FCC ID: OCRCAM0250U-LG

EMC

TEST REPORT

REPORT NO. : F88031961
MODEL NO. : LEGO Cam-001
DATE OF TEST : Mar. 22, 1999

MULTIPLE LISTING FOR : ElecVision
MODEL : EVCam250KU

PREPARED FOR: ElecVision Inc.

ADDRESS : 2F, NO. 9, INDUSTRY E. ROAD IX, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

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No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien, Taiwan, R.O.C.

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CERTIFICATION

Issue Date: June 19, 1999

Product	:	PC-Camera
Trade Name	:	LEGO, ElecVision
Model No.	:	LEGO Cam-001, EVCam250KU
Applicant	:	ElecVision Inc.
Standard	:	FCC Part 15, Subpart B, Class B ANSI C63.4-1992 CISPR 22:1993+A1: 1995+A2: 1996

We hereby certify that one sample of the designation had been tested in our facility on March 22, 1999. The test record, data evaluation and Equipment Under Test (EUT) configurations represent herein are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

The test results show that the EUT as described in this report was in compliance with the Class B limits of conducted and radiated emission of applicable standards

TESTED BY: Rico Teng , DATE: 6/19/'99
(Rico Teng)

CHECKED BY: Rita Yi , DATE: 6/19/99
(Rita Yi)

APPROVED BY: DATE: 6/19/99
(Stephen W.F. Chen)

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	PC-Camera
Model No.	:	LEGO Cam-001
Power Supply	:	DC 5V
Data Cable	:	USB shielded cable (5m) EPP shielded cable (1.5m)

Note: The EUT is a PC-Camera with USB or EPP interface. It provided user to capture still pictures, live video or stop frame video into their computer, and it can be incorporated into report, presentations and web pages.

The EUT has two model names which are identical to each other in all aspects except for the followings:

Model Name	Brand
LEGO Cam-001	LEGO
EVCam250KU	ElecVision

Since the EUT could be supplied with USB or EPP interface, those two configuration were tested individually and their test data were recorded in the report.

For more detailed features, please refer to ATTACHMENT 1 - TECHNICAL DESCRIPTION OF EUT and User's Manual.

2.2 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories are used to form representative test configuration during the tests.

FOR USB TEST MODE

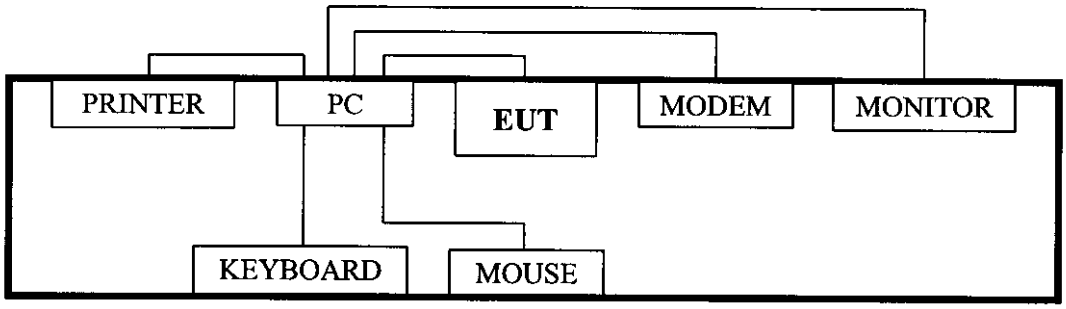
No	Product	Brand	Model No.	FCC DoC	I/O Cable
1	PERSONAL COMPUTER	IBM	2156-DIJ	FCC DoC	Nonshielded Power (1.8m)
2	MONITOR	COMPAQ	V410	BJMC4A	Shielded Signal (1.2m) Nonshielded Power (1.8m)
3	PRINTER	HP	C2642A	B94C2642X	Shielded Signal (1.2m) Nonshielded Power (1.8m)
4	MODEM	ACEEX	1414	IFAXDM1414	Shielded Signal (1.1m) Nonshielded Power (2.1m)
5	MOUSE	LOGITECH	M-S34	DZL211029	Shielded Signal (1.8m)
6	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (1.4m)

FOR EPP TEST MODE

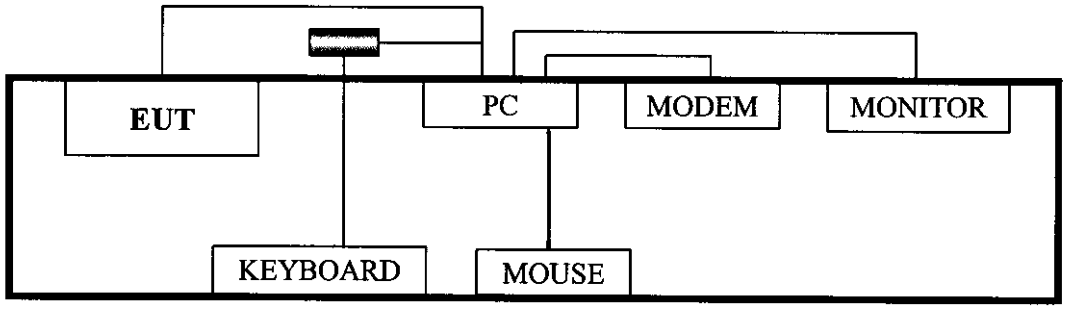
No	Product	Brand	Model No.	Serial No.	I/O Cable
1	PERSONAL COMPUTER	IBM	2156-DIJ	FCC DoC	Nonshielded Power (1.8m)
2	MONITOR	COMPAQ	V410	BJMC4A	Shielded Signal (1.2m) Nonshielded Power (1.8m)
3	MODEM	ACEEX	1414	IFAXDM1414	Shielded Signal (1.1m) Nonshielded Power (2.1m)
4	MOUSE	LOGITECH	M-S34	DZL211029	Shielded Signal (1.8m)
5	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (1.4m)

2.3 TEST METHODOLOGY AND CONFIGURATION

FOR USB TEST MODE



FOR EPP TEST MODE



Both conducted and radiated testing were performed according to the procedures in ANSI C63.4:1992. Radiated testing was performed at an antenna to EUT distance of 10m on an open area test site. Please refer to the photos of test configuration in Item 5.

3. TEST INSTRUMENTS

3.1 TEST INSTRUMENTS (EMISSION)

RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
HP Spectrum Analyzer	8594E	3710A04861	Sep. 14, 1999
CHASE RF Pre_Amplifier	CPA9232	1001	Jan. 31, 2000
ROHDE & SCHWARZ Test Receiver	ESVS 10	846285/012	Dec. 15, 1999
CHASE Broadband Antenna	CBL6112A	2342	June 24, 1999
ROHDE & SCHWARZ Precision Dipole	HZ-12 (30~300MHz)	846932/0003	June 06, 2000
ROHDE & SCHWARZ Precision Dipole	HZ-13 (300~1000MHz)	846556/0007	June 17, 2000
EMCO Antenna Tower	2075-2	9712-2124	N/A
EMCO Turn Table	2081-1.53	9712-2030	N/A
CORCOM AC Filter	MRI2030	107/108	N/A
Open Field Test Site	Site A	ADT-RA	July 08, 1999

Note: 1. The measurement uncertainty is less than +/- 3dB, which is calculated as per NAMAS document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

CONDUCTED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Test Receiver	ESCS 30	847124/029	Nov. 13, 1999
ROHDE & SCHWARZ LISN	ESHS-Z5	848773/004	Nov. 11, 1999
KYORITSU LISN	KNW-407	8/1395/12	July 15, 1999
Shielded Room	Con A	ADT-CA	N/A

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMAS document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION

LIMIT OF RADIATED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (at 10m) dBuV/m	Class B (at 10m) dBuV/m
30 - 230	40	30
230 - 1000	47	37

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
Above 1000	300	49.5	500	54.0

Note: (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

LIMIT OF CONDUCTED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: (1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4. TEST RESULTS (EMISSION)

4.1 RADIO DISTURBANCE

Frequency Range	:	0.15 - 30 MHz (Conducted Emission)
		30 - 1000 MHz (Radiated Emission)
Input Voltage	:	DC 5V
Temperature	:	22 ℃
Humidity	:	60 %
Atmospheric Pressure	:	986 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -12.00 dB at 4.410 MHz Minimum passing margin of radiated emission: -2.0 dB at 48.00 MHz

4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
2. PC reads a test program to enable all functions.
3. EUT captures images and sends image messages to PC.
4. PC sends image messages and "H" messages to monitor and monitor displays these messages simultaneously on screen.
5. PC sends "H" messages to modem (for USB mode only).
6. PC sends "H" messages to printer, and the printer prints them on paper.
7. Repeat steps 3-7.

4.2 TEST DATA OF CONDUCTED EMISSION (A)

EUT: **PC-Camera** MODEL: **LEGO Cam-001**

TEST MODE: **USB MODE**

6 dB Bandwidth: 10 kHz

Freq.	L Level		N Level		Limit		Margin [dB (μV)]			
[MHz]	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
3.843	40.00	-	40.80	-	56.00	46.00	-16.00	-	-15.20	-
4.080	42.50	-	42.90	-	56.00	46.00	-13.50	-	-13.10	-
4.410	44.00	-	43.80	-	56.00	46.00	-12.00	-	-12.20	-
5.125	42.60	-	42.50	-	60.00	50.00	-17.40	-	-17.50	-
7.734	44.80	-	45.00	-	60.00	50.00	-15.20	-	-15.00	-
9.203	42.90	-	43.40	-	60.00	50.00	-17.10	-	-16.60	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
4. The emission level of other frequencies were very low against the limit.

ADT CORP. SHIELDED ROOM A
CISPR 22 CLASS B

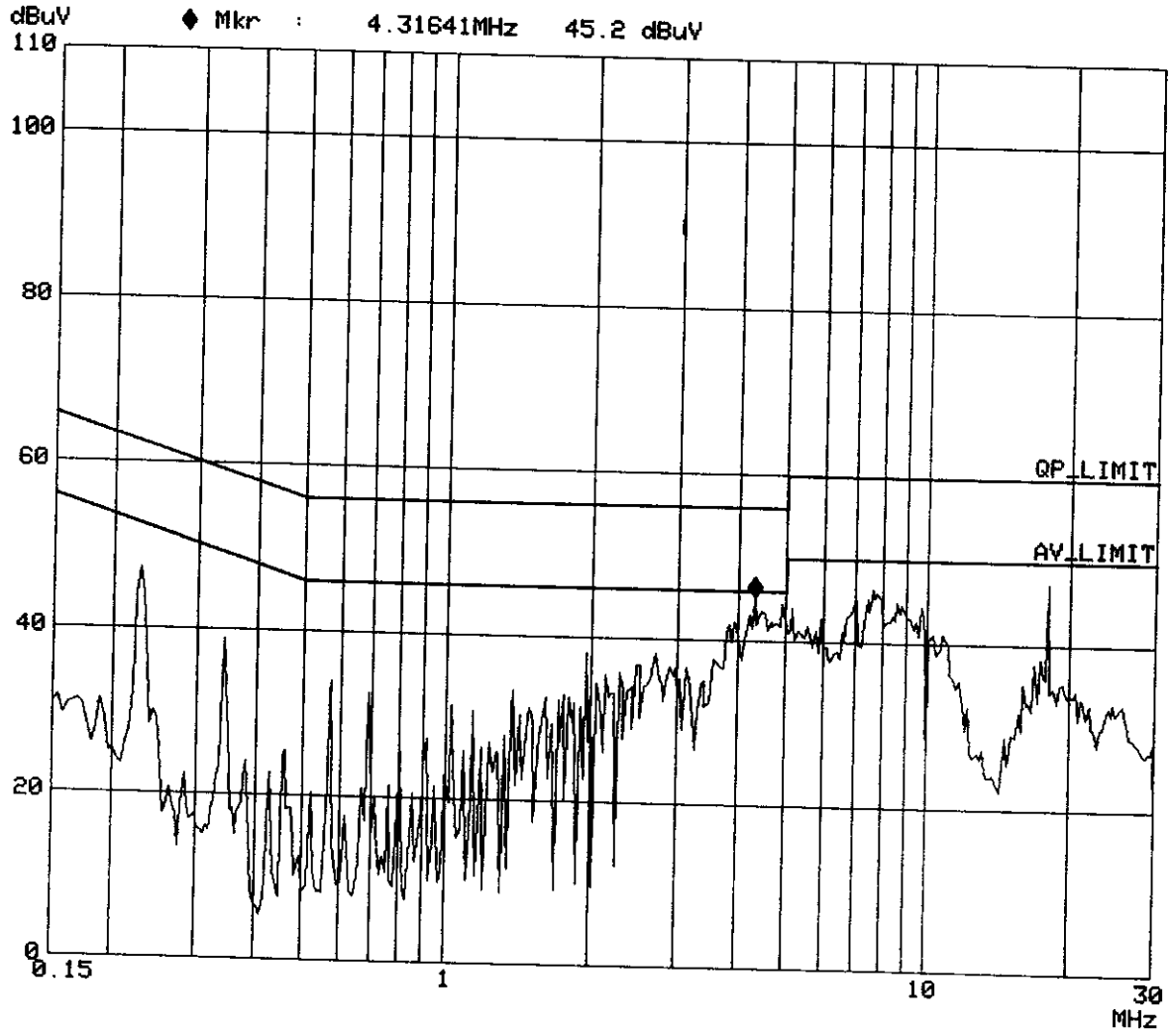
EUT: LEGO Cam-001
Op Cond: USB MODE
Test Spec: LISN :L
Comment: 120V AC / 60Hz
Date: 22. Mar 99 10:08

Report No.: F88031961
Page: 10-1
Test By: Rico Tong

Overview Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	3M	3.90625k	9k	PK	10ms	10dBLN	OFF
3M	10M	3.90625k	9k	PK	0.05ms	10dBLN	OFF
10M	30M	3.90625k	9k	PK	0.05ms	10dBLN	OFF

Transducer No.	Start	Stop	Name
1	150k	30M	C_CA_01A



ADT CORP. SHIELDED ROOM A
CISPR 22 CLASS B

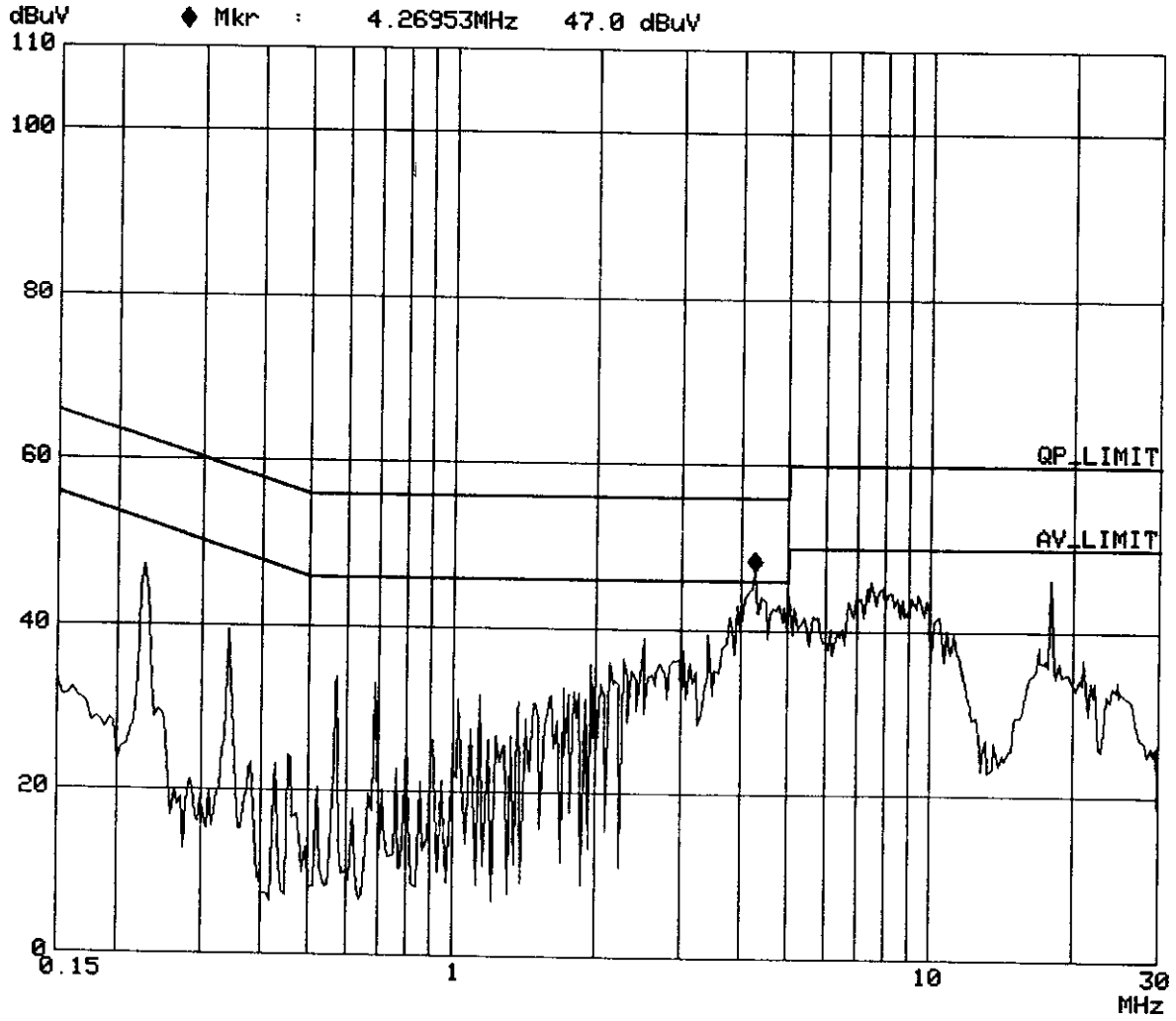
EUT: LEGO Cam-001
Op Cond: USB MODE
Test Spec: LISN :N
Comment: 120V AC / 60Hz
Date: 22. Mar 99 10:03

Report No.: F88031961
Page: 10-2
Test By: Dico Teng

Overview Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	3M	3.90625k	9k	PK	10ms	10dBLN	OFF
3M	10M	3.90625k	9k	PK	0.05ms	10dBLN	OFF
10M	30M	3.90625k	9k	PK	0.05ms	10dBLN	OFF

Transducer No.	Start	Stop	Name
1	150k	30M	C_CA_01A



4.3 TEST DATA OF CONDUCTED EMISSION (B)

EUT: **PC-Camera** MODEL: **LEGO Cam-001**

TEST MODE: **EPP MODE**

6 dB Bandwidth: 10 kHz

Freq.	L Level		N Level		Limit		Margin [dB (μV)]			
[MHz]	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
3.890	40.90	-	41.40	-	56.00	46.00	-15.10	-	-14.60	-
4.648	42.50	-	42.50	-	56.00	46.00	-13.50	-	-13.50	-
5.027	44.10	-	43.3	-	60.00	50.00	-15.90	-	-16.70	-
7.781	42.20	-	42.10	-	60.00	50.00	-17.80	-	-17.90	-
12.476	39.70	-	39.80	-	60.00	50.00	-20.30	-	-20.20	-
13.281	42.70	-	42.80	-	60.00	50.00	-17.30	-	-17.20	-

Remarks: 1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
4. The emission level of other frequencies were very low against the limit.

ADT CORP. SHIELDED ROOM A
CISPR22 CLASS B

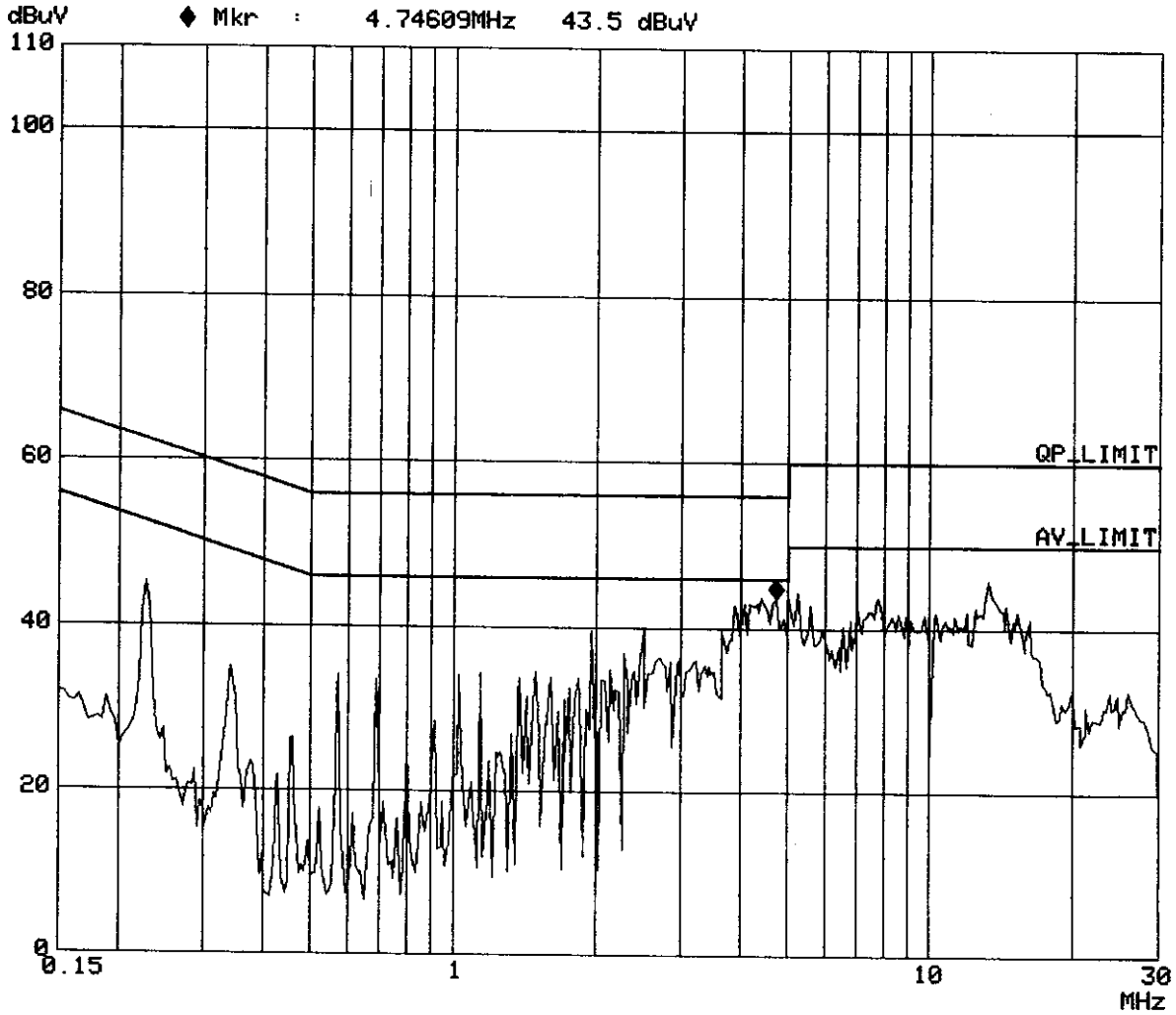
EUT: LEGO Cam-001
Op Cond: EPP MODE
Test Spec: LISN :L
Comment: 120V AC / 60Hz
Date: 22. Mar 99 11:15

Report No.: F88031961
Page: 11-1
Test By: Rico Tong

Overview Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	3M	3.90625k	9k	PK	10ms	10dBLN	OFF
3M	10M	3.90625k	9k	PK	0.05ms	10dBLN	OFF
10M	30M	3.90625k	9k	PK	0.05ms	10dBLN	OFF

Transducer No.	Start	Stop	Name
1	150k	30M	C_CA_01A



ADT CORP. SHIELDED ROOM A
CISPR22 CLASS B

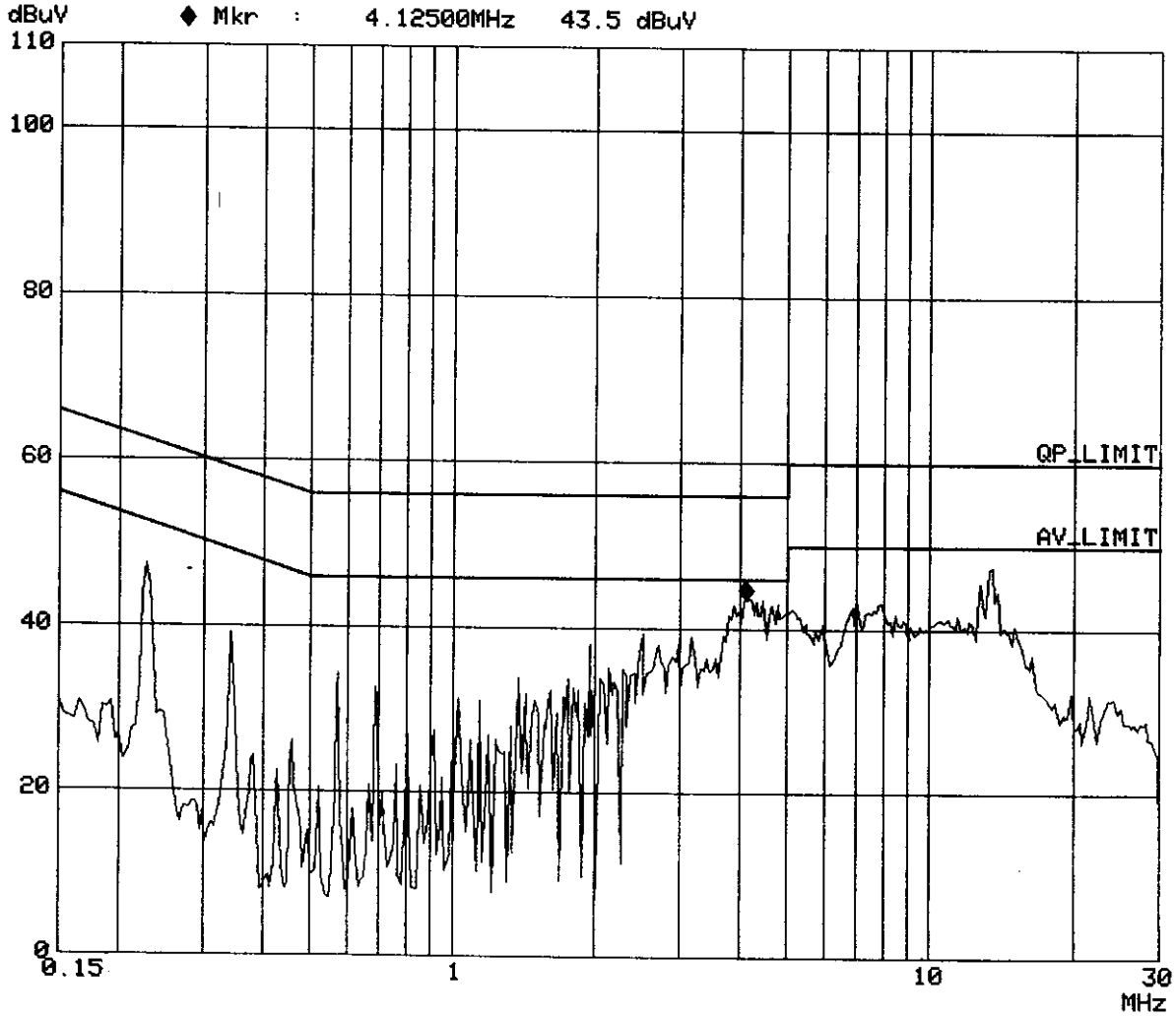
EUT: LEGO Cam-001
Op Cond: EPP MODE
Test Spec: LISN :N
Comment: 120V AC / 60Hz
Date: 22. Mar 99 11:24

Report No.: F88031961
Page: 11-2
Test By: Dico Teng

Overview Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	3M	3.90625k	9k	PK	10ms	10dBLN	OFF
3M	10M	3.90625k	9k	PK	0.05ms	10dBLN	OFF
10M	30M	3.90625k	9k	PK	0.05ms	10dBLN	OFF

Transducer No.	Start	Stop	Name
1	150k	30M	C_CA_01A



4.4 TEST DATA OF RADIATED EMISSION (A)

EUT: **PC-Camera** MODEL: **LEGO Cam-001**

TEST MODE: **USB MODE** ANT. POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
48.01	10.4	11.0	21.4	30.0	-8.6
54.02	7.9	16.0	23.9	30.0	-6.1
72.00	7.6	14.5	22.1	30.0	-7.9
72.20	7.7	15.0	22.7	30.0	-7.3
192.00	12.0	15.8	27.8	30.0	-2.2
217.24	11.7	8.7	20.4	30.0	-9.6

REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) +Meter Reading (dBuV).
2. Correction Factor (dB/m) = Ant. Factor (dB/m)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

FCC ID: OCRCAM0250U-LG

TEST DATA OF RADIATED EMISSION (A)

EUT: **PC-Camera** MODEL: **LEGO Cam-001**

TEST MODE: **USB MODE** ANT. POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
48.00	10.6	17.4	28.0	30.0	-2.0
54.01	8.3	19.0	27.3	30.0	-2.7
60.53	6.9	17.0	23.9	30.0	-6.1
114.01	13.7	11.0	24.7	30.0	-5.3
192.01	13.0	14.9	27.8	30.0	-2.1
884.80	27.3	4.0	31.3	37.0	-5.7

REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) +Meter Reading (dBuV).
2. Correction Factor (dB/m) = Ant. Factor (dB/m)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

4.5 TEST DATA OF RADIATED EMISSION (B)

EUT: **PC-Camera** MODEL: **LEGO Cam-001**

TEST MODE: **EPP MODE** ANT. POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
226.50	12.3	6.0	18.3	30.0	-11.7
520.93	22.9	12.0	34.9	37.0	-2.1
525.41	23.0	11.0	34.0	37.0	-3.0
528.00	23.0	11.7	34.7	37.0	-2.3
552.97	23.5	8.6	32.1	37.0	-4.9
577.55	23.9	6.1	30.0	37.0	-7.0

REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) +Meter Reading (dBuV).
2. Correction Factor (dB/m) = Ant. Factor (dB/m)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

FCC ID: OCRCAM0250U-LG

TEST DATA OF RADIATED EMISSION (B)

EUT: **PC-Camera** MODEL: **LEGO Cam-001**

TEST MODE: **EPP MODE** ANT. POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
50.95	9.0	17.0	26.0	30.0	-4.0
53.70	8.3	16.0	24.3	30.0	-5.7
226.50	13.3	10.0	23.3	30.0	-6.7
522.50	22.7	12.0	34.7	37.0	-2.3
525.55	22.8	5.2	28.0	37.0	-9.0
528.90	22.8	11.3	34.1	37.0	-2.9

REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) +Meter Reading (dBuV).
2. Correction Factor (dB/m) = Ant. Factor (dB/m)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value