

FCC CERTIFICATION REPORT

Test Report No. : MH/2018/80057

Applicant : Sharp Corporation, Mobile Communication B.U.

Address : 2-13-1, Hachihonmatsu-lida, Higashi-hiroshima-shi, Hiroshima
739-0192, Japan

Manufacturer : Sharp Corporation

Address : 1 Takumi-cho, Sakai-ku, Sakai-Shi, Osaka 590-8522, Japan

Equipment Under Test (EUT) :

Product Name : Smart Phone

Standards : FCC Part 15, Subpart B, Class B

FCC Designation Numbers : 916890 / TW1087

Date of Receipt : Aug. 07, 2018

Date of Test : Aug. 07 ~ 31, 2018

Date of Issue : Sep. 05, 2018

Test Result :	PASS
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In the configuration tested, the EUT complied with the standards specified above.

Remarks :

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

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Tested By:

Thomas Liu

Date

Sep. 05, 2018

Thomas Liu (Engineer)

Approved By

Eddy Cheng

Date

Sep. 05, 2018

Eddy Cheng (Asst. Supervisor)



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Revision History

Report Number	Revision	Description	Issue Date
MH/2018/80057	Rev.00	Initial creation of document	Sep. 05, 2018

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1. General Information

1.1 Applicant & Manufacturer Information

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Manufacturer : Sharp Corporation
Address of Manufacturer : 1 Takumi-cho, Sakai-ku, Sakai-Shi, Osaka 590-8522, Japan

1.2 General Description of EUT

Product Name : Smart Phone

1.3 Details of EUT

Power Supply : AC 100~240V, 50/60Hz
Highest operate description : 2480 MHz
Battery : 3.85V, 2700mAh, 10.40Wh
Worst case : CE worst case : Config 1
Below RE worst case : Config 2
Above RE worst case : Config 3

	FCC ID : APYHRO00265
1 st Source (eMCP memory, PCB, Shield, Sub camera)	V
2 nd Source (eMCP memory, PCB, Shield, Sub camera)	Worst case

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Accessories List: AC Charger : Salom/XN-2QC25 Data Cable : Luxshare-ICT/L6KU2007-CS-H PHF : Sony / MDR-EX15AP			
	Config 1	Config2	Config 3
Applicable standard	FCC 15B		
Accessories	EUT + AC Adaptor +USB Cable +PHF	EUT +USB Cable +PHF	EUT + AC Adaptor +USB Cable +PHF
Main function	<i>Speech</i>	<i>Data Link</i>	<i>Camera</i>
Additional function	BT+WiFi +GPS+NFC		
Description			
radiated emission	GSM 850/1900 WCDMA BV LTE B05/12/17	Data R/W	MP3/ ;REC mode (Front/Back) ;play REC
conducted emission (DC Power)	NA	NA	NA
conducted emission (AC Power)	GSM 850/1900 WCDMA BV LTE B05/12/17	Data R/W	MP3/ ;REC mode (Front/Back) ;play REC

1.4 Operation Procedure

Config 1

1. Let EUT plug in SD Card & SIM Card & Earphone, connect to Adapter with USB cable and turn it on.
2. Turn on BT function and Link BT Speaker.
3. Turn on WiFi function, connected with NB WiFi-AP (5G/2.4G), NB ping EUT IP Address.
4. Turn on NFC function and use proximity card to close the back of the phone before and after the test to confirm that the NFC function is normal.
5. Set up GPS simulator and turn on GPS test app.
6. Set up base station, set channel (GSM 850/1900, WCDMA B5, LTE B5/B12/B17)Link(2G/3G talk) & Idle.
7. Start the test.

Config 2

1. Let EUT plug in SD Card & SIM Card & Earphone, connect to NB with USB cable and turn it on.
2. Turn on BT function and Link BT Speaker.
3. Turn on WiFi function, connected with NB WiFi-AP (5G/2.4G), NB ping EUT IP Address.
4. Turn on NFC function and use proximity card to close the back of the phone before and after the test to confirm that the NFC function is normal.
5. Set up GPS simulator and turn on GPS test app.
6. Execute Data Read & Write with EUT in NB.
7. Start the test.

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Config 3

1. Let EUT plug in SD Card & SIM Card & Earphone, connect to Adapter with USB cable and turn it on.
2. Turn on BT function and Link BT Speaker.
3. Turn on WiFi function, connected with NB WiFi-AP (5G/2.4G), NB ping EUT IP Address.
4. Turn on NFC function and use proximity card to close the back of the phone before and after the test to confirm that the NFC function is normal.
5. Set up GPS simulator and turn on GPS test app.
6. Execute music playback MP3 (1k audio source).
7. Turn on Camera (Front/Rear) and execute Record.
8. Start the test.

1.5 Description of Support Units

PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
SIM Card	R&S	CMW-Z05	8952530076180138474
BT Speaker	Creative	MF8090	YFMF8090245R00855Y
Radio Communication Analyzer	R&S	CMU200	102189
Radio Communication Analyzer	R&S	CMW500	1201.002K50-152303-Zr
AP	BUFFALO	WZR-HP-G300NH2	44066221202559[[G]]
GPS Signal Generator	Spectracom	GSG53 GNSS4	200218
Notebook (RE, HRE)	DELL	Latitude E6440	3VGS162
Notebook (CE)	DELL	Latitude E5430	COVZYW1
Mouse (RE, HRE, CE)	Logitech	M-U0026	1738HS05FGU8
Printer (RE, HRE, CE)	HP	VCVRA-1004	CN33K19J3F
Micro SD	Transcend	Micro SDHC (Class4)	N/A
Adapter	Salom	XN-2QC25	N/A

Support Equipment Used in Tested Cable

Cable Type	Core	Length	Shielding/Non-shielding
USB Cable*2	N/A	1.8m	Shielding

1.6 Modification List

No modification was made by SGS Taiwan Electronics & Communication Laboratory.

1.7 Accessories Cable List

Cable Type	Core	Length	Shielding/Non-shielding
USB Cable	N/A	1m	Shielding
Earphone Cable	N/A	1.25m	Non-shielding

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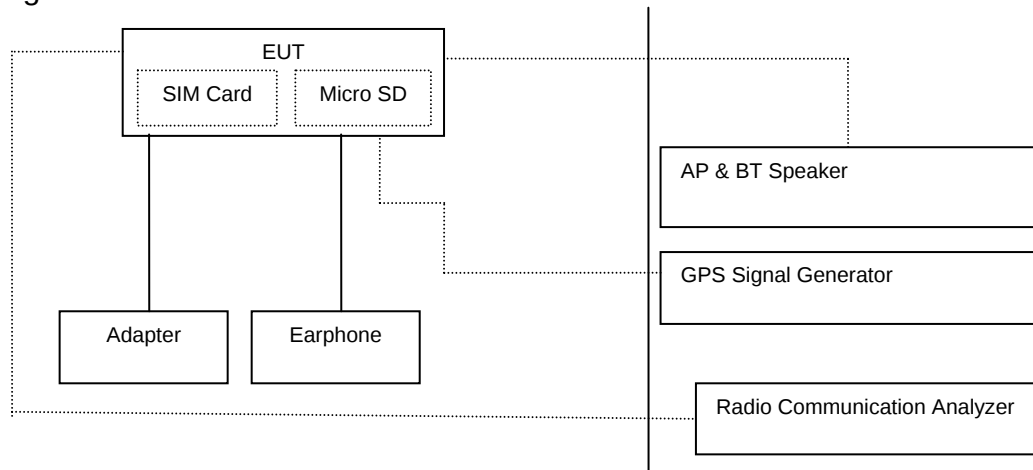
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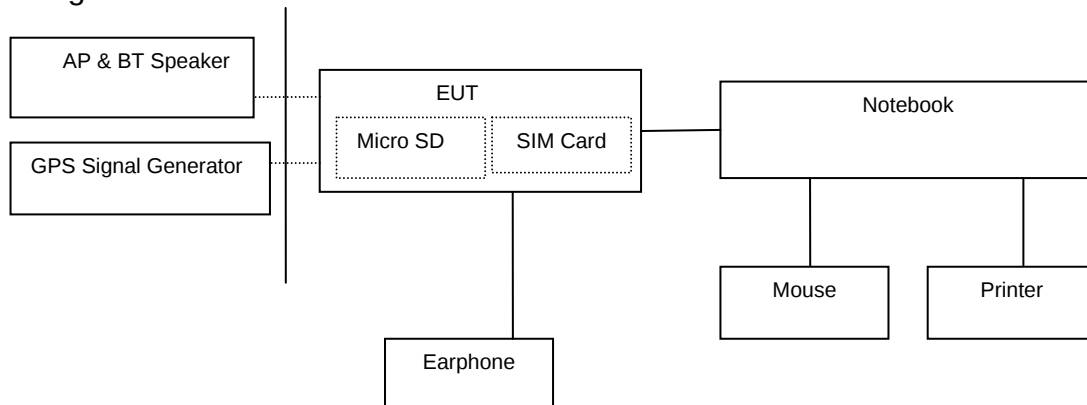
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1.8 Test Set-Up Configuration

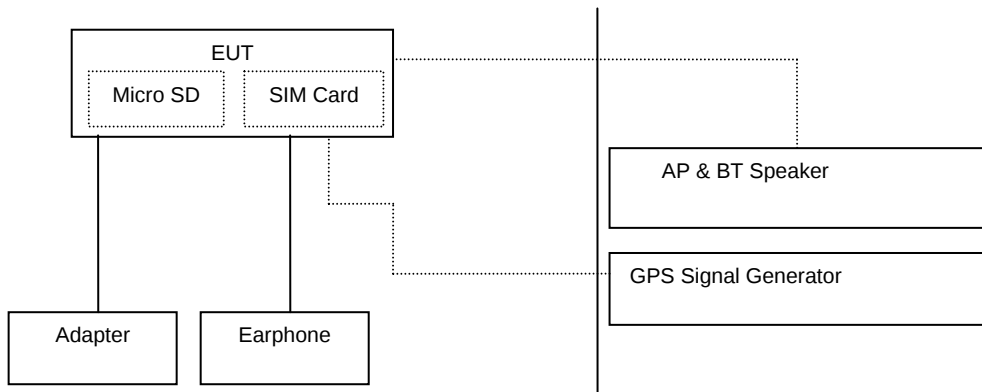
Config 1



Config 2



Config 3



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1.9 Measurement Procedure

Conducted Emission Testing was performed according to ANSI C63.4:2014 in a shielded room with peripherals placed on a table, 0.8m high over a metal floor. It was located more than required distance away from the shielded room wall.

Radiated Emission Testing was performed according to ANSI C63.4:2014 at the 3/10m semi-anechoic chamber. The EUT was placed on a 0.8m high table along with the peripherals. The turn table was placed 10m distance from the antenna. Cables were placed in a position to produce maximum emissions as determined by experimentation, and operation mode was selected for production of maximum emission.

The frequencies and amplitudes of maximum emission were measured at varying azimuths, antenna heights and antenna polarities. Maximum emission levels are then reported.

1.10 Standards Applicable for Testing

Tests to be carried out under FCC Part 15, Subpart B/CISPR 22

Test Standards	Status
FCC Part 15, Subpart B/ CISPR 22	Applicable
Deviation from Standard	No deviation

1.11 Summary of Results

Highest Emission					
Standard	Test Type	Result	Phase/Pol.	Frequency(MHz)	Margin(dB)
FCC Part 15 Subpart B Class B	Conducted Emission	PASS	Line	0.2140	-14.02 (QP)
			Neutral	0.2060	-16.63 (QP)
	Radiated Emission	PASS	Ver.	45.2700	-5.47 (QP)

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2. EMISSION

2.1 Test Results

	Results
Conducted Emission	Pass
Radiated Emission	Pass

2.2 Frequency Range

FCC Part 15, Subpart B:

Conducted Emission : 150 kHz - 30 MHz

Radiated Emission : See below table

Highest frequency generated or Upper frequency of measurement
used in the device or on which the range (MHz)
device operates or tunes (MHz)

Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

2.3 Limits of Conducted and Radiated Emission

2.3.1 Limits of Conducted Emission

FCC Part 15, Subpart B/CISPR 22:

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 : (1) The lower limit shall apply at the transition frequencies.

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

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected there to, shall not exceed the level of field strengths specified above.

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2.3.2 Limits of Radiated Emissions

FCC Part 15, Subpart B Limit:

- Detector Function : Quasi – Peak

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30~88	39	40
88~216	43.5	43.5
216~960	46.44	46
Above 960	49.54	54

- Detector Function : Peak , Average

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
Above 1000	79.3	59.3	73.9	53.9

CISPR 22 Limit:

- Detector Function : Quasi – Peak

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30-230	40	30
230-1000	47	37

NOTE 1 The lower limit shall apply at the transition frequency.

NOTE 2 Additional provisions may be required for cases where interference occurs.

FREQUENCY (GHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Average	Peak	Average	Peak
1~3	56	76	50	70
3~6	60	80	54	74

NOTE The lower limit applies at the transition frequency.

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2.4. Test of Conducted Emission

2.4.1 Test Equipments

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	101342	2018/1/31	2019/1/30
Coaxial Cables	EMC Instruments Corp	EMCRG58-BM-BM-3000	160812	2018/8/12	2019/8/11
LISN	Schwarzbeck	NSLK 8127	8127-648	2018/7/9	2019/7/8
Pulse Limiter	Narda S.T.S.	PMM PL01	1110X30602	2018/8/12	2019/8/11
LISN	Schwarzbeck	NSLK 8128	NSLK8128-300	2017/9/4	2018/9/3
Universal Digital Radio Communication Tester	R&S	CMU 200	119988	2018/2/22	2019/2/21
Wideband Radio Communication Tester	R&S	CMW 500	152303	2018/2/21	2019/2/20
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.

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 Measurement Uncertainty of Conducted Emission
 Expanded uncertainty U_{lab}(K=2) of conducted emission is 2.25 dB
 Theory values uncertainty U_{cispr 16-4-2 :2011+A1 2014} (K=2) of AC mains conducted Emission is 3.44dB

2.4.2 Operating Environment

Temperature : 25 degree C

Humidity : 66 %RH

Atmospheric Pressure : 992 mBar

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

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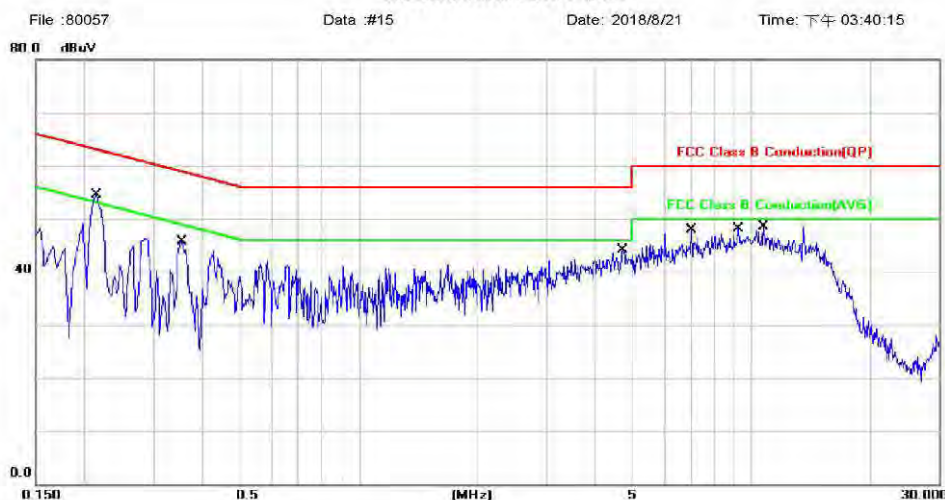


2.4.4 Measurement Data:

Config_1_L

Site : Conduction Room Phase: **L1** Temperature: 25 °C
Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 66 %
Mode: Config 1
Note: GSM850

Conducted Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1	*	0.2140	49.00	0.03	49.03	63.05	-14.02	QP	
2		0.2140	37.60	0.03	37.63	53.05	-15.42	AVG	
3		0.3540	40.20	0.09	40.29	58.87	-18.58	QP	
4		0.3540	32.20	0.09	32.29	48.87	-16.58	AVG	
5		4.6980	36.80	0.33	37.13	56.00	-18.87	QP	
6		4.6980	28.10	0.33	28.43	46.00	-17.57	AVG	
7		7.0620	38.50	0.39	38.89	60.00	-21.11	QP	
8		7.0620	29.10	0.39	29.49	50.00	-20.51	AVG	
9		9.2860	39.00	0.44	39.44	60.00	-20.56	QP	
10		9.2860	29.40	0.44	29.84	50.00	-20.16	AVG	
11		10.7380	39.20	0.49	39.69	60.00	-20.31	QP	
12		10.7380	29.00	0.49	29.49	50.00	-20.51	AVG	

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

File :80057\Data :#15

Page: 1

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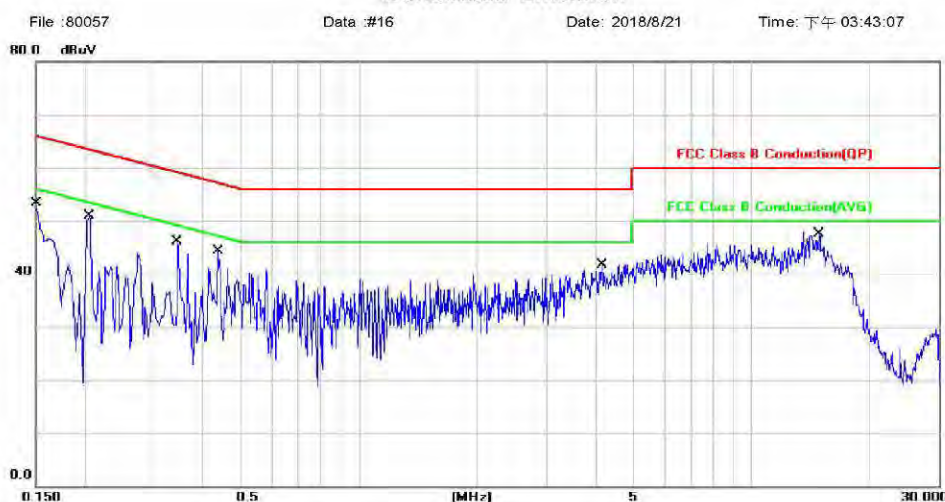
Config_1_N

Site : Conduction Room
 Limit: FCC Class B Conduction(QP)
 Mode: Config 1
 Note: GSM850

Phase: **N**
 Power: AC 120V/60Hz

Temperature: 25 ℃
 Humidity: 66 %

Conducted Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.1500	43.10	0.04	43.14	66.00	-22.86	QP	
2		0.1500	25.20	0.04	25.24	56.00	-30.76	AVG	
3 *		0.2060	46.70	0.04	46.74	63.37	-16.63	QP	
4		0.2060	33.30	0.04	33.34	53.37	-20.03	AVG	
5		0.3460	36.50	0.09	36.59	59.06	-22.47	QP	
6		0.3460	20.00	0.09	20.09	49.06	-28.97	AVG	
7		0.4380	35.70	0.12	35.82	57.10	-21.28	QP	
8		0.4380	23.10	0.12	23.22	47.10	-23.88	AVG	
9		4.1740	34.50	0.30	34.80	56.00	-21.20	QP	
10		4.1740	25.50	0.30	25.80	46.00	-20.20	AVG	
11		14.8780	38.50	0.50	39.00	60.00	-21.00	QP	
12		14.8780	17.30	0.50	17.80	50.00	-32.20	AVG	

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

File :80057\Data :#16

Page: 1

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Config_2_L

Site : Conduction Room
Limit: FCC Class B Conduction(QP)
Mode: Config 2
Note: Data Read (SD Card)
AC 120V/60Hz

Phase: L1
Power: From System

Temperature: 25 ℃
Humidity: 66 %

Conducted Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment	dBuV	dB	Detector	Comment
1		0.1580	46.50	0.04	46.54	65.57	-19.03	QP	
2		0.1580	27.60	0.04	27.64	55.57	-27.93	AVG	
3 *		0.1820	47.50	0.03	47.53	64.39	-16.86	QP	
4		0.1820	33.80	0.03	33.83	54.39	-20.56	AVG	
5		0.2460	35.80	0.05	35.85	61.89	-26.04	QP	
6		0.2460	21.30	0.05	21.35	51.89	-30.54	AVG	
7		0.2780	39.00	0.06	39.06	60.88	-21.82	QP	
8		0.2780	31.90	0.06	31.96	50.88	-18.92	AVG	
9		0.4340	36.20	0.12	36.32	57.18	-20.86	QP	
10		0.4340	21.70	0.12	21.82	47.18	-25.36	AVG	
11		1.7500	27.70	0.27	27.97	56.00	-28.03	QP	
12		1.7500	20.50	0.27	20.77	46.00	-25.23	AVG	

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

File :80057\Data :#25

Page: 1

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Config_2_N

Site : Conduction Room
Limit: FCC Class B Conduction(QP)
Mode: Config 2
Note: Data Read (SD Card)
AC 120V/60Hz

Phase: **N**
Power: From System

Temperature: 25 ℃
Humidity: 66 %

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1620	45.40	0.04	45.44	65.36	-19.92	QP	
2		0.1620	24.10	0.04	24.14	55.36	-31.22	AVG	
3 *		0.1820	47.80	0.04	47.84	64.39	-16.55	QP	
4		0.1820	32.30	0.04	32.34	54.39	-22.05	AVG	
5		0.2300	42.70	0.05	42.75	62.45	-19.70	QP	
6		0.2300	30.80	0.05	30.85	52.45	-21.60	AVG	
7		0.2660	35.50	0.06	35.56	61.24	-25.68	QP	
8		0.2660	22.70	0.06	22.76	51.24	-28.48	AVG	
9		0.3260	35.30	0.08	35.38	59.55	-24.17	QP	
10		0.3260	26.90	0.08	26.98	49.55	-22.57	AVG	
11		0.4700	34.30	0.13	34.43	56.51	-22.08	QP	
12		0.4700	26.50	0.13	26.63	46.51	-19.88	AVG	

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

File :80057\Data :#26

Page: 1

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Config_3_L

Site : Conduction Room
Limit: FCC Class B Conduction(QP)
Mode: Config 3
Note: play REC

Phase: **L1**
Power: AC 120V/60Hz

Temperature: 25 ℃
Humidity: 66 %

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	*	0.1740	49.90	0.04	49.94	64.77	-14.83	QP	
2		0.1740	37.00	0.04	37.04	54.77	-17.73	AVG	
3		0.3980	42.30	0.11	42.41	57.90	-15.49	QP	
4		0.3980	27.80	0.11	27.91	47.90	-19.99	AVG	
5		3.1620	35.00	0.29	35.29	56.00	-20.71	QP	
6		3.1620	26.20	0.29	26.49	46.00	-19.51	AVG	
7		5.0180	37.20	0.34	37.54	60.00	-22.46	QP	
8		5.0180	28.40	0.34	28.74	50.00	-21.26	AVG	
9		6.3060	39.10	0.37	39.47	60.00	-20.53	QP	
10		6.3060	29.10	0.37	29.47	50.00	-20.53	AVG	
11		8.9820	38.90	0.43	39.33	60.00	-20.67	QP	
12		8.9820	28.40	0.43	28.83	50.00	-21.17	AVG	

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

File :80057\Data :#36

Page: 1

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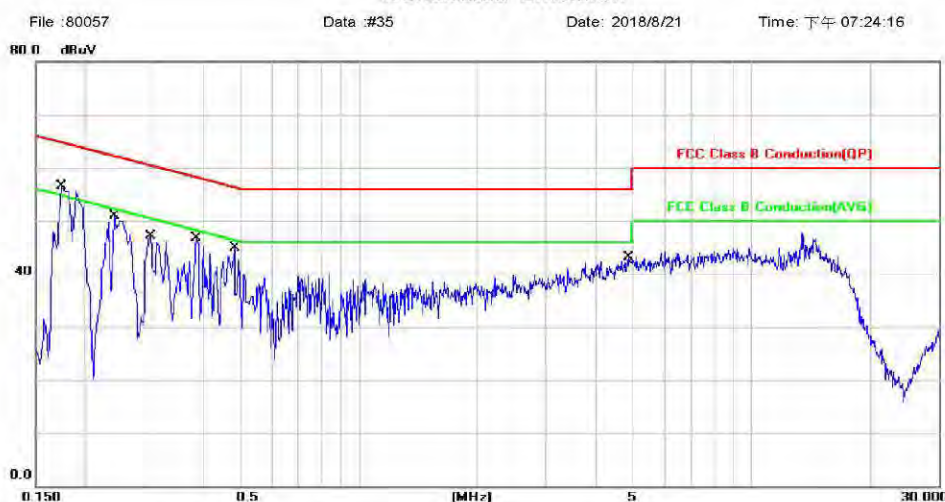
Config_3_N

Site : Conduction Room
Limit: FCC Class B Conduction(QP)
Mode: Config 3
Note: play REC

Phase: **N**
Power: AC 120V/60Hz

Temperature: 25 ℃
Humidity: 66 %

Conducted Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment	dBuV	dB	Detector	Comment
1	*	0.1740	53.30	0.04	53.34	64.77	-11.43	QP	
2		0.1740	37.50	0.04	37.54	54.77	-17.23	AVG	
3		0.2380	46.70	0.05	46.75	62.17	-15.42	QP	
4		0.2380	30.20	0.05	30.25	52.17	-21.92	AVG	
5		0.2940	40.10	0.07	40.17	60.41	-20.24	QP	
6		0.2940	23.90	0.07	23.97	50.41	-26.44	AVG	
7		0.3860	42.80	0.10	42.90	58.15	-15.25	QP	
8		0.3860	27.70	0.10	27.80	48.15	-20.35	AVG	
9		0.4820	38.40	0.13	38.53	56.30	-17.77	QP	
10		0.4820	25.10	0.13	25.23	46.30	-21.07	AVG	
11		4.8700	36.40	0.31	36.71	56.00	-19.29	QP	
12		4.8700	26.60	0.31	26.91	46.00	-19.09	AVG	

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

File : 80057\Data : #35

Page: 1

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2.5 Test of Radiated Emission

2.5.1 Test Equipments

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-NM	150917	2017/9/18	2018/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150919	2017/9/18	2018/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150820	2017/9/18	2018/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150918	2017/9/18	2018/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150821	2017/9/18	2018/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150822	2017/9/18	2018/9/17
Universal Digital Radio Communication Tester	R&S	CMU 200	119988	2018/2/22	2019/2/21
Wideband Radio Communication Tester	R&S	CMW 500	152303	2018/2/21	2019/2/20
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.

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 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
Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170-184	2017/12/12	2018/12/11
Pre Amplifier	EMC Instruments Corp.	EMC012645B	980216	2018/3/31	2019/3/30
Pre Amplifier	EMC Instruments Corp.	EMC184045B	980135	2017/10/27	2018/10/26
Coaxial Cable	JUNFLOW	MWX221-NMSNMS	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
Universal Digital Radio Communication Tester	R&S	CMU 200	119988	2018/2/22	2019/2/21
Wideband Radio Communication Tester	R&S	CMW 500	152303	2018/2/21	2019/2/20
Radio Communication Analyzer	Anritsu	MT8820C	6201465315	2017/12/10	2018/12/9
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)
Expanded uncertainty (k=2) of radiated emission measurement is 5.07 dB. (6-18GHz)
Expanded uncertainty Ulab (k=2) of radiated emission measurement is 5.19 dB. (18-26GHz)
Expanded uncertainty Ulab (k=2) of radiated emission measurement is 5.14 dB. (26-40GHz)
Theory values uncertainty Ucispr 16-4-2:2011+A1:2014 (K=2) of radiated emission measurement is 5.18 dB. (1-6GHz)
Theory values uncertainty Ucispr 16-4-2:2011+A1:2014 (K=2) of radiated emission measurement is 5.48 dB. (6-18GHz)
Theory values uncertainty Ucispr 16-4-2:2011+A1:2014 (K=2) of radiated emission measurement is ---- dB. (18-26GHz)
Theory values uncertainty Ucispr 16-4-2:2011+A1:2014 (K=2) of radiated emission measurement is ---- dB. (26-40GHz)

2.5.2 Operating Environment

Temperature : 24 degree C

Humidity : 66 %RH

Atmospheric Pressure : 996 mBar

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

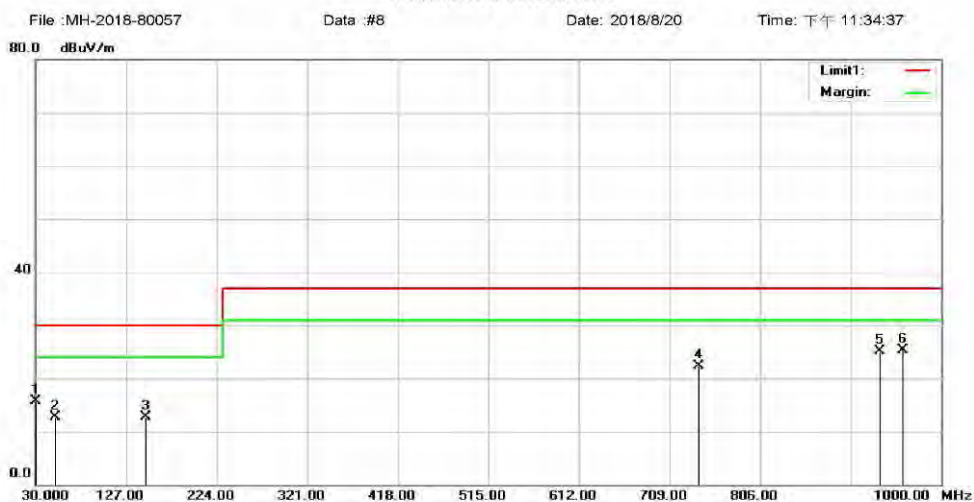
Config_1_H

Site: SGS 10m Chamber
 Limit: CISPR22 Class B 10M Radiation
 Mode: Config_1
 Note: WCDMA BV

Polarization: **Horizontal**
 Power: AC 120V/60Hz
 Distance: 10m

Temperature: 24 °C
 Humidity: 66 %

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		30.9700	28.16	-12.49	15.67	30.00	-14.33	QP	
2		51.3400	23.88	-11.22	12.66	30.00	-17.34	QP	
3		148.3400	24.08	-11.30	12.78	30.00	-17.22	QP	
4		740.0400	23.18	-0.90	22.28	37.00	-14.72	QP	
5		935.0100	23.43	1.64	25.07	37.00	-11.93	QP	
6 *		959.2600	23.44	1.91	25.35	37.00	-11.65	QP	

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

File: MH-2018-80057\Data: #8

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Config_1_V

Site: SGS 10m Chamber
Limit: CISPR22 Class B 10M Radiation
Mode: Config_1
Note: WCDMA BV

Polarization: **Vertical**
Power: AC 120V/60Hz
Distance: 10m

Temperature: 24 °C
Humidity: 66 %

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	*	31.9400	31.78	-12.24	19.54	30.00	-10.46	QP	
2		54.2500	24.02	-11.05	12.97	30.00	-17.03	QP	
3		166.7700	26.42	-11.41	15.01	30.00	-14.99	QP	
4		770.1100	22.66	-0.36	22.30	37.00	-14.70	QP	
5		957.3200	22.65	1.52	24.17	37.00	-12.83	QP	
6		979.6300	22.55	1.62	24.17	37.00	-12.83	QP	

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

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Config_2_H

Site: SGS 10m Chamber
Limit: CISPR22 Class B 10M Radiation
Mode: Config_2
Note: Data Read

Polarization: **Horizontal**
Power: From System
Distance: 10m

Temperature: 24 °C
Humidity: 66 %

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		30.0000	27.99	-12.60	15.39	30.00	-14.61	QP	
2		54.2500	24.43	-11.49	12.94	30.00	-17.06	QP	
3		153.1900	23.90	-11.27	12.63	30.00	-17.37	QP	
4		871.9600	23.55	0.63	24.18	37.00	-12.82	QP	
5		939.8600	23.43	1.76	25.19	37.00	-11.81	QP	
6 *		974.7800	23.54	1.75	25.29	37.00	-11.71	QP	

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

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Config_2_V

Site: SGS 10m Chamber
Limit: CISPR22 Class B 10M Radiation
Mode: Config_2
Note: Data Read

Polarization: **Vertical**
Power: From System
Distance: 10m

Temperature: 24 °C
Humidity: 66 %

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		30.0000	35.74	-12.40	23.34	30.00	-6.66	QP	
2	*	45.2700	35.42	-10.89	24.53	30.00	-5.47	QP	
3		157.0700	25.66	-10.77	14.89	30.00	-15.11	QP	
4		896.2100	22.66	1.01	23.67	37.00	-13.33	QP	
5		932.1000	22.76	1.36	24.12	37.00	-12.88	QP	
6		964.1100	22.74	1.56	24.30	37.00	-12.70	QP	

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

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Config_3_H

Site: SGS 10m Chamber
Limit: CISPR22 Class B 10M Radiation
Mode: Config_3
Note: REC (Back)

Polarization: **Horizontal**
Power: AC 120V/60Hz
Distance: 10m

Temperature: 24 °C
Humidity: 66 %

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		31.9400	28.91	-12.39	16.52	30.00	-13.48	QP	
2		51.3400	23.90	-11.22	12.68	30.00	-17.32	QP	
3		165.8000	24.10	-11.28	12.82	30.00	-17.18	QP	
4		849.6500	23.69	0.50	24.19	37.00	-12.81	QP	
5		947.6200	23.30	1.95	25.25	37.00	-11.75	QP	
6	*	983.5100	23.62	1.66	25.28	37.00	-11.72	QP	

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

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Config_3_V

Site: SGS 10m Chamber
Limit: CISPR22 Class B 10M Radiation
Mode: Config_3
Note: REC (Back)

Polarization: **Vertical**
Power: AC 120V/60Hz
Distance: 10m

Temperature: 24 °C
Humidity: 66 %

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	*	32.3000	32.12	-12.22	19.90	30.00	-10.10	QP	
2		54.2500	24.05	-11.05	13.00	30.00	-17.00	QP	
3		166.7700	26.18	-11.41	14.77	30.00	-15.23	QP	
4		787.5700	22.64	0.03	22.67	37.00	-14.33	QP	
5		883.6000	22.64	0.73	23.37	37.00	-13.63	QP	
6		948.5900	22.78	1.48	24.26	37.00	-12.74	QP	

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

File: MH-2018-80057\Data #11

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Above 1GHz

1GMz-18GMz

Config_1_H

Site: SGS 966 Chamber A

Polarization: **Horizontal**

Temperature: 22 °C

Limit: FCC Class B 3M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

Humidity: 71 %

Mode: Config_1

Distance:

Note:

Radiated Emission

File :80057

Data :#10

Date: 2018/8/23

Time: 下午 10:10:40

100.0 dBuV/m



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		2598.000	58.38	-11.36	47.02	74.00	-26.98	peak	
2		4247.000	57.72	-8.00	49.72	74.00	-24.28	peak	
3		4706.000	57.95	-7.46	50.49	74.00	-23.51	peak	
4		5301.000	57.71	-6.50	51.21	74.00	-22.79	peak	
5		5301.000	45.08	-6.50	38.58	54.00	-15.42	AVG	
6		5743.000	57.85	-5.37	52.48	74.00	-21.52	peak	
7	*	5743.000	44.48	-5.37	39.11	54.00	-14.89	AVG	
8		6117.000	56.51	-3.75	52.76	74.00	-21.24	peak	
9		6117.000	42.79	-3.75	39.04	54.00	-14.96	AVG	

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

File :80057\Data :#10

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Config_1_V

Site: SGS 966 Chamber A

Polarization: **Vertical**

Temperature: 22 °C

Limit: FCC Class B 3M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

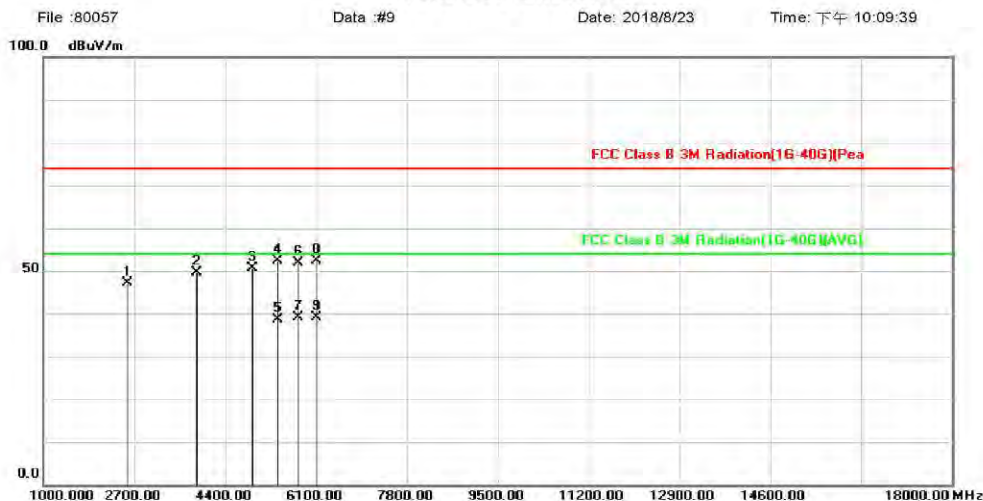
Humidity: 71 %

Mode: Config_1

Distance:

Note:

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment			Detector	Comment
1		2581.000	58.60	-11.35	47.25	74.00	-26.75	peak	
2		3856.000	58.54	-8.96	49.58	74.00	-24.42	peak	
3		4910.000	57.73	-7.20	50.53	74.00	-23.47	peak	
4		5386.000	58.66	-6.33	52.33	74.00	-21.67	peak	
5		5386.000	44.97	-6.33	38.64	54.00	-15.36	AVG	
6		5760.000	57.26	-5.33	51.93	74.00	-22.07	peak	
7 *		5760.000	44.45	-5.33	39.12	54.00	-14.88	AVG	
8		6117.000	56.09	-3.75	52.34	74.00	-21.66	peak	
9		6117.000	42.82	-3.75	39.07	54.00	-14.93	AVG	

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

File :80057\Data :#9

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Config_2_H

Site: SGS 966 Chamber A

Polarization: **Horizontal**

Temperature: 22 °C

Limit: FCC Class B 3M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

Humidity: 71 %

Mode: Config_2

Distance:

Note:

Radiated Emission

File :80057

Data :#8

Date: 2018/8/23

Time: 下午 09:50:53



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		2377.000	60.46	-13.60	46.86	74.00	-27.14	peak	
2		2955.000	58.31	-12.23	46.08	74.00	-27.92	peak	
3		4043.000	57.56	-9.17	48.39	74.00	-25.61	peak	
4		4502.000	57.74	-7.80	49.94	74.00	-24.06	peak	
5		5029.000	57.61	-7.25	50.36	74.00	-23.64	peak	
6		5828.000	57.64	-5.48	52.16	74.00	-21.84	peak	
7 *		5828.000	44.63	-5.48	39.15	54.00	-14.85	AVG	

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

File :80057\Data :#8

Page: 1

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Config_2_V

Site: SGS 966 Chamber A

Polarization: **Vertical**

Temperature: 22 °C

Limit: FCC Class B 3M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

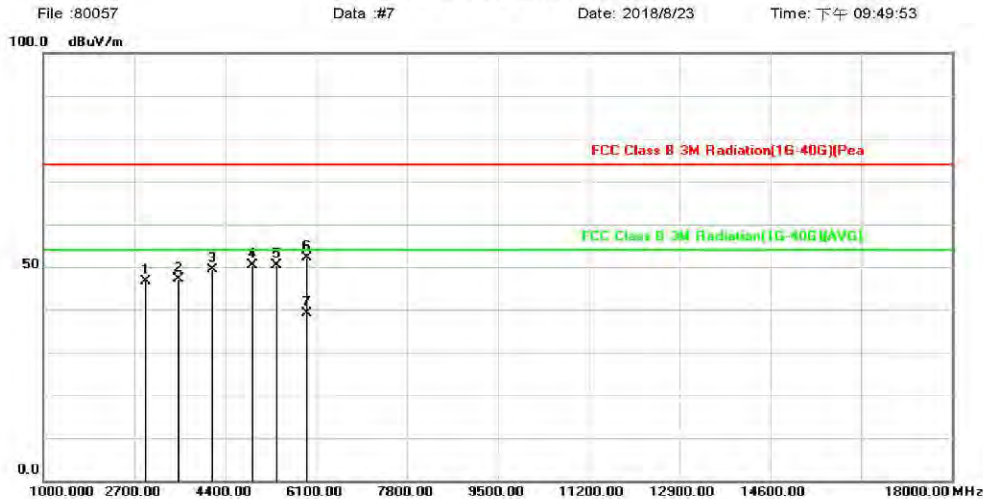
Humidity: 71 %

Mode: Config_2

Distance:

Note:

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		2904.000	58.87	-12.27	46.60	74.00	-27.40	peak	
2		3533.000	57.84	-10.80	47.04	74.00	-26.96	peak	
3		4162.000	58.19	-8.82	49.37	74.00	-24.63	peak	
4		4910.000	57.79	-7.38	50.41	74.00	-23.59	peak	
5		5369.000	57.13	-6.63	50.50	74.00	-23.50	peak	
6		5930.000	57.22	-5.19	52.03	74.00	-21.97	peak	
7 *		5930.000	44.25	-5.19	39.06	54.00	-14.94	AVG	

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

File :80057\Data :#7

Page: 1

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Config_3_H

Site: SGS 966 Chamber A

Polarization: **Horizontal**

Temperature: 22 °C

Limit: FCC Class B 3M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

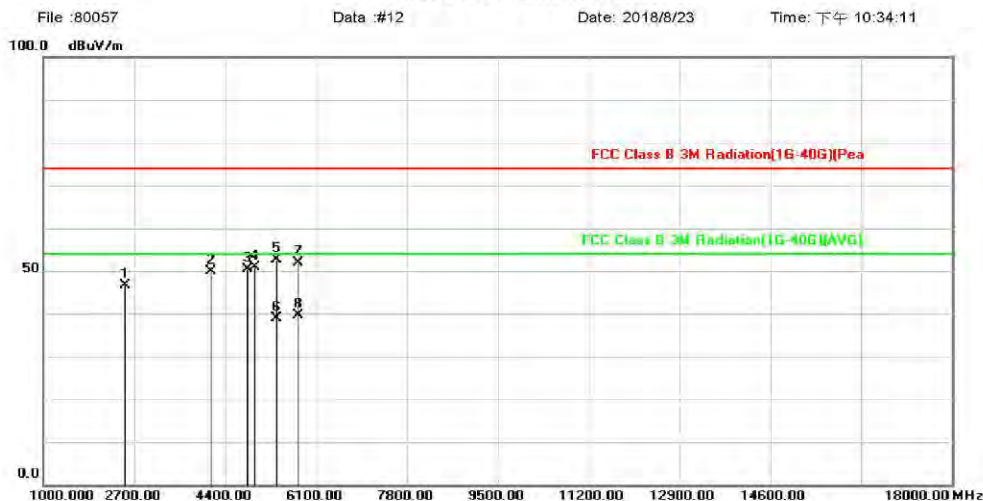
Humidity: 71 %

Mode: Config_3

Distance:

Note:

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment			Detector	Comment
1		2530.000	57.85	-11.25	46.60	74.00	-27.40	peak	
2		4128.000	57.92	-8.14	49.78	74.00	-24.22	peak	
3		4825.000	57.75	-7.31	50.44	74.00	-23.56	peak	
4		4961.000	57.93	-7.14	50.79	74.00	-23.21	peak	
5		5369.000	58.92	-6.36	52.56	74.00	-21.44	peak	
6		5369.000	45.13	-6.36	38.77	54.00	-15.23	AVG	
7		5760.000	57.29	-5.33	51.96	74.00	-22.04	peak	
8	*	5760.000	44.84	-5.33	39.51	54.00	-14.49	AVG	

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

File :80057\Data :#12

Page: 1

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Config_3_V

Site: SGS 966 Chamber A

Polarization: **Vertical**

Temperature: 22 °C

Limit: FCC Class B 3M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

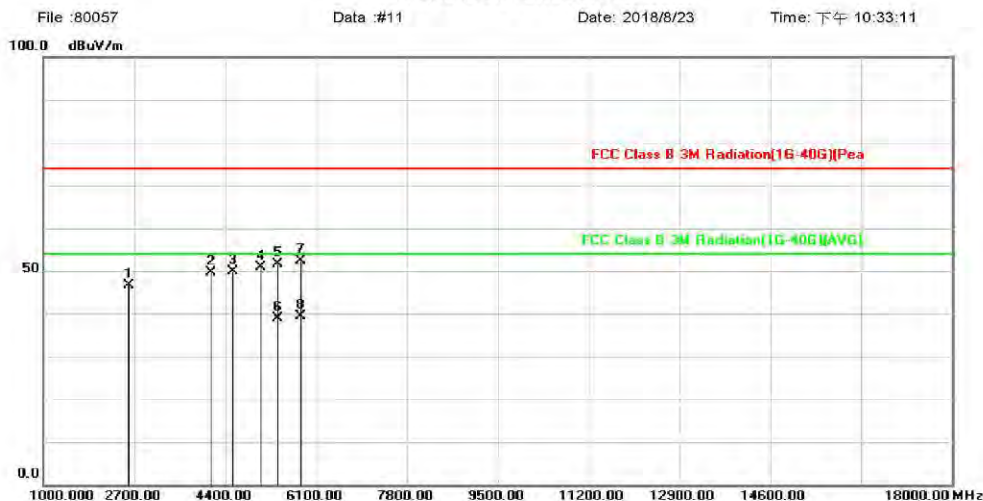
Humidity: 71 %

Mode: Config_3

Distance:

Note:

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment			Detector	Comment
1		2598.000	57.99	-11.36	46.63	74.00	-27.37	peak	
2		4128.000	57.76	-8.14	49.62	74.00	-24.38	peak	
3		4553.000	57.58	-7.64	49.94	74.00	-24.06	peak	
4		5063.000	57.94	-6.97	50.97	74.00	-23.03	peak	
5		5386.000	57.86	-6.33	51.53	74.00	-22.47	peak	
6		5386.000	45.29	-6.33	38.96	54.00	-15.04	AVG	
7		5811.000	57.47	-5.17	52.30	74.00	-21.70	peak	
8	*	5811.000	44.61	-5.17	39.44	54.00	-14.56	AVG	

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

File :80057\Data :#11

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18GMz-30GMz

Config_1_H

Site: SGS 966 Chamber A

Polarization: **Horizontal**

Temperature: 22 °C

Limit: FCC Class B 1M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

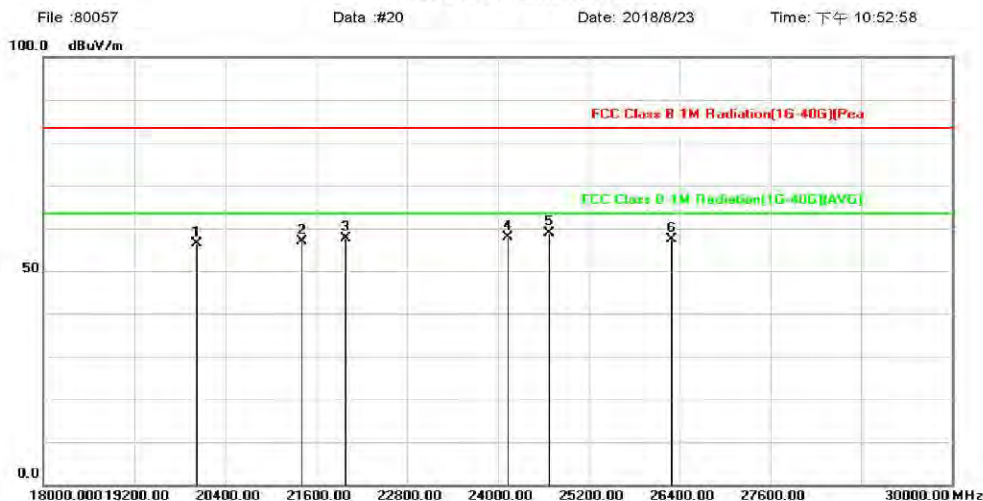
Humidity: 71 %

Mode: Config_1

Distance:

Note:

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		20028.000	53.79	2.70	56.49	83.50	-27.01	peak	
2		21408.000	53.05	3.94	56.99	83.50	-26.51	peak	
3		21996.000	52.59	5.00	57.59	83.50	-25.91	peak	
4		24132.000	51.91	5.98	57.89	83.50	-25.61	peak	
5	*	24672.000	52.63	6.23	58.86	83.50	-24.64	peak	
6		26292.000	51.47	5.96	57.43	83.50	-26.07	peak	

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

File :80057\Data :#20

Page: 1

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Config 1_V

Site: SGS 966 Chamber A

Polarization: **Vertical**

Temperature: 22 °C

Limit: FCC Class B 1M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

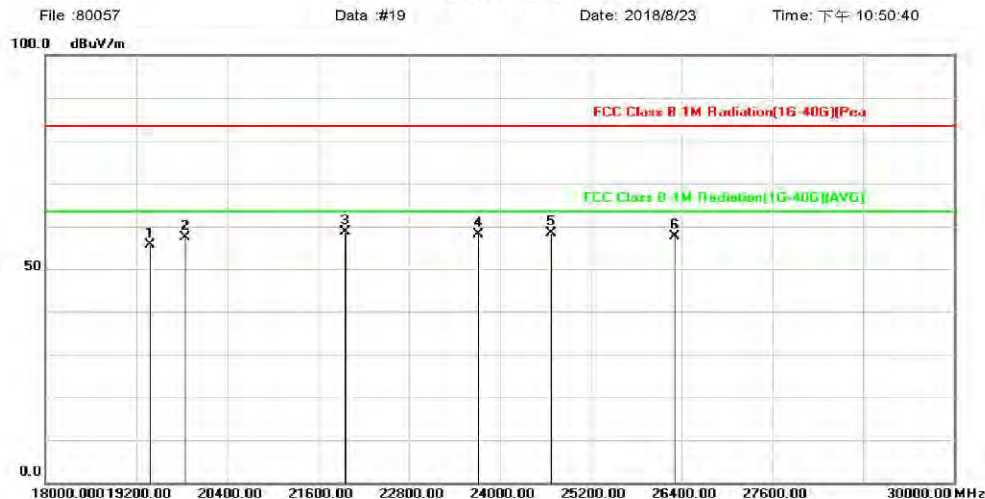
Humidity: 71 %

Mode: Config_1

Distance:

Note:

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment			Detector	Comment
1		19380.000	53.94	1.61	55.55	83.50	-27.95	peak	
2		19848.000	54.86	2.40	57.26	83.50	-26.24	peak	
3	*	21960.000	53.60	4.93	58.53	83.50	-24.97	peak	
4		23712.000	52.21	5.90	58.11	83.50	-25.39	peak	
5		24684.000	52.14	6.24	58.38	83.50	-25.12	peak	
6		26304.000	51.77	5.96	57.73	83.50	-25.77	peak	

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

File :80057\Data :#19

Page: 1

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Config_2_H

Site: SGS 966 Chamber A

Polarization: **Horizontal**

Temperature: 22 °C

Limit: FCC Class B 1M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

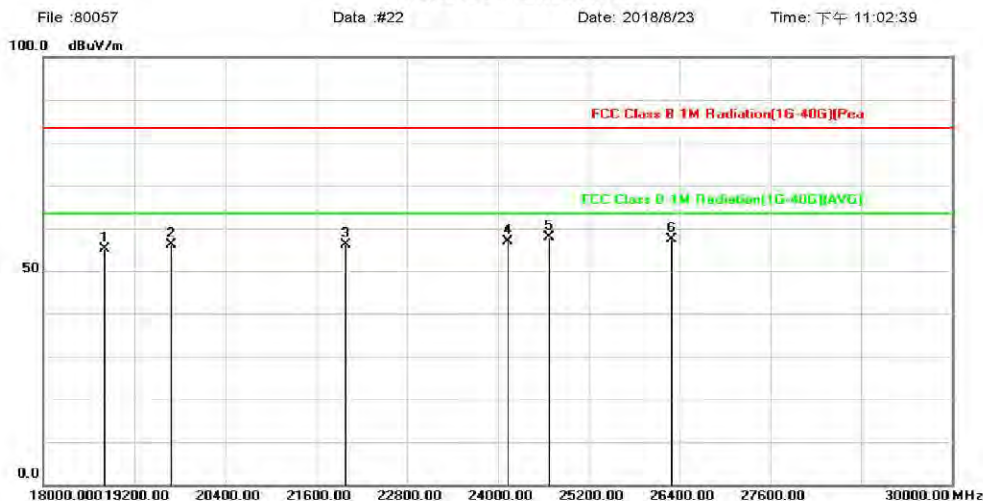
Humidity: 71 %

Mode: Config_2

Distance:

Note:

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		18804.000	53.82	1.26	55.08	83.50	-28.42	peak	
2		19680.000	53.95	2.06	56.01	83.50	-27.49	peak	
3		21996.000	51.09	5.00	56.09	83.50	-27.41	peak	
4		24132.000	50.91	5.98	56.89	83.50	-26.61	peak	
5	*	24672.000	51.63	6.23	57.86	83.50	-25.64	peak	
6		26292.000	51.47	5.96	57.43	83.50	-26.07	peak	

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

File :80057\Data :#22

Page: 1

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Config_2_V

Site: SGS 966 Chamber A

Polarization: **Vertical**

Temperature: 22 °C

Limit: FCC Class B 1M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

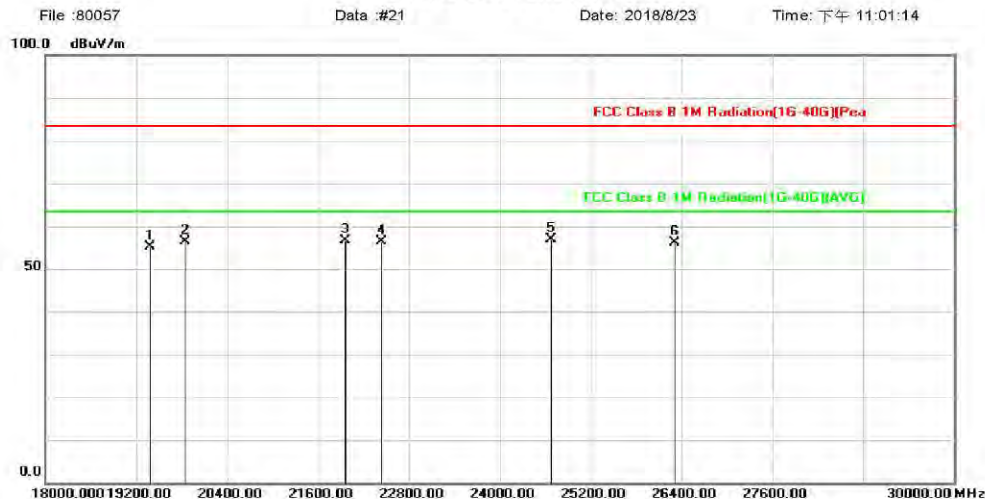
Humidity: 71 %

Mode: Config_2

Distance:

Note:

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		19380.000	53.44	1.61	55.05	83.50	-28.45	peak	
2		19848.000	53.86	2.40	56.26	83.50	-27.24	peak	
3		21960.000	51.60	4.93	56.53	83.50	-26.97	peak	
4		22440.000	50.98	5.35	56.33	83.50	-27.17	peak	
5 *		24684.000	50.64	6.24	56.88	83.50	-26.62	peak	
6		26304.000	50.27	5.96	56.23	83.50	-27.27	peak	

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

File :80057\Data :#21

Page: 1

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Config_3_H

Site: SGS 966 Chamber A

Polarization: **Horizontal**

Temperature: 22 °C

Limit: FCC Class B 1M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

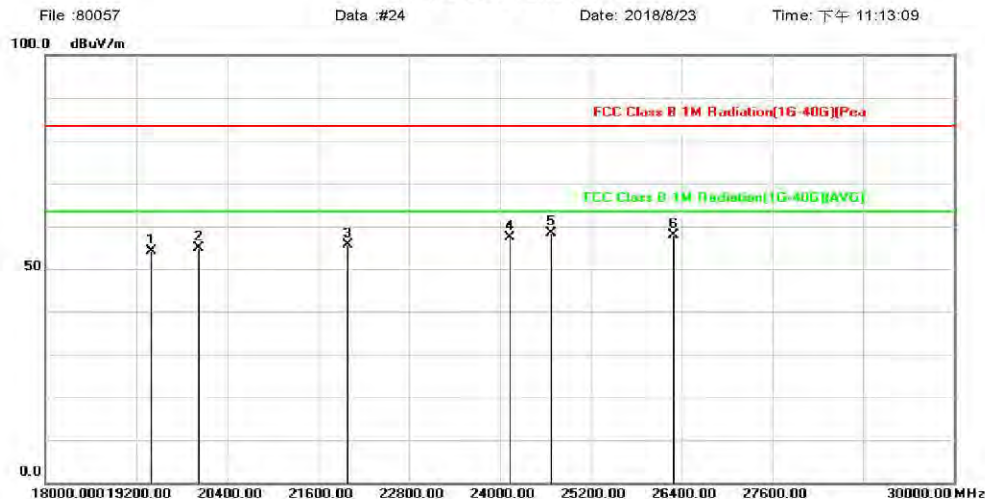
Humidity: 71 %

Mode: Config_3

Distance:

Note:

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		19392.000	52.42	1.62	54.04	83.50	-29.46	peak	
2		20028.000	52.29	2.70	54.99	83.50	-28.51	peak	
3		21996.000	50.59	5.00	55.59	83.50	-27.91	peak	
4		24132.000	51.41	5.98	57.39	83.50	-26.11	peak	
5	*	24672.000	52.13	6.23	58.36	83.50	-25.14	peak	
6		26292.000	51.97	5.96	57.93	83.50	-25.57	peak	

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

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SGS Taiwan Ltd.

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Config_3_V

Site: SGS 966 Chamber A

Polarization: **Vertical**

Temperature: 22 °C

Limit: FCC Class B 1M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

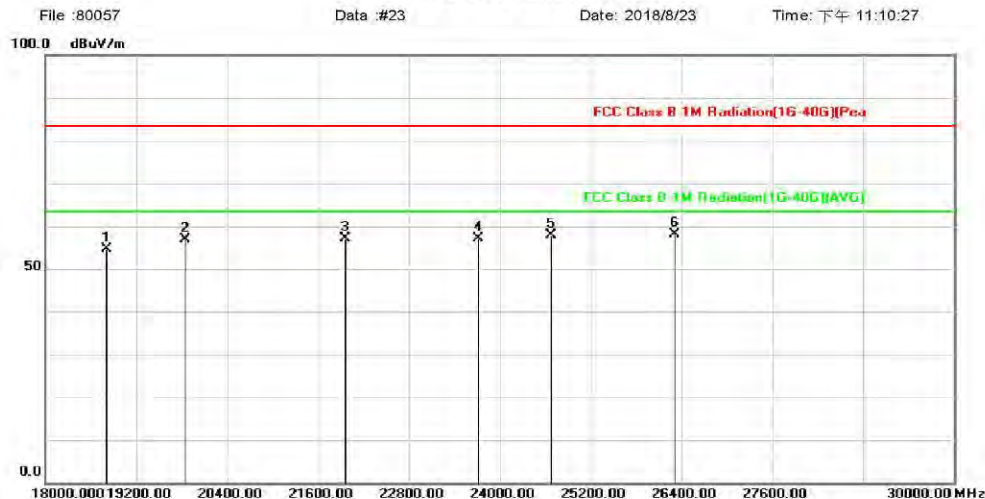
Humidity: 71 %

Mode: Config_3

Distance:

Note:

Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
1		18804.000	53.41	1.26	54.67	83.50	-28.83	peak	
2		19848.000	54.36	2.40	56.76	83.50	-26.74	peak	
3		21960.000	52.10	4.93	57.03	83.50	-26.47	peak	
4		23712.000	51.21	5.90	57.11	83.50	-26.39	peak	
5		24684.000	51.64	6.24	57.88	83.50	-25.62	peak	
6	*	26304.000	52.27	5.96	58.23	83.50	-25.27	peak	

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

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