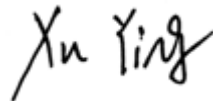


RF TEST REPORT

Applicant	Carestream Health, Inc.
FCC ID	U72MTMGLM
Product	Remote control
Brand	Carestream
Model	RMT1
Report No.	R2110A0882-R1V3
Issue Date	April 4, 2023

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2022)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.



Prepared by: Xu Ying



Approved by: Xu Kai

TA Technology (Shanghai) Co., Ltd.

Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000

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Version	Revision description	Issue Date
Rev.0	Initial issue of report.	March 2, 2023
Rev.1	Update Antenna Gain in Page 6.	March 28, 2023
Rev.2	Update description and data.	March 31, 2023
Rev.3	Update description and data.	April 4, 2023
Note: This revised report (Report No.: R2110A0882-R1V3) supersedes and replaces the previously issued report (Report No.: R2110A0882-R1V2). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Transmission and Deactivation Time	15.231(a)	PASS
2	Occupied bandwidth	15.231(c)	PASS
3	Unwanted Emissions	15.231(b),15.209	PASS
4	Conducted Emissions	15.207	NA
Date of Testing: January 12, 2023~ January 13, 2023 and April 3, 2023			
Date of Sample Received: October 12, 2021			
<p>Note: PASS: The EUT complies with the essential requirements in the standard.</p> <p>FAIL: The EUT does not comply with the essential requirements in the standard.</p> <p>All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.</p>			

1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	Carestream Health, Inc.
Applicant address	1049 Ridge Road West, Rochester, New York
Manufacturer	Carestream Health, Inc.
Manufacturer address	1049 Ridge Road West, Rochester, New York

2.2. General information

EUT Description	
Model	RMT1
Lab internal SN	R2110A0882/S01
Hardware Version	D
Software Version	N/A
Power Supply	Type 23A Battery
Antenna Type	Internal Antenna
Antenna Connector	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)
Antenna Gain	-6.95dBi
Modulation Type	/
Operating Frequency Range(s)	Transmit: 433.90MH±250KHz Receive: The manufacture declared that the EUT only supports transmit.
EUT Accessory	
Battery	Manufacturer: Philips Model: 8LR932P5B
Note: The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.	

3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:

FCC CFR47 Part 15C (2022) Radio Frequency Devices

ANSI C63.10-2013

4. Test Configuration

Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

5. Test Case Results

5.1. Transmission and Deactivation Time

Ambient condition

Temperature	Relative humidity
20°C ~25°C	45%~50%

Methods of Measurement

Set SPA Center Frequency = fundamental frequency

RBW=100 KHz

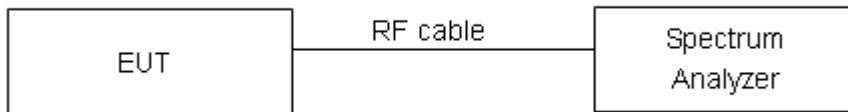
VBW=300 KHz

Span=0Hz.

Set EUT Power on as normal operation.

Set SPA Max hold. Delta Mark.

Test Setup



Limits

15.231 (a)

The provisions of this section are restricted to periodic operation within the band 40.66-40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

- (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
- (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.
- (3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.
- (4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition

(5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a) (1) and (a)(2) of this section, provided such transmissions are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

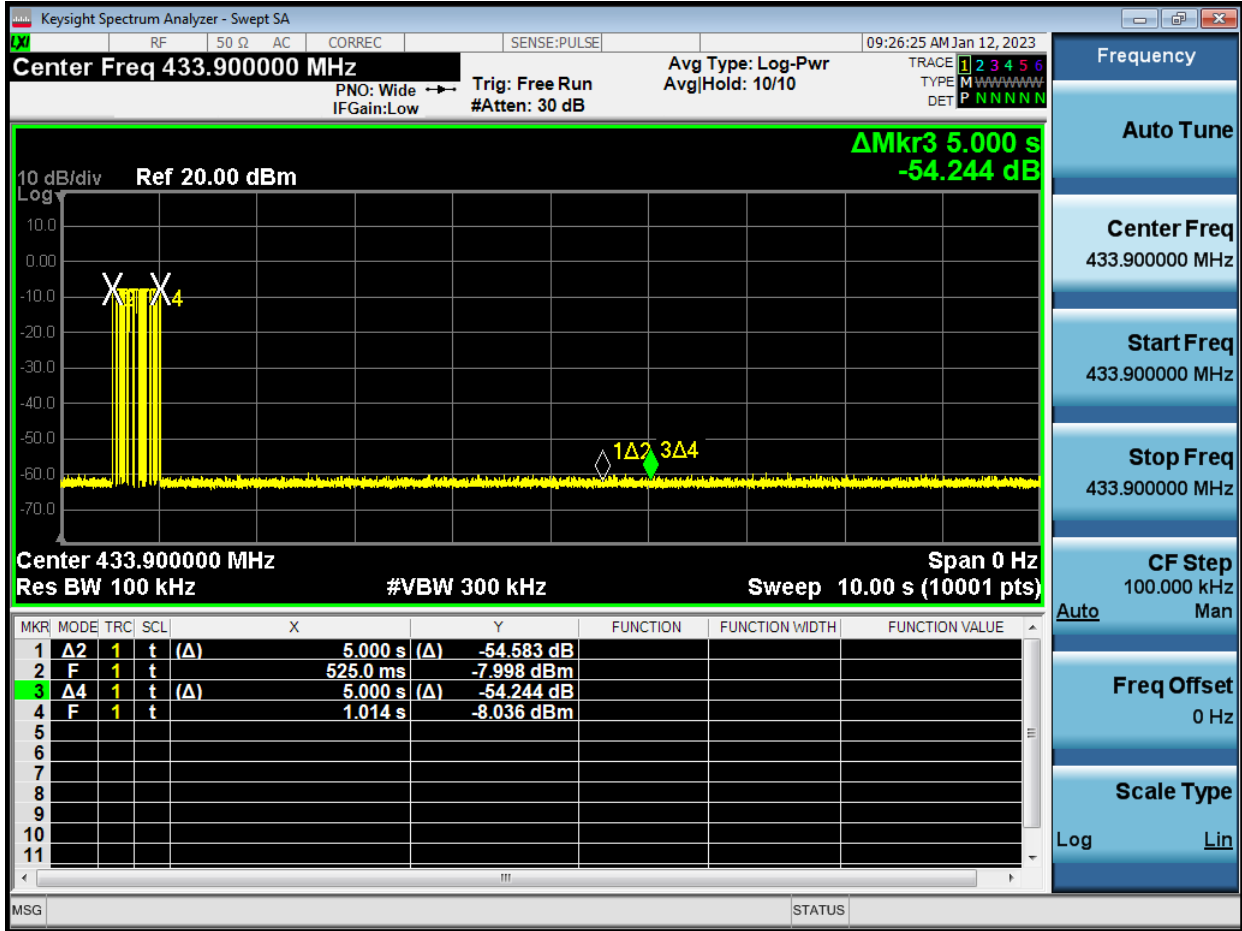
Limit(ms)	5s
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$.

Test Results

Frequency (MHz)	Transmission and Deactivation Time (s)	Limit (s)	Conclusion
433.90	0.489	5	PASS



Carrier frequency (MHz): 433.90

5.2. Occupied Bandwidth

Ambient condition

Temperature	Relative humidity
20°C ~25°C	45%~50%

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

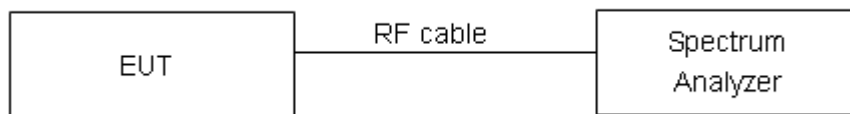
RBW=OBW1%~5%;

VBW =3*RBW

Span=300KHz

Dector=Peak, Trace mode=max hold.

Test Setup



Limits

Rule Part 15.230 (c) specifies that “The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz.”

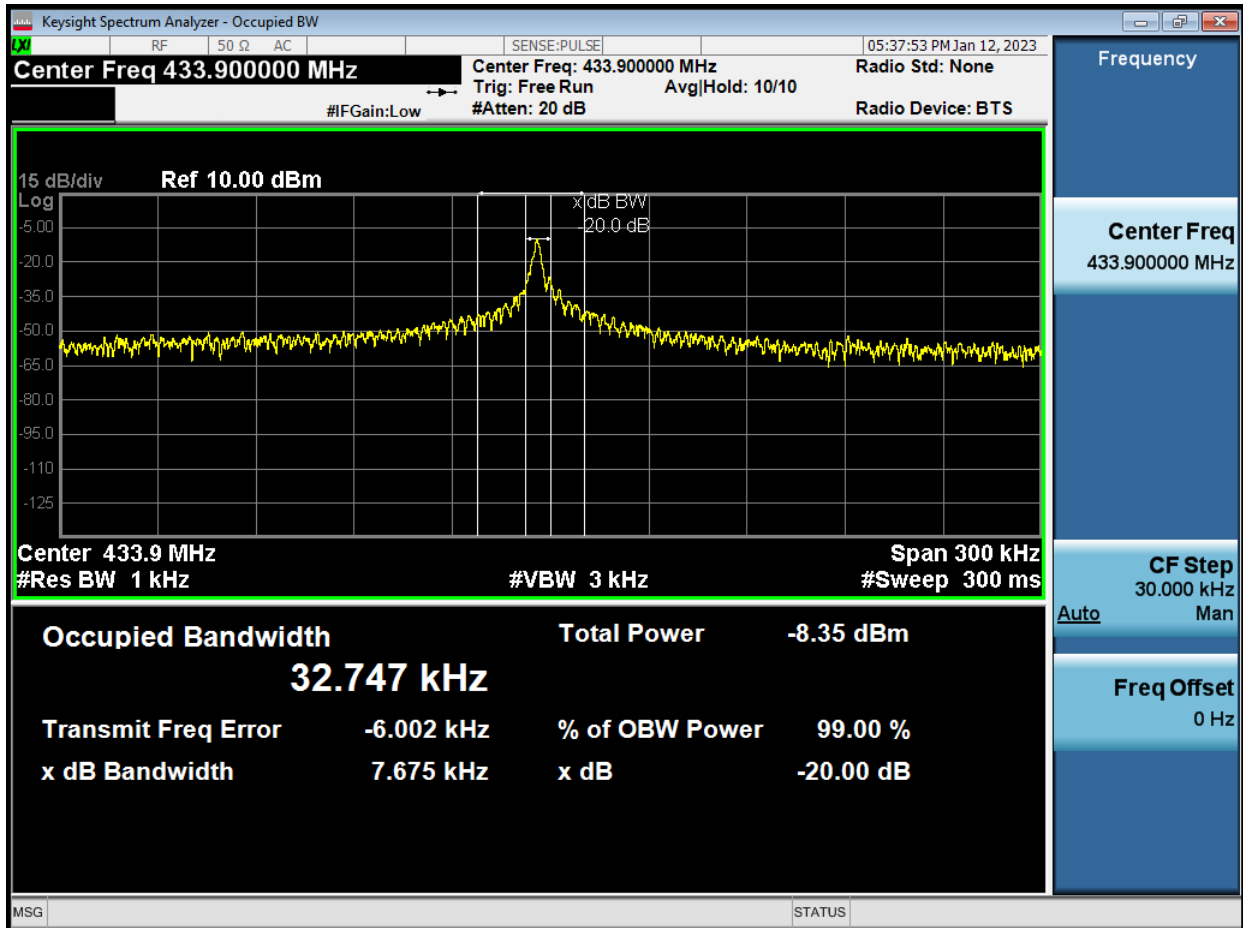
Limits	<1.0848MHz
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 936$ Hz.

Test Results:

Carrier frequency (MHz)	20dB Bandwidth(MHz)	Limit (MHz)	Conclusion
433.90	0.007675	<1.0848	PASS



Carrier frequency (MHz): 433.90

5.3. Unwanted Emission

Ambient condition

Temperature	Relative humidity
20°C ~25°C	45%~50%

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10.

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration.

During the test, below 30MHz, the center of the loop shall be 1 meters; above 30MHz, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Set the spectrum analyzer in the following:

For Peak value:

RBW=100 kHz for $f < 1\text{GHz}$, 1MHz for $f \geq 1\text{GHz}$

VBW \geq RBW

Sweep=auto

Detector function=Peak

Trance=max hold

For AV value:

For harmonic emission:

Average = Peak value + 20log (Duty cycle),

For other unwanted emissions:

RBW=100 kHz for $f < 1\text{GHz}$, 1MHz for $f \geq 1\text{GHz}$

Sweep=auto

VBW=10Hz

Detector function=Peak

Trance=max hold

The receice was scanned from the lowest frequency generated within the EUT TO 5GHz. When an Emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. The worst case was recorded.

An initial pre-scan was performed

The radiated emission was measured in the following position: EUT stand-up position (Z axis),

lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

An initial pre-scan was performed in the 3m chamber using the spectrum analyzer in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bilog antenna with 2 orthogonal polarities.

The field strength is calculated by adding the Antenna Factor, Cable Factor & Peramplifier. The basic equation with a sample calculated is as follows:

Final Test Level=Receiver Reading+ Antenna Factor +Cable Factor- Peramplifier Factor.

The following test results were performed on the EUT.

Since the peak emission level is lower than the average limit, the average emission level does not need to show.

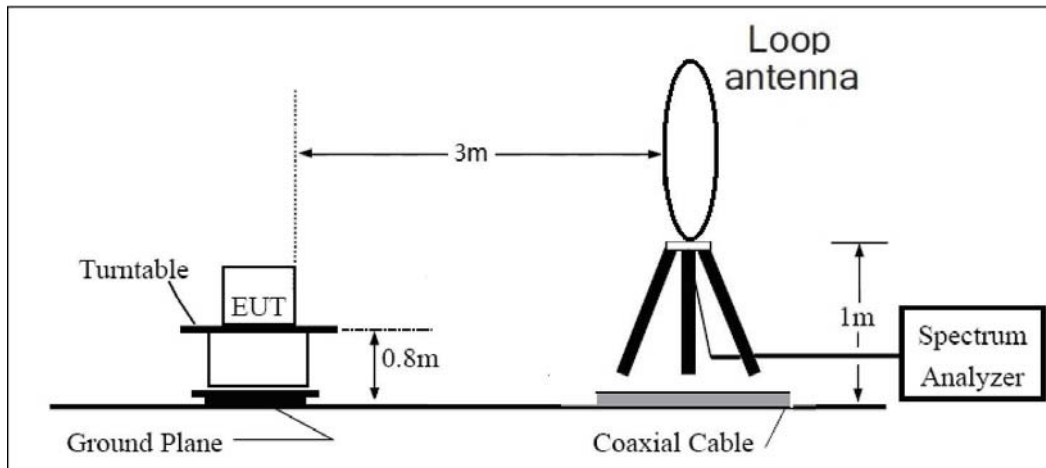
15.35(a) On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths, unless otherwise specified. The specifications for the measuring instrumentation using the CISPR quasi-peak detector can be found in ANSI C63.4-2014, clause 4 (incorporated by reference, see §15.38). As an alternative to CISPR quasi-peak measurements, the responsible party, at its option, may demonstrate compliance with the emission limits using measuring equipment employing a peak detector function as long as the same bandwidth as indicated for CISPR quasi-peak measurements are employed.

15.35(b) Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, e.g., see §§15.250, 15.252, 15.253(d), 15.255, 15.256, and 15.509 through 15.519, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device, e.g., the total peak power level. Note that the use of a pulse desensitization correction factor may be needed to determine the total peak emission level. The instruction manual or application note for the measurement instrument should be consulted for determining pulse desensitization factors, as necessary. The test is in transmitting mode.

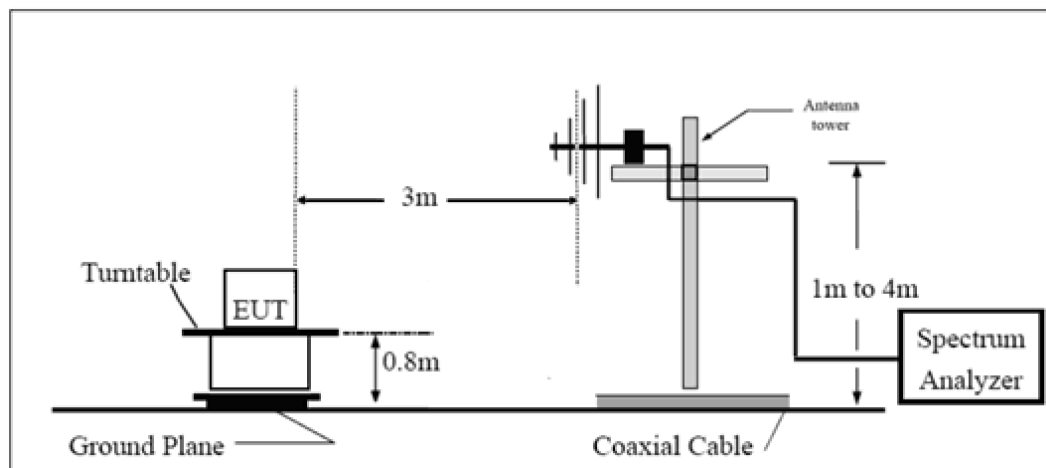
The average correction factor is computed by analyzing the on time in 100ms over one complete pulse train. Analysis of the remote transmitter on time in one complete pulse train, therefore the average value of fundamental frequency is: Average= Peak value +20log(Duty cycle).

Test setup

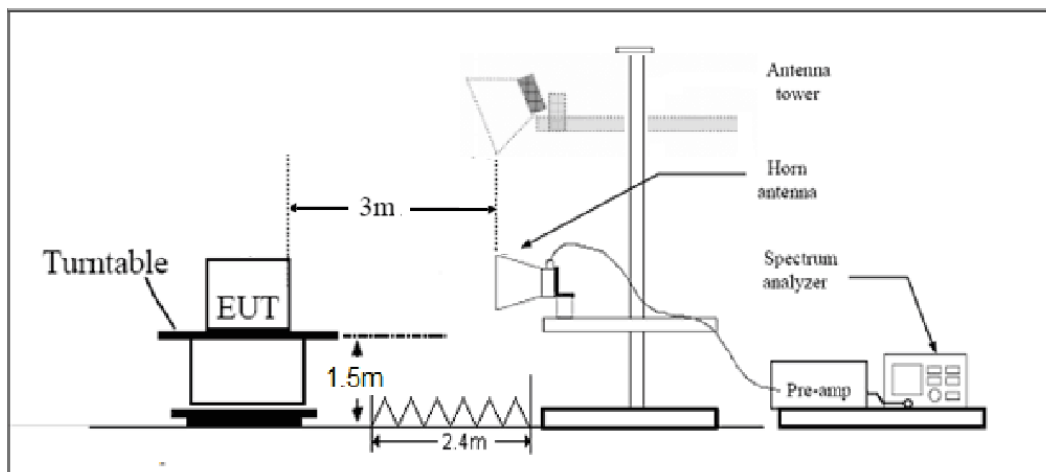
9KHz~ 30MHz



30MHz~ 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

Limits

In addition to the provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of fundamental (dB μ V/m)	Field strength of spurious emissions (microvolts/meter)	Field strength of spurious emissions (dB μ V/m)
40.66-40.70	2,250	67.04	225	47.04
70-130	1,250	61.93	125	41.93
130-174	1,250 to 3,750	61.93-71.48	125 to 375	41.93-51.48
174-260	3,750	71.48	375	51.48
260-470	13,750 to 12,500	71.48-81.93	375 to 1,250	51.48-61.93
Above 470	12,500	81.93	1250	61.93

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

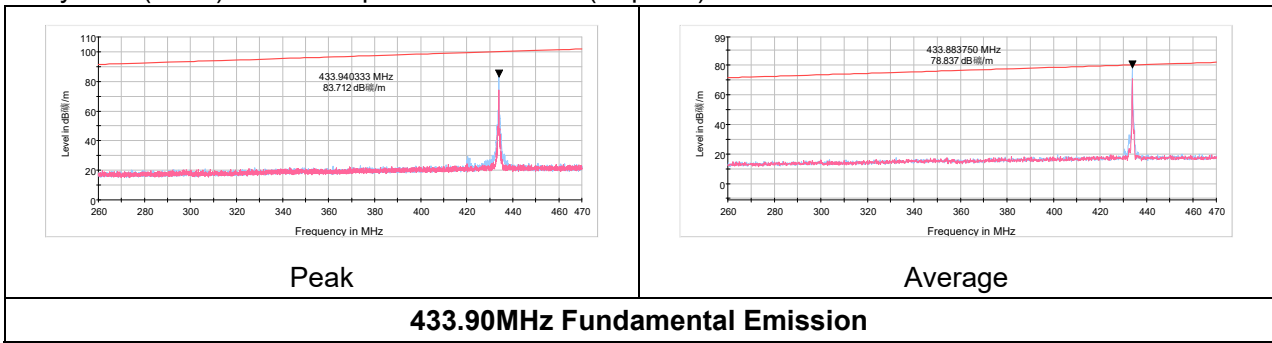
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.17 dB
200MHz-1GHz	4.84 dB
1-18GHz	4.35 dB

Test Results

A symbol ($\text{dB}\mu\text{V}/\text{m}$) in the test plot below means ($\text{dB}\mu\text{V}/\text{m}$)



Frequency (MHz)	Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
433.94	83.71	100.2	16.49	100	H	273.00	24.00
Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
433.88	78.84	80.2	1.36	100	H	94.00	23.60

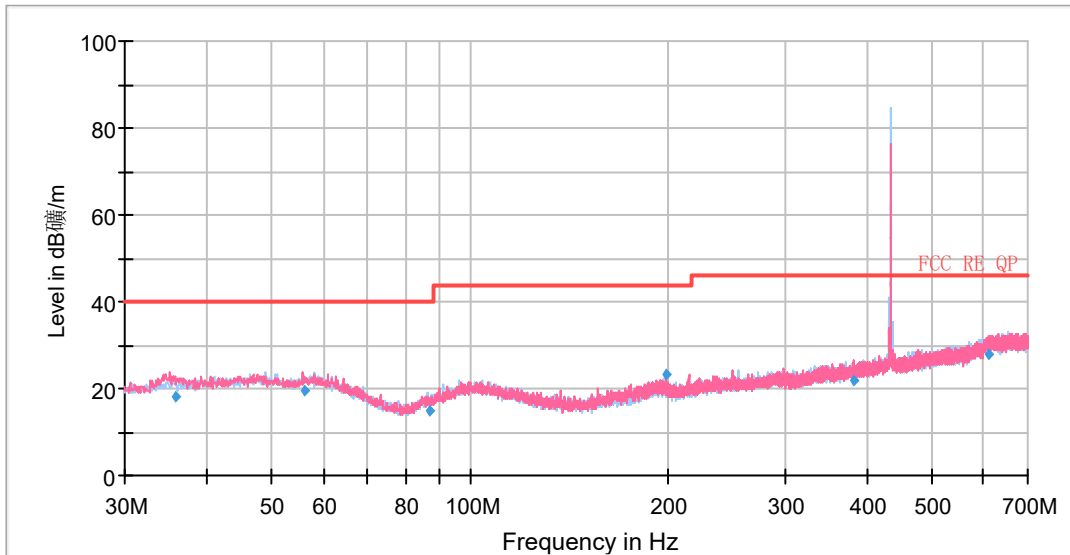
Result of RE

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The following graphs display the maximum values of horizontal and vertical by software.

A symbol (dB V/) in the test plot below means (dBuV/m)

A symbol (dBμV/m) in the test plot below means (dBμV/m)



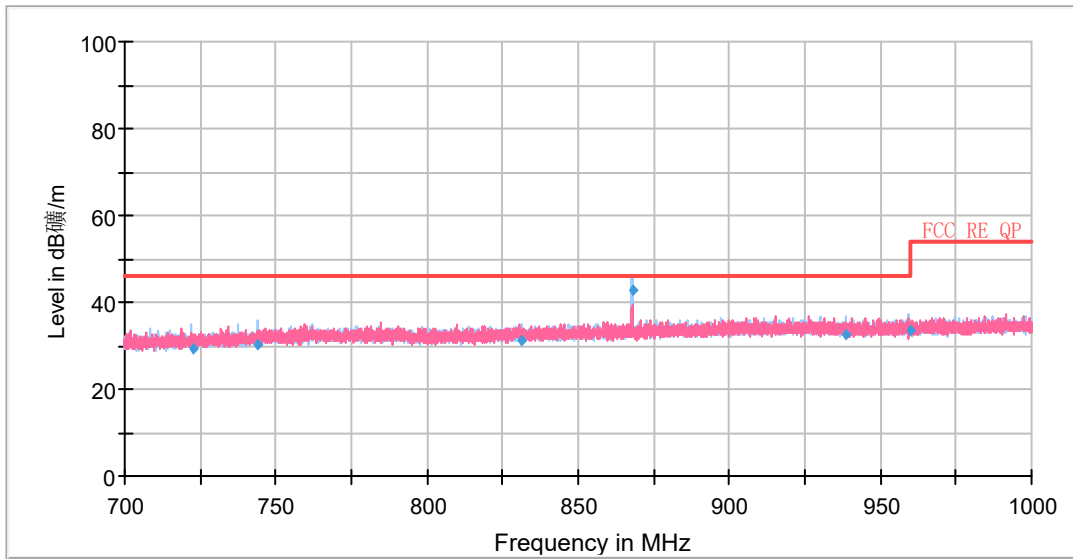
Radiates Emission from 30MHz to 700MHz

Note: The signal beyond the limit is carrier.

Frequency (MHz)	Quasi-Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
35.71	18.28	40.00	21.72	103.0	V	266.00	14
56.15	19.43	40.00	20.57	202.0	V	262.00	15
86.63	14.81	40.00	25.19	182.0	H	15.00	11
198.00	23.37	43.50	20.13	223.0	V	22.00	13
380.91	21.83	46.00	24.17	112.0	V	285.00	18
608.80	27.93	46.00	18.07	206.0	V	238.00	23

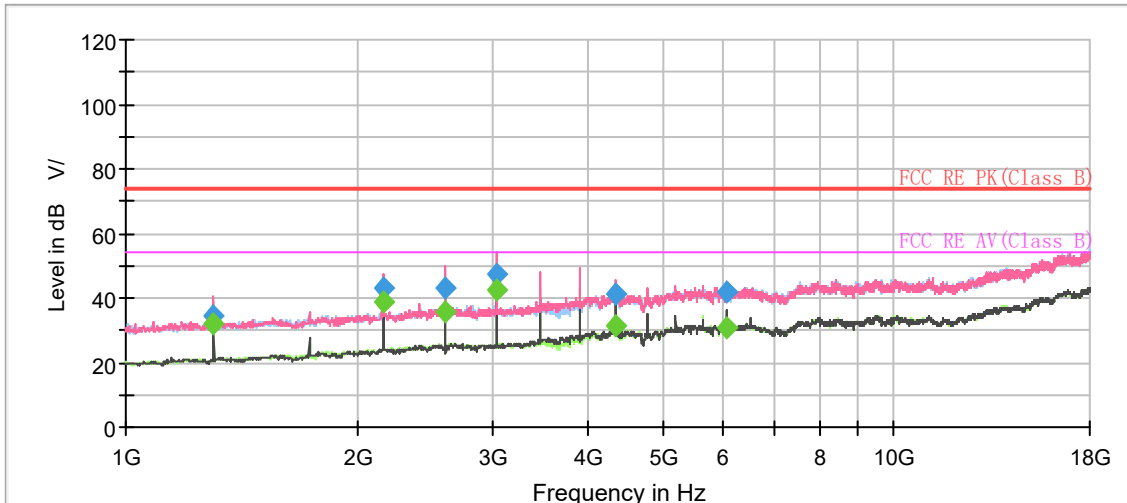
Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Margin = Limit – Quasi-Peak



Radiates Emission from 700MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
722.61	29.15	46.00	16.85	222.0	H	22.00	24
744.25	30.03	46.00	15.97	201.0	H	136.00	25
831.29	31.37	46.00	14.63	103.0	H	0.00	26
867.81	42.71	46.00	3.29	100.0	H	68.00	26
938.80	32.76	46.00	13.24	187.0	H	294.00	27
959.67	33.38	46.00	12.62	211.0	H	22.00	27



Radiates Emission from 1GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1301.743750	---	32.17	54.00	21.83	500.0	100.0	H	58.0	-16.9
1301.955000	34.72	---	74.00	39.28	500.0	200.0	V	0.0	-16.9
2169.195000	43.07	---	74.00	30.93	500.0	200.0	H	296.0	-12.2
2169.393750	---	38.77	54.00	15.23	500.0	100.0	V	241.0	-12.2
2603.276250	43.33	---	74.00	30.67	500.0	200.0	V	311.0	-10.2
2603.343750	---	35.77	54.00	18.23	500.0	200.0	V	311.0	-10.2
3036.988750	47.66	---	74.00	26.34	500.0	200.0	V	326.0	-8.6
3037.607500	---	42.42	54.00	11.58	500.0	200.0	V	326.0	-8.6
4336.895000	41.06	---	74.00	32.94	500.0	200.0	V	70.0	-4.1
4339.096250	---	31.67	54.00	22.33	500.0	200.0	V	70.0	-4.1
6075.363750	---	30.77	54.00	23.23	500.0	200.0	V	161.0	-0.9
6078.577500	42.12	---	74.00	31.88	500.0	200.0	V	161.0	-0.9

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)
2. Margin = Limit -MAX Peak/ Average

5.4. Conducted Emission

Ambient condition

Temperature	Relative humidity
20°C ~25°C	45%~50%

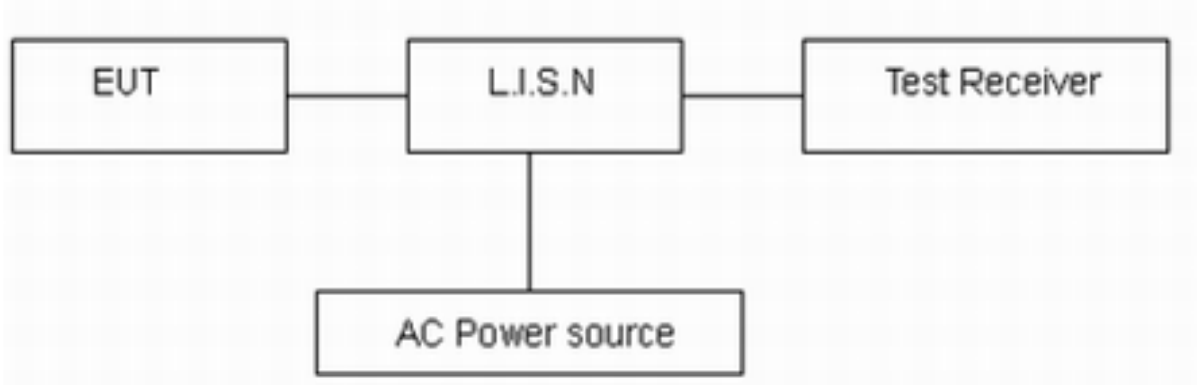
Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz.

The measurement result should include both L line and N line.

The test is in transmitting mode.

Test Setup



Note: AC Power source is used to change the voltage 110V/60Hz.

Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	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.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 2.69$ dB.

Test Results:

This product is powered by batteries, not applicable conducted emission.

6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Spectrum Analyzer	Agilent	N9020A	MY51330870	2022-05-14	2023-05-13
Radiated Emission					
EMI Test Receiver	R&S	ESR	102389	2022-05-25	2023-05-24
Signal Analyzer	R&S	FSV40	100816	2022-05-14	2023-05-13
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2020-04-02	2024-04-01
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	1023	2020-05-05	2023-05-04
Horn Antenna	R&S	HF907	102723	2020-08-11	2023-08-10
Software	R&S	EMC32	9.26.01	/	/

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

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.