TEST REPORT

No. I20Z61820-EMC03

for

Shenzhen Tinno Mobile Technology Corp.

Smart Phone

Model Name: Wiko U614AS

FCC ID: XD6U614AS

with

Hardware Version: V1.0

Software Version: U614ASV02.06.10

Issued Date: 2021-01-06

Note:

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Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I20Z61820-EMC03	Rev.0	1st edition	2021-01-06

Note: the latest revision of the test report supersedes all previous versions.

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road, Haidian District, Beijing, P. R. China 100191

1.3. Testing Environment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

Air pressure 980 - 1040 hPa

The climatic requirements above are general exclude the special requirements for dedicated test environments listed in section 5 and some specific test cases in other parts of this report.

1.4. Project data

Testing Start Date: 2020-10-22

Testing End Date: 2020-12-31

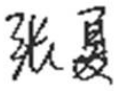
1.5. Signature

An Hui

(Prepared this test report)

Zhang Ying

(Reviewed this test report)



Zhang Xia

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Shenzhen Tinno Mobile Technology Corp.
Address /Post:	4/F, H-3 Building,OCT Eastern Industrial Park. NO.1 XiangShan East Road, Nan Shan District,Shenzhen, P.R.China
Contact:	xiaoping.li
Email:	xiaoping.li@tinno.com
Telephone:	0755-86095550

2.2. Manufacturer Information

Company Name:	Shenzhen Tinno Mobile Technology Corp.
Address /Post:	4/F, H-3 Building,OCT Eastern Industrial Park. NO.1 XiangShan East Road, Nan Shan District,Shenzhen, P.R.China
Contact:	xiaoping.li
Email:	xiaoping.li@tinno.com
Telephone:	0755-86095550

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Smart Phone
Model	Wiko U614AS
FCC ID	XD6U614AS

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, CAICT.

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
EUT1	868657050017365	V1.0	U614ASV02.06.10
EUT2	868657050002011	V1.0	U614ASV01.08.10

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN	Revision
AE1	Battery	/	/
AE2	Battery	/	/

AE1

Model	PT34H406082J
Manufacturer	Ningbo Veken Battery Co., Ltd.
Capacity	3310mAh
Nominal Voltage	3.85V

AE2

Model	PT34H406082W
Manufacturer	Shenzhen BYD Lithium Battery Company Limited
Capacity	3330mAh
Nominal Voltage	3.85V

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

Equipment Under Test (EUT) is a model of Mobile phone with integrated antenna.
Manual and specifications of the EUT were provided to fulfil the test.
Samples undergoing test were selected by the client.

3.5. EUT set-ups

EUT Set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1 + AE1/AE2	RSE tests
Set.2	EUT2 + AE1/AE2	ERP tests

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 90	PRIVATE LAND MOBILE RADIO SERVICES	10-1-19 Edition
ANSI C63.26	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
KDB 971168 D01	Measurement Guidance for Certification of Licensed Digital Transmitters	v03r01

5. LABORATORY ENVIRONMENT

Fully-anechoic chamber FAC-3 (9 meters×6.5 meters×4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

Shielding chamber did not exceed following limits along the RF testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. =20 %, Max. = 80 %

6. SUMMARY OF TEST RESULTS

6.1. Summary of test results

Abbreviations used in this clause:		
Verdict Column	P	Pass
	F	Fail
	NA	Not applicable
	NM	Not measured

CDMA800 BC10

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	90.635(b)	A1	P
2	Emission Limit	90.691, 2.1051	A2	P

7. Test Equipments Utilized

NO.	NAME	TYPE	PRODUCER	SERIES NUMBER	CAL. DUE DATE	CAL. INTERVAL
1.	Test Receiver	E4440A	MY48250642	Agilent	2021-03-12	1 year
2.	EMI Antenna	VULB9163	9163-301	Schwarzbeck	2021-08-04	1 year
3.	EMI Antenna	3117	00119024	ETS-Lindgren	2021-05-08	1 year
4.	EMI Antenna	3117	00119021	ETS-Lindgren	2021-02-06	1 year
5.	EMI Antenna	9117	167	Schwarzbeck	2021-08-19	1 year
6.	Signal Generator	N5183A	MY49060052	Agilent	2021-07-01	1 year
7.	Power Amplifier	5S1G4	0341863	AR	/	/
8.	Universal Radio Communication Tester	MT8821C	6201623363	Anritsu	2021-09-10	1 year
9.	Spectrum Analyzer	FSV30	101576	R&S	2021-05-07	1 Year
10.	Wireless Communications Test Set	8960(E5515C)	MY48360950	Agilent	2021-09-02	1 Year
11.	Climatic chamber	SH-242	93008556	ESPEC	2020-12-21	3 Years

Note:

The Climatic chamber which series number is 93008556 was before the CAL. DUE DATE when used.

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

Reference

FCC: CFR Part 90.635, and 2.1053

A.1.1 Summary

During the process of testing, the EUT was controlled via Agilent Universal Radio Communication Tester to ensure max power transmission and proper modulation.

This result contains peak output power and ERP/EIRP measurements for the EUT.

In all cases, output power is within the specified limits.

A.1.2 Radiated

A.1.2.1 Description

This is the test for the maximum radiated power from the EUT.

Rule Part 22.913(a) (2) specifies" The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

Rule Part 24.232 specifies, "Mobile/portable stations are limited to 2 watts EIRP. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

A.1.2.2 Method of Measurement

According to KDB 412172 D01 and ANSI C63.26 the relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

ERP or EIRP = P_T + G_T – L_C, ERP = EIRP -2.15, where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively
(expressed in the same units as P_{Mea} , e.g., dBm or dBW)

P_T = transmitter output power in dBm;

G_T = gain of the transimitting antenna, in dBd(ERP) or dBi(EIRP);

L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CDMA800(BC10)- ERP

Limits

Band	RMS ERP (dBm)
CDMA800(BC10)	≤50dBm

Measurement result

Channel	Frequency (MHz)	Conducted Power (dBm)			Radiated Power (dBm) (G_T – L_C = -1.29)		
		1x RTT	1xEVDO		1x RTT	1xEVDO	
			Rel0	RevA		Rel0	RevA
476	817.9	24.47	24.06	24.13	21.03	20.62	20.69
684	823.1	24.52	24.11	24.13	21.08	20.67	20.69

A.2 EMISSION LIMT

Reference

FCC: CFR Part 90.691 and 2.1053

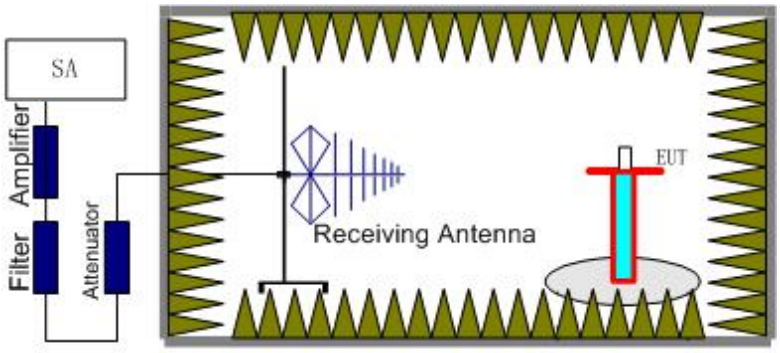
A.2.1 Measurement Method

The measurements procedures in TIA-603-E-2016 are used. This measurement is carried out in fully-anechoic chamber

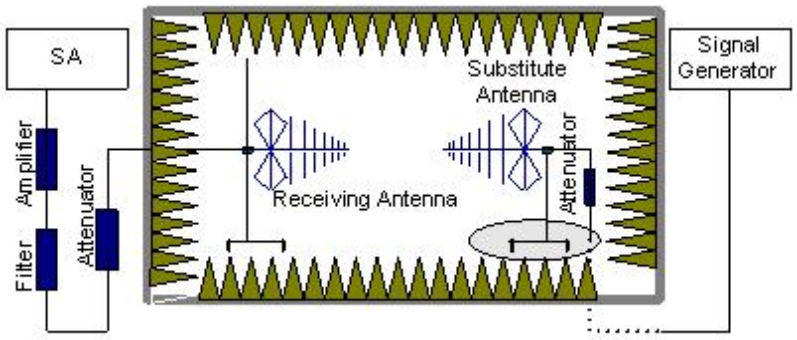
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set 1MHz as outlined in CFR Part 90.691. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of CDMA800 BC10.

The procedure of radiated spurious emissions is as follows:

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.
   An amplifier should be connected in for the test.
   The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.
   The measurement results are obtained as described below:
   Power (EIRP) = P_{Mea}- P_{pl} + G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit: dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dB.

A.2.2 Measurement Limit

CFR Part 90.691 all specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper and lower carrier frequencies of the CDMA BC10 (817.9MHz and 823.1MHz). It was decided that measurements at these two carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the CDMA BC10 into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

The worst case

CDMA BC10, Channel 475

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Margin (dB)	Polarization
1634.01	-60.56	3.55	5.26	2.15	-61.00	-13.00	48.00	H
2450.00	-50.40	4.57	5.95	2.15	-51.17	-13.00	38.20	V
3267.02	-54.39	5.28	7.64	2.15	-54.18	-13.00	41.20	V
4090.02	-54.89	6.04	8.99	2.15	-54.09	-13.00	41.10	H
4906.01	-54.44	6.73	9.81	2.15	-53.51	-13.00	40.50	V
5730.01	-53.05	7.29	10.55	2.15	-51.94	-13.00	38.90	H

CDMA BC10, Channel 684

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Margin (dB)	Polarization
1650.01	-59.91	3.57	5.23	2.15	-60.40	-13.00	47.40	V
2472.00	-53.36	4.59	6.02	2.15	-54.08	-13.00	41.10	V
3291.02	-55.03	5.29	7.70	2.15	-54.77	-13.00	41.80	V
4112.02	-54.46	6.04	9.01	2.15	-53.64	-13.00	40.60	H
4936.01	-54.20	6.71	9.84	2.15	-53.22	-13.00	40.20	V
5764.01	-53.56	7.24	10.55	2.15	-52.40	-13.00	39.40	V

Sample calculation: 1650.01MHz

Peak ERP (dBm) = P_{Mea}(-59.91 dBm) - P_{cl} (3.57dB) + G_a (5.23 dBi) – 2.15dBm=-60.40 dBm

Note: Expanded measurement uncertainty for this test item is U = 5.16 dB, k = 2.

ANNEX B: Persons involved in this testing

Test Item	Tester
Out Power	Chen Tianwei
Transmitter Spurious Emission	Chen Tianwei

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