FCC REPORT
(GSM)

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-R12-2101723*		

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

Test Engineer

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

Project Engineer

3. Contents

Page

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)-21082803(A)
Peak-to-Average Power Ratio	Part 24.232 (d)	Refer to the report: SRTC2021-9004(F)-21082803(A)
Occupied Bandwidth	Part 2.1049	Refer to the report: SRTC2021-9004(F)-21082803(A)
Emission Bandwidth	Part 2.1049	Refer to the report: SRTC2021-9004(F)-21082803(A)
Spurious Emissions at antenna terminals	Part 2.1051 Part 22.917 (a) Part 24.238 (a)	Refer to the report: SRTC2021-9004(F)-21082803(A)
Band Edges Compliance	Part 2.1051 Part 22.917 (a) Part 24.238 (a)	Refer to the report: SRTC2021-9004(F)-21082803(A)
Field strength of spurious radiation	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)-21082803(A)
Remark: *1. Pass: The EUT complies with the essential requirements in the standard.* *2. The report: SRTC2021-9004(F)-21082803(A), 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:	GSM 850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz
Modulation type:	☒Voice(GMSK) ☒GPRS(GMSK) ☒EGPRS(GMSK, 8PSK)
Antenna type:	Internal Antenna
Antenna gain:	GSM 850: -3.46 dBi(declare by Applicant) PCS 1900: -2.87 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:

GSM 850		PCS1900	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20
129	824.40	513	1850.40
….	….	….	….
189	836.40	660	1879.80
190	836.60	661	1880.00
191	836.80	662	1880.20
…	…	…	…
250	848.60	809	1909.60
251	848.80	810	1909.80

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:

GSM850			PCS1900		
Channel		Frequency(MHz)	Channel		Frequency(MHz)
Lowest	128	824.20	Lowest	512	1850.20
Middle	190	836.60	Middle	661	1880.00
Highest	251	848.80	Highest	810	1909.80

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:	
GSM mode	Keep the EUT communication with simulated station in GSM mode
GPRS mode	Keep the EUT communication with simulated station in GPRS mode
EGPRS mode	Keep the EUT communication with simulated station in EGPRS 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

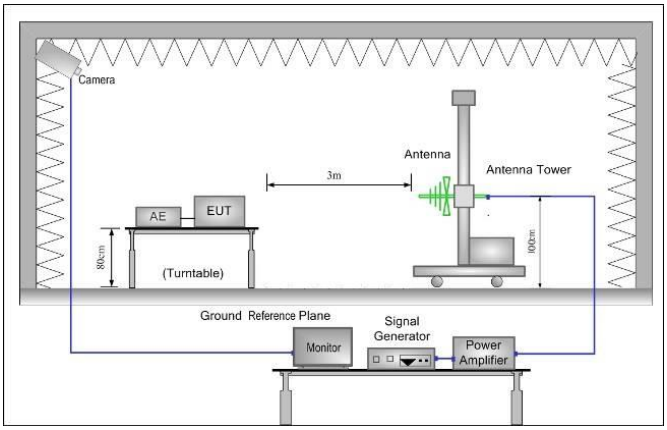
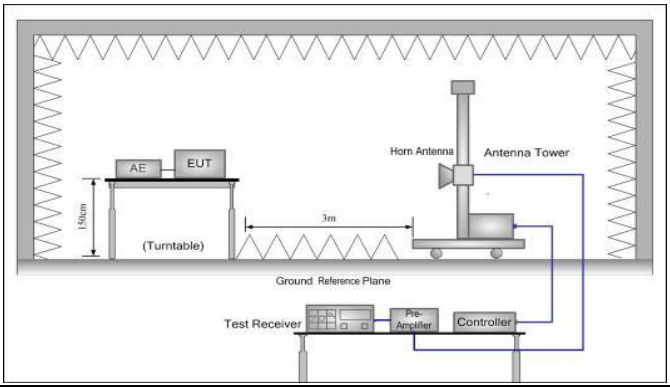
JianYan Testing Group Shenzhen Co., Ltd.
Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info-JYTee@lets.com, Website: http://www.ccis-cb.com

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)
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-R12-2101723

Measurement Data (worst case):

GSM850					
Test Channel = Middle Channel					
Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarity
1102.8051	21.60	-68.80	-13.00	55.80	Horizontal
1986.7493	21.89	-66.43	-13.00	53.43	Horizontal
2979.0990	21.84	-63.78	-13.00	50.78	Horizontal
4850.1925	50.71	-62.64	-13.00	49.64	Horizontal
6505.0753	48.61	-57.89	-13.00	44.89	Horizontal
9845.2923	46.77	-52.33	-13.00	39.33	Horizontal
1054.3027	22.08	-68.20	-13.00	55.20	Vertical
1975.3488	22.04	-66.27	-13.00	53.27	Vertical
2961.5981	21.88	-63.79	-13.00	50.79	Vertical
4449.7725	51.54	-63.13	-13.00	50.13	Vertical
6969.1985	48.96	-57.12	-13.00	44.12	Vertical
8406.3703	48.47	-53.80	-13.00	40.80	Vertical
Remark:					
1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.					

PCS1900					
Test Channel = Middle Channel					
Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarity
2231.4039	20.61	-48.12	-13.00	35.12	Horizontal
3759.7880	64.62	-52.88	-13.00	39.88	Horizontal
5640.1320	59.88	-49.90	-13.00	36.90	Horizontal
7480.7240	48.37	-55.45	-13.00	42.45	Horizontal
10613.6307	46.40	-50.94	-13.00	37.94	Horizontal
16403.9202	46.44	-43.99	-13.00	30.99	Horizontal
2392.1740	20.88	-47.65	-13.00	34.65	Vertical
3759.7880	60.60	-56.90	-13.00	43.90	Vertical
5640.1320	64.22	-45.56	-13.00	32.56	Vertical
7485.9743	48.35	-55.42	-13.00	42.42	Vertical
11232.4116	46.36	-49.52	-13.00	36.52	Vertical
16404.6702	46.20	-44.25	-13.00	31.25	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------