

## Appendix H. – DL CA Power Measurement

## 1. LTE Down-link Carrier Aggregation Conducted Powers

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number component carriers (CCs) supported by test product implementation. For those configurations required by April 2018 TCBC Workshop notes, conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only.

### Downlink Carrier aggregation:

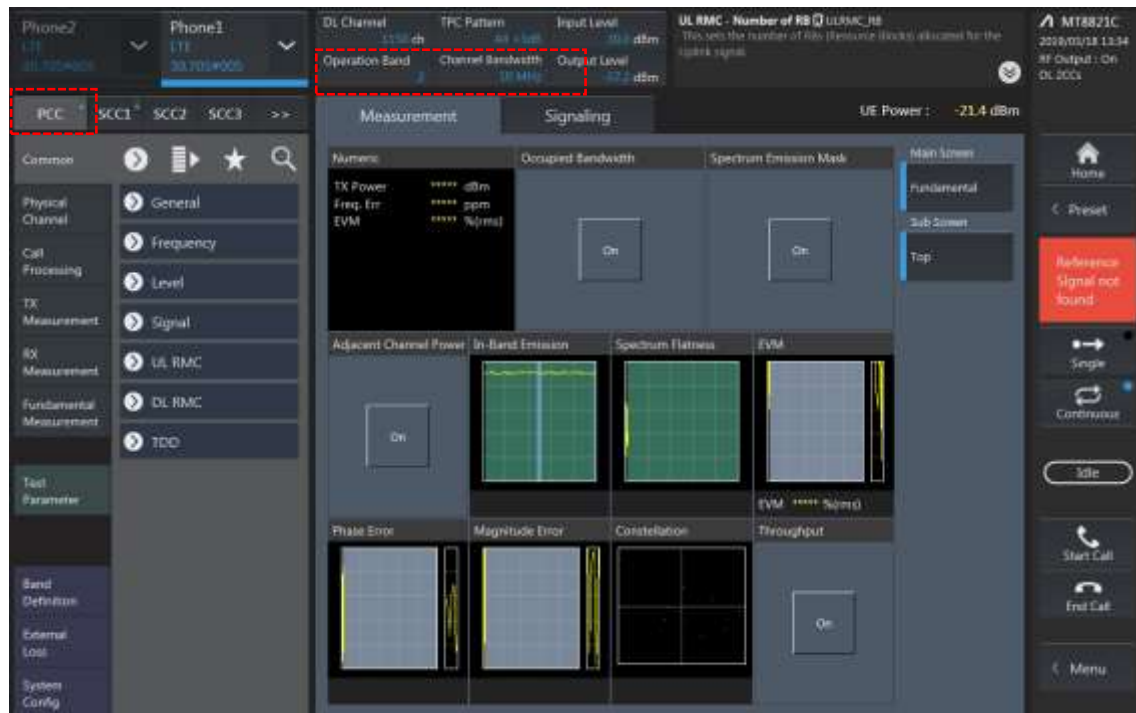
1. This device only supports downlink carrier aggregation. For every supported combination of downlink carrier aggregation, power measurements were performed with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.
2. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
3. Per FCC KDB publication 941225 D05A v01r02, Section C)3)b)ii), PCC uplink channel was selected at downlink carrier aggregation combinations. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
4. For continuous intra-band carrier aggregation, the downlink channel spacing between the component carriers was set to multiple of 300kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521.
5. For non-continuous intra-band carrier aggregation, 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.
6. All selected downlink channels remained fully within the downlink transmission band of the respective component carrier.



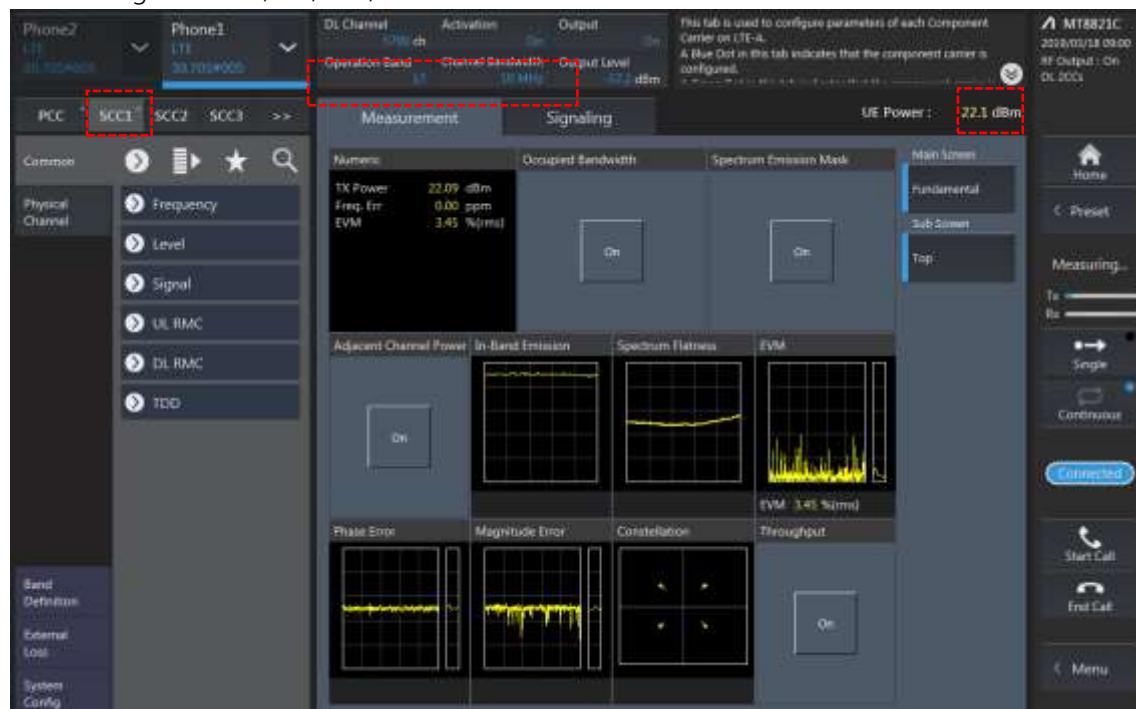
Power Measurement setup

## LTE Down Link 2CA Call Setup

PCC Setting : Channel/ RB/ BW/ Modulation



SCC Setting : Channel/ RB/ BW/ Modulation and call Connection

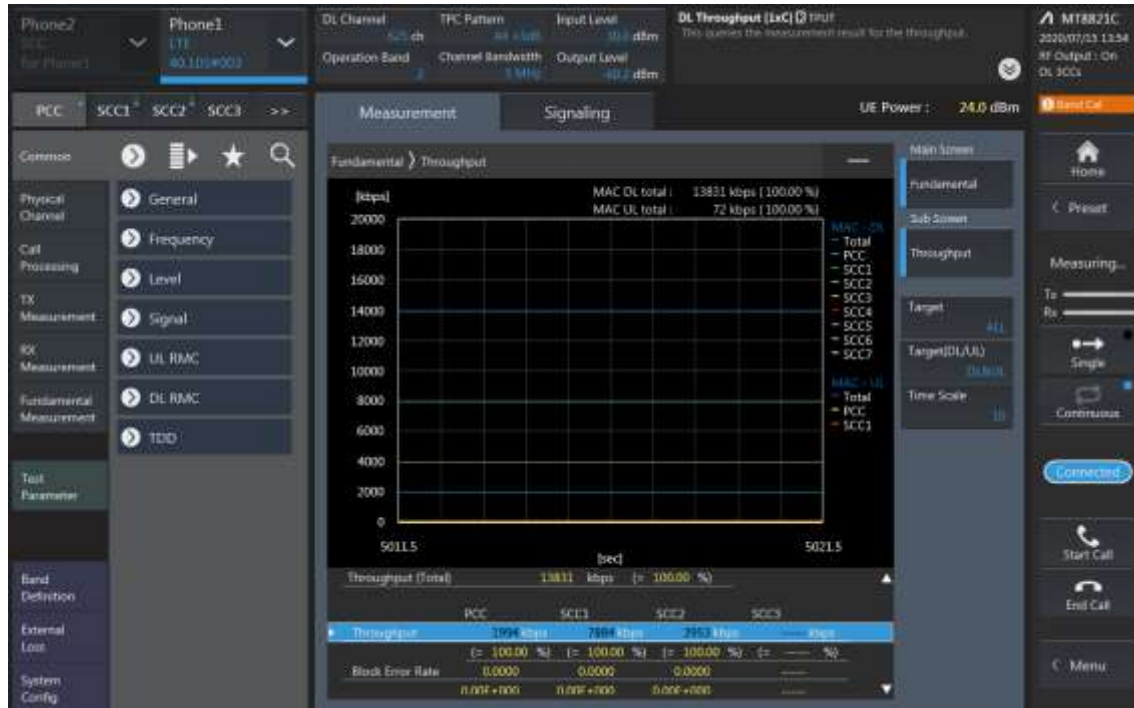


## 2CA Downlink Carrier aggregation Maximum conducted Powers

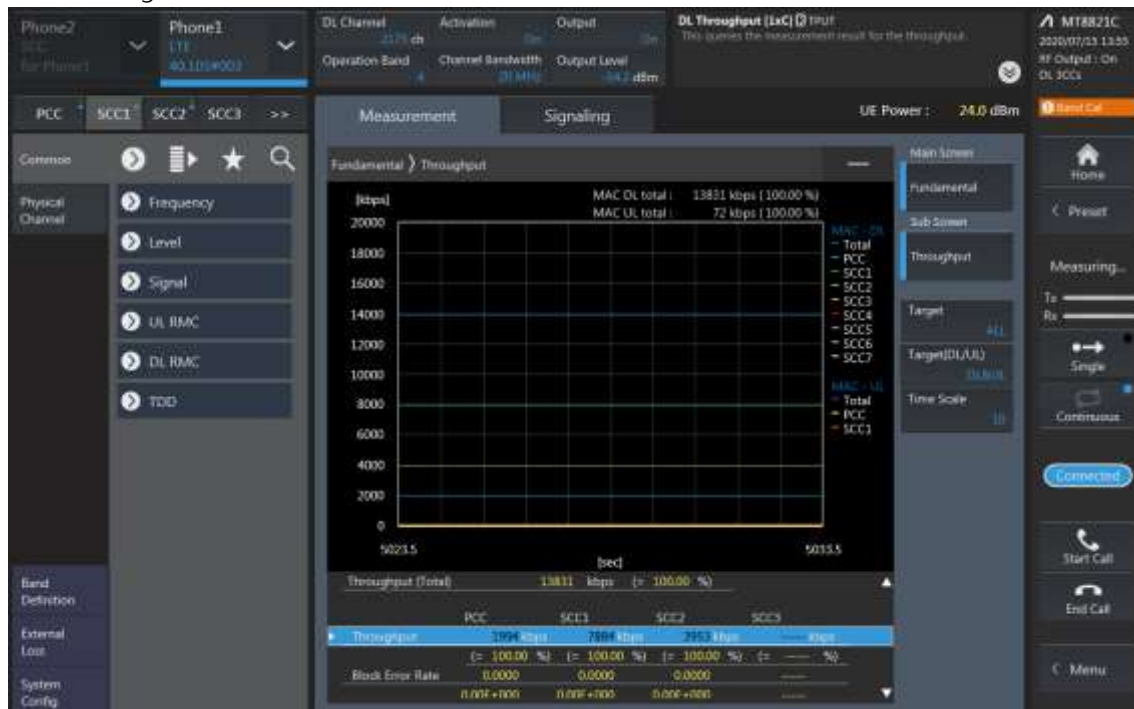
| Combination | PCC  |    |               |                 |               |                 |                |    |              | SCC  |    |                  |                    | Tx Power                                       |                                                    | Delta<br>(2)-(1) |
|-------------|------|----|---------------|-----------------|---------------|-----------------|----------------|----|--------------|------|----|------------------|--------------------|------------------------------------------------|----------------------------------------------------|------------------|
|             | Band | BW | PCC UL<br>Ch. | PCC UL<br>Freq. | PCC DL<br>Ch. | PCC DL<br>Freq. | Modul<br>ation | RB | RB<br>offset | Band | BW | SCC<br>DL<br>Ch. | SCC<br>DL<br>Freq. | LTE Single<br>Carrier Tx<br>Power (dBm)<br>(1) | LTE Tx Power<br>with DL CA<br>Enabled (dBm)<br>(2) |                  |
| 42C         | 42   | 15 | 42590         | 3500            | 42590         | 3500            | QPSK           | 1  | 74           | 42   | 20 | 42419            | 3482.9             | 18.00                                          | 17.95                                              | -0.05            |
| 4A-29A      | 4    | 20 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 49           | 29   | 10 | 9715             | 722.5              | 23.01                                          | 22.94                                              | -0.07            |
| 4A-48A      | 4    | 20 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 49           | 48   | 20 | 55340            | 3560               | 23.01                                          | 22.99                                              | -0.02            |
| 5A-25A      | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 25   | 10 | 8365             | 1962.5             | 23.15                                          | 23.15                                              | 0.00             |
| 5A-25A      | 25   | 5  | 26365         | 1882.5          | 8365          | 1962.5          | QPSK           | 1  | 12           | 5    | 10 | 2525             | 881.5              | 23.11                                          | 23.06                                              | -0.05            |
| 7A-42A      | 7    | 20 | 21100         | 2535            | 3100          | 2655            | QPSK           | 1  | 0            | 42   | 20 | 42590            | 3500               | 23.19                                          | 23.17                                              | -0.02            |
| 12A-25A     | 12   | 10 | 23095         | 707.5           | 5095          | 737.5           | QPSK           | 1  | 0            | 25   | 10 | 8365             | 1962.5             | 23.20                                          | 23.12                                              | -0.08            |
| 12A-25A     | 25   | 5  | 26365         | 1882.5          | 8365          | 1962.5          | QPSK           | 1  | 12           | 12   | 5  | 5095             | 737.5              | 23.11                                          | 23.07                                              | -0.04            |
| 29A-66A     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 29   | 10 | 9715             | 722.5              | 23.21                                          | 23.19                                              | -0.02            |

## LTE Down Link 3CA Call Setup

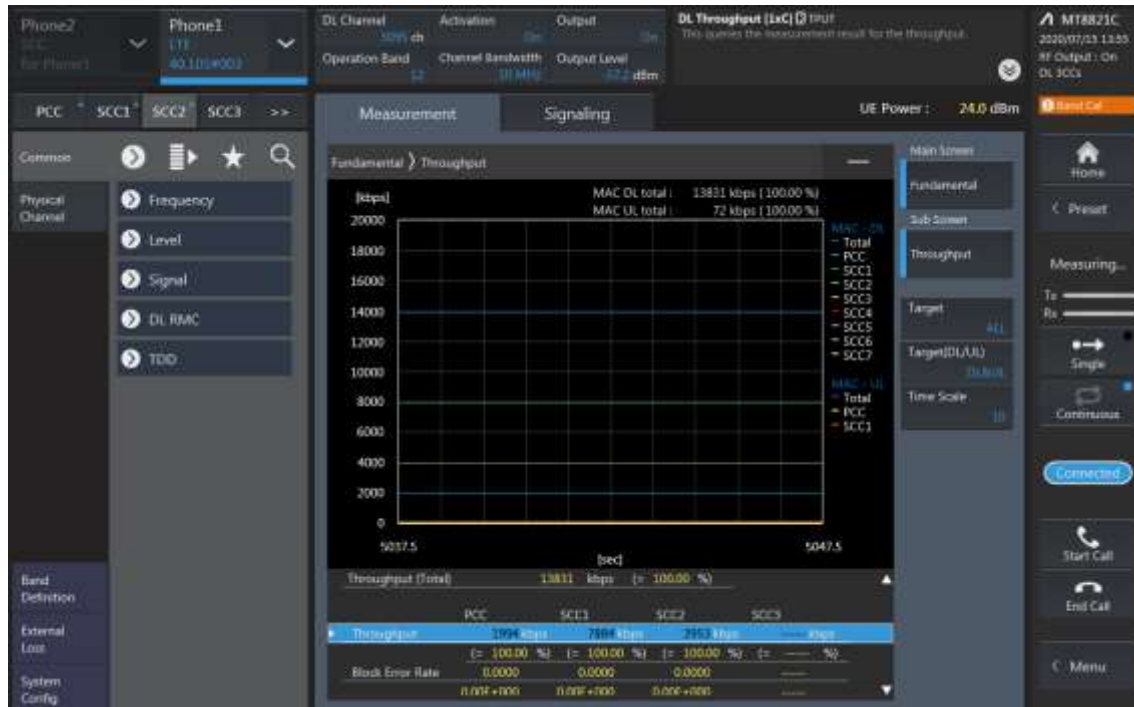
### PCC Setting: Channel /RB/BW/Modulation



### SCC1 Setting : Channel /RB/BW/Modulation



# SCC2 Setting (Channel /RB/BW/Modulation) and call Connection



### 3CA Downlink Carrier aggregation conducted Powers

| Combination | PCC  |    |            |              |            |              |            |    |           | SCC  |    |            |              | SCC  |    |            |              | Tx Power                              |                                           | Delta (2)-(1) |
|-------------|------|----|------------|--------------|------------|--------------|------------|----|-----------|------|----|------------|--------------|------|----|------------|--------------|---------------------------------------|-------------------------------------------|---------------|
|             | Band | BW | PCC UL Ch. | PCC UL Freq. | PCC DL Ch. | PCC DL Freq. | Modulation | RB | RB offset | Band | BW | SCC DL Ch. | SCC DL Freq. | Band | BW | SCC DL Ch. | SCC DL Freq. | LTE Single Carrier Tx Power (dBm) (1) | LTE Tx Power with DL CA Enabled (dBm) (2) |               |
| 42D         | 42   | 15 | 42590      | 3500         | 42590      | 3500         | QPSK       | 1  | 74        | 42   | 20 | 42419      | 3482.9       | 42   | 20 | 42761      | 3517.1       | 18.00                                 | 17.99                                     | -0.01         |
| 48D         | 48   | 20 | 55773      | 3603.3       | 55773      | 3603.3       | QPSK       | 1  | 99        | 48   | 20 | 55575      | 3583.5       | 48   | 20 | 55971      | 3623.1       | 18.30                                 | 18.23                                     | -0.07         |
| 66D         | 66   | 5  | 131997     | 1712.5       | 66461      | 2112.5       | QPSK       | 1  | 12        | 66   | 20 | 66344      | 2190.8       | 66   | 20 | 66227      | 2179.1       | 23.21                                 | 23.15                                     | -0.06         |
| 2A-5B       | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 5    | 10 | 2525       | 881.5        | 5    | 5  | 2597       | 888.7        | 22.85                                 | 22.83                                     | -0.02         |
| 2A-5B       | 5    | 5  | 20425      | 826.5        | 2425       | 871.5        | QPSK       | 1  | 12        | 5    | 10 | 2497       | 878.7        | 2    | 20 | 900        | 1960         | 23.15                                 | 23.12                                     | -0.03         |
| 2A-7B       | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 7    | 10 | 3100       | 2655         | 7    | 10 | 3199       | 2664.9       | 22.85                                 | 22.82                                     | -0.03         |
| 2A-7B       | 7    | 10 | 21100      | 2535         | 3100       | 2655         | QPSK       | 1  | 0         | 7    | 10 | 3001       | 2645.1       | 2    | 20 | 1100       | 1980         | 23.19                                 | 23.18                                     | -0.01         |
| 2A-7C       | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 7    | 20 | 2902       | 2635.2       | 7    | 20 | 3298       | 2674.8       | 22.85                                 | 22.77                                     | -0.08         |
| 2A-7C       | 7    | 20 | 21100      | 2535         | 3100       | 2655         | QPSK       | 1  | 0         | 7    | 20 | 3298       | 2674.8       | 2    | 20 | 900        | 1960         | 23.19                                 | 23.17                                     | -0.02         |
| 2A-12B      | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 12   | 5  | 5095       | 737.5        | 12   | 5  | 5143       | 742.3        | 23.19                                 | 23.17                                     | -0.02         |
| 2A-12B      | 12   | 5  | 23095      | 707.5        | 5095       | 737.5        | QPSK       | 1  | 12        | 12   | 5  | 5143       | 742.3        | 2    | 20 | 1100       | 1980         | 23.20                                 | 23.18                                     | -0.02         |
| 2A-48C      | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 48   | 20 | 55773      | 3603.3       | 48   | 20 | 55575      | 3583.5       | 22.85                                 | 22.78                                     | -0.07         |
| 2A-66B      | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 66   | 10 | 66786      | 2145         | 66   | 10 | 66687      | 2135.1       | 22.85                                 | 22.84                                     | -0.01         |
| 2A-66B      | 66   | 5  | 131997     | 1712.5       | 66461      | 2112.5       | QPSK       | 1  | 12        | 66   | 15 | 66554      | 2121.8       | 2    | 20 | 900        | 1960         | 23.21                                 | 23.14                                     | -0.07         |
| 2A-66C      | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 66   | 20 | 66786      | 2145         | 66   | 20 | 66588      | 2125.2       | 22.85                                 | 22.77                                     | -0.08         |
| 2A-66C      | 66   | 5  | 131997     | 1712.5       | 66461      | 2112.5       | QPSK       | 1  | 12        | 66   | 20 | 66578      | 2124.2       | 2    | 20 | 900        | 1960         | 23.19                                 | 23.15                                     | -0.04         |
| 2C-5A       | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 2    | 20 | 902        | 1960.2       | 5    | 10 | 2525       | 881.5        | 22.85                                 | 22.84                                     | -0.01         |
| 2C-5A       | 5    | 5  | 20425      | 826.5        | 2425       | 871.5        | QPSK       | 1  | 12        | 2    | 20 | 1100       | 1980         | 2    | 20 | 902        | 1960.2       | 23.15                                 | 23.11                                     | -0.04         |
| 2C-12A      | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 2    | 20 | 902        | 1960.2       | 12   | 10 | 5095       | 737.5        | 22.85                                 | 22.80                                     | -0.05         |
| 2C-12A      | 12   | 5  | 23095      | 707.5        | 5095       | 737.5        | QPSK       | 1  | 12        | 2    | 20 | 1100       | 1980         | 2    | 20 | 902        | 1960.2       | 23.20                                 | 23.18                                     | -0.02         |
| 2C-29A      | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 2    | 20 | 902        | 1960.2       | 29   | 10 | 9715       | 722.5        | 22.85                                 | 22.77                                     | -0.08         |
| 2C-66A      | 2    | 20 | 19100      | 1900         | 1100       | 1980         | QPSK       | 1  | 99        | 2    | 20 | 902        | 1960.2       | 66   | 20 | 66786      | 2145         | 22.85                                 | 22.79                                     | -0.06         |
| 2C-66A      | 66   | 5  | 131997     | 1712.5       | 66461      | 2112.5       | QPSK       | 1  | 12        | 2    | 20 | 1100       | 1980         | 2    | 20 | 902        | 1960.2       | 23.21                                 | 23.21                                     | 0.00          |
| 4A-5B       | 4    | 20 | 20175      | 1732.5       | 2175       | 2132.5       | QPSK       | 1  | 49        | 5    | 10 | 2525       | 881.5        | 5    | 5  | 2453       | 874.3        | 23.01                                 | 22.95                                     | -0.06         |
| 4A-5B       | 5    | 5  | 20425      | 826.5        | 2425       | 871.5        | QPSK       | 1  | 12        | 5    | 10 | 2497       | 878.7        | 4    | 20 | 2175       | 2132.5       | 23.15                                 | 23.08                                     | -0.07         |
| 4A-7B       | 4    | 20 | 20175      | 1732.5       | 2175       | 2132.5       | QPSK       | 1  | 49        | 7    | 10 | 3100       | 2655         | 7    | 10 | 3199       | 2664.9       | 23.01                                 | 22.98                                     | -0.03         |
| 4A-7B       | 7    | 10 | 21100      | 2535         | 3100       | 2655         | QPSK       | 1  | 0         | 7    | 10 | 2902       | 2635.2       | 4    | 20 | 2175       | 2132.5       | 23.19                                 | 23.13                                     | -0.06         |
| 4A-7C       | 4    | 20 | 20175      | 1732.5       | 2175       | 2132.5       | QPSK       | 1  | 49        | 7    | 20 | 2902       | 2635.2       | 7    | 20 | 3298       | 2674.8       | 23.01                                 | 23.00                                     | -0.01         |
| 4A-7C       | 7    | 20 | 21100      | 2535         | 3100       | 2655         | QPSK       | 1  | 0         | 7    | 20 | 3298       | 2674.8       | 4    | 20 | 2175       | 2132.5       | 23.19                                 | 23.15                                     | -0.04         |
| 4A-12B      | 4    | 20 | 20175      | 1732.5       | 2175       | 2132.5       | QPSK       | 1  | 49        | 12   | 5  | 5095       | 737.5        | 12   | 5  | 5047       | 732.7        | 23.01                                 | 22.96                                     | -0.05         |

| Combination | PCC  |    |               |                 |               |                 |                |    |              | SCC  |    |                  |                    | SCC  |    |                  |                    | Tx Power                                       |                                                    | Delta<br>(2)-(1) |
|-------------|------|----|---------------|-----------------|---------------|-----------------|----------------|----|--------------|------|----|------------------|--------------------|------|----|------------------|--------------------|------------------------------------------------|----------------------------------------------------|------------------|
|             | Band | BW | PCC UL<br>Ch. | PCC UL<br>Freq. | PCC DL<br>Ch. | PCC DL<br>Freq. | Modul<br>ation | RB | RB<br>offset | Band | BW | SCC<br>DL<br>Ch. | SCC<br>DL<br>Freq. | Band | BW | SCC<br>DL<br>Ch. | SCC<br>DL<br>Freq. | LTE Single<br>Carrier Tx<br>Power (dBm)<br>(1) | LTE Tx Power<br>with DL CA<br>Enabled (dBm)<br>(2) |                  |
| 4A-48C      | 4    | 20 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 49           | 48   | 20 | 55773            | 3603.3             | 48   | 20 | 55575            | 3583.5             | 23.01                                          | 22.98                                              | -0.03            |
| 5A-7B       | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 7    | 10 | 3100             | 2655               | 7    | 10 | 3199             | 2664.9             | 23.15                                          | 23.09                                              | -0.06            |
| 5A-7B       | 7    | 10 | 21100         | 2535            | 3100          | 2655            | QPSK           | 1  | 0            | 7    | 10 | 3001             | 2645.1             | 5    | 10 | 2525             | 881.5              | 23.19                                          | 23.18                                              | -0.01            |
| 5A-7C       | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 7    | 20 | 3100             | 2655               | 7    | 20 | 3298             | 2674.8             | 23.15                                          | 23.10                                              | -0.05            |
| 5A-7C       | 7    | 20 | 21100         | 2535            | 3100          | 2655            | QPSK           | 1  | 0            | 7    | 20 | 3298             | 2674.8             | 5    | 10 | 2525             | 881.5              | 23.19                                          | 23.17                                              | -0.02            |
| 5A-48C      | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 48   | 20 | 55773            | 3603.3             | 48   | 20 | 55575            | 3583.5             | 23.15                                          | 23.10                                              | -0.05            |
| 5A-66B      | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 66   | 10 | 66786            | 2145               | 66   | 10 | 66687            | 2135.1             | 22.85                                          | 22.80                                              | -0.05            |
| 5A-66B      | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 15 | 66554            | 2121.8             | 5    | 10 | 2525             | 881.5              | 23.21                                          | 23.17                                              | -0.04            |
| 5A-66C      | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 66   | 20 | 66786            | 2145               | 66   | 20 | 66588            | 2125.2             | 23.15                                          | 23.13                                              | -0.02            |
| 5A-66C      | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 66578            | 2124.2             | 5    | 10 | 2525             | 881.5              | 23.21                                          | 23.16                                              | -0.05            |
| 5B-66A      | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 5    | 10 | 2497             | 878.7              | 66   | 20 | 66786            | 2145               | 23.15                                          | 23.12                                              | -0.03            |
| 5B-66A      | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 5    | 10 | 2525             | 881.5              | 5    | 5  | 2597             | 888.7              | 23.21                                          | 23.18                                              | -0.03            |
| 12A-66B     | 12   | 10 | 23095         | 707.5           | 5095          | 737.5           | QPSK           | 1  | 0            | 66   | 10 | 66786            | 2145               | 66   | 10 | 66687            | 2135.1             | 23.20                                          | 23.19                                              | -0.01            |
| 12A-66B     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 15 | 66554            | 2121.8             | 12   | 10 | 5095             | 737.5              | 23.21                                          | 23.17                                              | -0.04            |
| 12A-66C     | 12   | 10 | 23095         | 707.5           | 5095          | 737.5           | QPSK           | 1  | 0            | 66   | 20 | 66786            | 2145               | 66   | 20 | 66588            | 2125.2             | 23.20                                          | 23.18                                              | -0.02            |
| 12A-66C     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 66578            | 2124.2             | 12   | 10 | 5095             | 737.5              | 23.21                                          | 23.18                                              | -0.03            |
| 13A-48C     | 13   | 5  | 23255         | 784.5           | 5255          | 753.5           | QPSK           | 1  | 12           | 48   | 20 | 55773            | 3603.3             | 48   | 20 | 55575            | 3583.5             | 23.26                                          | 23.19                                              | -0.07            |
| 13A-66B     | 13   | 5  | 23255         | 784.5           | 5255          | 753.5           | QPSK           | 1  | 12           | 66   | 10 | 66786            | 2145               | 66   | 10 | 66687            | 2135.1             | 23.26                                          | 23.18                                              | -0.08            |
| 13A-66B     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 15 | 66554            | 2121.8             | 13   | 10 | 5230             | 751                | 23.21                                          | 23.15                                              | -0.06            |
| 13A-66C     | 13   | 5  | 23255         | 784.5           | 5255          | 753.5           | QPSK           | 1  | 12           | 66   | 20 | 66786            | 2145               | 66   | 20 | 66588            | 2125.2             | 23.26                                          | 23.26                                              | 0.00             |
| 13A-66C     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 66578            | 2124.2             | 13   | 10 | 5230             | 751                | 23.21                                          | 23.13                                              | -0.08            |
| 48A-66B     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 15 | 66554            | 2121.8             | 48   | 20 | 55773            | 3603.3             | 23.21                                          | 23.16                                              | -0.05            |
| 48A-66C     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 66578            | 2124.2             | 48   | 20 | 55773            | 3603.3             | 23.21                                          | 23.15                                              | -0.06            |
| 48C-66A     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 48   | 20 | 55773            | 3603.3             | 48   | 20 | 55575            | 3583.5             | 23.21                                          | 23.18                                              | -0.03            |
| 66A-66B     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 10 | 66786            | 2145               | 66   | 10 | 66687            | 2135.1             | 23.21                                          | 23.19                                              | -0.02            |
| 66A-66B     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 15 | 66554            | 2121.8             | 66   | 20 | 66786            | 2145               | 23.21                                          | 23.18                                              | -0.03            |
| 66A-66C     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 66786            | 2145               | 66   | 20 | 66588            | 2125.2             | 23.21                                          | 23.20                                              | -0.01            |
| 66A-66C     | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 66578            | 2124.2             | 66   | 20 | 66786            | 2145               | 23.21                                          | 23.20                                              | -0.01            |
| 2A-2A-5A    | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 2    | 20 | 900              | 1960               | 5    | 10 | 2525             | 881.5              | 22.85                                          | 22.83                                              | -0.02            |
| 2A-2A-5A    | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 2    | 20 | 900              | 1960               | 23.15                                          | 23.10                                              | -0.05            |

| Combination     | PCC  |    |               |                 |               |                 |                |    |              | SCC  |    |                  |                    | SCC  |    |                  |                    | Tx Power                                       |                                                    | Delta<br>(2)-(1) |
|-----------------|------|----|---------------|-----------------|---------------|-----------------|----------------|----|--------------|------|----|------------------|--------------------|------|----|------------------|--------------------|------------------------------------------------|----------------------------------------------------|------------------|
|                 | Band | BW | PCC UL<br>Ch. | PCC UL<br>Freq. | PCC DL<br>Ch. | PCC DL<br>Freq. | Modul<br>ation | RB | RB<br>offset | Band | BW | SCC<br>DL<br>Ch. | SCC<br>DL<br>Freq. | Band | BW | SCC<br>DL<br>Ch. | SCC<br>DL<br>Freq. | LTE Single<br>Carrier Tx<br>Power (dBm)<br>(1) | LTE Tx Power<br>with DL CA<br>Enabled (dBm)<br>(2) |                  |
| 2A-2A-12A       | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 2    | 20 | 900              | 1960               | 12   | 10 | 5023             | 730.3              | 22.85                                          | 22.84                                              | -0.01            |
| 2A-2A-12A       | 12   | 10 | 23095         | 707.5           | 5095          | 737.5           | QPSK           | 1  | 0            | 2    | 20 | 1100             | 1980               | 2    | 20 | 900              | 1960               | 23.20                                          | 23.17                                              | -0.03            |
| 2A-2A-13A       | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 2    | 20 | 900              | 1960               | 13   | 10 | 5230             | 751                | 22.85                                          | 22.83                                              | -0.02            |
| 2A-2A-13A       | 13   | 10 | 23255         | 784.5           | 5255          | 753.5           | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 2    | 20 | 900              | 1960               | 23.26                                          | 23.23                                              | -0.03            |
| 2A-2A-14A       | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 2    | 20 | 900              | 1960               | 14   | 10 | 5330             | 763                | 22.85                                          | 22.85                                              | 0.00             |
| 2A-2A-14A       | 14   | 5  | 23355         | 795.5           | 5355          | 765.5           | QPSK           | 1  | 0            | 2    | 20 | 1100             | 1980               | 2    | 20 | 900              | 1960               | 23.18                                          | 23.16                                              | -0.02            |
| 2A-2A-29A       | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 2    | 20 | 900              | 1960               | 29   | 10 | 9715             | 722.5              | 22.85                                          | 22.84                                              | -0.01            |
| 2A-4A-5A        | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 4    | 20 | 2175             | 2132.5             | 5    | 10 | 2525             | 881.5              | 22.85                                          | 22.83                                              | -0.02            |
| 2A-4A-5A        | 4    | 20 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 49           | 2    | 20 | 1100             | 1980               | 5    | 10 | 2525             | 881.5              | 23.01                                          | 22.94                                              | -0.07            |
| 2A-4A-5A        | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 4    | 20 | 2175             | 2132.5             | 23.15                                          | 23.08                                              | -0.07            |
| 2A-4A-12A       | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 4    | 20 | 2175             | 2132.5             | 12   | 10 | 5095             | 737.5              | 22.85                                          | 22.83                                              | -0.02            |
| 2A-4A-12A       | 4    | 20 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 49           | 2    | 20 | 1100             | 1980               | 12   | 10 | 5095             | 737.5              | 23.01                                          | 22.99                                              | -0.02            |
| 2A-4A-12A       | 12   | 10 | 23095         | 707.5           | 5095          | 737.5           | QPSK           | 1  | 0            | 2    | 20 | 1100             | 1980               | 4    | 20 | 2175             | 2132.5             | 23.20                                          | 23.19                                              | -0.01            |
| 2A-4A-13A       | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 4    | 20 | 2175             | 2132.5             | 13   | 10 | 5230             | 751                | 22.85                                          | 22.79                                              | -0.06            |
| 2A-4A-13A       | 4    | 20 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 49           | 2    | 20 | 1100             | 1980               | 13   | 10 | 5230             | 751                | 23.01                                          | 22.95                                              | -0.06            |
| 2A-4A-13A       | 13   | 10 | 23255         | 784.5           | 5255          | 753.5           | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 4    | 20 | 2175             | 2132.5             | 23.26                                          | 23.20                                              | -0.06            |
| 2A-5A-48A       | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 5    | 10 | 2525             | 881.5              | 48   | 20 | 55773            | 3603.3             | 22.85                                          | 22.84                                              | -0.01            |
| 2A-5A-48A       | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 48   | 20 | 55773            | 3603.3             | 23.15                                          | 23.11                                              | -0.04            |
| 2A-5A-66A       | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 5    | 10 | 2525             | 881.5              | 66   | 20 | 66786            | 2145               | 22.85                                          | 22.84                                              | -0.01            |
| 2A-5A-66A       | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 66   | 20 | 66786            | 2145               | 23.15                                          | 23.08                                              | -0.07            |
| 2A-5A-66A       | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 5    | 10 | 2525             | 881.5              | 23.21                                          | 23.18                                              | -0.03            |
| 2A-7A-7A(1,2,3) | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 7    | 10 | 3100             | 2655               | 7    | 10 | 2800             | 2625               | 22.85                                          | 22.79                                              | -0.06            |
| 2A-7A-7A(1,2,3) | 7    | 20 | 21100         | 2535            | 3100          | 2655            | QPSK           | 1  | 0            | 7    | 10 | 2800             | 2625               | 2    | 20 | 1100             | 1980               | 23.19                                          | 23.12                                              | -0.07            |
| 2A-7A-12A       | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 7    | 10 | 3100             | 2655               | 12   | 10 | 5023             | 730.3              | 22.85                                          | 22.83                                              | -0.02            |
| 2A-7A-12A       | 7    | 20 | 21100         | 2535            | 3100          | 2655            | QPSK           | 1  | 0            | 2    | 20 | 1100             | 1980               | 12   | 10 | 5095             | 737.5              | 23.19                                          | 23.18                                              | -0.01            |
| 2A-7A-12A       | 12   | 10 | 23095         | 707.5           | 5095          | 737.5           | QPSK           | 1  | 0            | 2    | 20 | 1100             | 1980               | 7    | 10 | 3100             | 2655               | 23.20                                          | 23.12                                              | -0.08            |
| 2A-12A-12A      | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 12   | 5  | 5035             | 731.5              | 12   | 5  | 5095             | 737.5              | 22.85                                          | 22.83                                              | -0.02            |
| 2A-12A-12A      | 12   | 5  | 23035         | 701.5           | 5035          | 731.5           | QPSK           | 1  | 12           | 12   | 5  | 5095             | 737.5              | 2    | 20 | 1100             | 1980               | 23.20                                          | 23.16                                              | -0.04            |
| 2A-12A-66A      | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 12   | 10 | 5095             | 737.5              | 66   | 20 | 66786            | 2145               | 22.85                                          | 22.84                                              | -0.01            |
| 2A-12A-66A      | 12   | 10 | 23095         | 707.5           | 5095          | 737.5           | QPSK           | 1  | 0            | 2    | 20 | 1100             | 1980               | 66   | 20 | 66786            | 2145               | 23.20                                          | 23.16                                              | -0.04            |

| Combination | PCC  |    |               |                 |               |                 |                |    |              | SCC  |    |                  |                    | SCC  |    |                  |                    | Tx Power                                       |                                                    | Delta<br>(2)-(1) |
|-------------|------|----|---------------|-----------------|---------------|-----------------|----------------|----|--------------|------|----|------------------|--------------------|------|----|------------------|--------------------|------------------------------------------------|----------------------------------------------------|------------------|
|             | Band | BW | PCC UL<br>Ch. | PCC UL<br>Freq. | PCC DL<br>Ch. | PCC DL<br>Freq. | Modul<br>ation | RB | RB<br>offset | Band | BW | SCC<br>DL<br>Ch. | SCC<br>DL<br>Freq. | Band | BW | SCC<br>DL<br>Ch. | SCC<br>DL<br>Freq. | LTE Single<br>Carrier Tx<br>Power (dBm)<br>(1) | LTE Tx Power<br>with DL CA<br>Enabled (dBm)<br>(2) |                  |
| 2A-12A-66A  | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 12   | 10 | 5095             | 737.5              | 23.21                                          | 23.21                                              | 0.00             |
| 2A-13A-48A  | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 13   | 10 | 5230             | 751                | 48   | 20 | 55773            | 3603.3             | 22.85                                          | 22.77                                              | -0.08            |
| 2A-13A-48A  | 13   | 10 | 23255         | 784.5           | 5255          | 753.5           | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 48   | 20 | 55773            | 3603.3             | 23.26                                          | 23.18                                              | -0.08            |
| 2A-13A-66A  | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 13   | 10 | 5230             | 751                | 66   | 20 | 66786            | 2145               | 22.85                                          | 22.85                                              | 0.00             |
| 2A-13A-66A  | 13   | 10 | 23255         | 784.5           | 5255          | 753.5           | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 66   | 20 | 66786            | 2145               | 23.26                                          | 23.22                                              | -0.04            |
| 2A-13A-66A  | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 13   | 10 | 5230             | 751                | 23.21                                          | 23.21                                              | 0.00             |
| 2A-14A-66A  | 2    | 20 | 19100         | 1900            | 1100          | 1980            | QPSK           | 1  | 99           | 14   | 10 | 5330             | 763                | 66   | 20 | 66786            | 2145               | 22.85                                          | 22.81                                              | -0.04            |
| 2A-14A-66A  | 14   | 5  | 23355         | 795.5           | 5355          | 765.5           | QPSK           | 1  | 0            | 2    | 20 | 1100             | 1980               | 66   | 20 | 66786            | 2145               | 23.18                                          | 23.12                                              | -0.06            |
| 2A-14A-66A  | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 2    | 20 | 1100             | 1980               | 14   | 10 | 5330             | 763                | 23.21                                          | 23.21                                              | 0.00             |
| 4A-4A-5A    | 4    | 10 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 0            | 4    | 10 | 2000             | 2115               | 5    | 10 | 2525             | 881.5              | 22.95                                          | 22.92                                              | -0.03            |
| 4A-4A-5A    | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 4    | 10 | 2175             | 2132.5             | 4    | 10 | 2000             | 2115               | 23.15                                          | 23.09                                              | -0.06            |
| 4A-4A-7A    | 4    | 10 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 0            | 4    | 10 | 2000             | 2115               | 7    | 10 | 3100             | 2655               | 22.95                                          | 22.89                                              | -0.06            |
| 4A-4A-7A    | 7    | 20 | 21100         | 2535            | 3100          | 2655            | QPSK           | 1  | 0            | 4    | 10 | 2175             | 2132.5             | 4    | 10 | 2000             | 2115               | 23.19                                          | 23.16                                              | -0.03            |
| 4A-4A-12A   | 4    | 10 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 0            | 4    | 10 | 2000             | 2115               | 12   | 10 | 5095             | 737.5              | 22.95                                          | 22.93                                              | -0.02            |
| 4A-4A-12A   | 12   | 10 | 23095         | 707.5           | 5095          | 737.5           | QPSK           | 1  | 0            | 4    | 10 | 2175             | 2132.5             | 4    | 10 | 2000             | 2115               | 23.20                                          | 23.20                                              | 0.00             |
| 4A-4A-13A   | 4    | 10 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 0            | 4    | 10 | 2000             | 2115               | 13   | 10 | 5230             | 751                | 22.95                                          | 22.93                                              | -0.02            |
| 4A-4A-13A   | 13   | 10 | 23255         | 784.5           | 5255          | 753.5           | QPSK           | 1  | 12           | 4    | 10 | 2175             | 2132.5             | 4    | 10 | 2000             | 2115               | 23.26                                          | 23.26                                              | 0.00             |
| 4A-7A-7A    | 4    | 20 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 49           | 7    | 10 | 3100             | 2655               | 7    | 10 | 2800             | 2625               | 23.01                                          | 22.99                                              | -0.02            |
| 4A-7A-7A    | 7    | 20 | 21100         | 2535            | 3100          | 2655            | QPSK           | 1  | 0            | 7    | 10 | 2800             | 2625               | 4    | 20 | 2175             | 2132.5             | 23.19                                          | 23.15                                              | -0.04            |
| 4A-7A-12A   | 4    | 20 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 49           | 7    | 10 | 3100             | 2655               | 12   | 10 | 5095             | 737.5              | 23.01                                          | 22.94                                              | -0.07            |
| 4A-7A-12A   | 7    | 20 | 21100         | 2535            | 3100          | 2655            | QPSK           | 1  | 0            | 4    | 20 | 2175             | 2132.5             | 12   | 10 | 5095             | 737.5              | 23.19                                          | 23.16                                              | -0.03            |
| 4A-7A-12A   | 12   | 10 | 23095         | 707.5           | 5095          | 737.5           | QPSK           | 1  | 0            | 4    | 20 | 2175             | 2132.5             | 7    | 10 | 3100             | 2655               | 23.20                                          | 23.14                                              | -0.06            |
| 4A-12A-12A  | 4    | 20 | 20175         | 1732.5          | 2175          | 2132.5          | QPSK           | 1  | 49           | 12   | 5  | 5035             | 731.5              | 12   | 5  | 5095             | 737.5              | 23.01                                          | 22.97                                              | -0.04            |
| 4A-12A-12A  | 12   | 5  | 23035         | 701.5           | 5035          | 731.5           | QPSK           | 1  | 12           | 12   | 5  | 5095             | 737.5              | 4    | 20 | 2175             | 2132.5             | 23.20                                          | 23.16                                              | -0.04            |
| 5A-5A-66A   | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 5    | 10 | 2525             | 881.5              | 66   | 20 | 66786            | 2145               | 23.15                                          | 23.10                                              | -0.05            |
| 5A-5A-66A   | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 5    | 5  | 2425             | 871.5              | 5    | 10 | 2525             | 881.5              | 23.21                                          | 23.18                                              | -0.03            |
| 5A-7A-7A    | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 7    | 10 | 3100             | 2655               | 7    | 10 | 2800             | 2625               | 23.15                                          | 23.09                                              | -0.06            |
| 5A-7A-7A    | 7    | 20 | 21100         | 2535            | 3100          | 2655            | QPSK           | 1  | 0            | 7    | 10 | 2800             | 2625               | 5    | 10 | 2525             | 881.5              | 23.19                                          | 23.12                                              | -0.07            |
| 5A-48A-66A  | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 48   | 20 | 55773            | 3603.3             | 66   | 20 | 66786            | 2145               | 23.15                                          | 23.12                                              | -0.03            |
| 5A-48A-66A  | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 5    | 10 | 2525             | 881.5              | 48   | 20 | 55773            | 3603.3             | 23.21                                          | 23.16                                              | -0.05            |

| Combination | PCC  |    |               |                 |               |                 |                |    |              | SCC  |    |                  |                    | SCC  |    |                  |                    | Tx Power                                       |                                                    | Delta<br>(2)-(1) |
|-------------|------|----|---------------|-----------------|---------------|-----------------|----------------|----|--------------|------|----|------------------|--------------------|------|----|------------------|--------------------|------------------------------------------------|----------------------------------------------------|------------------|
|             | Band | BW | PCC UL<br>Ch. | PCC UL<br>Freq. | PCC DL<br>Ch. | PCC DL<br>Freq. | Modul<br>ation | RB | RB<br>offset | Band | BW | SCC<br>DL<br>Ch. | SCC<br>DL<br>Freq. | Band | BW | SCC<br>DL<br>Ch. | SCC<br>DL<br>Freq. | LTE Single<br>Carrier Tx<br>Power (dBm)<br>(1) | LTE Tx Power<br>with DL CA<br>Enabled (dBm)<br>(2) |                  |
| 5A-66A-66A  | 5    | 5  | 20425         | 826.5           | 2425          | 871.5           | QPSK           | 1  | 12           | 66   | 20 | 66786            | 2145               | 66   | 20 | 66536            | 2120               | 23.15                                          | 23.08                                              | -0.07            |
| 5A-66A-66A  | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 67236            | 2190               | 5    | 10 | 2525             | 881.5              | 23.21                                          | 23.16                                              | -0.05            |
| 12A-66A-66A | 12   | 10 | 23095         | 707.5           | 5095          | 737.5           | QPSK           | 1  | 0            | 66   | 20 | 66786            | 2145               | 66   | 20 | 66536            | 2120               | 23.20                                          | 23.16                                              | -0.04            |
| 12A-66A-66A | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 67236            | 2190               | 12   | 10 | 5095             | 737.5              | 23.21                                          | 23.16                                              | -0.05            |
| 13A-48A-66A | 13   | 10 | 23255         | 784.5           | 5255          | 753.5           | QPSK           | 1  | 12           | 48   | 20 | 55773            | 3603.3             | 66   | 20 | 66786            | 2145               | 23.26                                          | 23.18                                              | -0.08            |
| 13A-48A-66A | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 13   | 10 | 5230             | 751                | 48   | 20 | 55773            | 3603.3             | 23.21                                          | 23.20                                              | -0.01            |
| 13A-66A-66A | 13   | 10 | 23255         | 784.5           | 5255          | 753.5           | QPSK           | 1  | 12           | 66   | 20 | 66786            | 2145               | 66   | 20 | 66536            | 2120               | 23.26                                          | 23.23                                              | -0.03            |
| 13A-66A-66A | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 67236            | 2190               | 13   | 10 | 5230             | 751                | 23.21                                          | 23.17                                              | -0.04            |
| 14A-66A-66A | 14   | 5  | 23355         | 795.5           | 5355          | 765.5           | QPSK           | 1  | 0            | 66   | 20 | 66786            | 2145               | 66   | 20 | 66536            | 2120               | 23.18                                          | 23.12                                              | -0.06            |
| 14A-66A-66A | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 67236            | 2190               | 14   | 10 | 5330             | 763                | 23.21                                          | 23.21                                              | 0.00             |
| 25A-25A-26A | 25   | 5  | 26365         | 1882.5          | 8365          | 1962.5          | QPSK           | 1  | 12           | 25   | 5  | 8065             | 1932.5             | 26   | 5  | 8715             | 861.5              | 23.13                                          | 23.13                                              | 0.00             |
| 25A-25A-26A | 26   | 5  | 26715         | 816.5           | 8715          | 861.5           | QPSK           | 1  | 0            | 25   | 5  | 8365             | 1962.5             | 25   | 5  | 8065             | 1932.5             | 23.13                                          | 23.13                                              | 0.00             |
| 48A-66A-66A | 66   | 5  | 131997        | 1712.5          | 66461         | 2112.5          | QPSK           | 1  | 12           | 66   | 20 | 67236            | 2190               | 48   | 20 | 55773            | 3603.3             | 23.21                                          | 23.20                                              | -0.01            |