Shenzhen Reecoo Electronic Co., Ltd.

TEST REPORT

SCOPE OF WORK
FCC TESTING–CH1918

REPORT NUMBER
220126040SZN-001

ISSUE DATE	**[REVISED DATE]**
18 February 2022	[----------]

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DOCUMENT CONTROL NUMBER
FCC ID JAB

Shenzhen Reecoo Electronic Co., Ltd.

Application
For
Certification

FCC ID: 2AZMB-CH1918

Docking Station (Self-empty Station)

Model: CH1918

Brand Name: yeedi

Part 15 Class B Digital Devices

Report No.: 220126040SZN-001

Prepared and Checked by:

Vito

Vito Pan
Project Engineer
Date: 18 February 2022

Approved by:

Sewen Guo
Senior Project Engineer
Date: 18 February 2022

Intertek Testing Service Shenzhen Ltd. Longhua Branch
101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, Shenzhen, P.R. China.
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MEASUREMENT / TECHNICAL REPORT

This report concerns (check one:) Original Grant X Class I Change __

Equipment Type: JAB-Part 15 Class B Digital Devices

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No ____X

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No ____X

If no, assumed Part 15, Subpart B for unintentional radiator – the new 47 CFR [10-01-20 Edition] provision.

Report prepared by:

Vito Pan
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Table of Contents

1.0 SUMMARY OF TEST RESULT

Grantee: Shenzhen Reecoo Electronic Co., Ltd.
Grantee Address: Building 5-6, ShangLiLang Science and Technology Park, ShangLiLang Community, NanWan Street, LongGang District, ShenZhen City, Guangdong Province, China

MODEL: CH1918
FCC ID: 2AZMB-CH1918

Test Specification	Reference	Results
Radiated Emission	15.107	Pass
Conducted Emission	15.109	Pass

2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a Docking Station (Self-empty Station) to Charge the floor cleaning robot and empty the Dust Bin as it needs. The EUT is powered by Input: 120V~, 50-60Hz, 8A Output: 20V DC 1A.

2.2 Related Submittal(s) Grants

This is an application for certification of a Docking Station (Self-empty Station) to Charge the floor cleaning robot.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2014). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst-case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

2.4 Test Facility

The Semi-anechoic chamber and shielding room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Longhua Branch** and located at 101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen, P.R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: CN1188).

3.0 System Test Configuration

3.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2014).

The device was powered by AC 120V/60Hz during the test. only the worst-case data was reported in this report.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. The step by step procedure for maximizing emissions led to the data reported in Section 4.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on turn table, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

The frequency ranges from 30MHz to 1000MHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

3.2 EUT Exercising Software

N/A

3.3 Special Accessories

N/A

3.4 Equipment Modification

Any modifications installed previous to testing by Shenzhen Reecoo Electronic Co., Ltd. will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Longhua Branch.

3.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

Measurement Uncertainty	Uncertainty
AC conducted Emission	±3.6dB
Radiated Emission (Up to 1GHz)	±4.8dB
Radiated Emission (1GHz to 6GHz)	±4.8dB
Radiated Emission (6GHz to 18GHz)	±5.1dB

3.6 Support Equipment List and Description

Description	Manufacturer	Model No.
floor cleaning robot	Reecoo	YDVN11
Cables(Length 192cm)	Reecoo	-

4.0 Emission Results

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

4.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$FS = RA + AF + CF - AG$

where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB/m
AG = Amplifier Gain in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$FS = RA + AF + CF - AG$

Example

Assume a receiver reading of 62.0dBμV is obtained. The antenna factor of 7.4dB/m and cable factor of 1.6dB is added. The amplifier gain of 29dB is subtracted. The net field strength for comparison to the appropriate emission limit is 42dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0dBμV
AF = 7.4dB/m
CF = 1.6dB
AG = 29.0dB

$FS = 62 + 7.4 + 1.6 - 29 = 42dB\mu V/m$

Level in μV/m = Common Antilogarithm [(42dBμV/m)/20] = 125.9μV/m

4.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
At
480.000000MHz (Charging Mode)

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.

4.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 5.5dB margin (Charging Mode)

TEST PERSONNEL:

Sign on file

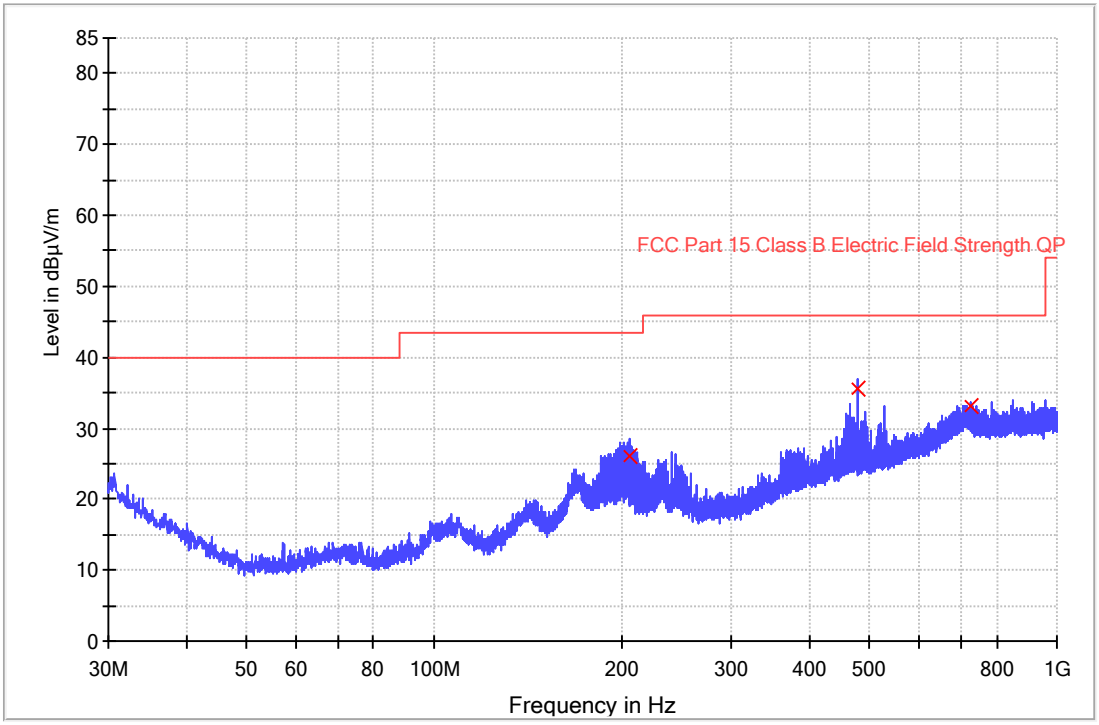
Vito Pan, Project Engineer
Typed/Printed Name

11 February 2022
Date

Applicant: Shenzhen Reecoo Electronic Co., Ltd.
Date of Test: 11 February 2022 Model: CH1918
Worst Case Operating Mode: Charging

Radiated Disturbance (30MHz to 1GHz)

Horizontal

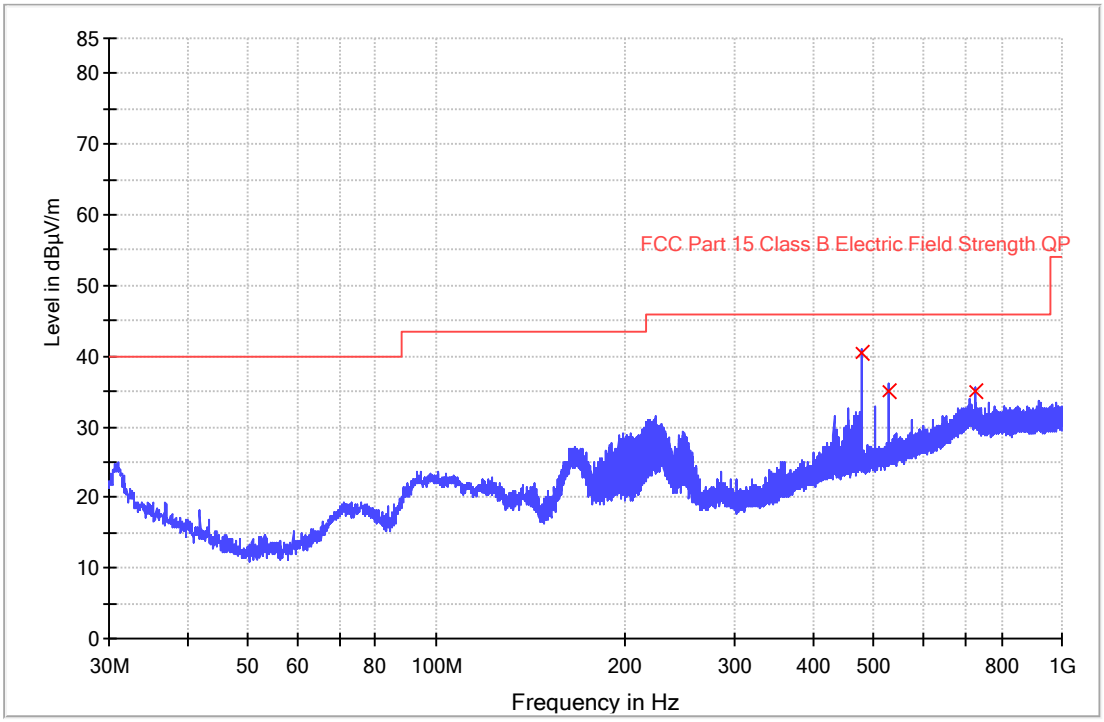


Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
206.313667	26.0	1000.0	120.000	100.0	H	19.6	17.5	43.5
479.983000	35.5	1000.0	120.000	100.0	H	26.3	10.5	46.0
729.240667	33.2	1000.0	120.000	100.0	H	32.0	12.8	46.0

Remark:
1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin (dB) = Limit Line (dBµV/m) – Level (dBµV/m)

Applicant: Shenzhen Reecoo Electronic Co., Ltd.
Date of Test: 11 February 2022 Model: CH1918
Worst Case Operating Mode: Charging

Vertical



Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
480.000000	40.5	1000.0	120.000	100.0	V	26.3	5.5	46.0
527.998000	35.0	1000.0	120.000	100.0	V	27.1	11.0	46.0
729.079000	35.1	1000.0	120.000	100.0	V	32.0	10.9	46.0

Remark:
1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin (dB) = Limit Line (dBµV/m) – Level (dBµV/m)

4.4 Conducted Emission at Mains Terminal

4.4.1 Conducted Emission Configuration Photograph

Worst Case Conducted Configuration
at
0.306000 MHz (Charging Mode)

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

4.5 Conducted Emission Data

Judgement: Passed by 24.7 dB margin(Charging Mode)

TEST PERSONNEL:

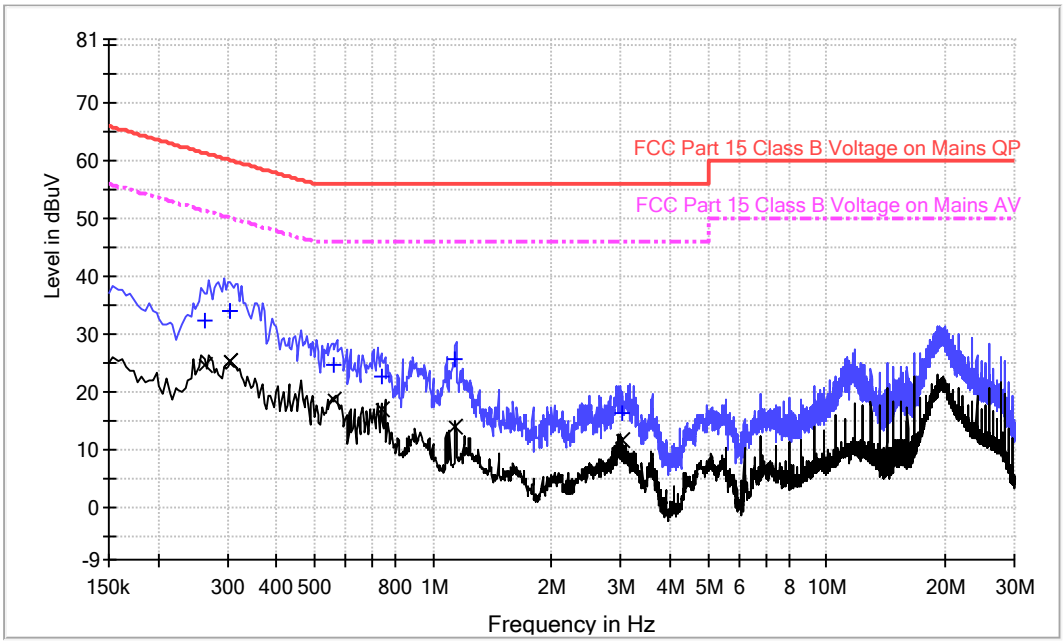
Sign on file

Vito Pan, Project Engineer
Typed/Printed Name

11 February 2022
Date

Applicant: Shenzhen Reecoo Electronic Co., Ltd.
Date of Test: 11 February 2022
Model: CH1918
Operating Mode: Charging
Phase: Live
Test Voltage: AC 120V/60Hz

Conducted Emission Test - FCC



Result Table QP

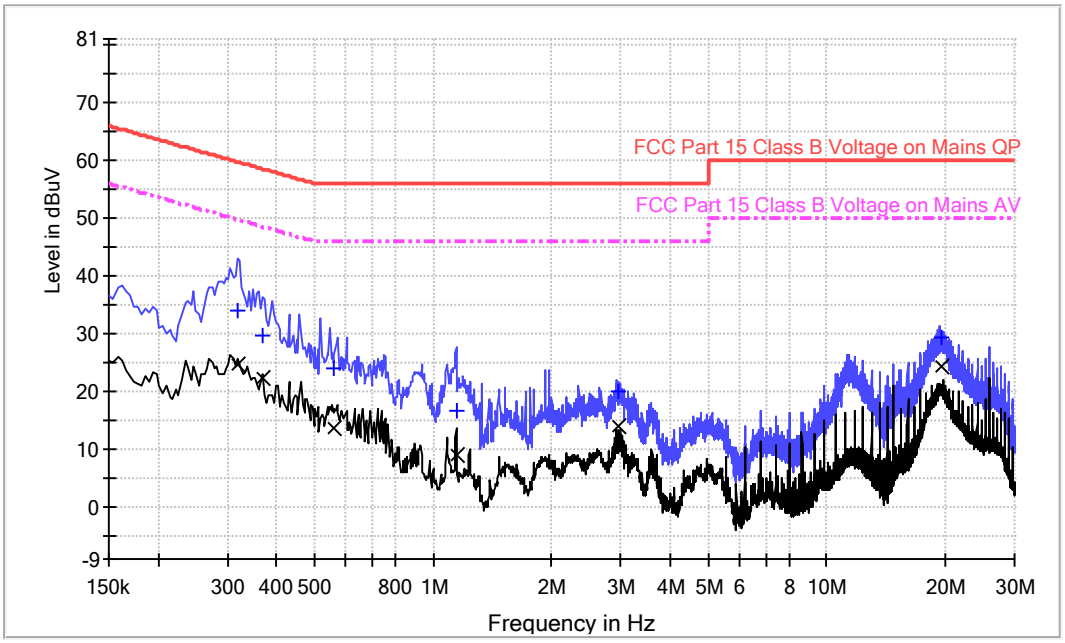
Frequency (MHz)	Quasi Peak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.262000	32.3	L	9.5	29.1	61.4
0.306000	34.2	L	9.5	25.9	60.1
0.306000	34.0	L	9.5	26.1	60.1
0.562000	24.7	L	9.5	31.3	56.0
0.738000	22.8	L	9.5	33.2	56.0
1.142000	25.5	L	9.5	30.5	56.0

Result Table AV

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.262000	24.7	L	9.5	26.7	51.4
0.306000	25.4	L	9.5	24.7	50.1
0.306000	25.2	L	9.5	24.9	50.1
0.562000	18.7	L	9.5	27.3	46.0
0.738000	16.9	L	9.5	29.1	46.0
1.142000	14.0	L	9.5	32.0	46.0

Applicant: Shenzhen Reecoo Electronic Co., Ltd.
Date of Test: 11 February 2022
Model: CH1918
Operating Mode: Charging
Phase: Neutral
Test Voltage: AC 120V/60Hz

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	Quasi Peak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.318000	34.1	N	9.6	25.7	59.8
0.370000	29.7	N	9.6	28.8	58.5
0.562000	23.9	N	9.6	32.1	56.0
1.146000	16.7	N	9.6	39.3	56.0
2.954000	20.1	N	9.7	35.9	56.0
19.562000	29.4	N	10.6	30.6	60.0

Result Table AV

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.318000	24.7	N	9.6	25.1	49.8
0.370000	22.3	N	9.6	26.2	48.5
0.562000	13.8	N	9.6	32.2	46.0
1.146000	8.9	N	9.6	37.1	46.0
2.954000	14.1	N	9.7	31.9	46.0
19.562000	24.4	N	10.6	25.6	50.0

5.0 Equipment Photographs

For electronic filing, photographs of the tested EUT are saved with filename: external photos.pdf and internal photos.pdf.

6.0 Product Labelling

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

7.0 Technical Specifications

For electronic filing, the block diagram of the tested EUT is saved with filename: block.pdf.

8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold / leased in the United States.

9.0 Miscellaneous Information

This miscellaneous information includes emission measuring procedure.

9.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of computer peripheral operating under Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 – 2014.

The floor-standing EUT was placed on a non-conductive table whose total height equaled 10cm. 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 (or 10 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.

Detector function for radiated emissions are in QP mode from the frequency band 30MHz to 1GHz with RBW setting 120kHz. Detector function for conducted emissions are in QP & AV mode and IFBW setting is 9kHz from the frequency band 150kHz to 30MHz.

For radiated emission, the frequency range scanned is 30MHz to 1GHz. For line-conducted emissions, the range scanned is 150kHz to 30MHz with RBW setting 9KHz.

The EUT is warmed up for 15 minutes prior to the test.
Conducted measurements are made as described in ANSI C63.4 – 2014.

10.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-12	BiConiLog Antenna	ETS	3142E	00166158	04-Aug-2021	04-Aug-2024
SZ185-03	EMI Receiver	R&S	ESCI	100547	20-Dec-2021	20-Dec-2022
SZ061-08	Horn Antenna	ETS	3115	00092346	05-Sep-2021	05-Sep-2024
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	10-May-2021	10-May-2022
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	10-May-2021	10-May-2022
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	22-Dec-2021	22-Dec-2024
SZ062-23	RF Cable	RADIALL	SF104PE	--	26-Oct-2021	26-Oct-2022
SZ062-35	RF Cable	RADIALL	A50-3.5M3.5M-8M	--	26-Oct-2021	26-Oct-2022
SZ062-30	RF Cable	RADIALL	A50-3.5M3.5M-4.5M	--	26-Oct-2021	26-Oct-2022
SZ062-31	RF Cable	RADIALL	A50-3.5M3.5M-1M		26-Oct-2021	26-Oct-2022
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	12-Jul-2021	12-Jul-2022
SZ187-02	Two-Line V-Network	R&S	ENV216	100072	12-May-2021	12-May-2022
SZ062-16	RF Cable	HUBER+SUHNER	CBL2-BN-1m	110127-2231000	26-Oct-2021	26-Oct-2022
SZ188-03	Shielding Room	ETS	RFD-100	4100	07-Jan-2020	07-Jan-2023

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