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<http://www.ltalab.com>

Dates of Tests: December 06 - 11, 2007

Test Report S/N: LR500190712A

Test Site : LTA CO., LTD.

## CERTIFICATION OF COMPLIANCE

FCC ID.

**VUJAT570**

APPLICANT

**ATID CO.,Ltd**

<b>FCC Classification</b>	<b>:</b>	<b>FCC Part 15 Spread Spectrum Transceiver (DSS)</b>
<b>Manufacturing Description</b>	<b>:</b>	<b>Industrial PDA</b>
<b>Manufacturer</b>	<b>:</b>	<b>ATID CO.,Ltd</b>
<b>Model name</b>	<b>:</b>	<b>AT570</b>
<b>Test Device Serial No.:</b>	<b>:</b>	<b>-</b>
<b>Rule Part(s)</b>	<b>:</b>	<b>FCC Part 15.247 Subpart C; ANSI C-63.4-2003</b>
<b>Frequency Range</b>	<b>:</b>	<b>2412MHz ~ 2462MHz</b>
<b>RF power</b>	<b>:</b>	<b>0.08 W - Conducted</b>
<b>Data of issue</b>	<b>:</b>	<b>December 26, 2007</b>

This test report is issued under the authority of:

The test was supervised by:

Dong -Min JUNG, Technical Manager

Kyung-Taek LEE, Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. This report must not be used by the applicant to claim product endorsement by any agency.



NVLAP LAB Code.: 200723-0

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## 1. General information's

### 1-1 Test Performed

Company name : LTA Co., Ltd.  
 Address : 243, Jubug-ri, Yangji-Myeon, Youngin-Si, Kyunggi-Do, Korea. 449-822  
 Web site : <http://www.ltalab.com>  
 E-mail : [chahn@ltalab.com](mailto:chahn@ltalab.com)  
 Telephone : +82-31-323-6008  
 Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

### 1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2008-09-30	ECT accredited Lab.
RRL	KOREA	KR0049	2009-06-20	EMC accredited Lab.
FCC	U.S.A	610755	2008-03-28	FCC filing
VCCI	JAPAN	R2133, C2307	2008-06-22	VCCI registration
IC	CANADA	IC5799	2008-04-23	IC filing

## 2. Information's about test item

### 2-1 Client & Manufacturer

Company name : ATID CO.,Ltd  
 Address : #1210 Byuksan/Gyungin digital valley II #481 – 10 Gasan-Dong  
 Gumchon-Gu Seoul KOREA  
 Tel / Fax : +82-2-544-1436 / +82-2-544-1438

### 2-2 Equipment Under Test (EUT)

Trade name : Industrial PDA  
 FCC ID : VUJAT570  
 Model name : AT570  
 Serial number : -  
 Date of receipt : December 06, 2007  
 EUT condition : Pre-production, not damaged  
 Antenna type : Wire Antenna Gain 0 dBi  
 Frequency Range : 2412MHz ~ 2462MHz (DSSS)  
 RF output power : 0.08W - Conducted  
 Type of Modulation : CCK, DQPSK, DBPSK for DSSS  
 64QAM, 16QAM, QPSK, BPSK for OFDM  
 Transfer Rate : 11/5.5/2/1Mbps for 802.11b  
 54/48/36/24/18/12/9/6Mbps for 802.11g  
 Power Source-Battery : 3.7Vdc (Lithium Ion Battery)  
 Power Source-Adaptor : Input 100-240Vac, 50-60Hz, 0.5A  
 Output: 5Vdc, 3.0A

### 2-3 Tested frequency

	LOW	MID	HIGH
Frequency (MHz)	2412	2437	2462

### 2-4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
PC	dx2200Microtower	CNG6500RX9	HP
Monitor	VS11353	E060T4021/1-1	View Sonic
Keyboard	SK-8115	641-OEWW	DELL
Keyboard	SK-8115	61K-1CLN	DELL
Mouse	MO56UO	510022473	DELL
Print	STYLUS C65	-	EPSON
Earphone	-	-	-

### 3. Test Report

#### 3.1 Summary of tests

	Parameter	Limit	Test Condition	Status (note 1)
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##### I. FCC Part Section(s)

802.11b/g Module is certified by FCC(FCC ID: TWG-SDMCF10G).

##### II. Additional items

15.209	Field Strength of Harmonics	< 54 dBuV (at 3m)	Radiated	C
15.207	AC Conducted Emissions	EN 55022	Line Conducted	C

Note 1: C=Complies    NC=Not Complies    NT=Not Tested    NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

The sample was tested according to the following specification:

FCC Parts 15.247; ANSI C-63.4-2003

## 3.2 Technical Characteristics Test

### 3.2.1 Field Strength of Harmonics

#### Procedure:

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic.

RBW = 100 kHz ( 30MHz ~ 1 GHz)

VBW  $\geq$  RBW

= 1 MHz (1 GHz ~ 10<sup>th</sup> harmonic )

Span = 100 MHz

Detector function = peak

Trace = max hold

Sweep = auto

**Measurement Data: Complies**

#### Minimum Standard: FCC Part 15.209(a)

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

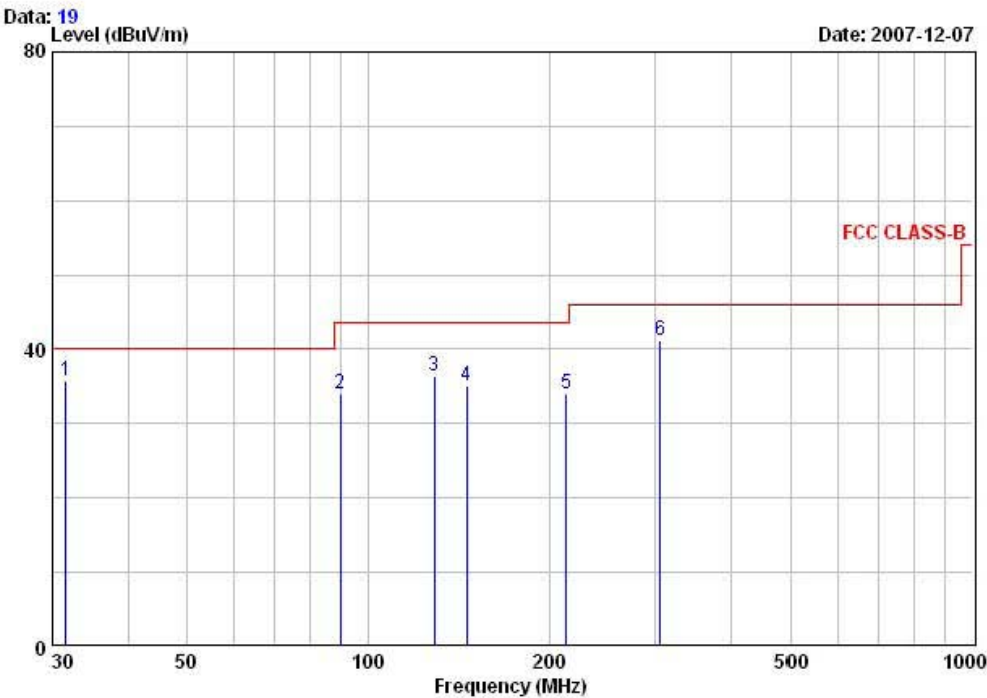
\*\* Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

Measurement Data: 802.11b mode



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EUT/Model No.: AT570                      TEST MODE: Wireless 802.11b mode  
Temp Humi : 3 / 41                      Tested by: B.S.KIM



	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
	MHz	dBuV	dB	QK dBuV/m	dBuV/m	dB	cm	deg	
1	31.53	49.20	-13.35	35.85	40.00	4.15	132	232	VERTICAL
2	89.96	49.90	-15.79	34.11	43.50	9.39	132	186	HORIZONTAL
3	128.81	48.20	-11.90	36.30	43.50	7.20	175	352	VERTICAL
4	145.78	45.70	-10.55	35.15	43.50	8.35	113	26	VERTICAL
5	213.65	46.80	-12.79	34.01	43.50	9.49	131	252	VERTICAL
6	305.17	50.50	-9.21	41.29	46.00	4.71	165	253	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain





## Measurement Data: Active sync mode



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EUT/Model No.: AT570

TEST MODE: Active sync mode

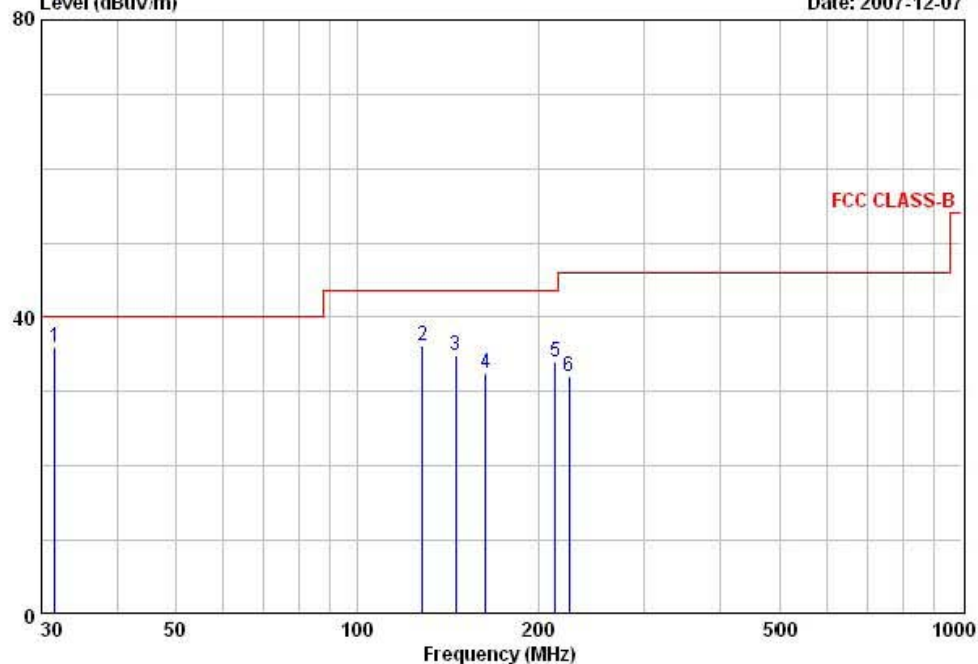
Temp Humi : 3 / 41

Tested by: B.S.KIM

Data: 17

Level (dBuV/m)

Date: 2007-12-07



	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
	MHz	dBuV	dB	QK dBuV/m	dBuV/m	dB	cm	deg	
1	31.57	49.30	-13.35	35.95	40.00	4.05	100	321	VERTICAL
2	128.71	48.20	-11.91	36.29	43.50	7.21	100	278	VERTICAL
3	145.69	45.50	-10.55	34.95	43.50	8.55	100	152	VERTICAL
4	163.58	42.80	-10.32	32.48	43.50	11.02	125	184	VERTICAL
5	213.65	46.70	-12.79	33.91	43.50	9.59	100	323	VERTICAL
6	224.93	44.40	-12.30	32.10	46.00	13.90	100	179	VERTICAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

### 3.2.2 AC Conducted Emissions

#### Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

#### Measurement Data: Complies

- See next pages for actual measured spectrum plots.
- No emissions were detected at a level greater than 10dB below limit.

#### Minimum Standard: FCC Part 15.207(a)/EN 55022

Class B

Frequency Range	quasi-peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

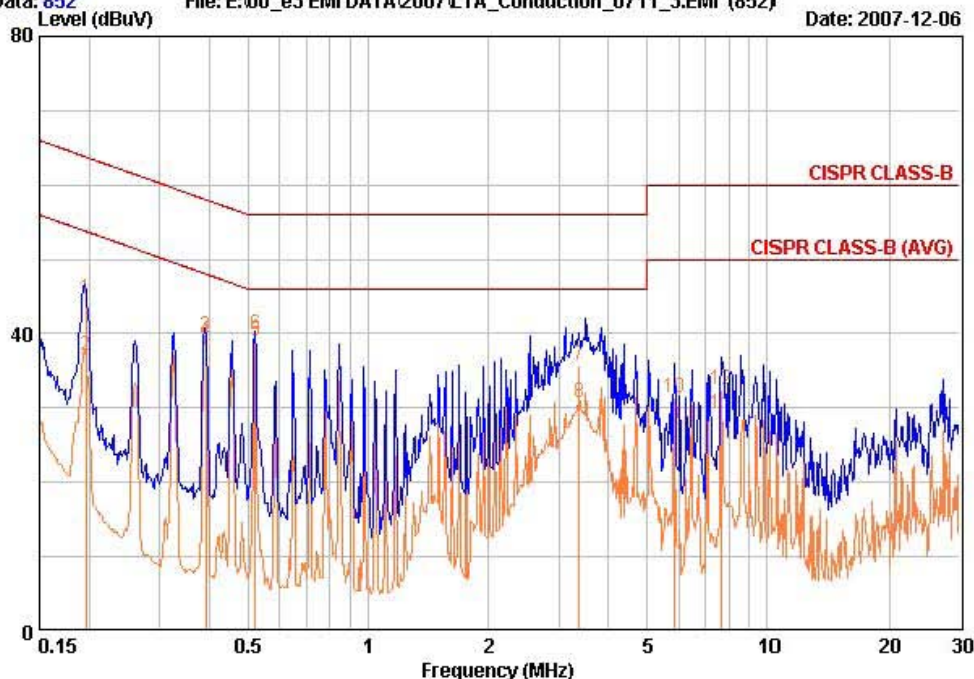
\* Decreases with the logarithm of the frequency

**AC Conducted Emissions –Line**

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EUT / Model No. : AT570	Phase : LINE
Test Mode : 802.11b mode	Test Power : 120 / 60
Temp./Humi. : 24 / 15	Test Engineer : B.S.KIM

Data: 852 File: E:\00\_e3 EMI DATA\2007\LTA\_Conduction\_0711\_3.EMI (852) Date: 2007-12-06



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.196	44.50	36.80	0.21	44.71	37.01	63.78	53.78	19.07	16.77
0.392	39.30	38.60	0.38	39.68	38.98	58.02	48.02	18.34	9.04
0.521	39.70	38.80	0.29	39.99	39.09	56.00	46.00	16.01	6.91
3.380	35.20	30.20	0.57	35.77	30.77	56.00	46.00	20.23	15.23
5.858	30.90	27.10	0.59	31.49	27.69	60.00	50.00	28.51	22.31
7.687	31.80	28.50	0.62	32.42	29.12	60.00	50.00	27.58	20.88

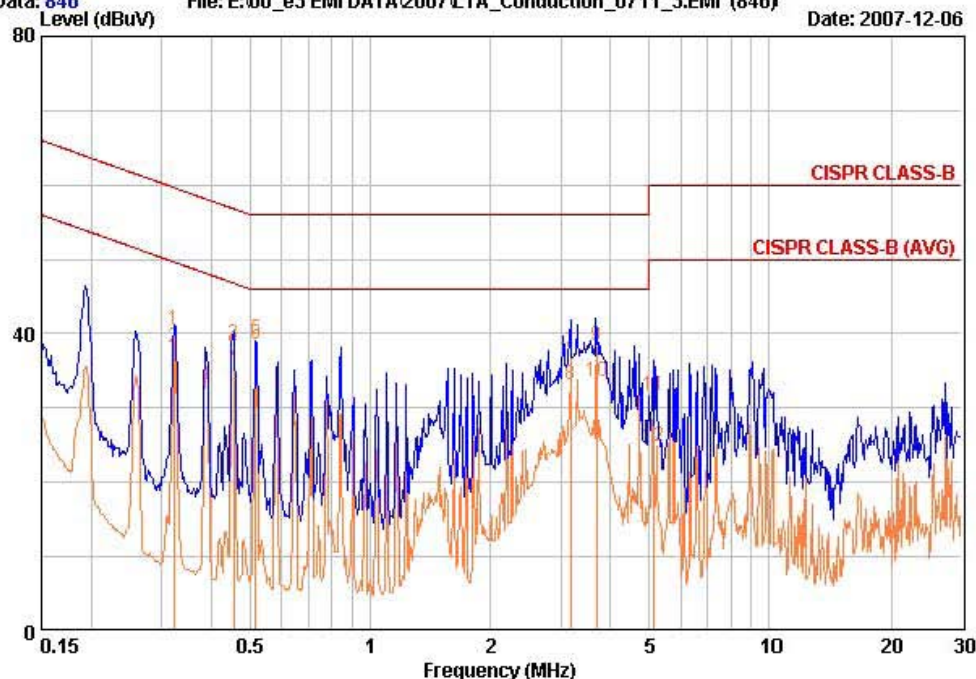
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

**AC Conducted Emissions –Neutral**

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EUT / Model No. : AT570	Phase : NEUTRAL
Test Mode : 802.11b mode	Test Power : 120 / 60
Temp./Humi. : 24 / 15	Test Engineer : B.S.KIM

Data: 846 File: E:\00\_e3 EMI DATA\2007\LTA\_Conduction\_0711\_3.EMI (846) Date: 2007-12-06



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.322	40.20	37.80	0.31	40.51	38.11	59.66	49.66	19.15	11.55
0.454	38.20	37.50	0.33	38.53	37.83	56.80	46.80	18.27	8.97
0.517	39.00	38.20	0.29	39.29	38.49	56.00	46.00	16.71	7.51
3.174	36.90	32.50	0.63	37.53	33.13	56.00	46.00	18.47	12.87
3.692	37.80	33.00	0.49	38.29	33.49	56.00	46.00	17.71	12.51
5.119	31.10	24.20	0.56	31.66	24.76	60.00	50.00	28.34	25.24

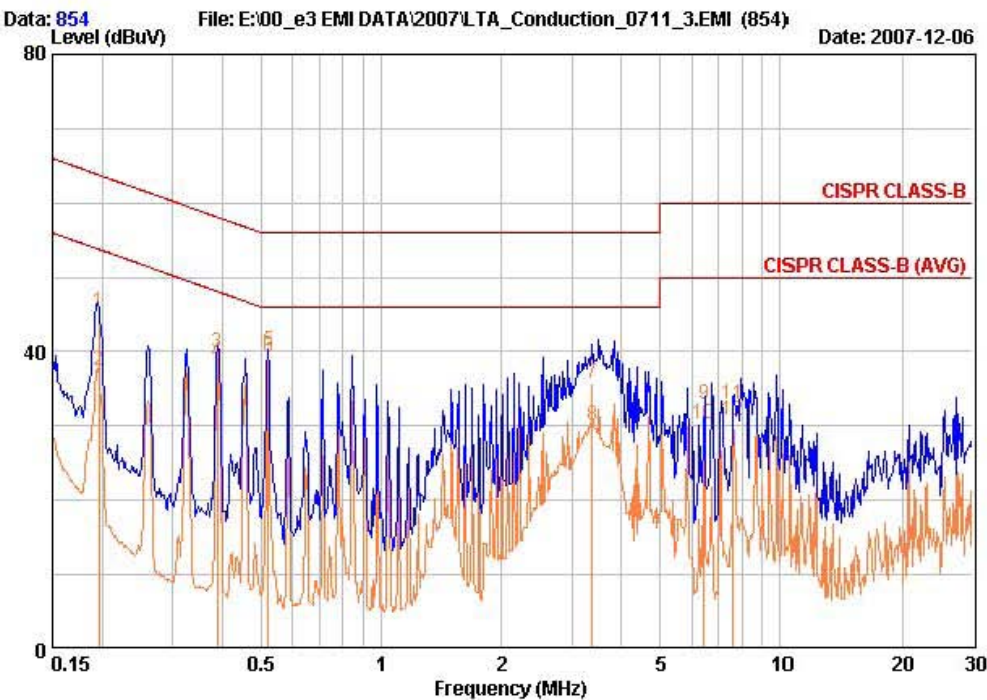
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

AC Conducted Emissions –Line



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EUT / Model No. : AT570	Phase : LINE
Test Mode : 802.11g mode	Test Power : 120 / 60
Temp./Humi. : 24 / 15	Test Engineer : B.S.KIM



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.196	45.10	37.30	0.21	45.31	37.51	63.78	53.78	18.47	16.27
0.388	39.60	38.10	0.37	39.97	38.47	58.11	48.11	18.13	9.63
0.520	39.80	39.00	0.29	40.09	39.29	56.00	46.00	15.91	6.71
3.380	35.10	29.60	0.57	35.67	30.17	56.00	46.00	20.33	15.83
6.449	32.40	29.80	0.57	32.97	30.37	60.00	50.00	27.03	19.63
7.620	32.30	30.20	0.61	32.91	30.81	60.00	50.00	27.09	19.19

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

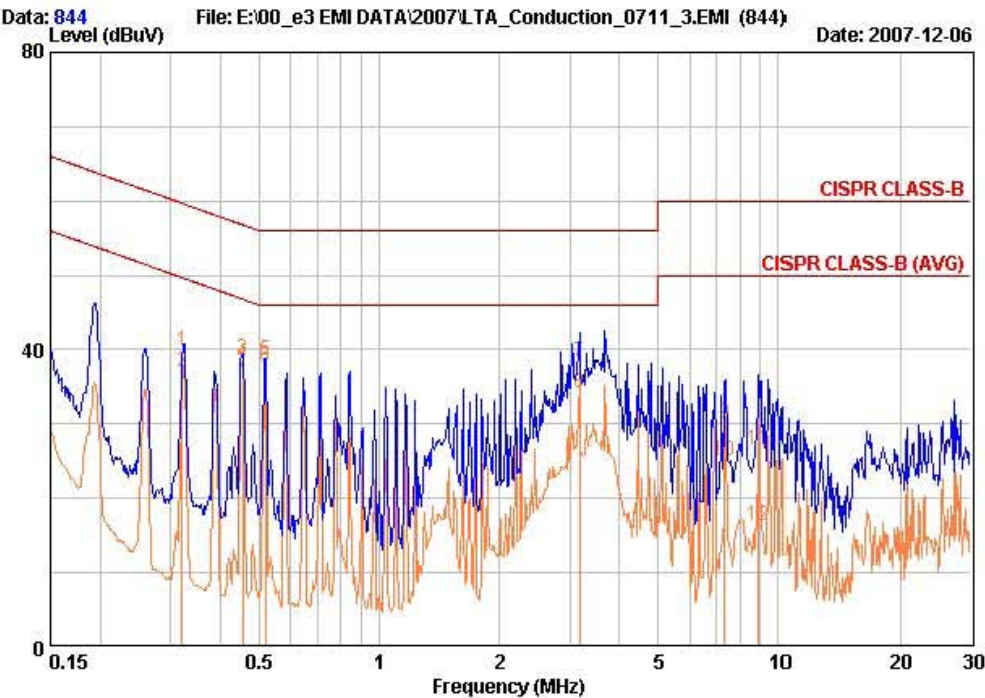


AC Conducted Emissions –Neutral



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EUT / Model No. :	AT570	Phase	: NEUTRAL
Test Mode	: 802.11g mode	Test Power	: 120 / 60
Temp./Humi.	: 24 / 15	Test Engineer	: B.S.KIM



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.321	39.50	36.80	0.31	39.81	37.11	59.68	49.68	19.88	12.58
0.454	38.50	37.90	0.33	38.83	38.23	56.80	46.80	17.97	8.57
0.519	38.30	37.50	0.29	38.59	37.79	56.00	46.00	17.41	8.21
3.176	37.70	33.70	0.63	38.33	34.33	56.00	46.00	17.67	11.67
7.319	29.60	24.50	0.58	30.18	25.08	60.00	50.00	29.82	24.92
8.900	26.10	15.70	0.59	26.69	16.29	60.00	50.00	33.31	33.71

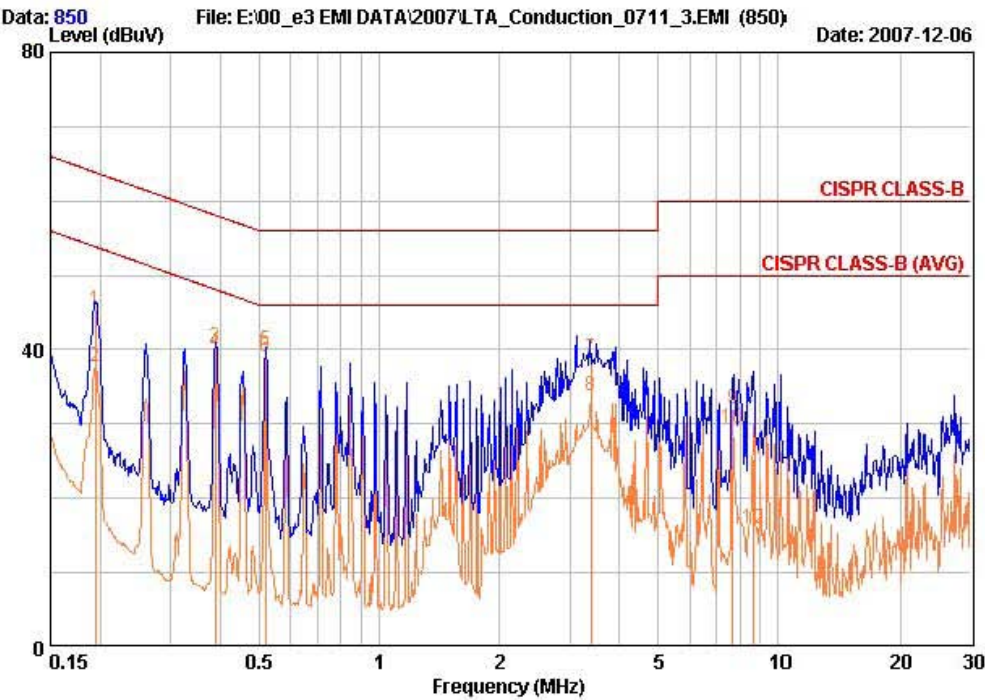
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

AC Conducted Emissions –Line



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EUT / Model No. : AT570	Phase : LINE
Test Mode : Active sync mode	Test Power : 120 / 60
Temp./Humi. : 24 / 15	Test Engineer : B.S.KIM



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.194	45.10	37.40	0.23	45.33	37.63	63.86	53.86	18.53	16.23
0.389	40.00	39.20	0.38	40.38	39.58	58.09	48.09	17.71	8.51
0.519	39.60	38.80	0.29	39.89	39.09	56.00	46.00	16.11	6.91
3.389	38.20	33.30	0.57	38.77	33.87	56.00	46.00	17.23	12.13
7.687	31.50	28.80	0.62	32.12	29.42	60.00	50.00	27.88	20.58
8.638	24.70	15.20	0.61	25.31	15.81	60.00	50.00	34.69	34.19

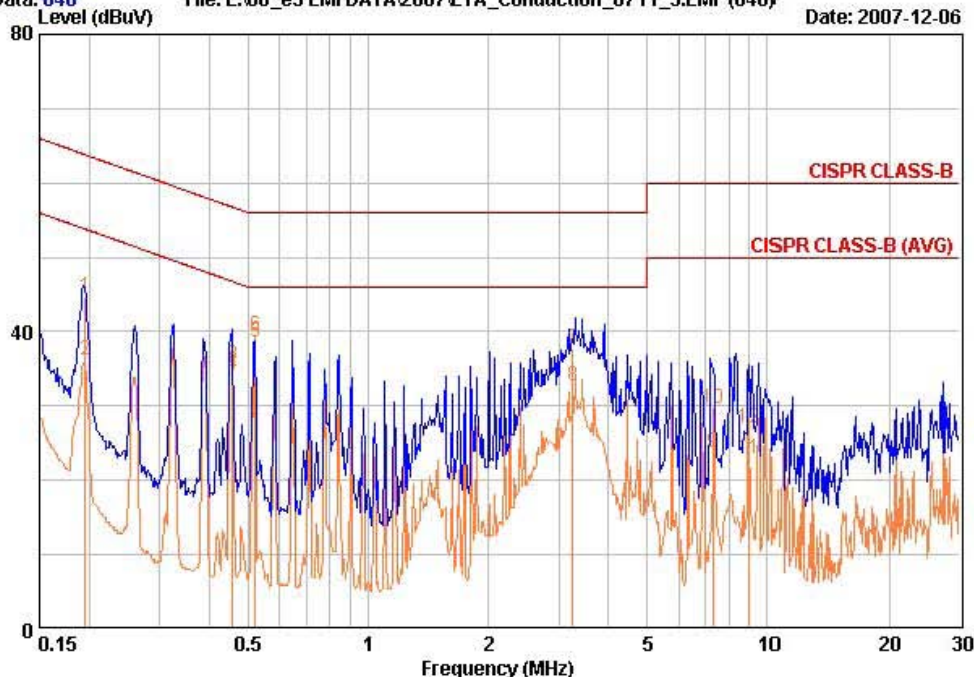
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

**AC Conducted Emissions –Neutral**

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EUT / Model No. : AT570	Phase : NEUTRAL
Test Mode : Active sync mode	Test Power : 120 / 60
Temp./Humi. : 24 / 15	Test Engineer : B.S.KIM

Data: 848 File: E:\00\_e3 EMI DATA\2007\LTA\_Conduction\_0711\_3.EMI (848) Date: 2007-12-06



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.195	44.50	36.00	0.22	44.72	36.22	63.82	53.82	19.10	17.60
0.458	35.30	34.00	0.33	35.63	34.33	56.73	46.73	21.10	12.40
0.522	39.20	38.30	0.29	39.49	38.59	56.00	46.00	16.51	7.41
3.256	37.20	32.10	0.61	37.81	32.71	56.00	46.00	18.19	13.29
7.294	29.10	23.10	0.57	29.67	23.67	60.00	50.00	30.33	26.33
9.012	26.50	22.40	0.58	27.08	22.98	60.00	50.00	32.92	27.02

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss



APPENDIX

**TEST EQUIPMENT USED FOR TESTS**

	Description	Model No.	Serial No.	Manufacturer	Next Cal. Date
1	Spectrum Analyzer	8594E	3649A03649	HP	Apr-08
2	Signal Generator	8648C	3623A02597	HP	Apr-08
3	Attenuator (3dB)	8491A	37822	HP	Oct-08
4	Attenuator (10dB)	8491A	63196	HP	Oct-08
5	EMI Test Receiver	ESVD	843748/001	R&S	Aug-08
6	LISN	KNW-407	8-1430-1	Kyoritsu	Oct-08
7	Two-Line V-Network	ESH3-Z5	893045/017	R&S	Oct-08
8	RF Amplifier	8447D	2949A02670	HP	Jan-08
9	RF Amplifier	8447D	2439A09058	HP	Oct-08
10	RF Amplifier	8449B	3008A02126	HP	Apr-09
11	Test Receiver	ESHS10	828404009	R&S	Aug-08
12	TRILOG Antenna	VULB 9160	9160-3212	SCHWARZBECK	Jul-08
13	Log.-Per. Antenna	VULP 9118	9118 A 401	SCHWARZBECK	Apr-09
14	Biconical Antenna	BBA 9106	VHA 9103-2315	SCHWARZBECK	Apr-09
15	Horn Antenna	3115	00055005	ETS LINDGREN	Mar-09
16	Dipole Antenna	VHA9103	2116	Schwarzbeck	Nov-08
17	Dipole Antenna	VHA9103	2117	Schwarzbeck	Nov-08
18	Dipole Antenna	UHA9105	2261	Schwarzbeck	Nov-08
19	Dipole Antenna	UHA9105	2262	Schwarzbeck	Nov-08
20	Spectrum Analyzer	8591E	3649A05888	HP	Oct-08
21	Spectrum Analyzer	8563E	3425A02505	HP	Apr-08
22	Hygro-Thermograph	THB-36	0041557-01	ISUZU	May-08
23	Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	Jun-08
24	RF Switch	MP59B	6200414971	ANRITSU	Jun-08
25	RF Switch	MP59B	6200438565	ANRITSU	Jun-08
26	Power Divider	11636A	6243	HP	Oct-08
27	DC Power Supply	6622A	3448A03079	HP	Oct-08
28	Attenuator (30dB)	11636A	6243	HP	Oct-08
29	Frequency Counter	5342A	2826A12411	HP	Apr-08
30	Power Meter	EPM-441A	GB32481702	HP	Apr-08
31	Power Sensor	8481A	2702A64048	HP	Apr-08
32	Audio Analyzer	8903B	3729A18901	HP	Oct-08
33	Modulation Analyzer	8901B	3749A05878	HP	Oct-08
34	TEMP & HUMIDITY Chamber	YJ-500	L05022	JinYoung Tech	Oct-08
35	LOOP-ANTENNA	FMZB 1516	151602/94	SCHWARZBECK	Mar-09