

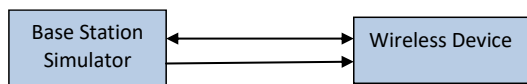
only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the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

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Test Dates: 09/19/21 - 11/15/21	DUT Type: Portable Handset	APPENDIX J: Page 2 of 15	

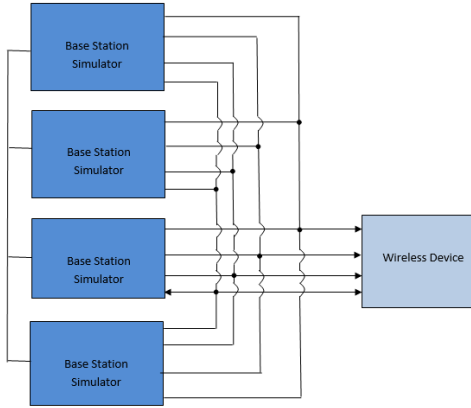


Figure J-2
DL CA with DL 4x4 MIMO Power Measurement Setup

J.2 Downlink Carrier Aggregation RF Conducted Powers

J.2.1 LTE Band 71 as PCC

Table J-3
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_4A-4A-71A	LTE B71	5	133447	695.5	QPSK	1	12	68911	649.5	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	24.89	24.79	
CA_4B4-4B4-71A	LTE B71	5	133447	695.5	QPSK	1	12	68911	649.5	LTE B48	20	5590	3625	LTE B48	20	5640	3690	-	-	-	-	-	24.92	24.79	
CA_4B2-71A	LTE B71	5	133447	695.5	QPSK	1	12	68911	649.5	LTE B48	20	5590	3625	LTE B48	20	56180	3644.8	-	-	-	-	-	24.83	24.79	
CA_2A-2A-4A-71A	LTE B71	5	133447	695.5	QPSK	1	12	68911	649.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B4	20	2175	2132.5	-	-	25.01	24.79
CA_2A-2A-66A-71A	LTE B71	5	133447	695.5	QPSK	1	12	68911	649.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B66	20	66786	2145	-	-	24.99	24.79
CA_2A-66A-66A-71A	LTE B71	5	133447	695.5	QPSK	1	12	68911	649.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	67236	2190	-	-	24.97	24.79
CA_2A-66C-71A	LTE B71	5	133447	695.5	QPSK	1	12	68911	649.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66964	2164.8	-	-	24.98	24.79

J.2.2 LTE Band 12 as PCC

Table J-4
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-12A (1)	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B2	20	900	1960	-	-	-	-	-	-	-	-	-	-	-	-	-	25.00	24.95	
CA_4A-12A (1)	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	-	-	-	-	-	25.02	24.95	
CA_4A-12A (2)	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	-	-	-	-	-	25.02	24.95	
CA_12A-25A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B25	20	8365	1962.5	-	-	-	-	-	-	-	-	-	-	-	-	-	24.89	24.95	
CA_12A-66A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B48	20	50665	5537.5	-	-	-	-	-	-	-	-	-	-	-	-	-	24.82	24.95	
CA_12A-48A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B48	20	5590	3625	-	-	-	-	-	-	-	-	-	-	-	-	-	24.89	24.95	
CA_12A-66A (1)	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B66	20	66786	2145	-	-	-	-	-	-	-	-	-	-	-	-	-	25.02	24.95	
CA_12A-66A (2)	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B66	20	66786	2145	-	-	-	-	-	-	-	-	-	-	-	-	-	25.02	24.95	
CA_12A-96C	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B48	20	50665	5537.5	LTE B48	20	50467	5517.7	-	-	-	-	-	-	-	-	-	-	24.76	24.95
CA_12A-48C	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B48	20	5590	3625	LTE B48	20	56180	3644.8	-	-	-	-	-	-	-	-	-	-	24.86	24.95
CA_2A-2A-12A-12A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B4	20	2175	2132.5	-	-	-	-	-	-	25.02	24.95
CA_2A-66A-12A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	-	24.99	24.95
CA_2A-4A-12B	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B12	5	5107	738.7	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	-	-	-	-	-	-	24.99	24.95
CA_2A-12A-66C	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66964	2164.8	-	-	-	-	-	-	25.00	24.95
CA_4A-4A-12B	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B12	5	5107	738.7	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	-	25.04	24.95
CA_12A-48D	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B48	20	50665	5537.5	LTE B48	20	50467	5517.7	LTE B48	20	50663	5557.3	-	-	-	-	-	-	24.81	24.95
CA_2A-2A-12A-30A-66A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B30	10	8620	2355	LTE B66	20	66786	2145	-	-	25.09	24.95
CA_2A-2A-12A-66A-66A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B66	20	66786	2145	LTE B66	20	67236	2190	-	-	25.05	24.95
CA_2A-2A-12A-66A-66A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B12	5	5107	738.7	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66786	2145	-	-	25.12	24.95
CA_2A-2A-12A-30A-66A-66A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B2	20	900	1960	LTE B30	10	8620	2355	LTE B66	20	66786	2145	LTE B66	20	67236	2190	-	-	25.08	24.95
CA_2A-12B-66A-66A	LTE B12	5	23155	713.5	QPSK	1	12	5155	743.5	LTE B12	5	5107	738.7	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	67236	2190	-	-	25.10	24.95

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J.2.10 LTE Band 48 as PCC

Table J-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	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	56640	3690	-	-	-	-	-	-	-	-	-	-	-	-	-	21.95	21.40
CA_48A-48C	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	56640	3690	LTE B48	20	56442	3670.2	-	-	-	-	-	-	-	-	-	21.41	21.40
CA_48C-48A	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	55434	3569.4	LTE B48	20	56640	3690	-	-	-	-	-	-	-	-	-	21.07	21.40
CA_48A-48D	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	56640	3690	LTE B48	20	56442	3670.2	LTE B48	20	56244	3650.4	-	-	-	-	-	21.09	21.40
CA_48D-48A	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	55434	3569.4	LTE B48	20	56532	3680.2	LTE B48	20	56640	3690	-	-	-	-	-	21.07	21.40
CA_48C-48C	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	55434	3569.4	LTE B48	20	56640	3690	LTE B48	20	56442	3670.2	-	-	-	-	-	21.06	21.40
CA_48A-48E	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	56640	3690	LTE B48	20	56442	3670.2	LTE B48	20	56244	3650.4	LTE B48	20	56046	3630.6	21.37	21.40	
CA_48E-48A	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	55434	3569.4	LTE B48	20	56532	3680.2	LTE B48	20	56594	3674.4	LTE B48	20	56640	3690	21.43	21.40	
CA_48C-48D	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	55434	3569.4	LTE B48	20	56640	3690	LTE B48	20	56442	3670.2	LTE B48	20	56244	3650.4	21.35	21.40	
CA_48D-48C	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	55434	3569.4	LTE B48	20	56532	3680.2	LTE B48	20	56640	3690	LTE B48	20	56442	3670.2	21.11	21.40	
CA_48F	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	LTE B48	20	55434	3569.4	LTE B48	20	56532	3680.2	LTE B48	20	56630	3678	LTE B48	20	56528	3678.8	21.33	21.40	

J.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 J.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.

J.3.1 LTE 4x4 MIMO DL Standalone Powers

Table J-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]	Target Power [dBm]
66	5	131997	1712.5	QPSK	1	12	23.33	23.28	23.0
25	15	26365	1882.5	QPSK	1	36	22.68	23.73	23.5
30	5	27710	2310	QPSK	1	12	22.40	22.36	22.5
41	10	40620	2593	QPSK	1	25	23.95	23.98	23.5
48	10	55290	3555	16QAM	1	25	21.32	21.40	20.5

FCC ID: A3LSMS906U



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Quality Manager

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DUT Type:
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APPENDIX J:
Page 6 of 15


Table J-20 Maximum Output Powers

Combination	FCC Band	PCC			SCC1					SCC2					SCC3					SCC4					LTE Power Class	Power						
		MHz	Power (mW)	Power (mW)	Mod.	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)	Power (mW)								
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19
CA_1A24-3A-30A-980A	LTE 800	5	31900	17125	OPSK	1	12	86401	21225	242	LTE E-50	20	900	1960	242	LTE E-50	20	700	1940	242	LTE E-50	10	2520	8815	242	LTE E-50	10	8620	2350	242	23.19	23.19


FCC ID: A3LSMS906U

Test Dates:
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DUT Type:
Portable Handset

APPENDIX J:
Page 11 of 15

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J.3.11 LTE Band 48 as PCC

Table J-26
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC				SCC 1				SCC 2				SCC 3				SCC 4				Power					
				Mod.	PCC (UL) RB	PCC (UL) Freq. [MHz]	PCC (UL) Ch.	Mod.	SCC (UL) RB	SCC (UL) Freq. [MHz]	SCC (UL) Ch.	Mod.	SCC (UL) RB	SCC (UL) Freq. [MHz]	SCC (UL) Ch.	Mod.	SCC (UL) RB	SCC (UL) Freq. [MHz]	SCC (UL) Ch.	Mod.	SCC (UL) RB	SCC (UL) Freq. [MHz]	SCC (UL) Ch.	DL Ant. Config.	ULCA Tx Power with add'l CA config. (dBm)	ULCA Tx Power (dBm)			
CA_48A(48A)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55640	3690	4x4	-	-	-	-	-	-	-	-	-	-	21.34	21.40		
CA_48B(48A)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55640	3690	4x4	-	-	-	-	-	-	-	-	-	-	21.33	21.40		
CA_48A(48B)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55640	3690	4x4	-	-	-	-	-	-	-	-	-	-	21.38	21.40		
CA_48C(48A)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	-	-	-	-	21.38	21.40	
CA_48C(48B)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	2x2	LTE B48	20	56442	3670.2	2x2	-	-	21.33	21.40
CA_48A(48C)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55434	3569.4	2x2	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.36	21.40
CA_48B(48C)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.33	21.40
CA_48C(48C)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55640	3690	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	-	-	21.31	21.40
CA_48A(48D)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55640	3690	2x2	LTE B48	20	56442	3670.2	2x2	LTE B48	20	56244	3650.4	2x2	-	-	21.35	21.40
CA_48B(48D)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55640	3690	2x2	LTE B48	20	56442	3670.2	2x2	LTE B48	20	56244	3650.4	2x2	-	-	21.37	21.40
CA_48C(48D)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.35	21.40
CA_48D(48A)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55640	3690	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	-	-	21.39	21.40
CA_48D(48B)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.29	21.40
CA_48D(48C)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.36	21.40
CA_48A(48E)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55640	3690	4x4	LTE B48	20	56442	3670.2	4x4	LTE B48	20	56244	3650.4	4x4	-	-	21.37	21.40
CA_48B(48E)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.33	21.40
CA_48C(48E)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55640	3690	2x2	LTE B48	20	56442	3670.2	2x2	LTE B48	20	56244	3650.4	2x2	-	-	21.28	21.40
CA_48E(48A)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55434	3569.4	2x2	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.31	21.40
CA_48E(48B)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.33	21.40
CA_48E(48C)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55640	3690	2x2	LTE B48	20	56442	3670.2	2x2	LTE B48	20	56244	3650.4	2x2	-	-	21.27	21.40
CA_48E(48D)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.34	21.40
CA_48C(48E)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	2x2	LTE B48	20	55640	3690	2x2	LTE B48	20	56442	3670.2	2x2	LTE B48	20	56244	3650.4	2x2	-	-	21.27	21.40
CA_48D(48E)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.28	21.40
CA_48E(48E)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.31	21.40
CA_48E(48F)	LTE B48	10	55290	3555	16QAM	1	25	55290	3555	4x4	LTE B48	20	55434	3569.4	4x4	LTE B48	20	56640	3690	4x4	LTE B48	20	56442	3670.2	4x4	-	-	21.30	21.40

J.4 Downlink Carrier Aggregation with CA_41C Uplink Carrier Aggregation enabled

This device supports uplink carrier aggregation (ULCA) with additional Carrier Aggregation configurations active in the downlink. Power measurements were performed with ULCA active and additional CA configurations active in the downlink for the configuration per Fall 2017 TCB Workshop Notes.

Per FCC Guidance, additional SAR measurements for these configurations were not required since their maximum output power was not more than 0.25 dB higher than the maximum output power for with only ULCA active.

J.4.1 DL Carrier Aggregation RF Conducted Powers

Table J-27
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC				SCC 1				SCC 2				Power								
				Mod.	PCC (UL) RB	PCC (UL) Freq. [MHz]	PCC (UL) Ch.	Mod.	SCC (UL) RB	SCC (UL) Freq. [MHz]	SCC (UL) Ch.	Mod.	SCC (UL) RB	SCC (UL) Freq. [MHz]	SCC (UL) Ch.	ULCA Tx Power with add'l CA config. (dBm)	ULCA Tx Power (dBm)							
CA_41D	LTE B41	20	38750	2508	QPSK	1	50	38750	2508	LTE B41	20	39948	2525.8	QPSK	1	0	39948	2525.8	LTE B41	20	40146	2545.6	23.45	23.54

J.4.2 DL Carrier Aggregation with DL 4x4 MIMO RF Conducted Powers

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 J-28
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC				SCC 1				SCC 2				Power													
				Mod.	PCC (UL) RB	PCC (UL) Freq. [MHz]	PCC (UL) Ch.	Mod.	SCC (UL) RB	SCC (UL) Freq. [MHz]	SCC (UL) Ch.	Mod.	SCC (UL) RB	SCC (UL) Freq. [MHz]	SCC (UL) Ch.	ULCA Tx Power with add'l CA config. (dBm)	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	2124.9	4x4	-	-	23.58	23.49					
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	-	-	23.51	23.56					
CA_[41C](1)	LTE B41	20	39750	2506	QPSK	1	50	39750	2506	4x4	LTE B41	20	39948	2525.8	QPSK	1	0	39948	2525.8	4x4	-	-	-	23.47	23.54				
CA_[41D]	LTE B41	20	39750	2506	QPSK	1	50	39750	2506	4x4	LTE B41	20	39948	2525.8	QPSK	1	0	39948	2525.8	4x4	LTE B41	20	40146	2545.6	4x4	-	-	23.42	23.54
CA_[48C]	LTE B48	20	55773	3603.3	QPSK	50	0	55773	3603.3	4x4	LTE B48	20	55575	3583.5	QPSK	50	0	55575	3583.5	4x4	-	-	-	20.96	20.98				

FCC ID: A3LSMS906U		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/19/21 - 11/15/21	DUT Type: Portable Handset			APPENDIX J: Page 15 of 15