

FCC ID: PY7-84558E	SAR EVALUATION REPORT	Approved by: Technical Manager
DUT Type: Portable Handset		APPENDIX H: Page 1 of 12

H.1 LTE Downlink Only Carrier Aggregation Test Selection and Setup

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number component carriers (CCs) supported by the product implementation. For those configurations required by April 2018 TCBC Workshop Notes, conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. Additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

This device supports LAA with downlink carrier aggregation only. It uses carrier aggregation in the downlink to combine LTE in the unlicensed spectrum (i.e. LTE Band 46) with LTE in the licensed band (served as PCC). All uplink communications and acknowledgements on the PCC remain identical to specifications when downlink carrier aggregation is inactive.

Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the maximum average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive. All bands required for SAR testing per FCC KDB procedures were considered. Based on the measured maximum powers below, no additional SAR tests were required for DLCA SAR configurations.

General PCC and SCC configuration selection procedure

- PCC uplink channel, channel bandwidth, modulation and RB configurations were selected based on section C)3)b)ii) of KDB 941225 D05 V01r02. All LTE bandwidth conducted powers needed for PCC uplink configuration selection can be found in the RF Conducted Powers Section and LTE/NR Lower Bandwidth RF Conducted Power Appendix. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
- To maximize aggregated bandwidth, highest channel bandwidth available for that CA combination was selected for SCC. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
- All selected PCC and SCC(s) remained fully within the uplink/downlink transmission band of the respective component carrier.

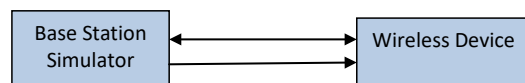


Figure H-1
DL CA Power Measurement Setup

FCC ID: PY7-84558E	SAR EVALUATION REPORT	Approved by: Technical Manager
DUT Type: Portable Handset		APPENDIX H: Page 2 of 12

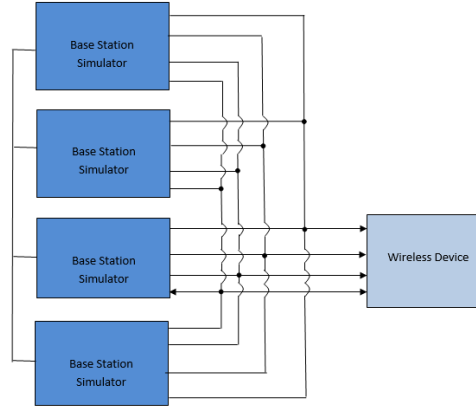


Figure H-2
DL CA with DL 4x4 MIMO Power Measurement Setup

H.2 Downlink Carrier Aggregation RF Conducted Powers

H.2.1 LTE Band 71 as PCC

Table H-3

Combination	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC 1				SCC 2				SCC 3				LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
										SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]		
CA 4A-4A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	24.33	24.37
CA 2A-2A-4A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B4	20	2175	2132.5	24.35	24.37
CA 2A-2A-8A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B6	20	68786	2145	24.34	24.37
CA 2A-6A-6A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	LTE B2	20	900	1960	LTE B6	20	68786	2145	LTE B6	20	67236	2190	24.31	24.37
CA 2A-6B-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	LTE B2	20	900	1960	LTE B6	20	68786	2145	LTE B6	20	66984	2164.8	24.33	24.37

H.2.2 LTE Band 12 as PCC

Table H-4
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC 1				SCC 2				SCC 3				LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
										SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]		
CA 12A-6A (1)	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B6	20	68786	2145	-	-	-	-	-	-	-	-	24.57	24.54
CA 12A-6A (2)	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B6	20	68786	2145	-	-	-	-	-	-	-	-	24.57	24.54
CA 2A-12A (1)	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B2	20	900	1960	-	-	-	-	-	-	-	-	24.62	24.54
CA 4A-12A (1)	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	24.54	24.54
CA 4A-12A (2)	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	24.54	24.54
CA 12B-6A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B12	10	5083	730.3	LTE B6	20	68786	2145	-	-	-	-	24.52	24.50
CA 2A-4A-12A	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	-	-	-	-	24.51	24.54
CA 4A-12A-6A	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B4	20	2175	2132.5	LTE B30	10	9620	2335	-	-	-	-	24.50	24.54
CA 4A-12B	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B12	10	5083	730.3	LTE B4	20	2175	2132.5	-	-	-	-	24.35	24.30
CA 4A-4A-12A	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	24.52	24.54
CA 2A-12A-6B	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B2	20	900	1960	LTE B6	20	68786	2145	-	-	-	-	24.46	24.54
CA 2A-12A-3A-6A-6B	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B6	20	67236	2190	24.53	24.54
CA 2A-12A-12A-3A-6A-6B	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B6	20	66986	2145	24.52	24.54
CA 2A-12A-12A-6A-6B	LTE B12	10	23095	707.5	QPSK	1	0	6095	737.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B6	20	67236	2190	24.47	24.54

H.2.3 LTE Band 13 as PCC

Table H-5
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC 1				SCC 2				SCC 3				SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
										SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
CA 13A-4A-6A	LTE B13	5	23230	762	QPSK	1	12	5230	751	LTE B4	20	5885	5537.5	LTE B4	20	4700	518	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

H.2.4 LTE Band 5 as PCC

Table H-6
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC [DU] (C)	PCC			PCC [DU] RB	PCC [DU] RB Offset	PCC [DU] Channel	PCC [DU] Freq. [MHz]	SCB Band	SCB BW [MHz]	SCC1			SCC2			SCC3			SCC4			SCB Band	SCB BW [MHz]	SCC [DU] Channel	SCC [DU] Freq. [MHz]	SCB Band	SCB BW [MHz]	SCC [DU] Channel	SCC [DU] Freq. [MHz]	LTE Tx Power [dBm]	LTE Single Carrier Tx Power [dBm]
				Mod.	PCC [DU] Freq. [MHz]	PCC [DU] Channel							SCC1 [DU] Channel	SCC1 [DU] Freq. [MHz]	SCC2 [DU] Channel	SCC2 [DU] Freq. [MHz]	SCC3 [DU] Channel	SCC3 [DU] Freq. [MHz]	SCC4 [DU] Channel	SCC4 [DU] Freq. [MHz]														
CA SA-45A (1)	LTE BS	3	2525	836.5	OPSK	1	7	2525	881.5	LTE B46	5	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CA SA-5A (1)	LTE BS	3	2525	836.5	OPSK	1	7	2525	881.5	LTE B46	5	5425	871.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA BS (1)	LTE BS	3	2525	836.5	OPSK	1	7	2525	881.5	LTE B46	5	5425	871.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-45A-46A	LTE BS	3	2525	836.5	OPSK	1	7	2525	881.5	LTE B46	5	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-45A-30A	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5175	2132.5	LTE B30	10	5820	2350	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-45A-30A-46A	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5175	2132.5	LTE B30	10	5820	2350	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-46C (1)	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5068	5337.5	LTE B46	20	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-46C (1)	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5068	5337.5	LTE B46	20	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-46C (1)	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5068	5337.5	LTE B46	20	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-46C (1)	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5068	5337.5	LTE B46	20	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-46C (1)	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5068	5337.5	LTE B46	20	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-46C (1)	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5068	5337.5	LTE B46	20	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-46C (1)	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5068	5337.5	LTE B46	20	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-46C (1)	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5068	5337.5	LTE B46	20	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-46C (1)	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5068	5337.5	LTE B46	20	5068	5337.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CA SA-46C (1)	LTE BS	5	2525	846.5	OPSK	1	12	2525	891.5	LTE B44	20	5068	5337.5	LTE B46	20	5068	5337.5	-	-	-	-	-												

H.2.5 LTE Band 66 as PCC

Table H-7
Maximum Output Powers

[illegible]

H.2.6 LTE Band 30 as PCC

Table H-8
Maximum Output Powers

Combination	PCC										SCC1			SCC2			SCC3			SCC4			Power				
	PCC Band	PCC BW [MHz]	PCC [UL] Ch.	PCC [UL] Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC [DL] Channel	PCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA 2A-4A-30A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	23.45	23.52
CA 4A-12A-30A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B4	20	2175	2132.5	LTE B12	10	5095	797.5	-	-	-	-	-	-	-	-	23.47	23.52
CA 4A-20A-30A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B4	20	2175	2132.5	LTE B20	10	9715	722.5	-	-	-	-	-	-	-	-	23.45	23.52
CA 4A-30A-30A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B4	20	2175	2132.5	LTE B5	10	2525	881.5	-	-	-	-	-	-	-	-	23.48	23.52
CA 20A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B20	10	9715	722.5	LTE B66	20	66786	2145	LTE B66	20	67236	2190	-	-	-	-	23.45	23.52
CA 2A-20A-30A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B2	20	900	1960	LTE B20	10	9715	722.5	LTE B66	20	66786	2145	-	-	-	-	23.43	23.52
CA 2A-2A-20A-30A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B20	10	9715	722.5	-	-	-	-	23.44	23.52
CA 2A-12A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B2	20	900	1960	LTE B12	10	5095	797.5	LTE B66	20	66786	2145	LTE B66	20	67236	2190	23.51	23.52
CA 2A-2A-12A-30A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B12	10	5095	797.5	LTE B66	20	66786	2145	23.48	23.52
CA 2A-2A-5A-30A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B5	10	2525	881.5	LTE B66	20	66786	2145	23.46	23.52
CA 2A-5A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B2	20	900	1960	LTE B5	10	2525	881.5	LTE B66	20	66786	2145	LTE B66	20	67236	2190	23.50	23.52
CA 2A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B2	20	900	1960	LTE B5	10	2525	881.5	LTE B5	5	2453	874.3	LTE B66	20	66786	2145	23.47	23.52
CA 5B-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	9820	2305	LTE B5	10	2525	881.5	LTE B5	5	2453	874.3	LTE B66	20	66786	2145	LTE B66	20	67236	2190	23.46	23.52

H.2.7 LTE Band 41 as PCC

Table H-9
Maximum Output Powers

Combination	PCC										SCC1			SCC2			SCC3			SCC4			Power				
	PCC Band	PCC BW [MHz]	PCC [UL] Ch.	PCC [UL] Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC [DL] Channel	PCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA 41A-46A	LTE B41	5	41480	2680	QPSK	1	12	41480	2680	LTE B46	20	50665	5537.5	-	-	-	-	-	-	-	-	-	-	-	-	24.20	24.36
CA 41C (1)	LTE B41	5	41480	2680	QPSK	1	12	41480	2680	LTE B41	20	41373	2658.3	-	-	-	-	-	-	-	-	-	-	-	-	24.18	24.36
CA 41A-46C	LTE B41	5	41480	2680	QPSK	1	12	41480	2680	LTE B46	20	50665	5537.5	LTE B46	20	50667	5517.7	-	-	-	-	-	-	-	-	24.18	24.36
CA 41D	LTE B41	10	41480	2680	QPSK	1	25	41480	2680	LTE B41	20	41346	2655.6	LTE B41	20	41148	2645.8	-	-	-	-	-	-	-	-	24.18	24.30
CA 41A-46C	LTE B41	5	41480	2680	QPSK	1	12	41480	2680	LTE B46	20	50665	5537.5	LTE B46	20	50667	5517.7	LTE B46	20	50663	5557.9	-	-	-	-	24.18	24.36
CA 41A-46E	LTE B41	5	41480	2680	QPSK	1	12	41480	2680	LTE B46	20	50665	5537.5	LTE B46	20	50667	5517.7	LTE B46	20	50663	5557.9	LTE B46	20	50663	5557.9	24.17	24.36

H.2.8 LTE Band 48 as PCC

Table H-10
Maximum Output Powers

Combination	PCC										SCC 1				SCC 2				SCC 3				SCC 4				Power	
	PCC Band	PCC BW [MHz]	PCC [UL] Ch	PCC [UL] Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC [DL] Channel	PCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)	
CA 48A-48A	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3590	-	-	-	-	-	-	-	-	-	-	-	-	24.78	24.75	
CA 48A-48C	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3590	LTE B48	20	55338	3579.8	-	-	-	-	-	-	-	-	24.74	24.75	
CA 48C-48A	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55338	3579.8	LTE B48	20	55340	3590	-	-	-	-	-	-	-	-	24.73	24.75	
CA 48A-48D	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3590	LTE B48	20	55338	3579.8	LTE B48	20	55736	3599.6	-	-	-	-	24.67	24.75	
CA 48C-48C	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55338	3579.8	LTE B48	20	55340	3590	LTE B48	20	55338	3579.8	-	-	-	-	24.73	24.75	
CA 48A-48E	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3590	LTE B48	20	55338	3579.8	LTE B48	20	55736	3599.6	LTE B48	20	55834	3619.4	24.76	24.75	
CA 48C-48D	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55338	3579.8	LTE B48	20	55340	3590	LTE B48	20	55338	3579.8	LTE B48	20	55736	3599.6	24.77	24.75	

H.3 DL CA with DL 4x4 MIMO RF Conduction Powers

This device supports downlink 4x4 MIMO operations for some LTE bands. Uplink transmission is limited to a single output stream. When carrier aggregation was applicable, the general test selection and setup procedures described in Section H.1 were applied.

Per May 2017 TCB Workshop Notes, SAR for 4x4 DL MIMO was not needed since the maximum average output power in 4x4 DL MIMO mode was not more than 0.25 dB higher than the maximum output power with 4x4 DL MIMO inactive. Additionally, SAR for 4x4 MIMO Downlink Carrier Aggregation was not needed since the maximum average output power in 4x4 MIMO Downlink Carrier Aggregation mode was not more than 0.25 dB higher than the maximum output power with 4x4 MIMO Downlink and downlink carrier aggregation inactive.

FCC ID: PY7-84558E	SAR EVALUATION REPORT	Approved by: Technical Manager
DUT Type: Portable Handset		APPENDIX H: Page 5 of 12

H.3.3 LTE Band 13 as PCC

Table H-13
Maximum Output Powers

Combination	PCC Band	PCC				SCC1				SCC2				SCC3				SCC4				SCC5				LTE Tapering with CA	LTE Single Carrier Tx Power	
		RC BW [MHz]	SCC [MHz]	RC Freq. [MHz]	QoS	PCC RB	PCC RB Offset	SCC [MHz]	SCC Freq. [MHz]	SCC RB	SCC RB Offset	SCC [MHz]	SCC Freq. [MHz]	SCC RB	SCC RB Offset	SCC [MHz]	SCC Freq. [MHz]	SCC RB	SCC RB Offset	SCC [MHz]	SCC Freq. [MHz]	SCC RB	SCC RB Offset					
CA 12A-10A-10A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	23.86	24.08
CA 12A-13A-10A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	23.86	24.08
CA 12A-14A-13A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.07	24.08
CA 12A-14A-10A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.04	24.08
CA 13A-14A-13A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.04	24.08
CA 13A-14A-10A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.04	24.08
CA 13A-14A-14A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.04	24.08
CA 13A-14A-14A-10A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.04	24.08
CA 13A-14A-14A-14A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.04	24.08
CA 13A-14A-14A-14A-10A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.04	24.08
CA 13A-14A-14A-14A-14A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.04	24.08
CA 13A-14A-14A-14A-14A-10A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.04	24.08
CA 13A-14A-14A-14A-14A-14A	LTE-B13	5	2320	751	QPSK	1	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	12	5220	751	262	24.04	24.08
CA 13A-14A-14A-14A-14A-14A																												

H.3.4 LTE Band 71 as PCC

Table H-14
Maximum Output Powers

Combination	PCB Band	PCB BW [MHz]	PCC [U] Ch.	PCC (U) Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	SCC 1										SCC 2										SCC 3										Power	
								PCC [U] Ch.	PCC Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [U] Ch.	SCC (U) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [U] Ch.	SCC (U) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [U] Ch.	SCC (U) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [U] Ch.	SCC (U) Freq. [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled	LTE Single Carrier Tx Power (dBm)							
CA [4A]-[4A]-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B4	20	2175	2132.5	4x4	LTE B4	10	2350	2150	2x2	-	-	-	-	-	-	-	24.33	24.37										
CA [4A]-[4A]-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B4	20	2175	2132.5	4x4	LTE B4	10	2350	2150	4x4	-	-	-	-	-	-	-	24.37	24.37										
CA [2A]-[2A]-471A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B4	20	2175	2132.5	2x2	-	-	24.29	24.37										
CA [2A]-[2A]-471A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B4	20	2175	2132.5	2x2	-	-	24.32	24.37										
CA [2A]-[2A]-471A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	4x4	LTE B4	20	2175	2132.5	2x2	-	-	24.30	24.37										
CA [2A]-[2A]-471A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B4	20	2175	2132.5	4x4	-	-	24.33	24.37										
CA [2A]-[2A]-[4A]-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	4x4	LTE B4	20	2175	2132.5	4x4	-	-	24.35	24.37										
CA [2A]-[2A]-66A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B6B	20	6876B	2145	2x2	-	-	24.36	24.37										
CA [2A]-[2A]-66A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	2x2	LTE B2	20	700	1940	2x2	LTE B6B	20	6876B	2145	4x4	-	-	24.36	24.37										
CA [2A]-[2A]-66A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	2x2	LTE B2	20	700	1940	2x2	LTE B6B	20	6876B	2145	4x4	-	-	24.37	24.37										
CA [2A]-[2A]-66A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B6B	20	6876B	2145	4x4	-	-	24.35	24.37										
CA [2A]-[2A]-66A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B6B	20	6876B	2145	4x4	-	-	24.34	24.37										
CA [2A]-66A-66A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6B	20	6876B	2145	2x2	LTE B6B	20	6732B	2190	2x2	-	-	24.33	24.37										
CA [2A]-66A-66A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6B	20	6876B	2145	2x2	LTE B6B	20	6732B	2190	2x2	-	-	24.36	24.37										
CA [2A]-66A-66A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6B	20	6876B	2145	4x4	LTE B6B	20	6732B	2190	2x2	-	-	24.32	24.37										
CA [2A]-66A-66A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	2x2	LTE B6B	20	6876B	2145	4x4	LTE B6B	20	6732B	2190	4x4	-	-	24.36	24.37										
CA [2A]-66A-66A-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6B	20	6876B	2145	2x2	LTE B6B	20	6884	2164.8	2x2	-	-	24.35	24.37										
CA [2A]-66C-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6B	20	6876B	2145	4x4	LTE B6B	20	6884	2164.8	4x4	-	-	24.36	24.37										
CA [2A]-66C-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6B	20	6876B	2145	4x4	LTE B6B	20	6884	2164.8	4x4	-	-	24.37	24.37										
CA [2A]-66C-71A	LTE B71	5	133297	680.5	QPSK	1	12	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6B	20	6876B	2145	4x4	LTE B6B	20	6884	2164.8	4x4	-	-	24.37	24.37										

FCC ID: PY7-84558E

SAR EVALUATION REPORT

Approved by:
Technical Manager

DUT Type:
Portable Handset

APPENDIX H:
Page 7 of 12

APPENDIX H:
Page 9 of 12

APPENDIX H:
Page 12 of 12