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Shenzhen Branch**

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Report No.: SZEM170600616801
Page: 1 of 24

TEST REPORT

Application No.: SZEM1706006168RG
Applicant: Huawei Technologies Co.,Ltd.
Address of Applicant: Adiministration Building, Headquarters of Huawei Technologies Co.,Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Manufacturer: Huawei Technologies Co.,Ltd.
Address of Manufacturer: Adiministration Building, Headquarters of Huawei Technologies Co.,Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Factory: Huawei Technologies Co.,Ltd.
Address of Factory: Adiministration Building, Headquarters of Huawei Technologies Co.,Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

Equipment Under Test (EUT):

EUT Name: Smart Phone
Model No.: LON-L29
Trade mark: HUAWEI
FCC ID: QISLON-L29
Standards: 47 CFR Part 15,Subpart B:2016
Date of Receipt: 2017-06-20
Date of Test: 2017-06-20 to 2017-06-28
Date of Issue: 2017-06-30

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



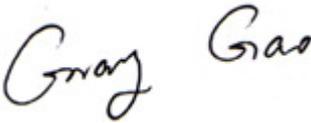
Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2017-06-30		Original

Authorized for issue by:				
				
		<hr/> Gray Gao /Project Engineer		
				
		<hr/> Eric Fu /Reviewer		

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15,Subpart B:2016	ANSI C63.4	Class B	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 15,Subpart B:2016	ANSI C63.4	Class B	Pass

InternalSource	UpperFrequency
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower

Remark:

Model No.: LON-L29

This test report (Ref. No.: SZEM170600616801) is only valid with the original test report (Ref. No.: SZEM160900776501).

According to the declaration from the applicant, the model in this report and the model in original report were identical, The difference details as below:

LON-L29 is subscriber equipment in the LTE/ WCDMA/GSM system. The LTE frequency band is Band I, Band II, Band III, Band IV, Band V, Band VII, Band VIII, Band IX, Band XII, Band XVII, Band XVIII, Band XIX, Band XX, Band XXVI, Band XXVIII, Band XXIX, Band XXXVIII, Band XXXIX, Band XL and Band XLI. But only Band I, Band III, Band VII, Band VIII, Band XX, Band XXXVIII and Band XL test data included in this report. The HSUPA/HSDPA/UMTS frequency band is Band I, Band II, Band IV, Band V, Band VI, Band VIII and Band XIX, The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900, The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/UMTS/GSM protocol processing, voice, video, MMS service, GPS, AGPS,NFC and WIFI etc. Externally it provides earphone port (to provide voice service) and dual USIM card interfaces. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

Below is the change point:



PA models changed, new models modified the power Bias, the overall performance of the product does not affect.

Before	After
Model: SKY78117-14 Description: RF Multi-functional Component, HB PAMID(w/ B7 DUP), 2300~2690MHz, LGA	Model: SKY78117-14A Description: RF Multi-functional Component, HB PAMID(w/ B7 DUP) w/ B7 Gain improvement, 2300~2690MHz, LGA
Model: SKY78114-14 Description: RF Multi-functional Component,MB PAMID(w/ B1/2/3/4 Dup),1710~2025 MHz,LGA,Terminal Dedicated	Model: SKY78114-21 Description: RF Multi-functional Component,MB PAMID(w/ B1/2/3/4 Dup),1710~2025 MHz,LGA,Terminal Dedicated, but this change only affects B2/3/4.

Considering to the difference, pre-scan were performed on the sample in this report to find the items which can be influential to the result in the original test report for fully retest.

Therefore in this report Radiated Disturbance were fully retested on model LON-L29 and shown the data in this report, other tests please refer to original report SZEM160900776501.



3 Contents

	Page
1 COVER PAGE	1
2 TEST SUMMARY	3
3 CONTENTS	5
4 GENERAL INFORMATION	6
4.1 DETAILS OF E.U.T.	6
4.2 DESCRIPTION OF SUPPORT UNITS	6
4.3 MEASUREMENT UNCERTAINTY	7
4.4 TEST LOCATION	8
4.5 TEST FACILITY	8
4.6 DEVIATION FROM STANDARDS.....	8
4.7 ABNORMALITIES FROM STANDARD CONDITIONS	8
5 EQUIPMENT LIST.....	9
6 EMISSION TEST RESULTS	10
6.1 RADIATED EMISSIONS (30MHZ-1GHZ).....	10
6.1.1 <i>E.U.T. Operation</i>	11
6.1.2 <i>Test Setup Diagram</i>	11
6.1.3 <i>Measurement Data</i>	11
6.2 RADIATED EMISSIONS (ABOVE 1GHZ)	16
6.2.1 <i>E.U.T. Operation</i>	17
6.2.2 <i>Test Setup Diagram</i>	17
6.2.3 <i>Measurement Data</i>	17
7 PHOTOGRAPHS.....	22
7.1 RADIATED EMISSIONS (30MHZ-1GHZ) TEST SETUP	22
7.2 RADIATED EMISSIONS (ABOVE 1GHZ) TEST SETUP.....	23
7.3 EUT CONSTRUCTIONAL DETAILS	24



4 General Information

4.1 Details of E.U.T.

Power supply: AC input : 100-240V 50/60Hz,0.75A
DC output: 5V 2A or 5V 4.5A or 4.5V 5A

Cable: USB cable: 100cm shielded.
earphone cable: 110cm unshielded.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	T430u	REF. No.SEA1800
Router	NETGEAR	DGN2200	REF. No.SEA2200

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction emission	3.45dB (9kHz to 150kHz)
		3.0dB (150kHz to 30MHz)
2	Radiated emission	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-6GHz)
3	Radiated Power	3.64dB
4	Radiated Immunity	1.64dB
5	Conducted Immunity	0.96dB
6	ESD	6 %
7	EFT (Electrical Fast Transients)	5 %
8	Surge Immunity	5 %
9	Voltage Dips and Interruptions	4 %
10	20 system	1.5dB
11	Temperature test	1 °C
12	Humidity test	3%
13	DC power test	0.5 %



4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



5 Equipment List

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-05-10	2018-05-10
EMI Test Receiver	Agilent Technologies	N9038A	SEM004-05	2016-10-09	2017-10-09
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2014-11-01	2017-11-01
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2017-04-14	2018-04-13

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2017-05-10	2018-05-10
EXA Spectrum Analyzer	Agilent Technologies Inc	N9010A	SEM004-09	2017-06-05	2018-06-04
Horn Antenna(1-18GHz)	Rohde & Schwarz	HF907	SEM003-06	2015-06-14	2018-06-14
Low Noise Amplifier	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2016-10-09	2017-10-09

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2016-10-12	2017-10-12
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2017-04-18	2018-04-18



6 Emission Test Results

6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement:	47 CFR Part 15, Subpart B:2016
Test Method:	ANSI C63.4
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz -88MHz	40.0(dB μ V/m) quasi-peak
88MHz-216MHz	43.5(dB μ V/m) quasi-peak
216MHz-960MHz	46.0(dB μ V/m) quasi-peak
960MHz-1000MHz	54.0(dB μ V/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

6.1.1 E.U.T. Operation

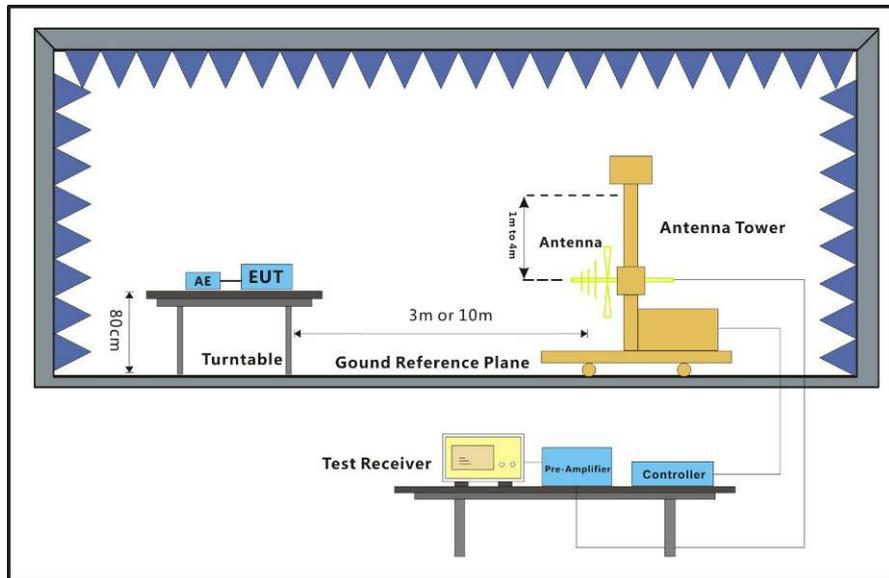
Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1005 mbar

- Pretest these mode to find the worst case:
- a: Telecom + BT+ WLAN + GPS Rx + playing MP4 + earphone + battery + adapter
 - b: Telecom + BT + WLAN+ GPS Rx + camera(Front) + earphone + battery + adapter
 - c: Telecom + BT + WLAN+ GPS Rx + camera(Rear) + earphone + battery + adapter
 - d: Transfer data between the EUT and the PC(R/W)
 - e: Keep EUT working with standard testing signal, pretest performed at low, middle and high channels.
 - f: Single play.

The worst case for final test: b: Telecom + BT + WLAN+ GPS Rx + camera(Front) + earphone + battery + adapter
d: Transfer data between the EUT and the PC(R/W)

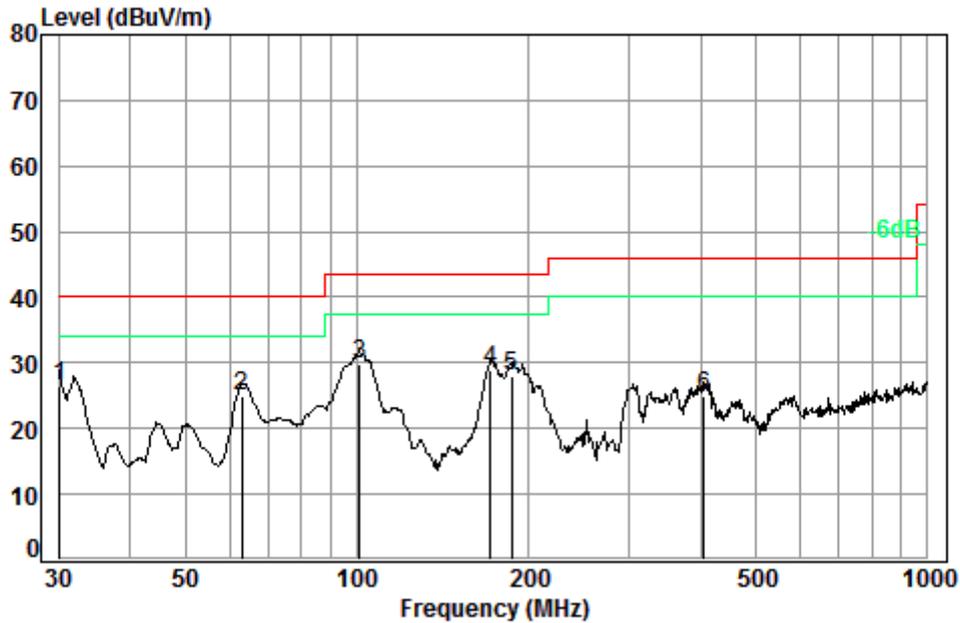
6.1.2 Test Setup Diagram



6.1.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

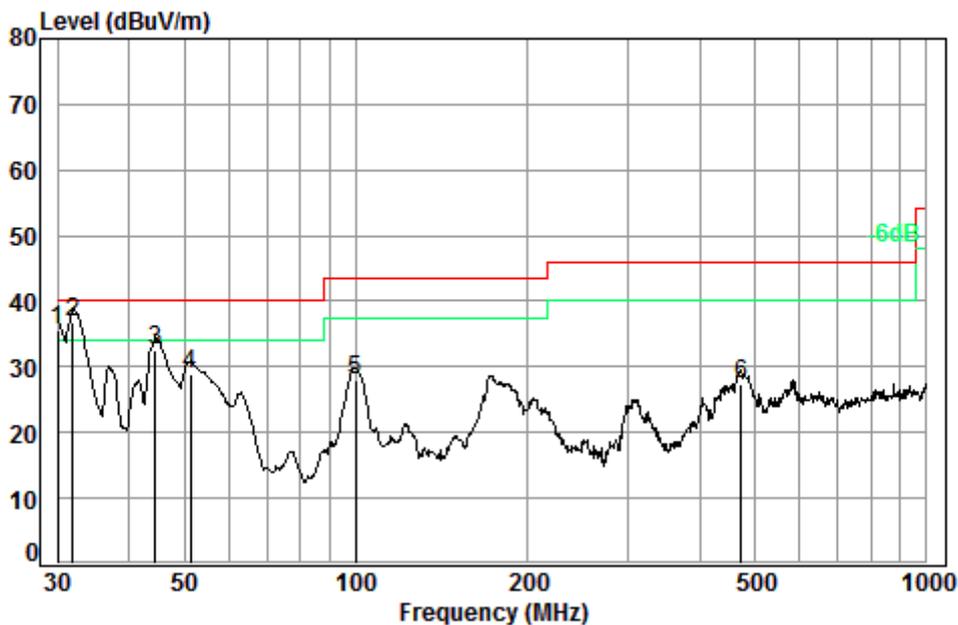
Mode:b; Polarization:Horizontal



Condition: 3m HORIZONTAL
Job No. : 06168RG
Test mode: b

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	30.11	0.60	18.64	27.36	34.44	26.32	40.00	-13.68
2	62.87	0.80	7.11	27.26	44.20	24.85	40.00	-15.15
3 pp	100.93	1.20	9.05	27.19	46.78	29.84	43.50	-13.66
4	171.39	1.36	9.56	26.81	44.72	28.83	43.50	-14.67
5	187.10	1.38	10.04	26.75	43.42	28.09	43.50	-15.41
6	406.09	2.23	16.32	27.17	33.65	25.03	46.00	-20.97

Mode:b; Polarization:Vertical



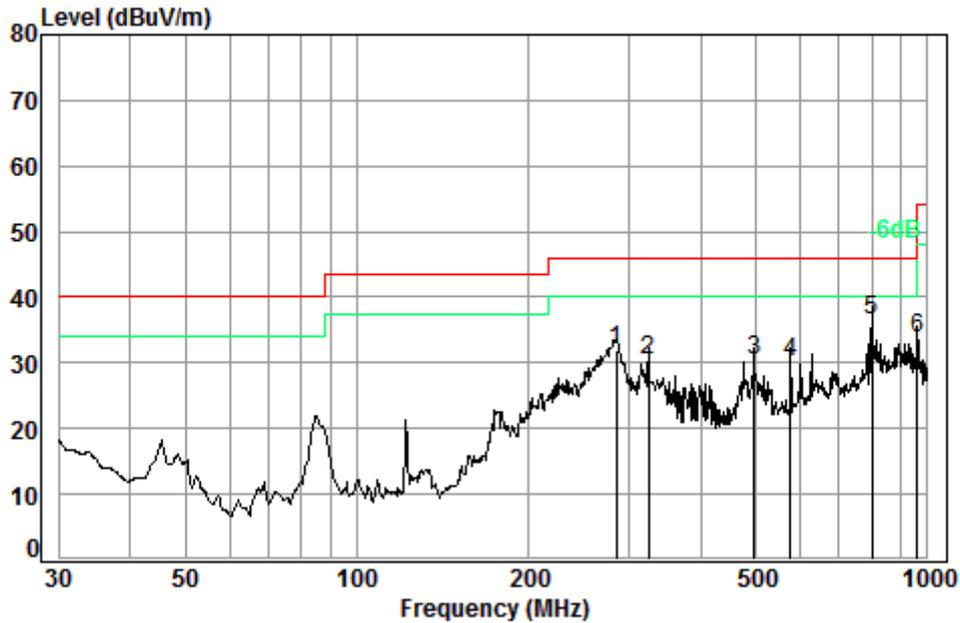
Condition: 3m VERTICAL

Job No. : 06168RG

Test mode: b

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	30.00	0.60	18.70	27.36	43.73	35.67	40.00	-4.33
2 pp	31.95	0.60	17.61	27.35	46.00	36.86	40.00	-3.14
3	44.59	0.70	11.08	27.31	48.12	32.59	40.00	-7.41
4	51.30	0.80	8.50	27.29	46.88	28.89	40.00	-11.11
5	99.88	1.20	9.10	27.20	44.84	27.94	43.50	-15.56
6	473.83	2.50	17.76	27.58	34.79	27.47	46.00	-18.53

Mode:d; Polarization:Horizontal



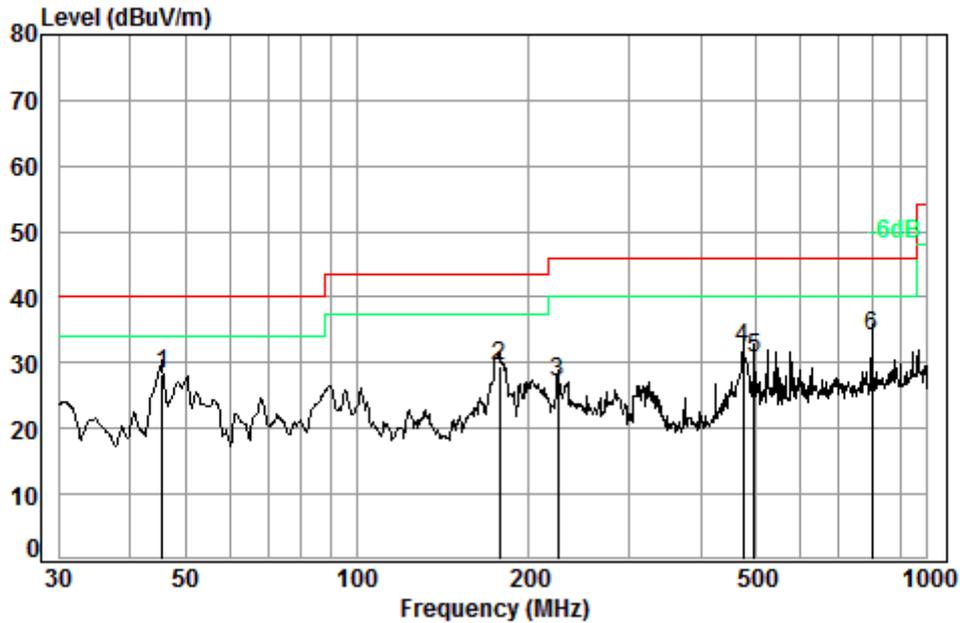
Condition: 3m HORIZONTAL

Job No. : 06168RG

Test mode: d

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	284.98	1.84	13.24	26.44	43.21	31.85	46.00	-14.15
2	324.46	1.98	14.78	26.58	40.11	30.29	46.00	-15.71
3	495.93	2.59	17.80	27.68	37.59	30.30	46.00	-15.70
4	574.63	2.68	19.10	27.58	36.07	30.27	46.00	-15.73
5 pp	798.98	3.20	22.10	27.30	38.63	36.63	46.00	-9.37
6	958.79	3.66	23.30	26.51	33.20	33.65	46.00	-12.35

Mode:d; Polarization:Vertical



Condition: 3m VERTICAL
Job No. : 06168RG
Test mode: d

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	45.53	0.72	10.66	27.30	44.27	28.35	40.00	-11.65
2	177.51	1.37	9.80	26.78	45.23	29.62	43.50	-13.88
3	225.31	1.55	11.51	26.61	40.48	26.93	46.00	-19.07
4	475.50	2.51	17.80	27.58	39.36	32.09	46.00	-13.91
5	497.68	2.59	17.80	27.70	38.08	30.77	46.00	-15.23
6	798.98	3.20	22.10	27.30	35.94	33.94	46.00	-12.06



6.2 Radiated Emissions (above 1GHz)

Test Requirement:	47 CFR Part 15,Subpart B:2016
Test Method:	ANSI C63.4
Frequency Range:	Above 1GHz
Measurement Distance:	3m
Limit:	
Above 1GHz	74(dB μ V/m) peak, 54(dB μ V/m) average
Detector:	Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

6.2.1 E.U.T. Operation

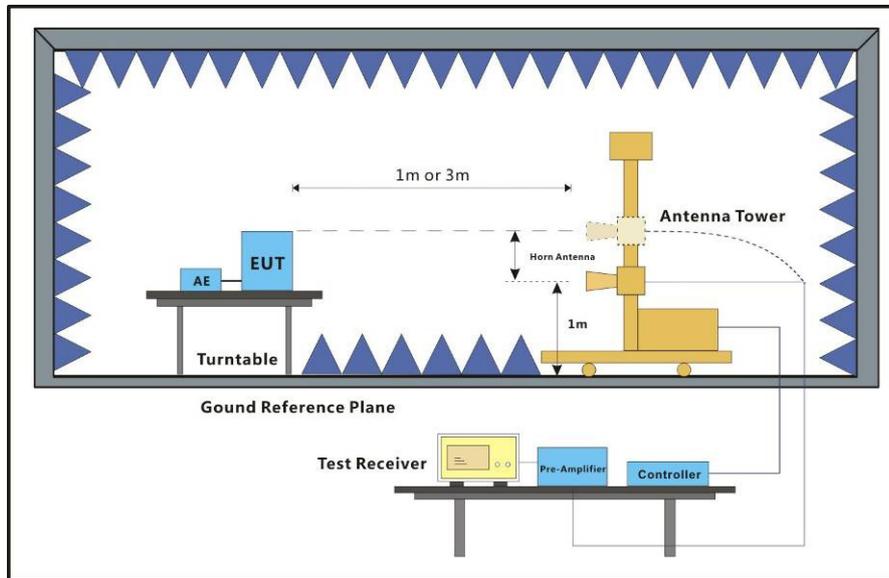
Operating Environment:

Temperature: 23 °C Humidity: 54 % RH Atmospheric Pressure: 1005 mbar

- Pretest these mode to find the worst case:
- a: Telecom + BT+ WLAN + GPS Rx + playing MP4 + earphone + battery + adapter
 - b: Telecom + BT + WLAN+ GPS Rx + camera(Front) + earphone + battery + adapter
 - c: Telecom + BT + WLAN+ GPS Rx + camera(Rear) + earphone + battery + adapter
 - d: Transfer data between the EUT and the PC(R/W)
 - e: Keep EUT working with standard testing signal, pretest performed at low, middle and high channels.
 - f: Single play.

The worst case for final test: b: Telecom + BT + WLAN+ GPS Rx + camera(Front) + earphone + battery + adapter
d: Transfer data between the EUT and the PC(R/W)

6.2.2 Test Setup Diagram

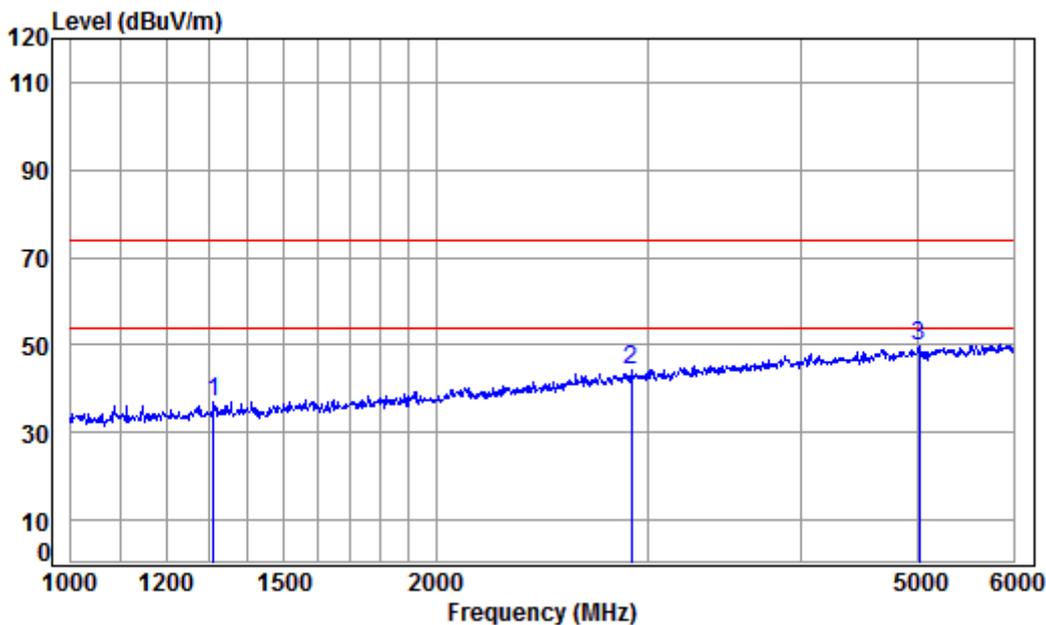


6.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.



Mode:b; Polarization:Horizontal



Condition: 3m Horizontal

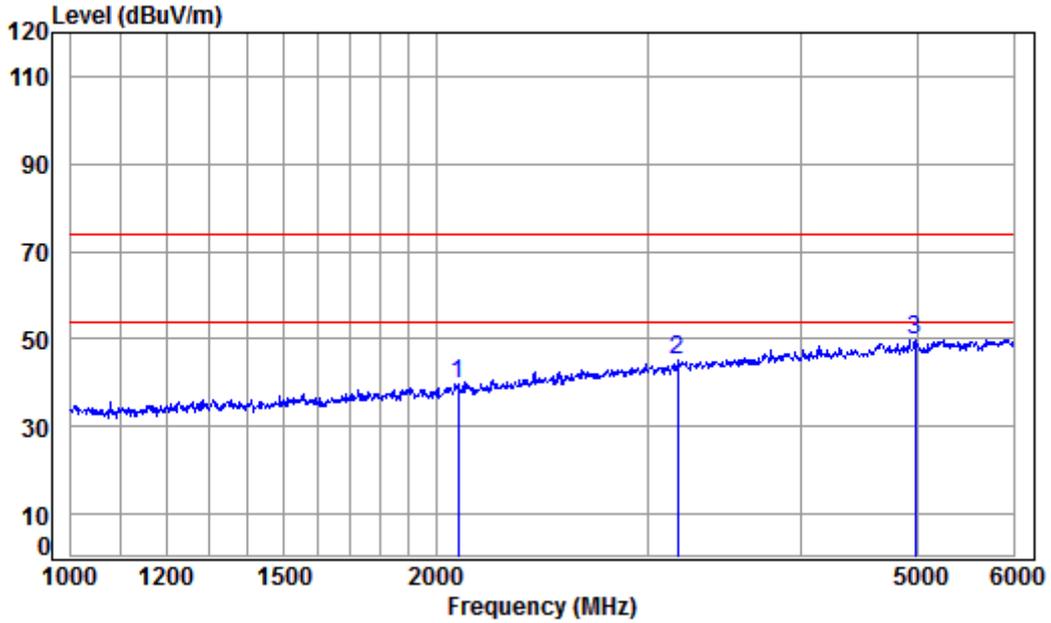
Job No: : 06168RG

Mode: : b

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1310.693	4.23	25.00	38.07	45.98	37.14	74.00	-36.86	Peak
2	2898.824	5.83	30.94	37.91	45.56	44.42	74.00	-29.58	Peak
3 pp	5015.753	8.01	34.50	38.50	45.61	49.62	74.00	-24.38	Peak



Mode:b; Polarization:Vertical

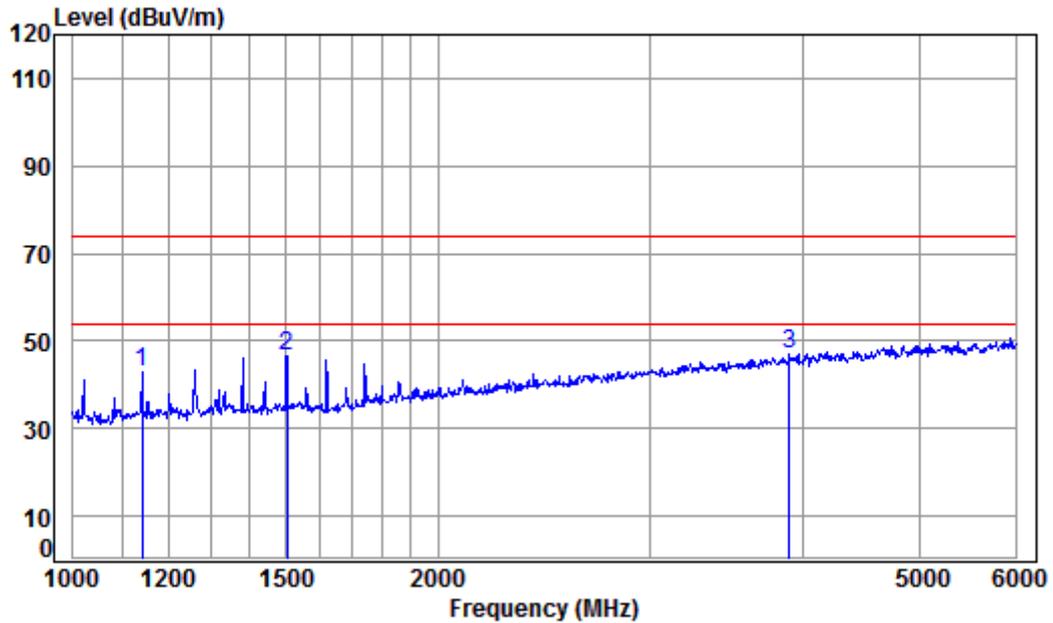


Condition: 3m VERTICAL
Job No: : 06168RG
Mode: : b

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2088.431	5.09	28.11	37.99	44.46	39.67	74.00	-34.33	Peak
2	3170.512	6.06	31.62	37.92	45.31	45.07	74.00	-28.93	Peak
3 pp	4979.933	7.97	34.47	38.49	46.00	49.95	74.00	-24.05	Peak



Mode:d; Polarization:Horizontal

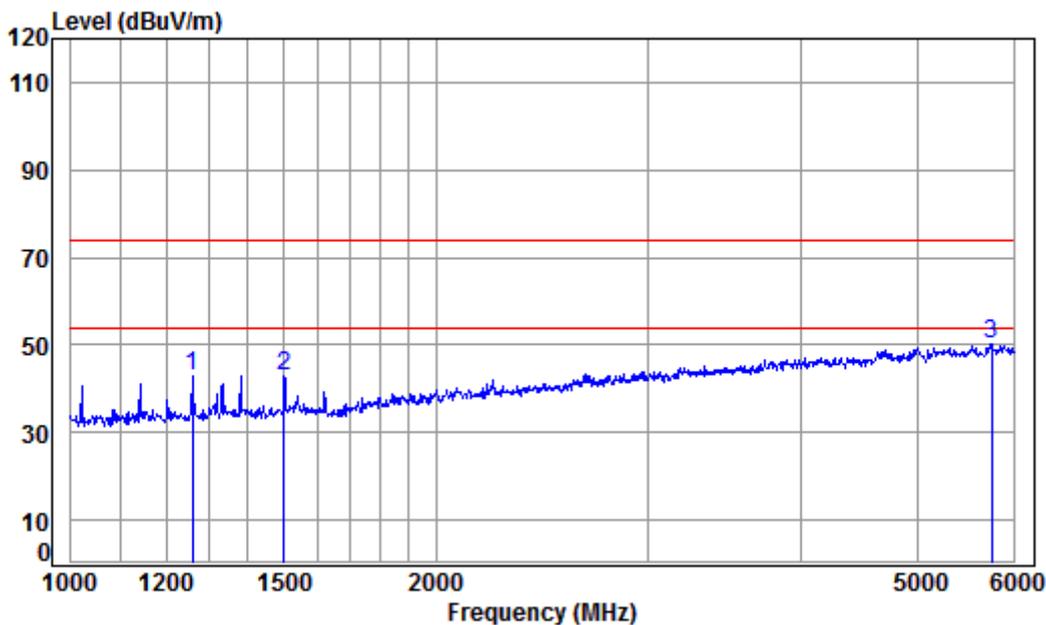


Condition: 3m HORIZONTAL
Job No: : 06168RG
Mode: : d

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1139.738	3.99	24.17	38.09	52.61	42.68	74.00	-31.32	Peak
2	1501.898	4.47	25.81	38.05	54.47	46.70	74.00	-27.30	Peak
3 pp	3902.968	6.63	33.34	37.99	45.06	47.04	74.00	-26.96	Peak



Mode:d; Polarization:Vertical



Condition: 3m VERTICAL

Job No: : 06168RG

Mode: : d

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1260.032	4.16	24.77	38.07	52.15	43.01	74.00	-30.99	Peak
2	1499.209	4.47	25.80	38.05	50.75	42.97	74.00	-31.03	Peak
3 pp	5757.763	8.51	34.56	38.35	45.46	50.18	74.00	-23.82	Peak



7.3 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1609007765RG