

APPENDIX I: LTE DOWNLINK ONLY CARRIER AGGREGATION TEST REDUCTION METHODOLOGY

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number of component carriers (CCs) supported by the product implementation. Per April 2018 TCBC Workshop Notes, the following test reduction methodology was applied to determine the combinations required for conducted power measurements.

LTE DLCA Test Reduction Methodology:

- The supported combinations were arranged by the number of component carriers in columns.
- Any limitations on the PCC or SCC for each combination were identified alongside the combination (e.g. CA_2A-2A-4A-12A, but B12 can only be configured as a SCC).
- Power measurements were performed for "supersets" (LTE CA combinations with multiple components carriers) and any "subsets" (LTE CA combinations with fewer component carriers) that were not completely covered by the supersets.
- Only subsets that have the exact same components as a superset were excluded for measurement.
- When there were certain restrictions on component carriers that existed in the superset that were not applied for the subset, the subset configuration was additionally evaluated.
- Both inter-band and intra-band downlink carrier aggregation scenarios were considered.
- Downlink CA combinations for SISO and 4x4 Downlink MIMO operations were measured independently, per May 2017 TCBC Workshop notes.

Table I-1 – Example of Exclusion Table for SISO Configurations

Index	BCC	Supported Channel Bandwidth (MHz)				Restriction	Completely Covered by Measurement Superset
		CC1	CC2	CC3	CC4		
CC#01	CA_2A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#02	CA_2A-2A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#03	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#04	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#05	CA_2A-2A-4A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#06	CA_2A-2A-4A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#07	CA_2A-2A-4A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#08	CA_2A-2A-4A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#09	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#10	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#11	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#12	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#13	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#14	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#15	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#16	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#17	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#18	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#19	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	
CC#20	CA_2A-2A-4A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A-12A	5, 10, 15, 20	5, 10, 15, 20			CC#01	

Table I-2 – Example of Exclusion Table for 4x4 Downlink MIMO Configurations

Index	BCC	Supported Channel Bandwidth (MHz)				Restriction	Completely Covered by Measurement Superset
		CC1	CC2	CC3	CC4		
CC#M01	CA_12C1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M02	CA_12A1-12A	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M03	CA_12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M04	CA_12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M05	CA_12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M06	CA_12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M07	CA_12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M08	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M09	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M10	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M11	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M12	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M13	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M14	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M15	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M16	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M17	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M18	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M19	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M20	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M21	CA_12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M22	CA_12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M23	CA_12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M24	CA_12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M25	CA_12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M26	CA_12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M27	CA_12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M28	CA_12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M29	CA_12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	
CC#M30	CA_12A1-12A1	5, 10, 15, 20	5, 10, 15, 20			CC#M01	

Note: [CC] indicates component carrier with 4x4 DL MIMO antenna configuration

I.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

FCC ID: A3LSMF721U	SAR EVALUATION REPORT	Approved by: Technical Manager
DUT Type: Portable Handset		APPENDIX I: Page 1 of 15

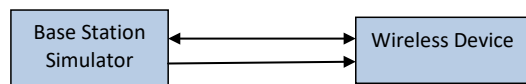
only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the 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 active 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 Section 9.3 and appendix H. 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 I-1
DL CA Power Measurement Setup**

FCC ID: A3LSMF721U	SAR EVALUATION REPORT	Approved by: Technical Manager
DUT Type: Portable Handset		APPENDIX I: Page 2 of 15

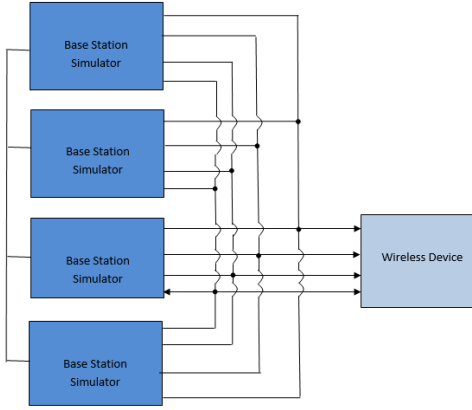


Figure I-2
DL CA with DL 4x4 MIMO Power Measurement Setup

I.2 Downlink Carrier Aggregation RF Conducted Powers

I.2.1 LTE Band 71 as PCC

Table I-3
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_4A-4A-71A	LTE B71	5	133147	665.5	QPSK	1	12	68611	619.5	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	24.63	24.70	
CA_4A-4A-71A	LTE B71	5	133147	665.5	QPSK	1	12	68611	619.5	LTE B48	20	5590	3625	LTE B48	20	5590	3625	-	-	-	-	24.77	24.70	
CA_4A-4A-71A	LTE B71	5	133147	665.5	QPSK	1	12	68611	619.5	LTE B48	20	5590	3625	LTE B48	20	5590	3625	-	-	-	-	24.73	24.70	
CA_2A-2A-4A-71A	LTE B71	5	133147	665.5	QPSK	1	12	68611	619.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B4	20	2175	2132.5	-	24.64	24.70
CA_2A-2A-6A-71A	LTE B71	5	133147	665.5	QPSK	1	12	68611	619.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B68	20	66786	2145	-	24.66	24.70
CA_2A-6A-6A-71A	LTE B71	5	133147	665.5	QPSK	1	12	68611	619.5	LTE B2	20	900	1960	LTE B68	20	66786	2145	LTE B68	20	67235	2150	-	24.66	24.70
CA_2A-6A-71A	LTE B71	5	133147	665.5	QPSK	1	12	68611	619.5	LTE B2	20	900	1960	LTE B68	20	66786	2145	LTE B68	20	66984	2164.8	-	24.63	24.70

I.2.2 LTE Band 12 as PCC

Table I-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_2A-12A (1)	LTE B12	3	23005	700.5	QPSK	1	7	5025	730.5	LTE B2	20	900	1960	-	-	-	-	-	-	-	-	-	24.65	24.65			
CA_4A-12A (1)	LTE B12	6	23005	707.5	QPSK	1	24	5095	737.5	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	-	24.39	24.64			
CA_4A-12A (2)	LTE B12	3	23005	700.5	QPSK	1	7	5025	730.5	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	-	24.45	24.69			
CA_12A-12A	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B65	20	6365	1925.5	-	-	-	-	-	-	-	-	-	-	24.48	24.64		
CA_12A-4A	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B48	20	50665	5537.5	-	-	-	-	-	-	-	-	-	-	24.64	24.64		
CA_12A-4A-1	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B48	20	50990	3625	-	-	-	-	-	-	-	-	-	-	24.57	24.64		
CA_12A-6A (1)	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B68	20	66786	2145	-	-	-	-	-	-	-	-	-	-	24.65	24.68		
CA_12A-6A (2)	LTE B12	3	23005	700.5	QPSK	1	7	5025	730.5	LTE B68	20	66786	2145	-	-	-	-	-	-	-	-	-	-	24.50	24.69		
CA_12A-4B	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B48	20	50665	5537.5	LTE B48	20	50667	5517.7	-	-	-	-	-	-	24.54	24.84		
CA_12A-4B	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B48	20	50990	3625	LTE B48	20	50990	3644.8	-	-	-	-	-	-	24.64	24.64		
CA_2A-4A-12A	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B4	20	2175	2132.5	-	24.55	24.64			
CA_2A-4A-12A	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	24.53	24.84			
CA_2A-4A-12B	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B12	5	5047	732.7	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	-	24.46	24.64			
CA_2A-6A-4B	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B2	20	900	1960	LTE B68	20	66786	2145	LTE B68	20	66984	2164.8	-	24.49	24.65			
CA_4A-4A-12B	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B12	5	5047	732.7	LTE B4	10	2350	2150	-	-	-	-	-	-	24.59	24.64		
CA_12A-4B	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B68	20	50665	5537.5	LTE B48	20	50667	5517.7	LTE B48	20	50665	5537.5	-	24.93	24.94			
CA_2A-2A-12A-3A-6A	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B30	10	9600	2355	LTE B68	20	66786	2145	24.75	24.64
CA_2A-2A-12A-6A-6A	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B2	20	900	1960	LTE B68	20	66786	2145	LTE B68	20	67235	2150	-	24.40	24.64			
CA_2A-2A-12B-6A	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B12	5	5047	732.7	LTE B2	20	900	1960	LTE B68	20	66786	2145	-	24.39	24.68			
CA_2A-12A-2A-6A-6A	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B2	20	900	1960	LTE B30	10	16200	2355	LTE B68	20	66786	2145	LTE B68	20	66786	2145	24.47	24.64
CA_2A-12B-6A-6A	LTE B12	5	23005	707.5	QPSK	1	24	5095	737.5	LTE B12	5	5047	732.7	LTE B2	20	900	1960	LTE B68	20	66786	2145	LTE B68	20	67235	2150	24.35	24.64

I.2.3 LTE Band 13 as PCC

Table I-5
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC [DL] Ch.	PCC [DL] 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_2A-13A-13A	LTE B13	10	23020	762	QPSK	1	11	5130	761	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	-	-	-	-	-	-	24.65	24.65
CA_4A-13A-13A	LTE B13	10	23020	762	QPSK	1	11	5130	761	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	-	24.39	24.65
CA_13A-13A-6A	LTE B13	10	23020	762	QPSK	1	11	5130	761	LTE B68	20	66786	2145	LTE B68	20	66786	2145	-	-	-	-	-	-	24.39	24.65
CA_13A-13A-6B	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B4	20	2175	2132.5	-	24.48	24.65	
CA_13A-13A-6B	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	-	24.39	24.65
CA_2A-2A-13A-6A-6A	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B2	20	900	1960	LTE B68	20	66786	2145	LTE B68	20	66984	2164.8	-	24.49	24.65	
CA_2A-2A-13A-6A-6A	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	-	24.40	24.65
CA_2A-2A-13A-6A-6A	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B2	20	900	1960	LTE B68	20	66786	2145	LTE B68	20	66984	2164.8	-	24.49	24.65	
CA_2A-2A-13A-6A-6A	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	-	24.40	24.65
CA_2A-2A-13A-6A-6A	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B2	20	900	1960	LTE B68	20	66786	2145	LTE B68	20	66984	2164.8	-	24.49	24.65	
CA_2A-2A-13A-6A-6A	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	-	24.40	24.65
CA_2A-2A-13A-6A-6A	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B2	20	900	1960	LTE B68	20	66786	2145	LTE B68	20	66984	2164.8	-	24.49	24.65	
CA_2A-2A-13A-6A-6A	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	-	24.40	24.65
CA_2A-2A-13A-6A-6A	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B2	20	900	1960	LTE B68	20	66786	2145	LTE B68	20	66984	2164.8	-	24.49	24.65	
CA_2A-2A-13A-6A-6A	LTE B13	5	23020	762	QPSK	1	11	5130	761	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-</							

I.2.7 LTE Band 25 as PCC

**Table I-9
Maximum Output Powers**

Combination	PCC										SCC 1				SCC 2				SCC 3				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]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)	
CA 2A-25A	LTE B25	20	26140	1800	QPSK	1	50	8140	1940	LTE B5	10	2525	881.5	-	-	-	-	-	-	-	-	-	24.21	24.20
CA 12A-25A	LTE B25	20	26140	1800	QPSK	1	50	8140	1940	LTE B12	10	5095	737.5	-	-	-	-	-	-	-	-	-	24.11	24.20
CA 25A-25A (1)	LTE B25	20	26140	1800	QPSK	1	50	8140	1940	LTE B25	20	8500	1885	-	-	-	-	-	-	-	-	-	24.00	24.20
CA 25A-41D	LTE B25	20	26140	1800	QPSK	1	50	8140	1940	LTE B41	20	40422	2573.2	LTE B41	20	40620	2593	LTE B41	20	40818	2612.8	24.15	24.20	

I.2.8 LTE Band 30 as PCC

**Table I-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 2A-2A-30A-30A	LTE B30	5	27710	2310	QPSK	1	12	8820	2365	LTE B2	20	800	1960	LTE B2	20	700	1940	LTE B20	10	9715	722.5	-	-	-	-	22.26	22.21	
CA 2A-2A-30A-66A	LTE B30	5	27710	2310	QPSK	1	12	8820	2365	LTE B2	20	800	1960	LTE B20	10	9715	722.5	LTE B66	20	66786	2146	-	-	-	-	22.16	22.21	
CA 2A-2A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	8820	2365	LTE B2	20	800	1960	LTE B20	10	9715	722.5	LTE B66	20	66786	2146	LTE B66	20	66786	2146	22.08	22.21	
CA 2A-2A-12A-30A-66A	LTE B30	5	27710	2310	QPSK	1	12	8820	2365	LTE B2	20	800	1960	LTE B2	20	700	1940	LTE B5	10	7525	881.5	LTE B66	20	66786	2145	22.16	22.21	
CA 2A-2A-12A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	8820	2365	LTE B2	20	800	1960	LTE B2	20	700	1940	LTE B12	10	5095	737.5	LTE B66	20	66786	2145	22.14	22.21	
CA 2A-2A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	8820	2365	LTE B2	20	800	1960	LTE B2	20	700	1940	LTE B12	10	5095	737.5	LTE B66	20	66786	2145	22.14	22.21	
CA 2A-2A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	8820	2365	LTE B2	20	800	1960	LTE B5	10	7525	881.5	LTE B66	20	66786	2145	LTE B66	20	66786	2145	22.16	22.21	
CA 2A-12A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	8820	2365	LTE B2	20	800	1960	LTE B12	10	5095	737.5	LTE B66	20	66786	2145	LTE B66	20	66786	2145	22.12	22.21	
CA 2A-14A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	8820	2365	LTE B2	20	800	1960	LTE B14	10	5330	763	LTE B66	20	66786	2145	LTE B66	20	66786	2145	22.10	22.21	
CA 2A-30A-66A-66A	LTE B30	5	27710	2310	QPSK	1	12	8820	2365	LTE B5	10	2125	881.5	LTE B5	5	2453	874.3	LTE B66	20	66786	2145	LTE B66	20	66786	2145	22.07	22.21	

I.2.9 LTE Band 41 as PCC

**Table I-11
Maximum Output Powers**

Combination	PCC										SCC 1				SCC 2				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]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)	
CA 41D	LTE B41	10	41065	2636.5	QPSK	1	25	41055	2636.5	LTE B41	20	40911	2622.1	LTE B41	20	40713	2602.3	24.48	24.51	
CA 41A-41C	LTE B41	5	41490	2680	QPSK	1	12	41490	2680	LTE B41	20	39948	2525.8	LTE B41	20	39750	2506	24.53	24.57	
CA 41C-41A	LTE B41	5	41490	2680	QPSK	1	12	41490	2680	LTE B41	20	41373	2668.3	LTE B41	20	39750	2506	24.66	24.57	

I.2.10 LTE Band 48 as PCC

**Table I-12
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	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55640	3600	-	-	-	-	-	-	-	-	-	-	-	-	-	20.85	20.80	
CA 48A-48C	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55640	3600	LTE B48	20	55642	3670.2	-	-	-	-	-	-	-	-	-	-	20.81	20.80
CA 48C-48A	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55638	3579.8	LTE B48	20	55640	3600	-	-	-	-	-	-	-	-	-	-	20.79	20.80
CA 48A-48D	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55640	3600	LTE B48	20	55642	3670.2	LTE B48	20	55644	3650.4	-	-	-	-	-	-	20.79	20.80
CA 48D-48A	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55638	3579.8	LTE B48	20	55736	3599.6	LTE B48	20	55640	3600	-	-	-	-	-	-	20.76	20.80
CA 48C-48C	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55638	3579.8	LTE B48	20	55640	3600	LTE B48	20	55642	3670.2	-	-	-	-	-	-	20.77	20.80
CA 48A-48E	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55640	3600	LTE B48	20	55642	3670.2	LTE B48	20	55644	3650.4	LTE B48	20	55646	3630.6	20.81	20.80		
CA 48E-48A	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55638	3579.8	LTE B48	20	55736	3599.6	LTE B48	20	55934	3619.4	LTE B48	20	55640	3600	20.76	20.80		
CA 48C-48D	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55638	3579.8	LTE B48	20	55640	3600	LTE B48	20	55642	3670.2	LTE B48	20	55644	3650.4	20.76	20.80		
CA 48D-48C	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55638	3579.8	LTE B48	20	55736	3599.6	LTE B48	20	55640	3600	LTE B48	20	55642	3670.2	20.80	20.80		
CA 48F	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	LTE B48	20	55638	3579.8	LTE B48	20	55736	3599.6	LTE B48	20	55934	3619.4	LTE B48	20	55642	3650.4	20.73	20.80		

I.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 I.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.

I.3.1 LTE 4x4 MIMO DL Standalone Powers

Table I-13
Maximum Output Powers

LTE Band	Bandwidth [MHz]	Channel	Frequency [MHz]	Modulation	RB Size	RB Offset	4x4 DL MIMO Tx. Power [dBm]	Single Antenna Tx. Power [dBm]
66	10	132622	1775	QPSK	1	25	24.16	24.39
25	20	26140	1860	QPSK	1	50	24.13	24.20
30	5	27710	2310	QPSK	1	12	22.15	22.21
41	5	41490	2680	QPSK	1	12	24.44	24.57
48	20	55340	3560	16QAM	1	50	20.72	20.80

FCC ID: A3LSMF721U	SAR EVALUATION REPORT	Approved by: Technical Manager
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Combination	PCC										SCC 1										SCC 2										SCC 3										Power	
	PCC Band	PCC BW [MHz]	PCC Freq [MHz]	PCC UL Freq [MHz]	Mod.	PCC DL RB	PCC UL RB	PCC DL Freq [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC Freq [MHz]	SCC UL Freq [MHz]	Mod.	SCC DL RB	SCC UL RB	SCC DL Freq [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC Freq [MHz]	SCC UL Freq [MHz]	Mod.	SCC DL RB	SCC UL RB	SCC DL Freq [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC Freq [MHz]	SCC UL Freq [MHz]	Mod.	SCC DL RB	SCC UL RB	SCC DL Freq [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]				
CA SA 25A-1000-000	1.875	20	1812.5	1812.5	QPSK	1	50	1812.5	4x4	1.875	20	1812.5	1812.5	QPSK	1	50	1812.5	4x4	1.875	20	1812.5	1812.5	QPSK	1	50	1812.5	4x4	1.875	20	1812.5	1812.5	QPSK	1	50	1812.5	4x4	24.20	24.20				

I.3.7 LTE Band 25 as PCC

Table I-20
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC										SCC 1										SCC 2										SCC 3										Power	
			PCC UL Freq [MHz]	PCC UL RB	PCC DL Freq [MHz]	DL Ant. Config.	PCC UL RB	PCC UL Freq [MHz]	PCC DL Freq [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC Freq [MHz]	SCC UL Freq [MHz]	Mod.	SCC DL RB	SCC UL RB	SCC DL Freq [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC Freq [MHz]	SCC UL Freq [MHz]	Mod.	SCC DL RB	SCC UL RB	SCC DL Freq [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC Freq [MHz]	SCC UL Freq [MHz]	Mod.	SCC DL RB	SCC UL RB	SCC DL Freq [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]					
CA SA [25A]	LTE B25	20	26140	1860	QPSK	1	50	8140	1940	4x4	LTE B5	10	2525	881.5	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.20	24.20					
CA 25A-[25A] (1)	LTE B25	20	26140	1860	QPSK	1	50	8140	1940	2x2	LTE B25	20	8590	1985	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.08	24.20				
CA [25A]-25A (1)	LTE B25	20	26140	1860	QPSK	1	50	8140	1940	4x4	LTE B25	20	8590	1985	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.08	24.20				
CA [25A]-41D	LTE B25	20	26140	1860	QPSK	1	50	8140	1940	4x4	LTE B41	20	40422	2573.2	2x2	LTE B41	20	40620	2593	2x2	LTE B41	20	40620	2593	2x2	LTE B41	20	40818	2612.8	2x2	LTE B41	20	40818	2612.8	4x4	24.08	24.20	24.20	24.20					
CA [25A]-41D (1)	LTE B25	20	26140	1860	QPSK	1	50	8140	1940	2x2	LTE B41	20	40422	2573.2	4x4	LTE B41	20	40620	2593	4x4	LTE B41	20	40620	2593	4x4	LTE B41	20	40818	2612.8	4x4	LTE B41	20	40818	2612.8	4x4	24.08	24.20	24.20	24.20					
CA [25A]-141D (1)	LTE B25	20	26140	1860	QPSK	1	50	8140	1940	4x4	LTE B41	20	40422	2573.2	4x4	LTE B41	20	40620	2593	4x4	LTE B41	20	40620	2593	4x4	LTE B41	20	40818	2612.8	4x4	LTE B41	20	40818	2612.8	4x4	24.08	24.20	24.20	24.20					

I.3.9 LTE Band 41 as PCC

Table I-22
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC [UL] Ch.	PCC [UL] Freq. [MHz]	Mod.	PCC					SCC 1					SCC 2					Power	
						PCC UL# RB	PCC UL RB Offset	PCC [DL] Ch.	PCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]
CA [41D]	LTE B41	10	41055	2636.5	QPSK	1	25	41055	2636.5	4x4	LTE B41	20	40911	2622.1	4x4	LTE B41	20	40713	2602.3	4x4	24.58	24.51
CA [41A]-[41C]	LTE B41	5	41490	2680	QPSK	1	12	41490	2680	4x4	LTE B41	20	39948	2525.8	2x2	LTE B41	20	39750	2506	2x2	24.78	24.57
CA [41C]-[41A]	LTE B41	5	41490	2680	QPSK	1	12	41490	2680	2x2	LTE B41	20	41373	2668.3	2x2	LTE B41	20	39750	2506	4x4	24.71	24.57
CA [41A]-[41C]	LTE B41	5	41490	2680	QPSK	1	12	41490	2680	2x2	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	4x4	24.72	24.57
CA [41C]-[41A]	LTE B41	5	41490	2680	QPSK	1	12	41490	2680	4x4	LTE B41	20	41373	2668.3	4x4	LTE B41	20	39750	2506	2x2	24.46	24.57
CA [41A]-[41C]	LTE B41	5	41490	2680	QPSK	1	12	41490	2680	4x4	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	4x4	24.76	24.57
CA [41C]-[41A]	LTE B41	5	41490	2680	QPSK	1	12	41490	2680	4x4	LTE B41	20	41373	2668.3	4x4	LTE B41	20	39750	2506	4x4	24.78	24.57

I.3.10 LTE Band 48 as PCC

Table I-23
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC [UL] Ch.	PCC [UL] Freq. [MHz]	Mod.	PCC					SCC 1					SCC 2					SCC 3					SCC 4					Power						
						PCC UL# RB	PCC UL RB Offset	PCC [DL] Ch.	PCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]					
CA [48A]-[48A]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	2x2	LTE B48	20	55640	3600	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.84	20.80			
CA [48B]-[48A]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.78	20.80		
CA [48A]-[48A]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.87	20.80		
CA [48A]-[48C]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	2x2	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.78	20.80	
CA [48C]-[48A]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.81	20.80	
CA [48A]-[48C]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	2x2	LTE B48	20	56442	3670.2	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.80	20.80	
CA [48C]-[48A]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	2x2	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.81	20.80	
CA [48A]-[48C]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	2x2	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.79	20.80	
CA [48C]-[48A]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.77	20.80	
CA [48A]-[48D]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	2x2	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	-	-	-	-	-	-	-	-	-	20.77	20.80	
CA [48C]-[48A]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	-	-	-	20.82	20.80	
CA [48A]-[48D]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	2x2	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	-	-	-	-	-	-	-	-	-	20.78	20.80	
CA [48D]-[48A]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	2x2	LTE B48	20	55640	3600	2x2	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	-	-	-	20.78	20.80	
CA [48A]-[48D]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	-	-	-	-	-	-	-	-	-	20.88	20.80	
CA [48C]-[48A]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	-	-	-	20.72	20.80	
CA [48C]-[48D]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	2x2	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	-	-	-	20.78	20.80	
CA [48C]-[48D]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	-	-	-	20.78	20.80	
CA [48C]-[48C]	LTE B48	20	55340	3560	16QAM	1	50	55340	3560	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	-	-	-	20.77	20.80	
CA [48A]-[48E]	LTE B48	20	55340	3600	16QAM	1	50	55340	3600	2x2	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	LTE B48	20	56046	3630.6	4x4	-	-	-	-	-	20.74	20.80
CA [48E]-[48A]	LTE B48	20	55340	3600	16QAM	1	50	55340	3600	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	LTE B48	20	56046	3630.6	4x4	-	-	-	-	-	20.80	20.80
CA [48A]-[48E]	LTE B48	20	55340	3600	16QAM	1	50	55340	3600	4x4	LTE B48	20	55640	3600	2x2	LTE B48	20	56442	3670.2	2x2	LTE B48	20	56244	3650.4	4x4	LTE B48	20	56046	3630.6	4x4	-	-	-	-	-	20.76	20.80
CA [48E]-[48A]	LTE B48	20	55340	3600	16QAM	1	50	55340	3600	2x2	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	LTE B48	20	56046	3630.6	4x4	-	-	-	-	-	20.82	20.80
CA [48A]-[48E]	LTE B48	20	55340	3600	16QAM	1	50	55340	3600	4x4	LTE B48	20	55640	3600	2x2	LTE B48	20	56442	3670.2	2x2	LTE B48	20	56244	3650.4	4x4	LTE B48	20	56046	3630.6	4x4	-	-	-	-	-	20.78	20.80
CA [48A]-[48E]	LTE B48	20	55340	3600	16QAM	1	50	55340	3600	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	LTE B48	20	56046	3630.6	4x4	-	-	-	-	-	20.80	20.80
CA [48E]-[48E]	LTE B48	20	55340	3600	16QAM	1	50	55340	3600	2x2	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	LTE B48	20	56046	3630.6	4x4	-	-	-	-	-	20.79	20.80
CA [48E]-[48E]	LTE B48	20	55340	3600	16QAM	1	50	55340	3600	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	LTE B48	20	56046	3630.6	4x4	-	-	-	-	-	20.79	20.80
CA [48C]-[48D]	LTE B48	20	55340	3600	16QAM	1	50	55340	3600	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	LTE B48	20	56046	3630.6	4x4	-	-	-	-	-	20.79	20.80
CA [48C]-[48D]	LTE B48	20	55340	3600	16QAM	1	50	55340	3600	4x4	LTE B48	20	55640	3600	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	LTE B48	20	56046	3630.6	4x4	-	-	-	-	-	20.79	20.80
CA [48C]-[48C]	LTE B48																																				

1.4.2 Additional 4x4 MIMO DL Carrier Aggregation RF Conducted Powers with Uplink Carrier Aggregation Enabled

Note: 4x4 DL MIMO is only operating in the downlink. Uplink transmission is limited to a single output stream for each component carrier of ULCA.

**Table I-25
Maximum Output Powers**

Combination	PCC										SCC 1								Power			
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Ch.	PCC (DL) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC (UL) Ch.	SCC (UL) Freq. [MHz]	Mod.	SCC UL# RB	SCC UL RB Offset	SCC (DL) Ch.	SCC (DL) Freq. [MHz]	DL Ant. Config.	ULCA Tx Power with add'l CA config. active	ULCA Tx Power (dBm)
CA [66B]	LTE B66	10	132022	1715	QPSK	1	49	66486	2115	4x4	LTE B66	10	132121	1724.9	QPSK	1	0	66585	2134.9	4x4	23.93	23.91
CA [66C]	LTE B66	20	132072	1720	QPSK	1	99	66536	2120	4x4	LTE B66	20	132270	1739.8	QPSK	1	0	66734	2139.8	4x4	23.87	23.85

Combination	PCC										SCC 1								SCC 2		Power						
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Ch.	PCC (DL) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC (UL) Ch.	SCC (UL) Freq. [MHz]	Mod.	SCC UL# RB	SCC UL RB Offset	SCC (DL) Ch.	SCC (DL) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC (DL) Ch.	SCC (DL) Freq. [MHz]	DL Ant. Config.	ULCA Tx Power with add'l CA config. active	ULCA Tx Power (dBm)
CA [41C]	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	4x4	LTE B41	20	41292	2660.2	QPSK	1	99	41292	2660.2	4x4	-	-	-	-	-	23.96	24.25
CA [41D]	LTE B41	20	41490	2680	QPSK	1	0	41490	2680	4x4	LTE B41	20	41292	2660.2	QPSK	1	99	41292	2660.2	4x4	LTE B41	20	41094	2640.4	4x4	24.00	24.25

Combination	PCC										SCC 1								Power			
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Ch.	PCC (DL) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC (UL) Ch.	SCC (UL) Freq. [MHz]	Mod.	SCC UL# RB	SCC UL RB Offset	SCC (DL) Ch.	SCC (DL) Freq. [MHz]	DL Ant. Config.	ULCA Tx Power with add'l CA config. active	ULCA Tx Power (dBm)
CA [48C]	LTE B48	20	55340	3560	QPSK	50	50	55340	3560	4x4	LTE B48	20	55538	3579.8	QPSK	50	0	55538	3579.8	4x4	20.62	20.70

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