



Report No.: ZR/2020/3002705

Page: 1 of 20

TEST REPORT

Application No.: ZR/2020/30027
Applicant: TCL Communication Ltd.
Address of Applicant: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Manufacturer: TCL Communication Ltd.
Address of Manufacturer: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
EUT Name: LTE/UMTS/GSM mobile phone
Model No.: 5029A
Trade mark: alcatel
FCC ID: 2ACCJH119
Standard(s) : 47 CFR Part 15, Subpart B
Date of Receipt: 2020/3/19
Date of Test: 2020/3/20 to 2020/4/4
Date of Issue: 2020/4/17

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

Authorized Signature:

Derek Yang

Wireless Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020/4/17		Original

Authorized for issue by:				
		Mike Hu	2020/4/17	
		(Mike Hu) /Project Engineer	Date	
		David Chen	2020/4/17	
		(David Chen) /Reviewer	Date	

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass

Internal Source	Upper Frequency
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



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4 General Information

4.1 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	T430u	REF. No.SEA1800
Mouse	Lenovo	M-U0025-O	REF. No.:SEA2400
Router	NETGEAR	DGN2200	REF. No.SEA2200

	No.	P/N	Remark	Comment
Adaptor	1	CBA0059AGAC7	UC13US;Chenyang 5V2A Charger	
	2	CBA0059AGAC5	UC13US ;PUAN 5V2A Charger	
USB cable	1	CDA0000024C8	PUAN	-
	2	CDA0000024C2	JUWEI	-
Headset	1	CCB0046A10C1	JUWEI	-
	2	CCB0046A10C4	MEIHAO	-
	3	CCB0049A10C1	JUWEI	-
	4	CCB0049A10C4	MEIHAO	-
	5	CCB0046A15C1	JUWEI	CCB0046A15C1 Same with CCB0046A10C1, only remove alcatel logo
	6	CCB0046A15C4	MEIHAO	CCB0046A15C4 Same with CCB0046A10C4, only remove alcatel logo
	7	CCB0049A12C1	JUWEI	CCB CCB0049A12C1 Same with CCB0049A10C1, only remove alcatel logo
	8	CCB0049A12C4	MEIHAO	CCB CCB0049A12C4 Same with CCB0049A10C4, only remove alcatel logo
Battery	1	CAC3860024C1	TLp038D1; BYD	-
	2	CAC3860025C7	TLp038D7; VEKEN;	-

4.2 Test modes

Pretest these modes to find the worst case and show the worse data in the test items:	e: Transfer data between the EUT and the PC+USB cable1 f: Transfer data between the EUT and the PC+USB cable2 g: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card) +earphone1+battery+Cable(worst)+adapater1 h: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card) +earphone1+battery+Cable(worst)+adapater2 i: Telecom Idle+BT+WLAN +GPS Rx+camera (Front) +earphone+battery+Cable(worst)+ Cable(worst)+adapater(Worst)
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j: Telecom Idle+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)
k: GSM 850+BT+WLAN +GPS Rx+FM+earphone+battery+Cable(worst)+adapter(Worst)
l: GSM 1900+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)
m: WCDMA Band II+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)
n: WCDMA Band IV+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)
o: WCDMA Band V+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)
p: LTE band 2+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)
q: LTE band 4+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)
r: LTE band 5+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)
s: LTE band 7+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)
t: LTE band 13+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)
u: LTE band 17+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)
v: LTE band 66+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0dB (150kHz to 30MHz)
2	Radiated Emission	± 4.5dB (30MHz-1GHz) ± 4.8dB (1GHz-6GHz)
3	Temperature test	± 1°C
4	Humidity test	± 3%

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.

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No tests were sub-contracted.



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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 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	GB-88	SEM001-06	2017-05-10	2020-05-09
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2019-07-12	2020-07-11
LISN	Rohde & Schwarz	ENV216	SEM007-01	2019-09-25	2020-09-24
LISN	ETS-LINDGREN	3816/2	SEM007-02	2019-04-02	2020-04-01
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2020-03-13	2021-03-12

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date



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10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2019-03-31	2021-03-30
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2019-07-12	2020-07-11
EMI Test Receiver (9kHz-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2019-04-02	2020-04-01
Trilog-Broadband Antenna(30MHz-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2020-06-28
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2020-03-13	2021-03-12

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2019-07-12	2020-07-11
EXA Spectrum Analyzer	Agilent Technologies Inc	N9010A	SEM004-09	2020-03-13	2021-03-12
Horn Antenna(1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2020-03-13	2021-03-12
Pre-Amplifier(0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2019-09-27	2020-09-26



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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	2019-09-27	2020-09-26
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2019-09-27	2020-09-26
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2019-09-27	2020-09-26
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2020-03-13	2021-03-12



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6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 20.3 °C Humidity: 58.1 % RH Atmospheric Pressure: 1005 mbar

The worst case e: Transfer data between the EUT and the PC+USB cable1

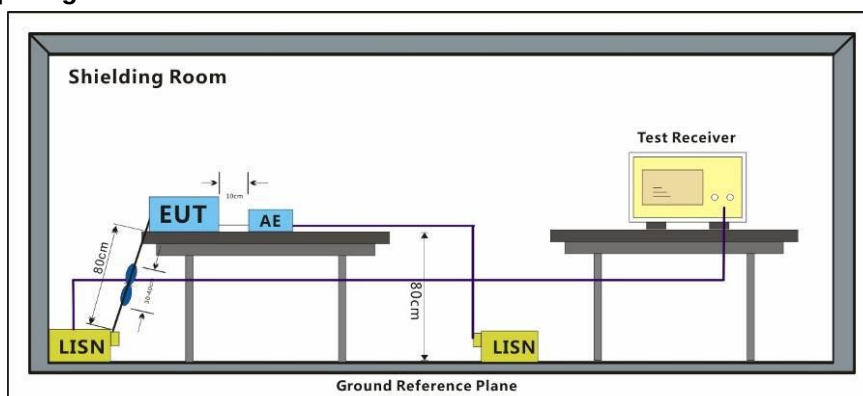
for final test: g: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)
+earphone1+battery+Cable1+adapter1

h: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)
+earphone1+battery+ Cable1+adapter2

i: Telecom Idle+BT+WLAN +GPS Rx+camera (Front) +earphone+battery+
Cable1+ Cable1+adapter2

j: Telecom Idle+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+
Cable1+adapter2

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

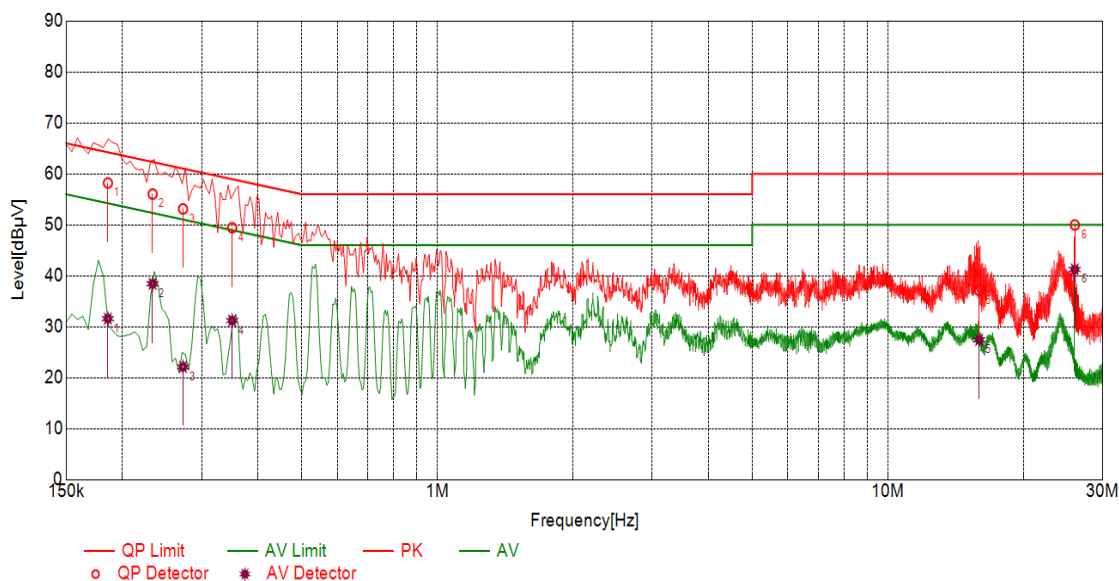


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Mode:e; Line:Live Line



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Type
1	0.1857	10.10	58.21	64.22	6.01	31.58	54.22	22.64	N
2	0.2334	10.10	56.03	62.33	6.30	38.43	52.33	13.90	N
3	0.2726	10.10	53.12	61.04	7.92	22.12	51.04	28.92	N
4	0.3505	10.10	49.42	58.95	9.53	31.21	48.95	17.74	N
5	15.9518	10.11	37.12	60.00	22.88	27.42	50.00	22.58	N
6	26.0006	10.11	49.97	60.00	10.03	41.24	50.00	8.76	N



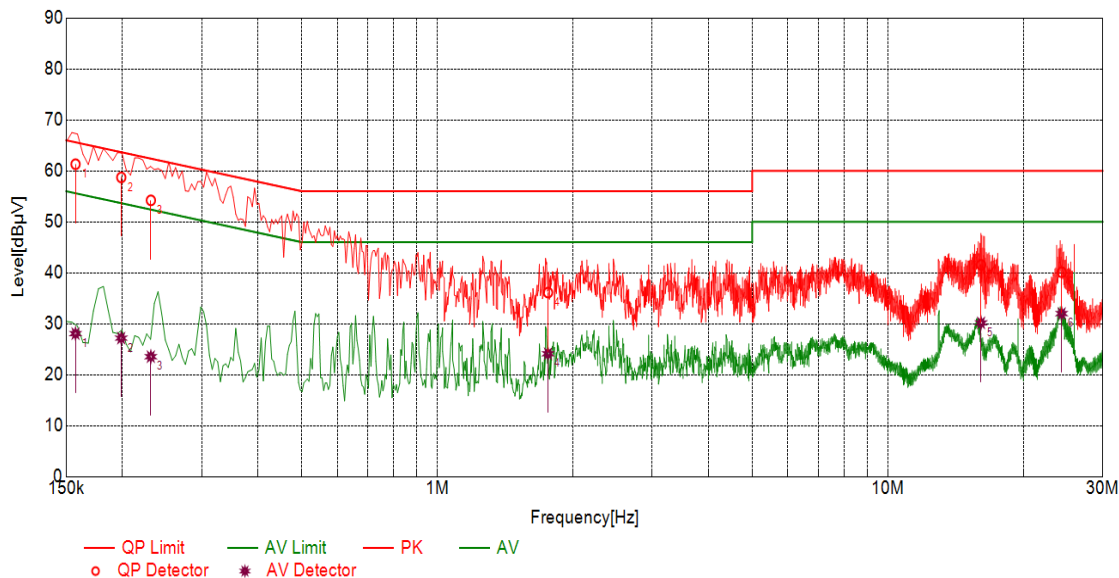
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Mode:e; Line:Neutral Line



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Type
1	0.1574	10.10	61.31	65.60	4.29	28.06	55.60	27.54	L
2	0.1988	10.10	58.71	63.66	4.95	27.17	53.66	26.49	L
3	0.2313	10.10	54.22	62.40	8.18	23.54	52.40	28.86	L
4	1.7611	10.10	36.12	56.00	19.88	24.12	46.00	21.88	L
5	16.1039	10.11	41.56	60.00	18.44	30.16	50.00	19.84	L
6	24.3157	10.11	40.11	60.00	19.89	32.00	50.00	18.00	L



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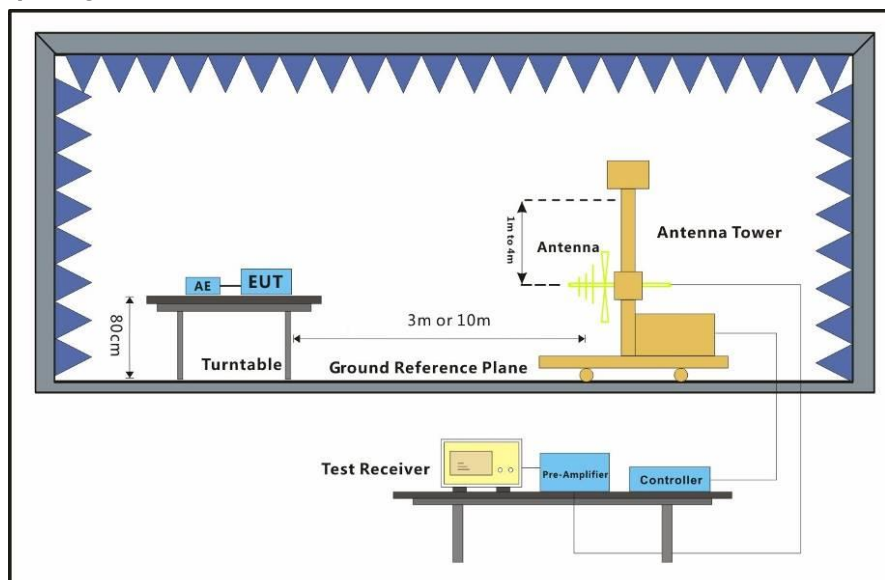
6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz -88MHz	40.0(dBμV/m) quasi-peak
88MHz-216MHz	43.5(dBμV/m) quasi-peak
216MHz-960MHz	46.0(dBμV/m) quasi-peak
960MHz-1000MHz	54.0(dBμV/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

6.2.1 E.U.T. Operation

Operating Environment:					
Temperature:	25.4 °C	Humidity:	51 % RH	Atmospheric Pressure:	1005 mbar
The worst case for final test:	f: Transfer data between the EUT and the PC+USB cable2				
	h: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card) +earphone1+battery+ Cable1+adapter2				

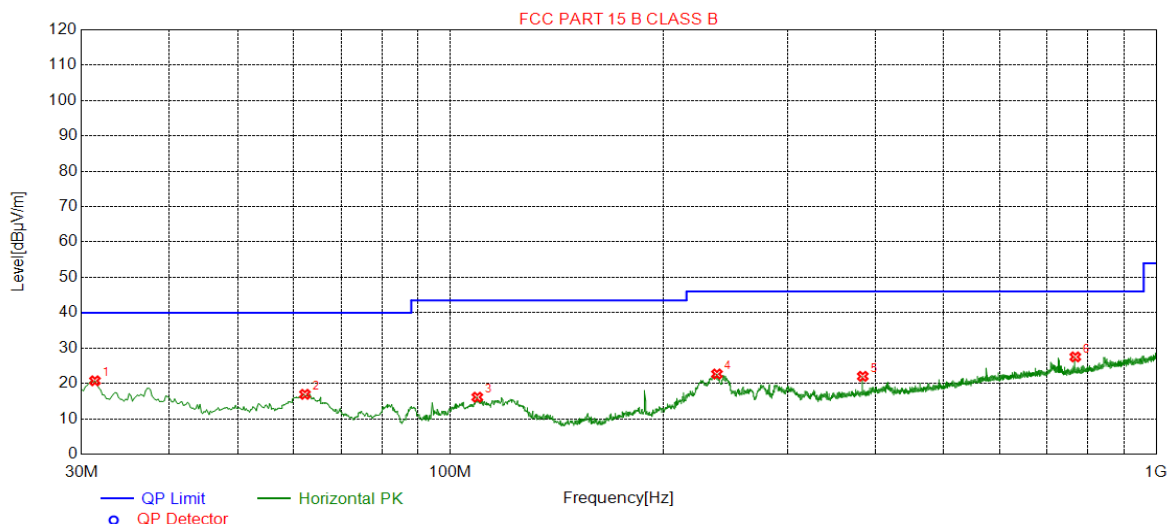
6.2.2 Test Setup Diagram



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:f; Polarization:Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	31.3583	20.75	-30.05	40.00	19.25	200	276	Horizontal
2	62.2104	16.93	-32.43	40.00	23.07	200	168	Horizontal
3	109.1678	16.12	-32.00	43.50	27.38	200	232	Horizontal
4	238.5917	22.67	-30.12	46.00	23.33	100	233	Horizontal
5	383.9268	22.01	-25.95	46.00	23.99	100	31	Horizontal
6	768.1236	27.51	-18.13	46.00	18.49	100	25	Horizontal

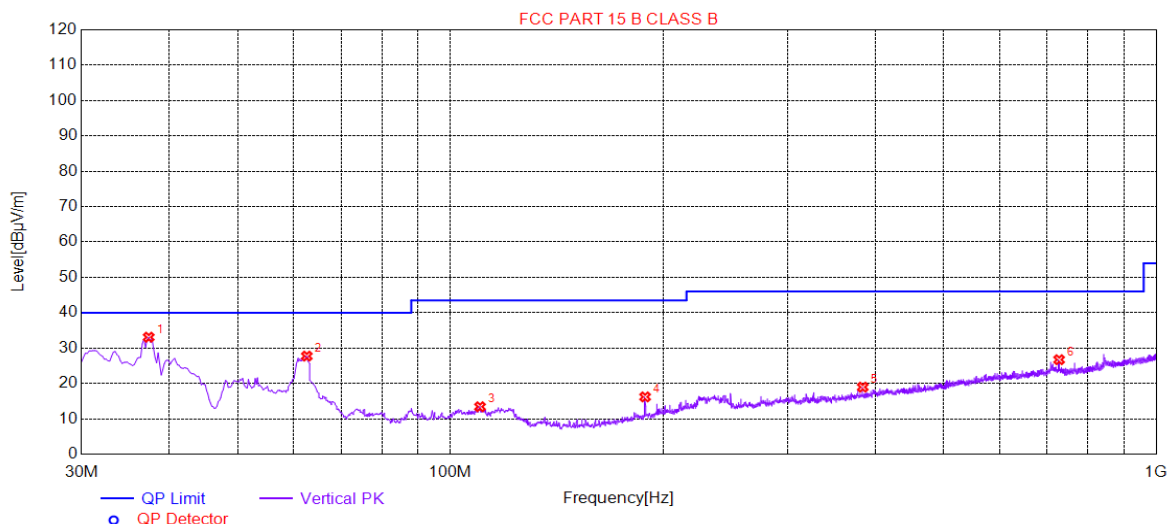


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Mode:f; Polarization:Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	37.3735	33.08	-29.19	40.00	6.92	100	327	Vertical
2	62.5985	27.73	-32.53	40.00	12.27	100	286	Vertical
3	110.1380	13.42	-32.02	43.50	30.08	100	223	Vertical
4	188.7237	16.20	-32.38	43.50	27.30	100	17	Vertical
5	383.9268	18.96	-25.95	46.00	27.04	100	57	Vertical
6	728.5397	26.72	-18.84	46.00	19.28	100	19	Vertical



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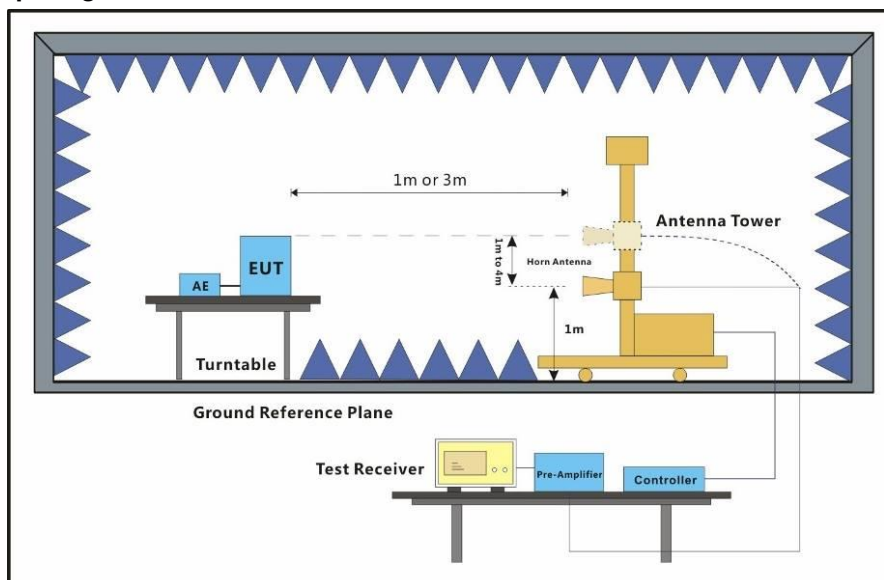
6.3 Radiated Emissions (above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B
Test Method: ANSI C63.4:2014
Frequency Range: Above 1GHz
Measurement Distance: 3m
Limit:
Above 1GHz 74(dBμV/m) peak, 54(dBμV/m) average
Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to 18000MHz

6.3.1 E.U.T. Operation

Operating Environment:
Temperature: 23.3 °C Humidity: 56.2 % RH Atmospheric Pressure: 1005 mbar
The worst case e: Transfer data between the EUT and the PC+USB cable1
for final test: j: Telecom Idle+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+ Cable1+adapter2

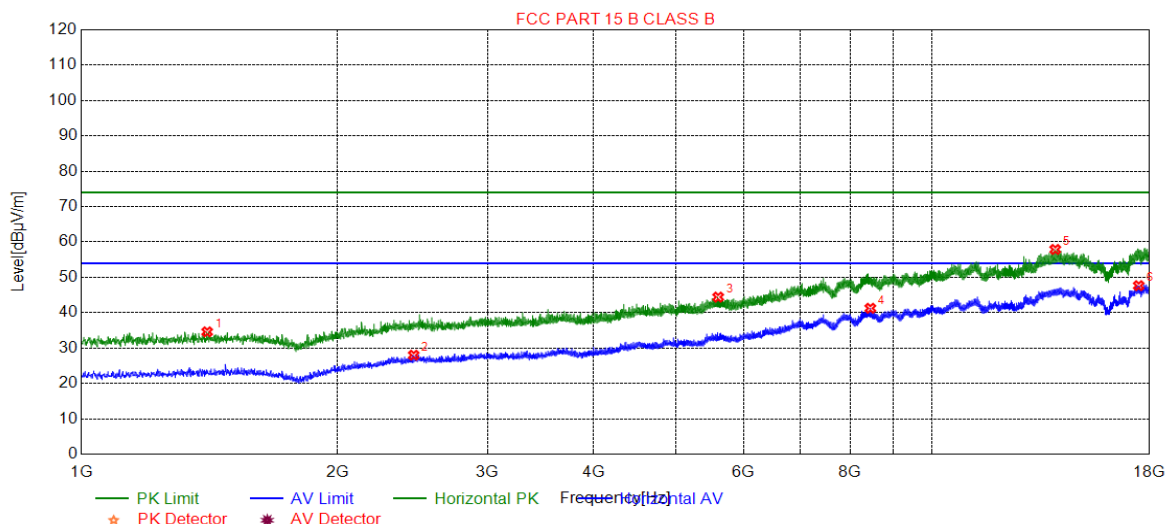
6.3.2 Test Setup Diagram



6.3.3 Measurement Data

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

Mode:e; Polarization:Horizontal



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1405.4703	34.59	-30.30	74.00	39.41	100	90	Horizontal
2	2457.8229	27.99	-26.12	54.00	26.01	100	204	Horizontal
3	5601.2801	44.42	-15.86	74.00	29.58	100	241	Horizontal
4	8454.8727	41.26	-7.68	54.00	12.74	100	53	Horizontal
5	13944.4472	57.89	2.20	74.00	16.11	100	90	Horizontal
6	17476.3738	47.65	1.34	54.00	6.35	100	204	Horizontal



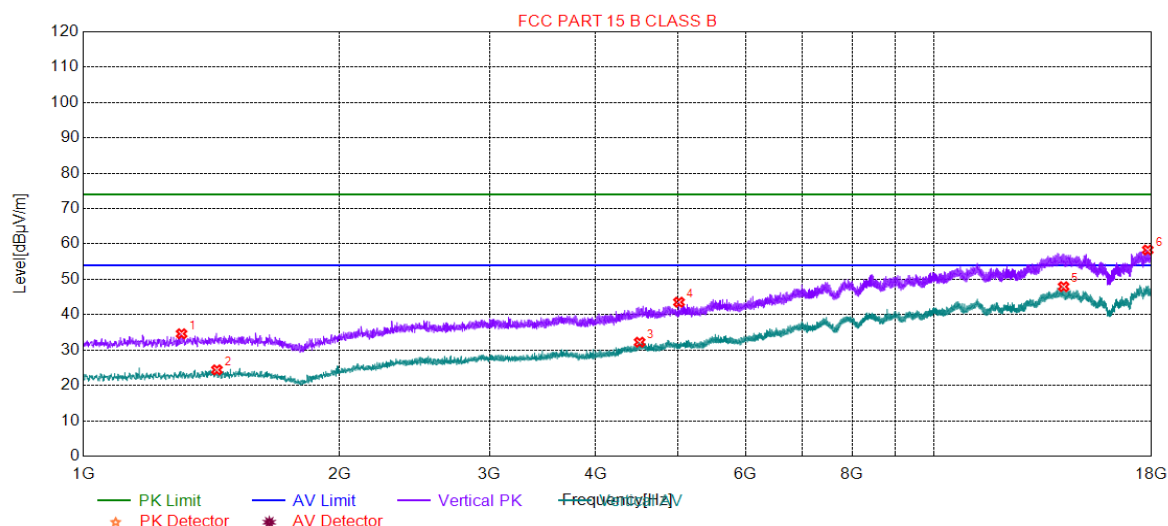
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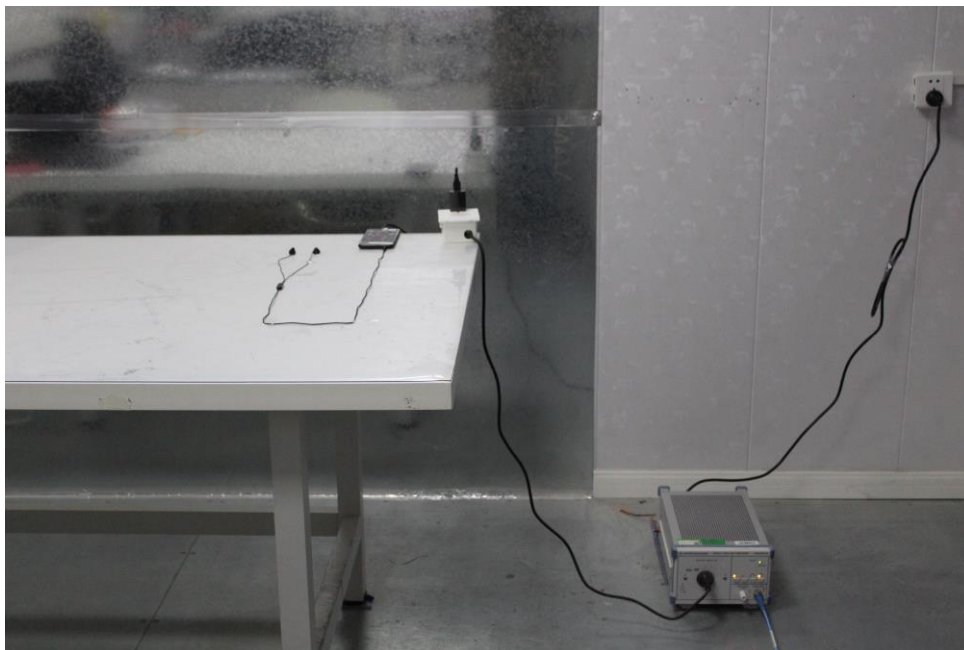
Mode:e; Polarization:Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1304.3152	34.61	-30.74	74.00	39.39	100	45	Vertical
2	1435.2218	24.41	-30.34	54.00	29.59	100	158	Vertical
3	4504.7252	32.23	-19.28	54.00	21.77	100	232	Vertical
4	5010.5005	43.54	-17.50	74.00	30.46	100	8	Vertical
5	14185.8593	47.93	2.11	54.00	6.07	100	270	Vertical
6	17812.1406	58.31	0.62	74.00	15.69	100	120	Vertical

7 Photographs

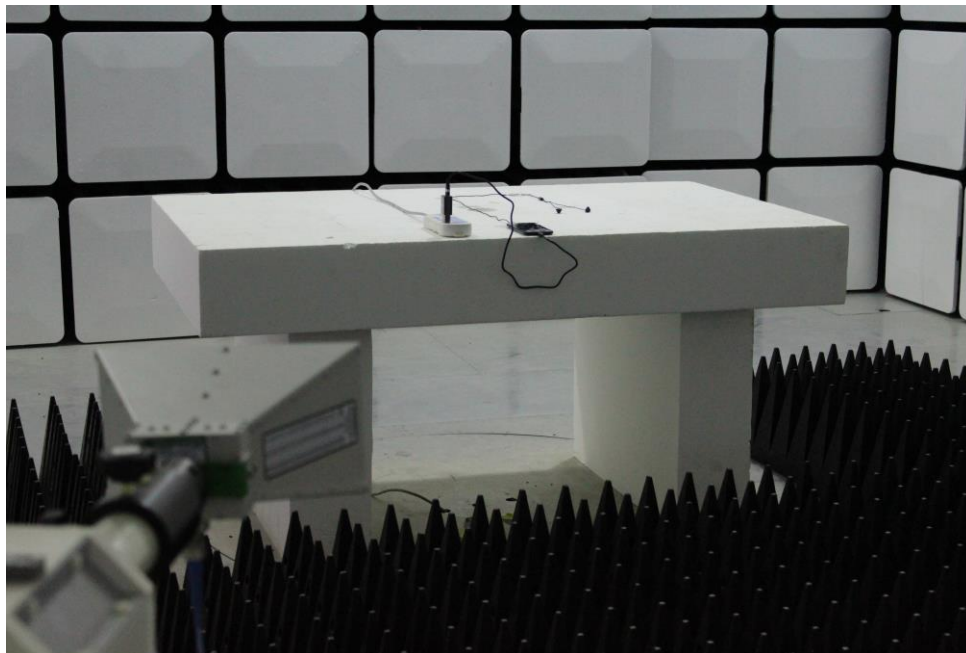
7.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) Test Setup



7.2 Radiated Emissions (30MHz-1GHz) Test Setup



7.3 Radiated Emissions (Above 1GHz) Test Setup



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7.4 EUT Constructional Details (EUT Photos)

Please refer to internal and external photo.

- End of the Report -



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