

## APPENDIX E: MULTI-TX AND ANTENNA SAR CONSIDERATIONS

### E.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 are applicable to devices with built-in unlicensed transmitters such as 802.11 and Bluetooth devices which may simultaneously transmit with the licensed transmitter

### E.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D01v06 and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is  $\leq 1.6$  W/kg. 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 (“-“).

Qualcomm Smart Transmit algorithm in WWAN/WLAN/BT directly adds the time-averaged RF exposure from WWAN sub-6/WLAN/BT. Smart Transmit algorithm controls the total RF exposure from all WWAN sub-6/WLAN/BT to not exceed FCC limit. Therefore, simultaneous transmission compliance between WWAN sub-6/WLAN/BT operations is demonstrated in the Part 2 Report during algorithm validation. Simultaneous SAR for WWAN sub-6/WLAN/BT in a DSI is the worst case reported SAR of WWAN sub-6/WLAN/BT

### E.3 Phablet (DSI = 0) Simultaneous Transmission Analysis

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required if wireless router 1g SAR (scaled to the maximum output power, including tolerance)  $< 1.2$  W/kg. Therefore no further analysis beyond the tables included in this section was required to determine that possible simultaneous transmission scenarios would not exceed the SAR limit.

**Table E-1  
Phablet (DSI=0) Simultaneous Transmission Scenario with NFC**

Phablet SAR	Configuration	WWAN/ WLAN/BT SAR (W/kg)	NFC SAR (W/kg)	WWAN/ WLAN/BT + NFC SAR (W/kg)
	Back	0.409	0.009	0.418
	Front	1.427	0.000	1.427
	Top	0.374	-	0.374
	Bottom	0.420	0.000	0.420
	Right	2.234	0.000	2.234
	Left	0.718	0.000	0.718

### E.4 Conclusion

The above numerical summed SAR results is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528- 2013 Section 6.3.4.1.

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