

EMC TEST REPORT




Project No.	LBE091160	Revision No.	None
Applicant	Name of organization	Samsung Electronics Co., Ltd.	
	Address	416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 443-742 Korea	
	Date of application	2009.04.14	
EUT Equipment Under Test	Kind of product	CCTV controller	
	Model No.	SCX-RD100	
		Variant Model	none
	Manufacturer	Tianjin Samsung Electronics Company 300457, TSEC12, 4th Avenue, TEDA, Tianjin, China	
New / Alternative / Permissive change information	*) New		
Applied Standards	AS/NZS CISPR22:2006		
Issued date	2009.04.24		
Test result : Complied The equipment under test has found to be compliant with the applied standards. (Refer to the attached test result for more detail.)			
Tested by : Seung Beom Choi <div style="text-align: center;"></div>		Reviewed by : No Cheon Park <div style="text-align: center;"></div>	
<p>This report is the test result about the sphere accredited by KOLAS which signed the Mutual Recognition Arrangement of International Laboratory Accreditation Cooperation.</p> <p>The test results in this report only apply to the tested sample. This report must not be reproduced, except in full, without written permission from SEC EMC Laboratory.</p>			
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1. Summary of test results

1.1 Emission

The EUT has been tested according to the following specifications:

Test type	Applied standard	Result	Remarks
Conducted Disturbance	AS/NZS CISPR22:2006	Complied	Minimum margin is 17.7 dB at 2.21 MHz
Radiated Disturbance		Complied	Minimum margin is 5.0 dB at 186.1 MHz



2. General Information












2.1 Test facility

The SEC EMC Laboratory is located on Samsung Electronics Co., Ltd. At 416 Maetan 3-Dong, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, South Korea.

All testing are performed in Semi-anechoic chambers conforming to the site attenuation Characteristics defined by ANSI C63.4, CISPR 22, 16-1 and 16-2. and Shielded rooms.

The SEC EMC Laboratory is operated as testing laboratory in accordance with the requirements of ISO/IEC 17025:2005.

2.2 Accreditation and listing

Laboratory Qualifications		Remarks
	KOLAS(Korea Laboratory Accreditation Scheme)	Accredited : 124
	Korea Communications Commission Radio Research Agency	Accredited : KR0004
	FCC(Federal Communications Commission)	Accredited : KR0004
	National Voluntary Laboratory Accreditation Program	Lab Code: 200623-0
	Norges Elektriske Materiellkontroll	Accredited : ELA 195
	VCCI (Voluntary Control Council for Interference by Information Technology Equipment)	C-2421,R-2224
	China Quality Certification Center	5-053, 5-054
	TUV Rhineland	H9354285
	GOST(GOSTSTANDART)	ROSTEST
	Elektrotechnicky Zkusebni Ustav	Reg. No.: 001
	IC(Industry Canada)	Assigned Code: 5871

3. Test Setup configuration

3.1 Test peripherals

The peripherals which were interconnected to the EUT during the test are as follows:

Item	Model No.	Serial No.	Manufacturer	Note
CCTV controller	SCX-RD100	-	Samsung	EUT
AC adapter	DAD-12050KA	-	Dream Elec.	-
CCTV camera	SCC-B2333	-	Samsung	-
AC adapter	DAD-12050KA	-	Dream Elec.	-

3.2 EUT operating mode(s)

To achieve compliance applied standard specification, the following mode(s) were made during compliance testing:

Operating Mode 1	CCTV camera in + RS-485 communication
Operating Mode 2	-
Operating Mode 3	-

3.3 Details of Sampling

Customer selected, single unit.

3.4 Cable description

The type(s) of cables which were connected to the ports (of the EUT) are as follows:

No.	From the port of EUT	To	Length[m]	Shielded[Y/N]
1	DC in	AC adapter	2.0	Yes
2	Video in	CCTV camera	0.5	Yes
3	Video out	75 ohm termination	1.0	Yes
4	RS-485	CCTV camera	0.3	Yes
5	RS-232	Cable termination	1.5	Yes
6	USB	Cable termination	1.0	Yes

3.5 EUT Description

The following features describe EUT represented by this report:

Item		Description
COAXIAL	Communication Method	COAXIAL INTERFACE
	Range	Max. 500m (with 5C-2V cable)
RS-232	Connector Type	D-SUB 9P
	Port	1 PORT
	BAUD RATE	4800/9600/19200/38400bps
RS-485	Connector Type	4P Terminal Type
	PORT	1 PORT
	BAUD RATE	600/1200/24004800/9600/ 19200/38400bps
USB PORT(USB2.0)		S/W PROGRAM UPLOAD
VIDEO IN/OUT		Composite Video 1.0Vp-p, 75ohm, Cable Compensation out (Select:S/L)
MULTI PROTOCOL		3 programs A) SAMSUNG, PANASONIC, PELCO-P, PELCO-D B) SAMSUNG, AD, ERNA, VICON, VCLTP C) SAMSUNG, DIAMOND, KALATEL
Environmental Conditions	Operating Temp.	-10°C ~ +50°C
	Humidity	Less than 90%
POWER		DC12V ± 10%
DIMENSIONS (WxHxD)		150(W) X 36(H) X 102(D)

3.6 Description of the EUT exercising method

The EUT exercise program used during EMI and Immunity (EMS) testing was the SEC EMC Laboratory standardized test program for MS Windows. The program repetitively sends a screen of H – Character to the display. Connect video output of computer on EUT's PC IN(D-sub)port and scrolled H – character continuously on EUT's screen.

Also, when EUT has loudspeaker, it was regenerative through EUT's audio input reproducing "digital white noise" by MS Windows Media Player in the computer.

Examples of functions defined by the manufacturer to be evaluated during testing include the following:

3.7 Performance Criteria

Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

3.8 Measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus: (According to CISPR 16-4 and UKAS Lab 34.)

3.8.1 Emission

Test type		Measurement uncertainty (C.L. 95%, k = 2)
Conducted Disturbance	Main terminal	± 3.50 dB
	10/100 Base LAN	± 2.80 dB
	1000 Base LAN	± 2.80 dB
	TEL line	± 2.80 dB
Radiated Disturbance	Horizontal	± 5.00 dB
	Vertical	± 5.03 dB
Harmonics current		7.5 %
Voltage fluctuation & Flicker		5.8 %

4. Results of individual test

4.1 Conducted disturbance

Both conducted lines are measured in Quasi-Peak and Average mode, including the worst-case data points for each tested configuration.

The EUT measured in accordance with the methods described in standards.

Limits for conducted disturbance at mains ports of class A ITE

Frequency range Limits MHz	Limits dB(μ V)	
	Quasi-peak	Average
0,15 to 0,50	79	66
0,50 to 30	73	60

Note 1: 1 μ V is regarded as 0 dB.
 Note 2: If the average limit is met in the measurement with quasi-peak detector, the measurement with average detector at the same frequency is unnecessary.
 Note 3: The lower limit shall apply at the transition frequency.

Limits for conducted disturbance at the mains ports of class B ITE

Frequency range Limits MHz	Limits dB(μ V)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Note 1: 1 μ V is regarded as 0 dB.
 Note 2: The limits shall decrease linearly with the logarithm of the frequency in the range 150 – 500 kHz.
 Note 3: If the average limit is met in the measurement with quasi-peak detector, the measurement with average detector is unnecessary.
 Note 4: The lower limit shall apply at the transition frequency.

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports for class A equipment

Frequency range Limits MHz	Voltage limits dB(μ V)		Current limits dB(μ A)	
	Quasi-peak	Quasi-peak	Quasi-peak	Average
0,15 to 0,50	97 to 87	84 to 74	53 to 43	40 to 30
0,50 to 30	87	74	43	30

Note 1: 1 μ V is regarded as 0 dB. 1 μ A is regarded as 0dB.
 Note 2: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note 3: If the average limit is met in a measurement with quasi-peak detector receiver, the measurement with average detector receiver at the same frequency is unnecessary.

Note 4: The conversion factor between voltage limits and current limits is $20 \log_{10} 150/I = 44$ dB.

Limits of conducted common mode (asymmetric mode) disturbance at telecommunication ports for class B equipment

Frequency range Limits MHz	Voltage limits dB(μV)		Current limits dB(μA)	
	Quasi-peak	Quasi-peak	Quasi-peak	Average
0,15 to 0,50	84 to 74	74 to 64	40 to 30	30 to 20
0,50 to 30	74	64	30	20

Note 1: 1 μV is regarded as 0 dB. 1 μA is regarded as 0dB.

Note 2: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note 3: If the average limit is met in a measurement with quasi-peak detector receiver, the measurement with average detector receiver at the same frequency is unnecessary.

Note 4: The conversion factor between voltage limits and current limits is $20 \log_{10} 150 /I= 44$ dB.

If the reading on the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 seconds at each measurement frequency, the highest reading shall be recorded, with the exception of any brief isolated high reading (which shall be ignored).

4.1.1 Test instrumentation

Test instrumentations which were used in the Conducted disturbance test are as follows;

Test instrumentation	Model name	Manufacturer	Serial or Firmware (No./Ver.)	Calibration	
				Date	Interval (Month)
Field strength meter	ESCS30	R&S	100104	2008-06-25	12
L.I.S.N	ENV216	R&S	100454	2008-11-28	12

4.1.2 Photograph of the test Configuration



4.1.3 Test result

Test date	2009.04.15		Test engineer		Seung Beom Choi	
Climate condition	Ambient temperature	24.5 °C	Relative humidity	23 %	Atmospheric pressure	100.4 kPa
	Test place					
DM Shielded Room #1						

4.1.4 Test data

■ Operating Mode: CCTV camera in + RS-485 communication

Test Information

Test Description: SCX-RD100
Operating Conditions: CCTV camera controlling
Operator Name: SB Choi
Comment:

Hardware Setup: Voltage_ITE - [EMI conducted]

Subrange 1

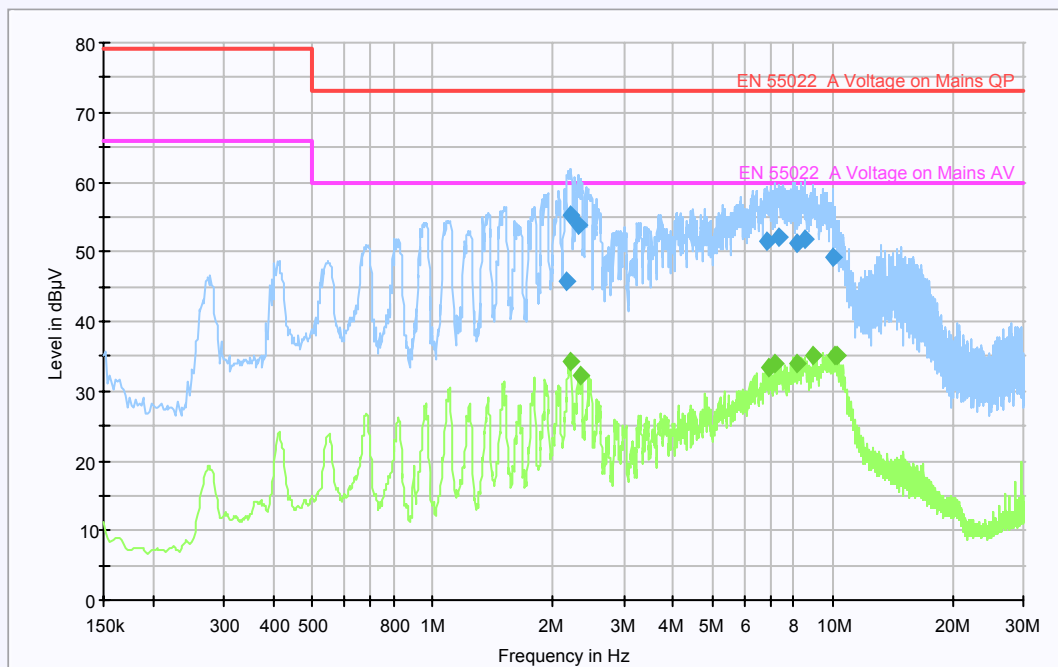
Frequency Range: 150kHz - 30MHz

Receiver: ESCS 30 [ESCS 30]
@ GPIB0 (ADR 18), SN 0, FW 2.30 02.01 02.36

Signal Path: ESCS 30-LISN
Correction Table: Cable loss_Receiver-2-LISN

LISN: LISN_ITE
Correction Table (Line 0): Factor_ENV216_100454_N
Correction Table (Line 1): Factor_ENV216_100454_L1

Conducted Emission_EN55022 class A



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
2.148600	45.8	L1	9.8	27.2	73.0
2.213400	55.3	N	9.8	17.7	73.0
2.316400	53.9	N	9.8	19.1	73.0
6.860600	51.6	N	9.9	21.4	73.0
7.310600	52.2	N	9.8	20.8	73.0
8.100400	51.3	N	10.0	21.7	73.0
8.514600	51.8	N	10.0	21.2	73.0
10.014000	49.1	N	10.0	23.9	73.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
2.207800	34.2	N	9.8	25.8	60.0
2.328800	32.3	N	9.8	27.7	60.0
6.892000	33.3	N	9.9	26.7	60.0
7.173800	34.0	N	9.8	26.0	60.0
8.113800	34.1	N	10.0	25.9	60.0
8.968600	35.2	N	10.0	24.8	60.0
10.088500	35.2	N	10.0	24.8	60.0
10.222800	35.1	N	10.0	24.9	60.0

4.2 Radiated disturbance

Of those disturbances above ($L - 20\text{dB}$), where L is the limit level in logarithmic units, record at least the disturbance levels and the frequencies of the six highest disturbances.

The following data lists the significant emission frequencies, measured levels, correction factors (for antenna and cables), orientation of table, polarization and height of antenna, the corrected reading, the limit, and the amount of margin. All measurements were taken utilizing quasi-peak detection unless stated otherwise. Measurements were performed at an antenna to EUT distance of 10 meters and elevated between 1 and 4 meters. Both vertical and horizontal antenna polarizations were measured.

Limits for radiated disturbance of ITE at a measuring distance of 10 m

Frequency range Limits MHz	Quasi-peak Limits dB dB($\mu\text{V}/\text{m}$)	
	Class A	Class B
30 to 230	40	30
230 to 1000	47	37

Note 1: The lower limit shall apply at the transition frequency.
 Note 2: Additional provisions may be required for cases where interference occurs.
 Note 3: 1 $\mu\text{V}/\text{m}$ is regarded as 0 dB.

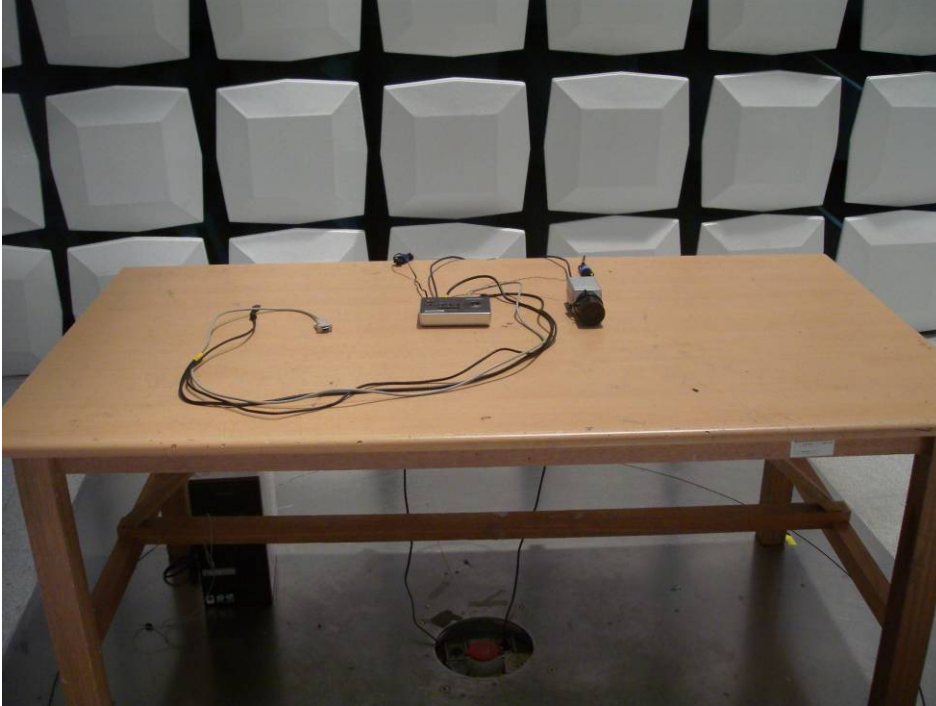
4.2.1 Test instrumentation

Test instrumentations which were used in the Radiated disturbance are as follows:

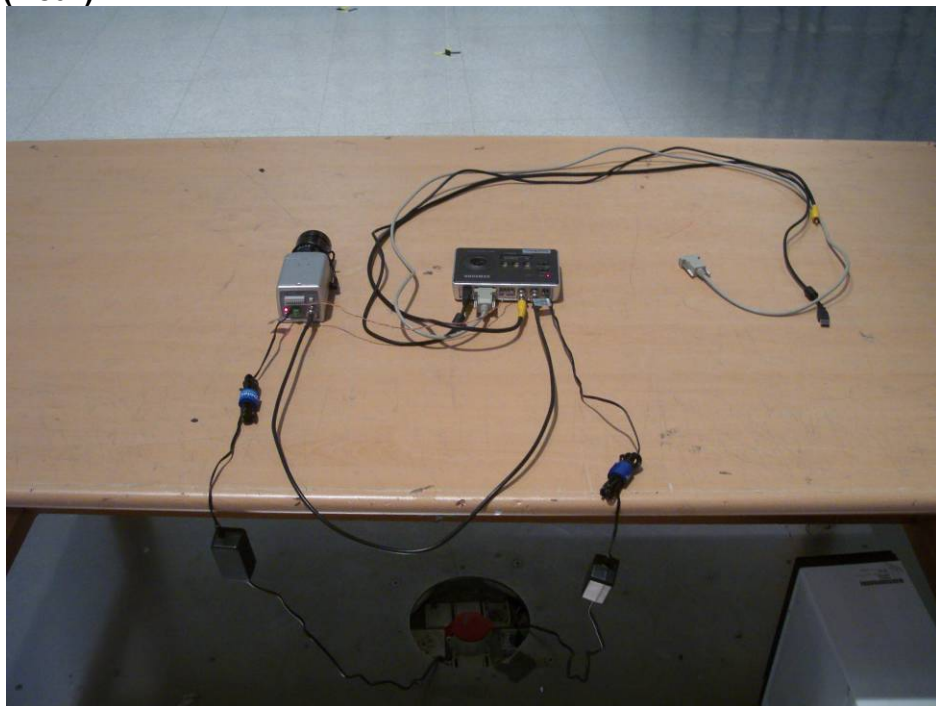
Test instrumentation	Model name	Manufacturer	Serial or Firmware (No./Ver.)	Calibration	
				Date	Interval (Month)
EMI Test Receiver	ESCS30	R&S	839809/002	2008-06-16	12
Spectrum Analyzer	E7405A	Agilent	MY42000052	2009-01-09	12
Ant. Mast	MA4000	inn-co	-	N/A	N/A
Mast Controller	CO2000	inn-co	-	N/A	N/A
Turntable Controller	HD100	inn-co	-	N/A	N/A
Amplifier	310N	SONOMA	251677	2009-03-26	12
RF selector	NS4900	TOYO	-	N/A	N/A
Bi-log Antenna	CBL6112B	SCHAFFNER	2953	2008-04-15	24

4.2.2 Photograph of the test Configuration

(Front)



(Rear)

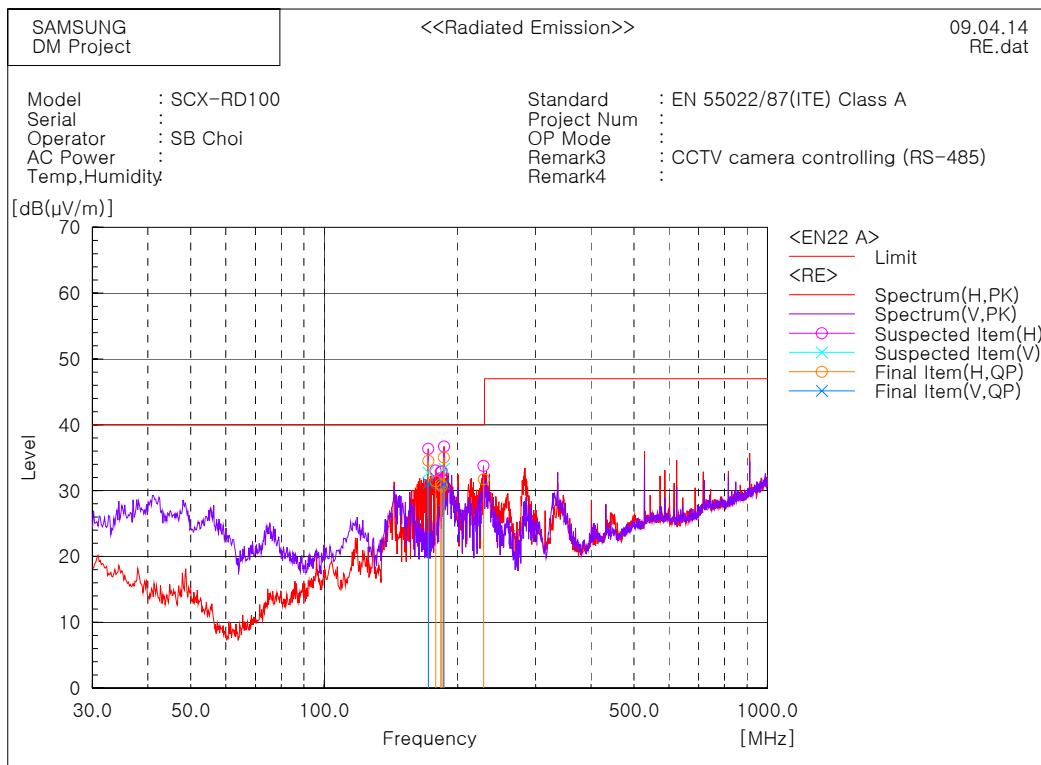


4.2.3 Test results

Test date	2009.04.14		Test engineer		Seung Beom Choi	
Climate condition	Ambient temperature	26.9 °C	Relative humidity	12 %	Atmospheric pressure	100.4 kPa
	Test place					
DM 10m Semi-Anechoic Chamber						

4.2.4 Test data

■ Operating Mode: CCTV camera in + RS-485 communication



Appendix A – EUT photography (Front)



(Rear)



Appendix B – Measurement Uncertainty budget

■ Conducted disturbance (mains port)

Conducted Disturbances from 150kHz to 30 MHz using 50Ohm/50uH LISN

Symbol	Source of Uncertainty	Value	Probability distribution	Divisor	c_i	$u_i(y)$	$u_i(y)^2$	ν_i or ν_{eff}	$u_i(y)^4/\nu_i$
R_I	Receiver Reading	0.01	rectangular	1.732	1	0.01	0.000	∞	0
LC	Attenuation AMN-Receiver	0.23	normal 2	2.000	1	0.11	0.013	∞	0
$LAMN$	LISN Voltage division factor	0.43	normal 2	2.000	1	0.22	0.046	∞	0
$dVSW$	Receiver Sine Wave	1.00	normal 2	2.000	1	0.50	0.250	∞	0
$dVPA$	Receiver Pulse Amplitude	1.50	rectangular	1.732	1	0.87	0.750	∞	0
$dVPR$	Receiver Pulse repetition	1.50	rectangular	1.732	1	0.87	0.750	∞	0
$dVNF$	Noise Floor Proximity	0.00	rectangular	1.732	1	0.00	0.000	∞	0
dZ	LISN Impedance	2.70	triangular	2.449	1	1.10	1.215	∞	0
$FSSTEP$	Frequency step error	0.33	rectangular	1.732	1	0.19	0.036	∞	0
M	Mismatch	-0.07	U-shaped	1.414	1	-0.05	0.003	∞	0
	Receiver VRC = 0.09	0.09	-						0
	LISN+Cable VRC = 0.09	0.09	-						0
R_S	Measurement System Repeatability	0.07	normal 1	1.000	1	0.07	0.006	9	3.41428E-06
R_{EUT}	Repeatability of EUT	0.00	normal 1	1.000	1	0.00	0.000		0
$u_c(y)$	Combined Standard Uncertainty		normal			1.75	3.069	2758334	3.41428E-06
$U(y)$	Expanded Uncertainty		normal k=	2.00		3.5		2758334	

■ Conducted disturbance (telecommunication port)

Conducted Disturbances from 150 kHz to 30 MHz using T400A (10/100BASE LAN) cat.5

Symbol	Source of Uncertainty	Value	Probability distribution	Divisor	c_i	$u_i(y)$	$U_i(y)^2$	v_i or v_{eff}	$u_i(y)^4/v_i$
RI	Receiver Reading	0.01	rectangular	1.732	1	0.01	0.000	∞	0
LC	Attenuation ISN-Receiver	0.23	normal 2	2.000	1	0.11	0.013	∞	0
LAMN	ISN Voltage division factor	0.10	normal 2	2.000	1	0.05	0.003	∞	0
dVSW	Receiver Sine Wave	1.00	rectangular	1.732	1	0.58	0.333	∞	0
dVPA	Receiver Pulse Amplitude	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dVPR	Receiver Pulse repetition	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dVNF	Noise Floor Proximity	0.00	rectangular	1.732	1	0.00	0.000	∞	0
FSTEP	Frequency step error	0.33	rectangular	1.732	1	0.19	0.036	∞	0
dM	Mismatch	-0.27	U-shaped	1.414	1	-0.19	0.036	∞	0
	Receiver VRC	0.09	-						0
	ISN+Cable	0.33	-						0
RS	Measurement System Repeatability	0.07	normal 1	1.000	1	0.07	0.006	9	3.41428E-06
REUT	Repeatability of EUT	0.00	normal 1	1.000	1	0.00	0.000		0
$u_c(F_z)$	Combined Standard Uncertainty		normal			1.39	1.927	1087092	3.41428E-06
$U(F_z)$	Expanded Uncertainty		normal k=	2.05		2.8		1087092	

Conducted Disturbances from 150 kHz to 30 MHz using ST08 (1000BASE LAN) cat.6

Symbol	Source of Uncertainty	Value	Probability distribution	Divisor	c_i	$u_i(y)$	$U_i(y)^2$	v_i or v_{eff}	$u_i(y)^4/v_i$
RI	Receiver Reading	0.01	rectangular	1.732	1	0.01	0.000	∞	0
LC	Attenuation ISN-Receiver	0.23	normal 2	2.000	1	0.11	0.013	∞	0
LAMN	ISN Voltage division factor	0.10	normal 2	2.000	1	0.05	0.003	∞	0
dVSW	Receiver Sine Wave	1.00	rectangular	1.732	1	0.58	0.333	∞	0
dVPA	Receiver Pulse Amplitude	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dVPR	Receiver Pulse repetition	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dVNF	Noise Floor Proximity	0.00	rectangular	1.732	1	0.00	0.000	∞	0
FSTEP	Frequency step error	0.33	rectangular	1.732	1	0.19	0.036	∞	0
dM	Mismatch	-0.27	U-shaped	1.414	1	-0.19	0.036	∞	0
	Receiver VRC	0.09	-						0
	ISN+Cable	0.33	-						0
RS	Measurement System Repeatability	0.07	normal 1	1.000	1	0.07	0.006	9	3.41428E-06
REUT	Repeatability of EUT	0.00	normal 1	1.000	1	0.00	0.000		0
$u_c(F_z)$	Combined Standard Uncertainty		normal			1.39	1.927	1087092	3.41428E-06
$U(F_z)$	Expanded Uncertainty		normal k=	2.05		2.8		1087092	

Radiated disturbance (10M / Horizontal)

1. Radiated Field Strength 30 dBmV/m to 60 dBmV/m (Bilog antenna 30 MHz to 300MHz - Horizontal Polarisation at 10 m, Mast)

Symbol	Source of Uncertainty	Value	Probability distribution	Divisor	c_i	$u_i(y)$	$u_i(y)^2$	v_i or v_{eff}	$u_i(y)^4$
R_f	Receiver Indication	0.01	rectangular	1.732	1	0.01	0.000	∞	0
dV_{sw}	Receiver Sine Wave	1.00	normal 2	2.000	1	0.50	0.250	∞	0
dV_{pa}	Receiver Pulse Amplitude	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dV_{pr}	Receiver Pulse repetition	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dV_{pf}	Noise Floor Proximity	0.50	normal 2	2.000	1	0.25	0.063	∞	0
A_F	Antenna Factor Calibration	1.00	normal 2	2.000	1	0.50	0.250	∞	0
C_L	Cable Loss	0.21	normal 2	2.000	1	0.11	0.012	∞	0
A_D	Antenna Directivity	0.00	rectangular	1.732	1	0.00	0.000	∞	0
A_H	Antenna Factor Height Dependence	0.50	rectangular	1.732	1	0.29	0.083	∞	0
A_P	Antenna Phase Centre Variation	0.00	rectangular	1.732	1	0.00	0.000	∞	0
A_f	Antenna Factor Frequency Interpolation	0.30	rectangular	1.732	1	0.17	0.030	∞	0
D_{cross}	Antenna Cross Polarisation	0.00	rectangular	1.732	1	0.00	0.000	∞	0
$Dbal$	Antenna balance	0.30	rectangular	1.732	1	0.17	0.030	∞	0
S_f	Site Imperfections	4.00	triangular	2.449	1	1.63	2.667	∞	0
D_V	Measurement Distance Variation	0.10	rectangular	1.732	1	0.06	0.003	∞	0
F_{step}	Frequency step error	0.00	rectangular	1.732	1	0.00	0.000	∞	0
M	Mismatch	-0.25	U-shaped	1.414	1	-0.18	0.032	∞	0
	Receiver VRC 0.09		-						
	Preamp output + Cable VRC 0.32		-						
M	Mismatch	-1.24	U-shaped	1.414	1	-0.87	0.764	∞	0
	Preamp input VRC 0.40								
	Antenna +Cable VRC 0.33								
R_S	Measurement System Repeatability	0.07	normal 1	1.000	1	0.07	0.005	9	2.66778E-06
R_{EUT}	Repeatability of EUT	0.00	normal 1	1.000	1	0.00	0.000		0
$u_c(F_2)$	Combined Standard Uncertainty		normal			2.39	5.689	12129747	2.66778E-06
$U(F_2)$	Expanded Uncertainty		normal	k= 2.00		4.77		12129747	

2. Radiated Field Strength 30 dBmV/m to 60 dBmV/m (Bilog antenna 300 MHz to 1GHz - Horizontal Polarisation at 10 m, Mast)

Symbol	Source of Uncertainty	Value	Probability distribution	Divisor	c_i	$u_i(y)$	$u_i(y)^2$	v_i or v_{eff}	$u_i(y)^4$
R_f	Receiver Indication	0.01	rectangular	1.732	1	0.01	0.000	∞	0
dV_{sw}	Receiver Sine Wave	1.00	normal 2	2.000	1	0.50	0.250	∞	0
dV_{pa}	Receiver Pulse Amplitude	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dV_{pr}	Receiver Pulse repetition	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dV_{pf}	Noise Floor Proximity	0.50	normal 2	2.000	1	0.25	0.063	∞	0
A_F	Antenna Factor Calibration	1.00	normal 2	2.000	1	0.50	0.250	∞	0
C_L	Cable Loss	0.21	normal 2	2.000	1	0.11	0.012	∞	0
A_D	Antenna Directivity	1.00	rectangular	1.732	1	0.58	0.333	∞	0
A_H	Antenna Factor Height Dependence	0.30	rectangular	1.732	1	0.17	0.030	∞	0
A_P	Antenna Phase Centre Variation	0.30	rectangular	1.732	1	0.17	0.030	∞	0
A_f	Antenna Factor Frequency Interpolation	0.30	rectangular	1.732	1	0.17	0.030	∞	0
D_{cross}	Antenna Cross Polarisation	0.90	rectangular	1.732	1	0.52	0.270	∞	0
$Dbal$	Antenna balance	0.00	rectangular	1.732	1	0.00	0.000	∞	0
S_f	Site Imperfections	4.00	triangular	2.449	1	1.63	2.667	∞	0
D_V	Measurement Distance Variation	0.10	rectangular	1.732	1	0.06	0.003	∞	0
F_{step}	Frequency step error	0.00	rectangular	1.732	1	0.00	0.000	∞	0
M	Mismatch	-0.25	U-shaped	1.414	1	-0.18	0.032	∞	0
	Preamp input VRC 0.09		-						
	Preamp output + Cable VRC 0.32		-						
M	Mismatch	-1.24	U-shaped	1.414	1	-0.87	0.764	∞	0
	Preamp input VRC 0.40								
	Antenna +Cable VRC 0.33								
R_S	Measurement System Repeatability	0.07	normal 1	1.000	1	0.07	0.004	9	2.03961E-06
R_{EUT}	Repeatability of EUT	0.00	normal 1	1.000	1	0.00	0.000		0
$u_c(F_2)$	Combined Standard Uncertainty		normal			2.50	6.238	19078028	2.03961E-06
$U(F_2)$	Expanded Uncertainty		normal	k= 2.00		5.00		19078028	

Radiated disturbance (10M / Vertical)

3. Radiated Field Strength 30 dBmV/m to 60 dBmV/m (Bilog antenna 30 MHz to 300MHz - Vertical Polarisation at 10 m, Slave)

Symbol	Source of Uncertainty	Value	Probability distribution	Divisor	c_i	$u_i(y)$	$u_i(y)^2$	ν_i or ν_{eff}	$u_i(y)^4$
R_i	Receiver Indication	0.01	rectangular	1.732	1	0.01	0.000	∞	0
dV_{sw}	Receiver Sine Wave	1.00	normal 2	2.000	1	0.50	0.250	∞	0
dV_{pa}	Receiver Pulse Amplitude	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dV_{pr}	Receiver Pulse repetition	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dV_{nf}	Noise Floor Proximity	0.50	normal 2	2.000	1	0.25	0.063	∞	0
A_F	Antenna Factor Calibration	1.20	normal 2	2.000	1	0.60	0.360	∞	0
C_L	Cable Loss	0.21	normal 2	2.000	1	0.11	0.012	∞	0
A_B	Antenna Directivity	1.00	rectangular	1.732	1	0.58	0.333	∞	0
A_H	Antenna Factor Height Dependence	0.30	rectangular	1.732	1	0.17	0.030	∞	0
A_P	Antenna Phase Centre Variation	0.00	rectangular	1.732	1	0.00	0.000	∞	0
A_I	Antenna Factor Frequency Interpolation	0.30	rectangular	1.732	1	0.17	0.030	∞	0
D_{cross}	Antenna Cross Polarisation	0.00	rectangular	1.732	1	0.00	0.000	∞	0
$Dbal$	Antenna balance	0.90	rectangular	1.732	1	0.52	0.270	∞	0
S_I	Site Imperfections	4.00	triangular	2.449	1	1.63	2.667	∞	0
D_V	Measurement Distance Variation	0.10	rectangular	1.732	1	0.06	0.003	∞	0
F_{step}	Frequency step error	0.00	rectangular	1.732	1	0.00	0.000	∞	0
M	Mismatch	-0.25	U-shaped	1.414	1	-0.18	0.032	∞	0
	Receiver VRC 0.09		-						
	Preamp output + Cable VRC 0.32		-						
M	Mismatch	-1.24	U-shaped	1.414	1	-0.87	0.764	∞	0
	Preamp input VRC 0.40								
	Antenna +Cable VRC 0.33								
R_S	Measurement System Repeatability	0.05	normal 1	1.000	1	0.05	0.003	9	8.96178E-07
R_{EUT}	Repeatability of EUT	0.00	normal 1	1.000	1	0.00	0.000		0
$u_c(y)$	Combined Standard Uncertainty		normal			2.51	6.316	44520072	8.96178E-07
$U(y)$	Expanded Uncertainty		normal k=	2.00		5.03		44520072	

4. Radiated Field Strength 30 dBmV/m to 60 dBmV/m (Bilog antenna 300 MHz to 1GHz - Vertical Polarisation at 10 m, Slave)

Symbol	Source of Uncertainty	Value	Probability distribution	Divisor	c_i	$u_i(y)$	$u_i(y)^2$	ν_i or ν_{eff}	$u_i(y)^4$
R_i	Receiver Indication	0.01	rectangular	1.732	1	0.01	0.000	∞	0
dV_{sw}	Receiver Sine Wave	1.00	normal 2	2.000	1	0.50	0.250	∞	0
dV_{pa}	Receiver Pulse Amplitude	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dV_{pr}	Receiver Pulse repetition	1.50	rectangular	1.732	1	0.87	0.750	∞	0
dV_{nf}	Noise Floor Proximity	0.50	normal 2	2.000	1	0.25	0.063	∞	0
A_F	Antenna Factor Calibration	1.20	normal 2	2.000	1	0.60	0.360	∞	0
C_L	Cable Loss	0.21	normal 2	2.000	1	0.11	0.012	∞	0
A_B	Antenna Directivity	1.00	rectangular	1.732	1	0.58	0.333	∞	0
A_H	Antenna Factor Height Dependence	0.10	rectangular	1.732	1	0.06	0.003	∞	0
A_P	Antenna Phase Centre Variation	0.30	rectangular	1.732	1	0.17	0.030	∞	0
A_I	Antenna Factor Frequency Interpolation	0.30	rectangular	1.732	1	0.17	0.030	∞	0
D_{cross}	Antenna Cross Polarisation	0.90	rectangular	1.732	1	0.52	0.270	∞	0
$Dbal$	Antenna balance	0.00	rectangular	1.732	1	0.00	0.000	∞	0
S_I	Site Imperfections	4.00	triangular	2.449	1	1.63	2.667	∞	0
D_V	Measurement Distance Variation	0.10	rectangular	1.732	1	0.06	0.003	∞	0
F_{step}	Frequency step error	0.00	rectangular	1.732	1	0.00	0.000	∞	0
M	Mismatch	-0.25	U-shaped	1.414	1	-0.18	0.032	∞	0
	Receiver VRC 0.09		-						
	Preamp output + Cable VRC 0.32		-						
M	Mismatch	-1.24	U-shaped	1.414	1	-0.87	0.764	∞	0
	Preamp input VRC 0.40								
	Antenna +Cable VRC 0.33								
R_S	Measurement System Repeatability	0.05	normal 1	1.000	1	0.05	0.003	9	6.94444E-07
R_{EUT}	Repeatability of EUT	0.00	normal 1	1.000	1	0.00	0.000		0
$u_c(y)$	Combined Standard Uncertainty		normal			2.51	6.319	57507441	6.94444E-07
$U(y)$	Expanded Uncertainty		normal k=	2.00		5.03		57507441	