

# FCC CERTIFICATION REPORT

**Test Report No.** : E1/2017/A0085

**Applicant** : Sharp Corporation, IoT 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 City, Osaka 590-8522, Japan

**Equipment Under Test (EUT) :**

**Product Name** : Smart Phone

**Standards** : FCC Part 15:2017, Subpart B, Class B

**FCC Designation Numbers** : 916890 / TW1087

**Date of Receipt** : Aug. 22, 2017

**Date of Test** : Aug. 22 ~ Oct. 31, 2017

**Date of Issue** : Nov. 15, 2017

<b>Test Result :</b>	<b>PASS</b>
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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:**

Ivan Hsieh

**Date**

Nov. 15, 2017

Ivan Hsieh (Engineer)

**Approved By**

Eddy Cheng

**Date**

Nov. 15, 2017

Eddy Cheng (Asst. Supervisor)



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## Revision History

Report Number	Revision	Description	Issue Date
E1/2017/A0085	Rev.00	Initial creation of document	Nov. 15, 2017

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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 City, 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  
Worst case : CE, Above RE worst case : Config 3  
Below RE worst case : Config 2  
Highest operate description : 2480 MHz  
Battery : Model No.: UBATIA283AFN2  
Supplier: SCUD(FUJIAN) Electronics Co., Ltd.

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QE44	Config 1	Config2	Config 3
Applicable standard	FCC 15B		
Accessories	EUT + AC Adaptor (SB-AC17-TCQC) +USB Cable +PHF	EUT +USB Cable +PHF	EUT + AC Adaptor (SB-AC17-TCQC) +USB Cable +PHF
Main function	<b>Speech</b>	<b>Data Link</b>	<b>Camera</b>
Additional function	BT+WiFi		
Description			
radiated emission	GSM 1900 WCDMA B2 LTE B2	Data R/W	MP3/ ;REC mode (Front/Back) ;play REC
conducted emission (DC Power)	NA	NA	NA
conducted emission (AC Power)	GSM 1900 WCDMA B2 LTE B2	Data R/W	MP3/ ;REC mode (Front/Back) ;play REC

## 1.4 Operation Procedure

### Config 1

1. Let EUT connect to Adapter & USB Cable & Earphone and turn it on.
2. Executed BT & WIFI & GPS & GSM 1900 or WCDMA B2 or LTE B2 Link & Idle mode.
3. Started the test.

### Config 2

1. Let EUT connect to Earphone & USB Cable and NB Link.
2. Executed BT & WIFI & GPS Link.
3. NB and mobile phone USB data transmission (Reader / Write)
4. Started the test.

### Config 3

1. Let EUT connect to Adapter & USB Cable & Earphone and turn it on.
2. Turned on front / rear camera to record / play the video or play music.
3. Executed BT & WIFI & GPS Link.
4. Started the test.

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## 1.5 Description of Support Units

PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
SIM Card	R&S	CMW-Z05	8952530076180167200
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	DELL	Latitude E5430	COVZYW1
Mouse	DELL	MS111-T	CN-OKW2YH-71616-345-OL7T
Printer	HP	VCVRA-1004	CN33K19J3F
Micro SD	Transcend	Micro SDHC (Class4)	N/A
Adapter	SoftBank Commerce & Service Corp.	SB-AC17-TCQC	N/A
Earphone	SONY	MDR-EX15AP	N/A

## Support Equipment Used in Tested Cable

Cable Type	Core	Length	Shielding/Non-shielding
USB cable	N/A	0.95m	Shielding
Earphone cable	N/A	1.25m	Non-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
N/A	N/A	N/A	N/A

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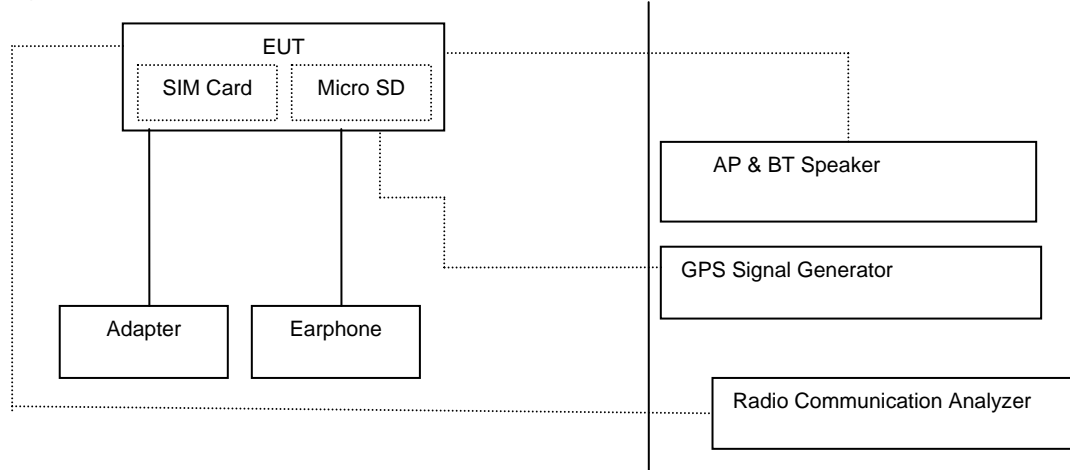
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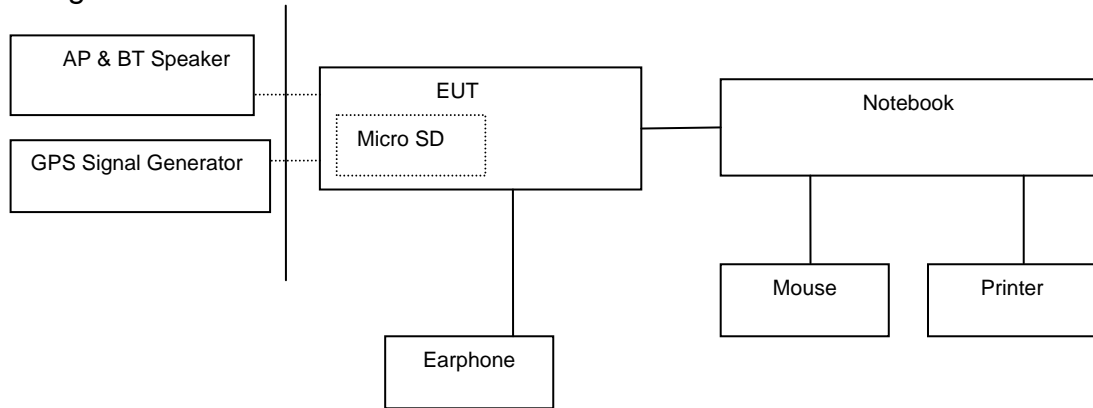
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## 1.8 Test Set-Up Configuration

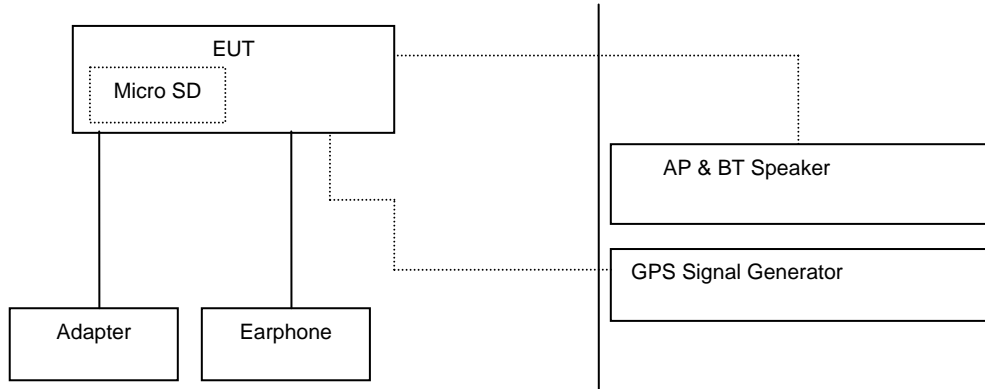
Config 1



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	0.1540	-10.54 (QP)
			Neutral	0.1540	-10.66 (QP)
	Radiated Emission	PASS	Hor.	186.4300	-4.07 (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	101311	2017/6/23	2018/6/22
Coaxial Cables	EMC Instruments Corp	EMCRG58-BM-BM-3000	160812	2017/8/30	2018/8/29
LISN	SCHWARZBECK	NSLK 8127	8127-648	2017/6/18	2018/6/17
Pulse Limiter	Narda S.T.S.	PMM PL01	1110X30602	2017/8/12	2018/8/11
LISN	FCC	FCC-LISN-50/250-25-2-01	4034	2017/3/19	2018/3/18
Universal Digital Radio Communication Tester	R&S	CMU 200	122498	2016/11/9	2017/11/8
Wideband Radio Communication Tester	R&S	CMW 500	152303	2017/2/23	2018/2/22
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 (K=2) of conducted emission is 2.25 dB					

### 2.4.2 Operating Environment

Temperature : 25 degree C

Humidity : 64 %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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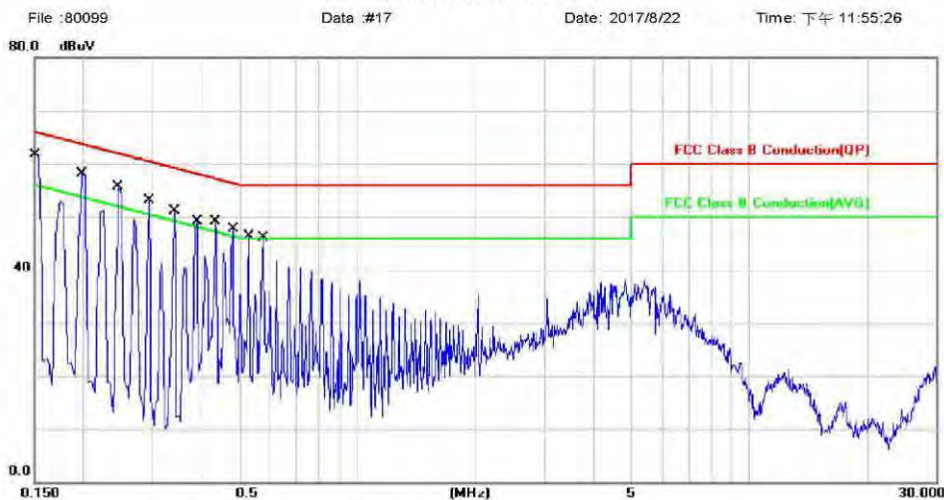
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## 2.4.4 Measurement Data:

## Config\_1\_L

Site : Conduction Room Phase: **L1** Temperature: 25 °C  
Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 64 %  
Mode: Config 1 GSM1900  
Note: Hynix

## Conducted Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1	*	0.1500	54.80	0.34	55.14	66.00	-10.86	QP	
2		0.1500	32.60	0.34	32.94	56.00	-23.06	AVG	
3		0.1980	50.80	0.33	51.13	63.69	-12.56	QP	
4		0.1980	27.50	0.33	27.83	53.69	-25.86	AVG	
5		0.2460	47.60	0.33	47.93	61.89	-13.96	QP	
6		0.2460	24.50	0.33	24.83	51.89	-27.06	AVG	
7		0.2940	44.50	0.33	44.83	60.41	-15.58	QP	
8		0.2940	19.50	0.33	19.83	50.41	-30.58	AVG	
9		0.3420	43.00	0.34	43.34	59.15	-15.81	QP	
10		0.3420	17.70	0.34	18.04	49.15	-31.11	AVG	
11		0.3900	41.50	0.34	41.84	58.06	-16.22	QP	
12		0.3900	23.40	0.34	23.74	48.06	-24.32	AVG	
13		0.4340	42.00	0.34	42.34	57.18	-14.84	QP	

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

File :80099\Data :#17

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## Config\_1\_L2

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
14		0.4340	27.20	0.34	27.54	47.18	-19.64	AVG	
15		0.4820	41.20	0.34	41.54	56.30	-14.76	QP	
16		0.4820	26.70	0.34	27.04	46.30	-19.26	AVG	
17		0.5300	38.30	0.35	38.65	56.00	-17.35	QP	
18		0.5300	23.80	0.35	24.15	46.00	-21.85	AVG	
19		0.5780	35.70	0.35	36.05	56.00	-19.95	QP	
20		0.5780	22.60	0.35	22.95	46.00	-23.05	AVG	

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

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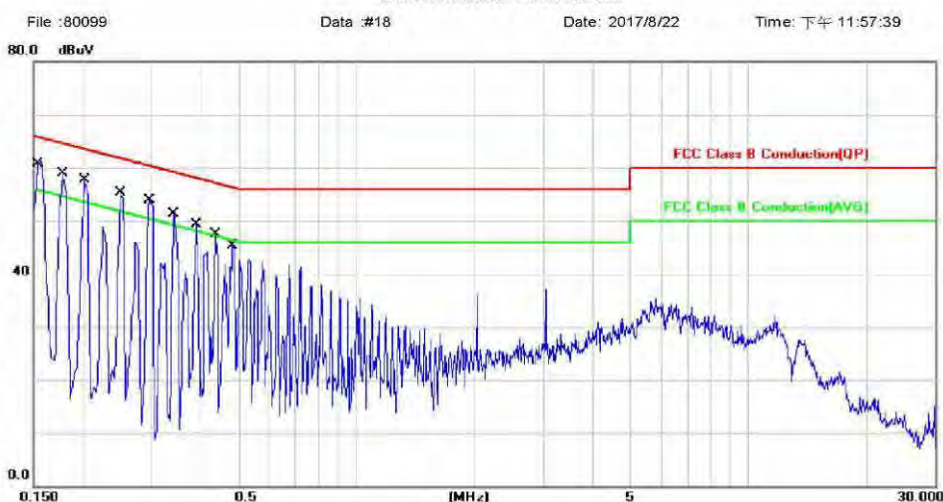
## Config\_1\_N

Site : Conduction Room  
 Limit: FCC Class B Conduction(QP)  
 Mode: Config 1 GSM1900  
 Note: Hynix

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

Temperature: 25 °C  
 Humidity: 64 %

## Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	55.00	0.42	55.42	66.00	-10.58	QP	
2		0.1500	33.70	0.42	34.12	56.00	-21.88	AVG	
3		0.1780	52.10	0.41	52.51	64.58	-12.07	QP	
4		0.1780	30.30	0.41	30.71	54.58	-23.87	AVG	
5		0.2020	50.20	0.41	50.61	63.53	-12.92	QP	
6		0.2020	27.00	0.41	27.41	53.53	-26.12	AVG	
7		0.2500	46.60	0.41	47.01	61.76	-14.75	QP	
8		0.2500	23.50	0.41	23.91	51.76	-27.85	AVG	
9		0.2980	44.40	0.41	44.81	60.30	-15.49	QP	
10		0.2980	18.60	0.41	19.01	50.30	-31.29	AVG	
11		0.3420	42.70	0.42	43.12	59.15	-16.03	QP	
12		0.3420	16.70	0.42	17.12	49.15	-32.03	AVG	
13		0.3900	40.90	0.42	41.32	58.06	-16.74	QP	

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

File :80099\Data :#18

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## Config\_1\_N2

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
14		0.3900	24.00	0.42	24.42	48.06	-23.64	AVG	
15		0.4380	40.30	0.42	40.72	57.10	-16.38	QP	
16		0.4380	24.20	0.42	24.62	47.10	-22.48	AVG	
17		0.4860	40.30	0.42	40.72	56.24	-15.52	QP	
18		0.4860	25.50	0.42	25.92	46.24	-20.32	AVG	

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

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Page: 2

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## Config\_2\_L

Site : Conduction Room Phase: **N** Temperature: 25 °C  
Limit: FCC Class B Conduction(QP) Power: From System Humidity: 64 %  
Mode: Config 2  
Note: Hynix , AC 120V/60Hz , Internal Sotrage Write

## Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1540	43.30	0.42	43.72	65.78	-22.06	QP	
2		0.1540	24.40	0.42	24.82	55.78	-30.96	AVG	
3	*	0.1700	47.90	0.42	48.32	64.96	-16.64	QP	
4		0.1700	34.30	0.42	34.72	54.96	-20.24	AVG	
5		0.1820	38.70	0.41	39.11	64.39	-25.28	QP	
6		0.1820	21.70	0.41	22.11	54.39	-32.28	AVG	
7		0.2300	35.90	0.41	36.31	62.45	-26.14	QP	
8		0.2300	20.60	0.41	21.01	52.45	-31.44	AVG	
9		0.4420	31.30	0.42	31.72	57.02	-25.30	QP	
10		0.4420	16.20	0.42	16.62	47.02	-30.40	AVG	
11		24.0780	26.80	0.87	27.67	60.00	-32.33	QP	
12		24.0780	20.90	0.87	21.77	50.00	-28.23	AVG	

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

File :80099\Data :#37

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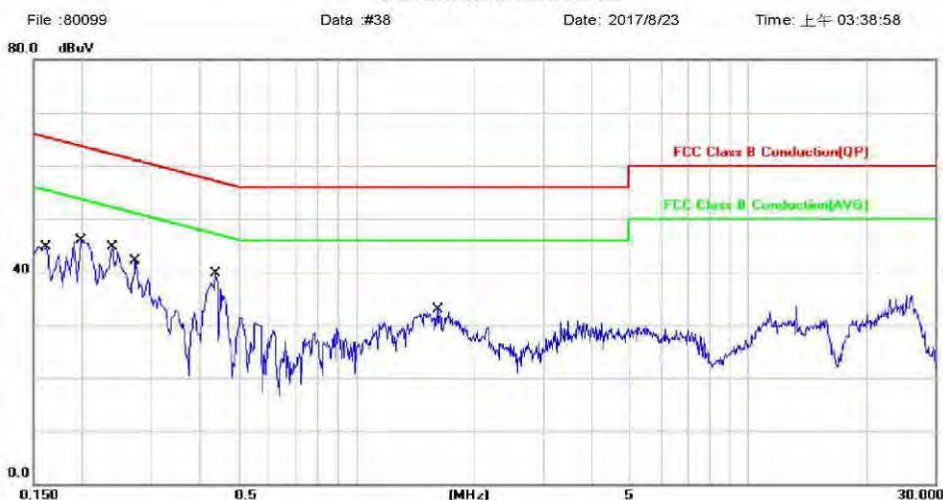
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## Config\_2\_N

Site : Conduction Room Phase: **L1** Temperature: 25 °C  
Limit: FCC Class B Conduction(QP) Power: From System Humidity: 64 %  
Mode: Config 2  
Note: Hynix , AC 120V/60Hz , Internal Sotrage Write

## Conducted Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.1620	42.00	0.34	42.34	65.36	-23.02	QP	
2		0.1620	28.70	0.34	29.04	55.36	-26.32	AVG	
3		0.1980	38.30	0.33	38.63	63.69	-25.06	QP	
4		0.1980	22.00	0.33	22.33	53.69	-31.36	AVG	
5		0.2380	38.60	0.33	38.93	62.17	-23.24	QP	
6		0.2380	24.30	0.33	24.63	52.17	-27.54	AVG	
7		0.2740	37.40	0.33	37.73	61.00	-23.27	QP	
8		0.2740	25.80	0.33	26.13	51.00	-24.87	AVG	
9 *		0.4380	35.00	0.34	35.34	57.10	-21.76	QP	
10		0.4380	20.70	0.34	21.04	47.10	-26.06	AVG	
11		1.6260	27.90	0.41	28.31	56.00	-27.69	QP	
12		1.6260	20.70	0.41	21.11	46.00	-24.89	AVG	

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

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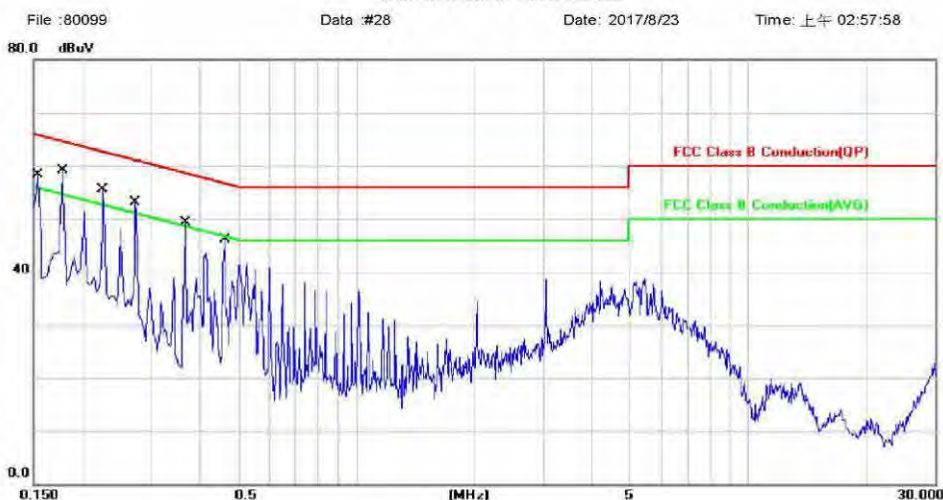
## Config\_3\_L

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

Phase: L1  
Power: AC 120V/60Hz

Temperature: 25 °C  
Humidity: 64 %

## Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1540	54.90	0.34	55.24	65.78	-10.54	QP	
2		0.1540	34.20	0.34	34.54	55.78	-21.24	AVG	
3		0.1780	52.30	0.33	52.63	64.58	-11.95	QP	
4		0.1780	29.80	0.33	30.13	54.58	-24.45	AVG	
5		0.2260	49.20	0.33	49.53	62.60	-13.07	QP	
6		0.2260	24.40	0.33	24.73	52.60	-27.87	AVG	
7		0.2740	46.40	0.33	46.73	61.00	-14.27	QP	
8		0.2740	21.50	0.33	21.83	51.00	-29.17	AVG	
9		0.3660	42.60	0.34	42.94	58.59	-15.65	QP	
10		0.3660	24.30	0.34	24.64	48.59	-23.95	AVG	
11		0.4620	42.80	0.34	43.14	56.66	-13.52	QP	
12		0.4620	30.50	0.34	30.84	46.66	-15.82	AVG	

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

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Page: 1

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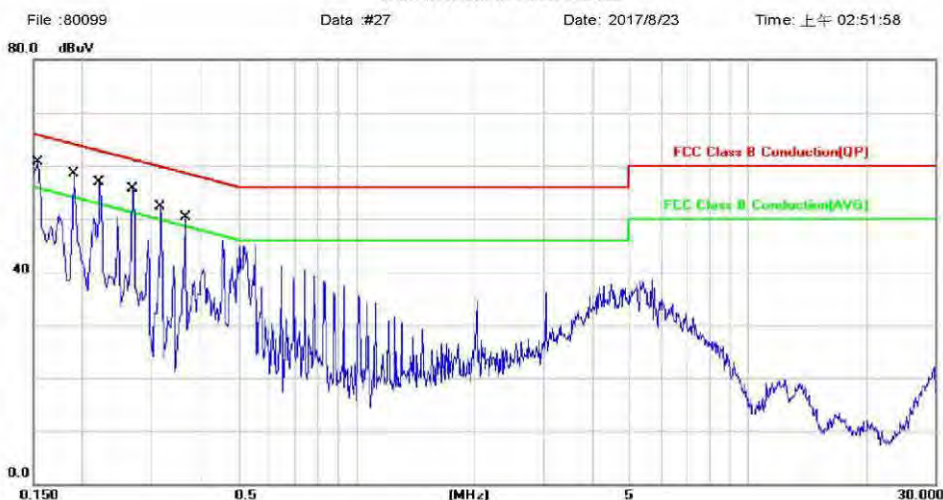
## Config\_3\_N

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

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

Temperature: 25 °C  
Humidity: 64 %

### Conducted Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment	dBuV	dB	Detector	Comment
1	*	0.1540	54.70	0.42	55.12	65.78	-10.66	QP	
2		0.1540	34.20	0.42	34.62	55.78	-21.16	AVG	
3		0.1900	51.30	0.41	51.71	64.04	-12.33	QP	
4		0.1900	28.40	0.41	28.81	54.04	-25.23	AVG	
5		0.2220	48.90	0.41	49.31	62.74	-13.43	QP	
6		0.2220	24.40	0.41	24.81	52.74	-27.93	AVG	
7		0.2700	46.60	0.41	47.01	61.12	-14.11	QP	
8		0.2700	22.20	0.41	22.61	51.12	-28.51	AVG	
9		0.3180	43.90	0.42	44.32	59.76	-15.44	QP	
10		0.3180	20.30	0.42	20.72	49.76	-29.04	AVG	
11		0.3660	41.90	0.42	42.32	58.59	-16.27	QP	
12		0.3660	21.70	0.42	22.12	48.59	-26.47	AVG	

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

File :80099\Data :#27

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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	2016/12/7	2017/12/6
EMI Test Receiver	R&S	ESCI 3	101343	2016/12/21	2017/12/20
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	2017/3/31	2018/3/30
Pre Amplifier	EMC Instruments Corp.	EMC330	980179	2017/3/31	2018/3/30
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	122498	2016/11/9	2017/11/8
Wideband Radio Communication Tester	R&S	CMW 500	152303	2017/2/23	2018/2/22
Radio Communication Analyzer	Anritsu	MT8820C	6201465315	2016/12/29	2017/12/28
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	2016/12/31	2017/12/31
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 of radiated emission is 4.09 dB. (30MHz ~ 1000MHz)

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### Above 1GHz

SGS Radiated_Above_1GHz HWAYA 966B_EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	R&S	FSV 40	101419	2017/3/1	2018/2/28
EMI Test Receiver	R&S	ESR 7	101507	2017/5/27	2018/5/26
Horn Antenna	SCHWARZBEC K	BBHA9120D	BBHA9120D67 3	2017/10/16	2018/10/15
Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170-184	2016/12/12	2017/12/11
Pre Amplifier	R&S	SCU-18	100203	2017/3/26	2018/3/26
Pre Amplifier	EMC Instruments	EMC184045B	980135	2017/10/27	2018/10/26
Coaxial Cable	EMC Instruments	EMC104-SM-SM	140923	2017/9/30	2018/9/29
Coaxial Cable	EMC Instruments	EMC104-SM-SM	140925	2017/9/30	2018/9/29
Coaxial Cable	EMC Instruments	EMC104-SM-SM	140927	2017/9/30	2018/9/29
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	MY 2152/2	2017/6/5	2018/6/4
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	MY 2153/2	2017/6/5	2018/6/4
Universal Digital Radio Communication Tester	R&S	CMU 200	122498	2016/11/9	2017/11/8
Wideband Radio Communication Tester	R&S	CMW 500	152303	2017/2/23	2018/2/22
Radio Communication Analyzer	Anritsu	MT8820C	6201465315	2016/12/29	2017/12/24
Controller	MF-7802	N/A	N/A	N.C.R.	N.C.R.
Antenna Master	N/A	N/A	N/A	N.C.R.	N.C.R.
Turn Table	N/A	N/A	N/A	N.C.R.	N.C.R.
Site VSWR	SGS	966 Chamber B	SAC-B	2017/10/8	2018/10/7
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 5.06 dB. (1-6GHz) Expanded uncertainty (k=2) of radiated emission measurement is 5.15 dB. (6-18GHz) Expanded uncertainty (k=2) of radiated emission measurement is 5.19 dB. (18-26GHz) Expanded uncertainty (k=2) of radiated emission measurement is 5.14 dB. (26-40GHz)					

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### 2.5.2 Operating Environment

Temperature : 25 degree C

Humidity : 65 %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: LTE B2

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

Temperature: 25 °C  
 Humidity: 65 %

## 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		43.5800	24.49	-11.21	13.28	30.00	-16.72	QP	
2		78.5000	27.94	-15.75	12.19	30.00	-17.81	QP	
3		149.3100	25.72	-11.63	14.09	30.00	-15.91	QP	
4		811.8200	24.04	-0.13	23.91	37.00	-13.09	QP	
5		894.2700	24.29	0.54	24.83	37.00	-12.17	QP	
6 *		965.0800	24.16	1.67	25.83	37.00	-11.17	QP	

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

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## Config\_1\_V

Site: SGS 10m Chamber  
Limit: CISPR22 Class B 10M Radiation  
Mode: Config\_1  
Note: LTE B2

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

Temperature: 25 °C  
Humidity: 65 %

### 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		49.4000	25.39	-10.72	14.67	30.00	-15.33	QP	
2		77.5300	36.27	-15.59	20.68	30.00	-9.32	QP	
3	*	114.3900	35.73	-13.95	21.78	30.00	-8.22	QP	
4		139.6100	28.46	-11.53	16.93	30.00	-13.07	QP	
5		196.8400	31.06	-14.08	16.98	30.00	-13.02	QP	
6		956.3500	23.30	1.16	24.46	37.00	-12.54	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: 25 °C  
Humidity: 65 %

## 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		83.8700	36.58	-16.64	19.94	30.00	-10.06	QP	
2		166.1320	31.04	-11.21	19.83	30.00	-10.17	QP	
3	*	186.4300	39.20	-13.27	25.93	30.00	-4.07	QP	
4		276.3800	35.44	-11.01	24.43	37.00	-12.57	QP	
5		480.0010	35.14	-5.54	29.60	37.00	-7.40	QP	
6		965.0800	24.17	1.67	25.84	37.00	-11.16	QP	

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

File: E1-2017-A0085\Data: #6

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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: 25 °C  
Humidity: 65 %

## 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		30.0000	32.80	-12.50	20.30	30.00	-9.70	QP	
2		140.3000	28.57	-11.48	17.09	30.00	-12.91	QP	
3	*	189.5300	38.37	-13.55	24.82	30.00	-5.18	QP	
4		746.8300	22.96	-0.29	22.67	37.00	-14.33	QP	
5		934.0400	22.81	1.01	23.82	37.00	-13.18	QP	
6		992.2400	23.06	1.52	24.58	37.00	-12.42	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: Camera REC (Front)

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

Temperature: 25 °C  
Humidity: 65 %

## 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		52.3100	24.90	-11.29	13.61	30.00	-16.39	QP	
2		82.3800	32.47	-16.43	16.04	30.00	-13.96	QP	
3		144.4600	28.36	-11.83	16.53	30.00	-13.47	QP	
4		943.7400	24.11	1.56	25.67	37.00	-11.33	QP	
5 *		969.9300	24.19	1.66	25.85	37.00	-11.15	QP	
6		994.1800	24.07	1.62	25.69	37.00	-11.31	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: Camera REC (Front)

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

Temperature: 25 °C  
Humidity: 65 %

### 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		49.4000	25.91	-10.72	15.19	30.00	-14.81	QP	
2		83.3500	36.52	-16.54	19.98	30.00	-10.02	QP	
3	*	112.4500	36.43	-14.11	22.32	30.00	-7.68	QP	
4		141.5500	30.01	-11.41	18.60	30.00	-11.40	QP	
5		198.7800	31.70	-14.22	17.48	30.00	-12.52	QP	
6		975.7500	23.43	1.36	24.79	37.00	-12.21	QP	

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

File: E1-2017-A0085>Data: #33

Page: 1

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## Above 1GHz

## Config\_1\_H

Site: SGS 966 Chamber B

Polarization: **Horizontal**

Temperature: 22 °C

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

Power: AC 120V/60Hz

Humidity: 65 %

Mode: Config 1

Distance:

Note: LTE\_B2

## Radiated Emission

File :E1-2017-A0085

Data :#10

Date: 2017/10/27

Time: 下午 11:16:51



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		8539.229	48.77	-3.10	45.67	74.00	-28.33	peak	
2		8539.229	42.70	-3.10	39.60	54.00	-14.40	AVG	
3		10618.643	46.61	-1.11	45.50	74.00	-28.50	peak	
4		10618.643	38.94	-1.11	37.83	54.00	-16.17	AVG	
5		12687.991	46.53	-0.87	45.66	74.00	-28.34	peak	
6		12687.991	41.24	-0.87	40.37	54.00	-13.63	AVG	
7		14643.750	47.88	4.80	52.68	74.00	-21.32	peak	
8 *		14643.750	40.64	4.80	45.44	54.00	-8.56	AVG	
9		15298.119	47.45	2.81	50.26	74.00	-23.74	peak	
10		15298.119	41.17	2.81	43.98	54.00	-10.02	AVG	
11		16648.549	46.45	3.24	49.69	74.00	-24.31	peak	
12		16648.549	37.74	3.24	40.98	54.00	-13.02	AVG	

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

File :E1-2017-A0085\Data :#10

Page: 1

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## Config\_1\_V

Site :SGS 966 Chamber B

Polarization: **Vertical**

Temperature: 22 °C

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

Power: AC 120V/60Hz

Humidity: 65 %

Mode: Config 1

Distance:

Note: LTE\_B2

## Radiated Emission

File :E1-2017-A0085

Data :#9

Date: 2017/10/27

Time: 下午 11:14:01



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		6623.084	47.79	-5.90	41.89	74.00	-32.11	peak	
2		6623.084	37.62	-5.90	31.72	54.00	-22.28	AVG	
3		8616.000	46.08	-3.12	42.96	74.00	-31.04	peak	
4		8616.000	39.17	-3.12	36.05	54.00	-17.95	AVG	
5		10610.315	46.74	-1.11	45.63	74.00	-28.37	peak	
6		10610.315	40.60	-1.11	39.49	54.00	-14.51	AVG	
7		12332.526	45.18	-1.30	43.88	74.00	-30.12	peak	
8		12332.526	39.46	-1.30	38.16	54.00	-15.84	AVG	
9		13885.620	46.57	3.39	49.96	74.00	-24.04	peak	
10		13885.620	40.21	3.39	43.60	54.00	-10.40	AVG	
11		16273.453	48.32	1.84	50.16	74.00	-23.84	peak	
12 *		16273.453	42.25	1.84	44.09	54.00	-9.91	AVG	

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

File :E1-2017-A0085\Data :#9

Page: 1

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## Config\_2\_H

Site: SGS 966 Chamber B

Polarization: **Horizontal**

Temperature: 22 °C

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

Power: AC 120V/60Hz

Humidity: 65 %

Mode: Config 2

Distance:

Note: DATA Read

## Radiated Emission

File :E1-2017-A0085

Data :#28

Date: 2017/10/28

Time: 上午 01:35:16



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment			Detector	Comment
1		1598.656	65.68	-17.36	48.32	74.00	-25.68	peak	
2		1598.656	40.24	-17.36	22.88	54.00	-31.12	AVG	
3		10295.004	49.15	-1.74	47.41	74.00	-26.59	peak	
4		10295.004	39.38	-1.74	37.64	54.00	-16.36	AVG	
5		13861.570	46.85	3.30	50.15	74.00	-23.85	peak	
6		13861.570	38.54	3.30	41.84	54.00	-12.16	AVG	
7		14637.796	47.74	4.81	52.55	74.00	-21.45	peak	
8		14637.796	37.89	4.81	42.70	54.00	-11.30	AVG	
9		16205.330	48.66	1.57	50.23	74.00	-23.77	peak	
10		16205.330	40.72	1.57	42.29	54.00	-11.71	AVG	
11		16870.647	48.68	4.03	52.71	74.00	-21.29	peak	
12 *		16870.647	39.93	4.03	43.96	54.00	-10.04	AVG	

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

File :E1-2017-A0085\Data :#28

Page: 1

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## Config\_2\_V

Site: SGS 966 Chamber B

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

Mode: Config 2

Note: DATA Read

Polarization: **Vertical**

Power: AC 120V/60Hz

Distance:

Temperature: 22 °C

Humidity: 65 %

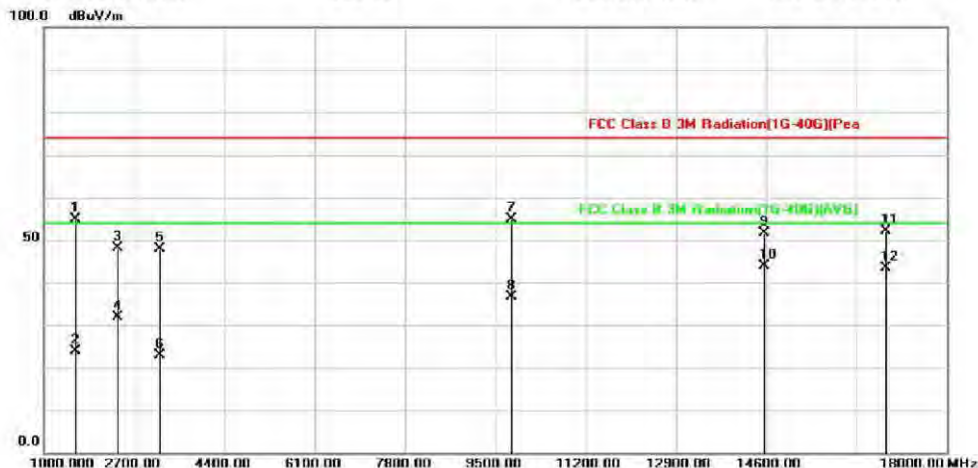
## Radiated Emission

File :E1-2017-A0085

Data :#27

Date: 2017/10/28

Time: 上午 01:31:33



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1594.720	72.18	-17.37	54.81	74.00	-19.19	peak	
2		1594.720	41.22	-17.37	23.85	54.00	-30.15	AVG	
3		2398.116	63.36	-15.13	48.23	74.00	-25.77	peak	
4		2398.116	47.06	-15.13	31.93	54.00	-22.07	AVG	
5		3193.240	61.85	-13.87	47.98	74.00	-26.02	peak	
6		3193.240	36.64	-13.87	22.77	54.00	-31.23	AVG	
7		9817.046	57.49	-2.54	54.95	74.00	-19.05	peak	
8		9817.046	39.10	-2.54	36.56	54.00	-17.44	AVG	
9		14573.929	46.68	4.90	51.58	74.00	-22.42	peak	
10 *		14573.929	38.97	4.90	43.87	54.00	-10.13	AVG	
11		16844.480	48.15	3.94	52.09	74.00	-21.91	peak	
12		16844.480	39.40	3.94	43.34	54.00	-10.66	AVG	

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

File :E1-2017-A0085\Data :#27

Page: 1

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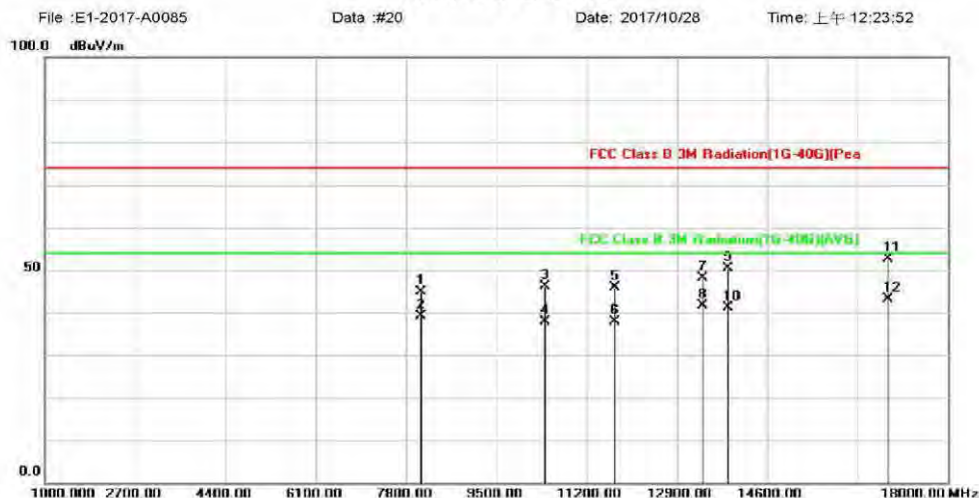
## Config\_3\_H

Site: SGS 966 Chamber B  
 Limit: FCC Class B 3M Radiation(1G-40G)(Pea  
 Mode: Config 3  
 Note: play REC

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

Temperature: 22 °C  
 Humidity: 65 %

### Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		8074.557	47.43	-2.67	44.76	74.00	-29.24	peak	
2		8074.557	41.78	-2.67	39.11	54.00	-14.89	AVG	
3		10427.810	47.64	-1.39	46.25	74.00	-27.75	peak	
4		10427.810	39.35	-1.39	37.96	54.00	-16.04	AVG	
5		11737.946	46.60	-0.83	45.77	74.00	-28.23	peak	
6		11737.946	38.68	-0.83	37.85	54.00	-16.15	AVG	
7		13382.573	46.48	1.53	48.01	74.00	-25.99	peak	
8		13382.573	40.15	1.53	41.68	54.00	-12.32	AVG	
9		13874.634	47.00	3.34	50.34	74.00	-23.66	peak	
10		13874.634	37.71	3.34	41.05	54.00	-12.95	AVG	
11		16875.722	48.45	4.06	52.51	74.00	-21.49	peak	
12 *		16875.722	39.05	4.06	43.11	54.00	-10.89	AVG	

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

File :E1-2017-A0085\Data :#20

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## Config\_3\_V

Site: SGS 966 Chamber B

Polarization: **Vertical**

Temperature: 22 °C

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

Power: AC 120V/60Hz

Humidity: 65 %

Mode: Config 3

Distance:

Note: play REC

## Radiated Emission

File :E1-2017-A0085

Data :#19

Date: 2017/10/28

Time: 上午 12:22:05



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		10762.595	47.78	-1.00	46.78	74.00	-27.22	peak	
2		10762.595	40.16	-1.00	39.16	54.00	-14.84	AVG	
3		13876.509	46.13	3.36	49.49	74.00	-24.51	peak	
4		13876.509	37.12	3.36	40.48	54.00	-13.52	AVG	
5		14668.000	47.12	4.76	51.88	74.00	-22.12	peak	
6 *		14668.000	41.18	4.76	45.94	54.00	-8.06	AVG	
7		15044.877	46.98	4.08	51.06	74.00	-22.94	peak	
8		15044.877	40.53	4.08	44.61	54.00	-9.39	AVG	
9		16376.109	48.76	2.23	50.99	74.00	-23.01	peak	
10		16376.109	41.88	2.23	44.11	54.00	-9.89	AVG	
11		16880.478	48.63	4.08	52.71	74.00	-21.29	peak	
12		16880.478	40.22	4.08	44.30	54.00	-9.70	AVG	

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

File :E1-2017-A0085\Data :#19

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**\*\* End of Report \*\***

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