FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment : Flybook

Model No. : A33i Series

FCC ID : JYV-A33iB

Filing Type : Certification

Applicant : Dialogue Technology Corp.
10F, No. 196, Sec. 2, Jungshing Rd., Shindian City,
Taipei 231, Taiwan, R.O.C.

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**

SPORTON International Inc.

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

Table of Contents

History of this test report ii
CERTIFICATE OF COMPLIANCE 1
1. General Description of Equipment under Test 2
1.1. Applicant 2
1.2 Manufacturer 2
1.3 Basic Description of Equipment under Test 2
1.4 Feature of Equipment under Test 3
2 Test Configuration of Equipment under Test 5
2.1 Test Manner 5
2.2 Description of Test System 6
2.3 Connection Diagram of Test System 7
3 Operation of Equipment under Test 8
4 General Information of Test 9
4.1 Test Voltage 9
4.2 Standard for Methods of Measurement 9
4.3 Test in Compliance with 9
4.4 Frequency Range Investigated 10
4.5 Test Distance 10
5 Report of Measurements and Examinations 11
5.1 List of Measurements and Examinations 11
5.2 6dB Bandwidth 13
5.3 Power Spectral Density 14
5.4 Band Edges Measurement 15
5.5 Hopping Channel Separation 17
5.6 Number of Hopping Frequency 18
5.7 Hopping Channel Bandwidth 19
5.8 Dwell Time of Each Frequency within a 30 Seconds Period 20
5.9 Peak Output Power 21
5.10 100KHz Bandwidth of Frequency Band Edges 23
5.11 Test of Conducted Emission 24
5.12 Test of Radiated Emission 33
5.13 Antenna Requirements 53
6 Antenna Factor & Cable Loss 54
7 List of Measuring Equipments Used 55
8 Uncertainty of Test Site 56
Appendix A. Photographs of EUT ..... A1 ~ A32
Appendix B. Test pattern ..... B1 ~ B20

History of this test report

Original Report Issue Date: Jan. 20, 2004

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

Certificate No. : F3D3126

CERTIFICATE OF COMPLIANCE

for

47 CFR Part 15 Subpart C

Equipment : Flybook

Model No. : A33i Series

FCC ID : JYV-A33iB

Filing Type : Certification

Applicant : **Dialogue Technology Corp.**
10F, No. 196, Sec. 2, Jungshing Rd., Shindian City,
Taipei 231, Taiwan, 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 Jan. 12, 2004 at **SPORTON International Inc.** LAB.

Joe Yang Jan. 20, 2004

Joe Yang
Director

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

Dialogue Technology Corp.

10F, No. 196, Sec. 2, Jungshing Rd., Shindian City, Taipei 231, Taiwan, R.O.C.

1.2 Manufacturer

Same as 1.1

1.3 Basic Description of Equipment under Test

Equipment	: Flybook
Model No.	: A33i series
FCC ID.	: JYV-A33iB
Trade Name	: Dialogue
Power Supply Type	: Switching
AC Power Input	: Wall-mounted, 1.2m, 2 pin.
DC Power Input	: Non-shielded, 1.8m, 2 pin.

1.4 Feature of Equipment under Test

The Emission Mode: Wireless LAN

Product Feature & Specification				
1. Host/Radio Interface	DSSS			
2. Type of Modulation/data rate	DBPSK, DQPSK and CCK for 1/2/5.5/11 Mbps			
3. Number of Channels	11			
4.Frequency Band	2400—2483.5MHz			
5.Carrier Frequency of each channel	2412+ (k -1)*5 MHz, k= 1~11			
6.Bandwidth of each channel	22MHz			
7.Maximum Output Power to Antenna	13.3 dBm			
8.IF & L.O. frequency	IF=374MHz, LO= 2038 MHz			
9.Type of Antenna Connector (Ex: SMA,TNC, MCX, MMCX, UFC…….etc)	I-PEX			
10.Antenna Type / Class and Gain	PIFA Antenna / Class2 Transceiver, Gain: 0.59 dBi			
11.Function Type	Transmitter		Transceiver	X
12.Power Rating (DC/AC , Voltage)	DC 3.3V			
13.Duty Cycle	100 %			
15.Temperature Range (Operating)	0 ~ 70°C			
16.Humidity	10~90%			

The Emission Mode: Bluetooth

Product Feature & Specification				
1. Host/Radio Interface	FHSS			
2. Type of Modulation/data rate	GFSK			
3. Number of Channels	79			
4.Frequency Band	2400—2483.5MHz			
5.Carrier Frequency of each channel	2402+ (k -1) MHz, k= 1~79			
6.Bandwidth of each channel	1MHz			
7.Maximum Output Power to Antenna	1.82 dBm (Class 2)			
8.IF & L.O. frequency	IF=6MHz, LO= $fc+f_{IF}$			
9.Type of Antenna Connector (Ex: SMA,TNC, MCX, MMCX, UFC…….etc)	I-PEX			
10.Antenna Type / Class and Gain	PIFA Antenna / Class2 Transceiver, GAIN: 0.59 dBi			
11.Function Type	Transmitter		Transceiver	X
12.Power Rating (DC/AC , Voltage)	DC 3~4.2V			
13.Duty Cycle	100 %			
15.Temperature Range (Operating)	0 ~ 70°C			
16.Humidity	10~90%			

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, which tended to maximize its emission characteristics in a typical application.

b. The complete test system included VIEWSONIC Monitor, LOGITECH USB Mouse, External HDD case, Gateway USB Keyboard and EUT for EMI test.

c. For WLAN emission The EUT can operate on eleven channels from 2412.0MHz to 2462.0MHz. (as listed in section 1.4).

d. The following test modes were pretested for conduction test:
   Mode 1: WLAN CH01（2412MHz）
   Mode 2: WLAN CH06（2437MHz）
   Mode 3: WLAN CH11（2462MHz）

e. The following test modes were pretested for radiation test:
   Mode 1: WLAN CH01（2412MHz）
   Mode 2: WLAN CH06（2437MHz）
   Mode 3: WLAN CH11（2462MHz）

f. The following test modes were pretested for conduction test:
   Mode 4: BluetoothCH00（2402MHz）
   Mode 5: Bluetooth CH39（2441MHz）
   Mode 6: Bluetooth CH78（2480MHz）

g. The following test modes were pretested for radiation test:
   Mode 4: BluetoothCH00（2402MHz）
   Mode 5: Bluetooth CH39（2441MHz）
   Mode 6: Bluetooth CH78（2480MHz）

h. Frequency range investigated: conduction 150 KHz to 30 MHz, radiation 30 MHz to 25GHz.

2.2 Description of Test System

Support Unit 1. -- Monitor (VIEWSONIC)

FCC ID	: N/A
Model No.	: VCDTS21553-3P
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0052
Data Cable	: Shielded, 1.7m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 2. -- USB Mouse (LOGITECH)

FCC ID	: N/A
Model No.	: M-BE58
Serial No.	: SP0041
Data Cable	: Shielded, 1.7m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

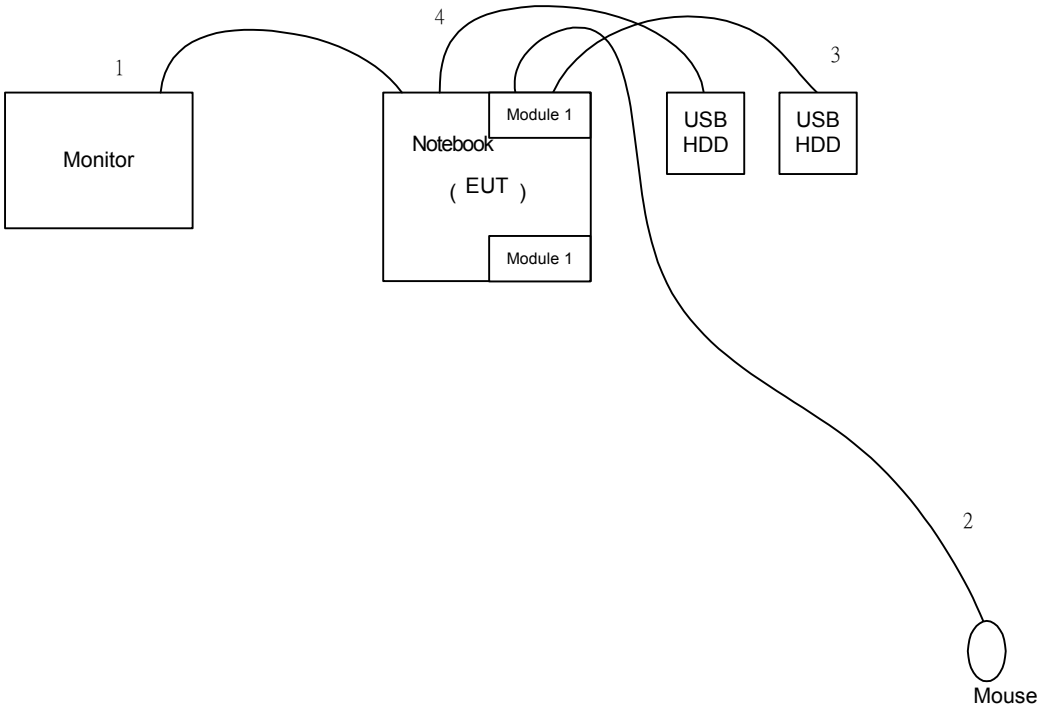
Support Unit 3. – External HDD (TeraSys)

FCC ID	: N/A
Model No.	: F12-UF
Power Cord	: Non-Shielded
Serial No.	: SP0048
Data Cable	: Shielded, 1.8m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 4. – Keyboard (Gateway)

FCC ID	: N/A
Model No.	: SK-9900U
Serial No.	: SP0049
Data Cable	: Shielded, 1.6m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

2.3 Connection Diagram of Test System



1. The I/O cable is connected from Notebook (EUT) to the support unit 2.
2. The I/O cable is connected from Notebook (EUT) to the support unit 3.
3. The I/O cable is connected from Notebook (EUT) to the support unit 4
4. The I/O cable is connected from Notebook (EUT) to the support unit 1.
5. Module 1: FCC certified Bluetooth module.
6. Module 2: FCC certified WLAN module.

3 Operation of Equipment under Test

An executive program, EMCTEST.EXE under WIN XP, which generates a complete line of continuously repeating “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 internal Hard Disk, and the Hard Disk reads and writes the message.
e. Repeat the steps from b to d.

At the same time, the following programs were executed:

RF Test Utility and one self test program to keep sending signals for Mode 1~3 (WLAN)

BT Test Utility and one self test program to keep sending signals for Mode 4~6 (Bluetooth)

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	:	CO01-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 25GHz

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

The Emission Mode: Wireless LAN

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	Radiated Emission	Pass
15.247(c)	100kHz Bandwidth of Frequency Band Edges	Pass
15.247(d)	Power Spectral Density	Pass
15.203	Antenna Requirement	Pass

The Emission Mode: Bluetooth

FCC Rule	Description of Test	Result
15.247(2)	Hopping Channel Bandwidth	Pass
15.247(a)(1)	Hopping Channel Separation	Pass
15.247(a)(1)(i)	Number of Hopping Frequency Used	Pass
15.247(a)(1)(ii)	Dwell Time of Each Frequency within a 30 Second Period	Pass
15.247(b)	Output Power	Pass
15.247(c)	100KHz Bandwidth of Frequency Band Edges	Pass
15.207	Conducted Emission	Pass
15.209	Radiated Emission	Pass
15.203	Antenna Requirement	Pass

5.2 6dB Bandwidth

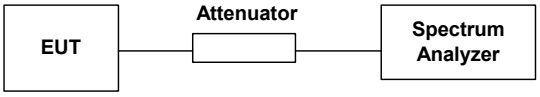
5.2.1 Measuring Instruments：

As described in chapter 7 of this test report.

5.2.2 Test Procedure：

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
3. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

5.2.3 Test Setup Layout：



5.2.4 Test Result：The spectrum analyzer plots are attached as below

- Mode 1~3 : WLAN
- Temperature : 23 °C
- Relative Humidity : 60%

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	8.4	0.5	1
06	2437	8.4	0.5	2
11	2462	8.36	0.5	3

5.3 Power Spectral Density

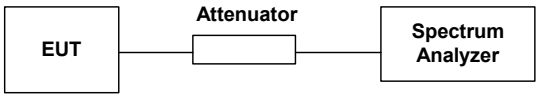
5.3.1 Measuring Instruments：

As described in chapter 7 of this test report.

5.3.2 Test Procedure：

1. The transmitter output was connected to spectrum analyzer through an attenuator.
2. The spectrum analyzer's resolution bandwidth were 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：See spectrum analyzer plots below

- Mode 1~3: WLAN .
- Temperature : 23°C,
- Relative Humidity : 60%

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-11.78	8	4
06	2437	-14.60	8	5
11	2462	-13.01	8	6

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 convenient frequency span including 100 KHz bandwidth from band edge.
3. The band edges was measured and recorded.

5.4.3 Test Result：

- Mode 1 & 3: WLAN .
- Temperature : 23°C,
- Relative Humidity : 60%

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

5.4.4 Note on Band edge Emission

Mode 1~3 : WLAN

The band edge emission plot on appendix B page B7. shows 51.85 dB delta between carrier maximum power and local maximum emission in the restricted band (2.3734 GHz).

The band edge emission plot on appendix B page B8. shows 55.41 dB delta between carrier maximum power and local maximum emission in the restricted band (2.4991 GHz).

Channel	Polarity	The emission of carrier power strength	The maximum field strength in restrict band	Limit	Margin	Result
		(dB μ V/m)	(dB μ V/m)	(dB μ V/m)	(dB)	
CH1	V	102.63	50.78	74	-23.22	Peak
	V	94.60	42.75	54	-11.25	Average
	H	105.88	54.03	74	-19.97	Peak
	H	98.55	46.70	54	-7.3	Average
Ch11	V	101.63	46.22	74	-27.78	Peak
	V	93.86	38.45	54	-15.55	Average
	H	98.63	43.22	74	-30.78	Peak
	H	87.67	32.26	54	-21.74	Average

∗The maximum field strength in restricted band is the emission of carrier power strength subtract to the delta between carrier maximum power and local maximum emission in the restricted band.

5.5 Hopping Channel Separation

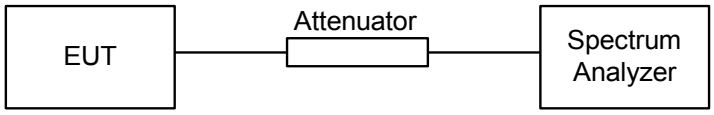
5.5.1 Measuring Instruments：

As described in chapter 7 of this test report.

5.5.2 Test Procedure：

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
3. The Hopping Channel Separation is defined as the channel is separated with the next channel.

5.5.3 Test Setup Layout：



5.5.4 Test Result：The spectrum analyzer plots are attached as below

- Mode: 4~6 : Bluetooth
- Temperature: 23°C
- Relative Humidity: 55 %
- Duty cycle of the equipment during the test X ＝ 100%

Channel	Frequency (MHz)	Carrier Frequency Separation (KHz)	Limits (KHz)	Plot Ref. No.
00	2402	1000	273	11
39	2441	1000	272	12
78	2480	1000	273	13

Note: Limits: min of 25KHz or the 20dB bandwidth of the hopping channel, which is greater.

5.5.5 Test Configuration（EUT Operating Condition）：

The software provided by client to enable the EUT under transmission condition.

The EUT have its hopping function enabled.

5.6 Number of Hopping Frequency

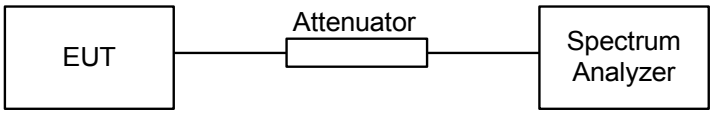
5.6.1 Measuring Instruments：

As described in chapter 7 of this test report.

5.6.2 Test Procedure：

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
3. The number of hopping frequency used is defined as the device has the numbers of total channel.

5.6.3 Test Setup Layout：



5.6.4 Test Result：See spectrum analyzer plots below

- Mode: 4~6 : Bluetooth
- Temperature: 23°C
- Relative Humidity: 55 %
- Duty cycle of the equipment during the test X ＝ 100%

Number of Hopping Frequency (Channel)	Limits (Channel)	Plot Ref. No.
79	75	14

5.6.5 Test Configuration（EUT Operating Condition）：

The software provided by client to enable the EUT under transmission condition.

The EUT have its hopping function enabled.

5.7 Hopping Channel Bandwidth

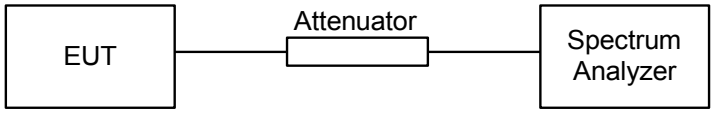
5.7.1 Measuring Instruments：

As described in chapter 7 of this test report.

5.7.2 Test Procedure：

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
3. The Hopping Channel bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

5.7.3 Test Setup Layout：



5.7.4 Test Result：See spectrum analyzer plots below

- Mode: 4~6 : Bluetooth
- Temperature: 23°C
- Relative Humidity: 60 %
- Duty cycle of the equipment during the test X ＝ 100%

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	0.273	1.0	15
39	2441	0.272	1.0	16
78	2480	0.273	1.0	17

5.7.5 Test Configuration（EUT Operating Condition）：

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies respectively.

5.8 Dwell Time of Each Frequency within a 30 Seconds Period

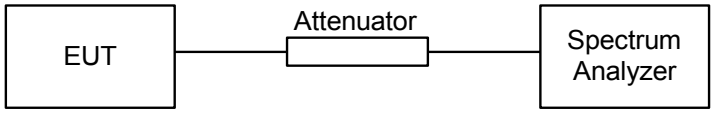
5.8.1 Measuring Instruments：

As described in chapter 7 of this test report.

5.8.2 Test Procedure：

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
3. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
4. The calculate = 30*(1600/79)*t (ie: t = the time duration of one single pulse)

5.8.3 Test Setup Layout：



5.8.4 Test Result：See spectrum analyzer plots below

- Mode: 4~6 : Bluetooth
- Temperature: 23°C
- Relative Humidity: 60 %
- Duty cycle of the equipment during the test X ＝ 100%

Channel	Frequency (MHz)	Dwell Time (s)	Limits (s)	Plot Ref. No.
00	2402	0.27	0.4	18
39	2441	0.27	0.4	19
78	2480	0.27	0.4	20

5.8.5 Test Configuration（EUT Operating Condition）：

Same as Section 5.7.5.

5.9 Peak Output Power

5.9.1 Measuring Instruments：

As described in chapter 7 of this test report.

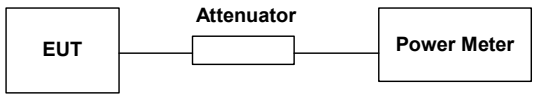
5.9.2 Test Procedure：

The Emission Modes: Wireless LAN and & Bluetooth

The antenna port（RF output）of the EUT was connected to the input（RF input）of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

5.9.3 Test Setup Layout：

The Emission Modes: Wireless LAN and & Bluetooth



5.9.4 Test Result：See spectrum analyzer plots below

- Temperature : 23°C
- Relative Humidity : 60 %
- Antenna Gain: 0 dBi

Mode 1~3 (WLAN)

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	12.8	1W/30 dBm
06	2437	12.5	1W/30 dBm
11	2462	13.3	1W/30 dBm

Mode 4~6 (Bluetooth)

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
00	2402	1.66	1W/30 dBm
39	2441	1.82	1W/30 dBm
78	2480	0.57	1W/30 dBm

Comments：Maximum Peak Output Power < 30dBm (1Watt)

5.10 100KHz Bandwidth of Frequency Band Edges

5.10.1 Measuring Instruments：

As described in chapter 7 of this test report.

5.10.2Test Procedure：

4. The transmitter output was connected to the spectrum analyzer via a low lose cable.
5. Set both RBW and VBW of spectrum analyzer to 100KHz with convenient frequency span including 100 KHz bandwidth from band edge.
6. The band edges was measured and recorded.

5.10.3 Test Result：

Test Result in lower band (Channel 00)： PASS

Test Result in higher band(Channel 78)： PASS

5.10.4 Note on Band edge Emission

The band edge emission plot on appendix B page 9. shows 59.57 dB delta between carrier maximum power and local maximum emission in the restricted band (2.3861GHz).

The band edge emission plot on appendix B page 10. shows 58.81 dB delta between carrier maximum power and local maximum emission in the restricted band (2.4960 GHz).h of Frequency Band Edges

Polarity	The emission of carrier power strength	The maximum field strength in restrict band	Limit	Margin	Detector	Result
	(dBμV/m)	(dBμV/m)	(dBμV/m)	(dB)		
H	87.75	27.95	74.00	-46.05	Peak	Pass
H	87.62	27.82	54.00	-26.18	Average	Pass
V	85.96	26.16	74.00	-47.84	Peak	Pass
V	85.46	25.66	54.00	-28.34	Average	Pass
H	87.4	29.19	74.00	-44.81	Peak	Pass
H	86.61	28.4	54.00	-25.6	Average	Pass
V	84.04	25.83	74.00	-48.17	Peak	Pass
V	83.51	25.3	54.00	-28.7	Average	Pass

5.11 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.

5.11.1Major Measuring Instruments：

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

5.11.2 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 mains through a 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.

5.11.3 Test Result of Conducted Emission：

Frequency Range of Test : from 150KHz to 30 MHz. 6dB Bandwidth : 9KHz

- Test Mode : Mode 1
- Temperature : 23°C
- Relative Humidity : 62 %

■ The test was passed at the minimum margin that marked by the frame in the following table

Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : WLAN
: Ch01 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.203	43.72	-19.77	63.49	43.60	0.10	0.02	QP
2	0.203	40.11	-13.38	53.49	39.99	0.10	0.02	Average
3	0.272	35.18	-25.88	61.06	35.06	0.10	0.02	QP
4	0.272	34.55	-16.51	51.06	34.43	0.10	0.02	Average
5	0.341	35.81	-23.37	59.18	35.69	0.10	0.02	QP
6	0.341	33.74	-15.44	49.18	33.62	0.10	0.02	Average
7	0.406	34.11	-23.62	57.73	33.99	0.10	0.02	QP
8	0.406	33.10	-14.63	47.73	32.98	0.10	0.02	Average
9	0.474	36.42	-20.02	56.44	36.30	0.10	0.02	QP
10	0.474	32.19	-14.25	46.44	32.07	0.10	0.02	Average
11	0.611	33.35	-22.65	56.00	33.22	0.10	0.03	QP
12	0.611	28.40	-17.60	46.00	28.27	0.10	0.03	Average

Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : WLAN
: Ch01 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.204	43.38	-20.07	63.45	43.26	0.10	0.02	QP
2	0.204	39.26	-14.19	53.45	39.14	0.10	0.02	Average
3	0.272	35.30	-25.76	61.06	35.18	0.10	0.02	QP
4	0.272	33.07	-17.99	51.06	32.95	0.10	0.02	Average
5	0.337	37.51	-21.77	59.28	37.39	0.10	0.02	QP
6	0.337	37.36	-11.92	49.28	37.24	0.10	0.02	Average
7	0.476	35.54	-20.87	56.41	35.42	0.10	0.02	QP
8	0.476	33.24	-13.17	46.41	33.12	0.10	0.02	Average
9	0.679	37.36	-18.64	56.00	37.23	0.10	0.03	QP
10	0.679	37.06	-8.94	46.00	36.93	0.10	0.03	Average
11	1.080	39.39	-16.61	56.00	39.25	0.10	0.04	QP
12	1.080	37.35	-8.65	46.00	37.21	0.10	0.04	Average

Test Engineer : Jones Tsai Jones Tsai

5.11.4 Test Result of Conducted Emission：

- Frequency Range of Test : from 150KHz to 30 MHz. 6dB Bandwidth : 9KHz
- Test Mode : Mode 2
- Temperature : 23°C
- Relative Humidity :62 %

■ The test was passed at the minimum margin that marked by the frame in the following table

Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : WLAN
: Ch06 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.203	43.48	-20.01	63.49	43.36	0.10	0.02	QP
2	0.203	39.55	-13.94	53.49	39.43	0.10	0.02	Average
3	0.267	33.61	-27.60	61.21	33.49	0.10	0.02	QP
4	0.267	31.16	-20.05	51.21	31.04	0.10	0.02	Average
5	0.339	37.35	-21.88	59.23	37.23	0.10	0.02	QP
6	0.339	35.66	-13.57	49.23	35.54	0.10	0.02	Average
7	0.611	35.18	-20.82	56.00	35.05	0.10	0.03	QP
8	0.611	32.17	-13.83	46.00	32.04	0.10	0.03	Average
9	0.611	35.32	-20.68	56.00	35.19	0.10	0.03	QP
10	0.611	32.39	-13.61	46.00	32.26	0.10	0.03	Average
11	0.948	39.55	-16.45	56.00	39.41	0.10	0.04	QP
12	0.948	38.31	-7.69	46.00	38.17	0.10	0.04	Average

Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : WLAN
: Ch06 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.204	43.44	-20.01	63.45	43.32	0.10	0.02	QP
2	0.204	39.74	-13.71	53.45	39.62	0.10	0.02	Average
3	0.270	37.12	-24.00	61.12	37.00	0.10	0.02	QP
4	0.270	33.37	-17.75	51.12	33.25	0.10	0.02	Average
5	0.337	36.93	-22.35	59.28	36.81	0.10	0.02	QP
6	0.337	35.28	-14.00	49.28	35.16	0.10	0.02	Average
7	0.476	34.21	-22.20	56.41	34.09	0.10	0.02	QP
8	0.476	31.67	-14.74	46.41	31.55	0.10	0.02	Average
9	0.675	36.72	-19.28	56.00	36.59	0.10	0.03	QP
10	0.675	33.47	-12.53	46.00	33.34	0.10	0.03	Average
11	0.948	38.16	-17.84	56.00	38.02	0.10	0.04	QP
12	0.948	35.44	-10.56	46.00	35.30	0.10	0.04	Average

Test Engineer : Jones Tsai

Jones Tsai

5.11.5Test Result of Conducted Emission：

- Frequency Range of Test : from 150KHz to 30 MHz. 6dB Bandwidth : 9KHz
- Test Mode : Mode 3
- Temperature : 23°C
- Relative Humidity : 62 %

■ The test was passed at the minimum margin that marked by the frame in the following table

Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : WLAN
: Ch11 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.206	42.16	-21.21	63.37	42.04	0.10	0.02	QP
2	0.206	38.48	-14.89	53.37	38.36	0.10	0.02	Average
3	0.272	35.06	-26.00	61.06	34.94	0.10	0.02	QP
4	0.272	33.02	-18.04	51.06	32.90	0.10	0.02	Average
5	0.336	37.37	-21.93	59.30	37.25	0.10	0.02	QP
6	0.336	34.54	-14.76	49.30	34.42	0.10	0.02	Average
7	0.406	34.33	-23.40	57.73	34.21	0.10	0.02	QP
8	0.406	33.49	-14.24	47.73	33.37	0.10	0.02	Average
9	0.476	34.03	-22.38	56.41	33.91	0.10	0.02	QP
10	0.476	31.11	-15.30	46.41	30.99	0.10	0.02	Average
11	0.608	34.37	-21.63	56.00	34.24	0.10	0.03	QP
12	0.608	29.23	-16.77	46.00	29.10	0.10	0.03	Average

Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : WLAN
: Ch11 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.206	42.12	-21.25	63.37	42.00	0.10	0.02	QP
2	0.206	37.81	-15.56	53.37	37.69	0.10	0.02	Average
3	0.270	35.72	-25.40	61.12	35.60	0.10	0.02	QP
4	0.270	33.47	-17.65	51.12	33.35	0.10	0.02	Average
5	0.341	36.49	-22.69	59.18	36.37	0.10	0.02	QP
6	0.341	34.63	-14.55	49.18	34.51	0.10	0.02	Average
7	0.544	36.80	-19.20	56.00	36.67	0.10	0.03	QP
8	0.544	35.44	-10.56	46.00	35.31	0.10	0.03	Average
9	0.675	38.20	-7.80	46.00	38.07	0.10	0.03	Average
10	0.675	38.70	-17.30	56.00	38.57	0.10	0.03	QP
11	0.813	39.23	-16.77	56.00	39.09	0.10	0.04	QP
12	0.813	38.36	-7.64	46.00	38.22	0.10	0.04	Average

Test Engineer : Jones Tsai

Jones Tsai

5.11.6 Test Result of Conducted Emission：

Frequency Range of Test : from 150KHz to 30 MHz. 6dB Bandwidth : 9KHz

- Test Mode : Mode 4
- Temperature : 23°C
- Relative Humidity : 62 %

■ The test was passed at the minimum margin that marked by the frame in the following table

Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : BlueTooth
: Ch00 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.203	46.24	-17.25	63.49	46.12	0.10	0.02	QP
2	0.203	39.31	-24.18	63.49	39.19	0.10	0.02	Average
3	0.269	40.02	-21.13	61.15	39.90	0.10	0.02	QP
4	0.269	33.42	-27.73	61.15	33.30	0.10	0.02	Average
5	0.341	37.37	-21.81	59.18	37.25	0.10	0.02	QP
6	0.341	34.37	-24.81	59.18	34.25	0.10	0.02	Average
7	0.341	37.29	-21.89	59.18	37.17	0.10	0.02	QP
8	0.341	34.37	-24.81	59.18	34.25	0.10	0.02	Average
9	0.474	39.33	-17.12	56.45	39.21	0.10	0.02	QP
10	0.474	38.33	-18.12	56.45	38.21	0.10	0.02	Average
11	0.611	38.68	-17.32	56.00	38.55	0.10	0.03	QP
12	0.611	37.74	-18.26	56.00	37.61	0.10	0.03	Average

Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : BlueTooth
: Ch00 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.203	42.95	-20.54	63.49	42.83	0.10	0.02	QP
2	0.203	36.20	-17.29	53.49	36.08	0.10	0.02	Average
3	0.272	38.90	-22.16	61.06	38.78	0.10	0.02	QP
4	0.272	33.22	-17.84	51.06	33.10	0.10	0.02	Average
5	0.336	36.99	-22.31	59.30	36.87	0.10	0.02	QP
6	0.336	35.89	-13.41	49.30	35.77	0.10	0.02	Average
7	0.408	37.34	-20.35	57.69	37.22	0.10	0.02	QP
8	0.408	32.03	-15.66	47.69	31.91	0.10	0.02	Average
9	0.474	40.65	-15.79	56.44	40.53	0.10	0.02	QP
10	0.474	39.89	-6.55	46.44	39.77	0.10	0.02	Average
11	0.611	40.02	-15.98	56.00	39.89	0.10	0.03	QP
12	0.611	39.30	-6.70	46.00	39.17	0.10	0.03	Average

Test Engineer : Jones Tsai

Jones Tsai

5.11.7 Test Result of Conducted Emission：

- Frequency Range of Test : from 150KHz to 30 MHz. 6dB Bandwidth : 9KHz
- Test Mode : Mode 5
- Temperature : 23°C
- Relative Humidity : 62 %

■ The test was passed at the minimum margin that marked by the frame in the following table

Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : BlueTooth
: Ch39 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.203	42.61	-20.88	63.49	42.49	0.10	0.02	QP
2	0.203	36.06	-17.43	53.49	35.94	0.10	0.02	Average
3	0.273	38.34	-22.69	61.03	38.22	0.10	0.02	QP
4	0.273	32.60	-18.43	51.03	32.48	0.10	0.02	Average
5	0.337	37.67	-21.61	59.28	37.55	0.10	0.02	QP
6	0.337	36.59	-12.69	49.28	36.47	0.10	0.02	Average
7	0.474	40.63	-15.81	56.44	40.51	0.10	0.02	QP
8	0.474	39.80	-6.64	46.44	39.68	0.10	0.02	Average
9	0.611	39.92	-16.08	56.00	39.79	0.10	0.03	QP
10	0.611	39.20	-6.80	46.00	39.07	0.10	0.03	Average
11	1.020	34.35	-21.65	56.00	34.21	0.10	0.04	QP
12	1.020	31.32	-14.68	46.00	31.18	0.10	0.04	Average

Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : BlueTooth
: Ch39 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.203	42.34	-21.15	63.49	42.22	0.10	0.02	QP
2	0.203	37.51	-15.98	53.49	37.39	0.10	0.02	Average
3	0.270	38.50	-22.62	61.12	38.38	0.10	0.02	QP
4	0.270	33.07	-18.05	51.12	32.95	0.10	0.02	Average
5	0.476	39.65	-16.76	56.41	39.53	0.10	0.02	QP
6	0.476	38.60	-7.81	46.41	38.48	0.10	0.02	Average
7	0.611	39.14	-16.86	56.00	39.01	0.10	0.03	QP
8	0.611	38.36	-7.64	46.00	38.23	0.10	0.03	Average
9	0.813	38.12	-17.88	56.00	37.98	0.10	0.04	QP
10	0.813	37.56	-8.44	46.00	37.42	0.10	0.04	Average
11	1.150	38.20	-17.80	56.00	38.06	0.10	0.04	QP
12	1.150	37.41	-8.59	46.00	37.27	0.10	0.04	Average

Test Engineer : Jones Tsai

Jones Tsai

5.11.8 Test Result of Conducted Emission：

- Frequency Range of Test : from 150KHz to 30 MHz. 6dB Bandwidth : 9KHz
- Test Mode : Mode 6
- Temperature : 23°C
- Relative Humidity : 62 %

■ The test was passed at the minimum margin that marked by the frame in the following table

Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : BlueTooth
: Ch78 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.201	42.12	-21.44	63.56	42.00	0.10	0.02	QP
2	0.201	37.32	-16.24	53.56	37.20	0.10	0.02	Average
3	0.267	35.14	-26.07	61.21	35.02	0.10	0.02	QP
4	0.267	30.42	-20.79	51.21	30.30	0.10	0.02	Average
5	0.336	36.91	-22.39	59.30	36.79	0.10	0.02	QP
6	0.336	35.58	-13.72	49.30	35.46	0.10	0.02	Average
7	0.406	37.72	-20.01	57.73	37.60	0.10	0.02	QP
8	0.406	32.09	-15.64	47.73	31.97	0.10	0.02	Average
9	0.476	39.43	-16.98	56.41	39.31	0.10	0.02	QP
10	0.476	38.33	-8.08	46.41	38.21	0.10	0.02	Average
11	0.608	39.49	-16.51	56.00	39.36	0.10	0.03	QP
12	0.608	38.69	-7.31	46.00	38.56	0.10	0.03	Average

Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : Flybook
Model No. : A33i series
Power : 110 Vac / 60 Hz
Memo : BlueTooth
: Ch78 Tx

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.203	41.94	-21.55	63.49	41.82	0.10	0.02	QP
2	0.203	35.84	-17.65	53.49	35.72	0.10	0.02	Average
3	0.269	38.66	-22.49	61.15	38.54	0.10	0.02	QP
4	0.269	33.32	-17.83	51.15	33.20	0.10	0.02	Average
5	0.339	38.07	-21.16	59.23	37.95	0.10	0.02	QP
6	0.339	37.11	-12.12	49.23	36.99	0.10	0.02	Average
7	0.408	37.20	-20.49	57.69	37.08	0.10	0.02	QP
8	0.408	31.45	-16.24	47.69	31.33	0.10	0.02	Average
9	0.476	40.42	-15.99	56.41	40.30	0.10	0.02	QP
10	0.476	39.52	-6.89	46.41	39.40	0.10	0.02	Average
11	0.611	40.16	-15.84	56.00	40.03	0.10	0.03	QP
12	0.611	39.50	-6.50	46.00	39.37	0.10	0.03	Average

Test Engineer : Jones Tsai

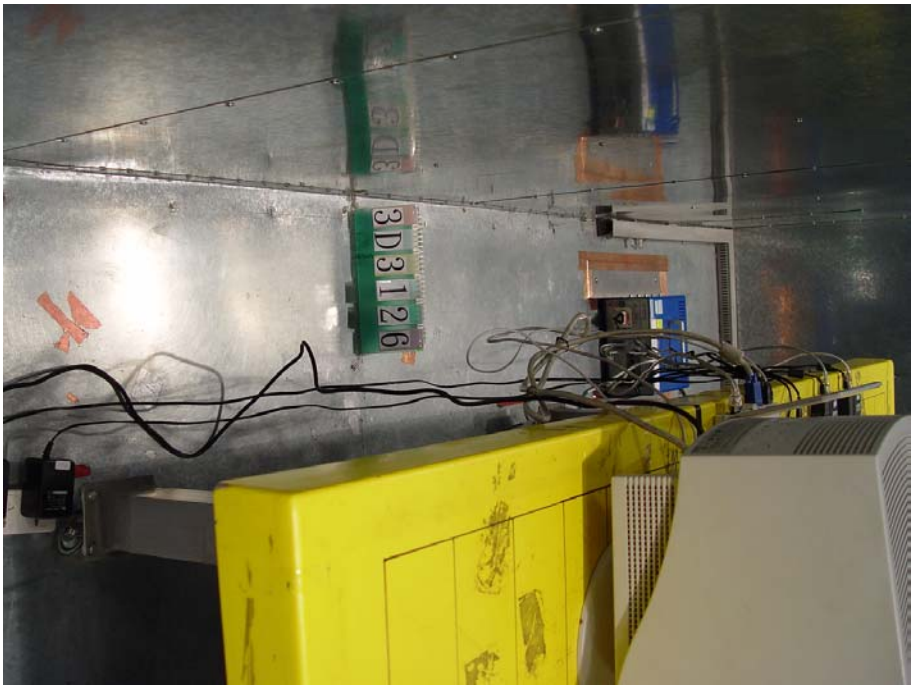
Jones Tsai

5.11.9 Photographs of Conducted Emission Test Configuration

- The photographs show the configuration that generates the maximum emission.

FRONT VIEW

REAR VIEW



SIDE VIEW

5.12 Test of Radiated Emission

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2001. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

5.12.1 Major Measuring Instruments

● Amplifier	(MITEQ AFS44)
RF Gain	40 dB
Signal Input	100 MHz to 26.5 GHz

● Amplifier	(HP8447D)
RF Gain	30 dB
Signal Input	100 MHz to 1.3 GHz

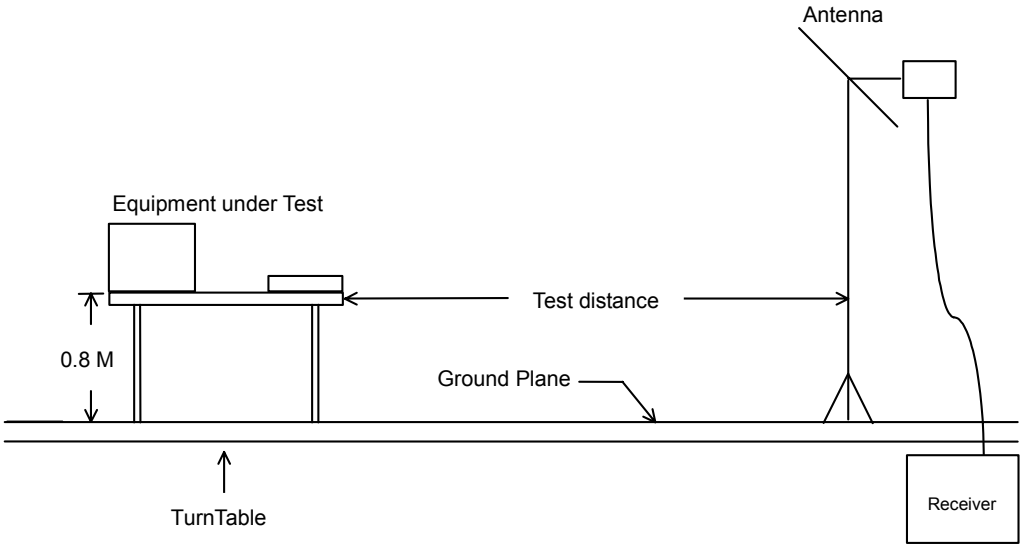
● Spectrum analyzer	(R&S FSP40)
Attenuation	10 dB
Start Frequency	1 GHz
Stop Frequency	25 GHz
Resolution Bandwidth	1 MHz
Video Bandwidth	1 MHz
Signal Input	9 KHz to 40 GHz

● Spectrum analyzer	(R&S FSP40)
Attenuation	10 dB
Start Frequency	30MHz
Stop Frequency	1 GHz
Resolution Bandwidth	120 KHz
Video Bandwidth	300KHz
Signal Input	9 KHz to 40 GHz

5.12.2Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
5. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.12.3Typical Test Setup Layout of Radiated Emission



5.12.3 Test Result of Radiated Emission

- Test Mode: Mode 1
- Test Distance : 3 M
- Temperature : 24 °C
- Relative Humidity :53 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test was passed at the minimum margin that marked by the frame in the following table

Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
MEMO : TX CH01 2412MHz

		Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1		1000.000	54.29	-19.71	74.00	62.90	24.10	3.92	36.63	Peak	---	---
2	!	1000.000	48.62	-5.38	54.00	57.23	24.10	3.92	36.63	Average	---	---
3		1028.000	51.71	-22.29	74.00	60.17	24.19	3.98	36.63	Peak	---	---
4		1028.000	46.25	-7.75	54.00	54.71	24.19	3.98	36.63	Average	---	---
5		1060.000	52.43	-21.57	74.00	60.75	24.27	4.03	36.62	Peak	---	---
6		1060.000	45.64	-8.36	54.00	53.96	24.27	4.03	36.62	Average	---	---
7		1238.000	50.39	-23.61	74.00	58.00	24.70	4.30	36.61	Peak	---	---
8		2238.000	50.45	-23.55	74.00	52.83	27.89	5.99	36.26	Peak	---	---
9		2294.000	50.59	-23.41	74.00	52.76	28.01	6.07	36.25	Peak	---	---
10		2374.000	51.73	-22.27	74.00	53.63	28.17	6.17	36.24	Peak	100	12
11		2374.000	40.93	-13.07	54.00	42.83	28.17	6.17	36.24	Average	100	12
14		2486.000	48.53	-25.47	74.00	50.03	28.40	6.32	36.22	Peak	---	---

Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
MEMO : TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1238.000	50.61	-23.39	74.00	58.22	24.70	4.30	36.61	Peak	---	---
2	2126.000	51.87	-22.13	74.00	54.64	27.66	5.85	36.28	Peak	---	---
3	2126.000	47.57	-6.43	54.00	50.34	27.66	5.85	36.28	Average	---	---
4	2390.000	39.36	-14.64	54.00	41.20	28.20	6.20	36.24	Average	100	15
5	2390.000	55.88	-18.12	74.00	57.72	28.20	6.20	36.24	Peak	100	15
6 X	2412.000	97.92	23.92	74.00	99.69	28.24	6.22	36.23	Peak	100	12

- For 2.487GHz ~ 25GHz

  Remark: Frequency from 2487MHz to 25GHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
2414.000	H	28.25	6.23	72.00	-	-	106.48	210862.81	-	Peak
2414.000	H	28.25	6.23	58.63	-	-	93.11	45237.65	-	AV
2412.000	V	28.24	6.22	70.26	-	-	104.72	172186.86	-	Peak
2412.000	V	28.24	6.22	63.46	-	-	97.92	78704.58	-	AV
4822.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
7236.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
9648.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
12060.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
14472.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
16884.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
19296.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
21708.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
24120.000	V/H	-	-	-	-	-	-	-	-	AV/Peak

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : Jones Tsai

Jones Tsai

5.12.4 Test Result of Radiated Emission

- Test Mode: Mode 2 (2437 MHz)
- Test Distance : 3 M
- Temperature : 23 °C
- Relative Humidity : 62 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test was passed at the minimum margin that marked by the frame in the following table

Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
MEMO : TX CH06 2437MHz

		Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	!	1000.000	48.62	-5.38	54.00	57.23	24.10	3.92	36.63	Average	---	---
2		1000.000	52.33	-21.67	74.00	60.94	24.10	3.92	36.63	Peak	---	---
3	!	1020.000	49.13	-4.87	54.00	57.62	24.17	3.97	36.63	Average	105	212
4		1020.000	52.89	-21.11	74.00	61.38	24.17	3.97	36.63	Peak	105	212
5		1060.000	51.58	-22.42	74.00	59.90	24.27	4.03	36.62	Peak	---	---
6	!	1060.000	49.48	-4.52	54.00	57.80	24.27	4.03	36.62	Average	---	---
7		1324.000	50.80	-23.20	74.00	58.06	24.91	4.43	36.60	Peak	---	---
8		1830.000	50.26	-23.74	74.00	54.57	26.72	5.36	36.39	Peak	---	---
9		2246.000	50.15	-23.85	74.00	52.49	27.91	6.01	36.26	Peak	---	---
10		2390.000	49.46	-24.54	74.00	51.30	28.20	6.20	36.24	Peak	100	25
11		2390.000	45.42	-8.58	54.00	47.26	28.20	6.20	36.24	Average	100	25

Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
MEMO : TX CH06 2437MHz

		Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1		1000.000	50.05	-23.95	74.00	58.66	24.10	3.92	36.63	Peak	---	---
2	!	1246.000	50.04	-3.96	54.00	57.61	24.72	4.31	36.60	Average	---	---
3		1246.000	52.22	-21.78	74.00	59.79	24.72	4.31	36.60	Peak	---	---
4		1332.000	49.93	-24.07	74.00	57.15	24.93	4.45	36.60	Peak	---	---
5		1486.000	50.11	-23.89	74.00	56.71	25.30	4.68	36.58	Peak	---	---
6		1742.000	49.49	-24.51	74.00	54.39	26.36	5.18	36.44	Peak	---	---
7		1996.000	52.53	-21.47	74.00	55.75	27.40	5.68	36.30	Peak	---	---
8	!	1996.000	49.67	-4.33	54.00	52.89	27.40	5.68	36.30	Average	---	---
9		2388.000	53.47	-20.53	74.00	55.32	28.20	6.19	36.24	Peak	100	32
10	!	2388.000	50.38	-3.62	54.00	52.23	28.20	6.19	36.24	Average	100	32
13		2494.000	36.15	-17.85	54.00	37.62	28.42	6.33	36.22	Average	100	16
14		2494.000	50.99	-23.01	74.00	52.46	28.42	6.33	36.22	Peak	100	16

- For 2.495GHz ~ 25GHz

  Remark: Frequency from 2495MHz to 25GHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission (dBuV/m)	Level (uV/m)	Margin (dB)	Detect Mode
2438.000	H	28.30	6.26	60.87	-	-	95.43	59088.10	-	AV
2438.000	H	28.30	6.26	68.74	-	-	103.30	146217.72	-	Peak
2436.000	V	28.29	6.26	53.00	-	-	87.55	23850.64	-	AV
2436.000	V	28.29	6.26	68.75	-	-	103.30	146217.72	-	Peak
4876.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
7311.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
9748.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
12185.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
14622.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
17059.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
19496.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
21933.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
24370.000	V/H	-	-	-	-	-	-	-	-	AV/Peak

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : Jones Tsai

Jones Tsai

5.12.5Test Result of Radiated Emission

- Test Mode: Mode 3 (2462 MHz)
- Test Distance : 3 M
- Temperature : 23 °C
- Relative Humidity : 62 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ **The test was passed at the minimum margin that marked by the frame in the following table**

Condition : 3m BIC-9124--301 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1 !	84.415	34.05	-5.95	40.00	51.88	9.70	0.40	27.93	QP	276	217
2	96.300	34.00	-9.50	43.50	51.96	9.47	0.48	27.91	Peak	---	---
3	163.110	33.25	-10.25	43.50	47.42	12.86	0.74	27.77	Peak	---	---

Condition : 3m LOG-9111-221 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1 !	336.000	40.40	-5.60	46.00	51.66	15.12	1.10	27.48	QP	100	240
2	352.000	38.18	-7.82	46.00	49.45	15.26	1.03	27.56	Peak	---	---
3 !	624.000	41.03	-4.97	46.00	49.45	18.89	1.47	28.78	QP	179	360

Condition : 3m BIC-9124--301 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	31.280	32.59	-7.41	40.00	46.54	13.94	0.16	28.05	QP	100	360
2	36.880	33.55	-6.45	40.00	48.86	12.50	0.22	28.03	QP	100	230
3	63.150	32.43	-7.57	40.00	50.55	9.56	0.29	27.97	Peak	---	---

Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
MEMO : TX CH11 2462MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1000.000	50.17	-23.83	74.00	58.78	24.10	3.92	36.63	Peak	---	---
2	1000.000	50.17	-23.83	74.00	58.78	24.10	3.92	36.63	Peak	---	---
3	1244.000	51.34	-22.66	74.00	58.93	24.71	4.31	36.61	Peak	---	---
4 !	1244.000	49.68	-4.32	54.00	57.27	24.71	4.31	36.61	Average	---	---
5	1998.000	50.94	-23.06	74.00	54.16	27.40	5.68	36.30	Peak	---	---
6	2124.000	50.36	-23.64	74.00	53.13	27.66	5.85	36.28	Peak	---	---
7	2382.000	55.22	-18.78	74.00	57.10	28.18	6.18	36.24	Peak	100	16
8 !	2382.000	48.61	-5.39	54.00	50.49	28.18	6.18	36.24	Average	100	16
11	2500.000	50.72	-23.28	74.00	52.15	28.44	6.34	36.21	Peak	100	19
12 !	2500.000	52.46	-1.54	54.00	53.89	28.44	6.34	36.21	Average	100	19

Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
MEMO : TX CH11 2462MHz

		Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1		1000.000	51.51	-22.49	74.00	60.12	24.10	3.92	36.63	Peak	---	---
2		1000.000	47.01	-6.99	54.00	55.62	24.10	3.92	36.63	Average	---	---
3		1060.000	52.35	-21.65	74.00	60.67	24.27	4.03	36.62	Peak	---	---
4		1060.000	47.90	-6.10	54.00	56.22	24.27	4.03	36.62	Average	---	---
5		1238.000	50.45	-23.55	74.00	58.06	24.70	4.30	36.61	Peak	---	---
6		1278.000	49.80	-24.20	74.00	57.25	24.79	4.36	36.60	Peak	---	---
7		1324.000	51.80	-22.20	74.00	59.06	24.91	4.43	36.60	Peak	---	---
8		1324.000	46.97	-7.03	54.00	54.23	24.91	4.43	36.60	Average	---	---
9		2246.000	50.45	-23.55	74.00	52.79	27.91	6.01	36.26	Peak	---	---
10		2422.000	37.48	-16.52	54.00	39.20	28.27	6.24	36.23	Average	---	---
11		2422.000	51.59	-22.41	74.00	53.31	28.27	6.24	36.23	Peak	---	---
12	X	2462.000	100.92	26.92	74.00	102.50	28.35	6.29	36.22	Peak	100	37
13	X	2462.000	93.74	39.74	54.00	95.32	28.35	6.29	36.22	Average	100	37

- 25GHz

  Remark: Frequency from 2501MHz to 25GHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
2462.000	H	28.35	6.29	66.28	-	-	100.92	111173.17	-	Peak
2438.000	H	28.35	6.29	59.10	-	-	93.74	48640.72	-	AV
2462.000	V	28.35	6.29	67.77	-	-	102.41	131977.53	-	Peak
2412.000	V	28.35	6.29	55.29	-	-	89.93	31368.95	-	AV
4926.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
7386.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
9848.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
12310.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
14772.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
17234.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
19696.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
22158.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
24620.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : Jones Tsai

Jones Tsai

5.12.6Test Result of Radiated Emission

- Test Mode: Mode 4 (2402MHz)
- Test Distance : 3 M
- Temperature : 23 °C
- Relative Humidity :62 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test was passed at the minimum margin that marked by the frame in the following table

Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110 V / 60 Hz
MODEL : A33i series
MEMO : BT TX CH00 2402MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1104.240	22.67	-31.33	54.00	36.43	24.37	4.10	42.23	Average	126	79
2	1200.200	24.61	-29.39	54.00	38.02	24.61	4.24	42.26	Average	135	71
3	1600.560	24.04	-29.96	54.00	35.75	25.77	4.90	42.38	Average	133	282

➢ For 1.601GHz ~ 25GHz

Remark: Frequency from 1601MHz to 25GHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission (dBuV/m)	Level (uV/m)	Margin (dB)	Detect Mode
2401.980	H	28.22	6.21	53.32	-	-	87.75	24406.19	-	Peak
2401.980	H	28.22	6.21	53.19	-	-	87.62	24043.63	-	AV
2401.960	V	28.22	6.21	51.53	-	-	85.96	19860.95	-	Peak
2401.960	V	28.22	6.21	51.03	-	-	85.46	18749.95	-	AV
4822.000	V/H									AV/Peak
7236.000	V/H									AV/Peak
9648.000	V/H									AV/Peak
12060.000	V/H									AV/Peak
14472.000	V/H									AV/Peak
16884.000	V/H					-	-			AV/Peak
19296.000	V/H						-			AV/Peak
21708.000	V/H						-			AV/Peak
24120.000	V/H						-			AV/Peak

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : Jones Tsai

Jones Tsai

5.12.7 Test Result of Radiated Emission

- Test Mode: Mode 5 (2441 MHz)
- Test Distance : 3 M
- Temperature : 23 °C
- Relative Humidity : 62 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ **The test was passed at the minimum margin that marked by the frame in the following table**

Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110 V / 60 Hz
MODEL : A33i series
MEMO : BT TX CH39 2441MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1193.800	23.17	-30.83	54.00	36.61	24.59	4.23	42.26	Average	100	215

Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110 V / 60 Hz
MODEL : A33i series
MEMO : BT TX CH39 2441MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1104.052	24.33	-29.67	54.00	38.09	24.37	4.10	42.23	Average	126	79
2	1200.256	24.39	-29.61	54.00	37.80	24.61	4.24	42.26	Average	136	71
3	1600.700	24.90	-29.10	54.00	36.61	25.77	4.90	42.38	Average	122	285

➢ For 1.601GHz ~ 25GHz

Remark: Frequency from 1601MHz to 25GHz, the emission emitted by the EUT is too low to be measured

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission (dBuV/m)	Level (uV/m)	Margin (dB)	Detect Mode
2438.000	H	28.30	6.26	54.04	-	-	88.60	26915.35	-	AV
2438.000	H	28.30	6.26	54.57	-	-	89.13	28608.82	-	Peak
2441.000	V	28.30	6.26	50.17	-	-	84.73	17238.52	-	AV
2441.000	V	28.30	6.26	50.76	-	-	85.32	18450.15	-	Peak
4876.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
7311.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
9748.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
12185.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
14622.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
17059.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
19496.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
21933.000	V/H	-	-	-	-	-	-	-	-	AV/Peak
24370.000	V/H	-	-	-	-	-	-	-	-	AV/Peak

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : Jones Tsai

Jones Tsai

5.12.8 Test Result of Radiated Emission

- Test Mode: Mode 6 (2480 MHz)
- Test Distance : 3 M
- Temperature : 24 °C
- Relative Humidity : 53 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

■ The test was passed at the minimum margin that marked by the frame in the following table

Condition : 3m BIC-9124--301 HORIZONTAL
EUT : Flybook
Power : AC 110 V / 60 Hz
MODEL : Bluetooth
MEMO : BT TX CH78 2480MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	152.230	33.22	-10.28	43.50	48.31	12.45	0.25	27.79	Peak	---	---
2	162.430	34.23	-9.27	43.50	48.46	12.82	0.72	27.77	Peak	---	---
3	183.340	31.48	-12.02	43.50	44.54	13.90	0.77	27.73	Peak	---	---

Condition : 3m LOG-9111-221 HORIZONTAL
EUT : Flybook
Power : AC 110 V / 60 Hz
MODEL : Bluetooth
MEMO : BT TX CH78 2480MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	336.044	39.04	-6.96	46.00	50.30	15.12	1.10	27.48	QP	100	123
2	528.000	37.05	-8.95	46.00	46.80	17.59	1.39	28.73	Peak	---	---
3 !	624.000	40.82	-5.18	46.00	49.24	18.89	1.47	28.78	QP	209	25

Condition : 3m BIC-9124--301 VERTICAL
EUT : Flybook
Power : AC 110 V / 60 Hz
MODEL : Bluetooth
MEMO : BT TX CH78 2480MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	31.020	33.71	-6.29	40.00	47.51	14.09	0.16	28.05	Peak	---	---
2	35.780	33.39	-6.61	40.00	48.39	12.79	0.24	28.03	Peak	---	---
3	62.470	31.93	-8.07	40.00	49.95	9.64	0.31	27.97	Peak	---	---

Condition : 3m LOG-9111-221 VERTICAL
EUT : Flybook
Power : AC 110 V / 60 Hz
MODEL : Bluetooth
MEMO : BT TX CH78 2480MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	332.800	36.12	-9.88	46.00	47.50	14.97	1.11	27.46	Peak	---	---
2	599.200	37.01	-8.99	46.00	45.16	18.98	1.67	28.80	Peak	---	---
3	624.000	37.54	-8.46	46.00	45.96	18.89	1.47	28.78	Peak	---	---

Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110 V / 60 Hz
MODEL : A33i series
MEMO : BT TX CH78 2480MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1194.820	23.20	-30.80	54.00	36.64	24.59	4.23	42.26	Average	100	215

Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110 V / 60 Hz
MODEL : A33i series
MEMO : BT TX CH78 2480MHz

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1104.080	23.54	-30.46	54.00	37.30	24.37	4.10	42.23	Average	124	76
2	1196.580	23.12	-30.88	54.00	36.54	24.60	4.24	42.26	Average	124	242
3	1600.680	24.36	-29.64	54.00	36.07	25.77	4.90	42.38	Average	120	283

- For 1.601GHz ~ 25GHz

  Remark: Frequency from 1601MHz to 25GMHz, the emission emitted by the EUT is too low to be measured

Test Engineer : Jones Tsai

Jones Tsai

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
2478.000	H	28.38	6.31	51.92	-	-	86.61	21404.25	-	AV
2478.000	H	28.38	6.31	52.45	-	-	87.14	22750.97	-	Peak
2478.000	V	28.38	6.31	48.82	-	-	83.51	14979.59	-	AV
2478.000	V	28.38	6.31	49.35	-	-	84.04	15922.09	-	Peak
4926.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
7386.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
9848.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
12310.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
14772.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
17234.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
19696.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
22158.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak
24620.000	V/H	-	-	-	-	-	-	-	-	AV/ Peak

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above,

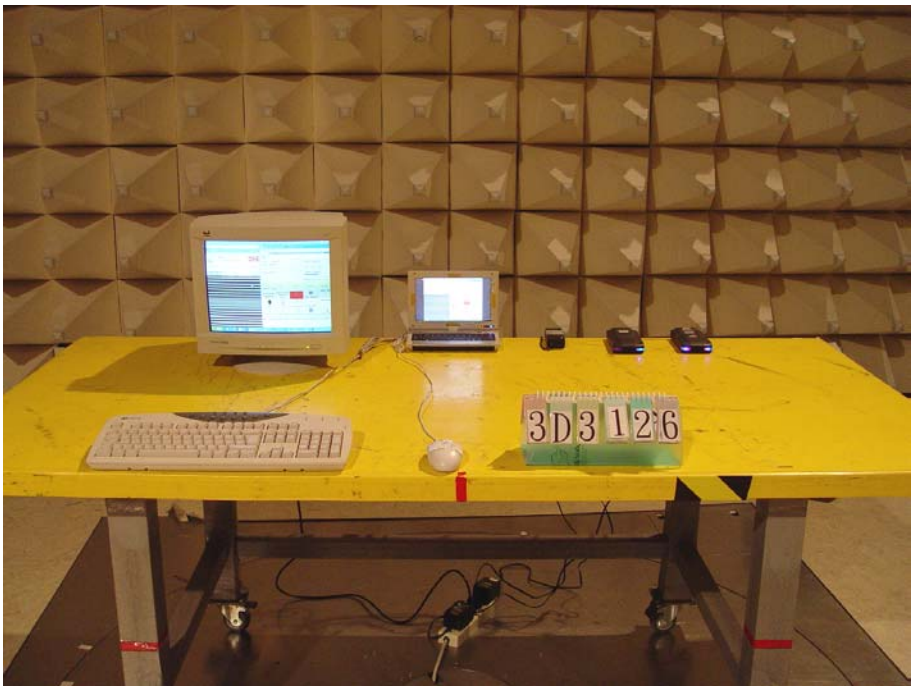
Test Engineer : Jones Tsai

Jones Tsai

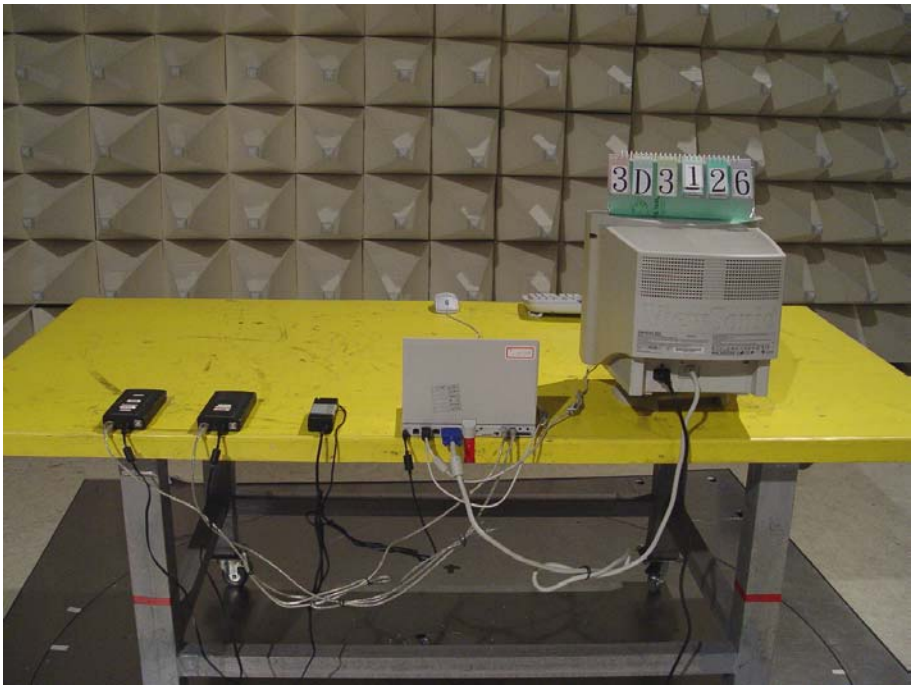
5.12.9 Photographs of Radiated Emission Test Configuration

- The photographs show the configuration that generates the maximum emission.

FRONT VIEW



REAR VIEW



5.13 Antenna Requirements

The EUT use an embedded PIFA antenna with I-PEX connector. It is considered meet antenna requirement of FCC.

5.13.1 Standard Applicable

For intentional device, according to FCC 47 CFR 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in 1 dB that the directional gain of the antenna exceeds 6dBi.

5.13.2 Antenna Connected Construction

The antenna used in this product is embedded PIFA antenna with I-PEX connector.

6 Antenna Factor & Cable Loss

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	14.47	0.14	1000	24.10	4.13
35	13.08	0.25	2000	27.40	6.42
40	11.70	0.05	3000	30.00	7.50
45	10.64	0.21	4000	32.60	9.42
50	10.14	0.27	5000	33.40	10.08
55	10.21	0.34	6000	34.20	11.47
60	10.21	0.43	7000	35.30	12.97
65	9.35	0.28	8000	36.90	15.96
70	8.91	0.37	9000	38.10	15.72
75	9.12	0.38	10000	39.00	16.24
80	9.50	0.51	11000	38.60	18.11
85	9.71	0.42	12000	39.50	18.80
90	9.30	0.48	13000	39.30	20.19
95	9.36	0.49	14000	41.60	21.87
100	9.80	0.49	15000	40.60	22.47
110	9.80	0.55	16000	37.20	23.23
120	10.44	0.57	17000	40.20	24.69
130	10.58	0.57	18000	48.90	26.52
140	11.74	0.67	19000	35.30	28.60
150	12.38	0.75	20000	36.90	30.43
160	12.68	0.66	21000	38.10	29.82
170	13.26	0.77	22000	39.00	29.28
180	13.56	0.80	23000	38.60	29.60
190	14.57	0.82	24000	39.50	31.08
200	14.80	1.03	25000	39.30	31.96
220	14.08	0.88			
240	12.85	0.52			
260	12.46	0.97			
280	12.91	1.20			
300	13.21	0.99			
320	14.37	1.13			
340	15.31	1.11			
360	15.23	1.11			
380	15.39	1.18			
400	15.79	1.18			
450	16.52	1.36			
500	17.35	1.36			
550	17.77	1.51			
600	19.00	1.64			
650	18.78	1.59			
700	19.80	1.50			
750	20.01	1.55			
800	20.38	1.61			
850	20.86	1.57			
900	21.08	1.83			
950	21.83	1.75			
1000	22.23	1.68			

7 List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100132	9 KHz – 2.75 GHz	Jun. 12, 2003	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001-008	9 KHz – 30 MHz	Apr. 29, 2003	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001-009	9 KHz – 30 MHz	Apr. 29, 2003	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450 Hz	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 ~ 60 Hz	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9KHz~30MHz	Jan. 07, 2003	Conduction (CO01-HY)
50 ohm BNC type Terminal	NOBLE	50ohm	TM009	50 ohm	Apr. 24, 2003	Conduction (CO01-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	25MHz~1GHz	Jun. 21, 2003	Radiation (03CH03-HY)
Spectrum analyzer	R&S	FSP40	100004	9KHZ~40GHz	Aug. 23, 2003	Radiation (03CH03-HY)
Amplifier	HP	8447D	2944A09072	100KHz – 1.3GHz	Nov. 05, 2003	Radiation (03CH03-HY)
Biconical Antenna	SCHWARZBECK	VUSLP	9124-301	25MHz –200MHz	Jul. 24, 2003	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz~1GHz	Jan. 02, 2003	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	25MHz~1GHz	Jun. 21, 2003	Radiation (03CH03-HY)

※ Calibration Interval of instruments listed above is one year, except for Horn Antenna, BBHA9170.

8 Uncertainty of Test Site

Uncertainty of Radiated Emission Measurement

Contribution	Probability Distribution	3m
Antenna factor calibration	normal(k=2)	±1
cable loss calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
Antenna Directivity	rectangular	±3
Antenna Factor V.S. Height	rectangular	±2
Antenna Factor Interpolation for Frequency	rectangular	±0.25
site imperfection	rectangular	±2
Mismatch Receiver VSWR Γ1=0.09 Antenna VSWR Γ2=0.67 Uncertainty=20log(1-Γ1*Γ2)	U-shaped	±0.54
combined standard uncertainty Ue(y)	normal	±2.7
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	normal (k=2)	±5.4

$U=\sqrt{\{(1/2)^2+(0.3/2)^2+(2^2+0.5^2+2^2+0.25^2+2^2)/3+(0.54)^2/2\}}=2.2$ for 10m test distance

$U=\sqrt{\{(1/2)^2+(0.3/2)^2+(2^2+3^2+2^2+0.25^2+2^2)/3+(0.54)^2/2\}}=2.7$ for 3m test distance

Uncertainty of Conducted Emission Measurement

Contribution	Probability Distribution	150KHz – 30MHz
Cable and I/P attenuator calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
LISN coupling specification	rectangular	±1.5
Transducer factor frequency interpolation	rectangular	±0.2
Mismatch Receiver VSWR Γ1=0.09 LISN VSWR Γ2=0.33 Uncertainty=20log(1-Γ1*Γ2)	U-shaped	0.2
combined standard uncertainty Ue(y)	normal	±1.66
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	normal (k=2)	±3.32

$U=\sqrt{\{(0.3/2)^2+(2^2+1.5^2+0.2^2)/3+(0.2)^2/2\}}=1.66$