

# **TEST REPORT**

Product Name : DataHub

Model Number : DataHub1000

Prepared for : SOLAX POWER NETWORK TECHNOLOGY (ZHEJIANG)

CO., LTD.

Address : No.288, Shizhu Road, Tonglu Economic Development Zone,

Tonglu City, Zhejiang Province 310000, P. R. China

Prepared by : EMTEK (NINGBO) CO., LTD.

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Report Number : ENB2204290281E01001R

Date(s) of Tests : November 25, 2021 to June 15, 2022

Date of issue : June 27, 2022





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#### **TEST REPORT DESCRIPTION**

: SOLAX POWER NETWORK TECHNOLOGY (ZHEJIANG) CO., LTD. **Applicant** 

Manufacturer : SOLAX POWER NETWORK TECHNOLOGY (ZHEJIANG) CO., LTD.

Trade Mark : SolaX Power

**EUT** : DataHub

: DataHub1000 Model No.

Power Supply : AC 100-240V, 50/60Hz

#### Measurement Procedure Used:

FCC CFR Title 47, Part 15, Subpart B ANSI C63.4-2014

The device described above is tested by EMTEK (NINGBO) CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK (NINGBO) CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK (NINGBO) CO., LTD.

| Date of Test :                | November 25, 2021 to June 15, 2022 |
|-------------------------------|------------------------------------|
| Prepared by :                 | June Gao/Engineer                  |
| Reviewer :                    | Ade Wang/Supervisor                |
| Approved & Authorized Signer: | Tony Wei/Manager                   |



# **Modified Information**

| Version | Report No.           | Revision date | Summary         |
|---------|----------------------|---------------|-----------------|
|         | ENB2204290281E01001R | 1             | Original Report |





# 1. SUMMARY OF TEST RESULTS

| EMISSION   |  |         |  |  |  |  |
|--|--|---------|--|--|--|--|
| Description of Test Item                         | Standard & Limits  | Results |  |  |  |  |
| Conducted Emission at Mains<br>Terminals         | FCC CFR Title 47, Part 15, Subpart B, Class B<br>ANSI C63.4-2014 | Pass    |  |  |  |  |
| Radiated Emission                                | FCC CFR Title 47, Part 15, Subpart B, Class B<br>ANSI C63.4-2014 | Pass    |  |  |  |  |
| Note: N/A is an abbreviation for Not Applicable. |  |         |  |  |  |  |





#### 2. GENERAL INFORMATION

## 2.1. Description of Device (EUT)

EUT : DataHub

Model Number : DataHub1000

Test Voltage : AC 120V/60Hz

AC Adapter : M/N: ABT020120A

Input: AC 100-240V, 50/60Hz, 1.5A

Output: DC 12V, 2A, 24W

AC Adapter 2 : M/N: BSG025W-1202000A

Input: AC 100-240V, 50/60Hz, 0.6A Max

Output: DC 12V, 2A

Highest Frequency: 2480 MHz

Sample Number : ENB2204290281E010-1-1

ENB2111250113E010-1-1

Applicant : SOLAX POWER NETWORK TECHNOLOGY (ZHEJIANG) CO., LTD.

Address : No.288, Shizhu Road, Tonglu Economic Development Zone, Tonglu City,

Zhejiang Province 310000, P. R. China

Manufacturer : SOLAX POWER NETWORK TECHNOLOGY (ZHEJIANG) CO., LTD.

Address : No.288, Shizhu Road, Tonglu Economic Development Zone, Tonglu City,

Zhejiang Province 310000, P. R. China

Date of Received : November 25, 2021

Date of Test : November 25, 2021 to June 15, 2022

#### 2.2. Input / Output Ports

| Port<br># | Name      | Name Type* Cable Max. >3m |  | Cable<br>Shielded | Comments |
|-----------|-----------|---------------------------|--|-------------------|----------|
| 1         | Enclosure | N/E                       |  |                   | None     |
| 2         | RS485 A/D |                           |  |                   | None     |
| 3         | Net Port  | A/D                       |  |                   | None     |

<sup>\*</sup> Note: Use abbreviations:

AC= AC Power Port DC= DC Power Port

N/E= Non-Electrical

I/O= Signal Input or Output Port (Not Involved in Process Control)

TP= Telecommunication Ports



## 2.3. Independent Operation Modes

A. ON

#### 2.4. Test Manner

| Test Items                               | Test Voltage | Operation Modes | Worst case |
|--|--------------|-----------------|------------|
| Conducted Emission at Mains<br>Terminals | AC 120V/60Hz | Mode A          | Mode A     |
| Radiated Emission up to 1 GHz            | AC 120V/60Hz | Mode A          | Mode A     |
| Radiated Emission above 1 GHz            | AC 120V/60Hz | Mode A          | Mode A     |

## 2.5. Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS

The Certificate Registration Number is L6666.

The Laboratory has been assessed and proved to be in compliance with

CNAS-CL01:2018 (identical to ISO/IEC 17025:2017)

**Accredited by FCC** 

Designation Number: CN1302

Test Firm Registration Number: 436491

Accredited by A2LA

The certificate is valid until May 31, 2023

**Accredited by Industry Canada** 

The Conformity Assessment Body Identifier is CN0114

Name of Firm : EMTEK (NINGBO) CO., LTD.

Site Location : 1F Building 4, 1177#, Lingyun Road, Ningbo National Hi-Tech Zone,

Ningbo, Zhejiang, China.

#### 2.6. Test Software

Item Software

Conducted Emission : EZ-EMC (Ver. CON-03A1)

TS+ (Ver.4.0.0.0)

Radiated Emission : EZ-EMC (Ver. EMEC-3A1)

TS+ (Ver.4.0.0.0)



## 2.7. Description of Support Device

Notebook : Manufacturer: LENOVO

M/N: T430s S/N: R9RK4YK

Notebook : Manufacturer: ASUS

M/N: FX80G

S/N: J7NRCX03D694281

Wireless router : Manufacturer: TP-LINK

M/N: TL-WR886N S/N: 1156004013356

## 2.8. Measurement Uncertainty

Test Item Uncertainty

Conducted Emission Uncertainty : 2.08dB (9 k-150 kHz)

2.40dB (150 k-30 MHz)

Radiated Emission Uncertainty

(3m Chamber)

: 4.06 dB (Polarize: H) (30MHz-1000MHz)

4.04 dB (Polarize: V) (30MHz-1000MHz)

4.82 dB (Polarize: H) (1~18GHz) 4.80 dB (Polarize: V) (1~18GHz)



# 3. MEASURING DEVICE AND TEST EQUIPMENT

## 3.1. For Power Line Conducted Emission Measurement

| Equ. No. | Equipment         | Manufacturer      | Model No. | Serial No.           | Last Cal.     | Cal. Interval |
|----------|-------------------|-------------------|-----------|----------------------|---------------|---------------|
| ENE-001  | Test Receiver     | Rohde & Schwarz   | ESCI      | 101108               | July 08, 2021 | 1 Year        |
| ENE-003  | L.I.S.N           | Rohde & Schwarz   | ENV216    | 101193               | July 08, 2021 | 1 Year        |
| ENE-004  | L.I.S.N           | Schwarzbeck       | NSLK 8126 | 8126-462             | July 08, 2021 | 1 Year        |
| ENE-006  | Pulse Limiter     | MTS-systemtechnik | IMP-136   | 2611115-001-<br>0033 | July 08, 2021 | 1 Year        |
| ENE-005  | RF Switching unit | CD                | RSU-M2    | 38400                | July 08, 2021 | 1 Year        |

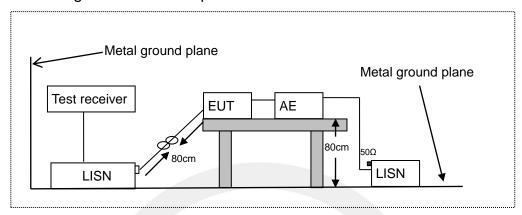
## 3.2. For Radiated Emission Measurement

| Equ. No.  | Equipment              | Manufacturer              | Model No.            | Serial No.           | Last Cal.         | Cal. Interval |
|-----------|------------------------|---------------------------|----------------------|----------------------|-------------------|---------------|
| ENE-002   | Spectrum<br>Analyzer   | Rohde & Schwarz           | ESCI                 | 101107               | July 08, 2021     | 1 Year        |
| ENE-002   | EMI Test<br>Receiver   | Rohde & Schwarz           | ESCI                 | 101107               | July 08, 2021     | 1 Year        |
| ENE-009   | Pre-Amplifier          | CD                        | PAP-0203             | 22015                | July 08, 2021     | 1 Year        |
| ENE-010   | Bilog Antenna          | Schwarzbeck               | VULB9163             | 9163-467             | July 12, 2020     | 2 Year        |
| ENE-025-1 | Cable                  | Huber + Suhner            | CBL3-NN-0.5<br>m     | 101216-2140<br>500-2 | July 08, 2021     | 1 Year        |
| ENE-025-2 | Cable                  | Huber + Suhner            | CBL3-NN-3.0<br>m     | 101216-2143<br>000-2 | July 08, 2021     | 1 Year        |
| ENE-025-3 | Cable                  | Huber + Suhner            | CBL3-NN-9.0<br>m     | 101216-2149<br>000   | July 08, 2021     | 1 Year        |
| ENE-170   | EXA Signal<br>Analyzer | KEYSIGHT                  | N9010B               | MY60242457           | March 01,<br>2022 | 1 Year        |
| ENE-090   | Pre-Amplifier          | Connphy<br>Microwave Inc. | GLN-1G40G-<br>4165-K | 0319104              | Nov 22, 2021      | 1 Year        |
| ENE-060   | Horn Antenna           | Schwarzbeck               | BBHA 9120            | 9120D-707            | April 13, 2021    | 2 Year        |
| ENE-101-1 | Cable                  | SMAMSMAM                  | A50-0.5M             | N/A                  | July 08, 2021     | 1 Year        |
| ENE-101-2 | Cable                  | SMAMSMAM                  | A50-3M               | N/A                  | July 08, 2021     | 1 Year        |
| ENE-101-4 | Cable                  | SMAMSMAM                  | A50-6M               | N/A                  | July 08, 2021     | 1 Year        |
| ENE-095   | Band Reject<br>Filter  | O.M.Jones,Inc.dba         | BRM50702-0           | G049                 | July 08, 2021     | 1 Year        |



#### 4. POWER LINE CONDUCTED EMISSION MEASUREMENT

#### 4.1. Block Diagram of Test Setup



LISN: Line Impedance Stabilization Network

AE: Associated equipment EUT: Equipment under test

#### 4.2. Conducted Limit

FCC CFR Title 47, Part 15, Subpart B, Class B

| Frequency |     |       | Limit (dBμV)     |               |  |  |  |
|-----------|-----|-------|------------------|---------------|--|--|--|
| (MHz)     |     |       | Quasi-peak Level | Average Level |  |  |  |
| 0.15      | ~ \ | 0.50  | 66.0 ~ 56.0 *    | 56.0 ~ 46.0 * |  |  |  |
| 0.50      | ~   | 5.00  | 56.0             | 46.0          |  |  |  |
| 5.00      | ~   | 30.00 | 60.0             | 50.0          |  |  |  |

NOTE1-The lower limit shall apply at the transition frequencies.

NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

#### 4.3. Test Procedure

The EUT was placed on a desk 0.8 m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface. The size of the table will nominally be 1.5 m x1.0 m.

The rear of the arrangement shall be flush with the back of the supporting tabletop unless that would not be possible or typical of normal use.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the power mains through a line impedance stabilization network (LISN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other LISN.



The LISN provides 50 ohm coupling impedance for the measuring instrument.

Both sides of AC line were checked for maximum conducted interference.

The frequency range from 150 kHz to 30 MHz was sweep.

Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

Test results were obtained from the following equation: Measurement (dB $\mu$ V) =Correct Factor (dB) + Reading (dB $\mu$ V) Over (dB) = Measurement (dB $\mu$ V) - Limit (dB $\mu$ V)

## 4.4. Measuring Results

Pass.

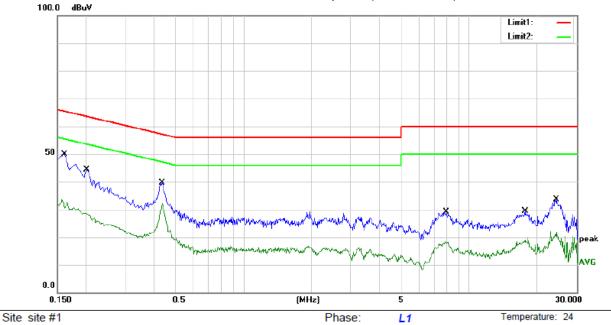
Please refer to following pages.



Humidity:

50 %

## Model DataHub1000 with adapter 1 (ABT020120A)



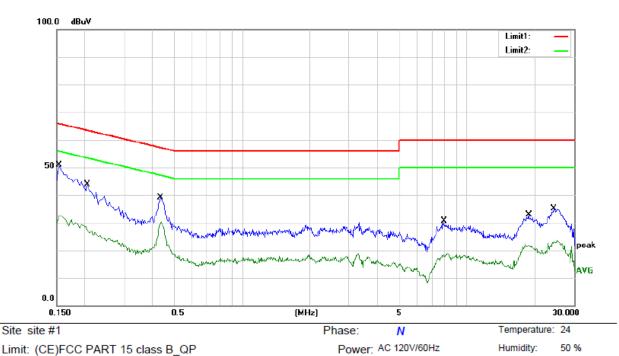
Power: AC 120V/60Hz

Limit: (CE)FCC PART 15 class B\_QP

Mode: ON Note:

| No. | Mk. | Freq.   | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit | Over   |          |         |
|-----|-----|---------|------------------|-------------------|------------------|-------|--------|----------|---------|
|     |     | MHz     | dBuV             | dB                | dBuV             | dBuV  | dB     | Detector | Comment |
| 1   |     | 0.1620  | 39.80            | 10.10             | 49.90            | 65.36 | -15.46 | QP       |         |
| 2   |     | 0.1620  | 20.50            | 10.10             | 30.60            | 55.36 | -24.76 | AVG      |         |
| 3   |     | 0.2020  | 34.20            | 10.09             | 44.29            | 63.53 | -19.24 | QP       |         |
| 4   |     | 0.2020  | 18.30            | 10.09             | 28.39            | 53.53 | -25.14 | AVG      |         |
| 5   |     | 0.4380  | 29.60            | 10.07             | 39.67            | 57.10 | -17.43 | QP       |         |
| 6   | *   | 0.4380  | 22.00            | 10.07             | 32.07            | 47.10 | -15.03 | AVG      |         |
| 7   |     | 7.9580  | 18.60            | 10.43             | 29.03            | 60.00 | -30.97 | QP       |         |
| 8   |     | 7.9580  | 7.30             | 10.43             | 17.73            | 50.00 | -32.27 | AVG      |         |
| 9   |     | 17.6940 | 18.60            | 10.58             | 29.18            | 60.00 | -30.82 | QP       |         |
| 10  |     | 17.6940 | 7.40             | 10.58             | 17.98            | 50.00 | -32.02 | AVG      |         |
| 11  |     | 24.3500 | 22.90            | 10.70             | 33.60            | 60.00 | -26.40 | QP       |         |
| 12  |     | 24.3500 | 10.40            | 10.70             | 21.10            | 50.00 | -28.90 | AVG      |         |





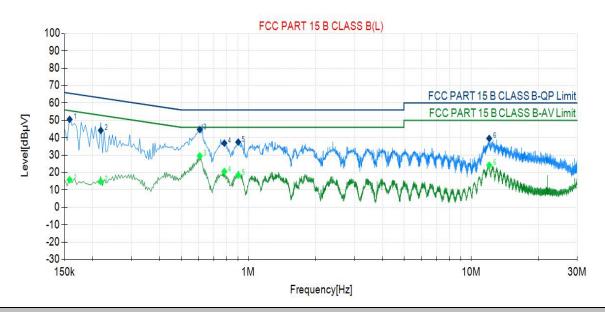
Limit: (CE)FCC PART 15 class B\_QP

Mode: ON Note:

| No. | Mk. | Freq.   | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit | Over   |          |         |
|-----|-----|---------|------------------|-------------------|------------------|-------|--------|----------|---------|
|     |     | MHz     | dBuV             | dB                | dBuV             | dBuV  | dB     | Detector | Comment |
| 1   | *   | 0.1540  | 40.80            | 10.08             | 50.88            | 65.78 | -14.90 | QP       |         |
| 2   |     | 0.1540  | 22.40            | 10.08             | 32.48            | 55.78 | -23.30 | AVG      |         |
| 3   |     | 0.2060  | 33.70            | 10.08             | 43.78            | 63.37 | -19.59 | QP       |         |
| 4   |     | 0.2060  | 17.00            | 10.08             | 27.08            | 53.37 | -26.29 | AVG      |         |
| 5   |     | 0.4340  | 29.10            | 10.10             | 39.20            | 57.18 | -17.98 | QP       |         |
| 6   |     | 0.4340  | 19.90            | 10.10             | 30.00            | 47.18 | -17.18 | AVG      |         |
| 7   |     | 7.9220  | 20.10            | 10.45             | 30.55            | 60.00 | -29.45 | QP       |         |
| 8   |     | 7.9220  | 7.20             | 10.45             | 17.65            | 50.00 | -32.35 | AVG      |         |
| 9   |     | 18.9140 | 22.10            | 10.65             | 32.75            | 60.00 | -27.25 | QP       |         |
| 10  |     | 18.9140 | 10.80            | 10.65             | 21.45            | 50.00 | -28.55 | AVG      |         |
| 11  |     | 24.2900 | 24.40            | 10.54             | 34.94            | 60.00 | -25.06 | QP       |         |
| 12  |     | 24.2900 | 12.70            | 10.54             | 23.24            | 50.00 | -26.76 | AVG      |         |



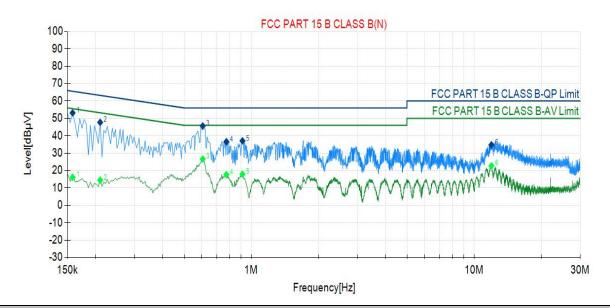
| Project Information(Model DataHub1000 with adapter 2 (BSG025W-1202000A)) |                        |           |              |  |  |  |  |  |
|--|------------------------|-----------|--------------|--|--|--|--|--|
| Mode:  | ON                     | Voltage:  | AC 120V/60Hz |  |  |  |  |  |
| Environment:   | Temp: 24.5°C; Humi:58% | Engineer: | Sen Song     |  |  |  |  |  |



| Final I | Final Data List |                |                         |                       |                       |                      |                         |                       |                       |                      |         |  |  |
|---------|-----------------|----------------|-------------------------|-----------------------|-----------------------|----------------------|-------------------------|-----------------------|-----------------------|----------------------|---------|--|--|
| NO.     | Freq.<br>[MHz]  | Factor<br>[dB] | QP<br>Reading<br>[dBµV] | QP<br>Value<br>[dBµV] | QP<br>Limit<br>[dBµV] | QP<br>Margin<br>[dB] | AV<br>Reading<br>[dBµV] | AV<br>Value<br>[dBµV] | AV<br>Limit<br>[dBµV] | AV<br>Margin<br>[dB] | Verdict |  |  |
| 1       | 0.158           | 10.51          | 40.05                   | 50.56                 | 65.57                 | 15.01                | 5.33                    | 15.84                 | 55.57                 | 39.73                | Pass    |  |  |
| 2       | 0.218           | 10.49          | 33.71                   | 44.20                 | 62.89                 | 18.69                | 4.32                    | 14.81                 | 52.89                 | 38.08                | Pass    |  |  |
| 3       | 0.606           | 10.36          | 34.34                   | 44.70                 | 56.00                 | 11.30                | 19.19                   | 29.55                 | 46.00                 | 16.45                | Pass    |  |  |
| 4       | 0.782           | 10.35          | 26.53                   | 36.88                 | 56.00                 | 19.12                | 10.19                   | 20.54                 | 46.00                 | 25.46                | Pass    |  |  |
| 5       | 0.902           | 10.36          | 27.15                   | 37.51                 | 56.00                 | 18.49                | 8.11                    | 18.47                 | 46.00                 | 27.53                | Pass    |  |  |
| 6       | 12.070          | 10.67          | 28.93                   | 39.60                 | 60.00                 | 20.40                | 13.5                    | 24.17                 | 50.00                 | 25.83                | Pass    |  |  |



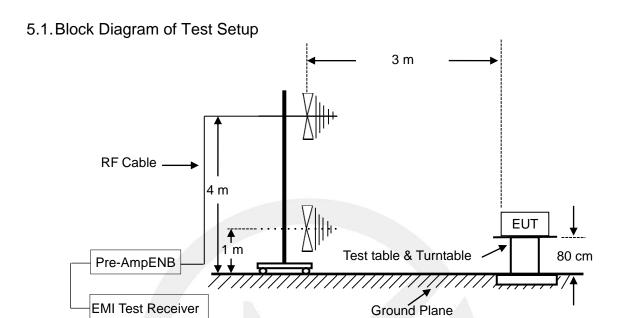
| Project Information(Model DataHub1000 with adapter 2 (BSG025W-1202000A)) |                                |           |          |  |  |  |  |  |  |
|--|--------------------------------|-----------|----------|--|--|--|--|--|--|
| Mode:  | Mode: ON Voltage: AC 120V/60Hz |           |          |  |  |  |  |  |  |
| Environment:   | Temp: 24.5°C; Humi:58%         | Engineer: | Sen Song |  |  |  |  |  |  |



| Final I | Final Data List |                |                         |                       |                       |                      |                         |                       |                       |                      |         |  |  |
|---------|-----------------|----------------|-------------------------|-----------------------|-----------------------|----------------------|-------------------------|-----------------------|-----------------------|----------------------|---------|--|--|
| NO.     | Freq.<br>[MHz]  | Factor<br>[dB] | QP<br>Reading<br>[dBµV] | QP<br>Value<br>[dBµV] | QP<br>Limit<br>[dBµV] | QP<br>Margin<br>[dB] | AV<br>Reading<br>[dBµV] | AV<br>Value<br>[dBµV] | AV<br>Limit<br>[dBµV] | AV<br>Margin<br>[dB] | Verdict |  |  |
| 1       | 0.158           | 10.49          | 42.65                   | 53.14                 | 65.57                 | 12.43                | 5.6                     | 16.09                 | 55.57                 | 39.48                | Pass    |  |  |
| 2       | 0.210           | 10.46          | 37.22                   | 47.68                 | 63.21                 | 15.53                | 4                       | 14.46                 | 53.21                 | 38.75                | Pass    |  |  |
| 3       | 0.606           | 10.45          | 35.16                   | 45.61                 | 56.00                 | 10.39                | 16.16                   | 26.61                 | 46.00                 | 19.39                | Pass    |  |  |
| 4       | 0.774           | 10.49          | 26.07                   | 36.56                 | 56.00                 | 19.44                | 7.14                    | 17.63                 | 46.00                 | 28.37                | Pass    |  |  |
| 5       | 0.914           | 10.50          | 26.57                   | 37.07                 | 56.00                 | 18.93                | 7.39                    | 17.89                 | 46.00                 | 28.11                | Pass    |  |  |
| 6       | 11.974          | 10.81          | 23.95                   | 34.76                 | 60.00                 | 25.24                | 11.87                   | 22.68                 | 50.00                 | 27.32                | Pass    |  |  |



# 5. RADIATED EMISSION MEASUREMENT(UP TO 1GHz)



#### 5.2. Radiated Limit

FCC CFR Title 47, Part 15, Subpart B, Class B

| I   | Freque | ency | Distance | Field Strengths Limit |          |  |  |
|-----|--------|------|----------|-----------------------|----------|--|--|
|     | MH     | Z    | Meters   | μV/m                  | dB(μV)/m |  |  |
| 30  | ~      | 88   | 3        | 100                   | 40.0     |  |  |
| 88  | ~      | 216  | 3        | 150                   | 43.5     |  |  |
| 216 | ~      | 960  | 3        | 200                   | 46.0     |  |  |
| 960 | ~      | 1000 | 3        | 500                   | 54.0     |  |  |

#### 5.3. Test Procedure

The EUT was placed on a non-conductive table whose total height equaled 80cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

The EUT was set 3 meters away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.



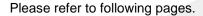
The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The bandwidth of the Receiver is set at 120 kHz.

Test results were obtained from the following equation: Measurement (dB $\mu$ V) =Correct Factor (dB) + Reading (dB $\mu$ V) Over (dB) = Measurement (dB $\mu$ V) - Limit (dB $\mu$ V)

## 5.4. Measuring Results

Pass.







Humidity:

55 %

## Model DataHub1000 with adapter 1 (ABT020120A)



Limit: FCC Part15 Class B 3M Radiation

Mode:ON Note:

| No. | Mk. | Freq.    | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit  | Over   |          | Antenna<br>Height | Table<br>Degree |         |
|-----|-----|----------|------------------|-------------------|------------------|--------|--------|----------|-------------------|-----------------|---------|
|     |     | MHz      | dBuV             | dB                | dBuV/m           | dBuV/m | dB     | Detector | cm                | degree          | Comment |
| 1   |     | 52.5752  | 53.52            | -21.02            | 32.50            | 40.00  | -7.50  | QP       |                   |                 |         |
| 2   | İ   | 77.0503  | 64.20            | -27.40            | 36.80            | 40.00  | -3.20  | QP       |                   |                 |         |
| 3   | *   | 85.8984  | 64.37            | -26.47            | 37.90            | 40.00  | -2.10  | QP       |                   |                 |         |
| 4   |     | 162.6105 | 57.28            | -26.98            | 30.30            | 43.50  | -13.20 | QP       |                   |                 |         |
| 5   |     | 350.4766 | 54.07            | -19.57            | 34.50            | 46.00  | -11.50 | QP       |                   |                 |         |
| 6   |     | 776.8777 | 45.86            | -9.66             | 36.20            | 46.00  | -9.80  | QP       |                   |                 |         |

Power: AC 120V/60Hz





Limit: FCC Part15 Class B 3M Radiation

olarization: Horizontal Power: AC 120V/60Hz Temperature: Humidity:

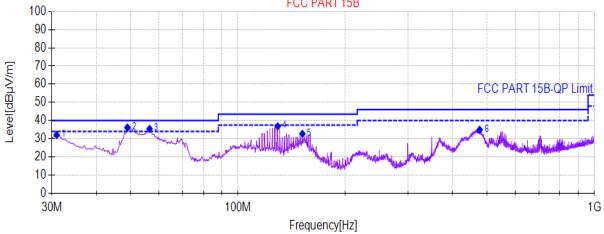
24 55 %

Mode:ON Note:

| No. | Mk | . Freq.  | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit  | Over   |          | Antenna<br>Height | Table<br>Degree |         |
|-----|----|----------|------------------|-------------------|------------------|--------|--------|----------|-------------------|-----------------|---------|
|     |    | MHz      | dBuV             | dB                | dBuV/m           | dBuV/m | dB     | Detector | cm                | degree          | Comment |
| 1   |    | 85.8983  | 58.97            | -26.47            | 32.50            | 40.00  | -7.50  | QP       |                   |                 |         |
| 2   |    | 162.6105 | 59.38            | -26.98            | 32.40            | 43.50  | -11.10 | QP       |                   |                 |         |
| 3   |    | 277.0935 | 57.43            | -20.63            | 36.80            | 46.00  | -9.20  | QP       |                   |                 |         |
| 4   | İ  | 355.4273 | 60.50            | -19.50            | 41.00            | 46.00  | -5.00  | QP       |                   |                 |         |
| 5   | ļ  | 451.1349 | 58.63            | -18.33            | 40.30            | 46.00  | -5.70  | QP       |                   |                 |         |
| 6   | *  | 776.8778 | 51.56            | -9.66             | 41.90            | 46.00  | -4.10  | QP       |                   |                 |         |



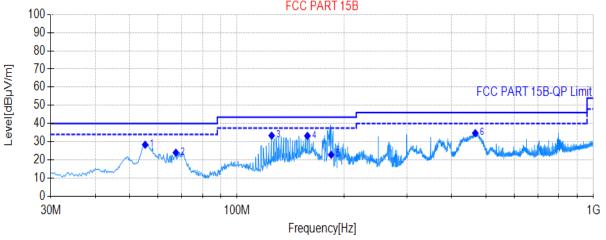
| Project Information(Model DataHub1000 with adapter 2 (BSG025W-1202000A)) |                      |            |              |  |  |  |  |  |  |  |  |  |
|--|----------------------|------------|--------------|--|--|--|--|--|--|--|--|--|
| Mode:  | ON                   | Voltage:   | AC 120V/60Hz |  |  |  |  |  |  |  |  |  |
| Environment:   | Temp: 25°C; Humi:60% | Engineer:  | Alarak Wu    |  |  |  |  |  |  |  |  |  |
| 100  | FC                   | C PART 15B |              |  |  |  |  |  |  |  |  |  |
| 90 -   |                      |            |              |  |  |  |  |  |  |  |  |  |
| 80 4   |                      |            |              |  |  |  |  |  |  |  |  |  |



| Final | Data List      |                        |             |                      |                      |                   |             |              |          |         |
|-------|----------------|------------------------|-------------|----------------------|----------------------|-------------------|-------------|--------------|----------|---------|
| NO.   | Freq.<br>[MHz] | QP Reading<br>[dBµV/m] | Factor [dB] | QP Value<br>[dBµV/m] | QP Limit<br>[dBµV/m] | QP Margin<br>[dB] | Height [cm] | Angle<br>[°] | Polarity | Verdict |
| 1     | 30.970         | 56.53                  | -24.43      | 32.10                | 40.00                | 7.90              | 100         | 298          | Vertical | Pass    |
| 2     | 48.915         | 58.72                  | -22.52      | 36.20                | 40.00                | 3.80              | 100         | 33           | Vertical | Pass    |
| 3     | 56.432         | 57.82                  | -22.33      | 35.49                | 40.00                | 4.51              | 100         | 127          | Vertical | Pass    |
| 4     | 129.182        | 61.68                  | -24.81      | 36.87                | 43.50                | 6.63              | 100         | 84           | Vertical | Pass    |
| 5     | 151.492        | 58.46                  | -25.72      | 32.74                | 43.50                | 10.76             | 100         | 202          | Vertical | Pass    |
| 6     | 476.442        | 51.73                  | -16.73      | 35.00                | 46.00                | 11.00             | 100         | 103          | Vertical | Pass    |



| Project Information(Model DataHub1000 with adapter 2 (BSG025W-1202000A)) |                      |             |              |  |  |  |  |  |  |  |
|--|----------------------|-------------|--------------|--|--|--|--|--|--|--|
| Mode:  | ON                   | Voltage:    | AC 120V/60Hz |  |  |  |  |  |  |  |
| Environment:   | Temp: 25°C; Humi:60% | Engineer:   | Alarak Wu    |  |  |  |  |  |  |  |
| 100  | FC                   | CC PART 15B |              |  |  |  |  |  |  |  |
| 100  |                      |             |              |  |  |  |  |  |  |  |

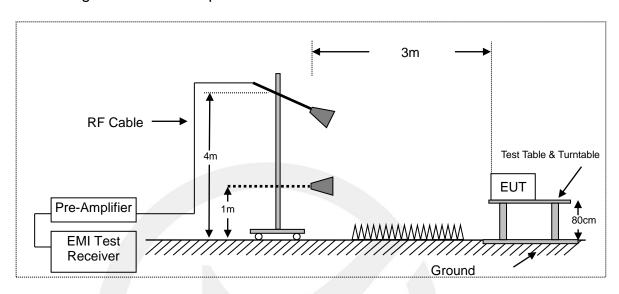


| Final | Final Data List |                        |             |                      |                      |                   |                |              |            |         |  |  |
|-------|-----------------|------------------------|-------------|----------------------|----------------------|-------------------|----------------|--------------|------------|---------|--|--|
| NO.   | Freq.<br>[MHz]  | QP Reading<br>[dBµV/m] | Factor [dB] | QP Value<br>[dBµV/m] | QP Limit<br>[dBµV/m] | QP Margin<br>[dB] | Height<br>[cm] | Angle<br>[°] | Polarity   | Verdict |  |  |
| 1     | 55.220          | 50.78                  | -22.39      | 28.39                | 40.00                | 11.61             | 100            | 73           | Horizontal | Pass    |  |  |
| 2     | 67.345          | 47.56                  | -23.54      | 24.02                | 40.00                | 15.98             | 100            | 4            | Horizontal | Pass    |  |  |
| 3     | 125.060         | 57.86                  | -24.46      | 33.40                | 43.50                | 10.10             | 100            | 248          | Horizontal | Pass    |  |  |
| 4     | 157.555         | 58.40                  | -25.14      | 33.26                | 43.50                | 10.24             | 100            | 275          | Horizontal | Pass    |  |  |
| 5     | 183.707         | 46.98                  | -24.11      | 22.87                | 43.50                | 20.63             | 100            | 129          | Horizontal | Pass    |  |  |
| 6     | 466.257         | 51.74                  | -16.99      | 34.75                | 46.00                | 11.25             | 100            | 248          | Horizontal | Pass    |  |  |



# 6. RADIATED EMISSION MEASUREMENT (ABOVE 1GHz)

#### 6.1. Block Diagram of Test Setup



#### 6.2. Radiated Limit

FCC CFR Title 47, Part 15, Subpart B, Class B

| Frequency range | Average limit | Peak limit |
|-----------------|---------------|------------|
| GHz             | dB(μV/m)      | dB(μV/m)   |
| Above 1000      | 54            | 74         |

Note: The highest internal source of an EUT is defined as the highest frequency generated or used in the device or on which the EUT operates or tunes. If the highest frequency of the internal sources of the EUT is less than 1.705 MHz, the measurement shall only be made up to 30 MHz. If the highest frequency of the internal sources of the EUT is between 1.705 MHz and 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is less.

#### 6.3. Test Procedure

The EUT was placed on a non-conductive table whose total height equaled 80cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

The EUT was set 3 meters away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.



The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with peak detector for peak values, and use RBW=1 MHz and VBW=10 Hz with peak detector for Average Values.

Test results were obtained from the following equation: Measurement (dB $\mu$ V) =Correct Factor (dB) + Reading (dB $\mu$ V) Over (dB) = Measurement (dB $\mu$ V) - Limit (dB $\mu$ V)

## 6.4. Measuring Results

Pass.

Please refer to following pages.



#### Model DataHub1000 with adapter 1 (ABT020120A)

#### ■ Radiated Emission Above 1GHz

Test mode: ON Humidity: 55%

Temperature: 24°C Test Voltage: AC 120V/60Hz

Test Date: 2021-11-29

| Freq.    | Ant.Pol. | Emission<br>Level(dBuV/m) |       | Limit 3m | (dBuV/m) | Over(dB) |        |  |
|----------|----------|---------------------------|-------|----------|----------|----------|--------|--|
| (MHz)    | H/V      | PK                        | AV    | PK       | AV       | PK       | AV     |  |
| 2913.740 | V        | 39.50                     | 35.40 | 74.00    | 54.00    | -34.50   | -18.60 |  |
| 4430.628 | V        | 41.10                     | 36.10 | 74.00    | 54.00    | -32.90   | -17.90 |  |
| 6285.695 | V        | 43.40                     | 34.20 | 74.00    | 54.00    | -30.60   | -19.80 |  |
| 8176.795 | V        | 45.80                     | 40.50 | 74.00    | 54.00    | -28.20   | -13.50 |  |
| 10274.23 | V        | 47.30                     | 43.20 | 74.00    | 54.00    | -26.70   | -10.80 |  |
| 11600.35 | V        | 48.30                     | 42.60 | 74.00    | 54.00    | -25.70   | -11.40 |  |
| 3186.869 | Н        | 39.00                     | 34.30 | 74.00    | 54.00    | -35.00   | -19.70 |  |
| 4640.339 | Н        | 41.00                     | 36.30 | 74.00    | 54.00    | -33.00   | -17.70 |  |
| 5830.640 | Н        | 41.20                     | 37.10 | 74.00    | 54.00    | -32.80   | -16.90 |  |
| 7454.429 | Н        | 44.00                     | 37.60 | 74.00    | 54.00    | -30.00   | -16.40 |  |
| 9895.349 | Н        | 45.70                     | 38.10 | 74.00    | 54.00    | -28.30   | -15.90 |  |
| 11044.12 | H        | 44.40                     | 37.20 | 74.00    | 54.00    | -29.60   | -16.80 |  |

## Model DataHub1000 with adapter 2 (BSG025W-1202000A

#### ■ Radiated Emission Above 1GHz

Test mode: ON Humidity: 55%

Temperature: 24°C Test Voltage: AC 120V/60Hz

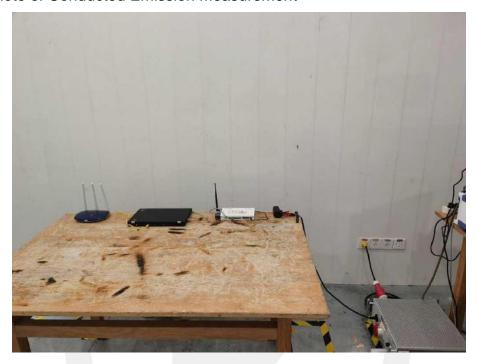
Test Date: 2022-06-03

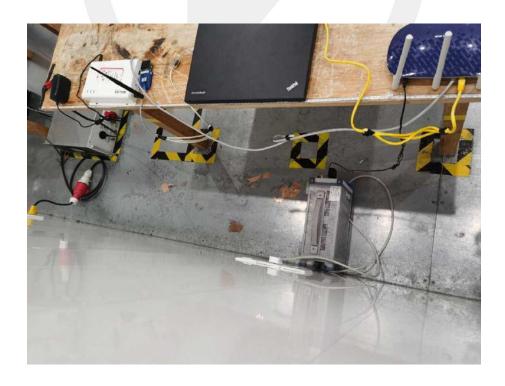
| Freq.<br>(MHz) | Ant.Pol. | Emission<br>Level(dBuV/m) |       | Limit 3m(dBuV/m) |       | Over(dB) |        |
|----------------|----------|---------------------------|-------|------------------|-------|----------|--------|
|                | H/V      | PK                        | AV    | PK               | AV    | PK       | AV     |
| 2220.523       | V        | 39.56                     | 29.32 | 74.00            | 54.00 | -34.44   | -24.68 |
| 2806.288       | V        | 39.36                     | 29.36 | 74.00            | 54.00 | -34.64   | -24.64 |
| 4430.628       | V        | 41.16                     | 31.24 | 74.00            | 54.00 | -32.84   | -22.76 |
| 6285.695       | V        | 43.99                     | 33.52 | 74.00            | 54.00 | -30.01   | -20.48 |
| 8176.795       | V        | 44.85                     | 35.37 | 74.00            | 54.00 | -29.15   | -18.63 |
| 11600.350      | V        | 46.84                     | 36.70 | 74.00            | 54.00 | -27.16   | -17.30 |
| 2239.861       | Н        | 41.33                     | 31.29 | 74.00            | 54.00 | -32.67   | -22.71 |
| 3096.075       | Н        | 41.66                     | 31.53 | 74.00            | 54.00 | -32.34   | -22.47 |
| 4291.976       | Н        | 43.16                     | 32.48 | 74.00            | 54.00 | -30.84   | -21.52 |
| 6995.172       | Н        | 43.92                     | 34.68 | 74.00            | 54.00 | -30.08   | -19.32 |
| 11044.12       | Н        | 45.98                     | 36.08 | 74.00            | 54.00 | -28.02   | -17.92 |
| 17741.73       | Н        | 52.78                     | 42.88 | 74.00            | 54.00 | -21.22   | -11.12 |



# 7. PHOTOGRAPHS

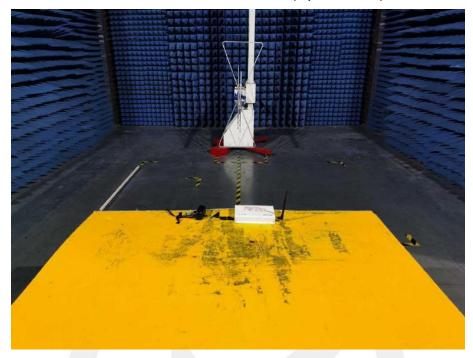
## 7.1. Photo of Conducted Emission Measurement







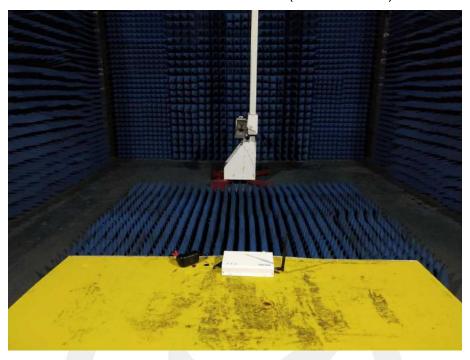
# 7.2. Photo of Radiation Emission Measurement (Up to 1GHz)

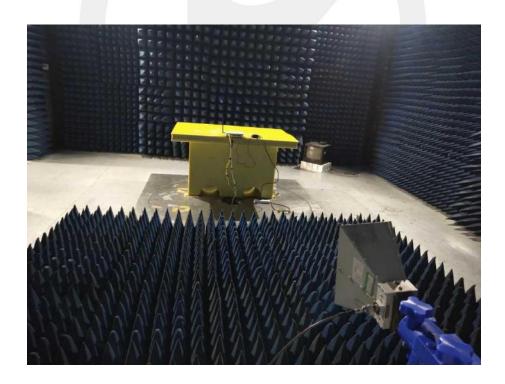






# 7.3. Photo of Radiation Emission Measurement ( Above 1GHz)







# **APPENDIX A: Warning Labels**

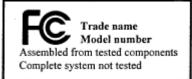
#### **Label Requirements**

A Class B digital device subject to Declaration of Conformity of FCC shall carry a label which includes the following statement:

#### \* \* \* W A R N I N G \* \* \*

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The sample label shown shall be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.







# **APPENDIX B: Warning Statement**

## **Statement Requirements**

The operators' manual for a Class B digital device shall contain the following statements or their equivalent:

\* \* \* W A R N I N G \* \* \*

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equivalent.

\* \* \* \* \* \* \* \*

If the EUT was tested with special shielded cables the operators manual for such product shall also contain the following statements or their equivalent:

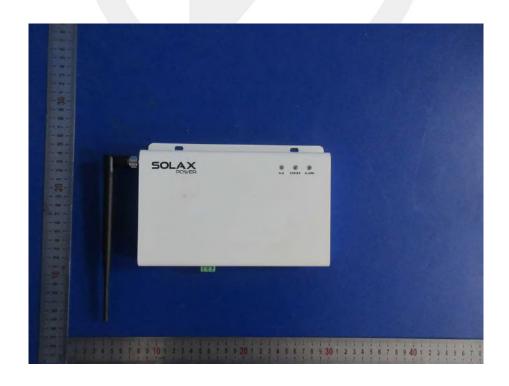
Shielded interface cables and/or AC power cord, if any, must be used in order to comply with the emission limits.



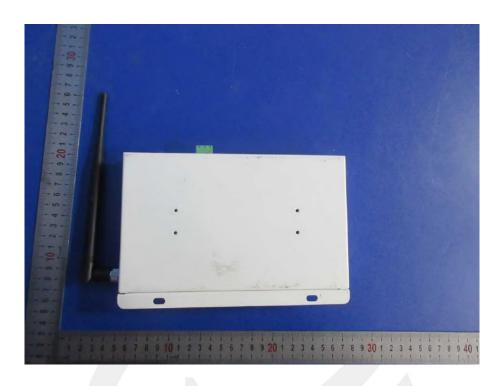
# **APPENDIX C: Photos of EUT**

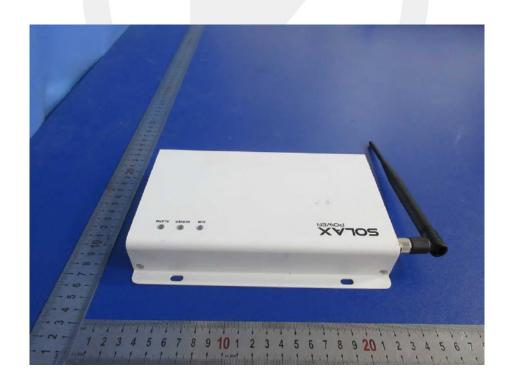
Model DataHub1000 with adapter 1 (ABT020120A)





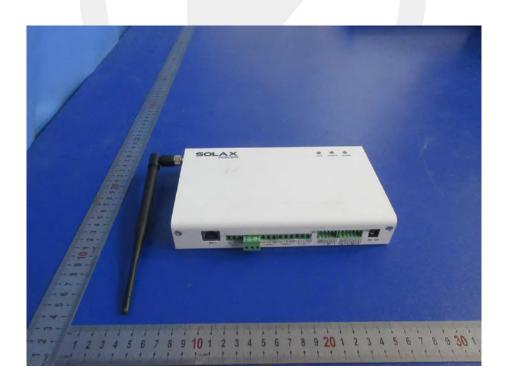




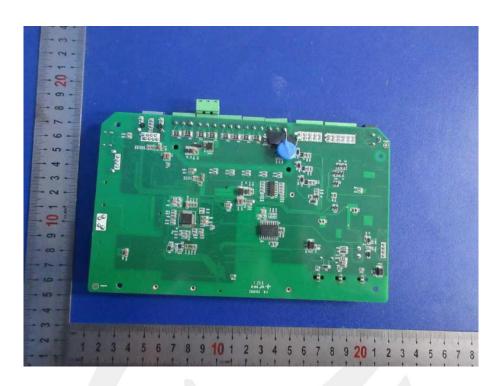








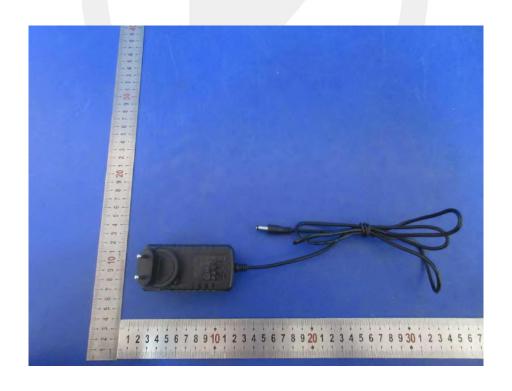






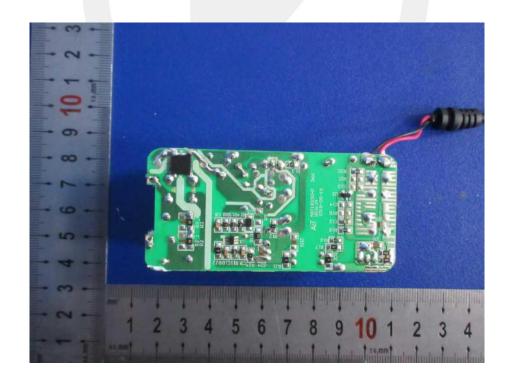




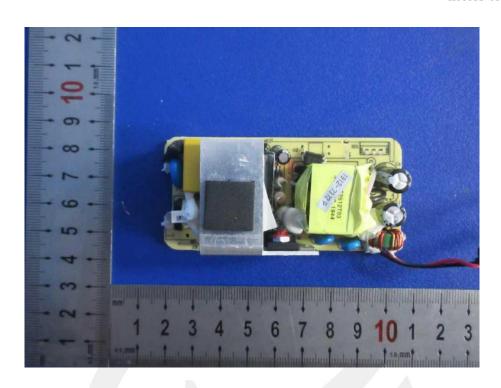








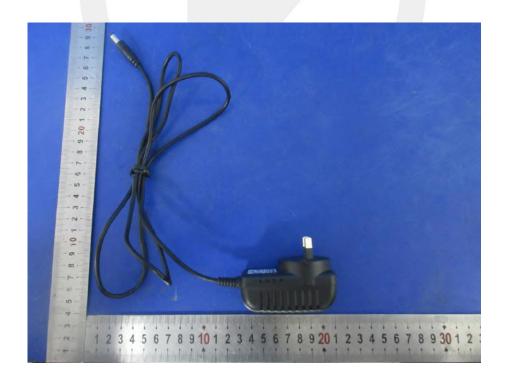




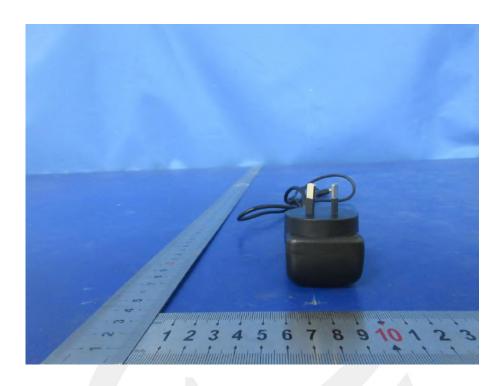


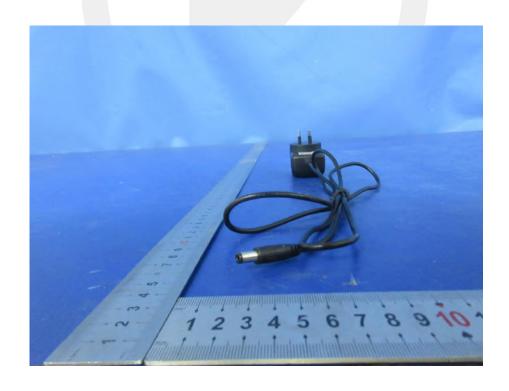






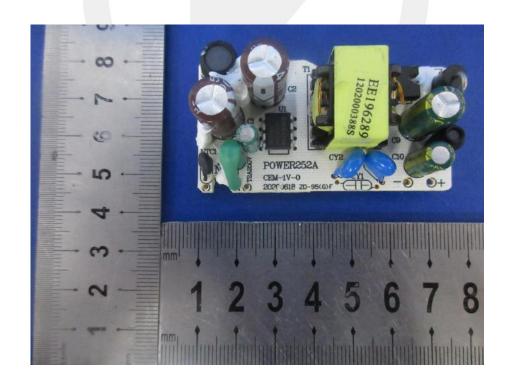




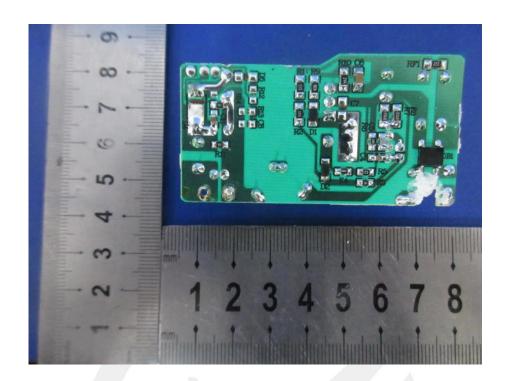












\*\*\* End of Report \*\*\*



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