CERTiTEK

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EMC TEST REPORT For FCC

Test Report No.	:	2005080011
Date of Issue	:	August 9, 2005
FCC ID	:	NLMPRO815
Model/Type No.	:	Pro815
Kind of Product	:	Digital Camera
Applicant	:	Samsung Techwin Co., Ltd.
Applicant Address	:	145-3 Sangdaewon 1-Dong, Jungwon-Gu, Sungnam-City, Kyungki-Do, Korea
Manufacturer	:	Samsung Techwin Co., Ltd.
Manufacturer Address	:	42, Sungju-dong, Changwon City, Kyungnam, Korea
Contact Person	:	Yang, Wook (Engineer)
Telephone	:	+82-31-740-8158
Received Date	:	July 28, 2005
Test period	:	Start : August 8, 2005 End : August 9, 2005
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

The test results presented in this report relate only to the object tested.

CERTiTEK Standards Laboratory Co., Ltd. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the above test item(s) and test method(s).

Tested by

Hyo-Jae, Jeong
EMC Test Engineer
Date: August 9, 2005

Reviewed by

James Hong
EMC Technical Manager
Date: August 9, 2005

REPORT REVISION HISTORY

Date	Revision	Page No
August 9, 2005	Issued (2005080011)	All

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1.0 General Product Description

1.0.1 Tested Equipment

☒ Unless otherwise indicated, all tests were conducted on Model Pro815.
☐ Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions:	135.5 by 87.0 by 78.6	☒ mm ☐ inch
Mobility:	☒ Hand-held ☐ Table-top ☐ Built-in	
	☒ Traveling ☐ Floor-standing	
Serial No.:	Prototype	

1.0.3 Electrical Ratings

Adapter	Input:	100-240 Vac, 50/60Hz, 0.3 A
	Output:	8.4 Vdc, 1.5 A
EUT	Input:	8.4 Vdc
	Output:	-

1.0.4 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage:	120 Vac
Frequency:	60 Hz

1.0.5 Clock & Other Frequencies Utilized

67.50 MHz, 12 MHz, 27 MHz, 6.00 MHz

1.1 Model Differences

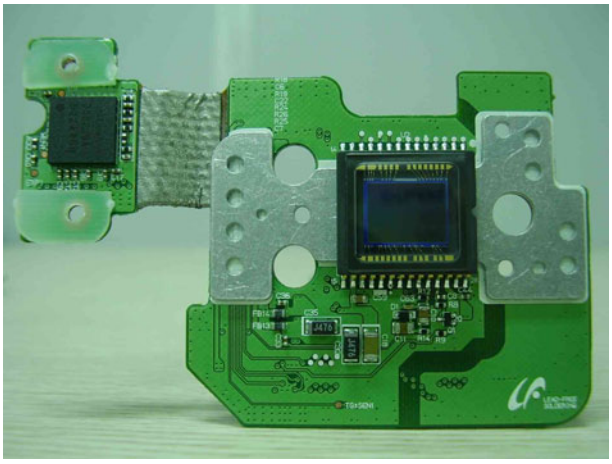
Not applicable

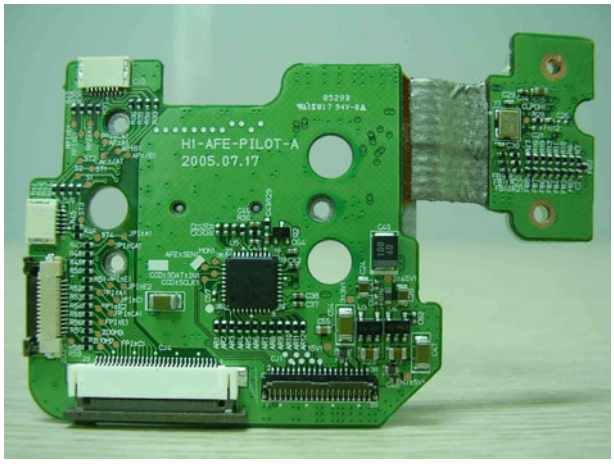
1.2 Device Modifications

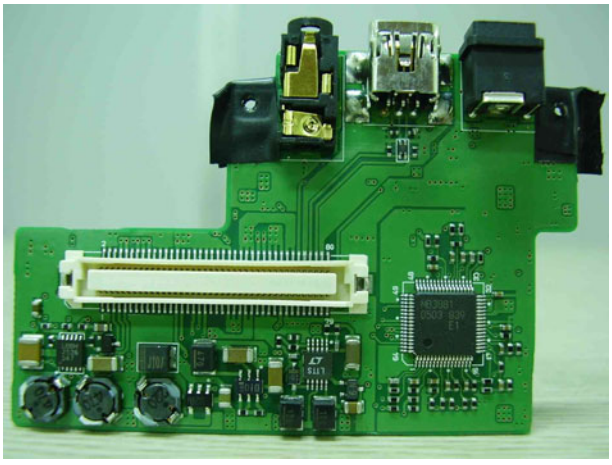
The following modifications were necessary for compliance:

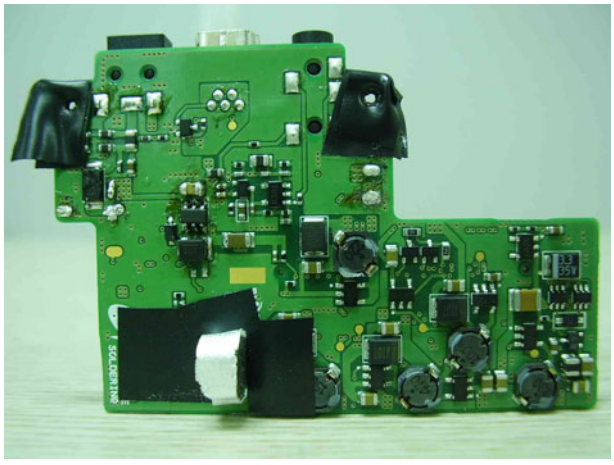
Ferrite Core is inserted additionally.

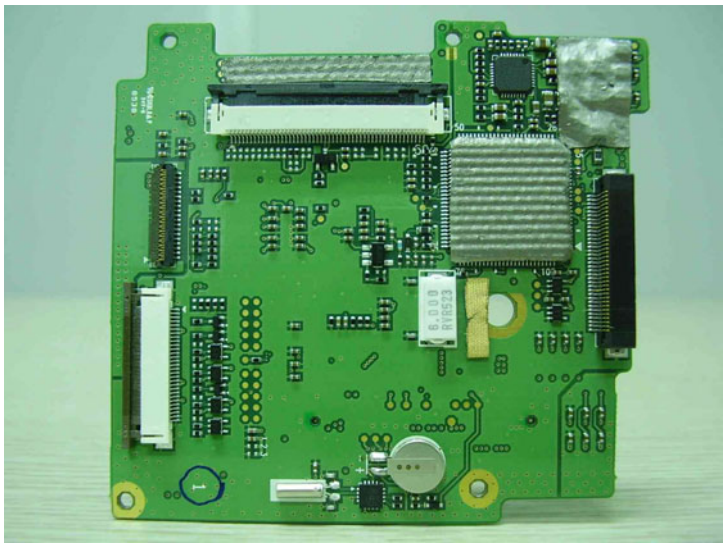
Core location	Manufacturer	Part No.
A/V Cable	TDK Corporation	ZCAT2035-0930

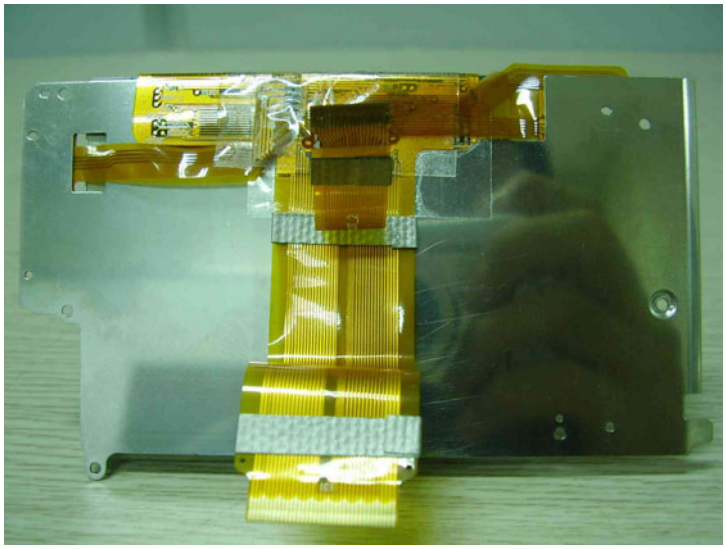


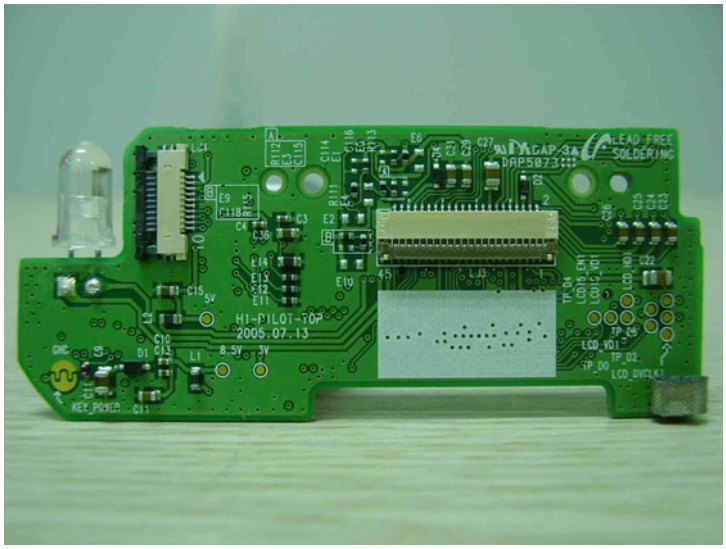












1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

Device	Manufacturer	Model No.	Serial No.	FCC ID or DoC
Adapter (for EUT)	DONGYANG INSTRUMENT INC.	SAC-81	-	-
Personal Computer	Hewlett-Packard Company	Hp pavilion t000 Grouper	KRJ50403HK	DoC
LCD Monitor	TIANJIN SAMSUNG ELECTRONICS DISPLAY	GH17US	N372HVEX225526	DoC
Adapter (for LCD Monitor)	Anam Instruments (Shen Zhen) Co., Ltd.	AP04214-UV	-	-
Keyboard (PS/2 type)	Hewlett-Packard Company	5219	BN5017686	DoC
Mouse (PS/2 type)	KEY SYSTEMS CORP.	N3 Optical	K045205991	DoC
Head-Phone	-	-	-	-
CCTV Monitor	PHILIPS	LTC2814/90	M2100662	-

☒ Cable Description

#	Description	Ferrite Core	Length (m)	Other Details
1	AC power cable, Unshielded	No	1.8	Connect to AC power
2	AC power cable, Unshielded	No	1.8	Connect to AC power
3	AC power cable, Unshielded	No	1.8	Connect to AC power
4	DC In Cable, Unshielded	Yes	1.5	Between the LCD Monitor and Adapter
5	Monitor cable, Shielded	Yes	1.5	Between the PC and LCD Monitor
6	Keyboard cable, Shielded	No	1.5	PS/2 type
7	USB cable, Shielded	Yes	1.5	Between the EUT and PC
8	A/V cable, Unshielded	Yes	1.5	Between the EUT and CCTV Monitor
9	Mouse cable, Shielded	No	1.5	PS/2 type
10	DC In Cable, Unshielded	Yes	1.5	Between the EUT and Adapter
11	Head-Phone Cable, Unshielded	No	2.5	Connect to PC
12	Adapter Power Cable, Unshielded	No	1.8	Connect to AC power

1.4 Test Software

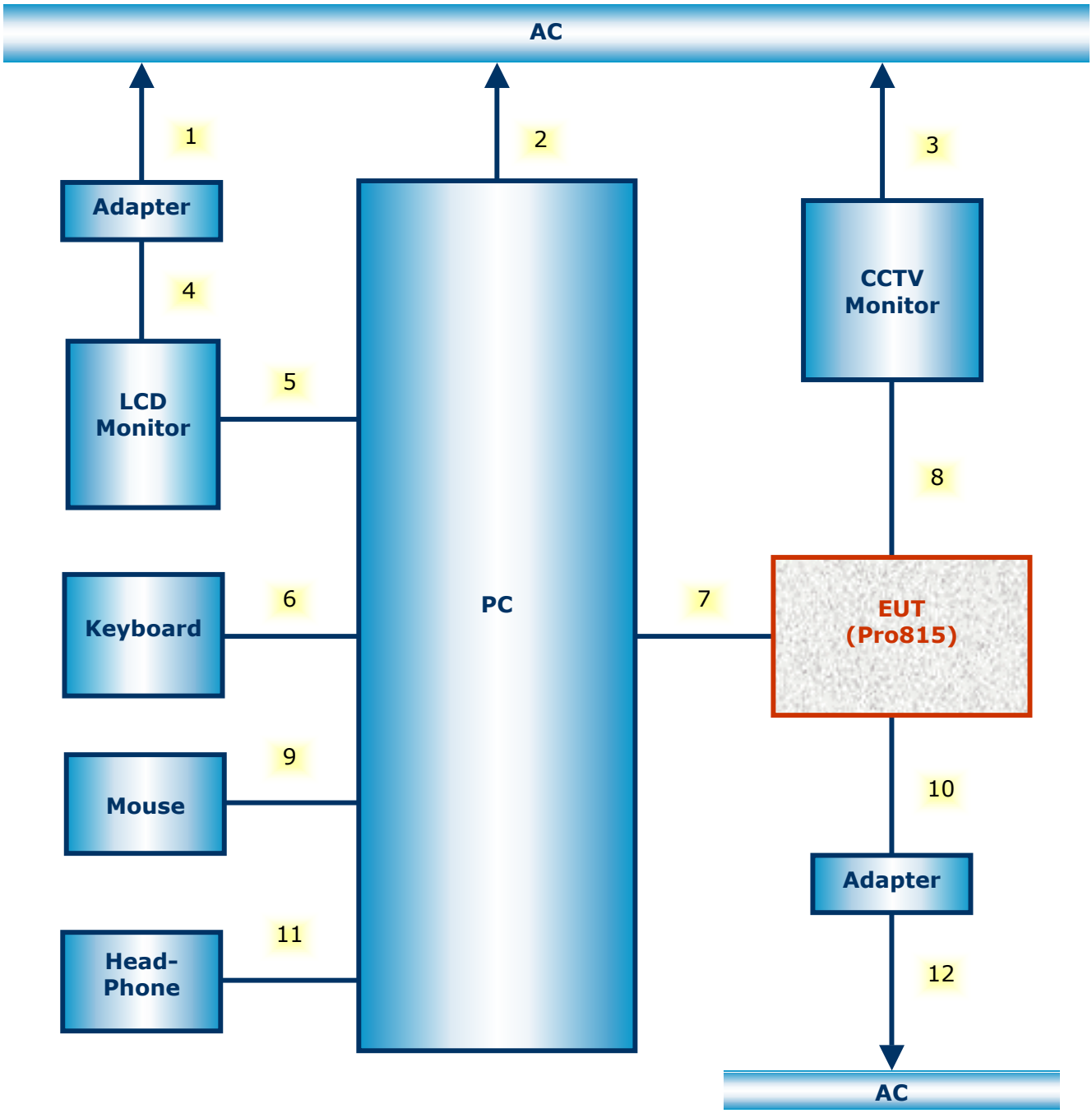
☐ EMC Test V 1.0
☐ Display Test Patterns – V1.5
☐ Ping.exe
☒ Not applicable

1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

☐ Standby
☐ Display circles pattern
☐ Scrolling 'H'
☐ Read / Write
☒ Practice operation – USB downloading mode.
A/V output monitoring mode.

1.6 Configuration



1.7 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.8 Test Facility

The measurement facility is located at 386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.9 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested.
Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)
Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-2001 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

1.10 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	**FCC**	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	93250
JAPAN	**VCCI**	10 meter Open Area Test Site and one conducted site.	R-948, C-986
KOREA	**MIC**	EMI (10 meter Open Area Test Site and two conducted sites) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	No. 51, KR0025
International	**KOLAS**	EMC	
Europe	**GLAS**	EMC EN 55011, EN 55022, EN 61000-6-3, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 50130-4, EN 55024, EN 61204-3, EN 60601-1-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11	No.13000796-02

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

☐ EN 61000-6-3:2001	☐ Class A	☐ Class B
☐ EN 61000-6-4:2001	☐ Class A	☐ Class B
☐ EN 50083-2:2001		
☐ EN 55011:1998 +A1:1999	☐ Group 1 ☐ Class A	☐ Group 2 ☐ Class B
☐ EN 55011:1998 +A1:1999 +A2:2002	☐ Group 1 ☐ Class A	☐ Group 2 ☐ Class B
☐ EN 55013:1990 +A12:1994 +A13:1996 +A14:1999 ☐ EN 55013:2001		
☐ EN 55014-1:2000 ☐ EN 55014-1:2000 +A1:2001		
☐ EN 55015:2000 ☐ EN 55015:2000 +A1:2001		
☐ EN 55022:1994 +A1:1995 +A2:1997	☐ Class A	☐ Class B
☐ EN 55022:1998	☐ Class A	☐ Class B
☐ EN 55022:1998 +A1:2000	☐ Class A	☐ Class B
☐ EN 55022:1998 +A1:2000 +A2:2003	☐ Class A	☐ Class B
☐ EN 61000-3-2:2000		
☐ EN 61000-3-3:1995 +A1:2001		
☐ VCCI V-3/2004.04	☐ Class A	☐ Class B
☐ AS/NZS 3548:1995 +A1:1997 +A2:1997	☐ Class A	☐ Class B
☒ FCC Part 15 Subpart B	☐ Class A	☒ Class B
☒ CISPR 22:1997	☐ Class A	☒ Class B

The unit was tested to CISPR 22 and complied with the alternate methods allowed by FCC under paragraphs 15.107 and 15.109.

☐ CISPR 22:1997 +A1:2000	☐ Class A	☐ Class B

2.1 Conducted Voltage Emissions

Test Date
August 9, 2005

Test Location
Shielded Room

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
☒	Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002	2006-02-01
☒	LISN	EMCO	3825/2	9607-2574	2005-09-03
☒	LISN	EMCO	3825/2	9409-2246	2005-09-03

Frequency Range of Measurement
150 kHz to 30 MHz

Test Results
The requirements are:

☒ MET

Frequency (MHz)	Measured Data (dBuV)	Margin (dB)	Remark
3.87	48.8	7.2	Quasi-peak

☐ NOT MET

Frequency (MHz)	Measured Data (dBuV)	Margin (dB)	Remark

☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

2.2 Radiated Electric Field Emissions

Test Date
August 8, 2005

Test Location
☒ Testing was performed at a test distance of 10 meter Open Area Test Site

Test Equipment

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
☒	Field Strength Meter	Rohde & Schwarz	ESVS30	826638/008	2005-11-15
☒	ULTRA Broadband Antenna	Rohde & Schwarz	HL562	361324/014	2006-05-27
☐	Biconical Antenna	EMCO	3110	9202-1510	2006-04-13
☐	Log-periodic Antenna	EMCO	3146	9607-4567	2006-04-08

Frequency Range of Measurement
30 MHz to 1 GHz

Test Results
The requirements are:

☒ MET

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
734.05	31.8	5.2	Quasi-peak

☐ NOT MET

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark

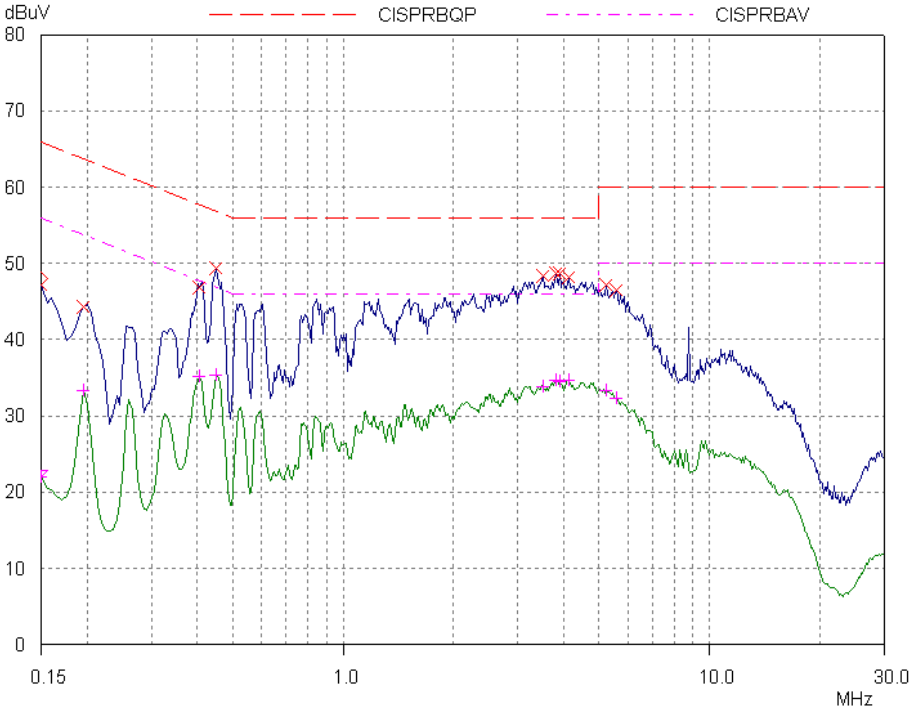
☐ NOT APPLICABLE

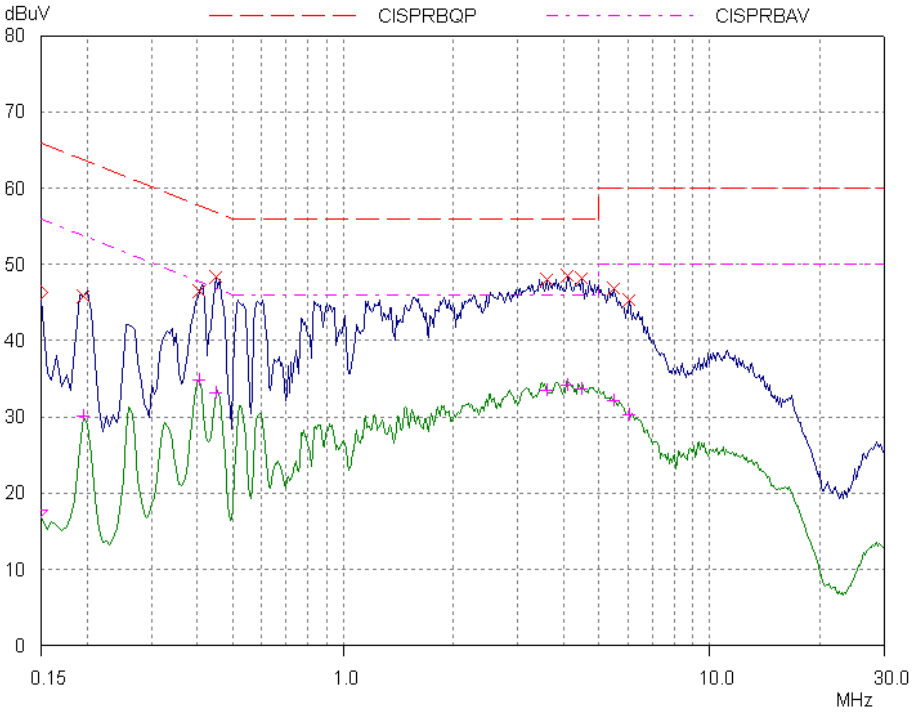
Remarks
See Appendix A for test data

APPENDIX A – TEST DATA

Conducted Voltage Emissions

Frequency	Correction Factor		Line	Quasi-peak				Average			
				Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
0.41	0.1	0.1	L	57.8	46.6	46.8	10.9	47.8	35.0	35.2	12.5
0.45	0.1	0.1	L	56.9	49.1	49.3	7.6	46.9	35.1	35.3	11.6
3.49	0.1	0.2	L	56.0	48.1	48.4	7.6	46.0	33.6	33.9	12.2
3.58	0.1	0.2	N	56.0	47.7	48.0	8.0	46.0	33.1	33.4	12.6
3.79	0.1	0.2	L	56.0	48.3	48.6	7.4	46.0	34.4	34.7	11.3
3.87	0.1	0.2	L	56.0	48.5	48.8	7.2	46.0	34.2	34.5	11.5
4.07	0.1	0.2	N	56.0	48.3	48.6	7.4	46.0	33.8	34.1	11.9
4.45	0.1	0.2	N	56.0	47.9	48.2	7.8	46.0	33.4	33.7	12.3





Radiated Electric Field Emissions

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
74.56	12.4	H	3.1	7.7	1.6	30.0	21.7	8.3
140.03	13.1	V	2.0	8.0	2.2	30.0	23.3	6.8
143.41	14.2	V	1.0	7.9	2.3	30.0	24.4	5.6
149.46	13.1	H	4.0	7.6	2.3	30.0	23.0	7.0
518.78	7.2	V	1.0	16.0	4.3	37.0	27.5	9.5
734.05	7.6	H	4.0	18.9	5.3	37.0	31.8	5.2
931.00	3.2	H	3.6	21.0	6.1	37.0	30.3	6.7
977.26	0.3	V	1.0	21.2	6.2	37.0	27.7	9.3