

CTS (GUANGZHOU) TESTING SERVICE TECHNOLOGY INTERNATIONAL

OPERATE ACCORDING TO ISO/IEC 17025

FCC TEST REPORT

TEST REPORT NUMBER: CGZ3110829-00717-E



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

Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China.





TEST REPORT FOR FCC				
47 CFR PART 15 OCT, 2010 Radio frequency devices				
Report Reference No:	CGZ3110829-00717-E			
Date of issue:	21 Oct. 2011			
Testing Laboratory Name:	CTS (Guangzhou) Testing Service Technology Co., Ltd.			
Address	Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China.			
Testing location/ procedure:	Full application of Harmonised standards ■			
	Partial application of Harmonised standards \square			
	Other standard testing method \square			
Applicant's name:	ARCTIC (HK) Ltd.			
Address:	Unit 2703-04, Nina Tower 2 8 Yeung Uk Road Tsuen Wan Hong Kong			
Test specification:				
Standard	47 CFR PART 15 OCT, 2010			
Test Report Form No	CTSEMC-1.0			
TRF Originator:	CTS (Guangzhou) Testing Service Technology Co., Ltd.			
Master TRF	Dated 2009-01			
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Test item description	Audio Relay			
Trade Mark:	ARCTIC			
Manufacturer	ARCTIC (HK) Ltd.			
Model/Type reference:	WA001			

Compiled by:

Ratings:

Result

Supervised by:

DC 5V BY ADAPTER

Positive

Approved by:

Violet Lee / File administrators

Tom Xiao / Technique principal

Vincent yao / Manager

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FCC--TEST REPORT

Test Report No. : CGZ3110829-00717-E

21 Oct. 2011

Date of issue

Γ	
Type / Model	WA001
EUT	Audio Relay
Applicant	ARCTIC (HK) Ltd.
	Unit 2703-04, Nina Tower 2 8 Yeung Uk Road Tsuen Wan Hong
Address	Kong
Telephone	+852-3759 7622
Fax	+852-2989 6055
Contact	Gary Lau
	,
Manufacturer	ARCTIC (HK) Ltd.
Addes	Unit 2703-04, Nina Tower 2 8 Yeung Uk Road Tsuen Wan Hong
Address	Kong
Telephone	+852-3759 7622
Fax	+852-2989 6055
Contact	Gary Lau
	·
Test report holder	ARCTIC (HK) Ltd.
	Unit 2703-04, Nina Tower 2 8 Yeung Uk Road Tsuen Wan Hong
Address	Kong
Telephone	+852-3759 7622
Fax	+852-2989 6055
Contact	Gary Lau
	,

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, 2010
- ANSI C63.4-2009

2 SUMMARY

2.1 GENERAL REMARKS

Date of receipt of test sample	29 August 2011
Testing commenced on	31 August 2011
Testing concluded on	21 Oct. 2011

2.2 FINAL ASSESSMENT

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

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	not	fulfil	led.
--	-----	--------	------

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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 utili

Power supply voltage : ■ DC 5V BY ADAPTER □ AC 115V/60Hz

☐ 5V From PC Via USB

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:

■ - RJ45 Link Play muisc form PC

Operation mode 1: RJ45 Link Play muisc form PC

Emissions tests...... According to **47 CFR PART 15 OCT, 2010**, searching for the highest disturbance.

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3.4 EUT configuration

3.4.1. Note Book

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

3.4.2. Moniter

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

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4 TEST ENVIRONMENT

4.1 Address of the test laboratory

Building F, Dachuang industrial park, No.379, Zhongshan Dadao, 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

CTS (Guangzhou) 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 (Guangzhou) 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 (Guangzhou) 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	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
Radiation emission (3m)	30MHz~300MHz	±3.14dB	(1)
	300MHz~1000MHz	±3.18dB	(1)

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

4.7 Test Description

4.7.1 Description of Standards and Results

EMISSION		
Description of Test Item Standard		Results
	47 CFR PART 15 OCT, 2010	
Conducted Emission Test	47 CFR PART 15 :107	PASS Class B
	ANSI C63.4-2009	
	47 CFR PART 15 OCT, 2010	
Radiated Emission Test	47 CFR PART 15 :109	PASS Class B
	ANSI C63.4-2009	

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⁽²⁾ The actual EUT tested items in this test report, only applies to this "measurement uncertainty" in part / all of the corresponding data.





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

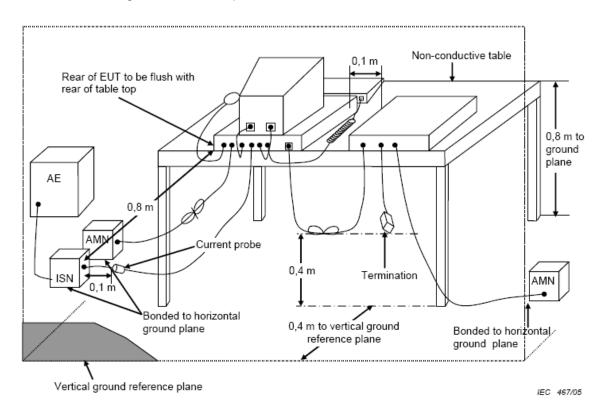
Test location : Shielding Room

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)

		•			
		Maximum RF Line Voltage			
Frequ	uencv	Quasi-Peak Level	Average Level		
requeriey		dB(μV)	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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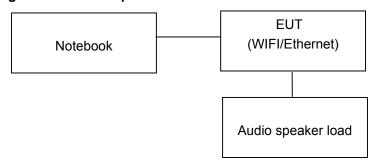


5.1.4 Test result

The requirements are	Fulfilled
Band width	9kHz
Frequency range	0.15kHz - 30 MHz
Min. limit margin	>8.04 dB at 0.15MHz - 30 MHz

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

5.1.5 Block Diagram of Test Setup



(EUT: Audio Relay)

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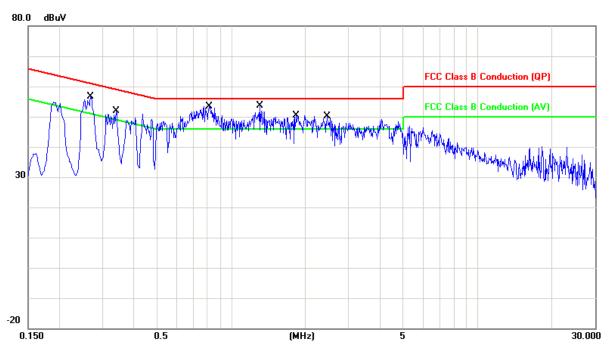




5.1.6 Test protocol

Test Mode:	RJ45 Link Play muisc form PC	Result:	■ - passed
Frequency range:	0.15~30MHz		☐ - not passed

EUT	Audio Relay
Power Supply	DC 5V BY ADAPTER
Test Condition	Ambient Temperature: 24°C Humidity: 56%
Operator	Cherry
Test Specification	MODE NO: WA001



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2700	9.99	43.57	53.56	61.12	-7.56	QP
2	0.2700	9.99	30.70	40.69	51.12	-10.43	AVG
3	0.3420	9.99	39.85	49.84	59.15	-9.31	QP
4	0.3420	9.99	22.95	32.94	49.15	-16.21	AVG
5	0.8140	10.11	40.45	50.56	56.00	-5.44	QP
6	0.8140	10.11	28.80	38.91	46.00	-7.09	AVG
7	1.3140	10.11	36.41	46.52	56.00	-9.48	QP
8	1.3140	10.11	25.79	35.90	46.00	-10.10	AVG
9	1.8420	10.08	32.94	43.02	56.00	-12.98	QP
10	1.8420	10.08	21.37	31.45	46.00	-14.55	AVG
11	2.4540	10.05	34.18	44.23	56.00	-11.77	QP
12	2.4540	10.05	25.33	35.38	46.00	-10.62	AVG

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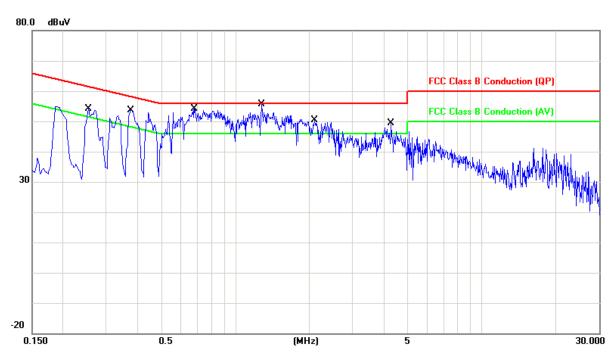
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FCC ID:Z3AWA001 CENTRE OF TESTING SERVICE





Test Mode: RJ45 Link Play muisc form PC Frequency range: RJ45 Link Play muisc form PC □ - passed □ - not passed



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2540	9.99	40.60	50.59	61.63	-11.04	QP
2	0.2540	9.99	26.83	36.82	51.63	-14.81	AVG
3	0.3780	10.00	39.78	49.78	58.32	-8.54	QP
4	0.3780	10.00	24.94	34.94	48.32	-13.38	AVG
5	0.6860	10.09	38.37	48.46	56.00	-7.54	QP
6	0.6860	10.09	24.10	34.19	46.00	-11.81	AVG
7	1.2860	10.11	42.48	52.59	56.00	-3.41	QP
8	1.2860	10.11	33.52	43.63	46.00	-2.37	AVG
9	2.1020	10.07	34.81	44.88	56.00	-11.12	QP
10	2.1020	10.07	18.24	28.31	46.00	-17.69	AVG
11	4.2940	10.09	28.68	38.77	56.00	-17.23	QP
12	4.2940	10.09	10.77	20.86	46.00	-25.14	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

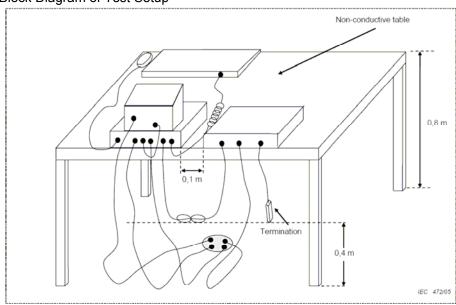
Test disturbance: 3 Meter

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 (dBµV/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.

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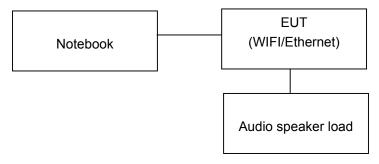


5.2.4 Test result

The requirements are	Fulfilled
Band width	120kHz
Frequency range	9KHz – 26.5GHz

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

5.2.5 Block Diagram of Test Setup



(EUT: Audio Relay)

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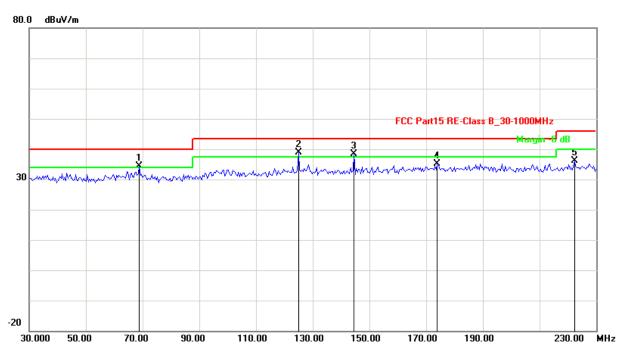




5.2.5 Test protocol

Test point:	Horizontal	Result:	■ - passed
Test Mode:	RJ45 Link Play muisc form PC		□ - not passed
Frequency range:	9KHz-26.5GHz		,

EUT	Audio Relay
Power Supply	DC 5V BY ADAPTER
Test Condition	Ambient Temperature: 24°C Humidity: 56%
Operator	Cherry
MODE NO:	WA001



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	68.8778	5.19	29.08	34.27	40.00	-5.73	QP
2	124.9900	6.55	32.37	38.92	43.50	-4.58	QP
3	144.6293	6.38	31.90	38.28	43.50	-5.22	QP
4	173.8878	7.42	27.63	35.05	43.50	-8.45	QP
5	222.3848	7.96	28.21	36.17	46.00	-9.83	QP

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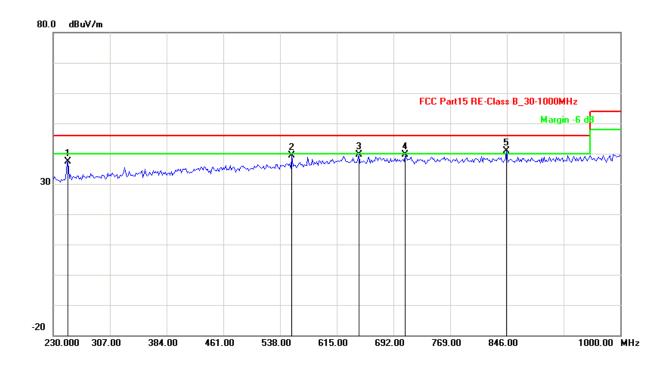
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	250.0601	5.60	31.86	37.46	46.00	-8.54	QP
2	554.0481	8.94	30.43	39.37	46.00	-6.63	QP
3	645.0902	9.75	29.91	39.66	46.00	-6.34	QP
4	708.3567	10.32	29.34	39.66	46.00	-6.34	QP
5	845.6914	10.23	30.69	40.92	46.00	-5.08	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	2631.263	18.77	31.06	49.83	74.00	-24.17	peak		
2	4791.583	22.90	27.32	50.22	74.00	-23.78	peak		
3	5452.906	24.02	29.56	53.58	74.00	-20.42	peak		
4	5452.906	24.02	16.30	40.32	54.00	-13.68	AVG		
5	6929.860	25.15	31.57	56.72	74.00	-17.28	peak		
6	6929.860	25.15	17.87	43.02	54.00	-10.98	AVG		
7	9090.180	27.33	28.03	55.36	74.00	-18.64	peak		
8	9090.180	27.33	15.93	43.26	54.00	-10.74	AVG		
9	11360.721	29.00	27.66	56.66	74.00	-17.34	peak		
10	11360.721	29.00	17.66	46.66	54.00	-7.34	AVG		
11	11845.691	29.93	29.32	59.25	74.00	-14.75	peak		
12	11845.691	29.93	17.32	47.25	54.00	-6.75	AVG		
Rema	Remark: Other frequency mini margin all >10 dB of Limit								

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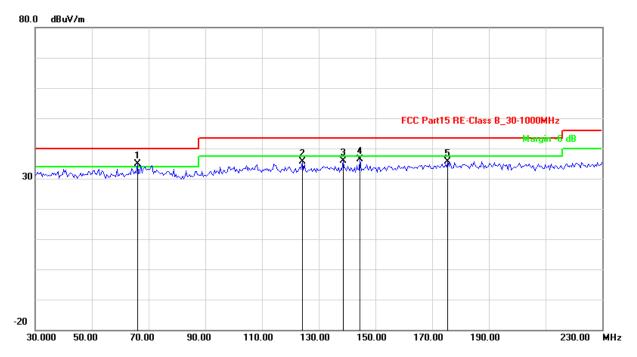
FCC ID:Z3AWA001 CENTRE OF TESTING SERVICE







EUT	Audio Relay
Power Supply	DC 5V BY ADAPTER
Test Condition	Ambient Temperature: 24°C Humidity: 56%
Operator	Cherry
Test Specification	MODE NO: WA001



No.	Frequency	Factor	Reading	Level	Limit	Margin	Det.
	(MHz)	(dB/m)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	66.0721	5.31	29.52	34.83	40.00	-5.17	QP
2	124.1884	6.54	28.99	35.53	43.50	-7.97	QP
3	138.6172	6.43	29.37	35.80	43.50	-7.70	QP
4	144.6293	6.38	30.08	36.46	43.50	-7.04	QP
5	175.4910	7.43	28.21	35.64	43.50	-7.86	QP

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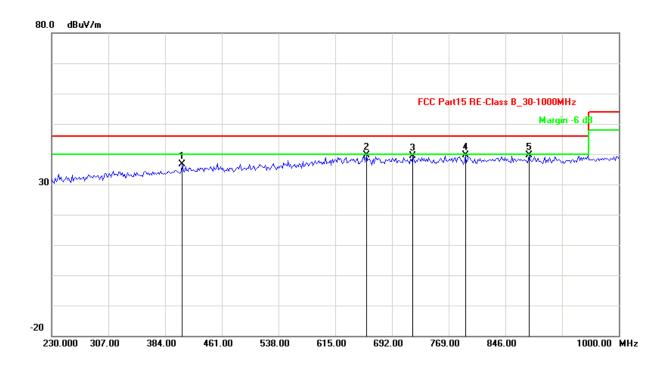
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	407.4549	7.86	28.89	36.75	46.00	-9.25	QP
l l							
2	657.4349	9.87	29.65	39.52	46.00	-6.48	QP
3	720.7014	10.27	29.12	39.39	46.00	-6.61	QP
4	791.6834	10.08	29.66	39.74	46.00	-6.26	QP
5	878.0962	10.50	29.09	39.59	46.00	-6.41	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	2543.086	18.40	31.01	49.41	74.00	-24.59	nook		
1		10.40	31.01	49.41	74.00	-24.59	peak		
2	4945.892	23.23	27.28	50.51	74.00	-23.49	peak		
3	6687.375	25.06	31.60	56.66	74.00	-17.34	peak		
4	6687.375	25.06	20.60	45.66	54.00	-8.34	AVG		
5	9905.812	29.09	27.51	56.60	74.00	-17.40	peak		
6	9905.812	29.09	15.51	44.60	54.00	-9.40	AVG		
7	10478.958	28.82	29.54	58.36	74.00	-15.64	peak		
8	10478.958	28.82	18.54	47.36	54.00	-6.64	AVG		
9	11140.281	28.58	28.08	56.66	74.00	-17.34	peak		
10	11140.281	28.58	15.58	44.16	54.00	-9.84	AVG		
Rema	Remark: Other frequency mini margin all >10 dB of Limit								

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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	2010/12		
2	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2010/12		
3	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2010/12		
4	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2010/12		
5	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2010/12		
6	Loop Antenna	A.R.A	PLA-1030/B	1030	2010/12		

6.2

Conducted Disturbance							
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.		
1	EMI Test Receiver	ROHDE & SCHWARZ	ESHS10	842884/012	2010/12		
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2010/12		
3	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100301	2010/12		
4	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2010/12		

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7 Deviation to test specifications

[NONE]

8 Manufacturer/ Approval holder Declaration

The following identical model(s):

N/A

Belong to the tested device:

Product description: Audio Relay Model name: WA001

No additional models were tested.

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