FCC RADIO TEST REPORT

FCC ID	:	ACJFZA3A20A
Equipment	:	Radio module
Brand Name	:	Panasonic
Model Name	:	WW18A
Marketing Name	:	WW18A
Applicant	:	Panasonic Corporation of North America Two Riverfront Plaza, 9th Floor, Newark, NJ 07102-5490
Manufacturer	:	Panasonic Mobile Communications Co., Ltd. 600 Saedo-cho, Tsuzuki-ku, Yokohama City 224-8539, Japan
Standard	:	FCC 47 CFR Part 2, 22(H), 24(E), 27

The product was received on Nov. 26, 2019 and testing was started from Jun. 10, 2020 and completed on Jun. 13, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FG992410-07B	01	Initial issue of report	Jun. 18, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	§2.1046	Conducted Output Power	Not Required	-
	§22.913 (a)(2)	Effective Radiated Power (Band 5) (Band 26)		
	§27.50 (b)(10) §27.50 (c)(10)	Effective Radiated Power (Band 12) (Band 13)		
	§24.232 (c) §27.50 (h)(2)	Equivalent Isotropic Radiated Power (Band 2)(Band 7) (Band 41)		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)		
-	§24.232 (d) §27.50 (d)(5)	Peak-to-Average Ratio	Not Required	-
-	§2.1049	Occupied Bandwidth	Not Required	-
-	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2)(4) §27.53 (g) §27.53 (h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 26) (Band 66)	Not Required	-
	§2.1051 §27.53 (m)(4)	Conducted Band Edge Measurement (Band 7) (Band 41)		
-	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (g) §27.53 (h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 26) (Band 66)	Not Required	-
	§2.1051 §27.53 (m)(4)	Conducted Spurious Emission (Band 7) (Band 41)		
-	§2.1055 §22.355 §24.235 §27.54	Frequency Stability Temperature & Voltage	Not Required	-

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1053 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (f) §27.53 (g) §27.53 (h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 26) (Band 66)	Pass	Under limit 7.58 dB at 5282.000 MHz
	§2.1051 §27.53 (m)(4)	Radiated Spurious Emission (Band 7) (Band 41)		

Remark:

1. Not required means after assessing, test items are not necessary to carry out.
2. This is a variant report by adding Vehicle Dock and External Antenna for host. All the test cases were performed on original report which can be referred to Sporton Report Number FG992410-02B.

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang

Report Producer: Lucy Wu

1 General Description

1.1 Product Feature of Equipment Under Test

WCDMA and LTE.

Product Specification subjective to this standard	
Integrated the Host	Equipment Name: Tablet Computer Brand Name: Panasonic Model Name: FZ-A3 Marketing Name: FZ-A3
Antenna Type	WWAN: Fixed Internal Antenna

Specification of Accessory for Host		
AC Adapter	**Brand Name**	Panasonic
	Model Name	CF-AA6413A
Battery 1 (Small)	**Brand Name**	Panasonic
	Model Name	FZ-VZSUT10U
Battery 2 (Large)	**Brand Name**	Panasonic
	Model Name	FZ-VZSUT11U
USB Cable 1	**Brand Name**	Panasonic
	Model Name	K1HY24YY0021
USB Cable 2	**Brand Name**	ELECOM
	Model Name	USB3-AC10BK
Gadget 1 (2nd USB)	**Brand Name**	Panasonic
	Model Name	N/A
Gadget 2 (BCR)	**Brand Name**	Panasonic
	Model Name	N/A
Cradle	**Brand Name**	Panasonic
	Model Name	FZ-VEBA21U
Vehicle Dock	**Brand Name**	Havis
	Model Name	DS-PAN-1401-2
Shoulder Strap	**Brand Name**	Panasonic
	Model Name	CF-VNS331U
Stylus Pen	**Brand Name**	Panasonic
	Model Name	CF-VNP025U
External antenna (2.4G+5G+GNSS)	**Brand Name**	Airgain
	Model Name	AP-PAN-MMF WG-Q-BL
External antenna (Cellular+2.4G)	**Brand Name**	Airgain
	Model Name	AP-PAN-MMF-C-Q-BL
External antenna (GNSS)	**Brand Name**	Airgain
	Model Name	DHXK1052ZA/X1

Remark: The external antenna can only be connected to the Host WLAN antenna 1.

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	03CH13-HY
Test Engineer	Jacky Hung and Wilson Wu
Temperature	21.5~23.5℃
Relative Humidity	49.5~55.5%

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW0007

1.4 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ANSI C63.26-2015
- ANSI / TIA-603-E
- FCC 47 CFR Part 2, 22(H), 24(E), 27
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 414788 D01 Radiated Test Site v01r01.

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

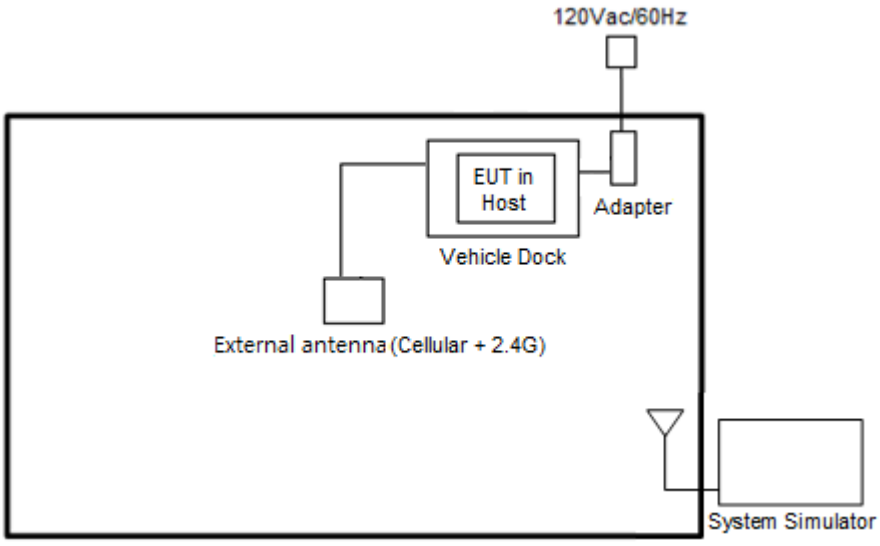
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X Plane for LTE Band 2, 4, 12, 41, 66; Z Plane for LTE Band 7, 13, 26) were recorded in this report.

Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Radiated Spurious Emission	2						v	v					v	v	v	v
	4						v	v					v	v	v	v
	5	Covered by Band 26														
	7	-	-				v	v					v	v	v	v
	12				v	-	-	v					v	v	v	v
	13	-	-	v	v	-	-	v					v	v	v	v
	26					v	-	v					v	v	v	v
	41	-	-				v	v					v	v	v	v
	66						v	v					v	v	v	v
Remark	1. The mark "**v** " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. All the radiated test cases were performed with Battery 1. 5. Wider operating range bandwidth covers narrower one when the power is higher or the same.															

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m

2.4 Frequency List of Low/Middle/High Channels

LTE Band 2 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

LTE Band 4 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	20050	20175	20300
	Frequency	1720	1732.5	1745
15	Channel	20025	20175	20325
	Frequency	1717.5	1732.5	1747.5
10	Channel	20000	20175	20350
	Frequency	1715	1732.5	1750
5	Channel	19975	20175	20375
	Frequency	1712.5	1732.5	1752.5
3	Channel	19965	20175	20385
	Frequency	1711.5	1732.5	1753.5
1.4	Channel	19957	20175	20393
	Frequency	1710.7	1732.5	1754.3

LTE Band 5 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
10	Channel	20450	20525	20600
	Frequency	829	836.5	844
5	Channel	20425	20525	20625
	Frequency	826.5	836.5	846.5
3	Channel	20415	20525	20635
	Frequency	825.5	836.5	847.5
1.4	Channel	20407	20525	20643
	Frequency	824.7	836.5	848.3

LTE Band 7 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	20850	21100	21350
	Frequency	2510	2535	2560
15	Channel	20825	21100	21375
	Frequency	2507.5	2535	2562.5
10	Channel	20800	21100	21400
	Frequency	2505	2535	2565
5	Channel	20775	21100	21425
	Frequency	2502.5	2535	2567.5

LTE Band 12 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
10	Channel	23060	23095	23130
	Frequency	704	707.5	711
5	Channel	23035	23095	23155
	Frequency	701.5	707.5	713.5
3	Channel	23025	23095	23165
	Frequency	700.5	707.5	714.5
1.4	Channel	23017	23095	23173
	Frequency	699.7	707.5	715.3

LTE Band 13 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	23230	-
	Frequency	-	782	-
5	Channel	23205	23230	23255
	Frequency	779.5	782	784.5

LTE Band 26 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
15	Channel	26865	26915	26965
	Frequency	831.5	836.5	841.5
10	Channel	26840	26915	26990
	Frequency	829.0	836.5	844.0
5	Channel	26815	26915	27015
	Frequency	826.5	836.5	846.5
3	Channel	26805	26915	27025
	Frequency	825.5	836.5	847.5
1.4	Channel	26797	26915	27033
	Frequency	824.7	836.5	848.3

LTE Band 41 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	39750	40620	41490
	Frequency	2506.0	2593.0	2680.0
15	Channel	39725	40620	41515
	Frequency	2503.5	2593.0	2682.5
10	Channel	39700	40620	41540
	Frequency	2501.0	2593.0	2685.0
5	Channel	39675	40620	41565
	Frequency	2498.5	2593.0	2687.5

LTE Band 66 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	132072	132322	132572
	Frequency	1720	1745	1770
15	Channel	132047	132322	132597
	Frequency	1717.5	1745	1772.5
10	Channel	132022	132322	132622
	Frequency	1715	1745	1775
5	Channel	131997	132322	132647
	Frequency	1712.5	1745	1777.5
3	Channel	131987	132322	132657
	Frequency	1711.5	1745	1778.5
1.4	Channel	131979	132322	132665
	Frequency	1710.7	1745	1779.3

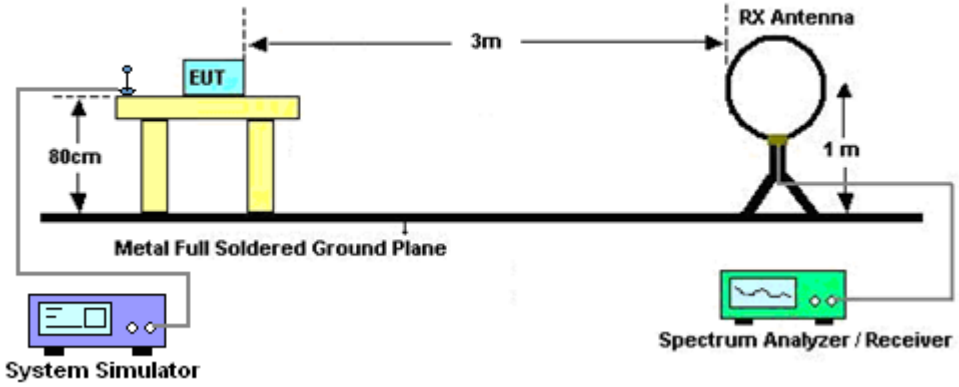
3 Radiated Test Items

3.1 Measuring Instruments

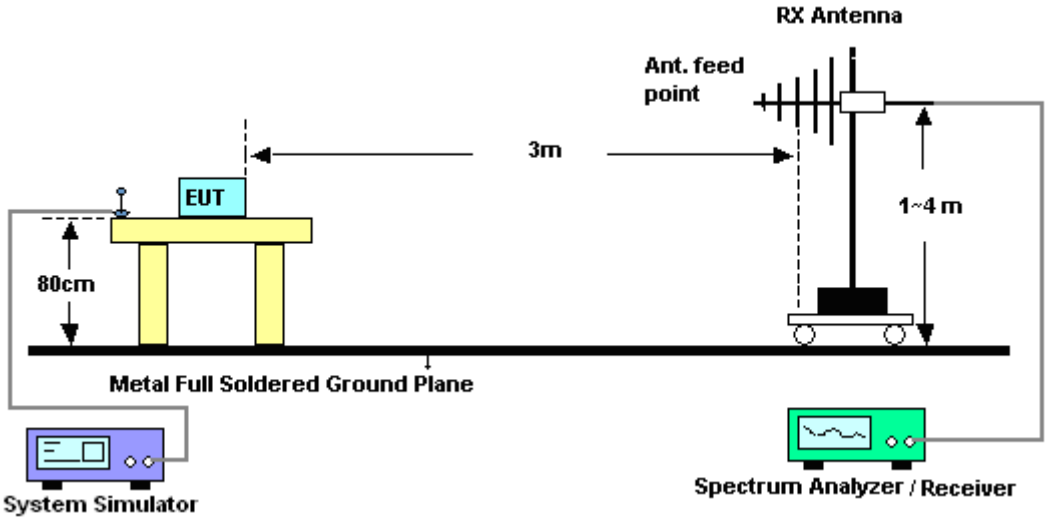
See list of measuring instruments of this test report.

3.1.1 Test Setup

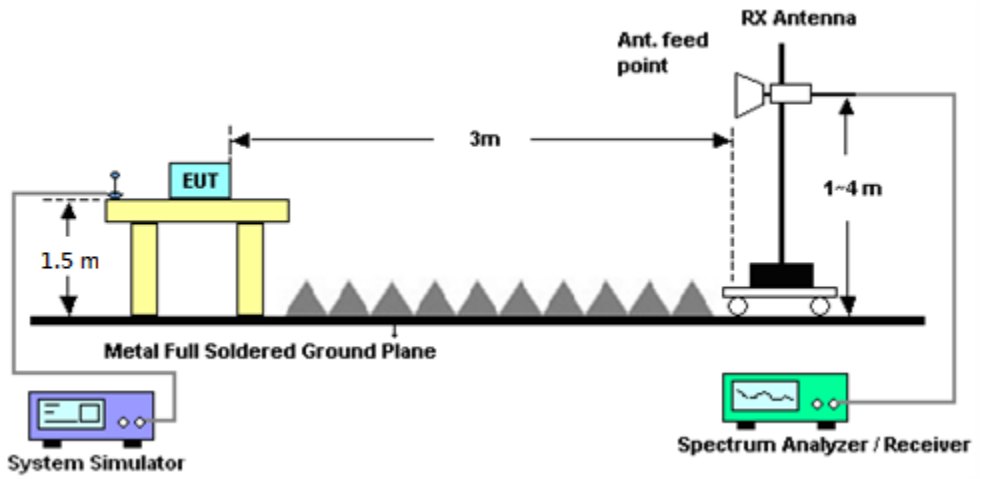
For radiated emissions below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



3.1.2 Test Result of Radiated Test

Please refer to Appendix A.

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.2 Radiated Spurious Emission Measurement

3.2.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

For LTE Band 7, 41

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 55 + 10 log (P) dB.

For LTE Band 13

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.2.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

    For LTE Band 7, 41

    The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)

    EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain

    ERP (dBm) = EIRP - 2.15

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Amplifier	Sonoma-Instrument	310 N	187282	9KHz~1GHz	Dec. 17, 2019	Jun. 10, 2020~ Jun. 13, 2020	Dec. 16, 2020	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800 N1D01N-06	40103&07	30MHz to 1GHz	Apr. 29, 2020	Jun. 10, 2020~ Jun. 13, 2020	Apr. 28, 2021	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800 N1D01N-06	41912 & 07	30MHz to 1GHz	Apr. 29, 2020	Jun. 10, 2020~ Jun. 13, 2020	Apr. 28, 2021	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1241	1GHz ~ 18GHz	Jul. 02, 2019	Jun. 10, 2020~ Jun. 13, 2020	Jul. 01, 2020	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1212	1GHz ~ 18GHz	May 20, 2020	Jun. 10, 2020~ Jun. 13, 2020	May 19, 2021	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590074	1GHz~18GHz	May 19, 2020	Jun. 10, 2020~ Jun. 13, 2020	May 18, 2021	Radiation (03CH13-HY)
Preamplifier	Keysight	83017A	MY53270147	1GHz~26.5GHz	Oct. 28, 2019	Jun. 10, 2020~ Jun. 13, 2020	Oct. 27, 2020	Radiation (03CH13-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	Aug. 27, 2019	Jun. 10, 2020~ Jun. 13, 2020	Aug. 26, 2020	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY55370526	10Hz~44GHz	Mar. 20, 2020	Jun. 10, 2020~ Jun. 13, 2020	Mar. 19, 2021	Radiation (03CH13-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Jun. 10, 2020~ Jun. 13, 2020	N/A	Radiation (03CH13-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jun. 10, 2020~ Jun. 13, 2020	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Jun. 10, 2020~ Jun. 13, 2020	N/A	Radiation (03CH13-HY)
Software	Audix	E3 6.2009-8-24	RK-000992	N/A	N/A	Jun. 10, 2020~ Jun. 13, 2020	N/A	Radiation (03CH13-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 13, 2019	Jun. 10, 2020~ Jun. 13, 2020	Dec. 12, 2020	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30M-18G	Feb. 12, 2020	Jun. 10, 2020~ Jun. 13, 2020	Feb. 21, 2021	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	804793/4	30M-18G	Feb. 12, 2020	Jun. 10, 2020~ Jun. 13, 2020	Feb. 21, 2021	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30M~40GHz	Feb. 25, 2020	Jun. 10, 2020~ Jun. 13, 2020	Feb. 24, 2021	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Dec. 10, 2019	Jun. 10, 2020~ Jun. 13, 2020	Dec. 09, 2020	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170980	18GHz~40GHz	Jan. 10, 2020	Jun. 10, 2020~ Jun. 13, 2020	Jan. 09, 2021	Radiation (03CH13-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60SS	SN2	3GHz High Pass Filter	Jul. 14, 2019	Jun. 10, 2020~ Jun. 13, 2020	Jul. 13, 2020	Radiation (03CH13-HY)
Filter	Wainwright	WHKX12-1080-1200-15000-60SS	SN3	1.2GHz High Pass Filter	Jul. 03, 2019	Jun. 10, 2020~ Jun. 13, 2020	Jul. 02, 2020	Radiation (03CH13-HY)
Hygrometer	TECPEL	DTM-303B	TP157151	N/A	Jun. 17, 2019	Jun. 10, 2020~ Jun. 13, 2020	Jun. 16, 2020	Radiation (03CH13-HY)

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.21**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.24**

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.99**

Appendix A. Test Results of Radiated Test

LTE Band 4

LTE Band 4 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3420	-30.49	-13	-17.49	-49.52	-40.85	1.80	12.16	H
	5135	-40.10	-13	-27.10	-63.51	-49.92	2.30	12.13	H
	6843	-45.31	-13	-32.31	-71.49	-54.00	2.37	11.06	H
									H
									H
									H
	3420	-37.67	-13	-24.67	-57.33	-48.03	1.80	12.16	V
	5135	-34.16	-13	-21.16	-58.14	-43.98	2.30	12.13	V
	6843	-43.42	-13	-30.42	-70.15	-52.11	2.37	11.06	V
									V
									V
									V
Middle	3448	-28.57	-13	-15.57	-47.86	-38.99	1.83	12.24	H
	5170	-36.77	-13	-23.77	-60.21	-46.61	2.29	12.13	H
	6892	-42.60	-13	-29.60	-68.93	-51.22	2.38	11.01	H
									H
									H
									H
	3448	-38.37	-13	-25.37	-58.23	-48.79	1.83	12.24	V
	5170	-33.58	-13	-20.58	-57.58	-43.42	2.29	12.13	V
	6892	-41.10	-13	-28.10	-68.02	-49.72	2.38	11.01	V
									V
									V
									V

Highest	3469	-30.35	-13	-17.35	-49.84	-40.81	1.84	12.31	H
	5205	-32.70	-13	-19.70	-56.17	-42.57	2.28	12.14	H
	6941	-41.76	-13	-28.76	-68.25	-50.32	2.40	10.96	H
									H
									H
									H
									H
	3469	-37.99	-13	-24.99	-58.04	-48.45	1.84	12.31	V
	5205	-28.60	-13	-15.60	-52.62	-38.47	2.28	12.14	V
	6941	-34.96	-13	-21.96	-62.07	-43.52	2.40	10.96	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 66

LTE Band 66 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3420	-29.80	-13	-16.80	-48.83	-40.16	1.80	12.16	H
	5135	-37.12	-13	-24.12	-60.53	-46.94	2.30	12.13	H
	6843	-46.04	-13	-33.04	-72.22	-54.73	2.37	11.06	H
									H
									H
									H
									H
	3420	-37.51	-13	-24.51	-57.17	-47.87	1.80	12.16	V
	5135	-34.14	-13	-21.14	-58.12	-43.96	2.30	12.13	V
	6843	-41.85	-13	-28.85	-68.58	-50.54	2.37	11.06	V
									V
									V
									V
									V
Middle	3476	-27.82	-13	-14.82	-47.37	-38.30	1.85	12.33	H
	5212	-29.41	-13	-16.41	-52.88	-39.28	2.27	12.14	H
	6948	-37.95	-13	-24.95	-64.45	-46.50	2.40	10.95	H
									H
									H
									H
									H
	3476	-33.64	-13	-20.64	-53.69	-44.12	1.85	12.33	V
	5212	-27.15	-13	-14.15	-51.17	-37.02	2.27	12.14	V
	6948	-36.06	-13	-23.06	-63.19	-44.61	2.40	10.95	V
									V
									V
									V
									V

Highest	3525	-29.36	-13	-16.36	-49.27	-39.86	1.88	12.39	H
	5282	-22.02	-13	-9.02	-45.55	-31.93	2.24	12.16	H
	7046	-36.98	-13	-23.98	-63.91	-45.41	2.39	10.82	H
									H
									H
									H
									H
	3525	-33.07	-13	-20.07	-53.46	-43.57	1.88	12.39	V
	5282	-20.58	-13	-7.58	-44.64	-30.49	2.24	12.16	V
	7046	-34.64	-13	-21.64	-62.17	-43.07	2.39	10.82	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 12

LTE Band 12 / 10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1408	-59.44	-13.00	-46.44	-73.71	-63.92	1.15	7.78	H
	2112	-58.33	-13.00	-45.33	-75.36	-64.99	1.38	10.19	H
	2816	-57.61	-13.00	-44.61	-75.42	-64.76	1.45	10.75	H
									H
									H
									H
									H
									V
	1408	-59.80	-13.00	-46.80	-73.53	-64.28	1.15	7.78	V
	2112	-58.36	-13.00	-45.36	-75.67	-65.02	1.38	10.19	V
	2816	-57.05	-13.00	-44.05	-75.28	-64.20	1.45	10.75	V
									V
									V
									V
Middle	1415	-59.70	-13.00	-46.70	-73.96	-64.21	1.15	7.81	H
	2123	-58.11	-13.00	-45.11	-75.32	-64.78	1.38	10.20	H
	2830	-57.33	-13.00	-44.33	-75.18	-64.49	1.45	10.76	H
									H
									H
									H
									H
	1415	-60.10	-13.00	-47.10	-73.83	-64.61	1.15	7.81	V
	2123	-57.85	-13.00	-44.85	-75.37	-64.52	1.38	10.20	V
	2830	-57.41	-13.00	-44.41	-75.68	-64.57	1.45	10.76	V
									V
									V
									V
									V

Highest	1422	-59.63	-13.00	-46.63	-73.85	-64.17	1.15	7.84	H
	2133	-57.75	-13.00	-44.75	-75.13	-64.43	1.38	10.21	H
	2844	-57.53	-13.00	-44.53	-75.41	-64.70	1.45	10.78	H
									H
									H
									H
									H
	1422	-60.29	-13.00	-47.29	-74.00	-64.83	1.15	7.84	V
	2133	-57.66	-13.00	-44.66	-75.37	-64.34	1.38	10.21	V
	2844	-57.07	-13.00	-44.07	-75.37	-64.24	1.45	10.78	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 13

LTE Band 13 / 5MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1554	-61.05	-13	-48.05	-74.41	-66.11	1.19	8.41	H
	2332	-58.01	-13	-45.01	-75.52	-64.81	1.41	10.37	H
	3109	-57.04	-13	-44.04	-75.80	-64.57	1.55	11.23	H
									H
									H
									H
									H
	1554	-61.53	-13.00	-48.53	-74.67	-66.59	1.19	8.41	V
	2332	-57.31	-13	-44.31	-75.35	-64.11	1.41	10.37	V
	3109	-56.64	-13	-43.64	-75.69	-64.17	1.55	11.23	V
									V
									V
									V
									V
Middle	1560	-61.31	-42.15	-19.16	-74.61	-66.40	1.19	8.43	H
	2339	-58.14	-13	-45.14	-75.59	-64.95	1.41	10.37	H
	3120	-56.97	-13	-43.97	-75.79	-64.52	1.56	11.26	H
									H
									H
									H
									H
	1560	-61.92	-42.15	-19.77	-75.00	-67.01	1.19	8.43	V
	2339	-57.26	-13	-44.26	-75.24	-64.07	1.41	10.37	V
	3120	-56.23	-13	-43.23	-75.32	-63.78	1.56	11.26	V
									V
									V
									V
									V

Highest	1569	-61.71	-42.15	-19.56	-74.91	-66.83	1.20	8.46	H
	2354	-58.13	-13	-45.13	-75.48	-64.95	1.42	10.38	H
	3138	-56.78	-13	-43.78	-75.67	-64.37	1.57	11.31	H
									H
									H
									H
									H
	1569	-61.74	-42.15	-19.59	-74.73	-66.86	1.20	8.46	V
	2354	-57.36	-13	-44.36	-75.24	-64.18	1.42	10.38	V
	3138	-56.26	-13	-43.26	-75.39	-63.85	1.57	11.31	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 13 / 10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1552	-61.45	-13	-48.45	-74.83	-66.51	1.19	8.40	H
	2328	-57.83	-13	-44.83	-75.37	-64.63	1.41	10.36	H
	3112	-56.99	-13	-43.99	-75.77	-64.52	1.55	11.24	H
									H
									H
									H
									H
	1552	-61.37	-13	-48.37	-74.53	-66.43	1.19	8.40	V
	2328	-57.43	-13	-44.43	-75.5	-64.23	1.41	10.36	V
	3112	-56.73	-13	-43.73	-75.79	-64.26	1.55	11.24	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 7

LTE Band 7 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	5002	-64.79	-25	-39.79	-57.73	-74.53	2.36	12.10	H
	7501	-58.73	-25	-33.73	-57.15	-66.62	2.11	10.00	H
	12508	-48.18	-25	-23.18	-53.19	-58.92	2.55	13.29	H
	15000	-57.43	-25	-32.43	-63.35	-67.86	2.67	13.10	H
									H
									H
									H
	5002	-65.35	-25	-40.35	-58.91	-75.09	2.36	12.10	V
	7501	-55.52	-25	-30.52	-53.8	-63.41	2.11	10.00	V
	12508	-43.00	-25	-18.00	-46.86	-53.74	2.55	13.29	V
	15000	-52.55	-25	-27.55	-60.74	-62.98	2.67	13.10	V
									V
									V
									V
Middle	7578	-60.84	-25	-35.84	-58.88	-69.01	2.11	10.28	H
	10099	-54.03	-25	-29.03	-56.53	-63.91	1.96	11.84	H
	12623.5	-52.23	-25	-27.23	-57.17	-62.84	2.54	13.15	H
	15164.5	-56.45	-25	-31.45	-62.76	-67.79	2.58	13.92	H
									H
									H
									H
	7578	-58.96	-25	-33.96	-56.99	-67.13	2.11	10.28	V
	10099	-56.99	-25	-31.99	-58.75	-66.87	1.96	11.84	V
	12623.5	-49.49	-25	-24.49	-53.39	-60.10	2.54	13.15	V
	15164.5	-51.76	-25	-26.76	-59.55	-63.10	2.58	13.92	V
									V
									V
									V

Highest	7655	-59.92	-25	-34.92	-58.02	-68.36	2.11	10.56	H
	10198	-55.71	-25	-30.71	-58.38	-65.48	2.11	11.88	H
	12755.5	-51.64	-25	-26.64	-56.47	-62.10	2.53	12.99	H
	15313	-53.71	-25	-28.71	-60.38	-65.88	2.49	14.67	H
									H
									H
									H
	7655	-58.41	-25	-33.41	-56.56	-66.85	2.11	10.56	V
	10198	-56.17	-25	-31.17	-58.29	-65.94	2.11	11.88	V
	12755.5	-50.06	-25	-25.06	-54	-60.52	2.53	12.99	V
	15313	-49.69	-25	-24.69	-57.12	-61.86	2.49	14.67	V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 41

LTE Band 41 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	7508	-52.38	-25	-27.38	-50.77	-60.29	2.11	10.03	H
	12508	-56.57	-25	-31.57	-61.58	-67.31	2.55	13.29	H
	15016	-53.42	-25	-28.42	-59.38	-63.94	2.66	13.18	H
	17508	-53.14	-25	-28.14	-61.33	-63.45	2.33	12.63	H
									H
									H
									H
	7508	-49.06	-25	-24.06	-47.31	-56.97	2.11	10.03	V
	12508	-56.02	-25	-31.02	-59.88	-66.76	2.55	13.29	V
	15016	-49.02	-25	-24.02	-57.17	-59.54	2.66	13.18	V
	17508	-47.19	-25	-22.19	-56.59	-57.50	2.33	12.63	V
									V
									V
									V
Middle	5176	-64.50	-25	-39.50	-57.97	-74.35	2.29	12.14	H
	7764	-60.42	-25	-35.42	-58.85	-69.26	2.11	10.95	H
	12937	-55.26	-25	-30.26	-59.97	-65.52	2.52	12.78	H
	15528	-56.80	-25	-31.80	-63.87	-70.10	2.40	15.70	H
									H
									H
									H
	5176	-63.61	-25	-38.61	-57.64	-73.46	2.29	12.14	V
	7764	-60.18	-25	-35.18	-58.67	-69.02	2.11	10.95	V
	12937	-57.12	-25	-32.12	-61.12	-67.38	2.52	12.78	V
	15528	-55.04	-25	-30.04	-61.98	-68.34	2.40	15.70	V
									V
									V
									V

Highest	5352	-61.97	-25	-36.97	-55.99	-71.92	2.22	12.17	H
	8028	-60.33	-25	-35.33	-60.16	-70.06	2.11	11.84	H
	13382.5	-43.60	-25	-18.60	-49.07	-53.77	2.53	12.70	H
									H
									H
									H
									H
	5352	-61.14	-25	-36.14	-55.67	-71.09	2.22	12.17	V
	8028	-60.15	-25	-35.15	-59.72	-69.88	2.11	11.84	V
	13382.5	-42.36	-25	-17.36	-47.44	-52.53	2.53	12.70	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 2

LTE Band 2 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3700	-31.68	-13	-18.68	-52.22	-41.99	1.97	12.28	H
	5555	-43.30	-13	-30.30	-66.87	-53.43	2.14	12.28	H
	7410	-47.84	-13	-34.84	-75.92	-55.83	2.17	10.16	H
									H
									H
									H
									H
	3700	-34.50	-13	-21.50	-55.56	-44.81	1.97	12.28	V
	5555	-33.19	-13	-20.19	-57.38	-43.32	2.14	12.28	V
	7410	-47.17	-13	-34.17	-75.21	-55.16	2.17	10.16	V
									V
									V
									V
									V
Middle	3742	-34.07	-13	-21.07	-54.71	-44.33	2.00	12.25	H
	5611	-44.94	-13	-31.94	-68.46	-55.17	2.13	12.36	H
	7480	-47.76	-13	-34.76	-75.73	-55.67	2.13	10.04	H
									H
									H
									H
									H
	3742	-35.08	-13	-22.08	-56.23	-45.34	2.00	12.25	V
	5611	-32.64	-13	-19.64	-56.81	-42.87	2.13	12.36	V
	7480	-47.55	-13	-34.55	-75.4	-55.46	2.13	10.04	V
									V
									V
									V
									V

Highest	3784	-35.31	-13	-22.31	-56.05	-45.52	2.02	12.23	H
	5674	-34.44	-13	-21.44	-58.26	-44.77	2.11	12.44	H
	7571	-48.16	-13	-35.16	-75.62	-56.30	2.11	10.26	H
									H
									H
									H
									H
	3784	-36.19	-13	-23.19	-57.42	-46.40	2.02	12.23	V
	5674	-27.04	-13	-14.04	-51.45	-37.37	2.11	12.44	V
	7571	-48.34	-13	-35.34	-75.79	-56.48	2.11	10.26	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 26

LTE Band 26 / 15MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648	-62.14	-13	-49.14	-75.11	-67.53	1.23	8.76	H
	2472	-58.76	-13	-45.76	-75.59	-65.65	1.44	10.48	H
	3299	-57.15	-13	-44.15	-75.73	-65.09	1.71	11.80	H
									H
									H
									H
									H
	1648	-62.22	-13	-49.22	-75.07	-67.61	1.23	8.76	V
	2472	-58.53	-13	-45.53	-75.65	-65.42	1.44	10.48	V
	3299	-56.71	-13	-43.71	-75.69	-64.65	1.71	11.80	V
									V
									V
									V
									V
Middle	1659	-62.00	-13	-49.00	-75	-67.42	1.23	8.80	H
	2489	-58.61	-13	-45.61	-75.4	-65.51	1.44	10.49	H
	3319	-57.72	-13	-44.72	-76.17	-65.71	1.72	11.86	H
									H
									H
									H
									H
	1659	-61.90	-13	-48.90	-74.78	-67.32	1.23	8.80	V
	2489	-58.39	-13	-45.39	-75.41	-65.29	1.44	10.49	V
	3319	-56.98	-13	-43.98	-75.59	-64.97	1.72	11.86	V
									V
									V
									V
									V

Highest	1672	-61.99	-13	-48.99	-75.01	-67.46	1.24	8.85	H
	2504	-58.94	-13	-45.94	-75.7	-65.85	1.44	10.50	H
	3336	-57.27	-13	-44.27	-75.62	-65.29	1.74	11.91	H
									H
									H
									H
									H
	1672	-61.77	-13	-48.77	-74.68	-67.24	1.24	8.85	V
	2504	-58.73	-13	-45.73	-75.68	-65.64	1.44	10.50	V
	3336	-56.69	-13	-43.69	-75.55	-64.71	1.74	11.91	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.