

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 utilizes a power reduction mechanism for some wireless modes under RSI(Radio SAR Index).

For this device RSI = 0 is configured when non head mode. RSI = 1 is configured when head mode.

Table 1.1 Power Reduction Verification for Antenna A

Mechanism		Band	RSI		
1st	2nd		FREE	1st	2nd
RCV ON	Hotspot On	GSM 850 Voice	0	1	0
Hotspot On	RCV ON	GSM 850 Voice	0	0	1
RCV ON	Hotspot On	GSM 850 1Tx	0	1	0
Hotspot On	RCV ON	GSM 850 1Tx	0	0	1
RCV ON	Hotspot On	GSM 850 2Tx	0	1	0
Hotspot On	RCV ON	GSM 850 2Tx	0	0	1
RCV ON	Hotspot On	GSM 850 3Tx	0	1	0
Hotspot On	RCV ON	GSM 850 3Tx	0	0	1
RCV ON	Hotspot On	GSM 850 4Tx	0	1	0
Hotspot On	RCV ON	GSM 850 4Tx	0	0	1
RCV ON	Hotspot On	UMTS Band 5	0	1	0
Hotspot On	RCV ON	UMTS Band 5	0	0	1
RCV ON	Hotspot On	LTE Band 5	0	1	0
Hotspot On	RCV ON	LTE Band 5	0	0	1
RCV ON	Hotspot On	LTE Band 12	0	1	0
Hotspot On	RCV ON	LTE Band 12	0	0	1
RCV ON	Hotspot On	LTE Band 13	0	1	0
Hotspot On	RCV ON	LTE Band 13	0	0	1
RCV ON	Hotspot On	LTE Band 17	0	1	0
Hotspot On	RCV ON	LTE Band 17	0	0	1
RCV ON	Hotspot On	LTE Band 26	0	1	0
Hotspot On	RCV ON	LTE Band 26	0	0	1
RCV ON	Hotspot On	NR Band n5	0	1	0
Hotspot On	RCV ON	NR Band n5	0	0	1

Table 1.2 Power Reduction Verification for Antenna B

Mechanism		Band	RSI		
1st	2nd		FREE	1st	2nd
RCV ON	Hotspot On	GSM 1900 Voice	0	1	0
Hotspot On	RCV ON	GSM 1900 Voice	0	0	1
RCV ON	Hotspot On	GSM 1900 1Tx	0	1	0
Hotspot On	RCV ON	GSM 1900 1Tx	0	0	1
RCV ON	Hotspot On	GSM 1900 2Tx	0	1	0
Hotspot On	RCV ON	GSM 1900 2Tx	0	0	1
RCV ON	Hotspot On	GSM 1900 3Tx	0	1	0
Hotspot On	RCV ON	GSM 1900 3Tx	0	0	1
RCV ON	Hotspot On	GSM 1900 4Tx	0	1	0
Hotspot On	RCV ON	GSM 1900 4Tx	0	0	1
RCV ON	Hotspot On	UMTS Band 2	0	1	0
Hotspot On	RCV ON	UMTS Band 2	0	0	1
RCV ON	Hotspot On	UMTS Band 4	0	1	0
Hotspot On	RCV ON	UMTS Band 4	0	0	1
RCV ON	Hotspot On	LTE Band 2	0	1	0
Hotspot On	RCV ON	LTE Band 2	0	0	1
RCV ON	Hotspot On	LTE Band 4	0	1	0
Hotspot On	RCV ON	LTE Band 4	0	0	1
RCV ON	Hotspot On	LTE Band 25	0	1	0
Hotspot On	RCV ON	LTE Band 25	0	0	1
RCV ON	Hotspot On	LTE Band 41 PC3	0	1	0
Hotspot On	RCV ON	LTE Band 41 PC3	0	0	1
RCV ON	Hotspot On	LTE Band 66	0	1	0
Hotspot On	RCV ON	LTE Band 66	0	0	1
RCV ON	Hotspot On	NR Band 41	0	1	0
Hotspot On	RCV ON	NR Band 41	0	0	1
RCV ON	Hotspot On	NR Band 66	0	1	0
Hotspot On	RCV ON	NR Band 66	0	0	1

Table 1.3 Power Reduction Verification for Antenna C

Mechanism		Band	RSI		
1st	2nd		FREE	1st	2nd
RCV ON	Hotspot On	NR Band n41 SRS3	0	1	0
Hotspot On	RCV ON	NR Band n41 SRS3	0	0	1

Table 1.5 Power Reduction Verification for Antenna E

Mechanism		Band	RSI		
1st	2nd		FREE	1st	2nd
RCV ON	Hotspot On	GSM 850 Voice	0	1	0
Hotspot On	RCV ON	GSM 850 Voice	0	0	1
RCV ON	Hotspot On	GSM 850 1Tx	0	1	0
Hotspot On	RCV ON	GSM 850 1Tx	0	0	1
RCV ON	Hotspot On	GSM 850 2Tx	0	1	0
Hotspot On	RCV ON	GSM 850 2Tx	0	0	1
RCV ON	Hotspot On	GSM 850 3Tx	0	1	0
Hotspot On	RCV ON	GSM 850 3Tx	0	0	1
RCV ON	Hotspot On	GSM 850 4Tx	0	1	0
Hotspot On	RCV ON	GSM 850 4Tx	0	0	1
RCV ON	Hotspot On	UMTS Band 5	0	1	0
Hotspot On	RCV ON	UMTS Band 5	0	0	1
RCV ON	Hotspot On	LTE Band 5	0	1	0
Hotspot On	RCV ON	LTE Band 5	0	0	1
RCV ON	Hotspot On	LTE Band 12	0	1	0
Hotspot On	RCV ON	LTE Band 12	0	0	1
RCV ON	Hotspot On	LTE Band 13	0	1	0
Hotspot On	RCV ON	LTE Band 13	0	0	1
RCV ON	Hotspot On	LTE Band 17	0	1	0
Hotspot On	RCV ON	LTE Band 17	0	0	1
RCV ON	Hotspot On	LTE Band 26	0	1	0
Hotspot On	RCV ON	LTE Band 26	0	0	1
RCV ON	Hotspot On	NR Band 5	0	1	0
Hotspot On	RCV ON	NR Band 5	0	0	1

Table 1.6 Power Reduction Verification for Antenna F

Mechanism		Band	RSI		
1st	2nd		FREE	1st	2nd
RCV ON	Hotspot On	LTE Band 2	0	1	0
Hotspot On	RCV ON	LTE Band 2	0	0	1
RCV ON	Hotspot On	LTE Band 4	0	1	0
Hotspot On	RCV ON	LTE Band 4	0	0	1
RCV ON	Hotspot On	LTE Band 25	0	1	0
Hotspot On	RCV ON	LTE Band 25	0	0	1
RCV ON	Hotspot On	LTE Band 66	0	1	0
Hotspot On	RCV ON	LTE Band 66	0	0	1
RCV ON	Hotspot On	LTE Band 41 PC3	0	1	0
Hotspot On	RCV ON	LTE Band 41 PC3	0	0	1
RCV ON	Hotspot On	NR Band n41 SRS1	0	1	0
Hotspot On	RCV ON	NR Band n41 SRS1	0	0	1
RCV ON	Hotspot On	NR Band 66	0	1	0
Hotspot On	RCV ON	NR Band 66	0	0	1
RCV ON	Hotspot On	NR Band 77	0	1	0
Hotspot On	RCV ON	NR Band 77	0	0	1

Table 1.7 Power Reduction Verification for Antenna H

Mechanism		Band	RSI		
1st	2nd		FREE	1st	2nd
RCV ON	Hotspot On	NR Band n41 SRS2	0	1	0
Hotspot On	RCV ON	NR Band n41 SRS2	0	0	1

2. Power Reduction Verification for WLAN/BT ANT

This device uses different Device State 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. RSI = 0 is configured when the device is not activated RCV [Non-Head].

Mechanism		WLAN Ant 1 Band	RSI		
1st	2nd		FREE	1st	2nd
RCV ON	Hotspot On	802.11b	0	1	0
Hotspot On	RCV ON	802.11b	0	0	1
RCV ON	Hotspot On	802.11g	0	1	0
Hotspot On	RCV ON	802.11g	0	0	1
RCV ON	Hotspot On	802.11n	0	1	0
Hotspot On	RCV ON	802.11n	0	0	1
Mechanism		WLAN Ant 2 Band	RSI		
1st	2nd		FREE	1st	2nd
RCV ON	Hotspot On	802.11b	0	1	0
Hotspot On	RCV ON	802.11b	0	0	1
RCV ON	Hotspot On	802.11g	0	1	0
Hotspot On	RCV ON	802.11g	0	0	1
RCV ON	Hotspot On	802.11n	0	1	0
Hotspot On	RCV ON	802.11n	0	0	1

Mechanism	WLAN Ant 1 Band	RSI	
		FREE	1st
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	802.11ax(5 GHz,20MHz)	0	1
RCV ON	802.11ax(5 GHz,40MHz)	0	1
RCV ON	802.11ax(5 GHz,80MHz)	0	1
Mechanism	WLAN Ant 2 Band	RSI	
		FREE	1st
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	802.11ax(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,40MHz)	0	1