FCC PART 15B
TEST REPORT

No. I21Z61796-EMC01

for

TCL Communication Ltd.

GSM/UMTS/LTE Mobile phone

Model name: 5002W

FCC ID: 2ACCJH120

with

Hardware Version: 01

Software Version: 3CF1

Issued Date: 2021-09-17

Note:

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Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z61796-EMC01	Rev.0	1st edition	2021-09-17

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

CONTENTS

1. Test Laboratory

1.1. Testing Location

CTTL (huayuan North Road)

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

1.2. Testing Environment

Normal Temperature: $15\text{-}35^{\circ}\text{C}$
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2021-09-15
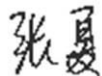Testing End Date: 2021-09-16

1.4. Signature

Wang Xue
(Prepared this test report)

Zhang Ying
(Reviewed this test report)

Zhang Xia
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	TCL Communication Ltd.
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Contact Person	Gong Zhizhou
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2.2. Manufacturer Information

Company Name:	TCL Communication Ltd.
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Contact Person	Gong Zhizhou
Contact Email	zhizhou.gong@tcl.com
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Fax:	0086-755-36612000-81722

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

3.1. About EUT

Description   GSM/UMTS/LTE Mobile phone
Model Name   5002W
FCC ID: 2ACCJH120

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*	SN or IMEI	HW Version	SW Version
EUT1	016114000000043	01	3CF1

*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	Remarks
AE1	Battery	/	
AE2	charger	/	
AE3	USB Cable	/	

AE1
  Model   TLi028C7
  Manufacturer   VEKEN
  Capacity   3000mAh
  Nominal Voltage   /

AE2
  Model   CBA0058AGAC5
  Manufacturer   PUAN
  Length of cable   /

AE3
  Model   CDA3122005C8
  Manufacturer   PUAN
  Length of cable   /

*AE ID: is used to identify the test sample in the lab internally.
Note: The USB cables are shielded.

3.4. <u>EUT set-ups</u>

EUT set-up No.   Combination of EUT and AE   Remarks
   Set.6   EUT1 + AE1+AE3   USB

I21Z61796 is a variant model based on I19Z62392 for conformance test. According to the declaration of changes, the following test items and test modes were performed:

Test Item	Mode or Feature	EUT Set-up
Radiated Continuous Emission	USB	Set.6

Other test results are derived from test report of I19Z62392-EMC01.

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 15, Subpart B	Radio frequency devices - Unintentional Radiators	2019
ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

Note: The test methods have no deviation with standards.

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (10 meters×6.7meters×6.1meters) 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
Normalised site attenuation (NSA)	**<** ±4 dB, 3m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 6GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

Shielded room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz－1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

6. SUMMARY OF TEST RESULTS

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

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	B.1	P	**CTTL(huayuan North Road)**

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100235	R&S	2022-02-23	1 Year
2	EMI Antenna	VULB 9163	01223	Schwarzbeck	2022-03-22	1 year
3	EMI Antenna	3115	6914	ETS-Lindgren	2022-02-03	1 year

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission
Reference
FCC: CFR Part 15.109(a).
A.1.1 Method of measurement
The field strength of radiated emissions from the unintentional radiator (USB mode of MS and charging mode of MS) at distances of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3/10 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.
A.1.2 EUT Operating Mode
The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

The model of the PC is M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note：I/O information：Printer – USB, Mouse – PS/2, Keyboard – USB.
A.1.3 Measurement Limit

Frequency range (MHz)	Field strength limit (µV/m)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

Note: the above limit is for 3 meters test distance. 10 meters' limit is got by converting.

A.1.4 Test Condition

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/1MHz	15	Peak, Average

A.1.5 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

Result = P_{Mea} + A_{Rpl} = P_{Mea} + G_A + G_{PL}

Where

G_A: Antenna factor of receive antenna

G_{PL}: Path Loss

P_{Mea}: Measurement result on receiver.

Measurement uncertainty (worst case): U = 4.74 dB, k=2.

Measurement results for Set.6:

USB Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17985.833	43.80	-29.06	46.66	26.20	54.00	10.20	H
17910.467	43.20	-29.33	45.95	26.57	54.00	10.80	H
17925.200	42.90	-29.40	46.66	25.64	54.00	11.10	V
17963.167	42.80	-29.06	46.66	25.20	54.00	11.20	H
17979.033	42.80	-29.06	46.66	25.20	54.00	11.20	V
17974.500	42.60	-29.06	46.66	25.00	54.00	11.40	V

USB Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17977.900	51.70	-29.06	46.66	34.10	74.00	22.30	V
17984.700	51.50	-29.06	46.66	33.90	74.00	22.50	V
17938.800	51.40	-29.40	46.66	34.14	74.00	22.60	V
17994.900	51.20	-29.06	46.66	33.60	74.00	22.80	H
17954.667	51.20	-28.94	46.66	33.48	74.00	22.80	V
17978.467	51.20	-29.06	46.66	33.60	74.00	22.80	V

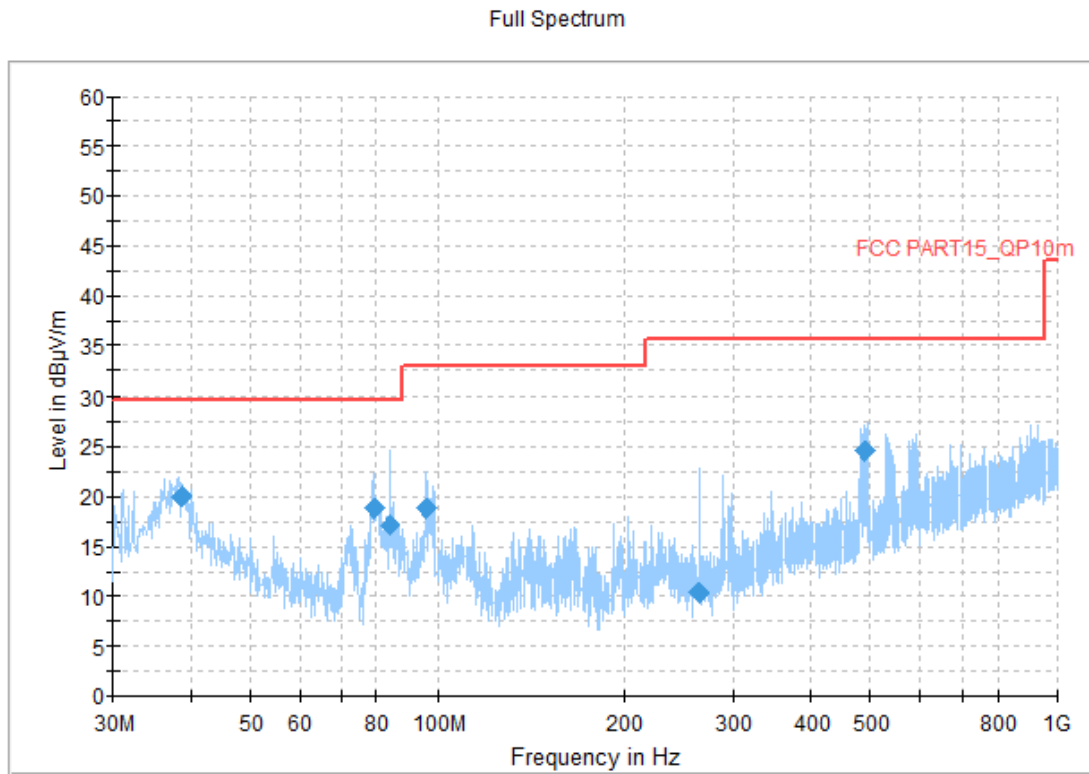**Measurement results for Set.6:**

Full Spectrum

Fig A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

| Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
38.730000	20.02	29.54	9.52	1000.0	120.000	223.0	V	290.0
78.985000	18.85	29.54	10.69	1000.0	120.000	235.0	V	93.0
83.932000	17.00	29.54	12.54	1000.0	120.000	235.0	V	74.0
96.154000	18.76	33.06	14.30	1000.0	120.000	105.0	V	150.0
263.867000	10.35	35.56	25.21	1000.0	120.000	125.0	V	8.0
489.295000	24.49	35.56	11.07	1000.0	120.000	319.0	V	7.0

Full Spectrum
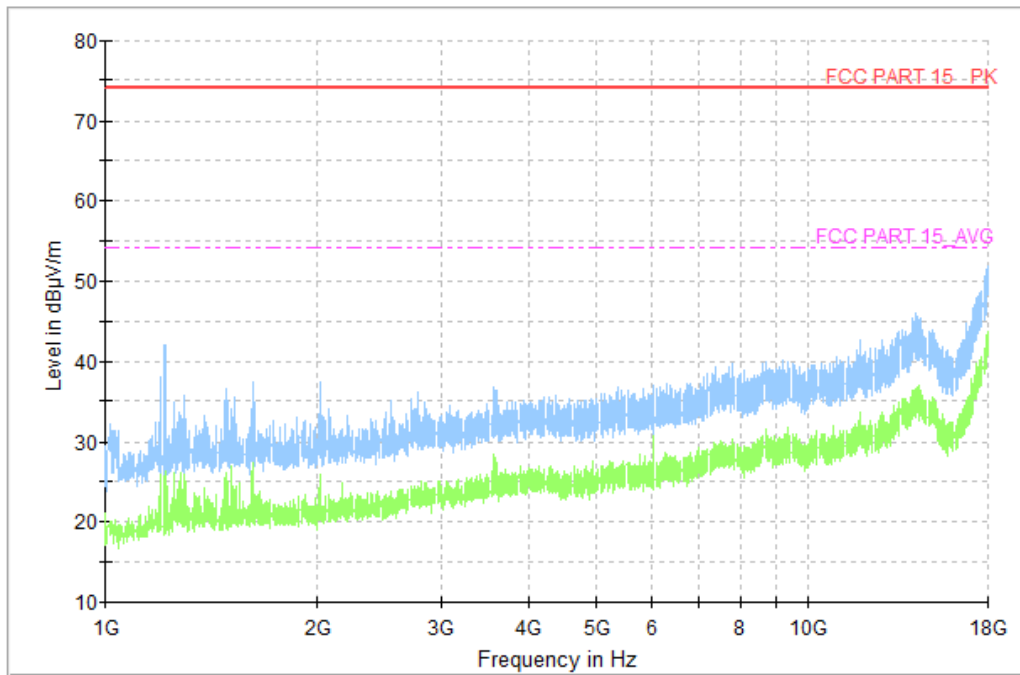
Fig A.2 Radiated Emission from 1GHz to 18GHz

END OF REPORT