RF TEST REPORT

Applicant	ID TECH
FCC ID	WQJ-AP6800L
Product	AP6800
Brand	ID TECH
Model	AP6800-0318; AP6800-0318D
Report No.	R2405A0524-R1V1
Issue Date	September 2, 2024

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2023)/ FCC CFR 47 Part 24E (2023)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Xu Ying *Approved by: Xu Kai*

Eurofins TA Technology (Shanghai) Co., Ltd.

Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
TEL: +86-021-50791141/2/3
FAX: +86-021-50791141/2/3-8000

TABLE OF CONTENT

Version	Revision Description	Issue Date
Rev.0	Initial issue of report.	August 21, 2024
Rev.1	Update description.	September 2, 2024
Note: This revised report (Report No.: R2405A0524-R1V1) supersedes and replaces the previously issued report (Report No.: R2405A0524-R1). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of measurement results

No.	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective Isotropic Radiated Power	2.1046 24.232(c)	PASS
2	Radiated Spurious Emission	2.1053 / 24.238(a)	PASS
Date of Testing: May 2, 2024 ~ July 2, 2024 Date of Sample Received: May 17, 2024			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard. All indications of Pass/Fail in this report are opinions expressed by Eurofins TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

This report is only test Radiated Spurious Emission, and because of the change of antenna gain, Effective Isotropic Radiated Power also re-evaluated. Other test items refer to the module report (FCC ID: XMR202008EC25AFXD, Grant date: 08/14/2020; Report No.: R2007A0434-R2).

1. Test Laboratory

1.1. Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **Eurofins TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test Facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 3857.01)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3. Testing Location

Company:	Eurofins TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	https://www.eurofins.com/electrical-and-electronics
E-mail:	Kain.Xu@cpt.eurofinscn.com

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	ID TECH
Applicant address	10721 Walker Street, Cypress, California 90630, United States
Manufacturer	ID TECH TAIWAN
Manufacturer address	No. 16, Lane 22, GaoQing Rd., YanMei Dist., TaoYuan City 326, Taiwan

2.2. General information

EUT Description			
Model	AP6800-0318; AP6800-0318D		
SN	416T278398		
Hardware Version	Rev.A		
Software Version	v1.00		
Power Supply	AC adapter		
Antenna Type	External Antenna		
Antenna Gain	0.9 dBi		
Test Mode(s)	LTE Band 2		
Test Modulation	QPSK, 16QAM;		
Maximum E.I.R.P	LTE Band 2	24.75 dBm	
Rated Power Supply Voltage	9V		
Operating Voltage	Minimum: 7.65V Maximum: 10.35V		
Operating Temperature	Lowest: -30°C Highest: +70°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	LTE Band 2	1850 ~ 1910	1930 ~ 1990
Auxiliary Test Equipment			
Adapter	Manufacturer: LITEON Model: PA-1450-50 5.0V/15.0W, 20.0V/45W Input: 100-240V~1.3A 50/60Hz Output: 5.0V⎓ 3.0A; 9.0V⎓ 3.0A; 12.0V⎓ 3.0A; 15.0V⎓ 3.0A; 20.0V⎓ 2.25A		
Note: 1. The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant. 2. AP6800-0318 and AP6800-0318D are the same except for different models, and this report only tests AP6800-0318D.			

3. Applied Standards

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

Test standards:
FCC CFR 47 Part 24E (2023)

FCC CFR47 Part 2 (2023)

Reference standard:
ANSI C63.26-2015

KDB 971168 D01 Power Meas License Digital Systems v03r01

4. Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (vertical), lie-down position (horizontal). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (horizontal, vertical polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated. Subsequently, only the worst case emissions are reported.

Test modes are chosen to be reported as the worst case configuration below for LTE Band 2:

Test items	Bandwidth (MHz)						Modulation		RB			Test Channel		
	1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF Power Output and Effective Isotropic Radiated Power	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Radiated Spurious Emission	O	-	O	-	-	O	O	-	O	-	-	-	O	-
Note	1. The mark “O” means that this configuration is chosen for testing. 2. The mark “-” means that this configuration is not testing.													

5. Test Case

5.1. RF Power Output and Effective Isotropic Radiated Power

Ambient condition

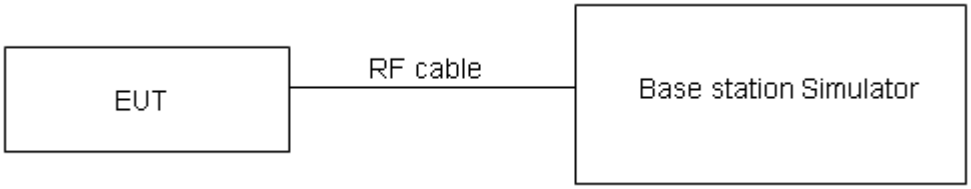
Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the Base Station Simulator with a known loss. The EUT is controlled by the Base Station Simulator test set to ensure max power transmission with proper modulation.

ERP can then be calculated as follows:
EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)
EIRP (dBm) = ERP (dBm) + 2.15 (dB.)

Test Setup



Limits

No specific RF power output requirements in part 2.1046.

Rule Part 24.232(c) Mobile and portable stations are limited to 2 watts EIRP.
Rule Part 24.232(e) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Limit	⩽ 2 W (33 dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.4 dB for RF power output, k = 2, U= 1.19 dB for EIRP.

Test Results

Refer to the section 6.1 of this report for test data.

5.2. Radiated Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

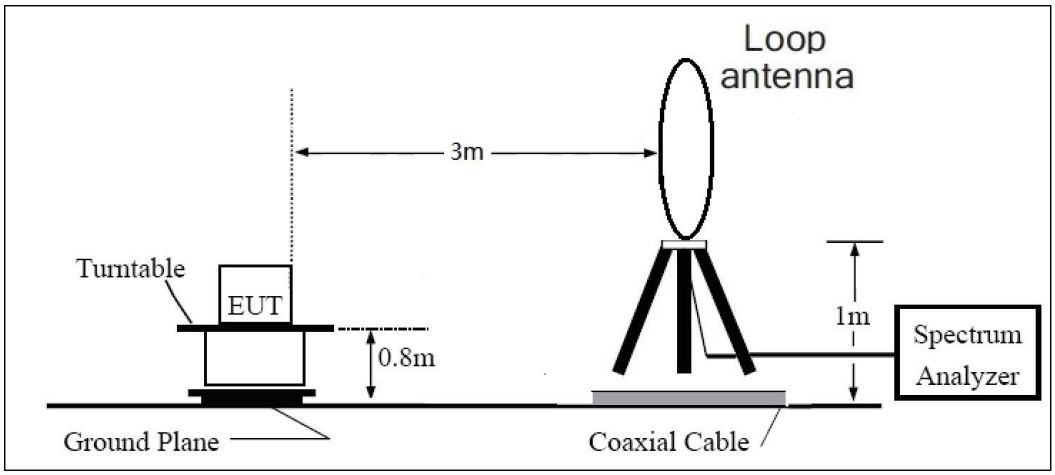
Method of Measurement

1. The testing follows FCC KDB 971168 v03r01 Section 5.8 and ANSI C63.26-2015.
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A loop antenna, A log-periodic antenna or horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, and the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
7. The measurement results are obtained as described below:
Power(EIRP)=PMea- PAg - Pcl + Ga
The measurement results are amend as described below:
Power(EIRP)=PMea- Pcl + Ga
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dB) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dB.
The modulation mode and RB allocation refer to section 5.1, using the maximum output power

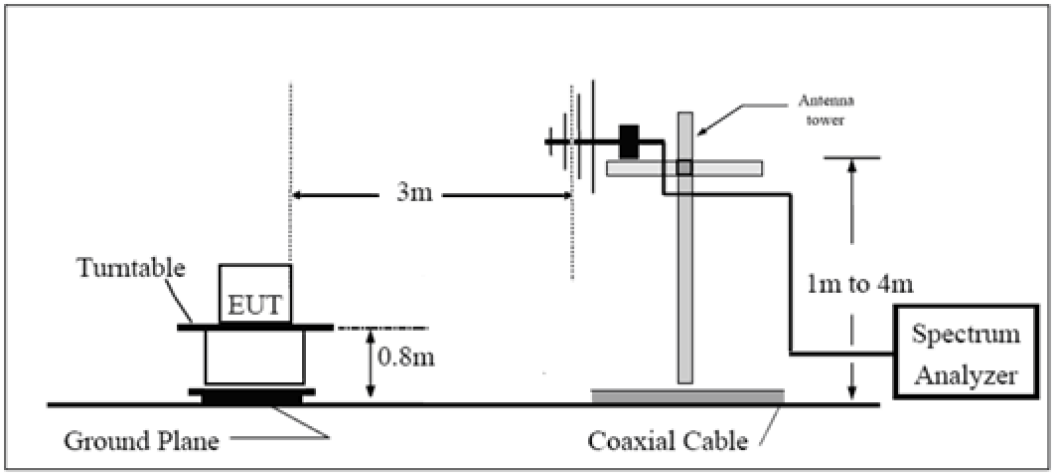
configuration.

Test setup

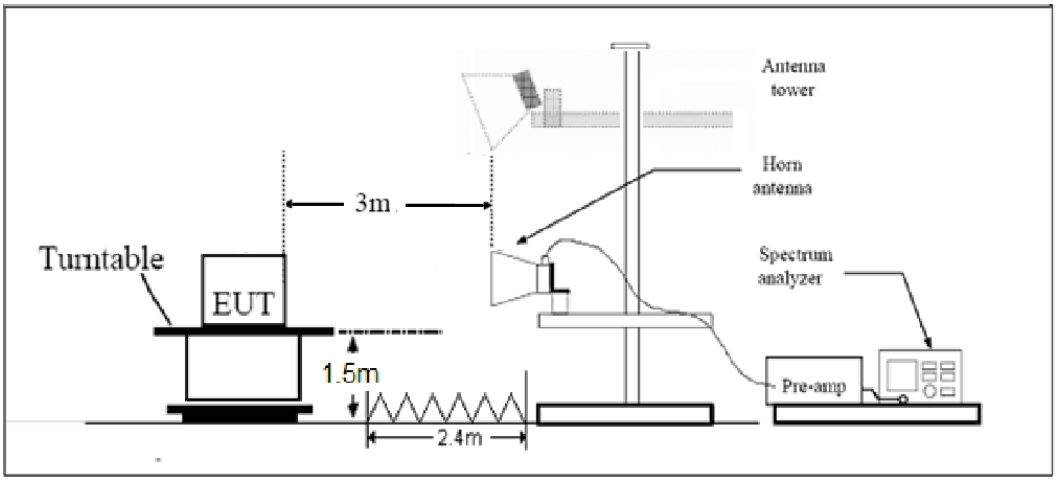
9KHz~ 30MHz



30MHz~ 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB.”

Limit	-13 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95％ confidence level for the normal distribution is with the coverage factor k = 1.96, U= 3.55 dB.

Test Results

Refer to the section 6.2 of this report for test data.

6. Test Results

6.1. RF Power Output and Effective Isotropic Radiated Power

LTE Band 2				Conducted Power(dBm)			EIRP (dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)		
				18607/1850.7	18900/1880	19193/1909.3	18607/1850.7	18900/1880	19193/1909.3
1.4MHz	QPSK	1	0	23.37	23.41	22.99	24.27	24.31	23.89
		1	2	23.41	23.79	22.99	24.31	24.69	23.89
		1	5	23.33	23.26	22.91	24.23	24.16	23.81
		3	0	23.35	23.29	23.12	24.25	24.19	24.02
		3	2	23.18	23.09	23.21	24.08	23.99	24.11
		3	3	23.37	23.26	22.90	24.27	24.16	23.80
		6	0	22.23	22.49	22.07	23.13	23.39	22.97
	16QAM	1	0	22.36	22.91	22.68	23.26	23.81	23.58
		1	2	22.41	22.94	23.00	23.31	23.84	23.90
		1	5	22.20	22.95	23.02	23.10	23.85	23.92
		3	0	22.33	22.19	22.16	23.23	23.09	23.06
		3	2	22.42	22.16	22.07	23.32	23.06	22.97
		3	3	22.31	22.29	22.06	23.21	23.19	22.96
		6	0	21.36	21.29	21.30	22.26	22.19	22.20
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)		
				18615/1851.5	18900/1880	19185/1908.5	18615/1851.5	18900/1880	19185/1908.5
3MHz	QPSK	1	0	23.39	23.45	23.02	24.29	24.35	23.92
		1	7	23.44	23.84	23.03	24.34	24.74	23.93
		1	14	23.36	23.31	22.95	24.26	24.21	23.85
		8	0	22.45	22.41	22.25	23.35	23.31	23.15
		8	4	22.30	22.19	22.33	23.20	23.09	23.23
		8	7	22.47	22.37	22.00	23.37	23.27	22.90
		15	0	22.26	22.53	22.10	23.16	23.43	23.00
	16QAM	1	0	22.39	22.93	22.71	23.29	23.83	23.61
		1	7	22.44	22.99	23.04	23.34	23.89	23.94
		1	14	22.22	22.99	23.05	23.12	23.89	23.95
		8	0	21.44	21.32	21.28	22.34	22.22	22.18
		8	4	21.53	21.29	21.19	22.43	22.19	22.09
		8	7	21.41	21.41	21.19	22.31	22.31	22.09
		15	0	21.39	21.33	21.33	22.29	22.23	22.23
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)		
				18625/1852.5	18900/1880	19175/1907.5	18625/1852.5	18900/1880	19175/1907.5
5MHz	QPSK	1	0	23.36	23.43	22.98	24.26	24.33	23.88
		1	13	23.42	23.80	23.00	24.32	24.70	23.90
		1	24	23.33	23.26	22.91	24.23	24.16	23.81

		12	0	22.42	22.36	22.21	23.32	23.26	23.11
		12	6	22.28	22.15	22.28	23.18	23.05	23.18
		12	13	22.45	22.35	21.96	23.35	23.25	22.86
		25	0	22.24	22.52	22.08	23.14	23.42	22.98
	16QAM	1	0	22.36	22.89	22.68	23.26	23.79	23.58
		1	13	22.41	22.97	23.01	23.31	23.87	23.91
		1	24	22.19	22.97	23.01	23.09	23.87	23.91
		12	0	21.42	21.28	21.25	22.32	22.18	22.15
		12	6	21.50	21.24	21.15	22.40	22.14	22.05
		12	13	21.38	21.36	21.15	22.28	22.26	22.05
		25	0	21.37	21.29	21.28	22.27	22.19	22.18
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)		
				18650/1855	18900/1880	19150/1905	18650/1855	18900/1880	19150/1905
10MHz	QPSK	1	0	23.38	23.44	23.01	24.28	24.34	23.91
		1	25	23.45	23.85	23.04	24.35	24.75	23.94
		1	49	23.35	23.30	22.94	24.25	24.20	23.84
		25	0	22.45	22.41	22.25	23.35	23.31	23.15
		25	13	22.31	22.20	22.32	23.21	23.10	23.22
		25	25	22.47	22.39	22.01	23.37	23.29	22.91
		50	0	22.32	22.54	22.12	23.22	23.44	23.02
	16QAM	1	0	22.38	22.92	22.70	23.28	23.82	23.60
		1	25	22.44	23.01	23.04	23.34	23.91	23.94
		1	49	22.22	22.99	23.04	23.12	23.89	23.94
		25	0	21.45	21.33	21.29	22.35	22.23	22.19
		25	13	21.52	21.28	21.18	22.42	22.18	22.08
		25	25	21.41	21.41	21.19	22.31	22.31	22.09
		50	0	21.40	21.34	21.32	22.30	22.24	22.22
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)		
				18675/1857.5	18900/1880	19125/1902.5	18675/1857.5	18900/1880	19125/1902.5
15MHz	QPSK	1	0	23.37	23.40	22.99	24.27	24.30	23.89
		1	38	23.43	23.84	23.01	24.33	24.74	23.91
		1	74	23.32	23.25	22.90	24.22	24.15	23.80
		36	0	22.43	22.37	22.22	23.33	23.27	23.12
		36	18	22.28	22.15	22.28	23.18	23.05	23.18
		36	39	22.44	22.36	21.97	23.34	23.26	22.87
		75	0	22.30	22.50	22.07	23.20	23.40	22.97
	16QAM	1	0	22.33	22.90	22.68	23.23	23.80	23.58
		1	38	22.42	22.98	23.02	23.32	23.88	23.92
		1	74	22.19	22.95	23.01	23.09	23.85	23.91
		36	0	21.42	21.31	21.26	22.32	22.21	22.16
		36	18	21.49	21.23	21.14	22.39	22.13	22.04
		36	39	21.39	21.37	21.16	22.29	22.27	22.06
		75	0	21.37	21.29	21.28	22.27	22.19	22.18

Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)			Channel/Frequency (MHz)		
				18700/1860	18900/1880	19100/1900	18700/1860	18900/1880	19100/1900
20MHz	QPSK	1	0	23.34	23.36	22.96	24.24	24.26	23.86
		1	50	23.42	23.80	22.99	24.32	24.70	23.89
		1	99	23.30	23.24	22.87	24.20	24.14	23.77
		50	0	22.40	22.32	22.18	23.30	23.22	23.08
		50	25	22.26	22.11	22.25	23.16	23.01	23.15
		50	50	22.41	22.31	21.93	23.31	23.21	22.83
		100	0	22.27	22.45	22.03	23.17	23.35	22.93
	16QAM	1	0	22.31	22.86	22.63	23.21	23.76	23.53
		1	50	22.38	22.96	22.98	23.28	23.86	23.88
		1	99	22.17	22.92	22.99	23.07	23.82	23.89
		50	0	21.39	21.27	21.23	22.29	22.17	22.13
		50	25	21.46	21.21	21.11	22.36	22.11	22.01
		50	50	21.36	21.32	21.12	22.26	22.22	22.02
		100	0	21.35	21.25	21.25	22.25	22.15	22.15

6.2. Radiated Spurious Emission

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in the report.

LTE Band 2 1.4MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3759.00	-62.55	2.60	12.50	Vertical	-52.65	-13.00	39.65	90
3	5638.88	-54.34	3.30	12.50	Vertical	-45.14	-13.00	32.14	21
4	7520.00	-55.81	4.20	12.20	Vertical	-47.81	-13.00	34.81	143
5	9400.00	-51.88	4.30	11.10	Vertical	-45.08	-13.00	32.08	57
6	11280.00	-50.33	5.90	11.90	Vertical	-44.33	-13.00	31.33	284
7	13160.00	-51.35	5.70	14.00	Vertical	-43.05	-13.00	30.05	93
8	15040.00	-54.77	5.80	13.10	Vertical	-47.47	-13.00	34.47	230
9	16920.00	-50.33	6.10	14.60	Vertical	-41.83	-13.00	28.83	46
10	18800.00	/	/	/	/	/	/	/	/
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Vertical position.									

LTE Band 2 5MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3755.63	-63.31	2.60	12.50	Vertical	-53.41	-13.00	40.41	48
3	5633.63	-53.56	3.30	12.50	Vertical	-44.36	-13.00	31.36	307
4	7510.00	-56.17	4.20	12.20	Vertical	-48.17	-13.00	35.17	124
5	9387.50	-52.90	4.30	11.10	Vertical	-46.10	-13.00	33.10	116
6	11265.00	-51.34	5.90	11.90	Vertical	-45.34	-13.00	32.34	251
7	13142.00	-50.87	5.70	14.00	Vertical	-42.57	-13.00	29.57	94
8	15020.00	-54.62	5.80	13.10	Vertical	-47.32	-13.00	34.32	32
9	16897.50	-51.79	6.10	14.60	Vertical	-43.29	-13.00	30.29	169
10	18800.00	/	/	/	/	/	/	/	/
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Vertical position.									

LTE Band 2 20MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3742.13	-61.04	2.60	12.50	Vertical	-51.14	-13.00	38.14	237
3	5613.38	-53.50	3.30	12.50	Vertical	-44.30	-13.00	31.30	93
4	7484.63	-56.89	4.20	12.20	Vertical	-48.89	-13.00	35.89	114
5	9355.33	-51.11	4.30	11.10	Vertical	-44.31	-13.00	31.31	88
6	11226.39	-51.21	5.90	11.90	Vertical	-45.21	-13.00	32.21	251
7	13097.46	-51.68	5.70	14.00	Vertical	-43.38	-13.00	30.38	32
8	14968.52	-53.65	5.80	13.10	Vertical	-46.35	-13.00	33.35	96
9	16938.59	-51.41	6.10	14.60	Vertical	-42.91	-13.00	29.91	219
10	18800.00	/	/	/	/	/	/	/	/

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Vertical position.

7. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Spectrum Analyzer	R&S	FSV30	100815	2023-12-05	2024-12-04
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2023-04-16	2026-04-15
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	391	2022-09-29	2025-09-28
Horn Antenna	SCHWARZBECK	BBHA 9120D	1594	2023-12-05	2026-12-04
Software	R&S	EMC32	10.35.10	/	/

ANNEX A: The EUT Appearance

The EUT Appearance is submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos is submitted separately.

******** END OF REPORT ********