



## TEST REPORT

Test report no.: 1-6411/18-02-03

### Testing laboratory

**CTC advanced GmbH**

Untertuerkheimer Strasse 6 – 10

66117 Saarbruecken / Germany

Phone: + 49 681 5 98 - 0

Fax: + 49 681 5 98 - 9075

Internet: <http://www.ctcadvanced.com>

e-mail: [mail@ctcadvanced.com](mailto:mail@ctcadvanced.com)

**Accredited Testing Laboratory:**

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) 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

**RSI Video Technologies SA**

25 rue Jacobi-Netter

67200 Strasbourg / FRANCE

Phone: +33 3 90 20 66 96

Contact: Geoffroy Eude

e-mail: [geoffroy.eude@rsivideotech.com](mailto:geoffroy.eude@rsivideotech.com)

Phone: +33 3 90 20 66 39

### Manufacturer

**RSI Video Technologies SA**

25 rue Jacobi-Netter

67200 Strasbourg / FRANCE

### 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

RSS - 132 Issue 3

Spectrum Management and Telecommunications Radio Standards Specification - Cellular Telephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz

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

### Test Item

**Kind of test item:** Alarm panel

**Model name:** XT640

**FCC ID:** X46XT08

**IC:** 8816A-XT08

**Frequency:** LTE Band V: 824 MHz to 849 MHz

**Technology tested:** LTE

**Antenna:** Internal antenna

**Power supply:** 4.2 V to 14.4 V DC by battery

**Temperature range:** -10°C to +55°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:

Mihail Dorongovskij  
Lab Manager  
Radio Communications & EMC

### Test performed:

Andreas Luckenbill  
Lab Manager  
Radio Communications & EMC

## 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	Test environment .....	5
5	Test item .....	5
5.1	Additional information .....	5
6	Description of the test setup .....	6
6.1	Shielded semi anechoic chamber .....	7
6.2	Shielded fully anechoic chamber .....	8
6.3	Conducted measurements .....	9
7	Measurement uncertainty .....	10
8	Summary of measurement results .....	11
8.1	LTE band V .....	11
9	RF measurements .....	12
9.1	Results LTE band V .....	12
9.1.1	RF output power .....	12
9.1.2	Spurious emissions radiated .....	16
Annex A	Glossary .....	22
Annex B	Document history .....	23
Annex C	Accreditation Certificate – D-PL-12076-01-04 .....	23
Annex D	Accreditation Certificate – D-PL-12076-01-05 .....	24

## 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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### 2.2 Application details

Date of receipt of order:	2018-05-28
Date of receipt of test item:	2019-04-04
Start of test:	2019-04-05
End of test:	2019-07-12
Person(s) present during the test:	-/-

### 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
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

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 <a href="https://www.dakks.de/as/ast/d/D-PL-12076-01-04.pdf">https://www.dakks.de/as/ast/d/D-PL-12076-01-04.pdf</a>
D-PL-12076-01-05	Telecommunication FCC requirements <a href="https://www.dakks.de/as/ast/d/D-PL-12076-01-05.pdf">https://www.dakks.de/as/ast/d/D-PL-12076-01-05.pdf</a>



#### 4 Test environment

Temperature	:	$T_{nom}$ $T_{max}$ $T_{min}$	+20 °C during room temperature tests No tests under extreme temperature conditions performed No tests under extreme temperature conditions performed
Relative humidity content	:		40 %
Barometric pressure	:		1021 hpa
Power supply	:	$V_{nom}$ $V_{max}$ $V_{min}$	12.0 V DC by battery No tests under extreme voltage conditions performed No tests under extreme voltage conditions performed

#### 5 Test item

Kind of test item	:	Alarm panel
Type identification	:	XT640
HMN	:	-/-
PMN	:	XT640
HVIN	:	XT640
FVIN	:	-/-
S/N serial number	:	F5C01219EF0A0006
Hardware status	:	5CA1299D-0A2 (Motherboard) 5CA0775A-0b (Input/Output board)
Software status	:	V.04.04.8T.028D
Firmware status	:	-/-
Frequency band	:	LTE Band V: 824 MHz to 849 MHz lowest frequency: 824.7 MHz; highest frequency: 848.3 MHz
Type of radio transmission	:	OFDM
Use of frequency spectrum	:	
Type of modulation	:	QPSK, 16 – QAM
Antenna	:	Internal antenna
Power supply	:	4.2 V to 14.4 V DC by battery
Temperature range	:	-10°C to +55°C

#### 5.1 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:

1-6411/18-02-01\_AnnexA  
 1-6411/18-02-01\_AnnexB  
 1-6411/18-02-01\_AnnexD

## 6 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).

### **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
vlk!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

## 6.1 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: 10.30.0

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

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

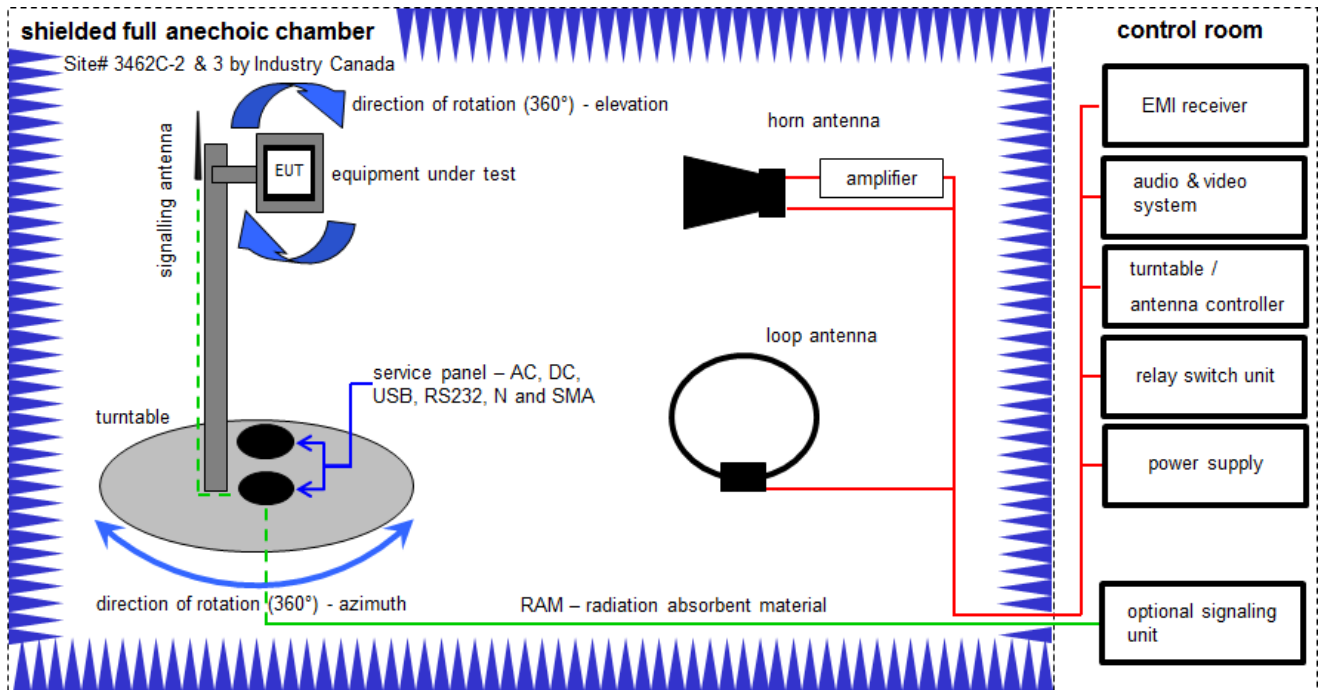
Example calculation:

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

### Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A	Wideband Radio Communication Tester	CMW500	R&S	102375	300004187	k	11.01.2018	10.01.2020
2	A	Switch-Unit	3488A	HP	2719A14505	300000368	ev	-/-	-/-
3	A	Meßkabine 1	HF-Absorberhalle	MWB AG 300023	-/-	300000551	ne	-/-	-/-
4	A	EMI Test Receiver	ESCI 3	R&S	100083	300003312	k	15.12.2017 12.12.2018	14.12.2018 11.12.2019
5	A	Antenna Tower	Model 2175	ETS-Lindgren	64762	300003745	izw	-/-	-/-
6	A	Positioning Controller	Model 2090	ETS-Lindgren	64672	300003746	izw	-/-	-/-
7	A	Turntable Interface-Box	Model 105637	ETS-Lindgren	44583	300003747	izw	-/-	-/-
8	A	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck Mess - Elektronik	371	300003854	vIKII	24.11.2017	23.11.2020

## 6.2 Shielded fully anechoic chamber



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

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

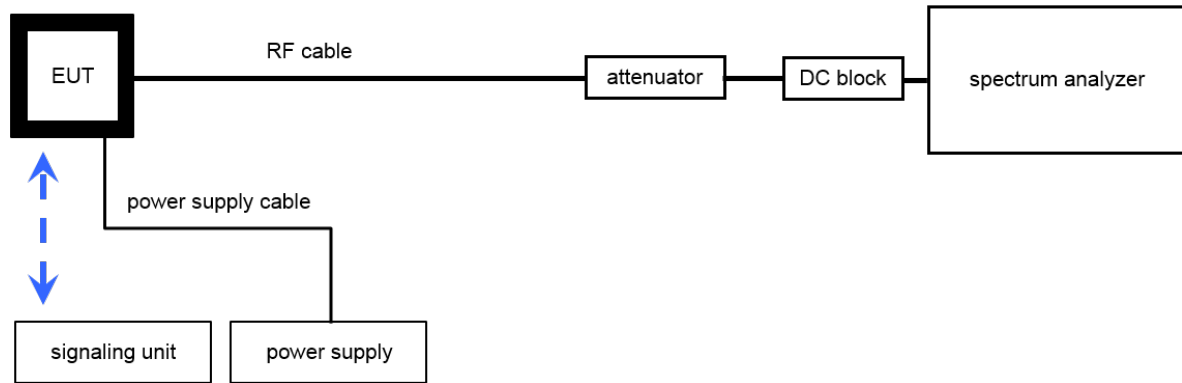
### Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	B	Active Loop Antenna 9 kHz to 30 MHz	6502	EMCO	2210	300001015	vKI!	07.07.2017	06.07.2019
2	A, B	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev	-/-	-/-
3	A, B	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vKI!	07.07.2017	06.07.2019
4	A, B	Switch / Control Unit	3488A	HP	*	300000199	ne	-/-	-/-
5	A	Highpass Filter	WHKX2.9/18G-12SS	Wainwright	1	300003492	ev	-/-	-/-
6	A, B	EMI Test Receiver 9kHz-26,5GHz	ESR26	R&S	101376	300005063	k	14.12.2017 19.12.2018	13.12.2018 18.12.2019
7	A	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev	-/-	-/-
8	A	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	19	300003790	ne	-/-	-/-
9	A	Broadband Amplifier 0.5-18 GHz	CBLU5184540	CERNEX	22049	300004481	ev	-/-	-/-
10	A, B	4U RF Switch Platform	L4491A	Agilent Technologies	MY50000037	300004509	ne	-/-	-/-
11	A, B	NEXIO EMV-Software	BAT EMC V3.16.0.49	EMCO	-/-	300004682	ne	-/-	-/-
12	A, B	PC	ExOne	F+W	-/-	300004703	ne	-/-	-/-
13	A, B	Wideband Radio Communication Tester	CMW500	R&S	102375	300004187	k	11.01.2018	10.01.2020



### 6.3 Conducted measurements

#### Conducted measurements normal conditions



$$OP = AV + CA$$

(OP-output power; AV-analyzer value; CA-loss signal path)

Example calculation:

$$OP \text{ [dBm]} = 6.0 \text{ [dBm]} + 11.7 \text{ [dB]} = 17.7 \text{ [dBm]} \text{ (58.88 mW)}$$

#### Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A	Hygro-Thermometer	-/-, 5-45°C, 20-100%rF	Thies Clima	-/-	400000108	ev	11.05.2018	10.05.2020
2	A	Wideband Radio Communication Tester	CMW500	R&S	102375	300004187	k	11.01.2018	10.01.2020
3	A	Signal Analyzer 40 GHz	FSV40	R&S	101042	300004517	k	17.12.2018	16.12.2019
4	A	PC Tester R005	Intel Core i3 3220/3,3 GHz, Prozessor	-/-	2V2403033A4523	300004589	ne	-/-	-/-
5	A	Teststand	Teststand Custom Sequence Editor	National Instruments GmbH	-/-	300004590	ne	-/-	-/-
6	A	Resistive Power Dividers, DC-40 GHz, 1W	1575	MRC COMPONENTS	-/-	300004671	ne	-/-	-/-
7	A	USB-GPIB-Adapter	GPIB-USB-HS	National Instruments	1829974	400001136	ne	-/-	-/-
8	A	RF-Cable	ST18/SMAm/SMAm/72	Huber & Suhner	Batch no. 699714	400001184	ev	-/-	-/-
9	A	DC-Blocker 0.1-40 GHz	8141A	Inmet	-/-	400001185	ev	-/-	-/-
10	A	Synchron Power Meter	SPM-4	CTC	1	300005580	ev	-/-	-/-
11	A	RF-Cable	ST18/SMAm/SMAm/36	Huber & Suhner	Batch no. 601494	400001309	ev	-/-	-/-

## 7 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

## 8 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. The content and verdict of the performed test cases are listed below.

TC identifier	Description	verdict	date	Remark
RF-Testing	CFR Part 22 RSS 132	passed	2019-09-09	partial tests only

### 8.1 LTE band V

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	Extreme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	partial test only
Frequency Stability	Extreme	Nominal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	partial test only
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"/>	partial test only
Block Edge Compliance	Nominal	Nominal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	partial test only
Occupied Bandwidth	Nominal	Nominal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	partial test only

#### Notes:

<b>C</b>	Compliant	<b>NC</b>	Not compliant	<b>NA</b>	Not applicable	<b>NP</b>	Not performed
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## 9 RF measurements

### 9.1 Results LTE band V

The EUT was set to transmit the maximum power.

#### 9.1.1 RF output power

**Description:**

This paragraph contains EIRP average power measurements for the mobile station.

**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:	Auto
Resolution bandwidth:	40 MHz
Used equipment:	See chapter 6.1 – A & 6.3 – A
Measurement uncertainty:	See chapter 7

**Limits:**

FCC	IC
CFR Part 22.913 CFR Part 2.1046	RSS 132
<p>+38.45 dBm</p> <p>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.</p>	

**Results:**

Output Power CCDF (conducted)						
Bandwidth (MHz)	Channel / Frequency (MHz)	Resource block allocation	Average Output Power (dBm)	Peak to Average Ratio (dB) 0.1% CCDF	Average Output Power (dBm)	Peak to Average Ratio (dB) 0.1% CCDF
			QPSK	QPSK	16-QAM	16-QAM
1.4	20407 / 824.7	1 RB low	22.0	5.7	21.3	6.7
		1 RB mid	21.9	5.7	21.2	6.6
		1 RB high	22.0	5.7	21.2	6.7
		50% RB low	21.9	5.9	21.1	6.9
		50% RB mid	22.0	6.0	21.3	6.8
		50% RB high	22.3	5.9	21.5	6.9
		100% RB	21.4	6.0	20.5	6.9
	20525 / 836.5	1 RB low	22.2	5.9	21.8	6.7
		1 RB mid	22.2	5.9	21.7	6.7
		1 RB high	22.2	5.9	21.7	6.8
		50% RB low	22.2	5.7	21.5	6.6
		50% RB mid	22.2	5.6	21.4	6.7
		50% RB high	22.2	5.7	21.4	6.6
		100% RB	21.3	6.0	20.5	6.9
	20643 / 848.3	1 RB low	22.3	5.7	21.5	6.6
		1 RB mid	22.3	5.7	21.5	6.5
		1 RB high	22.3	5.7	21.6	6.4
		50% RB low	22.2	5.7	21.4	6.6
		50% RB mid	22.2	5.7	21.4	6.6
		50% RB high	22.2	5.7	21.4	6.6
		100% RB	21.3	5.7	20.5	6.7
3	20415 / 825.5	1 RB low	22.2	5.7	21.7	6.5
		1 RB mid	22.2	5.9	21.7	6.8
		1 RB high	22.2	5.7	21.7	6.3
		50% RB low	21.3	6.0	20.6	6.9
		50% RB mid	21.3	6.1	20.4	6.8
		50% RB high	21.3	6.0	20.5	6.8
		100% RB	21.3	6.0	20.4	6.8
	20525 / 836.5	1 RB low	22.3	5.6	21.9	6.2
		1 RB mid	22.2	5.9	21.8	6.8
		1 RB high	22.2	5.7	21.8	6.3
		50% RB low	21.4	5.9	20.6	6.8
		50% RB mid	21.3	6.1	20.5	6.8
		50% RB high	21.4	6.1	20.6	6.9

	20635 / 847.5	100% RB	21.3	5.9	20.4	6.8
		1 RB low	22.2	5.5	21.3	6.1
		1 RB mid	22.3	5.7	21.5	6.3
		1 RB high	22.3	5.4	21.5	6.1
		50% RB low	21.3	5.7	20.5	6.6
		50% RB mid	21.3	5.8	20.4	6.6
		50% RB high	21.4	5.8	20.4	6.7
		100% RB	21.3	5.9	20.4	6.7
5	20425 / 826.5	1 RB low	22.2	5.7	21.5	6.6
		1 RB mid	22.3	5.7	21.5	6.7
		1 RB high	22.2	5.6	21.5	6.6
		50% RB low	21.2	5.9	20.4	6.8
		50% RB mid	21.3	5.8	20.4	6.7
		50% RB high	21.3	5.8	20.5	6.6
		100% RB	21.2	5.8	20.3	6.7
	20525 / 836.5	1 RB low	22.1	5.8	21.4	6.6
		1 RB mid	22.2	5.8	21.5	6.7
		1 RB high	22.1	6.0	21.4	6.8
		50% RB low	21.3	5.9	20.4	6.6
		50% RB mid	21.2	6.0	20.3	6.7
		50% RB high	21.2	6.0	20.3	6.7
		100% RB	21.2	5.9	20.3	6.8
	20625 / 846.5	1 RB low	22.1	5.6	21.3	6.5
		1 RB mid	22.2	5.6	21.4	6.6
		1 RB high	22.0	5.7	21.4	6.4
		50% RB low	21.2	5.7	20.3	6.7
		50% RB mid	21.2	5.8	20.3	6.7
		50% RB high	21.2	5.8	20.4	6.7
		100% RB	21.2	5.7	20.3	6.5
10	20450 / 829.0	1 RB low	22.0	5.8	21.5	6.6
		1 RB mid	22.2	5.7	21.7	6.5
		1 RB high	21.8	5.7	21.3	6.4
		50% RB low	21.2	5.9	20.2	6.7
		50% RB mid	21.2	5.8	20.3	6.7
		50% RB high	21.2	5.7	20.3	6.6
		100% RB	21.2	5.7	20.3	6.6
	20525 / 836.5	1 RB low	22.1	5.6	21.4	6.2
		1 RB mid	22.2	5.9	21.6	6.5
		1 RB high	22.0	5.9	21.3	6.4
		50% RB low	21.2	5.9	20.3	6.7
		50% RB mid	21.3	5.9	20.3	6.8
		50% RB high	21.2	5.9	20.3	6.8

		100% RB	21.2	6.0	20.3	6.8
	20600 / 844.0	1 RB low	22.0	5.8	21.3	6.7
		1 RB mid	22.2	5.7	21.5	6.5
		1 RB high	21.9	5.6	21.2	6.4
		50% RB low	21.2	5.9	20.3	6.7
		50% RB mid	21.3	5.7	20.4	6.6
		50% RB high	21.2	5.7	20.3	6.6
		100% RB	21.2	5.8	20.3	6.5

The radiated output power is measured in the mode with the highest conducted output power.

Output Power (radiated)			
Bandwidth (MHz)	Frequency (MHz)	Average Output Power (dBm) QPSK	Average Output Power (dBm) 16-QAM
1.4	824.7	18.9	18.1
	836.5	19.9	19.5
	848.3	20.2	19.5
3	825.5	18.8	18.3
	836.5	20.0	19.6
	847.5	20.2	19.4
5	826.5	18.9	18.1
	836.5	19.9	19.2
	846.5	20.1	19.3
10	829.0	18.8	18.3
	836.5	19.9	19.3
	844.0	20.1	19.4

## 9.1.2 Spurious emissions radiated

### Description:

Investigation of the spectrum from 9 kHz to 9 GHz.

### Measurement:

Measurement parameters	
Detector:	Peak
Sweep time:	2 sec.
Video bandwidth:	300 kHz
Resolution bandwidth:	100 kHz
Span:	100 MHz Steps
Trace-Mode:	Max Hold
Test setup:	See chapter 6.1 A; 6.2 A
Measurement uncertainty:	See chapter 7

### Limits:

FCC	IC
CFR Part 22.917 CFR Part 2.1053	RSS 132
Spurious Emissions Radiated	
Attenuation $\geq 43 + 10\log(P)$ (P, Power in Watts)	
-13 dBm	



**Results:****QPSK:**

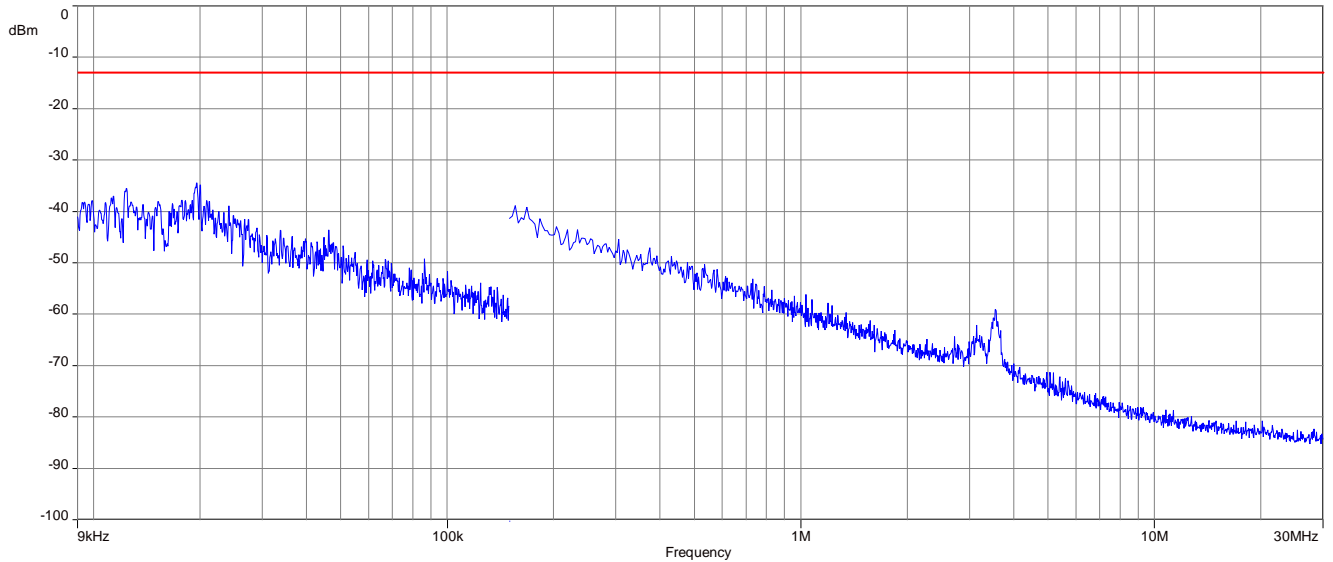
Spurious Emission Level (dBm)								
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]
2	1658.0	-	2	1673.0	-	2	1688.0	-
3	2487.0	-	3	2509.5	-	3	2532.0	-
4	3316.0	-	4	3346.0	-	4	3376.0	-
5	4145.0	-	5	4182.5	-	5	4220.0	-
6	4974.0	-	6	5019.0	-	6	5064.0	-
7	5803.0	-	7	5855.5	-	7	5908.0	-
8	6632.0	-	8	6692.0	-	8	6752.0	-
9	7461.0	-	9	7528.5	-	9	7596.0	-
10	8290.0	-	10	8365.0	-	10	8440.0	-

**16-QAM:**

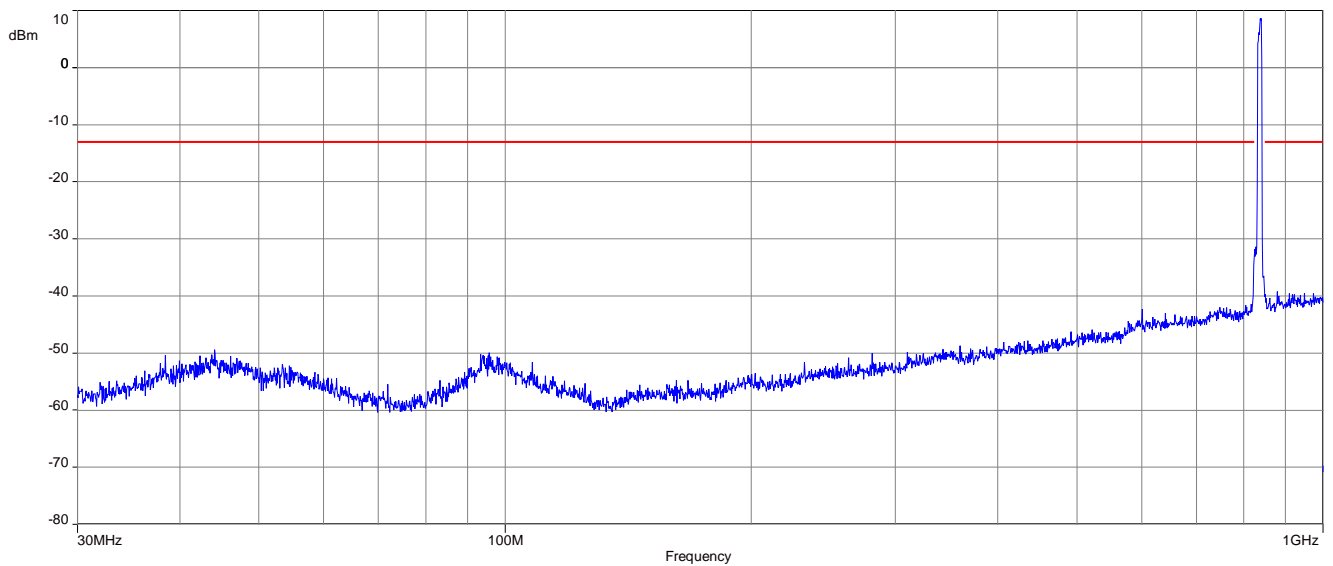
Spurious Emission Level (dBm)								
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]
2	1658.0	-	2	1673.0	-	2	1688.0	-
3	2487.0	-	3	2509.5	-	3	2532.0	-
4	3316.0	-	4	3346.0	-	4	3376.0	-
5	4145.0	-	5	4182.5	-	5	4220.0	-
6	4974.0	-	6	5019.0	-	6	5064.0	-
7	5803.0	-	7	5855.5	-	7	5908.0	-
8	6632.0	-	8	6692.0	-	8	6752.0	-
9	7461.0	-	9	7528.5	-	9	7596.0	-
10	8290.0	-	10	8365.0	-	10	8440.0	-

### QPSK with 10 MHz channel bandwidth

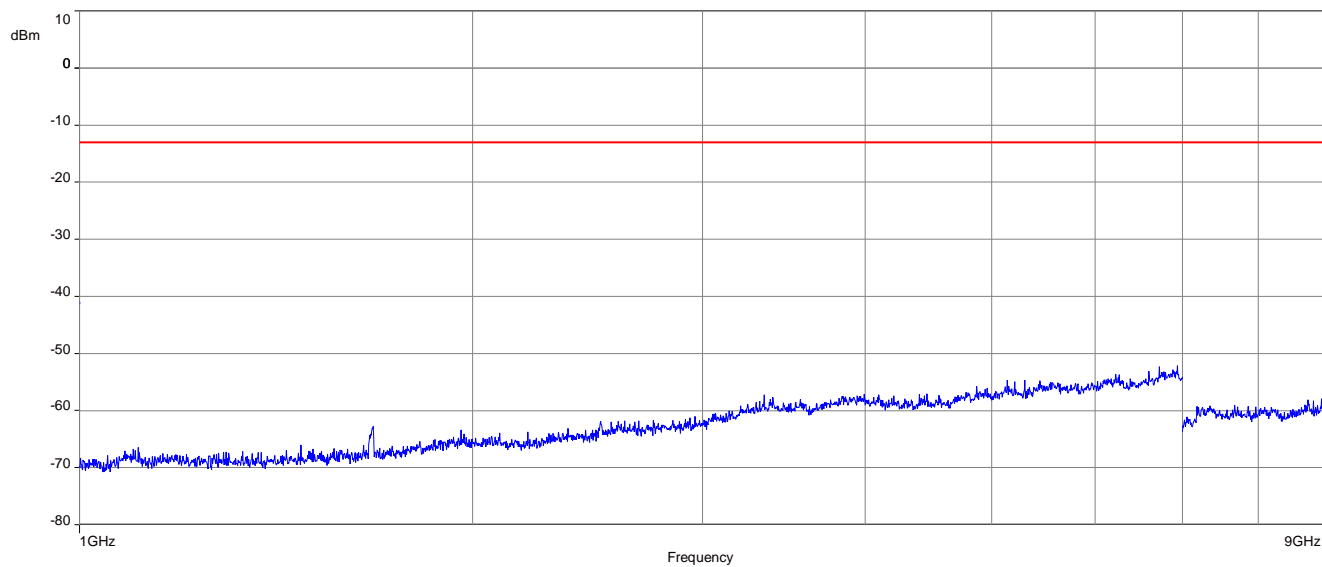
**Plot 1:** Channel 20525 (Traffic mode up to 30 MHz)

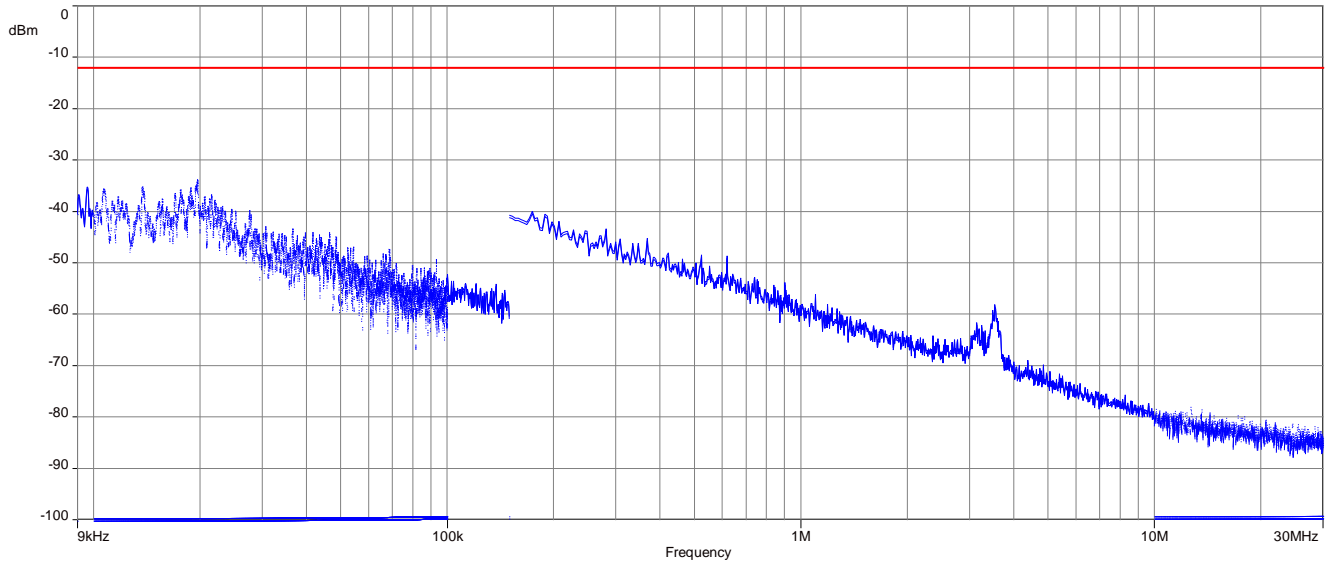
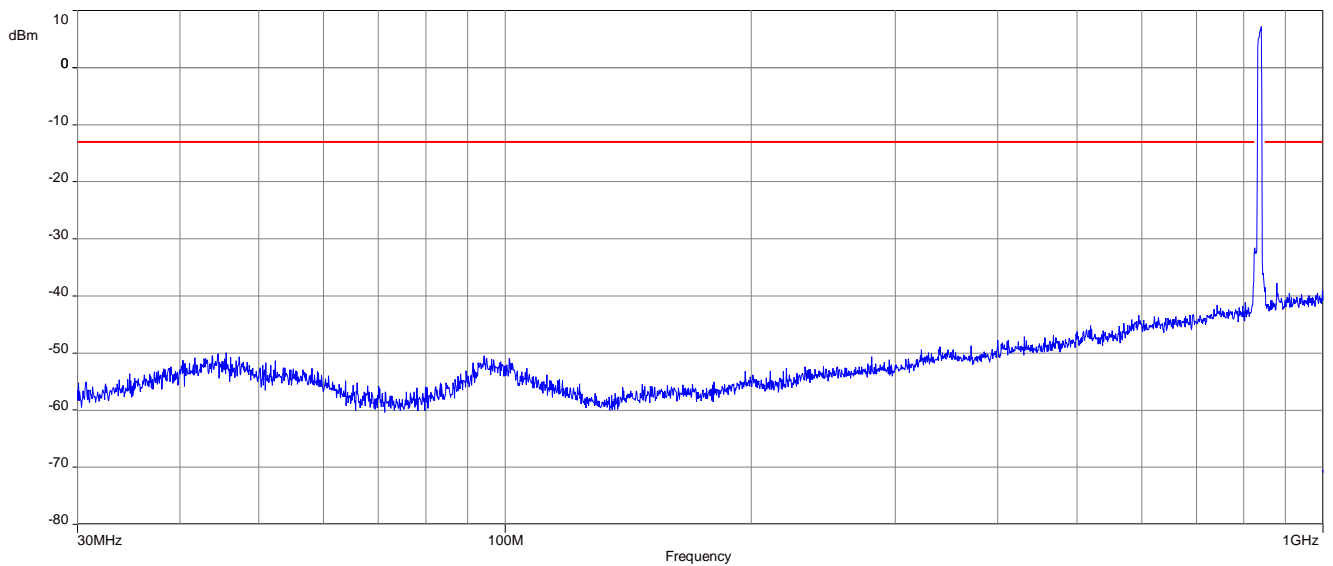


**Plot 2:** Channel 20525 (30 MHz – 1 GHz)

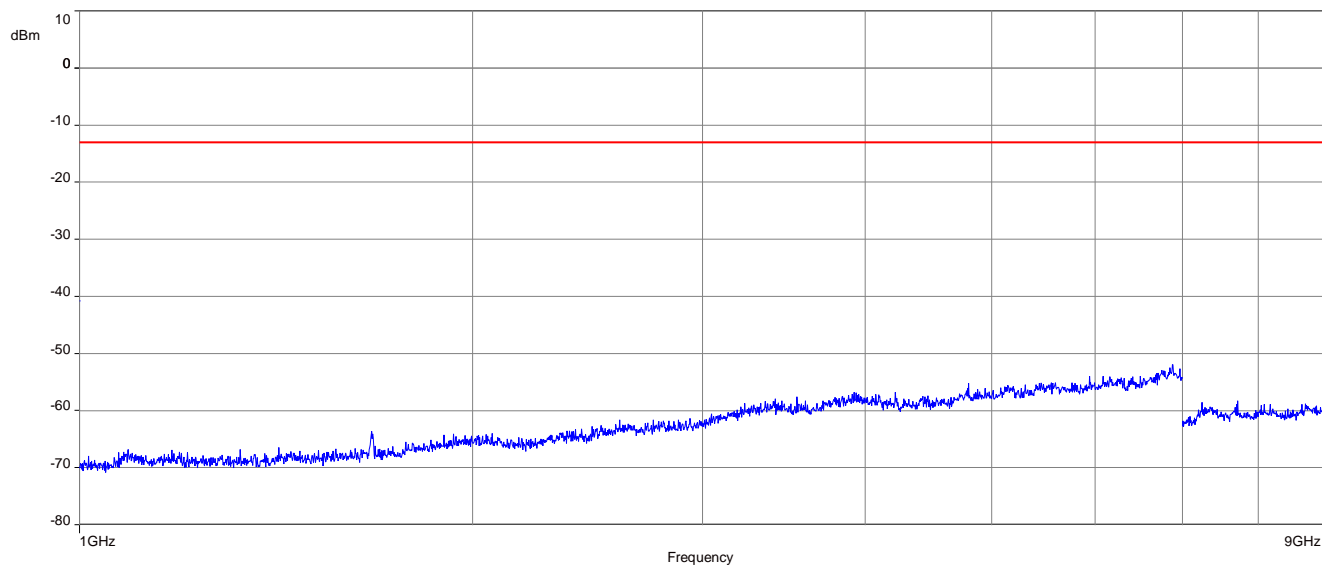


**Plot 3:** Channel 20525 (1 GHz – 9 GHz)



**16-QAM with 10 MHz channel bandwidth****Plot 4:** Channel 20525 (Traffic mode up to 30 MHz)**Plot 5:** Channel 20525 (30 MHz – 1 GHz)

**Plot 6:** Channel 20525 (1 GHz – 9 GHz)



## Annex A 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

## Annex B Document history

Version	Applied changes	Date of release
-/-	Initial release	2019-09-09

## Annex C 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 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 <b>CTC advanced GmbH</b> Untertürkheimer Straße 6-10, 66117 Saarbrücken</p> <p>is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following fields: <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 11.01.2019 with the accreditation number D-PL-12076-01 and is valid until 21.04.2021. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 7 pages.</p> <p>Registration number of the certificate: <b>D-PL-12076-01-04</b></p> <p>Frankfurt am Main, 11.01.2019</p>  Dipl.-Ing. Uwe Zimmermann Head of Division	<p>Deutsche Akkreditierungsstelle GmbH</p> <p>Office Berlin Spittelmarkt 10 10117 Berlin</p> <p>Office Frankfurt am Main Europa-Allee 52 60327 Frankfurt am Main</p> <p>Office Braunschweig Bundesallee 100 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: EA: <a href="http://www.european-accreditation.org">www.european-accreditation.org</a> ILAC: <a href="http://www.ilac.org">www.ilac.org</a> 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-12076-01-04.pdf>

**Annex D Accreditation Certificate – D-PL-12076-01-05**

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 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> Untertürkheimer Straße 6-10, 66117 Saarbrücken</p> <p>is competent under the terms of DIN EN ISO/IEC 17025:2005 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 11.01.2019 with the accreditation number D-PL-12076-01 and is valid until 21.04.2021. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 5 pages.</p> <p>Registration number of the certificate: <b>D-PL-12076-01-05</b></p> <p>Frankfurt am Main, 11.01.2019  Prof. Dr. Uwe Zimmermann Head of Division</p> <p><small>See notes (optional)</small></p>	<p>Deutsche Akkreditierungsstelle GmbH</p> <p>Office Berlin Spittelmarkt 10 10117 Berlin</p> <p>Office Frankfurt am Main Europa-Allee 52 60327 Frankfurt am Main</p> <p>Office Braunschweig Bundesallee 100 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: EA: <a href="http://www.european-accreditation.org">www.european-accreditation.org</a> ILAC: <a href="http://www.ilac.org">www.ilac.org</a> 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-12076-01-05.pdf>

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