

# FCC Test Report

Product Name : Network Camera

Model No. : IB9389-EH-v2, IB9389-EHT-v2, IB839-EH, IB839-EHT

Applicant : VIVOTEK INC.

Address : 6F, No.192, Lien-Cheng Rd., Chung-Ho, New Taipei City,  
Taiwan, R.O.C.

Date of Receipt : 2021/06/30

Issued Date : 2021/12/20

Report No. : 2161206R-E3012110013

Report Version : V2.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

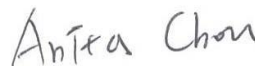
# Test Report

Issued Date : 2021/12/20  
Report No. : 2161206R-E3012110013



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Applicant : VIVOTEK INC.  
Address : 6F, No.192, Lien-Cheng Rd., Chung-Ho, New Taipei City,  
Taiwan, R.O.C.  
Manufacturer : VIVOTEK INC.  
Model No. : IB9389-EH-v2, IB9389-EHT-v2, IB839-EH, IB839-EHT  
EUT Rated Voltage : PoE  
EUT Test Voltage : PoE  
Trade Name : VIVOTEK  
Applicable Standard : FCC CFR Title 47 Part 15 Subpart B: 2020, Class A  
Test Result : Complied  
Performed Location : DEKRA Testing and Certification Co., Ltd.  
Linkou Laboratory  
No. 5-22, Ruishukeng  
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## Laboratory Information

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<b>Norway</b>	<b>:</b>	<b>DNVGL</b>
<b>USA</b>	<b>:</b>	<b>FCC</b>
<b>Japan</b>	<b>:</b>	<b>VCCI</b>

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : <http://www.dekra.com.tw>

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### Revision History

Report No.	Version	Description	Issued Date
2161206R-E3012110013	V1.0	Initial issue of report	2021-07-16
2161206R-E3012110013	V2.0	Add two new models	2021-12-20

## 1. General Information

### 1.1. EUT Description

Product Name	Network Camera
Trade Name	VIVOTEK
Model No.	IB9389-EH-v2, IB9389-EHT-v2, IB839-EH, IB839-EHT
EUT Max Frequency	3200MHz

Note: The different of each model is shown as below:

Project Name	IB9389-EH-v2	IB839-EH	IB9389-EHT-v2	IB839-EHT
Lens Type	Fixed-focal		Motorized, Vari-focal, Remote Focus	

### 1.2. Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

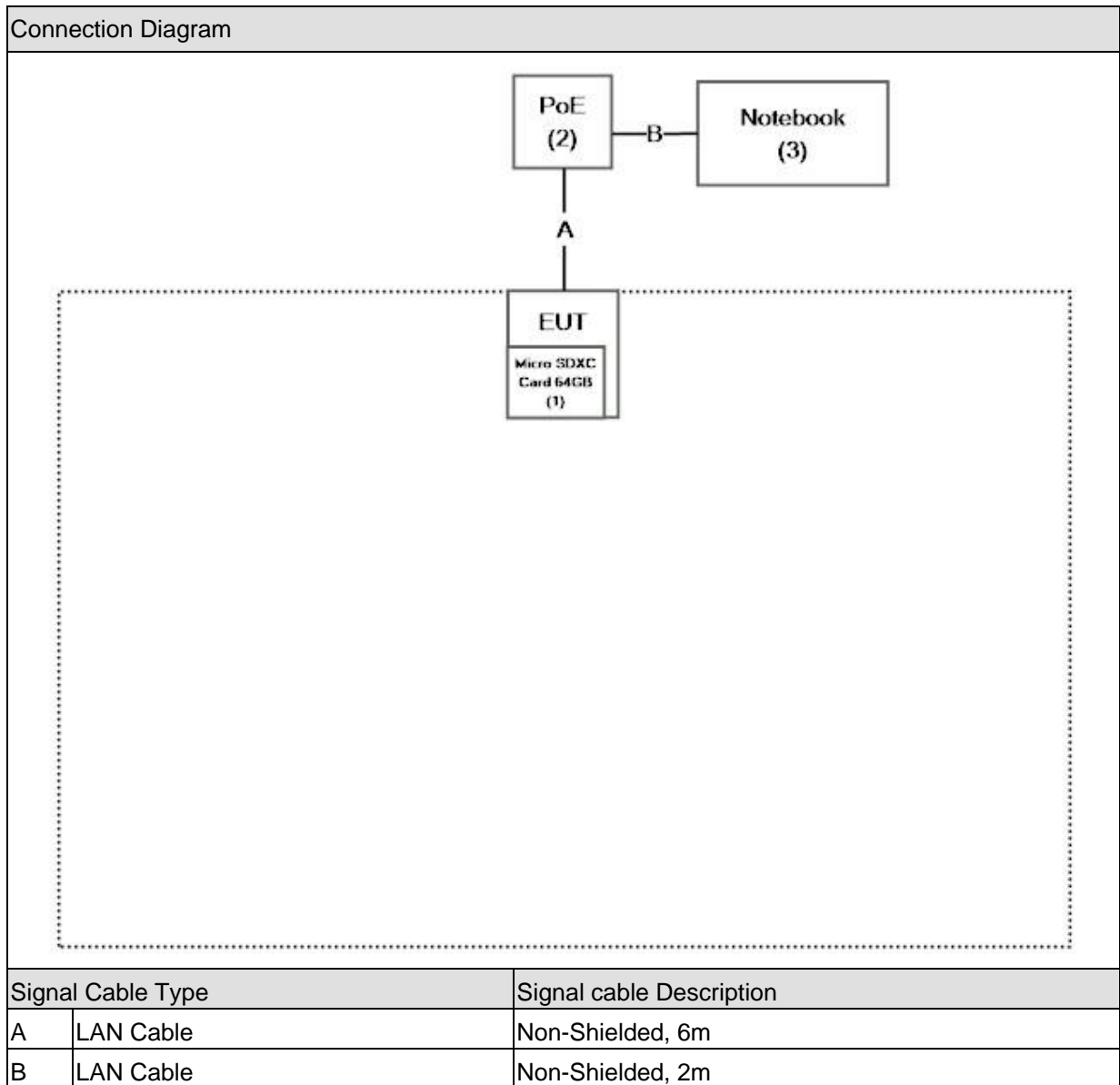
Pre-Test Mode	
Mode 1: IB9389-EHT-v2, PoE Mode	
Mode 2: IB9389-EH-v2, PoE Mode	
Final Test Mode	
Emission	Mode 1: IB9389-EHT-v2, PoE Mode

### 1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord	
1	Micro SDXC Card 64GB	SanDisk	SanDisk Extreme microSDXC UHS-I	N/A	N/A
2	PoE	N/A	N/A	N/A	N/A
3	Notebook	Lenovo	ThinkPad T490	PF-21W2ES	Non-Shielded, 0.8m

### 1.4. Configuration of Tested System



Note:

- Use Full system setup configuration determines Worst-Case Mode.
- Use 2dB law program determines Max. Cable Configuration and Worst-Case Mode.
- Radiated emission item test: Performed using the Horn Antenna 3dB Beamwidth to 3m from the EUT size sufficient to cover the procedure.
- Radiated emission item test: Performed using the Horn Antenna 3dB Beamwidth non 3m distance sufficient to cover the size of the EUT program.

### 1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment.
3	All the features of the EUT operation normally.

## 2. Technical Test

### 2.1. Summary of Test Result

- No deviations from the test standards
- Deviations from the test standards as below description:

Emission			
Performed Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart B: 2020, Class A CISPR 22: 2008 , ANSI C63.4: 2014	No	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart B: 2020, Class A CISPR 22: 2008 , ANSI C63.4: 2014	Yes	No

Note: Test Site Validation was carried out according to ANSI C63.4a: 2017

## 2.2. List of Test Equipment

### Radiated Emission / Site2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2923	2020/11/24
EMI Test Receiver	R&S	ESCS 30	100369	2020/12/09
Coaxial Cable	DEKRA	RG 214	LC002-RG	2021/06/10
Pre-Amplifier	Jet-Power	JPA-10M1G33	170101000330009	2021/06/10
Coaxial signal switch	Anritsu	MP59B	6200436230	2021/06/10
Site2 NSA	DEKRA	N/A	N/A	2021/06/10

Note: All equipments that need to calibrate are with calibration period of 1 years.

**Note:Test Receiver Detector:Quasipeak Bandwidth:120kHz**

### Radiated Emission / CB7(Up to 40GHz)

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESU26	100433	2020/11/20
Signal Analyzer	R&S	FSV40	101176	2021/05/21
Horn Antenna	ETS-Lindgren	3117	00202723	2020/09/25
Horn Antenna	Com-Power	AH-840	101043	2021/04/28
Pre-Amplifier	EMCI	EMC051845SE	980359	2020/11/11
Pre-Amplifier + Cable	EMCI	EMC184045SE	980370	2021/04/07
CB7 VSWR	DEKRA	N/A	N/A	2021/06/22

Note: All equipments that need to calibrate are with calibration period of 1 years.

### **2.3. Measurement Uncertainty**

#### Radiated Emission(Under 1GHz)

The measurement uncertainty is evaluated as  $\pm 4.22$  dB.

#### Radiated Emission(Above 1GHz)

The measurement uncertainty is evaluated as  $\pm 5.08$  dB.

## 2.4. Test Environment

Performed Item	Items	Required
Radiated Emission	Temperature (°C)	10-40
	Humidity (%RH)	10-90

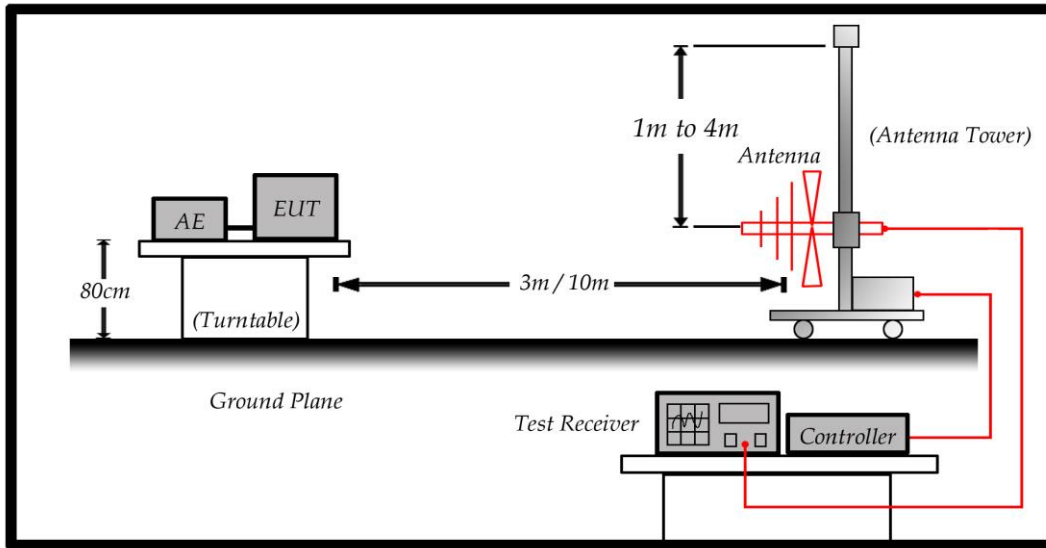
### 3. Radiated Emission

#### 3.1. Test Specification

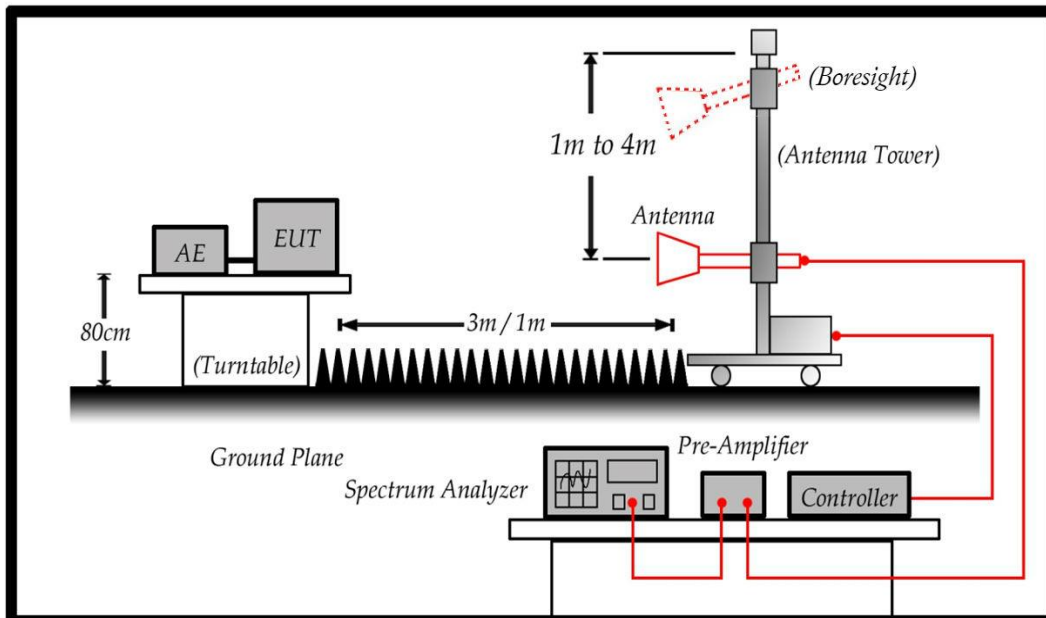
According to EMC Standard : FCC Part 15 Subpart B, CISPR 22: 2008

#### 3.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



### 3.3. Limit

Under 1GHz test shall not exceed the following value:

Limits		
Frequency (MHz)	Distance (m)	dBuV/m
30 – 230	10	40
230 – 1000	10	47

Above 1GHz test shall not exceed the following value:

FCC Part 15 Subpart B Paragraph 15.109 Limits (dBuV/m)		
Frequency (MHz)	Distance(m)	dBuV/m
30-88	10	39
88-216	10	43.5
216-960	10	46.4
960-1000	10	49.5
1000 to 18000	3	60
Above 18000	1	69.5

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

### 3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground.

The turn table can rotate 360 degrees to determine the position of the maximum emission level and the antenna (boresight antenna tower) can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower

On any frequency or frequencies below or equal to 1000 MHz, the radiated limits shown are based on measuring equipment employing a quasi-peak detector function and above 1000 MHz, the radiated limits shown are based measuring equipment employing an average detector function.

When average radiated emission measurement are included emission measurement Above 1000 MHz, there also is 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.

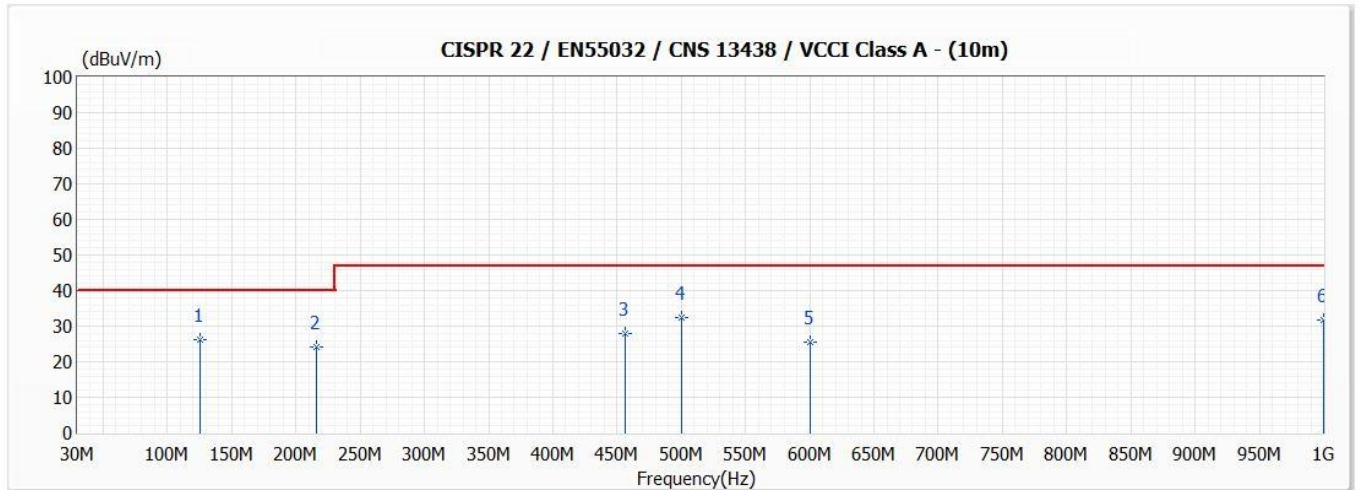
For class A, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and above 1GHz.

For class B, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and 3 meters for above 1GHz.

The bandwidth below 1GHz setting on the field strength meter (Test Receiver) is 120 kHz and above 1GHz is 1MHz.

### 3.5. Test Result

Model No	IB9389-EHT-v2	Site	SITE2
Test Voltage	PoE	Test Date	2021/7/2
Test Mode	Mode 1	Engineer	Edward Chi
Polarity	Horizontal	Temperature (°C)	27.5
Test Condition	--	Humidity (%RH)	58.8

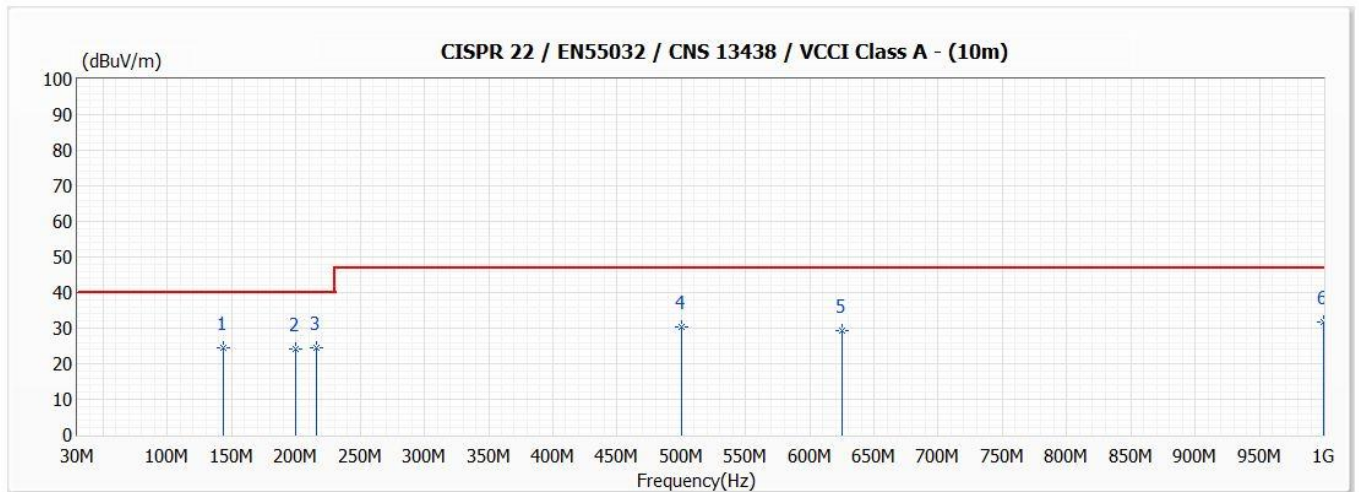


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
* 1	125.000	26.11	40.00	-13.89	38.30	-12.19	370	164	QP
2	216.000	24.29	40.00	-15.71	38.70	-14.41	370	-91	QP
3	456.000	28.09	47.00	-18.91	32.90	-4.81	200	61	QP
4	500.000	32.40	47.00	-14.60	36.30	-3.90	200	87	QP
5	600.000	25.44	47.00	-21.56	27.10	-1.66	100	-81	QP
6	1000.000	31.59	47.00	-15.41	26.70	4.89	100	-43	QP

Remark:

1. "\*" means this data is the worst emission level; "!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
3. Margin=Emission Level-Limit.

Model No	IB9389-EHT-v2	Site	SITE2
Test Voltage	PoE	Test Date	2021/7/2
Test Mode	Mode 1	Engineer	Edward Chi
Polarity	Vertical	Temperature (°C)	27.5
Test Condition	--	Humidity (%RH)	58.8

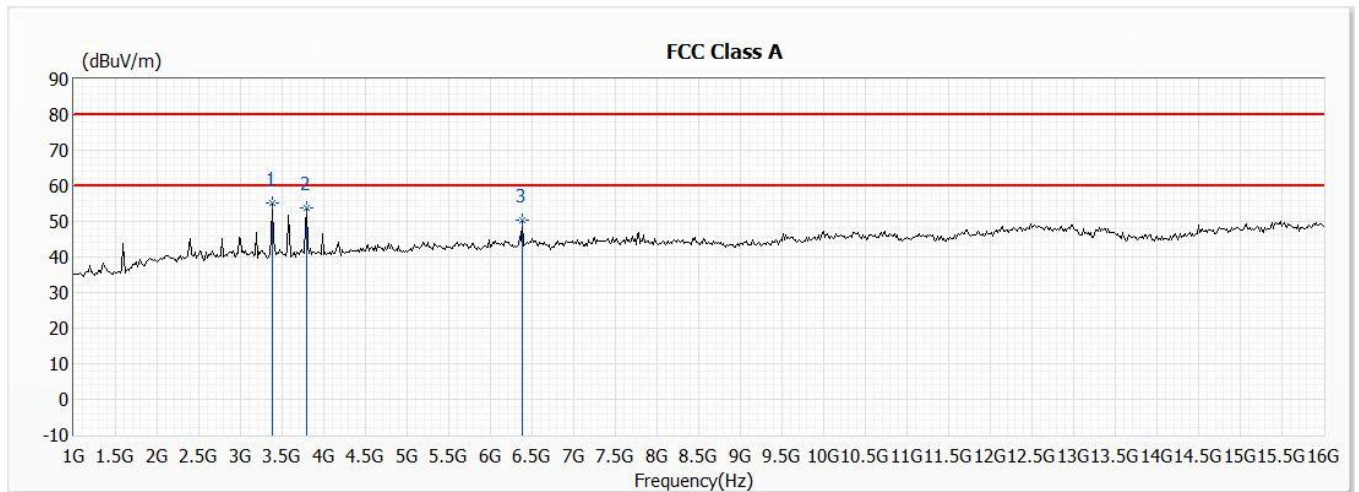


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
1	143.300	24.47	40.00	-15.53	37.50	-13.03	100	97	QP
2	200.000	24.11	40.00	-15.89	38.40	-14.29	100	193	QP
3	216.000	24.49	40.00	-15.51	38.90	-14.41	100	-77	QP
4	500.000	30.50	47.00	-16.50	34.40	-3.90	300	-182	QP
5	625.000	29.48	47.00	-17.52	30.50	-1.02	250	17	QP
* 6	1000.000	31.59	47.00	-15.41	26.70	4.89	150	-49	QP

Remark:

1. "\*" means this data is the worst emission level;"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
3. Margin=Emission Level-Limit.

Model No	IB9389-EHT-v2	Site	CB7
Test Voltage	PoE	Test Date	2021/7/2
Test Mode	Mode 1	Engineer	Nilk Chen
Polarity	Horizontal	Temperature (°C)	27.1
Test Condition	--	Humidity (%RH)	55

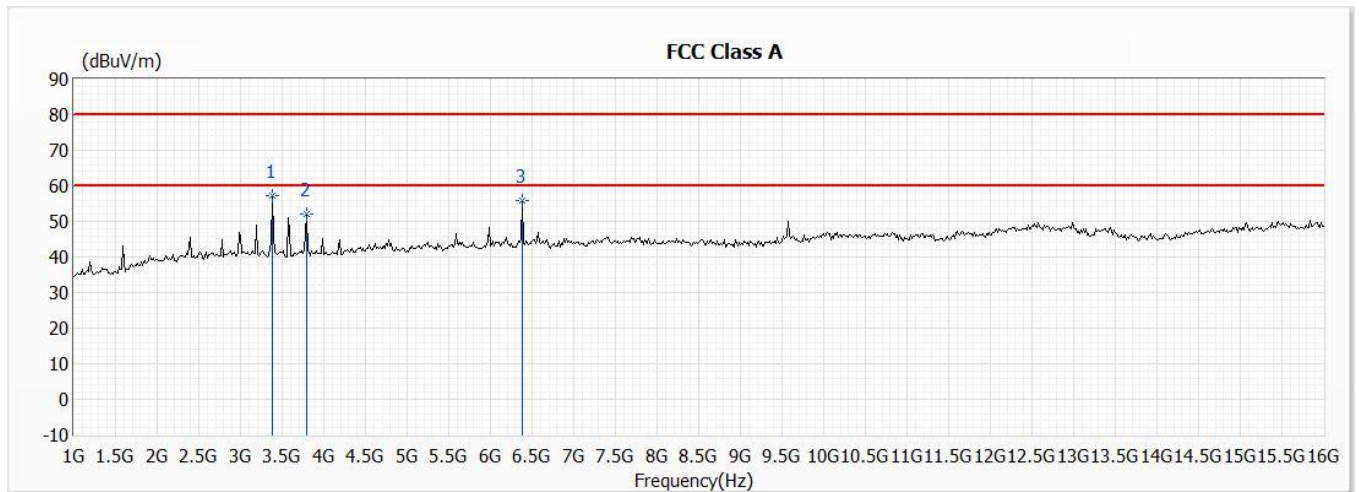


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
* 1	3385.000	55.11	80.00	-24.89	59.88	-4.77	140	193	PK
2	3790.000	53.94	80.00	-26.06	57.42	-3.48	100	-154	PK
3	6385.000	50.51	80.00	-29.49	48.89	1.62	120	77	PK

Remark:

1. "\*" means this data is the worst emission level;"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor (Correct Factor=Ant Factor+Cable Loss-Pre Amp).
3. Margin= Emission Level-Limit.
4. The above 1 GHz test. When PEAK measures level less than AV limit by 20 dBuV, its average is not measured separately.

Model No	IB9389-EHT-v2	Site	CB7
Test Voltage	PoE	Test Date	2021/7/2
Test Mode	Mode 1	Engineer	Nilk Chen
Polarity	Vertical	Temperature (°C)	27.1
Test Condition	--	Humidity (%RH)	55



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
* 1	3385.000	57.15	80.00	-22.85	61.92	-4.77	160	125	PK
2	3790.000	51.90	80.00	-28.10	55.38	-3.48	150	181	PK
3	6385.000	55.79	80.00	-24.21	54.17	1.62	110	-44	PK

Remark:

1. "\*" means this data is the worst emission level;"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor (Correct Factor=Ant Factor+Cable Loss-Pre Amp).
3. Margin= Emission Level-Limit.
4. The above 1 GHz test. When PEAK measures level less than AV limit by 20 dBuV, its average is not measured separately.

### 3.6. Test Photograph

Test Mode : Mode 1: IB9389-EHT-v2, PoE Mode

Description : Front View of Radiated Test



Test Mode : Mode 1: IB9389-EHT-v2, PoE Mode

Description : Back View of Radiated Test



Test Mode : Mode 1: IB9389-EHT-v2, PoE Mode

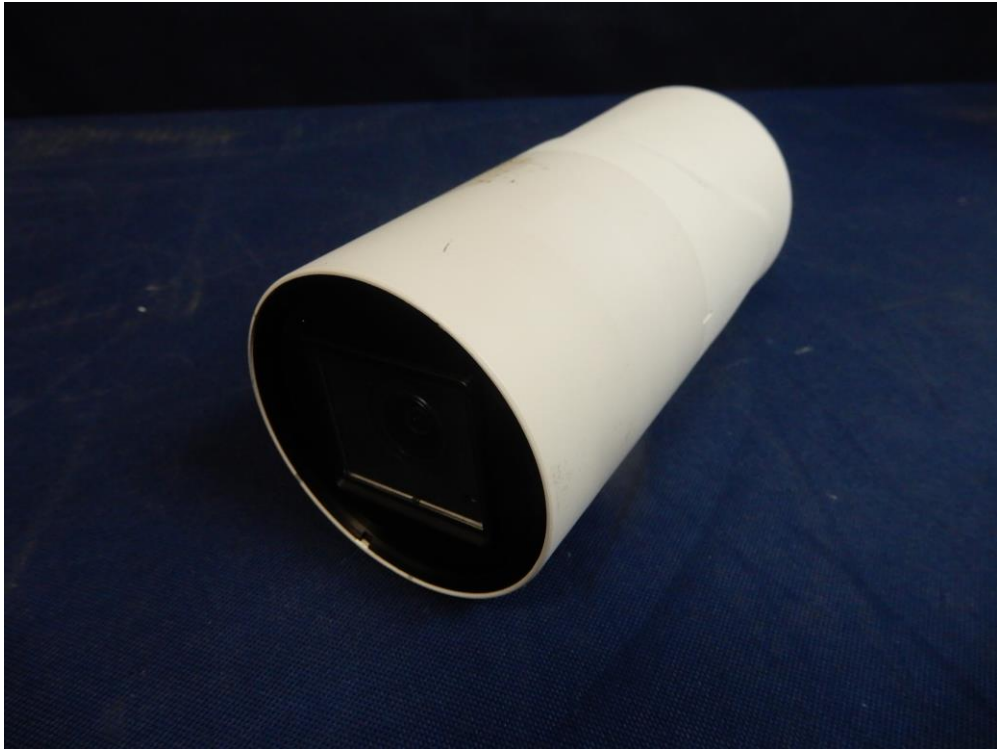
Description : Front View of High Frequency Radiated Test



**4. Attachment**

➤ **EUT Photograph**

(1) EUT Photo



(2) EUT Photo



(3) EUT Photo

