

TEST REPORT

Application No.: ZR/2020/80027
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 Description: LTE/UMTS/GSM mobile phone
Model No.: 5029F
Trade Mark: alcatel
FCC ID: 2ACCJH119
Standard(s) : 47 CFR Part 15, Subpart B
Date of Receipt: 2019/12/27
Date of Test: 2020/8/12 to 2020/8/20
Date of Issue: 2021/5/25

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

Authorized Signature:



Simon Ling
Wireless Laboratory Manager



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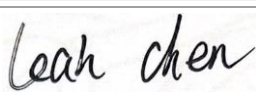

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Wireless Laboratory

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020/8/21		Original
02		2021/5/25	Leah Chen	1. Modify data conversion error of antenna height 2. Updated equipment list

Authorized for issue by:		
Prepared By		 (Leah Chen) /Engineer
Checked By		 (Daniel Wang) /Reviewer



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

Device Type :	portable device		
Exposure Category:	uncontrolled environment / general population		
Product Name:	LTE/UMTS/GSM mobile phone		
Model No.(EUT):	5029F		
Trade Mark:	alcatel		
FCC ID:	2ACCJH119		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990
	WCDMA Band II	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	LTE Band 2	1850~1910	1930~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869~894
	LTE Band 7	2500~2570	2620~2690
	LTE Band 13	777~787	746~756
	LTE Band 17	704~716	734~746
	LTE Band 66	1710~1780	2110~2180
	WIFI 2.4G	2412~2462	2412~2462
	BT	2402~2480	2402~2480
Adaptor Information 1#:	Model:	UC13US(CBA0059AGAC7)	
	SEC:	5V/2A	
	Manufacturer:	Chenyang	
Adaptor Information 1#:	Model:	UC13US(CBA0059AGAC5)	
	SEC:	5V/2A	
	Manufacturer:	PUAN	
EUT 1 Battery Information 1#:	Model:	CAC3860024C1	
	Normal Voltage:	3.85V	
	Rated capacity:	3860mAh	
	Manufacturer:	Shenzhen BYD Lithium Battery Company Limited	
EUT 2 Battery Information 2#:	Model:	CAC3860025C7	
	Normal Voltage:	3.85V	
	Rated capacity:	3860mAh	
	Manufacturer:	Ningbo Veken Battery Company Limited	
Headset Information1#:	Model:	CCB0046A10C1	
	Manufacturer:	JUWEI	
Headset Information2#:	Model:	CCB0049A10C1	





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	Manufacturer:	JUWEI
Headset Information3#:	Model:	CCB0046A10C4
	Manufacturer:	MEIHAO
Headset Information4#:	Model:	CCB0049A10C4
	Manufacturer:	MEIHAO
Headset Information5#:	Model:	CCB0046A15C1 (CCB0046A15C1 Same with CCB0046A10C1, only remove alcatel logo)
	Manufacturer:	JUWEI
Headset Information6#:	Model:	CCB0046A15C4 (CCB0046A15C4 Same with CCB0046A10C4, only remove alcatel logo)
	Manufacturer:	MEIHAO
Headset Information7#:	Model:	CCB0049A12C1 (CCB0049A12C1 Same with CCB0049A10C1 , only remove alcatel logo)
	Manufacturer:	JUWEI
Headset Information8#:	Model:	CCB0049A12C4 (CCB0049A12C4 Same with CCB0049A10C4 , only remove alcatel logo)
	Manufacturer:	MEIHAO
USB cable Information1#:	Model:	CDA0000024C8
	Manufacturer:	PUAN
USB cable Information2#:	Model:	CDA0000024C2
	Manufacturer:	JUWEI



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4.1 Description of Support Units

Description	Manufacturer	Model No.	Inventory No.
Router	NETGEAR	R6020	No.XA1401
Computer	Lenovo	L480	No.XA1402
Mouse	A4TECH	OP-520NU USB	No.XA1403

4.2 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction Emission	$\pm 3.0\text{dB}$ (150kHz to 30MHz)
2	Radiated Emission	$\pm 4.8\text{dB}$ (Below 1GHz)
		$\pm 4.8\text{dB}$ (1GHz to 6GHz)
		$\pm 4.5\text{dB}$ (6GHz to 18GHz)
		$\pm 5.02\text{dB}$ (Above 18GHz)



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4.3 Test Location

All tests were performed at:

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Post code:	710086
Test engineer:	Ben Huang, Leah Chen

4.4 Test Facility

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

• **A2LA (Certificate No. 4854.01)**

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• **FCC –Designation Number: CN1271.**

4.5 Deviation from Standards

None

4.6 Abnormalities from Standard Conditions

None



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5 Equipment List

RE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Semi-Anechoic Chamber	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
MXA signal analyzer	Keysight	N9020A	XAW01-06-01	2020-04-02	2021-04-01
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2019-09-07	2020-09-06
Receiving antenna (30MHz~3GHz)	Schwarzbeck	VULB 9163	XAW01-09-01	2019-10-13	2021-10-12
Receiving antenna (1GHz~18GHz)	Schwarzbeck	BBHA 9120D	XAW01-09-02	2019-10-13	2021-10-12
Receiving antenna (15GHz~40GHz)	Schwarzbeck	BBHA 9170	XAW01-09-03	2019-10-13	2021-10-12
Directional antenna rack controller	Max-Full	MF-7802BS	XAW03-03-01	NCR	NCR
High-speed antenna rack controller	Max-Full	MF-7802	XAW03-04-01	NCR	NCR
Filter bank	Tonscend	JS0806-F	XAW03-05-01	NCR	NCR
Filter bank	Tonscend	JS0806s	XAW03-05-02	NCR	NCR
Amplifier	Tonscend	TAP00903040	XAW01-41-01	2019-11-18	2020-11-17
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2019-11-18	2020-11-17
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2019-12-03	2020-12-02
Amplifier	Shanghai Steed	YX28980930	XAW01-41-06	2019-11-18	2020-11-17
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2019-12-06	2020-12-05
Measurement Software	Tonscend	TS+ RSE V3.0.0.2	XAW02-05-01	NCR	NCR
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	XAW01-03-02	2020-04-02	2021-04-01

CE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielding Room	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2019-09-07	2020-09-06
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-01	2020-08-04	2021-08-03
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2019-12-06	2020-12-05
Measurement Software	Tonscend	TS+ CE V2.5	XAW02-05-02	NCR	NCR
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	XAW01-03-02	2020-04-02	2021-04-01



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

2.1.1 E.U.T. Operation

Operating Environment:

Temperature: 18.9 °C Humidity: 55.1 % RH Atmospheric Pressure: 1000 mbar

- Pretest these modes to find the worst case:
- a: Transfer data between the EUT1 and the PC+USB cable 1
 - d: Transfer data between the EUT2 and the PC+USB cable 2
 - e: GSM850 Idle+BT+WLAN+GPS Rx+playing MP4 (SD card)+earphone+EUT1+USB cable1+adapter1
 - f: GSM1900 Idle+BT+WLAN+BDS Rx+camera (Front) +earphone+EUT2+USB cable1+adapter2
 - g: WCDMA II Idle+BT+WLAN+GLONASS Rx+camera (Back) +earphone+EUT(worst)+USB cable1+adapter1
 - h: WCDMA V Idle +BT+FM +WLAN+ Galileo Rx+earphone+EUT2+USB cable1+adapter2
 - i: WCDMA IV Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter2
 - j: LTE band 2 Idle +BT+FM+ WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter1
 - k: LTE band 4 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter1
 - l: LTE band 5 Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter2
 - m: LTE band 7 Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2
 - n: LTE band 13 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2
 - o: LTE band 17 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2
 - p: LTE band 66 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2

The worst case for final test: l: LTE band 5 Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter2



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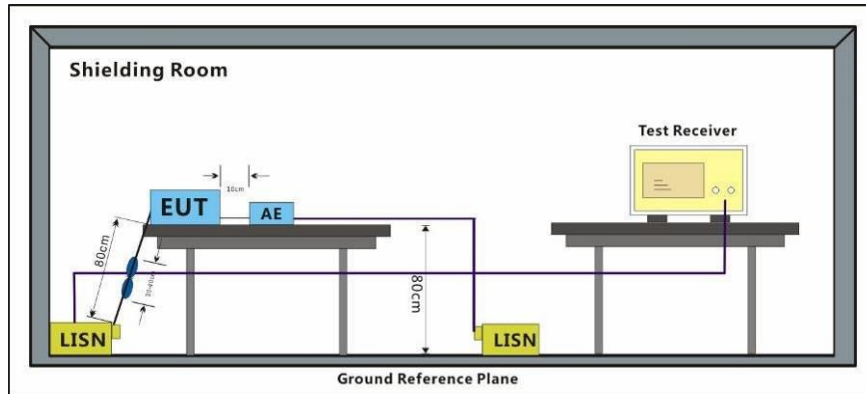
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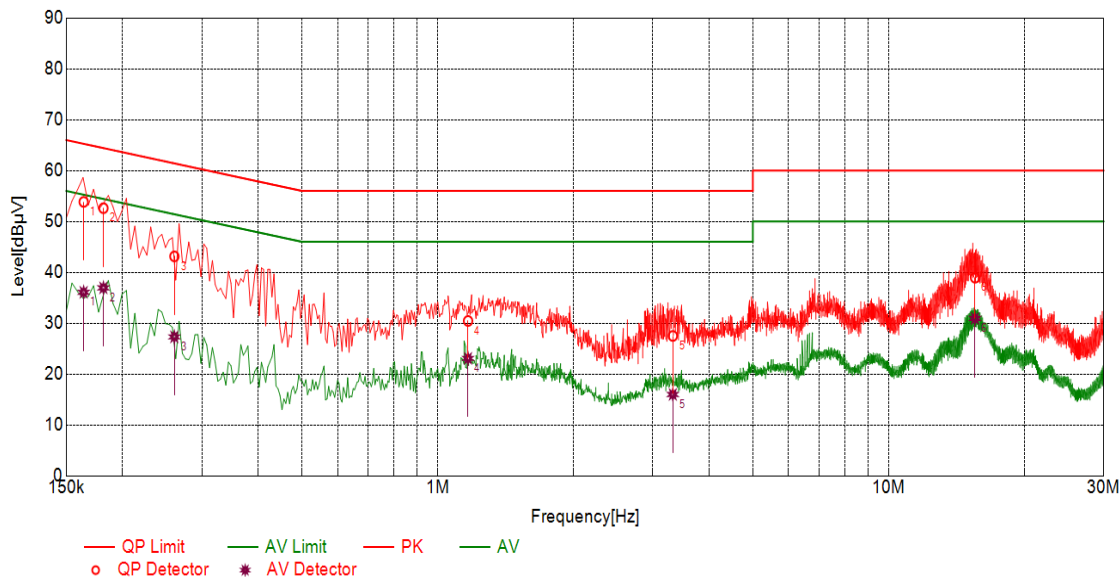
2.1.2 Test Setup Diagram



2.1.3 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.

Mode:I; 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	0.1640	10.10	53.85	65.26	11.41	36.07	55.26	19.19	L
2	0.1814	10.10	52.61	64.42	11.81	36.94	54.42	17.48	L
3	0.2606	10.10	43.14	61.41	18.27	27.31	51.41	24.10	L
4	1.1675	10.10	30.44	56.00	25.56	23.08	46.00	22.92	L
5	3.3226	10.10	27.50	56.00	28.50	15.99	46.00	30.01	L
6	15.5461	10.11	38.96	60.00	21.04	30.93	50.00	19.07	L



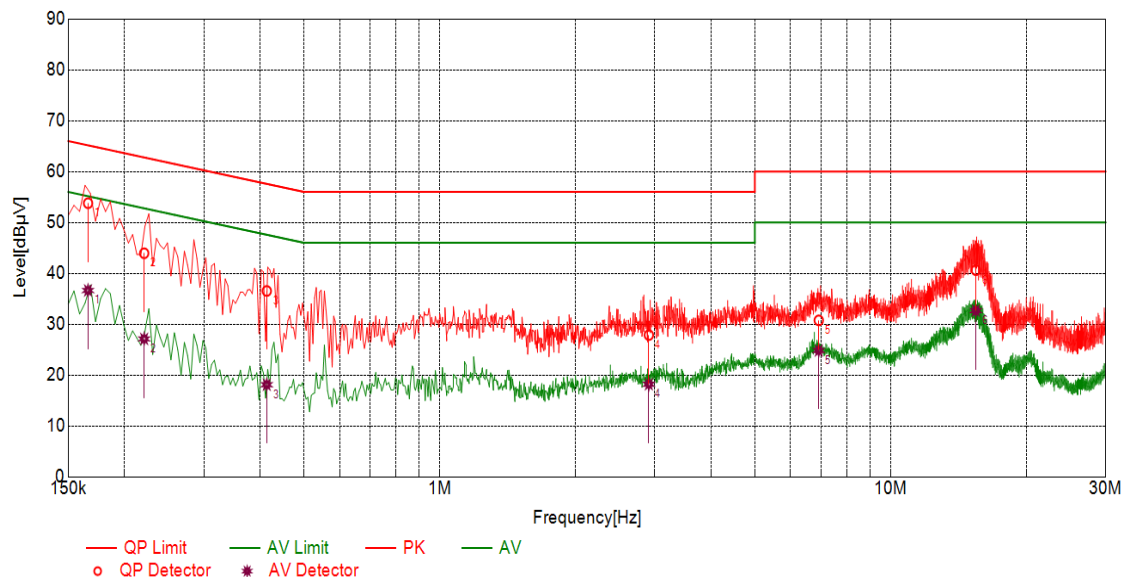
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Mode:I; Line:Neutral Line



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	0.1660	10.10	53.79	65.16	11.37	36.63	55.16	18.53	N
2	0.2211	10.10	43.94	62.78	18.84	27.11	52.78	25.67	N
3	0.4135	10.10	36.54	57.58	21.04	18.11	47.58	29.47	N
4	2.9095	10.10	27.87	56.00	28.13	18.20	46.00	27.80	N
5	6.9288	10.10	30.76	60.00	29.24	24.83	50.00	25.17	N
6	15.4558	10.11	40.62	60.00	19.38	32.67	50.00	17.33	N



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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

2.1.4 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 66.5 % RH Atmospheric Pressure: 1010 mbar

Pretest these
modes to find
the worst case:

- a: Transfer data between the EUT1 and the PC+USB cable 1
- d: Transfer data between the EUT2 and the PC+USB cable 2
- e: GSM850 Idle+BT+WLAN+GPS Rx+playing MP4 (SD card)+earphone+EUT1+USB cable1+adapter1
- f: GSM1900 Idle+BT+WLAN+BDS Rx+camera (Front) +earphone+EUT2+USB cable1+adapter2
- g: WCDMA II Idle+BT+WLAN+GLONASS Rx+camera (Back) +earphone+EUT(worst)+USB cable1+adapter1
- h: WCDMA V Idle +BT+FM +WLAN+ Galileo Rx+earphone+EUT2+USB cable1+adapter2
- i: WCDMA IV Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter2
- j: LTE band 2 Idle +BT+FM+ WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter1
- k: LTE band 4 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter1
- l: LTE band 5 Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter2
- m: LTE band 7 Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2
- n: LTE band 13 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2
- o: LTE band 17 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2
- p: LTE band 66 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2

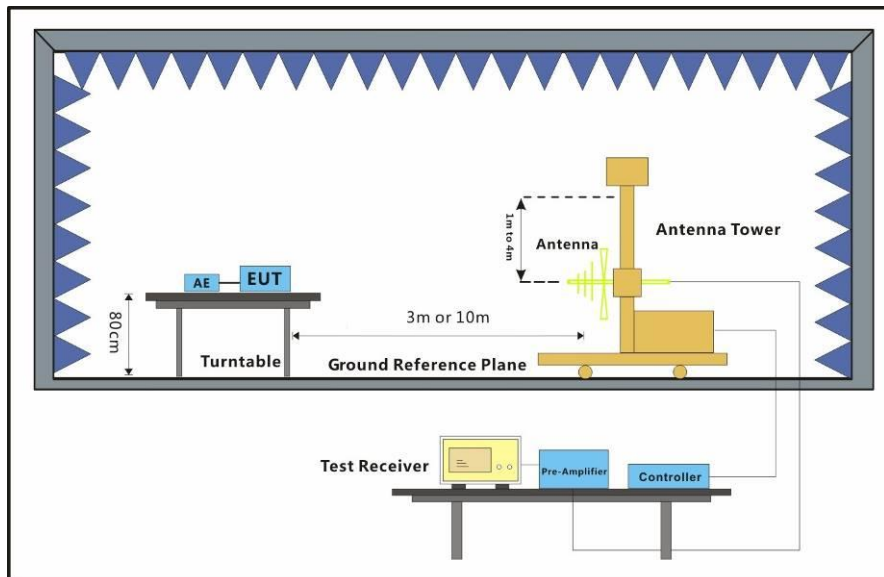
The worst case
for final test:

m: LTE band 7 Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2



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2.1.5 Test Setup Diagram



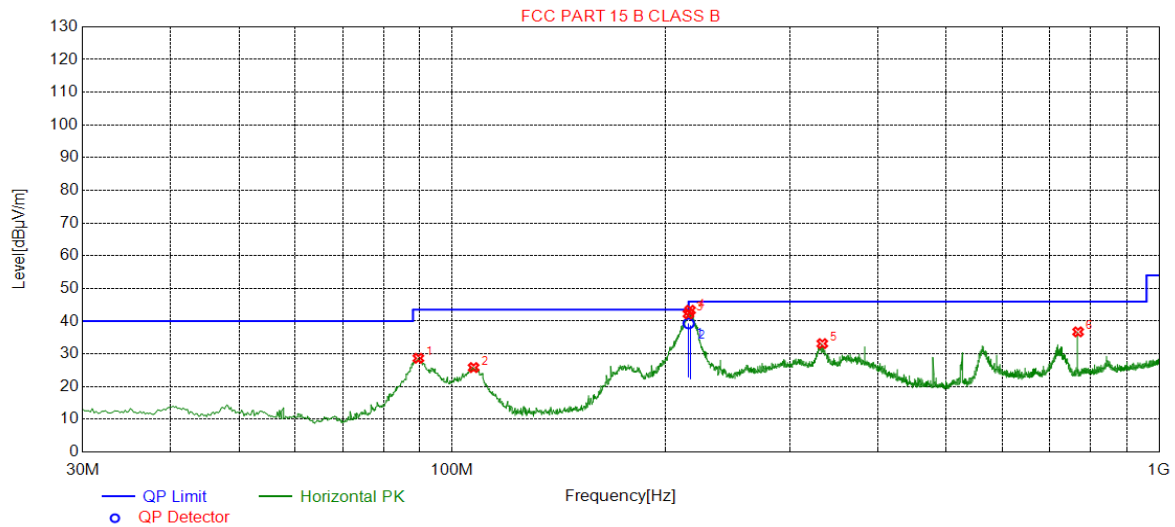
2.1.6 Measurement Data

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:m; Polarization:Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	89.5699	28.67	-33.82	43.50	14.83	228	108	Horizontal
2	107.227	25.82	-32.00	43.50	17.68	154	14	Horizontal
3	215.889	42.25	-30.82	43.50	1.25	160	229	Horizontal
4	217.053	43.35	-30.79	46.00	2.65	215	229	Horizontal
5	333.864	33.15	-27.30	46.00	12.85	199	185	Horizontal
6	768.123	36.74	-18.13	46.00	9.26	203	259	Horizontal



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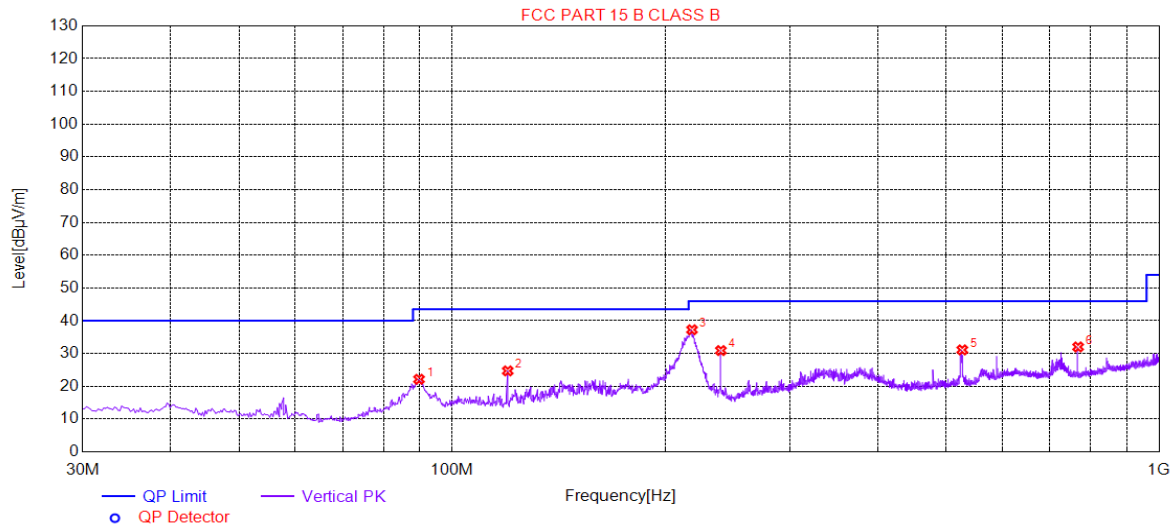
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Mode:m; Polarization:Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	89.7640	22.15	-33.77	43.50	21.35	166	28	Vertical
2	119.840	24.71	-33.54	43.50	18.79	275	339	Vertical
3	218.411	37.27	-30.75	46.00	8.73	230	179	Vertical
4	239.950	30.92	-30.07	46.00	15.08	200	214	Vertical
5	526.739	31.12	-22.64	46.00	14.88	232	346	Vertical
6	768.123	32.02	-18.13	46.00	13.98	169	295	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 to18000MHz

2.1.7 E.U.T. Operation

Operating Environment:

Temperature: 21.7 °C Humidity: 56.4 % RH Atmospheric Pressure: 1010 mbar

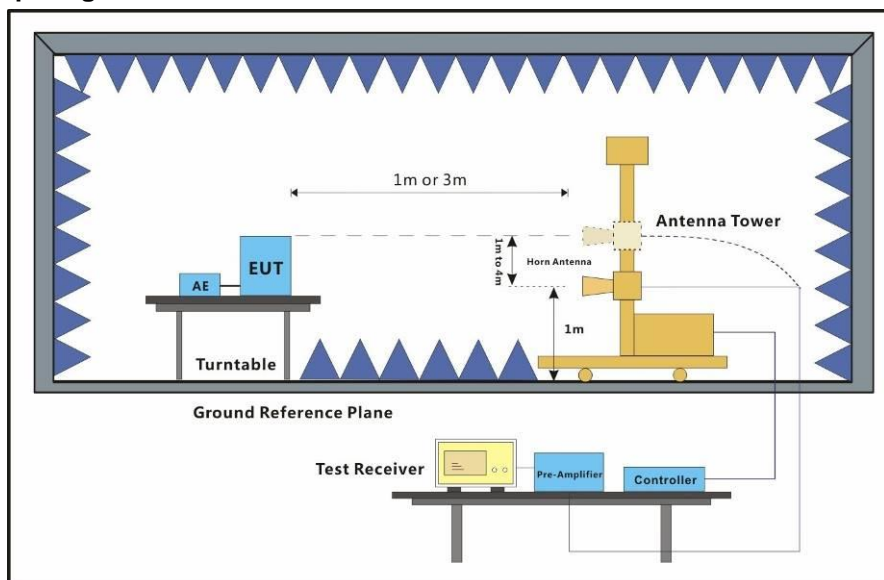
Pretest these modes to find the worst case:

- a: Transfer data between the EUT1 and the PC+USB cable 1
- d: Transfer data between the EUT2 and the PC+USB cable 2
- e: GSM850 Idle+BT+WLAN+GPS Rx+playing MP4 (SD card)+earphone+EUT1+USB cable1+adapter1
- f: GSM1900 Idle+BT+WLAN+BDS Rx+camera (Front) +earphone+EUT2+USB cable1+adapter2
- g: WCDMA II Idle+BT+WLAN+GLONASS Rx+camera (Back) +earphone+EUT(worst)+USB cable1+adapter1
- h: WCDMA V Idle +BT+FM +WLAN+ Galileo Rx+earphone+EUT2+USB cable1+adapter2
- i: WCDMA IV Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter2
- j: LTE band 2 Idle +BT+FM+ WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter1
- k: LTE band 4 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter1
- l: LTE band 5 Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable2+adapter2
- m: LTE band 7 Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2
- n: LTE band 13 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2
- o: LTE band 17 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2
- p: LTE band 66 Idle +BT+FM +WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2

The worst case for final test: m: LTE band 7 Idle +BT+FM+WLAN+GPS Rx+earphone+EUT2+USB cable1+adapter2



2.1.8 Test Setup Diagram

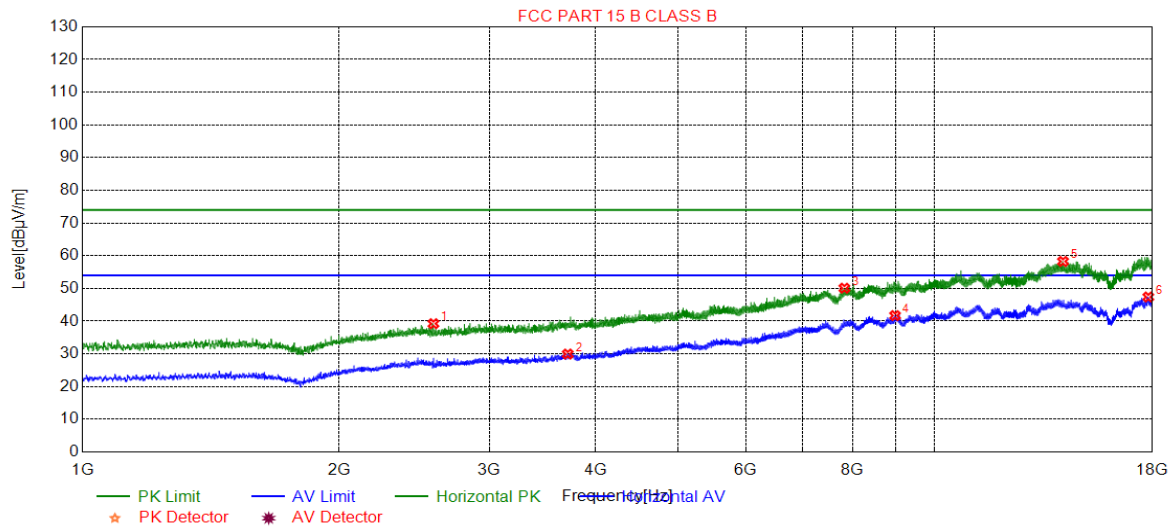


2.1.9 Measurement Data

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:m; Polarization:Horizontal



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2580.22	39.24	-25.92	74.00	34.76	148	284	Horizontal
2	3709.08	29.95	-22.54	54.00	24.05	196	132	Horizontal
3	7830.09	50.09	-8.57	74.00	23.91	223	132	Horizontal
4	8979.34	41.71	-6.81	54.00	12.29	121	245	Horizontal
5	14134.8	58.27	2.26	74.00	15.73	233	55	Horizontal
6	17798.5	47.40	0.69	54.00	6.60	129	322	Horizontal



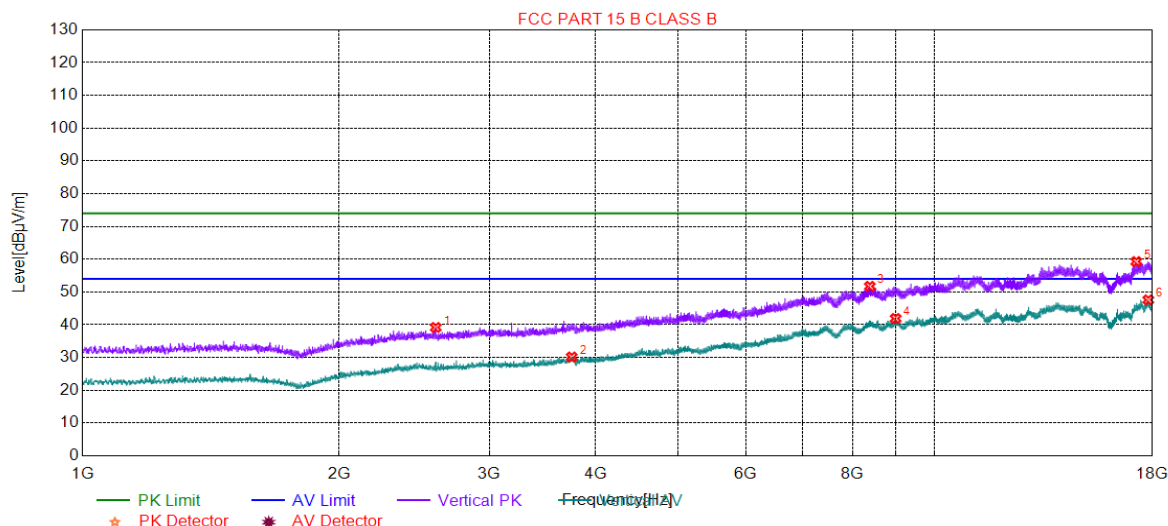
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Mode:m; Polarization:Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2596.37	39.19	-25.94	74.00	34.81	223	168	Vertical
2	3749.03	30.17	-22.36	54.00	23.83	152	77	Vertical
3	8388.56	51.73	-7.78	74.00	22.27	184	322	Vertical
4	8994.64	41.91	-6.77	54.00	12.09	198	16	Vertical
5	17228.1	59.29	-0.57	74.00	14.71	244	358	Vertical
6	17798.5	47.60	0.69	54.00	6.40	244	307	Vertical



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7 Photographs

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

Refer to Photographs of Set-Up for ZR202080027

7.2 EUT Constructional Details (EUT Photos)

Refer to Photographs of EUT Constructional Details

- End of the Report -



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