

# TEST REPORT

**Reference No.**..... : WTX22X11222718W002  
**FCC ID** ..... : 2ATT5-S215S  
**Applicant** ..... : Dnake (Xiamen) Intelligent Technology Co., Ltd.  
**Address**..... : North Gate, No.1, Haijing Road, Haicang District, Xiamen, 361026, Fujian,  
China  
**Manufacturer** ..... : The same as Applicant  
**Address**..... : The same as Applicant  
**Product Name** ..... : Door Station  
**Model No.**..... : S215/S  
**Standards** ..... : FCC Part 15C  
**Date of Receipt sample** .... : 2022-11-07  
**Date of Test**..... : 2022-11-07 to 2022-11-29  
**Date of Issue** ..... : 2022-11-29  
**Test Report Form No.** ..... : WTX\_Part 15CW  
**Test Result**..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

**Prepared By:**

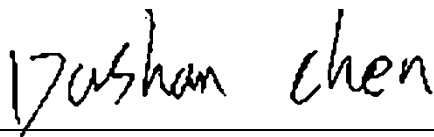
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**Report version**

Version No.	Date of issue	Description
Rev.00	2022-11-29	Original
/	/	/

## 1. GENERAL INFORMATION

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### 1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Door Station
Trade Name:	DNAKE
Model No.:	S215/S
Adding Model:	S215, S215/F
Battery Capacity	/
<p><i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model S215/S, but the circuit and the electronic construction do not change, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT	
Frequency Range:	125kHz
Power adapter:	/
Antenna Type:	Coil Antenna
Modulation Type:	BPSK
Rated Voltage:	DC12V/POE
Antenna Gain:	0dBi

## 1.2 Test Standards

**FCC Part 15 Subpart C:** Intentional Radiators.

**FCC Rules Part 15.207:** Conducted limits.

**FCC Rules Part 15.209:** Radiated emission limits; general requirements.

**FCC Rules Part 15.215:** Additional provisions to the general radiated emission limitations.

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

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

## 1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

## 1.4 Test Facility

### **FCC – Registration No.: 125990**

Waltek Testing Group (Shenzhen) Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

### **Industry Canada (IC) Registration No.: 11464A**

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

## 1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

### Test Mode List:

Test Mode	Description	Remark	Power Supply Mode
TM1	Transmit/ Receiving	125kHz	DC12V

### EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

### Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Network Cable	1.0	Unshielded	Without Ferrite
DC Cable	1.0	Unshielded	Without Ferrite
Adapter	KELI	SW-1960	/

### Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Network Cable	1.0	Unshielded	Without Ferrite
DC Cable	1.0	Unshielded	Without Ferrite

### 1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	$\pm 2.88\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

**1.7 Test Equipment List and Details**

Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2022-03-22	2023-03-21
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2022-03-21	2023-03-20
Amplifier	Agilent	8447F	3113A06717	2022-01-07	2023-01-06
Amplifier	C&D	PAP-1G18	2002	2022-03-21	2023-03-20
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2021-03-20	2023-03-19
Horn Antenna	ETS	3117	00086197	2021-03-19	2023-03-18
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2023-03-19
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2023-04-08
Amplifier	Agilent	8447D	2944A10179	2022-03-21	2023-03-20
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2022-03-25	2023-03-24



## 2. SUMMARY OF TEST RESULTS

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Description of Test	Result
§15.207(a) Conducted Emission	Compliant
§15.209(a) Radiated Emission	Compliant
§15.215 20dB Emission Bandwidth	Compliant

N/A: not applicable

### **3. Antenna Requirement**

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#### **3.1 Standard Applicable**

According to FCC Part 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.

#### **3.2 Evaluation Information**

This product has a Coil antenna, fulfill the requirement of this section.

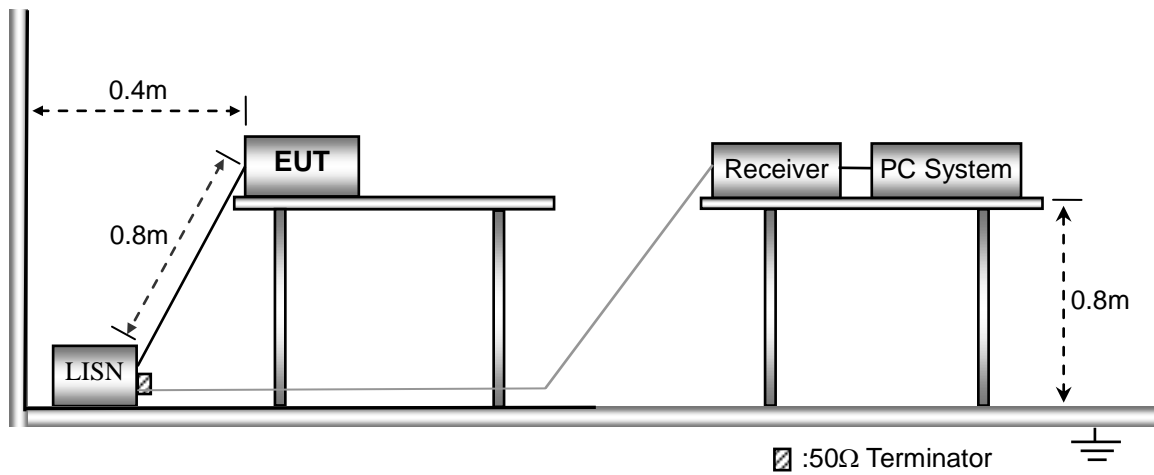
## 4. Conducted Emissions

### 4.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

### 4.2 Basic Test Setup Block Diagram



### 4.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

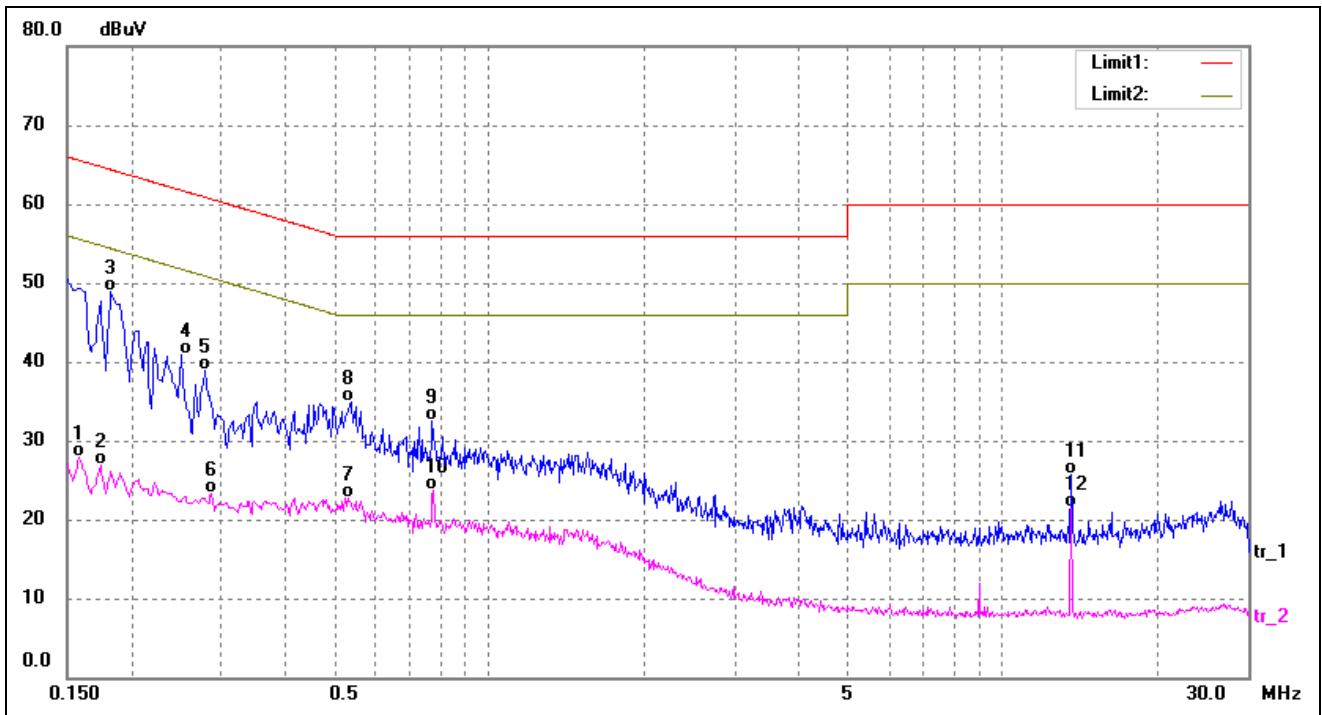
#### 4.4 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency .....	150 kHz
Stop Frequency .....	30 MHz
Sweep Speed .....	Auto
IF Bandwidth.....	10 kHz
Quasi-Peak Adapter Bandwidth.....	9 kHz
Quasi-Peak Adapter Mode .....	Normal

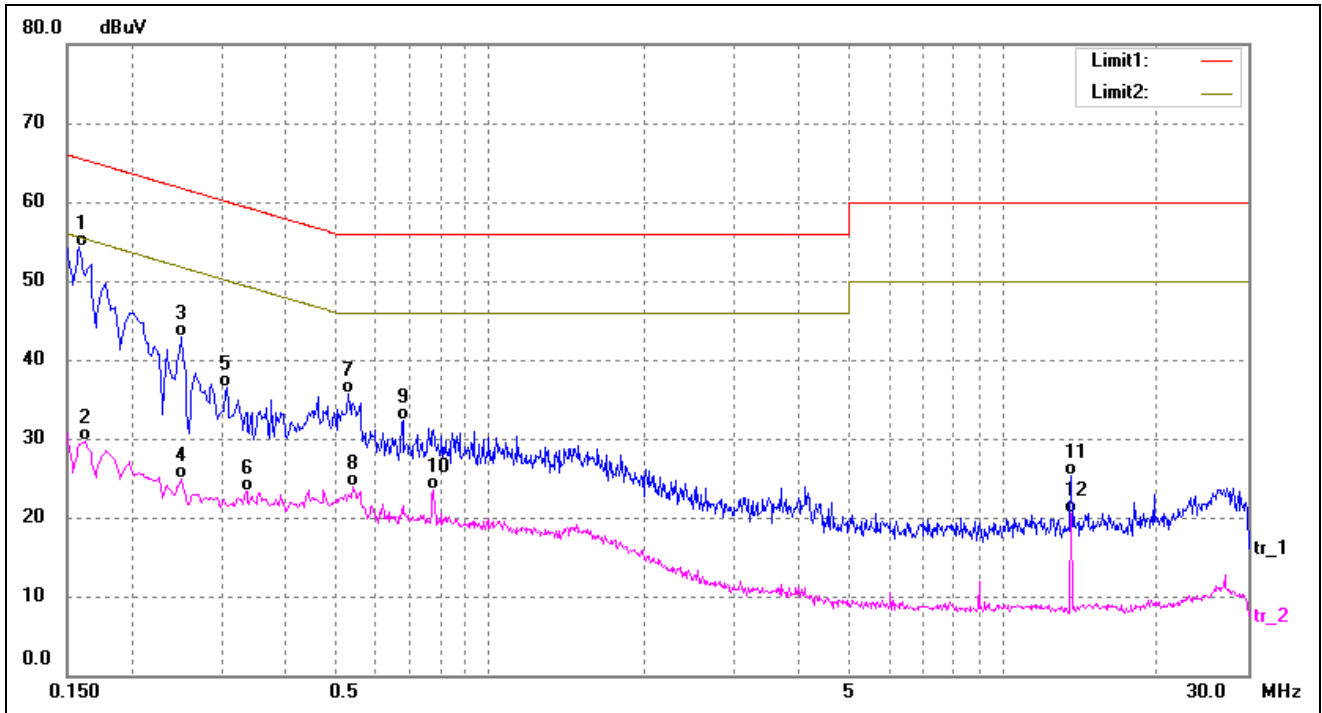
#### 4.5 Summary of Test Results/Plots

Test mode:	TM1	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1580	17.52	10.31	27.83	55.57	-27.74	AVG
2	0.1740	16.53	10.30	26.83	54.77	-27.94	AVG
3*	0.1820	38.53	10.31	48.84	64.39	-15.55	QP
4	0.2500	30.72	10.26	40.98	61.76	-20.78	QP
5	0.2780	28.60	10.25	38.85	60.88	-22.03	QP
6	0.2860	12.99	10.25	23.24	50.64	-27.40	AVG
7	0.5300	12.50	10.22	22.72	46.00	-23.28	AVG
8	0.5340	24.76	10.22	34.98	56.00	-21.02	QP
9	0.7740	22.30	10.17	32.47	56.00	-23.53	QP
10	0.7780	13.57	10.17	23.74	46.00	-22.26	AVG
11	13.5580	15.46	10.27	25.73	60.00	-34.27	QP
12	13.5580	11.26	10.27	21.53	50.00	-28.47	AVG

Test mode:	TM1	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1580	44.05	10.31	54.36	65.57	-11.21	QP
2	0.1620	19.35	10.31	29.66	55.36	-25.70	AVG
3	0.2500	32.65	10.26	42.91	61.76	-18.85	QP
4	0.2500	14.59	10.26	24.85	51.76	-26.91	AVG
5	0.3060	26.28	10.24	36.52	60.08	-23.56	QP
6	0.3340	13.12	10.24	23.36	49.35	-25.99	AVG
7	0.5300	25.47	10.22	35.69	56.00	-20.31	QP
8	0.5420	13.69	10.22	23.91	46.00	-22.09	AVG
9	0.6780	22.15	10.20	32.35	56.00	-23.65	QP
10	0.7780	13.43	10.17	23.60	46.00	-22.40	AVG
11	13.5580	15.00	10.27	25.27	60.00	-34.73	QP
12	13.5580	10.20	10.27	20.47	50.00	-29.53	AVG

## 5. Field Strength of Spurious Emissions

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### 5.1 Standard Applicable

According to §15.209(a), 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:.

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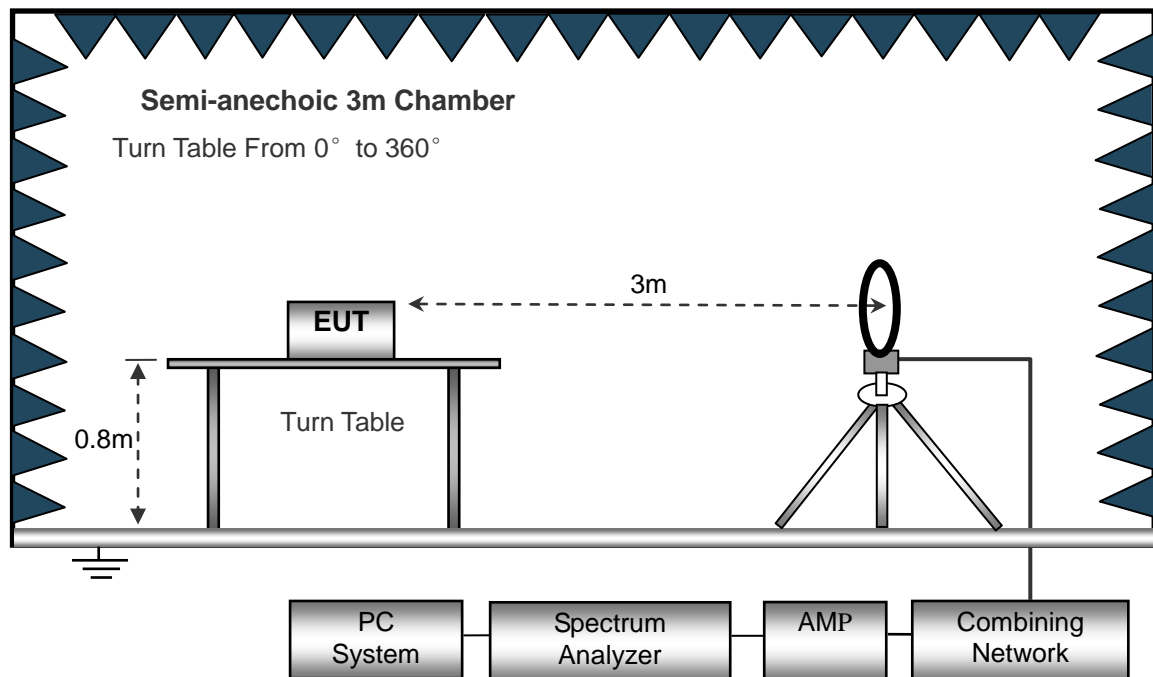
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

### 5.2 Test Procedure

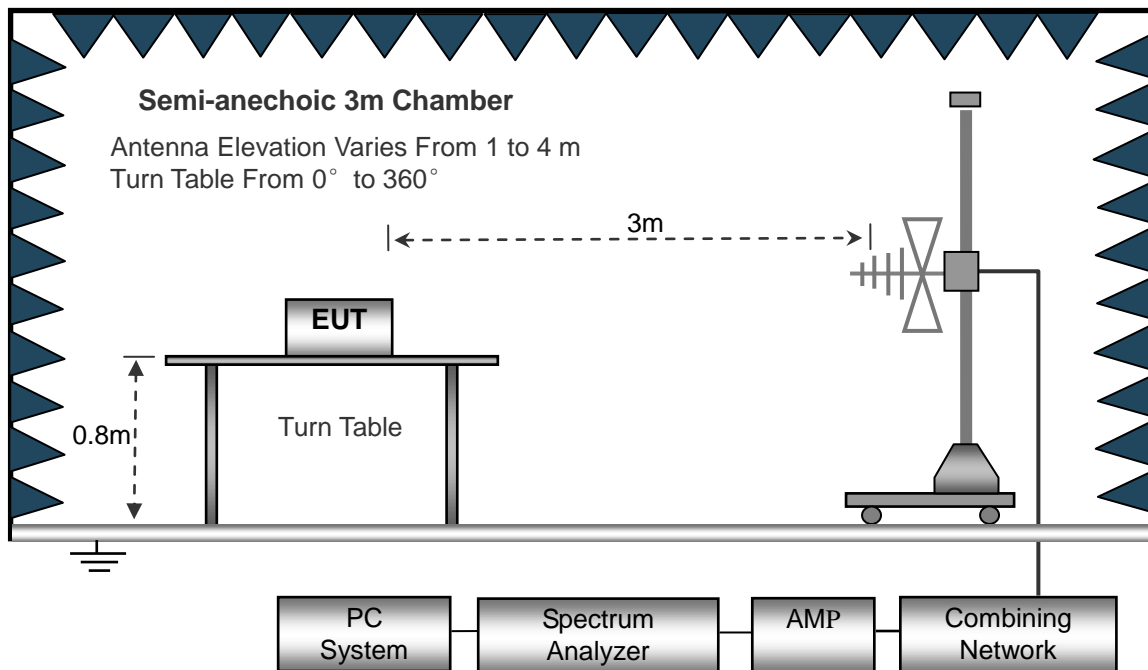
The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

The test setup for emission measurement below 30MHz..



The test setup for emission measurement from 30 MHz to 1 GHz..



Frequency :9kHz-30MHz  
 RBW=10KHz  
 VBW =30KHz  
 Sweep time= Auto  
 Trace = max hold  
 Detector function = peak

Frequency :30MHz-1GHz  
 RBW=120KHz,  
 VBW=300KHz  
 Sweep time= Auto  
 Trace = max hold  
 Detector function = peak, QP

### 5.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB $\mu$ V means the emission is 6dB $\mu$ V below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$



## 5.4 Environmental Conditions

Temperature:	22.5 °C
Relative Humidity:	54%
ATM Pressure:	1012 mbar

## 5. Reference Measurement at open field site

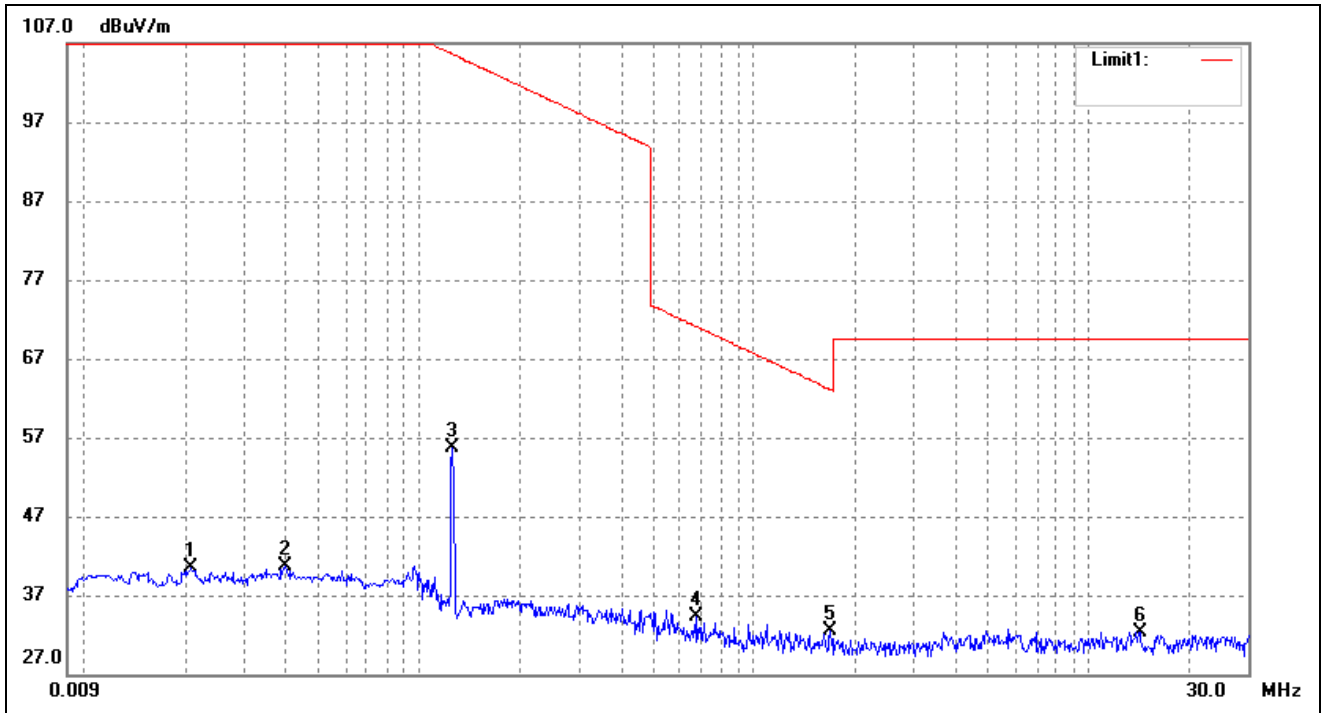
The measurement was performed with set-up consisting of a single turn loop antenna with a diameter of 0.15 m, fed by a signal generator. The loop dimension was chosen to simulate the EUT as far as possible. The signal generator was set to a fixed output level with an unmodulated 10 kHz and 14 kHz sinusoidal signal. The radiated H fieldstrength at 10 kHz and 14 kHz generated by this set-up was measured with the same test setup as used in the SAC in 3 m distance first, and then repeated at the open field site in 3 m and 10 m distance

## 5.5 Summary of Test Results/Plots

*Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

**Radiated Emissions Test Data (Below 30MHz)( Worst case EUT X axis)**

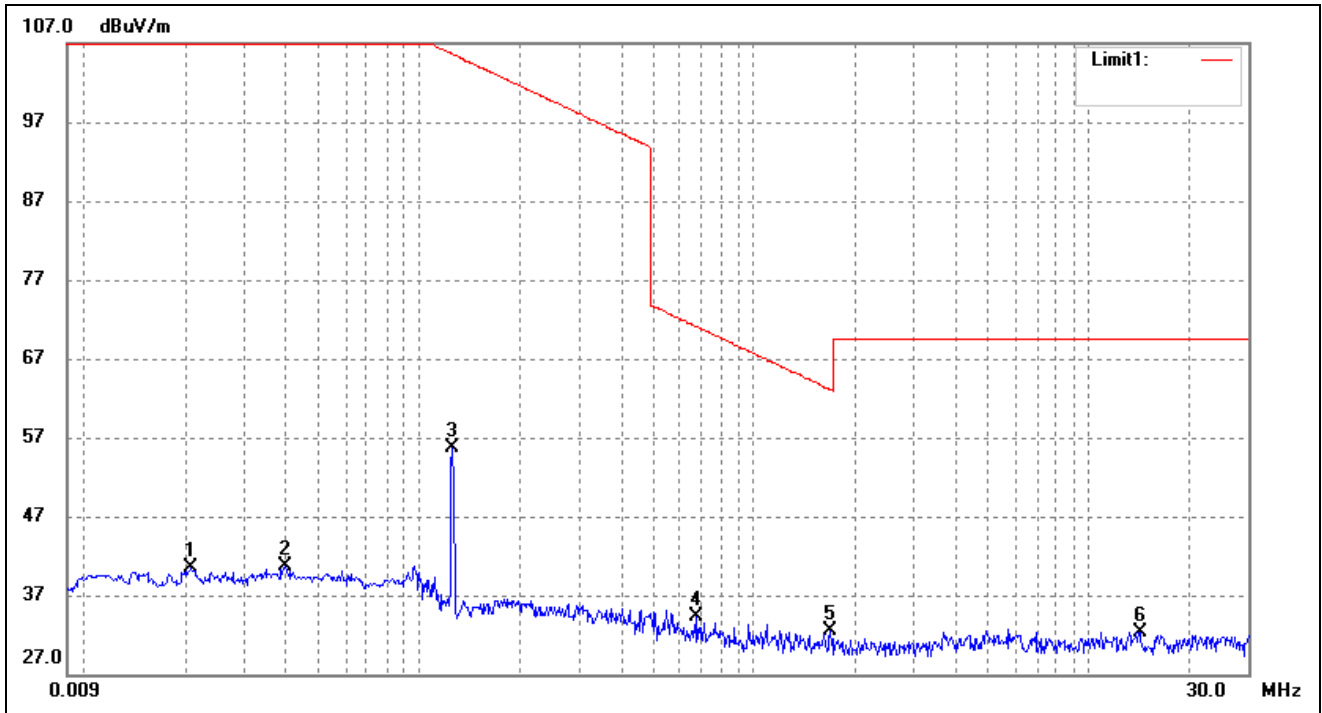
Test mode:	TM1	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	0.0209	47.43	-6.99	40.44	121.19	-80.75	-	-	peak
2	0.0398	46.63	-5.99	40.64	115.59	-74.95	-	-	peak
3	0.1253	62.11	-6.47	55.64	105.64	-50.00	-	-	peak
4	0.6719	40.99	-6.76	34.23	71.07	-36.84	-	-	peak
5	1.6891	38.51	-6.07	32.44	63.08	-30.64	-	-	peak
6	14.1376	37.22	-4.86	32.36	69.50	-37.14	-	-	peak

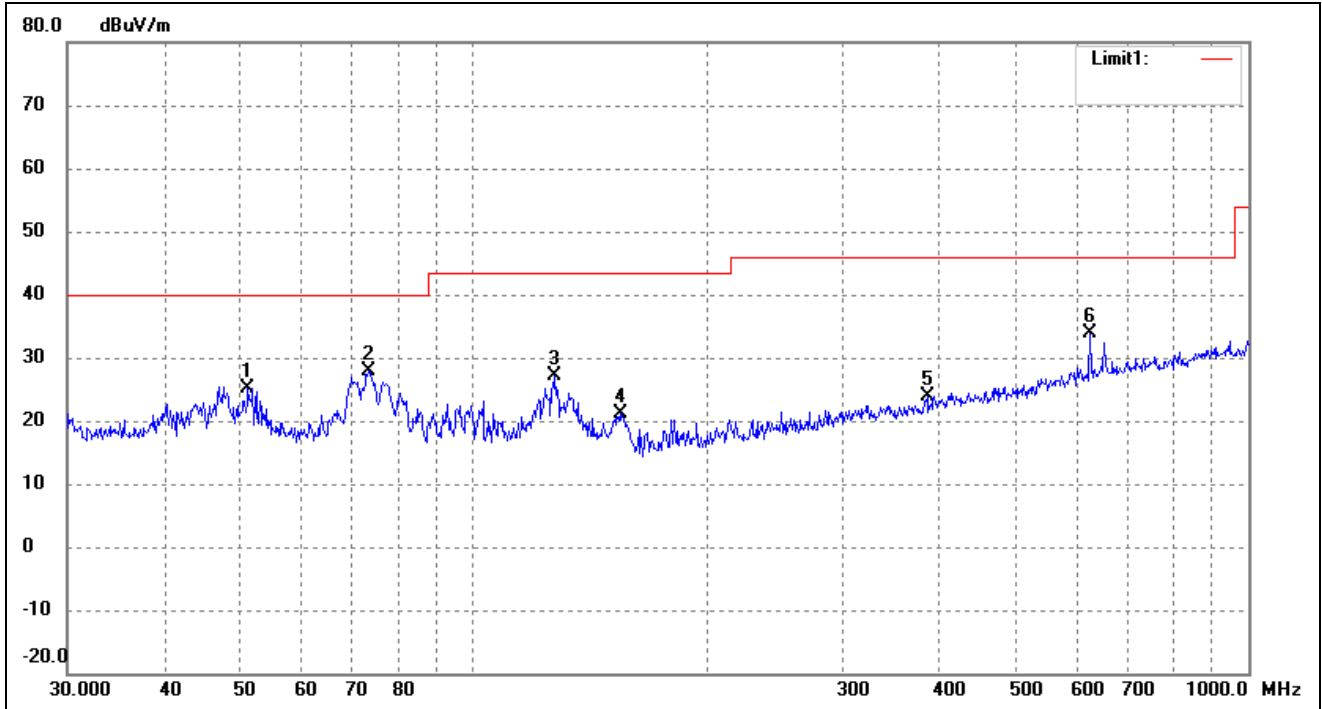
**Plot of Radiated Emissions Test Data ( Above 30MHz)**

Test mode:	TM1	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	0.0209	47.43	-6.99	40.44	121.19	-80.75	-	-	peak
2	0.0398	46.63	-5.99	40.64	115.59	-74.95	-	-	peak
3	0.1253	62.11	-6.47	55.64	105.64	-50.00	-	-	peak
4	0.6719	40.99	-6.76	34.23	71.07	-36.84	-	-	peak
5	1.6891	38.51	-6.07	32.44	63.08	-30.64	-	-	peak
6	14.1376	37.22	-4.86	32.36	69.50	-37.14	-	-	peak

Test mode:	TM1	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	51.3005	32.79	-7.54	25.25	40.00	-14.75	-	-	peak
2	73.3593	39.16	-11.36	27.80	40.00	-12.20	-	-	peak
3	127.6645	37.22	-10.19	27.03	43.50	-16.47	-	-	peak
4	154.8205	32.48	-11.43	21.05	43.50	-22.45	-	-	peak
5	385.2805	27.45	-3.55	23.90	46.00	-22.10	-	-	peak
6	625.0780	33.68	0.22	33.90	46.00	-12.10	-	-	peak

Remark: '- Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

## 6. 20dB Emission bandwidth.

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### 6.1 Standard Applicable

According to 15.215, 20dB emission bandwidth.

### 6.2 Test Procedure

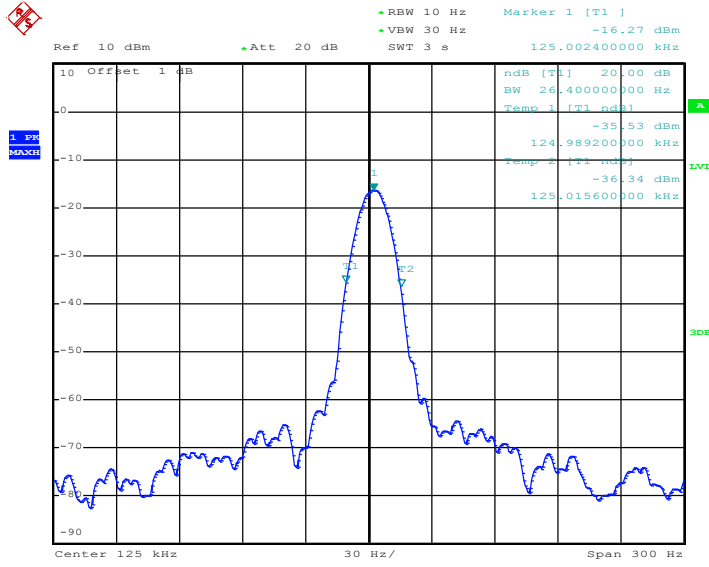
- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

### 6.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

### 6.4 Summary of Test Results/Plots

Test Channel(kHz)	20dB Emission Bandwidth(Hz)
125.002	26.40



Date: 18.NOV.2022 15:58:34

*Note: The RBW of the analyzer measuring Bandwidth cannot be adjusted to 1%-5% occupied bandwidth, the RBW of the test setting is the closest value.*

## APPENDIX PHOTOGRAPHS

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Please refer to "ANNEX"

\*\*\*\*\* END OF REPORT \*\*\*\*\*