

## Appendix E: Simultaneous Transmission Analysis

### E.1. Introduction

According to FCC KDB Publication 447498 D04v01, transmitters are considered to be operating simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

Table E-1 - Supported Simultaneous Transmission Scenarios

| # | Scenario                     | Body | Extremity |
|---|------------------------------|------|-----------|
| 1 | LTE-M + 2.4 GHz Bluetooth LE | Yes  | Yes       |

### E.2. Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D04v01, IEEE 1528-2013 Section 6.3.4.1.2 and IEC/IEEE 62209-1528 Section 7.4.4, simultaneous transmission SAR test exclusion may be applied when the sum of the 1g SAR for all the simultaneous transmitting antennas in a specific physical test configuration is  $\leq 1.6$  W/kg. When 10g SAR measurement is applicable, a factor of 2.5 is applied to the thresholds above. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1g or 10g SAR.

Per FCC KDB Publication 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR ("").

### E.3. Simultaneous Transmission Analysis

Table E-2 – LTE-M+BLE Simultaneous Transmission

| Exposure Condition | Position | Max LTE-M SAR (W/kg) | Max BT LE SAR (W/kg) | $\Sigma$ SAR <sub>1g</sub> (W/kg) | $\Sigma$ SAR <sub>10g</sub> (W/kg) |
|--------------------|----------|----------------------|----------------------|-----------------------------------|------------------------------------|
| Body (1g)          | Back     | 1.348                | 0.032                | 1.380                             | -                                  |
| Extremity (10g)    | Front    | 2.164                | 0.041                | -                                 | 2.205                              |

The above analysis of the simultaneous transmission scenarios is sufficient to show that simultaneous transmission cases will not exceed the SAR limit. Therefore, no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D04v01, IEEE 1528- 2013, and IEC/IEEE 62209-1528.