

Variant FCC RF Test Report

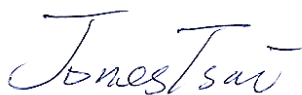
APPLICANT : Doro AB
EQUIPMENT : GSM Mobile Telephone
BRAND NAME : doro
MODEL NAME : Doro PhoneEasy 613
MARKETING NAME : Doro PhoneEasy 613
FCC ID : WS5DORO613
STANDARD : FCC 47 CFR Part 2, 24(E)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

This is a variant report which is only valid together with the original test report. The product was received on May 07, 2014 and testing was completed on May 22, 2014. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown to be compliant 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.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (SHENZHEN) INC.

No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.

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REVISION HISTORY

[illegible]

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	N/A	PASS	-
3.2	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.3	§2.1053 §24.238(a)	Field Strength of Spurious Radiation	$< 43 + 10\log_{10}(P[\text{Watts}])$	PASS	Under limit 31.71 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 Feature of Equipment Under Test

Product Feature	
Equipment	GSM Mobile Telephone
Brand Name	doro
Model Name	Doro PhoneEasy 613
Marketing Name	Doro PhoneEasy 613
FCC ID	WS5DORO613
IMEI Number	352927060003546
EUT supports Radios application	GSM/GPRS/Bluetooth v3.0+EDR
HW Version	YACHTPLUS-V2.0
SW Version	YACHTPLUS02A-S01A_DORO613_L18EN_103_140429
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

Product Specification subjective to this standard	
Tx Frequency	GSM1900: 1850.2 MHz ~ 1909.8MHz
Rx Frequency	GSM1900: 1930.2 MHz ~ 1989.8 MHz
Maximum Output Power to Antenna	GSM1900 : 30.03 dBm
Antenna Type	Fixed Internal Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK

1.5 Modification of EUT

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

1.6 Maximum EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	Maximum EIRP (W)
Part 24	GSM1900 GSM	GMSK	1.09

1.7 Testing Site

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.C. TEL: +86-755- 3320-2398		
Test Site No.	Sporton Site No.		FCC Registration No.
	TH01-SZ	03CH01-SZ	831040

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.		
Test Site Location	No. 101, Complex Building C, Guanlong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755-8637-9589 FAX: +86-755-8637-9595		
Test Site No.	Sporton Site No.		
	OTA01-SZ		

1.8 Applied Standards

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

- ♦ FCC 47 CFR Part 2, 24(E)
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01

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 v02r01 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission (Y Plane for 24E).

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 19000 MHz for GSM1900.

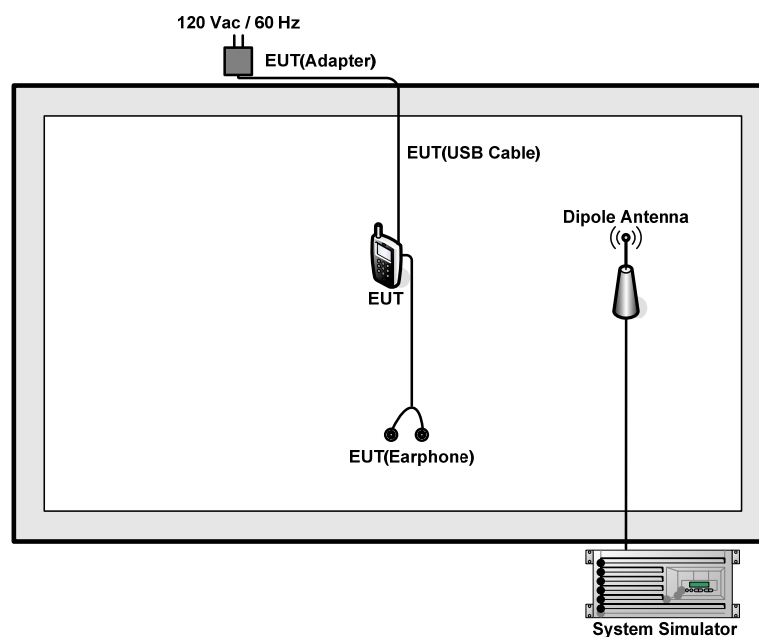
Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 1900	■ GSM Link	■ GSM Link

Note: The maximum power levels are chosen to test as the worst case configuration as follows: GSM mode for GMSK modulation, only the mode was used for all tests.

The conducted power tables are as follows:

Conducted Power (*Unit: dBm)			
Band	GSM1900		
Channel	512	661	810
Frequency	1850.2	1880.0	1909.8
GSM	29.76	29.86	30.03
GPRS class 8	29.75	29.85	30.01
GPRS class 10	28.68	28.79	29.02
GPRS class 11	26.37	26.47	26.77
GPRS class 12	25.34	25.46	25.66

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMW 500	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	TOPWORD	3303DR	N/A	N/A	N/A

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

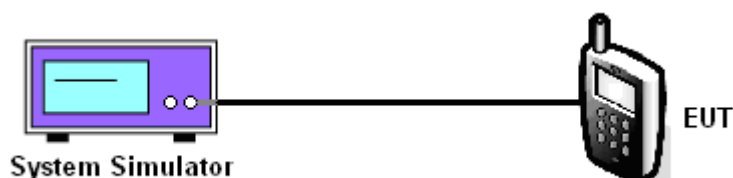
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

PCS Band			
Modes	GSM1900 (GSM)		
Channel	512 (Low)	661 (Mid)	810 (High)
Frequency (MHz)	1850.2	1880	1909.8
Conducted Power (dBm)	29.76	29.86	30.03
Conducted Power (Watts)	0.95	0.97	1.01

Note: maximum burst average power for GSM.

3.2 Effective Isotropic Radiated Power Measurement

3.2.1 Description of the EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-C-2004, was used for EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r01. The EIRP of mobile transmitters are limited to 2 Watts.

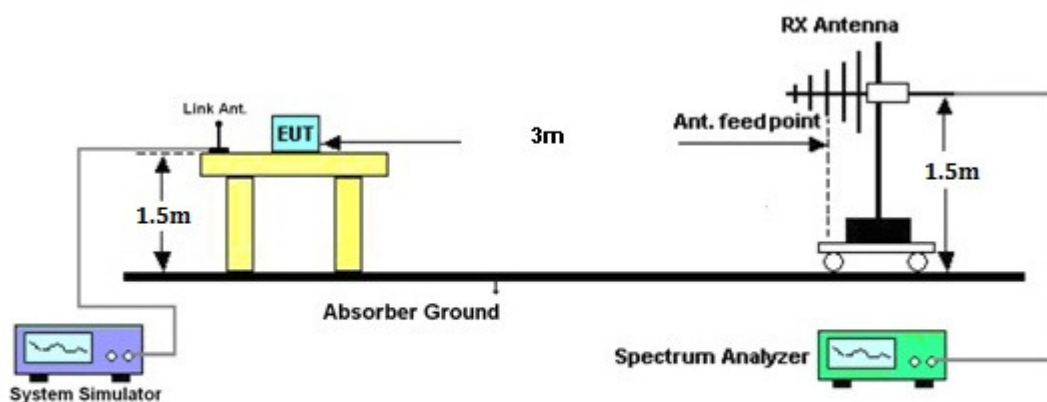
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. GSM operating modes: Set RBW= 1MHz, VBW= 3MHz, RMS detector over burst;
RMS detector over frame, and use channel power option with bandwidth=5MHz, per KDB 971168 D01.
4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum EIRP.
6. Taking the record of maximum EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum EIRP of the substitution antenna.
10. $EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$
 P_s (dBm) : Input power to substitution antenna.
 G_s (dBi or dBd) : Substitution antenna Gain.
 $E_t = R_t + AF$
 $E_s = R_s + AF$
 AF (dB/m) : Receive antenna factor
 R_t : The highest received signal in spectrum analyzer for EUT.
 R_s : The highest received signal in spectrum analyzer for substitution antenna.

3.2.4 Test Setup



3.2.5 Test Result of EIRP

GSM1900 (GSM) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-25.22	-51.88	0.00	1.96	28.62	0.73
1880.00	-25.44	-52.99	0.00	2.00	29.55	0.90
1909.80	-26.16	-54.28	0.00	1.98	30.10	1.02
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-24.90	-52.13	0.00	1.96	29.19	0.83
1880.00	-25.21	-53.17	0.00	2.00	29.96	0.99
1909.80	-25.72	-54.13	0.00	1.98	30.39	1.09

3.3 Field Strength of Spurious Radiation Measurement

3.3.1 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.

3.3.2 Measuring Instruments

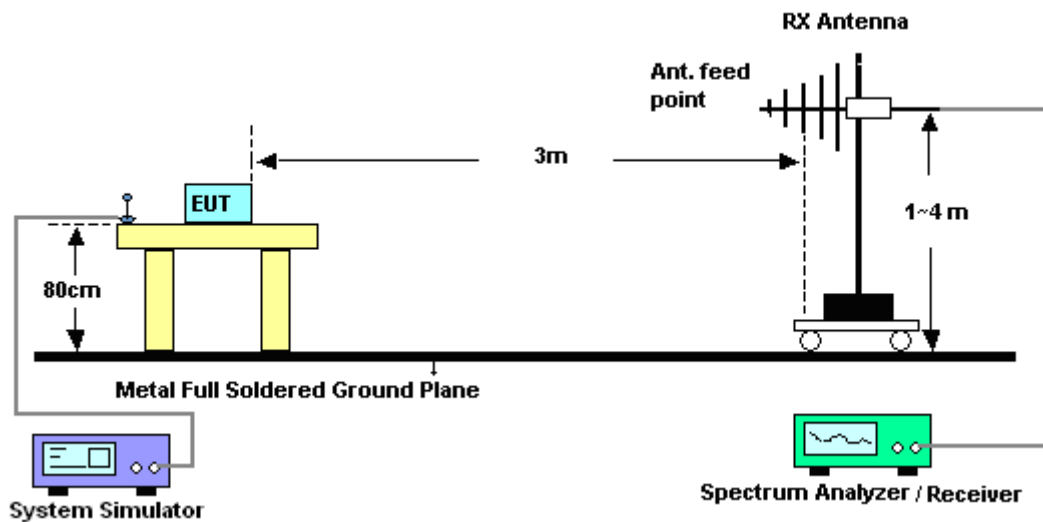
See list of measuring instruments of this test report.

3.3.3 Test Procedures

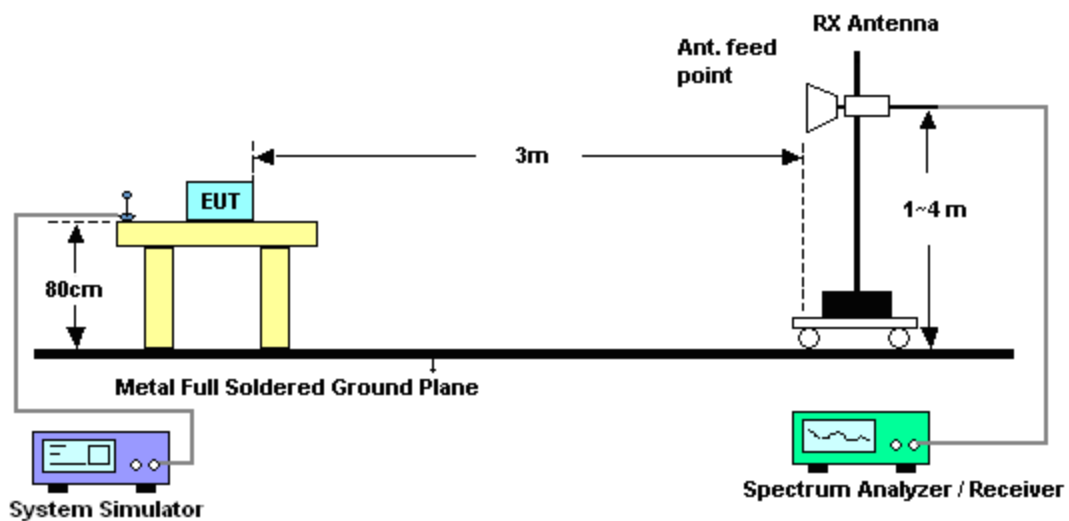
1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$

3.3.4 Test Setup

For radiated emissions from 30MHz to 1GHz

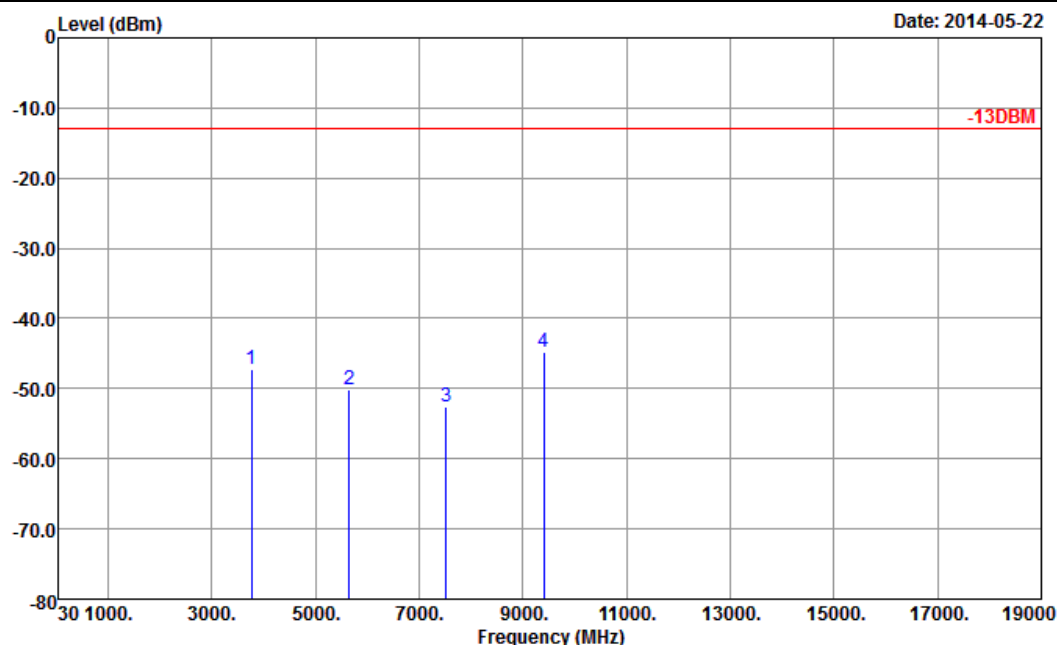


For radiated emissions above 1GHz



3.3.5 Test Result of Field Strength of Spurious Radiated

Band :	GSM1900	Temperature :	24~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

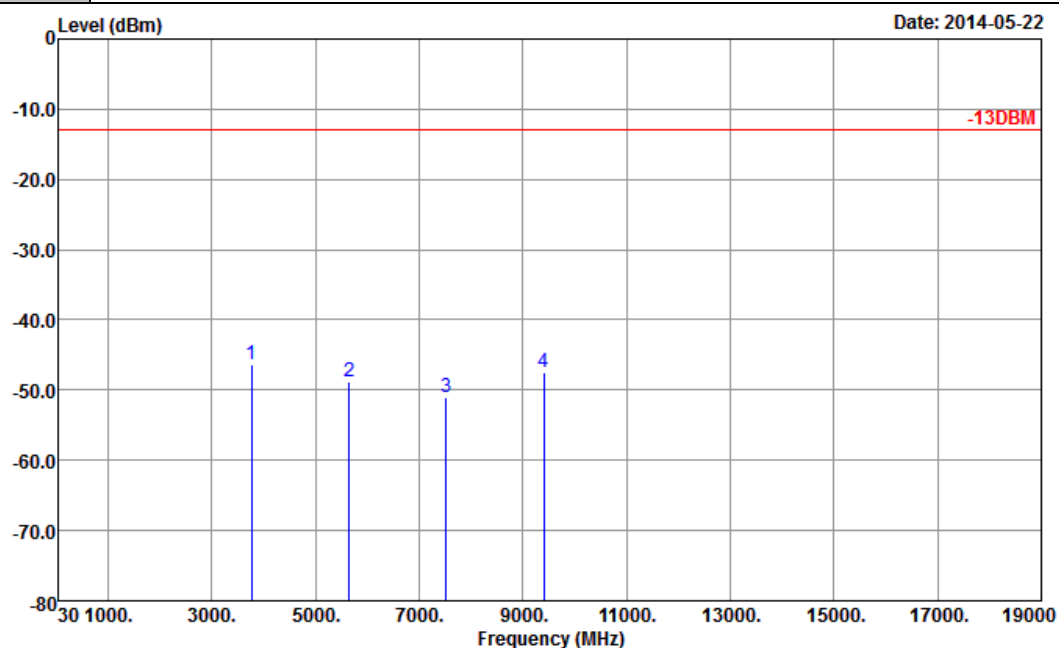


Site : 03CH01-SZ
 Condition : -13DBM HF_EIRP_H_130101 HORIZONTAL
 Project : (FG)3O2201-01
 Mode : Mode 1

: Y

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)	Result
3760	-47.26	-13	-34.26	-61.67	-54.00	1.28	8.02	H	Pass
5640	-50.18	-13	-37.18	-68.17	-58.60	1.58	10.00	H	Pass
7520	-52.67	-13	-39.67	-74.61	-62.99	1.78	12.10	H	Pass
9400	-44.71	-13	-31.71	-66.83	-55.49	2.22	13.00	H	Pass

Band :	GSM1900	Temperature :	24~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH01-SZ
 Condition : -13DBM HF_EIRP_V_130101 VERTICAL
 Project : (FG)3O2201-01
 Mode : Mode 1

: Y

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)	Result
3760	-46.41	-13	-33.41	-61.93	-53.15	1.28	8.02	V	Pass
5640	-48.76	-13	-35.76	-65.84	-57.18	1.58	10	V	Pass
7520	-51.12	-13	-38.12	-73.37	-61.44	1.78	12.1	V	Pass
9400	-47.37	-13	-34.37	-70.99	-58.15	2.22	13	V	Pass

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Mar. 03, 2014	May 12, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Jun. 17, 2013	May 12, 2014	Jun. 16, 2014	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	13dBm~-20dBm	Mar. 03, 2014	May 12, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
Power Sensor	Anritsu	MA2411B	1207253	0.3GHz~40GHz	Mar. 03, 2014	May 12, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	May 22, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	May 26, 2014	May 22, 2014	May 25, 2015	Radiation (03CH01-SZ)
Bilog Antenna	TESEQ	CBL 6112D	23188	30MHz~2GHz	Oct. 26, 2013	May 22, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 26, 2013	May 22, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridged Horn Antenna	COM-POWER	AH-840	101073	18GHz~40GHz	Jan. 27, 2014	May 22, 2014	Jan. 26, 2015	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz	Feb. 21, 2014	May 22, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Amplifier	Agilent	83017A	MY39501302	3Hz~26.5GHz	Mar. 03, 2014	May 22, 2014	Mar. 02, 2015	Radiation (03CH01-SZ)
AC Source(AVR)	Chroma	61601	616010001985	100Vac~250Vac	Mar. 25, 2014	May 22, 2014	Mar. 24, 2015	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	NCR	May 22, 2014	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM Electronics	EM 1000	N/A	1 m~4 m	NCR	May 22, 2014	NCR	Radiation (03CH01-SZ)
Spectrum Analyzer	R&S	FSP 7	100818	9kHz~7GHz	Sep. 03, 2013	May 20, 2014	Sep. 02, 2014	EIRP (OTA01-SZ)
Quad-Ridged Horn	ETS-Lindgren	3164-08	00102954	700MHz~10000MHz	N/A	May 20, 2014	N/A	EIRP (OTA01-SZ)
Multi-Devices Controller	ETS-Lindgren	2090-OPT1	00108147	N/A	N/A	May 20, 2014	N/A	EIRP (OTA01-SZ)
Switch Control Mainframe	Agilent	3499A	MY42005451	N/A	N/A	May 20, 2014	N/A	EIRP (OTA01-SZ)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.90
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Appendix A. Photographs of EUT

Please refer to Sporton report number EP3O2201-01 which is issued separately.



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: July 3, 2014

Product Equality Declaration

We, **CK TELECOM LTD**, declare on our sole responsibility for the product of Doro PhoneEasy 613 as below:

The difference between Doro PhoneEasy 613 and Doro PhoneEasy 612i:

- ◆ S.W. changed from YACHTPLUS-S01A_DORO612i_L18EN_200_131011 to YACHTPLUS02A-S01A_DORO613_L18EN_103_140429
- ◆ LCD changed from TXDT240TQ-76V23(doro612i LCD) to TXDT240SQ-163V6(doro613 LCD)
- ◆ ID design and color changed
- ◆ Battery changed from SHELL01A to DBF-800B
- ◆ Microphone change from ACMG4013-05S-422-001 to EM4013SMT-42BC6.8nF&r330-G
- ◆ Cradle changed

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,



Contact Person: Xin Li

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