



# TEST REPORT

Report No.: DHQ-18JY2473VTSHPB  
Test Model: DH-HAC-HDBW1230RN-Z  
Received: Jul.30, 2018  
ISSUED: Aug.13, 2018

Applicant: ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD.  
Address: No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China

Issued By: BUREAU VERITAS ADT (Shanghai) Corporation  
Lab Location: No. 829, Xinzhuan Road, Shanghai, P.R.China (201612)

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## 1. TEST PROGRAM

**PRODUCT:** HDCVI CAMERA  
**TEST MODEL:** DH-HAC-HDBW1230RN-Z  
**SERIES MODEL:** Refer to model list  
**APPLICANT:** ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.  
**TESTED:** Jul.30 to Aug.13, 2018  
**STANDARDS:** 47 CFR FCC Part15, Subpart B, Class A  
ANSI C63.4:2014

We, BUREAU VERITAS ADT (Shanghai) Corporation, declare that the equipment above has been tested and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

**PREPARED BY :** Kevin WANG, **DATE:** Aug.13, 2018

Kevin WANG  
Testing Engineer

**APPROVED BY :** Joy ZHU, **DATE:** Aug.13, 2018

Joy ZHU  
Testing Manager



## 2. Summary of Test Procedure and Test Results

EMISSION(47 CFR FCC Part15, Subpart B)		
Test Item	Normative References	Test Result
Conducted Emission	47 CFR FCC Part15, Subpart B 15.107	Meets the Class A requirements
Radiated Emission	47 CFR FCC Part15, Subpart B 15.109	Meets the Class A requirements



### 3. Test Configuration of Equipment under Test

#### 3.1. Manufacturer information

Manufacturer : ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.

Address : No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China

#### 3.2. Factory information

Factory (1) : ZHEJIANG DAHUA VISION TECHNOLOGY CO.,LTD.

Address : No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China

Factory (2) : ZHEJIANG DAHUA ZHILIAN CO.,LTD.

Address : No.28, Dongqiao Road, Dongzhou Street, Fuyang District, Hangzhou,  
P.R.China.

#### 3.3. Feature of Equipment under Test

<b>Product Name:</b>	HDCVI CAMERA
<b>Test Model:</b>	DH-HAC-HDBW1230RN-Z
<b>Series Model:</b>	Refer to model list
<b>Model Discrepancy:</b>	All models have same internal structure, just different appearance, pixels and model name.
<b>EUT Power Rating:</b>	12VDC, 0.5A

Note: Please refer to user manual.

### 3.4. Model list

DH-HAC-HDBW1230RN-Z , DH-HAC-HDBW1230RP-Z ,  
HAC-HDBW1230RN-Z , HAC-HDBW1230RP-Z ,  
DH-HAC-HDBW1200RN-Z , DH-HAC-HDBW1200RP-Z ,  
HAC-HDBW1200RN-Z , HAC-HDBW1200RP-Z ,  
DH-HAC-HDBW1400RN-Z , DH-HAC-HDBW1400RP-Z ,  
HAC-HDBW1400RN-Z , HAC-HDBW1400RP-Z ,  
DH-HAC-HDBW1500RN-Z , DH-HAC-HDBW1500RP-Z ,  
HAC-HDBW1500RN-Z , HAC-HDBW1500RP-Z ,  
DH-HAC-HDBW1800RN-Z , DH-HAC-HDBW1800RP-Z ,  
HAC-HDBW1800RN-Z , HAC-HDBW1800RP-Z , A21CM0Z ,

### 3.5. Description of support units

NO.	PRODUCT	BRAND	MODEL NO.
1	monitor	Doffler	BT751LSD00033
2	AC adapter	HONOR	ADS-12AM-12 12012EPCN
3	DVR	DAHUA	DH-XVR7208AN-4KL-X
4	Cable	--	--



### 3.6. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

This listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement		Value
Conducted emissions		2.55 dB
Radiated emissions	30 MHz ~ 1GHz	3.22 dB
	Above 1GHz	2.89 dB

## 4. Test of Conducted Emission

### 4.1. Test Limit

**TEST STANDARD:**

**CFR 47 FCC Part 15, Subpart B (Section: 15.107)**

FREQUENCY (MHz)	Class A (dB $\mu$ V)		Class B (dB $\mu$ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

- NOTES:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.







#### 4.4. Measurement Equipment

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	E1R1001	Mar.05, 2019
LISN ROHDE & SCHWARZ	ENV216	E1L1011	Jul.18, 2019
LISN	ISNT800	E1C4021	Sep.20, 2018
Software ADT	ADT_Cond_V7.3.0	N/A	N/A

## 4.5. Test Result and Data

### 4.5.1 Conducted Emission Test Data

Phase : LINE

Location: Conduction 1

Date: 8/2/2018

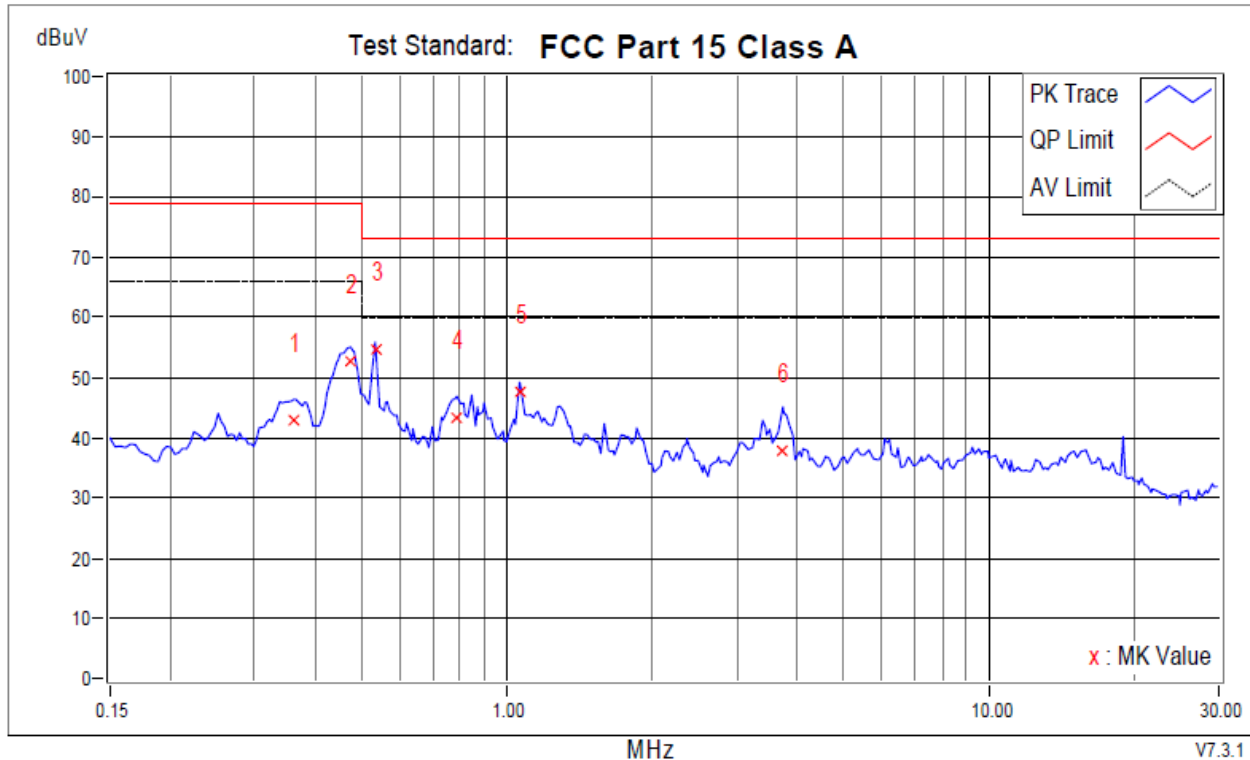
Time: 7:36:26 PM

Phase L1

Temperatuer (C): 22

Humidity (%): 48

Approved by:



No.	Frequency	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
	MHz	dB	QP	AV	QP	AV	QP	AV	QP	AV	
1	0.36114	9.62	33.36	25.81	42.98	35.43	79.00	66.00	-36.02	-30.57	
2	0.47453	9.61	42.98	35.69	52.59	45.30	79.00	66.00	-26.41	-20.70	
+3	0.53318	9.61	45.00	37.89	54.61	47.50	73.00	60.00	-18.39	-12.50	
4	0.78733	9.61	33.76	26.25	43.37	35.86	73.00	60.00	-29.63	-24.14	
5	1.06256	9.60	38.14	31.01	47.74	40.61	73.00	60.00	-25.26	-19.39	
6	3.74482	9.73	28.10	18.45	37.83	28.18	73.00	60.00	-35.17	-31.82	

#### REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

Phase : NEUTRAL



**BUREAU  
VERITAS**

Location: Conduction 1

Date: 8/2/2018

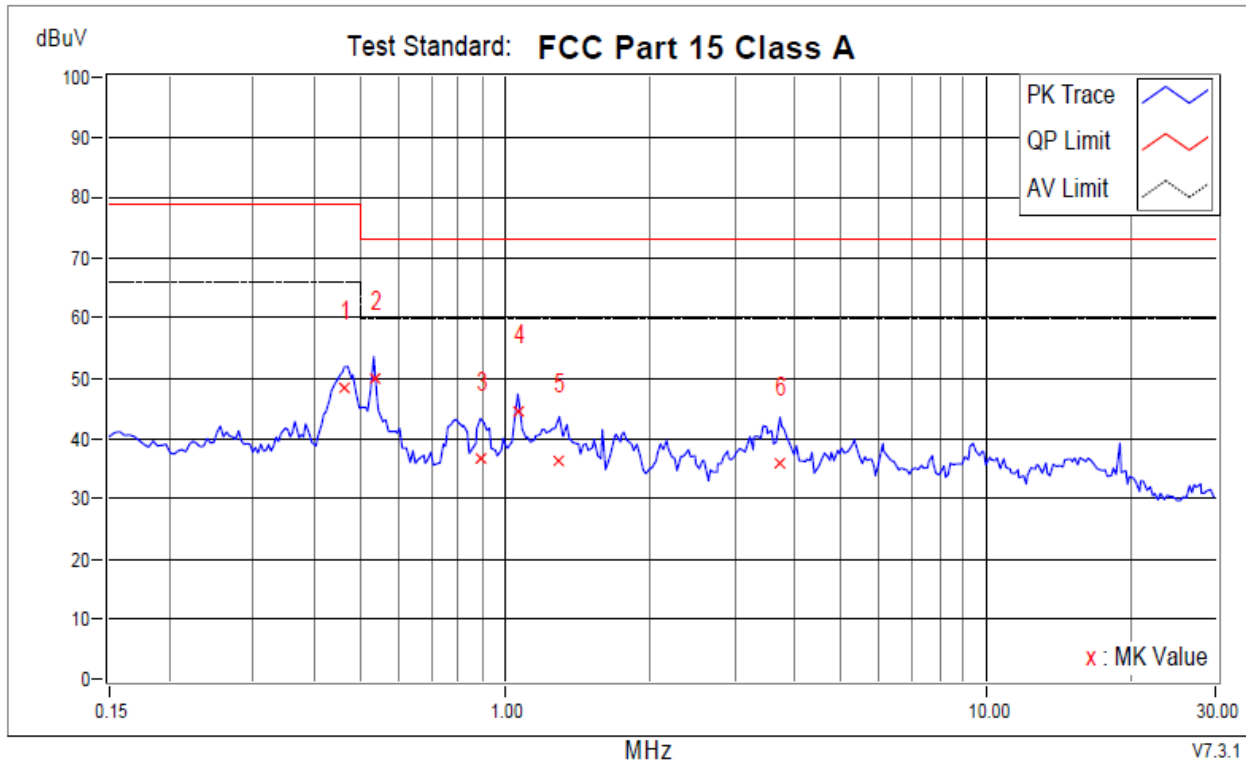
Time: 7:39:22 PM

Phase N

Temperatuer (C): 22

Humidity (%): 48

Approved by:



	Frequency	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
No.	MHz	dB	QP	AV	QP	AV	QP	AV	QP	AV	
1	0.46280	9.61	38.68	28.17	48.29	37.78	79.00	66.00	-30.71	-28.22	
+2	0.53318	9.61	40.58	27.85	50.19	37.46	73.00	60.00	-22.81	-22.54	
3	0.88899	9.60	27.16	18.87	36.76	28.47	73.00	60.00	-36.24	-31.53	
4	1.06256	9.60	35.06	22.05	44.66	31.65	73.00	60.00	-28.34	-28.35	
5	1.29716	9.61	26.76	17.17	36.37	26.78	73.00	60.00	-36.63	-33.22	
6	3.73309	9.73	26.14	15.61	35.87	25.34	73.00	60.00	-37.13	-34.66	

#### REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

#### 4.6. Test Photographs



## 5. Test of Radiated Emission

### 5.1. Test Limit

#### TEST STANDARD:

CFR 47 FCC Part 15, Subpart B (Section: 15.109)

#### FOR FREQUENCY BELOW 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	μV/m	dBμV/m	μV/m	dBμV/m
30 – 88	90	39.1	100	40.0
88 – 216	150	43.5	150	43.5
216 – 960	210	46.4	200	46.0
960 – 1000	300	49.5	500	54.0

#### LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

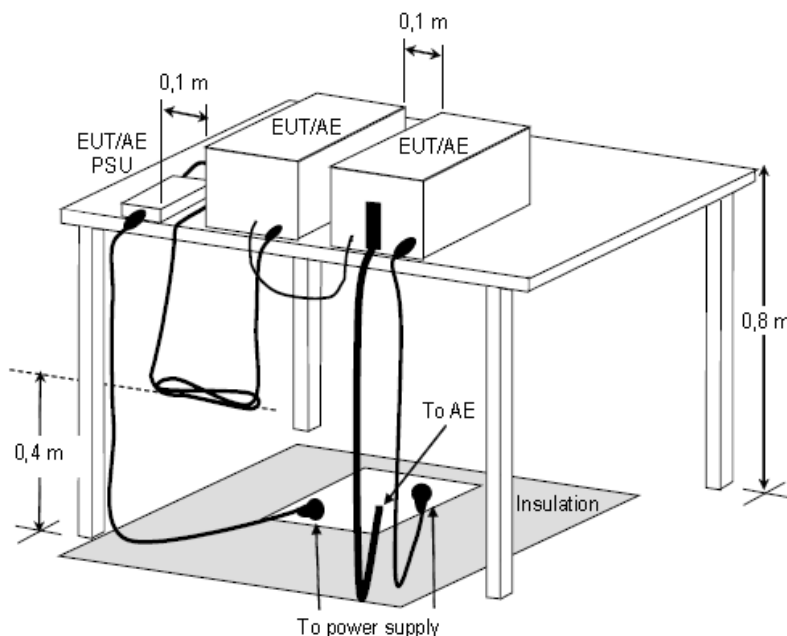
FREQUENCY (MHz)	Class A (dBμV/m) (at 3m)		Class B (dBμV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

- Note:** (1) The lower limit shall apply at the transition frequencies.  
 (2) Emission level (dBuV/m) = 20 log Emission level (uV/m).  
 (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

## 5.2. Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3/10 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

## 5.3. Typical Test Setup



**Figure D.8 – Example measurement arrangement for table-top EUT  
(Radiated emission measurement)**



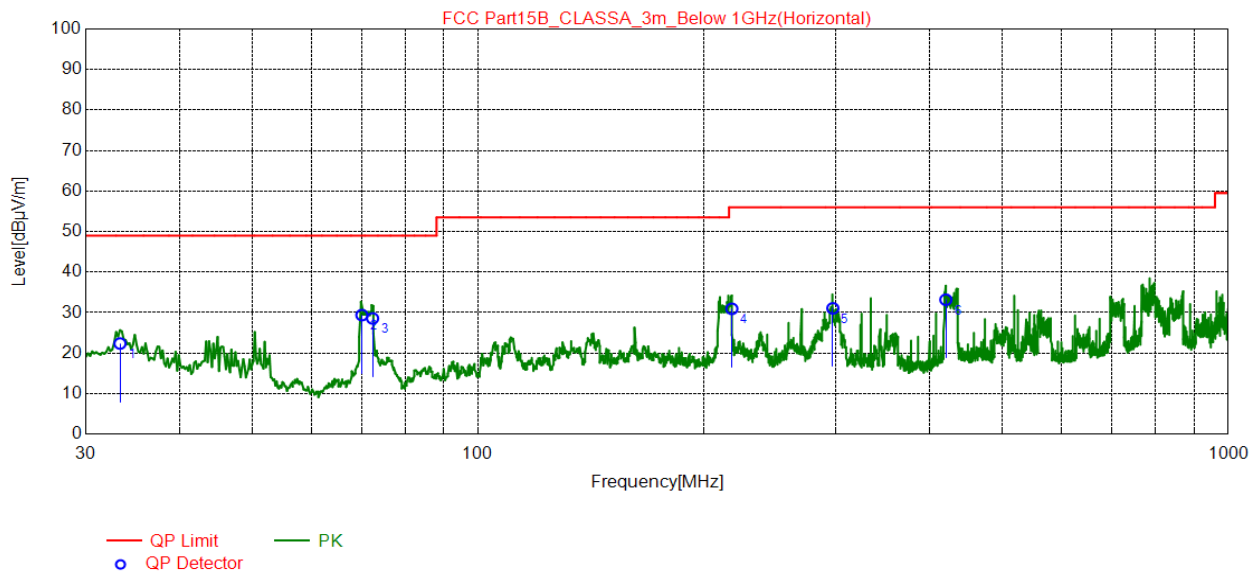
#### 5.4. Measurement Equipment

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
EMI Test Spectrum ROHDE & SCHWARZ	ESR7	E1R1005	Dec.04, 2018
Broad-Band Antenna Schwarzbeck	VULB9168	E1A1001	Feb.27, 2019
Double Riaged Vroadband Horn Antenna Schwarzbeck	BBHA9120D	E1A1017	Aug.26, 2019
Preamplifier Agilent	8447D	E1A2001	Oct.18, 2018
Preamplifier Agilent	8449B	E1A2002	Mar.26, 2019



## 5.5. Test Result and Data (30MHz ~ 1GHz)

Position: Horizontal

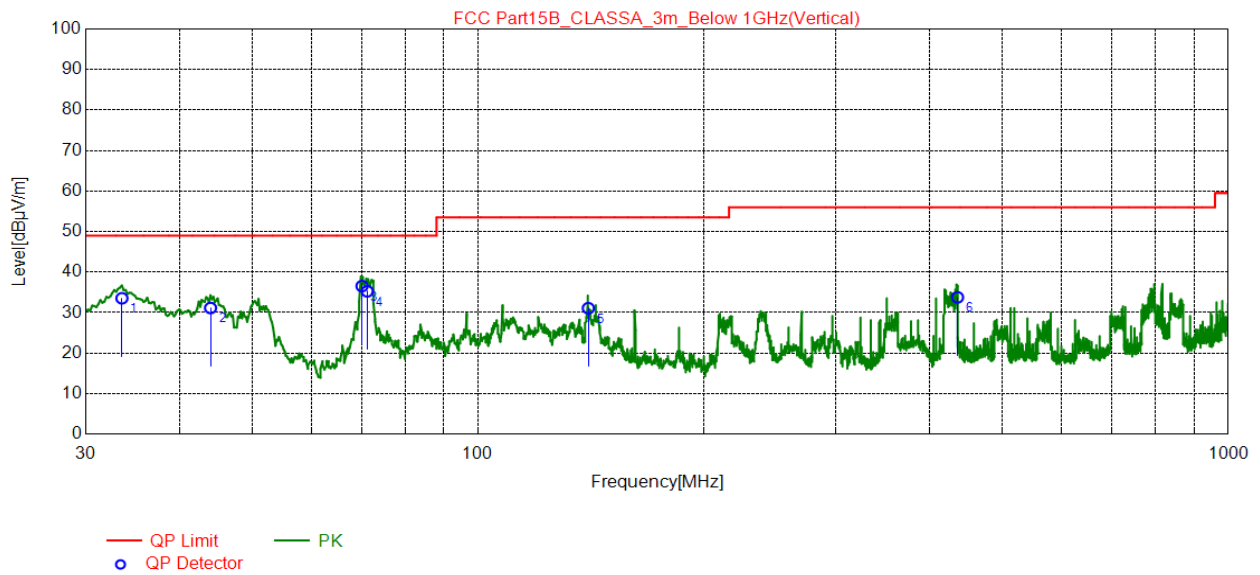


NO.	Freq. [MHz]	QP Reading [dB μV/m]	Factor [dB]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	33.298	39.82	-17.46	49.00	26.64	100	17	Horizontal
2	69.964	47.72	-18.33	49.00	19.61	200	283	Horizontal
3	72.292	47.38	-18.82	49.00	20.44	200	283	Horizontal
4	217.79	49.43	-18.49	56.00	25.06	100	193	Horizontal
5	296.94	47.04	-15.99	56.00	24.95	200	20	Horizontal
6	420.13	46.05	-12.88	56.00	22.83	200	220	Horizontal

### REMARKS:

1. Q.P. is abbreviation of quasi-peak individually.
2. The emission levels of other frequencies were very low against the limit.
3. QP Margin value = QP Limit value – QP value
4. Factor = Antenna Factor + Amplifier Factor + Cable loss
5. QP value = Factor + Reading Value.

Position: Vertical



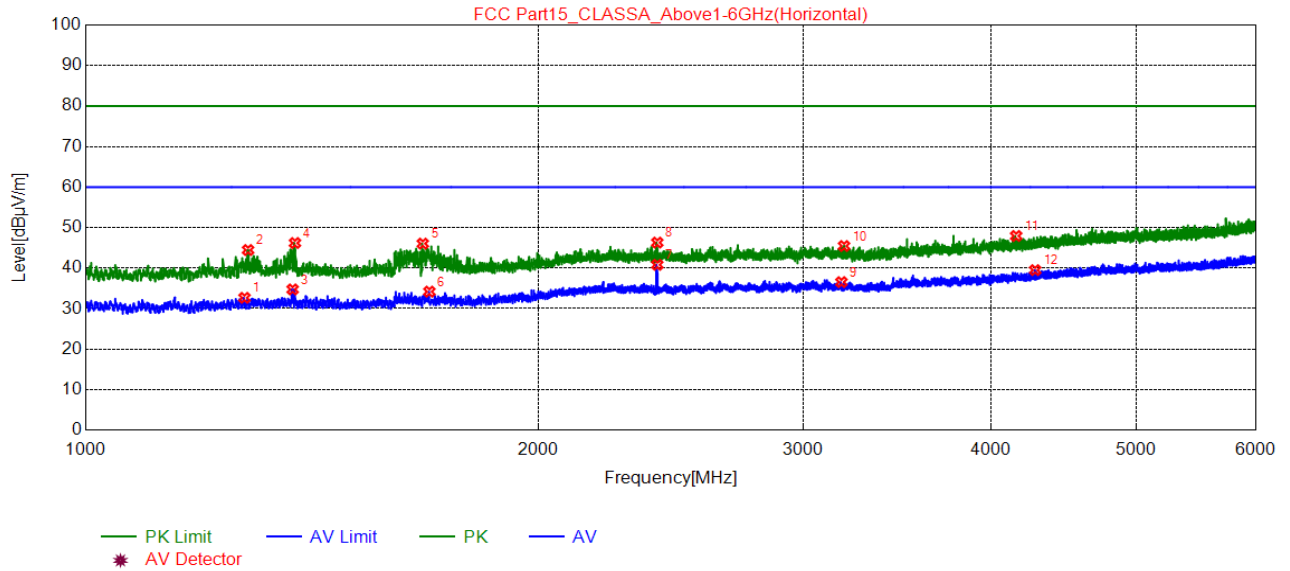
NO.	Freq. [MHz]	QP Reading [dB $\mu$ V/m]	Factor [dB]	QP Limit [dB $\mu$ V/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	33.492	50.99	-17.46	49.00	15.47	100	200	Vertical
2	43.968	48.33	-17.20	49.00	17.87	100	266	Vertical
3	69.990	54.87	-18.32	49.00	12.45	108.1	154.1	Vertical
4	71.128	53.82	-18.57	49.00	13.75	100	158	Vertical
5	140.19	48.25	-17.16	53.50	22.41	100	179	Vertical
6	435.46	46.36	-12.59	56.00	22.23	100	260	Vertical

#### REMARKS:

1. Q.P. is abbreviation of quasi-peak individually.
2. The emission levels of other frequencies were very low against the limit.
3. QP Margin value = QP Limit value – QP value
4. Factor = Antenna Factor + Amplifier Factor + Cable loss
5. QP value = Factor + Reading Value.

## 5.6. Test Result and Data (1GHz ~ 6GHz)

Position: Horizontal

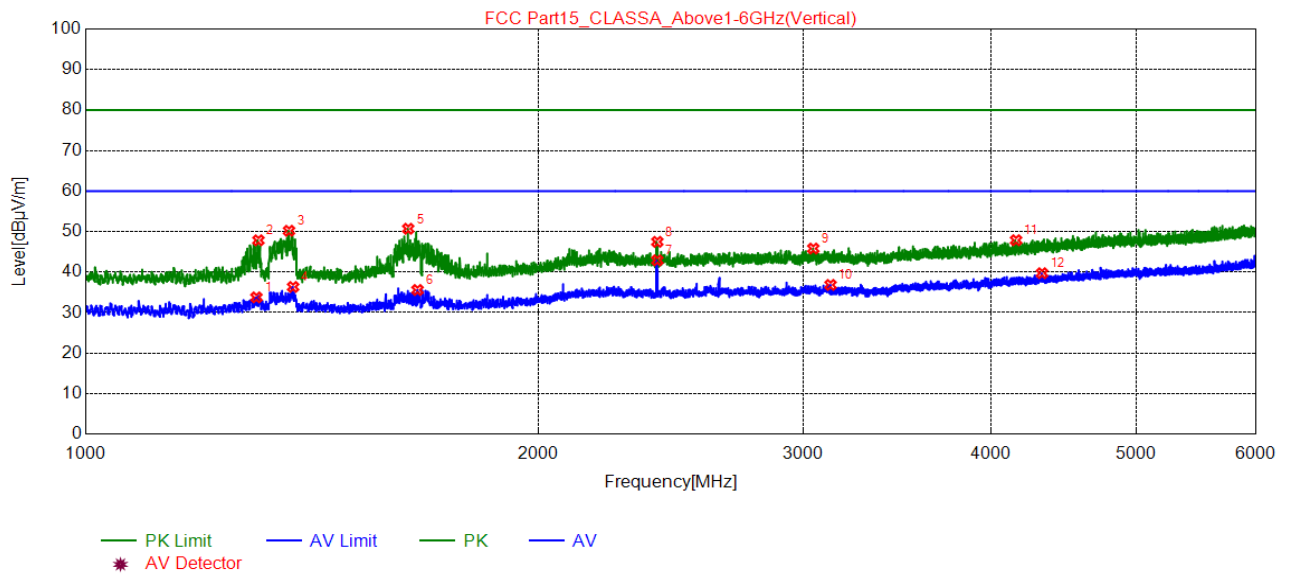


NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	1275.0	32.65	60.00	27.35	100	208	Horizontal	AV
2	1282.0	44.45	80.00	35.55	100	198	Horizontal	PK
3	1372.5	34.73	60.00	25.27	100	156	Horizontal	AV
4	1377.5	46.18	80.00	33.82	100	156	Horizontal	PK
5	1675.5	46.04	80.00	33.96	100	167	Horizontal	PK
6	1692.5	34.18	60.00	25.82	100	218	Horizontal	AV
7	2400.0	40.80	60.00	19.20	100	259	Horizontal	AV
8	2400.0	46.29	80.00	33.71	100	146	Horizontal	PK
9	3182.0	36.53	60.00	23.47	100	177	Horizontal	AV
10	3195.0	45.44	80.00	34.56	100	65	Horizontal	PK
11	4159.0	47.92	80.00	32.08	100	330	Horizontal	PK
12	4282.0	39.49	60.00	20.51	100	238	Horizontal	AV

### REMARKS:

1. The emission levels of other frequencies were very low against the limit.
2. Margin = Limit –Level

Position: Vertical

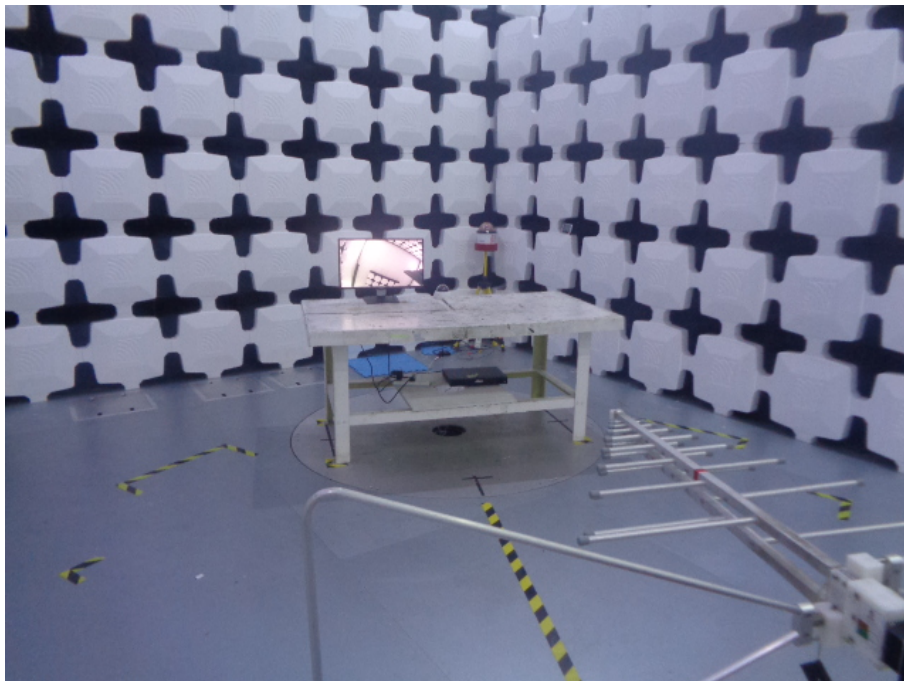
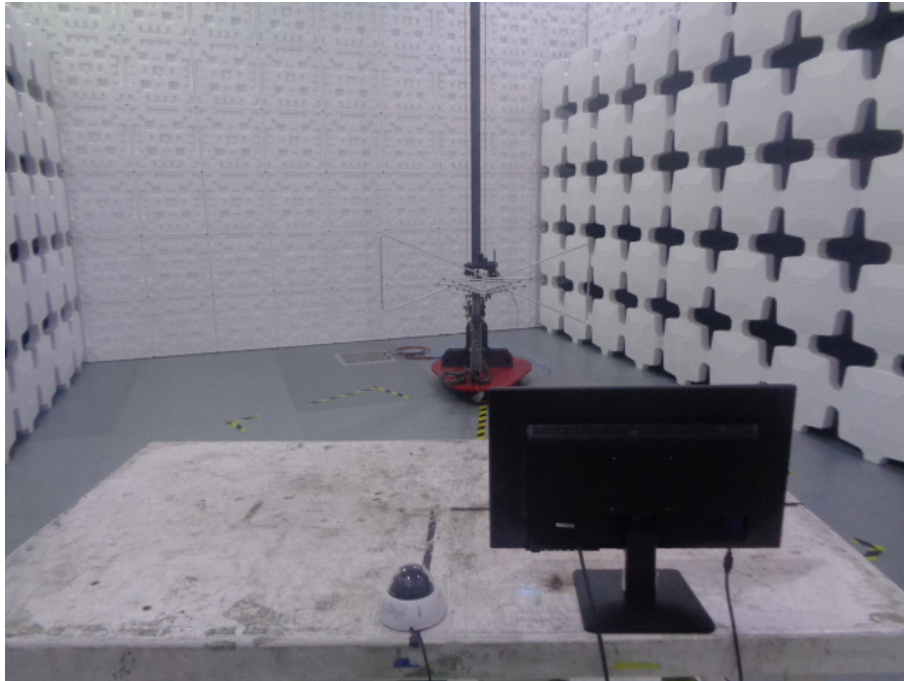


NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	1298.5	33.74	60.00	26.26	100	138	Vertical	AV
2	1302.5	47.84	80.00	32.16	100	168	Vertical	PK
3	1365.0	50.19	80.00	29.81	100	188	Vertical	PK
4	1373.5	36.33	60.00	23.67	100	199	Vertical	AV
5	1638.5	50.69	80.00	29.31	100	188	Vertical	PK
6	1662.0	35.57	60.00	24.43	100	188	Vertical	AV
7	2400.0	42.90	60.00	17.10	100	27	Vertical	AV
8	2400.0	47.46	80.00	32.54	100	0	Vertical	PK
9	3048.0	45.80	80.00	34.20	100	319	Vertical	PK
10	3129.5	36.83	60.00	23.17	100	329	Vertical	AV
11	4158.5	47.85	80.00	32.15	100	48	Vertical	PK
12	4327.5	39.71	60.00	20.29	100	329	Vertical	AV

#### REMARKS:

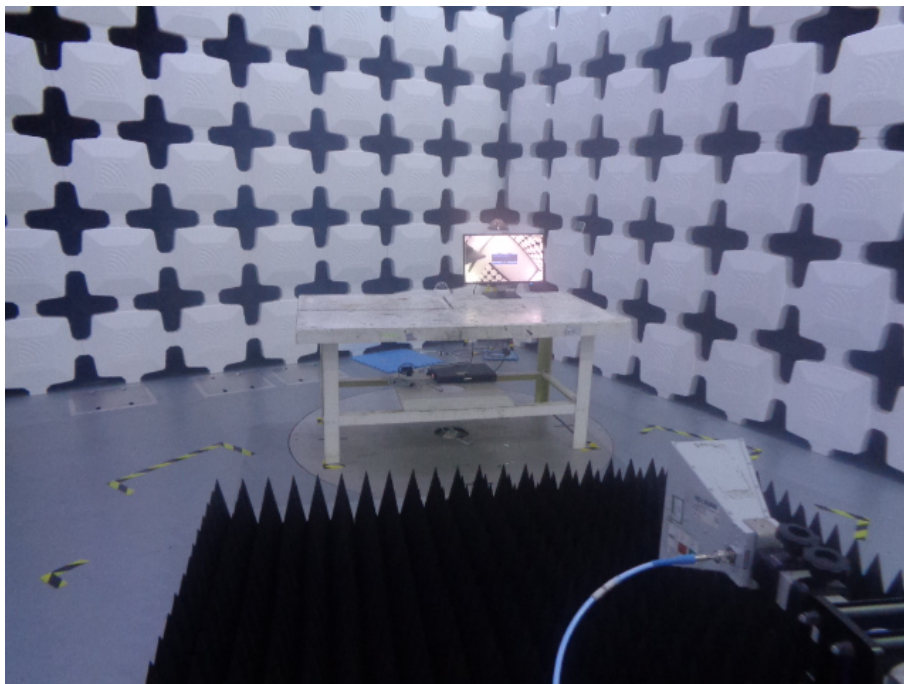
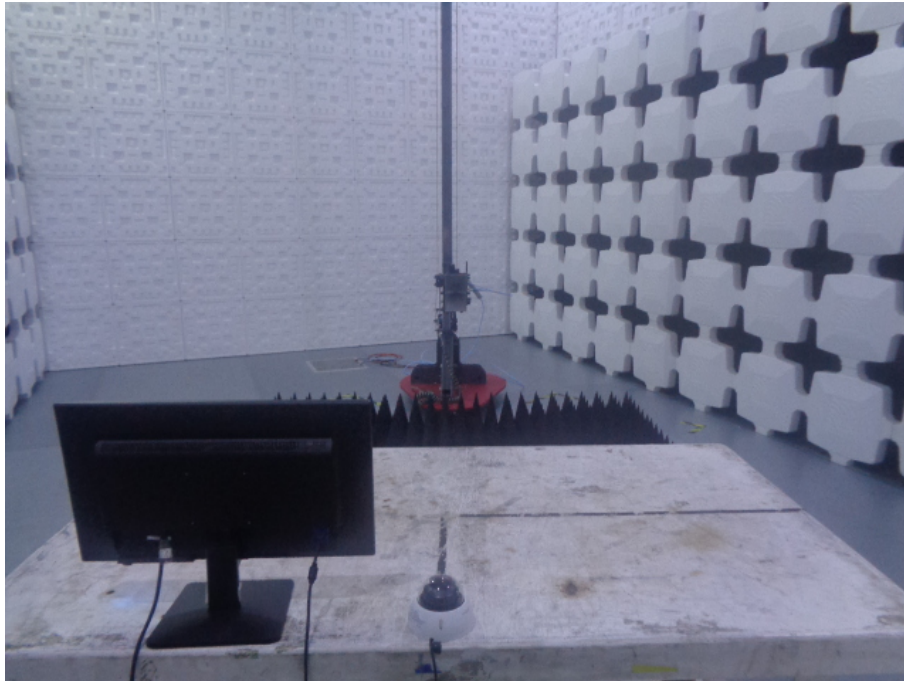
1. The emission levels of other frequencies were very low against the limit.
2. Margin = Limit – Level

### 5.7. Test Photographs (30MHz ~ 1000MHz)



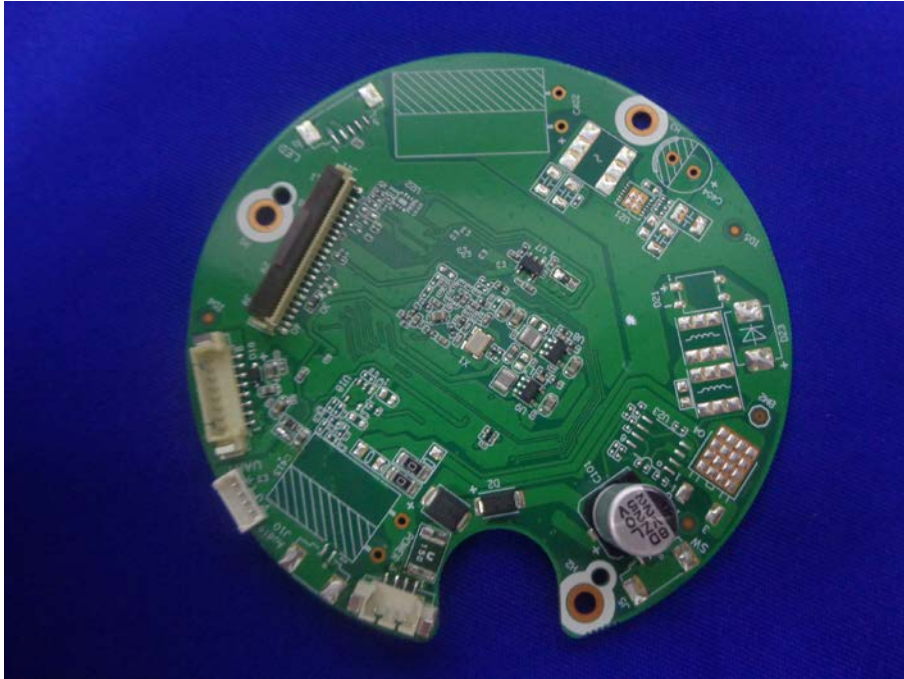


## 5.8. Test Photographs (1000MHz ~ 6000MHz)

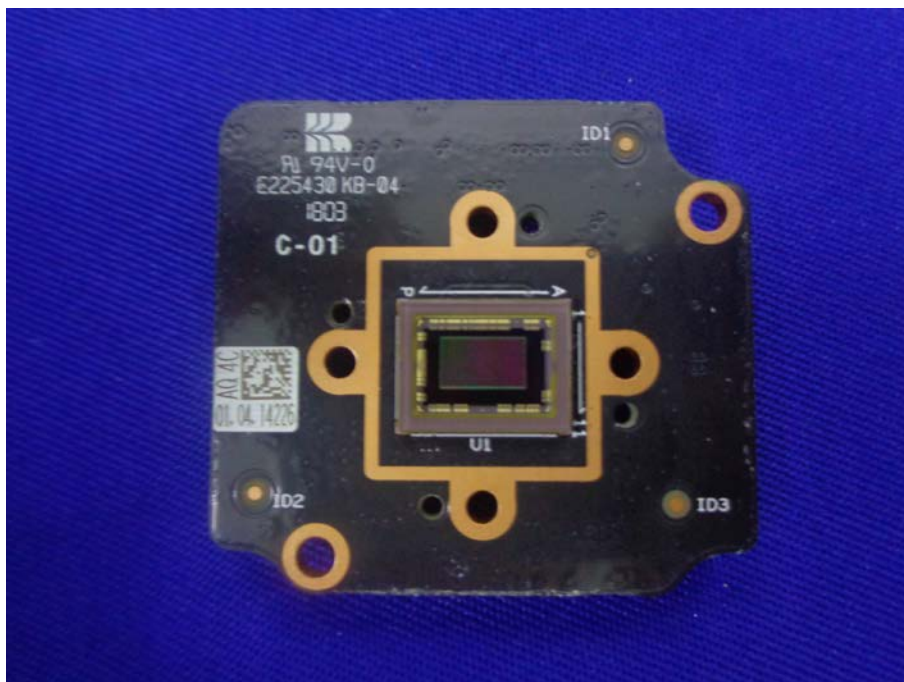
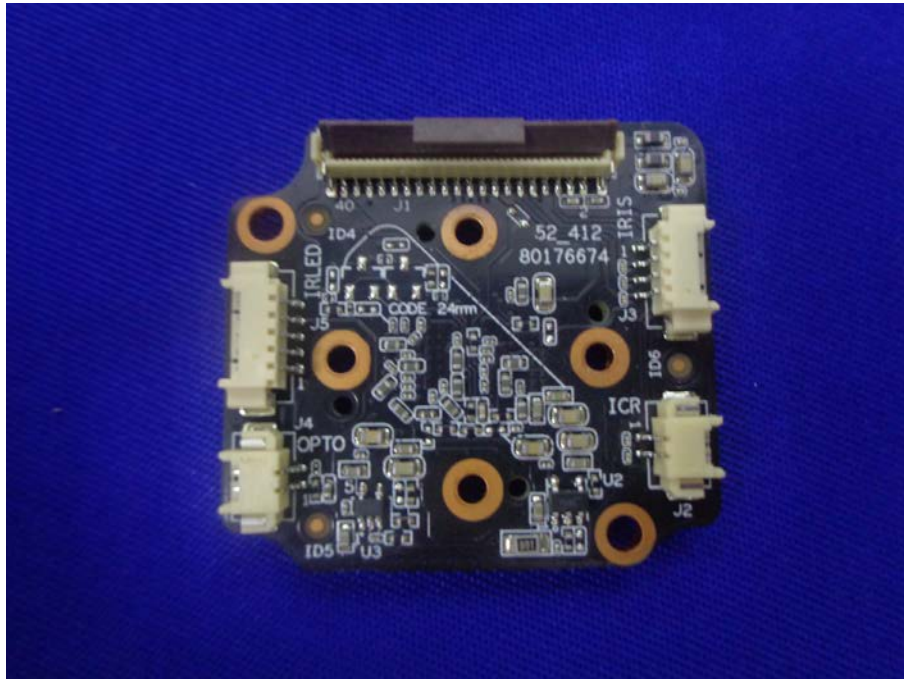


## 6. Photographs of EUT











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