FCC Test Report

Applicant	:	**Shenzhen Xinhengcheng Electronics Co.,Ltd.**
Address	:	**#202, Second Floor, Building A, Nanchang First Industrial Zone, Nanchang Community, Xixiang Street, Baoan District, Shenzhen, China**
Product Name	:	**433 RF Remote Control**
Report Date	:	**Apr. 01, 2024**

Shenzhen Anbotek Compliance Laboratory Limited

Contents

TEST REPORT

Applicant	:	Shenzhen Xinhengcheng Electronics Co.,Ltd.
Manufacturer	:	Shenzhen Xinhengcheng Electronics Co.,Ltd.
Product Name	:	433 RF Remote Control
Test Model No.	:	XHC-K077
Reference Model No.	:	N/A
Trade Mark	:	N/A
Rating(s)	:	Input: DC 3V (with "CR2032" battery inside)
Test Standard(s)	:	**47 CFR Part 15.231** **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: Mar. 21, 2024

Date of Test: Mar. 21, 2024 to Mar. 29, 2024

Prepared By: Nian xiu Chen

(Nianxiu Chen)

Approved & Authorized Signer: Edward Pan

(Edward Pan)

Revision History

Report Version	Description	Issued Date
R00	Original Issue.	Apr. 01, 2024

1. General Information

1.1. Client Information

Applicant	:	Shenzhen Xinhengcheng Electronics Co.,Ltd.
Address	:	#202, Second Floor, Building A, Nanchang First Industrial Zone, Nanchang Community, Xixiang Street, Baoan District, Shenzhen, China
Manufacturer	:	Shenzhen Xinhengcheng Electronics Co.,Ltd.
Address	:	#202, Second Floor, Building A, Nanchang First Industrial Zone, Nanchang Community, Xixiang Street, Baoan District, Shenzhen, China
Factory	:	Shenzhen Xinhengcheng Electronics Co.,Ltd.
Address	:	#202, Second Floor, Building A, Nanchang First Industrial Zone, Nanchang Community, Xixiang Street, Baoan District, Shenzhen, China

1.2. Description of Device (EUT)

Product Name	:	433 RF Remote Control
Test Model No.	:	XHC-K077
Reference Model No.	:	N/A
Trade Mark	:	N/A
Test Power Supply	:	DC 3V Battery
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	N/A
RF Specification		
Operation Frequency	:	433.92MHz
Number of Channel	:	1
Modulation Type	:	ASK
Antenna Type	:	PCB Antenna
Antenna Gain(Peak)	:	-1.22 dBi

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.

1.3. Auxiliary Equipment Used During Test

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

1.4. Operation channel list

Operation Band:

Channel	Frequency (MHz)
01	433.92

1.5. Description of Test Modes

Pretest Modes	Descriptions
TM1	Keep the EUT in continuously transmitting mode

1.6. Measurement Uncertainty

Parameter	Uncertainty
Occupied Bandwidth	925Hz
Radiated spurious emissions (30MHz~1GHz)	Horizontal: 3.92dB; Vertical: 4.52dB
Radiated emissions (Below 30MHz)	3.53dB
Radiated spurious emissions (above 1GHz)	1G-6GHz: 4.78dB; 6G-18GHz: 4.88dB 18G-40GHz: 5.68dB
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.	

1.7. Test Summary

Test Items	Test Modes	Status
Antenna requirement	/	P
Conducted Emission at AC power line	/	N
20dB Bandwidth	Mode1	P
Dwell Time	Mode1	P
Duty Cycle	Mode1	P
Field Strength of The Fundamental Signal	Mode1	P
Radiated Emission	Mode1	P
Note: P: Pass N: N/A, not applicable		

1.8. Description of Test Facility

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

FCC-Registration No.: 434132
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. 434132.

ISED-Registration No.: 8058A
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location
Shenzhen Anbotek Compliance Laboratory Limited.
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.

1.9. 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.
5. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
6. The authenticity of the information provided by the customer is the responsibility of the customer and the laboratory is not responsible for its authenticity.

The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

1.10. Test Equipment List

20dB Bandwidth Dwell Time Duty Cycle						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	2023-10-16	2024-10-15
2	DC Power Supply	IVYTECH	IV3605	1804D360510	2023-10-20	2024-10-19
3	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	101792	2023-05-26	2024-05-25
4	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY50531823	2023-10-12	2024-10-11
5	Oscilloscope	Tektronix	MDO3012	C020298	2023-10-12	2024-10-11
6	MXG RF Vector Signal Generator	Agilent	N5182A	MY47420647	2024-02-04	2025-02-03

Field Strength of The Fundamental Signal Radiated Emission (below 1GHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2024-01-23	2025-01-22
2	Pre-amplifier	SONOMA	310N	186860	2024-01-17	2025-01-16
3	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	2022-10-23	2025-10-22
4	Loop Antenna (9K-30M)	Schwarzbeck	FMZB1519 B	00053	2023-10-12	2024-10-11
5	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	/	/

Radiated Emission (above 1GHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2024-01-23	2025-01-22
2	EMI Preamplifier	SKET Electronic	LNPA-0118G-45	SKET-PA-002	2024-01-17	2025-01-16
3	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	2022-10-16	2025-10-15
4	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	/	/
5	Horn Antenna	A-INFO	LB-180400-KF	J211060628	2023-10-12	2024-10-11
6	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	101792	2023-05-26	2024-05-25
7	Amplifier	Talent Microwave	TLLA18G40G-50-30	23022802	2023-05-25	2024-05-24

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 **PCB Antenna** which permanently attached, and the best case gain of the antenna is **-1.22 dBi**. It complies with the standard requirement.

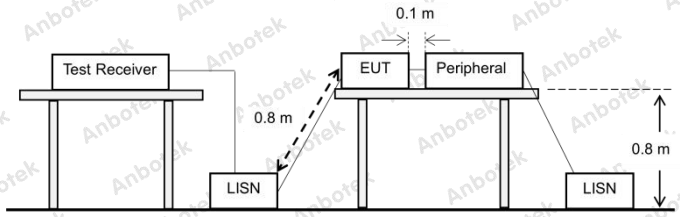
3. Conducted Emission at AC power line

Test Requirement:	Refer to 47 CFR 15.207(a), 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 μH/50 ohms line impedance stabilization network (LISN).
Test Limit:	Frequency of emission (MHz) / Conducted limit (dBμV): 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. The EUT is powered by DC 3V battery inside, so there is no need to conduct this test.

4. 20dB Bandwidth

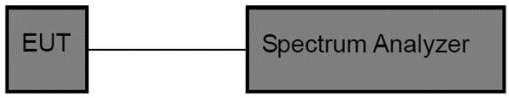
Test Requirement:	47 CFR 15.231(c)
Test Limit:	The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.
Test Method:	ANSI C63.10-2020, section 6.9.2
Procedure:	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. 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. 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 (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2. d) Steps a) through c) might require iteration to adjust within the specified tolerances. 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. f) Set detection mode to peak and trace mode to max hold. 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). h) Determine the “-xx dB down amplitude” using [(reference value) - xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument. 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 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 “íxx 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 “íxx 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: TX mode: Keep the EUT in continuously transmitting mode

4.2. Test Setup



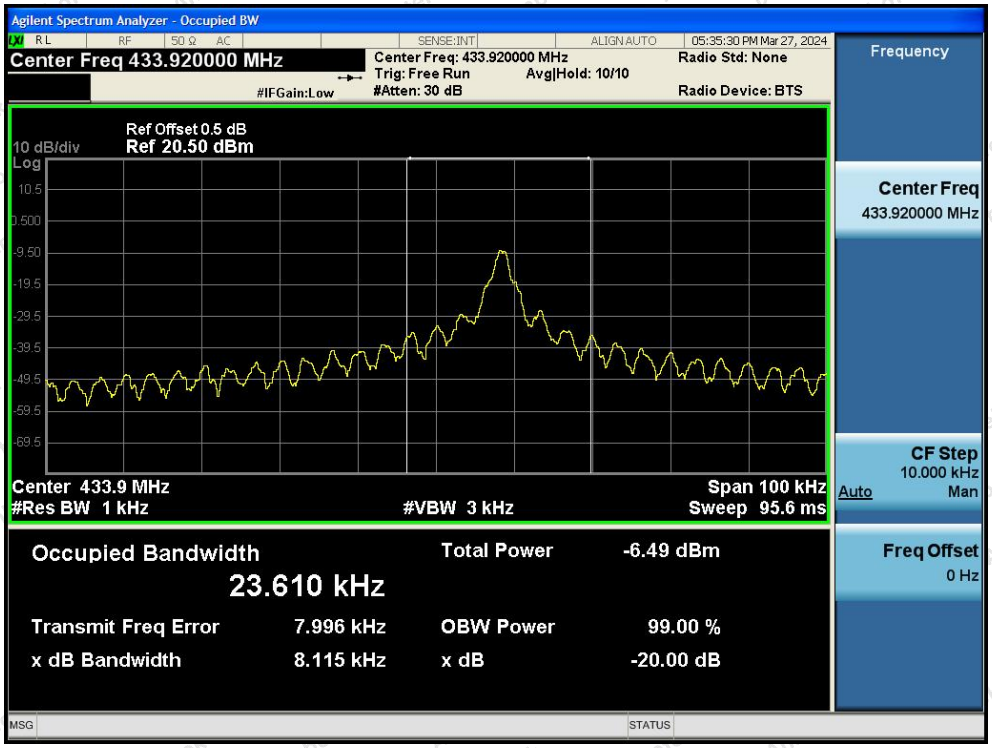
4.3. Test Data

Temperature:	24 °C	Humidity:	50 %	Atmospheric Pressure:	101 kPa

Mode	Freq. (MHz)	20DB Bandwidth (kHz)	Limit (kHz)	Results
TX Mode	433.92	8.115	≤1084.8	PASS

Note: Limit=0.0025*Freq.

20dB Bandwidth



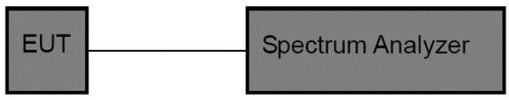
5. Dwell Time

Test Requirement:	47 CFR 15.231(a)(1) & (a)(2)
Test Limit:	(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.
Test Method:	ANSI C63.10-2020, Section 7.4
Procedure:	For evaluation of periodic operation characteristics, the following procedure may be used: a) Trigger the spectrum analyzer sweep on the RF waveform of the unlicensed wireless device. b) Set the spectrum analyzer sweep time greater than the specified time for periodic operation. c) Manually activate and deactivate the unlicensed wireless device and confirm that it ceases transmission within the specified time of deactivation. d) Document the test results. e) Verify and document that periodic transmissions at regular predetermined intervals do not exist, except where regulatory requirements allow polling or supervision transmissions, including data, to determine system integrity. Compliance is addressed by an attestation supported by the equipment theory of operation.

5.1. EUT Operation

Operating Environment:	
Test mode:	1: TX mode: Keep the EUT in continuously transmitting mode

5.2. Test Setup

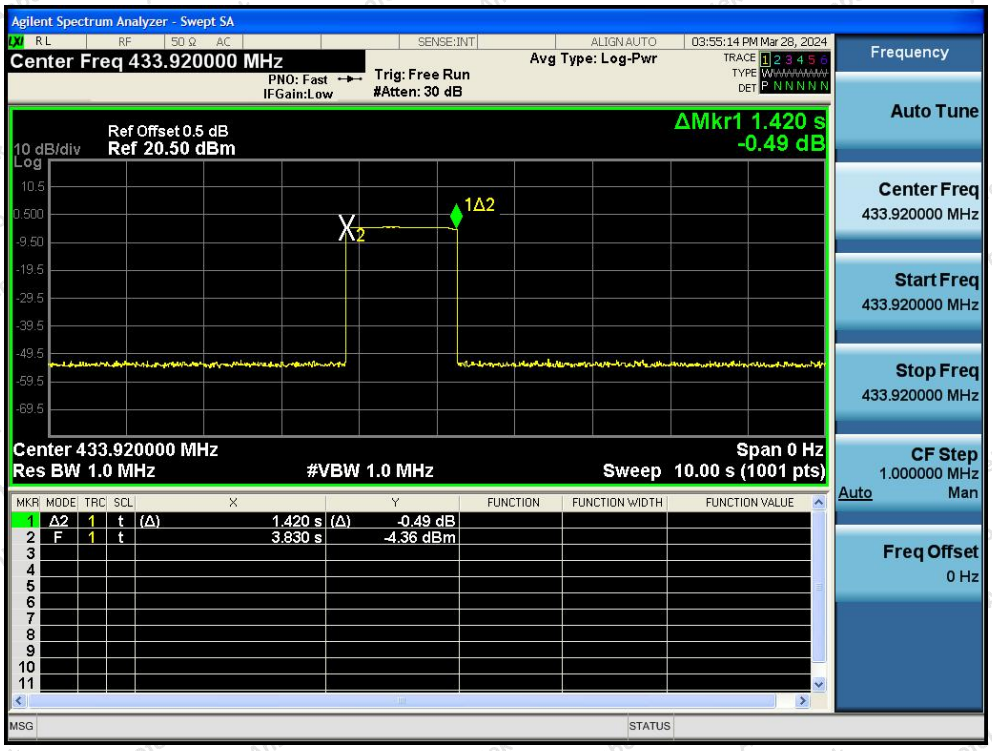


5.3. Test Data

Temperature:	24 °C	Humidity:	50 %	Atmospheric Pressure:	101 kPa

Mode	Freq. (MHz)	Transmitting time(s)	Limit(s)	Results
TX Mode	433.92	1.42	≤5	PASS

433.92 MHz


Agilent Spectrum Analyzer - Swept SA
Center Freq 433.920000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
03:55:14 PM Mar 28, 2024
Ref Offset 0.5 dB
10 dB/div
Log
Ref 20.50 dBm
ΔMkr1 1.420 s
-0.49 dB
1Δ2
Center 433.920000 MHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 10.00 s (1001 pts)
1 Δ2 1 t (Δ) 1.420 s (Δ) -0.49 dB
2 F 1 t 3.830 s -4.36 dBm
Frequency
Auto Tune
Center Freq
433.920000 MHz
Start Freq
433.920000 MHz
Stop Freq
433.920000 MHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

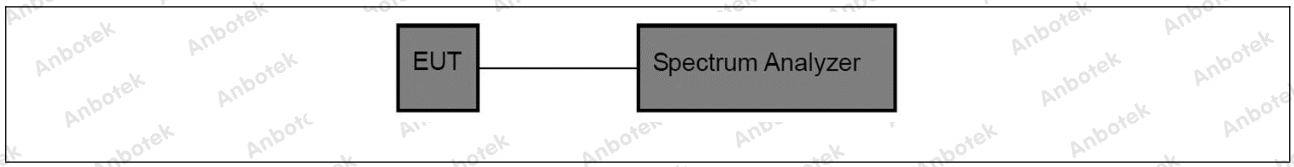
6. Duty Cycle

Test Requirement:	47 CFR 15.231(b) & (e)
Test Limit:	No limit, only for Report Use.
Test Method:	ANSI C63.10-2020, Section 7.5
Procedure:	a) Adjust and configure any EUT switches, controls, or input data streams to ensure that the EUT is transmitting or encoded to obtain the “worst-case” pulse ON time. b) Couple the final radio frequency output signal to the input of a spectrum analyzer. This may be performed by a radiated, direct connection (i.e., conducted) or by a “near-field” coupling method. The signal received shall be of sufficient level to trigger adequately the spectrum analyzer sweep display. NOTE—If the bandwidth of the pulse is greater than the RBW of the spectrum analyzer, then a similar measurement may be performed using a wideband digital storage oscilloscope (DSO). c) Adjust the center frequency of the spectrum analyzer to the center of the RF signal. d) Set the spectrum analyzer for ZERO SPAN. e) Adjust the SWEEP TIME to obtain at least a 100 ms period of time on the horizontal display axis of the spectrum analyzer. f) If the pulse train is periodic (i.e., consists of a series of pulses that repeat in a characteristic pattern over a constant time period), and the period (T) is less than or equal to 100 ms, then: 1) Set the TRIGGER on the spectrum analyzer to capture at least one period of the pulse train, including any blanking intervals. 2) Determine the total maximum pulse “ON time” (t_{ON}) over one period of the pulse train. An example of a periodic pulse train and the associated period is shown in Figure 14. If the pulse train contains pulses of different widths, then t_{ON} is determined by summing the duration of all of the pulses within the pulse train [i.e., $t_{ON} = \Sigma(t1 + t2 + \ldots tn)$]. 3) The duty cycle is then determined by dividing the total maximum “ON time” by the period of the pulse train (t_{ON}/T). g) If the pulse train is nonperiodic or is periodic with a period that exceeds 100 ms, or as an alternative to step f), then: 1) Set the TRIGGER on the spectrum analyzer to capture the greatest amount of pulse “ON time” over 100 ms. 2) Find the 100 ms period that contains the maximum “on time”; this may require summing the duration of multiple pulses as described in step f2). 3) Determine the duty cycle by dividing the total maximum “ON time” by 100 ms (t_{ON}/100 ms).

6.1. EUT Operation

Operating Environment:	
Test mode:	1: TX mode: Keep the EUT in continuously transmitting mode

6.2. Test Setup



6.3. Test Data

Temperature:	24 °C	Humidity:	50 %	Atmospheric Pressure:	101 kPa

Pulse Desensitization Correction Factor

Mode	Freq. (MHz)	Pulse Width (ms)	2/Pulse Width (kHz)
TX Mode	433.92	21.860	0.091

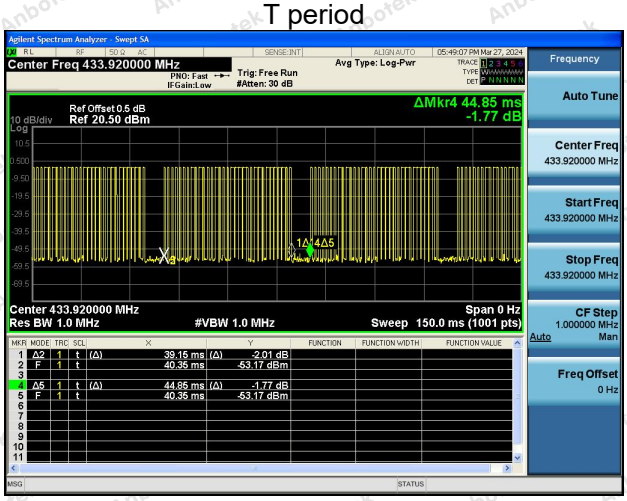
Remark:
RBW(1000kHz)＞2/Pulse Width, Therefore PDCF is not needed.

Duty Cycle Factor

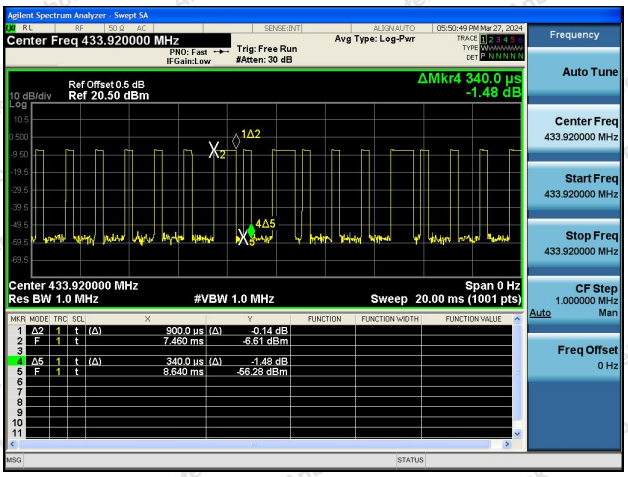
Mode	Freq. (MHz)	T on1 (ms)	N1	T on2 (ms)	N2	T period(ms)	Duty Cycle	Duty Cycle Factor
TX Mode	433.92	0.9	19	0.34	14	44.85	48.74%	-6.24

Remark:
1. T on=T on1*N1 + T on2*N2
2. Duty Cycle=T on/T period
3. Duty Cycle Factor =20*lg(Duty Cycle)

T period



T on1



7. Field Strength of The Fundamental Signal

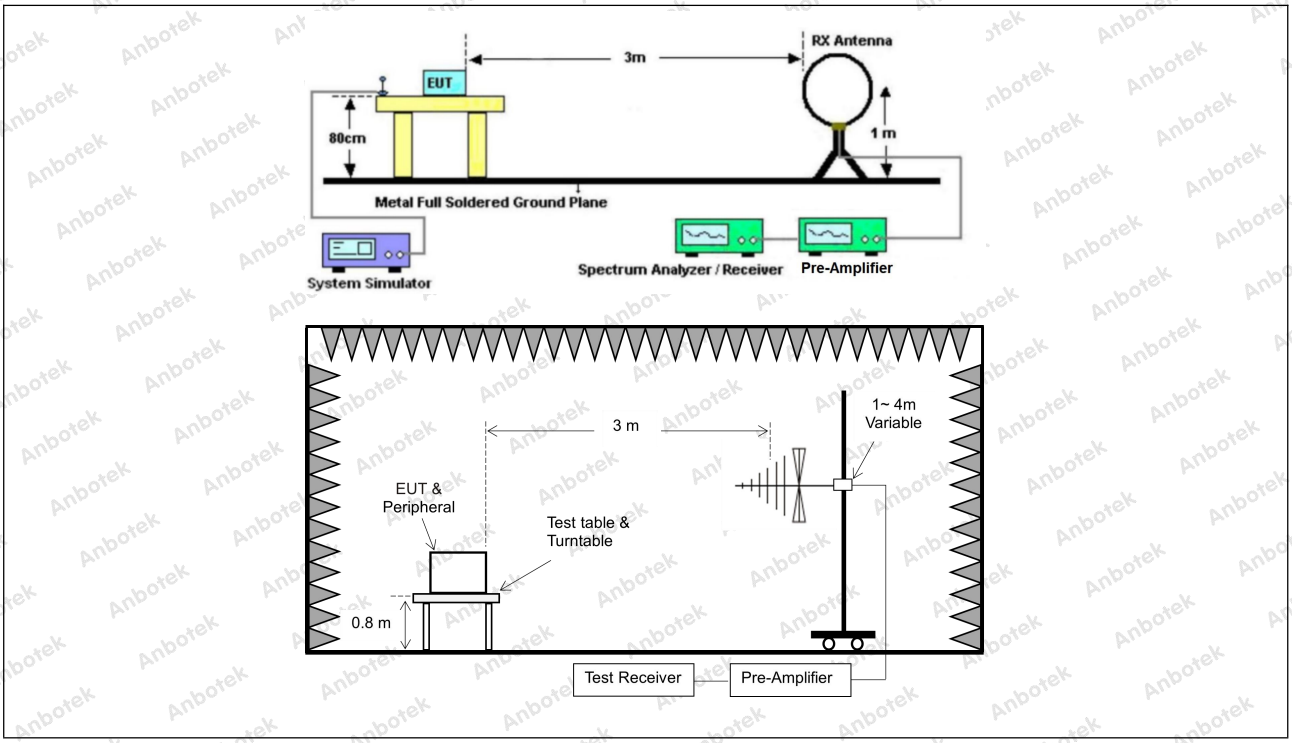
Test Requirement:	47 CFR 15.231(b)
Test Limit:	<table><tr><th>Fundamental frequency (MHz)</th><th>Field strength of fundamental (microvolts/meter)</th><th>Field strength of spurious emissions (microvolts/meter)</th></tr><tr><td>40.66-40.70</td><td>2,250</td><td>225</td></tr><tr><td>70-130</td><td>1,250</td><td>125</td></tr><tr><td>130-174</td><td>[1]1,250 to 3,750</td><td>[1]125 to 375</td></tr><tr><td>174-260</td><td>3,750</td><td>375</td></tr><tr><td>260-470</td><td>[1]3,750 to 12,500</td><td>[1]375 to 1,250</td></tr><tr><td>Above 470</td><td>12,500</td><td>1,250</td></tr></table> [1]Linear interpolations. (1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.
Test Method:	ANSI C63.10-2020, Section 6.5
Procedure:	Below 1GHz: 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. 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. 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 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. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 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 quasi-peak method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. 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. i. Repeat above procedures until all frequencies measured was complete. Remark: 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. Above 1GHz: a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was 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 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. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 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 peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. 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. i. Repeat above procedures until all frequencies measured was complete. Remark: 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz 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. As shown in this section, for frequencies above 1GHz, the field strength limits 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 the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report. 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

7.1. EUT Operation

Operating Environment:	
Test mode:	1: TX mode: Keep the EUT in continuously transmitting mode

7.2. Test Setup



7.3. Test Data

Temperature:	24 °C	Humidity:	50 %	Atmospheric Pressure:	101 kPa

Test Results (Fundamental)

Mode	Freq. (MHz)	Antenna Pol.	Reading (dBuV/m)	Factor (dB)	Duty cycle Factor (dB)	Results (dBuV/m)	Limits (dBuV/m)	Det. Mode
TX Mode	433.92	H	76.95	-11.78	--	65.17	100.82	PK
	433.92	H	76.95	-11.78	-6.24	58.93	80.82	AV
	433.92	V	80.81	-11.78	--	69.03	100.82	PK
	433.92	V	80.81	-11.78	-6.24	62.79	80.82	AV

Remark:
1. Results = Reading + Factor + Duty cycle Factor

8. Radiated Emission

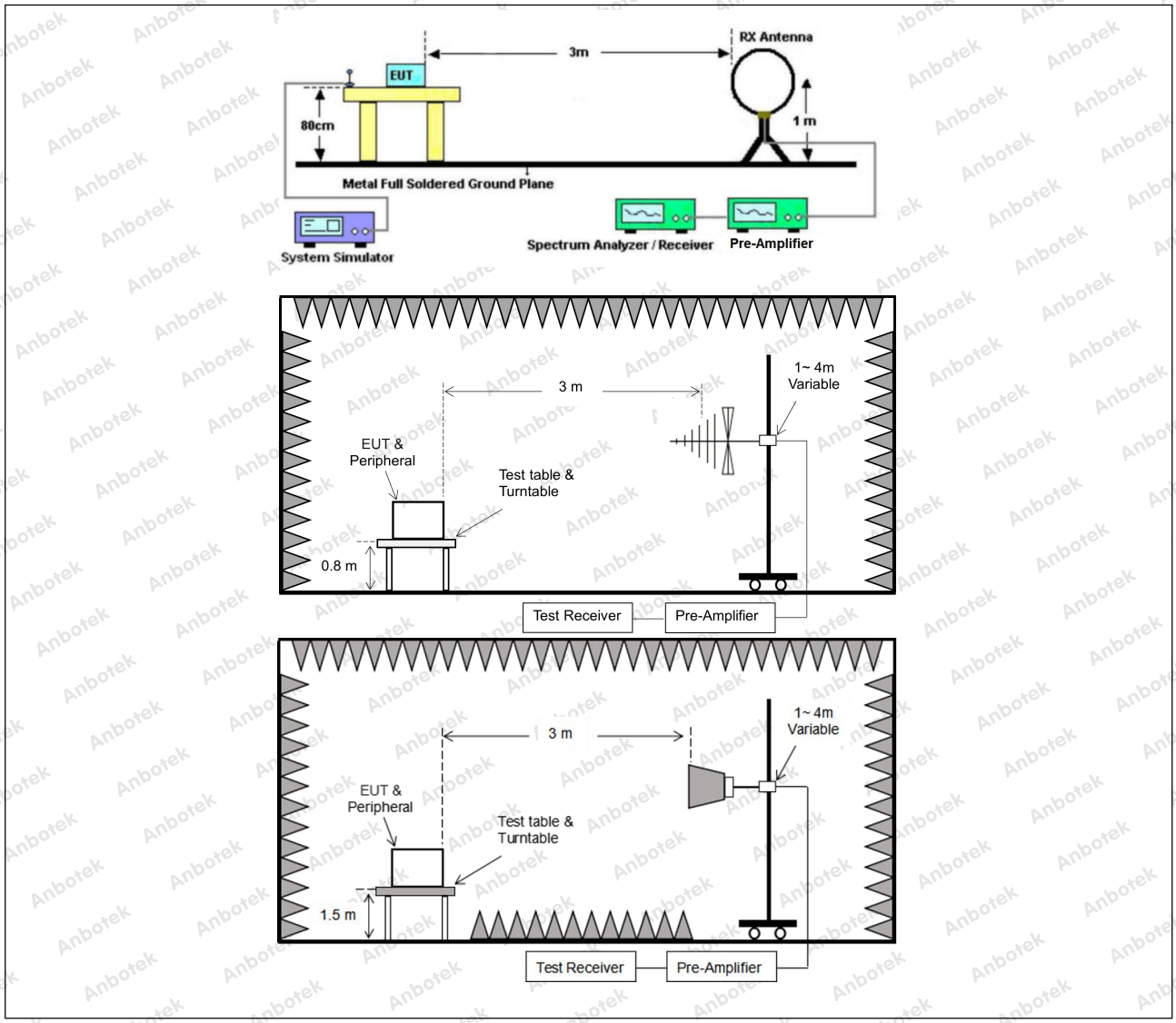
Test Requirement:	47 CFR 15.231
Test Limit:	<table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</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 960</td><td>500</td><td>3</td></tr></table> ** 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. 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.
Test Method:	ANSI C63.10-2020, Section 6.5
Procedure:	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. 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. 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 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. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 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 quasi-peak method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. 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. i. Repeat above procedures until all frequencies measured was complete.

	Remark: 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.

8.1. EUT Operation

Operating Environment:	
Test mode:	1: TX mode: Keep the EUT in continuously transmitting mode

8.2. Test Setup

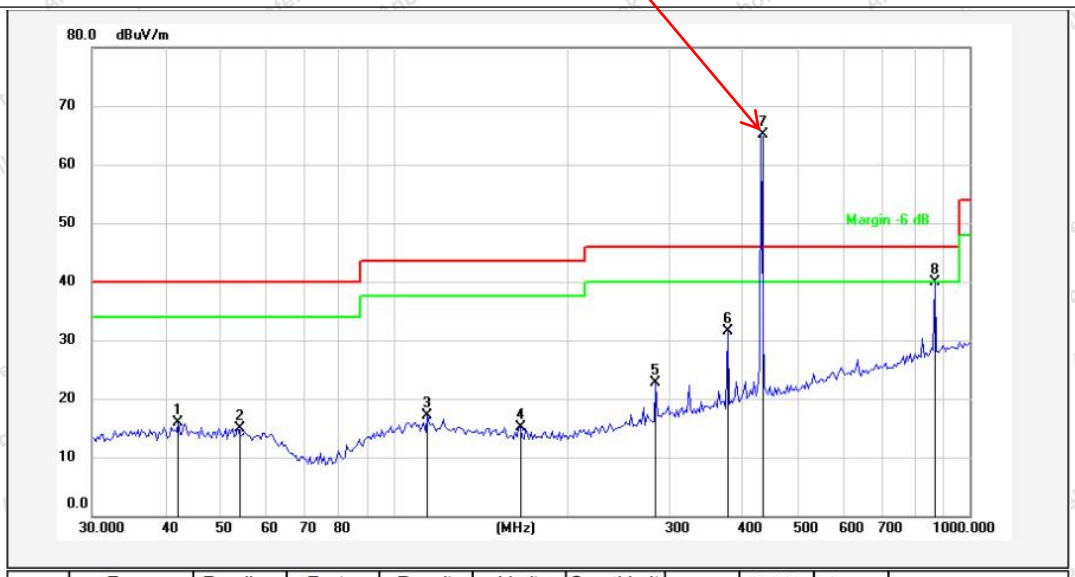


8.3. Test Data

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Temperature:	23.5 °C	Humidity:	55 %	Atmospheric Pressure:	101 kPa

TM1 / Polarization: Horizontal / BW: 1 / CH: L

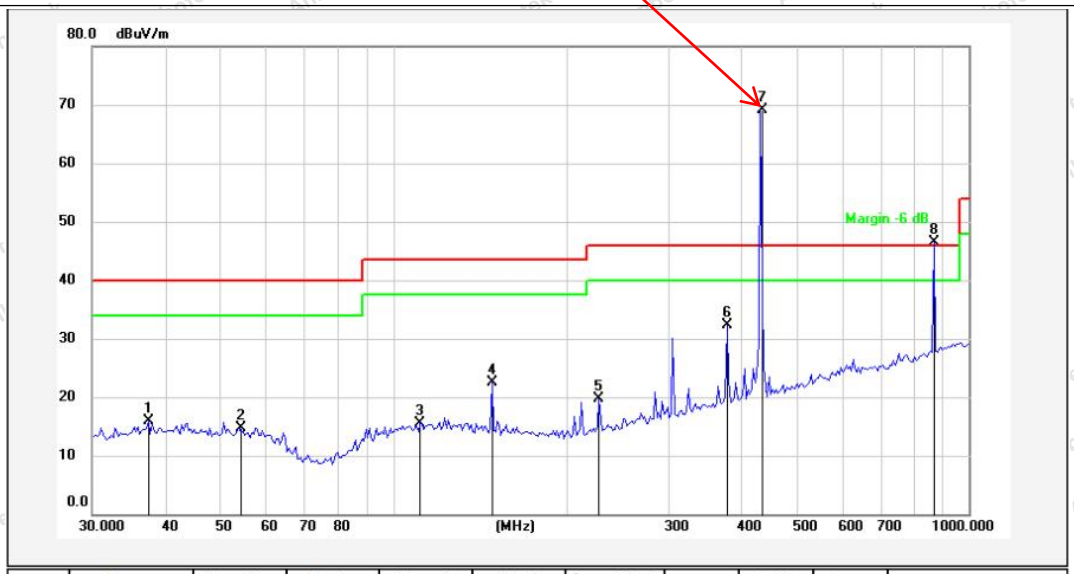


No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	42.3022	32.80	-16.92	15.88	40.00	-24.12	QP			
2	53.6932	32.36	-17.36	15.00	40.00	-25.00	QP			
3	114.5146	35.99	-18.84	17.15	43.50	-26.35	QP			
4	166.0680	35.28	-20.17	15.11	43.50	-28.39	QP			
5	284.9767	37.93	-15.21	22.72	46.00	-23.28	QP			
6	379.9141	44.45	-12.90	31.55	46.00	-14.45	QP			
7	434.0651	76.95	-11.78	65.17						
8	869.1302	44.77	-4.92	39.85						

Temperature:	23.5 °C	Humidity:	55 %	Atmospheric Pressure:	101 kPa

TM1 / Polarization: Vertical / BW: 1 / CH: L

Fundamental



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	37.5478	33.35	-17.44	15.91	40.00	-24.09	QP			
2	54.0711	32.09	-17.38	14.71	40.00	-25.29	QP			
3	111.3468	33.94	-18.43	15.51	43.50	-27.99	QP			
4	148.4410	43.61	-21.15	22.46	43.50	-21.04	QP			
5	227.6905	36.66	-17.01	19.65	46.00	-26.35	QP			
6	379.9141	45.22	-12.90	32.32	46.00	-13.68	QP			
7	434.0651	80.81	-11.78	69.03						
8	869.1302	51.43	-4.92	46.51						

Test Results (Harmonics Emissions+Radiated Emissions from 1G-4G)							
Test Mode: 433.92MHz							
Frequency (MHz)	Antenna Pol.	Reading (dBuV/m)	Factor (dB)	Duty cycle Factor (dB)	Results (dBuV/m)	Limits (dBuV/m)	Det. Mode
867.84	H	44.77	-4.92	--	39.85	80.82	PK
867.84	H	44.77	-4.92	-6.24	33.61	60.82	AV
867.84	V	51.43	-4.92	--	46.51	80.82	PK
867.84	V	51.43	-4.92	-6.24	40.27	60.82	AV
1301.76	H	50.18	1.36	--	51.54	74.00	PK
1301.76	H	50.18	1.36	-6.24	45.30	54.00	AV
1301.76	V	50.51	1.36	--	51.87	74.00	PK
1301.76	V	50.51	1.36	-6.24	45.63	54.00	AV
1735.68	H	*				74.00	PK
1735.68	H	*				54.00	AV
1735.68	V	*				74.00	PK
1735.68	V	*				54.00	AV
2169.60	H	*				74.00	PK
2169.60	H	*				54.00	AV
2169.60	V	*				74.00	PK
2169.60	V	*				54.00	AV

Remark:
1. Result = Reading + Factor + Duty cycle Factor
2. “*” means the he test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

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

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