

FCC Test Report

Report No. : 1812C50369712504

Applicant : CiVinTec Global Co., Limited.

Address : FLAT/RM 19H MAXGRAND PLAZA 3 TAI YAU
STREET SAN PO KONG HONGKONG, CHINA

Product Name : CRYSTAL TOUCH KEYPAD TERMINAL

Report Date : 2025-09-18

Shenzhen Anbotek Compliance Laboratory Limited

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TEST REPORT

Applicant : CiVinTec Global Co., Limited.

Manufacturer : C-TECH INTELLIGENCE & TECHNOLOGY CO., LTD

Product Name : CRYSTAL TOUCH KEYPAD TERMINAL

Model No. : CT9E-HW-QP, CT9E-XX-XX-X (First X: is H for 4G module, Second X: is WiFi module, Third X: is Q for QR module, Fourth X: is P for POE module, Fifth X: is 2R for double relays), CT9E-T-P, CT9E-W-P, CT9E-T-P-2R, CT9E-W-P-2R, CT9E-T-QP, CT9E-W-QP, CT9E-T-QP-2R, CT9E-W-QP-2R, CT9E-H-P, CT9E-H-QP, CT9E-HW-P, CT9E-H-P-2R, CT9E-HW-P-2R

Trade Mark : CIVINTEC

Rating(s) : Input: 12-24V=800mA

Test Standard(s) : **47 CFR Part 15.225**
ANSI C63.10-2020

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with above listed standard(s) requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt: 2025-07-30

Date of Test: 2025-07-30 to 2025-08-13

Prepared By:



(Lene Chen)

Approved & Authorized Signer:



(Hugo Chen)

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Revision History

Report Version	Description	Issued Date
R00	Original Issue.	2025-09-18

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1. General Information

1.1. Client Information

Applicant	:	CiVinTec Global Co., Limited.
Address	:	FLAT/RM 19H MAXGRAND PLAZA 3 TAI YAU STREET SAN PO KONG HONGKONG, CHINA
Manufacturer	:	C-TECH INTELLIGENCE & TECHNOLOGY CO., LTD
Address	:	F20,Huatong Building,No.8,Ganli Road 2,Jihua Street,Longgang District,Shenzhen,Guangdong,518112,China
Factory	:	C-TECH INTELLIGENCE & TECHNOLOGY CO., LTD
Address	:	F20,Huatong Building,No.8,Ganli Road 2,Jihua Street,Longgang District,Shenzhen,Guangdong,518112,China

1.2. Description of Device (EUT)

Product Name	:	CRYSTAL TOUCH KEYPAD TERMINAL
Model No.	:	CT9E-HW-QP, CT9E-XX-XX-X (First X: is H for 4G module, Second X: is WiFi module, Third X: is Q for QR module, Fourth X: is P for POE module, Fifth X: is 2R for double relays), CT9E-T-P, CT9E-W-P, CT9E-T-P-2R, CT9E-W-P-2R, CT9E-T-QP, CT9E-W-QP, CT9E-T-QP-2R, CT9E-W-QP-2R, CT9E-H-P, CT9E-H-QP, CT9E-HW-P, CT9E-H-P-2R, CT9E-HW-P-2R (Note: All samples are the same except the model number, so we prepare "CT9E-HW-QP" for test only.)
Trade Mark	:	CIVINTEC
Test Sample No.	:	DC 12V
Adapter	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)

RF Specification

Operation Frequency	:	13.56MHz
Number of Channel	:	1
Modulation Type	:	ASK
Antenna Type	:	Inductive loop coil Antenna

Remark:

- (1) All of the RF specification are provided by customer.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

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1.3. Auxiliary Equipment Used During Test

Title	Manufacturer	Model No.	Serial No.
/	/	/	/

1.4. Description of Test Modes

Pretest Modes	Descriptions
TM1	On Mode

1.5. Measurement Uncertainty

Parameter	Uncertainty
Occupied Bandwidth	925Hz
Dwell Time	2%
Radiated emissions (Below 30MHz)	3.26dB
Radiated spurious emissions (30MHz~1GHz)	Horizontal: 3.70dB; Vertical: 4.42dB
The measurement uncertainty and decision risk evaluated according to AB/WI-RF-F-032. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

1.6. Test Summary

Test Items	Test Modes	Status
Antenna requirement	/	P
Conducted Emission at AC power line	/	N
20dB Bandwidth	Mode1	P
Frequency Tolerance	Mode1	P
Field Strength of The Fundamental Signal	Mode1	P
Emissions in restricted frequency bands (below 30MHz)	Mode1	P
Emissions in restricted frequency bands (30M-1GHz)	Mode1	P
Note: P: Pass N: N/A, not applicable		

1.7. Description of Test Facility

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

FCC-Registration No.:279531

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 279531.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

1.8. Disclaimer

1. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
2. The test report is invalid if there is any evidence and/or falsification.
3. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
4. This document may not be altered or revised in any way unless done so by Anbotek and all revisions are duly noted in the revisions section.
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1.9. Test Equipment List

20dB Bandwidth Frequency Tolerance						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	2024-10-14	2025-10-13
2	DC Power Supply	IVYTECH	IV3605	1804D360 510	2024-09-09	2025-09-08
3	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102150	2025-04-25	2026-04-24
4	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY505318 23	2024-09-09	2025-09-08
5	Oscilloscope	Tektronix	MDO3012	C020298	2024-10-10	2025-10-09
6	MXG RF Vector Signal Generator	Agilent	N5182A	MY474206 47	2025-01-14	2026-01-13

Field Strength of The Fundamental Signal Emissions in frequency bands (below 30MHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver(RE2/3#)	Rohde & Schwarz	ESR26	101481	2025-01-14	2026-01-13
2	Pre-amplifier	SONOMA	310N	186860	2025-01-14	2026-01-13
3	Loop Antenna (9K-30M)	Schwarzbeck	FMZB1519 B	00053	2024-09-12	2025-09-11
4	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	/	/

Emissions in frequency bands (30M-1GHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver(RE2/3#)	Rohde & Schwarz	ESR26	101481	2025-01-14	2026-01-13
2	Pre-amplifier	SONOMA	310N	186860	2025-01-14	2026-01-13
3	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	2022-10-23	2025-10-22
4	Loop Antenna (9K-30M)	Schwarzbeck	FMZB1519 B	00053	2024-09-12	2025-09-11
5	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	/	/

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2. Antenna requirement

Test Requirement:

Refer to 47 CFR Part 15.203, 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 shall be considered sufficient to comply with the provisions of this section.

2.1. Conclusion

The antenna is a **Inductive loop coil antenna** which permanently attached. It complies with the standard requirement.

3. Conducted Emission at AC power line

Test Requirement:	Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).			
Test Limit:	Frequency of emission (MHz)		Conducted limit (dB μ V)	
	Quasi-peak		Average	
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30	60	50	

*Decreases with the logarithm of the frequency.

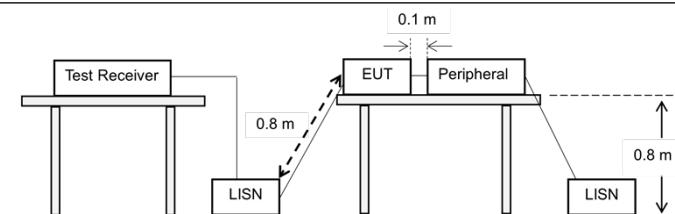
| Test Method: | ANSI C63.10-2020 section 6.2 | | |
| Procedure: | Refer to ANSI C63.10-2020 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices | | |

3.1. EUT Operation

Operating Environment:

Test mode: /

3.2. Test Setup



3.3. Test Data

Not applicable for equipment operated with DC power supply.

4. 20dB Bandwidth

Test Requirement:	47 CFR 15.215(c)
Test Limit:	Refer to 47 CFR 15.215(c), 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 the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.
Test Method:	ANSI C63.10-2020, section 6.9.2
Procedure:	<p>a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.</p> <p>b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.</p> <p>c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (\text{OBW}/\text{RBW})]$ below the reference level. Specific guidance is given in 4.1.5.2.</p> <p>d) Steps a) through c) might require iteration to adjust within the specified tolerances.</p> <p>e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “-xx dB down” requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.</p> <p>f) Set detection mode to peak and trace mode to max hold.</p> <p>g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).</p> <p>h) Determine the “-xx dB down amplitude” using $[(\text{reference value}) - \text{xx}]$. Alternatively, this calculation may be made by using the marker-delta function of the instrument.</p> <p>i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for</p>

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step j).

j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “ixx dB down amplitude” determined in step h). If a marker is below this “-xx dB down amplitude” value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “ixx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.

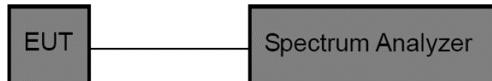
k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

4.1. EUT Operation

Operating Environment:

Test mode: 1: TM1: On Mode

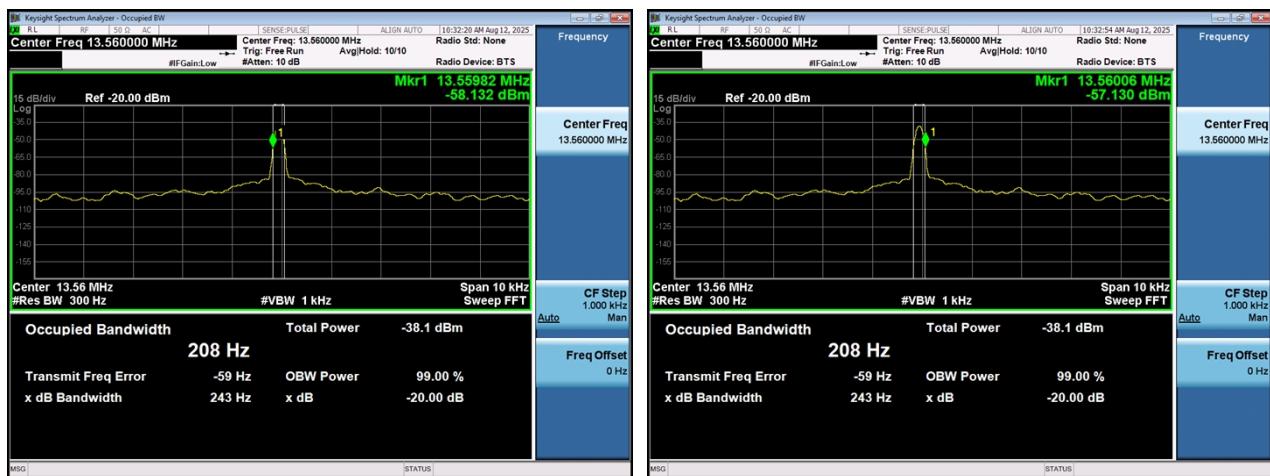
4.2. Test Setup



4.3. Test Data

Temperature:	26.1 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa
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Freq.(MHz)	Bandwidth (kHz)	Results
13.56	0.243	PASS



Note: The measured signal is Cw-like, adjusting the RBW per C63.10 would not be practical since measurement bandwidth will always follow the RBW. The RBW is set to 3kHz to perform the occupied bandwidth test.

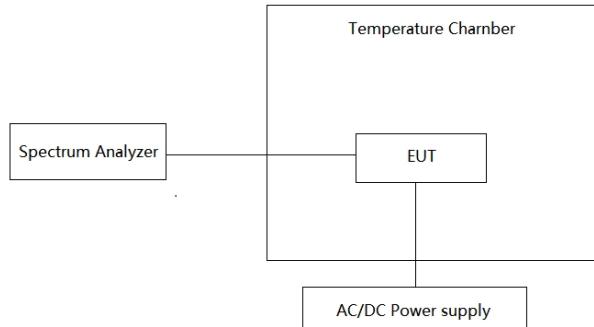
5. Frequency Tolerance

Test Requirement:	47 CFR 15.231(e)
Test Limit:	The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to + 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.
Test Method:	ANSI C63.10-2020, Section 6.8
Procedure:	Refer to ANSI C63.10-2020, Section 6.8

5.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On Mode

5.2. Test Setup



5.3. Test Data

Temperature:	26.1 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa
--------------	---------	-----------	------	-----------------------	---------

Voltage (VDC)	Temperature (°C)	Frequency Measured (MHz)	Test data (ppm)	Limit (ppm)	Verdict
12	-20	13.560384	28.28	±100	PASS
	-10	13.560355	26.17	±100	PASS
	0	13.560337	24.83	±100	PASS
	+10	13.560385	28.38	±100	PASS
	+20	13.560365	26.94	±100	PASS
	+30	13.560472	34.81	±100	PASS
	+40	13.560437	32.21	±100	PASS
	+50	13.560414	30.56	±100	PASS
10.2	+20	13.560474	34.93	±100	PASS
13.8	+20	13.560450	33.16	±100	PASS

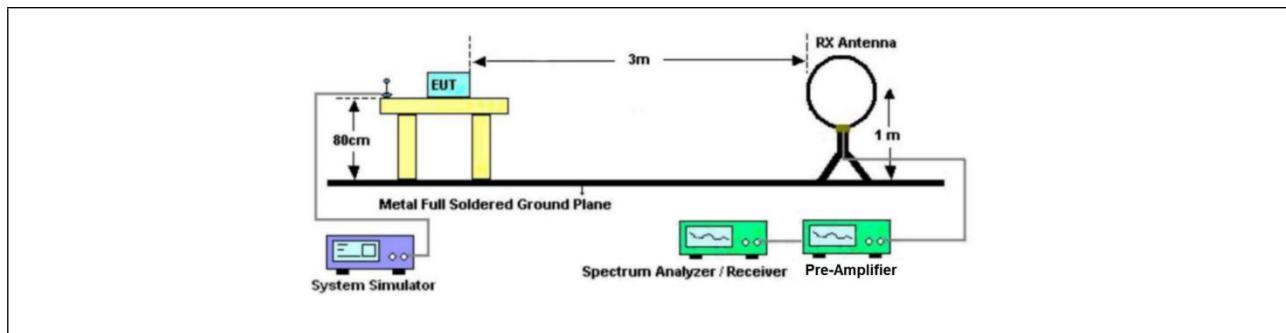
6. Field Strength of The Fundamental Signal

Test Requirement:	47 CFR 15.225(a)
Test Limit:	The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
Test Method:	ANSI C63.10-2020, Section 6.4
Procedure:	Refer to ANSI C63.10-2020, Section 6.4

6.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On Mode

6.2. Test Setup



6.3. Test Data

Temperature:	26.1 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa
--------------	---------	-----------	------	-----------------------	---------

Indicated			Table Angle Degree	Antenna Height (m)	Detector	Correction Factor			Corrected Amplitude (dBuV/m) @3m	FCC part 15.225		
Frequency Range (MHz)	Mark Point (MHz)	Corrected Amplitude (dBuV/m) @3m				Ant. Factor (dB)	Cable Loss (dB)	Pre-Amp. Gain (dB)		Limit (dBuV/m) @3m	Margin (dBuV/m) @3m	Result
13.110~13.410	13.381	45.26	0	1.0	QP	20.8	0.2	30.2	37.36	80.5	44.44	PASS
13.410~13.553	13.544	51.50	0	1.0	QP	20.9	0.2	30.2	42.22	90.5	48.10	PASS
13.553~13.567	13.557	56.63	0	1.0	QP	20.9	0.2	30.2	46.85	124	76.47	PASS
13.567~13.710	13.573	49.87	0	1.0	QP	21.1	0.2	30.2	40.62	90.5	49.53	PASS
13.710~14.010	13.887	45.69	0	1.0	QP	21.2	0.2	30.2	37.08	80.5	43.61	PASS

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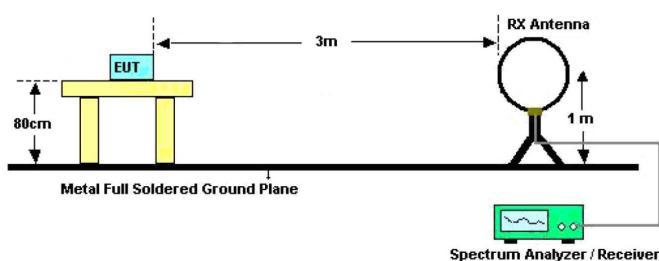
7. Emissions in restricted frequency bands (below 30MHz)

Test Requirement:	47 CFR 15.225(d)		
	Refer to 47 CFR Part 15.225(d), The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.		
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
Test Limit:	<p>** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.</p> <p>In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.</p> <p>As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.</p>		
Test Method:	ANSI C63.10-2020, Section 6.4		
Procedure:	Refer to ANSI C63.10-2020 section 6.4		

7.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: On Mode

7.2. Test Setup

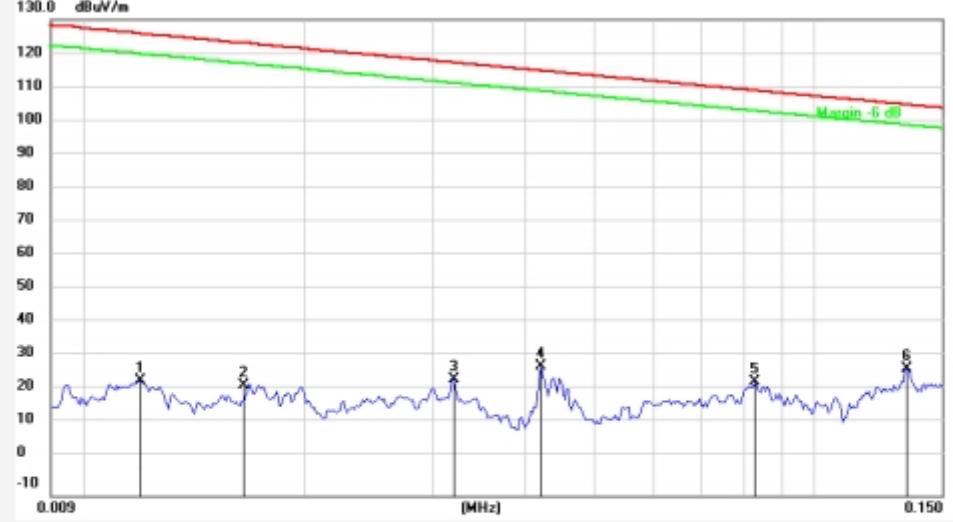


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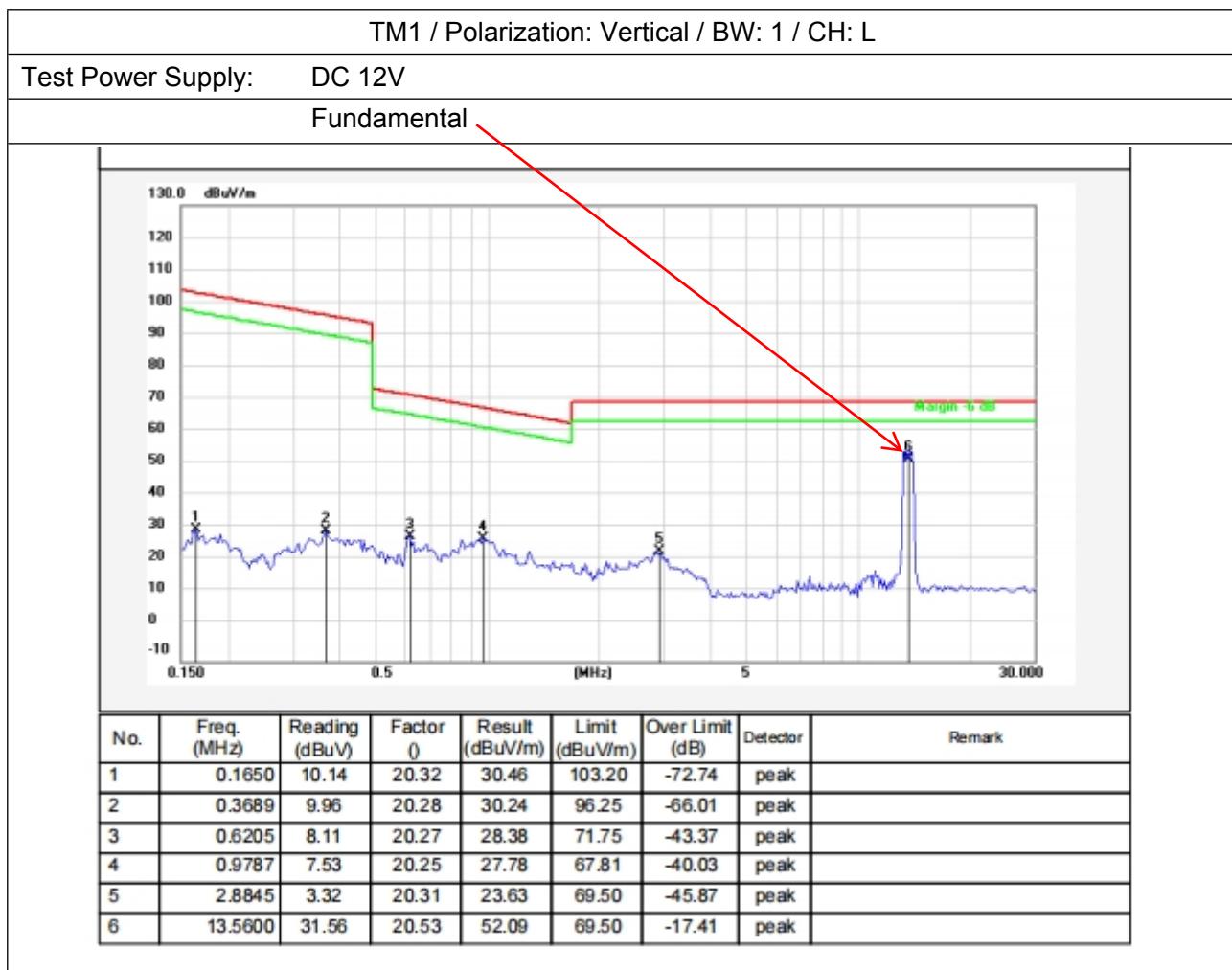
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7.3. Test Data

Temperature:	24 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa																																																															
TM1 / Polarization: Horizontal / BW: 1 / CH: L																																																																				
Test Power Supply:	DC 12V																																																																			
																																																																				
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Temperature:	24 °C	Humidity:	52 %	Atmospheric Pressure:	101 kPa
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Note:

1. Result(dB μ V/m) = Reading(dB μ V) + Factor(dB/m);
Over Limit(dB) = Result(dB μ V/m) - Limit(dB μ V/m)

8. Emissions in restricted frequency bands (30M-1GHz)

Test Requirement:	47 CFR 15.225(d)		
	Refer to 47 CFR Part 15.225(d), The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.		
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
Test Limit:	<p>** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.</p> <p>In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.</p> <p>As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.</p>		
Test Method:	ANSI C63.10-2020, Section 6.5		
Procedure:	<p>a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>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.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the</p>		

Shenzhen Anbotek Compliance Laboratory Limited

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Hotline: 400-003-0500 web: www.anbotek.com E-mail: service@anbotek.com

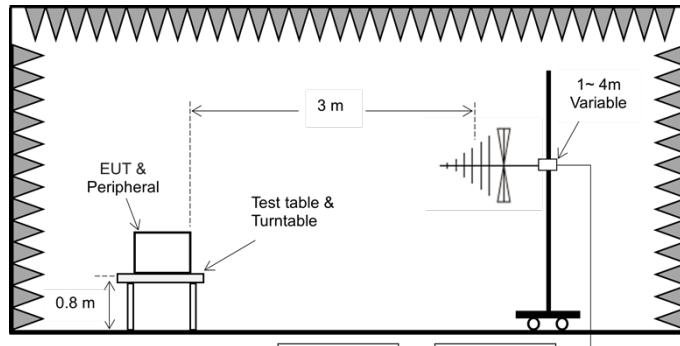
	<p>limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.</p> <p>g. Test the EUT in the lowest channel, the middle channel, the Highest channel.</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p> <p>Remark:</p> <ol style="list-style-type: none"> 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. 3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
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8.1. EUT Operation

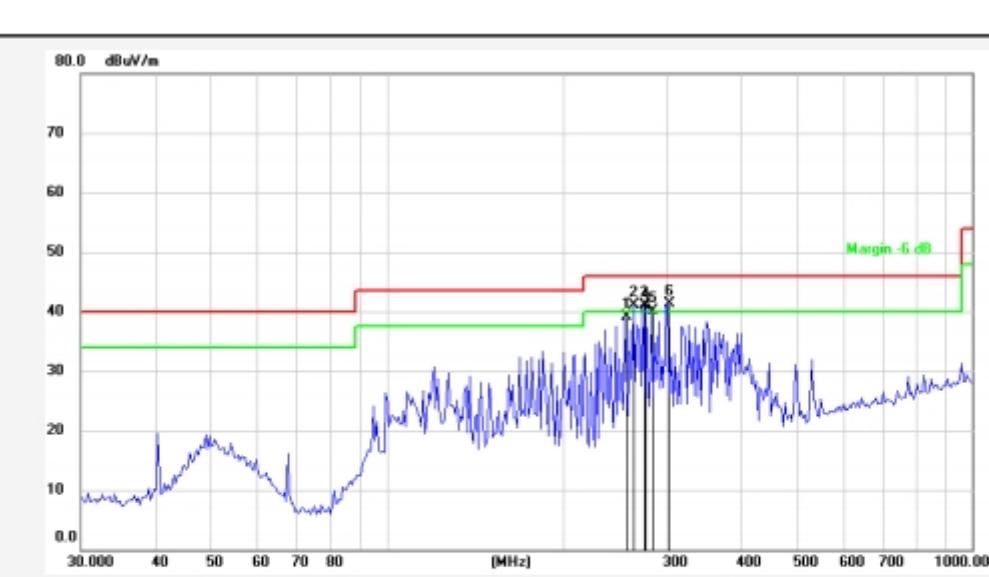
Operating Environment:

Test mode:	1: TM1: On Mode
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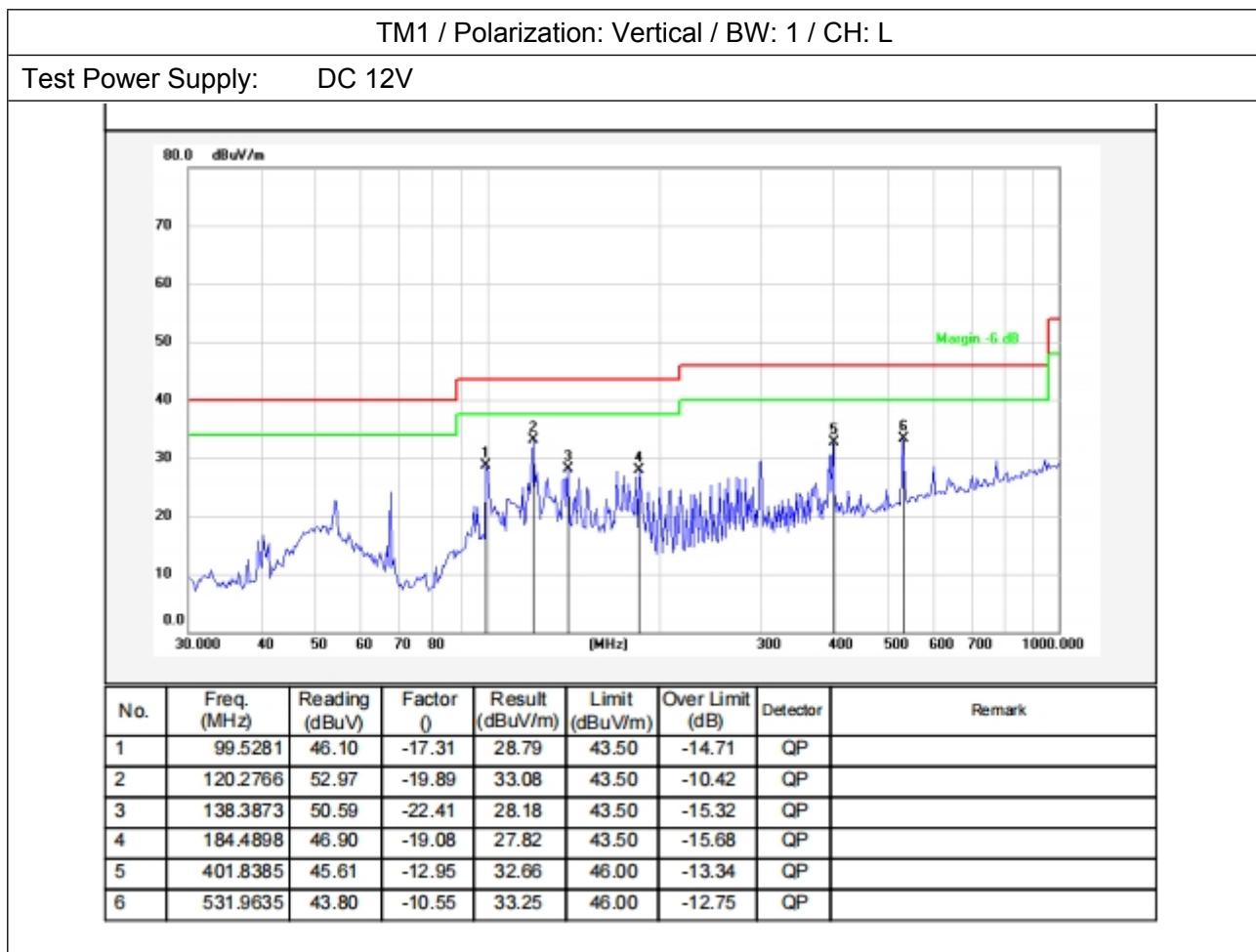
8.2. Test Setup



8.3. Test Data

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APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph_RF

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

----- End of Report -----