SGS

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

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TEST REPORT

Application No.:	SZEM1507004258CR
Applicant:	SHENZHEN Hitevision Technology Co., Ltd.
Address of Applicant:	No. 8, Qinglan 1st Road, Pingshan, Shenzhen, Guangdong 518118, P. R. China.
Manufacturer:	Newline Interactive Inc.
Address of Manufacturer:	101 East Park Blvd. Suite 807 Plano, TX 75074, USA
Factory:	SHENZHEN Hitevision Technology Co., Ltd.
Address of Factory:	No. 8, Qinglan 1st Road, Pingshan, Shenzhen, Guangdong 518118, P. R. China.
Equipment Under Test (EUT):
EUT Name:	Collaboration Touch Screen
Model No.:	X7, X7-x, X7-xx, X7-xxx (x =0-9, a-z or A-Z) 🌲
*	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical
FCC ID:	2ACYT-BNL15X7
Standards:	47 CFR PART 15,Subpart B:2014
Date of Receipt:	2015-07-20
Date of Test:	2015-08-10 to 2015-08-18
Date of Issue:	2015-09-29
Test Result :	Pass*

* In the configuration tested, the EUT complied with the standards specified above.



Jack Zhang EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.



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2 Test Summary

Item	Standard		Method	Class	Result	
Conducted Disturbance at Mains Terminals (150kHz-30MHz)	47 CFR PART 15,Subpart B:2014		ANSI C63.4	Class B	Pass	
Radiated Disturbance (30MHz-1GHz)	47 CFR PART 15,Subpart B:2014		ANSI C63.4	Class B	Pass	
Radiated Disturbance (above 1GHz)	47 CFR PART 15,Subpart B:2014		ANSI C63.4	Class B	Pass	
The highest frequency of the Upper			Upper frequency of measurement Range			
internal sources of	the EUT					
Below 1.705MHz		30MHz	2			
1.705MHz to 108MHz 1GHz						
108MHz to 500MHz 2GHz						
500MHz to 1GHz 5GHz						
Above 1GHz 5th ha			rmonic of the highest free	quency or 40GHz,	whichever is	

Remark:

Model No.: X7, X7-x, X7-xx, X7-xxx (x =0-9, a-z or A-Z)

Only the model X7 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, only different on outlook silkprint, color and model number.

lower



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3 Contents

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4 General Information

4.1 Details of E.U.T.

Power Supply:	Input voltage: AC100-240V 50/60Hz
	Test voltage: AC120V 60Hz
	DC 3V (1.5V x 2"AAA"Size batteries) for remote control
Cable:	AC cable:180cm unshielded
	USB cable:500cm shielded with two ferrite core
	HDMI cable:295cm shielded
Internal source	Above 1GHz

4.2 Description of Support Units

Description	Manufacturer	Model No.
Laptop	Lenovo	T430u
Mouse	Lenovo	MO28UOA
MITSUBISHI Television	MITSUBISHI	AX025
U-disk	Color turn	UL4GHKXG
Router	NETGEAR	DGN2200
Router	NETGEAR	JNR3300
SD Card	Kingston	SD-K08G
Earphone	PHILIPS	SHE6000
AUX IN Cable	SAMZHE	YPH-8310
HDMI Cable	Supplied by SGS	REF. No.SEA0900
VGA Cable	Supplied by SGS	REF. No.SEA3300
Network Cable	Supplied by SGS	REF. No.SEA1100
X-PC(OPS port load)	Supplied by client	XJ-0581



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4.3 Standards Applicable for Testing

Table 1 : Tests Carried Out Under 47 CFR PART 15,Subpart B:2014

Method	Item	Status
ANSI C63.4	Conducted Disturbance at Mains Terminals	\checkmark
	(150kHz-30MHz)	
ANSI C63.4	Radiated Disturbance(30MHz-1GHz)	\checkmark
ANSI C63.4	Radiated Disturbance(above 1GHz)	\checkmark

× Indicates that the test is not applicable

 $\sqrt{}$ Indicates that the test is applicable



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4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration

Laboratories) for the competence in the field of testing.

A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

VCCI

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

FCC – Registration No.: 556682

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

Industry Canada (IC)

The 3m Semi-anechoic chambers and the 10m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-2, 4620C-3.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

	Conducted Disturbance at Mains Terminals(150kHz-30MHz)						
Item	Equipment	Inventory No	Cal. date (yyyy-mm-dd)	Cal Due Date			
1	Shielding Room	ChangZhou ZhongYu	GB-88	SEL0042	2015-05-13	2016-05-13	
2	LISN	Rohde & Schwarz	ENV216	SEL0152	2015-10-09	2016-10-09	
3	LISN	ETS-LINDGREN	3816/2	SEL0021	2015-05-13	2016-05-13	
4	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	2015-05-13	2016-05-13	
5	Coaxial Cable	SGS	N/A	SEL0025	2015-05-13	2016-05-13	

	Radiated Disturbance						
Item	Equipment	Manufacturer	Model No	Inventory No	Cal. date (yyyy-mm-dd)	Cal Due Date	
1	10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEL0303	2015-08-01	2016-08-01	
2	EMI Test Receiver	Rohde & Schwarz	ESR	SEL0295	2015-05-13	2016-05-13	
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A	
4	Coaxial cable	SGS	N/A	SEL0288	2015-05-13	2016-05-13	
5	Coaxial cable	SGS	N/A	SEL0275	2015-05-13	2016-05-13	
6	Coaxial cable	SGS	N/A	SEL0274	2015-05-13	2016-05-13	
7	BiConiLog Antenna(30M-1GHz)	Schwarzbeck	VULB9160	SEL0308	2015-10-17	2018-10-17	
8	BiConiLog Antenna(30M-1GHz)	Schwarzbeck	VULB9160	SEL0309	2015-10-17	2018-10-17	
9	Horn Antenna(1- 18GHz)	Rohde & Schwarz	HF907	SEL0310	2015-06-14	2018-06-14	
10	Pre-amplifier	Sonoma Instrument Co	310N	SEL0298	2015-05-13	2016-05-13	



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	General used equipment					
Item	Equipment	Manufacturer	Model No	Inventory No	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	Humidity/Temperature Indicator	Shang Hai Meteorological Industry Factory	ZJ1-2B	SEL0101	2015-10-12	2016-10-12
2	Humidity/Temperature Indicator	Shang Hai Meteorological Industry Factory	ZJ1-2B	SEL0102	2015-10-12	2016-10-12
3	Humidity/Temperature Indicator	Shang Hai Meteorological Industry Factory	ZJ1-2B	SEL0103	2015-10-12	2016-10-12
4	Barometer	Chang Chun Meteorological Industry Factory	DYM3	SEL0088	2015-05-13	2016-05-13



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6 Emission Test Results

6.1 Conducted Disturbance at Mains Terminals(150kHz-30MHz)

Test Requirement:	47 CFR PART 15,Subpart B:2014
Test Method:	ANSI C63.4
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μ V)-56dB(μ V) quasi-peak, 56dB(μ V)-46dB(μ V) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.1.1 E.U.T. Operation

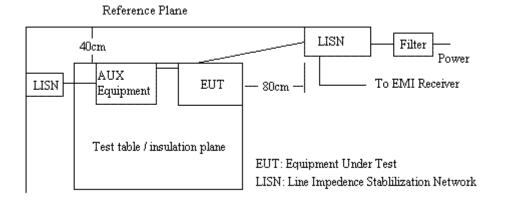
Operating Environment:								
Temperature:	23.0 °C	Humidity:	54 % RH	Atmospheric Pressure:	1010 mbar			
	a:HDMI1 mode: Keep EUT working with external HDMI source via front panel HDM port and HDMI signal output via rear panel HDMI port.							
			T working with ext output via rear par	ernal HDMI source via rea iel HDMI port.	r panel HDMI			
	c: LAN mode: with external in			EUT and internet, Keep	EUT working			
Pretest these	displaying char	acter "H" in	all screen. Set ch	ess and contrast to the management of the	of characters			
mode to find	per line so that typically the greatest number of characters per screen is displayed.							
the worst case:	e:SD card mode : Keep EUT playing with SD card.							
the worst case.	f:USB mode :Keep EUT working with 1-8 USB ports, pretest at each ports to find the worst case.							
	g:Top camera i	mode: Keep	EUT recording via	a top camera.				
	h::Bottom came	era mode: K	eep EUT recording	g via bottom camera.				
	i: MIC record m	ode:Keep E	UT recording via r	nicphone.				
	j: Normally working mode, keep EUT working normally.							
The worst case			working with extend to a set of the set of t	ernal HDMI source via fror DMI port.	t panel HDMI			
for final test:								





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6.1.2 Test Setup

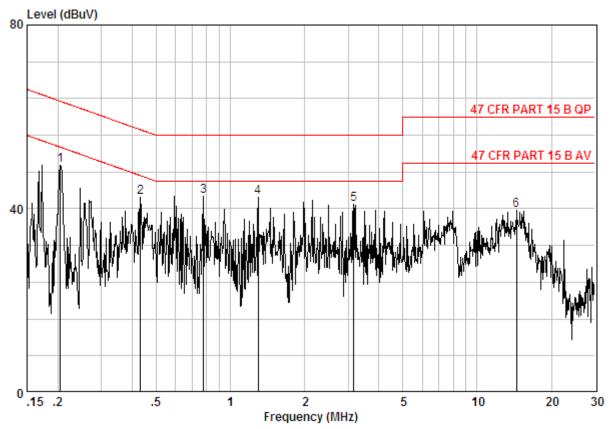


6.1.3 Measurement Data

An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.



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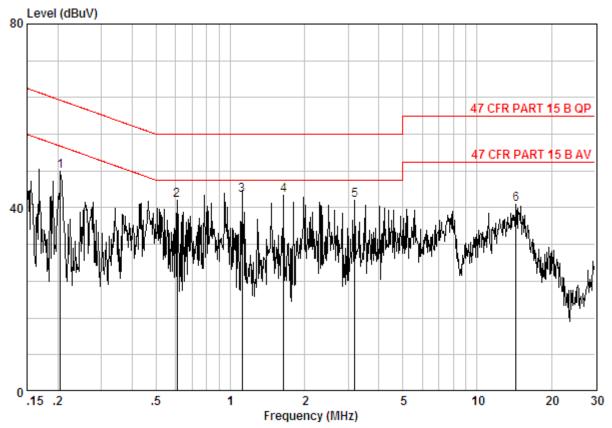
Mode:a;Line:Live Line

Site	: Shielding Room
Condition	: 47 CFR PART 15 B AV CE LINE
Job No.	: 4258CR
Test Mode	: a

	Freq		LISN Factor					Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.20505	0.02	9.83	39.55	49.40	53.40	-4.00	Peak
2	0.43281	0.01	9.86	32.57	42.44	47.20	-4.76	Peak
3 0	0.77931	0.02	9.88	32.72	42.62	46.00	-3.38	Peak
4	1.296	0.02	9.91	32.60	42.53	46.00	-3.47	Peak
5	3.156	0.02	10.03	31.03	41.08	46.00	-4.92	Peak
6	14.440	0.01	10.16	29.47	39.64	50.00	-10.36	Peak



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Mode:a;Line:Neutral Line

Site	: Shielding Room
Condition	: 47 CFR PART 15 B AV CE NEUTRAL
Job No.	: 4258CR
Test Mode	: a

	Freq		LISN Factor					Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1 2	0.20505 0.60752							
	1.117 1.645	0.02	10.09	32.53	42.64	46.00	-3.36	Peak
5 6	3.190 14.364		10.13 10.21					



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6.2 Radiated Disturbance(30MHz-1GHz)

Test Requirement:	47 CFR PART 15,Subpart B:2014
Test Method:	ANSI C63.4
Frequency Range:	30MHz to 1GHz
Limit:	
30MHz -88MHz	29.5(dBµV/m) quasi-peak
88MHz-216MHz	33.0(dBµV/m) quasi-peak
216MHz-960MHz	35.6(dBµV/m) quasi-peak
960MHz-1000MHz	44.4(dBµV/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

6.2.1 E.U.T. Operation

Operating Environment:

Temperature:	23.0 °C	Humidity:	56 % RH	Atmospheric Pressure:	1010 mbar					
	a:HDMI1 mode: Keep EUT working with external HDMI source via front panel HDMI port and HDMI signal output via rear panel HDMI port.									
		b: HDMI2 mode: Keep EUT working with external HDMI source via rear panel HDMI rear port and HDMI signal output via rear panel HDMI port.								
	c: LAN mode: Build the connection between EUT and internet, Keep EUT worki with external internet source.									
Pretest these			•	ess and contrast to the management of the mana the management of the management of t						
mode to find	per line so that typically the greatest number of characters per screen is displayed.									
	e:SD card mode : Keep EUT playing with SD card.									
the worst case:	f:USB mode :Keep EUT working with 1-8 USB ports, pretest at each ports to find the worst case.									
	g:Top camera r	node: Keep	EUT recording via	a top camera.						
	h::Bottom came	era mode: K	eep EUT recording	g via bottom camera.						
	i: MIC record m	ode:Keep E	UT recording via r	nicphone.						
	j: Normally wor	king mode, k	keep EUT working	normally.						
The worst case			working with extent wit via rear panel HI	ernal HDMI source via fron DMI port.	t panel HDMI					

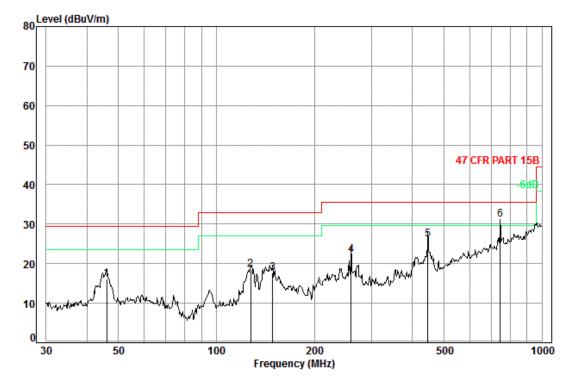
for final test:

6.2.2 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.



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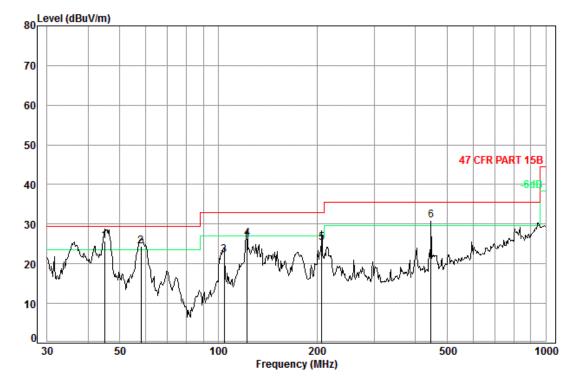
Mode:a;Polarization:Horizontal

Condition: 47 CFR PART 15B 10m Horizontal Job No. : 4258CR Test Mode: a

		Cable	Ant	Preamp	Read		Limit	0ver
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	46.02	6.82	11.98	32.65	30.08	16.23	29.50	-13.27
2	127.66	7.34	11.76	32.63	32.16	18.63	33.00	-14.37
3	148.96	7.45	13.12	32.62	29.73	17.68	33.00	-15.32
4	259.23	7.90	11.85	32.56	35.06	22.25	35.60	-13.35
5	446.41	8.42	16.52	32.56	33.82	26.20	35.60	-9.40
6 p	p 744.87	9.20	21.70	32.49	32.65	31.06	35.60	-4.54



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Mode:a;Polarization:Vertical

Condition: 47 CFR PART 15B 10m Vertical Job No. : 4258CR Test Mode: a

		Frea			Preamp Factor				Over
		Freq	LUSS	Factor	Factor	Level	rever	LTHE	LIMIC
	_	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	рр	44.90	6.80	12.02	32.65	39.57	25.74	29.50	-3.76
2	1	58.00	7.00	11.84	32.66	38.25	24.43	29.50	-5.07
3		104.17	7.22	9.87	32.65	37.80	22.24	33.00	-10.76
4		122.40	7.31	11.45	32.63	40.20	26.33	33.00	-6.67
5		207.12	7.64	9.98	32.59	40.32	25.35	33.00	-7.65
6	1	446.41	8.42	16.52	32.56	38.52	30.90	35.60	-4.70



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6.3 Radiated Disturbance(above 1GHz)

Test Requirement:	47 CFR PART 15,Subpart B:2014
Test Method:	ANSI C63.4
Frequency Range:	Above 1GHz
Limit:	
Above 1GHz	74(dBµV/m) peak, 54(dBµV/m) average
Detector:	Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

6.3.1 E.U.T. Operation

Operating Environment:

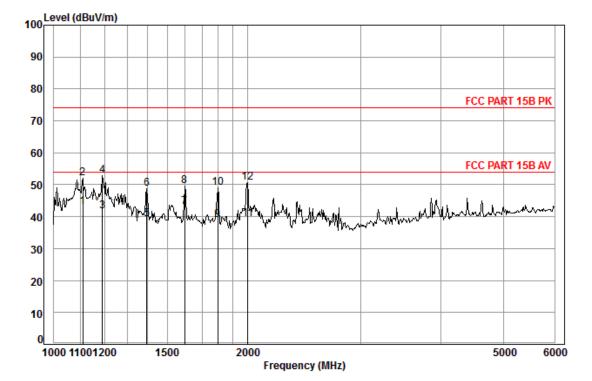
Temperature:	23.0 °C	Humidity:	56 % RH	Atmospheric Pressure:	1010 mbar					
	a:HDMI1 mode: Keep EUT working with external HDMI source via front panel HI port and HDMI signal output via rear panel HDMI port. b: HDMI2 mode: Keep EUT working with external HDMI source via rear panel HI rear port and HDMI signal output via rear panel HDMI port.									
	c: LAN mode: Build the connection between EUT and internet, Keep EUT working with external internet source.									
Pretest these				ess and contrast to the ma haracter size and number						
mode to find	per line so that typically the greatest number of characters per screen is displayed.									
II	e:SD card mode : Keep EUT playing with SD card.									
the worst case:	f:USB mode :Keep EUT working with 1-8 USB ports, pretest at each ports to find the worst case.									
	g:Top camera r	node: Keep	EUT recording via	a top camera.						
	h::Bottom came	era mode: K	eep EUT recordin	g via bottom camera.						
	i: MIC record m	ode:Keep E	UT recording via	micphone.						
	j: Normally wor	king mode, l	keep EUT working	normally.						
The worst case			working with extent wit via rear panel H	ernal HDMI source via fron DMI port.	t panel HDMI					
for final test:										

6.3.2 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.



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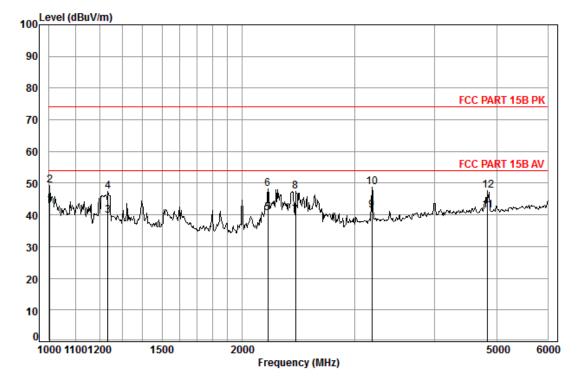
Mode:a;Polarization:Horizontal

Condition: FCC PART 15B PK 3m Horizontal Job No. : 4258CR Test Mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
-	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1109.51	12.18	24.16	37.95	44.58	42.97	54.00	-11.03	Average
2	1109.51	12.18	24.16	37.95	53.56	51.95	74.00	-22.05	Peak
3	1189.82	11.39	24.20	37.97	44.18	41.80	54.00	-12.20	Average
4 pk	1189.82	11.39	24.20	37.97	55.31	52.93	74.00	-21.07	Peak
5	1395.52	9.57	24.79	38.01	42.81	39.16	54.00	-14.84	Average
6	1395.52	9.57	24.79	38.01	52.45	48.80	74.00	-25.20	Peak
7 pp	1596.24	8.03	26.18	38.04	46.86	43.03	54.00	-10.97	Average
8	1596.24	8.03	26.18	38.04	53.38	49.55	74.00	-24.45	Peak
9	1796.62	6.68	26.69	38.07	43.59	38.89	54.00	-15.11	Average
10	1796.62	6.68	26.69	38.07	53.86	49.16	74.00	-24.84	Peak
11	2000.53	5.46	28.30	38.09	43.62	39.29	54.00	-14.71	Average
12	2000.53	5.46	28.30	38.09	54.90	50.57	74.00	-23.43	Peak



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Mode:a;Polarization:Vertical

Condition: FCC PART 15B PK 3m Vertical Job No. : 4258CR Test Mode: a

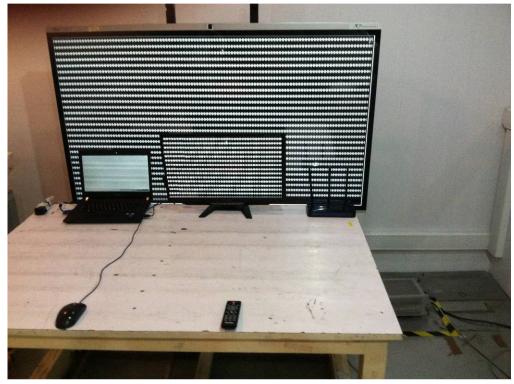
	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
-	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	1001.79	13.35	24.10	37.93	43.56	43.08			Average
2 pk	1001.79	13.35	24.10	37.93	49.69	49.21		-24.79	
3	1235.44	10.96	24.31	37.98	42.62	39.91	54.00	-14.09	Average
4	1235.44	10.96	24.31	37.98	50.09	47.38	74.00	-26.62	Peak
5	2195.88	5.75	28.01	38.10	44.85	40.51	54.00	-13.49	Average
6	2195.88	5.75	28.01	38.10	52.65	48.31	74.00	-25.69	Peak
7	2423.30	6.05	28.71	38.11	43.18	39.83	54.00	-14.17	Average
8	2423.30	6.05	28.71	38.11	50.72	47.37	74.00	-26.63	Peak
9	3187.60	7.03	31.73	38.23	40.87	41.40	54.00	-12.60	Average
10	3187.60	7.03	31.73	38.23	48.30	48.83	74.00	-25.17	Peak
11	4839.20	9.21	34.14	38.76	36.86	41.45	54.00	-12.55	Average
12	4839.20	9.21	34.14	38.76	42.99	47.58	74.00	-26.42	Peak



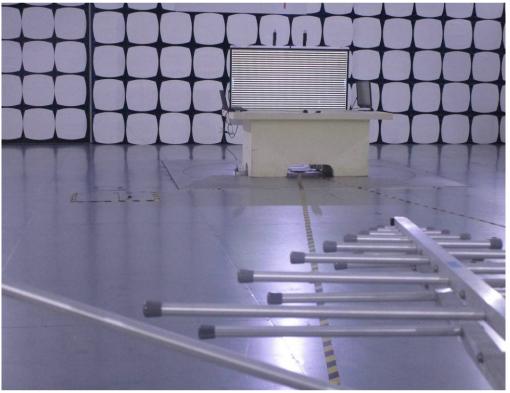
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7 Photographs

7.1 Conducted Disturbance at Mains Terminals(150kHz-30MHz) Test Setup



7.2 Radiated Disturbance(30MHz-1GHz) Test Setup







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7.3 Radiated Disturbance(above 1GHz) Test Setup



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7.4 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1507004258CR.