



# TEST REPORT

**No. I20D00140-SRD01**

***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-SRD01	00	2020-11-05	Initial creation of test report
I20D00140-SRD01	01	2020-11-12	First modification of test report

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## 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°C-35°C
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
BT Frequency	2402MHz-2480MHz
BT Channel	Channel0-Channel78
BT type of modulation	GFSK; $\pi/4$ DQPSK; 8DPSK
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 Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.	2018-10-01
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
KDB 558074	Guidance for Performing Compliance Measurements on Frequency Hopping Spread Spectrum systems (DSS) Operating Under §15.247	v05r02



## 5. Test Results

### 5.1. Summary of Test Results

Measurement Items	Sub-clause of Part15	Verdict
Transmitter Spurious Emission-Radiated	15.247,15.209,	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.

#### Test Conditions

Tnom	Normal Temperature
Tmin	Low Temperature
Tmax	High Temperature
Vnom	Normal Voltage
Vmin	Low Voltage
Vmax	High Voltage
Hnom	Norm Humidity
Anom	Norm Air Pressure

For this report, all the test case listed above are tested under Normal Temperature and Normal Voltage, and also under norm humidity, the specific conditions as following:

Temperature	Tnom	25°C
Voltage	Vnom	3.8V
Humidity	Hnom	48%
Air Pressure	Anom	1010hPa

#### Note:

- All the test data for each data were verified, but only the worst case was reported.
- The GFSK,  $\pi/4$  DQPSK and 8DPSK were set in DH1 for GFSK, 2-DH1 for  $\pi/4$  DQPSK, 3-DH1 for 8DPSK.
- The DC and low frequency voltages' measurement uncertainty is  $\pm 2\%$ .

## 5.2.Statements

The MEMOR 10 is a variant product for testing.

ECIT only performed test cases which identified with P/NP/NA/F results in Annex A.

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-SRD01-BT, which was prepared by East China Institute of Telecommunications.

## 6. Test Equipments Utilized

### 6.1. Radiated Emission Test System

Item	Instrument Name	Type	Serial Number	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	VULB9163	VULB9163-515	Schwarzbeck	2020-02-28	2 years
4	Double- ridged Waveguide Antenna	ETS-3117	00135890	ETS	2020-02-28	2 years
5	2-Line V-Network	ENV216	101380	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
Peak Output Power-Conducted	2402MHz-2480MHz	95%	$\pm 0.544\text{dB}$
Frequency Band Edges-Conducted	2402MHz-2480MHz	95%	$\pm 0.544\text{dB}$
Conducted Emission	30MHz-2GHz	95%	$\pm 0.90\text{dB}$
Conducted Emission	2GHz-3.6GHz	95%	$\pm 0.88\text{dB}$
Conducted Emission	3.6GHz-8GHz	95%	$\pm 0.96\text{dB}$
Conducted Emission	8GHz-20GHz	95%	$\pm 0.94\text{dB}$
Conducted Emission	20GHz-22GHz	95%	$\pm 0.88\text{dB}$
Conducted Emission	22GHz-26GHz	95%	$\pm 0.86\text{dB}$
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%	$\pm 5.20\text{dB}$
Dwell Time	2402MHz-2480MHz	95%	$\pm 0.218\text{ms}$
20dB Bandwidth	2402MHz-2480MHz	95%	$\pm 62.04\text{Hz}$
AC Power line Conducted Emission	0.15MHz-30MHz	95%	$\pm 3.66\text{ dB}$

## 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. = 30 %, Max. = 60 %
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

### ANNEXA.1. Radiated Emission

#### A.4.1 Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see 15.205(c)).

#### Limit in restricted band:

Frequency of emission (MHz)	Field strength (uV/m)	Field strength (dBuV/m)
30~88	100	40
88~216	150	43.5
216~960	200	46
Above 960	500	54

#### A.4.2 Test Method

Portable, small, lightweight, or modular devices that may be handheld, worn on the body, or placed on a table during operation shall be positioned on a non-conducting platform, the top of which is 80 cm above the reference ground plane. The preferred area occupied by the EUT arrangement is 1 m by 1.5 m. For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. but it may be larger or smaller to accommodate various sized EUTs. For testing purposes, ceiling- and wall-mounted devices also shall be positioned on a tabletop (see also ANSI C63.10-2013 section 6.3.4 and 6.3.5). In making any tests involving handheld, body-worn, or ceiling-mounted equipment, it is essential to recognize that the measured levels may be dependent on the orientation (attitude) of the three orthogonal axes of the EUT. Thus, exploratory tests as specified in 8.3.1 shall be carried out for various axes orientations to determine the attitude having maximum or near-maximum emission level.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. 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.

Frequency of emission (MHz)	RBW/VBW	Sweep Time (s)
30~1000	100KHz/300KHz	5
1000~4000	1MHz/3MHz	15
4000~18000	1MHz/3MHz	40
18000~26500	1MHz/3MHz	20

### A.4.3 Measurement Results:

A “reference path loss” is established and  $A_{Rpi}$  is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

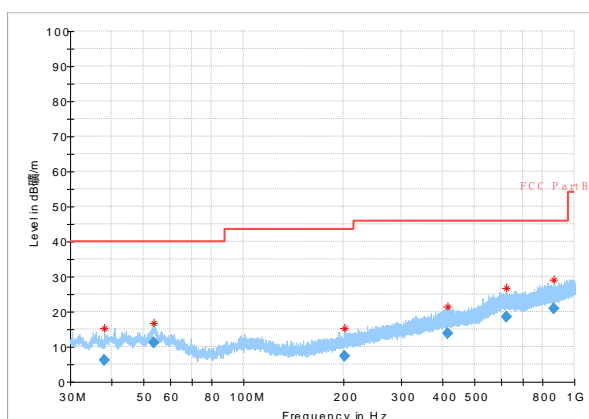
The measurement results are obtained as described below:

$$A_{Rpi} = \text{Cable loss} + \text{Antenna Gain} - \text{Preamplifier gain}$$

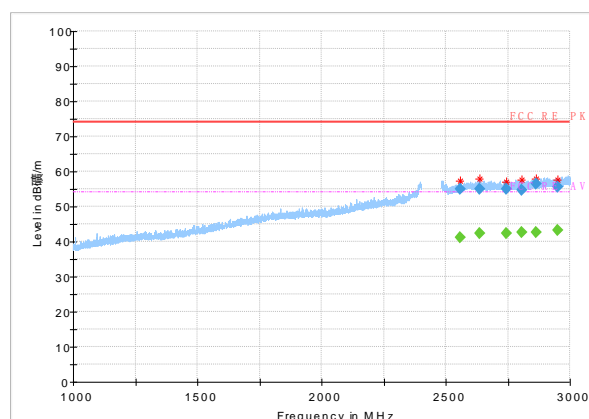
$$\text{Result} = P_{\text{Mea}} + A_{Rpi}$$

### HE test data

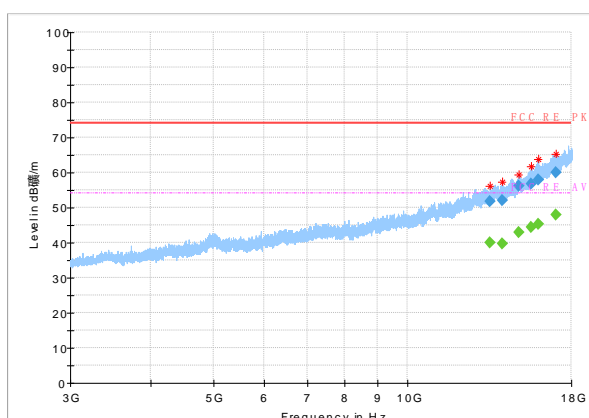
Radiated emission: GFSK, Ch78, 30MHz~1GHz



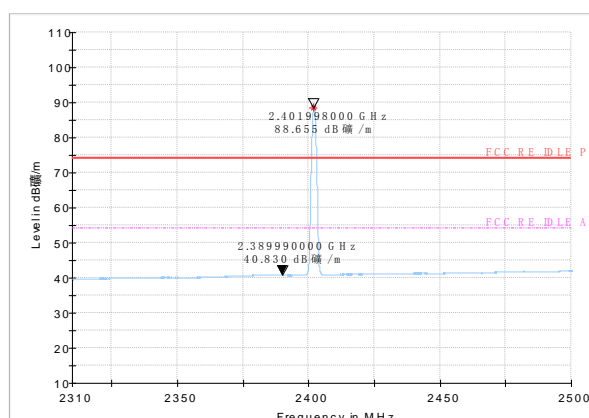
Radiated emission: GFSK, Ch78, 1GHz~3GHz



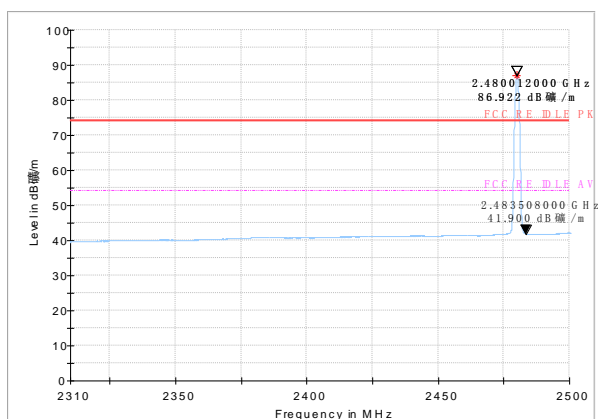
Radiated emission: GFSK, Ch78, 3GHz~18GHz



Bandedge (Low): GFSK, low channel

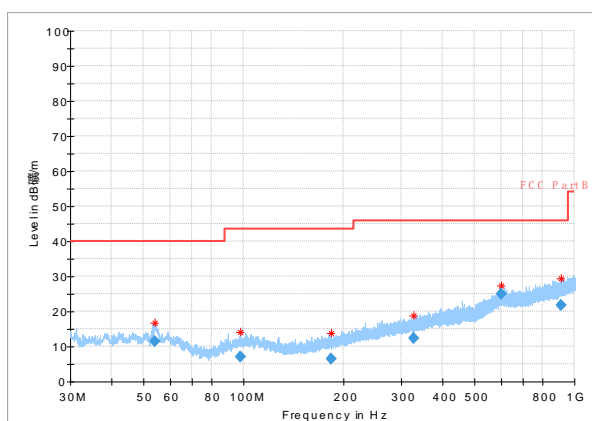


Bandedge (High): GFSK, high channel

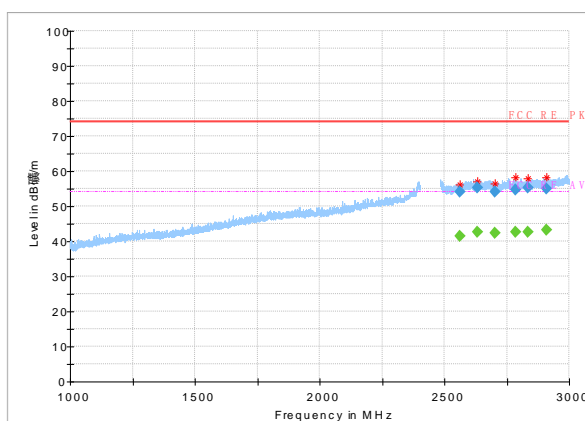

/  
/

## LE test data

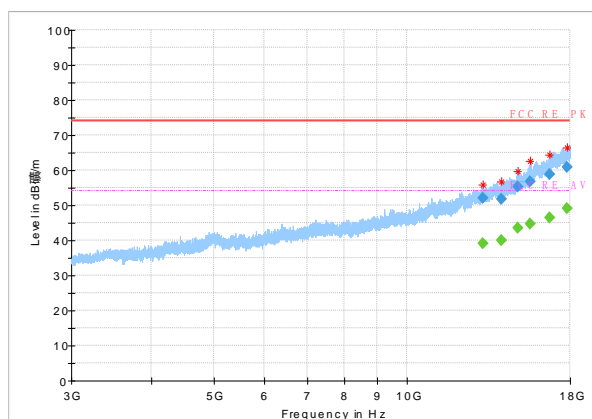
Radiated emission: GFSK, Ch78, 30MHz~1GHz



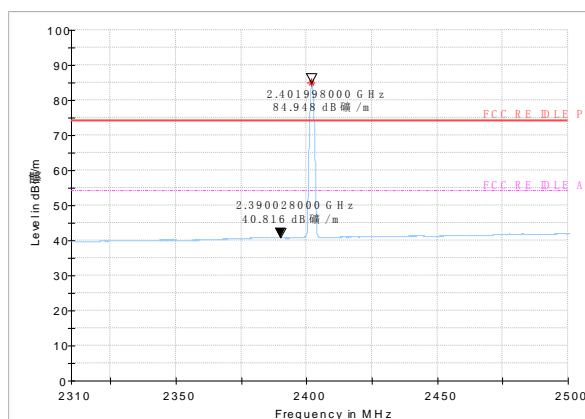
Radiated emission: GFSK, Ch78, 1GHz~3GHz



Radiated emission: GFSK, Ch78, 3GHz~18GHz

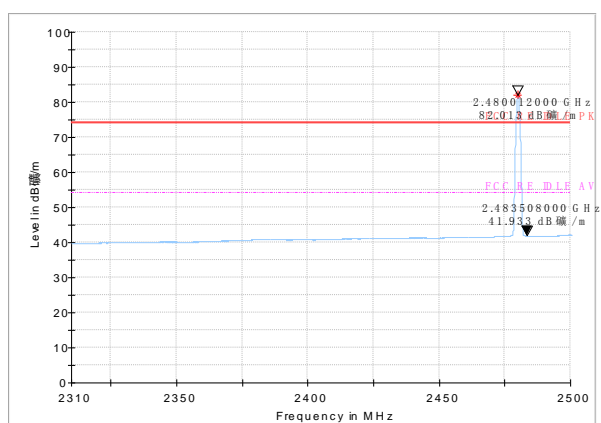


Bandedge (Low): GFSK, low channel

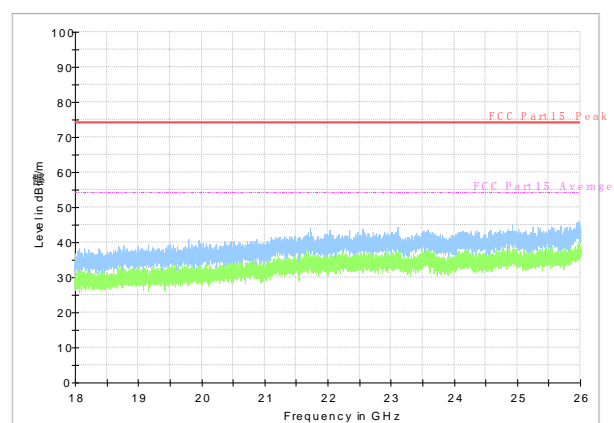




Bandedge (High): GFSK, high channel



ALL Channel 18GHz~26GHz



# HE test data

## GFSK Ch0 30MHz-1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl(dB)	PMea(dBuV/m)	Polarity
40.2	6.32	-16.1	22.42	V
54.0	11.63	-15.4	27.03	V
105.6	6.98	-15.7	22.68	V
402.1	13.99	-8.4	22.39	H
609.7	19.16	-2.8	21.96	V
922.9	22.11	-0.5	22.61	V

## GFSK Ch0 1GHz-3GHz (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl(dB)	PMea(dBuV/m)	Polarity
2576.9	53.88	17.4	36.48	V
2628.9	54.73	17.8	36.93	H
2710.4	54.55	17.8	36.75	V
2758.6	55.09	18	37.09	H
2824.6	54.43	18.3	36.13	H
2913.4	55.41	18.7	36.71	H

## GFSK Ch0 1GHz-3GHz (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl(dB)	PMea(dBuV/m)	Polarity
2628.9	42.31	17.8	24.51	H
2710.4	42.21	17.8	24.41	V
2758.6	42.26	18	24.26	H
2824.6	42.53	18.3	24.23	H
2913.4	43.2	18.7	24.5	H
2628.9	42.31	17.8	24.51	H

**GFSK Ch0 3GHz-18GHz (Peak)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
14510.2	52.67	20	32.67	V
14950.0	54.42	21.8	32.62	V
15597.9	56.62	24.6	32.02	H
15968.7	57.22	25.3	31.92	V
17040.0	59.28	27.8	31.48	V
17456.4	59.75	28.6	31.15	V

**GFSK Ch0 3GHz-18GHz (Average)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
14950.0	42.68	21.8	20.88	V
15597.9	44.65	24.6	20.05	H
15968.7	45.61	25.3	20.31	V
17040.0	47.5	27.8	19.7	V

**LE test data**
**GFSK Ch0 30MHz-1GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl(dB)	PMea(dBuV/m)	Polarity
38.6	7.83	-16.3	24.13	H
54.7	11.12	-15.4	26.52	V
105.8	7.14	-15.7	22.84	H
360.6	12.76	-9.6	22.36	H
583.3	20.35	-3.8	24.15	V
851.5	21.12	-1.5	22.62	V

**GFSK Ch0 1GHz-3GHz (Peak)**

Frequency(MHz)	Result(dBuV/m)	ARpl(dB)	PMea(dBuV/m)	Polarity
2576.5	54.25	17.4	36.85	V
2639.8	56.35	17.8	38.55	H
2682.8	53.81	17.8	36.01	V
2739.4	55.24	18	37.24	V

2799.6	55.15	18.2	36.95	H
2855.2	54.28	18.4	35.88	H

**GFSK Ch0 1GHz-3GHz (Average)**

Frequency(MHz)	Result(dBuV/m)	ARpl(dB)	PMea(dBuV/m)	Polarity
2576.5	42.15	17.4	24.75	V
2639.8	42.37	17.8	24.57	H
2739.4	42.59	18	24.59	V
2799.6	42.79	18.2	24.59	H
2855.2	42.66	18.4	24.26	H

**GFSK Ch0 3GHz-18GHz (Peak)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
13738.4	53.21	18.4	34.81	V
14532.0	53.23	20	33.23	H
15496.2	54.88	23.5	31.38	V
15921.8	57.71	25.4	32.31	H
17018.3	60.18	28.1	32.08	H
17816.2	61.33	29.8	31.53	V

**GFSK Ch0 3GHz-18GHz (Average)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
15496.2	43.09	23.5	19.59	V
15921.8	45.75	25.4	20.35	H
17018.3	48.03	28.1	19.93	H
17816.2	48.95	29.8	19.15	V

**Note: Only the worst case is written in the report.**

## ANNEX A. Accreditation Certificate



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