

Prüfbericht-Nr.: <i>Test report No.:</i>	50064681 005	Auftrags-Nr.: <i>Order No.:</i>	164074884	Seite 1 von 19 <i>Page 1 of 19</i>	
Kunden-Referenz-Nr.: <i>Client reference No.:</i>	N/A	Auftragsdatum: <i>Order date.:</i>	26.09.2016		
Auftraggeber: <i>Client:</i>	BBB Inc. 28, Yatap-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, South Korea				
Prüfgegenstand: <i>Test item:</i>	Mobile Phone				
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	EZ-100 (elemark™, mobihealth)				
Auftrags-Inhalt: <i>Order content:</i>	FCC Certification				
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 27				
Wareneingangsdatum: <i>Date of receipt:</i>	08.08.2016	Please refer to photo documents			
Prüfmuster-Nr.: <i>Test sample No.:</i>	STR160981081-2				
Prüfzeitraum: <i>Testing period:</i>	08.08.2016 - 07.12.2016				
Ort der Prüfung: <i>Place of testing:</i>	Shenzhen SEM.Test Technology Co., Ltd.				
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüfergebnis*: <i>Test result*:</i>	Pass				
geprüft von / tested by:		kontrolliert von / reviewed by:			
					
29.12.2016		29.12.2016			
Lin Lin / Project Manager		Sam Lin / Technical Certifier			
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>
Sonstiges / Other:					
FCC ID: 2AKGP-EZ100					
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>			Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged:</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend			4 = ausreichend 5 = mangelhaft		
P(ass) = entspricht o.g. Prüfgrundlage(n)			N/A = nicht anwendbar N/T = nicht getestet		
Legend: 1 = very good 2 = good 3 = satisfactory			4 = sufficient 5 = poor		
P(ass) = passed a.m. test specifications(s)			N/A = not applicable 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.					
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.					

V04

Test Summary

5.1.1 RADIATED POWER

RESULT: Pass

5.1.2 OCCUPIED BANDWIDTH

RESULT: Pass

5.1.3 SPURIOUS EMISSIONS AND BANDEDGE AT ANTENNA TERMINALS

RESULT: Pass

5.1.4 RADIATED SPURIOUS EMISSIONS

RESULT: Pass

5.1.5 FREQUENCY STABILITY

RESULT: Pass

5.1.6 PEAK-AVERAGE RATIO

RESULT: Pass

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:
Appendix A: Test Results of LTE Band 4
Appendix B: Test Results of LTE Band 7

2 Test Sites

2.1 Test Facilities

Shenzhen SEM.Test Technology Co., Ltd.
1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, China

FCC Registration No.: 934118

The tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Shenzhen SEM.Test Technology Co., Ltd.

Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
Communication Tester	Rohde & Schwarz	CMW500	148650	2016-06-04	2017-06-03
GSM Tester	Rohde & Schwarz	CMU200	104036	2016-06-04	2017-06-03
Spectrum Analyzer	Agilent	E4407B	MY41440400	2016-06-04	2017-06-03
Spectrum Analyzer	Agilent	N9020A	US47140102	2016-06-04	2017-06-03
Signal Generator	Agilent	83752A	3610A01453	2016-06-04	2017-06-03
Vector Signal Generator	Agilent	N5182A	MY47070202	2016-06-04	2017-06-03
Power Divider	Weinschel	1506A	PM204	2016-06-04	2017-06-03
Power Divider	RF-Lambda	RFLT4W5M18G	14110400027	2016-06-04	2017-06-03
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2016-06-04	2017-06-03
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2016-06-04	2017-06-03
Amplifier	Agilent	8447F	3113A06717	2016-06-04	2017-06-03
Amplifier	C&D	PAP-1G18	2002	2016-06-04	2017-06-03
Loop Antenna	Schwarz beck	FMZB 1516	9773	2016-06-04	2017-06-03
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2016-06-04	2017-06-03
Horn Antenna	ETS	3117	00086197	2016-06-04	2017-06-03
Horn Antenna	ETS	3116B	00088203	2016-06-04	2017-06-03
Horn Antenna	Schwarbeck	BBHA9170	BBHA9170582	2016-06-04	2017-06-03
Temperature Chamber cycling	Zhongjian	YX-KHWS150A	ZJI130929	2016-11-18	2017-11-17

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

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 basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table:

Table 2: Measurement Uncertainty

Item	Conditions	Extended Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Frequency Stability	Conducted	2.3%
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A and Appendix B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The Shenzhen SEM.Test Technology Co., Ltd. Test facility located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a Mobile Phone which supports Bluetooth V4.0 (dual mode) and WiFi 802.11 b/g/n/ wireless technology. This report is only for LTE functions of PCE. Other functions with different technologies are reported in the related reports.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Description of EUT	
Product Name:	Mobile Phone
Brand Name:	elemark™, mobihealth
Model No.:	EZ-100
Rated Voltage:	DC 3.8V
Battery Capacity:	3000mAh
Software Version:	I3501_65u_l1_20160928175345
Hardware Version:	I3501-MB-V2
Type of Product	Portable Device
LTE	
Support Networks:	LTE
Category:	5
Support Bands:	FDD-LTE Band 4, 7
Frequency Range:	FDD-LTE Band 4: Tx: 1710-1755MHz, Rx: 2110-2155MHz FDD-LTE Band 7: Tx: 2500-2570MHz, Rx: 2620-2690MHz
Operation Bandwidth:	FDD-LTE Band 4: 1.4/3/5/10/15/20MHz FDD-LTE Band 7: 5/10/15/20MHz
Modulation Type:	QPSK, 16QAM
Antenna Type:	Internal Antenna
Antenna Gain:	FDD-LTE Band 4: 1.90dBi FDD-LTE Band 7: 2.76dBi

Table 4: RF Channel and Frequency of LTE

Support Band	Bandwidth (MHz)	Channel Frequency (L/M/H) (MHz)	Channel Number (L/M/H)
LTE Band 4	1.4	1710.7/1732.5/1754.3	19957/20175/20393
	3	1711.5/1732.5/1753.5	19965/20175/20385
	5	1712.5/1732.5/1752.5	19975/20175/20375
	10	1715.0/1732.5/1750.0	20000/20175/20350
	15	1717.5/1732.5/1747.5	20025/20175/20325
	20	1720.0/1732.5/1745.0	20050/20175/20300
LTE Band 7	5	2502.5/2535.0/2567.5	20775/21100/21425
	10	2505.0/2535.0/2565.0	20800/21100/21400
	15	2507.5/2535.0/2562.5	20825/21100/21375
	20	2510.0/2535.0/2560.0	20850/21100/21350

3.3 Independent Operation Modes

Test Mode	Description	Remark
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TM1	LTE Band 4	Low, Middle, High Channels
TM2	LTE Band 7	Low, Middle, High Channels

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Block Diagram
- Schematics
- Technical Description
- FCC/IC Label and Location Info
- Photo Document
- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in KDB 971168 D01 and ANSI/TIA-603-D.

4.3 Special Accessories and Auxiliary Equipment

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4.4 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

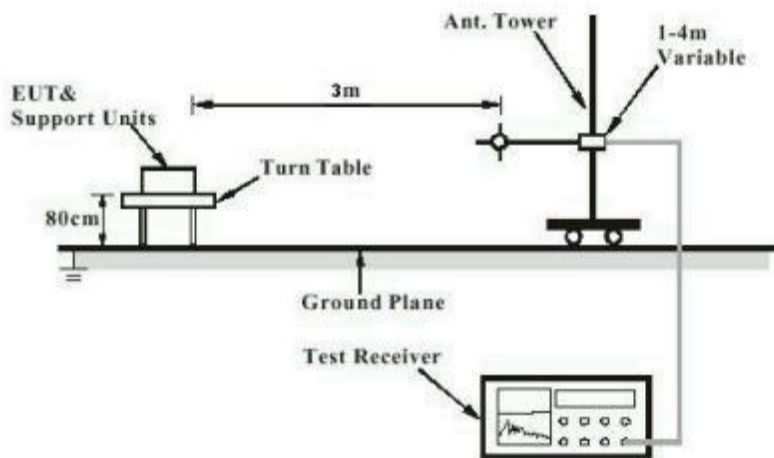


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

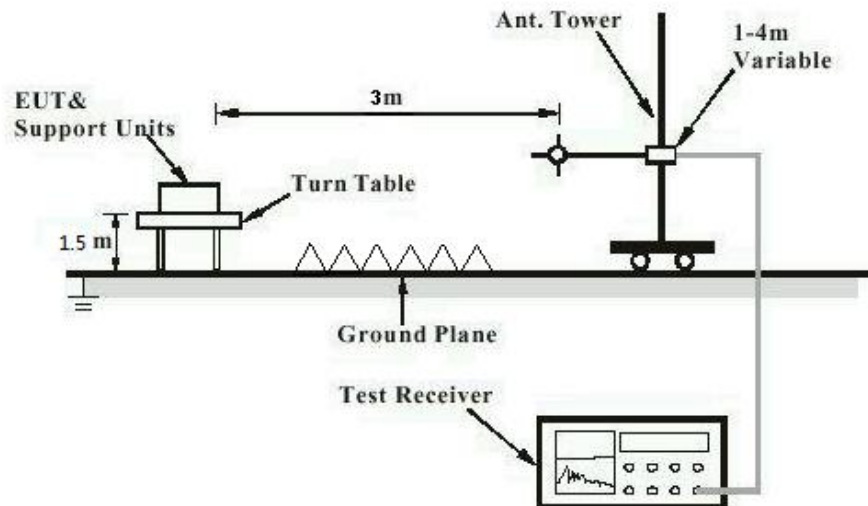
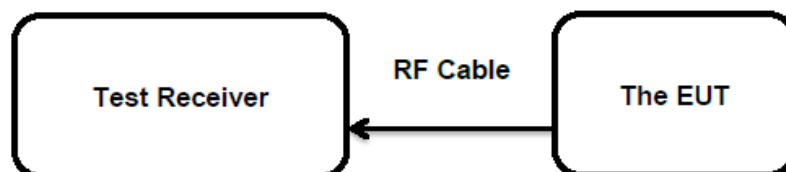


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Radiated Power

RESULT:**Pass****Test Specification**

Test standard	:	FCC Part 27.50 (d) (4)
	:	FCC Part 27.50 (h) (2)
Limits	:	≤ 1W EIRP (LTE Band 4)
	:	≤ 2W EIRP (LTE Band 7)
Kind of test site	:	3m Full-anechoic Chamber

Test Setup

Date of testing	:	26.10.2016
Input voltage	:	Fully charged Lithium battery
Operation mode	:	TM1 to TM12
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Refer to 50064681 005 Appendix A for LTE Band 4 detail test data.

Refer to 50064681 005 Appendix B for LTE Band 7 detail test data.

5.1.2 Occupied Bandwidth**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 2.1049
Limits	: N/A (99% bandwidth and 26dB bandwidth)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 26.10.2016
Input voltage	: Fully charged Lithium battery
Operation mode	: TM1 to TM12
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

Refer to 50064681 005 Appendix A for LTE Band 4 detail test data.

Refer to 50064681 005 Appendix B for LTE Band 7 detail test data.

5.1.3 Spurious Emissions and Bandedge at Antenna Terminals**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 2.1051 FCC Part 27.53 (h) FCC Part 27.53 (m) (4) Less than -13dBm for LTE Band 4 The attenuation factor shall be not less than -10dBm on all frequencies between the channel edge and 5 megahertz from the channel edge, -13dBm on all frequencies between 5 megahertz and X megahertz from the channel edge, and -
Limits	: 25dBm on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth, In addition, the attenuation factor shall not be less that -13dBm on all frequencies between 2490.5 MHz and 2496 MHz and -25dBm at or below 2490.5 MHz for LTE Band 7
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 26.10.2016
Input voltage	: Fully charged Lithium battery
Operation mode	: TM1 to TM12
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

Refer to 50064681 005 Appendix A for LTE Band 4 detail test data.

Refer to 50064681 005 Appendix B for LTE Band 7 detail test data.

5.1.4 Radiated Spurious Emissions**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 2.1053 FCC Part 27.53 (h) (1) FCC Part 27.53 (m) (4) Less than -13dBm for LTE Band 4 The attenuation factor shall be not less than -10dBm on all frequencies between the channel edge and 5 megahertz from the channel edge, -13dBm on all frequencies between 5 megahertz and X megahertz from the channel edge, and -
Limits	: 25dBm on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth, In addition, the attenuation factor shall not be less that -13dBm on all frequencies between 2490.5 MHz and 2496 MHz and -25dBm at or below 2490.5 MHz for LTE Band 7
Kind of test site	: 3m Semi-anechoic Chamber & 3m Full-anechoic Chamber

Test Setup

Date of testing	: 26.10.2016
Input voltage	: Fully charged Lithium battery
Operation mode	: TM1 to TM12
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

Refer to 50064681 005 Appendix A for LTE Band 4 detail test data.

Refer to 50064681 005 Appendix B for LTE Band 7 detail test data.

5.1.5 Frequency Stability**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part2.1055
	:	FCC Part 27.54
Limits	:	Within assigned bands
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	26.10.2016
Input voltage	:	Fully charged Lithium battery
Operation mode	:	TM1 to TM12
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Refer to 50064681 005 Appendix A for LTE Band 4 detail test data.

Refer to 50064681 005 Appendix B for LTE Band 7 detail test data.

5.1.6 Peak-Average Ratio**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 27.50 (d) (5)
Limits	: <13dB
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 26.10.2016
Input voltage	: Fully charged Lithium battery
Operation mode	: TM1 to TM12
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

Refer to 50064681 005 Appendix A for LTE Band 4 detail test data.

Refer to 50064681 005 Appendix B for LTE Band 7 detail test data.