

APPLICATION FOR VERIFICATION  
On Behalf of  
Hornady Manufacturing Company

Hornady RAPiD Vehicle Safe

Model No.: 98210

FCC ID: 2AFJZ-98210

Prepared for : Hornady Manufacturing Company  
Address : 3625 Old Potash Hwy Grand Island, United States, 68803

Prepared by : Shenzhen Accurate Technology Co., Ltd.  
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Report No. : ATE20172226  
Date of Test : Nov. 10, 2017--Nov. 21, 2017  
Date of Report : Nov. 22, 2017

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## Test Report Declaration

Applicant& address : Hornady Manufacturing Company  
3625 Old Potash Hwy Grand Island, United States, 68803  
Manufacturer& address : NINGBO YINZHOU RONGLI METAL PRODUCTS CO.,LTD  
West End XiangYun Road, BinHai Industrial Zone, ZhanQi  
Town, YinZhou District, NingBo, ZheJiang, China  
Product : Hornady RAPID Vehicle Safe  
Model No. : 98210  
Trade name : Hornady


Measurement Procedure Used:


### FCC Rules and Regulations Part 15 Subpart C 15.209 ANSI C63.10: 2013

The device described above is tested by Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both radiated and conducted emissions. The measurement results are contained in this test report and Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Accurate Technology Co., Ltd.

Date of Test : Nov. 10, 2017--Nov. 21, 2017  
Date of Report : Nov. 22, 2017

Prepared by :   
(Tim [unclear] Engineer)

Approved & Authorized Signer :   
( Sean Liu, Manager)

## 1. TEST RESULTS SUMMARY

| Test Items                    | Test Standard   | Test Results |
|-------------------------------|-----------------|--------------|
| Power Line Conducted Emission | FCC Part 15.207 | N/A          |
| Radiated Emission             | FCC Part 15.209 | Pass         |

Note: The power supply mode of the EUT is DC 12-24V, According to the FCC standard requirements, conducted emission is not applicable.

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

The submitted sample is wireless transmitter which declared TX channel frequency is 125kHz.

|                    |   |                                       |
|--------------------|---|---------------------------------------|
|                    |   | Hornady RAPiD Vehicle Safe            |
| Frequency          | : | 125kHz                                |
| Number of Channels | : | 1                                     |
| Modulation Type    | : | ASK                                   |
| Type of Antenna    | : | Integral Antenna                      |
| Max antenna gain   | : | 5dBi                                  |
| Power Supply       | : | DC 12-24V(Powered by Vehicle charger) |

### 2.2. Special Accessory and Auxiliary Equipment

N/A

### 2.3. Description of Test Facility

- EMC Lab : Recognition of accreditation by Federal Communications Commission (FCC)  
The Designation Number is CN1189  
The Registration Number is 708358
- Listed by Innovation, Science and Economic Development Canada (ISED)  
The Registration Number is 5077A-2
- Accredited by China National Accreditation Service for Conformity Assessment (CNAS)  
The Registration Number is CNAS L3193
- Accredited by American Association for Laboratory Accreditation (A2LA)  
The Certificate Number is 4297.01
- Name of Firm : Shenzhen Accurate Technology Co., Ltd  
Site Location : 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

### 2.4. Measurement Uncertainty

- Conducted emission expanded uncertainty : U=2.23dB, k=2  
Power disturbance expanded uncertainty : U=2.92dB, k=2  
Radiated emission expanded uncertainty : U=3.08dB, k=2  
(9kHz-30MHz)  
Radiated emission expanded uncertainty : U=4.42dB, k=2  
(30MHz-1000MHz)  
Radiated emission expanded uncertainty : U=4.06dB, k=2  
(Above 1GHz)

### 3. MEASURING DEVICE AND TEST EQUIPMENT

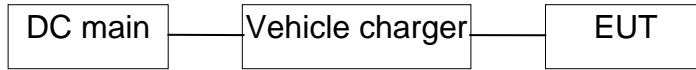
#### 3.1. For Radiated Emission Measurement

| Item | Equipment                        | Manufacturer         | Model No.                | Serial No. | Last Cal.    | Cal. Interval |
|------|----------------------------------|----------------------|--------------------------|------------|--------------|---------------|
| 1.   | Spectrum Analyzer                | Agilent              | E7405A                   | MY45115511 | Jan.07, 2017 | 1 Year        |
| 2.   | Spectrum Analyzer                | Rohde&Schwarz        | FSV40                    | 101495     | Jan.07, 2017 | 1 Year        |
| 3.   | Test Receiver                    | Rohde&Schwarz        | ESCS30                   | 100307     | Jan.07, 2017 | 1 Year        |
| 4.   | Test Receiver                    | Rohde& Schwarz       | ESPI                     | 100396/003 | Jan.07, 2017 | 1 Year        |
| 5.   | Test Receiver                    | Rohde& Schwarz       | ESPI                     | 101526/003 | Jan.07, 2017 | 1 Year        |
| 6.   | Test Receiver                    | Rohde& Schwarz       | ESR                      | 101817     | Jan.07, 2017 | 1 Year        |
| 7.   | Bilog Antenna                    | Schwarzbeck          | VULB9163                 | 9163-194   | Jan.13, 2017 | 1 Year        |
| 8.   | Bilog Antenna                    | Schwarzbeck          | VULB9163                 | 9163-323   | Jan.13, 2017 | 1 Year        |
| 9.   | Log.-Per.Antenna                 | Schwarzbeck          | VUSLP<br>9111B           | 9111B-074  | Jan.13, 2017 | 1 Year        |
| 10.  | Biconical Broad Band Antenna     | Schwarzbeck          | VHBB<br>9124+BBA<br>9106 | 9124-617   | Jan.13, 2017 | 1 Year        |
| 11.  | Loop Antenna                     | Schwarzbeck          | FMZB1516                 | 1516131    | Jan.13, 2017 | 1 Year        |
| 12.  | Horn Antenna                     | Schwarzbeck          | BBHA9120D                | 9120D-655  | Jan.13, 2017 | 1 Year        |
| 13.  | Horn Antenna                     | Schwarzbeck          | BBHA9120D                | 9120D-1067 | Jan.13, 2017 | 1 Year        |
| 14.  | Vertical Active Monopole Antenna | Schwarzbeck          | VAMP 9243                | 9243-370   | Jan.13, 2017 | 1 Year        |
| 15.  | RF Switching Unit+PreAMP         | Compliance Direction | RSU-M2                   | 38322      | Jan.07, 2017 | 1 Year        |
| 16.  | Pre-Amplifier                    | Agilent              | 8447D                    | 294A10619  | Jan.07, 2017 | 1 Year        |
| 17.  | Pre-Amplifier                    | Rohde&Schwarz        | CBLU11835<br>40-01       | 3791       | Jan.07, 2017 | 1 Year        |
| 18.  | 50 Coaxial Switch                | Anritsu Corp         | MP59B                    | 6200237248 | Jan.07, 2017 | 1 Year        |
| 19.  | 50 Coaxial Switch                | Anritsu Corp         | MP59B                    | 6200506474 | Jan.07, 2017 | 1 Year        |
| 20.  | RF Coaxial Cable                 | Schwarzbeck          | N-5m                     | No.1       | Jan.07, 2017 | 1 Year        |
| 21.  | RF Coaxial Cable                 | Schwarzbeck          | N-1m                     | No.6       | Jan.07, 2017 | 1 Year        |
| 22.  | RF Coaxial Cable                 | Schwarzbeck          | N-1m                     | No.7       | Jan.07, 2017 | 1 Year        |
| 23.  | RF Coaxial Cable                 | SUHNER               | N-3m                     | No.8       | Jan.07, 2017 | 1 Year        |
| 24.  | RF Coaxial Cable                 | RESENBERGER          | N-3.5m                   | No.9       | Jan.07, 2017 | 1 Year        |
| 25.  | RF Coaxial Cable                 | SUHNER               | N-6m                     | No.10      | Jan.07, 2017 | 1 Year        |
| 26.  | RF Coaxial Cable                 | RESENBERGER          | N-12m                    | No.11      | Jan.07, 2017 | 1 Year        |
| 27.  | RF Coaxial Cable                 | RESENBERGER          | N-0.5m                   | No.12      | Jan.07, 2017 | 1 Year        |
| 28.  | RF Coaxial Cable                 | SUHNER               | N-2m                     | No.13      | Jan.07, 2017 | 1 Year        |
| 29.  | RF Coaxial Cable                 | SUHNER               | N-0.5m                   | No.15      | Jan.07, 2017 | 1 Year        |
| 30.  | RF Coaxial Cable                 | SUHNER               | N-2m                     | No.16      | Jan.07, 2017 | 1 Year        |
| 31.  | RF Coaxial Cable                 | RESENBERGER          | N-6m                     | No.17      | Jan.07, 2017 | 1 Year        |

## 4. RADIATED EMISSION MEASUREMENT

### 4.1. Block Diagram of Test

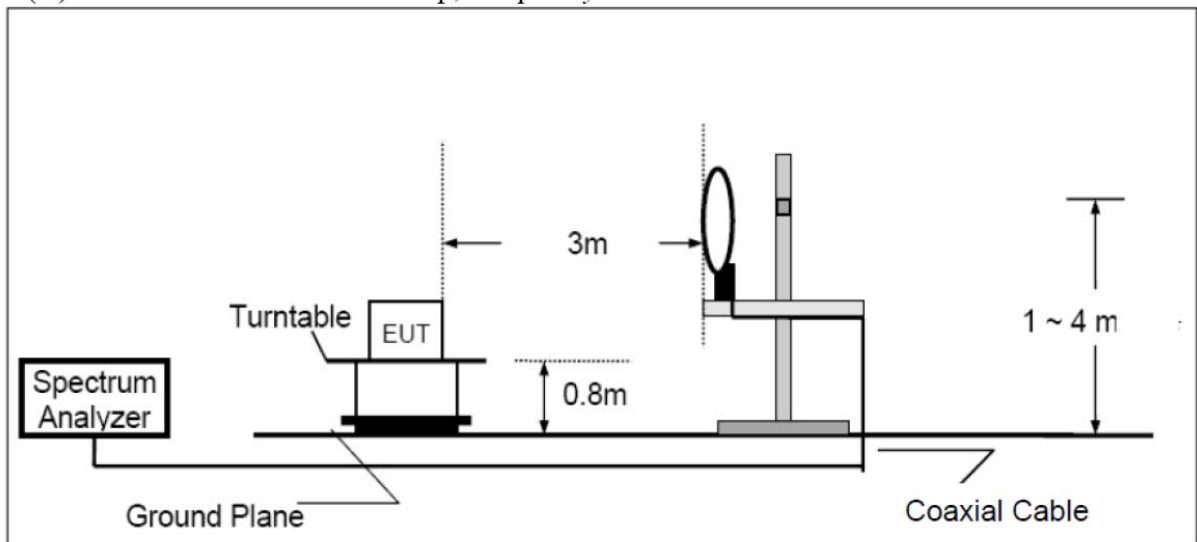
#### 4.1.1. Block diagram of connection between the EUT and simulators



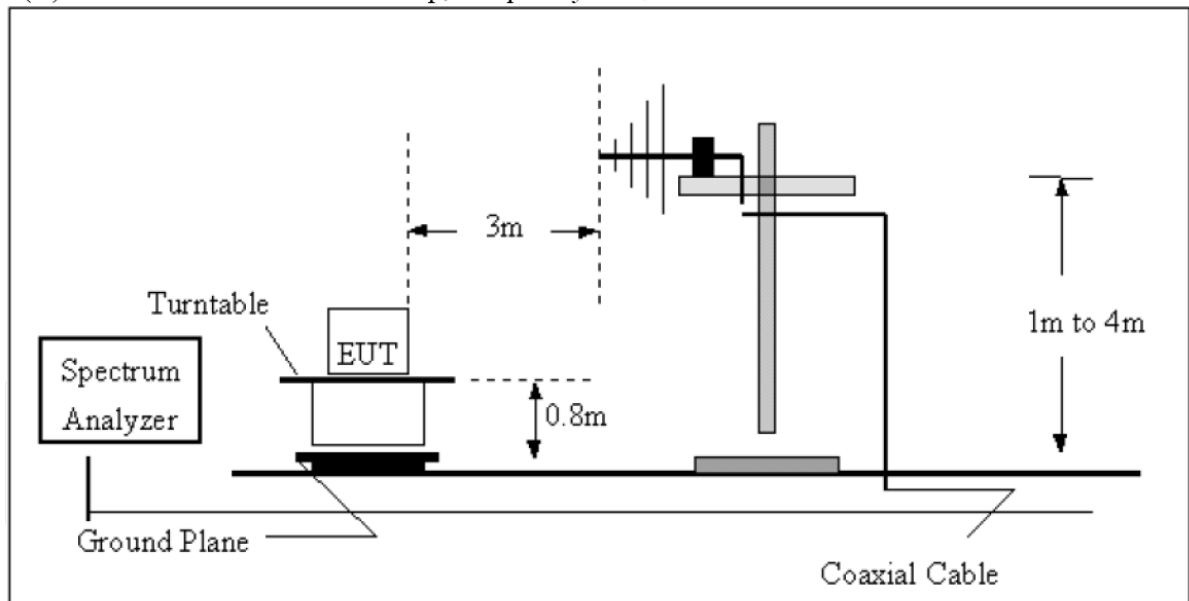
(EUT: Hornady RAPiD Vehicle Safe)

#### 4.1.2. Block diagram of test setup (In chamber)

(A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency 30-1000MHz





## 4.2. Radiated Emission Limit (Class B)

| Frequency (MHz) | Field Strength Limitation |      | Field Strength Limitation at 3m Measurement Dist |                         |
|-----------------|---------------------------|------|--|-------------------------|
|                 | (uV/m)                    | Dist | (uV/m)   | (dBuV/m)                |
| 0.009 – 0.490   | 2400 / F(KHz)             | 300m | 10000 * 2400/F(KHz)                              | 20log 2400/F(KHz) + 80  |
| 0.490 – 1.705   | 24000 / F(KHz)            | 30m  | 100 * 24000/F(KHz)                               | 20log 24000/F(KHz) + 40 |
| 1.705 – 30.00   | 30                        | 30m  | 100 * 30   | 20log 30 + 40           |
| 30.0 – 88.0     | 100                       | 3m   | 100  | 20log 100               |
| 88.0 – 216.0    | 150                       | 3m   | 150  | 20log 150               |
| 216.0 – 960.0   | 200                       | 3m   | 200  | 20log 200               |
| Above 960.0     | 500                       | 3m   | 500  | 20log 500               |

Limit:  $2400/125=19.2\mu\text{V/m}@300\text{m}$

Distance Correction Factor= $40\log(\text{test distance}/\text{specific distance})$

## 4.3. Manufacturer

The following equipments are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 4.3.1. Hornady RAPID Vehicle Safe (EUT)

Model Number: 98210

Manufacturer: NINGBO YINZHOU RONGLI METAL PRODUCTS CO.,LTD

## 4.4. Operating Condition of EUT

4.4.1. Setup the EUT and simulator as shown as Section 4.1.

4.4.2. Turn on the power of all equipment.

4.4.3. Let the EUT work in test mode and measure it.

## 4.5. DATA SAMPLE

| Frequency (MHz) | Reading (dB $\mu\text{V}$ ) | Factor (dB/m) | Result (dB $\mu\text{V/m}$ ) | Limit (dB $\mu\text{V/m}$ ) | Margin (dB) | Remark |
|-----------------|-----------------------------|---------------|------------------------------|-----------------------------|-------------|--------|
| X.XX            | 49.83                       | -22.03        | 27.80                        | 43.50                       | -15.70      | QP     |

Frequency(MHz) = Emission frequency in MHz

Reading(dB $\mu\text{V}$ ) = Uncorrected Analyzer/Receiver reading

Factor (dB/m)= Antenna factor + Cable Loss – Amplifier gain

Result(dB $\mu\text{V/m}$ ) = Reading + Factor

Limit (dB $\mu\text{V/m}$ )= Limit stated in standard

Margin (dB) = Result(dB $\mu\text{V/m}$ ) - Limit (dB $\mu\text{V/m}$ )

Calculation Formula:

$$\text{Margin(dB)} = \text{Result (dB}\mu\text{V/m)} - \text{Limit(dB}\mu\text{V/m)}$$
$$\text{Result(dB}\mu\text{V/m)} = \text{Reading(dB}\mu\text{V)} + \text{Factor(dB/m)}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

#### 4.1. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated emission measurement.

From 9kHz to 30MHz at distance 3m The EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

From 30MHz to 1000MHz at distance 3m The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization.

The final measurement will be performed with an EMI Receiver set to Quasi Peak detector for the frequency bands 9kHz to 90kHz and 110 to 490 kHz where an average detector will be used according to Section 15.209(d)(2).

The final level, expressed in dBuV/m, is arrived at by taking the reading from the EMI receiver(Level dBuV) and adding the antenna correction factor and cable loss factor(Factor dB) to it. This result then has to be compared with the relevant FCC limit. The resolution bandwidth during the measurement is as follows:

9kHz – 150kHz: ResBW:200Hz

150kHz – 30MHz: ResBW:9kHz

The bandwidth of the EMI test receiver (R&S ESCS30) is set at 120kHz from 30MHz to 1000MHz.

#### 4.2. Radiated Emission Noise Measurement Result

**PASS.**

From 9kHz to 30MHz

| Frequency (MHz) | Quasi Peak (dB $\mu$ V/m) | Detector | Azimuth | Height (cm) | Limit @3m (dB $\mu$ V/m) | Margin (dB) |
|-----------------|---------------------------|----------|---------|-------------|--------------------------|-------------|
| 0.125           | 96.12                     | AV       | 176     | 128         | 105.7                    | -9.58       |
| 2.21            | 37.20                     | QP       | 375     | 155         | 69.5                     | -32.3       |
| 2.59            | 36.42                     | QP       | 228     | 201         | 69.5                     | -33.08      |
| 0.125           | 87.39                     | AV       | 208     | 142         | 105.7                    | -18.31      |
| 2.66            | 32.31                     | QP       | 375     | 157         | 69.5                     | -37.19      |
| 3.56            | 35.38                     | QP       | 38      | 146         | 69.5                     | -34.12      |

Part 15 Section 15.31(f)(2) (9kHz-30MHz)

Limit at 3m=Limit at 300m-40\*log(3(m)/300(m))

Limit at 3m=Limit at 30m-40\*log(3(m)/30(m))

From 30MHz to 1000MHz


**ACCURATE TECHNOLOGY CO., LTD.**

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

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Job No.: frank2017 #1563

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Hornady RAPID Vehicle Safe

Mode: TX 125kHz

Model: 98210

Manufacturer: NINGBO YINZGOU RONGLI METAL PRODUCTS

Polarization: Horizontal

Power Source: DC 12V

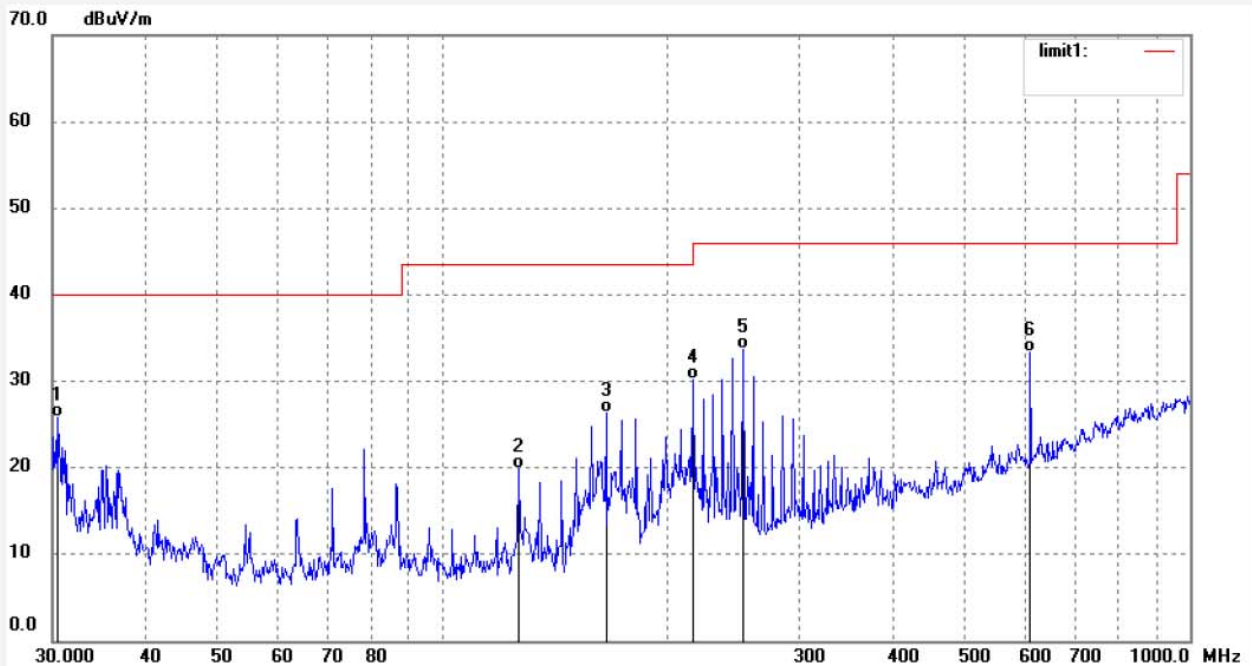
Date: 17/11/20/

Time: 14/44/49

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172226



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 30.4246     | 46.19            | -20.31      | 25.88           | 40.00          | -14.12      | QP       | 200         | 183           |        |
| 2   | 126.2486    | 47.52            | -27.62      | 19.90           | 43.50          | -23.60      | QP       | 200         | 79            |        |
| 3   | 165.4715    | 52.74            | -26.48      | 26.26           | 43.50          | -17.24      | QP       | 200         | 349           |        |
| 4   | 216.1196    | 54.22            | -24.05      | 30.17           | 46.00          | -15.83      | QP       | 200         | 128           |        |
| 5   | 252.2522    | 57.21            | -23.51      | 33.70           | 46.00          | -12.30      | QP       | 200         | 248           |        |
| 6   | 611.4623    | 46.76            | -13.45      | 33.31           | 46.00          | -12.69      | QP       | 200         | 134           |        |

Job No.: frank2017 #1564

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: Hornady RAPID Vehicle Safe

Mode: TX 125kHz

Model: 98210

Manufacturer: NINGBO YINZGOU RONGLI METAL PRODUCTS

Polarization: Vertical

Power Source: DC 12V

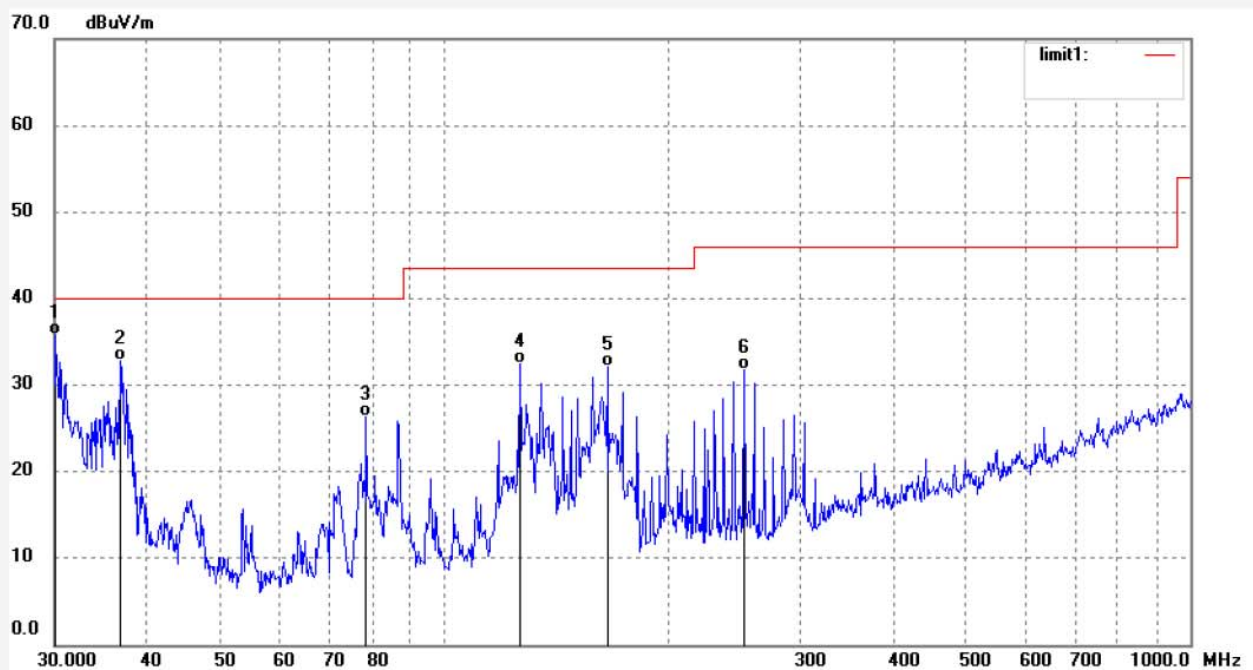
Date: 17/11/20/

Time: 14/45/34

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172226



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 30.0000     | 56.01            | -20.20      | 35.81           | 40.00          | -4.19       | QP       | 100         | 112           |        |
| 2   | 36.7811     | 55.00            | -22.21      | 32.79           | 40.00          | -7.21       | QP       | 100         | 137           |        |
| 3   | 78.5644     | 53.80            | -27.49      | 26.31           | 40.00          | -13.69      | QP       | 100         | 119           |        |
| 4   | 126.2486    | 60.14            | -27.62      | 32.52           | 43.50          | -10.98      | QP       | 100         | 159           |        |
| 5   | 165.4715    | 58.51            | -26.48      | 32.03           | 43.50          | -11.47      | QP       | 100         | 40            |        |
| 6   | 252.2522    | 55.23            | -23.51      | 31.72           | 46.00          | -14.28      | QP       | 100         | 358           |        |

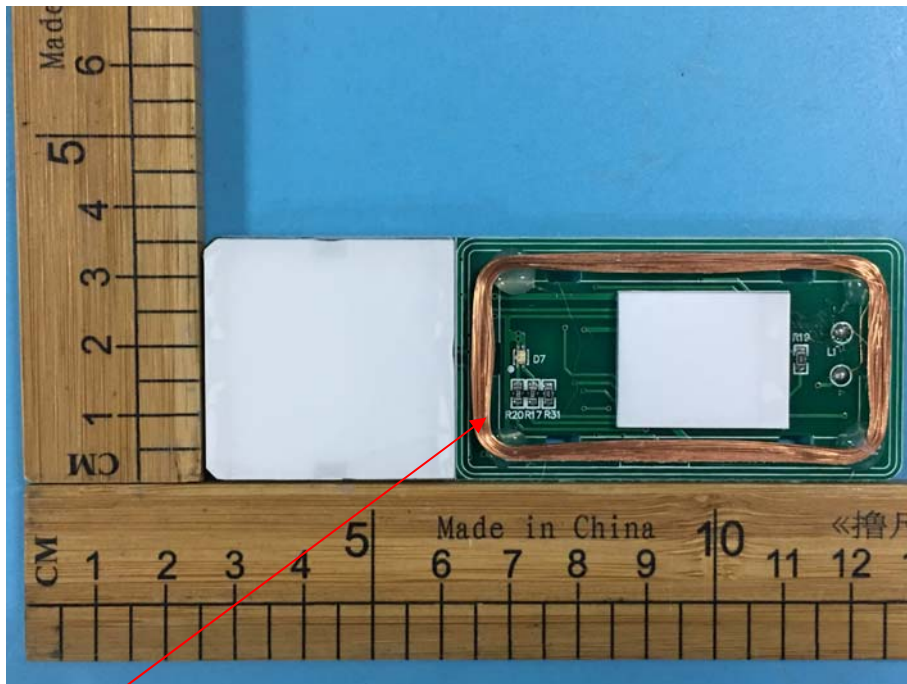
## 5. ANTENNA REQUIREMENT

### 5.1.The Requirement

According to Section 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.

### 5.2.Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The max Antenna gain of EUT is 5dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna