



SPOT CHECK EVALUATION

FCC ID : J9CQCARD7280N
Equipment : QCARD7280
Model Name : QCARD7280N-3
Applicant : Qualcomm Technologies, Inc.
5775 Morehouse Drive, San Diego, California 92121,
United State
Standard : 47 CFR Part 2, 22(H), 24(E), 27, 90(R), 90(S), 96
FCC Part 15 Subpart C §15.247
FCC Part 15 Subpart E §15.407

The product was received on May 03, 2022 and testing was performed from Jun. 14, 2022 to Aug. 26, 2022. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Approved by: Louis Wu

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History of this test report

| Version | Description | Issued Date |
|---------|-------------------------|---------------|
| 01 | Initial issue of report | Aug. 29, 2022 |
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1. Introduction Section

FCC ID: J9CQCARD7280N2 (parent model) and FCC ID: J9CQCARD7280N (variant model) use the same identical internal printed circuit board layouts, while the variant model depopulates mmWave related components, details are available in the operational description. Based on their similarity, the FCC Part 15C (equipment class: DSS, DTS) and FCC Part 15E (equipment class: NII, 6CD) and FCC Part 22, 24, 27, 90, 96 (equipment class: PCB, CBE) reuse the original model's result and do spot-check, following the FCC KDB 484596 D01 v01. The spot check data in this report is used to justify the data reuse.

The applicant should take full responsibility that the test data as referenced in this report represent compliance for this FCC ID (FCC ID: J9CQCARD7280N).



2. Model Difference Information

J9CQCARD7280N2 and J9CQCARD7280N use the identical internal printed circuit board layout, and the major differences which may relate to RF are listed below:

- Hardware: the only difference is that, on the variant model, FR2 related components are depopulated.
- Software: the software which associates with RF parameters in WCDMA/ LTE/ 5G FR1/ WiFi is identical between the reference and the variant.

The detail of similarity and difference is illustrated in the operational description. Based on the information, spot check of conducted power and emission level was performed and presented in this report to justify the data referencing.



3. Spot Check Verification Data Section

Conducted power test and conducted/radiated spurious emission test configurations were selected from the worst cases identified in the parent model and tested to demonstrate the test data from original model remains representative for the variant model.

Summary for power and CSE/RSE spot check for each rule entry and technology is listed as below:

| Test Item | Mode | J9CQCARD7280N2 Parent Worst Result | J9CQCARD7280N Variant Check Result | Difference (dB) |
|-----------------------|------------------|--|--|-----------------|
| Conducted Power (dBm) | WWAN UMTS Band 2 | 24.90 | 24.66 | -0.24 |
| | WWAN UMTS Band 4 | 24.47 | 24.36 | -0.11 |
| | WWAN UMTS Band 5 | 24.20 | 23.96 | -0.24 |
| | WWAN LTE Band 2 | 24.23 | 24.22 | -0.01 |
| | WWAN LTE Band 4 | 24.07 | 24.17 | 0.10 |
| | WWAN LTE Band 5 | 23.70 | 23.76 | 0.06 |
| | WWAN LTE Band 12 | 23.71 | 23.88 | 0.17 |
| | WWAN LTE Band 13 | 23.66 | 23.68 | 0.02 |
| | WWAN LTE Band 14 | 23.72 | 23.67 | -0.05 |
| | WWAN LTE Band 25 | 24.25 | 24.19 | -0.06 |
| | WWAN LTE Band 26 | 23.74 | 23.72 | -0.02 |
| | WWAN LTE Band 30 | 23.70 | 24.19 | 0.49 |
| | WWAN LTE Band 38 | 25.80 | 26.07 | 0.27 |
| | WWAN LTE Band 41 | 25.81 | 26.14 | 0.33 |
| | WWAN LTE Band 48 | 24.55 | 24.41 | -0.14 |
| | WWAN LTE Band 66 | 24.09 | 24.21 | 0.12 |
| | WWAN LTE Band 71 | 23.81 | 23.80 | -0.01 |
| | WWAN LTE CA 5B | 24.65 | 24.60 | -0.05 |
| | WWAN LTE CA 66B | 23.69 | 24.09 | 0.40 |
| | WWAN LTE CA 66C | 23.48 | 23.12 | -0.36 |
| | WWAN LTE CA 38C | 26.14 | 25.65 | -0.46 |
| | WWAN LTE CA 41C | 26.21 | 25.99 | -0.22 |
| | WWAN LTE CA 48C | 23.25 | 22.93 | -0.32 |
| | WWAN NR n2 | 24.22 | 24.43 | 0.21 |
| | WWAN NR n5 | 24.06 | 23.99 | -0.07 |
| | WWAN NR n25 | 24.50 | 24.37 | -0.13 |
| | WWAN NR n38 | 24.53 | 24.46 | -0.07 |
| | WWAN NR n41 | 26.56 | 26.22 | -0.34 |
| | WWAN NR n48 | 24.26 | 24.26 | 0.00 |
| | WWAN NR n66 | 24.65 | 24.55 | -0.10 |
| | WWAN NR n70 | 24.32 | 23.92 | -0.40 |
| | WWAN NR n71 | 24.13 | 24.12 | -0.01 |
| | WWAN NR n77 | 26.83 | 26.25 | -0.58 |
| WWAN NR n41 UL MIMO | 24.89 | 24.41 | -0.48 | |
| WWAN NR n48 UL MIMO | 21.75 | 21.48 | -0.27 | |
| WWAN NR n77 UL MIMO | 24.96 | 24.43 | -0.53 | |



| Test Item | Mode | ANT | J9CQCARD7280N2 Parent Worst Result | J9CQCARD7280N Variant Check Result | Difference (dB) |
|---|---------------------|--------|--|--|-----------------|
| Radiated Spurious Emission (dBm) | WWAN UMTS Band 5 | 0 | -58.15 | -58.93 | -0.78 |
| | WWAN UMTS Band 2 | 2 | -54.51 | -54.65 | -0.14 |
| | WWAN LTE Band 13 | 0 | -63.55 | -64.20 | -0.65 |
| | WWAN LTE CA 41C | 2 | -48.08 | -49.81 | -1.73 |
| | WWAN LTE Band 41 | 0 | -47.78 | -49.39 | -1.61 |
| | WWAN LTE CA 41C | 1 | -47.52 | -50.02 | -2.50 |
| | WWAN LTE CA 41C | 3 | -49.29 | -49.69 | -0.40 |
| | WWAN LTE Band 30 | 2 | -52.10 | -54.46 | -2.36 |
| | WWAN LTE Band 30 | 0 | -50.85 | -54.61 | -3.76 |
| | WWAN LTE Band 30 | 1 | -50.57 | -55.26 | -4.69 |
| | WWAN LTE Band 30 | 3 | -53.41 | -54.38 | -0.97 |
| | WWAN LTE Band 14 | 0 | -54.59 | -59.81 | -5.22 |
| | WWAN LTE Band 26 | 0 | -45.25 | -53.59 | -8.34 |
| | WWAN LTE Band 48 | 3 | -44.59 | -48.16 | -3.57 |
| | WWAN LTE Band 48 | 0 | -44.26 | -50.53 | -6.27 |
| | WWAN LTE Band 48 | 1 | -43.49 | -49.07 | -5.58 |
| | WWAN LTE Band 48 | 2 | -42.77 | -48.27 | -5.50 |
| | WWAN NR n71 | 0 | -56.57 | -59.72 | -3.15 |
| | WWAN NR n70 | 3 | -53.71 | -55.36 | -1.65 |
| | WWAN NR n70 | 2 | -54.61 | -55.53 | -0.92 |
| | WWAN NR n41 | 2 | -47.77 | -49.58 | -1.81 |
| | WWAN NR n41 | 0 | -47.55 | -49.65 | -2.10 |
| | WWAN NR n41 | 1 | -47.96 | -49.46 | -1.50 |
| | WWAN NR n41 | 3 | -48.35 | -49.75 | -1.40 |
| | WWAN NR n48 | 3 | -47.41 | -48.03 | -0.62 |
| | WWAN NR n48 | 0 | -44.65 | -48.19 | -3.54 |
| | WWAN NR n48 | 1 | -43.53 | -48.01 | -4.48 |
| | WWAN NR n48 | 2 | -43.77 | -48.19 | -4.42 |
| | WWAN NR n48 UL MIMO | 2+1 | -43.69 | -50.02 | -6.33 |
| | WWAN NR n77 | 3 | -27.18 | -28.76 | -1.58 |
| | WWAN NR n77 | 0 | -27.71 | -28.62 | -0.91 |
| | WWAN NR n77 | 1 | -27.56 | -28.73 | -1.17 |
| WWAN NR n77 | 2 | -27.67 | -28.73 | -1.06 | |



| Test Item | Mode | J9CQCARD7280N2 Parent Worst Result | J9CQCARD7280N Variant Check Result | Difference (dB) |
|--|---|--|--|-----------------|
| Average Conducted Power (dBm) | Bluetooth | 20.49 | 20.08 | -0.41 |
| | Bluetooth LE | 11.25 | 10.65 | -0.60 |
| | WLAN 2.4G | 22.86 | 23.11 | 0.25 |
| | WLAN 5G UNII-1 (5150~5250) | 16.52 | 16.47 | -0.05 |
| | WLAN 5G UNII-2A (5250~5350) | 20.46 | 20.31 | -0.15 |
| | WLAN 5G UNII-2C (5470~5725) | 20.46 | 20.36 | -0.10 |
| | WLAN 5G UNII-3 (5725~5850) | 20.46 | 20.01 | -0.45 |
| | WLAN 5G UNII-4 (5850~5895) | 18.96 | 18.66 | -0.30 |
| | WLAN 6G UNII-5 (5925~6425) - indoor client | 11.65 | 11.86 | 0.21 |
| | WLAN 6G UNII-6 (6425~6525) - indoor client | 11.46 | 11.24 | -0.22 |
| | WLAN 6G UNII-7 (6525~6875) - indoor client | 10.63 | 10.81 | 0.18 |
| | WLAN 6G UNII-8 (6875~7125) - indoor client | 11.31 | 11.07 | -0.24 |
| | WLAN 6G UNII-5 (5925~6425) - standard client | 15.81 | 16.17 | 0.36 |
| | WLAN 6G UNII-7 (6525~6875) - standard client | 15.81 | 15.96 | 0.15 |



| Test Item | Mode | ANT | J9CQCARD7280N2 Parent Worst Result | J9CQCARD7280N Variant Check Result | Difference (dB) |
|--|---|-----|--|--|-----------------|
| Conducted Spurious Emission (Band Edge) (dBm) | Bluetooth BR CH78 | 5 | -32.43 | -31.24 | 1.19 |
| | Bluetooth LE 2Mbps CH39 | 4 | -53.35 | -54.32 | -0.97 |
| | WLAN 2.4G 11ax HE40 CH03 Partial 484RU | 5+4 | -42.75 | -44.69 | -1.94 |
| | WLAN 5G UNII-1 (5150-5250) 11ax HE80 CH42 Partial 996RU | 5+4 | -44.14 | -44.95 | -0.81 |
| | WLAN 5G UNII-2A (5250-5350) 11ax HE40 CH62 Full RU | 5+4 | -22.72 | -23.26 | -0.54 |
| | WLAN 5G UNII-2C (5470-5725) 11ax HE20 CH140 Full RU | 5+4 | -28.60 | -28.97 | -0.37 |
| | WLAN 5G UNII-3 (5725-5850) 11ax HE20 CH149 Partial 242RU | 5+4 | -28.86 | -30.08 | -1.22 |
| | WLAN 5G UNII-4 (5850-5895) 11ax HE20 CH177 Partial 242RU | 5+4 | 12.85 | 12.75 | -0.10 |
| | WLAN 6G UNII-5 (5925-6425) - standard client 11ax HE20 CH002 Partial 52RU | 5+4 | -8.7 | -12.19 | -3.49 |
| | WLAN 6G UNII-8 (6875-7125) - indoor client 11ax HE20 CH233 Partial 26RU | 5+4 | -8.54 | -7.62 | 0.92 |

| Test Item | Mode | ANT | J9CQCARD7280N2 Parent Worst Result | J9CQCARD7280N Variant Check Result | Difference (dB) |
|---|---|-----|--|--|-----------------|
| Conducted Spurious Emission (Harmonic) (dBm) | Bluetooth BR CH39 | 5 | -45.66 | -43.32 | 2.34 |
| | Bluetooth LE 1Mbps CH19 | 4 | -55.97 | -56.48 | -0.51 |
| | WLAN 2.4G 11ax HE20 CH06 Partial 26RU | 5+4 | -44.89 | -47.74 | -3.85 |
| | WLAN 5G UNII-1 (5150-5250) 11ax HE20 CH48 Partial 26RU | 5+4 | -53.43 | -51.61 | 1.82 |
| | WLAN 5G UNII-2A (5250-5350) 11ax HE80 CH58 Full RU | 5+4 | -34.31 | -37.31 | -3.00 |
| | WLAN 5G UNII-2C (5470-5725) 11ax HE40 CH102 Full RU | 5+4 | -34.28 | -36.43 | -2.15 |
| | WLAN 5G UNII-3 (5725-5850) 11ax HE20 CH149 Partial 26RU | 5+4 | -37.16 | -39.04 | -1.88 |
| | WLAN 5G UNII-4 (5850-5895) 11ax HE160 CH163 Full RU | 5+4 | -38.62 | -39.09 | -0.47 |
| | WLAN 6G UNII-5 (5925-6425) - standard client 11ax HE160 CH015 Full RU | 5+4 | -38.62 | -38.07 | 0.55 |
| | WLAN 6G UNII-6 (6425-6525) - indoor client 11ax HE80 CH103 Full RU | 5+4 | -56.29 | -61.65 | -5.36 |
| | WLAN 6G UNII-7 (6525-6875) - standard client 11a CH181 | 5+4 | -40.84 | -40.64 | 0.2 |
| | WLAN 6G UNII-8 (6875-7125) - indoor client 11ax HE160 CH207 Full RU | 5+4 | -57.06 | -57.57 | -0.51 |



| Test Item | Mode | ANT | J9CQCARD7280N2 Parent Worst Result | J9CQCARD7280N Variant Check Result | Difference (dB) |
|--|---|-----|--|--|-----------------|
| Radiated Spurious Emission (dBuV/m) | WLAN 2.4G 11ax HE20 CH13 Partial 52RU | 5+4 | 52.31 | 48.42 | -3.89 |
| | WLAN 5G UNII-2C (5470-5725) 11ax HE40 CH102 Full RU | 5+4 | 51.69 | 53.88 | 2.19 |
| | WLAN 5G UNII-2C (5470-5725) 11ax HE40 CH110 Full RU | 5+4 | 53.98 | 46.34 | -7.64 |
| | WLAN 5G UNII-3 (5725-5850) 11ax HE20 CH149 Full RU | 5+4 | 50.47 | 49.87 | -0.6 |
| | WLAN 6G UNII-5 (5925-6425) - standard client 11ax HE160 CH015 Full RU | 5+4 | 46.15 | 47.10 | 0.95 |

Conclusion:

Conducted/Radiated spurious emission test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

The spot check emission level is not degraded more than 3dB, data referencing is justified according to the guidance in the KDB inquiry



4. Reference detail Section

| Rule Part | Equipment Class | Wireless Technology | Frequency Band (MHz) | Reference FCC ID (Parent) | Type Grant/ Permissive Change | Reference Title | FCC ID Filling (Variant) |
|--------------------|-----------------|---------------------|--|---------------------------|-------------------------------|--|--------------------------|
| 22, 24, 27, 90, 96 | PCB CBE | UMTS | 2/4/5 | J9CQCARD7280N2 | Original Grant | FG1N1011A | J9CQCARD7280N |
| | | LTE | 2/4/5/12/13/14/25/26/30/38/41/48/66/71 ULCA 5B/38C/41C /48C/66B/66C | J9CQCARD7280N2 | Original Grant | FG1N1011B FG1N1011D FG1N1011E FG1N1011F FG1N1011H FG1N1011J | J9CQCARD7280N |
| | | NR | n2/n5/n25/n38/ n41/n48/n66/n70/n71/n77 UL MIMO n41/n48/n77 | J9CQCARD7280N2 | Original Grant | FG1N1011C FG1N1011G FG1N1011I FG220729001 | J9CQCARD7280N |
| 15C | DSS | Bluetooth | 2400~2483.5 | J9CQCARD7280N2 | Original Grant | FR1N1011A | J9CQCARD7280N |
| | DTS | BLE Wi-Fi | 2400~2483.5 | J9CQCARD7280N2 | Original Grant | FR1N1011B FR1N1011C | J9CQCARD7280N |
| 15E | NII | Wi-Fi | 5150~5250 5250~5350 5470~5725 5725~5850 5850~5895 | J9CQCARD7280N2 | Original Grant | FR1N1011D FR1N1011E FR1N1011G | J9CQCARD7280N |
| | | DFS | 5250~5350 5470~5725 | J9CQCARD7280N2 | Original Grant | FZ1N1011 | J9CQCARD7280N |
| | 6CD | Wi-Fi | 5925~6425 6425~6525 6525~6875 6875~7125 | J9CQCARD7280N2 | Original Grant | FR1N1011F | J9CQCARD7280N |



5. List of Measuring Equipment

<Cabinet Radiation for FCC Part 22(H), 24(E), 27(F), 27(N), 27(L), 27(M)>

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---------------------------|-----------------|---------------|-----------------|----------------------|------------------|---------------------------------|---------------|--------------------------|
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100315 | 9 kHz~30 MHz | Jan. 07, 2022 | Aug. 16, 2022~ Aug. 18, 2022 | Jan. 06, 2023 | Radiation (03CH07-HY) |
| Double Ridge Horn Antenna | ESCO | 3117 | 00075962 | 1GHz ~ 18GHz | Dec. 03, 2021 | Aug. 16, 2022~ Aug. 18, 2022 | Dec. 02, 2022 | Radiation (03CH07-HY) |
| Preamplifier | Agilent | 8449B | 3008A02362 | 1GHz~26.5GHz | Oct. 04, 2021 | Aug. 16, 2022~ Aug. 18, 2022 | Oct. 03, 2022 | Radiation (03CH07-HY) |
| Preamplifier | EMEC | EM18G40G | 0600789 | 18-40GHz | Jul. 23, 2021 | Aug. 16, 2022~ Aug. 18, 2022 | Jul. 22, 2022 | Radiation (03CH07-HY) |
| Spectrum Analyzer | Agilent | N9030A | MY52350276 | 3Hz~44GHz | Jul. 22, 2021 | Aug. 16, 2022~ Aug. 18, 2022 | Jul. 21, 2022 | Radiation (03CH07-HY) |
| EMI Test Receiver | Agilent | N9038A(MXE) | MY53290053 | 20Hz~26.5GHz | May 27, 2022 | Aug. 16, 2022~ Aug. 18, 2022 | May 26, 2023 | Radiation (03CH07-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY15682/4 | 30MHz to 18GHz | Feb. 23, 2022 | Aug. 16, 2022~ Aug. 18, 2022 | Feb. 22, 2023 | Radiation (03CH07-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY24971/4 | 9kHz to 18GHz | Feb. 23, 2022 | Aug. 16, 2022~ Aug. 18, 2022 | Feb. 22, 2023 | Radiation (03CH07-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY28655/4 | 9kHz to 18GHz | Feb. 23, 2022 | Aug. 16, 2022~ Aug. 18, 2022 | Feb. 22, 2023 | Radiation (03CH07-HY) |
| Controller | EMEC | EM1000 | N/A | Control Ant Mast | N/A | Aug. 16, 2022~ Aug. 18, 2022 | N/A | Radiation (03CH07-HY) |
| Controller | MF | MF-7802 | N/A | Control Turn table | N/A | Aug. 16, 2022~ Aug. 18, 2022 | N/A | Radiation (03CH07-HY) |
| Antenna Mast | EMEC | AM-BS-4500E | N/A | Boresight mast 1M~4M | N/A | Aug. 16, 2022~ Aug. 18, 2022 | N/A | Radiation (03CH07-HY) |
| Turn Table | ChainTek | Chaintek 3000 | N/A | 0~360 Degree | N/A | Aug. 16, 2022~ Aug. 18, 2022 | N/A | Radiation (03CH07-HY) |
| Software | Audix | E3 | N/A | N/A | N/A | Aug. 16, 2022~ Aug. 18, 2022 | N/A | Radiation (03CH07-HY) |
| Horn Antenna | EMCO | 3117 | 00143261 | 1GHz~18GHz | Feb. 11, 2022 | Aug. 16, 2022~ Aug. 18, 2022 | Feb. 10, 2023 | Radiation (03CH07-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA917025 1 | 18GHz~40GHz | Nov. 30, 2021 | Aug. 16, 2022~ Aug. 18, 2022 | Nov. 29, 2022 | Radiation (03CH07-HY) |
| Signal Generator | Rohde & Schwarz | SMF100A | 101107 | 100kHz~40GHz | Dec. 08, 2021 | Aug. 16, 2022~ Aug. 18, 2022 | Dec. 07, 2022 | Radiation (03CH07-HY) |



<Cabinet Radiation for FCC Part 27(D), 27(O), 90(R), 90(S), 96 >

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|------------------------------|----------------------------|-----------------------------------|---------------------|---|------------------|---------------------------------|---------------|--------------------------|
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100488 | 9 kHz~30 MHz | Sep. 07, 2021 | Aug. 15, 2022~ Aug. 16, 2022 | Sep. 06, 2022 | Radiation (03CH12-HY) |
| Bilog Antenna | TESEQ | CBL 6111D & 00800N1D01N -06 | 37059 & 01 | 30MHz~1GHz | Oct. 09, 2021 | Aug. 15, 2022~ Aug. 16, 2022 | Oct. 08, 2022 | Radiation (03CH12-HY) |
| Bilog Antenna | TESEQ | CBL 6111D & N-6-06 | 35414 & AT-N0602 | 30MHz~1GHz | Oct. 09, 2021 | Aug. 15, 2022~ Aug. 16, 2022 | Oct. 08, 2022 | Radiation (03CH12-HY) |
| Horn Antenna | SCHWARZBE CK | BBHA 9120 D | 9120D-1328 | 1GHz~18GHz | Dec. 03, 2021 | Aug. 15, 2022~ Aug. 16, 2022 | Dec. 02, 2022 | Radiation (03CH12-HY) |
| Horn Antenna | SCHWARZBE CK | BBHA 9120 D | 9120D-1212 | 1GHz~18GHz | Mar. 10, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Mar. 09, 2023 | Radiation (03CH12-HY) |
| SHF-EHF Horn Antenna | SCHWARZBE CK | BBHA 9170 | BBHA9170251 | 18GHz~40GHz | Nov. 30, 2021 | Aug. 15, 2022~ Aug. 16, 2022 | Nov. 29, 2022 | Radiation (03CH12-HY) |
| SHF-EHF Horn Antenna | SCHWARZBE CK | BBHA 9170 | BBHA9170576 | 18GHz~40GHz | May 14, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | May 13, 2023 | Radiation (03CH12-HY) |
| Preamplifier | COM-POWER | PA-103 | 161075 | 10MHz~1GHz | Mar. 23, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Mar. 22, 2023 | Radiation (03CH12-HY) |
| Preamplifier | Aglient | 8449B | 3008A02375 | 1GHz~26.5GHz | May 24, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | May 23, 2023 | Radiation (03CH12-HY) |
| Preamplifier | E-INSTRUME NT TECH LTD. | ERA-100M-18 G-56-01-A70 | EC1900270 | 1GHz-18GHz | Dec. 27, 2021 | Aug. 15, 2022~ Aug. 16, 2022 | Dec. 26, 2022 | Radiation (03CH12-HY) |
| Preamplifier | EMEC | EM18G40G | 060715 | 18GHz~40GHz | Dec. 24, 2021 | Aug. 15, 2022~ Aug. 16, 2022 | Dec. 23, 2022 | Radiation (03CH12-HY) |
| Spectrum Analyzer | Keysight | N9010A | MY53470118 | 10Hz~44GHz | Jan. 12, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Jan. 11, 2023 | Radiation (03CH12-HY) |
| Base Station | Anritsu | MT8821C | 6201432816 | 2/3/4G/FDD/TDD with44)/LTE-3CC DLCA/2CC ULCA, CatM1/NB1/NB2 | May 10, 2021 | Aug. 15, 2022~ Aug. 16, 2022 | May 09, 2023 | Radiation (03CH12-HY) |
| 5G Wireless Test Platform | Anritsu | MT8000A | 6262012917 | FR1 (MT8821C SN:6262044657) | Feb 11, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Feb 10, 2023 | Radiation (03CH12-HY) |



| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|--------------|----------------|-------------------------------|------------|-------------------------------|------------------|---------------------------------|---------------|--------------------------|
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY9837/4PE | 9kHz~30MHz | Mar. 10, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Mar. 09, 2023 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 126E | 0058/126E | 30MHz~18GHz | Dec. 10, 2021 | Aug. 15, 2022~ Aug. 16, 2022 | Dec. 09, 2022 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 505134/2 | 30MHz~40GHz | Feb. 21, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Feb. 20, 2023 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 800740/2 | 30MHz~40GHz | Feb. 21, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Feb. 20, 2023 | Radiation (03CH12-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 803953/2 | 30MHz~40GHz | Mar. 08, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Mar. 07, 2023 | Radiation (03CH12-HY) |
| Filter | Wainwright | WLKS1200-12 SS | SN2 | 1.2GHz Low Pass Filter | Mar. 16, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Mar. 15, 2023 | Radiation (03CH12-HY) |
| Filter | Wainwright | WHKX12-2700 -3000-18000-6 0ST | SN2 | 3GHz High Pass Filter | Jul. 11, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Jul. 10, 2023 | Radiation (03CH12-HY) |
| Filter | Wainwright | WHKX8-5872. 5-6750-18000-40ST | SN2 | 6.75GHz High Pass Filter | Mar. 16, 2022 | Aug. 15, 2022~ Aug. 16, 2022 | Mar. 15, 2023 | Radiation (03CH12-HY) |
| Hygrometer | TECPEL | DTM-303B | TP140349 | N/A | Sep. 30, 2021 | Aug. 15, 2022~ Aug. 16, 2022 | Sep. 29, 2022 | Radiation (03CH12-HY) |
| Controller | EMEC | EM1000 | N/A | Control Turn table & Ant Mast | N/A | Aug. 15, 2022~ Aug. 16, 2022 | N/A | Radiation (03CH12-HY) |
| Antenna Mast | EMEC | AM-BS-4500-B | N/A | 1m~4m | N/A | Aug. 15, 2022~ Aug. 16, 2022 | N/A | Radiation (03CH12-HY) |
| Turn Table | EMEC | TT2000 | N/A | 0~360 Degree | N/A | Aug. 15, 2022~ Aug. 16, 2022 | N/A | Radiation (03CH12-HY) |
| Software | Audix | E3 6.2009-8-24 | RK-000989 | N/A | N/A | Aug. 15, 2022~ Aug. 16, 2022 | N/A | Radiation (03CH12-HY) |

**<Conducted for FCC Part 22, 24, 27, 90, 96>**

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|------------------------------|-----------------|-----------|------------|-------------------------------------|------------------|---------------------------------|---------------|------------------------|
| Radio Communication Analyzer | Anritsu | MT8821C | 6262025280 | LTE FDD/TDD LTE-2CC DLCA/ULCA | Oct. 29, 2021 | Jun. 14, 2022~ Aug. 18, 2022 | Oct. 28, 2022 | Conducted (TH03-HY) |
| Base Station (Measure) | Anritsu | MT8821C | 6261849015 | LTE | Oct. 06, 2021 | Jun. 14, 2022~ Aug. 18, 2022 | Oct. 05, 2022 | Conducted (TH03-HY) |
| Base Station (Measure) | Anritsu | MT8000A | 6261940327 | FR1 | Oct. 29, 2021 | Jun. 14, 2022~ Aug. 18, 2022 | Oct. 28, 2022 | Conducted (TH03-HY) |
| Base Station (Measure) | Rohde & Schwarz | CMU200 | 117997 | GSM / GPRS / WCDMA / CDMA | Sep. 19, 2021 | Jun. 14, 2022~ Aug. 18, 2022 | Sep. 18, 2022 | Conducted (TH03-HY) |
| Spectrum Analyzer | Rohde & Schwarz | FSV40 | 101908 | 10Hz~40GHz | Oct. 01, 2021 | Jun. 14, 2022~ Aug. 18, 2022 | Sep. 30, 2022 | Conducted (TH03-HY) |
| Signal Analyzer | Rohde & Schwarz | FSV3044 | 101049 | 10Hz~44GHz | Aug. 31, 2021 | Jun. 14, 2022~ Aug. 18, 2022 | Aug. 30, 2022 | Conducted (TH03-HY) |
| Hygrometer | Testo | 608-H11 | 34893240 | NA | Nov. 17, 2021 | Jun. 14, 2022~ Aug. 18, 2022 | Nov. 16, 2022 | Conducted (TH03-HY) |

**<Radiation Band edge for Part 15C and Harmonic (7~18GHz) for Part 15E UNII-2C, UNII-3>**

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|----------------------|----------------|------------------------------|----------------------------------|--------------------------|------------------|---------------|---------------|-----------------------|
| Horn Antenna | SCHWARZBECK | BBHA 9120 D | 9120D-02038 | 1GHz~18GHz | Aug. 09, 2022 | Aug. 18, 2022 | Aug. 08, 2023 | Radiation (03CH15-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170251 | 18GHz~40GHz | Nov. 30, 2021 | Aug. 18, 2022 | Nov. 29, 2022 | Radiation (03CH15-HY) |
| Preamplifier | Jet-Power | JPA0118-55-303 | 1710001800055006 | 1GHz~18GHz | May 05, 2022 | Aug. 18, 2022 | May 04, 2023 | Radiation (03CH15-HY) |
| Preamplifier | EM Electronics | EM01G18G | 060803 | 1GHz-18GHz | Dec. 16, 2021 | Aug. 18, 2022 | Dec. 15, 2022 | Radiation (03CH15-HY) |
| Spectrum Analyzer | Agilent | E4446A | MY50180136 | 3Hz~44GHz | May 11, 2022 | Aug. 18, 2022 | May 10, 2023 | Radiation (03CH15-HY) |
| Antenna Mast | ChainTek | MBS-520-1 | N/A | 1m~4m | N/A | Aug. 18, 2022 | N/A | Radiation (03CH15-HY) |
| Turn Table | ChainTek | T-200-S-1 | N/A | 0~360 Degree | N/A | Aug. 18, 2022 | N/A | Radiation (03CH15-HY) |
| Software | Audix | E3 6.2009-8-24(k5) | RK-000451 | N/A | N/A | Aug. 18, 2022 | N/A | Radiation (03CH15-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104, 102E | MY36980/4, MY9838/4PE, 508405/2E | 30MHz~18G | Nov. 15, 2021 | Aug. 18, 2022 | Nov. 14, 2022 | Radiation (03CH15-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 804011/2,804012/2 | 30MHz-40GHz | Jan. 04, 2022 | Aug. 18, 2022 | Jan. 03, 2023 | Radiation (03CH15-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY9837/4PE | 9kHz~30MHz | Mar. 10, 2022 | Aug. 18, 2022 | Mar. 09, 2023 | Radiation (03CH15-HY) |
| Filter | Wainwright | WHKX8-5872.5-6750-18000-40ST | SN6 | 6.75GHz High Pass Filter | Jun. 08, 2022 | Aug. 18, 2022 | Jun. 07, 2023 | Radiation (03CH15-HY) |



<Conducted for FCC Part 15C, Part 15E>

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|-------------------|-----------------|--------------------------------------|-------------------------------|--------------------------|------------------|---------------------------------|---------------|------------------------|
| Hygrometer | TECEPEL | DTM-303A | TP201996 | N/A | Nov. 16, 2021 | Aug. 16, 2022~ Aug. 26, 2022 | Nov. 15, 2022 | Conducted (TH05-HY) |
| Power Meter | Anritsu | ML2495A | 0932001 | N/A | Sep. 30, 2021 | Aug. 16, 2022~ Aug. 26, 2022 | Sep. 29, 2022 | Conducted (TH05-HY) |
| Power Sensor | Anritsu | MA2411B | 0846202 | 300MHz~40GHz | Sep. 30, 2021 | Aug. 16, 2022~ Aug. 26, 2022 | Sep. 29, 2022 | Conducted (TH05-HY) |
| Power Sensor | DARE | RPR3006W | 16100054SN O12 (NO:113) | 10MHz~6GHz | Dec. 16, 2021 | Aug. 16, 2022~ Aug. 26, 2022 | Dec. 15, 2022 | Conducted (TH05-HY) |
| Power Sensor | DARE | RPR3006W | 15100041SN O10 (NO:248) | 10MHz~6GHz | Dec. 29, 2021 | Aug. 16, 2022~ Aug. 26, 2022 | Dec. 28, 2022 | Conducted (TH05-HY) |
| Power Sensor | DARE | RPR3006W #010 | RPR6W-210 1002(NO:12 3) | 10MHz~8GHz | Jan. 13, 2022 | Aug. 16, 2022~ Aug. 26, 2022 | Jan. 12, 2023 | Conducted (TH05-HY) |
| Spectrum Analyzer | ROHDE & SCHWARZ | FSV40 | 101565 | 10Hz~40GHz | Dec. 29, 2021 | Aug. 16, 2022~ Aug. 26, 2022 | Dec. 28, 2022 | Conducted (TH05-HY) |
| Signal Analyzer | Rohde & Schwarz | FSV40 | 101566 | 10Hz~40GHz | Aug. 30, 2021 | Aug. 16, 2022~ Aug. 26, 2022 | Aug. 29, 2022 | Conducted (TH05-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY9837/4PE | 9kHz~30MHz | Mar. 10, 2022 | Aug. 16, 2022~ Aug. 26, 2022 | Mar. 09, 2023 | Conducted (TH05-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 126E | 0058/126E | 30MHz~18GHz | Dec. 10, 2021 | Aug. 16, 2022~ Aug. 26, 2022 | Dec. 09, 2022 | Conducted (TH05-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | 505134/2 | 30MHz~40GHz | Feb. 21, 2022 | Aug. 16, 2022~ Aug. 26, 2022 | Feb. 20, 2023 | Conducted (TH05-HY) |
| Filter | Wainwright | WHKX12-2700 -3000-18000-6 OST | SN2 | 3GHz High Pass Filter | Jul. 11, 2022 | Aug. 16, 2022~ Aug. 26, 2022 | Jul. 10, 2023 | Conducted (TH05-HY) |
| Filter | Wainwright | WHKX8-5872. 5-6750-18000- 40ST | SN17 | 6.75GHz High Pass Filter | May 23, 2022 | Aug. 16, 2022~ Aug. 26, 2022 | May 22, 2023 | Conducted (TH05-HY) |

Note: Test equipment calibration is traceable to the procedure of ISO17025.