

FCC EMC Test Report

Product: 16HD0173

Trade Name: N/A

Model Number: 16HD0173

FCC ID: 2AEQI-16HD0173

Prepared for

PACKO GIFT CO., LTD

Room 903B, 9/F, Block A, Hong Kong Industrial Centre,
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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name : PACKO GIFT CO., LIMITED
Address : Room 903B, 9/F, Block A, Hong Kong Industrial Centre, 489-491
 Castle Peak Road, Lai Chi Kok, Kowloon, Hong Kong
Manufacturer's Name : PACKO GIFT CO., LIMITED
Address : Room 903B, 9/F, Block A, Hong Kong Industrial Centre, 489-491
 Castle Peak Road, Lai Chi Kok, Kowloon, Hong Kong

Product description

Product name : 16HD0173
Model and/or type reference : 16HD0173
 47 CFR FCC part15 subpart B, 10-1-2015
Standards : ANSI C63.4:2014

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with Part 15 of FCC Rules. And it is applicable only to the tested sample identified in the report.

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Date of Test :
Date (s) of performance of tests : 10 May 2016 ~12 May 2016
Date of Issue : 12 May 2016
Test Result : **Pass**

Testing Engineer : 
 (Estelle Chen)

Technical Manager : 
 (Jane Lv)

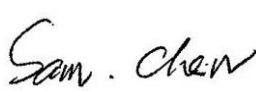
Authorized Signatory : 
 (Sam Chen)

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1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC part15 subpart B, 10-1-2015 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 $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, 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	16HD0173	
Model Name	16HD0173	
Additional Model Number(s)	N/A	
Model Difference	N/A	
Product Description	The EUT is a 16HD0173.	
	Operation Frequency:	433.92MHz RX
	Modulation Type:	ASK
	Number Of Channel:	1CH.
	Antenna Designation:	Wire antenna
	Antenna Gain:	1dBi
Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.		
Power Source	AC Voltage	
Power Rating	Input: 100-240V, 1.5A, 50-60Hz	
	Output: 24V, 2A, 48W	

2.2 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.

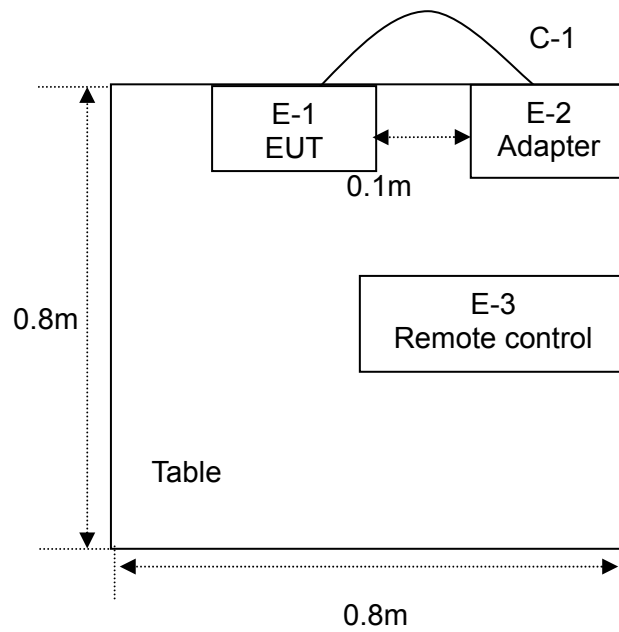
Pretest Mode	Description
Mode 1	Lighting

For Conducted Test	
Final Test Mode	Description
Mode 1	Lighting

For Radiated Test	
Final Test Mode	Description
Mode 1	Lighting

2.3 DESCRIPTION OF TEST SETUP

Mode 1: Lighting



2.4 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.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	16HD0173	N/A	16HD0173	N/A	EUT
E-2	Adapter	N/A	XY-2402000UB	N/A	
E-3	Remote control	N/A	N/A	N/A	

Item	Cable Type	Shielded Type	Ferrite Core	Length	Note
C-1	Power line	NO	NO	1.0m	

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”.

2.5 MEASUREMENT INSTRUMENTS LIST

2.5.1 CONDUCTED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2015.06.06	2016.06.05	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	6200264417	2015.06.07	2016.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2015.06.07	2016.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2015.06.08	2016.06.07	1 year
7	Test Cable	N/A	C01	N/A	2015.06.08	2016.06.07	1 year
8	Test Cable	N/A	C02	N/A	2015.06.08	2016.06.07	1 year
9	Test Cable	N/A	C03	N/A	2015.06.08	2016.06.07	1 year

2.5.2 RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2015.07.06	2016.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2015.06.07	2016.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2015.07.06	2016.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.06.07	2016.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2015.06.07	2016.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2015.07.06	2016.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2015.07.06	2016.07.05	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2015.06.08	2016.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2015.07.06	2016.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2015.07.06	2016.07.05	1 year
12	Test Cable	N/A	R-01	N/A	2015.07.06	2016.07.05	1 year
13	Test Cable	N/A	R-02	N/A	2015.07.06	2016.07.05	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 (dB μ V)		☒ Class B (dB μ V)	
	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.

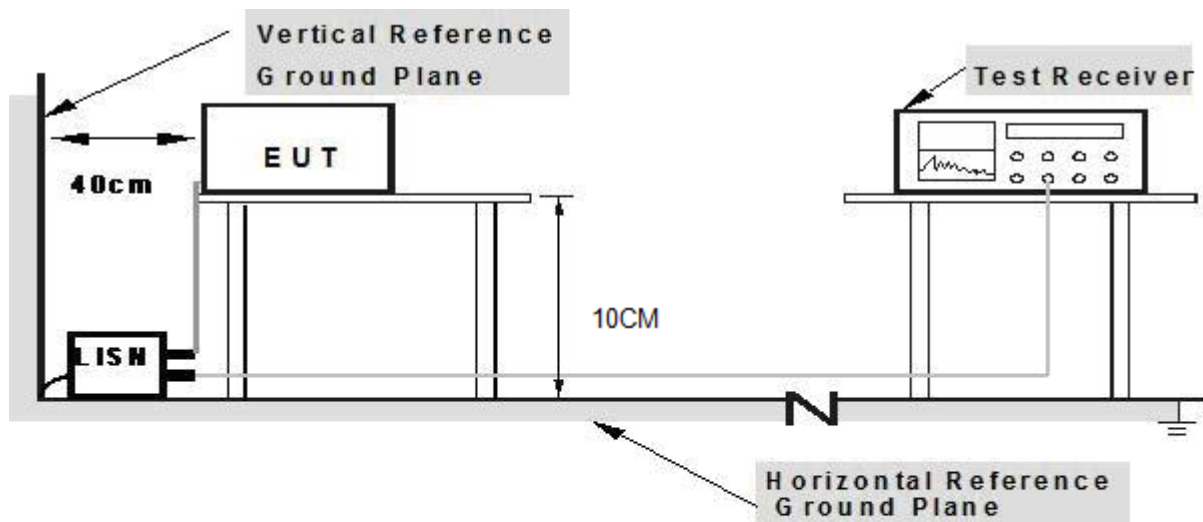
The following table is the setting of the receiver

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 0.1 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



Note: 1.Support units were connected to second LISN.

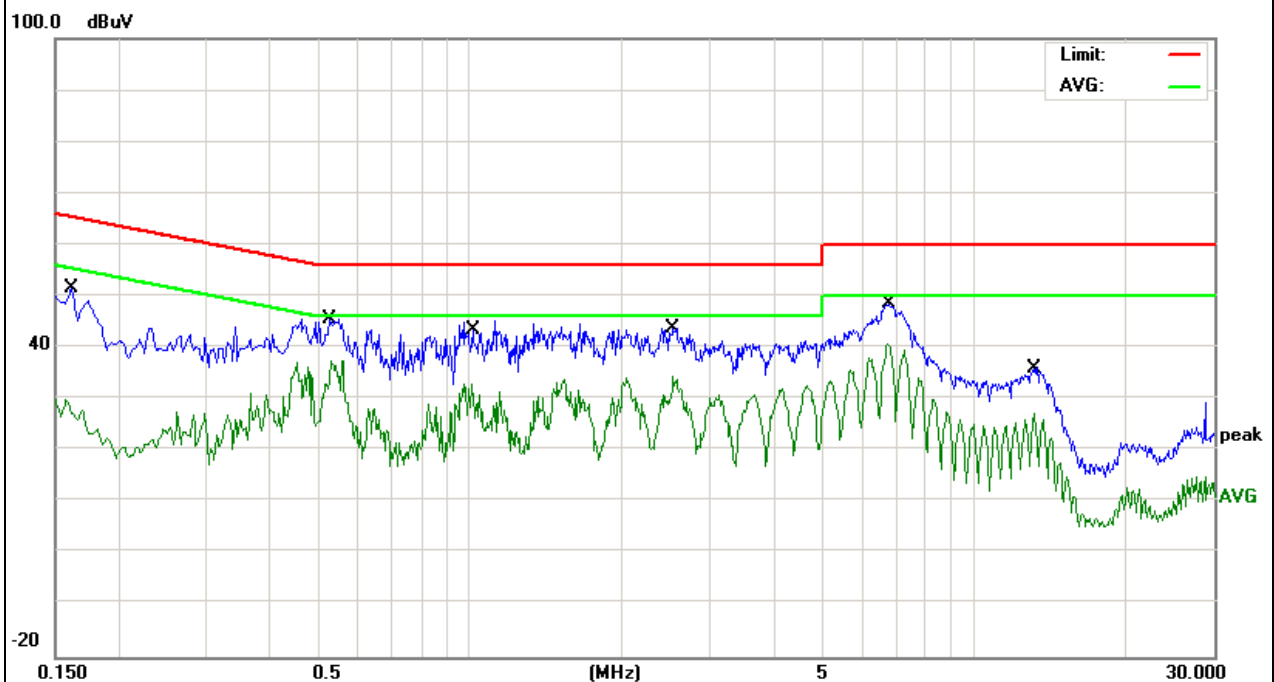
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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.

3.1.5 TEST RESULTS

EUT:	16HD0173	Model Name. :	16HD0173
Temperature:	26°C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date:	2016-05-12
Test Mode:	Lighting	Phase:	L
Test Voltage:	DC 24V form adapter AC 120V/60Hz		

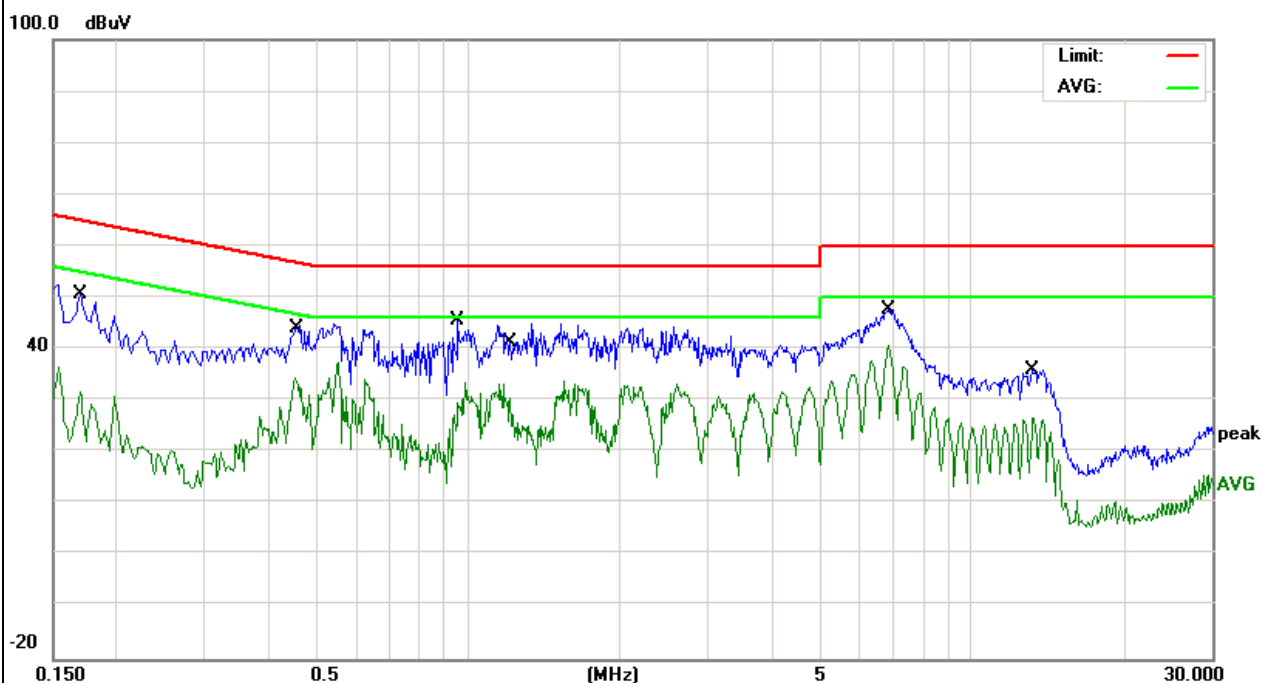


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1620	41.50	10.12	51.62	65.36	-13.74	QP	
2		0.1620	19.85	10.12	29.97	55.36	-25.39	AVG	
3		0.5260	35.79	9.80	45.59	56.00	-10.41	QP	
4	*	0.5260	27.75	9.80	37.55	46.00	-8.45	AVG	
5		1.0100	35.52	9.85	45.37	56.00	-10.63	QP	
6		1.0100	23.21	9.85	33.06	46.00	-12.94	AVG	
7		2.5339	33.94	9.74	43.68	56.00	-12.32	QP	
8		2.5339	24.62	9.74	34.36	46.00	-11.64	AVG	
9		6.7499	38.77	9.77	48.54	60.00	-11.46	QP	
10		6.7499	31.02	9.77	40.79	50.00	-9.21	AVG	
11		13.1819	26.33	9.83	36.16	60.00	-23.84	QP	
12		13.1819	17.49	9.83	27.32	50.00	-22.68	AVG	

Remark:

Factor = Insertion Loss + Cable Loss.

EUT:	16HD0173	Model Name. :	16HD0173
Temperature:	26°C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date:	2016-05-12
Test Mode:	Lighting	Phase:	N
Test Voltage:	DC 24V form adapter AC 120V/60Hz		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1700	40.63	10.06	50.69	64.96	-14.27	QP	
2		0.1700	21.54	10.06	31.60	54.96	-23.36	AVG	
3		0.4540	34.83	9.93	44.76	56.80	-12.04	QP	
4		0.4540	24.51	9.93	34.44	46.80	-12.36	AVG	
5		0.9540	35.70	9.86	45.56	56.00	-10.44	QP	
6		0.9540	23.63	9.86	33.49	46.00	-12.51	AVG	
7		1.2140	35.07	9.84	44.91	56.00	-11.09	QP	
8		1.2140	20.63	9.84	30.47	46.00	-15.53	AVG	
9		6.8259	38.01	9.74	47.75	60.00	-12.25	QP	
10	*	6.8259	30.98	9.74	40.72	50.00	-9.28	AVG	
11		13.2539	26.21	9.79	36.00	60.00	-24.00	QP	
12		13.2539	16.71	9.79	26.50	50.00	-23.50	AVG	

Remark:

Factor = Insertion Loss + Cable Loss.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	☐ Class A (at 3m)	☒ Class B (at 3m)
	dB μ V/m	dB μ V/m
30 ~ 88	49.0	40.0
88 ~ 216	53.5	43.5
216 ~ 960	56.5	46.0
Above 960	59.5	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 (dB μ V/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 0 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.

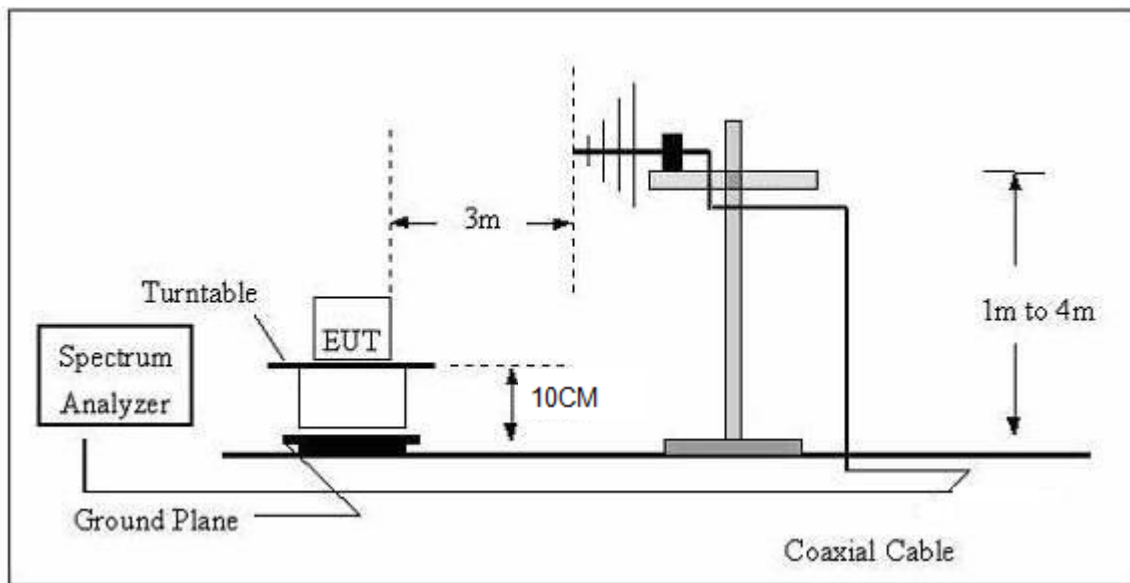
Note: For the hand-held device, the EUT should be measured for all 3 axes and only the worst case is recorded in the report

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

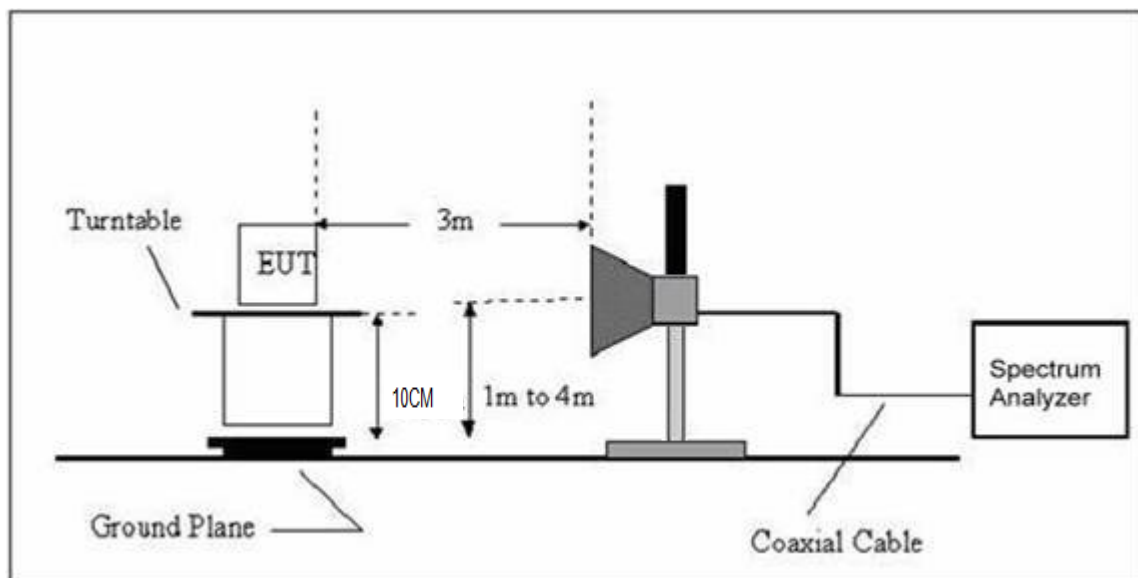
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Avg	1 MHz	10 Hz

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



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

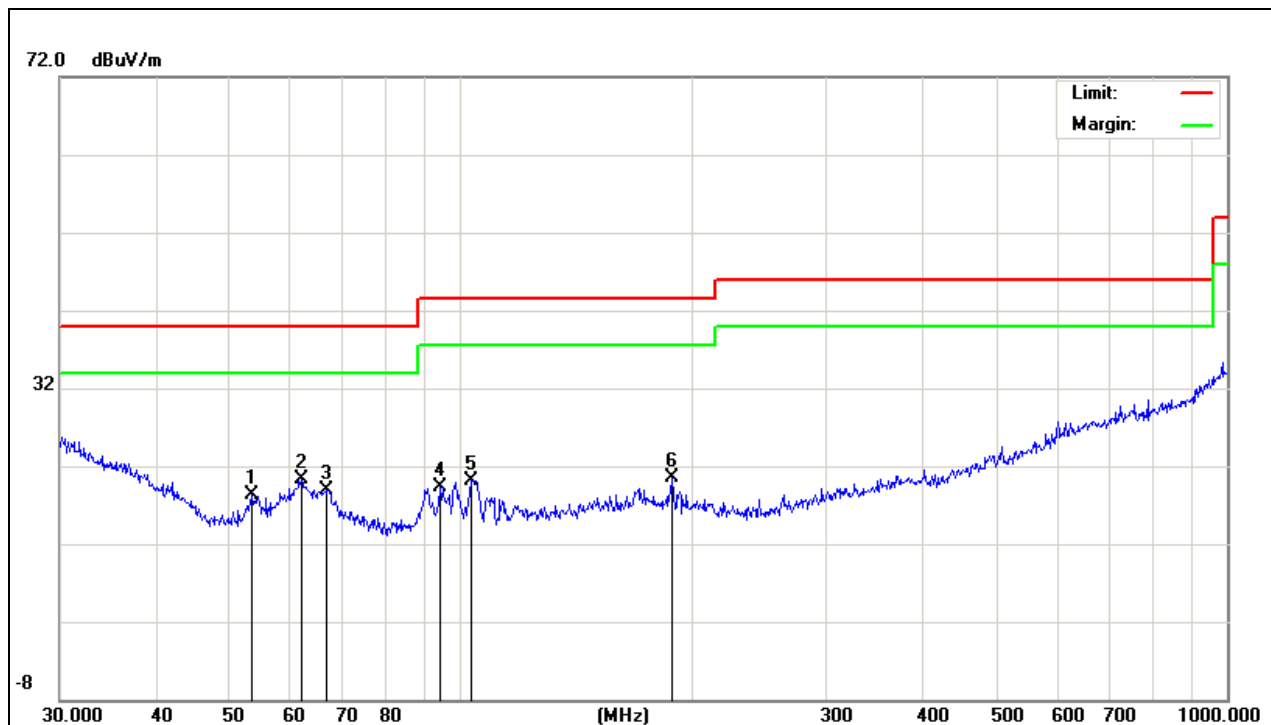


3.2.4 EUT OPERATING CONDITIONS

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.

3.2.5 TEST RESULTS(Below 1GHz)

EUT:	16HD0173	Model Name :	16HD0173
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date:	2016-05-12
Test Mode:	Lighting	Polarization:	Horizontal
Test Power:	DC 24V form adapter AC 120V/60Hz		

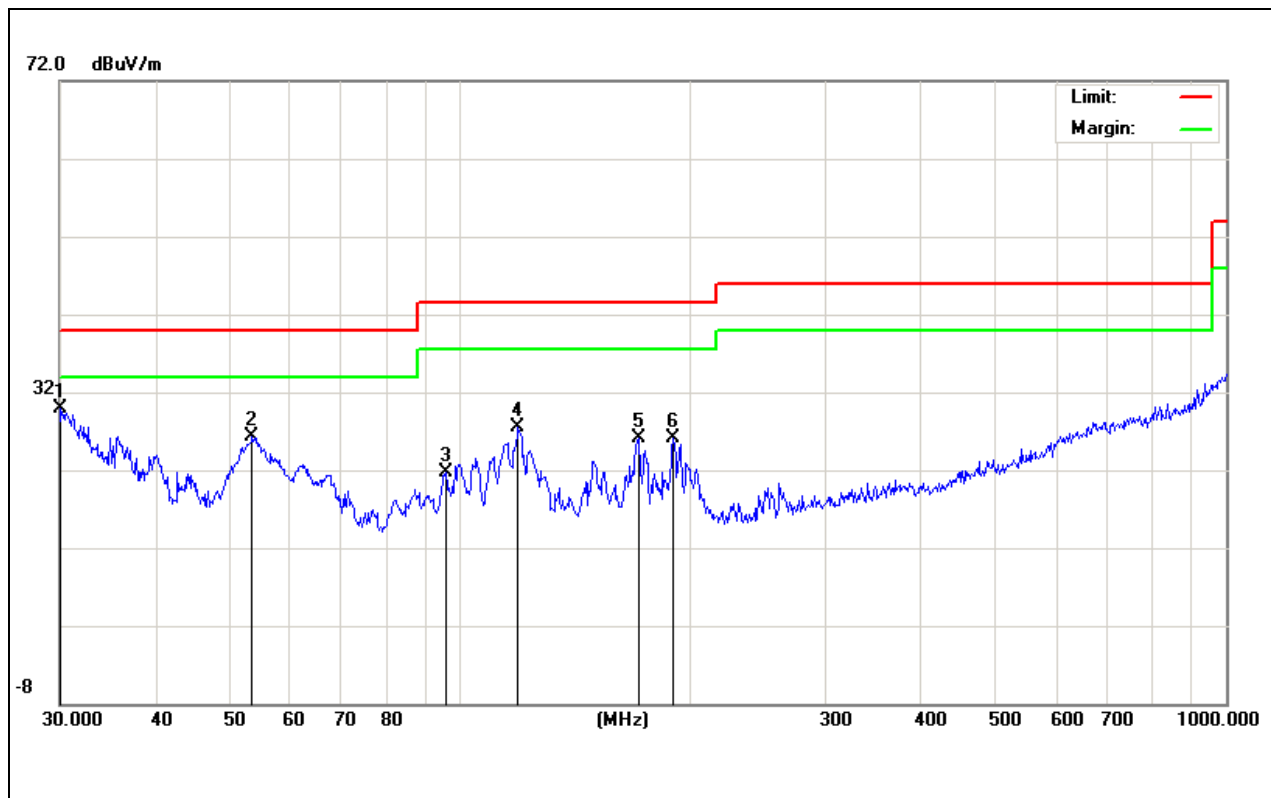


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		53.5052	10.01	8.23	18.24	40.00	-21.76	QP			
2	*	61.9951	14.49	5.83	20.32	40.00	-19.68	QP			
3		66.9668	11.76	7.19	18.95	40.00	-21.05	QP			
4		94.0979	9.34	10.05	19.39	43.50	-24.11	QP			
5		103.4421	9.93	10.27	20.20	43.50	-23.30	QP			
6		189.0743	9.05	11.38	20.43	43.50	-23.07	QP			

Remark:

Factor = Antenna Factor + Cable Loss.

EUT:	16HD0173	Model Name :	16HD0173
Temperature:	24°C	Relative Humidity:	54%
Pressure:	1010hPa	Test Date:	2016-05-12
Test Mode:	Lighting	Polarization:	Vertical
Test Power:	DC 24V form adapter 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	cm	degree	Comment
1	*	30.0000	10.30	19.57	29.87	40.00	-10.13	QP		
2		53.5052	18.06	8.23	26.29	40.00	-13.71	QP		
3		95.7622	11.61	10.14	21.75	43.50	-21.75	QP		
4		119.0180	16.96	10.45	27.41	43.50	-16.09	QP		
5		170.7926	13.67	12.51	26.18	43.50	-17.32	QP		
6		189.7384	14.72	11.32	26.04	43.50	-17.46	QP		

Remark:

Factor = Antenna Factor + Cable Loss.

3.2.6 TEST RESULTS(1000~10000MHz)

EUT:	16HD0173	Model Name :	16HD0173
Temperature:	24℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Date:	2016-05-12
Test Mode :	Lighting	Polarization:	Horizontal
Test Power :	DC 24V form adapter AC 120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	3505.144	46.44	-4.8	41.64	74	-32.36	peak
V	3505.144	33.58	-4.8	28.78	54	-25.22	AVG
V	4874.002	43.96	1.57	45.53	74	-28.47	peak
V	4874.002	31.69	1.57	33.26	54	-20.74	AVG
H	3164.8360	45.73	-6.00	39.73	74.00	-34.27	peak
H	3164.8360	32.65	-6.00	26.65	54.00	-27.35	AVG
H	4865.2770	44.14	1.52	45.66	74.00	-28.34	peak
H	4865.2770	31.27	1.52	32.79	54.00	-21.21	AVG

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level – Limit

All other emissions more than 20dB below the limit

4. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos

