FCC REPORT

Applicant:	Shenzhen Bestart Technology Co.,Ltd
Address of Applicant:	Guang Xing Yuan Internet Creative Park Building A-220, Xing Ye Road, Bao'an District, Shenzhen

Equipment Under Test (EUT)

Product Name:	Auto-grip Wireless charging phone holder
Model No.:	B02F, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, B14, B15, B16, B17, B18, B19
Trade mark:	Bestart
FCC ID:	2AO5P-B02F
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.209
Date of sample receipt:	14 Nov., 2018
Date of Test:	14 Nov., to 21 Nov., 2018
Date of report issue:	23 Nov., 2018
Test Result:	PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Bruce Zhang
Laboratory Manager

2 Version

Version No.	Date	Description
00	*23 Nov., 2018*	*Original*

Prepared By: Zora Lee ***Date:*** *23 Nov., 2018*

Report Clerk

Check By: Wimer Zhang ***Date:*** *23 Nov., 2018*

Project Engineer

3 Contents

Page

4 Test Summary

Test Item	Section in CFR 47	Result
Spurious emissions	15.209	Pass
20dB Bandwidth	15.215(c)	Pass
Conducted Emission	15.207	Pass
Remark: *Pass: The EUT complies with the essential requirements in the standard.*		

5 General Information

5.1 Client Information

Applicant:	Shenzhen Bestart Technology Co.,Ltd
Address:	Guang Xing Yuan Internet Creative Park Building A-220, Xing Ye Road, Bao'an District, Shenzhen
Manufacturer/Factory:	Shenzhen Bestart Technology Co.,Ltd
Address:	Guang Xing Yuan Internet Creative Park Building A-220, Xing Ye Road, Bao'an District, Shenzhen

5.2 General Description of E.U.T.

Product Name:	Auto-grip Wireless charging phone holder
Model No.:	B02F, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, B14, B15, B16, B17, B18, B19
Operation Frequency:	111.7kHz~182.3kHz
Modulation type:	Loading
Antenna Type:	Coil Antenna
Power supply:	Input: 5V, 2A / 9V, 1.67A Output: 5V, 1.5A / 9V, 1.2A
Test Sample Condition:	The test samples were provided in good working order with no visible defects.
Remark:	Model No.: B02F, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, B14, B15, B16, B17, B18, B19 were identical inside, the electrical circuit design, layout, components used and internal wiring, with difference being model name and Appearance.

5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting mode with modulation
Remark: *Pre-scan input: 5V, output: 5V,1.5A/9V,1.2A and input: 9V, output: 5V,1.5A/9V,1.2A of the Power supply, found input: 5V, output: 9V,1.2A was worse case mode. So the report only reflects the worse mode.*	

5.4 Description of Support Units

Manufacturer	Description	Model	S/N	FCC ID/DoC
Skytek	Wireless charging match load	N/A	N/A	N/A
Shenzhen HengChangshengding Electronics Co., ltd.	Adapter	HCSD-12650100	N/A	SDOC

5.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	±2.22 dB
Radiated Emission (9kHz ~ 30MHz)	±2.76 dB
Radiated Emission (30MHz ~ 1000MHz)	±4.28 dB
Radiated Emission (1GHz ~ 18GHz)	±5.72 dB
Radiated Emission (18GHz ~ 26.5GHz)	±2.88 dB

5.6 Description of Cable Used

Cable Type	Description	Length	From	To
USB Cable	Detachable, Unshielded	1.0m	EUT	PC/Adapter

5.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Registration No.: 727551**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

- **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

5.8 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

5.9 Test Instrumentslist

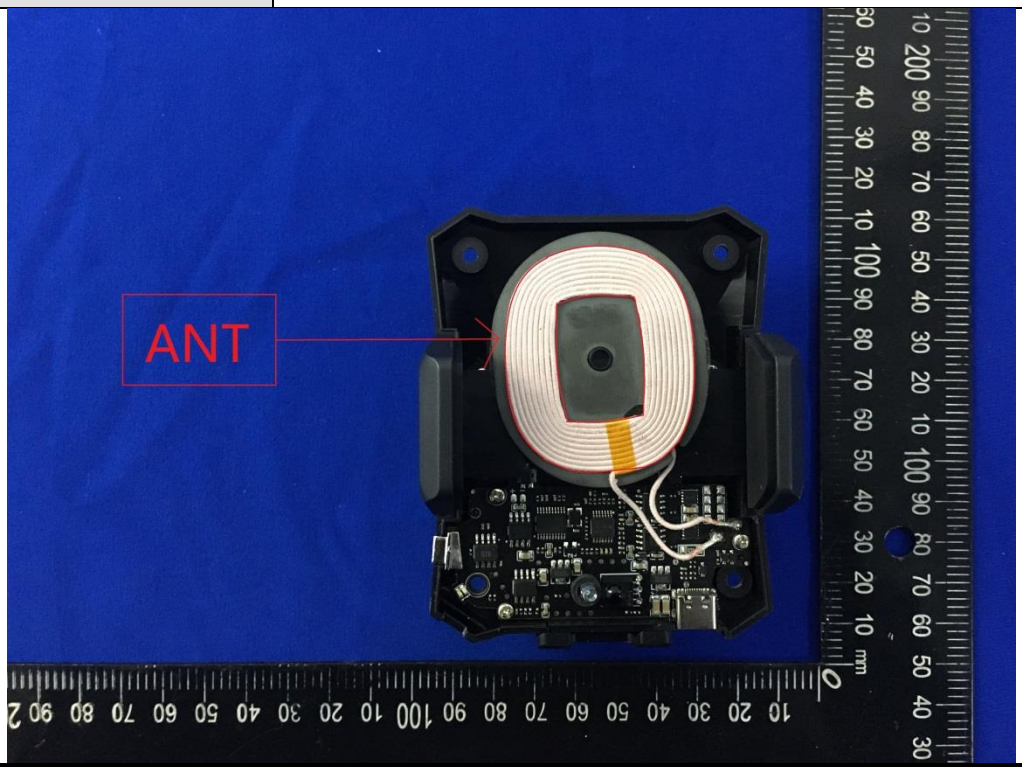
Radiated Emission:					
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-21-2017	11-20-2018
				11-21-2018	11-20-2019
Loop Antenna	SCHWARZBECK	FMZB 1519 B	00044	04-28-2018	04-27-2019
EMI Test Software	AUDIX	E3	Version: 6.110919b		
Pre-amplifier	HP	8447D	2944A09358	03-07-2018	03-06-2019
Pre-amplifier	CD	PAP-1G18	11804	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-21-2017	11-20-2018
				11-21-2018	11-20-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-07-2018	03-06-2019
Simulated Station	Anritsu	MT8820C	6201026545	03-07-2018	03-06-2019
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2018	03-06-2019
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2018	03-06-2019
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2018	03-06-2019

Conducted Emission:					
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-07-2018	03-06-2019
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-07-2018	03-06-2019
LISN	CHASE	MN2050D	1447	03-19-2018	03-18-2019
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2019
Cable	HP	10503A	N/A	03-07-2018	03-06-2019
EMI Test Software	AUDIX	E3	Version: 6.110919b		

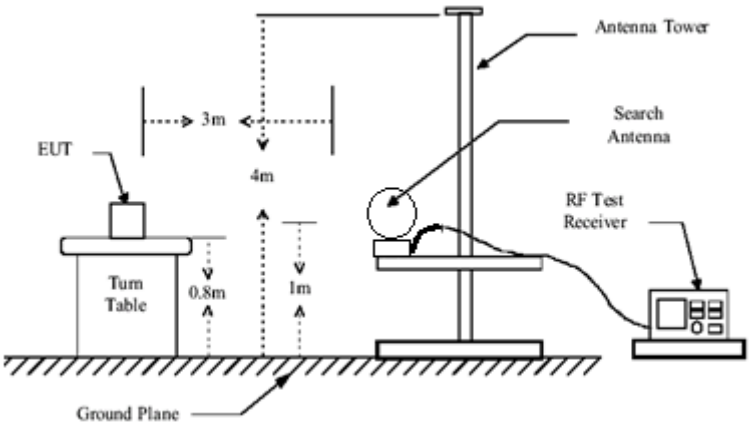
6 Test results andMeasurement Data

6.1 Antenna requirement

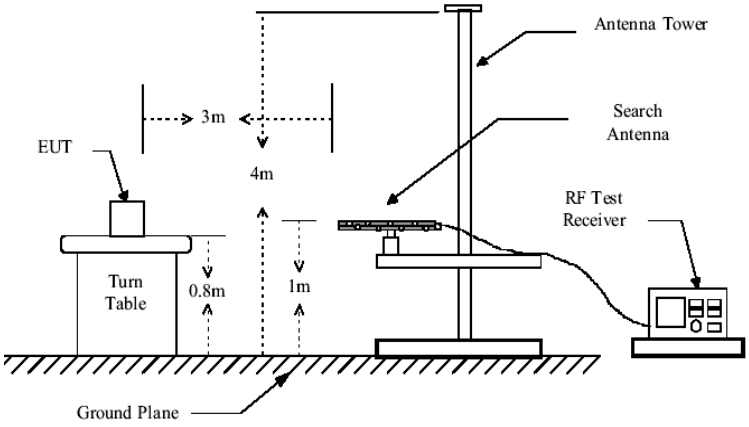
Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	



6.2 Radiated Emission

<table>
<tr><td>Test Requirement:</td><td colspan="5">FCC Part15 C Section 15.209</td></tr>
<tr><td>Test Method:</td><td colspan="5">ANSI C63.4:2014</td></tr>
<tr><td>Test Frequency Range:</td><td colspan="5">9kHz to 1000MHz</td></tr>
<tr><td>Test site:</td><td colspan="5">Measurement Distance: 3m(Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver setup:</td><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td></td><td>9kHz-150kHz</td><td>PK/AV</td><td>200Hz</td><td>600Hz</td><td>PK /AV Value</td></tr>
<tr><td></td><td>150kHz-30MHz</td><td>PK/AV/QP</td><td>9kHz</td><td>30kHz</td><td>PK/AV/QP Value</td></tr>
<tr><td></td><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td>Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Limit:</td><td colspan="5"><table><tr><td>Frequency (MHz)</td><td>Limit (uV/m @3m)</td><td>Distance (m)</td></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100</td><td>3</td></tr><tr><td>88-216</td><td>150</td><td>3</td></tr><tr><td>216-960</td><td>200</td><td>3</td></tr><tr><td>Above 1GHz</td><td>500</td><td>3</td></tr></table></td></tr>
<tr><td>Test Procedure:</td><td colspan="5">a. The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and thenthe antenna was tuned to heights from 1 meter to 4 meters and the rotatabletable was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.</td></tr>
<tr><td>Test setup:</td><td colspan="5">9kHz-30MHz
 

30MHz-1GHz</td></tr>
</table>

	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass
Remark:	The emission levels of above 1 GHz are very lower than the limit and not show in test report.

Measurement Data:

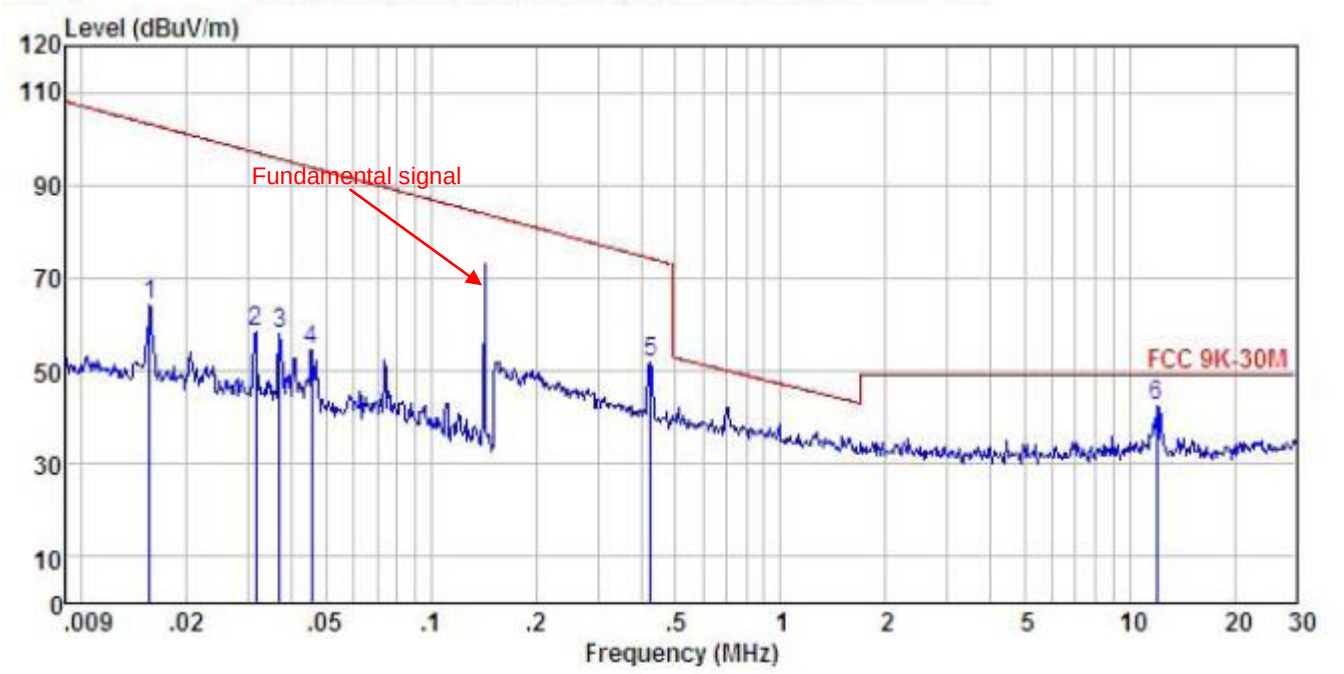
a) Fundamental field strength

Peak value				
Test Polarization	Frequency (kHz)	H-field@3m (dBμV)	Limit@3m (dBμV)	Result
Horizontal	147	79.73	124.25	Pass
Vertical	147	73.35	124.25	Pass
Average value				
Test Polarization	Frequency (kHz)	H-field@3m (dBμV)	Limit@3m (dBμV)	Result
Horizontal	147	59.73	104.25	Pass
Vertical	147	53.35	104.25	Pass

b) Radiated spurious:

Below 1GHz:

Product Name:	Auto-grip Wireless charging phone holder	**Product Model:**	B02F
Test By:	Zora	**Test mode:**	Charing mode
Test Frequency:	9kHz~30MHz	**Polarization:**	Vertical
Test Voltage:	AC 120V/60Hz	**Environment:**	Temp: 24℃ Huni: 57%

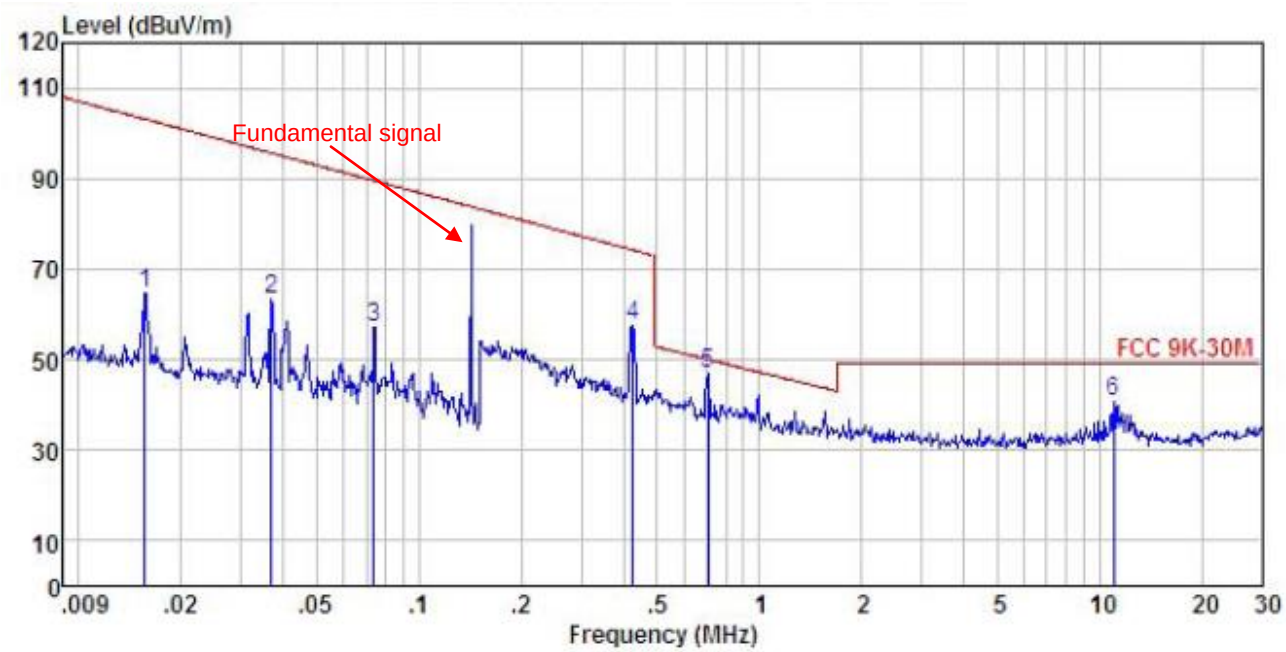


	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	0.016	38.54	-25.86	0.05	0.00	64.23	103.17	-38.94	Peak
2	0.031	32.66	-25.95	0.12	0.00	58.33	97.06	-38.73	Peak
3	0.037	32.28	-25.97	0.14	0.00	57.95	95.64	-37.69	Peak
4	0.046	28.70	-25.99	0.16	0.00	54.37	93.79	-39.42	Peak
5	0.424	26.29	-26.28	0.39	0.00	51.90	74.26	-22.36	Peak
6	11.996	16.99	-26.44	0.59	0.00	42.64	49.00	-6.36	Peak

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Product Name:	Auto-grip Wireless charging phone holder	Product Model:	B02F
Test By:	Zora	Test mode:	Charing mode
Test Frequency:	9kHz~30MHz	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Huni: 57%

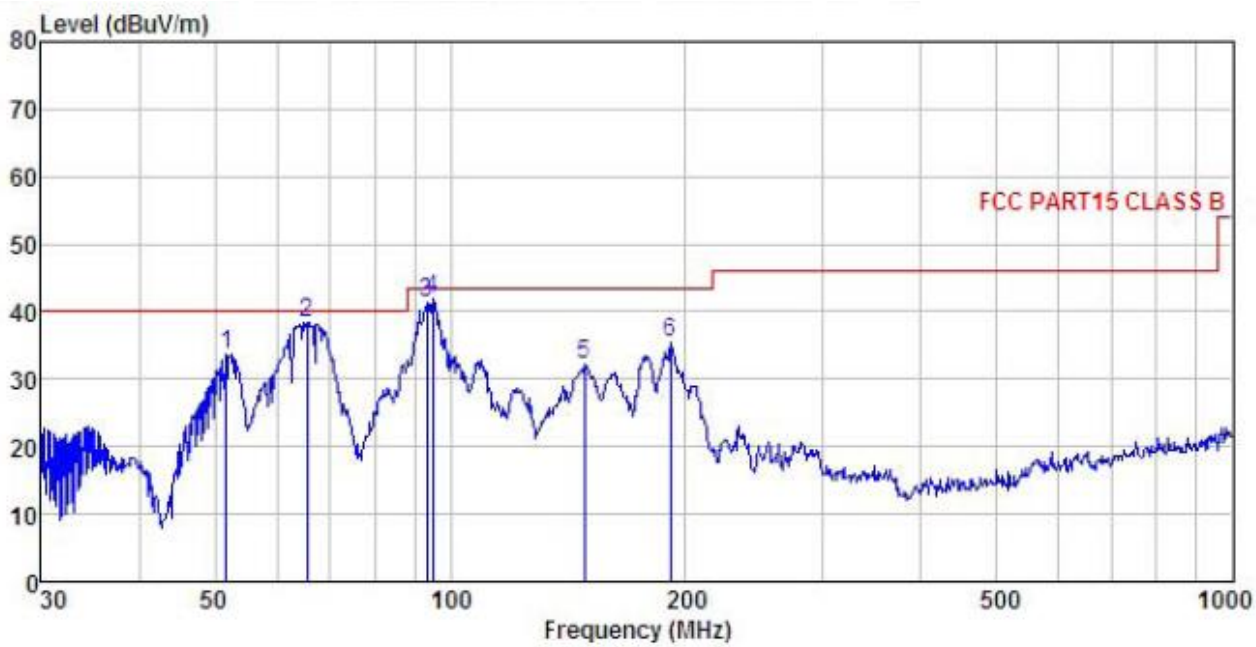


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	0.016	38.93	-25.86	0.05	0.00	64.62	103.17	-38.55	Peak
2	0.037	37.76	-25.97	0.14	0.00	63.43	95.64	-32.21	Peak
3	0.074	31.70	-26.06	0.19	0.00	57.33	89.60	-32.27	Peak
4	0.424	31.78	-26.28	0.39	0.00	57.39	74.26	-16.87	Peak
5	0.707	21.30	-26.30	0.56	0.00	47.06	50.06	-3.00	Peak
6	11.061	15.15	-26.42	0.55	0.00	40.78	49.00	-8.22	Peak

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Product Name:	Auto-grip Wireless charging phone holder	Product Model:	B02F
Test By:	Zora	Test mode:	Charing mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Huni: 57%

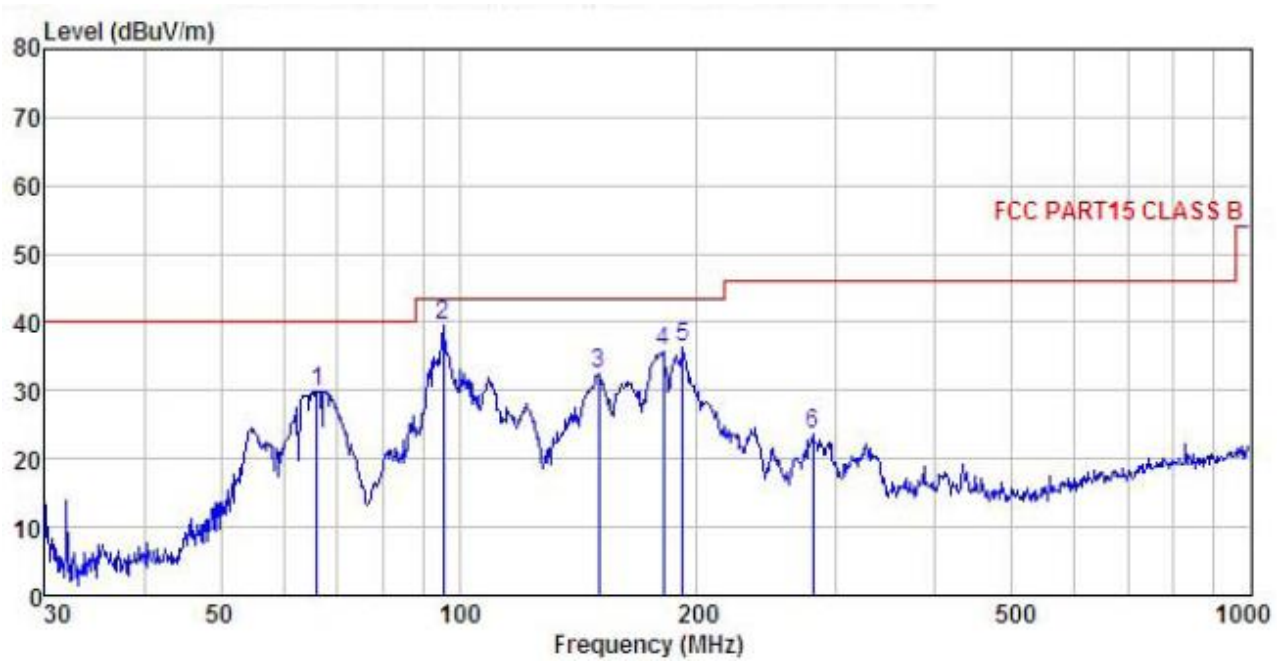


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	51.662	48.49	13.80	1.27	29.81	33.75	40.00	-6.25	QP
2	65.573	56.27	10.50	1.41	29.75	38.43	40.00	-1.57	QP
3	93.440	58.31	10.61	2.02	29.56	41.38	43.50	-2.12	QP
4	95.093	58.44	10.89	2.01	29.55	41.79	43.50	-1.71	QP
5	148.441	50.37	8.52	2.50	29.23	32.16	43.50	-11.34	QP
6	191.074	50.36	11.23	2.81	28.89	35.51	43.50	-7.99	QP

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Product Name:	Auto-grip Wireless charging phone holder	Product Model:	B02F
Test By:	Zora	Test mode:	Charing mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Environment:	Temp: 24℃ Huni: 57%

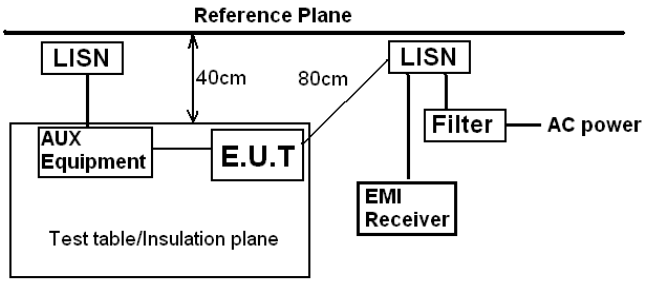


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	66.266	47.96	10.27	1.41	29.75	29.89	40.00	-10.11	QP
2	95.427	56.26	10.94	2.01	29.55	39.66	43.50	-3.84	QP
3	150.011	50.45	8.60	2.52	29.22	32.35	43.50	-11.15	QP
4	181.283	51.94	9.98	2.74	28.96	35.70	43.50	-7.80	QP
5	191.745	50.99	11.25	2.81	28.89	36.16	43.50	-7.34	QP
6	280.024	35.60	13.49	2.89	28.48	23.50	46.00	-22.50	QP

Remark:

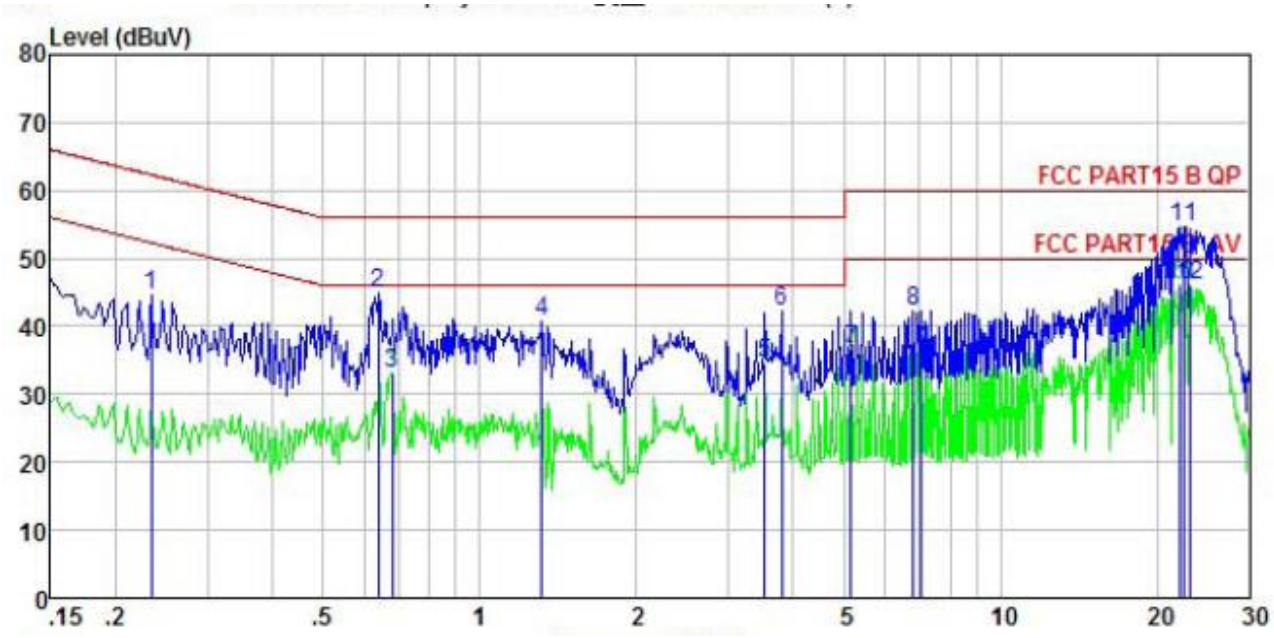
1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

6.3 Conducted Emission

Test Requirement:	FCC Part 15 B Section 15.107					
Test Method:	ANSI C63.4:2014					
Test Frequency Range:	150kHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9kHz, VBW=30kHz					
Limit:	Frequency range (MHz)	Limit (dBμV)				
		Quasi-peak	Average			
	0.15-0.5	66 to 56*	56 to 46*			
	0.5-5	56	46			
	0.5-30	60	50			
	* Decreases with the logarithm of the frequency.					
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*					
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.					
Test environment:	Temp.:	23 °C	Humid.:	56%	Press.:	101kPa
Test Instruments:	Refer to section 5.9 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Pass					

Measurement data:

Product name:	Auto-grip Wireless charging phone holder	Product Model:	B02F
Test by:	Zora	Test mode:	Charing mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Huni: 55%

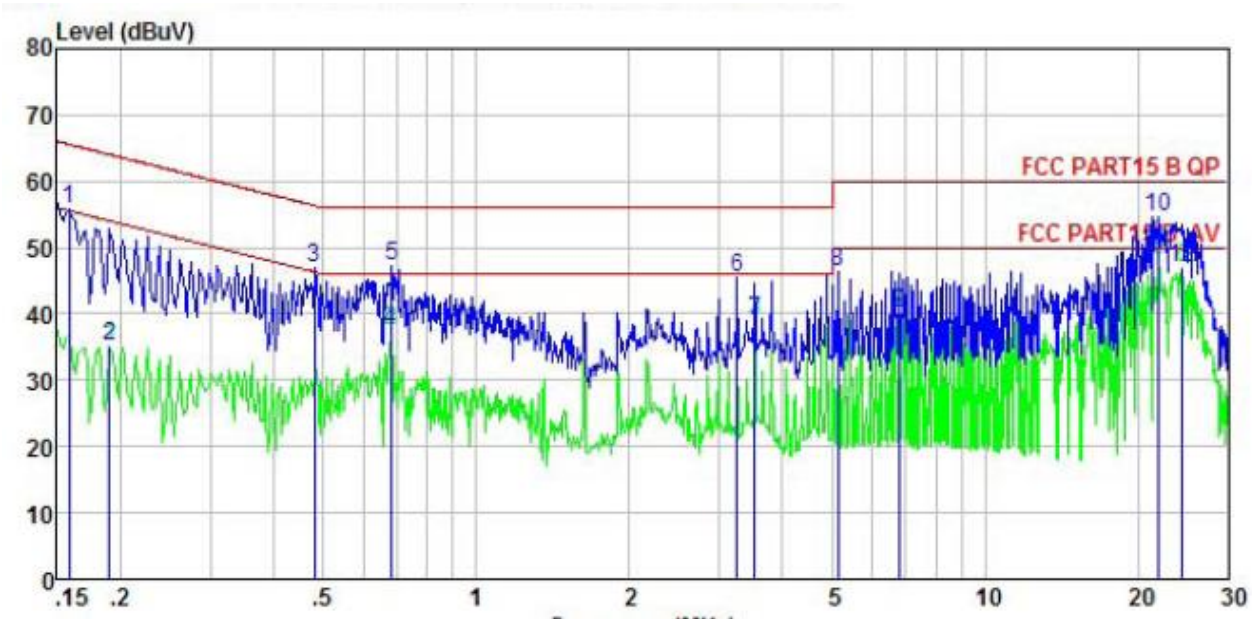


	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.234	33.74	0.14	10.75	44.63	62.30	-17.67	QP
2	0.637	33.88	0.13	10.77	44.78	56.00	-11.22	QP
3	0.679	22.17	0.13	10.77	33.07	46.00	-12.93	Average
4	1.317	29.57	0.13	10.91	40.61	56.00	-15.39	QP
5	3.528	23.54	0.17	10.90	34.61	46.00	-11.39	Average
6	3.799	31.21	0.18	10.90	42.29	56.00	-13.71	QP
7	5.166	25.45	0.21	10.84	36.50	50.00	-13.50	Average
8	6.805	31.18	0.25	10.80	42.23	60.00	-17.77	QP
9	7.062	25.26	0.25	10.80	36.31	50.00	-13.69	Average
10	22.180	34.79	0.30	10.90	45.99	50.00	-4.01	Average
11	22.535	43.49	0.31	10.90	54.70	60.00	-5.30	QP
12	23.018	34.71	0.31	10.89	45.91	50.00	-4.09	Average

Notes:

1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level =Receiver Read level + LISN Factor + Cable Loss.*

Product name:	Auto-grip Wireless charging phone holder	Product Model:	B02F
Test by:	Zora	Test mode:	Charing mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Huni: 55%

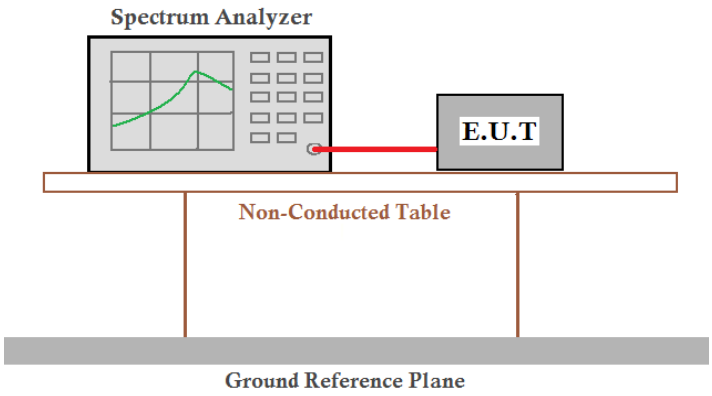


	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.158	43.98	0.98	10.77	55.73	65.56	-9.83	QP
2	0.190	23.49	0.93	10.76	35.18	54.02	-18.84	Average
3	0.481	35.23	0.97	10.75	46.95	56.32	-9.37	QP
4	0.679	25.70	0.97	10.77	37.44	46.00	-8.56	Average
5	0.683	35.44	0.97	10.77	47.18	56.00	-8.82	QP
6	3.258	33.55	0.99	10.91	45.45	56.00	-10.55	QP
7	3.528	27.06	1.00	10.90	38.96	46.00	-7.04	Average
8	5.139	34.48	1.01	10.85	46.34	60.00	-13.66	QP
9	6.805	28.28	1.02	10.80	40.10	50.00	-9.90	Average
10	21.946	43.01	0.68	10.91	54.60	60.00	-5.40	QP
11	21.946	36.39	0.68	10.91	47.98	50.00	-2.02	Average
12	24.400	35.28	0.67	10.88	46.83	50.00	-3.17	Average

Notes:

1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level =Receiver Read level + LISN Factor + Cable Loss.*

6.4 20dB Bandwidth

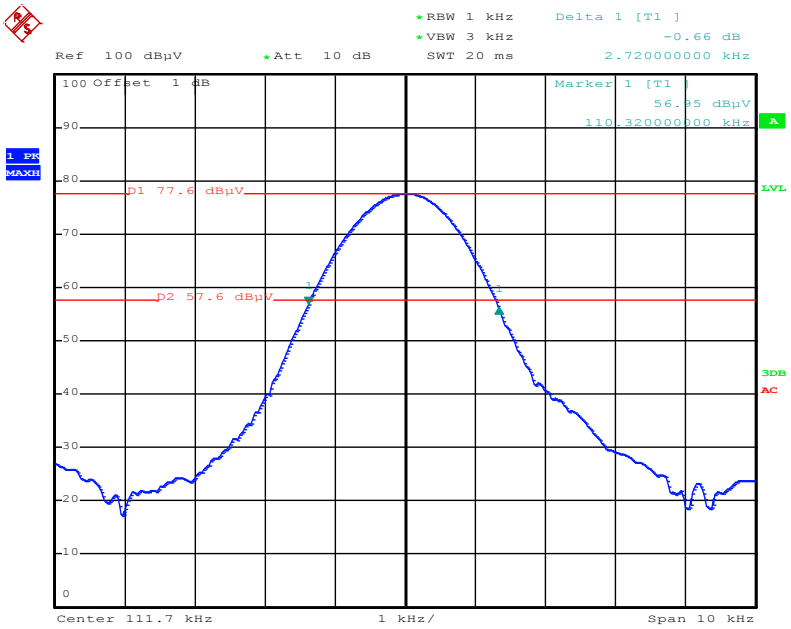
Test Requirement:	FCC Part15 C Section 15.215 (c)
Test Method:	ANSI C63.4:2014
Receiver setup:	RBW=1 kHz, VBW=3 kHz, detector: Peak
Limit:	The fundamentalemission be kept within atleast the central 80% of the permittedband
Test Procedure:	1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set the EUT to proper test channel. 3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points. 4. Read 20dB bandwidth.
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

20dB bandwidth (kHz)	Limits
2.72	N/A
2.76	
Remark: For report purpose only.	

Test plot as follows:

Test Frequency= 111.7 kHz



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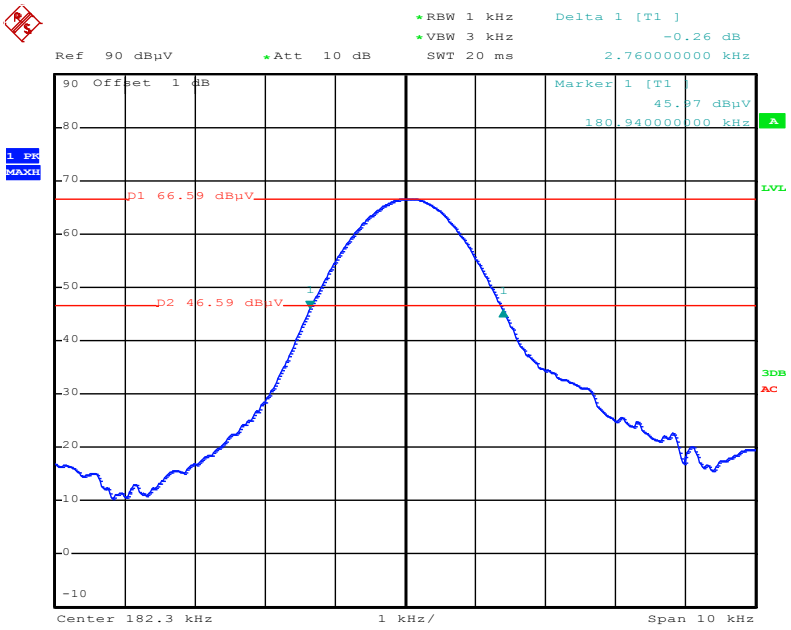
Test Frequency= 182.3 kHz



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