

# RF Exposure Report

## (Part 0: SAR Char Evaluation)

APPLICANT : OnePlus Technology (Shenzhen) Co., Ltd.  
EQUIPMENT : Mobile Phone  
BRAND NAME : 1+, ONEPLUS  
MODEL NAME : CPH2451  
FCC ID : 2ABZ2-AA516  
STANDARD : FCC 47 CFR PART 2 (2.1093)

We, Sporton International Inc. (Shenzhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has 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. (Shenzhen), the test report shall not be reproduced except in full.



Approved by: Si Zhang

**Sporton International Inc. (Shenzhen)**  
1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055  
People's Republic of China



## **Table of Contents**

|                                            |          |
|--------------------------------------------|----------|
| <b>1. Introduction .....</b>               | <b>4</b> |
| <b>2. Product Description .....</b>        | <b>5</b> |
| <b>3. SAR Characterization.....</b>        | <b>6</b> |
| 3.1 SAR design target and uncertainty..... | 6        |
| 3.2 SAR Char Table .....                   | 7        |

## History of this test report

| Report No. | Version | Description             | Issued Date   |
|------------|---------|-------------------------|---------------|
| FA2O2001D  | 01      | Initial issue of report | Dec. 21, 2022 |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |

## 1. Introduction

This Device is enabled with the Qualcomm® Smart Transmit Gen2 feature. The RF exposure limit is defined based on time-averaged RF exposure. WWAN bands are enabled with Qualcomm Smart Transmit feature. The RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with RF exposure limit over a defined time window, for SAR (transmit frequency  $\leq 6\text{GHz}$ ) to control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement. Smart Transmit cannot operate without SAR characterization at the device level, beforehand.

This report describes the procedures for the SAR char generation, and the parameters obtained from SAR characterization (referred to as SAR char, respectively) will be used as input for Smart Transmit. Both SAR char will be entered via the Embedded File System (EFS) to enable the Smart Transmit GEN2 Feature.

### Terminologies in this report

|                    |                                                                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| $P_{\text{limit}}$ | The time-averaged RF power which corresponds to SAR_design_target.                                                                                |
| $P_{\text{max}}$   | Maximum target power level                                                                                                                        |
| SAR_design_target: | The design target for SAR compliance. It should be less than regulatory power density limit to account for all device design related uncertainty. |
| SAR char           | $P_{\text{limit}}$ for all the technologies/bands for all applicable DSI                                                                          |



## 2. Product Description

| Product Feature & Specification         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment Name                          | Mobile Phone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Brand Name                              | 1+, ONEPLUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Model Name                              | CPH2451                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| FCC ID                                  | 2ABZ2-AA516                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Wireless Technology and Frequency Range | GSM850: 824 MHz ~ 849 MHz<br>GSM1900: 1850 MHz ~ 1910 MHz<br>WCDMA Band II: 1850 MHz ~ 1910 MHz<br>WCDMA Band IV: 1710 MHz ~ 1755 MHz<br>WCDMA Band V: 824 MHz ~ 849 MHz<br>LTE Band 2: 1850 MHz ~ 1910 MHz<br>LTE Band 4: 1710 MHz ~ 1755 MHz<br>LTE Band 5: 824 MHz ~ 849 MHz<br>LTE Band 7: 2500 MHz ~ 2570 MHz<br>LTE Band 12: 699 MHz ~ 716 MHz<br>LTE Band 13: 777 MHz ~ 787 MHz<br>LTE Band 17: 704 MHz ~ 716 MHz<br>LTE Band 25: 1850 MHz ~ 1915 MHz<br>LTE Band 26: 814 MHz ~ 849 MHz<br>LTE Band 30: 2305 MHz ~ 2315 MHz<br>LTE Band 38: 2570 MHz ~ 2620 MHz<br>LTE Band 41: 2496 MHz ~ 2690 MHz<br>LTE Band 48: 3550 MHz ~ 3700 MHz<br>LTE Band 66: 1710 MHz ~ 1780 MHz<br>LTE Band 71: 663 MHz ~ 698 MHz<br>5G NR n2 : 1850 MHz ~ 1910 MHz<br>5G NR n5 : 824 MHz ~ 849 MHz<br>5G NR n7 : 2500 MHz ~ 2570 MHz<br>5G NR n25 : 1850 MHz ~ 1915 MHz<br>5G NR n30 : 2305 MHz ~ 2315 MHz<br>5G NR n38 : 2570 MHz ~ 2620 MHz<br>5G NR n41 : 2496 MHz ~ 2690 MHz<br>5G NR n48 : 3550 MHz ~ 3700 MHz<br>5G NR n66 : 1710 MHz ~ 1780 MHz<br>5G NR n71 : 663 MHz ~ 698 MHz<br>5G NR n77 : 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz<br>5G NR n78 : 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 MHz<br>WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz<br>WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz<br>WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz<br>WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz<br>WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz<br>WLAN 6GHz U-NII-5: 5925 MHz ~ 6425 MHz<br>WLAN 6GHz U-NII-6: 6425 MHz ~ 6525 MHz<br>WLAN 6GHz U-NII-7: 6525 MHz ~ 6875 MHz<br>WLAN 6GHz U-NII-8: 6875 MHz ~ 7125 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz<br>NFC: 13.56 MHz |
| Mode                                    | GSM/GPRS/EGPRS/DTM<br>AMR / RMC 12.2Kbps<br>HSDPA<br>HSUPA<br>DC-HSDPA<br>HSPA+ (16QAM uplink is supported)<br>LTE: QPSK, 16QAM, 64QAM, 256QAM<br>5G NR: CP-OFDM / DFT-s-OFDM, PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM<br>WLAN 2.4GHz 802.11b/g/n HT20/HT40<br>WLAN 2.4GHz 802.11ac VHT20/VHT40<br>WLAN 2.4GHz 802.11ax HE20/HE40<br>WLAN 2.4GHz 802.11be EHT20/EHT40<br>WLAN 5GHz 802.11a/n HT20/HT40<br>WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/VHT160<br>WLAN 5GHz 802.11ax HE20/HE40/HE80/HE160<br>WLAN 5GHz 802.11be EHT20/EHT40/EHT80/EHT160<br>WLAN 6GHz 802.11a/ax HE20/HE40/HE80/HE160<br>WLAN 6GHz 802.11be EHT20/EHT40/EHT80/EHT160/EHT320<br>Bluetooth BR/EDR/LE<br>NFC: ASK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

### 3. SAR Characterization

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for Smart Transmit to control and manage RF exposure for  $f < 6$  GHz.

#### 3.1 SAR design target and uncertainty

**SAR design Target :**

| Exposure conditions | Measure Distance | Standalone SAR (W/kg) | Simultaneous SAR (W/kg) |
|---------------------|------------------|-----------------------|-------------------------|
|                     |                  | WWAN                  | WLAN+ WWAN 2/3/4/5G     |
|                     |                  | 2/3/4/5G              | 2/3/4/5G                |
| Body Worn (1g)      | 15 mm            | 0.95                  | 0.63                    |
| Hotspot (1g)        | 10 mm            | 0.63                  | 0.63                    |
| Head (1g)           | touch&tilt 15deg | 0.95                  | 0.63                    |
| Extremity (10g)     | 0 mm             | 2.22                  | 1.23                    |

#### **Antenna**

|                    |                                           |
|--------------------|-------------------------------------------|
| <b>UAT Antenna</b> | ANT0 & ANT4 & ANT6 & ANT7 & ANT10 & ANT13 |
| <b>LAT Antenna</b> | ANT1 & ANT5                               |

#### **Uncertainty:**

| Item              | Uncertainty dB (k=2) |
|-------------------|----------------------|
| Total uncertainty | 1.0                  |

To account for total uncertainty, SAR\_design\_target should be determined as:

$$SAR_{design\_target} < SAR_{regulatory\_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

### 3.2 SAR Char Table

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for Smart Transmit to control and manage RF exposure for  $f < 6$  GHz.

#### **<P<sub>limit</sub> for supported technologies and bands (P<sub>limit</sub> in EFS file)> for UAT**

| Band                  | Antenna | Head<br>(DSI5)<br>WWAN<br>Standalone | Head<br>(DSI10)<br>Head(2.4G<br>or 5G/6G<br>On) | Head<br>(DSI15)<br>Head(2.4G+<br>5G/6G On) | Body Worn<br>(DSI4)<br>WWAN<br>Standalone | Body Worn<br>(DSI9)<br>(2.4G or<br>5G/6G<br>On) | Body Worn<br>(DSI14)<br>(2.4G+<br>5G/6G<br>On) | Hotspot<br>(DSI17) | Extremity<br>(DSI1)<br>WWAN<br>Standalone | Extremity<br>(DSI6)<br>(2.4G or<br>5G/6G<br>On) | Extremity<br>(DSI11)<br>(2.4G+<br>5G/6G<br>On) | P <sub>max</sub> * |
|-----------------------|---------|--------------------------------------|-------------------------------------------------|--------------------------------------------|-------------------------------------------|-------------------------------------------------|------------------------------------------------|--------------------|-------------------------------------------|-------------------------------------------------|------------------------------------------------|--------------------|
| GSM850                | ANT 0   | 24.0                                 | 22.0                                            | 22.0                                       | 29.4                                      | 27.7                                            | 27.7                                           | 21.5               | 23.5                                      | 23.5                                            | 23.5                                           | 23.5               |
| GSM1900               | ANT 4   | 20.0                                 | 18.5                                            | 18.5                                       | 28.2                                      | 26.4                                            | 26.4                                           | 19.5               | 20.5                                      | 20.5                                            | 20.5                                           | 20.5               |
| WCDMA V               | ANT 0   | 24.3                                 | 22.3                                            | 22.3                                       | 28.9                                      | 27.2                                            | 27.2                                           | 21.8               | 23.3                                      | 23.3                                            | 23.3                                           | 23.3               |
| WCDMA IV              | ANT 4   | 19.5                                 | 18.0                                            | 18.0                                       | 27.8                                      | 26.0                                            | 26.0                                           | 21.5               | 22.5                                      | 20.0                                            | 20.0                                           | 22.5               |
| WCDMA II              | ANT 4   | 20.5                                 | 18.5                                            | 18.5                                       | 28.6                                      | 26.8                                            | 26.8                                           | 21.0               | 22.5                                      | 22.5                                            | 22.5                                           | 22.5               |
| LTE Band 71           | ANT 0   | 24.7                                 | 22.8                                            | 22.8                                       | 29.4                                      | 27.7                                            | 27.7                                           | 23.6               | 23.3                                      | 23.3                                            | 23.3                                           | 23.3               |
| LTE Band 12/17        | ANT 0   | 23.7                                 | 21.8                                            | 21.8                                       | 28.4                                      | 26.6                                            | 26.6                                           | 21.8               | 23.3                                      | 23.3                                            | 23.3                                           | 23.3               |
| LTE Band 13           | ANT 0   | 24.0                                 | 22.3                                            | 22.3                                       | 28.8                                      | 27.0                                            | 27.0                                           | 22.8               | 23.3                                      | 23.3                                            | 23.3                                           | 23.3               |
| LTE Band 5            | ANT 0   | 23.8                                 | 21.8                                            | 21.8                                       | 29.2                                      | 27.5                                            | 27.5                                           | 21.3               | 27.1                                      | 23.8                                            | 23.8                                           | 23.8               |
| LTE Band 26           | ANT 0   | 23.8                                 | 21.8                                            | 21.8                                       | 29.2                                      | 27.5                                            | 27.5                                           | 21.3               | 27.1                                      | 23.8                                            | 23.8                                           | 23.3               |
| LTE Band 66/4         | ANT 7   | 20.7                                 | 19.2                                            | 19.2                                       | 27.0                                      | 21.3                                            | 21.3                                           | 19.7               | 23.3                                      | 21.3                                            | 21.3                                           | 22.4               |
| LTE Band 66(EN-DC)    | ANT 7   | 20.7                                 | 19.2                                            | 19.2                                       | 27.0                                      | 21.3                                            | 21.3                                           | 19.7               | 23.3                                      | 21.3                                            | 21.3                                           | 23.3               |
| LTE Band 66/4         | ANT 4   | 19.9                                 | 17.9                                            | 17.9                                       | 27.4                                      | 25.7                                            | 25.7                                           | 20.4               | 22.9                                      | 21.9                                            | 21.9                                           | 22.4               |
| LTE Band 4(EN-DC)     | ANT 6   | 16.3                                 | 15.8                                            | 15.8                                       | 26.2                                      | 24.5                                            | 24.5                                           | 18.8               | 20.8                                      | 18.3                                            | 18.3                                           | 23.3               |
| LTE Band 66(EN-DC)    | ANT 6   | 16.3                                 | 15.8                                            | 15.8                                       | 26.2                                      | 24.5                                            | 24.5                                           | 18.8               | 20.8                                      | 18.3                                            | 18.3                                           | 23.8               |
| LTE Band 2(EN-DC)     | ANT 4   | 20.4                                 | 18.9                                            | 18.9                                       | 30.0                                      | 28.3                                            | 28.3                                           | 19.9               | 22.8                                      | 22.8                                            | 22.8                                           | 22.8               |
| LTE Band 25           | ANT 4   | 20.4                                 | 18.9                                            | 18.9                                       | 30.0                                      | 28.3                                            | 28.3                                           | 19.9               | 22.4                                      | 22.4                                            | 22.4                                           | 22.4               |
| LTE Band 25/2(EN-DC)  | ANT 6   | 16.8                                 | 15.3                                            | 15.3                                       | 25.4                                      | 18.8                                            | 18.8                                           | 19.3               | 21.8                                      | 18.8                                            | 18.8                                           | 23.3               |
| LTE Band 2(EN-DC)     | ANT 7   | 21.7                                 | 20.2                                            | 20.2                                       | 27.5                                      | 25.7                                            | 25.7                                           | 20.2               | 22.7                                      | 22.7                                            | 22.7                                           | 22.7               |
| LTE Band 25           | ANT 7   | 21.7                                 | 20.2                                            | 20.2                                       | 27.5                                      | 25.7                                            | 25.7                                           | 20.2               | 22.7                                      | 22.7                                            | 22.7                                           | 22.2               |
| LTE Band 30           | ANT 4   | 19.4                                 | 17.9                                            | 17.9                                       | 26.9                                      | 25.1                                            | 25.1                                           | 19.4               | 19.4                                      | 16.9                                            | 16.9                                           | 21.9               |
| LTE Band 30           | ANT 6   | 16.3                                 | 14.3                                            | 14.3                                       | 27.9                                      | 26.1                                            | 26.1                                           | 20.3               | 20.3                                      | 17.8                                            | 17.8                                           | 22.8               |
| LTE Band 30           | ANT 7   | 21.1                                 | 19.6                                            | 19.6                                       | 29.5                                      | 27.7                                            | 27.7                                           | 20.6               | 22.1                                      | 22.1                                            | 22.1                                           | 22.1               |
| LTE Band 7            | ANT 4   | 20.2                                 | 19.2                                            | 19.2                                       | 27.9                                      | 26.1                                            | 26.1                                           | 18.7               | 20.2                                      | 17.7                                            | 17.7                                           | 21.7               |
| LTE Band 7            | ANT 6   | 13.8                                 | 12.3                                            | 12.3                                       | 22.8                                      | 16.8                                            | 16.8                                           | 15.3               | 19.3                                      | 16.8                                            | 16.8                                           | 22.8               |
| LTE Band 7            | ANT 7   | 20.6                                 | 18.6                                            | 18.6                                       | 27.4                                      | 25.6                                            | 25.6                                           | 20.6               | 22.0                                      | 22.0                                            | 22.0                                           | 22.0               |
| LTE Band 41/38(PC3)** | ANT 4   | 21.1                                 | 19.3                                            | 19.3                                       | 25.8                                      | 24.0                                            | 24.0                                           | 18.8               | 20.8                                      | 17.8                                            | 17.8                                           | 20.4               |
| LTE Band 41(PC2)**    | ANT 4   | 21.1                                 | 19.3                                            | 19.3                                       | 25.8                                      | 24.0                                            | 24.0                                           | 18.8               | 20.8                                      | 17.8                                            | 17.8                                           | 20.8               |
| LTE Band 41(PC3)**    | ANT 6   | 14.2                                 | 12.2                                            | 12.2                                       | 24.6                                      | 22.9                                            | 22.9                                           | 14.3               | 19.8                                      | 17.3                                            | 17.3                                           | 21.3               |
| LTE Band 41(PC2)**    | ANT 6   | 14.2                                 | 12.2                                            | 12.2                                       | 24.6                                      | 22.9                                            | 22.9                                           | 14.3               | 19.8                                      | 17.3                                            | 17.3                                           | 21.7               |
| LTE Band 48           | ANT 6   | 13.8                                 | 12.3                                            | 12.3                                       | 25.8                                      | 24.2                                            | 24.2                                           | 17.3               | 17.3                                      | 14.8                                            | 14.8                                           | 21.8               |
| LTE Band 48           | ANT 7   | 20.3                                 | 19.3                                            | 19.3                                       | 20.8                                      | 17.8                                            | 17.8                                           | 18.3               | 20.3                                      | 17.8                                            | 17.8                                           | 20.8               |
| LTE Band 48           | ANT 10  | 11.8                                 | 10.3                                            | 10.3                                       | 21.8                                      | 15.3                                            | 15.3                                           | 17.3               | 17.3                                      | 15.3                                            | 15.3                                           | 21.8               |
| LTE Band 48           | ANT 13  | 19.3                                 | 16.3                                            | 16.3                                       | 27.0                                      | 25.2                                            | 25.2                                           | 19.8               | 21.8                                      | 21.8                                            | 21.8                                           | 21.8               |
| n71                   | ANT 0   | 23.2                                 | 21.7                                            | 21.7                                       | 29.5                                      | 27.4                                            | 27.4                                           | 22.7               | 23.7                                      | 23.7                                            | 23.7                                           | 23.7               |
| n5                    | ANT 0   | 24.2                                 | 21.7                                            | 21.7                                       | 29.5                                      | 27.5                                            | 27.5                                           | 22.2               | 23.7                                      | 23.7                                            | 23.7                                           | 23.7               |
| n66                   | ANT 4   | 19.2                                 | 17.2                                            | 17.2                                       | 27.2                                      | 25.2                                            | 25.2                                           | 20.7               | 22.7                                      | 22.7                                            | 22.7                                           | 22.7               |
| n66                   | ANT 6   | 15.7                                 | 14.2                                            | 14.2                                       | 25.5                                      | 23.7                                            | 23.7                                           | 19.2               | 20.7                                      | 18.2                                            | 18.2                                           | 23.7               |
| n66                   | ANT 7   | 21.2                                 | 19.2                                            | 19.2                                       | 27.6                                      | 25.5                                            | 25.5                                           | 21.2               | 22.2                                      | 22.2                                            | 22.2                                           | 22.2               |
| n25/2                 | ANT 4   | 20.7                                 | 18.7                                            | 18.7                                       | 29.0                                      | 27.0                                            | 27.0                                           | 21.7               | 23.2                                      | 23.2                                            | 23.2                                           | 23.2               |
| n25/2                 | ANT 6   | 16.7                                 | 14.7                                            | 14.7                                       | 25.5                                      | 23.7                                            | 23.7                                           | 18.7               | 21.7                                      | 19.2                                            | 19.2                                           | 23.7               |
| n2                    | ANT 7   | 22.1                                 | 20.7                                            | 20.7                                       | 23.1                                      | 19.6                                            | 19.6                                           | 20.6               | 22.1                                      | 19.6                                            | 19.6                                           | 22.7               |
| n25                   | ANT 7   | 22.1                                 | 20.7                                            | 20.7                                       | 23.1                                      | 19.6                                            | 19.6                                           | 20.6               | 22.1                                      | 19.6                                            | 19.6                                           | 23.1               |
| n30                   | ANT 4   | 19.5                                 | 17.5                                            | 17.5                                       | 26.2                                      | 24.1                                            | 24.1                                           | 20.7               | 20.7                                      | 18.2                                            | 18.2                                           | 22.7               |
| n7                    | ANT 4   | 19.0                                 | 18.5                                            | 18.5                                       | 26.8                                      | 24.7                                            | 24.7                                           | 19.0               | 19.0                                      | 16.5                                            | 16.5                                           | 22.5               |
| n7                    | ANT 6   | 14.2                                 | 12.2                                            | 12.2                                       | 24.2                                      | 22.2                                            | 22.2                                           | 15.7               | 19.2                                      | 16.7                                            | 16.7                                           | 23.2               |
| n7                    | ANT 7   | 21.0                                 | 19.0                                            | 19.0                                       | 27.8                                      | 25.8                                            | 25.8                                           | 20.5               | 22.5                                      | 22.5                                            | 22.5                                           | 22.5               |
| n38(PC3)              | ANT 4   | 20.2                                 | 19.2                                            | 19.2                                       | 26.2                                      | 24.2                                            | 24.2                                           | 19.2               | 20.2                                      | 17.7                                            | 17.7                                           | 22.7               |

|             |        |      |      |      |      |      |      |      |      |      |      |      |
|-------------|--------|------|------|------|------|------|------|------|------|------|------|------|
| n41(PC3)    | ANT 4  | 20.2 | 19.2 | 19.2 | 26.2 | 24.2 | 24.2 | 19.2 | 20.2 | 17.7 | 17.7 | 22.2 |
| n41(PC2)    | ANT 4  | 20.2 | 19.2 | 19.2 | 26.2 | 24.2 | 24.2 | 19.2 | 20.2 | 17.7 | 17.7 | 24.2 |
| n38(PC3)    | ANT 6  | 14.2 | 12.2 | 12.2 | 25.2 | 21.7 | 21.7 | 15.2 | 20.0 | 17.5 | 17.5 | 23.7 |
| n41(PC3)    | ANT 6  | 14.2 | 12.2 | 12.2 | 25.2 | 21.7 | 21.7 | 15.2 | 20.0 | 17.5 | 17.5 | 23.2 |
| n41(PC2)    | ANT 6  | 14.2 | 12.2 | 12.2 | 25.2 | 21.7 | 21.7 | 15.2 | 20.0 | 17.5 | 17.5 | 25.2 |
| n38         | ANT 7  | 22.0 | 20.0 | 20.0 | 29.2 | 27.2 | 27.2 | 22.0 | 23.0 | 23.0 | 23.0 | 23.0 |
| n48         | ANT 6  | 14.2 | 12.2 | 12.2 | 24.4 | 22.2 | 22.2 | 17.7 | 17.2 | 14.7 | 14.7 | 24.2 |
| n48         | ANT 13 | 20.2 | 18.2 | 18.2 | 25.6 | 23.2 | 23.2 | 20.7 | 20.2 | 17.7 | 17.7 | 24.2 |
| n77/78(PC3) | ANT 6  | 14.2 | 12.2 | 12.2 | 25.7 | 22.2 | 22.2 | 18.2 | 16.7 | 14.2 | 14.2 | 23.2 |
| n77(PC2)    | ANT 6  | 14.2 | 12.2 | 12.2 | 25.7 | 22.2 | 22.2 | 18.2 | 16.7 | 14.2 | 14.2 | 25.7 |
| n78(PC2)    | ANT 6  | 14.2 | 12.2 | 12.2 | 25.7 | 22.2 | 22.2 | 18.2 | 16.7 | 14.2 | 14.2 | 25.2 |
| n77/78(PC3) | ANT 7  | 20.7 | 19.2 | 19.2 | 24.2 | 18.2 | 18.2 | 18.2 | 20.7 | 18.2 | 18.2 | 21.7 |
| n77(PC2)    | ANT 7  | 20.7 | 19.2 | 19.2 | 24.2 | 18.2 | 18.2 | 18.2 | 20.7 | 18.2 | 18.2 | 24.2 |
| n78(PC2)    | ANT 7  | 20.7 | 19.2 | 19.2 | 24.2 | 18.2 | 18.2 | 18.2 | 20.7 | 18.2 | 18.2 | 23.7 |
| n77/78(PC3) | ANT 10 | 13.7 | 11.7 | 11.7 | 25.7 | 16.7 | 16.7 | 19.2 | 19.2 | 16.7 | 16.7 | 23.2 |
| n77(PC2)    | ANT 10 | 13.7 | 11.7 | 11.7 | 25.7 | 16.7 | 16.7 | 19.2 | 19.2 | 16.7 | 16.7 | 25.7 |
| n78(PC2)    | ANT 10 | 13.7 | 11.7 | 11.7 | 25.7 | 16.7 | 16.7 | 19.2 | 19.2 | 16.7 | 16.7 | 25.2 |
| n77(PC3)    | ANT 13 | 18.7 | 17.2 | 17.2 | 25.2 | 23.2 | 23.2 | 19.2 | 18.7 | 16.2 | 16.2 | 22.7 |
| n78(PC3)    | ANT 13 | 18.7 | 17.2 | 17.2 | 25.2 | 23.2 | 23.2 | 19.2 | 18.7 | 16.2 | 16.2 | 23.2 |
| n77/78(PC2) | ANT 13 | 18.7 | 17.2 | 17.2 | 25.2 | 23.2 | 23.2 | 19.2 | 18.7 | 16.2 | 16.2 | 25.2 |

**<P<sub>limit</sub> for supported technologies and bands (P<sub>limit</sub> in EFS file)> for LAT**

| Band                  | Antenna | Head<br>(DSI5)<br>WWAN<br>standalone | Head<br>(DSI10)<br>Head(2.4G<br>or 5G/6G<br>On) | Head<br>(DSI15)<br>Head(2.4G<br>+5G/6G On) | Body Worn<br>(DSI4)<br>WWAN<br>standalone | Body Worn<br>(DSI9)<br>(2.4G or<br>5G/6G On) | Body Worn<br>(DSI14)<br>(2.4G+<br>5G/6G On) | Hotspot<br>(DSI17) | Extremity<br>(DSI2)<br>WWAN<br>standalone | Extremity<br>(DSI7)<br>(2.4G or<br>5G/6G<br>On) | Extremity<br>(DSI12)<br>(2.4G+<br>5G/6G<br>On) | P <sub>max</sub> * |
|-----------------------|---------|--------------------------------------|-------------------------------------------------|--------------------------------------------|-------------------------------------------|----------------------------------------------|---------------------------------------------|--------------------|-------------------------------------------|-------------------------------------------------|------------------------------------------------|--------------------|
| GSM850                | ANT 1   | 31.8                                 | 30.0                                            | 30.0                                       | 31.0                                      | 29.3                                         | 29.3                                        | 27.2               | 24.5                                      | 24.5                                            | 24.5                                           | 24.5               |
| GSM1900               | ANT 5   | 31.1                                 | 29.3                                            | 29.3                                       | 26.7                                      | 24.9                                         | 24.9                                        | 20.0               | 21.5                                      | 21.5                                            | 21.5                                           | 21.5               |
| WCDMA V               | ANT 1   | 31.3                                 | 29.5                                            | 29.5                                       | 30.9                                      | 29.2                                         | 29.2                                        | 26.6               | 23.8                                      | 23.8                                            | 23.8                                           | 23.8               |
| WCDMA IV              | ANT 5   | 33.0                                 | 31.3                                            | 31.3                                       | 23.8                                      | 19.8                                         | 19.8                                        | 20.3               | 23.8                                      | 19.8                                            | 19.8                                           | 23.8               |
| WCDMA II              | ANT 5   | 32.5                                 | 30.8                                            | 30.8                                       | 23.8                                      | 19.3                                         | 19.3                                        | 19.3               | 23.8                                      | 19.3                                            | 19.3                                           | 23.8               |
| LTE Band 71           | ANT 1   | 34.4                                 | 32.6                                            | 32.6                                       | 31.5                                      | 29.7                                         | 29.7                                        | 29.9               | 23.8                                      | 23.8                                            | 23.8                                           | 23.8               |
| LTE Band 12/17        | ANT 1   | 33.0                                 | 31.3                                            | 31.3                                       | 30.5                                      | 28.8                                         | 28.8                                        | 26.4               | 23.8                                      | 23.8                                            | 23.8                                           | 23.8               |
| LTE Band 13           | ANT 1   | 31.5                                 | 29.8                                            | 29.8                                       | 30.0                                      | 28.3                                         | 28.3                                        | 26.8               | 23.8                                      | 23.8                                            | 23.8                                           | 23.8               |
| LTE Band 26/5         | ANT 1   | 31.6                                 | 29.9                                            | 29.9                                       | 31.9                                      | 30.1                                         | 30.1                                        | 28.0               | 23.8                                      | 23.8                                            | 23.8                                           | 23.8               |
| LTE Band 66/4         | ANT 5   | 33.0                                 | 31.2                                            | 31.2                                       | 23.8                                      | 20.3                                         | 20.3                                        | 20.3               | 23.8                                      | 20.3                                            | 20.3                                           | 23.8               |
| LTE Band 25/2         | ANT 5   | 34.3                                 | 32.5                                            | 32.5                                       | 23.8                                      | 20.3                                         | 20.3                                        | 19.8               | 23.8                                      | 20.3                                            | 20.3                                           | 23.8               |
| LTE Band 30           | ANT 5   | 31.7                                 | 29.9                                            | 29.9                                       | 23.3                                      | 17.8                                         | 17.8                                        | 20.3               | 23.3                                      | 17.8                                            | 17.8                                           | 23.3               |
| LTE Band 7            | ANT 5   | 32.9                                 | 31.1                                            | 31.1                                       | 23.1                                      | 18.3                                         | 18.3                                        | 19.8               | 23.1                                      | 18.3                                            | 18.3                                           | 23.1               |
| LTE Band 41/38(PC3)** | ANT 5   | 31.5                                 | 29.8                                            | 29.8                                       | 22.2                                      | 17.3                                         | 17.3                                        | 19.3               | 22.2                                      | 17.3                                            | 17.3                                           | 21.8               |
| LTE Band 41(PC2)**    | ANT 5   | 31.5                                 | 29.8                                            | 29.8                                       | 22.2                                      | 17.3                                         | 17.3                                        | 19.3               | 22.2                                      | 17.3                                            | 17.3                                           | 22.2               |
| n71                   | ANT 1   | 31.5                                 | 29.7                                            | 29.7                                       | 32.2                                      | 30.2                                         | 30.2                                        | 26.4               | 24.2                                      | 24.2                                            | 24.2                                           | 24.2               |
| n5                    | ANT 1   | 31.8                                 | 30.0                                            | 30.0                                       | 29.7                                      | 27.6                                         | 27.6                                        | 27.5               | 24.2                                      | 24.2                                            | 24.2                                           | 24.2               |
| n66                   | ANT 5   | 31.6                                 | 29.8                                            | 29.8                                       | 24.2                                      | 20.2                                         | 20.2                                        | 20.2               | 24.2                                      | 20.2                                            | 20.2                                           | 24.2               |
| n25/2                 | ANT 5   | 31.5                                 | 29.7                                            | 29.7                                       | 24.2                                      | 20.2                                         | 20.2                                        | 20.2               | 24.2                                      | 20.2                                            | 20.2                                           | 24.2               |
| n30                   | ANT 5   | 32.5                                 | 30.7                                            | 30.7                                       | 23.7                                      | 18.2                                         | 18.2                                        | 20.7               | 23.7                                      | 18.2                                            | 18.2                                           | 23.7               |
| n7                    | ANT 5   | 30.9                                 | 29.2                                            | 29.2                                       | 23.7                                      | 17.7                                         | 17.7                                        | 19.2               | 23.7                                      | 17.7                                            | 17.7                                           | 23.7               |
| n38(PC3)              | ANT 5   | 31.0                                 | 29.2                                            | 29.2                                       | 25.7                                      | 17.7                                         | 17.7                                        | 19.2               | 25.7                                      | 17.7                                            | 17.7                                           | 24.2               |
| n41(PC3)              | ANT 5   | 31.0                                 | 29.2                                            | 29.2                                       | 25.7                                      | 17.7                                         | 17.7                                        | 19.2               | 25.7                                      | 17.7                                            | 17.7                                           | 23.2               |
| n41(PC2)              | ANT 5   | 31.0                                 | 29.2                                            | 29.2                                       | 25.7                                      | 17.7                                         | 17.7                                        | 19.2               | 25.7                                      | 17.7                                            | 17.7                                           | 25.7               |

Note: 1) \*P<sub>max</sub> is used for RF tune up procedure. The maximum allowed output power is equal to P<sub>max</sub> + uncertainty.

2) \*\*All P<sub>limit</sub> power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM).

3) The max allowed output power is the P<sub>limit</sub> + 1dB device uncertainty, and if P<sub>limit</sub> is higher than P<sub>max</sub>, the device output power will be P<sub>max</sub> instead.

4) LTE B30 at Ant6/7 and LTE B48 at Ant7/10 were limited to EN-DC combination.

5) The following table is duty cycle and factor used for calculating time average power.

| GSM/FDD/TDD | Duty Cycle | Time average calculation factor(dB) |
|-------------|------------|-------------------------------------|
| GSM 1TX     | 12.50%     | -9.0                                |
| GSM 2TX     | 25%        | -6.0                                |
| GSM 3TX     | 37.50%     | -4.3                                |
| GSM 4TX     | 50%        | -3.0                                |
| FDD LTE     | 100%       | 0.0                                 |
| TDD LTE     | 63.30%     | -2.0                                |
| TDD HPUE    | 43.30%     | -3.6                                |
| NR FDD/TDD  | 100%       | 0.0                                 |