

## Abridged report

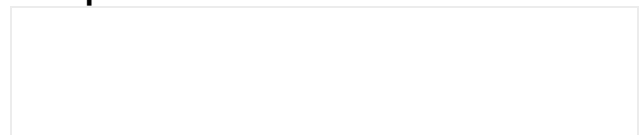
**Test report no.: 1-8203/19-02-03**

### Report information

Kind of test item: RFID Card Reader  
Model name: IDE-ZG-L-MFB-USB (10117-810, 10115-610)  
Customer: Baltech AG  
Standard: FCC - Title 47 CFR Part 15  
RSS - 247 Issue 2  
Frequency: Band or fixed frequency  
Technology tested: Bluetooth® LE  
Antenna: Integrated antenna  
Verdict:  Compliant  Not compliant  
Additional comments: -/-

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

### Test performed:



Andreas Luckenbill  
Lab Manager  
Radio Communications & EMC

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## 2 Notes and disclaimer

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### 3 Additional comments

Reference documents: BALTECH Bluetooth Test Tool description V3.00  
 CTC advanced GmbH – External Photos of the EUT– 1-8203/19-02-01\_AnnexA  
 CTC advanced GmbH – Internal Photos of the EUT – 1-8203/19-02-01\_AnnexB  
 CTC advanced GmbH – Test setup Photos – 1-8203/19-02-01\_AnnexD

Special test descriptions: None

Configuration descriptions: None

Test mode:  No test mode available.  
 lperf was used to ping another device with the largest support packet size

Special software is used.  
 EUT is transmitting pseudo random data by itself

Antennas and transmit operating modes:

Operating mode 1 (single antenna)

- *Equipment with 1 antenna,*
- *Equipment with 2 diversity antennas operating in switched diversity mode by which at any moment in time only 1 antenna is used,*
- *Smart antenna system with 2 or more transmit/receive chains, but operating in a mode where only 1 transmit/receive chain is used)*

Operating mode 2 (multiple antennas, no beamforming)

- *Equipment operating in this mode contains a smart antenna system using two or more transmit/receive chains simultaneously but without beamforming.*

Operating mode 3 (multiple antennas, with beamforming)

- *Equipment operating in this mode contains a smart antenna system using two or more transmit/receive chains simultaneously with beamforming. In addition to the antenna assembly gain (G), the beamforming gain (Y) may have to be taken into account when performing the measurements.*

#### 4 Test standard/s and references

Test standard	Date	Description
FCC - Title 47 CFR Part 15		FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 15 - Radio frequency devices
RSS - 247 Issue 2	February 2017	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence - Exempt Local Area Network (LE-LAN) Devices

Guidance	Version	Description
DTS: KDB 558074 D01	v05r01	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES
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 C63.10-2013	-/-	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

## 5 Measurement results

### 5.1 Radiated output power

**Measurement parameters:**

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	3 MHz
Video bandwidth:	10 MHz
Trace mode:	Max hold

**Limits:**

30 dBm conducted + 6dBi

**Results:**

	Lowest channel	Middle channel	Highest channel
conducted: EUT 1: 10115-610	-2.7 dBm	-1.4 dBm	-1.2 dBm
conducted: EUT 2: 10117-810	-2.8 dBm	-1.5 dBm	-0.7 dBm
radiated: EUT 1: 10115-610	-25.4 dBm	-27.5 dBm	-28.8 dBm
radiated: EUT 2: 10117-810	-25.2 dBm	-26.9 dBm	-28.3 dBm

## 5.2 Radiated spurious emissions

### Measurement:

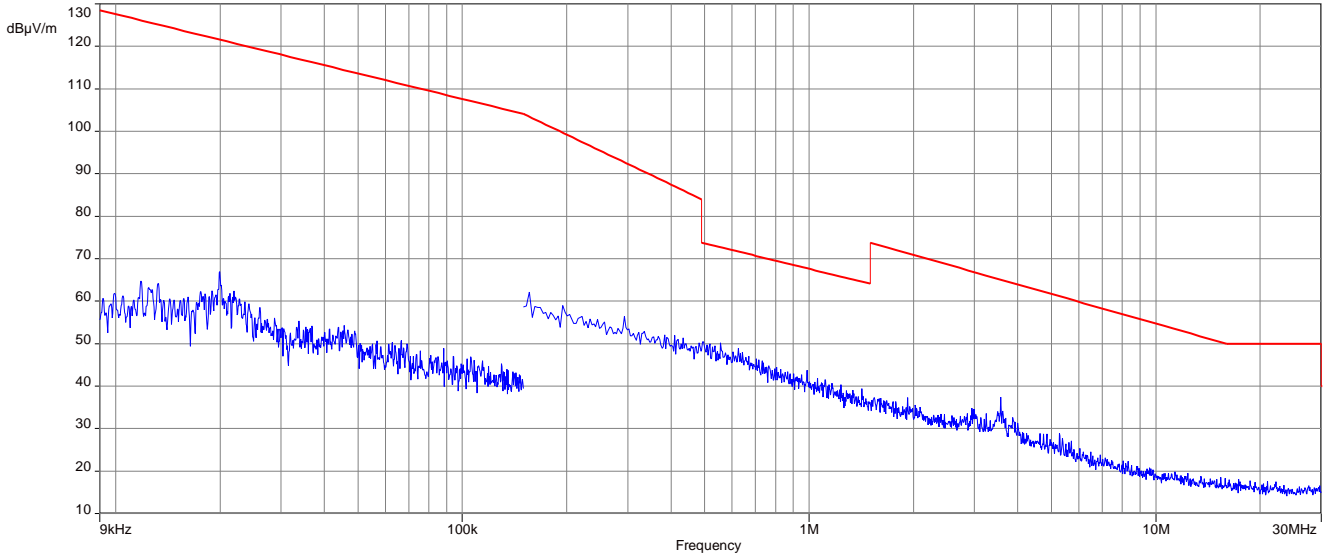
Measurement parameter	
Detector:	Peak / Quasi Peak / RMS
Sweep time:	Auto
Resolution bandwidth:	F > 1 GHz: 1 MHz F < 1 GHz: 200 Hz, 9 kHz, 120 kHz
Video bandwidth:	3 x RBW
Span:	9 kHz to 18 GHz
Trace mode:	Max Hold

### Limits:

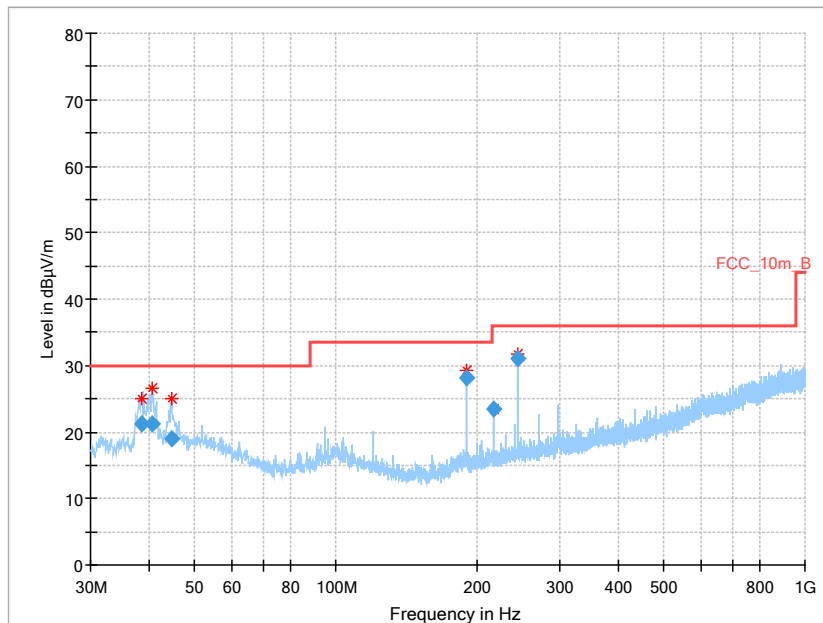
Part 15.209/RSS-Gen: Restricted bands 54 dB $\mu$ V/m @ 3 m

**Plots:**

**Plot 1:** lowest channel, 9 kHz to 30 MHz



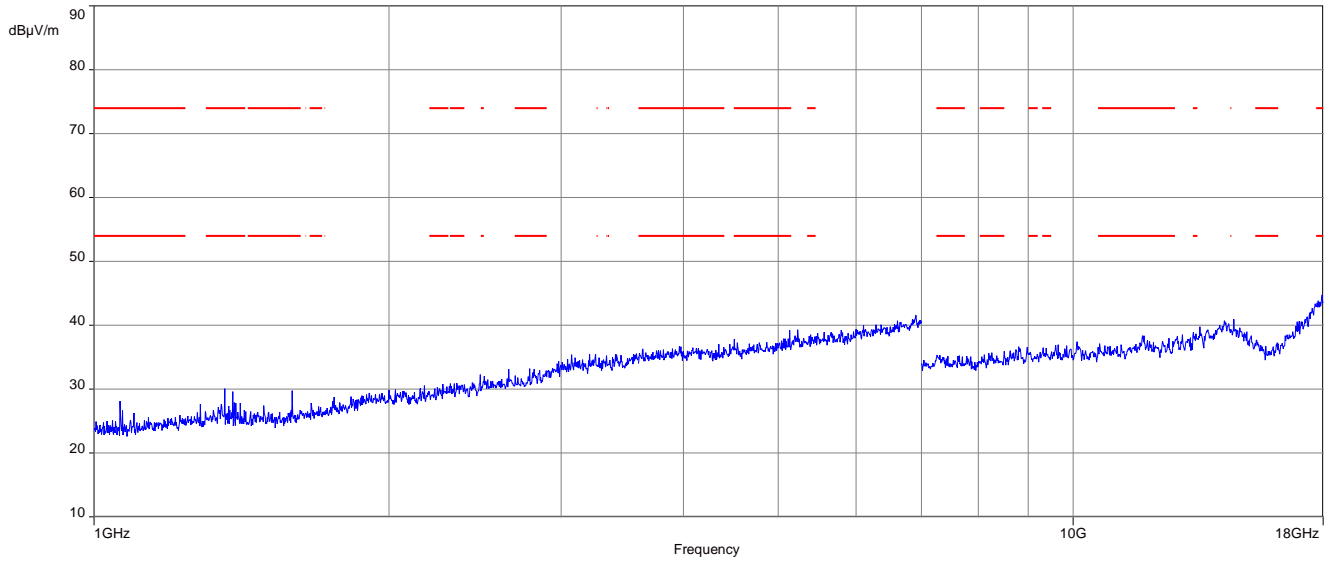
**Plot 2:** lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization



Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Po l	Azimuth (deg)	Corr. (dB/m)
38.448	21.19	---	30.0	8.81	1000	120	98.0	V	92.0	14
40.658	21.29	---	30.0	8.71	1000	120	98.0	V	167.0	14
44.852	19.01	---	30.0	10.99	1000	120	101.0	V	310.0	15
189.856	28.16	---	33.5	5.34	1000	120	101.0	V	257.0	12
216.979	23.47	---	36.0	12.53	1000	120	98.0	V	206.0	13
244.093	31.06	---	36.0	4.94	1000	120	160.0	V	62.0	14

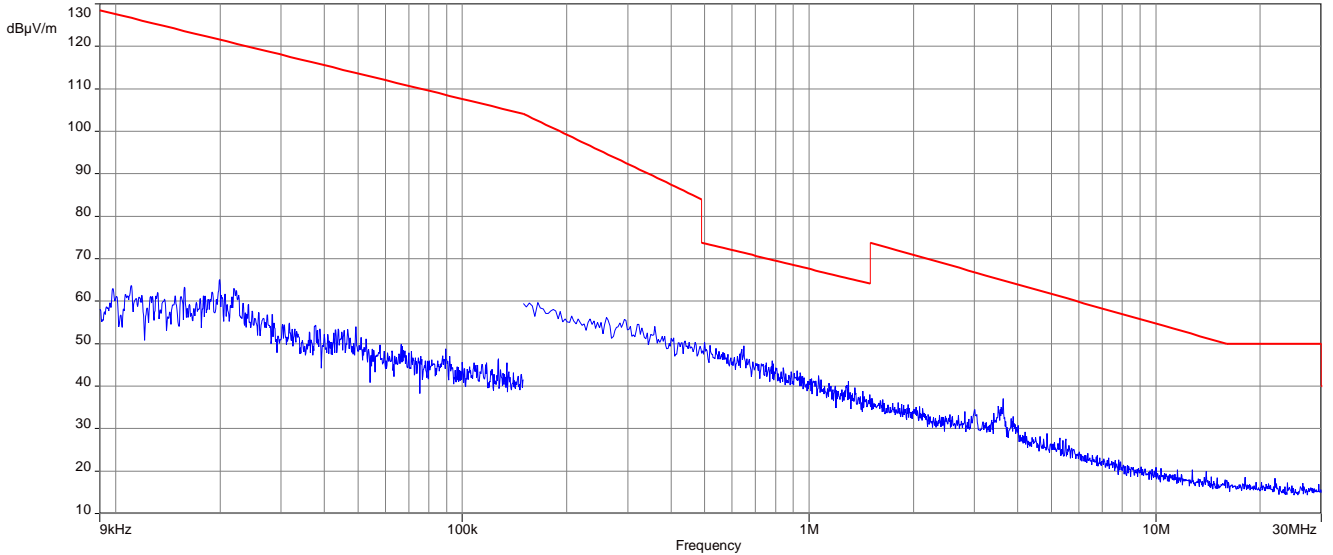


**Plot 3:** lowest channel, 1 GHz to 18 GHz, vertical & horizontal polarization

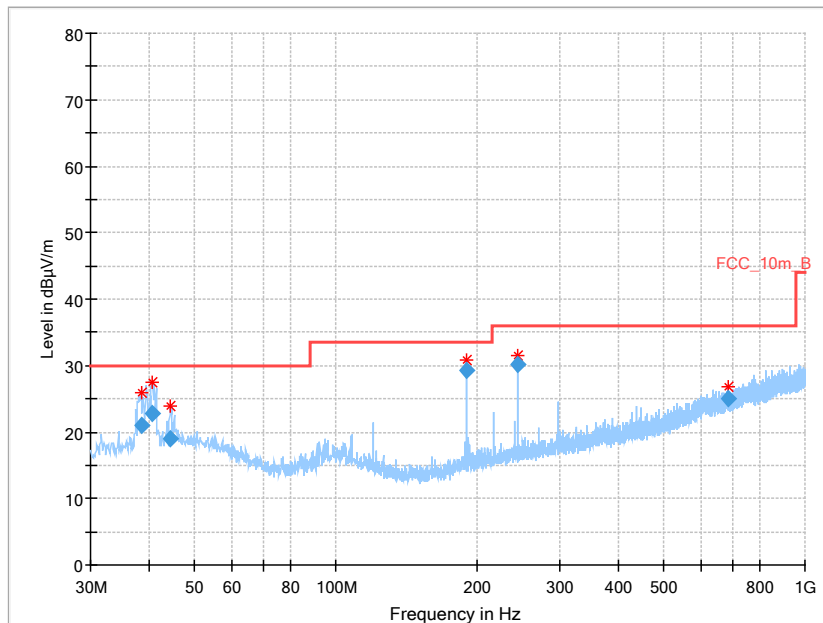


The carrier signal is notched with a 2.4 GHz band rejection filter.

**Plot 4:** mid channel, 9 kHz to 30 MHz

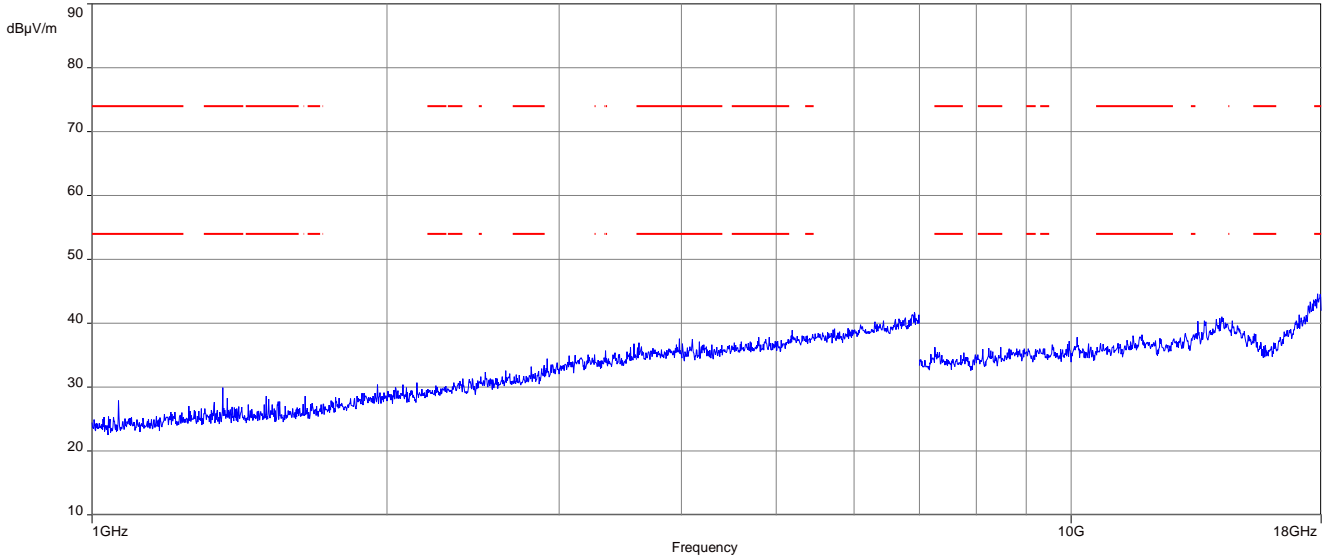


**Plot 5:** mid channel, 30 MHz to 1 GHz, vertical & horizontal polarization



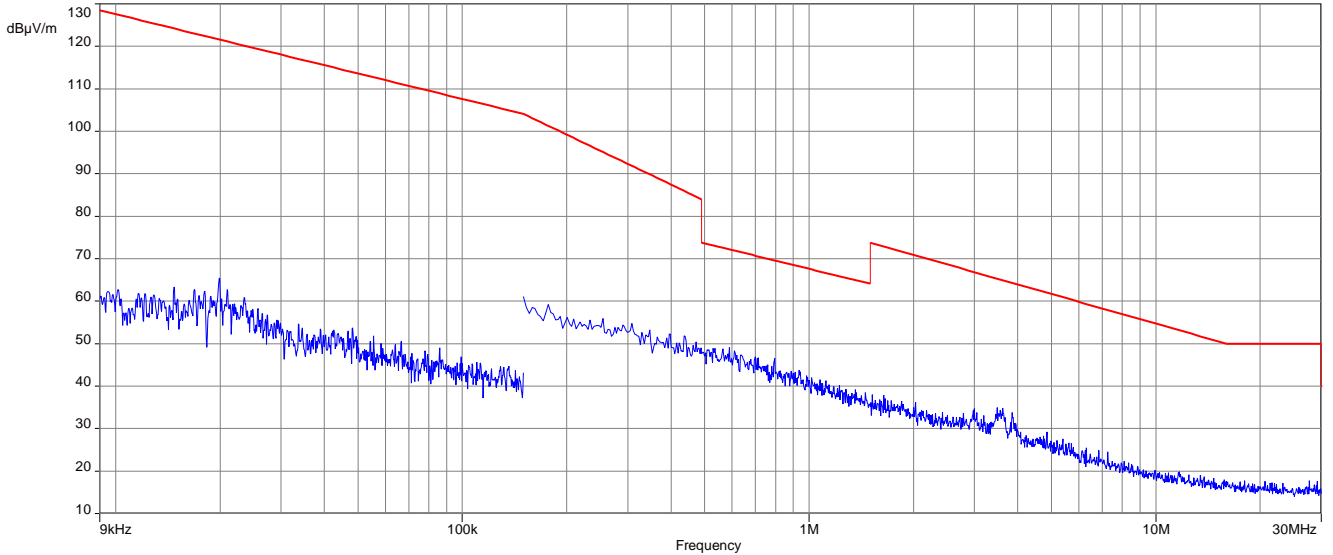
Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Po l	Azimuth (deg)	Corr. (dB/m)
38.678	21.04	---	30.0	8.96	1000	120	101.0	V	87.0	14
40.656	22.86	---	30.0	7.14	1000	120	98.0	V	228.0	14
44.458	18.94	---	30.0	11.06	1000	120	100.0	V	236.0	15
189.846	29.37	---	33.5	4.13	1000	120	98.0	V	291.0	12
244.088	30.14	---	36.0	5.86	1000	120	101.0	V	8.0	14
685.610	24.93	---	36.0	11.07	1000	120	160.0	V	341.0	21

**Plot 6:** mid channel, 1 GHz to 18 GHz, vertical & horizontal polarization

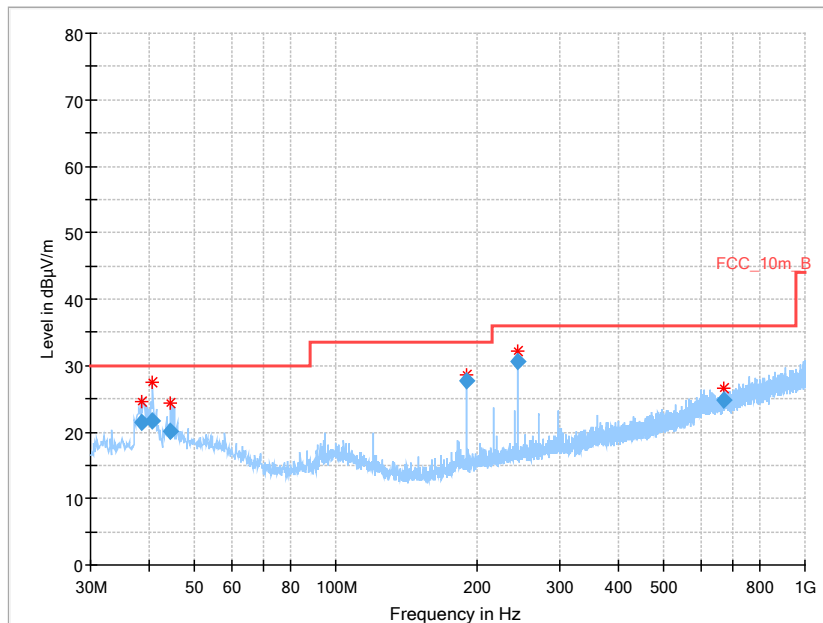


The carrier signal is notched with a 2.4 GHz band rejection filter.

**Plot 7:** highest channel, 9 kHz to 30 MHz

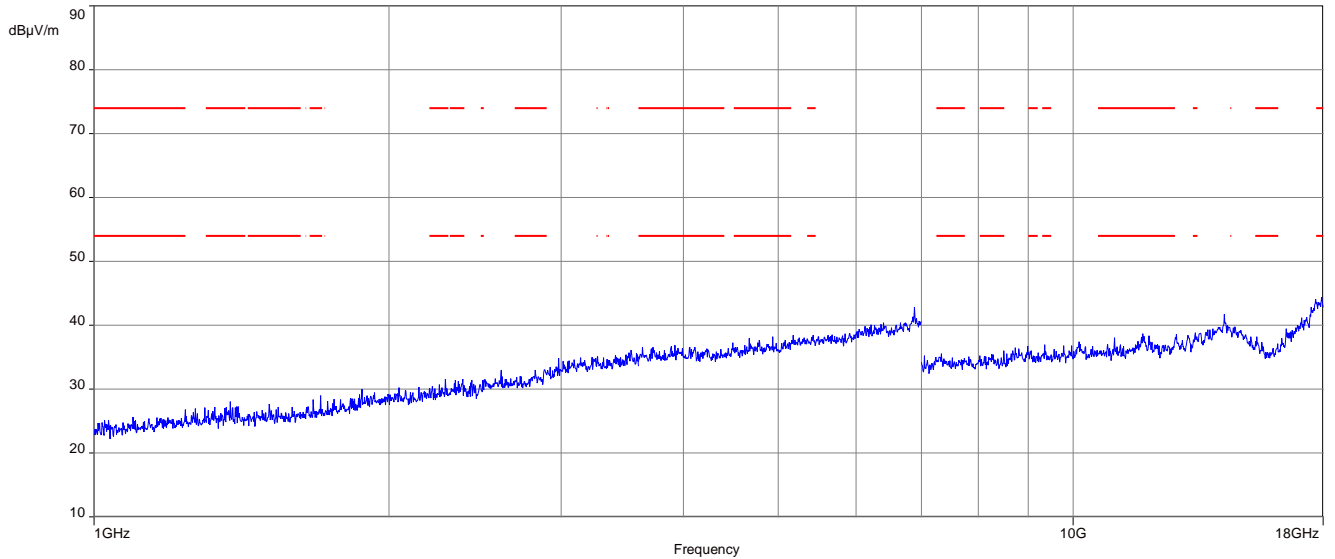


**Plot 8:** highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization



Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Po l	Azimuth (deg)	Corr. (dB/m)
38.482	21.54	---	30.0	8.46	1000	120	98.0	V	328.0	14
40.684	21.61	---	30.0	8.39	1000	120	98.0	V	353.0	14
44.480	20.15	---	30.0	9.85	1000	120	101.0	V	61.0	15
189.839	27.77	---	33.5	5.73	1000	120	98.0	V	303.0	12
244.092	30.68	---	36.0	5.32	1000	120	98.0	V	15.0	14
673.277	24.79	---	36.0	11.21	1000	120	160.0	H	136.0	21

**Plot 9:** highest channel, 1 GHz to 18 GHz, vertical & horizontal polarization



The carrier signal is notched with a 2.4 GHz band rejection filter.

## 6 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

## 7 Document history

Version	Applied changes	Date of release
-/-	Initial release	2019-05-02

## Annex A Accreditation Certificate – D-PL-12076-01-04

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

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first page	last page			
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##### END OF TEST REPORT #####