

# FCC SAR Test Report

APPLICANT : LG Electronics Mobile Comm USA  
EQUIPMENT : Smart phone  
BRAND NAME : LG  
MODEL NAME : LG-X240F  
FCC ID : ZNFX240F  
STANDARD : FCC 47 CFR Part 2 (2.1093)  
ANSI/IEEE C95.1-1992  
IEEE 1528-2013

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Eric Huang / Deputy Manager



Approved by: Jones Tsai / Manager



## SPORTON INTERNATIONAL INC.

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## Revision History

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FA6O1804   | Rev. 01 | Initial issue of report | Feb. 15, 2017 |
| FA6O1804   | Rev. 02 | Updated appendix A      | Feb. 21, 2017 |
| FA6O1804   | Rev. 03 | Updated appendix A      | Feb. 27, 2017 |
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## 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for LG Electronics Mobile Comm USA, Smart phone, LG-X240F, are as follows.

| Equipment Class | Frequency Band | Highest SAR Summary      |                                |                              | Highest Simultaneous Transmission<br>1g SAR (W/kg) |
|-----------------|----------------|--------------------------|--------------------------------|------------------------------|----------------------------------------------------|
|                 |                | Head<br>(Separation 0mm) | Body-worn<br>(Separation 15mm) | Hotspot<br>(Separation 10mm) |                                                    |
|                 |                | 1g SAR (W/kg)            |                                |                              |                                                    |
| Licensed        | GSM850         | 0.58                     | 0.48                           | 0.59                         | 1.42                                               |
|                 | GSM1900        | 0.18                     | 0.16                           | 0.29                         |                                                    |
|                 | WCDMA II       | 0.45                     | 0.50                           | 0.81                         |                                                    |
|                 | WCDMA IV       | 0.60                     | 0.64                           | 1.15                         |                                                    |
|                 | WCDMA V        | 0.61                     | 0.59                           | 0.75                         |                                                    |
|                 | LTE Band 2     | 0.33                     | 0.43                           | 0.71                         |                                                    |
|                 | LTE Band 4     | 0.42                     | 0.51                           | 0.86                         |                                                    |
|                 | LTE Band 5     | 0.44                     | 0.44                           | 0.59                         |                                                    |
|                 | LTE Band 7     | 1.11                     | 1.17                           | 0.78                         |                                                    |
| DTS             | 2.4GHz WLAN    | 0.79                     | 0.06                           | 0.13                         |                                                    |

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

## 2. Administration Data

| Testing Laboratory |                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Site          | SPORTON INTERNATIONAL INC.                                                                                                                       |
| Test Site Location | No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |

| Applicant    |                                                                                   |
|--------------|-----------------------------------------------------------------------------------|
| Company Name | LG Electronics Mobile Comm USA                                                    |
| Address      | LG Twin Towers 20, Yeouido-Dong Youngdeungpo-Gu, Seoul 150-721, Republic Of Korea |

| Manufacturer |                                                                        |
|--------------|------------------------------------------------------------------------|
| Company Name | Arima Communications Corp.                                             |
| Address      | 6F,No.866,Jhongjheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan |

### **3. Equipment Under Test (EUT) Information**

#### **3.1 General Information**

| Product Feature & Specification                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment Name                                                                                                                                                                           | Smart phone                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Brand Name                                                                                                                                                                               | LG                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Model Name                                                                                                                                                                               | LG-X240F                                                                                                                                                                                                                                                                                                                                                                                                                          |
| FCC ID                                                                                                                                                                                   | ZNFX240F                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Wireless Technology and Frequency Range                                                                                                                                                  | GSM850: 824.2 MHz ~ 848.8 MHz<br>GSM1900: 1850.2 MHz ~ 1909.8 MHz<br>WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz<br>WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz<br>WCDMA Band V: 826.4 MHz ~ 846.6 MHz<br>LTE Band 2: 1850.7 MHz ~ 1909.3 MHz<br>LTE Band 4: 1710.7 MHz ~ 1754.3 MHz<br>LTE Band 5: 824.7 MHz ~ 848.3 MHz<br>LTE Band 7: 2502.5 MHz ~ 2567.5 MHz<br>WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz |
| Mode                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>· GSM/GPRS/EGPRS</li> <li>· RMC/AMR 12.2Kbps</li> <li>· HSDPA</li> <li>· HSUPA</li> <li>· DC-HSDPA</li> <li>· LTE: QPSK, 16QAM</li> <li>· 802.11b/g/n HT20/HT40</li> <li>· Bluetooth BR/EDR/LE</li> </ul>                                                                                                                                                                                  |
| HW Version                                                                                                                                                                               | PP2                                                                                                                                                                                                                                                                                                                                                                                                                               |
| SW Version                                                                                                                                                                               | LGX240FAT-00-V08a-CIS-XX-NOV-17-2016+0                                                                                                                                                                                                                                                                                                                                                                                            |
| GSM / (E)GPRS Transfer mode                                                                                                                                                              | Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.                                                                                                                                                                                                                                                                |
| EUT Stage                                                                                                                                                                                | Production Unit                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Remark:</b><br>1. This device WLAN 2.4GHz supports Hotspot operation.<br>2. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of LTE Band 7. |                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### 3.2 General LTE SAR Test and Reporting Considerations

| Summarized necessary items addressed in KDB 941225 D05 v02r05           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|----------------------------------------------------------------|--|--|--|--|--|--|--|------------|-------------------------------------------------|--|--|--|--|--|----------|---------|---------|-------|--------|--------|--------|------|-----|-----|-----|------|------|------|-----|--------|-----|-----|-----|------|------|------|-----|--------|-----|-----|-----|------|------|------|-----|
| FCC ID                                                                  | ZNFX240F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Equipment Name                                                          | Smart phone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Operating Frequency Range of each LTE transmission band                 | LTE Band 2: 1850.7 MHz ~ 1909.3 MHz<br>LTE Band 4: 1710.7 MHz ~ 1754.3 MHz<br>LTE Band 5: 824.7 MHz ~ 848.3 MHz<br>LTE Band 7: 2502.5 MHz ~ 2567.5 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Channel Bandwidth                                                       | LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz<br>LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| uplink modulations used                                                 | QPSK, and 16QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE Voice / Data requirements                                           | 1. Data only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE MPR permanently built-in by design                                  | <table><tr><th colspan="8">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</th></tr><tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th><th rowspan="2">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>&gt; 5</td><td>&gt; 4</td><td>&gt; 8</td><td>&gt; 12</td><td>&gt; 16</td><td>&gt; 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>&gt; 5</td><td>&gt; 4</td><td>&gt; 8</td><td>&gt; 12</td><td>&gt; 16</td><td>&gt; 18</td><td>≤ 2</td></tr></table> |             |                  |             |                  |             |                  |             |                  |             |                  |             | Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3 |  |  |  |  |  |  |  | Modulation | Channel bandwidth / Transmission bandwidth (RB) |  |  |  |  |  | MPR (dB) | 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | QPSK | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 1 | 16 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 | 16 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2 |
| Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Modulation                                                              | Channel bandwidth / Transmission bandwidth (RB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                  |             |                  |             | MPR (dB)         |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                         | 1.4 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3.0 MHz     | 5 MHz            | 10 MHz      | 15 MHz           | 20 MHz      |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| QPSK                                                                    | > 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | > 4         | > 8              | > 12        | > 16             | > 18        | ≤ 1              |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| 16 QAM                                                                  | ≤ 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ≤ 4         | ≤ 8              | ≤ 12        | ≤ 16             | ≤ 18        | ≤ 1              |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| 16 QAM                                                                  | > 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | > 4         | > 8              | > 12        | > 16             | > 18        | ≤ 2              |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE A-MPR                                                               | In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Spectrum plots for RB configuration                                     | A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Power reduction applied to satisfy SAR compliance                       | 1. Yes, when operating in hotspot mode that LTE B7 power reduction applied to satisfy SAR compliance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| Transmission (H, M, L) channel numbers and frequencies in each LTE band |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE Band 2                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                         | Bandwidth 1.4 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             | Bandwidth 3 MHz  |             | Bandwidth 5 MHz  |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                         | Ch. #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| L                                                                       | 18607                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1850.7      | 18615            | 1851.5      | 18625            | 1852.5      | 18650            | 1855        | 18675            | 1857.5      | 18700            | 1860        |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| M                                                                       | 18900                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1880        | 18900            | 1880        | 18900            | 1880        | 18900            | 1880        | 18900            | 1880        | 18900            | 1880        |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| H                                                                       | 19193                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1909.3      | 19185            | 1908.5      | 19175            | 1907.5      | 19150            | 1905        | 19125            | 1902.5      | 19100            | 1900        |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE Band 4                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                         | Bandwidth 1.4 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             | Bandwidth 3 MHz  |             | Bandwidth 5 MHz  |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                         | Ch. #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| L                                                                       | 19957                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1710.7      | 19965            | 1711.5      | 19975            | 1712.5      | 20000            | 1715        | 20025            | 1717.5      | 20050            | 1720        |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| M                                                                       | 20175                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1732.5      | 20175            | 1732.5      | 20175            | 1732.5      | 20175            | 1732.5      | 20175            | 1732.5      | 20175            | 1732.5      |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| H                                                                       | 20393                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1754.3      | 20385            | 1753.5      | 20375            | 1752.5      | 20350            | 1750        | 20325            | 1747.5      | 20300            | 1745        |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE Band 5                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                         | Bandwidth 1.4 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             | Bandwidth 3 MHz  |             | Bandwidth 5 MHz  |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                         | Ch. #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| L                                                                       | 20407                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 824.7       | 20415            | 825.5       | 20425            | 826.5       | 20450            | 829         | 20450            | 829         | 20450            | 829         |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| M                                                                       | 20525                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 836.5       | 20525            | 836.5       | 20525            | 836.5       | 20525            | 836.5       | 20525            | 836.5       | 20525            | 836.5       |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| H                                                                       | 20643                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 848.3       | 20635            | 847.5       | 20625            | 846.5       | 20600            | 844         | 20600            | 844         | 20600            | 844         |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| LTE Band 7                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |                  |             |                  |             |                  |             |                  |             |                  |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                         | Bandwidth 5 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
|                                                                         | Ch. #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| L                                                                       | 20775                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2502.5      | 20800            | 2505        | 20825            | 2507.5      | 20850            | 2510        | 20850            | 2510        | 20850            | 2510        |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| M                                                                       | 21100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2535        | 21100            | 2535        | 21100            | 2535        | 21100            | 2535        | 21100            | 2535        | 21100            | 2535        |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |
| H                                                                       | 21425                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2567.5      | 21400            | 2565        | 21375            | 2562.5      | 21350            | 2560        | 21350            | 2560        | 21350            | 2560        |                                                                |  |  |  |  |  |  |  |            |                                                 |  |  |  |  |  |          |         |         |       |        |        |        |      |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |        |     |     |     |      |      |      |     |



#### 4. Re-use of Measured Data

##### 1. Introduction Section

This report referenced from the FCC ID: ZNFX240H  
(GSM 850 / 1900, WCDMA Band 2 / 4 / 5, LTE Band 2 / 4 / 5 / 7, DTS and DSS)

And the applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID (FCC ID : ZNFX240F).

##### 2. Difference Section

(FCC ID: ZNFX240F, model: LG-X240F) is a variant model of (FCC ID: ZNFX240H, model: LG-X240H) with removed LTE Band 13 and LTE Band 17, and all the divergent bands have been properly tested to ensure compliance. The detailed comparison of (FCC ID: ZNFX240F, model: LG-X240F) and (FCC ID: ZNFX240H, model: LG-X240H) is included in the Produce Equality Declaration.

The WWAN (GSM 850 / 1900, WCDMA Band 2 / 4 / 5 and LTE Band 2 / 4 / 5 / 7) and WLAN SAR measurement results from the original report (Sporton SAR Report No. FA6O1802, FCC ID: ZNFX240H) or appendix A.

The product specification is outlined in the following table:

| FCC ID        |                                         |                                   | ZNFX240H            | ZNFX240F    |
|---------------|-----------------------------------------|-----------------------------------|---------------------|-------------|
| Wireless Tech | Mode                                    |                                   | Frequency (MHz)     |             |
| GSM           | GSM Voice<br>GPRS (GMSK)<br>EDGE (8PSK) | Multi-Slot<br>Class 12<br>DTM: No | 850/1900            | 850/1900    |
| UMTS          | AMR/RCM12.2Kbps<br>HSDPA/HSUPA/DC-HSDPA |                                   | B2/B4/B5            | B2/B4/B5    |
| LTE (FDD)     | QPSK<br>16QAM                           |                                   | B2/B4/B5/B7/B13/B17 | B2/B4/B5/B7 |
| Wi-Fi         | 11b/11g/11n(HT20/HT40)                  |                                   | 2412-2462 MHz       |             |
| Bluetooth     | BR/EDR/LE                               |                                   | 2402-2480 MHz       |             |



## 3. Spot Check Verification Data Section

| Band       | BW (MHz) | Modulation | RB Size | RB offset | Mode              | Test Position | Gap (mm) | Power Reduction | Ch.   | Freq. (MHz) | Original Model(FCC ID : ZNFX240H) |                     |                        |                        | Spot Check Model(FCC ID: ZNFX240F) |                     |                        |                        | Deviation |
|------------|----------|------------|---------|-----------|-------------------|---------------|----------|-----------------|-------|-------------|-----------------------------------|---------------------|------------------------|------------------------|------------------------------------|---------------------|------------------------|------------------------|-----------|
|            |          |            |         |           |                   |               |          |                 |       |             | Average Power (dBm)               | Tune-Up Limit (dBm) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) | Average Power (dBm)                | Tune-Up Limit (dBm) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |           |
| Head       |          |            |         |           |                   |               |          |                 |       |             |                                   |                     |                        |                        |                                    |                     |                        |                        |           |
| GSM850     |          |            |         |           | GPRS (4 Tx slots) | Right Cheek   | 0mm      | -               | 128   | 824.2       | 27.31                             | 28.00               | 0.495                  | 0.580                  | 27.56                              | 28.00               | 0.493                  | 0.546                  | -6.0%     |
| GSM1900    |          |            |         |           | GPRS (4 Tx slots) | Right Cheek   | 0mm      | -               | 810   | 1909.8      | 24.53                             | 25.00               | 0.159                  | 0.177                  | 24.66                              | 25.00               | 0.186                  | 0.201                  | 13.5%     |
| WCDMA II   |          |            |         |           | RMC 12.2Kbps      | Right Cheek   | 0mm      | -               | 9262  | 1852.4      | 24.87                             | 25.00               | 0.436                  | 0.449                  | 24.79                              | 25.00               | 0.497                  | 0.522                  | 16.1%     |
| WCDMA IV   |          |            |         |           | RMC 12.2Kbps      | Right Cheek   | 0mm      | -               | 1513  | 1752.6      | 24.85                             | 25.00               | 0.579                  | 0.599                  | 24.59                              | 25.00               | 0.605                  | 0.665                  | 10.9%     |
| WCDMA V    |          |            |         |           | RMC 12.2Kbps      | Right Cheek   | 0mm      | -               | 4233  | 846.6       | 24.86                             | 25.00               | 0.594                  | 0.613                  | 24.65                              | 25.00               | 0.536                  | 0.581                  | -5.3%     |
| LTE Band 2 | 20M      | QPSK       | 1       | 0         |                   | Right Cheek   | 0mm      | -               | 18900 | 1880        | 24.43                             | 24.50               | 0.325                  | 0.330                  | 24.35                              | 24.50               | 0.31                   | 0.321                  | -2.8%     |
| LTE Band 4 | 20M      | QPSK       | 1       | 0         |                   | Right Cheek   | 0mm      | -               | 20175 | 1732.5      | 24.41                             | 24.50               | 0.414                  | 0.423                  | 24.12                              | 24.50               | 0.313                  | 0.342                  | -19.2%    |
| LTE Band 5 | 10M      | QPSK       | 1       | 0         |                   | Right Cheek   | 0mm      | -               | 20525 | 836.5       | 24.41                             | 24.50               | 0.432                  | 0.441                  | 24.39                              | 24.50               | 0.369                  | 0.378                  | -14.2%    |
| LTE Band 7 | 20M      | QPSK       | 1       | 0         |                   | Left Cheek    | 0mm      | -               | 20850 | 2510        | 23.02                             | 23.30               | 1.040                  | 1.109                  | 22.85                              | 23.30               | 0.940                  | 1.043                  | -6.0%     |
| WLAN2.4GHz |          |            |         |           | 802.11b 1Mbps     | Right Cheek   | 0mm      | -               | 6     | 2437        | 16.97                             | 17.00               | 0.970                  | 0.977                  | 16.97                              | 17.00               | 1.060                  | 1.067                  | 9.3%      |
| Hotspot    |          |            |         |           |                   |               |          |                 |       |             |                                   |                     |                        |                        |                                    |                     |                        |                        |           |
| GSM850     |          |            |         |           | GPRS (4 Tx slots) | Back          | 10mm     | -               | 128   | 824.2       | 27.31                             | 28.00               | 0.502                  | 0.588                  | 27.56                              | 28.00               | 0.528                  | 0.584                  | -0.7%     |
| GSM1900    |          |            |         |           | GPRS (4 Tx slots) | Front         | 10mm     | -               | 810   | 1909.8      | 24.53                             | 25.00               | 0.256                  | 0.285                  | 24.66                              | 25.00               | 0.265                  | 0.287                  | 0.5%      |
| WCDMA II   |          |            |         |           | RMC 12.2Kbps      | Front         | 10mm     | -               | 9400  | 1880        | 24.81                             | 25.00               | 0.771                  | 0.805                  | 24.73                              | 25.00               | 0.762                  | 0.811                  | 0.7%      |
| WCDMA IV   |          |            |         |           | RMC 12.2Kbps      | Front         | 10mm     | -               | 1312  | 1712.4      | 24.76                             | 25.00               | 1.090                  | 1.152                  | 24.52                              | 25.00               | 1.090                  | 1.217                  | 5.7%      |
| WCDMA V    |          |            |         |           | RMC 12.2Kbps      | Back          | 10mm     | -               | 4233  | 846.6       | 24.86                             | 25.00               | 0.722                  | 0.746                  | 24.65                              | 25.00               | 0.665                  | 0.721                  | -3.3%     |
| LTE Band 2 | 20M      | QPSK       | 1       | 0         |                   | Front         | 10mm     | -               | 18900 | 1880        | 24.43                             | 24.50               | 0.701                  | 0.712                  | 24.35                              | 24.50               | 0.666                  | 0.689                  | -3.2%     |
| LTE Band 4 | 20M      | QPSK       | 1       | 0         |                   | Front         | 10mm     | -               | 20175 | 1732.5      | 24.41                             | 24.50               | 0.839                  | 0.857                  | 24.12                              | 24.50               | 0.668                  | 0.729                  | -14.9%    |
| LTE Band 5 | 10M      | QPSK       | 1       | 0         |                   | Back          | 10mm     | -               | 20525 | 836.5       | 24.41                             | 24.50               | 0.579                  | 0.591                  | 24.36                              | 24.50               | 0.549                  | 0.567                  | -4.1%     |
| LTE Band 7 | 20M      | QPSK       | 50      | 0         |                   | Back          | 10mm     | ON              | 21350 | 2560        | 18.15                             | 18.30               | 0.749                  | 0.775                  | 18.13                              | 18.30               | 0.797                  | 0.829                  | 6.9%      |
| WLAN2.4GHz |          |            |         |           | 802.11b 1Mbps     | Front         | 10mm     | -               | 6     | 2437        | 16.97                             | 17.00               | 0.123                  | 0.124                  | 16.97                              | 17.00               | 0.117                  | 0.118                  | -4.9%     |
| Body-Worn  |          |            |         |           |                   |               |          |                 |       |             |                                   |                     |                        |                        |                                    |                     |                        |                        |           |
| GSM850     |          |            |         |           | GPRS (4 Tx slots) | Back          | 15mm     | -               | 128   | 824.2       | 27.31                             | 28.00               | 0.405                  | 0.475                  | 27.56                              | 28.00               | 0.409                  | 0.453                  | -4.7%     |
| GSM1900    |          |            |         |           | GPRS (4 Tx slots) | Front         | 15mm     | -               | 810   | 1909.8      | 24.53                             | 25.00               | 0.145                  | 0.162                  | 24.66                              | 25.00               | 0.155                  | 0.168                  | 3.7%      |
| WCDMA II   |          |            |         |           | RMC 12.2Kbps      | Front         | 15mm     | -               | 9262  | 1852.4      | 24.87                             | 25.00               | 0.489                  | 0.504                  | 24.79                              | 25.00               | 0.518                  | 0.544                  | 7.9%      |
| WCDMA IV   |          |            |         |           | RMC 12.2Kbps      | Front         | 15mm     | -               | 1513  | 1752.6      | 24.85                             | 25.00               | 0.620                  | 0.642                  | 24.59                              | 25.00               | 0.617                  | 0.678                  | 5.7%      |
| WCDMA V    |          |            |         |           | RMC 12.2Kbps      | Back          | 15mm     | -               | 4233  | 846.6       | 24.86                             | 25.00               | 0.571                  | 0.590                  | 24.65                              | 25.00               | 0.589                  | 0.638                  | 8.3%      |
| LTE Band 2 | 20M      | QPSK       | 1       | 0         |                   | Front         | 15mm     | -               | 18900 | 1880        | 24.43                             | 24.50               | 0.418                  | 0.425                  | 24.35                              | 24.50               | 0.406                  | 0.420                  | -1.1%     |
| LTE Band 4 | 20M      | QPSK       | 1       | 0         |                   | Front         | 15mm     | -               | 20175 | 1732.5      | 24.41                             | 24.50               | 0.501                  | 0.511                  | 24.12                              | 24.50               | 0.430                  | 0.469                  | -8.2%     |
| LTE Band 5 | 10M      | QPSK       | 1       | 0         |                   | Back          | 15mm     | -               | 20525 | 836.5       | 24.41                             | 24.50               | 0.427                  | 0.436                  | 24.36                              | 24.50               | 0.474                  | 0.490                  | 12.3%     |
| LTE Band 7 | 20M      | QPSK       | 1       | 0         |                   | Back          | 15mm     | -               | 20850 | 2510        | 23.02                             | 23.30               | 1.100                  | 1.173                  | 22.85                              | 23.30               | 1.110                  | 1.231                  | 4.9%      |
| WLAN2.4GHz |          |            |         |           | 802.11b 1Mbps     | Back          | 15mm     | -               | 6     | 2437        | 16.97                             | 17.00               | 0.051                  | 0.051                  | 16.97                              | 17.00               | 0.047                  | 0.047                  | -7.8%     |

**Note:** The spot check verification shows the WWAN / WLAN SAR performance of ZNFX240H represents the performance of ZNFX240F

**4. Reference detail Section:**

| Rule Part | Frequency Band (MHz) | Wireless Technology | Reference FCC ID | Reference Report Title | Reference Report No. | Reference Report Sections               |
|-----------|----------------------|---------------------|------------------|------------------------|----------------------|-----------------------------------------|
| 22        | 824.2 ~ 848.8        | GSM 850             | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to GSM 850 test data   |
| 24        | 1850.2 ~ 1909.8      | GSM 1900            | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to GSM 1900 test data  |
| 24        | 1852.4 ~ 1907.6      | WCDMA B2            | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to WCDMA B2 test data  |
| 27        | 1712.4 ~ 1752.6      | WCDMA B4            | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to WCDMA B4 test data  |
| 22        | 826.4 ~ 846.6        | WCDMA B5            | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to WCDMA B5 test data  |
| 24        | 1850.7 ~ 1909.3      | LTE B2              | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to LTE B2 test data    |
| 27        | 1710.7 ~ 1754.3      | LTE B4              | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to LTE B4 test data    |
| 22        | 824.7 ~ 848.3        | LTE B5              | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to LTE B5 test data    |
| 27        | 2502.5 ~ 2567.5      | LTE B7              | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to LTE B7 test data    |
| 15C       | 2402~2480            | Bluetooth           | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to Bluetooth test data |
| 15C       | 2412~2462            | Wi-Fi               | ZNFX240H         | FCC SAR Test Report    | FA6O1802             | Sections related to WiFi test data      |

## 5. Uncertainty Assessment

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

| Uncertainty Distributions          | Normal                     | Rectangular   | Triangular    | U-Shape       |
|------------------------------------|----------------------------|---------------|---------------|---------------|
| Multi-plying Factor <sup>(a)</sup> | 1/ $\kappa$ <sup>(b)</sup> | 1/ $\sqrt{3}$ | 1/ $\sqrt{6}$ | 1/ $\sqrt{2}$ |

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b)  $\kappa$  is the coverage factor

**Table 5.1. Standard Uncertainty for Assumed Distribution**

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

| Error Description                 | Uncertainty Value (±%) | Probability | Divisor | (Ci) 1g | (Ci) 10g | Standard Uncertainty (1g) (±%) | Standard Uncertainty (10g) (±%) |
|-----------------------------------|------------------------|-------------|---------|---------|----------|--------------------------------|---------------------------------|
| <b>Measurement System</b>         |                        |             |         |         |          |                                |                                 |
| Probe Calibration                 | 6.0                    | N           | 1       | 1       | 1        | 6.0                            | 6.0                             |
| Axial Isotropy                    | 4.7                    | R           | 1.732   | 0.7     | 0.7      | 1.9                            | 1.9                             |
| Hemispherical Isotropy            | 9.6                    | R           | 1.732   | 0.7     | 0.7      | 3.9                            | 3.9                             |
| Boundary Effects                  | 1.0                    | R           | 1.732   | 1       | 1        | 0.6                            | 0.6                             |
| Linearity                         | 4.7                    | R           | 1.732   | 1       | 1        | 2.7                            | 2.7                             |
| System Detection Limits           | 1.0                    | R           | 1.732   | 1       | 1        | 0.6                            | 0.6                             |
| Modulation Response               | 3.2                    | R           | 1.732   | 1       | 1        | 1.8                            | 1.8                             |
| Readout Electronics               | 0.3                    | N           | 1       | 1       | 1        | 0.3                            | 0.3                             |
| Response Time                     | 0.0                    | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| Integration Time                  | 2.6                    | R           | 1.732   | 1       | 1        | 1.5                            | 1.5                             |
| RF Ambient Noise                  | 3.0                    | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| RF Ambient Reflections            | 3.0                    | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| Probe Positioner                  | 0.4                    | R           | 1.732   | 1       | 1        | 0.2                            | 0.2                             |
| Probe Positioning                 | 2.9                    | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| Max. SAR Eval.                    | 2.0                    | R           | 1.732   | 1       | 1        | 1.2                            | 1.2                             |
| <b>Test Sample Related</b>        |                        |             |         |         |          |                                |                                 |
| Device Positioning                | 3.0                    | N           | 1       | 1       | 1        | 3.0                            | 3.0                             |
| Device Holder                     | 3.6                    | N           | 1       | 1       | 1        | 3.6                            | 3.6                             |
| Power Drift                       | 5.0                    | R           | 1.732   | 1       | 1        | 2.9                            | 2.9                             |
| Power Scaling                     | 0.0                    | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| <b>Phantom and Setup</b>          |                        |             |         |         |          |                                |                                 |
| Phantom Uncertainty               | 6.1                    | R           | 1.732   | 1       | 1        | 3.5                            | 3.5                             |
| SAR correction                    | 0.0                    | R           | 1.732   | 1       | 0.84     | 0.0                            | 0.0                             |
| Liquid Conductivity Repeatability | 0.2                    | N           | 1       | 0.78    | 0.71     | 0.1                            | 0.1                             |
| Liquid Conductivity (target)      | 5.0                    | R           | 1.732   | 0.78    | 0.71     | 2.3                            | 2.0                             |
| Liquid Conductivity (mea.)        | 2.5                    | R           | 1.732   | 0.78    | 0.71     | 1.1                            | 1.0                             |
| Temp. unc. - Conductivity         | 3.4                    | R           | 1.732   | 0.78    | 0.71     | 1.5                            | 1.4                             |
| Liquid Permittivity Repeatability | 0.15                   | N           | 1       | 0.23    | 0.26     | 0.0                            | 0.0                             |
| Liquid Permittivity (target)      | 5.0                    | R           | 1.732   | 0.23    | 0.26     | 0.7                            | 0.8                             |
| Liquid Permittivity (mea.)        | 2.5                    | R           | 1.732   | 0.23    | 0.26     | 0.3                            | 0.4                             |
| Temp. unc. - Permittivity         | 0.83                   | R           | 1.732   | 0.23    | 0.26     | 0.1                            | 0.1                             |
| <b>Combined Std. Uncertainty</b>  |                        |             |         |         |          | 11.4%                          | 11.4%                           |
| <b>Coverage Factor for 95 %</b>   |                        |             |         |         |          | K=2                            | K=2                             |
| <b>Expanded STD Uncertainty</b>   |                        |             |         |         |          | 22.9%                          | 22.7%                           |

**Table 5.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz**