



**CTS (NINGBO) TESTING SERVICE TECHNOLOGY
INTERNATIONAL**

OPERATE ACCORDING TO ISO/IEC 17025

FCC ID TEST REPORT

TEST REPORT NUMBER : CNB3120221-00216-E



CTS (Ningbo) Testing Service Technology Co., Ltd.

GZ test site: Building F, Dachuang industrial park, No.379, Zhongshan Dadao,
Guangzhou, China.



TEST REPORT FOR FCC 47 CFR PART 15 OCT, 2011 Radio frequency devices	
Report Reference No.	CNB3120221-00216-E
Date of issue	08 March 2012
Testing Laboratory Name	CTS (Ningbo) Testing Service Technology Co., Ltd.
Address	GZ test site: Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China.
Testing location/ procedure	Full application of Harmonised standards <input checked="" type="checkbox"/> Partial application of Harmonised standards <input type="checkbox"/> Other standard testing method <input type="checkbox"/>
Applicant's name	HuBei MMR Network Technology Co., Ltd.
Address	Optic Valley International Headquator, Building 6, 7th Floor, No.3-8, No.62, Guanggu Road East lake New Tech Development Zone, Wuhan, Hubei, PRC
Test specification:	
Standard	47 CFR PART 15 OCT, 2011
Test Report Form No.	CTSEMC-1.0
TRF Originator	CTS (Ningbo) Testing Service Technology Co., Ltd.
Master TRF	Dated 2009-01
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Test item description	Switches over Coax
Trade Mark	/
Manufacturer	HuBei MMR Network Technology Co., Ltd.
Model/Type reference	MMR-EDB-13D/14h
Ratings	AC 110V/60Hz
Result	Positive

Compiled by:

Violet Lee / File administrators

Supervised by:

Tom Xiao / Technique principal

Approved by:

Vincent yao / Manager

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FCC ID-- T E S T R E P O R T

Test Report No. : CNB3120221-00216-E

08 March 2012
Date of issue

Type / Model.....	MMR-EDB-13D/14h
EUT.....	Switches over Coax
Applicant	HuBei MMR Network Technology Co., Ltd.
Address.....	Optic Valley International Headquator, Building 6, 7th Floor, No.3-8, No.62, Guanggu Road East lake New Tech Development Zone, Wuhan, Hubei, PRC
Telephone.....	+86-27-87462135
Fax.....	+86-27-87462140
Contact.....	Guotao Zhou
Manufacturer	HuBei MMR Network Technology Co., Ltd.
Address.....	Optic Valley International Headquator, Building 6, 7th Floor, No.3-8, No.62, Guanggu Road East lake New Tech Development Zone, Wuhan, Hubei, PRC
Telephone.....	+86-27-87462135
Fax.....	+86-27-87462140
Contact.....	Guotao Zhou
Test report holder	HuBei MMR Network Technology Co., Ltd.
Address.....	Optic Valley International Headquator, Building 6, 7th Floor, No.3-8, No.62, Guanggu Road East lake New Tech Development Zone, Wuhan, Hubei, PRC
Telephone.....	+86-27-87462135
Fax.....	+86-27-87462140
Contact.....	Guotao Zhou

Test Result according to the standards on page 3: **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 TEST STANDARDS

The tests were performed according to following standards:

- 47 CFR PART 15 OCT, 2011
- ANSI C63.4-2009

2 SUMMARY

2.1 GENERAL REMARKS

Date of receipt of test sample	21 February 2012
Testing commenced on	07 March 2012
Testing concluded on	07 March 2012

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 3.
- ☐ - **does not** fulfil the FCC requirements cited on page 3.

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3 EQUIPMENT UNDER TEST

3.1 Power supply system utilised

Power supply voltage : ☒ AC 110V/60Hz
☐ Others

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:

☒ - Ping IP

Operation mode 1: Ping IP

Emissions tests.....: According to **47 CFR PART 15 OCT, 2011**, searching for the highest disturbance.

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3.4 EUT configuration

3.4.1. Monitor

M/N	:	E7722-f
S/N	:	CN-02W486-64180-3B7-01MP
Manufacturer	:	DELL
Power Cord	:	Unshielded, Detachabled, 1.8m , 3Pin
Certificate	:	By DoC

3.4.2. Keyboard

M/N	:	SK-8110
S/N	:	CN-07N244-71616-37T-B293
Manufacturer	:	DELL
Power Cord	:	Shielded, Detachabled
Certificate	:	By DoC

3.4.4. Mouse

M/N	:	WB365
S/N	:	2HTJMB101178717
Manufacturer	:	HP
Power Cord	:	Shielded, Detachabled,
Certificate	:	By DoC

3.4.5. Notebook

M/N	:	E40
S/N	:	N/A
Manufacturer	:	IBM
Power Cord	:	Shielded, Detachabled, 1.8m , 3Pin
Certificate	:	By ID

3.4.6. Personal Computer

M/N	:	DIMENSION 4600
S/N	:	CN-OTO486-42940-37M-00XB
Manufacturer	:	DELL
Power Cord	:	Unshielded, Detachabled, 1.8m , 3Pin
FCC ID	:	By DoC

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4 TEST ENVIRONMENT

4.1 Address of the test laboratory

GZ test site: Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China

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4.2 Test facility

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

CNAS-Lab Code: L3394

CTS (Ningbo) Testing Service Technology 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 CTS (Ningbo) Testing Service Technology 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 06, 2011 .

FCC-Registration No.: 971995

CTS (Ningbo) Testing Service Technology 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 21,2009.

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.

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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)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.
- (2) The actual EUT tested items in this test report, only applies to this "measurement uncertainty" in part / all of the corresponding data.

4.7 Test Description

4.7.1 Description of Standards and Results

EMISSION		
Description of Test Item	Standard	Results
Conducted Emission Test	47 CFR PART 15 OCT, 2011:107 ANSI C63.4-2009	PASS Class B
Radiated Emission Test	47 CFR PART 15 OCT, 2011:109 ANSI C63.4-2009	PASS Class B
Output and spurious conducted level	47 CFR PART 15 OCT, 2011:115 ANSI C63.4-2009	PASSED

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5 TEST CONDITIONS AND RESULTS

5.1 Power Line Conducted Emission Test

For test instruments and accessories used see section 6 part 6.2.

5.1.1 Description of the test location

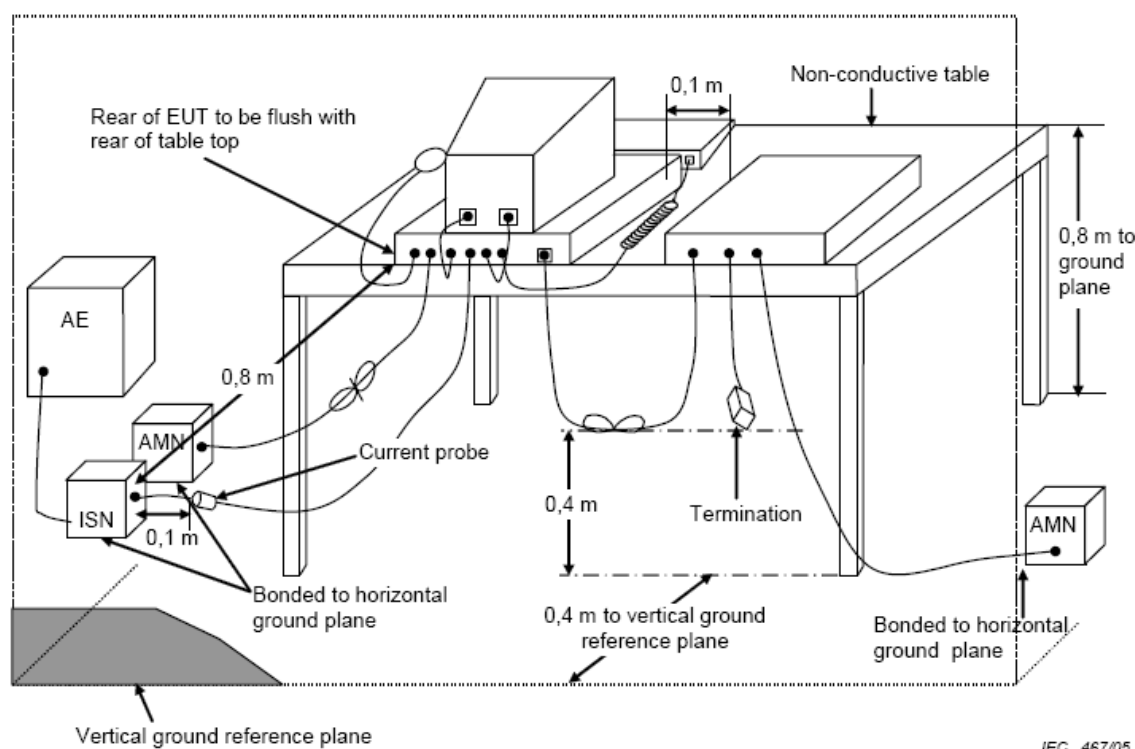
Test location : Shielding Room

5.1.2 Description of the test set-up

5.1.2.1 Operating Condition

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

5.1.2.2 Block Diagram of Test Setup



5.1.3 Limits of disturbance (Class B)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
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.

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5.1.4 Test result

The requirements are	Fulfilled
Band width	9kHz
Frequency range	0.15kHz - 30 MHz
Min. limit margin	>5.90dB at 0.15MHz - 30 MHz

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

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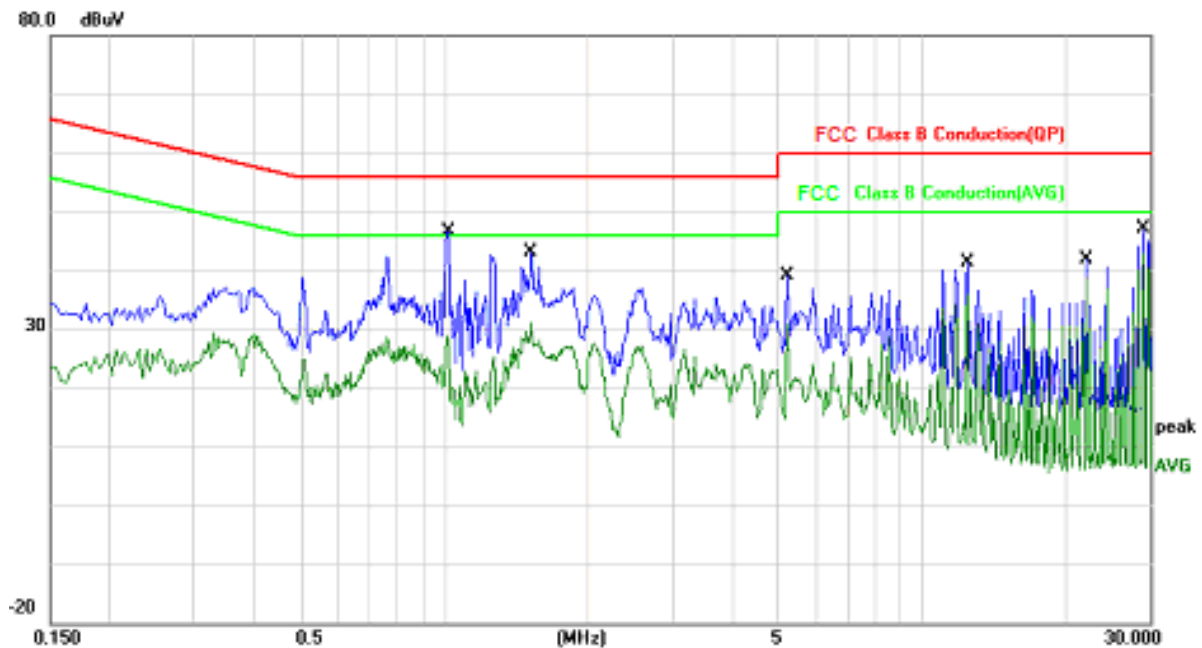
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5.1.5 Test protocol

Test Model:	Ping IP	Result:	■ - passed
Test point:	L		□ - not passed
Frequency range:	0.15~30MHz		

EUT	Switches over Coax
Power Supply	AC 110V/60Hz
Test Condition	Ambient Temperature: 24°C Humidity: 56%
Operator	Cherry
Test Specification	MODE NO: MMR-EDB-13D/14h



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	1.0220	10.12	33.03	43.15	56.00	-12.85	QP
2	1.0220	10.12	14.50	24.62	46.00	-21.38	AVG
3	1.5260	10.10	29.82	39.92	56.00	-16.08	QP
4	1.5260	10.10	19.11	29.21	46.00	-16.79	AVG
5	5.2380	10.12	20.69	30.81	60.00	-29.19	QP
6	5.2380	10.12	8.12	18.24	50.00	-31.76	AVG
7	12.5020	10.16	25.03	35.19	60.00	-24.81	QP
8	12.5020	10.16	6.88	17.04	50.00	-32.96	AVG
9	22.1220	10.35	30.31	40.66	60.00	-19.34	QP
10	22.1220	10.35	27.44	37.79	50.00	-12.21	AVG
11	29.1140	10.63	24.95	35.58	60.00	-24.42	QP
12	29.1140	10.63	11.84	22.47	50.00	-27.53	AVG

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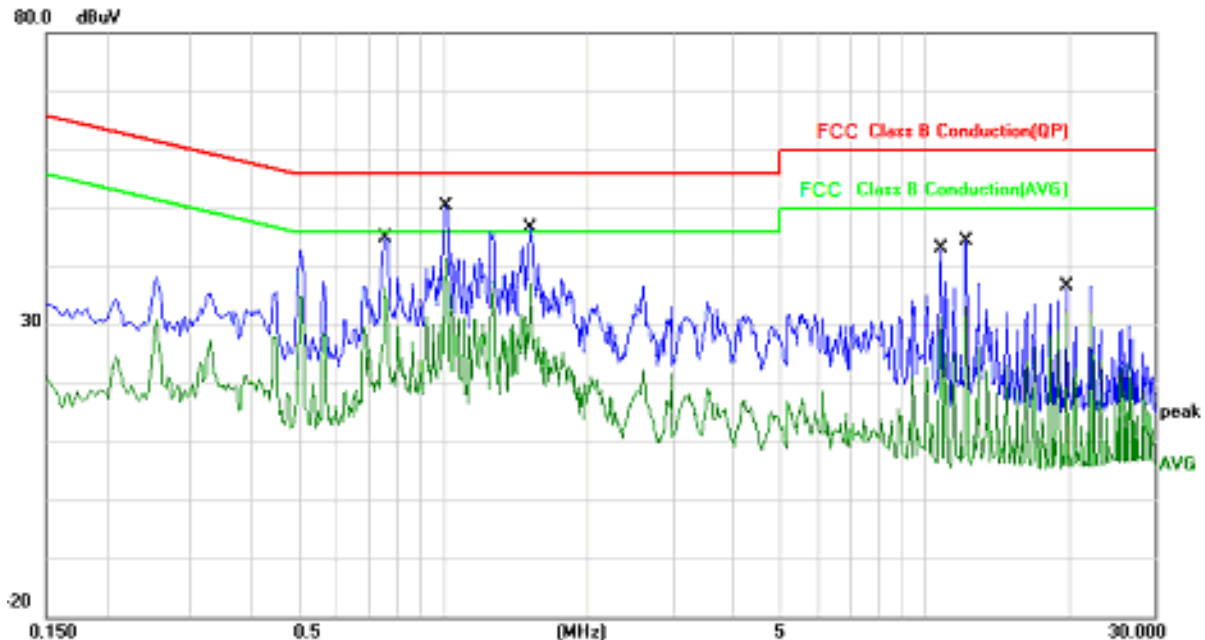
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Test Model:	Ping IP	Result:	■ - passed
Test point:	N		□ - not passed
Frequency range:	0.15~30MHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.7620	10.10	33.43	43.53	56.00	-12.47	QP
2	0.7620	10.10	25.77	35.87	46.00	-10.13	AVG
3	1.0140	10.12	38.82	48.94	56.00	-7.06	QP
4	1.0140	10.12	29.98	40.10	46.00	-5.90	AVG
5	1.5220	10.10	35.07	45.17	56.00	-10.83	QP
6	1.5220	10.10	24.41	34.51	46.00	-11.49	AVG
7	10.7940	10.15	0.51	10.66	60.00	-49.34	QP
8	10.7940	10.15	-4.78	5.37	50.00	-44.63	AVG
9	12.1980	10.16	1.39	11.55	60.00	-48.45	QP
10	12.1980	10.16	-4.59	5.57	50.00	-44.43	AVG
11	19.7100	10.23	0.14	10.37	60.00	-49.63	QP
12	19.7100	10.23	-4.87	5.36	50.00	-44.64	AVG

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5.2 Radiated disturbance (electric field)

For test instruments and accessories used see section 6 part 6.1.

5.2.1 Description of the test location

Test location : Semi-Anechoic chamber

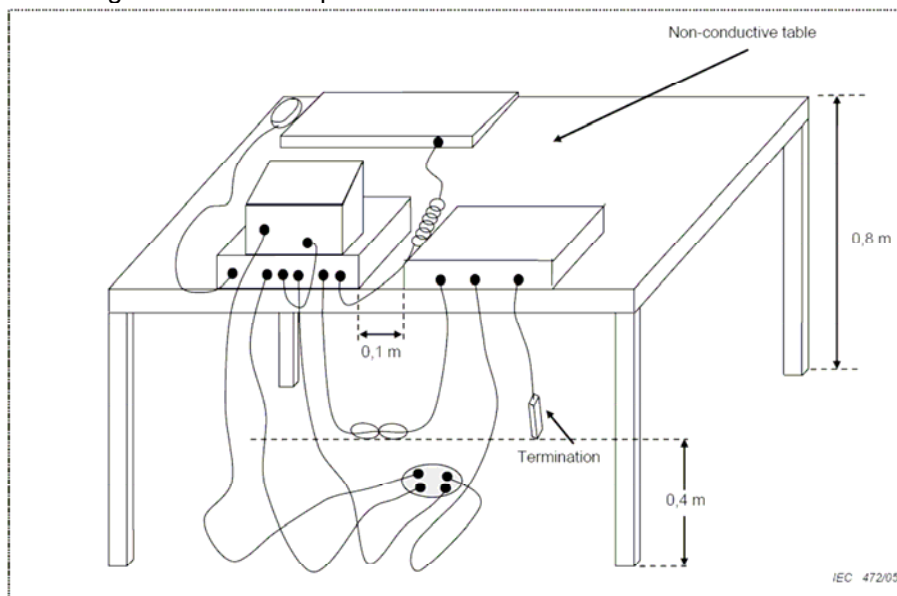
Test disturbance: 3 Meter

5.2.2 Description of the test set-up

5.2.2.1 Operating Condition

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

5.2.2.2 Block Diagram of Test Setup



5.2.3 Limits of disturbance (Class B)

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 88	3	40
88 ~ 216	3	43.5
216 ~ 960	3	46
960 ~ 1000	3	54

Note: (1) The tighter limit shall apply at the edge between two frequency bands.
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

5.2.4 Test result

The requirements are	Fulfilled
Band width	120kHz
Frequency range	30MHz - 1000 MHz
Min. limit margin	>3.88 dB at 30MHz - 1000 MHz

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

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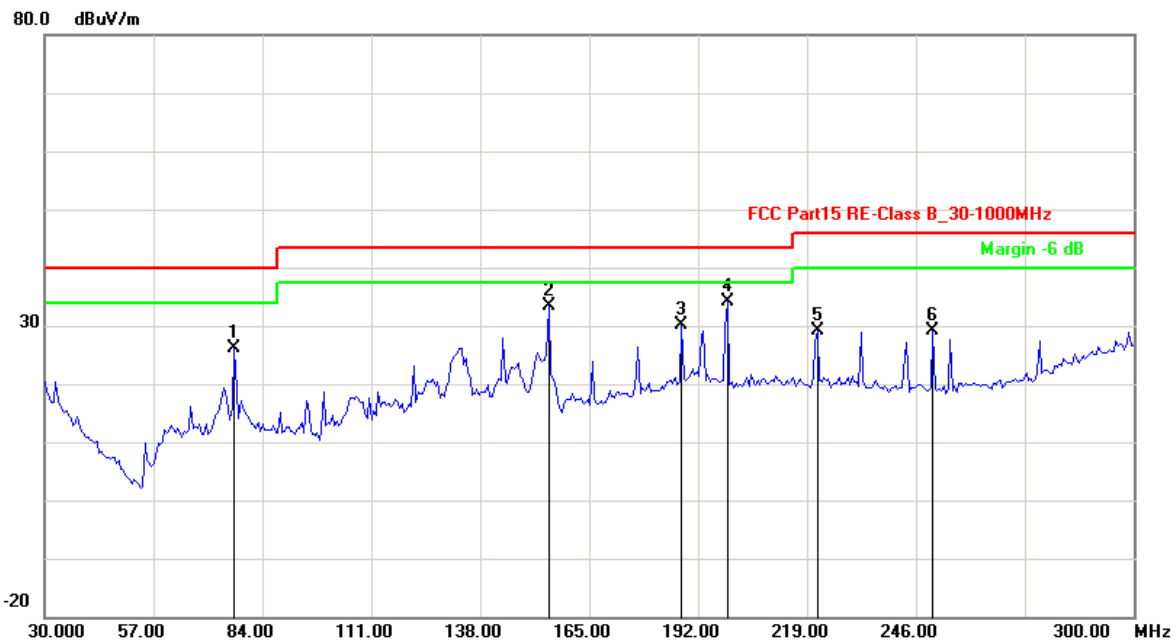
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5.2.5 Test protocol

Test point:	Horizontal	Result:	■ - passed
Operation mode 1	Ping IP		□ - not passed
Remarks:	N/A		

EUT	Switches over Coax
Power Supply	AC 110V/60Hz
Test Condition	Ambient Temperature: 24°C Humidity: 56%
Operator	Cherry
Test Specification	MODE NO: MMR-EDB-13D/14h



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	77.0741	-38.29	64.36	26.07	40.00	-13.93	QP
2	154.9900	-36.65	70.15	33.50	43.50	-10.00	QP
3	187.9960	-31.91	61.93	30.02	43.50	-13.48	QP
4	199.3587	-32.04	66.27	34.23	43.50	-9.27	QP
5	221.5431	-31.73	60.94	29.21	46.00	-16.79	QP
6	250.2204	-32.57	61.82	29.25	46.00	-16.75	QP

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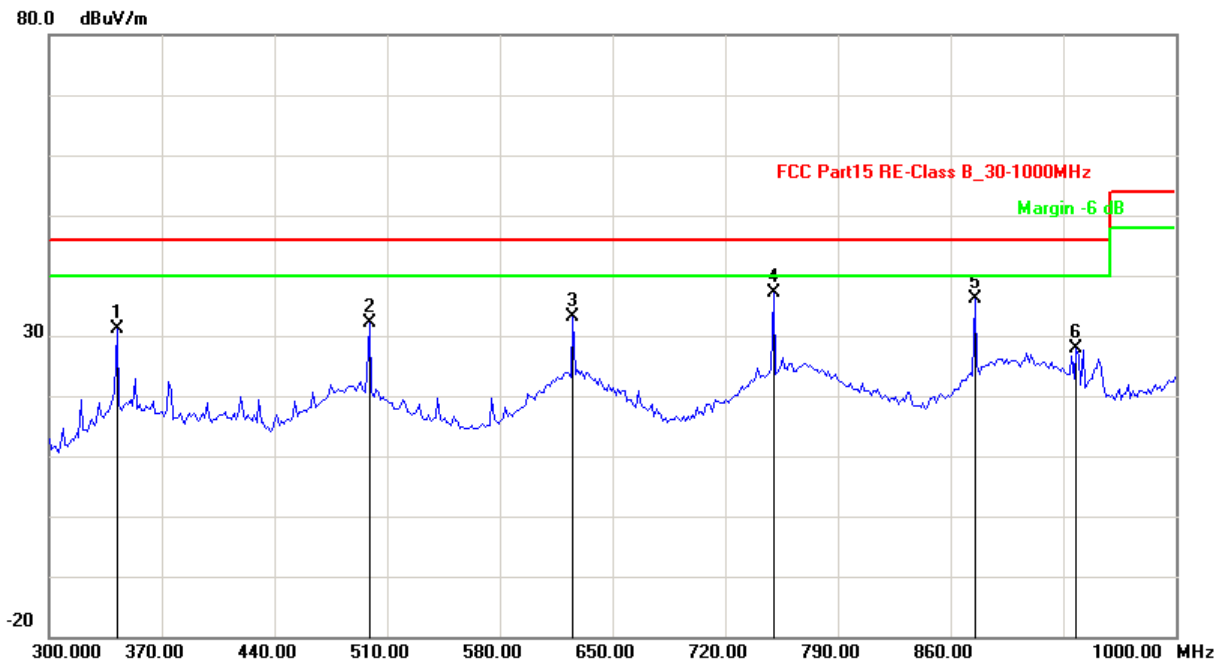
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	342.0842	-33.36	64.41	31.05	46.00	-14.95	QP
2	499.1984	-30.59	62.61	32.02	46.00	-13.98	QP
3	625.4509	-27.81	61.04	33.23	46.00	-12.77	QP
4	750.3006	-27.19	64.27	37.08	46.00	-8.92	QP
5	875.1503	-27.06	63.24	36.18	46.00	-9.82	QP
6	938.2766	-28.11	55.93	27.82	46.00	-18.18	QP

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Above 1GHz

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1280.561	-25.18	68.71	43.53	74.00	-30.47	peak
2	1280.561	-25.18	57.32	32.14	54.00	-21.86	AVG
3	1649.299	-22.45	67.54	45.09	74.00	-28.91	peak
4	1649.299	-22.45	53.71	31.26	54.00	-22.74	AVG
5	2014.028	-19.99	70.43	50.44	74.00	-23.56	peak
6	2014.028	-19.99	58.56	38.57	54.00	-15.43	AVG
7	2955.912	-15.03	64.35	49.32	74.00	-24.68	peak
8	2955.912	-15.03	49.02	33.99	54.00	-20.01	AVG
9	2486.974	-17.32	64.17	46.85	74.00	-27.15	peak
10	2486.974	-17.32	48.40	31.08	54.00	-22.92	AVG

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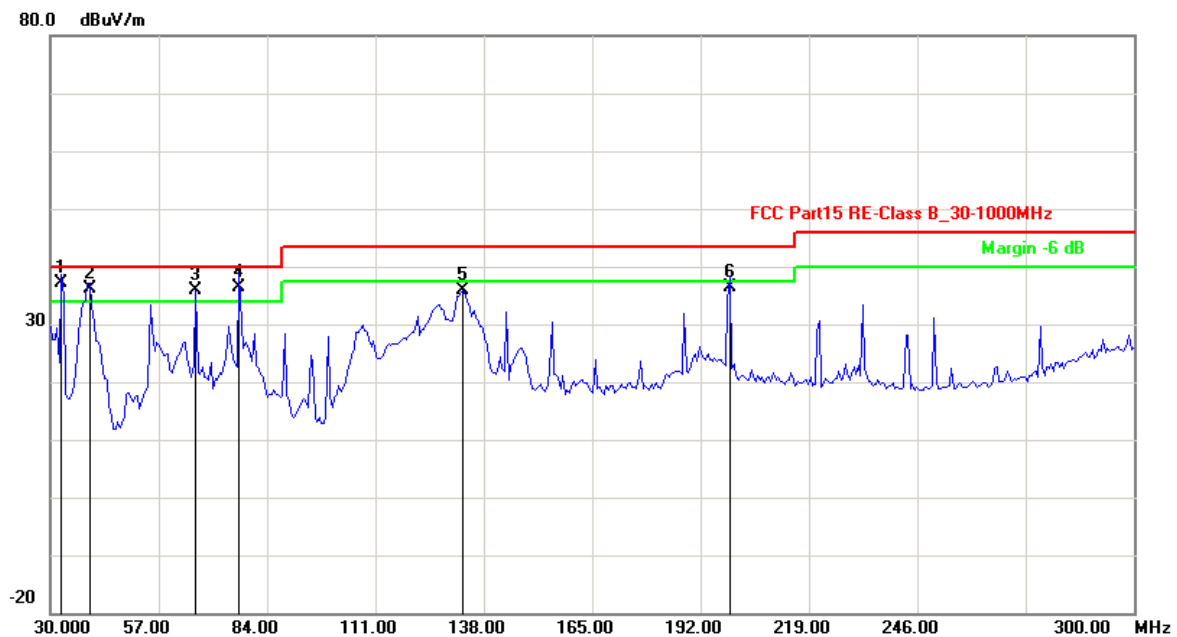
Complaint line: +86-20-85533471

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

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Test point: Operation mode 1 Remarks:	Vertical Ping IP N/A	Result:	<input checked="" type="checkbox"/> - passed <input type="checkbox"/> - not passed
--	----------------------------	---------	---

EUT	Switches over Coax
Power Supply	AC 110V/60Hz
Test Condition	Ambient Temperature: 24°C Humidity: 56%
Operator	Cherry
Test Specification	MODE NO: MMR-EDB-13D/14h



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	32.7054	-35.60	71.72	36.12	40.00	-3.88	QP
2	39.7395	-41.30	77.53	36.23	40.00	-3.77	QP
3	66.2525	-40.25	76.02	35.77	40.00	-4.23	QP
4	77.0741	-38.29	74.66	36.37	40.00	-3.63	QP
5	132.8056	-35.05	70.94	35.89	43.50	-7.61	QP
6	199.3587	-32.04	68.32	36.28	43.50	-7.22	QP

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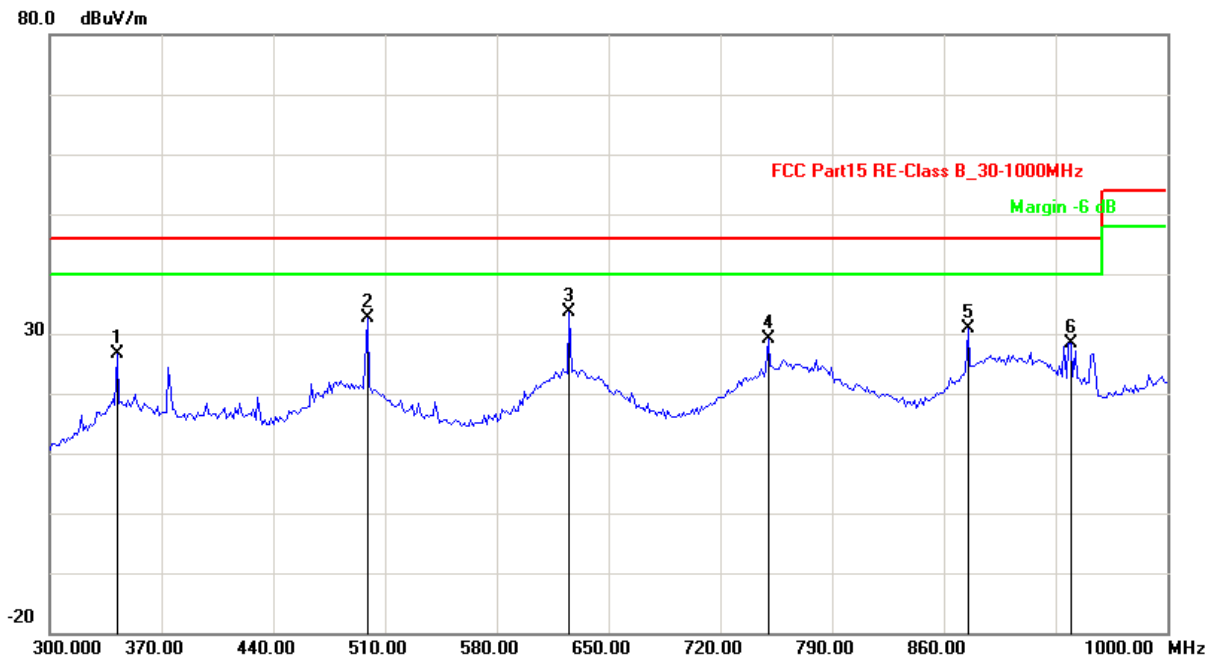
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	342.0842	-33.36	59.95	26.59	46.00	-19.41	QP
2	499.1984	-30.59	63.18	32.59	46.00	-13.41	QP
3	625.4509	-27.81	61.43	33.62	46.00	-12.38	QP
4	750.3006	-27.19	56.26	29.07	46.00	-16.93	QP
5	875.1503	-27.06	57.95	30.89	46.00	-15.11	QP
6	939.6794	-28.28	56.76	28.48	46.00	-17.52	QP

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Above 1GHz

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1296.593	-25.06	69.07	44.01	74.00	-29.99	peak
2	1296.593	-25.06	55.56	30.50	54.00	-23.50	AVG
3	1492.986	-23.52	64.54	41.02	74.00	-32.98	peak
4	1492.986	-23.52	53.41	29.89	54.00	-24.11	AVG
5	2234.469	-18.75	65.73	46.98	74.00	-27.02	peak
6	2234.469	-18.75	50.94	32.19	54.00	-21.81	AVG
7	2503.006	-17.24	64.45	47.21	74.00	-26.79	peak
8	2503.006	-17.24	50.80	33.56	54.00	-20.44	AVG
9	2947.896	-15.07	66.14	51.07	74.00	-22.93	peak
10	2947.896	-15.07	54.61	39.54	54.00	-14.46	AVG
11	2803.607	-15.77	63.23	47.46	74.00	-26.54	peak
12	2803.607	-15.77	48.65	32.88	54.00	-21.12	AVG

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5.3 Output and spurious conducted level

For test instruments and accessories used see section 6 part 6.3.

5.3.1 Description of the test location

Test location : Shielding Room

5.3.2 Measurement Operation:

According to FCC Part 15.115(b) (1), For a cable system terminal device or a TV interface device used with a master antenna, at any RF output terminal, the maximum measured RMS voltage, in microvolts, corresponding to the peak envelope power of the modulated signal during maximum amplitude peaks across a resistance (R in ohms) matching the rated output impedance of the TV interface device, shall not exceed the 692.8 times the square root of (R) for the video signal and 155 times the square root of (R) for the audio signal. And for any emission appearing on frequencies removed by more than 4.6 MHz below or 7.4 MHz above the video carrier frequency on which the TV interface device is operated shall not exceed the 692.8 times the square root of (R).

Remark: As R=75 ohms.

5.3.3 Limits of disturbance .

Video carrier	75.56 dB μ V
Audio Carrier	59.54 dB μ V
Spurious	75.56 dB μ V

5.3.3 Test result:

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EUT	Switches over Coax
Power Supply	AC 110V/60Hz
Test Condition	Ambient Temperature: 24°C Humidity: 56%
Operator	Cherry
Test Specification	MODE NO: MMR-EDB-13D/14h

Video Carrier and spurious:

Frequency(MHz)	Level (dB μ V)	Limit (dB μ V)	Margin(dB)
61.25	65.34	75.56	-10.22
46.78	33.58	75.56	-41.98
172.56	31.93	75.56	-43.63
189.52	33.77	75.56	-41.79
549.67	30.90	75.56	-44.66
773.89	34.01	75.56	-41.55

Audio Carrier and spurious:

Frequency(MHz)	Level (dB μ V)	Limit (dB μ V)	Margin(dB)
65.75	51.89	59.54	-7.65
37.91	34.01	75.56	-41.55
76.65	32.86	75.56	-42.70
216.43	31.89	75.56	-43.67
403.55	32.70	75.56	-43.67
689.17	33.56	75.56	-42.00

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6 USED TEST EQUIPMENT

6.1

Radiated Emission Test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2011/12
2	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2011/12
3	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2011/12
4	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2011/12
5	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2011/12

6.2

Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESHS10	842884/012	2011/12
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2011/12
3	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100301	2011/12
4	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2011/12

6.3

Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2011/12
2	TV Test Transmitter	ROHDE & SCHWARZ	SFM	100119	2011/12
3	TV Test Transmitter	ROHDE & SCHWARZ	SFQ	100367	2011/12
4	TV Generator	ROHDE & SCHWARZ	DVG	100229	2011/12

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7 Deviation to test specifications

[NONE]

8 Normative references

- 1 FCC CFR PART 15: OCT, 2011
Radio Frequency Devices
- 2 ANSI C 63.4 : 2009
American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

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9 Manufacturer/ Approval holder Declaration

The following identical model(s):

N/A

Belong to the tested device:

Product description: **Switches over Coax**
Model name: **MMR-EDB-13D/14h**

No additional models were tested.

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