FCC REPORT
(WCDMA)

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 2 FCC CFR Title 47 Part 22 Subpart H FCC CFR Title 47 Part 24 Subpart E
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

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 daul 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-R12-2101725*		

Tested by: Mike.ou ***Date:*** *16 Sep., 2021*

Test Engineer

Reviewed by: Winner Zhang ***Date:*** *16 Sep., 2021*

Project Engineer

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4. Test Summary

Test Item	Section in CFR 47	Result
RF Output Power Effective Radiated Power and Effective Isotropic Radiated Power	Part 2.1046 Part 22.913 (a)(5) Part 24.232 (c)	Refer to the report: SRTC2021-9004(F)-21040803(B)
Peak-to-Average Power Ratio	Part 24.232 (d)	Refer to the report: SRTC2021-9004(F)-21040803(B)
Occupied Bandwidth	Part 2.1049	Refer to the report: SRTC2021-9004(F)-21040803(B)
Emission Bandwidth	Part 2.1049	Refer to the report: SRTC2021-9004(F)-21040803(B)
Spurious Emissions at antenna terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a)	Refer to the report: SRTC2021-9004(F)-21040803(B)
Band Edges Compliance	Part 2.1051 Part 22.917 (a) Part 24.238 (a)	Refer to the report: SRTC2021-9004(F)-21040803(B)
Field strength of spurious radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a)	Pass
Frequency stability	Part 22.355 Part 24.235 Part 2.1055	Refer to the report: SRTC2021-9004(F)-21040803(B)
Remark: *1. Pass: The EUT complies with the essential requirements in the standard.* *2. The report: SRTC2021-9004(F)-21040803(B), issued by The State Radio_monitoring_center Testing Center.*		
Test Method:	*ANSI/TIA-603-E-2016* *ANSI C63.26-2015*	

5. General Information

5.1 Client Information

Applicant:	HMD global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
Manufacturer/ Factory:	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
Operation Frequency range:	WCDMA Band II: 1852.4 MHz-1907.6 MHz WCDMA Band V: 826.4MHz-846.6MHz
Modulation type:	☒RMC(QPSK) ☒HSUPA(QPSK) ☒HSDPA(QPSK,16QAM)
Antenna type:	Internal Antenna
Antenna gain:	WCDMA Band II: -3.06 dBi(declare by Applicant) WCDMA Band V: -3.46 dBi(declare by Applicant)
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.

Operation Frequency List:

WCDMA Band II		WCDMA Band V	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
9262	1852.40	4132	826.40
9263	1852.60	4133	826.60
….	….	….	….
9399	1879.80	4182	836.40
9400	1880.00	4183	836.60
9401	1880.20	4184	836.80
…	…	…	…
9537	1907.40	4232	846.40
9538	1907.60	4233	846.60

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

WCDMA Band II			WCDMA Band V		
Channel		Frequency(MHz)	Channel		Frequency(MHz)
Lowest	9262	1852.40	Lowest	4132	826.40
Middle	9400	1880.00	Middle	4183	836.60
Highest	9538	1907.60	Highest	4233	846.60

5.3 Test environment and mode

Operating Environment:	
Temperature:	Normal: 15℃ ~ 35℃, Extreme: -30℃ ~ +50℃
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 3.85Vdc, Extreme: Low 3.4 Vdc, High 4.4 Vdc
Test mode:	
RMC mode	Keep the EUT communication with simulated station in RMC mode
HSDPA	Keep the EUT communication with simulated station in HSDPA mode
HSUPA	Keep the EUT communication with simulated station in HSUPA mode
Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes. Just the worst case position (H mode) shown in report.	

5.4 Description of Test Auxiliary Equipment

Test Equipment	Manufacturer	Model No.	Serial No.
Simulated Station	Rohde & Schwarz	CMW500	140493

5.5 Additions to, deviations, or exclusions from the method

No

5.6 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
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.*	

5.7 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

5.8 Laboratory Location

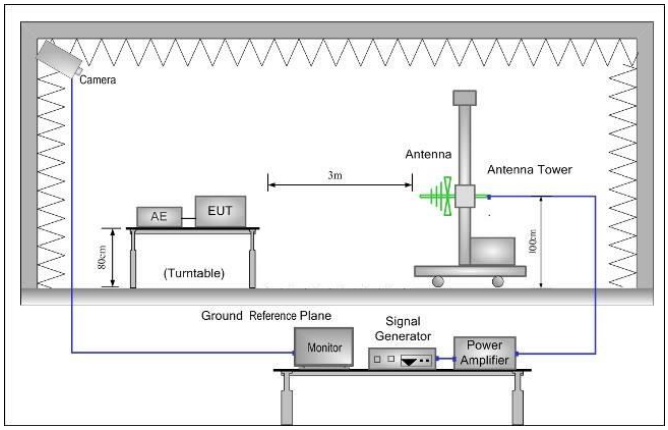
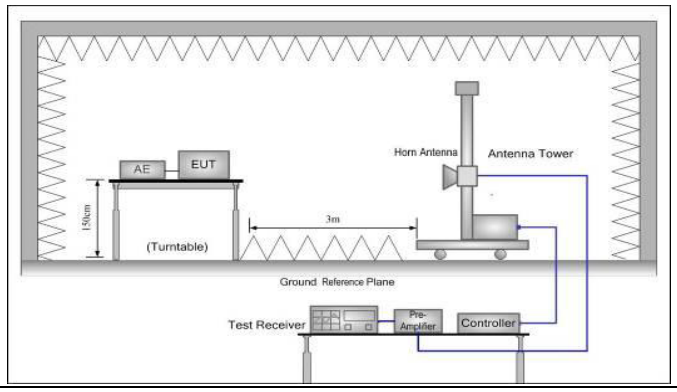
JianYan Testing Group Shenzhen Co., Ltd.
Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info-JYTee@lets.com, Website: http://www.ccis-cb.com

5.9 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
Biconical Antenna	SCHWARZBECK	VUBA9117	WXJ002-1	06-20-2021	06-19-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	WXJ002-2	03-03-2021	03-02-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	WXJ002-3	06-18-2021	06-17-2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	WXJ002-4	03-07-2021	03-06-2022
Pre-amplifier (30MHz ~ 1GHz)	HP	8447D	WXG001-2	03-07-2021	03-06-2022
Pre-amplifier (1GHz ~ 18GHz)	SKET	LNPA_0118G-50	WXG001-3	03-07-2021	03-06-2022
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXG001-9	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
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ004-2	11-27-2020	11-26-2021
Signal Generator	Agilent	N5173B	WXJ006-7	03-25-2021	03-24-2022
Simulated Station	Rohde & Schwarz	CMW500	WXJ008-3	06-17-2021	06-16-2022
Coaxial Cable (30MHz ~ 1GHz)	JYT	JYT3M-1G-NN-8M	WXG001-4	03-07-2021	03-06-2022
Coaxial Cable (1GHz ~ 18GHz)	JYT	JYT3M-18G-NN-8M	WXG001-5	03-07-2021	03-06-2022
Coaxial Cable (9kHz ~ 30MHz)	JYT	JYT3M-1G-BB-5M	WXG001-6	03-07-2021	03-06-2022
Coaxial Cable (1GHz ~ 18GHz)	JYT	JYT3M-40G-SS-8M	WXG001-7	03-07-2021	03-06-2022
RF Switch Unit	Tonscend	JS0806-F	WXJ089	N/A	
Test Software	Tonscend	TS+	Version: 3.0.0.1		

6. Test results

6.1 Field strength of spurious radiation measurement

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a), FCC part 27.53(h)
Limit:	-13dBm
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter camber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed
Remark:	The test data in this report are based on the previous report with report number: JYTSZB-R12-2101724

Measurement Data (worst case):

WCDMA Band II					
Test Channel = High Channel					
Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarity
2333.4167	21.13	-47.74	-13.00	34.74	Horizontal
3976.5488	50.87	-66.00	-13.00	53.00	Horizontal
6525.1763	48.25	-58.69	-13.00	45.69	Horizontal
8834.5417	47.12	-54.20	-13.00	41.20	Horizontal
11924.6962	44.76	-48.99	-13.00	35.99	Horizontal
16400.9200	45.71	-44.67	-13.00	31.67	Horizontal
2317.1646	21.03	-47.80	-13.00	34.80	Vertical
4114.5557	51.36	-65.09	-13.00	52.09	Vertical
6985.6993	48.00	-58.01	-13.00	45.01	Vertical
9606.3303	45.51	-53.72	-13.00	40.72	Vertical
12379.2190	44.96	-48.55	-13.00	35.55	Vertical
16387.4194	46.15	-44.47	-13.00	31.47	Vertical

Remark:

1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.

WCDMA Band V					
Test Channel = Middle Channel					
Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarity
1171.2086	22.33	-67.58	-13.00	54.58	Horizontal
1972.7486	21.84	-66.46	-13.00	53.46	Horizontal
2989.5995	21.84	-63.74	-13.00	50.74	Horizontal
4392.3696	51.32	-63.84	-13.00	50.84	Horizontal
7470.7735	49.08	-54.84	-13.00	41.84	Horizontal
9852.9927	46.51	-52.54	-13.00	39.54	Horizontal
1236.3118	28.90	-61.48	-13.00	48.48	Vertical
1938.9469	21.87	-66.44	-13.00	53.44	Vertical
2964.3982	21.87	-63.79	-13.00	50.79	Vertical
4224.7112	51.26	-64.39	-13.00	51.39	Vertical
6868.3934	49.49	-57.39	-13.00	44.39	Vertical
9568.7784	47.41	-52.19	-13.00	39.19	Vertical

Remark:

1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.

7. Test Setup Photo

Reference to the test setup photos: PCE-Test Setup Photo

8. EUT Constructional Details

Reference to the External Photo and Internal Photo

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