

|           |                                            |   |       |        |       |      |      |         |
|-----------|--------------------------------------------|---|-------|--------|-------|------|------|---------|
| 10239-CAB | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)    | X | 16.84 | 88.17  | 24.62 | 6.02 | 65.0 | ± 9.6 % |
|           |                                            | Y | 21.89 | 99.53  | 28.77 |      | 65.0 |         |
|           |                                            | Z | 82.47 | 123.88 | 35.17 |      | 65.0 |         |
| 10240-CAB | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)      | X | 21.01 | 96.29  | 28.73 | 6.02 | 65.0 | ± 9.6 % |
|           |                                            | Y | 20.88 | 104.33 | 32.35 |      | 65.0 |         |
|           |                                            | Z | 48.10 | 123.14 | 37.85 |      | 65.0 |         |
| 10241-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | X | 15.45 | 87.26  | 27.54 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 11.04 | 84.82  | 26.82 |      | 65.0 |         |
|           |                                            | Z | 12.90 | 89.71  | 28.70 |      | 65.0 |         |
| 10242-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | X | 14.94 | 86.42  | 27.15 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 9.99  | 82.59  | 25.84 |      | 65.0 |         |
|           |                                            | Z | 10.58 | 85.38  | 26.97 |      | 65.0 |         |
| 10243-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)   | X | 13.20 | 85.87  | 27.69 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.19  | 79.71  | 25.49 |      | 65.0 |         |
|           |                                            | Z | 8.16  | 81.11  | 26.18 |      | 65.0 |         |
| 10244-CAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)   | X | 11.50 | 80.68  | 21.87 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.87  | 79.76  | 20.74 |      | 65.0 |         |
|           |                                            | Z | 9.52  | 81.24  | 20.81 |      | 65.0 |         |
| 10245-CAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)   | X | 11.46 | 80.43  | 21.75 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.72  | 79.23  | 20.48 |      | 65.0 |         |
|           |                                            | Z | 9.20  | 80.44  | 20.46 |      | 65.0 |         |
| 10246-CAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)     | X | 10.21 | 80.78  | 21.55 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 9.21  | 83.14  | 22.01 |      | 65.0 |         |
|           |                                            | Z | 10.18 | 85.32  | 22.50 |      | 65.0 |         |
| 10247-CAB | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)   | X | 9.64  | 78.21  | 21.09 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 7.56  | 77.67  | 20.49 |      | 65.0 |         |
|           |                                            | Z | 7.61  | 78.43  | 20.54 |      | 65.0 |         |
| 10248-CAB | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)   | X | 9.70  | 77.89  | 20.98 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 7.51  | 77.10  | 20.25 |      | 65.0 |         |
|           |                                            | Z | 7.49  | 77.71  | 20.24 |      | 65.0 |         |
| 10249-CAB | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)     | X | 10.31 | 80.78  | 21.79 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 10.17 | 85.03  | 23.37 |      | 65.0 |         |
|           |                                            | Z | 11.76 | 88.25  | 24.33 |      | 65.0 |         |
| 10250-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)  | X | 10.06 | 78.79  | 21.99 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.41  | 79.53  | 22.52 |      | 65.0 |         |
|           |                                            | Z | 8.60  | 80.75  | 22.93 |      | 65.0 |         |
| 10251-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)  | X | 9.73  | 77.29  | 21.23 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 7.93  | 77.32  | 21.34 |      | 65.0 |         |
|           |                                            | Z | 8.00  | 78.29  | 21.64 |      | 65.0 |         |
| 10252-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)    | X | 10.18 | 79.83  | 21.68 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 9.87  | 83.90  | 23.66 |      | 65.0 |         |
|           |                                            | Z | 11.01 | 86.77  | 24.67 |      | 65.0 |         |
| 10253-CAB | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)  | X | 9.71  | 76.75  | 21.13 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 7.84  | 76.32  | 21.21 |      | 65.0 |         |
|           |                                            | Z | 7.85  | 77.16  | 21.53 |      | 65.0 |         |
| 10254-CAB | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)  | X | 10.03 | 77.26  | 21.61 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.23  | 77.13  | 21.85 |      | 65.0 |         |
|           |                                            | Z | 8.26  | 78.00  | 22.17 |      | 65.0 |         |

|           |                                             |   |       |       |       |      |      |         |
|-----------|---------------------------------------------|---|-------|-------|-------|------|------|---------|
| 10255-CAB | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)     | X | 9.84  | 78.12 | 21.15 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.79  | 80.23 | 22.49 |      | 65.0 |         |
|           |                                             | Z | 9.26  | 82.06 | 23.20 |      | 65.0 |         |
| 10256-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM) | X | 11.29 | 80.30 | 21.28 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 7.73  | 77.21 | 18.92 |      | 65.0 |         |
|           |                                             | Z | 7.68  | 77.31 | 18.36 |      | 65.0 |         |
| 10257-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM) | X | 11.33 | 80.06 | 21.15 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 7.53  | 76.45 | 18.53 |      | 65.0 |         |
|           |                                             | Z | 7.33  | 76.27 | 17.86 |      | 65.0 |         |
| 10258-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)   | X | 10.31 | 80.91 | 21.35 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 7.76  | 79.92 | 20.19 |      | 65.0 |         |
|           |                                             | Z | 7.82  | 80.45 | 19.98 |      | 65.0 |         |
| 10259-CAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)   | X | 9.79  | 78.29 | 21.36 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 7.89  | 78.31 | 21.20 |      | 65.0 |         |
|           |                                             | Z | 8.01  | 79.28 | 21.39 |      | 65.0 |         |
| 10260-CAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)   | X | 9.86  | 78.18 | 21.35 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 7.89  | 78.02 | 21.10 |      | 65.0 |         |
|           |                                             | Z | 7.96  | 78.87 | 21.24 |      | 65.0 |         |
| 10261-CAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)     | X | 10.13 | 80.23 | 21.74 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 9.61  | 83.83 | 23.25 |      | 65.0 |         |
|           |                                             | Z | 10.78 | 86.66 | 24.15 |      | 65.0 |         |
| 10262-CAB | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)   | X | 10.06 | 78.78 | 21.97 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.40  | 79.48 | 22.49 |      | 65.0 |         |
|           |                                             | Z | 8.58  | 80.70 | 22.89 |      | 65.0 |         |
| 10263-CAB | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)   | X | 9.74  | 77.31 | 21.24 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 7.92  | 77.31 | 21.33 |      | 65.0 |         |
|           |                                             | Z | 7.99  | 78.27 | 21.64 |      | 65.0 |         |
| 10264-CAB | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)     | X | 10.16 | 79.77 | 21.64 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 9.80  | 83.74 | 23.58 |      | 65.0 |         |
|           |                                             | Z | 10.90 | 86.57 | 24.58 |      | 65.0 |         |
| 10265-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)  | X | 9.86  | 77.05 | 21.15 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.03  | 76.90 | 21.43 |      | 65.0 |         |
|           |                                             | Z | 8.05  | 77.75 | 21.78 |      | 65.0 |         |
| 10266-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)  | X | 10.15 | 77.56 | 21.65 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.43  | 77.72 | 22.11 |      | 65.0 |         |
|           |                                             | Z | 8.48  | 78.63 | 22.47 |      | 65.0 |         |
| 10267-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)    | X | 9.92  | 78.07 | 20.89 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 9.10  | 80.63 | 22.42 |      | 65.0 |         |
|           |                                             | Z | 9.63  | 82.52 | 23.16 |      | 65.0 |         |
| 10268-CAB | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)  | X | 10.25 | 76.65 | 21.26 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.52  | 76.45 | 21.62 |      | 65.0 |         |
|           |                                             | Z | 8.48  | 77.13 | 21.92 |      | 65.0 |         |
| 10269-CAB | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)  | X | 10.19 | 76.42 | 21.27 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.45  | 76.04 | 21.51 |      | 65.0 |         |
|           |                                             | Z | 8.40  | 76.67 | 21.79 |      | 65.0 |         |
| 10270-CAB | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)    | X | 9.86  | 76.75 | 20.51 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.62  | 77.91 | 21.51 |      | 65.0 |         |
|           |                                             | Z | 8.79  | 79.05 | 21.99 |      | 65.0 |         |

|           |                                                                    |   |       |       |       |      |       |         |
|-----------|--------------------------------------------------------------------|---|-------|-------|-------|------|-------|---------|
| 10274-CAB | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)                          | X | 2.77  | 66.49 | 15.71 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.64  | 66.30 | 15.24 |      | 150.0 |         |
|           |                                                                    | Z | 2.65  | 66.91 | 15.49 |      | 150.0 |         |
| 10275-CAB | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)                           | X | 1.88  | 69.31 | 16.53 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.64  | 67.55 | 15.40 |      | 150.0 |         |
|           |                                                                    | Z | 1.70  | 68.78 | 16.07 |      | 150.0 |         |
| 10277-CAA | PHS (QPSK)                                                         | X | 8.68  | 73.85 | 17.59 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 5.42  | 69.49 | 13.89 |      | 50.0  |         |
|           |                                                                    | Z | 4.74  | 68.12 | 12.61 |      | 50.0  |         |
| 10278-CAA | PHS (QPSK, BW 884MHz, Rolloff 0.5)                                 | X | 11.80 | 81.35 | 22.35 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 9.38  | 80.62 | 21.03 |      | 50.0  |         |
|           |                                                                    | Z | 9.08  | 80.35 | 20.35 |      | 50.0  |         |
| 10279-CAA | PHS (QPSK, BW 884MHz, Rolloff 0.38)                                | X | 12.00 | 81.57 | 22.44 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 9.52  | 80.78 | 21.11 |      | 50.0  |         |
|           |                                                                    | Z | 9.21  | 80.51 | 20.43 |      | 50.0  |         |
| 10290-AAB | CDMA2000, RC1, SO55, Full Rate                                     | X | 1.97  | 70.58 | 16.54 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.53  | 68.60 | 14.31 |      | 150.0 |         |
|           |                                                                    | Z | 1.62  | 70.34 | 14.87 |      | 150.0 |         |
| 10291-AAB | CDMA2000, RC3, SO55, Full Rate                                     | X | 1.20  | 68.77 | 15.64 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 0.88  | 65.75 | 12.81 |      | 150.0 |         |
|           |                                                                    | Z | 0.93  | 67.33 | 13.43 |      | 150.0 |         |
| 10292-AAB | CDMA2000, RC3, SO32, Full Rate                                     | X | 1.42  | 72.46 | 17.76 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.05  | 69.10 | 14.86 |      | 150.0 |         |
|           |                                                                    | Z | 1.29  | 72.85 | 16.37 |      | 150.0 |         |
| 10293-AAB | CDMA2000, RC3, SO3, Full Rate                                      | X | 1.79  | 76.28 | 19.83 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.44  | 73.75 | 17.39 |      | 150.0 |         |
|           |                                                                    | Z | 2.22  | 81.02 | 20.07 |      | 150.0 |         |
| 10295-AAB | CDMA2000, RC1, SO3, 1/8th Rate 25 fr.                              | X | 11.75 | 82.61 | 24.25 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 11.50 | 85.78 | 24.97 |      | 50.0  |         |
|           |                                                                    | Z | 13.16 | 88.95 | 25.79 |      | 50.0  |         |
| 10297-AAA | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)                            | X | 3.30  | 71.22 | 17.19 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.82  | 69.50 | 16.47 |      | 150.0 |         |
|           |                                                                    | Z | 2.85  | 70.29 | 16.93 |      | 150.0 |         |
| 10298-AAB | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)                             | X | 2.18  | 69.85 | 16.58 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.67  | 67.77 | 14.48 |      | 150.0 |         |
|           |                                                                    | Z | 1.69  | 68.80 | 14.77 |      | 150.0 |         |
| 10299-AAB | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)                           | X | 4.23  | 74.55 | 18.49 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.86  | 70.57 | 15.39 |      | 150.0 |         |
|           |                                                                    | Z | 3.26  | 72.64 | 15.67 |      | 150.0 |         |
| 10300-AAB | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)                           | X | 3.53  | 70.72 | 16.20 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.22  | 66.27 | 12.62 |      | 150.0 |         |
|           |                                                                    | Z | 2.22  | 66.71 | 12.25 |      | 150.0 |         |
| 10301-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)                 | X | 6.36  | 68.85 | 19.32 | 4.17 | 80.0  | ± 9.6 % |
|           |                                                                    | Y | 5.68  | 68.17 | 18.80 |      | 80.0  |         |
|           |                                                                    | Z | 5.55  | 68.25 | 18.76 |      | 80.0  |         |
| 10302-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols) | X | 7.00  | 70.03 | 20.38 | 4.96 | 80.0  | ± 9.6 % |
|           |                                                                    | Y | 6.06  | 68.21 | 19.20 |      | 80.0  |         |
|           |                                                                    | Z | 5.98  | 68.63 | 19.38 |      | 80.0  |         |

|           |                                                                     |   |       |       |       |       |       |         |
|-----------|---------------------------------------------------------------------|---|-------|-------|-------|-------|-------|---------|
| 10303-AAA | IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)                 | X | 6.98  | 70.52 | 20.65 | 4.96  | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.89  | 68.20 | 19.20 |       | 80.0  |         |
|           |                                                                     | Z | 5.80  | 68.59 | 19.37 |       | 80.0  |         |
| 10304-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)                 | X | 6.46  | 69.38 | 19.61 | 4.17  | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.55  | 67.58 | 18.44 |       | 80.0  |         |
|           |                                                                     | Z | 5.48  | 68.00 | 18.61 |       | 80.0  |         |
| 10305-AAA | IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)    | X | 9.75  | 80.93 | 26.10 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 7.80  | 78.66 | 24.74 |       | 50.0  |         |
|           |                                                                     | Z | 7.67  | 79.09 | 24.85 |       | 50.0  |         |
| 10306-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)    | X | 7.97  | 74.84 | 23.57 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 6.61  | 73.09 | 22.49 |       | 50.0  |         |
|           |                                                                     | Z | 6.07  | 70.95 | 21.08 |       | 50.0  |         |
| 10307-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)     | X | 8.31  | 76.06 | 23.89 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 6.81  | 74.21 | 22.83 |       | 50.0  |         |
|           |                                                                     | Z | 6.09  | 71.46 | 21.16 |       | 50.0  |         |
| 10308-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)                | X | 8.49  | 76.81 | 24.22 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 6.91  | 74.82 | 23.13 |       | 50.0  |         |
|           |                                                                     | Z | 6.73  | 75.04 | 23.19 |       | 50.0  |         |
| 10309-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols) | X | 8.03  | 74.86 | 23.58 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 6.73  | 73.43 | 22.67 |       | 50.0  |         |
|           |                                                                     | Z | 6.15  | 71.24 | 21.25 |       | 50.0  |         |
| 10310-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)  | X | 8.06  | 75.25 | 23.64 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 6.67  | 73.52 | 22.60 |       | 50.0  |         |
|           |                                                                     | Z | 6.07  | 71.16 | 21.10 |       | 50.0  |         |
| 10311-AAA | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)                            | X | 3.66  | 70.59 | 16.87 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 3.17  | 68.80 | 16.13 |       | 150.0 |         |
|           |                                                                     | Z | 3.21  | 69.53 | 16.54 |       | 150.0 |         |
| 10313-AAA | iDEN 1:3                                                            | X | 8.35  | 75.49 | 17.72 | 6.99  | 70.0  | ± 9.6 % |
|           |                                                                     | Y | 7.95  | 79.95 | 19.50 |       | 70.0  |         |
|           |                                                                     | Z | 9.26  | 82.77 | 20.34 |       | 70.0  |         |
| 10314-AAA | iDEN 1:6                                                            | X | 11.10 | 81.08 | 21.83 | 10.00 | 30.0  | ± 9.6 % |
|           |                                                                     | Y | 10.75 | 87.12 | 24.53 |       | 30.0  |         |
|           |                                                                     | Z | 13.73 | 92.29 | 26.13 |       | 30.0  |         |
| 10315-AAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)           | X | 1.32  | 66.13 | 16.48 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 1.16  | 64.22 | 15.34 |       | 150.0 |         |
|           |                                                                     | Z | 1.18  | 64.92 | 15.85 |       | 150.0 |         |
| 10316-AAB | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)       | X | 5.02  | 67.07 | 16.57 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.75  | 66.87 | 16.44 |       | 150.0 |         |
|           |                                                                     | Z | 4.68  | 67.09 | 16.52 |       | 150.0 |         |
| 10317-AAB | IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)             | X | 5.02  | 67.07 | 16.57 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.75  | 66.87 | 16.44 |       | 150.0 |         |
|           |                                                                     | Z | 4.68  | 67.09 | 16.52 |       | 150.0 |         |
| 10400-AAC | IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)                 | X | 5.16  | 67.30 | 16.45 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.83  | 67.08 | 16.34 |       | 150.0 |         |
|           |                                                                     | Z | 4.75  | 67.29 | 16.42 |       | 150.0 |         |
| 10401-AAC | IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)                 | X | 5.77  | 67.53 | 16.58 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 5.52  | 67.31 | 16.53 |       | 150.0 |         |
|           |                                                                     | Z | 5.47  | 67.54 | 16.62 |       | 150.0 |         |

|           |                                                                                |   |        |        |       |      |       |         |
|-----------|--------------------------------------------------------------------------------|---|--------|--------|-------|------|-------|---------|
| 10402-AAC | IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)                            | X | 6.05   | 68.07  | 16.68 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 5.79   | 67.71  | 16.57 |      | 150.0 |         |
|           |                                                                                | Z | 5.71   | 67.77  | 16.58 |      | 150.0 |         |
| 10403-AAB | CDMA2000 (1xEV-DO, Rev. 0)                                                     | X | 1.97   | 70.58  | 16.54 | 0.00 | 115.0 | ± 9.6 % |
|           |                                                                                | Y | 1.53   | 68.60  | 14.31 |      | 115.0 |         |
|           |                                                                                | Z | 1.62   | 70.34  | 14.87 |      | 115.0 |         |
| 10404-AAB | CDMA2000 (1xEV-DO, Rev. A)                                                     | X | 1.97   | 70.58  | 16.54 | 0.00 | 115.0 | ± 9.6 % |
|           |                                                                                | Y | 1.53   | 68.60  | 14.31 |      | 115.0 |         |
|           |                                                                                | Z | 1.62   | 70.34  | 14.87 |      | 115.0 |         |
| 10406-AAB | CDMA2000, RC3, SO32, SCH0, Full Rate                                           | X | 28.32  | 105.49 | 28.28 | 0.00 | 100.0 | ± 9.6 % |
|           |                                                                                | Y | 14.90  | 98.73  | 25.93 |      | 100.0 |         |
|           |                                                                                | Z | 100.00 | 120.76 | 29.81 |      | 100.0 |         |
| 10410-AAA | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)                 | X | 4.66   | 69.85  | 12.19 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                                | Y | 1.26   | 61.35  | 6.31  |      | 80.0  |         |
|           |                                                                                | Z | 0.95   | 60.00  | 4.82  |      | 80.0  |         |
| 10415-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)                      | X | 1.05   | 63.52  | 15.18 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 1.03   | 62.82  | 14.49 |      | 150.0 |         |
|           |                                                                                | Z | 1.04   | 63.47  | 14.98 |      | 150.0 |         |
| 10416-AAA | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)                  | X | 4.88   | 66.81  | 16.36 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.64   | 66.71  | 16.28 |      | 150.0 |         |
|           |                                                                                | Z | 4.59   | 66.94  | 16.36 |      | 150.0 |         |
| 10417-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)                      | X | 4.88   | 66.81  | 16.36 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.64   | 66.71  | 16.28 |      | 150.0 |         |
|           |                                                                                | Z | 4.59   | 66.94  | 16.36 |      | 150.0 |         |
| 10418-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)  | X | 4.86   | 66.93  | 16.35 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.63   | 66.85  | 16.28 |      | 150.0 |         |
|           |                                                                                | Z | 4.58   | 67.10  | 16.38 |      | 150.0 |         |
| 10419-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble) | X | 4.89   | 66.90  | 16.37 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.65   | 66.81  | 16.29 |      | 150.0 |         |
|           |                                                                                | Z | 4.60   | 67.05  | 16.38 |      | 150.0 |         |
| 10422-AAA | IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)                                   | X | 5.03   | 66.92  | 16.38 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.78   | 66.83  | 16.31 |      | 150.0 |         |
|           |                                                                                | Z | 4.72   | 67.05  | 16.39 |      | 150.0 |         |
| 10423-AAA | IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)                                | X | 5.30   | 67.39  | 16.55 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.96   | 67.18  | 16.44 |      | 150.0 |         |
|           |                                                                                | Z | 4.88   | 67.37  | 16.51 |      | 150.0 |         |
| 10424-AAA | IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)                                | X | 5.19   | 67.31  | 16.51 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.88   | 67.12  | 16.41 |      | 150.0 |         |
|           |                                                                                | Z | 4.80   | 67.32  | 16.48 |      | 150.0 |         |
| 10425-AAA | IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)                                    | X | 5.73   | 67.72  | 16.66 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 5.50   | 67.56  | 16.64 |      | 150.0 |         |
|           |                                                                                | Z | 5.42   | 67.67  | 16.68 |      | 150.0 |         |
| 10426-AAA | IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)                                  | X | 5.76   | 67.78  | 16.68 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 5.50   | 67.57  | 16.65 |      | 150.0 |         |
|           |                                                                                | Z | 5.43   | 67.71  | 16.70 |      | 150.0 |         |

|           |                                                                |   |      |       |       |      |       |         |
|-----------|----------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10427-AAA | IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)                 | X | 5.81 | 67.91 | 16.74 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 5.51 | 67.53 | 16.62 |      | 150.0 |         |
|           |                                                                | Z | 5.43 | 67.67 | 16.67 |      | 150.0 |         |
| 10430-AAA | LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)                               | X | 4.62 | 69.59 | 18.10 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.31 | 70.41 | 18.12 |      | 150.0 |         |
|           |                                                                | Z | 4.28 | 70.94 | 18.23 |      | 150.0 |         |
| 10431-AAA | LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)                              | X | 4.73 | 67.38 | 16.53 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.34 | 67.24 | 16.29 |      | 150.0 |         |
|           |                                                                | Z | 4.27 | 67.52 | 16.37 |      | 150.0 |         |
| 10432-AAA | LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)                              | X | 4.99 | 67.36 | 16.52 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.64 | 67.14 | 16.35 |      | 150.0 |         |
|           |                                                                | Z | 4.57 | 67.38 | 16.44 |      | 150.0 |         |
| 10433-AAA | LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)                              | X | 5.22 | 67.42 | 16.56 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.89 | 67.15 | 16.43 |      | 150.0 |         |
|           |                                                                | Z | 4.82 | 67.36 | 16.50 |      | 150.0 |         |
| 10434-AAA | W-CDMA (BS Test Model 1, 64 DPCH)                              | X | 4.68 | 70.02 | 18.09 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.40 | 71.16 | 18.09 |      | 150.0 |         |
|           |                                                                | Z | 4.38 | 71.81 | 18.21 |      | 150.0 |         |
| 10435-AAA | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | X | 4.61 | 69.70 | 12.13 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                | Y | 1.27 | 61.33 | 6.29  |      | 80.0  |         |
|           |                                                                | Z | 0.95 | 60.00 | 4.82  |      | 80.0  |         |
| 10447-AAA | LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)                 | X | 4.07 | 67.39 | 16.27 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.63 | 67.20 | 15.67 |      | 150.0 |         |
|           |                                                                | Z | 3.57 | 67.58 | 15.72 |      | 150.0 |         |
| 10448-AAA | LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)                | X | 4.50 | 67.14 | 16.38 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.17 | 67.00 | 16.14 |      | 150.0 |         |
|           |                                                                | Z | 4.11 | 67.30 | 16.23 |      | 150.0 |         |
| 10449-AAA | LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)                | X | 4.72 | 67.15 | 16.41 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.44 | 66.96 | 16.24 |      | 150.0 |         |
|           |                                                                | Z | 4.38 | 67.21 | 16.33 |      | 150.0 |         |
| 10450-AAA | LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)                | X | 4.87 | 67.12 | 16.42 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.63 | 66.90 | 16.27 |      | 150.0 |         |
|           |                                                                | Z | 4.58 | 67.12 | 16.36 |      | 150.0 |         |
| 10451-AAA | W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)                | X | 4.03 | 67.67 | 16.16 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.54 | 67.41 | 15.35 |      | 150.0 |         |
|           |                                                                | Z | 3.46 | 67.78 | 15.35 |      | 150.0 |         |
| 10456-AAA | IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)           | X | 6.57 | 68.45 | 16.88 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 6.36 | 68.13 | 16.80 |      | 150.0 |         |
|           |                                                                | Z | 6.29 | 68.20 | 16.82 |      | 150.0 |         |
| 10457-AAA | UMTS-FDD (DC-HSDPA)                                            | X | 3.96 | 65.55 | 16.17 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.86 | 65.34 | 15.98 |      | 150.0 |         |
|           |                                                                | Z | 3.83 | 65.58 | 16.07 |      | 150.0 |         |
| 10458-AAA | CDMA2000 (1xEV-DO, Rev. B, 2 carriers)                         | X | 3.73 | 66.33 | 15.59 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.37 | 66.75 | 14.83 |      | 150.0 |         |
|           |                                                                | Z | 3.29 | 67.13 | 14.77 |      | 150.0 |         |
| 10459-AAA | CDMA2000 (1xEV-DO, Rev. B, 3 carriers)                         | X | 4.80 | 64.25 | 15.81 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.44 | 64.93 | 15.63 |      | 150.0 |         |
|           |                                                                | Z | 4.47 | 65.77 | 15.89 |      | 150.0 |         |

|           |                                                                   |   |        |        |       |      |       |         |
|-----------|-------------------------------------------------------------------|---|--------|--------|-------|------|-------|---------|
| 10460-AAA | UMTS-FDD (WCDMA, AMR)                                             | X | 1.06   | 70.38  | 17.59 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                   | Y | 0.90   | 67.32  | 15.64 |      | 150.0 |         |
|           |                                                                   | Z | 0.98   | 69.52  | 16.94 |      | 150.0 |         |
| 10461-AAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 100.00 | 116.53 | 30.21 | 3.29 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 124.93 | 32.76 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 126.81 | 33.20 |      | 80.0  |         |
| 10462-AAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 70.18  | 103.94 | 25.18 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 110.54 | 25.86 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 108.56 | 24.48 |      | 80.0  |         |
| 10463-AAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 34.47  | 94.04  | 22.31 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 24.86  | 92.54  | 20.87 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 104.83 | 22.72 |      | 80.0  |         |
| 10464-AAA | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 100.00 | 115.32 | 29.52 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 123.01 | 31.71 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 124.63 | 32.03 |      | 80.0  |         |
| 10465-AAA | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 51.21  | 99.84  | 24.08 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 70.70  | 106.13 | 24.73 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 107.97 | 24.20 |      | 80.0  |         |
| 10466-AAA | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 27.09  | 90.97  | 21.41 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 13.41  | 85.62  | 18.91 |      | 80.0  |         |
|           |                                                                   | Z | 31.05  | 92.96  | 19.89 |      | 80.0  |         |
| 10467-AAA | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 100.00 | 115.43 | 29.57 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 123.23 | 31.81 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 124.89 | 32.14 |      | 80.0  |         |
| 10468-AAA | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 54.96  | 100.78 | 24.34 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 94.28  | 109.52 | 25.53 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 108.16 | 24.29 |      | 80.0  |         |
| 10469-AAA | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 27.59  | 91.19  | 21.47 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 13.74  | 85.89  | 18.98 |      | 80.0  |         |
|           |                                                                   | Z | 32.90  | 93.53  | 20.03 |      | 80.0  |         |
| 10470-AAA | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 100.00 | 115.44 | 29.58 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 123.25 | 31.82 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 124.92 | 32.15 |      | 80.0  |         |
| 10471-AAA | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 55.24  | 100.82 | 24.34 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 94.55  | 109.51 | 25.51 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 108.10 | 24.25 |      | 80.0  |         |
| 10472-AAA | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)  | X | 27.68  | 91.21  | 21.47 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 13.71  | 85.85  | 18.96 |      | 80.0  |         |
|           |                                                                   | Z | 32.46  | 93.35  | 19.96 |      | 80.0  |         |
| 10473-AAA | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 100.00 | 115.43 | 29.57 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 123.22 | 31.80 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 124.89 | 32.13 |      | 80.0  |         |
| 10474-AAA | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 54.80  | 100.73 | 24.32 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 91.93  | 109.20 | 25.45 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 108.10 | 24.25 |      | 80.0  |         |
| 10475-AAA | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)  | X | 27.50  | 91.14  | 21.45 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 13.50  | 85.69  | 18.91 |      | 80.0  |         |
|           |                                                                   | Z | 31.52  | 93.08  | 19.90 |      | 80.0  |         |

|           |                                                                     |   |        |        |       |      |      |         |
|-----------|---------------------------------------------------------------------|---|--------|--------|-------|------|------|---------|
| 10477-AAA | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)    | X | 52.37  | 100.09 | 24.13 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 75.38  | 106.81 | 24.87 |      | 80.0 |         |
|           |                                                                     | Z | 100.00 | 107.91 | 24.16 |      | 80.0 |         |
| 10478-AAA | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)    | X | 27.26  | 91.02  | 21.41 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 13.26  | 85.47  | 18.84 |      | 80.0 |         |
|           |                                                                     | Z | 30.16  | 92.61  | 19.77 |      | 80.0 |         |
| 10479-AAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 100.00 | 110.48 | 26.81 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 2.73   | 68.06  | 11.81 |      | 80.0 |         |
|           |                                                                     | Z | 1.43   | 62.45  | 8.56  |      | 80.0 |         |
| 10480-AAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 10.33  | 78.63  | 17.34 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 1.46   | 60.00  | 7.26  |      | 80.0 |         |
|           |                                                                     | Z | 1.33   | 60.00  | 6.36  |      | 80.0 |         |
| 10481-AAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 8.08   | 75.22  | 15.95 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 1.48   | 60.00  | 7.04  |      | 80.0 |         |
|           |                                                                     | Z | 1.36   | 60.00  | 6.13  |      | 80.0 |         |
| 10482-AAA | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 9.61   | 82.86  | 21.13 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 5.81   | 78.79  | 19.00 |      | 80.0 |         |
|           |                                                                     | Z | 7.49   | 82.61  | 19.95 |      | 80.0 |         |
| 10483-AAA | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 11.05  | 82.78  | 21.52 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 7.68   | 79.55  | 19.16 |      | 80.0 |         |
|           |                                                                     | Z | 9.15   | 81.77  | 19.31 |      | 80.0 |         |
| 10484-AAA | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 10.66  | 82.06  | 21.31 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 6.96   | 78.04  | 18.65 |      | 80.0 |         |
|           |                                                                     | Z | 7.77   | 79.52  | 18.59 |      | 80.0 |         |
| 10485-AAA | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 10.18  | 83.77  | 21.74 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 6.53   | 81.04  | 20.70 |      | 80.0 |         |
|           |                                                                     | Z | 8.63   | 85.83  | 22.16 |      | 80.0 |         |
| 10486-AAA | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 6.80   | 75.85  | 19.18 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 4.63   | 73.14  | 17.52 |      | 80.0 |         |
|           |                                                                     | Z | 4.93   | 74.63  | 17.85 |      | 80.0 |         |
| 10487-AAA | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 6.74   | 75.42  | 19.05 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 4.56   | 72.57  | 17.30 |      | 80.0 |         |
|           |                                                                     | Z | 4.76   | 73.82  | 17.53 |      | 80.0 |         |
| 10488-AAA | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 9.26   | 81.31  | 21.14 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 6.04   | 78.74  | 20.60 |      | 80.0 |         |
|           |                                                                     | Z | 6.88   | 81.70  | 21.70 |      | 80.0 |         |
| 10489-AAA | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 6.70   | 74.94  | 19.37 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 4.74   | 72.58  | 18.49 |      | 80.0 |         |
|           |                                                                     | Z | 4.87   | 73.80  | 18.93 |      | 80.0 |         |
| 10490-AAA | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)  | X | 6.63   | 74.31  | 19.19 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 4.78   | 72.20  | 18.37 |      | 80.0 |         |
|           |                                                                     | Z | 4.88   | 73.31  | 18.77 |      | 80.0 |         |
| 10491-AAA | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 7.99   | 77.79  | 20.04 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 5.54   | 75.44  | 19.58 |      | 80.0 |         |
|           |                                                                     | Z | 5.85   | 77.18  | 20.31 |      | 80.0 |         |
| 10492-AAA | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 6.64   | 73.40  | 18.97 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 4.89   | 71.22  | 18.27 |      | 80.0 |         |
|           |                                                                     | Z | 4.91   | 72.02  | 18.60 |      | 80.0 |         |

|           |                                                                      |   |      |       |       |      |      |         |
|-----------|----------------------------------------------------------------------|---|------|-------|-------|------|------|---------|
| 10493-AAA | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 6.63 | 73.05 | 18.88 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 4.93 | 70.98 | 18.19 |      | 80.0 |         |
|           |                                                                      | Z | 4.94 | 71.73 | 18.50 |      | 80.0 |         |
| 10494-AAA | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 9.25 | 79.94 | 20.55 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 6.29 | 77.48 | 20.14 |      | 80.0 |         |
|           |                                                                      | Z | 6.82 | 79.60 | 20.99 |      | 80.0 |         |
| 10495-AAA | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 6.90 | 74.24 | 19.21 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.00 | 71.81 | 18.51 |      | 80.0 |         |
|           |                                                                      | Z | 5.02 | 72.61 | 18.86 |      | 80.0 |         |
| 10496-AAA | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 6.80 | 73.58 | 19.03 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.02 | 71.34 | 18.37 |      | 80.0 |         |
|           |                                                                      | Z | 5.02 | 72.06 | 18.68 |      | 80.0 |         |
| 10497-AAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 8.70 | 81.61 | 20.39 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.68 | 72.36 | 15.74 |      | 80.0 |         |
|           |                                                                      | Z | 3.73 | 72.83 | 15.43 |      | 80.0 |         |
| 10498-AAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 6.14 | 74.45 | 17.47 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 2.42 | 64.76 | 11.65 |      | 80.0 |         |
|           |                                                                      | Z | 2.01 | 63.29 | 10.42 |      | 80.0 |         |
| 10499-AAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 6.10 | 74.03 | 17.25 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 2.34 | 64.14 | 11.24 |      | 80.0 |         |
|           |                                                                      | Z | 1.93 | 62.60 | 9.95  |      | 80.0 |         |
| 10500-AAA | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 9.20 | 81.83 | 21.24 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 6.05 | 79.44 | 20.47 |      | 80.0 |         |
|           |                                                                      | Z | 7.38 | 83.28 | 21.74 |      | 80.0 |         |
| 10501-AAA | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 6.68 | 75.21 | 19.15 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 4.68 | 72.89 | 17.89 |      | 80.0 |         |
|           |                                                                      | Z | 4.92 | 74.35 | 18.29 |      | 80.0 |         |
| 10502-AAA | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 6.61 | 74.73 | 18.98 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 4.69 | 72.56 | 17.72 |      | 80.0 |         |
|           |                                                                      | Z | 4.90 | 73.90 | 18.06 |      | 80.0 |         |
| 10503-AAA | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 9.12 | 81.09 | 21.05 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.94 | 78.46 | 20.49 |      | 80.0 |         |
|           |                                                                      | Z | 6.74 | 81.37 | 21.57 |      | 80.0 |         |
| 10504-AAA | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 6.67 | 74.86 | 19.32 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 4.71 | 72.47 | 18.43 |      | 80.0 |         |
|           |                                                                      | Z | 4.83 | 73.67 | 18.86 |      | 80.0 |         |
| 10505-AAA | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 6.59 | 74.22 | 19.14 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 4.75 | 72.08 | 18.31 |      | 80.0 |         |
|           |                                                                      | Z | 4.84 | 73.19 | 18.70 |      | 80.0 |         |
| 10506-AAA | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 9.16 | 79.78 | 20.48 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 6.22 | 77.28 | 20.05 |      | 80.0 |         |
|           |                                                                      | Z | 6.73 | 79.37 | 20.90 |      | 80.0 |         |
| 10507-AAA | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 6.87 | 74.17 | 19.18 | 1.99 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 4.97 | 71.74 | 18.47 |      | 80.0 |         |
|           |                                                                      | Z | 5.00 | 72.54 | 18.82 |      | 80.0 |         |

|           |                                                                     |   |      |       |       |      |       |         |
|-----------|---------------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10508-AAA | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 6.78 | 73.51 | 18.99 | 1.99 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.00 | 71.26 | 18.32 |      | 80.0  |         |
|           |                                                                     | Z | 4.99 | 71.98 | 18.64 |      | 80.0  |         |
| 10509-AAA | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 8.19 | 76.69 | 19.48 | 1.99 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.96 | 74.56 | 19.11 |      | 80.0  |         |
|           |                                                                     | Z | 6.18 | 75.85 | 19.67 |      | 80.0  |         |
| 10510-AAA | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 7.09 | 73.18 | 18.86 | 1.99 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.35 | 70.96 | 18.27 |      | 80.0  |         |
|           |                                                                     | Z | 5.32 | 71.51 | 18.53 |      | 80.0  |         |
| 10511-AAA | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 7.01 | 72.71 | 18.76 | 1.99 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.36 | 70.59 | 18.17 |      | 80.0  |         |
|           |                                                                     | Z | 5.32 | 71.09 | 18.41 |      | 80.0  |         |
| 10512-AAA | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 9.39 | 79.21 | 20.17 | 1.99 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 6.60 | 76.78 | 19.74 |      | 80.0  |         |
|           |                                                                     | Z | 7.04 | 78.51 | 20.46 |      | 80.0  |         |
| 10513-AAA | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 7.22 | 74.05 | 19.13 | 1.99 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.31 | 71.48 | 18.45 |      | 80.0  |         |
|           |                                                                     | Z | 5.29 | 72.06 | 18.74 |      | 80.0  |         |
| 10514-AAA | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 7.01 | 73.30 | 18.95 | 1.99 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.25 | 70.89 | 18.29 |      | 80.0  |         |
|           |                                                                     | Z | 5.21 | 71.40 | 18.54 |      | 80.0  |         |
| 10515-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)           | X | 1.01 | 63.76 | 15.28 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 0.99 | 62.98 | 14.53 |      | 150.0 |         |
|           |                                                                     | Z | 1.00 | 63.68 | 15.06 |      | 150.0 |         |
| 10516-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)         | X | 0.80 | 75.28 | 19.93 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 0.58 | 68.61 | 16.24 |      | 150.0 |         |
|           |                                                                     | Z | 0.70 | 72.93 | 18.74 |      | 150.0 |         |
| 10517-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)          | X | 0.91 | 66.46 | 16.32 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 0.83 | 64.68 | 15.01 |      | 150.0 |         |
|           |                                                                     | Z | 0.86 | 65.89 | 15.88 |      | 150.0 |         |
| 10518-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)           | X | 4.89 | 66.93 | 16.38 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.64 | 66.79 | 16.26 |      | 150.0 |         |
|           |                                                                     | Z | 4.58 | 67.02 | 16.34 |      | 150.0 |         |
| 10519-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)          | X | 5.17 | 67.29 | 16.52 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.84 | 67.06 | 16.39 |      | 150.0 |         |
|           |                                                                     | Z | 4.77 | 67.26 | 16.46 |      | 150.0 |         |
| 10520-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)          | X | 5.01 | 67.26 | 16.44 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.69 | 67.02 | 16.31 |      | 150.0 |         |
|           |                                                                     | Z | 4.62 | 67.22 | 16.38 |      | 150.0 |         |
| 10521-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)          | X | 4.93 | 67.28 | 16.44 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.62 | 67.01 | 16.29 |      | 150.0 |         |
|           |                                                                     | Z | 4.55 | 67.22 | 16.37 |      | 150.0 |         |
| 10522-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)          | X | 4.95 | 67.09 | 16.39 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.68 | 67.06 | 16.36 |      | 150.0 |         |
|           |                                                                     | Z | 4.61 | 67.31 | 16.46 |      | 150.0 |         |

|           |                                                            |   |      |       |       |      |       |         |
|-----------|------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10523-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle) | X | 4.83 | 67.13 | 16.32 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.55 | 66.92 | 16.20 |      | 150.0 |         |
|           |                                                            | Z | 4.49 | 67.17 | 16.30 |      | 150.0 |         |
| 10524-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle) | X | 4.91 | 67.07 | 16.40 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.62 | 66.99 | 16.33 |      | 150.0 |         |
|           |                                                            | Z | 4.55 | 67.23 | 16.42 |      | 150.0 |         |
| 10525-AAA | IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)          | X | 4.83 | 66.16 | 16.01 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.59 | 66.02 | 15.91 |      | 150.0 |         |
|           |                                                            | Z | 4.54 | 66.27 | 16.01 |      | 150.0 |         |
| 10526-AAA | IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)          | X | 5.08 | 66.58 | 16.15 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.78 | 66.41 | 16.06 |      | 150.0 |         |
|           |                                                            | Z | 4.71 | 66.64 | 16.15 |      | 150.0 |         |
| 10527-AAA | IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)          | X | 5.00 | 66.62 | 16.14 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.69 | 66.37 | 16.00 |      | 150.0 |         |
|           |                                                            | Z | 4.63 | 66.60 | 16.10 |      | 150.0 |         |
| 10528-AAA | IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)          | X | 5.02 | 66.63 | 16.17 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.71 | 66.39 | 16.04 |      | 150.0 |         |
|           |                                                            | Z | 4.65 | 66.62 | 16.13 |      | 150.0 |         |
| 10529-AAA | IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)          | X | 5.02 | 66.63 | 16.17 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.71 | 66.39 | 16.04 |      | 150.0 |         |
|           |                                                            | Z | 4.65 | 66.62 | 16.13 |      | 150.0 |         |
| 10531-AAA | IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)          | X | 5.05 | 66.78 | 16.18 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.71 | 66.51 | 16.06 |      | 150.0 |         |
|           |                                                            | Z | 4.64 | 66.73 | 16.14 |      | 150.0 |         |
| 10532-AAA | IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)          | X | 4.92 | 66.80 | 16.21 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.57 | 66.36 | 15.99 |      | 150.0 |         |
|           |                                                            | Z | 4.50 | 66.58 | 16.08 |      | 150.0 |         |
| 10533-AAA | IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)          | X | 5.04 | 66.62 | 16.13 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.72 | 66.42 | 16.02 |      | 150.0 |         |
|           |                                                            | Z | 4.66 | 66.67 | 16.12 |      | 150.0 |         |
| 10534-AAA | IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)          | X | 5.50 | 66.89 | 16.23 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.25 | 66.56 | 16.12 |      | 150.0 |         |
|           |                                                            | Z | 5.18 | 66.72 | 16.18 |      | 150.0 |         |
| 10535-AAA | IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)          | X | 5.61 | 67.07 | 16.29 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.32 | 66.72 | 16.19 |      | 150.0 |         |
|           |                                                            | Z | 5.26 | 66.91 | 16.27 |      | 150.0 |         |
| 10536-AAA | IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)          | X | 5.45 | 67.03 | 16.27 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.18 | 66.67 | 16.15 |      | 150.0 |         |
|           |                                                            | Z | 5.12 | 66.85 | 16.22 |      | 150.0 |         |
| 10537-AAA | IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)          | X | 5.51 | 66.97 | 16.23 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.25 | 66.66 | 16.15 |      | 150.0 |         |
|           |                                                            | Z | 5.18 | 66.81 | 16.21 |      | 150.0 |         |
| 10538-AAA | IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)          | X | 5.66 | 67.09 | 16.33 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.35 | 66.71 | 16.21 |      | 150.0 |         |
|           |                                                            | Z | 5.27 | 66.83 | 16.26 |      | 150.0 |         |
| 10540-AAA | IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)          | X | 5.52 | 66.96 | 16.29 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.27 | 66.69 | 16.22 |      | 150.0 |         |
|           |                                                            | Z | 5.21 | 66.87 | 16.29 |      | 150.0 |         |

|           |                                                     |   |      |       |       |      |       |         |
|-----------|-----------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10541-AAA | IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)   | X | 5.54 | 67.03 | 16.32 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.24 | 66.55 | 16.14 |      | 150.0 |         |
|           |                                                     | Z | 5.17 | 66.72 | 16.20 |      | 150.0 |         |
| 10542-AAA | IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)   | X | 5.66 | 66.95 | 16.30 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.40 | 66.64 | 16.20 |      | 150.0 |         |
|           |                                                     | Z | 5.33 | 66.79 | 16.25 |      | 150.0 |         |
| 10543-AAA | IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)   | X | 5.85 | 67.19 | 16.42 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.49 | 66.69 | 16.24 |      | 150.0 |         |
|           |                                                     | Z | 5.41 | 66.83 | 16.30 |      | 150.0 |         |
| 10544-AAA | IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)   | X | 5.73 | 67.00 | 16.21 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.55 | 66.66 | 16.11 |      | 150.0 |         |
|           |                                                     | Z | 5.50 | 66.82 | 16.17 |      | 150.0 |         |
| 10545-AAA | IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)   | X | 5.97 | 67.35 | 16.30 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.77 | 67.14 | 16.30 |      | 150.0 |         |
|           |                                                     | Z | 5.70 | 67.27 | 16.35 |      | 150.0 |         |
| 10546-AAA | IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)   | X | 5.89 | 67.40 | 16.36 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.63 | 66.93 | 16.21 |      | 150.0 |         |
|           |                                                     | Z | 5.56 | 67.04 | 16.25 |      | 150.0 |         |
| 10547-AAA | IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)   | X | 5.98 | 67.45 | 16.37 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.72 | 67.02 | 16.25 |      | 150.0 |         |
|           |                                                     | Z | 5.63 | 67.08 | 16.26 |      | 150.0 |         |
| 10548-AAA | IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)   | X | 6.20 | 68.21 | 16.72 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 6.10 | 68.30 | 16.85 |      | 150.0 |         |
|           |                                                     | Z | 5.92 | 68.12 | 16.75 |      | 150.0 |         |
| 10550-AAA | IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)   | X | 5.90 | 67.28 | 16.30 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.65 | 66.91 | 16.21 |      | 150.0 |         |
|           |                                                     | Z | 5.59 | 67.06 | 16.27 |      | 150.0 |         |
| 10551-AAA | IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)   | X | 5.89 | 67.30 | 16.27 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.66 | 66.95 | 16.19 |      | 150.0 |         |
|           |                                                     | Z | 5.60 | 67.09 | 16.24 |      | 150.0 |         |
| 10552-AAA | IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)   | X | 5.82 | 67.18 | 16.24 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.56 | 66.72 | 16.09 |      | 150.0 |         |
|           |                                                     | Z | 5.51 | 66.88 | 16.15 |      | 150.0 |         |
| 10553-AAA | IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)   | X | 5.91 | 67.18 | 16.26 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.65 | 66.78 | 16.14 |      | 150.0 |         |
|           |                                                     | Z | 5.59 | 66.92 | 16.19 |      | 150.0 |         |
| 10554-AAA | IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle) | X | 6.12 | 67.39 | 16.31 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.96 | 67.06 | 16.22 |      | 150.0 |         |
|           |                                                     | Z | 5.91 | 67.18 | 16.26 |      | 150.0 |         |
| 10555-AAA | IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle) | X | 6.35 | 67.90 | 16.52 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 6.10 | 67.40 | 16.36 |      | 150.0 |         |
|           |                                                     | Z | 6.04 | 67.50 | 16.40 |      | 150.0 |         |
| 10556-AAA | IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle) | X | 6.31 | 67.76 | 16.45 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 6.12 | 67.42 | 16.37 |      | 150.0 |         |
|           |                                                     | Z | 6.06 | 67.55 | 16.41 |      | 150.0 |         |
| 10557-AAA | IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle) | X | 6.32 | 67.78 | 16.49 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 6.09 | 67.35 | 16.35 |      | 150.0 |         |
|           |                                                     | Z | 6.02 | 67.44 | 16.38 |      | 150.0 |         |

|           |                                                                 |   |       |        |       |      |       |         |
|-----------|-----------------------------------------------------------------|---|-------|--------|-------|------|-------|---------|
| 10558-AAA | IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)             | X | 6.37  | 67.94  | 16.58 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 6.15  | 67.54  | 16.46 |      | 150.0 |         |
|           |                                                                 | Z | 6.07  | 67.61  | 16.48 |      | 150.0 |         |
| 10560-AAA | IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)             | X | 6.41  | 67.89  | 16.59 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 6.13  | 67.35  | 16.40 |      | 150.0 |         |
|           |                                                                 | Z | 6.06  | 67.45  | 16.43 |      | 150.0 |         |
| 10561-AAA | IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)             | X | 6.29  | 67.78  | 16.58 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 6.06  | 67.32  | 16.43 |      | 150.0 |         |
|           |                                                                 | Z | 5.99  | 67.43  | 16.46 |      | 150.0 |         |
| 10562-AAA | IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)             | X | 6.44  | 68.21  | 16.80 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 6.22  | 67.82  | 16.68 |      | 150.0 |         |
|           |                                                                 | Z | 6.12  | 67.82  | 16.66 |      | 150.0 |         |
| 10563-AAA | IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)             | X | 6.59  | 68.18  | 16.73 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 6.63  | 68.58  | 17.01 |      | 150.0 |         |
|           |                                                                 | Z | 6.34  | 68.11  | 16.76 |      | 150.0 |         |
| 10564-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)  | X | 5.25  | 67.12  | 16.59 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 4.98  | 66.92  | 16.45 |      | 150.0 |         |
|           |                                                                 | Z | 4.92  | 67.13  | 16.52 |      | 150.0 |         |
| 10565-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle) | X | 5.57  | 67.65  | 16.90 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.23  | 67.39  | 16.77 |      | 150.0 |         |
|           |                                                                 | Z | 5.14  | 67.56  | 16.83 |      | 150.0 |         |
| 10566-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle) | X | 5.38  | 67.52  | 16.73 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.06  | 67.25  | 16.60 |      | 150.0 |         |
|           |                                                                 | Z | 4.98  | 67.42  | 16.66 |      | 150.0 |         |
| 10567-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle) | X | 5.40  | 67.87  | 17.04 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.08  | 67.62  | 16.93 |      | 150.0 |         |
|           |                                                                 | Z | 5.01  | 67.79  | 16.99 |      | 150.0 |         |
| 10568-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle) | X | 5.28  | 67.17  | 16.47 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 4.98  | 67.02  | 16.37 |      | 150.0 |         |
|           |                                                                 | Z | 4.90  | 67.24  | 16.46 |      | 150.0 |         |
| 10569-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle) | X | 5.33  | 67.87  | 17.05 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.03  | 67.67  | 16.98 |      | 150.0 |         |
|           |                                                                 | Z | 4.97  | 67.89  | 17.06 |      | 150.0 |         |
| 10570-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle) | X | 5.37  | 67.60  | 16.95 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.07  | 67.53  | 16.92 |      | 150.0 |         |
|           |                                                                 | Z | 5.00  | 67.73  | 16.99 |      | 150.0 |         |
| 10571-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)       | X | 1.66  | 68.44  | 17.44 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 1.33  | 65.54  | 16.01 |      | 130.0 |         |
|           |                                                                 | Z | 1.35  | 66.28  | 16.53 |      | 130.0 |         |
| 10572-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)       | X | 1.71  | 69.24  | 17.84 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 1.36  | 66.15  | 16.37 |      | 130.0 |         |
|           |                                                                 | Z | 1.37  | 66.96  | 16.93 |      | 130.0 |         |
| 10573-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)     | X | 23.25 | 116.08 | 31.04 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 2.80  | 86.95  | 23.21 |      | 130.0 |         |
|           |                                                                 | Z | 7.22  | 103.82 | 28.80 |      | 130.0 |         |
| 10574-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)      | X | 2.45  | 78.44  | 21.67 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 1.56  | 72.17  | 19.23 |      | 130.0 |         |
|           |                                                                 | Z | 1.66  | 74.16  | 20.33 |      | 130.0 |         |

|           |                                                                 |   |      |       |       |      |       |         |
|-----------|-----------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10575-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)  | X | 5.08 | 67.00 | 16.69 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.80 | 66.81 | 16.56 |      | 130.0 |         |
|           |                                                                 | Z | 4.73 | 67.01 | 16.63 |      | 130.0 |         |
| 10576-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)  | X | 5.11 | 67.18 | 16.76 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.82 | 66.96 | 16.62 |      | 130.0 |         |
|           |                                                                 | Z | 4.76 | 67.17 | 16.69 |      | 130.0 |         |
| 10577-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle) | X | 5.40 | 67.54 | 16.94 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 5.04 | 67.27 | 16.80 |      | 130.0 |         |
|           |                                                                 | Z | 4.96 | 67.45 | 16.85 |      | 130.0 |         |
| 10578-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle) | X | 5.29 | 67.72 | 17.03 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.94 | 67.44 | 16.89 |      | 130.0 |         |
|           |                                                                 | Z | 4.86 | 67.61 | 16.95 |      | 130.0 |         |
| 10579-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle) | X | 5.09 | 67.24 | 16.49 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.71 | 66.78 | 16.24 |      | 130.0 |         |
|           |                                                                 | Z | 4.63 | 66.96 | 16.30 |      | 130.0 |         |
| 10580-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle) | X | 5.13 | 67.14 | 16.47 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.76 | 66.78 | 16.25 |      | 130.0 |         |
|           |                                                                 | Z | 4.68 | 67.00 | 16.33 |      | 130.0 |         |
| 10581-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle) | X | 5.24 | 67.96 | 17.05 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.84 | 67.49 | 16.84 |      | 130.0 |         |
|           |                                                                 | Z | 4.76 | 67.68 | 16.91 |      | 130.0 |         |
| 10582-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle) | X | 5.05 | 66.95 | 16.29 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.66 | 66.55 | 16.03 |      | 130.0 |         |
|           |                                                                 | Z | 4.58 | 66.73 | 16.10 |      | 130.0 |         |
| 10583-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)       | X | 5.08 | 67.00 | 16.69 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.80 | 66.81 | 16.56 |      | 130.0 |         |
|           |                                                                 | Z | 4.73 | 67.01 | 16.63 |      | 130.0 |         |
| 10584-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)       | X | 5.11 | 67.18 | 16.76 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.82 | 66.96 | 16.62 |      | 130.0 |         |
|           |                                                                 | Z | 4.76 | 67.17 | 16.69 |      | 130.0 |         |
| 10585-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)      | X | 5.40 | 67.54 | 16.94 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 5.04 | 67.27 | 16.80 |      | 130.0 |         |
|           |                                                                 | Z | 4.96 | 67.45 | 16.85 |      | 130.0 |         |
| 10586-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)      | X | 5.29 | 67.72 | 17.03 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.94 | 67.44 | 16.89 |      | 130.0 |         |
|           |                                                                 | Z | 4.86 | 67.61 | 16.95 |      | 130.0 |         |
| 10587-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)      | X | 5.09 | 67.24 | 16.49 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.71 | 66.78 | 16.24 |      | 130.0 |         |
|           |                                                                 | Z | 4.63 | 66.96 | 16.30 |      | 130.0 |         |
| 10588-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)      | X | 5.13 | 67.14 | 16.47 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.76 | 66.78 | 16.25 |      | 130.0 |         |
|           |                                                                 | Z | 4.68 | 67.00 | 16.33 |      | 130.0 |         |
| 10589-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)      | X | 5.24 | 67.96 | 17.05 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.84 | 67.49 | 16.84 |      | 130.0 |         |
|           |                                                                 | Z | 4.76 | 67.68 | 16.91 |      | 130.0 |         |
| 10590-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)      | X | 5.05 | 66.95 | 16.29 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.66 | 66.55 | 16.03 |      | 130.0 |         |
|           |                                                                 | Z | 4.58 | 66.73 | 16.10 |      | 130.0 |         |

|           |                                                       |   |      |       |       |      |       |         |
|-----------|-------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10591-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle) | X | 5.23 | 67.05 | 16.77 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.95 | 66.86 | 16.65 |      | 130.0 |         |
|           |                                                       | Z | 4.88 | 67.05 | 16.71 |      | 130.0 |         |
| 10592-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle) | X | 5.44 | 67.40 | 16.87 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.11 | 67.20 | 16.78 |      | 130.0 |         |
|           |                                                       | Z | 5.03 | 67.39 | 16.84 |      | 130.0 |         |
| 10593-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle) | X | 5.39 | 67.43 | 16.83 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.04 | 67.14 | 16.68 |      | 130.0 |         |
|           |                                                       | Z | 4.96 | 67.31 | 16.73 |      | 130.0 |         |
| 10594-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle) | X | 5.42 | 67.52 | 16.93 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.09 | 67.29 | 16.82 |      | 130.0 |         |
|           |                                                       | Z | 5.01 | 67.47 | 16.88 |      | 130.0 |         |
| 10595-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle) | X | 5.44 | 67.58 | 16.88 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.06 | 67.25 | 16.72 |      | 130.0 |         |
|           |                                                       | Z | 4.98 | 67.43 | 16.78 |      | 130.0 |         |
| 10596-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle) | X | 5.36 | 67.53 | 16.86 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.00 | 67.25 | 16.73 |      | 130.0 |         |
|           |                                                       | Z | 4.92 | 67.44 | 16.79 |      | 130.0 |         |
| 10597-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle) | X | 5.32 | 67.55 | 16.82 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.95 | 67.17 | 16.62 |      | 130.0 |         |
|           |                                                       | Z | 4.87 | 67.35 | 16.68 |      | 130.0 |         |
| 10598-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle) | X | 5.31 | 67.84 | 17.09 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 4.93 | 67.41 | 16.88 |      | 130.0 |         |
|           |                                                       | Z | 4.85 | 67.56 | 16.93 |      | 130.0 |         |
| 10599-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle) | X | 5.98 | 68.04 | 17.10 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.63 | 67.46 | 16.88 |      | 130.0 |         |
|           |                                                       | Z | 5.55 | 67.59 | 16.92 |      | 130.0 |         |
| 10600-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle) | X | 6.16 | 68.48 | 17.29 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.84 | 68.13 | 17.18 |      | 130.0 |         |
|           |                                                       | Z | 5.70 | 68.07 | 17.13 |      | 130.0 |         |
| 10601-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle) | X | 6.01 | 68.11 | 17.11 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.68 | 67.73 | 17.00 |      | 130.0 |         |
|           |                                                       | Z | 5.58 | 67.79 | 17.01 |      | 130.0 |         |
| 10602-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle) | X | 6.12 | 68.18 | 17.08 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.77 | 67.72 | 16.91 |      | 130.0 |         |
|           |                                                       | Z | 5.68 | 67.84 | 16.95 |      | 130.0 |         |
| 10603-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle) | X | 6.27 | 68.61 | 17.40 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.85 | 68.00 | 17.18 |      | 130.0 |         |
|           |                                                       | Z | 5.75 | 68.10 | 17.21 |      | 130.0 |         |
| 10604-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle) | X | 5.96 | 67.89 | 17.04 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.63 | 67.42 | 16.88 |      | 130.0 |         |
|           |                                                       | Z | 5.56 | 67.56 | 16.93 |      | 130.0 |         |
| 10605-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle) | X | 6.05 | 68.09 | 17.15 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.76 | 67.82 | 17.08 |      | 130.0 |         |
|           |                                                       | Z | 5.68 | 67.94 | 17.13 |      | 130.0 |         |
| 10606-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle) | X | 5.81 | 67.58 | 16.78 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.51 | 67.17 | 16.62 |      | 130.0 |         |
|           |                                                       | Z | 5.42 | 67.25 | 16.64 |      | 130.0 |         |

|           |                                                   |   |      |       |       |      |       |         |
|-----------|---------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10607-AAA | IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle) | X | 5.04 | 66.30 | 16.36 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.78 | 66.14 | 16.25 |      | 130.0 |         |
|           |                                                   | Z | 4.72 | 66.37 | 16.34 |      | 130.0 |         |
| 10608-AAA | IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle) | X | 5.30 | 66.73 | 16.50 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.98 | 66.56 | 16.42 |      | 130.0 |         |
|           |                                                   | Z | 4.90 | 66.77 | 16.50 |      | 130.0 |         |
| 10609-AAA | IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle) | X | 5.19 | 66.70 | 16.41 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.87 | 66.42 | 16.27 |      | 130.0 |         |
|           |                                                   | Z | 4.79 | 66.63 | 16.35 |      | 130.0 |         |
| 10610-AAA | IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle) | X | 5.25 | 66.83 | 16.55 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.92 | 66.58 | 16.43 |      | 130.0 |         |
|           |                                                   | Z | 4.84 | 66.79 | 16.50 |      | 130.0 |         |
| 10611-AAA | IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle) | X | 5.20 | 66.77 | 16.47 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.84 | 66.40 | 16.28 |      | 130.0 |         |
|           |                                                   | Z | 4.76 | 66.60 | 16.36 |      | 130.0 |         |
| 10612-AAA | IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle) | X | 5.21 | 66.84 | 16.45 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.85 | 66.56 | 16.33 |      | 130.0 |         |
|           |                                                   | Z | 4.77 | 66.77 | 16.41 |      | 130.0 |         |
| 10613-AAA | IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle) | X | 5.23 | 66.80 | 16.38 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.86 | 66.47 | 16.23 |      | 130.0 |         |
|           |                                                   | Z | 4.78 | 66.66 | 16.30 |      | 130.0 |         |
| 10614-AAA | IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle) | X | 5.17 | 67.09 | 16.66 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.79 | 66.63 | 16.45 |      | 130.0 |         |
|           |                                                   | Z | 4.72 | 66.82 | 16.52 |      | 130.0 |         |
| 10615-AAA | IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle) | X | 5.19 | 66.51 | 16.22 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.84 | 66.23 | 16.06 |      | 130.0 |         |
|           |                                                   | Z | 4.76 | 66.45 | 16.15 |      | 130.0 |         |
| 10616-AAA | IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle) | X | 5.70 | 67.02 | 16.57 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.44 | 66.69 | 16.47 |      | 130.0 |         |
|           |                                                   | Z | 5.36 | 66.82 | 16.52 |      | 130.0 |         |
| 10617-AAA | IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle) | X | 5.80 | 67.16 | 16.60 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.50 | 66.84 | 16.51 |      | 130.0 |         |
|           |                                                   | Z | 5.44 | 67.03 | 16.59 |      | 130.0 |         |
| 10618-AAA | IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle) | X | 5.66 | 67.20 | 16.64 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.39 | 66.87 | 16.55 |      | 130.0 |         |
|           |                                                   | Z | 5.32 | 67.02 | 16.60 |      | 130.0 |         |
| 10619-AAA | IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle) | X | 5.69 | 67.00 | 16.48 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.42 | 66.71 | 16.40 |      | 130.0 |         |
|           |                                                   | Z | 5.34 | 66.85 | 16.45 |      | 130.0 |         |
| 10620-AAA | IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle) | X | 5.85 | 67.18 | 16.62 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.52 | 66.78 | 16.49 |      | 130.0 |         |
|           |                                                   | Z | 5.43 | 66.87 | 16.51 |      | 130.0 |         |
| 10621-AAA | IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle) | X | 5.81 | 67.25 | 16.76 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.50 | 66.84 | 16.63 |      | 130.0 |         |
|           |                                                   | Z | 5.42 | 66.97 | 16.68 |      | 130.0 |         |
| 10622-AAA | IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle) | X | 5.76 | 67.22 | 16.74 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.51 | 67.01 | 16.71 |      | 130.0 |         |
|           |                                                   | Z | 5.44 | 67.16 | 16.77 |      | 130.0 |         |

|           |                                                     |   |      |       |       |      |       |         |
|-----------|-----------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10623-AAA | IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)   | X | 5.73 | 67.10 | 16.58 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.38 | 66.53 | 16.35 |      | 130.0 |         |
|           |                                                     | Z | 5.32 | 66.69 | 16.41 |      | 130.0 |         |
| 10624-AAA | IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)   | X | 5.85 | 67.03 | 16.60 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.59 | 66.76 | 16.53 |      | 130.0 |         |
|           |                                                     | Z | 5.51 | 66.88 | 16.57 |      | 130.0 |         |
| 10625-AAA | IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)   | X | 6.18 | 67.71 | 16.97 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.05 | 68.01 | 17.20 |      | 130.0 |         |
|           |                                                     | Z | 5.89 | 67.91 | 17.13 |      | 130.0 |         |
| 10626-AAA | IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)   | X | 5.90 | 67.04 | 16.50 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.71 | 66.72 | 16.41 |      | 130.0 |         |
|           |                                                     | Z | 5.66 | 66.86 | 16.46 |      | 130.0 |         |
| 10627-AAA | IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)   | X | 6.16 | 67.44 | 16.62 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.99 | 67.38 | 16.70 |      | 130.0 |         |
|           |                                                     | Z | 5.91 | 67.48 | 16.73 |      | 130.0 |         |
| 10628-AAA | IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)   | X | 6.03 | 67.34 | 16.53 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.77 | 66.89 | 16.39 |      | 130.0 |         |
|           |                                                     | Z | 5.70 | 66.99 | 16.42 |      | 130.0 |         |
| 10629-AAA | IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)   | X | 6.14 | 67.42 | 16.56 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.85 | 66.95 | 16.41 |      | 130.0 |         |
|           |                                                     | Z | 5.78 | 67.06 | 16.45 |      | 130.0 |         |
| 10630-AAA | IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)   | X | 6.60 | 68.90 | 17.30 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.51 | 69.06 | 17.46 |      | 130.0 |         |
|           |                                                     | Z | 6.28 | 68.74 | 17.29 |      | 130.0 |         |
| 10631-AAA | IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)   | X | 6.69 | 69.20 | 17.61 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.27 | 68.46 | 17.35 |      | 130.0 |         |
|           |                                                     | Z | 6.11 | 68.34 | 17.28 |      | 130.0 |         |
| 10632-AAA | IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)   | X | 6.24 | 67.82 | 16.94 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.94 | 67.39 | 16.84 |      | 130.0 |         |
|           |                                                     | Z | 5.87 | 67.50 | 16.88 |      | 130.0 |         |
| 10633-AAA | IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)   | X | 6.15 | 67.59 | 16.67 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.84 | 67.04 | 16.49 |      | 130.0 |         |
|           |                                                     | Z | 5.75 | 67.11 | 16.51 |      | 130.0 |         |
| 10634-AAA | IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)   | X | 6.17 | 67.68 | 16.78 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.81 | 67.04 | 16.55 |      | 130.0 |         |
|           |                                                     | Z | 5.73 | 67.14 | 16.58 |      | 130.0 |         |
| 10635-AAA | IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)   | X | 6.04 | 67.02 | 16.21 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.71 | 66.42 | 15.98 |      | 130.0 |         |
|           |                                                     | Z | 5.62 | 66.52 | 16.02 |      | 130.0 |         |
| 10636-AAA | IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle) | X | 6.29 | 67.42 | 16.59 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.13 | 67.13 | 16.52 |      | 130.0 |         |
|           |                                                     | Z | 6.07 | 67.23 | 16.55 |      | 130.0 |         |
| 10637-AAA | IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle) | X | 6.55 | 68.03 | 16.85 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.31 | 67.56 | 16.71 |      | 130.0 |         |
|           |                                                     | Z | 6.24 | 67.64 | 16.74 |      | 130.0 |         |
| 10638-AAA | IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle) | X | 6.48 | 67.77 | 16.71 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.31 | 67.53 | 16.68 |      | 130.0 |         |
|           |                                                     | Z | 6.23 | 67.61 | 16.70 |      | 130.0 |         |

|           |                                                        |   |       |        |       |      |       |         |
|-----------|--------------------------------------------------------|---|-------|--------|-------|------|-------|---------|
| 10639-AAA | IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)    | X | 6.52  | 67.90  | 16.82 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.29  | 67.48  | 16.70 |      | 130.0 |         |
|           |                                                        | Z | 6.21  | 67.54  | 16.71 |      | 130.0 |         |
| 10640-AAA | IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)    | X | 6.53  | 67.94  | 16.79 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.31  | 67.55  | 16.68 |      | 130.0 |         |
|           |                                                        | Z | 6.22  | 67.57  | 16.67 |      | 130.0 |         |
| 10641-AAA | IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)    | X | 6.56  | 67.74  | 16.70 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.32  | 67.33  | 16.59 |      | 130.0 |         |
|           |                                                        | Z | 6.26  | 67.47  | 16.64 |      | 130.0 |         |
| 10642-AAA | IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)    | X | 6.66  | 68.15  | 17.06 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.37  | 67.62  | 16.89 |      | 130.0 |         |
|           |                                                        | Z | 6.29  | 67.69  | 16.90 |      | 130.0 |         |
| 10643-AAA | IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)    | X | 6.45  | 67.77  | 16.79 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.21  | 67.32  | 16.65 |      | 130.0 |         |
|           |                                                        | Z | 6.14  | 67.41  | 16.67 |      | 130.0 |         |
| 10644-AAA | IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)    | X | 6.70  | 68.51  | 17.19 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.43  | 67.99  | 17.00 |      | 130.0 |         |
|           |                                                        | Z | 6.30  | 67.92  | 16.95 |      | 130.0 |         |
| 10645-AAA | IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)    | X | 6.82  | 68.38  | 17.06 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.97  | 69.10  | 17.51 |      | 130.0 |         |
|           |                                                        | Z | 6.66  | 68.59  | 17.25 |      | 130.0 |         |
| 10646-AAB | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)  | X | 20.33 | 96.08  | 30.98 | 9.30 | 60.0  | ± 9.6 % |
|           |                                                        | Y | 28.65 | 112.39 | 37.39 |      | 60.0  |         |
|           |                                                        | Z | 69.08 | 135.74 | 44.36 |      | 60.0  |         |
| 10647-AAA | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7) | X | 21.13 | 97.54  | 31.55 | 9.30 | 60.0  | ± 9.6 % |
|           |                                                        | Y | 28.75 | 113.30 | 37.80 |      | 60.0  |         |
|           |                                                        | Z | 67.82 | 136.37 | 44.71 |      | 60.0  |         |
| 10648-AAA | CDMA2000 (1x Advanced)                                 | X | 1.02  | 66.50  | 14.04 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                        | Y | 0.75  | 63.83  | 11.28 |      | 150.0 |         |
|           |                                                        | Z | 0.75  | 64.56  | 11.47 |      | 150.0 |         |

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.



Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **ES3-3209\_Mar16**

## CALIBRATION CERTIFICATE

Object

**ES3DV3 - SN:3209**

Calibration procedure(s)

**QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6**  
Calibration procedure for dosimetric E-field probes

BN  
3/30/2016

Calibration date:

**March 18, 2016**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature ( $22 \pm 3$ )°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID              | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B         | GB41293874      | 01-Apr-15 (No. 217-02128)         | Mar-16                 |
| Power sensor E4412A        | MY41498087      | 01-Apr-15 (No. 217-02128)         | Mar-16                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 01-Apr-15 (No. 217-02129)         | Mar-16                 |
| Reference 20 dB Attenuator | SN: S5277 (20x) | 01-Apr-15 (No. 217-02132)         | Mar-16                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 01-Apr-15 (No. 217-02133)         | Mar-16                 |
| Reference Probe ES3DV2     | SN: 3013        | 31-Dec-15 (No. ES3-3013_Dec15)    | Dec-16                 |
| DAE4                       | SN: 660         | 23-Dec-15 (No. DAE4-660_Dec15)    | Dec-16                 |
| Secondary Standards        | ID              | Check Date (in house)             | Scheduled Check        |
| RF generator HP 8648C      | US3642U01700    | 4-Aug-99 (in house check Apr-13)  | In house check: Apr-16 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

|                                                                                                                 | Name          | Function              | Signature |
|-----------------------------------------------------------------------------------------------------------------|---------------|-----------------------|-----------|
| Calibrated by:                                                                                                  | Leif Klysner  | Laboratory Technician |           |
| Approved by:                                                                                                    | Katja Pokovic | Technical Manager     |           |
| Issued: March 22, 2016                                                                                          |               |                       |           |
| This calibration certificate shall not be reproduced except in full without written approval of the laboratory. |               |                       |           |



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Accreditation No.: **SCS 0108**

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## Glossary:

|                          |                                                                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| TSL                      | tissue simulating liquid                                                                                                                                |
| NORM <sub>x,y,z</sub>    | sensitivity in free space                                                                                                                               |
| ConvF                    | sensitivity in TSL / NORM <sub>x,y,z</sub>                                                                                                              |
| DCP                      | diode compression point                                                                                                                                 |
| CF                       | crest factor (1/duty_cycle) of the RF signal                                                                                                            |
| A, B, C, D               | modulation dependent linearization parameters                                                                                                           |
| Polarization $\phi$      | $\phi$ rotation around probe axis                                                                                                                       |
| Polarization $\vartheta$ | $\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center),<br>i.e., $\vartheta = 0$ is normal to probe axis |
| Connector Angle          | information used in DASY system to align probe sensor X to the robot coordinate system                                                                  |

## Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

## Methods Applied and Interpretation of Parameters:

- NORM<sub>x,y,z</sub>**: Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not affect the  $E^2$ -field uncertainty inside TSL (see below **ConvF**).
- NORM( $f$ )<sub>x,y,z</sub>** = NORM<sub>x,y,z</sub> \* frequency\_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of **ConvF**.
- DCP<sub>x,y,z</sub>**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; D<sub>x,y,z</sub>; VR<sub>x,y,z</sub>**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for  $f \leq 800$  MHz) and inside waveguide using analytical field distributions based on power measurements for  $f > 800$  MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>x,y,z</sub> \* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from  $\pm 50$  MHz to  $\pm 100$  MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM<sub>x</sub> (no uncertainty required).

# Probe ES3DV3

## SN:3209

Manufactured: October 14, 2008  
Calibrated: March 18, 2016

Calibrated for DASY/EASY Systems  
(Note: non-compatible with DASY2 system!)

# DASY/EASY - Parameters of Probe: ES3DV3 - SN:3209

## Basic Calibration Parameters

|                                                           | Sensor X | Sensor Y | Sensor Z | Unc (k=2)     |
|-----------------------------------------------------------|----------|----------|----------|---------------|
| Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup> | 1.33     | 1.31     | 1.12     | $\pm 10.1 \%$ |
| DCP (mV) <sup>B</sup>                                     | 101.7    | 103.5    | 101.2    |               |

## Modulation Calibration Parameters

| UID       | Communication System Name                |   | A<br>dB | B<br>dB $\sqrt{\mu\text{V}}$ | C    | D<br>dB | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-----------|------------------------------------------|---|---------|------------------------------|------|---------|----------|---------------------------|
| 0         | CW                                       | X | 0.0     | 0.0                          | 1.0  | 0.00    | 220.0    | $\pm 3.8 \%$              |
|           |                                          | Y | 0.0     | 0.0                          | 1.0  |         | 213.1    |                           |
|           |                                          | Z | 0.0     | 0.0                          | 1.0  |         | 195.4    |                           |
| 10010-CAA | SAR Validation (Square, 100ms, 10ms)     | X | 2.09    | 61.8                         | 11.1 | 10.00   | 43.7     | $\pm 0.9 \%$              |
|           |                                          | Y | 2.54    | 63.7                         | 12.3 |         | 42.4     |                           |
|           |                                          | Z | 9.74    | 76.2                         | 16.0 |         | 38.8     |                           |
| 10012-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps) | X | 2.73    | 68.3                         | 18.8 | 1.87    | 133.3    | $\pm 0.7 \%$              |
|           |                                          | Y | 3.26    | 72.2                         | 21.0 |         | 127.7    |                           |
|           |                                          | Z | 2.80    | 68.4                         | 18.6 |         | 116.7    |                           |
| 10100-CAB | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK) | X | 6.61    | 68.5                         | 20.5 | 5.67    | 147.6    | $\pm 1.4 \%$              |
|           |                                          | Y | 6.48    | 68.0                         | 20.1 |         | 139.5    |                           |
|           |                                          | Z | 6.30    | 67.2                         | 19.6 |         | 127.7    |                           |
| 10103-CAB | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK) | X | 9.09    | 74.0                         | 25.9 | 9.29    | 124.5    | $\pm 2.2 \%$              |
|           |                                          | Y | 9.05    | 73.2                         | 25.1 |         | 120.6    |                           |
|           |                                          | Z | 8.51    | 71.7                         | 24.5 |         | 107.7    |                           |
| 10108-CAC | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK) | X | 6.45    | 68.0                         | 20.4 | 5.80    | 144.1    | $\pm 1.4 \%$              |
|           |                                          | Y | 6.35    | 67.6                         | 20.0 |         | 137.6    |                           |
|           |                                          | Z | 6.17    | 66.8                         | 19.5 |         | 124.8    |                           |
| 10151-CAB | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)  | X | 8.52    | 73.1                         | 25.6 | 9.28    | 119.2    | $\pm 2.5 \%$              |
|           |                                          | Y | 8.47    | 72.2                         | 24.7 |         | 116.3    |                           |
|           |                                          | Z | 9.20    | 75.3                         | 26.7 |         | 148.4    |                           |
| 10154-CAC | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)  | X | 6.14    | 67.6                         | 20.2 | 5.75    | 140.1    | $\pm 1.4 \%$              |
|           |                                          | Y | 6.03    | 67.1                         | 19.8 |         | 134.4    |                           |
|           |                                          | Z | 5.89    | 66.4                         | 19.4 |         | 121.9    |                           |
| 10160-CAB | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)  | X | 6.57    | 68.0                         | 20.3 | 5.82    | 145.9    | $\pm 1.4 \%$              |
|           |                                          | Y | 6.48    | 67.6                         | 20.0 |         | 139.5    |                           |
|           |                                          | Z | 6.32    | 67.0                         | 19.6 |         | 126.7    |                           |
| 10169-CAB | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)    | X | 4.84    | 66.7                         | 19.9 | 5.73    | 121.1    | $\pm 1.2 \%$              |
|           |                                          | Y | 4.86    | 66.6                         | 19.8 |         | 117.0    |                           |
|           |                                          | Z | 5.16    | 67.8                         | 20.4 |         | 148.7    |                           |
| 10172-CAB | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)    | X | 7.43    | 77.3                         | 28.3 | 9.21    | 131.4    | $\pm 1.9 \%$              |
|           |                                          | Y | 7.40    | 75.8                         | 27.0 |         | 129.7    |                           |
|           |                                          | Z | 6.83    | 73.7                         | 26.0 |         | 116.1    |                           |
| 10175-CAC | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)    | X | 4.75    | 66.3                         | 19.7 | 5.72    | 114.6    | $\pm 0.9 \%$              |
|           |                                          | Y | 4.82    | 66.4                         | 19.7 |         | 110.3    |                           |
|           |                                          | Z | 5.16    | 67.8                         | 20.4 |         | 147.4    |                           |

|           |                                          |   |      |      |      |      |       |        |
|-----------|------------------------------------------|---|------|------|------|------|-------|--------|
| 10181-CAB | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)    | X | 4.82 | 66.6 | 19.9 | 5.72 | 119.3 | ±0.9 % |
|           |                                          | Y | 4.79 | 66.2 | 19.6 |      | 110.0 |        |
|           |                                          | Z | 5.15 | 67.8 | 20.3 |      | 147.0 |        |
| 10237-CAB | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)    | X | 7.37 | 76.9 | 28.1 | 9.21 | 130.4 | ±1.9 % |
|           |                                          | Y | 7.02 | 74.1 | 26.0 |      | 122.0 |        |
|           |                                          | Z | 6.83 | 73.6 | 25.9 |      | 115.6 |        |
| 10252-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)  | X | 7.85 | 72.0 | 25.2 | 9.24 | 112.3 | ±2.5 % |
|           |                                          | Y | 7.74 | 70.8 | 24.1 |      | 104.5 |        |
|           |                                          | Z | 8.42 | 73.9 | 26.1 |      | 138.6 |        |
| 10267-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK) | X | 8.43 | 72.7 | 25.4 | 9.30 | 116.9 | ±2.5 % |
|           |                                          | Y | 8.28 | 71.5 | 24.3 |      | 109.4 |        |
|           |                                          | Z | 9.17 | 75.2 | 26.7 |      | 147.6 |        |
| 10297-AAA | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)  | X | 6.48 | 68.1 | 20.5 | 5.81 | 141.5 | ±1.4 % |
|           |                                          | Y | 6.32 | 67.4 | 20.0 |      | 136.8 |        |
|           |                                          | Z | 6.17 | 66.8 | 19.6 |      | 123.8 |        |
| 10311-AAA | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK) | X | 7.07 | 68.8 | 20.8 | 6.06 | 146.9 | ±1.7 % |
|           |                                          | Y | 6.98 | 68.3 | 20.5 |      | 142.2 |        |
|           |                                          | Z | 6.77 | 67.5 | 20.0 |      | 128.8 |        |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of Norm X,Y,Z do not affect the  $E^2$ -field uncertainty inside TSL (see Pages 6 and 7).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

## DASY/EASY - Parameters of Probe: ES3DV3 - SN:3209

### Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 750                  | 41.9                               | 0.89                            | 6.60    | 6.60    | 6.60    | 0.47               | 1.59                    | ± 12.0 %  |
| 835                  | 41.5                               | 0.90                            | 6.20    | 6.20    | 6.20    | 0.80               | 1.19                    | ± 12.0 %  |
| 1750                 | 40.1                               | 1.37                            | 5.28    | 5.28    | 5.28    | 0.54               | 1.35                    | ± 12.0 %  |
| 1900                 | 40.0                               | 1.40                            | 5.14    | 5.14    | 5.14    | 0.71               | 1.21                    | ± 12.0 %  |
| 2300                 | 39.5                               | 1.67                            | 4.82    | 4.82    | 4.82    | 0.74               | 1.26                    | ± 12.0 %  |
| 2450                 | 39.2                               | 1.80                            | 4.63    | 4.63    | 4.63    | 0.55               | 1.50                    | ± 12.0 %  |
| 2600                 | 39.0                               | 1.96                            | 4.48    | 4.48    | 4.48    | 0.78               | 1.25                    | ± 12.0 %  |

<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

## DASY/EASY - Parameters of Probe: ES3DV3 - SN:3209

### Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 750                  | 55.5                               | 0.96                            | 6.19    | 6.19    | 6.19    | 0.53               | 1.42                    | ± 12.0 %  |
| 835                  | 55.2                               | 0.97                            | 6.19    | 6.19    | 6.19    | 0.62               | 1.30                    | ± 12.0 %  |
| 1750                 | 53.4                               | 1.49                            | 4.99    | 4.99    | 4.99    | 0.51               | 1.54                    | ± 12.0 %  |
| 1900                 | 53.3                               | 1.52                            | 4.77    | 4.77    | 4.77    | 0.56               | 1.52                    | ± 12.0 %  |
| 2300                 | 52.9                               | 1.81                            | 4.44    | 4.44    | 4.44    | 0.75               | 1.26                    | ± 12.0 %  |
| 2450                 | 52.7                               | 1.95                            | 4.31    | 4.31    | 4.31    | 0.74               | 1.26                    | ± 12.0 %  |
| 2600                 | 52.5                               | 2.16                            | 4.11    | 4.11    | 4.11    | 0.80               | 1.20                    | ± 12.0 %  |

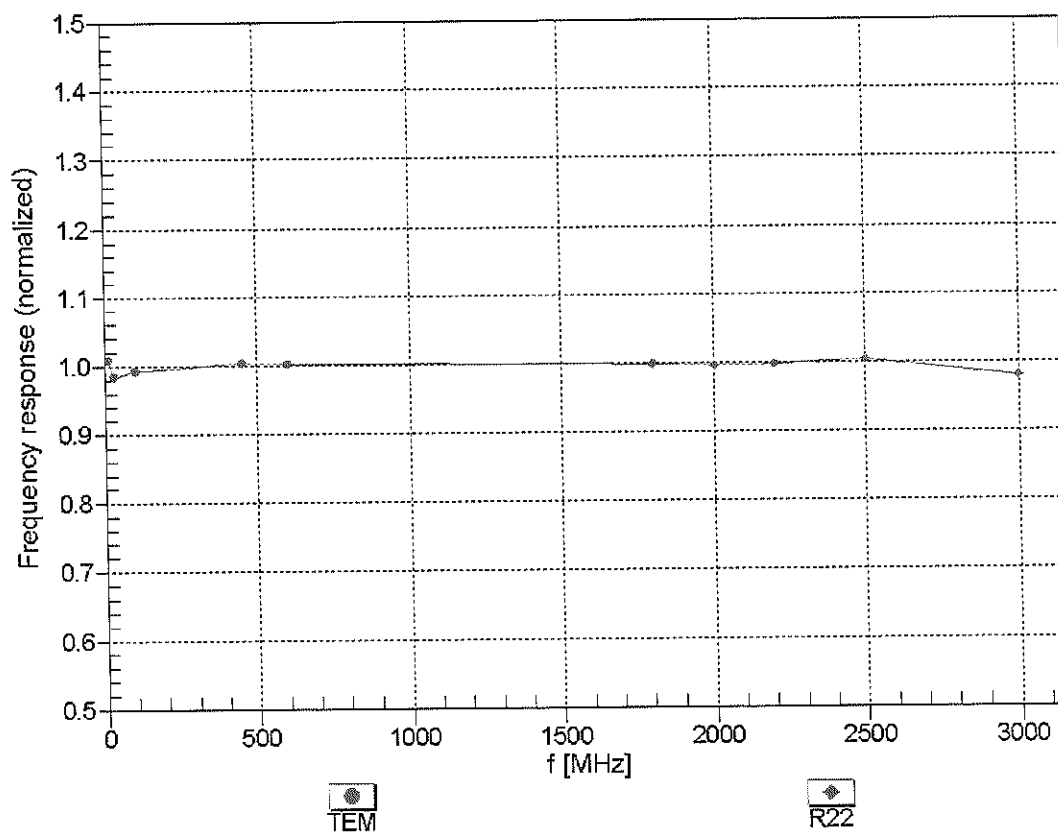
<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

## Frequency Response of E-Field

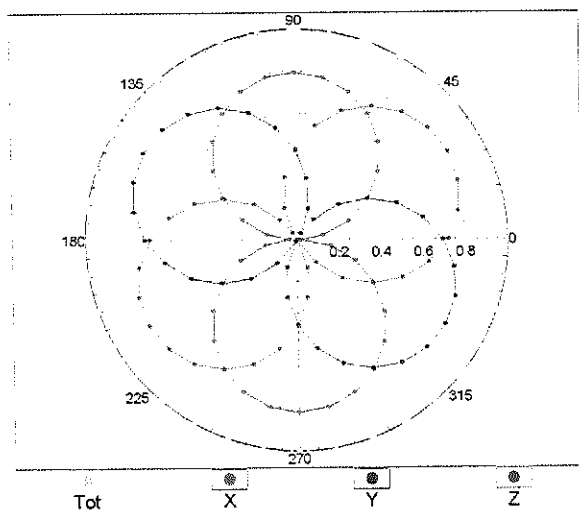
(TEM-Cell:ifi110 EXX, Waveguide: R22)



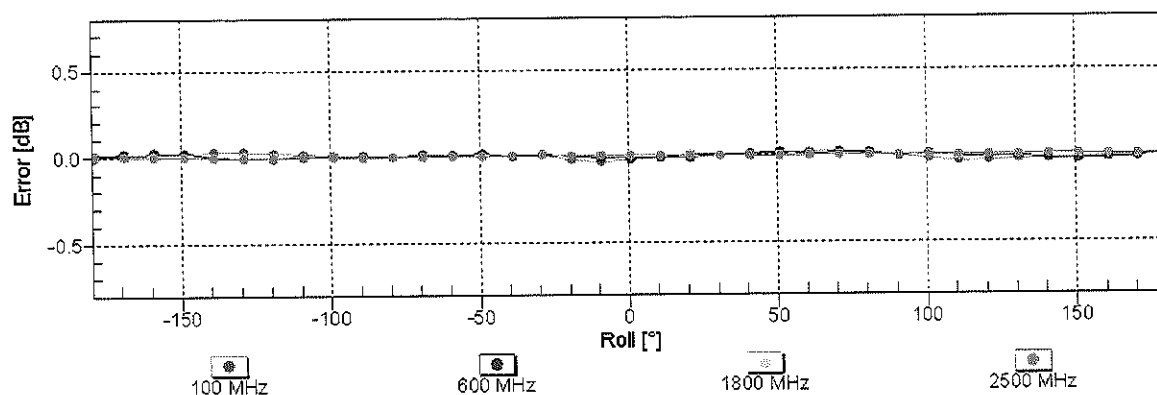
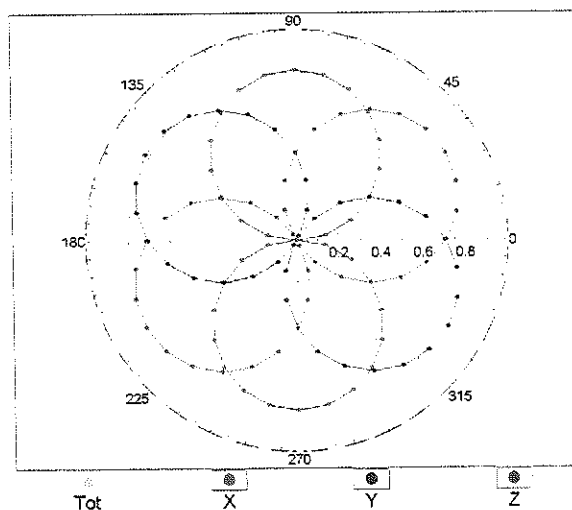
Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  (k=2)

## Receiving Pattern ( $\phi$ ), $\theta = 0^\circ$

f=600 MHz,TEM

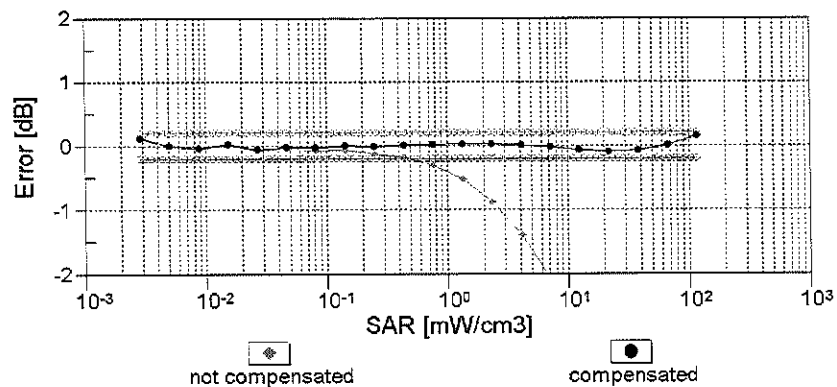
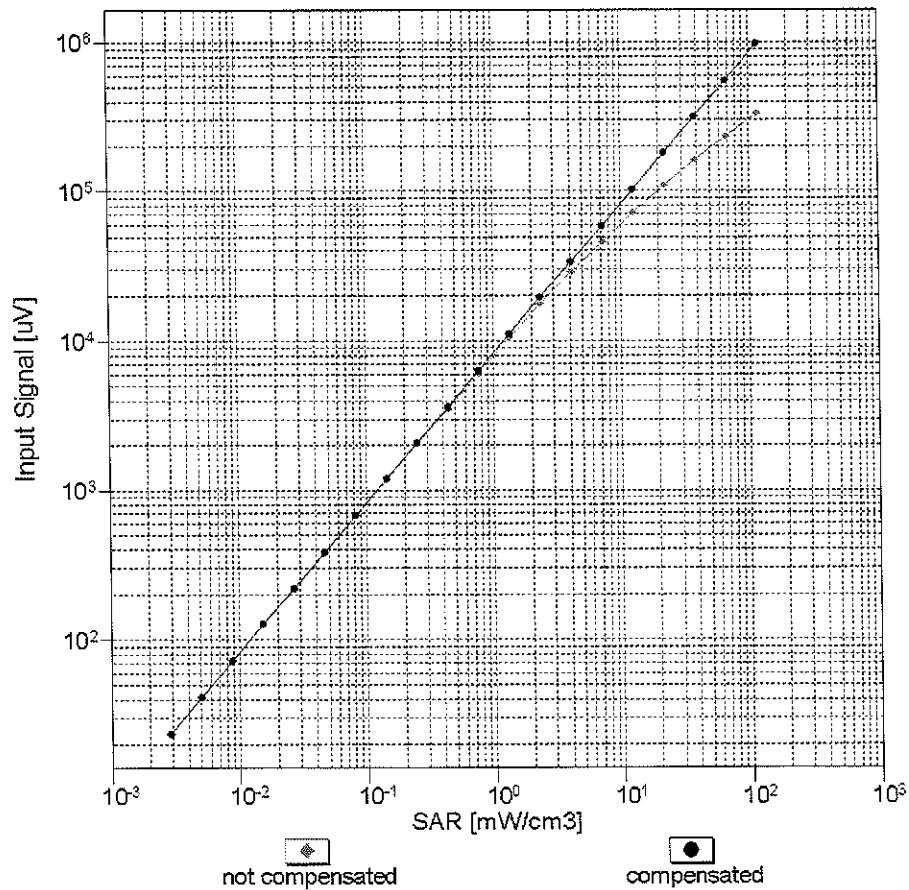


f=1800 MHz,R22



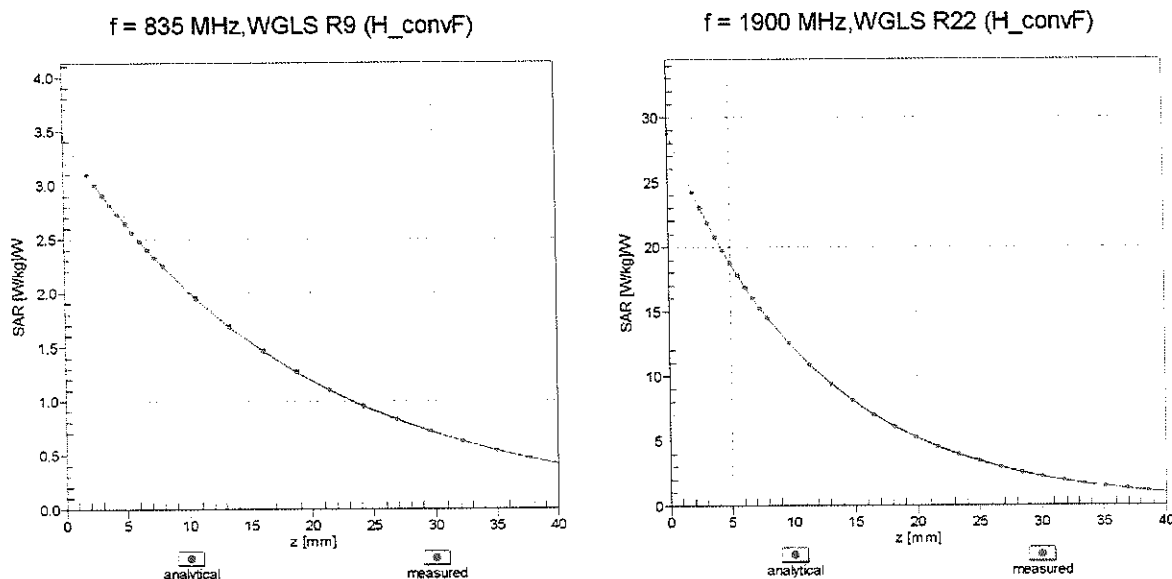
Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

## Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell , $f_{\text{eval}} = 1900 \text{ MHz}$ )



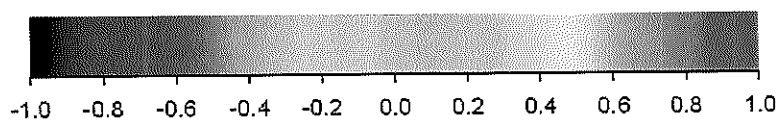
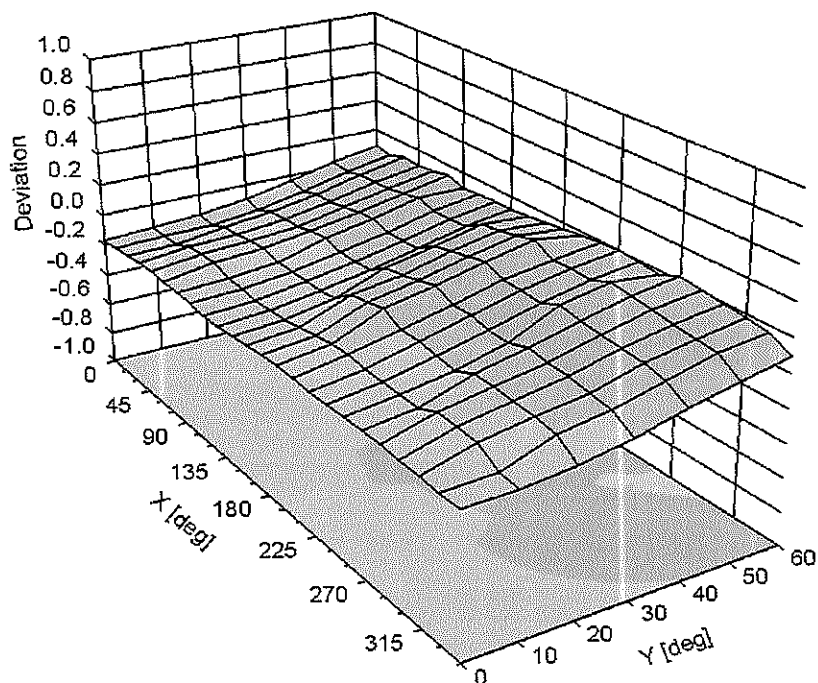
Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

## Conversion Factor Assessment



## Deviation from Isotropy in Liquid

Error ( $\phi, \theta$ ),  $f = 900 \text{ MHz}$



Uncertainty of Spherical Isotropy Assessment:  $\pm 2.6\%$  ( $k=2$ )

## DASY/EASY - Parameters of Probe: ES3DV3 - SN:3209

### Other Probe Parameters

|                                               |            |
|-----------------------------------------------|------------|
| Sensor Arrangement                            | Triangular |
| Connector Angle (°)                           | 141        |
| Mechanical Surface Detection Mode             | enabled    |
| Optical Surface Detection Mode                | disabled   |
| Probe Overall Length                          | 337 mm     |
| Probe Body Diameter                           | 10 mm      |
| Tip Length                                    | 10 mm      |
| Tip Diameter                                  | 4 mm       |
| Probe Tip to Sensor X Calibration Point       | 2 mm       |
| Probe Tip to Sensor Y Calibration Point       | 2 mm       |
| Probe Tip to Sensor Z Calibration Point       | 2 mm       |
| Recommended Measurement Distance from Surface | 3 mm       |



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **ES3-3334\_Nov16**

## CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3334**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-12.v9, QA CAL-23.v5, QA CAL-25.v6**  
**Calibration procedure for dosimetric E-field probes**

*BNV*  
*11-21-2016*

Calibration date: **November 15, 2016**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature  $(22 \pm 3)^\circ\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|------------------|-----------------------------------|------------------------|
| Power meter NRP            | SN: 104778       | 06-Apr-16 (No. 217-02288/02289)   | Apr-17                 |
| Power sensor NRP-Z91       | SN: 103244       | 06-Apr-16 (No. 217-02288)         | Apr-17                 |
| Power sensor NRP-Z91       | SN: 103245       | 06-Apr-16 (No. 217-02289)         | Apr-17                 |
| Reference 20 dB Attenuator | SN: S5277 (20x)  | 05-Apr-16 (No. 217-02293)         | Apr-17                 |
| Reference Probe ES3DV2     | SN: 3013         | 31-Dec-15 (No. ES3-3013_Dec15)    | Dec-16                 |
| DAE4                       | SN: 660          | 23-Dec-15 (No. DAE4-660_Dec15)    | Dec-16                 |
| Secondary Standards        | ID               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B         | SN: GB41293874   | 06-Apr-16 (in house check Jun-16) | In house check: Jun-18 |
| Power sensor E4412A        | SN: MY41498087   | 06-Apr-16 (in house check Jun-16) | In house check: Jun-18 |
| Power sensor E4412A        | SN: 000110210    | 06-Apr-16 (in house check Jun-16) | In house check: Jun-18 |
| RF generator HP 8648C      | SN: US3642U01700 | 04-Aug-99 (in house check Jun-16) | In house check: Jun-18 |
| Network Analyzer HP 8753E  | SN: US37390585   | 18-Oct-01 (in house check Oct-16) | In house check: Oct-17 |

|                |                               |                                          |               |
|----------------|-------------------------------|------------------------------------------|---------------|
| Calibrated by: | Name<br><b>Jeton Kastrati</b> | Function<br><b>Laboratory Technician</b> | Signature<br> |
| Approved by:   | Name<br><b>Katja Pokovic</b>  | Function<br><b>Technical Manager</b>     | Signature<br> |

Issued: November 15, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



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Accreditation No.: **SCS 0108**

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Multilateral Agreement for the recognition of calibration certificates

## Glossary:

|                          |                                                                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| TSL                      | tissue simulating liquid                                                                                                                                |
| NORM <sub>x,y,z</sub>    | sensitivity in free space                                                                                                                               |
| ConvF                    | sensitivity in TSL / NORM <sub>x,y,z</sub>                                                                                                              |
| DCP                      | diode compression point                                                                                                                                 |
| CF                       | crest factor (1/duty_cycle) of the RF signal                                                                                                            |
| A, B, C, D               | modulation dependent linearization parameters                                                                                                           |
| Polarization $\varphi$   | $\varphi$ rotation around probe axis                                                                                                                    |
| Polarization $\vartheta$ | $\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center),<br>i.e., $\vartheta = 0$ is normal to probe axis |
| Connector Angle          | information used in DASY system to align probe sensor X to the robot coordinate system                                                                  |

## Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

## Methods Applied and Interpretation of Parameters:

- NORM<sub>x,y,z</sub>**: Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not affect the  $E^2$ -field uncertainty inside TSL (see below ConvF).
- NORM(f)<sub>x,y,z</sub>** = NORM<sub>x,y,z</sub> \* frequency\_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP<sub>x,y,z</sub>**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; D<sub>x,y,z</sub>; VR<sub>x,y,z</sub>; A, B, C, D** are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for  $f \leq 800$  MHz) and inside waveguide using analytical field distributions based on power measurements for  $f > 800$  MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>x,y,z</sub> \* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from  $\pm 50$  MHz to  $\pm 100$  MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM<sub>x</sub> (no uncertainty required).

# Probe ES3DV3

## SN:3334

Manufactured: January 24, 2012  
Calibrated: November 15, 2016

Calibrated for DASY/EASY Systems  
(Note: non-compatible with DASY2 system!)

## DASY/EASY - Parameters of Probe: ES3DV3 - SN:3334

### Basic Calibration Parameters

|                                                           | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|-----------------------------------------------------------|----------|----------|----------|-----------|
| Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup> | 1.01     | 1.01     | 0.97     | ± 10.1 %  |
| DCP (mV) <sup>B</sup>                                     | 104.9    | 104.3    | 106.9    |           |

### Modulation Calibration Parameters

| UID | Communication System Name |   | A<br>dB | B<br>dB $\sqrt{\mu\text{V}}$ | C   | D<br>dB | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-----|---------------------------|---|---------|------------------------------|-----|---------|----------|---------------------------|
| 0   | CW                        | X | 0.0     | 0.0                          | 1.0 | 0.00    | 187.7    | ±3.3 %                    |
|     |                           | Y | 0.0     | 0.0                          | 1.0 |         | 186.1    |                           |
|     |                           | Z | 0.0     | 0.0                          | 1.0 |         | 182.2    |                           |

Note: For details on UID parameters see Appendix.

### Sensor Model Parameters

|   | C1<br>fF | C2<br>fF | $\alpha$<br>$\text{V}^{-1}$ | T1<br>$\text{ms}\cdot\text{V}^{-2}$ | T2<br>$\text{ms}\cdot\text{V}^{-1}$ | T3<br>ms | T4<br>$\text{V}^{-2}$ | T5<br>$\text{V}^{-1}$ | T6    |
|---|----------|----------|-----------------------------|-------------------------------------|-------------------------------------|----------|-----------------------|-----------------------|-------|
| X | 70.73    | 504.3    | 35.08                       | 31.68                               | 3.658                               | 5.1      | 1.261                 | 0.548                 | 1.013 |
| Y | 65.12    | 464.8    | 35.12                       | 29.88                               | 3.928                               | 5.1      | 1.127                 | 0.529                 | 1.01  |
| Z | 65.17    | 461.4    | 34.69                       | 29.79                               | 3.402                               | 5.1      | 0.804                 | 0.54                  | 1.01  |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of Norm X,Y,Z do not affect the  $E^2$ -field uncertainty inside TSL (see Pages 5 and 6).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

## DASY/EASY - Parameters of Probe: ES3DV3 - SN:3334

### Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 6                    | 55.5                               | 0.75                            | 6.51    | 6.51    | 6.51    | 0.05               | 1.10                    | ± 13.3 %  |
| 13                   | 55.5                               | 0.75                            | 6.87    | 6.87    | 6.87    | 0.05               | 1.20                    | ± 13.3 %  |
| 750                  | 41.9                               | 0.89                            | 6.76    | 6.76    | 6.76    | 0.40               | 1.68                    | ± 12.0 %  |
| 835                  | 41.5                               | 0.90                            | 6.49    | 6.49    | 6.49    | 0.41               | 1.68                    | ± 12.0 %  |
| 1750                 | 40.1                               | 1.37                            | 5.45    | 5.45    | 5.45    | 0.51               | 1.46                    | ± 12.0 %  |
| 1900                 | 40.0                               | 1.40                            | 5.27    | 5.27    | 5.27    | 0.52               | 1.49                    | ± 12.0 %  |
| 2300                 | 39.5                               | 1.67                            | 4.92    | 4.92    | 4.92    | 0.69               | 1.31                    | ± 12.0 %  |
| 2450                 | 39.2                               | 1.80                            | 4.73    | 4.73    | 4.73    | 0.77               | 1.27                    | ± 12.0 %  |
| 2600                 | 39.0                               | 1.96                            | 4.51    | 4.51    | 4.51    | 0.80               | 1.27                    | ± 12.0 %  |

<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

## DASY/EASY - Parameters of Probe: ES3DV3 - SN:3334

### Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 750                  | 55.5                               | 0.96                            | 6.33    | 6.33    | 6.33    | 0.45               | 1.54                    | ± 12.0 %  |
| 835                  | 55.2                               | 0.97                            | 6.31    | 6.31    | 6.31    | 0.74               | 1.21                    | ± 12.0 %  |
| 1750                 | 53.4                               | 1.49                            | 5.12    | 5.12    | 5.12    | 0.52               | 1.50                    | ± 12.0 %  |
| 1900                 | 53.3                               | 1.52                            | 4.91    | 4.91    | 4.91    | 0.41               | 1.81                    | ± 12.0 %  |
| 2300                 | 52.9                               | 1.81                            | 4.68    | 4.68    | 4.68    | 0.80               | 1.21                    | ± 12.0 %  |
| 2450                 | 52.7                               | 1.95                            | 4.52    | 4.52    | 4.52    | 0.79               | 1.20                    | ± 12.0 %  |
| 2600                 | 52.5                               | 2.16                            | 4.42    | 4.42    | 4.42    | 0.80               | 1.18                    | ± 12.0 %  |

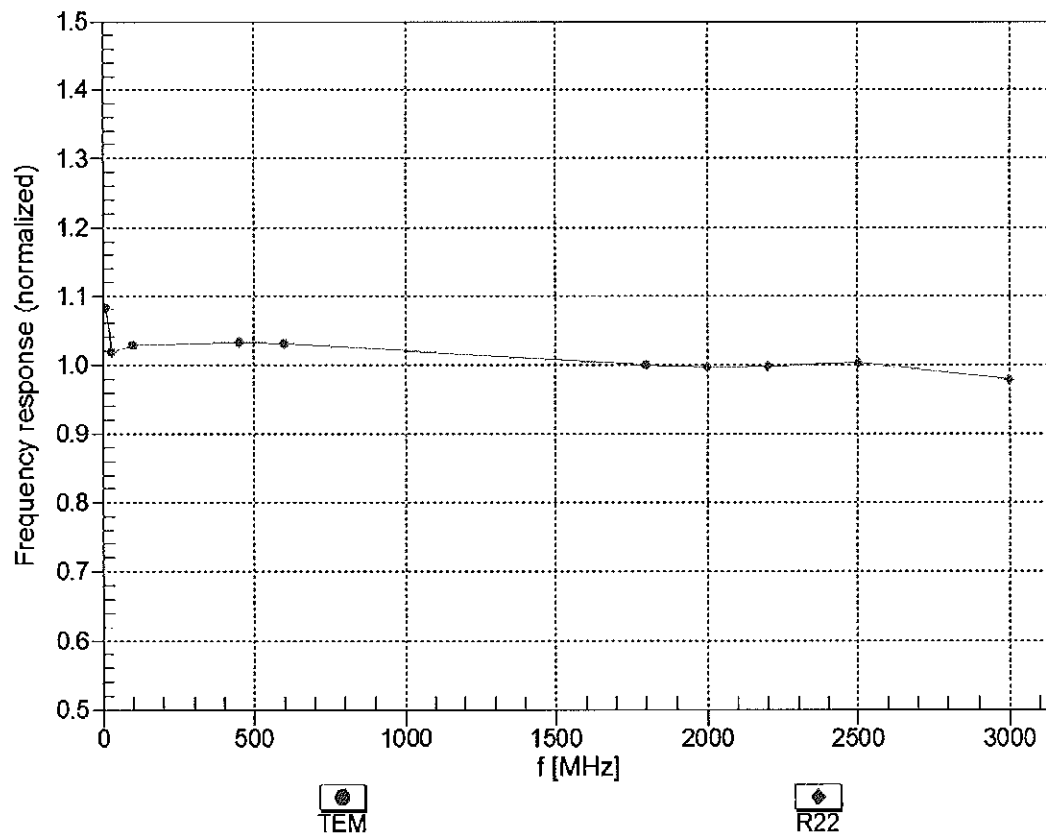
<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

## Frequency Response of E-Field

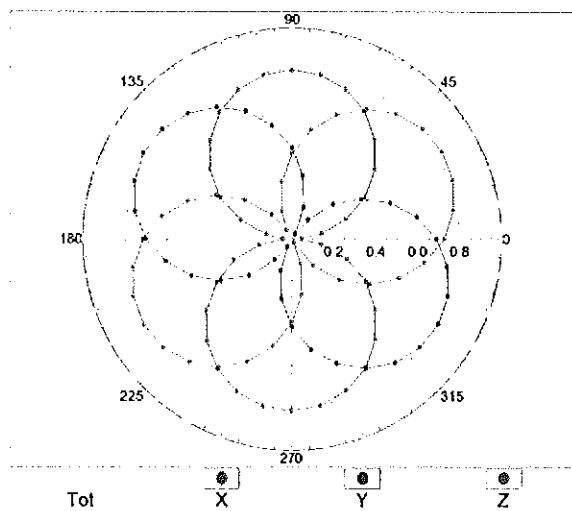
(TEM-Cell:ifi110 EXX, Waveguide: R22)



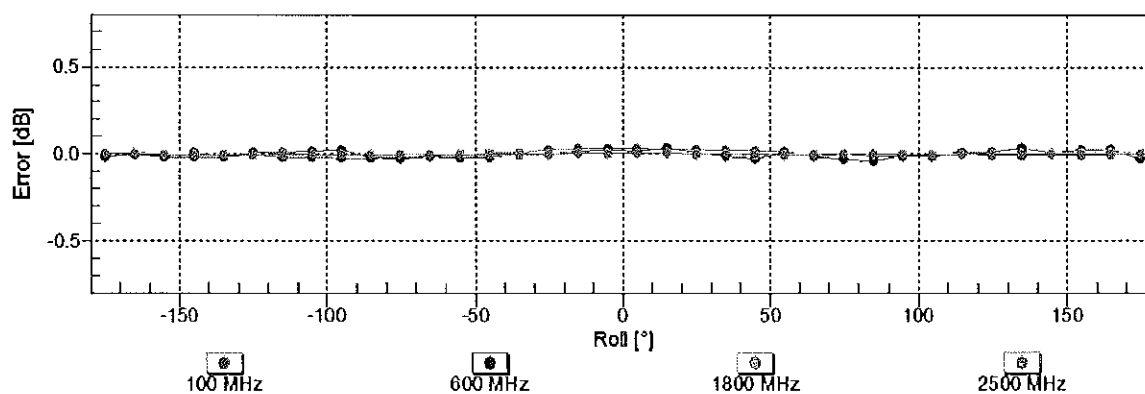
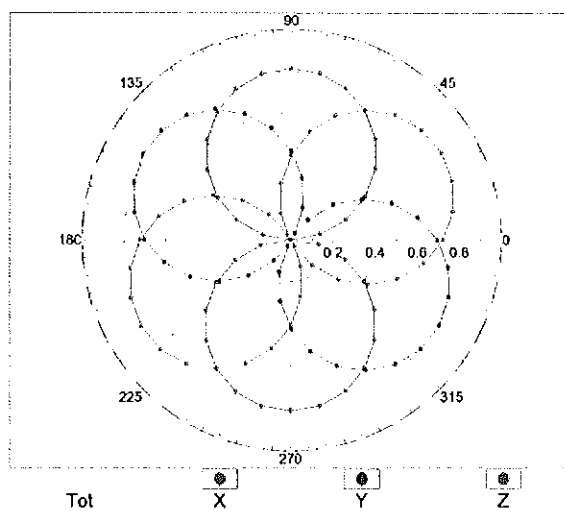
Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )

## Receiving Pattern ( $\phi$ ), $\theta = 0^\circ$

f=600 MHz,TEM



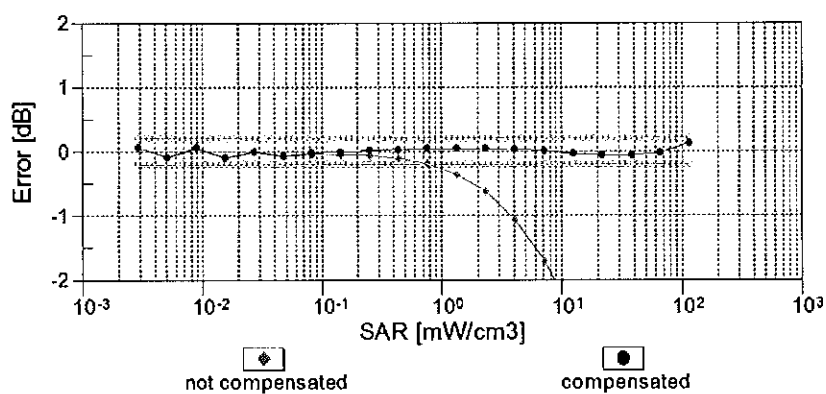
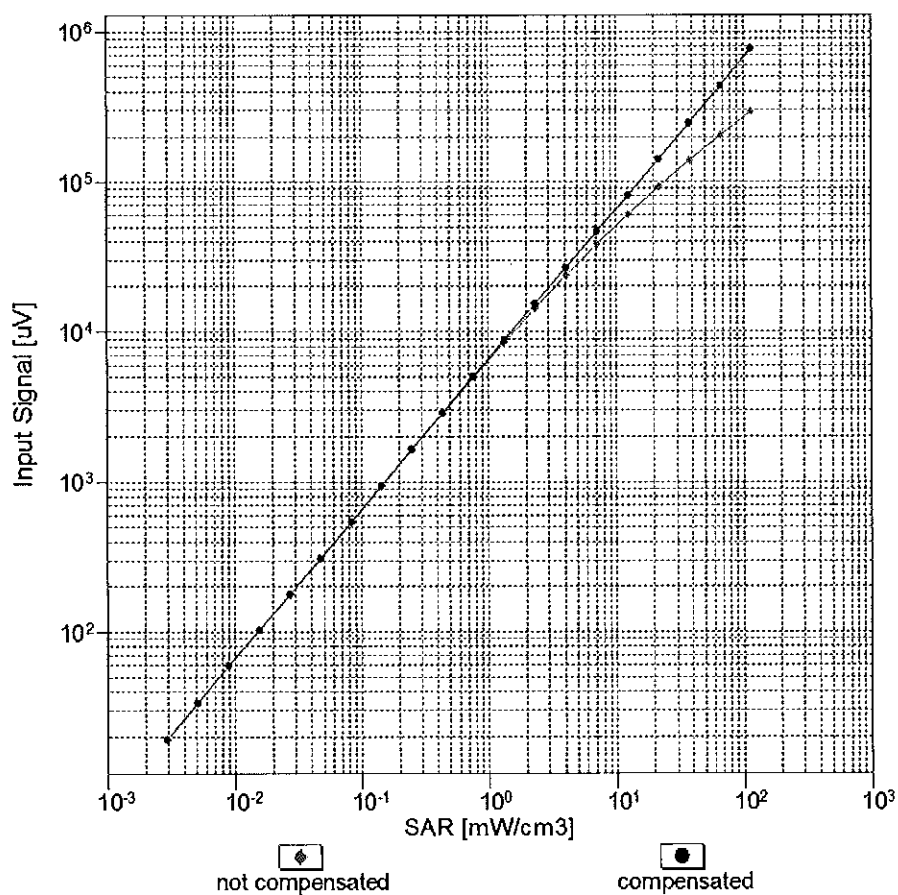
f=1800 MHz,R22



Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

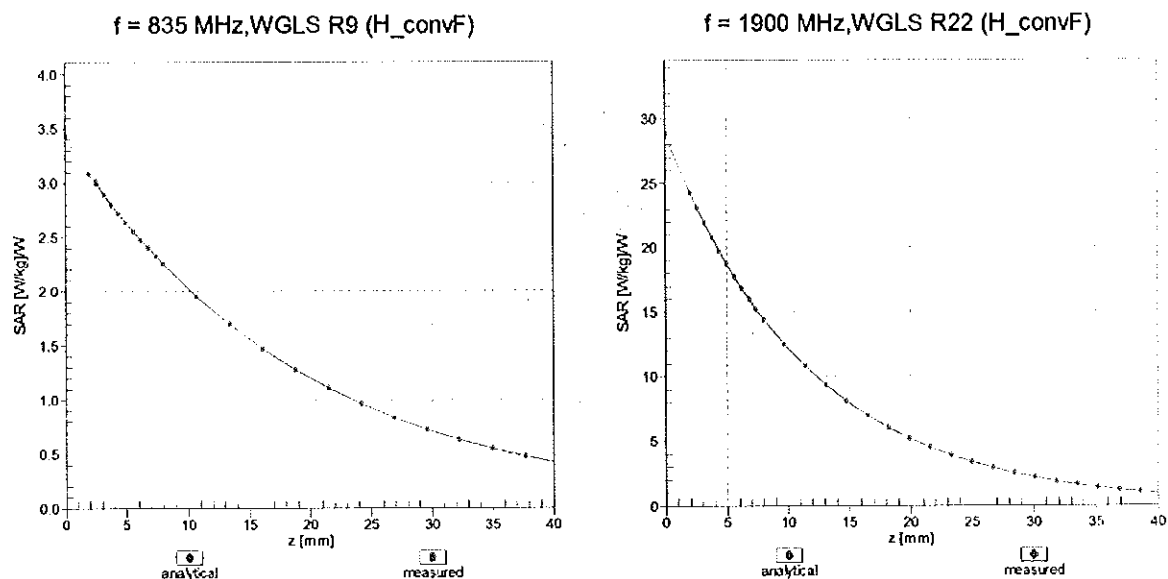
# Dynamic Range f(SAR<sub>head</sub>)

(TEM cell , f<sub>eval</sub>= 1900 MHz)



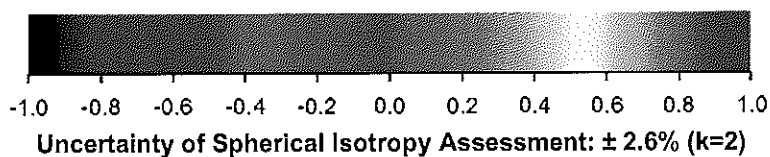
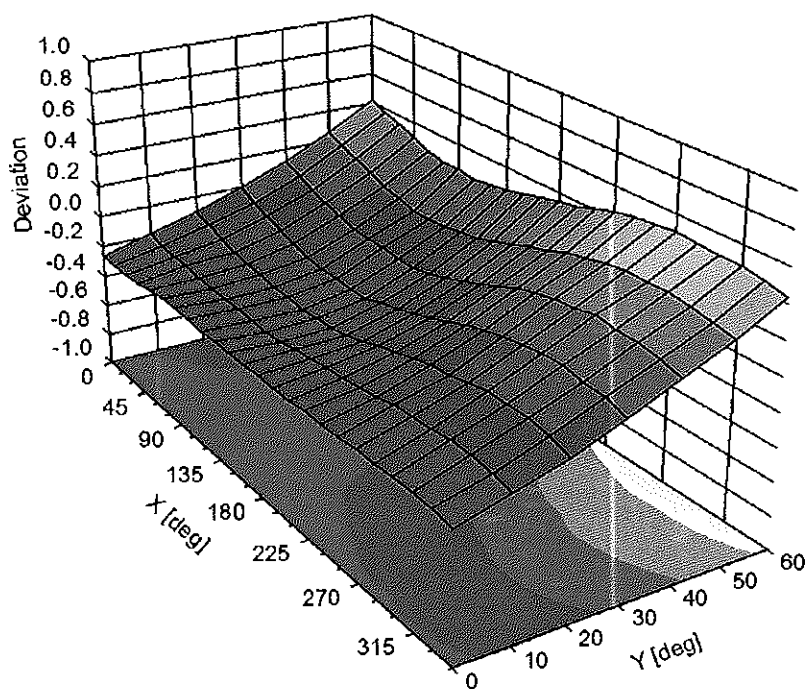
Uncertainty of Linearity Assessment:  $\pm 0.6\%$  (k=2)

## Conversion Factor Assessment



## Deviation from Isotropy in Liquid

Error ( $\phi, \vartheta$ ),  $f = 900 \text{ MHz}$



## DASY/EASY - Parameters of Probe: ES3DV3 - SN:3334

### Other Probe Parameters

|                                               |            |
|-----------------------------------------------|------------|
| Sensor Arrangement                            | Triangular |
| Connector Angle (°)                           | 14.8       |
| Mechanical Surface Detection Mode             | enabled    |
| Optical Surface Detection Mode                | disabled   |
| Probe Overall Length                          | 337 mm     |
| Probe Body Diameter                           | 10 mm      |
| Tip Length                                    | 10 mm      |
| Tip Diameter                                  | 4 mm       |
| Probe Tip to Sensor X Calibration Point       | 2 mm       |
| Probe Tip to Sensor Y Calibration Point       | 2 mm       |
| Probe Tip to Sensor Z Calibration Point       | 2 mm       |
| Recommended Measurement Distance from Surface | 3 mm       |

**Appendix: Modulation Calibration Parameters**

| UID           | Communication System Name                     |   | A<br>dB | B<br>dB $\mu$ V | C     | D<br>dB | VR<br>mV | Max<br>Unc <sup>E</sup><br>(k=2) |
|---------------|-----------------------------------------------|---|---------|-----------------|-------|---------|----------|----------------------------------|
| 0             | CW                                            | X | 0.00    | 0.00            | 1.00  | 0.00    | 187.7    | $\pm 3.3 \%$                     |
|               |                                               | Y | 0.00    | 0.00            | 1.00  |         | 186.1    |                                  |
|               |                                               | Z | 0.00    | 0.00            | 1.00  |         | 182.2    |                                  |
| 10010-<br>CAA | SAR Validation (Square, 100ms, 10ms)          | X | 8.77    | 79.31           | 19.59 | 10.00   | 25.0     | $\pm 9.6 \%$                     |
|               |                                               | Y | 9.54    | 81.15           | 20.73 |         | 25.0     |                                  |
|               |                                               | Z | 9.84    | 81.78           | 20.60 |         | 25.0     |                                  |
| 10011-<br>CAB | UMTS-FDD (WCDMA)                              | X | 1.16    | 69.33           | 16.31 | 0.00    | 150.0    | $\pm 9.6 \%$                     |
|               |                                               | Y | 1.10    | 67.90           | 15.63 |         | 150.0    |                                  |
|               |                                               | Z | 1.22    | 70.12           | 16.93 |         | 150.0    |                                  |
| 10012-<br>CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)      | X | 1.34    | 65.77           | 16.28 | 0.41    | 150.0    | $\pm 9.6 \%$                     |
|               |                                               | Y | 1.35    | 65.28           | 15.96 |         | 150.0    |                                  |
|               |                                               | Z | 1.37    | 65.99           | 16.52 |         | 150.0    |                                  |
| 10013-<br>CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps) | X | 5.24    | 67.29           | 17.48 | 1.46    | 150.0    | $\pm 9.6 \%$                     |
|               |                                               | Y | 5.25    | 67.32           | 17.47 |         | 150.0    |                                  |
|               |                                               | Z | 5.24    | 67.39           | 17.55 |         | 150.0    |                                  |
| 10021-<br>DAB | GSM-FDD (TDMA, GMSK)                          | X | 14.04   | 88.44           | 24.56 | 9.39    | 50.0     | $\pm 9.6 \%$                     |
|               |                                               | Y | 15.09   | 90.46           | 25.72 |         | 50.0     |                                  |
|               |                                               | Z | 17.26   | 92.82           | 26.12 |         | 50.0     |                                  |
| 10023-<br>DAB | GPRS-FDD (TDMA, GMSK, TN 0)                   | X | 13.38   | 87.46           | 24.27 | 9.57    | 50.0     | $\pm 9.6 \%$                     |
|               |                                               | Y | 14.20   | 89.20           | 25.34 |         | 50.0     |                                  |
|               |                                               | Z | 16.01   | 91.37           | 25.70 |         | 50.0     |                                  |
| 10024-<br>DAB | GPRS-FDD (TDMA, GMSK, TN 0-1)                 | X | 38.05   | 104.88          | 27.91 | 6.56    | 60.0     | $\pm 9.6 \%$                     |
|               |                                               | Y | 46.94   | 109.69          | 29.75 |         | 60.0     |                                  |
|               |                                               | Z | 100.00  | 120.75          | 32.11 |         | 60.0     |                                  |
| 10025-<br>DAB | EDGE-FDD (TDMA, 8PSK, TN 0)                   | X | 17.81   | 101.01          | 37.92 | 12.57   | 50.0     | $\pm 9.6 \%$                     |
|               |                                               | Y | 13.12   | 91.27           | 33.89 |         | 50.0     |                                  |
|               |                                               | Z | 16.92   | 100.44          | 37.93 |         | 50.0     |                                  |
| 10026-<br>DAB | EDGE-FDD (TDMA, 8PSK, TN 0-1)                 | X | 17.77   | 98.41           | 33.58 | 9.56    | 60.0     | $\pm 9.6 \%$                     |
|               |                                               | Y | 14.79   | 93.85           | 31.99 |         | 60.0     |                                  |
|               |                                               | Z | 18.16   | 99.88           | 34.34 |         | 60.0     |                                  |
| 10027-<br>DAB | GPRS-FDD (TDMA, GMSK, TN 0-1-2)               | X | 100.00  | 118.25          | 29.99 | 4.80    | 80.0     | $\pm 9.6 \%$                     |
|               |                                               | Y | 100.00  | 120.44          | 31.14 |         | 80.0     |                                  |
|               |                                               | Z | 100.00  | 119.61          | 30.56 |         | 80.0     |                                  |
| 10028-<br>DAB | GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)             | X | 100.00  | 117.97          | 28.98 | 3.55    | 100.0    | $\pm 9.6 \%$                     |
|               |                                               | Y | 100.00  | 120.46          | 30.24 |         | 100.0    |                                  |
|               |                                               | Z | 100.00  | 119.89          | 29.81 |         | 100.0    |                                  |
| 10029-<br>DAB | EDGE-FDD (TDMA, 8PSK, TN 0-1-2)               | X | 13.52   | 92.94           | 30.62 | 7.80    | 80.0     | $\pm 9.6 \%$                     |
|               |                                               | Y | 11.42   | 89.03           | 29.23 |         | 80.0     |                                  |
|               |                                               | Z | 13.37   | 93.50           | 31.06 |         | 80.0     |                                  |
| 10030-<br>CAA | IEEE 802.15.1 Bluetooth (GFSK, DH1)           | X | 100.00  | 118.21          | 30.35 | 5.30    | 70.0     | $\pm 9.6 \%$                     |
|               |                                               | Y | 100.00  | 120.20          | 31.41 |         | 70.0     |                                  |
|               |                                               | Z | 100.00  | 119.30          | 30.79 |         | 70.0     |                                  |
| 10031-<br>CAA | IEEE 802.15.1 Bluetooth (GFSK, DH3)           | X | 100.00  | 118.75          | 27.66 | 1.88    | 100.0    | $\pm 9.6 \%$                     |
|               |                                               | Y | 100.00  | 121.92          | 29.18 |         | 100.0    |                                  |
|               |                                               | Z | 100.00  | 122.14          | 29.14 |         | 100.0    |                                  |

|           |                                                     |   |        |        |       |       |       |         |
|-----------|-----------------------------------------------------|---|--------|--------|-------|-------|-------|---------|
| 10032-CAA | IEEE 802.15.1 Bluetooth (GFSK, DH5)                 | X | 100.00 | 122.24 | 27.95 | 1.17  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 100.00 | 126.42 | 29.90 |       | 100.0 |         |
|           |                                                     | Z | 100.00 | 128.02 | 30.44 |       | 100.0 |         |
| 10033-CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)           | X | 14.25  | 92.44  | 25.75 | 5.30  | 70.0  | ± 9.6 % |
|           |                                                     | Y | 12.48  | 90.39  | 25.26 |       | 70.0  |         |
|           |                                                     | Z | 16.14  | 95.22  | 26.75 |       | 70.0  |         |
| 10034-CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)           | X | 8.01   | 88.33  | 23.06 | 1.88  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 6.72   | 85.60  | 22.20 |       | 100.0 |         |
|           |                                                     | Z | 9.24   | 90.99  | 24.02 |       | 100.0 |         |
| 10035-CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)           | X | 4.78   | 82.59  | 20.90 | 1.17  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 4.12   | 80.18  | 20.04 |       | 100.0 |         |
|           |                                                     | Z | 5.37   | 84.73  | 21.75 |       | 100.0 |         |
| 10036-CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH1)               | X | 16.24  | 94.81  | 26.57 | 5.30  | 70.0  | ± 9.6 % |
|           |                                                     | Y | 14.09  | 92.64  | 26.06 |       | 70.0  |         |
|           |                                                     | Z | 18.84  | 98.03  | 27.68 |       | 70.0  |         |
| 10037-CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH3)               | X | 7.84   | 88.03  | 22.91 | 1.88  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 6.49   | 85.11  | 21.99 |       | 100.0 |         |
|           |                                                     | Z | 8.95   | 90.55  | 23.84 |       | 100.0 |         |
| 10038-CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH5)               | X | 5.00   | 83.47  | 21.28 | 1.17  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 4.25   | 80.87  | 20.36 |       | 100.0 |         |
|           |                                                     | Z | 5.60   | 85.62  | 22.13 |       | 100.0 |         |
| 10039-CAB | CDMA2000 (1xRTT, RC1)                               | X | 2.21   | 73.71  | 17.42 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                     | Y | 2.07   | 72.72  | 16.90 |       | 150.0 |         |
|           |                                                     | Z | 2.43   | 75.47  | 18.19 |       | 150.0 |         |
| 10042-CAB | IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate) | X | 21.10  | 94.61  | 24.99 | 7.78  | 50.0  | ± 9.6 % |
|           |                                                     | Y | 25.53  | 98.75  | 26.74 |       | 50.0  |         |
|           |                                                     | Z | 36.08  | 103.76 | 27.77 |       | 50.0  |         |
| 10044-CAA | IS-91/EIA/TIA-553 FDD (FDMA, FM)                    | X | 0.00   | 112.80 | 5.71  | 0.00  | 150.0 | ± 9.6 % |
|           |                                                     | Y | 0.00   | 96.18  | 0.45  |       | 150.0 |         |
|           |                                                     | Z | 0.00   | 107.58 | 0.68  |       | 150.0 |         |
| 10048-CAA | DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)           | X | 10.49  | 80.43  | 23.52 | 13.80 | 25.0  | ± 9.6 % |
|           |                                                     | Y | 10.81  | 81.22  | 24.23 |       | 25.0  |         |
|           |                                                     | Z | 11.11  | 82.26  | 24.27 |       | 25.0  |         |
| 10049-CAA | DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)         | X | 11.49  | 83.98  | 23.46 | 10.79 | 40.0  | ± 9.6 % |
|           |                                                     | Y | 11.98  | 85.23  | 24.35 |       | 40.0  |         |
|           |                                                     | Z | 12.68  | 86.48  | 24.43 |       | 40.0  |         |
| 10056-CAA | UMTS-TDD (TD-SCDMA, 1.28 Mcps)                      | X | 11.65  | 84.59  | 23.99 | 9.03  | 50.0  | ± 9.6 % |
|           |                                                     | Y | 11.36  | 84.29  | 24.10 |       | 50.0  |         |
|           |                                                     | Z | 12.41  | 86.38  | 24.72 |       | 50.0  |         |
| 10058-DAB | EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)                   | X | 10.62  | 88.69  | 28.41 | 6.55  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 9.13   | 85.32  | 27.18 |       | 100.0 |         |
|           |                                                     | Z | 10.28  | 88.69  | 28.63 |       | 100.0 |         |
| 10059-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)            | X | 1.56   | 68.30  | 17.46 | 0.61  | 110.0 | ± 9.6 % |
|           |                                                     | Y | 1.54   | 67.48  | 17.02 |       | 110.0 |         |
|           |                                                     | Z | 1.58   | 68.47  | 17.70 |       | 110.0 |         |
| 10060-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)          | X | 100.00 | 129.94 | 33.28 | 1.30  | 110.0 | ± 9.6 % |
|           |                                                     | Y | 82.67  | 128.45 | 33.38 |       | 110.0 |         |
|           |                                                     | Z | 100.00 | 132.52 | 34.47 |       | 110.0 |         |

|           |                                                |   |       |       |       |      |       |         |
|-----------|------------------------------------------------|---|-------|-------|-------|------|-------|---------|
| 10061-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)      | X | 12.22 | 98.02 | 27.41 | 2.04 | 110.0 | ± 9.6 % |
|           |                                                | Y | 8.15  | 91.42 | 25.55 |      | 110.0 |         |
|           |                                                | Z | 12.67 | 99.62 | 28.21 |      | 110.0 |         |
| 10062-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)       | X | 4.95  | 67.04 | 16.77 | 0.49 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.95  | 67.04 | 16.75 |      | 100.0 |         |
|           |                                                | Z | 4.95  | 67.16 | 16.84 |      | 100.0 |         |
| 10063-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)       | X | 5.00  | 67.22 | 16.92 | 0.72 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.00  | 67.22 | 16.90 |      | 100.0 |         |
|           |                                                | Z | 5.00  | 67.33 | 16.99 |      | 100.0 |         |
| 10064-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)      | X | 5.37  | 67.60 | 17.20 | 0.86 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.35  | 67.58 | 17.17 |      | 100.0 |         |
|           |                                                | Z | 5.35  | 67.68 | 17.26 |      | 100.0 |         |
| 10065-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)      | X | 5.27  | 67.66 | 17.37 | 1.21 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.27  | 67.65 | 17.35 |      | 100.0 |         |
|           |                                                | Z | 5.25  | 67.74 | 17.44 |      | 100.0 |         |
| 10066-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)      | X | 5.34  | 67.81 | 17.61 | 1.46 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.33  | 67.80 | 17.59 |      | 100.0 |         |
|           |                                                | Z | 5.32  | 67.89 | 17.67 |      | 100.0 |         |
| 10067-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)      | X | 5.67  | 67.95 | 18.07 | 2.04 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.66  | 67.95 | 18.04 |      | 100.0 |         |
|           |                                                | Z | 5.64  | 68.02 | 18.12 |      | 100.0 |         |
| 10068-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)      | X | 5.84  | 68.42 | 18.48 | 2.55 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.84  | 68.39 | 18.44 |      | 100.0 |         |
|           |                                                | Z | 5.80  | 68.45 | 18.52 |      | 100.0 |         |
| 10069-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)      | X | 5.91  | 68.29 | 18.64 | 2.67 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.91  | 68.28 | 18.60 |      | 100.0 |         |
|           |                                                | Z | 5.88  | 68.35 | 18.68 |      | 100.0 |         |
| 10071-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)  | X | 5.40  | 67.57 | 17.88 | 1.99 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.42  | 67.58 | 17.87 |      | 100.0 |         |
|           |                                                | Z | 5.39  | 67.65 | 17.94 |      | 100.0 |         |
| 10072-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps) | X | 5.50  | 68.20 | 18.23 | 2.30 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.51  | 68.20 | 18.21 |      | 100.0 |         |
|           |                                                | Z | 5.48  | 68.27 | 18.29 |      | 100.0 |         |
| 10073-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps) | X | 5.66  | 68.60 | 18.67 | 2.83 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.67  | 68.59 | 18.64 |      | 100.0 |         |
|           |                                                | Z | 5.63  | 68.66 | 18.73 |      | 100.0 |         |
| 10074-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps) | X | 5.71  | 68.74 | 18.97 | 3.30 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.72  | 68.71 | 18.92 |      | 100.0 |         |
|           |                                                | Z | 5.68  | 68.77 | 19.01 |      | 100.0 |         |
| 10075-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps) | X | 5.92  | 69.39 | 19.54 | 3.82 | 90.0  | ± 9.6 % |
|           |                                                | Y | 5.92  | 69.30 | 19.46 |      | 90.0  |         |
|           |                                                | Z | 5.87  | 69.36 | 19.56 |      | 90.0  |         |
| 10076-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps) | X | 5.92  | 69.17 | 19.65 | 4.15 | 90.0  | ± 9.6 % |
|           |                                                | Y | 5.94  | 69.10 | 19.58 |      | 90.0  |         |
|           |                                                | Z | 5.88  | 69.15 | 19.67 |      | 90.0  |         |
| 10077-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps) | X | 5.96  | 69.26 | 19.75 | 4.30 | 90.0  | ± 9.6 % |
|           |                                                | Y | 5.98  | 69.19 | 19.68 |      | 90.0  |         |
|           |                                                | Z | 5.92  | 69.25 | 19.77 |      | 90.0  |         |

|           |                                                     |   |       |        |       |      |       |         |
|-----------|-----------------------------------------------------|---|-------|--------|-------|------|-------|---------|
| 10081-CAB | CDMA2000 (1xRTT, RC3)                               | X | 1.06  | 68.38  | 14.68 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 1.00  | 67.23  | 14.06 |      | 150.0 |         |
|           |                                                     | Z | 1.15  | 69.61  | 15.40 |      | 150.0 |         |
| 10082-CAB | IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate) | X | 2.58  | 65.03  | 9.90  | 4.77 | 80.0  | ± 9.6 % |
|           |                                                     | Y | 2.69  | 65.68  | 10.51 |      | 80.0  |         |
|           |                                                     | Z | 2.57  | 65.43  | 10.13 |      | 80.0  |         |
| 10090-DAB | GPRS-FDD (TDMA, GMSK, TN 0-4)                       | X | 36.90 | 104.46 | 27.83 | 6.56 | 60.0  | ± 9.6 % |
|           |                                                     | Y | 45.21 | 109.15 | 29.65 |      | 60.0  |         |
|           |                                                     | Z | 94.87 | 120.02 | 31.97 |      | 60.0  |         |
| 10097-CAB | UMTS-FDD (HSDPA)                                    | X | 1.90  | 68.06  | 16.14 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 1.89  | 67.63  | 15.88 |      | 150.0 |         |
|           |                                                     | Z | 1.96  | 68.55  | 16.47 |      | 150.0 |         |
| 10098-CAB | UMTS-FDD (HSUPA, Subtest 2)                         | X | 1.86  | 68.04  | 16.12 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 1.85  | 67.59  | 15.85 |      | 150.0 |         |
|           |                                                     | Z | 1.92  | 68.55  | 16.45 |      | 150.0 |         |
| 10099-DAB | EDGE-FDD (TDMA, 8PSK, TN 0-4)                       | X | 17.69 | 98.25  | 33.53 | 9.56 | 60.0  | ± 9.6 % |
|           |                                                     | Y | 14.75 | 93.74  | 31.95 |      | 60.0  |         |
|           |                                                     | Z | 18.07 | 99.72  | 34.29 |      | 60.0  |         |
| 10100-CAB | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)            | X | 3.44  | 71.50  | 17.09 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 3.34  | 70.90  | 16.87 |      | 150.0 |         |
|           |                                                     | Z | 3.49  | 71.85  | 17.37 |      | 150.0 |         |
| 10101-CAB | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)          | X | 3.45  | 68.24  | 16.24 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 3.42  | 67.96  | 16.11 |      | 150.0 |         |
|           |                                                     | Z | 3.46  | 68.39  | 16.38 |      | 150.0 |         |
| 10102-CAB | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)          | X | 3.54  | 68.11  | 16.30 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 3.52  | 67.89  | 16.19 |      | 150.0 |         |
|           |                                                     | Z | 3.56  | 68.26  | 16.44 |      | 150.0 |         |
| 10103-CAB | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)            | X | 8.66  | 77.35  | 20.84 | 3.98 | 65.0  | ± 9.6 % |
|           |                                                     | Y | 8.46  | 77.01  | 20.81 |      | 65.0  |         |
|           |                                                     | Z | 8.71  | 77.85  | 21.15 |      | 65.0  |         |
| 10104-CAB | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)          | X | 8.88  | 76.70  | 21.45 | 3.98 | 65.0  | ± 9.6 % |
|           |                                                     | Y | 8.67  | 76.23  | 21.29 |      | 65.0  |         |
|           |                                                     | Z | 8.82  | 76.91  | 21.62 |      | 65.0  |         |
| 10105-CAB | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)          | X | 8.13  | 74.97  | 20.97 | 3.98 | 65.0  | ± 9.6 % |
|           |                                                     | Y | 7.88  | 74.31  | 20.72 |      | 65.0  |         |
|           |                                                     | Z | 7.92  | 74.75  | 20.95 |      | 65.0  |         |
| 10108-CAC | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)            | X | 3.04  | 70.66  | 16.91 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 2.95  | 70.09  | 16.69 |      | 150.0 |         |
|           |                                                     | Z | 3.08  | 70.99  | 17.20 |      | 150.0 |         |
| 10109-CAC | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)          | X | 3.12  | 68.03  | 16.19 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 3.09  | 67.76  | 16.05 |      | 150.0 |         |
|           |                                                     | Z | 3.14  | 68.21  | 16.35 |      | 150.0 |         |
| 10110-CAC | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)             | X | 2.50  | 69.68  | 16.63 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 2.43  | 69.09  | 16.36 |      | 150.0 |         |
|           |                                                     | Z | 2.53  | 70.06  | 16.93 |      | 150.0 |         |
| 10111-CAC | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)           | X | 2.81  | 68.48  | 16.49 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 2.78  | 68.30  | 16.36 |      | 150.0 |         |
|           |                                                     | Z | 2.84  | 68.81  | 16.69 |      | 150.0 |         |

|           |                                                |   |      |       |       |      |       |         |
|-----------|------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10112-CAC | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)     | X | 3.24 | 67.90 | 16.20 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 3.21 | 67.68 | 16.09 |      | 150.0 |         |
|           |                                                | Z | 3.25 | 68.09 | 16.35 |      | 150.0 |         |
| 10113-CAC | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)      | X | 2.97 | 68.50 | 16.56 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.94 | 68.37 | 16.47 |      | 150.0 |         |
|           |                                                | Z | 2.99 | 68.82 | 16.76 |      | 150.0 |         |
| 10114-CAB | IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)  | X | 5.29 | 67.41 | 16.51 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.28 | 67.36 | 16.48 |      | 150.0 |         |
|           |                                                | Z | 5.28 | 67.49 | 16.58 |      | 150.0 |         |
| 10115-CAB | IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)  | X | 5.70 | 67.80 | 16.71 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.66 | 67.68 | 16.65 |      | 150.0 |         |
|           |                                                | Z | 5.66 | 67.80 | 16.73 |      | 150.0 |         |
| 10116-CAB | IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM) | X | 5.42 | 67.66 | 16.55 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.41 | 67.63 | 16.54 |      | 150.0 |         |
|           |                                                | Z | 5.42 | 67.76 | 16.63 |      | 150.0 |         |
| 10117-CAB | IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)       | X | 5.29 | 67.43 | 16.54 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.29 | 67.39 | 16.52 |      | 150.0 |         |
|           |                                                | Z | 5.29 | 67.52 | 16.61 |      | 150.0 |         |
| 10118-CAB | IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)       | X | 5.72 | 67.78 | 16.70 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.72 | 67.79 | 16.71 |      | 150.0 |         |
|           |                                                | Z | 5.72 | 67.90 | 16.79 |      | 150.0 |         |
| 10119-CAB | IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)      | X | 5.39 | 67.61 | 16.55 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.39 | 67.59 | 16.53 |      | 150.0 |         |
|           |                                                | Z | 5.39 | 67.71 | 16.62 |      | 150.0 |         |
| 10140-CAB | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)     | X | 3.60 | 68.11 | 16.22 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 3.57 | 67.89 | 16.12 |      | 150.0 |         |
|           |                                                | Z | 3.61 | 68.26 | 16.36 |      | 150.0 |         |
| 10141-CAB | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)     | X | 3.71 | 68.11 | 16.35 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 3.69 | 67.93 | 16.26 |      | 150.0 |         |
|           |                                                | Z | 3.72 | 68.27 | 16.48 |      | 150.0 |         |
| 10142-CAC | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)        | X | 2.28 | 69.60 | 16.50 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.20 | 69.01 | 16.20 |      | 150.0 |         |
|           |                                                | Z | 2.31 | 70.09 | 16.82 |      | 150.0 |         |
| 10143-CAC | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)      | X | 2.70 | 69.15 | 16.46 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.67 | 68.99 | 16.31 |      | 150.0 |         |
|           |                                                | Z | 2.74 | 69.63 | 16.70 |      | 150.0 |         |
| 10144-CAC | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)      | X | 2.54 | 67.36 | 15.17 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.49 | 67.09 | 14.94 |      | 150.0 |         |
|           |                                                | Z | 2.55 | 67.71 | 15.33 |      | 150.0 |         |
| 10145-CAC | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)      | X | 1.68 | 68.42 | 14.82 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 1.60 | 67.64 | 14.26 |      | 150.0 |         |
|           |                                                | Z | 1.72 | 69.05 | 15.06 |      | 150.0 |         |
| 10146-CAC | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)    | X | 4.83 | 77.87 | 18.53 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 3.98 | 75.00 | 17.05 |      | 150.0 |         |
|           |                                                | Z | 3.89 | 75.00 | 17.12 |      | 150.0 |         |
| 10147-CAC | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)    | X | 6.50 | 82.39 | 20.39 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.41 | 79.51 | 18.99 |      | 150.0 |         |
|           |                                                | Z | 5.09 | 78.98 | 18.85 |      | 150.0 |         |

|           |                                            |   |      |       |       |      |       |         |
|-----------|--------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10149-CAB | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)  | X | 3.13 | 68.08 | 16.23 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.10 | 67.82 | 16.09 |      | 150.0 |         |
|           |                                            | Z | 3.14 | 68.27 | 16.39 |      | 150.0 |         |
| 10150-CAB | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)  | X | 3.25 | 67.94 | 16.24 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.22 | 67.73 | 16.12 |      | 150.0 |         |
|           |                                            | Z | 3.26 | 68.13 | 16.39 |      | 150.0 |         |
| 10151-CAB | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)    | X | 9.12 | 79.35 | 21.75 | 3.98 | 65.0  | ± 9.6 % |
|           |                                            | Y | 8.93 | 79.07 | 21.74 |      | 65.0  |         |
|           |                                            | Z | 9.26 | 80.07 | 22.14 |      | 65.0  |         |
| 10152-CAB | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)  | X | 8.52 | 76.90 | 21.36 | 3.98 | 65.0  | ± 9.6 % |
|           |                                            | Y | 8.28 | 76.34 | 21.15 |      | 65.0  |         |
|           |                                            | Z | 8.47 | 77.14 | 21.53 |      | 65.0  |         |
| 10153-CAB | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)  | X | 8.83 | 77.49 | 21.93 | 3.98 | 65.0  | ± 9.6 % |
|           |                                            | Y | 8.62 | 77.01 | 21.76 |      | 65.0  |         |
|           |                                            | Z | 8.79 | 77.75 | 22.10 |      | 65.0  |         |
| 10154-CAC | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)    | X | 2.57 | 70.18 | 16.94 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.49 | 69.59 | 16.67 |      | 150.0 |         |
|           |                                            | Z | 2.60 | 70.55 | 17.23 |      | 150.0 |         |
| 10155-CAC | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)  | X | 2.81 | 68.47 | 16.49 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.78 | 68.29 | 16.36 |      | 150.0 |         |
|           |                                            | Z | 2.84 | 68.81 | 16.70 |      | 150.0 |         |
| 10156-CAC | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)     | X | 2.16 | 69.95 | 16.57 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.07 | 69.28 | 16.21 |      | 150.0 |         |
|           |                                            | Z | 2.20 | 70.51 | 16.91 |      | 150.0 |         |
| 10157-CAC | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)   | X | 2.38 | 68.05 | 15.40 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.33 | 67.74 | 15.13 |      | 150.0 |         |
|           |                                            | Z | 2.41 | 68.51 | 15.61 |      | 150.0 |         |
| 10158-CAC | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)  | X | 2.97 | 68.54 | 16.60 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.95 | 68.41 | 16.50 |      | 150.0 |         |
|           |                                            | Z | 2.99 | 68.87 | 16.80 |      | 150.0 |         |
| 10159-CAC | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)   | X | 2.50 | 68.46 | 15.67 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.45 | 68.21 | 15.44 |      | 150.0 |         |
|           |                                            | Z | 2.53 | 68.95 | 15.89 |      | 150.0 |         |
| 10160-CAB | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)    | X | 2.97 | 69.28 | 16.60 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.92 | 68.92 | 16.43 |      | 150.0 |         |
|           |                                            | Z | 3.00 | 69.58 | 16.83 |      | 150.0 |         |
| 10161-CAB | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)  | X | 3.13 | 67.81 | 16.19 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.11 | 67.62 | 16.07 |      | 150.0 |         |
|           |                                            | Z | 3.15 | 68.02 | 16.34 |      | 150.0 |         |
| 10162-CAB | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)  | X | 3.23 | 67.81 | 16.23 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.21 | 67.66 | 16.13 |      | 150.0 |         |
|           |                                            | Z | 3.25 | 68.04 | 16.39 |      | 150.0 |         |
| 10166-CAC | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)   | X | 4.28 | 71.44 | 20.14 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.14 | 70.84 | 19.78 |      | 150.0 |         |
|           |                                            | Z | 4.08 | 70.78 | 19.80 |      | 150.0 |         |
| 10167-CAC | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | X | 5.82 | 75.47 | 21.02 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 5.49 | 74.58 | 20.57 |      | 150.0 |         |
|           |                                            | Z | 5.34 | 74.36 | 20.53 |      | 150.0 |         |

|           |                                            |   |       |        |       |      |       |         |
|-----------|--------------------------------------------|---|-------|--------|-------|------|-------|---------|
| 10168-CAC | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | X | 6.39  | 77.47  | 22.15 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 6.08  | 76.81  | 21.83 |      | 150.0 |         |
|           |                                            | Z | 5.84  | 76.29  | 21.65 |      | 150.0 |         |
| 10169-CAB | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)      | X | 4.38  | 75.00  | 21.59 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.97  | 73.13  | 20.72 |      | 150.0 |         |
|           |                                            | Z | 3.86  | 72.93  | 20.71 |      | 150.0 |         |
| 10170-CAB | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)    | X | 7.68  | 84.36  | 24.73 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 6.57  | 81.73  | 23.77 |      | 150.0 |         |
|           |                                            | Z | 6.11  | 80.75  | 23.47 |      | 150.0 |         |
| 10171-AAB | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)    | X | 5.83  | 78.41  | 21.57 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 5.03  | 75.97  | 20.56 |      | 150.0 |         |
|           |                                            | Z | 4.85  | 75.79  | 20.60 |      | 150.0 |         |
| 10172-CAB | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)      | X | 34.00 | 110.08 | 33.55 | 6.02 | 65.0  | ± 9.6 % |
|           |                                            | Y | 23.82 | 103.43 | 31.66 |      | 65.0  |         |
|           |                                            | Z | 27.68 | 107.07 | 32.82 |      | 65.0  |         |
| 10173-CAB | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)    | X | 32.90 | 104.70 | 30.42 | 6.02 | 65.0  | ± 9.6 % |
|           |                                            | Y | 28.30 | 102.52 | 29.89 |      | 65.0  |         |
|           |                                            | Z | 30.73 | 104.44 | 30.45 |      | 65.0  |         |
| 10174-CAB | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)    | X | 25.83 | 99.19  | 28.36 | 6.02 | 65.0  | ± 9.6 % |
|           |                                            | Y | 22.98 | 97.66  | 28.00 |      | 65.0  |         |
|           |                                            | Z | 24.34 | 99.06  | 28.41 |      | 65.0  |         |
| 10175-CAC | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)      | X | 4.30  | 74.53  | 21.28 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.90  | 72.69  | 20.41 |      | 150.0 |         |
|           |                                            | Z | 3.80  | 72.54  | 20.44 |      | 150.0 |         |
| 10176-CAC | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)    | X | 7.70  | 84.38  | 24.74 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 6.58  | 81.76  | 23.78 |      | 150.0 |         |
|           |                                            | Z | 6.11  | 80.77  | 23.48 |      | 150.0 |         |
| 10177-CAE | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)       | X | 4.35  | 74.76  | 21.41 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.95  | 72.91  | 20.54 |      | 150.0 |         |
|           |                                            | Z | 3.84  | 72.73  | 20.55 |      | 150.0 |         |
| 10178-CAC | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)     | X | 7.52  | 83.92  | 24.54 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 6.44  | 81.32  | 23.58 |      | 150.0 |         |
|           |                                            | Z | 6.01  | 80.41  | 23.31 |      | 150.0 |         |
| 10179-CAC | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)    | X | 6.63  | 81.06  | 22.94 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 5.69  | 78.55  | 21.97 |      | 150.0 |         |
|           |                                            | Z | 5.41  | 78.06  | 21.87 |      | 150.0 |         |
| 10180-CAC | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)     | X | 5.79  | 78.25  | 21.48 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.99  | 75.83  | 20.48 |      | 150.0 |         |
|           |                                            | Z | 4.83  | 75.67  | 20.53 |      | 150.0 |         |
| 10181-CAB | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)      | X | 4.34  | 74.74  | 21.40 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.94  | 72.89  | 20.53 |      | 150.0 |         |
|           |                                            | Z | 3.83  | 72.71  | 20.54 |      | 150.0 |         |
| 10182-CAB | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)    | X | 7.51  | 83.89  | 24.53 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 6.43  | 81.29  | 23.57 |      | 150.0 |         |
|           |                                            | Z | 6.00  | 80.39  | 23.30 |      | 150.0 |         |
| 10183-AAA | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)    | X | 5.78  | 78.22  | 21.47 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.98  | 75.80  | 20.47 |      | 150.0 |         |
|           |                                            | Z | 4.82  | 75.64  | 20.52 |      | 150.0 |         |

|           |                                               |   |      |       |       |      |       |         |
|-----------|-----------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10184-CAC | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)          | X | 4.36 | 74.79 | 21.43 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 3.95 | 72.94 | 20.56 |      | 150.0 |         |
|           |                                               | Z | 3.85 | 72.76 | 20.56 |      | 150.0 |         |
| 10185-CAC | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)        | X | 7.55 | 83.99 | 24.57 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 6.47 | 81.38 | 23.61 |      | 150.0 |         |
|           |                                               | Z | 6.03 | 80.47 | 23.34 |      | 150.0 |         |
| 10186-AAC | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)        | X | 5.81 | 78.31 | 21.51 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 5.01 | 75.88 | 20.50 |      | 150.0 |         |
|           |                                               | Z | 4.84 | 75.72 | 20.55 |      | 150.0 |         |
| 10187-CAC | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)        | X | 4.37 | 74.83 | 21.47 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 3.96 | 72.98 | 20.60 |      | 150.0 |         |
|           |                                               | Z | 3.85 | 72.80 | 20.61 |      | 150.0 |         |
| 10188-CAC | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)      | X | 7.95 | 85.05 | 25.06 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 6.80 | 82.42 | 24.11 |      | 150.0 |         |
|           |                                               | Z | 6.29 | 81.33 | 23.77 |      | 150.0 |         |
| 10189-AAC | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)      | X | 6.01 | 78.95 | 21.85 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 5.17 | 76.49 | 20.84 |      | 150.0 |         |
|           |                                               | Z | 4.98 | 76.26 | 20.86 |      | 150.0 |         |
| 10193-CAB | IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)  | X | 4.72 | 66.78 | 16.30 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.71 | 66.76 | 16.26 |      | 150.0 |         |
|           |                                               | Z | 4.72 | 66.90 | 16.38 |      | 150.0 |         |
| 10194-CAB | IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM) | X | 4.93 | 67.17 | 16.41 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.91 | 67.14 | 16.38 |      | 150.0 |         |
|           |                                               | Z | 4.92 | 67.28 | 16.49 |      | 150.0 |         |
| 10195-CAB | IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM) | X | 4.97 | 67.17 | 16.41 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.95 | 67.14 | 16.38 |      | 150.0 |         |
|           |                                               | Z | 4.96 | 67.29 | 16.49 |      | 150.0 |         |
| 10196-CAB | IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)       | X | 4.74 | 66.90 | 16.34 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.73 | 66.86 | 16.30 |      | 150.0 |         |
|           |                                               | Z | 4.74 | 67.01 | 16.41 |      | 150.0 |         |
| 10197-CAB | IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)      | X | 4.94 | 67.19 | 16.42 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.93 | 67.16 | 16.39 |      | 150.0 |         |
|           |                                               | Z | 4.94 | 67.30 | 16.50 |      | 150.0 |         |
| 10198-CAB | IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)      | X | 4.97 | 67.18 | 16.41 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.96 | 67.16 | 16.39 |      | 150.0 |         |
|           |                                               | Z | 4.97 | 67.30 | 16.50 |      | 150.0 |         |
| 10219-CAB | IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)       | X | 4.69 | 66.91 | 16.31 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.68 | 66.88 | 16.27 |      | 150.0 |         |
|           |                                               | Z | 4.69 | 67.03 | 16.38 |      | 150.0 |         |
| 10220-CAB | IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)    | X | 4.95 | 67.19 | 16.42 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.93 | 67.15 | 16.39 |      | 150.0 |         |
|           |                                               | Z | 4.94 | 67.30 | 16.50 |      | 150.0 |         |
| 10221-CAB | IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)    | X | 4.98 | 67.12 | 16.41 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.96 | 67.09 | 16.38 |      | 150.0 |         |
|           |                                               | Z | 4.97 | 67.24 | 16.49 |      | 150.0 |         |
| 10222-CAB | IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)        | X | 5.28 | 67.46 | 16.55 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 5.27 | 67.41 | 16.52 |      | 150.0 |         |
|           |                                               | Z | 5.27 | 67.54 | 16.61 |      | 150.0 |         |

|           |                                           |   |       |        |       |      |       |         |
|-----------|-------------------------------------------|---|-------|--------|-------|------|-------|---------|
| 10223-CAB | IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)  | X | 5.66  | 67.79  | 16.73 | 0.00 | 150.0 | ± 9.6 % |
|           |                                           | Y | 5.66  | 67.78  | 16.72 |      | 150.0 |         |
|           |                                           | Z | 5.66  | 67.89  | 16.81 |      | 150.0 |         |
| 10224-CAB | IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM) | X | 5.34  | 67.59  | 16.53 | 0.00 | 150.0 | ± 9.6 % |
|           |                                           | Y | 5.32  | 67.52  | 16.49 |      | 150.0 |         |
|           |                                           | Z | 5.33  | 67.65  | 16.59 |      | 150.0 |         |
| 10225-CAB | UMTS-FDD (HSPA+)                          | X | 2.98  | 66.36  | 15.75 | 0.00 | 150.0 | ± 9.6 % |
|           |                                           | Y | 2.97  | 66.26  | 15.63 |      | 150.0 |         |
|           |                                           | Z | 2.99  | 66.57  | 15.86 |      | 150.0 |         |
| 10226-CAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)  | X | 34.49 | 105.68 | 30.78 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 29.79 | 103.57 | 30.28 |      | 65.0  |         |
|           |                                           | Z | 32.28 | 105.46 | 30.82 |      | 65.0  |         |
| 10227-CAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)  | X | 26.80 | 99.98  | 28.68 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 24.57 | 98.96  | 28.48 |      | 65.0  |         |
|           |                                           | Z | 25.66 | 100.11 | 28.80 |      | 65.0  |         |
| 10228-CAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)    | X | 34.73 | 111.06 | 33.97 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 25.52 | 105.30 | 32.35 |      | 65.0  |         |
|           |                                           | Z | 30.95 | 109.77 | 33.72 |      | 65.0  |         |
| 10229-CAB | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)    | X | 32.90 | 104.69 | 30.43 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 28.35 | 102.53 | 29.91 |      | 65.0  |         |
|           |                                           | Z | 30.75 | 104.44 | 30.46 |      | 65.0  |         |
| 10230-CAB | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)    | X | 25.79 | 99.22  | 28.39 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 23.57 | 98.14  | 28.17 |      | 65.0  |         |
|           |                                           | Z | 24.66 | 99.32  | 28.50 |      | 65.0  |         |
| 10231-CAB | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)      | X | 33.18 | 110.06 | 33.62 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 24.40 | 104.32 | 31.99 |      | 65.0  |         |
|           |                                           | Z | 29.56 | 108.76 | 33.36 |      | 65.0  |         |
| 10232-CAB | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)    | X | 32.89 | 104.69 | 30.43 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 28.33 | 102.53 | 29.90 |      | 65.0  |         |
|           |                                           | Z | 30.74 | 104.44 | 30.46 |      | 65.0  |         |
| 10233-CAB | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)    | X | 25.82 | 99.25  | 28.40 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 23.57 | 98.15  | 28.17 |      | 65.0  |         |
|           |                                           | Z | 24.67 | 99.34  | 28.51 |      | 65.0  |         |
| 10234-CAB | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)      | X | 31.54 | 108.89 | 33.19 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 23.30 | 103.27 | 31.58 |      | 65.0  |         |
|           |                                           | Z | 28.13 | 107.61 | 32.94 |      | 65.0  |         |
| 10235-CAB | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)   | X | 32.98 | 104.76 | 30.45 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 28.39 | 102.58 | 29.92 |      | 65.0  |         |
|           |                                           | Z | 30.82 | 104.50 | 30.48 |      | 65.0  |         |
| 10236-CAB | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)   | X | 26.00 | 99.35  | 28.43 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 23.73 | 98.25  | 28.20 |      | 65.0  |         |
|           |                                           | Z | 24.86 | 99.45  | 28.54 |      | 65.0  |         |
| 10237-CAB | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)     | X | 33.51 | 110.27 | 33.67 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 24.55 | 104.47 | 32.03 |      | 65.0  |         |
|           |                                           | Z | 29.82 | 108.95 | 33.42 |      | 65.0  |         |
| 10238-CAB | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)   | X | 32.92 | 104.72 | 30.43 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 28.33 | 102.54 | 29.91 |      | 65.0  |         |
|           |                                           | Z | 30.76 | 104.46 | 30.46 |      | 65.0  |         |

|           |                                            |   |       |        |       |      |      |         |
|-----------|--------------------------------------------|---|-------|--------|-------|------|------|---------|
| 10239-CAB | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)    | X | 25.84 | 99.28  | 28.41 | 6.02 | 65.0 | ± 9.6 % |
|           |                                            | Y | 23.57 | 98.17  | 28.18 |      | 65.0 |         |
|           |                                            | Z | 24.68 | 99.36  | 28.51 |      | 65.0 |         |
| 10240-CAB | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)      | X | 33.41 | 110.22 | 33.66 | 6.02 | 65.0 | ± 9.6 % |
|           |                                            | Y | 24.49 | 104.42 | 32.01 |      | 65.0 |         |
|           |                                            | Z | 29.73 | 108.90 | 33.40 |      | 65.0 |         |
| 10241-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | X | 13.87 | 87.85  | 27.97 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 12.90 | 86.30  | 27.27 |      | 65.0 |         |
|           |                                            | Z | 13.00 | 86.99  | 27.62 |      | 65.0 |         |
| 10242-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | X | 13.03 | 86.40  | 27.33 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 12.04 | 84.70  | 26.56 |      | 65.0 |         |
|           |                                            | Z | 12.01 | 85.17  | 26.83 |      | 65.0 |         |
| 10243-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)   | X | 10.68 | 84.11  | 27.32 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 9.82  | 82.05  | 26.33 |      | 65.0 |         |
|           |                                            | Z | 9.82  | 82.65  | 26.70 |      | 65.0 |         |
| 10244-CAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)   | X | 10.69 | 81.99  | 22.20 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 10.07 | 80.96  | 21.68 |      | 65.0 |         |
|           |                                            | Z | 10.02 | 81.14  | 21.69 |      | 65.0 |         |
| 10245-CAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)   | X | 10.57 | 81.58  | 22.00 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 9.98  | 80.56  | 21.49 |      | 65.0 |         |
|           |                                            | Z | 9.91  | 80.72  | 21.49 |      | 65.0 |         |
| 10246-CAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)     | X | 9.29  | 82.24  | 22.05 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.84  | 81.48  | 21.78 |      | 65.0 |         |
|           |                                            | Z | 9.57  | 83.17  | 22.39 |      | 65.0 |         |
| 10247-CAB | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)   | X | 8.07  | 77.79  | 20.87 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 7.81  | 77.20  | 20.60 |      | 65.0 |         |
|           |                                            | Z | 8.04  | 78.08  | 20.96 |      | 65.0 |         |
| 10248-CAB | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)   | X | 8.11  | 77.42  | 20.72 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 7.83  | 76.80  | 20.42 |      | 65.0 |         |
|           |                                            | Z | 8.05  | 77.65  | 20.78 |      | 65.0 |         |
| 10249-CAB | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)     | X | 9.78  | 83.07  | 22.80 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 9.36  | 82.41  | 22.61 |      | 65.0 |         |
|           |                                            | Z | 10.14 | 84.18  | 23.26 |      | 65.0 |         |
| 10250-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)  | X | 8.72  | 78.97  | 22.30 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.48  | 78.45  | 22.12 |      | 65.0 |         |
|           |                                            | Z | 8.71  | 79.35  | 22.51 |      | 65.0 |         |
| 10251-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)  | X | 8.36  | 77.15  | 21.34 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.13  | 76.62  | 21.11 |      | 65.0 |         |
|           |                                            | Z | 8.33  | 77.46  | 21.50 |      | 65.0 |         |
| 10252-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)    | X | 9.59  | 81.92  | 22.81 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 9.28  | 81.44  | 22.73 |      | 65.0 |         |
|           |                                            | Z | 9.85  | 82.90  | 23.29 |      | 65.0 |         |
| 10253-CAB | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)  | X | 8.31  | 76.36  | 21.21 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.09  | 75.81  | 20.99 |      | 65.0 |         |
|           |                                            | Z | 8.25  | 76.57  | 21.35 |      | 65.0 |         |
| 10254-CAB | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)  | X | 8.64  | 76.97  | 21.75 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.44  | 76.49  | 21.55 |      | 65.0 |         |
|           |                                            | Z | 8.59  | 77.21  | 21.89 |      | 65.0 |         |

|           |                                             |   |       |       |       |      |      |         |
|-----------|---------------------------------------------|---|-------|-------|-------|------|------|---------|
| 10255-CAB | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)     | X | 8.88  | 79.09 | 21.89 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.67  | 78.72 | 21.83 |      | 65.0 |         |
|           |                                             | Z | 8.98  | 79.73 | 22.24 |      | 65.0 |         |
| 10256-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM) | X | 10.07 | 80.79 | 21.11 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 9.36  | 79.53 | 20.48 |      | 65.0 |         |
|           |                                             | Z | 9.27  | 79.61 | 20.43 |      | 65.0 |         |
| 10257-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM) | X | 9.93  | 80.22 | 20.83 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 9.22  | 78.95 | 20.18 |      | 65.0 |         |
|           |                                             | Z | 9.12  | 79.01 | 20.13 |      | 65.0 |         |
| 10258-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)   | X | 8.66  | 80.91 | 21.13 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.13  | 79.89 | 20.72 |      | 65.0 |         |
|           |                                             | Z | 8.71  | 81.36 | 21.24 |      | 65.0 |         |
| 10259-CAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)   | X | 8.32  | 78.14 | 21.35 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.07  | 77.59 | 21.11 |      | 65.0 |         |
|           |                                             | Z | 8.30  | 78.48 | 21.48 |      | 65.0 |         |
| 10260-CAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)   | X | 8.37  | 77.96 | 21.30 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.11  | 77.40 | 21.05 |      | 65.0 |         |
|           |                                             | Z | 8.33  | 78.25 | 21.41 |      | 65.0 |         |
| 10261-CAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)     | X | 9.44  | 82.16 | 22.69 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 9.05  | 81.51 | 22.50 |      | 65.0 |         |
|           |                                             | Z | 9.69  | 83.12 | 23.12 |      | 65.0 |         |
| 10262-CAB | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)   | X | 8.72  | 78.94 | 22.28 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.47  | 78.42 | 22.09 |      | 65.0 |         |
|           |                                             | Z | 8.71  | 79.32 | 22.48 |      | 65.0 |         |
| 10263-CAB | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)   | X | 8.36  | 77.16 | 21.34 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.13  | 76.62 | 21.11 |      | 65.0 |         |
|           |                                             | Z | 8.33  | 77.46 | 21.50 |      | 65.0 |         |
| 10264-CAB | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)     | X | 9.55  | 81.82 | 22.76 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 9.23  | 81.33 | 22.67 |      | 65.0 |         |
|           |                                             | Z | 9.80  | 82.79 | 23.23 |      | 65.0 |         |
| 10265-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)  | X | 8.52  | 76.91 | 21.37 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.28  | 76.34 | 21.16 |      | 65.0 |         |
|           |                                             | Z | 8.46  | 77.15 | 21.54 |      | 65.0 |         |
| 10266-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)  | X | 8.84  | 77.48 | 21.92 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.62  | 77.01 | 21.75 |      | 65.0 |         |
|           |                                             | Z | 8.79  | 77.75 | 22.10 |      | 65.0 |         |
| 10267-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)    | X | 9.11  | 79.33 | 21.73 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.91  | 79.04 | 21.73 |      | 65.0 |         |
|           |                                             | Z | 9.25  | 80.04 | 22.13 |      | 65.0 |         |
| 10268-CAB | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)  | X | 8.95  | 76.40 | 21.47 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.77  | 75.99 | 21.33 |      | 65.0 |         |
|           |                                             | Z | 8.89  | 76.60 | 21.62 |      | 65.0 |         |
| 10269-CAB | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)  | X | 8.88  | 76.03 | 21.40 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.71  | 75.62 | 21.25 |      | 65.0 |         |
|           |                                             | Z | 8.81  | 76.21 | 21.54 |      | 65.0 |         |
| 10270-CAB | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)    | X | 8.82  | 77.21 | 21.03 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 8.69  | 77.00 | 21.04 |      | 65.0 |         |
|           |                                             | Z | 8.86  | 77.65 | 21.31 |      | 65.0 |         |

|           |                                                                    |   |       |       |       |      |       |         |
|-----------|--------------------------------------------------------------------|---|-------|-------|-------|------|-------|---------|
| 10274-CAB | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)                          | X | 2.68  | 66.55 | 15.56 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.68  | 66.43 | 15.43 |      | 150.0 |         |
|           |                                                                    | Z | 2.71  | 66.85 | 15.73 |      | 150.0 |         |
| 10275-CAB | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)                           | X | 1.76  | 69.02 | 16.21 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.71  | 68.23 | 15.83 |      | 150.0 |         |
|           |                                                                    | Z | 1.82  | 69.57 | 16.62 |      | 150.0 |         |
| 10277-CAA | PHS (QPSK)                                                         | X | 6.62  | 71.52 | 15.81 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 6.77  | 71.96 | 16.20 |      | 50.0  |         |
|           |                                                                    | Z | 6.48  | 71.54 | 15.70 |      | 50.0  |         |
| 10278-CAA | PHS (QPSK, BW 884MHz, Rolloff 0.5)                                 | X | 9.81  | 80.35 | 21.62 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 9.58  | 79.96 | 21.62 |      | 50.0  |         |
|           |                                                                    | Z | 9.84  | 80.82 | 21.76 |      | 50.0  |         |
| 10279-CAA | PHS (QPSK, BW 884MHz, Rolloff 0.38)                                | X | 10.00 | 80.57 | 21.71 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 9.73  | 80.14 | 21.69 |      | 50.0  |         |
|           |                                                                    | Z | 10.02 | 81.03 | 21.84 |      | 50.0  |         |
| 10290-AAB | CDMA2000, RC1, SO55, Full Rate                                     | X | 1.82  | 70.77 | 15.90 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.72  | 69.89 | 15.40 |      | 150.0 |         |
|           |                                                                    | Z | 1.95  | 72.06 | 16.51 |      | 150.0 |         |
| 10291-AAB | CDMA2000, RC3, SO55, Full Rate                                     | X | 1.03  | 68.06 | 14.52 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 0.98  | 66.97 | 13.92 |      | 150.0 |         |
|           |                                                                    | Z | 1.11  | 69.26 | 15.22 |      | 150.0 |         |
| 10292-AAB | CDMA2000, RC3, SO32, Full Rate                                     | X | 1.32  | 72.62 | 17.03 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.20  | 70.85 | 16.19 |      | 150.0 |         |
|           |                                                                    | Z | 1.50  | 74.78 | 18.11 |      | 150.0 |         |
| 10293-AAB | CDMA2000, RC3, SO3, Full Rate                                      | X | 1.86  | 78.12 | 19.78 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.66  | 75.88 | 18.82 |      | 150.0 |         |
|           |                                                                    | Z | 2.25  | 81.38 | 21.19 |      | 150.0 |         |
| 10295-AAB | CDMA2000, RC1, SO3, 1/8th Rate 25 fr.                              | X | 10.17 | 82.01 | 23.87 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 10.08 | 81.64 | 23.75 |      | 50.0  |         |
|           |                                                                    | Z | 10.46 | 83.00 | 24.26 |      | 50.0  |         |
| 10297-AAA | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)                            | X | 3.06  | 70.75 | 16.98 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.97  | 70.19 | 16.76 |      | 150.0 |         |
|           |                                                                    | Z | 3.09  | 71.09 | 17.26 |      | 150.0 |         |
| 10298-AAB | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)                             | X | 1.94  | 69.59 | 15.88 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.86  | 68.90 | 15.44 |      | 150.0 |         |
|           |                                                                    | Z | 2.00  | 70.30 | 16.23 |      | 150.0 |         |
| 10299-AAB | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)                           | X | 4.90  | 77.67 | 19.07 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 4.30  | 75.67 | 18.00 |      | 150.0 |         |
|           |                                                                    | Z | 4.17  | 75.58 | 18.03 |      | 150.0 |         |
| 10300-AAB | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)                           | X | 3.47  | 71.44 | 15.80 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 3.06  | 69.68 | 14.73 |      | 150.0 |         |
|           |                                                                    | Z | 3.03  | 69.87 | 14.88 |      | 150.0 |         |
| 10301-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)                 | X | 6.02  | 68.68 | 19.11 | 4.17 | 80.0  | ± 9.6 % |
|           |                                                                    | Y | 5.98  | 68.44 | 18.86 |      | 80.0  |         |
|           |                                                                    | Z | 5.95  | 68.58 | 19.03 |      | 80.0  |         |
| 10302-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols) | X | 6.59  | 69.62 | 20.04 | 4.96 | 80.0  | ± 9.6 % |
|           |                                                                    | Y | 6.48  | 69.09 | 19.63 |      | 80.0  |         |
|           |                                                                    | Z | 6.53  | 69.66 | 20.05 |      | 80.0  |         |

|           |                                                                     |   |       |       |       |       |       |         |
|-----------|---------------------------------------------------------------------|---|-------|-------|-------|-------|-------|---------|
| 10303-AAA | IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)                 | X | 6.50  | 69.94 | 20.23 | 4.96  | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 6.37  | 69.29 | 19.74 |       | 80.0  |         |
|           |                                                                     | Z | 6.43  | 69.92 | 20.21 |       | 80.0  |         |
| 10304-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)                 | X | 6.04  | 68.91 | 19.25 | 4.17  | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.94  | 68.42 | 18.86 |       | 80.0  |         |
|           |                                                                     | Z | 5.99  | 68.95 | 19.25 |       | 80.0  |         |
| 10305-AAA | IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)    | X | 8.62  | 79.07 | 24.92 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 11.34 | 86.21 | 27.91 |       | 50.0  |         |
|           |                                                                     | Z | 8.42  | 78.75 | 24.71 |       | 50.0  |         |
| 10306-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)    | X | 7.30  | 73.86 | 22.83 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 6.99  | 72.41 | 21.84 |       | 50.0  |         |
|           |                                                                     | Z | 7.19  | 73.72 | 22.72 |       | 50.0  |         |
| 10307-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)     | X | 7.53  | 74.88 | 23.08 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 7.13  | 73.19 | 22.00 |       | 50.0  |         |
|           |                                                                     | Z | 7.41  | 74.71 | 22.96 |       | 50.0  |         |
| 10308-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)                | X | 7.64  | 75.45 | 23.34 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 7.20  | 73.62 | 22.20 |       | 50.0  |         |
|           |                                                                     | Z | 7.51  | 75.27 | 23.22 |       | 50.0  |         |
| 10309-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols) | X | 7.44  | 74.18 | 22.99 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 7.11  | 72.71 | 22.00 |       | 50.0  |         |
|           |                                                                     | Z | 7.33  | 74.08 | 22.90 |       | 50.0  |         |
| 10310-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)  | X | 7.36  | 74.18 | 22.87 | 6.02  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 7.02  | 72.66 | 21.86 |       | 50.0  |         |
|           |                                                                     | Z | 7.24  | 74.05 | 22.76 |       | 50.0  |         |
| 10311-AAA | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)                            | X | 3.41  | 70.03 | 16.61 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 3.32  | 69.51 | 16.42 |       | 150.0 |         |
|           |                                                                     | Z | 3.45  | 70.34 | 16.87 |       | 150.0 |         |
| 10313-AAA | IDEN 1:3                                                            | X | 7.37  | 77.22 | 18.46 | 6.99  | 70.0  | ± 9.6 % |
|           |                                                                     | Y | 7.49  | 77.91 | 19.05 |       | 70.0  |         |
|           |                                                                     | Z | 7.96  | 79.06 | 19.32 |       | 70.0  |         |
| 10314-AAA | IDEN 1:6                                                            | X | 8.75  | 81.12 | 22.17 | 10.00 | 30.0  | ± 9.6 % |
|           |                                                                     | Y | 8.84  | 81.70 | 22.74 |       | 30.0  |         |
|           |                                                                     | Z | 9.56  | 83.47 | 23.24 |       | 30.0  |         |
| 10315-AAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)           | X | 1.18  | 65.17 | 15.98 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 1.19  | 64.74 | 15.68 |       | 150.0 |         |
|           |                                                                     | Z | 1.21  | 65.44 | 16.26 |       | 150.0 |         |
| 10316-AAB | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)       | X | 4.83  | 66.99 | 16.50 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.83  | 66.97 | 16.48 |       | 150.0 |         |
|           |                                                                     | Z | 4.83  | 67.11 | 16.58 |       | 150.0 |         |
| 10317-AAB | IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)             | X | 4.83  | 66.99 | 16.50 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.83  | 66.97 | 16.48 |       | 150.0 |         |
|           |                                                                     | Z | 4.83  | 67.11 | 16.58 |       | 150.0 |         |
| 10400-AAC | IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)                 | X | 4.95  | 67.24 | 16.40 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.92  | 67.19 | 16.36 |       | 150.0 |         |
|           |                                                                     | Z | 4.94  | 67.35 | 16.49 |       | 150.0 |         |
| 10401-AAC | IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)                 | X | 5.53  | 67.22 | 16.43 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 5.54  | 67.25 | 16.44 |       | 150.0 |         |
|           |                                                                     | Z | 5.54  | 67.37 | 16.53 |       | 150.0 |         |

|           |                                                                                |   |        |        |       |      |       |         |
|-----------|--------------------------------------------------------------------------------|---|--------|--------|-------|------|-------|---------|
| 10402-AAC | IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle)                            | X | 5.85   | 67.86  | 16.58 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 5.85   | 67.83  | 16.57 |      | 150.0 |         |
|           |                                                                                | Z | 5.85   | 67.95  | 16.65 |      | 150.0 |         |
| 10403-AAB | CDMA2000 (1xEV-DO, Rev. 0)                                                     | X | 1.82   | 70.77  | 15.90 | 0.00 | 115.0 | ± 9.6 % |
|           |                                                                                | Y | 1.72   | 69.89  | 15.40 |      | 115.0 |         |
|           |                                                                                | Z | 1.95   | 72.06  | 16.51 |      | 115.0 |         |
| 10404-AAB | CDMA2000 (1xEV-DO, Rev. A)                                                     | X | 1.82   | 70.77  | 15.90 | 0.00 | 115.0 | ± 9.6 % |
|           |                                                                                | Y | 1.72   | 69.89  | 15.40 |      | 115.0 |         |
|           |                                                                                | Z | 1.95   | 72.06  | 16.51 |      | 115.0 |         |
| 10406-AAB | CDMA2000, RC3, SO32, SCH0, Full Rate                                           | X | 100.00 | 122.48 | 31.59 | 0.00 | 100.0 | ± 9.6 % |
|           |                                                                                | Y | 100.00 | 122.39 | 31.44 |      | 100.0 |         |
|           |                                                                                | Z | 100.00 | 123.91 | 32.06 |      | 100.0 |         |
| 10410-AAA | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)                 | X | 100.00 | 119.39 | 30.70 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                                | Y | 100.00 | 120.18 | 31.03 |      | 80.0  |         |
|           |                                                                                | Z | 100.00 | 120.31 | 30.97 |      | 80.0  |         |
| 10415-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle)                      | X | 1.00   | 63.40  | 15.00 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 1.03   | 63.13  | 14.76 |      | 150.0 |         |
|           |                                                                                | Z | 1.04   | 63.74  | 15.31 |      | 150.0 |         |
| 10416-AAA | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle)                  | X | 4.72   | 66.80  | 16.33 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.71   | 66.79  | 16.30 |      | 150.0 |         |
|           |                                                                                | Z | 4.72   | 66.93  | 16.41 |      | 150.0 |         |
| 10417-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle)                      | X | 4.72   | 66.80  | 16.33 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.71   | 66.79  | 16.30 |      | 150.0 |         |
|           |                                                                                | Z | 4.72   | 66.93  | 16.41 |      | 150.0 |         |
| 10418-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preamble)  | X | 4.70   | 66.93  | 16.32 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.69   | 66.92  | 16.30 |      | 150.0 |         |
|           |                                                                                | Z | 4.70   | 67.07  | 16.41 |      | 150.0 |         |
| 10419-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preamble) | X | 4.73   | 66.90  | 16.34 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.72   | 66.88  | 16.31 |      | 150.0 |         |
|           |                                                                                | Z | 4.73   | 67.03  | 16.42 |      | 150.0 |         |
| 10422-AAA | IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)                                   | X | 4.86   | 66.91  | 16.35 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.85   | 66.90  | 16.33 |      | 150.0 |         |
|           |                                                                                | Z | 4.86   | 67.04  | 16.44 |      | 150.0 |         |
| 10423-AAA | IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)                                | X | 5.08   | 67.33  | 16.51 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 5.06   | 67.29  | 16.47 |      | 150.0 |         |
|           |                                                                                | Z | 5.07   | 67.43  | 16.58 |      | 150.0 |         |
| 10424-AAA | IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)                                | X | 4.99   | 67.25  | 16.46 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 4.97   | 67.22  | 16.43 |      | 150.0 |         |
|           |                                                                                | Z | 4.98   | 67.37  | 16.54 |      | 150.0 |         |
| 10425-AAA | IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)                                    | X | 5.55   | 67.62  | 16.62 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 5.54   | 67.58  | 16.60 |      | 150.0 |         |
|           |                                                                                | Z | 5.54   | 67.69  | 16.68 |      | 150.0 |         |
| 10426-AAA | IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)                                  | X | 5.56   | 67.65  | 16.63 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                                | Y | 5.55   | 67.62  | 16.61 |      | 150.0 |         |
|           |                                                                                | Z | 5.55   | 67.73  | 16.70 |      | 150.0 |         |

|           |                                                                |   |        |        |       |      |       |         |
|-----------|----------------------------------------------------------------|---|--------|--------|-------|------|-------|---------|
| 10427-AAA | IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)                 | X | 5.59   | 67.68  | 16.64 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 5.57   | 67.63  | 16.62 |      | 150.0 |         |
|           |                                                                | Z | 5.58   | 67.75  | 16.70 |      | 150.0 |         |
| 10430-AAA | LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)                               | X | 4.40   | 70.01  | 18.10 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.43   | 70.35  | 18.24 |      | 150.0 |         |
|           |                                                                | Z | 4.41   | 70.36  | 18.25 |      | 150.0 |         |
| 10431-AAA | LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)                              | X | 4.49   | 67.37  | 16.43 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.45   | 67.33  | 16.37 |      | 150.0 |         |
|           |                                                                | Z | 4.47   | 67.52  | 16.51 |      | 150.0 |         |
| 10432-AAA | LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)                              | X | 4.77   | 67.29  | 16.44 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.74   | 67.25  | 16.40 |      | 150.0 |         |
|           |                                                                | Z | 4.75   | 67.42  | 16.53 |      | 150.0 |         |
| 10433-AAA | LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)                              | X | 5.00   | 67.31  | 16.50 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.98   | 67.27  | 16.46 |      | 150.0 |         |
|           |                                                                | Z | 4.99   | 67.42  | 16.57 |      | 150.0 |         |
| 10434-AAA | W-CDMA (BS Test Model 1, 64 DPCH)                              | X | 4.48   | 70.64  | 18.10 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.52   | 71.07  | 18.25 |      | 150.0 |         |
|           |                                                                | Z | 4.50   | 71.08  | 18.27 |      | 150.0 |         |
| 10435-AAA | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | X | 100.00 | 119.25 | 30.64 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                | Y | 100.00 | 120.04 | 30.96 |      | 80.0  |         |
|           |                                                                | Z | 100.00 | 120.17 | 30.90 |      | 80.0  |         |
| 10447-AAA | LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)                 | X | 3.81   | 67.43  | 16.04 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.77   | 67.36  | 15.92 |      | 150.0 |         |
|           |                                                                | Z | 3.80   | 67.63  | 16.11 |      | 150.0 |         |
| 10448-AAA | LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)                | X | 4.29   | 67.14  | 16.28 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.27   | 67.10  | 16.23 |      | 150.0 |         |
|           |                                                                | Z | 4.28   | 67.30  | 16.37 |      | 150.0 |         |
| 10449-AAA | LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)                | X | 4.54   | 67.10  | 16.34 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.52   | 67.07  | 16.30 |      | 150.0 |         |
|           |                                                                | Z | 4.53   | 67.24  | 16.43 |      | 150.0 |         |
| 10450-AAA | LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)                | X | 4.71   | 67.05  | 16.35 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.70   | 67.01  | 16.31 |      | 150.0 |         |
|           |                                                                | Z | 4.71   | 67.17  | 16.43 |      | 150.0 |         |
| 10451-AAA | W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)                | X | 3.76   | 67.73  | 15.85 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.70   | 67.65  | 15.70 |      | 150.0 |         |
|           |                                                                | Z | 3.74   | 67.97  | 15.92 |      | 150.0 |         |
| 10456-AAA | IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc duty cycle)           | X | 6.40   | 68.27  | 16.81 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 6.40   | 68.22  | 16.78 |      | 150.0 |         |
|           |                                                                | Z | 6.39   | 68.32  | 16.85 |      | 150.0 |         |
| 10457-AAA | UMTS-FDD (DC-HSDPA)                                            | X | 3.86   | 65.46  | 16.08 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.88   | 65.42  | 16.03 |      | 150.0 |         |
|           |                                                                | Z | 3.88   | 65.58  | 16.16 |      | 150.0 |         |
| 10458-AAA | CDMA2000 (1xEV-DO, Rev. B, 2 carriers)                         | X | 3.55   | 66.84  | 15.36 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 3.51   | 66.84  | 15.20 |      | 150.0 |         |
|           |                                                                | Z | 3.55   | 67.17  | 15.43 |      | 150.0 |         |
| 10459-AAA | CDMA2000 (1xEV-DO, Rev. B, 3 carriers)                         | X | 4.71   | 65.21  | 16.07 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                | Y | 4.63   | 65.09  | 15.89 |      | 150.0 |         |
|           |                                                                | Z | 4.67   | 65.34  | 16.07 |      | 150.0 |         |

|           |                                                                   |   |        |        |       |      |       |         |
|-----------|-------------------------------------------------------------------|---|--------|--------|-------|------|-------|---------|
| 10460-AAA | UMTS-FDD (WCDMA, AMR)                                             | X | 0.99   | 70.26  | 17.25 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                   | Y | 0.94   | 68.45  | 16.37 |      | 150.0 |         |
|           |                                                                   | Z | 1.07   | 71.18  | 17.96 |      | 150.0 |         |
| 10461-AAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 100.00 | 122.02 | 31.99 | 3.29 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 122.59 | 32.22 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 122.98 | 32.28 |      | 80.0  |         |
| 10462-AAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 100.00 | 109.85 | 26.14 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 110.36 | 26.33 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 110.34 | 26.21 |      | 80.0  |         |
| 10463-AAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 100.00 | 107.53 | 25.02 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 107.98 | 25.17 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 107.85 | 25.00 |      | 80.0  |         |
| 10464-AAA | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 100.00 | 120.45 | 31.12 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 121.00 | 31.33 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 121.35 | 31.38 |      | 80.0  |         |
| 10465-AAA | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 100.00 | 109.46 | 25.94 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 109.95 | 26.11 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 109.93 | 25.99 |      | 80.0  |         |
| 10466-AAA | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 100.00 | 107.15 | 24.83 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 107.57 | 24.97 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 107.44 | 24.80 |      | 80.0  |         |
| 10467-AAA | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 100.00 | 120.62 | 31.20 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 121.18 | 31.42 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 121.53 | 31.46 |      | 80.0  |         |
| 10468-AAA | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 100.00 | 109.57 | 26.00 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 110.07 | 26.17 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 110.05 | 26.05 |      | 80.0  |         |
| 10469-AAA | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 100.00 | 107.16 | 24.83 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 107.58 | 24.96 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 107.45 | 24.80 |      | 80.0  |         |
| 10470-AAA | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 100.00 | 120.64 | 31.20 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 121.21 | 31.42 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 121.56 | 31.46 |      | 80.0  |         |
| 10471-AAA | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 100.00 | 109.54 | 25.97 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 110.04 | 26.15 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 110.01 | 26.03 |      | 80.0  |         |
| 10472-AAA | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)  | X | 100.00 | 107.12 | 24.81 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 107.54 | 24.94 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 107.41 | 24.78 |      | 80.0  |         |
| 10473-AAA | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 100.00 | 120.62 | 31.19 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 121.18 | 31.41 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 121.53 | 31.45 |      | 80.0  |         |
| 10474-AAA | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 100.00 | 109.55 | 25.98 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 110.05 | 26.15 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 110.03 | 26.03 |      | 80.0  |         |
| 10475-AAA | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)  | X | 100.00 | 107.13 | 24.81 | 3.23 | 80.0  | ± 9.6 % |
|           |                                                                   | Y | 100.00 | 107.55 | 24.95 |      | 80.0  |         |
|           |                                                                   | Z | 100.00 | 107.42 | 24.78 |      | 80.0  |         |

|           |                                                                     |   |        |        |       |      |      |         |
|-----------|---------------------------------------------------------------------|---|--------|--------|-------|------|------|---------|
| 10477-AAA | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)    | X | 100.00 | 109.42 | 25.91 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 100.00 | 109.91 | 26.09 |      | 80.0 |         |
|           |                                                                     | Z | 100.00 | 109.89 | 25.96 |      | 80.0 |         |
| 10478-AAA | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)    | X | 100.00 | 107.10 | 24.80 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 100.00 | 107.52 | 24.93 |      | 80.0 |         |
|           |                                                                     | Z | 100.00 | 107.38 | 24.76 |      | 80.0 |         |
| 10479-AAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 15.27  | 94.34  | 26.55 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 13.93  | 92.73  | 25.91 |      | 80.0 |         |
|           |                                                                     | Z | 13.69  | 92.81  | 25.94 |      | 80.0 |         |
| 10480-AAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 17.85  | 91.69  | 24.29 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 17.05  | 90.96  | 23.91 |      | 80.0 |         |
|           |                                                                     | Z | 15.74  | 90.05  | 23.61 |      | 80.0 |         |
| 10481-AAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 16.05  | 89.42  | 23.31 | 3.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 15.20  | 88.58  | 22.88 |      | 80.0 |         |
|           |                                                                     | Z | 14.01  | 87.66  | 22.58 |      | 80.0 |         |
| 10482-AAA | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 6.46   | 79.79  | 20.49 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 6.00   | 78.69  | 20.07 |      | 80.0 |         |
|           |                                                                     | Z | 6.94   | 81.30  | 21.05 |      | 80.0 |         |
| 10483-AAA | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 10.64  | 84.45  | 22.26 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 10.00  | 83.37  | 21.70 |      | 80.0 |         |
|           |                                                                     | Z | 9.59   | 82.97  | 21.54 |      | 80.0 |         |
| 10484-AAA | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 9.96   | 83.22  | 21.86 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 9.31   | 82.09  | 21.27 |      | 80.0 |         |
|           |                                                                     | Z | 8.95   | 81.72  | 21.12 |      | 80.0 |         |
| 10485-AAA | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 6.59   | 80.11  | 21.11 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 6.08   | 78.90  | 20.69 |      | 80.0 |         |
|           |                                                                     | Z | 6.88   | 81.28  | 21.62 |      | 80.0 |         |
| 10486-AAA | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 5.22   | 73.82  | 18.61 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 5.09   | 73.44  | 18.41 |      | 80.0 |         |
|           |                                                                     | Z | 5.33   | 74.50  | 18.88 |      | 80.0 |         |
| 10487-AAA | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 5.19   | 73.39  | 18.45 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 5.06   | 73.02  | 18.24 |      | 80.0 |         |
|           |                                                                     | Z | 5.27   | 73.99  | 18.68 |      | 80.0 |         |
| 10488-AAA | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 6.39   | 78.18  | 20.73 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 5.97   | 77.14  | 20.41 |      | 80.0 |         |
|           |                                                                     | Z | 6.48   | 78.88  | 21.13 |      | 80.0 |         |
| 10489-AAA | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 5.20   | 72.70  | 18.88 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 5.07   | 72.27  | 18.71 |      | 80.0 |         |
|           |                                                                     | Z | 5.21   | 73.04  | 19.09 |      | 80.0 |         |
| 10490-AAA | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)  | X | 5.24   | 72.29  | 18.75 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 5.12   | 71.92  | 18.59 |      | 80.0 |         |
|           |                                                                     | Z | 5.24   | 72.63  | 18.94 |      | 80.0 |         |
| 10491-AAA | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 6.02   | 75.43  | 19.78 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 5.76   | 74.73  | 19.57 |      | 80.0 |         |
|           |                                                                     | Z | 6.05   | 75.89  | 20.09 |      | 80.0 |         |
| 10492-AAA | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 5.38   | 71.48  | 18.58 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                     | Y | 5.27   | 71.13  | 18.44 |      | 80.0 |         |
|           |                                                                     | Z | 5.35   | 71.71  | 18.74 |      | 80.0 |         |

|           |                                                                      |   |      |       |       |      |      |         |
|-----------|----------------------------------------------------------------------|---|------|-------|-------|------|------|---------|
| 10493-AAA | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 5.42 | 71.24 | 18.51 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.32 | 70.91 | 18.38 |      | 80.0 |         |
|           |                                                                      | Z | 5.40 | 71.45 | 18.66 |      | 80.0 |         |
| 10494-AAA | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 6.80 | 77.48 | 20.35 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 6.41 | 76.59 | 20.10 |      | 80.0 |         |
|           |                                                                      | Z | 6.87 | 78.03 | 20.70 |      | 80.0 |         |
| 10495-AAA | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 5.50 | 72.14 | 18.82 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.37 | 71.71 | 18.66 |      | 80.0 |         |
|           |                                                                      | Z | 5.48 | 72.35 | 18.98 |      | 80.0 |         |
| 10496-AAA | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 5.52 | 71.65 | 18.67 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.40 | 71.28 | 18.53 |      | 80.0 |         |
|           |                                                                      | Z | 5.49 | 71.85 | 18.82 |      | 80.0 |         |
| 10497-AAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 5.51 | 77.56 | 19.18 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.11 | 76.42 | 18.67 |      | 80.0 |         |
|           |                                                                      | Z | 5.89 | 78.83 | 19.60 |      | 80.0 |         |
| 10498-AAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 4.31 | 71.42 | 16.10 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 4.05 | 70.52 | 15.58 |      | 80.0 |         |
|           |                                                                      | Z | 4.34 | 71.77 | 16.11 |      | 80.0 |         |
| 10499-AAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 4.27 | 70.94 | 15.80 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 3.98 | 70.00 | 15.24 |      | 80.0 |         |
|           |                                                                      | Z | 4.25 | 71.16 | 15.75 |      | 80.0 |         |
| 10500-AAA | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 6.24 | 78.61 | 20.73 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.82 | 77.56 | 20.37 |      | 80.0 |         |
|           |                                                                      | Z | 6.42 | 79.55 | 21.18 |      | 80.0 |         |
| 10501-AAA | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 5.18 | 73.19 | 18.64 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.05 | 72.81 | 18.45 |      | 80.0 |         |
|           |                                                                      | Z | 5.24 | 73.73 | 18.88 |      | 80.0 |         |
| 10502-AAA | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 5.20 | 72.88 | 18.49 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.09 | 72.56 | 18.32 |      | 80.0 |         |
|           |                                                                      | Z | 5.26 | 73.41 | 18.72 |      | 80.0 |         |
| 10503-AAA | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9)     | X | 6.31 | 77.98 | 20.65 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.89 | 76.94 | 20.32 |      | 80.0 |         |
|           |                                                                      | Z | 6.40 | 78.67 | 21.04 |      | 80.0 |         |
| 10504-AAA | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)   | X | 5.18 | 72.62 | 18.84 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.05 | 72.19 | 18.66 |      | 80.0 |         |
|           |                                                                      | Z | 5.18 | 72.96 | 19.04 |      | 80.0 |         |
| 10505-AAA | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9)   | X | 5.22 | 72.20 | 18.70 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.10 | 71.83 | 18.54 |      | 80.0 |         |
|           |                                                                      | Z | 5.22 | 72.54 | 18.90 |      | 80.0 |         |
| 10506-AAA | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9)    | X | 6.75 | 77.34 | 20.29 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 6.36 | 76.44 | 20.03 |      | 80.0 |         |
|           |                                                                      | Z | 6.81 | 77.88 | 20.63 |      | 80.0 |         |
| 10507-AAA | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9)  | X | 5.48 | 72.08 | 18.79 | 2.23 | 80.0 | ± 9.6 % |
|           |                                                                      | Y | 5.35 | 71.65 | 18.63 |      | 80.0 |         |
|           |                                                                      | Z | 5.46 | 72.29 | 18.95 |      | 80.0 |         |

|           |                                                                     |   |      |       |       |      |       |         |
|-----------|---------------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10508-AAA | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 5.50 | 71.59 | 18.63 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.38 | 71.22 | 18.49 |      | 80.0  |         |
|           |                                                                     | Z | 5.47 | 71.78 | 18.79 |      | 80.0  |         |
| 10509-AAA | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 6.53 | 74.93 | 19.40 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 6.29 | 74.36 | 19.25 |      | 80.0  |         |
|           |                                                                     | Z | 6.55 | 75.31 | 19.67 |      | 80.0  |         |
| 10510-AAA | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 5.88 | 71.44 | 18.58 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.77 | 71.08 | 18.45 |      | 80.0  |         |
|           |                                                                     | Z | 5.84 | 71.58 | 18.71 |      | 80.0  |         |
| 10511-AAA | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 5.87 | 71.05 | 18.47 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.77 | 70.72 | 18.36 |      | 80.0  |         |
|           |                                                                     | Z | 5.83 | 71.17 | 18.60 |      | 80.0  |         |
| 10512-AAA | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9)   | X | 7.22 | 77.19 | 20.09 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 6.85 | 76.38 | 19.87 |      | 80.0  |         |
|           |                                                                     | Z | 7.29 | 77.69 | 20.41 |      | 80.0  |         |
| 10513-AAA | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | X | 5.86 | 72.04 | 18.79 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.72 | 71.59 | 18.64 |      | 80.0  |         |
|           |                                                                     | Z | 5.82 | 72.17 | 18.93 |      | 80.0  |         |
| 10514-AAA | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | X | 5.77 | 71.41 | 18.61 | 2.23 | 80.0  | ± 9.6 % |
|           |                                                                     | Y | 5.66 | 71.02 | 18.47 |      | 80.0  |         |
|           |                                                                     | Z | 5.73 | 71.53 | 18.74 |      | 80.0  |         |
| 10515-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle)           | X | 0.97 | 63.64 | 15.09 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 0.99 | 63.32 | 14.82 |      | 150.0 |         |
|           |                                                                     | Z | 1.01 | 63.99 | 15.42 |      | 150.0 |         |
| 10516-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle)         | X | 0.78 | 76.08 | 19.79 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 0.63 | 70.67 | 17.47 |      | 150.0 |         |
|           |                                                                     | Z | 0.88 | 77.61 | 21.01 |      | 150.0 |         |
| 10517-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle)          | X | 0.85 | 66.24 | 16.04 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 0.85 | 65.35 | 15.50 |      | 150.0 |         |
|           |                                                                     | Z | 0.89 | 66.77 | 16.53 |      | 150.0 |         |
| 10518-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle)           | X | 4.72 | 66.89 | 16.32 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.71 | 66.87 | 16.28 |      | 150.0 |         |
|           |                                                                     | Z | 4.72 | 67.02 | 16.40 |      | 150.0 |         |
| 10519-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle)          | X | 4.96 | 67.21 | 16.46 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.94 | 67.17 | 16.43 |      | 150.0 |         |
|           |                                                                     | Z | 4.94 | 67.32 | 16.54 |      | 150.0 |         |
| 10520-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle)          | X | 4.80 | 67.20 | 16.39 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.78 | 67.15 | 16.36 |      | 150.0 |         |
|           |                                                                     | Z | 4.79 | 67.31 | 16.47 |      | 150.0 |         |
| 10521-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle)          | X | 4.73 | 67.21 | 16.38 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.71 | 67.16 | 16.34 |      | 150.0 |         |
|           |                                                                     | Z | 4.72 | 67.32 | 16.46 |      | 150.0 |         |
| 10522-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle)          | X | 4.77 | 67.11 | 16.38 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.75 | 67.11 | 16.36 |      | 150.0 |         |
|           |                                                                     | Z | 4.76 | 67.26 | 16.48 |      | 150.0 |         |

|           |                                                            |   |      |       |       |      |       |         |
|-----------|------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10523-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle) | X | 4.64 | 67.06 | 16.26 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.63 | 67.02 | 16.23 |      | 150.0 |         |
|           |                                                            | Z | 4.64 | 67.19 | 16.35 |      | 150.0 |         |
| 10524-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle) | X | 4.73 | 67.10 | 16.38 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.71 | 67.08 | 16.36 |      | 150.0 |         |
|           |                                                            | Z | 4.72 | 67.24 | 16.48 |      | 150.0 |         |
| 10525-AAA | IEEE 802.11ac WiFi (20MHz, MCS0, 99pc duty cycle)          | X | 4.67 | 66.13 | 15.97 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.66 | 66.11 | 15.94 |      | 150.0 |         |
|           |                                                            | Z | 4.67 | 66.26 | 16.06 |      | 150.0 |         |
| 10526-AAA | IEEE 802.11ac WiFi (20MHz, MCS1, 99pc duty cycle)          | X | 4.89 | 66.55 | 16.11 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.87 | 66.51 | 16.09 |      | 150.0 |         |
|           |                                                            | Z | 4.88 | 66.68 | 16.21 |      | 150.0 |         |
| 10527-AAA | IEEE 802.11ac WiFi (20MHz, MCS2, 99pc duty cycle)          | X | 4.80 | 66.53 | 16.08 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.78 | 66.49 | 16.04 |      | 150.0 |         |
|           |                                                            | Z | 4.79 | 66.66 | 16.17 |      | 150.0 |         |
| 10528-AAA | IEEE 802.11ac WiFi (20MHz, MCS3, 99pc duty cycle)          | X | 4.82 | 66.56 | 16.11 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.80 | 66.51 | 16.08 |      | 150.0 |         |
|           |                                                            | Z | 4.81 | 66.68 | 16.20 |      | 150.0 |         |
| 10529-AAA | IEEE 802.11ac WiFi (20MHz, MCS4, 99pc duty cycle)          | X | 4.82 | 66.56 | 16.11 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.80 | 66.51 | 16.08 |      | 150.0 |         |
|           |                                                            | Z | 4.81 | 66.68 | 16.20 |      | 150.0 |         |
| 10531-AAA | IEEE 802.11ac WiFi (20MHz, MCS6, 99pc duty cycle)          | X | 4.84 | 66.72 | 16.14 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.82 | 66.67 | 16.11 |      | 150.0 |         |
|           |                                                            | Z | 4.83 | 66.84 | 16.23 |      | 150.0 |         |
| 10532-AAA | IEEE 802.11ac WiFi (20MHz, MCS7, 99pc duty cycle)          | X | 4.69 | 66.61 | 16.10 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.66 | 66.54 | 16.05 |      | 150.0 |         |
|           |                                                            | Z | 4.68 | 66.72 | 16.18 |      | 150.0 |         |
| 10533-AAA | IEEE 802.11ac WiFi (20MHz, MCS8, 99pc duty cycle)          | X | 4.84 | 66.57 | 16.08 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 4.81 | 66.53 | 16.05 |      | 150.0 |         |
|           |                                                            | Z | 4.83 | 66.70 | 16.17 |      | 150.0 |         |
| 10534-AAA | IEEE 802.11ac WiFi (40MHz, MCS0, 99pc duty cycle)          | X | 5.33 | 66.74 | 16.17 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.31 | 66.69 | 16.14 |      | 150.0 |         |
|           |                                                            | Z | 5.32 | 66.83 | 16.24 |      | 150.0 |         |
| 10535-AAA | IEEE 802.11ac WiFi (40MHz, MCS1, 99pc duty cycle)          | X | 5.40 | 66.88 | 16.22 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.39 | 66.83 | 16.19 |      | 150.0 |         |
|           |                                                            | Z | 5.39 | 66.97 | 16.29 |      | 150.0 |         |
| 10536-AAA | IEEE 802.11ac WiFi (40MHz, MCS2, 99pc duty cycle)          | X | 5.26 | 66.87 | 16.20 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.25 | 66.82 | 16.17 |      | 150.0 |         |
|           |                                                            | Z | 5.26 | 66.97 | 16.28 |      | 150.0 |         |
| 10537-AAA | IEEE 802.11ac WiFi (40MHz, MCS3, 99pc duty cycle)          | X | 5.33 | 66.84 | 16.18 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.32 | 66.80 | 16.16 |      | 150.0 |         |
|           |                                                            | Z | 5.33 | 66.94 | 16.26 |      | 150.0 |         |
| 10538-AAA | IEEE 802.11ac WiFi (40MHz, MCS4, 99pc duty cycle)          | X | 5.46 | 66.94 | 16.27 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.44 | 66.88 | 16.24 |      | 150.0 |         |
|           |                                                            | Z | 5.44 | 67.01 | 16.34 |      | 150.0 |         |
| 10540-AAA | IEEE 802.11ac WiFi (40MHz, MCS6, 99pc duty cycle)          | X | 5.34 | 66.86 | 16.25 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                            | Y | 5.33 | 66.81 | 16.22 |      | 150.0 |         |
|           |                                                            | Z | 5.34 | 66.95 | 16.32 |      | 150.0 |         |

|           |                                                     |   |      |       |       |      |       |         |
|-----------|-----------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10541-AAA | IEEE 802.11ac WiFi (40MHz, MCS7, 99pc duty cycle)   | X | 5.34 | 66.83 | 16.23 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.32 | 66.74 | 16.19 |      | 150.0 |         |
|           |                                                     | Z | 5.33 | 66.88 | 16.29 |      | 150.0 |         |
| 10542-AAA | IEEE 802.11ac WiFi (40MHz, MCS8, 99pc duty cycle)   | X | 5.48 | 66.80 | 16.24 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.47 | 66.76 | 16.21 |      | 150.0 |         |
|           |                                                     | Z | 5.47 | 66.89 | 16.31 |      | 150.0 |         |
| 10543-AAA | IEEE 802.11ac WiFi (40MHz, MCS9, 99pc duty cycle)   | X | 5.58 | 66.84 | 16.26 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.55 | 66.78 | 16.23 |      | 150.0 |         |
|           |                                                     | Z | 5.56 | 66.91 | 16.32 |      | 150.0 |         |
| 10544-AAA | IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle)   | X | 5.59 | 66.84 | 16.14 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.59 | 66.80 | 16.12 |      | 150.0 |         |
|           |                                                     | Z | 5.59 | 66.93 | 16.22 |      | 150.0 |         |
| 10545-AAA | IEEE 802.11ac WiFi (80MHz, MCS1, 99pc duty cycle)   | X | 5.80 | 67.23 | 16.27 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.81 | 67.21 | 16.27 |      | 150.0 |         |
|           |                                                     | Z | 5.81 | 67.33 | 16.35 |      | 150.0 |         |
| 10546-AAA | IEEE 802.11ac WiFi (80MHz, MCS2, 99pc duty cycle)   | X | 5.70 | 67.16 | 16.26 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.69 | 67.10 | 16.23 |      | 150.0 |         |
|           |                                                     | Z | 5.70 | 67.23 | 16.32 |      | 150.0 |         |
| 10547-AAA | IEEE 802.11ac WiFi (80MHz, MCS3, 99pc duty cycle)   | X | 5.80 | 67.24 | 16.29 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.78 | 67.16 | 16.25 |      | 150.0 |         |
|           |                                                     | Z | 5.79 | 67.29 | 16.34 |      | 150.0 |         |
| 10548-AAA | IEEE 802.11ac WiFi (80MHz, MCS4, 99pc duty cycle)   | X | 6.11 | 68.33 | 16.80 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 6.11 | 68.30 | 16.79 |      | 150.0 |         |
|           |                                                     | Z | 6.10 | 68.40 | 16.87 |      | 150.0 |         |
| 10550-AAA | IEEE 802.11ac WiFi (80MHz, MCS6, 99pc duty cycle)   | X | 5.72 | 67.09 | 16.23 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.71 | 67.04 | 16.21 |      | 150.0 |         |
|           |                                                     | Z | 5.72 | 67.17 | 16.30 |      | 150.0 |         |
| 10551-AAA | IEEE 802.11ac WiFi (80MHz, MCS7, 99pc duty cycle)   | X | 5.74 | 67.22 | 16.25 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.73 | 67.16 | 16.23 |      | 150.0 |         |
|           |                                                     | Z | 5.74 | 67.28 | 16.32 |      | 150.0 |         |
| 10552-AAA | IEEE 802.11ac WiFi (80MHz, MCS8, 99pc duty cycle)   | X | 5.64 | 66.96 | 16.15 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.63 | 66.91 | 16.12 |      | 150.0 |         |
|           |                                                     | Z | 5.63 | 67.04 | 16.21 |      | 150.0 |         |
| 10553-AAA | IEEE 802.11ac WiFi (80MHz, MCS9, 99pc duty cycle)   | X | 5.73 | 67.00 | 16.19 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.72 | 66.95 | 16.17 |      | 150.0 |         |
|           |                                                     | Z | 5.73 | 67.08 | 16.26 |      | 150.0 |         |
| 10554-AAA | IEEE 1602.11ac WiFi (160MHz, MCS0, 99pc duty cycle) | X | 5.98 | 67.23 | 16.24 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 5.99 | 67.19 | 16.23 |      | 150.0 |         |
|           |                                                     | Z | 5.99 | 67.31 | 16.31 |      | 150.0 |         |
| 10555-AAA | IEEE 1602.11ac WiFi (160MHz, MCS1, 99pc duty cycle) | X | 6.16 | 67.63 | 16.41 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 6.15 | 67.55 | 16.37 |      | 150.0 |         |
|           |                                                     | Z | 6.15 | 67.67 | 16.46 |      | 150.0 |         |
| 10556-AAA | IEEE 1602.11ac WiFi (160MHz, MCS2, 99pc duty cycle) | X | 6.15 | 67.58 | 16.38 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 6.15 | 67.54 | 16.36 |      | 150.0 |         |
|           |                                                     | Z | 6.16 | 67.66 | 16.45 |      | 150.0 |         |
| 10557-AAA | IEEE 1602.11ac WiFi (160MHz, MCS3, 99pc duty cycle) | X | 6.15 | 67.59 | 16.40 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 6.15 | 67.52 | 16.38 |      | 150.0 |         |
|           |                                                     | Z | 6.15 | 67.65 | 16.46 |      | 150.0 |         |

|           |                                                                 |   |       |        |       |      |       |         |
|-----------|-----------------------------------------------------------------|---|-------|--------|-------|------|-------|---------|
| 10558-AAA | IEEE 1602.11ac WiFi (160MHz, MCS4, 99pc duty cycle)             | X | 6.22  | 67.79  | 16.52 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 6.21  | 67.72  | 16.49 |      | 150.0 |         |
|           |                                                                 | Z | 6.21  | 67.84  | 16.57 |      | 150.0 |         |
| 10560-AAA | IEEE 1602.11ac WiFi (160MHz, MCS6, 99pc duty cycle)             | X | 6.21  | 67.62  | 16.48 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 6.20  | 67.54  | 16.44 |      | 150.0 |         |
|           |                                                                 | Z | 6.21  | 67.67  | 16.52 |      | 150.0 |         |
| 10561-AAA | IEEE 1602.11ac WiFi (160MHz, MCS7, 99pc duty cycle)             | X | 6.12  | 67.56  | 16.48 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 6.11  | 67.49  | 16.45 |      | 150.0 |         |
|           |                                                                 | Z | 6.11  | 67.62  | 16.54 |      | 150.0 |         |
| 10562-AAA | IEEE 1602.11ac WiFi (160MHz, MCS8, 99pc duty cycle)             | X | 6.29  | 68.09  | 16.75 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 6.28  | 68.00  | 16.71 |      | 150.0 |         |
|           |                                                                 | Z | 6.28  | 68.13  | 16.80 |      | 150.0 |         |
| 10563-AAA | IEEE 1602.11ac WiFi (160MHz, MCS9, 99pc duty cycle)             | X | 6.54  | 68.36  | 16.83 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 6.57  | 68.41  | 16.85 |      | 150.0 |         |
|           |                                                                 | Z | 6.57  | 68.51  | 16.93 |      | 150.0 |         |
| 10564-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle)  | X | 5.06  | 67.04  | 16.51 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.05  | 67.01  | 16.47 |      | 150.0 |         |
|           |                                                                 | Z | 5.06  | 67.15  | 16.59 |      | 150.0 |         |
| 10565-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle) | X | 5.34  | 67.54  | 16.84 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.32  | 67.51  | 16.80 |      | 150.0 |         |
|           |                                                                 | Z | 5.33  | 67.64  | 16.90 |      | 150.0 |         |
| 10566-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle) | X | 5.17  | 67.43  | 16.67 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.15  | 67.38  | 16.64 |      | 150.0 |         |
|           |                                                                 | Z | 5.16  | 67.53  | 16.75 |      | 150.0 |         |
| 10567-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle) | X | 5.19  | 67.79  | 16.99 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.18  | 67.77  | 16.98 |      | 150.0 |         |
|           |                                                                 | Z | 5.18  | 67.89  | 17.07 |      | 150.0 |         |
| 10568-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle) | X | 5.08  | 67.13  | 16.42 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.06  | 67.09  | 16.38 |      | 150.0 |         |
|           |                                                                 | Z | 5.07  | 67.25  | 16.51 |      | 150.0 |         |
| 10569-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle) | X | 5.13  | 67.78  | 16.99 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.12  | 67.79  | 17.00 |      | 150.0 |         |
|           |                                                                 | Z | 5.12  | 67.90  | 17.08 |      | 150.0 |         |
| 10570-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle) | X | 5.17  | 67.61  | 16.93 | 0.46 | 150.0 | ± 9.6 % |
|           |                                                                 | Y | 5.16  | 67.61  | 16.93 |      | 150.0 |         |
|           |                                                                 | Z | 5.16  | 67.74  | 17.02 |      | 150.0 |         |
| 10571-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle)       | X | 1.39  | 66.83  | 16.76 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 1.39  | 66.19  | 16.38 |      | 130.0 |         |
|           |                                                                 | Z | 1.42  | 67.03  | 17.01 |      | 130.0 |         |
| 10572-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle)       | X | 1.43  | 67.56  | 17.16 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 1.42  | 66.85  | 16.75 |      | 130.0 |         |
|           |                                                                 | Z | 1.46  | 67.77  | 17.42 |      | 130.0 |         |
| 10573-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle)     | X | 18.61 | 116.47 | 31.43 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.07  | 92.61  | 25.14 |      | 130.0 |         |
|           |                                                                 | Z | 21.94 | 121.24 | 33.33 |      | 130.0 |         |
| 10574-AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle)      | X | 1.85  | 75.72  | 20.80 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 1.71  | 73.65  | 19.92 |      | 130.0 |         |
|           |                                                                 | Z | 1.88  | 76.05  | 21.19 |      | 130.0 |         |

|           |                                                                 |   |      |       |       |      |       |         |
|-----------|-----------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10575-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle)  | X | 4.89 | 66.92 | 16.62 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.88 | 66.90 | 16.59 |      | 130.0 |         |
|           |                                                                 | Z | 4.88 | 67.03 | 16.69 |      | 130.0 |         |
| 10576-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle)  | X | 4.91 | 67.07 | 16.68 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.91 | 67.06 | 16.65 |      | 130.0 |         |
|           |                                                                 | Z | 4.91 | 67.19 | 16.75 |      | 130.0 |         |
| 10577-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle) | X | 5.16 | 67.42 | 16.86 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 5.15 | 67.40 | 16.83 |      | 130.0 |         |
|           |                                                                 | Z | 5.15 | 67.52 | 16.93 |      | 130.0 |         |
| 10578-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle) | X | 5.06 | 67.59 | 16.95 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 5.04 | 67.58 | 16.94 |      | 130.0 |         |
|           |                                                                 | Z | 5.04 | 67.69 | 17.03 |      | 130.0 |         |
| 10579-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle) | X | 4.84 | 67.04 | 16.37 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.82 | 66.95 | 16.30 |      | 130.0 |         |
|           |                                                                 | Z | 4.83 | 67.12 | 16.43 |      | 130.0 |         |
| 10580-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle) | X | 4.88 | 66.96 | 16.35 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.86 | 66.90 | 16.28 |      | 130.0 |         |
|           |                                                                 | Z | 4.87 | 67.07 | 16.42 |      | 130.0 |         |
| 10581-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle) | X | 4.97 | 67.71 | 16.92 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.95 | 67.68 | 16.90 |      | 130.0 |         |
|           |                                                                 | Z | 4.95 | 67.80 | 16.99 |      | 130.0 |         |
| 10582-AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle) | X | 4.80 | 66.79 | 16.17 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.77 | 66.69 | 16.09 |      | 130.0 |         |
|           |                                                                 | Z | 4.78 | 66.88 | 16.24 |      | 130.0 |         |
| 10583-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle)       | X | 4.89 | 66.92 | 16.62 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.88 | 66.90 | 16.59 |      | 130.0 |         |
|           |                                                                 | Z | 4.88 | 67.03 | 16.69 |      | 130.0 |         |
| 10584-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle)       | X | 4.91 | 67.07 | 16.68 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.91 | 67.06 | 16.65 |      | 130.0 |         |
|           |                                                                 | Z | 4.91 | 67.19 | 16.75 |      | 130.0 |         |
| 10585-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle)      | X | 5.16 | 67.42 | 16.86 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 5.15 | 67.40 | 16.83 |      | 130.0 |         |
|           |                                                                 | Z | 5.15 | 67.52 | 16.93 |      | 130.0 |         |
| 10586-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle)      | X | 5.06 | 67.59 | 16.95 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 5.04 | 67.58 | 16.94 |      | 130.0 |         |
|           |                                                                 | Z | 5.04 | 67.69 | 17.03 |      | 130.0 |         |
| 10587-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle)      | X | 4.84 | 67.04 | 16.37 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.82 | 66.95 | 16.30 |      | 130.0 |         |
|           |                                                                 | Z | 4.83 | 67.12 | 16.43 |      | 130.0 |         |
| 10588-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle)      | X | 4.88 | 66.96 | 16.35 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.86 | 66.90 | 16.28 |      | 130.0 |         |
|           |                                                                 | Z | 4.87 | 67.07 | 16.42 |      | 130.0 |         |
| 10589-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle)      | X | 4.97 | 67.71 | 16.92 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.95 | 67.68 | 16.90 |      | 130.0 |         |
|           |                                                                 | Z | 4.95 | 67.80 | 16.99 |      | 130.0 |         |
| 10590-AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle)      | X | 4.80 | 66.79 | 16.17 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                                 | Y | 4.77 | 66.69 | 16.09 |      | 130.0 |         |
|           |                                                                 | Z | 4.78 | 66.88 | 16.24 |      | 130.0 |         |

|           |                                                       |   |      |       |       |      |       |         |
|-----------|-------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10591-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle) | X | 5.03 | 66.97 | 16.70 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.03 | 66.96 | 16.68 |      | 130.0 |         |
|           |                                                       | Z | 5.03 | 67.08 | 16.78 |      | 130.0 |         |
| 10592-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc duty cycle) | X | 5.22 | 67.32 | 16.82 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.21 | 67.31 | 16.80 |      | 130.0 |         |
|           |                                                       | Z | 5.21 | 67.42 | 16.90 |      | 130.0 |         |
| 10593-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc duty cycle) | X | 5.16 | 67.30 | 16.75 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.14 | 67.27 | 16.71 |      | 130.0 |         |
|           |                                                       | Z | 5.14 | 67.40 | 16.82 |      | 130.0 |         |
| 10594-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc duty cycle) | X | 5.20 | 67.42 | 16.87 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.19 | 67.41 | 16.85 |      | 130.0 |         |
|           |                                                       | Z | 5.19 | 67.53 | 16.94 |      | 130.0 |         |
| 10595-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc duty cycle) | X | 5.19 | 67.42 | 16.79 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.17 | 67.39 | 16.76 |      | 130.0 |         |
|           |                                                       | Z | 5.17 | 67.51 | 16.86 |      | 130.0 |         |
| 10596-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc duty cycle) | X | 5.12 | 67.41 | 16.79 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.11 | 67.38 | 16.76 |      | 130.0 |         |
|           |                                                       | Z | 5.11 | 67.51 | 16.86 |      | 130.0 |         |
| 10597-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc duty cycle) | X | 5.08 | 67.37 | 16.71 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.06 | 67.32 | 16.67 |      | 130.0 |         |
|           |                                                       | Z | 5.06 | 67.46 | 16.78 |      | 130.0 |         |
| 10598-AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc duty cycle) | X | 5.06 | 67.63 | 16.97 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.04 | 67.59 | 16.94 |      | 130.0 |         |
|           |                                                       | Z | 5.04 | 67.71 | 17.04 |      | 130.0 |         |
| 10599-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle) | X | 5.70 | 67.60 | 16.89 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.70 | 67.57 | 16.88 |      | 130.0 |         |
|           |                                                       | Z | 5.69 | 67.67 | 16.95 |      | 130.0 |         |
| 10600-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc duty cycle) | X | 5.96 | 68.36 | 17.25 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.93 | 68.27 | 17.19 |      | 130.0 |         |
|           |                                                       | Z | 5.92 | 68.36 | 17.27 |      | 130.0 |         |
| 10601-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc duty cycle) | X | 5.77 | 67.88 | 17.02 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.76 | 67.84 | 17.00 |      | 130.0 |         |
|           |                                                       | Z | 5.76 | 67.94 | 17.07 |      | 130.0 |         |
| 10602-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc duty cycle) | X | 5.89 | 67.97 | 16.99 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.86 | 67.86 | 16.92 |      | 130.0 |         |
|           |                                                       | Z | 5.85 | 67.97 | 17.01 |      | 130.0 |         |
| 10603-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc duty cycle) | X | 6.01 | 68.36 | 17.30 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.97 | 68.24 | 17.24 |      | 130.0 |         |
|           |                                                       | Z | 5.97 | 68.34 | 17.32 |      | 130.0 |         |
| 10604-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc duty cycle) | X | 5.72 | 67.60 | 16.91 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.71 | 67.55 | 16.89 |      | 130.0 |         |
|           |                                                       | Z | 5.70 | 67.65 | 16.97 |      | 130.0 |         |
| 10605-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc duty cycle) | X | 5.82 | 67.89 | 17.06 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.81 | 67.84 | 17.03 |      | 130.0 |         |
|           |                                                       | Z | 5.81 | 67.95 | 17.12 |      | 130.0 |         |
| 10606-AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc duty cycle) | X | 5.59 | 67.36 | 16.67 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                       | Y | 5.59 | 67.33 | 16.65 |      | 130.0 |         |
|           |                                                       | Z | 5.59 | 67.46 | 16.75 |      | 130.0 |         |

|           |                                                   |   |      |       |       |      |       |         |
|-----------|---------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10607-AAA | IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle) | X | 4.86 | 66.24 | 16.30 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.85 | 66.24 | 16.28 |      | 130.0 |         |
|           |                                                   | Z | 4.86 | 66.37 | 16.38 |      | 130.0 |         |
| 10608-AAA | IEEE 802.11ac WiFi (20MHz, MCS1, 90pc duty cycle) | X | 5.09 | 66.68 | 16.46 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.07 | 66.67 | 16.44 |      | 130.0 |         |
|           |                                                   | Z | 5.08 | 66.80 | 16.54 |      | 130.0 |         |
| 10609-AAA | IEEE 802.11ac WiFi (20MHz, MCS2, 90pc duty cycle) | X | 4.98 | 66.59 | 16.34 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.96 | 66.55 | 16.31 |      | 130.0 |         |
|           |                                                   | Z | 4.97 | 66.70 | 16.42 |      | 130.0 |         |
| 10610-AAA | IEEE 802.11ac WiFi (20MHz, MCS3, 90pc duty cycle) | X | 5.03 | 66.73 | 16.49 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.02 | 66.71 | 16.47 |      | 130.0 |         |
|           |                                                   | Z | 5.02 | 66.85 | 16.57 |      | 130.0 |         |
| 10611-AAA | IEEE 802.11ac WiFi (20MHz, MCS4, 90pc duty cycle) | X | 4.96 | 66.60 | 16.37 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.94 | 66.56 | 16.33 |      | 130.0 |         |
|           |                                                   | Z | 4.95 | 66.70 | 16.44 |      | 130.0 |         |
| 10612-AAA | IEEE 802.11ac WiFi (20MHz, MCS5, 90pc duty cycle) | X | 4.98 | 66.74 | 16.40 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.96 | 66.69 | 16.36 |      | 130.0 |         |
|           |                                                   | Z | 4.97 | 66.85 | 16.48 |      | 130.0 |         |
| 10613-AAA | IEEE 802.11ac WiFi (20MHz, MCS6, 90pc duty cycle) | X | 5.00 | 66.68 | 16.32 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.97 | 66.62 | 16.27 |      | 130.0 |         |
|           |                                                   | Z | 4.98 | 66.79 | 16.39 |      | 130.0 |         |
| 10614-AAA | IEEE 802.11ac WiFi (20MHz, MCS7, 90pc duty cycle) | X | 4.92 | 66.87 | 16.54 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.90 | 66.82 | 16.51 |      | 130.0 |         |
|           |                                                   | Z | 4.91 | 66.96 | 16.61 |      | 130.0 |         |
| 10615-AAA | IEEE 802.11ac WiFi (20MHz, MCS8, 90pc duty cycle) | X | 4.96 | 66.40 | 16.15 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 4.94 | 66.35 | 16.10 |      | 130.0 |         |
|           |                                                   | Z | 4.95 | 66.52 | 16.23 |      | 130.0 |         |
| 10616-AAA | IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle) | X | 5.51 | 66.85 | 16.50 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.51 | 66.82 | 16.48 |      | 130.0 |         |
|           |                                                   | Z | 5.51 | 66.93 | 16.57 |      | 130.0 |         |
| 10617-AAA | IEEE 802.11ac WiFi (40MHz, MCS1, 90pc duty cycle) | X | 5.58 | 66.97 | 16.52 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.57 | 66.93 | 16.50 |      | 130.0 |         |
|           |                                                   | Z | 5.57 | 67.05 | 16.59 |      | 130.0 |         |
| 10618-AAA | IEEE 802.11ac WiFi (40MHz, MCS2, 90pc duty cycle) | X | 5.47 | 67.03 | 16.57 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.47 | 67.01 | 16.56 |      | 130.0 |         |
|           |                                                   | Z | 5.47 | 67.12 | 16.65 |      | 130.0 |         |
| 10619-AAA | IEEE 802.11ac WiFi (40MHz, MCS3, 90pc duty cycle) | X | 5.49 | 66.84 | 16.42 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.48 | 66.81 | 16.40 |      | 130.0 |         |
|           |                                                   | Z | 5.49 | 66.94 | 16.49 |      | 130.0 |         |
| 10620-AAA | IEEE 802.11ac WiFi (40MHz, MCS4, 90pc duty cycle) | X | 5.63 | 67.01 | 16.55 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.61 | 66.94 | 16.51 |      | 130.0 |         |
|           |                                                   | Z | 5.61 | 67.06 | 16.60 |      | 130.0 |         |
| 10621-AAA | IEEE 802.11ac WiFi (40MHz, MCS5, 90pc duty cycle) | X | 5.59 | 67.04 | 16.67 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.58 | 67.00 | 16.66 |      | 130.0 |         |
|           |                                                   | Z | 5.58 | 67.11 | 16.73 |      | 130.0 |         |
| 10622-AAA | IEEE 802.11ac WiFi (40MHz, MCS6, 90pc duty cycle) | X | 5.58 | 67.13 | 16.71 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                   | Y | 5.58 | 67.10 | 16.70 |      | 130.0 |         |
|           |                                                   | Z | 5.57 | 67.21 | 16.77 |      | 130.0 |         |

|           |                                                     |   |      |       |       |      |       |         |
|-----------|-----------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10623-AAA | IEEE 802.11ac WiFi (40MHz, MCS7, 90pc duty cycle)   | X | 5.50 | 66.83 | 16.46 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.47 | 66.72 | 16.39 |      | 130.0 |         |
|           |                                                     | Z | 5.48 | 66.85 | 16.49 |      | 130.0 |         |
| 10624-AAA | IEEE 802.11ac WiFi (40MHz, MCS8, 90pc duty cycle)   | X | 5.66 | 66.88 | 16.54 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.65 | 66.86 | 16.52 |      | 130.0 |         |
|           |                                                     | Z | 5.65 | 66.97 | 16.61 |      | 130.0 |         |
| 10625-AAA | IEEE 802.11ac WiFi (40MHz, MCS9, 90pc duty cycle)   | X | 6.01 | 67.74 | 17.01 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.05 | 67.88 | 17.08 |      | 130.0 |         |
|           |                                                     | Z | 6.04 | 67.96 | 17.15 |      | 130.0 |         |
| 10626-AAA | IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)   | X | 5.75 | 66.88 | 16.43 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.76 | 66.85 | 16.41 |      | 130.0 |         |
|           |                                                     | Z | 5.75 | 66.96 | 16.49 |      | 130.0 |         |
| 10627-AAA | IEEE 802.11ac WiFi (80MHz, MCS1, 90pc duty cycle)   | X | 6.01 | 67.38 | 16.62 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.02 | 67.40 | 16.64 |      | 130.0 |         |
|           |                                                     | Z | 6.01 | 67.49 | 16.71 |      | 130.0 |         |
| 10628-AAA | IEEE 802.11ac WiFi (80MHz, MCS2, 90pc duty cycle)   | X | 5.83 | 67.09 | 16.43 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.83 | 67.04 | 16.40 |      | 130.0 |         |
|           |                                                     | Z | 5.83 | 67.16 | 16.49 |      | 130.0 |         |
| 10629-AAA | IEEE 802.11ac WiFi (80MHz, MCS3, 90pc duty cycle)   | X | 5.95 | 67.23 | 16.49 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.93 | 67.12 | 16.43 |      | 130.0 |         |
|           |                                                     | Z | 5.93 | 67.24 | 16.52 |      | 130.0 |         |
| 10630-AAA | IEEE 802.11ac WiFi (80MHz, MCS4, 90pc duty cycle)   | X | 6.53 | 69.08 | 17.41 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.52 | 69.03 | 17.38 |      | 130.0 |         |
|           |                                                     | Z | 6.50 | 69.10 | 17.45 |      | 130.0 |         |
| 10631-AAA | IEEE 802.11ac WiFi (80MHz, MCS5, 90pc duty cycle)   | X | 6.39 | 68.76 | 17.42 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.37 | 68.68 | 17.39 |      | 130.0 |         |
|           |                                                     | Z | 6.35 | 68.75 | 17.45 |      | 130.0 |         |
| 10632-AAA | IEEE 802.11ac WiFi (80MHz, MCS6, 90pc duty cycle)   | X | 6.01 | 67.52 | 16.82 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.00 | 67.49 | 16.82 |      | 130.0 |         |
|           |                                                     | Z | 5.99 | 67.58 | 16.88 |      | 130.0 |         |
| 10633-AAA | IEEE 802.11ac WiFi (80MHz, MCS7, 90pc duty cycle)   | X | 5.97 | 67.44 | 16.62 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.95 | 67.35 | 16.58 |      | 130.0 |         |
|           |                                                     | Z | 5.95 | 67.46 | 16.66 |      | 130.0 |         |
| 10634-AAA | IEEE 802.11ac WiFi (80MHz, MCS8, 90pc duty cycle)   | X | 5.94 | 67.39 | 16.66 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.92 | 67.31 | 16.62 |      | 130.0 |         |
|           |                                                     | Z | 5.91 | 67.41 | 16.70 |      | 130.0 |         |
| 10635-AAA | IEEE 802.11ac WiFi (80MHz, MCS9, 90pc duty cycle)   | X | 5.81 | 66.73 | 16.09 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 5.79 | 66.63 | 16.02 |      | 130.0 |         |
|           |                                                     | Z | 5.80 | 66.78 | 16.13 |      | 130.0 |         |
| 10636-AAA | IEEE 1602.11ac WiFi (160MHz, MCS0, 90pc duty cycle) | X | 6.15 | 67.27 | 16.52 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.16 | 67.25 | 16.52 |      | 130.0 |         |
|           |                                                     | Z | 6.16 | 67.35 | 16.59 |      | 130.0 |         |
| 10637-AAA | IEEE 1602.11ac WiFi (160MHz, MCS1, 90pc duty cycle) | X | 6.36 | 67.74 | 16.73 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.35 | 67.67 | 16.70 |      | 130.0 |         |
|           |                                                     | Z | 6.34 | 67.77 | 16.77 |      | 130.0 |         |
| 10638-AAA | IEEE 1602.11ac WiFi (160MHz, MCS2, 90pc duty cycle) | X | 6.33 | 67.63 | 16.65 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                     | Y | 6.34 | 67.61 | 16.65 |      | 130.0 |         |
|           |                                                     | Z | 6.33 | 67.71 | 16.72 |      | 130.0 |         |

|           |                                                        |   |       |        |       |      |       |         |
|-----------|--------------------------------------------------------|---|-------|--------|-------|------|-------|---------|
| 10639-AAA | IEEE 1602.11ac WiFi (160MHz, MCS3, 90pc duty cycle)    | X | 6.35  | 67.70  | 16.74 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.35  | 67.65  | 16.72 |      | 130.0 |         |
|           |                                                        | Z | 6.34  | 67.75  | 16.79 |      | 130.0 |         |
| 10640-AAA | IEEE 1602.11ac WiFi (160MHz, MCS4, 90pc duty cycle)    | X | 6.39  | 67.82  | 16.74 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.38  | 67.74  | 16.71 |      | 130.0 |         |
|           |                                                        | Z | 6.38  | 67.86  | 16.79 |      | 130.0 |         |
| 10641-AAA | IEEE 1602.11ac WiFi (160MHz, MCS5, 90pc duty cycle)    | X | 6.37  | 67.50  | 16.60 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.36  | 67.44  | 16.57 |      | 130.0 |         |
|           |                                                        | Z | 6.36  | 67.56  | 16.65 |      | 130.0 |         |
| 10642-AAA | IEEE 1602.11ac WiFi (160MHz, MCS6, 90pc duty cycle)    | X | 6.45  | 67.86  | 16.94 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.43  | 67.79  | 16.91 |      | 130.0 |         |
|           |                                                        | Z | 6.43  | 67.88  | 16.98 |      | 130.0 |         |
| 10643-AAA | IEEE 1602.11ac WiFi (160MHz, MCS7, 90pc duty cycle)    | X | 6.27  | 67.55  | 16.69 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.26  | 67.47  | 16.66 |      | 130.0 |         |
|           |                                                        | Z | 6.26  | 67.59  | 16.74 |      | 130.0 |         |
| 10644-AAA | IEEE 1602.11ac WiFi (160MHz, MCS8, 90pc duty cycle)    | X | 6.53  | 68.33  | 17.11 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.51  | 68.21  | 17.05 |      | 130.0 |         |
|           |                                                        | Z | 6.51  | 68.32  | 17.13 |      | 130.0 |         |
| 10645-AAA | IEEE 1602.11ac WiFi (160MHz, MCS9, 90pc duty cycle)    | X | 6.77  | 68.56  | 17.17 | 0.46 | 130.0 | ± 9.6 % |
|           |                                                        | Y | 6.81  | 68.62  | 17.19 |      | 130.0 |         |
|           |                                                        | Z | 6.80  | 68.72  | 17.27 |      | 130.0 |         |
| 10646-AAB | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7)  | X | 25.99 | 106.58 | 35.17 | 9.30 | 60.0  | ± 9.6 % |
|           |                                                        | Y | 21.82 | 102.72 | 33.95 |      | 60.0  |         |
|           |                                                        | Z | 27.43 | 108.77 | 35.97 |      | 60.0  |         |
| 10647-AAA | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7) | X | 27.16 | 108.33 | 35.83 | 9.30 | 60.0  | ± 9.6 % |
|           |                                                        | Y | 22.36 | 104.00 | 34.47 |      | 60.0  |         |
|           |                                                        | Z | 28.70 | 110.58 | 36.65 |      | 60.0  |         |
| 10648-AAA | CDMA2000 (1x Advanced)                                 | X | 0.86  | 65.46  | 12.69 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                        | Y | 0.83  | 64.77  | 12.28 |      | 150.0 |         |
|           |                                                        | Z | 0.90  | 66.26  | 13.22 |      | 150.0 |         |

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.



Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **EX3-7406\_Apr16**

## CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:7406**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6**  
**Calibration procedure for dosimetric E-field probes**

BN 04/26/2d6

Calibration date: **April 19, 2016**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature  $(22 \pm 3)^{\circ}\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|------------------|-----------------------------------|------------------------|
| Power meter NRP            | SN: 104778       | 06-Apr-16 (No. 217-02288/02289)   | Apr-17                 |
| Power sensor NRP-Z91       | SN: 103244       | 06-Apr-16 (No. 217-02288)         | Apr-17                 |
| Power sensor NRP-Z91       | SN: 103245       | 06-Apr-16 (No. 217-02289)         | Apr-17                 |
| Reference 20 dB Attenuator | SN: S5277 (20x)  | 05-Apr-16 (No. 217-02293)         | Apr-17                 |
| Reference Probe ES3DV2     | SN: 3013         | 31-Dec-15 (No. ES3-3013_Dec15)    | Dec-16                 |
| DAE4                       | SN: 660          | 23-Dec-15 (No. DAE4-660_Dec15)    | Dec-16                 |
| Secondary Standards        | ID               | Check Date (in house)             | Scheduled Check        |
| Power meter E4419B         | SN: GB41293874   | 06-Apr-16 (No. 217-02285/02284)   | In house check: Jun-16 |
| Power sensor E4412A        | SN: MY41498087   | 06-Apr-16 (No. 217-02285)         | In house check: Jun-16 |
| Power sensor E4412A        | SN: 000110210    | 06-Apr-16 (No. 217-02284)         | In house check: Jun-16 |
| RF generator HP 8648C      | SN: US3642U01700 | 04-Aug-99 (in house check Apr-13) | In house check: Jun-16 |
| Network Analyzer HP 8753E  | SN: US37390585   | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

|                                                                                                                 |                               |                                          |                        |
|-----------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------|------------------------|
| Calibrated by:                                                                                                  | Name<br><b>Jeton Kastrati</b> | Function<br><b>Laboratory Technician</b> | Signature<br>          |
| Approved by:                                                                                                    | Name<br><b>Katja Pokovic</b>  | Technical Manager                        |                        |
| This calibration certificate shall not be reproduced except in full without written approval of the laboratory. |                               |                                          | Issued: April 20, 2016 |



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 Multilateral Agreement for the recognition of calibration certificates

### Glossary:

|                          |                                                                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| TSL                      | tissue simulating liquid                                                                                                                                |
| NORM <sub>x,y,z</sub>    | sensitivity in free space                                                                                                                               |
| ConvF                    | sensitivity in TSL / NORM <sub>x,y,z</sub>                                                                                                              |
| DCP                      | diode compression point                                                                                                                                 |
| CF                       | crest factor (1/duty_cycle) of the RF signal                                                                                                            |
| A, B, C, D               | modulation dependent linearization parameters                                                                                                           |
| Polarization $\phi$      | $\phi$ rotation around probe axis                                                                                                                       |
| Polarization $\vartheta$ | $\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center),<br>i.e., $\vartheta = 0$ is normal to probe axis |
| Connector Angle          | information used in DASY system to align probe sensor X to the robot coordinate system                                                                  |

### Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

### Methods Applied and Interpretation of Parameters:

- NORM<sub>x,y,z</sub>**: Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not affect the E<sup>2</sup>-field uncertainty inside TSL (see below *ConvF*).
- NORM(*f*)<sub>x,y,z</sub>** = NORM<sub>x,y,z</sub> \* *frequency\_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- DCP<sub>x,y,z</sub>**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; D<sub>x,y,z</sub>; VR<sub>x,y,z</sub>**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for  $f \leq 800$  MHz) and inside waveguide using analytical field distributions based on power measurements for  $f > 800$  MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>x,y,z</sub> \* *ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from  $\pm 50$  MHz to  $\pm 100$  MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM<sub>x</sub> (no uncertainty required).

# Probe EX3DV4

## SN:7406

Manufactured: November 24, 2015  
Calibrated: April 19, 2016

Calibrated for DASY/EASY Systems  
(Note: non-compatible with DASY2 system!)

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:7406

## Basic Calibration Parameters

|                                                           | Sensor X | Sensor Y | Sensor Z | Unc (k=2)     |
|-----------------------------------------------------------|----------|----------|----------|---------------|
| Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup> | 0.48     | 0.44     | 0.47     | $\pm 10.1 \%$ |
| DCP (mV) <sup>B</sup>                                     | 100.7    | 97.9     | 98.6     |               |

## Modulation Calibration Parameters

| UID       | Communication System Name                |   | A<br>dB | B<br>dB $\sqrt{\mu\text{V}}$ | C    | D<br>dB | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-----------|------------------------------------------|---|---------|------------------------------|------|---------|----------|---------------------------|
| 0         | CW                                       | X | 0.0     | 0.0                          | 1.0  | 0.00    | 120.4    | $\pm 3.3 \%$              |
|           |                                          | Y | 0.0     | 0.0                          | 1.0  |         | 148.3    |                           |
|           |                                          | Z | 0.0     | 0.0                          | 1.0  |         | 146.7    |                           |
| 10010-CAA | SAR Validation (Square, 100ms, 10ms)     | X | 0.81    | 54.6                         | 7.4  | 10.00   | 50.3     | $\pm 2.2 \%$              |
|           |                                          | Y | 0.68    | 55.1                         | 7.9  |         | 47.9     |                           |
|           |                                          | Z | 1.34    | 61.0                         | 11.0 |         | 46.8     |                           |
| 10012-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps) | X | 2.83    | 68.0                         | 18.3 | 1.87    | 127.8    | $\pm 0.5 \%$              |
|           |                                          | Y | 2.82    | 68.4                         | 18.4 |         | 117.8    |                           |
|           |                                          | Z | 3.00    | 69.2                         | 19.0 |         | 115.9    |                           |
| 10100-CAB | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK) | X | 6.54    | 67.4                         | 19.5 | 5.67    | 142.1    | $\pm 1.2 \%$              |
|           |                                          | Y | 6.19    | 66.7                         | 19.3 |         | 127.6    |                           |
|           |                                          | Z | 6.37    | 66.7                         | 19.2 |         | 125.7    |                           |
| 10103-CAB | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK) | X | 7.58    | 67.9                         | 21.8 | 9.29    | 114.4    | $\pm 1.7 \%$              |
|           |                                          | Y | 7.34    | 68.3                         | 22.5 |         | 144.3    |                           |
|           |                                          | Z | 7.53    | 67.7                         | 21.8 |         | 139.5    |                           |
| 10108-CAC | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK) | X | 6.34    | 66.9                         | 19.4 | 5.80    | 137.5    | $\pm 1.2 \%$              |
|           |                                          | Y | 5.90    | 65.9                         | 19.0 |         | 123.8    |                           |
|           |                                          | Z | 6.24    | 66.4                         | 19.2 |         | 123.7    |                           |
| 10151-CAB | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)  | X | 7.17    | 67.2                         | 21.5 | 9.28    | 109.5    | $\pm 1.7 \%$              |
|           |                                          | Y | 6.83    | 67.6                         | 22.3 |         | 137.0    |                           |
|           |                                          | Z | 7.23    | 67.4                         | 21.7 |         | 135.1    |                           |
| 10154-CAC | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)  | X | 5.99    | 66.4                         | 19.2 | 5.75    | 132.4    | $\pm 0.9 \%$              |
|           |                                          | Y | 5.61    | 65.8                         | 19.1 |         | 119.4    |                           |
|           |                                          | Z | 5.91    | 65.9                         | 19.0 |         | 120.1    |                           |
| 10160-CAB | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)  | X | 6.47    | 67.0                         | 19.5 | 5.82    | 137.0    | $\pm 1.2 \%$              |
|           |                                          | Y | 5.96    | 66.0                         | 19.1 |         | 123.9    |                           |
|           |                                          | Z | 6.33    | 66.3                         | 19.1 |         | 124.2    |                           |
| 10169-CAB | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)    | X | 4.71    | 65.5                         | 18.9 | 5.73    | 113.2    | $\pm 1.2 \%$              |
|           |                                          | Y | 4.60    | 66.2                         | 19.6 |         | 144.2    |                           |
|           |                                          | Z | 4.93    | 66.5                         | 19.5 |         | 143.2    |                           |
| 10172-CAB | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)    | X | 5.68    | 68.2                         | 22.4 | 9.21    | 117.6    | $\pm 1.7 \%$              |
|           |                                          | Y | 5.56    | 70.1                         | 24.1 |         | 146.1    |                           |
|           |                                          | Z | 5.87    | 69.4                         | 23.2 |         | 143.7    |                           |
| 10175-CAC | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)    | X | 4.75    | 65.7                         | 19.1 | 5.72    | 112.3    | $\pm 0.9 \%$              |
|           |                                          | Y | 4.58    | 66.1                         | 19.5 |         | 143.2    |                           |
|           |                                          | Z | 4.95    | 66.7                         | 19.6 |         | 142.0    |                           |

|           |                                          |   |      |      |      |      |       |        |
|-----------|------------------------------------------|---|------|------|------|------|-------|--------|
| 10181-CAB | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)    | X | 4.71 | 65.5 | 18.9 | 5.72 | 110.2 | ±0.9 % |
|           |                                          | Y | 4.53 | 65.8 | 19.4 |      | 141.4 |        |
|           |                                          | Z | 4.90 | 66.5 | 19.5 |      | 138.1 |        |
| 10237-CAB | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)    | X | 5.69 | 68.3 | 22.5 | 9.21 | 117.3 | ±1.7 % |
|           |                                          | Y | 5.47 | 69.5 | 23.8 |      | 145.1 |        |
|           |                                          | Z | 5.85 | 69.3 | 23.1 |      | 142.0 |        |
| 10252-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)  | X | 7.04 | 68.1 | 22.2 | 9.24 | 141.2 | ±1.9 % |
|           |                                          | Y | 6.35 | 67.2 | 22.2 |      | 125.4 |        |
|           |                                          | Z | 6.82 | 67.1 | 21.7 |      | 127.5 |        |
| 10267-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK) | X | 7.45 | 68.3 | 22.2 | 9.30 | 148.0 | ±1.9 % |
|           |                                          | Y | 6.84 | 67.5 | 22.3 |      | 132.0 |        |
|           |                                          | Z | 7.24 | 67.4 | 21.8 |      | 134.6 |        |
| 10297-AAA | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)  | X | 6.35 | 66.9 | 19.4 | 5.81 | 135.3 | ±1.2 % |
|           |                                          | Y | 5.92 | 65.9 | 19.0 |      | 122.9 |        |
|           |                                          | Z | 6.26 | 66.4 | 19.2 |      | 122.1 |        |
| 10311-AAA | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK) | X | 6.92 | 67.4 | 19.7 | 6.06 | 139.3 | ±1.2 % |
|           |                                          | Y | 6.52 | 66.6 | 19.5 |      | 127.9 |        |
|           |                                          | Z | 6.82 | 66.9 | 19.5 |      | 126.8 |        |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of Norm X,Y,Z do not affect the  $E^2$ -field uncertainty inside TSL (see Pages 6 and 7).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:7406

### Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 750                  | 41.9                               | 0.89                            | 10.52   | 10.52   | 10.52   | 0.52               | 0.89                    | ± 12.0 %  |
| 835                  | 41.5                               | 0.90                            | 9.83    | 9.83    | 9.83    | 0.54               | 0.80                    | ± 12.0 %  |
| 1750                 | 40.1                               | 1.37                            | 8.85    | 8.85    | 8.85    | 0.49               | 0.85                    | ± 12.0 %  |
| 1900                 | 40.0                               | 1.40                            | 8.22    | 8.22    | 8.22    | 0.40               | 0.88                    | ± 12.0 %  |
| 2300                 | 39.5                               | 1.67                            | 7.67    | 7.67    | 7.67    | 0.36               | 0.89                    | ± 12.0 %  |
| 2450                 | 39.2                               | 1.80                            | 7.29    | 7.29    | 7.29    | 0.40               | 0.80                    | ± 12.0 %  |
| 2600                 | 39.0                               | 1.96                            | 7.08    | 7.08    | 7.08    | 0.37               | 0.95                    | ± 12.0 %  |

<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:7406

### Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 750                  | 55.5                               | 0.96                            | 9.54    | 9.54    | 9.54    | 0.46               | 0.80                    | ± 12.0 %  |
| 835                  | 55.2                               | 0.97                            | 9.35    | 9.35    | 9.35    | 0.45               | 0.84                    | ± 12.0 %  |
| 1750                 | 53.4                               | 1.49                            | 7.78    | 7.78    | 7.78    | 0.37               | 0.85                    | ± 12.0 %  |
| 1900                 | 53.3                               | 1.52                            | 7.49    | 7.49    | 7.49    | 0.33               | 0.91                    | ± 12.0 %  |
| 2300                 | 52.9                               | 1.81                            | 7.37    | 7.37    | 7.37    | 0.42               | 0.80                    | ± 12.0 %  |
| 2450                 | 52.7                               | 1.95                            | 7.24    | 7.24    | 7.24    | 0.37               | 0.88                    | ± 12.0 %  |
| 2600                 | 52.5                               | 2.16                            | 6.94    | 6.94    | 6.94    | 0.27               | 0.99                    | ± 12.0 %  |

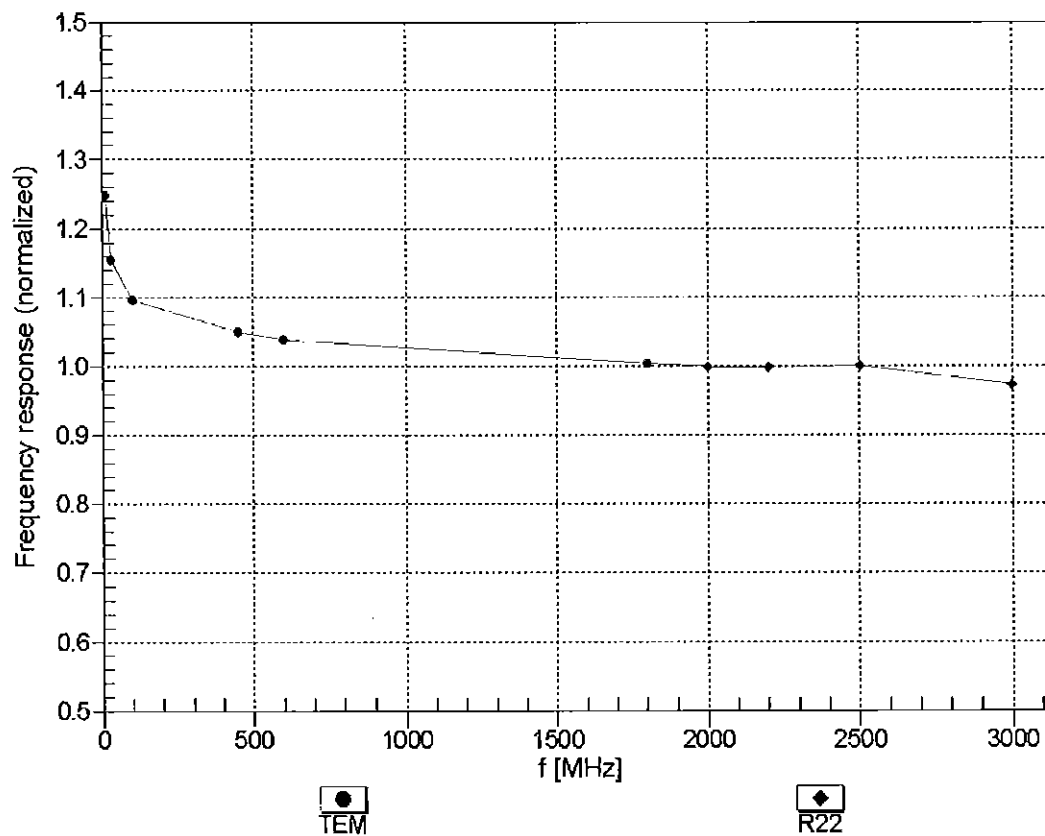
<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

## Frequency Response of E-Field

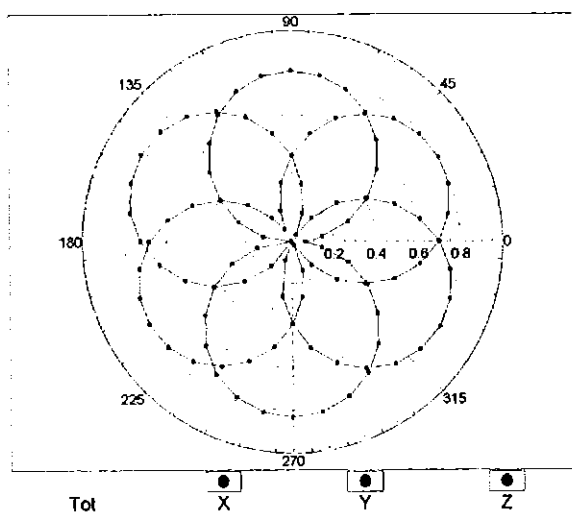
(TEM-Cell:ifi110 EXX, Waveguide: R22)



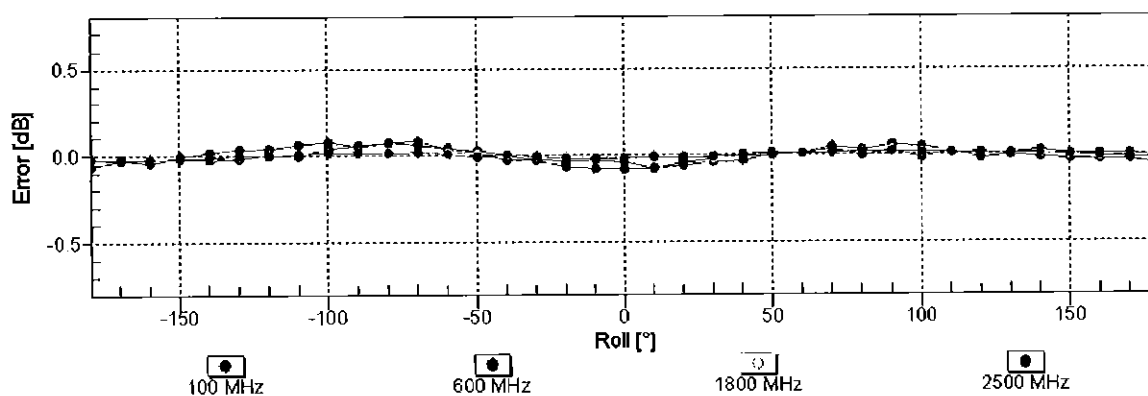
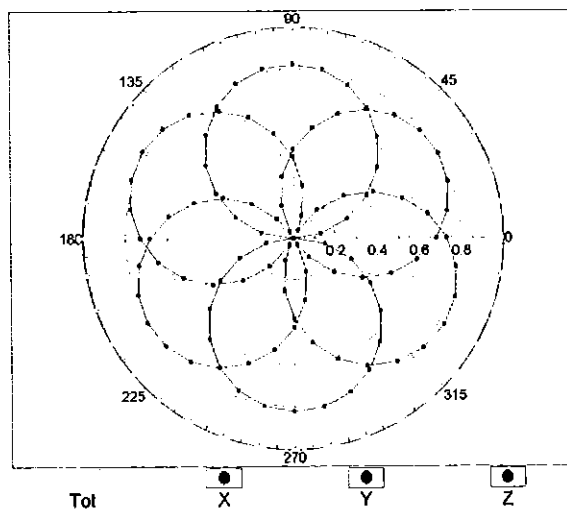
Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )

## Receiving Pattern ( $\phi$ ), $\theta = 0^\circ$

f=600 MHz,TEM



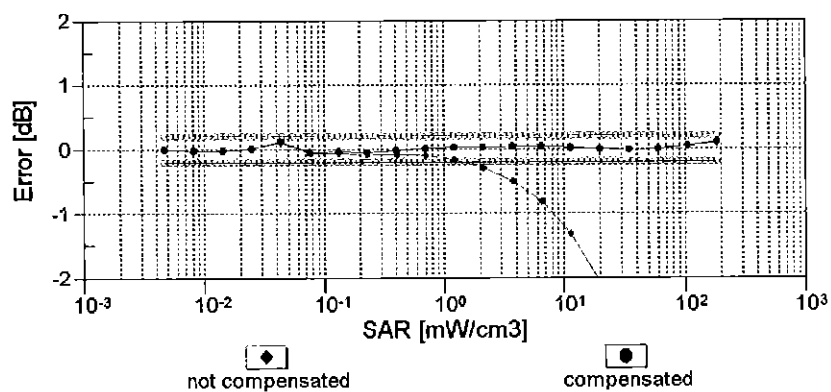
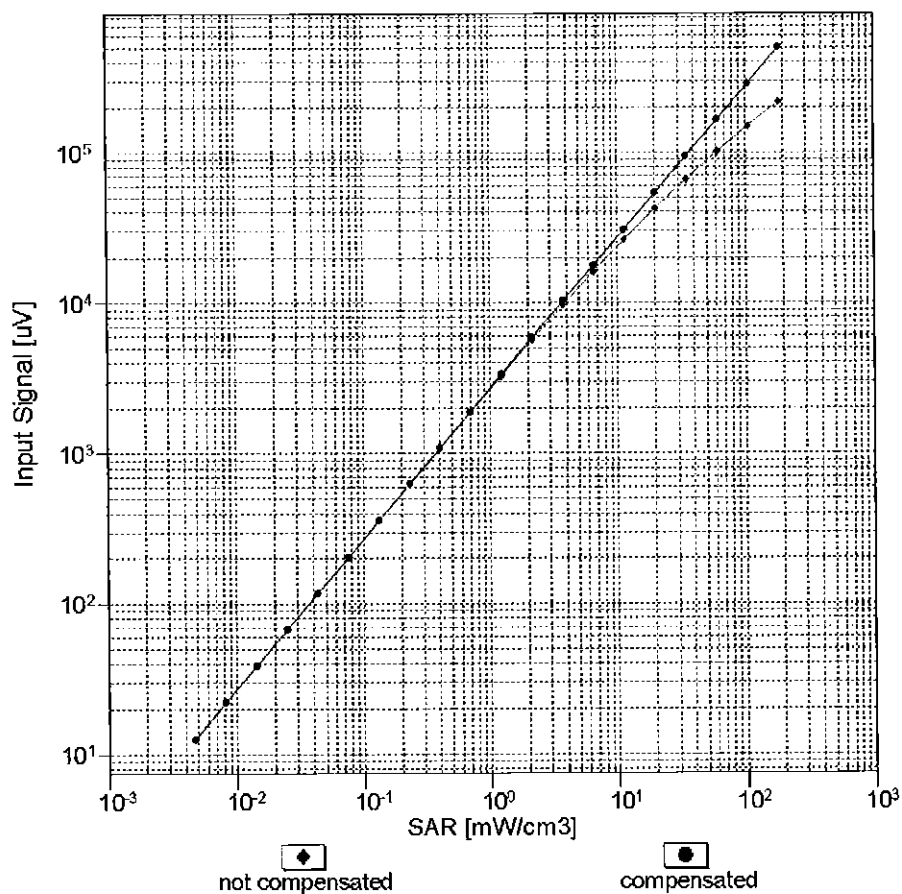
f=1800 MHz,R22



Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  (k=2)

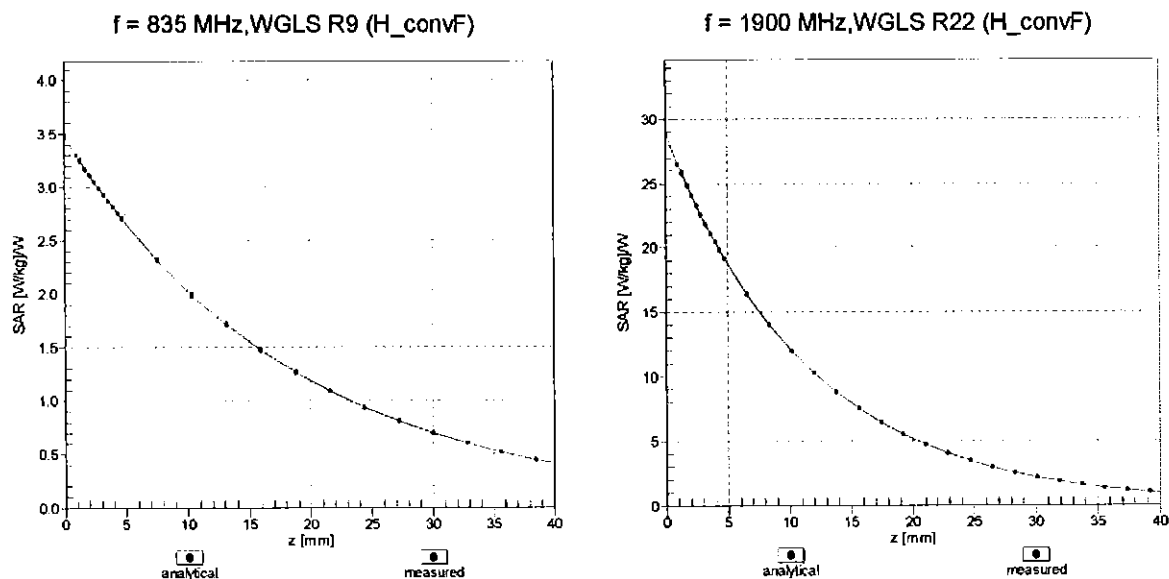
# Dynamic Range f(SAR<sub>head</sub>)

(TEM cell , f<sub>eval</sub>= 1900 MHz)



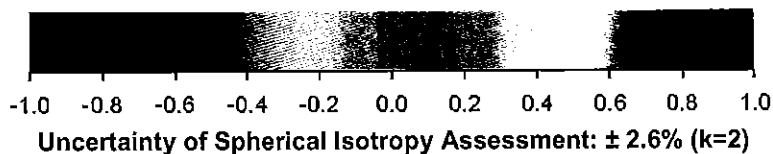
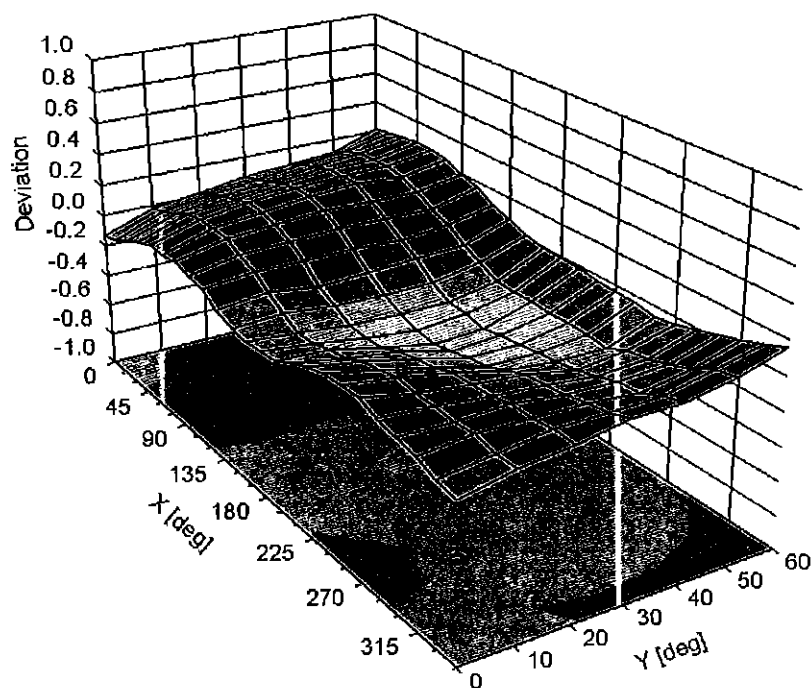
Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

## Conversion Factor Assessment



## Deviation from Isotropy in Liquid

Error ( $\phi, \theta$ ),  $f = 900 \text{ MHz}$



**DASY/EASY - Parameters of Probe: EX3DV4 - SN:7406****Other Probe Parameters**

|                                               |            |
|-----------------------------------------------|------------|
| Sensor Arrangement                            | Triangular |
| Connector Angle (°)                           | 0.4        |
| Mechanical Surface Detection Mode             | enabled    |
| Optical Surface Detection Mode                | disabled   |
| Probe Overall Length                          | 337 mm     |
| Probe Body Diameter                           | 10 mm      |
| Tip Length                                    | 9 mm       |
| Tip Diameter                                  | 2.5 mm     |
| Probe Tip to Sensor X Calibration Point       | 1 mm       |
| Probe Tip to Sensor Y Calibration Point       | 1 mm       |
| Probe Tip to Sensor Z Calibration Point       | 1 mm       |
| Recommended Measurement Distance from Surface | 1.4 mm     |



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Client **PC Test**

Certificate No: **EX3-3914\_Feb16**

## CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3914**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6**  
**Calibration procedure for dosimetric E-field probes**

BN  
03/01/2016

Calibration date: **February 22, 2016**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature  $(22 \pm 3)^\circ\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID              | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B         | GB41293874      | 01-Apr-15 (No. 217-02128)         | Mar-16                 |
| Power sensor E4412A        | MY41498087      | 01-Apr-15 (No. 217-02128)         | Mar-16                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 01-Apr-15 (No. 217-02129)         | Mar-16                 |
| Reference 20 dB Attenuator | SN: S5277 (20x) | 01-Apr-15 (No. 217-02132)         | Mar-16                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 01-Apr-15 (No. 217-02133)         | Mar-16                 |
| Reference Probe ES3DV2     | SN: 3013        | 31-Dec-15 (No. ES3-3013_Dec15)    | Dec-16                 |
| DAE4                       | SN: 660         | 23-Dec-15 (No. DAE4-660_Dec15)    | Dec-16                 |
| Secondary Standards        | ID              | Check Date (in house)             | Scheduled Check        |
| RF generator HP 8648C      | US3642U01700    | 4-Aug-99 (in house check Apr-13)  | In house check: Apr-16 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

|                                                                                                                                                         |                              |                                          |               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------|---------------|
| Calibrated by:                                                                                                                                          | Name<br><b>Jeon Kastrati</b> | Function<br><b>Laboratory Technician</b> | Signature<br> |
| Approved by:                                                                                                                                            | Name<br><b>Katja Pokovic</b> | Function<br><b>Technical Manager</b>     | Signature<br> |
| <p>Issued: February 22, 2016</p> <p>This calibration certificate shall not be reproduced except in full without written approval of the laboratory.</p> |                              |                                          |               |



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Multilateral Agreement for the recognition of calibration certificates

### Glossary:

|                          |                                                                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| TSL                      | tissue simulating liquid                                                                                                                                |
| NORM <sub>x,y,z</sub>    | sensitivity in free space                                                                                                                               |
| ConvF                    | sensitivity in TSL / NORM <sub>x,y,z</sub>                                                                                                              |
| DCP                      | diode compression point                                                                                                                                 |
| CF                       | crest factor (1/duty_cycle) of the RF signal                                                                                                            |
| A, B, C, D               | modulation dependent linearization parameters                                                                                                           |
| Polarization $\varphi$   | $\varphi$ rotation around probe axis                                                                                                                    |
| Polarization $\vartheta$ | $\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center),<br>i.e., $\vartheta = 0$ is normal to probe axis |
| Connector Angle          | information used in DASY system to align probe sensor X to the robot coordinate system                                                                  |

### Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
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### Methods Applied and Interpretation of Parameters:

- NORM<sub>x,y,z</sub>**: Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not affect the  $E^2$ -field uncertainty inside TSL (see below ConvF).
- NORM(f)<sub>x,y,z</sub>** = NORM<sub>x,y,z</sub> \* frequency\_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP<sub>x,y,z</sub>**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; D<sub>x,y,z</sub>; VR<sub>x,y,z</sub>**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for  $f \leq 800$  MHz) and inside waveguide using analytical field distributions based on power measurements for  $f > 800$  MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>x,y,z</sub> \* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from  $\pm 50$  MHz to  $\pm 100$  MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM<sub>x</sub> (no uncertainty required).

# Probe EX3DV4

## SN:3914

Manufactured: December 18, 2012  
Calibrated: February 22, 2016

Calibrated for DASY/EASY Systems  
(Note: non-compatible with DASY2 system!)

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3914

## Basic Calibration Parameters

|                                                           | Sensor X | Sensor Y | Sensor Z | Unc (k=2)     |
|-----------------------------------------------------------|----------|----------|----------|---------------|
| Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup> | 0.48     | 0.42     | 0.46     | $\pm 10.1 \%$ |
| DCP (mV) <sup>B</sup>                                     | 100.1    | 102.6    | 97.6     |               |

## Modulation Calibration Parameters

| UID       | Communication System Name                           |   | A<br>dB | B<br>dB $\sqrt{\mu\text{V}}$ | C    | D<br>dB | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-----------|-----------------------------------------------------|---|---------|------------------------------|------|---------|----------|---------------------------|
| 0         | CW                                                  | X | 0.0     | 0.0                          | 1.0  | 0.00    | 137.4    | $\pm 2.7 \%$              |
|           |                                                     | Y | 0.0     | 0.0                          | 1.0  |         | 139.7    |                           |
|           |                                                     | Z | 0.0     | 0.0                          | 1.0  |         | 133.7    |                           |
| 10010-CAA | SAR Validation (Square, 100ms, 10ms)                | X | 4.02    | 69.7                         | 14.2 | 10.00   | 41.0     | $\pm 0.9 \%$              |
|           |                                                     | Y | 2.42    | 64.8                         | 12.4 |         | 41.8     |                           |
|           |                                                     | Z | 2.11    | 63.9                         | 12.8 |         | 44.9     |                           |
| 10062-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)            | X | 10.26   | 68.5                         | 21.3 | 8.68    | 127.9    | $\pm 3.3 \%$              |
|           |                                                     | Y | 10.16   | 68.6                         | 21.4 |         | 127.8    |                           |
|           |                                                     | Z | 10.42   | 68.8                         | 21.4 |         | 144.6    |                           |
| 10117-CAB | IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)            | X | 10.15   | 68.2                         | 20.7 | 8.07    | 129.4    | $\pm 3.3 \%$              |
|           |                                                     | Y | 10.18   | 68.5                         | 20.9 |         | 131.7    |                           |
|           |                                                     | Z | 10.42   | 68.8                         | 20.9 |         | 148.3    |                           |
| 10196-CAB | IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)             | X | 10.13   | 68.8                         | 21.1 | 8.10    | 146.4    | $\pm 2.7 \%$              |
|           |                                                     | Y | 9.80    | 68.3                         | 20.9 |         | 126.3    |                           |
|           |                                                     | Z | 9.98    | 68.3                         | 20.8 |         | 139.8    |                           |
| 10400-AAC | IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle) | X | 10.33   | 68.8                         | 21.3 | 8.37    | 145.0    | $\pm 2.7 \%$              |
|           |                                                     | Y | 10.13   | 68.7                         | 21.3 |         | 132.0    |                           |
|           |                                                     | Z | 10.21   | 68.5                         | 21.0 |         | 140.2    |                           |
| 10401-AAC | IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle) | X | 10.67   | 68.4                         | 21.1 | 8.60    | 125.8    | $\pm 3.3 \%$              |
|           |                                                     | Y | 10.92   | 69.3                         | 21.6 |         | 140.7    |                           |
|           |                                                     | Z | 10.94   | 69.0                         | 21.3 |         | 148.7    |                           |
| 10402-AAC | IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc duty cycle) | X | 10.64   | 68.4                         | 20.8 | 8.53    | 125.5    | $\pm 3.3 \%$              |
|           |                                                     | Y | 11.11   | 69.7                         | 21.6 |         | 142.1    |                           |
|           |                                                     | Z | 10.93   | 69.0                         | 21.1 |         | 149.2    |                           |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of Norm X,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Pages 5 and 6).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3914

### Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 5250                 | 35.9                               | 4.71                            | 5.07    | 5.07    | 5.07    | 0.35               | 1.80                    | ± 13.1 %  |
| 5600                 | 35.5                               | 5.07                            | 4.66    | 4.66    | 4.66    | 0.40               | 1.80                    | ± 13.1 %  |
| 5750                 | 35.4                               | 5.22                            | 4.74    | 4.74    | 4.74    | 0.40               | 1.80                    | ± 13.1 %  |

<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3914

### Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth <sup>G</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 750                  | 55.5                               | 0.96                            | 9.57    | 9.57    | 9.57    | 0.47               | 0.85                    | ± 12.0 %  |
| 835                  | 55.2                               | 0.97                            | 9.44    | 9.44    | 9.44    | 0.47               | 0.85                    | ± 12.0 %  |
| 1750                 | 53.4                               | 1.49                            | 7.82    | 7.82    | 7.82    | 0.42               | 0.83                    | ± 12.0 %  |
| 1900                 | 53.3                               | 1.52                            | 7.50    | 7.50    | 7.50    | 0.45               | 0.80                    | ± 12.0 %  |
| 2300                 | 52.9                               | 1.81                            | 7.27    | 7.27    | 7.27    | 0.48               | 0.80                    | ± 12.0 %  |
| 2450                 | 52.7                               | 1.95                            | 7.22    | 7.22    | 7.22    | 0.46               | 0.80                    | ± 12.0 %  |
| 2600                 | 52.5                               | 2.16                            | 6.90    | 6.90    | 6.90    | 0.32               | 0.99                    | ± 12.0 %  |
| 5250                 | 48.9                               | 5.36                            | 4.32    | 4.32    | 4.32    | 0.50               | 1.90                    | ± 13.1 %  |
| 5600                 | 48.5                               | 5.77                            | 3.63    | 3.63    | 3.63    | 0.60               | 1.90                    | ± 13.1 %  |
| 5750                 | 48.3                               | 5.94                            | 3.86    | 3.86    | 3.86    | 0.60               | 1.90                    | ± 13.1 %  |

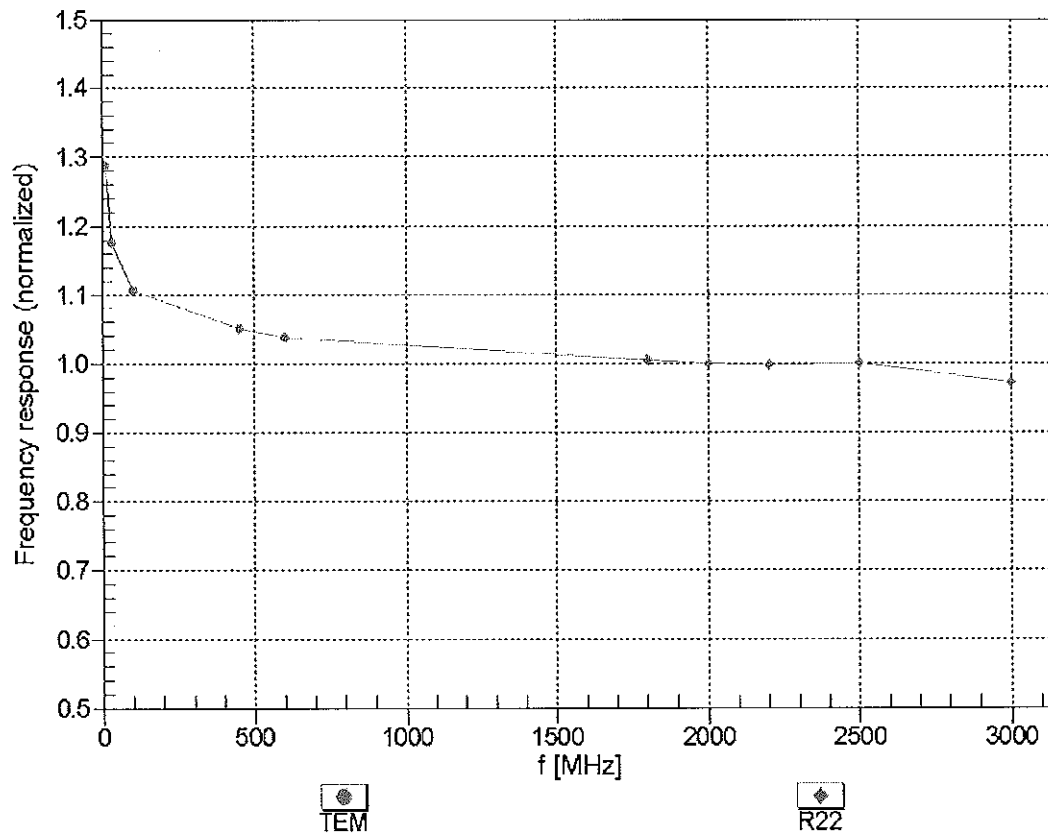
<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

## Frequency Response of E-Field

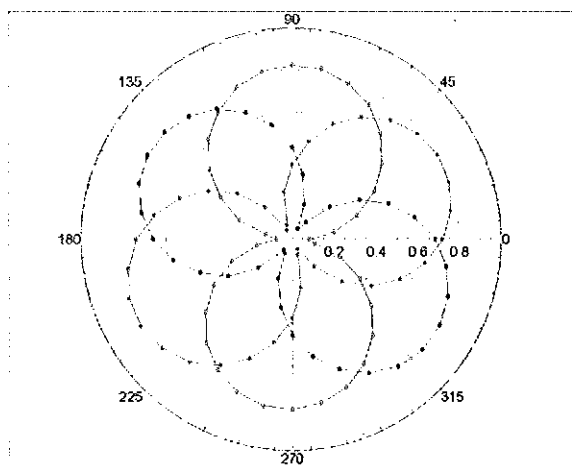
(TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )

## Receiving Pattern ( $\phi$ ), $\vartheta = 0^\circ$

f=600 MHz,TEM



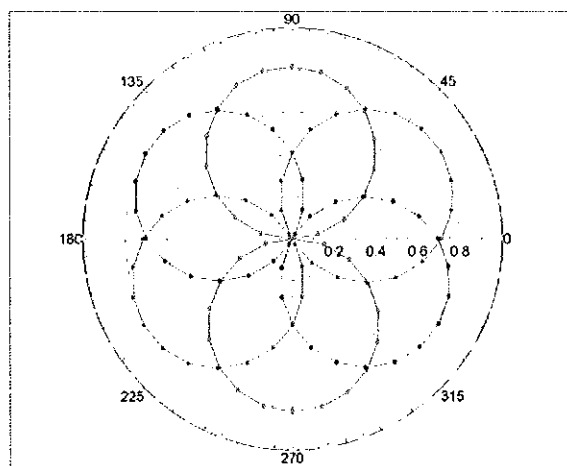
Tot

X

Y

Z

f=1800 MHz,R22

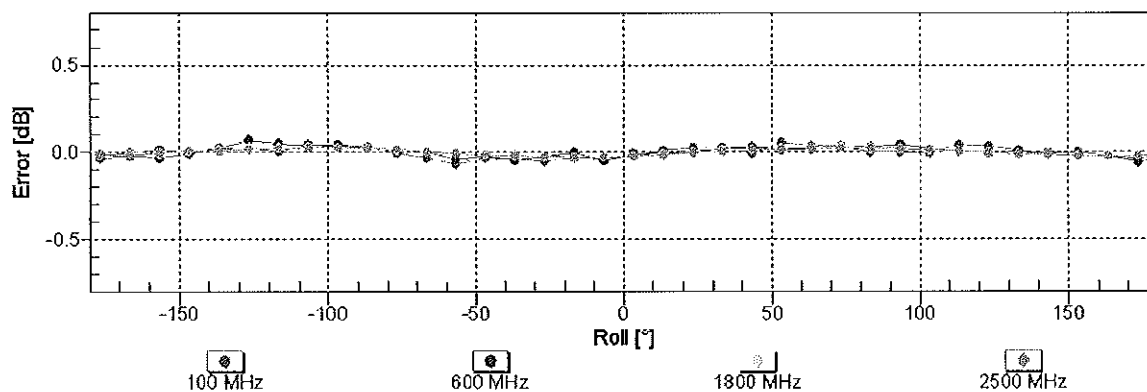


Tot

X

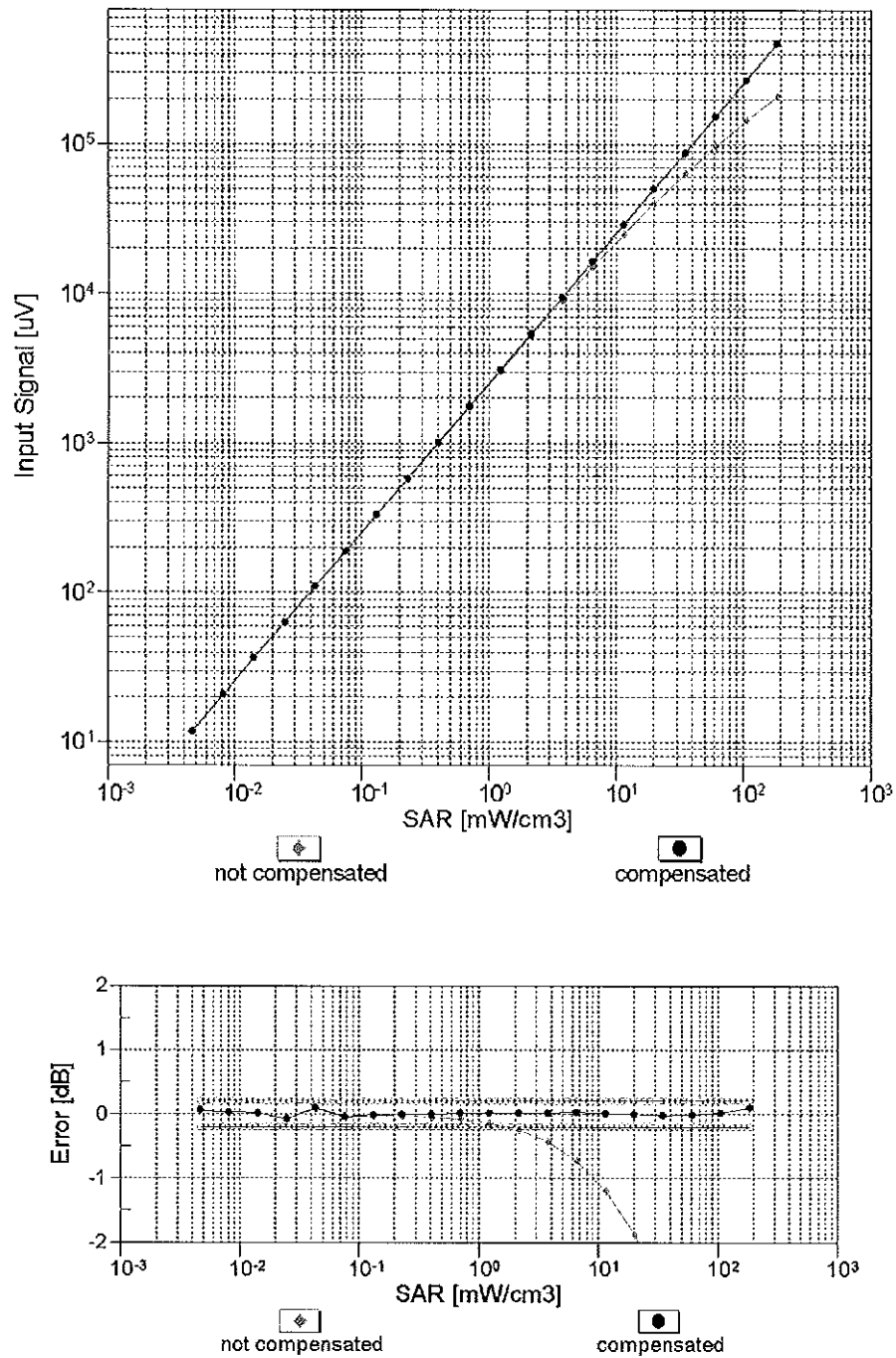
Y

Z



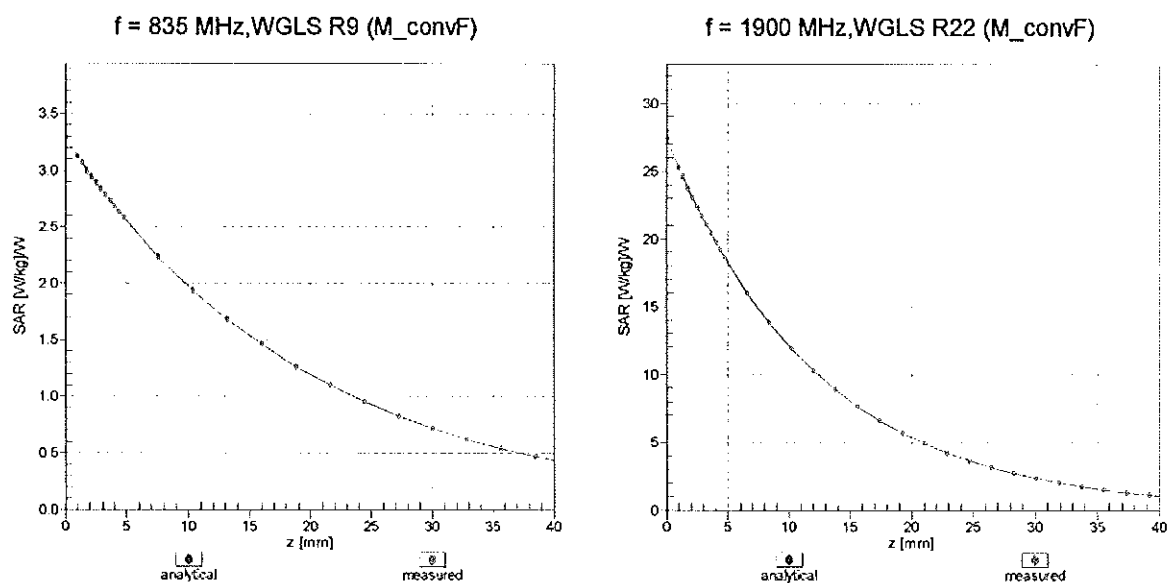
Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  (k=2)

# Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell , $f_{\text{eval}} = 1900 \text{ MHz}$ )



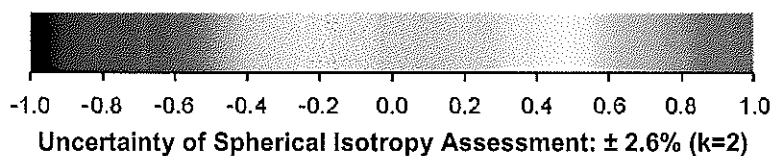
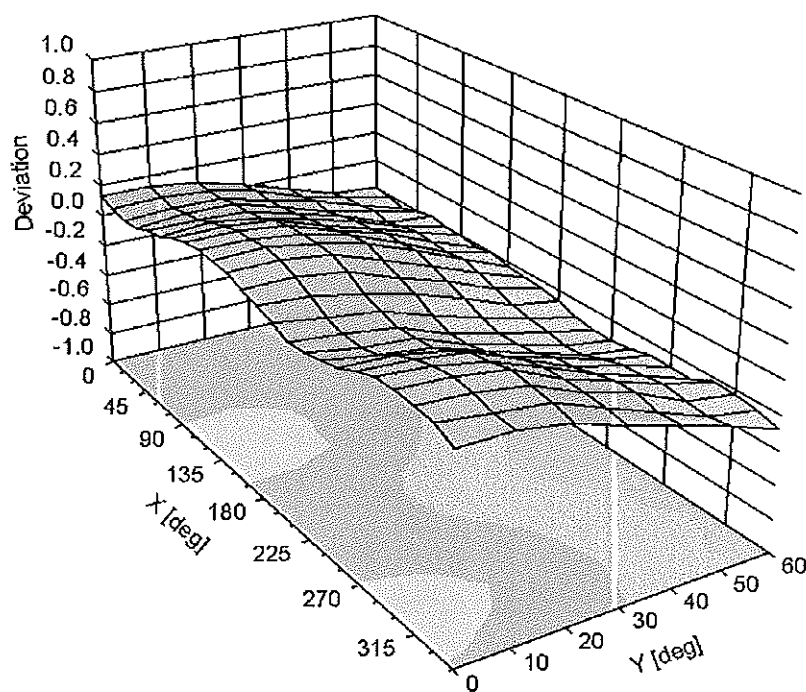
Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

## Conversion Factor Assessment



## Deviation from Isotropy in Liquid

Error ( $\phi, \theta$ ),  $f = 900 \text{ MHz}$



## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3914

### Other Probe Parameters

|                                               |            |
|-----------------------------------------------|------------|
| Sensor Arrangement                            | Triangular |
| Connector Angle (°)                           | 133.3      |
| Mechanical Surface Detection Mode             | enabled    |
| Optical Surface Detection Mode                | disabled   |
| Probe Overall Length                          | 337 mm     |
| Probe Body Diameter                           | 10 mm      |
| Tip Length                                    | 9 mm       |
| Tip Diameter                                  | 2.5 mm     |
| Probe Tip to Sensor X Calibration Point       | 1 mm       |
| Probe Tip to Sensor Y Calibration Point       | 1 mm       |
| Probe Tip to Sensor Z Calibration Point       | 1 mm       |
| Recommended Measurement Distance from Surface | 1.4 mm     |

## APPENDIX D: SAR TISSUE SPECIFICATIONS

Measurement Procedure for Tissue verification:

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the tissue. The tissue was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured
- 4) The complex relative permittivity  $\epsilon'$  can be calculated from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\epsilon_r\epsilon_0}{[\ln(b/a)]^2} \int_a^b \int_a^b \int_0^\pi \cos\phi' \frac{\exp[-j\omega r(\mu_0\epsilon_r'\epsilon_0)^{1/2}]}{r} d\phi' d\rho' d\rho$$

where  $Y$  is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively,  $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$ ,  $\omega$  is the angular frequency, and  $j = \sqrt{-1}$ .

**Table D-I**  
**Composition of the Tissue Equivalent Matter**

| Frequency (MHz)           | 750  | 750  | 835   | 835   | 1750 | 1750 | 1900  | 1900  | 2450 | 2450 | 5200-5800 | 5200-5800 |
|---------------------------|------|------|-------|-------|------|------|-------|-------|------|------|-----------|-----------|
| Tissue                    | Head | Body | Head  | Body  | Head | Body | Head  | Body  | Head | Body | Head      | Body      |
| Ingredients (% by weight) |      |      |       |       |      |      |       |       |      |      |           |           |
| Bactericide               |      |      | 0.1   | 0.1   |      |      |       |       |      |      |           |           |
| DGBE                      |      |      |       |       | 47   | 31   | 44.92 | 29.44 |      | 26.7 |           |           |
| HEC                       |      |      | 1     | 1     |      |      |       |       |      |      |           |           |
| NaCl                      |      |      | 1.45  | 0.94  | 0.4  | 0.2  | 0.18  | 0.39  |      | 0.1  |           |           |
| Sucrose                   |      |      | 57    | 44.9  |      |      |       |       |      |      |           |           |
| Polysorbate (Tween) 80    |      |      |       |       |      |      |       |       |      |      |           | 20        |
| Water                     |      |      | 40.45 | 53.06 | 52.6 | 68.8 | 54.9  | 70.17 |      | 73.2 |           | 80        |

|                                    |                                                                                     |                       |                                                                                       |                                 |
|------------------------------------|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMG955F                 |  | SAR EVALUATION REPORT |  | Approved by:<br>Quality Manager |
| Test Dates:<br>12/30/16 – 02/15/17 | DUT Type:<br>Portable Handset                                                       |                       |                                                                                       | APPENDIX D:<br>Page 1 of 5      |

## 2 Composition / Information on ingredients

The Item is composed of the following ingredients:

|                                                                  |                                                                                                                                                     |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| H <sub>2</sub> O                                                 | Water, 35 – 58%                                                                                                                                     |
| Sucrose                                                          | Sugar, white, refined, 40 – 60%                                                                                                                     |
| NaCl                                                             | Sodium Chloride, 0 – 6%                                                                                                                             |
| Hydroxyethyl-cellulose                                           | Medium Viscosity (CAS# 9004-62-0), <0.3%                                                                                                            |
| Preventol-D7                                                     | Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone, 0.1 – 0.7% |
| Relevant for safety; Refer to the respective Safety Data Sheet*. |                                                                                                                                                     |

**Figure D-1**  
**Composition of 750 MHz Head and Body Tissue Equivalent Matter**

**Note:** 750MHz 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.

### Measurement Certificate / Material Test

|              |                                          |
|--------------|------------------------------------------|
| Item Name    | Body Tissue Simulating Liquid (MSL750V2) |
| Product No.  | SL AAM 075 AA (Batch: 150518-2)          |
| Manufacturer | SPEAG                                    |

#### Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

#### Setup Validation

Validation results were within  $\pm 2.5\%$  towards the target values of Methanol.

#### Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

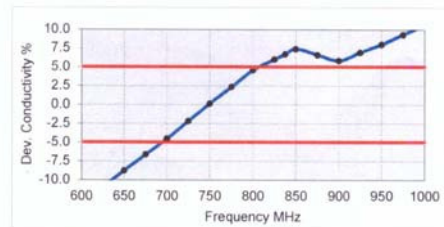
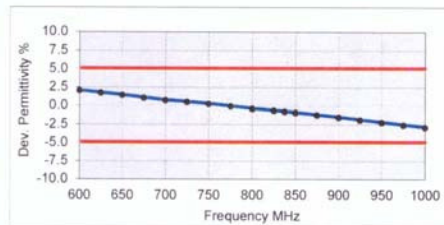
#### Test Condition

|                 |                                                           |
|-----------------|-----------------------------------------------------------|
| Ambient         | Environment temperatur (22 $\pm$ 3)°C and humidity < 70%. |
| TSL Temperature | 22°C                                                      |
| Test Date       | 20-Apr-16                                                 |
| Operator        | WM                                                        |

#### Additional Information

|                   |                         |
|-------------------|-------------------------|
| TSL Density       | 1.212 g/cm <sup>3</sup> |
| TSL Heat-capacity | 3.006 kJ/(kg*K)         |

| f [MHz] | Measured |       |       | Target |       | Diff. to Target [%] |                 |
|---------|----------|-------|-------|--------|-------|---------------------|-----------------|
|         | e'       | e''   | sigma | eps    | sigma | $\Delta$ -eps       | $\Delta$ -sigma |
| 600     | 57.2     | 24.76 | 0.83  | 56.1   | 0.95  | 2.0                 | -13.2           |
| 625     | 57.0     | 24.43 | 0.85  | 56.0   | 0.95  | 1.7                 | -11.0           |
| 650     | 56.7     | 24.11 | 0.87  | 55.9   | 0.96  | 1.4                 | -8.8            |
| 675     | 56.4     | 23.82 | 0.89  | 55.8   | 0.96  | 1.1                 | -6.6            |
| 700     | 56.1     | 23.53 | 0.92  | 55.7   | 0.96  | 0.7                 | -4.5            |
| 725     | 55.9     | 23.32 | 0.94  | 55.6   | 0.96  | 0.5                 | -2.2            |
| 750     | 55.7     | 23.12 | 0.96  | 55.5   | 0.96  | 0.2                 | 0.1             |
| 775     | 55.4     | 22.93 | 0.99  | 55.4   | 0.97  | -0.1                | 2.4             |
| 800     | 55.1     | 22.73 | 1.01  | 55.3   | 0.97  | -0.4                | 4.6             |
| 825     | 54.9     | 22.59 | 1.04  | 55.2   | 0.98  | -0.7                | 6.0             |
| 838     | 54.8     | 22.52 | 1.05  | 55.2   | 0.98  | -0.8                | 6.7             |
| 850     | 54.6     | 22.45 | 1.06  | 55.2   | 0.99  | -0.9                | 7.4             |
| 875     | 54.4     | 22.32 | 1.09  | 55.1   | 1.02  | -1.2                | 6.6             |
| 900     | 54.1     | 22.19 | 1.11  | 55.0   | 1.05  | -1.6                | 5.8             |
| 925     | 53.9     | 22.09 | 1.14  | 55.0   | 1.06  | -1.9                | 6.9             |
| 950     | 53.7     | 21.98 | 1.16  | 54.9   | 1.08  | -2.2                | 8.0             |
| 975     | 53.5     | 21.91 | 1.19  | 54.9   | 1.09  | -2.6                | 9.3             |
| 1000    | 53.2     | 21.83 | 1.21  | 54.8   | 1.10  | -2.9                | 10.6            |



**Figure D-2**  
**750MHz Body Tissue Equivalent Matter**

|                                    |                                                                                     |                       |                                                                                       |                                 |
|------------------------------------|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMG955F                 |  | SAR EVALUATION REPORT |  | Approved by:<br>Quality Manager |
| Test Dates:<br>12/30/16 – 02/15/17 | DUT Type:<br>Portable Handset                                                       |                       |                                                                                       | APPENDIX D:<br>Page 2 of 5      |

## Measurement Certificate / Material Test

|              |                                          |
|--------------|------------------------------------------|
| Item Name    | Head Tissue Simulating Liquid (HSL750V2) |
| Product No.  | SL AAH 075 AB (Batch: 160322-2)          |
| Manufacturer | SPEAG                                    |

### Measurement Method

|                                                                |
|----------------------------------------------------------------|
| TSL dielectric parameters measured using calibrated DAK probe. |
|----------------------------------------------------------------|

### Setup Validation

|                                                                                   |
|-----------------------------------------------------------------------------------|
| Validation results were within $\pm 2.5\%$ towards the target values of Methanol. |
|-----------------------------------------------------------------------------------|

### Target Parameters

|                                                                                   |
|-----------------------------------------------------------------------------------|
| Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards. |
|-----------------------------------------------------------------------------------|

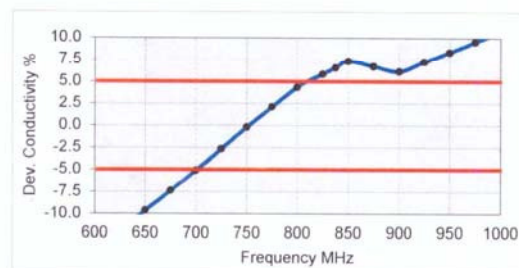
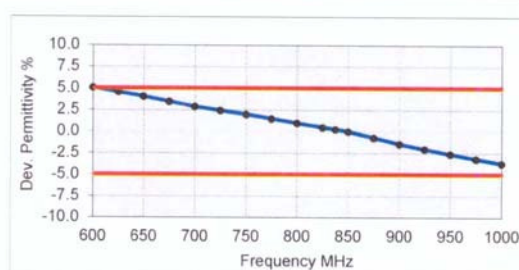
### Test Condition

|                 |                                                             |
|-----------------|-------------------------------------------------------------|
| Ambient         | Environment temperatur ( $22 \pm 3$ )°C and humidity < 70%. |
| TSL Temperature | 22°C                                                        |
| Test Date       | 23-Mar-16                                                   |
| Operator        | WM                                                          |

### Additional Information

|                   |                         |
|-------------------|-------------------------|
| TSL Density       | 1.284 g/cm <sup>3</sup> |
| TSL Heat-capacity | 2.701 kJ/(kg*K)         |

| f [MHz] | Measured |       |       | Target |       | Diff.to Target [%] |                 |
|---------|----------|-------|-------|--------|-------|--------------------|-----------------|
|         | e'       | e''   | sigma | eps    | sigma | $\Delta$ -eps      | $\Delta$ -sigma |
| 600     | 44.9     | 22.60 | 0.75  | 42.7   | 0.88  | 5.1                | -14.4           |
| 625     | 44.5     | 22.37 | 0.78  | 42.6   | 0.88  | 4.5                | -12.0           |
| 650     | 44.2     | 22.13 | 0.80  | 42.5   | 0.89  | 4.0                | -9.6            |
| 675     | 43.8     | 21.90 | 0.82  | 42.3   | 0.89  | 3.4                | -7.4            |
| 700     | 43.4     | 21.67 | 0.84  | 42.2   | 0.89  | 2.8                | -5.1            |
| 725     | 43.1     | 21.52 | 0.87  | 42.1   | 0.89  | 2.4                | -2.6            |
| 750     | 42.8     | 21.37 | 0.89  | 41.9   | 0.89  | 2.0                | -0.2            |
| 775     | 42.4     | 21.21 | 0.91  | 41.8   | 0.90  | 1.5                | 2.1             |
| 800     | 42.1     | 21.04 | 0.94  | 41.7   | 0.90  | 0.9                | 4.4             |
| 825     | 41.8     | 20.92 | 0.96  | 41.6   | 0.91  | 0.5                | 5.9             |
| 838     | 41.6     | 20.86 | 0.97  | 41.5   | 0.91  | 0.2                | 6.6             |
| 850     | 41.5     | 20.79 | 0.98  | 41.5   | 0.92  | 0.0                | 7.3             |
| 875     | 41.2     | 20.68 | 1.01  | 41.5   | 0.94  | -0.7               | 6.7             |
| 900     | 40.9     | 20.56 | 1.03  | 41.5   | 0.97  | -1.5               | 6.1             |
| 925     | 40.6     | 20.48 | 1.05  | 41.5   | 0.98  | -2.0               | 7.3             |
| 950     | 40.3     | 20.39 | 1.08  | 41.4   | 0.99  | -2.6               | 8.3             |
| 975     | 40.1     | 20.29 | 1.10  | 41.4   | 1.00  | -3.2               | 9.5             |
| 1000    | 39.8     | 20.20 | 1.12  | 41.3   | 1.01  | -3.7               | 10.7            |



**Figure D-3**  
**750MHz Head Tissue Equivalent Matter**

|                                    |                                                                                     |                       |                                                                                       |                                 |
|------------------------------------|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMG955F                 |  | SAR EVALUATION REPORT |  | Approved by:<br>Quality Manager |
| Test Dates:<br>12/30/16 – 02/15/17 | DUT Type:<br>Portable Handset                                                       |                       |                                                                                       | APPENDIX D:<br>Page 3 of 5      |

### 3 Composition / Information on ingredients

The Item is composed of the following ingredients:

|                      |             |                                     |
|----------------------|-------------|-------------------------------------|
| Water                | 50 – 73 %   |                                     |
| Non-ionic detergents | 25 – 50 %   | polyoxyethylenesorbitan monolaurate |
| NaCl                 | 0 – 2 %     |                                     |
| Preservative         | 0.05 – 0.1% | Preventol-D7                        |

Safety relevant ingredients:

|                    |         |                                                                                                          |
|--------------------|---------|----------------------------------------------------------------------------------------------------------|
| CAS-No. 55965-84-9 | < 0.1 % | aqueous preparation, containing 5-chloro-2-methyl-3-(2H)-isothiazolone and 2-methyl-3-(2H)-isothiazolone |
| CAS-No. 9005-64-5  | <50 %   | polyoxyethylenesorbitan monolaurate                                                                      |

According to international guidelines, the product is not a dangerous mixture and therefore not required to be marked by symbols.

**Figure D-4**  
**Composition of 2.4 GHz Head Tissue Equivalent Matter**

**Note:** 2.4 GHz head 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.

#### Measurement Certificate / Material Test

|              |                                                 |
|--------------|-------------------------------------------------|
| Item Name    | Head Tissue Simulating Liquid (HBBL1900-3800V3) |
| Product No.  | SL AAH 196 AB (Batch: 160330-1)                 |
| Manufacturer | SPEAG                                           |

#### Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

#### Setup Validation

Validation results were within  $\pm 2.5\%$  towards the target values of Methanol.

#### Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

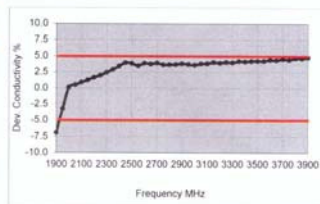
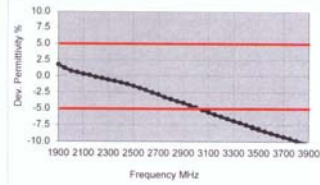
#### Test Condition

|                 |                                                              |
|-----------------|--------------------------------------------------------------|
| Ambient         | Environment temperatur ( $22 \pm 3$ ) °C and humidity < 70%. |
| TSL Temperature | 22°C                                                         |
| Test Date       | 30-Mar-16                                                    |
| Operator        | WM                                                           |

#### Additional Information

TSL Density 1.054 g/cm<sup>3</sup>  
TSL Heat-capacity 3.389 kJ/(kg·K)

| Measured |             |              |          | Target      |              | Diff to Target    |                    |
|----------|-------------|--------------|----------|-------------|--------------|-------------------|--------------------|
| f [MHz]  | $\epsilon'$ | $\epsilon''$ | $\sigma$ | $\epsilon'$ | $\epsilon''$ | $\Delta\epsilon'$ | $\Delta\epsilon''$ |
| 1900     | 40.7        | 12.3         | 1.3      | 40.0        | 1.4          | 1.7               | -6.9               |
| 1950     | 40.5        | 12.5         | 1.4      | 40.0        | 1.4          | 1.2               | -3.3               |
| 2000     | 40.3        | 12.6         | 1.4      | 40.0        | 1.4          | 0.8               | 0.1                |
| 2050     | 40.1        | 12.7         | 1.5      | 39.9        | 1.4          | 0.6               | 0.5                |
| 2100     | 39.9        | 12.9         | 1.5      | 39.8        | 1.5          | 0.3               | 0.9                |
| 2150     | 39.8        | 13.0         | 1.6      | 39.7        | 1.5          | 0.1               | 1.2                |
| 2200     | 39.6        | 13.1         | 1.6      | 39.6        | 1.6          | -0.2              | 1.7                |
| 2250     | 39.4        | 13.2         | 1.7      | 39.6        | 1.6          | -0.3              | 2.0                |
| 2300     | 39.2        | 13.3         | 1.7      | 39.5        | 1.7          | -0.6              | 2.4                |
| 2350     | 39.1        | 13.5         | 1.8      | 39.4        | 1.7          | -0.8              | 2.9                |
| 2400     | 38.9        | 13.6         | 1.8      | 39.3        | 1.8          | -1.0              | 3.4                |
| 2450     | 38.7        | 13.7         | 1.9      | 39.2        | 1.8          | -1.2              | 4.0                |
| 2500     | 38.5        | 13.8         | 1.9      | 39.1        | 1.9          | -1.5              | 3.9                |
| 2550     | 38.3        | 13.9         | 2.0      | 39.1        | 1.9          | -1.9              | 3.5                |
| 2600     | 38.2        | 14.1         | 2.0      | 39.0        | 2.0          | -2.2              | 3.9                |
| 2650     | 37.9        | 14.2         | 2.1      | 38.9        | 2.0          | -2.6              | 3.8                |
| 2700     | 37.8        | 14.3         | 2.2      | 38.9        | 2.1          | -2.8              | 3.9                |
| 2750     | 37.5        | 14.4         | 2.2      | 38.8        | 2.1          | -3.3              | 3.6                |
| 2800     | 37.4        | 14.5         | 2.3      | 38.8        | 2.2          | -3.6              | 3.6                |
| 2850     | 37.2        | 14.6         | 2.3      | 38.7        | 2.2          | -3.9              | 3.7                |
| 2900     | 37.0        | 14.7         | 2.4      | 38.6        | 2.3          | -4.1              | 3.8                |
| 2950     | 36.8        | 14.8         | 2.4      | 38.6        | 2.3          | -4.5              | 3.7                |
| 3000     | 36.6        | 14.9         | 2.5      | 38.5        | 2.4          | -4.8              | 3.6                |
| 3050     | 36.4        | 15.0         | 2.5      | 38.4        | 2.5          | -5.2              | 3.8                |
| 3100     | 36.2        | 15.1         | 2.6      | 38.4        | 2.5          | -5.6              | 3.8                |
| 3150     | 36.1        | 15.2         | 2.7      | 38.3        | 2.6          | -5.9              | 4.0                |
| 3200     | 35.9        | 15.2         | 2.7      | 38.3        | 2.6          | -6.2              | 3.9                |
| 3250     | 35.7        | 15.3         | 2.8      | 38.2        | 2.7          | -6.6              | 4.1                |
| 3300     | 35.5        | 15.3         | 2.8      | 38.2        | 2.7          | -6.9              | 4.0                |
| 3350     | 35.4        | 15.4         | 2.9      | 38.1        | 2.8          | -7.2              | 4.2                |
| 3400     | 35.2        | 15.5         | 2.9      | 38.0        | 2.8          | -7.5              | 4.1                |
| 3450     | 35.0        | 15.5         | 3.0      | 38.0        | 2.9          | -7.8              | 4.2                |
| 3500     | 34.9        | 15.6         | 3.0      | 37.9        | 2.9          | -8.1              | 4.2                |
| 3550     | 34.7        | 15.6         | 3.1      | 37.9        | 3.0          | -8.4              | 4.2                |
| 3600     | 34.5        | 15.7         | 3.1      | 37.8        | 3.0          | -8.7              | 4.4                |
| 3650     | 34.4        | 15.8         | 3.2      | 37.8        | 3.1          | -9.0              | 4.3                |
| 3700     | 34.2        | 15.8         | 3.3      | 37.7        | 3.1          | -9.3              | 4.5                |
| 3750     | 34.1        | 15.9         | 3.3      | 37.6        | 3.2          | -9.5              | 4.4                |
| 3800     | 33.9        | 15.9         | 3.4      | 37.6        | 3.2          | -9.9              | 4.7                |
| 3850     | 33.7        | 16.0         | 3.4      | 37.5        | 3.3          | -10.1             | 4.7                |



**Figure D-5**  
**2.4 GHz Head Tissue Equivalent Matter**

|                                    |                                                                                     |                       |                                                                                       |                                 |
|------------------------------------|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMG955F                 |  | SAR EVALUATION REPORT |  | Approved by:<br>Quality Manager |
| Test Dates:<br>12/30/16 – 02/15/17 | DUT Type:<br>Portable Handset                                                       |                       |                                                                                       | APPENDIX D:<br>Page 4 of 5      |

## 2 Composition / Information on ingredients

The Item is composed of the following ingredients:

|             |          |
|-------------|----------|
| Water       | 50 – 65% |
| Mineral oil | 10 – 30% |
| Emulsifiers | 8 – 25%  |
| Sodium salt | 0 – 1.5% |

Figure D-6

### Composition of 5 GHz Head Tissue Equivalent Matter

**Note:** 5GHz head 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.

#### Measurement Certificate / Material Test

|              |                                                 |
|--------------|-------------------------------------------------|
| Item Name    | Head Tissue Simulating Liquid (HBBL3500-5800V5) |
| Product No.  | SL AAH 502 AG (Batch: 160331-2)                 |
| Manufacturer | SPEAG                                           |

#### Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

#### Setup Validation

Validation results were within  $\pm 2.5\%$  towards the target values of Methanol.

#### Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

#### Test Condition

|                 |                                                             |
|-----------------|-------------------------------------------------------------|
| Ambient         | Environment temperatur ( $22 \pm 3$ )°C and humidity < 70%. |
| TSL Temperature | 22°C                                                        |
| Test Date       | 4-Apr-16                                                    |
| Operator        | WM                                                          |

#### Additional Information

|                   |                         |
|-------------------|-------------------------|
| TSL Density       | 0.985 g/cm <sup>3</sup> |
| TSL Heat-capacity | 3.383 kJ/(kg*K)         |

|         | Measured    |              |          | Target |       |              | Diff. to Target (%) |  |
|---------|-------------|--------------|----------|--------|-------|--------------|---------------------|--|
| f (MHz) | $\epsilon'$ | $\epsilon''$ | $\sigma$ | eps    | sigma | $\Delta$ eps | $\Delta$ -sigma     |  |
| 3400    | 39.0        | 15.12        | 2.86     | 38.0   | 2.81  | 2.5          | 1.8                 |  |
| 3500    | 38.8        | 15.09        | 2.94     | 37.9   | 2.91  | 2.3          | 0.9                 |  |
| 3600    | 38.7        | 15.08        | 3.02     | 37.8   | 3.02  | 2.3          | 0.2                 |  |
| 3700    | 38.6        | 15.08        | 3.10     | 37.7   | 3.12  | 2.4          | -0.6                |  |
| 3800    | 38.4        | 15.07        | 3.19     | 37.6   | 3.22  | 2.2          | -0.9                |  |
| 3900    | 38.3        | 15.09        | 3.27     | 37.5   | 3.32  | 2.2          | -1.6                |  |
| 4000    | 38.2        | 15.10        | 3.36     | 37.4   | 3.43  | 2.3          | -1.9                |  |
| 4100    | 38.1        | 15.13        | 3.45     | 37.2   | 3.53  | 2.3          | -2.2                |  |
| 4200    | 38.0        | 15.18        | 3.55     | 37.1   | 3.63  | 2.3          | -2.2                |  |
| 4300    | 37.8        | 15.22        | 3.64     | 37.0   | 3.73  | 2.1          | -2.5                |  |
| 4400    | 37.7        | 15.29        | 3.74     | 36.9   | 3.84  | 2.2          | -2.5                |  |
| 4500    | 37.6        | 15.34        | 3.84     | 36.8   | 3.94  | 2.2          | -2.5                |  |
| 4600    | 37.4        | 15.41        | 3.94     | 36.7   | 4.04  | 2.0          | -2.5                |  |
| 4700    | 37.3        | 15.47        | 4.05     | 36.6   | 4.14  | 2.0          | -2.2                |  |
| 4800    | 37.1        | 15.53        | 4.15     | 36.4   | 4.25  | 1.8          | -2.2                |  |
| 4850    | 37.1        | 15.57        | 4.20     | 36.4   | 4.30  | 2.0          | -2.2                |  |
| 4900    | 37.0        | 15.60        | 4.25     | 36.3   | 4.35  | 1.8          | -2.2                |  |
| 4950    | 36.9        | 15.62        | 4.30     | 36.3   | 4.40  | 1.7          | -2.2                |  |
| 5000    | 36.8        | 15.66        | 4.35     | 36.2   | 4.45  | 1.6          | -2.2                |  |
| 5050    | 36.8        | 15.68        | 4.40     | 36.2   | 4.50  | 1.8          | -2.2                |  |
| 5100    | 36.7        | 15.73        | 4.46     | 36.1   | 4.55  | 1.7          | -2.0                |  |
| 5150    | 36.6        | 15.75        | 4.51     | 36.0   | 4.60  | 1.5          | -2.0                |  |
| 5200    | 36.5        | 15.78        | 4.57     | 36.0   | 4.66  | 1.4          | -1.8                |  |
| 5250    | 36.4        | 15.80        | 4.62     | 35.9   | 4.71  | 1.3          | -1.8                |  |
| 5300    | 36.4        | 15.84        | 4.67     | 35.9   | 4.76  | 1.5          | -1.8                |  |
| 5350    | 36.3        | 15.85        | 4.72     | 35.8   | 4.81  | 1.4          | -1.8                |  |
| 5400    | 36.2        | 15.88        | 4.77     | 35.8   | 4.86  | 1.2          | -1.9                |  |
| 5450    | 36.2        | 15.90        | 4.82     | 35.7   | 4.91  | 1.4          | -1.9                |  |
| 5500    | 36.1        | 15.91        | 4.87     | 35.6   | 4.96  | 1.3          | -1.9                |  |
| 5550    | 36.0        | 15.95        | 4.93     | 35.6   | 5.01  | 1.2          | -1.7                |  |
| 5600    | 35.9        | 15.99        | 4.98     | 35.5   | 5.07  | 1.0          | -1.7                |  |
| 5650    | 35.9        | 16.02        | 5.04     | 35.5   | 5.12  | 1.2          | -1.5                |  |
| 5700    | 35.8        | 16.05        | 5.09     | 35.4   | 5.17  | 1.1          | -1.5                |  |
| 5750    | 35.7        | 16.09        | 5.15     | 35.4   | 5.22  | 1.0          | -1.3                |  |
| 5800    | 35.7        | 16.10        | 5.20     | 35.3   | 5.27  | 1.1          | -1.3                |  |
| 5850    | 35.6        | 16.14        | 5.25     | 35.3   | 5.34  | 0.8          | -1.6                |  |
| 5900    | 35.5        | 16.15        | 5.30     | 35.3   | 5.40  | 0.6          | -1.9                |  |

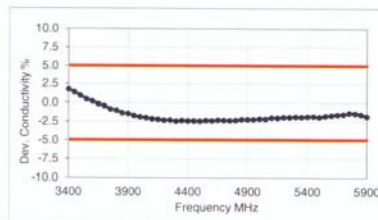
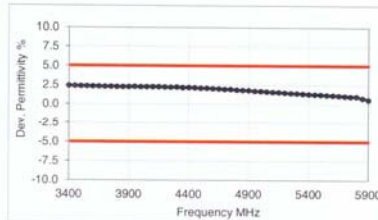


Figure D-7

### 5GHz Head Tissue Equivalent Matter

|                                    |                                                                                     |                       |                                                                                       |                                 |
|------------------------------------|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMG955F                 |  | SAR EVALUATION REPORT |  | Approved by:<br>Quality Manager |
| Test Dates:<br>12/30/16 – 02/15/17 | DUT Type:<br>Portable Handset                                                       |                       |                                                                                       | APPENDIX D:<br>Page 5 of 5      |

## 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-I**  
**SAR System Validation Summary (1g)**

| SAR SYSTEM # | FREQ. [MHz] | DATE       | PROBE SN | PROBE TYPE | PROBE CAL. POINT |      | COND. | PERM.  | CW VALIDATION |                 |                | MOD. VALIDATION |             |      |
|--------------|-------------|------------|----------|------------|------------------|------|-------|--------|---------------|-----------------|----------------|-----------------|-------------|------|
|              |             |            |          |            |                  |      | (σ)   | (ε)    | SENSITIVITY   | PROBE LINEARITY | PROBE ISOTROPY | MOD. TYPE       | DUTY FACTOR | PAR  |
| K            | 750         | 5/25/2016  | 7409     | EX3DV4     | 750              | Head | 0.908 | 42.422 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| H            | 835         | 4/7/2016   | 3319     | ES3DV3     | 835              | Head | 0.914 | 42.395 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| D            | 1750        | 5/19/2016  | 3213     | ES3DV3     | 1750             | Head | 1.412 | 39.009 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| G            | 1900        | 9/29/2016  | 3287     | ES3DV3     | 1900             | Head | 1.395 | 38.777 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| I            | 1900        | 12/13/2016 | 3209     | ES3DV3     | 1900             | Head | 1.447 | 39.330 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| G            | 2450        | 9/28/2016  | 3287     | ES3DV3     | 2450             | Head | 1.875 | 37.737 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| G            | 2600        | 9/28/2016  | 3287     | ES3DV3     | 2600             | Head | 2.050 | 37.072 | PASS          | PASS            | PASS           | TDD             | PASS        | N/A  |
| J            | 5250        | 4/25/2016  | 7357     | EX3DV4     | 5250             | Head | 4.508 | 34.565 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| J            | 5600        | 4/25/2016  | 7357     | EX3DV4     | 5600             | Head | 4.852 | 34.028 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| J            | 5750        | 4/25/2016  | 7357     | EX3DV4     | 5750             | Head | 5.021 | 33.850 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| F            | 750         | 10/10/2016 | 3332     | ES3DV3     | 750              | Body | 0.966 | 55.020 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| H            | 835         | 4/7/2016   | 3319     | ES3DV3     | 835              | Body | 1.000 | 54.246 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| I            | 1750        | 12/19/2016 | 3209     | ES3DV3     | 1750             | Body | 1.503 | 51.815 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| K            | 1900        | 5/24/2016  | 7409     | EX3DV4     | 1900             | Body | 1.583 | 51.303 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| J            | 1900        | 2/3/2017   | 3334     | ES3DV3     | 1900             | Body | 1.561 | 51.227 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| E            | 2450        | 4/27/2016  | 7406     | EX3DV4     | 2450             | Body | 2.016 | 51.629 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| E            | 2600        | 4/29/2016  | 7406     | EX3DV4     | 2600             | Body | 2.225 | 50.688 | PASS          | PASS            | PASS           | TDD             | PASS        | N/A  |
| D            | 5250        | 3/1/2016   | 3914     | EX3DV4     | 5250             | Body | 5.438 | 47.912 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| D            | 5600        | 3/1/2016   | 3914     | EX3DV4     | 5600             | Body | 5.895 | 47.321 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| D            | 5750        | 3/1/2016   | 3914     | EX3DV4     | 5750             | Body | 6.111 | 47.085 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |

**Table E-II**  
**SAR System Validation Summary (10g)**

| SAR SYSTEM # | FREQ. [MHz] | DATE       | PROBE SN | PROBE TYPE | PROBE CAL. POINT |      | COND. | PERM.  | CW VALIDATION |                 |                | MOD. VALIDATION |             |      |
|--------------|-------------|------------|----------|------------|------------------|------|-------|--------|---------------|-----------------|----------------|-----------------|-------------|------|
|              |             |            |          |            |                  |      | (σ)   | (ε)    | SENSITIVITY   | PROBE LINEARITY | PROBE ISOTROPY | MOD. TYPE       | DUTY FACTOR | PAR  |
| I            | 1750        | 12/19/2016 | 3209     | ES3DV3     | 1750             | Body | 1.503 | 51.815 | PASS          | PASS            | PASS           | N/A             | N/A         | N/A  |
| K            | 1900        | 5/24/2016  | 7409     | EX3DV4     | 1900             | Body | 1.583 | 51.303 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| J            | 1900        | 2/3/2017   | 3334     | ES3DV3     | 1900             | Body | 1.561 | 51.227 | PASS          | PASS            | PASS           | GMSK            | PASS        | N/A  |
| E            | 2450        | 4/27/2016  | 7406     | EX3DV4     | 2450             | Body | 2.016 | 51.629 | PASS          | PASS            | PASS           | OFDM/TDD        | PASS        | PASS |
| D            | 5250        | 3/1/2016   | 3914     | EX3DV4     | 5250             | Body | 5.438 | 47.912 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| D            | 5600        | 3/1/2016   | 3914     | EX3DV4     | 5600             | Body | 5.895 | 47.321 | PASS          | PASS            | PASS           | OFDM            | N/A         | PASS |
| D            | 5750        | 3/1/2016   | 3914     | EX3DV4     | 5750             | Body | 6.111 | 47.085 | 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: A3LSMG955F                 |  | SAR EVALUATION REPORT |  | Approved by:<br>Quality Manager |
| Test Dates:<br>12/30/16 – 02/15/17 | DUT Type:<br>Portable Handset                                                       |                       |                                                                                       | APPENDIX E:<br>Page 1 of 1      |

## APPENDIX G: CONDUCTED POWERS FOR 4X4 DL MIMO

This device supports downlink 4x4 MIMO operations for LTE Band 4 only. Uplink transmission is limited to a single output stream. Power measurements were performed with downlink 4x4 MIMO active for the configuration with highest measured maximum conducted power with 4x4 downlink MIMO inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

Per FCC Guidance, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive. Single Carrier 4x4 Downlink MIMO

CA combinations with 4x4 MIMO are not supported

**Table G-1**  
**LTE 4x4 Downlink MIMO Maximum Conducted Powers**

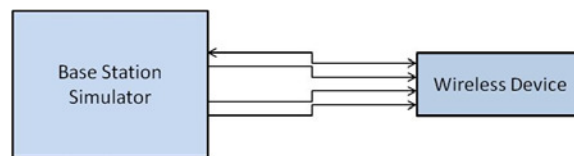
| LTE Band | Bandwidth [MHz] | Channel | Frequency [MHz] | Modulation | RB Size | RB Offset | 4x4 DL MIMO Tx. Power [dBm] | Single Antenna Tx. Power [dBm] | Target Power [dBm] |
|----------|-----------------|---------|-----------------|------------|---------|-----------|-----------------------------|--------------------------------|--------------------|
| 4        | 10              | 20350   | 1750            | QPSK       | 1       | 0         | 22.63                       | 23.16                          | 23.5               |

**Table G-2**  
**LTE 4x4 Downlink MIMO Reduced Conducted Powers**

| LTE Band | Bandwidth [MHz] | Channel | Frequency [MHz] | Modulation | RB Size | RB Offset | 4x4 DL MIMO Tx. Power [dBm] | Single Antenna Tx. Power [dBm] | Target Power [dBm] |
|----------|-----------------|---------|-----------------|------------|---------|-----------|-----------------------------|--------------------------------|--------------------|
| 4        | 15              | 20300   | 1745            | 16QAM      | 36      | 18        | 19.70                       | 19.99                          | 20.5               |

Notes:

- Per FCC guidance LTE Band 66 SISO powers were used to select measurement configurations for LTE Band 4.



**Figure G-1**  
**Power Measurement Setup**

|                                    |                                                                                     |                       |                                                                                       |                                 |
|------------------------------------|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID A3LSMG955F                  |  | SAR EVALUATION REPORT |  | Approved by:<br>Quality Manager |
| Test Dates:<br>12/30/16 – 02/15/17 | DUT Type:<br>Portable Handset                                                       |                       |                                                                                       | APPENDIX F:<br>Page 1 of 1      |

## APPENDIX H: SENSOR TRIGGERING DATA SUMMARY

### A3LSMG955F Sensor Triggering Data Summary

Per FCC KDB Publication 616217 D04v01r02, this device was tested by the manufacturer to determine the proximity sensor triggering distances for all applicable sides and edges of the device. The measured output power at distances within  $\pm 5$  mm of the triggering points (or until touching the phantom) is included for back and front sides and each applicable edge per Step i) in Section 6.2 of the KDB. The technical descriptions in the filing contain the complete set of triggering data required by Section 6 of FCC KDB Publication 616217 D04v01r02.

To ensure all production units are compliant, it is necessary to test SAR at a distance 1 mm less than the smallest distance between the device and SAR phantom (determined from the sensor triggering tests according to FCC KDB 616217 D04v01r02) with the device at the maximum output power (without power reduction). These SAR tests are included in addition to the SAR tests for the device touching the SAR phantom (at the reduced output power level).

The operational description contains information explaining how this device remains compliant in the event of a sensor malfunction.

|                                               |                                                                                                                                   |                              |                                                                                       |                                        |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LSMG955F                     |  <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | <b>SAR EVALUATION REPORT</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Dates:</b><br>12/30/2016 – 02/15/2017 | <b>DUT Type:</b><br>Portable Handset                                                                                              |                              |                                                                                       | <b>APPENDIX H:</b><br>Page 1 of 4      |

## Back Side

Moving device toward the phantom:

| KDB 616217 6.2.f Measured Power [dBm] |       |       |       |       |       |       |       |       |       |       |       |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Distance[mm]                          | 11    | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3     | 2     | 1     |
| GPRS 1900 1Tx                         | 30.65 | 30.72 | 30.90 | 30.95 | 30.77 | 28.85 | 28.73 | 28.94 | 28.84 | 28.90 | 28.70 |
| GPRS 1900 2Tx                         | 27.87 | 27.85 | 27.80 | 27.97 | 28.08 | 24.91 | 24.90 | 24.74 | 24.72 | 24.65 | 24.70 |
| GPRS 1900 3Tx                         | 24.64 | 24.95 | 24.93 | 24.62 | 24.94 | 22.94 | 22.91 | 22.61 | 22.89 | 22.91 | 22.88 |
| GPRS 1900 4Tx                         | 24.02 | 23.93 | 23.83 | 24.11 | 24.06 | 21.84 | 22.06 | 21.99 | 22.04 | 22.07 | 21.99 |
| UMTS B4                               | 24.29 | 24.25 | 24.13 | 24.37 | 24.12 | 20.94 | 20.61 | 20.91 | 20.87 | 20.81 | 20.92 |
| UMTS B2                               | 24.32 | 24.19 | 24.18 | 24.17 | 24.24 | 20.17 | 20.27 | 20.21 | 20.10 | 20.27 | 20.31 |
| LTE FDD B66                           | 23.74 | 23.64 | 23.92 | 23.92 | 23.66 | 20.64 | 20.67 | 20.61 | 20.73 | 20.79 | 20.65 |
| LTE FDD B4                            | 23.61 | 23.73 | 23.64 | 23.60 | 23.72 | 20.71 | 20.89 | 20.62 | 20.93 | 20.95 | 20.89 |
| LTE FDD B25                           | 23.89 | 23.79 | 23.91 | 23.73 | 23.63 | 20.43 | 20.38 | 20.18 | 20.26 | 20.45 | 20.20 |
| LTE FDD B2                            | 23.82 | 23.80 | 23.92 | 23.81 | 23.61 | 20.16 | 20.37 | 20.40 | 20.19 | 20.12 | 20.12 |

Moving device away from the phantom:

| KDB 616217 6.2.h Measured Power [dBm] |       |       |       |       |       |       |       |       |       |       |       |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Distance[mm]                          | 11    | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3     | 2     | 1     |
| GPRS 1900 1Tx                         | 30.74 | 30.71 | 30.79 | 30.82 | 30.87 | 28.74 | 28.89 | 28.70 | 28.67 | 28.61 | 28.83 |
| GPRS 1900 2Tx                         | 28.06 | 27.93 | 28.07 | 27.95 | 28.10 | 24.66 | 24.67 | 24.85 | 24.83 | 24.87 | 24.82 |
| GPRS 1900 3Tx                         | 24.64 | 24.93 | 24.68 | 24.73 | 24.76 | 22.92 | 22.69 | 22.81 | 22.78 | 22.90 | 22.84 |
| GPRS 1900 4Tx                         | 23.91 | 24.09 | 24.13 | 23.95 | 24.03 | 21.93 | 21.95 | 21.85 | 21.97 | 22.11 | 22.12 |
| UMTS B4                               | 24.27 | 24.17 | 24.25 | 24.37 | 24.40 | 20.66 | 20.87 | 20.85 | 20.88 | 20.80 | 20.92 |
| UMTS B2                               | 24.44 | 24.10 | 24.37 | 24.27 | 24.13 | 20.22 | 20.16 | 20.31 | 20.15 | 20.45 | 20.39 |
| LTE FDD B66                           | 23.65 | 23.78 | 23.84 | 23.90 | 23.94 | 20.73 | 20.65 | 20.75 | 20.80 | 20.77 | 20.73 |
| LTE FDD B4                            | 23.67 | 23.85 | 23.81 | 23.92 | 23.95 | 20.72 | 20.68 | 20.87 | 20.94 | 20.82 | 20.95 |
| LTE FDD B25                           | 23.88 | 23.70 | 23.67 | 23.81 | 23.74 | 20.14 | 20.22 | 20.10 | 20.44 | 20.26 | 20.18 |
| LTE FDD B2                            | 23.76 | 23.84 | 23.75 | 23.82 | 23.82 | 20.38 | 20.36 | 20.25 | 20.20 | 20.27 | 20.27 |

Based on the most conservative measured triggering distance of 6 mm, additional SAR measurements were required at 5 mm from the back side.

|                                        |                                                                                                                                   |                       |                                                                                       |                                 |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------------------|
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| Test Dates:<br>12/30/2016 – 02/15/2017 | DUT Type:<br>Portable Handset                                                                                                     |                       |                                                                                       | APPENDIX H:<br>Page 2 of 4      |

## Front Side

Moving device toward the phantom:

| KDB 616217 6.2.f Measured Power [dBm] |       |       |       |       |       |       |       |       |       |       |       |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Distance[mm]                          | 12    | 11    | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3     | 2     |
| GPRS 1900 1Tx                         | 30.70 | 30.94 | 30.60 | 30.82 | 30.80 | 28.71 | 28.92 | 28.79 | 28.94 | 28.60 | 28.86 |
| GPRS 1900 2Tx                         | 28.02 | 27.89 | 27.82 | 27.87 | 27.92 | 24.61 | 24.70 | 24.76 | 24.75 | 24.65 | 24.93 |
| GPRS 1900 3Tx                         | 24.93 | 24.90 | 24.92 | 24.65 | 24.68 | 22.61 | 22.92 | 22.89 | 22.80 | 22.76 | 22.86 |
| GPRS 1900 4Tx                         | 24.14 | 23.95 | 24.07 | 24.07 | 23.97 | 22.03 | 22.07 | 22.07 | 21.86 | 22.15 | 22.06 |
| UMTS B4                               | 24.36 | 24.31 | 24.32 | 24.41 | 24.45 | 20.62 | 20.91 | 20.91 | 20.86 | 20.69 | 20.81 |
| UMTS B2                               | 24.15 | 24.15 | 24.35 | 24.27 | 24.40 | 20.37 | 20.32 | 20.36 | 20.43 | 20.44 | 20.18 |
| LTE FDD B66                           | 23.89 | 23.69 | 23.89 | 23.84 | 23.87 | 20.85 | 20.63 | 20.77 | 20.71 | 20.89 | 20.80 |
| LTE FDD B4                            | 23.85 | 23.73 | 23.91 | 23.74 | 23.75 | 20.79 | 20.76 | 20.65 | 20.60 | 20.84 | 20.74 |
| LTE FDD B25                           | 23.80 | 23.95 | 23.85 | 23.73 | 23.90 | 20.18 | 20.21 | 20.14 | 20.42 | 20.11 | 20.33 |
| LTE FDD B2                            | 23.81 | 23.61 | 23.69 | 23.84 | 23.75 | 20.15 | 20.24 | 20.44 | 20.40 | 20.13 | 20.40 |

Moving device away from the phantom:

| KDB 616217 6.2.h Measured Power [dBm] |       |       |       |       |       |       |       |       |       |       |       |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Distance[mm]                          | 12    | 11    | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3     | 2     |
| GPRS 1900 1Tx                         | 30.75 | 30.72 | 30.86 | 30.89 | 30.90 | 28.62 | 28.71 | 28.66 | 28.90 | 28.62 | 28.93 |
| GPRS 1900 2Tx                         | 28.13 | 27.81 | 28.02 | 28.06 | 28.09 | 24.84 | 24.61 | 24.91 | 24.88 | 24.83 | 24.82 |
| GPRS 1900 3Tx                         | 24.68 | 24.88 | 24.62 | 24.65 | 24.82 | 22.68 | 22.92 | 22.69 | 22.60 | 22.88 | 22.78 |
| GPRS 1900 4Tx                         | 24.05 | 24.03 | 23.81 | 23.85 | 23.83 | 22.02 | 21.81 | 21.94 | 21.84 | 21.98 | 21.97 |
| UMTS B4                               | 24.33 | 24.23 | 24.27 | 24.21 | 24.35 | 20.86 | 20.85 | 20.61 | 20.86 | 20.69 | 20.89 |
| UMTS B2                               | 24.31 | 24.25 | 24.43 | 24.33 | 24.33 | 20.25 | 20.27 | 20.30 | 20.18 | 20.31 | 20.27 |
| LTE FDD B66                           | 23.63 | 23.78 | 23.69 | 23.83 | 23.73 | 20.61 | 20.88 | 20.87 | 20.61 | 20.86 | 20.91 |
| LTE FDD B4                            | 23.75 | 23.87 | 23.95 | 23.93 | 23.77 | 20.95 | 20.63 | 20.70 | 20.90 | 20.65 | 20.60 |
| LTE FDD B25                           | 23.94 | 23.81 | 23.65 | 23.60 | 23.92 | 20.27 | 20.17 | 20.11 | 20.34 | 20.32 | 20.11 |
| LTE FDD B2                            | 23.89 | 23.88 | 23.74 | 23.64 | 23.69 | 20.19 | 20.12 | 20.22 | 20.12 | 20.11 | 20.23 |

Based on the most conservative measured triggering distance of 7 mm, additional SAR measurements were required at 6 mm from the front side.

|                                               |                                                                                                                                   |                              |                                                                                       |                                        |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| FCC ID: A3LSMG955F                            |  <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | <b>SAR EVALUATION REPORT</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Dates:</b><br>12/30/2016 – 02/15/2017 | <b>DUT Type:</b><br>Portable Handset                                                                                              |                              |                                                                                       | <b>APPENDIX H:</b><br>Page 3 of 4      |

## Bottom Edge

Moving device toward the phantom:

| KDB 616217 6.2.f Measured Power [dBm] |       |       |       |       |       |       |       |       |       |       |       |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Distance[mm]                          | 13    | 12    | 11    | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3     |
| GPRS 1900 1Tx                         | 30.74 | 30.62 | 30.81 | 30.83 | 30.79 | 28.93 | 28.87 | 28.87 | 28.79 | 28.85 | 28.95 |
| GPRS 1900 2Tx                         | 28.09 | 28.00 | 28.06 | 27.98 | 27.85 | 24.69 | 24.66 | 24.79 | 24.63 | 24.67 | 24.89 |
| GPRS 1900 3Tx                         | 24.81 | 24.92 | 24.62 | 24.86 | 24.77 | 22.61 | 22.65 | 22.83 | 22.63 | 22.84 | 22.71 |
| GPRS 1900 4Tx                         | 23.98 | 24.09 | 23.98 | 24.14 | 23.99 | 21.85 | 21.97 | 21.95 | 22.05 | 22.12 | 21.80 |
| UMTS B4                               | 24.40 | 24.26 | 24.13 | 24.17 | 24.39 | 20.68 | 20.74 | 20.69 | 20.81 | 20.60 | 20.61 |
| UMTS B2                               | 24.14 | 24.39 | 24.32 | 24.34 | 24.12 | 20.33 | 20.18 | 20.32 | 20.38 | 20.17 | 20.23 |
| LTE FDD B66                           | 23.71 | 23.92 | 23.93 | 23.93 | 23.95 | 20.90 | 20.74 | 20.76 | 20.86 | 20.70 | 20.94 |
| LTE FDD B4                            | 23.92 | 23.81 | 23.91 | 23.73 | 23.82 | 20.69 | 20.93 | 20.66 | 20.91 | 20.64 | 20.90 |
| LTE FDD B25                           | 23.74 | 23.84 | 23.84 | 23.75 | 23.74 | 20.23 | 20.38 | 20.21 | 20.45 | 20.21 | 20.16 |
| LTE FDD B2                            | 23.81 | 23.81 | 23.71 | 23.91 | 23.94 | 20.18 | 20.35 | 20.22 | 20.25 | 20.22 | 20.39 |

Moving device away from the phantom:

| KDB 616217 6.2.h Measured Power [dBm] |       |       |       |       |       |       |       |       |       |       |       |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Distance[mm]                          | 13    | 12    | 11    | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3     |
| GPRS 1900 1Tx                         | 30.77 | 30.62 | 30.78 | 30.60 | 30.86 | 28.76 | 28.63 | 28.83 | 28.65 | 28.87 | 28.75 |
| GPRS 1900 2Tx                         | 27.94 | 27.95 | 27.83 | 28.11 | 28.04 | 24.81 | 24.89 | 24.82 | 24.81 | 24.67 | 24.80 |
| GPRS 1900 3Tx                         | 24.80 | 24.64 | 24.82 | 24.75 | 24.87 | 22.84 | 22.80 | 22.70 | 22.76 | 22.73 | 22.75 |
| GPRS 1900 4Tx                         | 24.11 | 24.11 | 24.01 | 23.87 | 23.93 | 21.82 | 21.81 | 21.95 | 22.00 | 22.01 | 21.86 |
| UMTS B4                               | 24.17 | 24.25 | 24.40 | 24.39 | 24.13 | 20.60 | 20.76 | 20.72 | 20.68 | 20.74 | 20.75 |
| UMTS B2                               | 24.39 | 24.45 | 24.11 | 24.31 | 24.27 | 20.12 | 20.13 | 20.13 | 20.38 | 20.23 | 20.30 |
| LTE FDD B66                           | 23.69 | 23.82 | 23.60 | 23.74 | 23.74 | 20.77 | 20.81 | 20.62 | 20.62 | 20.70 | 20.73 |
| LTE FDD B4                            | 23.67 | 23.88 | 23.80 | 23.76 | 23.91 | 20.63 | 20.90 | 20.66 | 20.91 | 20.95 | 20.70 |
| LTE FDD B25                           | 23.86 | 23.91 | 23.73 | 23.69 | 23.82 | 20.31 | 20.36 | 20.11 | 20.41 | 20.15 | 20.13 |
| LTE FDD B2                            | 23.71 | 23.72 | 23.61 | 23.90 | 23.83 | 20.20 | 20.41 | 20.21 | 20.30 | 20.30 | 20.28 |

Based on the most conservative measured triggering distance of 8 mm, additional SAR measurements were required at 7 mm from the bottom edge.

|                                               |                                                                                                                                   |                              |                                                                                       |                                        |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| FCC ID: A3LSMG955F                            |  <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | <b>SAR EVALUATION REPORT</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Dates:</b><br>12/30/2016 – 02/15/2017 | <b>DUT Type:</b><br>Portable Handset                                                                                              |                              |                                                                                       | <b>APPENDIX H:</b><br>Page 4 of 4      |