

Test Report

Compliance with Canada Interference-Causing Equipment Standard ICES-003

Product Name : work Camera
Model No. : FD9389-EHTV-v2, FD9389-EHV-v2, FD839-EHV, FD839-EHTV

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

Date of Receipt : 2021/06/25
Issued Date : 2021/12/20
Report No. : 2161042R-E3012150008
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.
This report must not be used to claim product endorsement by TAF or any agency of the government.
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

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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. : FD9389-EHTV-v2, FD9389-EHV-v2, FD839-EHV, FD839-EHTV
EUT Rated Voltage : PoE
EUT Test Voltage : PoE
Trade Name : VIVOTEK
Applicable Standard : ICES-003 Issue 7: 2020 Class A
Test Result : Complied
Performed Location : DEKRA Testing and Certification Co., Ltd.
Linkou Laboratory
No. 5-22, Ruishukeng
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Approved By :



(Director / Vincent Lin)

Laboratory Information

We, **DEKRA Testing and Certification Co., Ltd.**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scopes:

Taiwan	:	BSMI, NCC, TAF
Norway	:	DNVGL
USA	:	FCC
Japan	:	VCCI

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
2161042R-E3012150008	V1.0	Initial issue of report	2021-07-14
2161042R-E3012150008	V2.0	adding the Model No. FD839-EHV, FD839-EHTV	2021-12-20

1. General Information

1.1. EUT Description

Product Name	work Camera
Trade Name	VIVOTEK
Model No.	FD9389-EHTV-v2, FD9389-EHV-v2, FD839-EHV, FD839-EHTV
EUT Max Frequency	3200MHz

Note: The EUT is including four models for different marketing requirement, the different of two models shown as follows:

Project Name	FD9389-EHV-v2 FD839-EHV	FD9389-EHTV-v2 FD839-EHTV
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:

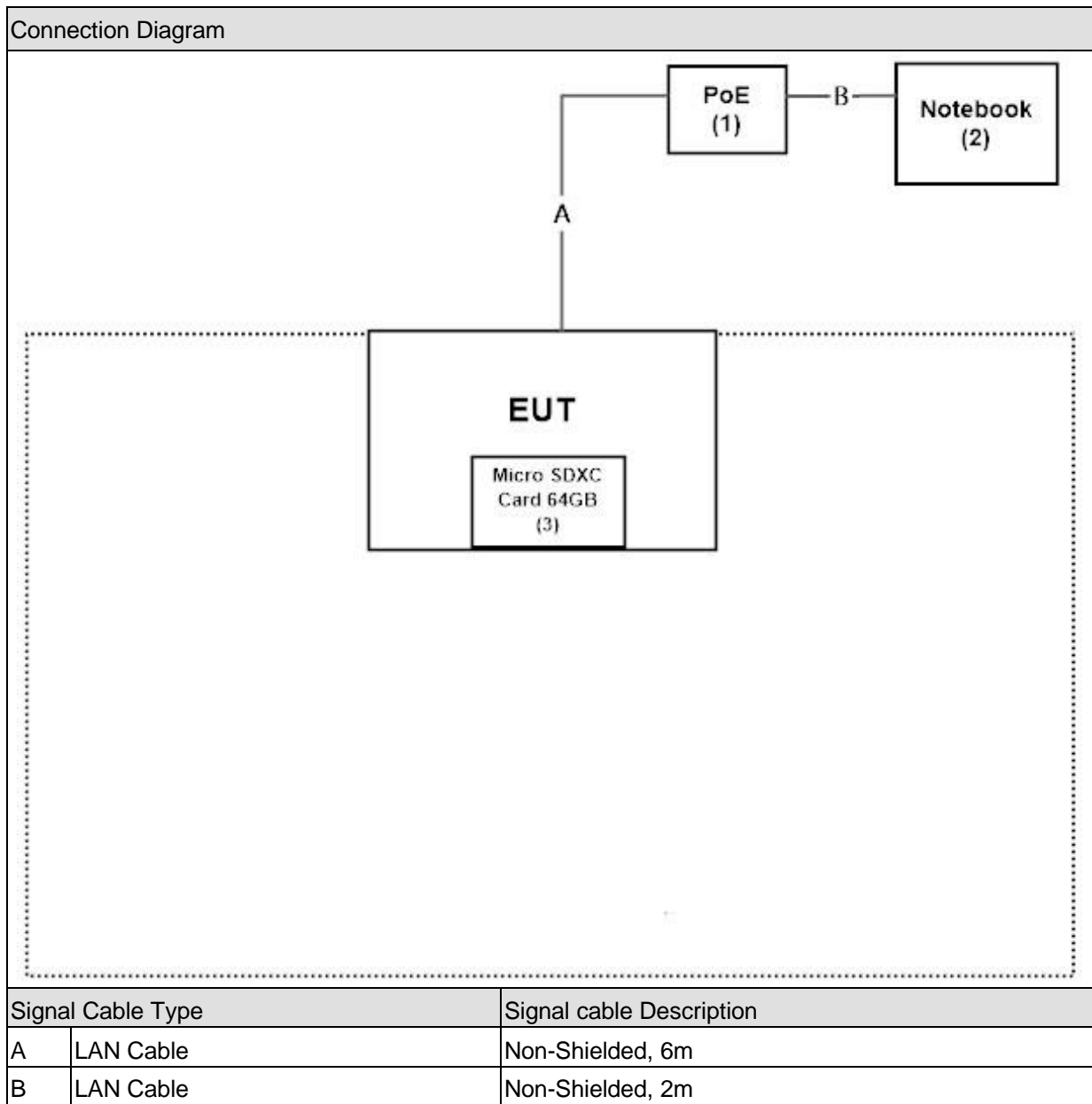
Pre-Test Mode	
Mode 1: POE MODE	
Final Test Mode	
Emission	Mode 1: POE MODE

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	PoE	N/A	N/A	N/A	Non-Shielded, 1.8m
2	Notebook	Lenovo	ThinkPad T490	PF-21W2ES	Non-Shielded, 0.8m
3	Micro SDXC Card 64GB	SanDisk	SanDisk Extreme microSDXC UHS-I	N/A	N/A

1.4. Configuration of Tested System



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	ICES-003 Issue 7: 2020 Class A ANSI C63.4-2014 CAN/CSA CISPR 32:2017	No	No
Radiated Emission	ICES-003 Issue 7: 2020 Class A ANSI C63.4-2014 CAN/CSA CISPR 32:2017	Yes	No

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

2.2. List of Test Equipment

Radiated Emission / Site1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2905	2021/01/18
EMI Test Receiver	R&S	ESR3	102042	2021/05/12
Coaxial Cable	DEKRA	RG 214	LC001-RG	2021/06/09
Pre-Amplifier	Jet-Power	JPA-10M1G33	170101000330008	2021/06/09
Site1 NSA	DEKRA	N/A	N/A	2021/06/09
Note: All equipments that need to calibrate are with calibration period of 1 years.				

Radiated Emission / CB8

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESR26	101385	2020/12/22
Horn Antenna	ETS-Lindgren	3117	00227710	2021/01/26
Pre-Amplifier	SGH	PRAMP118	20200921-1	2021/04/07
CB8 VSWR	DEKRA	N/A	N/A	2021/06/23
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 ± 4.22 dB.

Radiated Emission(Above 1GHz)

The measurement uncertainty is evaluated as ± 5.08 dB.

2.4. Test Environment

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

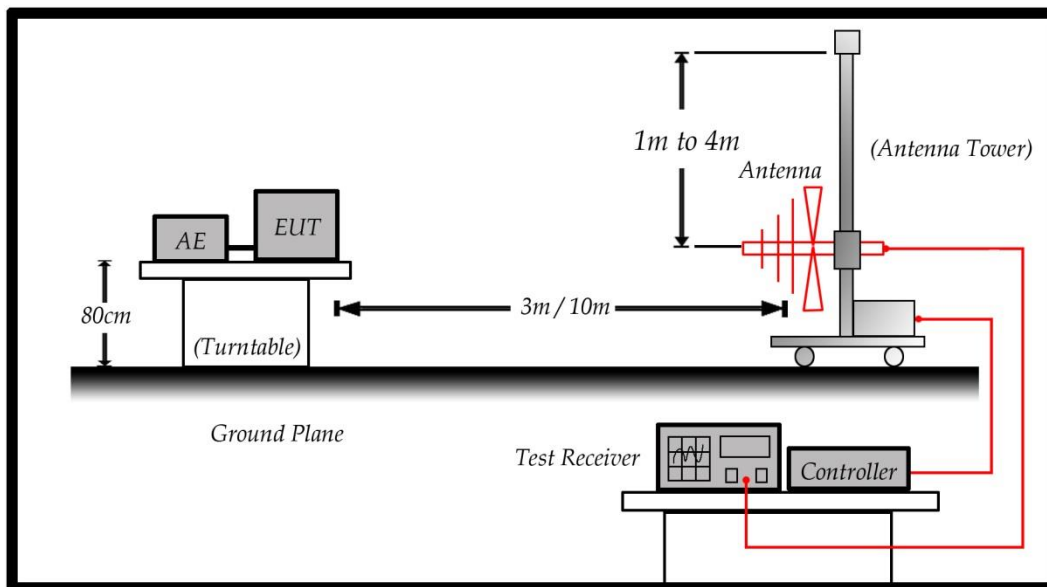
3. Radiated Emission

3.1. Test Specification

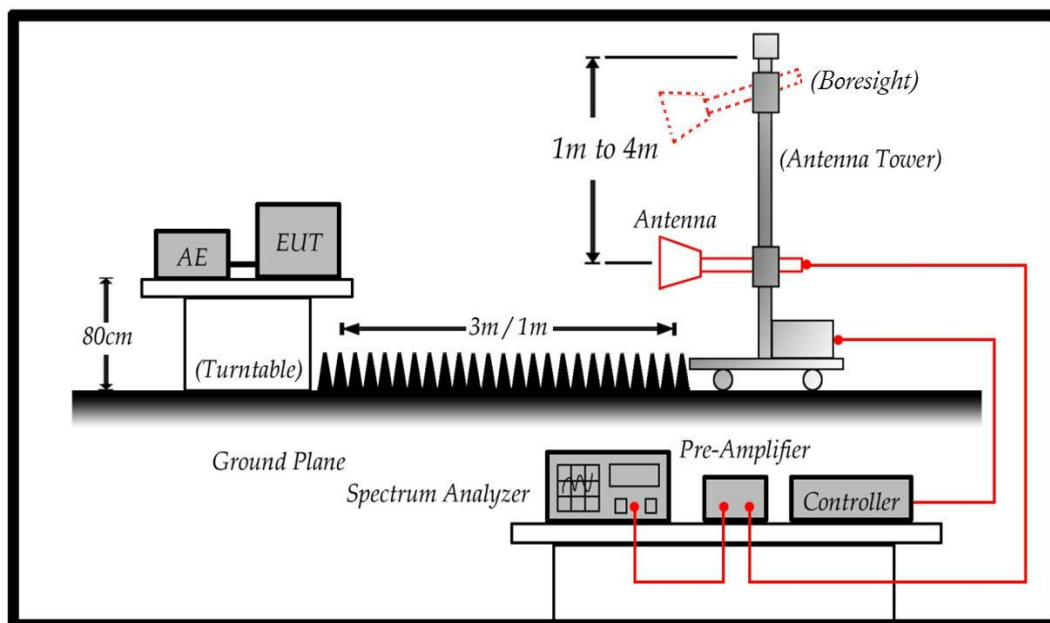
According to Standard : ICES-003 Issue 7: 2020

3.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



3.3. Limit

Radiated emissions limits (30 MHz to 1 GHz)				
Frequency range (MHz)	Class A (3 m) Quasi-peak (dBuV/m)	Class A (10 m) Quasi-peak (dBuV/m)	Class B (3 m) Quasi-peak (dBuV/m)	Class B (10 m) Quasi-peak (dBuV/m)
30-88	50.0	40.0	40.0	30.0
88-216	54.0	43.5	43.5	33.1
216-230	56.9	46.4	46.0	35.6
230-960	57.0	47.0	47.0	37.0
960-1000	60.0	49.5	54.0	43.5

Note: The more stringent limit applies at transition frequencies.

Required highest measurement frequency for radiated emissions

Highest internal frequency (F_x)	Highest measured frequency
$F_x \leq 108$ MHz	1 GHz
108 MHz < $F_x \leq 500$ MHz	2 GHz
500 MHz < $F_x \leq 1$ GHz	5 GHz
$F_x > 1$ GHz	$5 \times F_x$ up to a maximum of 40 GHz

Note: F_x is the highest fundamental frequency generated and/or used in the ITE or digital apparatus under test.

Radiated emission limits at 3 m distance (at and above 1 GHz)				
Frequency range (GHz)	Class A Average dB(uV/m)	Class A) Peak dB(uV/m)	Class B Average dB(uV/m)	Class B Peak dB(uV/m)
1 - F_M	60	80	54	74

Note:

1. The highest measurement frequency, F_M , in GHz, shall be determined as per table 3.
2. The measurement bandwidth shall be 1 MHz or greater.
3. These limit levels apply for a measurement distance of 3 m. If using a different measurement distance, the measured levels shall be extrapolated to the 3 m limit distance using a factor of 20 dB per decade of distance. The measurement distance shall place the measurement antenna in the far field of the ITE or digital apparatus under test.
4. The test site shall have been validated at the distance used for radiated emission measurements on the ITE or digital apparatus under test.

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.

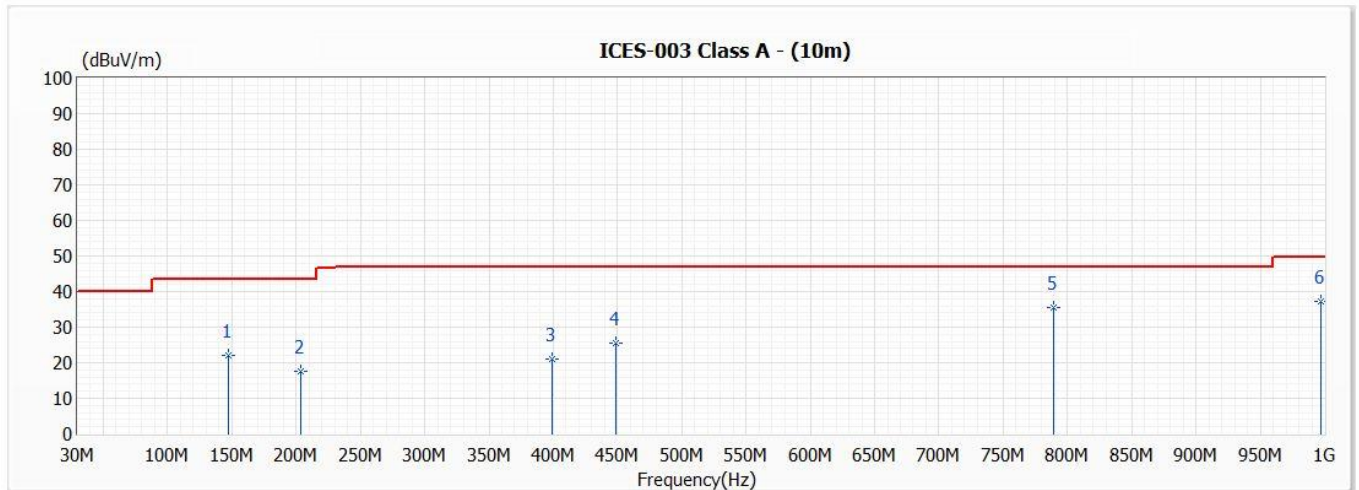
On any frequency or frequencies below or equal to 1000 MHz, the radiated limits shown are based on measuring equipment employing a quasi-peak detector function and above 1000 MHz, the radiated limits shown are based measuring equipment employing an peak & average detector function.

The measurement distance between the EUT and antenna is 3 meters or 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	FD9389-EHTV-v2	Site	SITE1
Test Voltage	POE	Test Date	2021/6/26
Test Mode	Mode 1	Engineer	Peter Lin
Polarity	Horizontal	Temperature (°C)	26
Test Condition	--	Humidity (%RH)	87

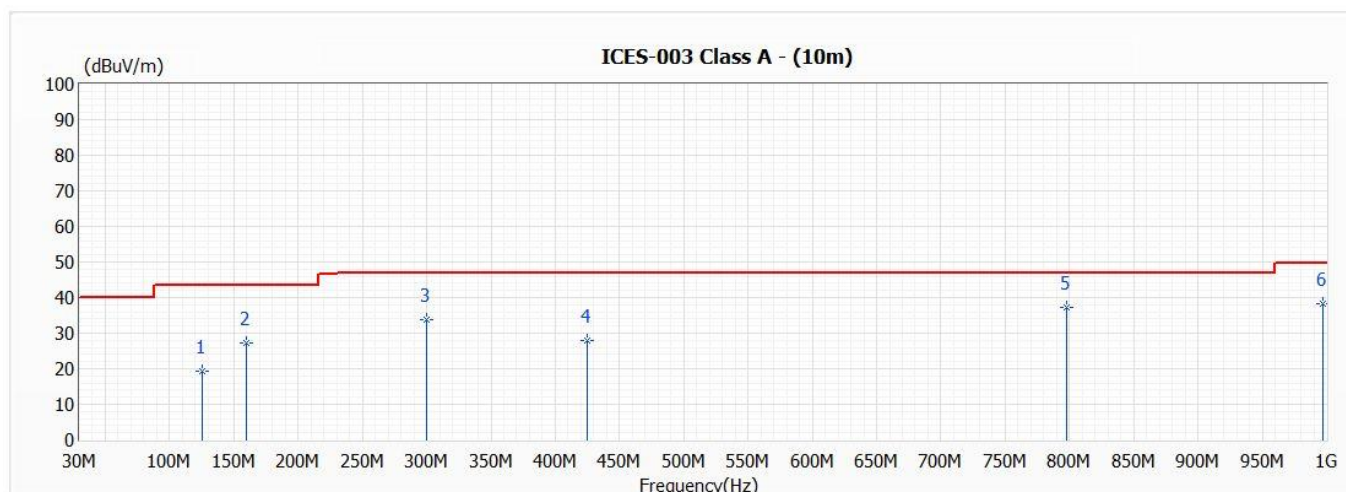


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
1	147.450	22.24	43.50	-21.26	35.90	-13.66	370	-24	QP
2	204.010	17.67	43.50	-25.83	32.10	-14.43	370	-126	QP
3	398.810	20.89	47.00	-26.11	27.40	-6.51	300	18	QP
4	448.410	25.61	47.00	-21.39	30.90	-5.29	200	83	QP
* 5	789.050	35.67	47.00	-11.33	34.50	1.17	100	-160	QP
6	997.360	37.14	49.50	-12.36	32.90	4.24	100	-100	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	FD9389-EHTV-v2	Site	SITE1
Test Voltage	POE	Test Date	2021/6/26
Test Mode	Mode 1	Engineer	Peter Lin
Polarity	Vertical	Temperature (°C)	26
Test Condition	--	Humidity (%RH)	87

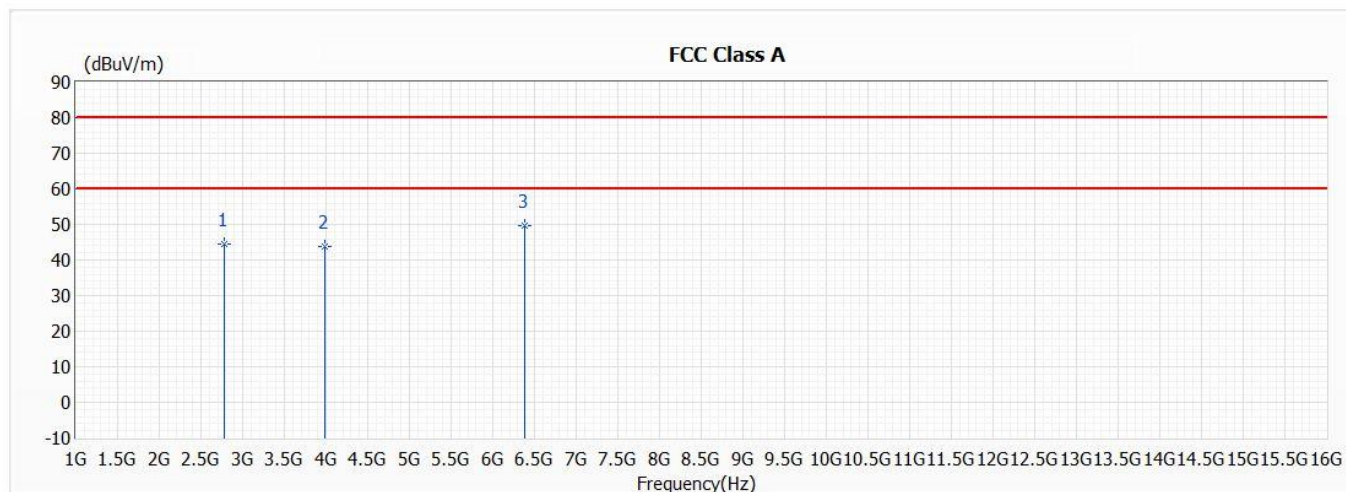


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
1	125.000	19.18	43.50	-24.32	31.80	-12.62	100	176	QP
2	159.740	27.40	43.50	-16.10	41.70	-14.30	100	10	QP
3	300.000	33.89	47.00	-13.11	43.70	-9.81	100	153	QP
4	424.960	28.02	47.00	-18.98	33.60	-5.58	300	42	QP
* 5	798.070	37.37	47.00	-9.63	36.20	1.17	250	-169	QP
6	997.030	38.32	49.50	-11.18	34.10	4.22	100	-63	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	FD9389-EHTV-v2	Site	CB8
Test Voltage	POE	Test Date	2021/6/26
Test Mode	Mode 1	Engineer	Shianyu Chiou
Polarity	Horizontal	Temperature (°C)	25.1
Test Condition	--	Humidity (%RH)	53

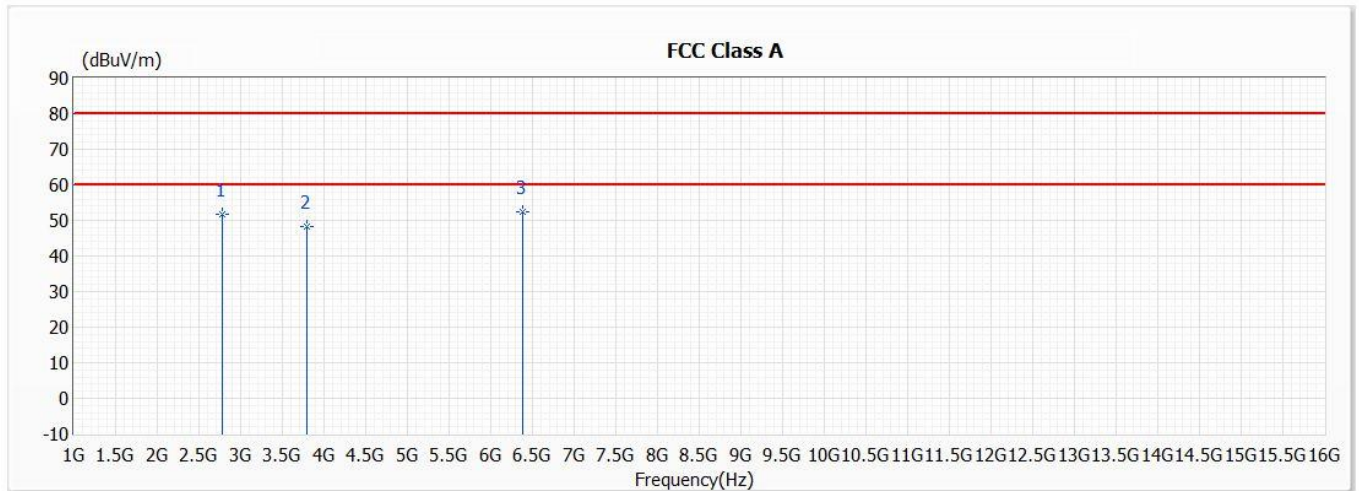


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
1	2785.000	44.48	80.00	-35.52	57.31	-12.83	100	158	PK
2	3985.000	43.85	80.00	-36.15	53.78	-9.93	100	-72	PK
* 3	6385.000	49.63	80.00	-30.37	52.13	-2.50	100	-99	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	FD9389-EHTV-v2	Site	CB8
Test Voltage	POE	Test Date	2021/6/26
Test Mode	Mode 1	Engineer	Shianyu Chiou
Polarity	Vertical	Temperature (°C)	25.1
Test Condition	--	Humidity (%RH)	53



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	2785.000	51.89	80.00	-28.11	64.72	-12.83	100	184	PK
2	3790.000	48.26	80.00	-31.74	58.60	-10.34	100	-64	PK
* 3	6385.000	52.31	80.00	-27.69	54.81	-2.50	100	-71	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: POE MODE

Description : Front View of Radiated Test



Test Mode : Mode 1: POE MODE

Description : Back View of Radiated Test



Test Mode : Mode 1: POE MODE

Description : Front View of High Frequency Radiated Test



4. Attachment

➤ **EUT Photograph**

(1) EUT Photo



(2) EUT Photo



(3) EUT Photo

