ISO/IEC17025 Accredited Lab.

FCC ID
TEST REPORT

for

USB 2.0 HUB
Trade Mark: N/A
Model: G-H822
FCC ID: Z8XG-H822
Test Report Number: 1308001697E
Issued Date: August 03, 2013

Issued for:

GHI INTERNATIONAL CO., LTD
3rd Floor, West Building, Shen Te Bian TechPark, Qiling North Road, Buji Town, Shenzhen, China

Issued by:

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD.
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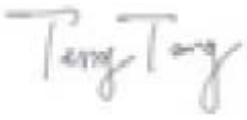
1TEST RESULT CERTIFICATION

Product:	USB 2.0 HUB
Model:	G-H822
Trade Mark	N/A
Applicant:	GHI INTERNATIONAL CO., LTD 3rd Floor, West Building, Shen Te Bian TechPark, Qiling North Road, Buji Town, Shenzhen, China
Manufacturer:	GHI INTERNATIONAL CO., LTD 3rd Floor, West Building, Shen Te Bian TechPark, Qiling North Road, Buji Town, Shenzhen, China
Tested:	July 23, 2013 ~ July 30, 2013
Test Voltage:	DC 5V
Applicable Standards:	FCC Part 15 rules: 2012 ANSI C63.4:2003

The above equipment has been tested by SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:  ***Date:*** ***2013.08.03***

(Brown Lu)



Check By: ***Date:*** ***2013.08.03***

(Terry Tang)

Approved By: ***Date:*** ***2013.08.03***

(Jack Chung)

2 EUT DESCRIPTION

Product	**USB 2.0 HUB**
Trade Mark	**N/A**
Model	**G-H822**
Applicant	**GHI INTERNATIONAL CO.,LTD**
EUT Type	☒ **Engineering Sample** ☐ **Product Sample** ☐ **Mass Product Sample**
Voltage Rating	**DC 5V**
DC Line	**N/A**

I/O PORT

I/O PORT TYPES	Q'TY	TESTED WITH
USB INPUT PORT	1	1
USB OUTPUT PORT	4	4

Model difference and model list

N/A

3 TEST METHODOLOGY

3.1. DECISION OF FINAL TEST MODE

The EUT was tested together with the thereinafter additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The following test mode(s) were scanned during the preliminary test:

Pre-Test Mode		
Emission	Conducted Emission	Mode: Data Transmitting
	Radiated Emission	Mode: Data Transmitting

After the preliminary scan, the following test mode was found to produce the highest emission level.

The Worst Test Mode		
Emission	Conducted Emission	Mode: Data Transmitting
	Radiated Emission	Mode: Data Transmitting

Then, the EUT configuration and cable configuration of the above highest emission mode was chosen for all final test items.

3.2. EUT SYSTEM OPERATION

1. Set up EUT with the relative support equipments.
2. Make sure the EUT worked normally during the test.

3.3. TEST MODE

Data transmitting: four U-disks switch data with PC.

4 SETUP OF EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF SUPPORT UNITS

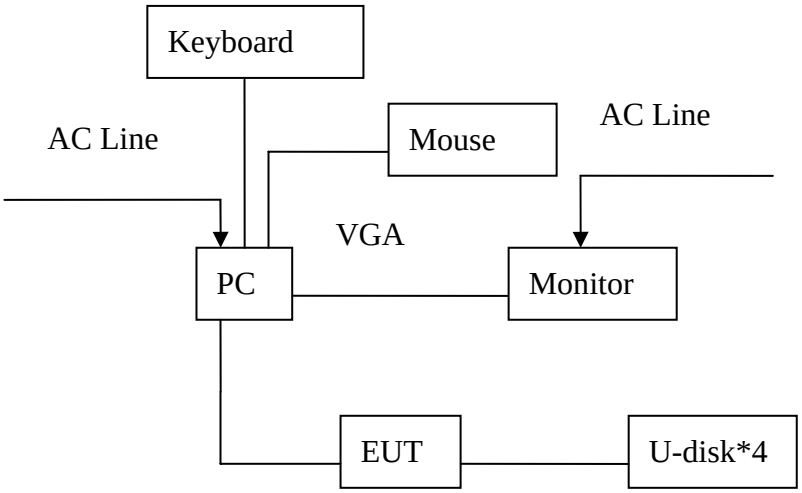
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	PC	dx2700	CNG7140T7P	N/A	HP	Unshielded1.4 m	Unshielded 1.6m
2	Monitor	HPL1706V	CND74535YZ	N/A	HP	Unshielded1.2 m	Unshielded 1.6m
3	Keyboard	SK-2880	435302-AA1	N/A	HP	Unshielded1.2 m	N/A
4	Mouse	N/A	N/A	N/A	HP	Unshielded1.2 m	N/A
5	U-disk*4	HP Compaq dx2290 MT	CNX74417JC	N/A	HP	N/A	N/A

Note:

1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.2. CONFIGURATION OF SYSTEM UNDER TEST



(EUT: USB 2.0 HUB)

5 FACILITIES AND ACCREDITATIONS

5.1. FACILITIES

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.
The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.
Our test facility is recognized, certified, or accredited by the following organizations:

CNAL-LAB Code: L2292
The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988
The 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.: 899988.

IC- Registration No.: IC5205A-01
The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-01

5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency		Uncertainty
Conducted emissions	150kHz~30MHz		+/- 3.59dB
Radiated emissions	Horizontal	30MHz ~ 200MHz	+/- 4.77dB
		200MHz ~1000MHz	+/- 4.93dB
	Vertical	30MHz ~ 200MHz	+/- 5.04dB
		200MHz ~1000MHz	+/- 4.93dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

6 CONDUCTED EMISSION MEASUREMENT

6.1. LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE:

(1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
(3) All emanations from EUT or system shall not exceed the level of field strengths specified above.

6.2. TEST INSTRUMENTS

Conducted Emission Shielding Room Test Site 843				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100005	12/16/2013
LISN	AFJ	LS16	16010222119	12/16/2013
LISN	Meestec	AN3016	04/10040	12/16/2013

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to International system of unit (SI).
2. N.C.R = No Calibration Request.

6.3. TEST PROCEDURES

Procedure of Preliminary Test

The EUT and Support equipment, if needed, was set up as per the test configuration to simulate typical 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.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in Item 3.1 were scanned during the preliminary test.

After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

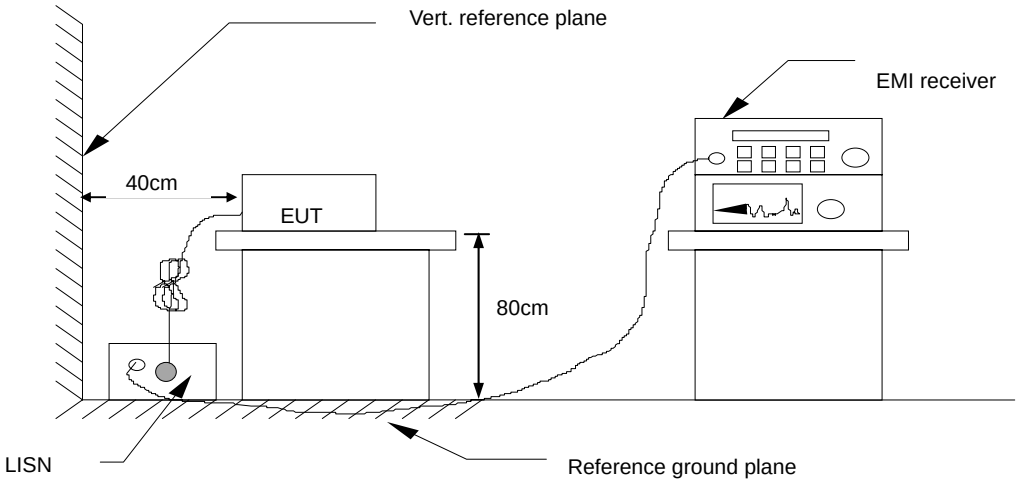
Procedure of Final Test

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. 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.

The test data of the worst-case condition(s) was recorded.

6.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.5. TEST RESULTS

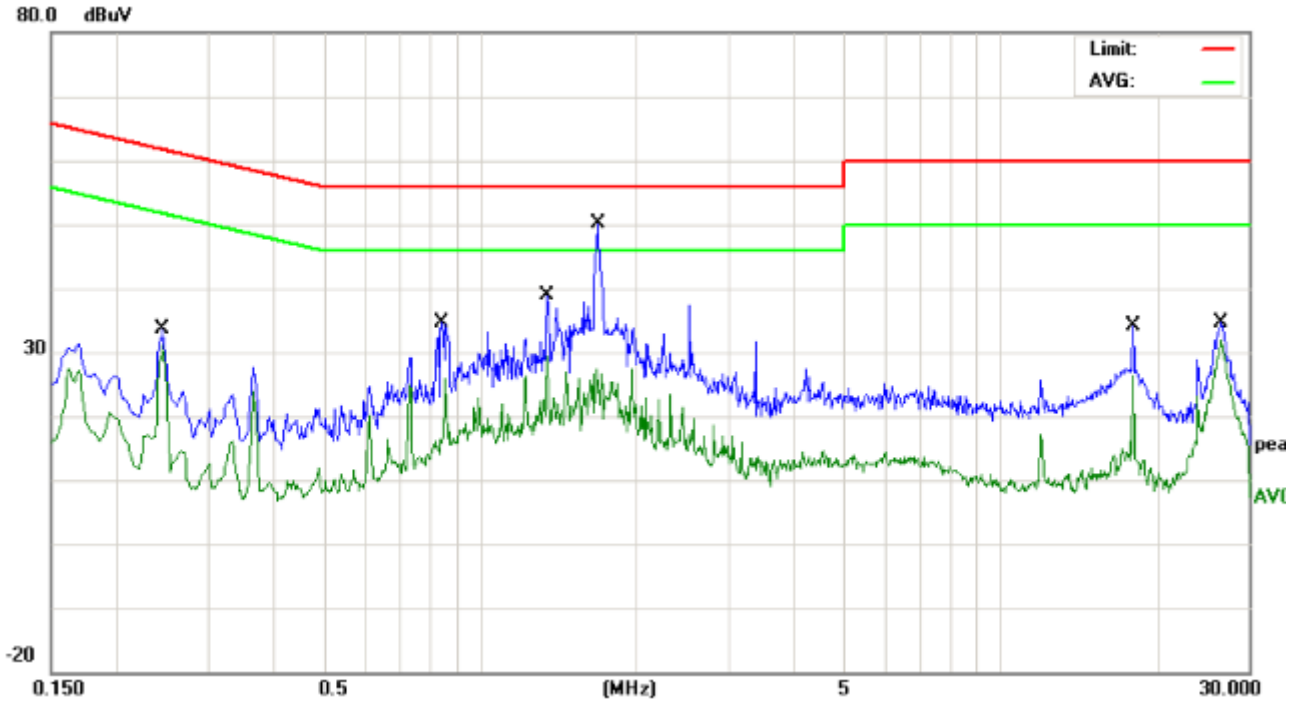
Model No.	G-H822	**6dB Bandwidth**	120 KHz
Environmental Conditions	26°C, 60% RH	**Test Mode**	Data Transmitting
Detector Function	Peak / Quasi-peak/AV	**Test Result**	Pass
Test By	Brown Lu		

NOTE: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).
2. "---" denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

Freq. = Emission frequency in MHz
Reading level(dBuV) = Receiver reading
Corr. Factor (dB) = Attenuator Factor+ Cable loss
Level (dBuV) = Reading level(dBuV) + Corr. Factor (dB)
Limit (dBuV) = Limit stated in standard
Margin (dB) = Level (dBuV) – Limits (dBuV)
Q.P.=Quasi-Pea

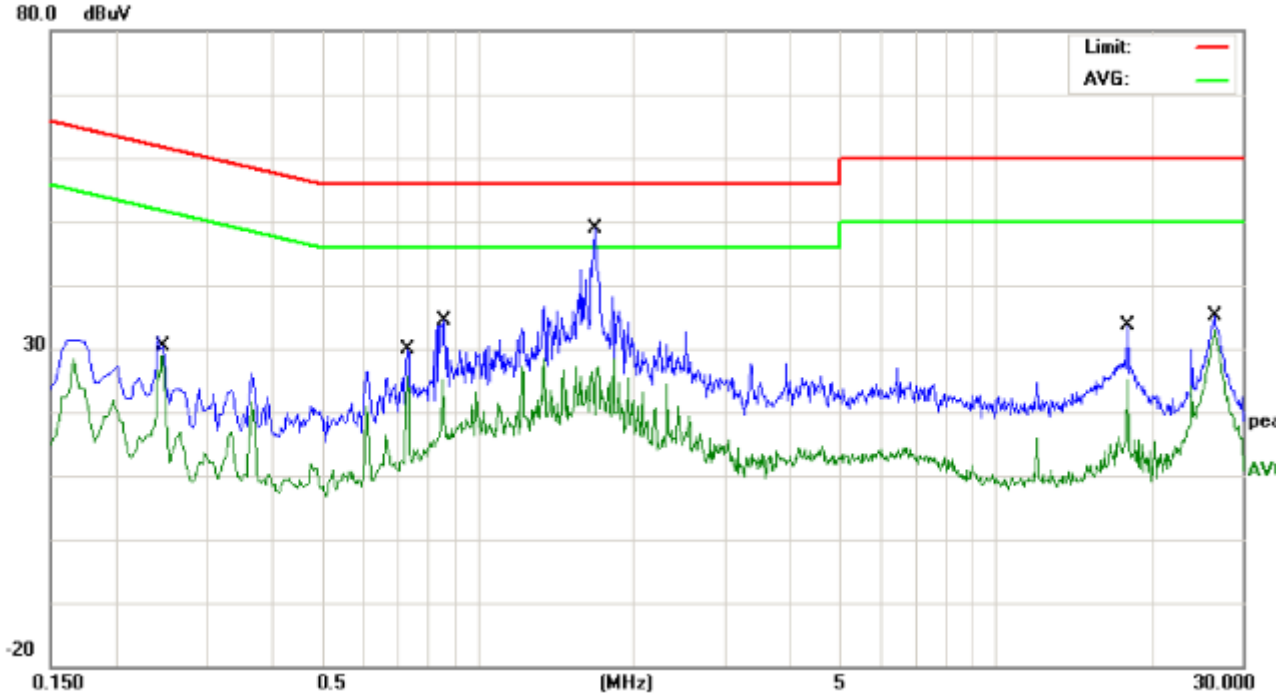
Please refer to following diagram for individual

L：



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2467	21.16	10.46	31.62	61.86	-30.24	QP	
2		0.2467	19.29	10.46	29.75	51.86	-22.11	AVG	
3		0.8460	23.81	10.71	34.52	56.00	-21.48	QP	
4		0.8460	5.15	10.71	15.86	46.00	-30.14	AVG	
5		1.3460	28.17	10.74	38.91	56.00	-17.09	QP	
6		1.3460	18.71	10.74	29.45	46.00	-16.55	AVG	
7	*	1.6900	38.14	10.72	48.86	56.00	-7.14	QP	
8		1.6900	14.55	10.72	25.27	46.00	-20.73	AVG	
9		18.0019	23.69	10.48	34.17	60.00	-25.83	QP	
10		18.0019	16.00	10.48	26.48	50.00	-23.52	AVG	
11		26.7140	23.60	10.57	34.17	60.00	-25.83	QP	
12		26.7140	20.42	10.57	30.99	50.00	-19.01	AVG	

N：



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2467	19.80	10.46	30.26	61.86	-31.60	QP	
2		0.2467	18.38	10.46	28.84	51.86	-23.02	AVG	
3		0.7339	19.19	10.76	29.95	56.00	-26.05	QP	
4		0.7339	14.76	10.76	25.52	46.00	-20.48	AVG	
5		0.8579	19.70	10.76	30.46	56.00	-25.54	QP	
6		0.8579	14.36	10.76	25.12	46.00	-20.88	AVG	
7	*	1.6899	38.16	10.72	48.88	56.00	-7.12	QP	
8		1.6899	13.72	10.72	24.44	46.00	-21.56	AVG	
9		17.9897	23.06	10.48	33.54	60.00	-26.46	QP	
10		17.9897	14.73	10.48	25.21	50.00	-24.79	AVG	
11		26.6780	23.59	10.57	34.16	60.00	-25.84	QP	
12		26.6780	21.58	10.57	32.15	50.00	-17.85	AVG	

7 RADIATED EMISSION MEASUREMENT

7.1. LIMITS OF RADIATED EMISSION MEASUREMENT

Maximum permissible level of Radiated Emission measured at 3 meter

FREQUENCY (MHz)	dBuV/m (At 3m)
	Class B
30~88	40.00
88~216	43.50
216~960	46.00
960~1000	54.00

NOTE: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

7.2. TEST INSTRUMENTS

Radiated Emission Test Site 966				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	G-H822	ESCI	100005	12/16/2013
Spectrum Analyzer	R&S	FSU	100114	12/16/2013
Pre Amplifier	H.P.	HP8447E	2945A02715	12/16/2013
Bilog Antenna	SUNOL Sciences	JB3	A021907	12/16/2013
Cable	TIME MICROWAVE	LMR-400	N-TYPE04	12/16/2013
System-Controller	CCS	N/A	N/A	N.C.R
Turn Table	CCS	N/A	N/A	N.C.R
Antenna Tower	CCS	N/A	N/A	N.C.R

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to International system of unit (SI).
2. N.C.R = No Calibration Request.

7.3. TEST PROCEDURES

Procedure of Preliminary Test

The equipment was set up as per the test configuration to simulate typical 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. 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.

Support equipment, if needed, was placed as per ANSI C63.4.

All I/O cables were positioned to simulate typical usage as per ANSI C63.4.

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test are shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

The antenna was placed at 3 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

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.

The test mode(s) described in Item 3.1 were scanned during the preliminary test:

After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.

The EUT and worse cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

When measuring emissions above 1GHz, the frequencies of maximum emission shall be determined by manually positioning the antenna close to the EUT and by moving the antenna over all sides of the EUT while observing a spectral display. It will be advantageous to have prior knowledge of the frequencies of emissions above 1GHz.If the EUT is a device with dimensions approximately equal to that of the measurement antenna beam width, the measurement antenna shall be aligned with the EUT.

Procedure of Final Test

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.

The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement 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.

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 only Q.P. reading is presented.

For the measurement above 1GHz, use the cable, EUT arrangement, and mode of operation determined in the exploratory testing to produce the emission that has the highest amplitude relative to the limit.

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the antenna in the “cone of radiation” from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.

The antenna may have to be higher or lower than the EUT, depending on the EUT’s size and mounting height, but the antenna should be restricted to a range of height of from 1m to 4m above the ground or reference ground plane.

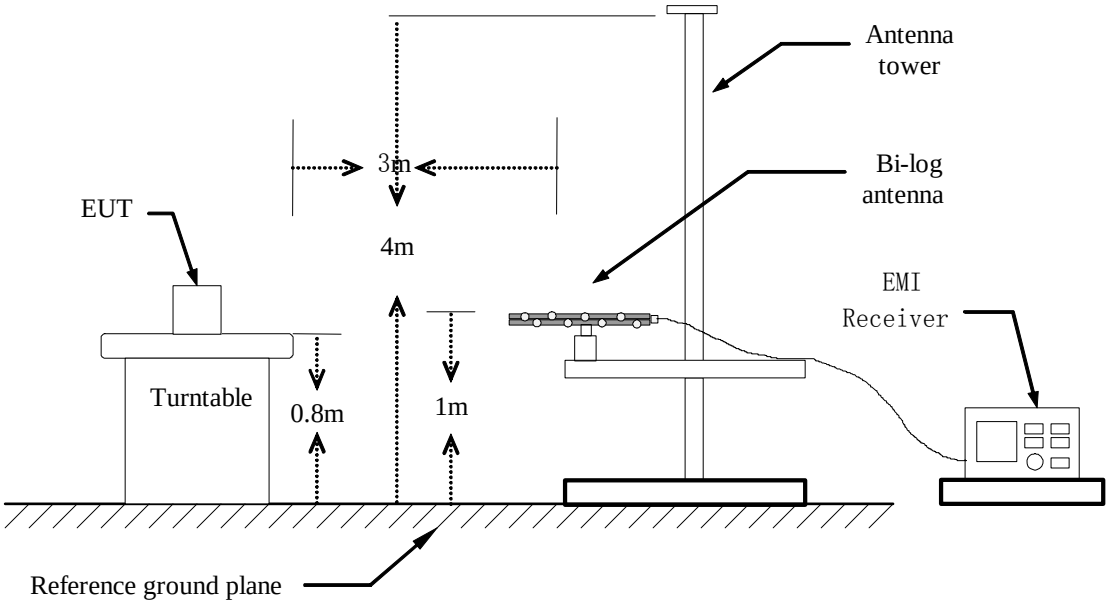
If the transmission line for the measurement antenna restricts its range of height and polarization, the steps needed to ensure the correct measurement of the maximum emissions, shall be described in detail in the report of the measurements.

using the procedures above to measure with peak detector function, if the result comply with the average limit specified by the appropriate regulation, record the EUT arrangement, mode of operation, and cable positions used for final radiated emission measurement , this can be done with either diagrams or photographs.

Set the detector function of the measuring instrument to average mode, using the procedures above and remeasure only those emissions that complied with the peak limits but exceeded the average limits.

Recorded at least the six highest emissions.

7.4. TEST SETUP



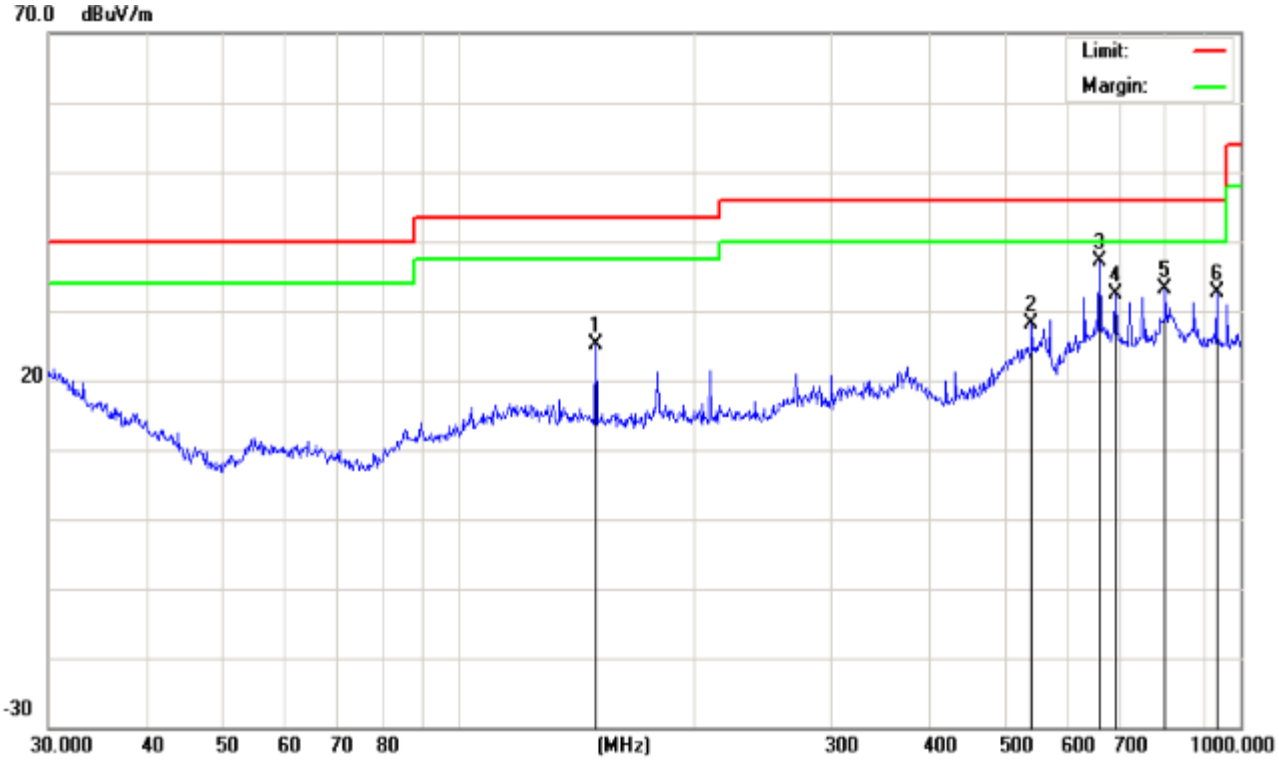
For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.5. TEST RESULTS

Model No.	G-H822	**Test Mode**	Data Transmitting
Environmental Conditions	26°C, 55% RH	**6dB Bandwidth**	120 KHz
Antenna Pole	Vertical / Horizontal	**Antenna Distance**	3m
Detector Function	Peak / Quasi-peak	**Test Result**	Pass

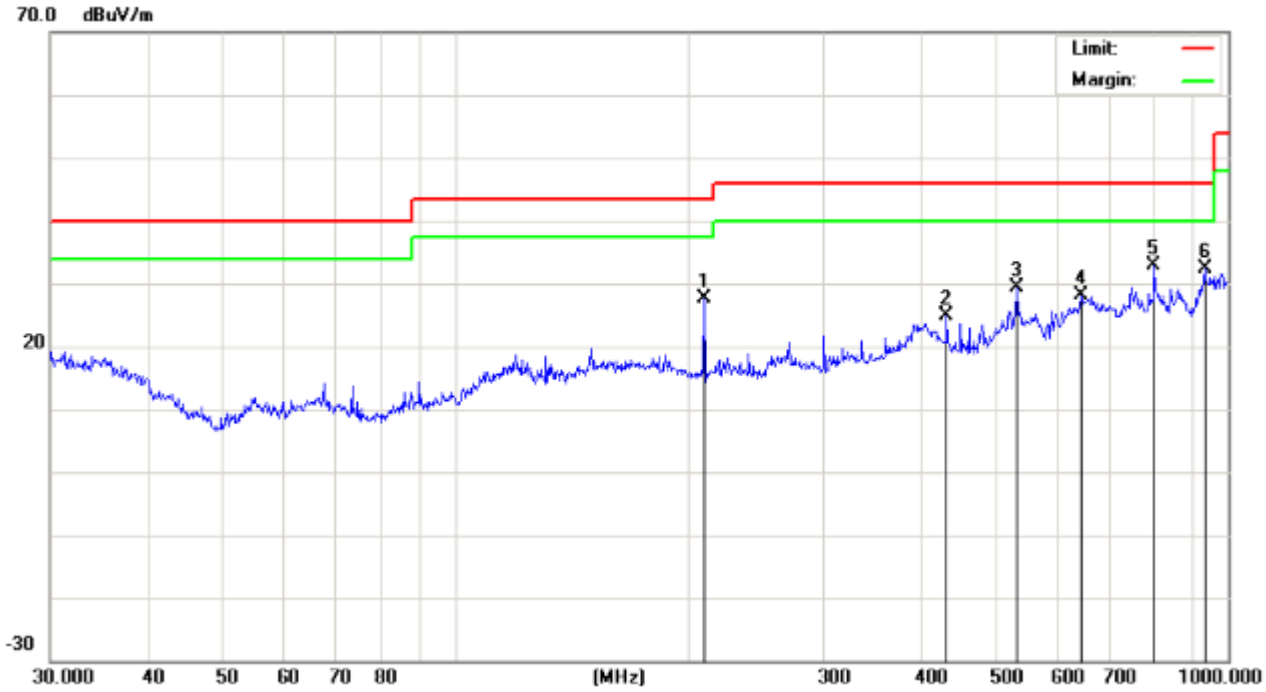
Freq. = Emission frequency in MHz
Reading level (dBuV) = Receiver reading
Corr. Factor (dB) = Antenna factor + Cable loss
Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)
Limit (dBuV) = Limit stated in standard
Margin (dB) = Measurement (dBuV) – Limits (dBuV)

Please refer to following diagram for individual
Horizontal：



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		150.0107	32.04	-6.95	25.09	43.50	-18.41	QP			
2		541.3724	25.86	2.20	28.06	46.00	-17.94	QP			
3	*	661.1504	31.38	5.73	37.11	46.00	-8.89	QP			
4		691.9867	28.71	3.79	32.50	46.00	-13.50	QP			
5		801.7862	26.51	6.69	33.20	46.00	-12.80	QP			
6		932.2714	29.38	3.19	32.57	46.00	-13.43	QP			

Vertical：



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		210.0482	33.41	-5.75	27.66	43.50	-15.84	QP			
2		432.5457	26.39	-1.56	24.83	46.00	-21.17	QP			
3		533.8320	27.63	1.80	29.43	46.00	-16.57	QP			
4		645.1195	23.72	4.30	28.02	46.00	-17.98	QP			
5	*	801.7862	27.32	5.67	32.99	46.00	-13.01	QP			
6		932.2714	25.04	7.41	32.45	46.00	-13.55	QP			

8 PHOTOGRAPHS OF THE TEST CONFIGURATION

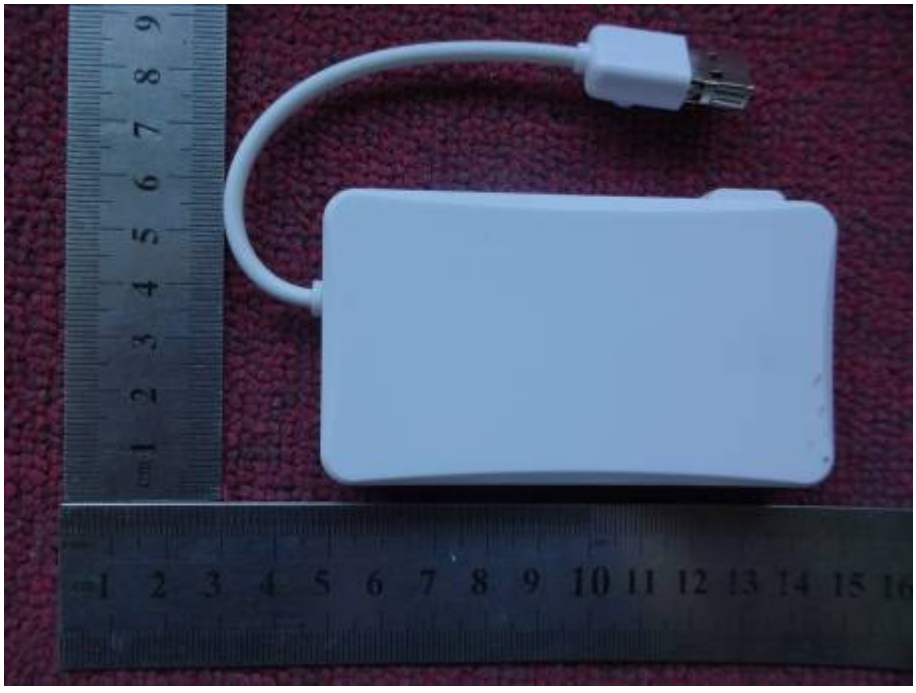
CONDUCTED EMISSION TEST

RADIATED EMISSION TEST（30MHz-1GHz）

9 PHOTOGRAPHS OF EUT

Appearance photograph of EUT

Appearance photograph of EUT

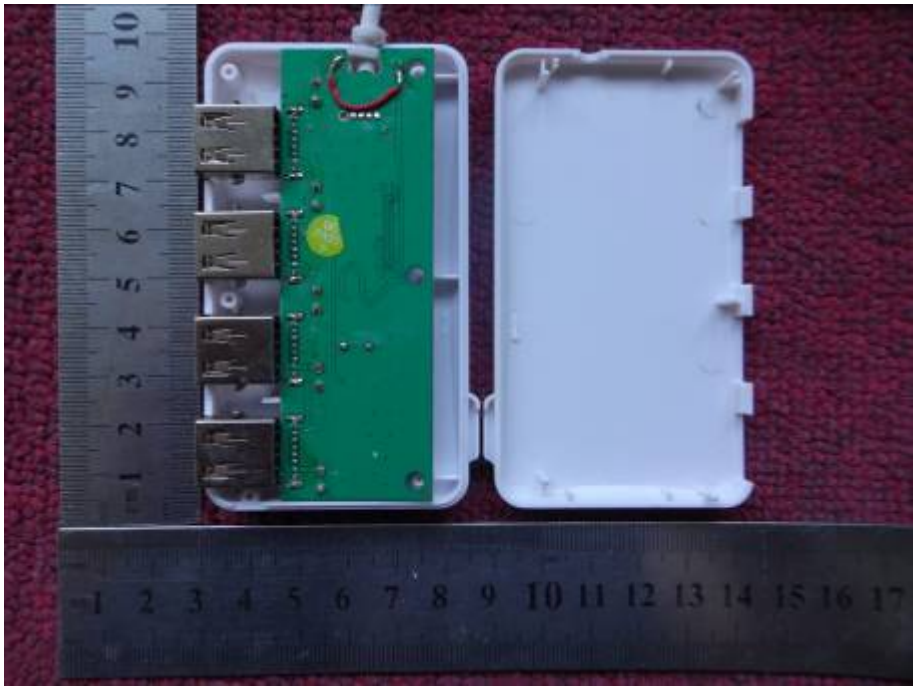


Appearance photograph of EUT

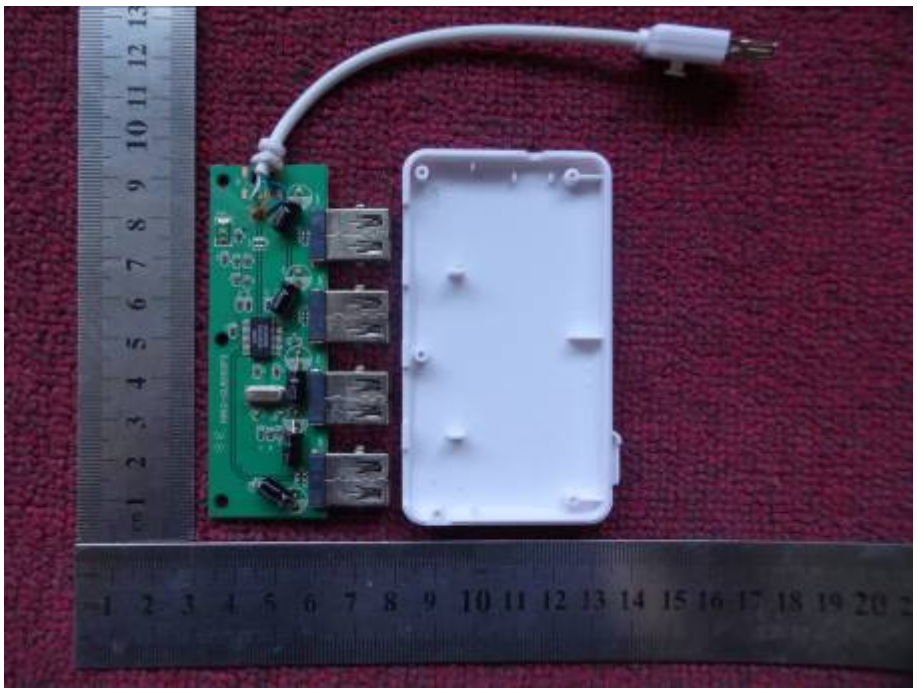
Appearance photograph of EUT

Ports photograph of EUT

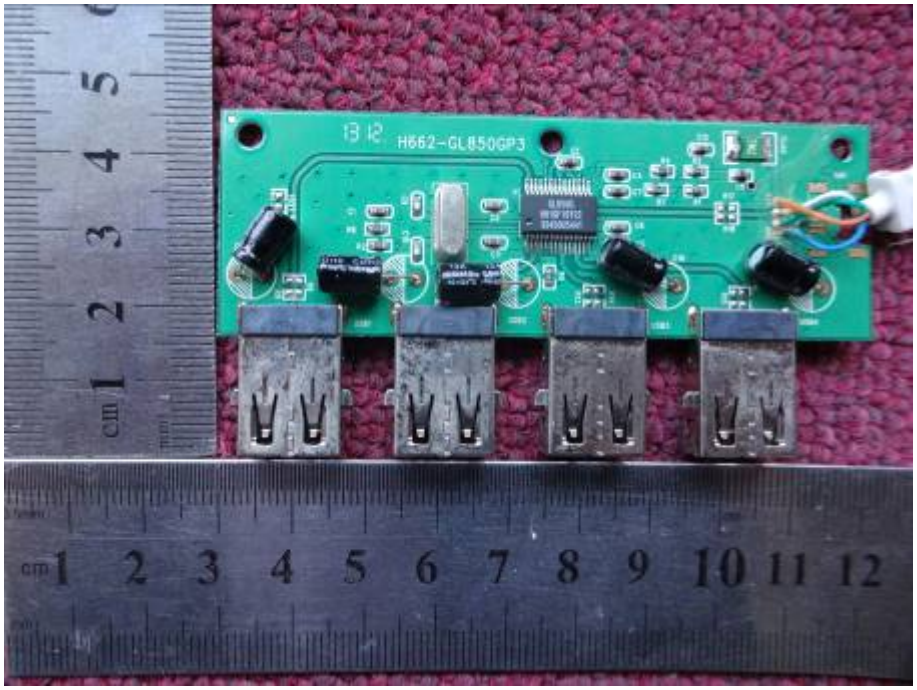
Internal photograph of EUT



Internal photograph of EUT



PCB photograph of EUT



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