Test Report

Report No.: MTi220704016-01E1

Date of issue: 2022-08-18

Applicant: Xindao B.V.

Product name: Indoor/outdoor weather station, silver

Model(s): P279.201

Shenzhen Microtest Co., Ltd.
http://www.mtitest.com

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Table of Contents

TEST RESULT CERTIFICATION	
Applicant's name:	Xindao B.V.
Address:	Verrijn Stuartlaan 1d, 2288 EK Rijswijk, The Netherlands
Manufacturer's Name:	Xindao B.V.
Address:	Verrijn Stuartlaan 1d, 2288 EK Rijswijk, The Netherlands
Factory's Name:	Xindao B.V.
Address:	Verrijn Stuartlaan 1d, 2288 EK Rijswijk, The Netherlands
Product description	
Product name.....:	Indoor/outdoor weather station, silver
Trademark .....:	N/A
Model Name .....:	P279.201
Serial Model.....	N/A
Standards.....:	EN 300 220-1 V3.1.1 (2017-02) EN 300 220-2 V3.2.1 (2018-06)
Date of Test	
Date (s) of performance of tests… :	2022-08-09 ~ 2022-08-18
Test Result.....:	Pass
This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the Radio equipment directive requirements. And it is applicable only to the tested sample identified in the report.	

Testing Engineer : Cindy Qin
(Cindy Qin)

Technical Manager : Leon Chen
(Leon Chen)

Authorized Signatory : Tom Xue
(Tom Xue)

1 General description

1.1 Feature of equipment under test (EUT)

Product name:	Indoor/outdoor weather station, silver
Model name:	P279.201
Serial Model:	N/A
Difference in series models:	N/A
TX/RX frequency range:	433.868MHz
Modulation type:	ASK
Antenna type:	Spring antenna
Antenna Gain:	0dBi
Power source:	DC 3V from battery
Hardware version:	V1.1
Software version:	V1.3
Adapter information:	N/A

1.2 EUT Operation Mode

During testing, the EUT is operating as normal mode.

1.3 Ancillary equipment list

Equipment	Model	S/N	Manufacturer
/	/	/	/

2 Summary of Test Result

Transmitter results summary:

Item	Description of Test	Result
1	Operating frequency	Pass
2	Effective Radiated Power	Pass
3	Maximum Effective Radiated Power spectral density	N/A
4	Duty Cycle	Pass
5	Occupied Bandwidth	Pass
6	Tx Out Of Band Emissions	Pass
7	Unwanted emissions in the spurious domain	Pass
8	Transient power	Pass
9	Adjacent Channel Power	Pass
10	TX behaviour under Low Voltage Conditions	Pass
11	Adaptive Power Control	N/A
12	RX sensitivity level	Pass
13	Blocking	Pass

3 Test Facilities and Accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Laboratory location:	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China.
CNAS Registration No.:	L5868
Telephone:	(86-755)88850135
Fax:	(86-755)88850136

3.2 Environmental conditions

Temperature:	15ºC~35ºC
Humidity	20%~75%
Atmospheric pressure	98kPa~101kPa

3.3 Test conditions

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

- Temperature: 15ºC~35ºC
- Humidity: 20%~75%
- Atmospheric pressure: 98kPa~101kPa

Test Conditions	Normal	L.V.L.T.	L.V.H.T.	H.V.L.T.	H.V.H.T.
Temperature (℃)	25	-9.9	50	-9.9	50
Power supply (Vdc)	3	2.7	2.7	3.3	3.3

Note: the extreme ambient temperatures and voltages are declared by manufacture.

3.4 Measurement uncertainty

The following measurement uncertainty levels have been calculated for tests performed on the EUT as specified in ETSI TR 100 028-1/2.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Parameter	Uncertainty Criterion	Measurement Uncertainty
RF frequency	1 x 10-7	1 x 10^{-8}
RF power, conducted	±1.5dB	±0.5dB
Maximum frequency deviation: - within 300 Hz and 6 kHz of audio frequency - within 6 kHz and 25 kHz of audio frequency	±5% ±3dB	2.1% ±1.5dB
Adjacent channel power	±3dB	±1.2dB
Conducted spurious emission of transmitter, valid up to 6 GHz	±3dB	±0.5dB
Conducted emission of receivers	±3dB	±0.5dB
Radiated emission of transmitter, valid up to 6 GHz	±6dB	±5.04dB
Radiated emission of receiver, valid up to 6 GHz	±6dB	±5.04dB
RF level uncertainty for a given BER	±1.5dB	±1.1dB
Temperature	±3℃	±0.8℃
Humidity	±10%	±2.5%

3.5 Test software

Software Name	Manufacturer	Model	Version
RF Test System	Shenzhen JS tonscend co., ltd	JS1120-3	2.5.77.0418

4 List of test equipment

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E043	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2022/05/05	2023/05/04
MTI-E044	TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-1338	2021/05/30	2023/05/29
MTI-E047	Amplifier	Hewlett-Packard	8447F	3113A06150	2022/05/05	2023/05/04
MTI-E045	Double Ridged Broadband Horn Antenna	schwarabeck	BBHA 9120 D	9120D-2278	2021/05/30	2023/05/29
MTI-E057	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2021/06/02	2022/06/01
MTI-E058	ESG Series Analog Ssignal Generator	Agilent	E4421B	GB40051240	2022/05/05	2023/05/04
MTI-E062	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2022/05/05	2023/05/04
MTI-E063	Power Splitter	/	PD-4SF-206D	/	2022/05/05	2023/05/04
MTI-E064	Synthesized Sweeper	Agilent	83752A	3610A01957	2022/05/05	2023/05/04
MTI-E065	DC Power Supply	Agilent	E3632A	MY40027695	2022/05/05	2023/05/04
MTI-E066	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2022/05/05	2023/05/04
MTI-E071	ESG Vector Signal Generator	Agilent	N5182A	MY50143762	2022/05/05	2023/05/04
MTI-E072	Thermometer Clock Humidity Monitor	-	HTC-1	/	2022/05/05	2023/05/04
MTI-E089	ESG Vector Signal Generator	Agilent	N5182A	MY49060455	2022/05/05	2023/05/04
MTI-E080	Thermometer Clock Humidity Monitor	-	HTC-1	/	2022/05/05	2023/05/04
Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).						

5 Transmitter parameters

5.1 Operating frequency

5.1.1 Definition

The nominal Operating Frequency is the center of a channel of width OCW.

5.1.2 Limits

Refer to chapter 4.2.1.2 of ETSI EN 300 220-2 V3.2.1 (2018-06)

The manufacturer may declare either one or more operating frequencies and operating channels. Operating channel(s) shall be be entirely within operational frequency bands allowed by annexes B H 433,050 MHz to 434,790MHz.

5.1.3 Test Procedures

Refer to chapter 5.1.1 of ETSI EN 300 220-1 V3.1.1 (2017-02).

5.1.4 Test Result

Table 6: Information Recorded in the Test Report for Operating Frequency test

Value	Notes
Operational Frequency band or bands	433.050-434.790MHz
Nominal Operating Frequency or Frequencies	433.868MHz
Operating Channel width(s) - OCW	0.74MHz

Note: OCW is claimed by the manufacturer.

5.2 Effective radiated power

5.2.1 Definition

The effective radiated power (e.r.p) is the power radiated in the direction of the maximum radiated power under specified conditions of measurements for any condition of modulation. For equipment with a permanent or temporary antenna connection it may be taken as the power delivered from that connector taking into account the antenna gain.

5.2.2 Limits

Refer to chapter 4.3.1.2 of ETSI EN 300 220-2 V3.2.1 (2018-06)
The effective radiated power shall not be greater than 10 mW e.r.p, Operational Frequency Band in H.
The limits please refer to ETSI EN 300 220-2 V3.2.1 (2018-06) Annex B, H 433,050 MHz to 434,790MHz.

5.2.3 Test Procedures

Refer to chapter 5.2.2.2 of ETSI EN 300 220-1 V3.1.1 (2017-02).

5.2.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	TX		

Frequency (MHz)	Ant H / V	SG Level (dBm)	Pcl (dB)	Ga (dB)	Correction (dBi)	(ERP) (dBm)	ERP (mW)	Limits (mW)	Result
433.868	H	2.21	0.5	0	2.15	0.56	1.13763	10	Pass
433.868	V	1.36	0.5	0	2.15	-0.29	0.93541	10	Pass

Note: Pcl= cable loss
Ga= Antenna Gain
Peak EIRP (dBm)= SG Level -Pcl +Ga
ERP (dBm)=EIRP-2.15

5.3 Maximum Effective Radiated Power spectral density

5.3.1 Definition

The maximum e.r.p. spectral density is defined as the highest e.r.p. level in dBm per Hertz generated by the transmitter within the power envelope.

5.3.2 Limits

The Maximum e.r.p. spectral density shall not be greater than the value allowed in annexes B or C for the chosen operational frequency band(s).

5.3.3 Test Procedures

Refer to chapter 5.3.4 of ETSI EN 300 220-1 V3.1.1 (2017-02).

5.3.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	N/A		

The Maximum e.r.p. spectral density shall not be required for EUT operating in Band H.

5.4 Duty Cycle

5.4.1 Definition

Duty cycle is the ratio expressed as a percentage, of the cumulative duration of transmissions T_{on_cum} within an observation interval T_{obs}. $DC = \left(\frac{T_{on\_cum}}{T_{obs}}\right)_{Fobs}$ on an observation bandwidth Fobs.
Unless otherwise specified, Tobs is 1 hour and the observation bandwidth Fobs is the operational frequency band.
Each transmission consists of an RF emission, or sequence of RF emissions separated by intervals < T_{Dis}.
An equipment may operate on several bands simultaneously (i.e. multi transmissions), Duty Cycle limit of each individual band applies to each transmission within that band.
In case of a multicarrier modulation in a band, the duty cycle applies to the whole signal used for a transmission (e.g. OFDM). These measurements are applicable to narrowband systems.

5.4.2 Limits

The limits please refer to ETSI EN 300 220-2 V3.2.1 (2018-06) Annex B H.

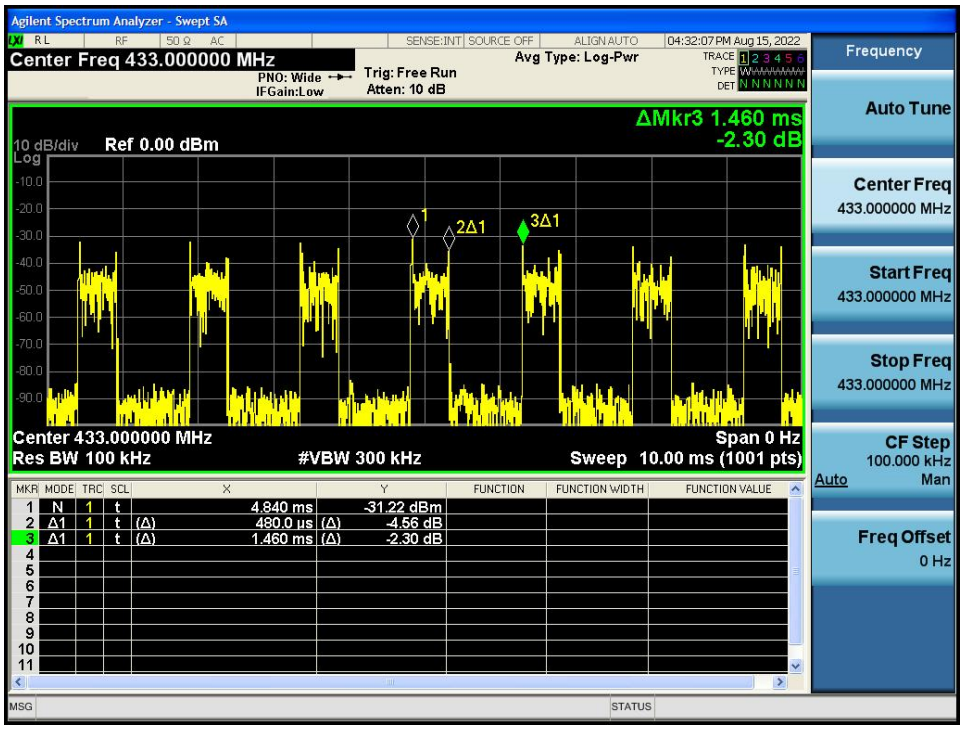
5.4.3 Test Procedures

Refer to chapter 5.4 of ETSI EN 300 220-1 V3.1.1 (2017-02).

5.4.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	TX		

T_{on}=0.48ms
DC=(T_{on}×N)/1hour
DC=（0.48×100）/3600000= 0.0000133=0.00133%
Note: N represents the number of times the EUT is transmitter within 1 hour, The customer claims that the maximum number of launches in the 1 hour is 100.


Agilent Spectrum Analyzer - Swept SA
Center Freq 433.000000 MHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
04:32:07 PM Aug 15, 2022
ΔMkr3 1.460 ms
-2.30 dB
10 dB/div
Ref 0.00 dBm
Log
Center 433.000000 MHz
Res BW 100 kHz
#VBW 300 kHz
Span 0 Hz
Sweep 10.00 ms (1001 pts)
1 N 1 t 4.840 ms -31.22 dBm
2 Δ1 1 t (Δ) 480.0 µs (Δ) -4.56 dB
3 Δ1 1 t (Δ) 1.460 ms (Δ) -2.30 dB
Frequency
Auto Tune
Center Freq
433.000000 MHz
Start Freq
433.000000 MHz
Stop Freq
433.000000 MHz
CF Step
100.000 kHz
Auto
Man
Freq Offset
0 Hz

5.5 Occupied bandwidth

5.5.1 Definition

The occupied bandwidth (OBW) is the Frequency Range in which 99 % of the total mean power of a given emission falls. The residual part of the total power being denoted as β, which, in cases of symmetrical spectra, splits up into β/2on each side of the spectrum. Unless otherwise specified, β/2 is taken as 0,5 % as described in Figure 3.

The maximum occupied bandwidth includes all associated side bands above the appropriate emissions level and the frequency error or drift under extreme test conditions

5.5.2 Limits

The Operating Channel shall be declared and shall reside entirely within the Operational Frequency Band.

The Maximum Occupied Bandwidth at 99 % shall reside entirely within the Operating Channel defined by F low and F high.

Follow the limit as described in EN 300 220-2 V3.1.1 Clause 4.3.4.2 to measure the modulation bandwidth at normal and extreme conditions

The limits please refer to ETSI EN 300 220-2 V3.2.1 (2018-06) Annex B H .

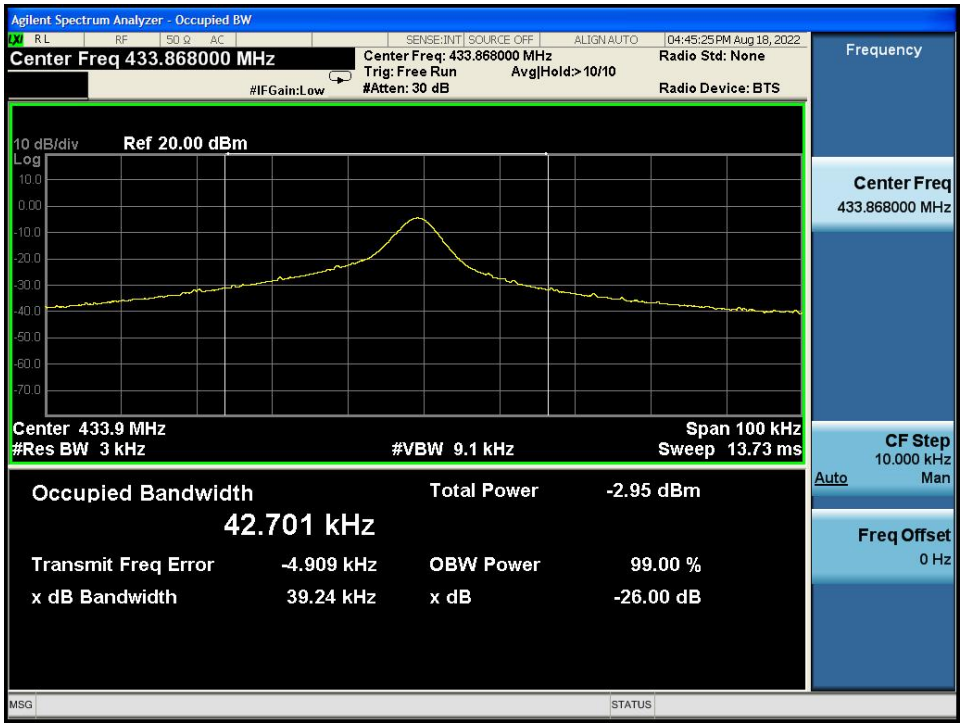
5.5.3 Test Procedures

Refer to chapter 5.3.5 of ETSI EN 300 220 V3.1.1 (2017-02).

5.5.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	TX		

Channel	Frequency (MHz)	99% Occupied Bandwidth (KHz)	Limit	Result
01	433.868	42.701	300 kHz except for voice limited to 25 kHz	PASS


Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
SOURCE OFF
ALIGN AUTO
04:45:25 PM Aug 18, 2022
Center Freq 433.868000 MHz
Center Freq: 433.868000 MHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center Freq
433.868000 MHz
Center 433.9 MHz
#Res BW 3 kHz
#VBW 9.1 kHz
Span 100 kHz
Sweep 13.73 ms
CF Step
10.000 kHz
Auto
Man
Occupied Bandwidth
42.701 kHz
Total Power
-2.95 dBm
Freq Offset
0 Hz
Transmit Freq Error
-4.909 kHz
OBW Power
99.00 %
x dB Bandwidth
39.24 kHz
x dB
-26.00 dB
MSG
STATUS

5.6 Tx Out of Band Emissions

5.6.1 Definition

For the purpose of the present document, the description in ETSI EN 300 220-1 [1], clause 5.8.1 applies.

5.6.2 Limit

Refer to chapter 4.3.5.2 of ETSI EN 300 220-2 V3.2.1 (2018-06)

TX Out of Band Emissions applies to all transmitters with OCW > 25 kHz.

The EUT emissions level in OOB domains for the Operating Channel and the Operational Frequency Band shall be less or equal to Table 15 spectrum mask.

Table 15: Emission limits in the Out Of Band domains

Domain	Frequency Range	RBW_{REF}	Max power limit
OOB limits applicable to Operational Frequency Band (See Figure 6)	$f \le f_{low\_OFB}$ - 400 kHz	10 kHz	-36 dBm
	F_{low_OFB} - 400 kHz ≤ f ≤ f_{low_OFB} - 200 kHz	1 kHz	-36 dBm
	f_{low} - 200 kHz ≤ f < f_{low_OFB}	1 kHz	See Figure 6
	$f = f_{low\_OFB}$	1 kHz	0 dBm
	$f = f_{high\_OFB}$	1 kHz	0 dBm
	F_{high_OFB} < f ≤ f_{high_OFB} + 200 kHz	1 kHz	See Figure 6
	F_{high_OFB} + 200 kHz ≤ f ≤ f_{high_OFB} + 400 kHz	1 kHz	-36 dBm
	F_{high_OFB} + 400 kHz ≤ f	10 kHz	-36 dBm
OOB limits applicable to Operating Channel (See Figure 5)	$f = f_c$ - 2.5 x OCW	1 kHz	-36 dBm
	f_c - 2,5 x OCW ≤ f ≤ f_c - 0,5 x OCW	1 kHz	See Figure 5
	$f = f_c$ - 0,5 x OCW	1 kHz	0 dBm
	$f = f_c$ + 0,5 x OCW	1 kHz	0 dBm
	f_c + 0,5 x OCW ≤ f ≤ f_c + 2,5 x OCW	1 kHz	See Figure 5
	$f = f_c$ + 2,5 x OCW	1 kHz	-36 dBm
NOTE: f is the measurement frequency. f_c is the Operating Frequency. F_{low_OFB} is the lower edge of the Operational Frequency Band. F_{high_OFB} is the upper edge of the Operational Frequency Band. OCW is the operating channel bandwidth.			

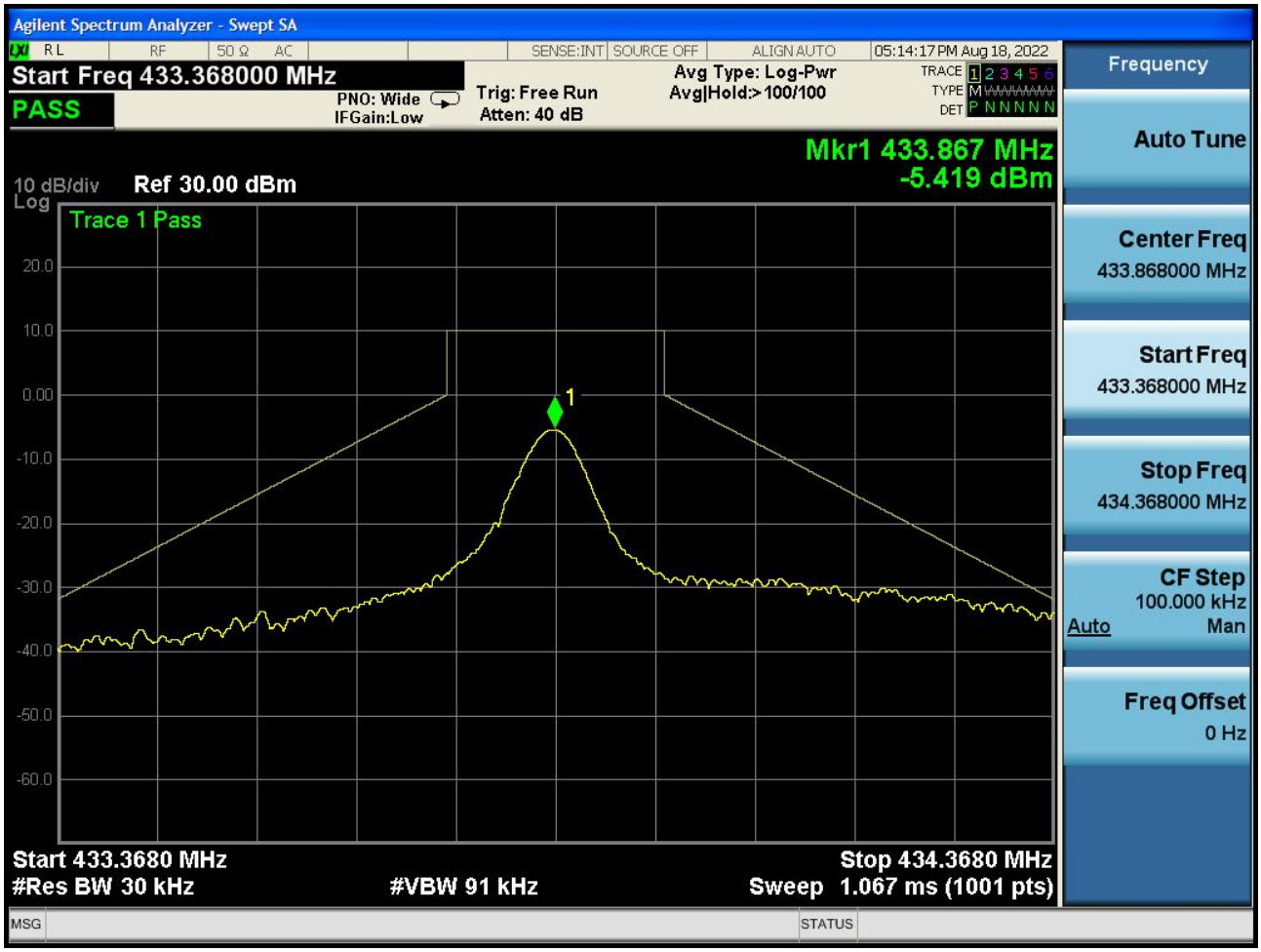
5.6.3 Test Procedures

Refer to chapter 5.8 of ETSI EN 300 220-1 V3.1.1 (2017-02).

5.6.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V
Test Mode:	TX		

OCW=42.701kHz



5.7 Transient power

5.7.1 Definition

For the purpose of the present document, the description in ETSI EN 300 220-1 [1], clause 5.10.1 applies.

5.7.2 Limits

Refer to chapter 4.3.6.2 of ETSI EN 300 220-2 V3.2.1 (2018-06) & clause 5.10.2 of EN 300 220-1 V3.1.1.

The transient power shall not exceed the values given in Table 23.

Table 23: Transmitter Transient Power limits

Absolute offset from centre frequency	RBW_{REF}	Peak power limit applicable at measurement points
≤ 400 kHz	1 kHz	0 dBm
> 400 kHz	1 kHz	-27 dBm

5.7.3 Test Procedures

Refer to chapter 5.10.3.2 of ETSI EN 300 220-1 V3.1.1 (2017-02).

5.7.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V
Test Mode:	TX		

Offset Frequency	Center Frequency	RBW	Max Vaule	Limit	Results
kHz	MHz	(kHz)	(dBm)	(dBm)	(P/F)
-0,5 x OCW - 3 kHz	433.755	1kHz	-36.03	0 dBm	PASS
0,5 x OCW + 3 kHz	433.981	1kHz	-36.12	0 dBm	PASS
-OCW	433.647	10kHz	-34.05	0 dBm	PASS
+OCW	434.089	10kHz	-33.91	0 dBm	PASS
-0,5 x OCW - 400 kHz	433.358	100kHz	-44.92	-27 dBm	PASS
0,5 x OCW + 400 kHz	434.378	100kHz	-45.04	-27 dBm	PASS
-0,5 x OCW -1 200 kHz	432.558	300kHz	-55.99	-27 dBm	PASS
0,5 x OCW +1 200 kHz	435.178	300kHz	-56.05	-27 dBm	PASS

5.8 Adjacent Channel Power

5.8.1 Definition

For the purpose of the present document, the description in ETSI EN 300 220-1 [1], clause 5.11.1 applies.

5.8.2 Limits

Refer to chapter 4.3.7.2 of ETSI EN 300 220-2 V3.2.1 (2018-06)

Where the operating channel width is less than or equal to 25 kHz, the power in the adjacent channels shall not exceed the values given in Table 26.

Table 26: Adjacent channel power limits for transmitters with OCW ≤ 25 kHz

		Adjacent Channel power integrated over 0,7 x OCW	Alternate Adjacent Channel power integrated over 0,7 x OCW
OCW < 20 kHz	Normal test conditions	-20 dBm	-20 dBm
	Extreme test conditions	-15 dBm	-20 dBm
OCW ≥ 20 kHz	Normal test conditions	-37 dBm	-40 dBm
	Extreme test conditions	-32 dBm	-37 dBm

5.8.3 Test Procedures

Refer to chapter 5.11.3.3 of ETSI EN 300 220-1 V3.1.1 (2017-02).

5.8.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	TX		

Note: the equipment is not applicable for adjacent channel power, Adjacent channel power applies to all transmitters with OCW ≤ 25 kHz.

5.9 TX behaviour under Low Voltage Conditions

5.9.1 Definition

The TX behaviour under low voltage condition is the ability of the equipment to maintain its operating frequency and not produce emissions which exceed any relevant limit when the battery voltage falls below the lower extreme voltage level

5.9.2 Limits

Refer to chapter 4.3.8.2 of ETSI EN 300 220-2 V3.2.1 (2018-06) & EN 300 220-1 V3.1.1, clause 5.12.2.

The equipment shall either:

a) remain in the Operating Channel OC without exceeding any applicable limits (e.g. Duty Cycle); or

b) reduce its effective radiated power below the Spurious Emission limits without exceeding any applicable limits(e.g. Duty Cycle); or

c) shut down, (ceasing function);

as the voltage falls below the manufacturers declared operating voltage.

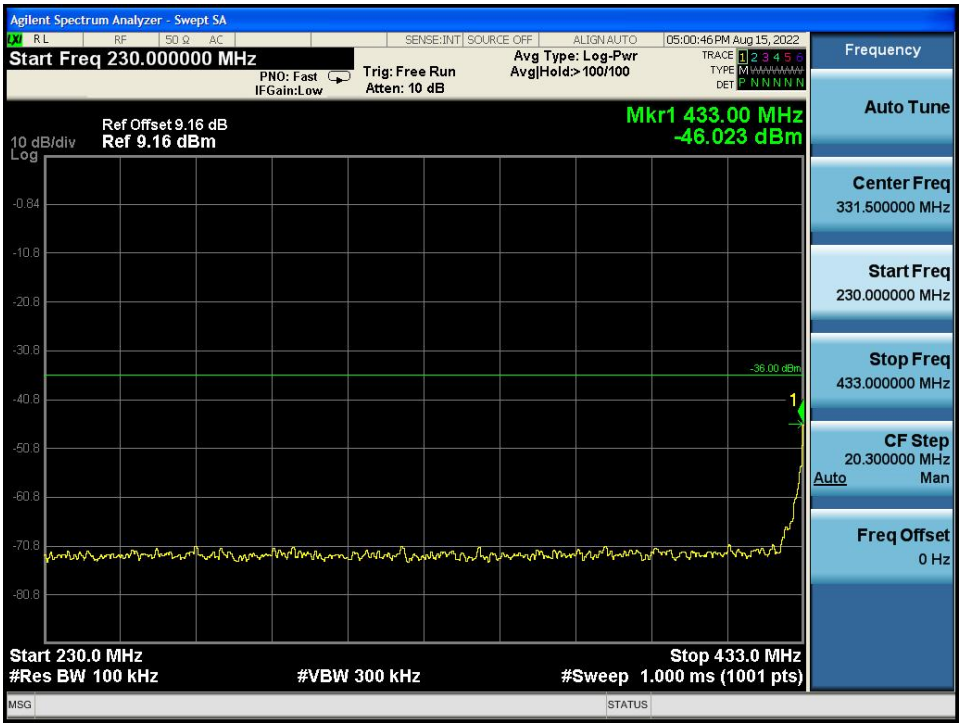
5.9.3 Test Procedures

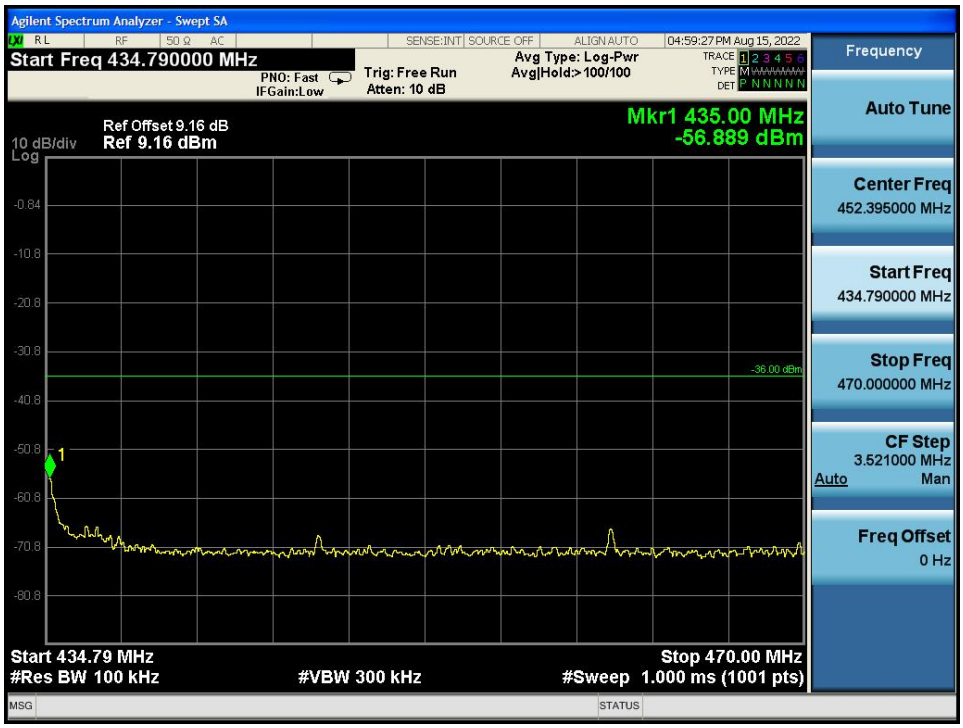
Refer to chapter 5.12.3.2 of ETSI EN 300 220-1 V3.1.1 (2017-02)

5.9.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	TX		

DC power Supplied (V) DC	Conducted Power	Limits
3	2.71	a) remain in the Operating Channel OC without exceeding any applicable limits (e.g. Duty Cycle); or b) reduce its effective radiated power below the Spurious Emission limits without exceeding any applicable limits (e.g. Duty Cycle); or c) shut down, (ceasing function); as the voltage falls below the manufacturers declared operating voltage.
2.7	2.68	
2.6	2.67	
2.5	2.42	
< 6	No function	





Test Conditions	Stop Function Voltage (V)	Result
T nom =20(°C)	6	PASS

5.10 Adaptive Power Control

5.10.1 Definition

For the purpose of the present document, the description in ETSI EN 300 220-1 [1], clause 5.13.1 applies.

5.10.2 Limits

Refer to chapter 4.3.9.2 of ETSI EN 300 220-2 V3.2.1 (2018-06) & EN 300 220-1 V3.1.1 clause 5.13.2.

The peak power measured when active APC function at its minimum setting shall not exceed the value shown in Table 29.

Table 29: APC power limit

Parameter	Limit
Transmitted e.r.p.	+7 dBm

5.10.3 Test Procedures

Refer to chapter 5.12.3.2 of ETSI EN 300 220-1 V3.1.1 (2017-02).

5.10.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	N/A		

Note: the equipment is not applicable for Adaptive power control.

5.11 Unwanted emissions in the spurious domain

5.11.1 Definition

Unwanted emissions for a TX mode.

5.11.2 Limits

Refer to chapter 5.9.2 of ETSI EN 300 220-1 V3.1.1

The power of any unwanted emission in the spurious domain shall not exceed the values given in Table 19.

Table 19: Spurious domain emission limits

Frequency / State	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz	Other frequencies below 1 000 MHz	Frequencies above 1 000 MHz
TX mode	-54 dBm	-36 dBm	-30 dBm
RX and all other modes	-57 dBm	-57 dBm	-47 dBm

.

5.11.3 Test Procedures

Refer to chapter 5.9.3.1 of ETSI EN 300 220-1 V3.1.1.

5.11.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	TX		

Polar (H/V)	Frequency (MHz)	Reading Level (dBm) m	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Detector Type
V	325.4531	-73.24	-5.54	-78.78	-36.00	-42.78	QP
V	433.8000	-31.87	-3.72	-35.59	-36.00	0.41	QP
H	433.8000	-34.09	-4.48	-38.57	-36.00	-2.57	QP
H	600.1099	-72.31	-2.22	-74.53	-54.00	-20.53	QP
V	1301.400	-76.12	13.20	-62.92	-30.00	-32.92	Peak
V	1735.200	-77.38	12.50	-64.88	-30.00	-34.88	Peak
H	1301.400	-75.20	13.09	-62.11	-30.00	-32.11	peak
H	1735.500	-76.81	12.40	-64.41	-30.00	-34.41	peak

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	RX		

Polar (H/V)	Frequency (MHz)	Reading Level (dBm) m	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Detector Type
V	336.0352	-81.03	-4.63	-85.66	-57.00	-28.66	QP
V	600.1099	-73.30	-0.10	-73.40	-57.00	-16.40	QP
H	367.6279	-80.50	-4.95	-85.45	-57.00	-28.45	QP
H	600.3730	-71.68	-2.22	-73.90	-57.00	-16.90	QP
V	3960.000	-74.02	17.26	-56.76	-47.00	-9.76	peak
V	4885.000	-74.68	18.77	-55.91	-47.00	-8.91	peak
H	2935.000	-72.80	15.84	-56.96	-47.00	-9.96	peak
H	4240.000	-74.27	17.74	-56.53	-47.00	-9.53	peak

6 Receiver parameters

6.1 RX sensitivity

6.1.1 Definition

For the purpose of the present document, the description in ETSI EN 300 220-1 [1], clause 5.14.1 applies.

6.1.2 Limits

Refer to chapter 4.4.1.2 of ETSI EN 300 220-2 V3.2.1 (2018-06)& EN 300 220-1 V3.1.1, clause 5.14.2.

The sensitivity for receivers shall be below or equal to Table 32 level.

Table 32: Limits for Receiver sensitivity

$$S = 10\log RB_{kHz} - 4 \quad dB\mu V \ emf \text{ ; or}$$

$$S_P = 10\log RB_{kHz} - 117 dBm$$

where:

- S_p is the sensitivity in dBm.
- RB is the declared receiver bandwidth in kHz.

The receiver bandwidth RB shall be declared by the manufacturer. RB is the usually 3 dB receiver bandwidth selectivity.
For example, the sensitivity for a 25 kHz Operating Channel equipment with a 16 kHz bandwidth shall be better than +8 dBμV emf for a 50 Ω receiver input impedance. This corresponds to a receiver sensitivity of -105dBm.

6.1.3 Test Procedures

Refer to chapter 5.14.3.3 of ETSI EN 300 220-1 V3.1.1 (2017-02).

6.1.4 Test Result

EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	RX		

RBkHz=220.51kHz

Frequency(MHz)	RBkHz (kHz)	Measured value (dBm)	≤Limit/ SP (dBm)	Result
433.868	42.701	-113.18	-93.57	Pass

6.2 Blocking

6.2.1 Definition

Blocking is a measure of the capability of the receiver to receive a wanted modulated signal without exceeding a given degradation due to the presence of an unwanted input signal at any frequencies other than those of the spurious responses or the adjacent channels or bands.

6.2.2 Limits

Refer to chapter 4.4.2.2 of ETSI EN 300 220-2 V3.2.1 (2018-06) & EN 300 220-1 V3.1.1 clause 5.18.2.

The blocking levels at the specified frequency offsets shall be equal to or greater than the limits Table 40, except at frequencies where spurious responses are found.

Table 40: Blocking level parameters for RX category 3

Requirement	Limits
	Receiver category 3
Blocking at ±2 MHz from OC edge fhigh and flow	≥ -80 dBm
Blocking at ±10 MHz from OC edge fhigh and flow	≥ -60 dBm
Blocking at ±5 % of Centre Frequency or 15 MHz, whichever is the greater	≥ -60 dBm

The blocking levels at the specified frequency offsets shall be equal to or greater than the limits Table 41, except at frequencies where spurious responses are found.

Table 41: Blocking level parameters for RX category 2

Requirement	Limits
	Receiver category 2
Blocking at ±2 MHz from OC edge fhigh and flow	≥ -69 dBm
Blocking at ±10 MHz from OC edge fhigh and flow	≥ -44 dBm
Blocking at ±5 % of Centre Frequency or 15 MHz, whichever is the greater	≥ -44 dBm

The blocking levels at the specified frequency offsets shall be equal to or greater than the limits Table 42, except at frequencies where spurious responses are found.

Table 42: Blocking level parameters for RX category 1.5

Requirement	Limits
	Receiver category 1.5
Blocking at ±2 MHz from OC edge fhigh and flow	≥ -43 dBm
Blocking at ±10 MHz from OC edge fhigh and flow	≥ -33 dBm
Blocking at ±5 % of Centre Frequency or 15 MHz, whichever is the greater	≥ -33 dBm

The blocking levels at the specified frequency offsets shall be equal to or greater than the limits Table 43, except at frequencies where spurious responses are found.

Table 43: Blocking level parameters for RX category 1

433.Requirement	Limits
	Receiver category 1
Blocking at ±2 MHz from OC edge fhigh and flow	≥ -20 dBm
Blocking at ±10 MHz from OC edge fhigh and flow	≥ -20 dBm
Blocking at ±5 % of Centre Frequency or 15 MHz, whichever is the greater	≥ -20 dBm

6.2.3 Test Procedures

Refer to chapter 5.18.6.3&5.18.6.4 of ETSI EN 300 220-1 V3.1.1 (2017-02).

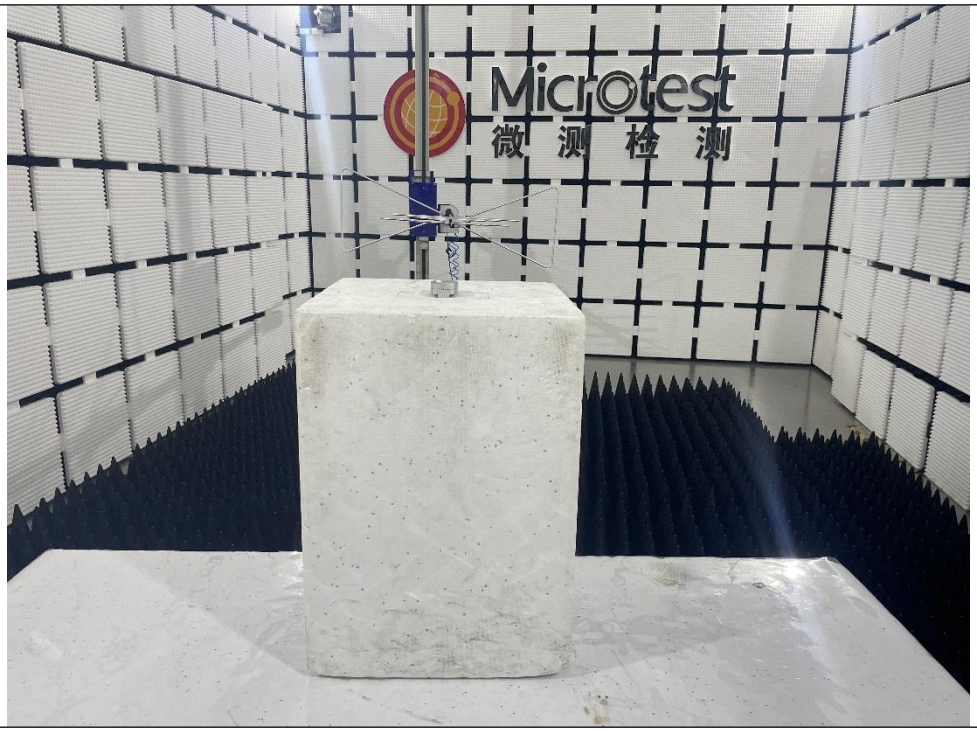
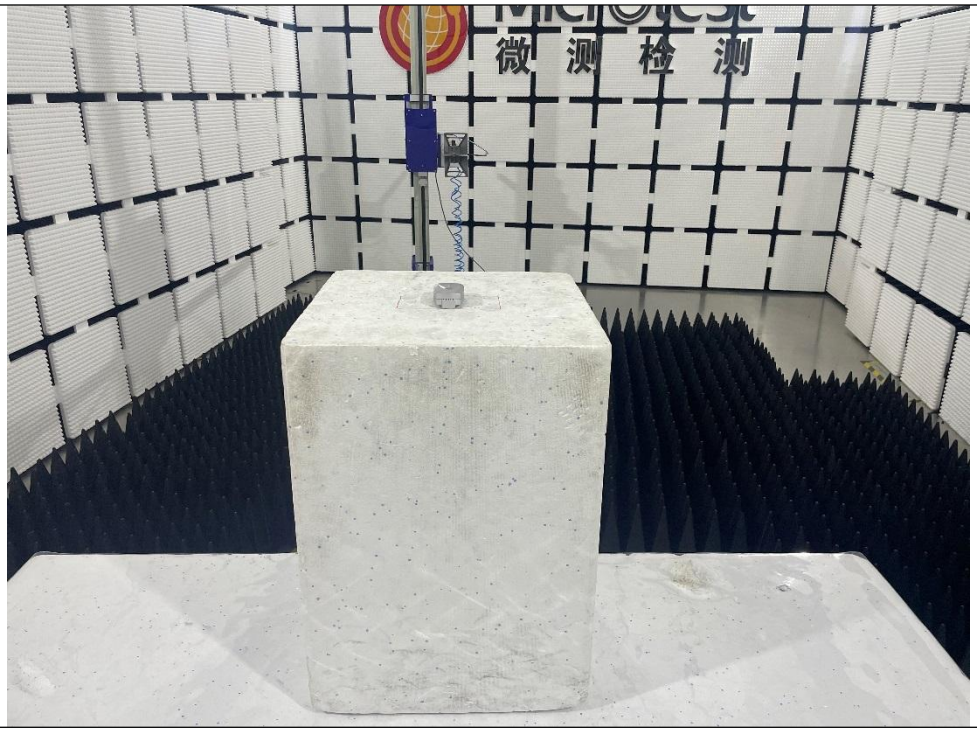
6.2.4 Test Result

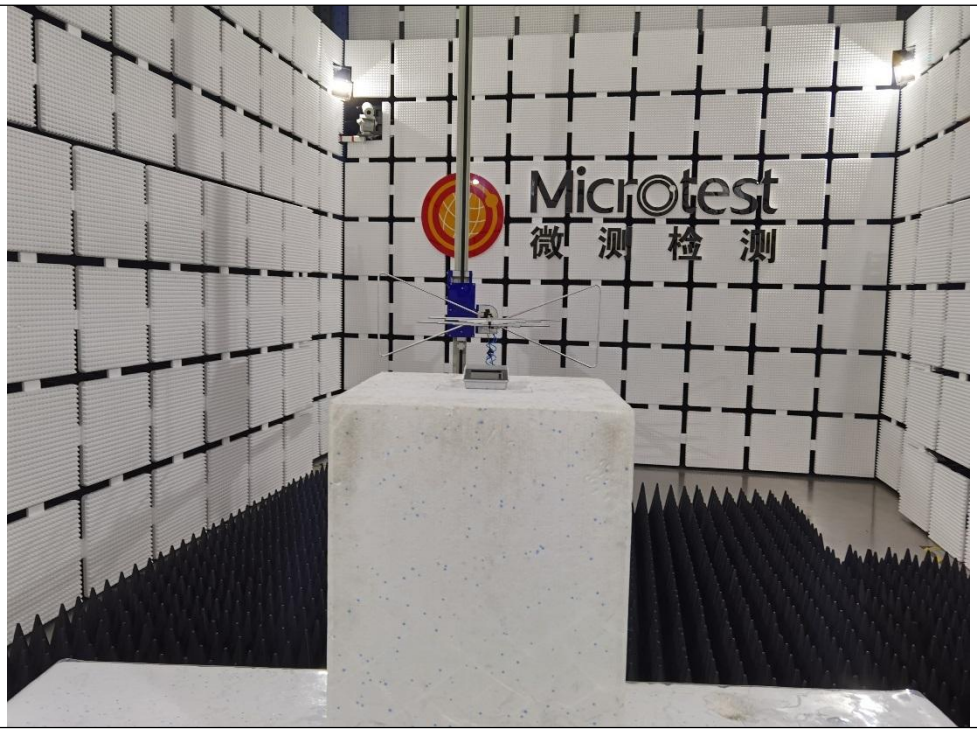
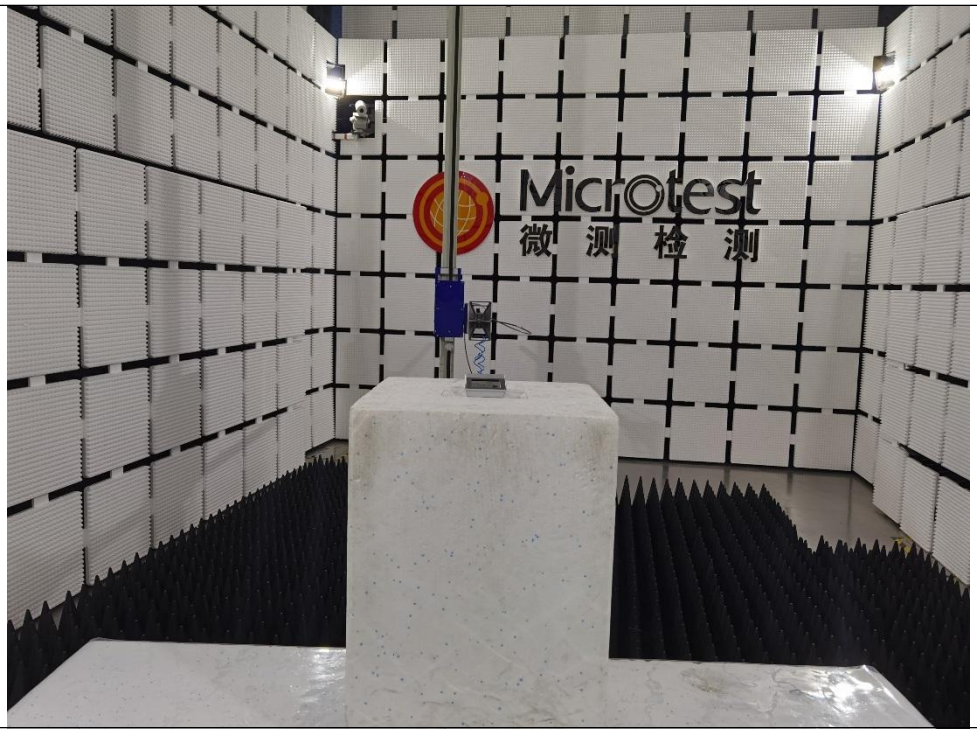
EUT:	Indoor/outdoor weather station, silver	Model Name:	P279.201
Pressure:	1012 hPa	Test Voltage:	DC 3V from battery
Test Mode:	RX		

F low =fc - 2.5XOCW
F high= fc + 2.5Xocw
F low= 433.761MHz; F high=434.975MHz

Receiver category	Frequency offset	Test Frequency (MHz)	Reciever BW(kHz)	Measurement Vause(dB)	≧Limit(dB)
2	+2 MHz of Flow	435.761	42.71	-56	-69
	-2 MHz of F_{low}	431.761	42.71	-50	-69
	+2 MHz of F_{high}	431.975	42.71	-58	-69
	-2 MHz of F_{high}	435.975	42.71	-50	-69
	+10 MHz of F_{low}	443.761	42.71	-31	-44
	-10 MHz of F_{low}	423.761	42.71	-23	-44
	+10 MHz of F_{high}	443.975	42.71	-32	-44
	-10 MHz of F_{high}	423.975	42.71	-23	-44
2	+5 % of Centre Frequency	455.5614	42.71	-12	-44
	-5 % of Centre Frequency	412.1746	42.71	-13	-44

Photographs of the Test Setup

TX
Radiated emission – below1GHz

Radiated emission – above 1GHz


RX
Radiated emission – below1GHz

Radiated emission – above 1GHz


Photographs of the EUT

See the Appendix - EUT Photos.

----END OF REPORT----