

TEST REPORT

Applicant: SHENZHEN WLINK TECHNOLOGY CO., LTD.

Address of Applicant: 2A, F5 Building, TCL International E City, No.1001
Zhongshanyuan Rd., Nanshan Dist., Shenzhen, 518052, China

Manufacturer: SHENZHEN WLINK TECHNOLOGY CO., LTD.

Address of Manufacturer: 2A, F5 Building, TCL International E City, No.1001
Zhongshanyuan Rd., Nanshan Dist., Shenzhen, 518052, China

Equipment Under Test (EUT)

Product Name: Industrial 3G/4G Cellular Router

Model No.: WL-R210

Applicable standards: ETSI EN 301 511 V12.5.1 (2017-03)
ETSI EN 301 908-1 V13.1.1 (2019-11)
ETSI EN 301 908-2 V13.1.1 (2020-06)
ETSI EN 301 908-13 V13.1.1 (2019-11)
ETSI EN 300 328 V2.2.2 (2019-07)

Date of sample receipt: September 27, 2021

Date of Test: September 28, 2021-October 09, 2021

Date of report issued: October 09, 2021

Test Result : PASS *

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

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives. The protection requirements with respect to electromagnetic compatibility contained in Directive 2014/53/EU are considered.



Robinson Luo

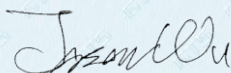
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Report No.	Version No.	Date	Description
GTS201903000054E03	00	March 11, 2019	Original
GTS202109000200E03	01	October 09, 2021	Change adapter, address of applicant/ manufacturer; Add telecommunication port; Delete factory; Update the version of standards.

Prepared By:

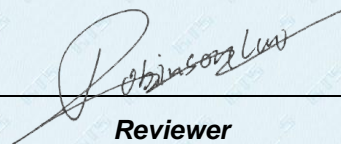


Date:

October 09, 2021

Project Engineer

Check By:



Date:

October 09, 2021

Reviewer

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4 Test Summary

UTRA FDD (EN 301 908-1/EN 301 908-2)				
Test Item	Test Requirement	Test method	Limit/Severity	Result
Radiated emissions	ETSI EN 301 908-1 Section 4.2.2	ETSI EN 301 908-1 Section 5.3.1	Table 4.2.2.2-1	Pass
E-UTRA (EN 301 908-1/EN 301 908-13)				
Test Item	Test Requirement	Test method	Limit/Severity	Result
Radiated emissions	ETSI EN 301 908-1 Section 4.2.2	ETSI EN 301 908-1 Section 5.3.1	Table 4.2.2.2-1	Pass
GSM (EN 301 511)				
Test Item	Test Requirement	Test method	Limit/Severity	Result
Radiated spurious emissions - MS allocated a channel	EN 301 511 Section 4.2.16	ETSI TS 151 010-1 [2]	TS 151 010-1 clause 12.2.1	± 6dB
WIFI (EN 300 328)				
Test Item	Test Requirement	Test method	Limit/Severity	Result
Transmitter unwanted emissions in the spurious domain	Clause 4.3.2.9	Clause 5.4.9.2	Clause 4.3.2.9.3	Pass
Receiver spurious emissions	Clause 4.3.2.10	Clause 5.4.10.2	Clause 4.3.2.10.3	Pass

Remark:

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 General Description of EUT

Product Name:	Industrial 3G/4G Cellular Router
Model No.:	WL-R210
Operation Frequency:	UTRA-FDD: BAND 1, BAND 2, BAND 5, BAND 8 E-UTRA: BAND 1, BAND 3, BAND 7, BAND 8, BAND 20 GSM: GSM900, GSM1800. WIFI: 2412MHz ~ 2472MHz
Modulation Type:	UTRA-FDD & E-UTRA: QPSK, 16QAM GSM: GMSK WIFI: DSSS, OFDM
Antenna Type:	External Antenna
Antenna Gain:	UTRA-FDD, E-UTRA & GSM:2dBi WIFI:2dBi
Power Supply:	Adapter: Model No.: SAW20-120-1500GD Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 12.0V, 1.5A, 18.0W

5.2 Description of Support Units

The EUT was test as an independent unit

5.3 Test Facility

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

- **FCC—Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files.

- **IC —Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-

anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.4 Test Location

All other tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China

Tel: 0755-27798480

Fax: 0755-27798960

5.5 Deviation from Standards

None

5.6 Other Information Requested by the Customer

None.

6 Test Instruments List

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 02 2020	July. 01 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 24 2021	June. 23 2022
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 24 2021	June. 23 2022
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 24 2021	June. 23 2022
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 24 2021	June. 23 2022
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 24 2021	June. 23 2022
9	Coaxial Cable	GTS	N/A	GTS211	June. 24 2021	June. 23 2022
10	Coaxial cable	GTS	N/A	GTS210	June. 24 2021	June. 23 2022
11	Coaxial Cable	GTS	N/A	GTS212	June. 24 2021	June. 23 2022
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 24 2021	June. 23 2022
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 24 2021	June. 23 2022
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 24 2021	June. 23 2022
15	Band filter	Amindeon	82346	GTS219	June. 24 2021	June. 23 2022
16	Power Meter	Anritsu	ML2495A	GTS540	June. 24 2021	June. 23 2022
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 24 2021	June. 23 2022
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 24 2021	June. 23 2022
19	Splitter	Agilent	11636B	GTS237	June. 24 2021	June. 23 2022
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 24 2021	June. 23 2022
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 18 2020	Oct. 17 2021
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 18 2020	Oct. 17 2021
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 18 2020	Oct. 17 2021
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 24 2021	June. 23 2022

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 24 2021	June. 23 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 24 2021	June. 23 2022
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 24 2021	June. 23 2022
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 24 2021	June. 23 2022
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 24 2021	June. 23 2022
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 24 2021	June. 23 2022
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 24 2021	June. 23 2022
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 24 2021	June. 23 2022

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 24 2021	June. 23 2022
2	Barometer	ChangChun	DYM3	GTS255	June. 24 2021	June. 23 2022

6.1 Radiated Spurious emissions

Test Requirement:	UTRA FDD & E-UTRA: ETSI EN 301 908-1 clause 4.2.2 GSM: EN301 511 section 4.2.16 WIFI: ETSI EN 300 328 clause 4.3.2.9 & 4.3.2.10																																	
Test Method:	UTRA FDD & E-UTRA: ETSI EN 301 908-1 clause 5.3.1 GSM: TS 151 010-1 clause 12.2.1 WIFI: ETSI EN 300 328 clause 5.4.9.2 & 5.4.10.2																																	
Receiver setup:	Below 1GHz :RBW=100KHz, VBW=30KHz, Detector= peak Above 1GHz :RBW=1MHz, VBW=3MHz,Detector=Peak																																	
Limit:	UTRA-FDD & E-UTRA & GSM																																	
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Frequency Range	Maximum power e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Bandwidth																																
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694 MHz to 1 GHz	-36 dBm	100 kHz																																
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Test mode:	Kept UE in Transmitting mode																																	
Test Instruments:	See section 6.0																																	
Test Frequency range:	30MHz to 12.75GHz																																	
Test setup:	Below 1GHz																																	

	<p style="text-align: center;">Above 1GHz</p>	
<p>Test procedure:</p>	<p>Substitution method was performed to determine the actual ERP emission levels of the EUT.</p> <p>The following test procedure as below:</p> <p>1>.Below 1GHz test procedure:</p> <ol style="list-style-type: none"> 1. On the test site as test setup graph above,the EUT shall be placed at the 1.5m support on the turntable and in the position closest to normal use as declared by the provider. 2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter.The output of the test antenna shall be connected to the measuring receiver. 3. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test. 4. The test antenna shall be raised and lowered from 1m to 4m until a maximum signal level is detected by the measuring receiver. Then the turntable should be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver. 5. Repeat step 4 for test frequency with the test antenna polarized horizontally. 6. Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At the lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground. 7. Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends vertically polarized, and with the signal 	

	<p>generator tuned to a particular test frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.</p> <p>8. Repeat step 7 with both antennas horizontally polarized for each test frequency.</p> <p>9. Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps 7 and 8 by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula: $\text{ERP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBd)}$ where: Pg is the generator output power into the substitution antenna.</p> <p>2>.Above 1GHz test procedure: Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber, and the test antenna do not need to raise from 1 to 4m, just test in 1.5m height.</p>
Measurement Record:	Uncertainty: 4.64dB

Measurement Data:

UTRA-FDD:

Traffic mode:

Band I

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
232.25	Vertical	-68.04	-36 dBm below 1GHz, -30 dBm above 1GHz.	Pass
591.36	V	-69.37		
4100.00	V	-64.21		
5865.00	V	-61.41		
7868.00	V	-63.56		
98.75	Horizontal	-69.81		
662.39	H	-73.99		
4100.00	H	-64.19		
5865.00	H	-63.87		
7868.00	H	-59.85		

Band VIII

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
183.27	Vertical	-71.82	-36 dBm below 1GHz, -30 dBm above 1GHz.	Pass
471.55	V	-67.99		
4414.00	V	-60.35		
6179.00	V	-60.03		
8182.00	V	-60.59		
99.58	Horizontal	-70.13		
622.36	H	-73.17		
4414.00	H	-60.33		
6179.00	H	-58.91		
8182.00	H	-61.08		

E-UTRA:

Normal link mode:

Band 1

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
165.25	Vertical	-75.89	-36 dBm below 1GHz, -30 dBm above 1GHz.	Pass
373.22	V	-74.19		
3900.00	V	-54.25		
5850.00	V	-53.35		
7800.00	V	-52.04		
98.62	Horizontal	-75.36		
688.55	H	-75.98		
3900.00	H	-51.75		
5850.00	H	-53.19		
7800.00	H	-51.78		

Band 3

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
156.58	Vertical	-76.80	-36 dBm below 1GHz, -30 dBm above 1GHz.	Pass
523.66	V	-71.16		
3495.00	V	-51.89		
5242.50	V	-54.56		
6990.00	V	-51.71		
170.43	Horizontal	-75.08		
525.55	H	-70.48		
3495.00	H	-58.55		
5242.50	H	-52.70		
6990.00	H	-51.48		

Band 7

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
122.45	Vertical	-75.20	-36 dBm below 1GHz, -30 dBm above 1GHz.	Pass
476.91	V	-78.06		
5070.00	V	-54.15		
7605.00	V	-52.12		
10140.00	V	-51.52		
77.21	Horizontal	-75.31		
520.91	H	-75.92		
5070.00	H	-52.72		
7605.00	H	-53.22		
10140.00	H	-50.11		

Band 8

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
123.84	Vertical	-76.98	-36 dBm below 1GHz, -30 dBm above 1GHz.	Pass
595.01	V	-72.48		
1795.00	V	-55.17		
1590.00	V	-52.91		
5385.00	V	-51.15		
121.66	Horizontal	-77.04		
535.24	H	-75.62		
1795.00	H	-52.77		
3590.00	H	-53.25		
5385.00	H	-51.60		

Band 20

Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
112.17	Vertical	-73.72	-36 dBm below 1GHz, -30 dBm above 1GHz.	Pass
326.98	V	-75.89		
1694.00	V	-53.84		
2541.00	V	-51.84		
4235.00	V	-51.43		
88.11	Horizontal	-75.27		
619.380	H	-75.85		
1694.00	H	-59.37		
2541.00	H	-53.69		
4235.00	H	-51.93		

GSM:

GSM 900 Band, Normal Voltage, Test channel 60				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
120.33	Vertical	-72.43	-36.00	Pass
539.26	V	-71.99	-36.00	
1804.00	V	-56.59	-30.00	
2707.00	V	-55.03	-30.00	
3415.00	V	-53.16	-30.00	
109.50	Horizontal	-74.04	-36.00	
766.20	H	-70.92	-36.00	
1804.00	H	-56.51	-30.00	
2707.00	H	-54.46	-30.00	
3610.00	H	-52.66	-30.00	

GSM 1800 Band: Normal Voltage, Test channel 700				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result
	polarization	Level(dBm)		
98.63	Vertical	-76.61	-36.00	Pass
565.39	V	-73.37	-36.00	
1280.00	V	-59.07	-30.00	
2580.00	V	-56.73	-30.00	
3600.00	V	-54.57	-30.00	
72.77	Horizontal	-75.76	-36.00	
725.65	H	-73.42	-36.00	
1280.00	H	-59.49	-30.00	
2580.00	H	-54.75	-30.00	
3600.00	H	-53.25	-30.00	

WIFI (Transmitting mode):

802.11b mode					
The lowest channel					
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result	
	polarization	Level(dBm)			
97.97	Vertical	-70.58	-54.00	Pass	
464.14	V	-67.02	-36.00		
4824.00	V	-42.83	-30.00		
7236.00	V	-45.55	-30.00		
9648.00	V	-42.20	-30.00		
12060.00	V	-43.02	-30.00		
180.50	Horizontal	-69.46	-54.00		
652.49	H	-64.91	-54.00		
4824.00	H	-45.03	-30.00		
7236.00	H	-45.74	-30.00		
9648.00	H	-42.38	-30.00		
12060.00	H	-44.35	-30.00		
The highest channel					
Frequency (MHz)	Spurious Emission		Limit (dBm)		Test Result
	polarization	Level(dBm)			
145.73	Vertical	-72.11	-36.00	Pass	
617.44	V	-63.34	-54.00		
4944.00	V	-43.25	-30.00		
7416.00	V	-45.06	-30.00		
9888.00	V	-43.84	-30.00		
12360.00	V	-43.23	-30.00		
257.65	Horizontal	-69.44	-36.00		
821.77	H	-62.39	-36.00		
4944.00	H	-44.48	-30.00		
7416.00	H	-45.52	-30.00		
9888.00	H	-43.46	-30.00		
12360.00	H	-43.81	-30.00		

802.11g mode					
The lowest channel					
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result	
	polarization	Level(dBm)			
103.67	Vertical	-71.51	-54.00	Pass	
381.79	V	-68.18	-36.00		
4824.00	V	-52.22	-30.00		
7236.00	V	-45.87	-30.00		
9648.00	V	-42.60	-30.00		
12060.00	V	-44.60	-30.00		
130.43	Horizontal	-69.63	-36.00		
710.44	H	-68.91	-36.00		
4824.00	H	-51.26	-30.00		
7236.00	H	-45.20	-30.00		
9648.00	H	-42.70	-30.00		
12060.00	H	-45.43	-30.00		
The highest channel					
Frequency (MHz)	Spurious Emission		Limit (dBm)		Test Result
	polarization	Level(dBm)			
159.18	Vertical	-70.69	-36.00	Pass	
972.23	V	-63.10	-36.00		
4944.00	V	-52.03	-30.00		
7416.00	V	-45.15	-30.00		
9888.00	V	-43.19	-30.00		
12360.00	V	-43.21	-30.00		
127.99	Horizontal	-70.02	-36.00		
780.67	H	-71.73	-36.00		
4944.00	H	-51.19	-30.00		
7416.00	H	-45.69	-30.00		
9888.00	H	-42.22	-30.00		
12360.00	H	-42.14	-30.00		

802.11n(HT20) mode					
The lowest channel					
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result	
	polarization	Level(dBm)			
199.68	Vertical	-69.92	-54.00	Pass	
779.58	V	-64.39	-36.00		
4824.00	V	-52.63	-30.00		
7236.00	V	-45.36	-30.00		
9648.00	V	-43.78	-30.00		
12060.00	V	-43.52	-30.00		
208.13	Horizontal	-70.17	-54.00		
724.33	H	-62.39	-36.00		
4824.00	H	-52.64	-30.00		
7236.00	H	-46.30	-30.00		
9648.00	H	-43.60	-30.00		
12060.00	H	-45.03	-30.00		
The highest channel					
Frequency (MHz)	Spurious Emission		Limit (dBm)		Test Result
	polarization	Level(dBm)			
289.18	Vertical	-69.29	-36.00	Pass	
913.99	V	-66.10	-36.00		
4944.00	V	-52.22	-30.00		
7416.00	V	-44.38	-30.00		
9888.00	V	-43.30	-30.00		
12360.00	V	-44.10	-30.00		
147.85	Horizontal	-72.19	-36.00		
888.33	H	-71.60	-36.00		
4944.00	H	-50.83	-30.00		
7416.00	H	-46.79	-30.00		
9888.00	H	-43.24	-30.00		
12360.00	H	-45.62	-30.00		

802.11n(HT40) mode					
The lowest channel					
Frequency (MHz)	Spurious Emission		Limit (dBm)	Test Result	
	polarization	Level(dBm)			
120.26	Vertical	-69.79	-36.00	Pass	
485.96	V	-60.55	-54.00		
4824.00	V	-52.41	-30.00		
7236.00	V	-45.64	-30.00		
9648.00	V	-43.18	-30.00		
12110.00	V	-45.10	-30.00		
157.87	Horizontal	-68.69	-36.00		
708.87	H	-63.62	-36.00		
4824.00	H	-52.12	-30.00		
7236.00	H	-45.79	-30.00		
9648.00	H	-42.35	-30.00		
12110.00	H	-45.03	-30.00		
The highest channel					
Frequency (MHz)	Spurious Emission		Limit (dBm)		Test Result
	polarization	Level(dBm)			
122.31	Vertical	-69.49	-36.00	Pass	
859.48	V	-62.43	-36.00		
4944.00	V	-52.21	-30.00		
7416.00	V	-46.02	-30.00		
9888.00	V	-42.49	-30.00		
12310.00	V	-44.99	-30.00		
198.47	Horizontal	-67.17	-54.00		
614.81	H	-64.25	-54.00		
4944.00	H	-50.35	-30.00		
7416.00	H	-46.40	-30.00		
9888.00	H	-44.19	-30.00		
12310.00	H	-46.08	-30.00		

7 Test Setup Photo

Reference to the **appendix I** for details.

8 EUT Constructional Details

Reference to the **appendix II** for details.

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