



TEST REPORT

No. I16Z42254-EMC01

for

TCL Communication Ltd.

HSUPA/HSDPA/UMTS Tri Band/GSM Quad Band/LTE 6 Band mobile

phone

Model Name: 4044V

FCC ID: 2ACCJN013

with

Hardware Version: 03

Software Version: D4N

Issued Date: 2016-12-16

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

FCC 2.948 Listed: No.525429

IC O.A.T.S listed: No.12389A-1

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REPORT HISTORY

| Report Number | Revision | Description | Issue Date |
|----------------------|-----------------|-------------------------|-------------------|
| I16Z42254-EMC01 | Rev.0 | 1 st edition | 2016-12-16 |

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1. Test Laboratory

1.1. Testing Location

Location 1: CTTL(huayuan North Road)

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

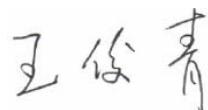
1.2. Testing Environment

Normal Temperature: 15-35°C
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2016-10-25
Testing End Date: 2016-11-01

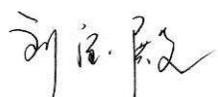
1.4. Signature



Wang Junqing
(Prepared this test report)



Qu Pengfei
(Reviewed this test report)



Liu Baodian
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: TCL Communication Ltd.
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2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
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Contact Email zhizhou.gong@tcl.com
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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

| | |
|---------------------|---|
| Description | HSUPA/HSDPA/UMTS Tri Band/GSM Quad Band/LTE 6 Band mobile phone |
| Model Name | 4044V |
| FCC ID | 2ACCJN013 |
| IC Number | 9238A-0064 |
| Extreme vol. Limits | 3.5VDC to 4.2VDC (nominal: 3.7VDC) |

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

3.2. Internal Identification of EUT used during the test

| EUT ID* | SN or IMEI | HW Version | SW Version |
|---------|------------|------------|------------|
| EUT1 | / | 03 | D4N |

*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 | / | / |
| AE4 | Charger | / | / |

AE1

| | |
|-----------------|----------|
| Model | TLi013C1 |
| Manufacturer | BYD |
| Capacitance | 1350 mAh |
| Nominal voltage | 3.7 V |

AE4

| | |
|-----------------|-----------------|
| Model | WUS550mA5V00-02 |
| Manufacturer | BYD |
| Length of cable | 114cm |

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

3.4. EUT set-ups

| EUT set-up No. | Combination of EUT and AE | Remarks |
|----------------|---------------------------|---------|
| Set.1 | EUT1+ AE1+ AE4 | Charger |

Note: HSUPA/HSDPA/UMTS Tri Band/GSM Quad Band/LTE 6 Band mobile phone 4044V manufactured by TCL Communication Ltd is a variant model based on 4044O for conformance test. According to the declaration of changes, no test needs to be performed, all results are cited from the initial model. The report number for initial model is I16Z42016-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 | 10-1-15 |
| 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 | Edition 2014 |

Note: The test methods have no deviation with standards.

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17meters×10meters) 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, 10 m distance |
| Site voltage standing-wave ratio (SvSWR) | Between 0 and 6 dB, from 1GHz to 6GHz |
| Uniformity of field strength | Between 0 and 6 dB, from 80 to 3000 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 | |
| Location Column | 1 | The test is performed in test location 1 which is described in section 1.1 of this report | |

| Items | Test Name | Clause in FCC rules | Section in this report | Verdict | Test Location |
|-------|--------------------|---------------------|------------------------|---------|---------------|
| 1 | Radiated Emission | 15.109(a) | B.1 | P | 1 |
| 2 | Conducted Emission | 15.107(a) | B.2 | P | 1 |

7. Test Equipments Utilized

| NO. | Description | TYPE | SERIES NUMBER | MANUFACTURE | CAL DUE DATE | CALIBRATION INTERVAL |
|-----|--------------------------------------|--------------|--------------------------|--------------|--------------|----------------------|
| 1 | Test Receiver | ESU26 | 100235 | R&S | 2017-03-02 | 1 year |
| 2 | Test Receiver | ESCI 7 | 100344 | R&S | 2017-07-05 | 1 year |
| 3 | Universal Radio Communication Tester | CMW500 | 143008 | R&S | 2016-12-09 | 1 year |
| 4 | Universal Radio Communication Tester | CMW500 | 155415 | R&S | 2017-01-11 | 1 year |
| 5 | LISN | ENV216 | 101200 | R&S | 2017-07-10 | 1 year |
| 6 | EMI Antenna | VULB 9163 | 9163-301 | Schwarzbeck | 2017-12-16 | 3 years |
| 7 | EMI Antenna | 3115 | 6914 | ETS-Lindgren | 2016-12-15 | 3 years |
| 8 | PC | OPTIPLEX 380 | 2X1YV2X | DELL | N/A | N/A |
| 9 | Printer | P1606dn | VNC3L52122 | HP | N/A | N/A |
| 10 | Keyboard | L100 | CN0RH6596589 07ATOI40 | DELL | N/A | N/A |
| 11 | Mouse | M-UAE119 | LZ935220ZRC | Lenovo | N/A | N/A |

| Test Item | Test Software and Version | Software Vendor |
|------------------------------|---------------------------|-----------------|
| Radiated Continuous Emission | EMC32 V9.01 | R&S |
| Conducted Emission | EMC32 V8.52.0 | R&S |

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 (charging mode of MS) at distances of 3 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) 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 charging mode. During the test MS is connected to a charger in the case of charging mode.

A.1.3 Measurement Limit

| Frequency range (MHz) | Field strength limit (μ V/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:

$$\text{Result} = P_{\text{Mea}} + A_{RPL} = P_{\text{Mea}} + G_A + G_{PL}$$

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): 30MHz-1GHz: 4.86dB, 1GHz-18GHz: 5.26dB, $k=2$.

Measurement results for Set.1:

Charging Mode/Average detector

| Frequency(MHz) | Result(dB μ V/m) | G_{PL} (dB) | G_A (dB/m) | P_{Mea} (dB μ V) | Polarity |
|----------------|----------------------|---------------|--------------|-------------------------------|----------|
| 17658.000 | 46.7 | -13.0 | 41.2 | 18.5 | H |
| 17619.750 | 46.6 | -14.9 | 41.2 | 20.3 | V |
| 17718.000 | 46.5 | -13.0 | 41.2 | 18.3 | V |
| 17616.750 | 46.5 | -14.9 | 41.2 | 20.2 | H |
| 17642.250 | 46.5 | -13.0 | 41.2 | 18.3 | H |
| 17629.500 | 46.5 | -14.9 | 41.2 | 20.2 | H |

Charging Mode/Peak detector

| Frequency(MHz) | Result(dB μ V/m) | G_{PL} (dB) | G_A (dB/m) | P_{Mea} (dB μ V) | Polarity |
|----------------|----------------------|---------------|--------------|-------------------------------|----------|
| 17651.250 | 58.9 | -13.0 | 41.2 | 30.7 | H |
| 17557.500 | 58.8 | -14.9 | 41.2 | 32.5 | H |
| 17550.750 | 58.8 | -14.9 | 41.2 | 32.5 | H |
| 17579.250 | 58.5 | -14.9 | 41.2 | 32.2 | V |
| 17556.000 | 58.5 | -14.9 | 41.2 | 32.2 | V |
| 17636.250 | 58.4 | -13.0 | 41.2 | 30.2 | V |

Sample calculation: Peak detector, 17557.500MHz

$$\text{Result} = P_{\text{Mea}} (32.518 \text{dB}\mu\text{V}) + G_A (41.2 \text{dB/m}) + G_{PL} (-14.9 \text{ dB}) = 58.8 \text{dB}\mu\text{V/m}$$

Charging Mode, Set.1

15B RE 30MHz-1GHz_ESCI3

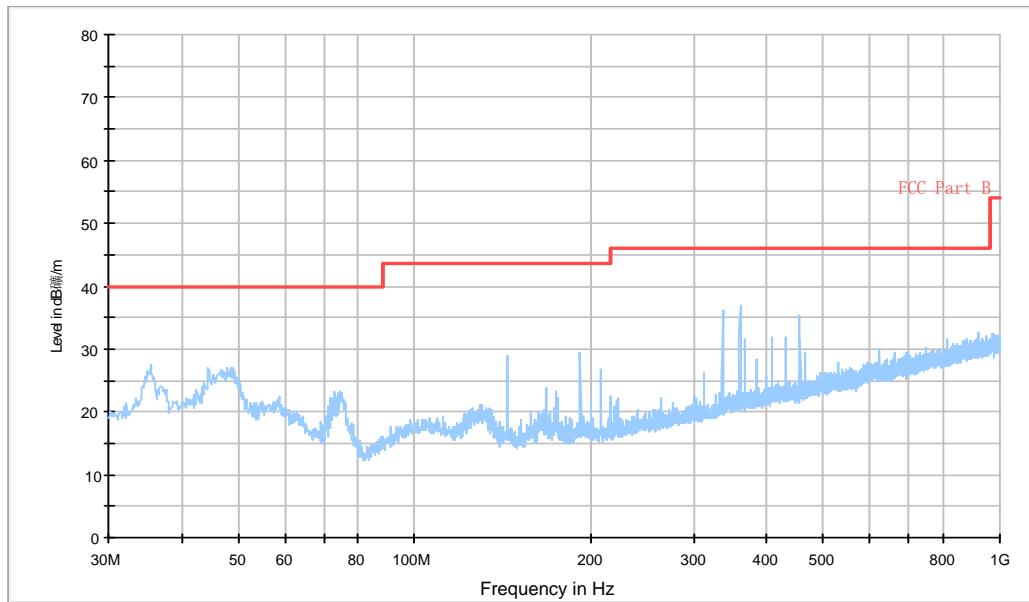


Figure A.1 Radiated Emission from 30MHz to 1GHz

15B RE - 1GHz-3GHz

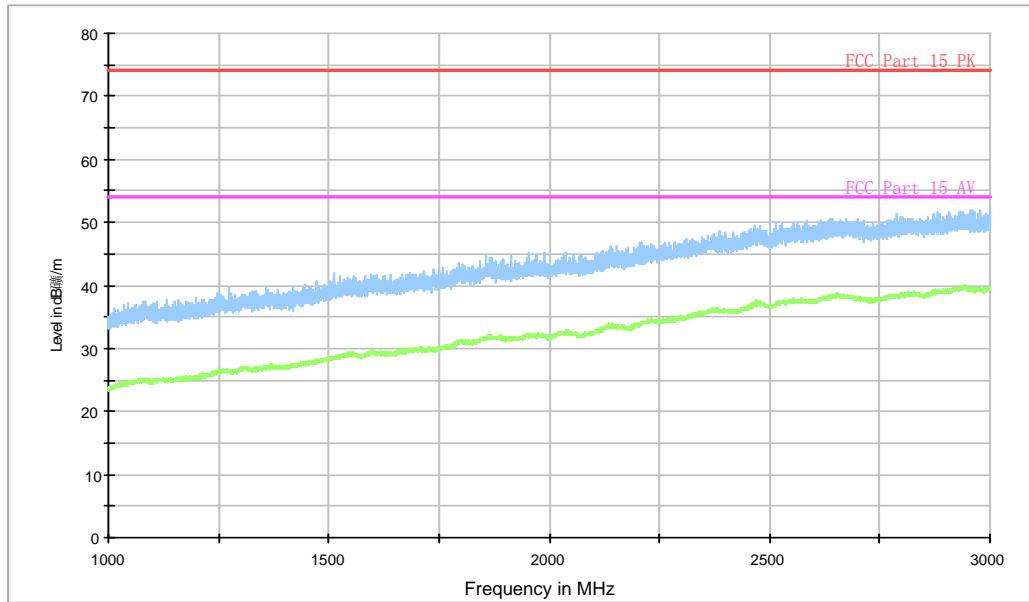


Figure A.2 Radiated Emission from 1GHz to 3GHz

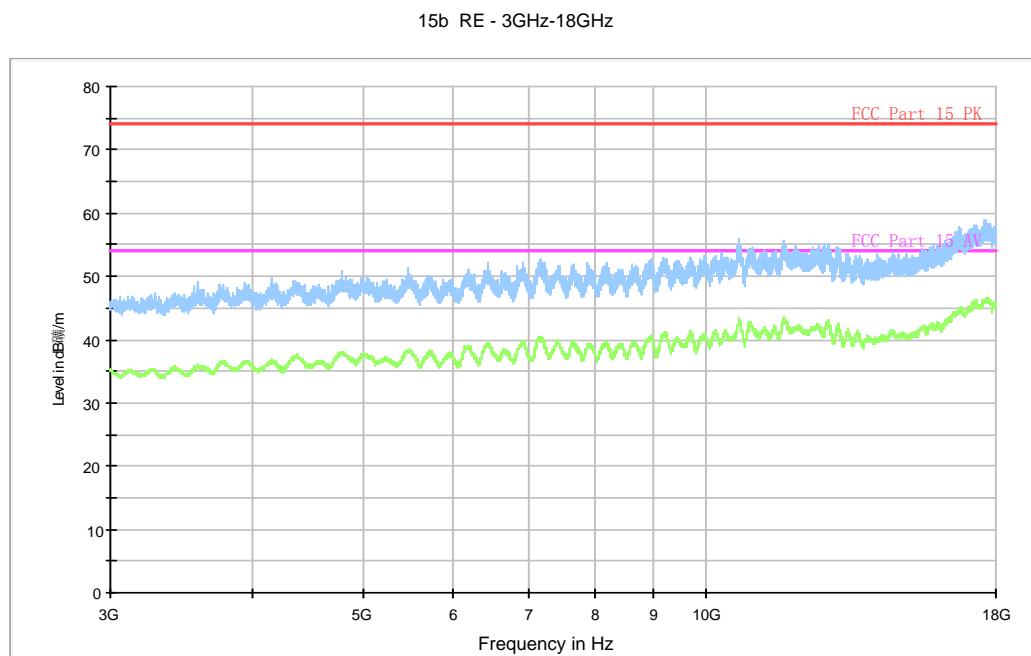


Figure A.3 Radiated Emission from 3GHz to 18GHz

A.2 Conducted Emission

Reference

FCC: CFR Part 15.107(a).

A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 7.3.

A.2.2 EUT Operating Mode

The MS is operating in the charging mode. During the test MS is connected to a charger in the case of charging mode.

A.2.3 Measurement Limit

| Frequency of emission (MHz) | Conducted limit (dB μ V) | |
|-----------------------------|------------------------------|-----------|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency

A.2.4 Test Condition in charging mode

| Voltage (V) | Frequency (Hz) |
|-------------|----------------|
| 120 | 60 |

| RBW/IF bandwidth | Sweep Time(s) |
|------------------|---------------|
| 9kHz | 1 |

A.2.5 Measurement Results

Measurement uncertainty: $U = 3.38\text{dB}$, $k=2$.

Charging Mode, Set.1

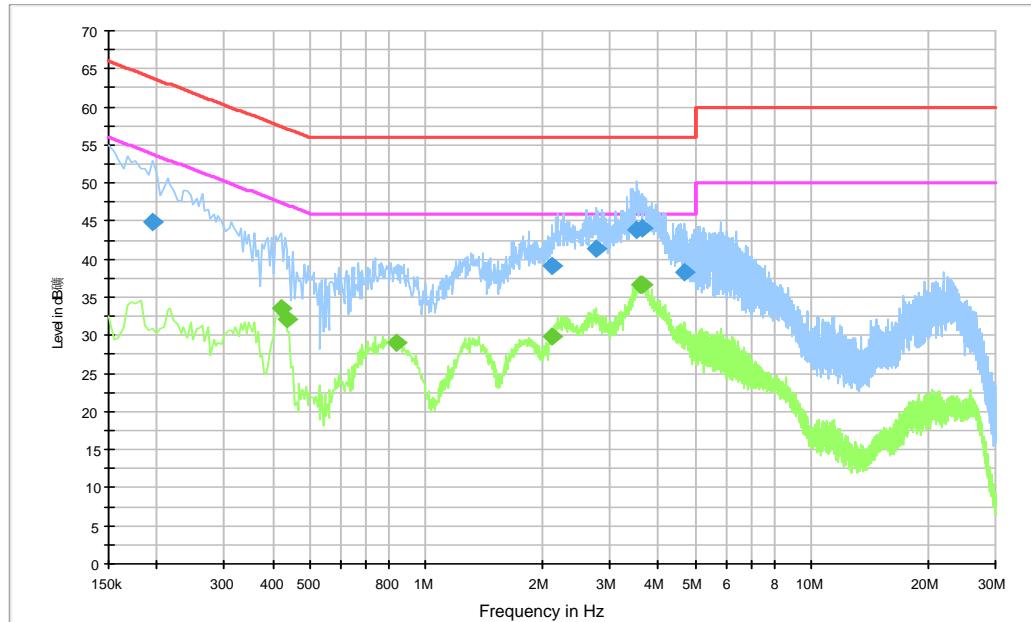


Figure A.7 Conducted Emission

Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|-----------------|-----------------|--------|------|------------|-------------|--------------|
| 0.195000 | 44.9 | 2000.0 | 9.000 | On | L1 | 10.3 | 19.0 | 63.8 |
| 2.116500 | 39.0 | 2000.0 | 9.000 | On | L1 | 10.4 | 17.0 | 56.0 |
| 2.755500 | 41.3 | 2000.0 | 9.000 | On | L1 | 10.4 | 14.7 | 56.0 |
| 3.529500 | 43.9 | 2000.0 | 9.000 | On | L1 | 10.4 | 12.1 | 56.0 |
| 3.628500 | 44.1 | 2000.0 | 9.000 | On | L1 | 10.4 | 11.9 | 56.0 |
| 4.695000 | 38.3 | 2000.0 | 9.000 | On | L1 | 10.5 | 17.7 | 56.0 |

Final Result 2

| Frequency (MHz) | CAverage (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|-----------------|-----------------|-----------------|--------|------|------------|-------------|--------------|
| 0.420000 | 33.5 | 2000.0 | 9.000 | On | N | 10.4 | 14.0 | 47.4 |
| 0.433500 | 32.2 | 2000.0 | 9.000 | On | N | 10.4 | 15.0 | 47.2 |
| 0.834000 | 29.1 | 2000.0 | 9.000 | On | N | 10.4 | 16.9 | 46.0 |
| 2.116500 | 29.9 | 2000.0 | 9.000 | On | L1 | 10.4 | 16.1 | 46.0 |
| 3.588000 | 36.6 | 2000.0 | 9.000 | On | L1 | 10.4 | 9.4 | 46.0 |
| 3.633000 | 36.6 | 2000.0 | 9.000 | On | L1 | 10.4 | 9.4 | 46.0 |

END OF REPORT