

CERTIFICATIO OF COMPLIANCE

FCC ID.

VCVSQ201

APPLICANT

ITian Corporation.

FCC Classification	:	Digital Transmission System (DTS)
Manufacturing Description	:	Square One Personal Server
Manufacturer	:	ITian Corporation
Model name	:	SQ201-W, SQ201-N
Test Device Serial No.:	:	Identical prototype
Rule Part(s)	:	FCC Part 15.247 Subpart C; ANSI C-63.4-2003
Frequency Range	:	2412MHz ~ 2462MHz (DSSS/OFDM)
Max. Output Power	:	16.5dBm Peak Conducted (802.11b) 15.9dBm Peak Conducted (802.11g)
Data of issue	:	June 14, 2007

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.
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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	2007-09-30	ECT accredited Lab.
RRL	KOREA	KR0049	2007-07-13	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

3. Test Report

3.1 Summary of tests

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

The Mini PCI WLAN Module is certified by FCC(FCC ID: NLFGMIWLGR2).

15.247(d)	Band Edge	< 54 dBuV (at 3m)	Radiated	C
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II. Additional items

15.209 / 15.109	Field Strength of Harmonics	< 54 dBuV (at 3m)	Radiated	C
15.207 / 15.107	AC Conducted Emissions	EN 55022	Line Conducted	C

II. Additional items

15.203	Antenna requirement	-	-	C
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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

→ Part 15.203 – WLAN connector:

The Antenna Connector is the reverse polarity connector of SMA type. Refer to the Operational Description.

3.2 Technical Characteristics Test

3.2.5 Band Edge – Radiated Measurement-

Procedure:

Radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a)

The spectrum analyzer is set to:

Center frequency = the highest, the lowest channels

PEAK: RBW = VBW = 1MHz, Sweep=Auto

Average: RBW = 1MHz, VBW=10Hz, Sweep=Auto

Measurement Distance: 3m

Polarization: Horizontal / Vertical

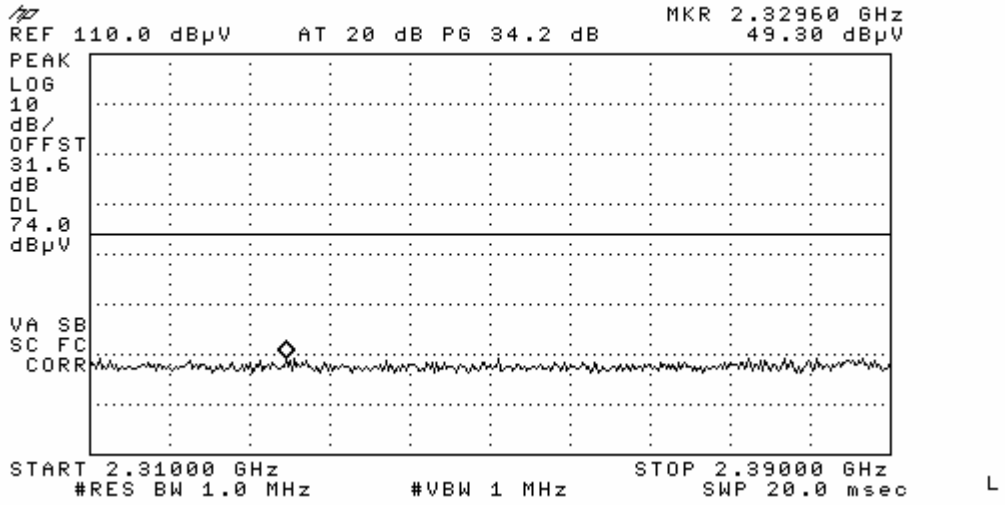
Measurement Data:

- Refer to the next page.

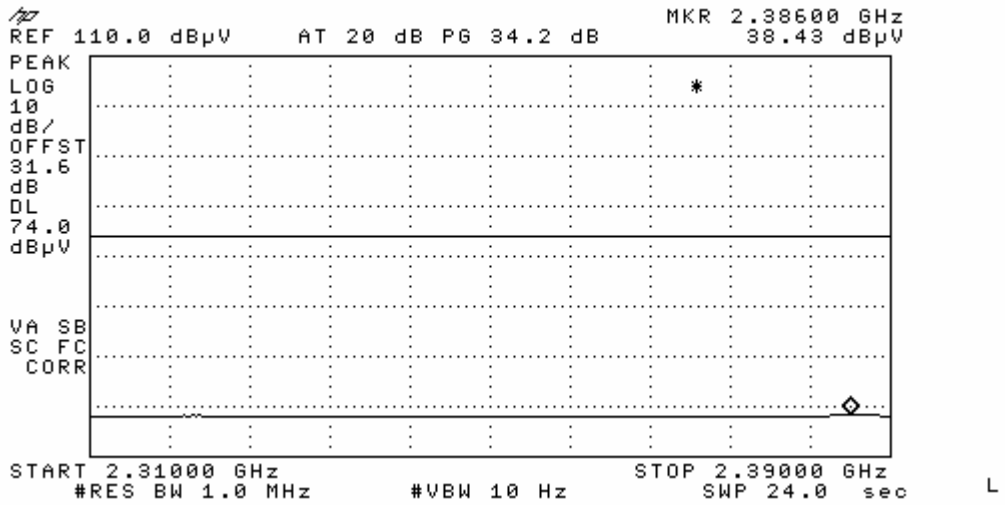
Minimum Standard: FCC Part 15.209(a)

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

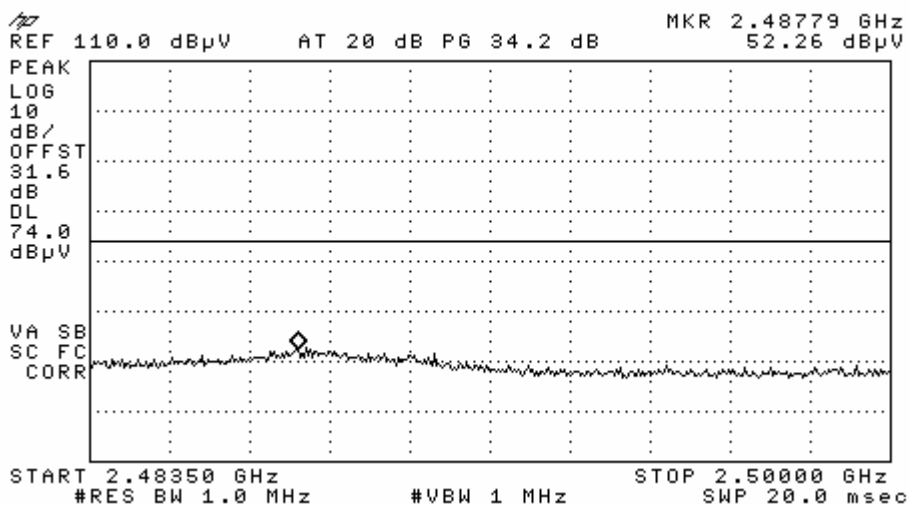
Band Edge – 802.11b / CH-LOW
Detector mode: PEAK / Polarity: Horizontal



Band Edge – 802.11b / CH-LOW
Detector mode: Average / Polarity: Horizontal

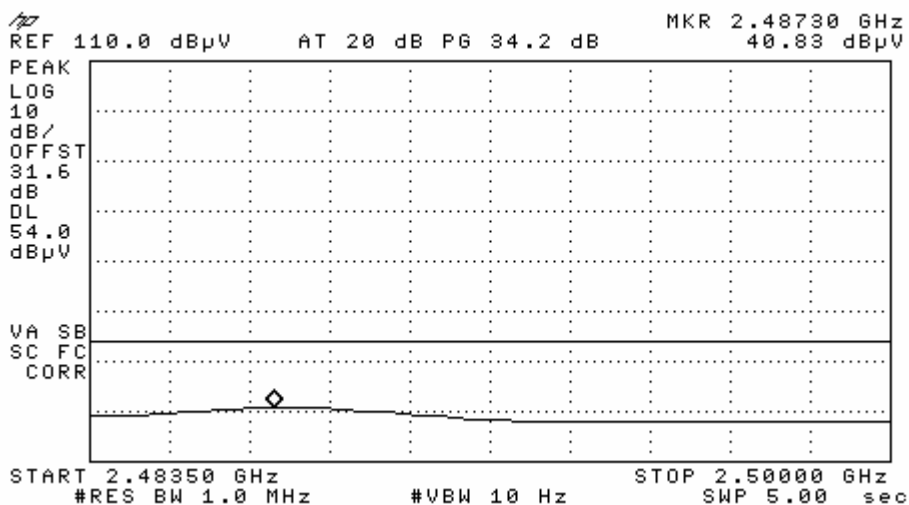


Band Edge – 802.11b / CH-HIGH
Detector mode: PEAK / Polarity: Horizontal



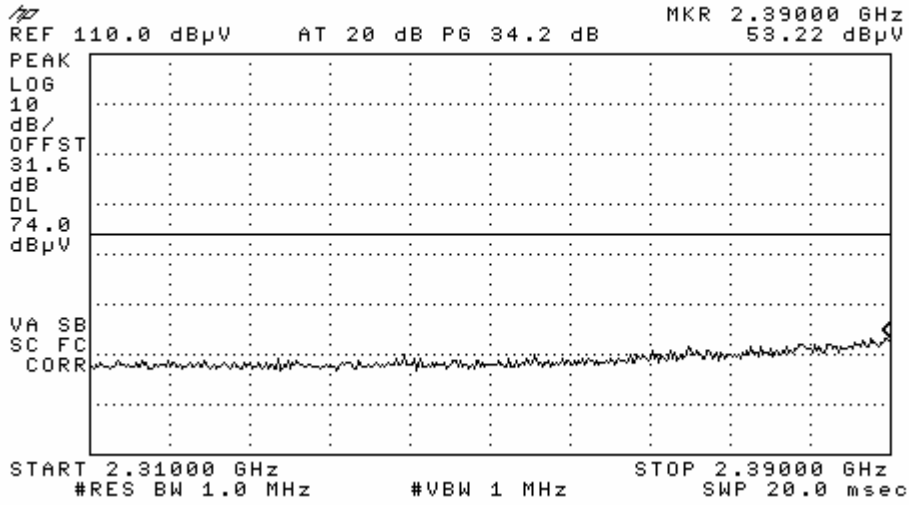
L

Band Edge – 802.11b / CH-HIGH
Detector mode: Average / Polarity: Horizontal



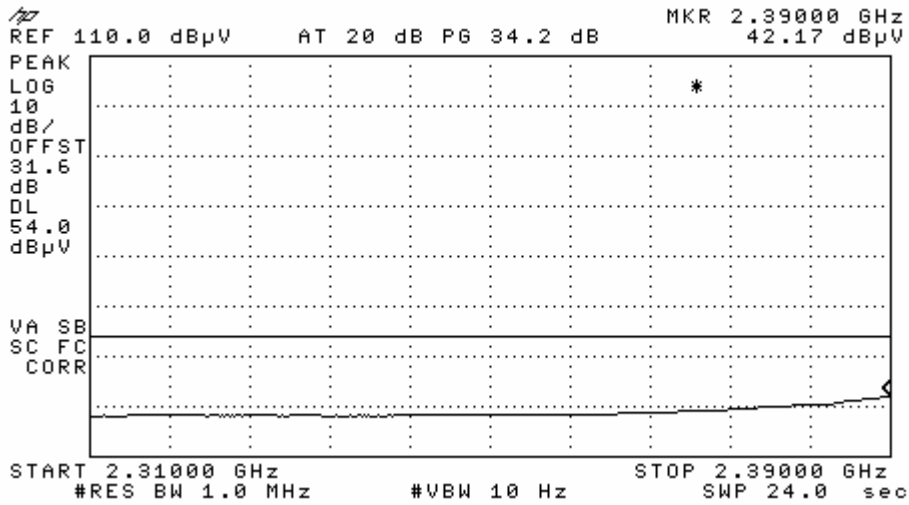
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Band Edge – 802.11g / CH-LOW
Detector mode: PEAK / Polarity: Vertical



L

Band Edge – 802.11g / CH-LOW
Detector mode: Average / Polarity: Vertical



L

3.2.2 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 ~ 10th harmonic.

RBW = 100 kHz (30MHz ~ 1 GHz)

VBW \geq RBW

= 1 MHz (1 GHz ~ 10th harmonic)

Span = 100 MHz

Detector function = peak

Trace = max hold

Sweep = auto

Measurement Data: Complies

→ For testing above 1GHz,

The emissions level of the EUT is reported in peak mode. If the level in peak mode is not complies with the limit in average mode, then the emissions will be measured in average mode again and reported.

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.

1. Measurement Data: 802.11b mode

Low channel		Mid channel		High channel	
Frequency (MHz)	Level (dBuV)	Frequency (MHz)	Level (dBuV)	Frequency (MHz)	Level (dBuV)
4824	48.9	4878	50.3	4924	52.5
7236	51.2	7317	51.1	7386	51.7
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
Measurement uncertainty		± 6 dB			

No other emissions were detected at a level greater than 20dB below limit.

2. Measurement Data: 802.11g mode

Low channel		Mid channel		High channel	
Frequency (MHz)	Level (dBuV)	Frequency (MHz)	Level (dBuV)	Frequency (MHz)	Level (dBuV)
4824	48.3	4878	49.3	4924	50.5
7236	51.1	7317	51.4	7386	51.7
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
Measurement uncertainty		± 6 dB			

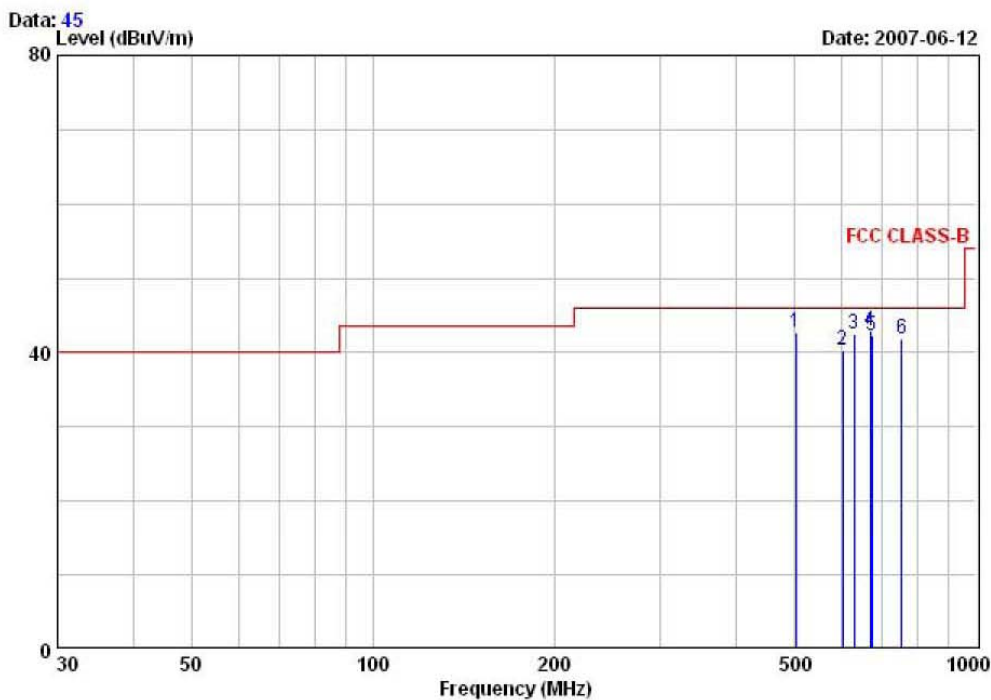
No other emissions were detected at a level greater than 20dB below limit.

3. Measurement Data: other spurious



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EUT/Model No.: SQ201 TEST MODE: WLAN + PING + FILE UP DOWN mode
Temp Humi : 18 / 48 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	502.84	-5.58	42.62	46.00	3.38	100	241	VERTICAL
2	602.14	-2.83	40.37	46.00	5.63	385	141	HORIZONTAL
3	628.41	-2.61	42.49	46.00	3.51	100	241	VERTICAL
4	667.24	-1.97	42.93	46.00	3.07	100	314	VERTICAL
5	671.57	-1.92	42.28	46.00	3.72	100	205	VERTICAL
6	753.48	0.03	41.83	46.00	4.17	100	314	VERTICAL

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

3.2.3 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

Frequency Range (MHz)	Conducted Limit (dBuV)	
	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

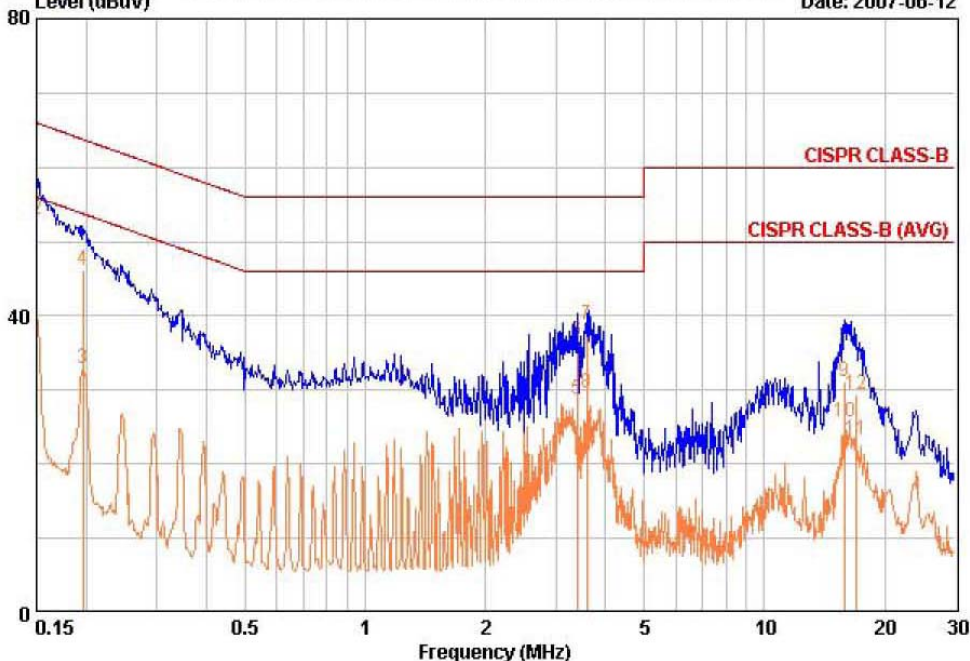
AC Conducted Emissions –Line



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EUT / Model No. : SQ201 Phase : LINE
 Test Mode : WLAN + PING + File Up Down mode Test Power : 120 / 60
 Temp./Humi. : 25 / 51 Test Engineer : B.S.KIM

Data: 150 Level (dBuV) File: E:\00_e3 EMI DATA\2007\LTA_Conduction_0706_1.EMI (489) Date: 2007-06-12



Freq MHz	RD		C.F	Result		Limit		Margin	
	QP dBuV	AV dBuV		QP dBuV	AV dBuV	QP dBuV	AV dBuV	QP dB	AV dB
0.150	52.40	39.17	0.59	52.99	39.76	66.00	56.00	13.01	16.25
0.197	46.00	32.62	0.21	46.21	32.83	63.76	53.76	17.55	20.93
3.399	36.10	28.13	0.57	36.67	28.70	56.00	46.00	19.33	17.30
3.584	38.30	29.08	0.52	38.82	29.60	56.00	46.00	17.18	16.40
15.885	30.00	24.44	1.22	31.22	25.66	60.00	50.00	28.78	24.34
17.018	28.00	21.98	1.37	29.37	23.35	60.00	50.00	30.63	26.65

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

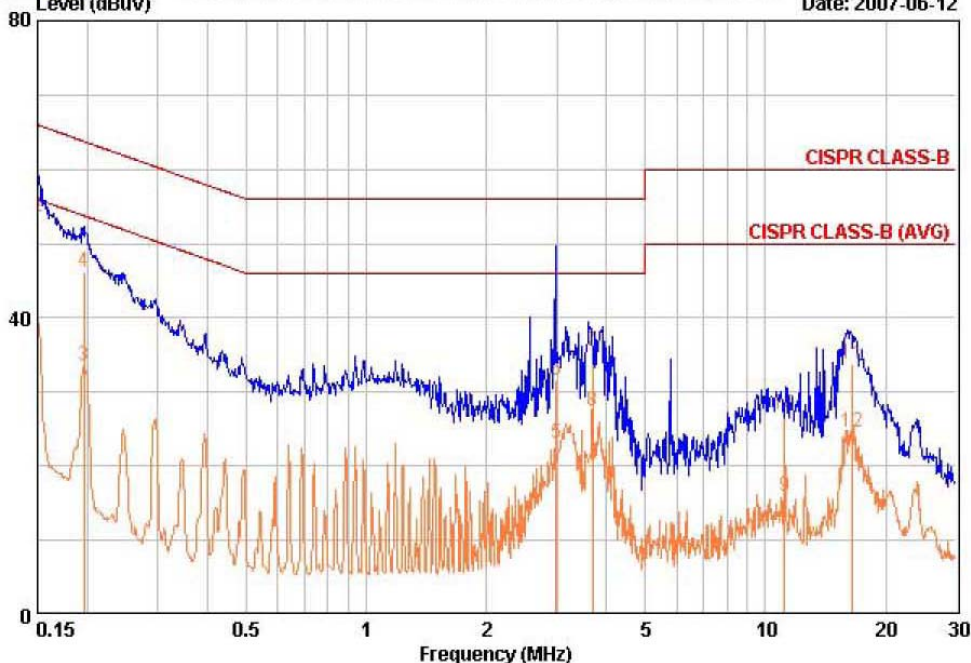
AC Conducted Emissions –Neutral:



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EUT / Model No. : SQ201 Phase : NEUTRAL
 Test Mode : WLAN+ PING + File Up Down mode Test Power : 120 / 60
 Temp./Humi. : 25 / 51 Test Engineer : B.S.KIM

Data: 148 Level (dBuV) File: E:\00_e3 EMI DATA\2007\LTA_Conduction_0706_1.EMI (489) Date: 2007-06-12



Freq MHz	RD		C.F	Result		Limit		Margin	
	QP dBuV	AV dBuV		QP dBuV	AV dBuV	QP dBuV	AV dBuV	QP dB	AV dB
0.150	53.00	39.35	0.57	53.57	39.92	66.00	56.00	12.43	16.08
0.197	45.96	33.32	0.21	46.17	33.53	63.76	53.76	17.59	20.23
2.994	31.00	22.40	0.64	31.64	23.04	56.00	46.00	24.36	22.96
3.684	35.00	27.10	0.46	35.46	27.56	56.00	46.00	20.54	18.44
11.149	26.00	15.00	0.93	26.93	15.93	60.00	50.00	33.07	34.07
16.514	32.50	23.40	1.19	33.69	24.59	60.00	50.00	26.31	25.41

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 Generater	8648C	3623A02597	HP	Apr-08
3	Attenuator (3dB)	8491A	37822	HP	Nov-07
4	Attenuator (10dB)	8491A	63196	HP	Nov-07
5	EMI Test Receiver	ESVD	843748/001	R&S	Jan-08
6	LISN	KNW-407	8-1430-1	Kyoritsu	Jan-08
7	Two-Line V-Network	ESH3-Z5	893045/017	R&S	Jan-08
8	RF Amplifier	8447D	2949A02670	HP	Jan-08
9	RF Amplifier	8447D	2439A09058	HP	Jan-08
10	RF Amplifier	8449B	3008A02126	HP	Apr-09
11	Test Receiver	ESHS10	828404009	R&S	Jan-08
12	TRILOG Antenna	VULB 9160	9160-3212	SCHWARZBECK	Jul-07
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	Horn Antenna	BBHA 9120D	0499	Schwarzbeck	Jun-07
17	Dipole Antenna	VHA9103	2116	Schwarzbeck	Nov-07
18	Dipole Antenna	VHA9103	2117	Schwarzbeck	Nov-07
19	Dipole Antenna	UHA9105	2261	Schwarzbeck	Nov-07
20	Dipole Antenna	UHA9105	2262	Schwarzbeck	Nov-07
21	Spectrum Analyzer	8591E	3649A05888	HP	Jan-08
22	Spectrum Analyzer	8563E	3425A02505	HP	Apr-08
23	Hygro-Thermograph	THB-36	0041557-01	ISUZU	Feb-08
24	Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	Jun-07
25	RF Switch	MP59B	6200414971	ANRITSU	Jun-07
26	RF Switch	MP59B	6200438565	ANRITSU	Jun-07
27	Power Divider	11636A	6243	HP	Nov-07
28	DC Power Supply	6622A	3448A03079	HP	Oct-07
29	Attenuator (30dB)	11636A	6243	HP	Nov-07
30	Frequency Counter	5342A	2826A12411	HP	Apr-08
31	Power Meter	EPM-441A	GB32481702	HP	Apr-08
32	Power Sensor	8481A	2702A64048	HP	Apr-08
33	Audio Analyzer	8903B	3729A18901	HP	Nov-07
34	Modulation Analyzer	8901B	3749A05878	HP	Nov-07
35	TEMP & HUMIDITY Chamber	YJ-500	L05022	JinYoung Tech	Oct-07
36	LOOP-ANTENNA	FMZB 1516	151602/94	SCHWARZBECK	Mar-09