

FCC REPORT

Applicant: HMD global Oy

Address of Applicant: Bertel Jungin aukio 9, 02600 Espoo, Finland

Equipment Under Test (EUT)

Product Name: Smart Phone

Model No.: TA-1358

Trade mark: NOKIA

FCC ID: 2AJOTTA-1358

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: 19 Aug., 2021

Date of Test: 20 Aug., to 28 Aug., 2021

Date of report issued: 16 Sep., 2021

Test Result: PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

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 and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. 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.

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2 Version

Version No.	Date	Description
00	16 Sep., 2021	Original

According to the declaration from the applicant, the models: TA-1361 and TA-1358 are identical in specifications, only different SIM adapter, TA-1361 supports dual sim mode, TA-1358 supports only single sim mode.
Therefore in this report all items do not need to retest and all test data in this report are based on the previous report with report number: JYTSZB-R12-2101718

Tested by:



Test Engineer

Date:

16 Sep., 2021

Reviewed by:



Project Engineer

Date:

16 Sep., 2021

3 Contents

Page

1	COVER PAGE.....	1
2	VERSION	2
3	CONTENTS	3
4	TEST SUMMARY	4
5	GENERAL INFORMATION.....	5
5.1	CLIENT INFORMATION	5
5.2	GENERAL DESCRIPTION OF E.U.T.	5
5.3	TEST MODE.....	7
5.4	MEASUREMENT UNCERTAINTY	7
5.5	DESCRIPTION OF SUPPORT UNITS	8
5.6	RELATED SUBMITTAL(S) / GRANT (S).....	8
5.7	DESCRIPTION OF CABLE USED	8
5.8	ADDITIONS TO, DEVIATIONS, OR EXCLUSIONS FROM THE METHOD	8
5.9	LABORATORY FACILITY	8
5.10	LABORATORY LOCATION.....	8
5.11	TEST INSTRUMENTS LIST	9
6	TEST RESULTS AND MEASUREMENT DATA	10
6.1	CONDUCTED EMISSION.....	10
6.2	RADIATED EMISSION	13
7	TEST SETUP PHOTO	19
8	EUT CONSTRUCTIONAL DETAILS	19

4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part 15.107	Pass
Radiated Emission	Part 15.109	Pass
Remark: 1. Pass: The EUT complies with the essential requirements in the standard.		
Test Method:	ANSI C63.4:2014	

5 General Information

5.1 Client Information

Applicant:	HMD global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
Manufacturer:	HMD global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland

5.2 General Description of E.U.T.

Product Name:	Smart Phone		
Model No.:	TA-1358		
Frequency Bands:	Band	TX Frequency (MHz)	RX Frequency (MHz)
	GSM850:	824~849	869~894
	GSM1900	1850~1910	1930~1990
	WCDMA Band II:	1850~1910	1930~1990
	WCDMA Band V:	824~849	869~894
	LTE Band 5:	824~849	869~894
	LTE Band 7:	2500~2570	2620~2690
	LTE Band 38:	2570~2620	2570~2620
	LTE Band 41:	2496~2690	2496~2690
	LTE Band CA_7C:	2500~2570	2620~2690
	LTE Band CA_38C:	2570~2620	2570~2620
	LTE Band CA_41C:	2496~2690	2496~2690
	NR n5:	824~849	869~894
	NR n7	2500~2570	2620~2690
	NR n38:	2570~2620	2570~2620
	NR n41:	2496~2690	2496~2690
	NR n78:	3450~3550	3450~3550
	Wi-Fi 2.4G	2412~2462	2412~2462
	Bluetooth	2402~2480	2402~2480
	Wi-Fi 5G	5150~5850	5150~5850
	GNSS(GPS + Galileo + Glonass + Beidou)	/	1599~1610
	NFC	13.56	13.56
	FM	/	88~108
Power supply:	Rechargeable Lithium ion Polymer Battery DC3.85V, 4.85Ah		
AC adapter:	Adapter 1: Model: TN-050200U3, TN-050200E3, TN-050200C3A Input: AC100-240V, 50/60Hz, 0.35A Output: DC 5.0V, 2.0A 10.0W Note: Only the pins are different between different models Adapter 2: Model: TN-050200U3, TN-050200A3, TN-050200C3A Input: AC100-240V, 50/60Hz, 0.35A Output: DC 5.0V, 2.0A 10.0W Note: Only the pins are different between different models Adapter 3:		

	Model: AD-010A, AD-010X Input: AC100-240V, 50/60Hz, 0.35A Output: DC 5.0V, 2.0A 10.0W Note: Only the pins are different between different models
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

5.3 Test Mode

Operating mode	Detail description
TM 1 mode	Keep the EUT and PC data exchange (Worst case)
TM 2 mode	Keep the EUT in Charging+Recording mode
TM 3 mode	Keep the EUT in Charging+Playing mode
TM 4 mode	Keep the EUT in FM receiver mode
TM 5 mode	Keep the EUT in GPS receiver mode
TM 6 mode	GSM850 Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)+NFC+adapter
TM 7 mode	WCDMA Band V Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)+NFC+adapter
TM 8 mode	LTE Band 5 Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)+NFC+adapter
TM 9 mode	NR n5 Idle +BT+WLAN +GPS Rx+playing MP4 (SD card)+NFC+adapter
Remark :	- During the test, pre-scan all mode, found TM 1 was worse case mode. - Pre-scan all adapter and all USB Cable, found adapter 1 and USB Cable 1 was worse case mode. - The report only reflects the worst mode.
The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

5.4 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Conducted Emission (9kHz ~ 30MHz)	±2.62 dB (k=2)
Radiated Emission (9kHz ~ 30MHz) (3m SAC)	±3.13 dB
Radiated Emission (30MHz ~ 1000MHz) (3m SAC)	±4.45 dB
Radiated Emission (1GHz ~ 18GHz) (3m SAC)	±5.34 dB
Radiated Emission (18GHz ~ 40GHz) (3m SAC)	±5.34 dB
Note: The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.26-2015. All the measurement uncertainty value were shown with a coverage k=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.	

5.5 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
LENOVO	Laptop	SL510	2847A65	DoC
DELL	MOUSE	MS116t1	N/A	DoC
MERCURY	Wireless router	MW150R	12922104015	FCC ID

5.6 Related Submittal(s) / Grant (s)

This is an original grant, no related submittals and grants.

5.7 Description of Cable Used

Cable Type	Vendor	Model Name	Spec Info	Supplier PN
Detached USB Cable 1	Shenzhen Chuangyitong Technology Co., Ltd.	88806-025	Type-C/2A data cable/1M/AWG24/Black/CYT	P103-BVJ130-010
Detached USB Cable 2	Shenzhen Yihuaxing Electronics CO.,Ltd.	T365-011B	Type-C/2A data cable/1M/AWG24/Black/YHX	P103-BVJ130-000
Detached headset cable	DongGuan LongTa Xin Electronics Co.,Ltd	LTX-LH021	3.5 round wire semi-in-ear type/low end with wheat/black 1.2m	P106-BTX130-000

5.8 Additions to, deviations, or exclusions from the method

No

5.9 Laboratory Facility

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

● **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.10 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info-JYTee@lets.com, Website: <http://www.ccis-cb.com>

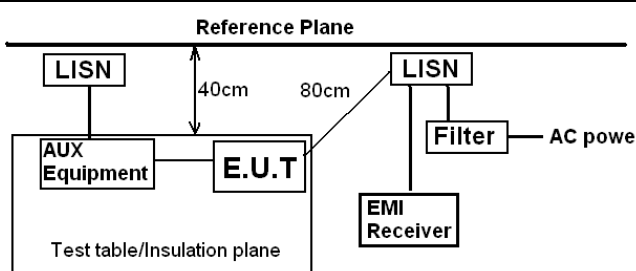
5.11 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Management Number	Cal.Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	WXJ001-1	01-19-2021	01-18-2024
BiConiLog Antenna	SCHWARZBECK	VULB9163	WXJ002	03-03-2021	03-02-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	WXJ002-2	03-03-2021	03-02-2022
Pre-amplifier	HP	8447D	WXG001-2	03-07-2021	03-06-2022
Pre-amplifier	SKET	LNPA_0118G-50	WXG001-3	03-07-2021	03-06-2022
EMI Test Receiver	Rohde & Schwarz	ESRP7	WXJ003-1	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP30	WXJ004	03-03-2021	03-02-2022
Signal Generator	Agilent	N5173B	WXJ006-7	03-25-2021	03-24-2022
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY60192444	11-27-2020	11-26-2021
RF Switch Unit	Tonscend	JS0806-F	WXJ089	N/A	
Test Software	Tonscend	TS+	Version: 3.0.0.1		

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Management Number	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	WXJ003	03-03-2021	03-02-2022
LISN	Rohde & Schwarz	ENV432	WXJ005-2	04-06-2021	04-05-2022
LISN	Rohde & Schwarz	ESH3-Z5	WXJ005-1	06-17-2020	06-16-2022
Coaxial Cable	JYT	JYTCE-1G-NN-2M	WXG003-1	03-03-2021	03-02-2022
Simulated Station	Rohde & Schwarz	CMW500	WXJ008-3	06-17-2021	06-16-2022
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY60192444	11-27-2020	11-26-2021
RF Switch	Top Precision	RSU0301	WXG003	N/A	N/A
EMI Test Software	AUDIX	E3	Version: 6.110919b		

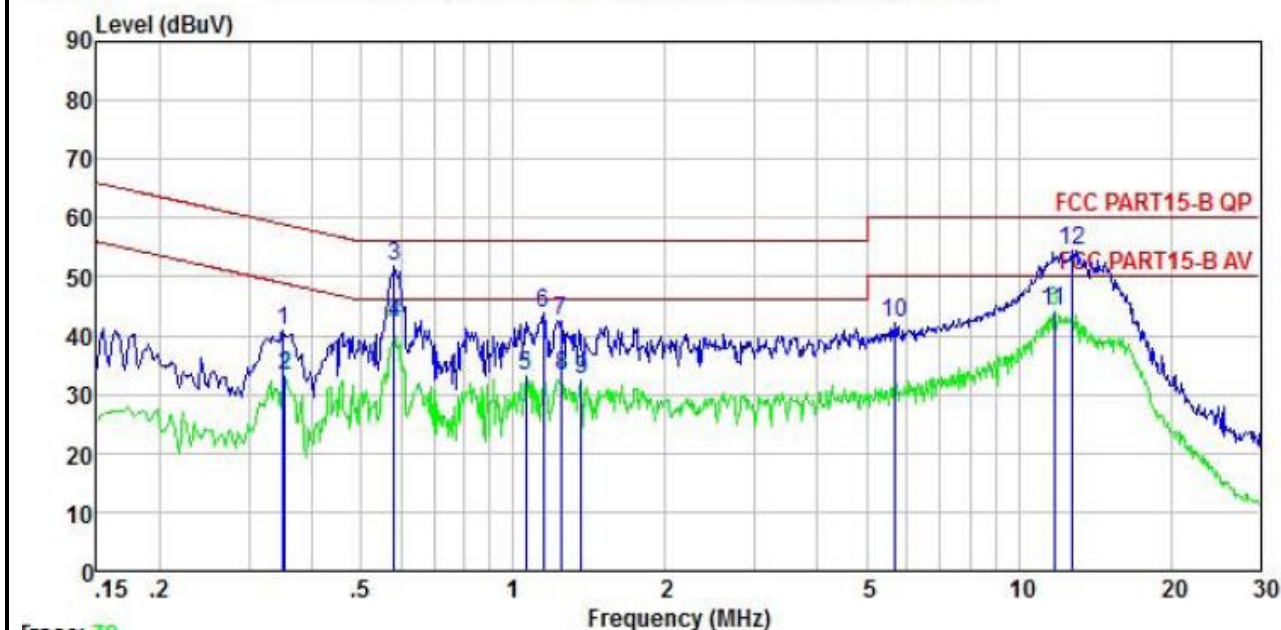
6 Test results and Measurement Data

6.1 Conducted Emission

Test Requirement:	FCC Part 15 B Section 15.107		
Test Frequency Range:	150kHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9kHz, VBW=30kHz		
Limit:	Frequency range (MHz)	Limit (dB μ V)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	0.5-30	60	50
* Decreases with the logarithm of the frequency.			
Test setup:	 Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4(latest version) on conducted measurement.		
Test Instruments:	Refer to section 5.11 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		
Remark:	The test data in this report are based on the previous report with report number: JYTSZB-R12-2101718		

Measurement data:

Product name:	Smart Phone	Product model:	TA-1361
Test by:	Mike	Test mode:	TM 1 mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Humi: 55%



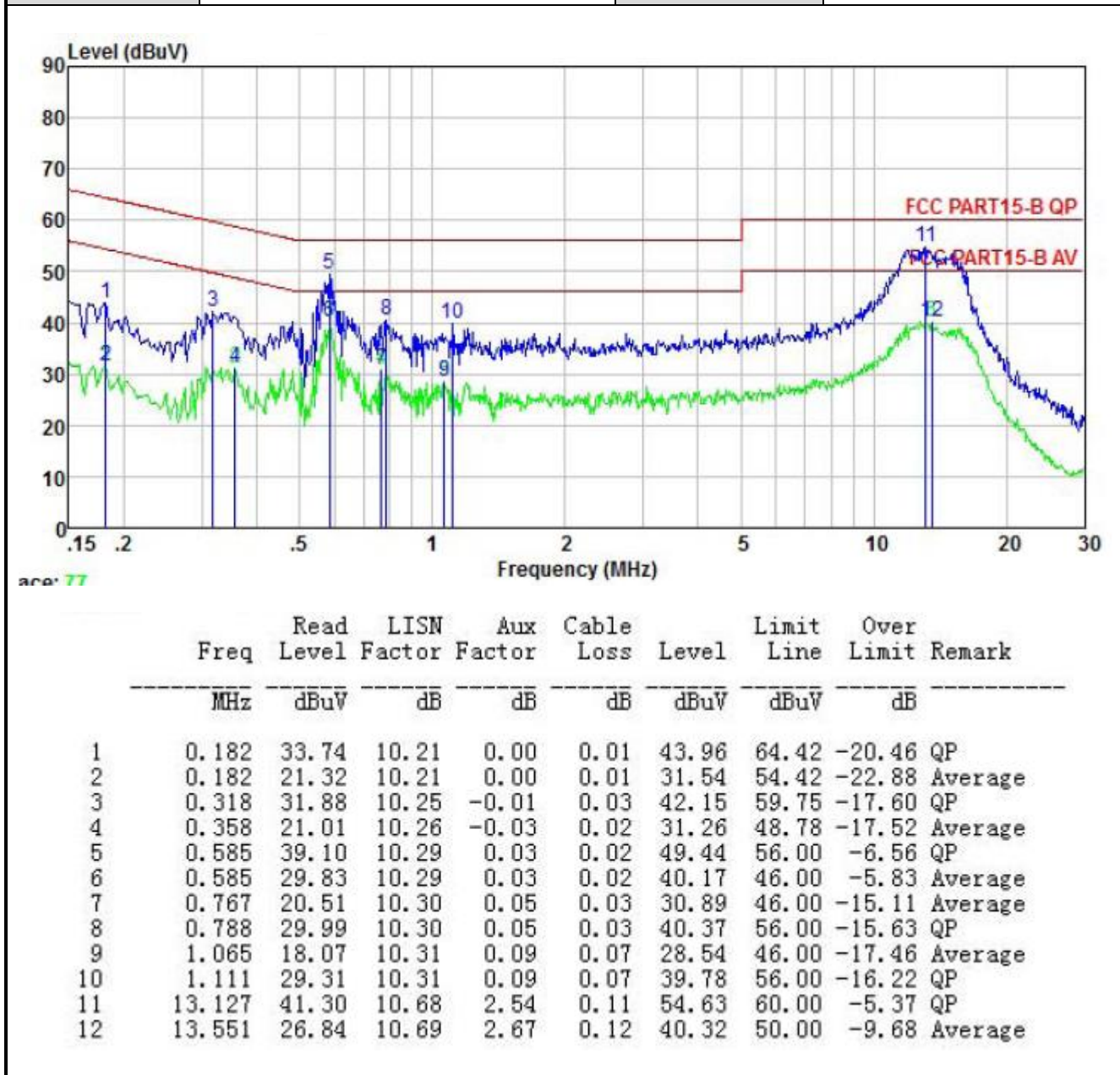
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	Freq	Read Level	LISN Factor	Aux Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.350	30.50	10.27	0.10	0.02	40.89	58.96	-18.07	QP
2	0.354	22.78	10.27	0.14	0.02	33.21	48.87	-15.66	Average
3	0.582	41.87	10.29	-0.37	0.02	51.81	56.00	-4.19	QP
4	0.582	32.12	10.29	-0.37	0.02	42.06	46.00	-3.94	Average
5	1.060	22.44	10.32	0.40	0.06	33.22	46.00	-12.78	Average
6	1.147	33.17	10.32	0.30	0.08	43.87	56.00	-12.13	QP
7	1.242	31.98	10.32	0.22	0.10	42.62	56.00	-13.38	QP
8	1.249	22.51	10.32	0.21	0.10	33.14	46.00	-12.86	Average
9	1.367	22.01	10.32	0.11	0.12	32.56	46.00	-13.44	Average
10	5.683	31.02	10.45	0.56	0.09	42.12	60.00	-17.88	QP
11	11.745	30.75	10.66	2.58	0.10	44.09	50.00	-5.91	Average
12	12.784	40.69	10.70	2.95	0.11	54.45	60.00	-5.55	QP

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Aux Factor + Cable Loss.

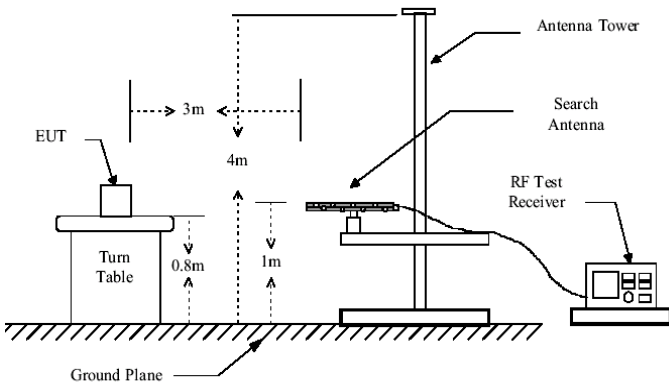
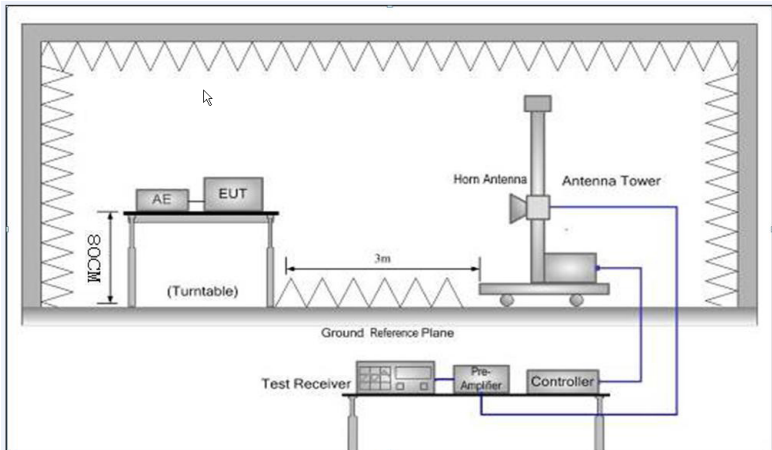
Product name:	Smart Phone	Product model:	TA-1361
Test by:	Mike	Test mode:	TM 1 mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5°C Humi: 55%



Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Aux Factor + Cable Loss.

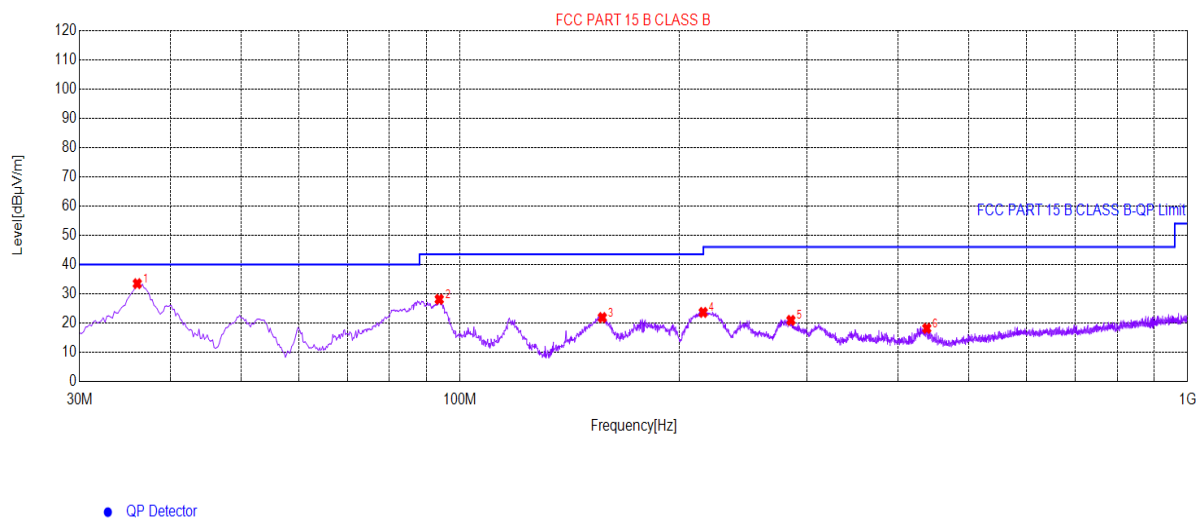
6.2 Radiated Emission

Test Requirement:	FCC Part 15 B Section 15.109				
Test Frequency Range:	30MHz to 18000MHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
RMS		1MHz	3MHz	Average Value	
Limit:	Frequency	Limit (dBuV/m @3m)			Remark
	30MHz-88MHz	40.0			Quasi-peak Value
	88MHz-216MHz	43.5			Quasi-peak Value
	216MHz-960MHz	46.0			Quasi-peak Value
	960MHz-1GHz	54.0			Quasi-peak Value
	Above 1GHz	54.0			Average Value
74.0			Peak Value		
Test setup:	Below 1GHz				
					
Test setup:	Above 1GHz				
					
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.				

	4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 5.11 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	1. All of the observed value above 6GHz were the noise floor , which were no recorded 2. The test data in this report are based on the previous report with report number: JYTSZB-R12-2101718

Measurement Data:
Below 1GHz:

Product Name:	Smart Phone	Product Model:	TA-1361
Test By:	Mike	Test mode:	TM 1 mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Humi: 57%

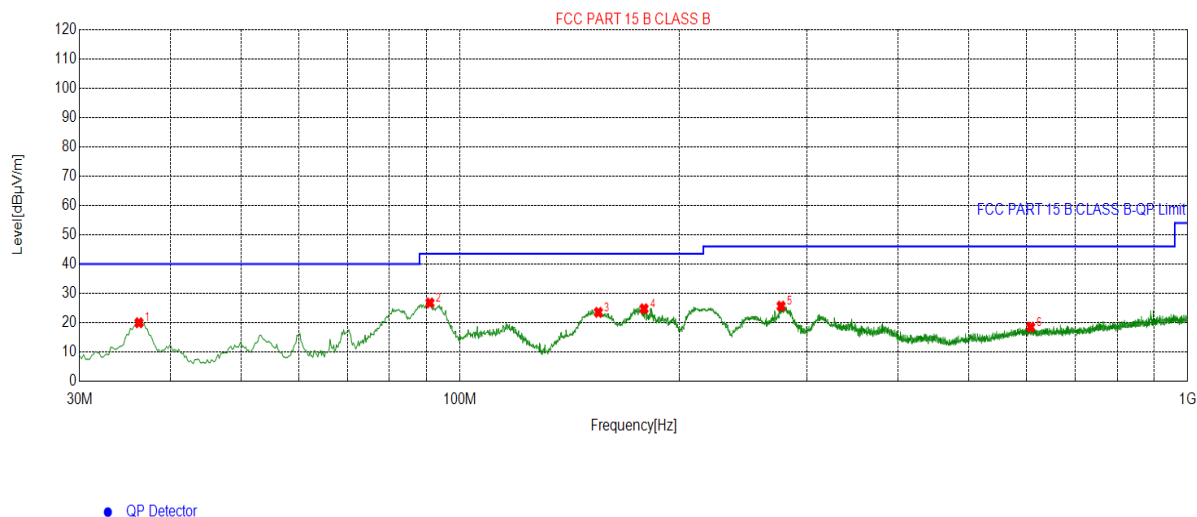

Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.0152	33.47	-31.23	40.00	6.53	252	229	Vertical
2	93.6447	28.11	-31.59	43.50	15.39	264	101	Vertical
3	156.9014	21.88	-32.06	43.50	21.62	294	336	Vertical
4	215.8892	23.63	-29.04	43.50	19.87	108	324	Vertical
5	284.9670	20.93	-26.91	46.00	25.07	244	210	Vertical
6	438.0636	18.18	-23.90	46.00	27.82	261	298	Vertical

Remark:

- Final Level = Receiver Read level + Factor (Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	Smart Phone	Product Model:	TA-1361
Test By:	Mike	Test mode:	TM 1 mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Humi: 57%



Suspected List

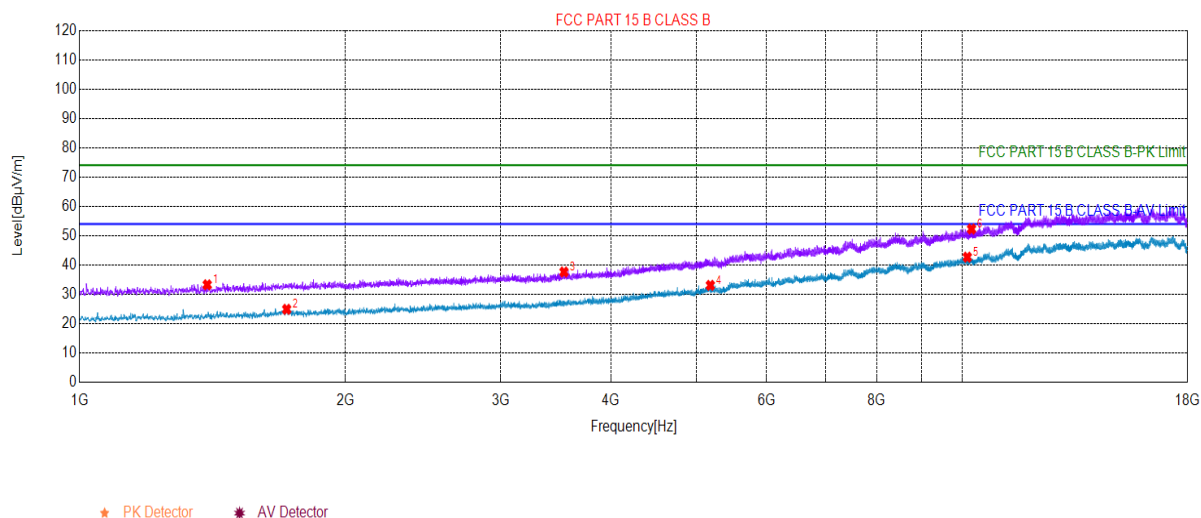
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.2092	19.96	-31.19	40.00	20.04	188	269	Horizontal
2	90.9282	26.73	-31.82	43.50	16.77	163	276	Horizontal
3	154.9610	23.50	-32.10	43.50	20.00	184	252	Horizontal
4	179.0218	24.73	-31.04	43.50	18.77	122	129	Horizontal
5	276.2352	25.62	-27.13	46.00	20.38	269	131	Horizontal
6	608.4297	18.47	-19.79	46.00	27.53	251	254	Horizontal

Remark:

- Final Level = Receiver Read level + Factor (Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Above 1GHz:

Product Name:	Smart Phone	Product Model:	TA-1361
Test By:	Mike	Test mode:	TM 1 mode
Test Frequency:	1 GHz ~ 18 GHz	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Humi: 57%



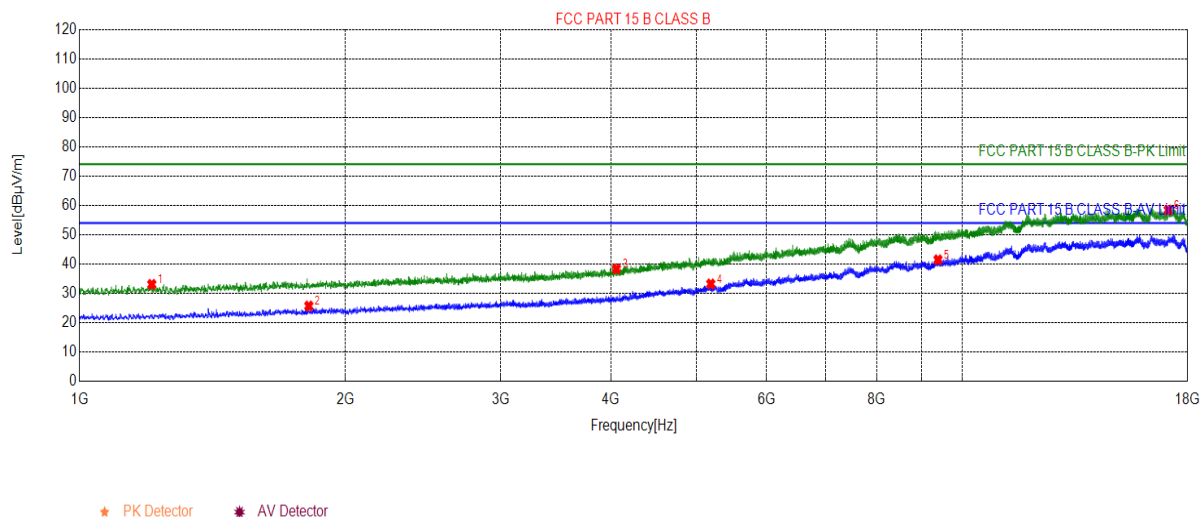
Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1395.2698	33.25	-29.91	74.00	40.75	196	54	Vertical
2	1716.5858	24.89	-28.70	54.00	29.11	115	344	Vertical
3	3538.2269	37.62	-23.63	74.00	36.38	206	146	Vertical
4	5183.0592	33.07	-17.12	54.00	20.93	284	321	Vertical
5	10132.0066	42.68	-3.67	54.00	11.32	288	168	Vertical
6	10244.2122	52.26	-3.23	74.00	21.74	279	222	Vertical

Remark:

- Final Level = Receiver Read level + Factor (Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	Smart Phone	Product Model:	TA-1361
Test By:	Mike	Test mode:	TM 1 mode
Test Frequency:	1 GHz ~ 18 GHz	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Humi: 57%



Suspected List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1207.4104	33.05	-30.61	74.00	40.95	185	153	Horizontal
2	1818.5909	25.68	-28.76	54.00	28.32	163	268	Horizontal
3	4056.7528	38.32	-22.00	74.00	35.68	125	176	Horizontal
4	5189.0095	33.19	-17.12	54.00	20.81	189	344	Horizontal
5	9386.5193	41.43	-5.16	54.00	12.57	211	24	Horizontal
6	17108.3054	58.37	1.26	74.00	15.63	284	130	Horizontal

Remark:

1. Final Level = Receiver Read level + Factor (Antenna Factor + Cable Loss – Preamplifier Factor).
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

7 Test Setup Photo

Reference to the test setup photos: 15B-Test Setup Photo

8 EUT Constructional Details

Reference to the External Photo and Internal Photo

-----End of report-----