Variant FCC RF Test Report

APPLICANT	:	**Doro AB**
EQUIPMENT	:	**GSM Mobile Telephone**
BRAND NAME	:	**doro**
MODEL NAME	:	**Doro PhoneEasy 508, Doro PhoneEasy 507S**
MARKETING NAME	:	**Doro PhoneEasy 508, Doro PhoneEasy 507S**
FCC ID	:	**WS5DORO508**
STANDARD	:	**FCC 47 CFR Part 2, 24(E)**
CLASSIFICATION	:	**PCS Licensed Transmitter Held to Ear (PCE)**

This is a variant report which is only valid together with the original test report. The product was received on Apr. 29, 2016 and testing was completed on Jun. 13, 2016. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-D-2010 and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.

Prepared by: Ken Chen / Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
2353

SPORTON INTERNATIONAL (SHENZHEN) INC.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG442204-02	Rev. 01	This is a variant report for Doro PhoneEasy 508, Doro PhoneEasy 507S. The product equality declaration could be referred to Appendix C. Based on the similarity between two models, only the Conducted Power, EIRP and the worst case of Radiated Spurious Emission from original test report (Sporton Report Number FG442204) were verified for the differences.	Jun. 28, 2016

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
4.4	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
4.5	§2.1053 §24.238(a)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 23.60 dB at 9400.000 MHz

1 General Description

1.1 Applicant

Doro AB
Magistratsvägen 10 SE-226 43 Lund Sweden

1.2 Manufacturer

CK TELECOM LTD.
Technology Road.High-Tech Development Zone. Heyuan, Guangdong, P.R.China.

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	GSM Mobile Telephone
Brand Name	doro
Model Name	Doro PhoneEasy 508, Doro PhoneEasy 507S
Marketing Name	Doro PhoneEasy 508, Doro PhoneEasy 507S
FCC ID	WS5DORO508
EUT supports Radios application	GSM/Bluetooth v3.0 + EDR
IMEI Code	Radiation:357300060125328 EIRP:NA
HW Version	ARBOR-V1.0
SW Version	ARBOR-S04A_DORO508_L6EN_201_160412
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification		
Tx Frequency	1900:	1850.2 MHz ~ 1909.8MHz
Rx Frequency	1900:	1930.2 MHz ~ 1989.8 MHz
Maximum Output Power to Antenna	1900:	29.71 dBm
Antenna Type	Fixed Internal Antenna	
Type of Modulation	GSM: GMSK	

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Maximum EIRP Power

FCC Rule	System	Type of Modulation	Maximum EIRP(W)
Part 24	GSM1900 GSM	GMSK	1.7382

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.	
Test Site Location	1F & 2F, Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili Town, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595	
Test Site No.	**Sporton Site No.**	
	TH01-SZ	

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.	
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: +86-755-3320-2398	
Test Site No.	**Sporton Site No.**	**FCC Registration No.**
	03CH03-SZ	565805

Note: The test site complies with ANSI C63.4 2014 requirement.

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, 24(E)
- ANSI / TIA / EIA-603-D-2010
- FCC KDB 971168 D01 Power Meas. License Digital Systems v02r02

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Radiated emissions were investigated as following frequency range:

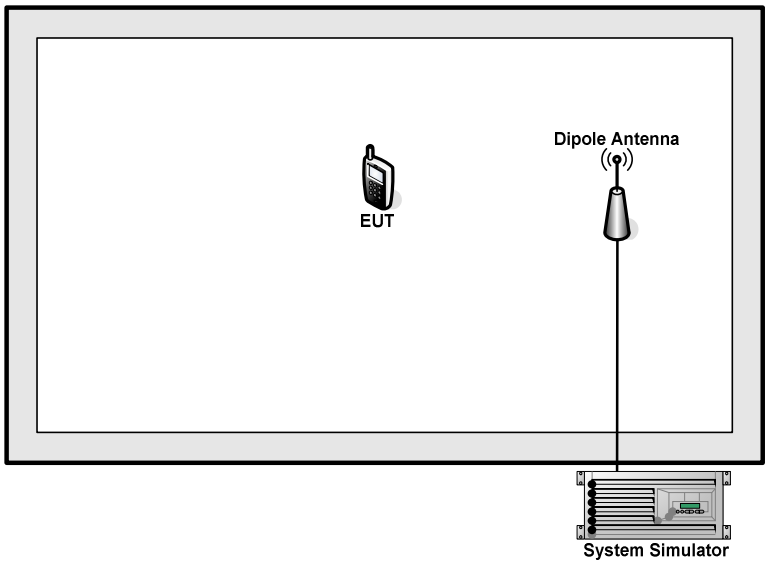
1. 30 MHz to 10th harmonic for GSM1900.

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

Test Modes	
Band	**Radiated TCs**
GSM 1900	GSM Link

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritus	MT8820C	N/A	N/A	Unshielded, 1.8 m

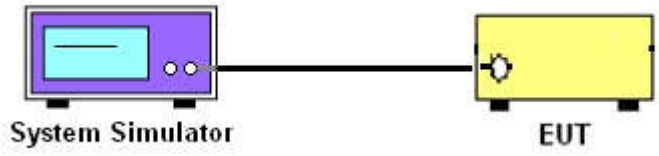
3 Conducted Test Result

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 Conducted Output Power



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power

3.4.1 Description of the Conducted Output Power

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

3.4.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM.

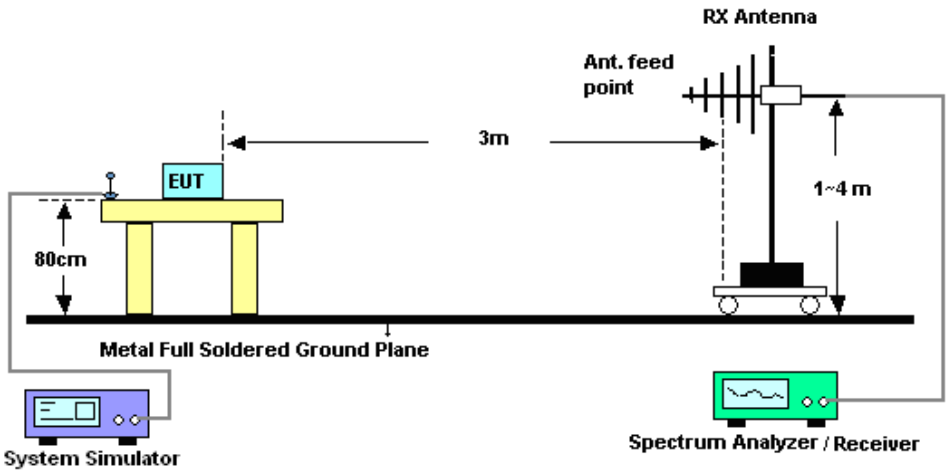
4 Radiated Test Items

4.1 Measuring Instruments

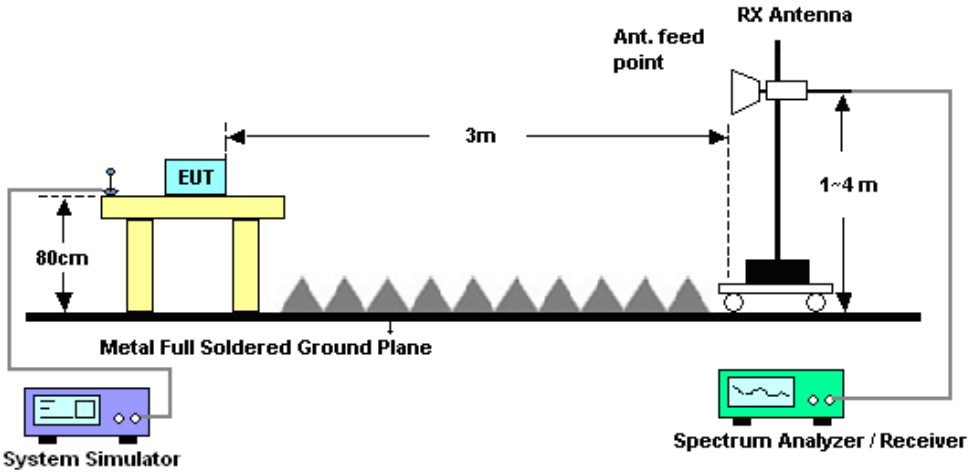
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

4.4 Effective Isotropic Radiated Power Measurement

4.4.1 Description of the EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-D-2010, was used for EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. The EIRP of mobile transmitters are limited to 2 Watts (PCS Band).

4.4.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v02r02 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GPRS/EDGE) and ANSI / TIA-603-D-2010 Section 2.2.17.
2. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
4. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP = LVL + Correction factor and ERP = EIRP - 2.15. Take the record of the output power at substitution antenna.

	GSM/GPRS/EDGE	WCDMA/HSPA
SPAN	500kHz	10MHz
RBW	10kHz	100kHz
VBW	30kHz	300kHz
Detector	RMS	RMS
Trace	Average	Average
Average Type	Power	Power
Sweep Count	100	100

4.5 Field Strength of Spurious Radiation Measurement

4.5.1 Description of Field Strength of Spurious Radiated Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.5.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v02r02 Section 5.8 and ANSI / TIA-603-D-2010 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
12. ERP (dBm) = EIRP - 2.15
13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
14. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

    = P(W) - [43 + 10log(P)] (dB)

    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

    = -13dBm.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	9kHz~40GHz	May 07, 2016	Jun. 13, 2016	May 06, 2017	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	May 07, 2016	Jun. 03, 2016	May 06, 2017	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	May 07, 2016	Jun. 03, 2016	May 06, 2017	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	May 21, 2016	Jun. 03, 2016	May 20, 2017	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	May 07, 2016	Jun. 03, 2016	May 06, 2017	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Aug. 19, 2015	Jun. 03, 2016	Aug. 18, 2016	Radiation (03CH03-SZ)
Amplifier	PREAMP LIFIER	BPA-530	102210	0.01Hz ~3000MHz	Oct. 20, 2015	Jun. 03, 2016	Oct. 19, 2016	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Jan. 12, 2016	Jun. 03, 2016	Jan. 11, 2017	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Jun. 03, 2016	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jun. 03, 2016	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jun. 03, 2016	NCR	Radiation (03CH03-SZ)

NCR: No Calibration Required

6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0dB**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

Conducted Power (*Unit: dBm)			
Band	**GSM1900**		
Channel	**512**	**661**	**810**
Frequency	**1850.2**	**1880.0**	**1909.8**
GSM	29.50	29.70	**29.71**

Appendix B. Test Results of Radiated Test

EIRP

Channel	Mode	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	GSM1900 GSM	31.70	1.4802	32.29	1.6931
Middle		31.63	1.4550	32.40	1.7382
Highest		31.72	1.4853	32.19	1.6545
Limit	EIRP < 2W	Result		PASS	

Radiated Spurious Emission

GSM1900 (GSM)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3760	-49.88	-13	-36.88	-70.21	-61.61	0.87	12.60	H
	5640	-46.64	-13	-33.64	-69.51	-58.67	1.07	13.10	H
	7520	-49.76	-13	-36.76	-74.89	-59.37	1.69	11.30	H
	9400	-36.93	-13	-23.93	-67.15	-47.00	1.83	11.90	H
	3760	-48.20	-13	-35.20	-69.76	-59.93	0.87	12.6	V
	5640	-43.89	-13	-30.89	-66.64	-55.92	1.07	13.1	V
	7520	-51.29	-13	-38.29	-76.2	-60.72	1.87	11.3	V
	9400	-36.60	-13	-23.60	-65.88	-46.67	1.83	11.9	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

Appendix C. Product Equality Declaration

CK TELECOM LTD.

Technology Road.High-Tech Development Zone. Heyuan, Guangdong,P.R.China.
Tel: +86-755-26739633; Fax: +86-755-26739500

Date: June 20, 2016

Product Equality Declaration

We, **CK TELECOM LTD**, declare on our sole responsibility for the product of Doro PhoneEasy 508as below:

The difference between current Doro PhoneEasy508 and previous Doro PhoneEasy508:

- Add a new battery model: DBC-800D
- Add four new adapters , model : A31-500550(with ErP V), A31-500550 (ErP VI and UCS), A2-501000, A85-501000
- Add a new USB cable model: 9148-0300014RIIHW
- Add a cradle
- SW changed from ARBOR-S05A_DORO508_L6EN_200_140320 to ARBOR-S04A_DORO508_L6EN_201_160412

Except Listings above, the others are the same as previous version.

Should you have any questions or comments regarding this matter, please have my best attention.

Sincerely yours,

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Applicant: CK TELECOM LTD.
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E-Mail: xin.li@ck-telecom.com

Appendix D. Photographs of EUT

Please refer to Sporton report number EP442204-02 which is issued separately.