

TEST REPORT

Details of item(s) tested

Applicant: Samsung Electronics
Address: 506-835 No.271, Oseon-Dong, Gwangsan-Gu,
Gwangju-City, Korea, 506-723.

Manufacturer: Samsung Electronics
EUT: Vacuum Cleaner
Brand/model Tested: SC8830
Serial number of unit tested: None

Test Report No.: X0285 Issue 1

Applied Standards: EN 55014-1:2006
EN 55014-2:1997 + A1:2001 + A2:2008(Not UKAS)
EN 61000-3-2:2006 + A2:2009(Not UKAS)
EN 61000-3-3:2008
EN 62233:2008

Result: **PASS**

The Equipment Under Test (EUT) has been found to be compliant with those sections of the applied Standards and in the modes of operation detailed for each specific test in this report.

Checked by


Richard Beckett
(Test Engineer)



1911

Authorised by



James White
(Senior Test Engineer)

Issue Date...30 March 2011...

Tests marked (Not UKAS) in this report are not included in the UKAS Accreditation Schedule for our Laboratory. The results in this report apply only to the item(s) tested.

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2 Description of the EUT

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model tested: **SC8830**
Serial No.: **None**
Date of receipt: **22/02/2011**
Date tests started: **10/03/2011**
Date tests finished: **24/03/2011**

DESCRIPTION OF EUT:

The EUT is a Canister style vacuum cleaner with speed control electronics.

2.1 TECHNICAL DATA:

Rated voltage:	230V
Mains frequency:	50Hz
Number of phases:	1

2.2 TEST VOLTAGES:

The following data details the supply levels at which the EUT was operated during tests.

Tests	Freq. (Hz)	Voltage (V)
Conducted Emissions	50	253
Disturbance power	50	240
Harmonic Currents	50	230
Voltage fluctuations & Flicker	50	230

2.3 OTHER PORTS:

Designation/Description	Specified length	Type of shielding
None	-	-

2.4 OPERATING MODES:

Mode	Description
1	Maximum setting
2	Medium setting (90°)
3	Minimum setting

Note: Not all modes used for all tests. See test details for actual modes used.

---End of page---

2.5 FAILURE CRITERIA FOR IMMUNITY TESTING:

During and/or after immunity testing, the EUT was monitored to the following 'performance criteria'

Criterion	Operational mode(s)	Description
Testing to EN55014-2 A	2	No noticeable degradation or loss of function is allowed during the test. The EUT shall continue to operate as intended without operator intervention.
Testing to EN55014-2 B	2	No noticeable degradation or loss of function is allowed after the test. The EUT shall continue to operate as intended without operator intervention. During the test, degradation of performance is allowed. No change of operating state is allowed to persist after the test.
Testing to EN55014-2 C	2	Loss of function is allowed, provided that the function is self recoverable or can be restored by the operation of the controls by the user.

2.6 MODIFICATIONS:

None.

2.7 DETAILS OF SUPPORT EQUIPMENT:

None.

2.8 VARIANT MODELS:

SC883*

“*” represents “0-9” according to cosmetic design.

---End of page---

3 Summary of Test Results

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

RESULTS OF INDIVIDUAL TESTS:

Description of test	Applied Standard	Report section	Result
EMC Emissions			
Conducted Emissions - 150kHz to 30MHz	EN 55014-1:2006	4.1	Pass
Disturbance Power - 30MHz to 300MHz	EN 55014-1:2006	4.2	Pass
Harmonic Emissions	EN61000-3-2:2006 + A2:2009(Not UKAS)	4.3	Pass
Voltage Fluctuations	EN61000-3-3:2008	4.4	Pass
Electromagnetic Field	EN 62233:2008	4.5	Pass
EMC Immunity			
Electrostatic Discharge	EN 55014-2:1997 + A1:2001 + A2:2008 (category II Device)	4.6	Pass
Fast Transients – Common Mode		4.7	Pass
Surges		4.8	Pass
RF Common Mode		4.9	Pass
Voltage Dips and Interruptions		4.10	Pass

Result: PASS

The equipment under test (EUT) has been found to comply with those parts of the applied standards tested to.

---End of page--

4 Description of individual tests

4.1 Conducted Emissions Measurement

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

Test Method: EN 55014-1:2006
Tested by: R. Beckett
Test date: 24/03/2011

Test Equipment

Test site: Room 6				
Reference	Description	Manufacturer	Model	Serial No.:
EMC 736	LISN Two Line V Network	Rohde & Schwarz	ESH3-Z5	100004
EMC 738	EMI Test Receiver	Rohde & Schwarz	ESCS30	100025
EMC 948	High Pass Filter	Wainright	WHJSO.10C5/30ST	1
EMC 949	High Pass Filter	Wainright	WHJSO.10C5/30ST	1
EMC 786	Spectrum Analyzer	Rohde & Schwarz	FSP	100037
EMC 474	Pulse Limiter	Rohde & Schwarz	ESH3 Z2	-

EUT Test Set Up

The EUT was set up as per normal use on a wooden table/Platform 0.4m from the vertical ground reference plane and 0.8m from the LISN. See photo.



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EUT Operating Mode(s)

1. Maximum setting.

Mains voltage was adjusted +/- 10% of the rated voltage of the EUT which is 230V, and a single measurement was made at 160kHz. The voltage recorded for the highest emission was 253V. The test was then carried out at this voltage.

Record

For the mains port, peak and average measurements were made over the frequency range 150kHz to 30MHz on the live and neutral conductors via the LISN. Measurements within 10dB of the limit were then checked on both the live and neutral conductors and final measurements made for the worst case measurement using a quasi peak and average detector.

Result

PASS

The measured emissions of the EUT have been found to be below the specified limits.

The results can be found on the following page.

Uncertainty

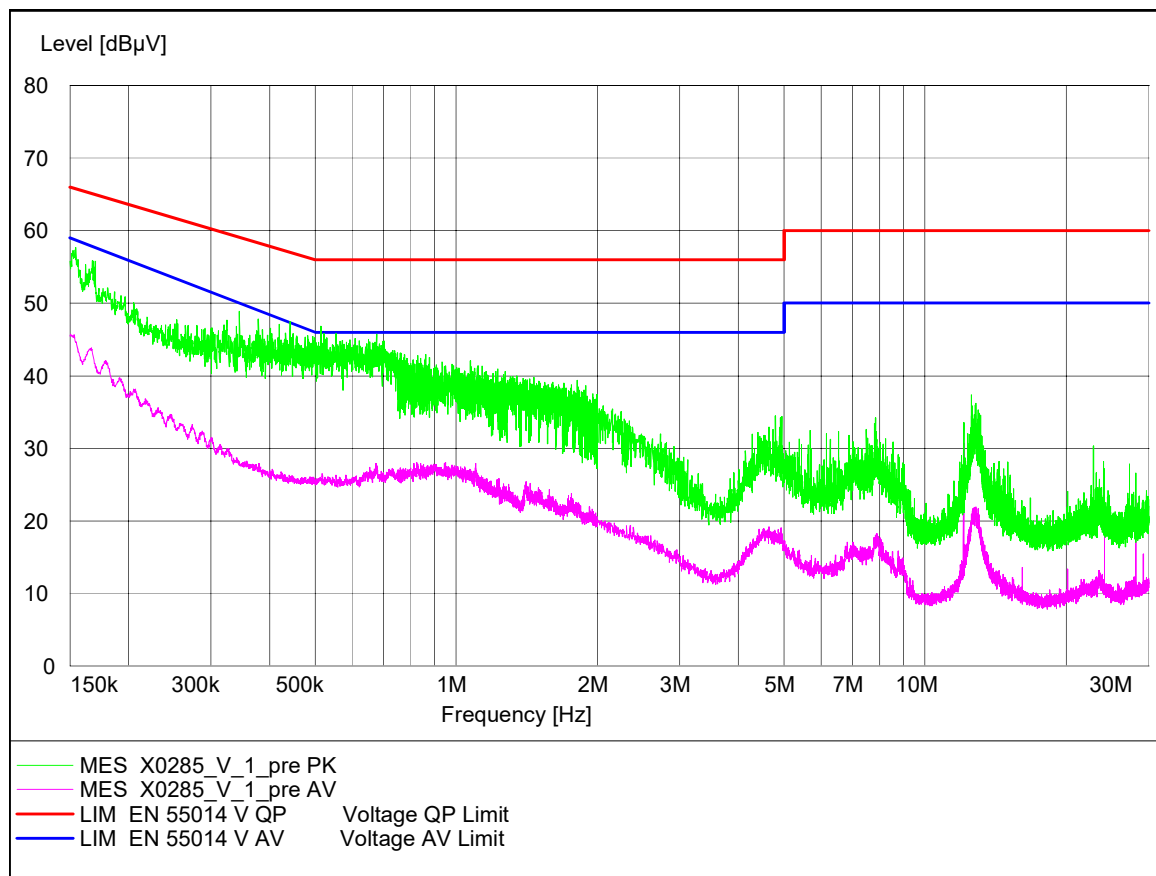
The expanded uncertainty with a level of confidence of 95% for this test is 3.1dB which is less than the value for U_{cispr} given in EN 55016-4-2:2004.

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SAMSUNG EURO QA LAB

CONDUCTED DISTURBANCE

EUT: X0285
Manufacturer: SEK
Operating Condition: Max setting
Test Site: Room 6
Operator: R.Beckett
Test Specification: EN55014-1
Start of Test: 24/03/2011 / 09:41:39



---End of page---

4.2 Disturbance Power Measurement

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

Test Method: EN 55014-1:2006
Tested by: R. Beckett
Test date: 16/03/2011

Test Equipment

Test site: Room 6				
Reference	Description	Manufacturer	Model	Serial No.:
EMC 109	Spectrum Analyzer	Rhode & Schwarz	FSP	100037
EMC 495	Absorbing Clamp	Rohde & Schwarz	MDS 21	-
EMC 738	Test Receiver	Rhode & Schwarz	ESCS 30	100025

EUT Test Set Up

The EUT was set up as per normal use on a wooden table at least 0.8m from all metallic objects with the mains cable extended to pass through the absorbing clamp and along the length of the track. See photo.



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EUT Operating Mode(s)

1. Maximum setting.

Mains voltage adjusted to +/- 10% of rated voltage measuring at 50MHz. Voltage recorded for highest emission was 240V.

Record

Peak and average measurements were made over the frequency range 30MHz to 300MHz on the mains cable via the absorbing clamp. Final measurements at those frequencies within 10dB of the limit were then made using a quasi peak detector and average detector having moved the clamp from 0 to 500cm from the EUT to determine the position giving the maximum measurement.

Result

PASS

The measured emissions of the EUT have been found to be below the specified limits.

The results can be found on the following page.

Uncertainty

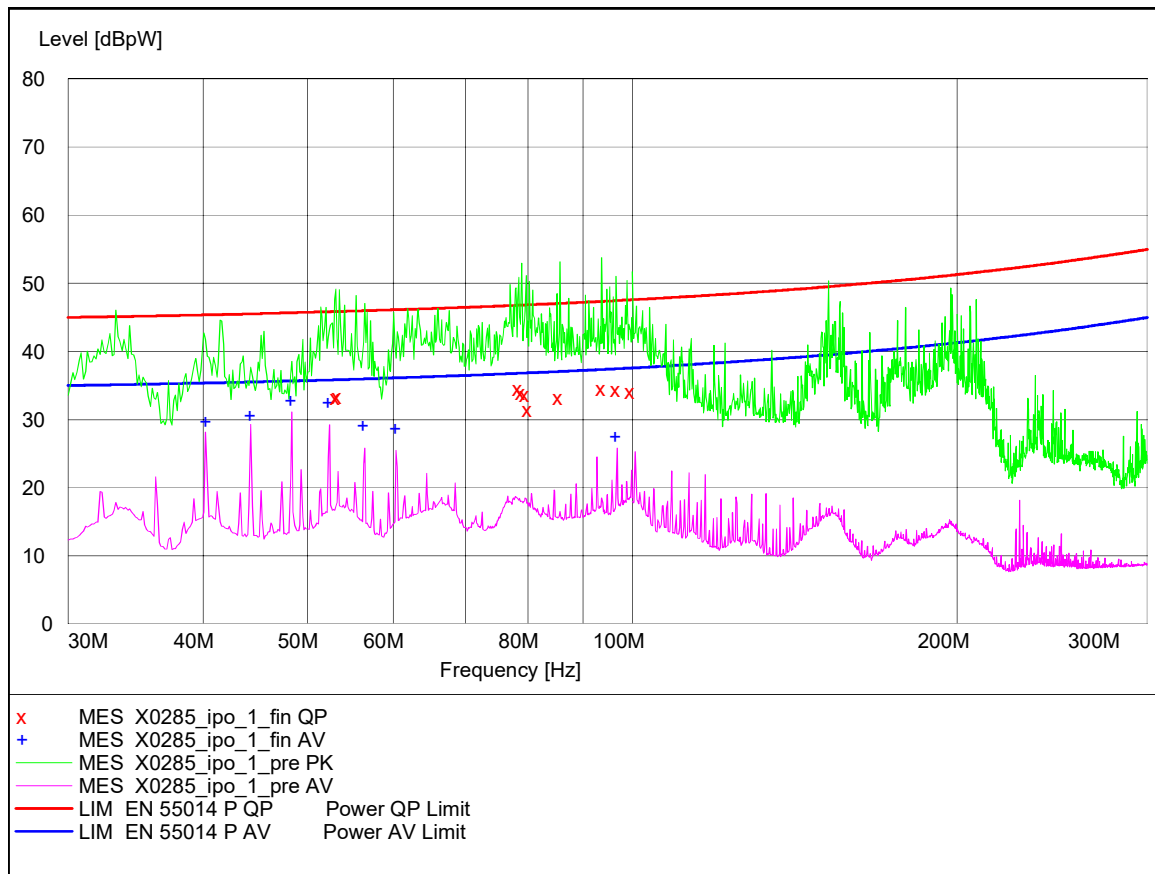
The expanded uncertainty with a level of confidence of 95% for this test is 3.93dB which is less than the value for U_{cispr} given in EN 55016-4-2:2004.

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SAMSUNG ELECTRONICS EURO QA LAB

Disturbance Power Test

EUT: X0285
Manufacturer: Samsung Electronics
Operating Condition: Max settings
Test Site: Room 6
Operator: R.Beckett
Test Specification: EN 55014-1
Start of Test: 16/03/2011 / 13:39:46



MEASUREMENT RESULT: "X0285_ipo_1_fin QP"

16/03/2011 16:30

Frequency MHz	Level dBpW	Transd dB	Limit dBpW	Margin dB	Position cm
53.220000	33.10	6.8	46	12.7	122.0
53.460000	33.40	6.7	46	12.6	374.0
78.530000	34.50	7.3	47	12.3	20.0
79.020000	34.00	7.3	47	12.8	48.0
79.700000	33.70	7.3	47	13.1	47.0
80.280000	31.50	7.4	47	15.4	0.0
85.660000	33.20	7.4	47	16.8	463.0
93.850000	34.50	7.4	47	12.5	118.0
96.790000	34.40	7.3	48	13.6	158.0
99.850000	34.10	7.1	48	13.9	487.0

MEASUREMENT RESULT: "X0285_ipo_1_fin AV"

16/03/2011 14:22

Frequency MHz	Level dBpW	Transd dB	Limit dBpW	Margin dB	Position cm
40.300000	29.70	9.0	35	5.7	222.0
44.330000	30.50	7.8	36	5.1	467.0
48.350000	32.80	7.8	36	2.9	150.0
52.380000	32.50	6.9	36	3.3	122.0
56.410000	29.10	6.8	36	6.8	122.0
60.440000	28.70	7.1	36	7.5	102.0
96.700000	27.50	7.3	38	10.0	102.0

---End of page---

4.3 Harmonic Currents

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

Test Method: EN 61000-3-2:2006 + A2:2009 (Not UKAS)
Tested by: R. Beckett
Test date: 10/03/2011

Test Equipment

Test site: Harmonics				
Reference	Description	Manufacturer	Model	Serial No.:
EMC 700	Harmonic	EMC Partner	Harmonics 1000	HAR1000 – 36

EUT Test Set Up

The EUT was set up as per normal use and in accordance with the requirements of the applied standard.



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EUT Operating Mode(s)

1. Maximum setting
2. Medium setting (90°)
3. Minimum setting

The vacuum cleaner was run for 2 minutes at maximum setting and with the nozzle open.

A power consumption of 2114W was recorded.

The cleaner was run for a further 20 seconds at maximum setting with the nozzle blocked.

A power consumption of 1746W was recorded.

The average of these two recorded power is 1930W.

The vacuum cleaner's nozzle was restricted to achieve a power consumption of 1930W with the control set to maximum. A 2-minute test was then started. The test was repeated to determine if repeatability of 5% was achieved. If not, test time was increased and repeated until it was achieved.

Once this was achieved the vacuum cleaner's control setting was reduced to 90° firing power and a 2 minute test was started. The test was repeated to determine if repeatability of 5% was achieved. If not, test time was increased and repeated until it was achieved.

The vacuum cleaner's control setting was then reduced to its minimal power setting and a 2-minute test was started. The test was repeated to determine if repeatability of 5% was achieved. If not, test time was increased and repeated until it was achieved.

The average of the three final measurements results from the above 2 minute tests was then calculated and compared with the limits to determine compliance.

Record

Measured power consumption:	1930W
Classification:	Class A

Result

PASS

The results can be found on the following page.

Uncertainty

The expanded uncertainty with a level of confidence of 95% for this test is 10.5%.

---End of page---

Operator : Richard Beckett
SEQAL Job No : X0285
Model : SC8830
Remarks Average result from the 3 power settings

Urms = 229.9V Freq = 49.984 Range: 25 A
Irms = 2.710A Ipk = 6.763A cf = 2.495
P = 123.9W S = 623.1VA pf = 0.199
THDi = 67.6 % THDu = 0.10 % Class A

Test completed, Result: PASSED

Order	Freq.	Iavg	Iavg%L	Irms	Irms%	Irms%L	Imax	Imax%L	Limit	Status	Vrms
	[Hz]	[A]	[%]	[A]	[%]	[%]	[A]	[%]	[A]		[V]
1	50	5.8679		8.4473	98.435		8.5052				229.84
2	100	0.002467	0.230533	0.0305	0.5631	2.8257	0.0504	4.6624	1.08		0.1473
3	150	2.1144	91.92867	3.2364	58.896	140.71	3.273	142.3	2.3		0.1718
4	200	0.000167	0.039633	0.0229	0.5631	5.3228	0.0381	8.8714	0.43		0.0491
5	250	0.682367	59.855	1.0437	32.038	91.553	1.0635	93.293	1.14		0.1227
6	300	0.000367	0.118833	0.0153	0.5068	5.0863	0.0244	8.138	0.3		0.0245
7	350	0.199567	25.9203	0.3036	9.9099	39.435	0.3189	41.417	0.77		0.0491
8	400	0	0	0.0107	0.3941	4.644	0.0153	6.6343	0.23		0.0245
9	450	0.114033	28.50867	0.2197	4.4482	54.932	0.235	58.746	0.4		0.0736
10	500	0	0	0.0122	0.2815	6.6343	0.0275	14.927	0.184		0
11	550	0.0481	14.57267	0.0885	3.2658	26.818	0.0916	27.743	0.33		0.0736
12	600	0	0	0.0168	0.2252	10.947	0.032	20.898	0.1533		0
13	650	0.0085	4.043667	0.0259	0.9572	12.352	0.0336	15.985	0.21		0.0491
14	700	0	0	0.0076	0.2252	5.805	0.0107	8.127	0.1314		0
15	750	0.026833	17.88037	0.0809	2.9842	53.914	0.0809	53.914	0.15		0.0491
16	800	0	0	0.0061	0.2252	5.3074	0.0061	5.3074	0.115		0
17	850	0.0381	28.78833	0.0687	1.7455	51.88	0.0824	62.256	0.1324		0.0491
18	900	0	0	0.0061	0.2252	5.9708	0.0076	7.4635	0.1022		0
19	950	0.0283	23.905	0.0565	1.2387	47.675	0.0702	59.272	0.1184		0.0491
20	1000	0	0	0.0092	0.3378	9.9514	0.0092	9.9514	0.092		0
21	1050	0.0331	30.88667	0.061	1.6892	56.966	0.0809	75.48	0.1071		0.0245
22	1100	0	0	0.0107	0.3941	12.771	0.0336	40.137	0.0836		0
23	1150	0.021433	21.89533	0.0504	0.6757	51.473	0.0595	60.832	0.0978		0.0245
24	1200	0	0	0.0092	0.2815	11.942	0.029	37.815	0.0767		0
25	1250	0.009	9.997333	0.0381	1.0135	42.386	0.0427	47.472	0.09		0.0491
26	1300	0	0	0.0092	0.3378	12.937	0.0076	10.781	0.0708		0
27	1350	0.0092	11.04367	0.0305	1.0135	36.621	0.0351	42.114	0.0833		0.0245
28	1400	0	0	0.0107	0.3941	16.254	0.0107	16.254	0.0657		0
29	1450	0	0	0.0351	0.5068	45.234	0.0397	51.134	0.0776		0.0245
30	1500	0	0	0.0092	0.3378	14.927	0.0107	17.415	0.0613		0
31	1550	0.007167	9.878667	0.0244	0.7883	33.637	0.029	39.944	0.0726		0.0491
32	1600	0	0	0.0061	0.2252	10.615	0.0076	13.269	0.0575		0
33	1650	0.003267	4.800333	0.0198	0.6194	29.093	0.0229	33.569	0.0682		0.0245
34	1700	0	0	0.0061	0.2252	11.278	0.0076	14.098	0.0541		0
35	1750	0	0	0.0229	0.4505	35.604	0.0244	37.977	0.0643		0.0245
36	1800	0	0	0.0061	0.2252	11.942	0.0076	14.927	0.0511		0
37	1850	0.005533	9.126333	0.0183	0.6194	30.111	0.0214	35.129	0.0608		0.0245
38	1900	0	0	0.0046	0.1689	9.4538	0.0046	9.4538	0.0484		0
39	1950	0	0	0.0168	0.3378	29.093	0.0229	39.673	0.0577		0.0245
40	2000	0	0	0.0061	0.1689	13.269	0.0061	13.269	0.046		0

4.4 Voltage Fluctuations and Flicker

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

Test Method : EN 61000-3-3:2008
Tested by: R. Beckett
Test date: 10/03/2011

Test Equipment

Test site: Voltage Fluctuations				
Reference	Description	Manufacturer	Model	Serial No.:
EMC 700	Harmonic Analyser	EMC Partner	Harmonics 1000	HAR1000 - 36

EUT Test Set Up

The EUT was set up as per normal use and in accordance with the requirements of the applied standard.
See Photo.



---End of page---

EUT Operating Mode(s)

Turn on test for Dmax.

Record

Current, including inrush at turn on <20A and current variation during operation <1.5A, so no Dmax measurements for manual switch are required.

Result

PASS

Uncertainty

The expanded uncertainty with a level of confidence of 95% for this test is 5.1%.

---End of page---

4.5 Electromagnetic Field

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

Test Method: EN 62233:2008
Tested by: R. Beckett
Test date: 16/03/2011

Ambient Temperature: 22°C (Limit 25°C ± 5°C).

Test Equipment

Test site: Room 6				
Reference	Description	Manufacture	Model	Serial No.
EMC 816	Exposure Level	Narda	ELT-400	E-0005

EUT Test Set Up

The EUT was set up as per normal use on a wooden table. The power supply for the EUT was 230V, 50Hz.
See photo.



---End of page---

EUT Operating Mode(s)

1. Maximum setting.

The EUT was operated continuously in normal operation with user controls set to maximum.

Measurement method

Measurements were made of the magnetic field strength around the EUT with the sensor at a perpendicular distance of 0 cm from the surface of the EUT.

The measurements were made using a time domain method as described in clause 5.5.2 of EN 62233. In this the measurements from the three coils in the sensor are weighted by the transfer function defined in the standard, then subsequently squared before being summed and the square root of the sum being taken. The resulting measurement is then compared with the reference level in table B.2 of EN 62233 to obtain a result as a percentage of the reference level.

Result

PASS

As defined in clauses 5 and 6 of EN 62233, the EUT is deemed to comply with the basic restriction for exposure to electric and magnetic fields in table B.1 of EN 62233 if the result plus measurement uncertainty does not exceed the reference level in table B.2. Both table B.1 and B.2 are referenced from European Council Recommendation 1999/519/EC.

If a result plus the measurement uncertainty value exceeds the reference level, the coupling factor for the type of appliance can be taken into account to show compliance with the basic restriction. The result plus the measurement uncertainty value is multiplied by the coupling factor and if this new result does not exceed 100% of the reference level, the EUT is deemed to comply with the basic restriction.

The maximum electromagnetic field measured was 51.75% of the reference level. Added to the measurement uncertainty of 15.2%, this gives a total of 59.56%. The coupling factor for this type of appliance is 0.16, which when multiplied by the total measured level gives a result of 9.53% of the reference level.

The measured electromagnetic fields of the EUT in the frequency range 10Hz to 400kHz comply with the basic restriction of Table B.1 of EN 62233, without being multiplied by the relevant coupling factor.

Uncertainty

The expanded uncertainty with a level of confidence of 95% for this test is 15.2%.

---End of page---

4.6 Immunity to Electrostatic Discharge

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

Applied Standard: EN 55014-2:1997 + A1:2001 + A2:2008 Criterion B (Not UKAS)
Test Method: EN 61000-4-2:1995 + A1:1998 + A2:2001
Tested by: R. Beckett
Test date:

Ambient temperature: 21°C
Limits: 15 to 35°C

Relative Humidity: 36%
30 to 60%

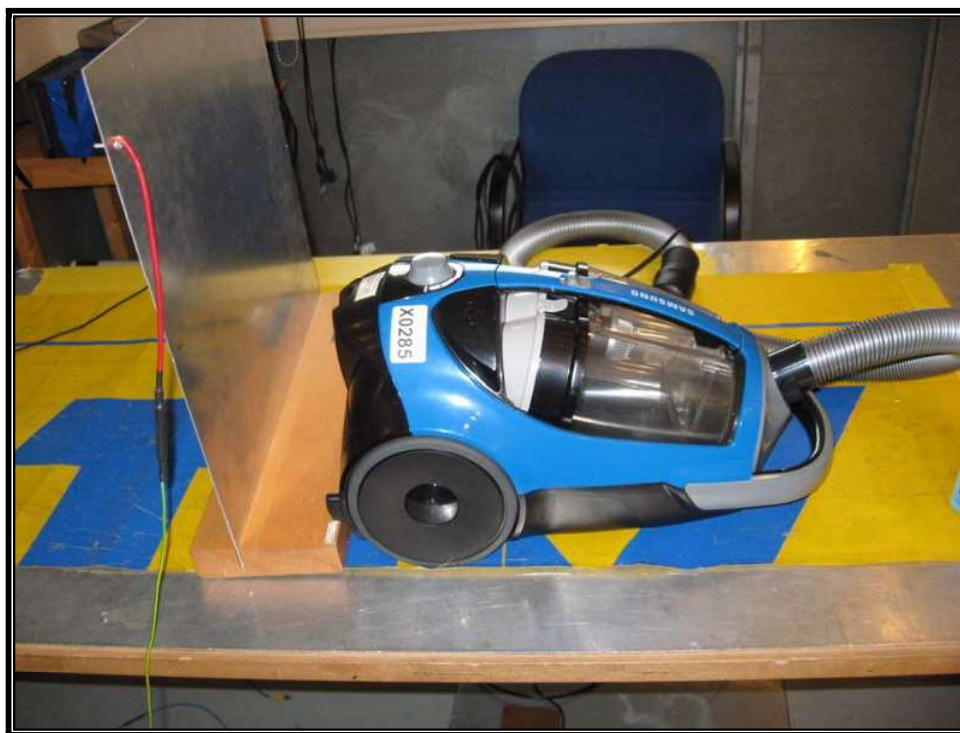
Air Pressure: 1020mbar
860 to 1060

Test Equipment

Test site: ESD				
Reference	Description	Manufacturer	Model	Serial No.
EMC 783	ESD Gun and Tip	EMC Partner	ESD3000	023 & 029

EUT Test Set Up

The EUT was set up as per normal use over a horizontal coupling plane and in accordance with the requirements of the applied standard. See photo for set up and discharge points.



---End of page---

EUT Operating Mode(s)

2. Medium setting

Monitoring of EUT

The EUT was monitored visually for loss of function or degradation.

Description of test points

1. HCP - Contact Discharge
2. VCP - Contact Discharge

Record

20 discharges of each polarity were applied to the test points as below:

Mode: 2

Point	+/- ve	
	Contact	
	2kV	4kV
1	A	A
2	A	A

A = performance within criterion A, B = performance within criterion B, C = performance within criterion C.

Result

PASS

The operating performance observed, during and after the test, was found to be in accordance with the failure criterion required.

Uncertainty

The test equipment used for this test meets the requirements of EN 61000-4-2:1995 +A1/A2 taking into account the uncertainty of calibration of the test equipment with a level of confidence of 95%.

---End of page---

4.7 Immunity to Electrical Fast Transients

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

Applied Standard: EN 55014-2:1997 + A1:2001 + A2:2008 Criterion B (Not UKAS)
Test Method: EN 61000-4-4:2004
Tested by: R. Beckett
Test date: 17/03/2011

Ambient temperature: 20½°C.
Limits: 15 to 35°C

Relative Humidity: 33%
25 to 75%

Air Pressure: 1000mbar
860 to 1060

Test Equipment

Test site: Room 8				
Reference	Description	Manufacturer	Model	Serial No.
EMC 689	Transient Generator	EMC Partner	Transient 1000	TRA 1000-323

EUT Test Set Up

The EUT was set up as per normal use on a wooden table 0.1m above the ground reference plane and in accordance with the requirements of the applied standard. See photo for set up.



---End of Page---

EUT Operating Mode(s)

2. Medium setting.

Monitoring method for EUT

The EUT was monitored visually for loss of function or degradation.

EFT Burst Parameters and Coupling Methods

Bursts were coupled directly to the following ports for a period of 2 minutes each, as in the table below:

AC Port via CDN

Port Coupling	Mode	Voltage (kV)	Pulse wave shape (ns.)	Repetition frequency (kHz)	Burst duration (ms)	Burst period (ms)	Pol.	Test duration (mins)	Angle	Result
AC Live	2	500 1	5/50	5	15	300	+/-	2	Async	A
AC Neutral	2	500 1	5/50	5	15	300	+/-	2	Async	A

A = performance within criterion A, B = performance within criterion B, C = performance within criterion C.

Result

PASS

The operating performance observed, during and after the test, was found to be in accordance with the failure criterion required.

Uncertainty

The test equipment used for this test meets the requirements of EN 61000-4-4:1995 taking into account the uncertainty of calibration of the test equipment with a level of confidence of 95%.

---End of page---

4.8 Immunity to Surges

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

Applied Standard: EN 55014-2:1997 + A1:2001 + A2:2008 Criterion B (Not UKAS)
Test Method: EN 61000-4-5:2006
Tested by: R. Beckett
Test date: 24/03/2011

Ambient temperature: 23°C
Limits: 15 to 35°C

Relative Humidity: 35%
10 to 75%

Air Pressure: 1040mbar
860 to 1060

Test Equipment

Test site: Surge				
Reference	Description	Manufacturer	Model	Serial No.
EMC 986	Surge Generator	EMC Partner	Transients 2000	1015

EUT Test Set Up

The EUT was set up as per normal use on a wooden table 0.8m above the ground reference plane and in accordance with the requirements of the applied standard. See photo.



---End of page---

EUT Operating Mode(s)

2. Medium setting.

Monitoring method for EUT

The EUT was monitored visually for loss of function or degradation.

Surge Parameters

Surges were coupled to the following ports as in the tables below:

Port/ Coupling	Mode	Voltage (kV)	Pulse wave-shape (μ s)	Angle (degrees)	Repetition time (s)	Polarity	Number of pulses	Result
AC L – N	2	1	1.2/50(8/20)	0,90, 180, 270	60	+/-	10	A

Result

PASS

The operating performance observed, during and after the test, was found to be in accordance with the failure criterion required.

Uncertainty

The test equipment used for this test meets the requirements of EN 61000-4-5:1995 taking into account the uncertainty of calibration of the test equipment with a level of confidence of 95%.

---End of page---

4.9 Immunity to Conducted RF Immunity

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

Applied Standard: EN 55014-2:1997 + A1:2001 + A2:2008 Criterion A (Not UKAS)
Test Method: EN 61000-4-6:2007
Tested by: R. Beckett
Test date: 17/03/2011

Ambient temperature: 21°C to 22½°C

Relative Humidity: 33% to 31%

Test Equipment

Test site: Room 8				
Reference	Description	Manufacturer	Model	Serial No.
EMC 030	Signal Generator	Rohde & Schwarz	SMX	827612/033
EMC 031	Millivoltmeter	Rohde & Schwarz	URV5	843166/043
EMC 120	CDN	MEB	M2/M3	13142

EUT Test Set Up

The EUT was set up as per normal use on a wooden table 0.1m above the ground reference plane and in accordance with the requirements of the applied standard.



---End of page---

EUT Operating Mode(s)

2. Medium setting.

Monitoring method for EUT

The EUT was monitored visually for loss of function or degradation.

CMS Test Voltage and Frequency Range

Port	Mode	Frequency Range (MHz)	Level (V emf. in 150Ω)	Modulation	Coupling method	Result
Mains	2	0.15 to230	3	1kHz, 80% AM	Direct via M2 CDN	A

A = performance within criterion A, B = performance within criterion B, C = performance within criterion C.

Dwell time = 3 seconds.

Interfering signals were also applied at spot frequencies of 150kHz, 20MHz, 40MHz, 60MHz and 80MHz for up to 3 minutes while the EUT was operated over its complete power setting range. Result: PASS

Result

PASS

The operating performance observed, during and after the test, was found to be in accordance with the failure criterion required.

Uncertainty

The expanded uncertainty for a 50% level of confidence that the applied level was as stated is 2.3dB.

---End of page---

4.10 Immunity to Voltage Dips and Interruptions

Applicant: **Samsung Electronics**
SEQAL ref.: **X0285**
EUT: **Vacuum Cleaner**
Model: **SC8830**

Applied Standard: EN 55014-2:1997 + A1:2001 + A2:2008 Criterion B/C (Not UKAS)
Test Method: EN 61000-4-11:2004
Tested by: R. Beckett
Test date: 17/03/2011

Ambient temperature: 21°C

Relative Humidity: 36%

Test Equipment

Test site: Voltage Dip and Interruptions				
Reference	Description	Manufacturer	Model	Serial No.
EMC 789	Power Fail Simulator	EMC Partner	Transient 2000	562

EUT Test Set Up

The EUT was set up as per normal use in accordance with the requirements of the applied standard. See photo.



---End of page---

EUT Operating Mode(s)

2. Medium setting

Monitoring method for EUT

The EUT was monitored visually for loss of function or degradation.

Dips and Interruptions Parameters

Dips and interruptions to the mains supply were applied as below:

Test Voltage	Mode	Duration (ms)	Number of applications	Time between applications (s)	Angle (degrees)	Result
< 5% rated voltage = 0V	2	10	3	10	0, 180	A
40% rated voltage = 92V	2	200	3	10	0	A
70% rated voltage = 161V	2	1000	3	10	0	B

A = performance within criterion A, B = performance within criterion B, C = performance within criterion C.

Result

PASS

The operating performance observed, during and after the test, was found to be in accordance with the failure criterion required.

Uncertainty

The test equipment used for this test meets the requirements of EN 61000-4-11:1994 taking into account the uncertainty of calibration of the test equipment with a level of confidence of 95%.

---END OF REPORT---