



FCC RADIO TEST REPORT

FCC ID : PU5-TP00127BLF
Equipment : Notebook Computer
Brand Name : Lenovo
Model Name : TP00127B
Applicant : Wistron Corporation
21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist,
New Taipei City 221, Taiwan
Manufacturer : Lenovo PC HK Limited.
23/F, Lincoln House, Taikoo Place, 979 King's Road,
Quarry Bay, Hong Kong, China
Standard : FCC 47 CFR Part 2, 22(H), 24(E), 27(L)

Equipment: Fibocom L860-GL-16 tested inside of Lenovo Notebook Computer.

The product was received on Nov. 18, 2021 and testing was performed from Jan. 03, 2022 to Jan. 25, 2022. We, Sporton International Inc. Wensan 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 test results in this partial 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

Sporton International Inc. Wensan Laboratory



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History of this test report

Report No.	Version	Description	Issued Date
FG1N1847A	01	Initial issue of report	Mar. 01, 2022



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Pass	-
	§22.913 (a)(5)	Effective Radiated Power (WCDMA Band V)		
	§24.232 (c)	Equivalent Isotropic Radiated Power (WCDMA Band II)		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (WCDMA Band IV)		
-	§24.232 (d)	Peak-to-Average Ratio	-	See Note
-	§2.1049 §22.917 (b) §24.238 (b) §27.53 (g)	Occupied Bandwidth (WCDMA Band V) (WCDMA Band II) (WCDMA Band IV)	-	See Note
-	§2.1051 §22.917 (a) §24.238 (a) §27.53 (g)	Band Edge Measurement (WCDMA Band V) (WCDMA Band II) (WCDMA Band IV)	-	See Note
-	§2.1051 §22.917 (a) §24.238 (a) §27.53 (g)	Conducted Emission (WCDMA Band V) (WCDMA Band II) (WCDMA Band IV)	-	See Note
-	§2.1055 §22.355 §24.235 §27.54	Frequency Stability Temperature & Voltage	-	See Note
4.4	§2.1053 §22.917 (a) §24.238 (a) §27.53 (h)	Field Strength of Spurious Radiation (WCDMA Band V) (WCDMA Band II) (WCDMA Band IV)	Pass	Under limit 27.13 dB at 12958.500 MHz

Note:

- The module (Model: L860-GL-16) makes no difference after verifying output power, this report reuses test data from the module report.
- Conducted power was verified to be consistent with the original modular approval, so the output power level in the original modular grant is referenced in this report for determining ERP/EIRP of this host product.

Declaration of Conformity:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
- The measurement uncertainty please refer to this report "Uncertainty of Evaluation".

Comments and Explanations:

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sheng Kuo

Report Producer: Vivian Hsu

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Notebook Computer
Brand Name	Lenovo
Model Name	TP00127B
FCC ID	PU5-TP00127BLF
EUT supports Radios application	WCDMA/HSPA/LTE/GNSS
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer.
2. Equipment: Fibocom L860-GL-16 tested inside of Lenovo Notebook Computer.

Antenna Information				
Main Antenna	Manufacturer	AWAN	Peak gain(dBi)	WCDMA Band II: 1.66 WCDMA Band IV: 1.92 WCDMA Band V: -1.87
	Part number	025.901S1.0071	Type	PIFA

Remark: The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard	
Tx Frequency	WCDMA: Band V: 826.4 MHz ~ 846.6 MHz Band II: 1852.4 MHz ~ 1907.6 MHz Band IV: 1712.4 MHz ~ 1752.6 MHz
Rx Frequency	WCDMA: Band V: 871.4 MHz ~ 891.6 MHz Band II: 1932.4 MHz ~ 1987.6 MHz Band IV: 2112.4 MHz ~ 2152.6 MHz
Maximum Output Power to Antenna	WCDMA: Band V: 23.32 dBm Band II: 23.52 dBm Band IV: 23.32 dBm
Type of Modulation	WCDMA: BPSK HSPA: QPSK HSPA+: 16QAM DC-HSUPA: 64QAM

1.3 Modification of EUT

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



1.4 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333
Test Site No.	Sporton Site No.
	TH03-HY (TAF Code: 1190)
Test Engineer	HaoEn Zhang
Temperature (°C)	22.1~23.4
Relative Humidity (%)	51.8~55.6
Remark	The Conducted test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010
Test Site No.	Sporton Site No.
	03CH20-HY
Test Engineer	Bill Chang and JC Liang
Temperature (°C)	20~23
Relative Humidity (%)	66~69

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

FCC Designation No.: TW1190 and TW3786

1.5 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(L)
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ 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. 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 were performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in Tablet Type (three orthogonal axis (X: flat, Y: portrait, Z: landscape)) and Notebook Type, and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and find (Y Plane for Cellular Band; Notebook Type for PCS Band and AWS Band as worst plane.

Radiated emissions were investigated as following frequency range:

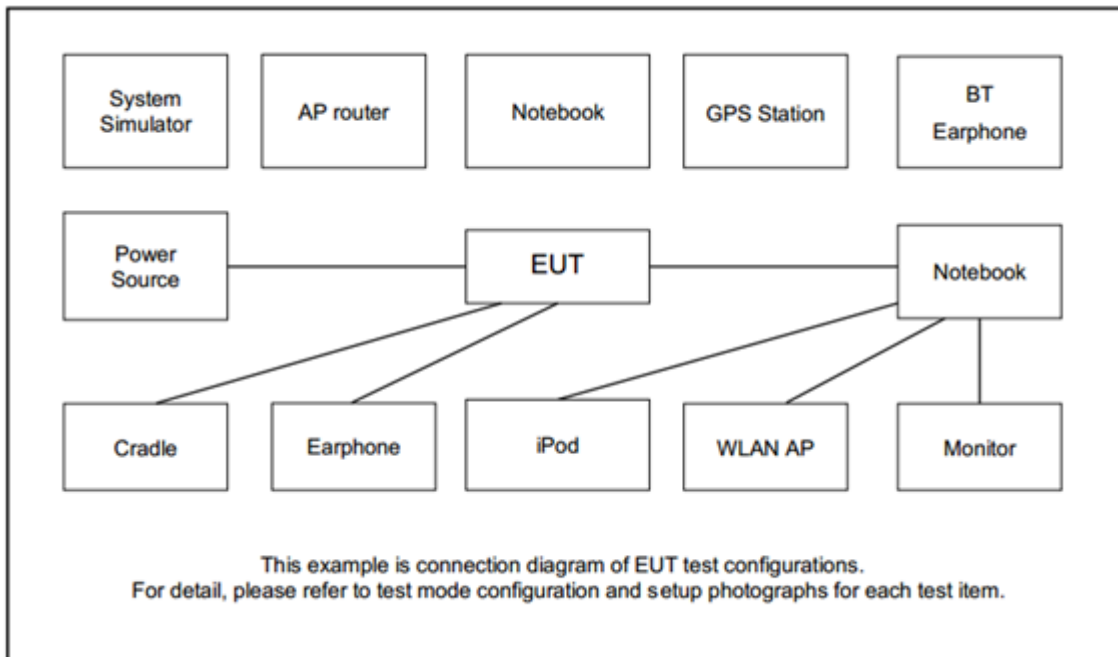
1. 30 MHz to 9000 MHz for WCDMA Band V
2. 30 MHz to 18000 MHz for WCDMA Band IV
3. 30 MHz to 19100 MHz for WCDMA Band II

All modes, data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

Test Modes		
Band	Radiated TCs	Conducted TCs
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band IV	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

2.2 Connection Diagram of Test System





2.3 Support Unit used in test configuration

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
2.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
3.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m

2.4 Frequency List of Low/Middle/High Channels

Frequency List				
Band	Channel/Frequency(MHz)	Lowest	Middle	Highest
WCDMA Band V	Channel	4132	4182	4233
	Frequency	826.4	836.4	846.6
WCDMA Band II	Channel	9262	9400	9538
	Frequency	1852.4	1880.0	1907.6
WCDMA Band IV	Channel	1312	1413	1513
	Frequency	1712.4	1732.6	1752.6

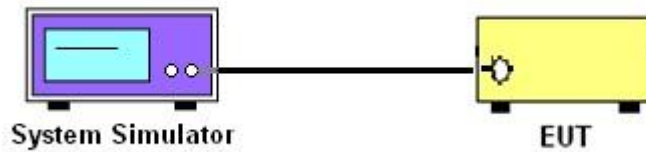
3 Conducted Test Result

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.1.1 Test Setup

3.1.2 Conducted Output Power



3.1.3 Test Result of Conducted Test

Please refer to Appendix A.



3.2 Conducted Output Power and ERP/EIRP

3.2.1 Description of the Conducted Output Power and ERP/EIRP

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for WCDMA Band V

The EIRP of mobile transmitters must not exceed 2 Watts for WCDMA Band II

The EIRP of mobile transmitters must not exceed 1 Watts for WCDMA Band IV

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select the lowest, middle, and the highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.

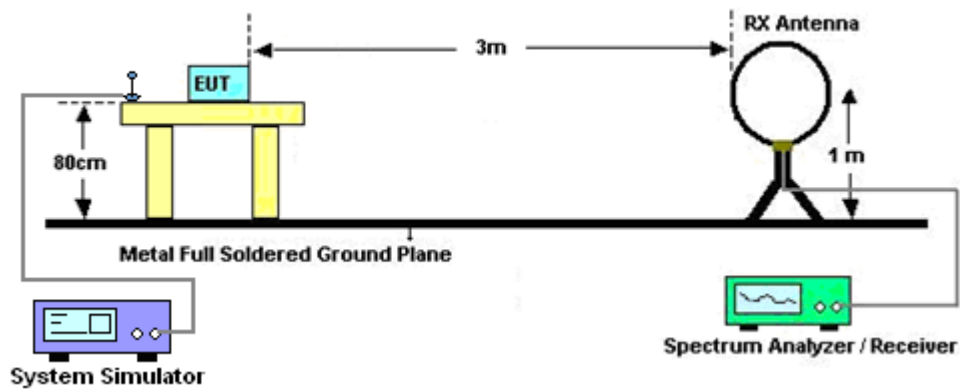
4 Radiated Test Items

4.1 Measuring Instruments

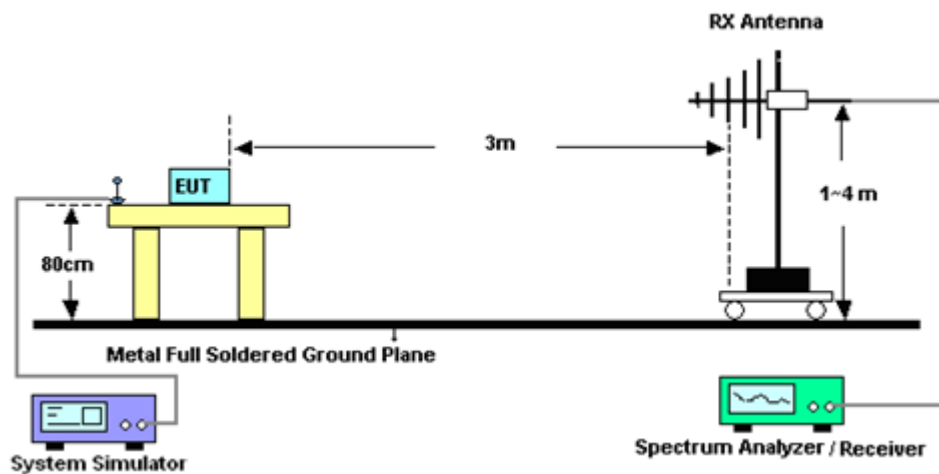
See list of measuring instruments of this test report.

4.2 Test Setup

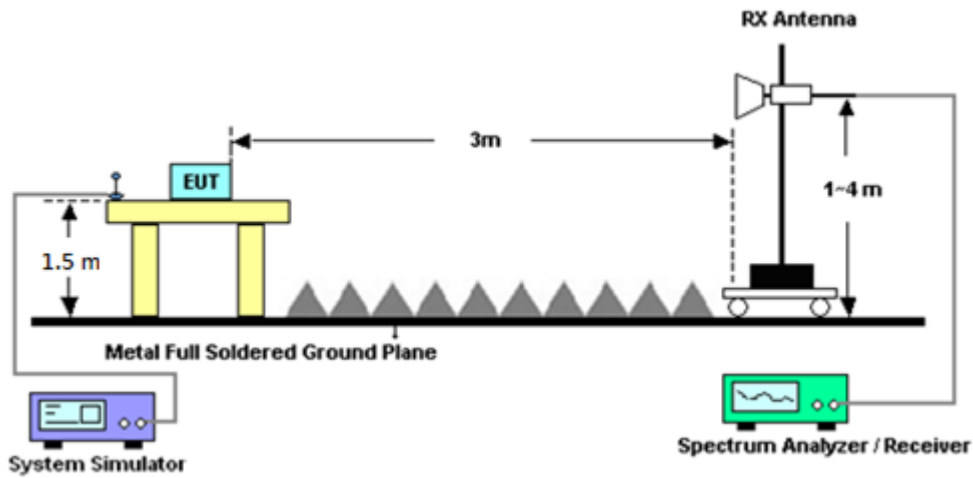
For radiated test below 30MHz



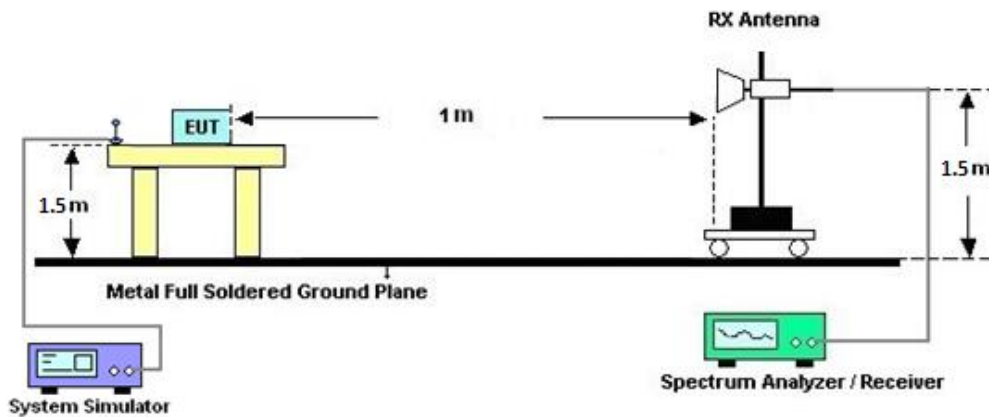
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

Note:

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

There is adequate comparison measurement 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.



4.4 Field Strength of Spurious Radiation Measurement

4.4.1 Description of Field Strength of Spurious Radiated Measurement

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

4.4.2 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 rotatable wooden table 0.8 meters for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz above the 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 for the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1 MHz, VBW = 3 MHz, taking 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. Take the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. $EIRP (dBm) = S.G. Power - Tx Cable Loss + Tx Antenna Gain$
11. $ERP (dBm) = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)



5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9010B	MY60241055	10Hz~44GHz	Jul. 12, 2021	Jan. 08, 2022~ Jan. 25, 2022	Jul. 11, 2022	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Jan. 03, 2022	Jan. 08, 2022~ Jan. 25, 2022	Jan. 02, 2023	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45SE	980792	N/A	Nov. 15, 2021	Jan. 08, 2022~ Jan. 25, 2022	Nov. 14, 2022	Radiation (03CH20-HY)
Preamplifier	E MEC	EM18G40G	060715	18GHz~40GHz	Dec. 24, 2021	Jan. 08, 2022~ Jan. 25, 2022	Dec. 23, 2022	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 07, 2022	Jan. 08, 2022~ Jan. 25, 2022	Jan. 06, 2023	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802N1 D01N-06	55606 & 08	30MHz~1GHz	Oct. 17, 2021	Jan. 08, 2022~ Jan. 25, 2022	Oct. 16, 2022	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802N1 D01N-06	37059 & 01	30MHz~1GHz	Oct. 09, 2021	Jan. 08, 2022~ Jan. 25, 2022	Oct. 08, 2022	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02294	1GHz~18GHz	Jun. 23, 2021	Jan. 08, 2022~ Jan. 25, 2022	Jun. 22, 2022	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	02360	1GHz~18GHz	Nov. 02, 2021	Jan. 08, 2022~ Jan. 25, 2022	Nov. 01, 2022	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00991	18GHz-40GHz	May 12, 2021	Jan. 08, 2022~ Jan. 25, 2022	May 11, 2022	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz-40GHz	Nov. 30, 2021	Jan. 08, 2022~ Jan. 25, 2022	Nov. 29, 2022	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303B	TP200728	N/A	Mar. 09, 2021	Jan. 08, 2022~ Jan. 25, 2022	Mar. 08, 2022	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,804 015/2,804027 /2	N/A	Jan. 20, 2021	Jan. 08, 2022~ Jan. 18, 2022	Jan. 19, 2022	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,804 015/2,804027 /2	N/A	Jan. 19, 2022	Jan. 19, 2022~ Jan. 25, 2022	Jan. 18, 2023	Radiation (03CH20-HY)
Software	Audix	E3 6.2009-8-24	RK-002156	N/A	N/A	Jan. 08, 2022~ Jan. 25, 2022	N/A	Radiation (03CH20-HY)
Antenna Mast	E MEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jan. 08, 2022~ Jan. 25, 2022	N/A	Radiation (03CH20-HY)
Turn Table	E MEC	TT2000	N/A	0~360 Degree	N/A	Jan. 08, 2022~ Jan. 25, 2022	N/A	Radiation (03CH20-HY)
Controller	E MEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Jan. 08, 2022~ Jan. 25, 2022	N/A	Radiation (03CH20-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	Dec. 08, 2021	Jan. 08, 2022~ Jan. 25, 2022	Dec. 07, 2022	Radiation (03CH20-HY)
Radio Communication Analyzer	Anritsu	MT8821C	6201664755	2/3/4G/LTE FDD/TDD with44)/LTE-3C C DLCA/2CC ULCA, CatM1/NB1/NB2	Jul. 21, 2021	Jan. 03, 2022~ Jan. 07, 2022	Jul. 20, 2022	Conducted (TH03-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#B	1-18GHz	Jan. 09, 2021	Jan. 03, 2022~ Jan. 07, 2022	Jan. 08, 2022	Conducted (TH03-HY)



6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.33 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.63 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.43 dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power (Average power) & ERP / EIRP

WCDMA Band V Maximum Average Power [dBm] (GT - LC = -1.87 dB)					
Channel	4132	4182	4233	ERP (dBm)	ERP (W)
Frequency	826.4	836.4	846.6		
RMC 12.2K	23.11	23.32	23.25	19.30	0.0851
Limit	ERP < 7W			Result	Pass

WCDMA Band II Maximum Average Power [dBm] (GT - LC = 1.66 dB)					
Channel	9262	9400	9538	EIRP (dBm)	EIRP (W)
Frequency	1852.4	1880	1907.6		
RMC 12.2K	23.09	23.36	23.52	25.18	0.3296
Limit	EIRP < 2W			Result	Pass

WCDMA Band IV Maximum Average Power [dBm] (GT - LC = 1.92 dB)					
Channel	1312	1413	1513	EIRP (dBm)	EIRP (W)
Frequency	1712.4	1732.6	1752.6		
RMC 12.2K	23.32	23.06	23.13	25.24	0.3342
Limit	EIRP < 1W			Result	Pass



Appendix B. Test Results of Radiated Test

WCDMA 850

WCDMA 850									
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	1656	-57.65	-13	-44.65	-67.51	-60.10	4.93	9.54	H
	2480	-48.67	-13	-35.67	-61.6	-50.94	6.08	10.50	H
	3312	-62.10	-13	-49.10	-78.65	-64.03	7.05	11.12	H
									H
									H
									H
	1656	-57.21	-13	-44.21	-66.85	-59.66	4.93	9.54	V
	2480	-46.47	-13	-33.47	-59.34	-48.74	6.08	10.50	V
	3312	-62.56	-13	-49.56	-78.86	-64.49	7.05	11.12	V
									V
									V
									V
Middle	1672	-60.39	-13	-47.39	-70.25	-62.91	4.96	9.63	H
	2512	-50.04	-13	-37.04	-63.11	-52.27	6.12	10.50	H
	3344	-62.47	-13	-49.47	-78.97	-64.43	7.08	11.19	H
									H
									H
									H
	1672	-58.02	-13	-45.02	-67.66	-60.54	4.96	9.63	V
	2512	-48.03	-13	-35.03	-61	-50.26	6.12	10.50	V
	3344	-62.86	-13	-49.86	-79.11	-64.82	7.08	11.19	V
									V
									V
									V



Highest	1688	-57.66	-13	-44.66	-67.53	-60.26	4.98	9.73	H
	2536	-48.89	-13	-35.89	-62.13	-51.09	6.15	10.50	H
	3381	-62.52	-13	-49.52	-78.95	-64.51	7.12	11.26	H
									H
									H
									H
	1688	-59.10	-13	-46.10	-68.76	-61.70	4.98	9.73	V
	2536	-47.46	-13	-34.46	-60.57	-49.66	6.15	10.50	V
	3381	-62.70	-13	-49.70	-78.88	-64.69	7.12	11.26	V
									V
									V
									V

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



WCDMA 1700

WCDMA 1700									
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	3426	-59.10	-13	-46.10	-76.37	-63.44	7.17	11.51	H
	5136	-54.69	-13	-41.69	-76.48	-57.48	8.83	11.62	H
	10281	-52.38	-13	-39.38	-81.05	-51.37	12.67	11.66	H
	11995	-51.81	-13	-38.81	-81.23	-50.95	13.76	12.90	H
									H
									H
									H
	3426	-59.70	-13	-46.70	-76.79	-64.04	7.17	11.51	V
	5136	-51.55	-13	-38.55	-73.28	-54.34	8.83	11.62	V
	10281	-51.17	-13	-38.17	-79.02	-50.16	12.67	11.66	V
	11995	-50.25	-13	-37.25	-79.15	-49.39	13.76	12.90	V
									V
									V
									V
Middle	3462	-59.43	-13	-46.43	-76.73	-63.97	7.21	11.75	H
	5202	-53.52	-13	-40.52	-75.39	-56.54	8.88	11.90	H
	6930	-56.61	-13	-43.61	-81.97	-57.75	10.32	11.46	H
									H
									H
									H
	3462	-59.50	-13	-46.50	-76.72	-64.04	7.21	11.75	V
	5202	-49.45	-13	-36.45	-71.25	-52.47	8.88	11.90	V
	6930	-52.30	-13	-39.30	-78.43	-53.44	10.32	11.46	V
									V
									V



Highest	3504	-61.74	-13	-48.74	-79.07	-66.39	7.25	11.90	H
	5256	-57.02	-13	-44.02	-78.97	-60.09	8.93	12.00	H
	7008	-56.27	-13	-43.27	-81.74	-57.25	10.39	11.37	H
									H
									H
									H
	3504	-59.74	-13	-46.74	-77.07	-64.39	7.25	11.90	V
	5256	-54.08	-13	-41.08	-75.92	-57.15	8.93	12.00	V
	7008	-55.07	-13	-42.07	-81.27	-56.05	10.39	11.37	V
									V
									V
									V

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



WCDMA 1900

WCDMA 1900									
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	3708	-54.71	-13	-41.71	-73.07	-59.09	7.50	11.88	H
	5562	-50.01	-13	-37.01	-72.46	-53.29	9.20	12.48	H
	7404	-52.37	-13	-39.37	-78.76	-52.91	10.68	11.22	H
	12958.5	-48.39	-13	-35.39	-79.07	-47.06	14.23	12.90	H
	14827.5	-49.20	-13	-36.20	-79.66	-47.91	15.32	14.04	H
									H
									H
	3708	-55.76	-13	-42.76	-73.07	-60.14	7.50	11.88	V
	5562	-41.59	-13	-28.59	-72.46	-44.87	9.20	12.48	V
	7404	-44.45	-13	-31.45	-78.76	-44.99	10.68	11.22	V
	12958.5	-40.13	-13	-27.13	-79.07	-38.80	14.23	12.90	V
	14827.5	-42.95	-13	-29.95	-79.66	-41.66	15.32	14.04	V
									V
									V
Middle	3756	-56.48	-13	-43.48	-75.08	-60.69	7.56	11.78	H
	5634	-51.95	-13	-38.95	-74.63	-54.95	9.26	12.26	H
	7518	-53.68	-13	-40.68	-80.05	-54.49	10.76	11.57	H
									H
									H
	3756	-54.10	-13	-41.10	-72.38	-58.31	7.56	11.78	V
	5634	-42.68	-13	-29.68	-65.38	-45.68	9.26	12.26	V
	7518	-49.05	-13	-36.05	-75.64	-49.86	10.76	11.57	V
									V
									V



Highest	3816	-55.02	-13	-42.02	-73.91	-58.92	7.64	11.54	H
	5724	-52.63	-13	-39.63	-75.65	-55.19	9.35	11.90	H
	7626	-51.49	-13	-38.49	-78.04	-52.29	10.84	11.65	H
	13357.5	-50.50	-13	-37.50	-81.59	-48.99	14.46	12.94	H
									H
									H
	3816	-49.72	-13	-36.72	-68.35	-53.62	7.64	11.54	V
	5724	-46.17	-13	-33.17	-69.38	-48.73	9.35	11.90	V
	7626	-46.49	-13	-33.49	-73.32	-47.29	10.84	11.65	V
	13357.5	-45.34	-13	-32.34	-76.08	-43.83	14.46	12.94	V
									V
									V

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