Supplier’s Declaration of Conformity Documentation

The following equipment:

Type of Product:	**BeaglePlay**
Model Number:	**BeaglePlay**
Brand Name:	**Beagleboard.org**
Report Number:	**EED32P800026**

is herewith confirmed to comply with the requirements of FCC Part 15 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 result of electromagnetic emission has been evaluated by Centre Testing International Group Co., Ltd. EMC laboratory (**A2LA Cert No. 3061.01)** and showed in the test report.

It is understood that each unit marketed is identical to the device as tested, and any changes to the device which could adversely affect the emission characteristics will require retest.

The following importer / manufacturer is responsible for this declaration:

Company Name: _____

Company Address: _____

Person is responsible for making this declaration:

Name: _____

Title: _____

Legal Signature: _____

Date: _____

Declaration of Conformity

The submitted sample of the following equipment has been tested according to the following FCC Rules.

Applicant name & address	:	**Seeed Technology Co., Ltd 9F, Building G3, TCL International E city, Zhongshanyuan Road, Nanshan,Shenzhen, China.**
Manufacturer name & address	:	**Seeed Technology Co., Ltd 9F, Building G3, TCL International E city, Zhongshanyuan Road, Nanshan,Shenzhen, China.**
Product	:	**BeaglePlay**
Model/Type reference	:	**BeaglePlay**
Trade mark	:	**Beagleboard.org**
Ratings:	:	**DC 5V**
Order No. / Report No.	:	**EED32P800026**

Test Standards	47 CFR FCC Part 15 Subpart B

This Declaration is for the exclusive use of CTI's Client and is provided pursuant to the agreement between CTI and its Client. The observations and test results referenced from this Declaration are relevant only to the sample tested. This Declaration by itself does not imply that the material, product, or service is or has ever been under a CTI certification program.

Note 1: This declaration is part of the full test report(s) and should be read in conjunction with it.

Aaron Ma

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Aaron Ma

Date of Issue: Feb. 21, 2023

Check No.:5404030123

CENTRE TESTING INTERNATIONAL GROUP CO., LTD.

Report Seal

CENTRE TESTING INTERNATIONAL GROUP CO., LTD.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China

www.cti-cert.com E-mail:info@cti-cert.com

Hotline

400-6788-333

FCC TEST REPORT

Product	:	BeaglePlay
Trade mark	:	Beagleboard.org
Model/Type reference	:	BeaglePlay
Serial Number	:	N/A
Report Number	:	EED32P800026
Date of Issue	:	Feb. 21, 2023
Regulations	:	See below

Test Standards	Results
☒ 47 CFR FCC Part 15 Subpart B	PASS

Prepared for:

Seeed Technology Co., Ltd
9F, Building G3, TCL International E city, Zhongshanyuan Road, Nanshan, Shenzhen, China.

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385

Compiled by: Wifi.Lei Reviewed by: Deng Binbin

Approved by: Aaron Ma Date of Issue: Feb. 21, 2023

Aaron Ma Check No.:5404030123

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(Note: N/A means not applicable)

1. GENERAL INFORMATION

Applicant:	Seeed Technology Co., Ltd 9F, Building G3, TCL International E city, Zhongshanyuan Road, Nanshan,Shenzhen, China.
Manufacturer:	Seeed Technology Co., Ltd 9F, Building G3, TCL International E city, Zhongshanyuan Road, Nanshan,Shenzhen, China.
Product:	BeaglePlay
Trade mark:	Beagleboard.org
Model/Type reference:	BeaglePlay
Serial Number:	N/A
Report Number:	EED32P800026
State of Sample(s):	Normal
Sample Received Date:	Jan. 03, 2023
Sample tested Date:	Jan. 03, 2023 to Jan. 05, 2023

Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn’t verified.

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Standard	Test Item	Test Method	Test
FCC 15.107	Conducted Emission	ANSI C63.4:2014	Yes
FCC 15.109	Radiated Emission	ANSI C63.4:2014	Yes

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted Emission	3.1
Radiated Emission	4.9

4. PRODUCT INFORMATION AND TEST SETUP

4.1. PRODUCT INFORMATION

Ratings: DC 5V

4.2. TEST SETUP CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between Product and support equipment.

4.3. SUPPORT EQUIPMENT

Associated equipment name	Manufacture	model	S/N serial number	Supplied by	Certification
Notebook	HP	C1260	---	---	---

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer’s requirements and conditions for the intended use.

5. FACILITIES AND ACCREDITATIONS

5.1. TEST FACILITY

All test facilities used to collect the test data are located at Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4, CISPR 16-1-1 and other equivalent standards.

5.2. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipments used at CTI for testing.
The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

Equipment used during the tests:

Shielding Room No. 1 - Disturbance voltages Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Due Date**
Receiver	R&S	ESCI	100435	04/13/2023
LISN	R&S	ENV216	100098	03/02/2023
Temperature/Humidity Indicator	Defu	TH128	/	
Barometer	changchun	DYM3	1188	05/22/2023

3M Semi-anechoic Chamber (2)- Radiated disturbance Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Due Date**
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05/21/2025
Receiver	R&S	ESCI7	100938-003	09/27/2023
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	9163-618	05/21/2023
Multi device Controller	maturo	NCD/070/10711112	---	---
Horn Antenna	ETS-LINGREN	BBHA 9120D	9120D-1869	04/14/2024
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04/16/2024
Microwave Preamplifier	Agilent	8449B	3008A02425	06/19/2023

5.3. LABORATORY ACCREDITATIONS AND LISTINGS

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

6. CONDUCTED EMISSION TEST

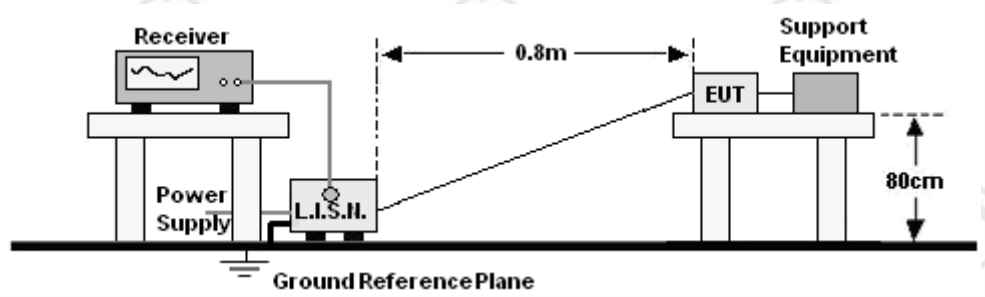
6.1. LIMITS

Limits for Class B digital devices

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

6.2. BLOCK DIAGRAM OF TEST SETUP



6.3. PROCEDURE OF CONDUCTED EMISSION TEST

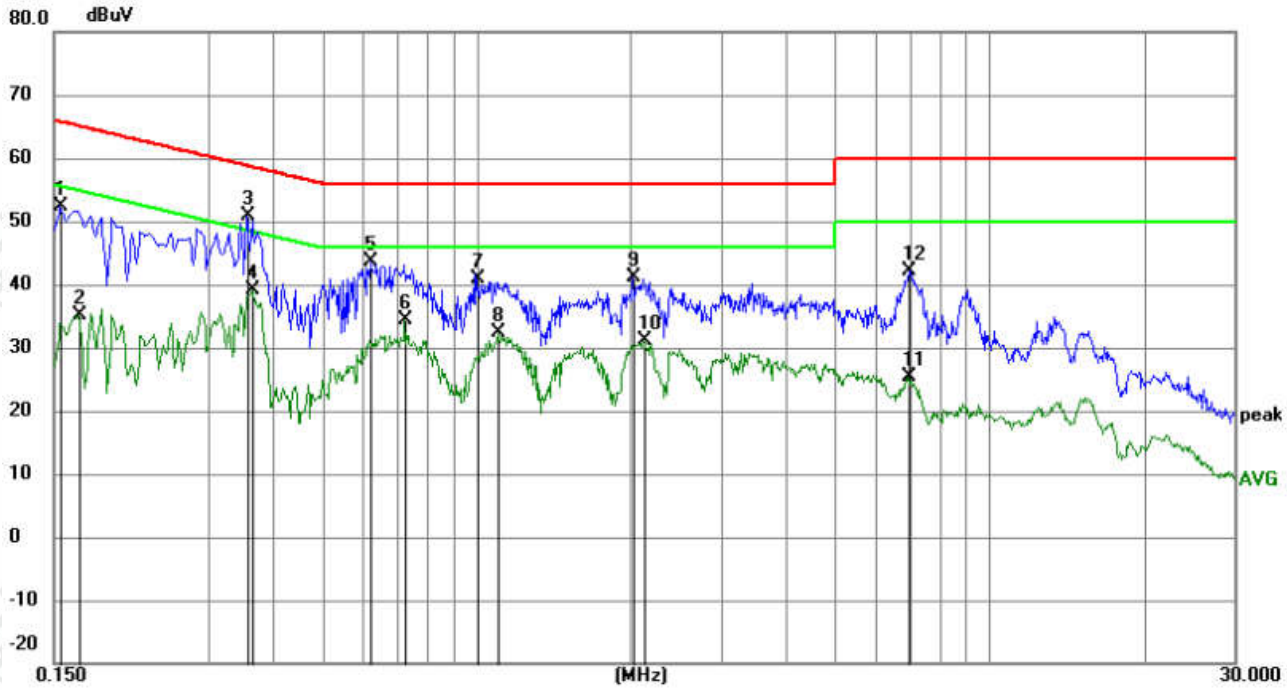
a. The Product was placed on a nonconductive table above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).

b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.

c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

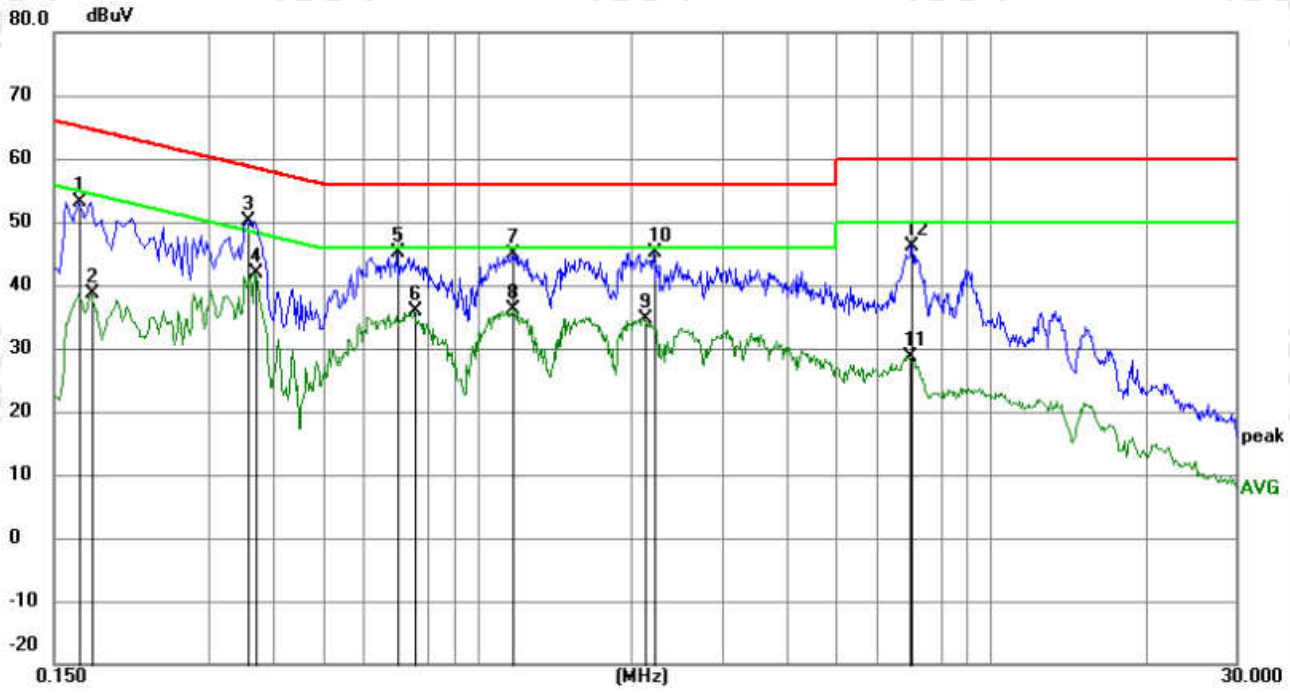
6.4. GRAPHS AND DATA

Product	:	BeaglePlay			
Model/Type reference	:	BeaglePlay			
Test Voltage	:	AC120V/60Hz	**Temperature/Humidity**	:	23℃/53%
Mode	:	Normal	**Phase**	:	L
Note	:				



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1544	42.43	9.87	52.30	65.76	-13.46	QP	
2		0.1680	25.29	9.87	35.16	55.06	-19.90	AVG	
3	*	0.3570	40.90	10.01	50.91	58.80	-7.89	QP	
4		0.3660	29.06	10.00	39.06	48.59	-9.53	AVG	
5		0.6224	33.69	10.03	43.72	56.00	-12.28	QP	
6		0.7259	24.53	9.87	34.40	46.00	-11.60	AVG	
7		1.0004	31.01	9.83	40.84	56.00	-15.16	QP	
8		1.1038	22.49	9.83	32.32	46.00	-13.68	AVG	
9		2.0219	31.27	9.79	41.06	56.00	-14.94	QP	
10		2.1118	21.30	9.79	31.09	46.00	-14.91	AVG	
11		6.9450	15.50	9.79	25.29	50.00	-24.71	AVG	
12		6.9855	32.27	9.79	42.06	60.00	-17.94	QP	

Product	:	BeaglePlay			
Model/Type reference	:	BeaglePlay			
Test Voltage	:	AC120V/60Hz	**Temperature/Humidity**	:	23℃/53%
Mode	:	Normal	**Phase**	:	N
Note	:				



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1680	43.36	9.87	53.23	65.06	-11.83	QP	
2		0.1770	28.79	9.87	38.66	54.63	-15.97	AVG	
3		0.3570	40.06	10.01	50.07	58.80	-8.73	QP	
4	*	0.3704	31.88	10.00	41.88	48.49	-6.61	AVG	
5		0.6990	35.14	9.88	45.02	56.00	-10.98	QP	
6		0.7575	25.90	9.86	35.76	46.00	-10.24	AVG	
7		1.1760	35.15	9.82	44.97	56.00	-11.03	QP	
8		1.1760	26.23	9.82	36.05	46.00	-9.95	AVG	
9		2.1120	24.84	9.79	34.63	46.00	-11.37	AVG	
10		2.2020	35.39	9.79	45.18	56.00	-10.82	QP	
11		6.9495	18.80	9.79	28.59	50.00	-21.41	AVG	
12		7.0080	36.35	9.79	46.14	60.00	-13.86	QP	

Note:

1. Margin=Measurement-Limit.
2. Measurement=Reading_Level+Correct Factor.
3. Correct Factor=Cable Factor+Lisn Factor.

7. RADIATED EMISSION TEST

7.1. LIMITS

For unintentional device , according to §15.109 (a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values.

And according to §15.109 (2)measurements below 1000 MHz provided the limits in paragraphs (a) and (b) of this section are extrapolated to the new measurement distance using an inverse linear distance extrapolation factor (20 dB/decade).

According to FCC 15.31 section(1), at frequencies at or above 30 MHz measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

According to FCC 15.31 section(2), frequencies below 30 MHz, performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

According to 15.35 Measurement detector functions and bandwidths section (b). Unless otherwise specified, e.g., see §§15.250, 15.252, 15.253(d), 15.255, 15.256, and 15.509 through 15.519 of this part, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

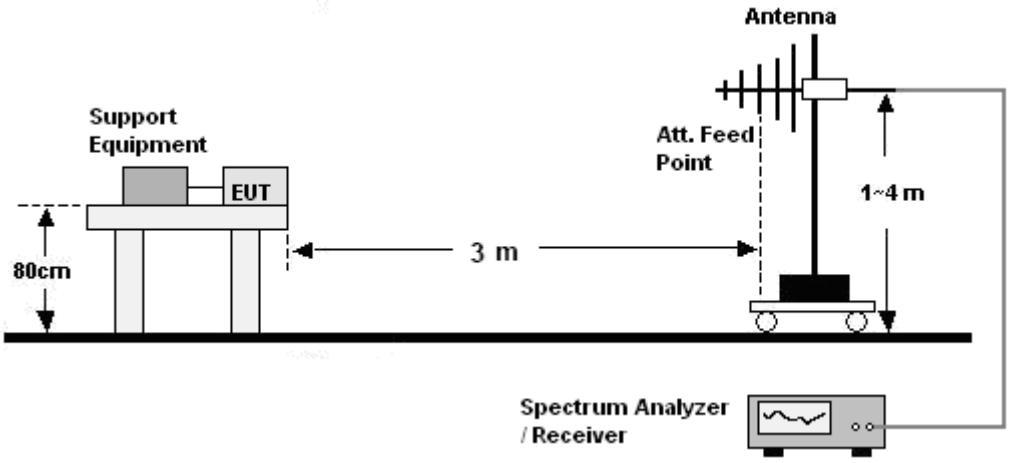
Limits for Class B digital devices

Frequency (MHz)	limits at 3m dB(μV/m)
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

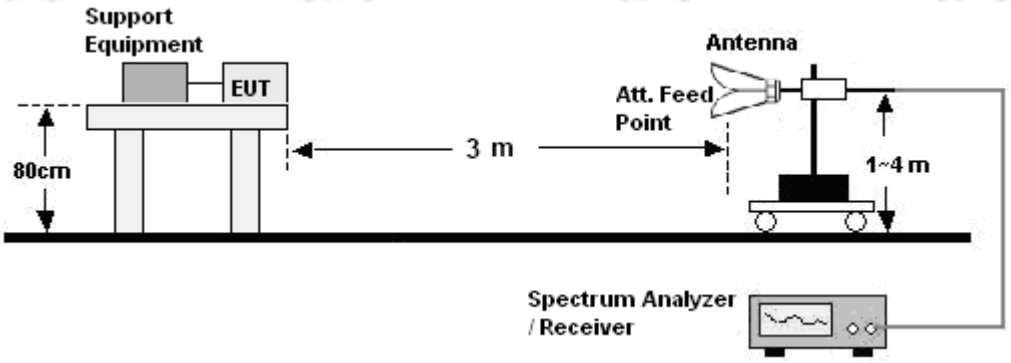
NOTE: 1. The lower limit shall apply at the transition frequency.
2. The limits shown above are based on measuring equipment employing a CISPR quasi-peak detector function for frequencies below or equal to 1000MHz.
3. The limits shown above are based on measuring equipment employing an average detector function for frequencies above 1000MHz.

7.2. BLOCK DIAGRAM OF TEST SETUP

30MHz ~ 1GHz:



Above 1GHz:



7.3. PROCEDURE OF RADIATED EMISSION TEST

30MHz ~ 1GHz:

a. The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:

a. The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.

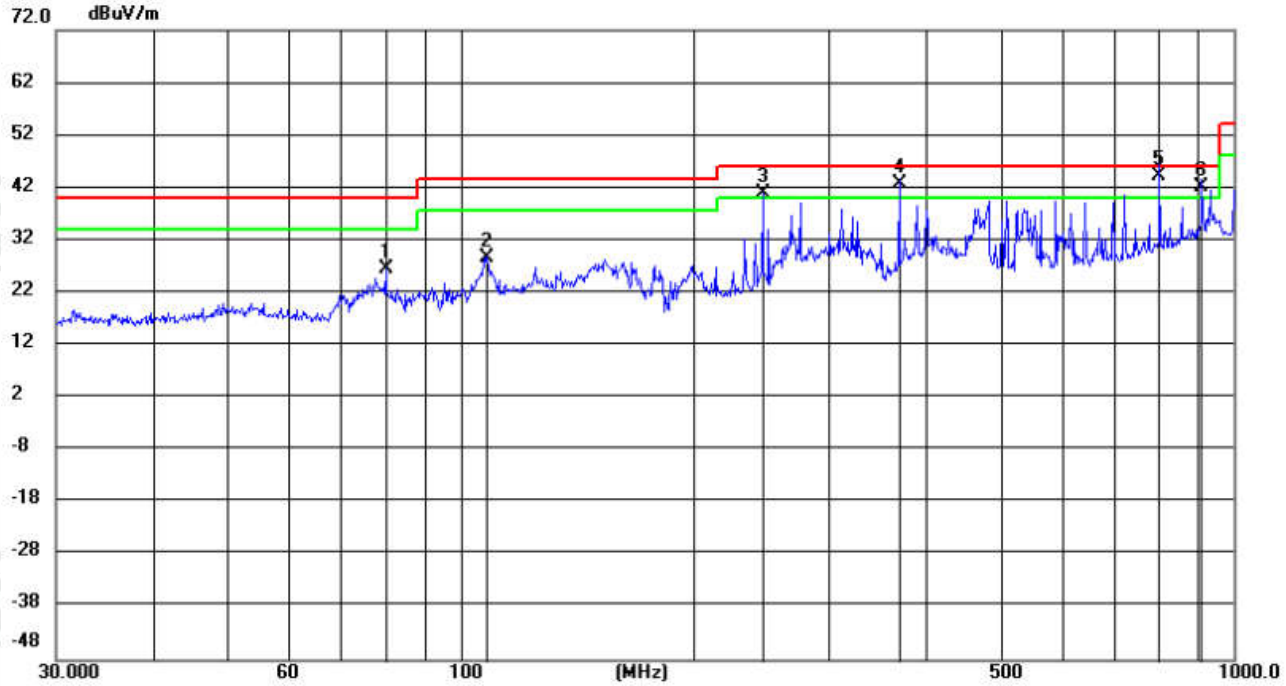
b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4. GRAPHS AND DATA

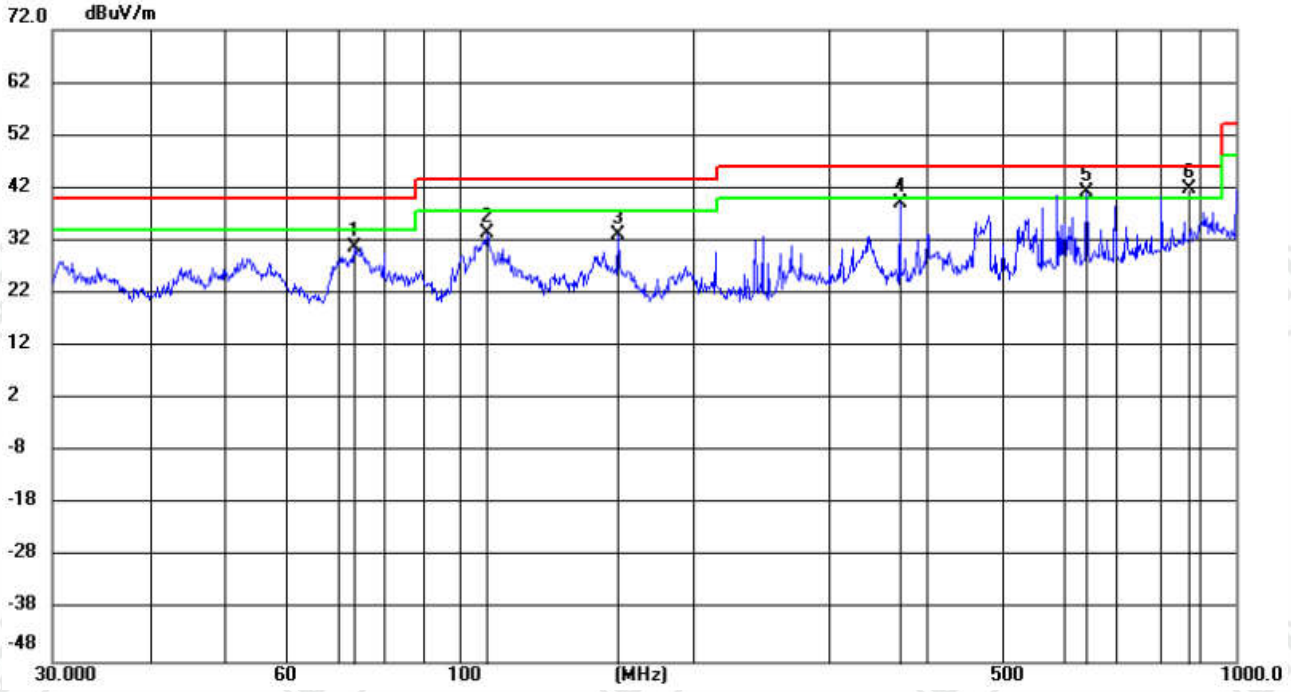
30MHz ~ 1GHz:

Product	:	BeaglePlay			
Model/Type reference	:	BeaglePlay			
Test Voltage	:	AC120V/60Hz	**Temperature**	:	23℃
Mode	:	Normal	**Humidity**	:	54%
Polarization	:	Horizontal	**Note**	:	



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		80.0805	15.71	10.70	26.41	40.00	-13.59	QP	200	4	
2		108.2666	15.25	13.55	28.80	43.50	-14.70	QP	200	192	
3	!	245.9509	26.34	14.71	41.05	46.00	-4.95	QP	100	261	
4	!	369.4047	24.95	17.85	42.80	46.00	-3.20	QP	100	88	
5	*	801.7863	19.06	25.34	44.40	46.00	-1.60	QP	200	4	
6	!	909.6666	14.09	28.21	42.30	46.00	-3.70	QP	200	4	

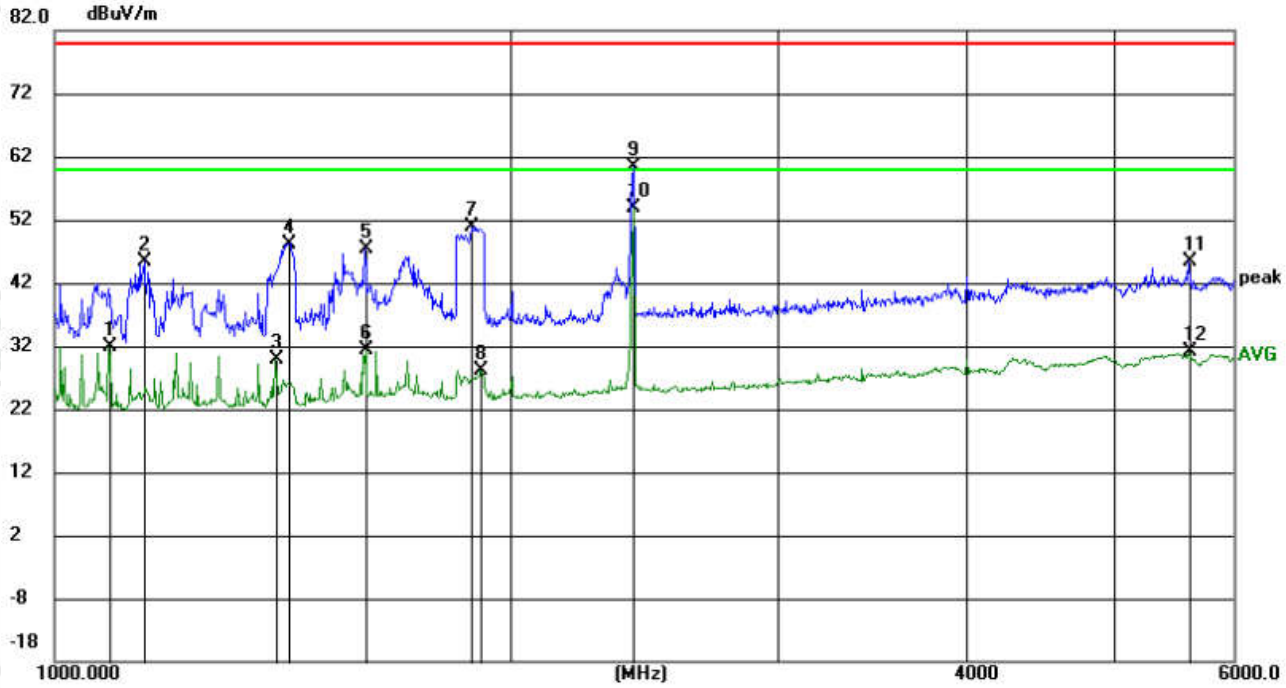
Product	:	BeaglePlay			
Model/Type reference	:	BeaglePlay			
Test Voltage	:	AC120V/60Hz	**Temperature**	:	23℃
Mode	:	Normal	**Humidity**	:	54%
Polarization	:	Vertical	**Note**	:	



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		73.3593	19.17	11.60	30.77	40.00	-9.23	QP	200	129	
2		108.6470	19.87	13.54	33.41	43.50	-10.09	QP	100	351	
3		160.3456	22.76	10.52	33.28	43.50	-10.22	QP	100	4	
4		369.4047	21.24	17.85	39.09	46.00	-6.91	QP	100	4	
5	*	642.8612	18.52	22.86	41.38	46.00	-4.62	QP	100	343	
6		1000.0000	13.88	28.11	41.99	54.00	-12.01	QP	100	4	

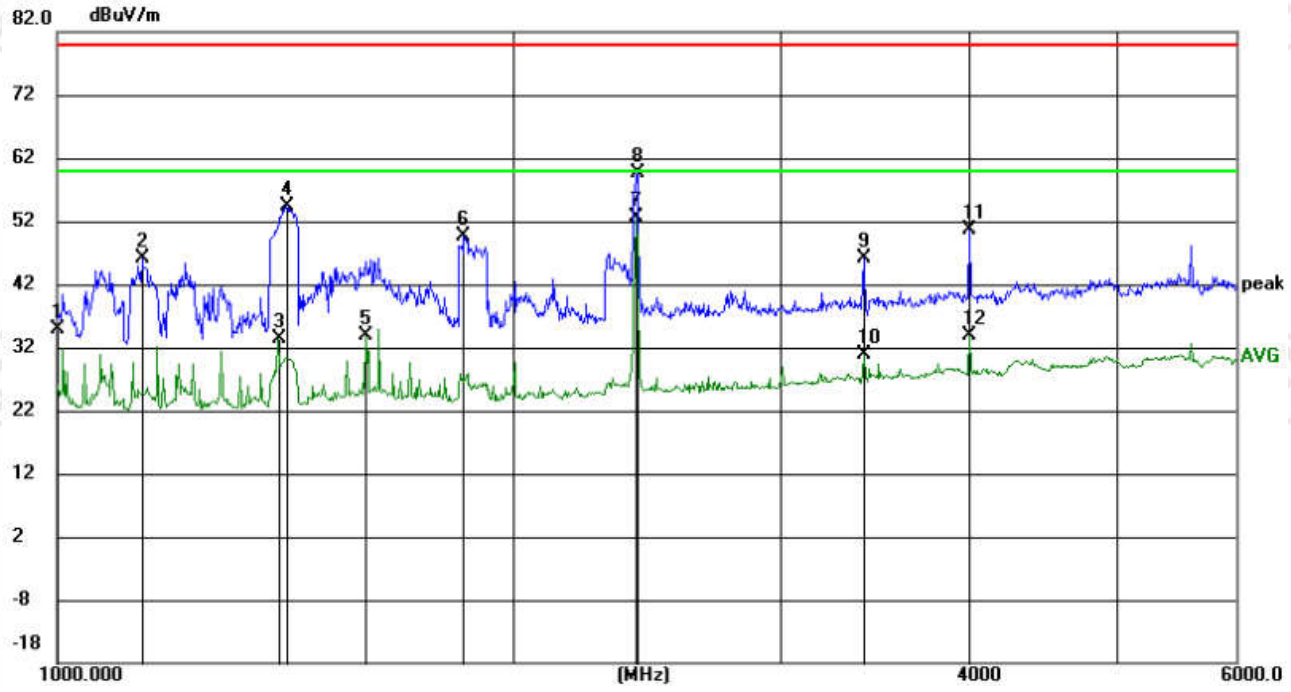
Above 1GHz:

Product	:	BeaglePlay			
Model/Type reference	:	BeaglePlay			
Test Voltage	:	AC120V/60Hz	**Temperature**	:	23℃
Mode	:	Normal	**Humidity**	:	54%
Polarization	:	Horizontal	**Note**	:	



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1085.913	46.31	-14.41	31.90	60.00	-28.10	AVG	100	37	
2		1145.881	59.44	-14.10	45.34	80.00	-34.66	peak	100	316	
3		1398.023	43.19	-13.31	29.88	60.00	-30.12	AVG	100	239	
4		1428.407	61.38	-13.18	48.20	80.00	-31.80	peak	200	9	
5		1601.968	60.05	-12.57	47.48	80.00	-32.52	peak	200	32	
6		1604.841	43.90	-12.55	31.35	60.00	-28.65	AVG	200	32	
7		1885.669	62.52	-11.55	50.97	80.00	-29.03	peak	100	25	
8		1909.469	39.54	-11.43	28.11	60.00	-31.89	AVG	100	25	
9		2410.306	70.10	-9.66	60.44	80.00	-19.56	peak	200	356	
10	*	2410.306	63.50	-9.66	53.84	60.00	-6.16	AVG	200	356	
11		5605.076	46.68	-1.37	45.31	80.00	-34.69	peak	200	172	
12		5605.076	32.52	-1.37	31.15	60.00	-28.85	AVG	200	172	

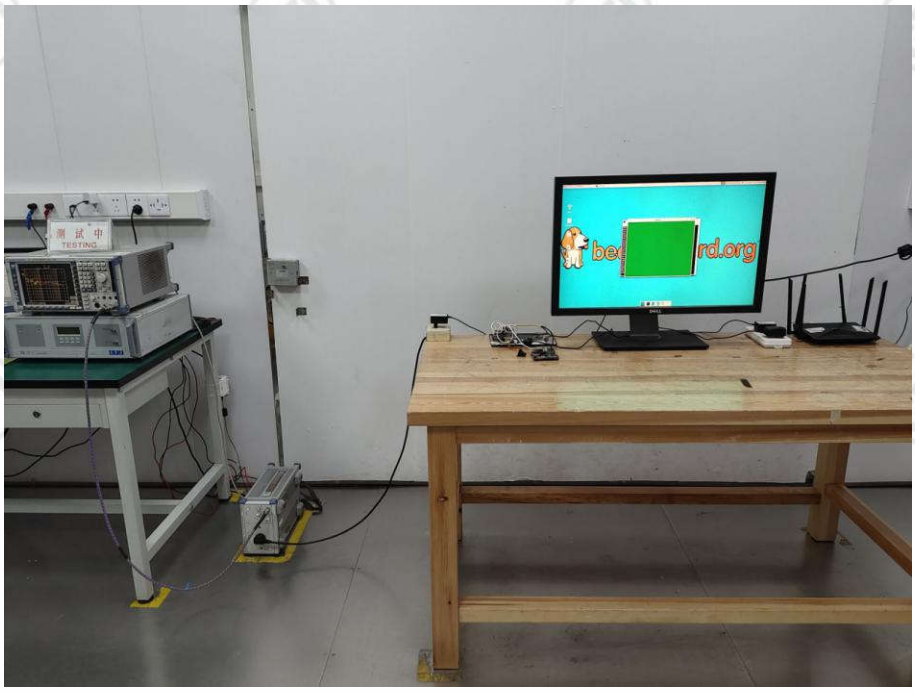
Product	:	BeaglePlay			
Model/Type reference	:	BeaglePlay			
Test Voltage	:	AC120V/60Hz	**Temperature**	:	23℃
Mode	:	Normal	**Humidity**	:	54%
Polarization	:	Vertical	**Note**	:	



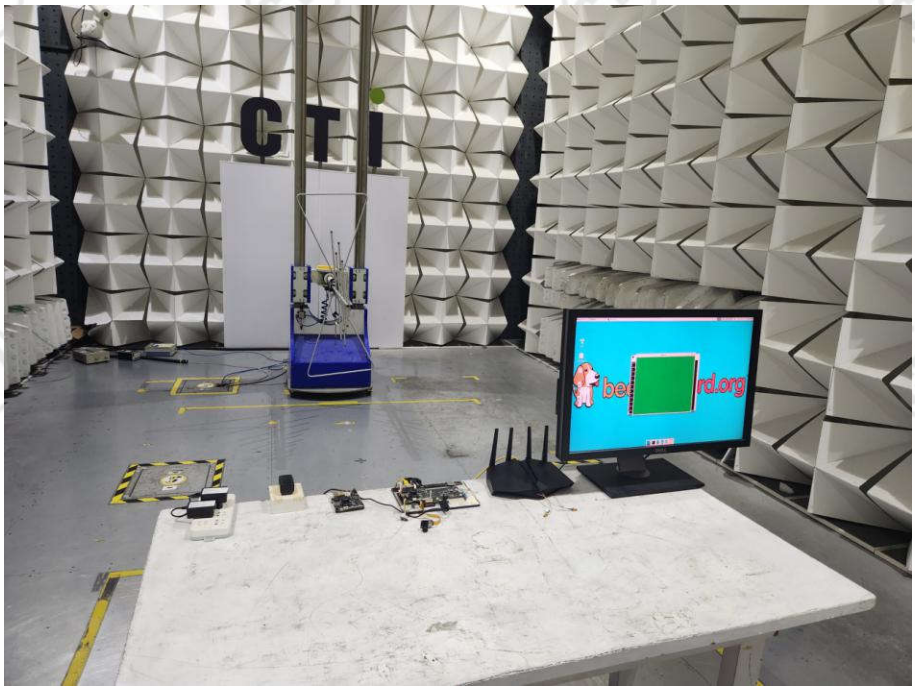
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1000.0000	49.81	-14.86	34.95	60.00	-25.05	AVG	100	356	
2		1137.698	60.27	-14.15	46.12	80.00	-33.88	peak	100	9	
3		1398.023	46.59	-13.31	33.28	60.00	-26.72	AVG	200	4	
4		1415.668	67.72	-13.24	54.48	80.00	-25.52	peak	200	4	
5		1599.100	46.38	-12.58	33.80	60.00	-26.20	AVG	100	0	
6		1855.505	61.34	-11.61	49.73	80.00	-30.27	peak	200	315	
7	*	2410.306	62.25	-9.66	52.59	60.00	-7.41	AVG	100	235	
8		2414.629	69.32	-9.63	59.69	80.00	-20.31	peak	200	163	
9		3406.085	52.52	-6.38	46.14	80.00	-33.86	peak	100	356	
10		3406.085	37.38	-6.38	31.00	60.00	-29.00	AVG	100	356	
11		4002.110	56.00	-5.31	50.69	80.00	-29.31	peak	200	303	
12		4002.110	39.23	-5.31	33.92	60.00	-26.08	AVG	200	303	

Note:
1. Margin=Measurement-Limit.
2. Measurement=Reading_Level+Correct Factor.
3. Correct Factor=Ant Factor+Cable loss.

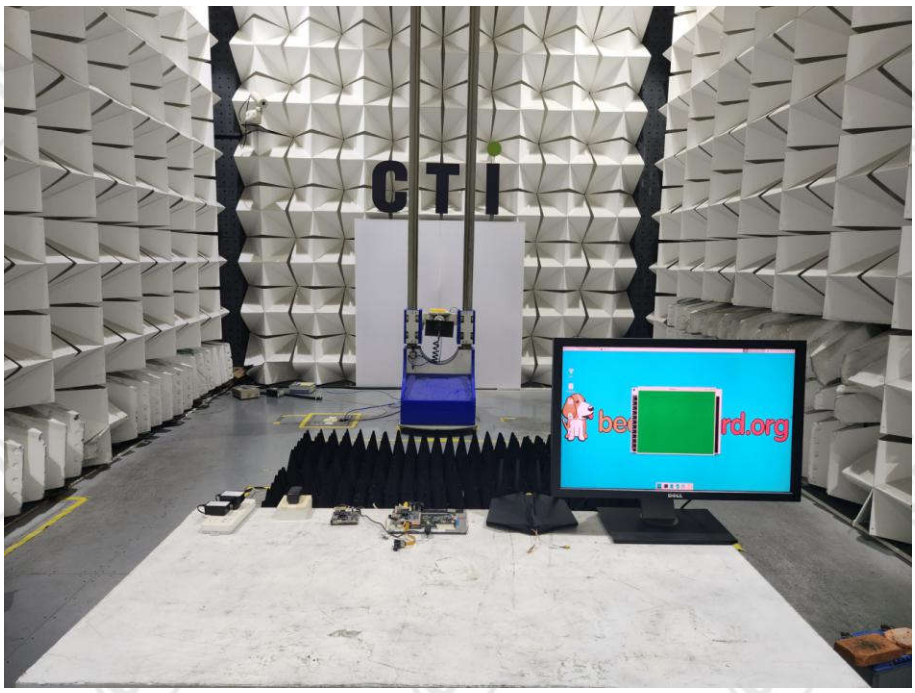
APPENDIX 1 PHOTOGRAPHS OF TEST SETUP



CONDUCTED DISTURBANCE TEST SETUP



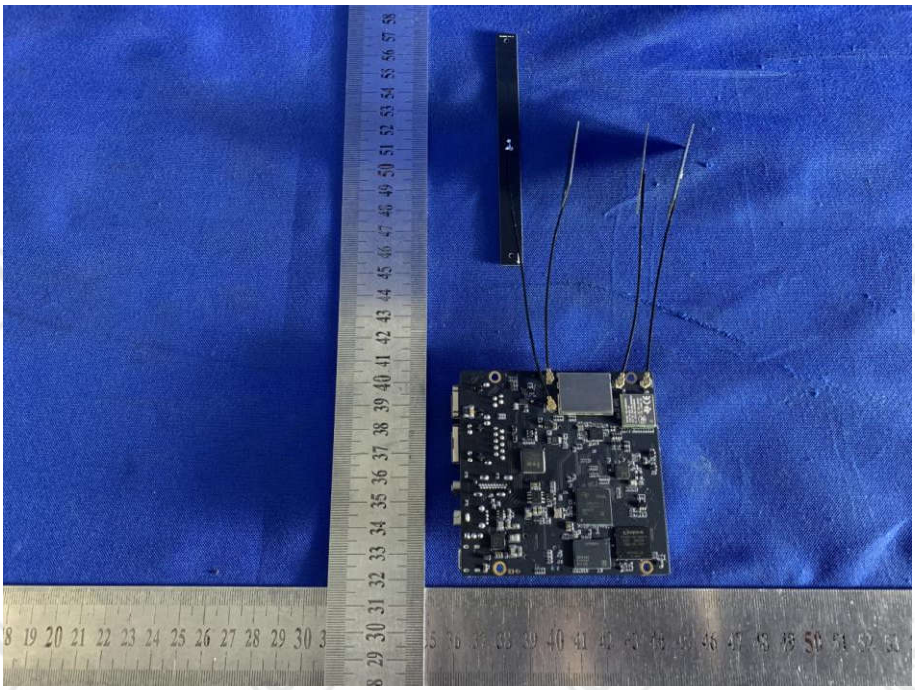
RADIATED EMISSION TEST SETUP-1



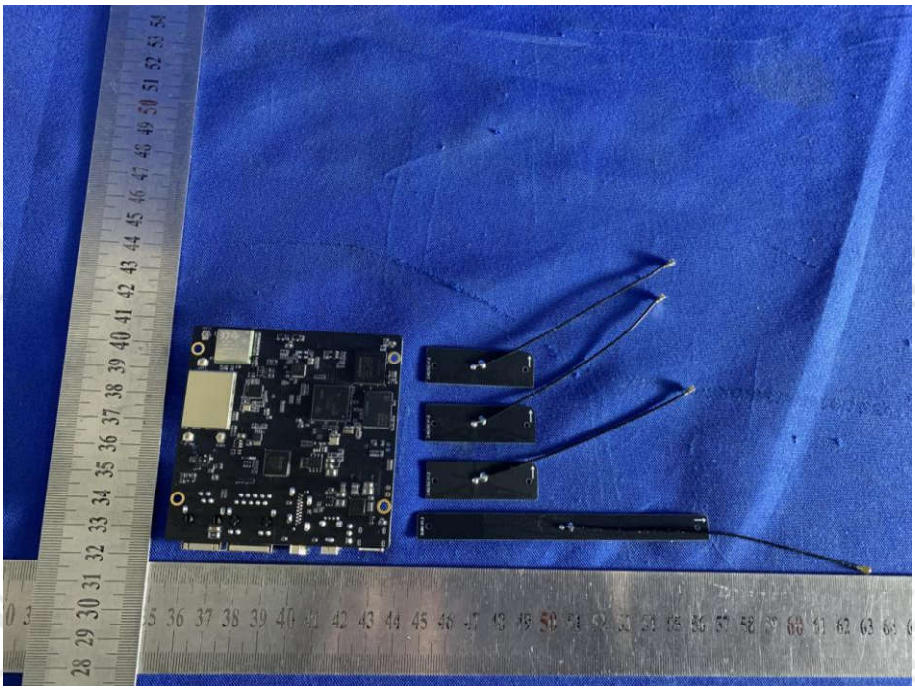
RADIATED EMISSION TEST SETUP-2

APPENDIX 2 PHOTOGRAPHS OF PRODUCT

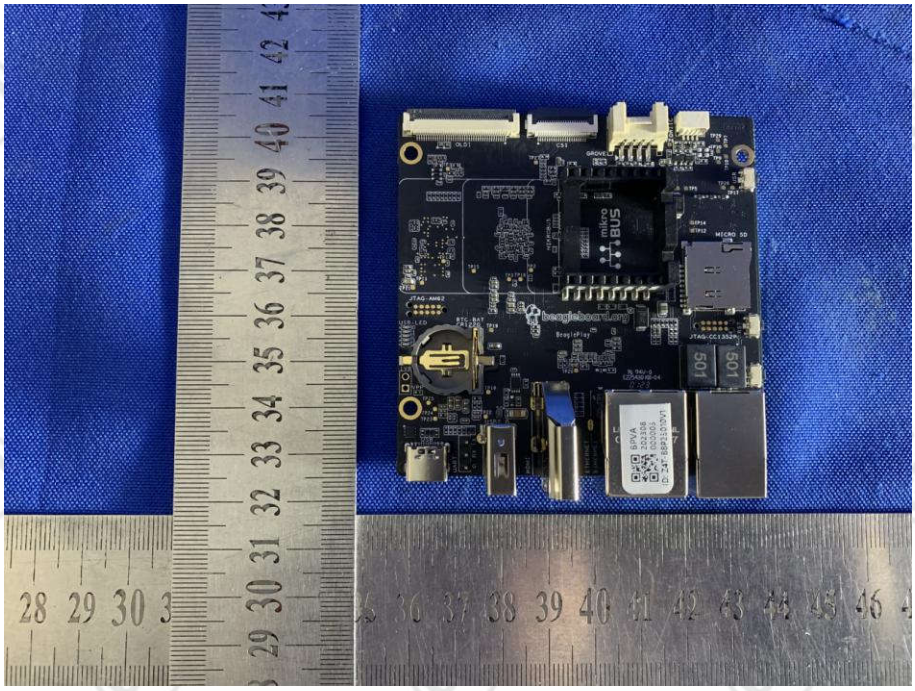
Test model No.: BeaglePlay



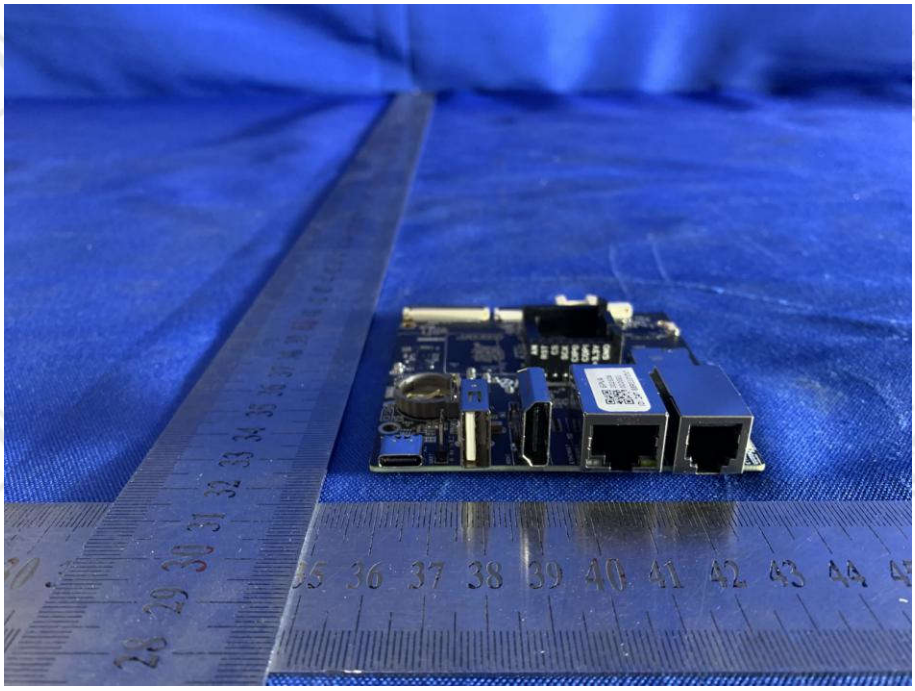
View of Product-1



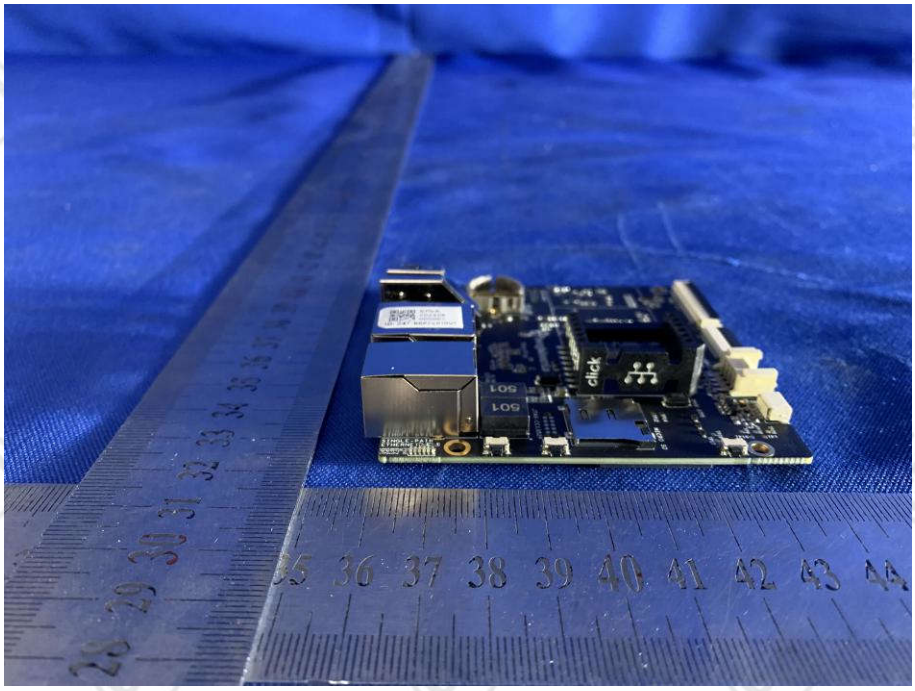
View of Product-2



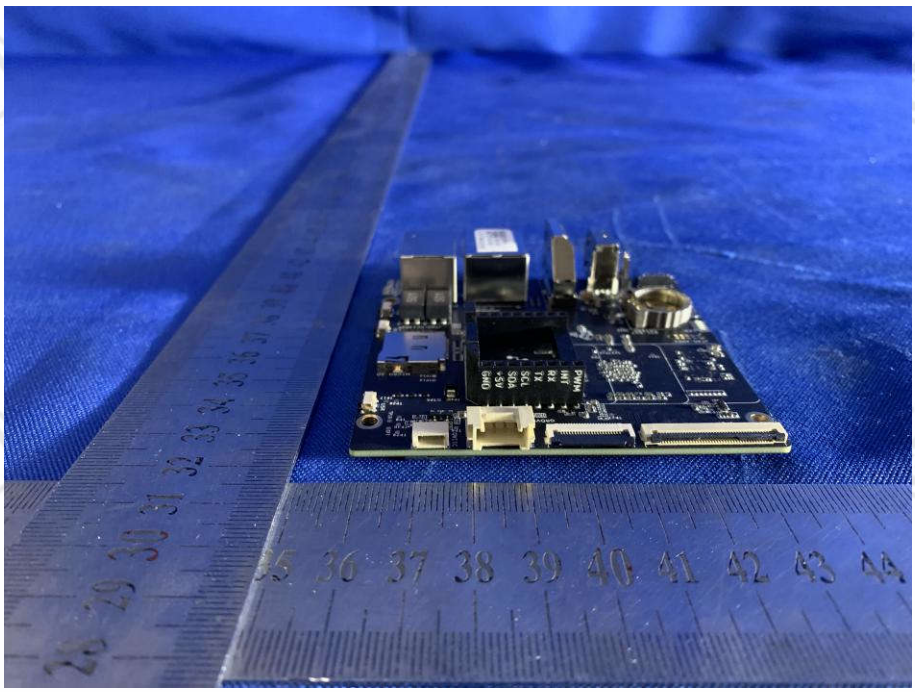
View of Product-3



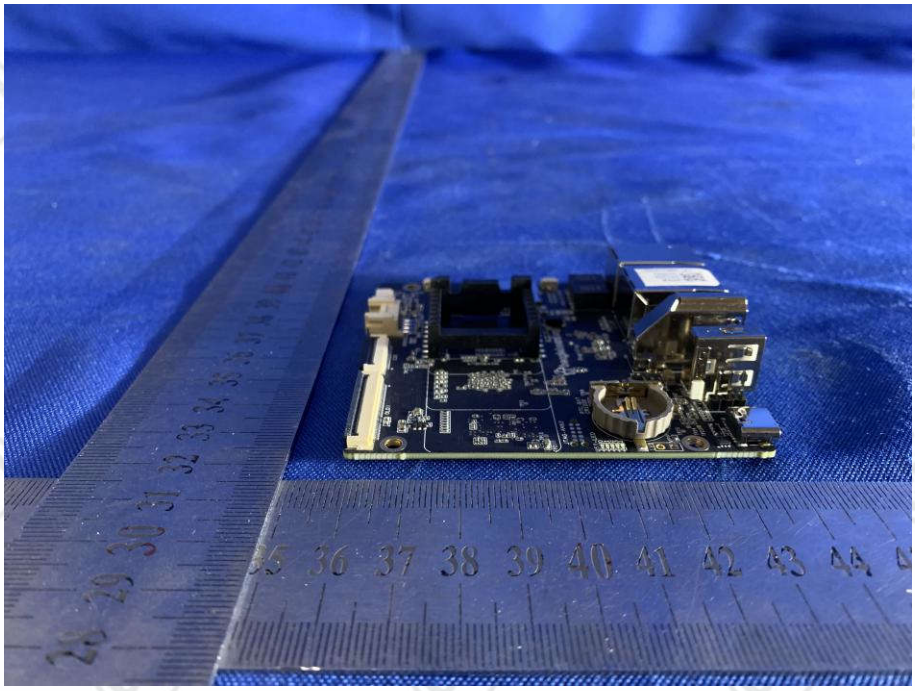
View of Product-4



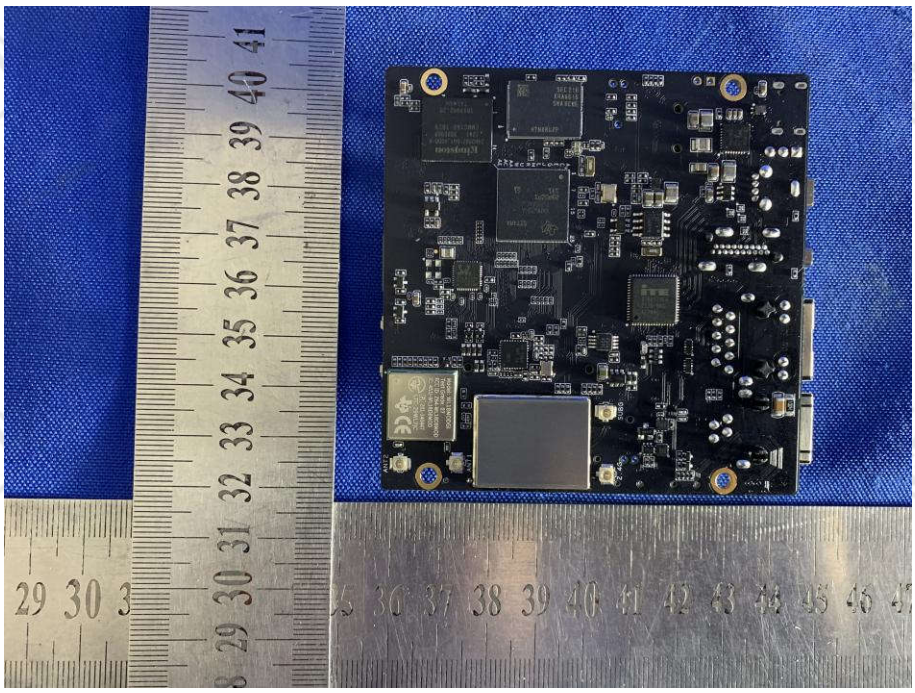
View of Product-5



View of Product-6



View of Product-7



View of Product-8

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*** End of Report ***

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