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## FCC Test Report

**FCC ID : BEJA190A**

**Applicant : LG Electronics Inc.**

**Model Number : LG-A190a**

**Additional Model(s) : A190a, LGA190a**

**Manufacturer : LG Electronics Inc.**

**ANSI C 63.4:2003**

**Test Standard : FCC Part 15 Subpart B**

**(Type of Device : Class B Computing Device Peripheral (JBP))**

**Date of Tests : February 23 ~ 26, 2011**

**Date of Issue : March 24, 2011**

**Tested by : M.J.SONG/Manager**

**Reviewed by : Y.K.SHIN/Manager**

A handwritten signature in black ink, appearing to be "M.J. Song", written over a horizontal line.

A handwritten signature in black ink, appearing to be "Y.K. Shin", written over a horizontal line.

**This test result only responds to the tested sample.**

**It is not allowed to copy this report even partly without the allowance of the test laboratory.**

## **CONTENTS**

|                                                |          |
|------------------------------------------------|----------|
| <b>1. General Remarks .....</b>                | <b>3</b> |
| <b>2. Test Laboratory .....</b>                | <b>3</b> |
| <b>3. General Information of EUT .....</b>     | <b>4</b> |
| 3.1 Product Description.....                   | 4        |
| 3.2 Product Information.....                   | 4        |
| <b>4. Test Summary .....</b>                   | <b>5</b> |
| 4.1 Summary of tests .....                     | 5        |
| <b>5. Test Set-up and operation mode .....</b> | <b>6</b> |
| 5.1 Principle of Configuration Selection ..... | 6        |
| 5.2 Test Operation Mode.....                   | 6        |
| 5.3 Support Equipment Used .....               | 6        |
| <b>6. Test Results : Emission.....</b>         | <b>7</b> |
| 6.1 Conducted Emission .....                   | 7        |
| 6.2 Radiated Emission .....                    | 11       |

## 1. General Remarks

This Report describes the emission characteristics of the tested product.

If the product will be used with additional equipment other than those mentioned in this report or if the tested product will be used against the manufacture's specifications, the compliance with the relevant standards for the system has to be ensured.

## 2. Test Laboratory

Digital EMC Co., Ltd. has been accredited / filed / authorized by the agencies listed in the following table;

| Certificate   | Nation  | Agency | Code                               | Mark                          |
|---------------|---------|--------|------------------------------------|-------------------------------|
| Accreditation | Korea   | KOLAS  | 393                                | ISO/IEC 17025                 |
| Site Filing   | USA     | FCC    | 101842                             | Test Facility list & NSA Data |
|               | Japan   | VCCI   | C-1427<br>R-1364, R-3385<br>T-1442 | Test Facility list & NSA Data |
| Certification | Korea   | KCC    | KR0034                             | Test Facility list & NSA Data |
|               | Germany | TUV    | ROK1028C                           | ISO/IEC 17025                 |

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the "General requirements for the competents of calibration and testing laboratory".

### DIGITAL EMC CO., LTD.

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### 3. General Information of EUT

#### 3.1 Product Description

Equipment Under Test (E.U.T) is Cellular/PCS GSM Phone

Model: LG-A190a manufactured by LG Electronics Inc. Its basic purpose is used for communications.

#### 3.2 Product Information

|                           |                                                                             |
|---------------------------|-----------------------------------------------------------------------------|
| Model No.                 | LG-A190a                                                                    |
| Add Model No.             | A190a, LGA190a                                                              |
| EUT Type                  | Cellular/PCS GSM Phone                                                      |
| Serial No                 | NONE                                                                        |
| FCC ID                    | BEJA190A                                                                    |
| Type of Sample Tested     | Pre-Production                                                              |
| High Frequency            | 26MHz                                                                       |
| Supplied Power for Test   | AC120V, 60Hz                                                                |
| Applicant                 | LG Electronics Inc.<br>60-39, Gasan-dong, Gumchon-gu, Seoul, 153-023, Korea |
| TX Frequency              | 824.20 MHz to 848.80 MHz (GSM850)<br>1850.20 MHz to 1909.80 MHz (GSM1900)   |
| RX Frequency              | 869.20 MHz to 893.80 MHz (GSM850)<br>1930.20 MHz to 1989.80 MHz (GSM1900)   |
| Date of Receipt of Sample | 2011-02-21                                                                  |

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

**Original submittal only.**

## 4. Test Summary

### 4.1 Summary of tests

The applied standards to evaluate the compliance of requirements is 47CFR Part 15, Subpart B and the measurement procedures specified in ANSI C63.4 are performed.

| Test Items                                                             | Applied Standards     | Status |
|------------------------------------------------------------------------|-----------------------|--------|
| <b>Emission</b>                                                        |                       |        |
| Conducted Emission                                                     | FCC Part 15 Subpart B | C      |
| Radiated Emission                                                      | FCC Part 15 Subpart B | C      |
| Note 1: C=Conform   NC=Not Conform   NT=Not Tested   NA=Not Applicable |                       |        |

## 5. Test Set-up and operation mode

### 5.1 Principle of Configuration Selection

**Emission** : The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

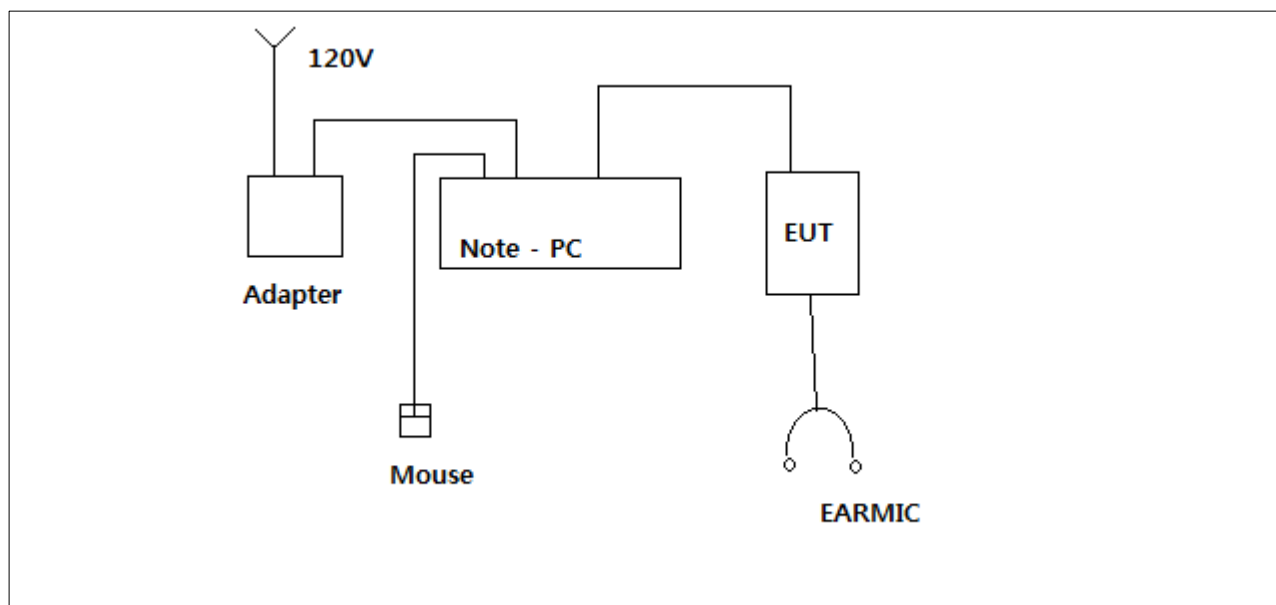
### 5.2 Test Operation Mode

- PC link mode(The measurement was made of the maximized by: Write/Delete the “H” pattern mode; data exchange speed; moving the cable)

### 5.3 Support Equipment Used

| Unit    | Model No. | Serial No.   | Manufacturer              | CABLE        |            |        | Backshell | FCC ID |
|---------|-----------|--------------|---------------------------|--------------|------------|--------|-----------|--------|
|         |           |              |                           | Connect type | Length (m) | shield |           |        |
| NOTE PC | LGX14     | F022040      | LG                        | USB          | 1.0        | Shield | Plastic   | DOC    |
|         |           |              |                           | DC POWER     | 1.6        | Shield | Plastic   |        |
|         |           |              |                           | USB          | 1.4        | Shield | Plastic   |        |
| ADAPTER | ADP-40PH  | 6T1094       | DELTA ELECTRONICS,INC.    | AC POWER     | 1.2        | Shield | Plastic   | -      |
| MOUSE   | OMS3CB    | OMS3CBGGD RT | SAMSUNG ELECTRO-MECHANICS | USB          | 1.4        | Shield | Plastic   | DOC    |
| EarMic  | N/A       | N/A          | LG                        | Stereo       | 1.2        | Shield | Plastic   | DOC    |

(Configuration of Tested System)



## 6. Test Results : Emission

### 6.1 Conducted Emission

#### **RESULT : COMPLY**

#### 6.1.1 Measurement Procedure

In the range of 0.15MHz to 30MHz, the conducted emission was measured and set-up was made accordance with **ANSI C63.4:2003**.

If the EUT is table top equipment, it was placed on a wooden table with a height of 0.8m above the reference ground plane and 0.4m from the conducting wall of the shielded room.

Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15m above the reference ground plane.

Connect the EUT's power source lines to the appropriate power mains / peripherals through the LISN. All the other peripherals are connected to the 2<sup>nd</sup> LISN, if any.

Unused measuring port of the LISN was resistively terminated by 50 ohm terminator.

The measuring port of the LISN for EUT was connected to spectrum analyzer.

Using TOYO conducted emission test software, the emissions were scanned from 150KHz to 30MHz with peak detector mode.

After scanning over the frequency range, suspected emissions were selected to perform final measurement. When performing final measurement, the receiver was used which has Quasi-Peak detector and Average detector.

By varying the configuration of the test sample and the cable routing it was attempted to maximize the emission.

For further description of the configuration refer to the picture of the test set-up.

#### 6.1.2 List of Test and Measurement Instruments

| Name of Instrument        | Model No. | Serial No. | Manufacturer | Cal. Date  | Next Cal. Date |
|---------------------------|-----------|------------|--------------|------------|----------------|
| Spectrum Analyzer         | 8594E     | 3710A03993 | H.P          | 2011.02.16 | 2012.02.16     |
| RFI/Field intensity Meter | KNM-2402  | 4N-170-3   | KYORITSU     | 2010.07.02 | 2011.07.02     |
| LISN                      | KNW-407   | 8-317-8    | KYORITSU     | 2011.01.11 | 2012.01.12     |
| LISN                      | KNW-242   | 8-654-15   | KYORITSU     | 2010.07.02 | 2011.07.02     |
| 50 ohm Terminator         | CT-01     | N/A        | TME          | 2011.01.11 | 2012.01.11     |

### 6.1.3 Limit for Conducted Emission

#### (1) Conducted Emission at mains ports of class A

| Frequency range<br>(MHz)                                        | Limits dB(μV) |         |
|-----------------------------------------------------------------|---------------|---------|
|                                                                 | Quasi-peak    | Average |
| 0.15 to 0.50                                                    | 79            | 66      |
| 0.50 to 30                                                      | 73            | 60      |
| Note The lower limit shall apply at the transition frequencies. |               |         |

#### (2) Conducted Emission at mains ports of class B

| Frequency range<br>(MHz)                                                                                | Limits dB(μV) |          |
|---------------------------------------------------------------------------------------------------------|---------------|----------|
|                                                                                                         | Quasi-peak    | Average  |
| 0.15 to 0.50                                                                                            | 66 to 56      | 56 to 46 |
| 0.50 to 5                                                                                               | 56            | 46       |
| 5 to 30                                                                                                 | 60            | 50       |
| Note 1 The lower limit shall apply at the transition frequencies.                                       |               |          |
| Note 2 The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz. |               |          |

### 6.1.4 Test Result

|                     |                   |
|---------------------|-------------------|
| Test date           | February 23, 2011 |
| Ambient Temperature | 21 °C             |
| Relative Humidity   | 31 % R.H.         |

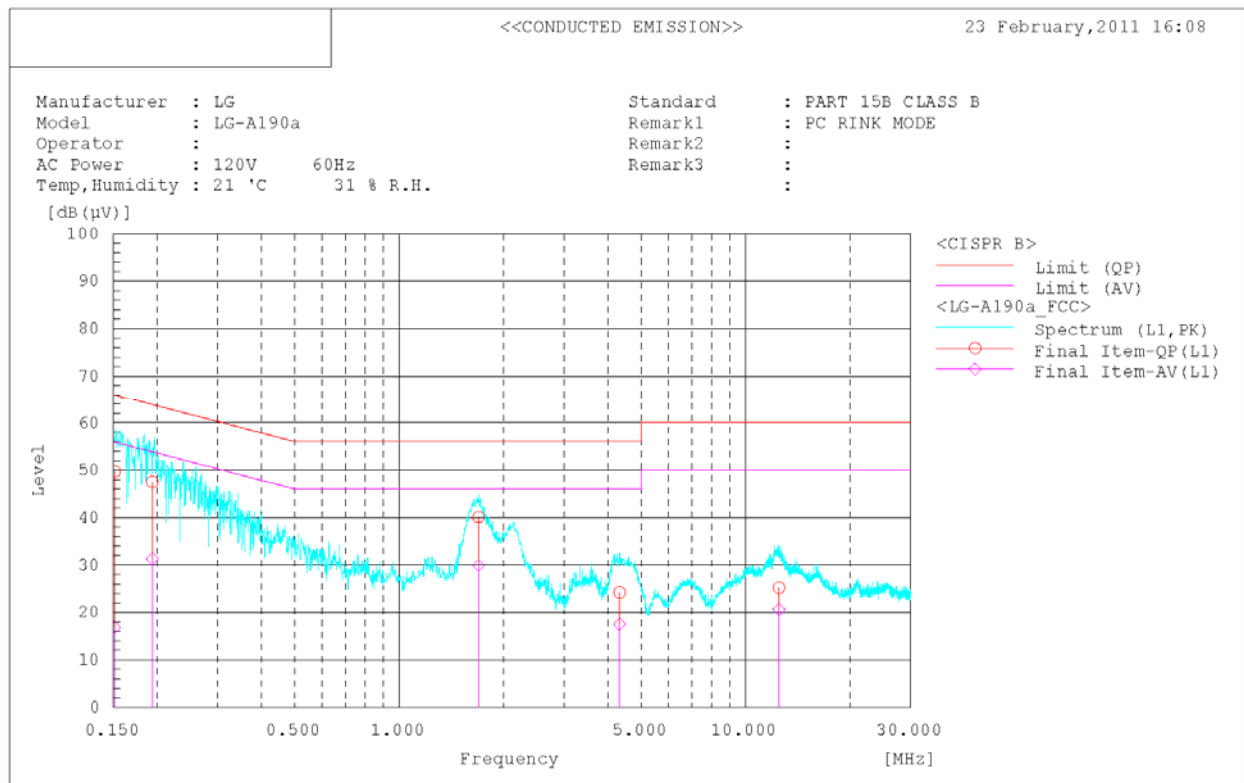
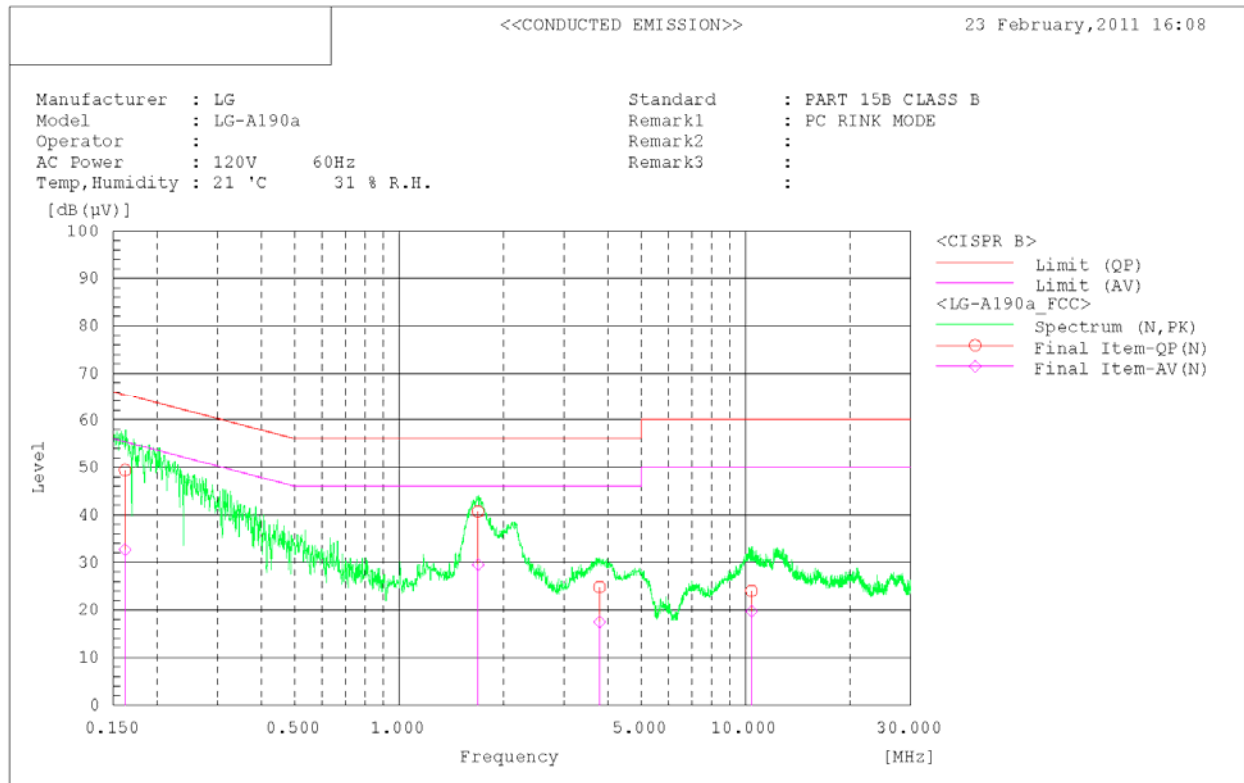
Result : For the measurement data, see next page.

- Note) 1. Emission Level = Reading Value + Correction Factor.  
2. Correction Factor = Cable Loss + Insertion Loss of LISN  
3. Margin = Limit - Emission level  
4. Passed by 15.3 dB

| Power Line Conducted Emissions |                     |           | FCC PART 15b Class B |              |             |
|--------------------------------|---------------------|-----------|----------------------|--------------|-------------|
| Frequency<br>(MHz)             | Amplitude<br>(dBμV) | Conductor | Detector             | Limit (dBμV) | Margin (dB) |
| 1,690                          | 40.7                | N         | Quasi-Peak           | 56.0         | 15.3        |
| 1,696                          | 40.1                | L1        | Quasi-Peak           | 56.0         | 15.9        |



# Test Result



```

*****
<<CONDUCTED EMISSION>>
23 February,2011 16:08

Standard      : PART 15B CLASS B
Manufacturer  : LG
Model         : LG-A190a
Operator      :
AC Power      : 120V      60Hz
Temp, Humidity : 21 °C      31 % R.H.
Remark1       : PC RINK MODE
Remark2       :
Remark3       :
*****
Final Result

--- N Phase ---
No.  Frequency  Reading  Reading  c.f  Result  Result  Limit  Limit  Margin  Margin  Remark
      [MHz]      [dB(μV)]  [dB(μV)]  [dB]  [dB(μV)] [dB(μV)] [dB(μV)] [dB(μV)] [dB]  [dB]
1      0.162      49.3      32.6      0.1  49.4      32.7      65.4      55.4      16.0      22.7
2      1.690      40.5      29.3      0.2  40.7      29.5      56.0      46.0      15.3      16.5
3      3.792      24.5      17.2      0.3  24.8      17.5      56.0      46.0      31.2      28.5
4     10.403      23.4      19.1      0.6  24.0      19.7      60.0      50.0      36.0      30.3

--- L1 Phase ---
No.  Frequency  Reading  Reading  c.f  Result  Result  Limit  Limit  Margin  Margin  Remark
      [MHz]      [dB(μV)]  [dB(μV)]  [dB]  [dB(μV)] [dB(μV)] [dB(μV)] [dB(μV)] [dB]  [dB]
1      0.151      49.4      16.6      0.3  49.7      16.9      65.9      55.9      16.2      39.0
2      0.194      47.2      31.0      0.3  47.5      31.3      63.9      53.9      16.4      22.6
3      1.696      39.8      29.6      0.3  40.1      29.9      56.0      46.0      15.9      16.1
4      4.331      23.7      17.0      0.5  24.2      17.5      56.0      46.0      31.8      28.5
5     12.487      24.4      19.8      0.8  25.2      20.6      60.0      50.0      34.8      29.4

```

## 6.2 Radiated Emission

### **RESULT : COMPLY**

#### 6.2.1 Measurement Procedure

The radiated emission was measured and set-up was made accordance with **ANSI C63.4:2003**.

If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8m above the reference ground plane and 3m away from the interference receiving antenna in the **10m semi-anechoic chamber**.

Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15m above the reference ground plane.

Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4m above the reference ground plane continuously to determine associated with higher emission levels and record them.

The measurement was made in both the vertical and horizontal polarization, and the maximum value is presented in the report.

For below 1GHz frequency range, Quasi-Peak detector with 120kHz RBW was used.

Also Peak and Average detector with 1MHz RBW were used for above 1GHz frequency range.

For further description of the configuration refer to the picture of the test set-up.

#### 6.2.2 List of Test and Measurement Instruments

| Radiated Emission (10m Chamber) |                  |            |              |            |                |
|---------------------------------|------------------|------------|--------------|------------|----------------|
| Name of Instrument              | Model No.        | Serial No. | Manufacturer | Cal. Date  | Next Cal. Date |
| EMI Test Receiver               | ESU              | 100014     | R&S          | 2011.01.20 | 2012.01.20     |
| Bilog Antenna                   | CBL6112B         | 2737       | SCHAFFNER    | 2010.07.14 | 2011.07.14     |
| Horn Antenna                    | BBHA9120A        | 322        | SCHWARZBECK  | 2010.04.13 | 2011.04.13     |
| Amplifier(22dB)                 | 8447E            | 2945A02865 | H/P          | 2011.01.11 | 2012.01.11     |
| Low Noise Preamplifier          | MLA-00108-B02-36 | 1518831    | TSJ          | 2011.01.11 | 2012.01.11     |
| Controller                      | 5905A            | N/A        | TOKIN        | -          | -              |
| ANT.master                      | N/A              | N/A        | TOKIN        | -          | -              |

#### 6.2.3 Limit of Radiated Emission

- The test frequency range of Radiated Emission measurements are listed below.

| Highest frequency generated or used in the device or on which the device operates or tunes (MHz) | Upper frequency of measurement range (MHz)                                     |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Below 108                                                                                        | 1000                                                                           |
| 108 – 500                                                                                        | 2000                                                                           |
| 500 – 1000                                                                                       | 5000                                                                           |
| Above 1000                                                                                       | 5 <sup>th</sup> harmonic of the highest frequency or 40GHz, whichever is lower |

## (1) Limit for Radiated Emission below 1000MHz

| Frequency range<br>(MHz)                                                                                                                                                                                                                                                                                                                          | Class A Equipment<br>(10m distance) | Class B Equipment<br>(3m distance)  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                   | Quasi-peak limits<br>(dB $\mu$ V/m) | Quasi-peak limits<br>(dB $\mu$ V/m) |
| 30 to 88                                                                                                                                                                                                                                                                                                                                          | 39.1                                | 40                                  |
| 88 to 216                                                                                                                                                                                                                                                                                                                                         | 43.5                                | 43.5                                |
| 216 to 960                                                                                                                                                                                                                                                                                                                                        | 46.4                                | 46                                  |
| 960 to 1000                                                                                                                                                                                                                                                                                                                                       | 49.5                                | 54                                  |
| Note 1 The lower limit shall apply at the transition frequency.<br>Note 2 Additional provisions may be required for cases where interference occurs.<br>Note 3 According to 15.109(g), as an alternative to the radiated emission limit shown above,<br>digital devices may be shown to comply with the standards(CISPR), Pub. 22 shown as below. |                                     |                                     |
| 30 to 230                                                                                                                                                                                                                                                                                                                                         | 40                                  | 30                                  |
| 230 to 1000                                                                                                                                                                                                                                                                                                                                       | 47                                  | 37                                  |

## (2) Limits for Radiated Emission in the frequency range 1000 - 2000MHz at a measuring distance of 10m

| Frequency<br>(GHz) | Class A Equipment      |                        | Class B Equipment      |                           |
|--------------------|------------------------|------------------------|------------------------|---------------------------|
|                    | peak<br>(dB $\mu$ V/m) | peak<br>(dB $\mu$ V/m) | peak<br>(dB $\mu$ V/m) | Average<br>(dB $\mu$ V/m) |
| 1 to 2             | 69.5                   | 49.5                   | 63.5                   | 43.5                      |

## (3) Limits for Radiated Emission above 1000MHz at a measuring distance of 3m

| Frequency<br>(GHz) | Class A Equipment      |                        | Class B Equipment      |                           |
|--------------------|------------------------|------------------------|------------------------|---------------------------|
|                    | peak<br>(dB $\mu$ V/m) | peak<br>(dB $\mu$ V/m) | peak<br>(dB $\mu$ V/m) | Average<br>(dB $\mu$ V/m) |
| 1 to 40            | 80                     | 60                     | 74                     | 54                        |

## 6.2.4 Test Result

|                     |                   |
|---------------------|-------------------|
| Test date           | February 26, 2011 |
| Ambient Temperature | 18 °C             |
| Relative Humidity   | 45 % R.H.         |

Result : For the measurement data, see next page

Note) 1. Emission Level = Reading Value + Correction Factor.

2. Correction Factor = Cable loss - Amp gain + Antenna Factor

3. Margin = Limit - Emission level

| Frequency<br>[MHz] | Pol. | Reading<br>[dB $\mu$ V] | C.F.<br>[dB(1/m)] | Result<br>[dB( $\mu$ V/m)] | Limit<br>[dB( $\mu$ V/m)] | Margin<br>[dB] |
|--------------------|------|-------------------------|-------------------|----------------------------|---------------------------|----------------|
| 376.493            | H    | 48.7                    | -6.4              | 42.3                       | 46.0                      | 3.7            |

## Radiated emission Test Data

# Test Result



## RADIATED EMISSION

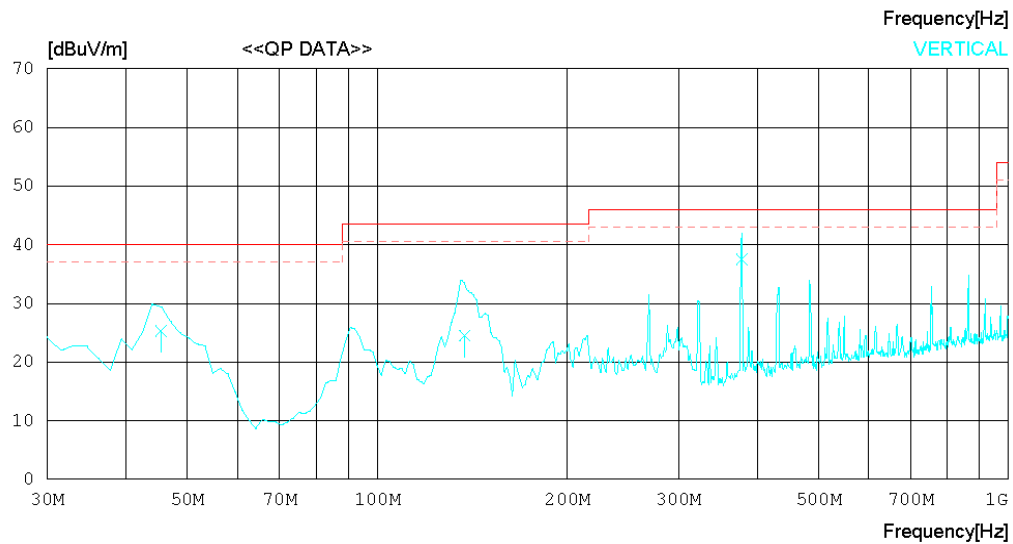
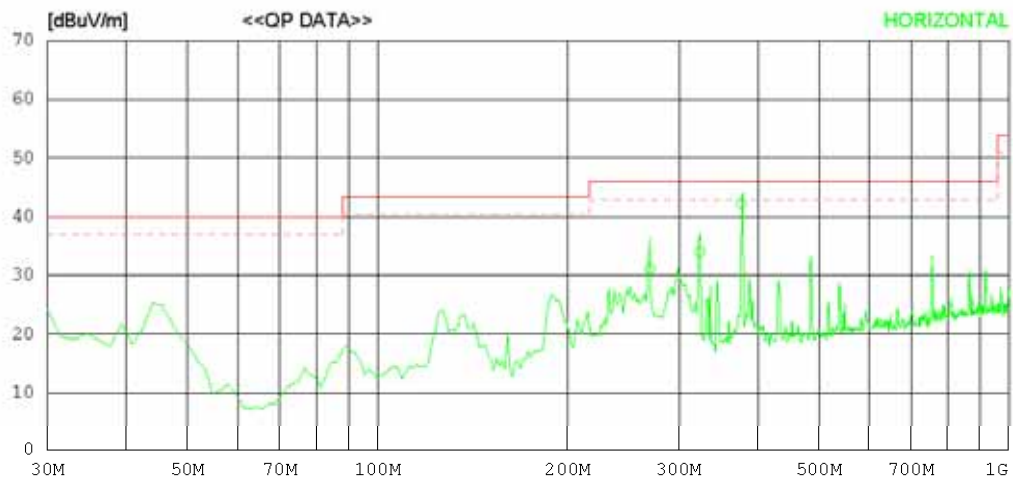
Date : 2011-02-26

Model Name : LG-A190a  
Model No. :  
Serial No. :  
Test Condition :

Reference No. :  
Power Supply : 120V 60Hz  
Temp/Humi : 18°C 45 % R.H.  
Operator :

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m)  
MARGIN: 3 dB



# RADIATED EMISSION

Date : 2011-02-26

|                |   |          |               |   |                |
|----------------|---|----------|---------------|---|----------------|
| Model Name     | : | LG-A190a | Reference No. | : |                |
| Model No.      | : |          | Power Supply  | : | 120V 60Hz      |
| Serial No.     | : |          | Temp/Humi     | : | 18°C 45 % R.H. |
| Test Condition | : |          | Operator      | : |                |

Memo :

LIMIT : FCC Part15 Subpart B Class B (3m)  
MARGIN: 3 dB

| No.                    | FREQ    | READING      | ANT            | LOSS | GAIN | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|---------|--------------|----------------|------|------|----------|----------|--------|---------|-------|
|                        | [MHz]   | QP<br>[dBuV] | FACTOR<br>[dB] | [dB] | [dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |         |              |                |      |      |          |          |        |         |       |
| 1                      | 269.831 | 39.5         | 13.4           | 1.9  | 23.7 | 31.1     | 46.0     | 14.9   | 131     | 283   |
| 2                      | 323.895 | 41.5         | 14.4           | 2.1  | 24.0 | 34.0     | 46.0     | 12.0   | 115     | 100   |
| 3                      | 376.493 | 48.7         | 15.5           | 2.3  | 24.2 | 42.3     | 46.0     | 3.7    | 105     | 223   |
| ----- Vertical -----   |         |              |                |      |      |          |          |        |         |       |
| 4                      | 45.391  | 33.3         | 13.8           | 0.8  | 22.6 | 25.3     | 40.0     | 14.7   | 136     | 181   |
| 5                      | 137.552 | 35.1         | 11.1           | 1.3  | 23.0 | 24.5     | 43.5     | 19.0   | 135     | 238   |
| 6                      | 377.956 | 43.9         | 15.5           | 2.3  | 24.2 | 37.5     | 46.0     | 8.5    | 117     | 185   |