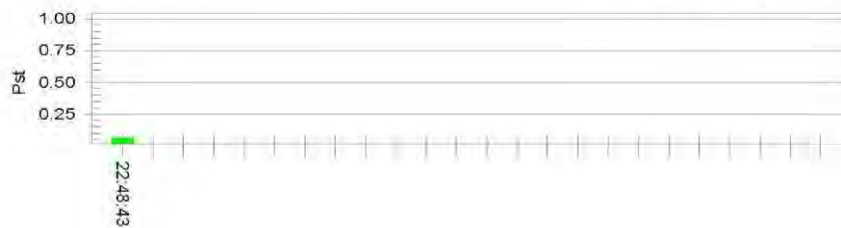
Customer:

Test Result: Pass

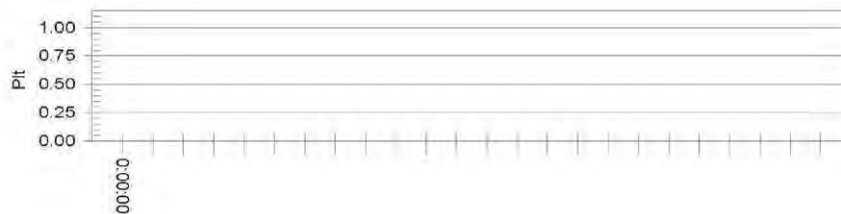
Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 230.93

Highest dt (%): 0.00

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.064

Highest Plt (2 hr. period): 0.028

Test limit (%): N/A

Test limit (mS): 500.0

Test limit (%): 3.30

Test limit (%): 4.00

Test limit: 1.000

Test limit: 0.650

N/A

Pass

Pass

Pass

Pass

Pass

Teseq AG Win2100 V4.14.0

Page 1 of 1

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5. IMMUNITY

EN 55024:2010+A1:2015

EN 61000-6-1 : 2007

5.1 Test Results

EN 55024

Test Standard	Performance Criteria	Result
IEC 61000-4-2:2008	B	PASS
IEC 61000-4-3:2006+A1:2007+A2:2010	A	PASS
IEC 61000-4-4:2012	B	PASS
IEC 61000-4-5:2014+A1:2017	B	PASS
IEC 61000-4-6:2013	A	PASS
IEC 61000-4-8:2009	A	PASS
IEC 61000-4-11:2004+A1:2017	C/C/B	PASS

EN 61000-6-1

Test Standard	Result
IEC 61000-4-2 : 2008	PASS
IEC 61000-4-3 : 2006+A1:2007+A2:2010	PASS
IEC 61000-4-4 : 2012	PASS
IEC 61000-4-5 : 2014+A1:2017	PASS
IEC 61000-4-6 : 2013	PASS
IEC 61000-4-8 : 2009	PASS
IEC 61000-4-11 : 2004+A1:2017	PASS

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5.2 Performance Criteria Description

EN 55024

Criterion A - The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion B - The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

EN 61000-6-1

A functional description and a definition of the equipment under test's (EUT) specific performance criteria, during or as a consequence of immunity testing, shall be provided by the manufacturer and noted in the test report. They shall be consistent with one of the following general criteria for each test.

Criterion A –The EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

Criterion B –The EUT shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. However, during the test degradation of performance is allowed but no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

Criterion C –Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.

If, as a result of the application of the tests defined in this standard, the EUT becomes dangerous or unsafe, it shall be deemed to have failed the test.

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5.3 Test of IEC 61000-4-2

5.3.1 Methods and Procedures

Standard	Edition	Description
IEC 61000-4-2	2008	Electrostatic Discharge (ESD)

5.3.2 Test Instruments

SGS ESD EN61000-4-2 HwaYa No.1 EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
ESD Simulator	NoiseKen	ESS-B3011	ESS12Z5075	2018/6/23	2019/6/22
HCP	N/A	1.6 x 0.8 m	N/A	N.C.R.	N.C.R.
VCP	N/A	0.5 x 0.5 m	N/A	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

Rev.01

SGS ESD EN61000-4-2 HwaYa No.2 EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
ESD Simulator	Thermo	MiniZap	612312	2019/7/11	2020/7/10
HCP	N/A	1.6 x 0.8 m	N/A	N.C.R.	N.C.R.
VCP	N/A	0.5 x 0.5 m	N/A	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)					

5.3.3 EUT Operating Condition

Environment :

Temperature	Humidity
21 °C	45 %RH

Test setup : Please refer to photo of ESD testing set-up

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5.3.4 Results of Electrostatic Discharge Test (ESD)

Model No.: DS-200GB-T0A1E

EN 55024

Test Mode : Mode 1
 Basic Standard : IEC 61000-4-2
 Discharge Impedance : 330 ohm / 150 pF
 Discharge Voltage : Air Discharge : $\pm 2, 4, 8$ kV
 Contact Discharge : $\pm 2, 4$ kV
 HCP/VCP : $\pm 2, 4$ kV
 Polarity : Positive/Negative
 Number of Discharge : 25 times at each test point
 Discharge Mode : Single Discharge
 Discharge Period : 1 second

Note 1 : For contact discharge, the EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity. All tests according to sec. 4.2.1 of EN 55024 : 2010+A1:2015.

A. Observations :

Test points: 1. Surface of case. 2. Screw. 3. Junction of case. 4. RJ45 Port.
 5. USB Port. 6. Earphone Jack. 7. Control Button. 8. Mini DP Port.
 9. DP Port. 10. HDMI Port. 11. RS232 Port. 12. DC input. 13. Ant Port.
 14. Ant

Direct Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Contact Discharge	Air Discharge
2, 4, 8(Air.)	+/-	5, 8, 9, 10, 12	N/A	A
2, 4, 8(Air.)	+/-	13	N/A	B
2, 4(Cont.)	+/-	6, 7, 11, 14	A	N/A
2, 4(Cont.)	+/-	1~4	B	N/A

Remark: A : No degradation of performance or loss of function.

B : During test, the EUT's function degradation. After test, it recovery by itself.

N/A : Not Applicable.

B. Observations :

Test points: 1. Front side. 2. Rear side. 3. Left side. 4. Right side.

Indirect Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
2, 4	+/-	1 - 4	A	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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EN 61000-6-1

Test Mode	: Mode 1
Basic Standard	: IEC 61000-4-2
Discharge Impedance	: 330 ohm / 150 pF
Discharge Voltage	: Air Discharge : $\pm 2, 4, 8$ kV Contact Discharge : $\pm 2, 4$ kV HCP/VCP : $\pm 2, 4$ kV
Polarity	: Positive/Negative
Number of Discharge	: 10 times at each test point
Discharge Mode	: Single Discharge
Discharge Period	: 1 second

A. Observations :

Test points: 1. Surface of case. 2. Screw. 3. Junction of case. 4. RJ45 Port.
5. USB Port. 6. Earphone Jack. 7. Control Button.
8. Mini DP Port. 9. DP Port. 10. HDMI Port. 11. RS232 Port.
12. DC input. 13. Ant Port. 14. Ant

Direct Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Contact Discharge	Air Discharge
2, 4, 8(Air)	+/-	5, 8, 9, 10, 12	N/A	B
2, 4(Cont)	+/-	1~4, 6, 7, 11, 13	B	N/A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

B. Observations :

Test points: 1. Front side. 2. Rear side. 3. Left side. 4. Right side.

Indirect Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
2.4	+/-	1 - 4	A	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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EN 55024

Test Date	: 2019/9/20
Test Mode	: Mode 5
Basic Standard	: IEC 61000-4-2
Discharge Impedance	: 330 ohm / 150 pF
Discharge Voltage	: Air Discharge : $\pm 2, 4, 8$ kV Contact Discharge : $\pm 2, 4$ kV HCP/VCP : $\pm 2, 4$ kV
Polarity	: Positive/Negative
Number of Discharge	: 25 times at each test point
Discharge Mode	: Single Discharge
Discharge Period	: 1 second

Note 1 : For contact discharge, the EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity. All tests according to sec. 4.2.1 of EN 55024 : 2010+A1:2015.

A.Observations :

Test points: 1. Surface of case. 2. Junction of case. 3. USB Port. 4. HDMI Port. 5. DISPLAY Port. 6. Mini DISPLAY Port. 7. Audio Port. 8. DC IN. 9. Switch. 10. RS232 Port. 11. RJ45 Port. 12. Screw. 13. Power Button .14. Reset Button.

Direct Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Contact Discharge	Air Discharge
2, 4, 8(Air.)	+/-	3~9	N/A	A
2, 4(Cont.)	+/-	1, 2, 10~14	A	N/A

Remark: A : No degradation of performance or loss of function.
N/A : Not Applicable.

B.Observations :

Test points: 1. Front side. 2. Rear side. 3. Left side. 4. Right side.

Indirect Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
2. 4	+/-	1 - 4	A	A

Remark: A : No degradation of performance or loss of function.
N/A : Not Applicable.

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EN 61000-6-1

Test Date	: 2019/9/20
Test Mode	: Mode 5
Basic Standard	: IEC 61000-4-2
Discharge Impedance	: 330 ohm / 150 pF
Discharge Voltage	: Air Discharge : $\pm 2, 4, 8$ kV Contact Discharge : $\pm 2, 4$ kV HCP/VCP : $\pm 2, 4$ kV
Polarity	: Positive/Negative
Number of Discharge	: 10 times at each test point
Discharge Mode	: Single Discharge
Discharge Period	: 1 second

A. Observations :

Test points: 1.Surface of case. 2. Junction of case. 3. USB Port.
4. HDMI Port. 5. DISPLAY Port. 6. Mini DISPLAY Port.
7. Audio Port. 8. DC IN. 9. Switch. 10. RS232 Port.
11. RJ45 Port. 12. Screw. 13. Power Button .14. Reset Button.

Direct Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Contact Discharge	Air Discharge
2, 4, 8(Air)	+/-	3~9	N/A	A
2, 4(Cont)	+/-	1, 2, 10~14	A	N/A

Remark: A : No degradation of performance or loss of function.
N/A : Not Applicable.

B. Observations :

Test points: 1. Front side. 2. Rear side. 3. Left side. 4. Right side.

Indirect Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
2.4	+/-	1 - 4	A	A

Remark: A : No degradation of performance or loss of function.
N/A : Not Applicable.

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5.4 Test of IEC 61000-4-3

5.4.1 Methods and Procedures

Standard	Edition	Description
IEC 61000-4-3	2006+A1:2007 +A2:2010	Radio-Frequency Electromagnetic Field Susceptibility Test, RS

5.4.2 Test Instruments

SGS RS EN61000-4-3 HWAYA SAC-F EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Semi Anechoic Chamber RS 16 grid points	Chance Most	8x5X3	SAC-F	2018/4/7	2019/4/6
Signal Generator	R&S	SMB 100A	114674	2017/11/9	2018/11/8
Power Sensor	R&S	NRP-Z11	112186	2018/3/27	2019/3/26
Power Sensor	R&S	NRP-Z11	111682	2018/4/10	2019/4/9
Power Amplifier	R&S	BBA100	101075	N.C.R.	N.C.R.
Power Amplifier	R&S	BBA100	101021	N.C.R.	N.C.R.
Power Amplifier	R&S	BBA150	102229	N.C.R.	N.C.R.
(*)E-Field Generating Antenna	ifi	EFG-3	U2137-0217	N.C.R.	N.C.R.
High Gain Log-Periodic Antenna	R&S	HL046E	100112	N.C.R.	N.C.R.
Calibrated Broadband Log-Per. Test-Antenna	SCHWARZBEC K	STLP 9149	9149-151	N.C.R.	N.C.R.
EMC Field Probes	Narda	NBM-550	F-0375	2018/2/22	2019/2/21
Test Software	R&S	EMC 32	V10.20.01	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

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SGS RS EN61000-4-3 HWAYA SAC-F EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Semi Anechoic Chamber RS 16 grid points	Chance Most	8x5X3	SAC-F	2019/4/7	2020/4/6
Signal Generator	R&S	SMJ 100A	114674	2018/11/25	2019/11/24
Power Sensor	R&S	NRP-Z11	112186	2019/4/8	2020/4/7
Power Sensor	R&S	NRP-Z11	111682	2019/4/16	2020/4/15
Power Amplifier	R&S	BBA100	101075	N.C.R.	N.C.R.
Power Amplifier	R&S	BBA100	101021	N.C.R.	N.C.R.
Power Amplifier	R&S	BBA150	102229	N.C.R.	N.C.R.
(*)E-Field Generating Antenna	ifi	EFG-3	U2137-0217	N.C.R.	N.C.R.
High Gain Log-Periodic Antenna	R&S	HL046E	100112	N.C.R.	N.C.R.
Calibrated Broadband Log-Per. Test-Antenna	SCHWARZBEC K	STLP 9149	9149-151	N.C.R.	N.C.R.
EMC Field Probes	AR	FL7006+FI7000	0330722+0330847	2019/8/14	2020/8/13
Test Software	R&S	EMC 32	V10.20.01	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)					

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5.4.3 EUT Operating Condition

Environment :

Temperature	Humidity
22 °C	52 %RH

Test setup : Please refer to photo of RS testing set-up

5.4.4 Results of Radiated Radio Frequency Electromagnetic (RS)

Model No.:DS-200GB-T0A1E

EN 55024

Test Mode : Mode 1

Basic Standard : IEC 61000-4-3

Frequency range: 80 MHz - 1000 MHz

Field strength : 3 V/m

Modulation : 80% AM (1kHz)

Frequency step : 1 % of fundamental

Polarity of Antenna: Horizontal and Vertical

Dwell Time : 3 seconds

Test distance : 3 m

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	80 - 1000	Vertical/Horizontal	A	0 degree
2	80 - 1000	Vertical/Horizontal	A	90 degree
3	80 - 1000	Vertical/Horizontal	A	180 degree
4	80 - 1000	Vertical/Horizontal	A	270 degree

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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EN 61000-6-1

Test Mode : Mode 1
 Basic Standard : IEC 61000-4-3
 Frequency range: 80 MHz -1000 MHz; 1.4 GHz - 2.0 GHz; 2.0 GHz – 2.7 GHz
 Field strength : 3 V/m; 3 V/m; 1 V/m
 Modulation : 80% AM (1 kHz)
 Frequency step : 1 % of fundamental
 Polarity of Antenna : Horizontal and Vertical
 Dwell Time : 3 seconds
 Test distance : 3 m

No. (3V/m)	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	80 - 1000	Vertical/Horizontal	A	0 degree
2	80 - 1000	Vertical/Horizontal	A	90 degree
3	80 - 1000	Vertical/Horizontal	A	180 degree
4	80 - 1000	Vertical/Horizontal	A	270 degree

No. (3V/m)	Frequency (GHz)	Antenna Orientation	Observation	EUT Orientation
5	1.4 – 2.0	Vertical/Horizontal	A	0 degree
6	1.4 – 2.0	Vertical/Horizontal	A	90 degree
7	1.4 – 2.0	Vertical/Horizontal	A	180 degree
8	1.4 – 2.0	Vertical/Horizontal	A	270 degree

No. (3V/m)	Frequency (GHz)	Antenna Orientation	Observation	EUT Orientation
9	2.0 – 2.7	Vertical/Horizontal	A	0 degree
10	2.0 – 2.7	Vertical/Horizontal	A	90 degree
11	2.0 – 2.7	Vertical/Horizontal	A	180 degree
12	2.0 – 2.7	Vertical/Horizontal	A	270 degree

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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Rev.01**EN 55024**

Test Date : 2019/9/20
Test Mode : Mode 5
Basic Standard : IEC 61000-4-3
Frequency range: 80 MHz - 1000 MHz
Field strength : 3 V/m
Modulation : 80% AM (1kHz)
Frequency step : 1 % of fundamental
Polarity of Antenna: Horizontal and Vertical
Dwell Time : 3 seconds
Test distance : 3 m

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	80 - 1000	Vertical/Horizontal	A	0 degree
2	80 - 1000	Vertical/Horizontal	A	90 degree
3	80 - 1000	Vertical/Horizontal	A	180 degree
4	80 - 1000	Vertical/Horizontal	A	270 degree

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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EN 61000-6-1

Test Date : 2019/9/20
 Test Mode : Mode 5
 Basic Standard : IEC 61000-4-3
 Frequency range: 80 MHz -1000 MHz; 1.4 GHz - 2.0 GHz; 2.0 GHz – 2.7 GHz
 Field strength : 3 V/m; 3 V/m; 1 V/m
 Modulation : 80% AM (1 kHz)
 Frequency step : 1 % of fundamental
 Polarity of Antenna : Horizontal and Vertical
 Dwell Time : 3 seconds
 Test distance : 3 m

No. (3V/m)	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	80 - 1000	Vertical/Horizontal	A	0 degree
2	80 - 1000	Vertical/Horizontal	A	90 degree
3	80 - 1000	Vertical/Horizontal	A	180 degree
4	80 - 1000	Vertical/Horizontal	A	270 degree

No. (3V/m)	Frequency (GHz)	Antenna Orientation	Observation	EUT Orientation
5	1.4 – 2.0	Vertical/Horizontal	A	0 degree
6	1.4 – 2.0	Vertical/Horizontal	A	90 degree
7	1.4 – 2.0	Vertical/Horizontal	A	180 degree
8	1.4 – 2.0	Vertical/Horizontal	A	270 degree

No. (3V/m)	Frequency (GHz)	Antenna Orientation	Observation	EUT Orientation
9	2.0 – 2.7	Vertical/Horizontal	A	0 degree
10	2.0 – 2.7	Vertical/Horizontal	A	90 degree
11	2.0 – 2.7	Vertical/Horizontal	A	180 degree
12	2.0 – 2.7	Vertical/Horizontal	A	270 degree

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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5.5 Test of IEC 61000-4-4

5.5.1 Methods and Procedures

Standard	Edition	Description
IEC 61000-4-4	2012	Electrical fast transient/burst requirements

5.5.2 Test Instruments

SGS EFT EN61000-4-4 HwaYa No.2 EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Burst Generator	TESEQ	NSG3060	1763	2018/5/7	2019/5/6
EFT Clamp	Thermo	CCL	612359	2017/12/21	2018/12/20
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

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SGS EFT EN61000-4-4 HwaYa No.2 EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Burst Generator	TESEQ	NSG3060	1763	2019/7/9	2020/7/8
EFT Clamp	Thermo	CCL	612359	2018/12/20	2019/12/19
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)					

5.5.3 EUT Operating Condition

Environment :

Temperature	Humidity
22 °C	53 %RH

Test setup : Please refer to photo of EFT testing set-up

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5.5.4 Results of Electrical Fast Transient (EFT)

Model No.:DS-200GB-T0A1E

EN 55024

Test Mode : Mode 1

Basic Standard : IEC 61000-4-4

Test Voltage : AC Input/Output : + 1 kV,
DC Input/Output : + 0.5 kV, Signal port : + 0.5 kV

Signal/Comm. : + 0.5 kV

Polarity : Positive/Negative

Impulse Frequency : 5 kHz

Tr/Tn : 5/50ns

Burst : 15ms/300ms

Observation :

Test Point	Polarity	Test Level (kV)	Results
L	+/-	1	A
N	+/-	1	A
PE	+/-	1	A
L-N	+/-	1	A
L-PE	+/-	1	A
N-PE	+/-	1	A
L-N-PE	+/-	1	A
DC Input	+/-	0.5	N/A
Signal/Comm.	+/-	0.5	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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EN 61000-6-1

Test Mode : Mode 1
Basic Standard : IEC 61000-4-4
Test Voltage : AC Input/Output : +/- 1 kV,
DC Input/Output : +/- 0.5 kV, Signal port : +/- 0.5 kV
Polarity : Positive/Negative
Impulse Frequency : 5 kHz
tr/tw : 5/50ns
Burst : 15ms/300ms

Observation :

Test Point	Polarity	Test Level (kV)	Results
L	+/-	1	A
N	+/-	1	A
PE	+/-	1	A
L-N	+/-	1	A
L-PE	+/-	1	A
N-PE	+/-	1	A
L-N-PE	+/-	1	A
DC Input	+/-	0.5	N/A
Signal/Comm.	+/-	0.5	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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Test Date : 2019/9/18
Test Mode : Mode 5
Basic Standard : IEC 61000-4-4
Test Voltage : AC Input/Output : + 1 kV,
DC Input/Output : + 0.5 kV, Signal port : + 0.5 kV
Signal/Comm. : + 0.5 kV
Polarity : Positive/Negative
Impulse Frequency : 5 kHz
Tr/Tn : 5/50ns
Burst : 15ms/300ms

Observation :

Test Point	Polarity	Test Level (kV)	Results
L	+/-	1	A
N	+/-	1	A
PE	+/-	1	A
L-N	+/-	1	A
L-PE	+/-	1	A
N-PE	+/-	1	A
L-N-PE	+/-	1	A
DC Input	+/-	0.5	N/A
Signal/Comm.	+/-	0.5	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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EN 61000-6-1

Test Date : 2019/9/18
Test Mode : Mode 5
Basic Standard : IEC 61000-4-4
Test Voltage : AC Input/Output : +/- 1 kV,
DC Input/Output : +/- 0.5 kV, Signal port : +/- 0.5 kV
Polarity : Positive/Negative
Impulse Frequency : 5 kHz
tr/tw : 5/50ns
Burst : 15ms/300ms

Observation :

Test Point	Polarity	Test Level (kV)	Results
L	+/-	1	A
N	+/-	1	A
PE	+/-	1	A
L-N	+/-	1	A
L-PE	+/-	1	A
N-PE	+/-	1	A
L-N-PE	+/-	1	A
DC Input	+/-	0.5	N/A
Signal/Comm.	+/-	0.5	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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5.6 Test of IEC 61000-4-5

5.6.1 Methods and Procedures

Standard	Edition	Description
IEC 61000-4-5	2014+A1:2017	Surge immunity test

5.6.2 Test Instruments

SGS Surge EN61000-4-5 HwaYa No.2 EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Surge Tester	TESEQ	NSG3060	1763	2018/5/7	2019/5/6
Surge Tester	TESEQ	NSG3060	1976	2018/5/7	2019/5/6
Surge Tester	TESEQ	CDN3061	1541	2018/5/7	2019/5/6
Universal Surge CDN	EMC Partner	CDN-UTP8	CDN-UTP8-1502	2018/5/8	2019/5/7
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

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SGS Surge EN61000-4-5 HwaYa No.2 EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Surge Tester	TESEQ	NSG3060	1763	2019/7/9	2020/7/8
Surge Tester	TESEQ	NSG3060	1976	2019/7/12	2020/7/11
Surge Tester	TESEQ	CDN3061	1541	2019/7/9	2020/7/8
Universal Surge CDN	EMC Partner	CDN-UTP8	CDN-UTP8-1602	2019/6/19	2020/6/18
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)					

5.6.3 EUT Operating Condition

Environment :

Temperature	Humidity
22 °C	54 %RH

Test setup : Please refer to photo of SURGE testing set-up

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5.6.4 Results of Surge Test

Model No.:DS-200GB-T0A1E

EN 55024

Test Mode : Mode 1

Test Rate : 1 pulse every minute

No. of Tests : 5 positive and 5 negative pulses

Waveform : 1.2/50 μ s (8/20 μ s)**Observation Description**

AC input line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
L – N	0, 90, 180, 270	+/-	1	A
L – PE	0, 90, 180, 270	+/-	2	A
N – PE	0, 90, 180, 270	+/-	2	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

DC input line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
DC input	No phase angle (degree)	+/-	0.5	N/A

Remark: N/A : Not Applicable.

Signal line:

Test Rate : 1 pulse every minute

No. of Tests : 5 positive and 5 negative pulses

Waveform : 10/700 μ s**Observation Description**

Signal line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
Signal I/O	No phase angle (degree)	+/-	1	N/A

Remark: N/A : Not Applicable.

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EN 61000-6-1

Test Mode : Mode 1
 Test Rate : 1 pulse every minute
 No. of Tests : 5 positive and 5 negative pulses
 Waveform : 1.2/50 μ s (8/20 μ s)

Observation Description

AC Power line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
L – N	0, 90, 180, 270	+/-	1	A
L – PE	0, 90, 180, 270	+/-	2	A
N – PE	0, 90, 180, 270	+/-	2	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

DC Power line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
DC input	N/A	+/-	0.5	N/A

Remark: N/A : Not Applicable.

Signal line:

Test Rate : 1 pulse every minute
 No. of Tests : 5 positive and 5 negative pulses
 Waveform : 10/700 μ s

Observation Description

Telecommunication line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
Signal I/O	N/A	+/-	1	N/A
POE LAN	N/A	+/-	1	N/A

Remark: N/A : Not Applicable.

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Rev.01**EN 55024**

Test Date : 2019/9/18
 Test Mode : Mode 5
 Test Rate : 1 pulse every minute
 No. of Tests : 5 positive and 5 negative pulses
 Waveform : 1.2/50 μ s (8/20 μ s)

Observation Description

AC input line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
L – N	0, 90, 180, 270	+/-	1	A
L – PE	0, 90, 180, 270	+/-	2	A
N – PE	0, 90, 180, 270	+/-	2	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

DC input line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
DC input	No phase angle (degree)	+/-	0.5	N/A

Remark: N/A : Not Applicable.

Signal line:

Test Rate : 1 pulse every minute
 No. of Tests : 5 positive and 5 negative pulses
 Waveform : 10/700 μ s

Observation Description

Signal line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
Signal I/O	No phase angle (degree)	+/-	1	N/A

Remark: N/A : Not Applicable.

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EN 61000-6-1

Test Date : 2019/9/18
 Test Mode : Mode 5
 Test Rate : 1 pulse every minute
 No. of Tests : 5 positive and 5 negative pulses
 Waveform : 1.2/50 μ s (8/20 μ s)

Observation Description

AC Power line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
L – N	0, 90, 180, 270	+/-	1	A
L – PE	0, 90, 180, 270	+/-	2	A
N – PE	0, 90, 180, 270	+/-	2	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

DC Power line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
DC input	N/A	+/-	0.5	N/A

Remark: N/A : Not Applicable.

Signal line:

Test Rate : 1 pulse every minute
 No. of Tests : 5 positive and 5 negative pulses
 Waveform : 10/700 μ s

Observation Description

Telecommunication line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
Signal I/O	N/A	+/-	1	N/A
POE LAN	N/A	+/-	1	N/A

Remark: N/A : Not Applicable.

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5.7 Test of IEC 61000-4-6

5.7.1 Methods and Procedures

Standard	Edition	Description
IEC 61000-4-6	2013	Immunity to conducted disturbances, induced by radio-frequency fields.

5.7.2 Test Instruments

SGS CS EN61000-4-6 HWAYA SR-D EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Signal Generator	Agilent	8648C	4108A05772	2018/2/23	2019/2/22
Power Sensor	R&S	NRVD	837794/029	2018/8/15	2019/8/14
Power Sensor	R&S	URV5-Z2	835640/015	2018/8/15	2019/8/14
Dual Directional Coupler	OSR	C21A8	33	N.C.R.	N.C.R.
Conducted Immunity System	Frankonia	CIT-10	102D3226	N.C.R.	N.C.R.
CDN	TESEQ	CDN M016	35853	2018/1/31	2019/1/30
CDN	TESEQ	CDN M116	37673	2018/4/26	2019/4/25
(*)CDN	TESEQ	CDN T8-10	37212	2018/4/26	2019/4/25
CDN	TESEQ	CDN ST08A	30191	2018/2/14	2019/2/13
(*)EM Injection Clamp	TESEQ	KEMZ 801A	33430	2018/5/17	2019/5/16
Test Software	ar	emcware	V3.4.0	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

Rev.01

SGS CS EN61000-4-6 HWAYA SR-D EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Signal Generator	Agilent	8648C	4108A05772	2019/3/11	2020/3/10
Power Sensor	R&S	NRVD	837794/029	2019/8/19	2020/8/18
Power Sensor	R&S	URV5-Z2	835640/015	2019/8/19	2020/8/18
Power Sensor	R&S	URV5-Z2	835640/016	2019/8/19	2020/8/18
Dual Directional Coupler	OSR	C21A8	33	N.C.R.	N.C.R.
Conducted Immunity System	Frankonia	CIT-10	102D3226	N.C.R.	N.C.R.
CDN	TESEQ	CDN M116	37673	2019/4/29	2020/4/28
(*)CDN	TESEQ	CDN T8-10	37212	2019/5/7	2020/5/6
(*)CDN	TESEQ	CDN T8-10	37212	2019/5/7	2020/5/6
CDN	TESEQ	CDN ST08A	30191	2019/2/21	2020/2/20
(*)EM Injection Clamp	TESEQ	KEMZ 801A	33430	2019/5/28	2020/5/27
Test Software	ar	emcware	102920	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)					

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5.7.3 EUT Operating Condition

Environment :

Temperature	Humidity
25 °C	52 %RH

Test setup : Please refer to photo of CS testing set-up

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5.7.4 Results of Immunity to Conducted Disturbances (CS)

Model No.: DS-200GB-T0A1E

EN 55024

Test Mode : Mode 1
 Basic Standard : IEC 61000-4-6
 Frequency range : 0.15 MHz - 80 MHz
 Field strength : 3 Vrms
 Modulation : 80% AM, 1 kHz Sinewave
 Frequency step : 1 % of fundamental
 Dwell Time : 3 seconds
 Coupling Method : CDN 3 Lines, RJ45

Cable Description	Frequency (MHz)	Observation
AC input	0.15 – 80	A
DC input	0.15 – 80	N/A

Signal Ports

Cable Description	Frequency (MHz)	Observation
Signal/Comm.	0.15 – 80	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

EN 61000-6-1

Test Mode : Mode 1
 Basic Standard : IEC 61000-4-6
 Frequency range : 0.15 MHz - 80 MHz
 Field strength : 3 Vrms
 Modulation : 80% AM, 1 kHz Sinewave
 Frequency step : 1 % of fundamental
 Dwell Time : 3 seconds
 Coupling Method: : CDN 3 Lines, RJ45

Cable Description	Frequency (MHz)	Observation
AC input	0.15 – 80	A
DC input	0.15 – 80	N/A

Signal Ports

Cable Description	Frequency (MHz)	Observation
Signal/Comm.	0.15 – 80	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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Rev.01**EN 55024**

Test Date : 2019/9/18
 Test Mode : Mode 5
 Basic Standard : IEC 61000-4-6
 Frequency range : 0.15 MHz - 80 MHz
 Field strength : 3 Vrms
 Modulation : 80% AM, 1 kHz Sinewave
 Frequency step : 1 % of fundamental
 Dwell Time : 3 seconds
 Coupling Method : CDN 3 Lines, RJ45

Cable Description	Frequency (MHz)	Observation
AC input	0.15 – 80	A
DC input	0.15 – 80	N/A

Signal Ports

Cable Description	Frequency (MHz)	Observation
Signal/Comm.	0.15 – 80	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

EN 61000-6-1

Test Date : 2019/9/18
 Test Mode : Mode 5
 Basic Standard : IEC 61000-4-6
 Frequency range : 0.15 MHz - 80 MHz
 Field strength : 3 Vrms
 Modulation : 80% AM, 1 kHz Sinewave
 Frequency step : 1 % of fundamental
 Dwell Time : 3 seconds
 Coupling Method: : CDN 3 Lines, RJ45

Cable Description	Frequency (MHz)	Observation
AC input	0.15 – 80	A
DC input	0.15 – 80	N/A

Signal Ports

Cable Description	Frequency (MHz)	Observation
Signal/Comm.	0.15 – 80	A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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5.8 Test of IEC 61000-4-8

5.8.1 Methods and Procedures

Standard	Edition	Description
IEC 61000-4-8	2009	Power Frequency Magnetic Field Immunity Test

5.8.2 Test Instruments

SGS PFMF EN61000-4-8 HWAYA EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Magnetic Field Generator	Narda S.T.S.	PMM 1008	0100X30601	2017/11/21	2018/11/20
AC CLAMP METER	CHAUVIN ARNOUX	96	12002769	2017/9/4	2018/9/3
Triax Elf Magnetic Field Meter	F.W. BELL	4180	1248004	2018/7/17	2019/7/16
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

Rev.01

SGS PFMF EN61000-4-8 HwaYa EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Magnetic Field Generator	Narda S.T.S.	PMM 1008	0100X30601	2018/11/26	2019/11/25
AC CLAMP METER	CHAUVIN ARNOUX	96	12002769	2019/9/3	2020/9/2
Triax Elf Magnetic Field Meter	F.W. BELL	4180	1248004	2019/7/12	2020/7/11
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)					

5.8.3 EUT Operating Condition

Environment

Temperature	Humidity
22 °C	50 %RH

Test setup

: Please refer to photo of PMF testing set-up

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5.8.4 Result of Immunity to power Frequency Magnetic

Model No.:DS-200GB-T0A1E

EN 55024

Test Mode : Mode 1
Basic Standard : IEC 61000-4-8 : 2009
Power Frequency : 50Hz / 60Hz
Magnetic Field : 1 A/m(r.m.s)
Coil Orientation : X, Y, Z Axis
Observation : A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

EN 61000-6-1

Test Mode : Mode 1
Basic Standard : IEC 61000-4-8:2009
Power Frequency : 50Hz / 60Hz
Magnetic Field : 3 A/m(r.m.s)
Coil Orientation : X, Y, Z Axis
Observation : A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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Rev.01**EN 55024**

Test Date : 2019/9/18
Test Mode : Mode 5
Basic Standard : IEC 61000-4-8 : 2009
Power Frequency : 50Hz / 60Hz
Magnetic Field : 1 A/m(r.m.s)
Coil Orientation : X, Y, Z Axis
Observation : A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

EN 61000-6-1

Test Date : 2019/9/18
Test Mode : Mode 5
Basic Standard : IEC 61000-4-8:2009
Power Frequency : 50Hz / 60Hz
Magnetic Field : 3 A/m(r.m.s)
Coil Orientation : X, Y, Z Axis
Observation : A

Remark: A : No degradation of performance or loss of function.

N/A : Not Applicable.

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5.9 Test of IEC 61000-4-11

5.9.1 Methods and Procedures

Standard	Edition	Description
IEC 61000-4-11	2004+A1:2017	Voltage dips, short interruptions and voltage variations immunity tests

5.9.2 Test Instruments

SGS DIP EN61000-4-11 HwaYa No.2 EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMS Multi-Tester	TESEQ	INA 6502	209	2018/5/7	2019/5/6
EMS Multi-Tester	TESEQ	NSG3060	1763	2018/5/7	2019/5/6
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)					

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SGS DIP EN61000-4-11 HwaYa No.2 EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMS Multi-Tester	TESEQ	INA 6502	209	2019/7/9	2020/7/8
EMS Multi-Tester	TESEQ	NSG3060	1763	2019/7/9	2020/7/8
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City 33383, Taiwan (R.O.C.)					

5.9.3 EUT Operating Condition

Environment :

Temperature	Humidity
21 °C	56 %RH

Test setup : Please refer to photo of DIP testing set-up

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5.9.4 Results of Voltage Dips Immunity Test

Model No.:DS-200GB-T0A1E

EN 55024

Test Mode : Mode 1
 EUT Rated Voltage : 230 Volts.
 Reduction Voltage : 30, >95 % Ut
 Phase Angle : 0,180 degree
 Total events : 3 dropouts
 Event interval : 10 seconds

Environmental phenomena	Test specification (% reduction)	Duration (in periods of the rated frequency)	Observation
Voltage Interruptions	>95	250	C
Voltage dips	>95	0.5	A
	30	25	A

Remark: A : No degradation of performance or loss of function.

C : During and after test power turn off automatically. Turn ON/OFF by manual could return to normal operation.

N/A : Not Applicable.

EN 61000-6-1

EUT Rated Voltage : AC 230V/50Hz
 Test Mode : Mode 1
 Voltage : 100, 30 % Ut
 Phase Angle : 0, 180 degree
 Total events : 3 dropouts
 Event interval : 10 seconds

Environmental phenomena	Test specifications (% residual voltage)	Cycle	Observation
Interruptions	0	250	C
Voltage dips	70	25	A
	0	0.5	A
	0	1	A

Remark: A : No degradation of performance or loss of function.

C : During and after test power turn off automatically. Turn ON/OFF by manual could return to normal operation.

N/A : Not Applicable.

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Rev.01**EN 55024**

Test Date : 2019/9/18
 Test Mode : Mode 5
 EUT Rated Voltage : 230 Volts.
 Reduction Voltage : 30, >95 % Ut
 Phase Angle : 0, 180 degree
 Total events : 3 dropouts
 Event interval : 10 seconds

Environmental phenomena	Test specification (% reduction)	Duration (in periods of the rated frequency)	Observation
Voltage Interruptions	>95	250	C
Voltage dips	>95	0.5	A
	30	25	A

Remark: A : No degradation of performance or loss of function.

C : During and after test power turn off automatically. Turn ON/OFF by manual could return to normal operation.

N/A : Not Applicable.

EN 61000-6-1

Test Date : 2019/9/18
 EUT Rated Voltage : AC 230V/50Hz
 Test Mode : Mode 5
 Voltage : 100, 30 % Ut
 Phase Angle : 0, 180 degree
 Total events : 3 dropouts
 Event interval : 10 seconds

Environmental phenomena	Test specifications (% residual voltage)	Cycle	Observation
Interruptions	0	250	C
Voltage dips	70	25	A
	0	0.5	A
	0	1	A
	0	1	A

Remark: B : During test, the EUT's function degradation. After test, it recovery by itself.

C : During and after test power turn off automatically. Turn ON/OFF by manual could return to normal operation.

N/A : Not Applicable.

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APPENDIX - Constructional Details

Photography of General Testing Set-up.....	94-119
Photographs of Product.....	120-128

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**Photograph of Testing General Set-up
CE Testing Set-up****Model No.:DS-200GB-T0A1E****Mode_1_+****Mode_1_-**

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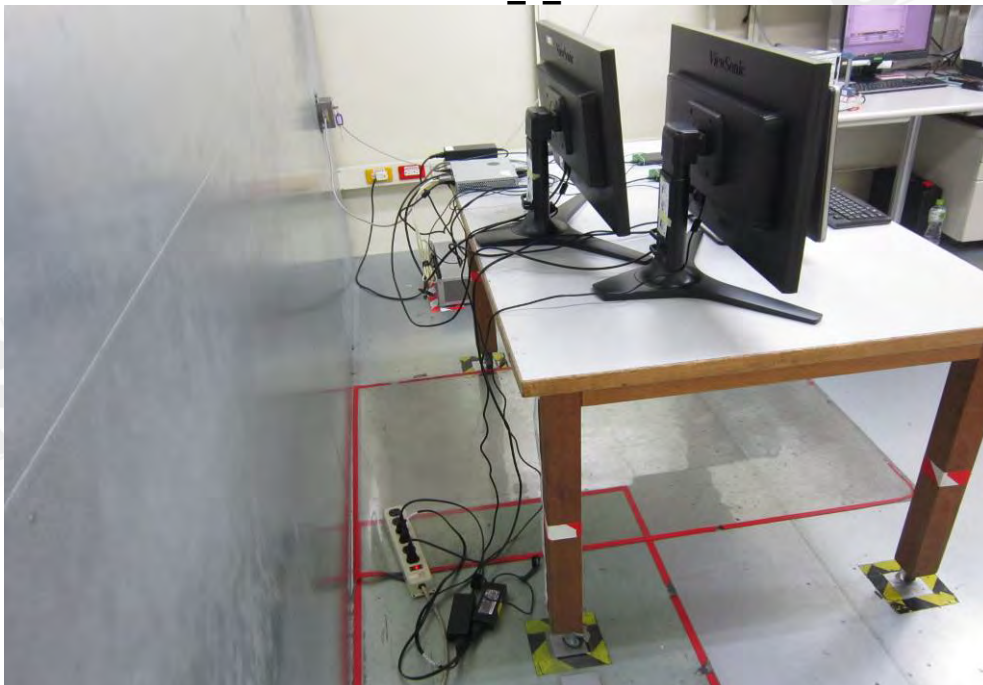
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Mode_5_+



Mode_5_-



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ISN Testing Set-up

Model No.:DS-200GB-T0A1E

Mode_1_+



Mode_1_-



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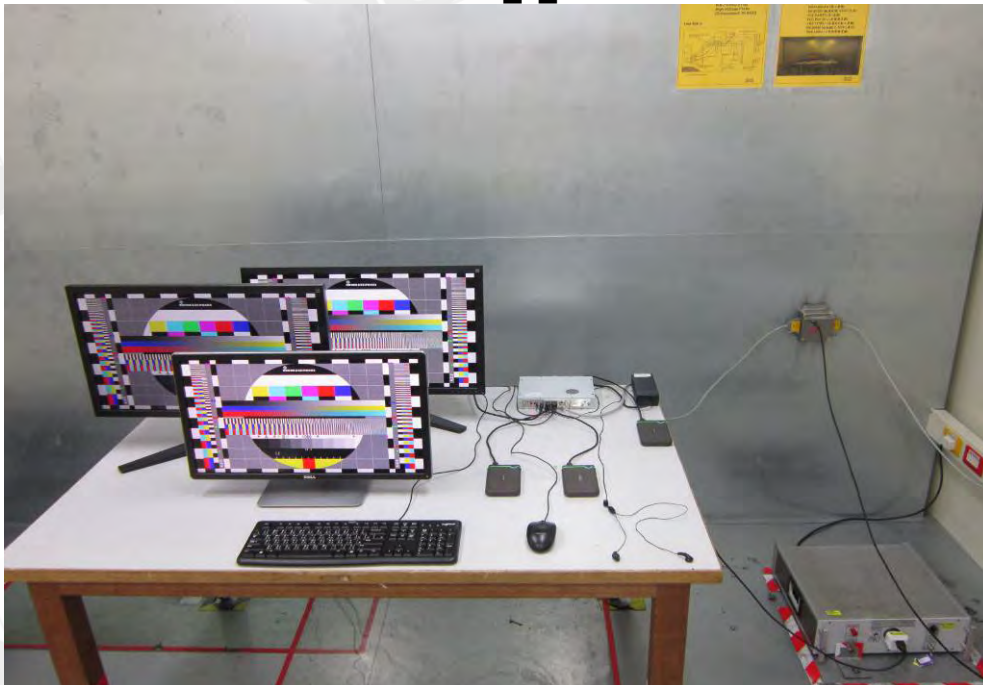
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Mode_5_+



Mode_5_-



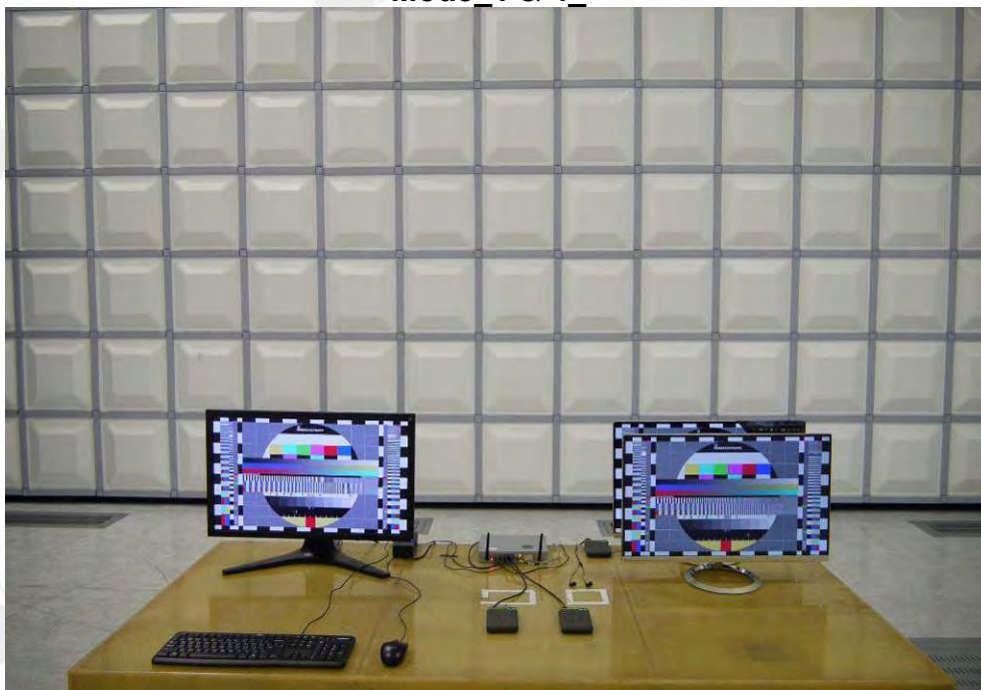
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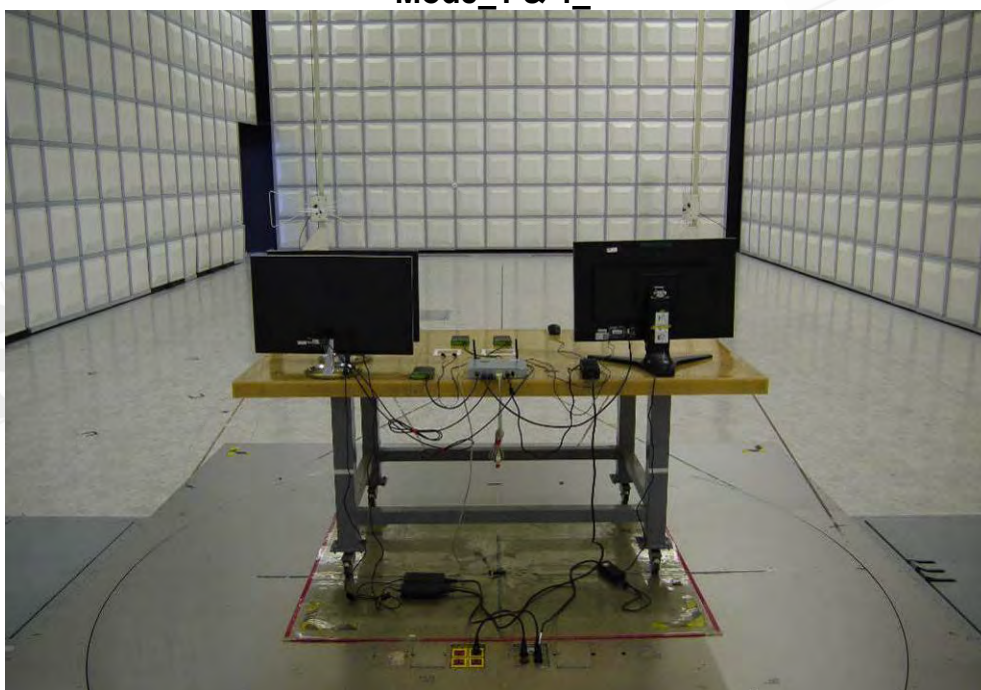
RE Testing Set-up Below 1GHz

Model No.:DS-200GB-T0A1E

Mode_1 & 4_+



Mode_1 & 4_-



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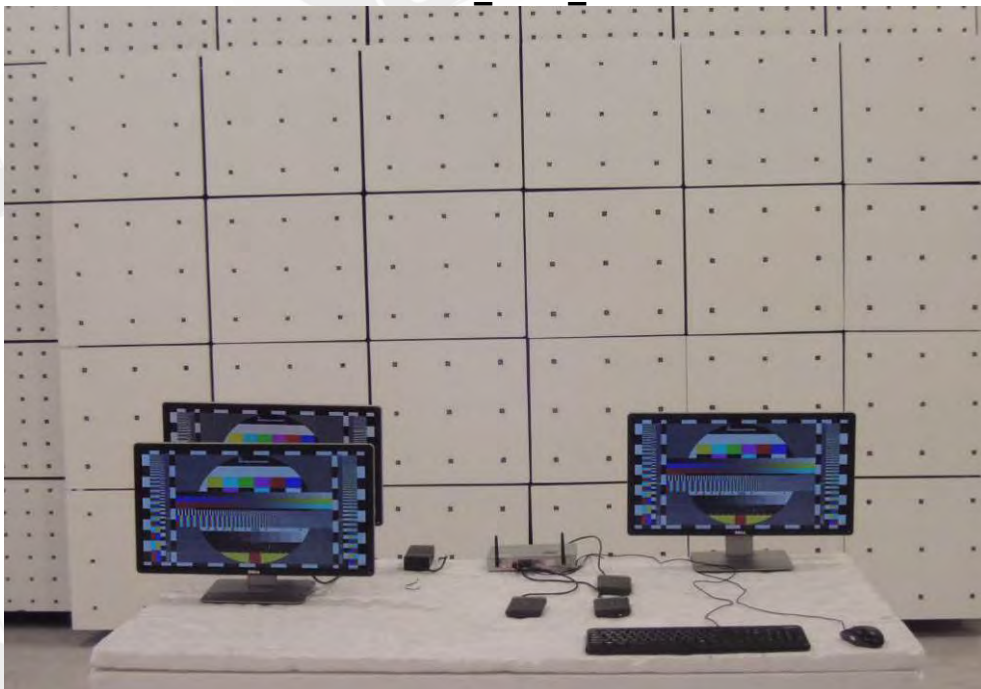
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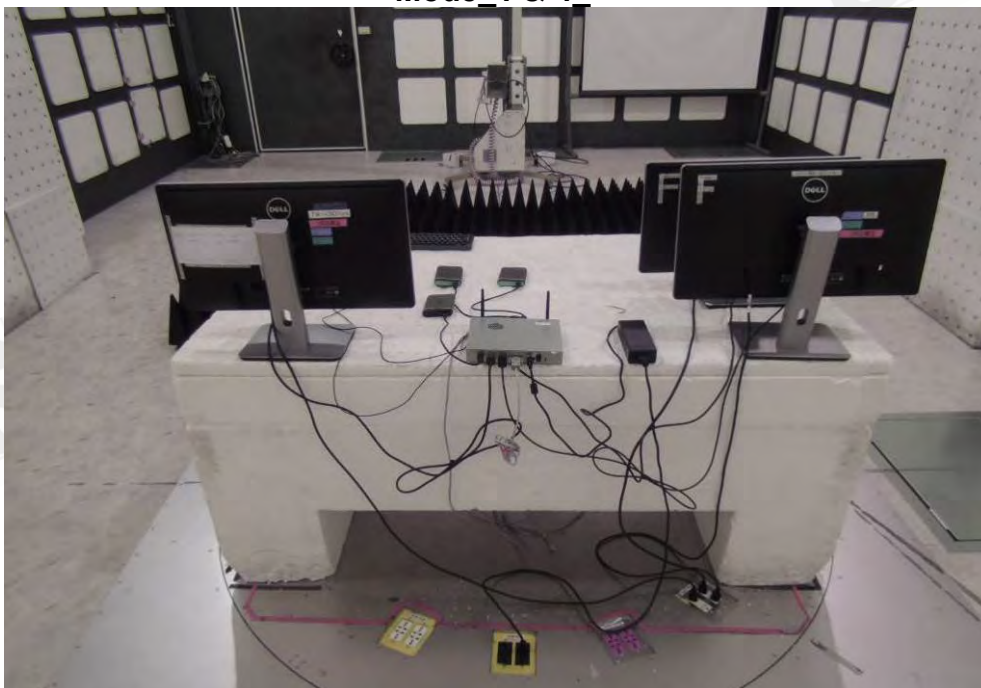
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Model No.:DS-200GB-T0A1E

Mode_1 & 4_+



Mode_1 & 4_-



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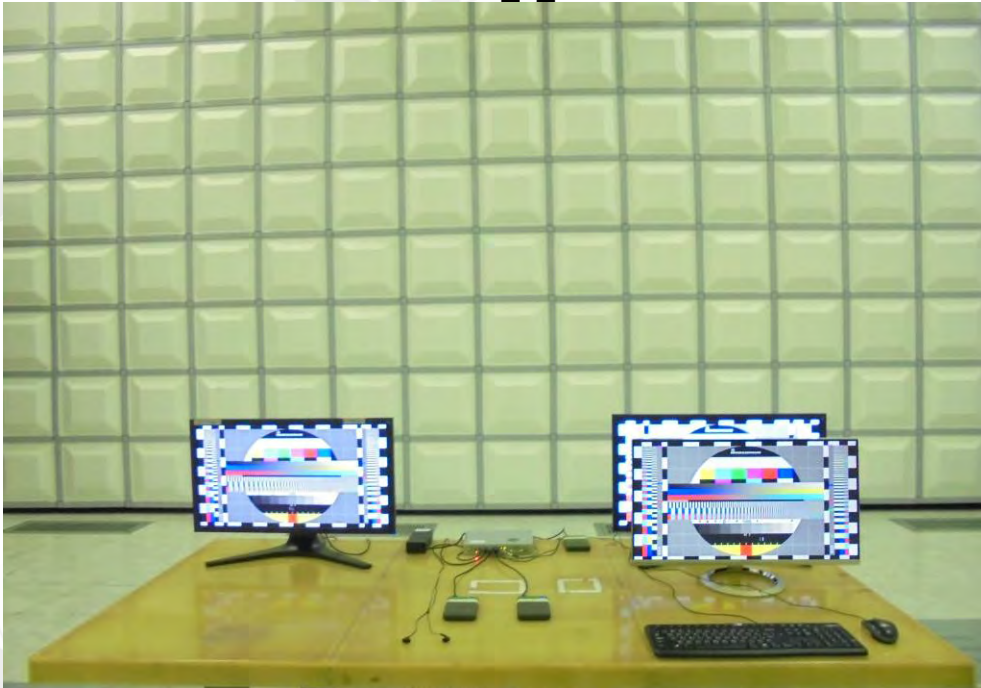
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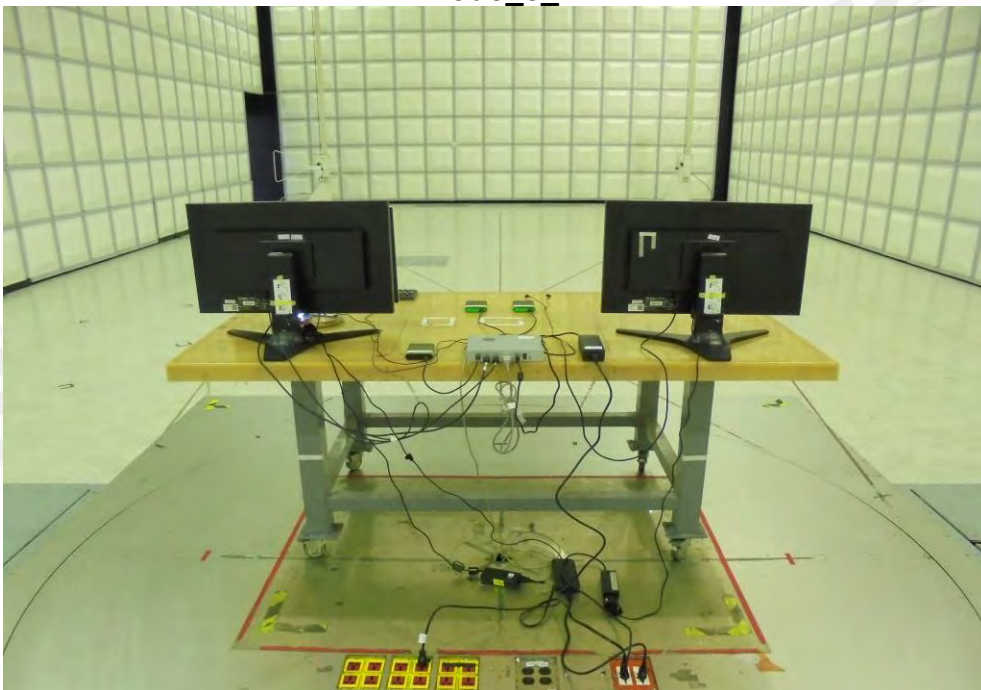
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Rev.01
Below 1GHz

Mode_5_+



Mode_5_-



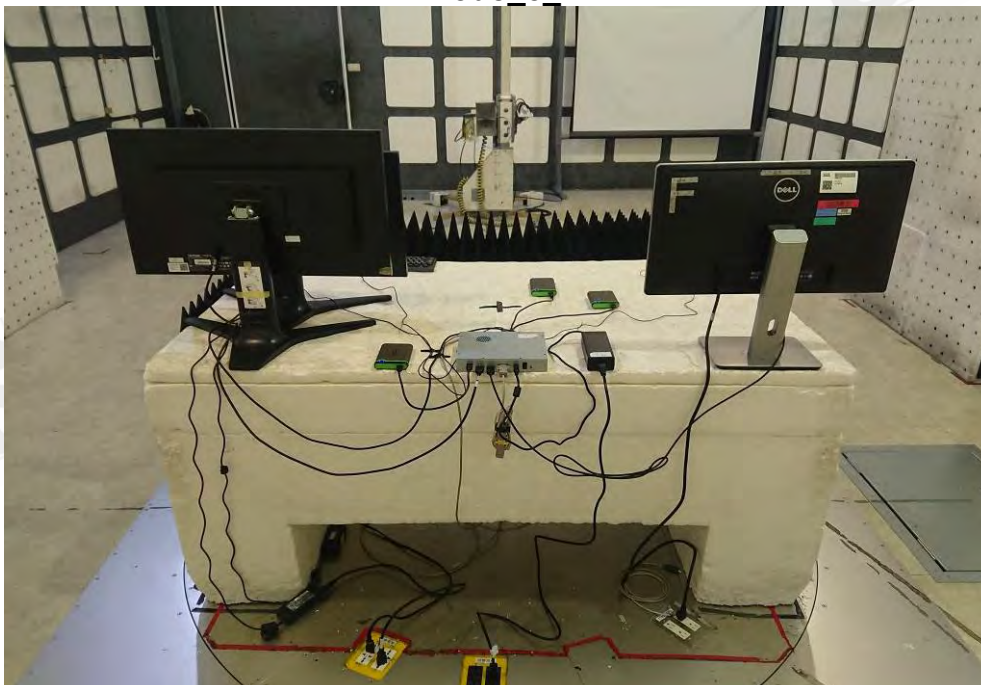
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Mode 5_+



Mode 5_-



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HARMONIC Testing Set-up

Model No.:DS-200GB-T0A1E

Mode_1



Rev.01

Mode_5



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FLICKER Testing Set-up

Model No.:DS-200GB-T0A1E

Mode_1



Rev.01

Mode_5



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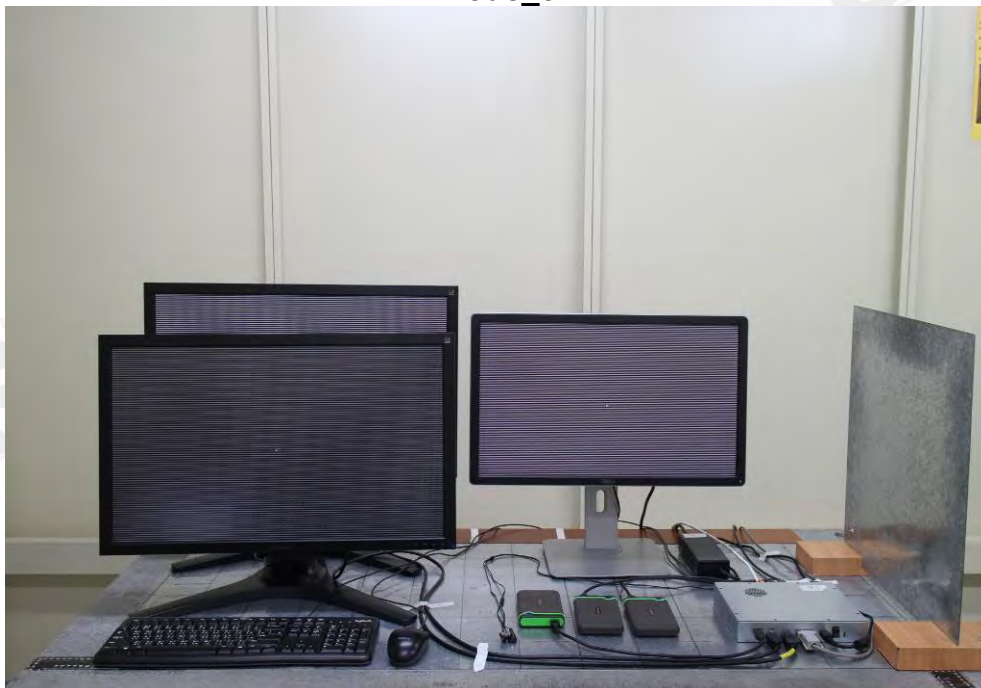
ESD Testing Set-up

Model No.:DS-200GB-T0A1E
Mode_1



Rev.01

Mode_5



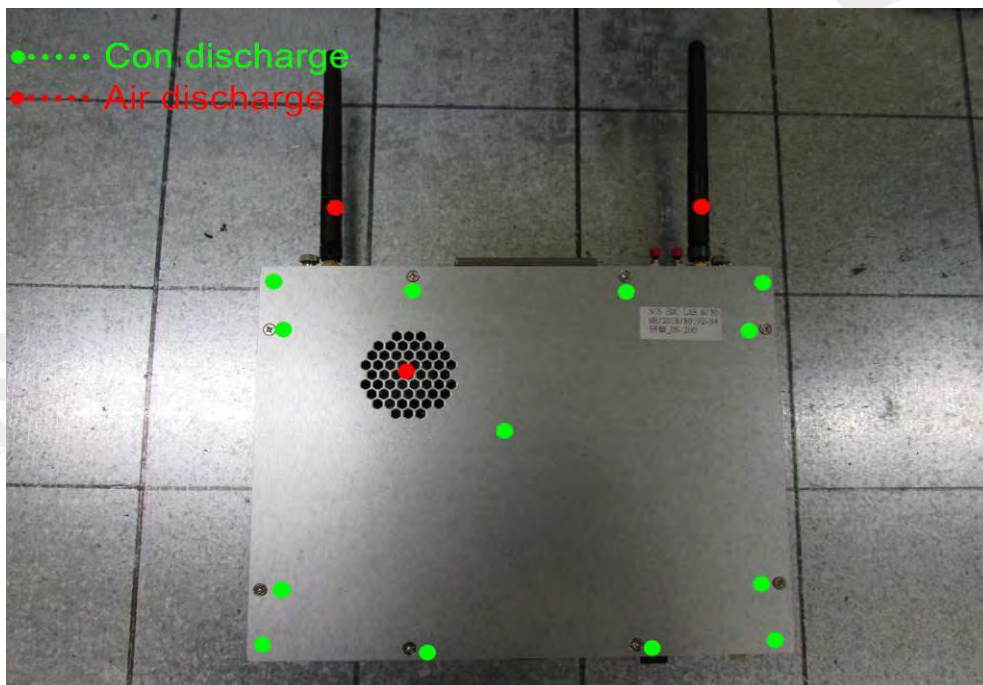
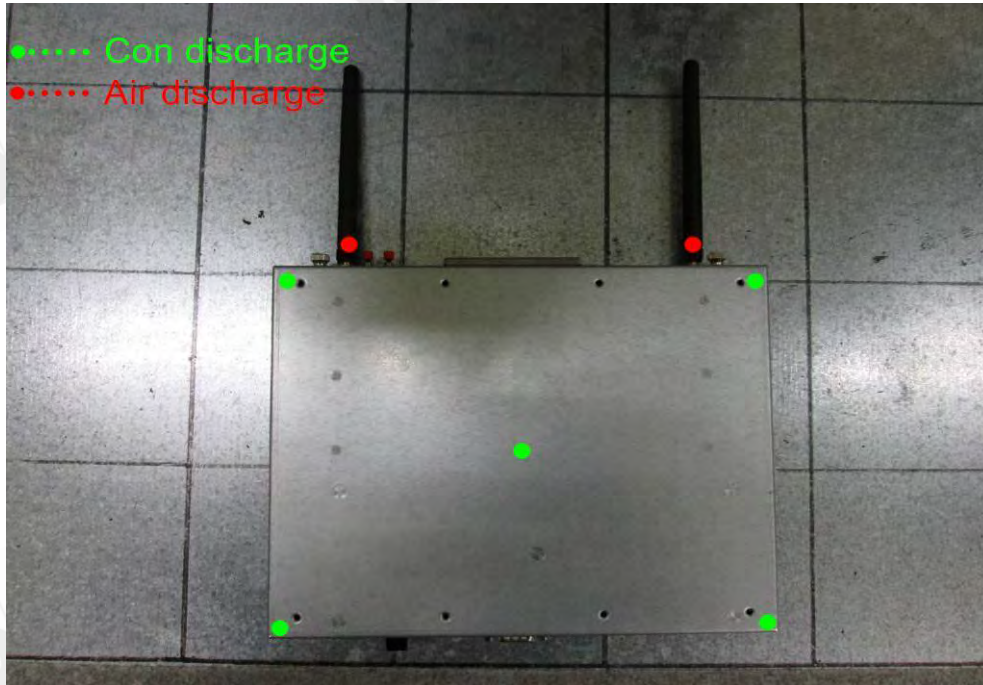
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ESD Test point

Air 
Cont. 

Model No.:DS-200GB-T0A1E



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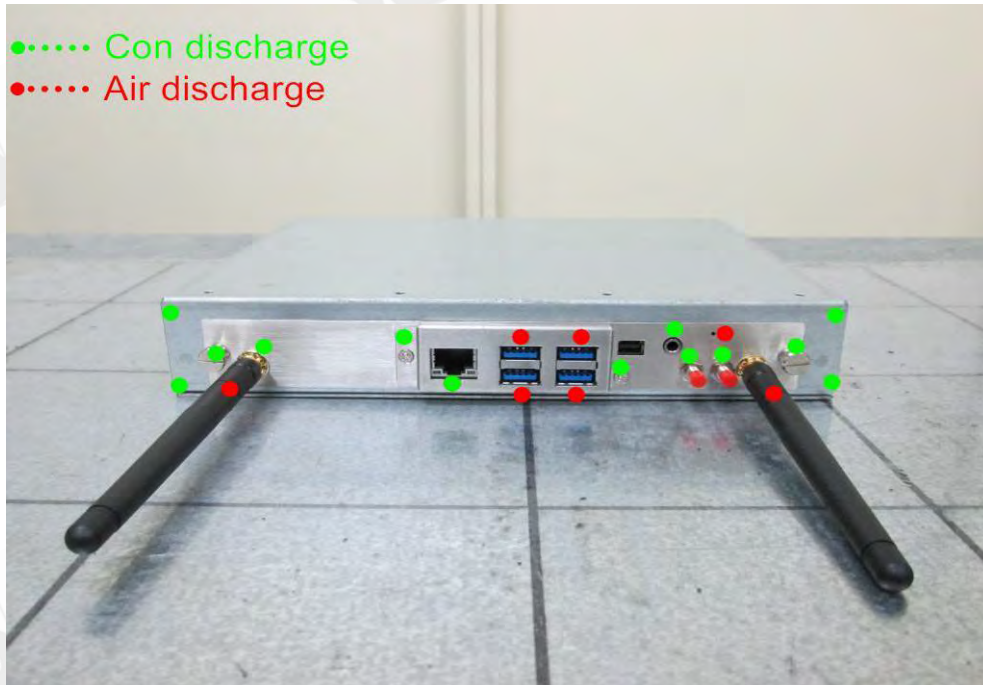
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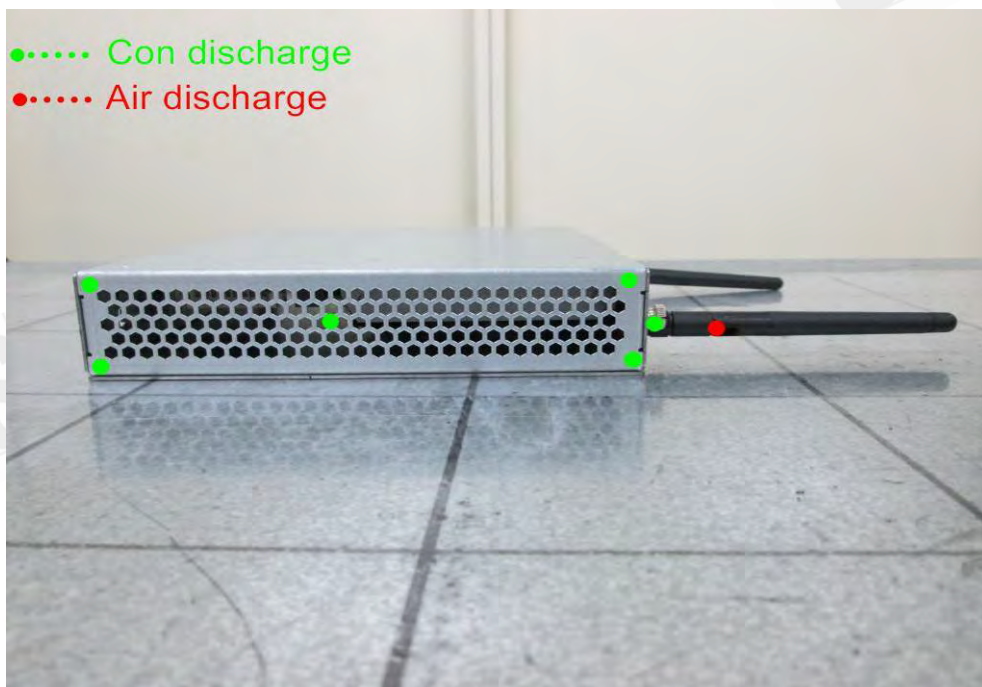
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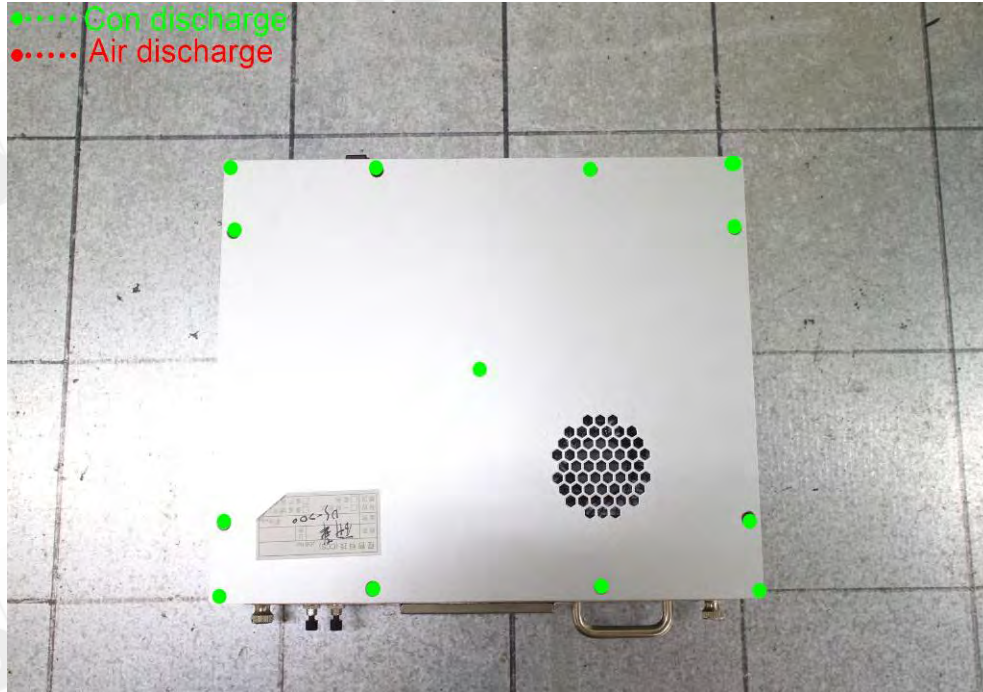
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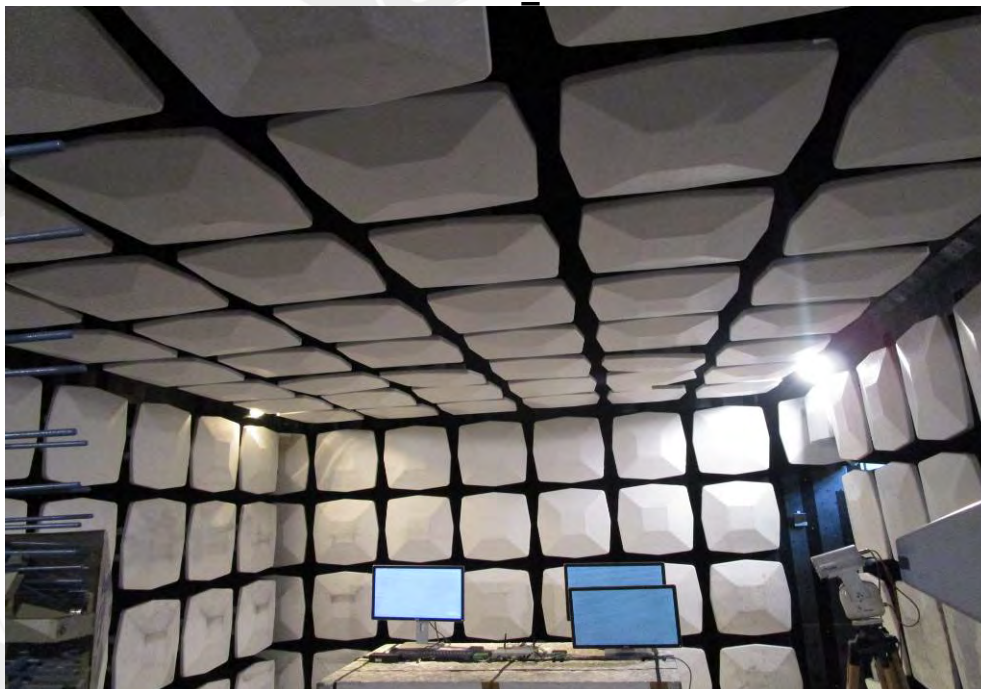
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RS Testing Set-up

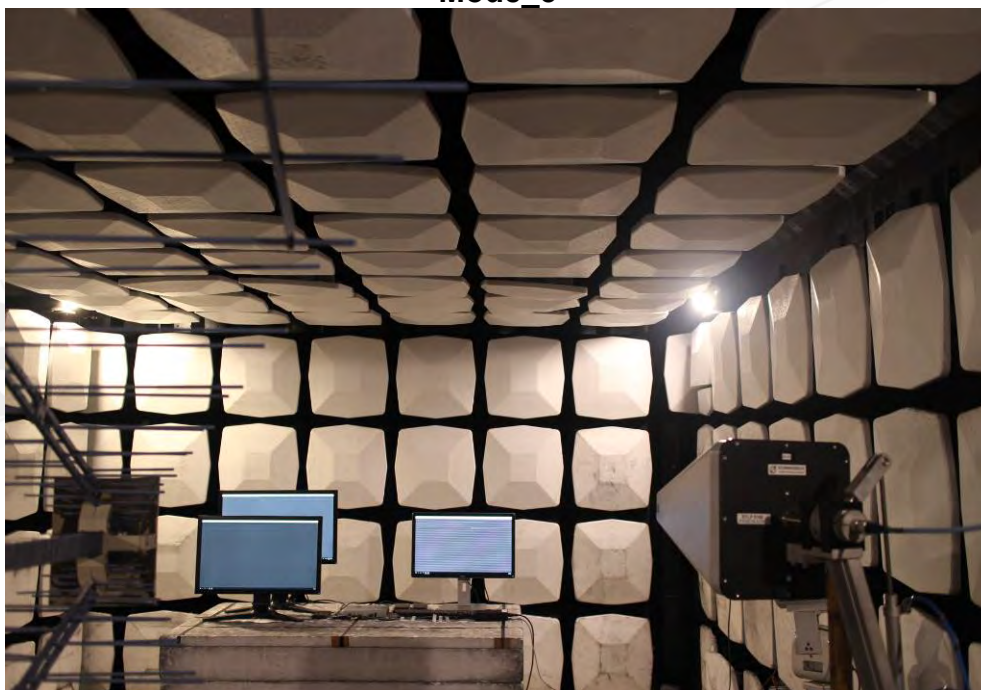
Model No.:DS-200GB-T0A1E

Mode_1



Rev.01

Mode_5



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EFT Testing Set-up

Model No.:DS-200GB-T0A1E

Mode_1



Mode_1_Clamp

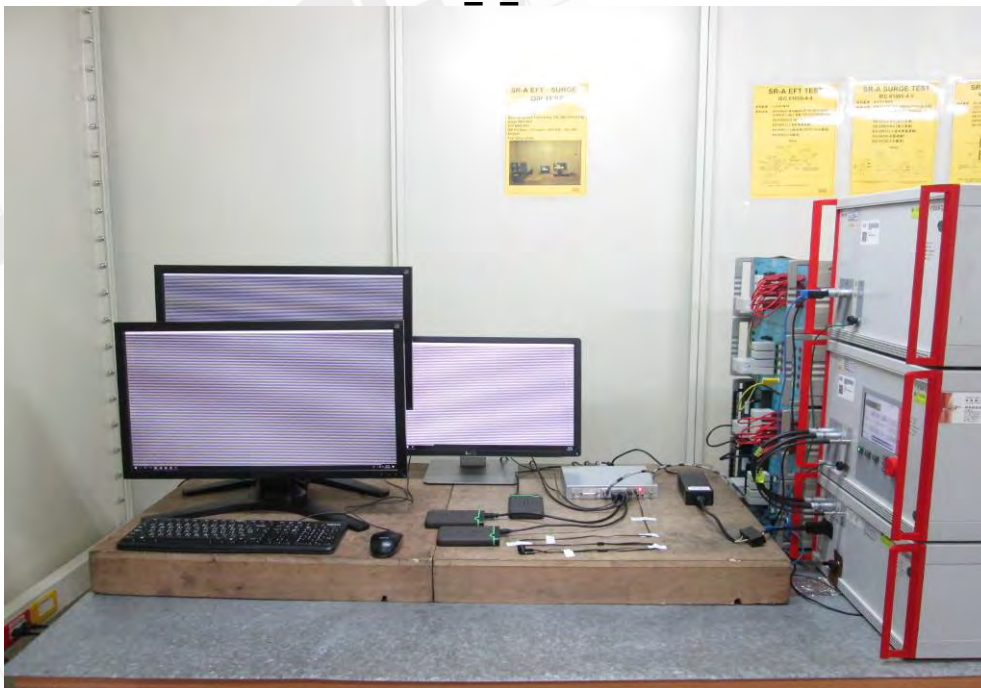


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Mode_5_Power



Mode_5_Clamp



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Surge Testing Set-up

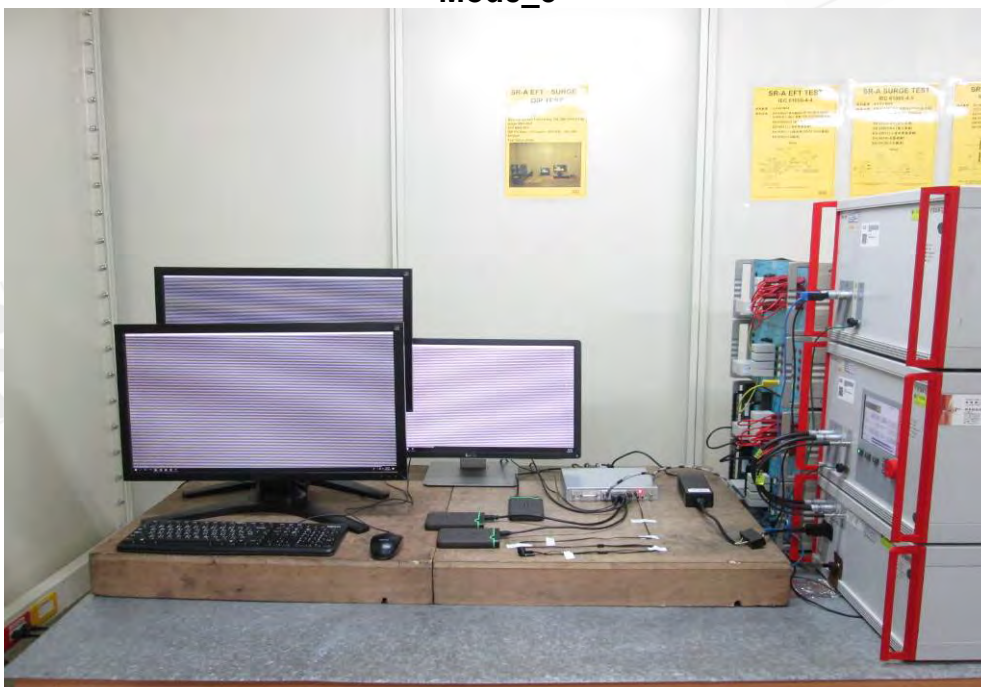
Model No.:DS-200GB-T0A1E

Mode_1



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Mode_5



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CS Testing Set-up

Model No.:DS-200GB-T0A1E

Mode_1



Mode_1_T8



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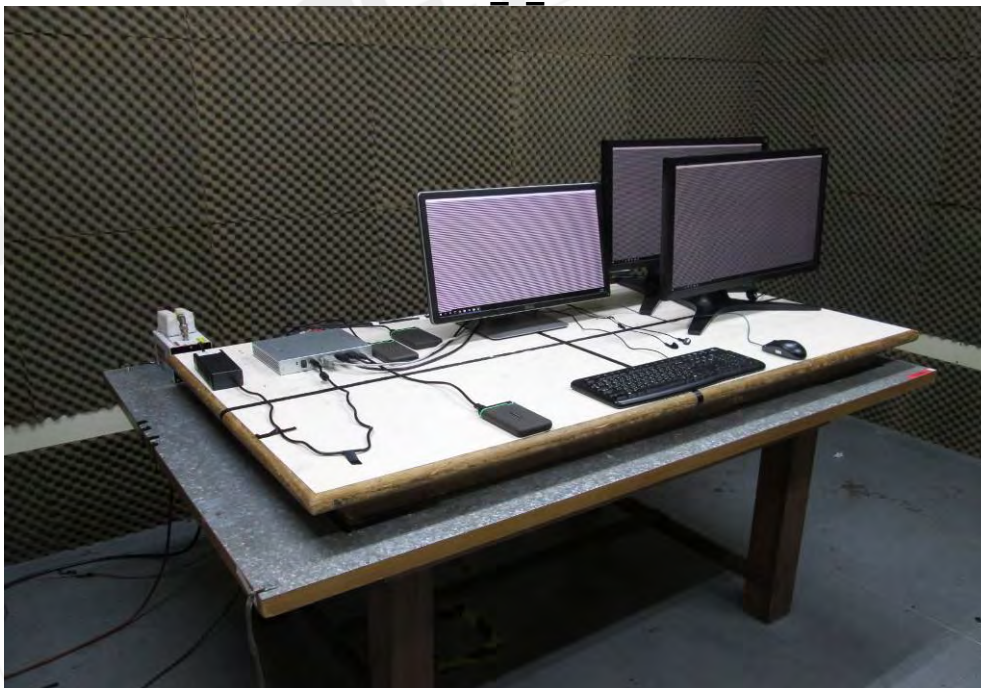
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Mode_5_M3



Mode_5_T8



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PMF Testing Set-up

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Mode_1



Rev.01

Mode_5



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DIP Testing Set-up

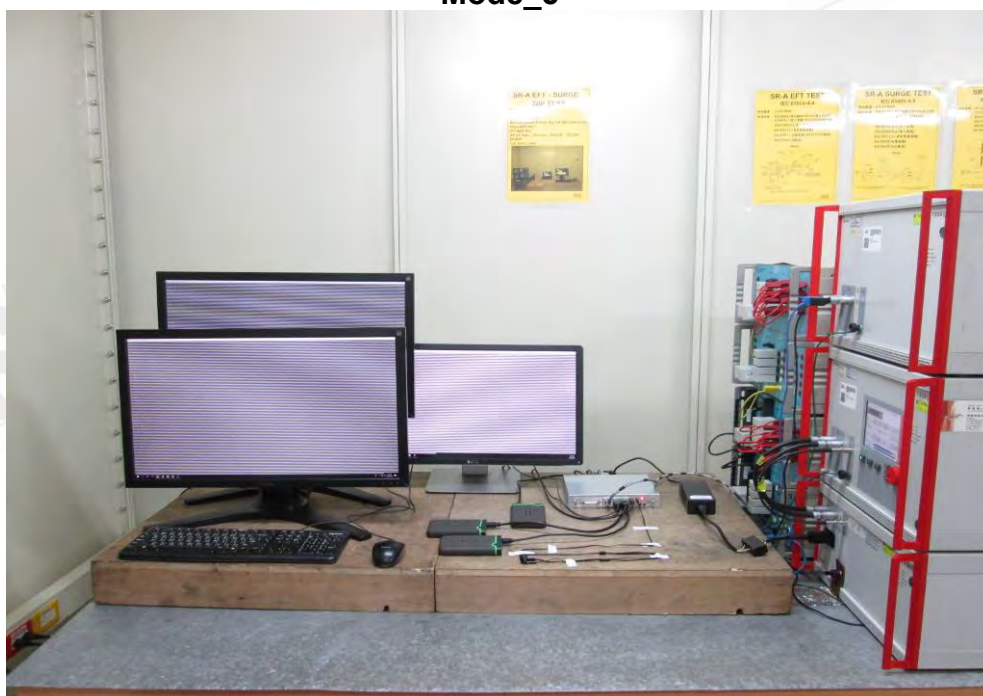
Model No.:DS-200GB-T0A1E

Mode_1



Rev.01

Mode_5



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Photographs of EUT Unit

Exterior

Model No.:DS-200GB-T0A1E



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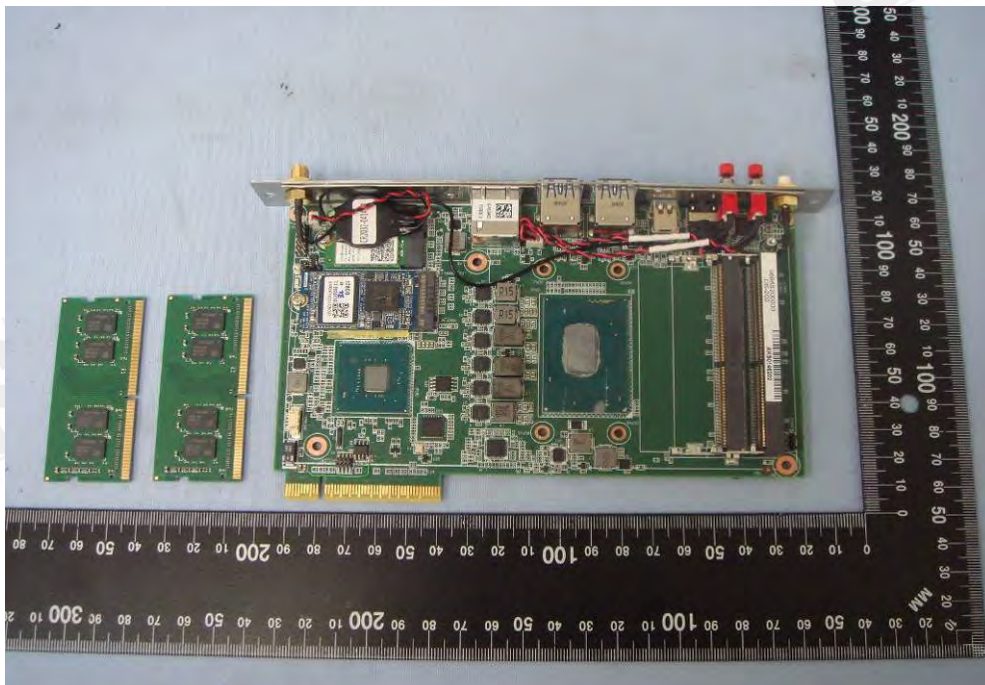
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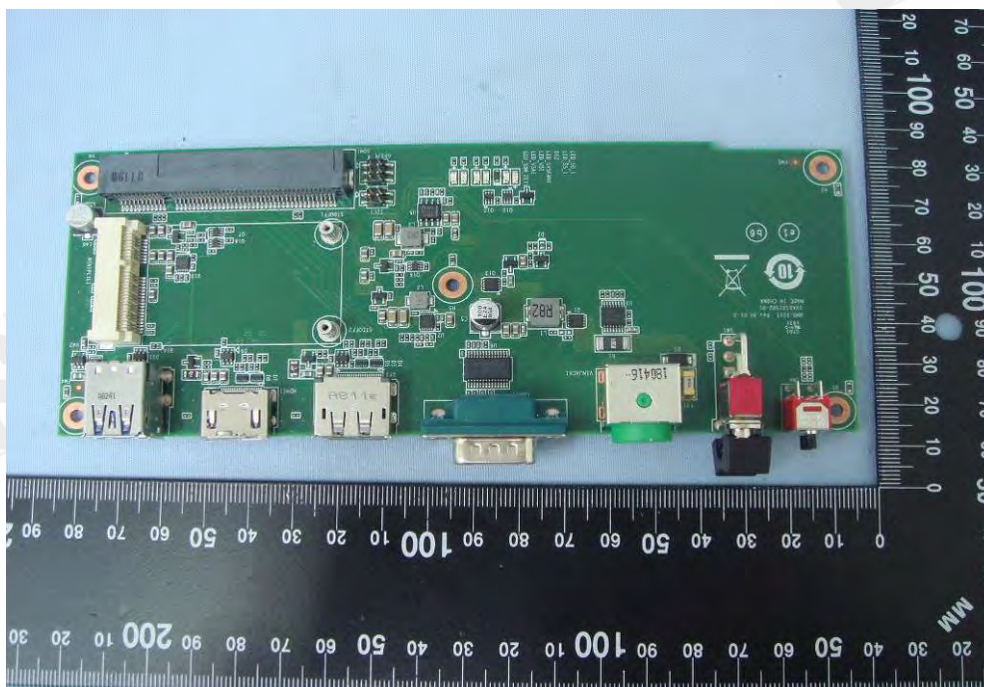
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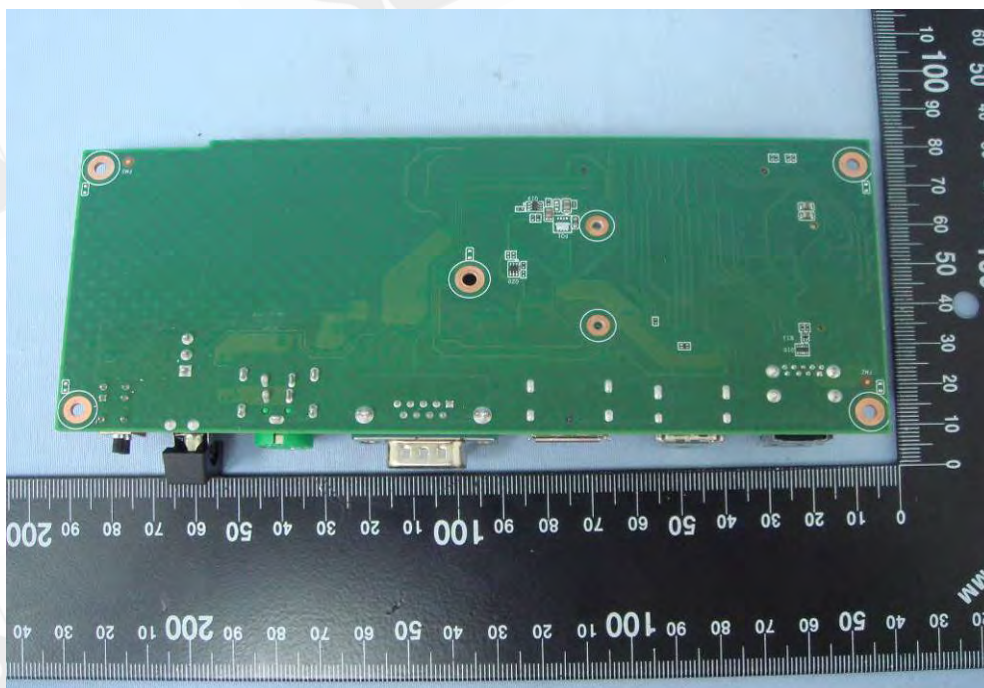
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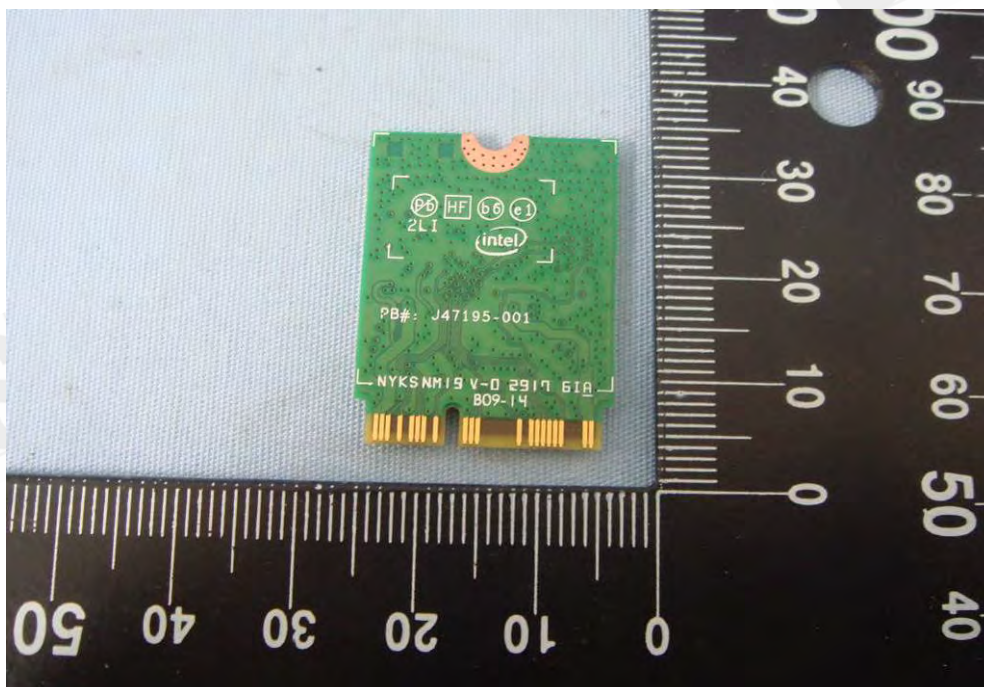
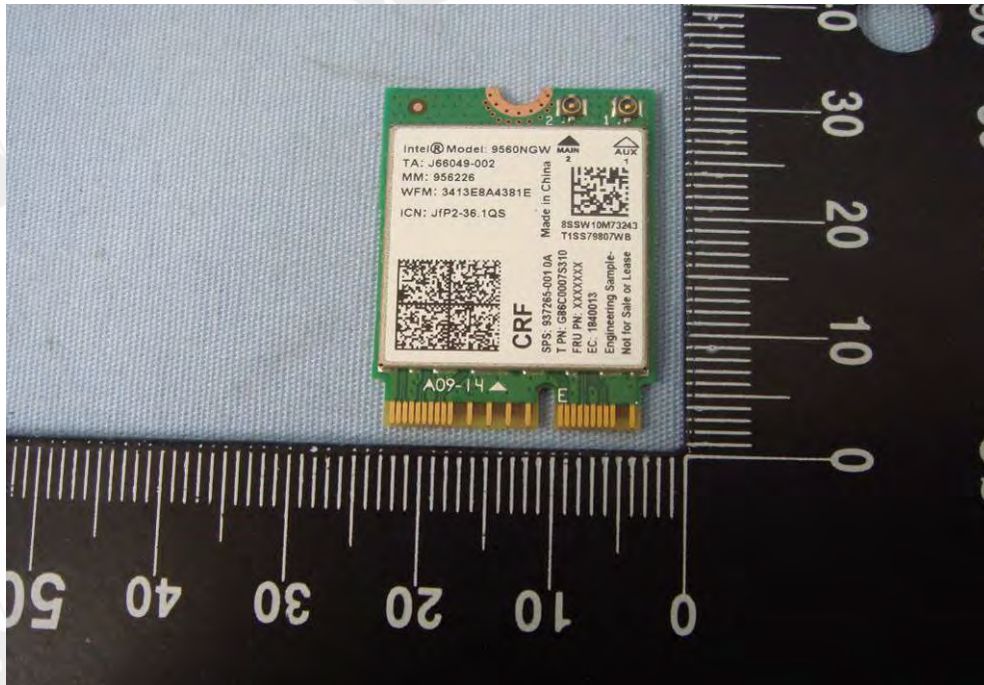
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**** End of Report ****

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