

Prüfbericht-Nr.: Test report no.:	ULR-TC568822300000052F	Auftrags-Nr.: Order no.:	146688043 10	Seite 1 von 90 Page 1 of 90
Kunden-Referenz-Nr.: Client reference no.:	NA	Auftragsdatum: Order date:	2022-05-23	
Auftraggeber: Client:	Bosch Global Software Technologies Private Limited RBEI/Pac, Ban601, Post Box No 3000 Hosur Road, Adugodi Bengaluru 560030 India			
Prüfgegenstand: Test item:	Connectivity Control Unit (CCU)			
Bezeichnung / Serien-Nr.: Identification / Serial no.:	CU-304-0510			
Auftrags-Inhalt: Order content:	Testing and Issue of FCC and IC grant certificate			
Prüfgrundlage: Test specification:	FCC Part 2, Part 22H, Part 24E & Part 27 RSS 132 Issue 3, RSS 133 Issue 6 Amendment1, RSS-139 Issue 3, RSS 130 Issue 2 RSS-Gen Issue 5 Amendment 1			
Wareneingangsdatum: Date of sample receipt:	2022-06-09			
Prüfmuster-Nr.: Test sample no:	A003277031-001 A003277031-002			
Prüfzeitraum: Testing period:	2022-06-09 - 2022-06-16			
Ort der Prüfung: Place of testing:	Wireless laboratory, Bangalore			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (India) Pvt. Ltd. 27/B, 2 nd Cross, Electronic City Phase I, Bangalore – 560100, India FCC Test Site Registration No: 496599 IC Test Site Registration Number: 3466E-1			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by:	genehmigt von: authorized by:			
Datum: Date: 2022-06-17	Ausstellatum: Issue date: 2022-06-23			
Stellung / Position: Yogesh V Engineer	Stellung / Position: Madhu Nagaraju Senior Engineer			
Sonstiges / Other:	FCC ID: 2AVVT-CU3040510-R6 IC: 25763-CU3040510R6			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* Legende: 1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar	5 = mangelhaft N/T = nicht getestet
* Legend: 1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable	5 = poor N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 2 von 90
Page 1 of 90

TEST SUMMARY

Test Item	FCC Clause	ISED Clause	Results
Conducted Output Average Power and Peak to Average Power ratio	§2.1046 §22.913 §24.232 §27.50	RSS 130 Issue 2, Section 4.6.1 RSS 132 Issue 3, Section 5.4 RSS 133 Issue 6 Amendment 1, Section 6.4 RSS 139 Issue 3, Section 6.5 RSS Gen Issue 5, Section 6.12	Pass
Equivalent Isotropic Radiated Power (EIRP) / Effective Radiated Power (ERP)	§24.232 (c) §27.50 (d)(4) §22.913 (a)(5) §27.50 (c)(9)	RSS 130 Issue 2, Section 4.6.3 RSS 132 Issue 3, Section 5.4 RSS 133 Issue 6 Amendment 1, Section 6.4 RSS 139 Issue 3, Section 6.5	Pass
Field strength of spurious radiation	§24.238(a) §27.53 (h)(1) §22.917 (a) §27.53 (g)	RSS 130 Issue 2, Section 4.7.1 RSS 132 Issue 3, Section 5.5 RSS 133 Issue 6 Amendment 1, Section 6.5 RSS 139 Issue 3, Section 6.6	Pass
Frequency Stability	2.1055 22.355 24.235 27.54	RSS 130 Issue 2, Section 4.5 RSS Gen Issue 5, Section 6.11 RSS 132 Issue 3, Section 5.3 RSS 133 Issue 6 Amendment 1, Section 6.3 RSS 139 Issue 3, Section 6.4	N/T
Emission Bandwidth and Occupied Bandwidth	2.1049	RSS Gen Issue 5, Section 6.7	N/T
Band Edge	22.917 24.238 27.53	RSS 130 Issue 2, Section 4.7 RSS 132 Issue 3, Section 5.5 RSS 133 Issue 6 Amendment 1, Section 6.5 RSS 139 Issue 3, Section 6.6	N/T
Conducted Spurious Emissions	2.1051 22.917 24.238 27.53	RSS 130 Issue 2, Section 4.7 RSS Gen Issue 5, Section 6.13 RSS 133 Issue 6 Amendment 1, Section 6.5 RSS 139 Issue 3, Section 6.6	N/T

Note: N/T: Not Tested

Connectivity Control Unit (CCU) product uses certified RF modules with **FCC IDs: XPYUBX21BE01** and **IC: 8595A-UBX21BE01**, hence the above mentioned test cases are excluded and which can be found in the module test report of respective FCC and IC Ids.

Product Category: Electronics Testing
Test Discipline: EMC Test Facility

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 3 von 90
Page 1 of 90

REVISION HISTORY OF THIS REPORT

Report Number	Version	Description	Issue date
ULR-TC568822300000052F	01	Initial issue of report	2022-06-23

Table of Contents

1	GENERAL REMARKS	5
1.1	Attachments.....	5
2	TEST SITES.....	6
2.1	Testing Facilities	6
2.2	List of Test and Measurement Instruments	6
3	GENERAL PRODUCT INFORMATION	8
3.1	Product Function and Intended Use	8
3.2	Ratings and System Details of Equipment under Test.....	8
3.3	Simultaneous operation.....	9
3.4	Measurement Uncertainty:	10
4	TEST SET-UP AND OPERATION MODE	11
4.1	Principle of Configuration Selection	11
4.2	Operation and Software of the EUT	11
4.3	Test modes – data rates and modulations	11
4.4	Special Accessories and Auxiliary Equipment	11
4.5	Countermeasures to achieve EMC Compliance	11
4.6	Report references	11
5	Operational Description of the product	14
6	Block Diagram of the product.....	14
7	TEST METHODOLOGY	15
	Radiated Emission Test	15
7.1.1	Test Setup Configuration.....	15
8	TEST RESULTS	18
8.1	Conducted Output Average Power.....	18
8.2	Peak to Average Power Ratio (PAPR)	45
8.3	Equivalent Isotropic Radiated Power (EIRP) / Effective Radiated Power (ERP)	72
8.4	Field Strength of Spurious Radiation.....	77
9	LIST OF TABLES.....	90

1 GENERAL REMARKS

1.1 Attachments

All attachments are part of this test report and are issued in separate document

1: TEST SETUP PHOTOS

2: EUT EXTERNAL PHOTOS

3: EUT INTERNAL PHOTOS

4: FCC LABEL AND LABEL LOCATION

5: BLOCK DIAGRAM

6: SPECIFICATION OF EUT

7: SCHEMATIC DIAGRAM

8: BILL OF MATERIAL

9: USER MANUAL

10: MAXIMUM PERMISSIBLE EXPOSURE INFORMATION

2 TEST SITES

2.1 Testing Facilities

1. TÜV Rheinland (India) Pvt.Ltd.,
27/B, 2nd Cross,
ElectronicCityPhase1
Bangalore – 560 100,
India
2. TUV Rheinland (India) Private Limited
108 , Beside ISBR Business School,
Electronic city Phase I
Bangalore - 560 100.
India

2.2 List of Test and Measurement Instruments

Table 1: List of test and measurement instruments

Equipment	Manufacturer	Model Name	Serial Number	Firmware Versions	Calibration Due Date	Periodicity	Test Facility
Active loop antenna	Schwarz beck	FMZB 1519 B	1519B-00111	-	27.06.2022	Yearly	Radiated Spurious Emission
Balun & Biconical Antenna	Schwarz beck Mess-Elektronik	BBA 9106+V HBB 9124	9124-1117	-	03.02.2023	Yearly	
Log - Periodical Antenna	Schwarzbeck Mess-Elektronik	VUSLP 9111B	9111B-324	-	04.02.2023	Yearly	
Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-1944	-	03.07.2022	Yearly	
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-0904	-	06.07.2022	Yearly	
EMI Receiver	Rohde & Schwarz	ESW 44	101732	4.73.SP5	19.08.2022	Yearly	
EMI Receiver	Rohde & Schwarz	ESW44	101773	1.72SP1	12.02.2023	Yearly	
Semi Anechoic Chamber	Frankonia	-	-	-	-	-	
Fully Anechoic Chamber	Albatross	-	-	-	-	-	
30dB Attenuator	Mini Circuits	BW-N30W5 +	938	-	13.10.2022	Yearly	Antenna - Port Measurements
Power Splitter	Mini Circuits	ZN4PD1 -63HP-S+	SF01530 1638	-	13.10.2022	Yearly	
USB Wideband Power Sensor	Boonton	55006	10231	-	24.03.2023	Yearly	
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	158345	-	24.08.2022	Yearly	

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568822300000052F

Seite 7 von 90

Page 1 of 90

Table 2: Instrument application Software versions

SL. No.	Test Type	Application software	Version
1	Radiated spurious emission measurement in 10Mtr - SAC	BAT EMC	3.20.0.17
2	Radiated spurious emission measurement in 3Mtr-FAC	EMC 32	10.60.00

3 GENERAL PRODUCT INFORMATION

3.1 Product Function and Intended Use

Product is telematics unit designed to work in vehicle, collect vehicle information and send this data to cloud-based server. It acts as a secure gateway for communication to and from the machine.

3.2 Ratings and System Details of Equipment under Test

Table 3: Ratings and System Details as declared by Client*

Cellular Operator	AT&T				
FCC ID	2AVVT-CU3040510-R6				
IC ID	25763-CU3040510R6				
Radio Protocol	LTE & WCDMA				
LTE E-UTRA operating bands	Band	Bandwidth (MHz)	UL Frequency (MHz)	DL Frequency (MHz)	Modulation
	2	1.4, 3, 5, 10, 15, 20	1850.7 - 1909.3	1930.7-1989.3	QPSK, 16QAM
	4	1.4, 3, 5, 10, 15, 20	1710.7 - 1754.3	2110.7-2154.3	QPSK, 16QAM
	5	1.4, 3, 5, 10	824.7 - 848.3	869.7 - 893.3	QPSK, 16QAM
	12	1.4, 3, 5, 10	699 - 716	729 - 746	QPSK, 16QAM
WCDMA/HSDPA/HSUPA	2	-	1852.4-1907.6	1932.4-1987.6	QPSK
	5	-	826.4-846.6	871.4-891.6	QPSK
Transmitted Power for LTE (dBm)	Band	Power Class		Max. Conducted Average. Output Power	
	2	Power Class 3: 23dBm		21.56 dBm	
	4	Power Class 3: 23dBm		21.70 dBm	
	5	Power Class 3: 23dBm		22.67 dBm	
	12	Power Class 3: 23dBm		21.90 dBm	
Transmitted Power for WCDMA (dBm)	2	Power Class 3: 24dBm		20.92 dBm	
	5	Power Class 3: 24dBm		22.07 dBm	
Antenna Type	3D Folded U Shape Antenna (LTE - 2 No.), Active patch antenna (GNSS - 1No.)				
Number of Antenna	3				
Antenna Gain	Refer Table 4: Antenna Gain Details				
Supply Voltage to Product	24VDC, Low Voltage - 9VDC, High Volthage - 32VDC				

Table 4: Antenna Gain Details

Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)
700	-3.3	900	0.4	1850	5.2	2100	5.2
750	-2.7	1700	4.3	1950	5.2	2150	5.1
800	-1.8	1750	4.4	2000	4.6	2200	5.1
850	0	1800	4.6	2050	4.7	2250	4.6

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 9 von 90
Page 1 of 90

***Disclaimer:**

The information/data is supplied by the client and the same is considered to arrive at the final value. Any changes made apart from the specified specification, can directly impact on the test results. Refer the product's user manual for more details.

Note: Product Connectivity Control Unit (CCU) has multiple protocols. All the supported wireless protocols and their respective test results are issued in separate test reports, refer clause 4.6 or report reference.

3.3 Simultaneous operation

This product does not support simultaneous transmission.

3.4 Measurement Uncertainty:

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k = 2$

Table 5: Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	± 0.51 dB
Power Spectral Density, conducted	± 0.85 dB
Unwanted Emissions, conducted	± 2.58 dB
SAC, radiated measurement	± 3.67 dB
FAC, radiated measurement	± 4.95 dB
Temperature	± 3 °C
Supply Voltages	± 3 %
Time	± 5 %

Note: The Listed Measurement Uncertainties are the worst-case uncertainty, for the respective test cases. Above Table is for reporting purpose only and not used in determining Final Pass/Fail verdict.

4 TEST SET-UP AND OPERATION MODE

4.1 Principle of Configuration Selection

Transmission was enabled with the help of CMW 500 on low, middle & high channels for LTE and WCDMA as mentioned in the Table 6.

4.2 Operation and Software of the EUT

Software Name: 12.0.0
Software Version: 12.0.0
Hardware Name: AD00A101355EA
Hardware Version: AD00A101355EA

4.3 Test modes – data rates and modulations

Radiated spurious emissions tests were performed and reported only for EUT worst case operating modes

4.4 Special Accessories and Auxiliary Equipment

- None

4.5 Countermeasures to achieve EMC Compliance

- None

4.6 Report references

Note: Product Connectivity Control Unit (CCU) has multiple protocols. All the supported wireless protocols and their respective test results are issued in separate test reports.

SL. No.	RF Protocol / Frequency Bands	Report No.
1	LTE, WCDMA	ULR-TC568822300000052F

Table 6: TUV Sample identification details

Samples used for Testing	S/N Number
Antenna port measurement	A003277031-001
Radiated mode test	A003277031-002

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 12 von 90
Page 1 of 90

Table 7: Mode of Operation

LTE Band 2						
Channel Bandwidth	1.4MHz		3MHz		5MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low Channel	18607	1850.7	18615	1851.5	18625	1852.5
Mid Channel	18900	1880.0	18900	1880.0	18900	1880.0
High Channel	19913	1909.3	19185	1908.5	19175	1907.5
Channel Bandwidth	10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low Channel	18650	1855.0	18675	1857.51	18700	1860.0
Mid Channel	18900	1880.0	18900	1880.0	18900	1880.0
High Channel	19150	1905.0	19125	1902.5	19100	1900.0

LTE Band 4						
Channel Bandwidth	1.4MHz		3MHz		5MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low Channel	19957	1710.7	19965	1711.5	19975	1712.5
Mid Channel	20175	1732.5	20175	1732.5	20175	1732.5
High Channel	20393	1754.3	20385	1753.5	20375	1752.5
Channel Bandwidth	10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low Channel	20000	1715.0	20025	1717.5	20050	1720.0
Mid Channel	20175	1732.5	20175	1732.5	20175	1732.5
High Channel	20350	1750.0	20325	1747.5	20300	1745.0

LTE Band 5				
Channel Bandwidth	1.4MHz		3MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low Channel	20407	824.7	20415	825.5
Mid Channel	20525	836.5	20525	836.5
High Channel	20643	848.3	20635	847.5
Channel Bandwidth	5MHz		10MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low Channel	20425	826.5	20450	829.0
Mid Channel	20525	836.5	20525	836.5
High Channel	20625	846.5	20600	844.0

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 13 von 90
Page 1 of 90

LTE Band 12				
Channel Bandwidth	1.4MHz		3MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low Channel	23017	699.7	23025	700.5
Mid Channel	23095	707.5	23095	707.5
High Channel	23173	715.3	23165	714.5
Channel Bandwidth	5MHz		10MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low Channel	23035	701.5	23060	704.0
Mid Channel	23095	707.5	23095	707.0
High Channel	23155	713.5	23130	711.0

Channel Bandwidth	WCDMA Band 2		WCDMA Band 5	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low Channel	9262	1852.4	4132	826.4
Mid Channel	9400	1880.0	4183	836.6
High Channel	9538	1907.6	4233	846.6

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 14 von 90
Page 1 of 90

5 Operational Description of the product

The Connectivity Control Unit (CCU) shall track the location of the vehicle and shall use LTE to communicate to the cloud system. CCU Powered from 24V/12V DC system with a nominal voltage of 14/28V DC, Operating voltage range: 9-32V. CCU will support the LTE Bands 2,4,5 & 12, WCDMA Bands 2 & 5 and 1575MHz-GPS.

6 Block Diagram of the product

7 TEST METHODOLOGY

Radiated Emission Test

Frequency Range 9 kHz - 30 MHz

Test performed as per ANSI C63.4-2014 section 8.3

The loop Antenna was placed at 1m above the ground plane & EUT is 3 meters far from the measuring antenna. With 3m measurement distance, correction data were applied to the measured results. The test arrangement, measuring antenna guidelines and operational configurations in 8.2.1 and 8.2.2, shall be followed. The measurement antenna shall be positioned with its plane perpendicular to the ground at the Specified distance, when perpendicular to the ground plane, the lowest height of the magnetic antenna shall be 1 m above the ground and shall be positioned at the specified distance from the EUT. EUT & its associates are placed on non-conducting table of 0.8m height which is placed on the turn table, For each measurement antenna alignment, the EUT shall be rotated through 0° to 360° on a turntable. The report shall list worst case emission results, for each of the parallel & perpendicular orientations.

7.1.1 Test Setup Configuration

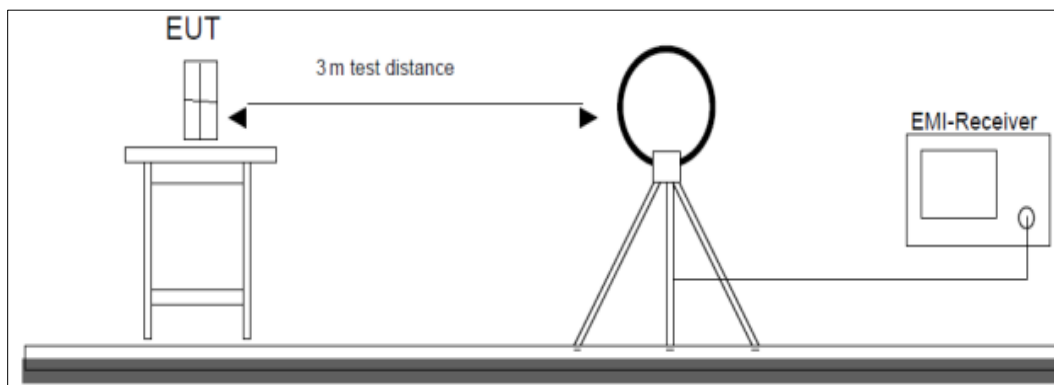


Figure 1: Frequency Range 9 kHz- 30 MHz

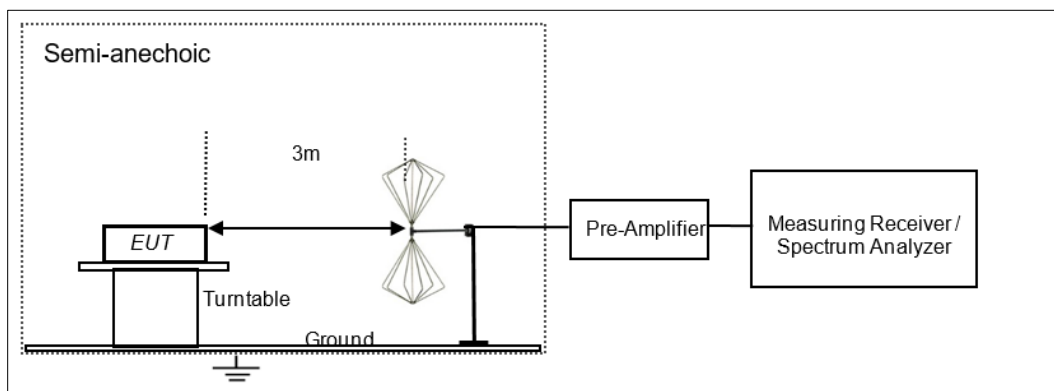


Figure 2: Frequency Range 30 MHz – 200 MHz

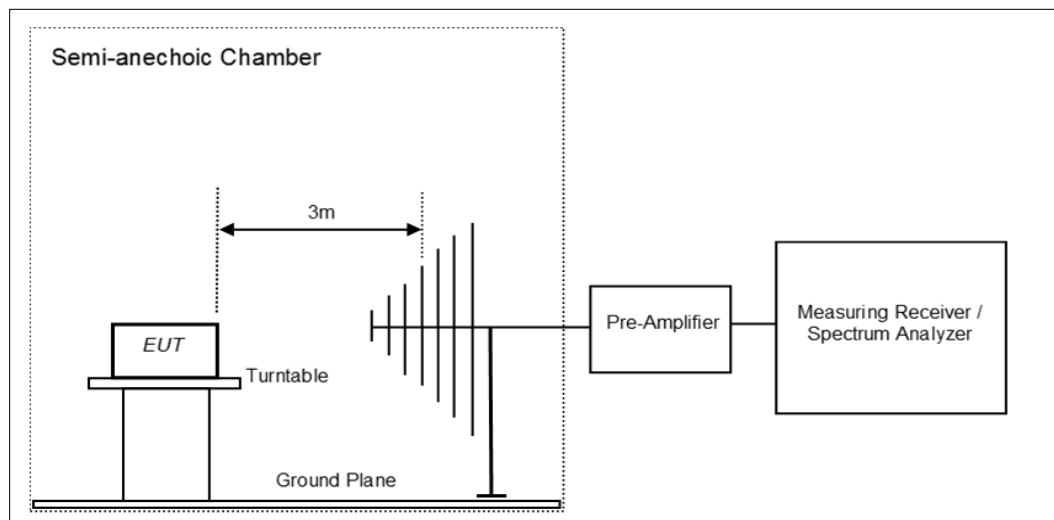


Figure 3: Frequency Range 200 MHz - 1GHz

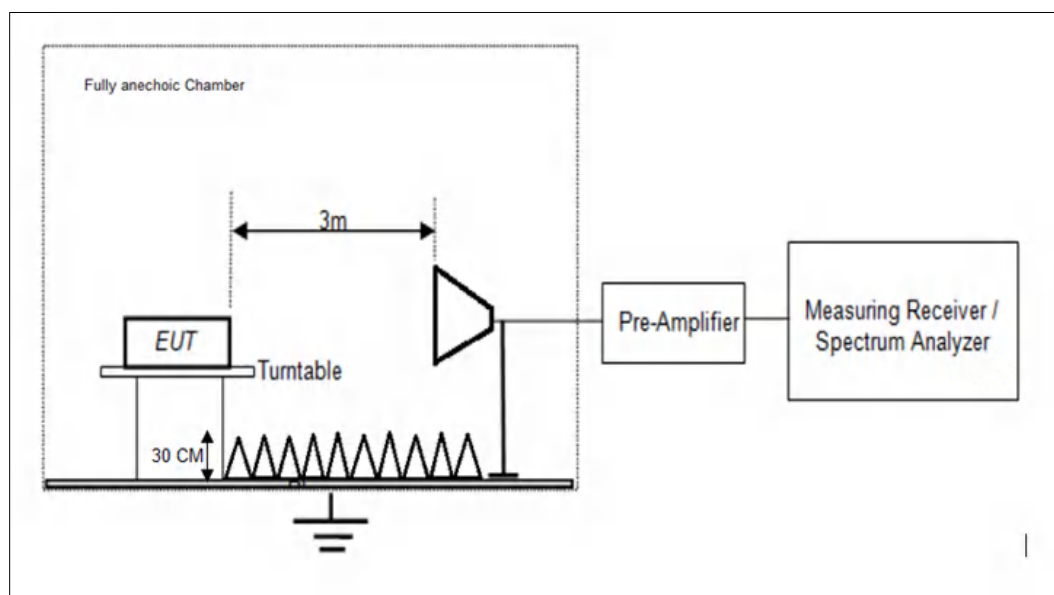


Figure 4: Frequency Range above 1 GHz

Frequency Range 30MHz to 10th harmonics of the highest fundamental frequency

Test performed as per ANSI C63.26-2015

ERP/EIRP Radiated Power & Radiated spurious emission test are performed as below.

All the radiated emission measurements are performed in accordance with common requirement specified in 5.5.2 and Pre-test site path loss correction factors are used to adjust the EUT emission data in place of two step substitution method (as defined in Annex B of ANSI C63.26-2015).

The equipment under test is placed on non-conductive table at 3m away from the receive antenna in accordance with above mentioned standard. Turn table is rotated through 360 degree, and receiver antenna height is varied in order to determine the level of maximum emission. The maximum emission level and position of the maximized emission is recorded with use of spectrum analyzer.

Using pre-test site path loss to determine EUT emission power:

- 1) EUT emission powers are calculated using the following equation:

$$\text{Emission Power} = \text{EUT}_{\text{Prec}} [\text{dBm EIRP}] + \text{P}_L [\text{dB}]$$

where

EUT_{Prec} = power of the emission measured at the test receiver during EUT measurements.

P_L = path loss determined on the frequency of the EUT emission or calculated using linear interpolation between site characterization frequencies.

- 2) This is the level to be compared against the regulatory limit as it is the emission power referenced back to the EUT on the test site.

8 TEST RESULTS

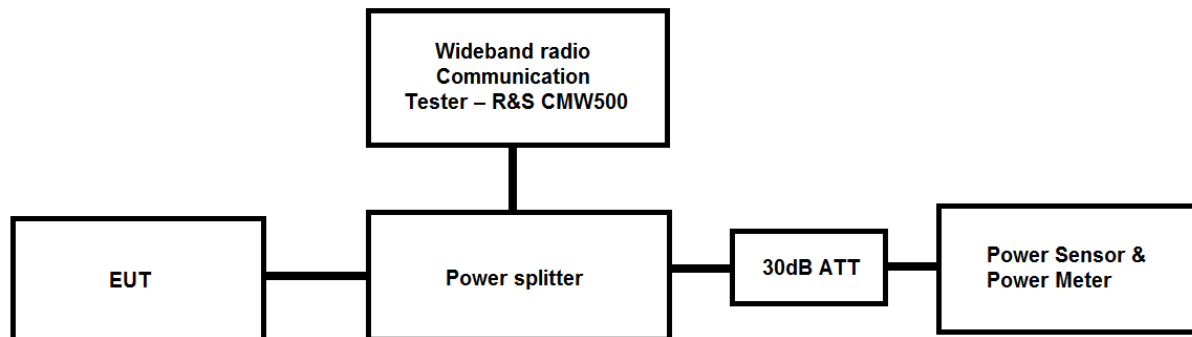
8.1 Conducted Output Average Power

Result

Pass

Test Specification	FCC Part §2.1046 , §24.232, §27.50, §22.913
	RSS 130 Issue 2, Section 4.6.1
	RSS 132 Issue 3, Section 5.4
	RSS 133 Issue 6 Amendment 1, Section 6.4
	RSS 139 Issue 3, Section 6.5
	RSS Gen Issue 5, Section 6.12
Test Method / Procedure	ANSI C63.26-2015 971168 D01 Power Meas License Digital Systems v03r01
Measurement Bandwidth(RBW)	≥ OBW
Detector function	Peak / Average
Requirement	NA

Test Setup:



Environmental conditions:

Temperature (Norm) = + 22.3 °C Voltage = 24 V DC (through AC to DC supply) Relative humidity = 62 %

KDB Guidelines applied:

Measurements were made as per section 5.1.3, section 5.2.4 and section 5.7.3 in KDB 971168 D01 Power Meas License Digital Systems v03r01.

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 19 von 90
Page 1 of 90

Test results:

Note:

1. All the losses are included during measurement and final values are mentioned in the test report.
2. RF Output power (dBm) = Measured power (dBm) + Attenuator factor (30dB) + Power Splitter (6 dB) + Cable loss (1dB)
3. This product do not support additional beamforming gain / directional gain, it uses single antenna and hence directional gain of the single antenna is **Table 4: Antenna Gain Details** dBi

Table 8: Conducted Power test results

LTE BAND 2								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Low	QPSK	18607	1850.7	1.4	1	Low	20.85	26.05
					1	Mid	20.91	25.96
					1	High	20.84	26.03
					3	Low	20.82	26.25
					3	High	20.71	26.19
					6	Low	19.87	26.29
					6	High	19.87	26.32
		18615	1851.5	3	1	Low	20.85	26.08
					1	Mid	20.89	25.91
					1	High	20.87	26.04
					8	Low	19.87	25.61
					8	High	19.93	25.78
					15	Low	19.91	26.72
					15	High	19.90	26.68
		18625	1852.5	5	1	Low	20.67	25.79
					1	Mid	20.67	25.68
					1	High	20.68	25.79
					12	Low	19.84	25.66
					12	High	19.94	25.69
					25	Low	19.97	26.72
					25	High	19.97	26.74
		18650	1855	10	1	Low	20.85	25.99
					1	Mid	21.14	26.16
					1	High	20.78	25.79
					25	Low	19.94	25.89
					25	High	19.95	25.75
					50	Low	20.03	26.79
		18675	1857.5	15	50	High	20.03	26.77
					1	Low	20.72	25.86
					1	Mid	20.86	25.80
					1	High	20.81	25.75
					36	Low	19.86	25.62
					36	High	20.04	25.63
		18700	1860	20	75	Low	20.00	26.46
					75	High	20.00	26.47
					1	Low	20.85	26.02
					1	Mid	21.13	26.09
					1	High	20.73	25.53
					50	Low	19.96	25.72
					50	High	20.13	25.81
					100	Low	20.05	26.90
					100	High	20.05	26.94

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 20 von 90
Page 1 of 90

LTE BAND 2

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Low	16-QAM	18607	1850.7	1.4	1	Low	20.15	26.28
					1	Mid	20.30	26.31
					1	High	20.14	26.20
					3	Low	19.79	26.18
					3	High	19.86	26.46
					6	Low	18.66	26.05
					6	High	18.93	26.31
		18615	1851.5	3	1	Low	19.87	25.95
					1	Mid	19.85	25.64
					1	High	19.91	26.00
					8	Low	18.96	25.55
					8	High	19.03	25.75
					15	Low	18.84	26.41
					15	High	18.83	26.43
		18625	1852.5	5	1	Low	19.32	25.65
					1	Mid	19.59	25.53
					1	High	19.64	25.64
					12	Low	18.77	25.45
					12	High	18.76	25.40
					25	Low	18.97	26.36
					25	High	18.88	26.25
		18650	1855	10	1	Low	19.80	25.88
					1	Mid	19.93	25.90
					1	High	20.01	25.99
					25	Low	18.85	25.71
					25	High	18.97	25.78
					50	Low	20.13	25.26
					50	High	19.98	25.13
		18675	1857.5	15	1	Low	19.87	25.81
					1	Mid	19.85	25.71
					1	High	19.19	25.00
					36	Low	19.88	26.24
					36	High	20.45	26.51
					75	Low	20.23	25.79
					75	High	19.91	26.35
		18700	1860	20	1	Low	20.26	26.09
					1	Mid	20.79	26.57
					1	High	20.26	25.83
					50	Low	21.37	26.84
					50	High	19.39	25.11
					100	Low	19.08	25.42
					100	High	19.99	26.59

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 21 von 90
Page 1 of 90

LTE BAND 2

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Mid	QPSK	18900	1880	1.4	1	Low	21.18	26.13
					1	Mid	21.36	26.14
					1	High	21.09	26.08
					3	Low	20.93	26.13
					3	High	21.10	26.30
					6	Low	20.08	26.14
					6	High	20.10	26.19
		18900	1880	3	1	Low	20.09	25.95
					1	Mid	20.08	25.69
					1	High	20.00	25.82
					8	Low	19.14	25.37
					8	High	19.20	25.61
					15	Low	18.94	26.10
					15	High	18.94	26.11
		18900	1880	5	1	Low	20.77	25.76
					1	Mid	21.09	25.90
					1	High	21.02	25.96
					12	Low	20.15	25.56
					12	High	20.23	25.70
					25	Low	20.11	26.42
					25	High	20.03	26.37
		18900	1880	10	1	Low	21.08	25.95
					1	Mid	21.31	26.11
					1	High	21.12	26.13
					25	Low	20.15	25.57
					25	High	20.23	25.66
					50	Low	20.13	26.80
					50	High	20.13	26.72
		18900	1880	15	1	Low	21.05	25.93
					1	Mid	21.06	25.89
					1	High	20.99	25.90
					36	Low	20.18	25.55
					36	High	20.23	25.77
					75	Low	20.18	26.29
					75	High	20.17	26.28
		18900	1880	20	1	Low	21.05	25.91
					1	Mid	21.38	26.19
					1	High	20.91	25.90
					50	Low	20.23	25.75
					50	High	20.28	25.82
					100	Low	20.23	26.69
					100	High	20.22	26.82

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 22 von 90
Page 1 of 90

LTE BAND 2

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Mid	16-QAM	18900	1880	1.4	1	Low	20.30	26.11
					1	Mid	20.51	26.26
					1	High	20.34	26.16
					3	Low	19.87	25.98
					3	High	19.86	26.05
					6	Low	19.10	26.06
					6	High	19.19	26.17
		18900	1880	3	1	Low	20.10	25.92
					1	Mid	20.02	25.63
					1	High	20.18	25.99
					8	Low	19.01	25.28
					8	High	18.95	25.27
					15	Low	19.12	26.27
					15	High	19.13	26.31
		18900	1880	5	1	Low	20.33	26.10
					1	Mid	20.91	26.44
					1	High	20.59	26.30
					12	Low	18.99	25.41
					12	High	19.08	25.44
					25	Low	19.04	26.15
					25	High	19.08	26.24
		18900	1880	10	1	Low	20.25	25.93
					1	Mid	21.14	26.65
					1	High	19.61	25.45
					25	Low	19.18	25.51
					25	High	19.18	25.53
					50	Low	20.60	25.86
					50	High	20.10	26.53
		18900	1880	15	1	Low	20.27	25.91
					1	Mid	19.91	25.60
					1	High	19.14	25.00
					36	Low	19.66	26.09
					36	High	20.31	26.77
					75	Low	21.22	25.35
					75	High	20.75	26.26
		18900	1880	20	1	Low	19.46	25.29
					1	Mid	20.15	25.88
					1	High	19.53	25.47
					50	Low	20.27	25.68
					50	High	19.88	26.01
					100	Low	19.18	26.42
					100	High	21.54	25.65

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 23 von 90
Page 1 of 90

LTE BAND 2

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
High	QPSK	19193	1909.3	1.4	1	Low	20.79	25.63
					1	Mid	21.03	25.75
					1	High	20.85	25.75
					3	Low	20.80	25.90
					3	High	20.87	25.89
					6	Low	20.00	25.78
		19185	1908.5	3	6	High	19.97	25.77
					1	Low	20.99	25.83
					1	Mid	21.00	25.96
					1	High	21.05	25.80
					8	Low	20.02	25.40
					8	High	19.96	25.40
		19175	1907.5	5	15	Low	20.01	26.04
					15	High	20.01	26.01
					1	Low	20.74	25.57
					1	Mid	20.89	25.56
					1	High	20.74	25.16
					12	Low	20.06	25.48
		19150	1905	10	12	High	19.94	25.19
					25	Low	20.00	26.08
					25	High	19.97	26.01
					1	Low	21.37	26.24
					1	Mid	21.24	25.91
					1	High	20.96	25.74
		19125	1902.5	15	25	Low	20.05	25.47
					25	High	19.98	25.29
					50	Low	19.99	26.38
					50	High	19.95	26.32
					1	Low	21.53	26.51
					1	Mid	21.07	25.95
		19100	1900	20	1	High	20.86	25.58
					36	Low	20.12	25.71
					36	High	19.99	25.34
					75	Low	19.97	26.06
					75	High	19.97	25.96
					1	Low	21.39	26.36
		19100	1900	20	1	Mid	21.56	26.36
					1	High	20.95	25.64
					50	Low	20.14	25.83
					50	High	20.08	25.48
					100	Low	20.12	26.56
					100	High	20.10	26.49

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 24 von 90
Page 1 of 90

LTE BAND 2

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
High	16-QAM	19193	1909.3	1.4	1	Low	20.01	25.77
					1	Mid	20.27	25.81
					1	High	20.18	25.91
					3	Low	20.23	26.12
					3	High	20.19	26.12
					6	Low	19.16	25.85
					6	High	19.15	25.85
		19185	1908.5	3	1	Low	20.03	25.73
					1	Mid	19.86	25.39
					1	High	19.52	25.34
					8	Low	19.05	25.21
					8	High	19.07	25.36
					15	Low	19.04	26.02
					15	High	18.95	25.95
		19175	1907.5	5	1	Low	19.77	25.50
					1	Mid	19.42	25.03
					1	High	19.41	25.25
					12	Low	18.90	25.17
					12	High	18.81	25.03
					25	Low	19.02	25.83
					25	High	19.01	25.86
		19150	1905	10	1	Low	20.25	25.88
					1	Mid	20.02	25.60
					1	High	19.90	25.54
					25	Low	19.13	25.60
					25	High	18.85	25.04
					50	Low	19.99	26.87
					50	High	19.64	26.00
		19125	1902.5	15	1	Low	20.16	26.05
					1	Mid	20.30	25.94
					1	High	19.92	25.42
					36	Low	18.28	26.56
					36	High	19.00	25.01
					75	Low	19.79	25.77
					75	High	19.66	24.81
		19100	1900	20	1	Low	20.12	26.06
					1	Mid	20.06	25.89
					1	High	19.32	24.94
					50	Low	18.99	25.97
					50	High	18.87	26.46
					100	Low	19.36	25.00
					100	High	19.54	25.21

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 25 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Low	QPSK	19957	1710.7	1.4	1	Low	20.59	26.73
					1	Mid	20.88	27.02
					1	High	20.60	26.72
					3	Low	21.31	26.79
					3	High	21.39	26.87
					6	Low	20.44	27.05
					6	High	20.44	27.07
		19965	1711.5	3	1	Low	21.33	26.54
					1	Mid	21.56	26.53
					1	High	21.34	26.61
					8	Low	20.33	26.31
					8	High	20.39	26.35
					15	Low	20.45	27.20
					15	High	20.44	27.23
		19975	1712.5	5	1	Low	21.16	26.32
					1	Mid	21.10	26.15
					1	High	21.17	26.36
					12	Low	20.34	26.12
					12	High	20.41	26.28
					25	Low	20.46	27.-85
					25	High	20.46	27.15
		20000	1715	10	1	Low	21.32	26.51
					1	Mid	21.47	26.59
					1	High	21.53	26.72
					25	Low	20.47	26.18
					25	High	20.45	26.26
					50	Low	20.50	27.48
					50	High	20.50	27.45
		20025	1717.5	15	1	Low	21.25	26.43
					1	Mid	21.41	26.51
					1	High	21.36	26.55
					36	Low	20.33	26.04
					36	High	20.42	26.20
					75	Low	20.32	26.95
					75	High	20.32	27.02
		20050	1720	20	1	Low	20.96	26.13
					1	Mid	21.58	26.70
					1	High	21.25	26.35
					50	Low	20.36	26.19
					50	High	20.27	26.13
					100	Low	20.32	27.18
					100	High	20.32	27.21

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 26 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Low	16-QAM	19957	1710.7	1.4	1	Low	20.61	26.78
					1	Mid	20.78	26.80
					1	High	20.67	26.81
					3	Low	20.34	26.76
					3	High	20.38	26.93
					6	Low	19.48	26.94
					6	High	19.48	26.95
		19965	1711.5	3	1	Low	20.38	26.54
					1	Mid	20.52	26.40
					1	High	20.34	26.63
					8	Low	19.48	26.17
					8	High	19.49	26.27
					15	Low	19.27	27.07
					15	High	19.27	27.13
		19975	1712.5	5	1	Low	20.04	26.15
					1	Mid	19.99	25.99
					1	High	20.17	26.30
					12	Low	19.22	25.91
					12	High	19.30	26.09
					25	Low	19.49	27.10
					25	High	19.48	27.00
		20000	1715	10	1	Low	20.44	26.61
					1	Mid	20.81	26.72
					1	High	19.84	25.87
					25	Low	19.44	26.19
					25	High	19.41	26.19
					50	Low	20.54	26.88
					50	High	20.98	26.51
		20025	1717.5	15	1	Low	20.20	26.30
					1	Mid	20.29	26.26
					1	High	20.35	26.53
					36	Low	19.98	25.86
					36	High	19.00	25.34
					75	Low	18.99	25.49
					75	High	20.12	25.42
		20050	1720	20	1	Low	20.05	26.17
					1	Mid	20.35	26.52
					1	High	20.27	26.35
					50	Low	20.32	26.64
					50	High	20.11	26.32
					100	Low	21.24	25.99
					100	High	20.78	26.00

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 27 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Mid	QPSK	20175	1732.5	1.4	1	Low	21.32	26.50
					1	Mid	21.34	26.40
					1	High	21.28	26.48
					3	Low	21.21	26.68
					3	High	21.15	26.60
					6	Low	21.10	26.61
				3	6	High	21.15	26.66
					1	Low	21.25	26.46
					1	Mid	21.31	26.35
					1	High	21.37	26.53
					8	Low	20.18	25.99
					8	High	20.19	26.02
				5	15	Low	20.23	26.87
					15	High	20.23	26.88
					1	Low	21.01	26.20
					1	Mid	21.10	26.09
					1	High	21.10	26.18
					12	Low	20.21	26.01
				10	12	High	20.23	25.97
					25	Low	20.12	26.78
					25	High	20.12	26.81
					1	Low	19.66	26.80
					1	Mid	18.26	23.34
					1	High	18.00	23.06
				15	25	Low	20.99	26.01
					25	High	20.38	26.07
					50	Low	20.36	27.24
					50	High	20.36	27.29
					1	Low	21.37	26.63
					1	Mid	21.34	26.38
				20	1	High	21.37	26.44
					36	Low	20.40	26.24
					36	High	20.56	26.30
					75	Low	20.48	26.86
					75	High	20.48	26.89
					1	Low	21.51	26.76
				100	1	Mid	21.70	26.75
					1	High	21.22	26.15
					50	Low	20.49	26.12
					50	High	20.43	26.39
					100	Low	20.46	27.25
					100	High	20.46	27.20

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 28 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Mid	16-QAM	20175	1732.5	1.4	1	Low	20.54	26.65
					1	Mid	20.65	26.64
					1	High	20.52	26.64
					3	Low	20.24	26.63
					3	High	20.16	26.63
					6	Low	19.29	26.69
					6	High	19.39	26.75
				3	1	Low	20.33	26.44
					1	Mid	20.34	26.19
					1	High	20.12	26.20
					8	Low	19.23	25.84
					8	High	19.27	25.96
					15	Low	19.00	26.64
					15	High	19.00	26.64
				5	1	Low	19.89	26.09
					1	Mid	19.97	26.04
					1	High	19.93	26.03
					12	Low	19.18	25.90
					12	High	19.21	25.80
					25	Low	19.31	26.71
					25	High	19.13	26.54
				10	1	Low	20.57	26.59
					1	Mid	20.66	26.56
					1	High	20.33	26.27
					25	Low	19.46	26.21
					25	High	19.46	26.03
					50	Low	20.54	25.22
					50	High	20.00	25.86
				15	1	Low	20.63	26.67
					1	Mid	21.38	27.17
					1	High	20.44	26.21
					36	Low	20.21	26.34
					36	High	19.73	25.97
					75	Low	19.88	26.54
					75	High	19.65	25.75
				20	1	Low	20.39	26.62
					1	Mid	20.33	26.33
					1	High	19.78	25.68
					50	Low	20.24	26.41
					50	High	20.11	25.77
					100	Low	19.96	25.94
					100	High	19.56	26.33

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 29 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
High	QPSK	20393	1754.3	1.4	1	Low	21.14	26.26
					1	Mid	21.27	26.24
					1	High	21.08	26.18
					3	Low	21.09	26.49
					3	High	21.14	26.56
					6	Low	20.17	26.44
		20385	1753.5	3	6	High	20.17	26.43
					1	Low	21.23	26.34
					1	Mid	21.36	26.29
					1	High	21.29	26.44
					8	Low	20.23	25.96
					8	Mid	20.11	25.82
					8	High	20.20	25.96
					15	Low	20.20	26.76
		20375	1752.5	5	15	High	20.19	26.79
					1	Low	21.04	26.09
					1	Mid	21.12	26.05
					1	High	21.05	26.14
					12	Low	20.27	25.97
					12	High	20.34	25.99
					25	Low	20.29	26.91
					25	High	20.29	26.87
		20350	1750	10	1	Low	21.27	26.23
					1	Mid	21.29	26.26
					1	High	21.38	26.49
					25	Low	20.32	25.92
					25	High	20.35	25.97
					50	Low	20.32	27.08
					50	High	20.40	27.19
		20325	1747.5	15	1	Low	21.57	26.47
					1	Mid	21.41	26.34
					1	High	21.46	26.51
					36	Low	20.39	26.09
					36	High	20.39	26.04
					75	Low	20.48	26.75
					75	High	20.47	26.80
		20300	1745	20	1	Low	21.51	26.51
					1	Mid	21.61	26.53
					1	High	21.47	26.56
					50	Low	20.40	26.06
					50	High	20.56	26.30
					100	Low	20.44	27.08
					100	High	20.48	27.15

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 30 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
High	16-QAM	20393	1754.3	1.4	1	Low	20.81	26.86
					1	Mid	20.96	26.89
					1	High	20.87	26.90
					3	Low	20.48	26.85
					3	High	20.36	26.74
					6	Low	19.60	26.78
					6	High	19.61	26.75
		20385	1753.5	3	1	Low	20.16	26.16
					1	Mid	20.11	25.88
					1	High	20.12	26.15
					8	Low	19.17	25.69
					8	High	19.13	25.79
					15	Low	19.20	26.75
					15	High	19.23	26.81
		20375	1752.5	5	1	Low	19.99	25.95
					1	Mid	20.05	26.03
					1	High	19.96	25.98
					12	Low	19.16	25.63
					12	High	19.33	25.87
					25	Low	19.40	26.75
					25	High	19.42	26.74
		20350	1750	10	1	Low	20.56	26.35
					1	Mid	20.50	26.34
					1	High	19.91	25.78
					25	Low	19.38	25.99
					25	High	19.43	25.94
					50	Low	20.54	26.75
					50	High	19.55	26.88
		20325	1747.5	15	1	Low	20.68	26.04
					1	Mid	21.30	26.99
					1	High	20.48	26.41
					36	Low	19.54	25.56
					36	High	19.62	25.14
					75	Low	19.75	25.84
					75	High	20.44	26.09
		20300	1745	20	1	Low	20.40	26.34
					1	Mid	20.31	26.29
					1	High	20.48	26.31
					50	Low	20.43	25.03
					50	High	20.91	25.70
					100	Low	20.00	25.38
					100	High	19.94	26.10

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 31 von 90
Page 1 of 90

LTE BAND 5								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Low	QPSK	20407	824.7	1.4	1	Low	22.08	26.59
					1	Mid	22.14	26.60
					1	High	22.14	26.69
					3	Low	22.13	26.82
					3	High	22.21	26.90
					6	Low	22.24	26.93
		20415	825.25	3	6	High	21.28	26.97
					1	Low	22.02	26.55
					1	Mid	22.38	26.69
					1	High	22.22	26.61
					8	Low	21.22	26.35
					8	High	21.20	26.33
		20425	826.5	5	15	Low	21.23	27.06
					15	High	21.21	27.20
					1	Low	21.97	26.38
					1	Mid	21.86	26.22
					1	High	21.76	26.22
					12	Low	21.06	26.06
		20450	829	10	12	High	21.00	26.07
					25	Low	20.92	26.64
					25	High	20.95	26.69
					1	Low	21.90	26.43
					1	Mid	21.91	26.32
					1	High	22.08	26.53
					25	Low	20.83	25.96
					25	High	21.06	26.17
					50	Low	20.91	27.37
					50	High	20.94	27.42

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 32 von 90
Page 1 of 90

LTE BAND 5								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Low	16-QAM	20407	824.7	1.4	1	Low	21.47	26.85
					1	Mid	21.66	26.89
					1	High	21.88	27.17
					3	Low	21.11	26.70
					3	High	21.07	26.82
					6	Low	20.35	26.80
					6	High	20.44	26.92
		20415	825.25	3	1	Low	21.14	26.57
					1	Mid	21.09	26.34
					1	High	21.13	26.53
					8	Low	20.12	26.07
					8	High	20.00	26.04
					15	Low	20.12	26.68
					15	High	20.12	26.87
		20425	826.5	5	1	Low	20.89	26.25
					1	Mid	20.85	26.14
					1	High	20.85	26.22
					12	Low	19.81	25.75
					12	High	19.99	26.00
					25	Low	19.83	26.45
					25	High	20.09	26.67
		20450	829	10	1	Low	20.80	26.18
					1	Mid	21.12	26.35
					1	High	21.31	26.48
					25	Low	19.92	26.05
					25	High	20.18	26.17
					50	Low	20.01	25.99
					50	High	19.51	26.04

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 33 von 90
Page 1 of 90

LTE BAND 5								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Mid	QPSK	20525	836.5	1.4	1	Low	22.19	26.74
					1	Mid	22.22	26.67
					1	High	22.17	26.74
					3	Low	22.24	27.00
					3	High	22.32	27.12
					6	Low	21.30	26.88
				3	6	High	21.30	26.93
					1	Low	22.07	26.68
					1	Mid	22.56	26.92
					1	High	22.24	26.84
					8	Low	21.34	26.52
					8	High	21.39	26.63
				5	15	Low	21.40	27.29
					15	High	21.40	27.30
					1	Low	21.95	26.51
					1	Mid	22.19	26.62
					1	High	22.18	26.78
					12	Low	21.21	26.24
					12	High	21.33	26.53
				10	25	Low	21.24	26.93
					25	High	21.32	27.01
					1	Low	22.16	26.52
					1	Mid	22.56	26.96
					1	High	22.10	26.67
					25	Low	21.22	26.45
					25	High	21.43	26.50
					50	Low	21.27	27.31
					50	High	21.27	27.27

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 34 von 90
Page 1 of 90

LTE BAND 5								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Mid	16-QAM	20525	836.5	1.4	1	Low	21.79	27.16
					1	Mid	22.00	27.27
					1	High	21.85	27.22
					3	Low	21.32	27.02
					3	High	21.42	27.07
					6	Low	20.31	26.78
					6	High	20.70	27.08
				3	1	Low	21.35	26.74
					1	Mid	21.69	26.93
					1	High	21.55	26.95
					8	Low	20.21	26.23
					8	High	20.22	26.37
					15	Low	20.23	26.90
					15	High	20.23	26.87
				5	1	Low	20.74	26.17
					1	Mid	21.67	26.92
					1	High	20.90	26.41
					12	Low	20.29	26.27
					12	High	20.28	26.37
					25	Low	20.33	26.95
					25	High	20.27	26.93
				10	1	Low	21.02	26.40
					1	Mid	22.19	27.32
					1	High	21.04	26.58
					25	Low	20.35	26.52
					25	High	20.36	26.47
					50	Low	20.33	27.01
					50	High	21.00	26.79

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 35 von 90
Page 1 of 90

LTE BAND 5

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
High	QPSK	20643	848.3	1.4	1	Low	22.22	26.69
					1	Mid	22.19	26.60
					1	High	21.95	26.52
					3	Low	22.51	27.06
					3	High	22.45	27.05
					6	Low	21.54	27.10
		20635	847.5	3	6	High	21.46	27.06
					1	Low	22.21	26.67
					1	Mid	22.67	26.84
					1	High	22.32	26.77
					8	Low	21.30	26.34
					8	High	21.51	26.58
		20625	846.5	5	15	Low	21.35	27.01
					15	High	21.34	27.16
					1	Low	21.93	26.46
					1	Mid	22.39	26.68
					1	High	22.25	26.67
					12	Low	21.37	26.41
		20600	844	10	12	High	21.46	26.47
					25	Low	21.33	27.05
					25	High	21.32	27.07
					1	Low	21.79	26.38
					1	Mid	22.21	26.64
					1	High	22.38	26.79
					25	Low	21.35	26.61
					25	High	21.42	26.74
					50	Low	21.36	27.89
					50	High	21.38	27.89

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 36 von 90
Page 1 of 90

LTE BAND 5								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
High	16-QAM	20643	848.3	1.4	1	Low	21.76	27.00
					1	Mid	21.68	26.90
					1	High	21.16	26.63
					3	Low	21.27	26.83
					3	High	21.24	26.86
					6	Low	20.40	26.84
					6	High	20.40	26.86
		20635	847.5	3	1	Low	21.23	26.62
					1	Mid	21.32	26.51
					1	High	21.21	26.64
					8	Low	20.18	26.12
					8	High	20.28	26.26
					15	Low	20.31	27.00
					15	High	20.32	26.88
		20625	846.5	5	1	Low	21.05	26.34
					1	Mid	21.29	26.42
					1	High	21.26	26.50
					12	Low	20.33	26.36
					12	High	20.30	26.31
					25	Low	20.27	26.90
					25	High	20.17	26.87
		20600	844	10	1	Low	21.36	26.73
					1	Mid	21.27	26.52
					1	High	21.56	26.77
					25	Low	20.34	26.53
					25	High	20.37	26.64
					50	Low	19.55	26.10
					50	High	20.41	25.52

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 37 von 90
Page 1 of 90

LTE BAND 12								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Low	QPSK	23017	699.7	1.4	1	Low	21.72	26.15
					1	Mid	21.90	26.28
					1	High	21.86	26.32
					3	Low	21.70	26.39
					3	High	21.62	26.34
					6	Low	20.77	26.13
		23025	700.5	3	6	High	20.85	26.23
					1	Low	21.87	26.38
					1	Mid	21.82	26.16
					1	High	21.62	26.21
					8	Low	20.79	25.98
					8	High	20.62	25.84
		23035	701.5	5	15	Low	20.65	26.68
					15	High	20.65	26.52
					1	Low	21.60	26.03
					1	Mid	21.47	25.85
					1	High	21.46	25.99
					12	Low	20.79	25.78
		23060	704	10	12	High	20.58	25.72
					25	Low	20.72	26.47
					25	High	20.72	26.44
					1	Low	21.78	26.21
					1	Mid	21.79	26.22
					1	High	21.62	26.08
					25	Low	20.57	25.66
					25	High	20.47	25.51
					50	Low	20.43	26.65
					50	High	20.38	26.59

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 38 von 90
Page 1 of 90

LTE BAND 12

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Low	16-QAM	23017	699.7	1.4	1	Low	20.81	26.14
					1	Mid	20.90	26.13
					1	High	20.49	25.90
					3	Low	20.99	26.53
					3	High	20.90	26.51
					6	Low	19.81	26.26
					6	High	19.56	25.03
		23025	700.5	3	1	Low	20.43	25.81
					1	Mid	20.59	25.79
					1	High	20.51	25.94
					8	Low	20.01	25.83
					8	High	19.76	25.75
					15	Low	19.56	26.43
					15	High	19.67	26.43
		23035	701.5	5	1	Low	20.72	26.02
					1	Mid	20.53	25.70
					1	High	19.62	24.98
					12	Low	19.72	25.67
					12	High	19.26	25.35
					25	Low	19.75	26.15
					25	High	19.60	26.22
		23060	704	10	1	Low	20.75	25.89
					1	Mid	20.55	25.82
					1	High	20.34	25.64
					25	Low	19.55	25.55
					25	High	19.43	25.44
					50	Low	19.11	26.59
					50	High	19.54	26.37

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 39 von 90
Page 1 of 90

LTE BAND 12

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Mid	QPSK	23095	707.5	1.4	1	Low	21.64	26.20
					1	Mid	21.71	26.07
					1	High	21.53	26.12
					3	Low	21.35	26.17
					3	High	21.36	26.06
					6	Low	20.45	26.23
					6	High	20.40	26.32
				3	1	Low	21.37	25.95
					1	Mid	21.38	25.76
					1	High	21.29	25.85
					8	Low	20.42	25.63
					8	High	20.36	25.55
					15	Low	20.41	26.20
					15	High	20.43	26.27
				5	1	Low	21.38	25.87
					1	Mid	21.33	25.73
					1	High	21.26	25.74
					12	Low	20.37	25.43
					12	High	20.35	25.46
					25	Low	20.35	26.08
					25	High	20.40	26.07
				10	1	Low	21.57	26.05
					1	Mid	21.77	26.19
					1	High	21.28	25.80
					25	Low	20.36	25.44
					25	High	20.52	25.63
					50	Low	20.46	26.62
					50	High	20.43	26.59

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 40 von 90
Page 1 of 90

LTE BAND 12

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
Mid	16-QAM	23095	707.5	1.4	1	Low	20.67	26.09
					1	Mid	20.80	26.11
					1	High	20.61	26.07
					3	Low	20.26	25.95
					3	High	19.89	25.62
					6	Low	19.32	25.91
					6	High	19.35	25.93
				3	1	Low	20.40	25.85
					1	Mid	20.29	25.51
					1	High	20.69	25.74
					8	Low	19.04	25.06
					8	High	19.51	25.46
					15	Low	19.46	26.22
					15	High	19.51	26.28
				5	1	Low	20.29	25.67
					1	Mid	20.05	25.36
					1	High	20.25	25.68
					12	Low	19.36	25.36
					12	High	19.33	25.27
					25	Low	19.41	26.12
					25	High	19.38	26.01
				10	1	Low	20.47	25.85
					1	Mid	21.30	26.46
					1	High	20.33	25.74
					25	Low	19.45	25.45
					25	High	19.41	25.51
					50	Low	20.44	27.00
					50	High	19.02	26.73

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 41 von 90
Page 1 of 90

LTE BAND 12

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
High	QPSK	23173	715.3	1.4	1	Low	21.41	25.92
					1	Mid	21.77	26.14
					1	High	21.81	26.22
					3	Low	21.42	26.15
					3	High	21.59	26.29
					6	Low	20.59	25.97
					6	High	20.60	26.95
		23165	714.5	3	1	Low	21.67	26.26
					1	Mid	21.44	25.82
					1	High	21.54	26.06
					8	Low	20.51	25.65
					8	High	20.60	25.79
					15	Low	20.53	26.42
					15	High	20.53	26.41
		23155	713.5	5	1	Low	21.35	25.85
					1	Mid	21.46	25.88
					1	High	21.39	25.88
					12	Low	20.52	25.57
					12	High	20.43	25.52
					25	Low	20.47	26.29
					25	High	20.38	26.14
		23130	711	10	1	Low	21.47	25.96
					1	Mid	21.89	26.26
					1	High	21.36	25.83
					25	Low	20.45	25.54
					25	High	20.48	25.64
					50	Low	20.43	27.04
					50	High	20.43	27.05

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 42 von 90
Page 1 of 90

LTE BAND 12								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	Average Measured Power (dBm)	Peak Measured Power (dBm)
High	16-QAM	23173	715.3	1.4	1	Low	20.71	26.08
					1	Mid	20.86	26.09
					1	High	20.80	26.08
					3	Low	20.67	26.30
					3	High	20.73	26.29
					6	Low	19.60	26.02
					6	High	19.51	25.91
		23165	714.5	3	1	Low	20.31	25.76
					1	Mid	20.64	25.81
					1	High	20.25	25.63
					8	Low	19.95	25.59
					8	High	19.59	25.59
					15	Low	19.36	26.22
					15	High	19.47	26.25
		23155	713.5	5	1	Low	19.93	25.39
					1	Mid	20.22	25.47
					1	High	20.32	25.68
					12	Low	19.30	25.25
					12	High	19.37	25.37
					25	Low	19.32	25.94
					25	High	19.39	26.03
		23130	711	10	1	Low	20.22	25.59
					1	Mid	21.40	26.58
					1	High	20.75	26.07
					25	Low	19.57	25.56
					25	High	19.44	25.55
					50	Low	20.00	26.61
					50	High	19.35	25.18

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 43 von 90
Page 1 of 90

WCDMA(UMTS) BAND 2

Mode	Subtest	Channel	Channel Frequency (MHz)	Average Measured Power (dBm)	Peak Measured Power (dBm)
UMTS, Rel 99	NA	Low	1852.40	20.92	24.63
		Mid	1880.00	20.73	24.30
		High	1907.60	20.77	24.28
UMTS, HSDPA (REL5)	Subtest 1	Low	1852.40	19.91	25.15
		Mid	1880.00	19.08	23.87
		High	1907.60	19.83	24.63
	Subtest 2	Low	1852.40	19.97	24.59
		Mid	1880.00	19.81	24.29
		High	1907.60	19.85	24.22
	Subtest 3	Low	1852.40	19.46	24.79
		Mid	1880.00	19.28	24.33
		High	1907.60	19.45	24.47
	Subtest 4	Low	1852.40	20.01	23.77
		Mid	1880.00	19.83	23.41
		High	1907.60	19.81	23.34
UMTS, HSUPA (REL6)	Subtest 1	Low	1852.40	20.11	25.30
		Mid	1880.00	19.95	24.74
		High	1907.60	18.85	23.58
	Subtest 2	Low	1852.40	19.49	24.00
		Mid	1880.00	19.31	23.78
		High	1907.60	19.38	23.58
	Subtest 3	Low	1852.40	19.97	25.39
		Mid	1880.00	19.86	24.90
		High	1907.60	19.90	24.91
	Subtest 4	Low	1852.40	19.98	23.69
		Mid	1880.00	19.84	23.38
		High	1907.60	19.89	23.45
	Subtest 5	Low	1852.40	20.02	25.85
		Mid	1880.00	19.84	25.13
		High	1907.60	19.88	25.10

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 44 von 90
Page 1 of 90

WCDMA(UMTS) BAND 5					
Mode	Subtest	Channel	Channel Frequency (MHz)	Average Measured Power (dBm)	Peak Measured Power (dBm)
UMTS, REL 99	NA	Low	826.40	22.07	25.34
		Mid	836.60	21.94	25.24
		High	846.60	21.74	25.09
UMTS, HSDPA	Subtest 1	Low	826.40	21.02	25.49
		Mid	836.60	20.94	25.43
		High	846.60	20.70	25.29
	Subtest 2	Low	826.40	20.96	24.95
		Mid	836.60	20.93	25.03
		High	846.60	20.77	24.89
	Subtest 3	Low	826.40	20.46	25.29
		Mid	836.60	20.30	25.24
		High	846.60	20.15	25.05
	Subtest 4	Low	826.40	21.01	24.43
		Mid	836.60	20.86	24.28
		High	846.60	20.79	24.35
UMTS, HSUPA (REL6)	Subtest 1	Low	826.40	20.98	25.35
		Mid	836.60	20.91	25.53
		High	846.60	20.75	25.30
	Subtest 2	Low	826.40	20.51	24.67
		Mid	836.60	20.36	24.62
		High	846.60	20.21	24.32
	Subtest 3	Low	826.40	21.03	25.70
		Mid	836.60	20.94	25.71
		High	846.60	20.78	25.51
	Subtest 4	Low	826.40	21.04	24.43
		Mid	836.60	20.87	24.33
		High	846.60	20.79	24.28
	Subtest 5	Low	826.40	20.99	25.93
		Mid	836.60	20.91	26.06
		High	846.60	20.74	25.54

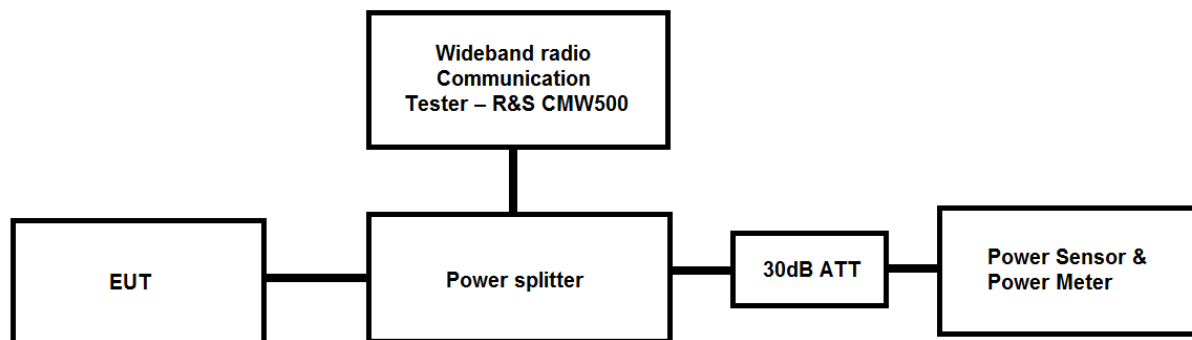
8.2 Peak to Average Power Ratio (PAPR)

Result

Pass

Test Specification	FCC Part §2.1046 , §24.232, §27.50 RSS 130 Issue 2, Section 4.6.1 RSS 132 Issue 3, Section 5.4 RSS 133 Issue 6 Amendment 1, Section 6.4 RSS 139 Issue 3, Section 6.5 RSS Gen Issue 5, Section 6.12
Test Method / Procedure	ANSI C63.26-2015 971168 D01 Power Meas License Digital Systems v03r01
Measurement Bandwidth(RBW)	≥ OBW
Detector function	Peak / Average
Requirement	PAPR ≤ 13dB

Test Setup:



Environmental conditions:

Temperature (Norm) = + 22.3 °C

Voltage = 24 V DC (through AC to DC supply) Relative humidity = 62 %

KDB Guidelines applied:

Measurements were made as per section 5.1.3, section 5.2.4 and section 5.7.3 in KDB 971168 D01 Power Meas License Digital Systems v03r01.

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 46 von 90
Page 1 of 90

Test results:

Note:

1. All the losses are included during measurement and final values are mentioned in the test report.
2. Total Average Output power (dBm) = Measured Average power (dBm) + Attenuator factor (30dB) + Power Splitter (6 dB) + Cable loss (1dB)
3. This product do not support additional beamforming gain / directional gain, it uses single antenna and hence directional gain of the single antenna is **Table 4: Antenna Gain Details** dBi
4. PAPR (dB) = Measured peak power (dBm) – Measured average power (dBm)

Table 9: PAPR test results

LTE BAND 2								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Low	QPSK	18607	1850.7	1.4	1	Low	5.20	≤13
					1	Mid	5.05	≤13
					1	High	5.19	≤13
					3	Low	5.43	≤13
					3	High	5.48	≤13
					6	Low	6.42	≤13
					6	High	6.45	≤13
		18615	1851.5	3	1	Low	5.23	≤13
					1	Mid	5.02	≤13
					1	High	5.17	≤13
					8	Low	5.74	≤13
					8	High	5.85	≤13
					15	Low	6.81	≤13
					15	High	6.78	≤13
		18625	1852.5	5	1	Low	5.12	≤13
					1	Mid	5.01	≤13
					1	High	5.11	≤13
					12	Low	5.82	≤13
					12	High	5.75	≤13
					25	Low	6.75	≤13
					25	High	6.77	≤13
		18650	1855	10	1	Low	5.14	≤13
					1	Mid	5.02	≤13
					1	High	5.01	≤13
					25	Low	5.95	≤13
					25	High	5.80	≤13
					50	Low	6.76	≤13
					50	High	6.74	≤13
		18675	1857.5	15	1	Low	5.14	≤13
					1	Mid	4.94	≤13
					1	High	4.94	≤13
					36	Low	5.76	≤13
					36	High	5.59	≤13
					75	Low	6.46	≤13
					75	High	6.47	≤13
		18700	1860	20	1	Low	5.17	≤13
					1	Mid	4.96	≤13
					1	High	4.80	≤13
					50	Low	5.76	≤13
					50	High	5.68	≤13
					100	Low	6.85	≤13
					100	High	6.89	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 47 von 90
Page 1 of 90

LTE BAND 2

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Low	16-QAM	18607	1850.7	1.4	1	Low	6.13	≤13
					1	Mid	6.00	≤13
					1	High	6.06	≤13
					3	Low	6.39	≤13
					3	High	6.60	≤13
					6	Low	7.39	≤13
					6	High	7.38	≤13
		18615	1851.5	3	1	Low	6.09	≤13
					1	Mid	5.79	≤13
					1	High	6.09	≤13
					8	Low	6.59	≤13
					8	High	6.71	≤13
					15	Low	7.57	≤13
					15	High	7.60	≤13
		18625	1852.5	5	1	Low	6.33	≤13
					1	Mid	5.94	≤13
					1	High	6.00	≤13
					12	Low	6.68	≤13
					12	High	6.64	≤13
					25	Low	7.39	≤13
					25	High	7.38	≤13
		18650	1855	10	1	Low	6.08	≤13
					1	Mid	5.98	≤13
					1	High	5.98	≤13
					25	Low	6.85	≤13
					25	High	6.81	≤13
					50	Low	5.13	≤13
					50	High	5.15	≤13
		18675	1857.5	15	1	Low	5.94	≤13
					1	Mid	5.86	≤13
					1	High	5.81	≤13
					36	Low	6.36	≤13
					36	High	6.06	≤13
					75	Low	5.56	≤13
					75	High	6.44	≤13
		18700	1860	20	1	Low	5.84	≤13
					1	Mid	5.79	≤13
					1	High	5.57	≤13
					50	Low	5.47	≤13
					50	High	5.72	≤13
					100	Low	6.34	≤13
					100	High	6.60	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 48 von 90
Page 1 of 90

LTE BAND 2

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Mid	QPSK	18900	1880	1.4	1	Low	4.95	≤13
					1	Mid	4.78	≤13
					1	High	4.99	≤13
					3	Low	5.20	≤13
					3	High	5.20	≤13
					6	Low	6.06	≤13
					6	High	6.09	≤13
		18900	1880	3	1	Low	5.86	≤13
					1	Mid	5.61	≤13
					1	High	5.82	≤13
					8	Low	6.23	≤13
					8	High	6.41	≤13
					15	Low	7.16	≤13
					15	High	7.17	≤13
		18900	1880	5	1	Low	4.99	≤13
					1	Mid	4.81	≤13
					1	High	4.94	≤13
					12	Low	5.41	≤13
					12	High	5.47	≤13
					25	Low	6.31	≤13
					25	High	6.34	≤13
		18900	1880	10	1	Low	4.87	≤13
					1	Mid	4.80	≤13
					1	High	5.01	≤13
					25	Low	5.42	≤13
					25	High	5.43	≤13
					50	Low	6.67	≤13
					50	High	6.59	≤13
		18900	1880	15	1	Low	4.88	≤13
					1	Mid	4.83	≤13
					1	High	4.91	≤13
					36	Low	5.37	≤13
					36	High	5.54	≤13
					75	Low	6.11	≤13
					75	High	6.11	≤13
		18900	1880	20	1	Low	4.86	≤13
					1	Mid	4.81	≤13
					1	High	4.99	≤13
					50	Low	5.52	≤13
					50	High	5.54	≤13
					100	Low	6.46	≤13
					100	High	6.60	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 49 von 90
Page 1 of 90

LTE BAND 2

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Mid	16-QAM	18900	1880	1.4	1	Low	5.82	≤13
					1	Mid	5.75	≤13
					1	High	5.82	≤13
					3	Low	6.11	≤13
					3	High	6.19	≤13
					6	Low	6.96	≤13
					6	High	6.98	≤13
		18900	1880	3	1	Low	5.82	≤13
					1	Mid	5.61	≤13
					1	High	5.82	≤13
					8	Low	6.27	≤13
					8	High	6.32	≤13
					15	Low	7.16	≤13
					15	High	7.18	≤13
		18900	1880	5	1	Low	5.77	≤13
					1	Mid	5.53	≤13
					1	High	5.71	≤13
					12	Low	6.41	≤13
					12	High	6.36	≤13
					25	Low	7.11	≤13
					25	High	7.15	≤13
		18900	1880	10	1	Low	5.69	≤13
					1	Mid	5.51	≤13
					1	High	5.85	≤13
					25	Low	6.34	≤13
					25	High	6.34	≤13
					50	Low	5.26	≤13
					50	High	6.42	≤13
		18900	1880	15	1	Low	5.65	≤13
					1	Mid	5.69	≤13
					1	High	5.86	≤13
					36	Low	6.43	≤13
					36	High	6.46	≤13
					75	Low	4.13	≤13
					75	High	5.51	≤13
		18900	1880	20	1	Low	5.83	≤13
					1	Mid	5.72	≤13
					1	High	5.94	≤13
					50	Low	5.41	≤13
					50	High	6.13	≤13
					100	Low	7.24	≤13
					100	High	4.11	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 50 von 90
Page 1 of 90

LTE BAND 2

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
High	QPSK	19193	1909.3	1.4	1	Low	4.84	≤13
					1	Mid	4.72	≤13
					1	High	4.90	≤13
					3	Low	5.10	≤13
					3	High	5.02	≤13
					6	Low	5.78	≤13
		19185	1908.5	3	6	High	5.80	≤13
					1	Low	4.84	≤13
					1	Mid	4.96	≤13
					1	High	4.75	≤13
					8	Low	5.38	≤13
					8	High	5.44	≤13
		19175	1907.5	5	15	Low	6.03	≤13
					15	High	6.00	≤13
					1	Low	4.83	≤13
					1	Mid	4.67	≤13
					1	High	4.42	≤13
					12	Low	0.42	≤13
		19150	1905	10	12	High	5.25	≤13
					25	Low	6.08	≤13
					25	High	6.04	≤13
					1	Low	4.87	≤13
					1	Mid	4.67	≤13
					1	High	4.78	≤13
		19125	1902.5	15	25	Low	5.42	≤13
					25	High	5.31	≤13
					50	Low	6.39	≤13
					50	High	6.37	≤13
					1	Low	4.98	≤13
					1	Mid	4.88	≤13
		19100	1900	20	1	High	4.72	≤13
					36	Low	5.59	≤13
					36	High	5.35	≤13
					75	Low	6.09	≤13
					75	High	5.99	≤13
					1	Low	4.97	≤13
					1	Mid	4.80	≤13
					1	High	4.69	≤13
					50	Low	5.69	≤13
					50	High	5.40	≤13
					100	Low	6.44	≤13
					100	High	6.39	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 51 von 90
Page 1 of 90

LTE BAND 2

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
High	16-QAM	19193	1909.3	1.4	1	Low	5.76	≤13
					1	Mid	5.53	≤13
					1	High	5.72	≤13
					3	Low	5.88	≤13
					3	High	5.93	≤13
					6	Low	6.70	≤13
					6	High	6.70	≤13
		19185	1908.5	3	1	Low	5.70	≤13
					1	Mid	5.53	≤13
					1	High	5.82	≤13
					8	Low	6.16	≤13
					8	High	6.29	≤13
					15	Low	6.98	≤13
					15	High	6.99	≤13
		19175	1907.5	5	1	Low	5.73	≤13
					1	Mid	5.61	≤13
					1	High	5.84	≤13
					12	Low	6.26	≤13
					12	High	6.22	≤13
					25	Low	6.81	≤13
					25	High	6.86	≤13
		19150	1905	10	1	Low	5.63	≤13
					1	Mid	5.58	≤13
					1	High	5.64	≤13
					25	Low	6.47	≤13
					25	High	6.20	≤13
					50	Low	6.88	≤13
					50	High	6.36	≤13
		19125	1902.5	15	1	Low	5.90	≤13
					1	Mid	5.64	≤13
					1	High	5.50	≤13
					36	Low	8.28	≤13
					36	High	6.01	≤13
					75	Low	5.98	≤13
					75	High	5.15	≤13
		19100	1900	20	1	Low	5.94	≤13
					1	Mid	5.83	≤13
					1	High	5.62	≤13
					50	Low	6.98	≤13
					50	High	7.59	≤13
					100	Low	5.64	≤13
					100	High	5.67	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 52 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Low	QPSK	19957	1710.7	1.4	1	Low	6.14	≤13
					1	Mid	6.14	≤13
					1	High	6.12	≤13
					3	Low	5.48	≤13
					3	High	5.48	≤13
					6	Low	6.77	≤13
					6	High	6.63	≤13
		19965	1711.5	3	1	Low	5.21	≤13
					1	Mid	4.97	≤13
					1	High	5.27	≤13
					8	Low	5.98	≤13
					8	High	5.96	≤13
					15	Low	6.75	≤13
					15	High	6.79	≤13
		19975	1712.5	5	1	Low	5.16	≤13
					1	Mid	5.05	≤13
					1	High	5.19	≤13
					12	Low	5.78	≤13
					12	High	5.87	≤13
					25	Low	7.39	≤13
					25	High	6.69	≤13
		20000	1715	10	1	Low	5.19	≤13
					1	Mid	5.12	≤13
					1	High	5.19	≤13
					25	Low	5.71	≤13
					25	High	5.81	≤13
					50	Low	6.98	≤13
					50	High	6.95	≤13
		20025	1717.5	15	1	Low	5.18	≤13
					1	Mid	5.10	≤13
					1	High	5.19	≤13
					36	Low	5.71	≤13
					36	High	5.78	≤13
					75	Low	6.63	≤13
					75	High	6.70	≤13
		20050	1720	20	1	Low	5.17	≤13
					1	Mid	5.12	≤13
					1	High	5.10	≤13
					50	Low	5.83	≤13
					50	High	5.86	≤13
					100	Low	6.86	≤13
					100	High	6.89	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 53 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Low	16-QAM	19957	1710.7	1.4	1	Low	6.18	≤13
					1	Mid	6.03	≤13
					1	High	6.13	≤13
					3	Low	6.42	≤13
					3	High	6.55	≤13
					6	Low	7.47	≤13
					6	High	7.47	≤13
		19965	1711.5	3	1	Low	6.16	≤13
					1	Mid	5.88	≤13
					1	High	6.29	≤13
					8	Low	6.68	≤13
					8	High	6.78	≤13
					15	Low	7.80	≤13
					15	High	7.86	≤13
		19975	1712.5	5	1	Low	6.11	≤13
					1	Mid	6.00	≤13
					1	High	6.14	≤13
					12	Low	6.69	≤13
					12	High	6.79	≤13
					25	Low	7.61	≤13
					25	High	7.51	≤13
		20000	1715	10	1	Low	6.17	≤13
					1	Mid	5.91	≤13
					1	High	6.03	≤13
					25	Low	6.75	≤13
					25	High	6.79	≤13
					50	Low	6.34	≤13
					50	High	5.53	≤13
		20025	1717.5	15	1	Low	6.10	≤13
					1	Mid	5.97	≤13
					1	High	6.18	≤13
					36	Low	5.88	≤13
					36	High	6.34	≤13
					75	Low	6.50	≤13
					75	High	5.30	≤13
		20050	1720	20	1	Low	6.13	≤13
					1	Mid	6.16	≤13
					1	High	6.08	≤13
					50	Low	6.32	≤13
					50	High	6.21	≤13
					100	Low	4.75	≤13
					100	High	5.22	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 54 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Mid	QPSK	20175	1732.5	1.4	1	Low	5.18	≤13
					1	Mid	5.06	≤13
					1	High	5.20	≤13
					3	Low	5.47	≤13
					3	High	5.45	≤13
					6	Low	5.51	≤13
					6	High	5.51	≤13
				3	1	Low	5.21	≤13
					1	Mid	5.04	≤13
					1	High	5.16	≤13
					8	Low	5.81	≤13
					8	High	5.83	≤13
					15	Low	6.64	≤13
					15	High	6.65	≤13
				5	1	Low	5.19	≤13
					1	Mid	4.99	≤13
					1	High	5.08	≤13
					12	Low	5.80	≤13
					12	High	5.74	≤13
					25	Low	6.66	≤13
					25	High	6.69	≤13
				10	1	Low	7.14	≤13
					1	Mid	5.08	≤13
					1	High	5.06	≤13
					25	Low	5.02	≤13
					25	High	5.69	≤13
					50	Low	6.88	≤13
					50	High	6.93	≤13
				15	1	Low	5.26	≤13
					1	Mid	5.04	≤13
					1	High	5.07	≤13
					36	Low	5.84	≤13
					36	High	5.74	≤13
					75	Low	6.38	≤13
					75	High	6.41	≤13
				20	1	Low	5.25	≤13
					1	Mid	5.05	≤13
					1	High	4.93	≤13
					50	Low	5.63	≤13
					50	High	5.96	≤13
					100	Low	6.79	≤13
					100	High	6.74	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 55 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Mid	16-QAM	20175	1732.5	1.4	1	Low	6.12	≤13
					1	Mid	5.99	≤13
					1	High	6.12	≤13
					3	Low	6.39	≤13
					3	High	6.47	≤13
					6	Low	7.40	≤13
					6	High	7.36	≤13
				3	1	Low	6.11	≤13
					1	Mid	5.84	≤13
					1	High	6.08	≤13
					8	Low	6.61	≤13
					8	High	6.69	≤13
					15	Low	7.64	≤13
					15	High	7.64	≤13
				5	1	Low	6.21	≤13
					1	Mid	6.07	≤13
					1	High	6.09	≤13
					12	Low	6.72	≤13
					12	High	6.59	≤13
					25	Low	7.40	≤13
					25	High	7.41	≤13
				10	1	Low	6.02	≤13
					1	Mid	5.90	≤13
					1	High	5.94	≤13
					25	Low	6.75	≤13
					25	High	6.57	≤13
					50	Low	4.68	≤13
					50	High	5.86	≤13
				15	1	Low	6.04	≤13
					1	Mid	5.79	≤13
					1	High	5.78	≤13
					36	Low	6.13	≤13
					36	High	6.24	≤13
					75	Low	6.66	≤13
					75	High	6.10	≤13
				20	1	Low	6.23	≤13
					1	Mid	6.00	≤13
					1	High	5.89	≤13
					50	Low	6.17	≤13
					50	High	5.66	≤13
					100	Low	5.98	≤13
					100	High	6.77	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 56 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
High	QPSK	20393	1754.3	1.4	1	Low	5.13	≤13
					1	Mid	4.98	≤13
					1	High	5.10	≤13
					3	Low	5.41	≤13
					3	High	5.42	≤13
					6	Low	6.27	≤13
		20385	1753.5	3	6	High	6.26	≤13
					1	Low	5.11	≤13
					1	Mid	4.93	≤13
					1	High	5.15	≤13
					8	Low	5.74	≤13
					8	High	5.76	≤13
		20375	1752.5	5	15	Low	6.56	≤13
					15	High	6.59	≤13
					1	Low	5.05	≤13
					1	Mid	4.93	≤13
					1	High	5.09	≤13
					12	Low	5.70	≤13
		20350	1750	10	12	High	5.65	≤13
					25	Low	6.62	≤13
					25	High	6.58	≤13
					1	Low	4.95	≤13
					1	Mid	4.97	≤13
					1	High	5.11	≤13
		20325	1747.5	15	25	Low	5.60	≤13
					25	High	5.62	≤13
					50	Low	6.76	≤13
					50	High	6.78	≤13
					1	Low	4.89	≤13
					1	Mid	4.93	≤13
		20300	1745	20	1	High	5.05	≤13
					36	Low	5.70	≤13
					36	High	5.65	≤13
					75	Low	6.27	≤13
					75	High	6.32	≤13
					1	Low	5.00	≤13
					1	Mid	4.92	≤13
					1	High	5.09	≤13
					50	Low	5.66	≤13
					50	High	5.74	≤13
					100	Low	6.64	≤13
					100	High	6.66	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 57 von 90
Page 1 of 90

LTE BAND 4

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
High	16-QAM	20393	1754.3	1.4	1	Low	6.05	≤13
					1	Mid	5.94	≤13
					1	High	6.03	≤13
					3	Low	6.37	≤13
					3	High	6.38	≤13
					6	Low	7.18	≤13
					6	High	7.14	≤13
		20385	1753.5	3	1	Low	6.01	≤13
					1	Mid	5.78	≤13
					1	High	6.03	≤13
					8	Low	6.52	≤13
					8	Mid	10.05	≤13
					8	High	6.66	≤13
		20375	1752.5	5	15	Low	7.55	≤13
					15	High	7.58	≤13
					1	Low	5.96	≤13
					1	Mid	5.98	≤13
					1	High	6.02	≤13
					12	Low	6.48	≤13
		20350	1750	10	12	High	6.54	≤13
					25	Low	7.35	≤13
					25	High	7.32	≤13
					1	Low	5.79	≤13
					1	Mid	5.84	≤13
					1	High	5.87	≤13
		20325	1747.5	15	25	Low	6.61	≤13
					25	High	6.51	≤13
					50	Low	6.21	≤13
					50	High	7.33	≤13
					1	Low	5.36	≤13
					1	Mid	5.69	≤13
		20300	1745	20	1	High	5.93	≤13
					36	Low	6.02	≤13
					36	High	5.52	≤13
					75	Low	6.09	≤13
					75	High	5.65	≤13
					1	Low	5.94	≤13
					1	Mid	5.98	≤13
					1	High	5.83	≤13
					50	Low	4.60	≤13
					50	High	4.79	≤13
					100	Low	5.38	≤13
					100	High	6.16	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 58 von 90
Page 1 of 90

LTE BAND 5

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Low	QPSK	20407	824.7	1.4	1	Low	4.51	≤13
					1	Mid	4.46	≤13
					1	High	4.55	≤13
					3	Low	4.69	≤13
					3	High	4.69	≤13
					6	Low	4.69	≤13
		20415	825.25	3	6	High	5.69	≤13
					1	Low	4.53	≤13
					1	Mid	4.31	≤13
					1	High	4.39	≤13
					8	Low	5.13	≤13
					8	High	5.13	≤13
		20425	826.5	5	15	Low	5.83	≤13
					15	High	5.99	≤13
					1	Low	4.41	≤13
					1	Mid	4.36	≤13
					1	High	4.46	≤13
					12	Low	5.00	≤13
		20450	829	10	12	High	5.07	≤13
					25	Low	5.72	≤13
					25	High	5.74	≤13
					1	Low	4.53	≤13
					1	Mid	4.41	≤13
					1	High	4.45	≤13
					25	Low	5.13	≤13
					25	High	5.11	≤13
					50	Low	6.46	≤13
					50	High	6.48	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 59 von 90
Page 1 of 90

LTE BAND 5								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Low	16-QAM	20407	824.7	1.4	1	Low	5.38	≤13
					1	Mid	5.23	≤13
					1	High	5.29	≤13
					3	Low	5.60	≤13
					3	High	5.75	≤13
					6	Low	6.45	≤13
		20415	825.25	3	6	High	6.48	≤13
					1	Low	5.43	≤13
					1	Mid	5.25	≤13
					1	High	5.40	≤13
					8	Low	5.95	≤13
					8	High	6.04	≤13
		20425	826.5	5	15	Low	6.56	≤13
					15	High	6.75	≤13
					1	Low	5.37	≤13
					1	Mid	5.29	≤13
					1	High	5.38	≤13
					12	Low	5.94	≤13
		20450	829	10	12	High	6.00	≤13
					25	Low	6.63	≤13
					25	High	6.59	≤13
					1	Low	5.38	≤13
					1	Mid	5.23	≤13
					1	High	5.16	≤13
					25	Low	6.12	≤13
					25	High	5.99	≤13
					50	Low	5.98	≤13
					50	High	6.53	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 60 von 90
Page 1 of 90

LTE BAND 5

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Mid	QPSK	20525	836.5	1.4	1	Low	4.55	≤13
					1	Mid	4.45	≤13
					1	High	4.57	≤13
					3	Low	4.76	≤13
					3	High	4.80	≤13
					6	Low	5.58	≤13
					6	High	5.63	≤13
				3	1	Low	4.61	≤13
					1	Mid	4.36	≤13
					1	High	4.60	≤13
					8	Low	5.18	≤13
					8	High	5.24	≤13
					15	Low	5.89	≤13
					15	High	5.90	≤13
				5	1	Low	4.56	≤13
					1	Mid	4.43	≤13
					1	High	4.60	≤13
					12	Low	5.03	≤13
					12	High	5.20	≤13
					25	Low	5.69	≤13
					25	High	5.69	≤13
				10	1	Low	4.36	≤13
					1	Mid	4.40	≤13
					1	High	4.57	≤13
					25	Low	5.23	≤13
					25	High	5.07	≤13
					50	Low	6.04	≤13
					50	High	6.00	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 61 von 90
Page 1 of 90

LTE BAND 5								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Mid	16-QAM	20525	836.5	1.4	1	Low	5.37	≤13
					1	Mid	5.27	≤13
					1	High	5.37	≤13
					3	Low	5.70	≤13
					3	High	5.66	≤13
					6	Low	6.47	≤13
					6	High	6.38	≤13
				3	1	Low	5.40	≤13
					1	Mid	5.24	≤13
					1	High	5.40	≤13
					8	Low	6.02	≤13
					8	High	6.15	≤13
					15	Low	6.66	≤13
					15	High	6.64	≤13
				5	1	Low	5.43	≤13
					1	Mid	5.25	≤13
					1	High	5.51	≤13
					12	Low	5.98	≤13
					12	High	6.09	≤13
					25	Low	6.61	≤13
					25	High	6.67	≤13
				10	1	Low	5.39	≤13
					1	Mid	5.14	≤13
					1	High	5.54	≤13
					25	Low	6.17	≤13
					25	High	6.11	≤13
					50	Low	6.68	≤13
					50	High	5.79	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 62 von 90
Page 1 of 90

LTE BAND 5

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
High	QPSK	20643	848.3	1.4	1	Low	4.47	≤13
					1	Mid	4.41	≤13
					1	High	4.57	≤13
					3	Low	4.55	≤13
					3	High	4.60	≤13
					6	Low	5.56	≤13
		20635	847.5	3	6	High	5.60	≤13
					1	Low	4.46	≤13
					1	Mid	4.17	≤13
					1	High	4.45	≤13
					8	Low	5.04	≤13
					8	High	5.07	≤13
		20625	846.5	5	15	Low	5.66	≤13
					15	High	5.82	≤13
					1	Low	4.53	≤13
					1	Mid	4.29	≤13
					1	High	4.42	≤13
					12	Low	5.04	≤13
		20600	844	10	12	High	5.01	≤13
					25	Low	5.72	≤13
					25	High	5.75	≤13
					1	Low	4.59	≤13
					1	Mid	4.43	≤13
					1	High	4.41	≤13
					25	Low	5.26	≤13
					25	High	5.32	≤13
					50	Low	6.53	≤13
					50	High	6.51	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 63 von 90
Page 1 of 90

LTE BAND 5								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
High	16-QAM	20643	848.3	1.4	1	Low	5.24	≤13
					1	Mid	5.22	≤13
					1	High	5.47	≤13
					3	Low	5.56	≤13
					3	High	5.61	≤13
					6	Low	6.45	≤13
		20635	847.5	3	6	High	6.46	≤13
					1	Low	5.39	≤13
					1	Mid	5.19	≤13
					1	High	5.44	≤13
					8	Low	5.94	≤13
					8	High	5.99	≤13
		20625	846.5	5	15	Low	6.69	≤13
					15	High	6.56	≤13
					1	Low	5.29	≤13
					1	Mid	5.13	≤13
					1	High	5.24	≤13
					12	Low	6.03	≤13
		20600	844	10	12	High	6.01	≤13
					25	Low	6.63	≤13
					25	High	6.70	≤13
					1	Low	5.37	≤13
					1	Mid	5.25	≤13
					1	High	5.21	≤13
					25	Low	6.19	≤13
					25	High	6.27	≤13
					50	Low	6.55	≤13
					50	High	5.11	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 64 von 90
Page 1 of 90

LTE BAND 12								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Low	QPSK	23017	699.7	1.4	1	Low	4.43	≤13
					1	Mid	4.38	≤13
					1	High	4.46	≤13
					3	Low	4.69	≤13
					3	High	4.72	≤13
					6	Low	5.36	≤13
		23025	700.5	3	6	High	5.38	≤13
					1	Low	4.51	≤13
					1	Mid	4.34	≤13
					1	High	4.59	≤13
					8	Low	5.19	≤13
					8	High	5.22	≤13
		23035	701.5	5	15	Low	6.03	≤13
					15	High	5.87	≤13
					1	Low	4.43	≤13
					1	Mid	4.38	≤13
					1	High	4.53	≤13
					12	Low	4.99	≤13
		23060	704	10	12	High	5.14	≤13
					25	Low	5.75	≤13
					25	High	5.72	≤13
					1	Low	4.43	≤13
					1	Mid	4.43	≤13
					1	High	4.46	≤13
					25	Low	5.09	≤13
					25	High	5.04	≤13
					50	Low	6.22	≤13
					50	High	6.21	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 65 von 90
Page 1 of 90

LTE BAND 12

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Low	16-QAM	23017	699.7	1.4	1	Low	5.33	≤13
					1	Mid	5.22	≤13
					1	High	5.41	≤13
					3	Low	5.54	≤13
					3	High	5.61	≤13
					6	Low	6.45	≤13
		23025	700.5	3	6	High	5.47	≤13
					1	Low	5.38	≤13
					1	Mid	5.20	≤13
					1	High	5.43	≤13
					8	Low	5.83	≤13
					8	High	5.99	≤13
		23035	701.5	5	15	Low	6.87	≤13
					15	High	6.76	≤13
					1	Low	5.30	≤13
					1	Mid	5.17	≤13
					1	High	5.36	≤13
					12	Low	5.95	≤13
		23060	704	10	12	High	6.10	≤13
					25	Low	6.40	≤13
					25	High	6.62	≤13
					1	Low	5.15	≤13
					1	Mid	5.27	≤13
					1	High	5.30	≤13
					25	Low	6.00	≤13
					25	High	6.01	≤13
					50	Low	7.48	≤13
					50	High	6.83	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 66 von 90
Page 1 of 90

LTE BAND 12

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Mid	QPSK	23095	707.5	1.4	1	Low	4.56	≤13
					1	Mid	4.36	≤13
					1	High	4.59	≤13
					3	Low	4.82	≤13
					3	High	4.70	≤13
					6	Low	5.78	≤13
					6	High	5.92	≤13
				3	1	Low	4.58	≤13
					1	Mid	4.38	≤13
					1	High	4.56	≤13
					8	Low	5.21	≤13
					8	High	5.19	≤13
					15	Low	5.79	≤13
					15	High	5.84	≤13
				5	1	Low	4.49	≤13
					1	Mid	4.40	≤13
					1	High	4.48	≤13
					12	Low	5.06	≤13
					12	High	5.11	≤13
					25	Low	5.73	≤13
					25	High	5.67	≤13
				10	1	Low	4.48	≤13
					1	Mid	4.42	≤13
					1	High	4.52	≤13
					25	Low	5.08	≤13
					25	High	5.11	≤13
					50	Low	6.16	≤13
					50	High	6.16	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 67 von 90
Page 1 of 90

LTE BAND 12								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
Mid	16-QAM	23095	707.5	1.4	1	Low	5.42	≤13
					1	Mid	5.31	≤13
					1	High	5.46	≤13
					3	Low	5.69	≤13
					3	High	5.73	≤13
					6	Low	6.59	≤13
					6	High	6.58	≤13
				3	1	Low	5.44	≤13
					1	Mid	5.22	≤13
					1	High	5.04	≤13
					8	Low	6.02	≤13
					8	High	5.95	≤13
					15	Low	6.77	≤13
					15	High	6.78	≤13
				5	1	Low	5.39	≤13
					1	Mid	5.30	≤13
					1	High	5.42	≤13
					12	Low	6.00	≤13
					12	High	5.94	≤13
					25	Low	6.72	≤13
					25	High	6.63	≤13
				10	1	Low	5.38	≤13
					1	Mid	5.16	≤13
					1	High	5.40	≤13
					25	Low	6.00	≤13
					25	High	6.10	≤13
					50	Low	6.56	≤13
					50	High	7.71	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 68 von 90
Page 1 of 90

LTE BAND 12								
Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
High	QPSK	23173	715.3	1.4	1	Low	4.51	≤13
					1	Mid	4.37	≤13
					1	High	4.41	≤13
					3	Low	4.73	≤13
					3	High	4.70	≤13
					6	Low	5.38	≤13
		23165	714.5	3	6	High	6.35	≤13
					1	Low	4.59	≤13
					1	Mid	4.38	≤13
					1	High	4.52	≤13
					8	Low	5.14	≤13
					8	High	5.19	≤13
		23155	713.5	5	15	Low	5.89	≤13
					15	High	5.88	≤13
					1	Low	4.50	≤13
					1	Mid	4.42	≤13
					1	High	4.49	≤13
					12	Low	5.05	≤13
		23130	711	10	12	High	5.09	≤13
					25	Low	5.82	≤13
					25	High	5.76	≤13
					1	Low	4.49	≤13
					1	Mid	4.37	≤13
					1	High	4.47	≤13
					25	Low	5.09	≤13
					25	High	5.16	≤13
					50	Low	6.61	≤13
					50	High	6.62	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 69 von 90
Page 1 of 90

LTE BAND 12

Channel	Modulation	Channel No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	No. of RB	RB Pos	PAPR (dB)	Limit (dB)
High	16-QAM	23173	715.3	1.4	1	Low	5.38	≤13
					1	Mid	5.23	≤13
					1	High	5.28	≤13
					3	Low	5.64	≤13
					3	High	5.56	≤13
					6	Low	6.43	≤13
					6	High	6.41	≤13
		23165	714.5	3	1	Low	5.45	≤13
					1	Mid	5.17	≤13
					1	High	5.38	≤13
					8	Low	5.64	≤13
					8	High	6.01	≤13
					15	Low	6.86	≤13
					15	High	6.77	≤13
		23155	713.5	5	1	Low	5.46	≤13
					1	Mid	5.26	≤13
					1	High	5.37	≤13
					12	Low	5.95	≤13
					12	High	6.00	≤13
					25	Low	6.62	≤13
					25	High	6.63	≤13
		23130	711	10	1	Low	5.37	≤13
					1	Mid	5.18	≤13
					1	High	5.32	≤13
					25	Low	6.00	≤13
					25	High	6.11	≤13
					50	Low	6.61	≤13
					50	High	5.83	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 70 von 90
Page 1 of 90

WCDMA BAND 2					
Mode	Subtest	Channel	Channel Frequency (MHz)	PAPR (dB)	Limit (dB)
UMTS, Rel 99	NA	Low	1852.40	3.71	≤13
		Mid	1880.00	3.57	≤13
		High	1907.60	3.51	≤13
UMTS, HSDPA (REL5)	Subtest 1	Low	1852.40	5.24	≤13
		Mid	1880.00	4.79	≤13
		High	1907.60	4.80	≤13
	Subtest 2	Low	1852.40	4.62	≤13
		Mid	1880.00	4.48	≤13
		High	1907.60	4.37	≤13
	Subtest 3	Low	1852.40	5.33	≤13
		Mid	1880.00	5.05	≤13
		High	1907.60	5.02	≤13
	Subtest 4	Low	1852.40	3.76	≤13
		Mid	1880.00	3.58	≤13
		High	1907.60	3.53	≤13
UMTS, HSUPA (REL6)	Subtest 1	Low	1852.40	5.19	≤13
		Mid	1880.00	4.79	≤13
		High	1907.60	4.73	≤13
	Subtest 2	Low	1852.40	4.51	≤13
		Mid	1880.00	4.47	≤13
		High	1907.60	4.20	≤13
	Subtest 3	Low	1852.40	5.42	≤13
		Mid	1880.00	5.04	≤13
		High	1907.60	5.01	≤13
	Subtest 4	Low	1852.40	3.71	≤13
		Mid	1880.00	3.54	≤13
		High	1907.60	3.56	≤13
	Subtest 5	Low	1852.40	5.83	≤13
		Mid	1880.00	5.29	≤13
		High	1907.60	5.22	≤13

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 71 von 90
Page 1 of 90

WCDMA BAND 5					
Mode	Subtest	Channel	Channel Frequency (MHz)	PAPR (dB)	Limit (dB)
UMTS, REL 99	NA	Low	826.40	3.27	≤13
		Mid	836.60	3.30	≤13
		High	846.60	3.35	≤13
UMTS, HSDPA	Subtest 1	Low	826.40	4.47	≤13
		Mid	836.60	4.49	≤13
		High	846.60	4.59	≤13
	Subtest 2	Low	826.40	3.99	≤13
		Mid	836.60	4.10	≤13
		High	846.60	4.12	≤13
	Subtest 3	Low	826.40	4.83	≤13
		Mid	836.60	4.94	≤13
		High	846.60	4.90	≤13
	Subtest 4	Low	826.40	3.42	≤13
		Mid	836.60	3.42	≤13
		High	846.60	3.56	≤13
UMTS, HSUPA (REL6)	Subtest 1	Low	826.40	4.37	≤13
		Mid	836.60	4.62	≤13
		High	846.60	4.55	≤13
	Subtest 2	Low	826.40	4.16	≤13
		Mid	836.60	4.26	≤13
		High	846.60	4.11	≤13
	Subtest 3	Low	826.40	4.67	≤13
		Mid	836.60	4.77	≤13
		High	846.60	4.73	≤13
	Subtest 4	Low	826.40	3.39	≤13
		Mid	836.60	3.46	≤13
		High	846.60	3.49	≤13
	Subtest 5	Low	826.40	4.94	≤13
		Mid	836.60	5.15	≤13
		High	846.60	4.80	≤13

8.3 Equivalent Isotropic Radiated Power (EIRP) / Effective Radiated Power (ERP)

Result

Pass

Specification	FCC Part §24.232(c), §27.50(d)(4), §22.913 (a)(5), §27.50 (c)(9) RSS 130 Issue 2, Section 4.6.3 RSS 132 Issue 3, Section 5.4 RSS 133 Issue 6 Amendment 1, Section 6.4 RSS 139 Issue 3, Section 6.5
Test Method / Procedure	ANSI C63.26-2015
Measurement Bandwidth	100 kHz for frequency range < 1GHz 1 MHz for Frequency range >1GHz
Detector function	Refer remarks below
Measuring Distance	3 m
Requirement	As per the limits mentioned in the below table
Test setup	Reffer TEST METHODOLOGY

Limit:

FCC Clause

Requirements

FCC Part 24.232(c)

Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

FCC Part 27.50(d)(4)

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1755-1780 MHz bands are limited to 1 watt EIRP.

FCC Part 22.913(a)(5)

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

FCC Part 27.50(c)(9)

Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP.

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 73 von 90
Page 1 of 90

ISED Clause

Requirements

RSS 130 Issue 2, Section 4.6.3

The e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

RSS 132 Issue 3, Section 5.4

The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts

RSS 133 Issue 6 Amendment 1,
Section 6.4

Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p.

RSS 139 Issue 3, Section 6.5

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt.

Environmental conditions:

Temperature (Norm) = + 24 °C Voltage = 224 V DC (through AC to DC supply) Relative humidity = 62 %

KDB Guidelines applied :

All the radiated emission measurements are performed in accordance with common requirement specified in 5.5.2 and Pre-test site path loss correction factors are used to adjust the EUT emission data in place of two step substitution method (as defined in Annex B of ANSI C63.26-2015)

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 74 von 90
Page 1 of 90

Test results:

Note: All the losses are included during measurement and final values are mentioned in the test report. Refer TEST METHODOLOGY for more details

Table 10: ERP/EIRP Test results for LTE

Band	Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)
2	QPSK	10	1	mid	18650	1855	Vertical	25.34	33.01
							Horizontal	24.57	33.01
		20	1	mid	18900	1880	Vertical	24.82	33.01
							Horizontal	25.52	33.01
		20	1	mid	19100	1900	Vertical	25.74	33.01
							Horizontal	23.79	33.01

Band	Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)
2	16-QAM	20	1	mid	18700	1860	Vertical	25.85	33.01
							Horizontal	27.02	33.01
		10	1	mid	18900	1880	Vertical	25.65	33.01
							Horizontal	25.76	33.01
		15	1	mid	19125	1902.5	Vertical	24.95	33.01
							Horizontal	24.78	33.01

Band	Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)
4	QPSK	20	1	mid	20050	1720	Vertical	23.33	30
							Horizontal	23.77	30
		20	1	mid	20175	1732.5	Vertical	24.76	30
							Horizontal	23.39	30
		20	1	mid	20300	1745	Vertical	23.91	30
							Horizontal	25.06	30

Band	Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)
4	16-QAM	10	1	mid	20000	1715	Vertical	24.52	30
							Horizontal	22.54	30
		15	1	mid	20175	1732.5	Vertical	25.52	30
							Horizontal	24.67	30
		15	1	mid	20325	1747.5	Vertical	25.08	30
							Horizontal	24.79	30

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 75 von 90
Page 1 of 90

Band	Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)
5	QPSK	3	1	mid	20415	825.25	Vertical	20.58	38.45
							Horizontal	19.87	38.45
		10	1	mid	20525	836.5	Vertical	19.57	38.45
							Horizontal	19.60	38.45
		3	1	mid	20635	847.5	Vertical	22.41	38.45
							Horizontal	20.26	38.45

Band	Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)
5	16-QAM	1.4	1	High	20407	824.7	Vertical	20.87	38.45
							Horizontal	19.98	38.45
		10	1	mid	20525	836.5	Vertical	22.40	38.45
							Horizontal	20.08	38.45
		1.4	1	Low	20643	848.3	Vertical	22.31	38.45
							Horizontal	19.87	38.45

Band	Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)
12	QPSK	1.4	1	mid	23017	699.7	Vertical	20.11	44.77
							Horizontal	22.78	44.77
		10	1	mid	23095	707.5	Vertical	19.80	44.77
							Horizontal	22.72	44.77
		10	1	mid	23130	711	Vertical	19.73	44.77
							Horizontal	22.28	44.77

Band	Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)
12	16-QAM	1.4	3	Low	23017	699.7	Vertical	17.42	44.77
							Horizontal	20.27	44.77
		10	1	mid	23095	707.5	Vertical	20.50	44.77
							Horizontal	22.82	44.77
		10	1	mid	23130	711	Vertical	19.87	44.77
							Horizontal	22.68	44.77

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 76 von 90
Page 1 of 90

Table 11: ERP/EIRP Test results for WCDMA

Band	Mode	Channel	Channel no's	Channel Frequency (MHz)	Antenna Polarization	EIRP (dBm)	Limit (dBm)
2	Rel99	Low	9262	1852.4	Vertical	20.21	33.01
					Horizontal	21.70	33.01
		Mid	9400	1880	Vertical	20.35	33.01
					Horizontal	20.10	33.01
		High	9538	1907.6	Vertical	19.89	33.01
					Horizontal	20.21	33.01
	UMTS, HSDPA (REL5)	Low	9262	1852.4	Vertical	20.26	33.01
					Horizontal	21.09	33.01
		Mid	9400	1880	Vertical	17.47	33.01
					Horizontal	19.67	33.01
		High	9538	1907.6	Vertical	20.24	33.01
					Horizontal	20.02	33.01
	UMTS, HSUPA (REL5)	Low	9262	1852.4	Vertical	20.68	33.01
					Horizontal	22.69	33.01
		Mid	9400	1880	Vertical	21.19	33.01
					Horizontal	20.40	33.01
		High	9538	1907.6	Vertical	19.92	33.01
					Horizontal	20.31	33.01

Band	Mode	Channel	Channel no's	Channel Frequency (MHz)	Antenna Polarization	ERP (dBm)	Limit (dBm)
5	Rel99	Low	4132	826.4	Vertical	20.63	38.45
					Horizontal	19.43	38.45
		Mid	4183	836.6	Vertical	20.58	38.45
					Horizontal	19.60	38.45
		High	4233	846.6	Vertical	23.49	38.45
					Horizontal	19.80	38.45
	UMTS, HSDPA (REL5)	Low	4132	826.4	Vertical	21.19	38.45
					Horizontal	19.04	38.45
		Mid	4183	836.6	Vertical	21.24	38.45
					Horizontal	18.58	38.45
		High	4233	846.6	Vertical	22.89	38.45
					Horizontal	19.95	38.45
	UMTS, HSUPA (REL5)	Low	4132	826.4	Vertical	21.80	38.45
					Horizontal	19.94	38.45
		Mid	4183	836.6	Vertical	21.45	38.45
					Horizontal	18.80	38.45
		High	4233	846.6	Vertical	23.15	38.45
					Horizontal	20.29	38.45

8.4 Field Strength of Spurious Radiation

Result

Pass

Specification	FCC Part §2.1051, §24.238(a), §27.53(h)(1), §22.917 (a), §27.53 (g) RSS 130 Issue 2, Section 4.7.1 RSS 132 Issue 3, Section 5.5 RSS 133 Issue 6 Amendment 1, Section 6.5 RSS 139 Issue 3, Section 6.6
Test Method / Procedure	ANSI C63.26-2015
Measurement Bandwidth (RBW)	100 kHz for frequency range < 1GHz 1 MHz for Frequency range >1GHz
Detector Function	Peak
Measuring Distance	3 m
Requirement	The power of any emission outside the authorized frequency range must be attenuated below the transmitting power (P) by a factor of at least 43+10log(P) dB
Test setup	Reffer TEST METHODOLOGY

Environmental conditions:

Temperature (Norm) = + 24 °C Voltage = 24 V DC (through AC to DC supply)

Relative humidity = 62 %

KDB Guidelines applied :

All the radiated emission measurements are performed in accordance with common requirement specified in 5.5.2 and Pre-test site path loss correction factors are used to adjust the EUT emission data in place of two step substitution method (as defined in Annex B of ANSI C63.26-2015)

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 78 von 90
Page 1 of 90

Test results:

Note: All the losses are included during measurement and final values are mentioned in the test report. Refer TEST METHODOLOGY for more details

Test results for frequency range 9kHz – 30MHz

No emissions found in frequency range 9 kHz to 30 MHz, and measured levels are below 20dB from the limit line, hence not reported

Table 12: Spurious Radiation in the frequency range 30 MHz – 1GHz

Antenna Polarization	Measured Frequency (MHz)	Measured e.i.r.p Value (dBm)	Limit (dBm)	Margin (dB)
Vertical	43.77	-76.20	-13.00	-63.20
	58.41	-74.60	-13.00	-61.60
	80.01	-74.60	-13.00	-61.60
	118.14	-75.10	-13.00	-62.10
	152.31	-65.80	-13.00	-52.80
	192.00	-64.00	-13.00	-51.00
	202.10	-58.10	-13.00	-45.10
	231.56	-63.90	-13.00	-50.90
	340.07	-64.10	-13.00	-51.10
	400.88	-73.90	-13.00	-60.90
	929.93	-60.50	-13.00	-47.50
Horizontal	39.75	-77.00	-13.00	-64.00
	80.01	-73.20	-13.00	-60.20
	147.72	-69.20	-13.00	-56.20
	156.69	-59.90	-13.00	-46.90
	192.00	64.00	-13.00	77.00
	202.19	-61.60	-13.00	-48.60
	231.59	-65.20	-13.00	-52.20
	346.97	-65.20	-13.00	-52.20
	749.96	-64.80	-13.00	-51.80
	929.93	-53.60	-13.00	-40.60

Prüfbericht - Nr.:

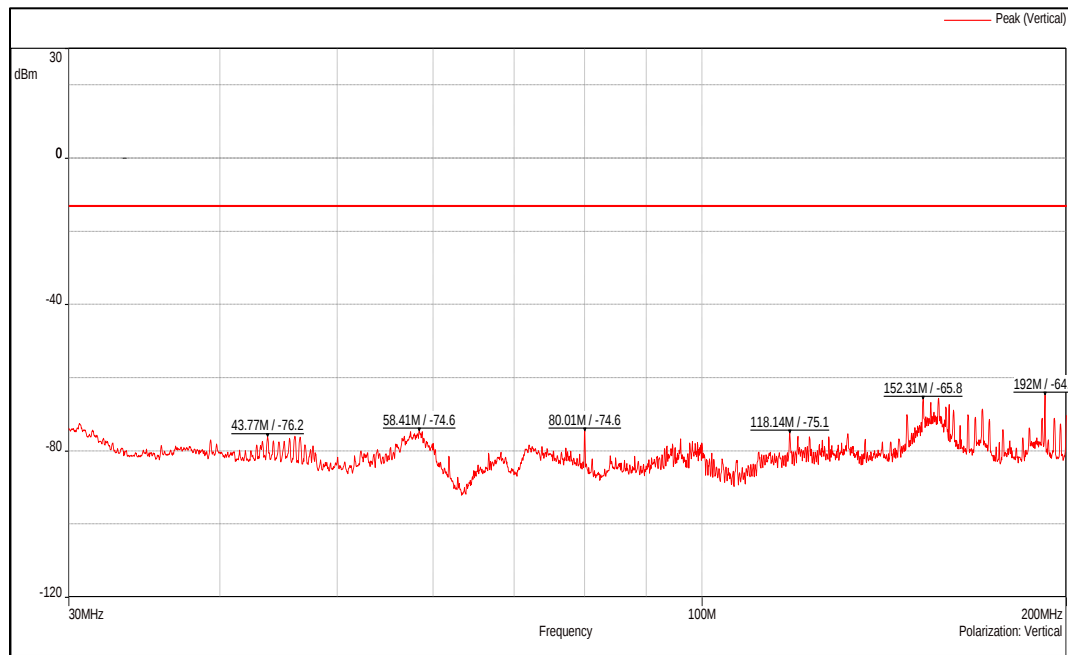
Test Report No.:

ULR-TC568822300000052F

Seite 79 von 90

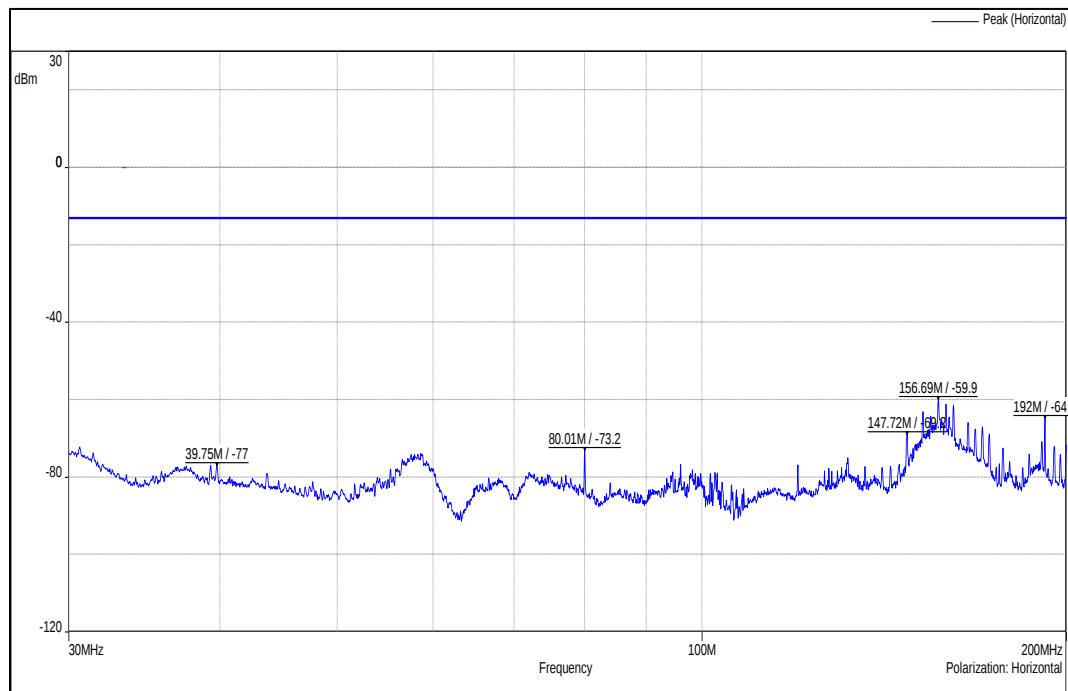
Page 1 of 90

Worst Case Emission Plots:



Frequency range: 30MHz to 200MHz

Polarization: Vertical



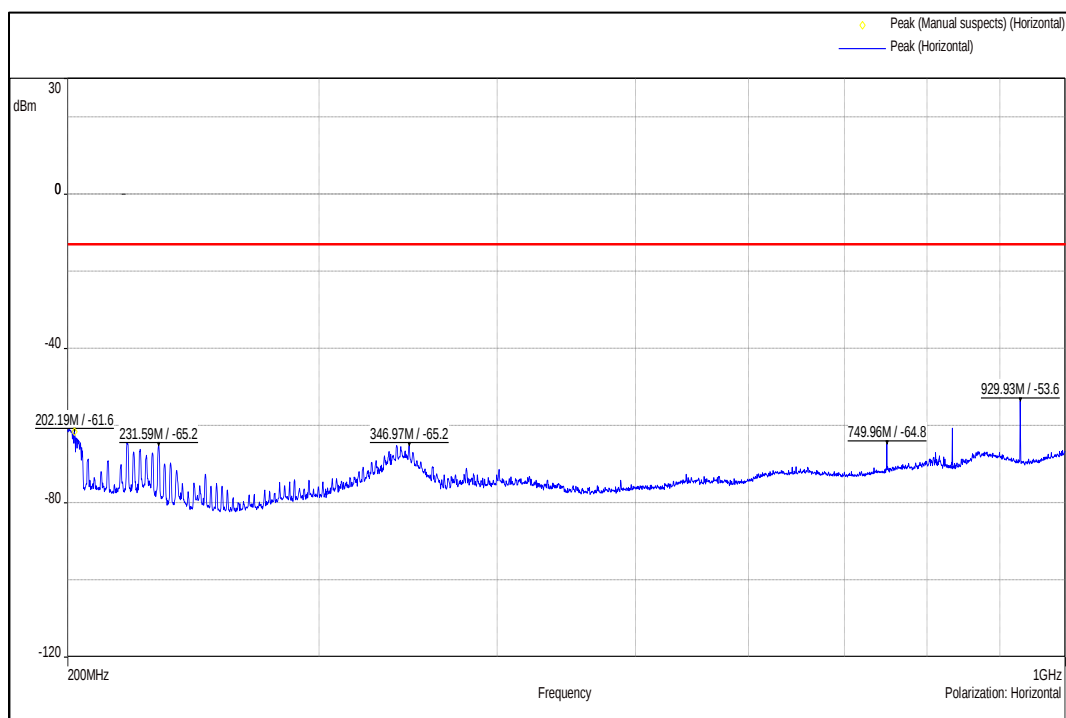
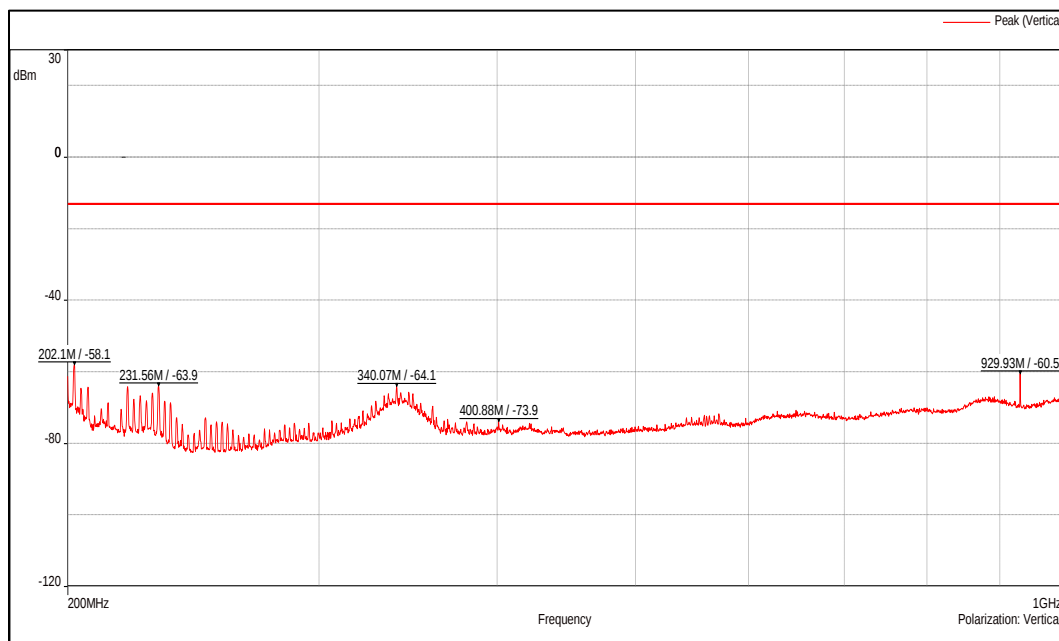
Frequency range: 30MHz to 200MHz

Polarization: Horizontal

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 80 von 90
Page 1 of 90



Prüfbericht - Nr.:

Test Report No.:

ULR-TC568822300000052F

Seite 81 von 90

Page 1 of 90

Table 13: Spurious Radiation above 1GHz

LTE BAND 2										
Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit	Margin
QPSK	10	1	Mid	18650	1855	3710	Vertical	-49.89	-13	-36.89
						5565		-40.23	-13	-27.23
						7420		-49.33	-13	-36.33
						3710	Horizontal	-50.41	-13	-37.41
						5565		-45.30	-13	-32.30
						7420		-49.95	-13	-36.95
	20	1	Mid	18900	1880	3760	Vertical	-49.33	-13	-36.33
						5640		-41.53	-13	-28.53
						7520		-49.63	-13	-36.63
						3760	Horizontal	-50.65	-13	-37.65
						5640		-43.86	-13	-30.86
						7520		-49.59	-13	-36.59
	20	1	Mid	19100	1900	3800	Vertical	-48.92	-13	-35.92
						5700		-43.72	-13	-30.72
						7600		-47.65	-13	-34.65
						3800	Horizontal	-51.36	-13	-38.36
						5700		-45.24	-13	-32.24
						7600		-48.96	-13	-35.96

LTE BAND 2

Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit	Margin
16-QAM	20	1	Mid	18700	1860	3720	Vertical	-48.42	-13	-35.42
						5580		-41.29	-13	-28.29
						7440		-49.23	-13	-36.23
						3720	Horizontal	-49.82	-13	-36.82
						5580		-45.30	-13	-32.30
						7440		-49.31	-13	-36.31
	10	1	Mid	18900	1880	3760	Vertical	-49.60	-13	-36.60
						5640		-41.82	-13	-28.82
						7520		-49.63	-13	-36.63
						3760	Horizontal	-50.70	-13	-37.70
						5640		-43.65	-13	-30.65
						7520		-49.71	-13	-36.71
	15	1	Mid	19125	1902.5	3805	Vertical	-46.81	-13	-33.81
						5707.5		-41.05	-13	-28.05
						7610		-50.20	-13	-37.20
						3805	Horizontal	-50.73	-13	-37.73
						5707.5		-44.32	-13	-31.32
						7610		-49.45	-13	-36.45

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 82 von 90
Page 1 of 90

LTE BAND 4

Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit	Margin
QPSK	20	1	Mid	20050	1720	3440	Vertical	-46.69	-13	-33.69
						5160		-40.86	-13	-27.86
						6880		-50.30	-13	-37.30
						3440	Horizontal	-49.11	-13	-36.11
						5160		-45.01	-13	-32.01
						6880		-51.43	-13	-38.43
	20	1	Mid	20175	1732.5	3465	Vertical	-46.91	-13	-33.91
						5197.5		-42.27	-13	-29.27
						6930		-50.12	-13	-37.12
						3465	Horizontal	-52.33	-13	-39.33
						5197.5		-46.46	-13	-33.46
						6930		-50.84	-13	-37.84
	20	1	Mid	20300	1745	3490	Vertical	-47.50	-13	-34.50
						5235		-40.57	-13	-27.57
						6980		-48.95	-13	-35.95
						3490	Horizontal	-47.90	-13	-34.90
						5235		-44.69	-13	-31.69
						6980		-50.27	-13	-37.27

LTE BAND 4

Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)
16-QAM	10	1	Mid	20000	1715	3430	Vertical	-45.03	-13	-32.03
						5145		-37.47	-13	-24.47
						6860		-49.51	-13	-36.51
						3430	Horizontal	-46.97	-13	-33.97
						5145		-44.13	-13	-31.13
						6860		-51.23	-13	-38.23
	15	1	Mid	20175	1732.5	3465	Vertical	-51.46	-13	-38.46
						5197.5		-41.31	-13	-28.31
						6930		-50.81	-13	-37.81
						3465	Horizontal	-52.16	-13	-39.16
						5197.5		-47.30	-13	-34.30
						6930		-51.20	-13	-38.20
	15	1	Mid	20325	1747.5	3495	Vertical	-46.23	-13	-33.23
						5242.5		-37.22	-13	-24.22
						6990		-48.25	-13	-35.25
						3495	Horizontal	-48.07	-13	-35.07
						5242.5		-43.68	-13	-30.68
						6990		-51.12	-13	-38.12

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 83 von 90
Page 1 of 90

LTE BAND 5

Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)
QPSK	3	1	Mid	20415	825.25	1650.5	Vertical	-42.19	-13	-29.19
						2475.75		-46.04	-13	-33.04
						3301		-51.07	-13	-38.07
						1650.5	Horizontal	-41.95	-13	-28.95
						2475.75		-49.22	-13	-36.22
						3301		-45.36	-13	-32.36
	10	1	Mid	20525	836.5	1673	Vertical	-47.58	-13	-34.58
						2509.5		-50.22	-13	-37.22
						3346		-52.67	-13	-39.67
						1673	Horizontal	-50.25	-13	-37.25
						2509.5		-51.65	-13	-38.65
						3346		-54.58	-13	-41.58
	3	1	Mid	20635	847.5	1695	Vertical	-44.37	-13	-31.37
						2542.5		-49.25	-13	-36.25
						3390		-54.19	-13	-41.19
						1695	Horizontal	-44.23	-13	-31.23
						2542.5		-50.50	-13	-37.50
						3390		-54.36	-13	-41.36

LTE BAND 5

Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)
16-QAM	1.4	1	High	20407	824.7	1649.4	Vertical	-41.53	-13	-28.53
						2474.1		-45.02	-13	-32.02
						3298.8		-51.35	-13	-38.35
						1649.4	Horizontal	-42.08	-13	-29.08
						2474.1		-48.83	-13	-35.83
						3298.8		-54.21	-13	-41.21
	10	1	Mid	20525	836.5	1673	Vertical	-49.09	-13	-36.09
						2509.5		-50.93	-13	-37.93
						3346		-54.21	-13	-41.21
						1673	Horizontal	-51.40	-13	-38.40
						2509.5		-54.73	-13	-41.73
						3346		-54.98	-13	-41.98
	1.4	1	Low	20643	848.3	1696.6	Vertical	-46.88	-13	-33.88
						2544.9		-41.19	-13	-28.19
						3393.2		-52.65	-13	-39.65
						1696.6	Horizontal	-46.25	-13	-33.25
						2544.9		-50.68	-13	-37.68
						3393.2		-54.59	-13	-41.59

Prüfbericht - Nr.:
Test Report No.:

ULR-TC568822300000052F

Seite 84 von 90
Page 1 of 90

LTE BAND 12

Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)
QPSK	1.4	1	Mid	23017	699.7	1399.4	Vertical	-42.64	-13	-29.64
						2099.1		-34.76	-13	-21.76
						2798.8		-49.62	-13	-36.62
						1399.4	Horizontal	-38.46	-13	-25.46
						2099.1		-34.55	-13	-21.55
						2798.8		-50.14	-13	-37.14
	10	1	Mid	23095	707.5	1415	Vertical	-48.81	-13	-35.81
						2122.5		-35.60	-13	-22.60
						2830		-52.31	-13	-39.31
						1415	Horizontal	-45.02	-13	-32.02
						2122.5		-36.39	-13	-23.39
						2830		-52.68	-13	-39.68
	10	1	Mid	23130	711	1422	Vertical	-45.40	-13	-32.40
						2133		-35.84	-13	-22.84
						2844		-51.27	-13	-38.27
						1422	Horizontal	-42.69	-13	-29.69
						2133		-37.84	-13	-24.84
						2844		-51.77	-13	-38.77

LTE BAND 12

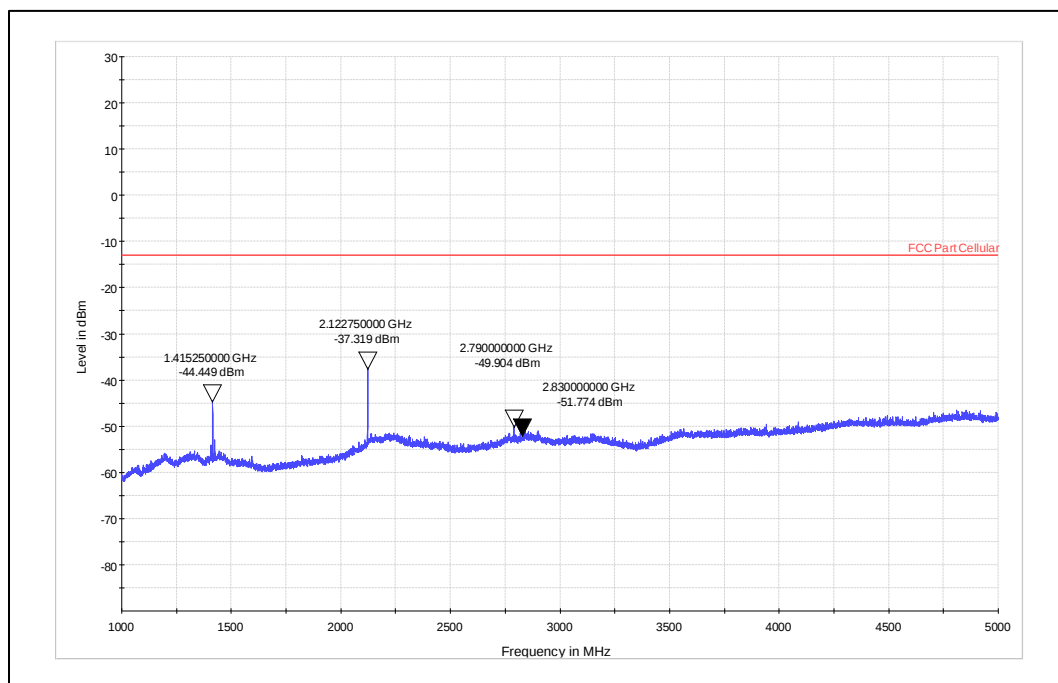
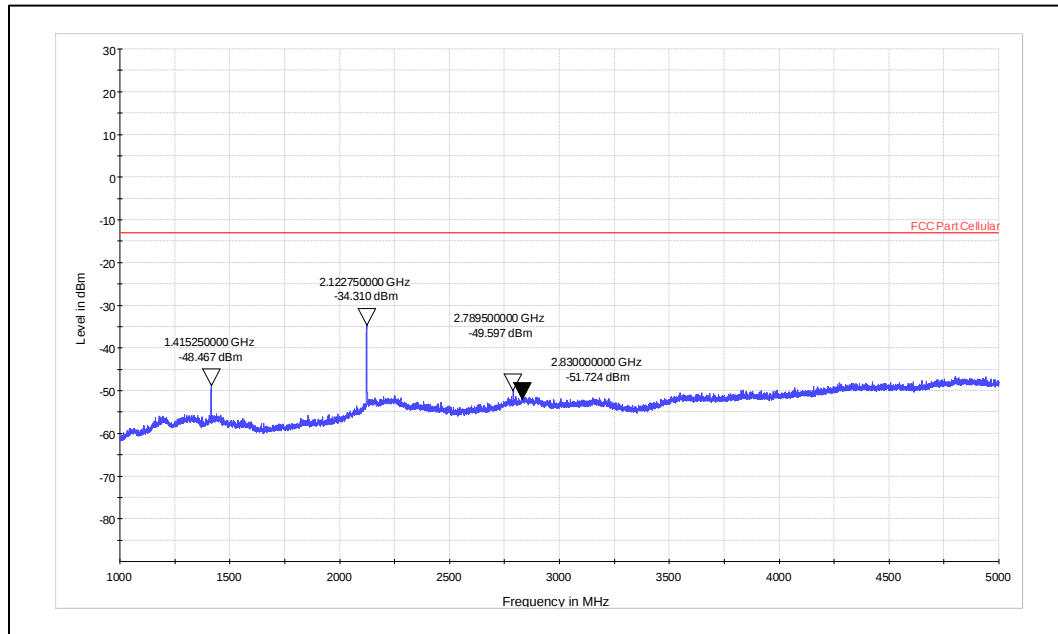
Modulation	Cell BW	No. of RB	RB Pos	Channel no's	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)
16-QAM	1.4	3	Low	23017	699.7	1399.4	Vertical	-46.57	-13	-33.57
						2099.1		-35.65	-13	-22.65
						2798.8		-49.44	-13	-36.44
						1399.4	Horizontal	-39.92	-13	-26.92
						2099.1		-34.98	-13	-21.98
						2798.8		-49.98	-13	-36.98
	10	1	Mid	23095	707.5	1415	Vertical	-48.46	-13	-35.46
						2122.5		-34.31	-13	-21.31
						2830		-51.72	-13	-38.72
						1415	Horizontal	-44.44	-13	-31.44
						2122.5		-37.31	-13	-24.31
						2830		-51.77	-13	-38.77
	10	1	Mid	23130	711	1422	Vertical	-45.47	-13	-32.47
						2133		-35.37	-13	-22.37
						2844		-51.34	-13	-38.34
						1422	Horizontal	-42.80	-13	-29.80
						2133		-37.65	-13	-24.65
						2844		-51.87	-13	-38.87

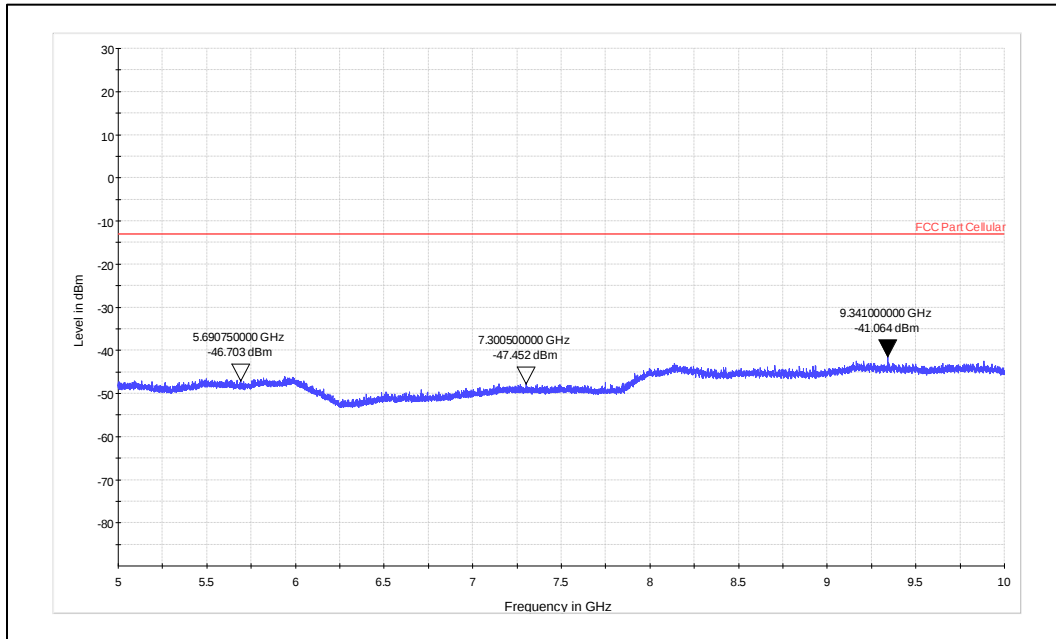
WCDMA BAND 2							
Mode	Subtest	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	EIRP (dBm)	Limit (dBm)	Margin (dB)
Rel 99	NA	1852.4	3704.8	Vertical	-49.03	-13	-36.03
			5557.2		-43.78	-13	-30.78
			7409.6		-46.44	-13	-33.44
			3704.8	Horizontal	-52.09	-13	-39.09
			5557.2		-44.83	-13	-31.83
			7409.6		-46.54	-13	-33.54
	NA	1880	3760	Vertical	-49.13	-13	-36.13
			5640		-45.22	-13	-32.22
			7520		-45.15	-13	-32.15
			3760	Horizontal	-49.43	-13	-36.43
			5640		-45.71	-13	-32.71
			7520		-45.21	-13	-32.21
	NA	1907.6	3815.2	Vertical	-48.41	-13	-35.41
			5722.8		-44.76	-13	-31.76
			7630.4		-45.81	-13	-32.81
			3815.2	Horizontal	-48.07	-13	-35.07
			5722.8		-45.72	-13	-32.72
			7630.4		-45.53	-13	-32.53
UMTS, HSDPA (REL5)	Subtest 4	1852.4	3704.8	Vertical	-48.75	-13	-35.75
			5557.2		-45.34	-13	-32.34
			7409.6		-45.36	-13	-32.36
			3704.8	Horizontal	-52.31	-13	-39.31
			5557.2		-45.43	-13	-32.43
			7409.6		-45.52	-13	-32.52
	Subtest 4	1880	3760	Vertical	-48.29	-13	-35.29
			5640		-44.79	-13	-31.79
			7520		-45.41	-13	-32.41
			3760	Horizontal	-48.46	-13	-35.46
			5640		-45.33	-13	-32.33
			7520		-45.31	-13	-32.31
	Subtest 2	1907.6	3815.2	Vertical	-47.78	-13	-34.78
			5722.8		-45.30	-13	-32.30
			7630.4		-45.79	-13	-32.79
			3815.2	Horizontal	-48.13	-13	-35.13
			5722.8		-45.39	-13	-32.39
			7630.4		-46.10	-13	-33.10
UMTS, HSUPA (REL6)	Subtest 1	1852.4	3704.8	Vertical	-49.39	-13	-36.39
			5557.2		-45.33	-13	-32.33
			7409.6		-46.21	-13	-33.21
			3704.8	Horizontal	-48.19	-13	-35.19
			5557.2		-44.84	-13	-31.84
			7409.6		-46.19	-13	-33.19
	Subtest 1	1880	3760	Vertical	-48.62	-13	-35.62
			5640		-44.49	-13	-31.49
			7520		-45.14	-13	-32.14
			3760	Horizontal	-48.65	-13	-35.65
			5640		-45.43	-13	-32.43
			7520		-43.51	-13	-30.51
	Subtest 3	1907.6	3815.2	Vertical	-48.76	-13	-35.76
			5722.8		-45.33	-13	-32.33
			7630.4		-46.14	-13	-33.14
			3815.2	Horizontal	-46.05	-13	-33.05
			5722.8		-45.71	-13	-32.71
			7630.4		-46.65	-13	-33.65

WCDMA BAND 5							
Mode	Subtest	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	EIRP (dBm)	Limit (dBm)	Margin (dB)
Rel 99	NA	826.4	1652.8	Vertical	-47.44	-13	-34.44
			2479.2		-47.61	-13	-34.61
			3305.6		-50.71	-13	-37.71
			1652.8	Horizontal	-46.87	-13	-33.87
			2479.2		-48.56	-13	-35.56
			3305.6		-52.25	-13	-39.25
	NA	836.6	1673.2	Vertical	-46.23	-13	-33.23
			2509.8		-52.49	-13	-39.49
			3346.4		-52.09	-13	-39.09
			1673.2	Horizontal	-44.54	-13	-31.54
			2509.8		-53.53	-13	-40.53
			3346.4		-52.64	-13	-39.64
	NA	846.6	1693.2	Vertical	-41.87	-13	-28.87
			2539.8		-52.87	-13	-39.87
			3386.4		-51.78	-13	-38.78
			1693.2	Horizontal	-43.43	-13	-30.43
			2539.8		-47.90	-13	-34.90
			3386.4		-51.27	-13	-38.27
UMTS, HSDPA (REL5)	Subtest 1	826.4	1652.8	Vertical	-57.77	-13	-44.77
			2479.2		-48.79	-13	-35.79
			3305.6		-52.40	-13	-39.40
			1652.8	Horizontal	-57.97	-13	-44.97
			2479.2		-52.97	-13	-39.97
			3305.6		-52.00	-13	-39.00
	Subtest 1	836.6	1673.2	Vertical	-53.90	-13	-40.90
			2509.8		-53.22	-13	-40.22
			3346.4		-51.68	-13	-38.68
			1673.2	Horizontal	-57.58	-13	-44.58
			2509.8		-53.76	-13	-40.76
			3346.4		-52.46	-13	-39.46
	Subtest 4	846.6	1693.2	Vertical	-57.94	-13	-44.94
			2539.8		-53.59	-13	-40.59
			3386.4		-51.88	-13	-38.88
			1693.2	Horizontal	-57.41	-13	-44.41
			2539.8		-47.77	-13	-34.77
			3386.4		-52.57	-13	-39.57
UMTS, HSUPA (REL6)	Subtest 1	826.4	1652.8	Vertical	-58.26	-13	-45.26
			2479.2		-52.73	-13	-39.73
			3305.6		-51.43	-13	-38.43
			1652.8	Horizontal	-57.79	-13	-44.79
			2479.2		-53.38	-13	-40.38
			3305.6		-52.60	-13	-39.60
	Subtest 3	836.6	1673.2	Vertical	-57.88	-13	-44.88
			2509.8		-48.01	-13	-35.01
			3346.4		-52.20	-13	-39.20
			1673.2	Horizontal	-57.60	-13	-44.60
			2509.8		-53.53	-13	-40.53
			3346.4		-51.28	-13	-38.28
	Subtest 4	846.6	1693.2	Vertical	-53.93	-13	-40.93
			2539.8		-53.94	-13	-40.94
			3386.4		-52.40	-13	-39.40
			1693.2	Horizontal	-57.60	-13	-44.60
			2539.8		-53.72	-13	-40.72
			3386.4		-51.43	-13	-38.43

Worst Case Emission Plots:

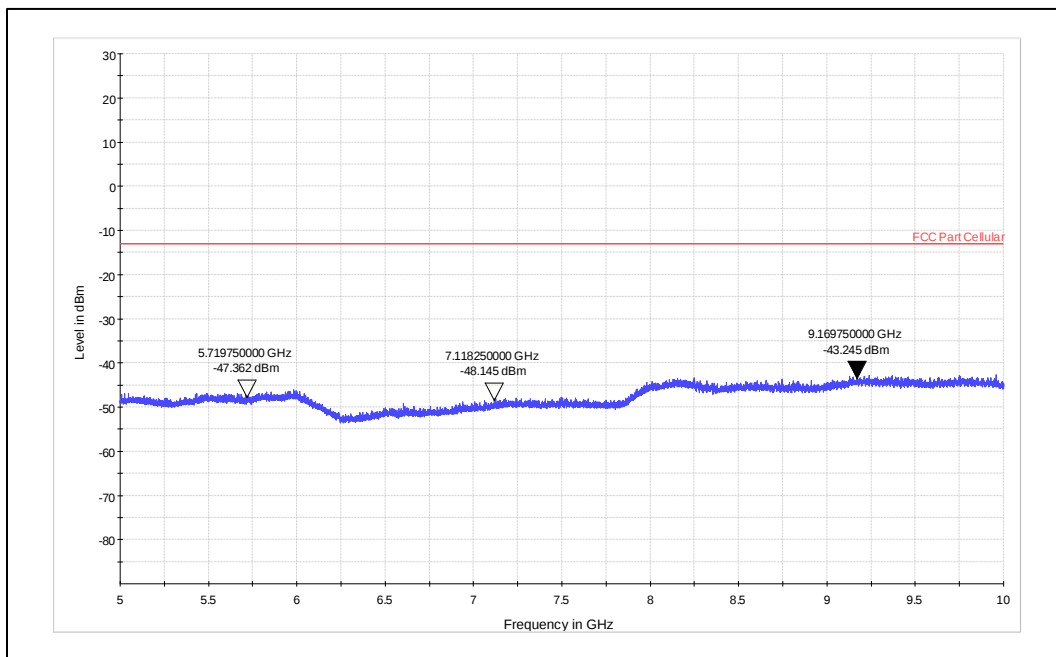
LTE, Band 12, Channel Bandwidth 10MHz, Channel Frequency 707.5MHz





Frequency range: 5GHz to 10GHz

Polarization: Vertical

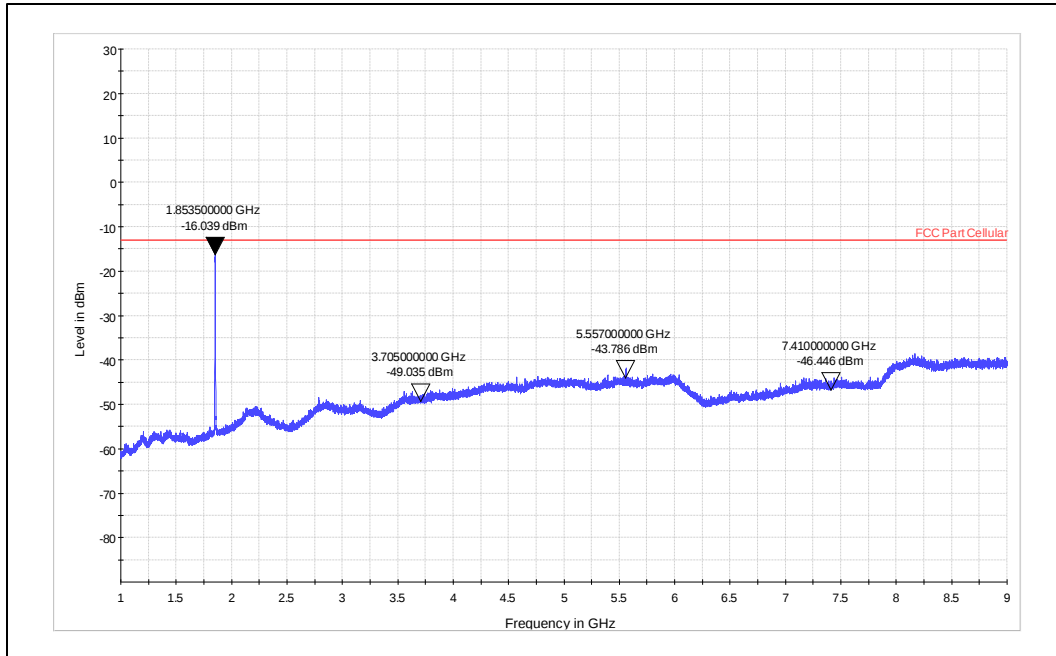


Frequency range: 5GHz to 10GHz

Polarization: Horizontal

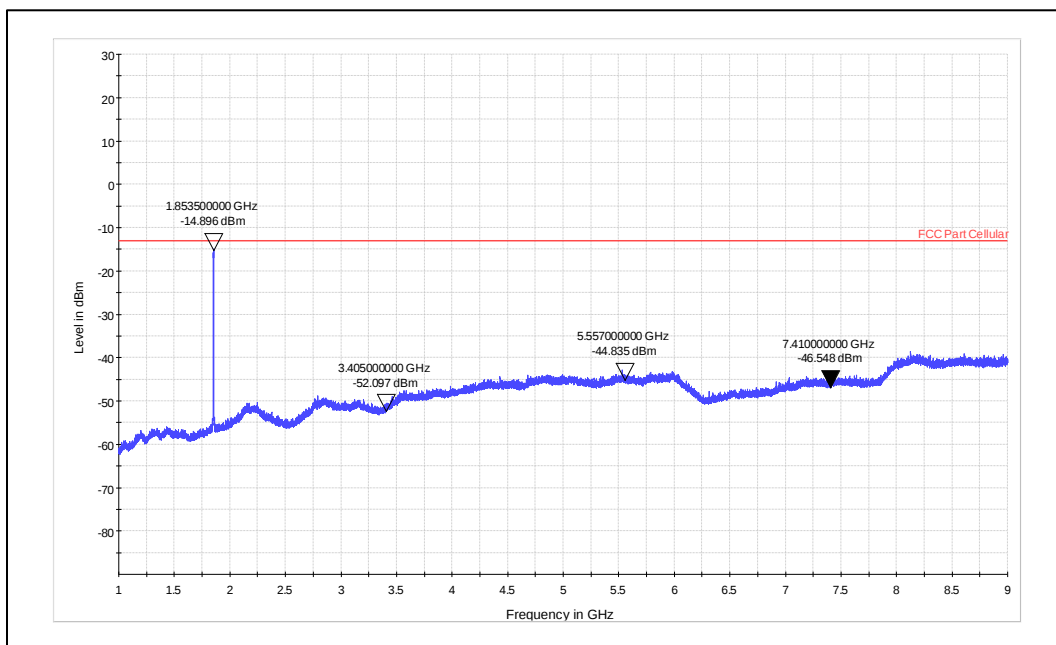
Worst Case Emission Plots:

WCDMA, Band 2, Rel 99 mode, Channel Frequency 1852.4MHz



Frequency range: 1GHz to 9GHz

Polarization: Vertical



Frequency range: 1GHz to 9GHz

Polarization: Horizontal

9 LIST OF TABLES

Table 1: List of test and measurement instruments	6
Table 2: Instrument application Software versions	7
Table 3: Ratings and System Details as declared by Client*	8
Table 4: Antenna Gain Details	8
Table 5: Measurement Uncertainty	10
Table 6: TUV Sample identification details	11
Table 7: Mode of Operation.....	12
Table 8: Conducted Power test results	19
Table 9: PAPR test results	46
Table 9: ERP/EIRP Test results for LTE	74
Table 10: ERP/EIRP Test results for WCDMA.....	76
Table 11: Spurious Radiation in the frequency range 30 MHz – 1GHz	78
Table 12: Spurious Radiation above 1GHz.....	81

*****END OF TEST REPORT*****