

Prüfbericht-Nr.: 50070786 001 Auftrags-Nr.: 154220594 Seite 1 von 36 Test Report No.: Order No.: Page 1 of 36 Kunden-Referenz-Nr.: 654233 Auftragsdatum: 01.03.2017 Client Reference No.: Order date: Auftraggeber: MOBIKE (HONGKONG) LIMITED Client: 2/F HONGKONG OFFSHORE CTR 28, AUSTIN AVENUE TST KLN. HONGKONG Prüfgegenstand: Mobike Lock Test item: Bezeichnung / Typ-Nr.: **LB4-5US: LC4-5US** Identification / Type No.: FCC ID: 2AK4SLBC4-5US Auftrags-Inhalt: Complete test Order content: Prüfgrundlage: FCC CFR47 Part 22, Subpart H Test specification: FCC CFR47 Part 24, Subpart E Wareneingangsdatum: 12.09.2016 Date of receipt: Prüfmuster-Nr.: A000475161-001 Test sample No.: Prüfzeitraum: 01.19.2017 to 01.20.2017 Testing period: Ort der Prüfung: MRT Technology(Suzhou) Place of testing: Co., Ltd. Prüflaboratorium: TÜV Rheinland (Shanghai) Testing laboratory: Co., Ltd. Pass Prüfergebnis*: Test result*: LB4-5US LC4-5US

geprüft von / tested by:

02.07.2017 Datum

Date

Elliot Zhang / Senior Project Engineer Name / Stellung

Name / Position

Unterschrift_ Signature

kontrolliert von I reviewed by:

02.07.2017

Shi Li / Section Manager

Datum Date

Name / Stellung Name / Position

Unterschrift Signature

Sonstiges I Other

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt Condition of the test item at delivery: Test item complete and undamaged

* Legende: Legend:

1 = sehr gut 1 = very good 2 = aut

2 = good

P(ass) = entspricht o.g. Prüfgrundlage(n)

3 = befriedigend 3 = satisfactory

F(ail) = entspricht nicht o.g. Prüfgrundlage(n)

4 = ausreichend N/A = nicht anwendbar

4 = sufficient

5 = mangelhaft N/T = nicht getestet 5 = poor

P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s)N/A = not applicable N/T = not testedDieser 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. 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



Products

 Prüfbericht - Nr.:
 50070786 001
 Seite 2 von 36

 Test Report No.
 Page 2 of 36

TEST SUMMARY

5.1.1 RADIATED POWER

RESULT: Pass

5.1.2 PEAK-AVERAGE RATIO

RESULT: Pass

5.1.3 OCCUPIED BANDWIDTH

RESULT: Pass

5.1.4 Spurious Emissions at Antenna Terminals

RESULT: Pass

5.1.5 BANDEDGE SPURIOUS EMISSION AT ANTENNA TERMINALS

RESULT: Pass

5.1.6 RADIATED SPURIOUS EMISSIONS

RESULT: Pass

5.1.7 FREQUENCY STABILITY

RESULT: Pass



Seite 3 von 36 50070786 001 Prüfbericht - Nr.: Page 3 of 36 Test Report No. Contents 1. GENERAL REMARKS4 1.1 COMPLEMENTARY MATERIALS4 2. Test Sites4 2.1 TEST FACILITIES......4 2.2 2.3 TRACEABILITY5 2.4 CALIBRATION6 2.5 MEASUREMENT UNCERTAINTY......6 3. GENERAL PRODUCT INFORMATION7 3.1 3.2 RATINGS AND SYSTEM DETAILS7 INDEPENDENT OPERATION MODES8 3.3 NOISE GENERATING AND NOISE SUPPRESSING PARTS9 3.4 3.5 TEST SET-UP AND OPERATION MODES10 4. 4.1 TEST OPERATION AND TEST SOFTWARE10 4.2 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT10 4.3 4.4 COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE......10 5. 5.1 TRANSMITTER REQUIREMENT & TEST SUITES11 5.1.1 5.1.2 Occupied Bandwidth 14 5.1.3 5.1.4 5.1.5 5.1.6 5.1.7 6. 7.



 Prüfbericht - Nr.:
 50070786 001
 Seite 4 von 36

 Test Report No.
 Page 4 of 36

1. General Remarks

1.1 Complementary Materials

Null.

2. Test Sites

2.1 Test Facilities

MRT Technology (Suzhou) Co., Ltd.

D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communications Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules. The description of the test facility is listed under FCC registration number 809388.

The Industry Canada has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance. The description of the test facility is listed under chambers filing number 11384A.



 Prüfbericht - Nr.:
 50070786 001
 Seite 5 von 36

 Test Report No.
 Page 5 of 36

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radiated Test Equipments

Instrument	Manufacturer	Type No.	Asset No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MY52090106	05.08.2017
EMI Test Receiver	R&S	ESR 3.6	102030	05.08.2017
Radio Communication Tester	R&S	CMU 200	117129	11.10.2017
Preamplifier	Schwarzbeck	BBV 9718	302	04.16.2017
Preamplifier	Schwarzbeck	BBV9721	9721-008	04.16.2017
Loop Antenna	Schwarzbeck	FMZB1519	1519-041	11.21.2017
Bilog Period Antenna	Schwarzbeck	VULB 9168	662	11.18.2017
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	1457	11.18.2017
Broadband Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170549	01.03.2018
ESG Vector Signal Generator	Agilent	E4438C	MY49872484	12.06.2017
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1167	10.22.2017
Half-Wave Tuned Dipole Antenna	Schwarzbeck	UHA 9105	UHA 91052260	12.24.2017
Temperature/Humidity Meter	Yuhuaze	ETH529	N/A	12.24.2017
Anechoic Chamber	RIKEN	Chamber-AC2	N/A	05.10.2017

Conducted Test Equipments

Conducted Foot Equipments				
Instrument	Manufacturer	Type No.	Asset No.	Cali. Due Date
EXA Signal Analyzer	Agilent	N9010A	MY51440166	06.23.2017
Radio Communication Tester	R&S	CMU 200	117129	11.10.2017
USB Wideband Power Sensor	Boonton	55006	8911	05.07.2017
Programmable Temperature & Humidity Chamber	BAOYT	BYH-1500L	1309W043	12.08.2017
Temperature/Humidity Meter	Yuhuaze	HTC-2	N/A	12.20.2017

2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

 Prüfbericht - Nr.:
 50070786 001
 Seite 6 von 36

 Test Report No.
 Page 6 of 36

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

Table 2: Measurement Uncertainty

Item	Conditions	Extended Uncertainty
RF Output Power	Conducted	±0.42dB
Occupied Bandwidth	Conducted	±1.5%
Frequency Stability	Conducted	2.3%
Conducted Spurious Emission	Conducted	±2.17dB
Transmitter Spurious Emissions	Radiated	±5.1dB



 Prüfbericht - Nr.:
 50070786 001
 Seite 7 von 36

 Test Report No.
 Page 7 of 36

3. General Product Information

3.1 Product Function and Intended Use

The EUTs (Equipments Under Test) are smart locks which use the technic of GSM / WCDMA / GPS / Bluetooth 4.0 Low Engry Only. There are two models: LB4-5US and LC4-5US, all of the two models are the same except the corresponding structure due to different installation method. For details please refer to the user manual and EUT Photos.

The aim of this report is to evalute the RF characteristic of the WCDMA.

For details refer to the User Manual and Circuit Diagram.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Description of	EUT
Product Name:	Mobike Lock
Brand Name:	mobike
Model No.:	LB4-5US; LC4-5US
Rated Voltage:	DC 3.7V
Type of Product:	Mobile Device
GSM	
Support Networks:	GPRS, EDGE
Supprot Bands:	Dual band GSM 850/1900MHz
Frequency Range:	GSM850: Tx: 824-849MHz, Rx: 869-894MHz
	PCS1900: Tx: 1850-1910MHz, Rx: 1930-1990MHz
Modulation Type:	GMSK, 8PSK
Multislot Class:	GPRS: Class 12
	EDGE: Class 12
Mobile Station Class:	GPRS: Class B
	EDGE: Class B
Antenna Type:	PIFA
Antenna Gain:	1.23 dBi
WCDMA	
Support Networks:	WCDMA,HSDPA, HSUPA
Support Bands:	Dual band UMTS 850/1900
Frequency Range:	CLR850: Tx: 824-849MHz, Rx: 869-894MHz
	PCS1900: Tx: 1850-1910MHz, Rx: 1930-1990MHz



 Prüfbericht - Nr.:
 50070786 001
 Seite 8 von 36

 Test Report No.
 Page 8 of 36

Modulation Type:	BPSK, QPSK, 16QAM
Category:	WCDMA: up to 384kbps DL/UL
	HSDPA: Cat.8
	HSUPA: Cat.6
Antenna Type:	PIFA
Antenna Gain:	1.23 dBi
BLE	
Frequency Range:	2402 – 2480MHz
Modulation Type:	GFSK
Antenna Type:	Monopole
Antenna Gain:	4.83 dBi

Table 4: RF Channel and Frequency

Support Band	Support Network	Channel Number	Channel Frequency
			826.4 MHz
UMTS 850	WCDMA/HSDPA/HSUPA	4182	836.4 MHz
			846.6 MHz
		9262	1852.4 MHz
UMTS 1900	WCDMA/HSDPA/HSUPA	9400	1880.0 MHz
		9538	1907.6 MHz

3.3 Independent Operation Modes

Test Mode	Network	Band	Channel
TM1			4132
TM2		UMTS 850	4182
TM3	WCDMA		4233
TM4	VVCDIVIA		9262
TM5		UMTS 1900	9400
TM6			9538
TM7			4132
TM8	HSDPA	UMTS 850	4182
TM9			4233
TM10			9262
TM11		UMTS 1900	9400
TM12			9538
TM13			4132
TM14		UMTS 850	4182
TM15	HSUPA		4233
TM16			9262
TM17		UMTS 1900	9400
TM18			9538

Note:

According to the difference between the two models, which will not affect the test result, the Model LB4-5US was chosen for the all tests.



 Prüfbericht - Nr.:
 50070786 001
 Seite 9 von 36

 Test Report No.
 Page 9 of 36

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Bill of Material
- PCB Layout
- Photo Document

- Circuit Diagram
- Instruction Manual
- Rating Label



 Prüfbericht - Nr.:
 50070786 001
 Seite 10 von 36

 Test Report No.
 Page 10 of 36

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

The EUT was controlled by Telecommunication Tester Set CMU200 during the test. Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI/TIA-603-D (2010).

ilo opodiai / todocodiloo alla / taxillai / =qaipilloii	4.3	Special	Accessories	and Auxiliary	/ Equi	pment
---	-----	----------------	--------------------	---------------	--------	-------

Null.

4.4 Countermeasures to achieve EMC Compliance

Null.



50070786 001 Seite 11 von 36 Prüfbericht - Nr.: Page 11 of 36 Test Report No.

5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Radiated Power

RESULT: Pass

Date of testing : 01.19.2017

Test standard : FCC Part 22.913 (a) (2)

FCC Part 24.232 (c)

Limit : ≤ 7W ERP (UMTS 850)

≤ 2W EIRP (UMTS 1900)

Kind of test site : 3m Full-anechoic Chamber

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : TM1 to TM18
Ambient temperature : 25°C
Relative humidity : 52%

Atmospheric pressure : 101kPa

Table 5: Radiated Power

Test Mode	Channel	Frequency [MHz]	ERP [dBm]	ERP [W]	Limit [W]
TM1	4132	826.4	25.03	0.31842	
TM2	4182	836.6	25.04	0.31915	
TM3	4233	846.6	24.76	0.29923	
TM7	4132	826.4	23.96	0.24889	
TM8	4182	836.6	24.06	0.25468	7
TM9	4233	846.6	23.97	0.24946	
TM13	4132	826.4	23.73	0.23605	
TM14	4182	836.6	23.84	0.24210	
TM15	4233	846.6	23.56	0.22699	
Test Mode	Channel	Frequency [MHz]	EIRP [dBm]	EIRP [W]	Limit [W]
TM4	9262	1852.4	25.03	0.31842	
TM5	9400	1880.0	24.11	0.25763	
TM6	9538	1907.6	23.95	0.24831	2
TM10	9262	1852.4	23.27	0.21232	
TM11	9400	1880.0	23.18	0.20797	



Prüfbericht - Nr.:	50070786 001	Seite 12 von 36
Test Report No.		Page 12 of 36

TM12	9538	1907.6	22.7	0.18621
TM16	9262	1852.4	23.17	0.20749
TM17	9400	1880.0	22.83	0.19187
TM18	9538	1907.6	22.14	0.16368

Note:

ERP (dBm) = SG Reading (dBm) - Cable Loss (dB) + Substitute Antenna Gain (dBd) All the measurements below were based on the Test Mode TM1 to TM6, since the WCDMA seem to be the worst mode according to the results listed in above table.



Prüfbericht - Nr.: 50070786 001
Test Report No.

Seite 13 von 36 *Page 13 of 36*

5.1.2 Peak-Average Ratio

RESULT: Pass

Date of testing : 01.20.2017

Test standard : FCC Part 24.232 (d)

Limit : <13dB

Kind of test site : Shielded room

Test setup

Test Channel : Middle
Operation Mode : TM5
Ambient temperature : 25°C
Relative humidity : 52%
Atmospheric pressure : 101kPa

Table 6: Peak-Average Ratio

Test Mode	Frequency [MHz]	Peak – Average Ratio [dB]	Limit
TM5	1880.0	4.35	<13dB



50070786 001 Seite 14 von 36 Prüfbericht - Nr.:

Test Report No.

Page 14 of 36

5.1.3 Occupied Bandwidth

RESULT: Pass

Date of testing : 01.20.2017 Test standard : FCC Part 2.1049

Limit : N/A

Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : TM1 to TM6
Ambient temperature : 25°C
Relative humidity : 52%
Atmospheric pressure : 101kPa

Table 7: Occupied Bandwidth

Test Mode	Network	Band	Channel	Frequency [MHz]	99% bandwidth [MHz]	26dB bandwidth [MHz]
TM1			4132	826.4	4.0708	4.627
TM2		UMTS 850	4182	836.4	4.0501	4.605
TM3	WCDMA		4233	846.6	4.0554	4.621
TM4	VVCDIVIA		9262	1852.4	4.0551	4.622
TM5		UMTS 1900	9400	1880.0	4.0672	4.584
TM6			9538	1907.6	4.0749	4.628



Seite 15 von 36

Prüfbericht - Nr.: 50070786 001
Test Report No.

Page 15 of 36

Figure 1: Occupied Bandwidth, TM1

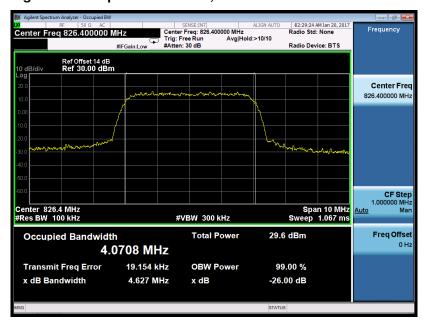
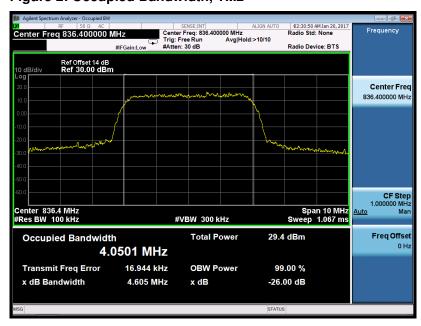


Figure 2: Occupied Bandwidth, TM2





Seite 16 von 36 Page 16 of 36

Figure 3: Occupied Bandwidth, TM3

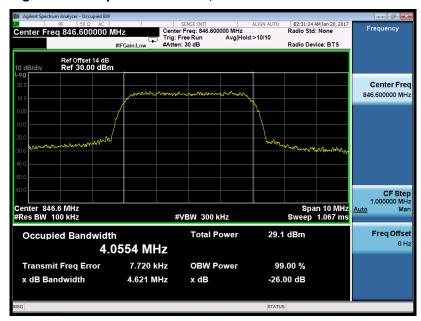
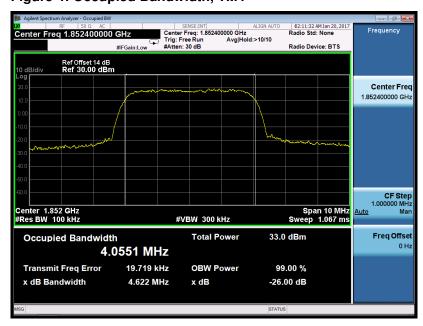


Figure 4: Occupied Bandwidth, TM4





Seite 17 von 36 *Page 17 of 36*

Figure 5: Occupied Bandwidth, TM5

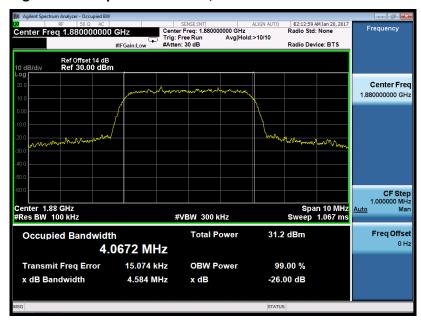
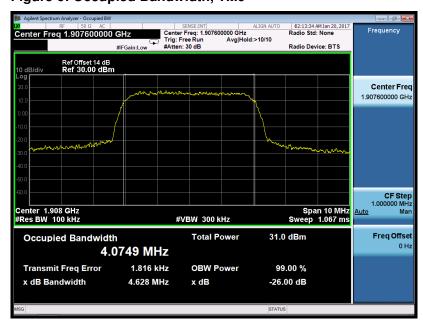


Figure 6: Occupied Bandwidth, TM6





50070786 001 Seite 18 von 36 Prüfbericht - Nr.: Page 18 of 36

Test Report No.

5.1.4 Spurious Emissions at Antenna Terminals

RESULT: Pass

: 01.20.2017 Date of testing

Test standard : FCC Part 2.1051

FCC Part 22.917 (a) FCC Part 24.238 (a)

: Less than -13dBm Limit

Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High

Test Channel : Low/ Middle/
Operation Mode : TM1 to TM6
Ambient temperature : 25°C
Relative humidity : 52%
Atmospheric pressure : 101kPa



Seite 19 von 36 *Page 19 of 36*

Figure 7: Conducted Spurious Emission, TM 1, part 1

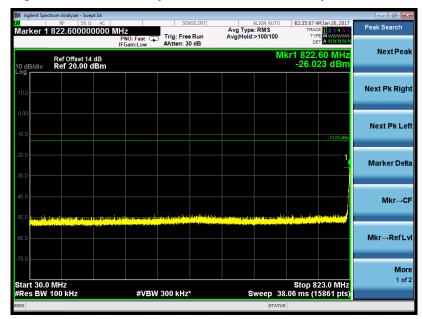
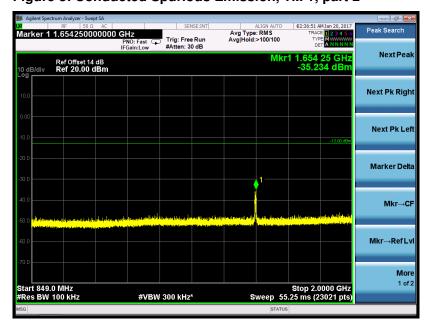


Figure 8: Conducted Spurious Emission, TM 1, part 2





Seite 20 von 36 Page 20 of 36

Figure 9: Conducted Spurious Emission, TM 1, part 3

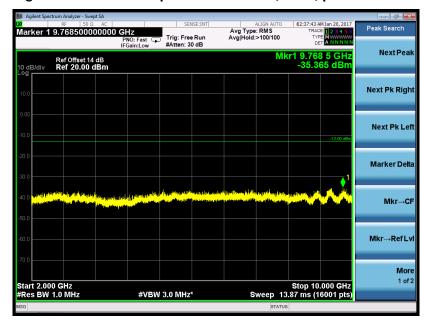
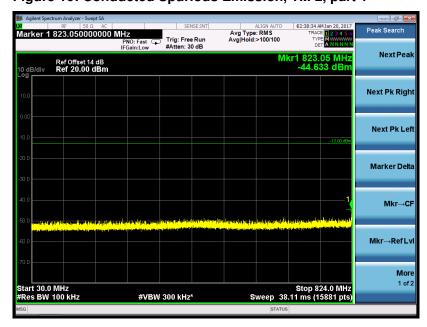


Figure 10: Conducted Spurious Emission, TM 2, part 1



Prüfbericht - Nr.: 50070786 001 Test Report No.

O786 001 Seite 21 von 36 Page 21 of 36

Figure 11: Conducted Spurious Emission, TM 2, part 2

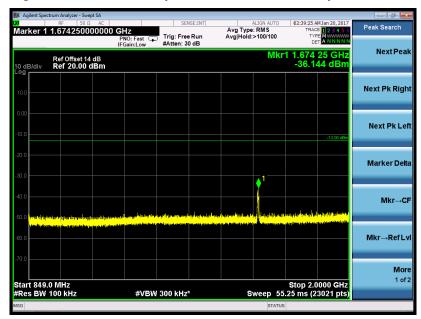
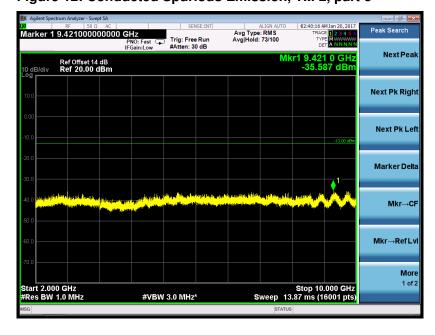


Figure 12: Conducted Spurious Emission, TM 2, part 3



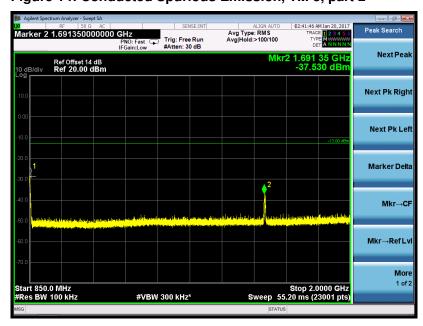


Seite 22 von 36 Page 22 of 36

Figure 13: Conducted Spurious Emission, TM 3, part 1



Figure 14: Conducted Spurious Emission, TM 3, part 2



Seite 23 von 36 Page 23 of 36

Figure 15: Conducted Spurious Emission, TM 3, part 3

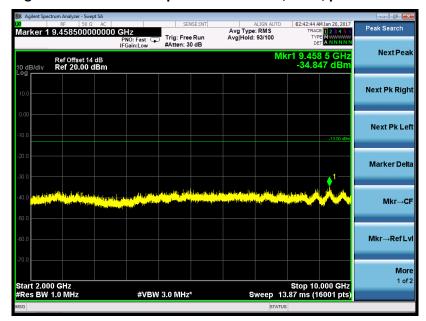
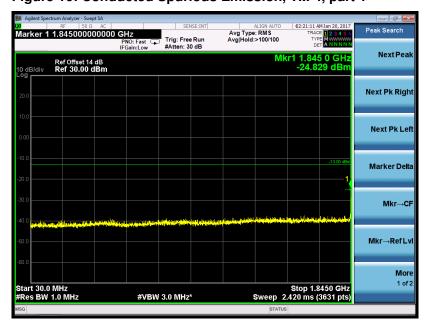


Figure 16: Conducted Spurious Emission, TM 4, part 1





Seite 24 von 36 Page 24 of 36

Figure 17: Conducted Spurious Emission, TM 4, part 2

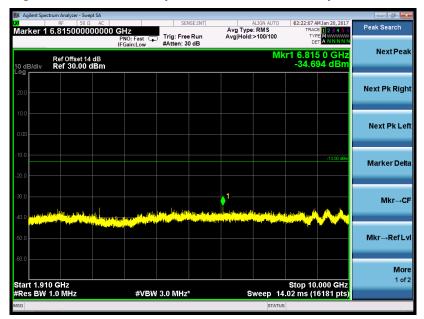
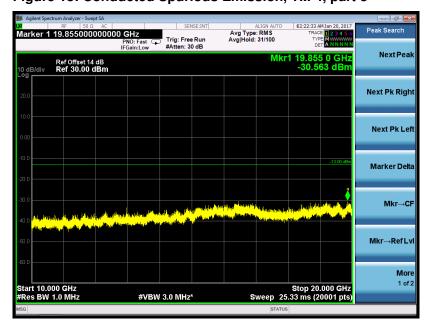


Figure 18: Conducted Spurious Emission, TM 4, part 3





Test Report No.

Seite 25 von 36 *Page 25 of 36*

Figure 19: Conducted Spurious Emission, TM 5, part 1

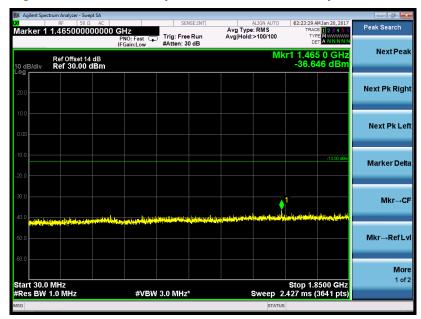
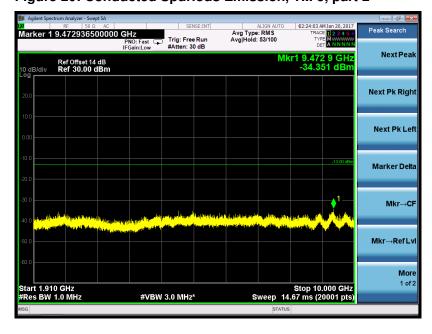


Figure 20: Conducted Spurious Emission, TM 5, part 2





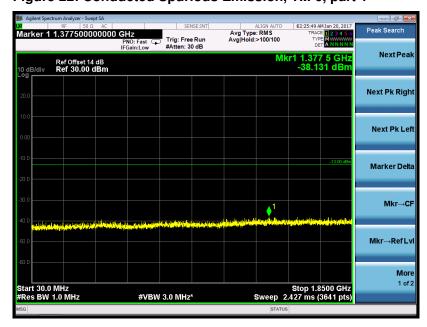
Test Report No.

Seite 26 von 36 *Page 26 of 36*

Figure 21: Conducted Spurious Emission, TM 5, part 3



Figure 22: Conducted Spurious Emission, TM 6, part 1



Test Report No.

Seite 27 von 36 *Page 27 of 36*

Figure 23: Conducted Spurious Emission, TM 6, part 2

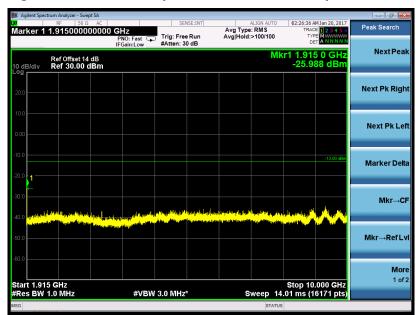


Figure 24: Conducted Spurious Emission, TM 6, part 3





50070786 001 Seite 28 von 36 Prüfbericht - Nr.: Page 28 of 36

Test Report No.

5.1.5 Bandedge Spurious Emission at Antenna Terminals

RESULT: Pass

: 01.20.2017 Date of testing Test standard

: FCC Part 2.1051 FCC Part 22.917 (a)

FCC Part 24.238 (a)

: Less than -13dBm Limit Kind of test site : Shielded room

Test setup

Test Channel

Test Channel : Low / High
Operation Mode : TM1,TM3,TM4,TM6
Ambient temperature : 25°C
Relative humidity : 52% Atmospheric pressure : 101kPa

Test Report No.

Prüfbericht - Nr.: 50070786 001

Seite 29 von 36 *Page 29 of 36*

Figure 25: Bandedge Spurious Emission at Antenna Terminals, TM1



Figure 26: Bandedge Spurious Emission at Antenna Terminals, TM3





Seite 30 von 36 *Page 30 of 36*

Figure 27: Bandedge Spurious Emission at Antenna Terminals, TM4



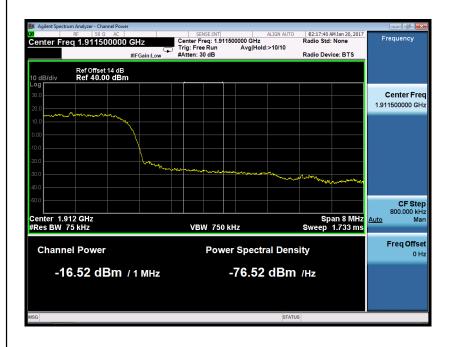




Seite 31 von 36 *Page 31 of 36*

Figure 28: Bandedge Spurious Emission at Antenna Terminals, TM6







Seite 32 von 36 Prüfbericht - Nr.: 50070786 001 Page 32 of 36

Test Report No.

5.1.6 Radiated Spurious Emissions

RESULT: Pass

Date of testing : 01.20.2017

Test standard : FCC Part 2.1053

FCC Part 22.917 (a) FCC Part 24.238 (a)

Limit : Less than -13dBm

Kind of test site : 3m Semi-anechoic Chamber & 3m Full-anechoic

Chamber

Test setup

: Low/ Middle/ High : TM1 to TM6

Test Channel : Low/
Operation Mode : TM1 to the Ambient temperature : 25°C
Relative humidity : 52% Atmospheric pressure : 101kPa

Table 8: Radiated Spurious Emission

Test Mode	Freq. [MHz]	SG Reading [dBm]	Cable Loss [dBm]	Substitute Antenna Gain [dBd]	ERP [dBm]	Limit [dBm]	Over Limit [dB]	Ant. Pol.
	3312.000	-46.398	0.970	12.802	-34.566	-13	-23.316	V
TM1	4961.000	-52.053	1.195	12.634	-40.614	-13	-31.627	V
I IVI I	2479.000	-55.031	0.815	10.516	-45.330	-13	-23.693	Н
	3312.000	-45.112	0.970	12.802	-33.280	-13	-29.188	Н
	3312.000	-52.196	0.970	12.802	-40.364	-13	-23.693	V
TM2	10732.500	-43.571	1.770	11.595	-33.746	-13	-29.188	V
I IVIZ	1654.500	-61.932	0.663	9.816	-52.779	-13	-23.693	Н
	3303.500	-54.472	0.965	12.774	-42.663	-13	-29.188	Н
	9032.500	-46.825	1.618	11.866	-36.577	-13	-21.388	V
TM3	13350.500	-42.377	2.125	13.005	-31.497	-13	-34.377	V
I IVIS	9746.500	-45.517	1.665	11.881	-35.301	-13	-26.088	Н
	13801.000	-40.246	2.040	12.106	-30.180	-13	-30.571	Н
	3711.500	-44.436	1.018	12.697	-32.757	-13	-23.316	V
TM4	5556.000	-52.738	1.250	13.146	-40.842	-13	-31.627	V
1 IVI4	3703.000	-46.568	1.015	12.692	-34.891	-13	-23.693	Н
	11633.500	-44.395	1.853	12.484	-33.764	-13	-29.188	Н
	7519.500	-49.972	1.470	11.279	-40.163	-13	-23.693	V
TM5	11514.500	-42.784	1.870	12.578	-32.076	-13	-29.188	V
CIVIT	7477.000	-50.411	1.455	11.183	-40.683	-13	-23.693	Н
	11489.000	-43.323	1.875	12.214	-32.984	-13	-29.188	Н
	8123.000	-49.526	1.520	11.604	-39.442	-13	-21.388	V
TM6	11540.000	-43.286	1.840	12.306	-32.820	-13	-34.377	V
	7222.000	-50.772	1.430	10.859	-41.343	-13	-26.088	Н



 Prüfbericht - Nr.:
 50070786 001
 Seite 33 von 36

 Test Report No.
 Page 33 of 36

٠								
	10843.000	-44.159	1.780	11.564	-34.375	-13	-30.571	Н

Note:

- 1. Spurious emissions below 30MHz and within 30-1000MHz were found more than 20dB below limit line.
- 2. ERP (dBm) = SG Reading (dBm) Cable Loss (dB) + Substitute Antenna Gain (dBd)

TÜVRheinland®

Produkte Products

 Prüfbericht - Nr.:
 50070786 001
 Seite 34 von 36

 Test Report No.
 Page 34 of 36

5.1.7 Frequency Stability

RESULT: Pass

Date of testing : 01.20.2017
Test standard : FCC Part2.1055
FCC Part 22.355

FCC Part 22.355 FCC Part 24.235

Limit : ±2.5ppm for FCC Part 22.355

Within assigned bands for FCC Part 24.235

Kind of test site : Shielded room

Test setup

Test Channel : Middle
Operation Mode : TM2, TM5
Ambient temperature : 25°C
Relative humidity : 52%
Atmospheric pressure : 101kPa

Table 9: Frequency Stability, TM2

Voltage [%]	Power [VDC]	TEMP [%]	Frequency [Hz]	Freq. Dev [Hz]	Deviation [%]
		+20(Ref)	836400000	-59	0.00000705
		-30	836400000	47	0.00000562
		-20	836400000	53	0.00000634
	3.7	-10	836400000	76	0.00000909
100%		0	836400000	43	0.00000514
		+10	836400000	69	0.00000825
		+20	836400000	-57	0.00000681
		+30	836400000	46	0.00000550
		+40	836400000	52	0.00000622
		+50	836400000	69	0.00000825
115%	4.2	+20	836400000	-72	0.00000861
BAT.ENDPOINT	3.6	+20	836400000	-68	0.00000813

Table 10: Frequency Stability, TM5

Voltage [%]	Power [VDC]	TEMP [%]	Frequency [Hz]	Freq. Dev [Hz]	Deviation [%]
100%	3.7	+20(Ref)	1,880,000,000	62	0.00000330
		-30	1,880,000,000	74	0.00000394
		-20	1,880,000,000	-63	0.00000335
		-10	1,880,000,000	69	0.00000367
		0	1,880,000,000	-68	0.00000362
		+10	1,880,000,000	72	0.0000383
		+20	1,880,000,000	69	0.00000367



Products

Prüfbericht - Nr.: 50070786 001 Test Report No.	Seite 35 von 36 <i>Page 35 of 36</i>
---	---

		+30	1,880,000,000	69	0.00000367
		+40	1,880,000,000	-53	0.00000282
		+50	1,880,000,000	61	0.00000324
115%	4.2	+20	1,880,000,000	68	0.00000362
BAT.ENDPOINT	3.6	+20	1,880,000,000	-73	0.0000388

Prüfbericht - Nr.: 50070786 001 Test Report No.

Seite 36 von 36 *Page 36 of 36*

6. List of Tables

Table 1: List of Test and Measurement Equipment	5
Table 2: Measurement Uncertainty	
Table 3: Technical Specification of EUT	
Table 4: RF Channel and Frequency	
Table 5: Radiated Power	
Table 6: Peak-Average Ratio	13
Table 7: Occupied Bandwidth	14
Table 8: Radiated Spurious Emission	32
Table 9: Frequency Stability, TM2	34
Table 10: Frequency Stability, TM5	

7. List of Figures

Figure 1: Occupied Bandwidth, TMT	
Figure 2: Occupied Bandwidth, TM2	15
Figure 3: Occupied Bandwidth, TM3	16
Figure 4: Occupied Bandwidth, TM4	
Figure 5: Occupied Bandwidth, TM5	17
Figure 6: Occupied Bandwidth, TM6	
Figure 7: Conducted Spurious Emission, TM 1, part 1	
Figure 8: Conducted Spurious Emission, TM 1, part 2	
Figure 9: Conducted Spurious Emission, TM 1, part 3	
Figure 10: Conducted Spurious Emission, TM 2, part 1	
Figure 11: Conducted Spurious Emission, TM 2, part 2	
Figure 12: Conducted Spurious Emission, TM 2, part 3	
Figure 13: Conducted Spurious Emission, TM 3, part 1	
Figure 14: Conducted Spurious Emission, TM 3, part 2	
Figure 15: Conducted Spurious Emission, TM 3, part 3	
Figure 16: Conducted Spurious Emission, TM 4, part 1	
Figure 17: Conducted Spurious Emission, TM 4, part 2	
Figure 18: Conducted Spurious Emission, TM 4, part 3	
Figure 19: Conducted Spurious Emission, TM 5, part 1	
Figure 20: Conducted Spurious Emission, TM 5, part 2	
Figure 21: Conducted Spurious Emission, TM 5, part 3	
Figure 22: Conducted Spurious Emission, TM 6, part 1	
Figure 23: Conducted Spurious Emission, TM 6, part 2	
Figure 24: Conducted Spurious Emission, TM 6, part 3	
Figure 25: Bandedge Spurious Emission at Antenna Terminals, TM1	
Figure 26: Bandedge Spurious Emission at Antenna Terminals, TM3	
Figure 27: Bandedge Spurious Emission at Antenna Terminals, TM4	
Figure 28: Bandedge Spurious Emission at Antenna Terminals, TM6	31