



# FCC RADIO TEST REPORT

**FCC ID** : PU5-TP00132B  
**Equipment** : Notebook Computer  
**Brand Name** : Lenovo  
**Model Name** : TP00132B  
**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 FM350-GL tested inside of Lenovo Notebook Computer.

The product was received on Jan. 28, 2022 and testing was performed from Feb. 25, 2022 to Mar. 24, 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.

*Louis Wu*

Approved by: Louis Wu

**Sporton International Inc. Wensan Laboratory**



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### History of this test report

Report No.	Version	Description	Issued Date
FG1N2210A	01	Initial issue of report	Mar. 31, 2022
FG1N2210A	02	Revise Product Feature of Equipment Under Test	Apr. 13, 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 26.70 dB at 1696.000 MHz

**Note:**

1. The certified module (model: FM350-GL) which supports normal mode and TX switching mode being integrated into a notebook computer. Spot check on both modes were performed and no degradation occur. Thus the module test results were leveraged in this report and additionally reporting the spot check results in this report.
2. In normal mode, 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, and verified the TX switching mode of Radiated Spurious Emission and Conducted power.



<b>Declaration of Conformity:</b>
1. 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.
2. The measurement uncertainty please refer to this report "Uncertainty of Evaluation".
<b>Comments and Explanations:</b>
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: Lucy Wu**



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Notebook Computer
Brand Name	Lenovo
Model Name	TP00132B
FCC ID	PU5-TP00132B
Sample 1	EUT with AVX/ Ethertronics Antenna
Sample 2	EUT with LUXSHARE-ICT Antenna
EUT supports Radios application	WCDMA/HSPA/LTE/5G NR/GNSS
EUT Stage	Production Unit

**Remark:**

1. The above EUT's information was declared by manufacturer.
2. Equipment: Fibocom FM350-GL tested inside of Lenovo Notebook Computer.

	Normal mode	TX switching mode
	TX/RX	TX/RX
Ant_0 (Main)	WCDMA : 2/4/5 LTE : 2/4/5/7/12/13/14/17/25/26/30/38/66/71 NR : 2/5/7/25/30/38/66/71	WCDMA : 5 LTE : 5/12/13/14/17/26/41/48/71 NR : 5/41/71/77/78
Ant_2 (MIMO2)	LTE : 41/48 NR : 41/77/78	WCDMA : 2/4 LTE : 2/4/7/25/30/38/66 NR : 2/7/25/30/38/66

WWAN Antenna Information				
Main Antenna	Manufacturer	AVX/ Ethertronics	Peak gain (dBi)	WCDMA Band II: 1.92 WCDMA Band IV: 1.56 WCDMA Band V: 0.33
	Part number	SA31F29287AA	Type	PIFA
	Manufacturer	LUXSHARE-ICT	Peak gain (dBi)	WCDMA Band II: 0.20 WCDMA Band IV: 1.10 WCDMA Band V: -3.00
	Part number	SA31F29290AA	Type	PIFA
MIMO 2 Antenna	Manufacturer	AVX/ Ethertronics	Peak gain (dBi)	WCDMA Band II: 1.86 WCDMA Band IV: 1.57
	Part number	SA31F29288AA	Type	PIFA
	Manufacturer	LUXSHARE-ICT	Peak gain (dBi)	WCDMA Band II: 1.50 WCDMA Band IV: 1.90
	Part number	SA31F29291AA	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	
<b>Tx Frequency</b>	<b>WCDMA:</b> Band V: 826.4 MHz ~ 846.6 MHz Band II: 1852.4 MHz ~ 1907.6 MHz Band IV: 1712.4 MHz ~ 1752.6 MHz
<b>Rx Frequency</b>	<b>WCDMA:</b> Band V: 871.4 MHz ~ 891.6 MHz Band II: 1932.4 MHz ~ 1987.6 MHz Band IV: 2112.4 MHz ~ 2152.6 MHz
<b>Maximum Output Power to Antenna</b>	<b>&lt;Main Antenna&gt;</b> <b>WCDMA:</b> Band V: 23.60 dBm Band II: 23.46 dBm Band IV: 23.45 dBm <b>&lt;MIMO2 Antenna&gt;</b> <b>WCDMA:</b> Band II: 23.34 dBm Band IV: 23.68 dBm
<b>Type of Modulation</b>	WCDMA: BPSK (Uplink) HSDPA: 64QAM (Downlink) HSUPA: QPSK (Uplink)



### 1.3 Modification of EUT

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

### 1.4 Testing Location

<b>Test Site</b>	Sporton International Inc. EMC & Wireless Communications Laboratory
<b>Test Site Location</b>	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333
<b>Test Site No.</b>	<b>Sporton Site No.</b>
	TH03-HY (TAF Code: 1190)
<b>Test Engineer</b>	Nina Cheng
<b>Temperature (°C)</b>	22~25°C
<b>Relative Humidity (%)</b>	52~54%
<b>Remark</b>	The Conducted test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

<b>Test Site</b>	Sporton International Inc. Wensan Laboratory
<b>Test Site Location</b>	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010
<b>Test Site No.</b>	<b>Sporton Site No.</b>
	03CH12-HY
<b>Test Engineer</b>	Jack Cheng, Lance Chiang and Chuan Chu
<b>Temperature (°C)</b>	21.6~26.2
<b>Relative Humidity (%)</b>	56~68

**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.

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

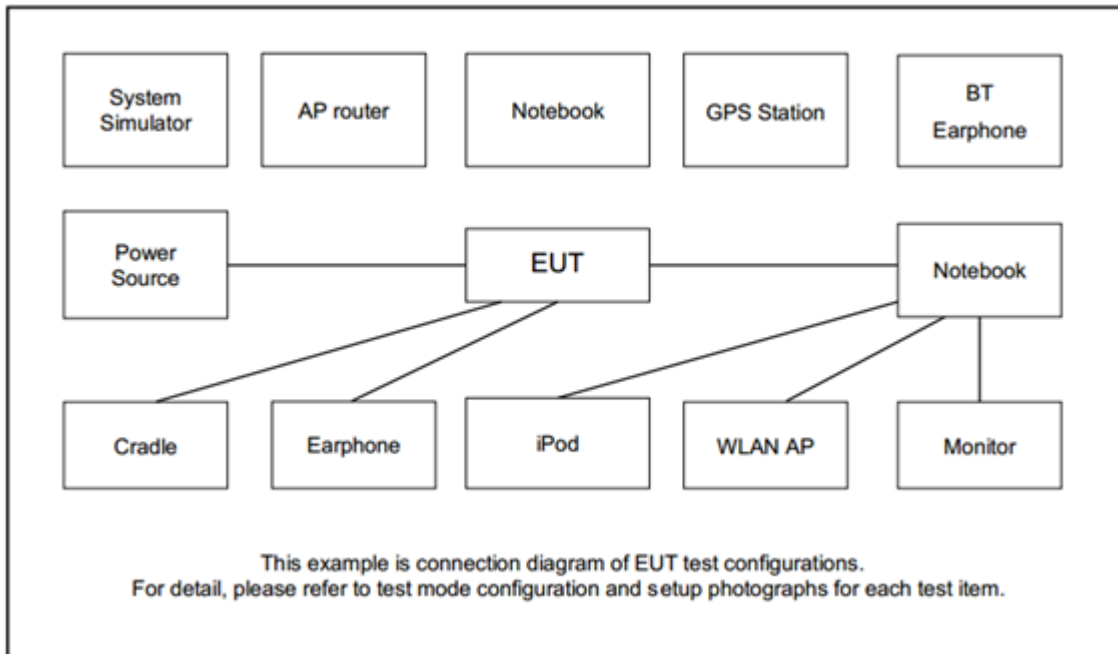
All modes, data rates and positions were investigated.

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

Remark: All the radiated test cases were performed with Adapter (ADL170SDC3A).

### 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.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
2.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

## 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

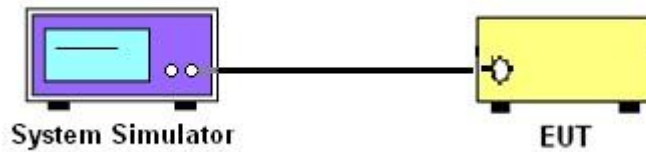
### 3 Conducted Test Result

#### 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.

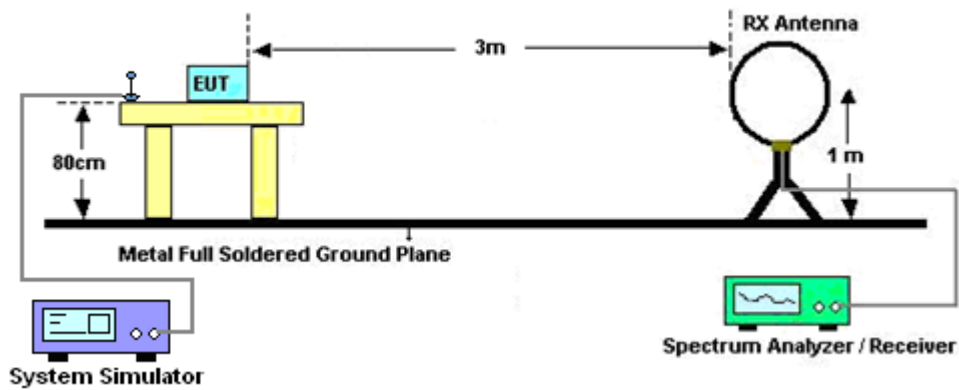
## 4 Radiated Test Items

### 4.1 Measuring Instruments

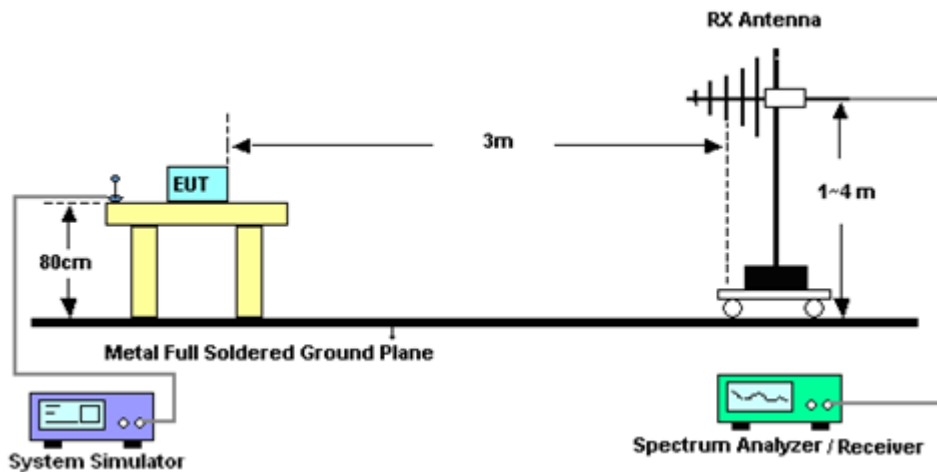
See list of measuring instruments of this test report.

### 4.2 Test Setup

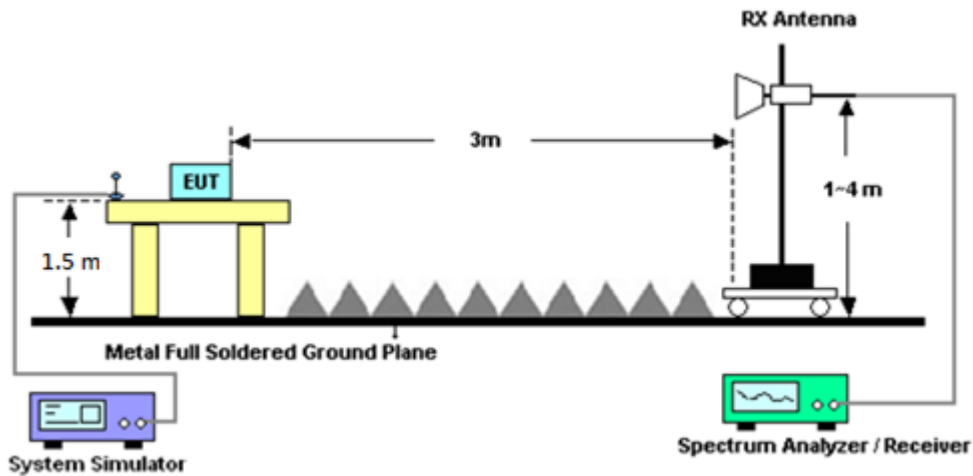
For radiated test below 30MHz



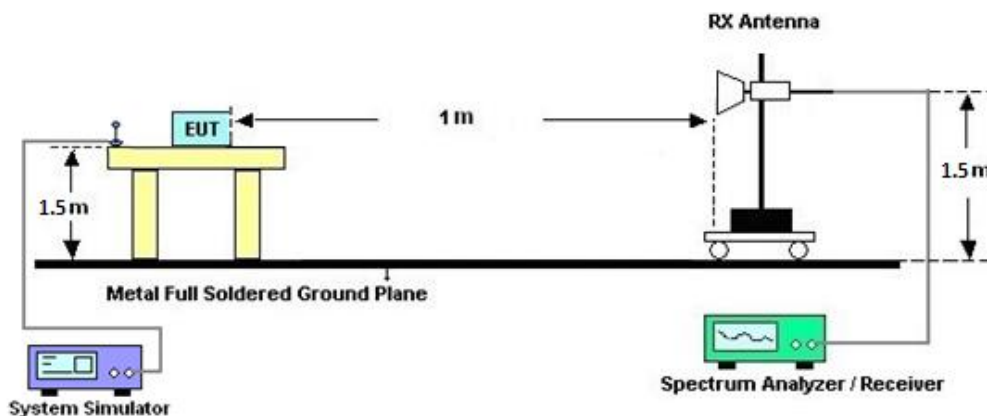
For radiated test from 30MHz to 1GHz



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
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 07, 2021	Mar. 05, 2022~ Mar. 23, 2022	Sep. 06, 2022	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	37059 & 01	30MHz~1GHz	Oct. 09, 2021	Mar. 05, 2022~ Mar. 23, 2022	Oct. 08, 2022	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 09, 2021	Mar. 05, 2022~ Mar. 23, 2022	Oct. 08, 2022	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1328	1GHz~18GHz	Dec. 03, 2021	Mar. 05, 2022~ Mar. 23, 2022	Dec. 02, 2022	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1212	1GHz~18GHz	May 18, 2021	Mar. 05, 2022~ Mar. 23, 2022	May 17, 2022	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917025 1	18GHz~40GHz	Nov. 30, 2021	Mar. 05, 2022~ Mar. 23, 2022	Nov. 29, 2022	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917057 6	18GHz~40GHz	May 21, 2021	Mar. 05, 2022~ Mar. 23, 2022	May 20, 2022	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 24, 2021	Mar. 05, 2022~ Mar. 22, 2022	Mar. 23, 2022	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 23, 2022	Mar. 23, 2022	Mar. 22, 2023	Radiation (03CH12-HY)
Preamplifier	Aglient	8449B	3008A02375	1GHz~26.5GHz	May 25, 2021	Mar. 05, 2022~ Mar. 23, 2022	May 24, 2022	Radiation (03CH12-HY)
Preamplifier	E-INSTRUME NT TECH LTD.	ERA-100M-18 G-56-01-A70	EC1900270	1GHz-18GHz	Dec. 27, 2021	Mar. 05, 2022~ Mar. 23, 2022	Dec. 26, 2022	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 24, 2021	Mar. 05, 2022~ Mar. 23, 2022	Dec. 23, 2022	Radiation (03CH12-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 15, 2021	Mar. 05, 2022~ Mar. 23, 2022	Oct. 14, 2022	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 11, 2021	Mar. 05, 2022~ Mar. 09, 2022	Mar. 10, 2022	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 10, 2022	Mar. 10, 2022~ Mar. 23, 2022	Mar. 09, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 10, 2021	Mar. 05, 2022~ Mar. 23, 2022	Dec. 09, 2022	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 21, 2022	Mar. 05, 2022~ Mar. 23, 2022	Feb. 20, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz~40GHz	Feb. 21, 2022	Mar. 05, 2022~ Mar. 07, 2022	Feb. 20, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803953/2	30MHz~40GHz	Mar. 08, 2022	Mar. 08, 2022~ Mar. 23, 2022	Mar. 07, 2023	Radiation (03CH12-HY)
Filter	Wainwright	WLKS1200-12 SS	SN2	1.2GHz Low Pass Filter	Mar. 17, 2021	Mar. 05, 2022~ Mar. 15, 2022	Mar. 16, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WLKS1200-12 SS	SN2	1.2GHz Low Pass Filter	Mar. 16, 2022	Mar. 16, 2022~ Mar. 23, 2022	Mar. 15, 2023	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-1080 -1200-15000-6 0SS	SN1	1.2GHz High Pass Filter	Mar. 17, 2021	Mar. 05, 2022~ Mar. 15, 2022	Mar. 16, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-1080 -1200-15000-6 0SS	SN1	1.2GHz High Pass Filter	Mar. 16, 2022	Mar. 16, 2022~ Mar. 23, 2022	Mar. 15, 2023	Radiation (03CH12-HY)





Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN2	3GHz High Pass Filter	Jul. 12, 2021	Mar. 05, 2022~Mar. 23, 2022	Jul. 11, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN2	6.75GHz High Pass Filter	Mar. 17, 2021	Mar. 05, 2022~Mar. 15, 2022	Mar. 16, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN2	6.75GHz High Pass Filter	Mar. 16, 2022	Mar. 16, 2022~Mar. 23, 2022	Mar. 15, 2023	Radiation (03CH12-HY)
Hygrometer	TECEPEL	DTM-303B	TP140349	N/A	Sep. 30, 2021	Mar. 05, 2022~Mar. 23, 2022	Sep. 29, 2022	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Mar. 05, 2022~Mar. 23, 2022	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Mar. 05, 2022~Mar. 23, 2022	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Mar. 05, 2022~Mar. 23, 2022	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Mar. 05, 2022~Mar. 23, 2022	N/A	Radiation (03CH12-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	Feb. 25, 2022~Mar. 24, 2022	Jul. 20, 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% ( $U = 2Uc(y)$ )	3.10 dB
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### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.39 dB
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### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.34 dB
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## Appendix A. Test Results of Conducted Test

### Conducted Output Power(Average power & ERP/EIRP)

#### <Main Antenna>

WCDMA Band V Maximum Average Power [dBm] (GT - LC = 0.33 dB)					
Channel	4132	4182	4233	ERP (dBm)	ERP (W)
Frequency	826.4	836.4	846.6		
RMC 12.2K	23.55	23.50	23.60	21.78	0.1507
Limit	ERP < 7W			Result	Pass

WCDMA Band II Maximum Average Power [dBm] (GT - LC = 1.92 dB)					
Channel	9262	9400	9538	EIRP (dBm)	EIRP (W)
Frequency	1852.4	1880	1907.6		
RMC 12.2K	23.46	23.40	23.19	25.38	0.3451
Limit	EIRP < 2W			Result	Pass

WCDMA Band IV Maximum Average Power [dBm] (GT - LC = 1.56 dB)					
Channel	1312	1413	1513	EIRP (dBm)	EIRP (W)
Frequency	1712.4	1732.6	1752.6		
RMC 12.2K	23.41	23.44	23.45	25.01	0.3170
Limit	EIRP < 1W			Result	Pass



<MIMO 2 Antenna>

WCDMA Band II Maximum Average Power [dBm] (GT - LC = 1.86 dB)					
Channel	9262	9400	9538	EIRP (dBm)	EIRP (W)
Frequency	1852.4	1880	1907.6		
RMC 12.2K	23.23	23.34	23.31	25.20	0.3311
Limit	EIRP < 2W			Result	Pass

WCDMA Band IV Maximum Average Power [dBm] (GT - LC = 1.9 dB)					
Channel	1312	1413	1513	EIRP (dBm)	EIRP (W)
Frequency	1712.4	1732.6	1752.6		
RMC 12.2K	23.56	23.68	23.65	25.58	0.3614
Limit	EIRP < 1W			Result	Pass



### Appendix B. Test Results of Radiated Test

<Sample 1>

<Main Antenna>

### 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	-44.73	-13	-31.73	-56.35	-51.17	0.81	9.40	H
	2479	-55.92	-13	-42.92	-70.58	-63.08	1.09	10.40	H
	3305	-53.40	-13	-40.40	-71.09	-62.22	1.10	12.08	H
									H
									H
									H
	1656	-47.12	-13	-34.12	-58.67	-53.56	0.81	9.40	V
	2479	-54.19	-13	-41.19	-68.9	-61.35	1.09	10.40	V
	3305	-53.34	-13	-40.34	-71.33	-62.16	1.10	12.08	V
									V
									V
									V
Middle	1672	-44.25	-13	-31.25	-55.9	-50.74	0.81	9.45	H
	2509	-55.72	-13	-42.72	-70.45	-63.01	1.11	10.55	H
	3345	-53.04	-13	-40.04	-70.76	-62.08	1.10	12.30	H
									H
									H
									H
	1672	-46.34	-13	-33.34	-57.95	-52.83	0.81	9.45	V
	2509	-53.77	-13	-40.77	-68.56	-61.06	1.11	10.55	V
	3345	-52.76	-13	-39.76	-70.79	-61.80	1.10	12.30	V
									V
									V
									V



Highest	1696	-39.70	-13	-26.70	-51.38	-46.27	0.81	9.54	H
	2539	-55.19	-13	-42.19	-70.17	-62.64	1.09	10.70	H
	3386	-53.54	-13	-40.54	-71.27	-62.81	1.10	12.52	H
									H
									H
									H
	1696	-42.11	-13	-29.11	-53.79	-48.68	0.81	9.54	V
	2539	-54.57	-13	-41.57	-69.63	-62.02	1.09	10.70	V
	3386	-52.89	-13	-39.89	-70.95	-62.16	1.10	12.52	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	3700	-51.63	-13	-38.63	-71.09	-62.50	1.23	12.10	H
	5550	-47.61	-13	-34.61	71.8	-59.18	1.58	13.15	H
	7400	-41.47	-13	-28.47	-71.87	-50.93	1.94	11.40	H
									H
									H
									H
	3700	-51.37	-13	-38.37	-71.09	-62.24	1.23	12.10	V
	5550	-45.16	-13	-32.16	-72.04	-56.73	1.58	13.15	V
	7400	-41.64	-13	-28.64	-72.14	-51.10	1.94	11.40	V
									V
									V
									V
Middle	3760	-51.62	-13	-38.62	-71.05	-62.62	1.16	12.16	H
	5640	-47.44	-13	-34.44	-71.62	-59.20	1.48	13.24	H
	7520	-42.03	-13	-29.03	-72.14	-51.40	1.91	11.28	H
									H
									H
									H
	3760	-51.05	-13	-38.05	-70.78	-62.05	1.16	12.16	V
	5640	-44.54	-13	-31.54	-71.46	-56.30	1.48	13.24	V
	7520	-41.66	-13	-28.66	-71.9	-51.03	1.91	11.28	V
									V
									V
									V



Highest	3819	-51.52	-13	-38.52	-71.05	-62.60	1.16	12.24	H
	5729	-47.57	-13	-34.57	-71.85	-59.51	1.38	13.33	H
	7639	-41.92	-13	-28.92	-72	-51.65	1.89	11.62	H
									H
									H
									H
	3819	-51.04	-13	-38.04	-70.88	-62.12	1.16	12.24	V
	5729	-44.48	-13	-31.48	-71.2	-56.42	1.38	13.33	V
	7639	-41.29	-13	-28.29	-71.57	-51.02	1.89	11.62	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	3424	-52.38	-13	-39.38	-71.19	-63.79	1.14	12.55	H
	5137	-48.34	-13	-35.34	-71.24	-59.71	1.30	12.67	H
	6849	-43.77	-13	-30.77	-72.12	-54.33	1.85	12.40	H
									H
									H
									H
	3424	-52.58	-13	-39.58	-71.52	-63.99	1.14	12.55	V
	5137	-47.73	-13	-34.73	-71.46	-59.10	1.30	12.67	V
	6849	-43.20	-13	-30.20	-72.28	-53.76	1.85	12.40	V
									V
									V
									V
Middle	3465	-52.32	-13	-39.32	-71.73	-63.58	1.21	12.47	H
	5197	-49.04	-13	-36.04	-72.06	-60.46	1.28	12.70	H
	6930	-43.55	-13	-30.55	-72.02	-53.79	1.84	12.08	H
									H
									H
									H
	3465	-52.15	-13	-39.15	-71.35	-63.41	1.21	12.47	V
	5197	-47.68	-13	-34.68	-71.69	-59.10	1.28	12.70	V
	6930	-42.62	-13	-29.62	-71.48	-52.86	1.84	12.08	V
									V
									V
									V



Highest	3505	-51.47	-13	-38.47	-71.37	-62.58	1.27	12.38	H
	5257	-48.39	-13	-35.39	-71.87	-59.86	1.40	12.87	H
	7010	-43.33	-13	-30.33	-71.96	-53.27	1.84	11.78	H
									H
									H
									H
	3505	-52.29	-13	-39.29	-71.72	-63.40	1.27	12.38	V
	5257	-47.46	-13	-34.46	-72.13	-58.93	1.40	12.87	V
	7010	-43.15	-13	-30.15	-71.88	-53.09	1.84	11.78	V
									V
									V
									V

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



<MIMO 2 Antenna>

**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	3700	-51.40	-13	-38.40	-70.86	-62.27	1.23	12.10	H
	5550	-47.83	-13	-34.83	-72.02	-59.40	1.58	13.15	H
	7400	-41.49	-13	-28.49	-71.89	-50.95	1.94	11.40	H
									H
									H
									H
	3700	-50.99	-13	-37.99	-70.71	-61.86	1.23	12.10	V
	5550	-44.99	-13	-31.99	-71.87	-56.56	1.58	13.15	V
	7400	-41.71	-13	-28.71	-72.21	-51.17	1.94	11.40	V
									V
									V
									V
Middle	3760	-51.77	-13	-38.77	-71.2	-62.77	1.16	12.16	H
	5640	-47.35	-13	-34.35	-71.53	-59.11	1.48	13.24	H
	7520	-41.98	-13	-28.98	-72.09	-51.35	1.91	11.28	H
									H
									H
									H
	3760	-51.07	-13	-38.07	-70.8	-62.07	1.16	12.16	V
	5640	-44.37	-13	-31.37	-71.29	-56.13	1.48	13.24	V
	7520	-41.86	-13	-28.86	-72.1	-51.23	1.91	11.28	V
									V
									V
									V



Highest	3819	-51.60	-13	-38.60	-71.13	-62.68	1.16	12.24	H
	5729	-47.56	-13	-34.56	-71.84	-59.50	1.38	13.33	H
	7639	-42.09	-13	-29.09	-72.17	-51.82	1.89	11.62	H
									H
									H
									H
	3819	-51.20	-13	-38.20	-71.04	-62.28	1.16	12.24	V
	5729	-45.14	-13	-32.14	-71.86	-57.08	1.38	13.33	V
	7639	-41.46	-13	-28.46	-71.75	-51.19	1.89	11.62	V
									V
									V
									V

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



<Sample 2>

<MIMO 2 Antenna>

**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	3424	-52.23	-13	-39.23	-71.04	-63.64	1.14	12.55	H
	5137	-48.84	-13	-35.84	-71.74	-60.21	1.30	12.67	H
	6849	-43.87	-13	-30.87	-72.22	-54.43	1.85	12.40	H
									H
									H
									H
	3424	-52.44	-13	-39.44	-71.38	-63.85	1.14	12.55	V
	5137	-48.07	-13	-35.07	-71.8	-59.44	1.30	12.67	V
	6849	-43.21	-13	-30.21	-72.29	-53.77	1.85	12.40	V
									V
									V
									V
Middle	3465	-51.93	-13	-38.93	-71.34	-63.19	1.21	12.47	H
	5197	-48.55	-13	-35.55	-71.57	-59.97	1.28	12.70	H
	6930	-43.69	-13	-30.69	-72.16	-53.93	1.84	12.08	H
									H
									H
									H
	3465	-51.74	-13	-38.74	-70.94	-63.00	1.21	12.47	V
	5197	-47.73	-13	-34.73	-71.74	-59.15	1.28	12.70	V
	6930	-43.12	-13	-30.12	-71.98	-53.36	1.84	12.08	V
									V
									V
									V



Highest	3505	-51.69	-13	-38.69	-71.59	-62.80	1.27	12.38	H
	5257	-48.49	-13	-35.49	-71.97	-59.96	1.40	12.87	H
	7010	-43.19	-13	-30.19	-71.82	-53.13	1.84	11.78	H
									H
									H
									H
	3505	-51.75	-13	-38.75	-71.18	-62.86	1.27	12.38	V
	5257	-47.34	-13	-34.34	-72.01	-58.81	1.40	12.87	V
	7010	-43.20	-13	-30.20	-71.93	-53.14	1.84	11.78	V
									V
									V
									V

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