

FCC - TEST REPORT

Report Number : **68.940.23.0026.01** Date of Issue: 2023-11-16

Model : 6936735306367, 6936735306350, 6936735306343, 2011857812119,
2011857811105, 2011857810108

Product Type : 27MHZ Four-Direction Off-Road Vehicle

Applicant : WinTide Brand Limited

Address : 4/F, NO.1, Donghuang Building, NO.2 Fengxing Road, Chenghai
District, Shantou City, Guangdong, China

Manufacturer : WinTide Brand Limited
4/F, NO.1, Donghuang Building, NO.2 Fengxing Road, Chenghai

Address : District, Shantou City, Guangdong, China

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including Appendices : 25

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13, Zhiheng Wisdomland Business Park, Guankou Erlu,
Nantou, Nanshan District, Shenzhen City, 518052, P. R. China

FCC Designation Number: CN5009

FCC Registration No.: 514049

Telephone: 86 755 8828 6998
Fax: 86 755 8828 5299

3 Description of the Equipment Under Test

Product:	27MHZ Four-Direction Off-Road Vehicle
Model no.:	6936735306367
FCC ID:	2BB6I-6367
Brand Name:	--
Options and accessories:	NIL
Rating:	3.0Vd.c. (AA battery*2)
RF Transmission Frequency:	27.145MHz
Modulation:	FSK
Antenna Type:	Integrated antenna
Description of the EUT:	The Equipment Under Test (EUT) is a 27MHz Four-Direction Off-Road Vehicle remote controller.

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2021 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to ANSI C63.10-2020.

5 Summary of Test Results

Technical Requirements					
FCC Part 15 Subpart C					
Test Condition		Pages	Test Result		
			Pass	Fail	N/A
§ 15.227 (a)	Field Strength of Fundamental	9	☒	☐	☐
§ 15.227 (b), § 15.209, § 15.205	Radiated Spurious Emissions	12	☒	☐	☐
§ 15.215(c)	20dB Bandwidth	18	☒	☐	☐
§ 15.203	Antenna requirement	See note 2	☒	☐	☐

Note 1: N/A=Not Applicable.

Note 2: The EUT uses an integrated antenna. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2BB6I-6367 complies with Section 15.227, 15.209, 15.205, 15.215 of the FCC Part 15, Subpart C Rules.

All models are identical except for the packing and the article number difference. So all the tests were applied on 6936735306367, other models are deemed to fulfil the RF tests without further testing.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: 2023-04-04

Testing Start Date: 2023-04-04

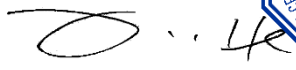
Testing End Date: 2023-04-17

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch -

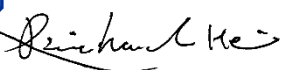
Reviewed by:

Prepared by:

Tested by:



Jessie He
Project Manager



Richard He
Project Engineer

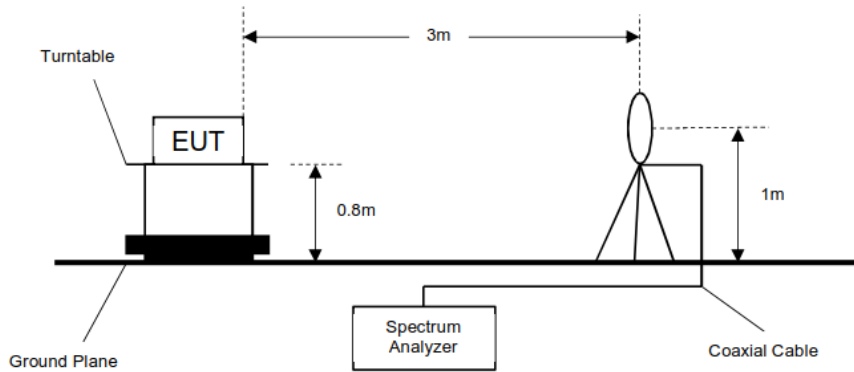


Garry Cai
Test Engineer

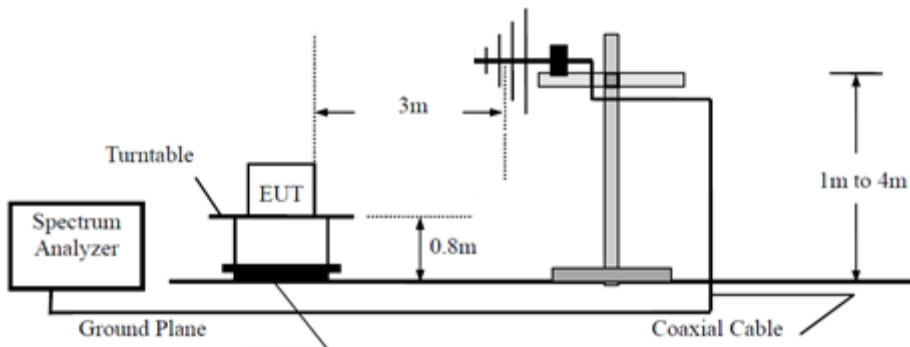
7 Test Setups

7.1 Radiated test setups

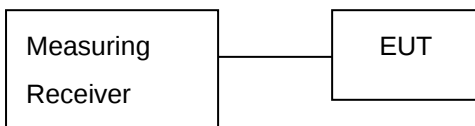
9KHz - 30MHz



30MHz - 1GHz



7.2 Conducted RF test setups



8 Technical Requirement

8.1 Field Strength of Fundamental Emissions

Test Method

- 1: The EUT was place on a turn table which is 0.8m above ground plane. 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 mounted on the top of a variable – height antenna tower.
- 3: The height of antenna 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.
- 4: For each emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 5: Use the following spectrum analyzer settings

For 9k-30MHz, use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious

RBW = 10 KHz, VBW = 30 KHz for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

Limits

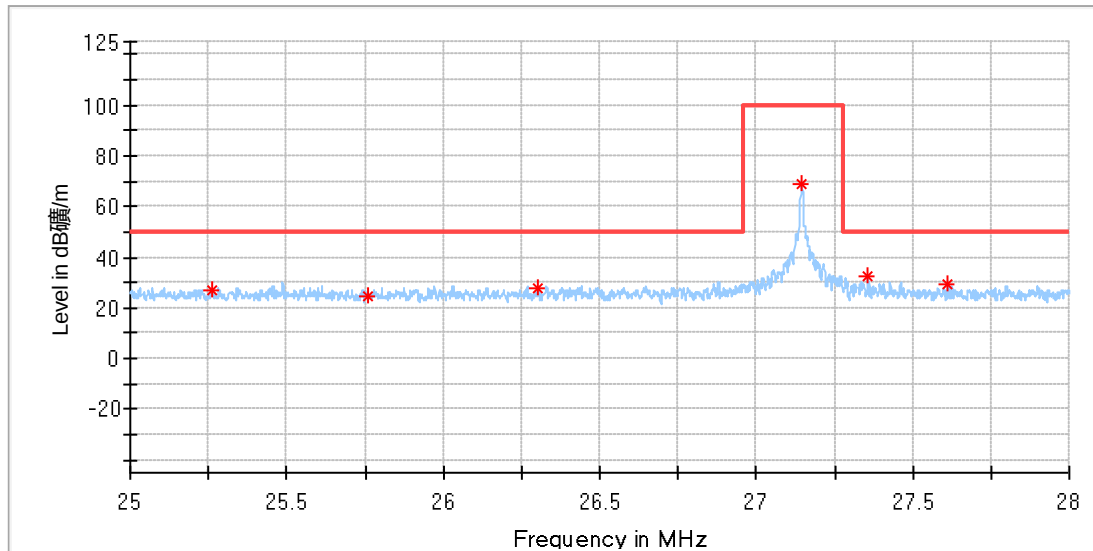
According to §15.227 (a), the field strength if any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters.

According to § 15.35, the limit on the radio frequency emissions as measured using instrumentation with peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Frequency Range of Fundamental (MHz)	Field Strength of Fundamental Emission (dBμV/m) [Peak]	Field Strength of Fundamental Emission (dBμV/m) [Average]
26.96-27.28	100	80

Field Strength of Fundamental Emissions Test result as below:

Product Type : 27MHZ Four-Direction Off-Road Vehicle
M/N : 6936735306367
Operating Condition : TX
Ant. Polarity : Horizontal



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)	Corr. (dB)
25.258667	27.11	50.00	22.89	H	57.0	19.66	---
25.756833	24.96	50.00	25.04	H	187.0	19.69	---
26.304000	27.69	50.00	22.31	H	76.0	19.72	---
*27.146333	68.52	100.00	31.48	H	94.0	19.75	---
27.356333	32.21	50.00	17.79	H	104.0	19.76	---
27.613000	29.38	50.00	20.62	H	206.0	19.78	---

Remark 1:

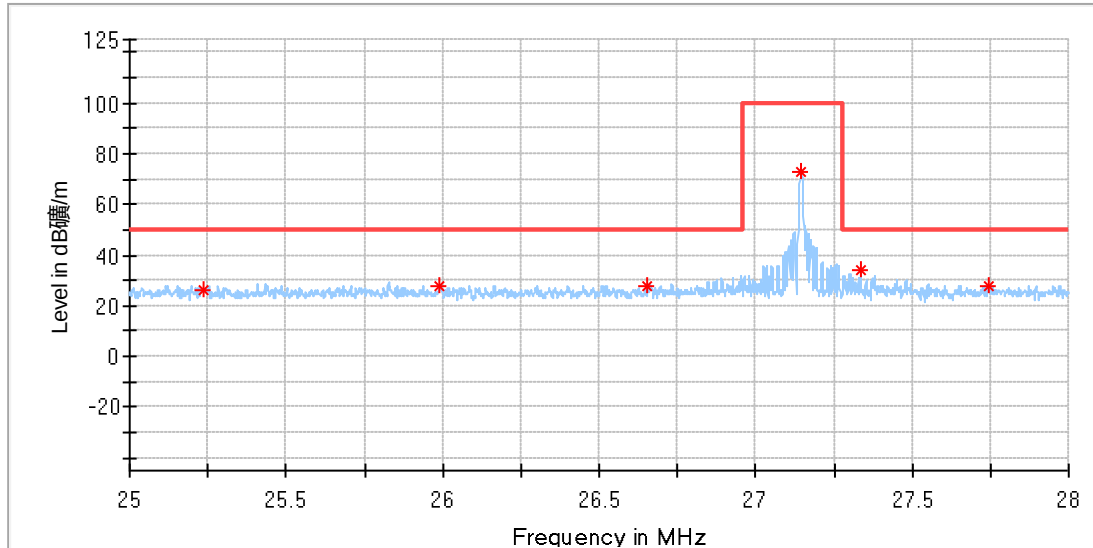
Corrected Amplitude = Read level + Corrector factor

Below 1GHz: Corrector factor = Antenna Factor + Cable Loss

Remark 2: According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Remark 3: The frequency mark with "*" is the fundamental frequency.

Product Type : 27MHZ Four-Direction Off-Road Vehicle
M/N : 6936735306367
Operating Condition : TX
Ant. Polarity : Vertical



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)	Corr. (dB)
25.238833	26.20	50.00	23.80	V	282.0	19.66	---
25.992500	28.07	50.00	21.93	V	164.0	19.70	---
26.655167	27.42	50.00	22.58	V	357.0	19.73	---
*27.145167	72.76	100.00	27.24	V	36.0	19.75	---
27.336500	34.05	50.00	15.95	V	36.0	19.76	---
27.744833	27.56	50.00	22.44	V	353.0	19.79	---

Remark 1:

Corrected Amplitude = Read level + Corrector factor

Below 1GHz: Corrector factor = Antenna Factor + Cable Loss

Remark 2: According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Remark 3: The frequency mark with "*" is the fundamental frequency.

8.2 Radiated Spurious Emission Test

Test Method

1. The EUT was placed on a turn table which is 0.8m above ground plane. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
4. The height of antenna 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.
5. 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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Use the following test receiver settings According to C63.10:

For Below 9k-30MHz, use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious

RBW = 10 KHz, VBW = 30 KHz for peak measurement, Sweep = auto, Detector function = peak,

Trace = max hold.

For 30M-1GHz, use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious

RBW = 100 KHz, VBW = 300 KHz for peak measurement, Sweep = auto, Detector function = peak,

Trace = max hold.

Limit

According to §15.227 (b), The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in § 15.209.

According to § 15.35, the limit on the radio frequency emissions as measured using instrumentation with peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

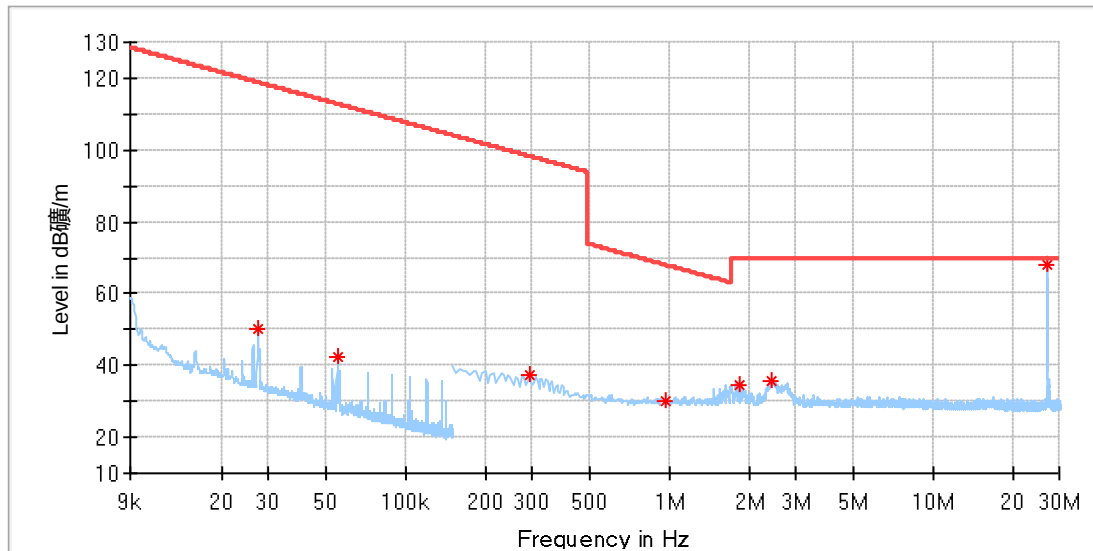
Frequency MHz	Field Strength $\mu\text{V/m}$	Field Strength dB $\mu\text{V/m}$	Detector	Measurement distance meters
0.009-0.490	2400/F(kHz)	48.5-13.8	AV	300
0.490-1.705	24000/F(kHz)	33.8-23.0	QP	30
1.705-30	30	29.5	QP	30
30-88	100	40	QP	3
88-216	150	43.5	QP	3
216-960	200	46	QP	3
960-1000	500	54	QP	3
Above 1000	500	54	AV	3
Above 1000	5000	74	PK	3

Note 1: Limit 3m(dB $\mu\text{V/m}$)=Limit 300m(dB $\mu\text{V/m}$)+40Log(300m/3m) (Below 30MHz)

Note 2: Limit 3m(dB $\mu\text{V/m}$)=Limit 30m(dB $\mu\text{V/m}$)+40Log(30m/3m) (Below 30MHz)

Transmitting spurious emission test result as below:

Product Type : 27MHz Four-Direction Off-Road Vehicle
M/N : 6936735306367
Operating Condition : TX
Ant. Polarity : Horizontal
Comment : 0.009-30MHz



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)	Corr. (dB)
0.027424	50.06	118.83	68.76	H	133.0	19.23	---
0.054872	42.61	112.81	70.20	H	234.0	19.26	---
0.294275	37.17	98.23	61.06	H	0.0	19.25	---
0.965900	30.05	67.92	37.87	H	183.0	19.34	---
1.836525	34.83	69.50	34.67	H	359.0	19.27	---
2.423575	35.82	69.50	33.68	H	323.0	19.32	---
*27.144350	68.14	69.50	1.36	H	104.0	19.75	---

Remark 1:

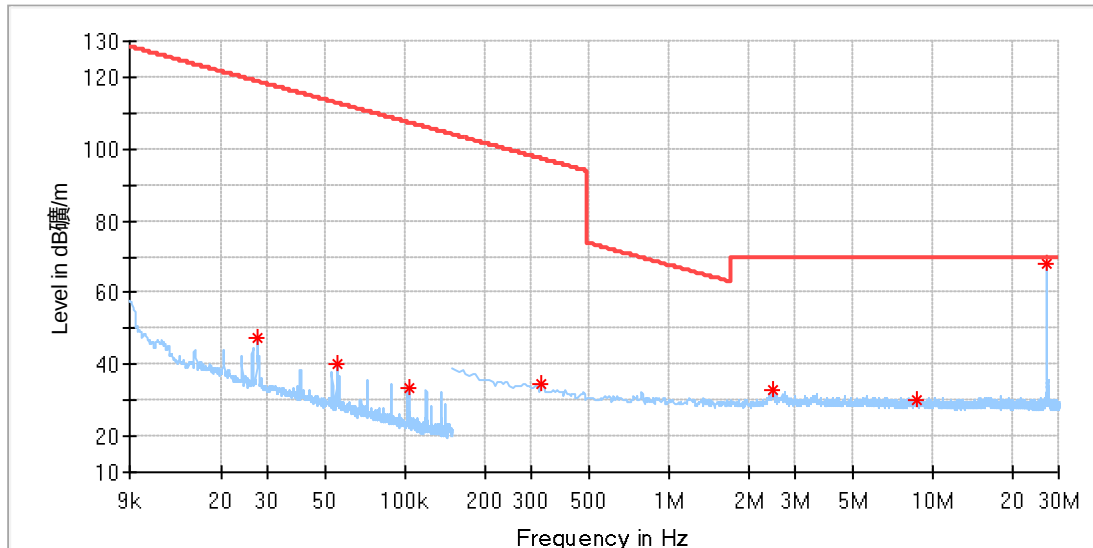
Corrected Amplitude = Read level + Corrector factor

Below 1GHz: Corrector factor = Antenna Factor + Cable Loss

Remark 2: According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Remark 3: The frequency mark with "*" is the fundamental frequency, the peak limit is 100dBμV/m.

Product Type : 27MHZ Four-Direction Off-Road Vehicle
M/N : 6936735306367
Operating Condition : TX
Ant. Polarity : Vertical
Comment : 0.009-30MHz



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)	Corr. (dB)
0.027424	47.28	118.82	71.54	V	1.0	19.23	---
0.054919	39.91	112.79	72.88	V	193.0	19.26	---
0.104034	33.46	107.26	73.80	V	0.0	19.25	---
0.329100	34.43	100.32	65.89	V	64.0	19.26	---
2.483275	33.14	69.50	36.36	V	73.0	19.34	---
8.766700	29.86	69.50	39.64	V	143.0	19.44	---
*27.144350	68.21	69.50	1.29	V	103.0	19.75	---

Remark 1:

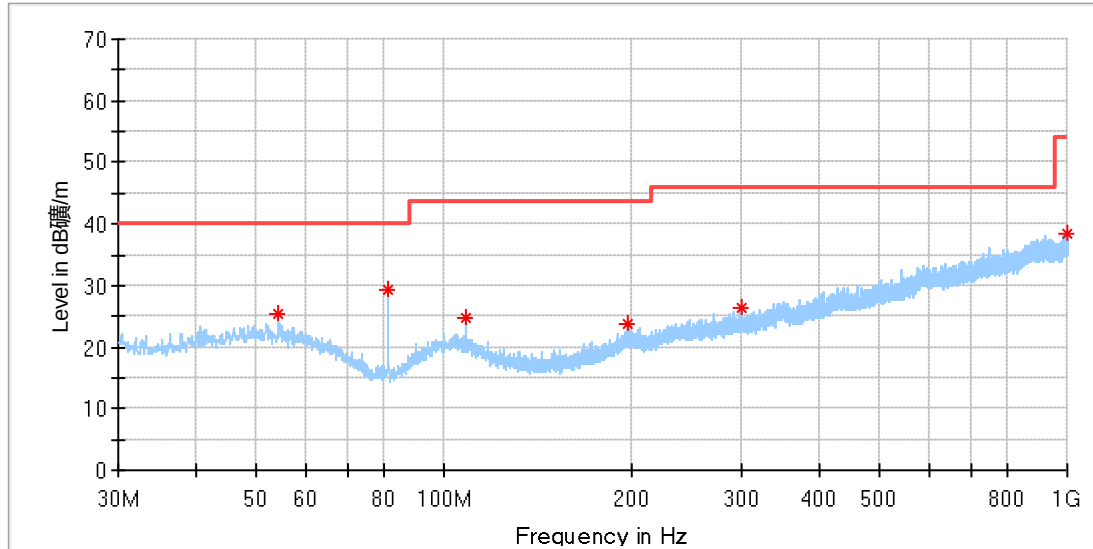
Corrected Amplitude = Read level + Corrector factor

Below 1GHz: Corrector factor = Antenna Factor + Cable Loss

Remark 2: According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Remark 3: The frequency mark with "*" is the fundamental frequency, the peak limit is 100dBμV/m.

Product Type : 27MHZ Four-Direction Off-Road Vehicle
M/N : 6936735306367
Operating Condition : TX
Ant. Polarity : Horizontal
Comment : 30-1000MHz



Critical_Freqs

Frequency (MHz)	MaxPeak (dB/m)	Limit (dB/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
54.250000	25.33	40.00	14.67	200.0	H	88.0	20.54
81.410000	29.43	40.00	10.57	200.0	H	96.0	14.18
108.570000	24.62	43.50	18.88	200.0	H	148.0	18.67
196.900625	23.93	43.50	19.57	100.0	H	359.0	19.19
299.296250	26.37	46.00	19.63	100.0	H	315.0	21.34
998.908750	38.35	54.00	15.65	200.0	H	0.0	32.54

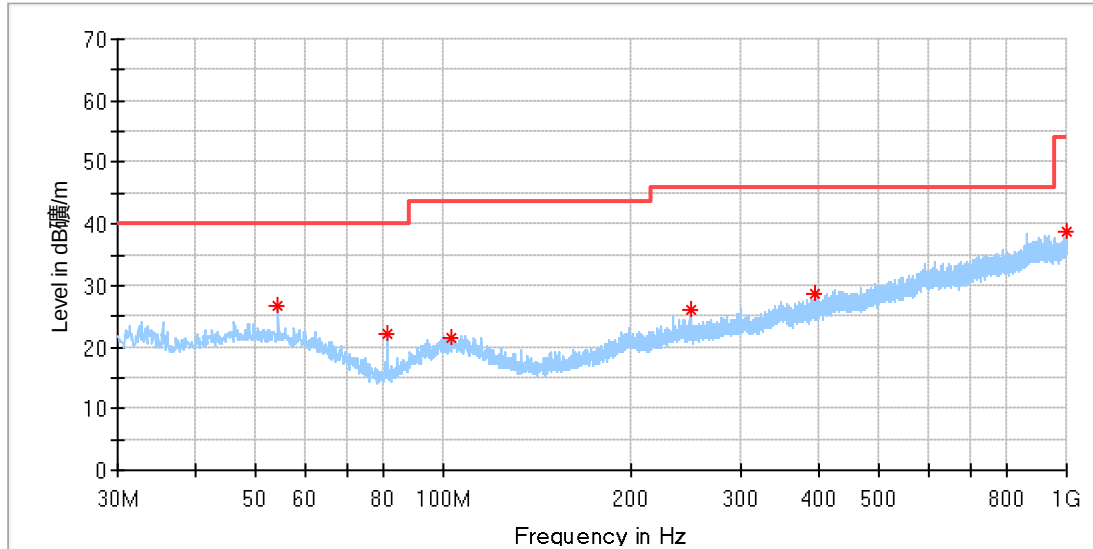
Remark:

Corrected Amplitude = Read level + Corrector factor

Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain

Below 1GHz: Corrector factor = Antenna Factor + Cable Loss

Product Type : 27MHZ Four-Direction Off-Road Vehicle
M/N : 6936735306367
Operating Condition : TX
Ant. Polarity : Vertical
Comment : 30-1000MHz



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
54.250000	26.74	40.00	13.26	100.0	V	29.0	20.54
81.410000	22.05	40.00	17.95	200.0	V	0.0	14.18
103.174375	21.37	43.50	22.13	100.0	V	226.0	19.09
248.735000	25.95	46.00	20.05	100.0	V	304.0	20.25
394.295625	28.66	46.00	17.34	100.0	V	0.0	23.78
997.514375	38.75	54.00	15.25	200.0	V	125.0	32.59

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---

Remark:

Corrected Amplitude = Read level + Corrector factor

Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain

Below 1GHz: Corrector factor = Antenna Factor + Cable Loss

8.3 20dB Bandwidth Measurement

Test Method

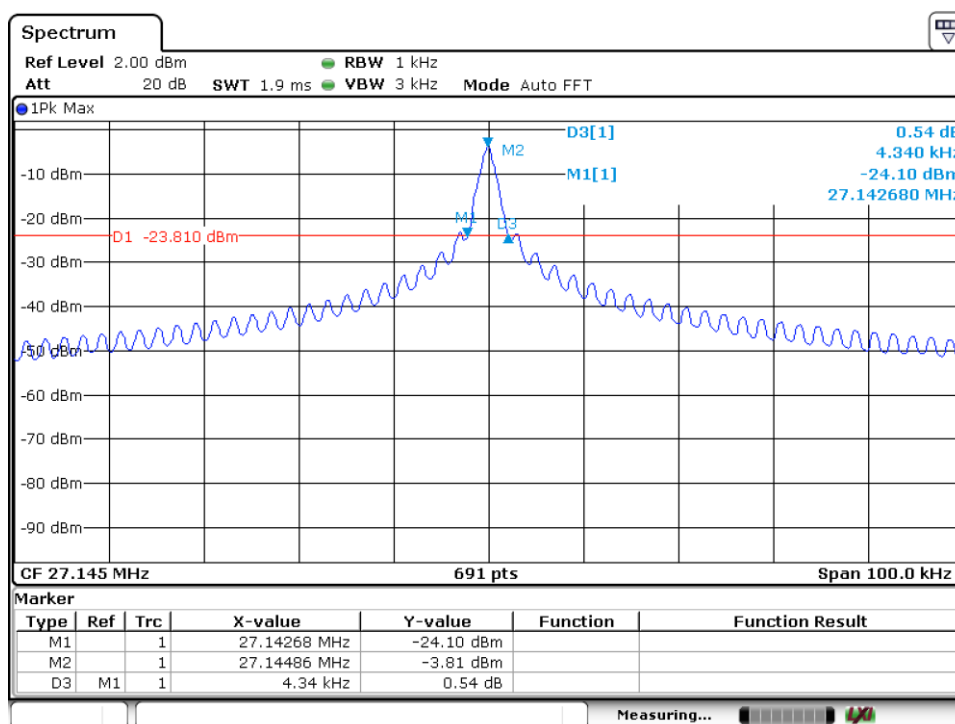
1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following test receiver settings:
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
RBW $\geq$ 1% to 5% of the 20 dB bandwidth, VBW $\geq$ 3RBW, Sweep = auto,
Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth. Record the results.

Limit:

Intentional radiators 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.

Frequency Low (MHz)	Frequency High (MHz)	Permitted frequency range (MHz)	Result
27.143	27.147	26.96-27.28	Compliant

Test Result: Result data graph is shown in the following for reference.



Date: 12.APR.2023 16:37:01

9 Test Equipment List

Radiated Emission Test 1# Test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 7	68-4-74-19-001	102176	1	2023-5-27
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	68-4-80-14-002	707	1	2023-7-12
Loop Antenna	Rohde & Schwarz	HFH2-Z2	68-4-80-14-006	100398	1	2023-8-17
Pre-amplifier	Rohde & Schwarz	SCU 18	68-4-29-14-001	102230	1	2023-5-28
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-001	15542	1	2023-5-27
3m Semi-anechoic chamber	TDK	SAC-3 #1	68-4-90-14-001	----	2	2023-5-28
Test software	Rohde & Schwarz	EMC32	68-4-90-14-001-A10	Version10.35.0 2	N/A	N/A

RF conducted test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
Signal Analyzer	Rohde & Schwarz	FSV40	68-4-74-14-004	101030	1	2023-5-27

10 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

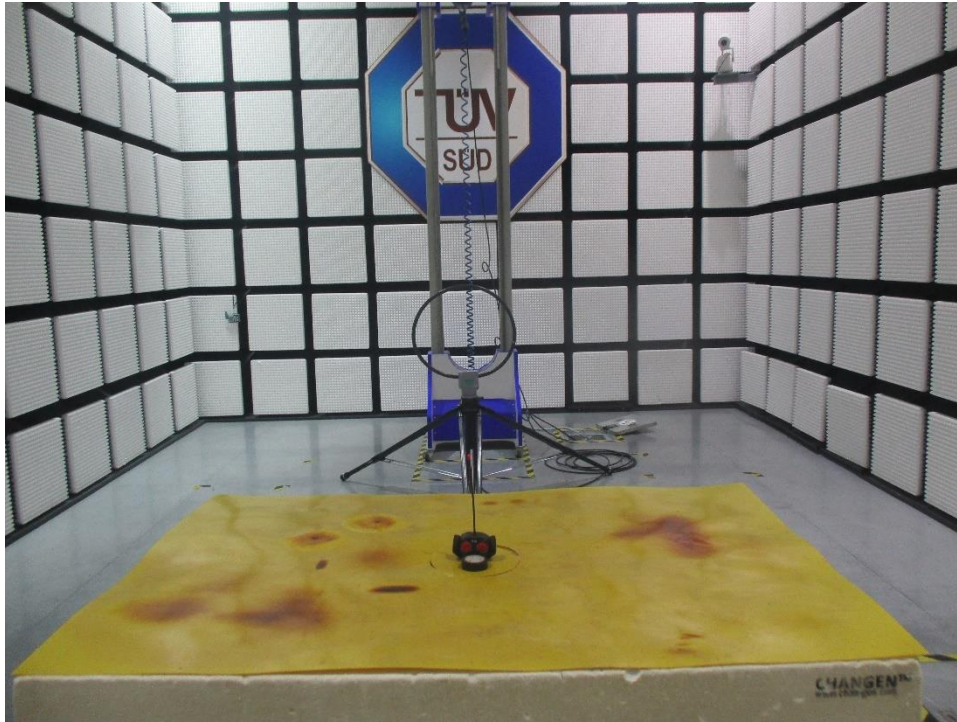
System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber (68-4-90-14-001)9kHz-30MHz	4.70dB
Uncertainty for Radiated Emission in 3m chamber (68-4-90-14-001)30MHz-1000MHz	Horizontal: 4.64dB; Vertical: 4.79dB;
Uncertainty for Conducted RF test with TS 8997	RF Power Conducted: 1.31dB Frequency test involved: 0.6×10 ⁻⁸ or 1%

Measurement Uncertainty Decision Rule

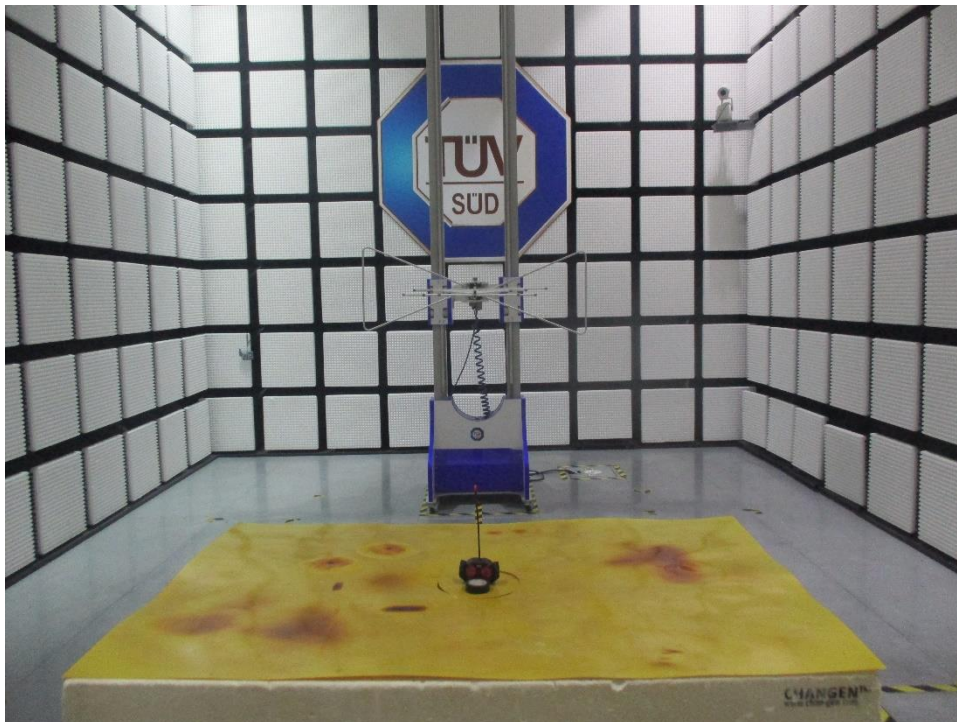
Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2021, clause 4.4.3 and 4.5.1.

11 Setup Photographs of EUT

Radiated Disturbance Emissions (Below 30MHz)



Radiated Disturbance Emissions (30MHz-1GHz)



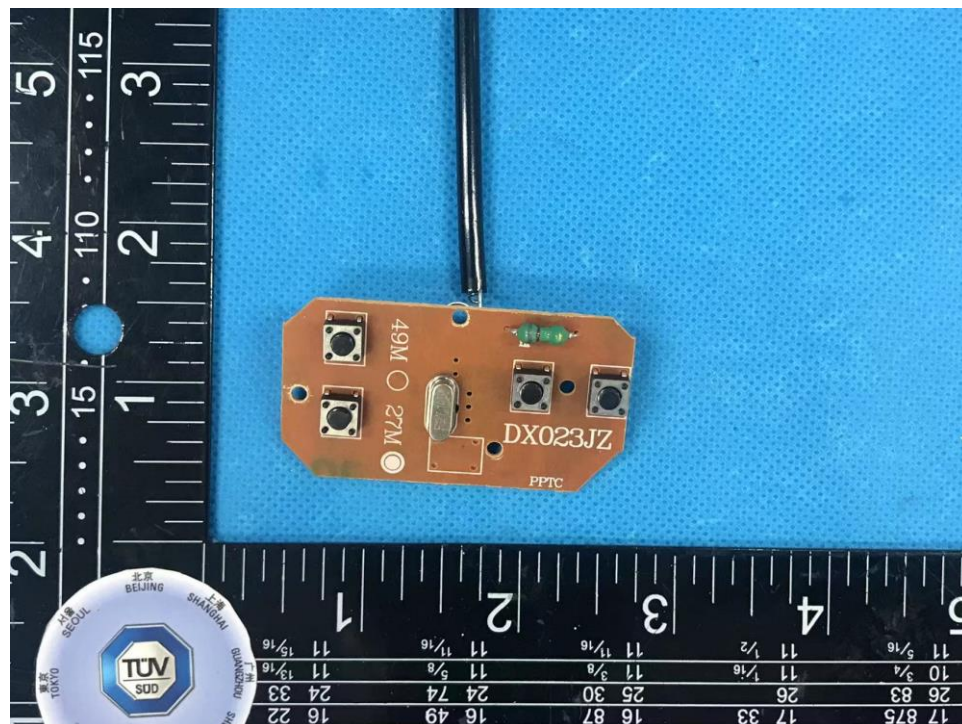
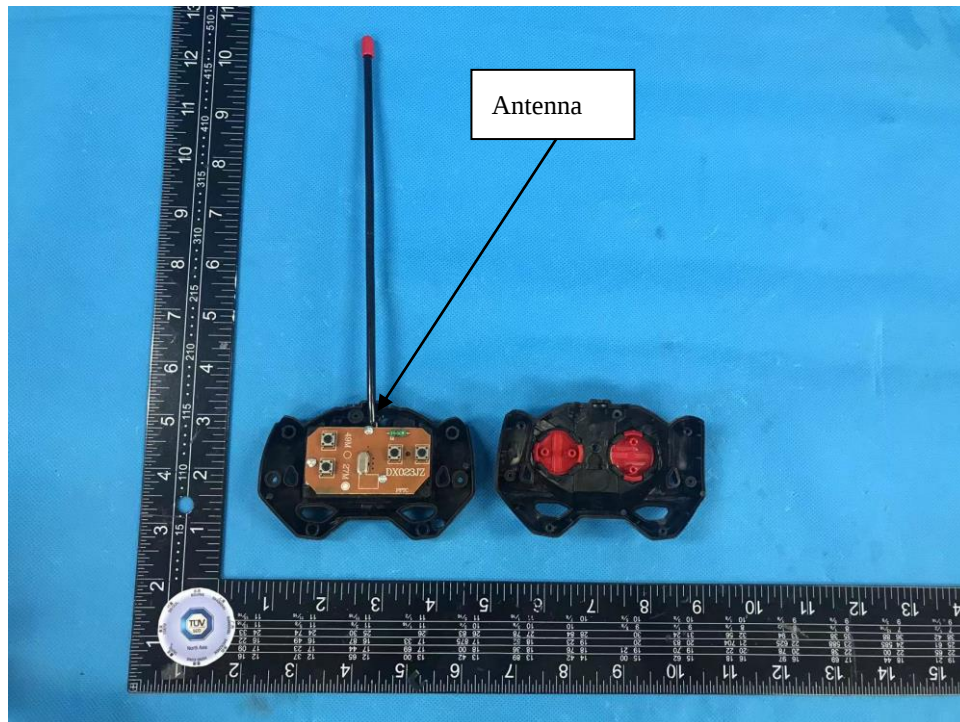
12 Photographs of EUT

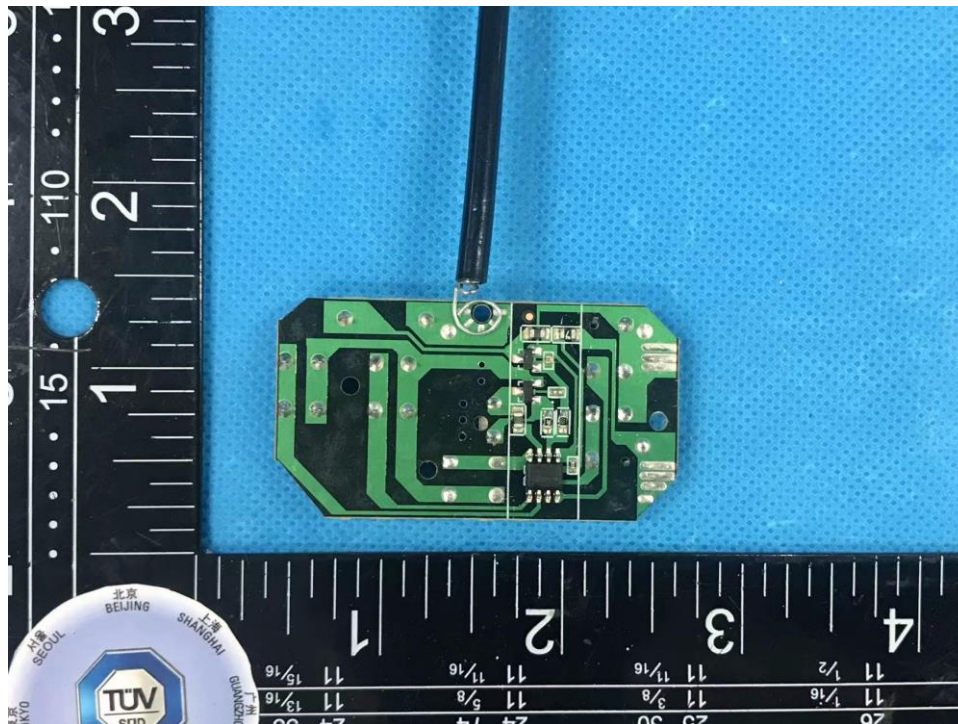
External Photo





Internal Photo





---THE END OF REPORT---