

FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment : Notebook with WLAN

Trade Name : ECS

Model No. : GREEN733E / GREEN733E PRO

FCC ID : SA6733EABXX

Filing Type : Certification

Applicant : ELITEGROUP COMPUTER SYSTEMS., CO., LTD.
3F, No. 240, Sec. 1, Nei Hu Road, Taipei, Taiwan 114,
R.O.C.

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SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

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History of this test report

Original Report Issue Date: July 01, 2004

No additional attachment.

Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

Declaration of Conformity

This equipment, Notebook with 802.11b WLAN (model number: GREEN433E / GREEN733E PRO) has been tested and found in compliance with part 15B and it was approved under the DoC procedure.

CERTIFICATE OF COMPLIANCE
for
47 CFR Part 15 Subpart C

Equipment : Notebook with WLAN

Trade Name : ECS

Model No. : GREEN733E / GREEN733E PRO

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Filing Type : Certification

Applicant : ELITEGROUP COMPUTER SYSTEMS., CO., LTD.
3F, No. 240, Sec. 1, Nei Hu Road, Taipei, Taiwan 114,
R.O.C.

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 2001** and the equipment under test was **passed** all test items required in FCC Part 15 subpart C, relative to the equipment under test. Testing was carried out on June 30, 2004 at **SPORTON International Inc. LAB.**



Daniel Lee
Manager

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

1. General Description of Equipment under Test

1.1. Applicant

ELITEGROUP COMPUTER SYSTEMS., CO., LTD.

3F, No. 240, Sec. 1, Nei Hu Road, Taipei, Taiwan 114, R.O.C.

1.2 Manufacturer

ELITEGROUP COMPUTER SYSTEMS., CO., LTD.

3F, No. 240, Sec. 1, Nei Hu Road, Taipei, Taiwan 114, R.O.C.

1.3 Basic Description of Equipment under Test

Equipment	: Notebook with WLAN
Trade Name	: ECS
Model No.	: GREEN733E / GREEN733E PRO
Power Supply Type	: Switching
AC Power Cord	: AC 120V, 1.8meter,3pin
DC Power Cable	: DC 19V, 1.5meter

1.4 Feature of Equipment under Test

Product Feature & Specification			
1. Host/Radio Interface	USB 2.0		
2. Modulation Type/Data Rate	802.11b: CCK (11Mbps), DQPSK (5.5Mbps), DQPSK (2Mbps),DBPSK (1Mbps)		
3. Freq.Range/Carrier Freqs.	2400 MHz ~ 2483.5 MHz		
4. Number of Channels	USA/Canada: 11		European: 13 V
	Japan: 13, 14		Other:
5. Carrier Frequency of each channel	2412 MHz +(n-1)*5 MHz, n= 1~13		
6. Channel Spacing	5 MHz		
7. Maximum Output Power to Antenna (Normal condition)	802.11b: 15 dBm		
8. Type of Antenna Connector	N/A		
9. Antenna Type	Chip Antenna		
10. Antenna Gain	1.3 dBi		
11. Function Type	Transmitter		Transceiver V
12. Power Rating (DC/AC , Voltage)	5.0V±5%		
13. Duty Cycle	100%		
14. Temperate Range (Operating)	0~35°C		

2 Test Configuration of Equipment under Test

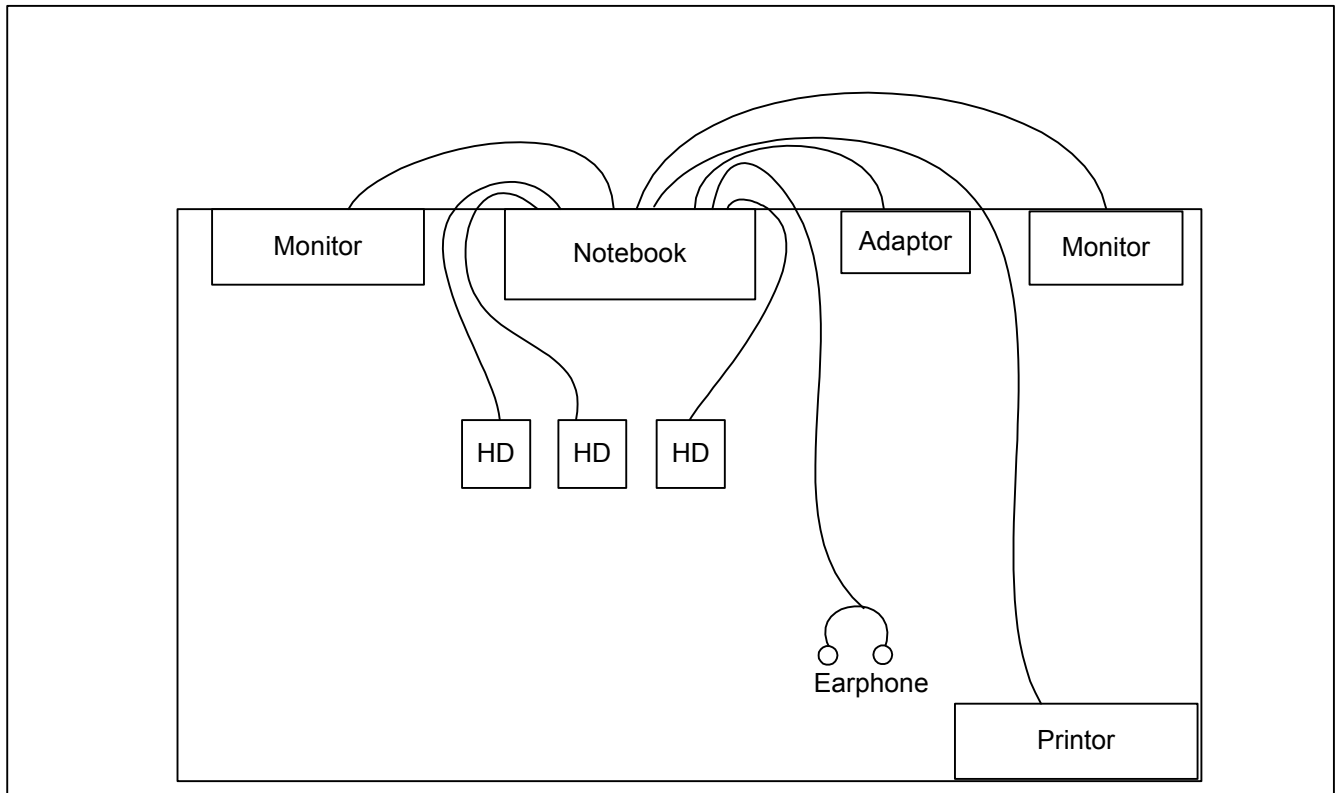
2.1 Test Manner

- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2001 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.
- b. The complete test system included VIEWSONIC Monitor, Terasys External HD case, JVC TV, GALAXY MIC+EARPHONE, EPSON Print and EUT for EMI test.
- c. The EUT can operate on eleven channels from 2412MHz to 2462MHz. (as listed in section 1.4).
- d. The following test modes were pretested for conduction test:
 - Mode 1: Link mode
 The following test modes were pretested for radiation test:
 - Mode 1: TX CH01 (2412MHz)
 - Mode 2: TX CH06 (2437MHz)
 - Mode 3: TX CH11 (2462MHz)
- e. Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz.

2.2 Description of Test System

Item	Asset	Model Name	Power Cord	S/N
1	Monitor (VIEWSONIC)	VCDTS21553-3P	Shielded, 1.7m	SP0007
2	External HD case (TeraSys)	F12-UF	Shielded, 1.8m	SP0025
3	TV (JVC)	TM-1700PN	N/A	SP0029
4	MIC+EARPHONE (ALAXY)	HP-316	Shielded, 1.7m	SP0030
5	Print (EPSON)	LQ-300t	Shielded, 1.2m	N/A

2.3 Connection Diagram of Test System



3 Operation of Equipment under Test

An executive program, EMCTEST.EXE on WIN XP continuously generating a complete line of "H" pattern, was used as the test software.

The program was executed as follows:

- a. Turn on the power of all equipment.
- b. The PC reads the test program from the hard disk drive and runs it.
- c. The PC sends "H" messages to the monitor, and the monitor displays "H" patterns on the screen.
- d. The PC sends "H" messages to the printer, then the printer prints them on the paper.
- e. The PC sends "H" messages to the internal hard disk , and the hard disk reads and writes the message.
- f. Repeat the steps from c to e.

At the same time, the following program was executed:

"Prism.EXE" sends continuous transmitting.

4 General Information of Test

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-318-0055
Test Site No : CO04-HY, 03CH03-HY

4.1 Test Voltage

110V/ 60Hz

4.2 Standard for Methods of Measurement

ANSI C63.4-2001

4.3 Test in Compliance with

47 CFR Part 15 Subpart C

4.4 Frequency Range Investigated

- a. Conduction: from 150 kHz to 30 MHz
- b. Radiation: from 30 MHz to 25000 MHz

4.5 Test Distance

The test distance of radiated emission from antenna to EUT is 3 m.

5 Report of Measurements and Examinations

5.1 List of Measurements and Examinations

FCC Rule	Description of Test	Result
15.207	Conducted Emission	Pass
15.247(a)(2)	6dB Bandwidth	Pass
15.247(b)	Maximum Peak Output Power	Pass
15.209(a)	Radiated Emission	Pass
15.247 (c)	100kHz Bandwidth of Frequency Band Edges	Pass
15.247(d)	Power Spectral Density	Pass
15.203 15.247(b)(4)	Antenna Requirement	Pass
1.1307 2.1091	RF Exposure	Pass

5.2 6dB Bandwidth

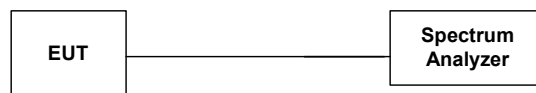
5.2.1 Measuring Instruments :

As described in chapter 7 of this test report.

5.2.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 100kHz and VBW to 100kHz.
3. The 6 dB bandwidth is defined as the frequency range where the power is higher than the peak power minus 6dB.

5.2.3 Test Setup Layout :



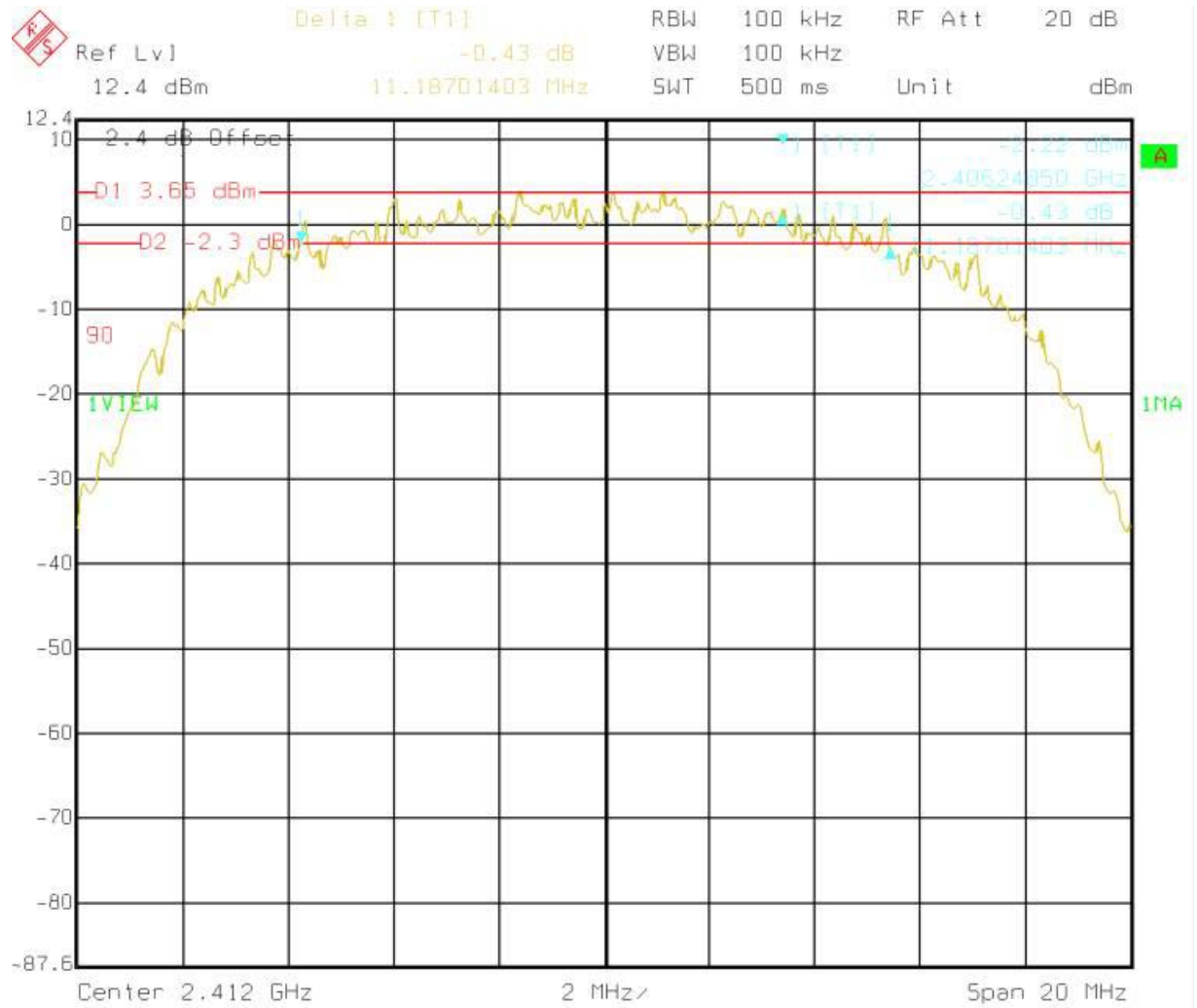
5.2.4 Test Result :

- Mode 1~3 : WLAN Tx
- Temperature : 26°C
- Relative Humidity : 53%

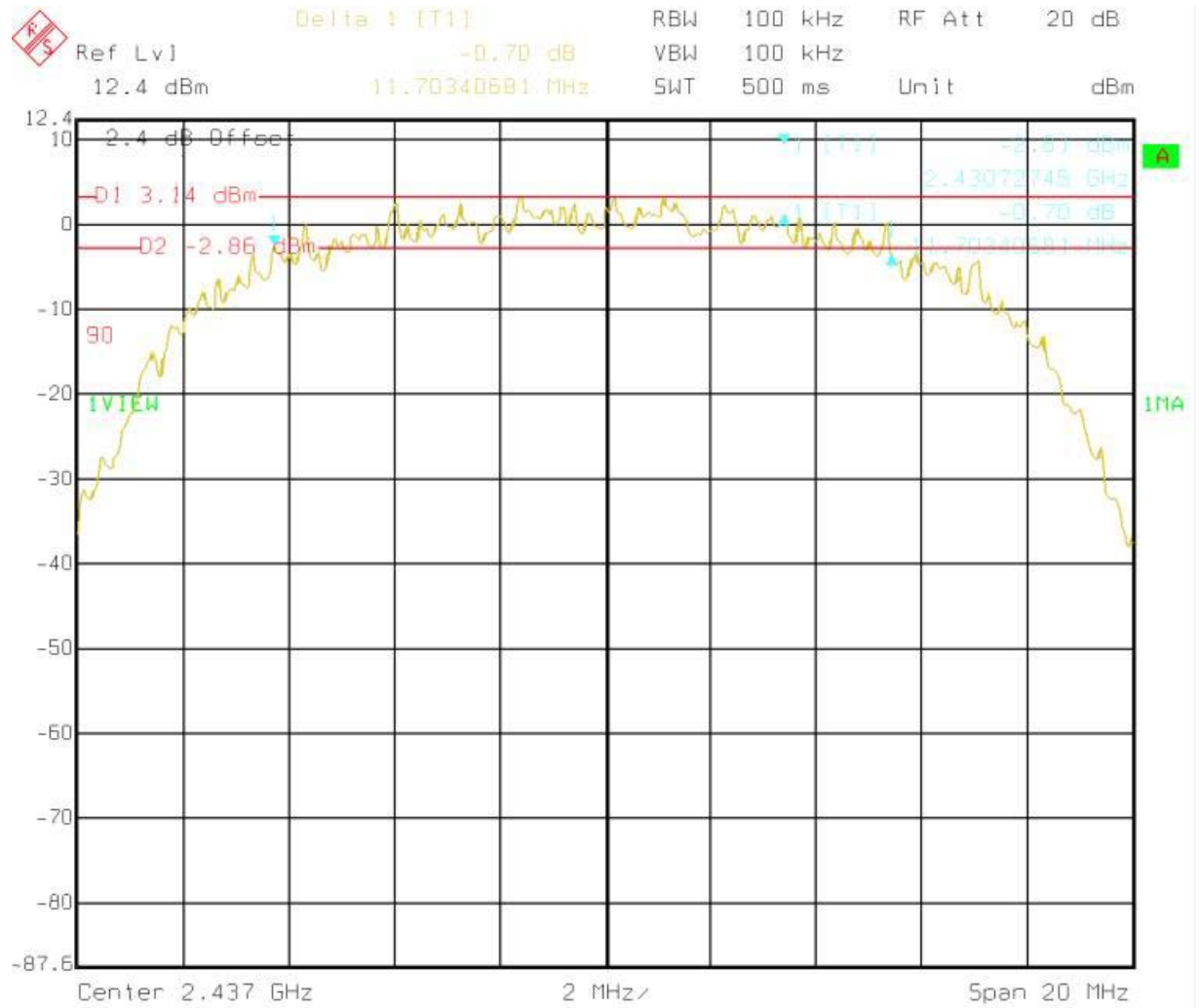
Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	11.18	0.5	Mode 1
06	2437	11.70	0.5	Mode 2
11	2462	11.70	0.5	Mode 3

5.2.6 6dB Bandwidth

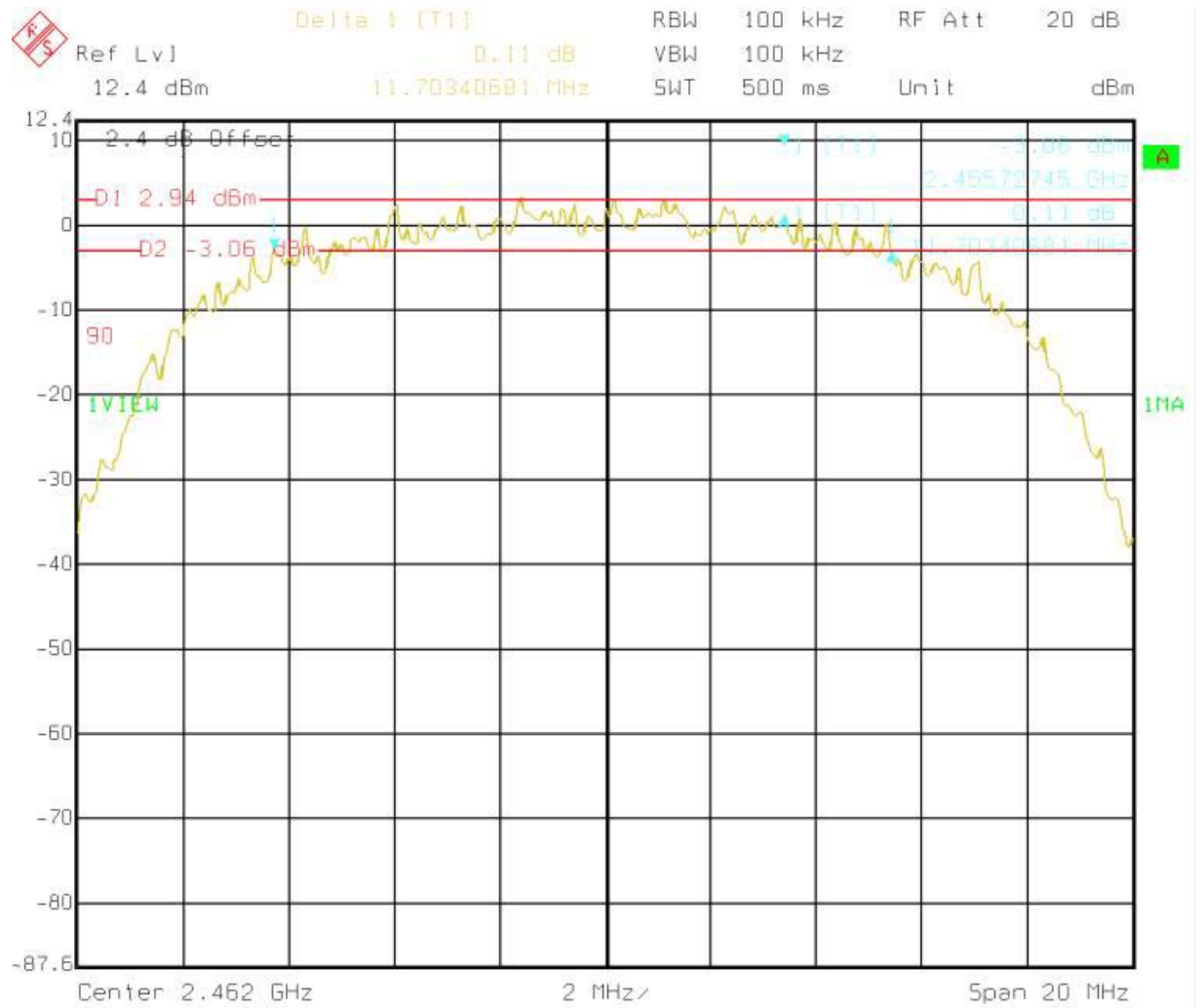
Mode 1 : Tx CH01 (2412MHz)



Mode 2 : Tx CH06 (2437MHz)



Mode 3 : Tx CH11(2462MHz)



5.3 Power Spectral Density

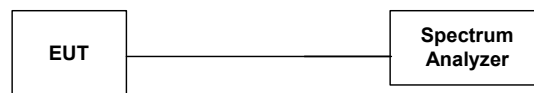
5.3.1 Measuring Instruments :

As described in chapter 7 of this test report.

5.3.2 Test Procedure :

1. The transmitter output was connected to spectrum analyzer directly.
2. The spectrum analyzer's resolution bandwidth was set at 3kHz RBW and 30kHz VBW as that of the fundamental frequency. Set the sweep time=span/3kHz.
3. The power spectral density was measured and recorded.
4. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

5.3.3 Test Setup Layout :



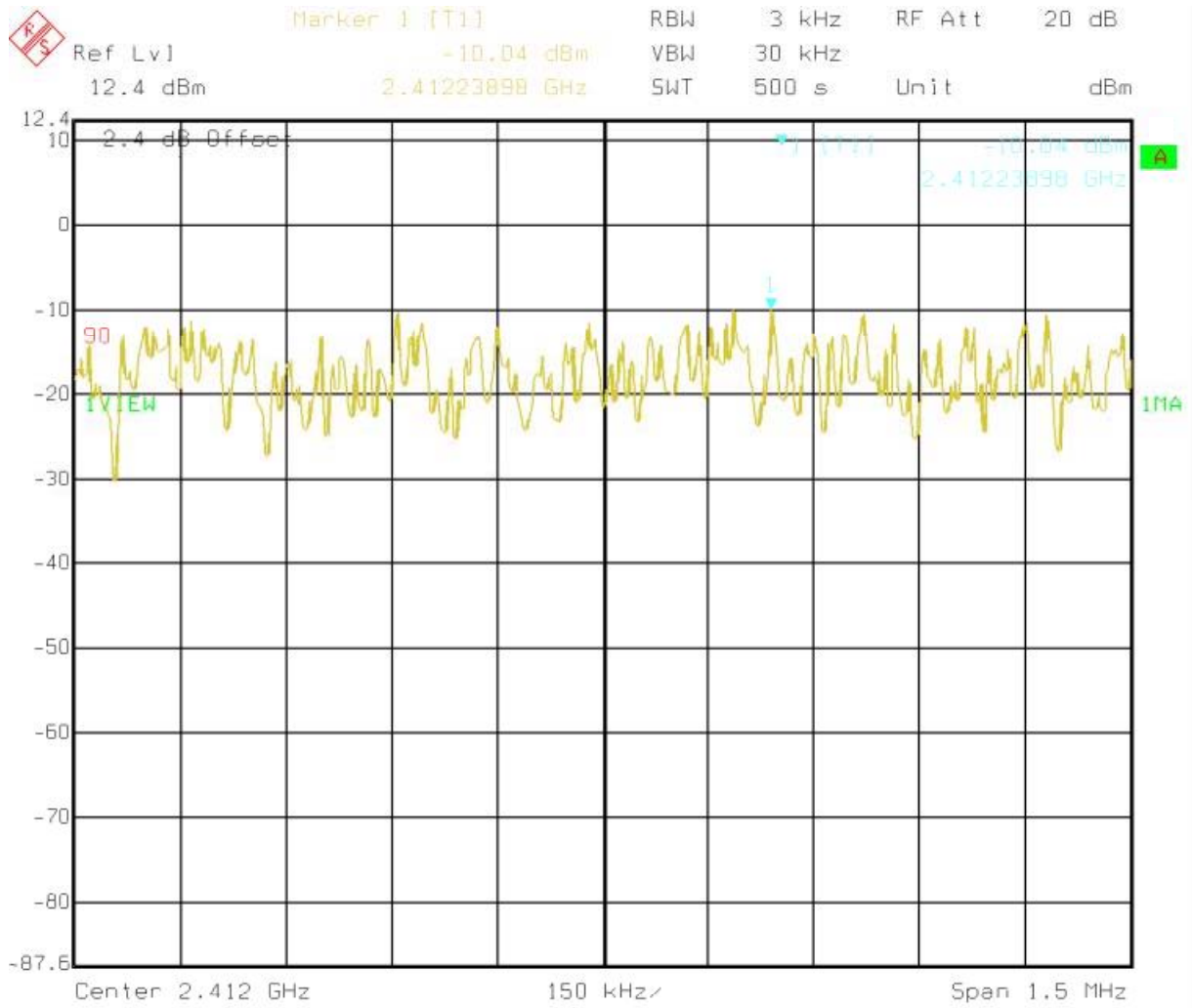
5.3.4 Test Result :

- Mode 1~3: WLAN Tx
- Temperature : 26°C,
- Relative Humidity : 53%

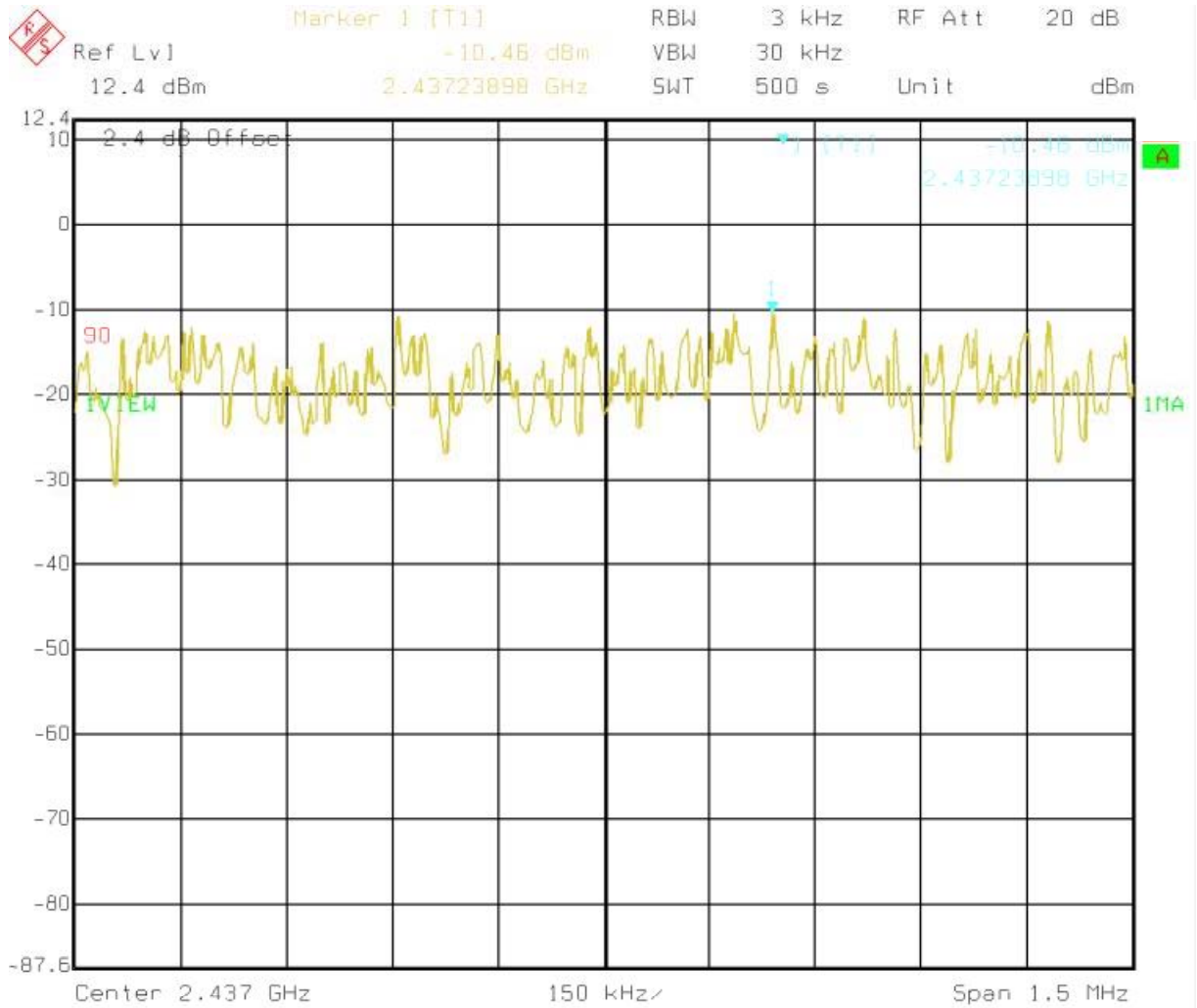
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-10.04	8	Mode 1
06	2437	-10.46	8	Mode 2
11	2462	-10.65	8	Mode 3

5.3.6 Power Spectral Density

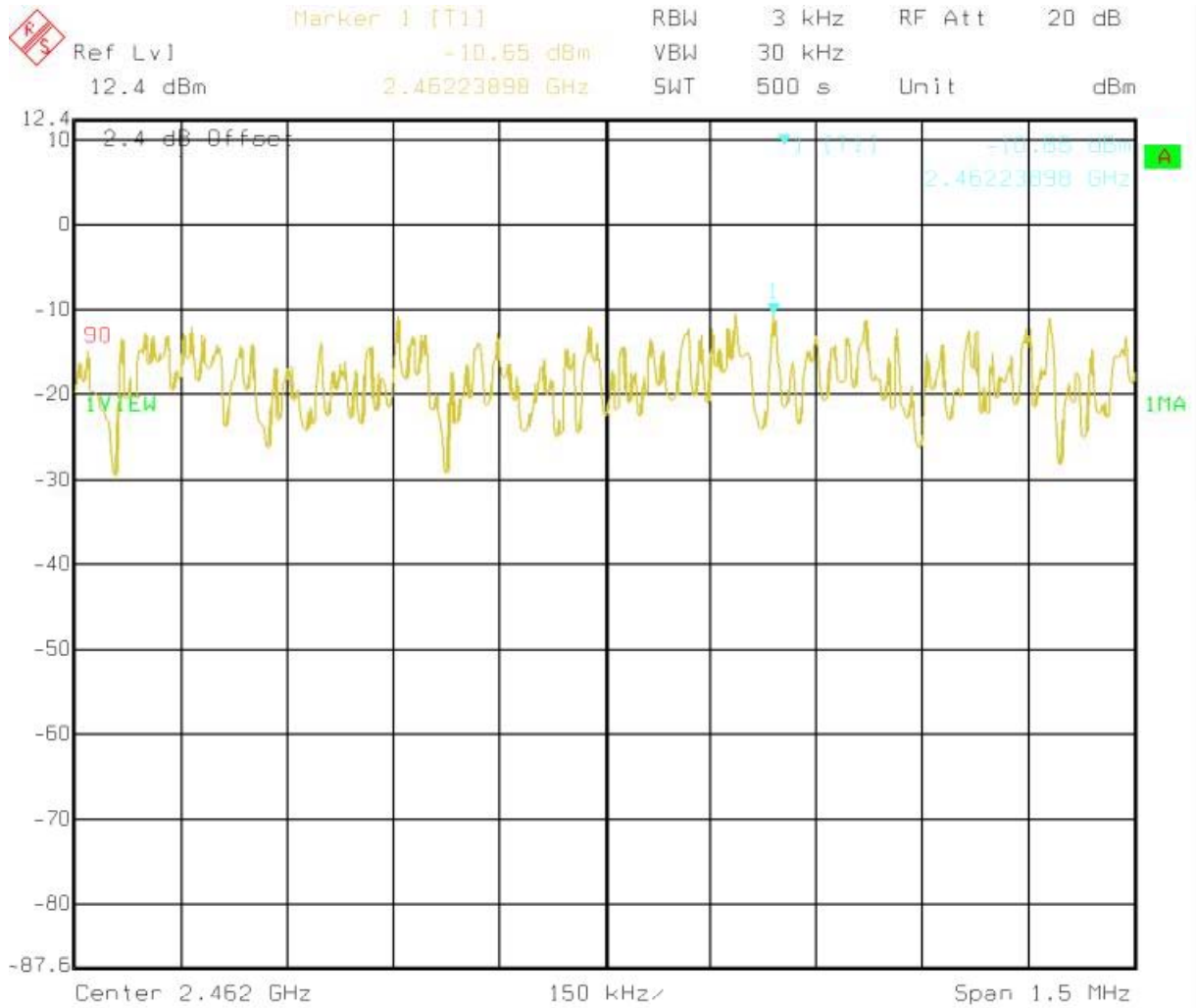
Mode 1 : Tx CH01(2412MHz)



Mode 2 : Tx CH06 (2437MHz)



Mode 3 : Tx CH11 (2462MHz)



5.4 Band Edges Measurement

5.4.1 Measuring Instruments :

As described in chapter 7 of this test report.

5.4.2 Test Procedure :

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 kHz bandwidth from band edge.
3. The band edges was measured and recorded.

5.4.3 Test Result :

- Mode 1 and 3 : WLAN Tx
- Temperature : 26°C,
- Relative Humidity : 53%

- Test Result in lower band (Channel 1) : PASS
- Test Result in higher band (Channel 11) : PASS

5.4.4 Note on Band Edge Emission

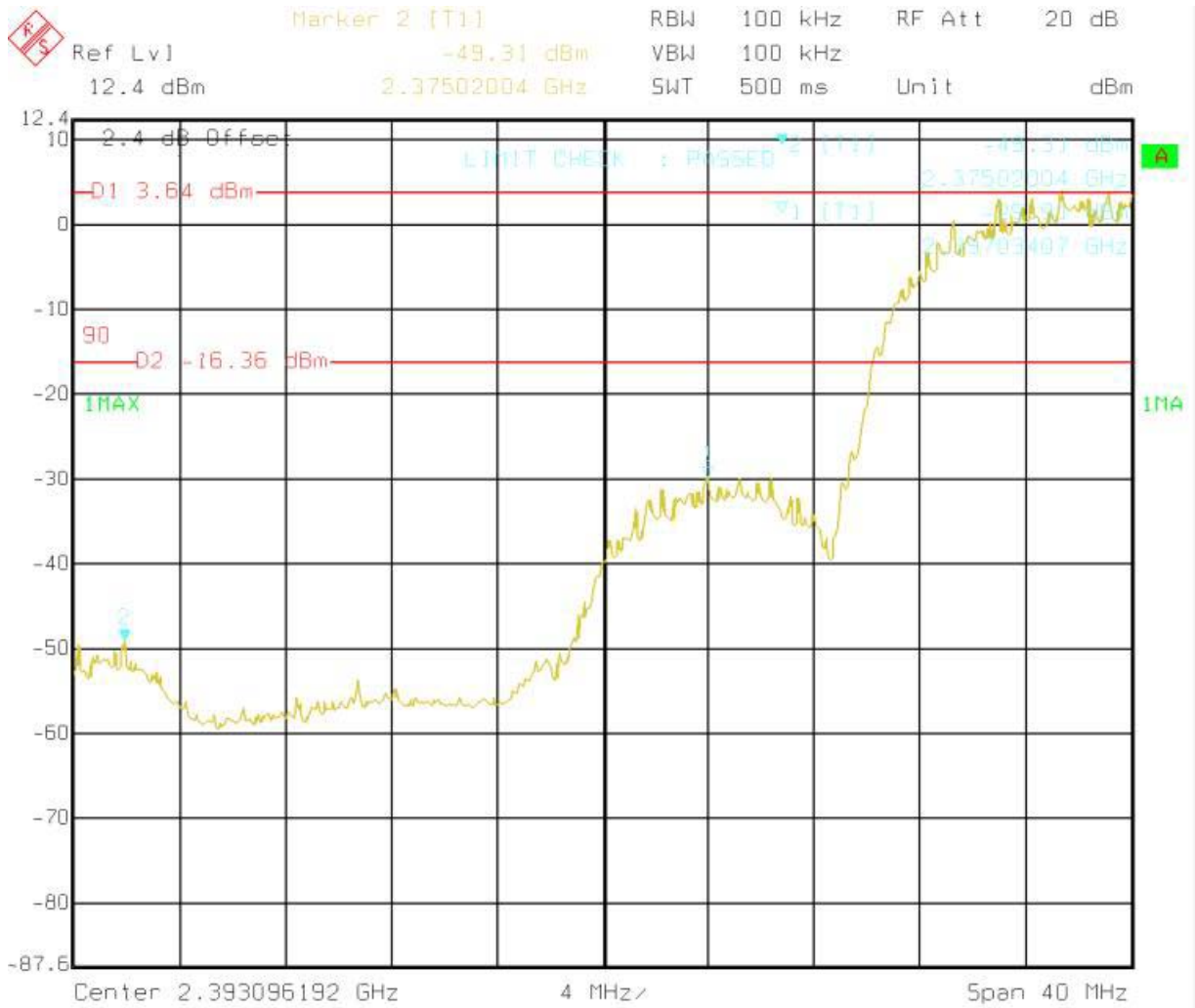
The band edge emission shows 33.63 dB delta between carrier maximum power and local maximum emission in the restricted band (2.390GHz).

The band edge emission shows 54.77 dB delta between carrier maximum power and local maximum emission in the restricted band (2.4835GHz)

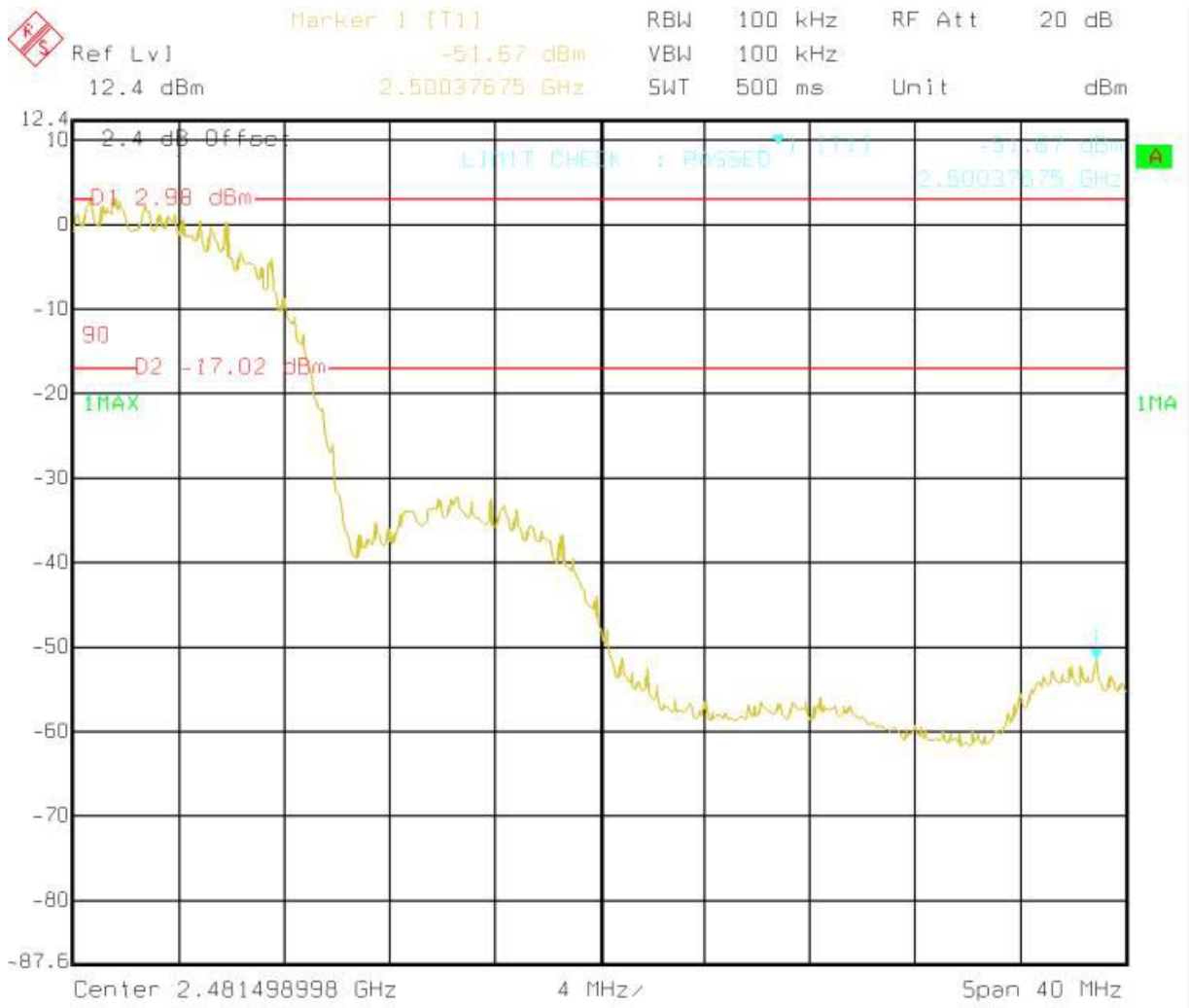
Channel	Polarity	The emission of carrier power strength	Frequency	The emission of band edge power strength	Limit	Margin	Remark	Result
		(dB μ V/m)		(MHz)				
01	H	99.67	2397.04	66.04	74	-7.96	Peak	Pass
	H	93.82	2397.04	60.19	54	6.19	Average	Pass
	V	99.2	2397.04	65.57	74	-8.43	Peak	Pass
	V	91.58	2397.04	57.95	54	3.95	Average	Pass
11	H	98.7	2500.38	43.93	74	-30.07	Peak	Pass
	H	91.64	2500.38	36.87	54	-17.13	Average	Pass
	V	96.76	2500.38	41.99	74	-32.01	Peak	Pass
	V	90.12	2500.38	35.35	54	-18.65	Average	Pass

5.4.7 20dB Band Edge

Mode1 : Tx CH01 (2412MHz)



Mode 2 : Tx CH11 (2462MHz)



5.5 Peak Output Power

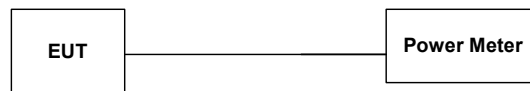
5.5.1 Measuring Instruments :

As described in chapter 7 of this test report.

5.5.2 Test Procedure :

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter.
The power is equal to the reading level on power meter plus cable loss at the EUT antenna terminal.

5.5.3 Test Setup Layout :



5.5.4 Test Result :

- Mode 1~3 : WLAN Tx
- Temperature : 26°C
- Relative Humidity : 53 %

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	14.7	1W/30 dBm
06	2437	14.6	1W/30 dBm
11	2462	14.6	1W/30 dBm

6. Test of Conducted Emission

Conducted emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz and return leads of the EUT according to the methods defined in ANSI C63.4-2001 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

6.1. Major Measuring Instruments

● Test Receiver	(R&S ESCS 30)
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

6.2. Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power port of the line impedance stabilization network (LISN).
- c. All the support units are connect to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.