

FCC TEST REPORT
for
NEO-TELECOM CORPORATION

ECOXB
Model No.: BTM-68D

Prepared for : NEO-TELECOM CORPORATION
Address : 7/F, 674-24, Anyang Dong, Manan Gu, Anyang City, Kyunggi
Do South Korea

Prepared By : Anbotek Compliance Laboratory Limited
Address : 1/F, 1 /Building, SEC Industrial Park, No. 4 Qianhai Road,
Nanshan District, Shenzhen, 518054, China
Tel: (86) 755-26066544
Fax: (86) 755-26014772

Report Number : 201209851F
Date of Test : Sept. 28~Nov. 14, 2012
Date of Report : Nov. 14, 2012

TABLE OF CONTENTS

Description	
Test Report	Page
1. GENERAL INFORMATION	4
1.1. Description of Device (EUT)	4
1.2. Description of Test Facility	5
1.3. 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	8
3.5. Test Procedure	8
3.6. Power Line Conducted Emission Measurement Results	8
4. RADIATION INTERFERENCE.....	11
4.1. Requirements (15.249, 15.209):	11
4.2 Test Procedure	11
4.3 Test Results.....	11
5. OCCUPIED BANDWIDTH.....	15
5.1. Requirements (15.249)	15
5.2. Test Procedure	15
5.3. Test Configuration	15
5.4. Test Results.....	15
6. PHOTOGRAPH.....	18
6.1. Photo of Power Line Conducted Emission Measurement	18
6.2. Photo of Radiation Emission Test	18
 APPENDIX I (External Photos) (1 Page)	
APPENDIX II (Internal Photos) (1 Page)	

TEST REPORT

Applicant : NEO-TELECOM CORPORATION
Manufacturer : NEO-TELECOM CORPORATION
EUT : ECOXBT
Model No. : BTM-68D
Serial No. : N/A
Rating : DC 5V VIA ADAPTER
Trade Mark : N.A.

Measurement Procedure Used:

FCC Part15 Subpart C, Paragraph 15.207, 15.249 & 15.209

The device described above is tested by 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 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 Anbotek Compliance Laboratory Limited

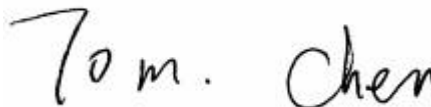
Date of Test : Sept. 28~Nov. 14, 2012



Prepared by : (Tested Engineer / Rock Zeng)



Reviewer : (Project Manager / Andy Chen)



Approved & Authorized Signer : (Manager / Tom Chen)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : ECOXBT

Model Number : BTM-68D

Test Power Supply : DC 5V Via Adapter
Parameter of Model: GA050010 Input: 100-240Vac 50/60Hz, 0.40A
adapter Output: 5V, 1.0A
Frequency : 2402~2480MHz

Antenna : Printed Antenna:0dBi
Specification

Applicant : NEO-TELECOM CORPORATION
Address : 7/F, 674-24, Anyang Dong, Manan Gu,
Anyang City, Kyunggi Do South Korea

Manufacturer : NEO-TELECOM CORPORATION
Address : 7/F, 674-24, Anyang Dong, Manan Gu,
Anyang City, Kyunggi Do South Korea

Date of receiver : Sept. 28, 2012

Date of Test : Sept. 28~Nov. 14, 2012

1.2. Description of Test Facility

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

CNAS - LAB Code: L3503

Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

FCC-Registration No.: 752021

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, August 20, 2010.

IC-Registration No.: 8058A-1

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, August 30, 2010.

Test Location

All Emissions tests were performed at
Anbotek Compliance Laboratory Limited. at 1/F, 1 /Building, SEC Industrial Park, No. 4
Qianhai Road, Nanshan District, Shenzhen, 518054, China

1.3. Measurement Uncertainty

Radiation Uncertainty : Ur = 4.3dB

Conduction Uncertainty : Uc = 3.4dB

2. Test Procedure

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

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2009 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 C63.4-2009 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

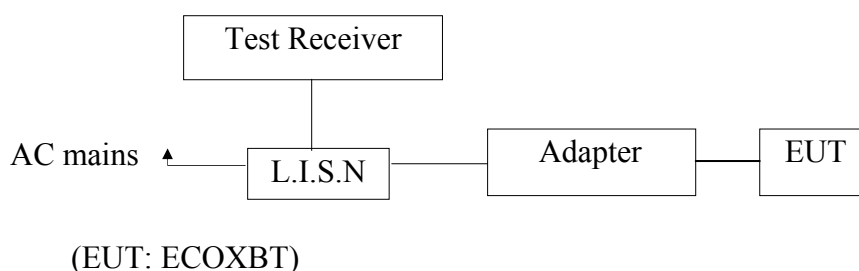
Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Nov. 12, 2012	1 Year
2.	LISN	SchwarzBeck	NSLK 8126	8126377	May 19, 2012	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	May 19, 2012	1 Year
4.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A

Conduction Uncertainty : Uc = 3.4dB

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.

EUT	:	ECOXBT
Model Number	:	BTM-68D
Applicant	:	NEO-TELECOM CORPORATION

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 (Charging) 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 C63.4-2003 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
5.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Nov. 12, 2012	1 Year
6.	LISN	SchwarzBeck	NSLK 8126	8126377	May 19, 2012	1 Year
7.	RF Switching Unit	Compliance Direction	RSU-M2	38303	May 19, 2012	1 Year
8.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A

Conduction Uncertainty : Uc = 3.4dB

3.6. Power Line Conducted Emission Measurement Results

PASS.

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

Please refer the following pages.

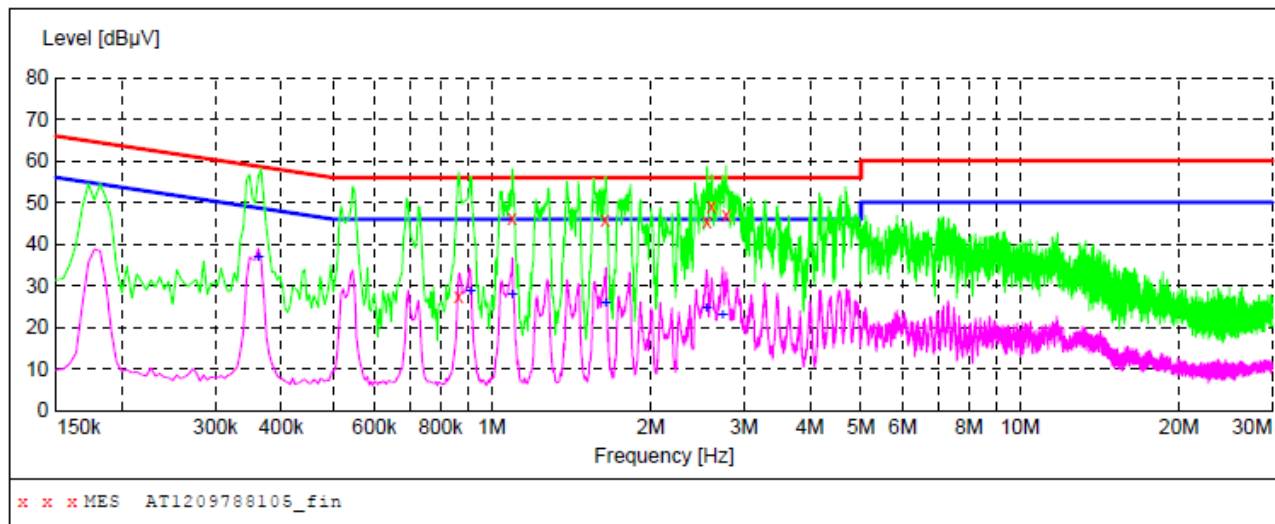
FCC ID: WYHBTM-68D

CONDUCTED EMISSION TEST DATA

EUT: ECOXBT M/N: BTM-68D
 Operating Condition: Charging
 Test Site: 1# Shielded Room
 Operator: Andy Chen
 Test Specification: DC 5V Via Adapter
 Comment: Live Line
 Tem:25°C Hum:50%

SCAN TABLE: "Voltage(150K~30M) FIN"

Short Description: 150K-30M Disturbance Voltages

**MEASUREMENT RESULT: "AT1209788105_fin"**

9/29/2012 11:22AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.865500	27.60	20.1	56	28.4	QP	L1	GND
1.094500	46.30	20.2	56	9.7	QP	L1	GND
1.643500	45.80	20.3	56	10.2	QP	L1	GND
2.557000	45.60	20.4	56	10.4	QP	L1	GND
2.606500	49.10	20.4	56	6.9	QP	L1	GND
2.777500	46.90	20.4	56	9.1	QP	L1	GND

MEASUREMENT RESULT: "AT1209788105_fin2"

9/29/2012 11:22AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.361500	37.00	20.1	49	11.7	AV	L1	GND
0.910500	28.50	20.1	46	17.5	AV	L1	GND
1.094500	27.80	20.2	46	18.2	AV	L1	GND
1.643500	25.60	20.3	46	20.4	AV	L1	GND
2.552500	24.40	20.4	46	21.6	AV	L1	GND
2.737000	22.90	20.4	46	23.1	AV	L1	GND

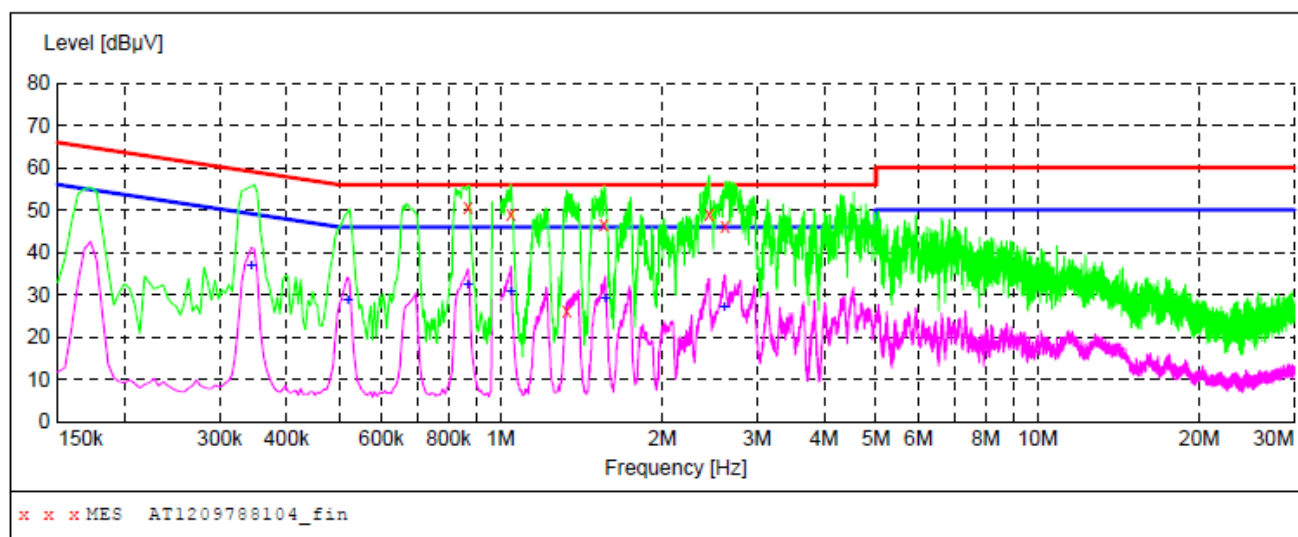
FCC ID: WYHBTM-68D

CONDUCTED EMISSION TEST DATA

EUT: ECOXBT M/N: BTM-68D
 Operating Condition: Charging
 Test Site: 1# Shielded Room
 Operator: Andy Chen
 Test Specification: DC 5V Via Adapter
 Comment: Neutral Line
 Tem:25°C Hum:50%

SCAN TABLE: "Voltage (150K~30M) FIN"

Short Description: 150K-30M Disturbance Voltages

**MEASUREMENT RESULT: "AT1209788104_fin"**

9/29/2012 11:19AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.870000	50.90	20.1	56	5.1	QP	N	GND
1.045000	49.20	20.2	56	6.8	QP	N	GND
1.328500	26.30	20.2	56	29.7	QP	N	GND
1.558000	46.80	20.3	56	9.2	QP	N	GND
2.444500	49.10	20.3	56	6.9	QP	N	GND
2.620000	46.30	20.4	56	9.7	QP	N	GND

MEASUREMENT RESULT: "AT1209788104_fin2"

9/29/2012 11:19AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.343500	36.80	20.1	49	12.3	AV	N	GND
0.519000	28.80	20.1	46	17.2	AV	N	GND
0.870000	32.30	20.1	46	13.7	AV	N	GND
1.045000	30.70	20.2	46	15.3	AV	N	GND
1.567000	29.00	20.3	46	17.0	AV	N	GND
2.611000	27.20	20.4	46	18.8	AV	N	GND

4. Radiation Interference

4.1. Requirements (15.249, 15.209):

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

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.

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.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Nov. 12, 2011	1 Year
2.	Trilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	May 17, 2012	1 Year
3.	Pre-amplifier	Compliance Direction	PAP-0203	22008	May 19, 2012	1 Year
4.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

Radiation Uncertainty : Ur = 4.3dB

4.3 Test Results

PASS.

Please refer the following pages.

FCC ID: WYHBTM-68D

Data:

Horizontal CH Low(2402MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
239.98	1.58	13.50	38.90	57.45	33.65	46.00	-12.35	QP
2402.00	2.17	31.21	35.30	98.56	101.60	114.0	-12.40	Peak
2402.00	2.17	31.21	35.30	95.71	90.79	94.0	-3.21	AV
4804.10	2.56	34.01	34.71	41.15	43.01	74.0	-30.99	Peak
4804.10	2.56	34.01	34.71	38.26	40.12	54.0	-13.88	AV
7207.97	2.98	36.16	35.15	38.33	42.32	74.0	-31.68	Peak
7207.97	2.98	36.16	35.15	35.50	39.49	54.0	-14.51	AV
9608.00	---	---	---	---	---	---	---	---
12010.00	---	---	---	---	---	---	---	---
14412.00	---	---	---	---	---	---	---	---
16814.00	---	---	---	---	---	---	---	---
19216.00	---	---	---	---	---	---	---	---
21618.00	---	---	---	---	---	---	---	---
24020.00	---	---	---	---	---	---	---	---

CH Middle(2441MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
312.18	1.60	13.52	38.82	56.40	32.70	46.00	-13.30	QP
2441.00	2.19	31.22	34.60	85.32	101.13	114.0	-12.87	Peak
2441.00	2.19	31.22	34.60	83.55	90.36	94.0	-3.64	AV
4882.08	2.57	35.00	34.58	39.61	42.62	74.0	-31.38	Peak
4882.08	2.57	35.00	34.58	37.47	40.46	54.0	-13.54	AV
7323.05	3.00	36.17	35.14	38.80	42.83	74.0	-31.17	Peak
7323.05	3.00	36.17	35.14	36.08	40.11	54.0	-13.89	AV
9764.00	---	---	---	---	---	---	---	---
12205.00	---	---	---	---	---	---	---	---
14646.00	---	---	---	---	---	---	---	---
17087.00	---	---	---	---	---	---	---	---
19528.00	---	---	---	---	---	---	---	---
21969.00	---	---	---	---	---	---	---	---
24410.00	---	---	---	---	---	---	---	---

FCC ID: WYHBTM-68D

CH High(2480MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
312.18	1.60	13.52	38.82	53.20	29.50	46.00	-16.50	QP
2480.00	2.20	31.65	36.00	92.78	100.63	114.0	-13.37	Peak
2480.00	2.20	31.65	36.00	89.51	90.36	94.0	-3.64	AV
4960.05	2.58	35.06	34.79	41.76	44.61	74.0	-29.39	Peak
4960.05	2.58	35.06	34.79	39.28	42.13	54.0	-11.87	AV
7439.97	3.02	36.19	34.90	39.53	43.84	74.0	-30.16	Peak
7439.97	3.02	36.20	35.20	37.40	41.42	54.0	-12.58	AV
9920.00	---	---	---	---	---	---	---	---
12400.00	---	---	---	---	---	---	---	---
14880.00	---	---	---	---	---	---	---	---
17360.00	---	---	---	---	---	---	---	---
19840.00	---	---	---	---	---	---	---	---
22320.00	---	---	---	---	---	---	---	---
24800.00	---	---	---	---	---	---	---	---

Vertical CH Low(2402MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
30.42	1.43	12.13	38.45	53.52	28.63	40.00	-11.37	QP
2402.00	2.17	31.21	35.30	84.23	101.11	114.0	-12.89	Peak
2402.00	2.17	31.21	35.30	81.84	90.92	94.0	-3.08	AV
4804.10	2.56	34.01	34.71	41.05	42.91	74.0	-31.09	Peak
4804.10	2.56	34.01	34.71	38.61	40.47	54.0	-13.53	AV
7207.93	2.98	36.16	35.15	37.46	41.45	74.0	-32.55	Peak
7207.93	2.98	36.16	35.15	34.50	38.49	54.0	-15.51	AV
9608.00	---	---	---	---	---	---	---	---
12010.00	---	---	---	---	---	---	---	---
14412.00	---	---	---	---	---	---	---	---
16814.00	---	---	---	---	---	---	---	---
19216.00	---	---	---	---	---	---	---	---
21618.00	---	---	---	---	---	---	---	---
24020.00	---	---	---	---	---	---	---	---

FCC ID: WYHBTM-68D

CH Middle(2441MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
143.82	1.50	13.40	38.89	53.90	29.91	43.50	-13.59	QP
2441.01	2.19	31.22	34.60	82.34	101.15	114.0	-12.85	Peak
2441.01	2.19	31.22	34.60	81.01	90.82	94.0	-3.18	AV
4882.11	2.57	35.00	34.58	40.15	43.14	74.0	-30.86	Peak
4882.11	2.57	35.00	34.58	37.86	40.85	54.0	-13.15	AV
7323.05	3.00	36.17	35.14	38.70	42.73	74.0	-31.27	Peak
7323.05	3.00	36.17	35.14	36.00	40.03	54.0	-13.97	AV
9764.00	---	---	---	---	---	---	---	---
12205.00	---	---	---	---	---	---	---	---
14646.00	---	---	---	---	---	---	---	---
17087.00	---	---	---	---	---	---	---	---
19528.00	---	---	---	---	---	---	---	---
21969.00	---	---	---	---	---	---	---	---
24410.00	---	---	---	---	---	---	---	---

CH High(2480MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
408.80	1.62	13.54	38.45	51.18	27.83	46.00	-18.17	QP
2480.00	2.20	31.65	36.00	83.52	101.37	114.0	-12.63	Peak
2480.00	2.20	31.65	36.00	82.03	90.88	94.0	-3.12	AV
4960.10	2.58	35.06	34.79	40.08	42.93	74.0	-31.07	Peak
4960.10	2.58	35.06	34.79	38.10	40.95	54.0	-13.05	AV
7439.97	3.02	36.19	34.90	38.58	42.89	74.0	-31.11	Peak
7439.97	3.02	36.20	35.20	36.34	40.36	54.0	-13.64	AV
9920.00	---	---	---	---	---	---	---	---
12400.00	---	---	---	---	---	---	---	---
14880.00	---	---	---	---	---	---	---	---
17360.00	---	---	---	---	---	---	---	---
19840.00	---	---	---	---	---	---	---	---
22320.00	---	---	---	---	---	---	---	---
24800.00	---	---	---	---	---	---	---	---

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. Occupied Bandwidth

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.

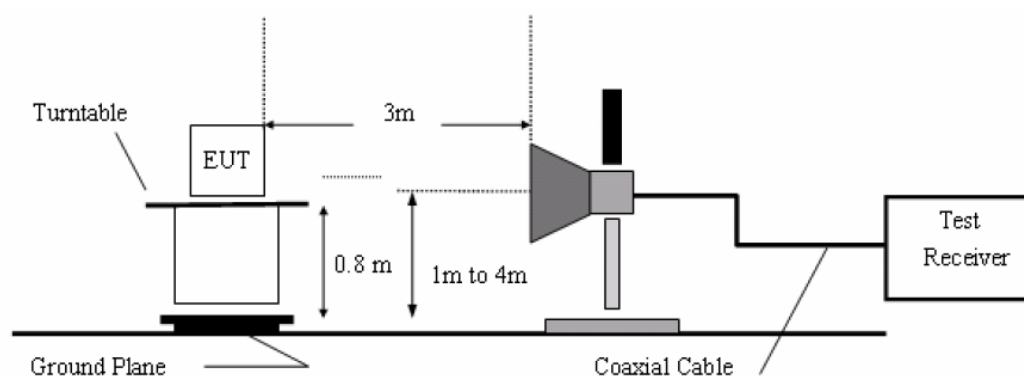
5.2. Test Procedure

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.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Nov. 12, 2012	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	July 03, 2012	1 Year
3.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 07, 2012	1 Year
4.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

5.3. Test Configuration:

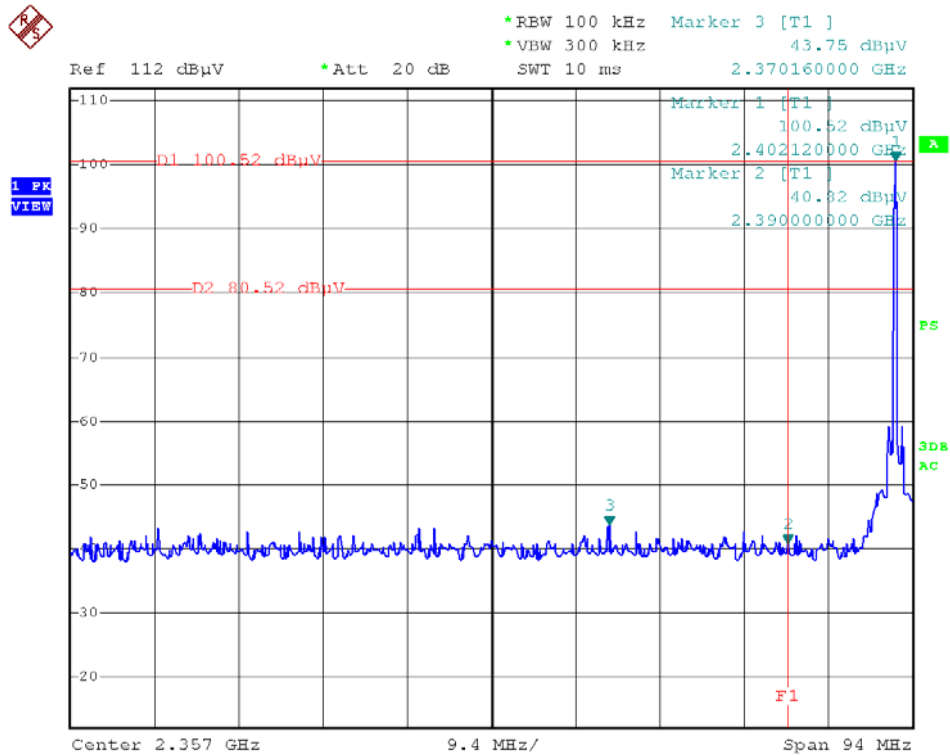


5.4. Test Results

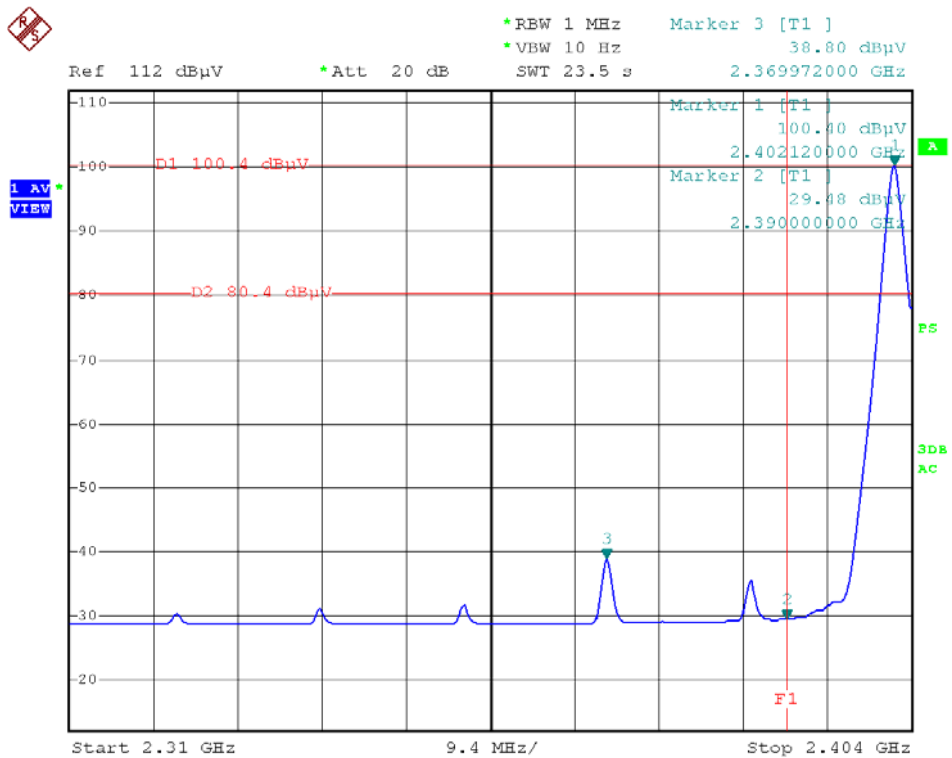
Pass.

Please refer the following plot.

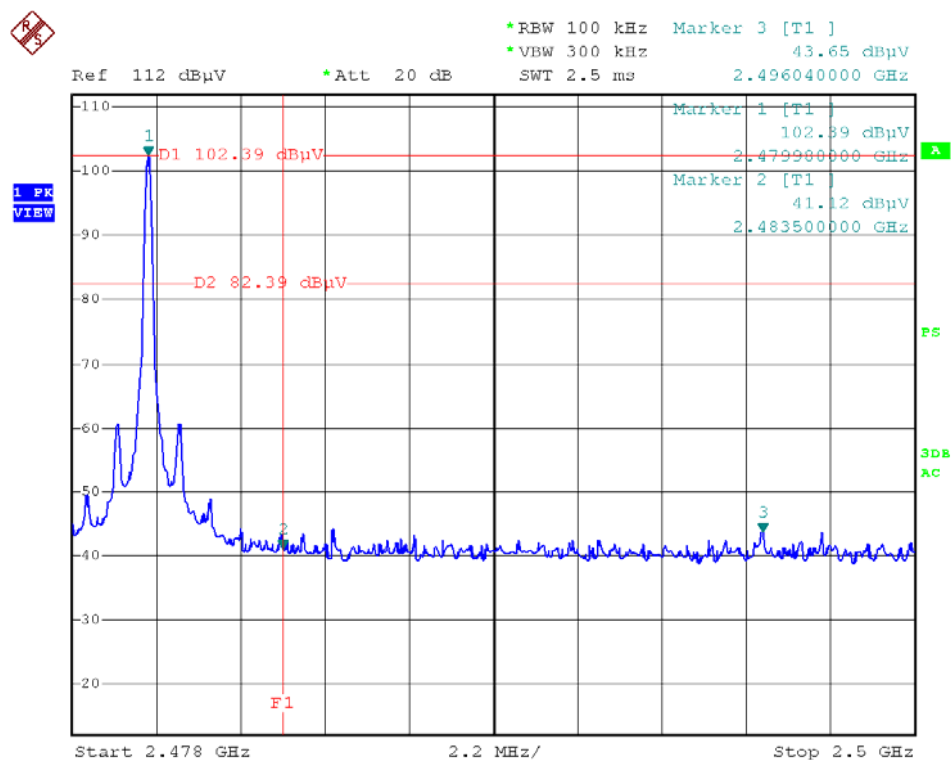
(Note: Marker 3 means the highest value in 2.39GHz~2.4GHz or 2.4835~2.5GHz)



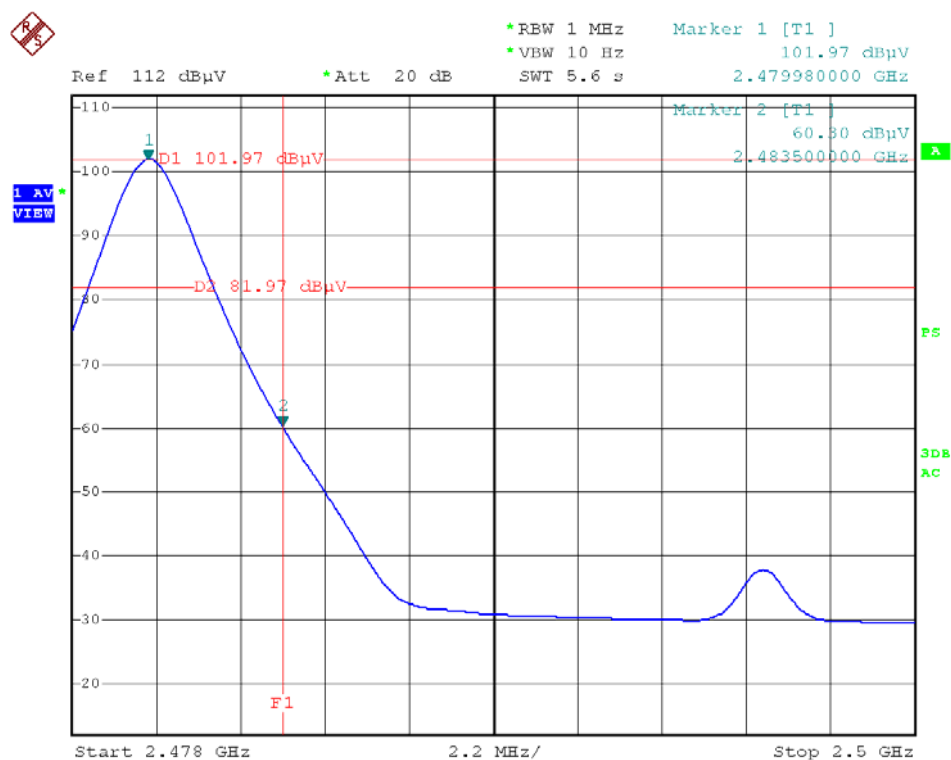
Date: 23.OCT.2012 21:02:49



Date: 23.OCT.2012 21:16:49



Date: 23.OCT.2012 21:07:39



Date: 23.OCT.2012 21:11:13