

TEST REPORT

Application No.: SZEM2107006533HS
Applicant: Shenzhen City yuan Rui Mdt InfoTech Ltd
Address of Applicant: Room 201,A Bldg,NO.1QianWan 1st Road,ShenZhen Hong Kong Cooperation Zone,QianHai,ShenZhen,China
Manufacturer: Shenzhen City yuan Rui Mdt InfoTech Ltd
Address of Manufacturer: Room 201,A Bldg,NO.1QianWan 1st Road,ShenZhen Hong Kong Cooperation Zone,QianHai,ShenZhen,China
Factory: Shenzhen Cosinno Technology Co., Ltd.
Address of Factory: 1F/2F/3F, Building 12, The Third Industrial Zone, Beixia North Road, Xiner Community, Xinqiao Street, Baoan Zone, Shenzhen City, China
Equipment Under Test (EUT):
EUT Name: FOOT LEG MASSAGER
Model No.: NK-FLM01
Trade Mark: NEKTECK
FCC ID: 2A2NPNK-FLM01
Standard(s) : 47 CFR Part 15, Subpart C 15.231
Date of Receipt: 2021-07-16
Date of Test: 2021-07-26 to 2021-07-29
Date of Issue: 2021-08-02

| | |
|---------------------|--------------|
| Test Result: | Pass* |
|---------------------|--------------|

* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu

Keny Xu
EMC Laboratory Manager


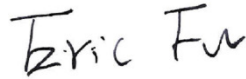


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| Revision Record | | | | |
|-----------------|---------|------------|----------|----------|
| Version | Chapter | Date | Modifier | Remark |
| 01 | | 2021-08-02 | | Original |
| | | | | |
| | | | | |

| | | | |
|--------------------------|--|---|--|
| Authorized for issue by: | | | |
| | |  | |
| | | Powell Bao/Project Engineer | |
| | |  | |
| | | Eric Fu/Reviewer | |

2 Test Summary

| Radio Spectrum Technical Requirement | | | | |
|--------------------------------------|----------------------------------|--------|----------------------------------|--------|
| Item | Standard | Method | Requirement | Result |
| Antenna Requirement | 47 CFR Part 15, Subpart C 15.231 | N/A | 47 CFR Part 15, Subpart C 15.203 | Pass |

| Radio Spectrum Matter Part | | | | |
|--|----------------------------------|--|--|--------|
| Item | Standard | Method | Requirement | Result |
| 20dB Bandwidth | 47 CFR Part 15, Subpart C 15.231 | ANSI C63.10 (2013) Section 6.9 | 47 CFR Part 15, Subpart C 15.231(c) | Pass |
| Radiated Emissions | | ANSI C63.10 (2013) Section 6.4&6.5&6.6 | 47 CFR Part 15C Section 15.231(b) and 15.209 | Pass |
| Dwell Time (15.231(a)) | | ANSI C63.10 (2013) Section 7.5 | 47 CFR Part 15, Subpart C 15.231(a) | Pass |
| Field Strength of the Fundamental Signal (15.231(b)) | | ANSI C63.10 (2013) Section 6.5 | 47 CFR Part 15, Subpart C 15.231(b) | Pass |

N/A: Not applicable



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9 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS)28



4 General Information

4.1 Details of E.U.T.

| | |
|---------------------|--|
| Power supply: | Remote controller(DC3.0V with DC1.5V x 2 "AAA" batteries) |
| Operation Frequency | 433.92MHz |
| Channel Numbers: | 1 |
| Modulation Type: | ASK |
| Antenna Gain: | 0dBi |
| Antenna Type: | integral antenna |

4.2 Description of Support Units

| Description | Manufacturer | Model No. | Serial No. |
|-------------|--------------|-----------|------------|
| -- | -- | -- | -- |

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

| Test Item | Measurement Uncertainty |
|--|---------------------------------------|
| 20dB Bandwidth | 3% |
| Radiated Emissions | 4.5dB (below 1GHz)/4.8dB (above 1GHz) |
| Dwell Time (15.231(a)) | 3% |
| Field Strength of the Fundamental Signal (15.231(b)) | 4.5dB |

Remark:

The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

4.4 Test Location

All tests were performed at:

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Address 1: No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Address 2: Room 105, Building A, Xinlong Technology Industrial Park, No. 50 Fengtang Road, Xintian Community, Fuyong Street, Bao'an District, Shenzhen, China

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

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

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Innovation, Science and Economic Development Canada**

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CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

| 20dB Bandwidth | | | | | |
|--------------------------------------|-----------------|-----------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Shielding Room | SAEMC | MSR733 | SEM001-09 | 2019-06-13 | 2022-06-12 |
| DC Power Supply | Rohde & Schwarz | NGSM 32/10 | SEM011-04 | 2021-03-23 | 2022-03-22 |
| Spectrum Analyzer | Rohde & Schwarz | FSP | SEM004-06 | 2020-09-23 | 2021-09-22 |
| Measurement Software | TST | TST PASS V1.0.5 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM031-02 | 2021-07-09 | 2022-07-08 |
| Attenuator | Huber+Suhner | 6620_SMA-50-1 | SEM021-09 | N/A | N/A |
| Signal Generator | KEYSIGHT | N5173B | SEM006-05 | 2020-09-23 | 2021-09-22 |
| Power Meter | Rohde & Schwarz | NRVS | SEM014-02 | 2020-09-23 | 2021-09-22 |
| Electric and Magnetic Field Analyzer | Narda | EHP-50F | SEM022-05 | 2020-11-28 | 2021-11-27 |

| Dwell Time (15.231(a)) | | | | | |
|--------------------------------------|-----------------|-----------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Shielding Room | SAEMC | MSR733 | SEM001-09 | 2019-06-13 | 2022-06-12 |
| DC Power Supply | Rohde & Schwarz | NGSM 32/10 | SEM011-04 | 2021-03-23 | 2022-03-22 |
| Spectrum Analyzer | Rohde & Schwarz | FSP | SEM004-06 | 2020-09-23 | 2021-09-22 |
| Measurement Software | TST | TST PASS V1.0.5 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM031-02 | 2021-07-09 | 2022-07-08 |
| Attenuator | Huber+Suhner | 6620_SMA-50-1 | SEM021-09 | N/A | N/A |
| Signal Generator | KEYSIGHT | N5173B | SEM006-05 | 2020-09-23 | 2021-09-22 |
| Power Meter | Rohde & Schwarz | NRVS | SEM014-02 | 2020-09-23 | 2021-09-22 |
| Electric and Magnetic Field Analyzer | Narda | EHP-50F | SEM022-05 | 2019-11-28 | 2020-11-27 |

| Field Strength of the Fundamental Signal (15.231(b)) | | | | | |
|--|--------------|-----------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Pre-Amplifier | HP | 8447D | SEM005-02 | 2020-09-24 | 2021-09-23 |
| Trilog-Broadband Antenna | Schwarzbeck | VULB9168 | SEM003-26 | 2019-10-14 | 2022-10-13 |
| Coaxial Cable | SGS | N/A | SEM035-01 | 2021-05-17 | 2022-05-16 |
| EMI Test Receiver | Agilent | N9038A | SEM004-05 | 2020-09-24 | 2021-09-23 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| 966 Anechoic Chamber | CRT | N/A | SEM001-13 | 2019-10-12 | 2022-10-11 |



| Radiated Emissions (30MHz-1GHz) | | | | | |
|---------------------------------|--------------|-----------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Pre-Amplifier | HP | 8447D | SEM005-02 | 2020-09-24 | 2021-09-23 |
| Trilog-Broadband Antenna | Schwarzbeck | VULB9168 | SEM003-26 | 2019-10-14 | 2022-10-13 |
| Coaxial Cable | SGS | N/A | SEM035-01 | 2021-05-17 | 2022-05-16 |
| EMI Test Receiver | Agilent | N9038A | SEM004-05 | 2020-09-24 | 2021-09-23 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| 966 Anechoic Chamber | CRT | N/A | SEM001-13 | 2019-10-12 | 2022-10-11 |

| Radiated Spurious Emissions(Above 1GHz) | | | | | |
|---|----------------------|-------------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| 966 Anechoic Chamber | CRT | N/A | SEM001-13 | 2019-10-12 | 2022-10-11 |
| MXA Signal Analyzer | Keysight | N9020A | SEM004-19 | 2021-05-31 | 2022-05-30 |
| Double-Ridged Waveguide Horn | ETS-LINDGREN | 3117 | SEM003-10 | 2020-05-27 | 2023-05-26 |
| Low Noise Amplifier | Black Diamond Series | BDLNA-0118-352810 | SEM005-05 | 2021-04-07 | 2022-04-06 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM035-01 | 2021-05-17 | 2022-05-16 |

| General used equipment | | | | | |
|---------------------------------|--|----------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Humidity/ Temperature Indicator | Shanghai Meteorological Industry Factory | ZJ1-2B | SEM002-04 | 2020-09-15 | 2021-09-14 |
| Humidity/ Temperature Indicator | MINGGAO | TH607 | SEM002-23 | 2020-09-15 | 2021-09-14 |
| Barometer | Shanghai Meteorological Industry Factory | DYM3 | SEM002-24 | 2020-09-20 | 2021-09-20 |



6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

15.203 requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0dBi.

Antenna location: Refer to Internal photos



7 Radio Spectrum Matter Test Results

7.1 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.231(c)
Test Method: ANSI C63.10 (2013) Section 6.9
Limit:

| Frequency range(MHz) | Limit |
|----------------------|---|
| 70-900 | No wider than 0.25% of the center frequency |
| Above 900 | No wider than 0.5% of the center frequency |

7.1.1 E.U.T. Operation

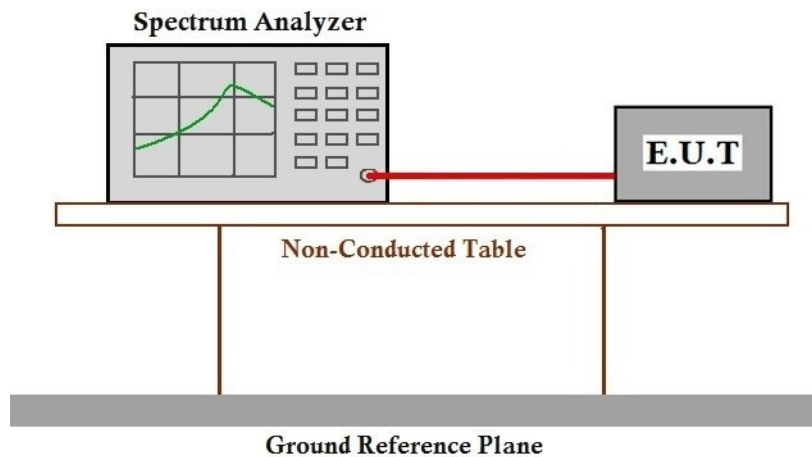
Operating Environment:

Temperature: 22.8 °C Humidity: 48.9 % RH Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|--------------------------|--------------|--|
| Final test | 00 | TX mode_Keep the EUT in transmitting with modulation mode. |

7.1.3 Test Setup Diagram



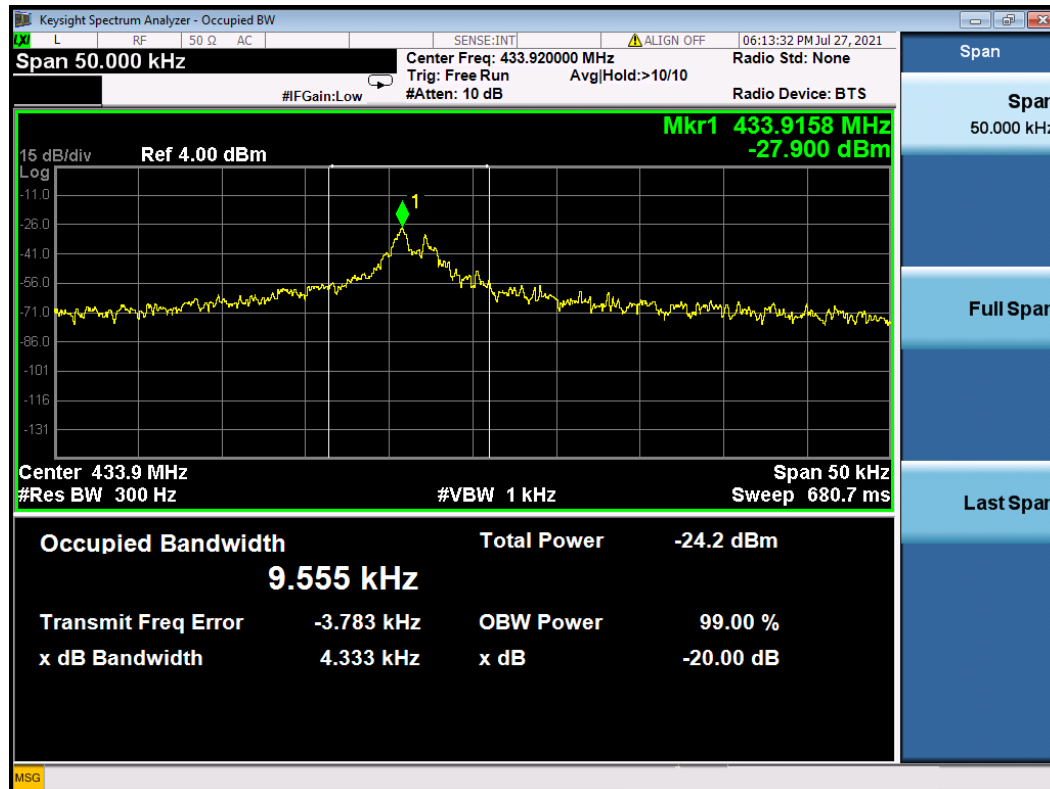
7.1.4 Measurement Procedure and Data



Transmitter mode

| Test channel | 20dB Bandwidth (KHz) | Limit (KHz) | Results |
|--------------|----------------------|-------------|---------|
| 433.92MHz | 4.33 | 1084.8 | Pass |

Test Mode: 20DB_433.92MHz_



7.2 Radiated Emissions

Test Requirement 47 CFR Part 15C Section 15.231(b) and 15.209

Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6

Measurement Distance: 3m

Limit:

| Frequency(MHz) | Field strength(microvolts/meter) | Measurement distance(meters) |
|----------------|----------------------------------|------------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| Above 960 | 500 | 3 |

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, 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.

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.8 °C

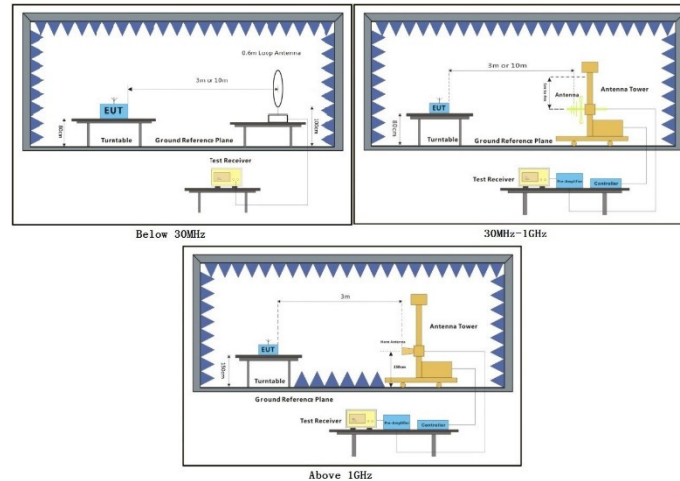
Humidity: 47.9 % RH

Atmospheric Pressure: 1010 mbar

7.2.1 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|--|
| Final test | 00 | TX mode_Keep the EUT in transmitting with modulation mode. |

7.2.2 Test Setup Diagram



7.2.3 Measurement Procedure and Data

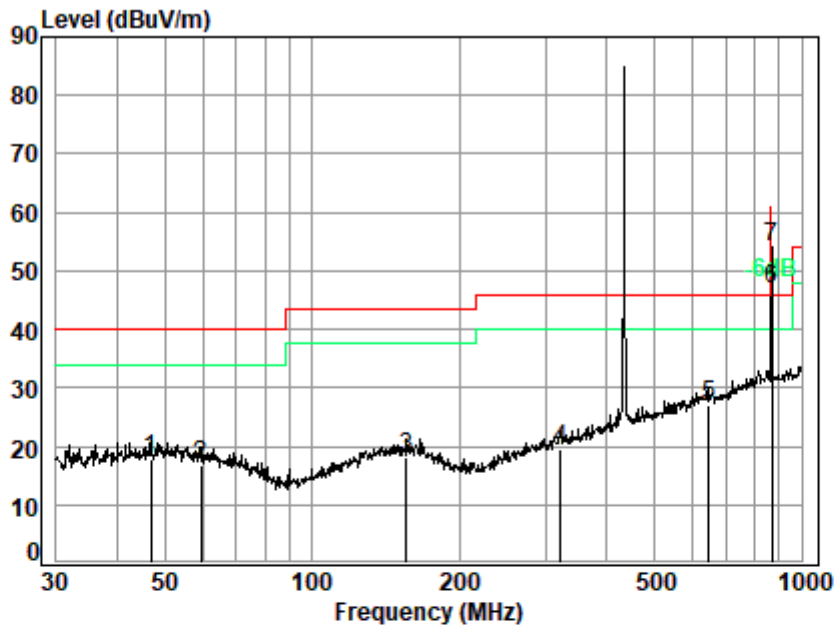
a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. c. 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. d. 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. e. 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. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. 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, quasi-peak or average method as specified and then reported in a data sheet. h. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report. Remark: 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor 2) Scan from 9kHz to 6GHz, 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) 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.



Below 1GHz

QP value:

Test Mode: 00; Polarity: Horizontal

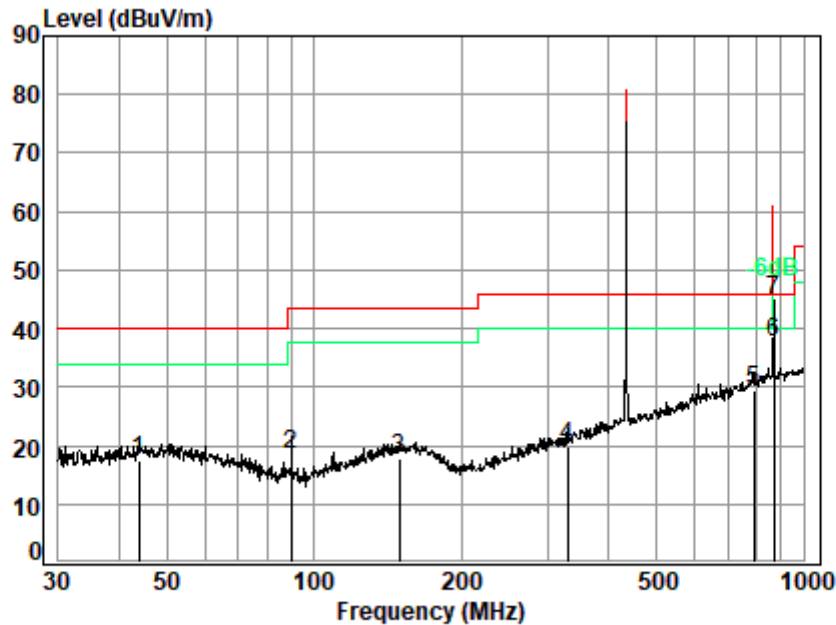


Site : chamber
Condition: 3m HORIZONTAL
Job No : 06533HS
Mode : 00

| | | Cable | Ant | Preamp | Read | Limit | Over | |
|------|----------|-------|--------|--------|-------|--------|--------|----------------|
| Freq | | Loss | Factor | Factor | Level | Level | Line | Limit Remark |
| MHz | | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 46.8303 | 0.21 | 19.94 | 25.87 | 23.63 | 17.91 | 40.00 | -22.09 QP |
| 2 | 59.2325 | 0.24 | 19.21 | 25.85 | 23.32 | 16.92 | 40.00 | -23.08 QP |
| 3 | 155.9101 | 0.81 | 19.36 | 25.52 | 23.56 | 18.21 | 43.50 | -25.29 QP |
| 4 | 322.1886 | 1.24 | 20.13 | 25.28 | 23.55 | 19.64 | 46.00 | -26.36 QP |
| 5 q | 647.3856 | 2.05 | 26.50 | 26.75 | 25.19 | 26.99 | 46.00 | -19.01 QP |
| 6 p | 869.1302 | 2.70 | 29.10 | 26.38 | 41.37 | 46.79 | 60.83 | -14.04 Average |
| 7 p | 869.1302 | 2.70 | 29.10 | 26.38 | 48.68 | 54.10 | 80.83 | -26.73 Peak |



Test Mode: 00; Polarity: Vertical



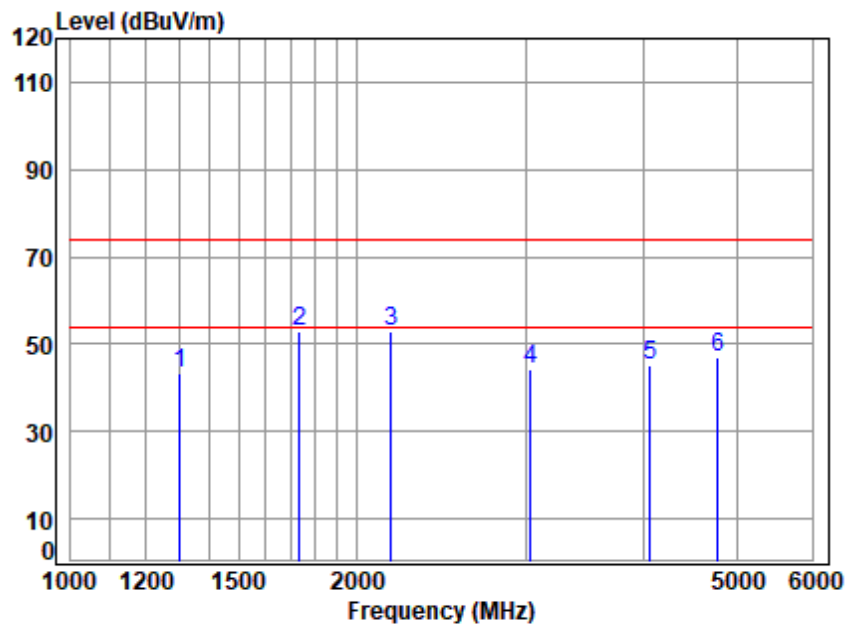
Site : chamber
Condition: 3m VERTICAL
Job No : 06533HS
Mode : 00

| | | Cable | Ant | Preamp | Read | Limit | Over | |
|------|----------|-------|--------|--------|-------|--------|--------|----------------|
| Freq | | Loss | Factor | Factor | Level | Line | Limit | Remark |
| MHz | | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 43.8119 | 0.21 | 19.78 | 25.87 | 23.44 | 17.56 | 40.00 | -22.44 QP |
| 2 | 89.9047 | 0.67 | 13.80 | 25.81 | 29.84 | 18.50 | 43.50 | -25.00 QP |
| 3 | 149.4857 | 0.85 | 19.28 | 25.54 | 23.04 | 17.63 | 43.50 | -25.87 QP |
| 4 | 329.0390 | 1.30 | 20.24 | 25.33 | 23.73 | 19.94 | 46.00 | -26.06 QP |
| 5 p | 790.6188 | 2.53 | 28.35 | 26.61 | 25.23 | 29.50 | 46.00 | -16.50 QP |
| 6 a | 869.1302 | 2.70 | 29.10 | 26.38 | 32.24 | 37.66 | 60.83 | -23.17 Average |
| 7 p | 869.1302 | 2.70 | 29.10 | 26.38 | 39.55 | 44.97 | 80.83 | -35.86 Peak |



Above 1GHz

Test Mode: 00; Polarity: Horizontal;

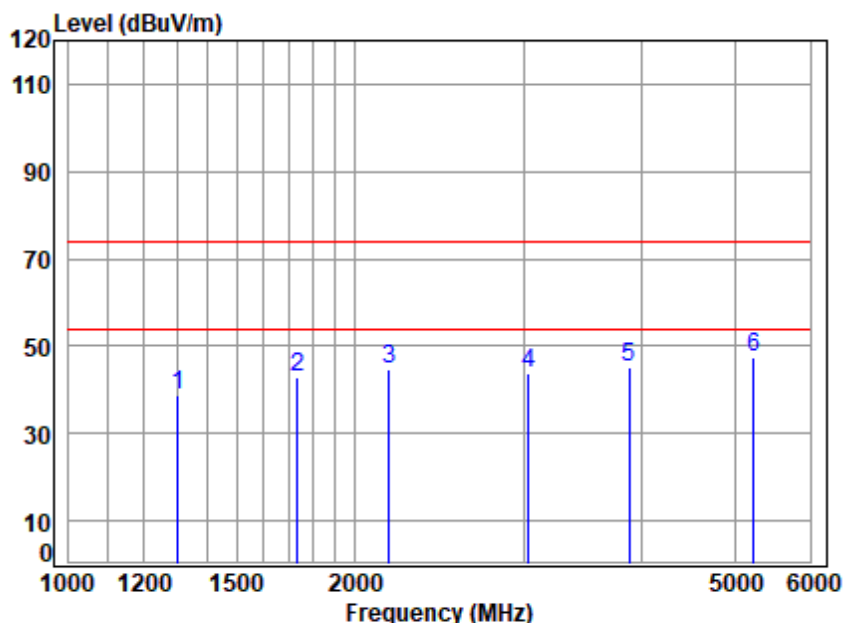


Site : chamber
Condition: 3m HORIZONTAL
Job No : 06533HS
Mode : 00
: 433M TX RSE

| | | Cable | Ant | Preamp | Read | Limit | Over | |
|--------------|------|--------|--------|--------|--------|--------|--------|--------|
| Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 1301.3320 | 3.37 | 26.45 | 47.99 | 61.67 | 43.50 | 74.00 | -30.50 | Peak |
| 2 1736.4830 | 4.27 | 27.83 | 48.04 | 68.86 | 52.92 | 74.00 | -21.08 | Peak |
| 3 p2168.5100 | 4.89 | 29.18 | 48.04 | 66.96 | 52.99 | 74.00 | -21.01 | Peak |
| 4 3037.0630 | 5.82 | 31.95 | 47.96 | 54.60 | 44.41 | 74.00 | -29.59 | Peak |
| 5 4052.6220 | 7.49 | 33.17 | 47.79 | 52.44 | 45.31 | 74.00 | -28.69 | Peak |
| 6 4778.8790 | 7.94 | 34.21 | 47.72 | 52.39 | 46.82 | 74.00 | -27.18 | Peak |



Test Mode: 00; Polarity: Vertical;



Site : chamber

Condition: 3m VERTICAL

Job No : 06533HS

Mode : 00

: 433M TX RSE

| | | Cable | Ant | Preamp | Read | Limit | Over | |
|---|-----------|-------|--------|--------|-------|--------|--------|--------------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 1301.3320 | 3.37 | 26.45 | 47.99 | 56.80 | 38.63 | 74.00 | -35.37 Peak |
| 2 | 1736.4830 | 4.27 | 27.83 | 48.04 | 58.90 | 42.96 | 74.00 | -31.04 Peak |
| 3 | 2168.5100 | 4.89 | 29.18 | 48.04 | 58.69 | 44.72 | 74.00 | -29.28 Peak |
| 4 | 3037.0630 | 5.82 | 31.95 | 47.96 | 54.09 | 43.90 | 74.00 | -30.10 Peak |
| 5 | 3875.0950 | 7.37 | 32.97 | 47.82 | 52.84 | 45.36 | 74.00 | -28.64 Peak |
| 6 | 5236.1460 | 8.29 | 34.83 | 47.66 | 52.06 | 47.52 | 74.00 | -26.48 Peak |



7.3 Dwell Time (15.231(a))

Test Requirement 47 CFR Part 15, Subpart C 15.231(a)

Test Method: ANSI C63.10 (2013) Section 7.8.4

Limit:

| Device type | Limit |
|--|--|
| Manually operated transmitter | The switch automatically deactivate the transmitter within not more than 5 seconds of being released |
| Automatically activated transmitter | Cease transmission within 5 seconds after activation |
| Periodic transmissions to determine system integrity of transmitters used in security or safety applications | The total transmission time does not exceed 2 seconds per hour |

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22.8 °C

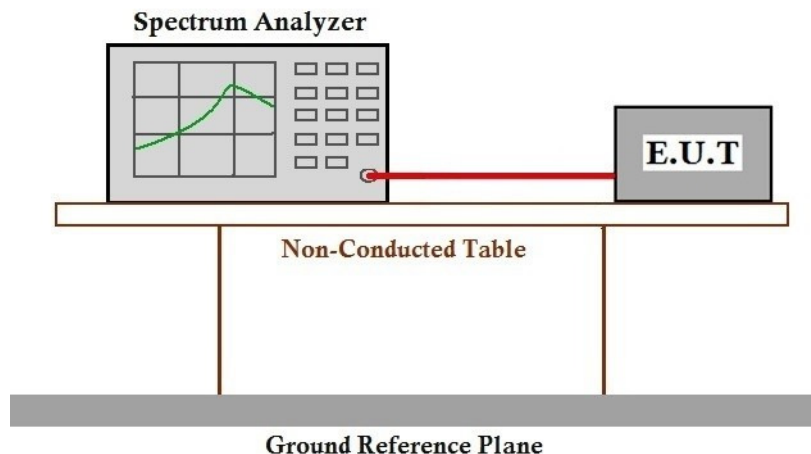
Humidity: 47.9 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|--|
| Final test | 00 | TX mode_Keep the EUT in transmitting with modulation mode. |

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

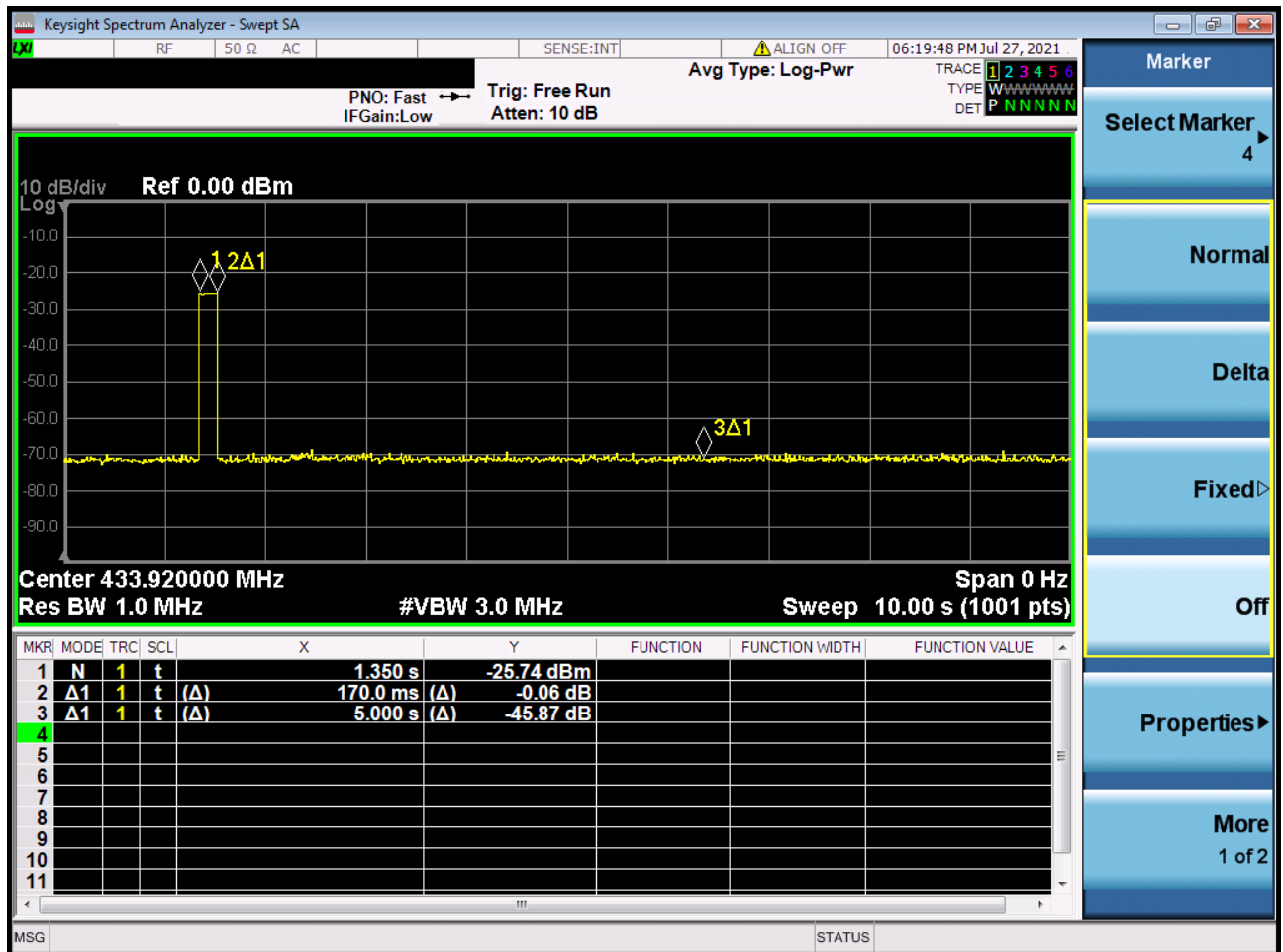


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| Test item | Limit (MHz) | Results |
|---------------------------|-------------|---------|
| Transmitting time:170.0ms | ≤5S | Pass |

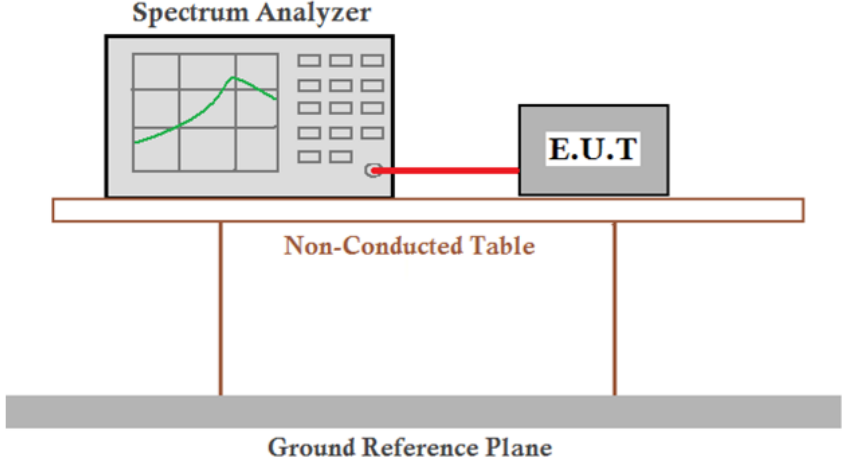


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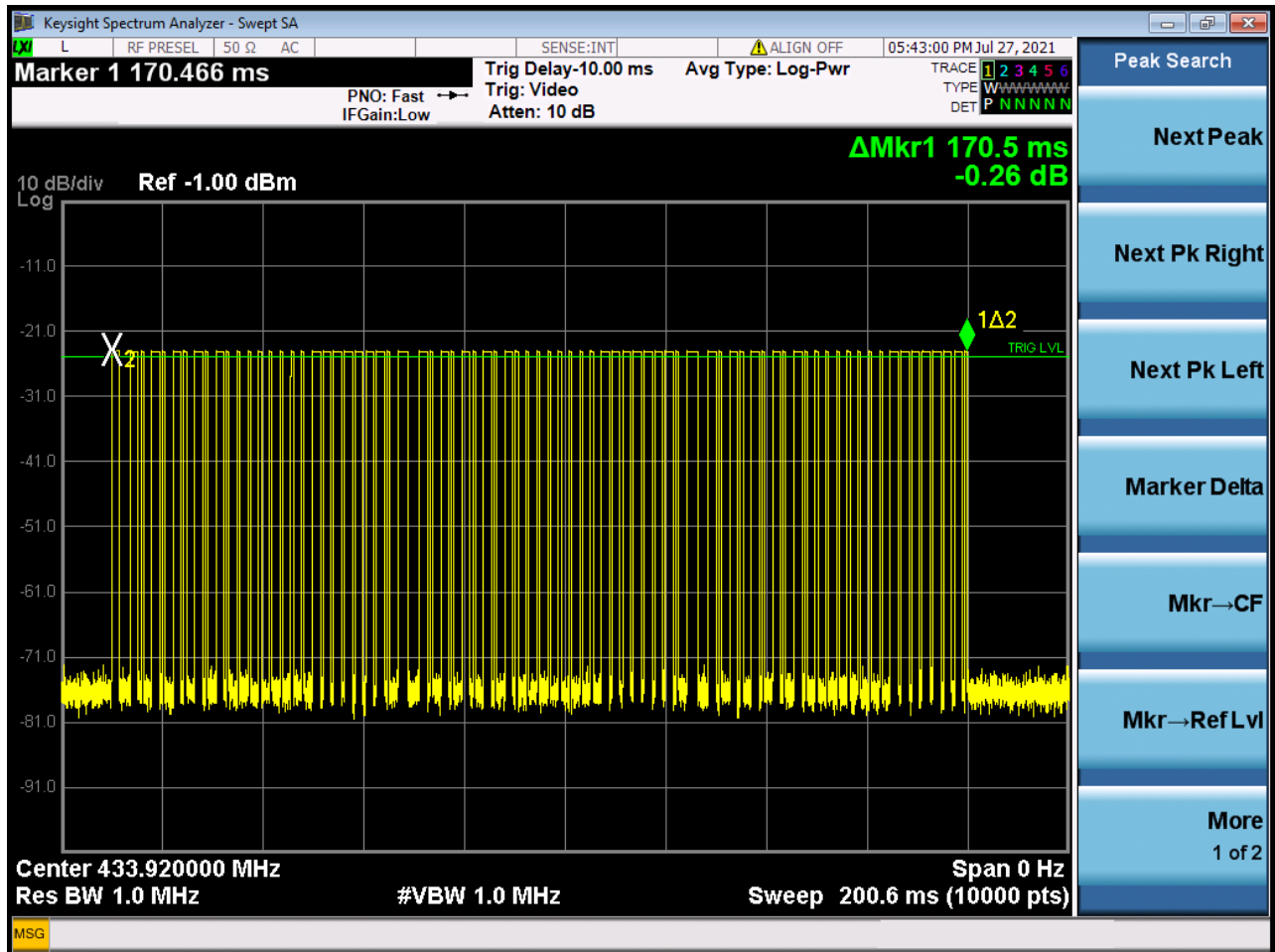
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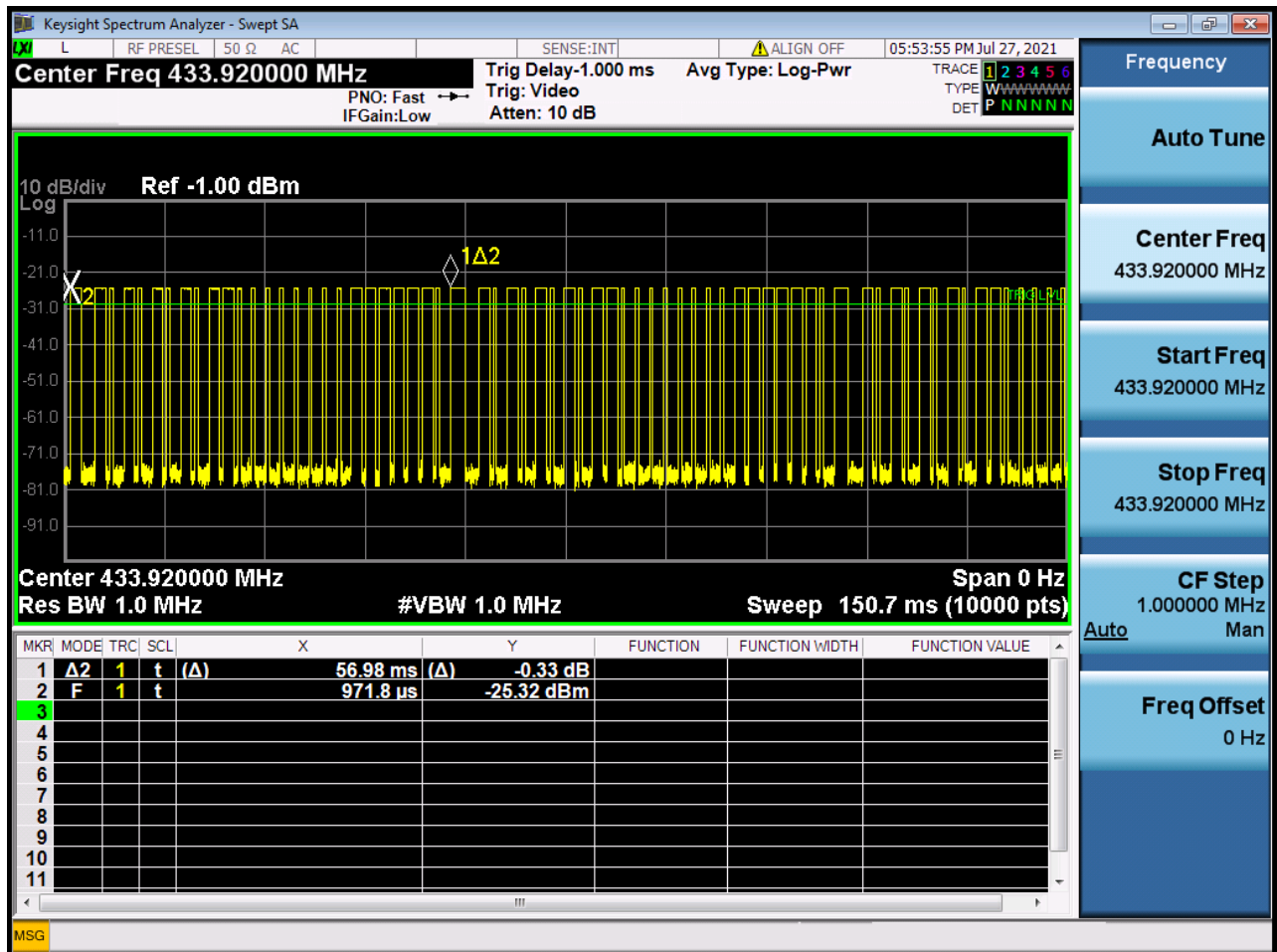
7.4 Duty Cycle

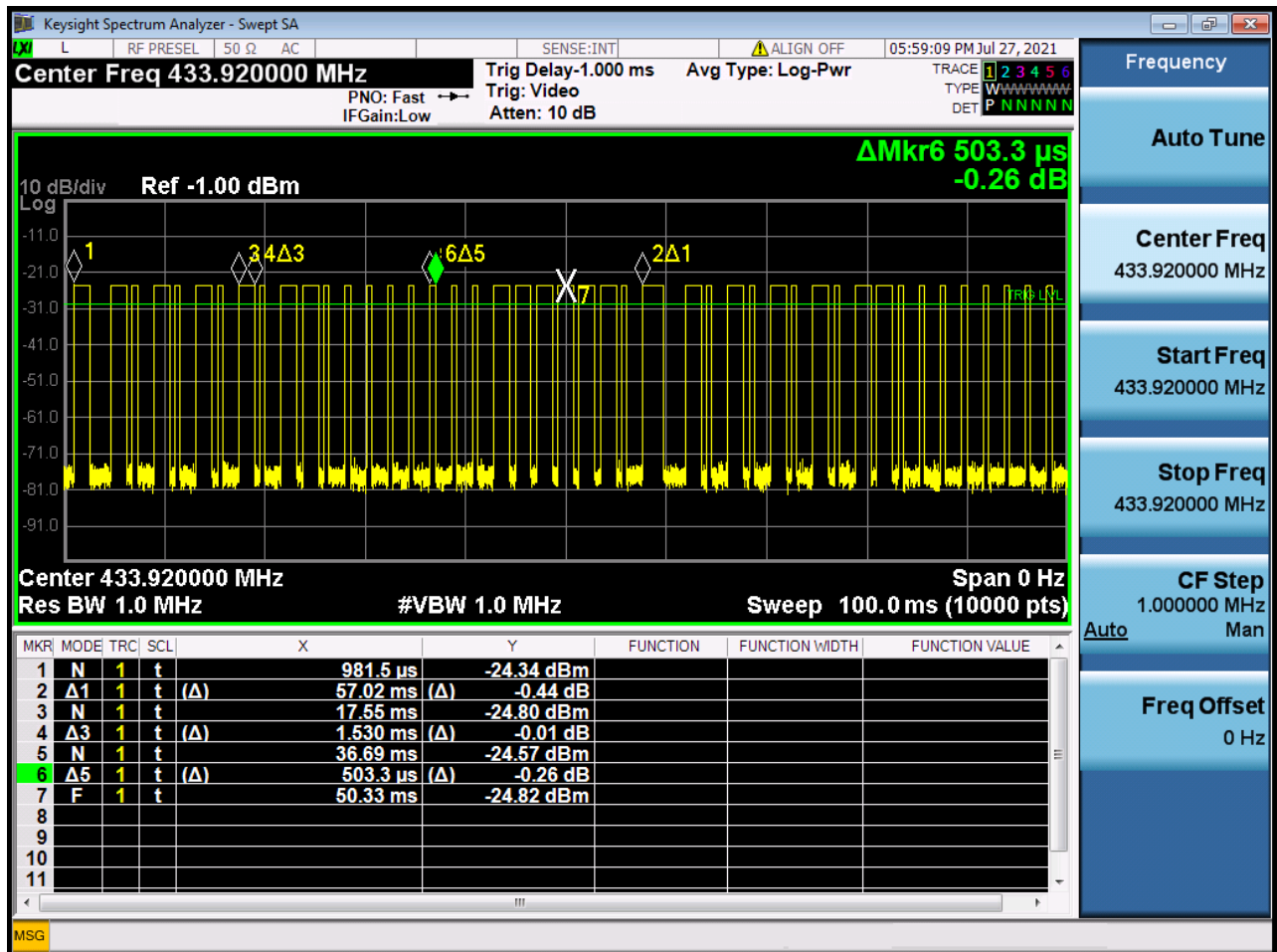
| | |
|-------------------|---|
| Test Requirement: | 47 CFR Part 15C Section 15.35 (c) |
| Test Method: | ANSI C63.10:2013 |
| Test Setup: |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p> |
| Limit: | N/A |
| Test Mode: | Transmitting mode |
| Instruments Used: | Refer to section 5 for details |
| Test Results: | Pass |



Test plot:







7.5 Field Strength of the Fundamental Signal (15.231(b))

Test Requirement 47 CFR Part 15, Subpart C 15.231(b)

Test Method: ANSI C63.10 (2013) Section 6.5

Measurement Distance: 3m

Limit:

| Fundamental frequency(MHz) | Field strength of fundamental(microvolts/meter) | Field strength of spurious emissions(microvolts/meter) |
|----------------------------|---|--|
| 40.66-40.70 | 2250 | 225 |
| 70-130 | 1250 | 125 |
| 130-174 | 1250 to 3750 | 125 to 375 |
| 174-260 | 3750 | 375 |
| 260-470 | 3750 to 12500 | 375 to 1250 |
| Above 470 | 12500 | 1250 |

Remark: the emission limit is based on measurement instrumentation employing an average detector at a distance of 3 meters. The frequencies above 1000MHz 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.

7.5.1 E.U.T. Operation

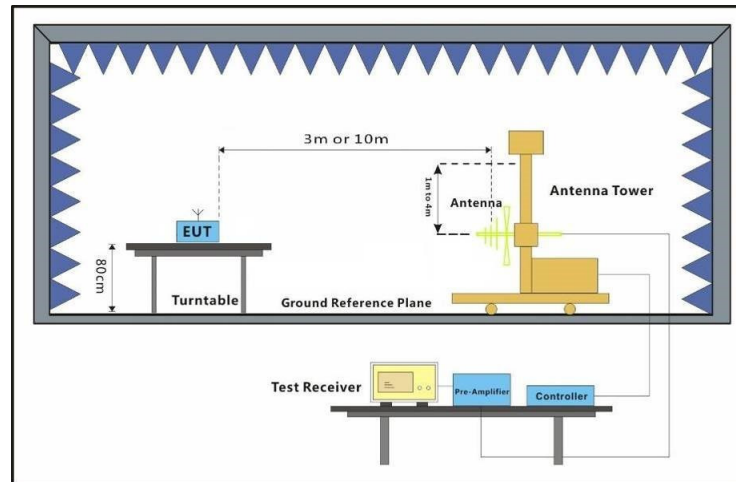
Operating Environment:

Temperature: 21.5 °C Humidity: 48.9 % RH Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|--|
| Final test | 00 | TX mode_Keep the EUT in transmitting with modulation mode. |

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 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.
- 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.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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, quasi-peak or average method as specified and then reported in a data sheet.
- The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



| Average value: | |
|--------------------|---|
| Calculate Formula: | Average value=Peak value + PDCF |
| | PDCF=20 log(Duty cycle)= 20 log[43.1/100]=-7.31dB |
| | Duty cycle= T on time / T period |
| Test data: | Ton time =1.53*20+0.503*25=43.1ms |
| | T period =100ms |

| Freq (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Preamp Gain (dB) | Read Level (dBuV) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Pol/Phase | Remark |
|------------|-----------------|-----------------------|------------------|-------------------|----------------|---------------------|-----------------|------------|--------|
| 433.92 | 1.53 | 22.67 | 26.0 | 83.83 | 82.03 | 100.83 | -18.80 | HORIZONTAL | Peak |
| 433.92 | 1.52 | 22.70 | 26.01 | 77.10 | 75.31 | 100.83 | -25.52 | VERTICAL | Peak |

| Freq (MHz) | PDCF(dB) | Average Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization | Remark |
|------------|----------|------------------------|---------------------|-----------------|--------------|---------|
| 433.92 | -7.31 | 74.72 | 80.83 | -6.11 | Horizontal | Average |
| 433.92 | | 69.79 | 80.83 | -12.83 | Vertical | Average |



8 Test Setup Photo

Refer to test setup photos for SZEM2107006533HS

9 EUT Constructional Details (EUT Photos)

Refer to external and internal photos for SZEM2107006533HS

- End of the Report -

