

LTE Downlink Carrier Aggregation configuration

1. DL Inter Band(2CC)

| E-UTRA CA configuration | Bandwidth Combination Set | E-UTRA Band | Bandwidth |       |       |        |        |        | Max Aggregated BW |
|-------------------------|---------------------------|-------------|-----------|-------|-------|--------|--------|--------|-------------------|
|                         |                           |             | 1.4 MHz   | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |                   |
| 2A-4A                   | (0)                       | Band 2      | Yes       | Yes   | Yes   | Yes    | Yes    | Yes    | 40                |
|                         |                           | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (1)                       | Band 2      |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 4      |           |       |       |        |        |        |                   |
| 2A-5A                   | (0)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 40                |
|                         |                           | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (1)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 4      |           |       |       |        |        |        |                   |
| 2A-12A                  | (0)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 12     |           |       | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 12     |           | Yes   | Yes   | Yes    |        |        |                   |
| 2A-13A                  | (0)                       | Band 2      |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 13     |           |       |       |        |        |        |                   |
|                         | (1)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 13     |           |       | Yes   | Yes    |        |        |                   |
| 2A-17A                  | (0)                       | Band 2      |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 17     |           |       | Yes   | Yes    |        |        |                   |
| 2A-66A                  | (0)                       | Band 2      | Yes       | Yes   | Yes   | Yes    | Yes    | Yes    | 40                |
|                         |                           | Band 66     |           |       | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (1)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 20                |
|                         |                           | Band 66     |           |       | Yes   | Yes    | Yes    | Yes    |                   |
| 4A-5A                   | (0)                       | Band 4      |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 5      |           |       | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (1)                       | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 5      |           |       | Yes   | Yes    |        |        |                   |
| 4A-12A                  | (0)                       | Band 4      | Yes       | Yes   | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 12     |           |       | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 4      | Yes       | Yes   | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 12     |           |       | Yes   | Yes    |        |        |                   |
| 4A-13A                  | (0)                       | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 13     |           |       | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    | 20                |
|                         |                           | Band 13     |           |       |       |        |        |        |                   |
| 4A-17A                  | (0)                       | Band 4      |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 17     |           |       | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 4      |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 17     |           |       |       |        |        |        |                   |
| 5A-66A                  | (0)                       | Band 5      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 66     |           |       | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (1)                       | Band 5      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 66     |           |       | Yes   | Yes    | Yes    | Yes    |                   |
| 12A-25A                 | (0)                       | Band 12     |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 25     |           |       | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 12     |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 25     |           |       | Yes   | Yes    |        |        |                   |
| 12A-66A                 | (0)                       | Band 12     | Yes       | Yes   | Yes   | Yes    |        |        | 30                |
|                         |                           | Band 66     |           |       | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 12     | Yes       | Yes   | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 66     |           |       | Yes   | Yes    |        |        |                   |
| 26A-41A                 | (0)                       | Band 26     |           |       | Yes   | Yes    | Yes    | Yes    | 35                |
|                         |                           | Band 41     |           |       | Yes   | Yes    | Yes    | Yes    |                   |

2. DL Inter Band(3CC)

| E-UTRA CA configuration | Bandwidth Combination Set | E-UTRA Band | Bandwidth |       |       |        |        |        | Max Aggregated BW |
|-------------------------|---------------------------|-------------|-----------|-------|-------|--------|--------|--------|-------------------|
|                         |                           |             | 1.4 MHz   | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |                   |
| 2A-4A-5A                | (0)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 50                |
|                         |                           | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (1)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 50                |
|                         |                           | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    |                   |
| 2A-5A-66A               | (0)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 50                |
|                         |                           | Band 5      |           |       | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (1)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 50                |
|                         |                           | Band 5      |           |       | Yes   | Yes    | Yes    | Yes    |                   |
| 4A-4A-12A               | (0)                       | Band 4      |           |       | Yes   | Yes    |        |        | 50                |
|                         |                           | Band 12     |           |       | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 4      |           |       | Yes   | Yes    |        |        | 50                |
|                         |                           | Band 12     |           |       | Yes   | Yes    |        |        |                   |
| 5A-66A-66A              | (0)                       | Band 5      |           |       | Yes   | Yes    |        |        | 50                |
|                         |                           | Band 66     |           |       | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 5      |           |       | Yes   | Yes    |        |        | 50                |
|                         |                           | Band 66     |           |       | Yes   | Yes    |        |        |                   |
| 26A-41C                 | (0)                       | Band 26     |           |       | Yes   | Yes    | Yes    |        | 55                |
|                         |                           | Band 41     |           |       | Yes   | Yes    | Yes    |        |                   |

3 DL Intra Band(non-contiguous)

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

**LTE Uplink Inter-band Carrier Aggregation**

| E-UTRA CA configuration | Bandwidth Combination Set | E-UTRA Band | Bandwidth |       |       |        |        |        | Max Aggregated BW |
|-------------------------|---------------------------|-------------|-----------|-------|-------|--------|--------|--------|-------------------|
|                         |                           |             | 1.4 MHz   | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |                   |
| 2A-4A                   | (0)                       | Band 2      | Yes       | Yes   | Yes   | Yes    | Yes    | Yes    | 40                |
|                         |                           | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (1)                       | Band 2      |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 4      |           |       | Yes   | Yes    |        |        |                   |
|                         | (2)                       | Band 2      |           |       | Yes   | Yes    | Yes    | Yes    | 40                |
|                         |                           | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    |                   |
| 4A-5A                   | (0)                       | Band 4      |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 5      |           |       | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 5      |           |       | Yes   | Yes    |        |        |                   |
| 4A-12A                  | (0)                       | Band 4      | Yes       | Yes   | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 12     |           |       | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 4      | Yes       | Yes   | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 12     |           |       | Yes   | Yes    |        |        |                   |
|                         | (2)                       | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 12     |           | Yes   | Yes   | Yes    |        |        |                   |
|                         | (3)                       | Band 4      |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 12     |           |       | Yes   | Yes    |        |        |                   |
|                         | (4)                       | Band 4      |           |       | Yes   | Yes    | Yes    | Yes    | 30                |
|                         |                           | Band 12     |           |       | Yes   | Yes    |        |        |                   |
|                         | (5)                       | Band 4      |           |       | Yes   | Yes    | Yes    |        | 20                |
|                         |                           | Band 12     |           |       | Yes   |        |        |        |                   |
| 5A-66A                  | (0)                       | Band 5      |           |       | Yes   | Yes    |        |        | 30                |
|                         |                           | Band 66     |           |       | Yes   | Yes    | Yes    | Yes    |                   |
| 12A-66A                 | (0)                       | Band 12     |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 66     | Yes       | Yes   | Yes   | Yes    |        |        |                   |
|                         | (1)                       | Band 12     |           |       | Yes   | Yes    |        |        | 30                |
|                         |                           | Band 66     | Yes       | Yes   | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (2)                       | Band 12     |           | Yes   | Yes   | Yes    |        |        | 30                |
|                         |                           | Band 66     |           |       | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (3)                       | Band 12     |           |       | Yes   | Yes    |        |        | 20                |
|                         |                           | Band 66     |           |       | Yes   | Yes    |        |        |                   |
|                         | (4)                       | Band 12     |           |       | Yes   | Yes    |        |        | 30                |
|                         |                           | Band 66     |           |       | Yes   | Yes    | Yes    | Yes    |                   |
|                         | (5)                       | Band 12     |           |       | Yes   |        |        |        | 20                |
|                         |                           | Band 66     |           |       | Yes   | Yes    | Yes    |        |                   |

**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 (5) downlinks.

**LTE Release 10 Carrier Aggregation**

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

| Index | 3CC         | Restriction  | Completely Covered by Measurement Superset |
|-------|-------------|--------------|--------------------------------------------|
| 3CC#1 | 2A-4A-5A    |              |                                            |
| 3CC#2 | 2A-4A-13A   |              |                                            |
| 3CC#3 | 2A-5A-66A   |              |                                            |
| 3CC#4 | 4A-4A-12A   |              |                                            |
| 3CC#5 | 5A-66A-66A  |              |                                            |
| 3CC#6 | 12A-66A-66A |              |                                            |
| 3CC#7 | 26A-41C     | 41C SCC only |                                            |
| 3CC#8 | 41A-41C     |              |                                            |
| 3CC#9 | 41D         |              | 4CC#1                                      |

| Index | 4CC     | Restriction | Completely Covered by Measurement Superset |
|-------|---------|-------------|--------------------------------------------|
| 4CC#1 | 41A-41D |             |                                            |
| 4CC#2 | 41C-41C |             |                                            |
| 4CC#3 | 41E     |             |                                            |

| Index | 5CC     | Restriction | Completely Covered by Measurement Superset |
|-------|---------|-------------|--------------------------------------------|
| 5CC#1 | 41C-41D |             |                                            |

**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 |
|--------|-------------|--------------|--------------------------------------------|
| 2CC#1  | 2A-[4A]     |              | 3CC#1                                      |
| 2CC#2  | 2A-[66A]    |              | 3CC#3                                      |
| 2CC#3  | [4A]-[4A]   |              | 3CC#4                                      |
| 2CC#4  | [4A]-5A     |              | 3CC#1                                      |
| 2CC#5  | [4A]-12A    |              | 3CC#4                                      |
| 2CC#6  | [4A]-13A    |              | 3CC#2                                      |
| 2CC#7  | [4A]-17A    |              |                                            |
| 2CC#8  | 5A-[41A]    | 41A SCC only |                                            |
| 2CC#9  | 5A-[66A]    |              | 3CC#5                                      |
| 2CC#10 | 12A-[66A]   |              | 3CC#6                                      |
| 2CC#11 | 26A-[41A]   | 41A SCC only |                                            |
| 2CC#12 | [41A]-[41A] |              |                                            |
| 2CC#13 | [41C]       |              | 3CC#8                                      |
| 2CC#14 | [66A]-[66A] |              | 3CC#5                                      |

| Index | 3CC             | Restriction  | Completely Covered by Measurement Superset |
|-------|-----------------|--------------|--------------------------------------------|
| 3CC#1 | 2A-[4A]-5A      |              |                                            |
| 3CC#2 | 2A-[4A]-13A     |              |                                            |
| 3CC#3 | 2A-5A-[66A]     |              |                                            |
| 3CC#4 | [4A]-[4A]-12A   |              |                                            |
| 3CC#5 | 5A-[66A]-[66A]  |              |                                            |
| 3CC#6 | 12A-[66A]-[66A] |              |                                            |
| 3CC#7 | 26A-[41C]       | 41C SCC only |                                            |
| 3CC#8 | [41A]-[41C]     |              |                                            |
| 3CC#9 | [41D]           |              | 4CC#1                                      |

| Index | 4CC         | Restriction | Completely Covered by Measurement Superset |
|-------|-------------|-------------|--------------------------------------------|
| 4CC#1 | [41A]-[41D] |             |                                            |
| 4CC#2 | [41C]-[41C] |             |                                            |
| 4CC#3 | [41E]       |             |                                            |

**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 |
|-----------|------------|----------|---------|-------------|-----------|---------------------------|-----------------------------|-------|
| Band 4    | QPSK       | 20       | 20175   | 1732.5      | 1/99      | 22.7                      | 22.8                        | 0.03  |
| Band 41   | QPSK       | 20       | 41055   | 2636.5      | 1/0       | 24.7                      | 24.6                        | -0.09 |
| Band 66   | QPSK       | 20       | 132072  | 1720        | 1/49      | 23.1                      | 23.0                        | -0.07 |

**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.

## DL CA output power results

| E-UTRA CA configuration (BCS) | Bands |      |      |      |      |      |      | UL   |          |         |             | DL        |          |         |             |          |         |             |          |         |             |          |         |             |          |         |             |  |       | LTE Rel 8 Tx. Power (dBm) | LTE Rel 10 Tx. Power | Delta |
|-------------------------------|-------|------|------|------|------|------|------|------|----------|---------|-------------|-----------|----------|---------|-------------|----------|---------|-------------|----------|---------|-------------|----------|---------|-------------|----------|---------|-------------|--|-------|---------------------------|----------------------|-------|
|                               | PCC   | SCC1 | SCC2 | SCC3 | SCC4 | SCC5 | SCC6 | PCC  |          |         |             | PCC       |          |         |             | SCC1     |         | SCC2        |          | SCC3    |             | SCC4     |         | SCC5        |          | SCC6    |             |  |       |                           |                      |       |
|                               | 1st   | 2nd  | 3rd  | 4th  | 5th  | 6th  | 7th  | Mode | BW (MHz) | Channel | Freq. (MHz) | RB/Offset | BW (MHz) | Channel | Freq. (MHz) | BW (MHz) | Channel | Freq. (MHz) | BW (MHz) | Channel | Freq. (MHz) | BW (MHz) | Channel | Freq. (MHz) | BW (MHz) | Channel | Freq. (MHz) |  |       |                           |                      |       |
| 2A-2A                         | 2A    | 2A   |      |      |      |      |      | QPSK | 20       | 18700   | 1860        | 1/0       | 20       | 700     | 1940        | 20       | 1100    | 1980        |          |         |             |          |         |             |          |         |             |  | 22.68 | 22.74                     | 0.06                 |       |
| 2C                            | 2C    | 2C   |      |      |      |      |      | QPSK | 20       | 18900   | 1880        | 1/99      | 20       | 900     | 1960        | 20       | 702     | 1940.2      |          |         |             |          |         |             |          |         |             |  | 22.68 | 22.73                     | 0.05                 |       |
| 2A-12A                        | 2A    | 12A  |      |      |      |      |      | QPSK | 20       | 18700   | 1860        | 1/0       | 20       | 700     | 1940        | 10       | 5095    | 737.5       |          |         |             |          |         |             |          |         |             |  | 22.68 | 22.69                     | 0.01                 |       |
|                               | 12A   | 2A   |      |      |      |      |      | QPSK | 10       | 23095   | 707.5       | 1/49      | 10       | 5095    | 737.5       | 20       | 900     | 1960        |          |         |             |          |         |             |          |         |             |  | 23.81 | 23.761                    | -0.05                |       |
| 2A-17A                        | 2A    | 17A  |      |      |      |      |      | QPSK | 10       | 18900   | 1880        | 1/99      | 10       | 900     | 1960        | 10       | 5790    | 740         |          |         |             |          |         |             |          |         |             |  | 22.68 | 22.67                     | -0.01                |       |
|                               | 17A   | 2A   |      |      |      |      |      | QPSK | 10       | 23790   | 710         | 1/25      | 10       | 5790    | 740         | 10       | 900     | 1960        |          |         |             |          |         |             |          |         |             |  | 23.91 | 23.96                     | 0.05                 |       |
| 4A-17A                        | 4A    | 17A  |      |      |      |      |      | QPSK | 20       | 20175   | 1732.5      | 1/99      | 20       | 2175    | 2132.5      | 10       | 5790    | 740         |          |         |             |          |         |             |          |         |             |  | 22.72 | 22.765                    | 0.04                 |       |
|                               | 17A   | 4A   |      |      |      |      |      | QPSK | 10       | 23790   | 710         | 1/25      | 10       | 5790    | 740         | 10       | 2175    | 2132.5      |          |         |             |          |         |             |          |         |             |  | 23.91 | 23.97                     | 0.06                 |       |
| 5A-41A                        | 5A    | 41A  |      |      |      |      |      | QPSK | 10       | 20525   | 836.5       | 1/0       | 10       | 2525    | 881.5       | 20       | 40620   | 2593        |          |         |             |          |         |             |          |         |             |  | 24.69 | 24.581                    | -0.11                |       |
| 12A-25A                       | 12A   | 25A  |      |      |      |      |      | QPSK | 10       | 23095   | 707.5       | 1/49      | 10       | 5095    | 737.5       | 20       | 8365    | 1962.5      |          |         |             |          |         |             |          |         |             |  | 23.81 | 23.911                    | 0.1                  |       |
|                               | 25A   | 12A  |      |      |      |      |      | QPSK | 20       | 26140   | 1860        | 1/0       | 20       | 8140    | 1940        | 10       | 5095    | 737.5       |          |         |             |          |         |             |          |         |             |  | 22.80 | 22.745                    | -0.05                |       |
| 26A-41A                       | 26A   | 41A  |      |      |      |      |      | QPSK | 15       | 26865   | 831.5       | 1/0       | 15       | 8865    | 876.5       | 20       | 40620   | 2593        |          |         |             |          |         |             |          |         |             |  | 24.13 | 24.15                     | 0.02                 |       |
| 41A-41A                       | 41A   | 41A  |      |      |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 39750   | 2506        |          |         |             |          |         |             |          |         |             |  | 24.70 | 24.76                     | 0.06                 |       |
| 66B                           | 66B   | 66B  |      |      |      |      |      | QPSK | 15       | 132322  | 1745        | 1/37      | 15       | 66786   | 2145        | 5        | 66693   | 2135.7      |          |         |             |          |         |             |          |         |             |  | 23.23 | 23.29                     | 0.06                 |       |
| 66C                           | 66C   | 66C  |      |      |      |      |      | QPSK | 20       | 132322  | 1745        | 1/49      | 20       | 66786   | 2145        | 20       | 66588   | 2125.2      |          |         |             |          |         |             |          |         |             |  | 23.08 | 22.96                     | -0.12                |       |
| 2A-4A-5A                      | 2A    | 4A   | 5A   |      |      |      |      | QPSK | 20       | 18900   | 1880        | 1/99      | 20       | 900     | 1960        | 20       | 2175    | 2132.5      | 10       | 2525    | 881.5       |          |         |             |          |         |             |  |       | 22.68                     | 22.75                | 0.07  |
|                               | 4A    | 5A   | 2A   |      |      |      |      | QPSK | 20       | 20175   | 1732.5      | 1/99      | 20       | 2175    | 2132.5      | 10       | 2525    | 881.5       | 20       | 900     | 1960        |          |         |             |          |         |             |  | 22.72 | 22.785                    | 0.06                 |       |
|                               | 5A    | 2A   | 4A   |      |      |      |      | QPSK | 10       | 20525   | 836.5       | 1/0       | 10       | 2525    | 881.5       | 20       | 900     | 1960        | 20       | 2175    | 2132.5      |          |         |             |          |         |             |  | 24.69 | 24.721                    | 0.03                 |       |
| 2A-4A-13A                     | 2A    | 4A   | 13A  |      |      |      |      | QPSK | 20       | 18700   | 1860        | 1/0       | 20       | 700     | 1940        | 20       | 2175    | 2132.5      | 10       | 5230    | 751         |          |         |             |          |         |             |  |       | 22.68                     | 22.75                | 0.07  |
|                               | 4A    | 13A  | 2A   |      |      |      |      | QPSK | 20       | 20175   | 1732.5      | 1/99      | 20       | 2175    | 2132.5      | 10       | 5230    | 751         | 20       | 900     | 1960        |          |         |             |          |         |             |  | 22.72 | 22.715                    | -0.01                |       |
|                               | 13A   | 2A   | 4A   |      |      |      |      | QPSK | 10       | 23230   | 172         | 1/49      | 10       | 5230    | 751         | 20       | 900     | 1960        | 20       | 2175    | 2132.5      |          |         |             |          |         |             |  | 23.57 | 23.616                    | 0.05                 |       |
| 2A-5A-66A                     | 2A    | 5A   | 66A  |      |      |      |      | QPSK | 20       | 18900   | 1880        | 1/99      | 20       | 900     | 1960        | 10       | 2525    | 881.5       | 20       | 66786   | 2145        |          |         |             |          |         |             |  |       | 22.68                     | 22.63                | -0.05 |
|                               | 5A    | 66A  | 2A   |      |      |      |      | QPSK | 10       | 20525   | 836.5       | 1/0       | 10       | 2525    | 881.5       | 20       | 66786   | 2145        | 20       | 900     | 1960        |          |         |             |          |         |             |  | 24.69 | 24.731                    | 0.04                 |       |
|                               | 66A   | 2A   | 5A   |      |      |      |      | QPSK | 20       | 132072  | 1720        | 1/0       | 20       | 66536   | 2120        | 20       | 900     | 1960        | 10       | 2525    | 881.5       |          |         |             |          |         |             |  | 23.08 | 23.13                     | 0.05                 |       |
| 4A-4A-12A                     | 4A    | 4A   | 12A  |      |      |      |      | QPSK | 20       | 20050   | 1720        | 1/99      | 20       | 2050    | 2120        | 20       | 2300    | 2145        | 10       | 5095    | 737.5       |          |         |             |          |         |             |  | 22.72 | 22.665                    | -0.06                |       |
|                               | 12A   | 4A   | 4A   |      |      |      |      | QPSK | 10       | 23095   | 707.5       | 1/49      | 10       | 5095    | 737.5       | 20       | 2050    | 2120        | 20       | 2300    | 2145        |          |         |             |          |         |             |  | 23.81 | 23.851                    | 0.04                 |       |
| 5A-66A-66A                    | 5A    | 66A  | 66A  |      |      |      |      | QPSK | 10       | 20525   | 836.5       | 1/0       | 10       | 2525    | 881.5       | 20       | 66536   | 2120        | 20       | 67036   | 2170        |          |         |             |          |         |             |  | 24.69 | 24.761                    | 0.07                 |       |
|                               | 66A   | 66A  | 5A   |      |      |      |      | QPSK | 20       | 132322  | 1745        | 1/49      | 20       | 66786   | 2145        | 20       | 67036   | 2170        | 10       | 2525    | 881.5       |          |         |             |          |         |             |  | 23.08 | 23.14                     | 0.06                 |       |
| 12A-66A-66A                   | 12A   | 66A  | 66A  |      |      |      |      | QPSK | 10       | 23095   | 707.5       | 1/49      | 10       | 5095    | 737.5       | 20       | 66536   | 2120        | 20       | 67036   | 2170        |          |         |             |          |         |             |  | 23.81 | 23.821                    | 0.01                 |       |
|                               | 66A   | 66A  | 12A  |      |      |      |      | QPSK | 20       | 132322  | 1745        | 1/49      | 20       | 66786   | 2145        | 20       | 67036   | 2170        | 10       | 5095    | 737.5       |          |         |             |          |         |             |  | 23.08 | 23.13                     | 0.05                 |       |
| 26A-41C                       | 26A   | 41C  | 41C  |      |      |      |      | QPSK | 15       | 26865   | 831.5       | 1/0       | 15       | 8865    | 876.5       | 20       | 40620   | 2593        | 20       | 40422   | 2573.2      |          |         |             |          |         |             |  | 24.13 | 24.14                     | 0.01                 |       |
| 41A-41C                       | 41A   | 41C  | 41C  |      |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 39750   | 2506        | 20       | 39948   | 2525.8      |          |         |             |          |         |             |  | 24.70 | 24.68                     | -0.02                |       |
|                               | 41C   | 41C  | 41A  |      |      |      |      | QPSK | 20       | 41045   | 2635.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 41253   | 2656.3      | 20       | 39750   | 2506        |          |         |             |          |         |             |  | 24.70 | 24.72                     | 0.02                 |       |
| 41A-41D                       | 41A   | 41D  | 41D  | 41D  |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 40185   | 2549.5      | 20       | 39987   | 2529.7      | 20       | 40383   | 2569.3      |          |         |             |  | 24.70 | 24.76                     | 0.06                 |       |
|                               | 41D   | 41D  | 41D  | 41A  |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 41253   | 2656.3      | 20       | 40857   | 2616.7      | 20       | 39750   | 2506        |          |         |             |  | 24.70 | 24.69                     | -0.01                |       |
| 41C-41C                       | 41C   | 41C  | 41C  | 41C  |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 41253   | 2656.3      | 20       | 39948   | 2525.8      | 20       | 39750   | 2506        |          |         |             |  | 24.70 | 24.73                     | 0.03                 |       |
| 41E                           | 41E   | 41E  | 41E  | 41E  |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 41253   | 2656.3      | 20       | 40857   | 2616.7      | 20       | 40659   | 2596.9      |          |         |             |  | 24.70 | 24.69                     | -0.01                |       |
| 41C-41D                       | 41C   | 41C  | 41D  | 41D  | 41D  |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 41253   | 2656.3      | 20       | 40185   | 2549.5      | 20       | 40383   | 2569.3      | 20       | 39987   | 2529.7      |  | 24.70 | 24.73                     | 0.03                 |       |
|                               | 41D   | 41D  | 41D  | 41C  | 41C  |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 41253   | 2656.3      | 20       | 40857   | 2616.7      | 20       | 39750   | 2506        | 20       | 39948   | 2525.8      |  | 24.70 | 24.72                     | 0.02                 |       |

## Note:

1. Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a 1/4 dB.
2. When the same frequency band is used for both contiguous and non-contiguous in DL CA Intra band, power was measured using the configuration with the largest aggregated bandwidth and maximum output power among the contiguous and non-contiguous in DL CA Intra band configurations.

## DL CA with 4x4 MIMO output power results

| E-UTRA CA configuration (BCS) | Bands       |       |       |       |      |      |      | UL   |          |         |             |           | DL       |         |             |          |         |             |          |         |             |          |         |             |          |         |             |          |         |             | LTE Rel 8 Tx. Power [dBm] | LTE Rel 10 Tx. Power | Delta |  |
|-------------------------------|-------------|-------|-------|-------|------|------|------|------|----------|---------|-------------|-----------|----------|---------|-------------|----------|---------|-------------|----------|---------|-------------|----------|---------|-------------|----------|---------|-------------|----------|---------|-------------|---------------------------|----------------------|-------|--|
|                               | PCC         | SCC1  | SCC2  | SCC3  | SCC4 | SCC5 | SCC6 | PCC  |          |         |             |           | PCC      |         |             | SCC1     |         |             | SCC2     |         |             | SCC3     |         |             | SCC4     |         |             | SCC5     |         |             | SCC6                      |                      |       |  |
|                               | 1st         | 2nd   | 3rd   | 4th   | 5th  | 6th  | 7th  | Mode | BW (MHz) | Channel | Freq. (MHz) | RB/Offset | BW (MHz) | Channel | Freq. (MHz) | BW (MHz) | Channel | Freq. (MHz) | BW (MHz) | Channel | Freq. (MHz) | BW (MHz) | Channel | Freq. (MHz) | BW (MHz) | Channel | Freq. (MHz) | BW (MHz) | Channel | Freq. (MHz) |                           |                      |       |  |
| [4A]-17A                      | [4A]        | 17A   |       |       |      |      |      | QPSK | 10       | 20175   | 1732.5      | 1/99      | 10       | 2175    | 2132.5      | 10       | 5790    | 740         |          |         |             |          |         |             |          |         |             |          |         |             | 22.72                     | 22.73                | 0.01  |  |
|                               | 17A         | [4A]  |       |       |      |      |      | QPSK | 10       | 23790   | 710         | 1/25      | 10       | 5790    | 740         | 10       | 2175    | 2132.5      |          |         |             |          |         |             |          |         |             |          |         |             | 23.91                     | 23.93                | 0.02  |  |
|                               | 5A-[41A]    | 5A    | [41A] |       |      |      |      | QPSK | 10       | 20525   | 836.5       | 1/0       | 10       | 2525    | 881.5       | 20       | 40620   | 2593        |          |         |             |          |         |             |          |         |             |          |         |             | 24.69                     | 24.68                | -0.01 |  |
|                               | 26A-[41A]   | 26A   | [41A] |       |      |      |      | QPSK | 15       | 26865   | 831.5       | 1/0       | 15       | 8865    | 876.5       | 20       | 40620   | 2593        |          |         |             |          |         |             |          |         |             |          |         |             | 24.07                     | 24.04                | -0.03 |  |
|                               | [41A]-[41A] | [41A] | [41A] |       |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 39750   | 2506        |          |         |             |          |         |             |          |         |             |          |         |             | 24.70                     | 24.66                | -0.04 |  |
| 2A-[4A]-5A                    | 2A          | [4A]  | 5A    |       |      |      |      | QPSK | 20       | 18900   | 1880        | 1/99      | 20       | 900     | 1960        | 20       | 2175    | 2132.5      | 10       | 2525    | 881.5       |          |         |             |          |         |             |          |         |             | 22.68                     | 22.69                | 0.01  |  |
|                               | [4A]        | 5A    | 2A    |       |      |      |      | QPSK | 20       | 20175   | 1732.5      | 1/99      | 20       | 2175    | 2132.5      | 10       | 2525    | 881.5       | 20       | 900     | 1960        |          |         |             |          |         |             |          |         |             | 22.72                     | 22.73                | 0.01  |  |
|                               | 5A          | 2A    | [4A]  |       |      |      |      | QPSK | 10       | 20525   | 836.5       | 1/0       | 10       | 2525    | 881.5       | 20       | 900     | 1960        | 20       | 2175    | 2132.5      |          |         |             |          |         |             |          |         |             | 24.69                     | 24.68                | -0.01 |  |
| 2A-[4A]-13A                   | 2A          | [4A]  | 13A   |       |      |      |      | QPSK | 20       | 18900   | 1880        | 1/99      | 20       | 900     | 1960        | 20       | 2175    | 2132.5      | 10       | 5230    | 751         |          |         |             |          |         |             |          |         |             | 22.68                     | 22.73                | 0.05  |  |
|                               | [4A]        | 13A   | 2A    |       |      |      |      | QPSK | 20       | 20175   | 1732.5      | 1/99      | 20       | 2175    | 2132.5      | 10       | 5230    | 751         | 20       | 900     | 1960        |          |         |             |          |         |             |          |         |             | 22.72                     | 22.73                | 0.01  |  |
|                               | 13A         | 2A    | [4A]  |       |      |      |      | QPSK | 10       | 23230   | 172         | 1/49      | 10       | 5230    | 751         | 20       | 900     | 1960        | 20       | 2175    | 2132.5      |          |         |             |          |         |             |          |         |             | 23.57                     | 23.60                | 0.03  |  |
| 2A-5A-[66A]                   | 2A          | 5A    | [66A] |       |      |      |      | QPSK | 20       | 18900   | 1880        | 1/99      | 20       | 900     | 1960        | 10       | 2525    | 881.5       | 20       | 66786   | 2145        |          |         |             |          |         |             |          |         |             | 22.68                     | 22.64                | -0.04 |  |
|                               | 5A          | [66A] | 2A    |       |      |      |      | QPSK | 10       | 20525   | 836.5       | 1/0       | 10       | 2525    | 881.5       | 20       | 66786   | 2145        | 20       | 900     | 1960        |          |         |             |          |         |             |          |         |             | 24.69                     | 24.63                | -0.06 |  |
|                               | [66A]       | 2A    | 5A    |       |      |      |      | QPSK | 20       | 132072  | 1720        | 1/0       | 20       | 66536   | 2120        | 20       | 900     | 1960        | 10       | 2525    | 881.5       |          |         |             |          |         |             |          |         |             | 23.08                     | 23.15                | 0.07  |  |
| [4A]-[4A]-12A                 | [4A]        | [4A]  | 12A   |       |      |      |      | QPSK | 20       | 20175   | 1732.5      | 1/99      | 20       | 2175    | 2132.5      | 20       | 2300    | 2145        | 10       | 5095    | 737.5       |          |         |             |          |         |             |          |         |             | 22.72                     | 22.82                | 0.1   |  |
|                               | 12A         | [4A]  | [4A]  |       |      |      |      | QPSK | 10       | 23095   | 707.5       | 1/49      | 10       | 5095    | 737.5       | 20       | 2050    | 2120        | 20       | 2300    | 2145        |          |         |             |          |         |             |          |         |             | 23.81                     | 23.76                | -0.05 |  |
| 5A-[66A]-[66A]                | 5A          | [66A] | [66A] |       |      |      |      | QPSK | 10       | 20525   | 836.5       | 1/0       | 10       | 2525    | 881.5       | 20       | 66536   | 2120        | 20       | 67036   | 2170        |          |         |             |          |         |             |          |         |             | 24.69                     | 24.75                | 0.06  |  |
|                               | [66A]       | [66A] | 5A    |       |      |      |      | QPSK | 20       | 132072  | 1720        | 1/49      | 20       | 66536   | 2120        | 20       | 67036   | 2170        | 10       | 2525    | 881.5       |          |         |             |          |         |             |          |         |             | 23.08                     | 23.12                | 0.04  |  |
| 12A-[66A]-[66A]               | 12A         | [66A] | [66A] |       |      |      |      | QPSK | 10       | 23095   | 707.5       | 1/49      | 10       | 5095    | 737.5       | 20       | 66536   | 2120        | 20       | 67036   | 2170        |          |         |             |          |         |             |          |         |             | 23.81                     | 23.84                | 0.03  |  |
|                               | [66A]       | [66A] | 12A   |       |      |      |      | QPSK | 20       | 132072  | 1720        | 1/49      | 20       | 66536   | 2120        | 20       | 67036   | 2170        | 10       | 5095    | 737.5       |          |         |             |          |         |             |          |         |             | 23.08                     | 23.06                | -0.02 |  |
| 26A-[41C]                     | 26A         | [41C] | [41C] |       |      |      |      | QPSK | 15       | 26865   | 831.5       | 1/0       | 15       | 8865    | 876.5       | 20       | 40620   | 2593        | 20       | 40422   | 2573.2      |          |         |             |          |         |             |          |         |             | 24.07                     | 24.11                | 0.04  |  |
| [41A]-[41C]                   | [41A]       | [41C] | [41C] |       |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 39750   | 2506        | 20       | 39948   | 2525.8      |          |         |             |          |         |             |          |         |             | 24.70                     | 24.65                | -0.05 |  |
|                               | [41C]       | [41C] | [41A] |       |      |      |      | QPSK | 20       | 41045   | 2635.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 41253   | 2656.3      | 20       | 39750   | 2506        |          |         |             |          |         |             |          |         |             | 24.70                     | 24.71                | 0.01  |  |
| [41A]-[41D]                   | [41A]       | [41D] | [41D] | [41D] |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 40185   | 2549.5      | 20       | 39987   | 2529.7      | 20       | 40383   | 2569.3      |          |         |             |          |         |             | 24.70                     | 24.76                | 0.06  |  |
|                               | [41D]       | [41D] | [41D] | [41A] |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 41253   | 2656.3      | 20       | 40857   | 2616.7      | 20       | 39750   | 2506        |          |         |             |          |         |             | 24.70                     | 24.63                | -0.07 |  |
| [41C]-[41C]                   | [41C]       | [41C] | [41C] | [41C] |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 41253   | 2656.3      | 20       | 39948   | 2525.8      | 20       | 39750   | 2506        |          |         |             |          |         |             | 24.70                     | 24.74                | 0.04  |  |
| [41E]                         | [41E]       | [41E] | [41E] | [41E] |      |      |      | QPSK | 20       | 41055   | 2636.5      | 1/0       | 20       | 41055   | 2636.5      | 20       | 41253   | 2656.3      | 20       | 40857   | 2616.7      | 20       | 40659   | 2596.9      |          |         |             |          |         |             | 24.70                     | 24.75                | 0.05  |  |

**Note:**

1. Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a 1/4 dB.
2. When the same frequency band is used for both contiguous and non-contiguous in DL CA Intra band, power was measured using the configuration with the largest aggregated bandwidth and maximum output power among the contiguous and non-contiguous in DL CA Intra band configurations.

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