

FCC TEST REPORT
for
Elexa Consumer Products Inc.

Dome Hub
Model No.: DMGW1

Prepared for : Elexa Consumer Products Inc.
Address : 2275 Half Day Road, Suite 333, Bannockburn, Illinois, 60015,
United States

Prepared By : Shenzhen Anbotek Compliance Laboratory Limited
Address : 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road,
Nanshan District, Shenzhen, Guangdong, China
Tel: (86) 755-26066544
Fax: (86) 755-26014772

Report Number : R011605225Y
Date of Test : May 12~ Jun. 03, 2016
Date of Report : Jun. 03, 2016

TABLE OF CONTENTS

Description

Page

Test Report

1. GENERAL INFORMATION.....	4
1.1. Description of Device (EUT).....	4
1.2. Auxiliary Equipment Used during Test.....	5
1.3. Description of Test Facility.....	5
1.4. Measurement Uncertainty.....	5
2. TEST PROCEDURE.....	6
3. CONDUCTED LIMITS.....	7
3.1. Block Diagram of Test Setup.....	7
3.2. Power Line Conducted Emission Measurement Limits (15.207).....	7
3.3. Configuration of EUT on Measurement.....	7
3.4. Operating Condition of EUT.....	7
3.5. Test Procedure.....	8
3.6. Power Line Conducted Emission Measurement Results.....	8
4. RADIATION INTERFERENCE.....	13
4.1. Requirements (15.249, 15.209):.....	13
4.2. Test Procedure.....	13
4.3. Test Results.....	15
5. BAND EDGE MEASUREMENT.....	19
5.1. Requirements (15.249):.....	19
5.2. Test Procedure.....	19
5.3. Test Configuration:.....	20
5.4. Test Results.....	20
6. 20dB Bandwidth.....	22
6.1. Requirements (15.215):.....	22
6.2. Test Procedure.....	22
6.3. Test Results.....	22
7. ANTENNA APPLICATION.....	24
7.1. Antenna requirement.....	24
7.2. Result.....	24
8. PHOTOGRAPH.....	25
8.1. Photo of Conducted Emission Test.....	25
8.2. Photo of Radiated Emission Test.....	25
APPENDIX I (EXTERNAL PHOTOS).....	27
APPENDIX II (INTERNAL PHOTOS).....	31

TEST REPORT

Applicant : Elexa Consumer Products Inc.
Manufacturer : Ubitech Limited
EUT : Dome Hub
Model No. : DMGW1
Serial No. : N.A.
Trade Mark : N.A.
Rating : DC 9V,1.3A

Measurement Procedure Used:
FCC Part15 Subpart C, Paragraph 15.207, 15.249 & 15.209

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : May 12~ Jun. 03, 2016

Prepared by :

Kebo Zhang

(Tested Engineer / Kebo Zhang)

Reviewer :

Amy Ding

(Project Manager / Amy Ding)

Approved & Authorized Signer :

Tom Chen

(Manager / Tom Chen)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	: Dome Hub
Model Number	: DMGW1
Test Power Supply	: AC 120V, 60Hz for adapter (with DC6V battery inside) AC 240V, 50Hz for adapter (with DC6V battery inside)
Adapter	: Model: ASSA55A-090130 Input: 100-240V~, 50/60Hz, 0.45A Output: DC 9V, 1.3A
RF Transmission Frequency	: 2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20)) 2422MHz~2452MHz (802.11n(HT40)) 908.4MHz, 916MHz
Channels	: 11 For (802.11b/802.11g/802.11n(HT20)) 7 For (802.11n(HT40)) 2 For (908.4MHz, 916MHz)
Modulation	: 802.11b CCK; 802.11g OFDM; 802.11n MCS ASK (908.4MHz, 916MHz)
Antenna Gain:	: 0 dBi for WIFI (ANT A, ANT B) 0 dBi For (908.4MHz, 916MHz)
Applicant Address	: Elexa Consumer Products Inc. 2275 Half Day Road, Suite 333, Bannockburn, Illinois, 60015, United States
Manufacturer Address	: Ubitech Limited Unit 5, 5/F, Mega Trade Centre, 1 Mei Wan Street, Tsuen Wan, NT, Hong Kong
Factory Address	: Shenzhen Yu Yang Sheng Technology Co., Ltd. 2F, Building 10, Changxing Technology Park, Wan'an Road, Shajing Street, Baoan District, Shenzhen, China
Date of receipt	: May 12, 2016
Date of Test	: May 12~ Jun. 03, 2016

1.2. Auxiliary Equipment Used during Test

Notebook : Manufacturer: LIFE BOOK
Model: LH531
CE, FCC DOC

Printer : Manufacturer: Brother
M/N: MFC-3360C
S/N: N/A
CE, FCC:DOC

1.3. Description of Test Facility

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

FCC-Registration No.: 752021

Shenzhen Anbotek Compliance Laboratory Limited, 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 752021, July 10, 2013.

IC-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited., 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 8058A-1, Jun. 13, 2016.

Test Location

All Emissions tests were performed at
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC
Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong,
China

1.4. Measurement Uncertainty

Radiation Uncertainty : Ur = 4.1 dB (Horizontal)
Ur = 4.3 dB (Vertical)
Conduction Uncertainty : Uc = 3.4dB

2. Test Procedure

GENERAL: This report shall NOT be reproduced except in full without the written approval of Shenzhen Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.10-2013 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz) METER READING + ACF = FS
20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

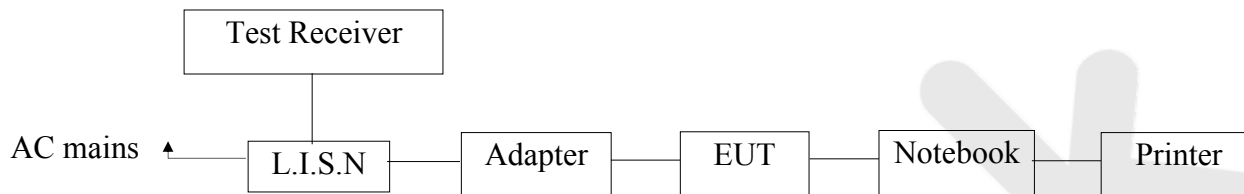
ANSI STANDARD C63.10-2013 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

3. Conducted Limits

3.1. Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



3.2. Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4. Operating Condition of EUT

3.4.1. Setup the EUT and simulator as shown as Section 3.1.

3.4.2. Turn on the power of all equipment.

3.4.3. Let the EUT work in test mode (WAN Mode) and measure it.

3.5. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2013 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 3.6.

Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Apr. 17, 2016	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 17, 2016	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 17, 2016	1 Year

3.6. Power Line Conducted Emission Measurement Results

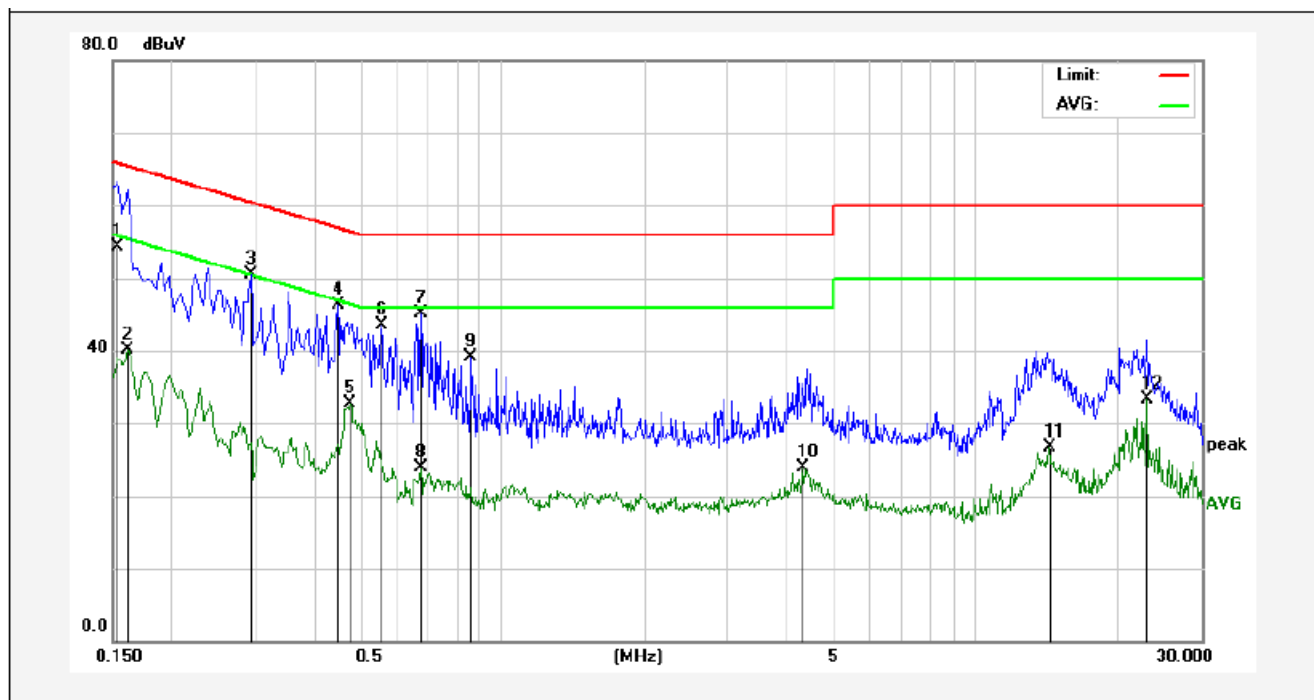
PASS.

The frequency range from 150KHz to 30 MHz is investigated.

Please refer the following pages.

CONDUCTED EMISSION TEST DATA

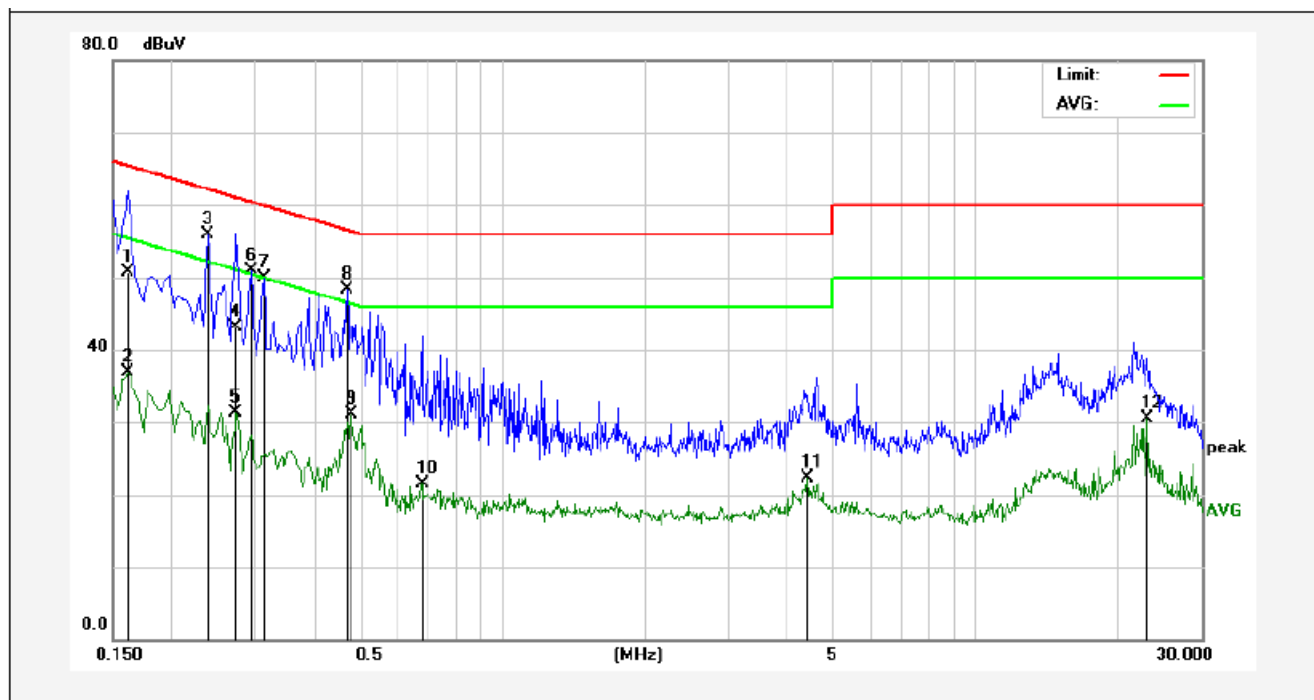
Test Site: 1# Shielded Room
Operating Condition: WAN Mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.:24°C Hum.:49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1539	34.37	20.00	54.37	65.78	-11.41	QP	
2	0.1620	20.15	20.00	40.15	55.36	-15.21	AVG	
3	0.2940	30.44	20.00	50.44	60.41	-9.97	QP	
4	0.4500	26.22	20.00	46.22	56.87	-10.65	QP	
5	0.4780	12.74	20.00	32.74	46.37	-13.63	AVG	
6	0.5580	23.55	20.00	43.55	56.00	-12.45	QP	
7	0.6740	25.09	20.00	45.09	56.00	-10.91	QP	
8	0.6740	3.89	20.00	23.89	46.00	-22.11	AVG	
9	0.8580	19.05	20.00	39.05	56.00	-16.95	QP	
10	4.3140	3.86	20.00	23.86	46.00	-22.14	AVG	
11	14.2140	6.79	20.00	26.79	50.00	-23.21	AVG	
12	23.1299	13.33	20.00	33.33	50.00	-16.67	AVG	

CONDUCTED EMISSION TEST DATA

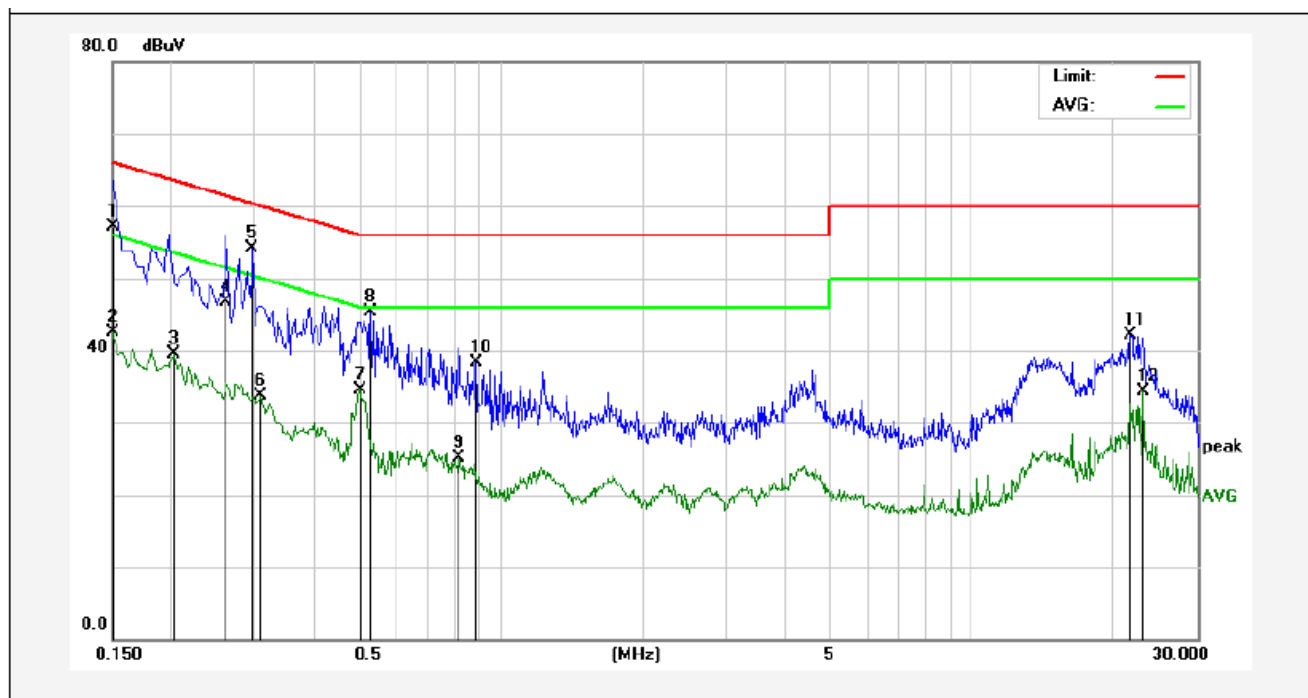
Test Site: 1# Shielded Room
Operating Condition: WAN Mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.:24°C Hum.:49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1620	30.69	20.00	50.69	65.36	-14.67	QP	
2	0.1620	16.98	20.00	36.98	55.36	-18.38	AVG	
3	0.2380	35.98	20.00	55.98	62.16	-6.18	QP	
4	0.2740	23.18	20.00	43.18	60.99	-17.81	QP	
5	0.2740	11.38	20.00	31.38	50.99	-19.61	AVG	
6	0.2940	30.82	20.00	50.82	60.41	-9.59	QP	
7	0.3140	29.84	20.00	49.84	59.86	-10.02	QP	
8	0.4700	28.24	20.00	48.24	56.51	-8.27	QP	
9	0.4780	11.01	20.00	31.01	46.37	-15.36	AVG	
10	0.6780	1.51	20.00	21.51	46.00	-24.49	AVG	
11	4.4220	2.26	20.00	22.26	46.00	-23.74	AVG	
12	23.1299	10.54	20.00	30.54	50.00	-19.46	AVG	

CONDUCTED EMISSION TEST DATA

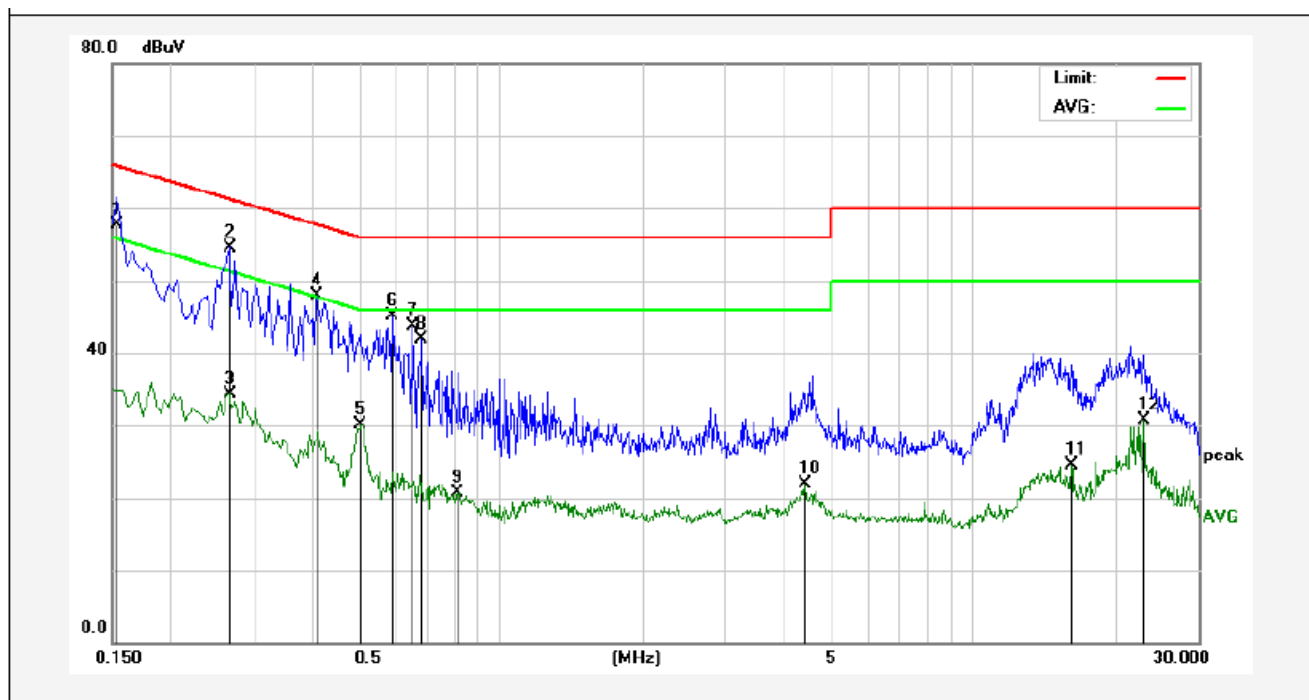
Test Site: 1# Shielded Room
Operating Condition: WAN Mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Live Line
Tem.:24°C Hum.:49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1500	37.08	20.00	57.08	65.99	-8.91	QP	
2	0.1500	22.46	20.00	42.46	55.99	-13.53	AVG	
3	0.2020	19.54	20.00	39.54	53.52	-13.98	AVG	
4	0.2620	26.62	20.00	46.62	61.36	-14.74	QP	
5	0.2980	34.12	20.00	54.12	60.30	-6.18	QP	
6	0.3100	13.68	20.00	33.68	49.97	-16.29	AVG	
7	0.5020	14.54	20.00	34.54	46.00	-11.46	AVG	
8	0.5299	25.33	20.00	45.33	56.00	-10.67	QP	
9	0.8139	5.15	20.00	25.15	46.00	-20.85	AVG	
10	0.8860	18.21	20.00	38.21	56.00	-17.79	QP	
11	21.6660	22.16	20.00	42.16	60.00	-17.84	QP	
12	23.1299	14.23	20.00	34.23	50.00	-15.77	AVG	

CONDUCTED EMISSION TEST DATA

Test Site: 1# Shielded Room
Operating Condition: WAN Mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Neutral Line
Tem.:24°C Hum.:49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1539	37.69	20.00	57.69	65.78	-8.09	QP	
2	0.2660	34.60	20.00	54.60	61.24	-6.64	QP	
3	0.2660	14.30	20.00	34.30	51.24	-16.94	AVG	
4	0.4100	27.93	20.00	47.93	57.65	-9.72	QP	
5	0.5060	10.11	20.00	30.11	46.00	-15.89	AVG	
6	0.5899	25.15	20.00	45.15	56.00	-10.85	QP	
7	0.6540	23.62	20.00	43.62	56.00	-12.38	QP	
8	0.6820	21.92	20.00	41.92	56.00	-14.08	QP	
9	0.8100	0.64	20.00	20.64	46.00	-25.36	AVG	
10	4.4220	1.91	20.00	21.91	46.00	-24.09	AVG	
11	16.1660	4.52	20.00	24.52	50.00	-25.48	AVG	
12	23.1299	10.65	20.00	30.65	50.00	-19.35	AVG	

4. Radiation Interference

4.1. Requirements (15.249, 15.209):

FIELD STRENGTH of Fundamental: @3M	FIELD STRENGTH of Harmonics	S15.209	
902-928 MHZ		30 - 88 MHz	40 dBuV/m
2.4-2.4835 GHz		88 - 216 MHz	43.5
94 dBuV/m @3m	54 dBuV/m @3m	216 - 960 MHz	46
		ABOVE 960 MHz	54dBuV/m

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.

4.2. Test Procedure

For below 1GHz, the EUT is placed on a turn table which is 0.8 meter high above the ground. For above 1GHz, the EUT is placed on a turn table which is 1.5 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

All readings from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. All reading are above 1GHz, peak & average values with a resolution bandwidth of 1MHz. The EUT is tested in 9*6*6 Chamber. The test results are listed in Section 4.3.

Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Apr. 17, 2016	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Apr. 17, 2016	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 17, 2016	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 20, 2016	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 20, 2016	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 17, 2016	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8	Power Sensor	DAER	RPR3006W	15I00041SN046	Jun 30, 2015	1 Year
9	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Jun 30, 2015	1 Year
10	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Jun 30, 2015	1 Year
11	Signal Generator	Agilent	E4421B	MY41000743	Jun 30, 2015	1 Year
12	DC Power supply	IV	IV-8080	YQSB0096	Jun 30, 2015	1 Year
13	TEMP&HUMI PROGRAMMABLE CHAMBER	Bell Group	BE-THK-150M8	SE-0137	Mar 16, 2016	1 Year

4.3. Test Results

PASS.

Please refer the following pages.

Data: (Frequency=908.40MHz)

Horizontal

Frequency	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
MHz	dB	dB/m	dB	dBμV	dBμV/m	dBμV/m	dB	
64.42	0.63	8.43	38.79	55.37	25.64	40	-14.36	QP
193.54	0.72	10.31	39.4	56.38	28.01	43.5	-15.49	QP
908.4	1.51	29	38.52	110.05	102.04	114	-11.96	Peak
908.4	1.51	29	38.52	94.48	86.47	94	-7.53	AV
1,816.80	1.82	28.02	39.21	71.57	62.2	74	-11.8	Peak
1,816.80	1.82	28.02	39.21	56.71	47.34	54	-6.66	AV
2,725.20	2.28	33.16	35.16	55.28	55.56	74	-18.44	Peak
2,725.20	2.28	33.16	35.16	43.86	44.14	54	-9.86	AV
3,633.60	2.5	33.31	35.02	53.61	54.4	74	-19.6	Peak
3,633.60	2.5	33.31	35.02	42.28	43.07	54	-10.93	AV
4,542.00	2.65	34.4	34.77	48.54	50.82	74	-23.18	Peak
4,542.00	2.65	34.4	34.77	37.89	40.17	54	-13.83	AV
5,450.40	---	---	---	---	---	---	---	---
6,358.80	---	---	---	---	---	---	---	---
7,267.20	---	---	---	---	---	---	---	---

Vertical

Frequency	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
MHz	dB	dB/m	dB	dBμV	dBμV/m	dBμV/m	dB	
85.64	0.63	8.43	38.79	56.37	26.64	40	-13.36	QP
201.68	0.72	10.31	39.4	55.97	27.6	43.5	-15.9	QP
908.4	1.51	29	38.52	108.97	100.96	114	-13.04	Peak
908.4	1.51	29	38.52	93.54	85.53	94	-8.47	AV
1,816.80	1.82	28.02	39.21	68.34	58.97	74	-15.03	Peak
1,816.80	1.82	28.02	39.21	55.12	45.75	54	-8.25	AV
2,725.20	2.28	33.16	35.16	54.78	55.06	74	-18.94	Peak
2,725.20	2.28	33.16	35.16	43.82	44.1	54	-9.9	AV
3,633.60	2.5	33.31	35.02	42.75	43.54	74	-30.46	Peak
3,633.60	2.5	33.31	35.02	31.67	32.46	54	-21.54	AV
4,542.00	2.65	34.4	34.77	45.62	47.9	74	-26.1	Peak
4,542.00	2.65	34.4	34.77	36.47	38.75	54	-15.25	AV
5,450.40	---	---	---	---	---	---	---	---
6,358.80	---	---	---	---	---	---	---	---
7,267.20	---	---	---	---	---	---	---	---

NOTE: “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Data: (Frequency=916.00MHz)

Horizontal

Frequency	Cable Loss	Ant Factor	Preamplifier Factor	Read Level	Level	Limit	Over Limit	Remark
MHz	dB	dB/m	dB	dBμV	dBμV/m	dBμV/m	dB	
96.37	0.63	8.43	38.79	57.88	28.15	40	-11.85	QP
195.24	0.72	10.31	39.4	56.38	28.01	43.5	-15.49	QP
916	1.54	27.65	37.55	109.69	101.33	114	-12.67	Peak
916	1.54	27.65	37.55	94.37	86.01	94	-7.99	AV
1,832.00	1.78	28.75	39.31	67.34	58.56	74	-15.44	Peak
1,832.00	1.78	28.75	39.31	55.01	46.23	54	-7.77	AV
2,748.00	2.17	32.67	35.36	55.34	54.82	74	-19.18	Peak
2,748.00	2.17	32.67	35.36	44.17	43.65	54	-10.35	AV
3,664.00	2.41	33.28	35.24	41.34	41.79	74	-32.21	Peak
3,664.00	2.41	33.28	35.24	32.84	33.29	54	-20.71	AV
4,580.00	2.56	34.34	34.52	43.31	45.69	74	-28.31	Peak
4,580.00	2.56	34.34	34.52	34.06	36.44	54	-17.56	AV
5,496.00	---	---	---	---	---	---	---	---
6,412.00	---	---	---	---	---	---	---	---
7,328.00	---	---	---	---	---	---	---	---

AMB

Vertical

Frequency	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
MHz	dB	dB/m	dB	dB μ V	dB μ V/m	dB μ V/m	dB	
100.28	0.63	8.43	38.79	56.32	26.59	40	-13.41	QP
186.47	0.72	10.31	39.4	57.05	28.68	43.5	-14.82	QP
916	1.54	27.65	37.55	107.54	99.18	114	-14.82	Peak
916	1.54	27.65	37.55	93.45	85.09	94	-8.91	AV
1,832.00	1.78	28.75	39.31	66.75	57.97	74	-16.03	Peak
1,832.00	1.78	28.75	39.31	54.87	46.09	54	-7.91	AV
2,748.00	2.17	32.67	35.36	56.34	55.82	74	-18.18	Peak
2,748.00	2.17	32.67	35.36	45.09	44.57	54	-9.43	AV
3,664.00	2.41	33.28	35.24	42.44	42.89	74	-31.11	Peak
3,664.00	2.41	33.28	35.24	33.38	33.83	54	-20.17	AV
4,580.00	2.56	34.34	34.52	41.67	44.05	74	-29.95	Peak
4,580.00	2.56	34.34	34.52	32.82	35.2	54	-18.8	AV
5,496.00	---	---	---	---	---	---	---	---
6,412.00	---	---	---	---	---	---	---	---
7,328.00	---	---	---	---	---	---	---	---

NOTE: “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5. Band Edge Measurement

5.1. Requirements (15.249):

The field strength of any emissions appearing outside the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 50 dB below the level of the carrier or to the general limits of 15.249.

5.2. Test Procedure

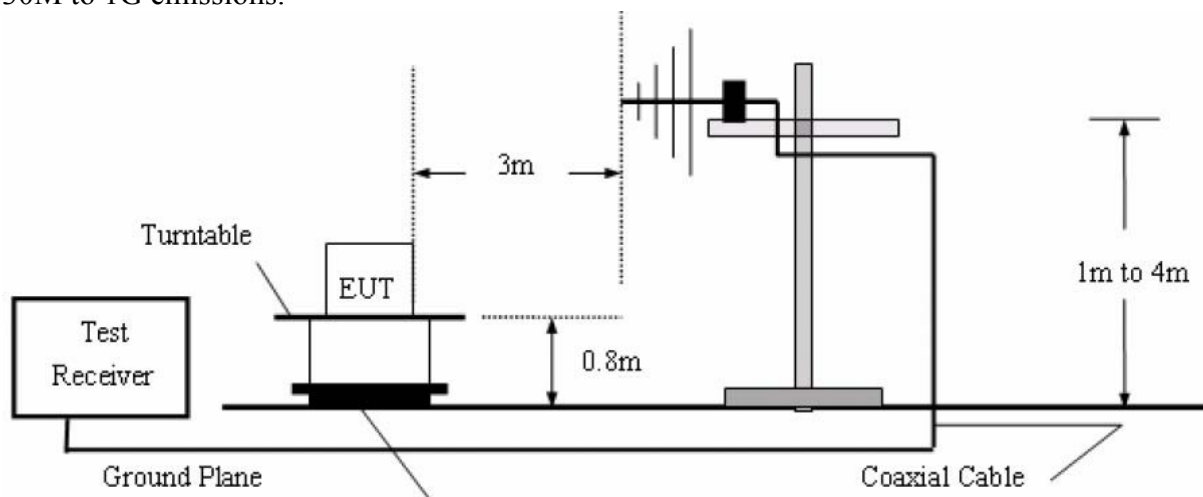
The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

Test Equipment

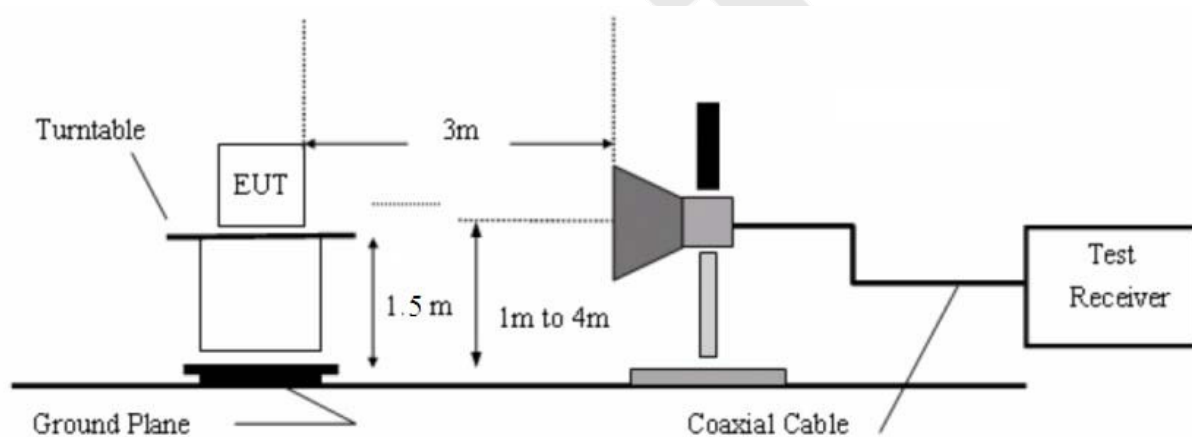
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Apr. 17, 2016	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Apr. 17, 2016	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 17, 2016	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 20, 2016	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 20, 2016	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 17, 2016	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8	Power Sensor	DAER	RPR3006W	15I00041SN046	Jun 30, 2015	1 Year
9	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Jun 30, 2015	1 Year
10	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Jun 30, 2015	1 Year
11	Signal Generator	Agilent	E4421B	MY41000743	Jun 30, 2015	1 Year
12	DC Power supply	IV	IV-8080	YQSB0096	Jun 30, 2015	1 Year
13	TEMP&HUMI PROGRAMMABLE CHAMBER	Bell Group	BE-THK-150M8	SE-0137	Mar 16, 2016	1 Year

5.3. Test Configuration:

30M to 1G emissions:



1G to 40G emissions:

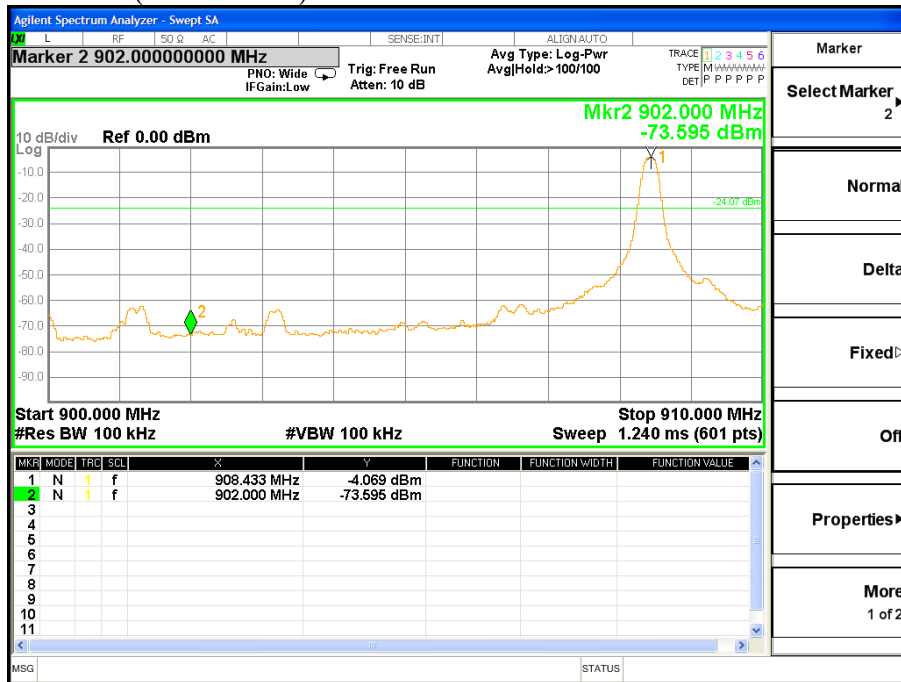


5.4. Test Results

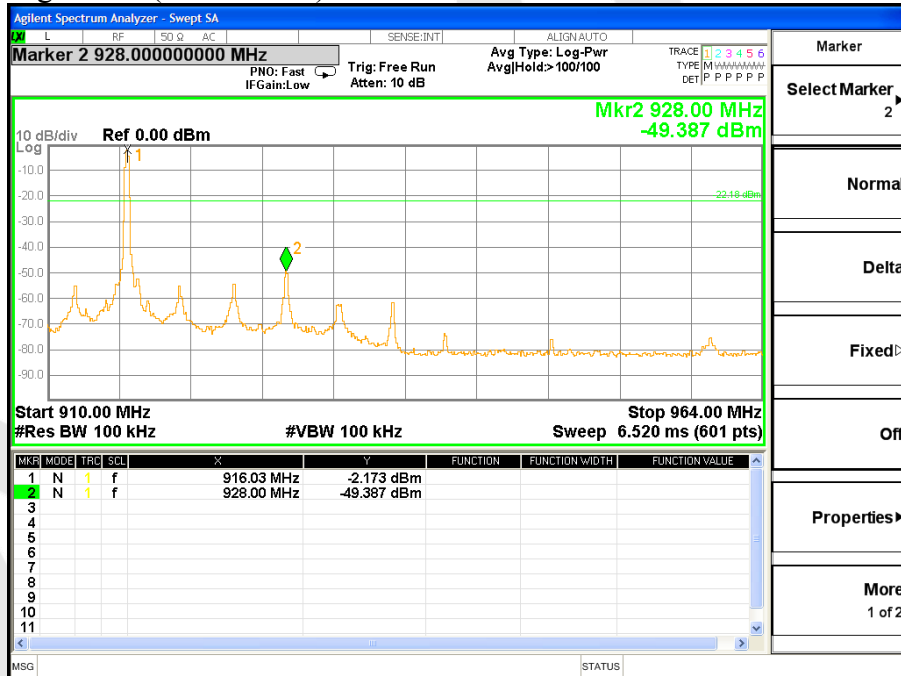
Pass.

Please refer the following plot.

Left Side (908.40MHz)



Right Side (916.00MHz)



6. 20dB Bandwidth

6.1. Requirements (15.215):

According to FCC 15.215(c), must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

6.2. Test Procedure

Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth. d. Repeat above procedures until all frequencies measured were complete.

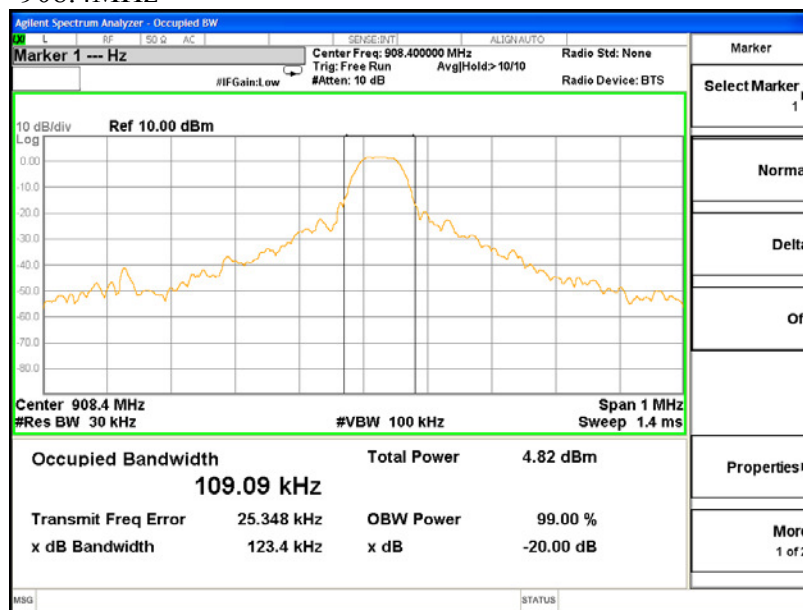
6.3. Test Results

Pass.

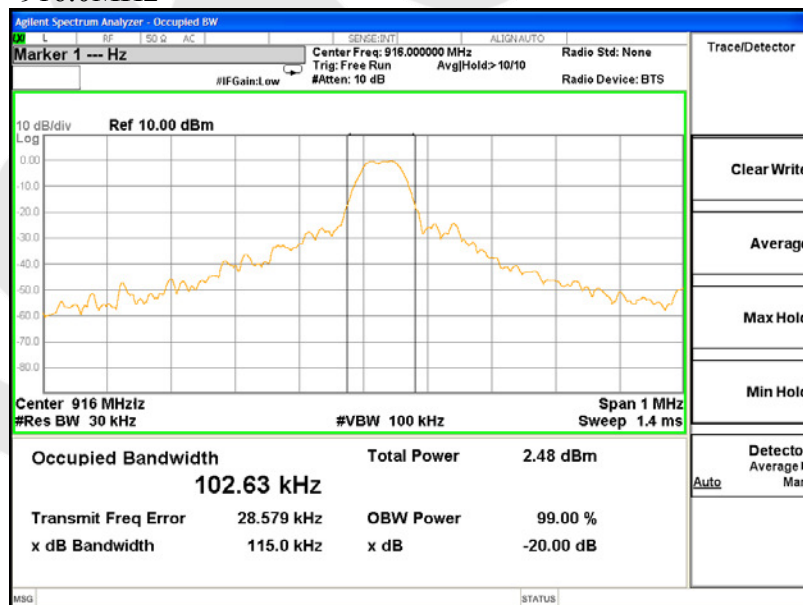
Please refer the following plot.

Channel Frequency (MHz)	Measured 20dB Bandwidth(kHz)	Result
908.4	123.4	PASS
916.0	115.0	PASS

908.4MHz



916.0MHz



7. ANTENNA APPLICATION

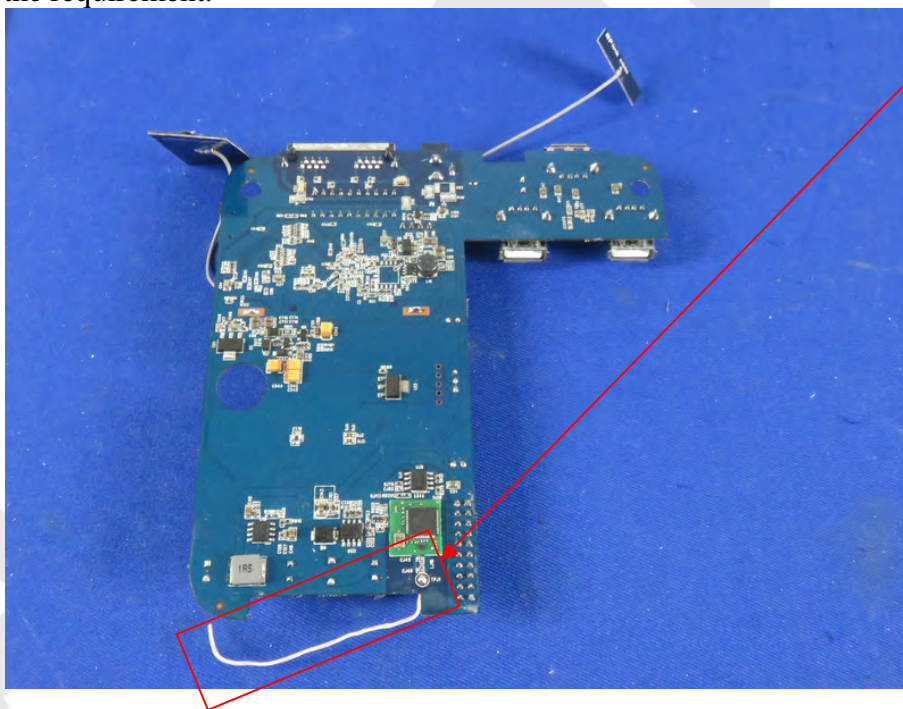
7.1. Antenna requirement

The EUT'S antenna is met the requirement of FCC part 15C section 15.203.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

7.2. Result

The EUT's antenna used a Integrated antenna which is permanently attached, The antenna's gain is 0dBi and meets the requirement.

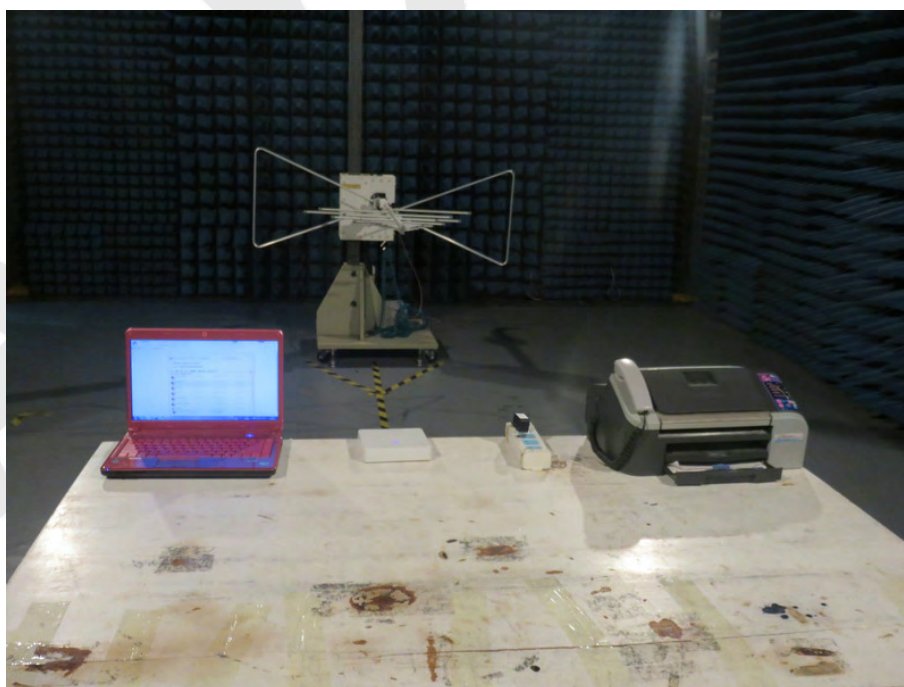


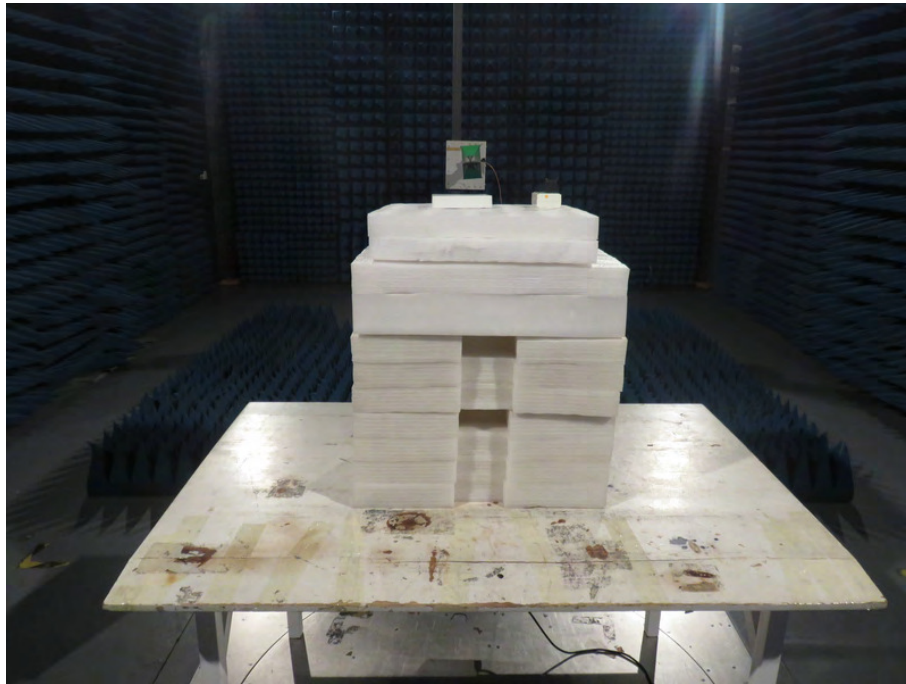
8. PHOTOGRAPH

8.1. Photo of Conducted Emission Test



8.2. Photo of Radiated Emission Test





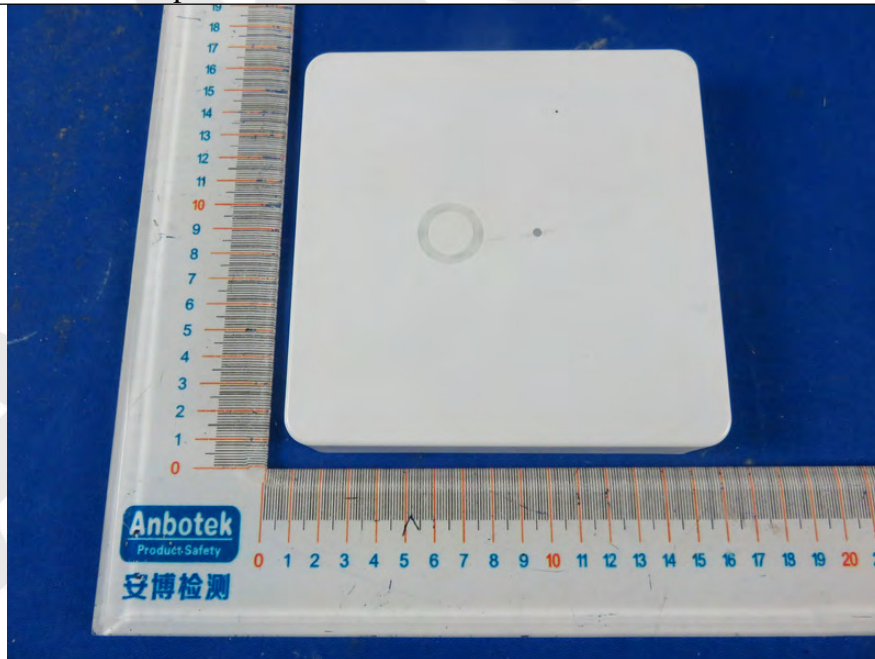
Anbotek

APPENDIX I (EXTERNAL PHOTOS)

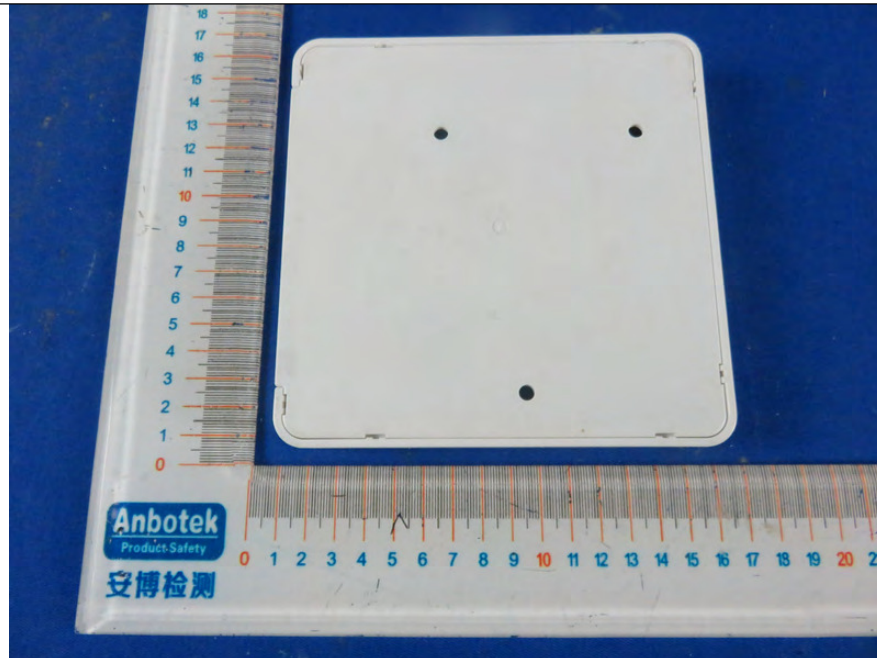
1. Figure
The EUT-Overall View



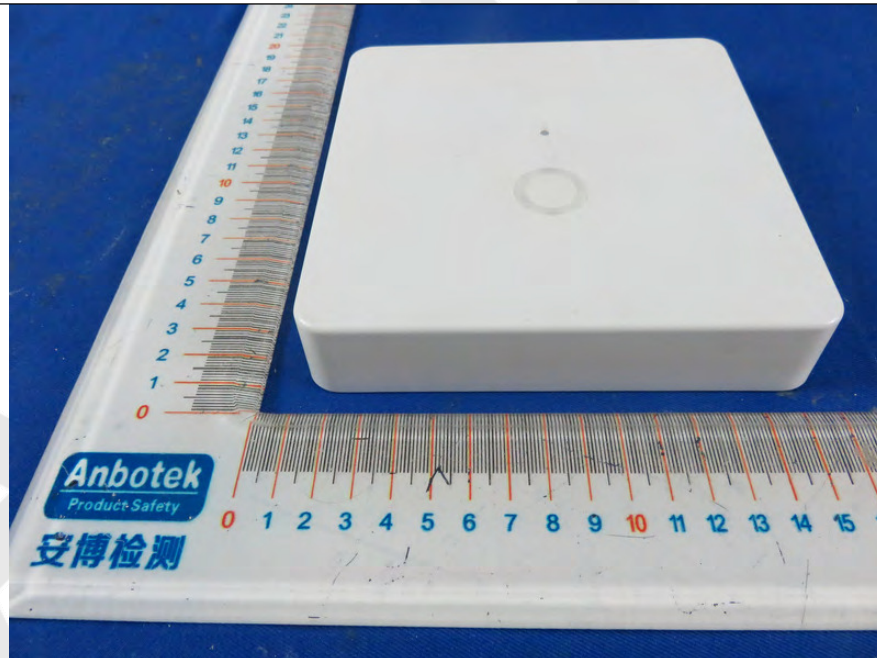
2. Figure
The EUT-Top View



3. Figure
The EUT-Bottom View



4. Figure
The EUT-Front View



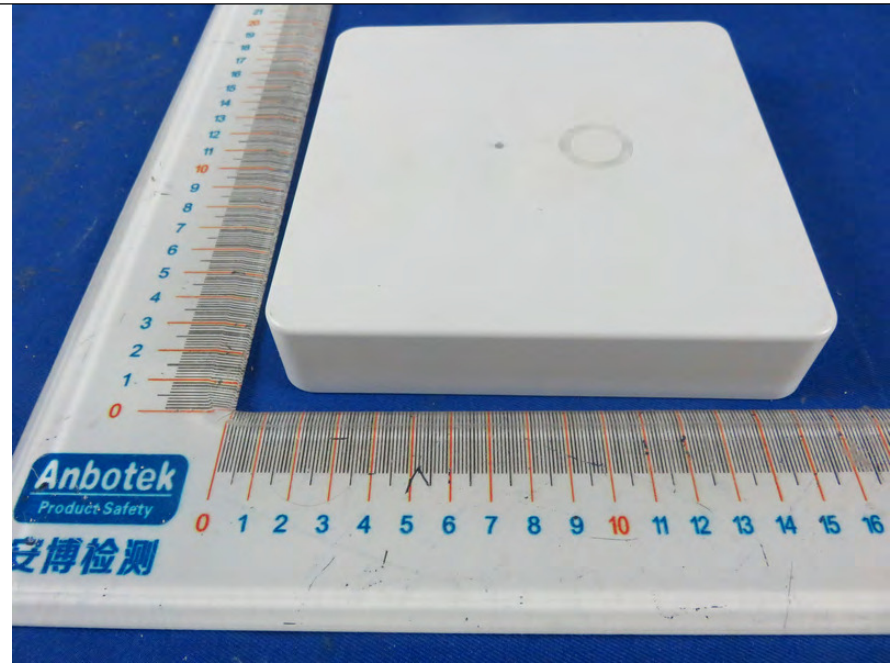
5. Figure
The EUT-Back View



6. Figure
The EUT-Right View

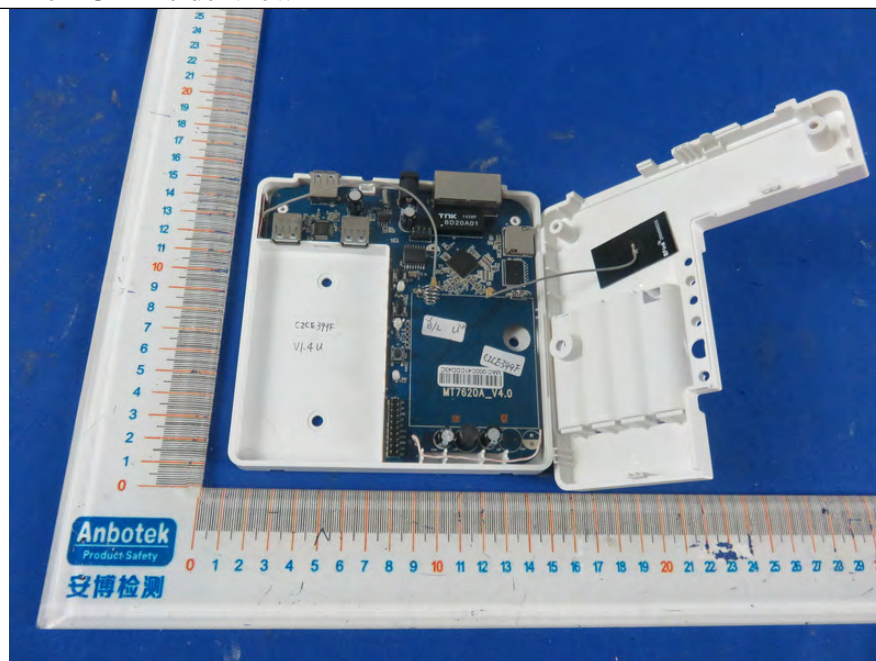


7. Figure
The EUT-Left View

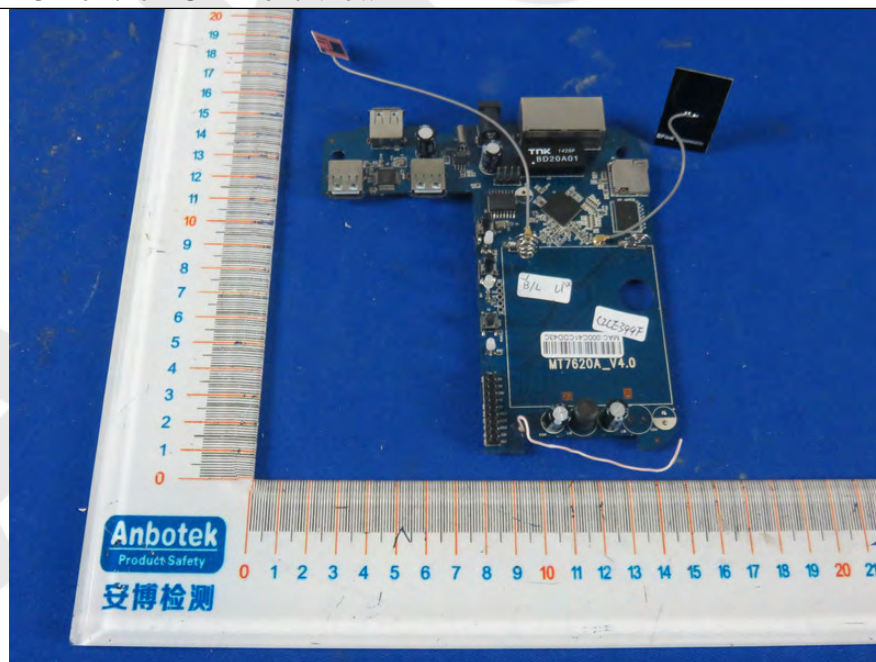


APPENDIX II (INTERNAL PHOTOS)

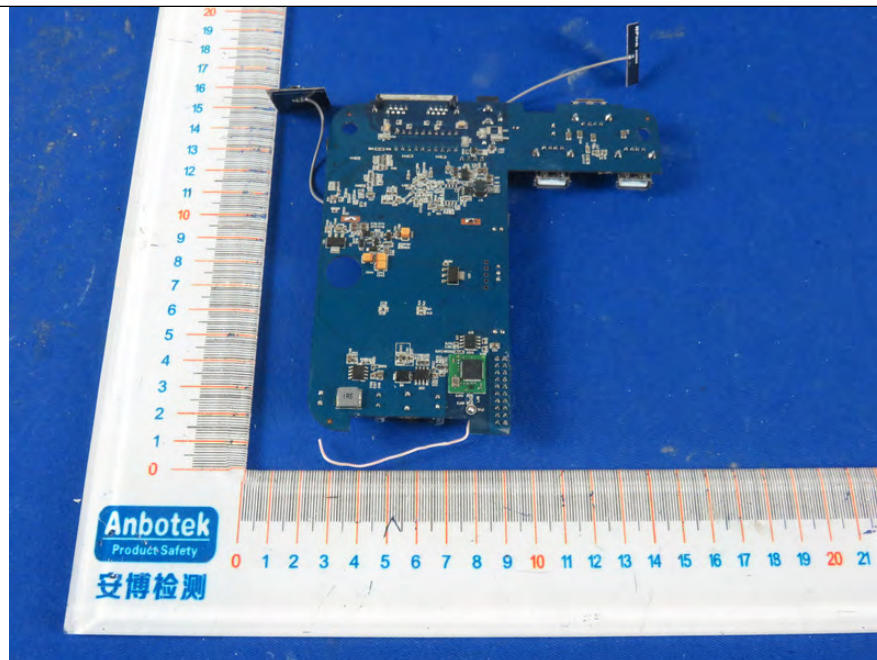
1. Figure
The EUT-Inside View



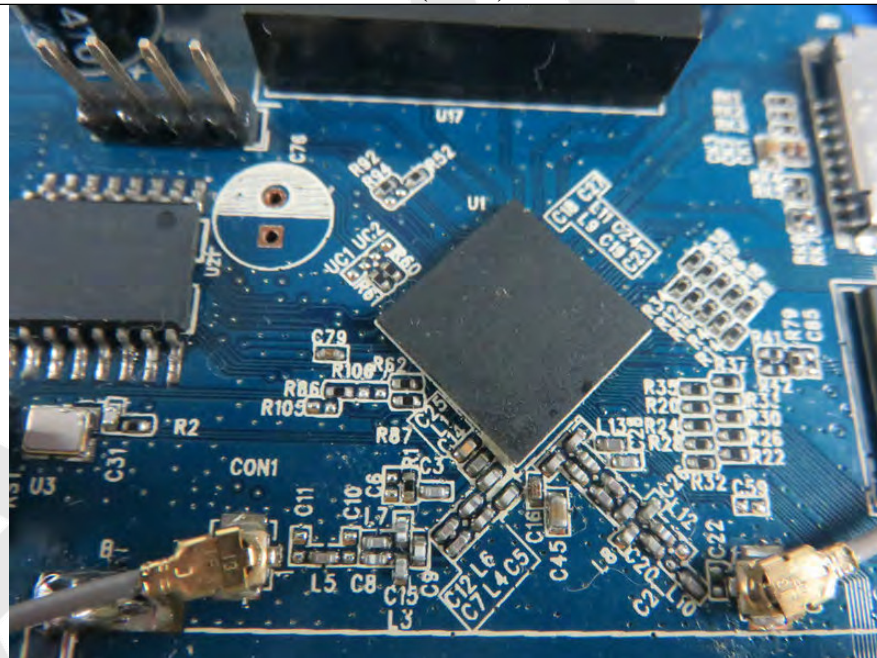
2. Figure
PCB of the EUT-Front View



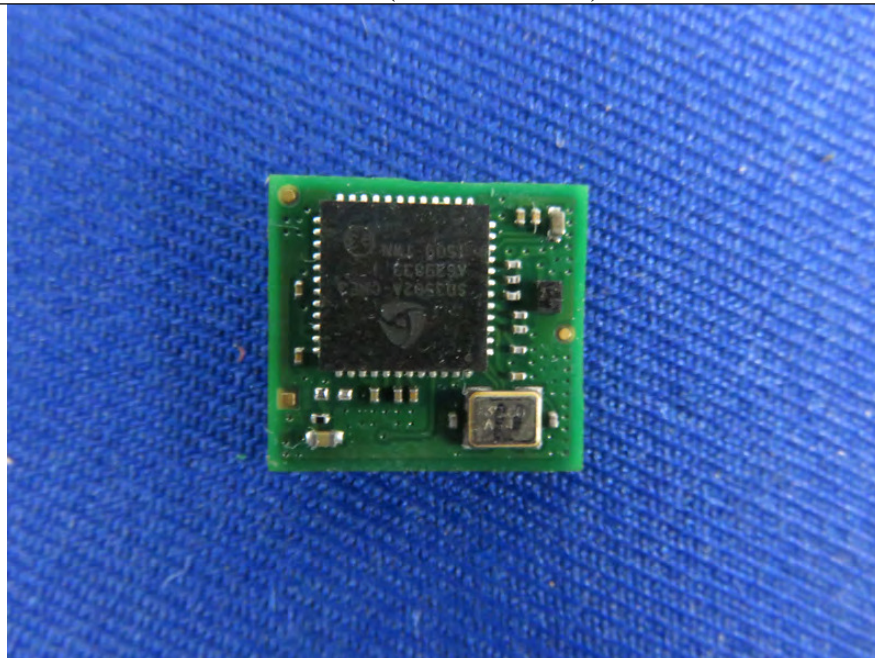
3. Figure
PCB of the EUT-Back View



4. Figure
PCB of the EUT-Module View (WIFI)



5. Figure
PCB of the EUT-Front View (908.4/916MHz)



6. Figure
PCB of the EUT-Back View (908.4/916MHz)

