

# FCC Test Report FCC ID:LNQSBWD960A

Product: ScreenBeam 960

Trade Name: Actiontec

Model Number: SBWD960A

Serial Model: N/A

Report No.: NTEK- 2016NT06206619F4

#### Prepared for

Actiontec Electronics Inc

760 North Mary Ave., Sunnyvale, CA 94086, United States

#### Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China

Tel.: +86-0755-61156588 Fax.: +86-0755-61156599 Website: www.ntek.org.cn



# **TEST RESULT CERTIFICATION**

Applicant's name:	Actiontec I	Electronics Inc						
Address:	760 North Mary Ave., Sunnyvale, California94086, United States							
Manufacturer's Name:	Actiontec l	Actiontec Electronics Inc						
Address:	760 North	Mary Ave., Sunnyvale, California94086, United States						
Product description								
Product name:	ScreenBea	am 960						
Model and/or type reference :								
Standards:	FCC Part1 ANSI C63	15B:01 Oct.2016 .4:2014						
	n complian	sted by NTEK, and the test results show that the ice with Part 15 of FCC Rules. And it is applicable only to						
	ised by N	t in full, without the written approval of NTEK, this ΓΕΚ, personnel only, and shall be noted in the revision of						
Date (s) of performance of tests	:	20 Jun. 2016 ~11 Aug. 2016						
Date of Issue	:	11 Aug. 2016						
Test Result	:	Pass						
Testing Engine	eer :	Eileen Wu. (Eileen Liu)						
		Jason chen						
Technical Man	ager :	(Jason Chen)						
Authorized Sig	gnatory :	Sam. Chew						
		(Sam Chen)						



Table of Contents	Page
1 . TEST SUMMARY	4
1.1 TEST FACILITY	5
1.2 MEASUREMENT UNCERTAINTY	5
2 . GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 DESCRIPTION OF TEST SETUP	8
2.3 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL	10
2.4 MEASUREMENT INSTRUMENTS LIST	11
3 . EMC EMISSION TEST	12
3.1 CONDUCTED EMISSION MEASUREMENT	12
3.1.1 POWER LINE CONDUCTED EMISSION 3.1.2 TEST PROCEDURE	12 13
3.1.3 TEST PROCEDURE  3.1.3 TEST SETUP	13
3.1.4 EUT OPERATING CONDITIONS	13
3.1.5 TEST RESULTS	14
3.2 RADIATED EMISSION MEASUREMENT	28
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT 3.2.2 TEST PROCEDURE	28 28
3.2.3 TEST SETUP	29
3.2.4 TEST RESULTS	30
3.2.5 TEST RESULTS(Above 1GHz) 3.2.6 TEST RESULTS(Above 1GHz)	36 38



# 1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission							
Standard	Test Item	Limit	Judgment	Remark			
FCC Part15B:2016 ANSI C63.4: 2014	Conducted Emission	Class B	PASS				
	Radiated Emission	Class B	PASS				

#### NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report
- (2) For client's request and manual description, the test will not be executed.



#### 1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd

Add.: 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.

FCC Registration Number:238937; IC Registration Number:9270A-1

CNAS Registration Number:L5516

#### 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $\mathbf{y} \pm \mathbf{U}$ , where expended uncertainty  $\mathbf{U}$  is based on a standard uncertainty multiplied by a coverage factor of  $\mathbf{k=2}$ , providing a level of confidence of approximately 95 %.

#### A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
NTEKC01	ANSI	150 KHz ~ 30MHz	3.2	

#### B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
NTEKA01	ANSI	30MHz ~ 1000MHz	4.7	
		1GHz ~12.4GHz	5.0	



# 2. GENERAL INFORMATION

# 2.1 GENERAL DESCRIPTION OF EUT

Equipment	ScreenBeam 960						
Trade Name	Actiontec						
Model Name	SBWD960A						
Serial Model	N/A						
Model Difference	N/A						
Product Description	The EUT is a Industrial S  Connecting I/O port: Operation Frequency:  Modulation Type:	USB, Earphone, HDMI, RJ-45, VGA  BT:2402~2480 MHz  WIFI:802.11b/g/n(20MHz): 2412~2462MHz  802.11n(40MHz):2422~2452MHz  802.11a/ac/n(20M/40M):5725 ~ 5850 MHz;  5180 MHz ~ 5240 MHz  BLE: GFSK IEEE 802.11b: DSSS (CCK, QPSK, DBPSK) IEEE 802.11g/n (HT20/HT40): OFDM					
		(64QAM, 16QAM, QPSK, BPSK) 802.11a/ac/n(20M/40M): OFDM with BPSK/QPSK/16QAM/64QAM/256QAM					
Power Source	DC Voltage						
Adapter	Adapter 1:  Mode: WA-10P05FU Input: 100-240V~, 50/60Hz, 0.3A Max Output: 5.0V——, 2.0A Adapter 2: Mode: WB-10E05FU Input: 100-240V~, 50/60Hz, 0.4A Max Output: 5.0V——, 2.0A Adapter 3: Mode: KSAS0120500200HU Input: 100-240V~, 50/60Hz, 0.4A						
Battery	Output: 5.0V, 2.0A N/A						



#### 2.1.1 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	VGA IN +HDMI OUT
Mode 2	VGA IN +VGA OUT

For Conducted Test			
Final Test Mode	Description		
Mode 1	VGA IN +HDMI OUT		
Mode 2	VGA IN +VGA OUT		

For Radiated Test				
Final Test Mode	Description			
Mode 1	VGA IN +HDMI OUT			
Mode 2	VGA IN +VGA OUT			

Note: Final Test Mode: Through Pre-scan, find the mode 1 is the worst case. Only the worst case mode is recorded in the report.



0.8m

Table

C-5

E-6

ΚY

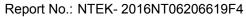
1.5m

#### Page 8 of 38 Report No.: NTEK-2016NT06206619F4 2.2 DESCRIPTION OF TEST SETUP Mode RE: VGA IN+VGA OUT Radiated Emission TEST SETUP C-2 C-1 C-4 C-3 AC Line E-3 E-2 E-1 E-5 E-4 TV EUT Print PC Adapter 0.1m 0.1m 0.1m 0.1m 0.8m C-5 C-6 E-6 E-7 KY Mouse **Table** 1.5m AC conducted TEST SETUP for Adapter C-2 C-1 C-4 C-3 AC Line E-4 E-3 E-1 E-2 E-5 LISN T۷ EUT PC Print Adapter 0.1m 0.1m 0.1m 0.1m

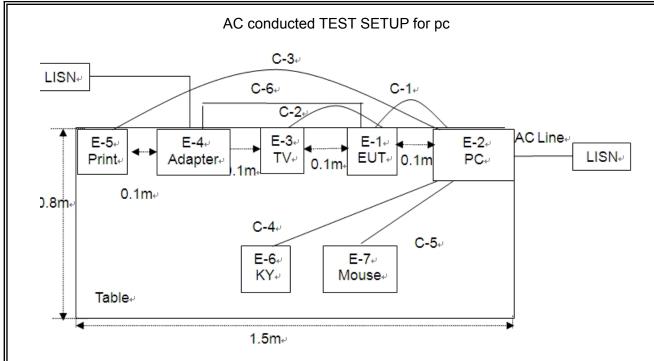
C-6

E-7

Mouse









2.3 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Report No.: NTEK-2016NT06206619F4

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	ScreenBeam 960	N/A	SBWD960A	N/A	EUT
E-2	Adapter 1	N/A	WA-10P05FU	N/A	
E-2	Adapter 2	N/A	WB-10E05FU	N/A	
E-2	Adapter 3	N/A	KSAS0120500200 HU	N/A	
E-3	TV	SONY	KDL-24EX520	6450730	
E-4	Personal computer	DELL	FT4Y23X	34413561645	
E-5	Printer	Canon	L11121E	LBP2900	
E-6	Keyboard	HP	KB-0318	434820-AA2SVH	
E-7	Mouse	HP	MS-SBF96	417441-002REV.OC	

Item	Cable Type	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	100cm	C-1	
C-2	YES	YES	120cm	C-2	
C-3	YES	YES	120cm	C-3	
C-4	NO	NO	100cm	C-4	
C-5	NO	NO	180cm	C-5	
C-6	NO	NO	180cm	C-6	

#### Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in Length column.
- (3) "YES" means "shielded" "with core"; "NO" means "unshielded" "without core".



Page 11 of 38 Report No.: NTEK-2016NT06206619F4

# 2.4 MEASUREMENT INSTRUMENTS LIST

Radiation Test equipment

Item		Manufacturer	Type No.	Serial No.	Last	Calibrated	Calibratio
	Equipment				calibration	until	n period
1	Spectrum Analyzer	Agilent	E4407B	MY4510804 0	2016.07.06	2017.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2016.06.07	2017.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2016.07.06	2017.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	620026441 6	2016.06.07	2017.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2016.06.07	2017.06.06	1 year
6	Horn Antenna	EM	EM-AH-101 80	2011071402	2016.07.06	2017.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2016.07.06	2017.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2016.07.06	2017.07.05	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2016.06.08	2017.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2016.07.06	2017.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619. 05	2016.07.06	2017.07.05	1 year
12	Test Cable	N/A	R-01	N/A	2016.07.06	2017.07.05	1 year
13	Test Cable	N/A	R-02	N/A	2016.07.06	2017.07.05	1 year

# Conduction Test equipment

Item	Kind of Equipment	Manufactu rer	Type No.	Serial No.	Last calibration	Calibrated until	Calibratio n period
1	Test Receiver	R&S	ESCI	101160	2016.06.07	2017.06.06	1 year
2	LISN	R&S	ENV216	101313	2015.08.24	2016.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2015.08.24	2016.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	620026441 7	2016.06.07	2017.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2016.06.07	2017.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2016.06.08	2017.06.07	1 year
7	Test Cable	N/A	C01	N/A	2016.06.08	2017.06.07	1 year
8	Test Cable	N/A	C02	N/A	2016.06.08	2017.06.07	1 year
9	Test Cable	N/A	C03	N/A	2016.06.08	2017.06.07	1 year



#### 3. EMC EMISSION TEST

#### 3.1 CONDUCTED EMISSION MEASUREMENT

## 3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A	(dBuV)	Class B (dBuV)		
FREQUENCT (MHZ)	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	
0.50 -5.0	73.00	60.00	56.00	46.00	
5.0 -30.0	73.00	60.00	60.00	50.00	

#### Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

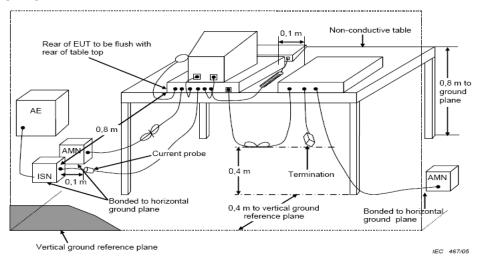
The following table is the setting of the receiver	
Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz



#### 3.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 3.1.3 TEST SETUP



#### 3.1.4 EUT OPERATING CONDITIONS

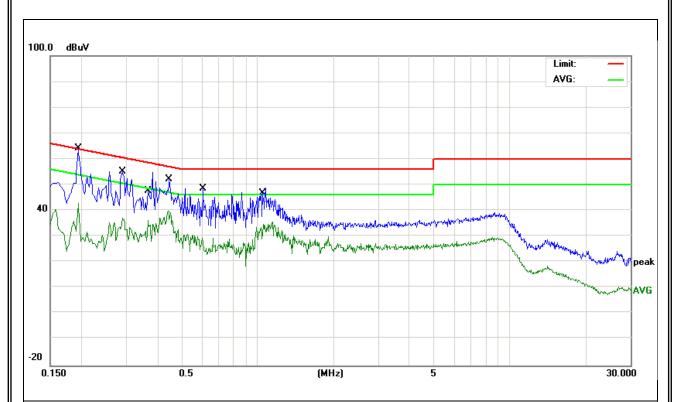
The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.



Page 14 of 38 Report No.: NTEK-2016NT06206619F4

#### 3.1.5 TEST RESULTS

EUT:	ScreenBeam 960,	Model Name. :	SBWD960A					
Temperature:	26℃	Relative Humidity:	54%					
Pressure:	1010hPa	Test Date:	2016-08-08					
Test Mode:	Mode 1	Phase:	L					
Test Voltage:	DC 5V form adapter 1 AC 120V/60Hz							

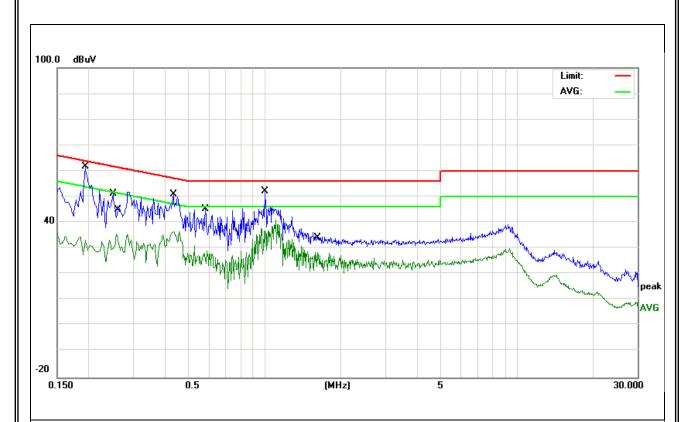


N	o. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∀	dB	dBu∀	dBuV	dB	Detector	Comment
	1 *	0.1940	50.07	10.13	60.20	63.86	-3.66	QP	
	2	0.1940	32.64	10.13	42.77	53.86	-11.09	AVG	
	3	0.2898	45.13	10.14	55.27	60.53	-5.26	QP	
	1	0.2898	26.98	10.14	37.12	50.53	-13.41	AVG	
	5	0.3659	44.86	10.07	54.93	58.59	-3.66	QP	
	3	0.3659	26.13	10.07	36.20	48.59	-12.39	AVG	
	7	0.4420	42.17	9.94	52.11	57.02	-4.91	QP	
	3	0.4420	29.92	9.94	39.86	47.02	-7.16	AVG	
	9	0.6018	38.80	9.79	48.59	56.00	-7.41	QP	
1	)	0.6018	19.65	9.79	29.44	46.00	-16.56	AVG	
1	1	1.0540	38.87	9.84	48.71	56.00	-7.29	QP	
1:	2	1.0540	24.80	9.84	34.64	46.00	-11.36	AVG	

#### Remark:



EUT:	ScreenBeam 960,	Model Name.:	SBWD960A					
Temperature:	26℃	Relative Humidity:	54%					
Pressure:	1010hPa	Test Date :	2016-08-08					
Test Mode:	Mode 1	Phase:	N					
Test Voltage:	age: DC 5V form adapter 1 AC 120V/60Hz							

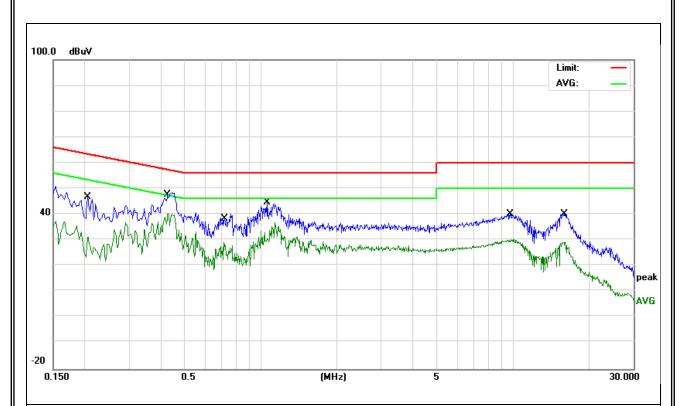


MHz dBuV dB	dBu∀				
	aba i	dBu∨	dB	Detector	Comment
1 * 0.1940 50.07 10.03	60.10	63.86	-3.76	QP	
2 0.1940 23.26 10.03	33.29	53.86	-20.57	AVG	
3 0.2500 41.07 10.08	51.15	61.75	-10.60	QP	
4 0.2580 25.53 10.08	35.61	51.49	-15.88	AVG	
5 0.4340 41.07 9.97	51.04	57.18	-6.14	QP	
6 0.4340 26.60 9.97	36.57	47.18	-10.61	AVG	
7 0.5817 35.56 9.82	45.38	56.00	-10.62	QP	
8 0.5817 19.26 9.82	29.08	46.00	-16.92	AVG	
9 1.0020 42.30 9.87	52.17	56.00	-3.83	QP	
10 1.0020 31.26 9.87	41.13	46.00	-4.87	AVG	
11 1.6140 24.51 9.80	34.31	56.00	-21.69	QP	
12 1.6140 18.50 9.80	28.30	46.00	-17.70	AVG	

### Remark:



EUT:	ScreenBeam 960,	Model Name.:	SBWD960A					
Temperature:	26℃	Relative Humidity:	54%					
Pressure:	1010hPa	Test Date:	2016-08-08					
Test Mode:	Mode 2	Phase:	L					
Test Voltage:	Itage: DC 5V form adapter 1 AC 120V/60Hz							



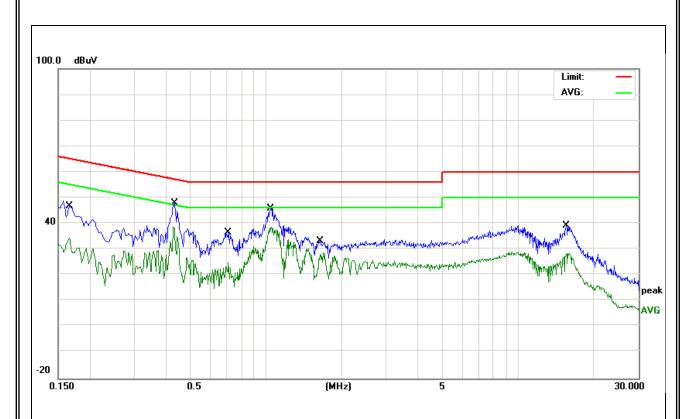
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBu∀	dBuV	dB	Detector	Comment
1		0.2059	36.57	10.13	46.70	63.37	-16.67	QP	
2		0.2059	21.01	10.13	31.14	53.37	-22.23	AVG	
3		0.4299	38.55	9.97	48.52	57.25	-8.73	QP	
4	*	0.4299	30.45	9.97	40.42	47.25	-6.83	AVG	
5		0.7259	30.25	9.79	40.04	56.00	-15.96	QP	
6		0.7259	18.15	9.79	27.94	46.00	-18.06	AVG	
7		1.0620	34.92	9.84	44.76	56.00	-11.24	QP	
8		1.0620	27.01	9.84	36.85	46.00	-9.15	AVG	
9		9.7139	30.24	9.78	40.02	60.00	-19.98	QP	
10		9.7139	20.45	9.78	30.23	50.00	-19.77	AVG	
11		15.9219	30.33	9.87	40.20	60.00	-19.80	QP	
12		15.9219	19.61	9.87	29.48	50.00	-20.52	AVG	

#### Remark:



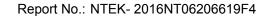


EUT:	ScreenBeam 960,	Model Name.:	SBWD960A				
Temperature:	26℃	Relative Humidity:	54%				
Pressure:	1010hPa	Test Date :	2016-08-08				
Test Mode:	Mode 2 Phase: N						
Test Voltage:	e: DC 5V form adapter 1 AC 120V/60Hz						



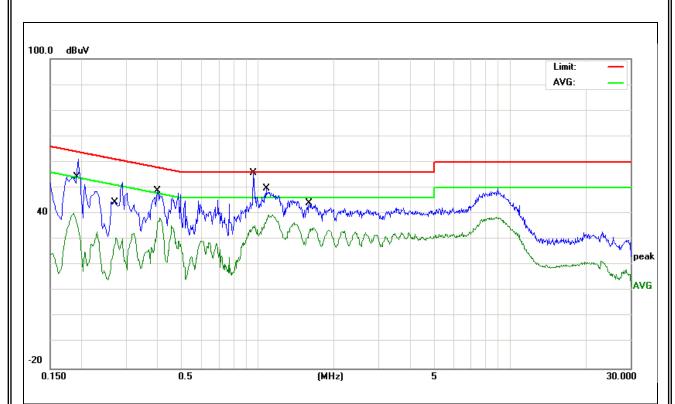
No. I	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∨	dB	dBu∨	dBuV	dB	Detector	Comment
1		0.1660	36.76	10.06	46.82	65.15	-18.33	QP	
2		0.1660	24.45	10.06	34.51	55.15	-20.64	AVG	
3		0.4300	38.05	9.98	48.03	57.25	-9.22	QP	
4		0.4300	28.53	9.98	38.51	47.25	-8.74	AVG	
5		0.7099	26.66	9.81	36.47	56.00	-19.53	QP	
6		0.7099	15.01	9.81	24.82	46.00	-21.18	AVG	
7		1.0460	35.97	9.86	45.83	56.00	-10.17	QP	
8 '	*	1.0460	28.77	9.86	38.63	46.00	-7.37	AVG	
9		1.6379	23.32	9.79	33.11	56.00	-22.89	QP	
10		1.6379	18.85	9.79	28.64	46.00	-17.36	AVG	
11		15.5220	29.37	9.81	39.18	60.00	-20.82	QP	
12		15.5220	18.75	9.81	28.56	50.00	-21.44	AVG	

#### Remark:





EUT:	ScreenBeam 960,	Model Name. :	SBWD960A				
Temperature:	<b>26</b> ℃	Relative Humidity:	54%				
Pressure:	1010hPa	Test Date:	2016-08-08				
Test Mode:	Mode 1	Phase:	L				
Test Voltage:	DC 5V form adapter 2 AC 120V/60Hz						

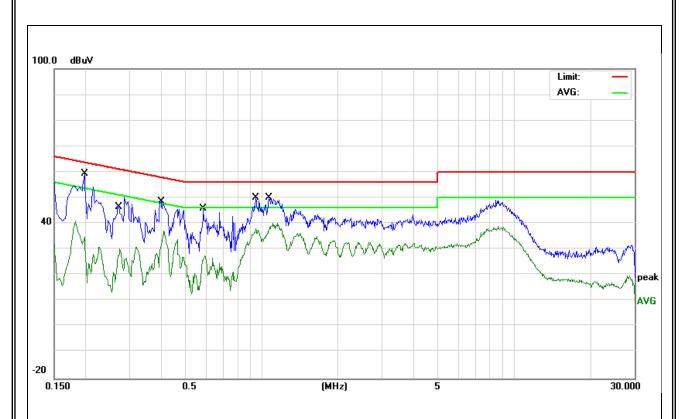


			- :	<u> </u>					
No	N/IIc	Eroa	Reading	Correct	Measure-	Limit	Over		
NO.	Mk.	Freq.	Level	Factor	ment	LIIIII	Ovei		
		MHz	dBu√	dB	dBu∨	dBu∀	dB	Detector	Comment
1		0.1882	45.87	10.13	56.00	64.11	-8.11	QP	
2		0.1882	28.41	10.13	38.54	54.11	-15.57	AVG	
3		0.2740	42.05	10.14	52.19	60.99	-8.80	QP	
4		0.2740	20.47	10.14	30.61	50.99	-20.38	AVG	
5		0.3980	38.71	10.04	48.75	57.89	-9.14	QP	
6		0.3980	28.30	10.04	38.34	47.89	-9.55	AVG	
7		0.9616	32.16	9.84	42.00	56.00	-14.00	QP	
8		0.9616	25.23	9.84	35.07	46.00	-10.93	AVG	
9	*	1.0820	39.77	9.84	49.61	56.00	-6.39	QP	
10		1.0820	29.73	9.84	39.57	46.00	-6.43	AVG	
11		1.5940	34.16	9.78	43.94	56.00	-12.06	QP	
12		1.5940	24.82	9.78	34.60	46.00	-11.40	AVG	

#### Remark:



EUT:	ScreenBeam 960,	Model Name. :	SBWD960A				
Temperature:	26℃	Relative Humidity:	54%				
Pressure:	1010hPa	Test Date :	2016-08-08				
Test Mode:	est Mode: Mode 1 Phase: N						
Test Voltage:	ge: DC 5V form adapter 2 AC 120V/60Hz						



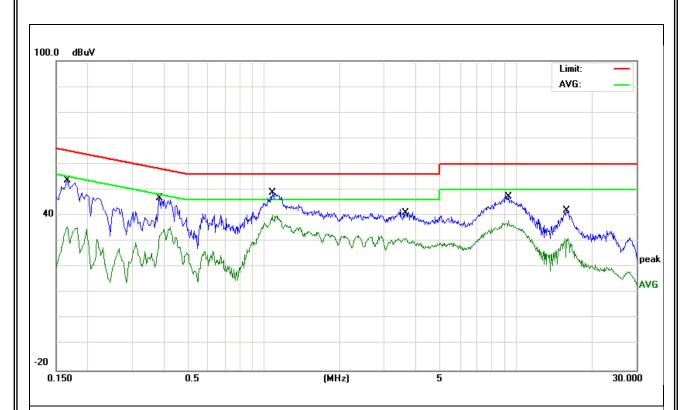
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∨	dB	dBu√	dBuV	dB	Detector	Comment
1	*	0.1980	49.20	10.02	59.22	63.69	-4.47	QP	
2		0.1980	24.60	10.02	34.62	53.69	-19.07	AVG	
3		0.2740	39.81	10.10	49.91	60.99	-11.08	QP	
4		0.2740	20.07	10.10	30.17	50.99	-20.82	AVG	
5		0.3980	38.46	10.05	48.51	57.89	-9.38	QP	
6		0.3980	26.98	10.05	37.03	47.89	-10.86	AVG	
7		0.5856	35.92	9.82	45.74	56.00	-10.26	QP	
8		0.5856	17.63	9.82	27.45	46.00	-18.55	AVG	
9		0.9456	40.24	9.86	50.10	56.00	-5.90	QP	
10		0.9456	28.05	9.86	37.91	46.00	-8.09	AVG	
11		1.0660	40.28	9.86	50.14	56.00	-5.86	QP	
12		1.0660	30.38	9.86	40.24	46.00	-5.76	AVG	

### Remark:





EUT:	ScreenBeam 960,	Model Name. :	SBWD960A					
Temperature:	26℃	Relative Humidity:	54%					
Pressure:	1010hPa	Test Date:	2016-08-08					
Test Mode:	Mode 2	Phase:	L					
Test Voltage:	/oltage: DC 5V form adapter 2 AC 120V/60Hz							



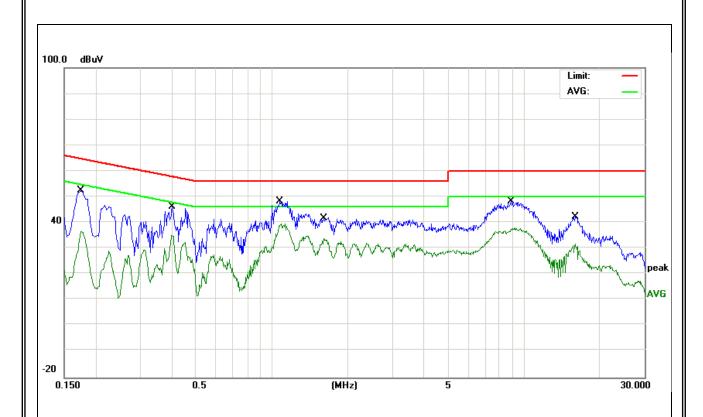
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∨	dB	dBu∀	dBuV	dB	Detector	Comment
1		0.1660	43.58	10.12	53.70	65.15	-11.45	QP	
2		0.1660	25.58	10.12	35.70	55.15	-19.45	AVG	
3		0.3860	36.74	10.05	46.79	58.15	-11.36	QP	
4		0.3860	25.49	10.05	35.54	48.15	-12.61	AVG	
5		1.0820	38.98	9.84	48.82	56.00	-7.18	QP	
6		1.0820	32.82	9.84	42.66	56.00	-13.34	QP	
7		3.6579	38.50	9.75	48.25	56.00	-7.75	QP	
8	*	3.6579	30.44	9.75	40.19	46.00	-5.81	AVG	
9		9.3139	21.48	9.78	31.26	50.00	-18.74	AVG	
10		9.3139	28.24	9.78	38.02	50.00	-11.98	AVG	
11		15.8058	32.11	9.87	41.98	60.00	-18.02	QP	
12		15.8058	21.36	9.87	31.23	50.00	-18.77	AVG	

#### Remark:





EUT:	ScreenBeam 960,	Model Name.:	SBWD960A				
Temperature:	26℃	Relative Humidity:	54%				
Pressure:	1010hPa	Test Date :	2016-08-08				
Test Mode: Mode 2 Phase: N							
Test Voltage: DC 5V form adapter 2 AC 120V/60Hz							

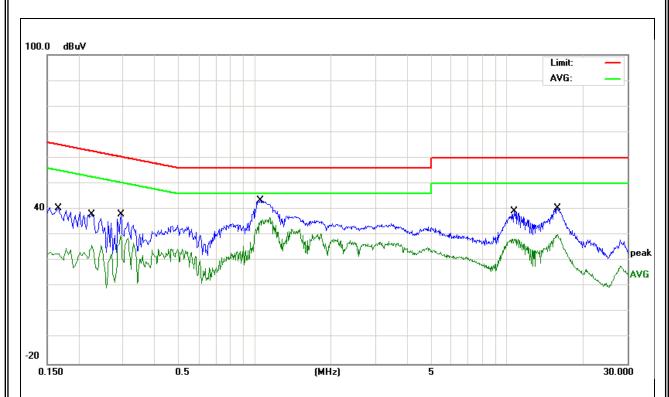


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∨	dB	dBu∨	dBuV	dB	Detector	Comment
1		0.1739	42.38	10.05	52.43	64.77	-12.34	QP	
2		0.1739	26.47	10.05	36.52	54.77	-18.25	AVG	
3		0.4020	36.05	10.05	46.10	57.81	-11.71	QP	
4		0.4020	25.07	10.05	35.12	47.81	-12.69	AVG	
5		1.0740	38.49	9.86	48.35	56.00	-7.65	QP	
6	*	1.0740	29.78	9.86	39.64	46.00	-6.36	AVG	
7		1.6100	32.27	9.80	42.07	56.00	-13.93	QP	
8		1.6100	24.15	9.80	33.95	46.00	-12.05	AVG	
9		8.9138	38.55	9.75	48.30	60.00	-11.70	QP	
10		8.9138	28.37	9.75	38.12	50.00	-11.88	AVG	
11		15.9059	32.58	9.82	42.40	60.00	-17.60	QP	
12		15.9059	21.79	9.82	31.61	50.00	-18.39	AVG	

#### Remark:



EUT:	ScreenBeam 960,	Model Name. :	SBWD960A					
Temperature:	26℃	Relative Humidity:	54%					
Pressure:	1010hPa	Test Date:	2016-08-08					
Test Mode:	Mode 1	Mode 1 Phase: L						
Test Voltage:	DC 5V form adapter 3 AC 120V/60Hz							

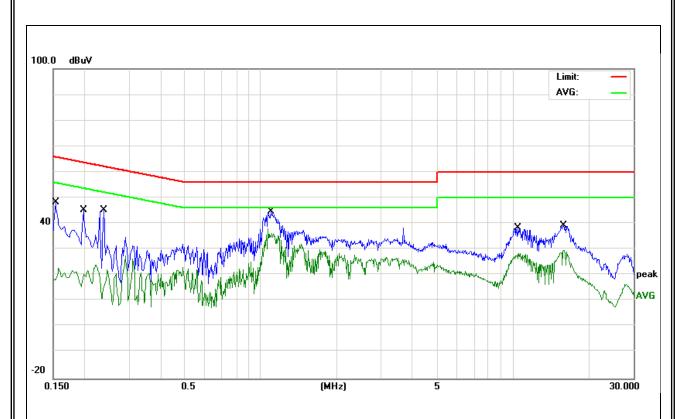


No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBu∀	dB	Detector	Comment
1	0.1660	30.42	10.06	40.48	65.15	-24.67	QP	
2	0.1660	12.83	10.06	22.89	55.15	-32.26	AVG	
3	0.2260	28.13	10.05	38.18	62.59	-24.41	QP	
4	0.2260	15.94	10.05	25.99	52.59	-26.60	AVG	
5	0.2938	28.05	10.12	38.17	60.41	-22.24	QP	
6	0.2938	19.71	10.12	29.83	50.41	-20.58	AVG	
7	1.0540	33.52	9.86	43.38	56.00	-12.62	QP	
8 *	1.0540	26.09	9.86	35.95	46.00	-10.05	AVG	
9	10.6219	29.46	9.76	39.22	60.00	-20.78	QP	
10	10.6219	18.72	9.76	28.48	50.00	-21.52	AVG	
11	15.8338	30.58	9.82	40.40	60.00	-19.60	QP	
12	15.8338	20.30	9.82	30.12	50.00	-19.88	AVG	

#### Remark:



EUT:	ScreenBeam 960,	Model Name. :	SBWD960A				
Temperature:	26℃	Relative Humidity:	54%				
Pressure:	1010hPa	Test Date :	2016-08-08				
Test Mode: Mode 1 Phase: N							
Test Voltage: DC 5V form adapter 3 AC 120V/60Hz							

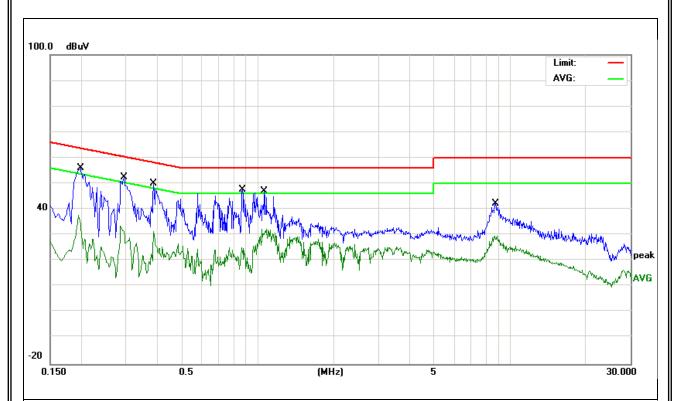


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1539	38.14	10.12	48.26	65.78	-17.52	QP	
2		0.1539	12.53	10.12	22.65	55.78	-33.13	AVG	
3		0.1980	35.05	10.13	45.18	63.69	-18.51	QP	
4		0.1980	11.59	10.13	21.72	53.69	-31.97	AVG	
5		0.2379	35.04	10.13	45.17	62.17	-17.00	QP	
6		0.2379	12.03	10.13	22.16	52.17	-30.01	AVG	
7		1.0980	34.88	9.84	44.72	56.00	-11.28	QP	
8	*	1.0980	28.31	9.84	38.15	46.00	-7.85	AVG	
9		10.4219	28.49	9.79	38.28	60.00	-21.72	QP	
10		10.4219	18.77	9.79	28.56	50.00	-21.44	AVG	
11		15.8299	29.29	9.87	39.16	60.00	-20.84	QP	
12		15.8299	19.92	9.87	29.79	50.00	-20.21	AVG	

#### Remark:



	-	_					
EUT:	ScreenBeam 960,	Model Name.:	SBWD960A				
Temperature:	26℃	Relative Humidity:	54%				
Pressure:	1010hPa	Test Date:	2016-08-08				
Test Mode:	Mode 2	Phase:	L				
Test Voltage:	DC 5V form adapter 3 AC 120V/60Hz						



No. I	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1 '	*	0.1980	45.81	10.13	55.94	63.69	-7.75	QP	
2		0.1980	27.64	10.13	37.77	53.69	-15.92	AVG	
3		0.2938	42.28	10.14	52.42	60.41	-7.99	QP	
4		0.2938	23.29	10.14	33.43	50.41	-16.98	AVG	
5		0.3860	40.03	10.05	50.08	58.15	-8.07	QP	
6		0.3860	21.31	10.05	31.36	48.15	-16.79	AVG	
7		0.8699	37.83	9.82	47.65	56.00	-8.35	QP	
8		0.8699	15.45	9.82	25.27	46.00	-20.73	AVG	
9		1.0620	37.24	9.84	47.08	56.00	-8.92	QP	
10		1.0620	22.49	9.84	32.33	46.00	-13.67	AVG	
11		8.7299	32.55	9.78	42.33	60.00	-17.67	QP	
12		8.7299	19.80	9.78	29.58	50.00	-20.42	AVG	

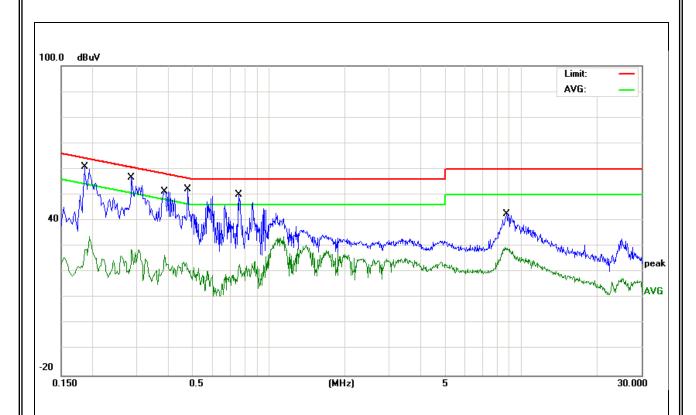
#### Remark:





EUT:	ScreenBeam 960,	Model Name. :	SBWD960A	
Temperature:	<b>26</b> ℃	Relative Humidity:	54%	
Pressure:	1010hPa	Test Date :	2016-08-08	
Test Mode:	Mode 2	Phase:	N	
Test Voltage:	DC 5V form adapter 3 AC 120V	//60Hz		

Page 25 of 38



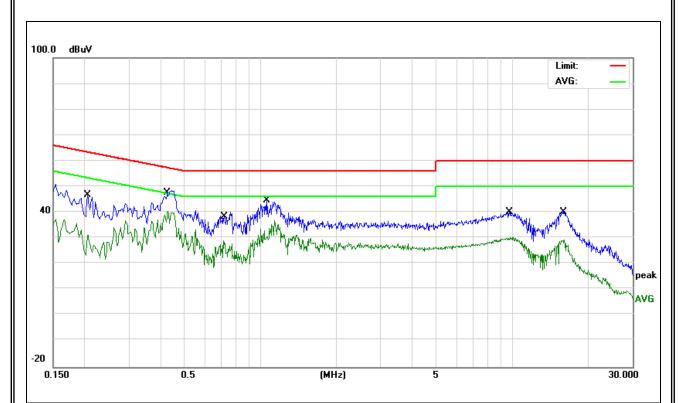
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1859	50.72	10.13	60.85	64.21	-3.36	QP	
2		0.1859	23.78	10.13	33.91	54.21	-20.30	AVG	
3		0.2858	46.43	10.14	56.57	60.64	-4.07	QP	
4		0.2858	18.64	10.14	28.78	50.64	-21.86	AVG	
5		0.3860	41.06	10.05	51.11	58.15	-7.04	QP	
6		0.3860	16.63	10.05	26.68	48.15	-21.47	AVG	
7		0.4778	42.32	9.85	52.17	56.38	-4.21	QP	
8		0.4778	14.04	9.85	23.89	46.38	-22.49	AVG	
9		0.7620	40.28	9.79	50.07	56.00	-5.93	QP	
10		0.7620	13.40	9.79	23.19	46.00	-22.81	AVG	
11		8.7499	32.74	9.78	42.52	60.00	-17.48	QP	
12		8.7499	19.78	9.78	29.56	50.00	-20.44	AVG	

#### Remark:





EUT:	ScreenBeam 960,	Model Name. :	SBWD960A
Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date:	2016-08-08
Test Mode:	Mode 2	Phase:	L
Test Voltage:	PC AC 120V/60Hz		



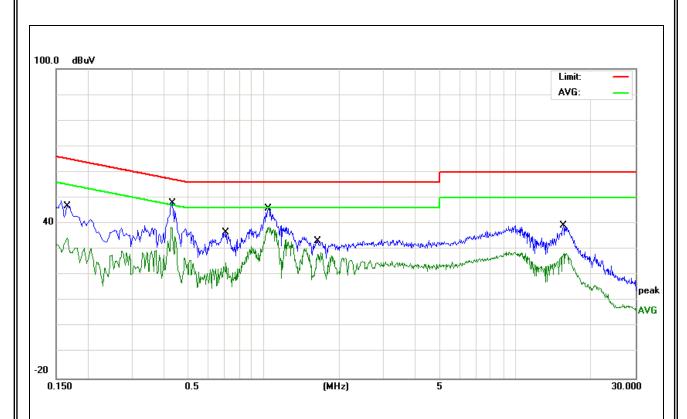
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∨	dB	dBu∨	dBuV	dB	Detector	Comment
1		0.2059	36.57	10.13	46.70	63.37	-16.67	QP	
2		0.2059	21.01	10.13	31.14	53.37	-22.23	AVG	
3		0.4299	38.55	9.97	48.52	57.25	-8.73	QP	
4	*	0.4299	30.45	9.97	40.42	47.25	-6.83	AVG	
5		0.7259	30.25	9.79	40.04	56.00	-15.96	QP	
6		0.7259	18.15	9.79	27.94	46.00	-18.06	AVG	
7		1.0620	34.92	9.84	44.76	56.00	-11.24	QP	
8		1.0620	27.01	9.84	36.85	46.00	-9.15	AVG	
9		9.7139	30.24	9.78	40.02	60.00	-19.98	QP	
10		9.7139	20.45	9.78	30.23	50.00	-19.77	AVG	
11		15.9219	30.33	9.87	40.20	60.00	-19.80	QP	
12		15.9219	19.61	9.87	29.48	50.00	-20.52	AVG	

#### Remark:





EUT:	ScreenBeam 960,	Model Name. :	SBWD960A
Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date :	2016-08-08
Test Mode:	Mode 2	Phase:	N
Test Voltage:	PC AC 120V/60Hz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∨	dB	dBu∀	dBuV	dB	Detector	Comment
1		0.1660	36.76	10.06	46.82	65.15	-18.33	QP	
2		0.1660	24.45	10.06	34.51	55.15	-20.64	AVG	
3		0.4300	38.05	9.98	48.03	57.25	-9.22	QP	
4		0.4300	28.53	9.98	38.51	47.25	-8.74	AVG	
5		0.7099	26.66	9.81	36.47	56.00	-19.53	QP	
6		0.7099	15.01	9.81	24.82	46.00	-21.18	AVG	
7		1.0460	35.97	9.86	45.83	56.00	-10.17	QP	
8	*	1.0460	28.77	9.86	38.63	46.00	-7.37	AVG	
9		1.6379	23.32	9.79	33.11	56.00	-22.89	QP	
10		1.6379	18.85	9.79	28.64	46.00	-17.36	AVG	
11		15.5220	29.37	9.81	39.18	60.00	-20.82	QP	
12		15.5220	18.75	9.81	28.56	50.00	-21.44	AVG	

#### Remark:



#### 3.2 RADIATED EMISSION MEASUREMENT

#### 3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

	Class A (at 10m)	Class B (at 3m)		
FREQUENCY (MHz)	dBuV/m	dBuV/m		
30 ~ 88	39.0	40.0		
88 ~ 216	43.5	43.5		
216 ~ 960	46.5	46.0		
Above 960	49.5	54.0		

#### Notes:

- (1) The limit for radiated test was performed according to as following: FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

#### 3.2.2 TEST PROCEDURE

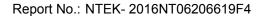
#### Test Arrangement for Radiated Emissions up to 1 GHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from ( degrees to 360 degrees to find the maximum reading.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.

#### Test Arrangement for Radiated Emissions above 1 GHz.

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.





Note: For the hand-held device, the EUT should be measured for all 3 axes and only the wors case is recorded in the report

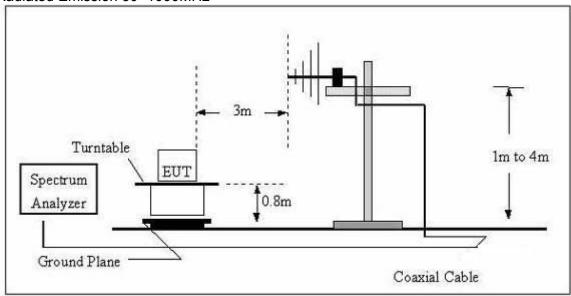
During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Page 29 of 38

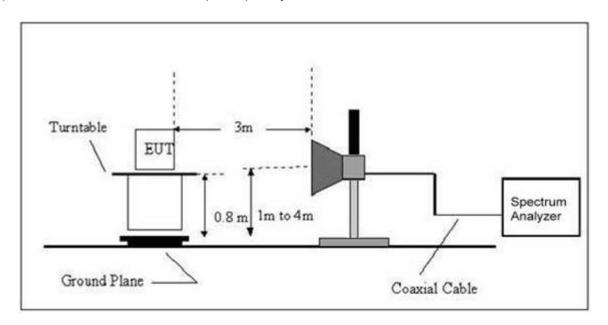
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth	
30 to 1000	QP	120 kHz	300 kHz	
	Peak	1 MHz	1 MHz	
Above 1000	Avg	1 MHz	10 Hz	

#### 3.2.3 TEST SETUP

For Radiated Emission 30~1000MHz



#### (B) Radiated Emission Test Set-Up Frequency Above 1GHz

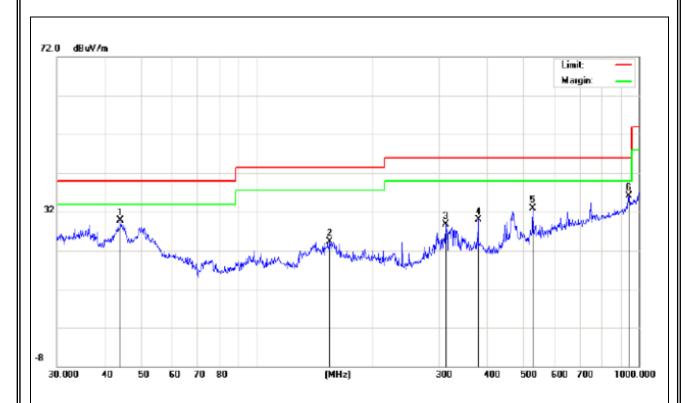




#### 3.2.4 TEST RESULTS

# TEST RESULTS (30~1000 MHz)

EUT:	ScreenBeam 960,	Model Name :	SBWD960A						
Temperature:	24℃	Relative Humidity:	54%						
Pressure:	1010 hPa	Test Date:	2016-08-08						
Test Mode:	Mode 1	Polarization:	Vertical						
Test Power:	DC 5V form adapter 1 AC 120V/60Hz								

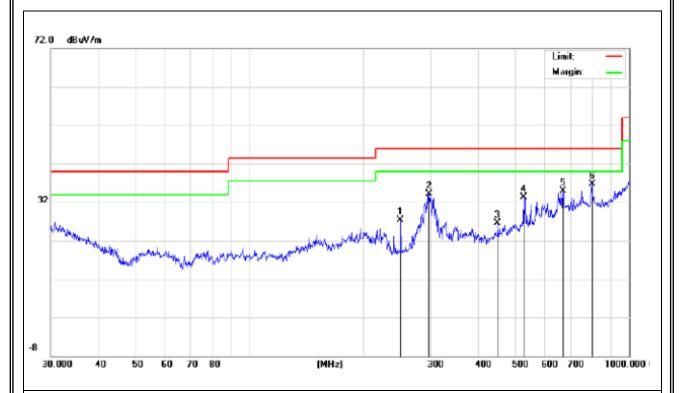


N	o. N	Mk. F	req.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		1	MHz	dBu∀	dB	dBu\//m	dBu∀/m	dB	Detector	cm	degree	Comment
	1	43.9	9658	16.33	13.38	29.71	40.00	-10.29	QP	120	360	
	2	155.3	3642	11.40	12.92	24.32	43.50	-19.18	QP	110	122	
	3	312.	1792	14.44	14.31	28.75	46.00	-17.25	QP	109	156	
	4	379.9	9141	13.64	16.28	29.92	46.00	-16.08	QP	108	187	
	5	528.2	2458	13.95	18.86	32.81	46.00	-13.19	QP	112	256	
	6 *	942.	1304	8.49	27.55	36.04	46.00	-9.96	QP	100	334	

### Remark:



EUT:	ScreenBeam 960,	Model Name :	SBWD960A					
Temperature:	24℃	Relative Humidity:	54%					
Pressure:	1010 hPa	Test Date:	2016-08-08					
Test Mode:	Mode 1	Horizontal						
Test Power:	st Power: DC 5V form adapter 1 AC 120V/60Hz							

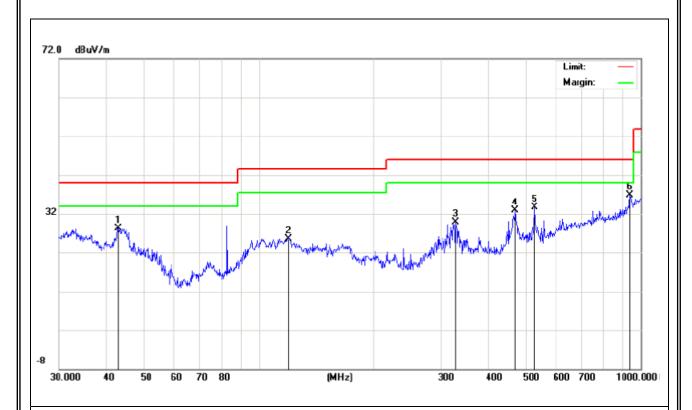


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBu∀	dB	dBu\//m	dBu∀/m	dB	Detector	cm	degree	Comment
1		250.3010	15.13	12.12	27.25	46.00	-18.75	QP	206	356	
2		297.2241	20.42	13.76	34.18	46.00	-11.82	QP	200	225	
3		451.1349	9.17	17.39	26.56	46.00	-19.44	QP	225	146	
4		528.2458	14.40	18.86	33.26	46.00	-12.74	QP	203	324	
5		670.4891	12.72	22.10	34.82	46.00	-11.18	QP	185	229	
6	*	798.9796	12.73	24.01	36.74	46.00	-9.26	QP	199	120	

#### Remark:



		_					
EUT:	ScreenBeam 960,	Model Name :	SBWD960A				
Temperature:	<b>24</b> °C	Relative Humidity:	54%				
Pressure:	1010 hPa	Test Date:	2016-08-08				
Test Mode:	Mode 1	Polarization:	Vertical				
Test Power: DC 5V form adapter 2 AC 120V/60Hz							



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		42.8997	14.58	13.79	28.37	40.00	-11.63	QP	102	123	
2		119.4361	14.02	11.57	25.59	43.50	-17.91	QP	122	221	
3		327.8873	14.99	14.83	29.82	46.00	-16.18	QP	111	326	
4		470.5230	15.16	17.73	32.89	46.00	-13.11	QP	106	289	
5		528.2458	14.83	18.86	33.69	46.00	-12.31	QP	115	156	
6	*	938.8324	9.39	27.44	36.83	46.00	-9.17	QP	120	344	

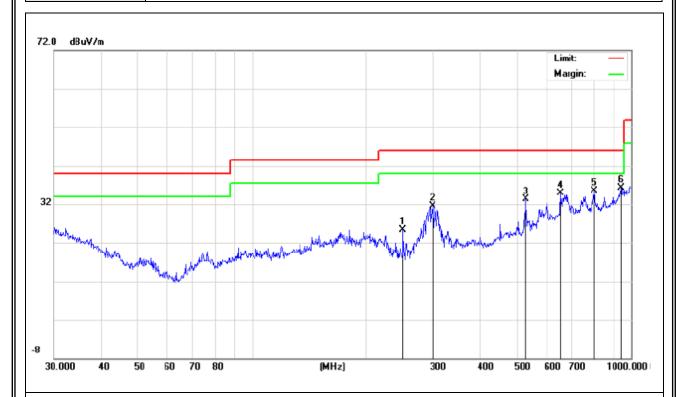
#### Remark:





EUT: ScreenBeam 960, Model Name: SBWD960A **24**℃ Temperature: Relative Humidity: 54% 1010 hPa Test Date: 2016-08-08 Pressure: Test Mode: Mode 1 Polarization: Horizontal Test Power: DC 5V form adapter 2 AC 120V/60Hz

Report No.: NTEK-2016NT06206619F4



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		250.3010	13.11	12.12	25.23	46.00	-20.77	QP	203	120	
2		299.3158	17.66	13.82	31.48	46.00	-14.52	QP	198	333	
3		528.2458	14.48	18.86	33.34	46.00	-12.66	QP	220	269	
4		651.9417	13.31	21.63	34.94	46.00	-11.06	QP	199	245	
5		801.7862	11.38	24.04	35.42	46.00	-10.58	QP	206	169	
6	×	942.1304	8.82	27.55	36.37	46.00	-9.63	QP	210	158	

#### Remark:



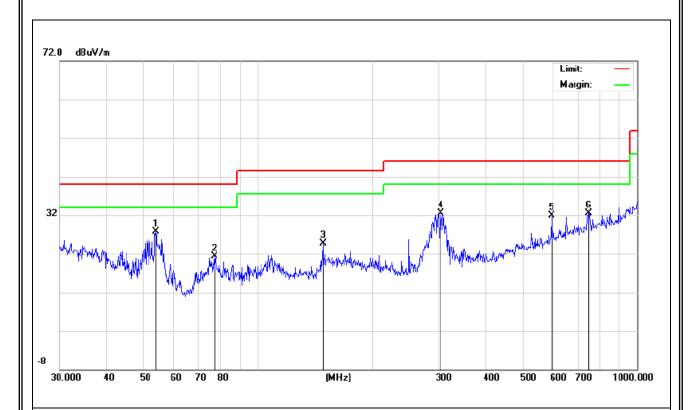
Temperature: 24°C Relative Humidity: 54%

Pressure: 1010 hPa Test Date: 2016-08-08

Test Mode: Mode 1 Polarization: Horizontal

Test Power: DC 5V form adapter 3 AC 120V/60Hz

Report No.: NTEK-2016NT06206619F4

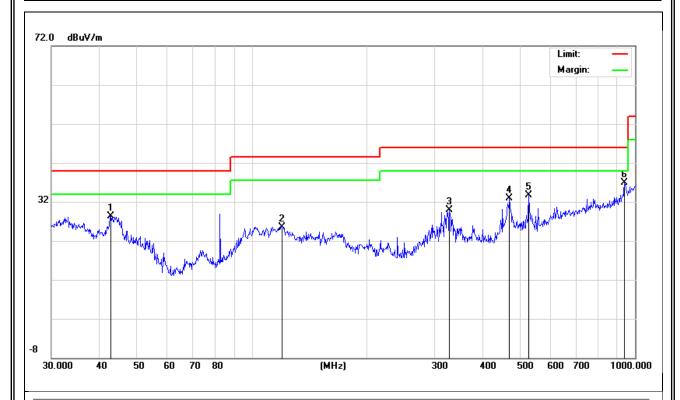


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	53.8818	18.98	8.77	27.75	40.00	-12.25	QP	212	360	
2		77.0502	10.90	10.46	21.36	40.00	-18.64	QP	203	256	
3		148.4410	12.04	12.69	24.73	43.50	-18.77	QP	211	243	
4	,	304.6099	18.41	14.03	32.44	46.00	-13.56	QP	188	159	
5		595.1326	11.53	20.39	31.92	46.00	-14.08	QP	197	142	
6		744.8659	9.23	23.35	32.58	46.00	-13.42	QP	206	55	

Remark:



EUT:	ScreenBeam 960,	Model Name :	SBWD960A					
Temperature:	24℃	Relative Humidity:	54%					
Pressure:	1010 hPa	Test Date:	2016-08-08					
Test Mode:	Mode 1	Polarization:	Vertical					
Test Power: DC 5V form adapter 3 AC 120V/60Hz								



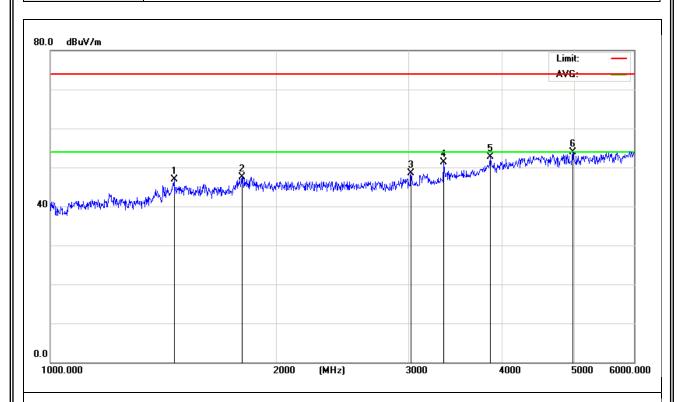
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		42.8997	14.58	13.79	28.37	40.00	-11.63	QP	150	300	
2		119.4361	14.02	11.57	25.59	43.50	-17.91	QP	210	0	
3		327.8873	14.99	14.83	29.82	46.00	-16.18	QP	100	360	
4		470.5230	15.16	17.73	32.89	46.00	-13.11	QP	130	200	
5		528.2458	14.83	18.86	33.69	46.00	-12.31	QP	250	200	
6	*	938.8324	9.39	27.44	36.83	46.00	-9.17	QP	200	360	

Remark:



#### 3.2.5 TEST RESULTS(Above 1GHz)

EUT:	ScreenBeam 960,	Model Name :	SBWD960A				
Temperature:	24℃	Relative Humidity:	54%				
Pressure:	1010 hPa	Test Date:	2016-08-08				
Test Mode:	Mode 1	Polarization:	Horizontal				
Test Power: DC 5V form adapter 1 AC 120V/60Hz							

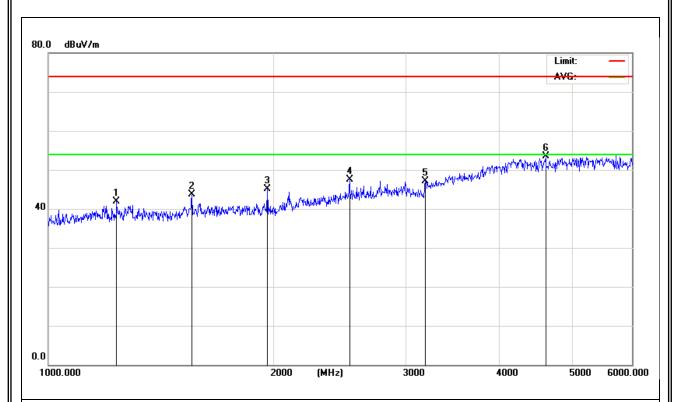


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1462.070	63.90	-17.00	46.90	74.00	-27.10	peak	400	360	
2		1799.839	62.55	-14.95	47.60	74.00	-26.40	peak	400	360	
3		3026.199	60.31	-11.71	48.60	74.00	-25.40	peak	400	360	
4		3345.599	62.04	-10.64	51.40	74.00	-22.60	peak	400	360	
5		3861.233	59.95	-7.27	52.68	74.00	-21.32	peak	400	360	
6	*	4971.018	57.66	-3.66	54.00	74.00	-20.00	peak	400	360	

- All readings are Peak and Average values.
   Factor = Antenna Factor + Cable Loss Amplifier.
- 3. N/A means All Data have pass Limit.



EUT:	ScreenBeam 960,	Model Name :	SBWD960A				
Temperature:	<b>24</b> °C	Relative Humidity:	54%				
Pressure:	1010 hPa	Test Date:	2016-08-08				
Test Mode:	Mode 1	Polarization:	Vertical				
Test Power: DC 5V form adapter 1 AC 120V/60Hz							



No.	Mk		Reading Level	Correct Factor	Measure- ment	Limit	Over	5.1.1	Antenna Height	Table Degree	
		MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1233.229	59.85	-17.85	42.00	74.00	-32.00	peak	400	360	
2		1553.908	60.62	-16.82	43.80	74.00	-30.20	peak	400	360	
3		1957.973	59.16	-14.06	45.10	74.00	-28.90	peak	400	360	
4		2520.728	60.40	-12.80	47.60	74.00	-26.40	peak	400	360	
5		3181.894	58.18	-11.12	47.06	74.00	-26.94	peak	400	360	
6	*	4602.405	58.85	-5.30	53.55	74.00	-20.45	peak	400	360	

#### Remark:

- 1. All readings are Peak and Average values.
- 2. Factor = Antenna Factor + Cable Loss Amplifier.
- 3. N/A means All Data have pass Limit.



#### 3.2.6 TEST RESULTS(Above 1GHz)

The Testing have been conformed to 6\*5825MHz=34950MHz, and the worst result was report as below:

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	1233.229	59.85	-17.85	42.00	74.00	-32.00	peak
V	1553.908	60.62	-16.82	43.80	74.00	-30.20	AVG
V	1957.973	59.16	-14.06	45.10	74.00	-28.90	peak
V	2520.728	60.40	-12.80	47.60	74.00	-26.40	AVG
V	3181.894	58.18	-11.12	47.06	74.00	-26.94	peak
V	4602.405	58.85	-5.30	53.55	74.00	-20.45	AVG
Н	1462.07	63.90	-17.00	46.90	74.00	-27.10	peak
Н	1799.839	62.55	-14.95	47.60	74.00	-26.40	AVG
Н	3026.199	60.31	-11.71	48.60	74.00	-25.40	peak
Н	3345.599	62.04	-10.64	51.40	74.00	-22.60	AVG
Н	3861.233	59.95	-7.27	52.68	74.00	-21.32	peak
Н	4971.018	57.66	-3.66	54.00	74.00	-20.00	AVG

#### Remark:

- 1. Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level Limit
- 2. All other emissions more than 20dB below the limit.