

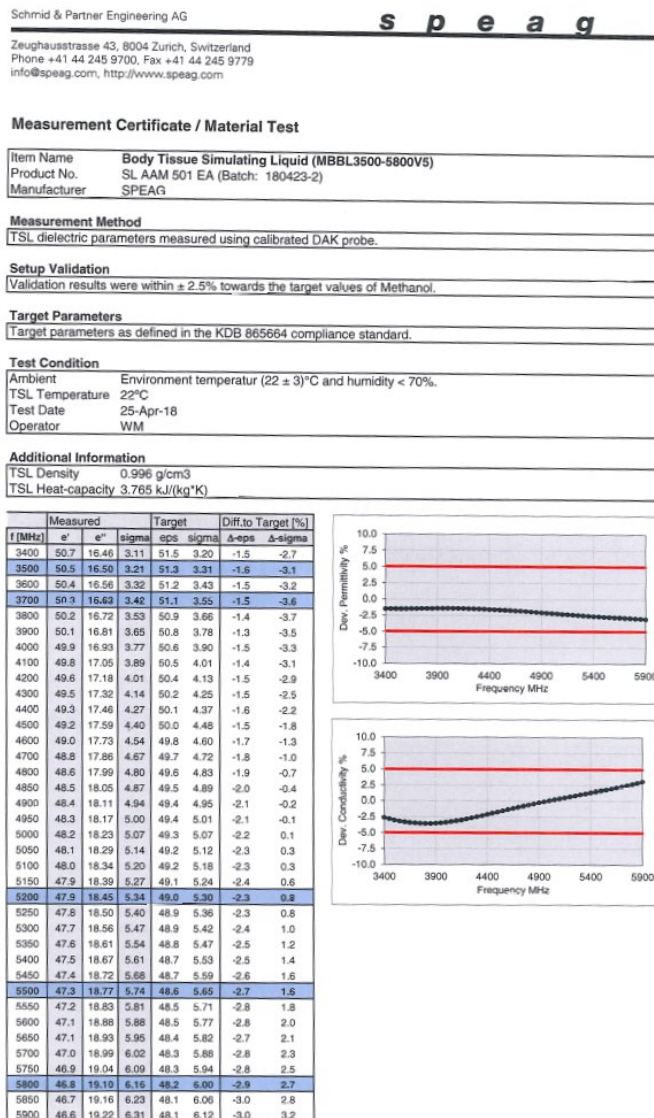
### 3 Composition / Information on ingredients

The Item is composed of the following ingredients:

|                                 |          |
|---------------------------------|----------|
| Water                           | 60 – 80% |
| Esters, Emulsifiers, Inhibitors | 20 – 40% |
| Sodium salt                     | 0 – 1.5% |

**Figure D-8**  
**Composition of 5 GHz Body Tissue Equivalent Matter**

**Note:** 5 GHz Body liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.



**Figure D-9**  
**5 GHz Body Tissue Equivalent Matter**

|                                    |                                                                                     |                       |                                                                                       |                                 |
|------------------------------------|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMA205U                 |  | SAR EVALUATION REPORT |  | Approved by:<br>Quality Manager |
| Test Dates:<br>04/29/19 - 06/17/19 | DUT Type:<br>Portable Handset                                                       |                       |                                                                                       | APPENDIX D:<br>Page 6 of 6      |

## APPENDIX E: SAR SYSTEM VALIDATION

Per FCC KDB Publication 865664 D02v01r02, SAR system validation status should be documented to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue- equivalent media for system validation, according to the procedures outlined in FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters has been included.

**Table E-1**  
**SAR System Validation Summary – 1g**

| SAR SYSTEM # | FREQ. [MHz] | DATE       | PROBE SN | PROBE TYPE | PROBE CAL. POINT | COND. |        | CW VALIDATION |                 |                | MOD. VALIDATION |             |      |
|--------------|-------------|------------|----------|------------|------------------|-------|--------|---------------|-----------------|----------------|-----------------|-------------|------|
|              |             |            |          |            |                  | (σ)   | (ε)    | SENSITIVITY   | PROBE LINEARITY | PROBE ISOTROPY | MOD. TYPE       | DUTY FACTOR | PAR  |
| AM7          | 750         | 4/8/2019   | 3837     | EX3DV4     | 750 Head         | 0.881 | 42.402 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| AM6          | 750         | 3/14/2019  | 7427     | EX3DV4     | 750 Head         | 0.861 | 42.073 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| AM6          | 835         | 3/14/2019  | 7427     | EX3DV4     | 835 Head         | 0.894 | 41.807 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM7          | 835         | 4/10/2019  | 3837     | EX3DV4     | 835 Head         | 0.914 | 41.210 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM2          | 1750        | 11/14/2018 | 7416     | EX3DV4     | 1750 Head        | 1.348 | 39.703 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| AM6          | 1750        | 3/14/2019  | 7427     | EX3DV4     | 1750 Head        | 1.349 | 39.903 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| AM7          | 1900        | 4/10/2019  | 3837     | EX3DV4     | 1900 Head        | 1.456 | 38.971 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM6          | 1900        | 3/14/2019  | 7427     | EX3DV4     | 1900 Head        | 1.444 | 39.663 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM3          | 2450        | 3/6/2019   | 7420     | EX3DV4     | 2450 Head        | 1.624 | 38.536 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| AM2          | 2450        | 11/12/2018 | 7416     | EX3DV4     | 2450 Head        | 1.845 | 39.366 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| AM6          | 2450        | 3/14/2019  | 7427     | EX3DV4     | 2450 Head        | 1.840 | 38.779 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| E            | 2450        | 2/5/2019   | 3589     | EX3DV4     | 2450 Head        | 1.825 | 39.836 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| AM6          | 2600        | 3/19/2019  | 7427     | EX3DV4     | 2600 Head        | 1.921 | 38.175 | PASS          | PASS            | PASS           | TDD             | PASS        | N/A  |
| E            | 2600        | 2/7/2019   | 3589     | EX3DV4     | 2600 Head        | 1.964 | 40.460 | PASS          | PASS            | PASS           | TDD             | PASS        | N/A  |
| AM8          | 5250        | 11/6/2018  | 7491     | EX3DV4     | 5250 Head        | 4.572 | 35.010 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| AM8          | 5600        | 11/6/2018  | 7491     | EX3DV4     | 5600 Head        | 4.958 | 34.387 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| AM8          | 5750        | 11/6/2018  | 7491     | EX3DV4     | 5750 Head        | 5.125 | 34.098 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| AM6          | 750         | 3/12/2019  | 7427     | EX3DV4     | 750 Body         | 0.937 | 53.296 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| AM4          | 835         | 4/23/2019  | 7532     | EX3DV4     | 835 Body         | 1.005 | 53.199 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM2          | 835         | 11/8/2018  | 7416     | EX3DV4     | 835 Body         | 0.986 | 54.641 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM7          | 835         | 2/21/2019  | 3837     | EX3DV4     | 835 Body         | 1.013 | 53.782 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM6          | 1750        | 3/12/2019  | 7427     | EX3DV4     | 1750 Body        | 1.528 | 51.589 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| AM5          | 1900        | 12/7/2018  | 3318     | ES3DV3     | 1900 Body        | 1.584 | 51.208 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM7          | 1900        | 2/22/2019  | 3837     | EX3DV4     | 1900 Body        | 1.575 | 51.902 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM8          | 1900        | 10/31/2018 | 7491     | EX3DV4     | 1900 Body        | 1.568 | 52.993 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM1          | 2450        | 4/2/2019   | 7421     | EX3DV4     | 2450 Body        | 2.026 | 50.280 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| AM6          | 2450        | 3/12/2019  | 7427     | EX3DV4     | 2450 Body        | 2.007 | 50.511 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| K            | 2450        | 3/6/2019   | 7417     | EX3DV4     | 2450 Body        | 2.039 | 50.670 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| AM1          | 2600        | 4/2/2019   | 7421     | EX3DV4     | 2600 Body        | 2.161 | 50.025 | PASS          | PASS            | PASS           | TDD             | PASS        | N/A  |
| AM6          | 2600        | 3/12/2019  | 7427     | EX3DV4     | 2600 Body        | 2.148 | 50.284 | PASS          | PASS            | PASS           | TDD             | PASS        | N/A  |
| K            | 2600        | 3/6/2019   | 7417     | EX3DV4     | 2600 Body        | 2.224 | 50.170 | PASS          | PASS            | PASS           | TDD             | PASS        | N/A  |
| AM8          | 5250        | 11/2/2018  | 7491     | EX3DV4     | 5250 Body        | 5.412 | 48.292 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| AM8          | 5600        | 11/2/2018  | 7491     | EX3DV4     | 5600 Body        | 5.872 | 47.700 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| AM8          | 5750        | 11/2/2018  | 7491     | EX3DV4     | 5750 Body        | 6.115 | 47.406 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |

**Table E-2**  
**SAR System Validation Summary – 10g**

| SAR SYSTEM # | FREQ. [MHz] | DATE       | PROBE SN | PROBE TYPE | PROBE CAL. POINT | COND. |        | CW VALIDATION |                 |                | MOD. VALIDATION |             |      |
|--------------|-------------|------------|----------|------------|------------------|-------|--------|---------------|-----------------|----------------|-----------------|-------------|------|
|              |             |            |          |            |                  | (σ)   | (ε)    | SENSITIVITY   | PROBE LINEARITY | PROBE ISOTROPY | MOD. TYPE       | DUTY FACTOR | PAR  |
| AM6          | 1750        | 3/12/2019  | 7427     | EX3DV4     | 1750 Body        | 1.528 | 51.589 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| AM5          | 1900        | 12/7/2018  | 3318     | ES3DV3     | 1900 Body        | 1.584 | 51.208 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM7          | 1900        | 2/22/2019  | 3837     | EX3DV4     | 1900 Body        | 1.575 | 51.902 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM8          | 1900        | 10/31/2018 | 7491     | EX3DV4     | 1900 Body        | 1.568 | 52.993 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| AM6          | 2450        | 3/12/2019  | 7427     | EX3DV4     | 2450 Body        | 2.007 | 50.511 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| AM6          | 2600        | 3/12/2019  | 7427     | EX3DV4     | 2600 Body        | 2.148 | 50.284 | PASS          | PASS            | PASS           | TDD             | PASS        | N/A  |
| AM8          | 5250        | 11/2/2018  | 7491     | EX3DV4     | 5250 Body        | 5.412 | 48.292 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| AM8          | 5600        | 11/2/2018  | 7491     | EX3DV4     | 5600 Body        | 5.872 | 47.700 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| AM8          | 5750        | 11/2/2018  | 7491     | EX3DV4     | 5750 Body        | 6.115 | 47.406 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |

NOTE: While the probes have been calibrated for both CW and modulated signals, all measurements were performed using communication systems calibrated for CW signals only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04 for scenarios when CW probe calibrations are used with other signal types. SAR systems were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5 dB), such as OFDM according to FCC KDB Publication 865664 D01v01r04.

|                                    |                                                                                     |                       |                                                                                       |                                 |
|------------------------------------|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMA205U                 |  | SAR EVALUATION REPORT |  | Approved by:<br>Quality Manager |
| Test Dates:<br>04/29/19 - 06/17/19 | DUT Type:<br>Portable Handset                                                       |                       |                                                                                       | APPENDIX E:<br>Page 1 of 1      |

## APPENDIX G POWER REDUCTION VERIFICATION

Per the May 2017 TCBC Workshop Notes, demonstration of proper functioning of the power reduction mechanisms is required to support the corresponding SAR configurations. The verification process was divided into two parts: (1) evaluation of output power levels for individual or multiple triggering mechanisms and (2) evaluation of the triggering distances for proximity-based sensors.

### G.1 Power Verification Procedure

The power verification was performed according to the following procedure:

1. A base station simulator was used to establish a conducted RF connection and the output power was monitored. The power measurements were confirmed to be within expected tolerances for all states before and after a power reduction mechanism was triggered.
2. Step 1 was repeated for all relevant modes and frequency bands for the mechanism being investigated.
3. Steps 1 and 2 were repeated for all individual power reduction mechanisms and combinations thereof. For the combination cases, one mechanism was switched to a 'triggered' state at a time; powers were confirmed to be within tolerances after each additional mechanism was activated.

### G.2 Distance Verification Procedure

The distance verification procedure was performed according to the following procedure:

1. A base station simulator was used to establish an RF connection and to monitor the power levels. The device being tested was placed below the relevant section of the phantom with the relevant side or edge of the device facing toward the phantom.
2. The device was moved toward and away from the phantom to determine the distance at which the mechanism triggers and the output power is reduced, per KDB Publication 616217 D04v01r02 and FCC Guidance. Each applicable test position was evaluated. The distances were confirmed to be the same or larger (more conservative) than the minimum distances provided by the manufacturer.
3. Steps 1 and 2 were repeated for low, mid, and high bands, as appropriate (see note below Table G-2 for more details).
4. Steps 1 through 3 were repeated for all distance-based power reduction mechanisms.

|                                        |                                                                                                                                   |                       |                                                                                       |                                 |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMA205U                     |  <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | SAR EVALUATION REPORT |  | Reviewed by:<br>Quality Manager |
| Test Dates:<br>04/29/2019 – 06/17/2019 | DUT Type:<br>Portable Handset                                                                                                     |                       |                                                                                       | APPENDIX G:<br>Page 1 of 3      |

### G.3 Main Antenna Verification Summary

**Table G-1**  
**Power Measurement Verification for Main Antenna**

| Mechanism(s) |             | Mode/Band             | Conducted Power (dBm) |                        |                        |
|--------------|-------------|-----------------------|-----------------------|------------------------|------------------------|
| 1st          | 2nd         |                       | Un-triggered (Max)    | Mechanism #1 (Reduced) | Mechanism #2 (Reduced) |
| Hotspot On   |             | GPRS 1900             | 25.6                  | 22.59                  |                        |
| Grip         |             | GPRS 1900             | 25.59                 | 22.58                  |                        |
| Hotspot On   | Grip        | GPRS 1900             | 25.6                  | 22.6                   | 22.61                  |
| Grip         | Hotspot On  | GPRS 1900             | 25.61                 | 22.6                   | 22.59                  |
| Hotspot On   |             | UMTS 1750             | 24.35                 | 21.37                  |                        |
| Grip         |             | UMTS 1750             | 24.32                 | 21.31                  |                        |
| Hotspot On   | Grip        | UMTS 1750             | 24.3                  | 21.38                  | 21.4                   |
| Grip         | Hotspot On  | UMTS 1750             | 24.28                 | 21.32                  | 21.33                  |
| Hotspot On   |             | UMTS 1900             | 24.62                 | 21.66                  |                        |
| Grip         |             | UMTS 1900             | 24.6                  | 21.64                  |                        |
| Hotspot On   | Grip        | UMTS 1900             | 24.62                 | 21.65                  | 21.66                  |
| Grip         | Hotspot On  | UMTS 1900             | 24.6                  | 21.65                  | 21.67                  |
| Hotspot On   |             | PCS EVDO              | 24.13                 | 21.02                  |                        |
| Grip         |             | PCS EVDO              | 24.1                  | 21                     |                        |
| Hotspot On   | Grip        | PCS EVDO              | 24.09                 | 21.03                  | 20.96                  |
| Grip         | Hotspot On  | PCS EVDO              | 24.07                 | 20.99                  | 21.01                  |
| Hotspot On   |             | LTE FDD Band 66       | 24.45                 | 21.26                  |                        |
| Grip         |             | LTE FDD Band 66       | 24.48                 | 21.27                  |                        |
| Hotspot On   | Grip        | LTE FDD Band 66       | 24.43                 | 21.23                  | 21.3                   |
| Grip         | Hotspot On  | LTE FDD Band 66       | 24.42                 | 21.22                  | 21.2                   |
| Hotspot On   |             | LTE FDD Band 4        | 24.69                 | 21.48                  |                        |
| Grip         |             | LTE FDD Band 4        | 24.66                 | 21.45                  |                        |
| Hotspot On   | Grip        | LTE FDD Band 4        | 24.62                 | 21.49                  | 21.5                   |
| Grip         | Hotspot On  | LTE FDD Band 4        | 24.63                 | 21.55                  | 21.47                  |
| Hotspot On   |             | LTE FDD Band 25       | 24.59                 | 21.52                  |                        |
| Grip         |             | LTE FDD Band 25       | 24.6                  | 21.53                  |                        |
| Hotspot On   | Grip        | LTE FDD Band 25       | 24.56                 | 21.54                  | 21.56                  |
| Grip         | Hotspot On  | LTE FDD Band 25       | 24.59                 | 21.53                  | 21.52                  |
| Hotspot On   |             | LTE FDD Band 2        | 24.53                 | 21.5                   |                        |
| Grip         |             | LTE FDD Band 2        | 24.54                 | 21.51                  |                        |
| Hotspot On   | Grip        | LTE FDD Band 2        | 24.57                 | 21.5                   | 21.52                  |
| Grip         | Hotspot On  | LTE FDD Band 2        | 24.55                 | 21.52                  | 21.44                  |
| Hotspot On   |             | LTE FDD Band 7        | 22.32                 | 20.1                   |                        |
| Held-to-Ear  |             | LTE TDD Band 41 (PC2) | 27.31                 | 23.14                  |                        |
| Hotspot On   |             | LTE TDD Band 41 (PC2) | 27.31                 | 23.66                  |                        |
| Held-to-Ear  | Hotspot On  | LTE TDD Band 41 (PC2) | 27.31                 | 23.14                  | 23.13                  |
| Hotspot On   | Held-to-Ear | LTE TDD Band 41 (PC2) | 27.31                 | 23.66                  | 23.14                  |

**Table G-2**  
**Distance Measurement Verification for Main Antenna**

| Mechanism(s) | Test Condition        | Band | Distance Measurements (mm) |             | Minimum Distance per Manufacturer (mm) |
|--------------|-----------------------|------|----------------------------|-------------|----------------------------------------|
|              |                       |      | Moving Toward              | Moving Away |                                        |
| Grip         | Phablet - Back Side   | Mid  | 16                         | 18          | 10                                     |
| Grip         | Phablet - Bottom Edge | Mid  | 7                          | 9           | 3                                      |

\*Note: Mid band refers to: CDMA BC1, GSM1900, UMTS B2/4, LTE B2/4/25/66

|                                        |                                                                                     |                       |                                                                                       |                                 |
|----------------------------------------|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMA205U                     |  | SAR EVALUATION REPORT |  | Reviewed by:<br>Quality Manager |
| Test Dates:<br>04/29/2019 – 06/17/2019 | DUT Type:<br>Portable Handset                                                       |                       |                                                                                       | APPENDIX G:<br>Page 2 of 3      |

## G.4 WIFI Verification Summary

**Table G-3**  
**Power Measurement Verification WIFI**

| Mechanism(s) | Mode/Band                | Conducted Power (dBm) |                        |
|--------------|--------------------------|-----------------------|------------------------|
| 1st          |                          | Un-triggered (Max)    | Mechanism #1 (Reduced) |
| Held-to-Ear  | 802.11b                  | 20.99                 | 11.92                  |
| Held-to-Ear  | 802.11g                  | 18.98                 | 11.93                  |
| Held-to-Ear  | 802.11n (2.4GHz)         | 18.85                 | 11.77                  |
| Held-to-Ear  | 802.11a                  | 17.76                 | 10.97                  |
| Held-to-Ear  | 802.11n (5GHz, 20MHz BW) | 17.00                 | 11.15                  |
| Held-to-Ear  | 802.11ac (20MHz BW)      | 17.06                 | 11.15                  |
| Held-to-Ear  | 802.11n (5GHz, 40MHz BW) | 15.05                 | 11.03                  |
| Held-to-Ear  | 802.11ac (40MHz BW)      | 15.13                 | 11.15                  |
| Held-to-Ear  | 802.11ac (80MHz BW)      | 13.70                 | 10.29                  |

|                                               |                                                                                                                                                                                                        |                                        |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LSMA205U                     |  <b>SAR EVALUATION REPORT</b>  | <b>Reviewed by:</b><br>Quality Manager |
| <b>Test Dates:</b><br>04/29/2019 – 06/17/2019 | <b>DUT Type:</b><br>Portable Handset                                                                                                                                                                   | <b>APPENDIX G:</b><br>Page 3 of 3      |

# APPENDIX H: DOWNLINK LTE CA RF CONDUCTED POWERS

## 1.1 LTE Downlink Only Carrier Aggregation Test Reduction Methodology

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

### LTE DLCA Test Reduction Methodology:

- The supported combinations were arranged by the number of component carriers in columns.
- Any limitations on the PCC or SCC for each combination were identified alongside the combination (e.g. CA\_2A-2A-4A-12A, but B12 can only be configured as a SCC).
- Power measurements were performed for "supersets" (LTE CA combinations with multiple components carriers) and any "subsets" (LTE CA combinations with fewer component carriers) that were not completely covered by the supersets.
- Only subsets that have the exact same components as a superset were excluded for measurement.
- When there were certain restrictions on component carriers that existed in the superset that were not applied for the subset, the subset configuration was additionally evaluated.
- Both inter-band and intra-band downlink carrier aggregation scenarios were considered.
- Downlink CA combinations for SISO and 4x4 Downlink MIMO operations were measured independently, per May 2017 TCBC Workshop notes.

Table 1 – Example of Exclusion Table for SISO Configurations

| Index     | ZCC        | Supported Channel Bandwidth (MHz) |               | Restriction | Completely Covered by Measurement Superset |
|-----------|------------|-----------------------------------|---------------|-------------|--------------------------------------------|
|           |            | CC1                               | CC2           |             |                                            |
| CCC RM1   | CA [2C]    | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM1     | No                                         |
| CCC RM2   | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM2     | No                                         |
| CCC RM3   | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM3     | No                                         |
| CCC RM4   | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM4     | No                                         |
| CCC RM5   | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM5     | No                                         |
| CCC RM6   | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM6     | No                                         |
| CCC RM7   | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM7     | No                                         |
| CCC RM8   | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM8     | No                                         |
| CCC RM9   | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM9     | No                                         |
| CCC RM10  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM10    | No                                         |
| CCC RM11  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM11    | No                                         |
| CCC RM12  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM12    | No                                         |
| CCC RM13  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM13    | No                                         |
| CCC RM14  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM14    | No                                         |
| CCC RM15  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM15    | No                                         |
| CCC RM16  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM16    | No                                         |
| CCC RM17  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM17    | No                                         |
| CCC RM18  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM18    | No                                         |
| CCC RM19  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM19    | No                                         |
| CCC RM20  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM20    | No                                         |
| CCC RM21  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM21    | No                                         |
| CCC RM22  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM22    | No                                         |
| CCC RM23  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM23    | No                                         |
| CCC RM24  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM24    | No                                         |
| CCC RM25  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM25    | No                                         |
| CCC RM26  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM26    | No                                         |
| CCC RM27  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM27    | No                                         |
| CCC RM28  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM28    | No                                         |
| CCC RM29  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM29    | No                                         |
| CCC RM30  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM30    | No                                         |
| CCC RM31  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM31    | No                                         |
| CCC RM32  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM32    | No                                         |
| CCC RM33  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM33    | No                                         |
| CCC RM34  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM34    | No                                         |
| CCC RM35  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM35    | No                                         |
| CCC RM36  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM36    | No                                         |
| CCC RM37  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM37    | No                                         |
| CCC RM38  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM38    | No                                         |
| CCC RM39  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM39    | No                                         |
| CCC RM40  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM40    | No                                         |
| CCC RM41  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM41    | No                                         |
| CCC RM42  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM42    | No                                         |
| CCC RM43  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM43    | No                                         |
| CCC RM44  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM44    | No                                         |
| CCC RM45  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM45    | No                                         |
| CCC RM46  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM46    | No                                         |
| CCC RM47  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM47    | No                                         |
| CCC RM48  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM48    | No                                         |
| CCC RM49  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM49    | No                                         |
| CCC RM50  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM50    | No                                         |
| CCC RM51  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM51    | No                                         |
| CCC RM52  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM52    | No                                         |
| CCC RM53  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM53    | No                                         |
| CCC RM54  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM54    | No                                         |
| CCC RM55  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM55    | No                                         |
| CCC RM56  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM56    | No                                         |
| CCC RM57  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM57    | No                                         |
| CCC RM58  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM58    | No                                         |
| CCC RM59  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM59    | No                                         |
| CCC RM60  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM60    | No                                         |
| CCC RM61  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM61    | No                                         |
| CCC RM62  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM62    | No                                         |
| CCC RM63  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM63    | No                                         |
| CCC RM64  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM64    | No                                         |
| CCC RM65  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM65    | No                                         |
| CCC RM66  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM66    | No                                         |
| CCC RM67  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM67    | No                                         |
| CCC RM68  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM68    | No                                         |
| CCC RM69  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM69    | No                                         |
| CCC RM70  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM70    | No                                         |
| CCC RM71  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM71    | No                                         |
| CCC RM72  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM72    | No                                         |
| CCC RM73  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM73    | No                                         |
| CCC RM74  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM74    | No                                         |
| CCC RM75  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM75    | No                                         |
| CCC RM76  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM76    | No                                         |
| CCC RM77  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM77    | No                                         |
| CCC RM78  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM78    | No                                         |
| CCC RM79  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM79    | No                                         |
| CCC RM80  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM80    | No                                         |
| CCC RM81  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM81    | No                                         |
| CCC RM82  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM82    | No                                         |
| CCC RM83  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM83    | No                                         |
| CCC RM84  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM84    | No                                         |
| CCC RM85  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM85    | No                                         |
| CCC RM86  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM86    | No                                         |
| CCC RM87  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM87    | No                                         |
| CCC RM88  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM88    | No                                         |
| CCC RM89  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM89    | No                                         |
| CCC RM90  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM90    | No                                         |
| CCC RM91  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM91    | No                                         |
| CCC RM92  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM92    | No                                         |
| CCC RM93  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM93    | No                                         |
| CCC RM94  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM94    | No                                         |
| CCC RM95  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM95    | No                                         |
| CCC RM96  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM96    | No                                         |
| CCC RM97  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM97    | No                                         |
| CCC RM98  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM98    | No                                         |
| CCC RM99  | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM99    | No                                         |
| CCC RM100 | CA [2A]-2A | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM100   | No                                         |

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

| Table 2: Example Channel Bandwidths (MHz) for 5G NR Frequency Range 1 (FR1) Configurations |                |                                   |               |              |                |                                            |               |               |                                   |              |          |                 |                                            |       |               |    |
|--------------------------------------------------------------------------------------------|----------------|-----------------------------------|---------------|--------------|----------------|--------------------------------------------|---------------|---------------|-----------------------------------|--------------|----------|-----------------|--------------------------------------------|-------|---------------|----|
| Index                                                                                      | ZCC            | Supported Channel Bandwidth (MHz) |               |              | Restriction    | Completely Covered by Measurement Superset | Index         | ZCC           | Supported Channel Bandwidth (MHz) |              |          | Restriction     | Completely Covered by Measurement Superset |       |               |    |
|                                                                                            |                | CC1                               | CC2           | CC3          |                |                                            |               |               | CC1                               | CC2          | CC3      |                 |                                            | CC4   |               |    |
| CCC RM1                                                                                    | CA [2C]        | 5, 10, 15, 20                     | 5, 10, 15, 20 |              | CCC RM1        | CA [2A]-2A-4A                              | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           | CCC RM1  | CA [2A]-8A-66A  | 5, 10, 15, 20                              | 5, 10 | 5, 10, 15, 20 | No |
| CCC RM2                                                                                    | CA [2A]-3A     | 5, 10, 15, 20                     | 5, 10, 15, 20 |              | CCC RM2        | CA [2A]-3A-6A                              | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           | CCC RM2  | CA [2A]-10A-66A | 5, 10, 15, 20                              | 5, 10 | 5, 10, 15, 20 | No |
| CCC RM3                                                                                    | CA [2A]-2A     | 5, 10, 15, 20                     | 5, 10, 15, 20 | No           | CCC RM3        | CA [2A]-2A-1A                              | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10                             | No           | CCC RM3  | CA [2A]-5A-66A  | 5, 10, 15, 20                              | 5, 10 | 5, 10, 15, 20 | No |
| CCC RM4                                                                                    | CA [2A]-4A(2)  | 5, 10, 15, 20                     | 5, 10, 15, 20 | No           | CCC RM4        | CA [2A]-2A-1A-1A                           | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10                             | No           | CCC RM4  | CA 2A-5A-66A    | 5, 10, 15, 20                              | 5, 10 | 5, 10, 15, 20 | No |
| CCC RM5                                                                                    | CA [2A]-6A(4)  | 5, 10, 15, 20                     | 5, 10, 15, 20 | No           | CCC RM5        | CA [2A]-3A-3A                              | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10                             | No           | CCC RM5  | CA [2A]-6A-66A  | 5, 10, 15, 20                              | 5, 10 | 5, 10, 15, 20 | No |
| CCC RM6                                                                                    | CA [2A]-5A     | 5, 10, 15, 20                     | 5, 10         | ACC RM5      | CCC RM6        | CA [2A]-6A-6A                              | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           | CCC RM6  | CA 2A-5A-66(6)  | 5, 10, 15, 20                              | 5, 10 | 5, 10, 15, 20 | No |
| CCC RM7                                                                                    | CA [2A]-12A(1) | 5, 10, 15, 20                     | 3, 5, 10      | CCC RM7      | ACC RM7        | CA 2C-66A                                  | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM8                                                                                    | CA [2A]-12A    | 5, 10, 15, 20                     | 10            | CCC RM8      | CA [2C]-66A    | 5, 10, 15, 20                              | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM9                                                                                    | CA [2A]-17A    | 5, 10, 15, 20                     | 5, 10         | No           | CCC RM9        | CA [2A]-2A-66A                             | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM10                                                                                   | CA [2A]-28A(2) | 5, 10, 15, 20                     | 5, 10         | B79 SCC Only | CCC RM10       | CA 2A-2A-66A                               | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM11                                                                                   | CA [2A]-38A    | 5, 10, 15, 20                     | 5, 10         | CCC RM11     | CA [2A]-2A-71A | 5, 10, 15, 20                              | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM12                                                                                   | CA [2A]-66A(2) | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM12     | CA [2A]-4A-29A | 5, 10, 15, 20                              | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10                             | B79 SCC Only |          |                 |                                            |       |               |    |
| CCC RM13                                                                                   | CA 2A-66A(2)   | 5, 10, 15, 20                     | 5, 10, 15, 20 | ACC RM2      | CCC RM13       | CA [2A]-4A-71A                             | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           | CCC RM13 | CA [2A]-4A-71A  | 5, 10, 15, 20                              | 5, 10 | 5, 10, 15, 20 | No |
| CCC RM14                                                                                   | CA [2A]-66A(4) | 5, 10, 15, 20                     | 5, 10, 15, 20 | No           | CCC RM14       | CA [2A]-6A-71A                             | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10                             | ACC RM1      |          |                 |                                            |       |               |    |
| CCC RM15                                                                                   | CA [2A]-71A    | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM15     | CCC RM15       | CA [2A]-5A-66A                             | 5, 10, 15, 20 | 5, 10         | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM16                                                                                   | CA 5A-66A      | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM16     | CCC RM16       | CA 2A-5A-66A                               | 5, 10, 15, 20 | 5, 10         | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM17                                                                                   | CA [2A]-66A(4) | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM17     | CCC RM17       | CA 2A-2A-66A                               | 5, 10, 15, 20 | 5, 10         | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM18                                                                                   | CA [3A]-66A    | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM18     | CCC RM18       | CA [2A]-1A-66A                             | 5, 10, 15, 20 | 5, 10         | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM19                                                                                   | CA 30A-66A     | 5, 10                             | 5, 10, 15, 20 | CCC RM20     | CCC RM19       | CA 2A-13A-66A                              | 5, 10, 15, 20 | 5, 10         | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM20                                                                                   | CA [2A]-66A    | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM20     | CCC RM20       | CA 2A-30A-66A                              | 5, 10, 15, 20 | 5, 10         | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
| CCC RM21                                                                                   | CA [66C]       | 5, 10, 15, 20                     | 5, 10, 15, 20 | ACC RM6      | CCC RM21       | CA [2A]-66B                                | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15                         | ACC RM3      |          |                 |                                            |       |               |    |
| CCC RM22                                                                                   | 66A-66A        | 5, 10, 15, 20                     | 5, 10, 15, 20 | CCC RM28     | CCC RM22       | CA 2A-66B                                  | 5, 10, 15, 20 | 5, 10, 15     | 5, 10, 15                         | ACC RM4      |          |                 |                                            |       |               |    |
| CCC RM23                                                                                   | CA [66A]-66A   | 5, 10, 15, 20                     | 5, 10, 15, 20 | No           | CCC RM23       | CA [2A]-66B                                | 5, 10, 15, 20 | 5, 10, 15     | 5, 10, 15                         | ACC RM5      |          |                 |                                            |       |               |    |
|                                                                                            |                |                                   |               |              | CCC RM24       | CA [2A]-66C                                | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | ACC RM6      |          |                 |                                            |       |               |    |
|                                                                                            |                |                                   |               |              | CCC RM25       | CA 2A-66C                                  | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | ACC RM6      |          |                 |                                            |       |               |    |
|                                                                                            |                |                                   |               |              | CCC RM26       | CA [2A]-66C                                | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | ACC RM6      |          |                 |                                            |       |               |    |
|                                                                                            |                |                                   |               |              | CCC RM27       | CA [2A]-66A-66A                            | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
|                                                                                            |                |                                   |               |              | CCC RM28       | CA 2A-66A-66A                              | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
|                                                                                            |                |                                   |               |              | CCC RM29       | CA [2A]-66A-66A                            | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |
|                                                                                            |                |                                   |               |              | CCC RM30       | CA [2A]-66A-66A                            | 5, 10, 15, 20 | 5, 10, 15, 20 | 5, 10, 15, 20                     | No           |          |                 |                                            |       |               |    |

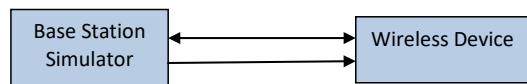
## 1.2 LTE Downlink Only Carrier Aggregation Test Selection and Setup

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number component carriers (CCs) supported by the product implementation. For those configurations required by April 2018 TCBC Workshop Notes, conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. Additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the maximum average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive. All bands required for SAR testing per FCC KDB procedures were considered. Based on the measured maximum powers below, no additional SAR tests were required for DLCA SAR configurations.

General PCC and SCC configuration selection procedure

- PCC uplink channel, channel bandwidth, modulation and RB configurations were selected based on section C)3)b)ii) of KDB 941225 D05 V01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
- To maximize aggregated bandwidth, highest channel bandwidth available for that CA combination was selected for SCC. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
- All selected PCC and SCC(s) remained fully within the uplink/downlink transmission band of the respective component carrier.



**Figure 1**  
**DL CA Power Measurement Setup**

|                                           |                                                                                                                  |                                        |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| FCC ID: A3LSMA205U                        |  <b>SAR EVALUATION REPORT</b> | <b>Reviewed by:</b><br>Quality Manager |
| <b>Test Dates:</b><br>04/29/19 - 06/17/19 | <b>DUT Type:</b><br>Portable Handset                                                                             | <b>APPENDIX H:</b><br>Page 2 of 5      |

## 1.3 Downlink Carrier Aggregation RF Conducted Powers

### 1.3.1 LTE Band 71 as PCC

Table 1  
Maximum Output Powers

| Combination | PCC      |              |              |                      |      |            |                  |                  |                      | SCC 1    |              |                  |                      | Power                                 |                                   |
|-------------|----------|--------------|--------------|----------------------|------|------------|------------------|------------------|----------------------|----------|--------------|------------------|----------------------|---------------------------------------|-----------------------------------|
|             | PCC Band | PCC BW [MHz] | PCC (UL) Ch. | PCC (UL) Freq. [MHz] | Mod. | PCC UL# RB | PCC UL RB Offset | PCC (DL) Channel | PCC (DL) Freq. [MHz] | SCC Band | SCC BW [MHz] | SCC (DL) Channel | SCC (DL) Freq. [MHz] | LTE Tx Power with DL CA Enabled (dBm) | LTE Single Carrier Tx Power (dBm) |
| CA 2A-71A   | LTE B71  | 15           | 133297       | 680.5                | QPSK | 1          | 0                | 68761            | 634.5                | LTE B2   | 20           | 900              | 1960                 | 25.12                                 | 25.14                             |
| CA 4A-71A   | LTE B71  | 15           | 133297       | 680.5                | QPSK | 1          | 0                | 68761            | 634.5                | LTE B4   | 20           | 2175             | 2132.5               | 25.12                                 | 25.14                             |
| CA 66A-71A  | LTE B71  | 15           | 133297       | 680.5                | QPSK | 1          | 0                | 68761            | 634.5                | LTE B66  | 20           | 66786            | 2145                 | 25.15                                 | 25.14                             |

### 1.3.2 LTE Band 12 as PCC

Table 2  
Maximum Output Powers

| Combination    | PCC      |              |              |                      |      |            |                  |                  |                      | SCC 1    |              |                  |                      | Power                                 |                                   |
|----------------|----------|--------------|--------------|----------------------|------|------------|------------------|------------------|----------------------|----------|--------------|------------------|----------------------|---------------------------------------|-----------------------------------|
|                | PCC Band | PCC BW [MHz] | PCC (UL) Ch. | PCC (UL) Freq. [MHz] | Mod. | PCC UL# RB | PCC UL RB Offset | PCC (DL) Channel | PCC (DL) Freq. [MHz] | SCC Band | SCC BW [MHz] | SCC (DL) Channel | SCC (DL) Freq. [MHz] | LTE Tx Power with DL CA Enabled (dBm) | LTE Single Carrier Tx Power (dBm) |
| CA 2A-12A (1)  | LTE B12  | 5            | 23095        | 707.5                | QPSK | 1          | 12               | 5095             | 737.5                | LTE B2   | 20           | 900              | 1960                 | 24.78                                 | 24.84                             |
| CA 4A-12A (1)  | LTE B12  | 5            | 23095        | 707.5                | QPSK | 1          | 12               | 5095             | 737.5                | LTE B4   | 20           | 2175             | 2132.5               | 24.67                                 | 24.84                             |
| CA 4A-12A (2)  | LTE B12  | 5            | 23095        | 707.5                | QPSK | 1          | 12               | 5095             | 737.5                | LTE B4   | 20           | 2175             | 2132.5               | 24.67                                 | 24.84                             |
| CA 12A-66A (1) | LTE B12  | 5            | 23095        | 707.5                | QPSK | 1          | 12               | 5095             | 737.5                | LTE B66  | 20           | 66786            | 2145                 | 24.68                                 | 24.84                             |
| CA 12A-66A (2) | LTE B12  | 5            | 23095        | 707.5                | QPSK | 1          | 12               | 5095             | 737.5                | LTE B66  | 20           | 66786            | 2145                 | 24.68                                 | 24.84                             |
| CA 7A-12A      | LTE B12  | 5            | 23095        | 707.5                | QPSK | 1          | 12               | 5095             | 737.5                | LTE B7   | 20           | 3100             | 2655                 | 24.67                                 | 24.84                             |

### 1.3.3 LTE Band 13 as PCC

Table 3  
Maximum Output Powers

| Combination | PCC      |              |              |                      |      |            |                  |                  |                      | SCC 1    |              |                  |                      | Power                                 |                                   |
|-------------|----------|--------------|--------------|----------------------|------|------------|------------------|------------------|----------------------|----------|--------------|------------------|----------------------|---------------------------------------|-----------------------------------|
|             | PCC Band | PCC BW [MHz] | PCC (UL) Ch. | PCC (UL) Freq. [MHz] | Mod. | PCC UL# RB | PCC UL RB Offset | PCC (DL) Channel | PCC (DL) Freq. [MHz] | SCC Band | SCC BW [MHz] | SCC (DL) Channel | SCC (DL) Freq. [MHz] | LTE Tx Power with DL CA Enabled (dBm) | LTE Single Carrier Tx Power (dBm) |
| CA 2A-13A   | LTE B13  | 10           | 23230        | 782                  | QPSK | 1          | 25               | 5230             | 751                  | LTE B2   | 20           | 900              | 1960                 | 24.51                                 | 24.57                             |
| CA 4A-13A   | LTE B13  | 10           | 23230        | 782                  | QPSK | 1          | 25               | 5230             | 751                  | LTE B4   | 20           | 2175             | 2132.5               | 24.53                                 | 24.57                             |
| CA 13A-66A  | LTE B13  | 5            | 23230        | 782                  | QPSK | 1          | 24               | 5230             | 751                  | LTE B66  | 20           | 66786            | 2145                 | 24.61                                 | 24.71                             |

### 1.3.4 LTE Band 26 as PCC

Table 4  
Maximum Output Powers

| Combination | PCC      |              |              |                      |      |            |                  |                  |                      | SCC 1    |              |                  |                      | Power                                 |                                   |
|-------------|----------|--------------|--------------|----------------------|------|------------|------------------|------------------|----------------------|----------|--------------|------------------|----------------------|---------------------------------------|-----------------------------------|
|             | PCC Band | PCC BW [MHz] | PCC (UL) Ch. | PCC (UL) Freq. [MHz] | Mod. | PCC UL# RB | PCC UL RB Offset | PCC (DL) Channel | PCC (DL) Freq. [MHz] | SCC Band | SCC BW [MHz] | SCC (DL) Channel | SCC (DL) Freq. [MHz] | LTE Tx Power with DL CA Enabled (dBm) | LTE Single Carrier Tx Power (dBm) |
| CA 25A-26A  | LTE B26  | 10           | 26740        | 819                  | QPSK | 1          | 25               | 8740             | 864                  | LTE B25  | 20           | 8365             | 1962.5               | 24.82                                 | 24.99                             |
| CA 26A-41A  | LTE B26  | 10           | 26740        | 819                  | QPSK | 1          | 25               | 8740             | 864                  | LTE B41  | 20           | 40620            | 2593                 | 24.93                                 | 24.99                             |

|                                    |                                                                                                           |                                 |
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### 1.3.5 LTE Band 66 as PCC

**Table 5**  
**Maximum Output Powers**

| Combination    | PCC      |              |              |                      |      |            |                  |                  |                      | SCC 1    |              |                  |                      | Power                                 |                                   |
|----------------|----------|--------------|--------------|----------------------|------|------------|------------------|------------------|----------------------|----------|--------------|------------------|----------------------|---------------------------------------|-----------------------------------|
|                | PCC Band | PCC BW [MHz] | PCC (UL) Ch. | PCC (UL) Freq. [MHz] | Mod. | PCC UL# RB | PCC UL RB Offset | PCC (DL) Channel | PCC (DL) Freq. [MHz] | SCC Band | SCC BW [MHz] | SCC (DL) Channel | SCC (DL) Freq. [MHz] | LTE Tx.Power with DL CA Enabled (dBm) | LTE Single Carrier Tx Power (dBm) |
| CA 66A-66A     | LTE B66  | 10           | 132322       | 1745                 | QPSK | 1          | 0                | 66786            | 2145                 | LTE B66  | 20           | 67236            | 2190                 | 24.57                                 | 24.74                             |
| CA 66B         | LTE B66  | 10           | 132322       | 1745                 | QPSK | 1          | 0                | 66786            | 2145                 | LTE B66  | 10           | 66687            | 2135.1               | 24.62                                 | 24.74                             |
| CA 66C         | LTE B66  | 10           | 132322       | 1745                 | QPSK | 1          | 0                | 66786            | 2145                 | LTE B66  | 20           | 66642            | 2130.6               | 24.64                                 | 24.74                             |
| CA 2A-66A      | LTE B66  | 10           | 132322       | 1745                 | QPSK | 1          | 0                | 66786            | 2145                 | LTE B2   | 20           | 900              | 1960                 | 24.65                                 | 24.74                             |
| CA 5A-66A      | LTE B66  | 10           | 132322       | 1745                 | QPSK | 1          | 0                | 66786            | 2145                 | LTE B5   | 10           | 2525             | 881.5                | 24.63                                 | 24.74                             |
| CA 12A-66A (1) | LTE B66  | 10           | 132322       | 1745                 | QPSK | 1          | 0                | 66786            | 2145                 | LTE B12  | 10           | 5095             | 737.5                | 24.69                                 | 24.74                             |
| CA 12A-66A (2) | LTE B66  | 10           | 132322       | 1745                 | QPSK | 1          | 0                | 66786            | 2145                 | LTE B12  | 10           | 5095             | 737.5                | 24.64                                 | 24.74                             |
| CA 13A-66A     | LTE B66  | 10           | 132322       | 1745                 | QPSK | 1          | 0                | 66786            | 2145                 | LTE B13  | 10           | 5230             | 751                  | 24.62                                 | 24.74                             |
| CA 66A-71A     | LTE B66  | 10           | 132322       | 1745                 | QPSK | 1          | 0                | 66786            | 2145                 | LTE B71  | 20           | 68761            | 634.5                | 24.65                                 | 24.74                             |
| CA 7A-66A      | LTE B66  | 10           | 132322       | 1745                 | QPSK | 1          | 0                | 66786            | 2145                 | LTE B7   | 20           | 3100             | 2655                 | 24.76                                 | 24.74                             |

### 1.3.6 LTE Band 25 as PCC

**Table 6**  
**Maximum Output Powers**

| Combination    | PCC      |              |              |                      |      |            |                  |                  |                      | SCC 1    |              |                  |                      | Power                                 |                                   |
|----------------|----------|--------------|--------------|----------------------|------|------------|------------------|------------------|----------------------|----------|--------------|------------------|----------------------|---------------------------------------|-----------------------------------|
|                | PCC Band | PCC BW [MHz] | PCC (UL) Ch. | PCC (UL) Freq. [MHz] | Mod. | PCC UL# RB | PCC UL RB Offset | PCC (DL) Channel | PCC (DL) Freq. [MHz] | SCC Band | SCC BW [MHz] | SCC (DL) Channel | SCC (DL) Freq. [MHz] | LTE Tx.Power with DL CA Enabled (dBm) | LTE Single Carrier Tx Power (dBm) |
| CA 25A-25A (1) | LTE B25  | 15           | 26115        | 1857.5               | QPSK | 1          | 36               | 8115             | 1937.5               | LTE B25  | 20           | 8590             | 1985                 | 24.64                                 | 24.65                             |
| CA 25A-26A     | LTE B25  | 15           | 26115        | 1857.5               | QPSK | 1          | 36               | 8115             | 1937.5               | LTE B26  | 15           | 8865             | 876.5                | 24.64                                 | 24.65                             |
| CA 25A-41A     | LTE B25  | 15           | 26115        | 1857.5               | QPSK | 1          | 36               | 8115             | 1937.5               | LTE B41  | 20           | 40620            | 2593                 | 24.69                                 | 24.65                             |

### 1.3.7 LTE Band 7 as PCC

**Table 7**  
**Maximum Output Powers**

| Combination  | PCC      |              |              |                      |      |            |                  |                  |                      | SCC 1    |              |                  |                      | Power                                 |                                   |
|--------------|----------|--------------|--------------|----------------------|------|------------|------------------|------------------|----------------------|----------|--------------|------------------|----------------------|---------------------------------------|-----------------------------------|
|              | PCC Band | PCC BW [MHz] | PCC (UL) Ch. | PCC (UL) Freq. [MHz] | Mod. | PCC UL# RB | PCC UL RB Offset | PCC (DL) Channel | PCC (DL) Freq. [MHz] | SCC Band | SCC BW [MHz] | SCC (DL) Channel | SCC (DL) Freq. [MHz] | LTE Tx.Power with DL CA Enabled (dBm) | LTE Single Carrier Tx Power (dBm) |
| CA 2A-7A     | LTE B7   | 20           | 21100        | 2535                 | QPSK | 1          | 0                | 3100             | 2655                 | LTE B2   | 20           | 900              | 1960                 | 22.36                                 | 22.43                             |
| CA 4A-7A (1) | LTE B7   | 20           | 21100        | 2535                 | QPSK | 1          | 0                | 3100             | 2655                 | LTE B4   | 20           | 2175             | 2132.5               | 22.39                                 | 22.43                             |
| CA 5A-7A     | LTE B7   | 20           | 21100        | 2535                 | QPSK | 1          | 0                | 3100             | 2655                 | LTE B5   | 10           | 2525             | 881.5                | 22.37                                 | 22.43                             |
| CA 7A-7A (1) | LTE B7   | 20           | 21100        | 2535                 | QPSK | 1          | 0                | 3100             | 2655                 | LTE B7   | 20           | 2850             | 2630                 | 22.51                                 | 22.43                             |
| CA 7A-12A    | LTE B7   | 20           | 21100        | 2535                 | QPSK | 1          | 0                | 3100             | 2655                 | LTE B12  | 10           | 5095             | 737.5                | 22.48                                 | 22.43                             |
| CA 7A-66A    | LTE B7   | 20           | 21100        | 2535                 | QPSK | 1          | 0                | 3100             | 2655                 | LTE B66  | 20           | 66786            | 2145                 | 22.51                                 | 22.43                             |

### 1.3.8 LTE Band 41 as PCC

**Table 8**  
**Maximum Output Powers**

| Combination | PCC      |              |              |                      |      |            |                  |                  |                      | SCC 1    |              |                  |                      | Power                                 |                                   |
|-------------|----------|--------------|--------------|----------------------|------|------------|------------------|------------------|----------------------|----------|--------------|------------------|----------------------|---------------------------------------|-----------------------------------|
|             | PCC Band | PCC BW [MHz] | PCC (UL) Ch. | PCC (UL) Freq. [MHz] | Mod. | PCC UL# RB | PCC UL RB Offset | PCC (DL) Channel | PCC (DL) Freq. [MHz] | SCC Band | SCC BW [MHz] | SCC (DL) Channel | SCC (DL) Freq. [MHz] | LTE Tx.Power with DL CA Enabled (dBm) | LTE Single Carrier Tx Power (dBm) |
| CA 41C (1)  | LTE B41  | 20           | 40185        | 2549.5               | QPSK | 1          | 0                | 40185            | 2549.5               | LTE B41  | 20           | 40383            | 2569.3               | 24.53                                 | 24.50                             |
| CA 41A-41A  | LTE B41  | 20           | 40185        | 2549.5               | QPSK | 1          | 0                | 40185            | 2549.5               | LTE B41  | 20           | 41490            | 2680                 | 24.49                                 | 24.50                             |

|                                           |                                                                                                                  |                                        |
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### 1.3.9 LTE Band 41 PC2 as PCC

**Table 9**  
**Maximum Output Powers**

| Combination | PCC         |              |              |                      |      |            |                  |                  |                      | SCC 1       |              |                  |                      | Power                                 |                                   |
|-------------|-------------|--------------|--------------|----------------------|------|------------|------------------|------------------|----------------------|-------------|--------------|------------------|----------------------|---------------------------------------|-----------------------------------|
|             | PCC Band    | PCC BW [MHz] | PCC (UL) Ch. | PCC (UL) Freq. [MHz] | Mod. | PCC UL# RB | PCC UL RB Offset | PCC (DL) Channel | PCC (DL) Freq. [MHz] | SCC Band    | SCC BW [MHz] | SCC (DL) Channel | SCC (DL) Freq. [MHz] | LTE Tx.Power with DL CA Enabled (dBm) | LTE Single Carrier Tx Power (dBm) |
| CA 41C (1)  | LTE B41 PC2 | 20           | 40185        | 2549.5               | QPSK | 1          | 0                | 40185            | 2549.5               | LTE B41 PC2 | 20           | 40383            | 2569.3               | 27.73                                 | 27.66                             |
| CA 41A-41A  | LTE B41 PC2 | 20           | 40185        | 2549.5               | QPSK | 1          | 0                | 40185            | 2549.5               | LTE B41 PC2 | 20           | 41540            | 2680                 | 27.61                                 | 27.66                             |

|                                           |                                                                                                                  |                                        |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------|
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