



**CENTRE OF TESTING SERVICE  
INTERNATIONAL**

**OPERATE ACCORDING TO ISO/IEC 17025**

# **FCC ID TEST REPORT**

**TEST REPORT NUMBER : CGZ3130426-00305-E**



**CENTRE OF TESTING SERVICE CO., LTD.**  
A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China



<b>TEST REPORT For FCC ID</b>	
<b>47 CFR PART 15 OCT, 2012</b>	
<b>Report Reference No.</b> .....	CGZ3130426-00305-E
<b>Date of issue</b> .....	28 June 2013
<b>Testing Laboratory Name</b> .....	<b>CENTRE OF TESTING SERVICE CO., LTD.</b>
<b>Address</b> .....	A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China
<b>Testing location/ procedure</b> .....	Full application of Harmonised standards <input checked="" type="checkbox"/> Partial application of Harmonised standards <input type="checkbox"/> Other standard testing method <input type="checkbox"/>
<b>Applicant's name</b> .....	SHARPVISION CO.,LTD.
<b>Address</b> .....	5/F., #3 Building, Huangzhou Industrial Park, Chebei Rd., Tianhe Dist., 510665 Guangzhou, China
<b>Test specification</b> .....	
<b>Standard</b> .....	<b>47 CFR PART 15 OCT, 2012</b>
<b>Test Report Form No.</b> .....	CTSEMC-1.0
<b>TRF Originator</b> .....	CENTRE OF TESTING SERVICE CO., LTD.
<b>Master TRF</b> .....	Dated 2009-01
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<b>Test item description</b> :	7"Digital Wireless System
<b>Trade Mark</b> .....	/
<b>Manufacturer</b> .....	SHARPVISION CO.,LTD.
<b>Model/Type reference</b> .....	DW639
<b>Ratings</b> .....	DC 12V
<b>Operating Frequency</b> .....	2403MMHz ~2478MHz
<b>Result</b> .....	<b>PASSED</b>

**Compiled by:**

Kate zhang / File administrators

**Supervised by:**

Duke yang / Technique principal

**Approved by:**

Vincent yao / Manager

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## FCC ID -- TEST REPORT

<b>Test Report No. :</b> CGZ3130426-00305-E	<u>28 June 2013</u> Date of issue
---	--------------------------------------

Type / Model.....	DW639
EUT.....	7"Digital Wireless System
<b>Applicant.....</b>	SHARPVISION CO.,LTD.
Address.....	5/F., #3 Building, Huangzhou Industrial Park, Chebei Rd.,Tianhe Dist., 510665 Guangzhou, China
Telephone.....	+86-20-66670988-231
Fax.....	+86-20-66670977
Contact.....	Hongyuan Zhang
<b>Manufacturer.....</b>	SHARPVISION CO.,LTD.
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Telephone.....	+86-20-66670988-231
Fax.....	+86-20-66670977
Contact.....	Hongyuan Zhang
<b>Test report holder.....</b>	SHARPVISION CO.,LTD.
Address.....	5/F., #3 Building, Huangzhou Industrial Park, Chebei Rd.,Tianhe Dist., 510665 Guangzhou, China
Telephone.....	+86-20-66670988-231
Fax.....	+86-20-66670977
Contact.....	Hongyuan Zhang

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. TEST STANDARDS

The tests were performed according to following standards:

- 47 CFR PART 15 OCT, 2012
- ANSI C63.4-2009

## 2. SUMMARY

### 2.1 GENERAL REMARKS

Date of receipt of test sample	26 April 2013
Testing commenced on	26 April ~28 June 2013
Testing concluded on	28 June 2013

### 2.2 FINAL ASSESSMENT

The FCC requirements pertaining to the technical standards and tested operation modes are

- - fulfilled.
- ☐ - **not** fulfilled.

The equipment under test

- - fulfils the FCC requirements cited on page 1.
- ☐ - **does not** fulfil the FCC requirements cited on page 1.

## 3. EQUIPMENT UNDER TEST

### 3.1 Power supply system utilised

Power supply voltage : ■ DC 12V

### 3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: 1

Serial number: Prototype

### 3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

- ☐ - Standby
- ☐ TX- Y position
- ☐ TX- Z position
- TX- X position

Operation mode 1: TX-X Position Low (2403MHz) , TX-X Position Middle (2439MHz) ,  
TX-X Position High (2478MHz)

Note: TX -X position of EUT is the worst case, so only these test results be recorded in the test report.



### 3.4 EUT configuration

#### 3.4.1. Description of configuration (EUT)

Description	:	7"Digital Wireless System
Model Number	:	DW639
Operation frequency	:	2403~ 2478 MHz ISM Band
Radio Technology	:	16QAM
Modulation Technology	:	16QAM modulation
Antenna	:	External antenna, met requirement of FCC 15.203
Antenna Gain	:	3.0dBi

#### 3.4.2. Tested Supporting System Details

N/A

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## 4. TEST ENVIRONMENT

### 4.1 Address of the test laboratory

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China

Tel: +86-20-85543113 (32 lines)

Fax: +86-20-38780406

### 4.2 Test facility

The test facility is recognized, certified, or accredited by the following organizations:

#### CNAS-Lab Code: L3394

CENTRE OF TESTING SERVICE CO., LTD has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

#### IC-Registration No.: 8374A

The 3m Alternate Test Site of CENTRE OF TESTING SERVICE CO., LTD has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374A on June 6, 2011.

#### FCC-Registration No.: 971995

CENTRE OF TESTING SERVICE CO., LTD, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration No. 971995, July 21, 2012.

### 4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

### 4.4 Definitions of symbols used in this test report

- - The black square indicates that the listed condition, standard or equipment is applicable for this report.
- - The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

### 4.5 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 CTS 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.



## 4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	$\pm 1.22\text{dB}$	(1)
Power disturbance	30MHz~300MHz	$\pm 1.38\text{dB}$	(1)
Radiation emission (3m)	30MHz~300MHz	$\pm 3.14\text{dB}$	(1)
	300MHz~1000MHz	$\pm 3.18\text{dB}$	(1)
	1GHz~26.5GHz	$\pm 3.54\text{dB}$	(1)

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

## 5. Summary of standards and results

### 5.1. Description of Standards and Results

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

EMISSION		
Description of Test Item	Standard	Results
Conducted disturbance	FCC Part 15 C: 15.209 ANSI C63.4-2009	PASSED
Maximum Peak Output Power Test	FCC Part 15 C: 15.247(b)(1) ANSI C63.4-2009	PASSED
Radiated Emission Test	FCC Part 15 C: 15.247(d) FCC Part 15 C: 15.209(a) ANSI C63.4-2009	PASSED
Band Edge Compliance Test	FCC Part 15 C: 15.247(d) ANSI C63.4-2009	PASSED
20 dB Bandwidth test	FCC Part 15 C: 15.247 (a) ANSI C63.4-2009	PASSED
Frequency Separation	FCC Part 15 C: 15.247 (a) ANSI C63.4-2009	PASSED
Number Of Hopping Frequency Test	FCC Part 15 C: 15.247 (a) ANSI C63.4-2009	PASSED
Dwell Time Test	FCC Part 15 C: 15.247 (a) ANSI C63.4-2009	PASSED
N/A is an abbreviation for Not Applicable.		

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## 6. Conducted disturbance

## 6. 1 Description of the test location

Test location:      Shielded room

## 6. 2 Test Equipment

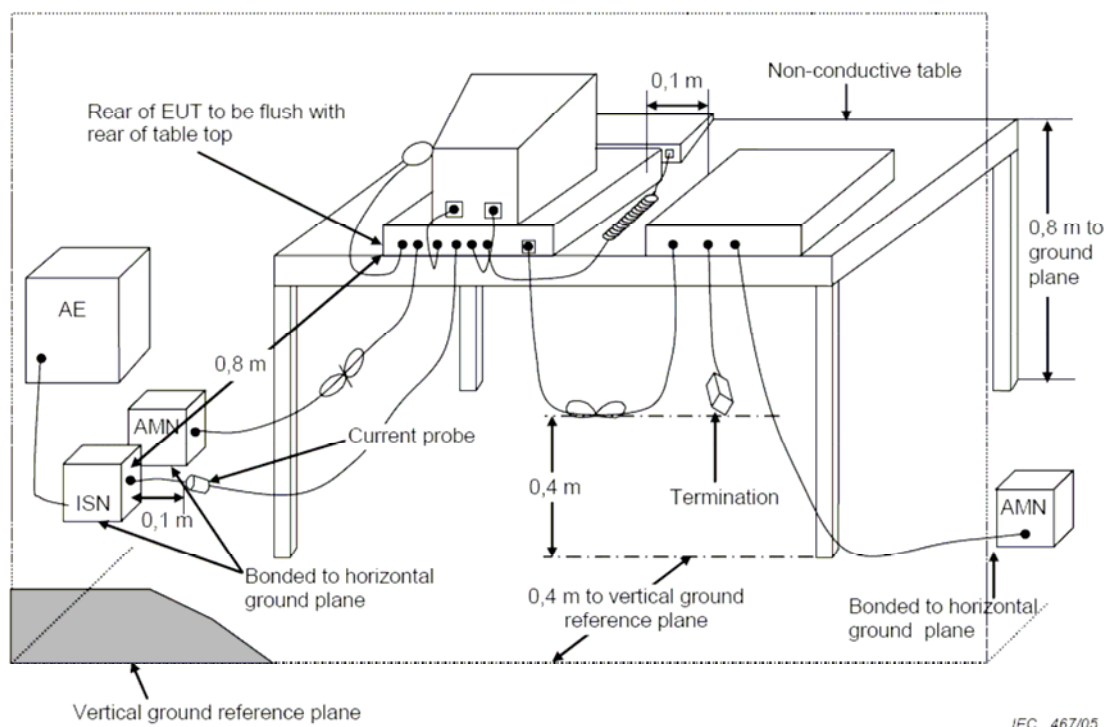
Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2012/11/06
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2012/11/06
3	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z6	100140	2012/11/06
4	Pulse Limiter	ROHDE & SCHWARZ	ESHS-Z2	100301	2012/11/06
5	EMI Test Software	Farad	EZ-EMC	N/A	N/A

### 6. 3 Description of the test set-up

### 6.3.1 Operating Condition

The EUT is engraving during the test, and the results of the maximum emanation are recorded

### 6.3.2 Block Diagram of Test Setup



## 6.4 Limits disturbance

Frequency			Maximum RF Line Voltage (dB $\mu$ V)	
			Quasi-peak Level	Average Level
150kHz	~	500kHz	66 ~ 56 *	56 ~ 46 *
500kHz	~	5MHz	56	46
5MHz	~	30MHz	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

## 6.5 Test result

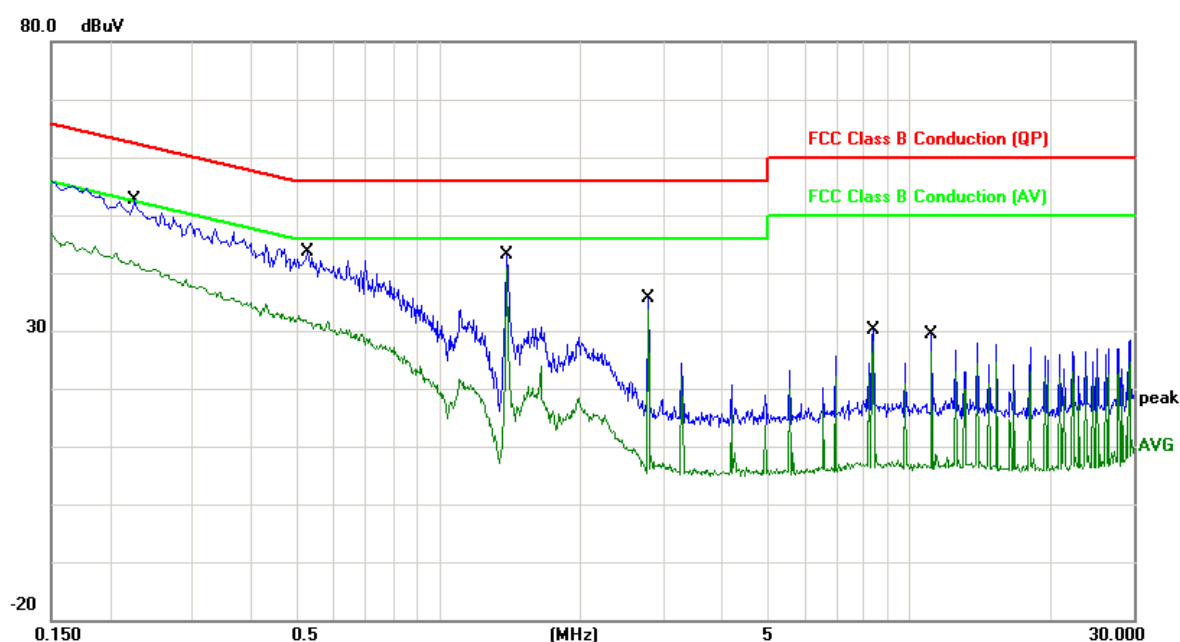
The requirements are	<b>Fulfilled</b>
Band width	9kHz
Frequency range	0.15 MHz - 30 MHz
Min. limit margin	>4.96 dB at 0.15 - 30 MHz

**Remarks:** The limits are kept. For detailed results, please see the following page(s).

## 6.6 Test protocol

Test point	DC Port	Result:	■ - passed
Operation mode	TX		□ - not passed
Remarks:			

EUT	7"Digital Wireless System
MODEL NO.	DW639
Operating Condition	DC 12V
Test Date:	26 April~28 June 2013
Test Condition	Ambient Temperature: 24°C Humidity: 56%
Operator	Duke



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2260	9.78	37.32	47.10	62.59	-15.49	QP
2	0.2260	9.78	31.34	41.12	52.59	-11.47	AVG
3	0.5260	9.84	27.29	37.13	56.00	-18.87	QP
4	0.5260	9.84	21.26	31.10	46.00	-14.90	AVG
5	1.3940	9.84	33.16	43.00	56.00	-13.00	QP
6	1.3940	9.84	31.20	41.04	46.00	-4.96	AVG
7	2.7900	9.88	12.09	21.97	56.00	-34.03	QP
8	2.7900	9.88	8.87	18.75	46.00	-27.25	AVG
9	8.3699	9.88	0.79	10.67	60.00	-49.33	QP
10	8.3699	9.88	-3.89	5.99	50.00	-44.01	AVG
11	11.1539	9.90	0.72	10.62	60.00	-49.38	QP
12	11.1539	9.90	-4.14	5.76	50.00	-44.24	AVG

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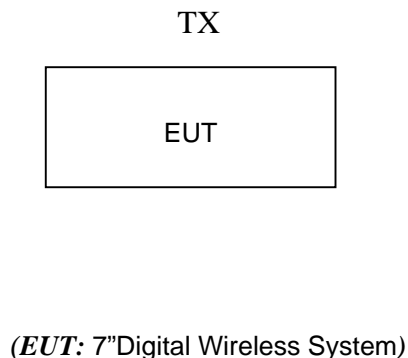
## 7. Radiated disturbance (electric field)

### 7.1. Test Equipment

7.1					
Radiated disturbance (Electric field)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2013/03/28
2	EMI Test Receiver	ROHDE & SCHWARZ	ESVS 10	842885/001	2012/11/06
3	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2013/03/29
4	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2013/03/29
5	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2013/03/29
6	Loop Antenna	A.R.A	PLA-1030/B	1030	2013/03/29
7	EMI Test Software	Farad	EZ-EMC	N/A	N/A

### 7.2. Block Diagram of Test Setup

#### 7.2.1 Block Diagram of connection between EUT and simulators



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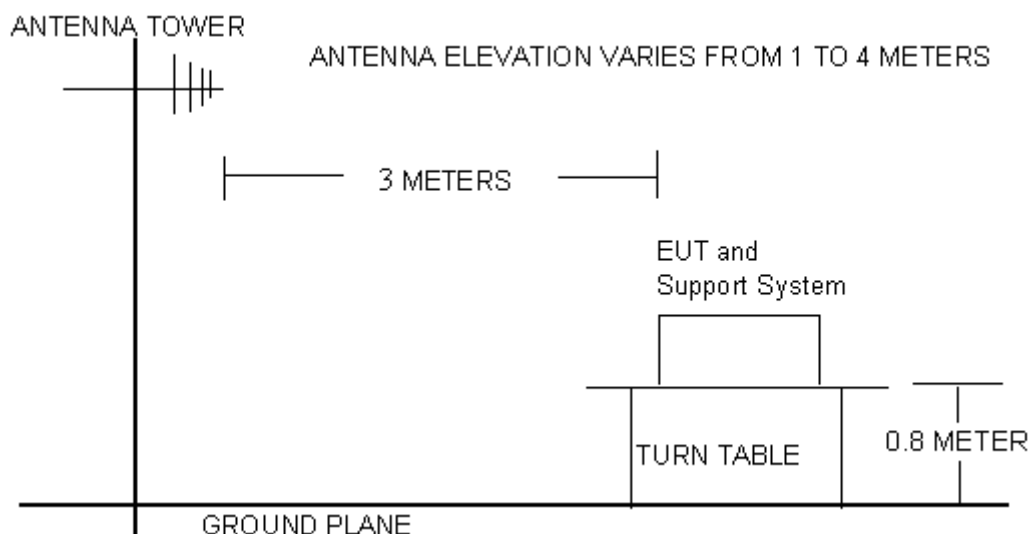
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### 7.2.2 Anechoic Chamber Setup Diagram



### 7.3. Radiated Emission Limit :

**Standard: FCC 15.247 , FCC 15.209**

Except as provided in paragraph (d) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
0.009 ~ 0.490	300	$2400/\text{F}(\text{KHz})$	----
0.490 ~ 1.705	30	$24000/\text{F}(\text{KHz})$	----
1.705 ~ 30	30	30	----
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other: $74.0 \text{ dB}(\mu\text{V})/\text{m}$ (Peak) $54.0 \text{ dB}(\mu\text{V})/\text{m}$ (Average)	

- Remark:
- (1) Emission level  $\text{dB}\mu\text{V} = 20 \log \text{Emission level } \mu\text{V}/\text{m}$
  - (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.

### 7.4. Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the

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antenna is set on Test. 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 Test.

The frequency range from 30MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 120kHz RBW below 1GHz and a Peak and Average detector with 1MHz RBW above 1GHz,

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 300kHz VBW below 1GHz and a Peak detector with 1MHz VBW above 1GHz, A average detector with 10Hz VBW above 1GHz

Pretest x, y, z position of EUT, final, select the worst case x position test and record the test results in the report.

The test modes (TX Mode) is tested in Anechoic Chamber and all the scanning waveforms are reported on section 7.5

## **7.5.Radiated Emission Test Results**

**PASSED.**

The frequency range from 9KHz~30MHz,30MHz to 230MHz, 230MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

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EUT	7"Digital Wireless System
Firm Name	SHARPVISION CO.,LTD.
Operating Condition	DC 12V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test distance	3 Meter
Test Date:	26 April~28 June 2013
Operator	<b>Duke</b>
MODEL NO	DW639

Test Mode:	TX -X Position Mode	Result:	<input checked="" type="checkbox"/> - passed
Frequency range:	9KHz~30MHz		<input type="checkbox"/> - not passed

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
Remark:Other frequency no specific emission form the EUT (Margin > 10dB form the applicable Limit)							

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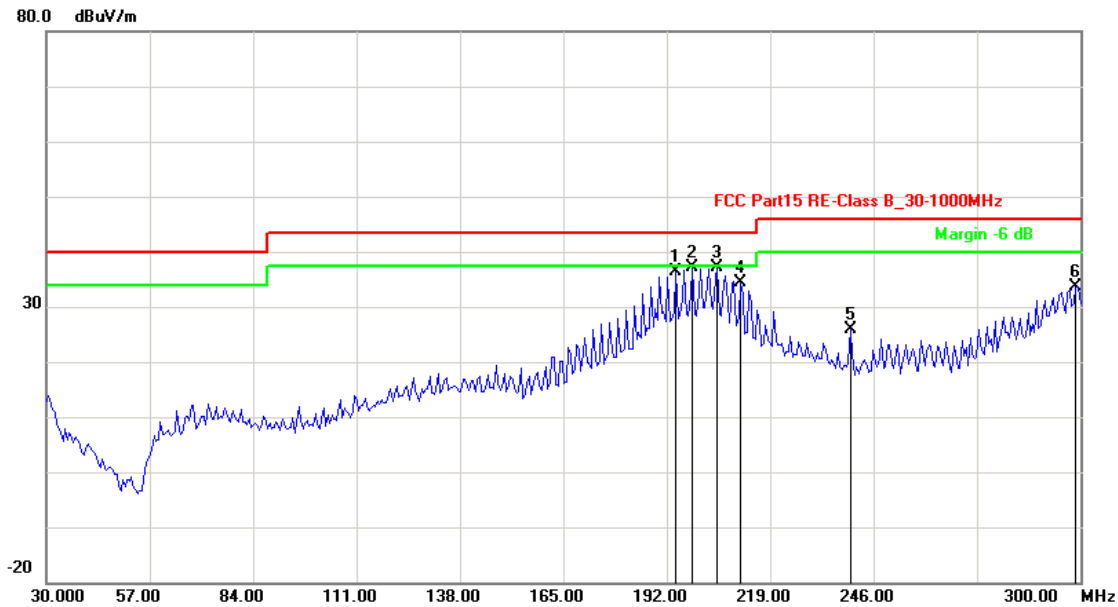
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Channel:	TX Low Channel	Result:	<input checked="" type="checkbox"/> - passed
Test point:	Horizontal		<input type="checkbox"/> - not passed
Frequency range:	30MHz~26.5GHz		



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	194.4890	-12.30	48.64	36.34	43.50	-7.16	QP
2	198.8176	-12.58	49.81	37.23	43.50	-6.27	QP
3	205.3106	-12.34	49.41	37.07	43.50	-6.43	QP
4	211.2625	-12.11	46.56	34.45	43.50	-9.05	QP
5	239.9399	-13.13	38.96	25.83	46.00	-20.17	QP
6	298.9178	-5.73	39.30	33.57	46.00	-12.43	QP

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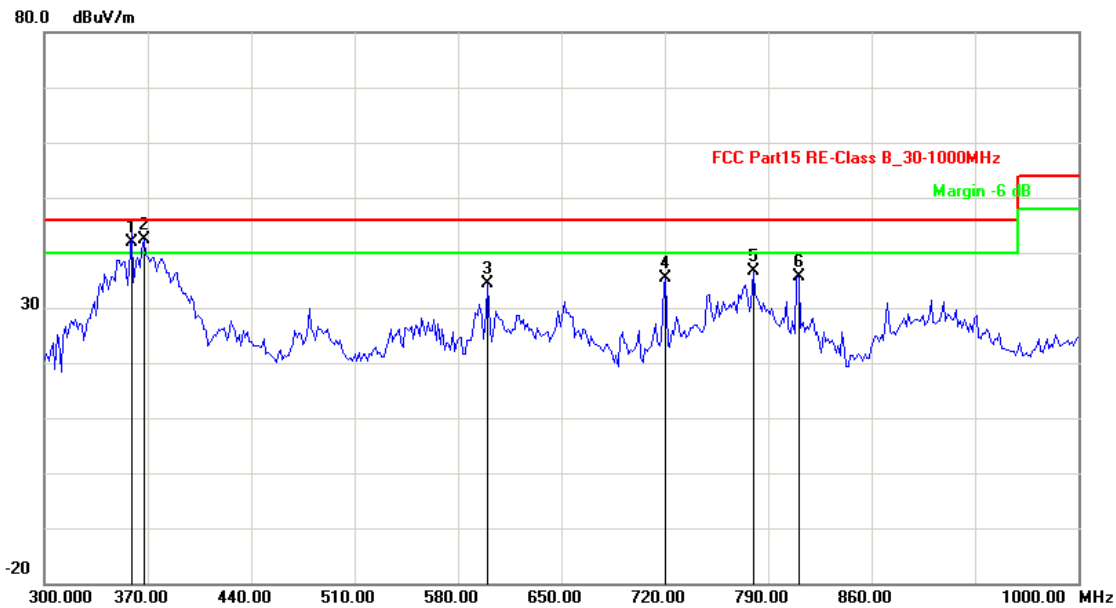
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Complaint line: +86-20-85533471

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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	358.9178	-13.85	55.69	41.84	46.00	-4.16	QP
2	367.3347	-14.25	56.72	42.47	46.00	-3.53	QP
3	600.2004	-10.94	45.22	34.28	46.00	-11.72	QP
4	720.8417	-10.94	46.40	35.46	46.00	-10.54	QP
5	779.7595	-5.94	42.65	36.71	46.00	-9.29	QP
6	810.6212	-9.19	44.83	35.64	46.00	-10.36	QP

Above 1GHz

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	1044.088	-5.36	51.79	46.43	74.00	-27.57	peak
2	1044.088	-5.36	36.61	31.25	54.00	-22.75	AVG
3	1330.661	-2.86	50.02	47.16	74.00	-26.84	peak
4	1330.661	-2.86	35.44	32.58	54.00	-21.42	AVG
5	1639.279	-1.32	53.60	52.28	74.00	-21.72	peak
6	1639.279	-1.32	38.83	37.51	54.00	-16.49	AVG
7	1991.984	-1.15	46.77	45.62	74.00	-28.38	peak
8	1991.984	-1.15	31.37	30.22	54.00	-23.78	AVG
9	2234.469	1.16	44.67	45.83	74.00	-28.17	peak
10	2234.469	1.16	29.25	30.41	54.00	-23.59	AVG
11	4967.936	12.08	38.94	51.02	74.00	-22.98	peak
12	4967.936	12.08	24.31	36.39	54.00	-17.61	AVG

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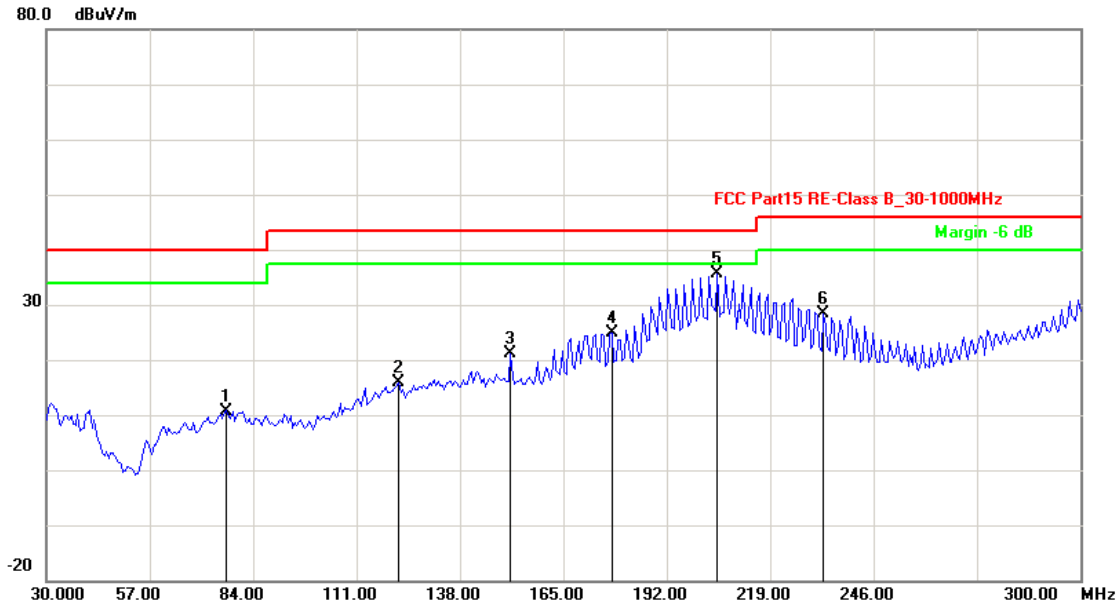
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Channel:	TX Low Channel	Result:	<input checked="" type="checkbox"/> - passed
Test point:	Vertical		<input type="checkbox"/> - not passed
Frequency range:	30MHz~26.5GHz		



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	77.0741	-21.43	32.18	10.75	40.00	-29.25	QP
2	121.9840	-17.92	33.74	15.82	43.50	-27.68	QP
3	151.2024	-17.53	38.64	21.11	43.50	-22.39	QP
4	177.7154	-15.80	40.56	24.76	43.50	-18.74	QP
5	205.3106	-12.34	48.03	35.69	43.50	-7.81	QP
6	232.9058	-12.57	40.91	28.34	46.00	-17.66	QP

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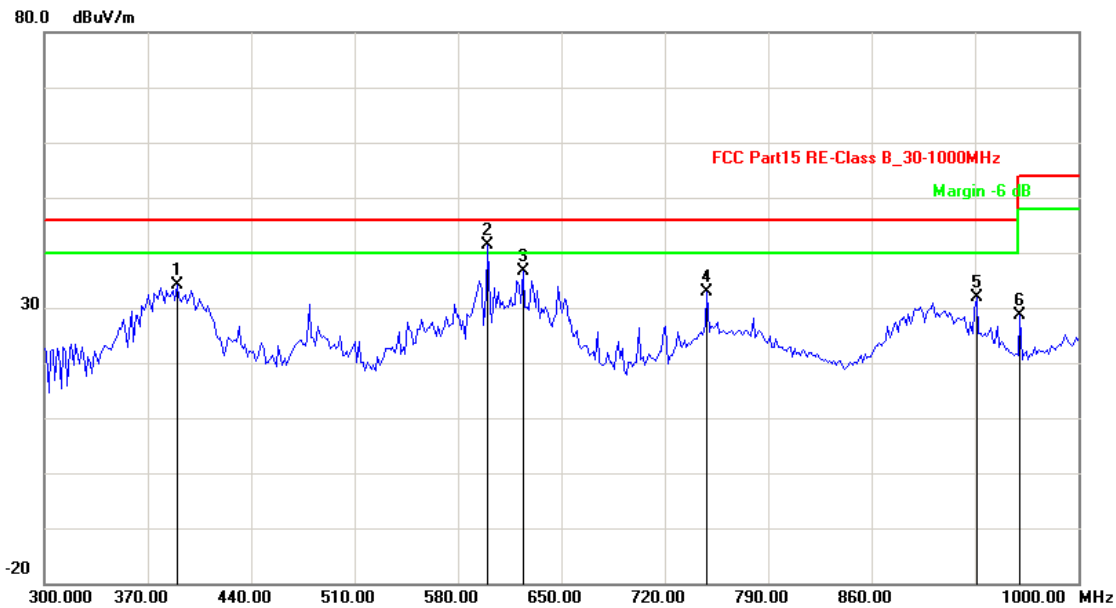
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	389.7796	-14.94	49.09	34.15	46.00	-11.85	QP
2	600.2004	-10.94	52.33	41.39	46.00	-4.61	QP
3	624.0481	-7.18	43.91	36.73	46.00	-9.27	QP
4	748.8978	-6.42	39.27	32.85	46.00	-13.15	QP
5	931.2625	-5.92	37.87	31.95	46.00	-14.05	QP
6	960.7214	-9.97	38.60	28.63	54.00	-25.37	QP

Above 1GHz

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	1330.661	-2.86	56.60	53.74	74.00	-20.26	peak
2	1330.661	-2.86	40.88	38.02	54.00	-15.98	AVG
3	1661.323	-1.31	55.86	54.55	74.00	-19.45	peak
4	1661.323	-1.31	40.46	39.15	54.00	-14.85	AVG
5	1991.984	-1.15	54.52	53.37	74.00	-20.63	peak
6	1991.984	-1.15	39.56	38.41	54.00	-15.59	AVG
7	4813.627	11.72	43.81	55.53	74.00	-18.47	peak
8	4813.627	11.72	35.30	47.02	54.00	-6.98	AVG
9	7304.609	18.22	37.09	55.31	74.00	-18.69	peak
10	7304.609	18.22	22.04	40.26	54.00	-13.74	AVG
11	7921.844	19.08	36.94	56.02	74.00	-17.98	peak
12	7921.844	19.08	22.01	41.09	54.00	-12.91	AVG

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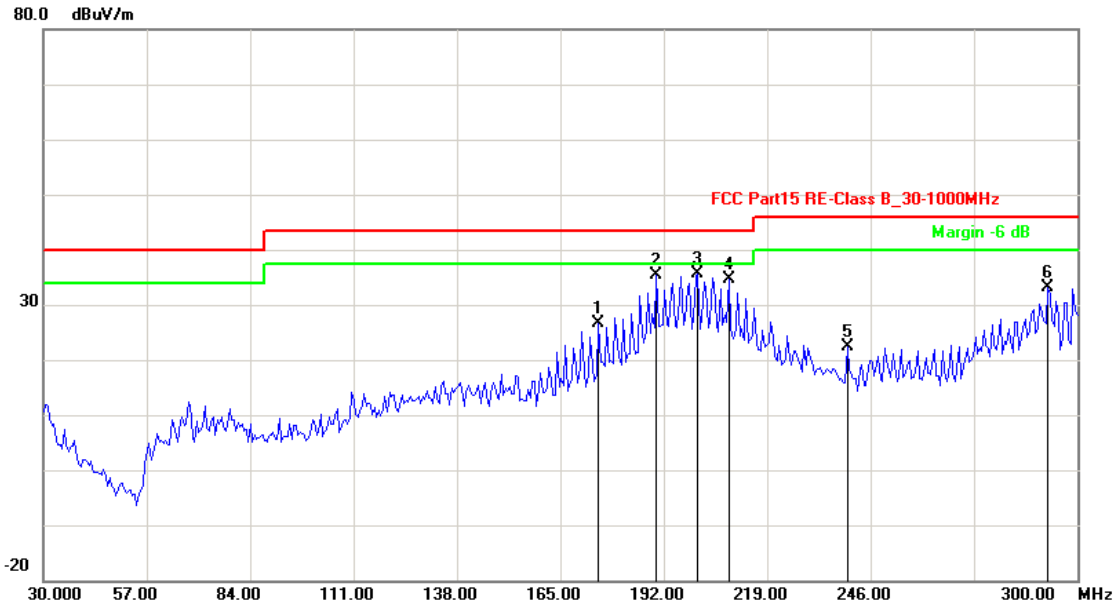
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Channel:	TX Middle Channel	Result:	<input checked="" type="checkbox"/> - passed
Test point:	Horizontal		<input type="checkbox"/> - not passed
Frequency range:	30MHz~26.5GHz		



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	175.0100	-16.09	42.67	26.58	43.50	-16.92	QP
2	190.1603	-12.02	47.30	35.28	43.50	-8.22	QP
3	200.9820	-12.60	48.22	35.62	43.50	-7.88	QP
4	209.0982	-12.11	46.85	34.74	43.50	-8.76	QP
5	239.9399	-13.13	35.58	22.45	46.00	-23.55	QP
6	292.4249	-6.70	39.78	33.08	46.00	-12.92	QP

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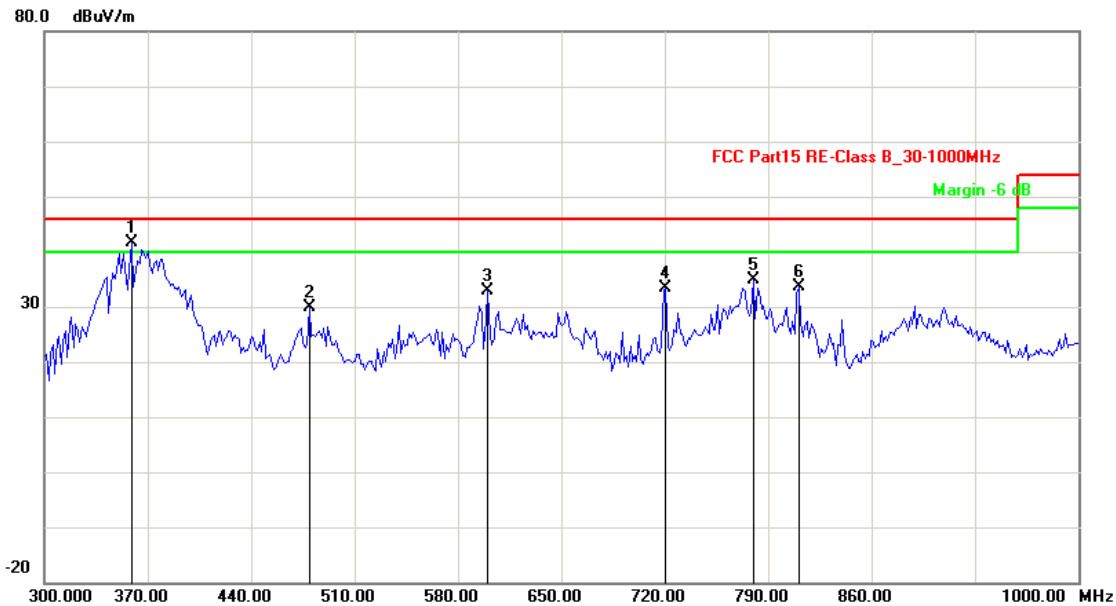
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	358.9178	-13.85	55.50	41.65	46.00	-4.35	QP
2	479.5591	-9.77	39.75	29.98	46.00	-16.02	QP
3	600.2004	-10.94	43.93	32.99	46.00	-13.01	QP
4	720.8417	-10.94	44.26	33.32	46.00	-12.68	QP
5	779.7595	-5.94	40.85	34.91	46.00	-11.09	QP
6	810.6212	-9.19	42.88	33.69	46.00	-12.31	QP

Above 1GHz

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1330.661	-2.86	47.05	44.19	74.00	-29.81	peak
2	1330.661	-2.86	32.72	29.86	54.00	-24.14	AVG
3	1639.279	-1.32	48.04	46.72	74.00	-27.28	peak
4	1639.279	-1.32	32.24	30.92	54.00	-23.08	AVG
5	2322.645	2.02	44.04	46.06	74.00	-27.94	peak
6	2322.645	2.02	28.25	30.27	54.00	-23.73	AVG
7	4460.922	10.89	39.10	49.99	74.00	-24.01	peak
8	4460.922	10.89	22.80	33.69	54.00	-20.31	AVG
9	5034.068	12.27	38.62	50.89	74.00	-23.11	peak
10	5034.068	12.27	22.75	35.02	54.00	-18.98	AVG
11	7458.918	18.44	37.23	55.67	74.00	-18.33	peak
12	7458.918	18.44	22.14	40.58	54.00	-13.42	AVG

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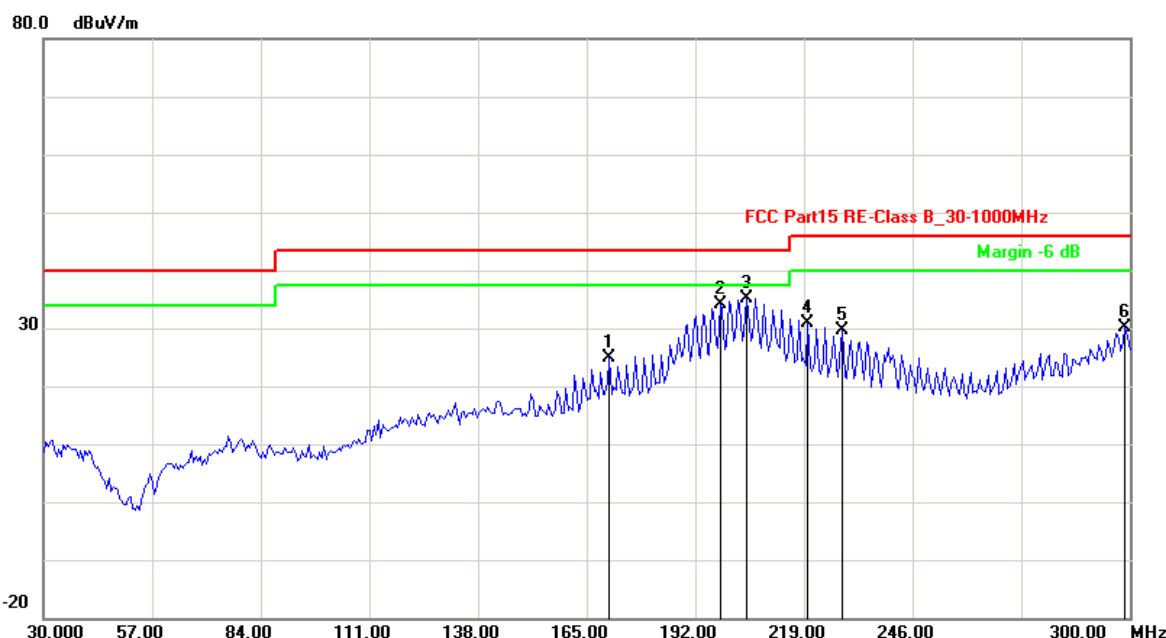
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Channel:	TX Middle Channel	Result:	■ - passed
Test point:	Vertical		□ - not passed
Frequency range:	30MHz~26.5GHz		

EUT	DW700127DC
Firm Name	SHARPVISION CO.,LTD.
Operating Condition	DC 12V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test distance	3 Meter
Test Date:	26 April~28 June 2013
Operator	Duke
MODEL NO	DW639



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	170.6814	-16.56	41.40	24.84	43.50	-18.66	QP
2	198.2766	-12.55	46.59	34.04	43.50	-9.46	QP
3	204.7695	-12.37	47.49	35.12	43.50	-8.38	QP
4	219.9198	-12.43	43.20	30.77	46.00	-15.23	QP
5	228.5772	-12.35	41.89	29.54	46.00	-16.46	QP
6	298.9178	-5.73	35.93	30.20	46.00	-15.80	QP

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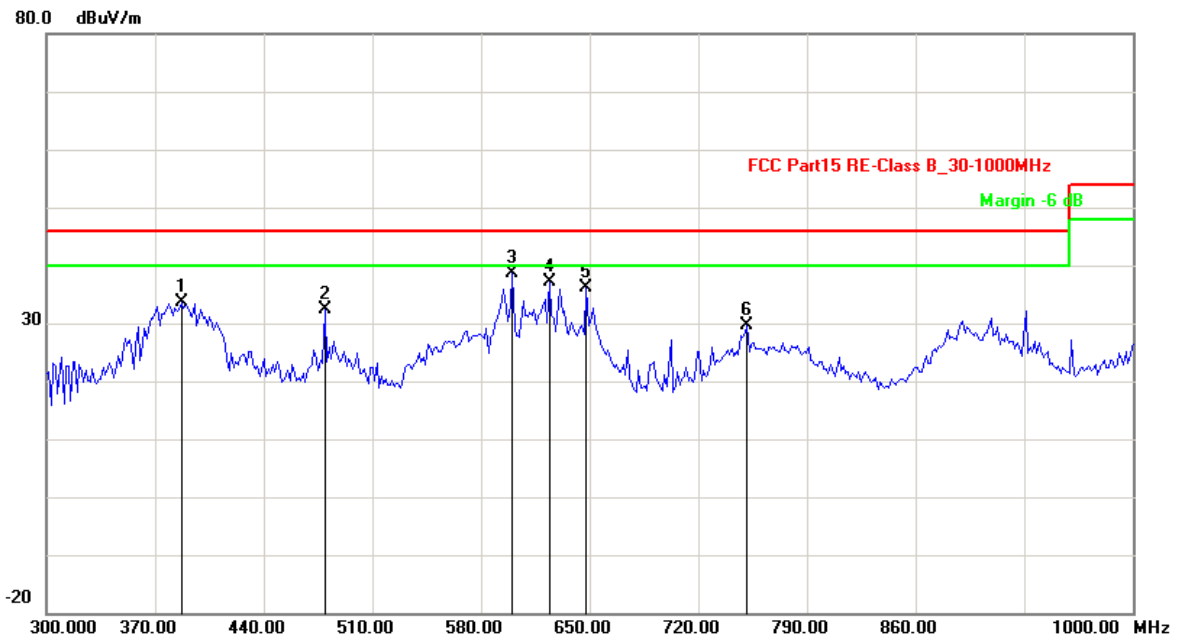
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	386.9739	-14.92	48.65	33.73	46.00	-12.27	QP
2	479.5591	-9.77	42.07	32.30	46.00	-13.70	QP
3	600.2004	-10.94	49.45	38.51	46.00	-7.49	QP
4	624.0481	-7.18	44.29	37.11	46.00	-8.89	QP
5	647.8958	-8.89	44.99	36.10	46.00	-9.90	QP
6	751.7034	-6.19	35.90	29.71	46.00	-16.29	QP

Above 1GHz

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	1308.617	-3.05	52.87	49.82	74.00	-24.18	peak
2	1308.617	-3.05	37.17	34.12	54.00	-19.88	AVG
3	1661.323	-1.31	58.17	56.86	74.00	-17.14	peak
4	1661.323	-1.31	42.33	41.02	54.00	-12.98	AVG
5	2234.469	1.16	50.73	51.89	74.00	-22.11	peak
6	2234.469	1.16	35.82	36.98	54.00	-17.02	AVG
7	3821.643	9.24	40.69	49.93	74.00	-24.07	peak
8	3821.643	9.24	24.61	33.85	54.00	-20.15	AVG
9	4879.760	11.88	42.79	54.67	74.00	-19.33	peak
10	4879.760	11.88	35.68	47.56	54.00	-6.44	AVG
11	7657.315	18.71	38.19	56.90	74.00	-17.10	peak
12	7657.315	18.71	22.32	41.03	54.00	-12.97	AVG

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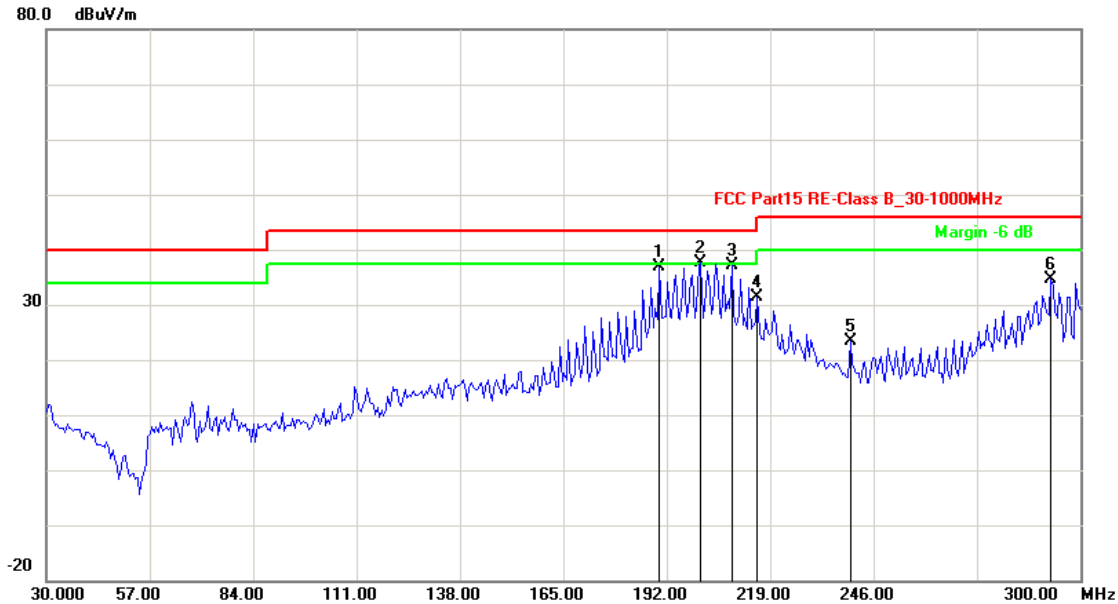
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Channel:	TX High Channel	Result:	<input checked="" type="checkbox"/> - passed
Test point:	Horizontal		<input type="checkbox"/> - not passed
Frequency range:	30MHz~26.5GHz		



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	190.1603	-12.02	48.80	36.78	43.50	-6.72	QP
2	200.9819	-12.60	50.22	37.62	43.50	-5.88	QP
3	209.0981	-12.11	49.35	37.24	43.50	-6.26	QP
4	215.5911	-12.27	43.62	31.35	43.50	-12.15	QP
5	239.9398	-13.13	36.58	23.45	46.00	-22.55	QP
6	292.4248	-6.70	41.28	34.58	46.00	-11.42	QP

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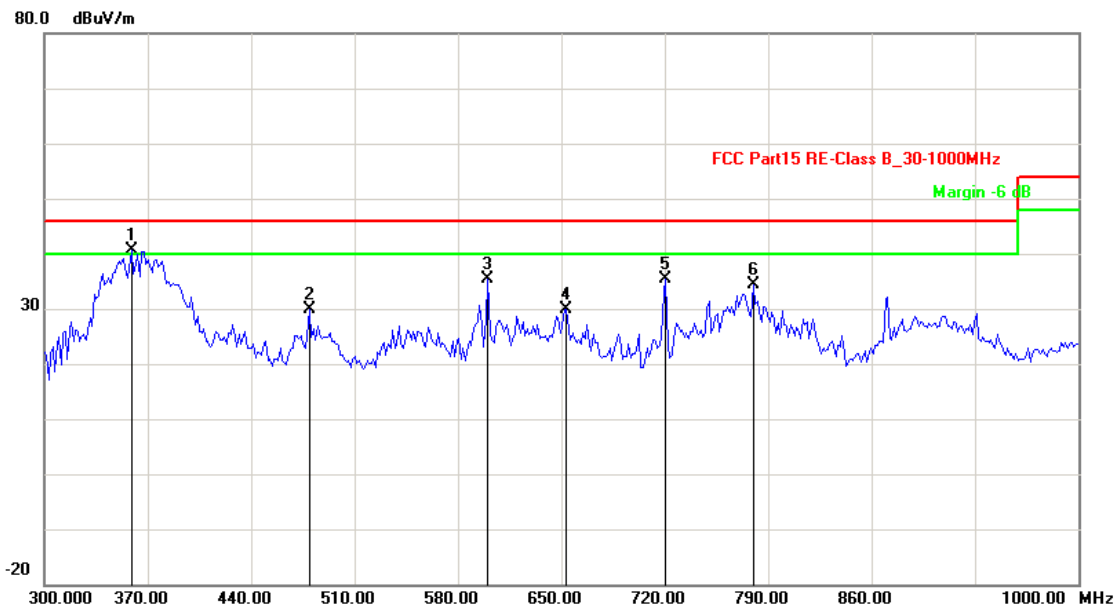
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	358.9178	-13.85	54.43	40.58	46.00	-5.42	QP
2	479.5591	-9.77	39.67	29.90	46.00	-16.10	QP
3	600.2004	-10.94	46.25	35.31	46.00	-10.69	QP
4	653.5070	-9.80	39.69	29.89	46.00	-16.11	QP
5	720.8417	-10.94	46.33	35.39	46.00	-10.61	QP
6	779.7595	-5.94	40.22	34.28	46.00	-11.72	QP

Above 1GHz

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	1088.176	-4.98	51.06	46.08	74.00	-27.92	peak
2	1088.176	-4.98	36.00	31.02	54.00	-22.98	AVG
3	1661.323	-1.31	46.83	45.52	74.00	-28.48	peak
4	1661.323	-1.31	31.57	30.26	54.00	-23.74	AVG
5	1991.984	-1.15	46.54	45.39	74.00	-28.61	peak
6	1991.984	-1.15	31.56	30.41	54.00	-23.59	AVG
7	3689.379	8.81	40.41	49.22	74.00	-24.78	peak
8	3689.379	8.81	25.45	34.26	54.00	-19.74	AVG
9	4549.098	11.10	37.37	48.47	74.00	-25.53	peak
10	4549.098	11.10	21.92	33.02	54.00	-20.98	AVG
11	6092.184	15.60	39.32	54.92	74.00	-19.08	peak
12	6092.184	15.60	24.26	39.86	54.00	-14.14	AVG

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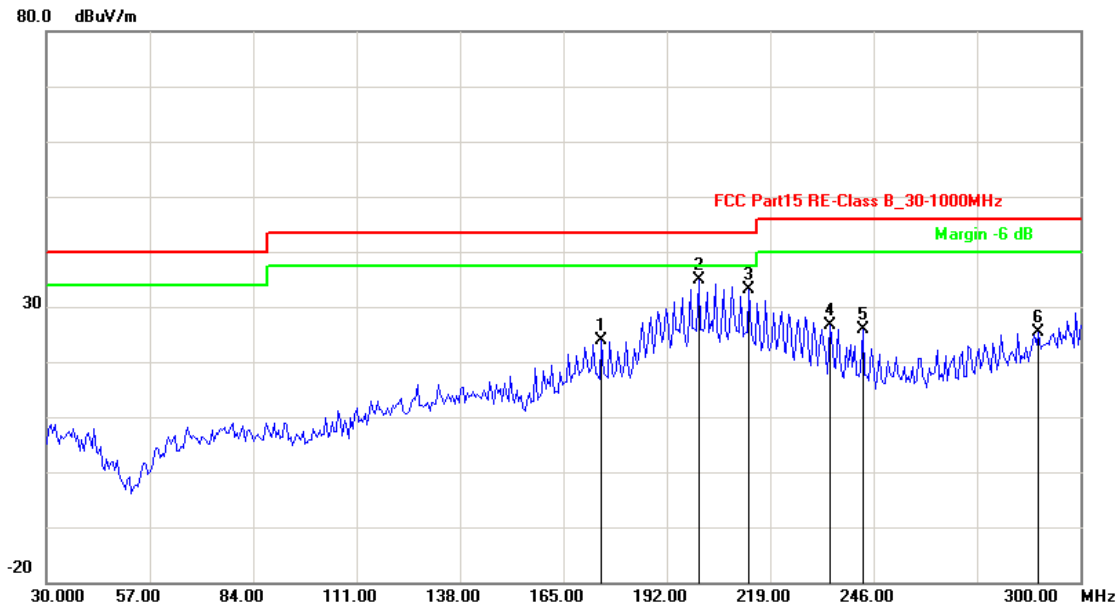
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E-mail: cts@cts-lab.com.cn

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Channel:	TX High Channel	Result:	<input checked="" type="checkbox"/> - passed
Test point:	Vertical		<input type="checkbox"/> - not passed
Frequency range:	30MHz~26.5GHz		



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	175.0100	-16.09	40.09	24.00	43.50	-19.50	QP
2	200.4409	-12.63	47.41	34.78	43.50	-8.72	QP
3	213.4269	-12.19	45.28	33.09	43.50	-10.41	QP
4	234.5291	-12.70	39.35	26.65	46.00	-19.35	QP
5	243.1864	-13.02	38.84	25.82	46.00	-20.18	QP
6	289.1784	-7.25	32.63	25.38	46.00	-20.62	QP

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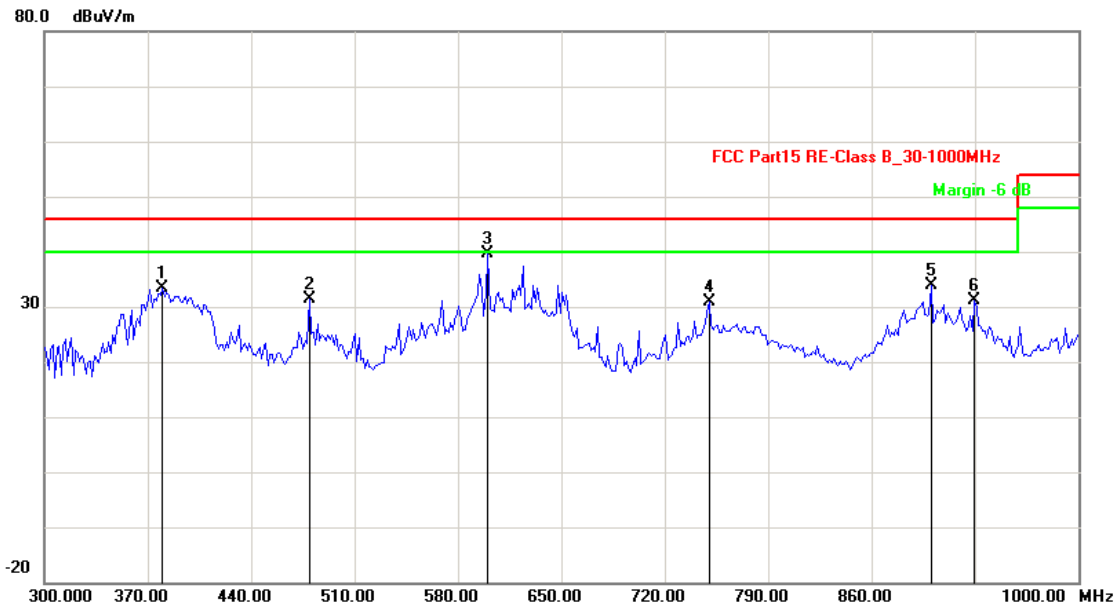
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	379.9599	-14.86	48.24	33.38	46.00	-12.62	QP
2	479.5591	-9.77	41.26	31.49	46.00	-14.51	QP
3	600.2004	-10.94	50.49	39.55	46.00	-6.45	QP
4	750.3006	-6.30	37.25	30.95	46.00	-15.05	QP
5	900.4008	-3.92	37.89	33.97	46.00	-12.03	QP
6	929.8597	-5.74	36.94	31.20	46.00	-14.80	QP

Above 1GHz

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBμV/m)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.
1	1661.323	-1.31	45.54	44.23	74.00	-29.77	peak
2	1661.323	-1.31	31.46	30.15	54.00	-23.85	AVG
3	2498.998	3.76	44.06	47.82	74.00	-26.18	peak
4	2498.998	3.76	28.52	32.28	54.00	-21.72	AVG
5	3821.643	9.24	39.12	48.36	74.00	-25.64	peak
6	3821.643	9.24	24.45	33.69	54.00	-20.31	AVG
7	4571.142	11.15	37.28	48.43	74.00	-25.57	peak
8	4571.142	11.15	22.43	33.58	54.00	-20.42	AVG
9	5519.038	13.83	38.73	52.56	74.00	-21.44	peak
10	5519.038	13.83	23.65	37.48	54.00	-16.52	AVG
11	7569.138	18.59	36.45	55.04	74.00	-18.96	peak
12	7569.138	18.59	21.67	40.26	54.00	-13.74	AVG

Note: Level = Reading + Factor. Margin = Limit - Level.

Remark: Others frequency Radiated Emission level margin all >10dB of Limit.

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## 8. Maximum Peak Output power test

### 8.1. Test Equipment

Maximum Peak Output power test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Power meter	ROHDE & SCHWARZ	NRVS	842856/049	2012/11/6

### 8.2. Test Information

EUT	7"Digital Wireless System
Firm Name	SHARPVISION CO.,LTD.
Operating Condition	DC 12V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	26 April~28 June 2013
Operator	Duke
MODEL NO	DW639

### 8.3 Limits

Standard:FCC 15.247(b)(1)

Test Item	Limit	Frequency Range(MHz)
Peak Output	Hopping Channels>75 Power<1W(30dBm) Others<125mW(21dBm)	2400~2483.5

### 8.4. Test Results

**PASSED.**

Frequency (MHz)	Cable Loss (dB)	Antenna Gain(dB)	Reading (dBm)	Power (dBm)	Limit dBm	Margin
2403	0.53	3.0	0.23	3.76	21	-17.24
2439	0.53	3.0	0.14	3.67		-16.33
2478	0.53	3.0	0.08	3.61		-16.39

Remark: Power= Reading+Cable loss+Antenna Gain

## 9. Band Edge Compliance test

### 9.1. Test Equipment

Band Edge Compliance test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2013/03/29
2	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2013/03/28

### 9.2. Test Information

EUT	DW700127DC
Firm Name	SHARPVISION CO.,LTD.
Operating Condition	DC 12V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test distance	3 Meter
Test Date:	26 April~28 June 2013
Operator	<b>Duke</b>
MODEL NO	DW639

### 9.3. Test procedure

- 1、 The EUT operates at hopping-off test mode. The lowest or highest channels are tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
- 2、 Max hold the trace of the setp 1, and the EUT operates at hopping-on test mode to verify the largest spurious emissions power.

### 9.4. Test Results

#### PASSED.

The EUT operates at hopping-off test mode. The lowest and highest channels are tested to verify the band edge emissions.

Test Mode	Channel Marked Frequency	Test Result Highest Emission (dBuV/m)			
		Horizontal		Vertical	
		Peak	Average	Peak	Average
Low Channel	2390MHz	54.36	42.98	55.26	43.01
	2400MHz	80.46	54.69	87.15	58.14
High Channel	2483.5MHz	64.78	45.47	69.91	46.37
	2500MHz	54.24	44.23	56.26	44.25

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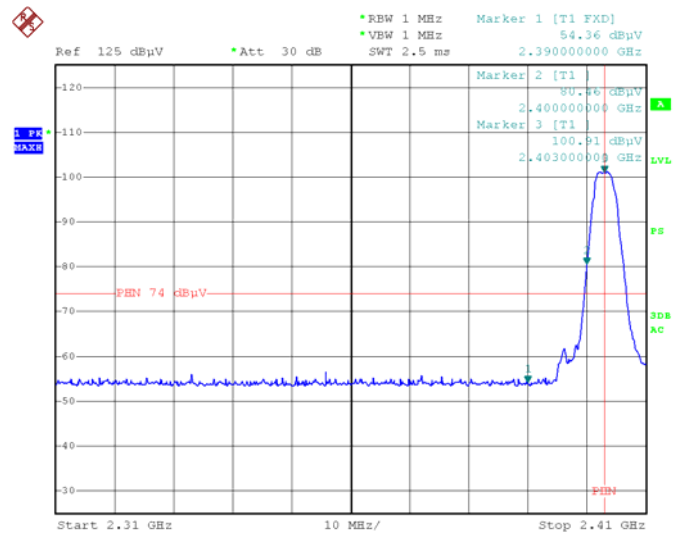
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**Band Edges(CH Low)**  
**Detector mode:Peak**

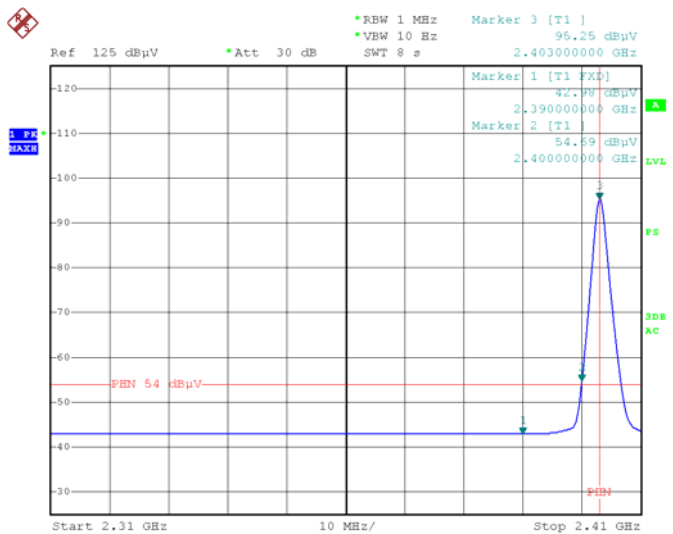
**Polarity:Horizontal**



Date: 27.JUN.2013 19:18:59

**Band Edges(CH Low)**  
**Detector mode:Average**

**Polarity:Horizontal**



Date: 27.JUN.2013 19:21:11

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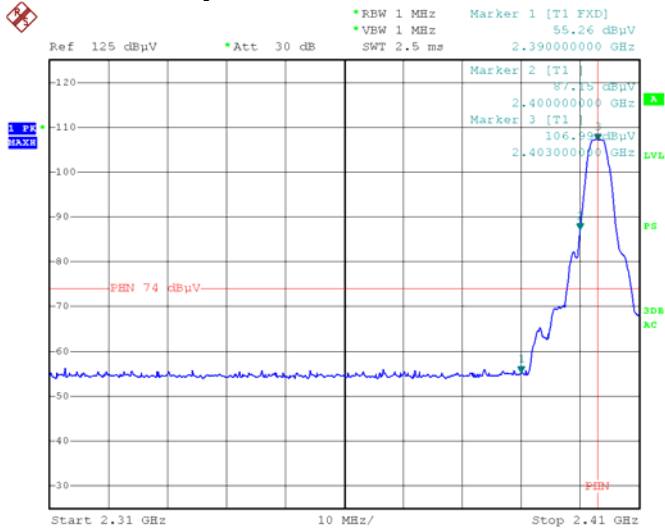
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Band Edges(CH Low)  
Detector mode:Peak

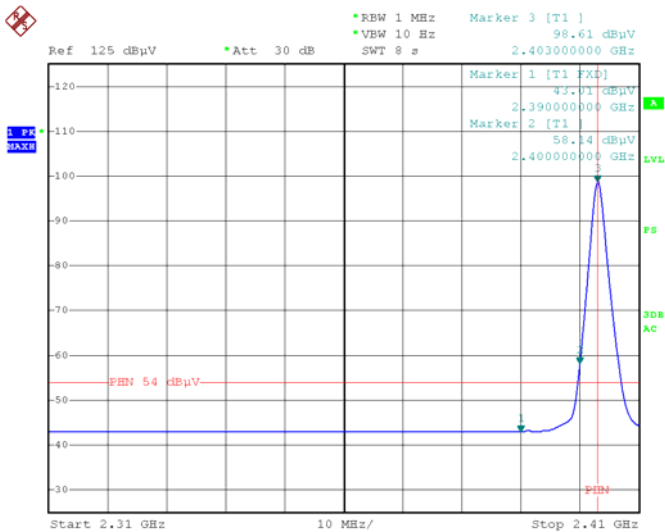
Polarity:Vertical



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Band Edges(CH Low)  
Detector mode:Average

Polarity:Vertical



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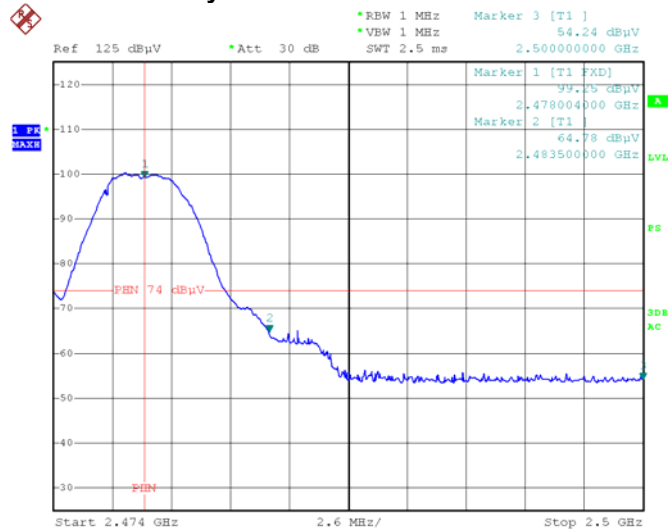
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**Band Edges(CH High)**  
**Detector mode:Peak**

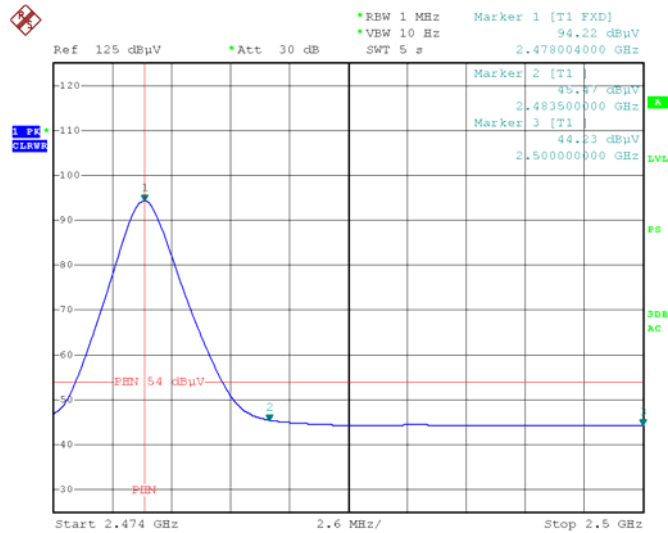
**Polarity:Horizontal**



Date: 27.JUN.2013 19:43:12

**Band Edges(CH High)**  
**Detector mode:Average**

**Polarity:Horizontal**



Date: 27.JUN.2013 19:49:51

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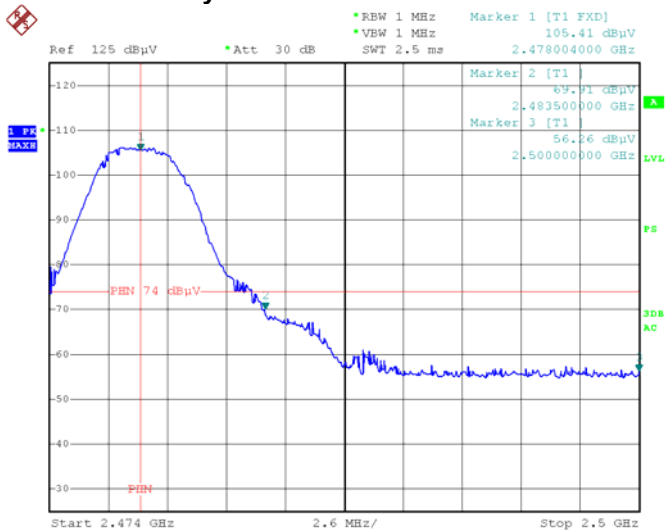
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Band Edges(CH High)  
Detector mode:Peak

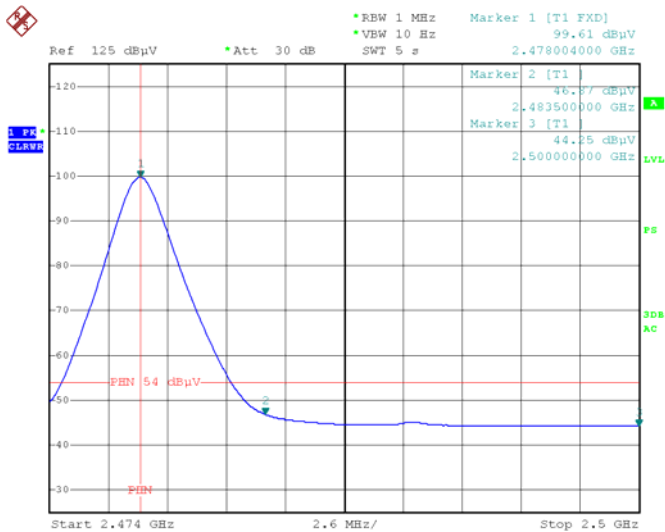
Polarity:Vertical



Date: 27.JUN.2013 19:45:31

Band Edges(CH High)  
Detector mode:Average

Polarity:Vertical



Date: 27.JUN.2013 19:49:03

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## 10. 20 dB Bandwidth test

### 10.1. Test Equipment

20 dB Bandwidth test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2013/03/29
2	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2013/03/28

### 10.2. Test Information

EUT	7"Digital Wireless System
Firm Name	SHARPVISION CO.,LTD.
Operating Condition	DC 12V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	26 April~28 June 2013
Operator	<b>Duke</b>
MODEL NO	DW639

### 10.3. Test Results

**PASSED.**

The testing data was attached in the next pages.

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2403	4.52
Middle	2439	4.48
High	2478	4.44

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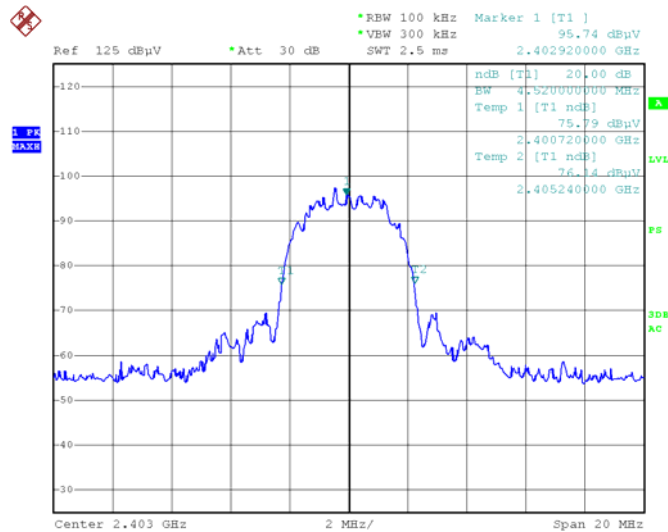
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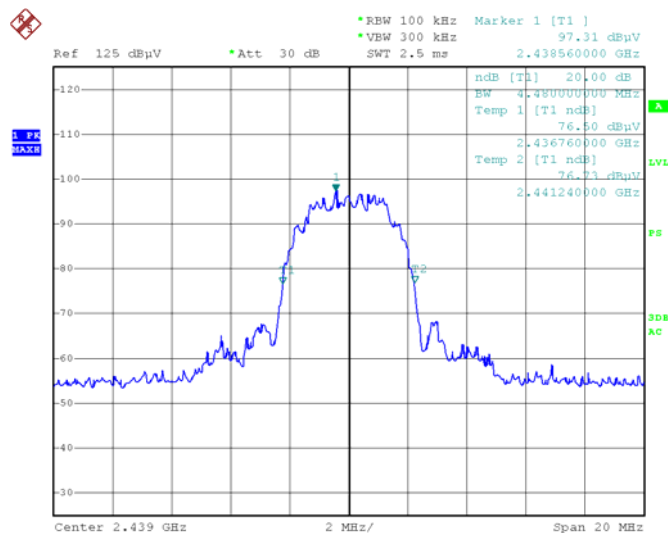
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**20 dB Bandwidth (2403MHz)**

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**20 dB Bandwidth (2439MHz)**

Date: 27.JUN.2013 19:56:17

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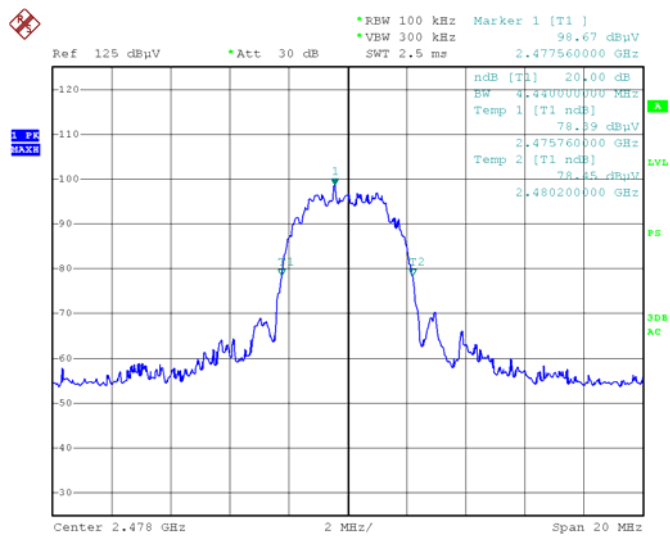
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20 dB Bandwidth (2478MHz)



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## 11. Dwell time test

### 11.1. Test Equipment

Dwell time test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2013/03/29
2	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2013/03/28

### 11.2. Test Information

EUT	7"Digital Wireless System
Firm Name	SHARPVISION CO.,LTD.
Operating Condition	DC 12V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	26 April~28 June 2013
Operator	Duke
MODEL NO	DW639

### 11.3. Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### 11.4. Test Procedure

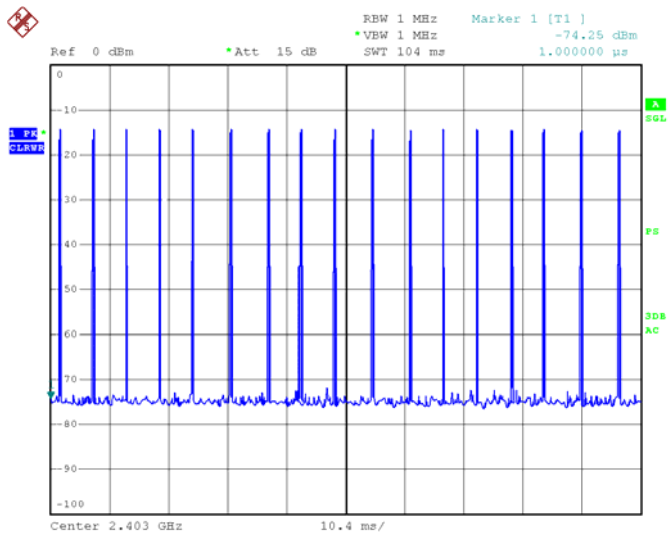
The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centred on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 10.4s second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 10.4 second period (26 channels\*0.4s) is equal to 100\*104ms(# of pulses in 10.4s ) \* pulse width.

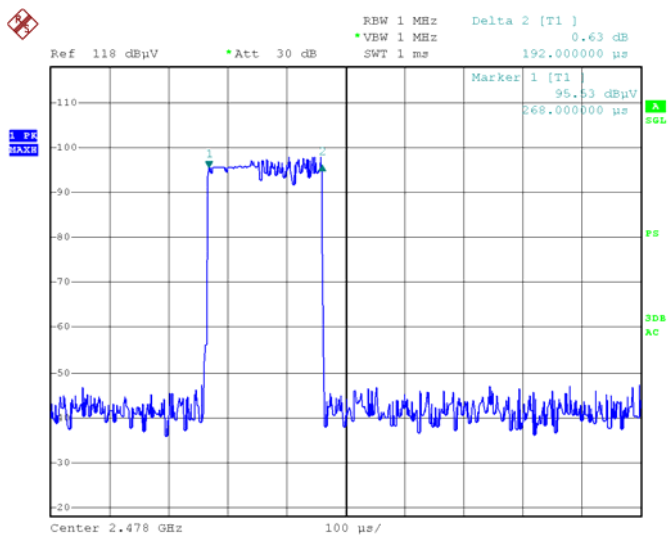
### 11.5. Test Results

**PASSED.**

**Time of occupancy=100\*17 pulse\*0.000192s=0.3264s**



Date: 28.JUN.2013 13:19:35



Date: 27.JUN.2013 20:00:35

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## 12. FREQUENCY SEPARATION

### 12.1. Test Equipment

Dwell time test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2013/03/29
2	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2013/03/28

### 12.2. Test Information

EUT	7"Digital Wireless System
Firm Name	SHARPVISION CO.,LTD.
Operating Condition	DC 12V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	26 April~28 June 2013
Operator	Duke
MODEL NO	DW639

### 12.3. LIMIT

According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

### 12.4. TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Set center frequency of spectrum analyzer = middle of hopping channel.
3. Set the spectrum analyzer as RBW = 1MHz, VBW = 1MHz, Span = 12MHz, Sweep = auto.
4. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.

### 12.4. TEST RESULTS

**PASSED**

Channel Separation (MHz)	20dB Band With (MHz)	Limit (KHz)	Test Result
3	4.52	>25	PASSED

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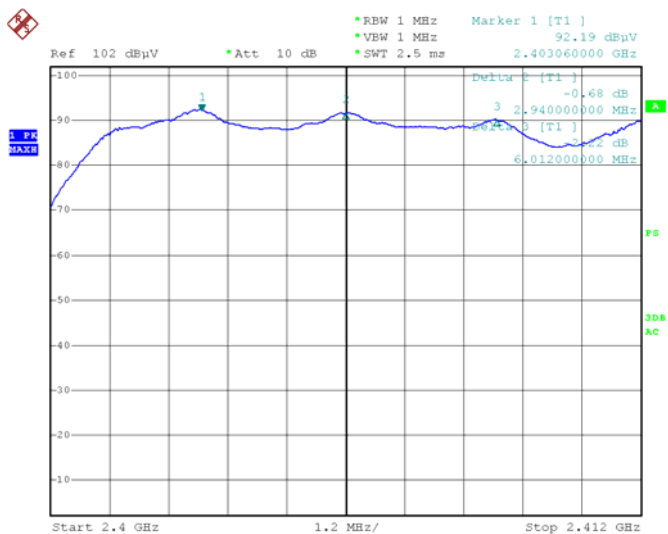
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## 13. NUMBER OF HOPPING FREQUENCY

### 13.1. Test Equipment

Dwell time test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2013/03/29
2	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2013/03/28

### 13.2. Test Information

EUT	7"Digital Wireless System
Firm Name	SHARPVISION CO.,LTD.
Operating Condition	DC 12V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	26 April~28 June 2013
Operator	<b>Duke</b>
MODEL NO	DW639

### 13.3. LIMIT

According to §15.247(a)(1)(ii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands shall use at least 15 hopping frequencies.

### 13.4. TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Set spectrum analyzer Start=2400MHz, Stop = 2485MHz, Sweep = auto and
3. Set the spectrum analyzer as RBW, VBW=1MHz,VBW=1MHz.
4. Max hold, view and count how many channel in the band.

### 13.5. TEST RESULTS

Result(No. of CH)	Limit (No. of CH)	Result
26	>15	PASSED

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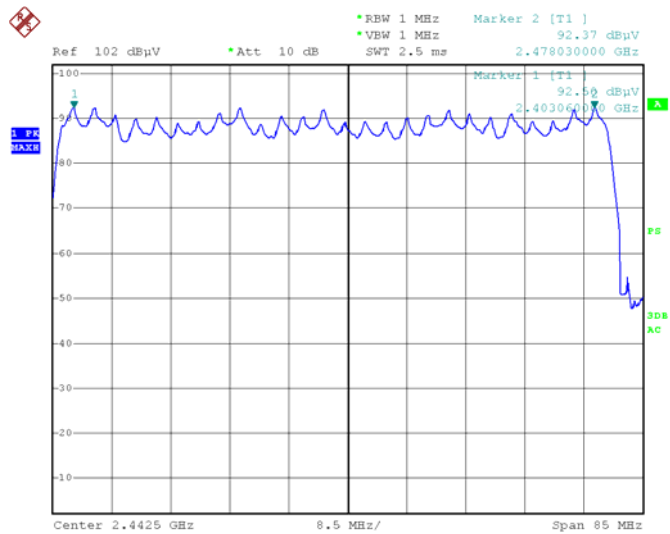
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## 14 Manufacturer/ Approval holder Declaration

The following identical model(s):

**DW086**

Belong to the tested device:

Product description: **7"Digital Wireless System**

Model name: **DW639**

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