# Appendix H. – Power reduction verification

Per the May 2017 TCBC Workshop notes, demonstration of proper functioning of the power reduction mechanism is required to support the corresponding SAR Configurations.

A Base station simulator was used to establish a conducted RF connection and output power was monitored. The power measurements were confirmed to be within expected tolerance for all RSI. before and after a power reduction mechanism was triggered. For the combination cases, one mechanism was switched to a 'triggered' state at a time; powers were confirmed to be within tolerances after each additional mechanism was activated

# 1. Power Reduction Verification for Main ANT

This device uses different Radio SAR Index [RSI] to configure different time averaged power levels based on certain exposure scenarios. For this device RSI = 1 is configured when receiver mode on Head SAR configuration. And RSI = 0 is configured when the device is not activated RCV-ON[Non-Head]

Table 1.1 Power Reduction Verification for Antenna A

| Mechanism | | Band | RSI | | |
|---|---|---|---|---|---|
| Mechanism 1st | Mechanism 2nd | | FREE | 1st | 2nd |
| RCV ON | Hotspot On | GSM 850 Voice | 0 | 1 | 1 |
| Hotspot On | RCV ON | GSM 850 Voice | 0 | 0 | 1 |
| RCV ON | Hotspot On | GSM 850 1Tx | 0 | 1 | 1 |
| Hotspot On | RCV ON | GSM 850 1Tx | 0 | 0 | 1 |
| RCV ON | Hotspot On | GSM 850 2Tx | 0 | 1 | 1 |
| Hotspot On | RCV ON | GSM 850 2Tx | 0 | 0 | 1 |
| RCV ON | Hotspot On | GSM 850 3Tx | 0 | 1 | 1 |
| Hotspot On | RCV ON | GSM 850 3Tx | 0 | 0 | 1 |
| RCV ON | Hotspot On | GSM 850 4Tx | 0 | 1 | 1 |
| Hotspot On | RCV ON | GSM 850 4Tx | 0 | 0 | 1 |
| RCV ON | Hotspot On | GSM 1900 Voice | 0 | 1 | 1 |
| Hotspot On | RCV ON | GSM 1900 Voice | 0 | 0 | 1 |
| RCV ON | Hotspot On | GSM 1900 1Tx | 0 | 1 | 1 |
| Hotspot On | RCV ON | GSM 1900 1Tx | 0 | 0 | 1 |
| RCV ON | Hotspot On | GSM 1900 2Tx | 0 | 1 | 1 |
| Hotspot On | RCV ON | GSM 1900 2Tx | 0 | 0 | 1 |
| RCV ON | Hotspot On | GSM 1900 3Tx | 0 | 1 | 1 |
| Hotspot On | RCV ON | GSM 1900 3Tx | 0 | 0 | 1 |
| RCV ON | Hotspot On | GSM 1900 4Tx | 0 | 1 | 1 |
| Hotspot On | RCV ON | GSM 1900 4Tx | 0 | 0 | 1 |
| RCV ON | Hotspot On | UMTS Band 5 | 0 | 1 | 1 |
| Hotspot On | RCV ON | UMTS Band 5 | 0 | 0 | 1 |
| RCV ON | Hotspot On | UMTS Band 4 | 0 | 1 | 1 |
| Hotspot On | RCV ON | UMTS Band 4 | 0 | 0 | 1 |
| RCV ON | Hotspot On | UMTS Band 2 | 0 | 1 | 1 |
| Hotspot On | RCV ON | UMTS Band 2 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 71 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 71 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 12 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 12 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 13 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 13 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 14 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 14 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 26 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 26 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 5 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 5 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 66 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 66 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 4 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 4 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 25 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 25 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 2 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 2 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 30 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 30 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n71 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n71 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n12 | 0 | 1 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| Hotspot On | RCV ON | NR Band n12 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n26 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n26 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n5 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n5 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n70 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n70 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n66 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n66 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n25 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n25 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n2 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n2 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n30 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n30 | 0 | 0 | 1 |

Table 1.2 Power Reduction Verification for Antenna B

| Mechanism | | Band | RSI | | |
|---|---|---|---|---|---|
| Mechanism 1st | Mechanism 2nd | | FREE | 1st | 2nd |
| RCV ON | Hotspot On | LTE Band 7 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 7 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 41 PC3 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 41 PC3 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 41 PC2 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 41 PC2 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 38 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 38 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n7 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n7 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n38 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n38 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n41 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n41 | 0 | 0 | 1 |

Table 1.3 Power Reduction Verification for Antenna F

| Mechanism | | Band | RSI | | |
|---|---|---|---|---|---|
| Mechanism 1st | Mechanism 2nd | | FREE | 1st | 2nd |
| RCV ON | Hotspot On | LTE Band 66 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 66 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 4 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 4 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 25 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 25 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 2 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 2 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 30 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 30 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 7 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 7 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 48 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 48 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 41 PC3 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 41 PC3 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 41 PC2 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 41 PC2 | 0 | 0 | 1 |
| RCV ON | Hotspot On | LTE Band 38 | 0 | 1 | 1 |
| Hotspot On | RCV ON | LTE Band 38 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n66 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n66 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n25 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n25 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n2 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n2 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n30 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n30 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n7 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n7 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n48 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n48 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n77 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n77 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n77 DoD | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n77 DoD | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n78 | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n78 | 0 | 0 | 1 |
| RCV ON | Hotspot On | NR Band n78 DoD | 0 | 1 | 1 |
| Hotspot On | RCV ON | NR Band n78 DoD | 0 | 0 | 1 |

## 2. Power Reduction Verification for WLAN/BT ANT

This device uses different Device State Index [DSI] to configure different time averaged power levels based on certain exposure scenarios. For this device DSI = 1 is configured when receiver mode on Head SAR configuration. RSI = 0 is configured when the device is not activated RCV-ON[Non-Head].and DSI=2 when mmwave mode is activated.

| Mechanism | WLAN Ant 1 | DSI | |
|---|---|---|---|
| 1st | Band | FREE | 1st |
| RCV ON | 802.11b | 0 | 1 |
| RCV ON | 802.11g | 0 | 1 |
| RCV ON | 802.11n | 0 | 1 |
| RCV ON | 802.11ac(2.4GHz) | 0 | 1 |
| RCV ON | 802.11ax(2.4GHz) | 0 | 1 |
| RCV ON | 802.11a(5 GHz) | 0 | 1 |
| RCV ON | 802.11n(5 GHz,20MHz) | 0 | 1 |
| RCV ON | 802.11n(5 GHz,40MHz) | 0 | 1 |
| RCV ON | 802.11ac(5 GHz,20MHz) | 0 | 1 |
| RCV ON | 802.11ac(5 GHz,40MHz) | 0 | 1 |
| RCV ON | 802.11ac(5 GHz,80MHz) | 0 | 1 |
| RCV ON | 802.11ac(5 GHz,160MHz) | 0 | 1 |
| RCV ON | 802.11ax(5 GHz,20MHz) | 0 | 1 |
| RCV ON | 802.11ax(5 GHz,40MHz) | 0 | 1 |
| RCV ON | 802.11ax(5 GHz,80MHz) | 0 | 1 |
| RCV ON | 802.11ax(5 GHz,160MHz) | 0 | 1 |
| RCV ON | 802.11ax(6 GHz,20MHz) | 0 | 1 |
| RCV ON | 802.11ax(6 GHz,40MHz) | 0 | 1 |
| RCV ON | 802.11ax(6 GHz,80MHz) | 0 | 1 |
| RCV ON | 802.11ax(6 GHz,160MHz) | 0 | 1 |
| RCV ON | 802.11a(6 GHz,20MHz) | 0 | 1 |
| Mechanism | WLAN Ant 2 | DSI | |
| 1st | Band | FREE | 1st |
| RCV ON | 802.11b | 0 | 1 |
| RCV ON | 802.11g | 0 | 1 |
| RCV ON | 802.11n | 0 | 1 |
| RCV ON | 802.11ac(2.4GHz) | 0 | 1 |
| RCV ON | 802.11ax(2.4GHz) | 0 | 1 |
| RCV ON | 802.11a(5 GHz) | 0 | 1 |
| RCV ON | 802.11n(5 GHz,20MHz) | 0 | 1 |
| RCV ON | 802.11n(5 GHz,40MHz) | 0 | 1 |
| RCV ON | 802.11ac(5 GHz,20MHz) | 0 | 1 |
| RCV ON | 802.11ac(5 GHz,40MHz) | 0 | 1 |
| RCV ON | 802.11ac(5 GHz,80MHz) | 0 | 1 |
| RCV ON | 802.11ac(5 GHz,160MHz) | 0 | 1 |
| RCV ON | 802.11ax(5 GHz,20MHz) | 0 | 1 |
| RCV ON | 802.11ax(5 GHz,40MHz) | 0 | 1 |
| RCV ON | 802.11ax(5 GHz,80MHz) | 0 | 1 |
| RCV ON | 802.11ax(5 GHz,160MHz) | 0 | 1 |
| RCV ON | 802.11ax(6 GHz,20MHz) | 0 | 1 |
| RCV ON | 802.11ax(6 GHz,40MHz) | 0 | 1 |
| RCV ON | 802.11ax(6 GHz,80MHz) | 0 | 1 |
| RCV ON | 802.11ax(6 GHz,160MHz) | 0 | 1 |
| RCV ON | 802.11a(6 GHz,20MHz) | 0 | 1 |

| Mechanism | Band | DSI | |
|---|---|---|---|
| Mechanism 1st | | FREE | 1st |
| RCV ON | BT ANT1 | 0 | 1 |
| RCV ON | BT ANT2 | 0 | 1 |