

**FCC TEST REPORT****On Behalf of****Shenzhen VStarcam Technology Co.,Ltd****IP CAMERA****Model No.: T7838WIP****Additional models NO.: Please refer to page 75**

**Prepared for** : Shenzhen VStarcam Technology Co.,Ltd  
**Address** : 5th Floor, F Building, Wanda Industrial Area, Zhoushi Road,  
Shiyan Town, Bao an District, Shenzhen City, Guangdong,  
China

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**Date of receipt of test sample** : January 03, 2014  
**Number of tested samples** : 1  
**Serial number** : Prototype  
**Date of Test** : January 03, 2014 - January 13, 2014  
**Date of Report** : January 13, 2014

**FCC TEST REPORT****FCC CFR 47 PART 15 Subpart B: 2012****Report Reference No.** ..... : **LCS140103031TF**

Date Of Issue ..... : January 13, 2014

**Testing Laboratory Name**..... : **Shenzhen LCS Compliance Testing Laboratory Ltd.**Address..... : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue,  
Bao'an District, Shenzhen, Guangdong, ChinaTesting Location/ Procedure..... : Full application of Harmonised standards   
Partial application of Harmonised standards   
Other standard testing method **Applicant's Name** ..... : **Shenzhen VStarcam Technology Co.,Ltd**Address..... : 5th Floor, F Building, Wanda Industrial Area, Zhoushi Road,  
: Shiyan Town, Bao an District, Shenzhen City, Guangdong,  
China**Test Specification**

Standard..... : FCC CFR 47 PART 15 Subpart B: 2012, ANSI C63.4-2009


Test Report Form No..... : LCSEMC-1.0

TRF Originator..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF ..... : Dated 2011-03

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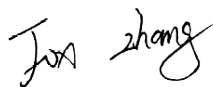
**Test Item Description**..... : **IP CAMERA**Trade Mark ..... : 

Model/ Type Reference ..... : T7838WIP

Ratings..... : Input:100~240V, 50/60Hz, 0.65A max; Output: DC 5V, 2A

**Result** ..... : **Positive****Compiled by:**

Jacky Li/ File administrators

**Supervised by:**

Fox Zhang/ Technique principal

**Approved by:**

Gavin Liang/ Manager

## FCC -- TEST REPORT

**Test Report No. : LCS140103031TF**January 13, 2013

Date of issue

Type / Model..... : T7838WIP

EUT..... : IP CAMERA

**Applicant..... : Shenzhen VStarcam Technology Co.,Ltd**Address..... : 5th Floor, F Building, Wanda Industrial Area, Zhoushi Road,  
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Shiyan Town, Bao an District, Shenzhen City, Guangdong,  
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Telephone..... : /

Fax..... : /

Contact..... : /

**Test Result** according to the standards on page 5: **Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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# 1. SUMMARY OF STANDARDS AND RESULTS

## 1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC CFR 47 PART 15 Subpart B: 2012	Class B	PASS
Radiated disturbance	FCC CFR 47 PART 15 Subpart B: 2012	Class B	PASS

N/A is an abbreviation for Not Applicable.

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

EUT	IP CAMERA
Model No.	T7838WIP
Channel frequency	2412.00-2462.00MHz (Channel Frequency=2412+5(K-1), K=1, 2, 3 .....11) for 11 channels 2422.00-2452.00MHz (Channel Frequency=2412+5(K-1), K=1, 2, 3 .....9) for 9 channels
Channel Spacing	5MHz
Modulation Type	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM,QPSK,BPSK)
Antenna Gain	Detachable antenna: 2dBi(Max.)
Input Voltage	: Input:100~240V, 50/60Hz, 0.65A max; Output:DC 5V, 2A

### 2.2. Description of Test Facility

#### Site Description

EMC Lab.	: Accredited by CNAS, June 04, 2010 The Certificate Registration Number. is L4595.  Accredited by FCC, July 14, 2011 The Certificate Registration Number. is 899208.  Accredited by Industry Canada, May. 02, 2011 The Certificate Registration Number. is 9642A-1  Accredited by VCCI, Japan January 30, 2012 The Certificate Registration Number. is C-4260 and R-3804  Accredited by ESMD, April 24, 2012 The Certificate Registration Number. is ARCB0108.  Accredited by UL, June 11, 2012 The Certificate Registration Number. is 100571-492.  Accredited by TUV, November 21, 2012 The Certificate Registration Number. is SCN1081  Accredited by Intertek, December 21, 2012 The Certificate Registration Number. is 2011-RTL-L1-50.
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### 2.3. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

### 2.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Radiation Uncertainty :	30MHz~200MHz	±2.96dB	(1)
	200MHz~1000MHz	±3.10dB	(1)
Conduction Uncertainty :	150kHz~30MHz	±1.63dB	(1)
Power disturbance :	30MHz~300MHz	±1.60dB	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

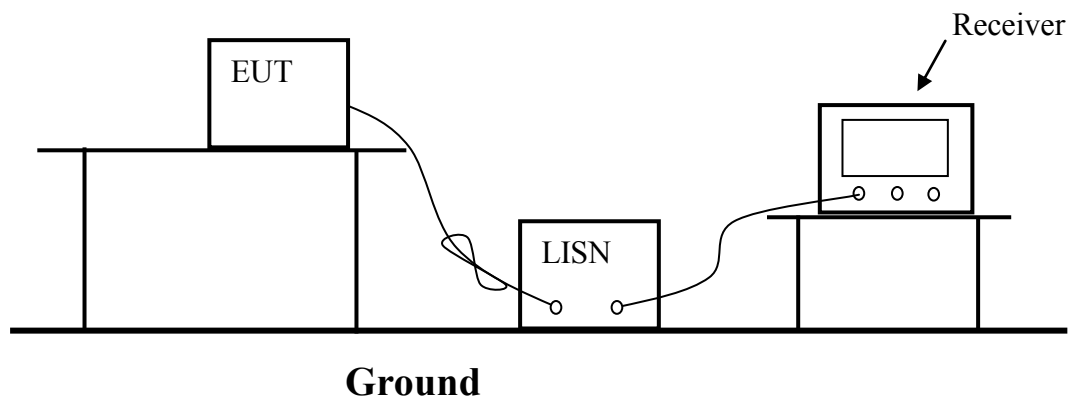
### 3. POWER LINE CONDUCTED MEASUREMENT

#### 3.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	EMI Test Receiver	R & S	ESCI	101142	2013/06/18	2014/06/17
2	EMI Test Receiver	R & S	ESPI	101840	2013/06/18	2014/06/17
3	Artificial Mains	R & S	ENV216	101288	2013/06/19	2014/06/18
4	EMI Test Software	AUDIX	E3	N/A	2013/06/18	2014/06/17

#### 3.2. Block Diagram of Test Setup



#### 3.3. Power Line Conducted Emission Measurement Limits (Class B)

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 ~ 0.50	66-56	56-46
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. \*Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

#### 3.4. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.



### 3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.

3.5.2. Turn on the power of all equipment.

3.5.3. Let the EUT work in test mode (ON) and measure it.

### 3.6. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC/ANSI C63.4-2009 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9kHz.

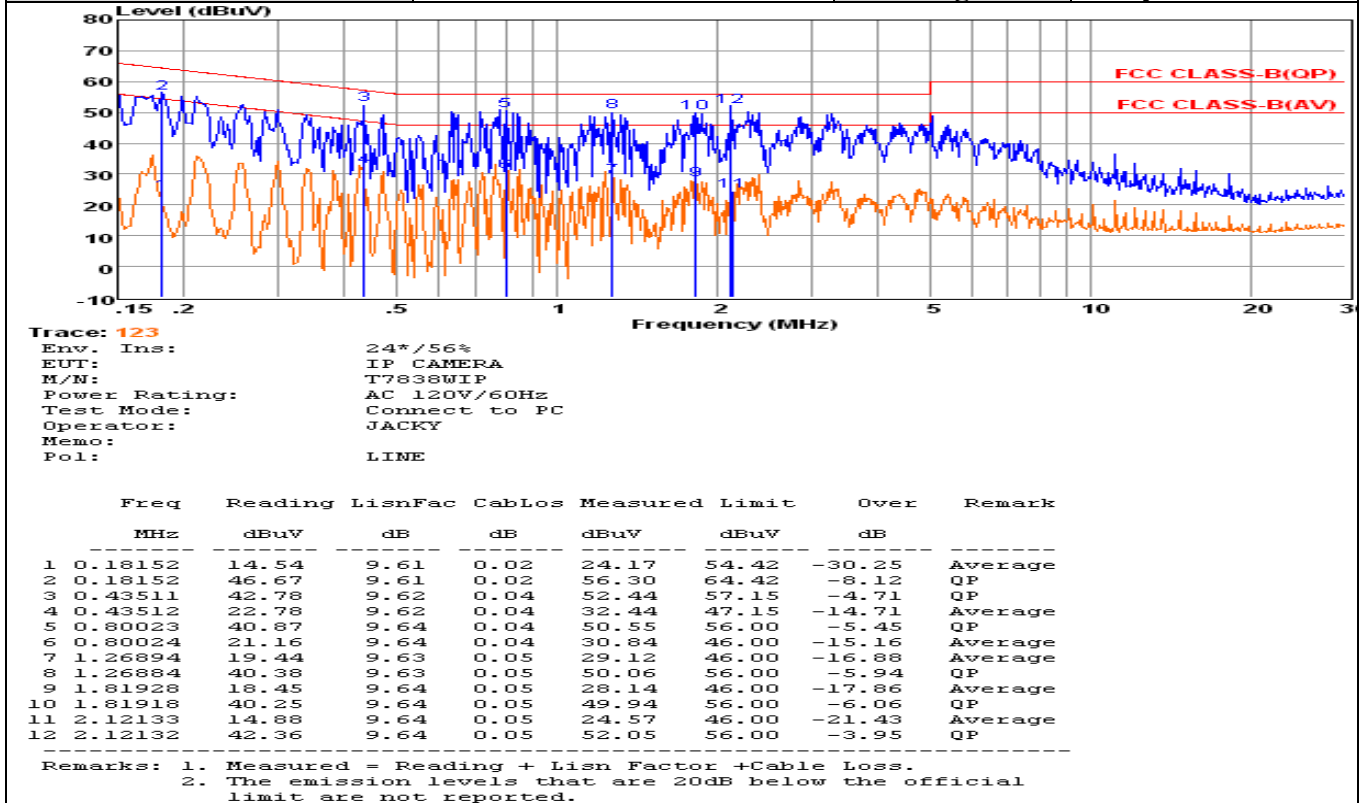
The frequency range from 150kHz to 30MHz is checked.

### 3.7. Power Line Conducted Emission Measurement Results

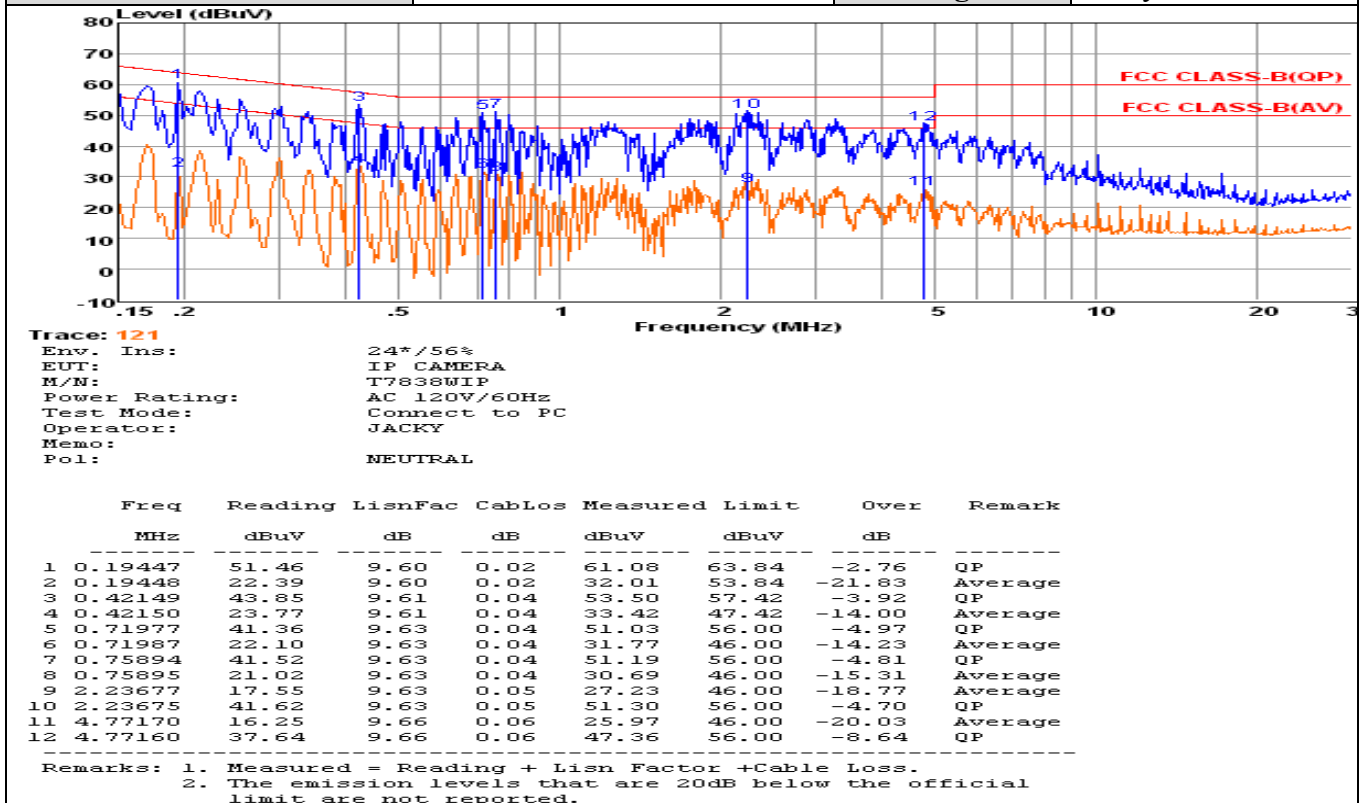
**PASS.**

All the scanning waveforms for Conducted Emission Measurement are refer to the next page. Only record the worst results.

<b>Model No.</b>	T7838WIP	<b>Test Date</b>	January 13, 2014
<b>Environmental Conditions</b>	24°C, 56% RH	<b>Test Mode</b>	Connect to PC
<b>Pol</b>	Line	<b>Test Engineer</b>	Jacky



<b>Model No.</b>	T7838WIP	<b>Test Date</b>	January 13, 2014
<b>Environmental Conditions</b>	24°C, 56% RH	<b>Test Mode</b>	Connect to PC
<b>Pol</b>	Neutral	<b>Test Engineer</b>	Jacky



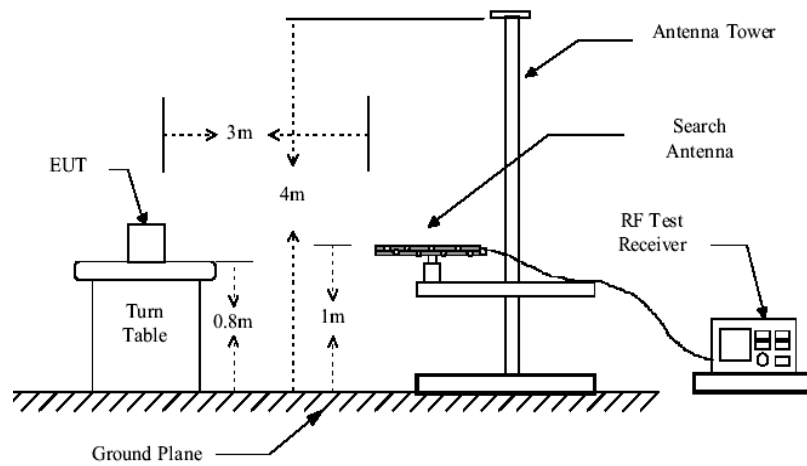
## 4. RADIATED EMISSION MEASUREMENT

### 4.1. Test Equipment

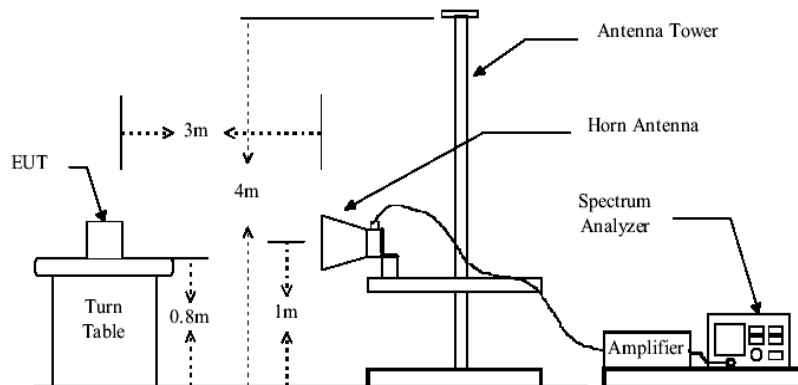
The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Last Cal.
1	EMI Test Receiver	R & S	ESCI	101142	2013/06/18	2014/06/17
2	EMI Test Receiver	R & S	ESPI	101840	2013/06/18	2014/06/17
3	Log per Antenna	R & S	VULB9163	9163-470	2013/06/21	2014/06/20
4	Spectrum Analyzer	Agilent	E4407B	MY41440754	2013/07/16	2014/07/15
5	Horn Antenna	ETS.LINDGREN	3115	00034771	2013/12/11	2014/12/10
6	Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	2013/06/10	2014/07/09
7	EMI Test Software	AUDIX	E3	N/A	2013/06/18	2014/06/17

### 4.2. Block Diagram of Test Setup



Below 1G



Above 1G

### 4.3. Radiated Emission Limit (Class B)

Limits for radiated disturbance Blow 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		dB( $\mu$ V)/m	dB( $\mu$ V)/m
30 ~ 40	3	40.0	Quasi-peak Value
88 ~ 43.5	3	43.5	Quasi-peak Value
216 ~ 46	3	46.0	Quasi-peak Value
960 ~ 54	3	54.0	Quasi-peak Value
Above 1GHz	3	54	Average Value
	3	74	Peak Value

Remark : (1) Emission level (dB) $\mu$ V = 20 log Emission level  $\mu$ V/m  
(2) The smaller limit shall apply at the cross point between two frequency bands.  
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

### 4.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 4.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown in Section 4.2.

4.5.2. Let the EUT work in test mode (on) and measure it.

### 4.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009 on radiated emission measurement. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Below 1G:

The bandwidth of the EMI test receiver is set at 120kHz, 1000kHz.

The frequency range from 30MHz to 1000MHz is checked.

Above 1G:

The bandwidth of the EMI test receiver is set at 1MHz, 3MHz for Peak detector.

The bandwidth of the EMI test receiver is set at 1MHz, 10Hz for Average detector

The frequency range from 1GHz to 24GHz is checked.

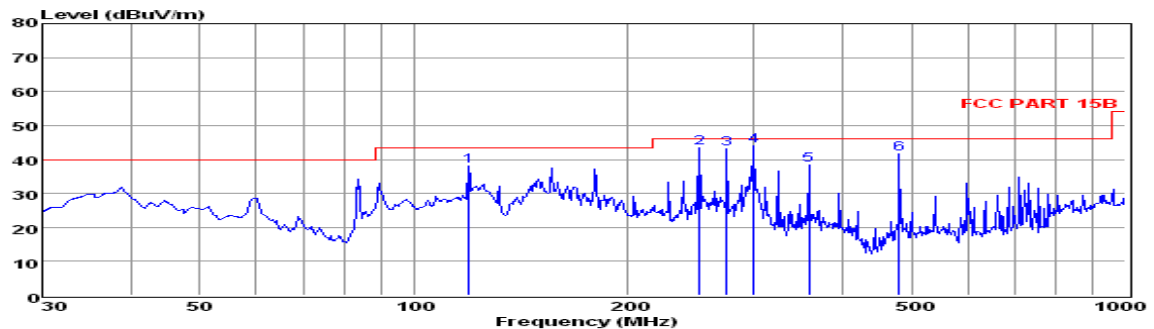
#### 4.7. Radiated Emission Noise Measurement Result

**PASS.**

The scanning waveforms please refer to the next page. Only record the worst results.

Below 30MHz the result is too low so we did not show it.

<b>Model No.</b>	T7838WIP	<b>Test Date</b>	January 13, 2014
<b>Environmental Conditions</b>	24°C, 56% RH	<b>Test Mode</b>	Connect to PC
<b>Pol</b>	Vertical	<b>Detector Function</b>	Quasi-peak
<b>Test Engineer</b>	Jacky	<b>Distance</b>	3m

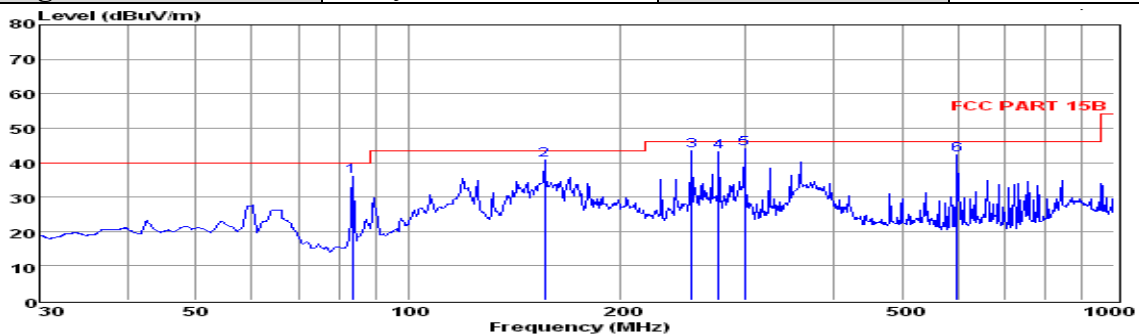


Env./Ins: 24°C/56%  
 EUT: IP CAMERA  
 M/N: T7838WIP  
 Power Rating: AC 120V/60Hz  
 Test Mode: Connect to PC  
 Operator: JACKY  
 Memo:  
 pol: VERTICAL

	Freq MHz	Reading dBuV	CabLos dB	Antfac dB/m	Measured dBuV/m	Limit dBuV/m	Over dB	Remark
1	119.44	26.72	0.64	10.58	37.94	43.50	-5.56	QP
2	252.06	30.35	0.90	12.07	43.32	46.00	-2.68	QP
3	275.16	29.57	1.00	12.52	43.09	46.00	-2.91	QP
4	300.37	29.79	1.13	13.06	43.98	46.00	-2.02	QP
5	359.19	22.70	1.18	14.42	38.30	46.00	-7.70	QP
6	480.53	24.20	1.31	16.08	41.59	46.00	-4.41	QP

Note: 1. All readings are Quasi-peak values.  
 2. Measured= Reading + Antenna Factor + Cable Loss  
 3. The emission that are 20db below the official limit are not reported

<b>Model No.</b>	T7838WIP	<b>Test Date</b>	January 13, 2014
<b>Environmental Conditions</b>	24°C, 56% RH	<b>Test Mode</b>	Connect to PC
<b>Pol</b>	Horizontal	<b>Detector Function</b>	Quasi-peak
<b>Test Engineer</b>	Jacky	<b>Distance</b>	3m



Env./Ins: 24°C/56%  
 EUT: IP CAMERA  
 M/N: T7838WIP  
 Power Rating: AC 120V/60Hz  
 Test Mode: Connect to PC  
 Operator: JACKY  
 Memo:  
 pol: HORIZONTAL

	Freq MHz	Reading dBuV	CabLos dB	Antfac dB/m	Measured dBuV/m	Limit dBuV/m	Over dB	Remark
1	83.23	25.79	0.54	9.68	36.01	40.00	-3.99	QP
2	155.91	31.38	0.76	8.50	40.64	43.50	-2.86	QP
3	252.06	30.41	0.90	12.07	43.38	46.00	-2.62	QP
4	275.16	29.71	1.00	12.52	43.23	46.00	-2.77	QP
5	299.32	29.82	1.13	13.05	44.00	46.00	-2.00	QP
6	599.32	22.25	1.43	18.44	42.12	46.00	-3.88	QP

Note: 1. All readings are Quasi-peak values.  
 2. Measured= Reading + Antenna Factor + Cable Loss  
 3. The emission that are 20db below the official limit are not reported

<b>Test Mode:</b> Mode 1(above 1GHz)	<b>Tested by:</b> Jacky
<b>Test voltage:</b> AC 120V/60Hz	<b>Test Distance:</b> 3m
<b>Detector Function:</b> Peak+AV	<b>Test Results:</b> Passed

Polarization	Frequency MHz	Emission Level dB $\mu$ V/m		Limits dB $\mu$ V/m		Margin dB $\mu$ V/m	
Horizontal	1395.8	58.36	41.80	74.00	54.00	-15.64	-12.20
	1861.7	60.13	43.39	74.00	54.00	-13.87	-10.61
	3225.1	61.32	44.75	74.00	54.00	-12.68	-9.25
	3965.6	61.85	44.34	74.00	54.00	-12.15	-9.66
	4460.6	62.54	45.07	74.00	54.00	-11.46	-8.93
	4861.4	63.78	45.63	74.00	54.00	-10.22	-8.37
Vertical	1377.1	58.11	41.88	74.00	54.00	-15.89	-12.12
	1875.0	60.01	43.06	74.00	54.00	-13.99	-10.94
	3216.5	60.85	44.39	74.00	54.00	-13.15	-9.61
	3736.7	61.44	44.25	74.00	54.00	-11.56	-9.75
	4457.9	62.13	45.31	74.00	54.00	-11.87	-8.69
	4844.3	63.24	45.10	74.00	54.00	-10.76	-8.90

**Notes:**

1. Measuring frequencies from 9k~26.5GHz , No emission found between lowest internal used/generated frequency to 30MHz.
2. Radiated emissions measured in frequency range from 9k~26.5GHz were made with an instrument using Peak detector mode.
3. 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 measure

## 5. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

T7835WIP	T6835WIP	T7837WIP	T7821WIP
T7833WIP-X3			

Belong to the tested device:

Product description : IP CAMERA

Model name : T7838WIP

Remark: PCB board, structure and internal of these model(s) are the same,  
So no additional models were tested.

-----THE END OF REPORT-----