FCC/ISED - TEST REPORT

Report Number	:	**68.760.24.0012.01-R**	Date of Issue:	2024-05-20
Model	:	**H8131.P.-., H8136.P.-.**		
Product Type	:	Mini Video OS		
Applicant	:	ABB Xiamen Smart Technology Co., Ltd.		
Address	:	4th Floor, No. 881, FangShanXiEr Road, Xiang'An Industrial Area, Torch Hi-Tech Industrial Development Zone, 361000 Xiamen S.E.Z, Fujian Province, PEOPLE'S REPUBLIC OF CHINA		
Manufacturer	:	ABB Xiamen Smart Technology Co., Ltd.		
Address	:	4th Floor, No. 881, FangShanXiEr Road, Xiang'An Industrial Area, Torch Hi-Tech Industrial Development Zone, 361000 Xiamen S.E.Z, Fujian Province, PEOPLE'S REPUBLIC OF CHINA		
Production Facility	:	ABB Xiamen Smart Technology Co., Ltd.		
Address	:	4th Floor, No. 881, FangShanXiEr Road, Xiang'An Industrial Area, Torch Hi-Tech Industrial Development Zone, 361000 Xiamen S.E.Z, Fujian Province, PEOPLE'S REPUBLIC OF CHINA		
Test Result	:	■ **Positive** ☐ **Negative**		
Total pages including Appendices	:	**25**		

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TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
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2 Details about the Test Laboratory

Details about the Test Laboratory
Test Site 1

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District, Shenzhen, Guangdong, China
Telephone:	86 755 8828 6998
Fax:	86 755 8828 5299
FCC Registration No.:	514049
FCC Designation Number:	CN5009
ISED CAB identifier:	CN0077
IC Registration No.:	10320A

3 Description of the Equipment Under Test

Product:	Mini Video OS
Model no.:	H8131.P.-., H8136.P.-.
Product Marketing Name (PMN):	Mini Video OS
Hardware Version Identification No. (HVIN):	H8131.P.-., H8136.P.-.
FCC ID:	2AEBL-H8136
IC:	20060-H8136
Options and accessories:	NIL
Ratings:	Input: 20V-27VDC, 8.4W Typ: 24VDC, 350mA
RF Transmission Frequency:	13.56 MHz
No. of Operated Channel:	1
Modulation:	FSK
Antenna Type:	PCB printed loop antenna
Description of the EUT:	The equipment under test is a Mini Video OS with 13.56MHz RFID function.

Remark:
All models are identical except for model number, size of front metal panel and the rear mounting accessory.
Unless otherwise specified, the model H8131.P.-. was selected as representative for all tests.

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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2023 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators
RSS-Gen Issue 5, April 2018 +Amendment 1, March 2019 + Amendment 2, February 2021	General Requirements for Compliance of Radio Apparatus
RSS-210 Issue 10 December 2019 + Amendment, April 2020	Licence-Exempt Radio Apparatus: Category I Equipment

All the test methods were according to ANSI C63.10-2020.

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5 Summary of Test Results

Technical Requirements				
FCC Part 15 Subpart C, RSS-210 Issue 10, RSS-Gen Issue 5				
Test Condition		Pages	Test Site	Test Result
§15.207 & RSS-Gen A8.8	Conducted emission at AC power port	10	Site 1	Pass
§ 15.215(c) & RSS-Gen 6.7	Occupied Bandwidth	13	Site 1	Pass
§15.225(a)(d) & §15.209 & RSS-210, Annex B.6 (a), RSS-Gen 8.9, 8.10	The field strength of any emissions	14	Site 1	Pass
§15.225(e) & RSS-210 B.6 (b), RSS-Gen 8.11	Frequency Tolerance	22	Site 1	Pass
§15.203 & RSS-Gen 6.8	Antenna requirement	--	See Note 1	Pass

Note 1: The EUT uses a PCB printed loop antenna. In accordance to §15.203 & RSS-Gen 6.8, it is considered sufficiently to comply with the provisions of this section.

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6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2AEBL-H8136, complies with Section 15.207, 15.209, 15.205, 15.225 of the FCC Part 15, Subpart C rules.

This submittal(s) (test report) is intended for IC: 20060-H8136 complies with RSS-Gen Issue 5 and RSS-210 issue 10.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: 2024-01-04

Testing Start Date: 2024-01-16

Testing End Date: 2024-01-19

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Reviewed by:	Prepared by:	Tested by:
Jessie He	Myron Yu	Carry Cai
Project Manager	Project Engineer	Test Engineer

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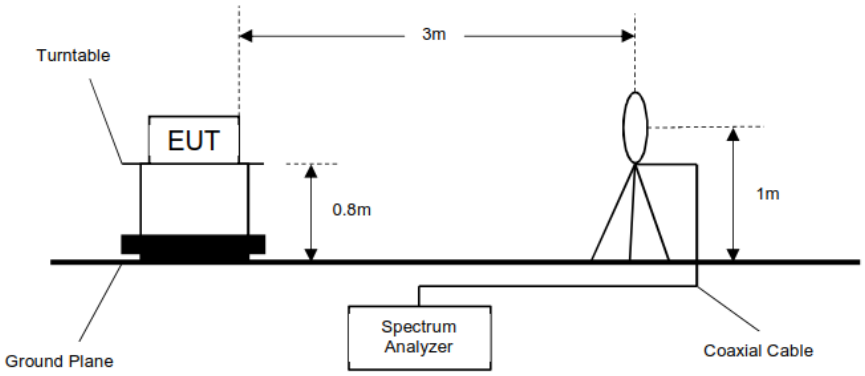
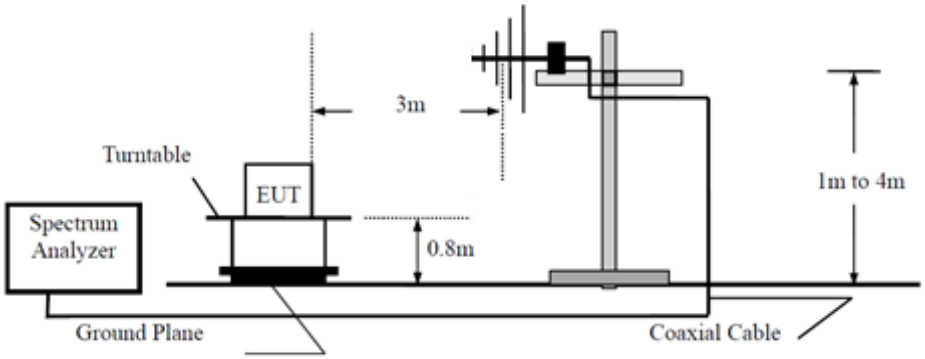
7 Test Setups

7.1 Radiated test setups

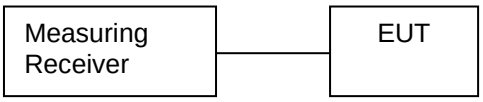
9kHz - 30MHz



Below 1GHz



7.2 Conducted RF test setups



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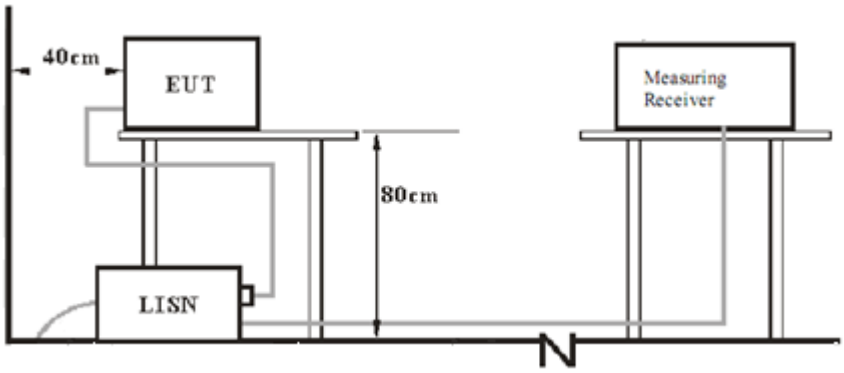
7.3 AC Power Line Conducted Emission test setups



7.4 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	REMARK
Power supply	YSM01-PS	ABB	---	Power supply
IP touch	M8236	ABB	---	IP touch
PoE switch	TL-SG1210DP	TP-LINK	1225175003885	PoE switch

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8 Test Methodology

8.1 Conducted Emission

Test Method:

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

Limits:

According to §15.207 & RSS-Gen 8.8, conducted emissions limit as below:

Frequency MHz	QP Limit dBµV	AV Limit dBµV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

*Decreasing linearly with logarithm of the frequency

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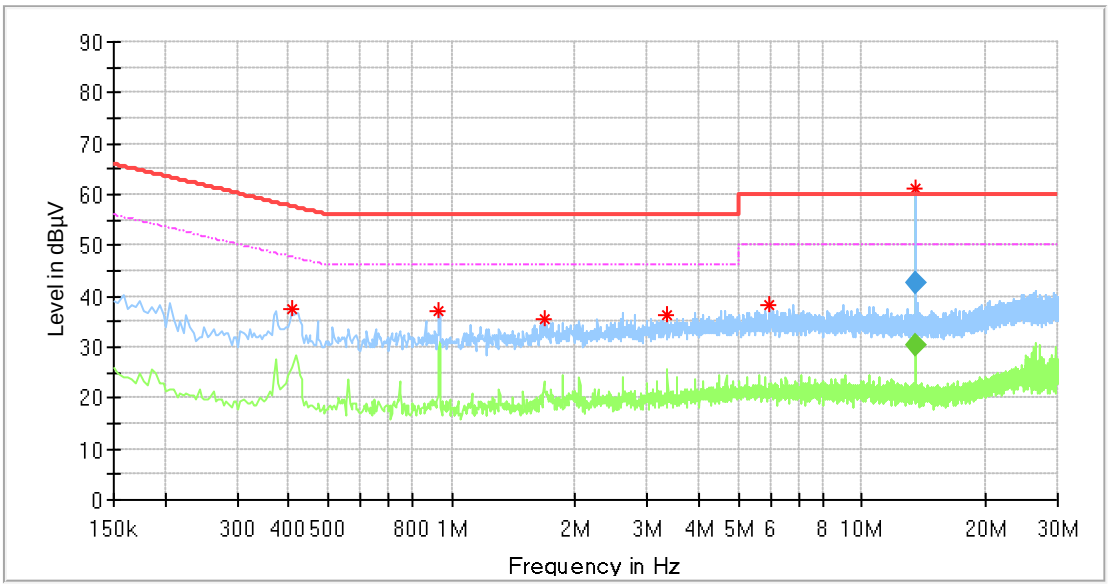
Conducted Emission

Product Type	:	Mini Video OS
M/N	:	H8131.P.-.
Operating Condition	:	Continuous transmitting, 13.56MHz
Test Specification	:	Line
Comment	:	120VAC, 60Hz (for auxiliary power supply)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.406000	37.50	---	57.73	20.23	L1	10.29
0.930000	37.10	---	56.00	18.90	L1	10.32
1.678000	35.71	---	56.00	20.29	L1	10.35
3.358000	36.44	---	56.00	19.56	L1	10.45
5.970000	38.36	---	60.00	21.64	L1	10.65
13.566500	61.02	---	60.00	-1.02	L1	11.14

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
13.566500	---	30.33	50.00	19.67	L1	11.14
13.566500	42.44	---	60.00	17.56	L1	11.14

Remark:
Level=Reading Level + Correction Factor
Correction Factor=Cable Loss + LISN Factor
(The Reading Level is recorded by software which is not shown in the sheet)

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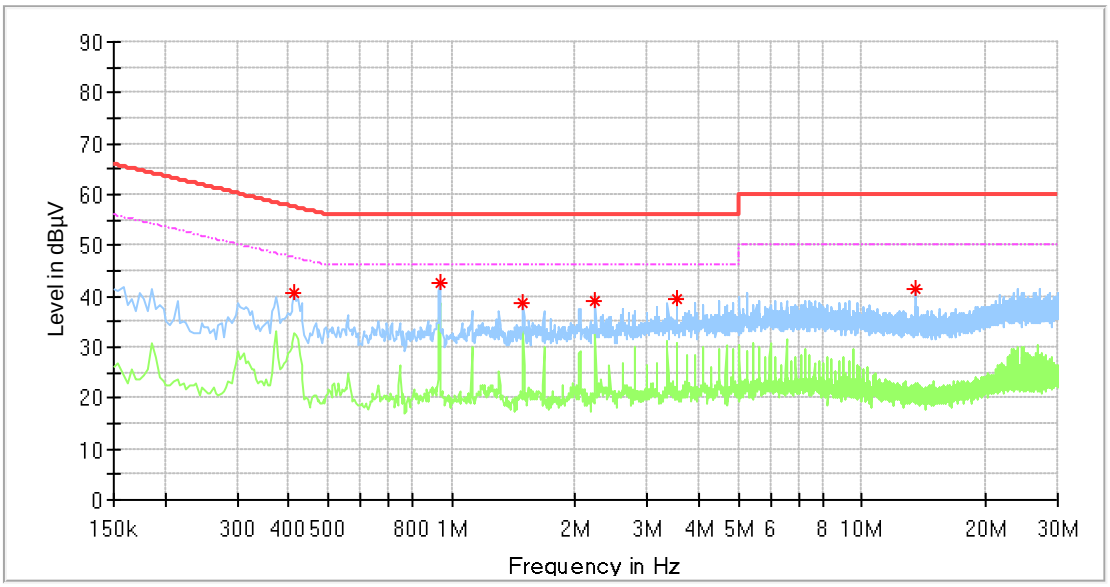
Conducted Emission

Product Type	:	Mini Video OS
M/N	:	H8131.P.-.
Operating Condition	:	Continuous transmitting, 13.56MHz
Test Specification	:	Neutral
Comment	:	120VAC, 60Hz (for auxiliary power supply)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.414000	40.79	---	57.57	16.78	N	10.17
0.934000	42.51	---	56.00	13.49	N	10.19
1.494000	38.84	---	56.00	17.16	N	10.24
2.242000	39.00	---	56.00	17.00	N	10.28
3.546000	39.42	---	56.00	16.58	N	10.40
13.482000	41.45	---	60.00	18.55	N	11.30

Remark:
Level=Reading Level + Correction Factor
Correction Factor=Cable Loss + LISN Factor
(The Reading Level is recorded by software which is not shown in the sheet)

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8.2 Occupied Bandwidth Measurement

Test Method:

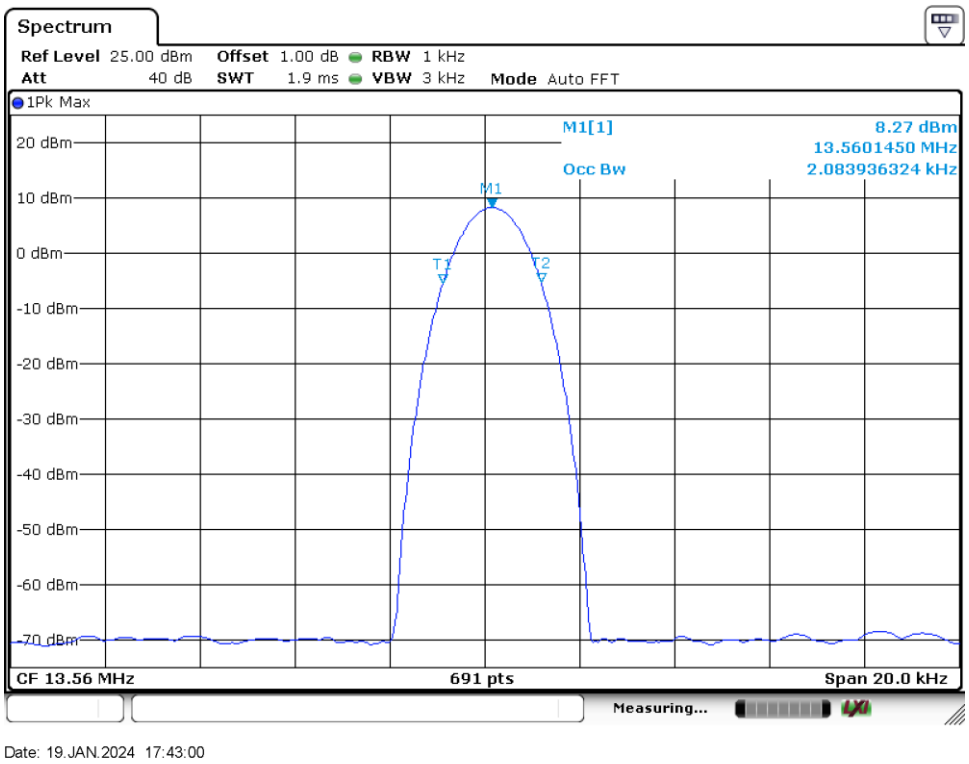
1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following test receiver settings:
   Span = approximately 2 to 3 times the 99% OBW, centered on a hopping channel
   RBW ≥ 1% to 5% of the 99% OBW, VBW≥3RBW, Sweep = auto,
   Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth. Record the results.

Limits:

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

Test Results:

Frequency	99% bandwidth	Result		Limit		Result
MHz	kHz	F_L (MHz)	F_H (MHz)	F_L (MHz)	F_H (MHz)	
13.56	2.084	13.559	13.561	>13.11	<14.01	Pass



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8.3 Field Strength of Emissions

Test Method:

1. The EUT was place on a turn table which is 0.8m above ground plane. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
4. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
5. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
   Use the following test receiver settings According to C63.10:
   For Below 9kHz-1GHz, use the following spectrum analyzer settings:
   Span = wide enough to capture the peak level of the in-band emission and all spurious
   9kHz -150kHz
   RBW = 200Hz, VBW = 600Hz for peak measurement, Sweep = auto, Detector function = peak,
   Trace = max hold.
   150kHz - 30MHz
   RBW = 10 kHz, VBW = 30 kHz for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.
   30MHz - 1GHz
   RBW = 10 kHz, VBW = 30 kHz for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

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Limits:

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15.848 mV/m (84 dBµV/m) at 30 meters.

The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in FCC § 15.209 and RSS-Gen.

According to § 15.209 field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Frequency MHz	Field Strength µV/m	Field Strength dBµV/m	Detector	Measurement distance meters
0.009-0.490	2400/F(kHz)	48.5-13.8	QP	300
0.490-1.705	24000/F(kHz)	33.8-23.0	QP	30
1.705-30	30	29.5	QP	30
30-88	100	40	QP	3
88-216	150	43.5	QP	3
216-960	200	46	QP	3
960-1000	500	54	QP	3
Above 1000	500	54	AV	3
Above 1000	5000	74	PK	3

According to RSS-Gen 8.9 field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Frequency MHz	Field Strength µA/m	Field Strength dBµA/m	Detector	Measurement distance meters
0.009-0.490	6.37/F(kHz)	77.00-42.28	AV	3
0.490-1.705	63.7/F(kHz)	22.27-11.45	AV	3
1.705-30	0.08	18.06	AV	3

Frequency MHz	Field Strength µV/m	Field Strength dBµV/m	Detector	Measurement distance meters
30-88	100	40	QP	3
88-216	150	43.5	QP	3
216-960	200	46	QP	3
960-1000	500	54	QP	3
Above 1000	500	54	AV	3
Above 1000	5000	74	PK	3

(a) The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

Note 1: Linear interpolations with frequency. The tighter limits apply at the band edges.
Note 2: Limit 3m(dBµV/m)=Limit 300m(dBµV/m)+40Log(300m/3m) (Below 30MHz)
Note 3: Limit 3m(dBµV/m)=Limit 30m(dBµV/m)+40Log(30m/3m) (Below 30MHz)
Note 4: dBµV/m = 20log(µV/m), dBµA/m = 20log(µA/m)

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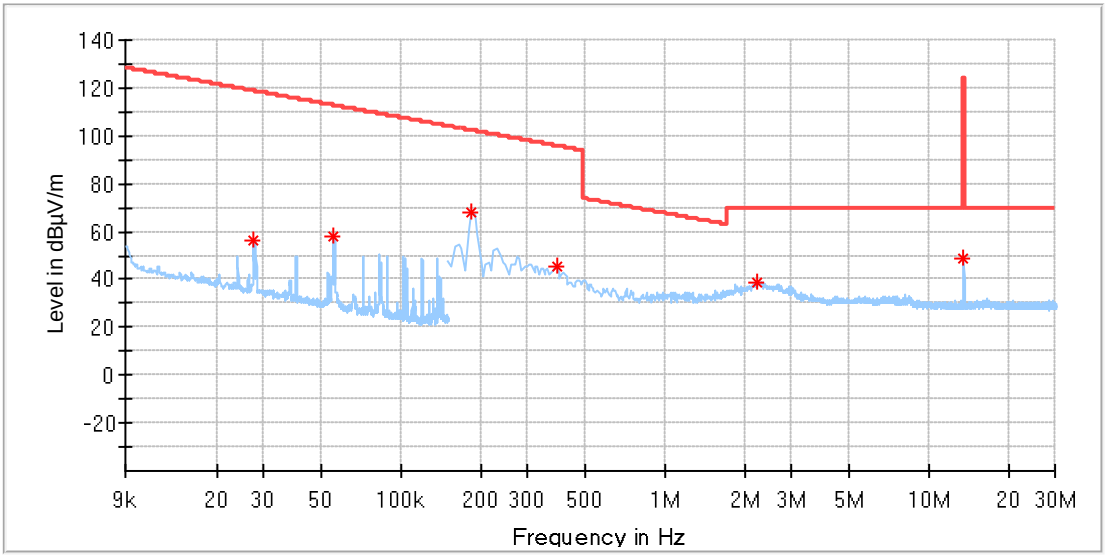
Field Strength (9kHz-30MHz)

FCC Test Data (9kHz-30MHz):

Product Type	:	Mini Video OS
M/N	:	H8131.P.-.
Operating Condition	:	Continuous transmitting, 13.56MHz
Test Specification	:	Horizontal
Comment	:	120VAC, 60Hz (for auxiliary power supply)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027518	56.57	118.80	62.23	H	294.0	19.23
0.055201	58.14	112.76	54.61	H	230.0	19.26
0.184825	67.62	102.26	34.64	H	299.0	19.21
0.388800	45.46	95.81	50.34	H	0.0	19.26
2.244475	39.03	69.50	30.47	H	348.0	19.29
13.557625	48.60	124.00	75.40	H	10.0	19.33

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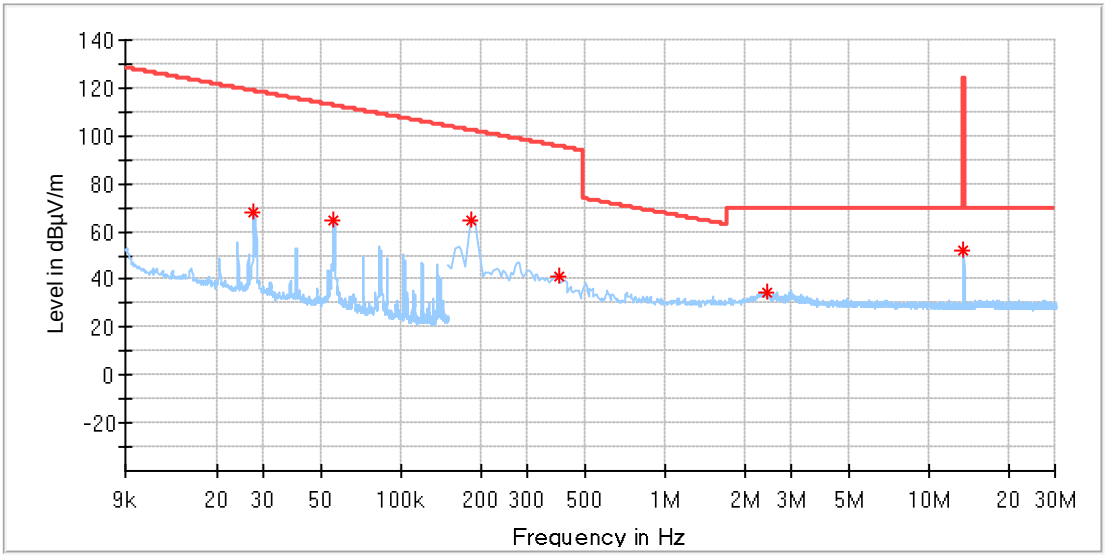
Field Strength (9kHz-30MHz)

FCC Test Data (9kHz-30MHz):

Product Type	:	Mini Video OS
M/N	:	H8131.P.-.
Operating Condition	:	Continuous transmitting, 13.56MHz
Test Specification	:	Vertical
Comment	:	120VAC, 60Hz (for auxiliary power supply)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027565	68.07	118.78	50.71	V	350.0	19.23
0.055107	64.32	112.77	48.45	V	13.0	19.26
0.184825	64.97	102.26	37.29	V	0.0	19.21
0.393775	41.03	95.70	54.67	V	0.0	19.26
2.418600	34.88	69.50	34.62	V	290.0	19.32
13.557625	52.09	124.00	71.94	V	264.0	19.33

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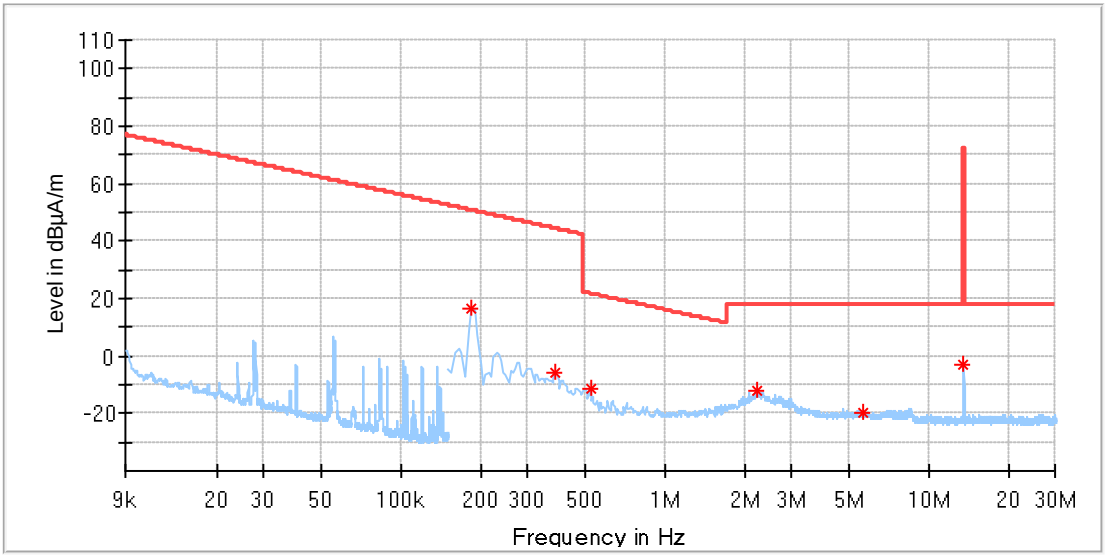
Field Strength (9kHz-30MHz)

ISED Test Data (9kHz-30MHz):

Product Type	:	Mini Video OS
M/N	:	H8131.P.-.
Operating Condition	:	Continuous transmitting, 13.56MHz
Test Specification	:	Horizontal
Comment	:	120VAC, 60Hz (for auxiliary power supply)



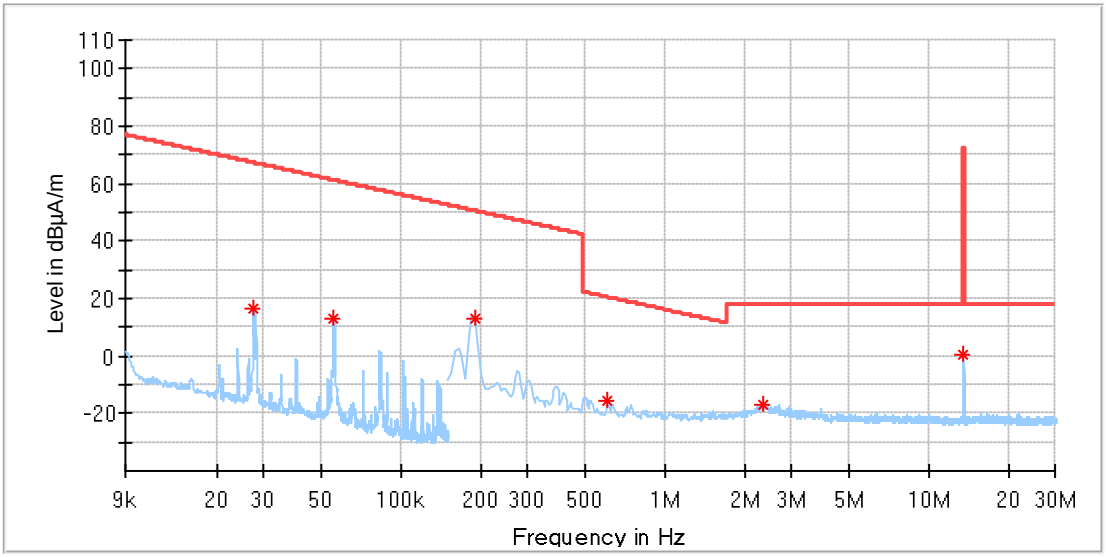
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµA/m)	Limit (dBµA/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)	Corr. (dB)
0.184825	16.17	50.75	34.58	H	291.0	-32.32	---
0.383825	-6.03	44.40	50.43	H	0.0	-32.27	---
0.523125	-11.74	21.73	33.47	H	0.0	-32.27	---
2.234525	-11.96	18.06	30.02	H	8.0	-32.24	---
5.627475	-19.58	18.06	37.64	H	342.0	-31.98	---
13.557625	-3.09	72.50	75.59	H	4.0	-32.20	---

Field Strength (9kHz-30MHz)

ISED Test Data (9kHz-30MHz):

Product Type	:	Mini Video OS
M/N	:	H8131.P.-.
Operating Condition	:	Continuous transmitting, 13.56MHz
Test Specification	:	Vertical
Comment	:	120VAC, 60Hz (for auxiliary power supply)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµA/m)	Limit (dBµA/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027518	16.48	67.29	50.81	V	267.0	-32.30
0.055060	12.75	61.27	48.52	V	5.0	-32.27
0.189800	13.16	50.52	37.36	V	7.0	-32.32
0.607700	-15.84	20.40	36.24	V	235.0	-32.25
2.358900	-17.23	18.06	35.29	V	86.0	-32.22
13.557625	0.45	72.50	72.05	V	308.0	-32.20

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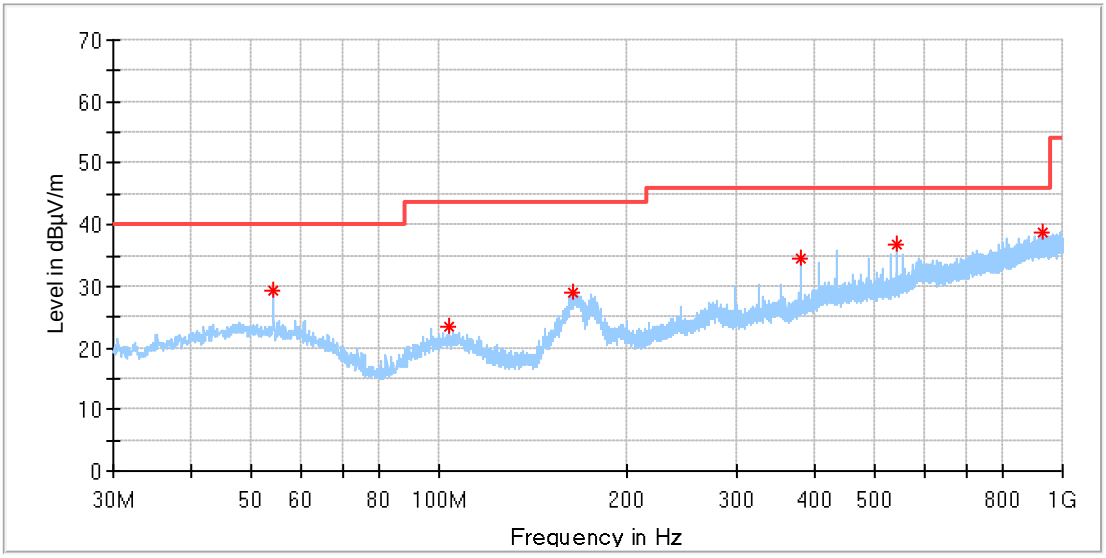
Field Strength (30MHz-1000MHz)

FCC and ISED Test Data (30MHz-1000MHz):

Product Type	:	Mini Video OS
M/N	:	H8131.P.-.
Operating Condition	:	Continuous transmitting, 13.56MHz
Test Specification	:	Horizontal
Comment	:	120VAC, 60Hz (for auxiliary power supply)



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
54.189375	29.21	40.00	10.79	200.0	H	261.0	20.60
103.841250	23.34	43.50	20.16	200.0	H	356.0	19.08
163.799375	28.96	43.50	14.54	200.0	H	158.0	16.10
379.685000	34.59	46.00	11.41	100.0	H	202.0	23.41
542.402500	36.89	46.00	9.11	200.0	H	278.0	26.51
931.069375	38.79	46.00	7.21	100.0	H	0.0	32.25

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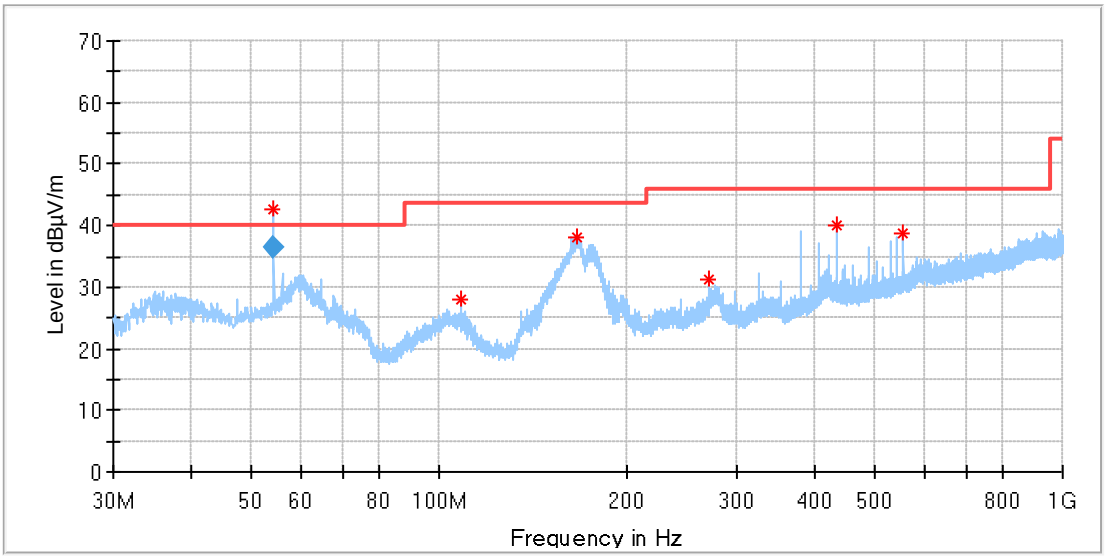
Field Strength (30MHz-1000MHz)

Product Type	:	Mini Video OS
M/N	:	H8131.P.-.
Operating Condition	:	Continuous transmitting, 13.56MHz
Test Specification	:	Vertical
Comment	:	120VAC, 60Hz (for auxiliary power supply)

FCC and ISED Test Data (30MHz-1000MHz):



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
108.448750	27.87	43.50	15.63	100.0	V	0.0	18.71
165.860625	38.20	43.50	5.30	100.0	V	334.0	16.14
271.166250	31.16	46.00	14.84	100.0	V	5.0	20.63
433.944375	40.17	46.00	5.83	100.0	V	49.0	24.81
555.982500	38.63	46.00	7.37	100.0	V	283.0	26.79

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
54.189375	36.60	40.00	3.40	100.0	V	129.0	20.60

Remark:
1: AV Emission Level= PK Emission Level+20log(duty cycle)
2: Data of measurement within this frequency range shown “/” in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
3: “*” means the emission(s) appear within the restrict bands shall follow the requirement of section RSS-Gen.
4: Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain
Below 1GHz: Corrector factor = Antenna Factor + Cable Loss
(The Reading Level is recorded by software which is not shown in the sheet)

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8.4 Frequency Tolerance

Test Method:
Frequency stability with respect to ambient temperature:

1. Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and tune it to the frequencies need to test.
2. Couple the EUT output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.
3. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level
4. Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.
5. Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.
6. While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.
7. Measure the frequency at each of frequencies need to test.
8. Switch OFF the EUT but do not switch OFF the oscillator heater.
9. Lower the chamber temperature by not more that 10 °C, and allow the temperature inside the chamber to stabilize.
10. Repeat step 5) through step 7) down to the lowest specified temperature.

Frequency stability when varying supply voltage
Unless otherwise specified, these tests shall be made at ambient room temperature.

1. Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.
2. Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level.
3. Measure the frequency at each of the frequencies need to test.
4. Repeat the above procedure at 85% and 115% of the nominal supply voltage

Limits:
The frequency tolerance of the carrier signal shall be maintained within ±0.01% 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. For battery operated equipment, the equipment tests shall be performed using a new battery.
The transmit frequency of the EUT is 13.56MHz, so limit is ≤ ±1.356KHz.

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Test Results:

For license-exempt devices, the following conditions apply:
(a) at the temperatures of -20°C (-4°F), +20°C (+68°F) and +50°C (+122°F), and at the manufacturer's rated supply voltage
(b) at the temperature of +20°C (+68°F) and at ±15% of the manufacturer's rated supply voltage

Frequency stability vs. temperature		
Temperature (°C)	Measured Frequency (MHz)	Frequency Drift (kHz)
50	13.56015	0.15
40	13.56014	0.14
30	13.56014	0.14
20	13.56014	0.14
10	13.56014	0.14
0	13.56013	0.13
-20	13.56014	0.14

Frequency stability vs. voltage		
Voltage (VDC)	Measured Frequency (MHz)	Frequency Drift (kHz)
20.4	13.56014	0.14
24	13.56014	0.14
27.6	13.56014	0.14

Result: PASS

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9 Test Equipment List

Conducted Emission Test

Description	Manufacturer	Model no.	Equipment ID	Serial no.	Cal interval (year)	Cal. due date
EMI Test Receiver	Rohde & Schwarz	ESR 3	68-4-74-19-002	102590	1	2024-5-19
LISN	Rohde & Schwarz	ENV216	68-4-87-19-001	102472	1	2024-5-20
Attenuator	Shanghai Huaxiang	TS2-26-3	68-4-81-16-003	080928189	1	2024-5-19
Test software	Rohde & Schwarz	EMC32	68-4-90-19-005-A01	Version 10.35.02	N/A	N/A
Shielding Room	TDK	CSR #2	68-4-90-19-005	----	3	2025-10-15

Radiated Emission Test, SAC-3 #1

Description	Manufacturer	Model no.	Equipment ID	Serial no.	Cal interval (year)	Cal. due date
EMI Test Receiver	Rohde & Schwarz	ESR 7	68-4-74-19-001	102176	1	2024-5-20
Loop Antenna	Rohde & Schwarz	HFH2-Z2	68-4-80-14-006	100398	1	2024-8-7
Pre-amplifier	Rohde & Schwarz	SCU 18	68-4-29-14-001	102230	1	2024-5-19
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-001	15542	1	2024-5-19
3m Semi-anechoic chamber	TDK	SAC-3 #1	68-4-90-14-001	----	3	2024-5-28
Test software	Rohde & Schwarz	EMC32	68-4-90-14-001-A10	Version10.35.02	N/A	N/A

Radiated Emission Test, SAC-3 #2

Description	Manufacturer	Model no.	Equipment ID	Serial no.	Cal interval (year)	Cal. due date
EMI Test Receiver	Rohde & Schwarz	ESR 26	68-4-74-14-002	101269	1	2024-5-20
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9162	68-4-80-19-003	284	1	2024-3-5
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-002	15542	1	2024-5-19
3m Semi-anechoic chamber	TDK	SAC-3 #2	68-4-90-19-006	----	2	2024-5-28
Test software	Rohde & Schwarz	EMC32	68-4-90-19-006-A01	Version10.35.02	N/A	N/A

RF Conducted Test

Description	Manufacturer	Model no.	Equipment ID	Serial no.	Cal interval (year)	Cal. due date
Signal Analyzer	Rohde & Schwarz	FSV40	68-4-74-14-004	101030	1	2024-5-19
Test software	Tonscend	System for BT/WIFI	68-4-74-14-006-A13	Version 2.6.77.0518	N/A	N/A

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10 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Conducted Emission (0.15MHz-30MHz)	3.15dB
Uncertainty for Radiated Emission in 3m chamber (68-4-90-14-001) 9kHz-30MHz	4.70dB
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) 30MHz-1000MHz	Horizontal: 4.59dB; Vertical: 4.75dB
Uncertainty for Conducted RF test with TS 8997	RF Power Conducted: 1.31dB Frequency test involved: 0.6×10^{-8} or 1%

Measurement Uncertainty Decision Rule:
Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2021, clause 4.4.3 and 4.5.1.

---THE END OF REPORT---

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