



FCC CERTIFICATION REPORT

Test Report No. : E1/2017/70120
Applicant : Huawei Technologies Co., Ltd.
Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Manufacturer : Huawei Technologies Co., Ltd.
Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Equipment Under Test (EUT) :
Product Name : LTE USB Stick
Brand Name : HUAWEI
Model No. : MS2372h-153
Added Model(s) : N/A
Standards : FCC Part 15:2017, Subpart B, Class B

Date of Receipt : Jul. 19, 2017
Date of Test : Jul. 19 ~ Aug. 01, 2017
Date of Issue : Aug. 04, 2017

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.

This report shall not be reproduced except in full, without the written approval of the laboratory. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

Tested By:

Ivan Hsieh
Ivan Hsieh (Engineer)

Date

Aug. 04, 2017

Approved By

Eddy Cheng
Eddy Cheng
(Assistant Supervisor)

Date

Aug. 04, 2017



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Revision History

Report Number	Revision	Description	Issue Date
E1/2017/70120	Rev.00	Initial creation of document	Aug. 04, 2017

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1. General Information

1.1 Applicant & Manufacturer Information

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 Manufacturer : Huawei Technologies Co., Ltd.
 Address of Manufacturer : Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

1.2 General Description of EUT

Product Name : LTE USB Stick
 Brand Name : HUAWEI
 Model No. : MS2372h-153
 Added Model(s) : N/A
 Model Difference : N/A

1.3 Details of EUT

Power Supply : From system
 Modes/Function : Mode 1. GSM 850 Link + Link NB Charger
 Mode 2. LET B7 Link + Link NB Charger
 Mode 3. Worst (LET B2) Idle + Link NB Charger
 Worst case : CE _Worst_ case:
 Mode 2. LET B7 Link + Link NB Charger
 Below / Above _RE_Worst_ case:
 Mode 2. LET B7 Link + Link NB Charger
 Highest operate description : 2570MHz
 Adapter : N/A

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1.4 Operation Procedure

Test Mode: 1

1. Open the EUT cover and insert the SIM card.
2. EUT plug in Notebook power on.
3. GSM850 Link.
4. Start the test.

Test Mode: 2

1. Open the EUT cover and insert the SIM card.
2. EUT plug in Notebook power on.
3. LTE B7 Link.
4. Start the test.

Test Mode: 3

1. Open the EUT cover and insert the SIM card
2. EUT plug in Notebook power on.
3. Worst (LET B7) Idle.
4. Start the test.

1.5 Description of Support Units

PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
SIM Card	R&S	CMW-Z05	8.95253E+18
Radio Communication Analyzer(1)	R&S	CMU200	102189
Radio Communication Analyzer(2)	R&S	CMW500	1201.002K50-152303-Zr
Notebook	DELL	Latitude E5430	COVZYW1
Mouse	DELL	MS111-T	CN-OKW2YH-71616-345-OL7T
Printer	HP	VCVRA-1004	CN33K19J3F

Support Equipment Used in Tested Cable

Cable Type	Core	Length	Shielding/Non-shielding
N/A	N/A	N/A	N/A

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1.6 Modification List

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

1.7 Accessories Cable List

Cable Type	Core	Length	Category	Shielding/Non-shielding
N/A	N/A	N/A	N/A	N/A

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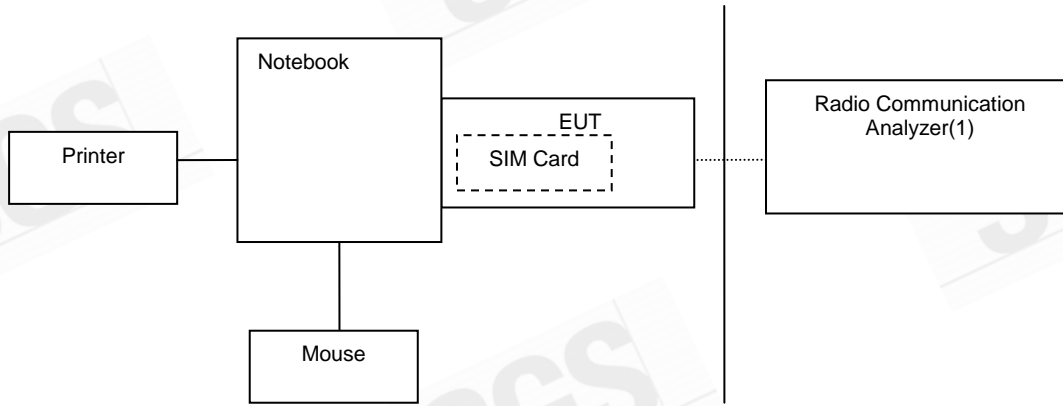
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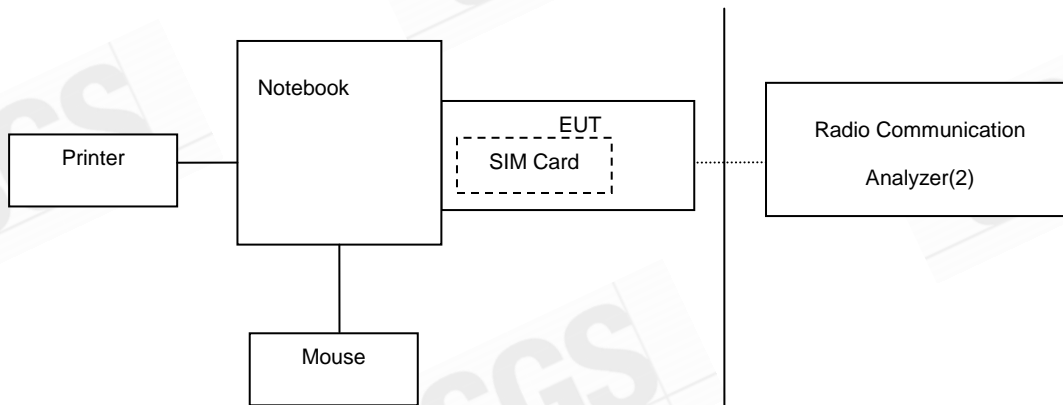


1.8 Test Set-Up Configuration

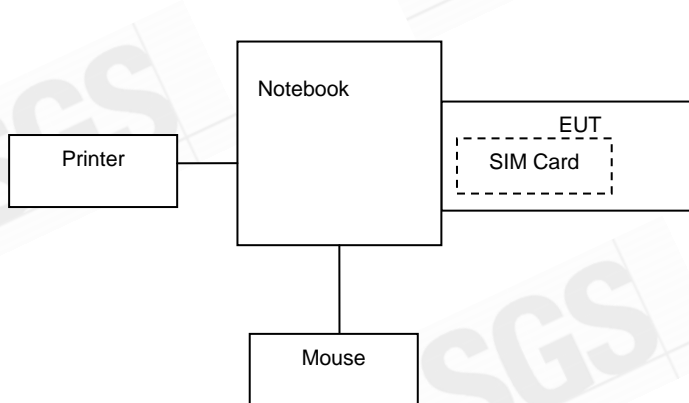
Mode 1



Mode 2



Mode 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

Standard	Test Type	Highest Emission			
		Result	Phase/Pol.	Frequency(MHz)	Margin(dB)
FCC Part 15 Subpart B Class B	Conducted Emission	PASS	Line	0.1740	-18.93 (QP)
			Neutral	0.1740	-18.65 (QP)
	Radiated Emission	PASS	Ver.	33.8800	-11.05 (peak)

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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

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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	2016/8/30	2017/8/29
LISN	SCHWARZBECK	NSLK 8127	8127-648	2017/6/18	2018/6/17
Pulse Limiter	Narda S.T.S.	PMM PL01	1110X30602	2016/8/12	2017/8/11
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 : 60 %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:

Model No.:MS2372h-153

Mode_2_L

Site : Conduction Room	Phase: L1	Temperature: 25 °C
Limit: FCC Class B Conduction(QP)	Power: From System	Humidity: 60 %
Mode: Mode 2		
Note: AC 120V/60Hz		

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1540	45.60	0.34	45.94	65.78	-19.84	QP	
2		0.1540	25.00	0.34	25.34	55.78	-30.44	AVG	
3 *		0.1740	45.50	0.34	45.84	64.77	-18.93	QP	
4		0.1740	32.60	0.34	32.94	54.77	-21.83	AVG	
5		0.2460	35.30	0.33	35.63	61.89	-26.26	QP	
6		0.2460	22.40	0.33	22.73	51.89	-29.16	AVG	
7		0.4380	34.90	0.34	35.24	57.10	-21.86	QP	
8		0.4380	22.80	0.34	23.14	47.10	-23.96	AVG	
9		1.7420	26.70	0.42	27.12	56.00	-28.88	QP	
10		1.7420	19.90	0.42	20.32	46.00	-25.68	AVG	
11		25.4380	34.10	1.15	35.25	60.00	-24.75	QP	
12		25.4380	28.50	1.15	29.65	50.00	-20.35	AVG	

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

File :70120\Data :#8

Page: 1

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Mode_2_N

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

Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	*	0.1740	45.70	0.42	46.12	64.77	-18.65	QP	
2		0.1740	30.80	0.42	31.22	54.77	-23.55	AVG	
3		0.2260	36.90	0.41	37.31	62.60	-25.29	QP	
4		0.2260	21.70	0.41	22.11	52.60	-30.49	AVG	
5		0.2500	38.00	0.41	38.41	61.76	-23.35	QP	
6		0.2500	28.00	0.41	28.41	51.76	-23.35	AVG	
7		0.3460	31.00	0.42	31.42	59.06	-27.64	QP	
8		0.3460	22.90	0.42	23.32	49.06	-25.74	AVG	
9		0.4500	31.80	0.42	32.22	56.88	-24.66	QP	
10		0.4500	17.20	0.42	17.62	46.88	-29.26	AVG	
11		24.6500	37.10	0.89	37.99	60.00	-22.01	QP	
12		24.6500	30.30	0.89	31.19	50.00	-18.81	AVG	

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

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2.5 Test of Radiated Emission

2.5.1 Test Equipments

Below 1GHz

SGS Radiated_Below_1GHz HWAYA 966A EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESR 7	101459	2017/2/17	2018/2/16
Biconical Antenna	SCHWARZBECK	VULB 9168	9168-297	2017/5/26	2018/5/25
Biconical Antenna	SCHWARZBECK	VHBB 9124	9124-560	2016/12/6	2017/12/5
Log-Periodic Antenna	SCHWARZBECK	UHALP 9108 A	UHALP 9108-A 0990	2016/12/6	2017/12/5
Pre Amplifier	EMC Instruments Corp.	EMC330	980180	2017/5/19	2018/5/18
Coaxial Cable	Huber+Suhner	RG 214/U	539808	2017/4/23	2018/4/22
Coaxial Cable	EMC Instruments	EMC8D-NM-NM-6000	140922	2017/4/23	2018/4/22
Coaxial Cable	NA	8D	SAC-A-0.5M	2017/4/23	2018/4/22
Communication Tester	SCHWARZBECK	CMW500	152303	2017/2/23	2018/2/22
Communication Tester	R&S	CMU200	122498	2016/11/9	2017/11/8
Coaxial Cable	MF	MF-7802	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	SGS	966 Chamber A	SAC-A	2017/1/12	2018/1/11
Test Software	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 4.71 dB. (30-1000MHz)					

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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	SCHWARZBECK	BBHA9120D	BBHA9120D673	2016/10/14	2017/10/13
Pre Amplifier	R&S	SCU-18	100203	2017/3/26	2018/3/26
Coaxial Cable	EMC Instruments	EMC104-SM-SM	140923	2016/9/30	2017/9/29
Coaxial Cable	EMC Instruments	EMC104-SM-SM	140925	2016/9/30	2017/9/29
Coaxial Cable	EMC Instruments	EMC104-SM-SM	140927	2016/9/30	2017/9/29
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
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	2016/10/8	2017/10/7
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)					

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2.5.2 Operating Environment

Temperature : 25 degree C

Humidity : 70 %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

Model No.:MS2372h-153

Mode_2_H

Site: SGS 966 Chamber A	Polarization: <i>Horizontal</i>	Temperature: 25 °C
Limit: FCC Class B 3M Radiation	Power: AC 120V/60Hz	Humidity: 70 %
Mode: Mode 2	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		98.8700	41.63	-17.34	24.29	43.50	-19.21	peak	
2		125.0600	41.88	-14.05	27.83	43.50	-15.67	peak	
3	*	165.8000	41.15	-12.10	29.05	43.50	-14.45	peak	
4		219.1500	43.37	-14.33	29.04	46.00	-16.96	peak	
5		232.7300	44.11	-13.77	30.34	46.00	-15.66	peak	
6		265.7100	39.68	-12.18	27.50	46.00	-18.50	peak	

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

File :70120\Data :#8

Page: 1

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Mode_2_V

Site: SGS 966 Chamber A	Polarization: Vertical	Temperature: 25 °C
Limit: FCC Class B 3M Radiation	Power: AC 120V/60Hz	Humidity: 70 %
Mode: Mode 2	Distance:	
Note:		

Radiated Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measurement dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	33.8800	41.47	-12.52	28.95	40.00	-11.05	peak	
2		46.4900	37.86	-11.77	26.09	40.00	-13.91	peak	
3		126.0300	42.50	-13.98	28.52	43.50	-14.98	peak	
4		159.0100	40.11	-11.76	28.35	43.50	-15.15	peak	
5		165.8000	39.87	-12.10	27.77	43.50	-15.73	peak	
6		252.1300	38.57	-12.46	26.11	46.00	-19.89	peak	

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

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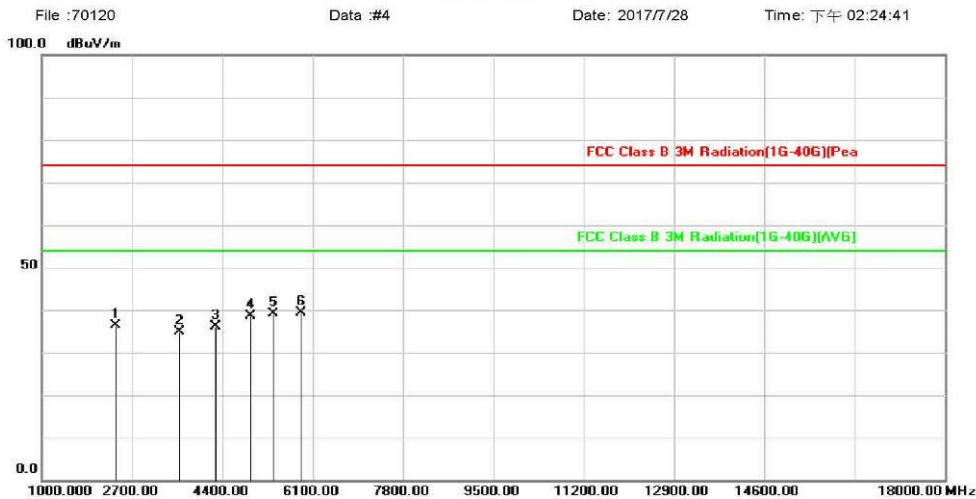
Above 1GHz

Model No.:MS2372h-153

Mode_2_H

Site: SGS 966 Chamber B	Polarization: Horizontal	Temperature: 25 °C
Limit: FCC Class B 3M Radiation(1G-40G)(Pea	Power: AC 120V/60Hz	Humidity: 67 %
Mode: Mode 2	Distance:	
Note:		

Radiated Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		2394.000	50.81	-14.42	36.39	74.00	-37.61	peak	
2		3584.000	47.25	-12.39	34.86	74.00	-39.14	peak	
3		4281.000	46.79	-10.68	36.11	74.00	-37.89	peak	
4		4927.000	47.30	-8.74	38.56	74.00	-35.44	peak	
5		5369.000	47.21	-8.05	39.16	74.00	-34.84	peak	
6	*	5879.000	46.65	-7.22	39.43	74.00	-34.57	peak	

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

File :70120\Data :#4

Page: 1

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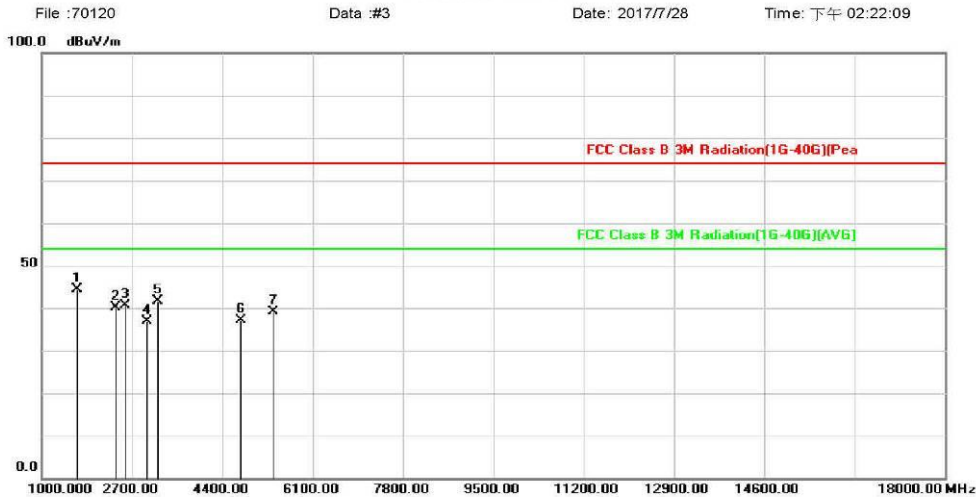
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Mode_2_V

Site: SGS 966 Chamber B Polarization: **Vertical** Temperature: 25 °C
 Limit: FCC Class B 3M Radiation(1G-40G)(Pea) Power: AC 120V/60Hz Humidity: 67 %
 Mode: Mode 2 Distance:
 Note:

Radiated Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measurement dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	1663.000	60.72	-16.34	44.38	74.00	-29.62	peak	
2		2394.000	54.49	-14.42	40.07	74.00	-33.93	peak	
3		2581.000	54.56	-13.92	40.64	74.00	-33.36	peak	
4		2989.000	49.79	-13.03	36.76	74.00	-37.24	peak	
5		3193.000	54.39	-12.84	41.55	74.00	-32.45	peak	
6		4757.000	46.52	-9.32	37.20	74.00	-36.80	peak	
7		5369.000	47.06	-8.05	39.01	74.00	-34.99	peak	

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

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**** End of Report ****

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