

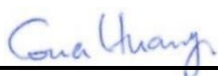
# RF EXPOSURE EVALUATION REPORT

FCC ID : RI7FN980  
Equipment : 5G/ LTE M.2 Data Card  
Brand Name : Telit  
Model Name : FN980  
Applicant : TELIT COMMUNICATIONS S.P.A.  
VIA STAZIONE DI PROSECCO 5B - SGONICO -TRIESTE - ITALY  
Manufacturer : TELIT COMMUNICATIONS S.P.A.  
VIA STAZIONE DI PROSECCO 5B - SGONICO -TRIESTE - ITALY  
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 2.1091 and it complies with applicable limit.

The 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.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.



Approved by: Cona Huang / Deputy Manager

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
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## History of this test report

| Report No. | Version | Description             | Issued Date   |
|------------|---------|-------------------------|---------------|
| FA031715   | Rev. 01 | Initial issue of report | Jul. 27, 2020 |
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**1. Description of Equipment Under Test (EUT)**

| Product Feature & Specification         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EUT Type                                | 5G/ LTE M.2 Data Card                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Brand Name                              | Telit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Model Name                              | FN980                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| FCC ID                                  | RI7FN980                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Wireless Technology and Frequency Range | 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 14: 788 MHz ~ 798 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 42: 3550 MHz ~ 3600 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 n12 : 699 MHz ~ 716 MHz<br>5G NR n25 : 1850 MHz ~ 1915 MHz<br>5G NR n66 : 1710 MHz ~ 1780 MHz<br>5G NR n71 : 663 MHz ~ 698 MHz |
| Mode                                    | RMC 12.2Kbps<br>HSDPA<br>HSUPA<br>DC-HSDPA<br>LTE: QPSK, 16QAM, 64QAM<br>5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| HW Version                              | 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| SW Version                              | M0H.000201                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| EUT Stage                               | Production Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

**Reviewed by:** Jason Wang

**Report Producer:** Daisy Peng

## **2. RF Exposure Limit Introduction**

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

| Frequency range (MHz)                                          | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposures</b>        |                               |                               |                                     |                          |
| 0.3-3.0                                                        | 614                           | 1.63                          | *(100)                              | 6                        |
| 3.0-30                                                         | 1842/f                        | 4.89/f                        | *(900/f <sup>2</sup> )              | 6                        |
| 30-300                                                         | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300-1500                                                       |                               |                               | f/300                               | 6                        |
| 1500-100,000                                                   |                               |                               | 5                                   | 6                        |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 0.3-1.34                                                       | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34-30                                                        | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30-300                                                         | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300-1500                                                       |                               |                               | f/1500                              | 30                       |
| 1500-100,000                                                   |                               |                               | 1.0                                 | 30                       |

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

### 3. Radio Frequency Radiation Exposure Evaluation

#### 3.1. Standalone Power Density Calculation

##### <UMTS>

| Band | Lowest Frequency (MHz) | Max Conducted output power (per Tune-up) (dBm) | Duty Cycle (%) | AVG Power with Duty Cycle (dBm) | MPE evaluation distance (m) | FCC MPE Limit (mW/cm <sup>2</sup> ) | IC MPE Limit (W/m <sup>2</sup> ) | IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Result / FCC/IC MPE Limit Ratio | FCC EIRP/ERP limit (W) | FCC EIRP/ERP limit (dBm) | IC EIRP/ERP limit (W) | IC EIRP/ERP limit (dBm) | Ant Gain to meet FCC MPE limit (dBi) | Ant Gain to meet FCC ERP/ERP limit (dBi) | Max Gain to meet FCC ERP/ERP and MPE limit (dBi) | Ant Gain to meet IC MPE limit (dBi) | Ant Gain to meet IC ERP/ERP limit (dBi) | Max Gain to meet IC ERP/ERP and MPE limit (dBi) | Max Gain to consider same Frequency with LTE | Max gain allowed (dBi) |
|------|------------------------|------------------------------------------------|----------------|---------------------------------|-----------------------------|-------------------------------------|----------------------------------|------------------------------------|----------------------------------------|--------------------------------------------|------------------------|--------------------------|-----------------------|-------------------------|--------------------------------------|------------------------------------------|--------------------------------------------------|-------------------------------------|-----------------------------------------|-------------------------------------------------|----------------------------------------------|------------------------|
| 5    | 824                    | 24.5                                           | 100            | 24.50                           | 0.2                         | 0.549                               | 2.576                            | 0.258                              | 0.258                                  | 0.4876                                     | 7.00                   | 38.5                     | 11.50                 | 40.6                    | 9.9                                  | 14.0                                     | 9.9                                              | 6.6                                 | 16.1                                    | 6.6                                             | 3.5                                          | 3.5                    |
| 4    | 1710                   | 25.0                                           | 100            | 25.00                           | 0.2                         | 1.000                               | 4.242                            | 0.424                              | 0.424                                  | 0.4692                                     | 1.00                   | 30.0                     | 1.00                  | 30.0                    | 12.0                                 | 5.0                                      | 5.0                                              | 8.3                                 | 5.0                                     | 5.0                                             | 5.5                                          | 5.0                    |
| 2    | 1850                   | 25.0                                           | 100            | 25.00                           | 0.2                         | 1.000                               | 4.476                            | 0.448                              | 0.448                                  | 0.5598                                     | 2.00                   | 33.0                     | 2.00                  | 33.0                    | 12.0                                 | 8.0                                      | 8.0                                              | 8.5                                 | 8.0                                     | 8.0                                             | 6.0                                          | 6.0                    |

##### <LTE>

| Band | Frequency (MHz) | Max Conducted output power (per Tune-up) (dBm) | Duty Cycle (%) | AVG Power with Duty Cycle (dBm) | Distance (m) | FCC MPE Limit (mW/cm <sup>2</sup> ) | IC MPE Limit (W/m <sup>2</sup> ) | IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Result / FCC/IC MPE Limit Ratio | FCC EIRP/ERP limit (W) | ERP limit (dBm) | IC EIRP/ERP limit (W) | IC EIRP/ERP limit (dBm) | Ant Gain to meet FCC MPE limit (dBi) | Ant Gain to meet FCC ERP/ERP limit (dBi) | Max Gain to meet FCC ERP/ERP and MPE limit (dBi) | Ant Gain to meet IC MPE limit (dBi) | Ant Gain to meet IC ERP/ERP limit (dBi) | Max Gain to meet IC ERP/ERP and MPE limit (dBi) | Max Gain to consider EN-DC Active | Max gain allowed (dBi) |
|------|-----------------|------------------------------------------------|----------------|---------------------------------|--------------|-------------------------------------|----------------------------------|------------------------------------|----------------------------------------|--------------------------------------------|------------------------|-----------------|-----------------------|-------------------------|--------------------------------------|------------------------------------------|--------------------------------------------------|-------------------------------------|-----------------------------------------|-------------------------------------------------|-----------------------------------|------------------------|
| 71   | 663             | 24.5                                           | 100            | 24.50                           | 0.2          | 0.442                               | 2.220                            | 0.222                              | 0.222                                  | 0.5042                                     | 3.00                   | 34.8            | 3.00                  | 34.8                    | 9.0                                  | 10.3                                     | 9.0                                              | 6.0                                 | 10.3                                    | 6.0                                             | 3.0                               | 3.0                    |
| 12   | 699             | 24.5                                           | 100            | 24.50                           | 0.2          | 0.466                               | 2.302                            | 0.230                              | 0.230                                  | 0.4863                                     | 3.00                   | 34.8            | 5.00                  | 37.0                    | 9.2                                  | 10.3                                     | 9.2                                              | 6.1                                 | 12.5                                    | 6.1                                             | 3.0                               | 3.0                    |
| 17   | 704             | 24.5                                           | 100            | 24.50                           | 0.2          | 0.469                               | 2.313                            | 0.231                              | 0.231                                  | 0.5430                                     | 3.00                   | 34.8            | 5.00                  | 37.0                    | 9.2                                  | 10.3                                     | 9.2                                              | 6.2                                 | 12.5                                    | 6.2                                             | 3.5                               | 3.5                    |
| 13   | 777             | 24.5                                           | 100            | 24.50                           | 0.2          | 0.518                               | 2.474                            | 0.247                              | 0.247                                  | 0.5076                                     | 3.00                   | 34.8            | 5.00                  | 37.0                    | 9.7                                  | 10.3                                     | 9.7                                              | 6.4                                 | 12.5                                    | 6.4                                             | 3.5                               | 3.5                    |
| 14   | 788             | 24.5                                           | 100            | 24.50                           | 0.2          | 0.525                               | 2.498                            | 0.250                              | 0.250                                  | 0.5027                                     | 3.00                   | 34.8            | 3.00                  | 34.8                    | 9.7                                  | 10.3                                     | 9.7                                              | 6.5                                 | 10.3                                    | 6.5                                             | 3.5                               | 3.5                    |
| 26   | 814             | 23.5                                           | 100            | 23.50                           | 0.2          | 0.543                               | 2.554                            | 0.255                              | 0.255                                  | 0.4917                                     | 7.00                   | 38.5            | 11.50                 | 40.6                    | 10.9                                 | 15.0                                     | 10.9                                             | 7.6                                 | 17.1                                    | 7.6                                             | 4.5                               | 4.5                    |
| 5    | 824             | 24.0                                           | 100            | 24.00                           | 0.2          | 0.549                               | 2.576                            | 0.258                              | 0.258                                  | 0.4346                                     | 7.00                   | 38.5            | 11.50                 | 40.6                    | 10.4                                 | 14.5                                     | 10.4                                             | 7.1                                 | 16.6                                    | 7.1                                             | 3.5                               | 3.5                    |
| 4    | 1710            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.242                            | 0.424                              | 0.424                                  | 0.3727                                     | 1.00                   | 30.0            | 1.00                  | 30.0                    | 13.5                                 | 6.5                                      | 6.5                                              | 9.8                                 | 6.5                                     | 6.5                                             | 5.5                               | 5.5                    |
| 66   | 1710            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.242                            | 0.424                              | 0.424                                  | 0.3727                                     | 1.00                   | 30.0            | 1.00                  | 30.0                    | 13.5                                 | 6.5                                      | 6.5                                              | 9.8                                 | 6.5                                     | 6.5                                             | 5.5                               | 5.5                    |
| 2    | 1850            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.476                            | 0.448                              | 0.448                                  | 0.3963                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.5                                 | 9.5                                      | 9.5                                              | 10.0                                | 9.5                                     | 9.5                                             | 6.0                               | 6.0                    |
| 25   | 1850            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.476                            | 0.448                              | 0.448                                  | 0.3963                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.5                                 | 9.5                                      | 9.5                                              | 10.0                                | 9.5                                     | 9.5                                             | 6.0                               | 6.0                    |
| 30   | 2305            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 5.202                            | 0.520                              | 0.520                                  | 0.0957                                     | 0.25                   | 24.0            | 0.25                  | 24.0                    | 13.5                                 | 0.5                                      | 0.5                                              | 10.7                                | 0.5                                     | 0.5                                             | 0.5                               | 0.5                    |
| 41   | 2496            | 26.0                                           | 100            | 26.00                           | 0.2          | 1.000                               | 5.493                            | 0.549                              | 0.549                                  | 0.5118                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 11.0                                 | 7.0                                      | 7.0                                              | 8.4                                 | 7.0                                     | 7.0                                             | 5.5                               | 5.5                    |
| 7    | 2500            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 5.499                            | 0.550                              | 0.550                                  | 0.2875                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.5                                 | 9.5                                      | 9.5                                              | 10.9                                | 9.5                                     | 9.5                                             | 5.5                               | 5.5                    |
| 38   | 2570            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 5.604                            | 0.560                              | 0.560                                  | 0.2821                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.5                                 | 9.5                                      | 9.5                                              | 11.0                                | 9.5                                     | 9.5                                             | 5.5                               | 5.5                    |
| 48   | 3400            | 22.5                                           | 100            | 22.50                           | 0.2          | 1.000                               | 6.785                            | 0.678                              | 0.678                                  | 0.0585                                     | 0.20                   | 23.0            | 0.20                  | 23.0                    | 14.5                                 | 0.5                                      | 0.5                                              | 12.8                                | 0.5                                     | 0.5                                             | 0.5                               | 0.5                    |
| 42   | 3550            | 22.5                                           | 100            | 22.50                           | 0.2          | 1.000                               | 6.988                            | 0.699                              | 0.699                                  | 0.0568                                     | 0.20                   | 23.0            | 0.20                  | 23.0                    | 14.5                                 | 0.5                                      | 0.5                                              | 13.0                                | 0.5                                     | 0.5                                             | 0.5                               | 0.5                    |

**<5G NR>**

| Band | Frequency (MHz) | Max Conducted output power (per Tune-up) (dBm) | Duty Cycle (%) | AVG Power with Duty Cycle (dBm) | Distance (m) | FCC MPE Limit (mW/cm <sup>2</sup> ) | IC MPE Limit (W/m <sup>2</sup> ) | IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Result / FCC/IC MPE Limit Ratio | FCC EIRP/ERP limit (W) | ERP limit (dBm) | IC EIRP/ERP limit (W) | IC EIRP/ERP limit (dBm) | Ant Gain to meet FCC MPE limit (dBi) | Ant Gain to meet FCC ERP/EIRP limit (dBi) | Max Gain to meet FCC ERP/EIRP and MPE limit (dBi) | Ant Gain to meet IC MPE limit (dBi) | Ant Gain to meet IC ERP/EIRP limit (dBi) | Max Gain to meet IC ERP/EIRP and MPE limit (dBi) | Max Gain to consider EN-DC Active | Max gain allowed (dBi) |
|------|-----------------|------------------------------------------------|----------------|---------------------------------|--------------|-------------------------------------|----------------------------------|------------------------------------|----------------------------------------|--------------------------------------------|------------------------|-----------------|-----------------------|-------------------------|--------------------------------------|-------------------------------------------|---------------------------------------------------|-------------------------------------|------------------------------------------|--------------------------------------------------|-----------------------------------|------------------------|
| n71  | 663             | 24.0                                           | 100            | 24.00                           | 0.2          | 0.442                               | 2.220                            | 0.222                              | 0.222                                  | 0.4494                                     | 3.00                   | 34.8            | 3.00                  | 34.8                    | 9.5                                  | 10.8                                      | 9.5                                               | 6.5                                 | 10.8                                     | 6.5                                              | 3.0                               | 3.0                    |
| n12  | 699             | 24.0                                           | 100            | 24.00                           | 0.2          | 0.466                               | 2.302                            | 0.230                              | 0.230                                  | 0.4334                                     | 3.00                   | 34.8            | 5.00                  | 37.0                    | 9.7                                  | 10.8                                      | 9.7                                               | 6.6                                 | 13.0                                     | 6.6                                              | 3.0                               | 3.0                    |
| n5   | 824             | 24.0                                           | 100            | 24.00                           | 0.2          | 0.549                               | 2.576                            | 0.258                              | 0.258                                  | 0.4346                                     | 7.00                   | 38.5            | 1.00                  | 30.0                    | 10.4                                 | 14.5                                      | 10.4                                              | 7.1                                 | 6.0                                      | 6.0                                              | 3.5                               | 3.5                    |
| n66  | 1710            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.242                            | 0.424                              | 0.424                                  | 0.3727                                     | 1.00                   | 30.0            | 5.00                  | 37.0                    | 13.5                                 | 6.5                                       | 6.5                                               | 9.8                                 | 13.5                                     | 9.8                                              | 5.5                               | 5.5                    |
| n2   | 1850            | 24.0                                           | 100            | 24.00                           | 0.2          | 1.000                               | 4.476                            | 0.448                              | 0.448                                  | 0.4447                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.0                                 | 9.0                                       | 9.0                                               | 9.5                                 | 9.0                                      | 9.0                                              | 6.0                               | 6.0                    |
| n25  | 1850            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.476                            | 0.448                              | 0.448                                  | 0.3963                                     | 3.00                   | 34.8            | 5.00                  | 37.0                    | 13.5                                 | 11.3                                      | 11.3                                              | 10.0                                | 13.5                                     | 10.0                                             | 6.0                               | 6.0                    |
| n7   | 2500            | 24.0                                           | 100            | 24.00                           | 0.2          | 1.000                               | 5.499                            | 0.550                              | 0.550                                  | 0.3226                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.0                                 | 9.0                                       | 9.0                                               | 10.4                                | 9.0                                      | 9.0                                              | 5.5                               | 5.5                    |

**<EN-DC Simtaneous Transmission analysis>**

| EN-DC                     |                             | $\Sigma$ (Power Density / Limit) of LTE + 5G NR |
|---------------------------|-----------------------------|-------------------------------------------------|
| LTE Power Density / Limit | 5G NR Power Density / Limit |                                                 |
| 0.5430                    | 0.4494                      | 0.9924                                          |

**General Note:**

- The device support 5G FR1 NSA mode, consider colocation analysis to selected worst case LTE and 5G NR power density / limit to summation to show compliance
- $\Sigma$ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for LTE + 5G NR.
- Considering the collocation with the four transmitters of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 2 collocated transmitters is compliant

**3.2. EN-DC active and transmit with WLAN/BT**

## &lt;UMTS&gt;

| Band | Lowest Frequency (MHz) | Max Conducted output power (per Tune-up) (dBm) | Duty Cycle (%) | AVG Power with Duty Cycle (dBm) | MPE evaluation distance (m) | FCC MPE Limit (mW/cm <sup>2</sup> ) | IC MPE Limit (W/m <sup>2</sup> ) | IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Result / FCC/IC MPE Limit Ratio | FCC EIRP/ERP limit (W) | FCC EIRP/ERP limit (dBm) | IC EIRP/ERP limit (W) | IC EIRP/ERP limit (dBm) | Ant Gain to meet FCC MPE limit (dBi) | Ant Gain to meet FCC ERP/ERP limit (dBi) | Max Gain to meet FCC ERP/ERP and MPE limit (dBi) | Ant Gain to meet IC MPE limit (dBi) | Ant Gain to meet IC ERP/ERP limit (dBi) | Max Gain to meet IC ERP/ERP and MPE limit (dBi) | Max Gain to consider the same Frequency | Max gain allowed (dBi) |
|------|------------------------|------------------------------------------------|----------------|---------------------------------|-----------------------------|-------------------------------------|----------------------------------|------------------------------------|----------------------------------------|--------------------------------------------|------------------------|--------------------------|-----------------------|-------------------------|--------------------------------------|------------------------------------------|--------------------------------------------------|-------------------------------------|-----------------------------------------|-------------------------------------------------|-----------------------------------------|------------------------|
| 5    | 824                    | 24.5                                           | 100            | 24.50                           | 0.2                         | 0.549                               | 2.576                            | 0.258                              | 0.258                                  | 0.4876                                     | 7.00                   | 38.5                     | 11.50                 | 40.6                    | 9.9                                  | 14.0                                     | 9.9                                              | 6.6                                 | 16.1                                    | 6.6                                             | 3.5                                     | 3.5                    |
| 4    | 1710                   | 25.0                                           | 100            | 25.00                           | 0.2                         | 1.000                               | 4.242                            | 0.424                              | 0.424                                  | 0.4692                                     | 1.00                   | 30.0                     | 1.00                  | 30.0                    | 12.0                                 | 5.0                                      | 5.0                                              | 8.3                                 | 5.0                                     | 5.0                                             | 5.5                                     | 5.0                    |
| 2    | 1850                   | 25.0                                           | 100            | 25.00                           | 0.2                         | 1.000                               | 4.476                            | 0.448                              | 0.448                                  | 0.5471                                     | 2.00                   | 33.0                     | 2.00                  | 33.0                    | 12.0                                 | 8.0                                      | 8.0                                              | 8.5                                 | 8.0                                     | 8.0                                             | 5.9                                     | 5.9                    |

## &lt;LTE&gt;

| Band | Frequency (MHz) | Max Conducted output power (per Tune-up) (dBm) | Duty Cycle (%) | AVG Power with Duty Cycle (dBm) | Distance (m) | FCC MPE Limit (mW/cm <sup>2</sup> ) | IC MPE Limit (W/m <sup>2</sup> ) | IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Result / FCC/IC MPE Limit Ratio | FCC EIRP/ERP limit (W) | ERP limit (dBm) | IC EIRP/ERP limit (W) | IC EIRP/ERP limit (dBm) | Ant Gain to meet FCC MPE limit (dBi) | Ant Gain to meet FCC ERP/ERP limit (dBi) | Max Gain to meet FCC ERP/ERP and MPE limit (dBi) | Ant Gain to meet IC MPE limit (dBi) | Ant Gain to meet IC ERP/ERP limit (dBi) | Max Gain to meet IC ERP/ERP and MPE limit (dBi) | Max Gain to consider EN-DC Transmit with WLAN | Max gain allowed (dBi) |
|------|-----------------|------------------------------------------------|----------------|---------------------------------|--------------|-------------------------------------|----------------------------------|------------------------------------|----------------------------------------|--------------------------------------------|------------------------|-----------------|-----------------------|-------------------------|--------------------------------------|------------------------------------------|--------------------------------------------------|-------------------------------------|-----------------------------------------|-------------------------------------------------|-----------------------------------------------|------------------------|
| 71   | 663             | 24.5                                           | 100            | 24.50                           | 0.2          | 0.442                               | 2.220                            | 0.222                              | 0.222                                  | 0.4598                                     | 3.00                   | 34.8            | 3.00                  | 34.8                    | 9.0                                  | 10.3                                     | 9.0                                              | 6.0                                 | 10.3                                    | 6.0                                             | 2.6                                           | 2.6                    |
| 12   | 699             | 24.5                                           | 100            | 24.50                           | 0.2          | 0.466                               | 2.302                            | 0.230                              | 0.230                                  | 0.4435                                     | 3.00                   | 34.8            | 5.00                  | 37.0                    | 9.2                                  | 10.3                                     | 9.2                                              | 6.1                                 | 12.5                                    | 6.1                                             | 2.6                                           | 2.6                    |
| 17   | 704             | 24.5                                           | 100            | 24.50                           | 0.2          | 0.469                               | 2.313                            | 0.231                              | 0.231                                  | 0.4414                                     | 3.00                   | 34.8            | 5.00                  | 37.0                    | 9.2                                  | 10.3                                     | 9.2                                              | 6.2                                 | 12.5                                    | 6.2                                             | 2.6                                           | 2.6                    |
| 13   | 777             | 24.5                                           | 100            | 24.50                           | 0.2          | 0.518                               | 2.474                            | 0.247                              | 0.247                                  | 0.4421                                     | 3.00                   | 34.8            | 5.00                  | 37.0                    | 9.7                                  | 10.3                                     | 9.7                                              | 6.4                                 | 12.5                                    | 6.4                                             | 2.9                                           | 2.9                    |
| 14   | 788             | 24.5                                           | 100            | 24.50                           | 0.2          | 0.525                               | 2.498                            | 0.250                              | 0.250                                  | 0.4481                                     | 3.00                   | 34.8            | 3.00                  | 34.8                    | 9.7                                  | 10.3                                     | 9.7                                              | 6.5                                 | 10.3                                    | 6.5                                             | 3.0                                           | 3.0                    |
| 26   | 814             | 23.5                                           | 100            | 23.50                           | 0.2          | 0.543                               | 2.554                            | 0.255                              | 0.255                                  | 0.4484                                     | 7.00                   | 38.5            | 11.50                 | 40.6                    | 10.9                                 | 15.0                                     | 10.9                                             | 7.6                                 | 17.1                                    | 7.6                                             | 4.1                                           | 4.1                    |
| 5    | 824             | 24.0                                           | 100            | 24.00                           | 0.2          | 0.549                               | 2.576                            | 0.258                              | 0.258                                  | 0.4346                                     | 7.00                   | 38.5            | 11.50                 | 40.6                    | 10.4                                 | 14.5                                     | 10.4                                             | 7.1                                 | 16.6                                    | 7.1                                             | 3.5                                           | 3.5                    |
| 4    | 1710            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.242                            | 0.424                              | 0.424                                  | 0.3727                                     | 1.00                   | 30.0            | 1.00                  | 30.0                    | 13.5                                 | 6.5                                      | 6.5                                              | 9.8                                 | 6.5                                     | 6.5                                             | 5.5                                           | 5.5                    |
| 66   | 1710            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.242                            | 0.424                              | 0.424                                  | 0.3727                                     | 1.00                   | 30.0            | 1.00                  | 30.0                    | 13.5                                 | 6.5                                      | 6.5                                              | 9.8                                 | 6.5                                     | 6.5                                             | 5.5                                           | 5.5                    |
| 2    | 1850            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.476                            | 0.448                              | 0.448                                  | 0.3873                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.5                                 | 9.5                                      | 9.5                                              | 10.0                                | 9.5                                     | 9.5                                             | 5.9                                           | 5.9                    |
| 25   | 1850            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.476                            | 0.448                              | 0.448                                  | 0.3873                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.5                                 | 9.5                                      | 9.5                                              | 10.0                                | 9.5                                     | 9.5                                             | 5.9                                           | 5.9                    |
| 30   | 2305            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 5.202                            | 0.520                              | 0.520                                  | 0.0957                                     | 0.25                   | 24.0            | 0.25                  | 24.0                    | 13.5                                 | 0.5                                      | 0.5                                              | 10.7                                | 0.5                                     | 0.5                                             | 0.5                                           | 0.5                    |
| 41   | 2496            | 26.0                                           | 100            | 26.00                           | 0.2          | 1.000                               | 5.493                            | 0.549                              | 0.549                                  | 0.4458                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 11.0                                 | 7.0                                      | 7.0                                              | 8.4                                 | 7.0                                     | 7.0                                             | 4.9                                           | 4.9                    |
| 7    | 2500            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 5.499                            | 0.550                              | 0.550                                  | 0.2504                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.5                                 | 9.5                                      | 9.5                                              | 10.9                                | 9.5                                     | 9.5                                             | 4.9                                           | 4.9                    |
| 38   | 2570            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 5.604                            | 0.560                              | 0.560                                  | 0.2457                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.5                                 | 9.5                                      | 9.5                                              | 11.0                                | 9.5                                     | 9.5                                             | 4.9                                           | 4.9                    |
| 48   | 3400            | 22.5                                           | 100            | 22.50                           | 0.2          | 1.000                               | 6.785                            | 0.678                              | 0.678                                  | 0.0585                                     | 0.20                   | 23.0            | 0.20                  | 23.0                    | 14.5                                 | 0.5                                      | 0.5                                              | 12.8                                | 0.5                                     | 0.5                                             | 0.5                                           | 0.5                    |
| 42   | 3550            | 22.5                                           | 100            | 22.50                           | 0.2          | 1.000                               | 6.988                            | 0.699                              | 0.699                                  | 0.0568                                     | 0.20                   | 23.0            | 0.20                  | 23.0                    | 14.5                                 | 0.5                                      | 0.5                                              | 13.0                                | 0.5                                     | 0.5                                             | 0.5                                           | 0.5                    |





## <5G FR1>

| Band | Frequency (MHz) | Max Conducted output power (per Tune-up) (dBm) | Duty Cycle (%) | AVG Power with Duty Cycle (dBm) | Distance (m) | FCC MPE Limit (mW/cm <sup>2</sup> ) | IC MPE Limit (W/m <sup>2</sup> ) | IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Result / FCC/IC MPE Limit Ratio | FCC EIRP/ERP limit (W) | ERP limit (dBm) | IC EIRP/ERP limit (W) | IC EIRP/ERP limit (dBm) | Ant Gain to meet FCC MPE limit (dBi) | Ant Gain to meet FCC ERP/EIRP limit (dBi) | Max Gain to meet FCC ERP/EIRP and MPE limit (dBi) | Ant Gain to meet IC MPE limit (dBi) | Ant Gain to meet IC ERP/EIRP limit (dBi) | Max Gain to meet IC ERP/EIRP and MPE limit (dBi) | Max Gain to consider EN-DC Transmit with WLAN | Max gain allowed (dBi) |
|------|-----------------|------------------------------------------------|----------------|---------------------------------|--------------|-------------------------------------|----------------------------------|------------------------------------|----------------------------------------|--------------------------------------------|------------------------|-----------------|-----------------------|-------------------------|--------------------------------------|-------------------------------------------|---------------------------------------------------|-------------------------------------|------------------------------------------|--------------------------------------------------|-----------------------------------------------|------------------------|
| n71  | 663             | 24.0                                           | 100            | 24.00                           | 0.2          | 0.442                               | 2.220                            | 0.222                              | 0.222                                  | 0.4098                                     | 3.00                   | 34.8            | 3.00                  | 34.8                    | 9.5                                  | 10.8                                      | 9.5                                               | 6.5                                 | 10.8                                     | 6.5                                              | 2.6                                           | 2.6                    |
| n12  | 699             | 24.0                                           | 100            | 24.00                           | 0.2          | 0.466                               | 2.302                            | 0.230                              | 0.230                                  | 0.3953                                     | 3.00                   | 34.8            | 5.00                  | 37.0                    | 9.7                                  | 10.8                                      | 9.7                                               | 6.6                                 | 13.0                                     | 6.6                                              | 2.6                                           | 2.6                    |
| n5   | 824             | 24.0                                           | 100            | 24.00                           | 0.2          | 0.549                               | 2.576                            | 0.258                              | 0.258                                  | 0.4346                                     | 7.00                   | 38.5            | 1.00                  | 30.0                    | 10.4                                 | 14.5                                      | 10.4                                              | 7.1                                 | 6.0                                      | 6.0                                              | 3.5                                           | 3.5                    |
| n66  | 1710            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.242                            | 0.424                              | 0.424                                  | 0.3727                                     | 1.00                   | 30.0            | 5.00                  | 37.0                    | 13.5                                 | 6.5                                       | 6.5                                               | 9.8                                 | 13.5                                     | 9.8                                              | 5.5                                           | 5.5                    |
| n2   | 1850            | 24.0                                           | 100            | 24.00                           | 0.2          | 1.000                               | 4.476                            | 0.448                              | 0.448                                  | 0.4345                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.0                                 | 9.0                                       | 9.0                                               | 9.5                                 | 9.0                                      | 9.0                                              | 5.9                                           | 5.9                    |
| n25  | 1850            | 23.5                                           | 100            | 23.50                           | 0.2          | 1.000                               | 4.476                            | 0.448                              | 0.448                                  | 0.3873                                     | 3.00                   | 34.8            | 5.00                  | 37.0                    | 13.5                                 | 11.3                                      | 11.3                                              | 10.0                                | 13.5                                     | 10.0                                             | 5.9                                           | 5.9                    |
| n7   | 2500            | 24.0                                           | 100            | 24.00                           | 0.2          | 1.000                               | 5.499                            | 0.550                              | 0.550                                  | 0.2810                                     | 2.00                   | 33.0            | 2.00                  | 33.0                    | 13.0                                 | 9.0                                       | 9.0                                               | 10.4                                | 9.0                                      | 9.0                                              | 4.9                                           | 4.9                    |

## <WLAN/BT>

| Band        | Frequency (MHz) | Max EIRP (dBm) | Duty Cycle (%) | AVG EIRP with Duty Cycle (dBm) | Distance (m) | FCC MPE Limit (mW/cm <sup>2</sup> ) | IC MPE Limit (W/m <sup>2</sup> ) | IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Limit (mW/cm <sup>2</sup> ) | FCC/IC MPE Result / FCC/IC MPE Limit Ratio |
|-------------|-----------------|----------------|----------------|--------------------------------|--------------|-------------------------------------|----------------------------------|------------------------------------|----------------------------------------|--------------------------------------------|
| 2.4GHz WLAN | 2402            | 24.0           | 100            | 24.00                          | 0.2          | 1.000                               | 5.351                            | 0.535                              | 0.535                                  | 0.093                                      |
| 5GHz WLAN   | 5150            | 24.0           | 100            | 24.00                          | 0.2          | 1.000                               | 9.011                            | 0.901                              | 0.901                                  | 0.055                                      |
| Bluetooth   | 2402            | 15.0           | 100            | 15.00                          | 0.2          | 1.000                               | 5.351                            | 0.535                              | 0.535                                  | 0.012                                      |

### General Note:

- This MPE analysis is applicable to any collocated transmitters with transmit power for WLAN EIRP is estimated 24dBm and for Bluetooth EIRP is estimated 15dBm

## <EN-DC Simtaneous Transmission analysis with WLAN/BT>

| EN-DC                     |                             | WLAN Power Density / Limit | Bluetooth Power Density / Limit | Σ (Power Density / Limit) of LTE + 5G NR + WLAN + Bluetooth |
|---------------------------|-----------------------------|----------------------------|---------------------------------|-------------------------------------------------------------|
| LTE Power Density / Limit | 5G NR Power Density / Limit |                            |                                 |                                                             |
| 0.4598                    | 0.4346                      | 0.0934                     | 0.0118                          | 0.9996                                                      |

### General Note:

- The device support 5G FR1 NSA mode, consider colocation analysis to selected worst case LTE and 5G NR power density / limit to summation to show compliance
- Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for LTE + 5G NR + WLAN + Bluetooth when EN-DC is active.
- Considering the collocation with the four transmitters of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 4 collocated transmitters is compliant

## Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.