

## TEST REPORT

Test report no.: 1-1804/21-02-03

### Testing laboratory

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**Accredited Testing Laboratory:**

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2018-03) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)

The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate starting with the registration number: D-PL-12076-01.

### Applicant

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### Manufacturer

**Endress+Hauser SE+Co. KG**

Hauptstraße 1

79689 Maulburg / GERMANY

### Test standard/s

FCC - Title 47 CFR Part 22 FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 22 - Public mobile services

FCC - Title 47 CFR Part 24 FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 24 - Personal communications services

For further applied test standards please refer to section 3 of this test report.

### Test Item

**Kind of test item:** Level probing radar  
**Model name:** FWR30  
**FCC ID:** LCGFWR3XXEL  
**IC:** 2519A-XEL  
**Frequency:** GSM 850 MHz and GSM 1900 MHz  
**Technology tested:** GSM  
**Antenna:** Integrated antenna  
**Power supply:** 3.6 V DC by Li-SOCI2 battery  
**Temperature range:** -20°C to +60°C



This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

### Test report authorized:



Andreas Luckenbill  
Head of Department  
Radio Communications

### Test performed:



Marco Bertolino  
Lab Manager  
Radio Communications

## 1 Table of contents

|      |                                                             |    |
|------|-------------------------------------------------------------|----|
| 1    | Table of contents .....                                     | 2  |
| 2    | General information .....                                   | 3  |
| 2.1  | Notes and disclaimer .....                                  | 3  |
| 2.2  | Application details .....                                   | 3  |
| 2.3  | Test laboratories sub-contracted .....                      | 3  |
| 3    | Test standard/s, references and accreditations .....        | 4  |
| 4    | Reporting statements of conformity – decision rule .....    | 5  |
| 5    | Test environment .....                                      | 6  |
| 6    | Test item .....                                             | 6  |
| 6.1  | General description .....                                   | 6  |
| 6.2  | Additional information .....                                | 6  |
| 7    | Description of the test setup.....                          | 7  |
| 7.1  | Shielded semi anechoic chamber .....                        | 8  |
| 7.2  | Shielded fully anechoic chamber.....                        | 9  |
| 7.3  | Radiated measurements > 18 GHz.....                         | 10 |
| 8    | Sequence of testing .....                                   | 11 |
| 8.1  | Sequence of testing radiated spurious 9 kHz to 30 MHz ..... | 11 |
| 8.2  | Sequence of testing radiated spurious 30 MHz to 1 GHz ..... | 12 |
| 8.3  | Sequence of testing radiated spurious 1 GHz to 18 GHz ..... | 13 |
| 8.4  | Sequence of testing radiated spurious above 18 GHz .....    | 14 |
| 9    | Measurement uncertainty .....                               | 14 |
| 10   | Summary of measurement results.....                         | 15 |
| 10.1 | GSM 850 .....                                               | 15 |
| 10.2 | PCS 1900 .....                                              | 15 |
| 11   | Results GSM 850.....                                        | 16 |
| 11.1 | RF output power .....                                       | 16 |
| 11.2 | Spurious emissions radiated .....                           | 18 |
| 12   | Results PCS 1900.....                                       | 24 |
| 12.1 | RF output power .....                                       | 24 |
| 12.2 | Spurious emissions radiated .....                           | 26 |
| 13   | Observations.....                                           | 31 |
| 14   | Glossary .....                                              | 32 |
| 15   | Document history .....                                      | 33 |
| 16   | Accreditation Certificate – D-PL-12076-01-04 .....          | 33 |
| 17   | Accreditation Certificate – D-PL-12076-01-05 .....          | 34 |

## 2 General information

### 2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CTC advanced GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

### 2.2 Application details

Date of receipt of order: 2021-02-04

Date of receipt of test item: 2021-05-17

Start of test:\* 2021-05-19

End of test:\* 2021-05-21

Person(s) present during the test: -/-

\*Date of each measurement, if not shown in the plot, can be requested. Dates are stored in the measurement software.

### 2.3 Test laboratories sub-contracted

None

### 3 Test standard/s, references and accreditations

| Test standard              | Date         | Description                                                                                                                                              |
|----------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| FCC - Title 47 CFR Part 22 | -/-          | FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 22 - Public mobile services                                                           |
| FCC - Title 47 CFR Part 24 | -/-          | FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 24 - Personal communications services                                                 |
| RSS - 132 Issue 3          | January 2013 | Spectrum Management and Telecommunications Radio Standards Specification - Cellular Telephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz |
| RSS - 133 Issue 6          | January 2018 | Spectrum Management and Telecommunications Policy - Radio Standards Specifications, 2 GHz Personal Communication Services                                |

| Guidance                                   | Version | Description                                                                                                                                                         |
|--------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANSI C63.4-2014                            | -/-     | American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |
| ANSI C63.26-2015                           | -/-     | American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services                                                                   |
| Power Meas License Systems: KDB 971168 D01 | v03r01  | Measurement Guidance for Certification of Licensed Digital Transmitters                                                                                             |

| Accreditation    | Description                                                                                                                                                 |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D-PL-12076-01-04 | Telecommunication and EMC Canada<br><a href="https://www.dakks.de/as/ast/d/D-PL-12076-01-04e.pdf">https://www.dakks.de/as/ast/d/D-PL-12076-01-04e.pdf</a>   |
| D-PL-12076-01-05 | Telecommunication FCC requirements<br><a href="https://www.dakks.de/as/ast/d/D-PL-12076-01-05e.pdf">https://www.dakks.de/as/ast/d/D-PL-12076-01-05e.pdf</a> |

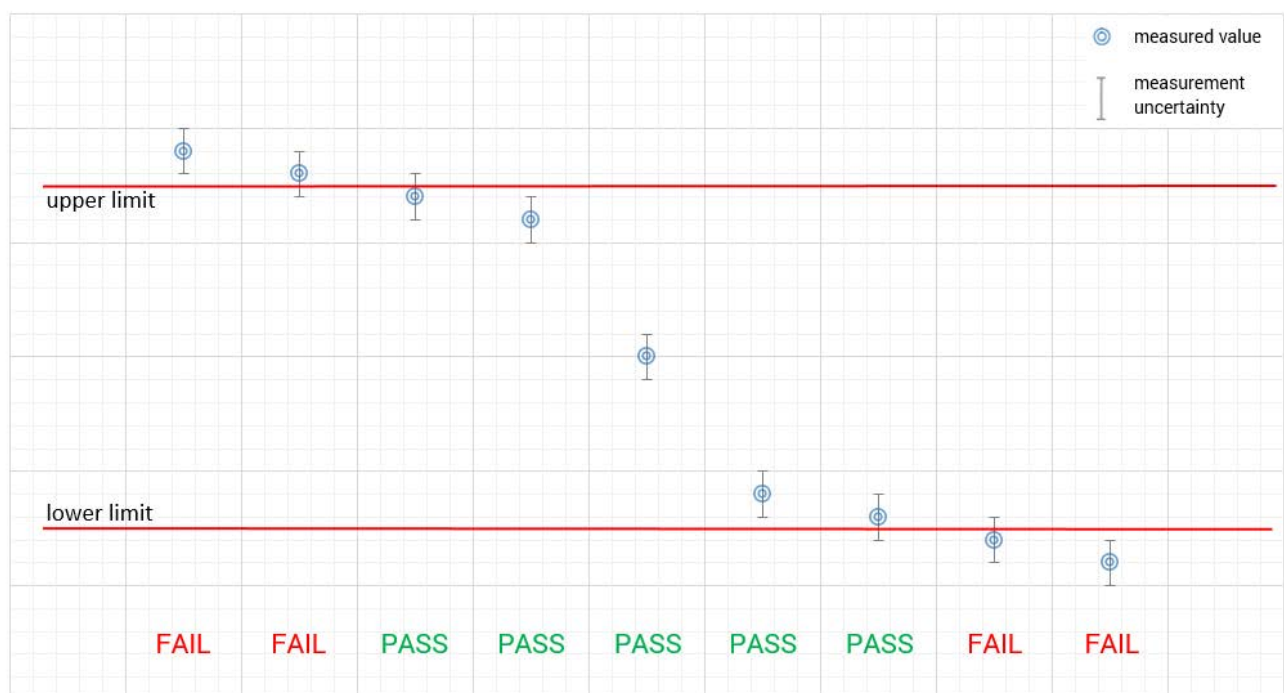


#### 4 Reporting statements of conformity – decision rule

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3.

The measurement uncertainty is mentioned in this test report, see chapter 9, but is not taken into account - neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 5% that the decision might be wrong."

measured value, measurement uncertainty, verdict



## 5 Test environment

|                             |                                     |                                                                                                                                          |
|-----------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature :               | $T_{nom}$<br>$T_{max}$<br>$T_{min}$ | +22 °C during room temperature tests<br>No tests under extreme conditions performed.<br>No tests under extreme conditions performed.     |
| Relative humidity content : |                                     | 44 %                                                                                                                                     |
| Barometric pressure :       |                                     | 1015 hpa                                                                                                                                 |
| Power supply :              | $V_{nom}$<br>$V_{max}$<br>$V_{min}$ | 3.6 V DC by Li-SOCl <sub>2</sub> battery<br>No tests under extreme conditions performed.<br>No tests under extreme conditions performed. |

## 6 Test item

### 6.1 General description

|                              |                                          |
|------------------------------|------------------------------------------|
| Kind of test item :          | Level probing radar                      |
| Model name :                 | FWR30                                    |
| HMN :                        | n/a                                      |
| PMN :                        | FWR30                                    |
| HVIN :                       | FWR30-C                                  |
| FVIN :                       | 01.00.01                                 |
| S/N serial number :          | FWR30GPS106                              |
| Hardware status :            | Dev.Rev.: 2                              |
| Software status :            | 01.00.01                                 |
| Firmware status :            | 01.00.01                                 |
| Frequency band :             | GSM 850 MHz and GSM 1900 MHz             |
| Type of radio transmission : | modulated carrier                        |
| Use of frequency spectrum :  |                                          |
| Type of modulation :         | GMSK / 8-PSK                             |
| Antenna :                    | Integrated antenna                       |
| Power supply :               | 3.6 V DC by Li-SOCl <sub>2</sub> battery |
| Temperature range :          | -20°C to +60°C                           |

### 6.2 Additional information

The content of the following annexes is defined in the QA. It may be that not all of the listed annexes are necessary for this report, thus some values in between may be missing.

Test setup and EUT photos are included in test report:

- 1-1804/21-02-01\_AnnexA
- 1-1804/21-02-01\_AnnexB
- 1-1804/21-02-01\_AnnexC

## 7 Description of the test setup

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, RF generating and signaling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

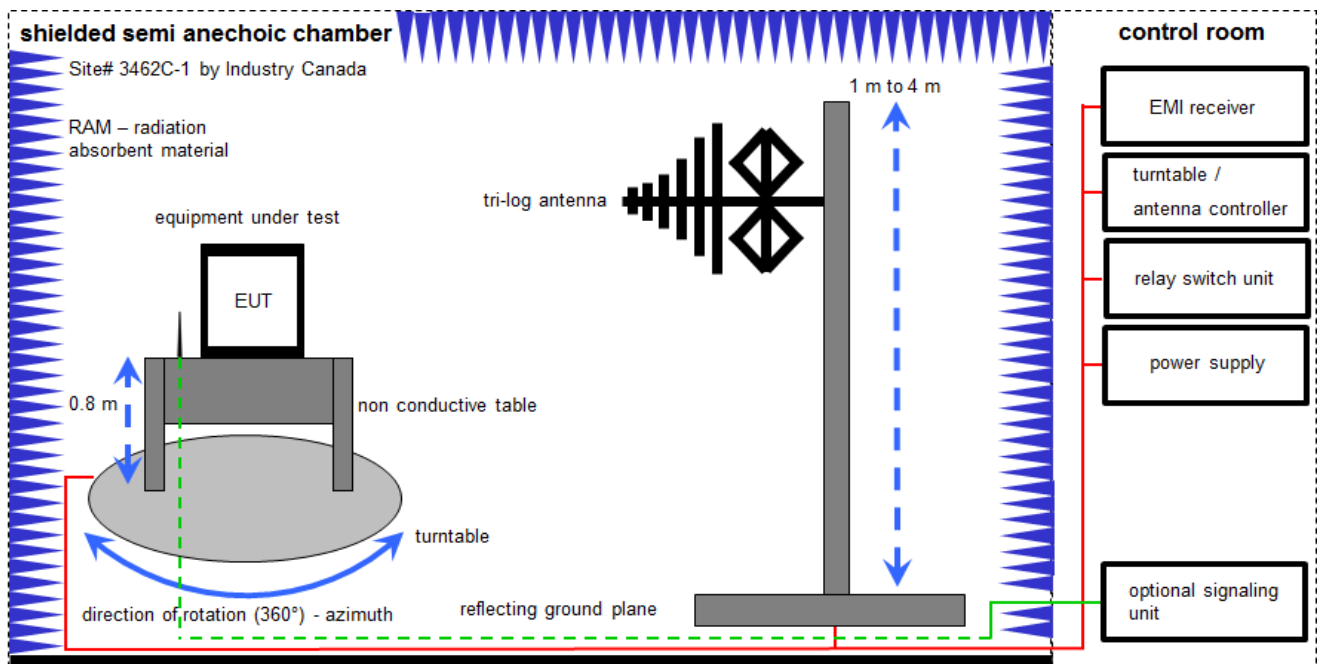
Each block diagram listed can contain several test setup configurations. All devices belonging to a test setup are identified with the same letter syntax. For example: Column Setup and all devices with an A.

### **Agenda:** Kind of Calibration

|      |                                            |     |                                                      |
|------|--------------------------------------------|-----|------------------------------------------------------|
| k    | calibration / calibrated                   | EK  | limited calibration                                  |
| ne   | not required (k, ev, izw, zw not required) | zw  | cyclical maintenance (external cyclical maintenance) |
| ev   | periodic self verification                 | izw | internal cyclical maintenance                        |
| Ve   | long-term stability recognized             | g   | blocked for accredited testing                       |
| vk!l | Attention: extended calibration interval   |     |                                                      |
| NK!  | Attention: not calibrated                  | *)  | next calibration ordered / currently in progress     |

## 7.1 Shielded semi anechoic chamber

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 30 MHz to 1 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are conform to specifications ANSI C63. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analyzers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.



Measurement distance: tri-log antenna 10 meter; EMC32 software version: 10.59.00

FS = UR + CL + AF

(FS-field strength; UR-voltage at the receiver; CL-loss of the cable; AF-antenna factor)

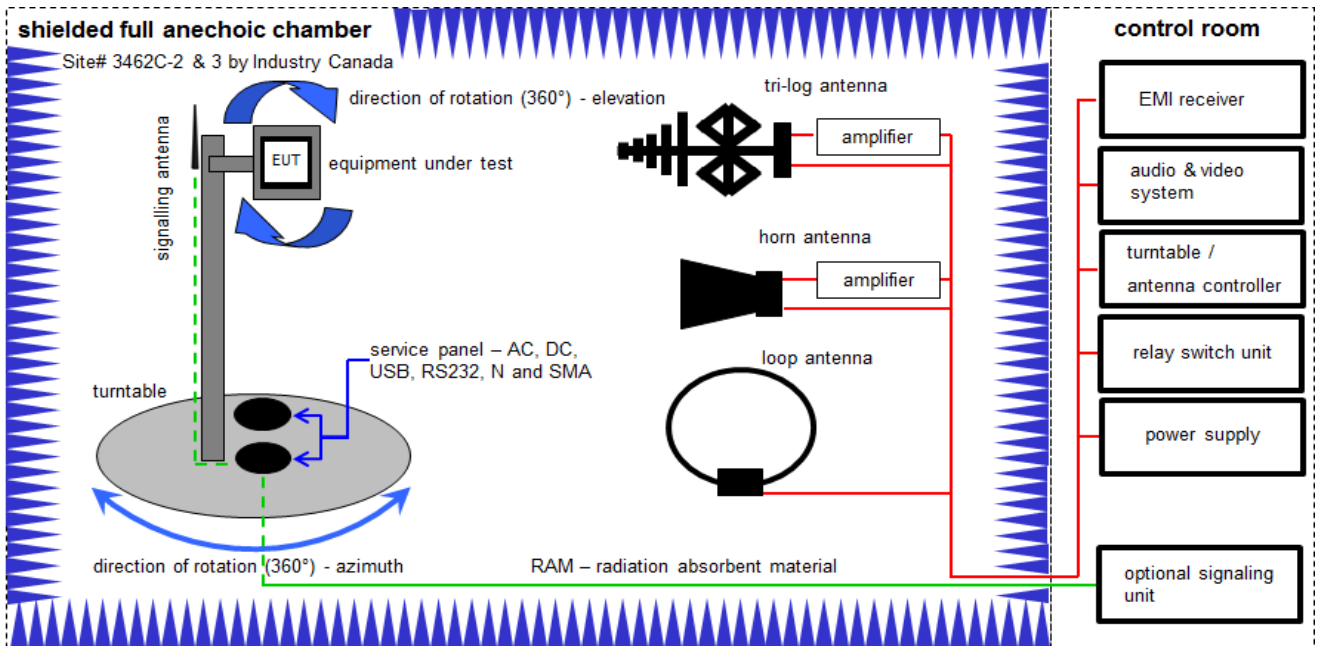
Example calculation:

FS [dBμV/m] = 12.35 [dBμV/m] + 1.90 [dB] + 16.80 [dB/m] = 31.05 [dBμV/m] (35.69 μV/m)

### Equipment table:

| No. | Lab / Item | Equipment                                    | Type         | Manufacturer                | Serial No. | INV. No.  | Kind of Calibration | Last Calibration | Next Calibration |
|-----|------------|----------------------------------------------|--------------|-----------------------------|------------|-----------|---------------------|------------------|------------------|
| 1   | A          | Switch-Unit                                  | 3488A        | HP                          | 2719A14505 | 300000368 | ev                  | -/-              | -/-              |
| 2   | A          | Semi anechoic chamber                        | 3000023      | MWB AG                      | -/-        | 300000551 | ne                  | -/-              | -/-              |
| 3   | A          | Antenna Tower                                | Model 2175   | ETS-Lindgren                | 64762      | 300003745 | izw                 | -/-              | -/-              |
| 4   | A          | Positioning Controller                       | Model 2090   | ETS-Lindgren                | 64672      | 300003746 | izw                 | -/-              | -/-              |
| 5   | A          | Turntable Interface-Box                      | Model 105637 | ETS-Lindgren                | 44583      | 300003747 | izw                 | -/-              | -/-              |
| 6   | A          | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz | VULB9163     | Schwarzbeck Mess-Elektronik | 318        | 300003696 | vIKI!               | 04.09.2019       | 03.09.2021       |
| 7   | A          | Turntable                                    | 2089-4.0     | EMCO                        | -/-        | 300004394 | ne                  | -/-              | -/-              |
| 8   | A          | PC                                           | TecLine      | F+W                         | -/-        | 300004388 | ne                  | -/-              | -/-              |
| 9   | A          | EMI Test Receiver                            | ESR3         | Rohde & Schwarz             | 102587     | 300005771 | k                   | 10.12.2020       | 09.06.2022       |
| 10  | A          | Universal Radio Communication Tester         | CMU200       | R&S                         | 103992     | 300003231 | vIKI!               | 10.12.2020       | 09.12.2022       |

## 7.2 Shielded fully anechoic chamber



Measurement distance: tri-log antenna and horn antenna 3 meter; loop antenna 3 meter / 1 meter

$$OP = AV + D - G + CA$$

(OP-radiated output power; AV-analyzer value; D-free field attenuation of measurement distance; G-antenna gain+amplifier gain; CA-loss signal path)

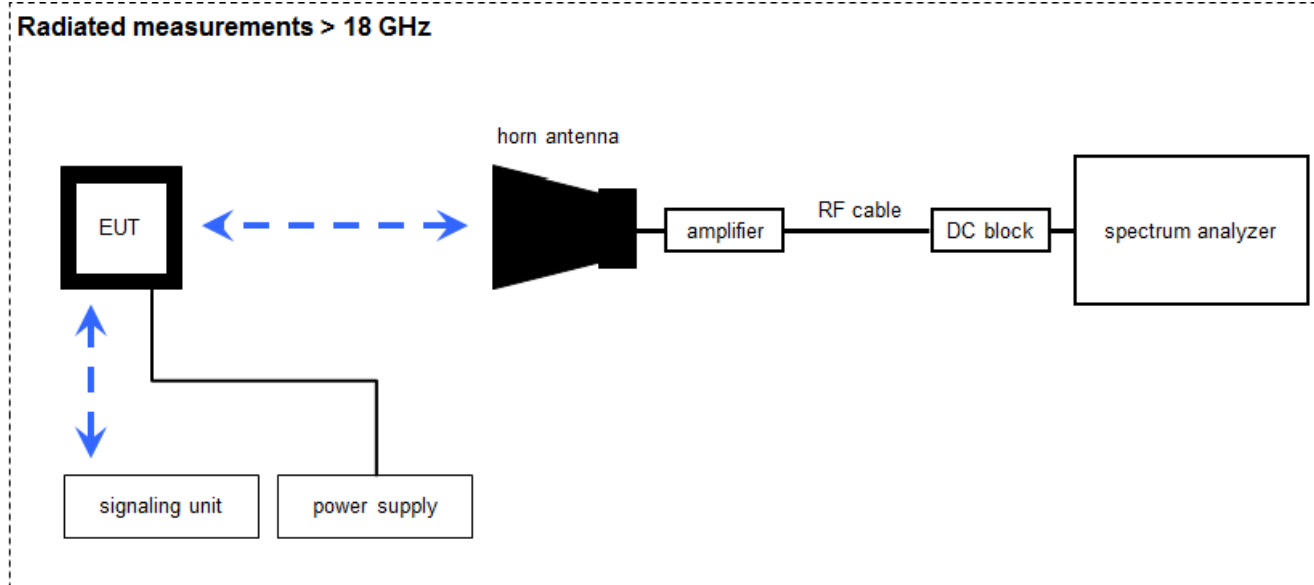
### Example calculation:

$$OP \text{ [dBm]} = -65.0 \text{ [dBm]} + 50 \text{ [dB]} - 20 \text{ [dBi]} + 5 \text{ [dB]} = -30 \text{ [dBm]} (1 \mu\text{W})$$

### Equipment table:

| No. | Lab / Item | Equipment                                      | Type                                  | Manufacturer         | Serial No.      | INV. No.  | Kind of Calibration | Last Calibration | Next Calibration |
|-----|------------|------------------------------------------------|---------------------------------------|----------------------|-----------------|-----------|---------------------|------------------|------------------|
| 1   | A          | Active Loop Antenna 9 kHz to 30 MHz            | 6502                                  | EMCO                 | 2210            | 300001015 | vKI!                | 13.06.2019       | 12.06.2021       |
| 2   | B          | Highpass Filter                                | WHK1.1/15G-10SS                       | Wainwright           | 37              | 400000148 | ne                  | -/-              | -/-              |
| 3   | B          | Band Reject Filter                             | WRCG1850/1910-1835/1925-40/8SS        | Wainwright           | 23              | 400000149 | ne                  | -/-              | -/-              |
| 4   | B          | Highpass Filter                                | WHKX7.0/18G-8SS                       | Wainwright           | 18              | 300003789 | ne                  | -/-              | -/-              |
| 5   | B          | Band Reject Filter                             | WRCG824/849-810/863-60/9SS            | Wainwright           | 6               | 300003791 | ne                  | -/-              | -/-              |
| 6   | B          | Broadband Amplifier 0.5-18 GHz                 | CBLU5184540                           | CERNEX               | 22051           | 300004483 | ev                  | -/-              | -/-              |
| 7   | A, B       | 4U RF Switch Platform                          | L4491A                                | Agilent Technologies | MY50000032      | 300004510 | ne                  | -/-              | -/-              |
| 8   | A, B       | Computer                                       | Intel Core i3 3220/3,3 GHz, Prozessor | -/-                  | 2V2403033A 5421 | 300004591 | ne                  | -/-              | -/-              |
| 9   | B          | Highpass Filter                                | WHKX2.6/18G-10SS                      | Wainwright           | 12              | 300004651 | ne                  | -/-              | -/-              |
| 10  | A, B       | NEXIO EMV-Software                             | BAT EMC V3.20.0.17                    | EMCO                 | -/-             | 300004682 | ne                  | -/-              | -/-              |
| 11  | A, B       | Anechoic chamber                               | -/-                                   | TDK                  | -/-             | 300003726 | ne                  | -/-              | -/-              |
| 12  | A, B       | EMI Test Receiver 9kHz-26,5GHz                 | ESR26                                 | Rohde & Schwarz      | 101376          | 300005063 | k                   | 09.12.2020       | 08.12.2021       |
| 13  | A, B       | Double-Ridged Waveguide Horn Antenna 1-18.0GHz | 3115                                  | EMCO                 | 8812-3089       | 300000307 | vKI!                | 28.08.2019       | 27.08.2021       |
| 14  | A, B       | Universal Radio Communication Tester           | CMU200                                | R&S                  | 103992          | 300003231 | vKI!                | 10.12.2020       | 09.12.2022       |

### 7.3 Radiated measurements > 18 GHz



Measurement distance: horn antenna 50 cm

$$OP = AV + D - G + CA$$

(OP-radiated output power; AV-analyzer value; D-free field attenuation of measurement distance;  
G-antenna gain+amplifier gain; CA-loss signal path)

Example calculation:

$$OP \text{ [dBm]} = -59.0 \text{ [dBm]} + 44.0 \text{ [dB]} - 20.0 \text{ [dBi]} + 5.0 \text{ [dB]} = -30 \text{ [dBm]} \text{ (1 } \mu\text{W)}$$

**Equipment table:**

| No. | Lab / Item | Equipment                                | Type               | Manufacturer    | Serial No.       | INV. No.  | Kind of Calibration | Last Calibration | Next Calibration |
|-----|------------|------------------------------------------|--------------------|-----------------|------------------|-----------|---------------------|------------------|------------------|
| 1   | A          | Microwave System Amplifier, 0.5-26.5 GHz | 83017A             | HP              | 00419            | 300002268 | ev                  | -/-              | -/-              |
| 2   | A          | Std. Gain Horn Antenna 18.0-26.5 GHz     | 638                | Narda           | 01096            | 300000486 | vKI!                | 21.01.2020       | 20.01.2022       |
| 3   | A          | Signal Analyzer 40 GHz                   | FSV40              | Rohde & Schwarz | 101042           | 300004517 | k                   | 07.12.2020       | 06.12.2021       |
| 4   | A          | RF-Cable                                 | ST18/SMAm/SMAm /48 | Huber & Suhner  | Batch no. 600918 | 400001182 | ev                  | -/-              | -/-              |
| 5   | A          | DC-Blocker 0.1-40 GHz                    | 8141A              | Inmet           | -/-              | 400001185 | ev                  | -/-              | -/-              |
| 6   | A          | Universal Radio Communication Tester     | CMU200             | R&S             | 103992           | 300003231 | vKI!                | 10.12.2020       | 09.12.2022       |

## 8 Sequence of testing

### 8.1 Sequence of testing radiated spurious 9 kHz to 30 MHz

#### Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- If the EUT is a tabletop system, it is placed on a table with 0.8 m height.
- If the EUT is a floor standing device, it is placed directly on the turn table.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- Measurement distance is 3 m (see ANSI C 63.4) – see test details.
- EUT is set into operation.

#### Premeasurement\*

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 1 m.
- At each turntable position the analyzer sweeps with positive-peak detector to find the maximum of all emissions.

#### Final measurement

- Identified emissions during the pre-measurement are maximized by the software by rotating the turntable from 0° to 360°.
- Loop antenna is rotated about its vertical axis for maximum response at each azimuth about the EUT. (For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT)
- The final measurement is done in the position (turntable and elevation) causing the highest emissions with quasi-peak (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. A plot with the graph of the premeasurement and the limit is stored.

\*Note: The sequence will be repeated three times with different EUT orientations.

## 8.2 Sequence of testing radiated spurious 30 MHz to 1 GHz

### Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- Measurement distance is 10 m or 3 m (see ANSI C 63.4) – see test details.
- EUT is set into operation.

### Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 m to 3 m.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

### Final measurement

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4.
- Based on antenna and turntable positions at which the peak values are measured the software maximize the peaks by changing turntable position  $\pm 45^\circ$  and antenna height between 1 and 4 m.
- The final measurement is done with quasi-peak detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is stored.

### 8.3 Sequence of testing radiated spurious 1 GHz to 18 GHz

#### Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- If the EUT is a tabletop system, a 2-axis positioner with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed directly on the turn table.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- Measurement distance is 3 m (see ANSI C 63.4) – see test details.
- EUT is set into operation.

#### Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height is 1.5 m.
- At each turntable position and antenna polarization the analyzer sweeps with positive peak detector to find the maximum of all emissions.

#### Final measurement

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4.
- Based on antenna and turntable positions at which the peak values are measured the software maximizes the peaks by rotating the turntable from 0° to 360°. This measurement is repeated for different EUT-table positions (0° to 150° in 30°-steps) and for both antenna polarizations.
- The final measurement is done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and RMS detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is stored.

## 8.4 Sequence of testing radiated spurious above 18 GHz

### Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet.
- The measurement distance is as appropriate (e.g. 0.5 m).
- The EUT is set into operation.

### Premeasurement

- The test antenna is handheld and moved carefully over the EUT to cover the EUT's whole sphere and different polarizations of the antenna.

### Final measurement

- The final measurement is performed at the position and antenna orientation causing the highest emissions with Peak and RMS detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement and the limit is stored.

## 9 Measurement uncertainty

| Measurement uncertainty                        |             |
|------------------------------------------------|-------------|
| Test case                                      | Uncertainty |
| RF output power conducted                      | ± 1 dB      |
| RF output power radiated                       | ± 3 dB      |
| Frequency stability                            | ± 20 Hz     |
| Spurious emissions radiated below 30 MHz       | ± 3 dB      |
| Spurious emissions radiated 30 MHz to 1 GHz    | ± 3 dB      |
| Spurious emissions radiated 1 GHz to 12.75 GHz | ± 3.7 dB    |
| Spurious emissions radiated above 12.75 GHz    | ± 4.5 dB    |
| Spurious emissions conducted                   | ± 3 dB      |
| Block edge compliance                          | ± 3 dB      |
| Occupied bandwidth                             | ± RBW       |

## 10 Summary of measurement results

|                                     |                                                                                                                          |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/>            | No deviations from the technical specifications were ascertained                                                         |
| <input type="checkbox"/>            | There were deviations from the technical specifications ascertained                                                      |
| <input checked="" type="checkbox"/> | This test report is only a partial test report.<br>The content and verdict of the performed test cases are listed below. |

| TC identifier | Description                     | verdict    | date       | Remark                              |
|---------------|---------------------------------|------------|------------|-------------------------------------|
| RF-Testing    | CFR Part 22, 24<br>RSS 132, 133 | See table! | 2021-08-31 | Tests according<br>customer demand. |

### 10.1 GSM 850

| Test Case                    | temperature conditions | power source voltages | C                                   | NC                       | NA                       | NP                                  | Remark |
|------------------------------|------------------------|-----------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------|
| RF Output Power              | Nominal                | Nominal               | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | -/-    |
| Frequency Stability          | Nominal                | Nominal               | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | -/-    |
| Spurious Emissions Radiated  | Nominal                | Nominal               | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | -/-    |
| Spurious Emissions Conducted | Nominal                | Nominal               | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | -/-    |
| Block Edge Compliance        | Nominal                | Nominal               | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | -/-    |
| Occupied Bandwidth           | Nominal                | Nominal               | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | -/-    |

**Note:** C = Compliant; NC = Not compliant; NA = Not applicable; NP = Not performed

### 10.2 PCS 1900

| Test Case                    | temperature conditions | power source voltages | C                                   | NC                       | NA                       | NP                                  | Remark |
|------------------------------|------------------------|-----------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------|
| RF Output Power              | Nominal                | Nominal               | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | -/-    |
| Frequency Stability          | Nominal                | Nominal               | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | -/-    |
| Spurious Emissions Radiated  | Nominal                | Nominal               | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | -/-    |
| Spurious Emissions Conducted | Nominal                | Nominal               | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | -/-    |
| Block Edge Compliance        | Nominal                | Nominal               | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | -/-    |
| Occupied Bandwidth           | Nominal                | Nominal               | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | -/-    |

**Note:** C = Compliant; NC = Not compliant; NA = Not applicable; NP = Not performed

## 11 Results GSM 850

### 11.1 RF output power

#### Description:

This paragraph contains average power, peak output power, PAPR and ERP measurements for the mobile station.

The plots in this test report represents only an example of the measurements. All plots of this chapter are available on request.

The red line in the measurements indicates the ideal Gaussian distribution for the measured amplitude range.

#### Measurement:

The mobile was set up for the maximum output power with pseudo random data modulation.

To determine the Peak-To-Average Power Ratio (PAPR) the measurement was performed with the Power Complementary Cumulative Distribution Function (CCDF).

| Measurement parameters   |                              |
|--------------------------|------------------------------|
| Detector:                | RMS                          |
| Sweep time:              | 2s                           |
| Video bandwidth:         | Depends on Channel Bandwidth |
| Resolution bandwidth:    | Depends on Channel Bandwidth |
| Span:                    | Zero Span                    |
| Trace mode:              | Max Hold                     |
| Test setup:              | Chapter 7.1 setup A          |
| Measurement uncertainty: | Chapter 9                    |

#### Limits:

| FCC                                                                                                                                                               | ISED |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| +38.45 dBm<br>In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB. |      |

**Results:**

| Output Power (radiated) GMSK mode |                                  |
|-----------------------------------|----------------------------------|
| Frequency (MHz)                   | Average Output Power (dBm) - ERP |
| 824.2                             | 29.15                            |
| 836.4                             | 29.26                            |
| 848.8                             | 29.44                            |

| Output Power (radiated) 8-PSK mode |                                  |
|------------------------------------|----------------------------------|
| Frequency (MHz)                    | Average Output Power (dBm) - ERP |
| 824.2                              | 29.59                            |
| 836.4                              | 29.52                            |
| 848.8                              | 29.27                            |

## 11.2 Spurious emissions radiated

### Description:

The following steps outline the procedure used to measure the radiated emissions from the mobile station. The site is constructed in accordance with ANSI C63.4:2014 requirements and is recognized by the FCC to be in compliance for a 3 and a 10 meter site. 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 848.8 MHz. Measurements made up to 9 GHz. The resolution bandwidth is set as outlined in Part 22.917. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the GSM-850 band.

### Measurement:

| Measurement parameters   |                                                         |
|--------------------------|---------------------------------------------------------|
| Detector:                | Peak                                                    |
| Sweep time:              | 2 s                                                     |
| Resolution bandwidth:    | 100 kHz                                                 |
| Video bandwidth:         | 300 kHz                                                 |
| Span:                    | 100 MHz Steps                                           |
| Trace mode:              | Max Hold                                                |
| Used equipment:          | See chapter 7.1 – setup A, 7.2 – setup A, 7.2 – setup B |
| Measurement uncertainty: | See chapter 9                                           |

### Limits:

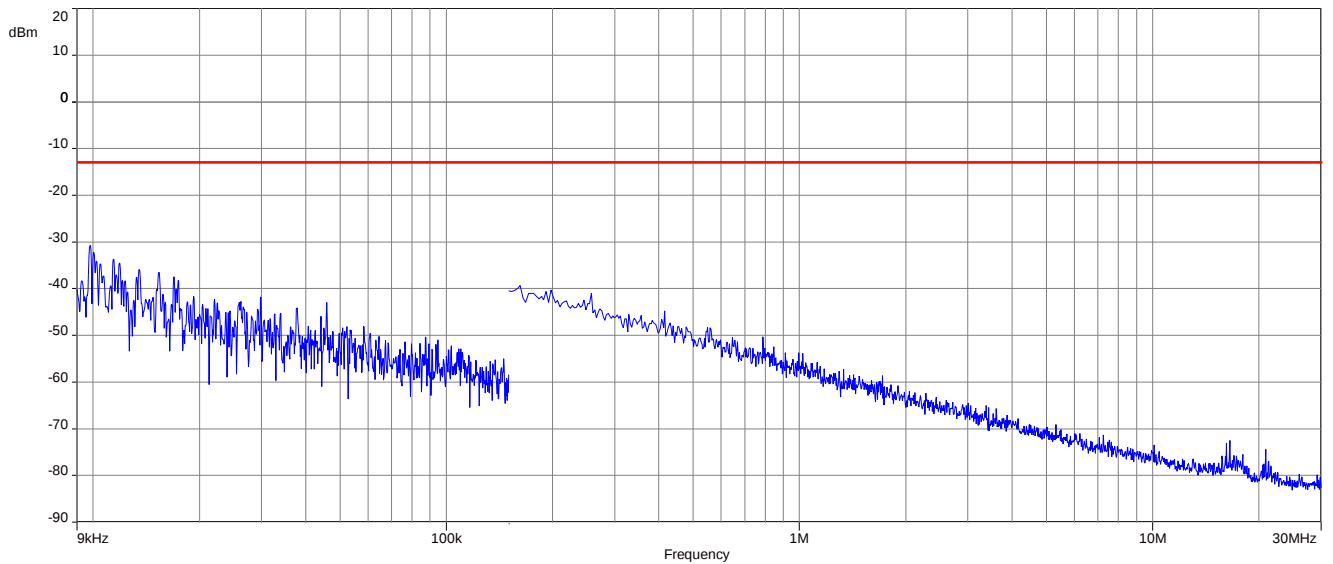
| FCC                                                      | ISED |
|----------------------------------------------------------|------|
| Attenuation $\geq 43 + 10\log(P)$<br>(P, Power in Watts) |      |
| -13 dBm                                                  |      |

## Results:

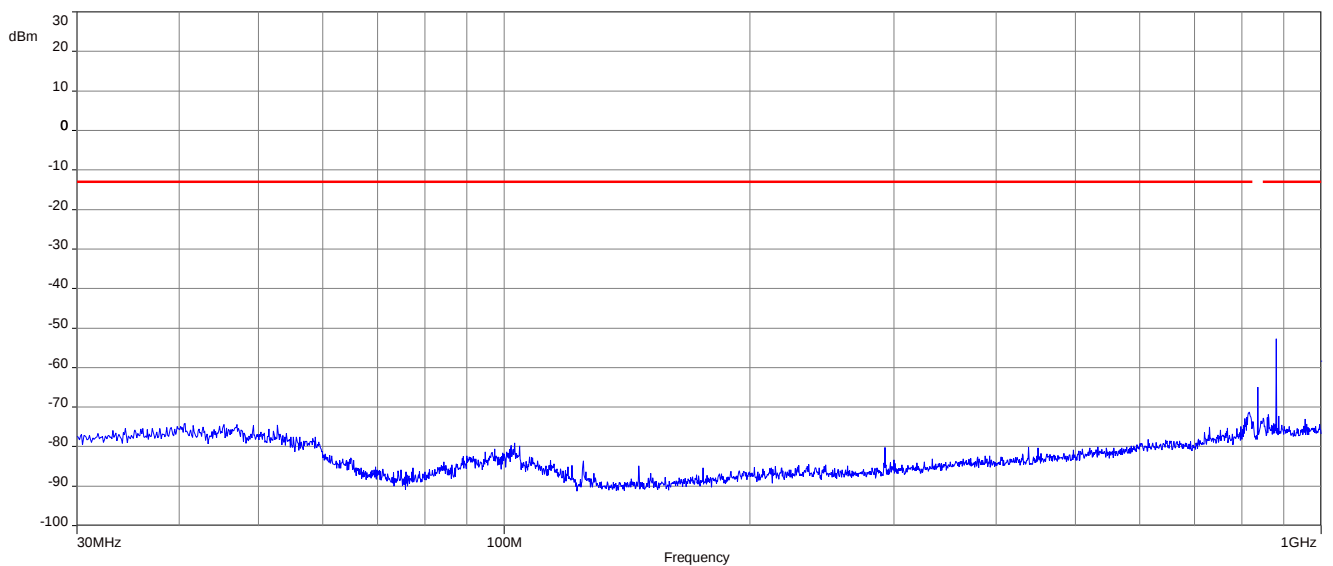
| Spurious emission level (dBm) |                        |                |          |                        |                         |          |                        |                |
|-------------------------------|------------------------|----------------|----------|------------------------|-------------------------|----------|------------------------|----------------|
| Harmonic                      | Ch. 128<br>Freq. (MHz) | Level<br>[dBm] | Harmonic | Ch. 189<br>Freq. (MHz) | Level<br>[dBm]          | Harmonic | Ch. 251<br>Freq. (MHz) | Level<br>[dBm] |
| 2                             | 1648.4                 | -/-            | 2        | 1672.8                 | >20dB<br>below<br>limit | 2        | 1697.6                 | -/-            |
| 3                             | 2472.6                 | -/-            | 3        | 2509.2                 |                         | 3        | 2546.4                 | -/-            |
| 4                             | 3296.8                 | -/-            | 4        | 3345.6                 |                         | 4        | 3395.2                 | -/-            |
| 5                             | 4121.0                 | -/-            | 5        | 4182.0                 |                         | 5        | 4244.0                 | -/-            |
| 6                             | 4945.2                 | -/-            | 6        | 5018.4                 |                         | 6        | 5092.8                 | -/-            |
| 7                             | 5769.4                 | -/-            | 7        | 5854.8                 |                         | 7        | 5941.6                 | -/-            |
| 8                             | 6593.6                 | -/-            | 8        | 6691.2                 |                         | 8        | 6790.4                 | -/-            |
| 9                             | 7417.8                 | -/-            | 9        | 7527.6                 |                         | 9        | 7639.2                 | -/-            |
| 10                            | 8242.0                 | -/-            | 10       | 8364.0                 |                         | 10       | 8488.0                 | -/-            |

**Plots:** GMSK

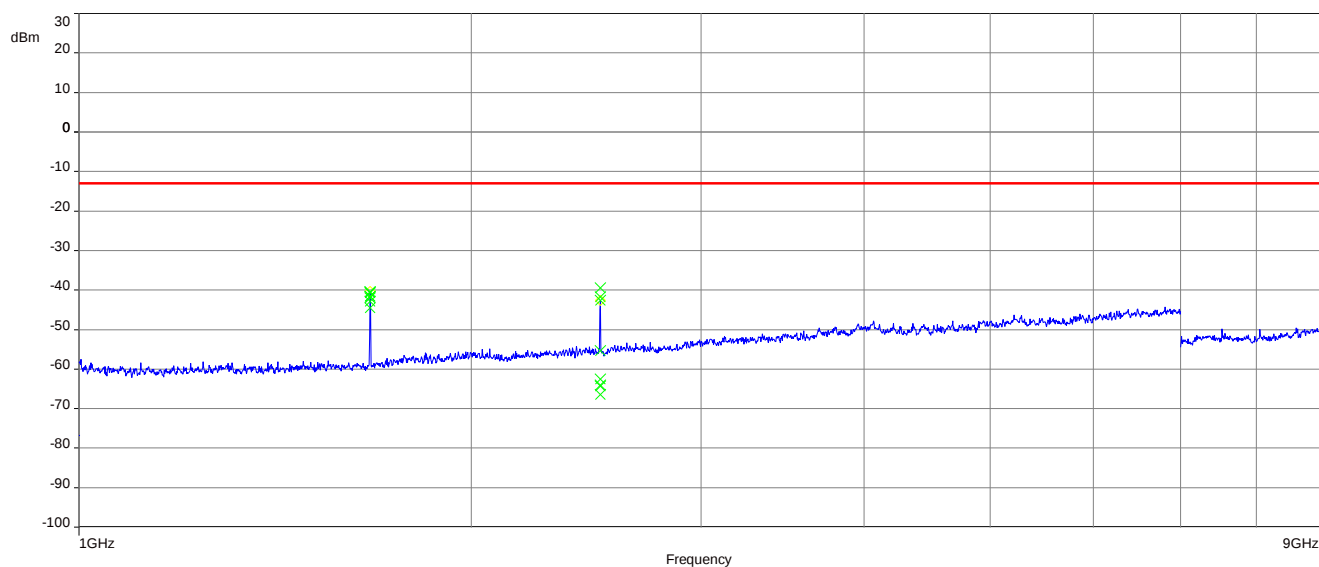
**Plot 1:** Channel 189 (Traffic mode up to 30 MHz)



**Plot 2:** Channel 189 (30 MHz – 1 GHz)

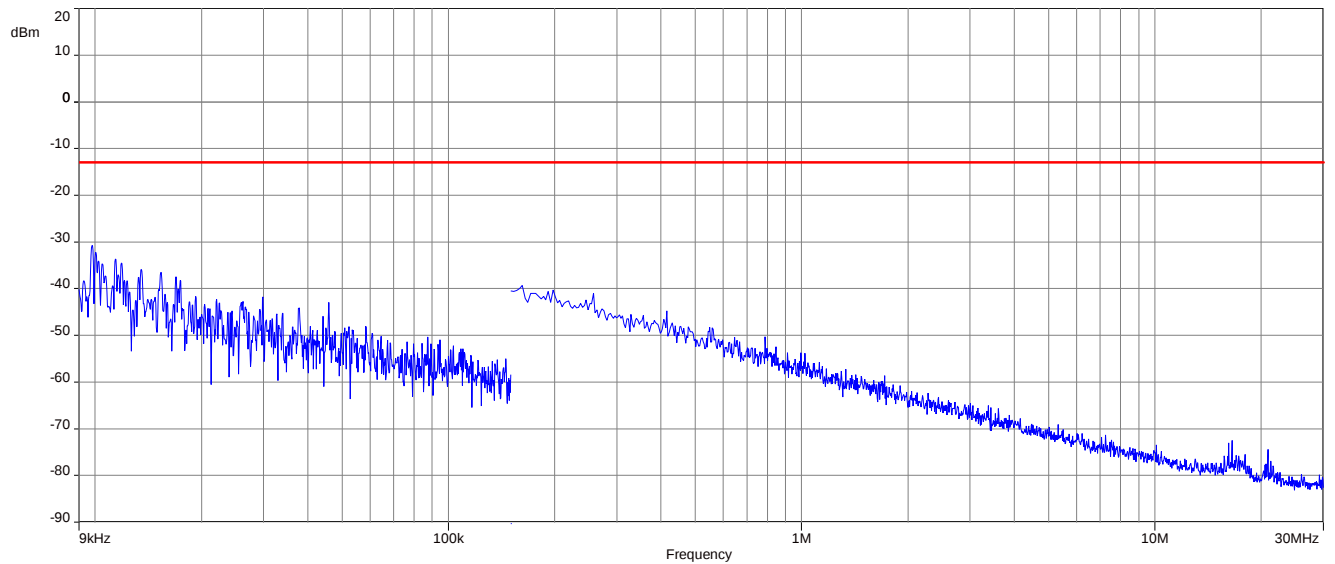


**Plot 3:** Channel 189 (1 GHz – 9 GHz)

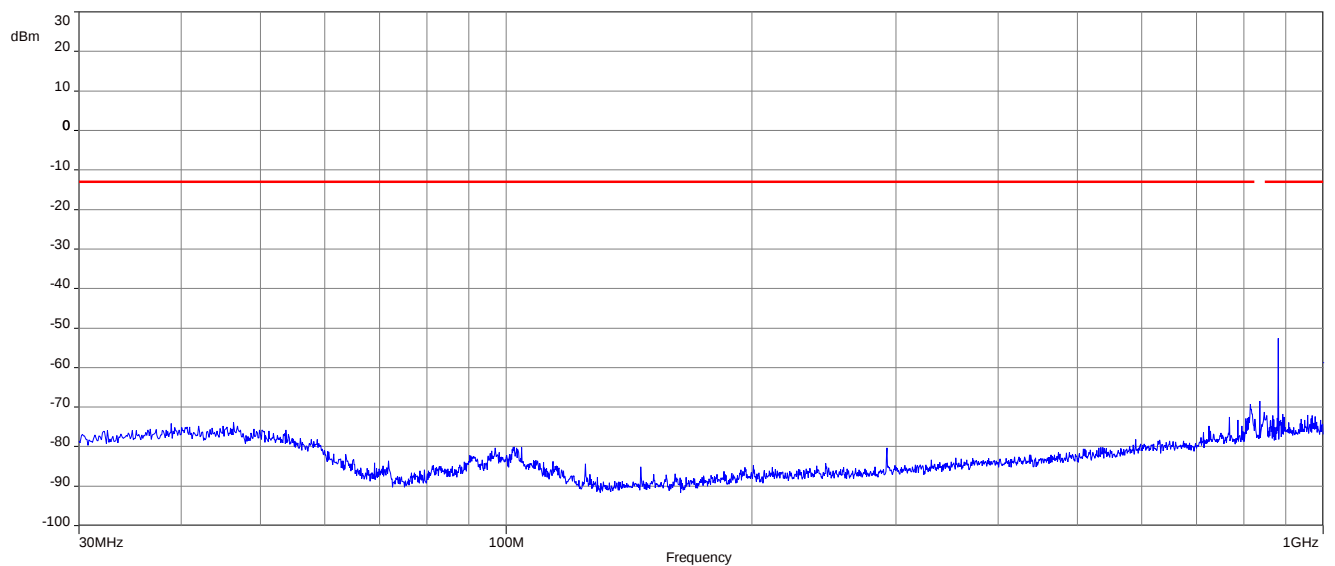


**Plots:** 8 PSK

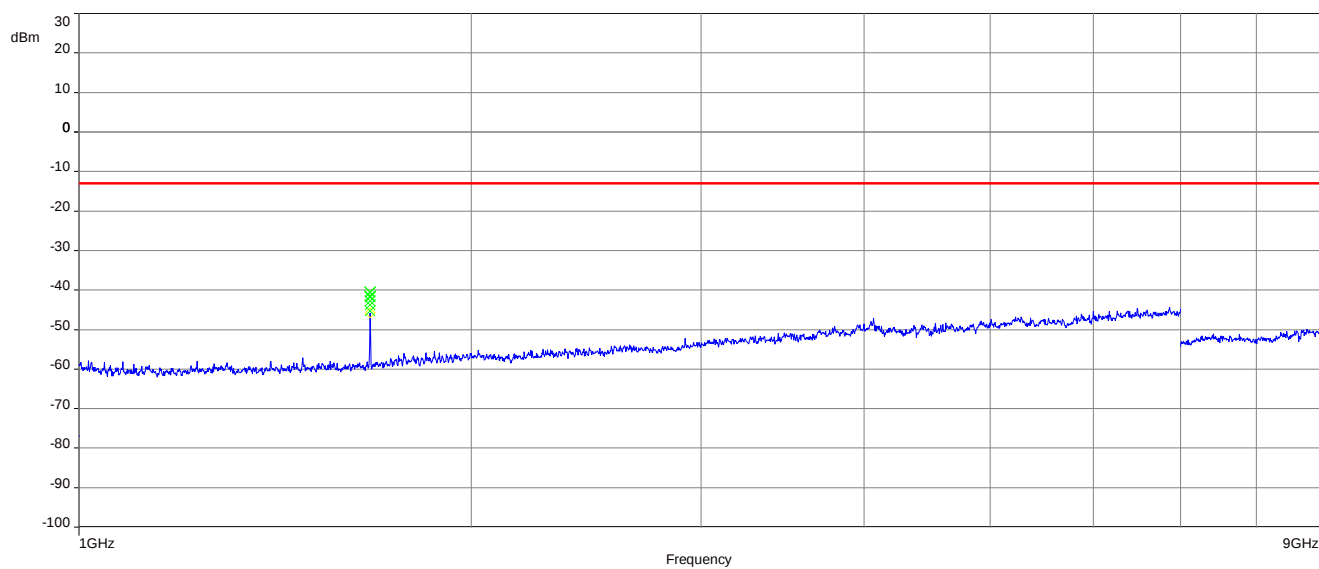
**Plot 1:** Channel 189 (Traffic mode up to 30 MHz)



**Plot 2:** Channel 189 (30 MHz – 1 GHz)



**Plot 3:** Channel 189 (1 GHz – 9 GHz)



## 12 Results PCS 1900

### 12.1 RF output power

#### Description:

This paragraph contains average power, peak output power, PAPR and ERP measurements for the mobile station.

The plots in this test report represents only an example of the measurements. All plots of this chapter are available on request.

The red line in the measurements indicates the ideal Gaussian distribution for the measured amplitude range.

#### Measurement:

The mobile was set up for the maximum output power with pseudo random data modulation.

To determine the Peak-To-Average Power Ratio (PAPR) the measurement was performed with the Power Complementary Cumulative Distribution Function (CCDF).

| Measurement parameters   |                                      |
|--------------------------|--------------------------------------|
| Detector:                | Sample                               |
| AQT:                     | See plot                             |
| Resolution bandwidth:    | 1 MHz                                |
| Used equipment:          | See chapter 7.2 – setup B (radiated) |
| Measurement uncertainty: | See chapter 9                        |

#### Limits:

| FCC                                                                                                                                                               | ISED |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| +33.00 dBm<br>In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB. |      |

**Results:**

| Output Power (radiated) GMSK mode |                                   |
|-----------------------------------|-----------------------------------|
| Frequency (MHz)                   | Average Output Power (dBm) - EIRP |
| 1850.2                            | 26.90                             |
| 1880.0                            | 28.26                             |
| 1909.8                            | 28.51                             |

| Output Power (radiated) 8-PSK mode |                                   |
|------------------------------------|-----------------------------------|
| Frequency (MHz)                    | Average Output Power (dBm) - EIRP |
| 1850.2                             | 27.27                             |
| 1880.0                             | 28.41                             |
| 1909.8                             | 28.76                             |

## 12.2 Spurious emissions radiated

### Description:

The following steps outline the procedure used to measure the radiated emissions from the mobile station. The site is constructed in accordance with ANSI C63.4:2014 requirements and is recognized by the FCC to be in compliance for a 3 and a 10 meter site. 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. Measurement made up to 26 GHz. The resolution bandwidth is set as outlined in Part 24.238. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the PCS1900 band.

### Measurement:

| Measurement parameters   |                                                             |
|--------------------------|-------------------------------------------------------------|
| Detector:                | Peak                                                        |
| Sweep time:              | 2 sec.                                                      |
| Resolution bandwidth:    | 1 MHz                                                       |
| Video bandwidth:         | 3 MHz                                                       |
| Span:                    | 100 MHz Steps                                               |
| Trace mode:              | Max Hold                                                    |
| Used equipment:          | See chapter 7.1 - setup A & 7.2 – setup A/B & 7.3 – setup B |
| Measurement uncertainty: | See chapter 9                                               |

### Limits:

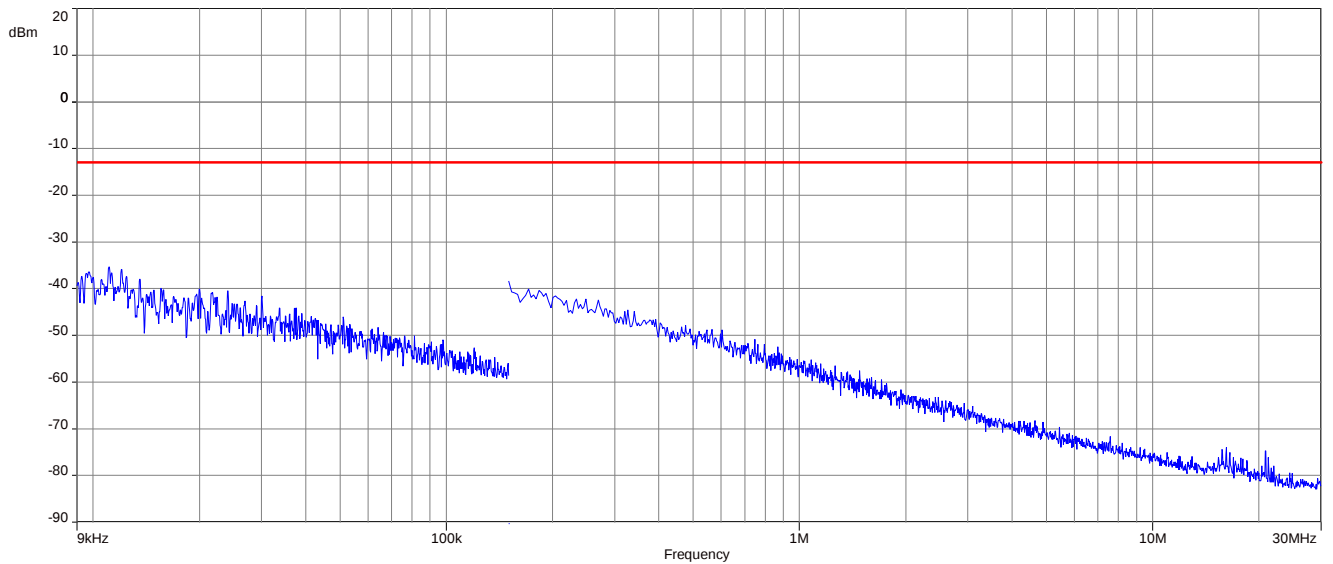
| FCC                                                      | ISED |
|----------------------------------------------------------|------|
| Attenuation $\geq 43 + 10\log(P)$<br>(P, Power in Watts) |      |
| -13 dBm                                                  |      |

**Results:**

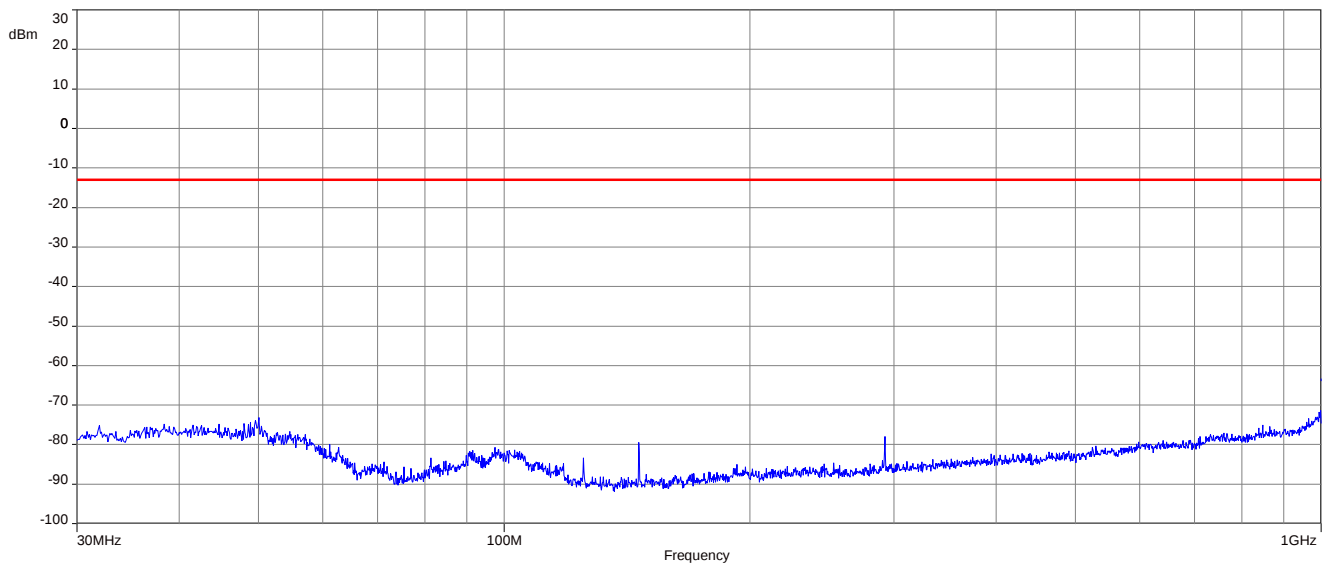
| Spurious emission level (dBm) |                        |                |          |                        |                         |          |                        |                |
|-------------------------------|------------------------|----------------|----------|------------------------|-------------------------|----------|------------------------|----------------|
| Harmonic                      | Ch. 512<br>Freq. (MHz) | Level<br>[dBm] | Harmonic | Ch. 661<br>Freq. (MHz) | Level<br>[dBm]          | Harmonic | Ch. 810<br>Freq. (MHz) | Level<br>[dBm] |
| 2                             | 3700.4                 | -/-            | 2        | 3760.0                 | >20dB<br>below<br>limit | 2        | 3819.6                 | -/-            |
| 3                             | 5550.6                 | -/-            | 3        | 5640.0                 |                         | 3        | 5729.4                 | -/-            |
| 4                             | 7400.8                 | -/-            | 4        | 7520.0                 |                         | 4        | 7639.2                 | -/-            |
| 5                             | 9251.0                 | -/-            | 5        | 9400.0                 |                         | 5        | 9549.0                 | -/-            |
| 6                             | 11101.2                | -/-            | 6        | 11280.0                |                         | 6        | 11458.8                | -/-            |
| 7                             | 12951.4                | -/-            | 7        | 13160.0                |                         | 7        | 13368.6                | -/-            |
| 8                             | 14801.6                | -/-            | 8        | 15040.0                |                         | 8        | 15278.4                | -/-            |
| 9                             | 16651.8                | -/-            | 9        | 16920.0                |                         | 9        | 17188.2                | -/-            |
| 10                            | 18502.0                | -/-            | 10       | 18800.0                |                         | 10       | 19098.0                | -/-            |

**Plots:** GMSK

**Plot 1:** Channel 661 (Traffic mode up to 30 MHz)



**Plot 2:** Channel 661 (30 MHz – 1 GHz)



**Spectrum**

Ref Level 10.00 dBm Offset 4.00 dB RBW 1 MHz  
 Att 20 dB SWT 32.1 ms VBW 3 MHz Mode Auto Sweep

1Pk Max  
 Limit Check  
 Line FCC\_22\_24\_27  
 PASS  
 PASS  
 M1[1] -47.79 dBm  
 18.2514609 GHz

0 dBm  
 -10 dBm  
 -20 dBm  
 -30 dBm  
 -40 dBm  
 -50 dBm  
 -60 dBm  
 -70 dBm  
 -80 dBm

FCC\_22\_24\_27  
 M1

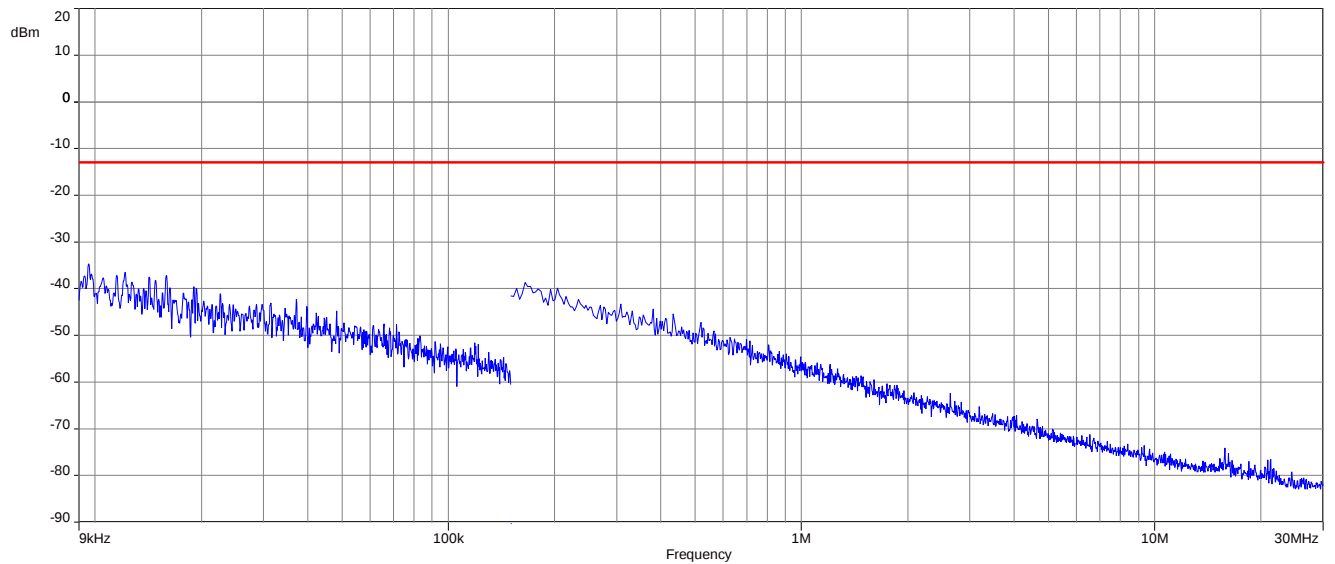
Start 18.0 GHz 32001 pts Stop 20.0 GHz

Measuring... 21.05.2021 10:10:57

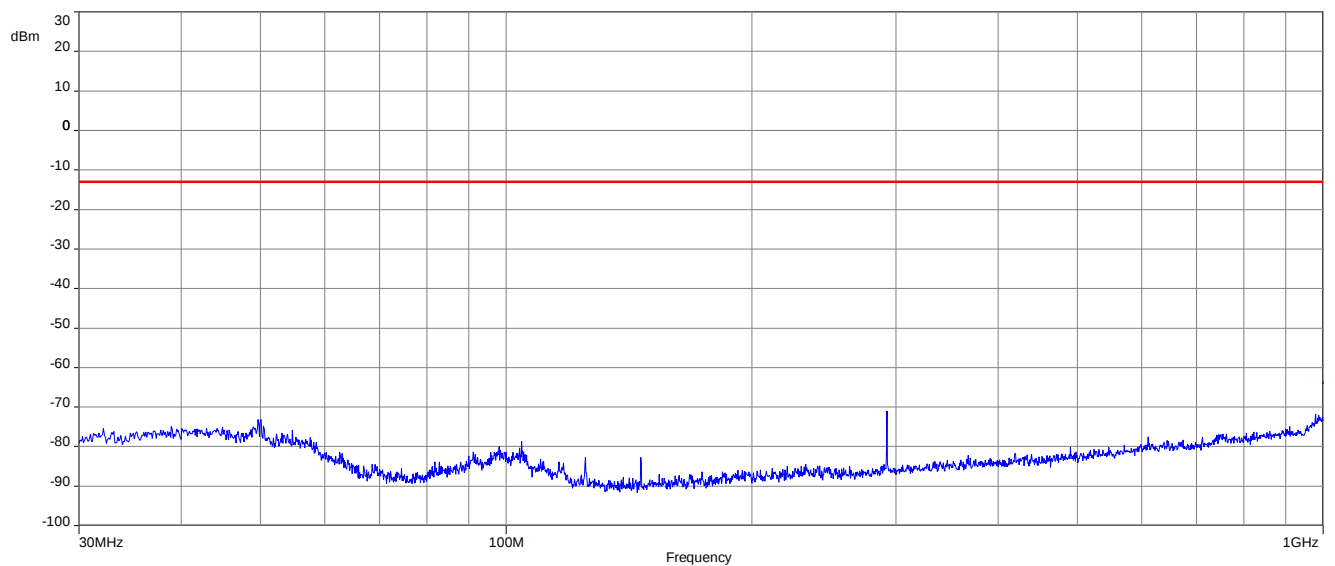
Date: 21.MAY.2021 10:10:57

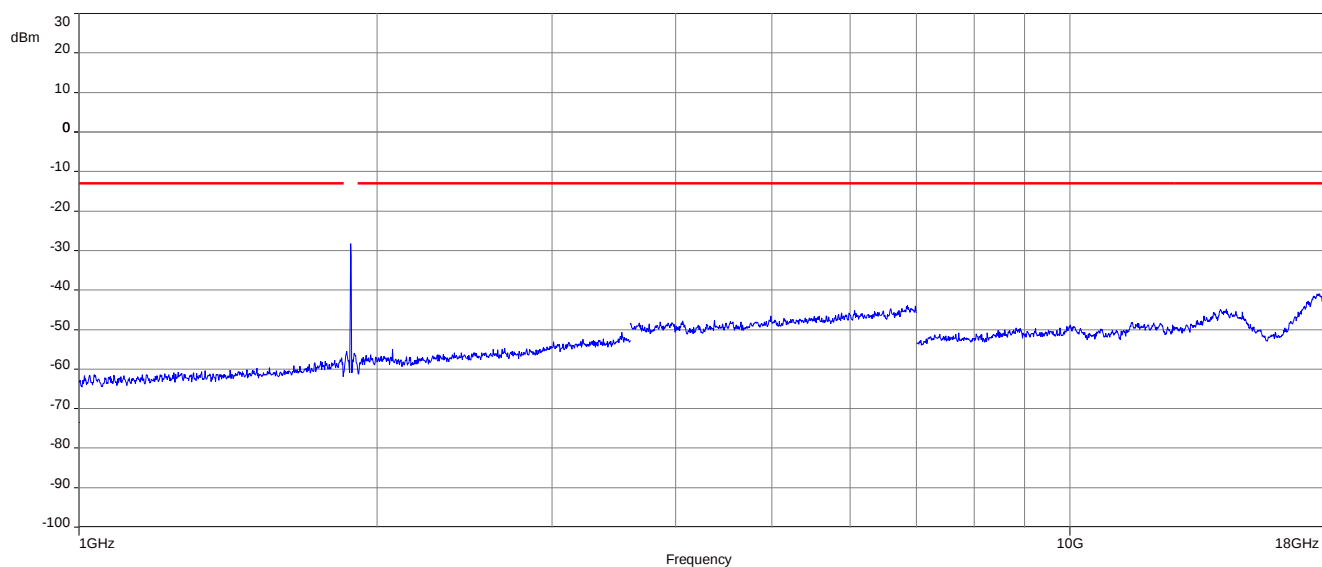
**Plots:** 8 PSK

**Plot 1:** Channel 661 (Traffic mode up to 30 MHz)

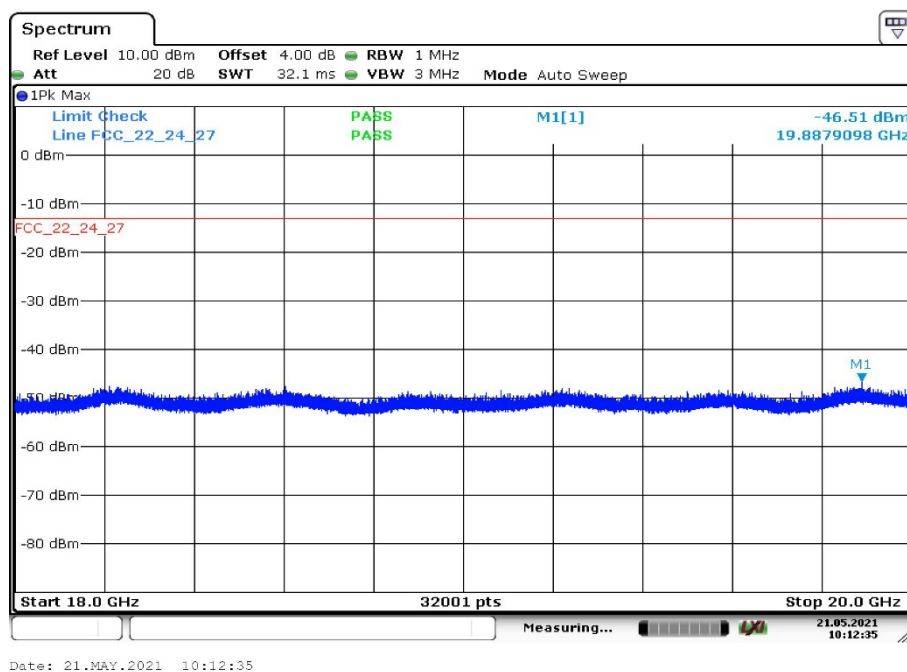


**Plot 2:** Channel 661 (30 MHz – 1 GHz)



**Plot 3:** Channel 661 (1 GHz - 18 GHz)

*Carrier notched with 1.9 GHz rejection filter*

**Plot 4:** Channel 661 (18 GHz - 20 GHz)

## 13 Observations

No observations except those reported with the single test cases have been made.

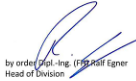
## 14 Glossary

|                        |                                                    |
|------------------------|----------------------------------------------------|
| <b>EUT</b>             | Equipment under test                               |
| <b>DUT</b>             | Device under test                                  |
| <b>UUT</b>             | Unit under test                                    |
| <b>GUE</b>             | GNSS User Equipment                                |
| <b>ETSI</b>            | European Telecommunications Standards Institute    |
| <b>EN</b>              | European Standard                                  |
| <b>FCC</b>             | Federal Communications Commission                  |
| <b>FCC ID</b>          | Company Identifier at FCC                          |
| <b>IC</b>              | Industry Canada                                    |
| <b>PMN</b>             | Product marketing name                             |
| <b>HMN</b>             | Host marketing name                                |
| <b>HVIN</b>            | Hardware version identification number             |
| <b>FVIN</b>            | Firmware version identification number             |
| <b>EMC</b>             | Electromagnetic Compatibility                      |
| <b>HW</b>              | Hardware                                           |
| <b>SW</b>              | Software                                           |
| <b>Inv. No.</b>        | Inventory number                                   |
| <b>S/N or SN</b>       | Serial number                                      |
| <b>C</b>               | Compliant                                          |
| <b>NC</b>              | Not compliant                                      |
| <b>NA</b>              | Not applicable                                     |
| <b>NP</b>              | Not performed                                      |
| <b>PP</b>              | Positive peak                                      |
| <b>QP</b>              | Quasi peak                                         |
| <b>AVG</b>             | Average                                            |
| <b>OC</b>              | Operating channel                                  |
| <b>OCW</b>             | Operating channel bandwidth                        |
| <b>OBW</b>             | Occupied bandwidth                                 |
| <b>OOB</b>             | Out of band                                        |
| <b>DFS</b>             | Dynamic frequency selection                        |
| <b>CAC</b>             | Channel availability check                         |
| <b>OP</b>              | Occupancy period                                   |
| <b>NOP</b>             | Non occupancy period                               |
| <b>DC</b>              | Duty cycle                                         |
| <b>PER</b>             | Packet error rate                                  |
| <b>CW</b>              | Clean wave                                         |
| <b>MC</b>              | Modulated carrier                                  |
| <b>WLAN</b>            | Wireless local area network                        |
| <b>RLAN</b>            | Radio local area network                           |
| <b>DSSS</b>            | Dynamic sequence spread spectrum                   |
| <b>OFDM</b>            | Orthogonal frequency division multiplexing         |
| <b>FHSS</b>            | Frequency hopping spread spectrum                  |
| <b>GNSS</b>            | Global Navigation Satellite System                 |
| <b>C/N<sub>0</sub></b> | Carrier to noise-density ratio, expressed in dB-Hz |

## 15 Document history

| Version | Applied changes | Date of release |
|---------|-----------------|-----------------|
| -/-     | Initial release | 2021-08-31      |

## 16 Accreditation Certificate – D-PL-12076-01-04

| first page                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | last page                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Deutsche Akkreditierungsstelle GmbH</p> <p>Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV<br/>Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition</p> <p><b>Accreditation</b> </p> <p>The Deutsche Akkreditierungsstelle GmbH attests that the testing laboratory<br/><b>CTC advanced GmbH</b><br/>Untertürkheimer Straße 6-10, 66117 Saarbrücken<br/>is competent under the terms of DIN EN ISO/IEC 17025:2018 to carry out tests in the following fields:<br/><b>Telecommunication (TC) and Electromagnetic Compatibility (EMC) for Canadian Standards</b></p> <p>The accreditation certificate shall only apply in connection with the notice of accreditation of 09.06.2020 with the accreditation number D-PL-12076-01. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 07 pages.<br/>Registration number of the certificate: D-PL-12076-01-04</p> <p>Frankfurt am Main, 09.06.2020 <br/>by order of: R. Egner, Head of Division</p> <p><small>The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.<br/><a href="https://www.dakks.de/en/content/accredited-bodies-dakks">https://www.dakks.de/en/content/accredited-bodies-dakks</a><br/>See notes on final.</small></p> | <p>Deutsche Akkreditierungsstelle GmbH</p> <p>Office Berlin<br/>Spittelmarkt 10<br/>10117 Berlin</p> <p>Office Frankfurt am Main<br/>Europa-Allee 52<br/>60327 Frankfurt am Main</p> <p>Office Braunschweig<br/>Bundesallee 100<br/>38116 Braunschweig</p> <p>The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAkKS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.</p> <p>No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAkKS.</p> <p>The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAkKS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.</p> <p>The up-to-date state of membership can be retrieved from the following websites:<br/>EA: <a href="http://www.european-accreditation.org">www.european-accreditation.org</a><br/>ILAC: <a href="http://www.ilac.org">www.ilac.org</a><br/>IAF: <a href="http://www.iaf.nu">www.iaf.nu</a></p> |

**Note: The current certificate annex is published on the website (link see below) of the Accreditation Body DAkKS or may be received by CTC advanced GmbH on request**

<https://www.dakks.de/as/ast/d/D-PL-12076-01-04e.pdf>

## 17 Accreditation Certificate – D-PL-12076-01-05

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|  <p>Deutsche Akkreditierungsstelle GmbH</p> <p>Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV<br/>Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition</p> <p><b>Accreditation</b> </p> <p>The Deutsche Akkreditierungsstelle GmbH attests that the testing laboratory</p> <p><b>CTC advanced GmbH</b><br/>Untertürkheimer Straße 6-10, 66117 Saarbrücken</p> <p>is competent under the terms of DIN EN ISO/IEC 17025:2018 to carry out tests in the following fields:</p> <p><b>Telecommunication (FCC Requirements)</b></p> <p>The accreditation certificate shall only apply in connection with the notice of accreditation of 09.06.2020 with the accreditation number D-PL-12076-01. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 05 pages.</p> <p>Registration number of the certificate: <b>D-PL-12076-01-05</b></p> <p>Frankfurt am Main, 09.06.2020</p> <p>by  <b>Alf Egner</b><br/>Head of Division</p> <p><small>The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.<br/><a href="https://www.dakks.de/en/content/accredited-bodies-dakks">https://www.dakks.de/en/content/accredited-bodies-dakks</a><br/>(last update: 09/2021)</small></p> | <p>Deutsche Akkreditierungsstelle GmbH</p> <p>Office Berlin<br/>Spittelmarkt 10<br/>10117 Berlin</p> <p>Office Frankfurt am Main<br/>Europa-Allee 52<br/>60327 Frankfurt am Main</p> <p>Office Braunschweig<br/>Bundesallee 100<br/>38116 Braunschweig</p> <p>The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAkkS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.</p> <p>No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAkkS.</p> <p>The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAkkS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.</p> <p>The up-to-date state of membership can be retrieved from the following websites:<br/>EA: <a href="http://www.european-accreditation.org">www.european-accreditation.org</a><br/>ILAC: <a href="http://www.ilac.org">www.ilac.org</a><br/>IAF: <a href="http://www.iaf.nu">www.iaf.nu</a></p> |

**Note: The current certificate annex is published on the website (link see below) of the Accreditation Body DAkkS or may be received by CTC advanced GmbH on request**

<https://www.dakks.de/as/ast/d/D-PL-12076-01-05e.pdf>

##### END OF TEST REPORT #####