



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



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/n7 0/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	BBHA9170251	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	TECPEL	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	16I00054SN O12 (NO:113)	10MHz~6GHz	Dec. 16, 2021	Aug. 16, 2022~ Aug. 26, 2022	Dec. 15, 2022	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15I00041SN 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 0ST	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.