



TEST REPORT

APPLICANT : Y Soft Corporation, a.s.
PRODUCT NAME : USB Card Reader
MODEL NAME : MU03076
BRAND NAME : YSoft USB Reader 3 MFX Mobile
FCC ID : XUY0YX0MU03076
STANDARD(S) : 47 CFR Part 15 Subpart C
RECEIPT DATE : 2020-10-21
TEST DATE : 2020-11-10 to 2020-11-25
ISSUE DATE : 2020-11-26

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| Change History | | |
|----------------|------------|-------------------|
| Version | Date | Reason for change |
| 1.0 | 2020-11-26 | First edition |
| | | |



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

| | |
|------------------------------|--|
| Applicant: | Y Soft Corporation, a.s. |
| Applicant Address: | Technická 2948/13, 61600, Brno, Czech Republic |
| Manufacturer: | Y Soft Corporation, a.s. |
| Manufacturer Address: | Technická 2948/13, 61600, Brno, Czech Republic |

1.2. Equipment Under Test (EUT) Description

| | |
|-----------------------------|-------------------------------|
| Product Name: | USB Card Reader |
| Serial No.: | (N/A, marked #1 by test site) |
| Hardware Version: | 3.1.0 |
| Software Version: | 2.6.0 |
| Operating Frequency: | 13.56MHz |
| Modulation Type: | AM |
| Antenna Type: | Coil Antenna |

Note 1: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.3. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

| No. | Identity | Document Title |
|-----|----------------------------------|-------------------------|
| 1 | 47 CFR Part 15 (10-1-15 Edition) | Radio Frequency Devices |

Test detailed items/section required by FCC rules and results are as below:

| No. | Section | Description | Test Date | Test Engineer | Result | Method determination /Remark |
|-----|-----------------------------------|---------------------|--------------|---------------|--------|------------------------------|
| 1 | 15.203 | Antenna Requirement | N/A | N/A | PASS | No deviation |
| 2 | 15.207 | Conducted Emission | Nov 10, 2020 | Huang Zhiye | PASS | No deviation |
| 3 | 15.209 15.225(a) (b) (c)(d) | Radiated Emission | Nov 25, 2020 | Gao Jianrou | PASS | No deviation |
| 4 | 15.225(e) | Frequency Tolerance | Nov 24, 2020 | Tu Ya'nan | PASS | No deviation |
| 5 | 15.215(c) | 20dB Bandwidth | Nov 25, 2020 | Gao Jianrou | PASS | No deviation |

Note 1: The tests were performed according to the method of measurements prescribed in ANSI C63.10-2013. The EUT has been tested under continuous operating condition.

Note 2: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 3: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% risk level.

1.4. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

| | |
|-----------------------------|--------|
| Temperature (°C): | 15-35 |
| Relative Humidity (%): | 30-60 |
| Atmospheric Pressure (kPa): | 86-106 |



2.47 CFR Part 15C Requirements

2.1. Antenna Requirement

2.1.1. Applicable Standard

According to FCC 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.

2.1.2. Test Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Conducted Emission

2.2.1. Test Requirement

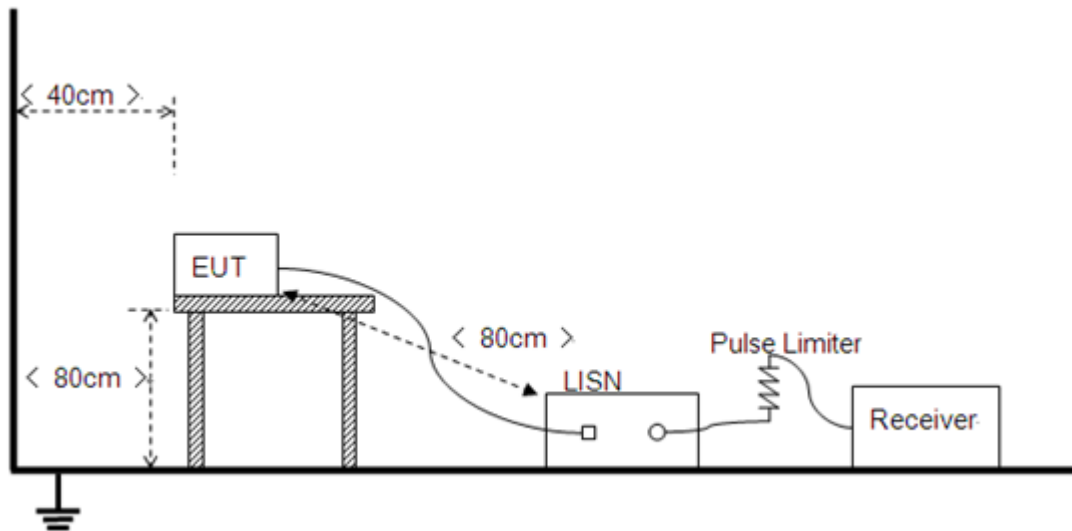
According to FCC section 15.207, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

| Frequency range (MHz) | Conducted Limit (dBμV) | |
|-----------------------|------------------------|----------|
| | Quai-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

NOTE:

- (a) The lower limit shall apply at the band edges.
- (b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.2.2. Test Setup



The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.



2.2.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT+PC+PC adapter+13.56MHz TX

Test voltage: AC 120V/60Hz

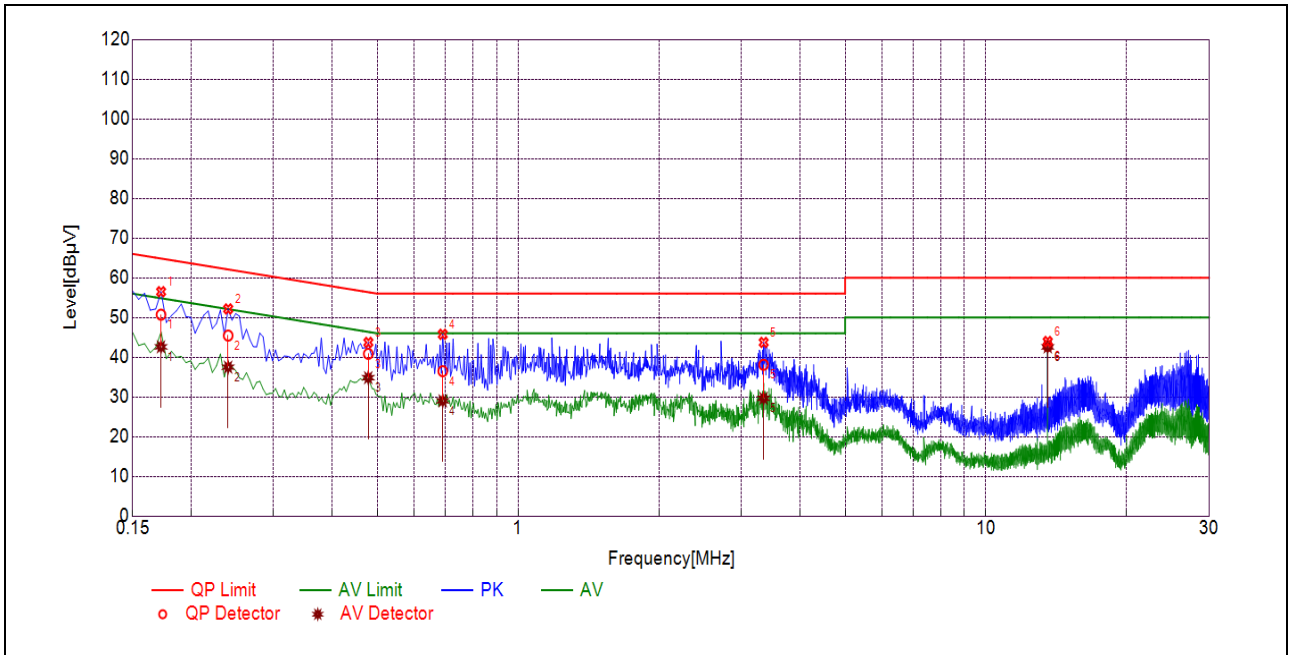
The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss}} \text{ [dB]} + A_{\text{Factor}}$$

U_R : Receiver Reading

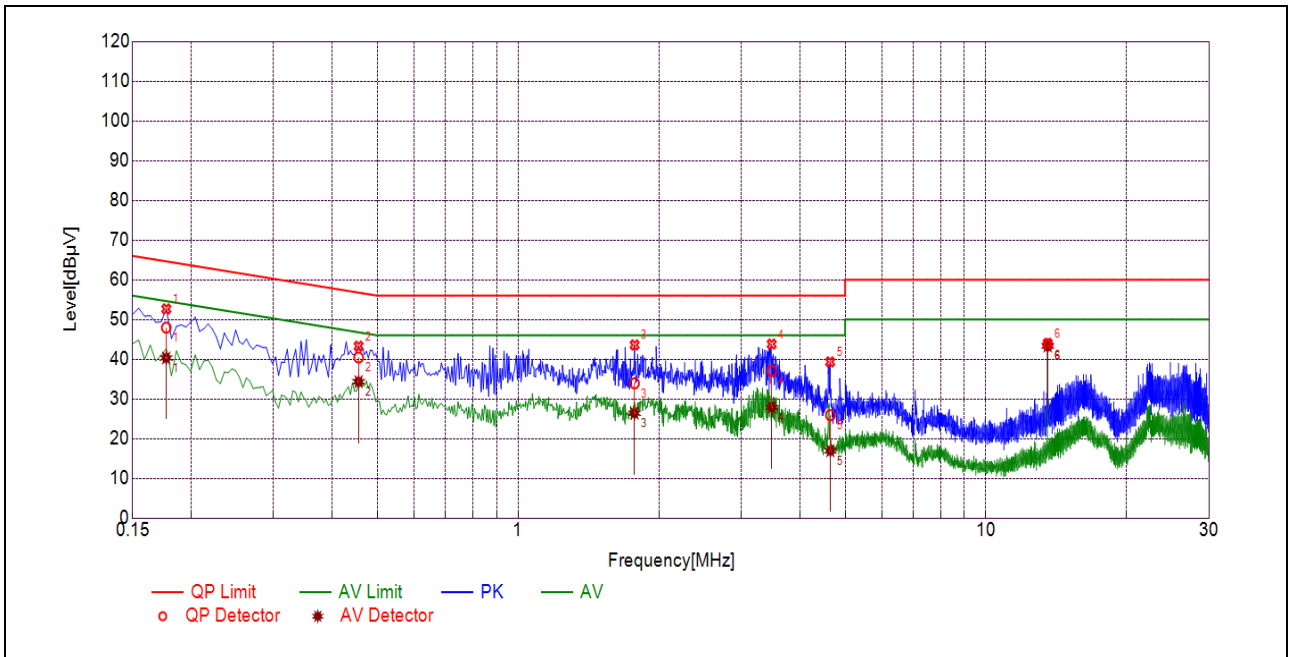
A_{Factor} : Voltage division factor of LISN

B.Test Plot:



(L Phase)

| No. | Fre. (MHz) | Emission Level (dBµV) | | Limit (dBµV) | | Power-line | Verdict |
|-----|------------|-----------------------|---------|--------------|---------|------------|---------|
| | | Quai-peak | Average | Quai-peak | Average | | |
| 1 | 0.1724 | 50.71 | 42.61 | 64.84 | 54.84 | Line | PASS |
| 2 | 0.2399 | 45.45 | 37.49 | 62.10 | 52.10 | | PASS |
| 3 | 0.4782 | 40.85 | 34.84 | 56.37 | 46.37 | | PASS |
| 4 | 0.6900 | 36.48 | 29.02 | 56.00 | 46.00 | | PASS |
| 5 | 3.3469 | 38.10 | 29.66 | 56.00 | 46.00 | | PASS |
| 6 | 13.5590 | 42.84 | 42.59 | 60.00 | 50.00 | | PASS |



(N Phase)

| NO. | Fre. (MHz) | Emission Level (dBμV) | | Limit (dBμV) | | Power-line | Verdict |
|-----|---------------|-----------------------|---------|--------------|---------|------------|---------|
| | | Quai-peak | Average | Quai-peak | Average | | |
| 1 | 0.1769 | 47.95 | 40.31 | 64.63 | 54.63 | Neutral | PASS |
| 2 | 0.4560 | 40.43 | 34.33 | 56.76 | 46.76 | | PASS |
| 3 | 1.7732 | 33.92 | 26.40 | 56.00 | 46.00 | | PASS |
| 4 | 3.4868 | 37.05 | 27.89 | 56.00 | 46.00 | | PASS |
| 5 | 4.6501 | 25.91 | 16.95 | 56.00 | 46.00 | | PASS |
| 6 | 13.5603 | 43.52 | 43.35 | 60.00 | 50.00 | | PASS |



2.3. Radiated Emission

2.3.1. Test Requirement

Radiated Emission <30MHz (9 kHz-30MHz, E-field)

According to FCC section 15.225, for <30MHz, Radiated emissions were measured according to ANSIC63.4. The EUT was set to transmit at the highest output power. The EUT was set 30 meter away from the measuring antenna. The loop antenna was positioned 1 meter above the ground from the center of the loop. The measuring bandwidth was set to 10KHz. (Note: During testing the receive antenna was rotated about its axis to maximize the emission from the EUT)

There was no detected Restricted bands and Radiated Spurious emission below 30MHz. The 30m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows;
 $3\text{ m Limit(dBuV/m)} = 20\log(X) + 40\log(30/3) = 20\log(15848) + 40\log(30/3) = 124\text{dBuV}$

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency range (MHz) | Field Strength@30m | | Field Strength@3m |
|-----------------------|--------------------|--------------------------|--------------------------|
| | $\mu\text{V/m}$ | $\text{dB}\mu\text{V/m}$ | $\text{dB}\mu\text{V/m}$ |
| Below 13.110 | 30 | 29.5 | 69.5 |
| 13.110 ~ 13.410 | 106 | 40.5 | 80.5 |
| 13.410 ~ 13.553 | 334 | 50.5 | 90.5 |
| 13.553 ~ 13.567 | 15.848 | 84 | 124 |
| 13.567 ~ 13.710 | 334 | 50.5 | 90.5 |
| 13.710 ~ 14.010 | 106 | 40.5 | 80.5 |
| Above 14.010 | 30 | 29.5 | 69.5 |

| Frequency range (MHz) | Field Strength($\mu\text{V/m}$) | Distance(m) |
|-----------------------|-----------------------------------|-------------|
| 0.009 ~ 0.490 | $2400/F(\text{kHz})$ | 300 |
| 0.490 ~ 1.705 | $24000/F(\text{kHz})$ | 30 |
| 1.705 ~ 30 | 30 | 30 |

NOTE: a) Field Strength ($\text{dB}\mu\text{V/m}$) = $20 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$.

b) In the emission tables above, the tighter limit applies at the band edges.

Radiated Emission >30MHz (30MHz-1GHz, E-field)

According to FCC section 15.205, the field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the following values:

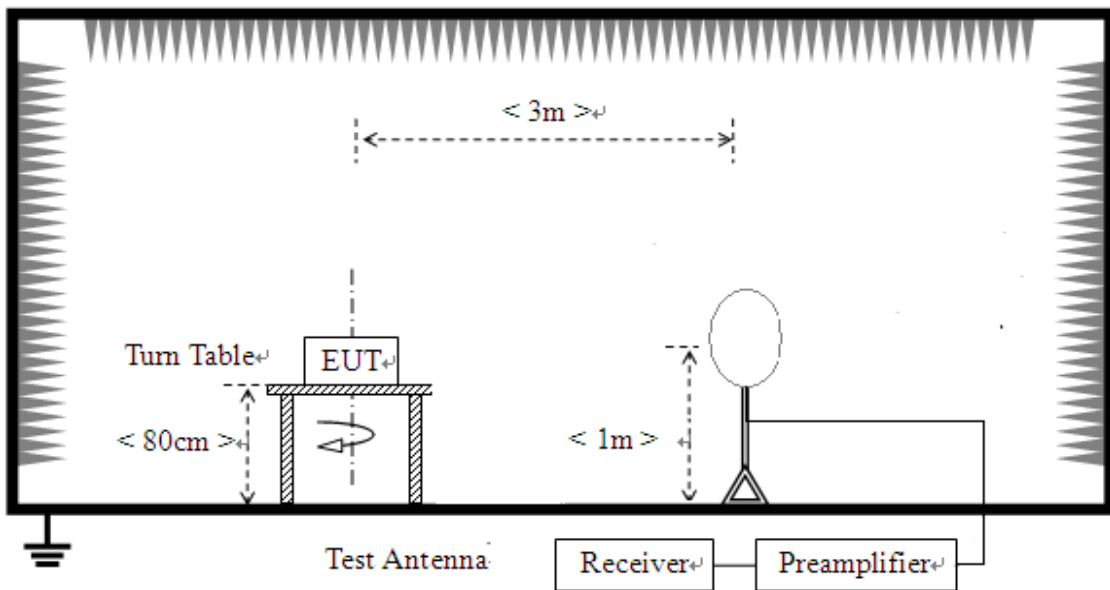
| Frequency range (MHz) | Field Strength | |
|-----------------------|-----------------|--------------------------|
| | $\mu\text{V/m}$ | $\text{dB}\mu\text{V/m}$ |
| 30 - 88 | 100 | 40 |
| 88 - 216 | 150 | 43.5 |
| 216 - 960 | 200 | 46 |
| Above 960 | 500 | 54 |

NOTE: a) Field Strength ($\text{dB}\mu\text{V/m}$) = $20 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$.

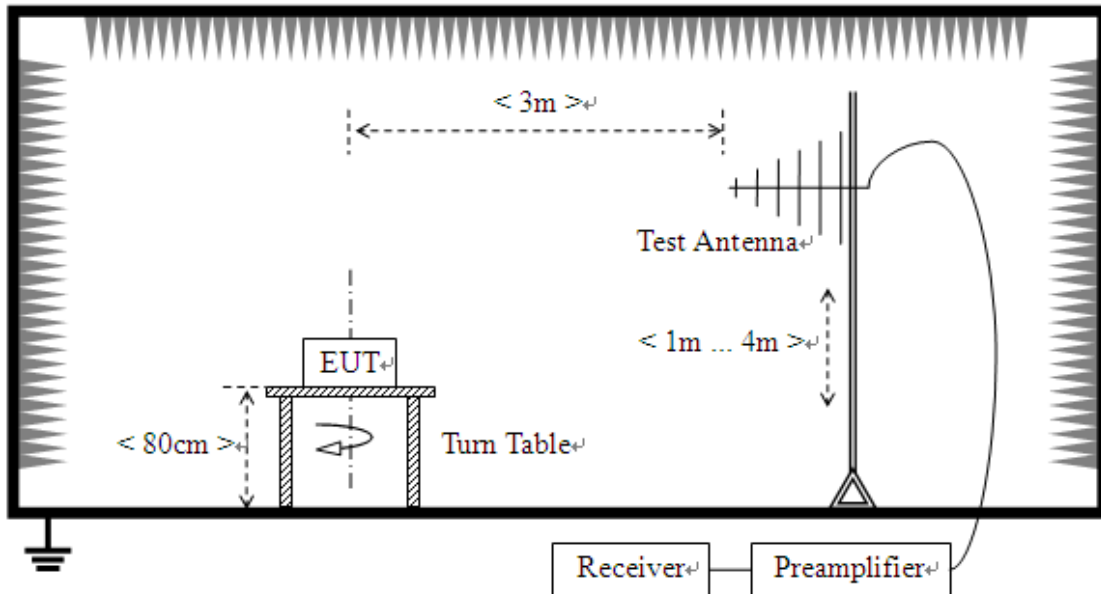
b) In the emission tables above, the tighter limit applies at the band edges.

2.3.2. Test Setup

1) For radiated emissions below 30MHz



2) For radiated emissions from 30MHz to 1GHz



The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

In the frequency range of 9 kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) was used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

2.3.3. Test Result

A. Radiated Emission <30MHz (9kHz-30MHz, opened)



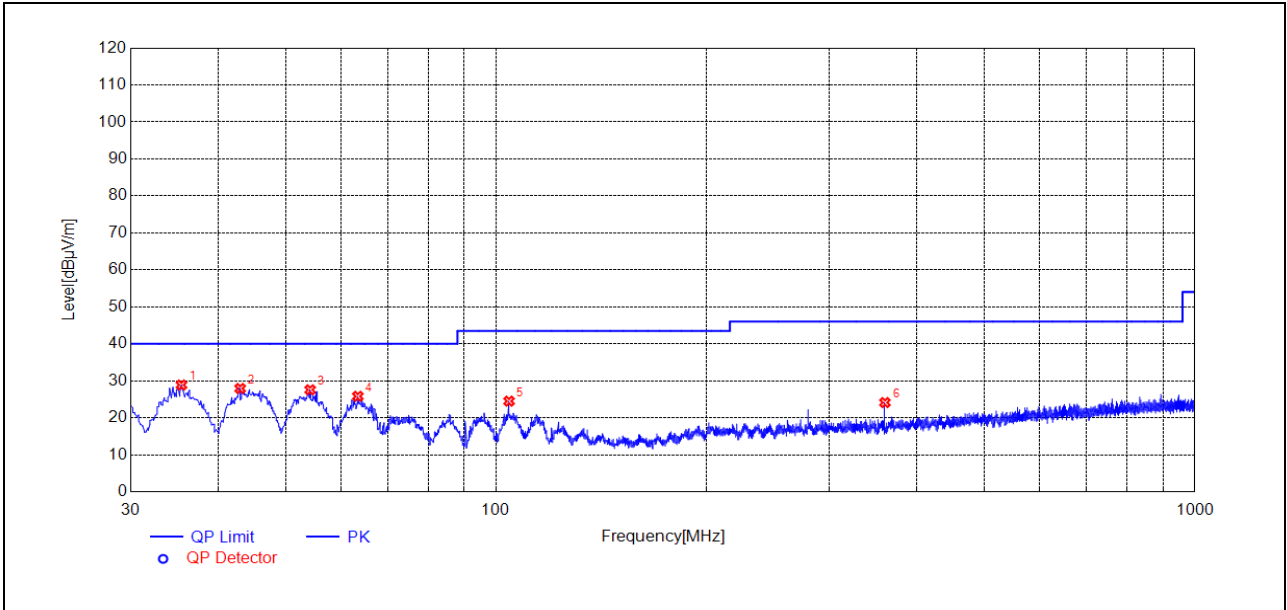
| No. | Frequency (MHz) | Detector Type | Level at 3m (dBμV/m) | Limit at 3m (dBμV/m) |
|-----|-----------------|---------------|----------------------|----------------------|
| 1 | 0.894 | Quasi Peak | 26.56 | 69.5 |
| 2 | 0.949 | Quasi Peak | 23.86 | 69.5 |
| 3 | 0.994 | Quasi Peak | 27.21 | 69.5 |
| 4 | 1.024 | Quasi Peak | 23.67 | 69.5 |
| 5 | 1.119 | Quasi Peak | 26.17 | 69.5 |
| 6 | 13.559 | Quasi Peak | 26.59 | 124.0 |

B.Radiated Emission <30MHz (9kHz-30MHz, closed)



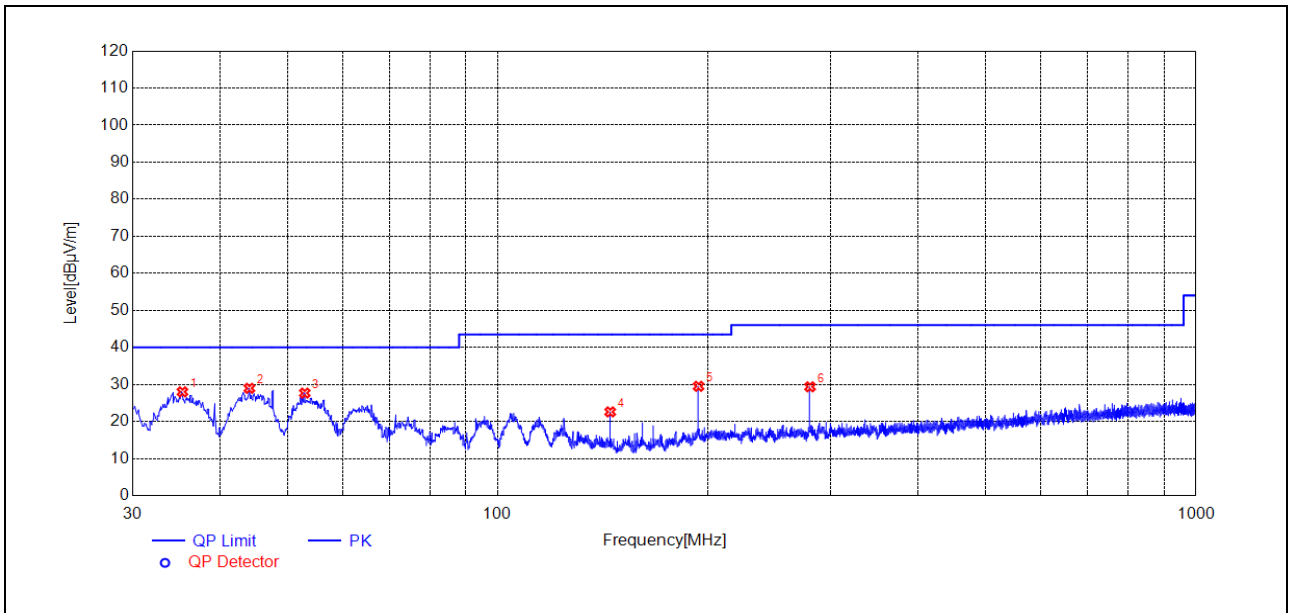
| No. | Frequency (MHz) | Detector Type | Level at 3m (dBμV/m) | Limit at 3m (dBμV/m) |
|-----|-----------------|---------------|----------------------|----------------------|
| 1 | 0.669 | Quasi Peak | 24.89 | 69.5 |
| 2 | 0.894 | Quasi Peak | 26.56 | 69.5 |
| 3 | 0.949 | Quasi Peak | 23.86 | 69.5 |
| 4 | 0.989 | Quasi Peak | 26.21 | 69.5 |
| 5 | 1.119 | Quasi Peak | 26.17 | 69.5 |
| 6 | 13.559 | Quasi Peak | 21.49 | 124.0 |

C. Radiated Emission >30MHz (30MHz-1GHz)



(30MHz – 1GHz, Test Antenna Horizontal)

| No. | Fre. MHz | Pk dBµV/m | QP dBµV/m | AV dBµV/m | Limit-PK dBµV/m | Limit-QP dBµV/m | Limit-AV dBµV/m | ANT | Verdict |
|-----|----------|-----------|-----------|-----------|-----------------|-----------------|-----------------|-----|---------|
| 1 | 35.4325 | 28.87 | N/A | N/A | N/A | 40.00 | N/A | H | PASS |
| 2 | 42.9993 | 27.93 | N/A | N/A | N/A | 40.00 | N/A | H | PASS |
| 3 | 54.1554 | 27.57 | N/A | N/A | N/A | 40.00 | N/A | H | PASS |
| 4 | 63.3713 | 25.81 | N/A | N/A | N/A | 40.00 | N/A | H | PASS |
| 5 | 104.3094 | 24.50 | N/A | N/A | N/A | 43.50 | N/A | H | PASS |
| 6 | 360.0270 | 24.12 | N/A | N/A | N/A | 46.00 | N/A | H | PASS |



(30MHz – 1GHz, Test Antenna Vertical)

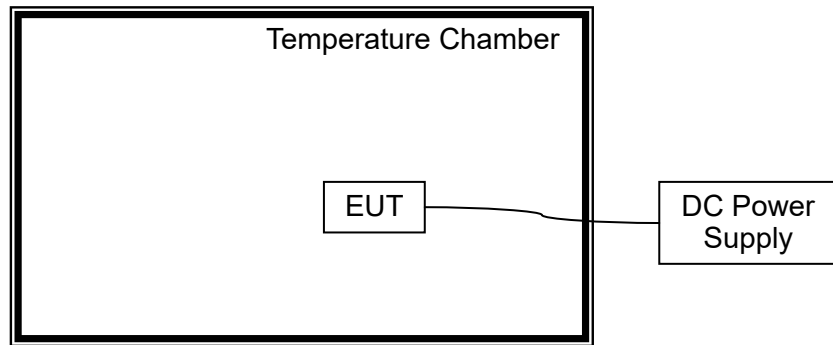
| No. | Fre. MHz | Pk dBµV/m | QP dBµV/m | AV dBµV/m | Limit-PK dBµV/m | Limit-QP dBµV/m | Limit-AV dBµV/m | ANT | Verdict |
|-----|----------|-----------|-----------|-----------|-----------------|-----------------|-----------------|-----|---------|
| 1 | 35.3355 | 28.00 | N/A | N/A | N/A | 40.00 | N/A | V | PASS |
| 2 | 44.0664 | 28.95 | N/A | N/A | N/A | 40.00 | N/A | V | PASS |
| 3 | 52.8943 | 27.67 | N/A | N/A | N/A | 40.00 | N/A | V | PASS |
| 4 | 144.8595 | 22.59 | N/A | N/A | N/A | 43.50 | N/A | V | PASS |
| 5 | 193.8494 | 29.50 | N/A | N/A | N/A | 43.50 | N/A | V | PASS |
| 6 | 279.9940 | 29.36 | N/A | N/A | N/A | 46.00 | N/A | V | PASS |

2.4. Frequency Tolerance

2.4.1. Test Requirement

According to FCC section 15.225, the devices operating in the 13.553~13.567 MHz shall maintain the carrier frequency within 0.01% of the operating frequency over the temperature variation of -20°C to +50°C using an environmental chamber. The primary supply voltage is varied from 85% to 115% of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

2.4.2. Test Setup



The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT was measured by transmitter mode continuously.



2.4.3. Test Result

Operating Frequency: 13,560,000 Hz

Deference Voltage: 5.0V

Deviant Limit: $\pm 0.01\%$

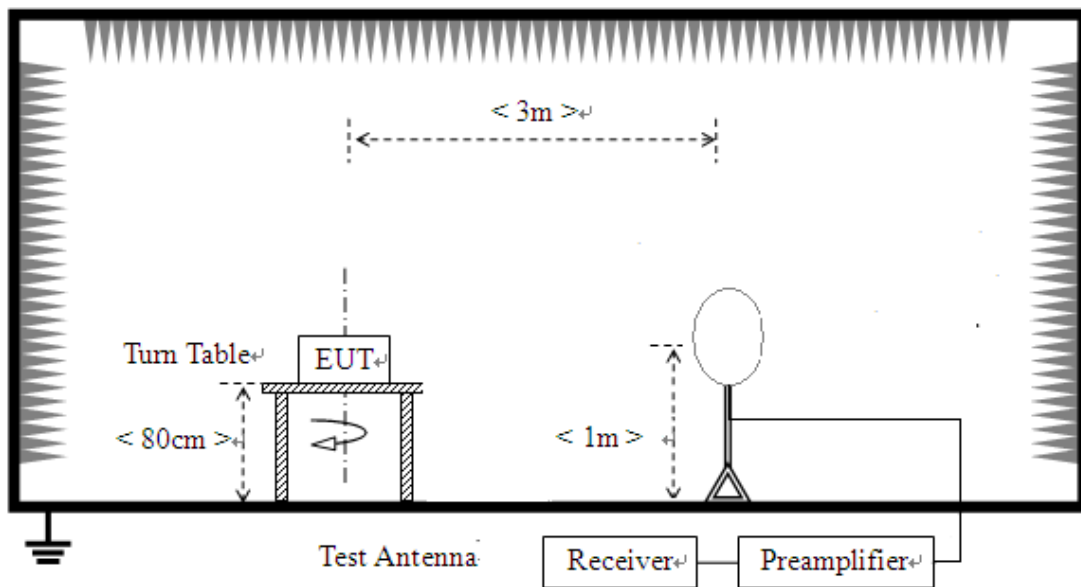
| VOLTAGE (%) | Test Conditions | | Fre. Dev. (Hz) | Deviation (%) | Verdict |
|-------------|-----------------|------------------|----------------|---------------|---------|
| | Power (VDC) | Temperature (°C) | | | |
| 100 | 5.00 | -20 | 22 | 0.00016 | PASS |
| 100 | | -10 | 21 | 0.00015 | |
| 100 | | 0 | 21 | 0.00015 | |
| 100 | | +10 | 20 | 0.00015 | |
| 100 | | +20 | 20 | 0.00015 | |
| 100 | | +25 | 20 | 0.00015 | |
| 100 | | +30 | 21 | 0.00015 | |
| 100 | | +40 | 21 | 0.00015 | |
| 100 | | +50 | 22 | 0.00016 | |
| 85 | | 4.50 | +20 | 22 | |
| 115 | 5.50 | +20 | 22 | 0.00016 | |

2.5. 20dB Bandwidth

2.5.1. Standard Applicable

According to FCC section 15.215(c), the 20dB bandwidth should be contained within the frequency band designated in the rule section under which the EUT is operated, it was measured with a spectrum analyzer connected the EUT while the EUT is operating in transmission mode.

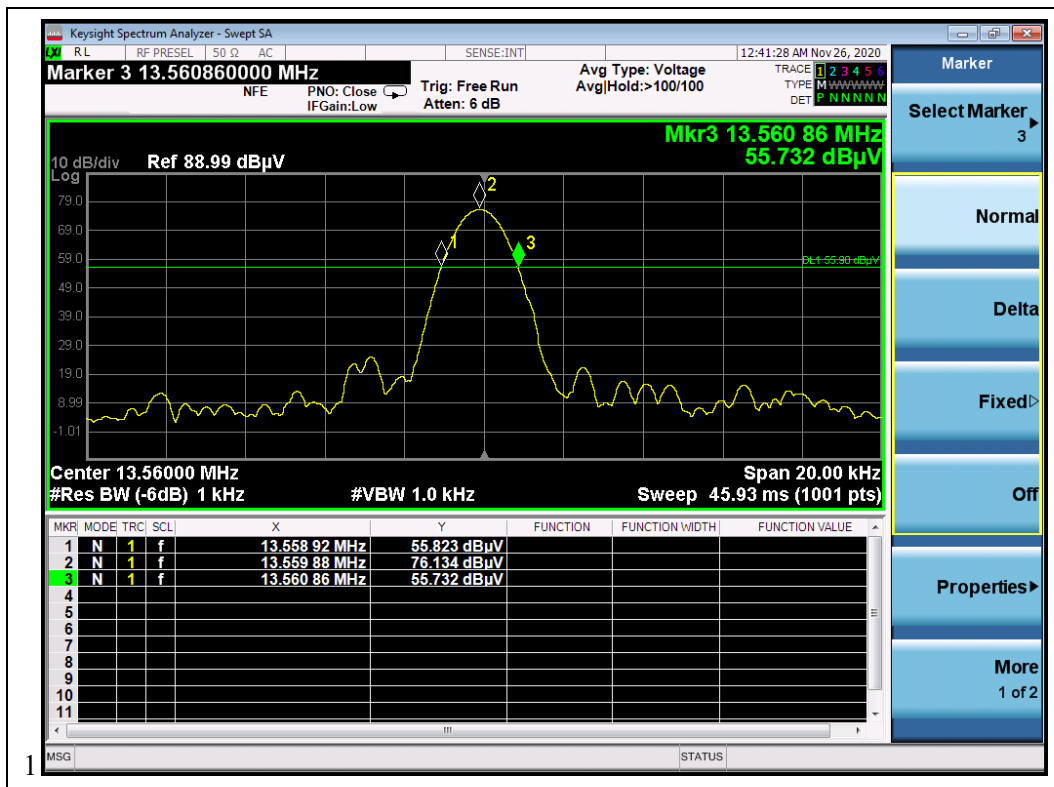
2.5.2. Test Setup





2.5.3. Test Result

| Centre Frequency | Measurement | | Limit | | Verdict |
|------------------|----------------------|-----------------------|----------------------|----------------------|---------|
| | 20dB Bandwidth (kHz) | Frequency Range (MHz) | 20dB Bandwidth (kHz) | Frequency Range(MHz) | |
| 13.56MHz | 1.94 | 13. 55892 to 13.56086 | 14 | 13.553 to 13.567 | PASS |





Annex A Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

| | |
|---------------------|--------------------|
| Radiated Emission: | $\pm 3.1\text{dB}$ |
| Conducted Emission: | $\pm 1.8\text{dB}$ |
| Bandwidth | $\pm 5\%$ |
| Frequency Tolerance | $\pm 5\%$ |



Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

| | |
|----------------------------|--|
| Laboratory Name: | Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory |
| Laboratory Address: | FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |
| Telephone: | +86 755 36698555 |
| Facsimile: | +86 755 36698525 |

2. Identification of the Responsible Testing Location

| | |
|-----------------|--|
| Name: | Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory |
| Address: | FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.



4. Test Equipments Utilized

4.1 Test Equipments

| Equipment Name | Serial No. | Type | Manufacturer | Cal. Date | Due Date |
|-----------------------|-------------|-------------|--------------|------------|------------|
| Receiver | MY54130016 | N9038A | Agilent | 2020.07.21 | 2021.07.20 |
| Test Antenna - Bi-Log | 9163-519 | VULB 9163 | Schwarzbeck | 2019.05.24 | 2022.05.23 |
| Test Antenna - Loop | 1520-022 | FMZB1519 | Schwarzbeck | 2019.02.14 | 2022.02.13 |
| Anechoic Chamber | N/A | 9m*6m*6m | CRT | 2020.01.06 | 2023.01.05 |
| DC Power Supply | 1709D361010 | IV3610 | IVYTECH | 2020.01.08 | 2021.01.07 |
| Temperature Chamber | 12108015 | DTL-003S101 | YOMA | 2020.01.08 | 2021.01.07 |

4.2 Conducted Emission Test Equipments

| Equipment Name | Serial No. | Type | Manufacturer | Cal. Date | Due Date |
|----------------------------------|--------------------|-------------|------------------------------|------------|------------|
| Receiver | MY56400093 | N9038A | KEYSIGHT | 2020.03.26 | 2021.03.25 |
| LISN | 812744 | NSLK 8127 | Schwarzbeck | 2020.03.26 | 2021.03.25 |
| Pulse Limiter (10dB) | VTSD 9561 F-B #206 | VTSD 9561-F | Schwarzbeck | 2020.07.24 | 2021.07.23 |
| Coaxial cable(BNC) (30MHz-26GHz) | CB01 | EMC01 | Morlab | N/A | N/A |
| Dell Computer | N/A | Vostro 5370 | Made in China | N/A | N/A |
| Dell adapter | N/A | LA45NM140 | Lite-On Technology Co., Ltd. | N/A | N/A |

4.3 Test Software Utilized

| Model | Version Number | Manufacturer |
|--------------------|-----------------|--------------|
| TS+ -[JS32-RE] | Version 2.5.0.6 | Tonscend |
| TS+ -[JS32-CE] | Version 2.5.0.0 | Tonscend |
| PMM Emission Suite | Version 2.02 | narda |

————— END OF REPORT —————