

Nemko Korea Co., Ltd.

300-2, Osan-Ri, Mohyun-Myun, Yongin-City, Kyungki-Do, KOREA

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FCC EVALUATION REPORT FOR CERTIFICATION

Manufacturer:

Samsung Electronics Co., Ltd.
416, Maetan3-Dong, Yeongtong-Gu,
Suwon-City, Kyungki-Do, Korea
Attn : Mr. Chang-Young, Choi

Dates of Issue : May 03, 2004
Test Report No. : NK2EE257
Test Site : Nemko Korea Co., Ltd.
EMC site, Korea

MODEL

A3LAT50L7

Brand Name

Samsung

Contact Person

Samsung Electronics Co., Ltd.
416, Maetan3-Dong, Yeongtong-Gu, Suwon-City,
Kyungki-Do, Korea
Mr. Chang-Young, Choi
Telephone No. : +82 31 200 5419

FCC Rule Part(s): Part 15 & 2
Classification : FCC Class B Device
EUT Type: DLP Projection TV

The device bearing the FCC ID specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2001.

I attest to the accuracy of data and all measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



Tested By : J. H. Ko
Engineer



Reviewed By : H.H. Kim
Manager & Chief Engineer

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SCOPE

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC part 15.

Responsible Party :	Samsung Electronics Co., Ltd.
Contact Person :	Mr. Chang-Young, Choi Tel No.: +82 31 200 5419
Manufacturer :	Samsung Electronics Co., Ltd. 416, Maetan3-Dong, Yeongtong-Gu, Suwon-City, Kyungki-Do, Korea Tel No.: +82 31 200 5419

- FCC ID: A3LAT50L7
- Model: AT50L7
- EUT Type: DLP Projection TV

- Classification: FCC Class B
- Rule Part(s): FCC Part 15 & Part 2
- Test Procedure(s): ANSI C63.4 (2001)
- Dates of Test: April 13, 2004 to April 26, 2004
- Place of Tests: Nemko Korea Co., Ltd. EMC Site
- Test Report No.: NK2EE257

INTRODUCTION

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2001) was used in determining radiated and conducted emissions emanating from **Samsung Electronics Co., Ltd.**

FCC ID : **A3LAT50L7, DLP Projection TV.**

These measurement tests were conducted at **Nemko Korea Co., Ltd. EMC Laboratory .**

The site address is 300-2, Osan-Ri, Mohyun-Myun, Yongin-City, Kyungki-Do, KOREA

The area of Nemko Korea Corporation Ltd. EMC Test Site is located in a mountain area at 80 kilometers (48 miles) southeast and Incheon International Airport (Incheon Airport), 30 kilometers (18miles) south-southeast from central Seoul.

It is located in the valley surrounded by mountains in all directions where ambient radio signal conditions are quiet and a favorable area to measure the radio frequency interference on open field test site for the computing and ISM devices manufactures.

The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4 on 2001.



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Fig. 1. The map above shows the Seoul in Korea vicinity area. The map also shows Nemko Korea Corporation Ltd. EMC Lab. and Incheon Airport.

TEST CONDITIONS & EUT INFORMATION

Operating During Test

The EUT was tuned to the output frequency of signal generator, with a pattern defined as 100/0/75/0 in the CCIR recommendation 471.

Support Equipment

DLP Projection TV (EUT)	Samsung, FCC ID : A3LAT50L7 1.8m unshielded AC power cable	S/N : N/A
Pattern Generator	Model: PM 5518-TX 1.8m unshielded AC power cable	S/N: LO6166
PC	Samsung, Model : M6200-ECIM 1.8m unshielded AC power cable	S/N : 450092DN101021
Keyboard	Sejin, Model : 104DYW10-100 1.6 unshielded Din cable	S/N : N/A
PS/2 Mouse	Samsung, Model : SMP2000WX 1.8m Unshielded Din cable	S/N : N/A
Serial Mouse	Allspirit, Model : WS-V1-400 1.5m unshielded Din cable	S/N : B050402
Printer	H.P, Model : C5870A 1.5m shielded D-sub cable	S/N : SG88R131GW
Printer Adaptor	Yokogawa, Model : C4557-60104 1.8m unshielded AC power cable 1.2m unshielded DC power cable	S/N : N/A

EUT Information

Clock	18.432MHz, 50MHz, 74MHz, 100MHz, 200MHz, 400MHz
Chipset(s)	CXA2069, Sony (AV Switch), VSP9437, Micronas (Decoder) A8904, Allegro (Motor Controller)
Tuner Type	Splitter : UMX-NT-034, Tuner : TMQH2-003A (x 2)
Antenna Description	75 ohm unbalance
Intermediate Frequency	Video : 45.75MHz, Audio : 41.25MHz
Frequency tuning Range	VHF CH2-CH13 UHF CH14-CH69
Power Consumption	200W
Port(s)	Antenna Terminal x 3EA, S-Video IN x 2EA, Audio IN x 6EA, Composite Video IN x 2EA, Composite Video OUT x 1EA, Audio OUT x 1EA, Component Video IN x 2EA, DVI x 1EA Analog D-Sub x 1EA, HDMI IN x 1EA

Description of Display Modes

Mode	Resolution	Horizontal Frequency [kHz]	Vertical Frequency[Hz]	Pixel Clock[MHz]	Sync Polarity (H/V)
VGA	640 x 350	31.47	70.00	25.175	+/-
		31.47	70.00	28.322	-/-
	640 x 480	37.93	85.00	35.5	-/+
		31.47	60.00	25.175	-/+
		35.00	66.70	30.24	-/-
		37.86	72.80	31.50	-/-
		37.50	75.00	31.50	-/-
		43.27	85.00	36.00	-/-
SVGA	800 X 600	35.16	56.30	36.00	-+/-
		37.88	60.30	40.00	+/-+
		48.08	72.20	50.00	+/+
		46.87	75.00	49.50	+/+
		53.67	85.10	56.25	+/+
	832 x 624	49.73	74.60	57.284	-/+
XGA	1024 x 768	48.36	60.00	65.00	-/-
		56.40	70.10	75.00	-/-
		60.02	75.00	78.75	+/-
DTV	1920 x 1080i	33.75	60	74.25	X
	1280 x 720p	45.00	60	74.25	X
	720 x 483p	31.47	60	27	X

DESCRIPTION OF TESTS

Conducted Emissions

The Line conducted emission test facility is located inside a 4 X 7 X 2.5 meter shielded enclosure.

It is manufactured by EM engineering. The shielding effectiveness of the shielded room is in accordance with MIL-STD-285 or NSA 65-6.

A 1m X 1.5m wooden table 0.8m height is placed 0.4m away from the vertical wall and 1.5m away from the side of wall of the shielded room

Rohde & Schwarz (ESH3-Z5) and Kyoritsu (KNW-408) of the 50ohm/50uH Line Impedance Stabilization Network(LISN) are bonded to the shielded room.

The EUT is powered from the Rohde & Schwarz LISN and the support equipment is powered from the Kyoritsu LISN. Power to the LISN s are filtered by high-current high insertion loss Power line filters. The purpose of filter is to attenuate ambient signal interference and this filter is also bonded to shielded enclosure. All electrical cables are shielded by tinned copper zipper tubing with inner diameter of 1/2".

If DC power device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the LISNs,

All interconnecting cables more than 1 meter were shortened by non inductive bundling (serpentine fashion) to a 1 meter length.

Sufficient time for EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer to determine the frequency producing the maximum EME from the EUT. The spectrum was scanned from 150kHz to 30MHz with 20msec sweep time.

The frequency producing the maximum level was re-examined using the EMI test receiver. (Rohde & Schwarz ESCS30).

The detector function were set to CISPR quasi-peak mode & average mode.

The bandwidth of receiver was set to 9KHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.

Each emission was maximized by; switching power lines; varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and of support equipment, and powering the monitor from the floor mounted outlet box and computer aux AC outlet, if applicable; which ever determined the worst case emission.

Each EME reported was calibrated using the R&S signal generator.

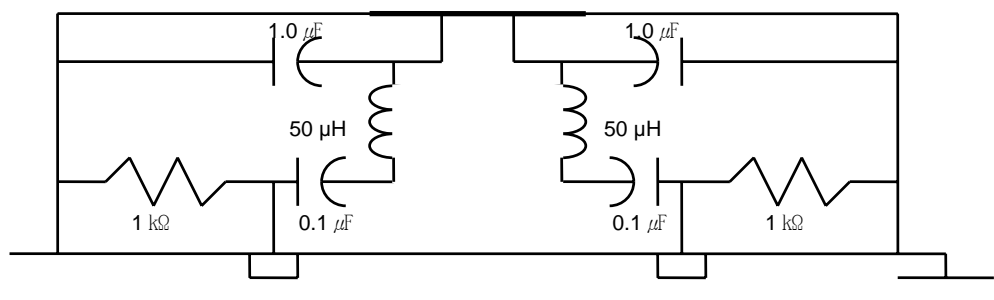


Fig. 2. LISN Schematic Diagram

DESCRIPTION OF TESTS

Radiated Emissions

Preliminary measurement were made indoors at 3 meter using broad band antennas, broadband amplifier, and spectrum analyzer to determine the frequency producing the maximum EME. Appropriate precaution was taken to ensure that all EME from the EUT were maximized and investigated. The Technology configuration, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna was note for each frequency found.

The spectrum was scanned from 30 to 1000MHz using Biconical log Antenna(ARA, LPB-2520/A). Above 1GHz, Doppels Teg Horn antenna (EMCO, DAA-37121:upto 1~18GHz) was used.

Final Measurements were made outdoors at 3 or 10m test range using Logbicon Super Antenna(Schwarzbeck, VULB9166) or Doppels Teg Horn antenna.(EMCO, DAA-37121) The test equipment was placed on a wooden table.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.

Each frequency found during pre-scan measurements was reexamined and investigated using EMI test receiver.(ESCS30)

The detector function was set to CISPR peak mode or quasi-peak mode or Average mode and the bandwidth of the receiver was set to 120KHz or 1MHz depending on the frequency or type of signal.

The half wave dipole antenna was tuned to the frequency found during preliminary radiated measurements.

The EUT support equipment and interconnecting cables were re configured to the setup producing the maximum emission for the frequency and were placed on top of a 0.8m high non- metallic 1.0X 1.5 meter table.

The EUT, support equipment and interconnecting cables were re-arranged and manipulated to maximize each EME emission.

The turn table containing the Technology was rotated; the antenna height was varied 1 to 4meter and stopped at the azimuth or height producing the maximum emission Each emission was maximized by : switching power lines; varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and of support equipment, and powering the monitor from the floor mounted outlet box and computer aux AC outlet, if applicable; which ever determined the worst case emission.

Each EME reported was calibrated using the R/S signal generator.

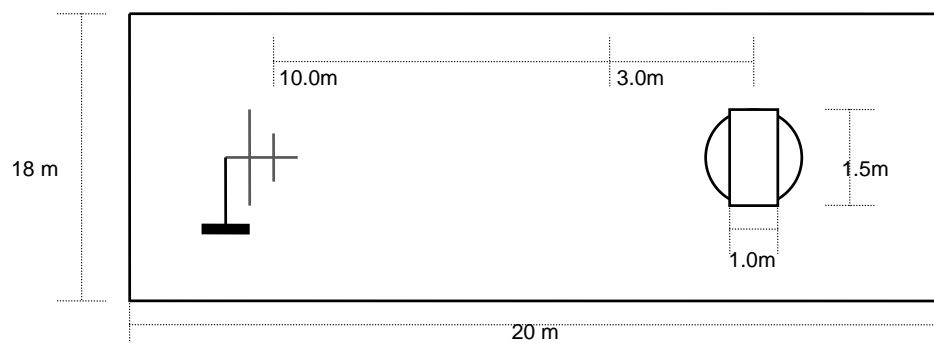


Fig. 3. Dimensions of Outdoor Test Site

DESCRIPTION OF TESTS

Antenna-Conducted Power Measurements

Power on the receive antenna terminals was to be determined by measurement of the voltage present at these terminals.

Antenna –conducted power measurements was performed with the EUT antenna terminals connected directly to measuring instrument (Rohde&Schwarz, ESCS 30) using a impedance-matching network(Rohde&Schwarz, RAM358.5414.02) to connect the measurement instrument to the antenna terminals of the EUT. Losses in decibels in impedance-matching network used was added to the measured values in dBuV.

With the receiver tuned to one of the number of frequency and voltage present at the antenna input terminals over the frequency range specified in the individual equipment requirements. The measurements was repeated with the receiver tuned to another frequency until the number of frequencies had been successively measured.

Power on the receive antenna terminals in the ratio of V^2/R , where V is the loss-corrected voltage measured at the antenna terminals, and R is the impedance of the measuring instrument.

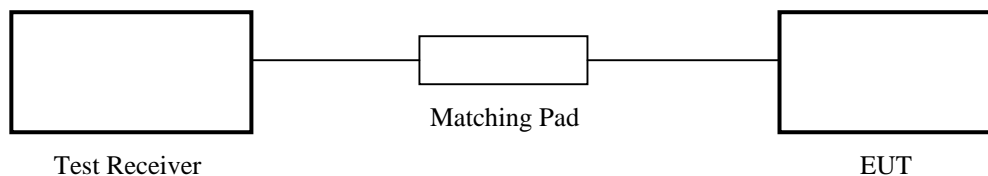


Fig. 4. Description of Test

DESCRIPTION OF TESTS

Measurements of isolation between the antenna and cable input terminals

Connect a signal generator to the antenna terminal or cable input terminal with an impedance matching device as required to Match the rate input impedance of EUT.

With an unmodulated input signal of 0dBm applied at from 54MHz to 800MHz, from the signal generator to the antenna terminal or cable input terminal of EUT and connect another antenna input terminal or cable input terminal to the measuring instrument using impedance matching device.

Isolation between the antenna input terminal and cable input terminals of at least 80dB from 54MHz to 216MHz, at least 60dB from 216MHz to 550MHz and at least 55dB from 550MHz to 806MHz. The 80dB standard applies at 216MHz and the 60dB Standard applies at 550MHz.

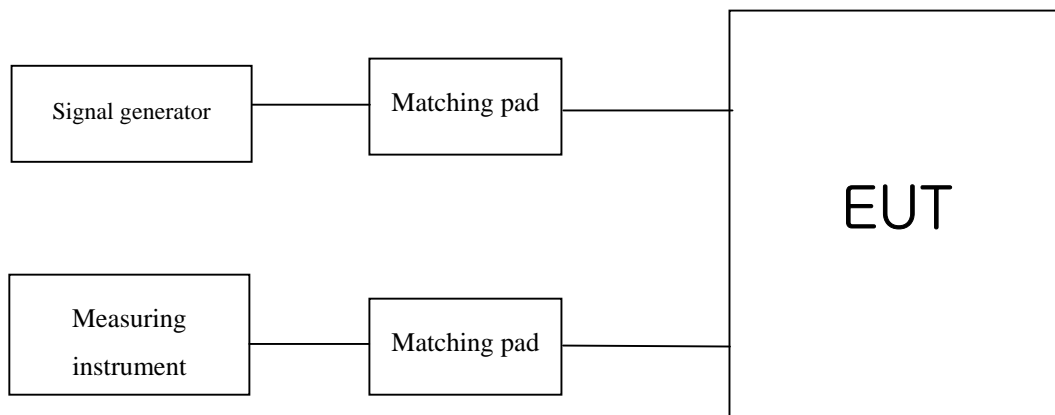


Fig. 5. Description of Test

TEST DATA

Conducted Emissions

FCC ID : A3LAT50L7

Test mode: TV Mode (Non-GND)

Frequency (MHz)	Test Level(dB μ V)		Line	Limit(dB μ V)		Margin(dBuV)	
	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.20	38.80	-	L	63.6	53.6	24.8	-
1.26	38.90	-	N	56.0	46.0	17.1	-
1.32	38.90	-	L	56.0	46.0	17.1	-
1.85	38.40	-	N	56.0	46.0	17.6	-
2.18	37.30	-	L	56.0	46.0	18.7	-
2.78	37.60	-	N	56.0	46.0	18.4	-

Table 1. Line Conducted Emissions Tabulated Data

NOTES:

1. Measurements using CISPR quasi-peak mode and average mode.
2. All modes of operation were investigated and the worst -case emission are reported. See attached Plots.
3. The limit for Class B device is on the FCC part section 15.107 (a).
4. LINE : L =Line , N = Neutral
5. Quasi peak level was lower than average limit, then average detector was not necessary



Tested by J. H. Ko

TEST DATA

Conducted Emissions

FCC ID : A3LAT50L7

Test mode: TV Mode (With-GND)

Frequency (MHz)	Test Level(dB μ V)		Line	Limit(dB μ V)		Margin(dBuV)	
	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.26	35.50	-	L	61.4	51.4	25.9	-
0.53	38.20	-	L	56.0	46.0	17.8	-
0.79	37.60	-	N	56.0	46.0	18.4	-
1.85	38.30	-	N	56.0	46.0	17.7	-
4.11	37.50	-	N	57.0	47.0	19.5	-
4.57	39.00	-	N	58.0	48.0	19.0	-

Table 2. Line Conducted Emissions Tabulated Data

NOTES:

1. Measurements using CISPR quasi-peak mode and average mode.
2. All modes of operation were investigated and the worst -case emission are reported. See attached Plots.
3. The limit for Class B device is on the FCC part section 15.107 (a).
4. LINE : L =Line , N = Neutral
5. Quasi peak level was lower than average limit, then average detector was not necessary



Tested by **J. H. Ko**

TEST DATA

Conducted Emissions

FCC ID : A3LAT50L7

Test mode: PC Monitor Mode (D-Sub, Resolution : 1280 x 720, 60Hz)

Frequency (MHz)	Test Level(dB μ V)		Line	Limit(dB μ V)		Margin(dBuV)	
	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.53	38.30	-	L	56.0	46.0	17.7	-
0.79	37.60	-	N	56.0	46.0	18.4	-
1.26	39.90	-	N	56.0	46.0	16.1	-
2.71	39.10	-	N	56.0	46.0	16.9	-
4.10	40.00	-	N	56.0	46.0	16.0	-
4.70	44.00	-	N	56.0	46.0	12.0	-

Table 3. Line Conducted Emissions Tabulated Data

NOTES:

1. Measurements using CISPR quasi-peak mode and average mode.
2. All modes of operation were investigated and the worst -case emission are reported.
The worst emission level was found when the EUT was tested under 1280 X 720, 60Hz resolution, therefore, the test data of this mode was recorded in the report. See attached Plots.
3. The limit for Class B device is on the FCC part section 15.107 (a).
4. LINE : L =Line , N = Neutral
5. Quasi peak level was lower than average limit, then average detector was not necessary



Tested by J. H. Ko

TEST DATA

Conducted Emissions

FCC ID : A3LAT50L7

Test mode: PC Monitor Mode (Digital DVI, Resolution : 1280 x 720, 60Hz)

Frequency (MHz)	Test Level(dB μ V)		Line	Limit(dB μ V)		Margin(dBuV)	
	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
1.25	38.80	-	L	56.0	46.0	17.2	-
1.79	38.80	-	N	56.0	46.0	17.2	-
2.25	38.90	-	L	56.0	46.0	17.1	-
4.30	44.20	-	N	56.0	46.0	11.8	-
4.50	44.70	-	N	56.0	46.0	11.3	-
4.70	44.80	-	L	56.0	46.0	11.2	-

Table 4. Line Conducted Emissions Tabulated Data

NOTES:

1. Measurements using CISPR quasi-peak mode and average mode.
2. All modes of operation were investigated and the worst -case emission are reported.
The worst emission level was found when the EUT was tested under 1280 X 720, 60Hz resolution, therefore, the test data of this mode was recorded in the report. See attached Plots.
3. The limit for Class B device is on the FCC part section 15.107 (a).
4. LINE : L =Line , N = Neutral
5. Quasi peak level was lower than average limit, then average detector was not necessary



Tested by **J. H. Ko**

PLOTS OF EMISSIONS

- Conducted Emission at the Mains port (TV Mode, Line, Non-GND)

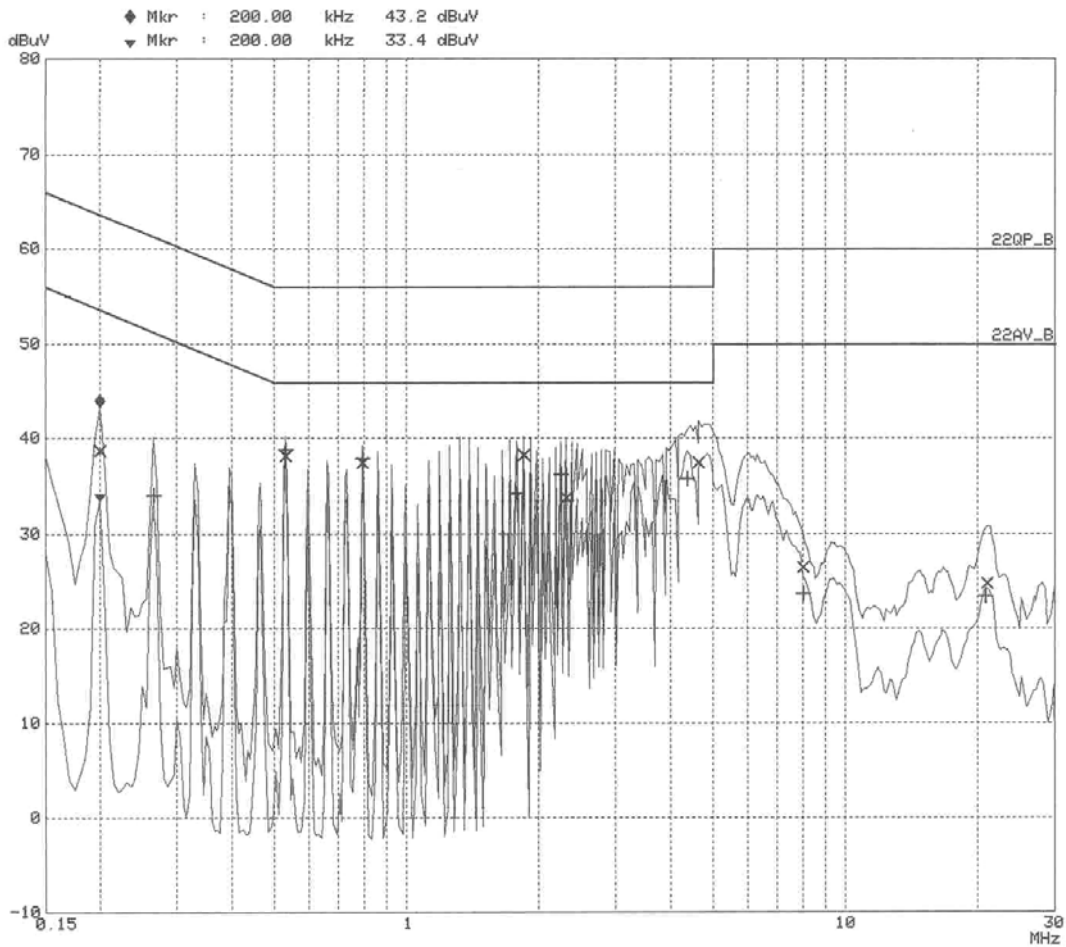
Comment: TV (Non GND)
 Line: L1
 File name: 257tnl.RES
 Date: 13. Apr 04 16:38

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO LN	OFF

Transducer No.	Start	Stop	Name
1	150k	30M	CE_LINE

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 8
 Acc Margin: 60dB



PLOTS OF EMISSIONS

- Conducted Emission at the Mains port (TV Mode, Neutral, Non-GND)

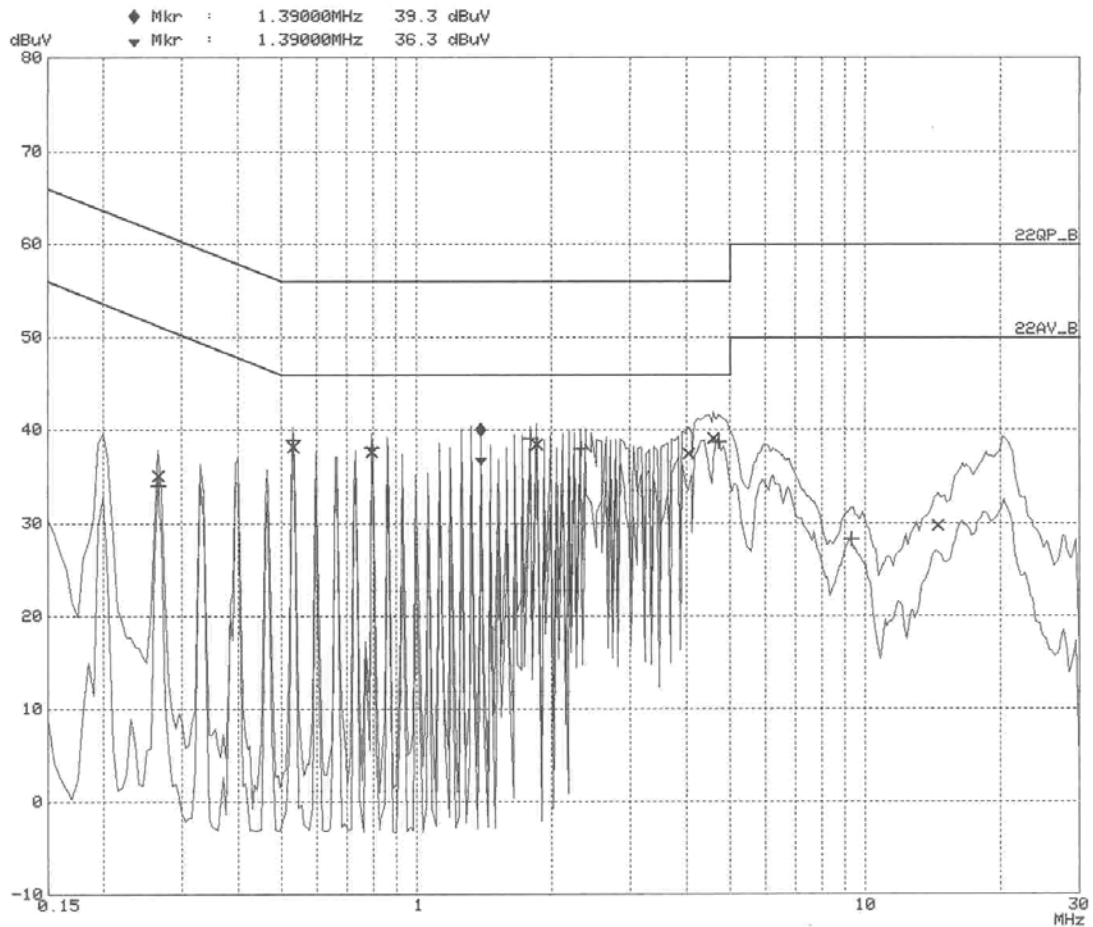
Comment: TV (Non GND)
 Line: Neutral
 File name: 257tnn.RES
 Date: 13. Apr 04 17:15

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO	LN OFF

Transducer No.	Start	Stop	Name
1	150k	30M	CE_LINE

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 8
 Acc Margin: 60dB



PLOTS OF EMISSIONS

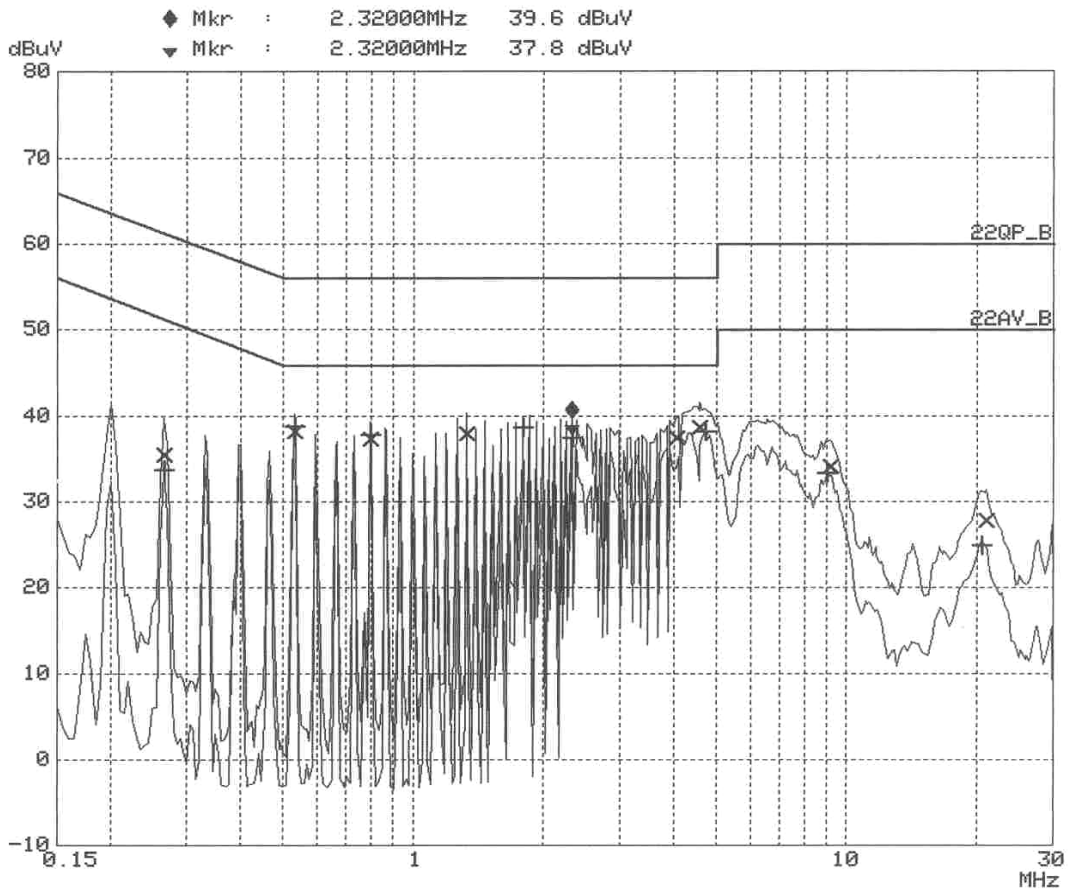
● **Conducted Emission at the Mains port (TV Mode, Line, With-GND)**

Comment: TV (With GND)
 Line: L1
 File name: 257TWL.RES
 Date: 13. Apr 04 18:17

Scan Settings (1 Range) |----- Receiver Settings -----|
 |----- Frequencies -----|
 Start Stop Step IF BW Detector M-Time Atten Preamp
 150k 30M 5k 9k PK+AV 20ms AUTO LN OFF

Transducer No. Start Stop Name
 1 150k 30M CE_LINE

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 8
 Acc Margin: 60dB



PLOTS OF EMISSIONS

- Conducted Emission at the Mains port(TV Mode, Neutral, with GND)

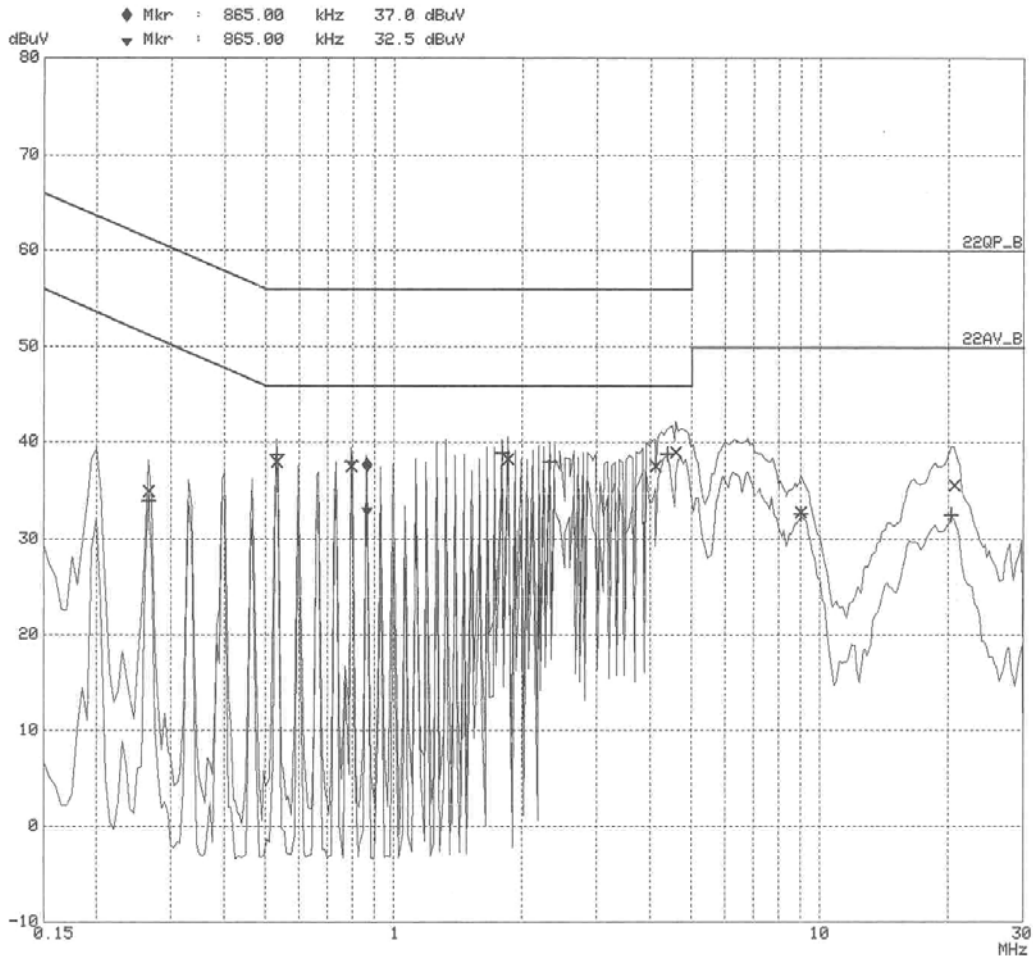
Comment: TV (With GND)
 Line: Neutral
 File name: 257TWN.RES
 Date: 13. Apr 04 17:33

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO LN	OFF

Transducer No.	Start	Stop	Name
1	150k	30M	CE_LINE

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 8
 Acc Margin: 60dB



PLOTS OF EMISSIONS

- **Conducted Emission at the Mains port(PC Monitor, Line, DVI)**
- Test Resolution : 1280 x 720, 60Hz

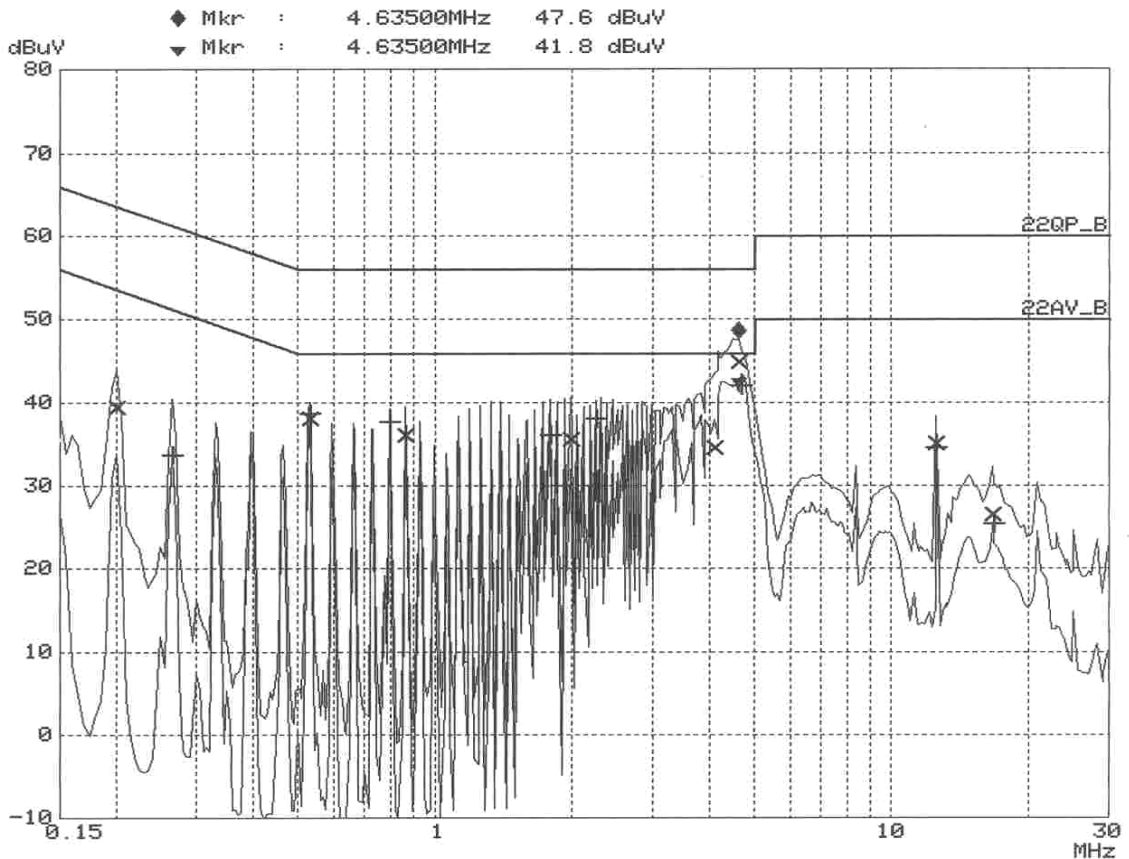
Comment: PC Monitor (DVI)
 Line: L1
 File name: 257DVL.RES
 Date: 14. Apr 04 09:22

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO LN	OFF

Transducer No.	Start	Stop	Name
1	150k	30M	CE_LINE

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 8
 Acc Margin: 60dB



PLOTS OF EMISSIONS

- **Conducted Emission at the Mains port(PC Monitor, Neutral, DVI)**
- Test Resolution : 1280 x 720, 60Hz

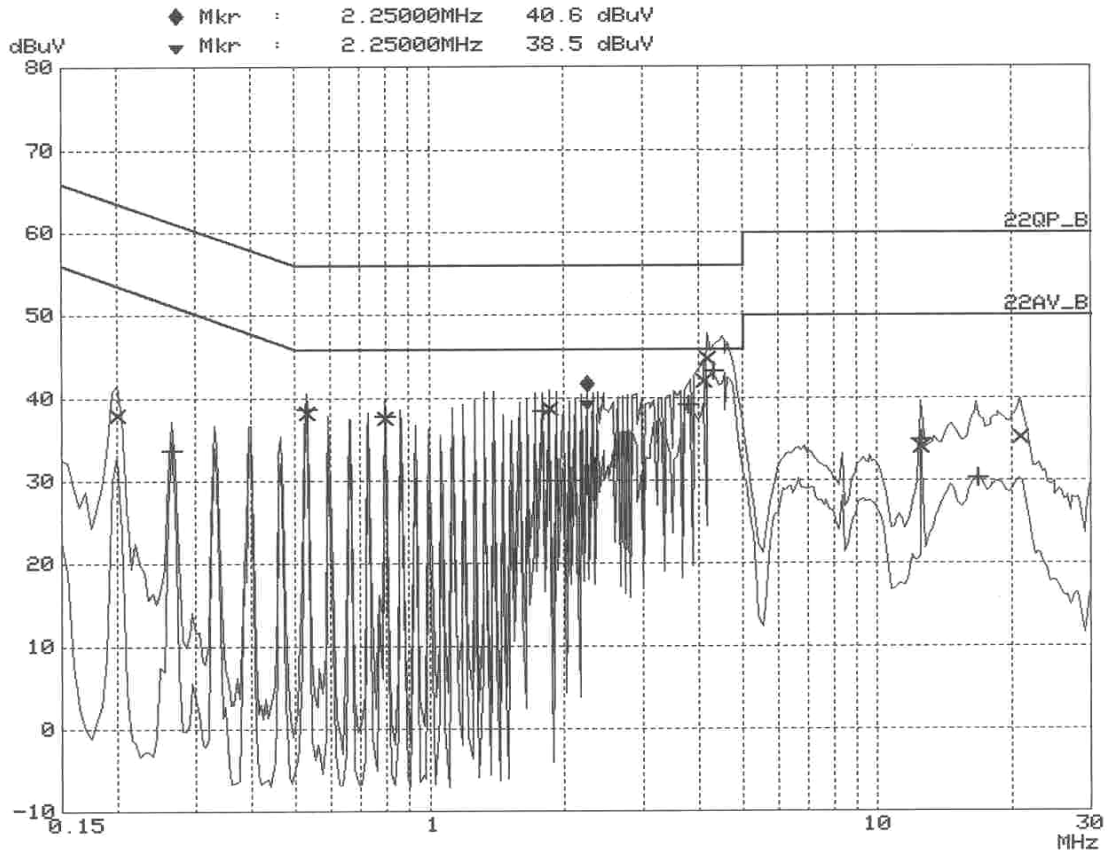
Comment: PC Monitor (DVI)
 Line: Neutral
 File name: 257dvn.RES
 Date: 14. Apr 04 09:50

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO LN	OFF

Transducer No.	Start	Stop	Name
1	150k	30M	CE_LINE

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 8
 Acc Margin: 60dB



PLOTS OF EMISSIONS

- **Conducted Emission at the Mains port(PC Monitor, Line, D-Sub)**
- Test Resolution : 1280 x 720, 60Hz

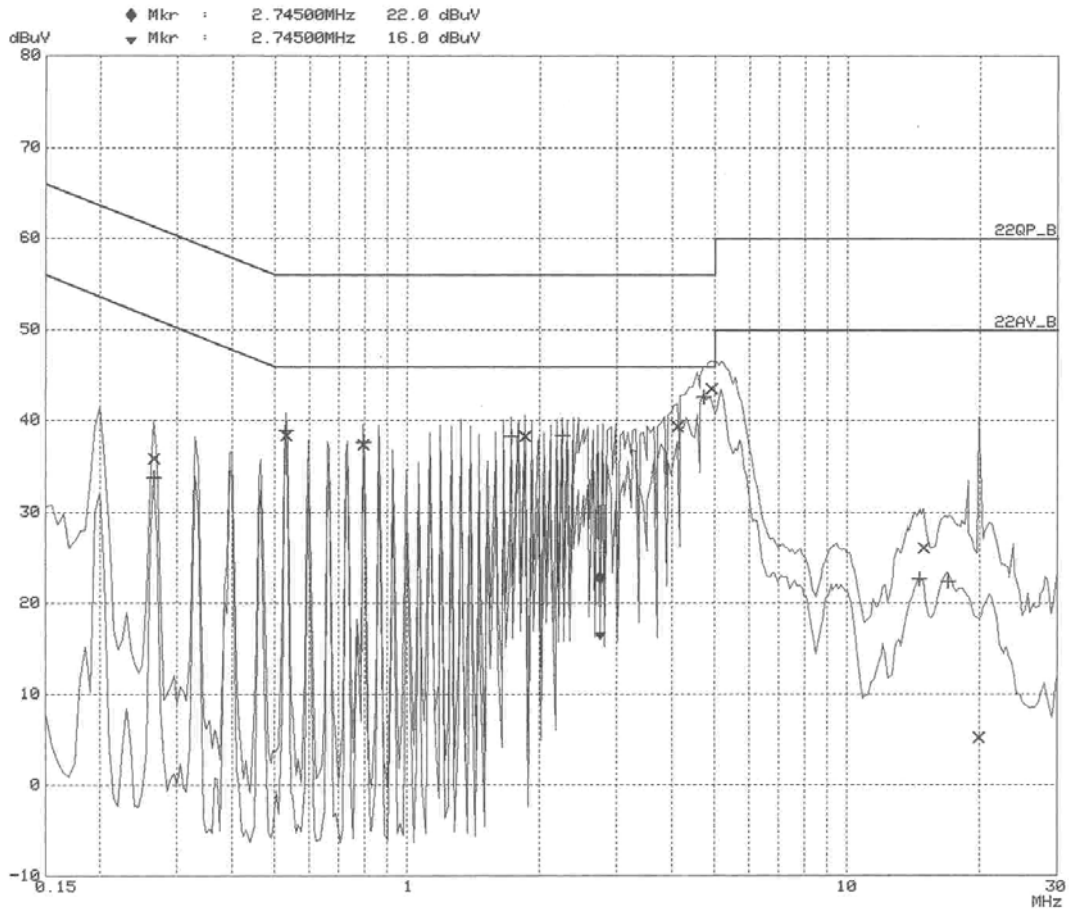
Comment: PC Monitor (D-Sub)
 Line: L1
 File name: 257DSL.RES
 Date: 14. Apr 04 10:42

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO	LN OFF

Transducer No.	Start	Stop	Name
1	150k	30M	CE_LINE

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 8
 Acc Margin: 60dB



PLOTS OF EMISSIONS

- **Conducted Emission at the Mains port(PC Monitor, Neutral, D-Sub)**
- Test Resolution : 1280 x 720, 60Hz

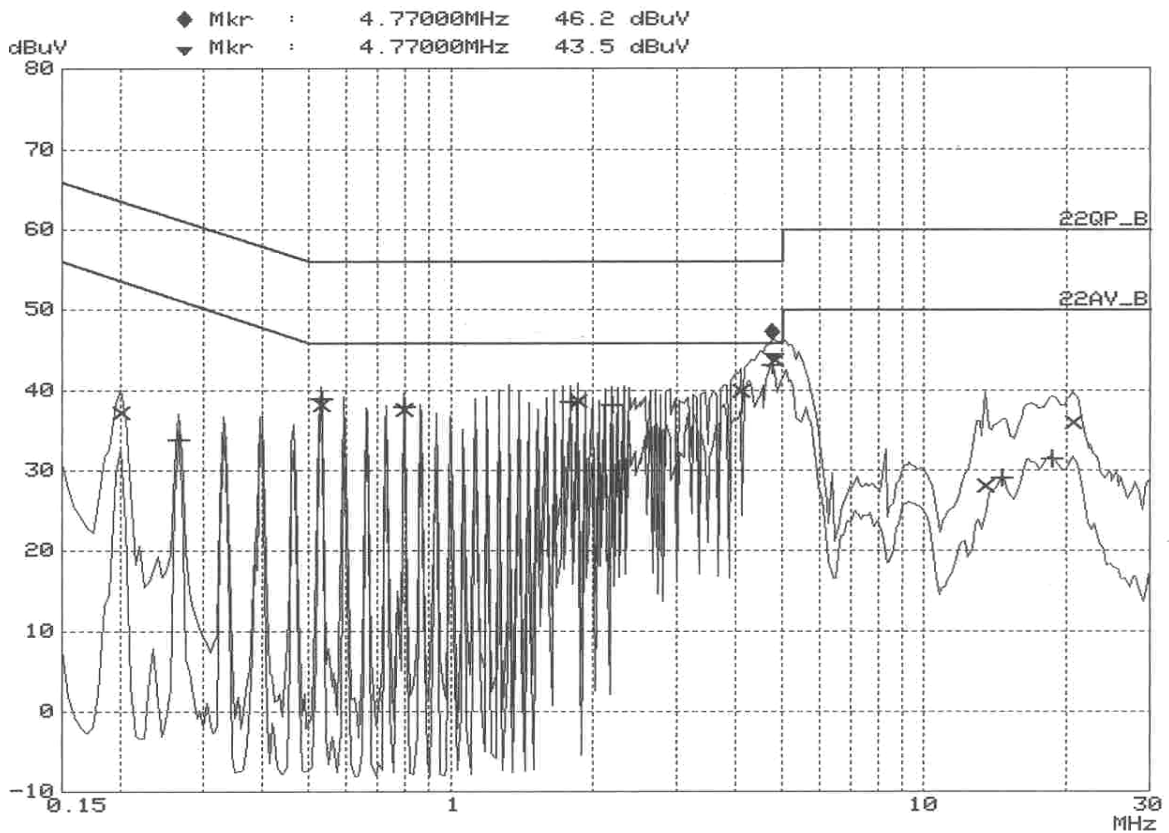
Comment: PC Monitor (D-Sub)
 Line: Neutral
 File name: 257dsn.RES
 Date: 14. Apr 04 10:25

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO LN	OFF

Transducer No.	Start	Stop	Name
1	150k	30M	CE_LINE

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 8
 Acc Margin: 60dB



TEST DATA

Radiated Emissions

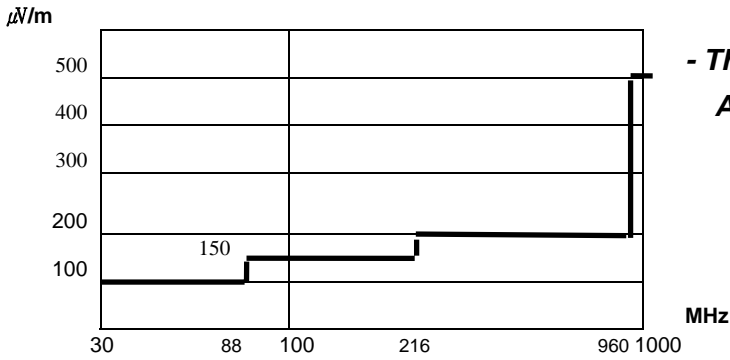
FCC ID : A3LAT50L7 (Antenna Terminal 1)

*) Disturbance radiation due to local oscillator

CHANNEL	Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
2 (55.25MHz)	101.00	36.9	V	-12.8	24.1	43.5	19.4
	202.00	26.0	V	-7.6	18.4	43.5	25.1
	303.00	29.3	V	-5.8	23.5	46.0	22.5
	404.00	27.0	V	-3.4	23.6	46.0	22.4
	505.00	28.6	V	-0.4	28.2	46.0	17.8
	606.00	-	-	2.6	-	46.0	-
	707.00	-	-	5.4	-	46.0	-
	808.00	25.1	H	8.0	33.1	46.0	12.9
3 (61.25MHz)	909.00	21.2	V	10.9	32.1	46.0	13.9
	107.00	38.4	V	-11.9	26.5	43.5	17.0
	214.00	33.8	V	-7.8	26.0	43.5	17.5
	321.00	33.3	V	-6.0	27.3	46.0	18.7
	428.00	24.9	H	-2.4	22.5	46.0	23.5
	535.00	-	-	1.0	-	46.0	-
	642.00	-	-	3.8	-	46.0	-
	749.00	-	-	6.4	-	46.0	-
4 (67.25MHz)	856.00	-	-	9.4	-	46.0	-
	963.00	24.7	H	11.7	36.4	46.0	9.6
	113.00	41.9	V	-11.7	30.2	43.5	13.3
	226.00	32.3	H	-7.6	24.7	46.0	21.3
	339.00	31.4	V	-5.8	25.6	46.0	20.4
	452.00	-	-	-1.6	-	46.0	-
	565.00	-	-	1.5	-	46.0	-
	678.00	-	-	4.9	-	46.0	-
5 (77.25MHz)	791.00	26.4	H	7.8	34.2	46.0	11.8
	904.00	-	-	11.1	-	46.0	-
	123.00	-	-	-11.3	-	43.5	-
	246.00	33.0	V	-8.1	24.9	46.0	21.1
	369.00	29.4	V	-4.6	24.8	46.0	21.2
	492.00	30.5	H	-0.3	30.2	46.0	15.8
	615.00	24.0	H	3.9	27.9	46.0	18.1
	738.00	31.5	H	6.1	37.6	46.0	8.4
6 (83.25MHz)	861.00	-	-	9.8	-	46.0	-
	984.00	24.1	H	12.1	36.2	46.0	9.8
	129.00	-	-	-11.4	-	43.5	-
	258.00	29.3	V	-6.7	22.6	46.0	23.4
	387.00	29.4	V	-3.9	25.5	46.0	20.5
	516.00	32.6	H	-0.2	32.4	46.0	13.6
	645.00	-	-	4.1	-	46.0	-
774.00	21.9	H	7.5	29.4	46.0	16.6	
903.00	-	-	11.0	-	46.0	-	

CHANNEL	Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
7 (175.25MHz)	221.00	34.4	H	-8.0	26.4	46.0	19.6
	442.00	31.0	H	-1.6	29.4	46.0	16.6
	663.00	25.0	H	4.9	29.9	46.0	16.1
	884.00	21.9	H	10.5	32.4	46.0	13.6
8 (181.25MHz)	227.00	32.3	H	-7.6	24.7	46.0	21.3
	454.00	29.9	H	-1.3	28.6	46.0	17.4
	681.00	-	-	5.1	-	46.0	-
	908.00	-	-	1.0	-	46.0	-
9 (187.25MHz)	233.00	33.0	V	-7.9	25.1	46.0	20.9
	466.00	25.8	H	-1.5	24.3	46.0	21.7
	669.00	25.3	H	5.1	30.4	46.0	15.6
	892.00	21.3	H	10.9	32.2	46.0	13.8
10 (193.25MHz)	239.00	32.6	V	-7.6	25.0	46.0	21.0
	478.00	25.2	V	-1.1	24.1	46.0	21.9
	717.00	-	-	5.4	-	46.0	-
	956.00	-	-	11.5	-	46.0	-
11 (199.25MHz)	245.00	33.9	V	-8.2	25.7	46.0	20.3
	490.00	26.0	H	-0.6	25.4	46.0	20.6
	735.00	31.1	H	6.1	37.2	46.0	8.8
	980.00	22.2	H	12.0	34.2	46.0	11.8
12 (205.25MHz)	251.00	33.8	V	-8.3	25.5	46.0	20.5
	502.00	34.2	H	-0.4	33.8	46.0	12.2
	753.00	22.4	H	6.6	29.0	46.0	17.0
	1004.00	-	-	-8.9	-	46.0	-
13 (211.25MHz)	257.00	32.9	V	-8.2	24.7	46.0	21.3
	514.00	32.9	H	-0.1	32.8	46.0	13.2
	771.00	-	-	7.1	-	46.0	-
	1028.00	48.5	V	-8.8	39.7	46.0	6.3
14 (471.25MHz)	517.00	33.0	H	-0.2	32.8	46.0	13.2
	1034.00	46.0	H	-8.8	37.2	54.0	16.8
19 (501.25MHz)	547.00	25.4	H	1.3	26.7	46.0	19.3
	1094.00	48.1	H	-8.7	39.4	54.0	14.6
28 (555.25MHz)	601.00	31.6	H	2.6	34.2	46.0	11.8
	1202.00	47.5	H	-7.8	39.7	54.0	14.3
36 (603.25MHz)	649.00	24.1	H	4.3	28.4	46.0	17.6
	1298.00	43.3	H	-7.4	35.9	54.0	18.1
44 (651.25MHz)	697.00	27.1	H	5.4	32.5	46.0	13.5
	1394.00	44.2	H	-7.4	36.8	54.0	17.2
53 (705.25MHz)	751.00	27.5	H	6.6	34.1	46.0	11.9
	1502.00	-	-	-6.2	-	54.0	-
61 (753.25MHz)	799.00	29.1	H	8.0	37.1	46.0	8.9
	1598.00	44.3	H	-5.6	38.7	54.0	15.3
69 (801.25MHz)	847.00	28.1	H	9.1	37.2	46.0	8.8
	1694.00	49.9	V	-5.2	44.7	54.0	9.3

Table 5. Radiated Measurements at 3meters



- The radiated limits are shown on Figure 5.
Above 1GHz the limit is 500 μV/m.

Fig. 6. Limits at 3 meters

NOTES:

1. All modes of operation were investigated the worst-case emission are reported.
2. *Pol. H=Horizontal V=Vertical
3. **AF+CL+Amp. = Antenna Factor + Cable Loss + Amplifier.
4. Measurements using CISPR quasi-peak mode. Above 1GHz, peak detector function mode is used using a resolution bandwidth of 1MHz and a video bandwidth of 1MHz. The peak level complies with the average limit. Peak mode is used with linearly polarized Log-periodic antenna and low-loss microwave cable.



Tested by J. H. Ko

TEST DATA

Radiated Emissions

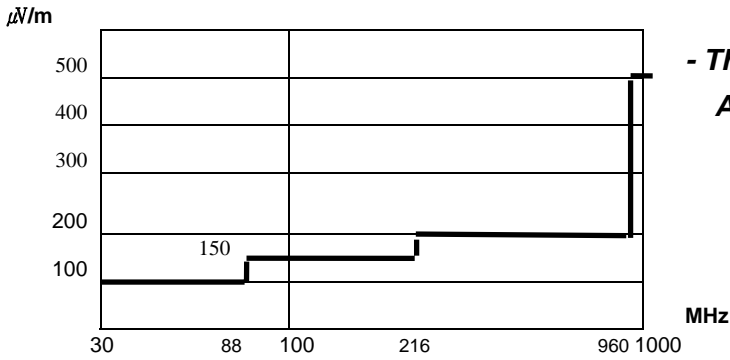
FCC ID : A3LAT50L7 (Antenna Terminal 2)

***) Disturbance radiation due to local oscillator**

CHANNEL	Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
2 (55.25MHz)	101.00	38.6	V	-12.8	25.8	43.5	17.7
	202.00	27.5	V	-7.6	19.9	43.5	23.6
	303.00	30.5	V	-5.8	24.7	46.0	21.3
	404.00	29.2	H	-3.4	25.8	46.0	20.2
	505.00	-	-	-0.4	-	46.0	-
	606.00	-	-	2.6	-	46.0	-
	707.00	-	-	5.4	-	46.0	-
	808.00	24.8	H	8.0	32.8	46.0	13.2
	909.00	22.5	V	10.9	33.4	46.0	12.6
3 (61.25MHz)	107.00	41.3	V	-11.9	29.4	43.5	14.1
	214.00	36.6	V	-7.8	28.8	43.5	14.7
	321.00	-	-	-6.0	-	46.0	-
	428.00	27.1	H	-2.4	24.7	46.0	21.3
	535.00	-	-	1.0	-	46.0	-
	642.00	-	-	3.8	-	46.0	-
	749.00	-	-	6.4	-	46.0	-
	856.00	21.8	H	9.4	31.2	46.0	14.8
963.00	24.7	H	11.7	36.4	46.0	9.6	
4 (67.25MHz)	113.00	42.9	V	-11.7	31.2	43.5	12.3
	226.00	32.7	H	-7.6	25.1	46.0	20.9
	339.00	-	-	-5.8	-	46.0	-
	452.00	27.8	V	-1.6	26.2	46.0	19.8
	565.00	-	-	1.5	-	46.0	-
	678.00	-	-	4.9	-	46.0	-
	791.00	29.0	H	7.8	36.8	46.0	9.2
	904.00	-	-	11.1	-	46.0	-
5 (77.25MHz)	123.00	-	-	-11.3	-	43.5	-
	246.00	35.2	H	-8.1	27.1	46.0	18.9
	369.00	29.6	V	-4.6	25.0	46.0	21.0
	492.00	30.7	H	-0.3	30.4	46.0	15.6
	615.00	27.2	V	3.9	31.1	46.0	14.9
	738.00	31.3	V	6.1	37.4	46.0	8.6
	861.00	-	-	9.8	-	46.0	-
	984.00	24.1	H	12.1	36.2	46.0	9.8
6 (83.25MHz)	129.00	-	-	-11.4	-	43.5	-
	258.00	31.5	V	-6.7	24.8	46.0	21.2
	387.00	29.9	V	-3.9	26.0	46.0	20.0
	516.00	32.0	H	-0.2	31.8	46.0	14.2
	645.00	-	-	4.1	-	46.0	-
	774.00	24.9	H	7.5	32.4	46.0	13.6
903.00	-	-	11.0	-	46.0	-	

CHANNEL	Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
7 (175.25MHz)	221.00	35.8	H	-8.0	27.8	46.0	18.2
	442.00	31.0	H	-1.6	29.4	46.0	16.6
	663.00	26.2	H	4.9	31.1	46.0	14.9
	884.00	24.2	H	10.5	34.7	46.0	11.3
8 (181.25MHz)	227.00	31.4	H	-7.6	23.8	46.0	22.2
	454.00	-	-	-1.3	-	46.0	-
	681.00	27.0	H	5.1	32.1	46.0	13.9
	908.00	-	-	1.0	-	46.0	-
9 (187.25MHz)	233.00	34.4	V	-7.9	26.5	46.0	19.5
	466.00	28.8	H	-1.5	27.3	46.0	18.7
	669.00	26.1	H	5.1	31.2	46.0	14.8
	892.00	23.2	H	10.9	34.1	46.0	11.9
10 (193.25MHz)	239.00	33.8	V	-7.6	26.2	46.0	19.8
	478.00	28.4	H	-1.1	27.3	46.0	18.7
	717.00	-	-	5.4	-	46.0	-
	956.00	-	-	11.5	-	46.0	-
11 (199.25MHz)	245.00	34.4	V	-8.2	26.2	46.0	19.8
	490.00	27.4	H	-0.6	26.8	46.0	19.2
	735.00	30.8	H	6.1	36.9	46.0	9.1
	980.00	22.4	H	12.0	34.4	46.0	11.6
12 (205.25MHz)	251.00	34.4	V	-8.3	26.1	46.0	19.9
	502.00	33.5	H	-0.4	33.1	46.0	12.9
	753.00	24.6	H	6.6	31.2	46.0	14.8
	1004.00	-	-	-8.9	-	46.0	-
13 (211.25MHz)	257.00	33.9	V	-8.2	25.7	46.0	20.3
	514.00	34.3	H	-0.1	34.2	46.0	11.8
	771.00	-	-	7.1	-	46.0	-
	1028.00	49.6	V	-8.8	40.8	46.0	5.2
14 (471.25MHz)	517.00	33.2	H	-0.2	33.0	46.0	13.0
	1034.00	48.0	H	-8.8	39.2	54.0	14.8
19 (501.25MHz)	547.00	24.1	H	1.3	25.4	46.0	20.6
	1094.00	49.5	H	-8.7	40.8	54.0	13.2
28 (555.25MHz)	601.00	31.6	H	2.6	34.2	46.0	11.8
	1202.00	47.0	H	-7.8	39.2	54.0	14.8
36 (603.25MHz)	649.00	23.4	H	4.3	27.7	46.0	18.3
	1298.00	43.5	H	-7.4	36.1	54.0	17.9
44 (651.25MHz)	697.00	27.3	V	5.4	32.7	46.0	13.3
	1394.00	44.8	H	-7.4	37.4	54.0	16.6
53 (705.25MHz)	751.00	27.9	H	6.6	34.5	46.0	11.5
	1502.00	-	-	-6.2	-	54.0	-
61 (753.25MHz)	799.00	30.1	H	8.0	38.1	46.0	7.9
	1598.00	45.4	H	-5.6	39.8	54.0	14.2
69 (801.25MHz)	847.00	26.8	H	9.1	35.9	46.0	10.1
	1694.00	51.0	V	-5.2	45.8	54.0	8.2

Table 6. Radiated Measurements at 3meters



- The radiated limits are shown on Figure 5.
Above 1GHz the limit is 500 μV/m.

Fig. 7. Limits at 3 meters

NOTES:

1. All modes of operation were investigated the worst-case emission are reported.
2. *Pol. H=Horizontal V=Vertical
3. **AF+CL+Amp. = Antenna Factor + Cable Loss + Amplifier.
4. Measurements using CISPR quasi-peak mode. Above 1GHz, peak detector function mode is used using a resolution bandwidth of 1MHz and a video bandwidth of 1MHz. The peak level complies with the average limit. Peak mode is used with linearly polarized Log-periodic antenna and low-loss microwave cable.



Tested by J. H. Ko

TEST DATA

Radiated Emissions

FCC ID : A3LAT50L7 (Cable input Terminal 1)

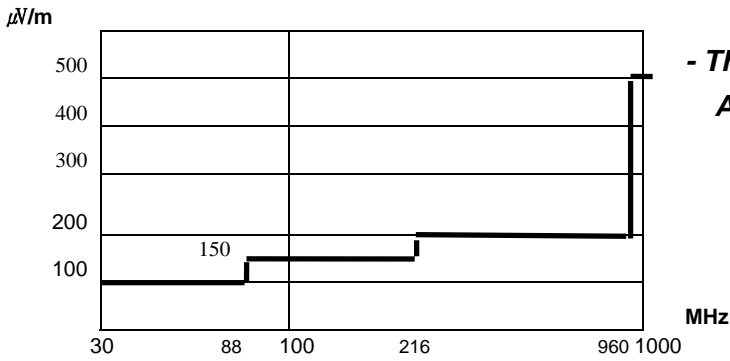
***) Disturbance radiation due to local oscillator**

CHANNEL	Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
2 (55.25MHz)	101.00	37.5	V	-12.8	24.7	43.5	18.8
	202.00	26.1	V	-7.6	18.5	43.5	25.0
	303.00	29.4	V	-5.8	23.6	46.0	22.4
	404.00	27.5	H	-3.4	24.1	46.0	21.9
	505.00	28.8	V	-0.4	28.4	46.0	17.6
	606.00	-	-	2.6	-	46.0	-
	707.00	-	-	5.4	-	46.0	-
	808.00	26.1	H	8.0	34.1	46.0	11.9
	909.00	20.9	V	10.9	31.8	46.0	14.2
3 (61.25MHz)	107.00	37.7	V	-11.9	25.8	43.5	17.7
	214.00	38.0	V	-11.8	26.2	43.5	17.3
	321.00	34.1	V	-6.0	28.1	46.0	17.9
	428.00	25.2	H	-2.4	22.8	46.0	23.2
	535.00	-	-	-1.0	-	46.0	-
	642.00	-	-	3.8	-	46.0	-
	749.00	-	-	6.4	-	46.0	-
	856.00	-	-	9.4	-	46.0	-
4 (67.25MHz)	963.00	24.0	H	11.7	35.7	54.0	18.3
	113.00	41.9	V	-11.7	30.2	43.5	13.3
	226.00	32.6	H	-7.6	25.0	46.0	21.0
	339.00	31.0	V	-5.8	25.2	46.0	20.8
	452.00	-	-	-1.6	-	46.0	-
	565.00	-	-	-1.5	-	46.0	-
	678.00	-	-	4.9	-	46.0	-
	791.00	26.1	V	7.8	33.9	46.0	12.1
5 (77.25MHz)	904.00	-	-	11.1	-	46.0	-
	123.00	-	-	-11.3	-	43.5	-
	246.00	33.2	V	-8.1	25.1	46.0	20.9
	369.00	29.3	V	-4.6	24.7	46.0	21.3
	492.00	30.7	H	-0.3	30.4	46.0	15.6
	615.00	25.5	H	2.9	28.4	46.0	17.6
	738.00	32.3	H	6.1	38.4	46.0	7.6
	861.00	-	-	9.8	-	46.0	-
6 (83.25MHz)	984.00	23.1	H	12.1	35.2	54.0	18.8
	129.00	-	-	-11.4	-	43.5	-
	258.00	28.6	V	-6.7	21.9	46.0	24.1
	387.00	29.6	V	-3.9	25.7	46.0	20.3
	516.00	33.4	H	-0.2	33.2	46.0	12.8
	645.00	-	-	4.1	-	46.0	-
	774.00	21.2	H	7.5	28.7	46.0	17.3
903.00	-	-	11.0	-	46.0	-	

CHANNEL	Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
7 (175.25MHz)	221.00	35.2	H	-8.0	27.2	46.0	18.8
	442.00	31.1	H	-1.6	29.5	46.0	16.5
	663.00	23.8	H	4.9	28.7	46.0	17.3
	884.00	22.7	H	10.5	33.2	46.0	12.8
8 (181.25MHz)	227.00	30.9	H	-7.8	23.1	46.0	22.9
	454.00	28.5	H	-1.3	27.2	46.0	18.8
	681.00	-	-	5.1	-	46.0	-
	908.00	-	-	1.0	-	46.0	-
9 (187.25MHz)	233.00	32.9	V	-7.9	25.0	46.0	21.0
	466.00	25.3	H	-1.5	23.8	46.0	22.2
	669.00	25.0	H	5.1	30.1	46.0	15.9
	892.00	22.3	H	10.9	33.2	46.0	12.8
10 (193.25MHz)	239.00	32.3	V	-7.6	24.7	46.0	21.3
	478.00	26.0	V	-1.1	24.9	46.0	21.1
	717.00	-	-	5.4	-	46.0	-
	956.00	-	-	11.5	-	46.0	-
11 (199.25MHz)	245.00	33.8	V	-8.2	25.6	46.0	20.4
	490.00	26.8	H	-0.6	26.2	46.0	19.8
	735.00	32.0	H	6.1	38.1	46.0	7.9
	980.00	22.9	H	12.0	34.9	54.0	19.1
12 (205.25MHz)	251.00	34.4	V	-8.3	26.1	46.0	19.9
	502.00	34.5	H	-0.4	34.1	46.0	11.9
	753.00	30.1	H	6.6	36.7	46.0	9.3
	1004.00	-	-	-8.9	-	54.0	-
13 (211.25MHz)	257.00	32.3	H	-8.2	24.1	46.0	21.9
	514.00	33.3	H	-0.1	33.2	46.0	12.8
	771.00	-	-	7.1	-	46.0	-
	1028.00	48.7	V	-8.8	39.9	54.0	14.1
14 (121.25MHz)	167.00	-	-	-5.3	-	43.5	-
	334.00	30.2	H	-5.4	24.8	46.0	21.2
	501.00	-	-	-0.4	-	46.0	-
	668.00	23.6	H	4.8	28.4	46.0	17.6
	835.00	-	-	8.9	-	46.0	-
	1002.00	47.5	H	-8.9	38.6	54.0	15.4
	1169.00	-	-	-8.3	-	54.0	-
	1336.00	45.7	H	-7.5	38.2	54.0	15.8
	1503.00	-	-	-6.2	-	54.0	-
	1670.00	-	-	-4.1	-	54.0	-
18 (169.25MHz)	1837.00	-	-	-4.8	-	54.0	-
	191.00	28.4	V	-8.8	19.6	43.5	23.9
	382.00	29.6	H	-3.9	25.7	46.0	20.3
	573.00	-	-	1.8	-	46.0	-
	764.00	-	-	7.1	-	46.0	-
	955.00	23.2	H	11.5	34.7	46.0	11.3
	1146.00	44.8	H	-8.6	36.2	54.0	17.8
	1337.00	46.1	H	-7.5	38.6	54.0	15.4
	1528.00	47.5	H	-6.1	41.4	54.0	12.6
1719.00	-	-	-5.3	-	54.0	-	
1910.00	-	-	-4.1	-	54.0	-	

CHANNEL	Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
22 (169.25MHz)	215.00	34.1	H	-7.9	26.2	43.5	17.3
	430.00	-	-	-2.1	-	46.0	-
	645.00	23.7	H	4.3	28.0	46.0	18.0
	860.00	-	-	9.4	-	46.0	-
	1075.00	-	-	-8.2	-	54.0	-
	1290.00	45.7	H	-7.6	38.1	54.0	15.9
	1505.00	44.1	H	-6.2	37.9	54.0	16.1
	1720.00	-	-	-5.3	-	54.0	-
26 (235.25MHz)	1935.00	-	-	-3.9	-	54.0	-
	281.00	-	-	-7.8	-	46.0	-
	562.00	-	-	1.7	-	46.0	-
	843.00	-	-	9.2	-	46.0	-
	1124.00	-	-	-8.1	-	54.0	-
	1405.00	-	-	-7.4	-	54.0	-
	1686.00	-	-	-5.2	-	54.0	-
36 (295.25MHz)	1967.00	-	-	-4.9	-	54.0	-
	341.00	31.0	H	-5.2	25.8	46.0	20.2
	682.00	-	-	5.1	-	46.0	-
	1023.00	46.1	H	-8.9	37.2	54.0	16.8
	1364.00	44.2	H	-7.6	36.6	54.0	17.4
49 (373.25MHz)	1705.00	-	-	-5.3	-	54.0	-
	419.00	26.7	V	-3.1	23.6	46.0	22.4
	838.00	-	-	9.0	-	46.0	-
	1257.00	44.8	H	-7.7	37.1	54.0	16.9
57 (421.25MHz)	1676.00	-	-	-5.2	-	54.0	-
	467.00	-	-	-1.2	-	46.0	-
	934.00	22.7	H	11.0	33.7	46.0	12.3
	1401.00	44.4	V	-7.4	37.0	54.0	17.0
65 (469.25MHz)	1868.00	43.3	V	-4.2	39.1	54.0	14.9
	515.00	26.5	H	-0.1	26.4	46.0	19.6
	1030.00	44.4	H	-8.9	35.5	54.0	18.5
80 (559.25MHz)	1545.00	47.5	H	-5.9	41.6	54.0	12.4
	605.00	24.8	H	2.6	27.4	46.0	18.6
	1210.00	46.3	H	-7.8	38.5	54.0	15.5
90 (619.25MHz)	1815.00	46.1	V	-4.9	41.2	54.0	12.8
	665.00	25.6	H	4.8	30.4	46.0	15.6
	1330.00	46.4	H	-7.6	38.8	54.0	15.2
	1995.00	-	-	-3.9	-	54.0	-

Table 6. Radiated Measurements at 3meters



- The radiated limits are shown on Figure 5.
Above 1GHz the limit is 500 $\mu\text{V}/\text{m}$.

Fig. 8. Limits at 3 meters

NOTES:

1. All modes of operation were investigated the worst-case emission are reported.
2. *Pol. H=Horizontal V=Vertical
3. **AF+CL+Amp. = Antenna Factor + Cable Loss + Amplifier.
4. Measurements using CISPR quasi-peak mode. Above 1GHz, peak detector function mode is used using a resolution bandwidth of 1MHz and a video bandwidth of 1MHz. The peak level complies with the average limit. Peak mode is used with linearly polarized Log-periodic antenna and low-loss microwave cable.



Tested by **J. H. Ko**

TEST DATA

Radiated Emissions

FCC ID : A3LAT50L7 (Cable input Terminal 2)

*) Disturbance radiation due to local oscillator

CHANNEL	Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
2 (55.25MHz)	101.00	39.5	V	-12.8	26.7	43.5	16.8
	202.00	28.7	V	-7.6	21.1	43.5	22.4
	303.00	31.2	V	-5.8	25.4	46.0	20.6
	404.00	28.1	H	-3.4	24.7	46.0	21.3
	505.00	-	-	-0.4	-	46.0	-
	606.00	-	-	2.6	-	46.0	-
	707.00	-	-	5.4	-	46.0	-
	808.00	25.1	H	8.0	33.1	46.0	12.9
	909.00	23.2	V	10.9	34.1	46.0	11.9
3 (61.25MHz)	107.00	40.3	V	-11.9	28.4	43.5	15.1
	214.00	39.4	V	-11.8	27.6	43.5	15.9
	321.00	-	-	-6.0	-	46.0	-
	428.00	27.6	H	-2.4	25.2	46.0	20.8
	535.00	-	-	-1.0	-	46.0	-
	642.00	-	-	3.8	-	46.0	-
	749.00	-	-	6.4	-	46.0	-
	856.00	22.7	H	9.4	32.1	46.0	13.9
963.00	26.1	V	11.7	37.8	54.0	16.2	
4 (67.25MHz)	113.00	43.8	V	-11.7	32.1	43.5	11.4
	226.00	34.3	H	-7.6	26.7	46.0	19.3
	339.00	-	-	-5.8	-	46.0	-
	452.00	30.0	V	-1.6	28.4	46.0	17.6
	565.00	-	-	-1.5	-	46.0	-
	678.00	-	-	4.9	-	46.0	-
	791.00	29.8	H	7.8	37.6	46.0	8.4
	904.00	-	-	11.1	-	46.0	-
5 (77.25MHz)	123.00	-	-	-11.3	-	43.5	-
	246.00	36.3	H	-8.1	28.2	46.0	17.8
	369.00	29.5	V	-4.6	24.9	46.0	21.1
	492.00	31.5	H	-0.3	31.2	46.0	14.8
	615.00	27.5	V	2.9	30.4	46.0	15.6
	738.00	33.1	V	6.1	39.2	46.0	6.8
	861.00	-	-	9.8	-	46.0	-
	984.00	25.1	H	12.1	37.2	54.0	16.8
6 (83.25MHz)	129.00	-	-	-11.4	-	43.5	-
	258.00	31.9	V	-6.7	25.2	46.0	20.8
	387.00	31.1	V	-3.9	27.2	46.0	18.8
	516.00	30.3	H	-0.2	30.1	46.0	15.9
	645.00	-	-	4.1	-	46.0	-
	774.00	24.9	H	7.5	32.4	46.0	13.6
	903.00	-	-	11.0	-	46.0	-

CHANNEL	Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
7 (175.25MHz)	221.00	35.9	H	-8.0	27.9	46.0	18.1
	442.00	32.0	H	-1.6	30.4	46.0	15.6
	663.00	27.5	H	4.9	32.4	46.0	13.6
	884.00	24.6	H	10.5	35.1	46.0	10.9
8 (181.25MHz)	227.00	29.0	H	-7.8	21.2	46.0	24.8
	454.00	-	-	-1.3	-	46.0	-
	681.00	25.3	H	5.1	30.4	46.0	15.6
	908.00	-	-	1.0	-	46.0	-
9 (187.25MHz)	233.00	35.5	V	-7.9	27.6	46.0	18.4
	466.00	27.7	H	-1.5	26.2	46.0	19.8
	669.00	-	-	5.1	-	46.0	-
	892.00	24.0	H	10.9	34.9	46.0	11.1
10 (193.25MHz)	239.00	36.0	V	-7.6	28.4	46.0	17.6
	478.00	27.3	V	-1.1	26.2	46.0	19.8
	717.00	-	-	5.4	-	46.0	-
	956.00	-	-	11.5	-	46.0	-
11 (199.25MHz)	245.00	31.4	H	-8.2	23.2	46.0	22.8
	490.00	26.0	H	-0.6	25.4	46.0	20.6
	735.00	22.0	H	6.1	28.1	46.0	17.9
	980.00	23.7	H	12.0	35.7	54.0	18.3
12 (205.25MHz)	251.00	34.7	V	-8.3	26.4	46.0	19.6
	502.00	35.6	H	-0.4	35.2	46.0	10.8
	753.00	26.0	H	6.6	32.6	46.0	13.4
	1004.00	-	-	-8.9	-	54.0	-
13 (211.25MHz)	257.00	34.4	V	-8.2	26.2	46.0	19.8
	514.00	35.2	H	-0.1	35.1	46.0	10.9
	771.00	-	-	7.1	-	46.0	-
	1028.00	51.0	V	-8.8	42.2	54.0	11.8
14 (121.25MHz)	167.00	25.8	V	-5.3	20.5	43.5	23.0
	334.00	31.7	V	-5.4	26.3	46.0	19.7
	501.00	27.2	H	-0.4	26.8	46.0	19.2
	668.00	24.8	H	4.8	29.6	46.0	16.4
	835.00	-	-	8.9	-	46.0	-
	1002.00	-	-	-8.9	-	54.0	-
	1169.00	-	-	-8.3	-	54.0	-
	1336.00	46.9	H	-7.5	39.4	54.0	14.6
	1503.00	46.3	H	-6.2	40.1	54.0	13.9
	1670.00	-	-	-4.1	-	54.0	-
1837.00	-	-	-4.8	-	54.0	-	
18 (169.25MHz)	191.00	28.6	V	-8.8	19.8	43.5	23.7
	382.00	29.9	V	-3.9	26.0	46.0	20.0
	573.00	-	-	1.8	-	46.0	-
	764.00	-	-	7.1	-	46.0	-
	955.00	26.7	H	11.5	38.2	46.0	7.8
	1146.00	-	-	-8.6	-	54.0	-
	1337.00	47.3	H	-7.5	39.8	54.0	14.2
	1528.00	-	-	-6.1	-	54.0	-
	1719.00	-	-	-5.3	-	54.0	-
1910.00	-	-	-4.1	-	54.0	-	

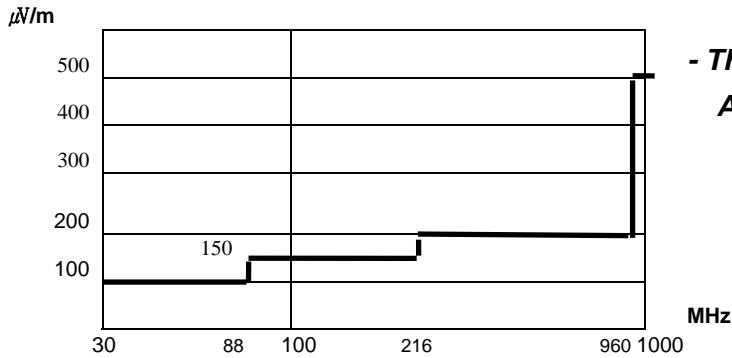
CHANNEL	Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
22 (169.25MHz)	215.00	33.3	H	-7.9	25.4	43.5	18.1
	430.00	-	-	-2.1	-	46.0	-
	645.00	-	-	4.3	-	46.0	-
	860.00	-	-	9.4	-	46.0	-
	1075.00	-	-	-8.2	-	54.0	-
	1290.00	-	-	-7.6	-	54.0	-
	1505.00	45.7	H	-6.2	39.5	54.0	14.5
	1720.00	-	-	-5.3	-	54.0	-
26 (235.25MHz)	1935.00	-	-	-3.9	-	54.0	-
	281.00	31.2	V	-7.8	23.4	46.0	22.6
	562.00	-	-	1.7	-	46.0	-
	843.00	20.0	V	9.2	29.2	46.0	16.8
	1124.00	-	-	-8.1	-	54.0	-
	1405.00	46.8	V	-7.4	39.4	54.0	14.6
	1686.00	-	-	-5.2	-	54.0	-
36 (295.25MHz)	1967.00	-	-	-4.9	-	54.0	-
	341.00	32.1	V	-5.2	26.9	46.0	19.1
	682.00	-	-	5.1	-	46.0	-
	1023.00	-	-	-8.9	-	54.0	-
	1364.00	46.5	H	-7.6	38.9	54.0	15.1
49 (373.25MHz)	1705.00	43.7	H	-5.3	38.4	54.0	15.6
	419.00	-	-	-3.1	-	46.0	-
	838.00	-	-	9.0	-	46.0	-
	1257.00	46.2	H	-7.7	38.5	54.0	15.5
57 (421.25MHz)	1676.00	43.6	H	-5.2	38.4	54.0	15.6
	467.00	-	-	-1.2	-	46.0	-
	934.00	24.7	H	11.0	35.7	46.0	10.3
	1401.00	-	-	-7.4	-	54.0	-
65 (469.25MHz)	1868.00	44.0	H	-4.2	39.8	54.0	14.2
	515.00	39.5	H	-0.1	39.4	46.0	6.6
	1030.00	46.0	H	-8.9	37.1	54.0	16.9
80 (559.25MHz)	1545.00	46.0	H	-5.9	40.1	54.0	13.9
	605.00	24.1	H	2.6	26.7	46.0	19.3
	1210.00	47.6	H	-7.8	39.8	54.0	14.2
90 (619.25MHz)	1815.00	45.9	V	-4.9	41.0	54.0	13.0
	665.00	26.4	H	4.8	31.2	46.0	14.8
	1330.00	46.5	V	-7.6	38.9	54.0	15.1
	1995.00	-	-	-3.9	-	54.0	-

Table 7. Radiated Measurements at 3meters

*)Disturbance radiation due to the other source

Frequency (MHz)	Reading (dB μ V)	Pol* (H/V)	AF+CL+Amp (dB)**	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
41.89	50.9	V	-16.5	34.4	40.0	5.6
669.25	36.9	V	4.3	41.2	46.0	4.8
864.78	28.9	H	9.9	38.8	46.0	7.2
1037.56	55.8	H	-8.8	47.0	54.0	7.0
1111.57	57.7	H	-8.3	49.4	54.0	4.6
1667.30	49.8	H	-4.1	45.7	54.0	8.3

Table 8. Radiated Measurements at 3meters



- The radiated limits are shown on Figure 5.
Above 1GHz the limit is 500 $\mu\text{V}/\text{m}$.

Fig. 9. Limits at 3 meters

NOTES:

1. All modes of operation were investigated the worst-case emission are reported.
In case of PC monitor, the worst emission level was found when the EUT was tested under 1280 X 720, 60Hz resolution, therefore, the test data of this mode was recorded in the report.
2. *Pol. H=Horizontal V=Vertical
3. **AF+CL+Amp. = Antenna Factor + Cable Loss + Amplifier.
4. Measurements using CISPR quasi-peak mode. Above 1GHz, peak detector function mode is used using a resolution bandwidth of 1MHz and a video bandwidth of 1MHz. The peak level complies with the average limit. Peak mode is used with linearly polarized Log-periodic antenna and low-loss microwave cable.



Tested by **J. H. Ko**

TEST DATA

Antenna-Conducted Power Measurements

FCC ID : A3LAT50L7 (Antenna Terminal 1)

CHANNEL	Frequency (MHz)	Reading (dB μ V)	MPL * (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)
2 (55.25MHz)	101.00	-	7.8	-	50.0	-
	202.00	-	7.8	-	50.0	-
3 (61.25MHz)	107.00	8.5	7.8	16.3	50.0	33.7
	214.00	-	7.8	-	50.0	-
4 (67.25MHz)	113.00	-	7.8	-	50.0	-
	226.00	-	7.8	-	50.0	-
5 (77.25MHz)	123.00	10.3	7.8	18.1	50.0	31.9
	246.00	-	7.8	-	50.0	-
6 (83.25MHz)	129.00	10.7	7.8	18.5	50.0	31.5
	258.00	-	7.8	-	50.0	-
7 (175.25MHz)	221.00	15.0	7.8	22.8	50.0	27.2
	442.00	-	7.8	-	50.0	-
8 (181.25MHz)	227.00	5.3	7.8	13.1	50.0	36.9
	454.00	-	7.8	-	50.0	-
9 (187.25MHz)	233.00	16.0	7.8	23.8	50.0	26.2
	466.00	-	7.8	-	50.0	-
10 (193.25MHz)	239.00	16.7	7.8	24.5	50.0	25.5
	478.00	-	7.8	-	50.0	-
11 (199.25MHz)	245.00	17.4	7.8	25.2	50.0	24.8
	490.00	-	7.8	-	50.0	-
12 (205.25MHz)	251.00	17.8	7.8	25.6	50.0	24.4
	502.00	-	7.8	-	50.0	-
13 (211.25MHz)	257.00	18.1	7.8	25.9	50.0	24.1
	514.00	-	7.8	-	50.0	-
14 (471.25MHz)	517.00	12.4	7.8	20.2	50.0	29.8
	1034.00	-	7.8	-	50.0	-
19 (501.25MHz)	547.00	11.9	7.8	19.7	50.0	30.3
	1094.00	12.1	7.8	19.9	50.0	30.1
28 (555.25MHz)	601.00	10.8	7.8	18.6	50.0	31.4
	1202.00	15.0	7.8	22.8	50.0	27.2
36 (603.25MHz)	649.00	12.8	7.8	20.6	50.0	29.4
	1298.00	22.3	7.8	30.1	50.0	19.9
44 (651.25MHz)	697.00	11.1	7.8	18.9	50.0	31.1
	1394.00	23.6	7.8	31.4	50.0	18.6
53 (705.25MHz)	751.00	20.3	7.8	28.1	50.0	21.9
	1502.00	25.1	7.8	32.9	50.0	17.1
61 (753.25MHz)	799.00	18.0	7.8	25.8	50.0	24.2
	1598.00	28.3	7.8	36.1	50.0	13.9
69 (801.25MHz)	847.00	14.1	7.8	21.9	50.0	28.1
	1694.00	19.6	7.8	27.4	50.0	22.6

Table 9. Antenna-Conducted Power Measurements

NOTES:

1. *MPL = Impedance Matching Network Loss
2. Measurements using CISPR quasi-peak mode.
The limits is 2.0 nano watts as the FCC part section 15.111.
3. Frequencies above 1GHz, both a peak and average detector shall be used.
If the unit complies with the peak limits, then no further investigation of the average readings is required.



Tested by **J. H. Ko**

TEST DATA

Antenna-Conducted Power Measurements

FCC ID : A3LAT50L7 (Antenna Terminal 2)

CHANNEL	Frequency (MHz)	Reading (dB μ V)	MPL * (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)
2 (55.25MHz)	101.00	-	7.8	-	50.0	-
	202.00	-	7.8	-	50.0	-
3 (61.25MHz)	107.00	-	7.8	-	50.0	-
	214.00	-	7.8	-	50.0	-
4 (67.25MHz)	113.00	-	7.8	-	50.0	-
	226.00	-	7.8	-	50.0	-
5 (77.25MHz)	123.00	15.5	7.8	23.3	50.0	26.7
	246.00	-	7.8	-	50.0	-
6 (83.25MHz)	129.00	16.0	7.8	23.8	50.0	26.2
	258.00	-	7.8	-	50.0	-
7 (175.25MHz)	221.00	20.0	7.8	27.8	50.0	22.2
	442.00	-	7.8	-	50.0	-
8 (181.25MHz)	227.00	20.8	7.8	28.6	50.0	21.4
	454.00	-	7.8	-	50.0	-
9 (187.25MHz)	233.00	20.6	7.8	28.4	50.0	21.6
	466.00	-	7.8	-	50.0	-
10 (193.25MHz)	239.00	19.3	7.8	27.1	50.0	22.9
	478.00	-	7.8	-	50.0	-
11 (199.25MHz)	245.00	20.0	7.8	27.8	50.0	22.2
	490.00	-	7.8	-	50.0	-
12 (205.25MHz)	251.00	19.9	7.8	27.7	50.0	22.3
	502.00	-	7.8	-	50.0	-
13 (211.25MHz)	257.00	19.8	7.8	27.6	50.0	22.4
	514.00	-	7.8	-	50.0	-
14 (471.25MHz)	517.00	17.7	7.8	25.5	50.0	24.5
	1034.00	-	7.8	-	50.0	-
19 (501.25MHz)	547.00	17.2	7.8	25.0	50.0	25.0
	1094.00	-	7.8	-	50.0	-
28 (555.25MHz)	601.00	-	7.8	-	50.0	-
	1202.00	21.6	7.8	29.4	50.0	20.6
36 (603.25MHz)	649.00	-	7.8	-	50.0	-
	1298.00	25.9	7.8	33.7	50.0	16.3
44 (651.25MHz)	697.00	19.8	7.8	27.6	50.0	22.4
	1394.00	26.9	7.8	34.7	50.0	15.3
53 (705.25MHz)	751.00	24.3	7.8	32.1	50.0	17.9
	1502.00	31.8	7.8	39.6	50.0	10.4
61 (753.25MHz)	799.00	20.5	7.8	28.3	50.0	21.7
	1598.00	33.6	7.8	41.4	50.0	8.6
69 (801.25MHz)	847.00	18.1	7.8	25.9	50.0	24.1
	1694.00	31.1	7.8	38.9	50.0	11.1

Table 10. Antenna-Conducted Power Measurements

NOTES:

1. *MPL = Impedance Matching Network Loss
2. Measurements using CISPR quasi-peak mode.
The limits is 2.0 nano watts as the FCC part section 15.111.
3. Frequencies above 1GHz, both a peak and average detector shall be used.
If the unit complies with the peak limits, then no further investigation of the average readings is required.



Tested by **J. H. Ko**

TEST DATA

Cable Input Conducted Emission

FCC ID : A3LAT50L7 (Cable input Terminal 1)

CHANNEL	Frequency (MHz)	Reading (dB μ V)	MPL * (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)
2 (55.25MHz)	101.00	7.4	7.8	15.2	34.0	18.8
	202.00	-	7.8	-	34.0	-
3 (61.25MHz)	107.00	8.5	7.8	16.3	34.0	17.7
	214.00	-	7.8	-	34.0	-
4 (67.25MHz)	113.00	9.8	7.8	17.6	34.0	16.4
	226.00	-	7.8	-	34.0	-
5 (77.25MHz)	123.00	10.1	7.8	17.9	34.0	16.1
	246.00	-	7.8	-	34.0	-
6 (83.25MHz)	129.00	10.7	7.8	18.5	34.0	15.5
	258.00	-	7.8	-	34.0	-
7 (175.25MHz)	221.00	13.2	7.8	21.0	34.0	13.0
	442.00	-	7.8	-	34.0	-
8 (181.25MHz)	227.00	13.4	7.8	21.2	34.0	12.8
	454.00	-	7.8	-	34.0	-
9 (187.25MHz)	233.00	14.7	7.8	22.5	34.0	11.5
	466.00	-	7.8	-	34.0	-
10 (193.25MHz)	239.00	18.1	7.8	25.9	34.0	8.1
	478.00	-	7.8	-	34.0	-
11 (199.25MHz)	245.00	15.4	7.8	23.2	34.0	10.8
	490.00	-	7.8	-	34.0	-
12 (205.25MHz)	251.00	16.2	7.8	24.0	34.0	10.0
	502.00	-	7.8	-	34.0	-
13 (211.25MHz)	257.00	16.8	7.8	24.6	34.0	9.4
	514.00	-	7.8	-	34.0	-
14 (121.25MHz)	167.00	10.4	7.8	18.2	34.0	15.8
	334.00	12.8	7.8	20.6	34.0	13.4
	501.00	-	7.8	-	34.0	-
18 (145.25MHz)	191.00	14.1	7.8	21.9	34.0	12.1
	382.00	-	7.8	-	34.0	-
	573.00	-	7.8	-	34.0	-
22 (169.25MHz)	215.00	15.4	7.8	23.2	34.0	10.8
	430.00	-	7.8	-	34.0	-
	645.00	10.1	7.8	17.9	34.0	16.1
26 (235.25MHz)	281.00	13.2	7.8	21.0	34.0	13.0
	562.00	-	7.8	-	34.0	-
	843.00	8.4	7.8	16.2	34.0	17.8
31 (265.25MHz)	311.00	15.3	7.8	23.1	34.0	10.9
	622.00	8.5	7.8	16.3	34.0	17.7
	933.00	11.2	7.8	19.0	34.0	15.0
36 (295.25MHz)	341.00	16.4	7.8	24.2	34.0	9.8
	682.00	11.8	7.8	19.6	34.0	14.4
	1023.00	16.4	7.8	24.2	34.0	9.8

CHANNEL	Frequency (MHz)	Reading (dB μ V)	MPL * (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)
49 (373.25MHz)	419.00	11.1	7.8	18.9	40.0	21.1
	838.00	9.8	7.8	17.6	40.0	22.4
	1257.00	9.4	7.8	17.2	40.0	22.8
57 (421.25MHz)	467.00	11.4	7.8	19.2	40.0	20.8
	934.00	7.8	7.8	15.6	40.0	24.4
	1401.00	18.4	7.8	26.2	40.0	13.8
65 (469.25MHz)	515.00	10.4	7.8	18.2	45.0	26.8
	1030.00	8.5	7.8	16.3	45.0	28.7
	1545.00	21.2	7.8	29.0	45.0	16.0
80 (559.25MHz)	605.00	13.4	7.8	21.2	45.0	23.8
	1210.00	18.5	7.8	26.3	45.0	18.7
	1815.00	20.1	7.8	27.9	45.0	17.1
	2420.00	21.4	7.8	29.2	45.0	15.8
90 (619.25MHz)	665.00	14.0	7.8	21.8	45.0	23.2
	1330.00	22.8	7.8	30.6	45.0	14.4
	1995.00	22.7	7.8	30.5	45.0	14.5

Table 11. Cable Input Conducted Emission
NOTES:

1. *MPL = Impedance Matching Network Loss
2. Measurements using CISPR quasi-peak mode.
The limits is
 - From 54MHz up to and including 300MHz -26 dBmV
 - From 300MHz up to and including 450MHz -20dBmV
 - From 450MHz up to and including 804MHz -15dBmV
 as the FCC part section 15.118.
3. Frequencies above 1GHz, both a peak and average detector shall be used.
If the unit complies with the peak limits, then no further investigation of the average readings is required.



 Tested by **J. H. Ko**

TEST DATA

Cable Input Conducted Emission

FCC ID : A3LAT50L7 (Cable Input 2)

CHANNEL	Frequency (MHz)	Reading (dB μ V)	MPL * (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)
2 (55.25MHz)	101.00	6.3	7.8	14.1	50.0	35.9
	202.00	-	7.8	-	50.0	-
3 (61.25MHz)	107.00	7.4	7.8	15.2	50.0	34.8
	214.00	-	7.8	-	50.0	-
4 (67.25MHz)	113.00	8.0	7.8	15.8	50.0	34.2
	226.00	-	7.8	-	50.0	-
5 (77.25MHz)	123.00	9.4	7.8	17.2	50.0	32.8
	246.00	-	7.8	-	50.0	-
6 (83.25MHz)	129.00	9.4	7.8	17.2	50.0	32.8
	258.00	-	7.8	-	50.0	-
7 (175.25MHz)	221.00	14.3	7.8	22.1	50.0	27.9
	442.00	-	7.8	-	50.0	-
8 (181.25MHz)	227.00	14.8	7.8	22.6	50.0	27.4
	454.00	-	7.8	-	50.0	-
9 (187.25MHz)	233.00	15.4	7.8	23.2	50.0	26.8
	466.00	-	7.8	-	50.0	-
10 (193.25MHz)	239.00	16.1	7.8	23.9	50.0	26.1
	478.00	-	7.8	-	50.0	-
11 (199.25MHz)	245.00	16.9	7.8	24.7	50.0	25.3
	490.00	-	7.8	-	50.0	-
12 (205.25MHz)	251.00	17.3	7.8	25.1	50.0	24.9
	502.00	-	7.8	-	50.0	-
13 (211.25MHz)	257.00	17.4	7.8	25.2	50.0	24.8
	514.00	-	7.8	-	50.0	-
14 (121.25MHz)	167.00	-	7.8	-	50.0	-
	334.00	14.3	7.8	22.1	50.0	27.9
	501.00	-	7.8	-	50.0	-
18 (145.25MHz)	191.00	15.1	7.8	22.9	50.0	27.1
	382.00	-	7.8	-	50.0	-
	573.00	-	7.8	-	50.0	-
22 (169.25MHz)	215.00	14.1	7.8	21.9	50.0	28.1
	430.00	-	7.8	-	50.0	-
	645.00	8.0	7.8	15.8	50.0	34.2
26 (235.25MHz)	281.00	14.8	7.8	22.6	50.0	27.4
	562.00	-	7.8	-	50.0	-
	843.00	7.9	7.8	15.7	50.0	34.3
31 (265.25MHz)	311.00	16.4	7.8	24.2	50.0	25.8
	622.00	7.4	7.8	15.2	50.0	34.8
	933.00	10.2	7.8	18.0	50.0	32.0
36 (295.25MHz)	341.00	17.6	7.8	25.4	50.0	24.6
	682.00	8.6	7.8	16.4	50.0	33.6
	1023.00	17.4	7.8	25.2	50.0	24.8

CHANNEL	Frequency (MHz)	Reading (dB μ V)	MPL * (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)
49 (373.25MHz)	419.00	12.0	7.8	19.8	50.0	30.2
	838.00	10.7	7.8	18.5	50.0	31.5
	1257.00	10.8	7.8	18.6	50.0	31.4
57 (421.25MHz)	467.00	12.6	7.8	20.4	50.0	29.6
	934.00	8.4	7.8	16.2	50.0	33.8
	1401.00	17.2	7.8	25.0	50.0	25.0
65 (469.25MHz)	515.00	11.7	7.8	19.5	50.0	30.5
	1030.00	9.0	7.8	16.8	50.0	33.2
	1545.00	23.4	7.8	31.2	50.0	18.8
80 (559.25MHz)	605.00	14.0	7.8	21.8	50.0	28.2
	1210.00	19.7	7.8	27.5	50.0	22.5
	1815.00	18.2	7.8	26.0	50.0	24.0
	2420.00	20.4	7.8	28.2	50.0	21.8
90 (619.25MHz)	665.00	14.9	7.8	22.7	50.0	27.3
	1330.00	23.6	7.8	31.4	50.0	18.6
	1995.00	23.9	7.8	31.7	50.0	18.3

Table 12. Cable Input Conducted Emission

NOTES:

1. *MPL = Impedance Matching Network Loss
2. Measurements using CISPR quasi-peak mode.

The limits is

From 54MHz up to and including 300MHz -26 dBmV

From 300MHz up to and including 450MHz -20dBmV

From 450MHz up to and including 804MHz -15dBmV

as the FCC part section 15.118.

3. Frequencies above 1GHz, both a peak and average detector shall be used. If the unit complies with the peak limits, then no further investigation of the average readings is required.



Tested by J. H. Ko

TEST DATA

Measurements of isolation between the antenna and cable input terminals

FCC ID : A3LAT50L7 (Input 1)

Input Signal Frequency (MHz)	Input Signal Level (dBm)	Reading (dBm)	MPL * (dB)	Result (dBm)	Limit (dB)	Margin (dB)
54	0.0	-95.2	13.1	-82.1	80.0	2.1
100	0.0	-95.6	13.4	-82.2	80.0	2.2
150	0.0	-	13.6	-	80.0	-
200	0.0	-95.8	13.7	-82.1	80.0	2.1
250	0.0	-95.5	13.7	-81.8	60.0	21.8
300	0.0	-97.0	13.8	-83.2	60.0	23.2
350	0.0	-97.6	13.8	-83.8	60.0	23.8
400	0.0	-	14	-	60.0	-
450	0.0	-97.4	14	-83.4	60.0	23.4
500	0.0	-97.4	14.3	-83.1	60.0	23.1
550	0.0	-93.0	14.2	-78.8	60.0	18.8
600	0.0	-94.0	14.5	-79.5	55.0	24.5
650	0.0	-90.0	14.3	-75.7	55.0	20.7
700	0.0	-89.1	14.6	-74.5	55.0	19.5
750	0.0	-90.7	14.5	-76.2	55.0	21.2
800	0.0	-92.0	14.9	-77.1	55.0	22.1

Table 13. Measurement of between the Antenna and Cable input

NOTES:

1. *MPL = Impedance Matching Network Loss
2. Measurements using peak detector mode.

The limits is

From 54MHz up to and including 216MHz 80 dB
 From 216MHz up to and including 550MHz 60 dB
 From 550MHz up to and including 800MHz 55 dB
 as the FCC part section 15.117.(h)



Tested by **J. H. Ko**

TEST DATA

Measurements of isolation between the antenna and cable input terminals

MODEL : AT50L7 (Input 2)

Input Signal Frequency (MHz)	Input Signal Level (dBm)	Reading (dBm)	MPL * (dB)	Result (dBm)	Limit (dB)	Margin (dB)
54	0.0	-95.3	13.1	-82.2	80.0	2.2
100	0.0	-95.7	13.4	-82.3	80.0	2.3
150	0.0	-95.8	13.6	-82.2	80.0	2.2
200	0.0	-96.3	13.7	-82.6	80.0	2.6
250	0.0	-94.3	13.7	-80.6	60.0	20.6
300	0.0	-97.3	13.8	-83.5	60.0	23.5
350	0.0	-	13.8	-	60.0	-
400	0.0	-	14	-	60.0	-
450	0.0	-96.8	14	-82.8	60.0	22.8
500	0.0	-97.6	14.3	-83.3	60.0	23.3
550	0.0	-95.1	14.2	-80.9	60.0	20.9
600	0.0	-92.9	14.5	-78.4	55.0	23.4
650	0.0	-91.6	14.3	-77.3	55.0	22.3
700	0.0	-88.0	14.6	-73.4	55.0	18.4
750	0.0	-92.6	14.5	-78.1	55.0	23.1
800	0.0	-93.9	14.9	-79.0	55.0	24.0

Table 14. Measurement of between the Antenna and Cable input

NOTES:

1. *MPL = Impedance Matching Network Loss
2. Measurements using peak detector mode.

The limits is

- From 54MHz up to and including 216MHz 80 dB
 - From 216MHz up to and including 550MHz 60 dB
 - From 550MHz up to and including 800MHz 55 dB
- as the FCC part section 15.117.(h)



Tested by J. H. Ko

ACCURACY OF MEASUREMENT

The Measurement Uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 with the confidence level of 95%

1. Radiation Uncertainty Calculation

<i>Contribution</i>	<i>Probability Distribution</i>	<i>Uncertainty(+/-dB)</i>
Antenna Factor	Normal (k=2)	± 0.5
Cable Loss	Normal (k=2)	± 0.04
Receiver Specification	Rectangular	± 2.0
Antenna directivity	Rectangular	± 1.0
Antenna Factor variation with Height		
Antenna Phase Center Variation		
Antenna Factor Frequency Interpolation		
Measurement Distance Variation		
Site Imperfections	Rectangular	± 2.0
Mismatch:Receiver VRC $r_i=0.3$ Antenna VRC $r_R=0.1(B_i)0.4(L_p)$ Uncertainty Limits $20\text{Log}(1+/-r_i r_R)$	U-Shaped	+ 0.25 / - 0.26
System Repeatibility	Std.deviation	± 0.05
Repeatability of EUT	-	-
Combined Standard Uncertainty	Normal	± 1.77
Expanded Uncertainty U	Normal (k=2)	± 3.5

2. Conducted Uncertainty Calculation

<i>Contribution</i>	<i>Probability Distribution</i>	<i>Uncertainty(+/-dB)</i>
Receiver Specification	Normal (k=2)	± 2.0
LISN coupling spec.	Normal (k=2)	± 0.4
Cable and input attenuator cal.	Rectangular	± 0.4
Mismatch:Receiver VRC $r_i=0.3$ LISN vrc $r_g=0.1$ Uncertainty Limits $20\text{Log}(1+/-r_i r_R)$	U-Shaped	± 0.26
System Repeatibility	Std.deviation	± 0.68
Repeatability of EUT	-	-
Combined Standard Uncertainty	Normal	± 1.18
Expanded Uncertainty U	Normal (k=2)	± 2.4

TEST EQUIPMENT

No.	Instrument	Manufacturer	Model	Calibration Date
1	*Test Receiver	R & S	ESCS 30	2003.09
2	*Amplifier	HP	8447F	2005.01
3	*Amplifier	HP	8449B	2004.03
4	Spectrum Analyzer	Advantest	R3265A	2003.12
5	*Spectrum Analyzer	HP	8566B	2004.03
6	*Logbicon Super Antenna	Schwarzbeck	VULB9166	2003.05
7	*Doppels Teg Horn	EMCO	DAA-37121	2003.10
8	Dipole Antenna	R & S	VHA9103	2003.05
9	Dipole Antenna	R & S	UHA9105	2003.05
10	*Biconical Log Antenna	ARA	LPB-2520/A	2003.05
11	Asorbing Clamp	R & S	MDS21	2003.06
12	High Voltage Probe	R & S	ESH2-Z3	2003.10
13	Signal Generater	R & S	SMP02	2004.03
14	*Matching Pad	R & S	RAM358.5414.02	2003.05
15	*LISN	R & S	ESH3-Z5	2003.11
16	LISN	Kyoritsu	KNW-407	2004.03
17	*LISN	Kyoritsu	KNW-408	2003.12
18	*Position Controller	EM Eng.	N/A	N/A
19	*Turn Table	EM Eng.	N/A	N/A
20	*Antenna Mast	EM Eng.	N/A	N/A
21	*Anechoic Chamber	EM Eng.	N/A	N/A
22	*Matching Pad	R & S	BN18084	2003.06

*) Test equipment used during the test