RF TEST REPORT

Applicant	Phillips Connect Technologies, LLC
FCC ID	2ASKH-SN01
Product	SolarNet CAN
Brand	Phillips Connect
Model	77-7571
Report No.	R2408A1060-R1V1
Issue Date	October 15, 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 22H (2023) / FCC CFR 47 Part 24E (2023) / FCC CFR47 Part 27C (2023)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Version	Revision description	Issue Date
Rev.0	Initial issue of report.	September 4, 2024
Rev.1	Updated information, data, and description.	October 15, 2024
Note: This revised report (Report No. R2408A1060-R1V1) supersedes and replaces the previously issued report (Report No. R2408A1060-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 / 22.913(a)(5) / 24.232(c) / 27.50(d)(4) / 27.50(c)(10)	Not Test [1]
2	Radiates Spurious Emission	2.1053 / 22.917(a) / 24.238(a) / 27.53(h) / 27.53(g)	Only tested WCDMA Band 5, CH Middle and PASS; Others Not Test [1]
Date of Testing: August 14, 2024 Date of Sample Received: August 8, 2024			
Note: 1. Not Test means after evaluation, test items are no need to test, the test results please refer to Original Report. 2. 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.			

77-7571 (Report No.: R2408A1060-R1V1) is a variant model of 77-7700-13J (Report No.: R2207A0680-R1V1 for FCC CFR 47 Part 22H; R2207A0680-R2V1 for FCC CFR 47 Part 24E; R2207A0680-R3V1 for FCC CFR47 Part 27C).
The changes are as follows:
add secondary battery
add solar panel in enclosure
This product also changes Product Name, Model Name, HW Version and SW Version.

The Radiated Spurious Emission tested the worst case (WCDMA Band 5, CH Middle) of all bands, and recorded in the report.
This report is used in conjunction with the original report (Report No.: R2207A0680-R1V1 for FCC CFR 47 Part 22H; R2207A0680-R2V1 for FCC CFR 47 Part 24E; R2207A0680-R3V1 for FCC CFR47 Part 27C).
The detailed product change description please refers to the *FCC C2PC letter*.

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
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2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	Phillips Connect Technologies, LLC
Applicant address	5231 California Avenue, Suite 110, Irvine, CA 92617
Manufacturer	Phillips Connect Technologies, LLC
Manufacturer address	5231 California Avenue, Suite 110, Irvine, CA 92617

2.2. General Information

EUT Description			
Model	77-7571		
Lab internal SN	R2408A1060/S01		
Hardware Version	Freight P6+Arrow P3		
Software Version	V2.0		
Power Supply	Battery		
Antenna Type	Internal Antenna		
Antenna Gain	-3 dBi		
Test Mode(s)	WCDMA Band II / IV / V; LTE Band 2 / 4 / 12		
Test Modulation	(WCDMA) QPSK; (LTE)QPSK,16QAM		
HSDPA UE Category	24		
HSUPA UE Category	6		
DC-HSDPA UE Category	24		
LTE Category	1		
Rated Power Supply Voltage	12V		
Operating Voltage	Minimum: 10V Maximum: 32V		
Operating Temperature	Lowest: -30°C Highest: +70°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	WCDMA Band II	1850 ~ 1910	1930 ~ 1990
	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	WCDMA Band V	824 ~ 849	869 ~ 894
	LTE Band 2	1850 ~ 1910	1930 ~ 1990
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 12	699 ~ 716	729 ~ 746
EUT Accessory			
Battery 1	Manufacturer: Dongguan Kingin power Co., Ltd.		

	Model: HRBS01-C
Battery 2	Manufacturer: EVE Model: JL001
Note: 1. The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant.	

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 22H (2023)

FCC CFR 47 Part 24E (2023)

FCC CFR47 Part 27C (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 (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, horizontal polarization) and the worst case was recorded.

Subsequently, only the worst case emissions are reported.
The following testing in WCDMA is set based on the maximum RF Output Power.
Test modes are chosen to be reported as the worst case configuration below:

Test items	**Modes/Modulation**
	WCDMA Band V
Radiates Spurious Emission	RMC

5. Test Case

5.1. Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

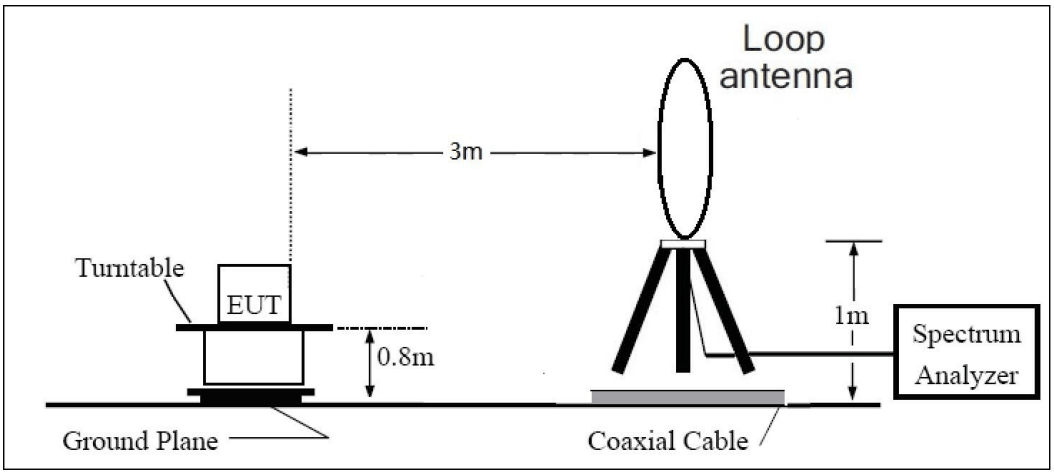
1. The testing follows FCC KDB 971168 v03r01 Section 5.8 and ANSI C63.26-2015.
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable 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=100kHz,VBW=300kHz, 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.

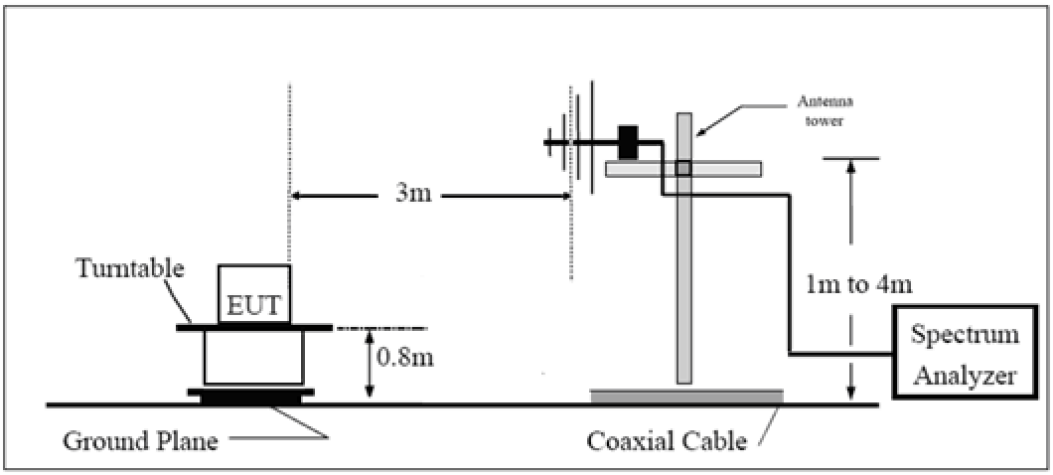
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

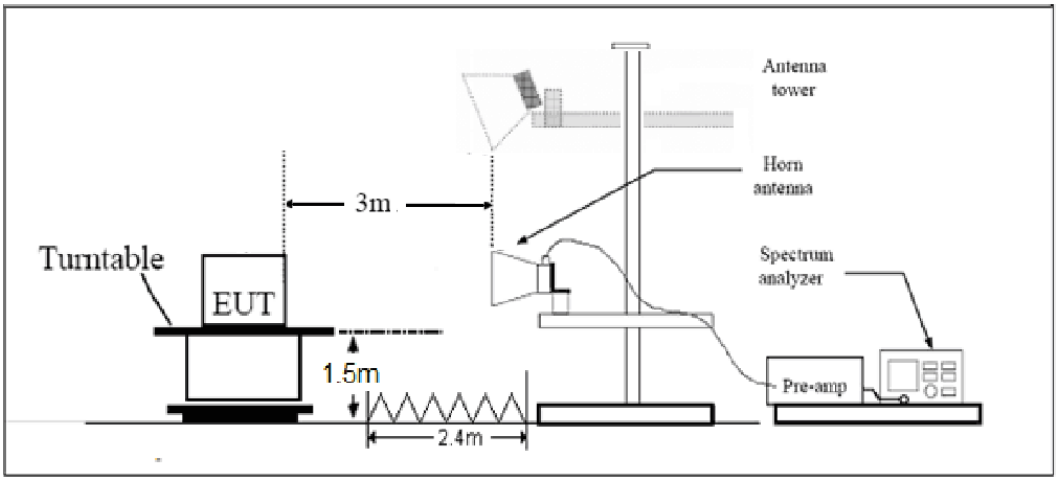
9KHz~ 30MHz



30MHz~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

Rule Part 22.917(a) specifies that “The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (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 6.1 of this report for test data.

6. Test Result

6.1. Radiates 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.

WCDMA Band V CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1671.20	-62.98	1.70	8.70	Horizontal	-58.13	-13.00	45.13	45
3	2510.40	-57.51	2.30	12.00	Horizontal	-49.96	-13.00	36.96	135
4	3346.40	-62.66	2.70	12.70	Horizontal	-54.81	-13.00	41.81	225
5	4183.00	-60.22	3.00	12.50	Horizontal	-52.87	-13.00	39.87	225
6	5019.60	-59.49	3.40	12.50	Horizontal	-52.54	-13.00	39.54	315
7	5856.20	-60.21	3.40	12.80	Horizontal	-52.96	-13.00	39.96	0
8	6692.80	-56.65	4.10	11.50	Horizontal	-51.40	-13.00	38.40	45
9	7529.40	-55.97	4.20	12.20	Horizontal	-50.12	-13.00	37.12	180
10	8366.00	-54.97	4.30	12.50	Horizontal	-48.92	-13.00	35.92	225
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 Horizontal position.									

7. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Wideband radio communication tester	R&S	CMW500	113645	2023-12-05	2024-12-04
Spectrum Analyzer	R&S	FSV30	104028	2024-05-07	2025-05-06
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	01439	2021-06-30	2024-06-29
Horn Antenna	SCHWARZBECK	BBHA 9120D	01799	2022-09-01	2025-08-31
Software	R&S	EMC32	10.35.10	/	/

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

ANNEX A: The EUT Appearance

The EUT Appearance is submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos is submitted separately.

ANNEX C: Product Change Description

The Product Change Description are submitted separately.