



TEST REPORT

No. I20D00140-SRD04

For

Client: Datalogic S.r.l.

Production: Smartphone

Model Name: MEMOR 10

Brand Name: Datalogic

FCC ID: U4GDL35US

Hardware Version: V00 (US)

Software Version: 2.05.07.20190919

Issued date: 2020-11-12

NOTE

1. The test results in this test report relate only to the devices specified in this report.
2. This report shall not be reproduced except in full without the written approval of East China Institute of Telecommunications.
3. For the test results, the uncertainty of measurement is not taken into account when judging the compliance with specification, and the results of measurement or the average value of measurement results are taken as the criterion of the compliance with specification directly.

Test Laboratory:

East China Institute of Telecommunications

Add: Block No.4, No.766, Jingang Road, Pudong District, Shanghai, P. R. China

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Revision Version

Report Number	Revision	Date	Memo
I20D00140-SRD04	00	2020-11-05	Initial creation of test report
I20D00140-SRD04	01	2020-11-12	First modification of test report

CONTENTS

1. TEST LABORATORY	5
1.1. TESTING LOCATION	5
1.2. TESTING ENVIRONMENT	5
1.3. PROJECT DATA	5
1.4. SIGNATURE	5
2. CLIENT INFORMATION	6
2.1. APPLICANT INFORMATION	6
2.2. MANUFACTURER INFORMATION	6
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	7
3.1. ABOUT EUT	7
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	7
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	7
4. REFERENCE DOCUMENTS	8
4.1. DOCUMENTS SUPPLIED BY APPLICANT	8
4.2. REFERENCE DOCUMENTS FOR TESTING	8
5. TEST RESULTS	9
5.1. SUMMARY OF TEST RESULTS	9
5.2. STATEMENTS	9
6. TEST EQUIPMENTS UTILIZED	10
6.1. RADIATED EMISSION TEST SYSTEM	10
7. MEASUREMENT UNCERTAINTY	11
8. TEST ENVIRONMENT	12
ANNEX A. DETAILED TEST RESULTS	13
ANNEX A.1 EMISSION LIMIT	13
ANNEX A. ACCREDITATION CERTIFICATE	23

1. Test Laboratory

1.1. Testing Location

Company Name	East China Institute of Telecommunications
Address	Block No.4, No.766, Jingang Road, Pudong District, Shanghai, P. R. China
Postal Code	201206
Telephone	+86 21 63843300
FCC registration No	CN1177


1.2. Testing Environment

Normal Temperature	15℃-35℃
Relative Humidity	20%-75%

1.3. Project Data

Project Leader	Chen Minfei
Testing Start Date	2020-09-16
Testing End Date	2020-10-20

1.4. Signature



Liu Yan
(Prepared this test report)



Fan Songyan
(Reviewed this test report)



Zheng Zhongbin
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name	Datalogic S.r.l.
Address	Via San Vitalino no. 13, Calderara di Reno – 40012 (BO) - Italy
Telephone	+39 051 314 72 16
Postcode	/

2.2. Manufacturer Information

Company Name	MOBIWIRE MOBILES (NINGBO) CO.,LTD
Address	No.999,Dacheng East Road,FenghuaCity,Zhejiang Province, China.
Telephone	+86 574 59555707
Postcode	/

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Production	Smartphone
Model name	MEMOR 10
GSM Frequency Band	GSM850/GSM900/GSM1800/GSM1900
Extreme Temperature	-20/+50°C
Nominal Voltage	3.80V
Extreme High Voltage	4.35V
Extreme Low Voltage	3.60V

Note:

- Photographs of EUT are shown in ANNEX A of this test report.
- The value of the antenna gain is provided by the customer. For specific antenna information, please check the antenna specifications of the customer.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N01(HE)	358328100030199	V00 (US)	2.05.07.20190919	2020-09-22
N02(LE)	359737090161724	V00 (US)	2.05.07.20190919	2020-09-22

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Type	Manufacturer
AE1	RF cable	---	AE1

*AE ID: is used to identify the test sample in the lab internally.

4. Reference Documents

4.1. Documents supplied by applicant

All technical documents are supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS	2018-10-01
FCC Part 22	PUBLIC MOBILE SERVICES	2018-10-01
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	2018-10-01
ANSI-TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
ANSI C63.26	American National Standard of Procedures for Compliance Testing of Licensed Transmitters Used in Licensed Radio	2015
KDB 971168 D01	Measurement Guidance for Certification of Licensed Digital Transmitters	v03r01

5. Test Results

5.1. Summary of Test Results

Measurement Items	Sub-clause	Verdict
Emission Limit	2.1051/22.917/24.238/22.913/24.232	P

Note: please refer to Annex A in this test report for the detailed test results.

The following terms are used in the above table.

P	Pass, the EUT complies with the essential requirements in the standard.
NP	Not Perform, the test was not performed by ECIT.
NA	Not Applicable, the test was not applicable.
F	Fail, the EUT does not comply with the essential requirements in the standard.

5.2. Statements

The MEMOR 10 is a variant product for testing.

ECIT only performed test cases which identified with Pass/Fail/Inc result in section 5.1.

ECIT has verified that the compliance of the tested device specified in section 3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 4 of this test report.

Note: This report only provides radiation data, and radiation data includes HE and LE scanning head, N01 corresponding to HE scanning head, N02 corresponding to LE scanning head, providing the worst mode data. The remaining data results please refer to report I18D00022-SRD04-2G&3G which was prepared by East China Institute of Telecommunications.

6. Test Equipments Utilized

6.1. Radiated Emission Test System

The test equipment and ancillaries used are as follows.

No.	Equipment	Model	SN	Manufacturer	Cal.date	Cal.interval
1	Universal Radio Communication Tester	CMU200	123123	R&S	2020-05-10	1 year
2	EMI Test Receiver	ESU40	100307	R&S	2020-05-10	1 year
3	TRILOG Broadband Antenna	VULB916 3	VULB916 3-515	Schwarzbeck	2020-02-28	2 years
4	Double- ridged Waveguide Antenna	ETS- 3117	0013589 0	ETS	2020-02-28	2 years
5	2-Line V-Network	ENV216	101380	R&S	2020-05-10	1 year
6	RF Signal Generator	SMF100 A	102314	R&S	2020-05-10	1 year
7	Amplifier	SCU08	10146	R&S	2020-05-10	1 year

Anechoic chamber

Fully anechoic chamber by ETS.

7. Measurement Uncertainty

Measurement uncertainty for all the testing in this report are within the limit specified in ECIT documents. The detailed measurement uncertainty is defined in ECIT documents.

Measurement Items	Range	Confidence Level	Calculated Uncertainty
Maximum Peak Output Power	30MHz-3600MHz	95%	$\pm 0.544\text{dB}$
EBW and VBW	30MHz-3600MHz	95%	$\pm 62.04\text{Hz}$
Transmitter Spurious Emission-Conducted	30MHz-2GHz	95%	$\pm 0.90\text{dB}$
Transmitter Spurious Emission-Conducted	2GHz-3.6GHz	95%	$\pm 0.88\text{dB}$
Transmitter Spurious Emission-Conducted	3.6GHz-8GHz	95%	$\pm 0.96\text{dB}$
Transmitter Spurious Emission-Conducted	8GHz-20GHz	95%	$\pm 0.94\text{dB}$
Transmitter Spurious Emission-Radiated	9KHz-30MHz	95%	$\pm 5.66\text{dB}$
Transmitter Spurious Emission-Radiated	30MHz-1000MHz	95%	$\pm 4.98\text{dB}$
Transmitter Spurious Emission-Radiated	1000MHz -18000MHz	95%	$\pm 5.06\text{dB}$
Transmitter Spurious Emission-Radiated	18000MHz -40000MHz	95%	$\pm 5.20\text{dB}$
Frequency stability	1MHz-16GHz	95%	$\pm 62.04\text{Hz}$

8. Test Environment

Shielding Room1 (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Ground system resistance	< 0.5 Ω

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber1 (6.9 meters×10.9 meters×5.4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB, 30MHz to 1GHz
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

ANNEX A. Detailed Test Results

ANNEX A.1 EMISSION LIMIT

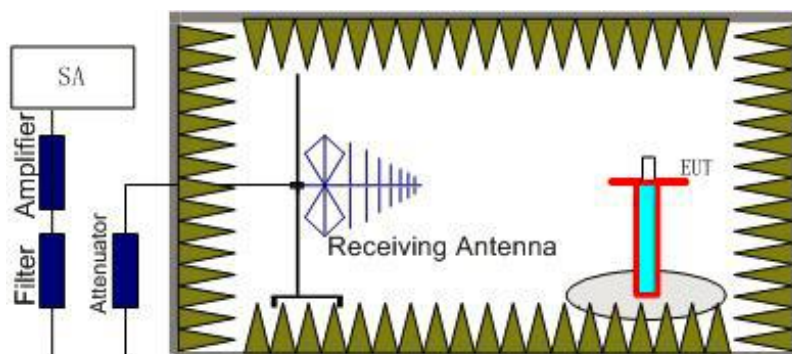
A.1.1.1 GSM Measurement Method

The measurement procedures in TIA-603E-2016 are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set as outlined in Part 24.238 and Part 22.917. The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of PCS1900 and GSM850.

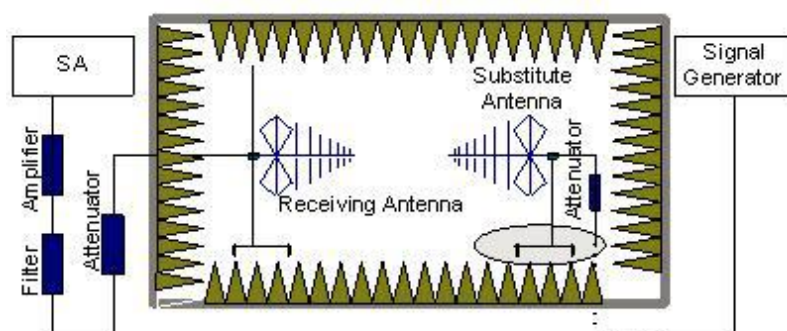
A.1.1.2 The procedure of radiated spurious emissions is as follows:

1. Below 1 GHz ,EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. Above 1 GHz ,EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).

3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the

reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.

A amplifier should be connected in for the test.

The Path loss (P_{pl}) is the summation of the cable loss .

The measurement results are obtained as described below:

$$\text{Power(EIRP)} = P_{Mea} - P_{pl} + G_a$$

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.

1. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dBi}$

A.1.1.3 Measurement Limit

Part 24.238 and Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A.1.1.4 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the PCS1900 band (1850.2 MHz, 1880 MHz and 1909.8 MHz) and GSM850 band (824.2MHz, 836.6MHz, 848.8MHz) . It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the PCS1900 ,GSM850 into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

A.1.1.5 Measurement Results

Measurements results:

Frequency	Channel	Frequency Range	Result
GSM850	Low	30MHz~10GHz	P
	Middle	30MHz~10GHz	P
	High	30MHz~10GHz	P

HE test data
GSM850
EGPRS Mode Channel 128
Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
1457.5	-26.59	4.1	3.4	-27.29	-13	H
2584.3	-36.01	5.5	3.7	-37.81	-13	V
3572.3	-43.57	6.4	4.7	-45.27	-13	H
4277.3	-49.53	7.1	7.7	-48.93	-13	V
5052.7	-47.42	7.8	9.0	-46.22	-13	V
5949.2	-49.99	8.5	10.4	-48.09	-13	H

EGPRS Mode Channel 189

Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
1672.5	-42.17	4.3	2.9	-43.57	-13	H
2570.4	-36.72	5.4	3.7	-38.42	-13	H
3579.2	-41.82	6.5	4.7	-43.62	-13	V
4228.8	-50.35	7.1	7.7	-49.75	-13	H
5042.3	-47.69	7.8	9.0	-46.49	-13	H
5911.2	-49.73	8.5	10.4	-47.83	-13	V

EGPRS Mode Channel 251

Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
1493.8	-43.41	4.1	3.4	-44.11	-13	H
2710.7	-35.07	5.6	4.1	-36.57	-13	H
3606.9	-43.39	6.5	4.7	-45.19	-13	H
4351.2	-48.8	7.2	7.7	-48.3	-13	V
5058.5	-46.75	7.8	9.0	-45.55	-13	H
5930.8	-49.83	8.5	10.4	-47.93	-13	H

LE test data**GSM850****EGPRS Mode Channel 128****Final result:**

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
1457.5	-26.59	4.1	3.4	-27.29	-13	H
2584.3	-36.01	5.5	3.7	-37.81	-13	V
3572.3	-43.57	6.4	4.7	-45.27	-13	H
4277.3	-49.53	7.1	7.7	-48.93	-13	V
5052.7	-47.42	7.8	9.0	-46.22	-13	V
5949.2	-49.99	8.5	10.4	-48.09	-13	H

EGPRS Mode Channel 189**Final result:**

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
1672.5	-42.17	4.3	2.9	-43.57	-13	H
2570.4	-36.72	5.4	3.7	-38.42	-13	H
3579.2	-41.82	6.5	4.7	-43.62	-13	V
4228.8	-50.35	7.1	7.7	-49.75	-13	H
5042.3	-47.69	7.8	9.0	-46.49	-13	H
5911.2	-49.73	8.5	10.4	-47.83	-13	V

EGPRS Mode Channel 251**Final result:**

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
1493.8	-43.41	4.1	3.4	-44.11	-13	H
2710.7	-35.07	5.6	4.1	-36.57	-13	H
3606.9	-43.39	6.5	4.7	-45.19	-13	H
4351.2	-48.8	7.2	7.7	-48.3	-13	V
5058.5	-46.75	7.8	9.0	-45.55	-13	H
5930.8	-49.83	8.5	10.4	-47.93	-13	H

Note: the EUT was displayed in several different direction, the worst cases were shown.

A.1.2 WCDMA Measurement Method

The measurements procedures in TIA-603E-2016 are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set as outlined in Part 24.238 and Part 24.917.

The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of WCDMA Band V.

The procedure of radiated spurious emissions is the same like GSM.

A.1.2.1 Measurement Limit

Part 24.238 and Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A.1.2.2 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the WCDMA Band V (826.4MHz, 836.6MHz and 846.6MHz) . It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the WCDMA Band V into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

A.1.2.3 Measurement Results Table

Frequency	Channel	Frequency Range	Result
WCDMA Band II	Low	30MHz~20GHz	P
	Middle	30MHz~20GHz	P
	High	30MHz~20GHz	P

HE test data

WCDMA BAND II Mode Channel 9262

Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
3706.0	-57.59	6.6	7.7	-56.49	-13	H
4713.6	-58.83	7.5	7.9	-58.43	-13	V
5555.2	-54.27	8.2	9.5	-52.97	-13	V
6559.6	-60.17	9.0	11.5	-57.67	-13	H
7578.8	-61.23	9.7	14.6	-56.33	-13	V
8426.8	-63.48	10.2	18.1	-55.58	-13	H

WCDMA BAND II Mode Channel 9400

Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
3758.4	-56.69	6.6	7.7	-55.59	-13	H
4689.2	-59.1	7.5	7.9	-58.7	-13	H
5642.8	-56.5	8.3	10.5	-54.3	-13	V
7516.4	-61.06	9.7	14.6	-56.16	-13	H
8608.8	-63.2	10.3	18.1	-55.4	-13	V
9649.6	-59.93	10.8	18.3	-52.43	-13	V

WCDMA BAND II Mode Channel 9538
Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
3816.8	-57.1	6.7	7.7	-56.1	-13	H
4756.4	-58.39	7.5	7.9	-57.99	-13	V
5720.4	-54.6	8.5	10.5	-52.6	-13	V
6640.8	-59.48	9.1	12.3	-56.28	-13	H
7654.4	-61.41	9.7	15.3	-55.81	-13	V
8590.0	-64.56	10.3	18.1	-56.76	-13	H
3816.8	-57.1	6.7	7.7	-56.1	-13	H

LE test data
WCDMA BAND II Mode Channel 9262
Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
3706.0	-57.59	6.6	7.7	-56.49	-13	H
4713.6	-58.83	7.5	7.9	-58.43	-13	V
5555.2	-54.27	8.2	9.5	-52.97	-13	V
6559.6	-60.17	9.0	11.5	-57.67	-13	H
7578.8	-61.23	9.7	14.6	-56.33	-13	V
8426.8	-63.48	10.2	18.1	-55.58	-13	H

WCDMA BAND II Mode Channel 9400
Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
3758.4	-56.69	6.6	7.7	-55.59	-13	H
4689.2	-59.1	7.5	7.9	-58.7	-13	H
5642.8	-56.5	8.3	10.5	-54.3	-13	V
7516.4	-61.06	9.7	14.6	-56.16	-13	H
8608.8	-63.2	10.3	18.1	-55.4	-13	V
9649.6	-59.93	10.8	18.3	-52.43	-13	V

WCDMA BAND II Mode Channel 9538
Final result:

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarization
3816.8	-57.1	6.7	7.7	-56.1	-13	H
4756.4	-58.39	7.5	7.9	-57.99	-13	V
5720.4	-54.6	8.5	10.5	-52.6	-13	V
6640.8	-59.48	9.1	12.3	-56.28	-13	H
7654.4	-61.41	9.7	15.3	-55.81	-13	V
8590.0	-64.56	10.3	18.1	-56.76	-13	H
3816.8	-57.1	6.7	7.7	-56.1	-13	H

Note: the EUT was displayed in several different direction, the worst cases were shown.

ANNEX A. Accreditation Certificate



*****END OF REPORT*****