



FCC TEST REPORT

Reference No. : G-45-2011-03002
 Applicant : Toshiba Samsung Storage Technology Korea Corporation
 Equipment Under Test (EUT) :
 Product Name : Optical Smart Hub
 Model Name : SE-208BW
 Applied Standards : FCC Part 15 : 2010, Subpart B, Class B
 ANSI C63.4 : 2003
 CISPR 22 : 2006
 Date of Receipt : November 01, 2011
 Date of Test : November 14, 2011
 Date of Issue : November 17, 2011
 Test Results : Complied

Tested by	:	 ----- Paul Kang
Reviewed by	:	 ----- Forest Lee

Remarks :

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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1. General Information

1.1 Client Information

Applicant : Toshiba Samsung Storage Technology Korea Corporation.
 Address of Applicant : 14th Floor, Bldg. No. 102, Digital Empire2, 486, Sin-dong,
 Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea 443-734
 Manufacturer : Toshiba Samsung Storage Technology Korea Corporation.
 Address of Manufacturer : 14th Floor, Bldg. No. 102, Digital Empire2, 486, Sin-dong,
 Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea 443-734
 Factory : Sephil (Samsung Electronics Philippines Mfg Corp)
 Address of Factory : BLK 6 CPIP Barangay Batino/Prinza Calamba 4027
 Languna Philippines

1.2 Test Laboratory

Name and Address : SGS Korea Co., Ltd.
 18-34, Sanbon-dong, Gunpo, Gyeonggi-do, Korea
 435-040
 FCC Registration No. : 367021
 IC Company No. : 4620F
 Phone : + 82 31 428 5700
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1.3 General Information of E.U.T.

Product Name	Optical Smart Hub
Model Name	SE-208BW
Serial No.	-
EMI Classification	Class B
Rated Voltage	Input : (100 ~ 240) H \checkmark U, (50 ~ 60) , 0.6 3 Output : 5.0 H \checkmark U, 4 3
Test Voltage	120 H \checkmark U, 60
Highest Internal Frequency	2,472

1.4 Operating Modes and Conditions

Operating mode	Operating condition
USB Mode	USB Data Communication

1.5 Auxiliary Equipments

Description	Model	Serial No.	Manufacturer
USB Mouse	1344	9282303793242	Microsoft
Local Area Network	-	-	-
USB Keyboard	SKG-3300UB	TAKB200205Z	MONTEREY INTERNATIONAL CORP.
Notebook Computer	LGX14	008QTEQ024836	LG
LCD Monitor	W2261VT	003NDWEKY873	LG

Note: Auxiliary equipments are declared according to FCC procedure.

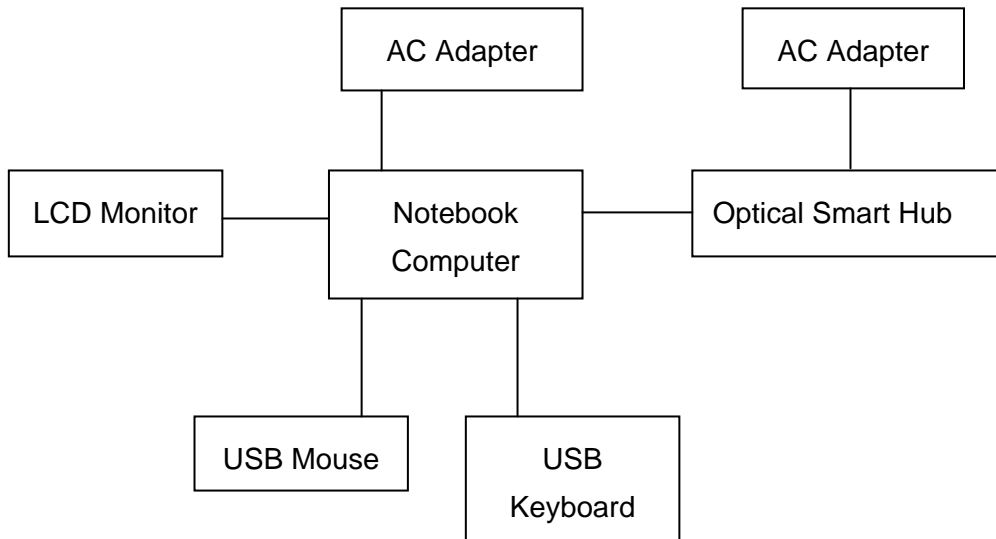
1.6 Cable List

Start		END		Cable Spec.	
Name	I/O Port	Name	I/O Port	Length	Shield
Optical Smart Hub	PC/AV	Notebook Computer	USB	0.5	Shield
	DC IN	AC Adapter	-	1.5	Unshield
AC Adapter	AC IN	AC Source	-	-	-
Notebook Computer	USB	USB Keyboard	USB	1.1	Shield
	USB	USB Mouse	USB	1.8	Shield
	USB	Optical Smart Hub	PC AV	0.5	Shield
	RGB	LCD Monitor	RGB	1.8	Shield
	DC IN	AC Adapter	DC OUT	1.2	Unshield
AC Adapter	DC OUT	Notebook Computer	DC IN	1.2	Unshield
	AC IN	AC Source	-	1.0	Unshield
LCD Monitor	RGB	Notebook Computer	RGB	1.8	Shield
	AC IN	AC Source	-	1.5	Unshield

1.7 System Configurations

Description	Model	Serial No.	Manufacturer
Main Board	SE-208BW	BG41-00675A	-
WLAN Board	SWL-R50	AUKR0A-B41000016	-
DVD Writer	SN-208	R8RY6GXBA00181	Toshiba Samsung Storage Technology Corporation
AC Adapter	WA-20A05R	199034500-AAAE	Asian Power Devices Inc.

1.8 Test System Layout



1.9 Modifications

There was no modified item during the test.

1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 : 2010, Subpart B	Applicable	No Deviation

1.11 Summary of Test Results

Test Item	Basic Standards	Results
Conducted Emission	ANSI C63.4 : 2003	Complied
Radiated Emission	ANSI C63.4 : 2003	Complied

Note : Test methods of all test items are performed according to the basic standards in this table.

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2.1 Test Results

Test Items	Basic Standards	Test Results
Conducted Emission	ANSI C63.4 : 2003	Complied
Radiated Emission	ANSI C63.4 : 2003	Complied

2.2 Test Method and Limits

2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 ~ 30	9	N/A
Radiated Emission	30 ~ 1	120	10 _ ~ 3 _
	Above 1	1	3 _

Note : 10 _ method of radiated emission measurement is only applied to Class A equipment over the frequency range of 30 ~ 1 . Except this, 3 _ method is applied to Class B equipment over the frequency range of 30 ~ 1 and Class A and Class B equipment above 1 .

2.2.2 Test Limits

-Conducted Emission Limits

Frequency Range	Limits(())		Class
	Quasi-peak	Average	
0.15 ~ 0.5	79	66	Class A
0.5 ~ 30	73	60	
0.15 ~ 0.5	66 to 56	56 to 46	Class B
0.5 ~ 5	56	46	
5 ~ 30	60	50	

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.5 .

-Radiated Emission Limits below 1

Frequency Range	Limits((/))		Class
	Quasi-peak		
30 ~ 88	39.1		Class A
88 ~ 216	43.5		
216 ~ 960	46.4		
960 ~ 1	49.5		
30 ~ 88	40		Class B
88 ~ 216	43.5		
216 ~ 960	46		
960 ~ 1	54		

-Radiated Emission Limits above 1

Frequency Range	Limits((/))		Class
	Average	Peak	
Above 1	60	80	Class A
Above 1	54	74	Class B

Note : The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/decade because it was measured at 3m distance not 10m distance.

2.3 Conducted Emission

The initial preliminary exploratory scans were performed over the measuring frequency range(0.15 to 30) using a max hold mode incorporating a Peak detector and Average detector and using the software of ES-K1(Version V1.71 from R&S). The final test data was measured using a Quasi-Peak detector and Average detector.

2.3.1 Test Equipments

Description	Model No.	Manufacturer	S/N	Last Cal. Date
Two-Line V-Network	ENV216	R & S	100190	2011.01.06
Artificial Mains Networks	ESH2-Z5	R & S	100280	2011.04.06
Test Receiver	ESHS10	R & S	863365/018	2011.07.07

2.3.2 Test Site

Shield Room in Gunpo Laboratory

2.3.3 Environment Conditions

Temperature : 22.4 §

Humidity : 32.0 , Dž: ž

Atmospheric Pressure : 100.7

Test Date : November 14, 2011

Freq. ()	Line (H/N)	Level ()		CL ()	LISN ()	Result ()		Limit ()		Margin ()	
		Q/P	A/V			Q/P	A/V	Q/P	A/V	Q/P	A/V
0.15	N	41.50	27.50	0.30	9.65	51.45	37.45	66.00	56.00	14.55	18.55
0.15	H	41.20	30.40	0.30	9.57	51.07	40.27	66.00	56.00	14.93	15.73
0.25	N	32.90	26.40	0.45	9.65	43.00	36.50	61.76	51.76	18.76	15.26
0.27	H	32.90	28.20	0.47	9.57	42.94	38.24	61.12	51.12	18.18	12.88
0.28	N	34.10	29.60	0.48	9.65	44.23	39.73	60.97	50.97	16.74	11.24
0.28	H	33.30	27.70	0.48	9.57	43.35	37.75	60.82	50.82	17.47	13.07

Measurement Uncertainty : ± 3.37 (The confidential level is about 95%, K=2)

- Note :
- Line (H) : Hot
 - Line (N) : Neutral
 - CL: Cable Loss
 - LISN : LISN Factor
 - Result = Level + CL + LISN
 - Margin = Limit – Result

See Appendix A (Conducted Emission)

2.4 Radiated Emission

The initial preliminary exploratory scans were performed over the measuring frequency range(30 to 12) using a max hold mode incorporating a Peak detector and using the software of EP5RE(Version Ver3.10.20 from TOYO). The final test data was measured using a Quasi-Peak detector below 1 and a Peak and Average detector above 1 . Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

2.4.1 Test Equipments

Description	Model No.	Manufacturer	S/N	Last Cal. Date
Horn Antenna	HF906	R & S	100229	2011.05.04
Signal Conditioning Unit	SCU 18	R & S	10117	2011.03.23
Bilog Antenna	VULB9163	SCHWARZBEC K MESS- ELEKTRONIK	396	2011.05.12
Test Receiver	ESU26	R & S	100109	2011.05.04
Amplifier	8447F	HP	2944A03909	2011.07.04

Note : Only the calibration period of Antennas is 2 years but the period of every equipment is 1 year.

2.4.2 Test Site

3 _ Semi-Anechoic Chamber in Gunpo Laboratory

2.4.3 Environment Conditions

Below 1 (3 _ method)

Temperature : 21.3 § ~ 22.3 §
 Humidity : 29.0 Ľ: ĺ ~ 30.0 Ľ: ĺ
 Atmospheric Pressure : 100.8

Test Date : November 14, 2011

Freq. ()	Level ()	Pol. (H/V)	A (°)	H (m fi)	AF ()	CL ()	Amp. ()	F/S (/_)	Limit (/_)	Margin ()
36.19	44.20	V	357.0	1.00	12.83	0.90	27.17	30.76	40.00	9.24
43.22	44.70	V	133.7	1.00	14.01	0.96	27.13	32.54	40.00	7.46
198.58	51.10	H	110.0	1.00	10.91	2.07	26.71	37.37	43.50	6.13
203.00	51.60	H	125.5	1.00	11.08	2.09	26.69	38.08	43.50	5.42
321.27	48.70	V	165.6	1.00	12.87	2.53	27.00	37.10	46.00	8.90
895.93	40.10	H	179.9	1.00	21.95	4.39	27.42	39.02	46.00	6.98

Measurement Uncertainty (Horizontal) : TM 5.00 (The confidential level is about 95%, K=2)

Measurement Uncertainty (Vertical) : TM 5.36 (The confidential level is about 95%, K=2)

Note: • AF = Antenna Factor • CL = Cable Loss • F/S = Field Strength
 • Pol.(H) = Horizontal • Pol.(V) = Vertical • Amp. = Amplifier Gain
 • Margin = Limit – F/S • F/S = Level + AF + CL – Amp.
 • A : Angle • H : Height

Above 1 (3 _ method)

Temperature : 19.6 §
 Humidity : 31.0 , Dž: ž
 Atmospheric Pressure : 100.4

Test Date : November 14, 2011

Freq. ()	Level ()	Pol. (H/V)	A (°)	H (_)	AF ()	CL ()	Amp. ()	F/S (/ _)	Limit (/ _)	Margin ()
Peak Detector										
1331.04	58.20	V	110.4	1.00	25.02	4.18	43.65	43.74	74.00	30.26
1992.92	55.60	V	347.4	1.00	27.50	4.76	43.74	44.12	74.00	29.88
Average Detector										
1331.04	36.60	V	110.4	1.00	25.02	4.18	43.65	22.14	54.00	31.86
1992.92	33.50	V	347.4	1.00	27.50	4.76	43.74	22.02	54.00	31.98

Measurement Uncertainty (Horizontal) : TM 4.89 (The confidential level is about 95%, K=2)

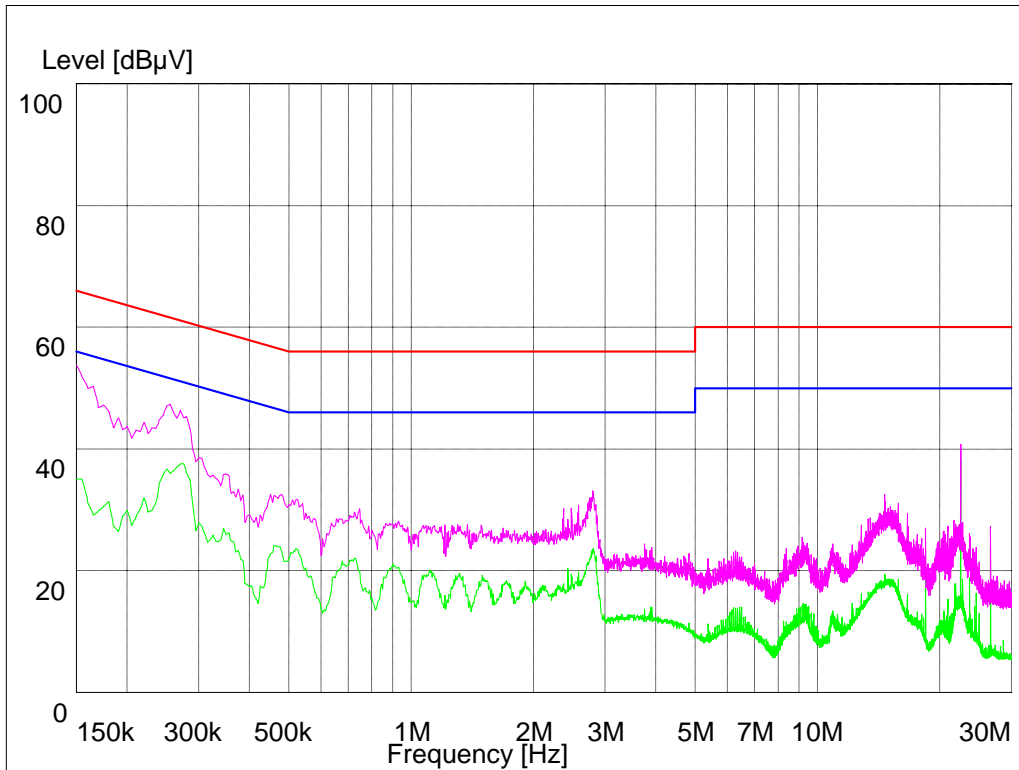
Measurement Uncertainty (Vertical) : TM 4.93 (The confidential level is about 95%, K=2)

Note: • AF = Antenna Factor • CL = Cable Loss • F/S = Field Strength
 • Pol.(H) = Horizontal • Pol.(V) = Vertical • Amp. = Amplifier Gain
 • Margin = Limit – F/S • F/S = Level + AF + CL – Amp.
 • A : Angle • H : Height

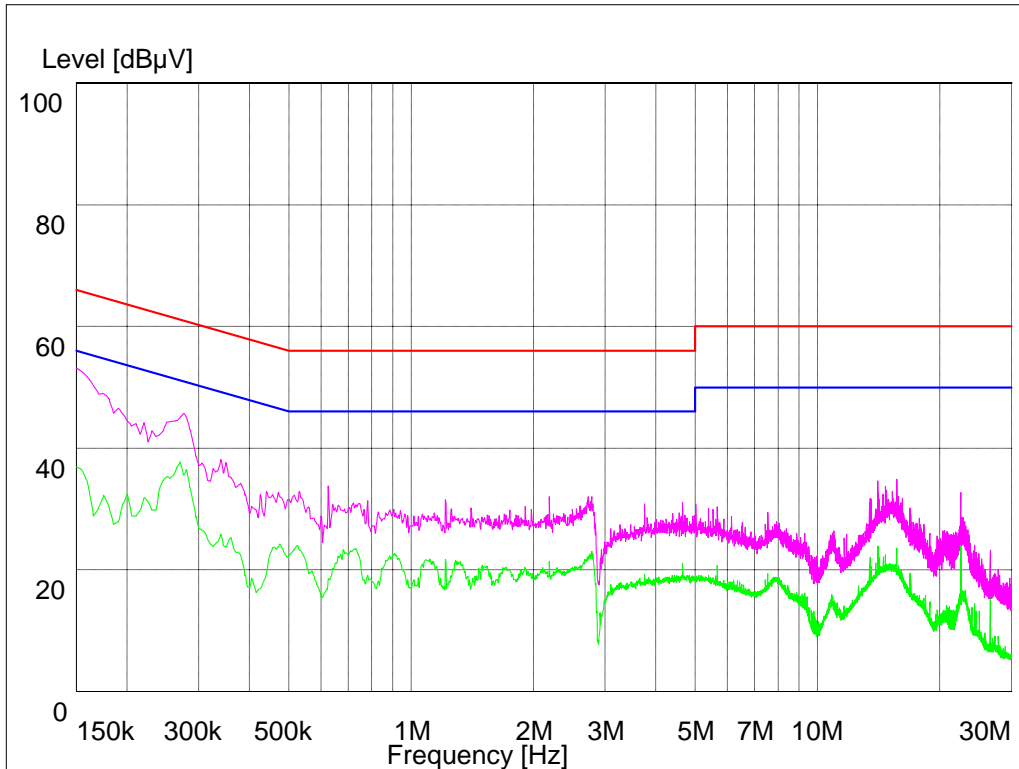
See Appendix C (Radiated Emission)

Appendix A : Conducted Emission

Neutral

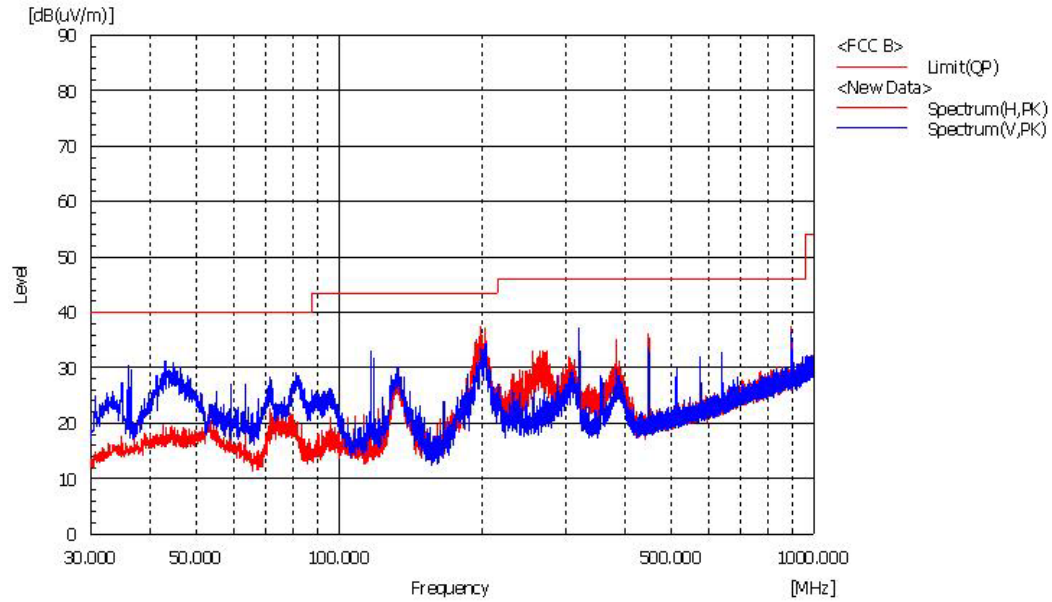


Hot



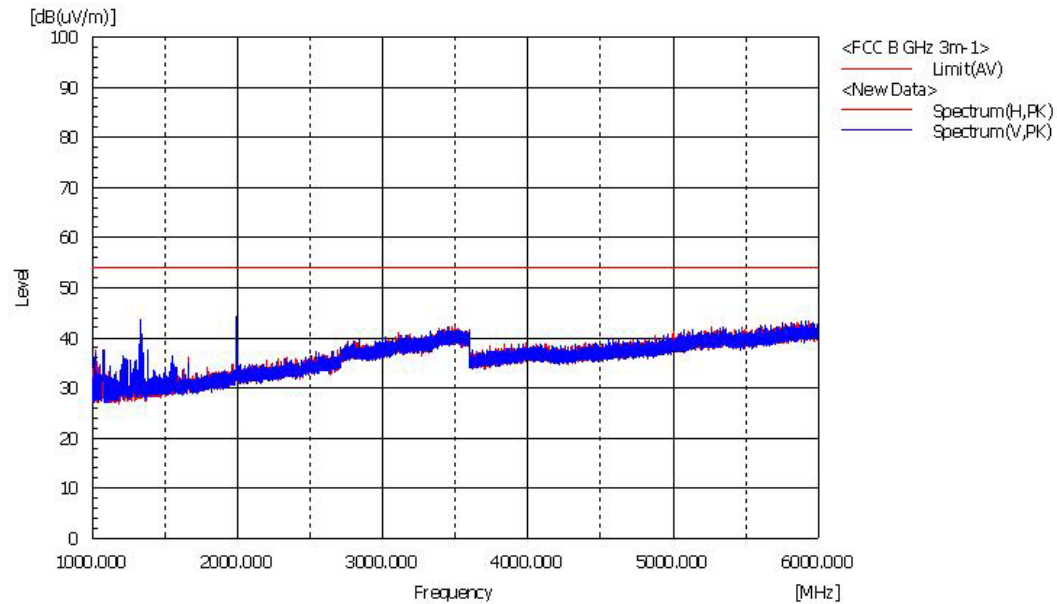
Appendix B : Radiated Emission

Below 1



Above 1

From 1 ~ 6



From (~ 12

