



| 10546 | AAC | IEEE 802.11ac WiFi (80MHz, MCS2, 99pc dc)                 | WLAN | 8.35 | ± 9.6 % |
|-------|-----|---|------|------|---------|
| 0547  | AAC | IEEE 802.11ac WiFi (80MHz, MCS3, 99pc dc)                 | WLAN | 8.49 | ± 9.6 % |
| 0548  | AAC | IEEE 802.11ac WiFi (80MHz, MCS4, 99pc dc)                 | WLAN | 8.37 | ± 9.6 % |
| 0550  | AAC | IEEE 802.11ac WiFi (80MHz, MCS6, 99pc dc)                 | WLAN | 8.38 | ± 9.6 % |
| 0551  | AAC | IEEE 802.11ac WiFi (80MHz, MCS7, 99pc dc)                 | WLAN | 8.50 | ± 9.6 % |
| 0552  | AAC | IEEE 802.11ac WiFi (80MHz, MCS8, 99pc dc)                 | WLAN | 8.42 | ± 9.6 % |
| 0552  | AAC | IEEE 802.11ac WiFi (80MHz, MCS9, 99pc dc)                 | WLAN | 8.45 | ± 9.6 % |
| 0554  |     | IEEE 802.11ac WiFi (160MHz, MCS0, 99pc dc)                | WLAN | 8.48 | ± 9.6 % |
| 0555  | AAC | IEEE 802.11ac WiFi (160MHz, MCS1, 99pc dc)                | WLAN | 8.47 | ± 9.6 % |
| 0556  | AAC | IEEE 802.11ac WiFi (160MHz, MCS2, 99pc dc)                | WLAN | 8.50 | ± 9.6 % |
| 10557 | AAC | IEEE 802.11ac WiFi (160MHz, MCS3, 99pc dc)                | WLAN | 8.52 | ± 9.6 % |
| 10558 | AAC | IEEE 802.11ac WiFi (160MHz, MCS4, 99pc dc)                | WLAN | 8.61 | ± 9.6 % |
| 10560 | AAC | IEEE 802.11ac WiFi (160MHz, MCS6, 99pc dc)                | WLAN | 8.73 | ± 9.6 % |
|       | AAC | IEEE 802.11ac WiFi (160MHz, MCS7, 99pc dc)                | WLAN | 8.56 | ± 9.6 % |
| 10561 | AAC | IEEE 802.11ac WiFi (160MHz, MCS8, 99pc dc)                | WLAN | 8.69 | ± 9.6 % |
| 10562 | AAC | IEEE 802.11ac WiFi (160MHz, MCS9, 99pc dc)                | WLAN | 8.77 | ± 9.6 % |
| 10563 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc dc)    | WLAN | 8.25 | ± 9.6 % |
| 10564 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc dc)   | WLAN | 8.45 | ± 9.6 % |
| 10565 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc dc)   | WLAN | 8.13 | ± 9.6 % |
| 10566 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 16 Mbps, 99pc dc)   | WLAN | 8.00 | ± 9.6 % |
| 10567 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc dc)   | WLAN | 8.37 | ± 9.6 % |
| 10568 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 39pc dc)   | WLAN | 8.10 | ± 9.6 % |
| 10569 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 46 Mbps, 99pc dc)   | WLAN | 8.30 | ± 9.6 % |
| 10570 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-0F-DM, 54 Midps, 33pc ds) | WLAN | 1.99 | ± 9.6 % |
| 10571 | AAC | IEEE 802.116 WIFI 2.4 GHz (DSSS, 1 Mbps, 90pc dc)         | WLAN | 1.99 | ± 9.6 % |
| 10572 | AAC | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc dc)         | WLAN | 1.98 | ± 9.6 % |
| 10573 | AAC | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc dc)       | WLAN | 1.98 | ± 9.6 % |
| 10574 | AAC | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc dc)        | WLAN | 8.59 | ± 9.6 % |
| 10575 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc dc)    | WLAN | 8.60 | ± 9.6 % |
| 10576 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc dc)    | WLAN | 8.70 | ± 9.6 % |
| 10577 | AAC | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc dc)   | WLAN | 8.49 | ± 9.6 % |
| 10578 | AAD | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc dc)   | WLAN | 8.36 | ± 9.6 % |
| 10579 | AAD | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc dc)   | WLAN | 8.76 | ± 9.6 % |
| 10580 | AAD | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc dc)   | WLAN | 8.35 | ± 9.6 % |
| 10581 | AAD | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc dc)   | WLAN | 8.67 | ± 9.6 % |
| 10582 | AAD | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc dc)   | WLAN | 8.59 | ± 9.6 % |
| 10583 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc dc)         | WLAN | 8.60 | ± 9.6 % |
| 10584 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc dc)         | WLAN | 8.70 | ± 9.6 % |
| 10585 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc dc)        |      | 8.49 | ± 9.6 % |
| 10586 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc dc)        | WLAN | 8.36 | ± 9.6 % |
| 10587 | AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc dc)        | WLAN |      | ± 9.6 % |
| 10588 | AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc dc)        | WLAN | 8.76 | ± 9.6 % |
| 10589 | AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc dc)        | WLAN | 8.35 | ± 9.6 % |
| 10590 | AAA | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc dc)        | WLAN | 8.67 |         |
| 10591 | AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc dc)             | WLAN | 8.63 | ± 9.6 % |
| 10592 | AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc dc)             | WLAN | 8.79 | ± 9.6 % |
| 10593 | AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc dc)             | WLAN | 8.64 | ± 9.6 % |
| 10594 | AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc dc)             | WLAN | 8.74 | ± 9.6 % |
| 10595 | AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc dc)             | WLAN | 8.74 | ± 9.6 % |
| 10596 | AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc dc)             | WLAN | 8.71 | ± 9.6 % |
| 10597 | AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc dc)             | WLAN | 8.72 | ± 9.6 % |
| 10598 | AAA | IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc dc)             | WLAN | 8.50 | ± 9.6 % |
| 10599 | AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc dc)             | WLAN | 8.79 | ± 9.6 9 |
| 10600 | AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc dc)             | WLAN | 8.88 | ± 9.6 % |
| 10601 | AAA | JEEE 000 44- (UT Mixed 40MH= MCC2 00pg dg)                | WLAN | 8.82 | ± 9.6 % |
| 10602 | AAA | VEEE 000 444 (UT Mixed 40MUz MCC2 00ng dg)                | WLAN | 8.94 | ± 9.6 % |
| 10603 | AAA | VEEE 000 44 - (UT Missel 40MU= MCC4 00pg dg)              | WLAN | 9.03 | ± 9.6 % |

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| 10604     | AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc dc)     | WLAN             | 8.76  | ± 9.6 % |
|-----------|-----|---|------------------|-------|---------|
| 10605     | AAA | IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc dc)     | WLAN             | 8.97  | ± 9.6 % |
| 10606     | AAC | IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc dc)     | WLAN             | 8.82  | ± 9.6 % |
| 10607     | AAC | IEEE 802.11ac WiFi (20MHz, MCS0, 90pc dc)         | WLAN             | 8.64  | ± 9.6 % |
| 10608     | AAC | IEEE 802.11ac WiFi (20MHz, MCS1, 90pc dc)         | WLAN             | 8.77  | ± 9.6 % |
| 10609     |     | IEEE 802.11ac WiFi (20MHz, MCS2, 90pc dc)         | WLAN             | 8.57  | ± 9.6 % |
| 10610     | AAC | IEEE 802.11ac WiFi (20MHz, MCS3, 90pc dc)         | WLAN             | 8.78  | ± 9.6 % |
| 10610     | AAC | IEEE 802.11ac WiFi (20MHz, MCS4, 90pc dc)         | WLAN             | 8.70  | ± 9.6 % |
| 10612     | AAC | IEEE 802.11ac WiFi (20MHz, MCS5, 90pc dc)         | WLAN             | 8.77  | ± 9.6 % |
| 10612     | AAC | IEEE 802.11ac WiFi (20MHz, MCS6, 90pc dc)         | WLAN             | 8.94  | ± 9.6 % |
|           | AAC | IEEE 802.11ac WiFi (20MHz, MCS7, 90pc dc)         | WLAN             | 8.59  | ± 9.6 % |
| 10614     | AAC | IEEE 802.11ac WiFi (20MHz, MCS8, 90pc dc)         | WLAN             | 8.82  | ± 9.6 % |
| 10615     | AAC | IEEE 802.11ac WiF1 (20MHz, MCS0, 90pc dc)         | WLAN             | 8.82  | ± 9.6 % |
| 10616     | AAC | IEEE 802.11ac WiFi (40MHz, MCS0, 90pc dc)         | WLAN             | 8.81  | ± 9.6 % |
| 10617     | AAC | IEEE 802.11ac WiFi (40MHz, MCS1, 90pc dc)         | WLAN             | 8.58  | ± 9.6 % |
| 10618     | AAC |   | WLAN             | 8.86  | ± 9.6 % |
| 10619     | AAC | IEEE 802.11ac WiFi (40MHz, MCS3, 90pc dc)         | WLAN             | 8.87  | ± 9.6 % |
| 10620     | AAC | IEEE 802.11ac WiFi (40MHz, MCS4, 90pc dc)         | WLAN             | 8.77  | ± 9.6 % |
| 10621     | AAC | IEEE 802.11ac WiFi (40MHz, MCS5, 90pc dc)         | The Committee of |       | ± 9.6 % |
| 10622     | AAC | IEEE 802.11ac WiFi (40MHz, MCS6, 90pc dc)         | WLAN             | 8.68  | ± 9.6 % |
| 10623     | AAC | IEEE 802.11ac WiFi (40MHz, MCS7, 90pc dc)         | WLAN             | 8.82  | ± 9.6 % |
| 10624     | AAC | IEEE 802.11ac WiFi (40MHz, MCS8, 90pc dc)         | WLAN             | 8.96  |         |
| 10625     | AAC | IEEE 802.11ac WiFi (40MHz, MCS9, 90pc dc)         | WLAN             | 8.96  | ± 9.6 % |
| 10626     | AAC | IEEE 802.11ac WiFi (80MHz, MCS0, 90pc dc)         | WLAN             | 8.83  | ± 9.6 % |
| 10627     | AAC | IEEE 802.11ac WiFi (80MHz, MCS1, 90pc dc)         | WLAN             | 8.88  | ± 9.6 % |
| 10628     | AAC | IEEE 802.11ac WiFi (80MHz, MCS2, 90pc dc)         | WLAN             | 8.71  | ± 9.6 % |
| 10629     | AAC | IEEE 802.11ac WiFi (80MHz, MCS3, 90pc dc)         | WLAN             | 8.85  | ± 9.6 % |
| 10630     | AAC | IEEE 802.11ac WiFi (80MHz, MCS4, 90pc dc)         | WLAN             | 8.72  | ± 9.6 % |
| 10631     | AAC | IEEE 802.11ac WiFi (80MHz, MCS5, 90pc dc)         | WLAN             | 8.81  | ± 9.6 % |
| 10632     | AAC | IEEE 802.11ac WiFi (80MHz, MCS6, 90pc dc)         | WLAN             | 8.74  | ± 9.6 % |
| 10633     | AAC | IEEE 802.11ac WiFi (80MHz, MCS7, 90pc dc)         | WLAN             | 8.83  | ± 9.6 % |
| 10634     |     | IEEE 802.11ac WiFi (80MHz, MCS8, 90pc dc)         | WLAN             | 8.80  | ± 9.6 % |
| 10635     | AAC | IEEE 802.11ac WiFi (80MHz, MCS9, 90pc dc)         | WLAN             | 8.81  | ± 9.6 % |
| 10635     | AAC | IEEE 802.11ac WiFi (160MHz, MCS0, 90pc dc)        | WLAN             | 8.83  | ± 9.6 % |
| 0.5177736 | AAC | IEEE 802.11ac WiFi (160MHz, MCS1, 90pc dc)        | WLAN             | 8.79  | ± 9.6 % |
| 10637     | AAC | IEEE 802.11ac WiFi (160MHz, MCS2, 90pc dc)        | WLAN             | 8.86  | ± 9.6 % |
| 10638     | AAC | IEEE 802.11ac WiFi (160MHz, MCS3, 90pc dc)        | WLAN             | 8.85  | ± 9.6 % |
| 10639     | AAC | IEEE 802.11ac WIFI (160MHz, MCS3, 90pc dc)        | WLAN             | 8.98  | ± 9.6 % |
| 10640     | AAC | IEEE 802.11ac WiFi (160MHz, MCS4, 90pc dc)        | WLAN             | 9.06  | ± 9.6 % |
| 10641     | AAC |   | WLAN             | 9.06  | ± 9.6 % |
| 10642     | AAC | IEEE 802.11ac WiFi (160MHz, MCS6, 90pc dc)        | WLAN             | 8.89  | ± 9.6 % |
| 10643     | AAC | IEEE 802.11ac WiFi (160MHz, MCS7, 90pc dc)        | WLAN             | 9.05  | ± 9.6 % |
| 10644     | AAC | IEEE 802.11ac WiFi (160MHz, MCS8, 90pc dc)        | WLAN             | 9.11  | ± 9.6 % |
| 10645     | AAC | IEEE 802.11ac WiFi (160MHz, MCS9, 90pc dc)        | LTE-TDD          | 11.96 | ± 9.6 % |
| 10646     | AAC | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Sub=2,7)  |                  | 11.96 | ± 9.6 % |
| 10647     | AAC | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Sub=2,7) | LTE-TDD          |       | ± 9.6 % |
| 10648     | AAC | CDMA2000 (1x Advanced)                            | CDMA2000         | 3.45  |         |
| 10652     | AAC | LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)    | LTE-TDD          | 6.91  | ± 9.6 % |
| 10653     | AAC | LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)   | LTE-TDD          | 7.42  | ± 9.6 % |
| 10654     | AAC | LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)   | LTE-TDD          | 6.96  | ± 9.6 % |
| 10655     | AAC | LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)   | LTE-TDD          | 7.21  | ± 9.6 % |
| 10658     | AAC | Pulse Waveform (200Hz, 10%)                       | Test             | 10.00 | ± 9.6 % |
| 10659     | AAC | Pulse Waveform (200Hz, 20%)                       | Test             | 6.99  | ± 9.6 % |
| 10660     | AAC | Pulse Waveform (200Hz, 40%)                       | Test             | 3.98  | ± 9.6 % |
| 10661     | AAC | Pulse Waveform (200Hz, 60%)                       | Test             | 2.22  | ± 9.6 % |
| 10662     | AAC | Pulse Waveform (200Hz, 80%)                       | Test             | 0.97  | ± 9.6 % |
| 10670     | AAC | Bluetooth Low Energy                              | Bluetooth        | 2.19  | ± 9.6 % |
| 10671     | AAD | 1555 000 44 (000MHz 14000 00mg dg)                | WLAN             | 9.09  | ± 9.6 % |

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| 10672 | AAD | IEEE 802.11ax (20MHz, MCS1, 90pc dc)  | WLAN | 8.57                                    | ± 9.6 % |
|-------|-----|---------------------------------------|------|---|---------|
| 10673 | AAD | IEEE 802.11ax (20MHz, MCS2, 90pc dc)  | WLAN | 8.78                                    | ± 9.6 % |
| 10674 | AAD | IEEE 802.11ax (20MHz, MCS3, 90pc dc)  | WLAN | 8.74                                    | ± 9.6 % |
| 10675 | AAD | IEEE 802.11ax (20MHz, MCS4, 90pc dc)  | WLAN | 8.90                                    | ± 9.6 % |
| 10676 |     | IEEE 802.11ax (20MHz, MCS5, 90pc dc)  | WLAN | 8.77                                    | ± 9.6 % |
| 10677 | AAD | IEEE 802.11ax (20MHz, MCS6, 90pc dc)  | WLAN | 8.73                                    | ± 9.6 % |
| 10678 | AAD | IEEE 802.11ax (20MHz, MCS7, 90pc dc)  | WLAN | 8.78                                    | ± 9.6 % |
| 10679 | AAD | IEEE 802.11ax (20MHz, MCS8, 90pc dc)  | WLAN | 8.89                                    | ± 9.6 % |
|       | AAD | IEEE 802.11ax (20MHz, MCS9, 90pc dc)  | WLAN | 8.80                                    | ± 9.6 % |
| 10680 | AAD | IEEE 802.11ax (20MHz, MCS10, 90pc dc) | WLAN | 8.62                                    | ± 9.6 % |
| 10681 | AAG | IEEE 802.11ax (20MHz, MCS11, 90pc dc) | WLAN | 8.83                                    | ± 9.6 % |
| 10682 | AAF | IEEE 802.11ax (20MHz, MCS0, 99pc dc)  | WLAN | 8.42                                    | ± 9.6 % |
| 10683 | AAA | IEEE 802.11ax (20MHz, MCS1, 99pc dc)  | WLAN | 8.26                                    | ± 9.6 % |
| 10684 | AAC | IEEE 802.11ax (20MHz, MCS1, 35pc dc)  | WLAN | 8.33                                    | ± 9.6 % |
| 10685 | AAC | IEEE 802.11ax (20MHz, MCS2, 99pc dc)  | WLAN | 8.28                                    | ± 9.6 % |
| 10686 | AAC | IEEE 802.11ax (20MHz, MCS3, 99pc dc)  | WLAN | 8.45                                    | ± 9.6 % |
| 10687 | AAE | IEEE 802.11ax (20MHz, MCS4, 99pc dc)  | WLAN | 8.29                                    | ± 9.6 % |
| 10688 | AAE | IEEE 802.11ax (20MHz, MCS5, 99pc dc)  | WLAN | 8.55                                    | ± 9.6 % |
| 10689 | AAD | IEEE 802.11ax (20MHz, MCS6, 99pc dc)  | WLAN | 8.29                                    | ± 9.6 % |
| 10690 | AAE | IEEE 802.11ax (20MHz, MCS7, 99pc dc)  | WLAN | 8.25                                    | ± 9.6 % |
| 10691 | AAB | IEEE 802.11ax (20MHz, MCS8, 99pc dc)  | WLAN | 8.29                                    | ± 9.6 % |
| 10692 | AAA | IEEE 802.11ax (20MHz, MCS9, 99pc dc)  | WLAN | 8.25                                    | ± 9.6 % |
| 10693 | AAA | IEEE 802.11ax (20MHz, MCS10, 99pc dc) |      | 8.57                                    | ± 9.6 % |
| 10694 | AAA | IEEE 802.11ax (20MHz, MCS11, 99pc dc) | WLAN | 100000000000000000000000000000000000000 | ± 9.6 % |
| 10695 | AAA | IEEE 802.11ax (40MHz, MCS0, 90pc dc)  | WLAN | 8.78                                    |         |
| 10696 | AAA | IEEE 802.11ax (40MHz, MCS1, 90pc dc)  | WLAN | 8.91                                    | ± 9.6 % |
| 10697 | AAA | IEEE 802.11ax (40MHz, MCS2, 90pc dc)  | WLAN | 8.61                                    | ± 9.6 % |
| 10698 | AAA | IEEE 802.11ax (40MHz, MCS3, 90pc dc)  | WLAN | 8.89                                    | ± 9.6 % |
| 10699 | AAA | IEEE 802.11ax (40MHz, MCS4, 90pc dc)  | WLAN | 8.82                                    | ± 9.6 % |
| 10700 | AAA | IEEE 802.11ax (40MHz, MCS5, 90pc dc)  | WLAN | 8.73                                    | ± 9.6 % |
| 10701 | AAA | IEEE 802.11ax (40MHz, MCS6, 90pc dc)  | WLAN | 8.86                                    | ± 9.6 % |
| 10702 | AAA | IEEE 802.11ax (40MHz, MCS7, 90pc dc)  | WLAN | 8.70                                    | ± 9.6 % |
| 10703 | AAA | IEEE 802.11ax (40MHz, MCS8, 90pc dc)  | WLAN | 8.82                                    | ± 9.6 % |
| 10704 | AAA | IEEE 802.11ax (40MHz, MCS9, 90pc dc)  | WLAN | 8.56                                    | ± 9.6 % |
| 10705 | AAA | IEEE 802.11ax (40MHz, MCS10, 90pc dc) | WLAN | 8.69                                    | ± 9.6 % |
| 10706 | AAC | IEEE 802.11ax (40MHz, MCS11, 90pc dc) | WLAN | 8.66                                    | ± 9.6 % |
| 10707 |     | IEEE 802.11ax (40MHz, MCS0, 99pc dc)  | WLAN | 8.32                                    | ± 9.6 % |
| 10707 | AAC | IEEE 802.11ax (40MHz, MCS1, 99pc dc)  | WLAN | 8.55                                    | ± 9.6 % |
| 10709 | AAC | IEEE 802.11ax (40MHz, MCS2, 99pc dc)  | WLAN | 8.33                                    | ± 9.6 % |
| 10709 | AAC | IEEE 802.11ax (40MHz, MCS3, 99pc dc)  | WLAN | 8.29                                    | ± 9.6 % |
|       | AAC | IEEE 802.11ax (40MHz, MCS4, 99pc dc)  | WLAN | 8.39                                    | ± 9.6 % |
| 10711 | AAC | IEEE 802.11ax (40MHz, MCS5, 99pc dc)  | WLAN | 8.67                                    | ± 9.6 % |
| 10712 | AAC | IEEE 802.11ax (40MHz, MCS6, 99pc dc)  | WLAN | 8.33                                    | ± 9.6 % |
| 10713 | AAC | IEEE 802.11ax (40MHz, MCS7, 99pc dc)  | WLAN | 8.26                                    | ± 9.6 % |
| 10714 | AAC | IEEE 802.11ax (40MHz, MCS8, 99pc dc)  | WLAN | 8.45                                    | ± 9.6 % |
| 10715 | AAC | IEEE 802.11ax (40MHz, MCS9, 99pc dc)  | WLAN | 8.30                                    | ± 9.6 % |
| 10716 | AAC | IEEE 802.11ax (40MHz, MCS10, 99pc dc) | WLAN | 8.48                                    | ± 9.6 % |
| 10717 | AAC |                                       | WLAN | 8.24                                    | ± 9.6 % |
| 10718 | AAC | IEEE 802.11ax (40MHz, MCS11, 99pc dc) | WLAN | 8.81                                    | ± 9.6 % |
| 10719 | AAC | IEEE 802.11ax (80MHz, MCS0, 90pc dc)  | WLAN | 8.87                                    | ± 9.6 ° |
| 10720 | AAC | IEEE 802.11ax (80MHz, MCS1, 90pc dc)  | WLAN | 8.76                                    | ± 9.6 ° |
| 10721 | AAC | IEEE 802.11ax (80MHz, MCS2, 90pc dc)  | WLAN | 8.55                                    | ± 9.6 ° |
| 10722 | AAC | IEEE 802.11ax (80MHz, MCS3, 90pc dc)  | WLAN | 8.70                                    | ± 9.6 ° |
| 10723 | AAC | IEEE 802.11ax (80MHz, MCS4, 90pc dc)  | WLAN | 8.90                                    | ± 9.6   |
| 10724 | AAC | IEEE 802.11ax (80MHz, MCS5, 90pc dc)  |      | 8.74                                    | ± 9.6   |
| 10725 | AAC | IEEE 802.11ax (80MHz, MCS6, 90pc dc)  | WLAN |   | ± 9.6   |
| 10726 | AAC | IEEE 802.11ax (80MHz, MCS7, 90pc dc)  | WLAN | 8.72                                    | ± 9.6 ° |
| 10727 | AAC | IEEE 802.11ax (80MHz, MCS8, 90pc dc)  | WLAN | 8.66                                    | 19.0    |

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| 10728  | AAC | IEEE 802.11ax (80MHz, MCS9, 90pc dc)   | WLAN   | 8.65 | ± 9.6 % |
|--|-----|--|--|------|---------|
| 0729   | AAC | IEEE 802.11ax (80MHz, MCS10, 90pc dc)  | WLAN   | 8.64 | ± 9.6 % |
| 0730   | AAC | IEEE 802.11ax (80MHz, MCS11, 90pc dc)  | WLAN   | 8.67 | ± 9.6 % |
| 0731   | AAC | IEEE 802.11ax (80MHz, MCS0, 99pc dc)   | WLAN   | 8.42 | ± 9.6 % |
| 0732   | AAC | IEEE 802.11ax (80MHz, MCS1, 99pc dc)   | WLAN   | 8.46 | ± 9.6 % |
| 0733   | AAC | IEEE 802.11ax (80MHz, MCS2, 99pc dc)   | WLAN   | 8.40 | ± 9.6 % |
| 0734   |     | IEEE 802.11ax (80MHz, MCS3, 99pc dc)   | WLAN   | 8.25 | ± 9.6 % |
| 0735   | AAC | IEEE 802.11ax (80MHz, MCS4, 99pc dc)   | WLAN   | 8.33 | ± 9.6 % |
| 0736   | AAC | IEEE 802.11ax (80MHz, MCS5, 99pc dc)   | WLAN   | 8.27 | ± 9.6 % |
| 10737  | AAC | IEEE 802.11ax (80MHz, MCS6, 99pc dc)   | WLAN   | 8.36 | ± 9.6 % |
| 10738  | AAC | IEEE 802.11ax (80MHz, MCS7, 99pc dc)   | WLAN   | 8.42 | ± 9.6 % |
| VANCOUS CO. 100 CO. 10 | AAC | IEEE 802.11ax (80MHz, MCS8, 99pc dc)   | WLAN   | 8.29 | ± 9.6 % |
| 10739  | AAC | IEEE 802.11ax (80MHz, MCS9, 99pc dc)   | WLAN   | 8.48 | ± 9.6 % |
| 10740  | AAC | IEEE 802.11ax (80MHz, MCS10, 99pc dc)  | WLAN   | 8.40 | ± 9.6 % |
| 10741  | AAC | IEEE 802.11ax (80MHz, MCS11, 99pc dc)  | WLAN   | 8.43 | ± 9.6 % |
| 10742  | AAC |  | WLAN   | 8.94 | ± 9.6 % |
| 10743  | AAC | IEEE 802.11ax (160MHz, MCS0, 90pc dc)  | WLAN   | 9.16 | ± 9.6 % |
| 10744  | AAC | IEEE 802.11ax (160MHz, MCS1, 90pc dc)  | WLAN   | 8.93 | ± 9.6 % |
| 10745  | AAC | IEEE 802.11ax (160MHz, MCS2, 90pc dc)  | WLAN   | 9.11 | ± 9.6 % |
| 10746  | AAC | IEEE 802.11ax (160MHz, MCS3, 90pc dc)  | WLAN   | 9.04 | ± 9.6 % |
| 10747  | AAC | IEEE 802.11ax (160MHz, MCS4, 90pc dc)  | WLAN   | 8.93 | ± 9.6 % |
| 10748  | AAC | IEEE 802.11ax (160MHz, MCS5, 90pc dc)  | WLAN   | 8.90 | ± 9.6 % |
| 10749  | AAC | IEEE 802.11ax (160MHz, MCS6, 90pc dc)  |  | 8.79 | ± 9.6 % |
| 10750  | AAC | IEEE 802.11ax (160MHz, MCS7, 90pc dc)  | WLAN   | 8.82 | ± 9.6 % |
| 10751  | AAC | IEEE 802.11ax (160MHz, MCS8, 90pc dc)  | WLAN   |      | ± 9.6 % |
| 10752  | AAC | IEEE 802.11ax (160MHz, MCS9, 90pc dc)  | WLAN   | 8.81 |         |
| 10753  | AAC | IEEE 802.11ax (160MHz, MCS10, 90pc dc)   | WLAN   | 9.00 | ± 9.6 % |
| 10754  | AAC | IEEE 802.11ax (160MHz, MCS11, 90pc dc)   | WLAN   | 8.94 | ± 9.6 % |
| 10755  | AAC | IEEE 802.11ax (160MHz, MCS0, 99pc dc)  | WLAN   | 8.64 | ± 9.6 % |
| 10756  | AAC | IEEE 802.11ax (160MHz, MCS1, 99pc dc)  | WLAN   | 8.77 | ± 9.6 % |
| 10757  | AAC | IEEE 802.11ax (160MHz, MCS2, 99pc dc)  | WLAN   | 8.77 | ± 9.6 % |
| 10758  | AAC | IEEE 802.11ax (160MHz, MCS3, 99pc dc)  | WLAN   | 8.69 | ± 9.6 % |
| 10759  | AAC | IEEE 802.11ax (160MHz, MCS4, 99pc dc)  | WLAN   | 8.58 | ± 9.6 % |
| 10760  | AAC | IEEE 802.11ax (160MHz, MCS5, 99pc dc)  | WLAN   | 8.49 | ± 9.6 % |
| 10761  | AAC | IEEE 802.11ax (160MHz, MCS6, 99pc dc)  | WLAN   | 8.58 | ± 9.6 % |
| 10762  | AAC | IEEE 802.11ax (160MHz, MCS7, 99pc dc)  | WLAN   | 8.49 | ± 9.6 % |
| 10763  | AAC | IEEE 802.11ax (160MHz, MCS8, 99pc dc)  | WLAN   | 8.53 | ± 9.6 % |
| 10764  | AAC | IEEE 802.11ax (160MHz, MCS9, 99pc dc)  | WLAN   | 8.54 | ± 9.6 % |
| 10765  | AAC | IEEE 802.11ax (160MHz, MCS10, 99pc dc)   | WLAN   | 8.54 | ± 9.6 % |
| 10766  | _   | IEEE 802.11ax (160MHz, MCS11, 99pc dc)   | WLAN   | 8.51 | ± 9.6 % |
| 10767  | AAC | 5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)   | 5G NR FR1 TDD  | 7.99 | ± 9.6 % |
| 10767  | AAC | 5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.01 | ± 9.6 % |
| 10769  | AAC | 5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.01 | ± 9.6 % |
|  | AAC | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.02 | ± 9.6 % |
| 10770  | AAC | 5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.02 | ± 9.6 % |
| 10771  | AAC | 5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.23 | ± 9.6 % |
| 10772  | AAC | 5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 15 KHz)  5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 15 KHz) | 5G NR FR1 TDD  | 8.03 | ± 9.6 % |
| 10773  | AAC | 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 15 KHz)  5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD  | 8.02 | ± 9.6 % |
| 10774  | AAC |  | 5G NR FR1 TDD  | 8.31 | ± 9.6 ° |
| 10775  | AAC | 5G NR (CP-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)   | 5G NR FR1 TDD  | 8.30 | ± 9.6 9 |
| 10776  | AAC | 5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.30 | ± 9.6 ° |
| 10777  | AAC | 5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.34 | ± 9.6 ° |
| 10778  | AAC | 5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.42 | ± 9.6 ° |
| 10779  | AAC | 5G NR (CP-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)  | The state of the s |      | ± 9.6 ° |
| 10780  | AAC | 5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.38 | _       |
| 10781  | AAC |  | 5G NR FR1 TDD  | 8.38 | ± 9.6 ° |
| 10782  | AAC | 5G NR (CP-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.43 | ± 9.6 ° |
| 10783  | AAC | 5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD  | 8.31 | ± 9.6   |

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| 10784 | AAC | 5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD | 8.29 | ± 9.6 % |
|-------|-----|---|---------------|------|---------|
| 10785 | AAC | 5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD | 8.40 | ± 9.6 % |
| 0786  | AAC | 5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD | 8.35 | ± 9.6 % |
| 0787  |     | 5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD | 8.44 | ± 9.6 % |
| 0788  | AAC | 5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD | 8.39 | ± 9.6 % |
|       | AAC | 5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD | 8.37 | ± 9.6 % |
| 0789  | AAC | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD | 8.39 | ± 9.6 % |
| 0790  | AAC | 5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz)      | 5G NR FR1 TDD | 7.83 | ± 9.6 % |
| 10791 | AAC | 5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 7.92 | ± 9.6 % |
| 10792 | AAC | 5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 7.95 | ± 9.6 % |
| 10793 | AAC | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 7.82 | ± 9.6 % |
| 10794 | AAC | 5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 7.84 | ± 9.6 % |
| 10795 | AAC | 5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 7.82 | ± 9.6 % |
| 10796 | AAC | 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 8.01 | ± 9.6 % |
| 10797 | AAC | 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 7.89 | ± 9.6 % |
| 10798 | AAC | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 30 KHz)     | 5G NR FR1 TDD | 7.93 | ± 9.6 % |
| 10799 | AAC | 5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 7.89 | ± 9.6 % |
| 10801 | AAC | 5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 7.87 | ± 9.6 % |
| 10802 | AAC | 5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 7.93 | ± 9.6 % |
| 10803 | AAE | 5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)    | 5G NR FR1 TDD | 8.34 | ± 9.6 % |
| 10805 | AAD | 5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz)   |               | 8.37 | ± 9.6 % |
| 10806 | AAD | 5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz)   | 5G NR FR1 TDD | 8.34 | ± 9.6 % |
| 10809 | AAD | 5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)   |               |      | ± 9.6 % |
| 10810 | AAD | 5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)   | 5G NR FR1 TDD | 8.34 | ± 9.6 % |
| 10812 | AAD | 5G NR (CP-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)   | 5G NR FR1 TDD | 8.35 |         |
| 10817 | AAD | 5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz)   | 5G NR FR1 TDD | 8.35 | ± 9.6 % |
| 10818 | AAD | 5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 8.34 | ± 9.6 % |
| 10819 | AAD | 5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 8.33 | ± 9.6 % |
| 10820 | AAD | 5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 8.30 | ± 9.6 % |
| 10821 | AAC | 5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 8.41 | ± 9.6 % |
| 10822 | AAD | 5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 8.41 | ± 9.6 % |
| 10823 | AAC | 5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 8.36 | ± 9.6 % |
| 10824 | AAD | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 8.39 | ± 9.6 % |
| 10825 | -   | 5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 8.41 | ± 9.6 % |
| 10827 | AAD | 5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 8.42 | ± 9.6 % |
|       | AAD | 5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 8.43 | ± 9.6 % |
| 10828 | AAE | 5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.40 | ± 9.6 % |
| 10829 | AAD | 5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 60 kHz)     | 5G NR FR1 TDD | 7.63 | ± 9.6 % |
| 10830 | AAD | 5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 60 kHz)     | 5G NR FR1 TDD | 7.73 | ± 9.6 ° |
| 10831 | AAD | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 60 kHz)     | 5G NR FR1 TDD | 7.74 | ± 9.6 ° |
| 10832 | AAD | 5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 60 kHz)     | 5G NR FR1 TDD | 7.70 | ± 9.6 ° |
| 10833 | AAD | 5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 60 kHz)     | 5G NR FR1 TDD | 7.75 | ± 9.6   |
| 10834 | AAD |   | 5G NR FR1 TDD | 7.70 | ± 9.6   |
| 10835 | AAD | 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 60 kHz)     | 5G NR FR1 TDD | 7.66 | ± 9.6   |
| 10836 | AAE | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 60 kHz)     | 5G NR FR1 TDD | 7.68 | ± 9.6   |
| 10837 | AAD | 5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 60 kHz)     | 5G NR FR1 TDD | 7.70 | ± 9.6   |
| 10839 | AAD | 5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 60 kHz)     | 5G NR FR1 TDD | 7.67 | ± 9.6   |
| 10840 | AAD | 5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 60 kHz)     | 5G NR FR1 TDD | 7.71 | ± 9.6   |
| 10841 | AAD | 5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 60 kHz)    | 5G NR FR1 TDD | 8.49 | ± 9.6   |
| 10843 | AAD | 5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 60 kHz)   |               |      | ± 9.6   |
| 10844 | AAD | 5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 60 kHz)   | 5G NR FR1 TDD | 8.34 |         |
| 10846 | AAD | 5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 60 kHz)   | 5G NR FR1 TDD | 8.41 | ± 9.6   |
| 10854 | AAD | 5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 60 kHz)  | 5G NR FR1 TDD | 8.34 | ± 9.6   |
| 10855 | AAD | 5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 60 kHz)  | 5G NR FR1 TDD | 8.36 | ± 9.6   |
| 10856 | AAD | 5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 60 kHz)  | 5G NR FR1 TDD | 8.37 | ± 9.6   |
| 10857 | AAD | 5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 60 kHz)  | 5G NR FR1 TDD | 8.35 | ± 9.6   |
| 10858 | AAD | 5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 60 kHz)  | 5G NR FR1 TDD | 8.36 | ± 9.6   |
| 10859 | AAD | TO NO CODE A 100% PR 40 MHz OPSK 60 kHz)        | 5G NR FR1 TDD | 8.34 | ± 9.6   |

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| 10860         | AAD | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 60 kHz)       | 5G NR FR1 TDD | 8.41 | ± 9.6 % |
|---------------|-----|--|---------------|------|---------|
| 10861         | AAD | 5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 60 kHz)       | 5G NR FR1 TDD | 8.40 | ± 9.6 % |
| 10863         | AAD | 5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 60 kHz)       | 5G NR FR1 TDD | 8.41 | ± 9.6 % |
| 10864         | AAE | 5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 60 kHz)       | 5G NR FR1 TDD | 8.37 | ± 9.6 % |
| 10865         | AAD | 5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 60 kHz)      | 5G NR FR1 TDD | 8.41 | ± 9.6 % |
| 10866         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)      | 5G NR FR1 TDD | 5.68 | ± 9.6 % |
| 10868         |     | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)   | 5G NR FR1 TDD | 5.89 | ± 9.6 % |
| 10869         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)     | 5G NR FR2 TDD | 5.75 | ± 9.6 % |
| 10870         | AAD | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)  | 5G NR FR2 TDD | 5.86 | ± 9.6 % |
|               | AAD | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)    | 5G NR FR2 TDD | 5.75 | ± 9.6 % |
| 10871         | AAD | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 6.52 | ± 9.6 % |
| 10872         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)    | 5G NR FR2 TDD | 6.61 | ± 9.6 % |
| 10873         | AAD | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 6.65 | ± 9.6 % |
| 10874         | AAD | 5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)        | 5G NR FR2 TDD | 7.78 | ± 9.6 % |
| 10875         | AAD | 5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)     | 5G NR FR2 TDD | 8.39 | ± 9.6 % |
| 10876         | AAD | 5G NR (CP-OFDM, 100 % RB, 100 MHz, 47 St., 125 MHz)  | 5G NR FR2 TDD | 7.95 | ± 9.6 % |
| 10877         | AAD | 5G NR (CP-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)       | 5G NR FR2 TDD | 8.41 | ± 9.6 % |
| 10878         | AAD | 5G NR (CP-OFDM, 100% RB, 100 MHz, 100AM, 120 KHz)    | 5G NR FR2 TDD | 8.12 | ± 9.6 % |
| 10879         | AAD | 5G NR (CP-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)       | 5G NR FR2 TDD | 8.38 | ± 9.6 % |
| 10880         | AAD | 5G NR (CP-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz)    | 5G NR FR2 TDD | 5.75 | ± 9.6 % |
| 10881         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)      | 5G NR FR2 TDD | 5.96 | ± 9.6 % |
| 10882         | AAD | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)   | 5G NR FR2 TDD | 6.57 | ± 9.6 % |
| 10883         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz)     |               | 6.53 | ± 9.6 % |
| 10884         | AAD | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz)  | 5G NR FR2 TDD |      | ± 9.6 % |
| 10885         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz)     | 5G NR FR2 TDD | 6.61 | -       |
| 10886         | AAD | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz)  | 5G NR FR2 TDD | 6.65 | ± 9.6 % |
| 10887         | AAD | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)         | 5G NR FR2 TDD | 7.78 | ± 9.6 % |
| 10888         | AAD | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)      | 5G NR FR2 TDD | 8.35 | ± 9.6 % |
| 10889         | AAD | 5G NR (CP-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz)        | 5G NR FR2 TDD | 8.02 | ± 9.6 % |
| 10890         | AAD | 5G NR (CP-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz)     | 5G NR FR2 TDD | 8.40 | ± 9.6 % |
| 10891         | AAD | 5G NR (CP-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz)        | 5G NR FR2 TDD | 8.13 | ± 9.6 % |
| 10892         | AAD | 5G NR (CP-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz)     | 5G NR FR2 TDD | 8.41 | ± 9.6 % |
| 10897         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz)        | 5G NR FR1 TDD | 5.66 | ± 9.6 % |
| 10898         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)       | 5G NR FR1 TDD | 5.67 | ± 9.6 % |
| 10899         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)       | 5G NR FR1 TDD | 5.67 | ± 9.6 % |
| 10990         | -   | 5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)       | 5G NR FR1 TDD | 5.68 | ± 9.6 % |
| 10900         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)       | 5G NR FR1 TDD | 5.68 | ± 9.6 % |
| 10901         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)       | 5G NR FR1 TDD | 5.68 | ± 9.6 % |
| 7/20/20/20/20 | AAD | 5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)       | 5G NR FR1 TDD | 5.68 | ± 9.6 % |
| 10903         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz)       | 5G NR FR1 TDD | 5.68 | ± 9.6 % |
| 10904         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)       | 5G NR FR1 TDD | 5.68 | ± 9.6 % |
| 10905         | AAD | 5G NR (DFT-s-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)       | 5G NR FR1 TDD | 5.68 | ± 9.6 % |
| 10906         | AAD | 5G NR (DFT-s-OFDM, 1 ND, 50 MHz, QPSK, 30 kHz)       | 5G NR FR1 TDD | 5.78 | ± 9.6 % |
| 10907         | AAD | 5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 5.93 | ± 9.6 % |
| 10908         | AAD |  | 5G NR FR1 TDD | 5.96 | ± 9.6 % |
| 10909         | AAD | 5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 5.83 | ± 9.6 % |
| 10910         | AAD | 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 5.93 | ± 9.6 % |
| 10911         | AAD | 5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 5.84 | ± 9.6 % |
| 10912         | AAD | 5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 5.84 | ± 9.6 % |
| 10913         | AAD | 5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)     |               | 5.85 | ± 9.6 % |
| 10914         | AAD | 5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD |      |         |
| 10915         | AAD | 5G NR (DFT-s-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 5.83 | ± 9.6 9 |
| 10916         | AAD | 5G NR (DFT-s-OFDM, 50% RB, 80 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 5.87 | ± 9.6 9 |
| 10917         | AAD | 5G NR (DFT-s-OFDM, 50% RB, 100 MHz, QPSK, 30 kHz)    | 5G NR FR1 TDD | 5.94 | ± 9.6   |
| 10918         | AAD | 5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz)     | 5G NR FR1 TDD | 5.86 | ± 9.6 9 |
| 10919         | AAD | 5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)    | 5G NR FR1 TDD | 5.86 | ± 9.6 ° |
| 10920         | AAD | 5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)    | 5G NR FR1 TDD | 5.87 | ± 9.6 ° |
| 10921         | AAD | OFDM 4000/ DD 20 MH- OPCK 20 kH-)                    | 5G NR FR1 TDD | 5.84 | ± 9.6 ° |

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| 10922                                   | AAD | 5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 5.82  | ± 9.6 % |
|---|-----|--|---------------|-------|---------|
| 10923                                   | AAD | 5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 5.84  | ± 9.6 % |
| 10924                                   | AAD | 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 5.84  | ± 9.6 % |
| 10925                                   | AAD | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 5.95  | ± 9.6 % |
| 10926                                   | AAD | 5G NR (DFT-s-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 5.84  | ± 9.6 % |
| 10927                                   | AAD | 5G NR (DFT-s-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 5.94  | ± 9.6 % |
| 10927                                   | AAD | 5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)  | 5G NR FR1 FDD | 5.52  | ± 9.6 % |
| 10929                                   | AAD | 5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.52  | ± 9.6 % |
| 10929                                   |     | 5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.52  | ± 9.6 % |
| 10930                                   | AAD | 5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.51  | ± 9.6 % |
| 10931                                   | AAD | 5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.51  | ± 9.6 % |
| 10932                                   | AAB | 5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.51  | ± 9.6 % |
| 10933                                   | AAA | 5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.51  | ± 9.6 % |
| 200000000000000000000000000000000000000 | AAA | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.51  | ± 9.6 % |
| 10935                                   | AAA | 5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)  | 5G NR FR1 FDD | 5.90  | ± 9.6 % |
| 10936                                   | AAC | 5G NR (DFT-s-OFDM, 50 % RB, 10 MHz, QPSK, 15 kHz)  | 5G NR FR1 FDD | 5.77  | ± 9.6 % |
| 10937                                   | AAB | 5G NR (DFT-s-OFDM, 50 % RB, 15 MHz, QPSK, 15 kHz)  | 5G NR FR1 FDD | 5.90  | ± 9.6 % |
| 10938                                   | AAB | 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.82  | ± 9.6 % |
| 10939                                   | AAB | 5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.89  | ± 9.6 % |
| 10940                                   | AAB | 5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.83  | ± 9.6 % |
| 10941                                   | AAB | 5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QFSK, 15 KHz)   | 5G NR FR1 FDD | 5.85  | ± 9.6 % |
| 10942                                   | AAB | 5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QFSK, 15 KHz)   | 5G NR FR1 FDD | 5.95  | ± 9.6 % |
| 10943                                   | AAB |  | 5G NR FR1 FDD | 5.81  | ± 9.6 % |
| 10944                                   | AAB | 5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz) 5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)       | 5G NR FR1 FDD | 5.85  | ± 9.6 % |
| 10945                                   | AAB |  | 5G NR FR1 FDD | 5.83  | ± 9.6 % |
| 10946                                   | AAC | 5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)  | 5G NR FR1 FDD | 5.87  | ± 9.6 % |
| 10947                                   | AAB | 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)<br>5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)   | 5G NR FR1 FDD | 5.94  | ± 9.6 % |
| 10948                                   | AAB |  | 5G NR FR1 FDD | 5.87  | ± 9.6 % |
| 10949                                   | AAB | 5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz) 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)      | 5G NR FR1 FDD | 5.94  | ± 9.6 % |
| 10950                                   | AAB | 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)  | 5G NR FR1 FDD | 5.92  | ± 9.6 % |
| 10951                                   | AAB | 5G NR (DF1-s-OFDM, 100% RB, 50 MHz, QF3K, 10 KHz)  | 5G NR FR1 FDD | 8.25  | ± 9.6 % |
| 10952                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 KHz)  | 5G NR FR1 FDD | 8.15  | ± 9.6 % |
| 10953                                   | AAB |  | 5G NR FR1 FDD | 8.23  | ± 9.6 % |
| 10954                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)   | 5G NR FR1 FDD | 8.42  | ± 9.6 % |
| 10955                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)   | 5G NR FR1 FDD | 8.14  | ± 9.6 % |
| 10956                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)  | 5G NR FR1 FDD | 8.31  | ± 9.6 % |
| 10957                                   | AAC | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)<br>5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.61  | ± 9.6 % |
| 10958                                   | AAB |  | 5G NR FR1 FDD | 8.33  | ± 9.6 % |
| 10959                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)   | 5G NR FR1 TDD | 9.32  | ± 9.6 % |
| 10960                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz)  | 5G NR FR1 TDD | 9.36  | ± 9.6 % |
| 10961                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)   | 5G NR FR1 TDD | 9.40  | ± 9.6 % |
| 10962                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)   | 5G NR FR1 TDD | 9.55  | ± 9.6 % |
| 10963                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)   | 5G NR FR1 TDD | 9.33  | ± 9.6 % |
| 10964                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)  | 5G NR FR1 TDD | 9.29  | ± 9.6 % |
| 10965                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)   | 5G NR FR1 TDD | 9.57  | ± 9.6 % |
| 10966                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz)   | 5G NR FR1 TDD | 9.55  | ± 9.6 % |
| 10967                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)   | 5G NR FR1 TDD | 9.42  | ± 9.6 % |
| 10968                                   | AAB | 5G NR DL (CP-OFDM, TM 3.1, 100 MHz, 64-QAM, 30 kHz)  | 5G NR FR1 TDD | 11.59 | ± 9.6 % |
| 10972                                   | AAB | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)  | 5G NR FR1 TDD | 9.06  | ± 9.6 % |
| 10973                                   | AAB | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)  | 5G NR FR1 TDD | 10.28 | ± 9.6 % |
| 10974                                   | AAB | 5G NR (CP-OFDM, 100% RB, 100 MHz, 256-QAM, 30 kHz)   | DG NK FKT IDD | 10.28 | 19.0 %  |

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

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#### ANNEX E DIPOLE CALIBRATION CERTIFICATE

#### Dipole 835 MHz

Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

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

Client

CTTL (Auden)

Certificate No: CD835V3-1023\_Aug21

#### **CALIBRATION CERTIFICATE** CD835V3 - SN: 1023 Object Calibration procedure(s) QA CAL-20.v7 Calibration Procedure for Validation Sources in air August 24, 2021 Calibration date: 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 ± 3)°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 09-Apr-21 (No. 217-03291/03292) Power sensor NRP-Z91 SN: 103244 09-Apr-21 (No. 217-03291) Apr-22 Apr-22 Power sensor NRP-Z91 SN: 103245 09-Apr-21 (No. 217-03292) Reference 20 dB Attenuator SN: BH9394 (20k) 09-Apr-21 (No. 217-03343) Apr-22 Type-N mismatch combination SN: 310982 / 06327 09-Apr-21 (No. 217-03344) Apr-22 Probe EF3DV3 SN: 4013 28-Dec-20 (No. EF3-4013\_Dec20) Dec-21 DAE4 SN: 781 23-Dec-20 (No. DAE4-781\_Dec20) Dec-21 Secondary Standards ID# Check Date (in house) Scheduled Check SN: GB42420191 Power meter Agilent 4419B 09-Oct-09 (in house check Oct-20) In house check: Oct-23 Power sensor HP F4412A SN: US38485102 05-Jan-10 (in house check Oct-20) In house check: Oct-23 In house check: Oct-23 Power sensor HP 8482A SN: US37295597 09-Oct-09 (in house check Oct-20) RF generator R&S SMT-06 SN: 837633/005 10-Jan-19 (in house check Oct-20) In house check: Oct-23 Network Analyzer Agilent E8358A SN: US41080477 31-Mar-14 (in house check Oct-20) In house check: Oct-21 Function Name Signature Calibrated by: Leif Klysner Laboratory Technician Approved by: Katja Pokovic Technical Manage Issued: August 27, 2021 This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: CD835V3-1023\_Aug21

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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
Servizio svizzero di taratura
Swiss Calibration Service

Accreditation No.: SCS 0108

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

#### References

[1] ANSI-C63.19-2019 (ANSI-C63.19-2011) American National Standard, Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

#### Methods Applied and Interpretation of Parameters:

- Coordinate System: y-axis is in the direction of the dipole arms. z-axis is from the basis of the antenna
  (mounted on the table) towards its feed point between the two dipole arms. x-axis is normal to the other axes.
  In coincidence with the standards [1], the measurement planes (probe sensor center) are selected to be at a
  distance of 15 mm above the top metal edge of the dipole arms.
- Measurement Conditions: Further details are available from the hardcopies at the end of the certificate. All
  figures stated in the certificate are valid at the frequency indicated. The forward power to the dipole connector
  is set with a calibrated power meter connected and monitored with an auxiliary power meter connected to a
  directional coupler. While the dipole under test is connected, the forward power is adjusted to the same level.
- Antenna Positioning: The dipole is mounted on a HAC Test Arch phantom using the matching dipole positioner with the arms horizontal and the feeding cable coming from the floor. The measurements are performed in a shielded room with absorbers around the setup to reduce the reflections. It is verified before the mounting of the dipole under the Test Arch phantom, that its arms are perfectly in a line. It is installed on the HAC dipole positioner with its arms parallel below the dielectric reference wire and able to move elastically in vertical direction without changing its relative position to the top center of the Test Arch phantom. The vertical distance to the probe is adjusted after dipole mounting with a DASY5 Surface Check job. Before the measurement, the distance between phantom surface and probe tip is verified. The proper measurement distance is selected by choosing the matching section of the HAC Test Arch phantom with the proper device reference point (upper surface of the dipole) and the matching grid reference point (tip of the probe) considering the probe sensor offset. The vertical distance to the probe is essential for the accuracy.
- Feed Point Impedance and Return Loss: These parameters are measured using a Vector Network Analyzer.
   The impedance is specified at the SMA connector of the dipole. The influence of reflections was eliminating by applying the averaging function while moving the dipole in the air, at least 70cm away from any obstacles.
- E-field distribution: E field is measured in the x-y-plane with an isotropic E-field probe with 100 mW forward power to the antenna feed point. In accordance with [1], the scan area is 20mm wide, its length exceeds the dipole arm length (180 or 90mm). The sensor center is 15 mm (in z) above the metal top of the dipole arms. Two 3D maxima are available near the end of the dipole arms. Assuming the dipole arms are perfectly in one line, the average of these two maxima (in subgrid 2 and subgrid 8) is determined to compensate for any non-parallelity to the measurement plane as well as the sensor displacement. The E-field value stated as calibration value represents the maximum of the interpolated 3D-E-field, in the plane above the dipole surface.

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%.

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### **Measurement Conditions**

DASY system configuration, as far as not given on page 1

| DASY Version                       | DASY5           |          |
|------------------------------------|-----------------|----------|
| Phantom                            | DASTS           | V52.10.4 |
|                                    | HAC Test Arch   |          |
| Distance Dipole Top - Probe Center | 15 mm           |          |
| Scan resolution                    |                 |          |
| Frequency                          | dx, $dy = 5 mm$ |          |
|                                    | 835 MHz ± 1 MHz |          |
| Input power drift                  |                 |          |
|                                    | < 0.05 dB       |          |

### Maximum Field values at 835 MHz

| E-field 15 mm above dipole surface | 00444              | T                        |  |
|------------------------------------|--------------------|--------------------------|--|
| Maximum measured above high end    | condition          | Interpolated maximum     |  |
|                                    | 100 mW input power | 112.2 V/m = 41.00 dBV/m  |  |
| Maximum measured above low end     | 100 mW input power |                          |  |
| Averaged maximum above arm         |                    | 108.3 V/m = 40.69 dBV/m  |  |
| above aim                          | 100 mW input power | 110.3 V/m ± 12.8 % (k=2) |  |

## Appendix (Additional assessments outside the scope of SCS 0108)

#### **Antenna Parameters**

| Frequency | D-4  |                             |
|-----------|--|-----------------------------|
| 800 MHz   | Return Loss  | Impedance                   |
| 835 MHz   | 17.2 dB  | 41.3 Ω - 9.3 jΩ             |
| 880 MHz   | 24.6 dB  | $53.0 \Omega + 5.2 j\Omega$ |
|           | 16.0 dB  |                             |
| 900 MHz   | 16.6 dB  | 62.4 Ω - 13.0 jΩ            |
| 945 MHz   | The state of the s | 52.4 Ω - 15.1 jΩ            |
|           | 25.6 dB  | 46.0 Ω + 3.0 jΩ             |

### 3.2 Antenna Design and Handling

The calibration dipole has a symmetric geometry with a built-in two stub matching network, which leads to the

The dipole is built of standard semirigid coaxial cable. The internal matching line is open ended. The antenna is therefore open for DC signals.

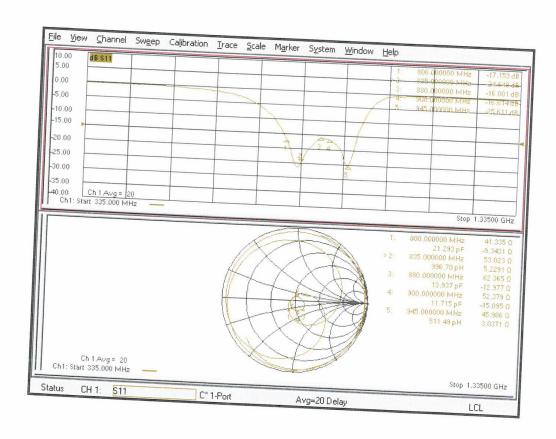
Do not apply force to dipole arms, as they are liable to bend. The soldered connections near the feedpoint may be damaged. After excessive mechanical stress or overheating, check the impedance characteristics to ensure that the internal matching network is not affected.

After long term use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.





## Impedance Measurement Plot



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#### **DASY5 E-field Result**

Date: 24.08.2021

Test Laboratory: SPEAG Lab2

## DUT: HAC-Dipole 835 MHz; Type: CD835V3; Serial: CD835V3 - SN: 1023

Communication System: UID 0 - CW ; Frequency: 835 MHz Medium parameters used:  $\sigma = 0$  S/m,  $\varepsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup> Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

### DASY52 Configuration:

- Probe: EF3DV3 SN4013; ConvF(1, 1, 1) @ 835 MHz; Calibrated: 28.12.2020
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 23.12.2020
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

# Dipole E-Field measurement @ 835MHz/E-Scan - 835MHz d=15mm/Hearing Aid Compatibility Test (41x361x1):

Device Reference Point: 0, 0, -6.3 mm

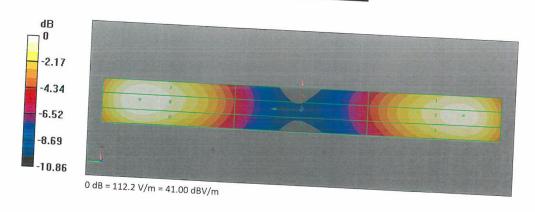
Reference Value = 133.6 V/m; Power Drift = -0.03 dB Applied MIF = 0.00 dB

RF audio interference level = 41.00 dBV/m

Emission category: M3

MIF scaled E-field

| Grid 1 M3<br>40.62 dBV/m | Grid 2 M3<br>40.69 dBV/m | Grid 3 M3<br>40.38 dBV/m |
|--------------------------|--------------------------|--------------------------|
| Grid 4 <b>M4</b>         | Grid 5 M4                | Grid 6 M4<br>35.53 dBV/m |
| 0                        | Grid 8 M3                | Grid 9 M3<br>40.67 dBV/m |



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#### Dipole 1880 MHz

Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

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

| ient CTTL (Auden)   |  | Cert  | ficate No: CD1880V3-1018_Aug21   |
|---|--|---|--|
| CALIBRATION C   | ERTIFICATE   |   |  |
| Object  | CD1880V3 - SN:   | 1018  |  |
| Calibration procedure(s)  | QA CAL-20.v7<br>Calibration Proce  | dure for Validation Sourc   | es in air  |
| Calibration date:   | August 24, 2021  |   |  |
| This calibration certificate documents the measurements and the uncertainty |  |   | nysical units of measurements (SI). pages and are part of the certificate. |
| All calibrations have been conducted  | ed in the closed laborator   | v facility: environment temperature   | (22 ± 3)°C and humidity < 70%.   |
| Calibration Equipment used (M&TE  |  | ,   | (LE 20) S and normally   |
| Primary Standards   | ID#  | Cal Date (Certificate No.)  | Scheduled Calibration  |
| Power meter NRP   | SN: 104778   | 09-Apr-21 (No. 217-03291/0329   |  |
| Power sensor NRP-Z91  | SN: 103244   | 09-Apr-21 (No. 217-03291)   | Apr-22   |
| Power sensor NRP-Z91  | SN: 103245   | 09-Apr-21 (No. 217-03292)   | Apr-22   |
| Reference 20 dB Attenuator  | SN: BH9394 (20k)   | 09-Apr-21 (No. 217-03343)   | Apr-22   |
| Type-N mismatch combination   | SN: 310982 / 06327   | 09-Apr-21 (No. 217-03344)   | Apr-22   |
| Probe EF3DV3  | SN: 4013   | 28-Dec-20 (No. EF3-4013 Dec2  | W 100000 COL   |
| DAE4  | SN: 781  | 23-Dec-20 (No. DAE4-781_Dec   |  |
| Secondary Standards   | ID#  | Check Date (in house)   | Scheduled Check  |
| Power meter Agilent 4419B   | SN: GB42420191   | 09-Oct-09 (in house check Oct-2   | 20) In house check: Oct-23   |
| Power sensor HP E4412A  | SN: US38485102   | 05-Jan-10 (in house check Oct-  | 20) In house check: Oct-23   |
| Power sensor HP 8482A   | SN: US37295597   | 09-Oct-09 (in house check Oct-2   | 20) In house check: Oct-23   |
| RF generator R&S SMT-06   | SN: 837633/005   | 10-Jan-19 (in house check Oct-  | 20) In house check: Oct-23   |
| Network Analyzer Agilent E8358A   | SN: US41080477   | 31-Mar-14 (in house check Oct-  | 20) In house check: Oct-21   |
|   | Name   | Function  | Signature  |
|   | ACCORDING TO A SECURITARIO DE LA COMPANSIONA DEL COMPANSIONA DE LA COMPANSIONA DE LA COMPANSIONA DE LA COMPANSIONA DE LA COMPANSIONA DEL COMPANSIONA DE LA C | THE RESIDENCE OF THE PROPERTY |  |
| Calibrated by:  | Leif Klysner   | Laboratory Technic  | an Sgiffalger  |
| Calibrated by: Approved by:   | Leif Klysner  Katja Pokovic  | Laboratory Technic  | Seiffaller   |

Certificate No: CD1880V3-1018\_Aug21

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