Test Lab
Cert 2951.01

TEST REPORT

Applicant	MEDIALINK PRODUCTS LLC
Address	1951 OLD CUTHBERT RD., STE 301 CHERRY HILL, NJ 08034-1411

Manufacturer or Supplier	Tranwo Technology Corp.
Address	No.236, Sec. 3, Huanbei Rd., Jubei City, Hsinchu County 30265, Taiwan
Product	TRAVEL WI-FI ROUTER
Brand Name	MEDIALINK
Model	MWN-TR150N
Additional Model & Model Difference	N/A
Date of tests	May 24 ~ Jun. 19, 2013

The submitted sample of the above equipment has been tested for according to the requirements of the following standards:

☒ **FCC Part 15, Subpart B, Class B**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Breeze Jiang Project Engineer / EMC Department	Approved by Madison Luo Supervisor/ EMC Department
	 Date: Mar. 31, 2014

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FV140319N033	Original release	Mar. 31, 2014

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1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD			
Standard Section	**Test Item**	**Result**	**Remark**
FCC Part 15 Subpart B Class B	Conducted Emission Test	PASS	Meets Class B Limit Minimum passing margin is -3.93dB at 2.82444MHz
	Radiated Emission Test (30MHz ~ 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -4.63dB at 55.22MHz
	Radiated Emission Test (Above 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -8.10dB at 3587.00MHz

1.1 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:

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz ~ 30MHz	+/-2.67 dB
Radiated emissions	30MHz ~ 1GHz	+/-4.12 dB
	Above 1GHz	+/-4.30 dB

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	TRAVEL WI-FI ROUTER
MODEL NO.	MWN-TR150N
POWER SUPPLY	Input: AC 120V/60Hz
DATA CABLE SUPPLIED	N/A
THE HIGHEST OPERATING FREQUENCY	2.462 GHz

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2. For the test results, the EUT had been tested with all conditions. But only the worst case was showed in test report.

3. Please refer to the EUT photo document (Reference No.:140319N033) for detailed product photo.

2.2 DESCRIPTION OF TEST MODES

The EUT was tested under the **WiFi Link Data Transmitting** mode for all tests.

2.3 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.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook PC	Lenovo	E430	MP-0DN27	N/A

NO.	CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.5m, DC Line: Unshielded, Undetachable 1.5m.

3 EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107)

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

NOTES: (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 a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU 26	100005	May 14,13	May 13,14
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	May 14,13	May 13,14
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	May 14,13	May 13,14
Test software	ADT	ADT_Cond _V7.3.7	N/A	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA and NIM/CHINA.
2. The test was performed in Shielding Room 553.

3.1.3 TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4:2009(section 7).

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

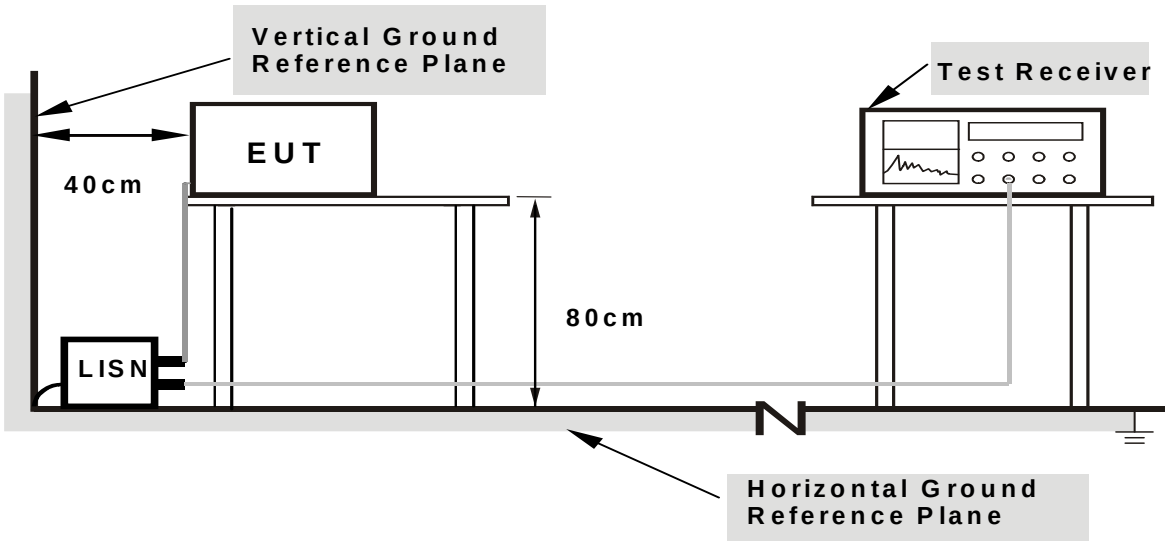
NOTE:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.

3.1.6 EUT OPERATING CONDITIONS

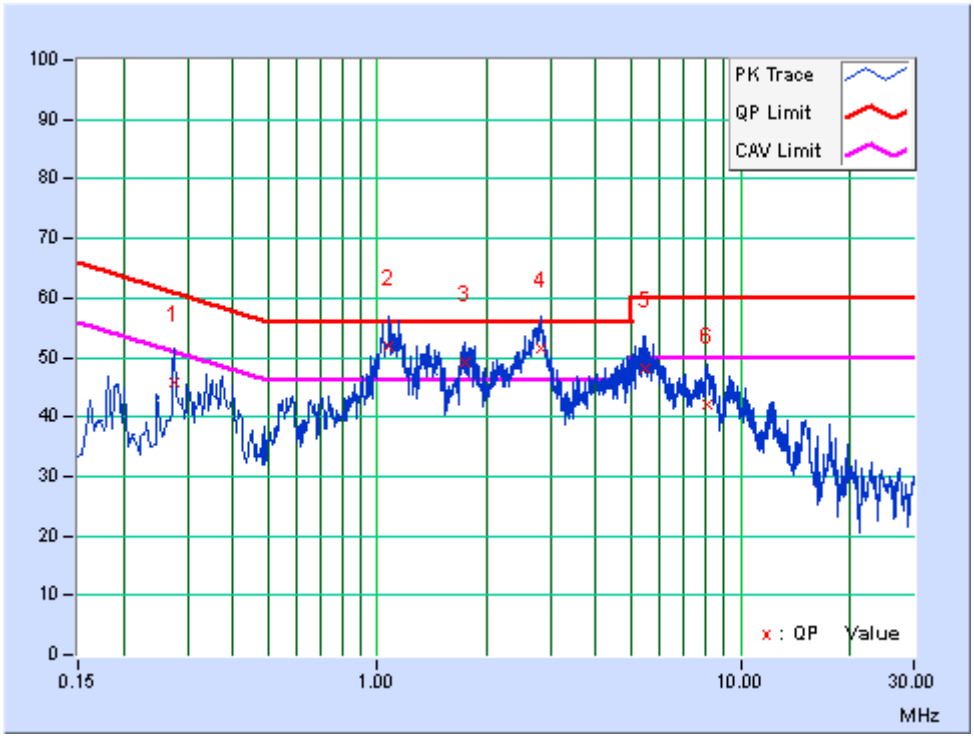
a. Turned on the power of all equipment.
b. EUT was operated according to the type description in manufacturer's specifications or the User's Manual.

3.1.7 TEST RESULTS

TEST MODE	WiFi Link Data Transmitting	**6DB BANDWIDTH**	9 kHz
TEST VOLTAGE	AC 120V/60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	26deg. C, 59% RH	**TESTED BY**	BIN

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.27512	10.44	35.21	24.44	45.65	34.88	60.96	50.96	-15.31	-16.08
2	1.08058	9.99	41.91	30.80	51.90	40.79	56.00	46.00	-4.10	-5.21
3	1.73339	9.93	39.06	28.32	48.99	38.25	56.00	46.00	-7.01	-7.75
4	**2.82444**	**9.91**	**41.47**	**32.16**	**51.38**	**42.07**	**56.00**	**46.00**	**-4.62**	**-3.93**
5	5.43632	9.95	38.14	19.44	48.09	29.39	60.00	50.00	-11.91	-20.61
6	8.09903	10.01	32.11	16.18	42.12	26.19	60.00	50.00	-17.88	-23.81

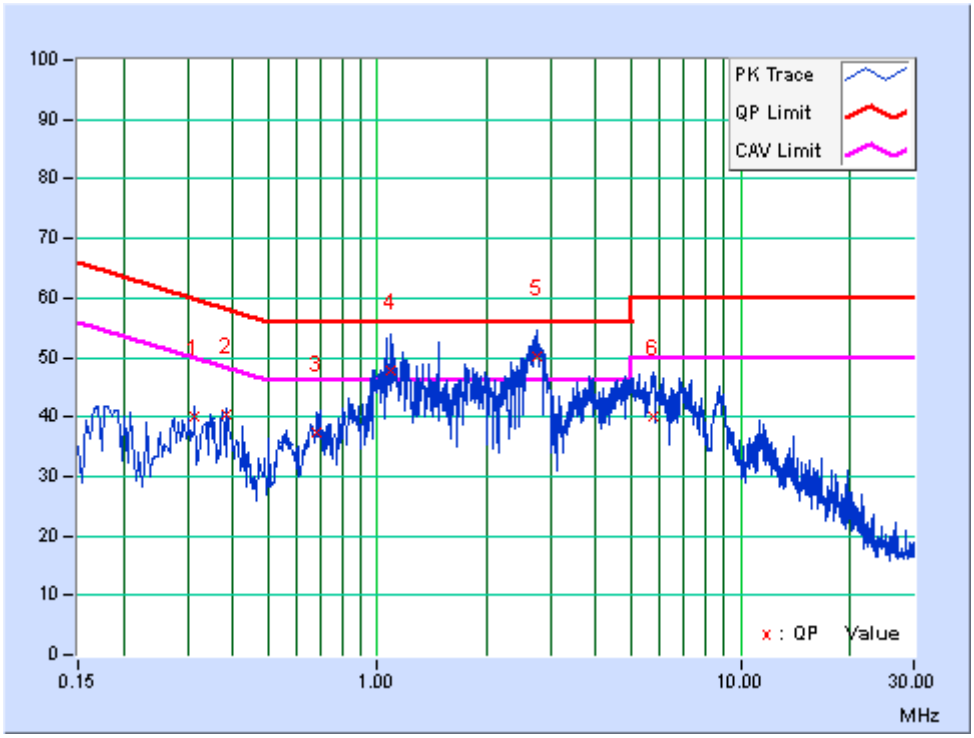
REMARKS: The emission levels of other frequencies were very low against the limit.



TEST MODE	WiFi Link Data Transmitting	**6DB BANDWIDTH**	9 kHz
TEST VOLTAGE	AC 120V/60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	26deg. C, 59% RH	**TESTED BY**	BIN

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.31422	10.47	29.54	16.17	40.01	26.64	59.86	49.86	-19.85	-23.22
2	0.38460	10.46	29.84	15.87	40.30	26.33	58.18	48.18	-17.88	-21.85
3	0.68204	10.13	27.14	14.58	37.27	24.71	56.00	46.00	-18.73	-21.29
4	1.08840	9.85	38.07	25.85	47.92	35.70	56.00	46.00	-8.08	-10.30
5	2.75015	9.70	40.61	27.19	50.31	36.89	56.00	46.00	-5.69	-9.11
6	5.73348	9.84	30.12	17.54	39.96	27.38	60.00	50.00	-20.04	-22.62

REMARKS: The emission levels of other frequencies were very low against the limit.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.109)

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
30 – 88	90	39.1	100	40.0
88 – 216	150	43.5	150	43.5
216 – 960	210	46.4	200	46.0
960 – 1000	300	49.5	500	54.0

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B, FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

Note: (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.2.2 TEST INSTRUMENTS

FOR FREQUENCY BELOW 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESVS10	841431/004	May 19,13	May 18,14
Bilog Antenna	Teseq	CBL 6111D	30643	Jul. 27, 13	Jul. 26, 14
EMI Test Receiver	Rohde&Schwarz	ESPI	100302	May 19,13	May 18,14
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Mar. 24,14	Mar. 23,15
Signal Amplifier	Agilent	8447D	2944A10488	N/A	N/A
Test software	ADT	ADT_Radiated _V7.5.14	N/A	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in Chamber 966.
3. The FCC Site Registration No. is 494399.

FOR FREQUENCY ABOVE 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	ETS-Lindgren	3117	00062558	Oct. 18,12	Oct. 17,14
Spectrum Analyzer	Agilent	E4446A	MY46180622	April 24,13	April 23,14
Spectrum Analyzer (9KHz-25GHz)	Agilent	E7405A	MY45118807	May 14,13	May 13,14
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 14,13	May 13,14
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,13	Nov. 03,14
Test Software	ADT	ADT_Radiated _V7.6.15.9.2	N/A	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in 10m Chamber.
3. The FCC Site Registration No. is 502831

3.2.3 TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4:2009 (section 12).

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters Semi-anechoic 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 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.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

NOTE:

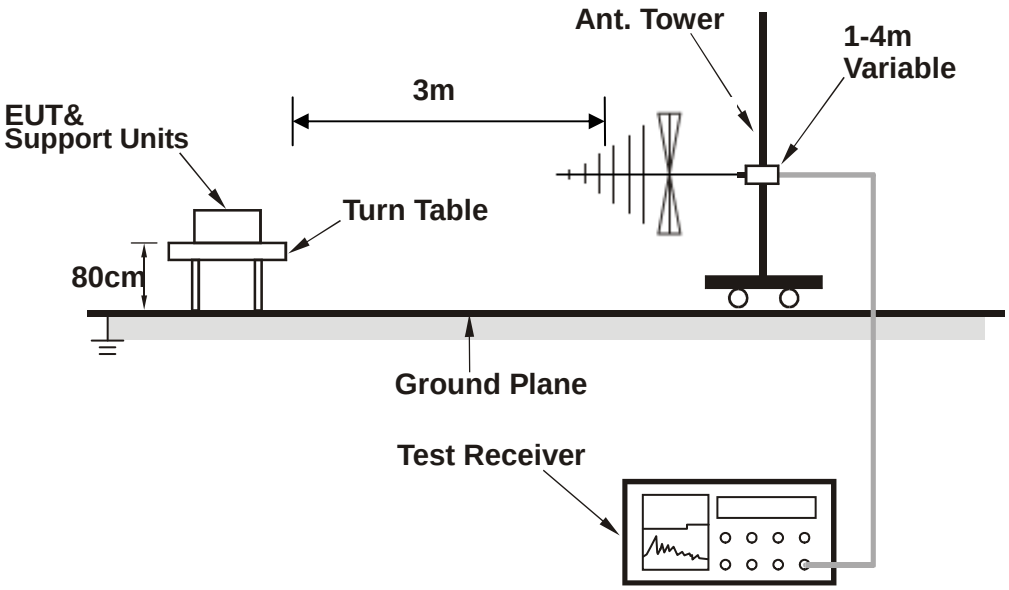
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the receiver antenna.
4. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
5. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
6. Margin value = Emission level – Limit value.

3.2.4 DEVIATION FROM TEST STANDARD

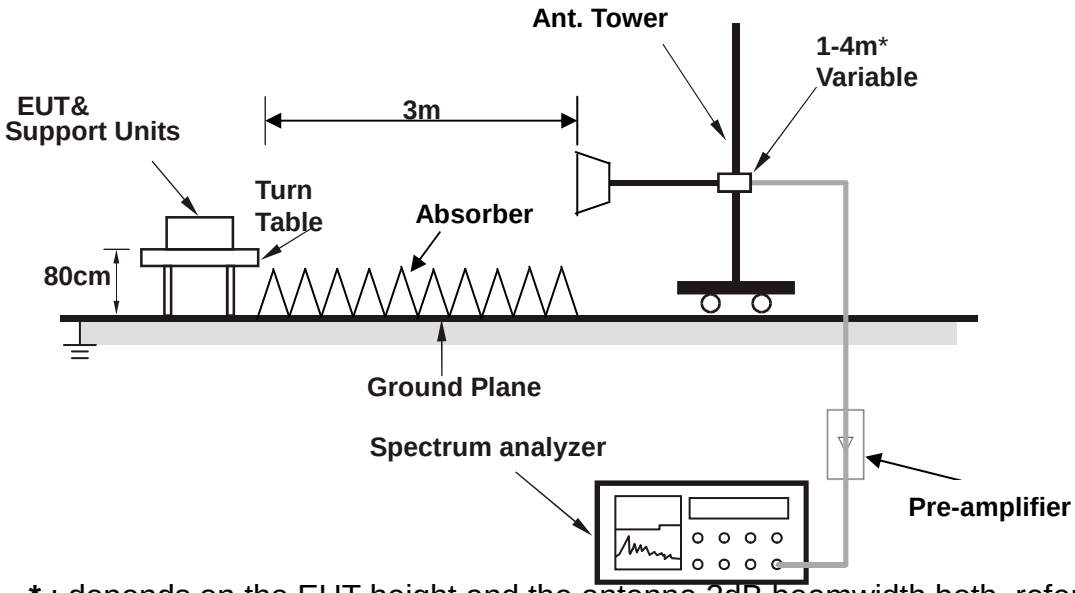
No deviation

3.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



***** : depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

3.2.6 EUT OPERATING CONDITIONS

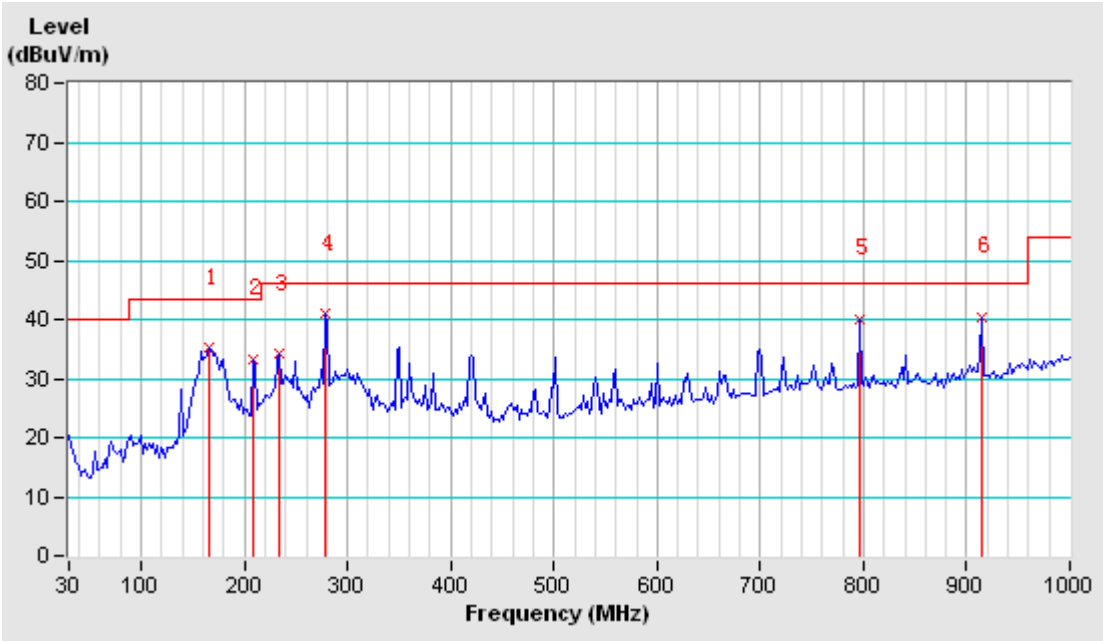
Same as item 3.1.6.

3.2.7 TEST RESULTS

TEST MODE	WiFi Link Data Transmitting	**FREQUENCY RANGE**	30-1000MHz
TEST VOLTAGE	AC 120V/60Hz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 52% RH	**TESTED BY**: Robert	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	165.80	12.16	22.98	35.14	43.50	-8.36	111	184
2	208.48	10.35	22.86	33.21	43.50	-10.29	165	105
3	233.70	12.31	21.84	34.15	46.00	-11.85	142	138
4	278.32	15.31	25.59	40.90	46.00	-5.10	159	0
5	796.30	27.25	12.74	39.99	46.00	-6.01	190	67
6	914.64	29.54	10.93	40.47	46.00	-5.53	218	25

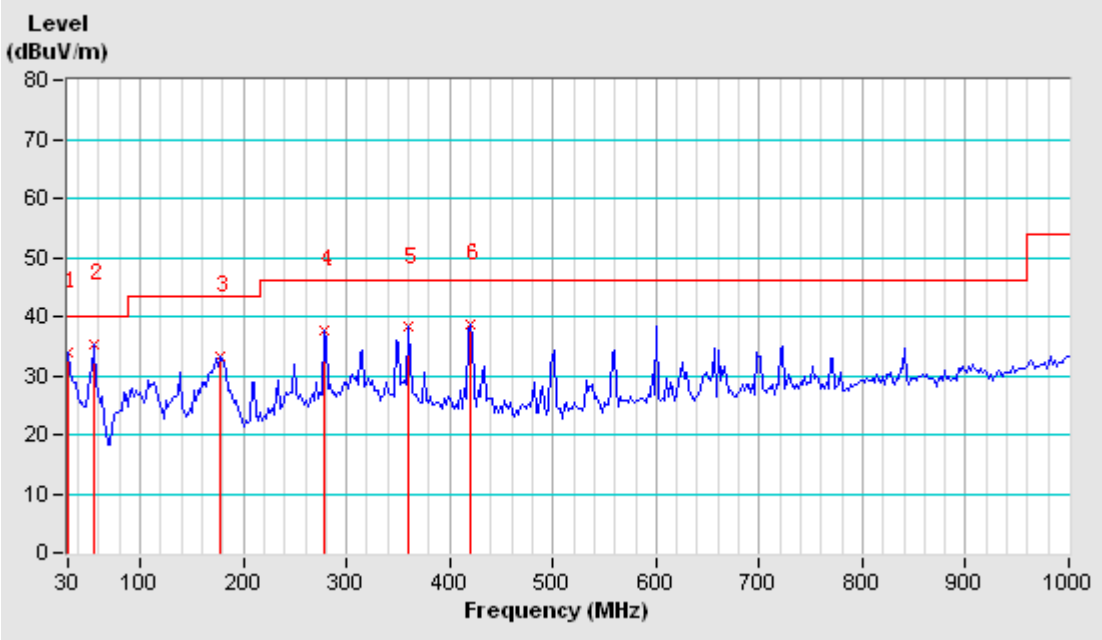
REMARKS: The emission levels of other frequencies were very low against the limit.



TEST MODE	WiFi Link Data Transmitting	**FREQUENCY RANGE**	30-1000MHz
TEST VOLTAGE	AC 120V/60Hz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 52% RH	**TESTED BY**: Robert	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	30.00	18.88	15.09	33.97	40.00	-6.03	100	210
2	**55.22**	**7.50**	**27.87**	**35.37**	**40.00**	**-4.63**	**100**	**0**
3	177.44	11.15	22.15	33.30	43.50	-10.20	100	167
4	278.32	15.31	22.47	37.78	46.00	-8.22	127	99
5	359.80	17.44	20.70	38.14	46.00	-7.86	106	130
6	419.94	20.16	18.44	38.60	46.00	-7.40	148	67

REMARKS: The emission levels of other frequencies were very low against the limit.



TEST MODE	WiFi Link Data Transmitting	FREQUENCY RANGE	Above 1 GHz
TEST VOLTAGE	AC 120V/60Hz	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Peak,Average,1MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 59% RH	TESTED BY: yuqiang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	2468.00 PK	37.38	11.32	48.70	74.00	-25.30	100	175
2	2468.00 AV	37.38	1.21	38.59	54.00	-15.41	100	175
3	3149.00 PK	38.81	12.79	51.60	74.00	-22.40	100	223
4	3149.00 AV	38.81	2.99	41.80	54.00	-12.20	100	223
5	3587.00 PK	39.47	15.13	54.60	74.00	-19.40	100	358
6	**3587.00** AV	**39.47**	**6.43**	**45.90**	**54.00**	**-8.10**	**100**	**358**

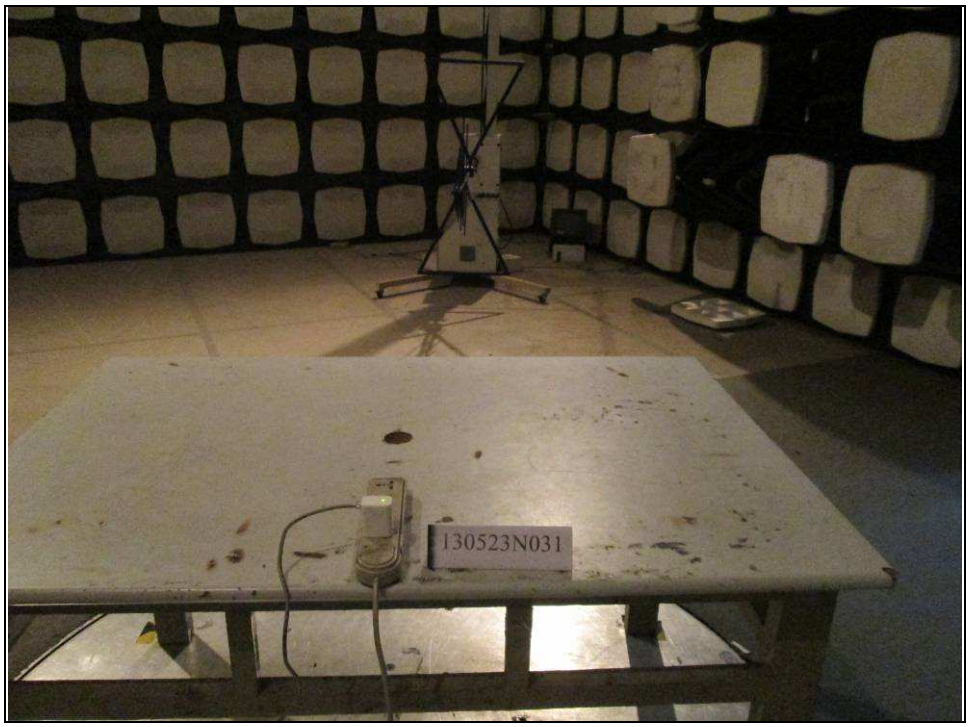
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	2795.00 PK	38.14	10.55	48.69	74.00	-25.31	104	157
2	2795.00 AV	38.14	1.64	39.78	54.00	-14.22	104	157
3	3157.00 PK	38.82	12.58	51.40	74.00	-22.60	110	341
4	3157.00 AV	38.82	3.33	42.15	54.00	-11.85	110	341
5	3428.00 PK	39.17	14.53	53.70	74.00	-20.30	100	120
6	3428.00 AV	39.17	5.33	44.50	54.00	-9.50	100	120

REMARKS: The emission levels of other frequencies were very low against the limit.

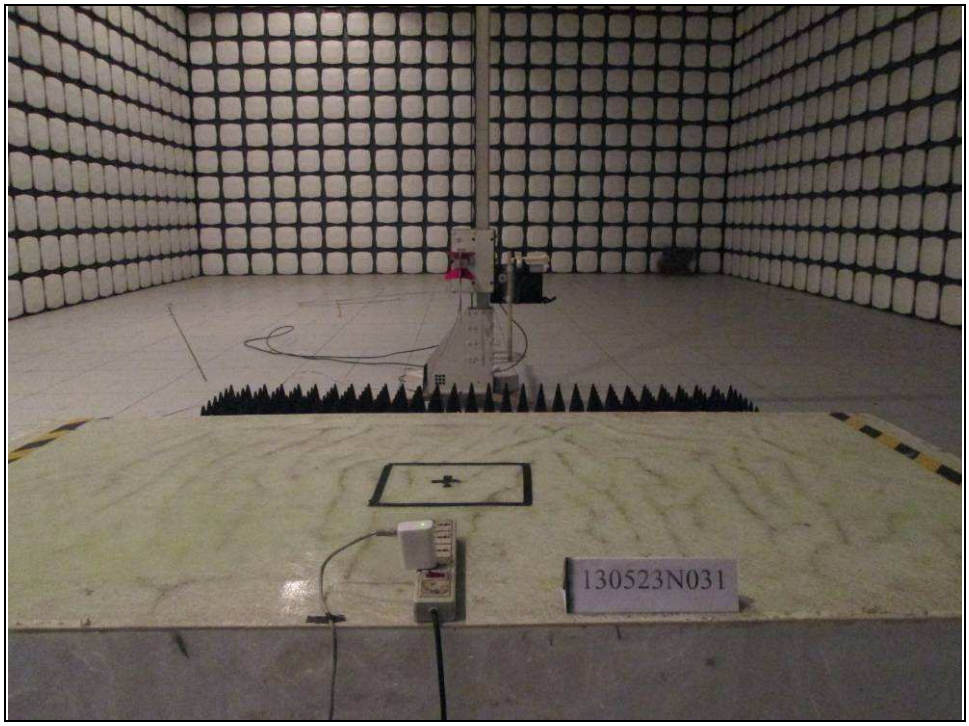
4 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

RADIATED EMISSION TEST< 30MHz~1GHz>



RADIATED EMISSION TEST< Above 1GHz>



5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

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