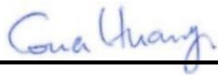


# RF EXPOSURE COMPLIANCE SUMMARY REPORT

FCC ID : O57FLEX5G14X05  
Equipment : Notebook Computer  
Brand Name : Lenovo  
Applicant : Lenovo (Shanghai) Electronics Technology Co., Ltd.  
Section 304-305, Building No. 4, # 222, Meiyue Road,  
China (Shanghai) Pilot Free Trade Zone, Shanghai

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



Approved by: Cona Huang / Deputy Manager

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## History of this test report

| Report No. | Version | Description             | Issued Date   |
|------------|---------|-------------------------|---------------|
| FA9N2705D  | 01      | Initial issue of report | Feb. 19, 2020 |
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## **1. Equipment Under Test (EUT) Information**

### **1.1 General Information**

| Product Feature & Specification         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment Name                          | Notebook Computer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Brand Name                              | Lenovo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| FCC ID                                  | O57FLEX5G14X05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Wireless Technology and Frequency Range | 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>LTE Band 12: 699.7 MHz ~ 715.3 MHz<br>LTE Band 13: 779.5 MHz ~ 784.5 MHz<br>LTE Band 14: 790.5 MHz ~ 795.5 MHz<br>LTE Band 17: 706.5 MHz ~ 713.5 MHz<br>LTE Band 25: 1850.7 MHz ~ 1914.3 MHz<br>LTE Band 26: 814.7 MHz ~ 848.3 MHz<br>LTE Band 30: 2307.5 MHz ~ 2312.5 MHz<br>LTE Band 38: 2572.5 MHz ~ 2617.5 MHz<br>LTE Band 41: 2498.5 MHz ~ 2687.5 MHz<br>LTE Band 48: 3552.5 MHz ~ 3697.5 MHz<br>LTE Band 66: 1710.7 MHz ~ 1779.3 MHz<br>LTE Band 71: 665.5 MHz ~ 695.5 MHz<br>5G NR n260: 37GHz~40GHz<br>5G NR n261: 27.5GHz~28.35GHz<br>WLAN 2.4GHz Band: 2412 MHz ~ 2472 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 ~ 5720 MHz<br>WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz |
| Mode                                    | RMC 12.2Kbps<br>HSDPA<br>HSUPA<br>DC-HSDPA<br>HSPA+<br>LTE: QPSK, 16QAM, 64QAM<br>5GNR: DFT-s-OFDM/CP-OFDM, QPSK / 16QAM / 64QAM<br>WLAN: 802.11a/b/g/n/ac HT20 / HT40 / VHT20 / VHT40 / VHT80<br>Bluetooth BR/EDR/LE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

Reviewed by: **Jason Wang**

Report Producer: **Wan Liu**

## **2. Strategy for Compliance Demonstration**

The FCC RF exposure limit is defined based on time-averaged RF exposure. When running in a wireless device, Qualcomm Smart Transmit algorithm enables more elegant power control mechanisms for RF exposure management. It ensures at all times the wireless device is in compliance with the FCC limit of RF exposure time-averaged over a defined time window, denoted as  $T_{SAR}$  and  $T_{PD}$  for specific absorption rate (SAR for transmit frequency < 6 GHz) and power density (PD for transmit frequency > 6 GHz) time windows, respectively.

The equipment under test (EUT) is Notebook Computer (FCC ID: O57FLEX5G14X05), it contains:

1. WWAN 2G/3G/4G technologies
2. mmw 5GNR 28GHz and 39GHz bands.
3. WLAN/BT

Both of WWAN and FR2 are enabled with Qualcomm<sup>®</sup> Smart Transmit feature. This feature performs time averaging algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure in compliance with FCC requirements all the time. WLAN/BT is not enabled with Smart Transmit.

Demonstrating compliance of EUT enabled with Qualcomm Smart Transmit feature is completed in three parts:

### **0. RF Exposure Compliance Test Report Part 0: SAR Characterization and PD Characterization**

The SAR and PD Characterization, denoted as SAR Char and PD Char, determines the power limit that meets FCC exposure requirement after accounting for device design related uncertainties for each supported radio configuration and RF exposure usage scenario.

### 1. RF Exposure Compliance Test Report Part 1: Test in Static Transmission Condition

Part 1 test is to demonstrate that EUT meets FCC SAR and PD limits when transmitting at pre-determined maximum time-averaged power level for WWAN radios (i.e., 3G/4G, 5GNR). The SAR and PD measurement in Part 1 is under static transmission condition.

### 2. RF Exposure Compliance Test Report Part 2: Test in Dynamic Transmission Condition

In Part 2 test, the compliance is assessed in Tx varying transmission condition to validate the Qualcomm® Smart Transmit algorithm. The test results reported in Part 2 demonstrates that EUT complies with FCC RF exposure requirement under Tx varying transmission scenarios

## 3. Compliance Summary General Information

Notebook Computer (FCC ID: O57FLEX5G14X05) complies with FCC RF exposure requirements.

**Table 4-1 Reported RF exposure level**

|                                                                                    | FCC Limit | Reported RF Exposure level | Notes                                      |
|------------------------------------------------------------------------------------|-----------|----------------------------|--------------------------------------------|
| Highest 1g SAR at $P_{limit}$ (W/kg)                                               | 1.6       | 1.20                       | Sporton Document No.<br>FA9N2705A (Part 1) |
| Highest 4cm <sup>2</sup> -avg PD at <i>input.power.limit</i> (mW/cm <sup>2</sup> ) | 1.0       | 0.441                      | Sporton Document No.<br>FA9N2705B (Part 1) |
| Highest normalized exposure ratio for simultaneous Tx                              | 1.0       | 0.994                      | Sporton Document No.<br>FA9N2705A (Part 1) |