T E S T R E P O R T
No.: 18-1-0026601T06a

According to:
FCC Regulations
Part 1.1310
Part 2.1091

for

Kathrein Automotive GmbH

LTE Kompensator US
Compensator US

FCC-ID: 2ACC7LTECOMPB1

Laboratory Accreditation and Listings		
DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01 Accredited EMC-Test Laboratory	Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3	Voluntary Controls for Electromagnetic Emissions Reg. No.: R-20013, C-20009, T-20006, G-20013
Wi Fi ALLIANCE AUTHORIZED RF LABORATORY	ctia Authorized™ Test Lab Lab Code: 20011130-00	FCC FEDERAL COMMUNICATIONS COMMISSION USA MRA US-EU 0003
accredited according to DIN EN ISO/IEC 17025		

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Laboratory Accreditation and Listings

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The listed attachments are an integral part of this report.

1. Summary of test results

The test results apply exclusively to the test samples as presented in this Report. The CETECOM GmbH does not assume responsibility for any conclusions and generalizations taken in conjunction with other specimens or samples of the type of the item presented to tests.

The Equipment Under Test (in this report, hereinafter referred as EUT) supports radiofrequency technologies. This test report shows results for LTE (4G), WCDMA (3G) and GSM (2G) technologies only. Other implemented wireless technologies were not considered within this test report.

Following tests have been performed to show compliance with applicable FCC Part 2.1091 and FCC Part 1.1310 of the FCC CFR 47 Rules.

1.1. Summary of tests results

RF-Exposure Evaluation (separation distance user to RF-radiating element greater 20cm)						
Test cases	**Port**	**References & Limits**		**EUT set-up**	**EUT op. mode**	**Result**
		FCC Standard	Test Limit			
Radio frequency radiation exposure Requirements	Cabinet	§1.1310 §2.1091	FCC: §1.1310 Table 1, Limits for General Population	1 to 3	1 to 13	Pass

Remark: Calculations based on Datasheet delivered by applicant

.....	.....
Dipl.-Ing. Niels Jeß	M.Schäfers
Responsible for test section	Responsible for test report

Digital signiert von: Marc Schäfers

2. Administrative Data

2.1. Identification of the testing laboratory

Company name:	CETECOM GmbH
Address:	Im Teelbruch 116 45219 Essen - Kettwig Germany
Responsible for testing laboratory:	Dipl.-Ing. Rachid Acharkaoui
Deputy:	Dipl.-Ing. Niels Jeß

2.2. Test location

2.2.1. Test laboratory "CTC"

Company name:	see chapter 2.1. Identification of the testing laboratory

2.3. Organizational items

Responsible for test report:	M. Schäfers
Receipt of EUT:	--
Date(s) of test:	--
Date of report:	2018-11-21

2.4. Applicant's details

Applicant's name:	Kathrein Automotive GmbH
Address:	Römerring 1 31137 Hildesheim Germany
Contact person:	Mr. Thomas Schuhbeck

2.5. Manufacturer's details

Manufacturer's name:	please see applicant's details
Address:	please see applicant's details

3. Equipment under test (EUT)

3.1. Summary of product description

Main function	Consumer wideband booster, cradle type		
Type	LTE Kompensator US		
TX-frequency range	Band 2 (1900MHz): 1850 - 1910 MHz (Uplink) Band 4 (2100MHz): 1710 - 1755 MHz (Uplink) Band 5 (850MHz): 824 - 849 MHz (Uplink) Band 12&17 (700MHz): 698 - 716 MHz (Uplink) Band 13 (700MHz): 777 - 787 MHz (Uplink)		
Antenna Type	☐ Integrated ☐ External, no RF- connector ☒ External, separate RF-connector: main TX + secondary RX connector		
Antenna Gain Tx (main)	External antenna gain described in Data sheet: 2ACC7LTECOMPB1_MPE_Calculation		
Path Losses	Path Losses described in Data sheet: 2ACC7LTECOMPB1_MPE_Calculation		
Installed option	☒ GPS (not tested within this test report)		
Power supply	12V DC (nominal)		
Special EMI components	--		
EUT sample type	☐ Production	☒ Pre-Production	☐ Engineering
FCC label attached	☐ yes	☒ no	

3.2. EUT: Type, S/N etc. and short descriptions used in this test report

Short descrip-tion*)	EUT	Type	S/N serial number	HW hardware status	SW software status
EUT A	LTE Kompensator US	Compensator US	18B234GK0010	13611825_B03 V07	9408752_F01_ RC14

*) EUT short description is used to simplify the identification of the EUT in this test report.

3.3. Auxiliary Equipment (AE): Type, S/N etc. and short descriptions

AE short descrip-tion *)	Auxiliary Equipment	Type	S/N serial number	HW hardware status	SW software status
AE 1	Ant 1	DA GSS/TEL/TEL/SDAR S LTE	9350090-01	--	--
AE 2	Ant 2	Telefonantenne1 Frontend Folie	9273669	--	--
AE 3	Ant 3	ECU-01 R1-US-3G / ANT 3G TEL GPS SDARS	9395306-01 + 9303036-03	--	--

*) AE short description is used to simplify the identification of the auxiliary equipment in this test report.

3.4. EUT set-ups

EUT set-up no.*)	Combination of EUT and AE	Remarks
set. 1	EUT A + AE1	Only theoretically calculation
set. 2	EUT A + AE2	Only theoretically calculation
set. 3	EUT A + AE3	Only theoretically calculation

*) EUT set-up no. is used to simplify the identification of the EUT set-up in this test report.

3.5. EUT operating modes

EUT operating mode no.*)	Description of operating modes	Additional information
op. 1	GPRS 850 TCH mode TCH=128/192/251	A communication link is established between the mobile station and the test simulator. The transmitter is operated at its maximum rated output power. USF_Duty CYCLE set to 100%. The input signal to the receiver is modulated with normal test modulation. The wanted RF input signal level to the receiver of the mobile station is set to a level to provide a stable communication link.
op. 2	E-GPRS 850 TCH mode TCH=128/192/251	
op. 3	GPRS 1900 TCH mode TCH=512/661/810	
op. 4	E-GPRS 1900 TCH mode TCH=512/661/810	

EUT operating mode no.*)	Description of operating modes	Additional information
op. 5	FDD Mode 2 RMC99-Mode	A communication link is established between the mobile station (UE) and the test simulator. The transmitter is operated on its maximum rated output power. The input signal to the receiver is modulated with normal test modulation. The wanted RF input signal level to the receiver of the mobile station is set to a level to provide a stable communication link according Table E5.1/Table E5.1A as described in 3GPP TS34.121, Annex E.
op. 6	FDD Mode 4 RMC99-Mode	
op. 7	FDD Mode 5 RMC99-Mode	
op. 8	LTE-Band 2 RMC Mode	A communication link is established between the mobile station (UE) and the test simulator. The transmitter is operated on its maximum rated output power. The input signal to the receiver is modulated with normal test modulation: QPSK or 16-QAM Modulation. The wanted RF input signal level to the receiver of the mobile station is set to a level to provide a stable communication link.
op. 9	LTE-Band 4 RMC Mode	
op. 10	LTE-Band 5 RMC Mode	
op. 11	LTE-Band 12 RMC Mode	
op. 12	LTE-Band 13 RMC Mode	
op. 13	LTE-Band 17 RMC Mode	

*) EUT operating mode no. is used to simplify the test report.

4. Measurements

4.1. Radio Frequency Exposure Evaluation §2.1091

4.1.1. Test location and equipment (for reference numbers please see chapter 'List of test equipment')

test location	☒ CETECOM Essen (Chapter. 2.2.1)	☐ Please see Chapter. 2.2.2	☐ Please see Chapter. 2.2.3
	For Evaluation instruments are not needed. Results are determined by calculation based on applicants delivered Tune-Up procedure.		

4.1.2. Requirements

FCC: §1.1310	*The criteria used for the evaluation of human exposure to radio frequency radiation is table 1 according FCC §1.1310 and table chapter 4.2 of RSS-102 standard and it is subject for evaluation of the RF exposure prior to equipment authorization.* *As the mobile equipment is authorized under Part 22 (Subpart H) and Part 24 of the FCC Rules, it is subject for evaluation of the RF exposure prior to equipment authorization.*
FCC § 2.1091	*Further information on evaluating compliance with these limits can be found in the FCC's OST/OET Bulletin Number 65, ''Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation.''* *For purposes of these requirements mobile devices are defined by the FCC as transmitters designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between radiating structures and the body of the user or nearby persons. These devices are normally evaluated for exposure potential with relation to the MPE limits given in Table 1 of Appendix A.*

4.1.2.1. Valid for FCC

Table 1: LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)				
Frequency range [MHz]	Electric field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm²]	Averaging time [minutes]
30 - 300	61.4	0.163	1.0	6
300 - 1500	-		f/300	6
1500 - 100,000	-		5	6
(B) Limits for General Population / Uncontrolled Exposure				
0.3 – 1.34	614	1.63	*(100)	30
1.34 – 30	824/f	2.19/f	*(180/f²)	30
30 - 300	27.5	0.073	0.2	30
300 - 1500	-	-	f/1500	30
1500 – 100,0	-	-	1.0	30

f=frequency in MHz
*Plane-wave equivalent power density

NOTE1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure. These limits apply to amateur station licensees and members of their immediate household as discussed in the text.

NOTE2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure. As discussed in the text, these limits apply to neighbours living near amateur radio stations.

4.1.3 General Limits:

FCC: §1.1307	*Cellular Radiotelephone Service (subpart H of part 22)* *Non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 1000 W ERP (1640 W EIRP)*
FCC §1.1307	*Personal Communications Services (part 24)* *Broadband PCS (subpart E): non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 2000 W ERP (3280 W EIRP)*
FCC §1.1310	*LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)* *Table 1(B) Limits for General Population/Uncontrolled Exposure* *300–1500 MHz: f/1500 mW/cm²* *1500–100,000 MHz: 1.0 mW/cm²*
FCC §2.1091	*Subject to routine evaluation is required when the device operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or if they operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.*
FCC §24.232	*(a) Base stations are limited to 1640 watts peak equivalent isotropically radiated power (e.i.r.p.) with an antenna height up to 300 meters HAAT.* *b) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power, …*
FCC §22.913	*(a) Maximum ERP. The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.*
FCC §27.50 (C)(10)	*(10) Portable stations (hand-held devices) are limited to 3 watts ERP; and*
FCC §27.50(d)	*(4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band are limited to 1 watt EIRP.*
KDBs	*No. 447498 D01 v06*

4.2. MPE Calculation method

Predication of MPE limit at a given distance
Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{EIRP}{4\pi R^2} = \frac{P * G}{4\pi R^2}$$

$$G_{NUMERIC} = \frac{S * 4\pi R^2}{P}$$

Where: S=power density
P=power input to antenna
G=power gain of the antenna in the direction of interest relative to an isotropic radiator
R=distance to the centre of radiation of the antenna

4.3. Evaluation Method

Valid for GSM/GPRS/EDGE mode:

• The power was tested on 3 frequencies (lowest/middle/highest) within each operable bands and the results compared to applicant's declared power values (tune-up info).
• Average burst power (slot power) and peak were measured (see separate report for GSM/GPRS/E-GPRS technology)
• A duty-cycle correction factor of 10*log10 (max. number of possible active slots / 8 slots) were applied

Please find in the following tables the calculations based on applicants tune-up information for the power values. Also the maximum admissible allowed antenna gain is calculated which is not exceeding the MPE limit for fixed and mobile operations.

Valid for W-CDMA/LTE Mode:

• The power was checked on 3 frequencies (lowest/middle/highest) within each operable FDD-band (see separate report for W-CDMA technology) and the results compared to applicant's declared power values (tune-up info). A RMS detector was used.
• No duty-cycle correction factor is applicable

Please find in the following tables the calculations based on applicants tune-up information for the power values. Also the maximum admissible allowed antenna gain is calculated which is not exceeding the MPE limit for fixed and mobile operations.

4.4. Results for fixed and mobile

Following documents have been used:
- 2ACC7LTECOMPB1_MPE_Calculation

4.4.1. Results for lower operational band: LTE Band 5, LTE Band 12, LTE Band 13, LTE Band 17, GSM 850 and FDD Band V

4.4.1.1. MPE results

Operating Mode	Frequency on channel (MHz)	Declared maximum conducted output power (dBm)	Antenna Gain (dBi)	Ext. Path Loss to antenna (external cables) (dB)	Calculated maximum EIRP (declared+ Tune-up+ antenna Gain) (dBm)	Duty cycle %	Declared Maximum EIRP (W)	Equivalent EIRP (maximum EIRP x duty cycle) (mW)	MPE Limit accord. Table 1 (mW/cm^2)	MPE-Value (mW/cm^2)	Margin to limit: (mW/cm^2)	Fraction for Co-Location calculations	Max. Fraction-Value within Frequency-Band
GSM/GPRS (Avg. Burst Power)	824,2	24,0	-0,26	0,52	23,22	100%	0,210	210	0,5495	0,0418	**0,5077**	0,0760	0,0760
	837,0	24,0	-0,26	0,52	23,22		0,210	210	0,5580	0,0418	**0,5162**	0,0748	
	848,8	24,0	-0,26	0,52	23,22		0,210	210	0,5659	0,0418	**0,5241**	0,0738	
EDGE (Avg. Burst Power)	824,2	24,0	-0,26	0,52	23,22	100%	0,210	210	0,5495	0,0418	**0,5077**	0,0760	0,0760
	837,0	24,0	-0,26	0,52	23,22		0,210	210	0,5580	0,0418	**0,5162**	0,0748	
	848,8	24,0	-0,26	0,52	23,22		0,210	210	0,5659	0,0418	**0,5241**	0,0738	
WCDMA FDD Band 5 (RMS-Value)	826,4	24,0	-0,26	0,52	23,22	100%	0,210	210	0,5509	0,0418	**0,5092**	0,0758	0,0758
	836,4	24,0	-0,26	0,52	23,22		0,210	210	0,5576	0,0418	**0,5158**	0,0749	
	846,6	24,0	-0,26	0,52	23,22		0,210	210	0,5644	0,0418	**0,5226**	0,0740	
LTE Band 5 (QPSK, #RB=1, RMS-Value)	824,7	24,0	-0,26	0,52	23,22	100%	0,210	210	0,5498	0,0418	**0,5080**	0,0759	0,0759
	836,5	24,0	-0,26	0,52	23,22		0,210	210	0,5577	0,0418	**0,5159**	0,0749	
	848,3	24,0	-0,26	0,52	23,22		0,210	210	0,5655	0,0418	**0,5238**	0,0738	
LTE Band 5 (16QAM, #RB=1, RMS-Value)	824,7	24,0	-0,26	0,52	23,22	100%	0,210	210	0,5498	0,0418	**0,5080**	0,0759	0,0759
	836,5	24,0	-0,26	0,52	23,22		0,210	210	0,5577	0,0418	**0,5159**	0,0749	
	848,3	24,0	-0,26	0,52	23,22		0,210	210	0,5655	0,0418	**0,5238**	0,0738	
LTE Band 12 (QPSK, #RB=1, RMS-Value)	699,7	22,0	-0,38	0,48	21,14	100%	0,130	130	0,4665	0,0259	**0,4406**	0,0555	0,0555
	707,4	22,0	-0,38	0,48	21,14		0,130	130	0,4716	0,0259	**0,4457**	0,0548	
	715,3	22,0	-0,38	0,48	21,14		0,130	130	0,4769	0,0259	**0,4510**	0,0542	
LTE Band 12 (16QAM, #RB=1, RMS-Value)	699,7	22,0	-0,38	0,48	21,14	100%	0,130	130	0,4665	0,0259	**0,4406**	0,0555	0,0555
	707,4	22,0	-0,38	0,48	21,14		0,130	130	0,4716	0,0259	**0,4457**	0,0548	
	715,3	22,0	-0,38	0,48	21,14		0,130	130	0,4769	0,0259	**0,4510**	0,0542	
LTE Band 13 (QPSK, #RB=1, RMS-Value)	779,5	22,0	0,75	0,50	22,25	100%	0,168	168	0,5197	0,0334	**0,4863**	0,0643	0,0643
	782,0	22,0	0,75	0,50	22,25		0,168	168	0,5213	0,0334	**0,4879**	0,0641	
	784,5	22,0	0,75	0,50	22,25		0,168	168	0,5230	0,0334	**0,4896**	0,0639	
LTE Band 13 (16QAM, #RB=1, RMS-Value)	779,5	22,0	0,75	0,50	22,25	100%	0,168	168	0,5197	0,0334	**0,4863**	0,0643	0,0643
	782,0	22,0	0,75	0,50	22,25		0,168	168	0,5213	0,0334	**0,4879**	0,0641	
	784,5	22,0	0,75	0,50	22,25		0,168	168	0,5230	0,0334	**0,4896**	0,0639	
LTE Band 17 (QPSK, #RB=1, RMS-Value)	706,5	22,0	-0,38	0,48	21,14	100%	0,130	130	0,4710	0,0259	**0,4451**	0,0549	0,0549
	710,0	22,0	-0,38	0,48	21,14		0,130	130	0,4733	0,0259	**0,4475**	0,0546	
	713,5	22,0	-0,38	0,48	21,14		0,130	130	0,4757	0,0259	**0,4498**	0,0544	
LTE Band 17 (16QAM, #RB=1, RMS-Value)	706,5	22,0	-0,38	0,48	21,14	100%	0,130	130	0,4710	0,0259	**0,4451**	0,0549	0,0549
	710,0	22,0	-0,38	0,48	21,14		0,130	130	0,4733	0,0259	**0,4475**	0,0546	
	713,5	22,0	-0,38	0,48	21,14		0,130	130	0,4757	0,0259	**0,4498**	0,0544	

Maximum calculated MPE value:		
Lowest MPE-Limit in Frequency-Band:	**0,4665**	**[mW/cm^2]**
Highest MPE value in frequency-band:	**0,0418**	**[mW/cm^2]**
Lowest margin to limit in frequency band:	**0,4406**	**[mW/cm^2]**

Remark: Only the worst case antenna gain (AE1) considered
Remark 2: Declared maximum conducted output power includes production tolerance

4.4.2. Results for upper operational band: LTE Band 4 and FDD Band IV

4.4.2.1. MPE results

Operating Mode	Frequency on channel (MHz)	Declared maximum conducted output power (dBm)	Antenna Gain (dBi)	Ext. Path Loss to antenna (external cables) (dB)	Calculated maximum EIRP (declared+ Tune-up+ antenna Gain) (dBm)	Duty cycle %	Declared Maximum EIRP (W)	Equivalent EIRP (maximum EIRP x duty cycle) (mW)	MPE Limit accord. Table 1 (mW/cm^2	MPE-Value (mW/cm^2)	Margin to limit: (mW/cm^2)	Fraction for Co-Location calculations	Max. Fraction-Value within Frequency-Band
W-CDMA Band 4 (RMS-Value)	1712,4	22,0	2,66	0,78	23,88	100%	0,2443	244,3	1,0000	0,0486	0,9514	0,048611	0,0486105
	1740,0	22,0	2,66	0,78	23,88		0,2443	244,3	1,0000	0,0486	0,9514	0,048611	
	1752,6	22,0	2,66	0,78	23,88		0,2443	244,3	1,0000	0,0486	0,9514	0,048611	
LTE Band 4 (QPSK, #1RB, RMS-Value)	1710,7	22,0	2,66	0,78	23,88	100%	0,2443	244,3	1,0000	0,0486	0,9514	0,048611	0,0486105
	1732,5	22,0	2,66	0,78	23,88		0,2443	244,3	1,0000	0,0486	0,9514	0,048611	
	1754,3	22,0	2,66	0,78	23,88		0,2443	244,3	1,0000	0,0486	0,9514	0,048611	
LTE Band 4 (16QAM, #1RB, RMS-Value)	1710,7	22,0	2,66	0,78	23,88	100%	0,2443	244,3	1,0000	0,0486	0,9514	0,048611	0,0486105
	1732,5	22,0	2,66	0,78	23,88		0,2443	244,3	1,0000	0,0486	0,9514	0,048611	
	1754,3	22,0	2,66	0,78	23,88		0,2443	244,3	1,0000	0,0486	0,9514	0,048611	

Maximum calculated MPE value:		
Lowest MPE-Limit in frequency-band:	1,0000	[mW/cm^2]
Highest MPE value in frequency-band:	0,0486	[mW/cm^2]
Lowest margin to limit in frequency-band:	0,9514	[mW/cm^2]

Remark: Only the worst case antenna gain (AE1) considered
Remark 2: Declared maximum conducted output power includes production tolerance

4.4.3. Results for upper operational band: LTE Band 2, FDD Band II and GSM 1900

4.4.3.1. MPE results

Operation Mode	Frequency on channel (MHz)	Declared maximum conducted output power (dBm)	Antenna Gain (dBi)	Ext. Path Loss to antenna (external cables) (dB)	Declared maximum EIRP (Measured+ Tune-up+ Antenna Gain) (dBm)	Duty cycle %	Declared Maximum EIRP (W)	Equivalent EIRP (maximum EIRP x duty cycle) (mW)	MPE Limit accord. Table 1 (mW/cm^2)	MPE-Value (mW/cm^2)	Margin to limit: (W/m^2)	Fraction for Co-Location calculations	Max. Fraction-Value within Frequency-Band
GSM/GPRS (Avg. Burst Power)	1850,2	24,0	3,15	0,80	26,35	100%	0,432	432	1,0000	0,0858	0,9142	0,085848	0,0858480
	1880,0	24,0	3,15	0,80	26,35		0,432	432	1,0000	0,0858	0,9142	0,085848	
	1909,8	24,0	3,15	0,80	26,35		0,432	432	1,0000	0,0858	0,9142	0,085848	
EDGE (Avg. Burst Power)	1850,2	24,0	3,15	0,80	26,35	100%	0,432	432	1,0000	0,0858	0,9142	0,085848	0,0858480
	1880,0	24,0	3,15	0,80	26,35		0,432	432	1,0000	0,0858	0,9142	0,085848	
	1909,8	24,0	3,15	0,80	26,35		0,432	432	1,0000	0,0858	0,9142	0,085848	
W-CDMA FDD Band 2 (RMS-Value)	1852,4	24,0	3,15	0,80	26,35	100%	0,432	432	1,0000	0,0858	0,9142	0,085848	0,0858480
	1880,0	24,0	3,15	0,80	26,35		0,432	432	1,0000	0,0858	0,9142	0,085848	
	1907,6	24,0	3,15	0,80	26,35		0,432	432	1,0000	0,0858	0,9142	0,085848	
LTE Band 2 (QPSK, #1RB, RMS-Value)	1850,7	24,0	3,15	0,80	26,35	100%	0,432	432	1,0000	0,0858	0,9142	0,085848	0,0858480
	1880,0	24,0	3,15	0,80	26,35		0,432	432	1,0000	0,0858	0,9142	0,085848	
	1909,3	24,0	3,15	0,80	26,35		0,432	432	1,0000	0,0858	0,9142	0,085848	
LTE Band 2 (16QAM, #1RB, RMS-Value)	1850,7	24,0	3,15	0,80	26,35	100%	0,432	432	1,0000	0,0858	0,9142	0,085848	0,0858480
	1880,0	24,0	3,15	0,80	26,35		0,432	432	1,0000	0,0858	0,9142	0,085848	
	1909,3	24,0	3,15	0,80	26,35		0,432	432	1,0000	0,0858	0,9142	0,085848	

Maximum calculated MPE value:		
Lowest MPE-Limit in frequency-band:	1,0000	[mW/cm^2]
Highest MPE value in frequency-band:	0,0858	[mW/cm^2]
Margin to limit in frequency-band:	0,9142	[mW/cm^2]

Remark: Only the worst case antenna gain (AE1) considered
Remark 2: Declared maximum conducted output power includes production tolerance

4.5. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

4.6. Measurement uncertainties

The reported uncertainties are calculated based on the standard uncertainty multiplied with the appropriate coverage factor **k**, such that a confidence level of approximately 95% is achieved.
For uncertainty determination, each component used in the concrete measurement set-up was taken in account and it's contribution to the overall uncertainty according it's statistical distribution calculated.

Following table shows expectable uncertainties for each measurement type performed.

RF-Measurement	Reference	Frequency range	Calculated uncertainty based on a confidence level of 95%						Remarks
Conducted emissions (U_{CISPR})	CISPR 16-2-1	9 kHz - 150 kHz 150 kHz - 30 MHz	4.0 dB 3.6 dB						-
Radiated emissions Enclosure	CISPR 16-2-3	30 MHz - 1 GHz 1 GHz - 18 GHz	4.2 dB 5.1 dB						E-Field
Disturbance power	CISPR 16-2-2	30 MHz - 300 MHz	-						-
Power Output radiated	-	30 MHz - 4 GHz	3.17 dB						Substitution method
Power Output conducted	-	Set-up No.	Cel-C1	Cel-C2	BT1	W1	W2		
		9 kHz - 12.75 GHz	N/A	0.60	--	--	--		-
		12.75 - 26.5GHz	N/A	0.82	--	--	--		
Conducted emissions on RF-port	-	9 kHz - 2.8 GHz	0.70	N/A	--	--	--		N/A - not applicable
		2.8 GHz - 12.75GHz	1.48	N/A	--	--	--		
		12.75 GHz - 18GHz	1.81	N/A	--	--	--		
		18 GHz - 26.5GHz	1.83	N/A	--	--	--		
Occupied bandwidth	-	9 kHz - 4 GHz	0.1272 ppm (Delta Marker)						Frequency error
			1.0 dB						Power
Emission bandwidth	-	9 kHz - 4 GHz	0.1272 ppm (Delta Marker)						Frequency error
	-		See above: 0.70 dB						Power
Frequency stability	-	9 kHz - 20 GHz	0.0636 ppm						-
Radiated emissions Enclosure	-	150 kHz - 30 MHz 30 MHz - 1 GHz 1 GHz - 20 GHz	5.0 dB 4.2 dB 3.17 dB						Magnetic field E-field Substitution

Table: measurement uncertainties, valid for conducted/radiated measurements

5. Abbreviations used in this report

The abbreviations	
ANSI	American National Standards Institute
AV , AVG, CAV	Average detector
EIRP	Equivalent isotropically radiated power, determined within a separate measurement
EGPRS	Enhanced General Packet Radio Service
EUT	Equipment Under Test
FCC	Federal Communications Commission, USA
IC	Industry Canada
n.a.	not applicable
Op-Mode	Operating mode of the equipment
PK	Peak
RBW	resolution bandwidth
RF	Radio frequency
RSS	Radio Standards Specification, Dokuments from Industry Canada
Rx	Receiver
TCH	Traffic channel
Tx	Transmitter
QP	Quasi peak detector
VBW	Video bandwidth
ERP	Effective radiated power

6. Accreditation details of CETECOM's laboratories and test sites

Ref.-No.	Accreditation Certificate	Valid for laboratory area or test site	Accreditation Body
-	D-PL-12047-01-01	All laboratories and test sites of CETECOM GmbH, Essen	DAkkS, Deutsche Akkreditierungsstelle GmbH
337 487 558 348 348	MRA US-EU 0003	Radiated Measurements 30 MHz to 1 GHz, 3 m / 10 m (OATS) Radiated Measurements 30 MHz to 1 GHz, 3 m (SAR) Radiated Measurements above 1 GHz, 3 m (FAR) Mains Ports Conducted Interference Measurements Telecommunication Ports Conducted Interference Measurem.	FCC, Federal Communications Commission Laboratory Division, USA
337 487 550 558	3462D-1 3462D-2 3462D-2 3462D-3	Radiated Measurements 30 MHz to 1 GHz, 3 m / 10 m (OATS) Radiated Measurements 30 MHz to 1 GHz, 3 m (SAR) Radiated Measurements 1 GHz to 6 GHz, 3 m (SAR) Radiated Measurements above 1 GHz, 3 m (FAR)	IC, Industry Canada Certification and Engineering Bureau
487 550 348 348	R-2666 G-301 C-2914 T-1967	Radiated Measurements 30 MHz to 1 GHz, 3 m (SAR) Radiated Measurements 1 GHz to 6 GHz, 3 m (SAR) Mains Ports Conducted Interference Measurements Telecommunication Ports Conducted Interference Measurem.	VCCI, Voluntary Control Council for Interference by Information Technology Equipment, Japan
OATS = Open Area Test Site, SAR = Semi Anechoic Room, FAR = Fully Anechoic Room			

7. Versions of test reports (change history)

Version	Applied changes	Date of release
--	Initial release	2018-11-21

End of Report