

### Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

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FCC ID :	2AY5D-CW120
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Date of issue	Mar. 29, 2023
Testing Laboratory Name:	Shenzhen CTA Testing Technology Co., Ltd.
(CIA)	Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community,
Address	Fuhai Street, Baoʻan District, Shenzhen, China
Applicant's name:	Shenzhen USV Technology Co.,Ltd
	4F, Building B20, Hengfeng Industrial City, Hangchen, Bao'an
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Address:	District, Shenzhen City, Guangdong Province, China
Test specification:	District, Shenzhen City, Guangdong Province, China
Test specification:	
Test specification:	District, Shenzhen City, Guangdong Province, China FCC Rules and Regulations Part 15 Subpart C (Section 15.209), ANSI C63.10: 2013
Shenzhen CTA Testing Technology C material. Shenzhen CTA Testing Tech	District, Shenzhen City, Guangdong Province, China FCC Rules and Regulations Part 15 Subpart C (Section 15.209), ANSI C63.10: 2013
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Test specification    Standard    Shenzhen CTA Testing Technology    This publication may be reproduced in    Shenzhen CTA Testing Technology C    naterial. Shenzhen CTA Testing Technology C    iability for damages resulting from the    placement and context.    Test item description	District, Shenzhen City, Guangdong Province, China FCC Rules and Regulations Part 15 Subpart C (Section 15.209), ANSI C63.10: 2013 Co., Ltd. All rights reserved. whole or in part for non-commercial purpses as long as the o., Ltd. is acknowledged as copyright owner and source of the mology Co., Ltd. takes no responsibility for and will not assume reader's interpretation of the reproduced material due to its Magnetic wireless charger
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Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China Tel:+86-755 2322 5875 E-mail:cta@cta-test.cn Web:http://www.cta-test.cn

TEST REPORT Equipment under Test Magnetic wireless charger 2 CW120 Model /Type Listed Models A6 CTATESTING 5 Applicant Shenzhen USV Technology Co.,Ltd 4F, Building B20, Hengfeng Industrial City, Hangchen, Bao'an Address District, Shenzhen City, Guangdong Province, China Manufacturer Shenzhen USV Technology Co.,Ltd 2 4F, Building B20, Hengfeng Industrial City, Hangchen, Bao'an Address 2 District, Shenzhen City, Guangdong Province, China Test Result: PASS

> The test report merely corresponds to the test sample. CTATE It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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#### TEST STANDARDS 1

The tests were performed according to following standards:

FCC Rules and Regulations Part 15 Subpart C (Section 15.207): Conducted limits. FCC Rules and Regulations Part 15 Subpart C (Section 15.202). D FCC Rules and Regulations Part 15 Subpart C (Section 15.209): Radiated emission limits; general requirements. ANSI C63.10: 2013: American National Standard for Testing Unlicensed Wireless Devices

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#### 2 SUMMARY

# 2.1 General Remarks

2.1 General Remarks		TESTING		
Date of receipt of test sample	200	Mar. 24, 2023		
Testing commenced on		Mar. 24, 2023		
Testing concluded on	:	Mar. 29, 2023		

# 2.2 Product Description

Product Name:	Magnetic wireless charger
Model/Type reference:	CW120
Hardware version:	V1.0
Software version:	V1.0 CTA
Test samples ID:	CTA230327004-1# (Engineer sample), CTA230327004-2# (Normal sample)
Power supply:	Input: 5V/9V Output: 5W/7.5W/10W/15W
Adapter information:	Model: HNT-PD2001 Input: AC 100-240V 50/60Hz Output: DC 5V 3A, 9V 2.22A, 12V 1.66A
Operation frequency:	110KHz - 205KHz
Modulation type:	ASK
Antenna type:	Loop coil antenna

# 2.3 Description of the test mode

Equipment under test was operated during the measurement under the following conditions: Charging and communication mode

Test Modes:					
Mode 1	Wireless Charging	STING	Recorded		
Mode 2	Standby	CTATES	Pre-tested	-ING	
Note: All test modes were pre-tested, but we only recorded the worst case in this report.					

# 2.4 Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

Description	Manufacturer	Model	Technical Parameters	Certificate	Provided by
1	ES. 1	/		/	/

# 2.5 Modifications

No modifications were implemented to meet testing criteria.

#### 3 TEST ENVIRONMENT

#### Address of the test laboratory 3.1

#### Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

### 3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations: FCC-Registration No.: 517856 Designation Number: CN1318

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

### A2LA-Lab Cert. No.: 6534.01

Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

### 3.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges: Radiated Emission

24 ° C		
45 %		
2		
950-1050mbar		

#### AC Power Conducted Emission:

	Temperature:	25 ° C
1	IN ON	
	Humidity:	46 %
	-INI	2
	Atmospheric pressure:	950-1050mbar

Atmospheric pressure:	950-1050mbar
Conducted testing:	ESTING
Temperature:	25 ° C
	G
Humidity:	44 %
	a start and a start a st
Atmospheric pressure:	950-1050mbar

#### Summary of measurement results 3.4

Description of test	Result
Conducted emissions test	Compliant
Radiated emission test	Compliant
The 20dB bandwidth measurement	Compliant
Antenna requirement	Compliant
Antenna requirement	Compliant
E Statement of the measurement uncertainty	

#### 3.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods - Part 4: Uncertainty in EMC Measurements" and is documented in the Shenzhen CTA Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device. TESTING

Hereafter the best measurement capability for Shenzhen CTA laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.06 dB	(1)
Radiated Emission	1~18GHz	5.14 dB	(1)
Radiated Emission	18-40GHz	5.38 dB	(1)
Conducted Disturbance	0.15~30MHz	2.14 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. CTATES

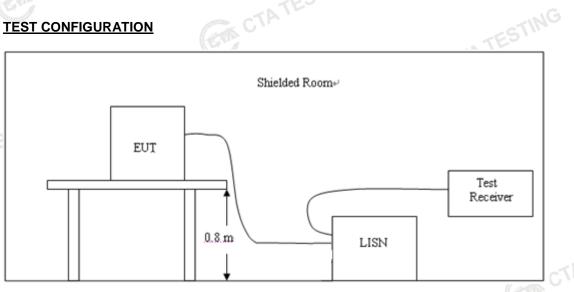
#### Equipments Used during the Test 3.6

-			. C			
	Test Equipment	Manufacturer	Model No.	Equipment No.	Calibration Date	Calibration Due Date
	LISN	R&S	ENV216	CTA-308	2022/08/03	2023/08/02
	LISN	R&S	ENV216	CTA-314	2022/08/03	2023/08/02
	EMI Test Receiver	R&S	ESPI	CTA-307	2022/08/03	2023/08/02
	EMI Test Receiver	R&S	ESCI	CTA-306	2022/08/03	2023/08/02
TATE	Spectrum Analyzer	Agilent	N9020A	CTA-301	2022/08/03	2023/08/02
1.	Spectrum Analyzer	R&S	FSP	CTA-337	2022/08/03	2023/08/02
	Vector Signal generator	Agilent	N5182A	CTA-305	2022/08/03	2023/08/02
	Analog Signal Generator	R&S	SML03	CTA-304	2022/08/03	2023/08/02
	Universal Radio Communication	CMW500	R&S	CTA-302	2022/08/03	2023/08/02
	Temperature and humidity meter	Chigo	ZG-7020	CTA-326	2022/08/03	2023/08/02
	Ultra-Broadband Antenna	G Schwarzbeck	VULB9163	CTA-310	2021/08/07	2024/08/06
	Horn Antenna	Schwarzbeck	BBHA 9120D	CTA-309	2021/08/07	2024/08/06
	Loop Antenna	Zhinan	ZN30900C	CTA-311	2021/08/07	2024/08/06
	Horn Antenna	Beijing Hangwei Dayang	OBH100400	CTA-336	2021/08/07	2024/08/06
	Amplifier	Schwarzbeck	BBV 9745	CTA-312	2022/08/03	2023/08/02
	Amplifier	Taiwan chengyi	EMC051845B	CTA-313	2022/08/03	2023/08/02
	Directional coupler	NARDA	4226-10	CTA-303	2022/08/03	2023/08/02
	High-Pass Filter	XingBo	XBLBQ-GTA18	CTA-402	2022/08/03	2023/08/02
TE	High-Pass Filter	XingBo	XBLBQ-GTA27	CTA-403	2022/08/03	2023/08/02
A	Automated filter bank	Tonscend	JS0806-F	CTA-404	2022/08/03	2023/08/02
	Power Sensor	Agilent	U2021XA	CTA-405	2022/08/03	2023/08/02
	Amplifier	Schwarzbeck	BBV9719	CTA-406	2022/08/03	2023/08/02
			GM CTP		Con CT	ATESTING

#### TEST CONDITIONS AND RESULTS 4

# TATESTING 4.1 AC Power Conducted Emission

### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

- 1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
- 2, Support equipment, if needed, was placed as per ANSI C63.10.
- 3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5, All support equipments received AC power from a second LISN, if any.
- 6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

# CTATES AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

	Limit (dBuV)					
Frequency range (MHz)	Quasi-peak	Average				
0.15-0.5	66 to 56*	56 to 46*				
0.5-5	56	46				
5-30	60	50				
* Decrease with the lenewith we of the free wi		•				

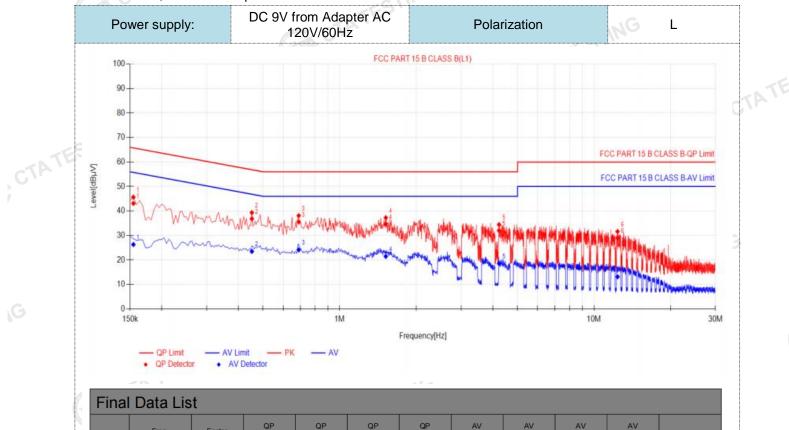
Decreases with the logarithm of the frequency.

TATE

CTATESTING

# **TEST RESULTS**

1. Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:



NO.	Freq. [MHz]	Factor [dB]	QP Reading[dB µV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBµV]	AV Limit [dΒμV]	AV Margin [dB]	Verdict
1	0.1545	10.50	32.59	43.09	65.75	22.66	15.80	26.30	55.75	29.45	PASS
2	0.4515	10.50	26.31	36.81	56.85	20.04	12.99	23.49	46.85	23.36	PASS
3	0.69	10.50	25.07	35.57	56.00	20.43	13.61	24.11	46.00	21.89	PASS
4	1.518	10.50	24.22	34.72	56.00	21.28	10.96	21.46	46.00	24.54	PASS
5	4.2315	10.50	21.51	32.01	56.00	23.99	8.05	18.55	46.00	27.45	PASS
6	12.372	10.50	18.46	28.96	60.00	31.04	2.65	13.15	50.00	36.85	PASS

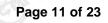
Note: Note:1).QP Value ( $dB\mu V$ )= QP Reading ( $dB\mu V$ )+ Factor (dB)

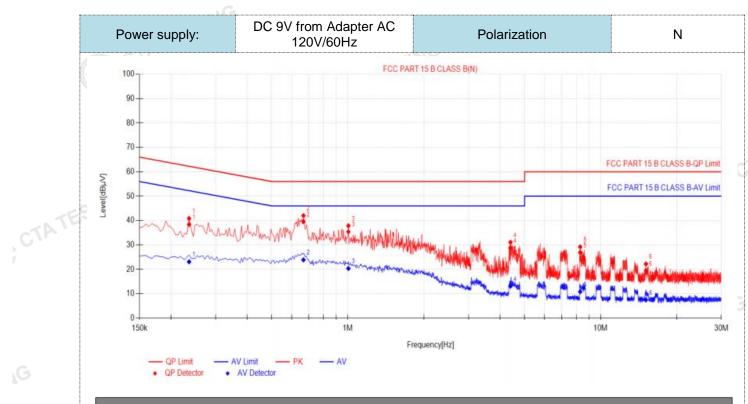
- 2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
- 3). QPMargin(dB) = QP Limit (dB $\mu$ V) QP Value (dB $\mu$ V)
- 4). AVMargin(dB) = AV Limit (dBμV) AV Value (dBμV)

Shenzhen CTA Testing Technology Co., Ltd. Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China Tel:+86-755 2322 5875 E-mail:cta@cta-test.cn Web:http://www.cta-test.cn

CTATE

#### Report No.: CTA23032700401





# **Final Data Lia**

гша	i Dala Lis	ot i										
NO.	Freq. [MHz]	Factor [dB]	QP Reading[dB µV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict	
1	0.2355	10.50	27.88	38.38	62.25	23.87	12.59	23.09	52.25	29.16	PASS	
2	0.6675	10.50	29.05	39.55	56.00	16.45	13.37	23.87	46.00	22.13	PASS	
3	1.005	10.50	24.90	35.40	56.00	20.60	9.84	20.34	46.00	25.66	PASS	
4	4.398	10.50	18.22	28.72	56.00	27.28	2.57	13.07	46.00	32.93	PASS	
5	8.2995	10.50	16.42	26.92	60.00	33.08	0.31	10.81	50.00	39.19	PASS	
6	15.108	10.50	8.89	19.39	60.00	40.61	-3.05	7.45	50.00	42.55	PASS	- AN
	lote:1).QP tor (dB)=in	-				-					GIA	3.21

- 3). QPMargin(dB) = QP Limit (dB $\mu$ V) QP Value (dB $\mu$ V)
- 4). AVMargin(dB) = AV Limit (dB $\mu$ V) AV Value (dB $\mu$ V) CTA TESTING

#### 4.2 **Radiated Emission**

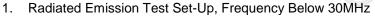
### Limit

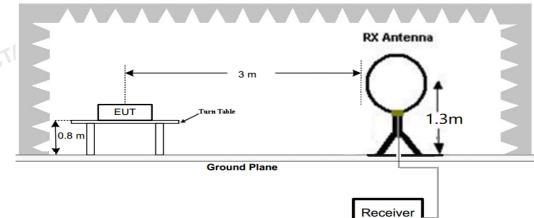
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

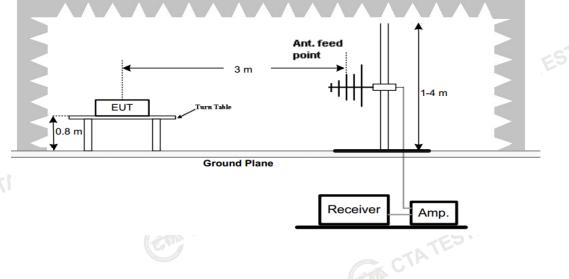
		Rad	diated emission limits	
	Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
	0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
TATE	0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
CTAV	1.705-30	3	20log(30)+ 40log(30/3)	30
1	30-88	3	40.0	100
	88-216	3	43.5	150
	216-960	3	46.0	200
	Above 960	3	54.0	500
				ATA
	TEST CONFIGURATION	ON		

### **TEST CONFIGURATION**





#### Radiated Emission Test Set-Up, Frequency below 1000MHz 2.



#### Report No.: CTA23032700401

- 1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane.
- 2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT

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- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until all frequency measurements have been completed. 4.
- 5. Radiated emission test frequency band from 9KHz to 1000MHz.
- 6. The distance between test antenna and EUT as following table states:

	Test Frequency range	Test Antenna Type	Test Distance	
	9KHz-30MHz	Active Loop Antenna	3	
3	30MHz-1GHz	Bilog Antenna	3	
- 44		felles de la states.		

CTATEST. Setting test receiver/spectrum as following table states:

	Test Frequency range	Test Receiver/Spectrum Setting	Detector	I
	9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP	
	150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP	
	30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP	
	G	CTATES		ING
R	<u>ESULTS</u>			SI
KI	lz-30MHz		CIA	
	WOR	ST-CASE RADIATED EMISSION BELOW 30 MHz		

### **TEST RESULTS**

#### For 9 KHz-30MHz

### WORST-CASE RADIATED EMISSION BELOW 30 MHz

Frequency	Reading	Polar	Antenna Factor	Cable Loss	Emission Levels	Limits at 3m	Margin	Detector Mode
(MHz)	(dBµV/m)	Loop	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
0.144000(F)	76.97	Loop	23.63	0.02	100.62	104.44	3.82	PK
0.144000(F)	53.69	Loop	23.63	<b>S</b> 0.02	77.34	84.44	7.10	AV
0.110	51.55	Loop	23.51	0.02	75.08	106.78	31.70	PK
0.110	47.91	Loop	23.51	0.02	71.44	86.78	15.34	AV
0.288	43.27	Loop	23.82	-0.17	66.92	98.42	31.50	QP
0.471	40.30	Loop	24.21	-0.28	64.23	94.14	29.91	QP
0.549	33.16	Loop	24.32	-0.3	57.18	72.81	15.63	QP

Remark:

- 2. The test limit distance is 3m limit.
- PK means Peak Value, QP means Quasi Peak Value, AV means Average Value. 3.
- F means Fundamental Frequency. 4.
- Emission level (dBuV/m) =Reading + Antenna Factor + Cable Loss. 5.
- Margin value = Limit value- Emission level. 6.

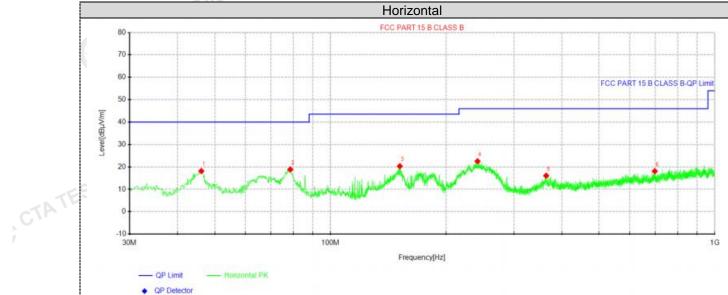
Data of measurement within this frequency range shown "-- in the table above means the reading of 1 emissions are attenuated more than 20dB below the permissible limits and not recorded.

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TATE

CTA C

### For 30MHz-1GHz



### Suspected Data List

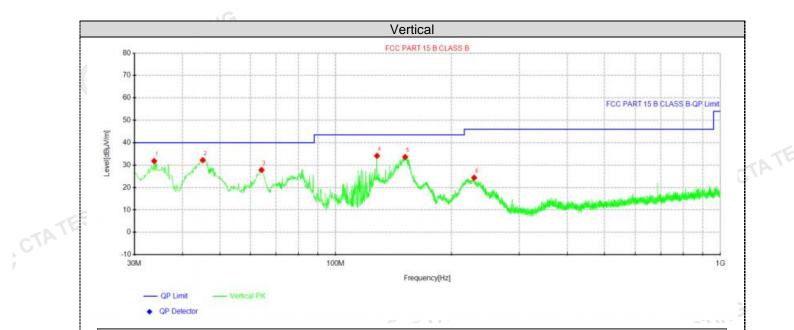
Freq. Reading Level Factor Limit Margin Height Angle											
	NO.	Freq.	Reading	Level	Factor	Limit	Margin	Height	Angle	Polarity	
	NO.	[MHz]	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Tolarity	
	1	46.1262	34.49	18.13	-16.36	40.00	21.87	100	355	Horizontal	
	2	78.6212	40.12	18.85	-21.27	40.00	21.15	200	355	Horizontal	
	3	151.492	42.04	20.30	-21.74	43.50	23.20	100	293	Horizontal	
	4	241.338	40.74	22.51	-18.23	46.00	23.49	100	266	Horizontal	
	5	364.165	31.98	16.07	-15.91	46.00	29.93	100	241	Horizontal	
	6	697.966	29.87	18.08	-11.79	46.00	27.92	100	250	Horizontal	

Note:1).Level ( $dB\mu V/m$ )= Reading ( $dB\mu V$ )+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin(dB) = Limit (dB $\mu$ V/m) - Level (dB $\mu$ V/m)

CTATE



# Supported Data Lie

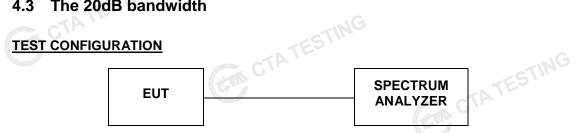
Suspe									
NO.	Freq.	Reading	Level	Factor	Limit	Margin	Height	Angle	Polarity
NO.	[MHz]	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Tolarity
1	33.7588	49.89	31.82	-18.07	40.00	8.18	100	92	Vertical
2	45.1562	48.65	32.21	-16.44	40.00	7.79	100	100	Vertical
3	64.1925	47.16	27.83	-19.33	40.00	12.17	100	49	Vertical
4	128.091	55.27	34.14	-21.13	43.50	9.36	200	255	Vertical
5	151.613	55.32	33.59	-21.73	43.50	9.91	100	307	Vertical
6	229.092	42.85	24.35	-18.50	46.00	21.65	100	247	Vertical

Note:1).Level (dBµV/m)= Reading (dBµV)+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin(dB) = Limit (dB $\mu$ V/m) - Level (dB $\mu$ V/m)

4.3 The 20dB bandwidth



### **TEST PROCEDURE**

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equip compliance with the 20dB attenuation specification may base on measurement at the intentional radiator's antenna output terminal unless the intentional radiator uses a permanently attached antenna, in which case compliance shall be deomonstrated by measuring the radiated emissions.

#### LIMIT

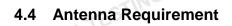
The 20dB bandwidth shall be less than 80% of the permitted frequency band.

### **TEST RESULTS**

CTA TESTING

Mode	Freq (KHz)	20dB Bandwidth (KHz)	Conclusion
Tx Mode	144.00	7.675	PASS
	Keysight Spectrum Analyzer - Occupied BW		e 💌

Center Freq 144.0	50 Ω AC DOO KHZ #IFGain	Center Trig: F	ENSE:PULSE r Freq: 144.000 kHz Free Run Avg h: 10 dB	ALIGN AUTO	Radio Std Radio Dev		Peak Sea	
5 dB/div Ref -2	20.00 dBm			N	/kr1 143 -37.0	3.66 kHz )40 dBm		
Log	10.00 u.sm							
-25.0	ی وجوالہ							
-30.0			1					
-35.0								
-40.0								
-45.0								
-55.0			و و و ا					
-60.0	~				$\sim$			
-65.0	ويسورك							
Center 144 kHz	ويصطلك		<u>سمعال</u>					
Center 144 KHZ #Res BW 1 kHz		#	#VBW 3 kHz			Span 10 kHz Sweep 12.4 ms		
Occupied Ba	ndwidth		Total Power	r -31	.3 dBm			
	5.75	64 kHz						
Transmit Freq	Error	-137 Hz	% of OBW P	ower 9	99.00 %			
x dB Bandwidt	h 7	7.675 kHz	x dB	-20	0.00 dB			



### Standard Applicable

#### Standard Applicable

CTATESTING For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to CTATE ensure that no antenna other than that furnished by the responsible party shall be used with the device.

#### Antenna Information

The antenna used in this product is a Coil Antenna, The directional gains of antenna used for transmitting is GIN CTATES 0dBi.

# 5 Test Setup Photos of the EUT





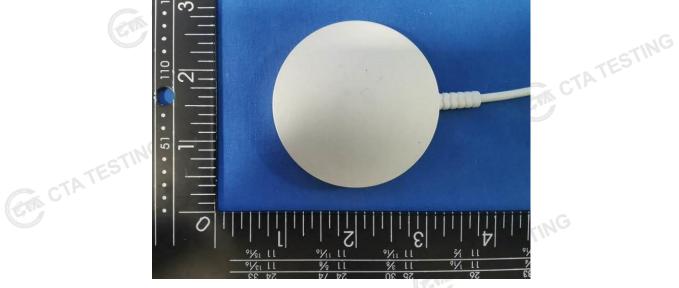


CTA TESTIN









0

9/91 LL

91/81 11

33

54





9/11 11

%

77

11

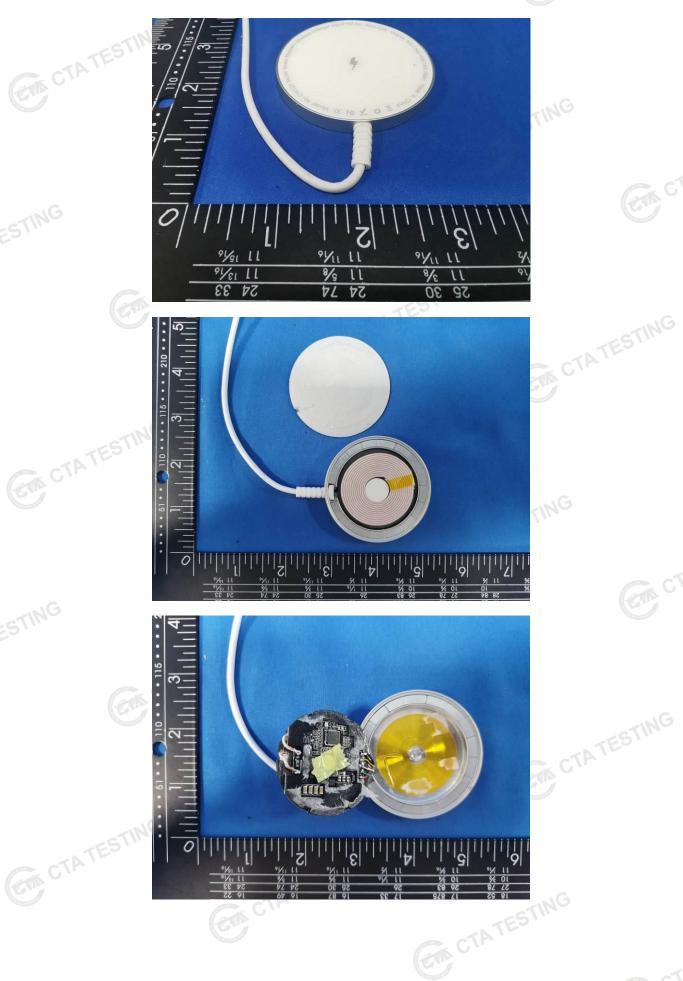
24

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11

52 30



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