

# EMI CERTIFICATION REPORT

**Applicant:**LG Electronics MobileComm U.S.A., Inc.  
1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Date of Receipt: March 18, 2014

Date of Issue: April 11, 2014

Test Report No. HCT-E-1404-F017

HCT FRN: 0005866421

**FCC ID:****ZNFL31L**

**Rule Part(s) / Standard(s)** : FCC PART 15 Subpart B Class B  
**EUT Type** : Cellular/PCS GSM/WCDMA and LTE Phone with Bluetooth and WLAN  
**Model Name** : LGL31L  
**Additional Model Name** : LG-L31L, L31L  
**Port / Connector(s)** : USB / Earphone Port  
**Date of Test** : March 31, 2014 - April 09, 2014

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003. (See Test Report if any modifications were made for compliance)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

HCT certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

**Tested By**

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Certification Division

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## DOCUMENT HISTORY

The revision history for this document is shown in table.

| Version         | Date           | Description     |
|-----------------|----------------|-----------------|
| HCT-E-1404-F017 | April 11, 2014 | Initial Release |



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**ATTACHMENT: TEST SETUP PHOTOGRAPHS**



## 1. GENERAL INFORMATION

### 1.1 Description of EUT

Equipment Under Test is manufactured by **LG Electronics MobileComm U.S.A., Inc.**  
Its basic purpose is used for communications.

|                         |   |
|-------------------------|---|
| <b>Model</b>            | LGL31L  |
| <b>FCC ID</b>           | ZNFL31L   |
| <b>Additional Model</b> | LG-L31L, L31L   |
| <b>EUT Type</b>         | Cellular/PCS GSM/WCDMA and LTE Phone with Bluetooth and WLAN  |
| <b>TX Frequency</b>     | 824.20 MHz to 848.80 MHz (GSM 850)<br>1 850.20 MHz to 1 909.80 MHz (GSM 1 900)<br>826.40 MHz to 846.60 MHz (WCDMA 850)<br>1 852.4 MHz to 1 907.6 MHz (WCDMA 1 900)<br>1 710 MHz to 1 755 MHz (LTE B4)<br>704 MHz to 716 MHz (LTE B17) |
| <b>RX Frequency</b>     | 869.20 MHz to 893.80 MHz (GSM 850)<br>1 930.20 MHz to 1 989.80 MHz (GSM 1 900)<br>871.40 MHz to 891.60 MHz (WCDMA 850)<br>1 932.4 MHz to 1 987.6 MHz (WCDMA 1 900)<br>2 110 MHz to 2 155 MHz (LTE B4)<br>734 MHz to 746 MHz (LTE B17) |

### 1.2 Related Submittal(s) / Grant(s)

Original submittal only.



### 1.3 Test Facility

Test site is located at 74, SEOICHEON-RO, 578BEON-GIL, MAJANG-MYEON, ICHEON-SI, GYEONGGI-DO, SOUTH KOREA. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4-2003.

| Measurement Facilities                              | Reg. No.                  |
|---|---------------------------|
| Radiated Field strength measurement facility (3 m)  | 90661 (February 28, 2014) |
| Radiated Field strength measurement facility (10 m) | 90661 (February 28, 2014) |



## 1.4 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

| Device Type            | Model Name               | Manufacturer                      | FCC ID / DoC | Connected To                  |
|------------------------|--------------------------|-----------------------------------|--------------|-------------------------------|
| EUT                    | LGL31L                   | LG                                | ZNFL31L      | Notebook PC<br>Ear-phone      |
| USB cable*             | EAD62377902              | Ningbo Broad                      | -            | E.U.T<br>Notebook PC          |
| USB cable*             | EAD62377903              | KSD                               | -            | E.U.T<br>Notebook PC          |
| Ear-phone              | EAB62808211              | I-SOUND                           | -            | E.U.T                         |
| Notebook PC            | ProBook6560b             | H.P                               | DoC          | EUT<br>Notebook PC<br>adaptor |
| Notebook PC<br>adaptor | PPP009D                  | DELTA Electronics<br>(JIANGSU)LTD | -            | Notebook PC                   |
| Gateway                | MV440                    | Axesstel                          | PH7MV440     | Notebook PC,<br>Adaptor       |
| Mouse                  | Serial 2 button<br>mouse | Radio shack                       | FSUGMZE3     | Notebook PC                   |
| Adaptor                | DA-60M12                 | Yang Ming<br>Industrial           | -            | Gateway                       |
| RJ45 cable             | -                        | -                                 | -            | Notebook PC,<br>Gateway       |

**\*NOTE:** The worst-case emissions are reported.



## 1.5 Cable Description

| Product Name | Port           | Power Cord Shielded (Y/N) | I/O Cable Shielded (Y/N) | Length (m) |
|--------------|----------------|---------------------------|--------------------------|------------|
| EUT          | Micro USB      | Y                         | Y                        | (P,D)1.2   |
|              | Ear-phone      | N/A                       | N                        | (D)1.2     |
| Notebook PC  | RJ 45          | N/A                       | N                        | (D)1.5     |
|              | Serial (Mouse) | N/A                       | Y                        | (D)1.8     |
|              | DC in          | N                         | N/A                      | (P)1.8     |
| Gateway      | DC in          | N                         | N/A                      | (P)1.8     |

\* The marked "(D)" means the data cable and "(P)" means the power cable.

## 1.6 Noise Suppression Parts on Cable. (I/O Cable)

| Product Name | Port           | Ferrite Bead (Y/N) | Location | Metal Hood (Y/N) | Location        |
|--------------|----------------|--------------------|----------|------------------|-----------------|
| EUT          | Micro USB      | N                  | N/A      | Y                | Both End        |
|              | Ear-phone      | N                  | N/A      | Y                | EUT End         |
| Notebook PC  | RJ 45          | N                  | N/A      | N                | N/A             |
|              | Serial (Mouse) | N                  | N/A      | Y                | Notebook PC End |



## 2. DESCRIPTION OF TEST

### 2.1 Measurement of Conducted Emission

The test procedure was in accordance with ANSI C63.4-2003, Clause 7

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both conducted lines are measured in Quasi-Peak and Average mode, including the worst-case data points for each tested configuration.
- c. The frequency range from 150 kHz to 30 MHz was searched.

#### [ Conducted Emission Limits ]

| Frequency (MHz) | Resolution Bandwidth | Quasi-Peak(dB $\mu$ V) | Average(dB $\mu$ V) |
|-----------------|----------------------|------------------------|---------------------|
| 0.15 to 0.5     | 9 kHz                | 66 to 56*              | 56 to 46*           |
| 0.5 to 5        | 9 kHz                | 56                     | 46                  |
| 5 to 30         | 9 kHz                | 60                     | 50                  |

*\*Decreases with the logarithm of the frequency.*





## 2.2 Measurement of Radiated Emission

The test procedure was in accordance with ANSI C63.4-2003, Clause 8

- a. The EUT was placed on the top of a turn table 0.8 meters above the ground at a 3 m shield room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 m away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from 1 m to 4 m above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 m to 4 m and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to Peak and Average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- g. The antenna height scans apply for both horizontal and vertical polarizations, except that for vertical polarization, the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the lowest antenna element clears the site reference ground plane by at least 25 cm.

### [ Radiated Emission Limits ]

| Frequency (MHz) | Antenna Distance (m) | Field Strength ( $\mu V/m$ ) | Quasi-Peak (dB $\mu V/m$ ) |
|-----------------|----------------------|------------------------------|----------------------------|
| 30 to 88        | 3                    | 100                          | 40.0                       |
| 88 to 216       | 3                    | 150                          | 43.5                       |
| 216 to 960      | 3                    | 200                          | 46.0                       |
| Above 960       | 3                    | 500                          | 54.0                       |
| Frequency (MHz) | Antenna Distance (m) | Peak (dB $\mu V/m$ )         | Average (dB $\mu V/m$ )    |
| Above 1 000     | 3                    | 74                           | 54                         |

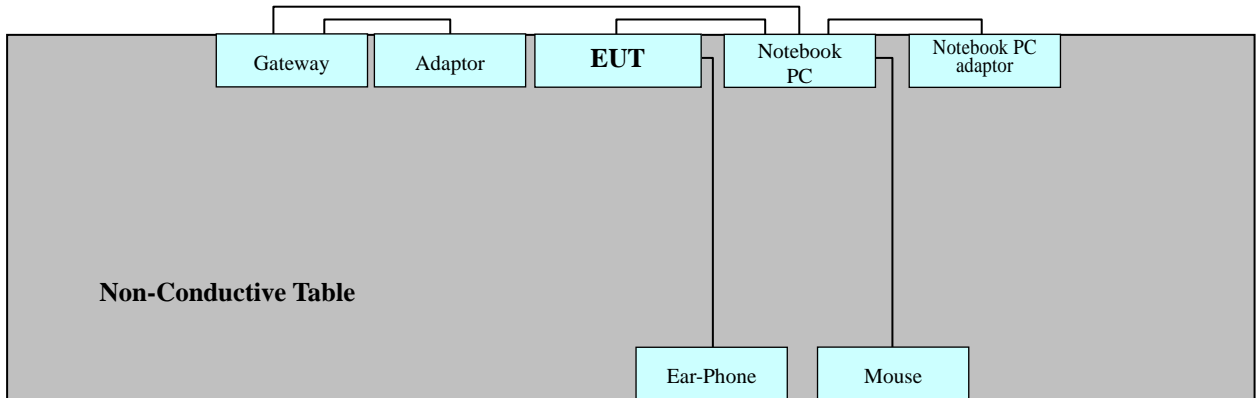


### 2.2.1 Frequency Range of Radiated Measurements

An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

| Highest frequency generated or used in the device or on which the device operates or tunes (MHz) | Upper frequency of measurement range (MHz)                                      |
|--|---|
| Below 1.705  | 30  |
| 1.705 to 108   | 1 000   |
| 108 to 500   | 2 000   |
| 500 to 1 000   | 5 000   |
| Above 1 000  | 5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower |

### 2.3 Configuration of Tested System



Power Line: 120 VAC, 60 Hz



### 3. PRELIMINARY TEST

#### 3.1 Conducted Emission Test

- It was tested Data Communication mode, after connecting all peripheral devices.

**Operation Mode:**       Data Communication mode

#### 3.2 Radiated Emission Test

- It was tested Data Communication mode, after connecting all peripheral devices.

**Operation Mode:**       Data Communication mode



## 4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

### 4.1 Conducted Emission Test

The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

|                        |   |
|------------------------|---|
| Limit Apply to         | : FCC PART 15 Subpart B Class B               |
| Detector               | : Quasi-Peak, Average (6 dB Bandwidth: 9 kHz) |
| Operation Mode         | : Data Communication mode                     |
| USB Cable Manufacturer | : Ningbo Broad                                |
|                        | ※ The worst-case emissions are reported.      |
| Temperature            | : 24.0°C                                      |
| Humidity Level         | : 33.6 %                                      |
| Test Date              | : March 31, 2014                              |

| Frequency<br>(MHz) | Corr.<br>(dB) | Conductor | Quasi-Peak      |                                |                           | Average         |                                |                           |
|--------------------|---------------|-----------|-----------------|--------------------------------|---------------------------|-----------------|--------------------------------|---------------------------|
|                    |               |           | Limit<br>(dBuV) | Measurement<br>Level<br>(dBuV) | Result<br>Level<br>(dBuV) | Limit<br>(dBuV) | Measurement<br>Level<br>(dBuV) | Result<br>Level<br>(dBuV] |
| 0.1500             | 9.7           | L1        | 66.0            | 38.1                           | 47.8                      | 56.0            | -                              | -                         |
| 0.1995             | 9.7           | L1        | 63.6            | 39.5                           | 49.2                      | 53.6            | 24.3                           | 34.0                      |
| 0.1950             | 9.7           | N         | 63.8            | 39.2                           | 48.9                      | 53.8            | 24.2                           | 33.9                      |
| 0.2085             | 9.7           | N         | 63.3            | 37.5                           | 47.2                      | 53.3            | -                              | -                         |
| 4.4550             | 10.1          | L1        | 56.0            | -                              | -                         | 46.0            | 18.1                           | 28.2                      |
| 4.5635             | 10.1          | N         | 56.0            | 25.1                           | 35.2                      | 46.0            | 18.6                           | 28.7                      |

#### ※ Calculation Formula:

1. Conductor L1 = Hot, Conductor N = Neutral
  2. Corr. = LISN Factor + Cable Loss
  3. Measurement Level (Receiver Reading) = Result Level - Corr.
  4. Result Level = Measurement Level + Corr.
- \* 'Result Level' in above table is same as the 'Quasi-Peak' and 'CAverage' of the Test Data Graph (Refer to page 13 to page 16 for details.)



- Test Data Graph

Test

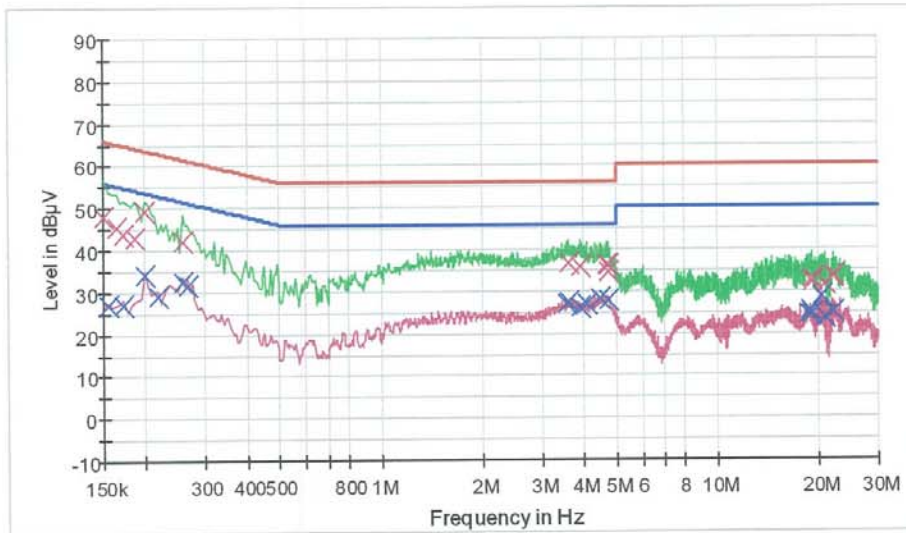
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# HCT TEST Report

## Common Information

EUT: LGL31L  
 Manufacturer: LG  
 Test Site: SHIELD ROOM  
 Operating Conditions: DATA MODE (NINGBO)  
 Operator Name:

FCC CLASS B



— FCCCLASS B\_QP     
 — FCCCLASS B\_AV     
 — Preview Result 1-PK\*  
— Preview Result 2-AVG     
 x Final Result 1-CPK     
 x Final Result 2-CAV

## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|-----------------|--------|------|------------|-------------|--------------|
| 0.150000        | 47.8             | 9.000           | Off    | L1   | 9.7        | 18.2        | 66.0         |
| 0.163500        | 45.3             | 9.000           | Off    | L1   | 9.7        | 20.0        | 65.3         |
| 0.172500        | 43.9             | 9.000           | Off    | L1   | 9.7        | 20.9        | 64.8         |
| 0.186000        | 42.8             | 9.000           | Off    | L1   | 9.7        | 21.4        | 64.2         |
| 0.199500        | 49.2             | 9.000           | Off    | L1   | 9.7        | 14.4        | 63.6         |
| 0.258000        | 42.3             | 9.000           | Off    | L1   | 9.7        | 19.2        | 61.5         |
| 3.609500        | 36.5             | 9.000           | Off    | L1   | 10.0       | 19.5        | 56.0         |
| 3.902000        | 35.6             | 9.000           | Off    | L1   | 10.1       | 20.4        | 56.0         |
| 3.911000        | 35.9             | 9.000           | Off    | L1   | 10.1       | 20.1        | 56.0         |
| 4.671500        | 36.4             | 9.000           | Off    | L1   | 10.1       | 19.6        | 56.0         |
| 4.725500        | 34.5             | 9.000           | Off    | L1   | 10.1       | 21.5        | 56.0         |
| 4.743500        | 36.1             | 9.000           | Off    | L1   | 10.1       | 19.9        | 56.0         |
| 19.031000       | 32.9             | 9.000           | Off    | L1   | 10.9       | 27.1        | 60.0         |
| 19.157000       | 31.9             | 9.000           | Off    | L1   | 10.9       | 28.1        | 60.0         |
| 20.844500       | 31.6             | 9.000           | Off    | L1   | 10.9       | 28.4        | 60.0         |
| 22.005500       | 33.5             | 9.000           | Off    | L1   | 11.0       | 26.5        | 60.0         |

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Test

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| Frequency (MHz) | QuasiPeak (dBµV) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|-----------------|--------|------|------------|-------------|--------------|
| 22.073000       | 33.2             | 9.000           | Off    | L1   | 11.0       | 26.8        | 60.0         |
| 22.217000       | 33.7             | 9.000           | Off    | L1   | 11.0       | 26.3        | 60.0         |

**Final Result 2**

| Frequency (MHz) | CAverage (dBµV) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|-----------------|-----------------|--------|------|------------|-------------|--------------|
| 0.154500        | 27.0            | 9.000           | Off    | L1   | 9.7        | 28.8        | 55.8         |
| 0.172500        | 27.0            | 9.000           | Off    | L1   | 9.7        | 27.8        | 54.8         |
| 0.199500        | 34.0            | 9.000           | Off    | L1   | 9.7        | 19.6        | 53.6         |
| 0.217500        | 29.1            | 9.000           | Off    | L1   | 9.7        | 23.8        | 52.9         |
| 0.258000        | 32.3            | 9.000           | Off    | L1   | 9.7        | 19.2        | 51.5         |
| 0.267000        | 31.5            | 9.000           | Off    | L1   | 9.7        | 19.8        | 51.2         |
| 3.578000        | 27.1            | 9.000           | Off    | L1   | 10.0       | 18.9        | 46.0         |
| 3.609500        | 27.6            | 9.000           | Off    | L1   | 10.0       | 18.4        | 46.0         |
| 3.902000        | 26.2            | 9.000           | Off    | L1   | 10.1       | 19.8        | 46.0         |
| 4.104500        | 27.0            | 9.000           | Off    | L1   | 10.1       | 19.0        | 46.0         |
| 4.455500        | 28.2            | 9.000           | Off    | L1   | 10.1       | 17.8        | 46.0         |
| 4.725500        | 27.7            | 9.000           | Off    | L1   | 10.1       | 18.3        | 46.0         |
| 18.612500       | 24.6            | 9.000           | Off    | L1   | 10.8       | 25.4        | 50.0         |
| 18.824000       | 25.2            | 9.000           | Off    | L1   | 10.8       | 24.8        | 50.0         |
| 19.157000       | 24.6            | 9.000           | Off    | L1   | 10.9       | 25.4        | 50.0         |
| 20.381000       | 28.8            | 9.000           | Off    | L1   | 10.9       | 21.2        | 50.0         |
| 20.844500       | 23.7            | 9.000           | Off    | L1   | 10.9       | 26.3        | 50.0         |
| 22.005500       | 25.1            | 9.000           | Off    | L1   | 11.0       | 24.9        | 50.0         |

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Test

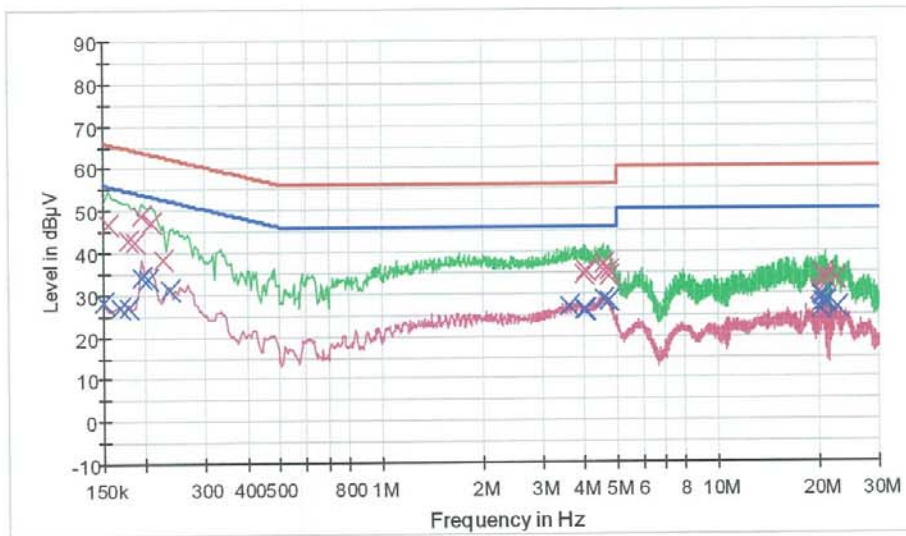
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# HCT TEST Report

## Common Information

EUT: LGL31L  
 Manufacturer: LG  
 Test Site: SHIELD ROOM  
 Operating Conditions: DATA MODE (NINGBO)  
 Operator Name:

FCC CLASS B



— FCCCLASS\_B\_CP     
 — FCCCLASS\_B\_AV     
 — Preview Result 1-PK  
— Preview Result 2-AVG     
 X Final Result 1-CPK     
 X Final Result 2-CAV

## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|-----------------|--------|------|------------|-------------|--------------|
| 0.154500        | 46.7             | 9.000           | Off    | N    | 9.7        | 19.1        | 65.8         |
| 0.177000        | 43.1             | 9.000           | Off    | N    | 9.7        | 21.5        | 64.6         |
| 0.186000        | 42.5             | 9.000           | Off    | N    | 9.7        | 21.7        | 64.2         |
| 0.195000        | 48.9             | 9.000           | Off    | N    | 9.7        | 14.9        | 63.8         |
| 0.208500        | 47.2             | 9.000           | Off    | N    | 9.7        | 16.1        | 63.3         |
| 0.226500        | 38.2             | 9.000           | Off    | N    | 9.7        | 24.4        | 62.6         |
| 4.005500        | 34.6             | 9.000           | Off    | N    | 10.1       | 21.4        | 56.0         |
| 4.041500        | 35.4             | 9.000           | Off    | N    | 10.1       | 20.6        | 56.0         |
| 4.563500        | 35.2             | 9.000           | Off    | N    | 10.1       | 20.8        | 56.0         |
| 4.599500        | 37.0             | 9.000           | Off    | N    | 10.1       | 19.0        | 56.0         |
| 4.716500        | 34.2             | 9.000           | Off    | N    | 10.1       | 21.8        | 56.0         |
| 4.743500        | 35.5             | 9.000           | Off    | N    | 10.1       | 20.5        | 56.0         |
| 20.021000       | 30.5             | 9.000           | Off    | N    | 10.8       | 29.5        | 60.0         |
| 20.309000       | 34.4             | 9.000           | Off    | N    | 10.8       | 25.6        | 60.0         |
| 20.390000       | 34.4             | 9.000           | Off    | N    | 10.8       | 25.6        | 60.0         |
| 20.736500       | 33.5             | 9.000           | Off    | N    | 10.8       | 26.5        | 60.0         |

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Test

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| Frequency (MHz) | QuasiPeak (dBμV) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|-----------------|--------|------|------------|-------------|--------------|
| 20.813000       | 33.3             | 9.000           | Off    | N    | 10.8       | 26.7        | 60.0         |
| 22.361000       | 33.3             | 9.000           | Off    | N    | 10.9       | 26.7        | 60.0         |

### Final Result 2

| Frequency (MHz) | CAverage (dBμV) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|-----------------|--------|------|------------|-------------|--------------|
| 0.150000        | 28.1            | 9.000           | Off    | N    | 9.7        | 27.9        | 56.0         |
| 0.168000        | 27.1            | 9.000           | Off    | N    | 9.7        | 28.0        | 55.1         |
| 0.177000        | 27.0            | 9.000           | Off    | N    | 9.7        | 27.6        | 54.6         |
| 0.195000        | 33.9            | 9.000           | Off    | N    | 9.7        | 19.9        | 53.8         |
| 0.204000        | 33.7            | 9.000           | Off    | N    | 9.7        | 19.7        | 53.4         |
| 0.235500        | 31.3            | 9.000           | Off    | N    | 9.7        | 21.0        | 52.3         |
| 3.609500        | 27.2            | 9.000           | Off    | N    | 10.0       | 18.8        | 46.0         |
| 4.005500        | 26.2            | 9.000           | Off    | N    | 10.1       | 19.8        | 46.0         |
| 4.041500        | 26.3            | 9.000           | Off    | N    | 10.1       | 19.7        | 46.0         |
| 4.563500        | 28.7            | 9.000           | Off    | N    | 10.1       | 17.3        | 46.0         |
| 4.716500        | 28.1            | 9.000           | Off    | N    | 10.1       | 17.9        | 46.0         |
| 4.743500        | 28.2            | 9.000           | Off    | N    | 10.1       | 17.8        | 46.0         |
| 20.133500       | 26.2            | 9.000           | Off    | N    | 10.8       | 23.8        | 50.0         |
| 20.259500       | 29.4            | 9.000           | Off    | N    | 10.8       | 20.6        | 50.0         |
| 20.318000       | 28.9            | 9.000           | Off    | N    | 10.8       | 21.1        | 50.0         |
| 20.394500       | 27.7            | 9.000           | Off    | N    | 10.8       | 22.3        | 50.0         |
| 20.808500       | 28.0            | 9.000           | Off    | N    | 10.8       | 22.0        | 50.0         |
| 22.577000       | 26.5            | 9.000           | Off    | N    | 10.9       | 23.5        | 50.0         |

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4:33:56





## 4.2 Radiated Emission Test

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

### -For Measurement Below 1 GHz

|                        |  |
|------------------------|--|
| Limit Apply to         | : FCC PART 15 Subpart B Class B                            |
| Detector               | : Quasi-Peak   |
| 6 dB Bandwidth:        | : RBW 120 kHz, VBW 300 kHz                                 |
| Operation Mode         | : Data Communication mode                                  |
| USB Cable Manufacturer | : Ningbo Broad<br>* The worst-case emissions are reported. |
| Temperature            | : 21.4°C   |
| Humidity Level         | : 27.0 %   |
| Test Date              | : April 07, 2014   |

| Frequency (MHz) | Reading (dBuV) | Polarity (H/V) | Antenna Height (m) | Correction Factor |            | Limit (dBuV/m) | Total Level (dBuV/m) | Margin (dB) |
|-----------------|----------------|----------------|--------------------|-------------------|------------|----------------|----------------------|-------------|
|                 |                |                |                    | Antenna (dB/m)    | Cable (dB) |                |                      |             |
| 125.0           | 17.1           | H              | 1.0                | 12.0              | 3.9        | 43.5           | 33.0                 | 10.5        |
| 200.0           | 18.0           | V              | 1.5                | 9.8               | 4.2        | 43.5           | 32.0                 | 11.5        |
| 375.0           | 20.9           | H              | 1.3                | 15.1              | 4.8        | 46.0           | 40.8                 | 5.2         |
| 625.0           | 13.7           | H              | 1.0                | 20.0              | 5.4        | 46.0           | 39.1                 | 6.9         |

#### \* Calculation Formula:

1. Polarity H = Horizontal, Polarity V = Vertical
2. Reading (Receiver Reading) = Total Level – Correction Factor
3. Margin = Limit - Total Level
4. Total Level = Quasi-Peak



## -For Measurement Above 1 GHz

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Peak mode: Peak (RBW: 1 MHz, VBW: 3 MHz)  
Average mode: Peak (RBW: 1 MHz, VBW: 10 Hz)

Operation Mode : Data Communication mode

USB Cable Manufacturer : Ningbo Broad  
※ The worst-case emissions are reported.

Temperature : 20.5°C

Humidity Level : 30.1 %

Test Date : April 09, 2014

| Frequency<br>(GHz) | Polarity<br>(H/V) | Antenna<br>Height<br>(m) | Peak                             |                         |                | Average                          |                         |                |
|--------------------|-------------------|--------------------------|----------------------------------|-------------------------|----------------|----------------------------------|-------------------------|----------------|
|                    |                   |                          | Total<br>Level<br>(dB $\mu$ V/m) | Limit<br>(dB $\mu$ V/m) | Margin<br>(dB) | Total<br>Level<br>(dB $\mu$ V/m) | Limit<br>(dB $\mu$ V/m) | Margin<br>(dB) |
| 1.3304             | V                 | 1.0                      | 51.2                             | 74                      | 22.8           | 28.1                             | 54                      | 25.9           |
| 1.9927             | V                 | 1.0                      | 57.3                             | 74                      | 16.7           | 29.6                             | 54                      | 24.4           |
| 2.6628             | V                 | 1.0                      | 53.4                             | 74                      | 20.6           | 31.5                             | 54                      | 22.5           |

### ※ Calculation Formula:

1. Polarity H = Horizontal, Polarity V = Vertical
2. Margin = Limit - Total Level



## 5. LIST OF TEST EQUIPMENT

| <u>Type</u>   | <u>Manufacturer</u> | <u>Model Name</u> | <u>Serial Number</u> | <u>Calibration Cycle</u> | <u>Next CAL Date</u> |
|---|---------------------|-------------------|----------------------|--------------------------|----------------------|
| <b><u>Conducted Emission</u></b>                      |                     |                   |                      |                          |                      |
| <input checked="" type="checkbox"/> EMI Test Receiver | Rohde & Schwarz     | ESCI              | 100584               | 1 year                   | 2015.01.24           |
| <input checked="" type="checkbox"/> LISN              | EMCO                | 3816/2SH          | 9706-1070            | 1 year                   | 2014.04.26           |
| <input checked="" type="checkbox"/> LISN              | Rohde & Schwarz     | ENV216            | 100073               | 1 year                   | 2015.01.29           |
| <input type="checkbox"/> EMI Test Receiver            | Rohde & Schwarz     | ESCI              | 100033               | 1 year                   | 2014.06.23           |
| <input type="checkbox"/> LISN                         | Rohde & Schwarz     | ESH3-Z5           | 100282               | 1 year                   | 2014.07.03           |
| <input type="checkbox"/> Attenuator                   | Rohde & Schwarz     | ESH3-Z2           | 357.8810.352         | 1 year                   | 2014.07.03           |
| <input checked="" type="checkbox"/> Software          | Rohde & Schwarz     | EMC32             | -                    | -                        | -                    |
| <b><u>Radiated Emission</u></b>                       |                     |                   |                      |                          |                      |
| <b>-For measurement below 1 GHz</b>                   |                     |                   |                      |                          |                      |
| <input checked="" type="checkbox"/> EMI Test Receiver | Rohde & Schwarz     | ESI40             | 831564103            | 1 year                   | 2015.04.07           |
| <input checked="" type="checkbox"/> Trilog Antenna    | Schwarzbeck         | VULB9160          | 3301                 | 2 year                   | 2014.12.17           |
| <input checked="" type="checkbox"/> Antenna master    | HD GmbH             | MA240             | 240/520              | N/A                      | -                    |
| <input checked="" type="checkbox"/> Turn Table        | HD GmbH             | 2090              | 9702/1224            | N/A                      | -                    |
| <input type="checkbox"/> EMI Test Receiver            | Rohde & Schwarz     | ESU 26            | 100241               | 1 year                   | 2014.07.01           |
| <input type="checkbox"/> Trilog Antenna               | Schwarzbeck         | VULB9168          | 185                  | 2 year                   | 2015.04.16           |
| <input type="checkbox"/> Antenna master               | INNCO Systems       | MA4000-EP         | MA4000/283           | N/A                      | -                    |
| <input type="checkbox"/> Turn Table                   | INNCO Systems       | DT3000-3T         | DT3000/69            | N/A                      | -                    |
| <input checked="" type="checkbox"/> Software          | Rohde & Schwarz     | EMC32             | -                    | -                        | -                    |
| <b>-For measurement above 1 GHz</b>                   |                     |                   |                      |                          |                      |
| <input checked="" type="checkbox"/> EMI Test Receiver | Rohde & Schwarz     | ESI40             | 831564103            | 1 year                   | 2015.04.07           |
| <input checked="" type="checkbox"/> Antenna master    | HD GmbH             | MA240             | 240/520              | N/A                      | -                    |
| <input checked="" type="checkbox"/> Turn Table        | HD GmbH             | 2090              | 9702/1224            | N/A                      | -                    |
| <input checked="" type="checkbox"/> Power Amplifier   | CERNEX              | CBLU1183540       | 21691                | 1 year                   | 2014.07.24           |
| <input type="checkbox"/> Power Amplifier              | CERNEX              | CBLU1183540       | 21690                | 1 year                   | 2014.07.12           |
| <input type="checkbox"/> Power Amplifier              | CERNEX              | CBLU1183540       | 22964                | 1 year                   | 2014.07.24           |
| <input checked="" type="checkbox"/> Horn Antenna      | Schwarzbeck         | BBHA 9120D        | 296                  | 2 year                   | 2014.12.13           |
| <input type="checkbox"/> EMI Test Receiver            | Rohde & Schwarz     | ESU 26            | 100241               | 1 year                   | 2014.07.01           |
| <input type="checkbox"/> Antenna master               | INNCO Systems       | MA4000-EP         | MA4000/283           | N/A                      | -                    |
| <input type="checkbox"/> Turn Table                   | INNCO Systems       | DT3000-3T         | DT3000/69            | N/A                      | -                    |
| <input type="checkbox"/> Horn Antenna                 | Schwarzbeck         | BBHA 9170         | BBHA9170124          | 2 year                   | 2014.10.30           |
| <input type="checkbox"/> Power Amplifier              | CERNEX              | CBL18265035       | 22966                | 1 year                   | 2014.07.24           |
| <input type="checkbox"/> Power Amplifier              | CERNEX              | CBL26405040       | 19660                | 1 year                   | 2014.04.16           |
| <input checked="" type="checkbox"/> Software          | Rohde & Schwarz     | EMC32             | -                    | -                        | -                    |



## 6. CONCLUSION

The data collected shows that the **EUT type: Multi-Band Cellular/PCS GSM/WCDMA and LTE Phone with Bluetooth and WLAN, FCC ID: ZNFL31L, Model: LGL31L** complies with §15.107 and §15.109 of the FCC rules.