Shenzhen CTL Testing Technology Co., Ltd.
Tel: +86-755-89486194 Fax: +86-755-26636041

FCC PART 15 SUBPART C TEST REPORT

FCC Part 15 Subpart B

Report Reference No.: **CTL1507031826-WF-12**

Compiled by: (position+printed name+signature)	Jacky Chen (File administrators)	Jacky chen
Tested by: (position+printed name+signature)	Allen Wang (Test Engineer)	Allen Wang
Approved by: (position+printed name+signature)	Tracy Qi (Manager)	Tracy Qi

Product Name.....:	LTE WiFi Router
Model/Type reference.....:	T-N100
List Model(s).....:	/
Trade Mark.......:	/
FCC ID.....:	**XYOT-N100**
Applicant's name.....:	**Asiatelco Technologies Co.**
Address of applicant......:	#289 Bisheng Road, Building-8, 3F, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China
Test Firm.....:	**Shenzhen CTL Testing Technology Co., Ltd.**
Address of Test Firm.....:	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Test specification.....:	
Standard.....:	**47 CFR FCC Part 15 Subpart B - Unintentional Radiators ANSI C63.4: 2009**
TRF Originator……..:	Shenzhen CTL Testing Technology Co., Ltd.
Master TRF……:	Dated 2011-01
Date of Receipt.....:	July 05, 2015
Date of Test Date.....:	July 07, 2015 - July 14, 2015
Data of Issue.....:	July 16, 2015
Result.......:	Positive

TEST REPORT

Test Report No. :	CTL1507031826-WF-12	July 16, 2015 Date of issue

Equipment under Test	:	LTE WiFi Router
Model /Type	:	T-N100
Listed Models	:	/
Applicant	:	**Asiatelco Technologies Co.**
Address	:	#289 Bisheng Road, Building-8, 3F, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China
Manufacturer	:	**Asiatelco Technologies Co.**
Address	:	#289 Bisheng Road, Building-8, 3F, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China

Test result	**Pass ***

* In the configuration tested, the EUT complied with the standards specified page 5.

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

** Modifited History **

Version	Description	Issued Data	Report No.	Remark
Version 1.0	Initial Test Report Release	2015-07-16	CTL1507031826-WF-12	Tracy Qi

Table of Contents Page

1. SUMMARY 5

1.1. TEST STANDARDS 5
1.2. TEST DESCRIPTION 5
1.3. TEST FACILITY 6
1.4. STATEMENT OF THE MEASUREMENT UNCERTAINTY 6

2. GENERAL INFORMATION 7

2.1. ENVIRONMENTAL CONDITIONS 7
2.2. GENERAL DESCRIPTION OF EUT 7
2.3. TEST CONFIGURATION 8
2.4. DESCRIPTION OF TEST MODES 8
2.5. EQUIPMENTS USED DURING THE TEST 9
2.6. RELATED SUBMITTAL(S) / GRANT (S) 9
2.7. MODIFICATIONS 9

3. TEST CONDITIONS AND RESULTS 10

3.1. CONDUCTED EMISSIONS TEST 10
3.2. RADIATED EMISSION 13

4. TEST SETUP PHOTOS OF THE EUT 17

5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT 18

1. SUMMARY

1.1. TEST STANDARDS

The tests were performed according to following standards:
47 CFR FCC Part 15 Subpart B - Unintentional Radiators
ANSI C63.4: 2009 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

1.2. Test Description

Emission Measurement requirements		
Radiated Emission	Part15.109	PASS
Conducted Disturbance	Part15.107	PASS

1.3. Test Facility

1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

1.3.2 Laboratory accreditation

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

IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B on November 13, 2013.

FCC-Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. 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 970318, December 19, 2013.

1.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Measurement Uncertainty	Notes
Transmitter power conducted	±0.57 dB	(1)
Transmitter power Radiated	±2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	±2.20 dB	(1)
Occupied Bandwidth	±0.01ppm	(1)
Radiated Emission 30~1000MHz	±4.10dB	(1)
Radiated Emission Above 1GHz	±4.32dB	(1)
Conducted Disturbance0.15~30MHz	±3.20dB	(1)

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

2. GENERAL INFORMATION

2.1. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2. General Description of EUT

Product Name:	LTE WiFi Router
Model/Type reference:	T-N100
Power supply:	DC 3.7V from battery or DC 12V from adapter
Serial number:	Prototype
Adapter information:	Model:C1000 Input: 100-240V, 50/60Hz 0.45A Output:12V⎓1.0A
Hardware version:	725-0335-001-01
Software version:	V1.1
WIFI	
Supported type:	802.11b/802.11g/802.11n(H20)/802.11n(H40)
Modulation:	802.11b: DSSS 802.11g/802.11n(H20)/802.11n(H40): OFDM
Operation frequency:	802.11b/802.11g/802.11n(H20): 2412MHz~2462MHz 802.11n(H40): 2422MHz~2452MHz
Channel number:	802.11b/802.11g/802.11n(H20): 11 802.11n(H40): 7
Channel separation:	5MHz
Antenna type:	PCB Antenna : 2*TX 2*RX
Antenna gain:	2.0dBi
3G	
Operation Band:	BC0 TX: 824.70 MHz ~ 848.31 MHz BC1 TX:1851.25 MHz ~ 1908.75 MHz
	BC0 RX: 869.70 MHz ~ 893.31 MHz BC1 RX: 1931.25 MHz ~ 1988.75 MHz
Supported Type:	CDMA2000 1xRTT/ CDMA2000 1xEv-DO-Release 0/ CDMA2000 1xEv-DO-Revision A
Modulation Type:	QPSK
Antenna Type:	External omni-antenna: 1*TX 2*RX
Antenna Gain:	2dBi
LTE	
Operation Band:	TD-LTE: Band 41 FDD-LTE: Band 2/4/5/12/13/25/26
Modulation Type:	QPSK, 16QAM
Release Version:	Release 9
Category:	Cat 3
Antenna Type:	External Omni-antenna: 1*TX 2*RX
Antenna gain:	2.0dBi

Note: For more details, refer to the user's manual of the EUT.

2.3. Test Configuration

Peripheral during Testing

No.	Product	Manufacturer	Model	Certification	Remark
1	Notebook	Dell	H57	FCC ID/DOC	
2	Ethernet cable	--	--	-	1.5m

2.4. Description of Test Modes

EUT operation at normal function, one of each type of functional port of the EUT connected to peripheral device.

2.5. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2015/06/02	2016/06/01
EMI Test Receiver	R&S	ESCI	103710	2015/06/02	2016/06/01
Spectrum Analyzer	Agilent	E4407B	MY41440676	2015/05/21	2016/05/20
Power Meter	Anritsu	ML2487B	110553	2015/06/02	2016/06/01
Power Sensor	Anritsu	MA2411B	100345	2015/05/21	2016/05/20
Controller	EM Electronics	Controller EM 1000	N/A	2015/05/21	2016/05/20
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2015/05/19	2016/05/18
Active Loop Antenna	SCHWARZBECK	FMZB1519	1519-037	2015/05/19	2016/05/18
LISN	R&S	ENV216	3560.6550.12	2015/06/02	2016/06/01
LISN	R&S	ESH2-Z5	860014/010	2015/06/02	2016/06/01
Amplifier	Agilent	8349B	3008A02306	2015/05/19	2016/05/18
Amplifier	Agilent	8447D	2944A10176	2015/05/19	2016/05/18
Transient Limiter	SCHWARZCECK	VTSD 9561F	9666	2015/06/02	2016/06/01
Temperature/Humidity Meter	Gangxing	CTH-608	02	2015/05/20	2016/05/19

The calibration interval was one year

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: XYOT-N100 filing to comply with FCC Part 15, Subpart B Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST CONDITIONS AND RESULTS

3.1. Conducted Emissions Test

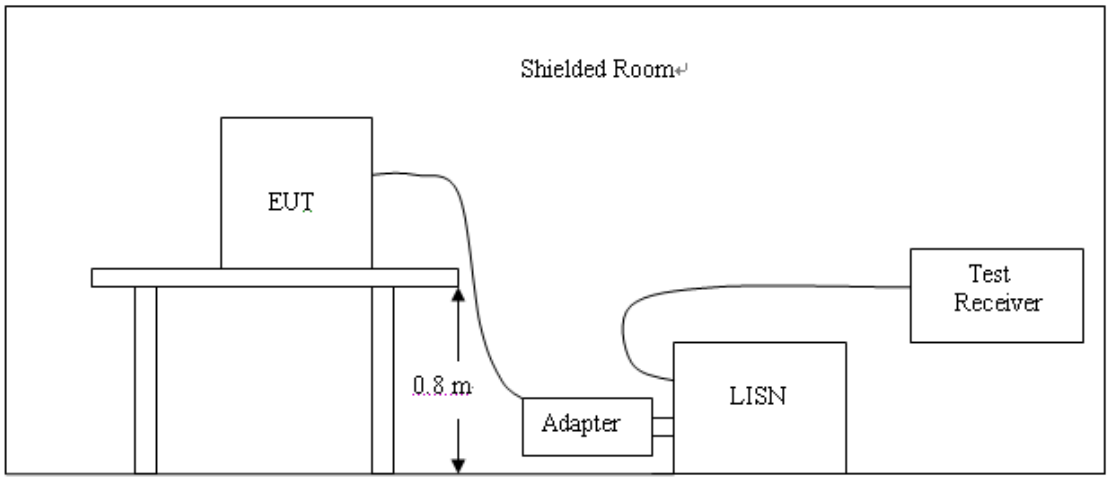
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION

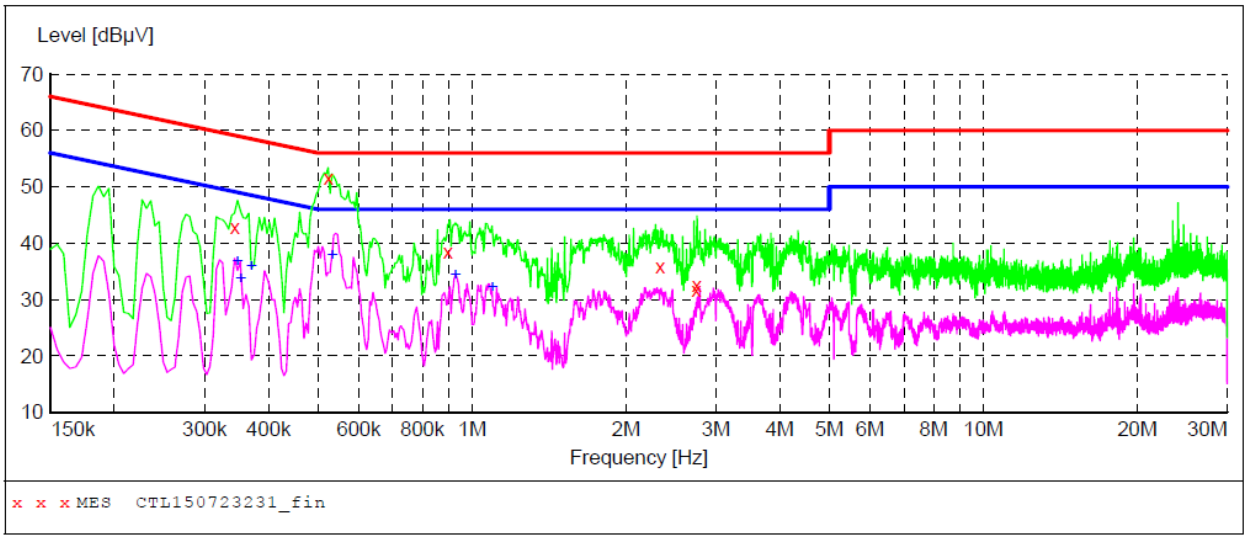


TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. 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.
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 adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. 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.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST RESULTS

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL150723231_fin"

7/23/2015 10:23AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.343501	42.90	10.2	59	16.2	QP	L1	GND
0.523501	51.50	10.2	56	4.5	QP	L1	GND
0.897001	38.50	10.2	56	17.5	QP	L1	GND
2.332501	35.80	10.4	56	20.2	QP	L1	GND
2.746501	31.60	10.4	56	24.4	QP	L1	GND
2.751001	32.60	10.4	56	23.4	QP	L1	GND

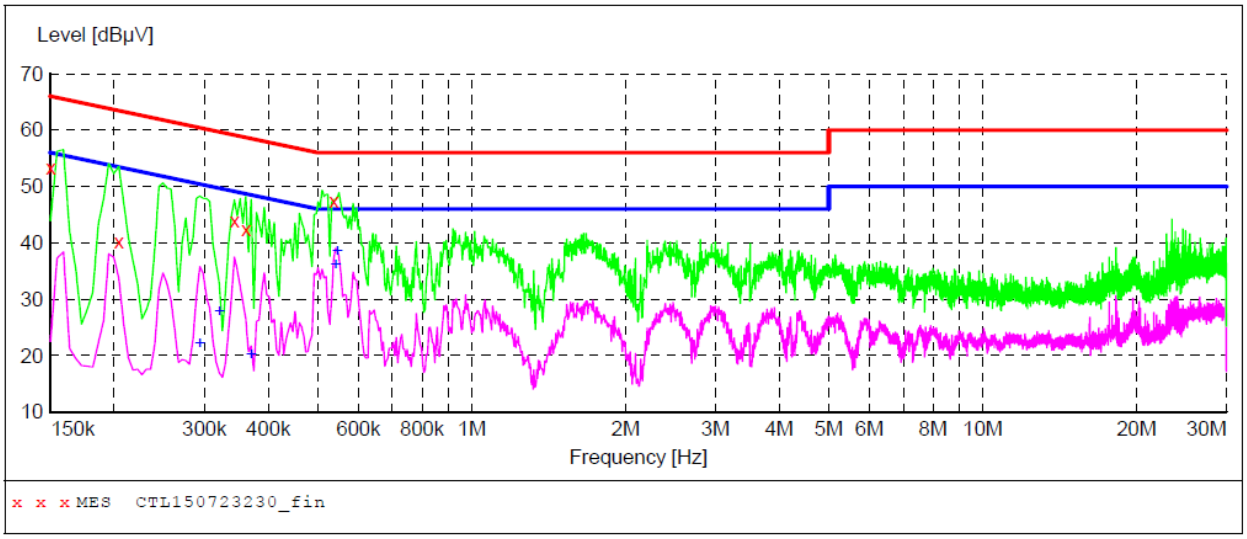
MEASUREMENT RESULT: "CTL150723231_fin2"

7/23/2015 10:23AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.348001	36.80	10.2	49	12.2	AV	L1	GND
0.352501	33.60	10.2	49	15.3	AV	L1	GND
0.370501	35.80	10.2	49	12.7	AV	L1	GND
0.532501	37.90	10.2	46	8.1	AV	L1	GND
0.928501	34.20	10.3	46	11.8	AV	L1	GND
1.095001	32.20	10.3	46	13.8	AV	L1	GND

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL150723230_fin"

7/23/2015 10:18AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150001	53.30	10.2	66	12.7	QP	N	GND
0.204001	40.30	10.2	63	23.1	QP	N	GND
0.343501	43.90	10.2	59	15.2	QP	N	GND
0.361501	42.30	10.2	59	16.4	QP	N	GND
0.537001	47.40	10.2	56	8.6	QP	N	GND

MEASUREMENT RESULT: "CTL150723230_fin2"

7/23/2015 10:18AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.294001	22.20	10.2	50	28.2	AV	N	GND
0.321001	27.70	10.2	50	22.0	AV	N	GND
0.370501	20.10	10.2	49	28.4	AV	N	GND
0.541501	36.10	10.2	46	9.9	AV	N	GND
0.546001	38.50	10.2	46	7.5	AV	N	GND

3.2. Radiated Emission

LIMITS

LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (at 3m) dBuV/m		Class B (at 3m) dBuV/m	
	Peak	Avg	Peak	Avg
Above 1000	80	60	74	54

Notes:

1) The limit for radiated test was performed according to as following: CISPR 22/ FCC PART 15B /ICES-003.
2) The tighter limit applies at the band edges.
3) Emission level (dBuV/m)=20log Emission level (uV/m).

TEST PROCEDURE

a) The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

b) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

c) The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

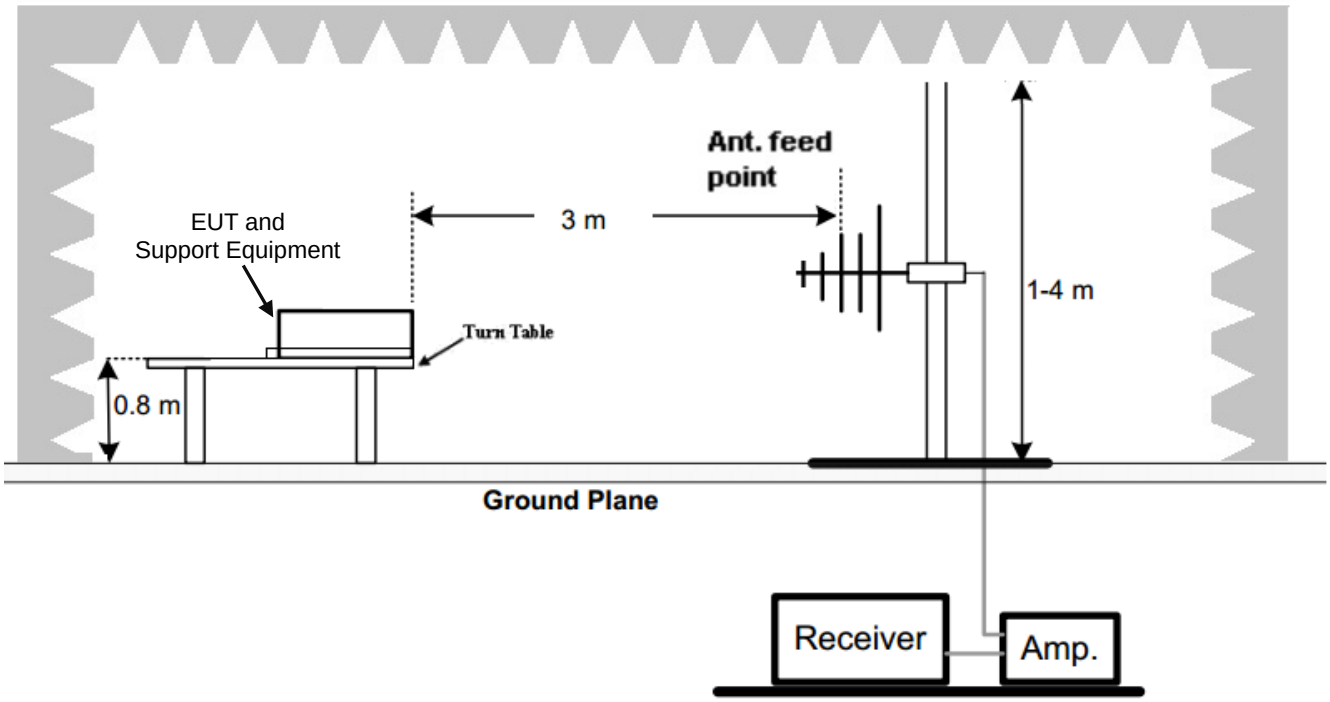
d) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.

e) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP (AV) Limits and then no additional QP Mode measurement performed.

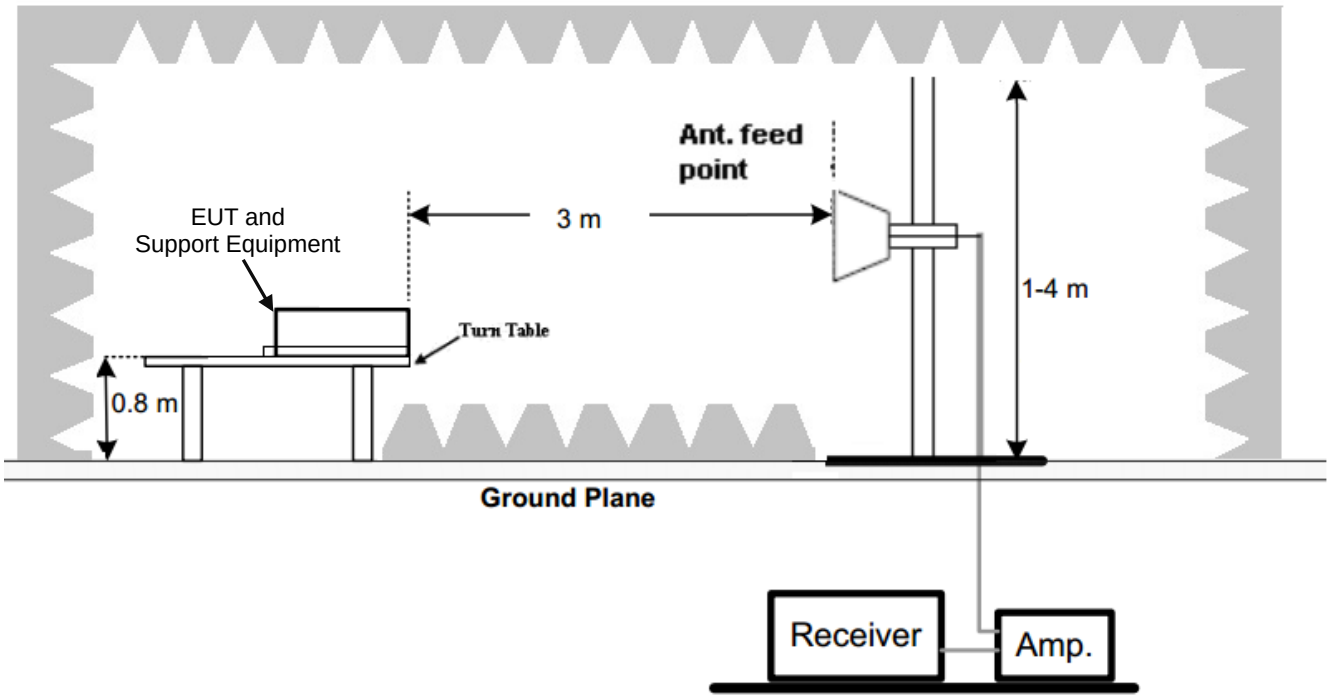
f) For the actual test configuration, please refer to the related Item –EUT Test Photos.

TEST SETUP

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



(B) Radiated Emission Test Set-UP Frequency above 1GHz

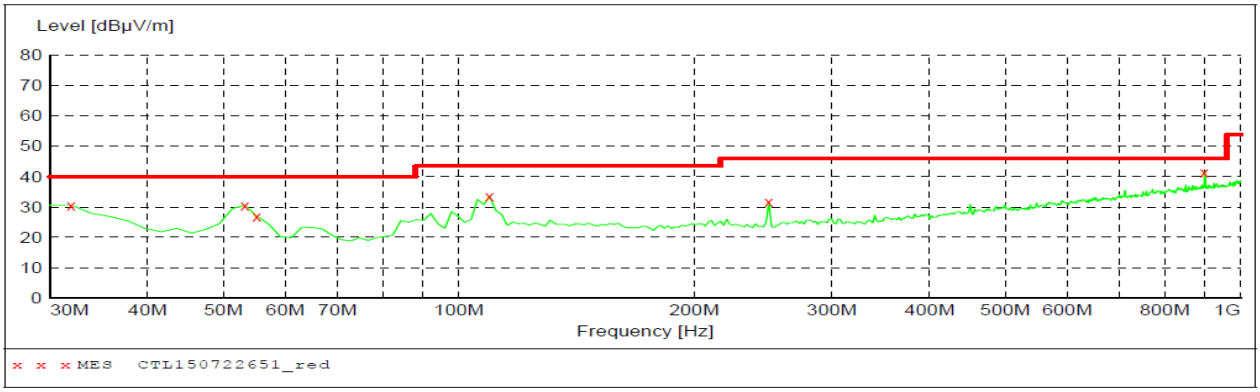


TEST RESULTS

Polarization:	Horizontal

SWEEP TABLE: "test (30M-1G)"

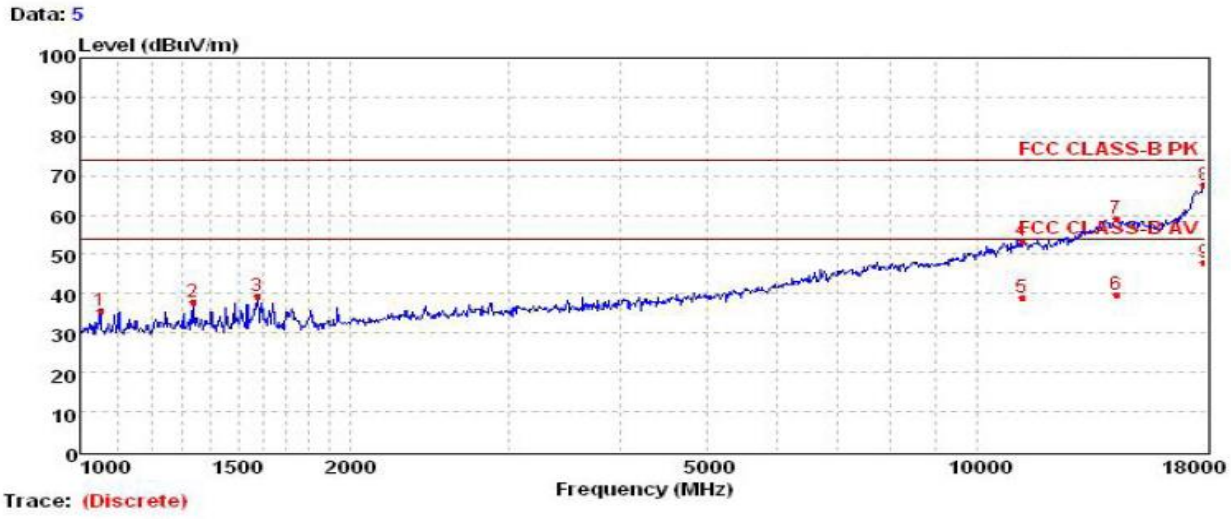
Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



MEASUREMENT RESULT: "CTL150722651_red"

7/22/2015 8:47PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
31.940000	30.60	19.6	40.0	9.4	---	0.0	0.00	HORIZONTAL
53.280000	30.50	8.3	40.0	9.5	---	0.0	0.00	HORIZONTAL
55.220000	26.90	8.3	40.0	13.1	---	0.0	0.00	HORIZONTAL
109.540000	33.60	13.7	43.5	9.9	---	0.0	0.00	HORIZONTAL
249.220000	31.70	14.1	46.0	14.3	---	0.0	0.00	HORIZONTAL
899.120000	41.40	26.1	46.0	4.6	---	0.0	0.00	HORIZONTAL



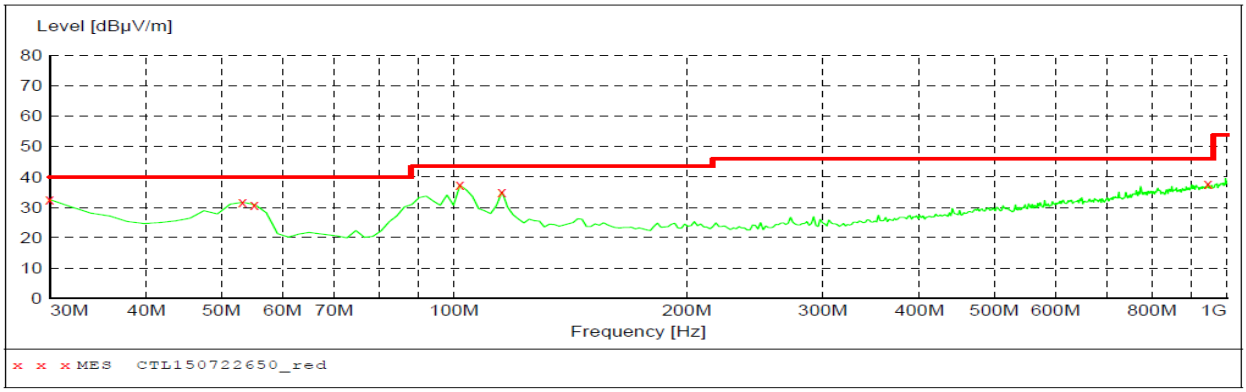
Mark	Frequency MHz	Level dBuV/m	Factor dB/m	Reading dBuV	Limit dBuV/m	Margin dB	Polarization	Detector
1	1053.40	35.71	-15.65	51.36	74.00	38.29	HORIZONTAL	Peak
2	1335.14	38.00	-14.90	52.90	74.00	36.00	HORIZONTAL	Peak
3	1574.27	39.25	-14.73	53.98	74.00	34.75	HORIZONTAL	Peak
4	11237.33	53.60	6.35	47.25	74.00	20.40	HORIZONTAL	Peak
5	11237.33	39.04	6.35	32.69	54.00	14.96	HORIZONTAL	Average
6	14325.37	39.63	13.48	26.15	54.00	14.37	HORIZONTAL	Average
7	14325.37	59.10	13.48	45.62	74.00	14.90	HORIZONTAL	Peak
8	17948.05	67.71	23.57	44.14	74.00	6.29	HORIZONTAL	Peak
9	17948.05	47.95	23.57	24.38	54.00	6.05	HORIZONTAL	Average

Note: 18GHz-25GHz was not recorded for its signal was very low against the limit.

Polarization:	Vertical

SWEEP TABLE: "test (30M-1G)"

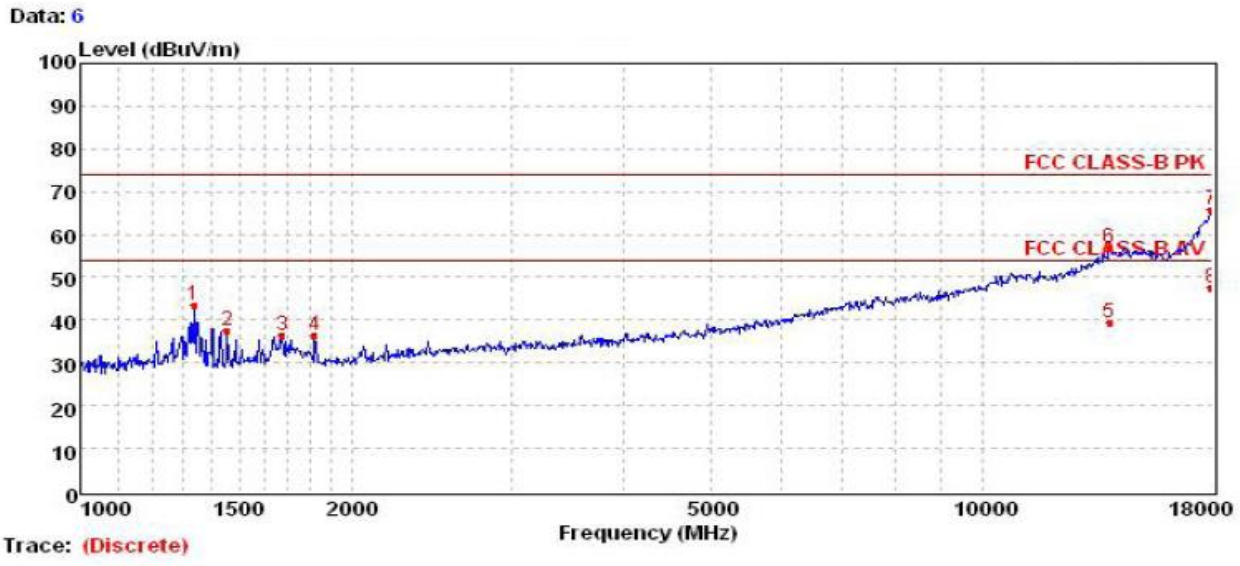
Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



MEASUREMENT RESULT: "CTL150722650_red"

7/22/2015 8:41PM

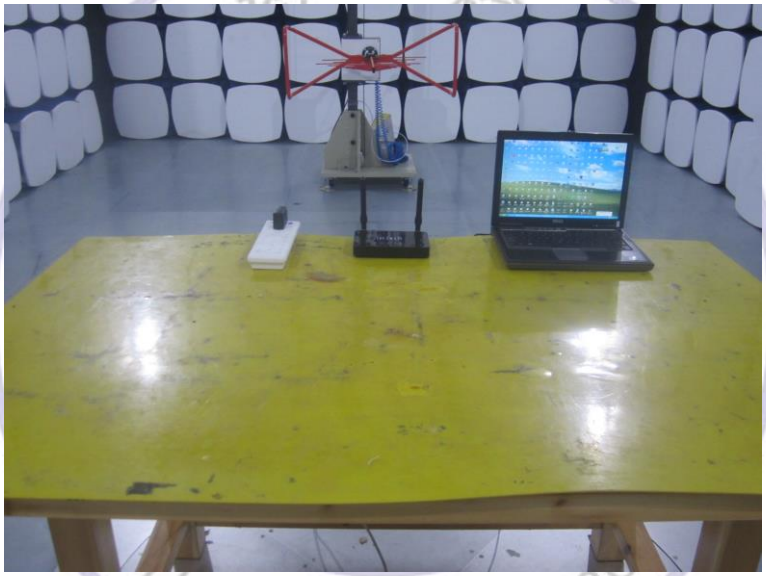
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	32.50	21.1	40.0	7.5	---	0.0	0.00	VERTICAL
53.280000	31.70	8.3	40.0	8.3	---	0.0	0.00	VERTICAL
55.220000	30.90	8.3	40.0	9.1	---	0.0	0.00	VERTICAL
101.780000	37.30	12.0	43.5	6.2	---	0.0	0.00	VERTICAL
115.360000	35.10	14.8	43.5	8.4	---	0.0	0.00	VERTICAL
945.680000	37.80	26.6	46.0	8.2	---	0.0	0.00	VERTICAL



Mark	Frequency MHz	Level dBuV/m	Factor dB/m	Reading dBuV	Limit dBuV/m	Margin dB	Polarization	Detector
1	1335.14	43.57	-14.90	58.47	74.00	30.43	VERTICAL	Peak
2	1456.08	37.55	-14.68	52.23	74.00	36.45	VERTICAL	Peak
3	1672.78	36.43	-14.67	51.10	74.00	37.57	VERTICAL	Peak
4	1819.04	36.52	-14.45	50.97	74.00	37.48	VERTICAL	Peak
5	13837.02	39.58	12.71	26.87	54.00	14.42	VERTICAL	Average
6	13837.02	56.76	12.71	44.05	74.00	17.24	VERTICAL	Peak
7	17948.05	65.64	23.57	42.07	74.00	8.36	VERTICAL	Peak
8	17948.05	47.72	23.57	24.15	54.00	6.28	VERTICAL	Average

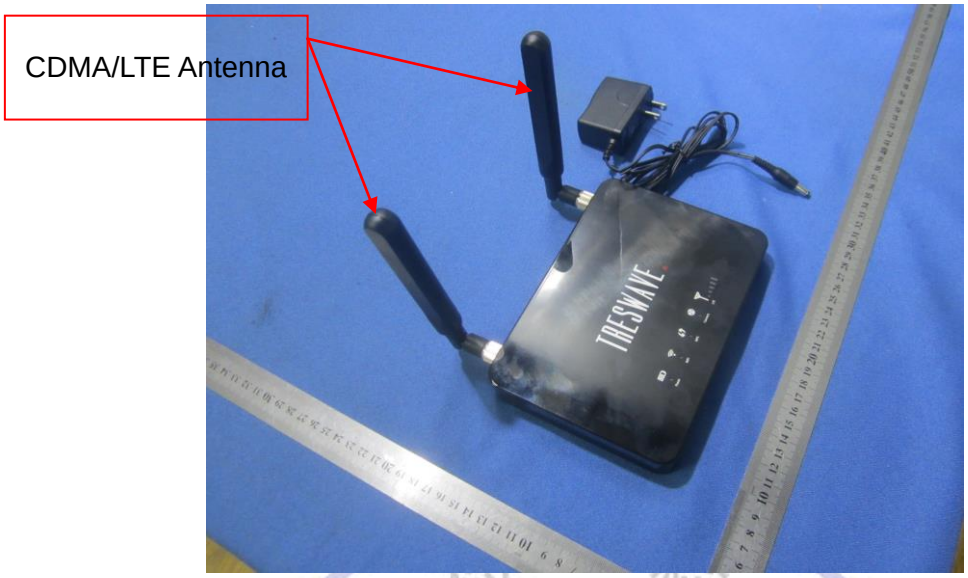
Note: 18GHz-25GHz was not recorded for its signal was very low against the limit.

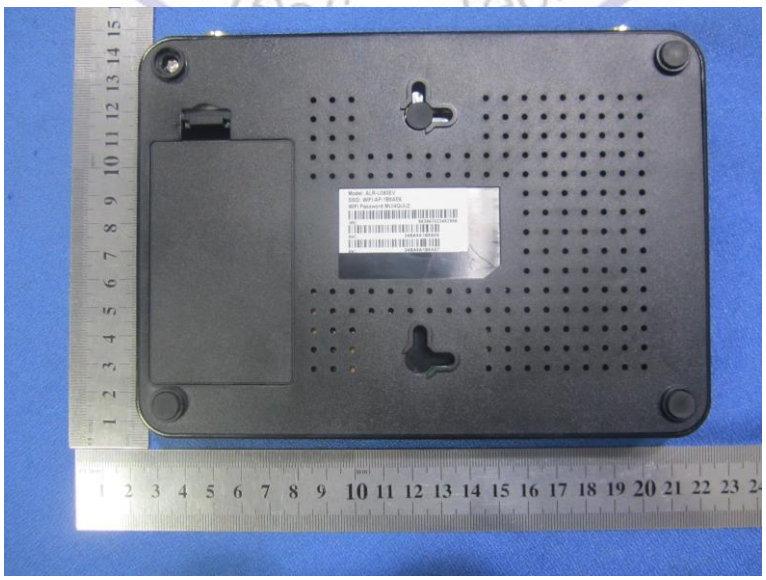
4. Test Setup Photos of the EUT



5. External and Internal Photos of the EUT

External Photos of EUT

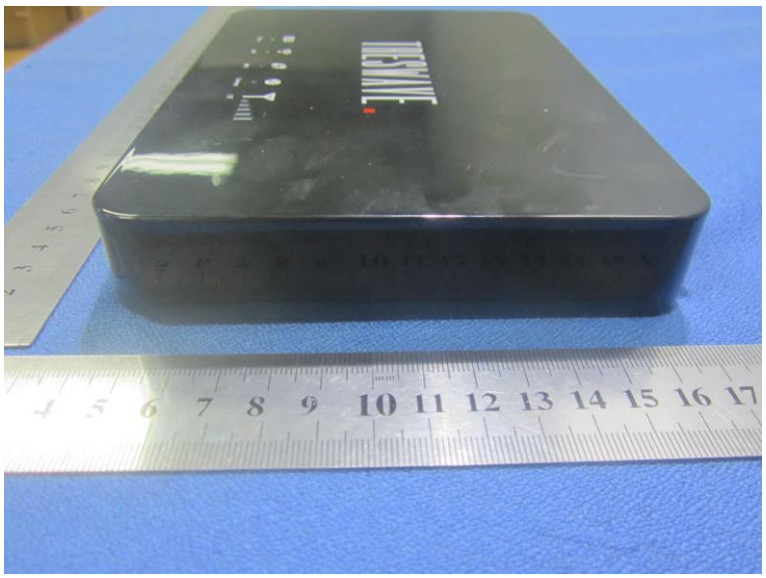





TRESWAVE
WPS
RST
RJ11
LAN1
LAN2
LAN3
OFF/ON
DC

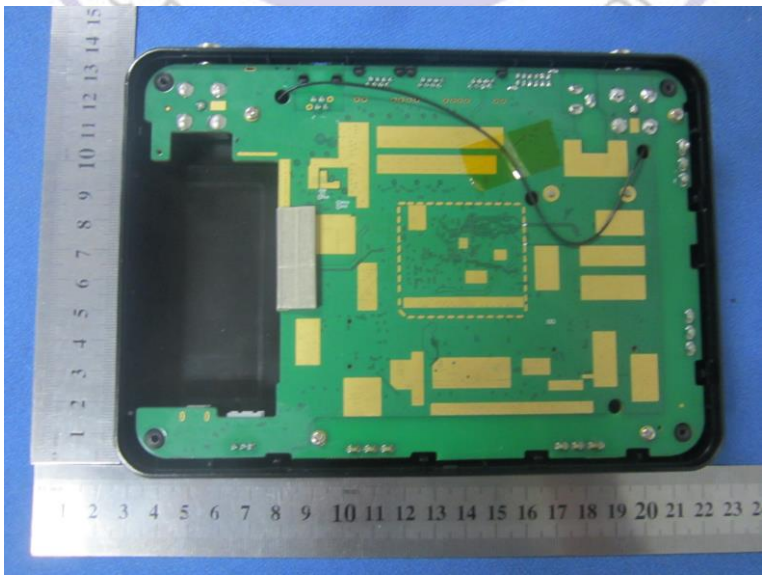

TRESWAVE

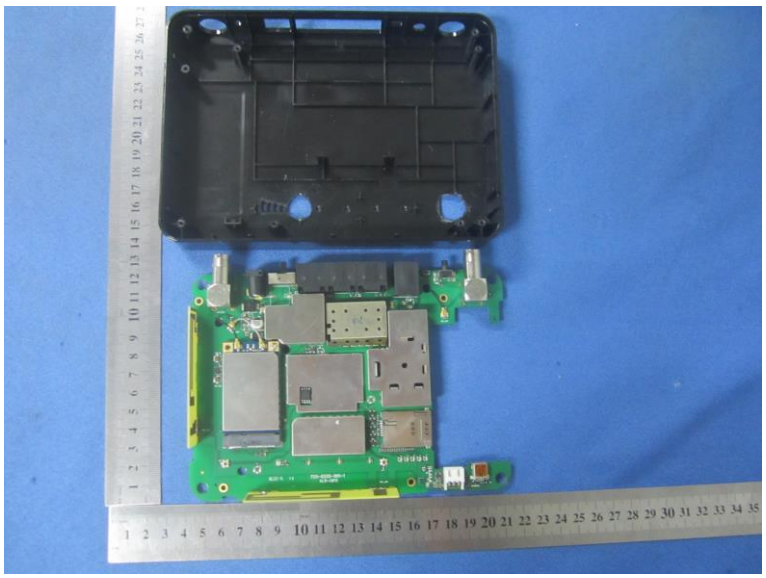

TRESWAVE

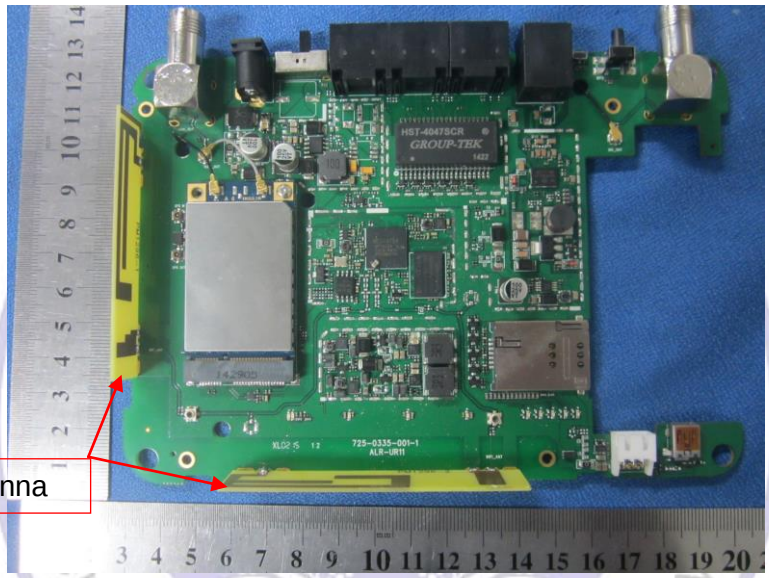


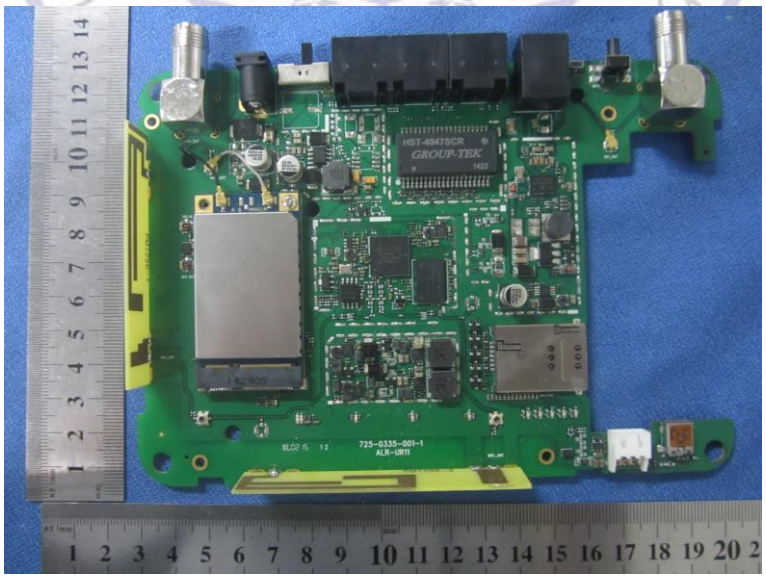

SWITCHING ADAPTER
LISTED

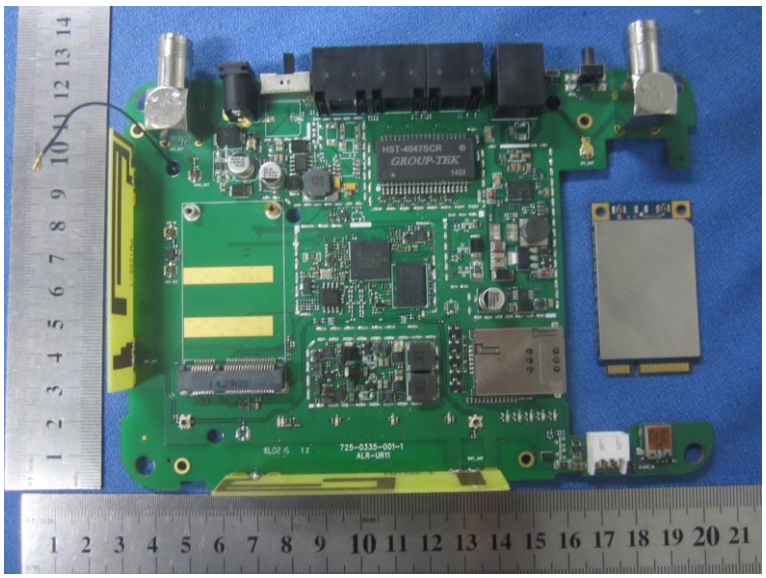
Internal Photos of EUT

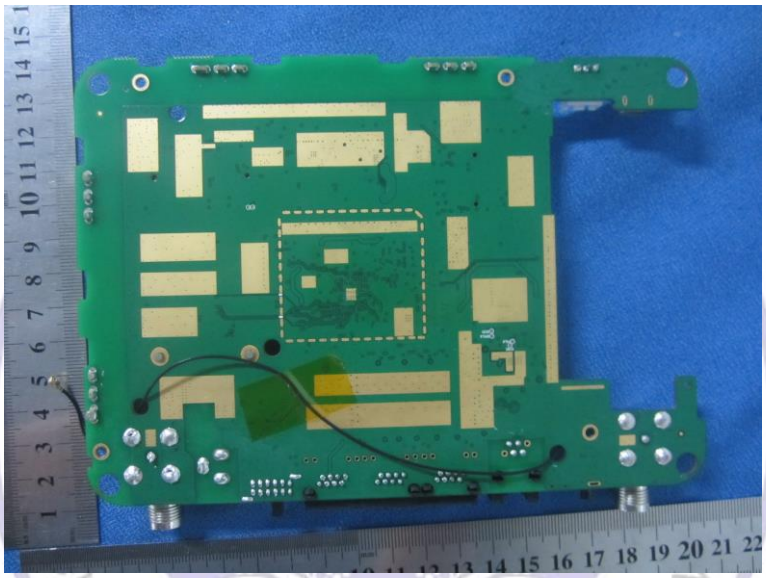


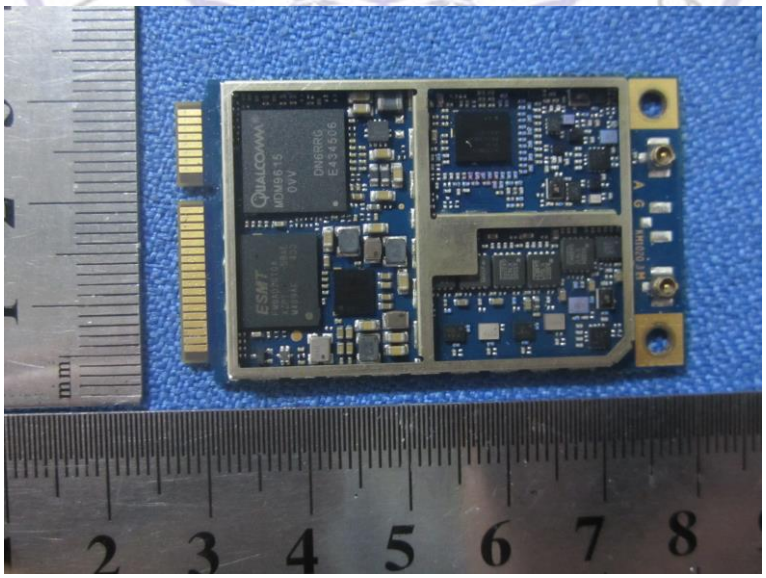


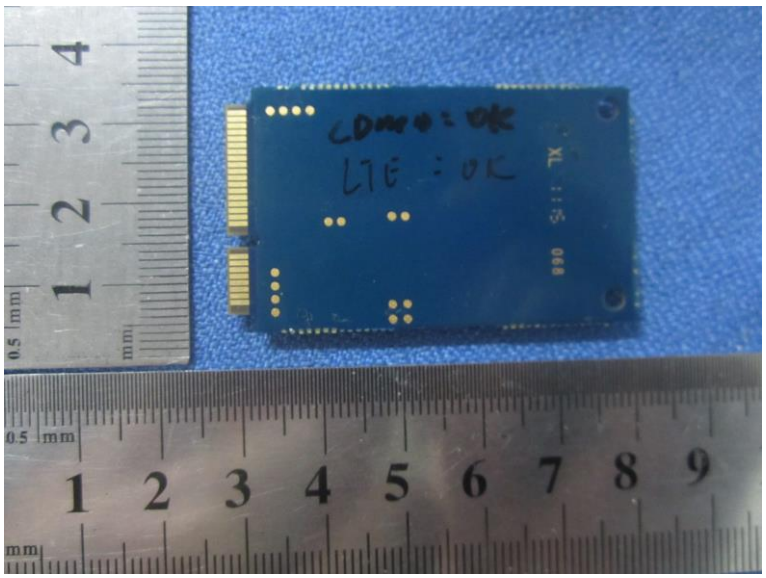

WIFI Antenna











********** End of Report **********