
FCC Test Report

Report No.: AGC00B110104F1

FCC ID : ZEATSN51B
PRODUCT DESIGNATION : Portable scanner
BRAND NAME : N/A
MODEL NAME : TSN51B
CLIENT : Sky Light Digital Limited
DATE OF ISSUE : Mar.23, 2011
STANDARD(S) : FCC Part 15 Rules

Attestation of Global Compliance Co., Ltd.

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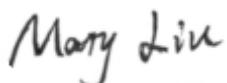
1. VERIFICATION OF COMPLIANCE

Product Designation:	Portable scanner
Brand name:	N/A
Model Name:	TSN51B, TSN52B, TSN53B, TSN54B
Model difference	The above models all the same except for appearance color.
Applicant:	Sky Light Digital Limited Rm.1009 Kwong Sang Hong Centre,151-153 Hoi Bun Road,Kwun Tong,Kowloon,Hong Kong
Manufacturer:	Sky Light Electronic(ShenZhen)Limited No.6 Building,JinBi Industrial Area,HuangTian,BaoAn,Shenzhen,China.
FCC ID:	ZEATSN51B
Measurement Procedure:	ANSI C63.4: 2003
File Number:	AGC00B110104F1
Date of test:	Mar.16, 2011 to Mar.23, 2011
Deviation:	None
Condition of Test Sample:	Normal

The above equipment was tested by Attestation Of Global Compliance Co., Ltd. for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, the measurement procedure according to ANSI C63.4:2003. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

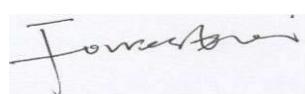
Checked By :



Mary Liu

Mar.23, 2011

Authorized By :



Forrest Lei

Mar.23, 2011

2. PRODUCT INFORMATION

Housing Type: Plastic

EUT Rating Voltage: DC4.2V by battery or USB Operated

I/O Port Information (Applicable Not Applicable)

I/O Port of EUT			
I/O Port Type	Q'TY	Cable	Tested with
USB	1	N/A	1

3. TEST FACILITY

Facility	Attestation of Global Compliance Co., Ltd.
Location:	1F, No.2 Building, Huafeng No.1 Technical, Industrial Park, Sanwei, Xixiang, Baoan District, Shenzhen, China
Description:	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2003.
Site Filing:	The FCC Registration Number is 259865
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4 requirements that meet industry regulatory agency and accreditation agency requirement.

4. SUPPORT EQUIPMENT LIST

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
PC	Lenovo	X63H	N/A	N/A	1.5m unshielded

**Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

5. SYSTEM DESCRIPTION

EUT test procedure:

1. Connect EUT and peripheral devices.
2. Power on the EUT, the EUT begins to work.
3. Running test software and make sure the EUT normal working.

Test Mode

1 USB
2 Charging

6 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.107	Conduction Emission	Compliant
§15.109	Radiated Emission	Compliant

7. FCC LINE CONDUCTED EMISSION TEST

7.1. TEST EQUIPMENT OF LINE CONDUCTED EMISSION TEST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4440A	N/A	06/29/2010	06/28/2011
EMI Test Receiver	H.P.	8546A	N/A	06/29/2010	06/28/2011
LISN	EMCO	3825/2	N/A	06/29/2010	06/28/2011

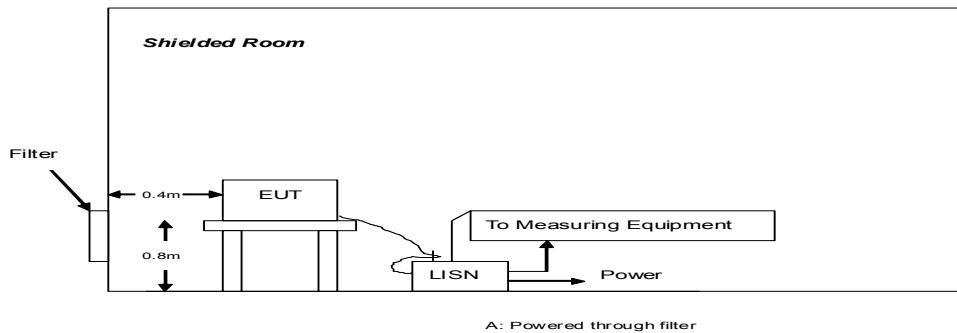
7.2 .LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

**Note: 1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

7.3. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



7.4. PROCEDURE OF LINE CONDUCTED EMISSION TEST

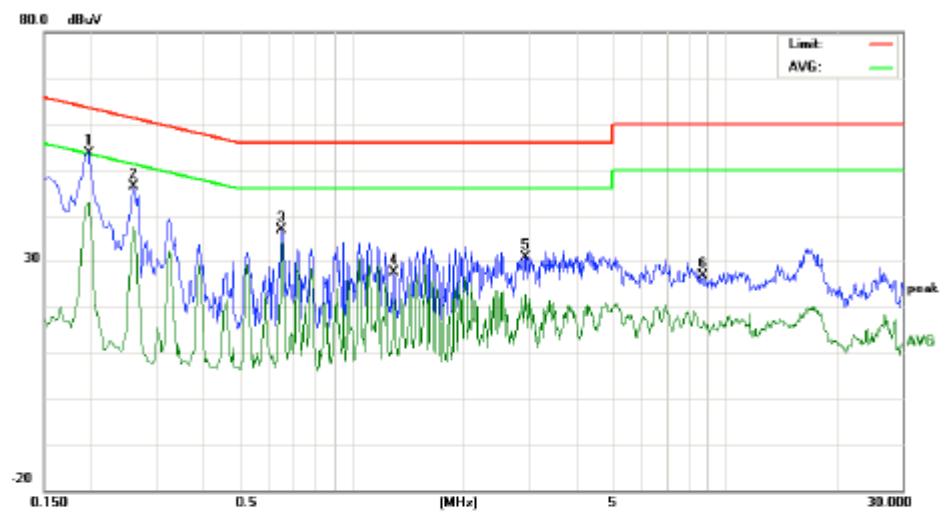
- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) The EUT received DC 5V power by PC. All support equipments received AC 120V/60Hz power from socket under the turntable, if any.
- 5) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 6) Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 7) During the above scans, the emissions were maximized by cable manipulation.
- 8) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.
- 9) Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.

The test data of the worst case condition(mode 2) was reported on the following Data page.

7.5 TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION - L

Conducted Emission Measurement

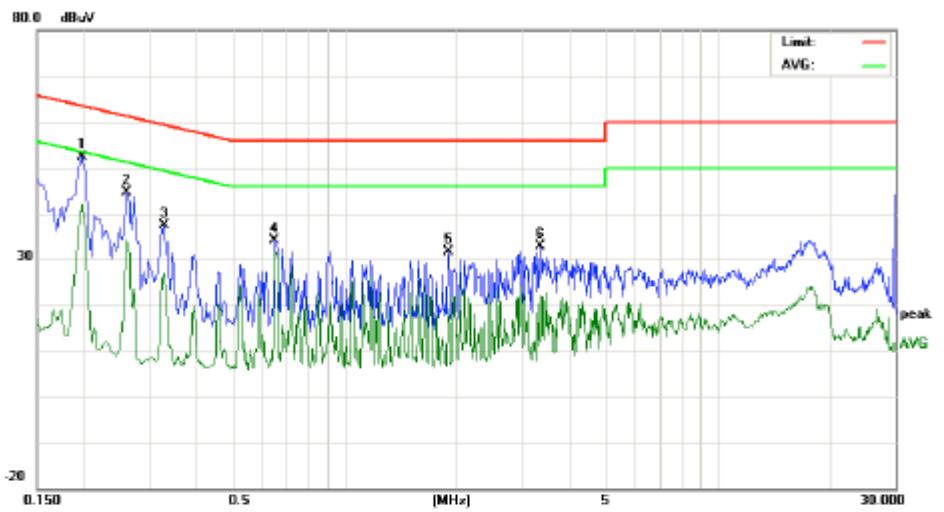


Site: Conduction Phase: **L1** Temperature: 26
Limit: FCC Class B Conduction(QP) Power: Humidity: 60 %
EUT: Portable scanner
M/N: TSN51B
Mode: Charging
Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment	
		Peak	QP	Avg		Peak	QP	Avg	QP	Avg	QP	Avg			
1	0.1980	43.60	42.01	32.04	10.21	53.71	52.22	42.25	63.69	53.69	-11.47	-11.44	P		
2	0.2620	36.04	34.58	26.36	10.27	46.31	44.85	36.63	61.36	51.36	-16.51	-14.73	P		
3	0.6540	37.53		7.25	10.33	47.86			17.58	56.00	46.00	-8.14	-28.42	P	
4	1.3020	17.18		10.17	10.38	27.56			20.55	56.00	46.00	-28.44	-25.45	P	
5	2.9340	20.46		12.23	10.53	30.99			22.76	56.00	46.00	-25.01	-23.24	P	
6	8.7420	16.63		5.93	10.28	26.91			16.21	60.00	50.00	-33.09	-33.79	P	

LINE CONDUCTED EMISSION – N

Conducted Emission Measurement



Site: Conduction Phase: **N** Temperature: 26
Limit: FCC Class B Conduction(QP) Power: 60 %
EUT: Portale scanner
M/N: TSN51B
Mode: Charging
Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1980	42.19		31.66	10.21	52.40		41.87	63.69	53.69	-11.29	-11.82	P	
2	0.2620	34.33		24.03	10.27	44.60		34.30	61.36	51.36	-16.76	-17.06	P	
3	0.3300	26.97		16.92	10.30	37.27		27.22	59.45	49.45	-22.18	-22.23	P	
4	0.6540	23.85		21.00	10.33	34.18		31.33	56.00	46.00	-21.82	-14.67	P	
5	1.9020	21.30		9.04	10.25	31.55		19.29	56.00	46.00	-24.45	-26.71	P	
6	3.3500	22.26		11.68	10.52	32.78		22.20	56.00	46.00	-23.22	-23.80	P	

8. FCC RADIATED EMISSION TEST

8.1. TEST EQUIPMENT OF RADIATED EMISSION

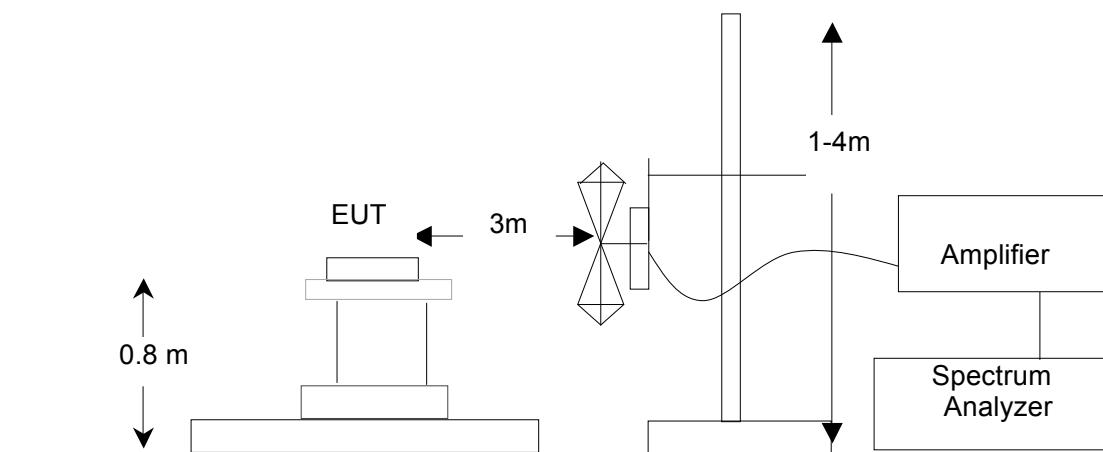
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
PSA SERIES SPECTRUM ANALYZER	AGILENT	E4440A	US41421290	06/29/2010	06/28/2011
ANTENNA	A.H.	SAS-521-4	128	06/29/2010	06/28/2011
HORN ANTENNA	EM	EM-AH-10180	N/A	06/29/2010	06/28/2011
AMPLIFIER	EM	EM30180	0607030	06/29/2010	06/28/2011
POSITIONING CONTROLLER	MF	MF-7802	MF780208147	06/29/2010	06/28/2011

8.2. LIMITS OF RADIATED EMISSION TEST

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m/ Q.P.)
30~88	3	40.0
88~216	3	43.5
216~960	3	46.0
Above 960	3	54.0

**Note: The lower limit shall apply at the transition frequency.

8.3 BLOCK DIAGRAM OF RADIATED EMISSION TEST



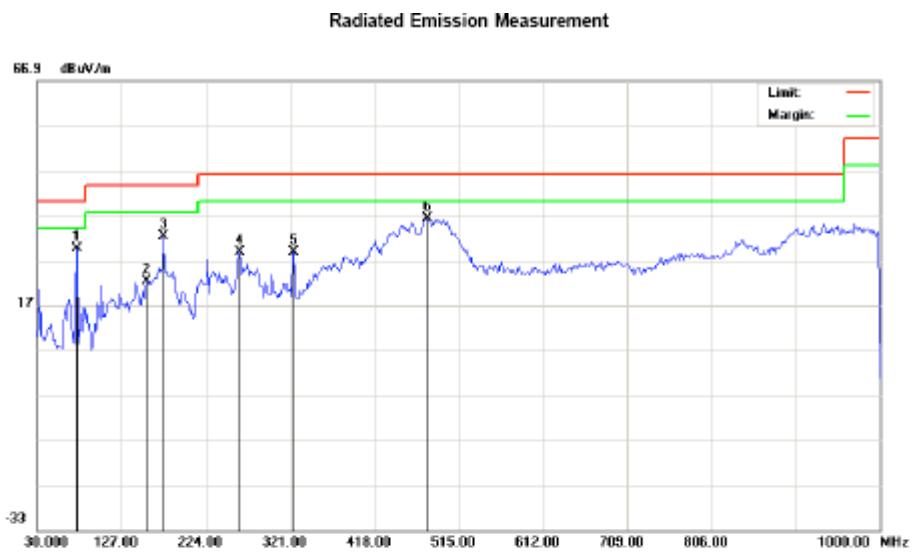
8.4 PROCEDURE OF RADIATED EMISSION TEST

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) The EUT received DC 5V by PC. All support equipments received AC 120V/60Hz power from socket under the turntable, if any.
- 5) The antenna was placed at 3 meter away from the EUT as stated in FCC Part 15. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
- 6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- 7) The test mode(s) were scanned during the test:
- 8) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P./Peak reading is presented.

The test data of the worst case condition(mode 1) was reported on the following Data page

8.5 TEST RESULT OF RADIATED EMISSION TEST

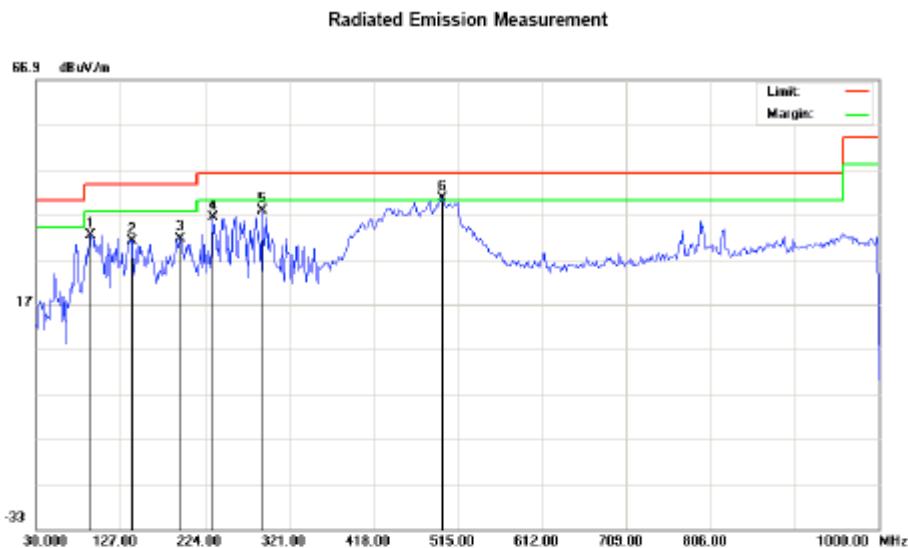
Radiated Emission Test –Horizontal -3m



Site: site #1 Polarization: Horizontal Temperature: 26
Limit: FCC Class B 3M Radiation Power: DC 5V Humidity: 60 %
EUT: Portable scanner Distance: 3m
M/N: TSN51B
Mode: USB
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBm	dBuV/m	dBuV/m	dB				
1		75.2667	20.07	9.34	29.41	40.00	-10.59	peak			
2		156.1000	8.42	13.74	22.16	43.50	-21.34	peak			
3		175.5000	15.04	17.16	32.20	43.50	-11.30	peak			
4		262.8000	12.04	16.86	28.90	46.00	-17.10	peak			
5		325.8500	10.30	18.51	28.81	46.00	-17.19	peak			
6	*	479.4333	14.63	21.67	36.30	46.00	-9.70	peak			

Radiated Emission Test –Vertical -3m



Site: site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation Power: DC 5V Humidity: 60 %
EUT: Portable scanner Distance: 3m
MN: TSN51B
Mode: USB
Note:

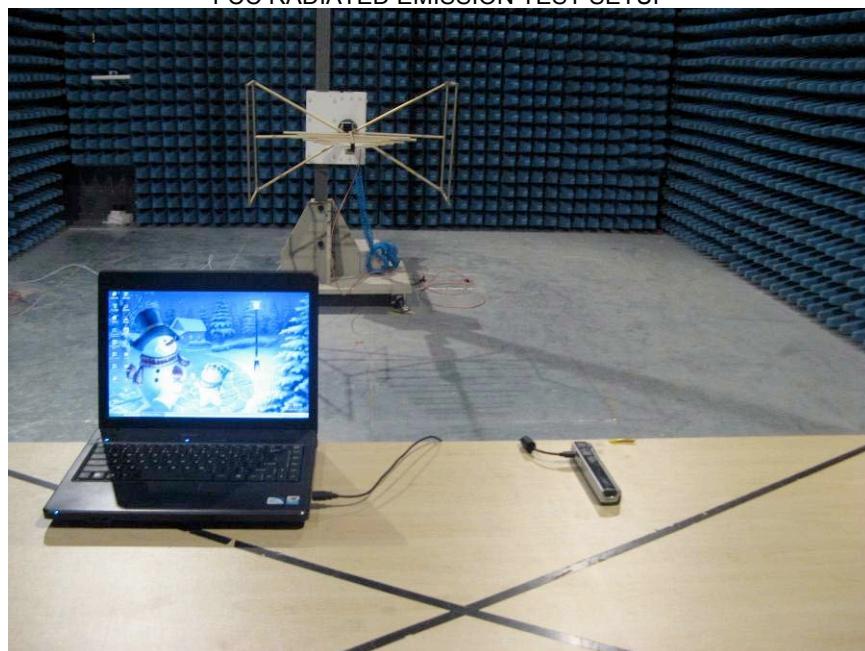
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBUv	dB/m	dBUv/m	dBUv/m	dB		cm	degree	
1		93.0500	21.70	10.62	32.32	43.50	-11.18	peak			
2		139.9333	17.30	13.72	31.02	43.50	-12.48	peak			
3		196.5167	15.73	15.79	31.52	43.50	-11.98	peak			
4		233.7000	20.26	16.14	36.40	46.00	-9.60	peak			
5		290.2833	20.57	17.10	37.67	46.00	-8.33	peak			
6	*	497.2167	17.64	22.78	40.42	46.00	-5.58	peak			

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

FCC LINE CONDUCTED EMISSION TEST SETUP



FCC RADIATED EMISSION TEST SETUP



APPENDIX 2 PHOTOGRAPHS OF EUT

WHOLE VIEW OF SAMPLE



TOP VIEW OF SAMPLE



BOTTOM VIEW OF SAMPLE



LEFT VIEW OF SAMPLE



RIGHT VIEW OF SAMPLE



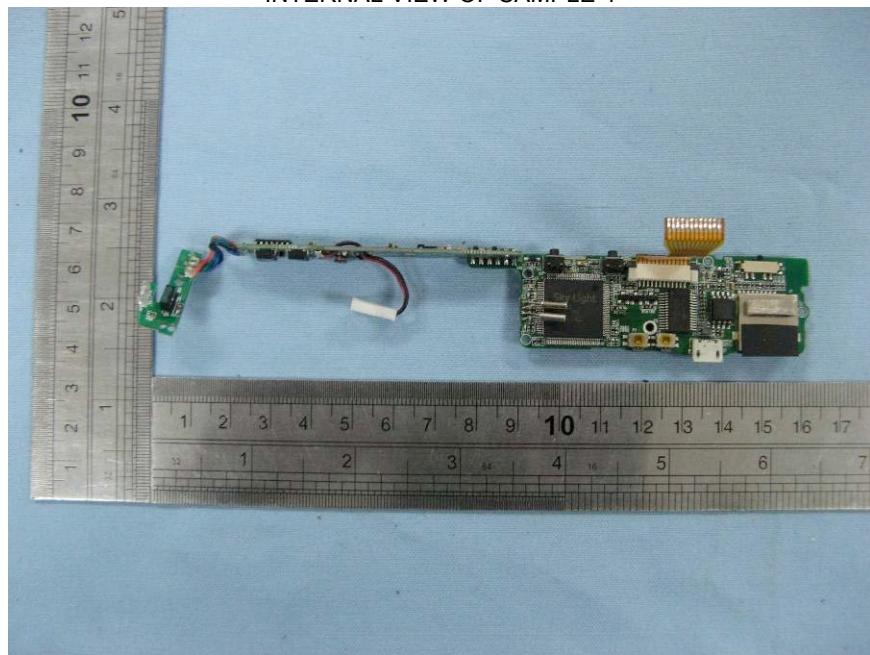
FRONT VIEW OF SAMPLE



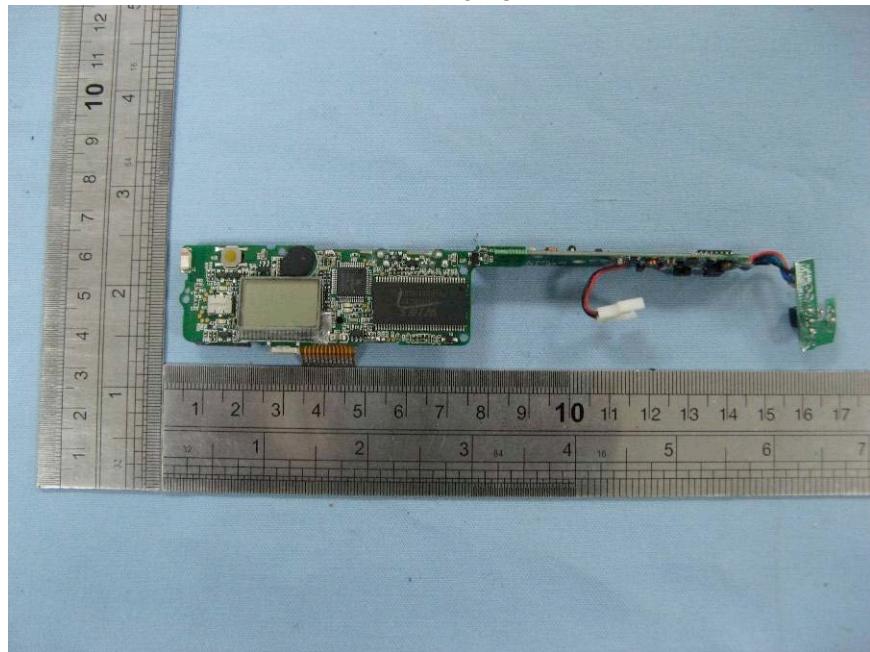
BACK VIEW OF SAMPLE



INTERNAL VIEW OF SAMPLE-1



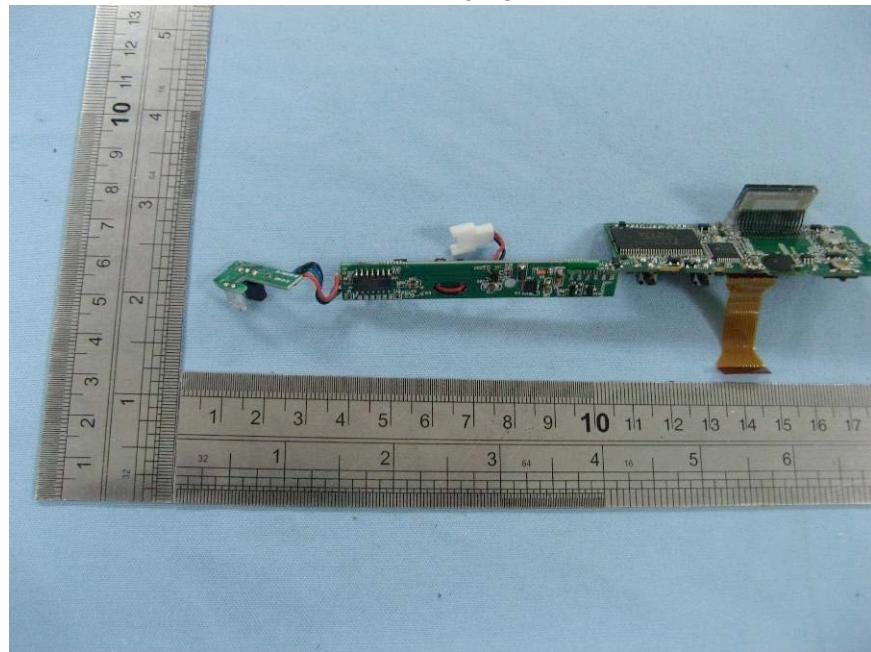
INTERNAL VIEW OF SAMPLE-2



INTERNAL VIEW OF SAMPLE-3



INTERNAL VIEW OF SAMPLE-4



-----END OF REPORT-----