# TEST REPORT

FCC ID: 2APX6-1001 Product: Instalock/Lock Adapter Model No.: 1001 Additional Model No.: N/A Trade Mark: Instalock Report No.: TCT181109E003 Issued Date: Nov. 28, 2018

Issued for:

Dee Cee Marketing Inc. 215 6th Avenue NE Saint Petersburg, FL 33701, United States

Issued By:

Shenzhen Tongce Testing Lab. 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China TEL: +86-755-27673339

FAX: +86-755-27673332

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# 1. Test Certification

Product:	Instalock/Lock Adapter
Model No.:	1001
Additional Model:	N/A
Trade Mark:	Instalock
Applicant:	Dee Cee Marketing Inc.
Address:	215 6th Avenue NE Saint Petersburg, FL 33701, United States
Manufacturer:	ZEHOO TECHNOLOGY (HONGKONG) CO., LIMITED
Address:	Floor 1, Building 3, Huilongpu technology park, Tongle community, Longgang district, Shenzhen, China
Factory:	ZEHOO TECHNOLOGY (HONGKONG) CO., LIMITED
Address:	Floor 1, Building 3, Huilongpu technology park, Tongle community, Longgang district, Shenzhen, China
Date of Test:	Nov. 12, 2018 – Nov. 27, 2018
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.231

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:

Rleo

Reviewed By:

Beryl Zhao

mkn

Tomsin

Approved By:

Date: Nov. 28, 2018

Nov. 27, 2018

Date:

Date:	Nov.	28,	2018
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Requirement	CFR	47 Section	Result
Conduction Emission, 0.15MHz to 30MHz		15.207	N/A
Manually Activated	§1	5.231(a)	PASS
Transmitter Radiation Emission	§15.231(b),	§15.205, §15.209, §15.35	PASS
Occupied Bandwidth		5.231(c)	PASS
. Fail: Test item does not meet . N/A: Test case does not apply . The test result judgment is dee	to the test object.	standard.	

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# 3. EUT Description

TCT 通测检测 TESTING CENTRE TECHNOLOGY

Product Name:	Instalock/Lock Adapter	No.
Model :	1001	
Additional Model:	N/A	
Trade Mark:	Instalock	
Hardware Version:	Instalock-20181101-V2	
Software Version:	WT51F516_InstaLOCK_TX_V21_5	
Operation Frequency:	433.27MHz	
Modulation Technology:	FSK	
Antenna Type:	External Antenna	
Antenna Gain:	0dBi	
Power Supply:	DC 3V	

# 4. General Information

TCT 通测检测 TEGTING CENTRE TECHNO

# 4.1. Test Environment and Mode

#### **Operating Environment:**

Temperature:		24.0 °C	
Humidity:		54 % RH	
Atmospheric Pressu	re:	1010 mbar	-

#### Test Mode:

Operation mode:	Keep the EUT in continuous transmitting with modulation

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

#### Per-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

Axis	Х	Y	Z
Field Strength(dBuV/m)	62.47	65.62	62.59
		X	

#### Final Test Mode:

According to ANSI C63.10 standards, the test results are both the "worst case" and "worst setup": Y axis (see the test setup photo)

# 4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
		/		

Note:

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.

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# 5. Facilities and Accreditations

## 5.1. Facilities

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

• FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

• IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

## 5.2. Location

Shenzhen Tongce Testing Lab

Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

Tel: 86-755-27673339

## 5.3. Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU	
1	Conducted Emission	±2.56dB	
2	RF power, conducted	±0.12dB	N.C.
3	Spurious emissions, conducted	±0.11dB	
4	All emissions, radiated(<1G)	±3.92dB	
5	All emissions, radiated(>1G)	±4.28dB	
6	Temperature	±0.1°C	
7	Humidity	±1.0%	

TCT通测检测 TESTING CENTRE TECHNOLOGY Report No.: TCT181109E003 Test Results and Measurement Data 6. 6.1. Antenna Requirement FCC Part15 C Section 15.203 /247(c) Standard requirement: 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. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi. E.U.T Antenna: The antenna is external antenna which permanently attached, and the best case gain of the antenna is 0dBi. Antenna 30 09 Page 8 of 29

#### Report No.: TCT181109E003 6.2. Conducted Emission 6.2.1. Test Specification **Test Requirement:** FCC Part15 C Section 15.207 **Test Method:** ANSI C63.4:2014 **Frequency Range:** 150 kHz to 30 MHz RBW=9 kHz, VBW=30 kHz, Sweep time=auto **Receiver setup:** Limit (dBuV) Frequency range Quasi-peak (MHz) Average 66 to 56\* 0.15-0.5 56 to 46\* Limits: 0.5-5 56 46 5-30 50 60 Reference Plane LISN LISN 40cm 80cm Filter - AC power AUX E.U.T Equipment Test Setup: EMI Receiver Test table/Insulation plane Remark E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m Test Mode: Transmitting Mode 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides 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 **Test Procedure:** refer 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. N/A Test Result:

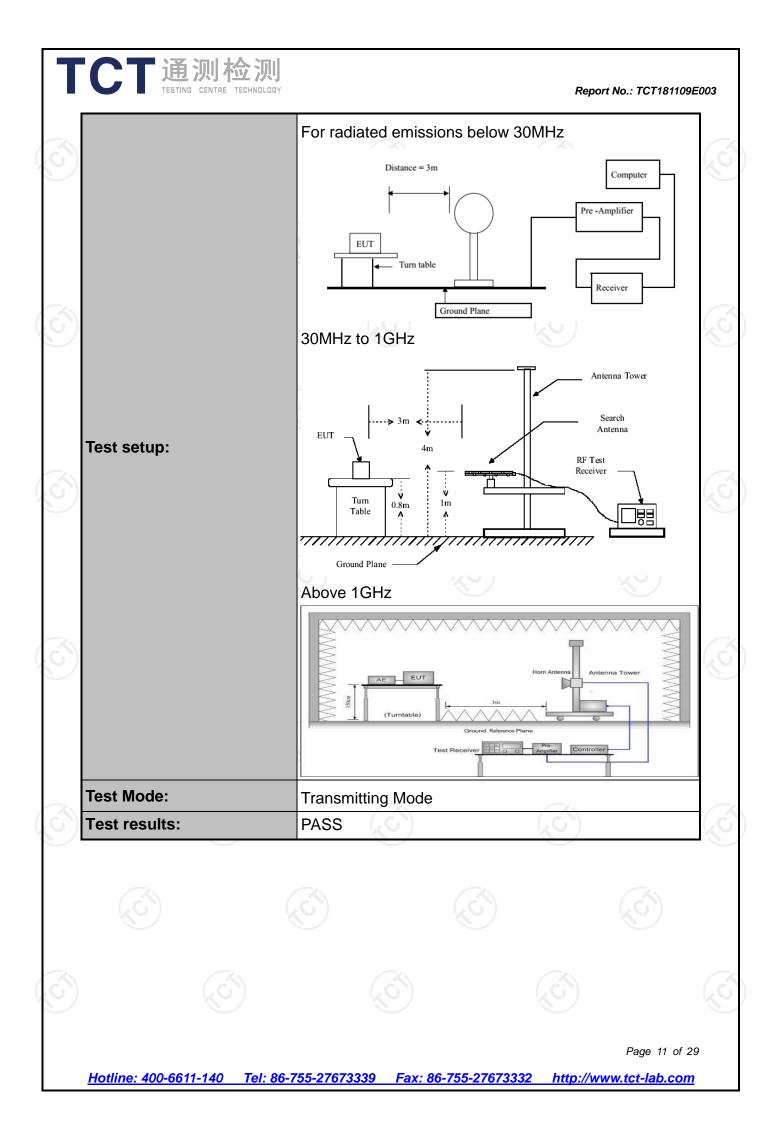
# 6.3. Radiated Emission Measurement

## 6.3.1. Test Specification

TCT 通测检测 TESTING CENTRE TECHNOLOGY

30MHz         30MHz         30MHz         30MHz         30MHz         30MHz         30MHz         30MHz         30MHz         300HHz         300HHz         300Hz         Above 1GHz       Peak       1MHz       300KHz       Quasi-peak Value         Above 1GHz       1.5m above the ground at a 3 meter camber is below 1GHz, 1.5m above the ground in abov 1GHz, 1.5m above the ground in abov 1GHz. The table was rotated 360 degrees the determine the position of the highest radiation.       2.         The EUT was set 3 meters away from the interference-receiving antenna, which was mounte on the top of a variable-height antenna tower.         3. The antenna height is varied from one meter to for meters above the ground to determine the maximur value of the field strength. Both horizontal an vertical polarizations of the antenna are set to mak the measurement.         4. For each suspected emission, the EUT was arrange to its worst case and then the antenna was tuned theights from 1 meter to 4 meters and the rotatabl table was turned from 0 degrees to 360 degrees t find the maximum reading.         5. The test-receiver system was set to Peak Deter Function and Specified Bandwidth with Maximur Hold Mode.         6. If the emission level of the	Test Requirement:	FCC Part15	C Section	15.231(a	) and 15	.209
Measurement Distance:       3 m         Antenna Polarization:       Horizontal & Vertical         Receiver Setup:	Test Method:	ANSI C63.4: 2014 and ANSI C63.10:2013				
Antenna Polarization:       Horizontal & Vertical         Frequency       Detector       RBW       VBW       Remark         9kHz       150kHz       Quasi-peak       200Hz       1kHz       Quasi-peak Value         30MHz       Quasi-peak       9kHz       30kHz       Quasi-peak Value         30MHz       160kHz       Quasi-peak       10kHz       Quasi-peak Value         30MHz       16kLz       Peak       10kHz       30kHz       Quasi-peak Value         Above 1GHz       Peak       10kHz       30kHz       Quasi-peak Value       Average Value         1. The EUT was placed on the top of a rotating table O.       meters above the ground at a 3 meter camber i below 1GHz, 1.5m above the ground in abov       1GHz. The table was rotated 360 degrees to determine the position of the highest radiation.         2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounte on the top of a variable-height antenna tower.       3. The antenna height is varied from one meter to four wature of the field strength. Both horizontal an vertical polarizations of the antenna are set to mak the measurement.         4. For each suspected emission, the EUT was arrange to its worst case and then the antenna was tuned the heights from 1 meter to 4 meters and the rotatabli table was turned from 0 degrees to 360 degrees to find the maximum reading.         5. The test-receiver system was set to Peak Detex       Function and Specified Bandwidth with M	Frequency Range:	9 kHz to 5 G	Hz	9		
Frequency       Detector       RBW       VBW       Remark         9kHz-150kHz       Quasi-peak       200Hz       1kHz       Quasi-peak Value         150kHz-       Quasi-peak       9kHz       30kHz       Quasi-peak Value         30MHz-       Quasi-peak       100KHz       Quasi-peak Value         30MHz-       Peak       10MHz       300KHz       Quasi-peak Value         30MHz-       Peak       10MHz       300KHz       Quasi-peak Value         Above 1GHz       Peak       10MHz       300KHz       Quasi-peak Value         1       The EUT was placed on the top of a rotating table 0.       meters above the ground at a 3 meter camber is below 1GHz, 1.5m above the ground in abov       1GHz.       The table was rotated 360 degrees the determine the position of the highest radiation.         2.       The EUT was set 3 meters away from the interference-receiving antenna, which was mounte on the top of a variable-height antenna tower.       3.         3.       The antenna height is varied from one meter to for meters above the ground to determine the maximur value of the field strength. Both horizontal an vertical polarizations of the antenna was tuned theights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.         5.       The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximur Hold Mode. <td< td=""><td>Measurement Distance:</td><td>3 m</td><td></td><td></td><td></td><td></td></td<>	Measurement Distance:	3 m				
<ul> <li>Receiver Setup:</li> <li>9kHz-150kHz Quasi-peak 200Hz 1kHz Quasi-peak Value 150kHz Quasi-peak Value 30MHz 10Hz Quasi-peak Value 30MHz-10Hz Quasi-peak 100KHz 300KHz Quasi-peak Value Above 1GHz Peak 1MHz 30HHz Quasi-peak Value Above 1GHz Peak 1MHz 30HHz Peak Value Peak 10HZ Average Value 1. The EUT was placed on the top of a rotating table 0. meters above the ground at a 3 meter camber i below 1GHz. The table was rotated 360 degrees t determine the position of the highest radiation.</li> <li>2. The EUT was set 3 meters away from th interference-receiving antenna, which was mounte on the top of a variable-height antenna tower.</li> <li>3. The antenna height is varied from one meter to for meters above the ground to determine the maximur value of the field strength. Both horizontal an vertical polarizations of the antenna are set to mak the measurement.</li> <li>4. For each suspected emission, the EUT was arrange to its worst case and then the antenna was tuned theights from 1 meter to 4 meters and the rotatabl table was turned from 0 degrees to 360 degrees the field Bandwidth with Maximur Hold Mode.</li> <li>6. If the emission level of the EUT in peak mode wa 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would b reported. Otherwise the emissions that did not hav 10dB margin would be re-tested one by one usin</li> </ul>	Antenna Polarization:	Horizontal &	Vertical			
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Image: Setup:       150kHz- 30MHz       Quasi-peak       9kHz       30kHz       Quasi-peak Value         30MHz       30MHz       Quasi-peak       100KHz       Quasi-peak Value         Above 1GHz       Peak       100KHz       300KHz       Quasi-peak Value         Above 1GHz       Peak       1MHz       30MHz       Peak Value         1. The EUT was placed on the top of a rotating table 0. meters above the ground at a 3 meter camber i below 1GHz, 1.5m above the ground in abov 1GHz. The table was rotated 360 degrees t determine the position of the highest radiation.         2. The EUT was set 3 meters away from th interference-receiving antenna, which was mounte on the top of a variable-height antenna tower.         3. The antenna height is varied from one meter to fot meters above the ground to determine the maximur value of the field strength. Both horizontal an vertical polarizations of the antenna are set to mak the measurement.         4. For each suspected emission, the EUT was arrange to its worst case and then the antenna was tuned the heights from 1 meter to 4 meters and the rotatabl table was turned from 0 degrees to 360 degrees to find the maximum reading.         5. The test-receiver system was set to Peak Deter Function and Specified Bandwidth with Maximur Hold Mode.       6. If the emission level of the EUT in peak mode wa 10dB lower than the limit specified, then testing coul be stopped and the peak values of the EUT would b reported. Otherwise the emissions that did not hav 10dB margin would be re-tested one by one usin						
30MHz-1GHz       Quasi-peak       100KHz       300KHz       Quasi-peak Value         Above 1GHz       Peak       1MHz       3MHz       Peak Value         1. The EUT was placed on the top of a rotating table 0. meters above the ground at a 3 meter camber i below 1GHz, 1.5m above the ground in abov 1GHz. The table was rotated 360 degrees t determine the position of the highest radiation.         2. The EUT was set 3 meters away from th interference-receiving antenna, which was mounte on the top of a variable-height antenna tower.         3. The antenna height is varied from one meter to for meters above the ground to determine the maximum value of the field strength. Both horizontal an vertical polarizations of the antenna are set to mak the measurement.         4. For each suspected emission, the EUT was arrange to its worst case and then the antenna was tuned theights from 1 meter to 4 meters and the rotatabl table was turned from 0 degrees to 360 degrees the field bandwidth with Maximum Hold Mode.         6. If the emission level of the EUT in peak mode wa 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not hav	Receiver Setup:			9kHz	30kHz	Quasi-peak Value
<ul> <li>Above 1GH2 Peak 1MHz 10Hz Average Value</li> <li>1. The EUT was placed on the top of a rotating table 0. meters above the ground at a 3 meter camber i below 1GHz, 1.5m above the ground in abov 1GHz. The table was rotated 360 degrees t determine the position of the highest radiation.</li> <li>2. The EUT was set 3 meters away from th interference-receiving antenna, which was mounte on the top of a variable-height antenna tower.</li> <li>3. The antenna height is varied from one meter to four meters above the ground to determine the maximur value of the field strength. Both horizontal an vertical polarizations of the antenna are set to mak the measurement.</li> <li>4. For each suspected emission, the EUT was arrange to its worst case and then the antenna was tuned theights from 1 meter to 4 meters and the rotatabl table was turned from 0 degrees to 360 degrees the field Mode.</li> <li>5. The test-receiver system was set to Peak Deter Function and Specified Bandwidth with Maximur Hold Mode.</li> <li>6. If the emission level of the EUT in peak mode wat 10dB lower than the limit specified, then testing coul be stopped and the peak values of the EUT would b reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using the stopped and the peak values of the atterna to a total b table was turned form the total be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using the stopped and the peak values of the stopped and the peak values of the atterna to a total b table was turned form the total be total by the peak value to the total by the peak value to the total by the total by the peak value to the total by the peak value to the total by the peak value to the total by the peak values of the test.</li> </ul>	•	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
<ol> <li>The EUT was placed on the top of a rotating table 0. meters above the ground at a 3 meter camber i below 1GHz, 1.5m above the ground in abov 1GHz. The table was rotated 360 degrees t determine the position of the highest radiation.</li> <li>The EUT was set 3 meters away from th interference-receiving antenna, which was mounte on the top of a variable-height antenna tower.</li> <li>The antenna height is varied from one meter to for meters above the ground to determine the maximur value of the field strength. Both horizontal an vertical polarizations of the antenna are set to mak the measurement.</li> <li>For each suspected emission, the EUT was arrange to its worst case and then the antenna was tuned t heights from 1 meter to 4 meters and the rotatabl table was turned from 0 degrees to 360 degrees t find the maximum reading.</li> <li>The test-receiver system was set to Peak Deter Function and Specified Bandwidth with Maximur Hold Mode.</li> <li>If the emission level of the EUT in peak mode wa 10dB lower than the limit specified, then testing coul be stopped and the peak values of the EUT would b reported. Otherwise the emissions that did not hav 10dB margin would be re-tested one by one usin</li> </ol>					3MHz	
<ul> <li>meters above the ground at a 3 meter camber is below 1GHz, 1.5m above the ground in above 1GHz. The table was rotated 360 degrees the determine the position of the highest radiation.</li> <li>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>3. The antenna height is varied from one meter to for meters above the ground to determine the maximum value of the field strength. Both horizontal an vertical polarizations of the antenna are set to make the measurement.</li> <li>4. For each suspected emission, the EUT was arrange to its worst case and then the antenna was tuned theights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees the find the maximum reading.</li> <li>5. The test-receiver system was set to Peak Determine the dMode.</li> <li>6. If the emission level of the EUT in peak mode wat 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using the set of th</li></ul>		Above IGHZ	Peak	1MHz	10Hz	Average Value
peak, quasi-peak or average method as specified an then reported in a data sheet.		<ul> <li>interferen on the top</li> <li>3. The anter meters al value of vertical p the meas</li> <li>4. For each s to its wor heights fit table was find the m</li> <li>5. The test- Function Hold Mod</li> <li>6. If the emi 10dB lowe be stopped reported.</li> </ul>	ace-receiving of a varian ha height bove the gr the field olarizations urement. suspected of st case and rom 1 meters turned from haximum re- receiver sy and Specter de. ssion level of than the potherwise	ng anten ble-heigl is varied ound to strength s of the a emission d then th er to 4 n om 0 deg eading. ystem w sified Ba I of the I limit speo beak valu the emis	na, whic nt antenr from or determin n. Both antenna a, the EU he antenr neters ar grees to ras set t ndwidth EUT in p cified, the esions th	h was mounted ha tower. he meter to fou he the maximum horizontal and are set to make T was arranged ha was tuned to ha the rotatable 360 degrees to with Maximum beak mode was en testing could be at did not have

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#### 6.3.2. Limit

Fundamental Frequency (MHz)	Filed Strength of Fundamental (microvolts/meter)	Filed Strength of Spurious Emission (microvolts/meter)
40.66-40.70	2250	225
70-130	1250	125
130-174	1250 to 3750*	125 to 375*
174-260	3750	375
260-470	3750 to 12500*	375 to 1250*
Above 470	12500	1250
Horn Antenna	Schwarzbeck	BBHA 9120D
inear interpolations		$(\mathcal{G})$

\*Linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

For the band 130-174 MHz,  $\mu$ V/m at 3 meters = 56.81818(F) - 6136.3636;

for the band 260-470 MHz,  $\mu$ V/m at 3 meters = 41.6667(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.

## For EUT

	al Frequency Hz)	Filed Strength Fundamental (dB	μV/m)	led Strength of Spurious nission(dBµV/m)
433	3.27	80.80		60.80
measured emi 2.According to 15 on measuring	ssions. 5.35, on any frequence equipment employing	ions, as shown in the above cy or frequencies below or ed g a CISPR quasi-peak detec ified the limit on peak radio f	qual to 1000 MHz, the tor function and relate	e limits Shown are base ed measurement
maximum perr 3. According to 1 on the fundam average (or, al	nitted average emiss 5.231(b), The limits o ental frequency of th ternatively, CISPR qu	ion limit applicable to the eq on the field strength of the sp e intentional radiator. Spurio uasi-peak) limits shown in th mits one higher field strengt	uipment under test. ourious emissions in t us emissions shall be is table or to the gene	the above table is base e attenuated to the
maximum perr 3. According to 1 on the fundam average (or, al	nitted average emiss 5.231(b), The limits o ental frequency of th ternatively, CISPR qu	ion limit applicable to the eq on the field strength of the sp e intentional radiator. Spurio uasi-peak) limits shown in th	uipment under test. ourious emissions in t us emissions shall be is table or to the gene	the above table is base e attenuated to the
maximum perr 3. According to 1 on the fundam average (or, al	nitted average emiss 5.231(b), The limits o ental frequency of th ternatively, CISPR qu	ion limit applicable to the eq on the field strength of the sp e intentional radiator. Spurio uasi-peak) limits shown in th	uipment under test. ourious emissions in t us emissions shall be is table or to the gene	the above table is base e attenuated to the

## Frequencies in restricted band are complied to limit on Paragraph 15.209

equency Range (MHz) Distance (m)	
3	20log 2400/F (kHz) + 80
3	20log 24000/F (kHz) + 40
3 (0)	20log 30 + 40
3	40.0
3	43.5
63	46.0
3	54.0
	3 3 3 3 3 3 3 3 3

#### Note:

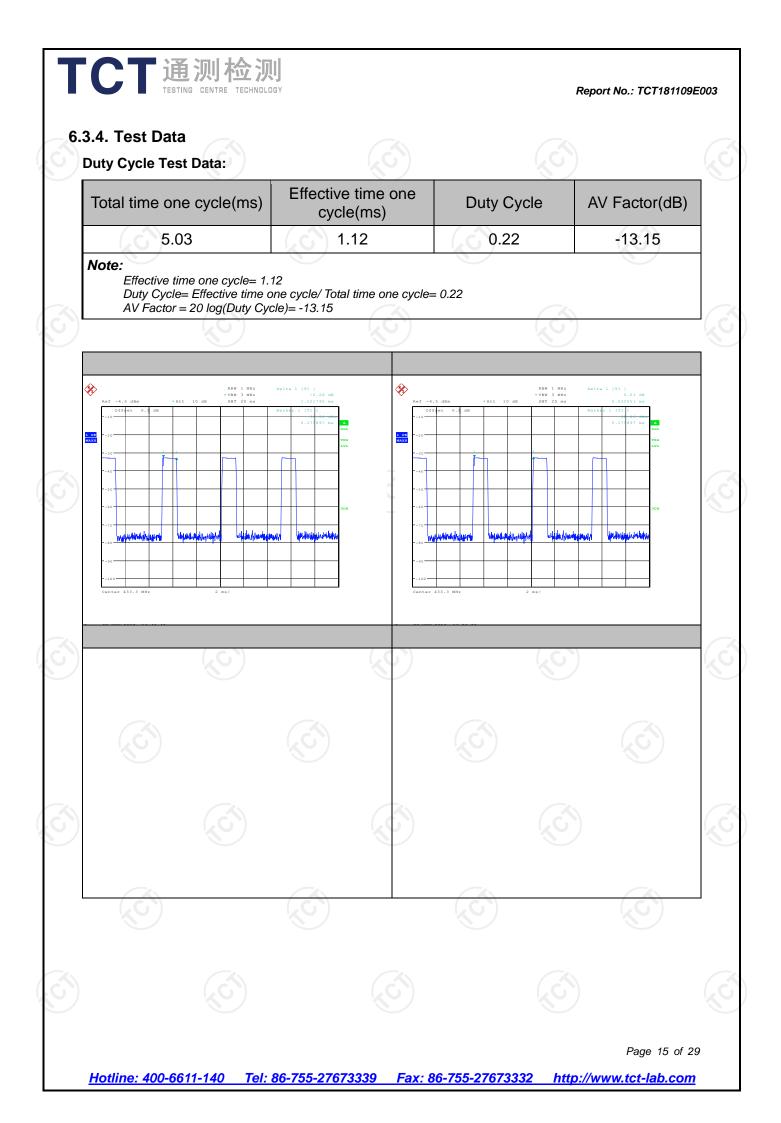
- 1. RF Voltage (dBuV) = 20 log RF Voltage (uV) 2. In the Above Table, the tighter limit applies at the band edges.
- Distance refers to the distance in meters between the measuring instrument antenna and the EUT
   The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was
- found that the worse radiated emission was get at the lying position.
- 5. If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula Ld1 = Ld2 \* (d2/d1)

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## 6.3.3. Test Instruments

	Radiated Emission	on Test Site	(966)		
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due	
ESPI Test Receiver	ROHDE&SCHWARZ	ESIB7	100197	Jul. 17, 2019	
Spectrum Analyzer	ROHDE&SCHWARZ	FSQ40	200061	Sep. 20, 2019	
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 16, 2019	
Pre-amplifier	HP	8447D	2727A05017	Sep. 16, 2019	
Loop antenna	ZHINAN	ZN30900A	12024	Oct. 20, 2019	
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 02, 2019	
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Oct. 20, 2019	
Coax cable	тст	N/A	N/A	Sep. 16, 2019	
Coax cable	ТСТ	N/A	N/A	Sep. 16, 2019	
Coax cable	ТСТ	N/A	N/A	Sep. 16, 2019	
Coax cable	тст	N/A	N/A	Sep. 16, 2019	
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A	

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



#### Field Strength of Fundamental

Frequency (MHz)	Emission PK (dBuV/m)	Horizontal /Vertical	Limits PK (dBuV/m)	Margin (dB)
433.27	79.30	н	100.80	-21.50
433.27	75.40	V	100.80	-25.40

Frequency (MHz)	Emission PK (dBuV/m)	AV Factor(dB)	Horizontal /Vertical	Emission AVG (dBuV/m)	Limits AV (dBuV/m)	Margin (dB)	Ko.
433.27	79.30	-13.15	Н	66.15	80.80	-14.65	
433.27	75.40	-13.15	V	62.25	80.80	-18.55	
(JG)		$(\mathcal{S})$		<b>(</b> ( )	U.C		

#### Harmonics and Spurious Emissions

#### Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBµV/m)	Limit@3m (dBµV/m)
	(Å	(4)
(xO)	(C) ((C)	(201)
	· · ·	

Note: 1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

Below	1GHz							
Quasi-peak Value Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
34.16	45.17	11.25	0.6	30.08	26.94	40.00	-13.06	Vertical
54.07	39.24	11.93	0.81	29.97	22.01	40.00	-17.99	Vertical
88.03	40.52	10.6	1.09	29.76	22.45	43.50	-21.05	Vertical
142.32	40.48	7.37	1.52	29.44	19.93	43.50	-23.57	Vertical
327.89	32.04	14.03	2.51	29.84	18.74	46.00	-27.26	Vertical
537.59	36.63	18.19	3.47	29.3	28.99	46.00	-17.01	Vertical
32.29	30.21	11.25	0.58	30.09	11.95	40.00	-28.05	Horizontal
75.98	42.37	7.35	0.99	29.82	20.89	40.00	-19.11	Horizontal
91.82	41.83	10.98	1.12	29.74	24.19	43.50	-19.31	Horizontal
157.56	47.97	8.02	1.62	29.37	28.24	43.50	-15.26	Horizontal
283.98	36.84	13.01	2.29	29.9	22.24	46.00	-23.76	Horizontal
362.99	44.07	14.74	2.68	29.67	31.82	46.00	-14.18	Horizontal

#### Above 1GHz

TCT通测检测 TESTING CENTRE TECHNOLOGY

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1370.00	37.56	25.66	4.59	33.39	34.42	74.00	-39.58	Vertical
2355.00	37.41	27.69	5.34	34.05	36.39	74.00	-37.61	Vertical
3415.00	37.23	28.67	6.8	32.85	39.85	74.00	-34.15	Vertical
4150.00	33.15	30.06	8.01	32.01	39.21	74.00	-34.79	Vertical
4695.00	33.08	31.65	8.51	32.03	41.21	74.00	-32.79	Vertical
5645.00	30.74	32.36	9.72	32.35	40.47	74.00	-33.53	Vertical
1430.00	36.58	25.42	4.64	33.47	33.17	74.00	-40.83	Horizontal
2410.00	36.45	27.57	5.4	33.99	35.43	74.00	-38.57	Horizontal
3395.00	37.68	28.6	6.76	32.87	40.17	74.00	-33.83	Horizontal
4115.00	30.81	29.95	7.97	32.05	36.68	74.00	-37.32	Horizontal
4635.00	31.14	31.57	8.46	32.01	39.16	74.00	-34.84	Horizontal
5590.00	28.29	32.22	9.63	32.38	37.76	74.00	-36.24	Horizontal

#### Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss - Pre-amplifier

2. Margin (dB) = Emission Level (dB $\mu$ V/m)- limit (dB $\mu$ V/m)

3. The emission levels of other frequencies are very lower than the limit and not show in test report.

4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.

5. Data of measurement shown " \* "in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.



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# 6.4. Manually Activated Transmitter

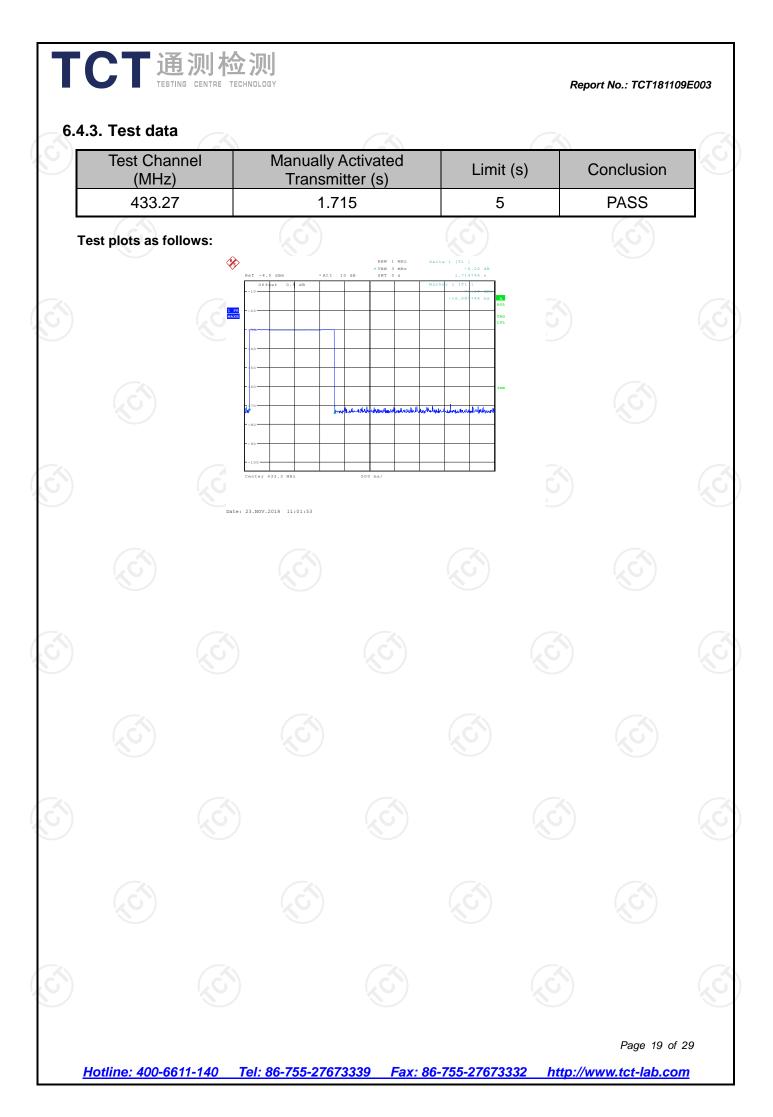
### 6.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.215(a)						
Test Method:	ANSI C63.10: 2013						
Limit:	According to 15.231(a), A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.						
	<ol> <li>According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>Use the following spectrum analyzer settings. VBW = 1MHz, VBW ≥ RBW; Span = 0; Sweep Time = 5s; Detector function = peak;</li> <li>Measure and record the results in the test report.</li> </ol>						
Test setup:	Spectrum Analyzer						
Test Mode:	Transmitting Mode						
Test results:	PASS						

#### 6.4.2. Test Instruments

RF Test Room					
Equipment Manufacturer Model Serial Number Calibration D					
Spectrum Analyzer	R&S	FSU	200054	Sep. 20, 2019	

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



# 6.5. Occupied Bandwidth

#### 6.5.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.215(c)				
Test Method:	ANSI C63.10: 2013	$\langle \mathcal{O} \rangle$			
Limit:	According to 15.231(c), The bandwid shall be no wider than 0.25% of the co devices operating above 70 MHz and For devices operating above 900 M shall be no wider than 0.5% of the Bandwidth is determined at the points the modulated carrier.	entre frequency for d below 900 MHz. /Hz, the emission centre frequency.			
	<ul> <li>position between the artificial anter</li> <li>2. Set to the maximum power settine</li> <li>EUT transmit continuously.</li> <li>3. Use the following spectrum and 20dB Bandwidth measurement.</li> <li>Span = approximately 2 to 3 bandwidth, centered on a hopping 1% of the 20 dB bandwidth; VBW</li> </ul>	<ol> <li>According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW ≥ 1% of the 20 dB bandwidth; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold.</li> </ol>			
Test setup:	Spectrum Analyzer				
Test Mode:	Transmitting Mode				
Test results:	PASS	(0)			

#### 6.5.2. Test Instruments

RF Test Room						
Equipment Manufacturer Model Serial Number Calibration Du						
Spectrum Analyzer	R&S	FSU	200054	Sep. 20, 2019		

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

