



Report No.: TW2103133E

File reference No.: 2021-03-24

Applicant: Shenzhen Neewer Technology Co., Ltd

Product: REMOTE SPEEDLITE TRIGGER

Model No.: PT-16GY, PT-16

Trademark: NEEWER

Test Standards: FCC Part 15 Subpart C, Paragraph 15.231

Test result:

It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.231 for the evaluation of electromagnetic compatibility



Dated: March 24, 2021

**Results appearing herein relate only to the sample tested**

**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**

**SHENZHEN TIMEWAY TESTING LABORATORIES**

**Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West,  
Tong Le Village, Nanshan District, Shenzhen, China**

**Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com**



### **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

#### **CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

#### **FCC-Registration No.: 744189**

The 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.:744189.

#### **Industry Canada (IC) —Registration No.:5205A**

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

#### **A2LA (Certification Number:5013.01)**

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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## Test Report Conclusion

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## 1.0 General Details

### 1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.  
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China  
Telephone: +86 755 83448688  
Fax: +86 755 83442996  
Site on File with the Federal Communications Commission – United States  
Registration Number: 744189  
For 3m Anechoic Chamber

### 1.2 Applicant Details

Applicant: Shenzhen Neewer Technology Co., Ltd  
Address: ROOM 1901-1903, Block A, LU SHAN BUILDING NO.3023 CHUNFENG RD LUO HU DISTRICT, SHENZHEN, GUANGDONG, 518001, CHINA  
Telephone: --  
Fax: --

### 1.3 Description of EUT

Product: REMOTE SPEEDLITE TRIGGER  
Manufacturer: Shenzhen Neewer Technology Co., Ltd  
Address: ROOM 1901-1903, Block A, LU SHAN BUILDING NO.3023 CHUNFENG RD LUO HU DISTRICT, SHENZHEN, GUANGDONG, 518001, CHINA  
Brand Name: NEEWER  
Model Number: PT-16GY  
Additional Model Name: PT-16  
Additional Trade Name: N/A  
Rating: DC12V, 1 PCS 23A button battery  
Operation Frequency: 433.92MHz  
Modulation Type: OOK  
Antenna Designation: Integral Antenna with Gain 5.0dBi maximum

### 1.4 Submitted Sample: 2 Samples

### 1.5 Test Duration

2021-03-11 to 2021-03-24

### 1.6 Test Uncertainty

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Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

## 1.7 Test Engineer

The sample tested by



| 2.0 Test Equipment |              |                      |              |              |            |
|--------------------|--------------|----------------------|--------------|--------------|------------|
| Instrument Type    | Manufacturer | Model                | Serial No.   | Date of Cal. | Due Date   |
| ESPI Test Receiver | R&S          | ESPI 3               | 100379       | 2020-06-23   | 2021-06-22 |
| LISN               | R&S          | EZH3-Z5              | 100294       | 2020-06-23   | 2021-06-22 |
| LISN               | R&S          | EZH3-Z5              | 100253       | 2020-06-23   | 2021-06-22 |
| Impuls-Begrenzer   | R&S          | ESH3-Z2              | 100281       | 2020-06-23   | 2021-06-22 |
| Loop Antenna       | EMCO         | 6507                 | 00078608     | 2018-06-25   | 2021-06-24 |
| Spectrum           | R&S          | FSIQ26               | 100292       | 2020-06-23   | 2021-06-22 |
| Horn Antenna       | A-INFO       | LB-180400-KF         | J211060660   | 2020-06-23   | 2021-06-22 |
| Horn Antenna       | R&S          | BBHA 9120D           | 9120D-631    | 2018-07-09   | 2021-07-08 |
| Power meter        | Anritsu      | ML2487A              | 6K00003613   | 2020-06-23   | 2021-06-22 |
| Power sensor       | Anritsu      | MA2491A              | 32263        | 2020-06-23   | 2021-06-22 |
| Bilog Antenna      | Schwarebeck  | VULB9163             | 9163/340     | 2018-07-04   | 2021-07-03 |
| 9*6*6 Anechoic     | --           | --                   | N/A          | 2018-02-07   | 2021-02-06 |
| EMI Test Receiver  | RS           | ESVB                 | 826156/011   | 2020-06-23   | 2021-06-22 |
| EMI Test Receiver  | RS           | ESH3                 | 860904/006   | 2020-06-23   | 2021-06-22 |
| Spectrum           | HP/Agilent   | ESA-L1500A           | US37451154   | 2020-06-23   | 2021-06-22 |
| Spectrum           | HP/Agilent   | E4407B               | MY50441392   | 2020-06-23   | 2021-06-22 |
| Spectrum           | RS           | FSP                  | 1164.4391.38 | 2020-01-16   | 2021-01-15 |
| RF Cable           | Zhengdi      | ZT26-NJ-NJ-8<br>M/FA | --           | 2020-06-23   | 2021-06-22 |
| RF Cable           | Zhengdi      | 7m                   | --           | 2020-06-23   | 2021-06-22 |
| RF Switch          | EM           | EMSW18               | 060391       | 2020-06-23   | 2021-06-22 |
| Pre-Amplifier      | Schwarebeck  | BBV9743              | #218         | 2020-06-23   | 2021-06-22 |
| Pre-Amplifier      | HP/Agilent   | 8449B                | 3008A00160   | 2020-06-23   | 2021-06-22 |
| LISN               | SCHAFFNER    | NNB42                | 00012        | 2021-01-06   | 2022-01-05 |

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## 2.2 Automation Test Software

### For Conducted Emission Test

| Name   | Version           |
|--------|-------------------|
| EZ-EMC | Ver.EMC-CON 3A1.1 |

### For Radiated Emissions

| Name                                            | Version |
|-------------------------------------------------|---------|
| EMI Test Software BL410-EV18.91                 | V18.905 |
| EMI Test Software BL410-EV18.806 High Frequency | V18.06  |

## 3.0 Technical Details

### 3.1 Summary of test results

| The EUT has been tested according to the following specifications: |                         |        |           |  |
|--------------------------------------------------------------------|-------------------------|--------|-----------|--|
| Standard                                                           | Test Type               | Result | Notes     |  |
| FCC Part 15, Paragraph 15.203                                      | Antenna requirements    | PASS   | Compliant |  |
| FCC Part 15, Paragraph 15.207                                      | Conducted Emission Test | N/A    | Compliant |  |
| FCC Part 15, Paragraph 15.209                                      | General Requirement     | PASS   | Compliant |  |
| FCC Part 15, Paragraph 15.231 (b)                                  | Radiated Emission Test  | PASS   | Compliant |  |
| FCC Part 15, Paragraph 15.231 (c)                                  | 20dB Bandwidth Testing  | PASS   | Compliant |  |
| FCC Part 15, Paragraph 15.231 (a1)                                 | Deactivate Testing      | PASS   | Compliant |  |

### 3.2 Test Standards

**FCC Part 15 Subpart C, Paragraph 15.231 , ANSI C63.4 :2014 and ANSI C63.10 :2013**

### 4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

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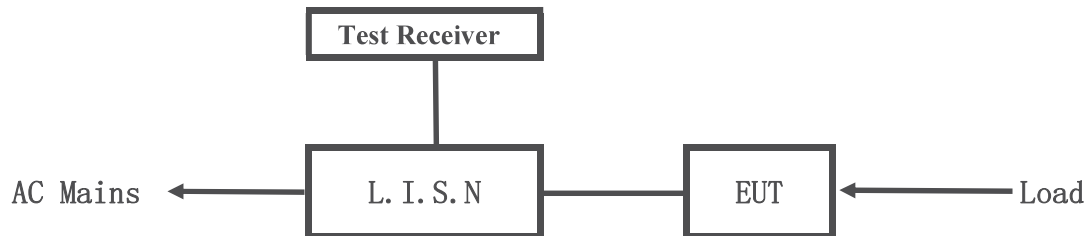
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## 5. Power Line Conducted Emission Test

### 5.1 Schematics of the test

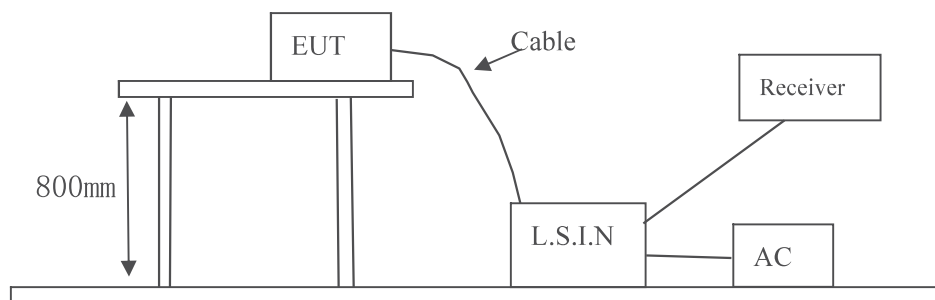


EUT: Equipment Under Test

### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2014. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2014.

Block diagram of Test setup



### 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2014. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

#### A. EUT

| Device                   | Manufacturer                        | Model          | FCC ID        |
|--------------------------|-------------------------------------|----------------|---------------|
| REMOTE SPEEDLITE TRIGGER | Shenzhen Neewer Technology Co., Ltd | PT-16GY, PT-16 | 2ANIV-PT-16GY |

#### B. Internal Device

| Device | Manufacturer | Model | FCC ID/DOC |
|--------|--------------|-------|------------|
| N/A    |              |       |            |

#### C. Peripherals

| Device | Manufacturer | Model | FCC ID/DOC | Cable |
|--------|--------------|-------|------------|-------|
| N/A    |              |       |            |       |

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#### 5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2014.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

#### 5.5 Power line conducted Emission Limit according to Paragraph 15.207

| Frequency<br>(MHz) | Class A Limits (dB $\mu$ V) |               | Class B Limits (dB $\mu$ V) |               |
|--------------------|-----------------------------|---------------|-----------------------------|---------------|
|                    | Quasi-peak Level            | Average Level | Quasi-peak Level            | Average Level |
| 0.15 ~ 0.50        | 79.0                        | 66.0          | 66.0~56.0*                  | 56.0~46.0*    |
| 0.50 ~ 5.00        | 73.0                        | 60.0          | 56.0                        | 46.0          |
| 5.00 ~ 30.00       | 73.0                        | 60.0          | 60.0                        | 50.0          |

Notes: 1. \*Decreasing linearly with logarithm of frequency.  
2. The tighter limit shall apply at the transition frequencies

#### 5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz. (The average detector is necessary when the Quasi-peak emission level beyond the average Limit.)

**Note: Due to Battery operation, this test item not applicable.**

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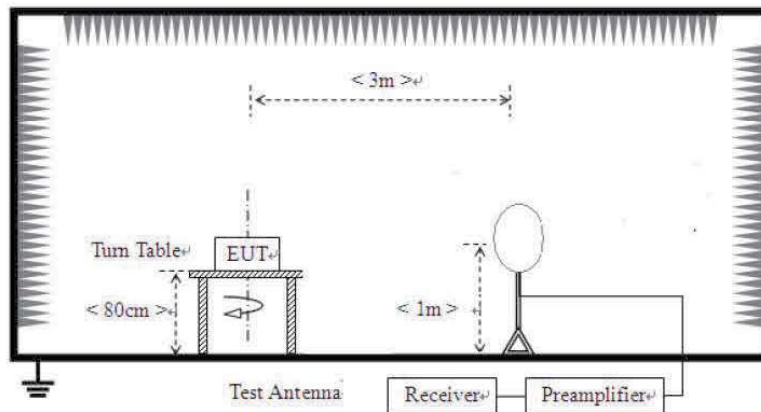
## 6 Radiated Emission Test

### 6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at TIMEWAY EMC Laboratory. This site is on file with the FCC laboratory division, Registration No.744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 5 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

### Block diagram of Test setup

For radiated emissions from 9kHz to 30MHz



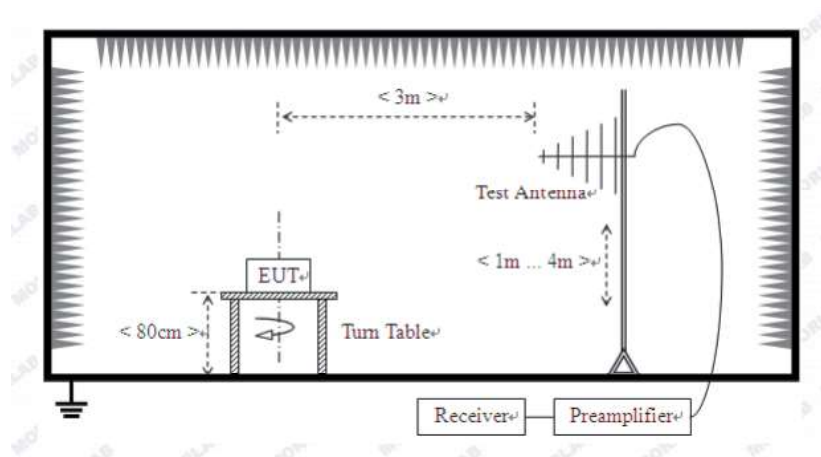
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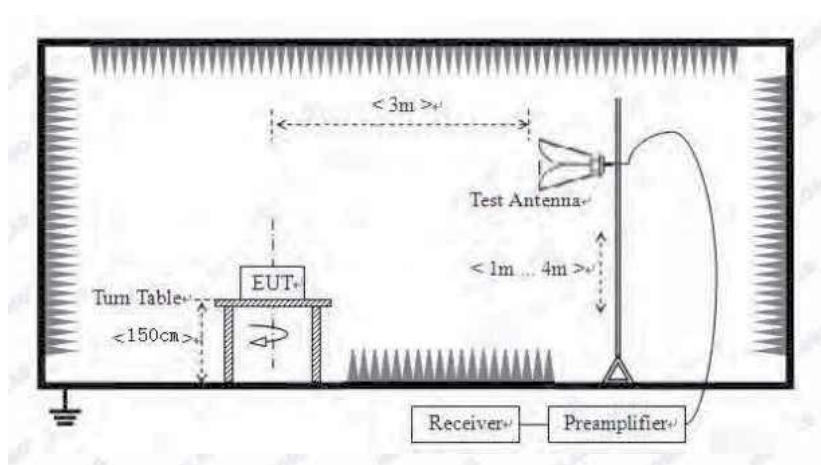
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For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



## 6.2 Configuration of The EUT

Same as section 5.3 of this report

## 6.3 EUT Operating Condition

Same as section 5.4 of this report.

## 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

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**A FCC Part 15 Subpart C Paragraph 15.231(a) Limit**

| Fundamental Frequency (MHz) | Field Strength of Fundamental |             | Field Strength of Spurious Emission |             |
|-----------------------------|-------------------------------|-------------|-------------------------------------|-------------|
|                             | uV/m                          | dBuV/m      | uV/m                                | dBuV/m      |
| 40.66-40.70                 | 2250                          | 67.04       | 225                                 | 47.04       |
| 70-130                      | 1250                          | 61.94       | 125                                 | 41.94       |
| 130-174                     | 1250-3750                     | 61.94-71.48 | 125-375                             | 41.94-51.48 |
| 174-260                     | 3750                          | 71.48       | 375                                 | 51.48       |
| 260-470                     | 3750-12500                    | 71.48-81.94 | 375-1250                            | 51.48-61.94 |
| Above 470                   | 12500                         | 81.94       | 1250                                | 61.94       |

- Note:
1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)
  2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
  3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.
  4. Linear interpolations for frequency ranges 130-174MHz and 260-470MHz
  5. the above field strength limits are specified at a distance of 3-meters and the tighter limits apply at the band edges
  6. New batteries were installed in the equipment under test for radiated emission testing.
  7. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

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**B. Frequencies in restricted band are compiled to limit on Paragraph 15.209.**

| Frequency Range (MHz) | Distance (m) | Field strength (dB $\mu$ V/m) |
|-----------------------|--------------|-------------------------------|
| 30-88                 | 3            | 40.0                          |
| 88-216                | 3            | 43.5                          |
| 216-960               | 3            | 46.0                          |
| Above 960             | 3            | 54.0                          |

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage ( $\mu$ V)
  2. In the Above Table, the tighter limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
  4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-5G, the final emission level got using PK detector. And Average = peak(dBuV/m) – duty cycle(dB)

**6.5 Test result**

**A Fundamental and Harmonics Radiated emission data**

| Product:        | REMOTE SPEEDLITE TRIGGER                                 |              | Test Mode:            | Keep Transmitting      |  |
|-----------------|----------------------------------------------------------|--------------|-----------------------|------------------------|--|
| Test Item:      | Fundamental Radiated Emission and Spurious Emission Data |              | Temperature:          | 25°C                   |  |
| Test Voltage:   | DC12V                                                    |              | Humidity:             | 56%                    |  |
| Test Result:    | Pass                                                     |              |                       |                        |  |
| Frequency (MHz) | Emission PK/AV (dBuV/m)                                  | Horiz / Vert | Limits PK/AV (dBuV/m) | Margin (dB)            |  |
| 433.92          | 85.37 (PK)/76.64 (AV)                                    | H            | 100.8/80.6            | -15.43 (PK)/-3.96(AV)  |  |
| 433.92          | 72.99 (PK)/64.26 (AV)                                    | V            | 100.8/80.6            | -27.81 (PK)/-16.34(AV) |  |
| 867.84          | 52.53 (PK)/43.80 (AV)                                    | H            | 80.8/60.6             | -28.27 (PK)/-16.80(AV) |  |
| 867.84          | 45.89 (PK)/37.16 (AV)                                    | V            | 80.8/60.6             | -34.91(PK)/-23.44 (AV) |  |
| 1301.76         | 44.26 (PK)/35.53 (AV)                                    | H            | 74/54                 | -29.74 (PK)/-18.47(AV) |  |
| 1301.76         | 45.05 (PK)/36.32 (AV)                                    | V            | 74/54                 | -28.95 (PK)/-17.68(AV) |  |
| 1735.68         | 51.31 (PK)/42.58 (AV)                                    | H            | 80.8/60.6             | -29.49 (PK)/-18.02(AV) |  |
| 1735.68         | 49.26 (PK)/40.53 (AV)                                    | V            | 80.8/60.6             | -31.54(PK)/-20.07 (AV) |  |
| 2169.6          | 49.83 (PK)/41.10 (AV)                                    | H            | 80.8/60.6             | -30.97 (PK)/-19.50(AV) |  |
| 2169.6          | 43.28 (PK)/34.55 (AV)                                    | V            | 80.8/60.6             | -37.52 (PK)/-26.05(AV) |  |
| 2603.52         | 43.60 (PK)/34.87 (AV)                                    | H            | 80.8/60.6             | -37.20 (PK)/-25.73(AV) |  |
| 2603.52         | 50.72 (PK)/41.99 (AV)                                    | V            | 80.8/60.6             | -30.08(PK)/-18.61 (AV) |  |
| 3037.44         | 47.67 (PK)/38.94 (AV)                                    | H            | 80.8/60.6             | -33.13(PK)/-21.66 (AV) |  |
| 3037.44         | 48.75 (PK)/40.02 (AV)                                    | V            | 80.8/60.6             | -32.05(PK)/-20.58 (AV) |  |
| 3471.36         | 43.97 (PK)/35.24 (AV)                                    | H            | 80.8/60.6             | -36.83(PK)/-25.36 (AV) |  |
| 3471.36         | --                                                       | V            | 80.8/60.6             | --                     |  |

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|         |    |     |       |    |
|---------|----|-----|-------|----|
| 3905.28 | -- | H/V | 74/54 | -- |
| 4339.2  | -- | H/V | 74/54 | -- |

Note: 1. Average = peak(dBuV/m) + duty cycle factor(dB), H=Horizontal, V=Vertical

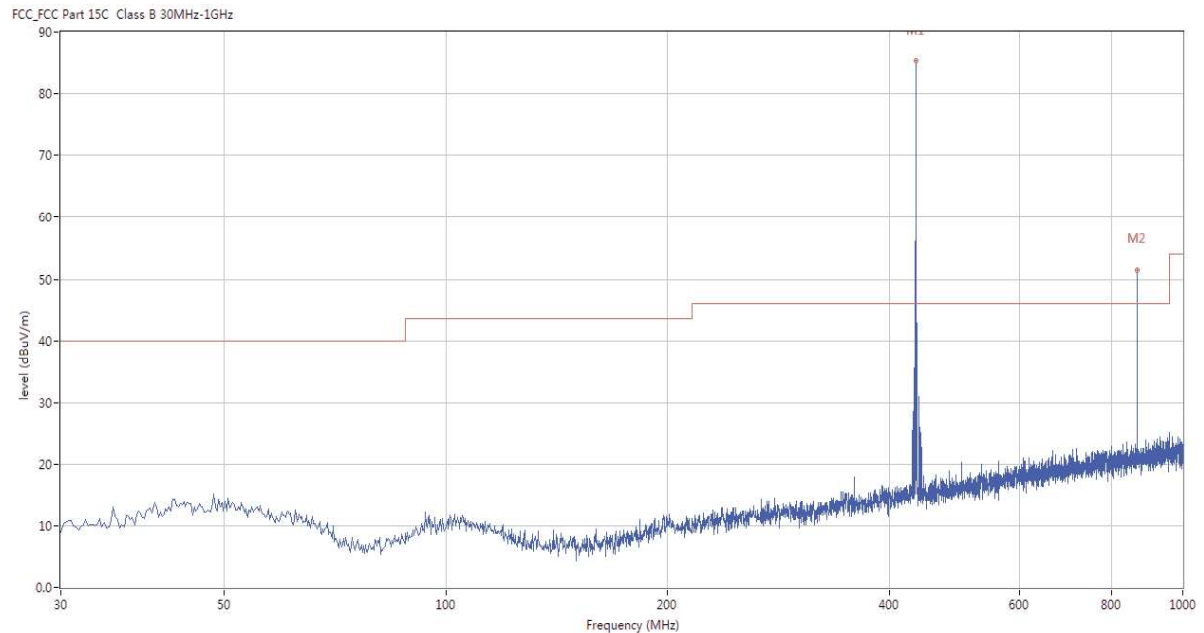
## B. General Radiated Emission Data

### Radiated Emission In Horizontal (30MHz---1000MHz)

EUT set Condition: Keep Transmitting

**Results: Pass**

Please refer to following diagram for individual



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (o) | Height (cm) | ANT        | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|-----------|-------------|------------|---------|
| 1   | 433.904         | 85.37            | -8.03       | 46.0           | 39.37           | Peak     | 346.00    | 100         | Horizontal | N/A     |
| 2   | 867.871         | 52.53            | -2.31       | 46.0           | 6.53            | Peak     | 348.00    | 100         | Horizontal | N/A     |

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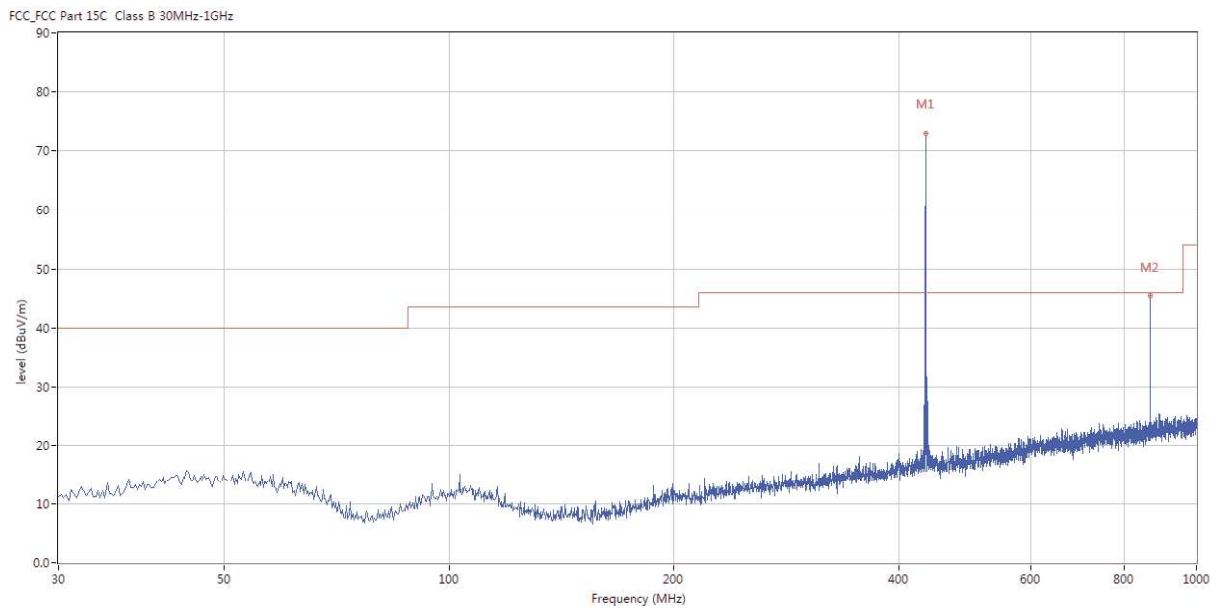
## B. General Radiated Emission Data

### Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Transmitting

**Results: Pass**

Please refer to following diagram for individual



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (o) | Height (cm) | ANT      | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|-----------|-------------|----------|---------|
| 1   | 433.904         | 72.99            | -8.03       | 46.0           | 26.99           | Peak     | 44.00     | 100         | Vertical | N/A     |
| 2   | 867.871         | 45.89            | -2.31       | 46.0           | -1.11           | Peak     | 52.00     | 100         | Vertical | N/A     |

The report refers only to the sample tested and does not apply to the bulk.

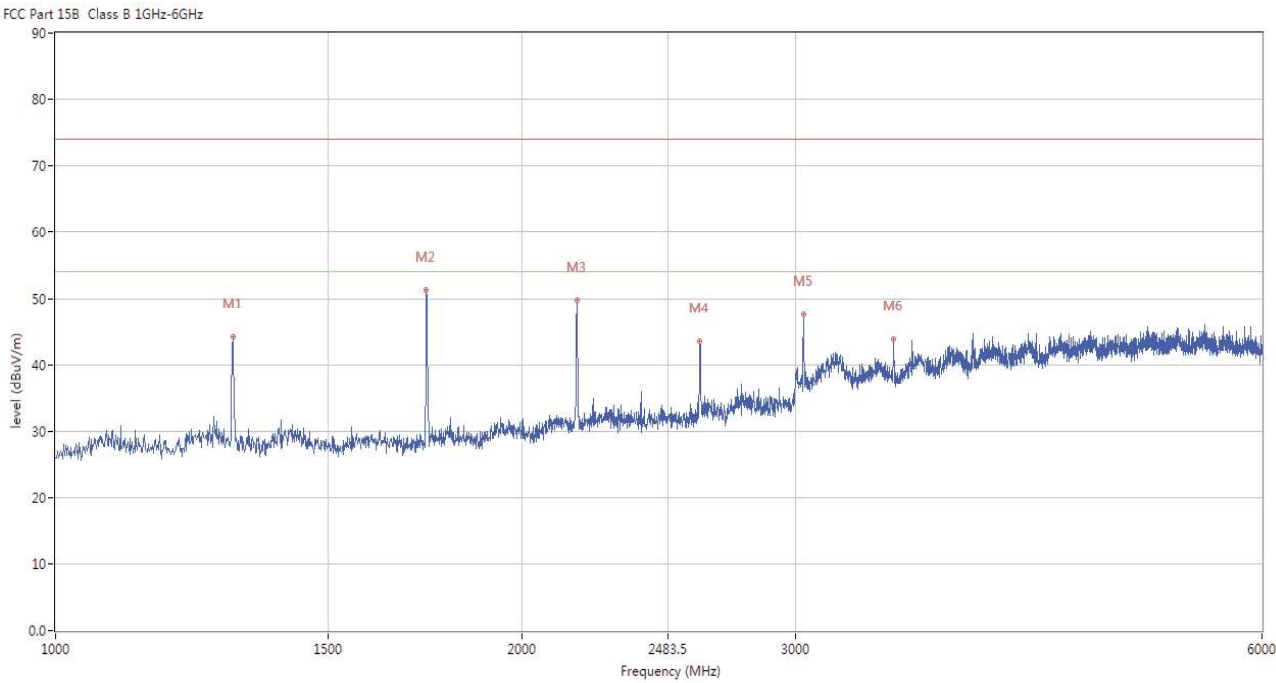
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Test Plot above 1G

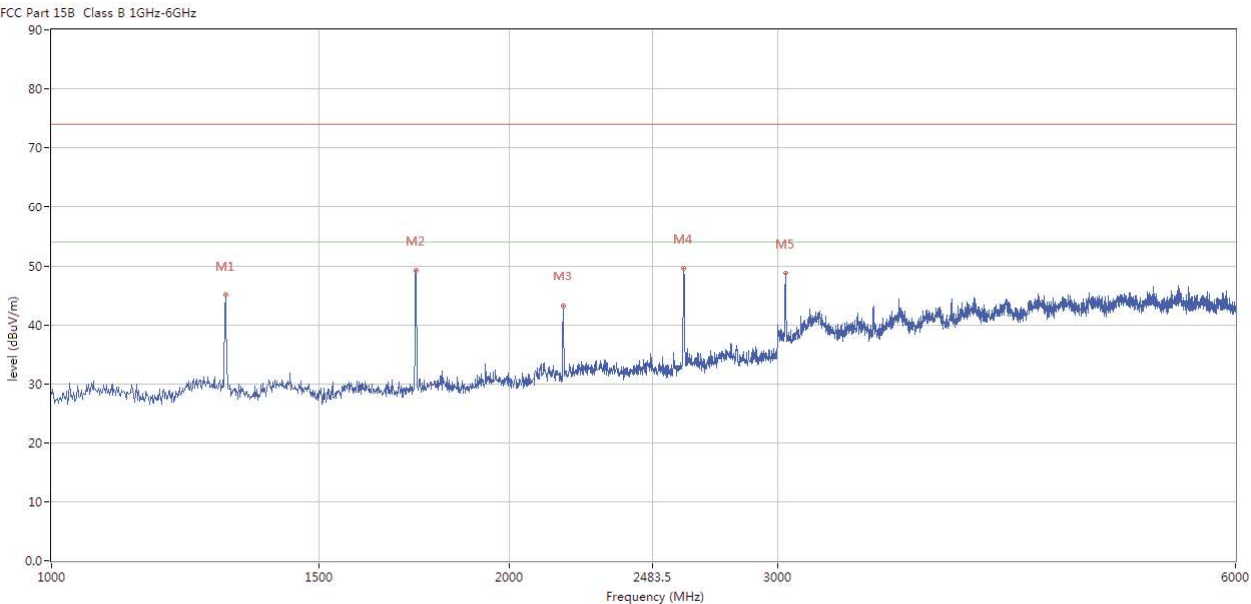
Horizontal



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Vertical



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## 7.0 20dB Bandwidth Testing

### 7.1 Requirement

Per 15.231(c) and RSS-210 A1, 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. Bandwidth is determined at the points 20 dB down from the modulated carrier.

### 7.2 Test Procedure

With the EUT's antenna attached, the EUT's 20dB Bandwidth power was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band.

### 7.3 Test Data

| Frequency (MHz) | 20dB Bandwidth Emission (kHz) | Limit (kHz) | Result |
|-----------------|-------------------------------|-------------|--------|
| 433.92          | 182.36                        | 1084.8      | Pass   |

Limit=Frequency x 0.25%=433.92x 0.25%=1084.8kHz

Refer to attached plots:

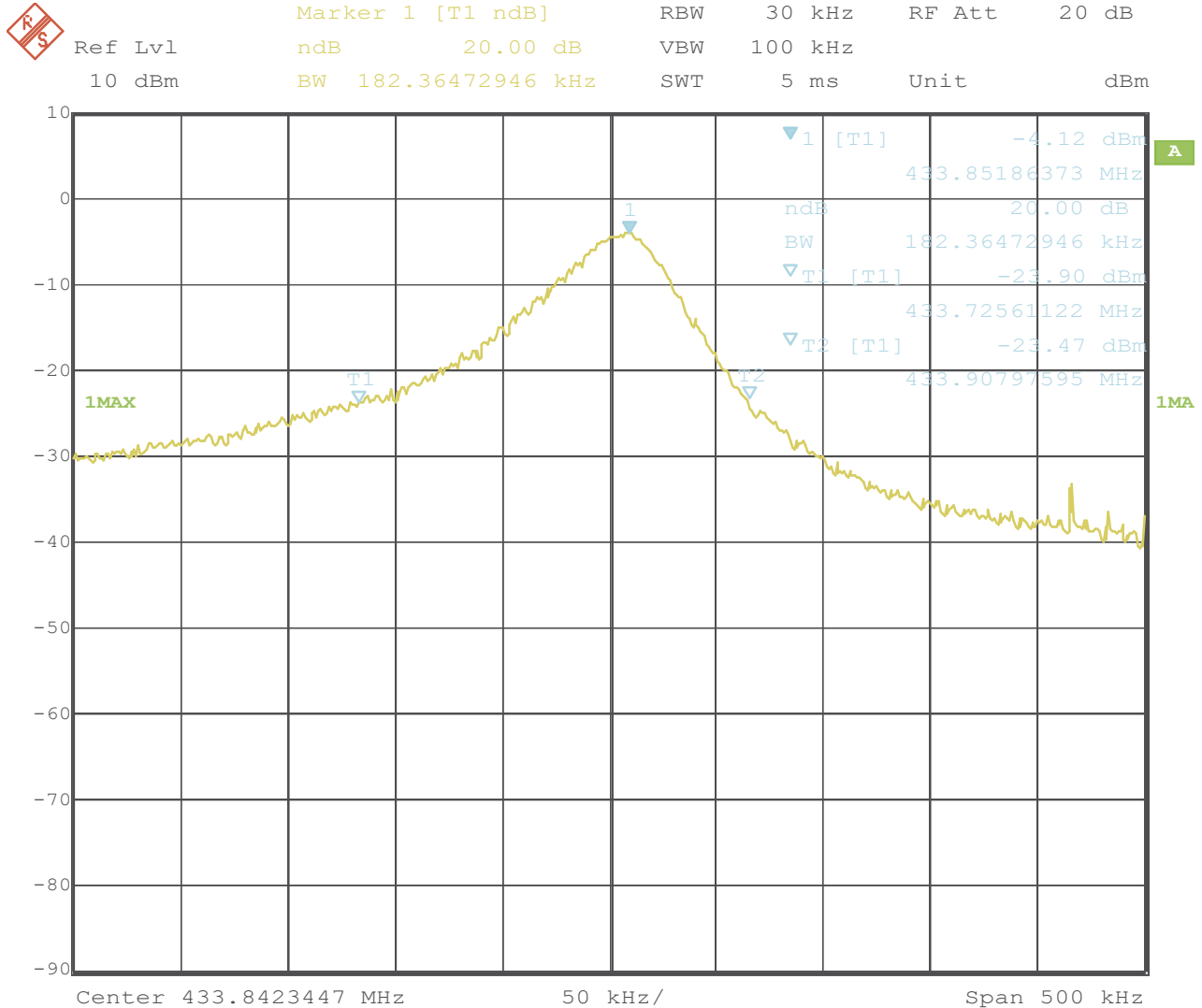
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20dB Bandwidth



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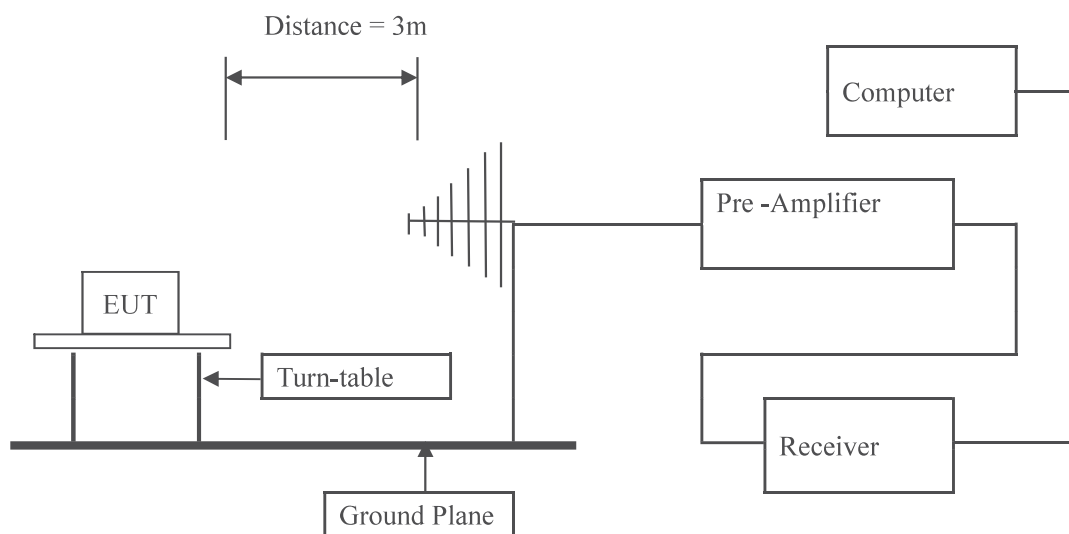
## 8.0 Deactivate Test

### 8.1 Requirement

Per 15.231(a) (1)

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

### 8.2 Radiated Test Setup



For the actual test configuration , please refer to the related items – Photos of Testing

The deactivation test was performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.231(e) limits.

### 8.3 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The report refers only to the sample tested and does not apply to the bulk.

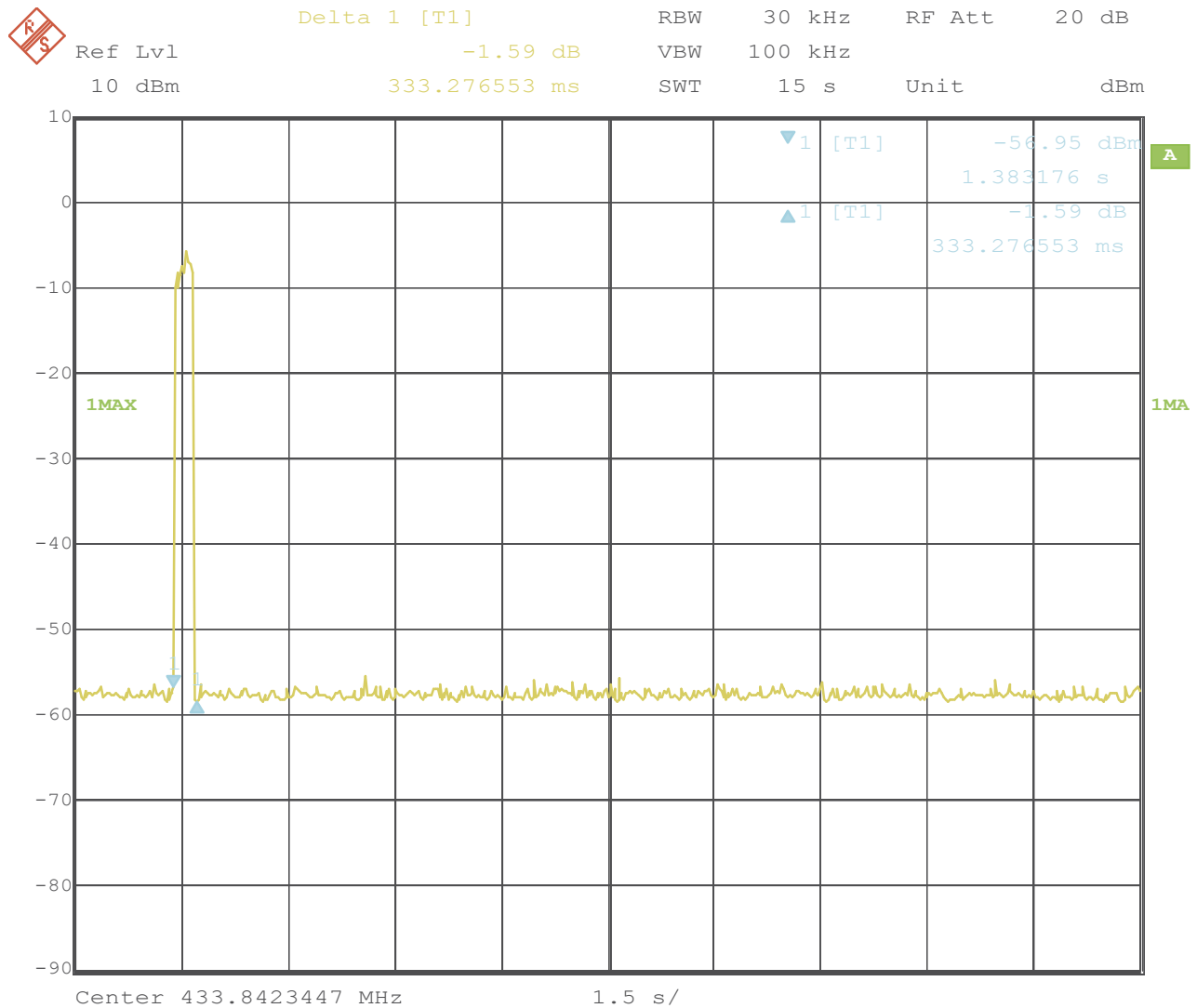
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## 8.4 Test Data

Refer to attached plots:



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## 8.5 Test result

Pass

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