

Downlink Carrier Aggregation Intra-band configurations**3 DL Intra Band(non-contiguous)**

E-UTRA CA configuration	Bandwidth Combination Set	E-UTRA Band	Allowed Channel BW Per Carrier (MHz)				Max Aggregated BW
			1st Carrier	2nd Carrier	3rd Carrier	4th Carrier	
2A-2A	(0)	Band 2	5, 10, 15, 20	5, 10, 15, 20			40
4A-4A	(0)	Band 4	5, 10, 15, 20	5, 10, 15, 20			40
	(1)	Band 4	5, 10	5, 10			20
41A-41A	(0)	Band 41	10, 15, 20	10, 15, 20			40
	(1)	Band 41	5, 10, 15, 20	5, 10, 15, 20			40
66A-66A	(0)	Band 66	5, 10, 15, 20	5, 10, 15, 20			40
41A-41C	(0)	Band 41	5, 10, 15, 20	41 BCS1			60
		Band 41	41C BCS1	5, 10, 15, 20			60
41A-41D	(0)	Band 41	5, 10, 15, 20	41D BCS0			80
		Band 41	41D BCS0	5, 10, 15, 20			80
41C-41C	(0)	Band 41	41C BCS0	41C BCS0			80
41C-41D	(0)	Band 41	41C BCS0	41D BCS0			100
		Band 41	41D BCS0	41C BCS0			100

4. DL Intra Band(contiguous)

E-UTRA CA configuration	Bandwidth Combination Set	E-UTRA Band	Allowed Channel BW Per Carrier (MHz)				Max Aggregated BW
			1st Carrier	2nd Carrier	3rd Carrier	4th Carrier	
2C	(0)	Band 2	5	20			40
			10	15, 20			
			15	10, 15, 20			
			20	5, 10, 15, 20			
41C	(0)	Band 41	10	20			40
			15	15, 20			
			20	10, 15, 20			
			5, 10	20			
	(1)	Band 41	15	15, 20			40
			20	5, 10, 15, 20			
			10	15, 20			
			15	10, 15, 20			
	(2)	Band 41	20	10, 15, 20			40
			10	20			
			20	20			
			5	5, 10, 15			
66B	(0)	Band 66	10	5, 10			20
			15	5			
			5	20			
66C	(0)	Band 66	10	15, 20			40
			15	10, 15, 20			
			20	5, 10, 15, 20			
			10	20	15		
41D	(0)	Band 41	10	15, 20	20		60
			15	20	10, 15		
			15	10, 15, 20	20		
			20	15, 20	10		
			20	10, 15, 20	15, 20		
			15, 20	15, 20	15, 20	20	
41E	(0)	Band 41	15, 20	15, 20	15, 20	20	80

LTE Downlink Carrier Aggregation Combinations

The DL CA power measurement conditions for various CC's combinations were determined according LTE DL CA SAR Test Exclusion guidance in TCB workshop note (April 2018). Only yellow highlighted cells need power measurement. The following power measurements were performed with a single carrier uplink; CA for this particular project only supports one (1) uplink and up to four (4) downlinks.

LTE Release 10 Carrier Aggregation

Index	2CC	Restriction	Completely Covered by Measurement Superset	Index	3CC	Restriction	Completely Covered by Measurement Superset	Index	4CC	Restriction	Completely Covered by Measurement Superset	Index	5CC	Restriction	Completely Covered by Measurement Superset
2CC#1	2A-2A			3CC#1	2A-4A-5A			4CC#1	41A-41D			5CC#1	41C-41D		
2CC#2	2C			3CC#2	2A-4A-13A			4CC#2	41C-41C						
2CC#3	2A-4A		3CC#1	3CC#3	2A-5A-66A			4CC#3	41E						
2CC#4	2A-5A		3CC#1	3CC#4	2A-66A-66A										
2CC#5	2A-12A			3CC#5	4A-4A-12A										
2CC#6	2A-13A		3CC#2	3CC#6	5A-66A-66A										
2CC#7	2A-17A			3CC#7	5A-66C										
2CC#8	2A-66A		3CC#3	3CC#8	12A-66A-66A										
2CC#9	4A-4A		3CC#5	3CC#9	26A-41C	41A SCC only									
2CC#10	4A-5A		3CC#1	3CC#10	41A-41C										
2CC#11	4A-12A		3CC#5	3CC#11	41D		4CC#1								
2CC#12	4A-13A		3CC#2												
2CC#13	4A-17A														
2CC#14	5A-41A	41A SCC only													
2CC#15	5A-66A		3CC#3												
2CC#16	12A-25A														
2CC#17	12A-66A		3CC#8												
2CC#18	26A-41A	41A SCC only													
2CC#19	41A-41A														
2CC#20	41C		3CC#10												
2CC#21	66A-66A		3CC#4												
2CC#22	66B														
2CC#23	66C		3CC#7												

Note:

Only yellow highlight cells need power measurement according to LTE DL CA SAR test Exclusion in TCB workshop (April.2018).

LTE Release 10 Carrier Aggregation with 4x4 MIMO

Index	2CC	Restriction	Completely Covered by Measurement Superset	Index	3CC	Restriction	Completely Covered by Measurement Superset	Index	4CC	Restriction	Completely Covered by Measurement Superset	Index	4CC	Restriction	Completely Covered by Measurement Superset
2CC#1	2A-[4A]		3CC#1	3CC#1	2A-[4A]-5A			4CC#1	41A-[41D]			5CC#1	41C-[41D]		
2CC#2	2A-[66A]		3CC#3	3CC#2	2A-[4A]-13A			4CC#2	[41A]-41D			5CC#2	[41C]-41D		
2CC#3	4A-[4A]		3CC#6	3CC#3	2A-5A-[66A]			4CC#3	[41A]-[41D]			5CC#3	[41C]-[41D]		
2CC#4	[4A]-[4A]		3CC#7	3CC#4	2A-66A-[66A]			4CC#4	41C-[41C]						
2CC#5	[4A]-5A		3CC#1	3CC#5	2A-[66A]-[66A]			4CC#5	[41C]-[41C]						
2CC#6	[4A]-12A		3CC#6	3CC#6	4A-[4A]-12A			4CC#6	[41E]						
2CC#7	[4A]-13A		3CC#2	3CC#7	[4A]-[4A]-12A										
2CC#8	[4A]-17A			3CC#8	5A-66A-[66A]										
2CC#9	5A-[41A]			3CC#9	5A-[66A]-[66A]										
2CC#10	5A-[66A]		3CC#3	3CC#10	5A-[66C]										
2CC#11	12A-[66A]		3CC#11	3CC#11	12A-66A-[66A]										
2CC#12	26A-[41A]	41A SCC only		3CC#12	12A-[66A]-[66A]										
2CC#13	41A-[41A]			3CC#13	26A-[41C]										
2CC#14	[41A]-[41A]			3CC#14	41A-[41C]										
2CC#15	[41C]		3CC#14	3CC#15	[41A]-41C										
2CC#16	66A-[66A]		3CC#4	3CC#16	[41A]-[41C]										
2CC#17	[66A]-[66A]		3CC#5	3CC#17	[41D]		4CC#1								
2CC#18	[66B]														
2CC#19	[66C]		3CC#10												

Note:

Only yellow highlight cells need power measurement according to LTE DL CA SAR test Exclusion in TCB workshop (April.2018).

Single Carrier Downlink 4x4 MIMO output power results

LTE Bands	Modulation	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	LTE Rel 8 Tx. Power [dBm]	DL 4x4 MIMO Tx. Power [dBm]	Delta
4	QPSK	20	20175	1732.5	1/99	23.7	23.5	-0.14
41	QPSK	20	39750	2506	1/0	23.9	23.8	-0.05
66	QPSK	20	132572	1770	1/49	24.0	24.1	0.12

Note:

According to LTE Test Conditions in TCB workshop (May, 2017), SAR is excluded for LTE downlink 4x4 MIMO operation when uplink output with DL MIMO does not exceed highest uplink output power configuration without DL MIMO by more than 1/4 dB. And for DL MIMO with carrier aggregation, the same SAR test exclusion procedure is considered.

