Shenzhen CTL Testing Technology Co., Ltd.
Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

# TEST REPORT

## FCC PART 15.236

| | | |
|---|---|---|
| **Report Reference No.** ..... : | **CTL2202172111-WF** | |
| Compiled by:<br>( position+printed name+signature) | Happy Guo<br>(File administrators) | |
| Tested by:<br>( position+printed name+signature) | Cary Gao<br>(Test Engineer) | |
| Approved by:<br>( position+printed name+signature) | Ivan Xie<br>(Manager) | |

| | |
|---|---|
| **Product Name** ..... : | Wireless Voice Transmission System |
| **Model/Type reference** ..... : | EX-938T |
| **List Model(s)**..... : | EX-938 |
| **Trade Mark**..... : | EXMAX |
| **FCC ID**..... : | 2ANVTEX-938T |
| **Applicant's name** ..... : | **Shenzhen Qi Xin Chuang Zhan Technology Co., LTD** |
| **Address of applicant** ..... : | Rm 928, Bldg A, Fengtian Industrial Park, No.308, Qinhu Xuegang Bei Rd.Longhua District, Shenzhen, China |
| **Test Firm**..... : | **Shenzhen CTL Testing Technology Co., Ltd.** |
| **Address of Test Firm** ..... : | Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055 |
| **Test specification**..... : | |
| Standard ..... : | **FCC Part 15.236:**Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz |
| TRF Originator ..... : | Shenzhen CTL Testing Technology Co., Ltd. |
| Master TRF..... : | Dated 2011-01 |
| **Date of receipt of test item** ..... : | Feb. 22, 2022 |
| **Date of Test Date**..... : | Feb. 22, 2022–Mar. 09, 2022 |
| **Data of Issue** ..... : | Mar. 10, 2022 |
| **Result**..... : | **Pass** |

# TEST REPORT

| Test Report No. : | CTL2202172111-WF | Mar. 10, 2022<br>Date of issue |
|---|---|---|

| | | |
|---|---|---|
| Equipment under Test | : | Wireless Voice Transmission System |
| Sample No. | | CTL220217211-1-S001 |
| Model /Type | : | EX-938T |
| Listed Models | : | EX-938 |
| **Applicant** | : | **Shenzhen Qi Xin Chuang Zhan Technology Co., LTD** |
| Address | : | Rm 928, Bldg A, Fengtian Industrial Park, No.308, Qinhu Xuegang Bei Rd.Longhua District, Shenzhen, China |
| **Manufacturer** | : | **Shenzhen Qi Xin Chuang Zhan Technology Co., LTD** |
| Address | : | Rm 928, Bldg A, Fengtian Industrial Park, No.308, Qinhu Xuegang Bei Rd.Longhua District, Shenzhen, China |

| Test result | Pass * |
|---|---|

* In the configuration tested, the EUT complied with the standards specified page 5.

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.

# ** Modified History **

| Revision | Description | Issued Data | Report No. | Remark |
|---|---|---|---|---|
| Version 1.0 | Initial Test Report Release | 2022-03-10 | CTL2202172111-WF | Tracy Qi |
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## Table of Contents Page

# 1. SUMMARY

## 1.1. TEST STANDARDS

The tests were performed according to following standards:
FCC Rules Part 15.236: Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz

ANSI C63.10:2013: American National Standard for Testing Unlicensed Wireless Devices

According to KDB 206256 D01 Wireless Microphone Certification v02.

## 1.2. Test Description

| TestSpecificationclause | | |
|---|---|---|
| FCC Part 15.207 | AC Power Conducted Emission | N/A |
| FCC Part 15.236(d) | RF Power Output | PASS |
| FCC Part 15.236(f)(2) | Occupied Bandwidth | PASS |
| FCC Part 15.236(g)<br>ETSI EN 300 422-1 v1.4.2 | Necessary Bandwidth<br>Spurious emissions | PASS |
| FCC Part 15.236(f)(3) | Frequency Stability | PASS |

## 1.3. Test Facility

### 1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSIC63.10 requirements.

### 1.3.2 Laboratoryaccreditation

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

### CNAS-Lab Code: L7497

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

### A2LA-Lab Cert. No. 4343.01

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

### IC Registration No.: 9618B

### CABidentifier: CN0041

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered byInnovation, Science and Economic Development Canada to test to Canadian radio equipment requirementswith Registration No.: 9618B on Jan.22, 2019.

## 1.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd.quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

| Test | Measurement Uncertainty | Notes |
|---|---|---|
| Transmitter power conducted | ±0.57 dB | (1) |
| Transmitter power Radiated | ±2.20 dB | (1) |
| Conducted spurious emission 9KHz-40 GHz | ±2.20 dB | (1) |
| Occupied Bandwidth | ±0.01ppm | (1) |
| Radiated Emission9KHz~30MHz | ±3.40dB | (1) |
| Radiated Emission30~1000MHz | ±4.10dB | (1) |
| Radiated Emission Above 1GHz | ±4.32dB | (1) |
| Conducted Disturbance0.15~30MHz | ±3.20dB | (1) |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

# 2. GENERAL INFORMATION

## 2.1. Environmental conditions

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

| | |
|---|---|
| Normal Temperature: | 25°C |
| Relative Humidity: | 55 % |
| Air Pressure: | 101 kPa |

## 2.2. General Descriptionof EUT

| | |
|---|---|
| Product Name: | Wireless Voice Transmission System |
| Model/Type reference: | EX-938T |
| Power supply: | DC 3V by 2*AA batteries |
| **Wireless microphone** | |
| Modulation: | FM |
| Operation frequency: | 540.5-549.5MHz |
| Channel number: | 3 |
| Antenna type: | Internal Antenna |
| Antenna gain: | 0dBi |

Note1: For more details, please refer to the user's manual of the EUT.
Note2: Antenna gain provided by the applicant.
Note3: The product cannot be configured to operate outside the current frequency band plan through software configuration, Third parties are not allowed to change any software parameter configuration of the product.

## 2.3. Description of Test Modes and Test Frequency

The system is configured to test under continuous transmission conditions and transmission frequency through the switch button control. And the number of channels provided to EUT is 03 select channel 01/02/03 for testing.

**Operation Frequency List：**

| Channel | Frequency (MHz) |
|---|---|
| **01** | **540.5** |
| **02** | **545.5** |
| **03** | **549.5** |

Note: The line display in grey is the channel selected to perform test.

## 2.4. Equipments Used during the Test

| Test Equipment | Manufacturer | Model No. | Serial No. | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| LISN | R&S | ESH2-Z5 | 860014/010 | 2021/05/13 | 2022/05/12 |
| Bilog Antenna | Sunol Sciences Corp. | JB1 | A061713 | 2021/04/06 | 2022/04/05 |
| EMI Test Receiver | R&S | ESCI | 1166.5950.03 | 2021/05/16 | 2022/05/15 |
| Spectrum Analyzer | Agilent | E4407B | MY41440676 | 2021/05/13 | 2022/05/12 |
| Spectrum Analyzer | Agilent | N9020A | US46220290 | 2021/05/13 | 2022/05/12 |
| Spectrum Analyzer | Keysight | N9020A | MY53420874 | 2021/05/13 | 2022/05/12 |
| Controller | EM Electronics | EM 1000 | 060859 | 2021/05/18 | 2022/05/17 |
| Horn Antenna | Sunol Sciences Corp. | DRH-118 | A062013 | 2021/05/18 | 2022/05/17 |
| Active Loop Antenna | Da Ze | ZN30900A | / | 2021/05/18 | 2022/05/17 |
| Amplifier | Agilent | 8449B | 3008A02306 | 2021/05/13 | 2022/05/12 |
| Amplifier | Agilent | 8447D | 2944A10176 | 2021/05/13 | 2022/05/12 |
| Temperature/Humidity Meter | Gangxing | CTH-608 | 02 | 2021/05/13 | 2022/05/12 |
| Power Sensor | Agilent | U2021XA | MY55130004 | 2021/05/13 | 2022/05/12 |
| Power Sensor | Agilent | U2021XA | MY55130006 | 2021/05/13 | 2022/05/12 |
| Spectrum Analyzer | RS | FSP | 1164.4391.38 | 2021/05/13 | 2022/05/12 |
| Audio signal generator | GOOD WILL INSTRUMENT | 8121C | NS 021110854 | 2021/04/28 | 2022/04/27 |
| Audio Analyzer | R&S | UPV | 1146.2003K02-101721-UW | 2021/04/28 | 2022/04/27 |

| Test Software | |
|---|---|
| Name of Software | Version |
| TST-PASS | 1.0.5 |
| ES-K1(Below 1GHz) | V1.71 |
| e3(Above 1GHz) | 6.111221a |

The calibration interval was one year

## 2.5. Related Submittal(s) / Grant(s)

This submittal(s) (test report) is intended to comply with Section 15.236 of the FCC Part 15, Subpart C Rules.

## 2.6. Modifications

No modifications were implemented to meet testing criteria.

# 3. TEST CONDITIONS AND RESULTS

## 3.1. Conducted Emissions Test

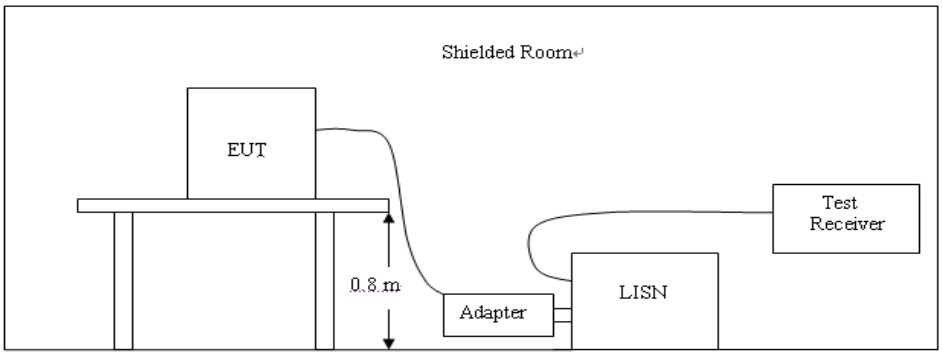
**LIMIT**

FCC CFR Title 47 Part 15 Subpart C Section 15.207

| Frequency range (MHz) | Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

**TEST CONFIGURATION**




**TEST PROCEDURE**

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. Ifa EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

**TEST RESULTS**

Battery Powered Products Do Not Require This Test.

## 3.2. Maximum Output Power

**Limit**

The maximum radiated power shall not exceed the following values:

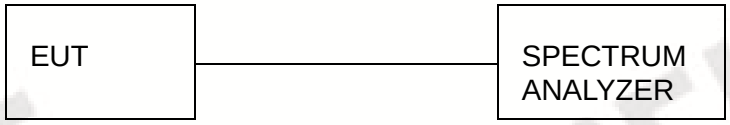
(1) In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP

(2) In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW EIRP.

**Test Procedure**

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.

**Test Configuration**

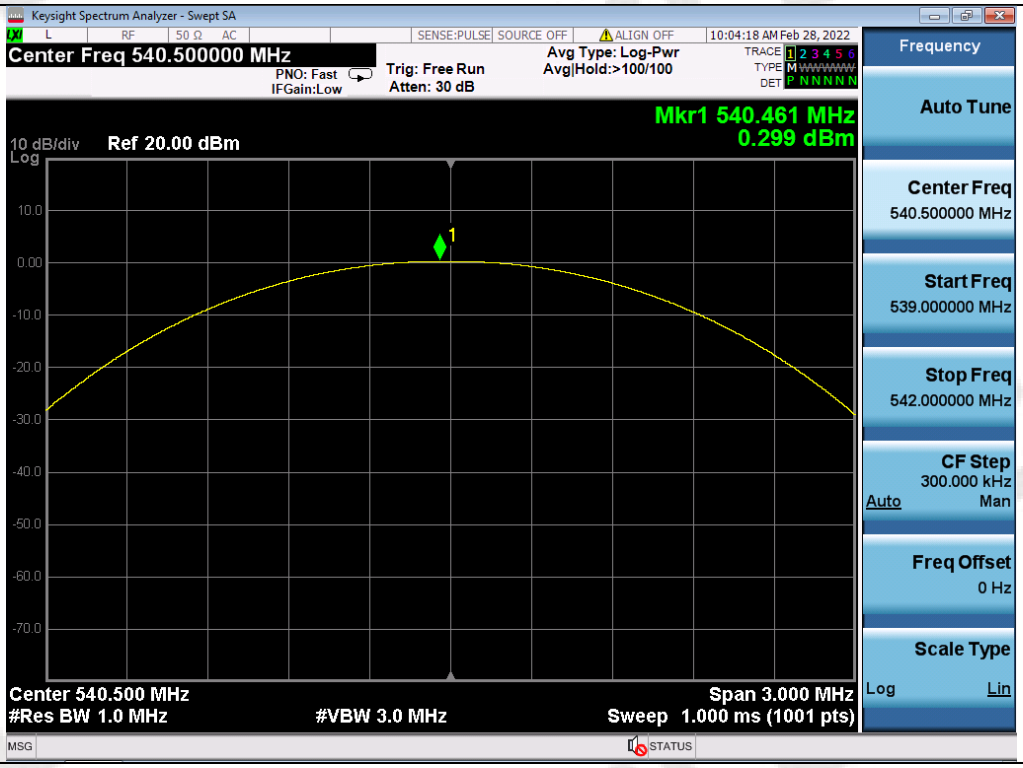



**Test Results**

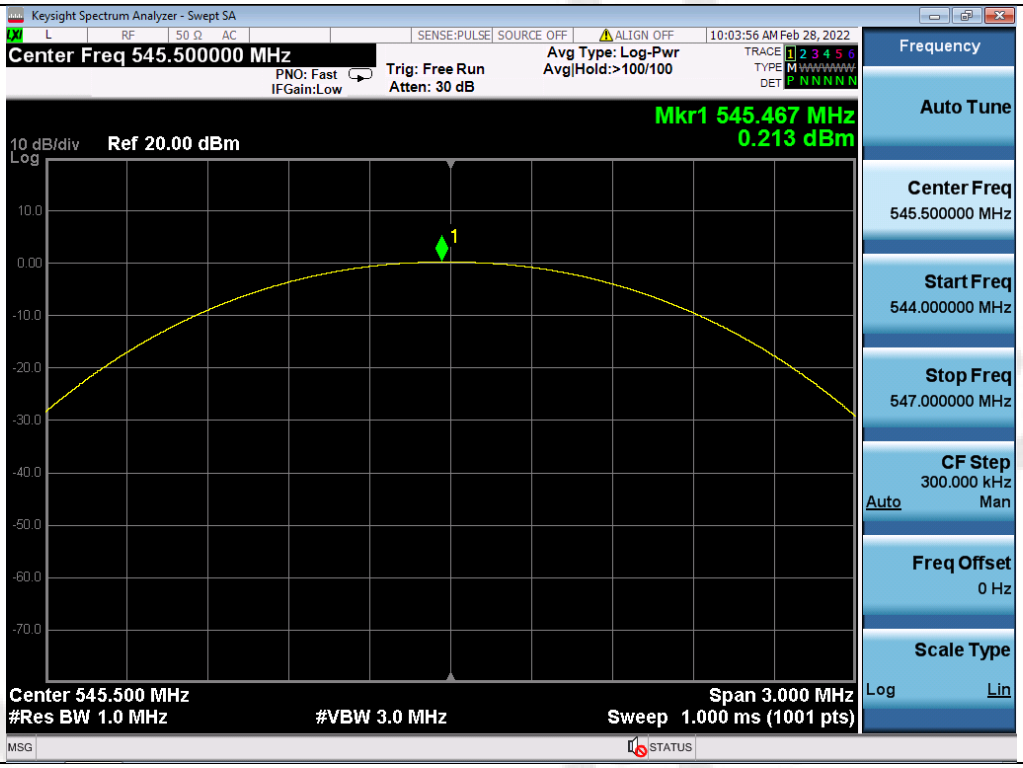
| Modulation | Channel | Output power (dBm) | Ant. Gain (dBi) | EIRP (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| FM | CH01 | 0.299 | 0.0 | 0.299 | 17 | Pass |
| | CH02 | 0.213 | 0.0 | 0.213 | 17 | Pass |
| | CH03 | 0.160 | 0.0 | 0.160 | 17 | Pass |

Note: 1.The test results including the cable lose.
2.The RF cable is 50 ohm.

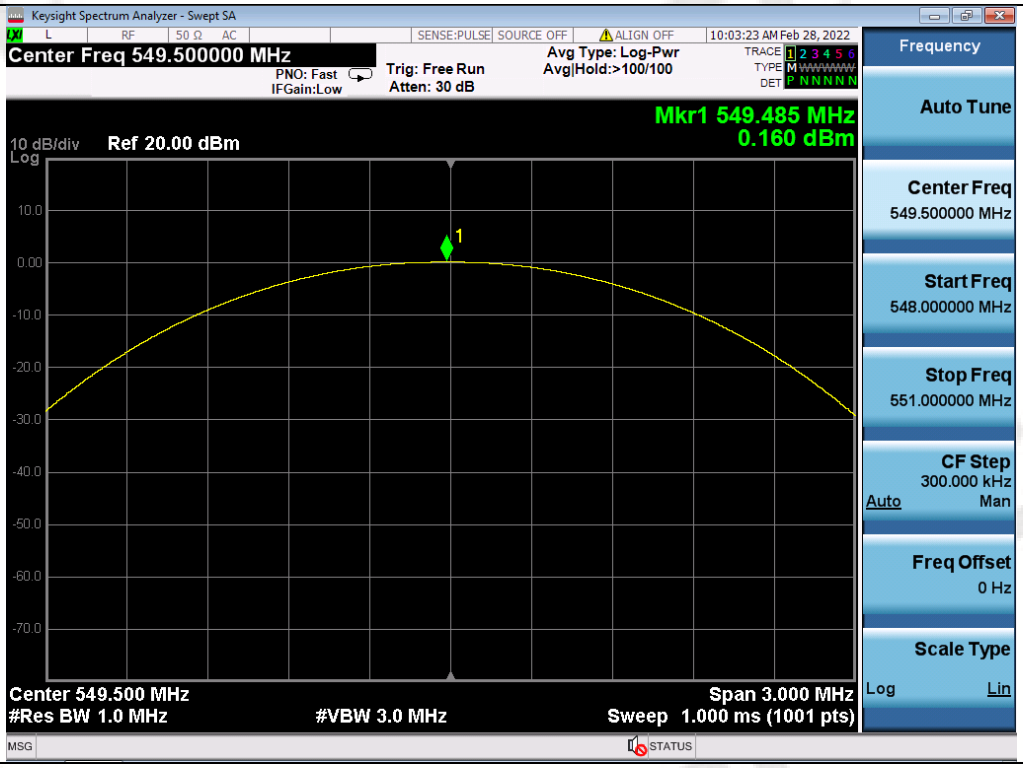
**Test plot as follows:**




*CH01*




*CH02*


Keysight Spectrum Analyzer - Swept SA
Center Freq 549.500000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:03:23 AM Feb 28, 2022
Mkr1 549.485 MHz
0.160 dBm
10 dB/div
Log
Ref 20.00 dBm
Center 549.500 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Span 3.000 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
549.500000 MHz
Start Freq
548.000000 MHz
Stop Freq
551.000000 MHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin
MSG
STATUS

*CH03*

## 3.2. Occupied Bandwidth Measurement

**Limit**

One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200 kHz.

**Test Configuration**


**Test Procedure**

The test shall be modulated by a 2500 Hz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation.

**Test Results**

| Modulation | Channel | 99% OBW (KHz) | Limit (KHz) | Result |
|---|---|---|---|---|
| FM | CH01 | 69.829 | 200 | Pass |
| | CH02 | 68.136 | 200 | |
| | CH03 | 67.804 | 200 | |

**Test plot as follows:**


*CH01*


*CH02*

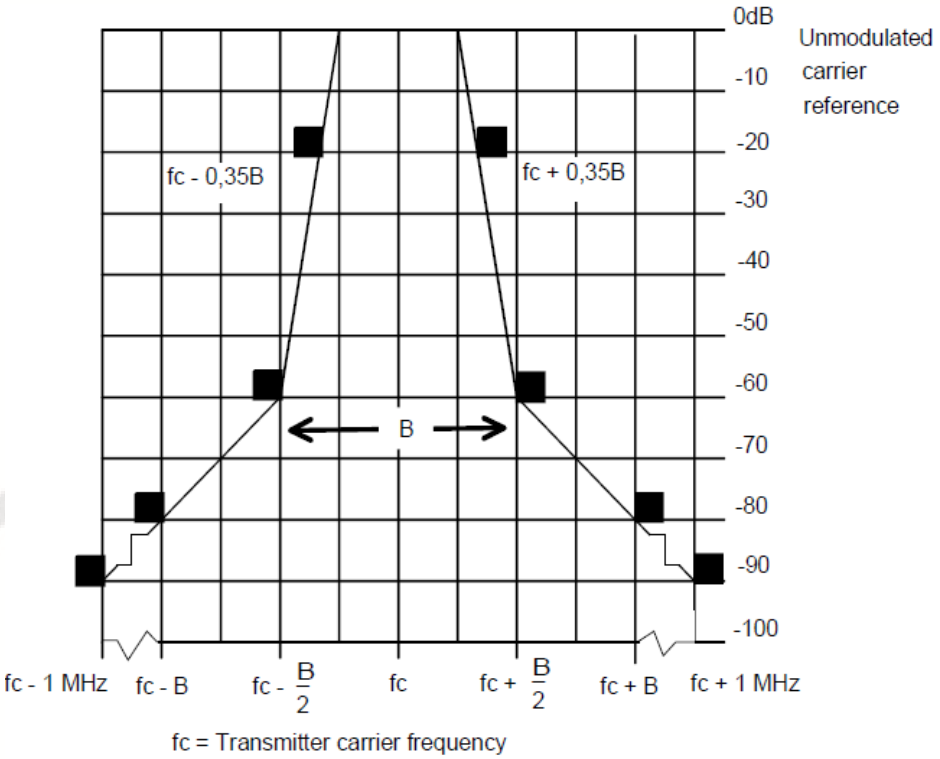

Keysight Spectrum Analyzer - Occupied BW
Center Freq 549.500000 MHz
Center Freq: 549.500000 MHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
10:02:26 AM Feb 28, 2022
Frequency
10 dB/div
Log
Ref 20.00 dBm
Center 549.5 MHz
#Res BW 3 kHz
#VBW 30 kHz
Span 200 kHz
#Sweep 102.6 ms
Occupied Bandwidth
67.804 kHz
Total Power 7.04 dBm
Transmit Freq Error -7.250 kHz
% of OBW Power 99.00 %
x dB Bandwidth 101.3 kHz
x dB -26.00 dB
Center Freq
549.500000 MHz
CF Step
20.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

*CH03*

## 3.3. Necessary Bandwidth

**LIMIT**

According to ETSI EN 300 422-1 V2.1.2 (2017-01) section 8.3.2.2, the trum mask for all analogue systems in the band. The -90 dBc point shall be ±1 MHz from fc easured with an average detector. To comply, a measured value shall fall below the mask limit as shown in figure 3.



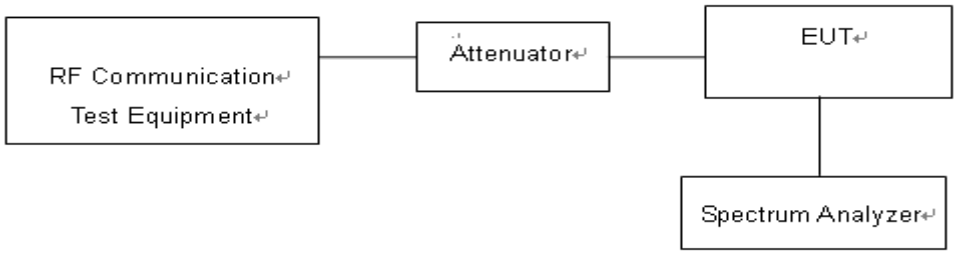

fc = Transmitter carrier frequency

**TEST PROCEDURE**

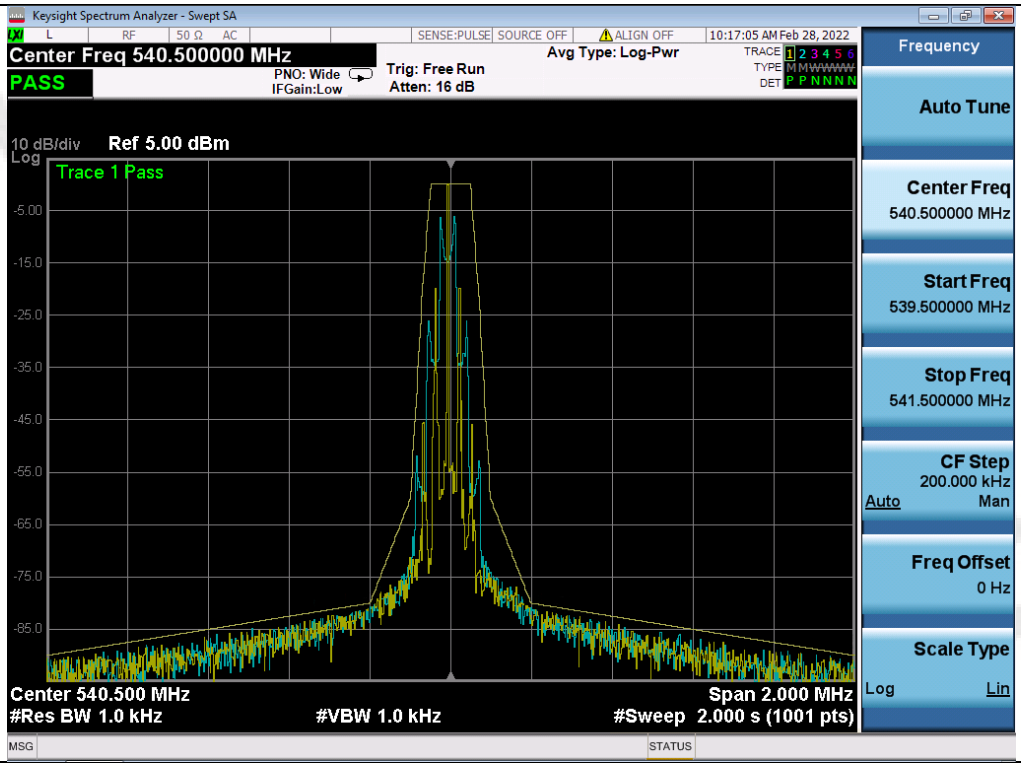
The arrangement of test equipment as shown in figure B.1 shall be used. Note that the noise meter conforms to (quasieak) without weighting filter (flat).
With the Low Frequency (LF) audio signal generator set to 500 Hz, the audio input level to the DUT shall be adjusted to 8 dB below the limiting threshold (-8 dB (lim)) as declared by the manufacturer. The corresponding audio output level from the demodulator shall be measured and recorded.
The input impedance of the noise meter shall be sufficiently high to avoid more than 0,1 dB change in input level when the meter is switched between input and output.
The audio input level shall be increased by 20 dB, i.e. to +12 dB (lim), and the corresponding change in output level shall be measured.
It shall be checked that the audio output level has increased by ≤ 10 dB.
If this condition is not met, the initial audio input level shall be increased from -8 dB (lim) in 1 dB steps until the above condition is fulfilled, and the input level recorded in the test report. This level replaces the value derived from the manufacturer's declaration and is defined as -8 dB (lim).
Measure the input level at the transmitter required to give +12 dB (lim).
The LF generator shall be replaced with the weighted noise source to Recommendation ITU-R BS.559-2 [i.3], band-limited to 15 kHz as described in IEC 60244-13 [2], and the level shall be adjusted such that the measured input to the transmitter corresponds to +12 dB (lim).
If the transmitter incorporates any ancillary coding or signalling channels (e.g. pilot-tones), these shall be enabled prior to any spectral measurements.
If the transmitter incorporates more than one audio input, e.g. stereo systems, the second and subsequent channels shall be simultaneously driven from the same noise source, attenuated to a level of -6 dB (lim).
The transmitter RF output spectrum shall be measured, using a spectrum analyser with the following settings:

- centre frequency: fc: Transmitter (Tx) nominal frequency;
- dispersion (Span): fc - 1 MHz to fc + 1 MHz;
- Resolution BandWidth (RBW): 1 kHz;
- Video BandWidth (VBW): 1 kHz;
- detector: Peak hold.

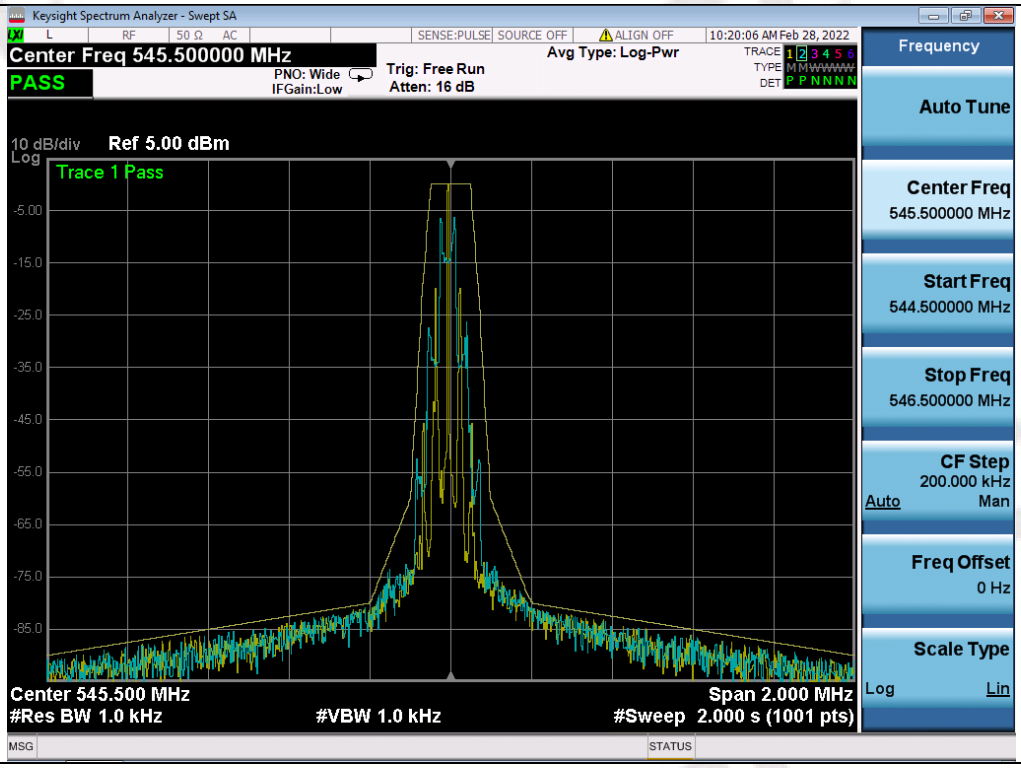
## TEST CONFIGURATION



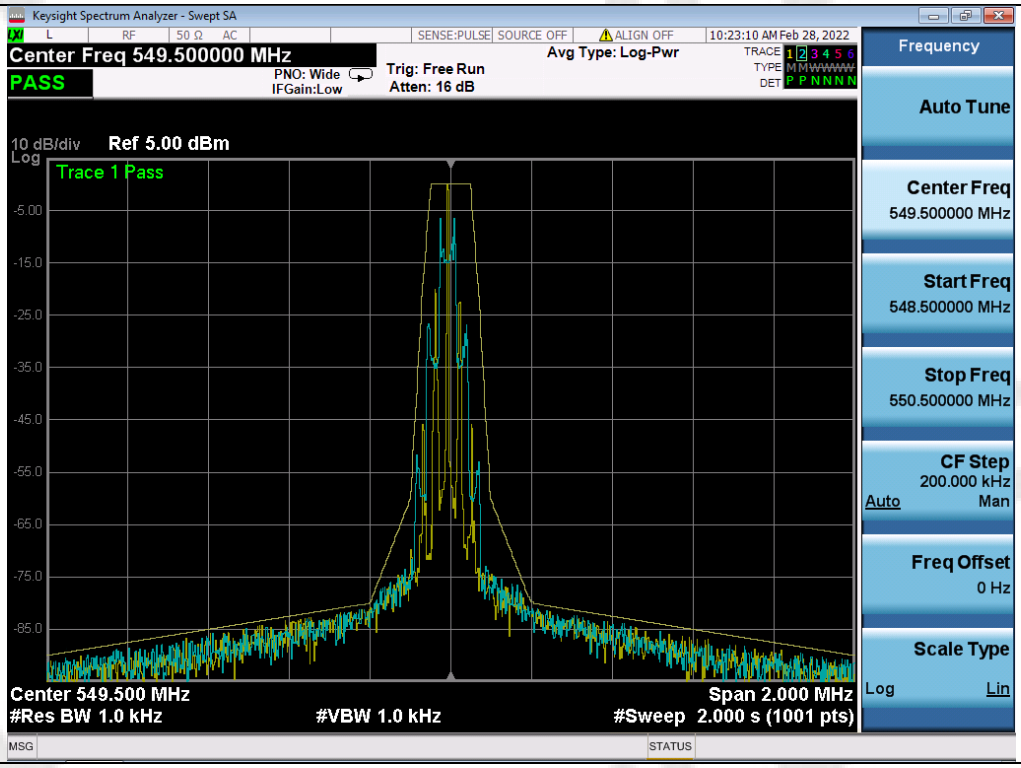

## TEST RESULTS




*CH01*


Keysight Spectrum Analyzer - Swept SA
Center Freq 545.500000 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 16 dB
Avg Type: Log-Pwr
10:20:06 AM Feb 28, 2022
10 dB/div
Log
Ref 5.00 dBm
Trace 1 Pass
Center 545.500 MHz
#Res BW 1.0 kHz
#VBW 1.0 kHz
Span 2.000 MHz
#Sweep 2.000 s (1001 pts)
Frequency
Auto Tune
Center Freq
545.500000 MHz
Start Freq
544.500000 MHz
Stop Freq
546.500000 MHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin
MSG
STATUS

*CH02*


Keysight Spectrum Analyzer - Swept SA
Center Freq 549.500000 MHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 16 dB
Avg Type: Log-Pwr
10:23:10 AM Feb 28, 2022
10 dB/div
Log
Ref 5.00 dBm
Trace 1 Pass
Center 549.500 MHz
#Res BW 1.0 kHz
#VBW 1.0 kHz
Span 2.000 MHz
#Sweep 2.000 s (1001 pts)
Frequency
Auto Tune
Center Freq
549.500000 MHz
Start Freq
548.500000 MHz
Stop Freq
550.500000 MHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin
MSG
STATUS

*CH03*

## 3.4. Transmitter spurious emissions

**Limit**

Spurious emissions are emissions outside the frequency range(s) of the equipment. The power of the spurious emissions shall not exceed the limits of table as below:

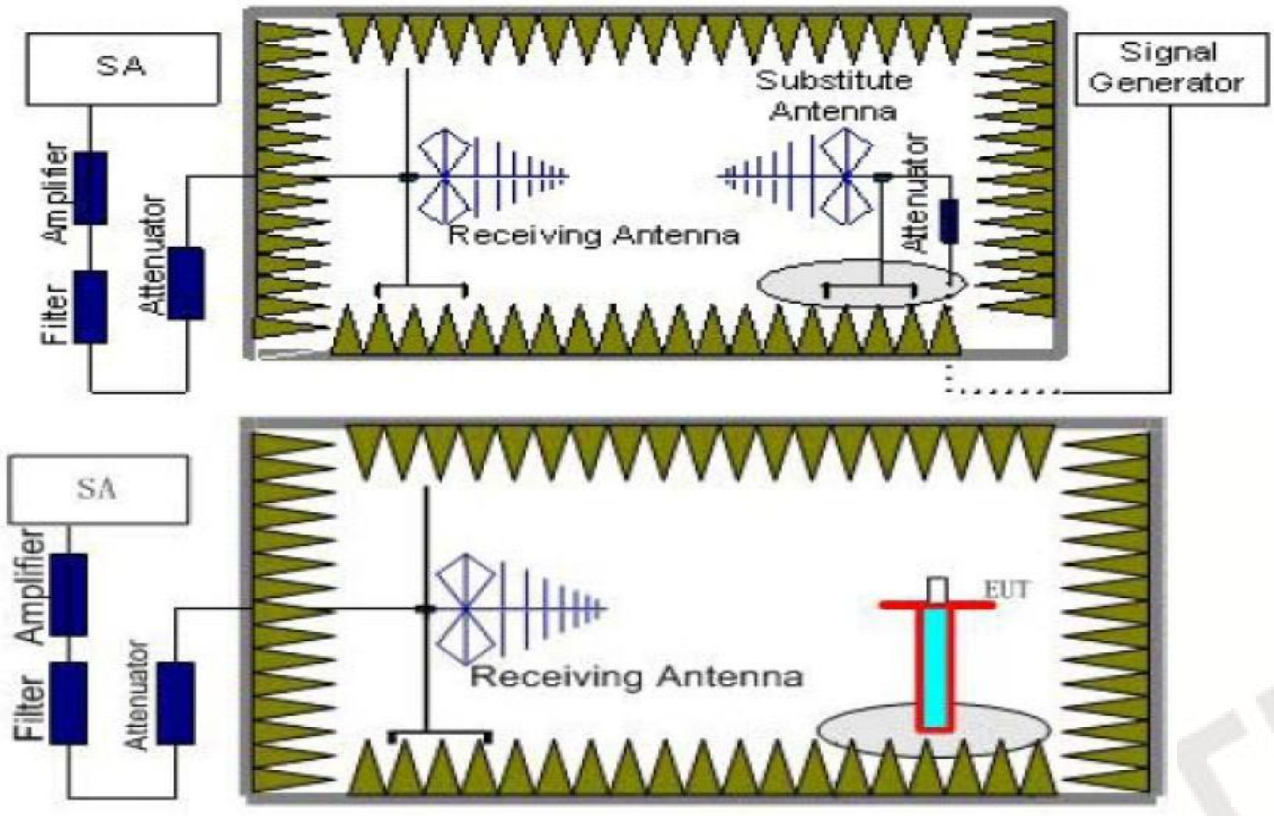
| State | Frequency | | |
|---|---|---|---|
| | 47 MHz to 74 MHz<br>87,5 MHz to 137 MHz<br>174 MHz to 230 MHz<br>470 MHz to 862 MHz | Other Frequencies below 1 000 MHz | Frequencies above 1 000 MHz |
| Operation | 4 nW | 250 nW | 1 µW |
| Standby | 2 nW | 2 nW | 20 nW |

**Test Procedure**

1. EUT shall be placed on a 0.8m high table for frequency below 1GHz
2. EUT shall be placed on a 1.5m high table for frequency above 1GHz, The test distance between the receiving antenna and the EUT is 1m up to 4m, Set EUT in continuous transmitting with maximum output power at test frequency.
3. The table was rotated from 0 to 360 degree to search the highest radiated emission.
4. Repeat step 3 to 4 for each polarization and test channel to find the worst emission level.
5. The results obtained are compared to the limits in order to prove compliance with the requirement.
6. Please refer to ETSI EN 300 422-1 V1.4.2 (2011-08) clause 6.1 for the test conditions.
7. Please refer to ETSI EN 300 422-1 V1.4.2 (2011-08) clause 8.4.2 for the measurement method.

**Test Configuration**

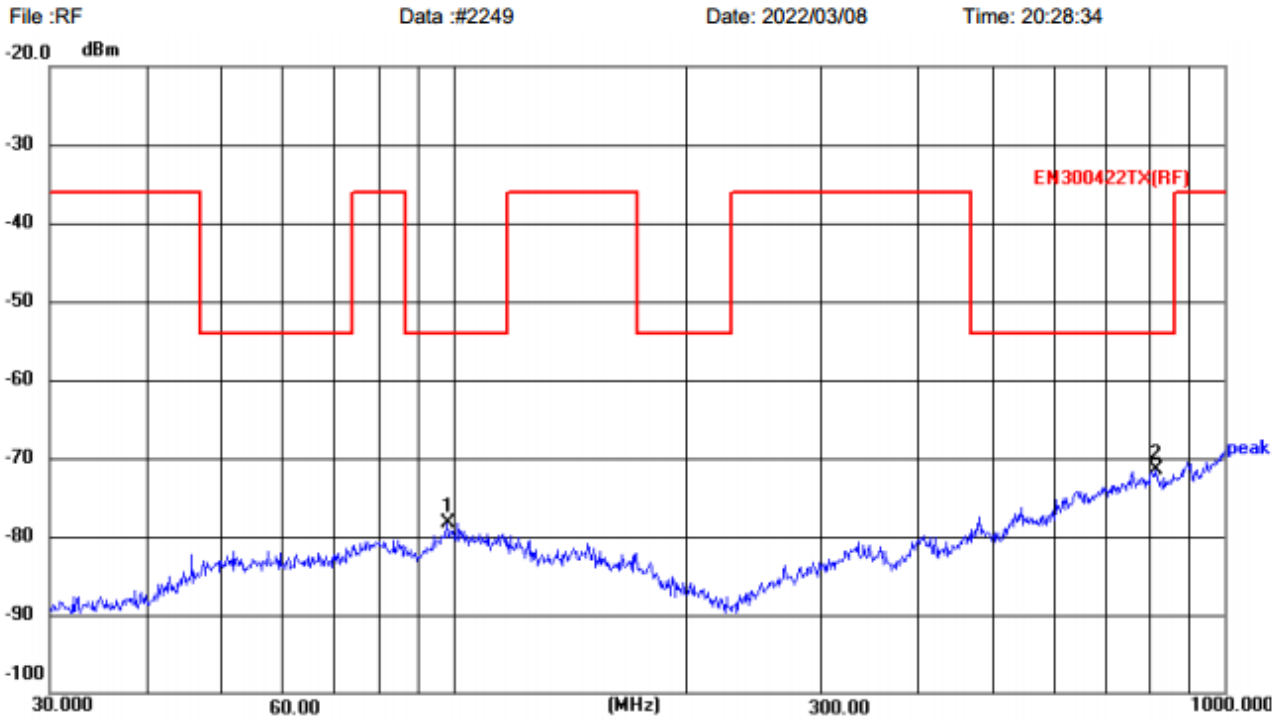
**Effective Radiated Power measurement (30 MHz to 12.75 GHz)**



## Test Results

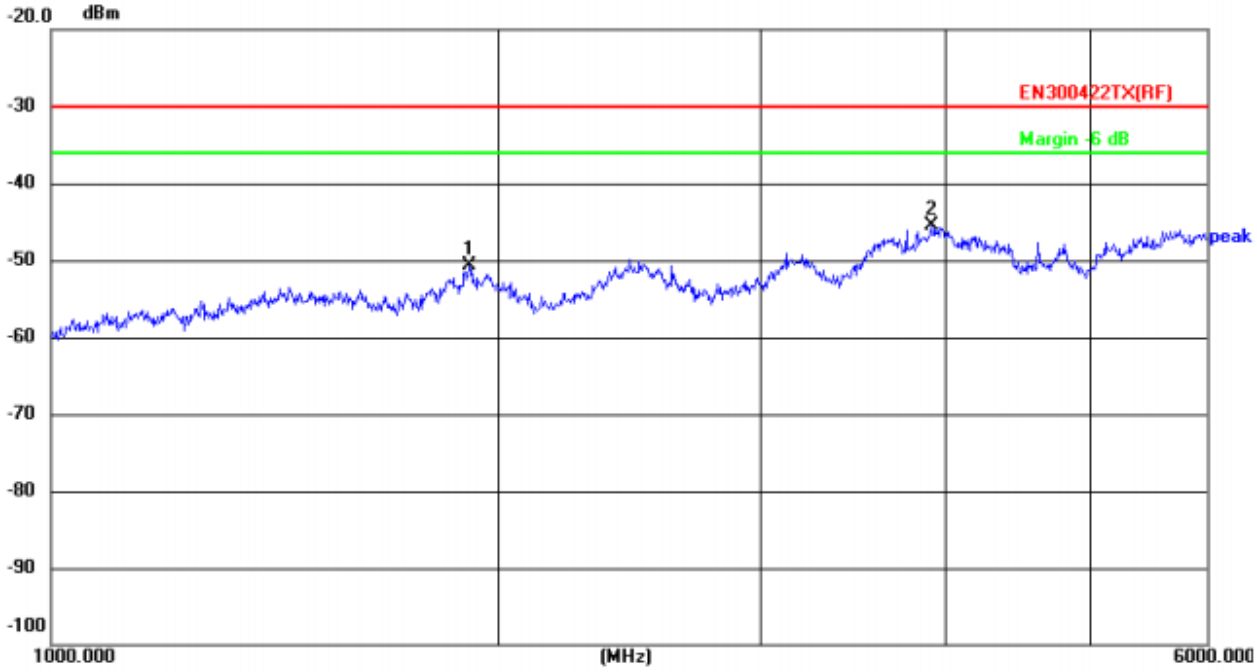
| Channel: | CH01 | Polarity: | Horizontal |
|---|---|---|---|

**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 98.1419 | -107.83 | 29.48 | -78.35 | -54.00 | 24.35 | peak | 150 | 0 | P |
| 2 | 815.9678 | -106.78 | 35.30 | -71.48 | -54.00 | 17.48 | peak | 150 | 0 | P |

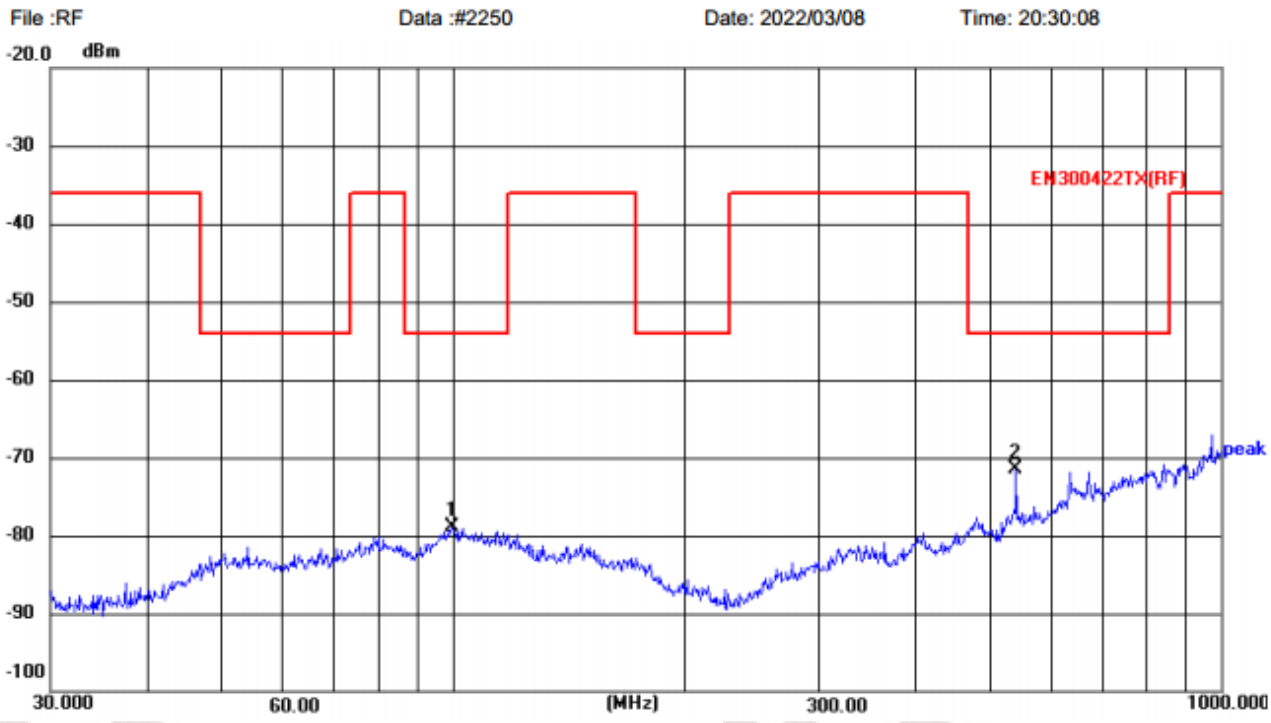
**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1912.893 | -62.16 | 11.44 | -50.72 | -30.00 | 20.72 | peak | 150 | 360 | P |
| 2 | 3916.979 | -65.73 | 20.31 | -45.42 | -30.00 | 15.42 | peak | 150 | 360 | P |

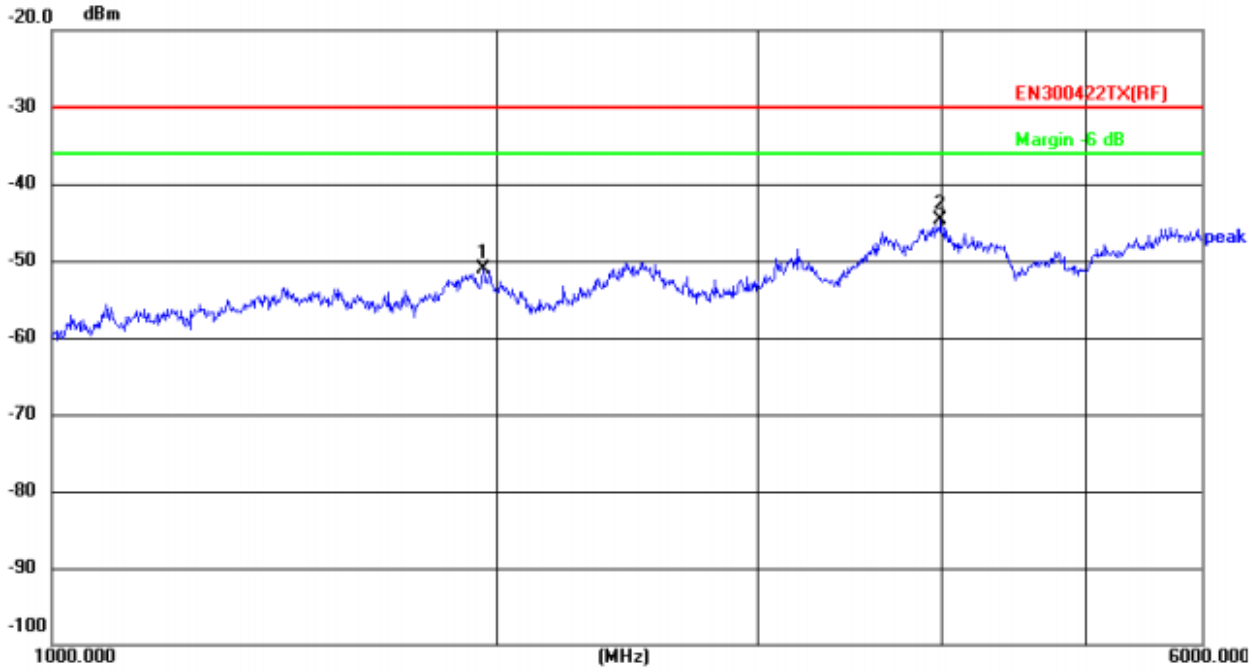
| Channel: | CH01 | Polarity: | Vertical |
|---|---|---|---|

**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 99.8777 | -108.94 | 29.95 | -78.99 | -54.00 | 24.99 | peak | 150 | 360 | P |
| 2 | 541.3725 | -101.74 | 30.33 | -71.41 | -54.00 | 17.41 | peak | 150 | 360 | P |

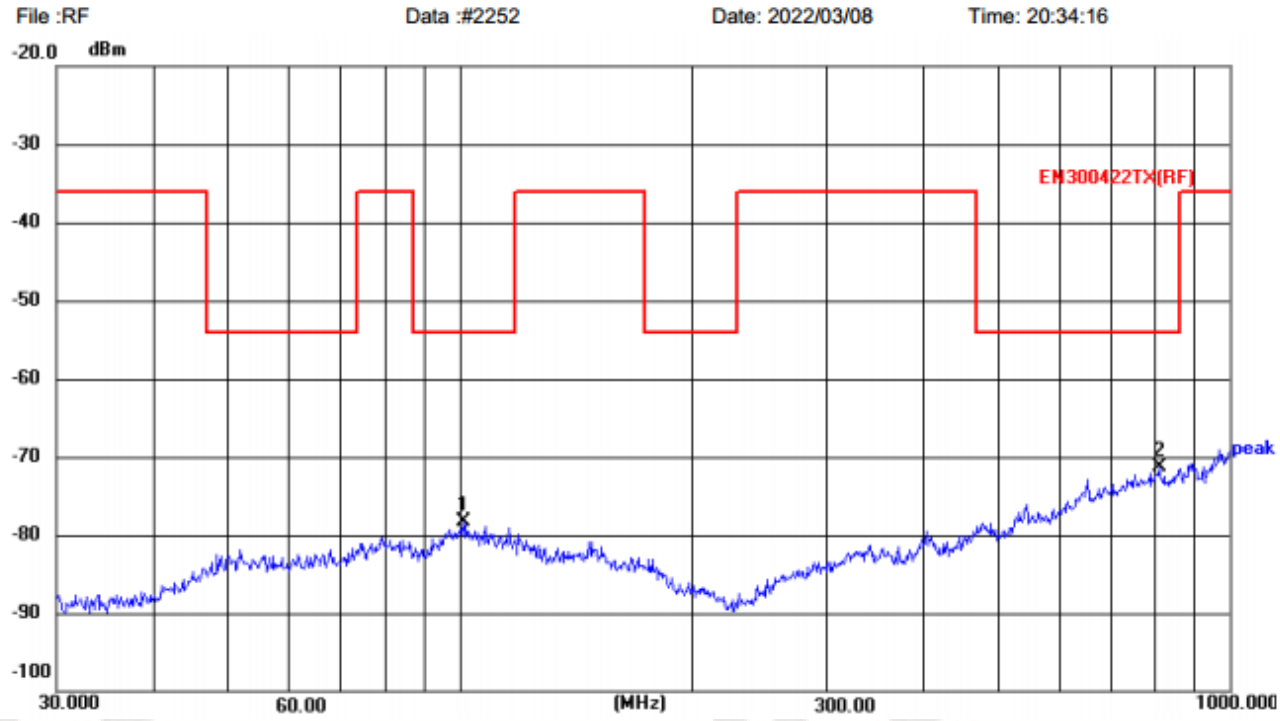
**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1957.973 | -62.34 | 11.30 | -51.04 | -30.00 | 21.04 | peak | 150 | 0 | P |
| 2 | 3994.946 | -65.15 | 20.39 | -44.76 | -30.00 | 14.76 | peak | 150 | 0 | P |

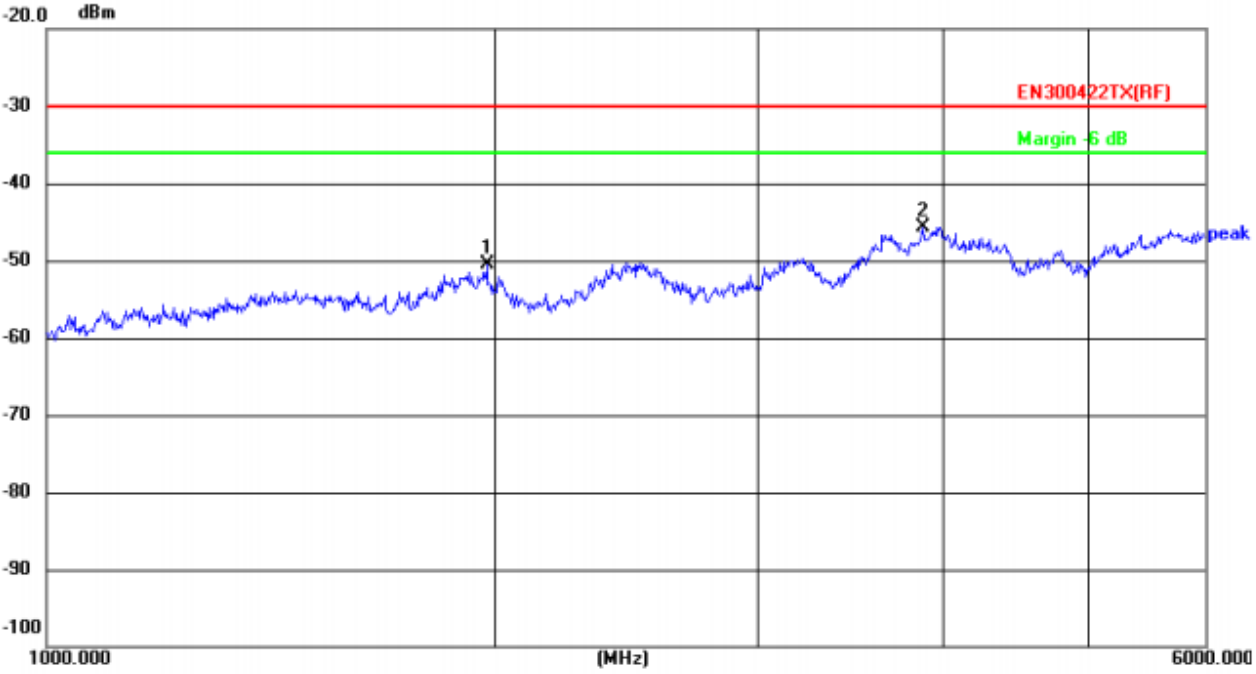
| Channel: | CH02 | Polarity: | Horizontal |
|---|---|---|---|

**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 101.2885 | -108.21 | 29.91 | -78.30 | -54.00 | 24.30 | peak | 150 | 360 | P |
| 2 | 810.2654 | -106.76 | 35.47 | -71.29 | -54.00 | 17.29 | peak | 150 | 360 | P |

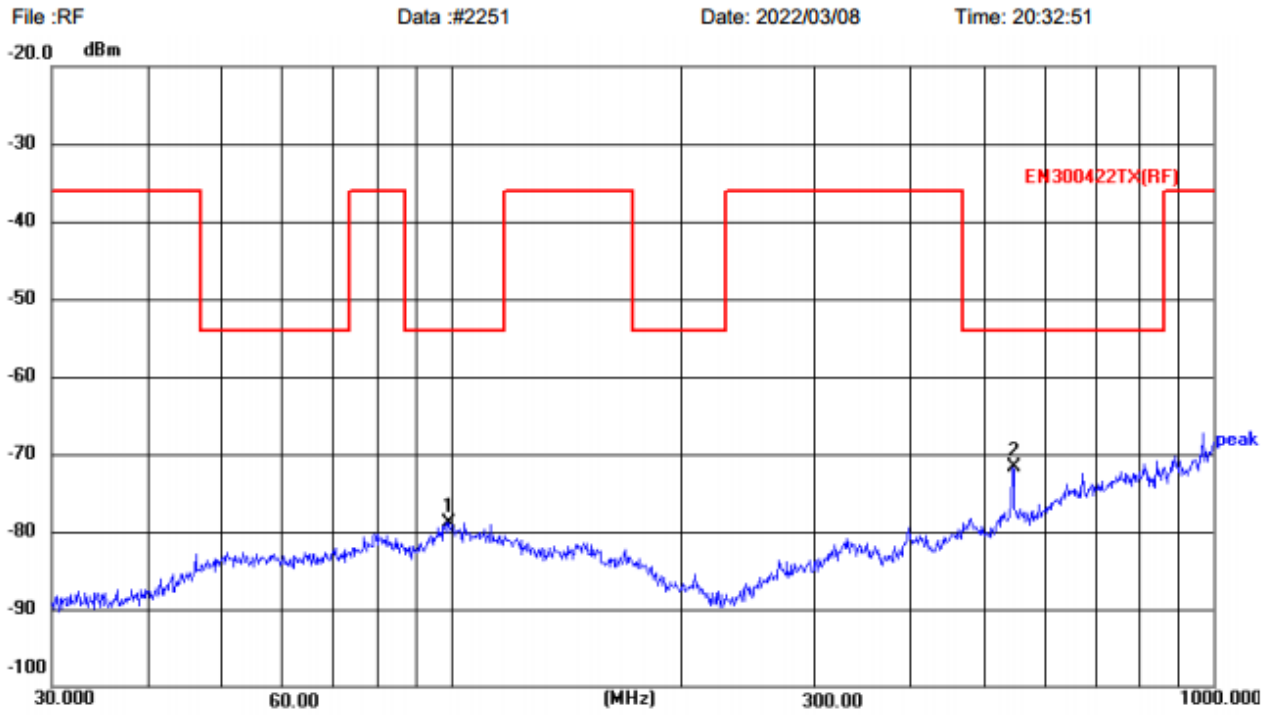
**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1975.593 | -61.71 | 11.25 | -50.46 | -30.00 | 20.46 | peak | 150 | 0 | P |
| 2 | 3882.044 | -65.54 | 19.94 | -45.60 | -30.00 | 15.60 | peak | 150 | 0 | P |

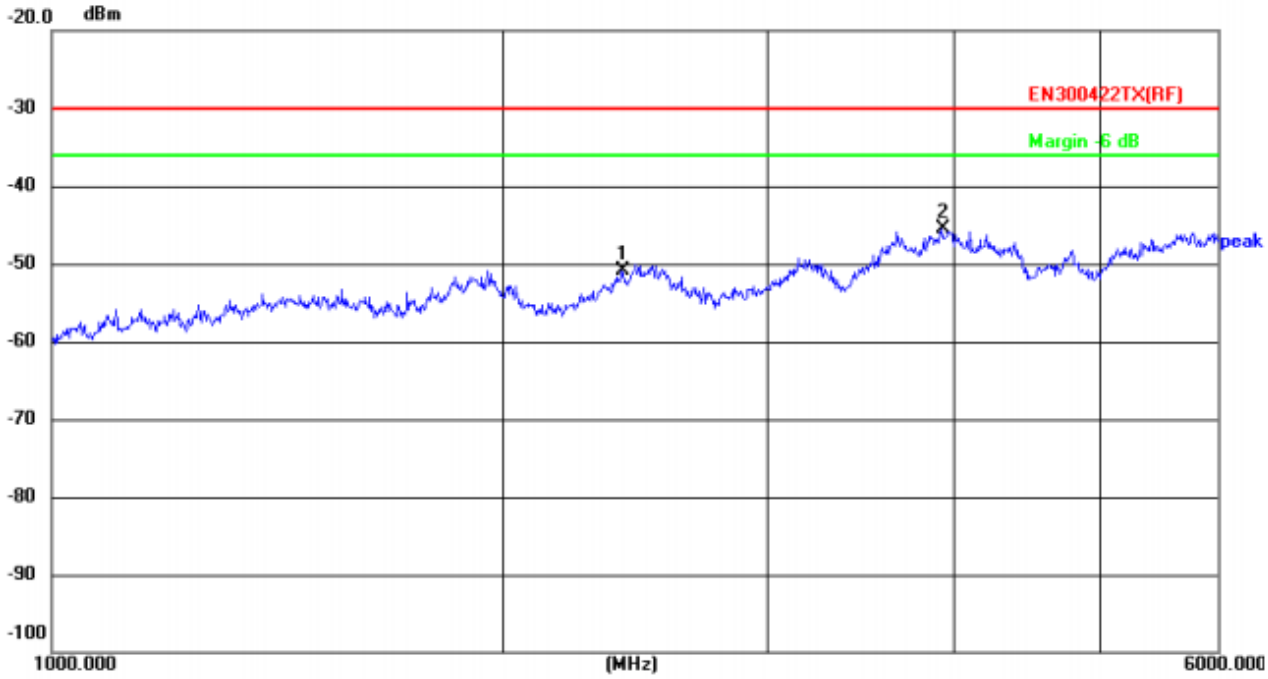
| Channel: | CH02 | Polarity: | Vertical |
|---|---|---|---|

**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 99.5281 | -108.67 | 29.84 | -78.83 | -54.00 | 24.83 | peak | 150 | 0 | P |
| 2 | 545.1826 | -102.01 | 30.39 | -71.62 | -54.00 | 17.62 | peak | 150 | 0 | P |

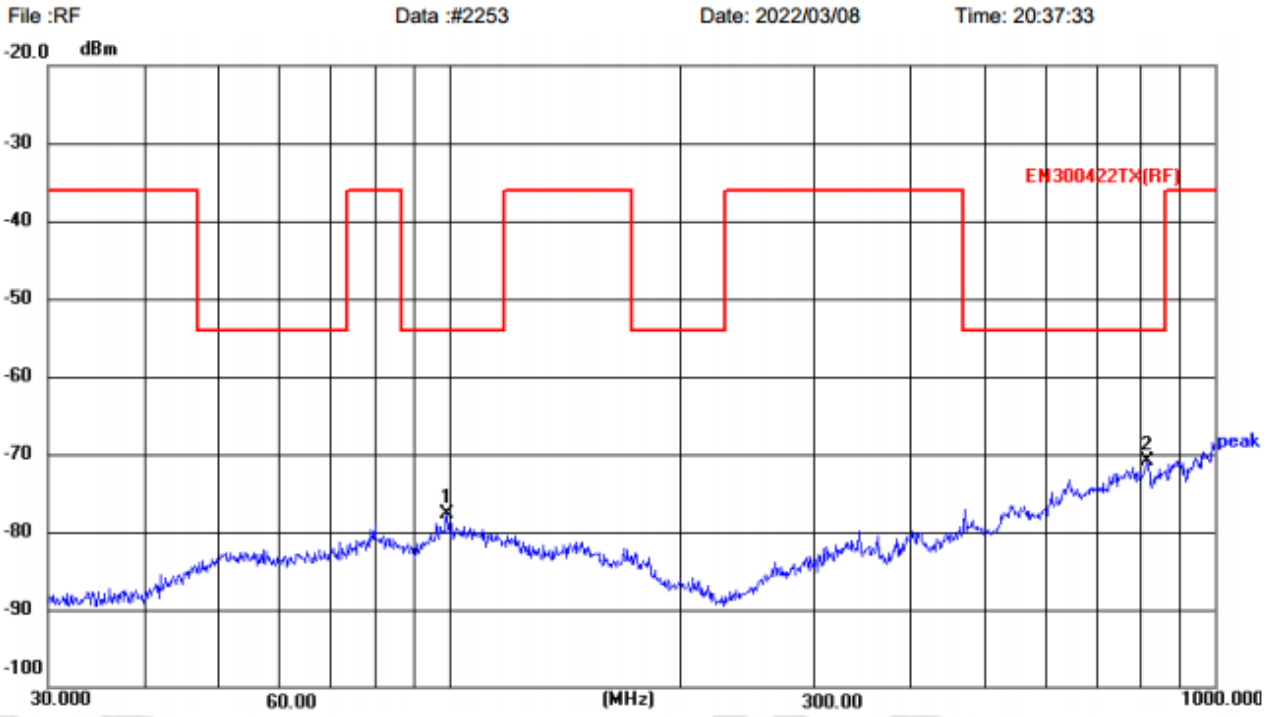
**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2401.685 | -63.86 | 12.99 | -50.87 | -30.00 | 20.87 | peak | 150 | 360 | P |
| 2 | 3924.004 | -65.84 | 20.31 | -45.53 | -30.00 | 15.53 | peak | 150 | 360 | P |

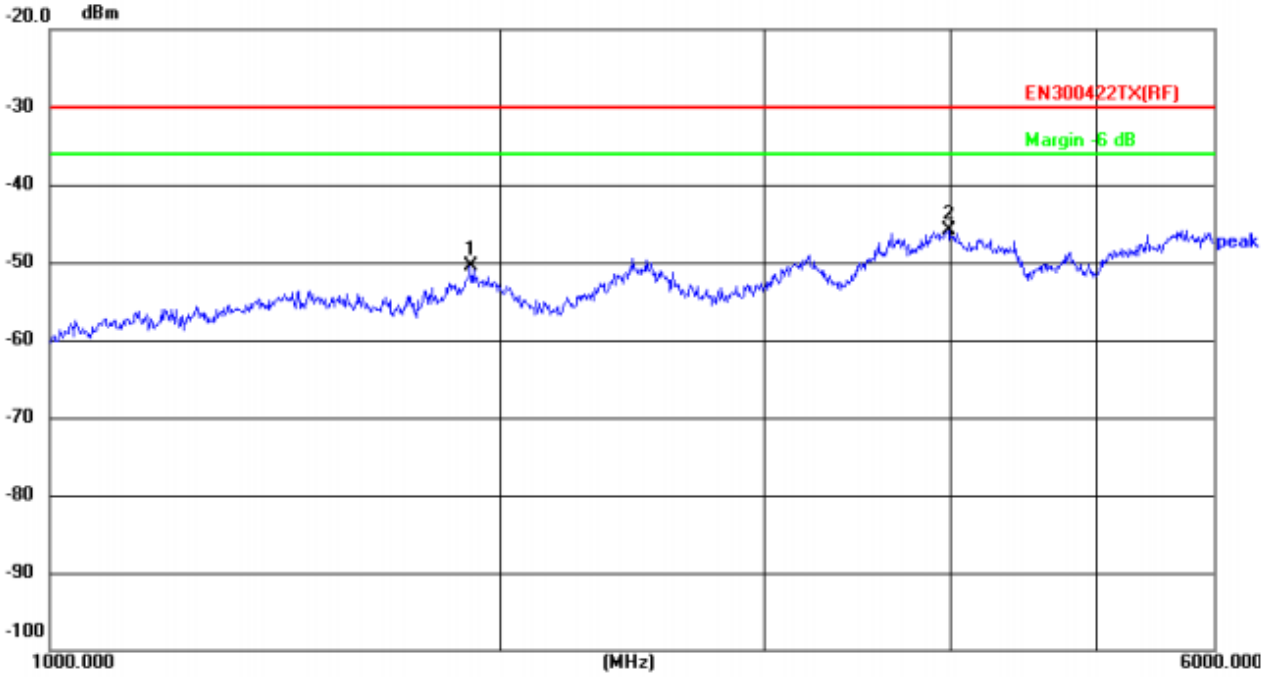
| Channel: | CH03 | Polarity: | Horizontal |
|---|---|---|---|

**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 99.5281 | -107.53 | 29.84 | -77.69 | -54.00 | 23.69 | peak | 150 | 0 | P |
| 2 | 815.9678 | -106.26 | 35.30 | -70.96 | -54.00 | 16.96 | peak | 150 | 0 | P |

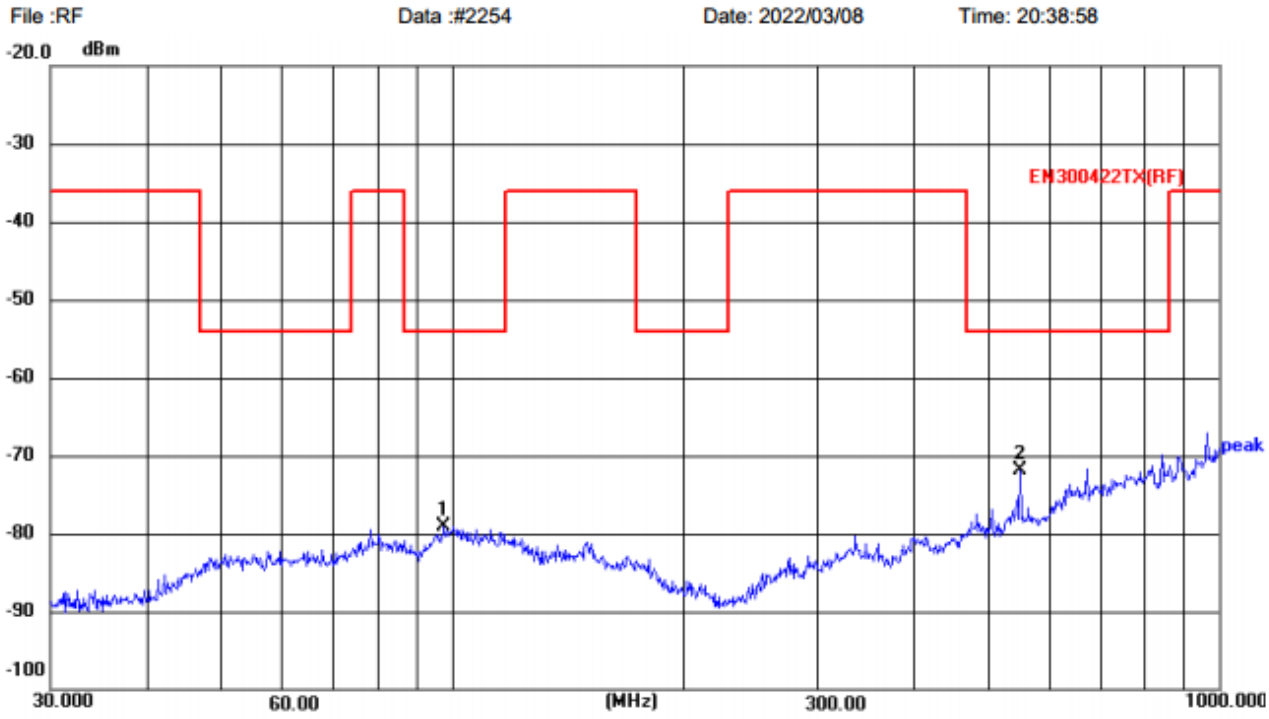
**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1909.469 | -61.94 | 11.45 | -50.49 | -30.00 | 20.49 | peak | 150 | 360 | P |
| 2 | 3987.794 | -66.20 | 20.38 | -45.82 | -30.00 | 15.82 | peak | 150 | 360 | P |

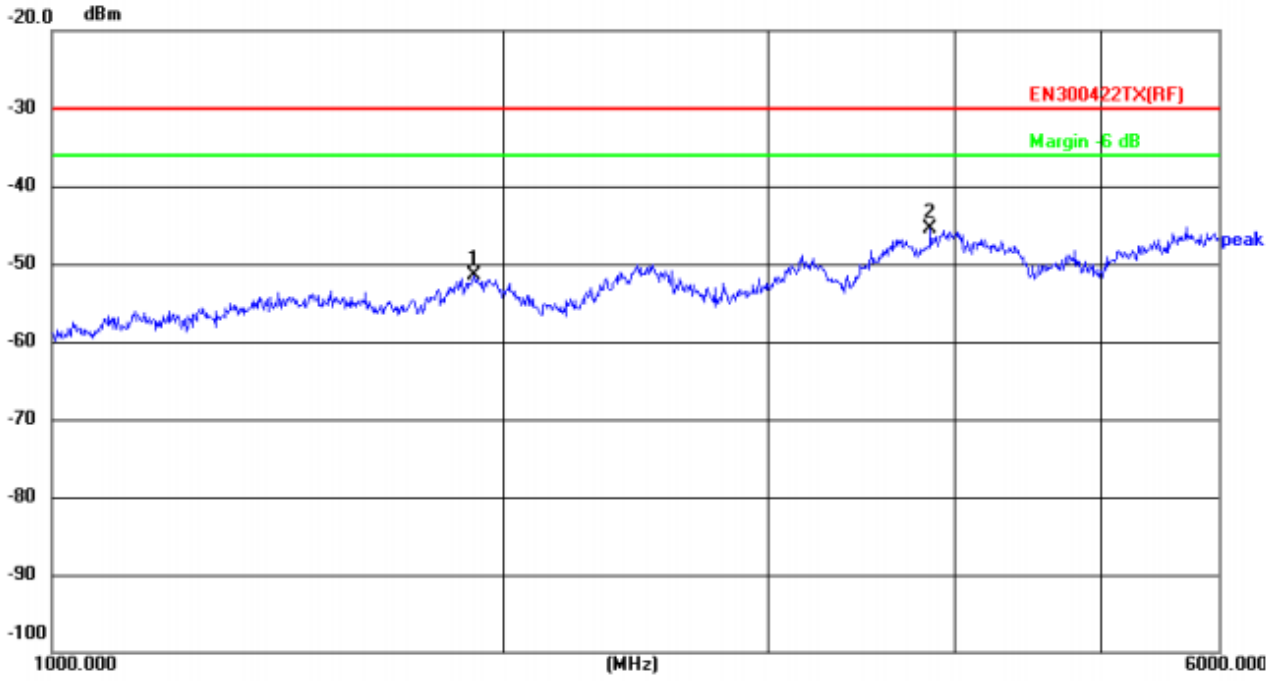
| Channel: | CH03 | Polarity: | Vertical |
|---|---|---|---|

**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 97.7983 | -108.52 | 29.38 | -79.14 | -54.00 | 25.14 | peak | 150 | 360 | P |
| 2 | 550.9480 | -102.32 | 30.48 | -71.84 | -54.00 | 17.84 | peak | 150 | 360 | P |

**Radiated Emission Measurement**




| No. | Frequency (MHz) | Reading (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1912.893 | -62.91 | 11.44 | -51.47 | -30.00 | 21.47 | peak | 150 | 0 | P |
| 2 | 3854.321 | -64.87 | 19.40 | -45.47 | -30.00 | 15.47 | peak | 150 | 0 | P |

## 3.5. Frequency Stability

**Limit**

The frequency tolerance of the carrier signal shall be maintained within ±0.005% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.

**Test Procedure**

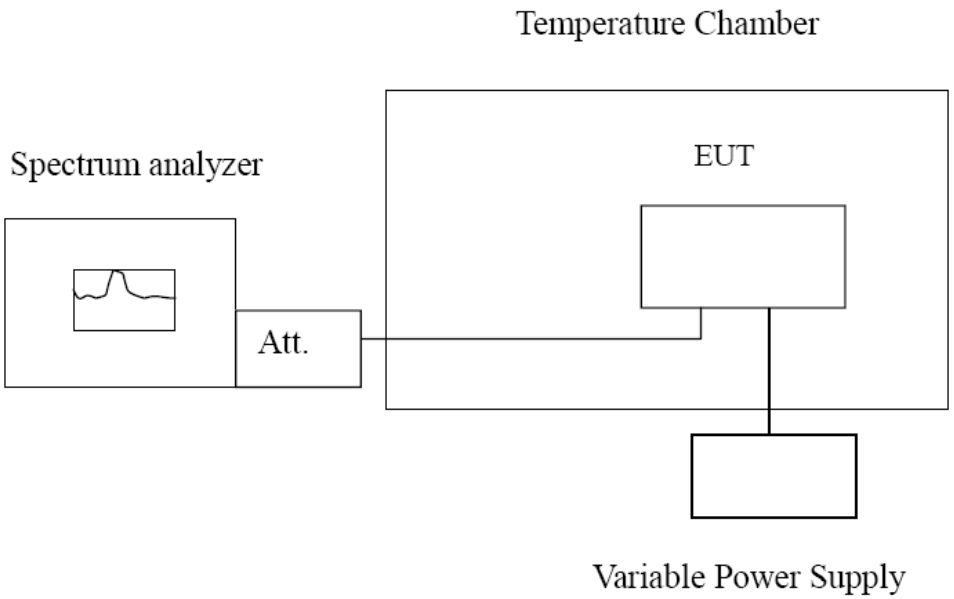
**a) Frequency stability versus environmental temperature**

1. Setup asTest Configuration for frequencies measured at ambient temperature if it is within 15℃to 25℃. Otherwise, an environmental chamber set for a temperature of 20℃shall be used.
2. Turn on EUT and set SA center frequency to the right frequency needs to be measured. Then set SA RBW to 3 kHz, VBW to 10kHz and frequency span to 500 kHz. Record this frequency to be a reference.
3. Set the temperature of chamber to 50℃. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10℃decreased per stage until the lowest temperature -20℃is measured, record all measurement frequencies.

**b) Frequency stability versus input voltage**

1. Setup asTest Configuration for frequencies measured at ambient temperature if it is within 15℃to 25℃. Otherwise, an environmental chamber set for a temperature of 20℃shall be used. Install new batteries in the EUT.
2. Set SA center frequency to the right frequency needs to be measured. Then set SA RBW to 3kHz, VBW to 10kHz and frequency span to 500 kHz. Record this frequency to be a reference.
3. For non hand carried, battery operated device, supply the EUT primary voltage with 85 and 115 percent of the nominal value and record the frequency.

**Test Configuration**



**Test Results**

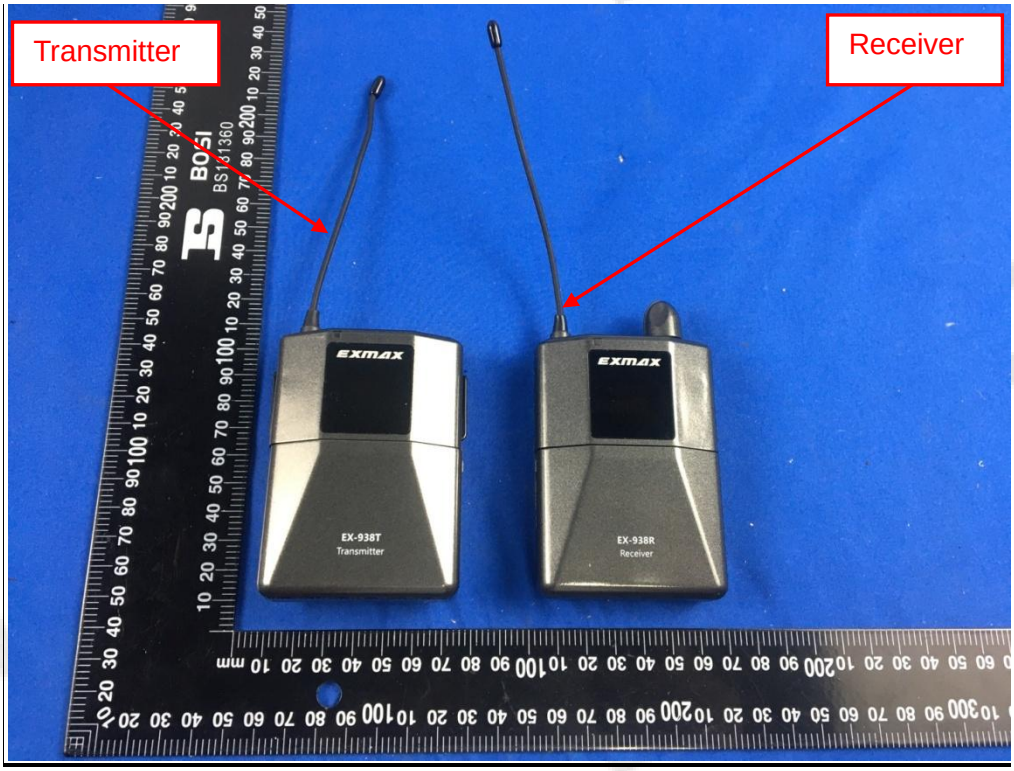
| Reference Frequency: 540.5MHz | | | | | |
|---|---|---|---|---|---|
| Voltage ( V ) | Temperature (℃) | Frequency error (MHz) | Frequency Tolerance (%) | Limit (%) | Result |
| 3.0 | -20 | 0.01815 | 0.00349% | ±0.005 | PASS |
| | -10 | 0.01842 | 0.00354% | | |
| | 0 | 0.01725 | 0.00332% | | |
| | 10 | 0.01792 | 0.00345% | | |
| | 20 | 0.01820 | 0.00350% | | |
| | 30 | 0.01762 | 0.00339% | | |
| | 40 | 0.01743 | 0.00335% | | |
| | 50 | 0.01827 | 0.00351% | | |
| 3.3 | 25 | 0.01910 | 0.00367% | | |
| 2.7 | 25 | 0.01914 | 0.00368% | | |

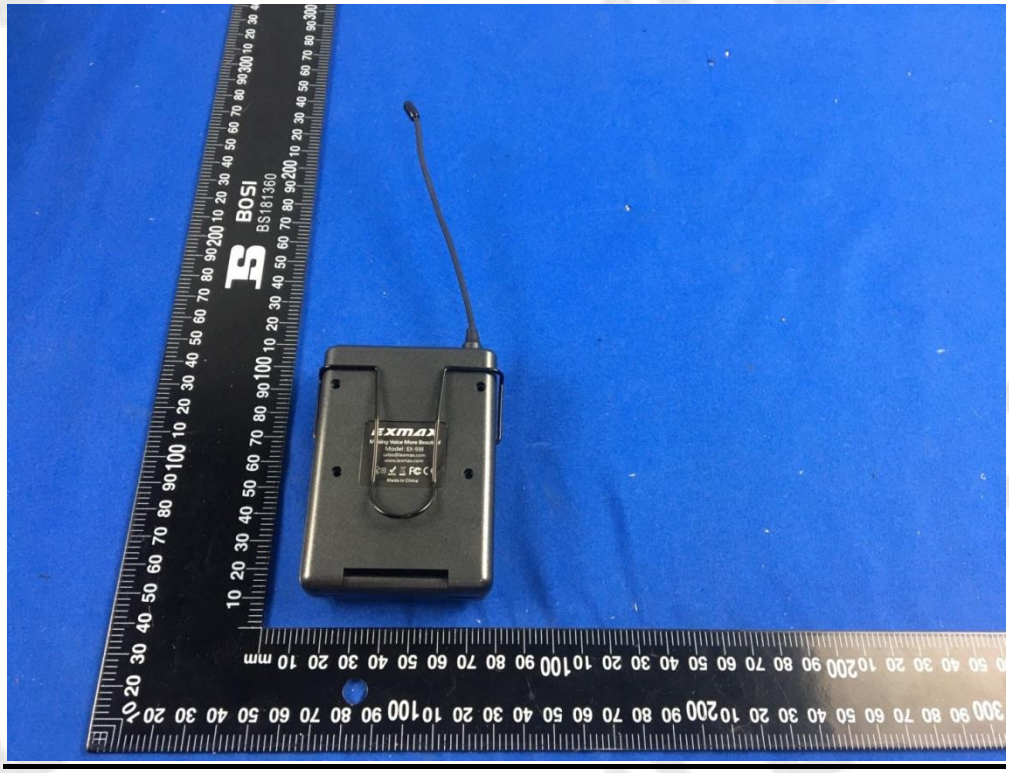
Note: The report tests all channel data, but this report only records the worst channel data.

# 4. Test Setup Photos of the EUT

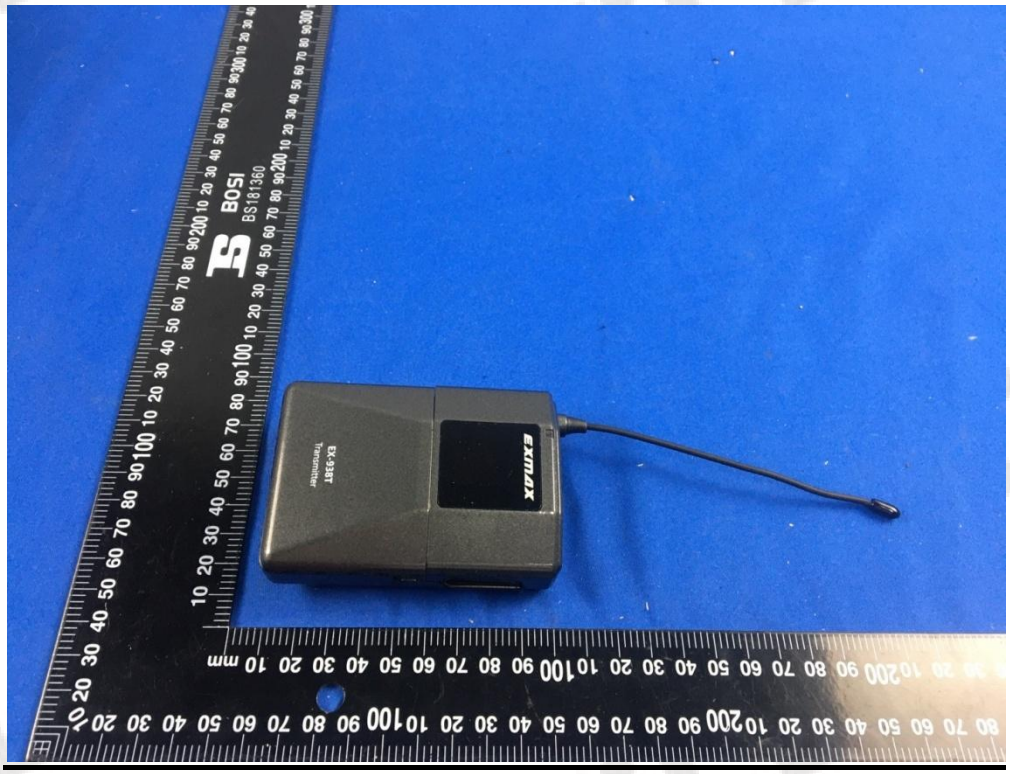
# 5. External and Internal Photos of the EUT

## External Photos of EUT





BOSI
BS181360

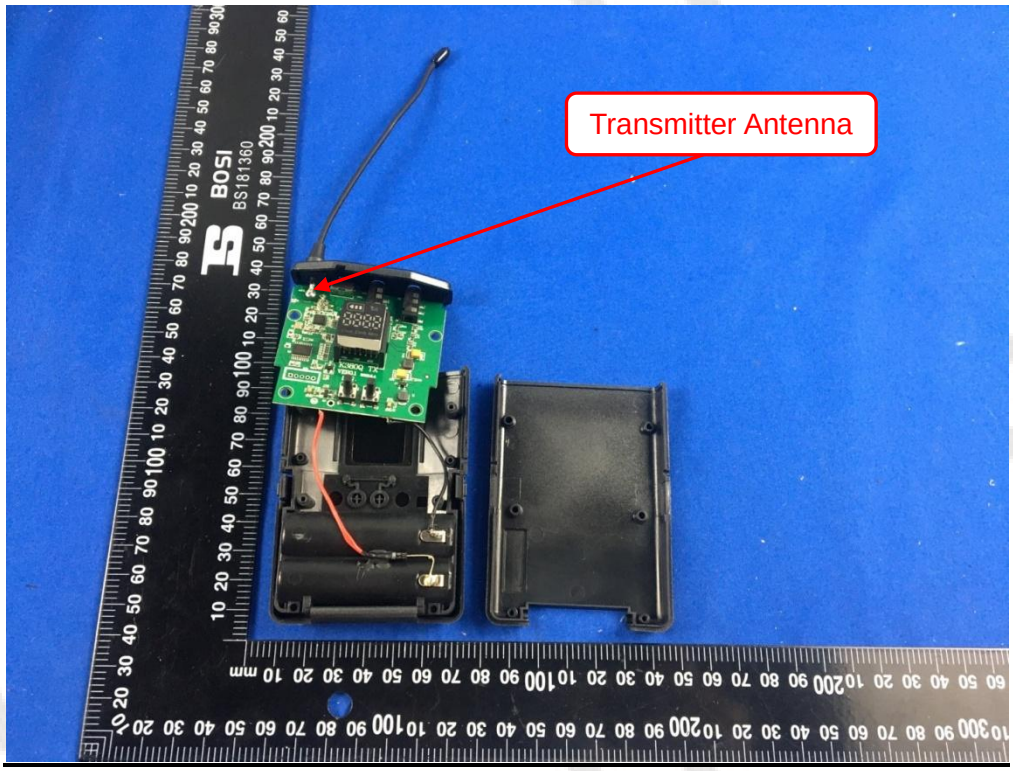

BOSI
BS181360
EX-938T
Transmitter

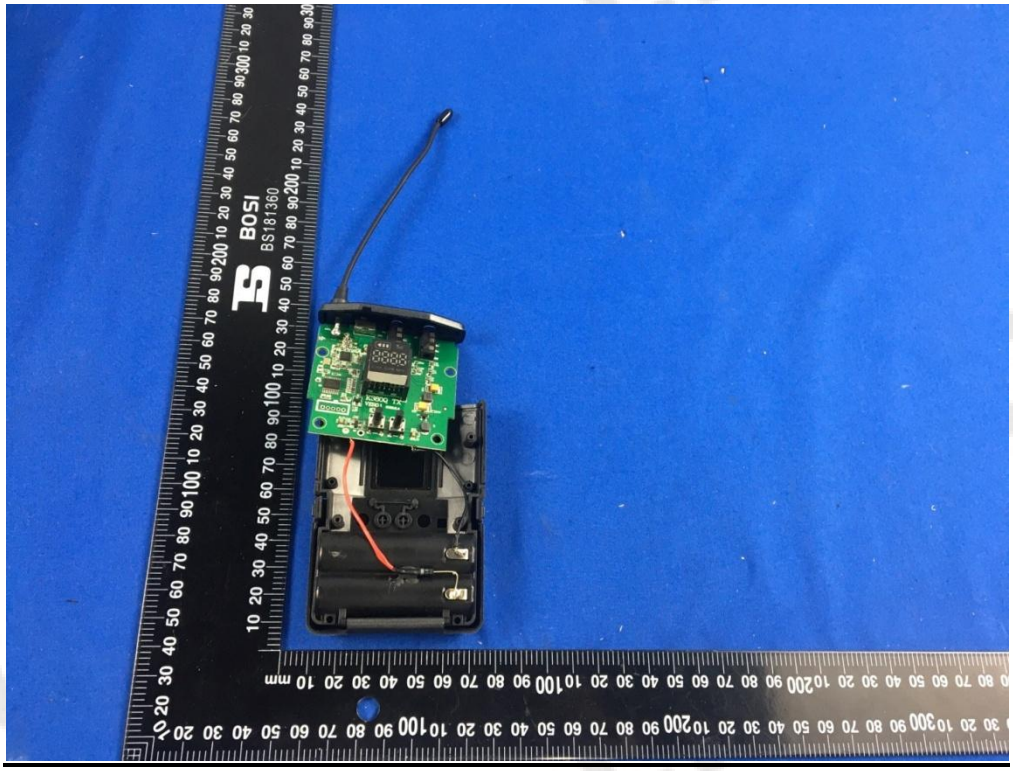

BOSI
BS181360
EX-938T
Transmitter
EXMAX

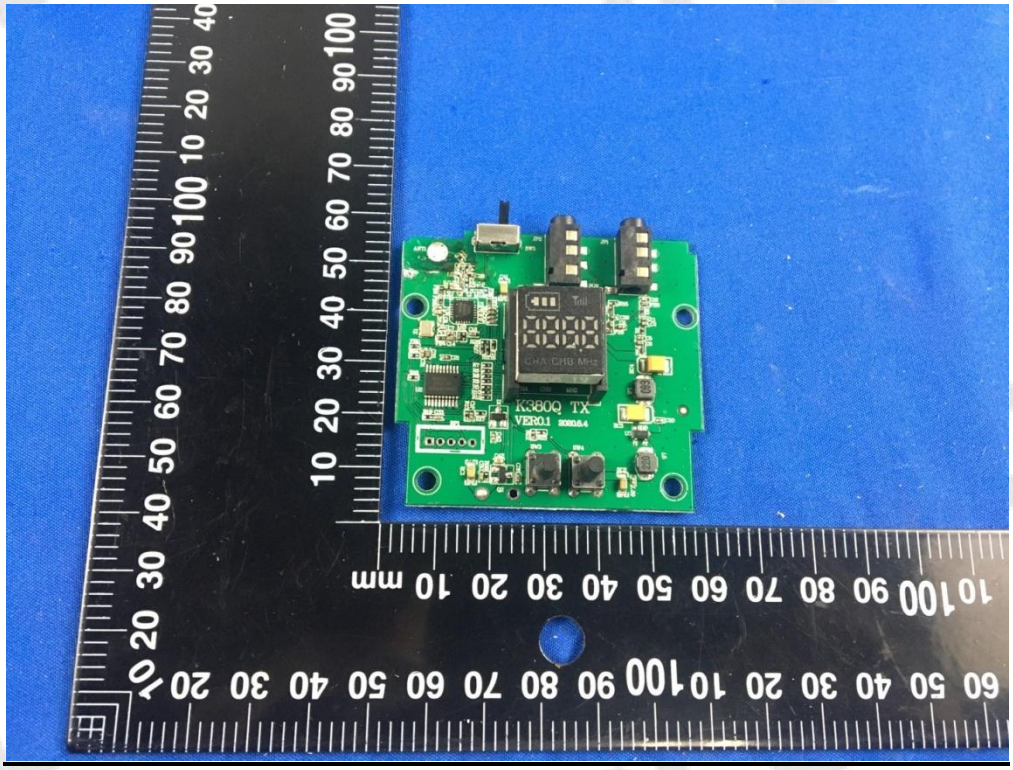

BOSI
BS181360
EXMAX

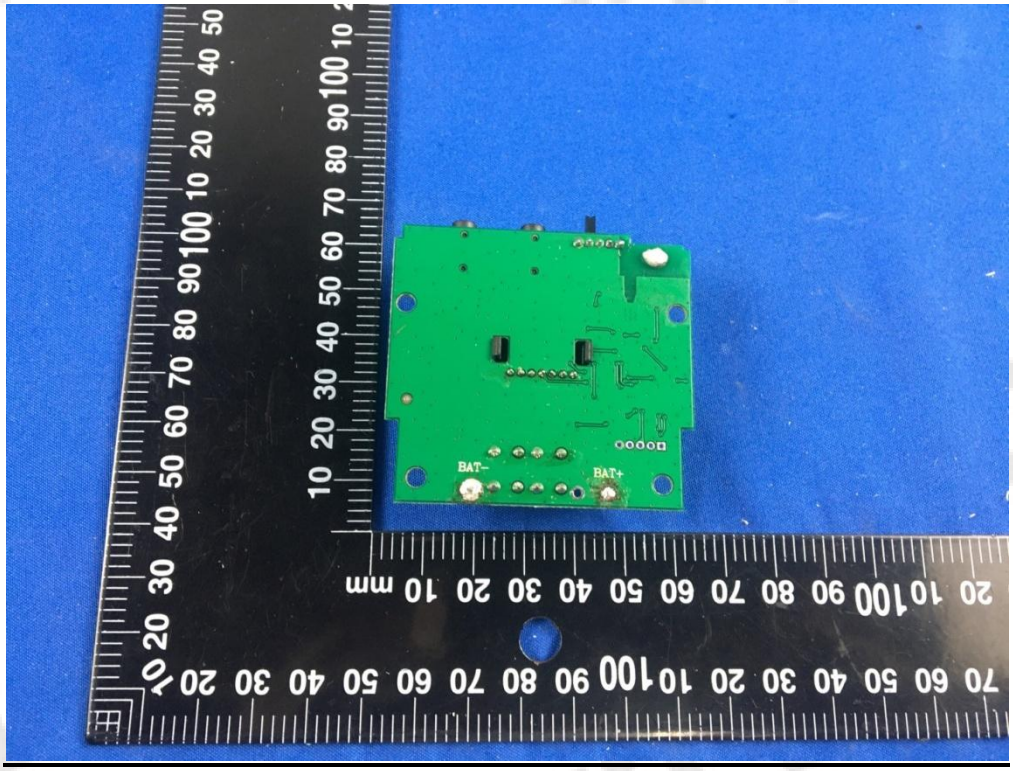

BOSI
BS1181360
EXMAX

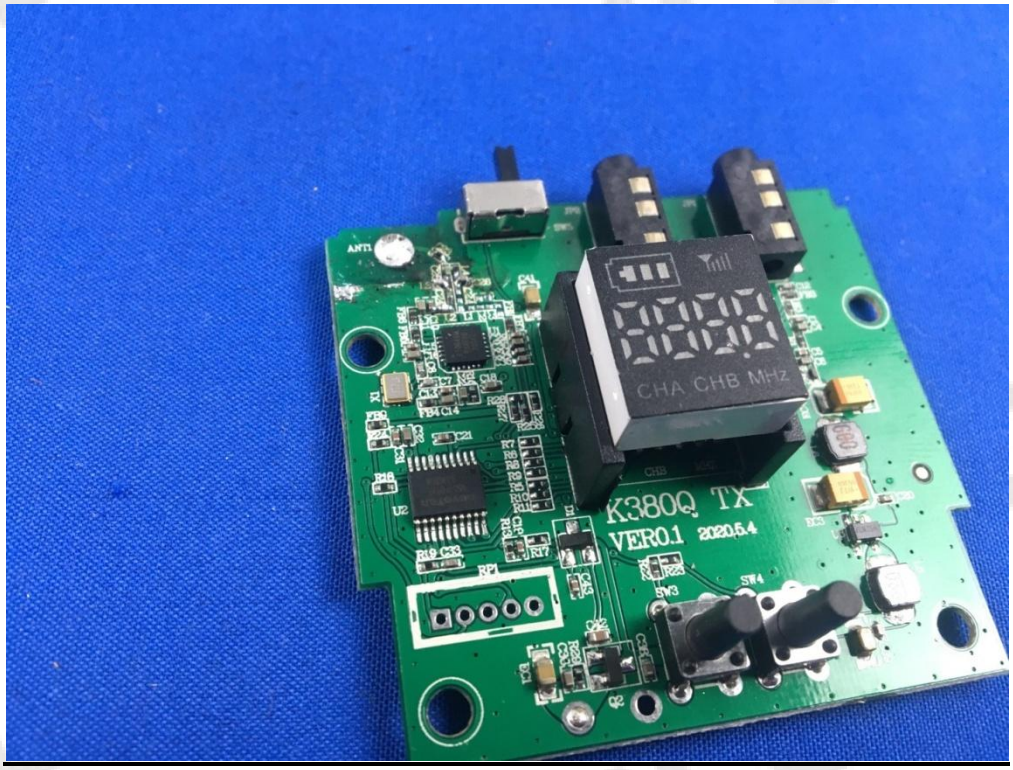
# Internal Photos of EUT




K380Q TX


BAT-
BAT+




**********End of Report**********