FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment	Model number
SpeedTouch 780 WL	DSLBB643 EB
SpeedTouch 780 WL	DSLBB843 EB
SpeedTouch 780 WL	DSLBB643 EE
SpeedTouch 706 WL	DSLBB643 ED
SpeedTouch 706 WL	DSLBB843 ED
SpeedTouch 706 WL	DSLBB643 EF
SpeedTouch 706 WL	DSLBB843 EF

FCC ID : RSE-ST780

Applicant : **Thomson Telecom Belgium**
Prins Boudewijnlaan 47
B-2650 Edegem
Belgium

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: Dec. 1, 2005

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

Certificate No. : FR5O2506

CERTIFICATE OF COMPLIANCE

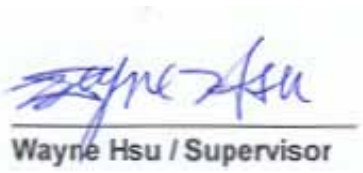
for

47 CFR Part 15 Subpart C

Equipment	Model number
SpeedTouch 780 WL	DSLBB643 EB
SpeedTouch 780 WL	DSLBB843 EB
SpeedTouch 780 WL	DSLBB643 EE
SpeedTouch 706 WL	DSLBB643 ED
SpeedTouch 706 WL	DSLBB843 ED
SpeedTouch 706 WL	DSLBB643 EF
SpeedTouch 706 WL	DSLBB843 EF

Applicant : **Thomson Telecom Belgium**
Prins Boudewijnlaan 47
B-2650 Edegem
Belgium

I **HEREBY** CERTIFY THAT:
The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 2003** and the equipment under test was ***passed*** all test items required in 47 CFR Part 15 subpart C, relative to the equipment under test. Testing was carried out on Nov. 29, 2005 at **SPORTON International Inc.** LAB.



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

Thomson Telecom Belgium
Prins Boudewijnlaan 47
B-2650 Edegem
Belgium

1.2 Manufacturer

Same 1.1

1.3 Basic Description of Equipment under Test

Trade Name : Thomson
Power Supply Type : Linear
DC Power : 18 Vac 1A
Hardware Version : PEM2

The table below shows the interface ports that are equipped on the models:

		Ports						
Equipment	**Model number**	**AC**	**ADSL**	**PSTN**	**Ethernet**	**VoIP**	**Client USB**	**WLAN**
SpeedTouch 780 WL	**DSLBB643 EB**	1	1	1	4	2	1	1
SpeedTouch 780 WL	DSLBB843 EB	1	1	1	4	2	1	1
SpeedTouch 780 WL	DSLBB643 EE	1	1	0	4	2	1	1
SpeedTouch 706 WL	DSLBB643 ED	1	1	0	2	1	1	1
SpeedTouch 706 WL	DSLBB843 ED	1	1	0	2	1	1	1
SpeedTouch 706 WL	DSLBB643 EF	1	1	1	2	1	1	1
SpeedTouch 706 WL	DSLBB843 EF	1	1	1	2	1	1	1

The tested model is listed in bold on the table. Other models are identical to the EUT but with lesser functions and interfaces not equipped.

1.4 Radio Interface of the EUT

The table below shows the radio information of the EUT:

Modulation Type	CCK, DQPSK, DBPSK for DSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Radio Technology	DSSS, OFDM
Transfer Rate	IEEE 802.11b: 11/5.5/2/1 Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps
Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channel	11

List of the carrier frequency is shown as below:

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412 MHz	5	2432 MHz	9	2452 MHz
2	2417 MHz	6	2437 MHz	10	2457 MHz
3	2422 MHz	7	2442 MHz	11	2462 MHz
4	2427 MHz	8	2447 MHz		

1.5 Features of Equipment under Test

Please refer to user manual.

2. Test Configuration of Equipment under Test

2.1 Test Manner

a. The EUT has been associated with personal computer and peripherals pursuant to ANSI C63.4-2003 and the configuration operated in a manner which tended to maximize its emission characteristics in a typical application.
b. The EUT can operate on 11 channels listed in section 1.4. Three channels (CH01, CH06 and CH11) in both DSSS and OFDM radio technologies were set for the measurements.
c. The datarate of DSSS was set to 11 Mbps.
d. The datarate of OFDM was set to 6 Mbps. (Note[1])
e. Frequency range investigated: Conducted emission: 150 KHz to 30 MHz, Radiated emission: 30 MHz to 26500MHz.

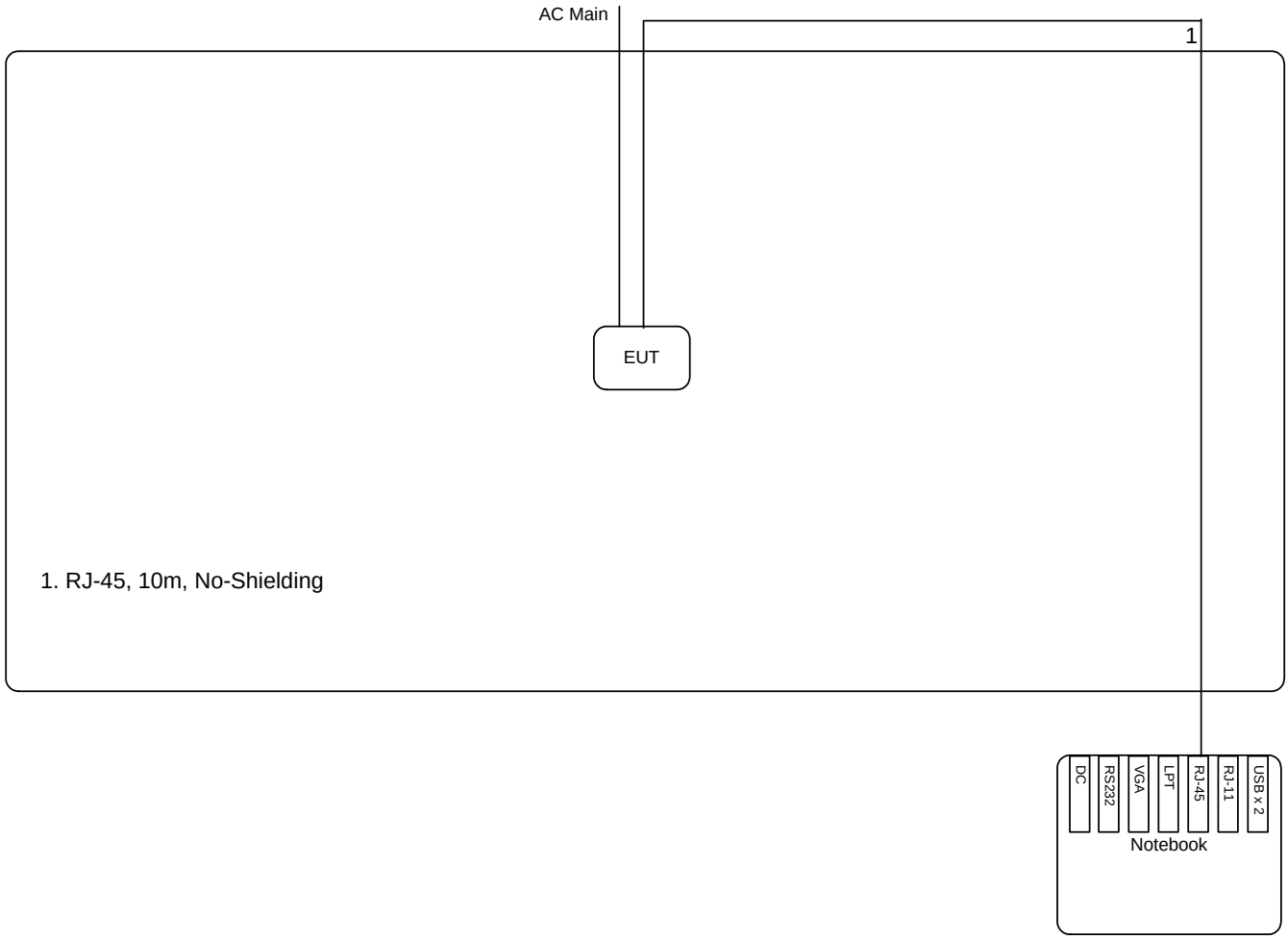
2.2 Description of Test System

Support Unit 1. -- Notebook (DELL) – for local workstation

FCC ID	: N/A
Model No.	: D400
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

[1] For OFDM modulation type, pre-testing was done with datarate set to 6 Mbps and 54 Mbps. This report only represented the results of the worst case – datarate was set to 6 Mbps.

2.3 Connection Diagram of Test System



■ The RJ-45 cable was connected between the EUT and the Notebook.

The Notebook was used to control the EUT to stay on the specific operational modes of the radio interface:
(1) Continuous transmitting mode,
(2) Continuous receiving mode,
(3) Normal operation mode.
The operational modes were achieved by the software pre-installed in the EUT.

3. General Information of Test

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiag, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-318-0055
Test Site No. : CO04-HY, 03CH03-HY,TH01-HY

3.1 Test Voltage

110V/60Hz

3.2 Standard for Methods of Measurement

ANSI C63.4-2003 for conducted power line test and radiated emission test.

3.3 Test in Compliance with

47 CFR Part 15 Subpart C

3.4 Frequency Range Investigated

a. Conduction: from 150 kHz to 30 MHz
b. Radiation: from 30 MHz to 26500 MHz

4. Report of Measurements and Examinations

4.1 List of Measurements and Examinations

Applied Standard: 47CFR FCC Part 15 Subpart C			
4.2	15.247(a)(2)	6dB Spectrum Bandwidth	Pass
4.3	15.247(b)(3)	Maximum Peak Conducted Output Power	Pass
4.4	15.247(e)	Peak Power Spectral Density	Pass
4.5	15.247(d)	Band Edges Emission	Pass
4.6	15.207	AC Power Line Conducted Emission	Pass
4.7	15.247(d)	Spurious Radiated Emission	Pass
4.8	15.203/15.247(b)/(c)	Antenna Requirement	Pass
4.9	2.1091	Maximum Permissible Exposure	Pass

4.2 6dB Bandwidth

4.2.1 Applicable Standard

Section 15.247(a)(2): For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

4.2.2 Instrument for the measurement

Item 18 of the table shown in section 5.

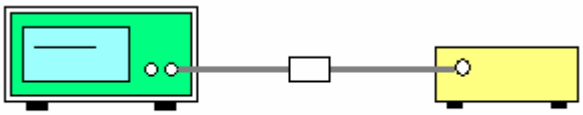
4.2.3 Detailed settings of the instrument

Spectrum Analyzer	R&S FSP40
Attenuation	Auto
Center Frequency	2412 MHz / 2437 MHz / 2462 MHz
Span Frequency	> 6 dB Bandwidth
RB	100 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.2.4 Test Procedure

1. The radio output port of the EUT was connected to the spectrum analyzer through an attenuator.
2. The radio interface of the EUT was set to continuous transmitting mode.
3. The 6 dB bandwidth is the spectrum with level higher than 6 dB below the peak level.

4.2.5 Test Setup



4.2.6 Test Criteria

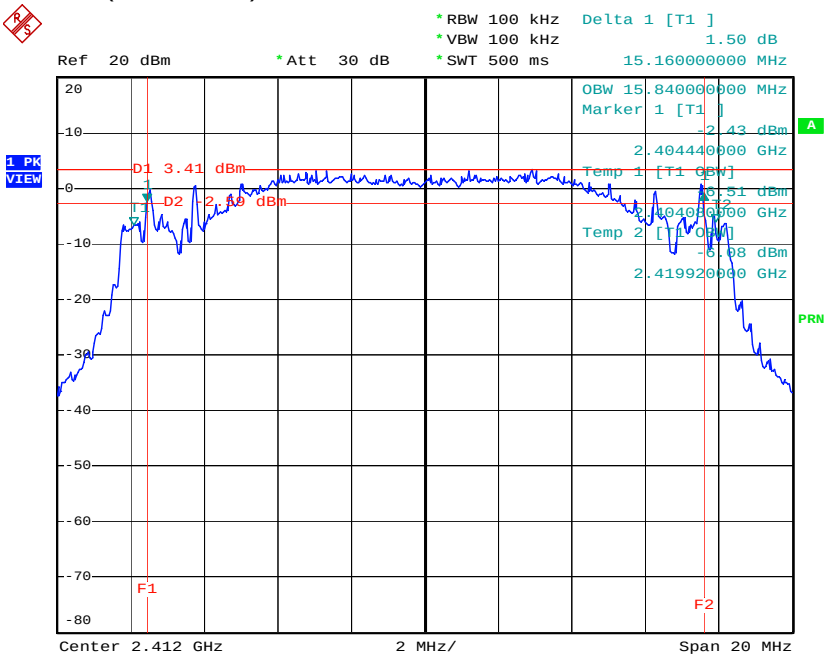
All test results complied with the requirements of 15.247(a)(2). Measurement Uncertainty is $1x10^{-5}$.

4.2.7 Test Result

- Temperature: 28℃
- Relative Humidity: 58%
- Duty Cycle of the Equipment During the Test:
- DSSS: 85%
- OFDM: 93.75%
- Test Engineer: Eason Lu

Modulation Type	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)
DSSS	01	2412 MHz	15.16	15.84	500
DSSS	06	2437 MHz	15.16	15.76	500
DSSS	11	2462 MHz	15.16	15.84	500
OFDM	01	2412 MHz	16.36	16.36	500
OFDM	06	2437 MHz	16.36	16.36	500
OFDM	11	2462 MHz	16.36	16.36	500

Modulation Type: DSSS (Channel 01)：



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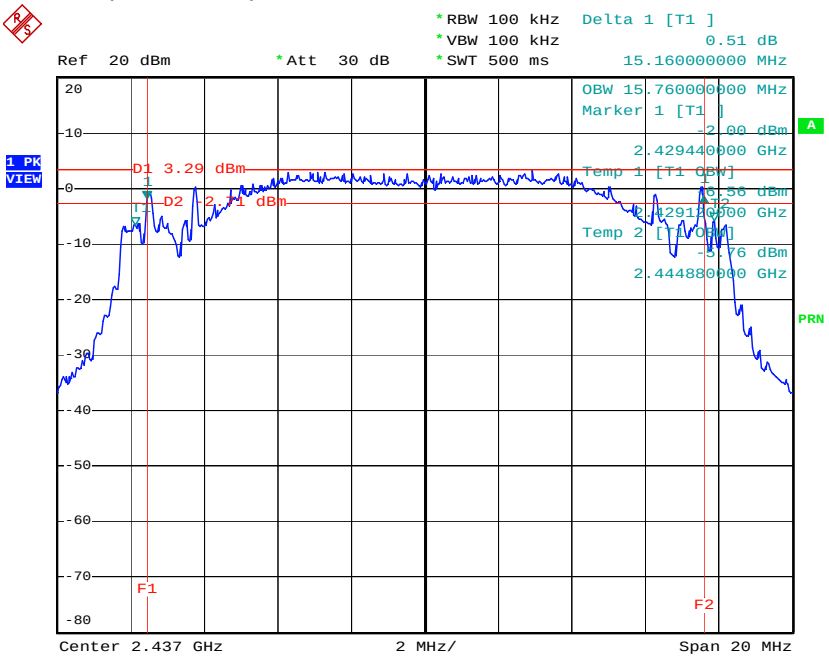
Modulation Type: DSSS (Channel 06)：



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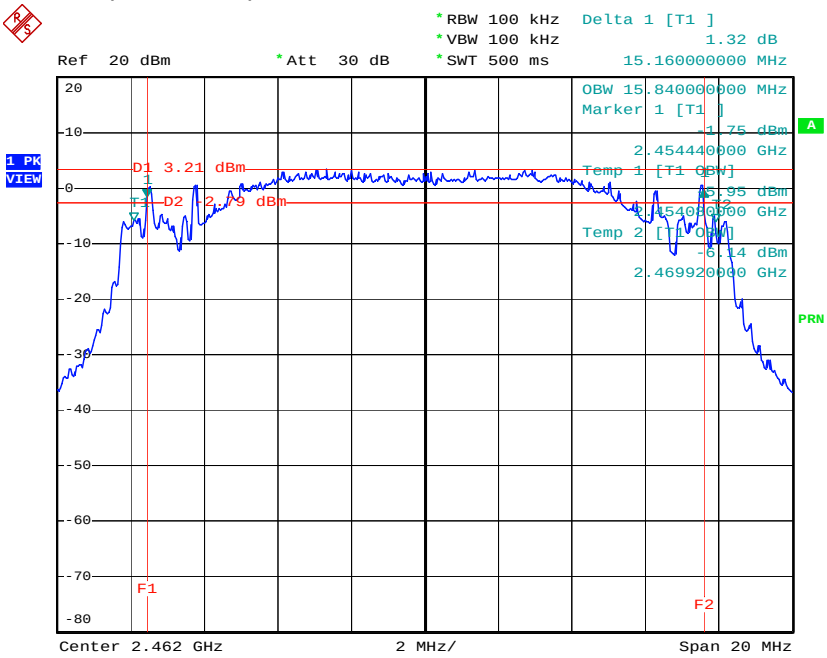
Modulation Type: DSSS (Channel 11)：



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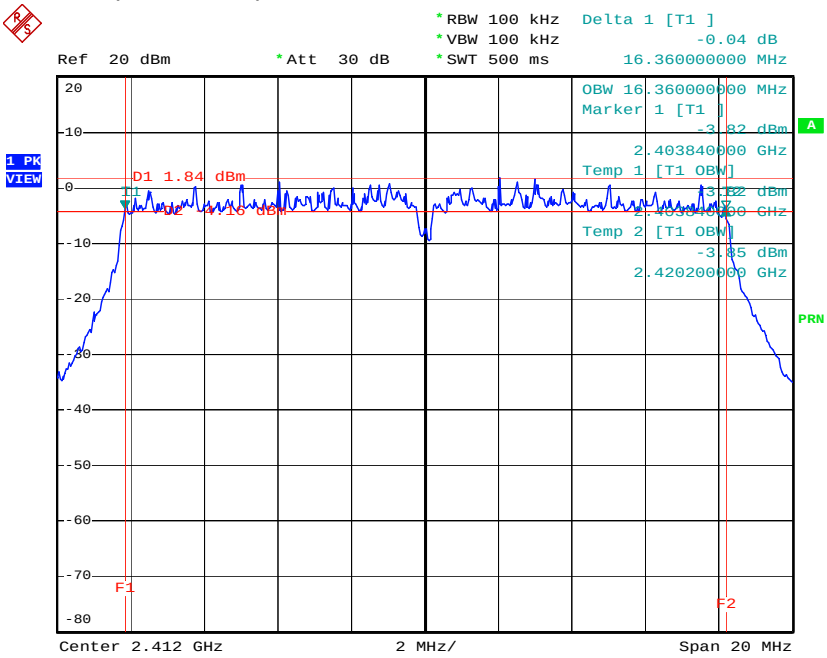
Modulation Type: OFDM (Channel 01)：



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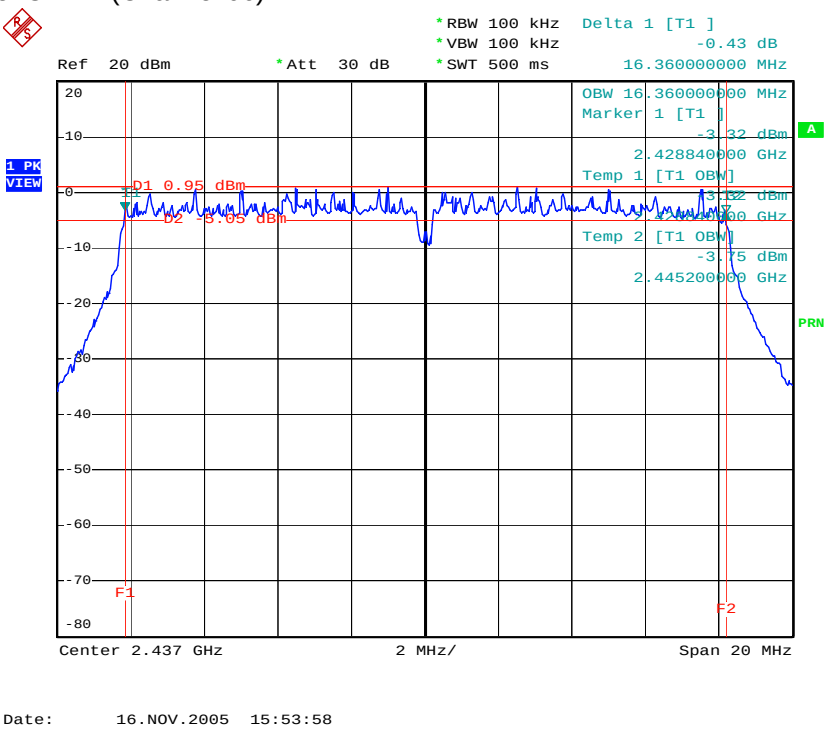
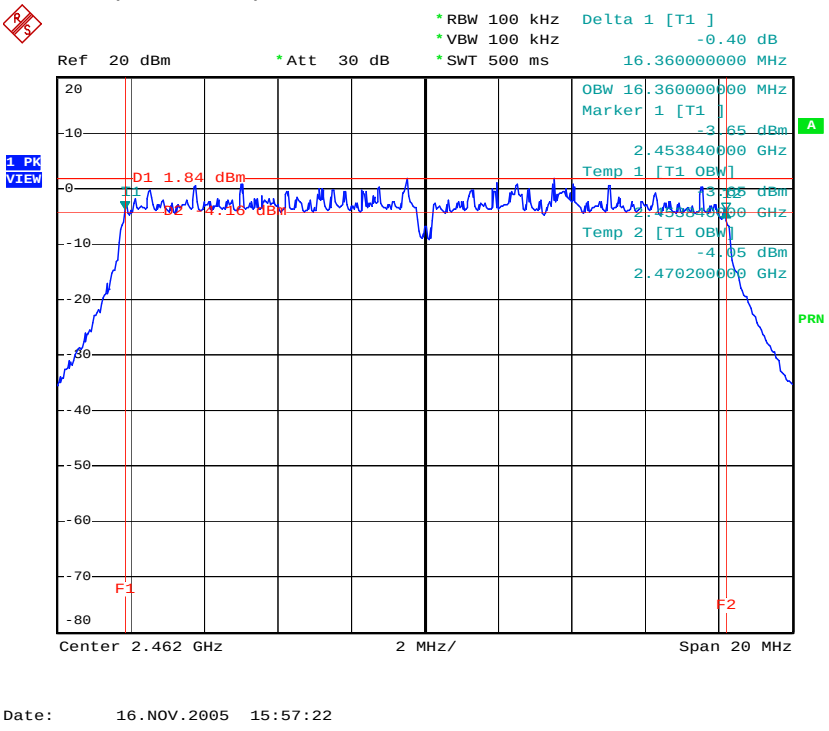
Modulation Type: OFDM (Channel 06)：



Modulation Type: OFDM (Channel 11)：



4.3 Maximum Peak Conducted Output Power

4.3.1 Applicable Standard

Section 15.247(b)(3): The maximum peak output power shall not exceed 1 watt (30dBm). Except as shown below, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the above stated values by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

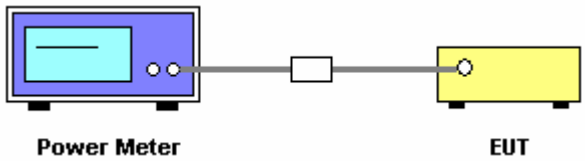
4.3.2 Instruments for the measurement

The table shown in section 5.

4.3.3 Test Procedure

The radio output port of the EUT was connected to the peak power meter through an attenuator.

4.3.4 Test Setup



4.3.5 Test Criteria

All test results complied with the requirements of 15.247(b)(3). Measurement Uncertainty is 1.5 dB.

4.3.6 Test Result of Conducted Power

- Temperature: 28℃
- Relative Humidity: 58%
- Duty Cycle of the Equipment During the Test:
- DSSS: 85%
- OFDM: 93.75%
- Test Engineer: Eason Lu

Modulation Type	Channel No.	Frequency (MHz)	Output Power (dBm)	Limits (dBm)
DSSS	01	2412 MHz	17.64	30
DSSS	06	2437 MHz	17.85	30
DSSS	11	2462 MHz	17.54	30
OFDM	01	2412 MHz	18.54	30
OFDM	06	2437 MHz	18.91	30
OFDM	11	2462 MHz	18.79	30

4.4 Peak Power Spectral Density

4.4.1 Applicable Standard

Section 15.247(e): For digital modulation systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.4.2 Instrument of the measurement

Item 18 of the table shown in section 5.

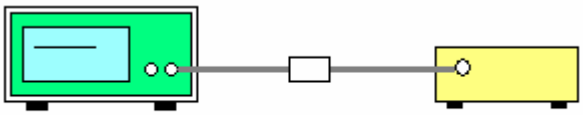
4.4.3 Detailed settings of the instrument

Spectrum Analyzer	R&S FSP40
Attenuation	Auto
Center Frequency	2412 MHz / 2437 MHz / 2462 MHz
Span Frequency	1.5 MHz
RB	3 kHz
VB	30 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	500s

4.4.4 Test Procedure

1. The radio output port of the EUT was connected to the spectrum analyzer through an attenuator.
2. The radio interface of the EUT was set to continuous transmitting mode.

4.4.5 Test Setup



4.4.6 Test Criteria

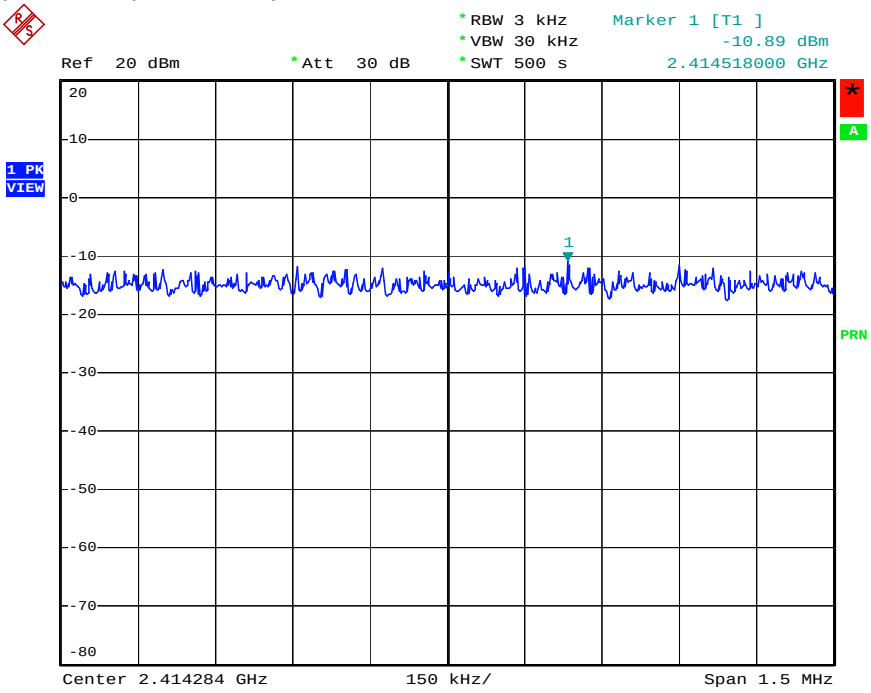
All test results complied with the requirements of 15.247(e). Measurement Uncertainty is 1.5 dB.

4.4.7 Test Result

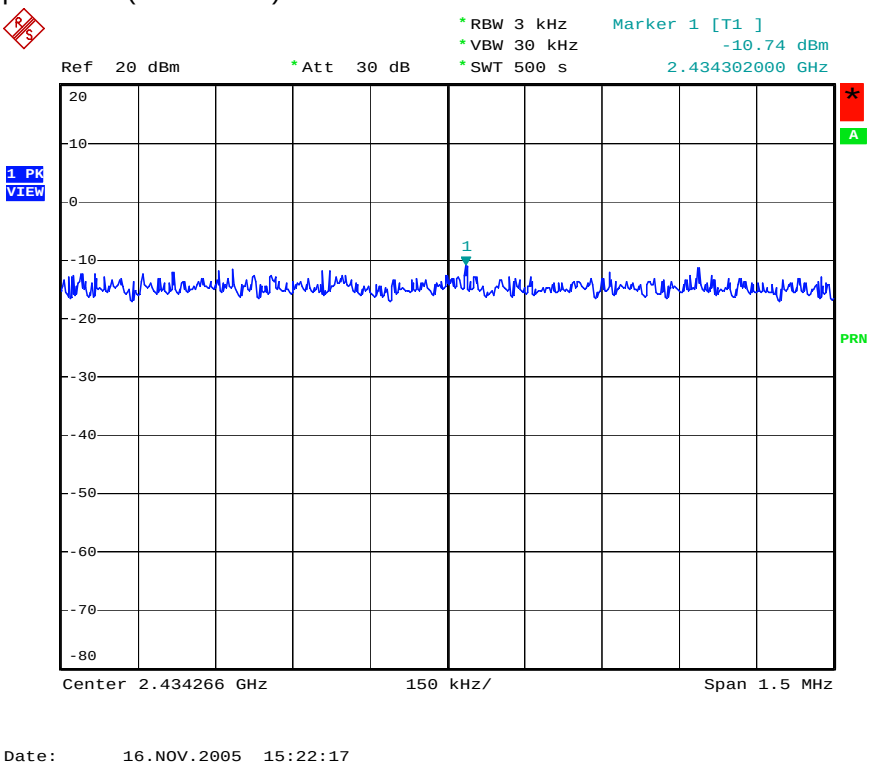
- Temperature: 28℃
- Relative Humidity: 58%
- Duty Cycle of the Equipment During the Test:
- DSSS: 85%
- OFDM: 93.75%
- Test Engineer: Eason Lu

Modulation Type	Channel No.	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
DSSS	01	2412 MHz	-10.89	8
DSSS	06	2437 MHz	-10.74	8
DSSS	11	2462 MHz	-9.65	8
OFDM	01	2412 MHz	-12.28	8
OFDM	06	2437 MHz	-12.11	8
OFDM	11	2462 MHz	-11.97	8

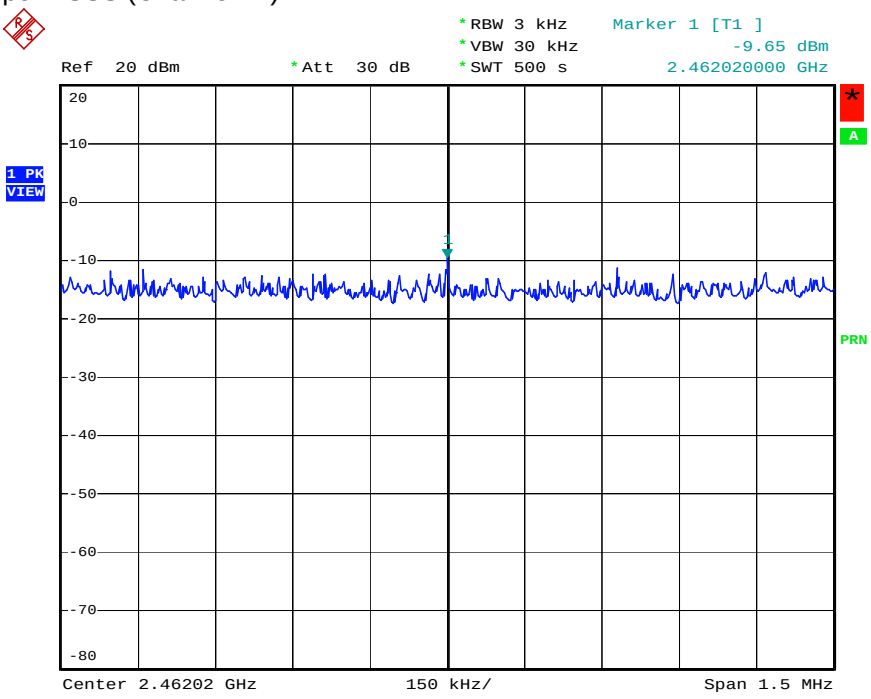
Modulation Type: DSSS (Channel 01)：



Modulation Type: DSSS (Channel 06)：



Modulation Type: DSSS (Channel 11)：



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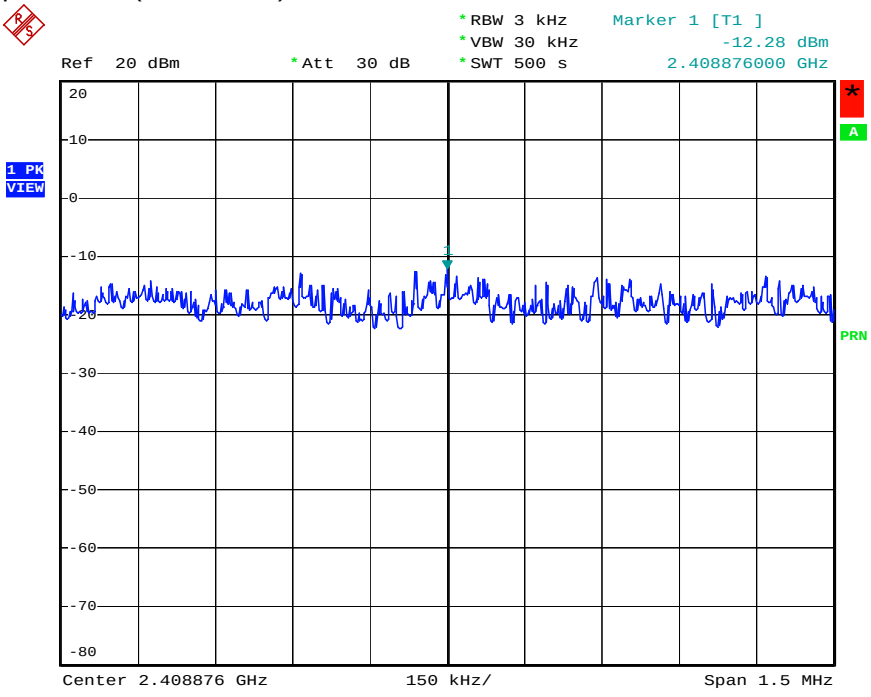
Modulation Type: OFDM (Channel 01)：



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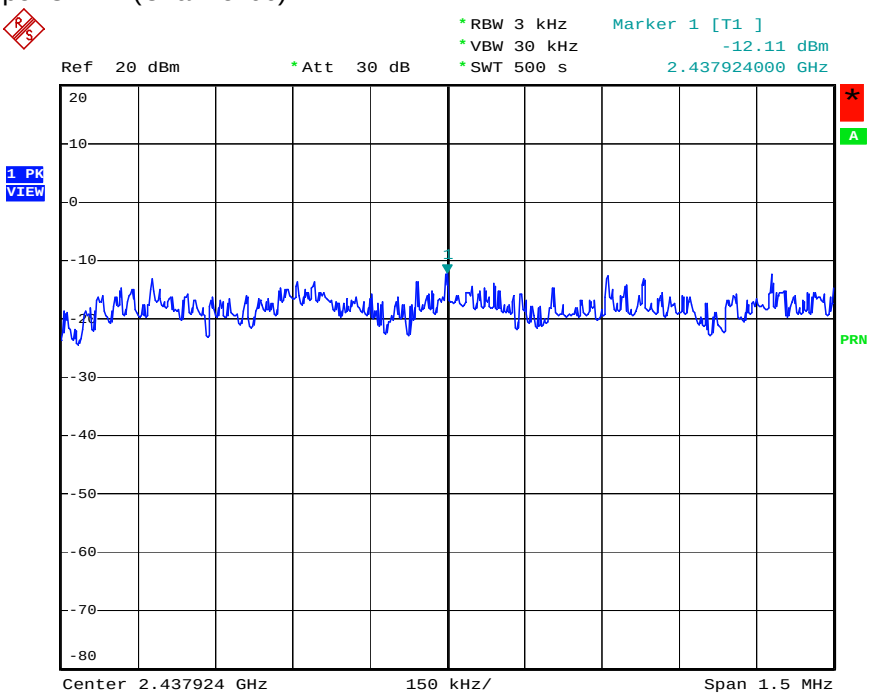
Modulation Type: OFDM (Channel 06)：



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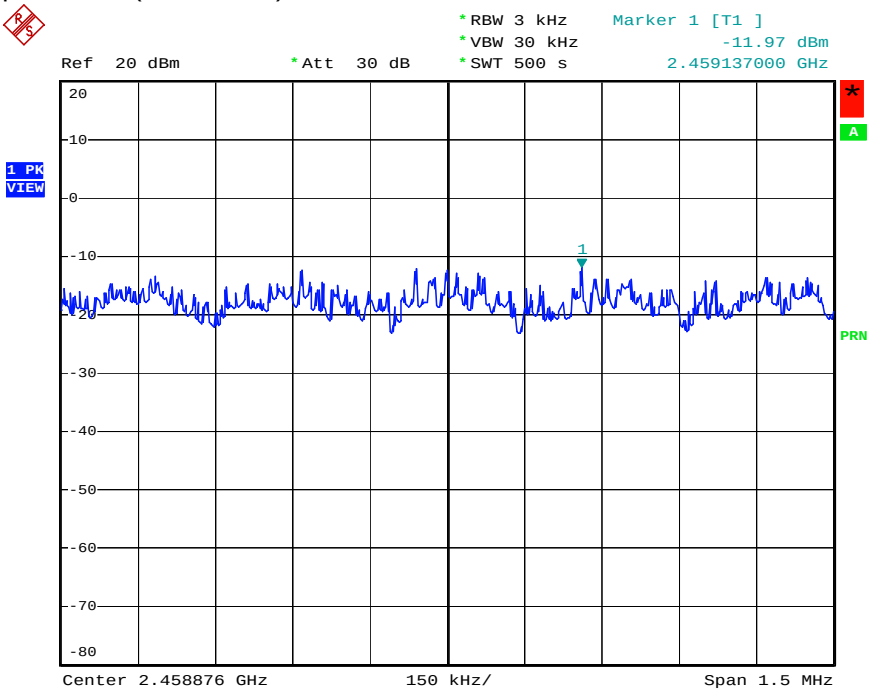
Modulation Type: OFDM (Channel 11)：



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4.5 Band Edges Emission

4.5.1 Applicable Standard

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

4.5.2 Instruments for the measurement

Radiated measurement: Item 6 ~ 17 of the table shown in section 5.
Conducted measurement: Item 18 of the table shown in section 5.

4.5.3 Detailed settings of the instruments

Spectrum Analyzer	R&S FSP40 (Conducted Measurement)
Attenuation	Auto
Center Frequency	2412 MHz / 2462 MHz
Span Frequency	100 MHz
RB	100 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

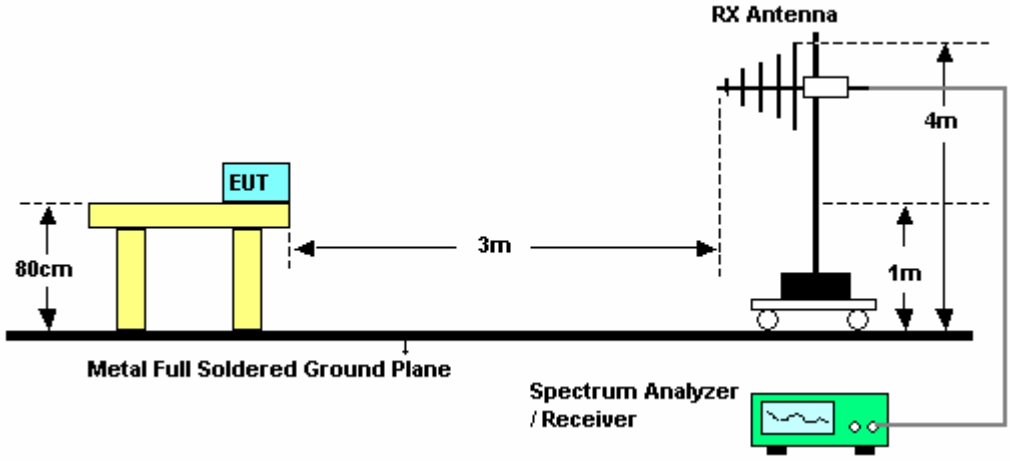
Spectrum Analyzer	R&S FSP40 (Radiated Measurement)
Attenuation	Auto
Center Frequency	2412 MHz / 2462 MHz
Span Frequency	100 MHz
RB	1 MHz for PK value / 1 MHz for AV value
VB	1 MHz for PK value / 10 Hz for AV value
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.5.4 Test Procedure

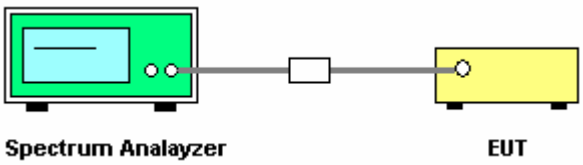
1. Only channel 01 and channel 11 were investigated.
2. Radiated Measurement
   a. The EUT was placed on a table 0.8 meter above the ground reference plane which is constituted by a turn table.
   b. The EUT was set 3 meters from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.
   c. The table was rotated 360 degrees to determine the position of the highest radiation.
   d. The height of the horn antenna is varied between one meter and four meters above ground to find the maximum value of the field strength.
   e. 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.
3. Conducted Measurement
4. The radio output port of the EUT was connected to the spectrum analyzer through an attenuator.
5. The radio interface of the EUT was set to continuous transmitting mode.

4.5.5 Test Setup

Radiated Method



Conducted Method



4.5.6 Test Criteria

All test results complied with the requirements of 15.247(d). Measurement Uncertainty is $1x10^{-5}$.

4.5.7 Results of Radiated Emission Test

- Temperature: 28℃
- Relative Humidity: 58%
- Modulation Type: DSSS
- Tested Channel: CH01
- Test Engineer: Vic

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1 @	2390.000	58.52	-15.48	28.03	74.00	2.28	28.21	0.00	Peak	---	---
1 @	2390.000	47.55	-6.45	17.06	54.00	2.28	28.21	0.00	Average	---	---

- Temperature: 28℃
- Relative Humidity: 58%
- Modulation Type: DSSS
- Tested Channel: CH11
- Test Engineer: Vic

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
2 @	2483.500	57.64	-16.36	26.93	74.00	2.34	28.37	0.00	Peak	---	---
2 @	2483.500	45.43	-8.57	14.72	54.00	2.34	28.37	0.00	Average	---	---

- Temperature: 28℃
- Relative Humidity: 58%
- Modulation Type: OFDM
- Tested Channel: CH01
- Test Engineer: Vic

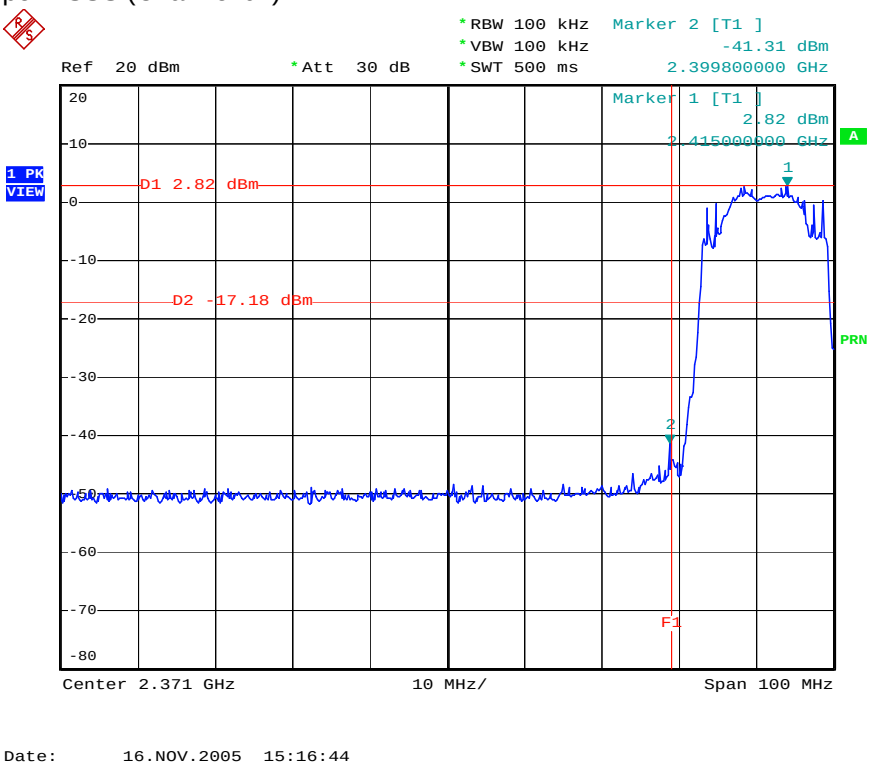
	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1 @	2390.000	71.41	-2.59	40.92	74.00	2.28	28.21	0.00	Peak	---	---
1 @	2390.000	49.53	-4.47	19.04	54.00	2.28	28.21	0.00	Average	---	---

- Temperature: 28℃
- Relative Humidity: 58%
- Modulation Type: OFDM
- Tested Channel: CH11
- Test Engineer: Vic

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
2 @	2483.500	67.47	-6.53	36.76	74.00	2.34	28.37	0.00	Peak	---	---
2 @	2483.500	49.41	-4.59	18.70	54.00	2.34	28.37	0.00	Average	---	---

4.5.8 Results of Conducted Emission Test

Modulation Type: DSSS (Channel 01)：



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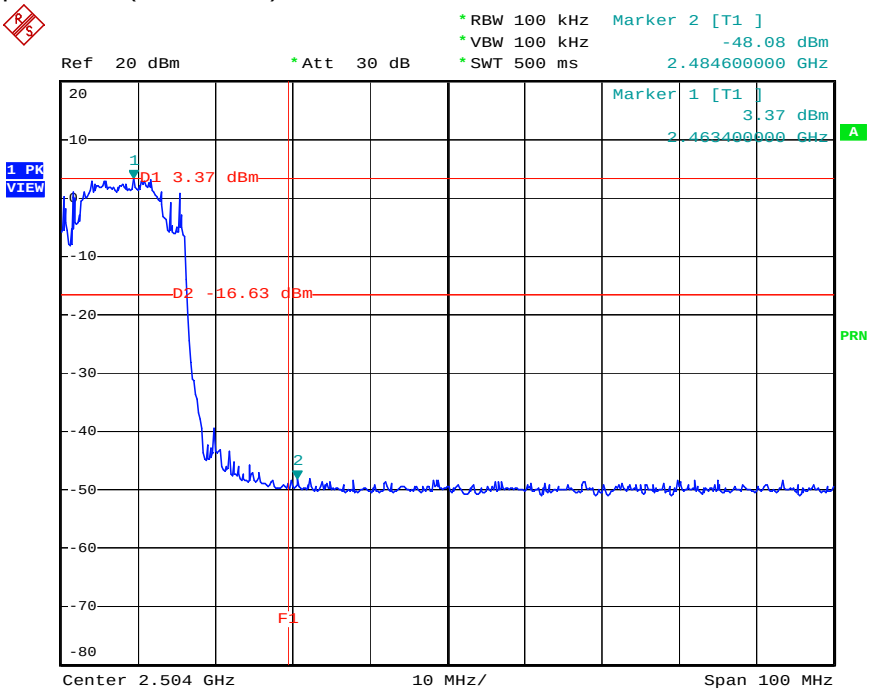
Modulation Type: DSSS (Channel 11)：



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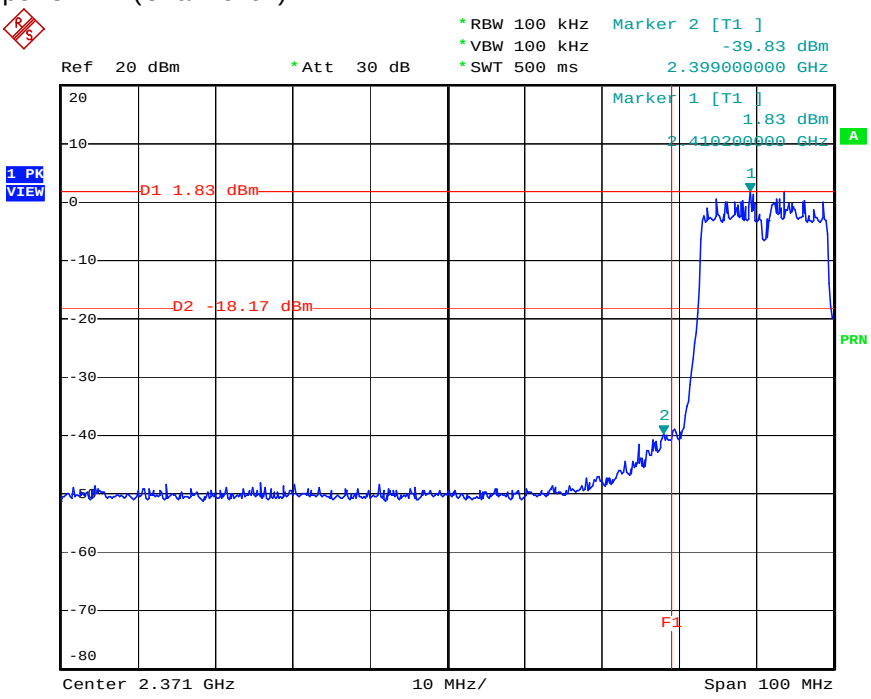
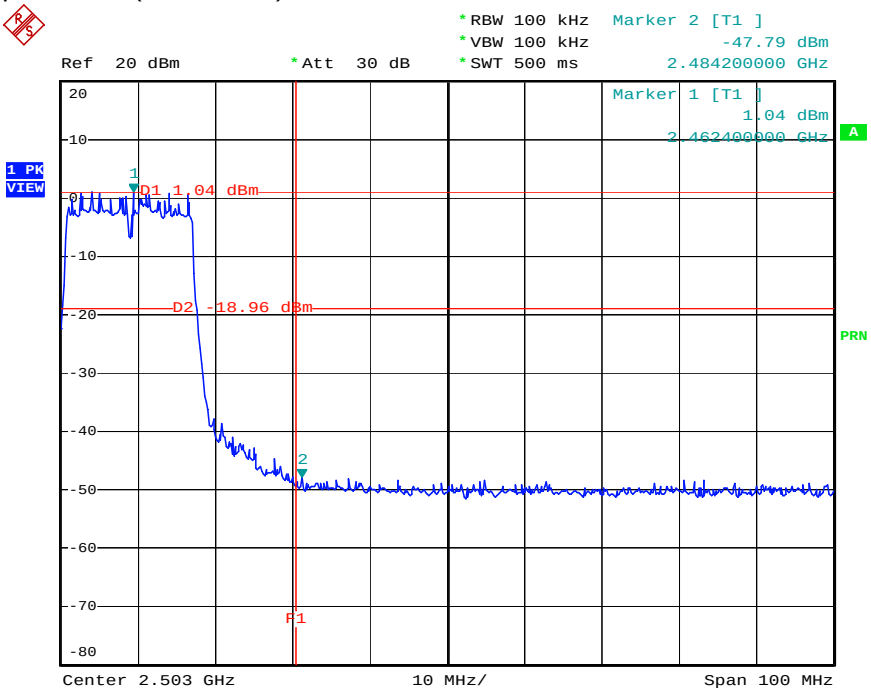
Modulation Type: OFDM (Channel 01)：



Date: 16.NOV.2005 15:48:57

Modulation Type: OFDM (Channel 11)：



Date: 16.NOV.2005 15:58:30

4.6 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 C63.4-2003 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.

4.6.1 Instrument for the measurement

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

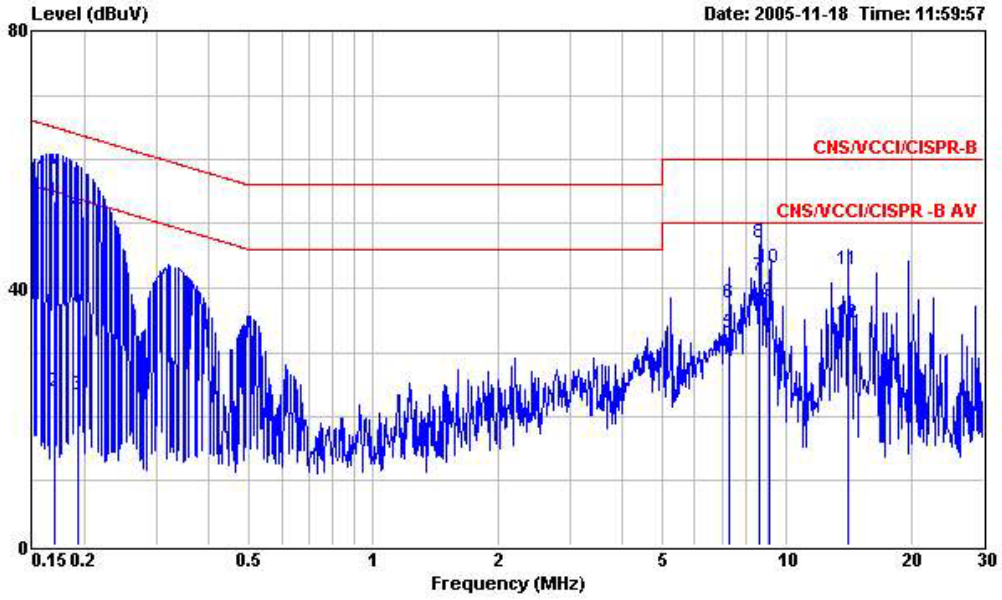
4.6.2 Test Procedure

a. The EUT was set to the normal operation.
b. The EUT was placed on a desk 0.8 meters height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meters from any other grounded conducting surface.
c. Connection of the EUT to the AC mains power was done through a Line Impedance Stabilization Network (LISN).
d. All the support units were connected to the other LISN's.
e. The LISN provides 50 ohm coupling impedance for the measuring instrument.
f. The CISPR states that a 50 ohm, 50 microhenry LISN should be used.
g. Both sides of AC line were checked for maximum conducted interference.
h. The frequency range from 150 kHz to 30 MHz was investigated.
i. The test-receiver system was set in its Peak Detect Function and specified bandwidth with Maximum Hold Mode.

4.6.3 Results of Conducted Emission Test

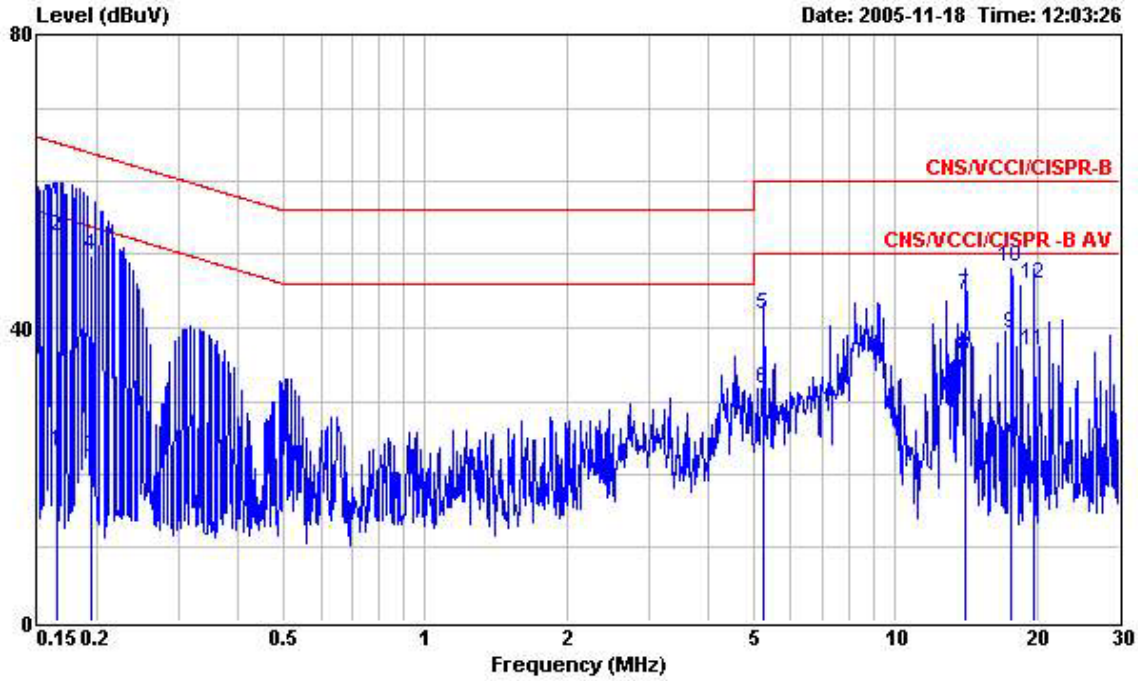
- ADSL operational Mode: ADSL2+ Annex A
- Test Model: DSLBB643 EB
- Frequency Range of Test: from 0.15 MHz to 30 MHz
- Temperature: 25℃
- Relative Humidity: 59%
- All emissions not reported here are more than 10 dB below the prescribed limit.

■ The minimum margin at which the test passed is indicated by the frame in the following table(s)



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200505 LINE
EUT : Speed Touch 780 WL
Power : 120V/60Hz
Model : DSLBB643 EB
Tested Port : AC
Operational Mode : ADSL2+ Annex A
Loop Length : 3 kfeet
ISN :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.169	53.39	-11.63	65.02	53.29	0.06	0.04	QP
2	0.169	23.88	-31.14	55.02	23.78	0.06	0.04	Average
3	0.193	23.35	-30.55	53.90	23.24	0.06	0.05	Average
4	0.193	51.65	-12.25	63.90	51.54	0.06	0.05	QP
5	7.294	32.87	-17.13	50.00	32.45	0.21	0.21	Average
6	7.294	37.64	-22.36	60.00	37.22	0.21	0.21	QP
7	8.623	41.88	-8.12	50.00	41.44	0.21	0.23	Average
8	8.623	46.98	-13.02	60.00	46.54	0.21	0.23	QP
9	9.118	37.98	-12.02	50.00	37.54	0.21	0.23	Average
10	9.118	43.02	-16.98	60.00	42.58	0.21	0.23	QP
11	14.151	42.91	-17.09	60.00	42.42	0.21	0.28	QP
12	14.151	34.52	-15.48	50.00	34.03	0.21	0.28	Average

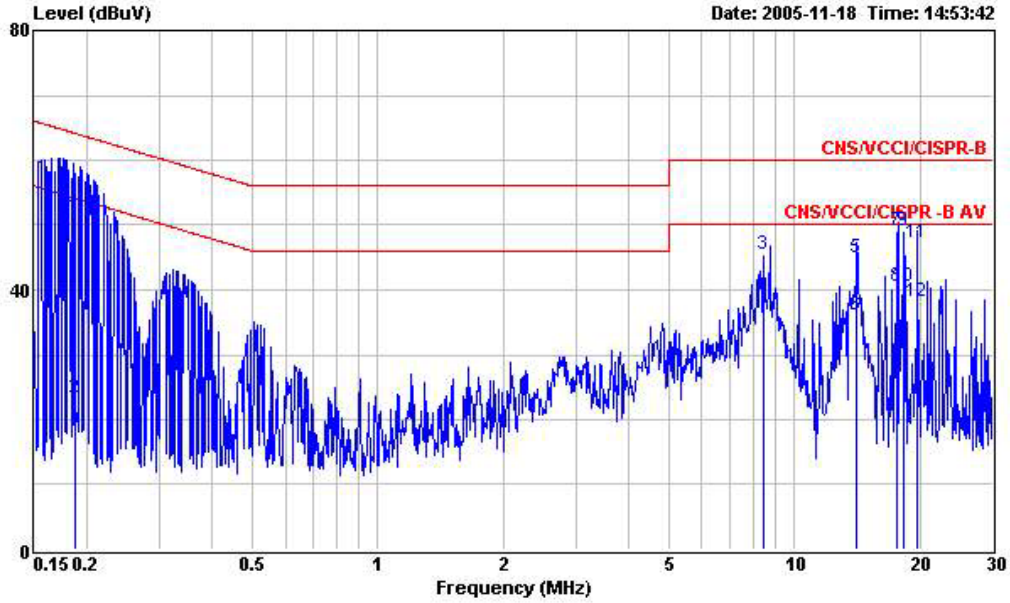


Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200505 NEUTRAL
EUT : Speed Touch 780 WL
Power : 120V/60Hz
Model : DSLBB643 EB
Tested Port : AC
Operational Mode : ADSL2+ Annex A
Loop Length : 3 kfeet
ISN :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.164	23.03	-32.23	55.26	22.88	0.11	0.04	Average
2	0.164	52.40	-12.86	65.26	52.25	0.11	0.04	QP
3	0.196	22.33	-31.47	53.80	22.17	0.11	0.05	Average
4	0.196	49.96	-13.84	63.80	49.80	0.11	0.05	QP
5	5.233	41.71	-18.29	60.00	41.27	0.26	0.18	QP
6	5.233	31.72	-18.28	50.00	31.28	0.26	0.18	Average
7	14.152	44.33	-15.67	60.00	43.72	0.33	0.28	QP
8	14.152	36.00	-14.00	50.00	35.39	0.33	0.28	Average
9	17.695	39.10	-10.90	50.00	38.39	0.39	0.32	Average
10	17.695	48.26	-11.74	60.00	47.55	0.39	0.32	QP
11	19.709	36.92	-13.08	50.00	36.14	0.43	0.35	Average
12	19.709	46.06	-13.94	60.00	45.28	0.43	0.35	QP

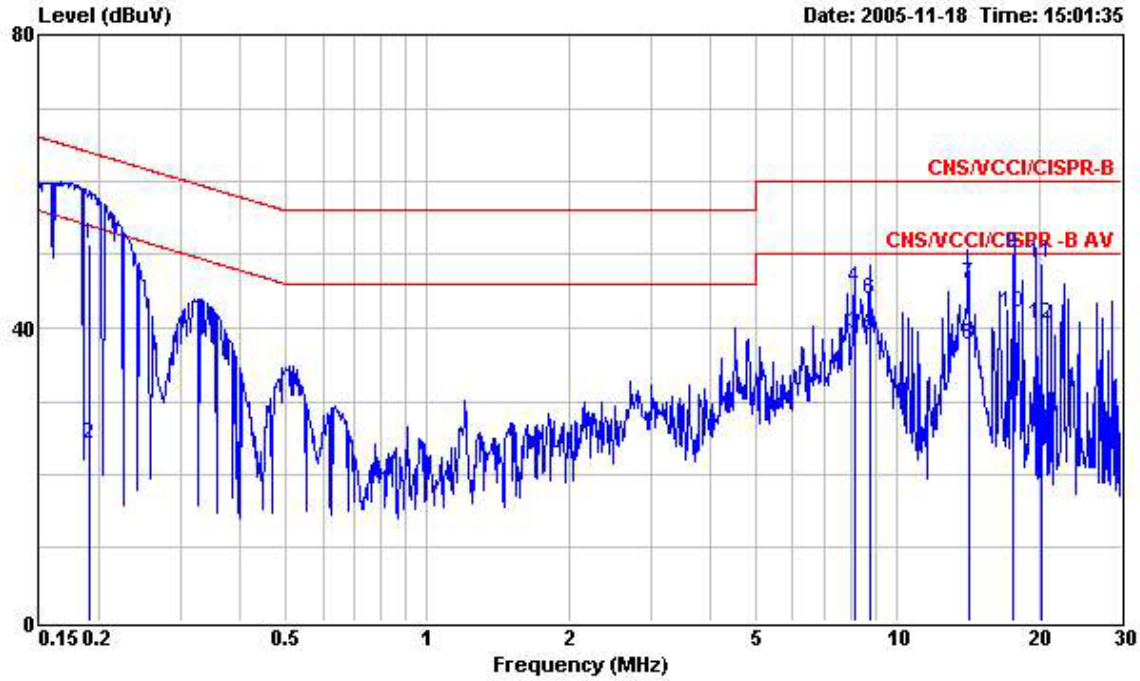
- Test Model: DSLBB643 EF
- Frequency Range of Test: from 0.15 MHz to 30 MHz
- Temperature: 25℃
- Relative Humidity: 59%
- All emissions not reported here are more than 10 dB below the prescribed limit.

■ The minimum margin at which the test passed is indicated by the frame in the following table(s)



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200505 LINE
EUT : Speed Touch 706 WL
Power : 120V/60Hz
Model : DSLBB643 EF
Tested Port : AC
Operational Mode : ADSL2+ Annex A
Loop Length : 3 kfeet
ISN :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.188	51.53	-12.59	64.12	51.42	0.06	0.05	QP
2	0.188	23.36	-30.76	54.12	23.25	0.06	0.05	Average
3	8.434	45.41	-14.59	60.00	44.98	0.21	0.22	QP
4	8.434	39.32	-10.68	50.00	38.89	0.21	0.22	Average
5	14.154	44.91	-15.09	60.00	44.42	0.21	0.28	QP
6	14.154	36.03	-13.97	50.00	35.54	0.21	0.28	Average
7	17.694	48.96	-11.04	60.00	48.37	0.27	0.32	QP
8	17.694	40.64	-9.36	50.00	40.05	0.27	0.32	Average
9	18.242	48.97	-11.03	60.00	48.36	0.28	0.33	QP
10	18.242	40.47	-9.53	50.00	39.86	0.28	0.33	Average
11	19.707	47.36	-12.64	60.00	46.70	0.31	0.35	QP
12	19.707	38.22	-11.78	50.00	37.56	0.31	0.35	Average



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200505 NEUTRAL
EUT : Speed Touch 706 WL
Power : 120V/60Hz
Model : DSLBB643 EF
Tested Port : AC
Operational Mode : ADSL2+ Annex A
Loop Length : 3 kfeet
ISN :

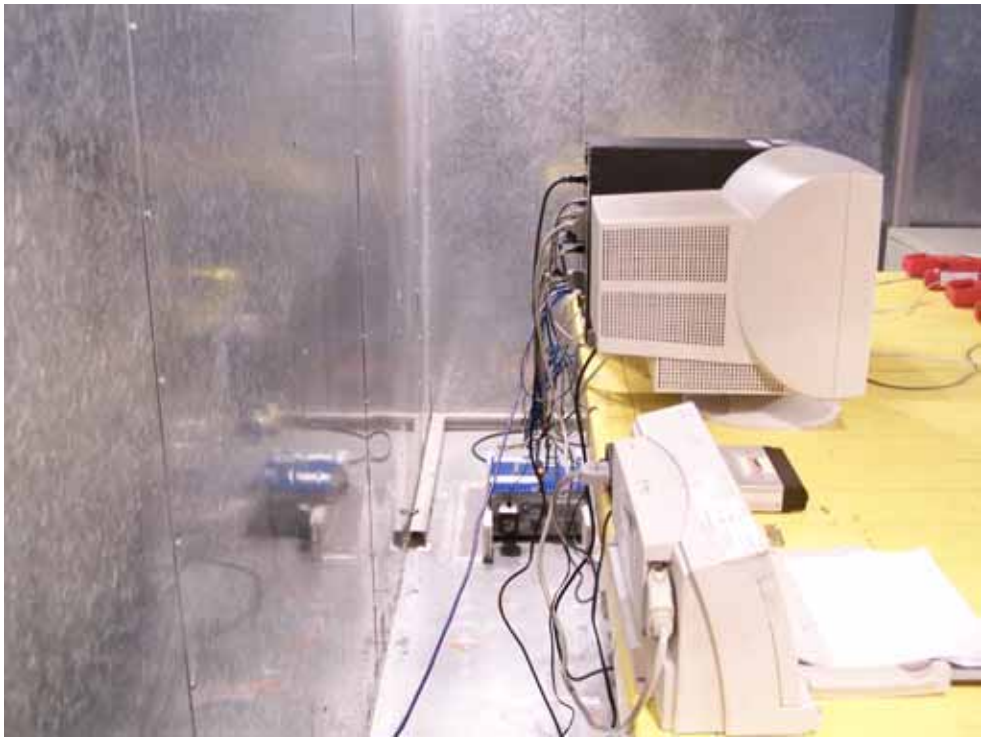
	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.191	51.41	-12.59	64.00	51.25	0.11	0.05	QP
2	0.191	24.08	-29.92	54.00	23.92	0.11	0.05	Average
3	8.130	39.15	-10.85	50.00	38.62	0.31	0.22	Average
4	8.130	45.52	-14.48	60.00	44.99	0.31	0.22	QP
5	8.734	39.07	-10.93	50.00	38.53	0.31	0.23	Average
6	8.734	43.99	-16.01	60.00	43.45	0.31	0.23	QP
7	14.274	46.03	-13.97	60.00	45.42	0.33	0.28	QP
8	14.274	37.61	-12.39	50.00	37.00	0.33	0.28	Average
9	17.693	50.11	-9.89	60.00	49.40	0.39	0.32	QP
10	17.693	42.11	-7.89	50.00	41.40	0.39	0.32	Average
11	20.259	48.79	-11.21	60.00	48.00	0.44	0.35	QP
12	20.259	40.54	-9.46	50.00	39.75	0.44	0.35	Average

4.7 Photographs of Conducted Powerline Test Configuration

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

FRONT VIEW

REAR VIEW



SIDE VIEW

4.8 Radiated Emission

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2003. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.4.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

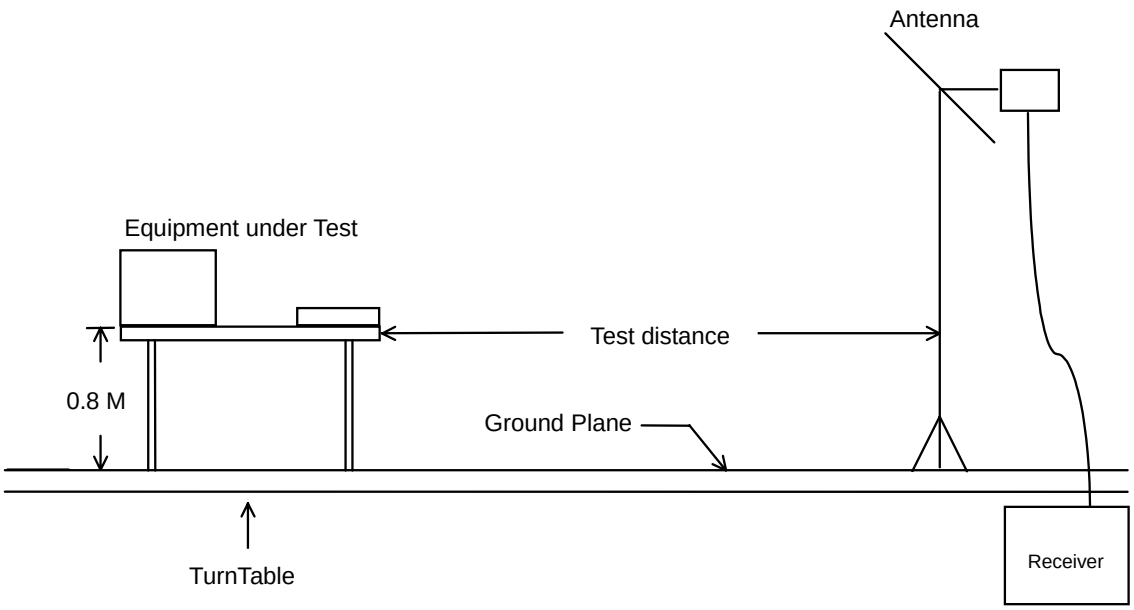
4.8.1 Instruments of the measurement

Amplifier	(SCHAFFNER CPA9231A)
RF Gain	30 dB
Signal Input	9 kHz -2 GHz
Spectrum Analyzer	(R&S FSP40)
Attenuation	10 dB
Start Frequency	1 GHz
Stop Frequency	18 GHz
Resolution Bandwidth	1 MHz
Video Bandwidth	1 MHz
Signal Input	9 kHz to 40 GHz
Amplifier	(Agilent 8449B)
RF Gain	35 dB
Signal Input	1 GHz to 26.5 GHz

4.8.2 Test Procedure

a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. 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.
e. 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.
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
g. 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.
h. For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB 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.

4.8.3 Typical Test Setup Layout of Radiated Emission

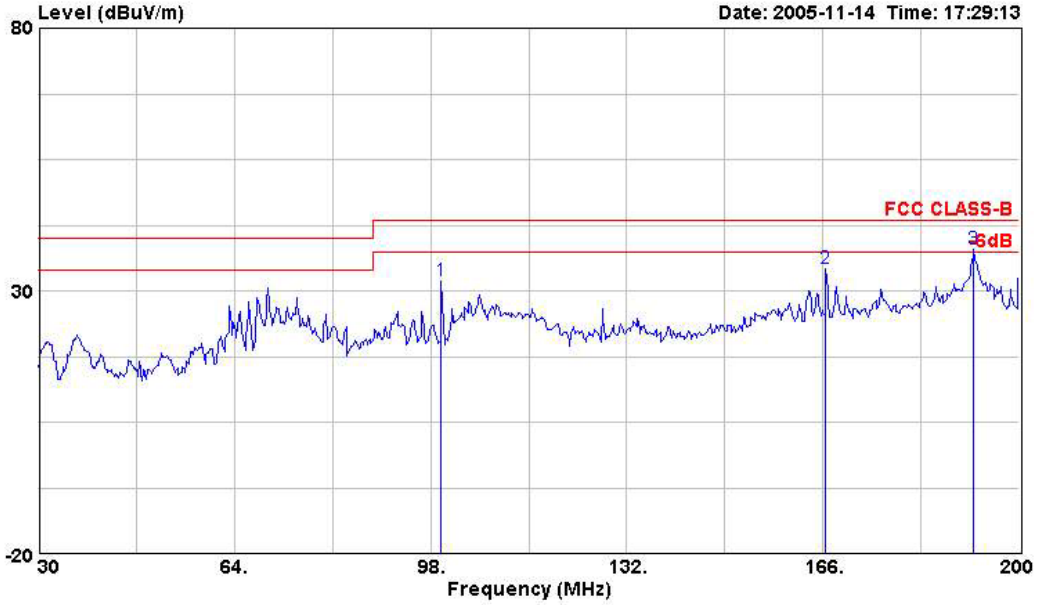


4.8.4 Results of Radiated Emission Test

- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: OFDM CH06
- Note:
- This mode is determined as the worst-case mode from all possible combinations between the available modulations and channels.
- Test Distance: 3 M
- Temperature: 28℃
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

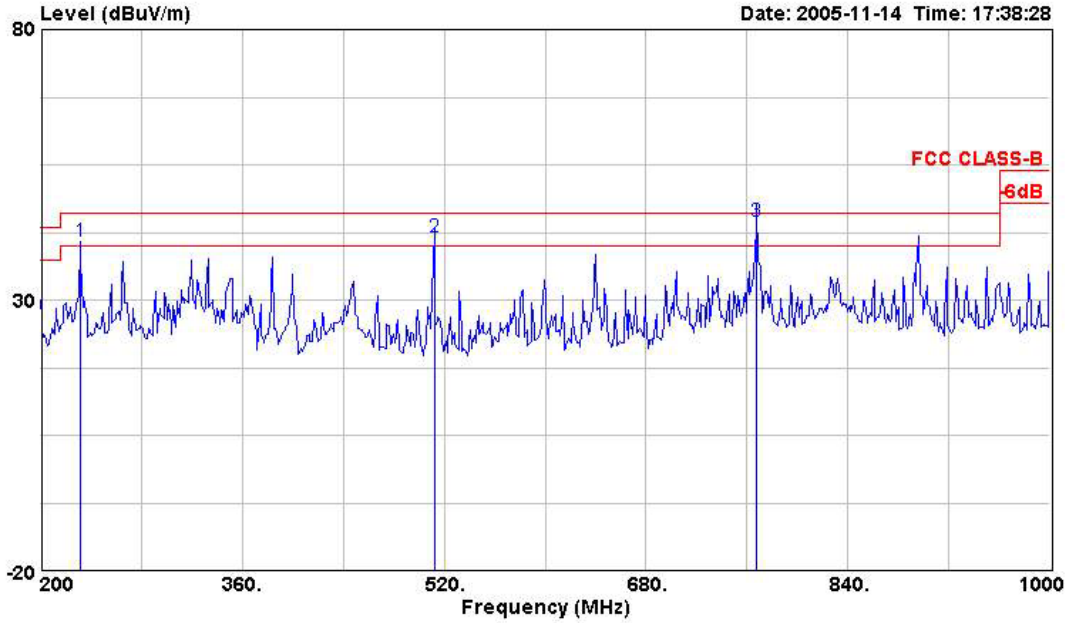
■ The test was passed at the minimum margin that marked by the frame in the following table

Spurious Emission



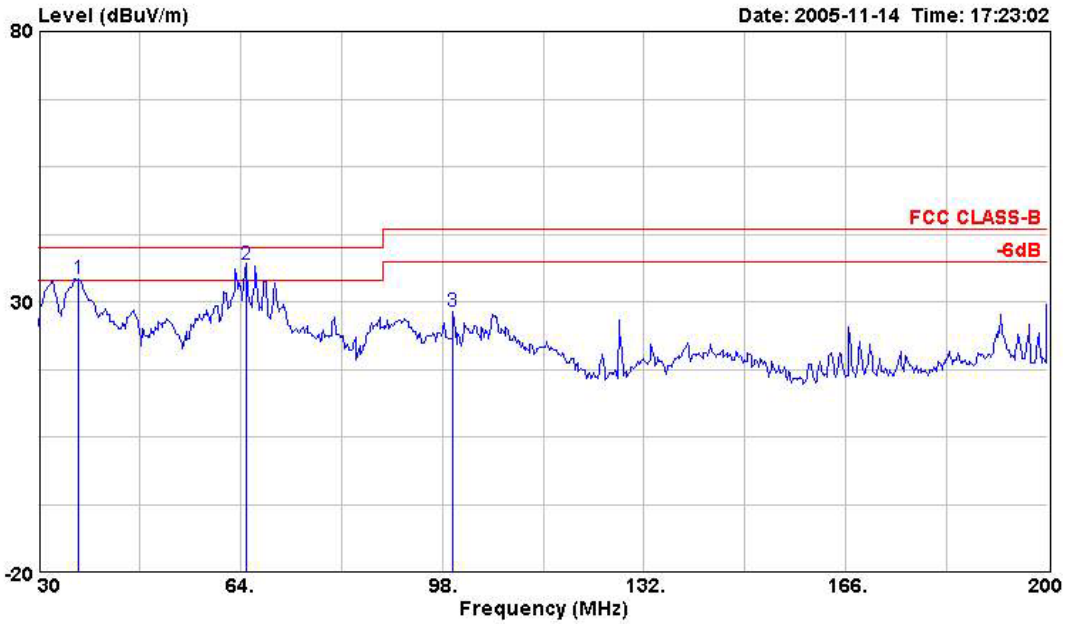
Site :03CH03-HY
Condition:FCC CLASS-B 3m BIC-9124--301 HORIZONTAL
EUT :ST780_706
Model :ST780_706
Memo :TX CH06 2437MHz 11g
:6MBPS

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1 @	99.870	31.73	-11.77	52.44	43.50	0.95	8.99	30.65	Peak	---	---
2 @	166.510	34.26	-9.24	49.78	43.50	1.28	13.31	30.11	Peak	---	---
3 @	192.180	37.97	-5.53	51.80	43.50	1.28	15.17	30.28	Peak	---	---



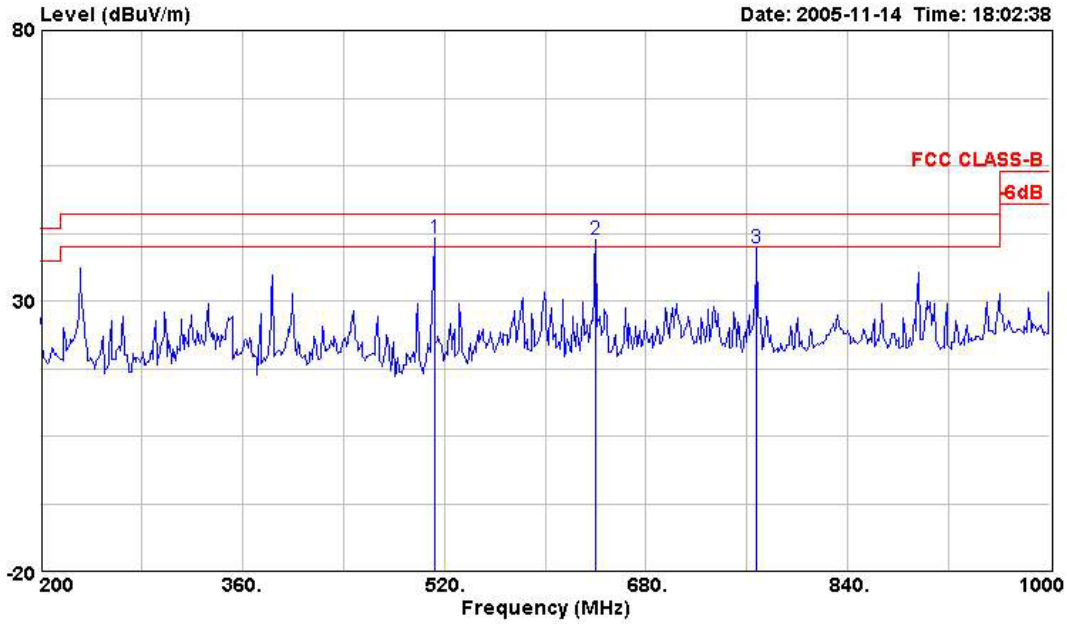
Site :03CH03-HY
Condition:FCC CLASS-B 3m LOG-9111-221 HORIZONTAL
EUT :ST780_706
Model :ST780_706
Memo :TX CH06 2437MHz 11g
:6MBPS

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1 @	231.200	40.90	-5.10	56.95	46.00	1.48	13.77	31.30	Peak	---	---
2 @	512.000	41.47	-4.53	53.53	46.00	2.19	16.54	30.80	QP	---	---
3 @	768.000	44.39	-1.61	50.61	46.00	2.79	21.52	30.53	QP	---	---



Site :03CH03-HY
Condition:FCC CLASS-B 3m BIC-9124--301 VERTICAL
EUT :ST780_706
Model :ST780_706
Memo :TX CH06 2437MHz 11g
:6MBPS

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1 @	36.630	34.28	-5.72	52.07	40.00	0.58	12.12	30.49	Peak	---	---
2 @	65.020	36.91	-3.09	56.53	40.00	0.82	10.14	30.58	Peak	---	---
3 @	99.870	28.28	-15.22	48.99	43.50	0.95	8.99	30.65	Peak	---	---



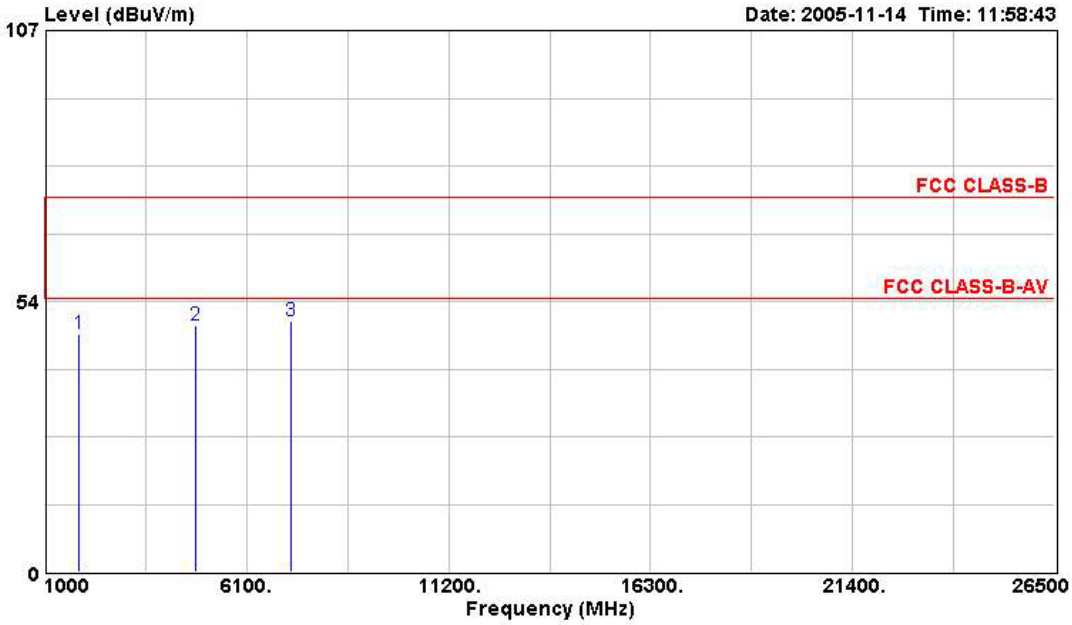
Site :03CH03-HY
Condition:FCC CLASS-B 3m LOG-9111-221 VERTICAL
EUT :ST780_706
Model :ST780_706
Memo :TX CH06 2437MHz 11g
:6MBPS

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1 @	512.000	41.56	-4.44	53.62	46.00	2.19	16.54	30.80	Peak	---	---
2 @	640.000	41.22	-4.78	48.83	46.00	2.47	20.52	30.61	Peak	---	---
3 @	768.000	39.84	-6.16	46.06	46.00	2.79	21.52	30.53	Peak	---	---

- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: DSSS CH01
- Test Distance: 3 M
- Temperature: 28℃
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

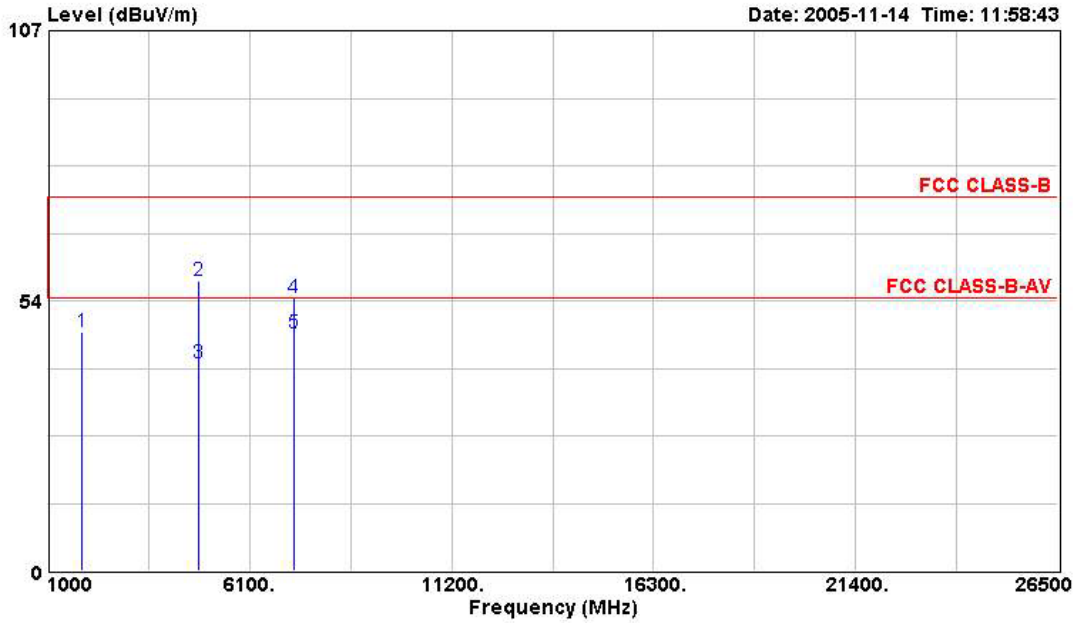
■ The test was passed at the minimum margin that marked by the frame in the following table

Spurious Emission




```
Site      :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 HORIZONTAL
EUT       :ST780_706
Model     :ST780_706
Memo      :TX CH01 2412MHz 11b
          :11MBPS
```

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1844.000	47.02	-26.98	51.08	74.00	1.90	26.84	32.79	PEAK	---	---
2	4824.000	48.80	-25.20	45.12	74.00	3.10	33.12	32.54	PEAK	---	---
3 @	7236.000	49.69	-24.31	42.08	74.00	4.09	35.98	32.46	PEAK	---	---



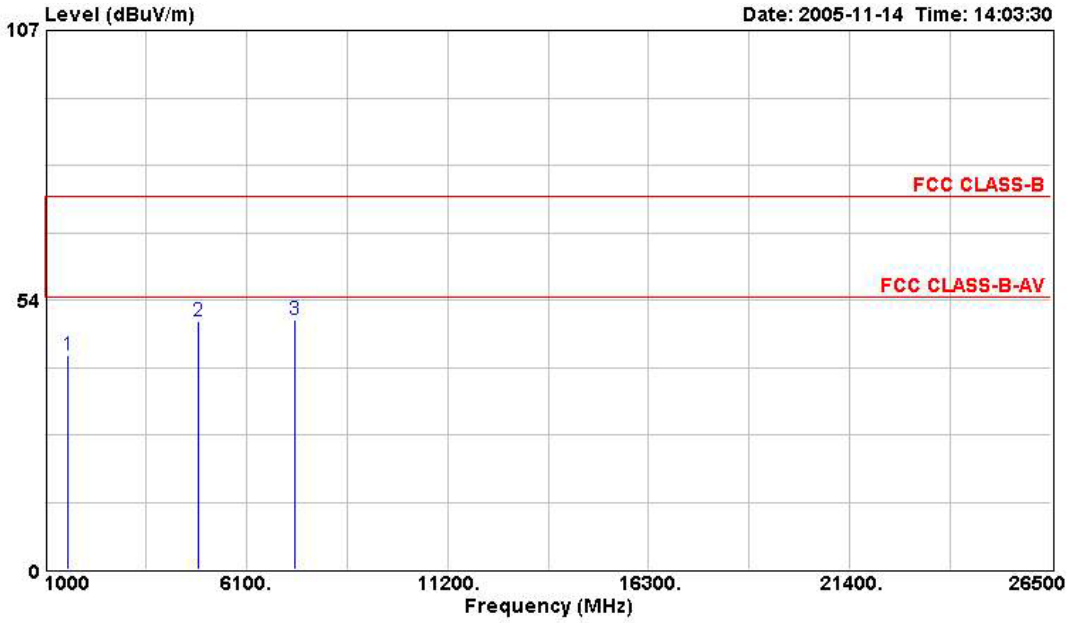
Site :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
EUT :ST780_706
Model :ST780_706
Memo :TX CH01 2412MHz 11b
:11MBPS

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1844.000	47.27	-26.73	51.32	74.00	1.90	26.84	32.79	Peak	---	---
2 @	4824.000	57.40	-16.60	53.72	74.00	3.10	33.12	32.54	PEAK	---	---
3 @	4824.000	41.22	-12.78	37.54	54.00	3.10	33.12	32.54	Average	---	---
4 @	7232.000	53.95	-20.05	46.28	74.00	4.09	35.98	32.40	PEAK	---	---
5 @	7232.000	47.15	-6.85	39.49	54.00	4.09	35.98	32.40	Average	---	---

- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: DSSS CH 06
- Test Distance: 3 M
- Temperature: 28℃
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

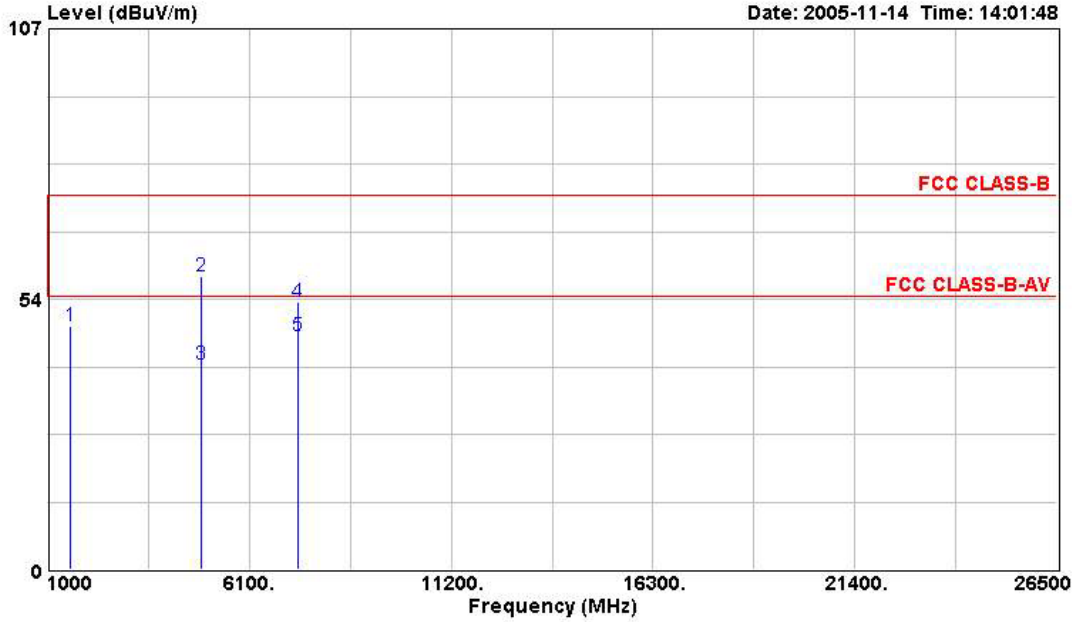
■ The test was passed at the minimum margin that marked by the frame in the following table

Spurious Emission




```
Site      :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 HORIZONTAL
EUT       :ST780_706
Model     :ST780_706
Memo      :TX CH06 2437MHz 11b
          :11MBPS
```

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1590.000	42.41	-31.59	48.03	74.00	1.62	25.74	32.98	Peak	---	---
2 @	4872.000	49.21	-24.79	45.44	74.00	3.11	33.21	32.55	PEAK	---	---
3 @	7311.000	49.56	-24.44	41.92	74.00	4.06	36.14	32.56	PEAK	---	---



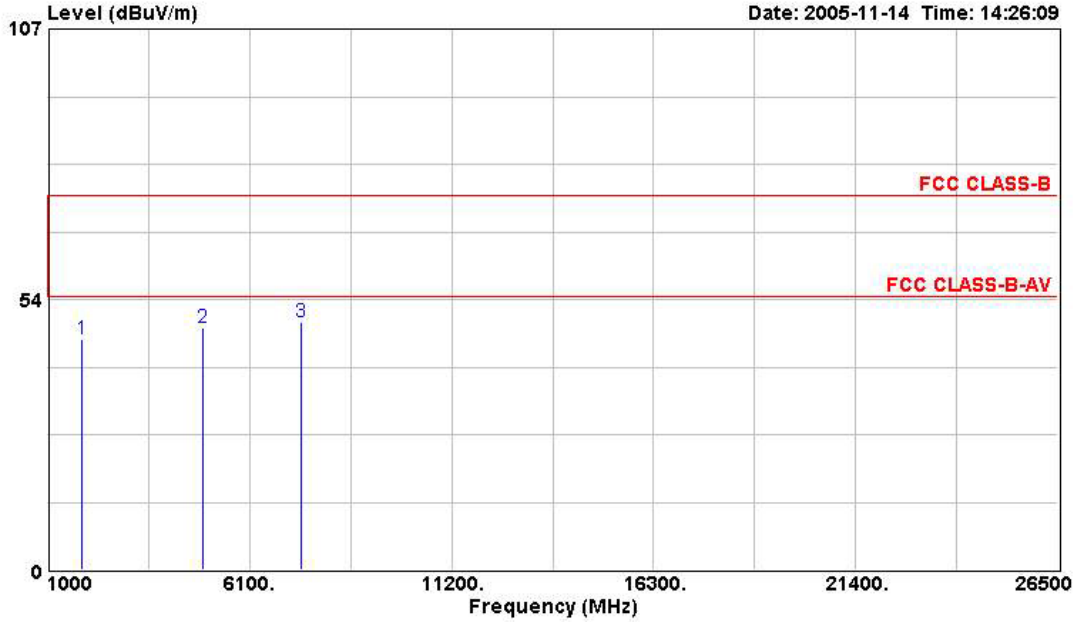
Site :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
EUT :ST780_706
Model :ST780_706
Memo :TX CH06 2437MHz 11b
:11MBPS

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1590.000	48.05	-25.95	53.67	74.00	1.62	25.74	32.98	Peak	---	---
2 @	4876.000	58.05	-15.95	54.28	74.00	3.11	33.21	32.55	PEAK	---	---
3 @	4876.000	40.50	-13.50	36.73	54.00	3.11	33.21	32.55	Average	---	---
4 @	7312.000	53.02	-20.98	45.43	74.00	4.06	36.14	32.61	PEAK	---	---
5 @	7312.000	46.22	-7.78	38.63	54.00	4.06	36.14	32.61	Average	---	---

- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: DSSS CH11
- Test Distance: 3 M
- Temperature: 28℃
- Relative Humidity: 58 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

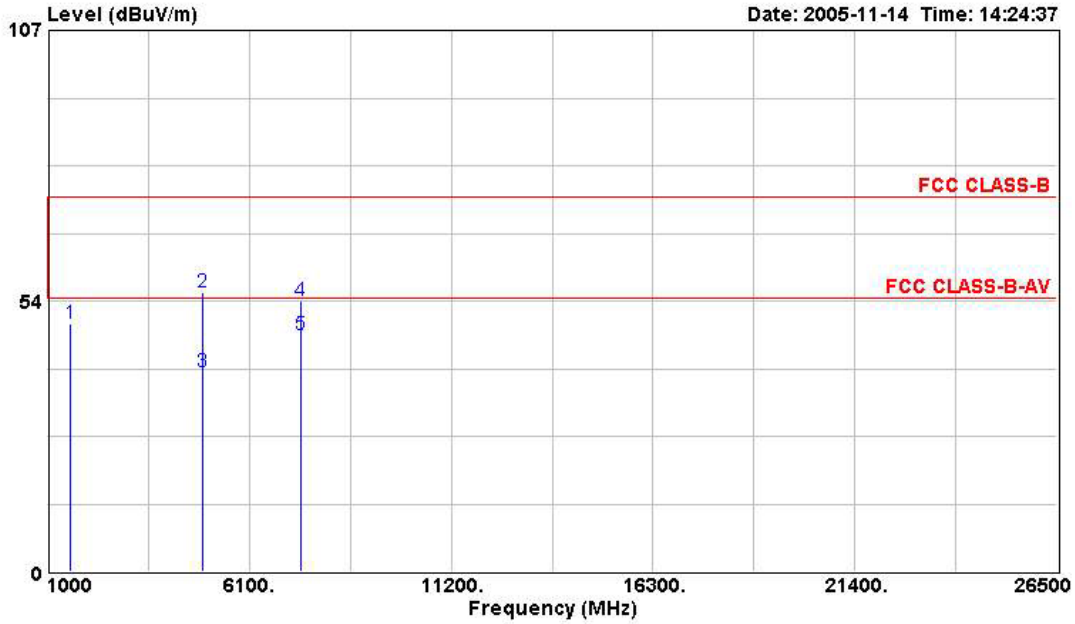
■ The test was passed at the minimum margin that marked by the frame in the following table

Spurious Emission




```
Site      :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 HORIZONTAL
EUT       :ST780_706
Model     :ST780_706
Memo      :TX CH11 2462MHz 11b
          :11MBPS
```

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1844.000	45.62	-28.38	49.67	74.00	1.90	26.84	32.79	Peak	---	---
2	4928.000	47.86	-26.14	44.00	74.00	3.12	33.29	32.55	PEAK	---	---
3 @	7386.000	48.99	-25.01	41.32	74.00	4.03	36.35	32.71	PEAK	---	---



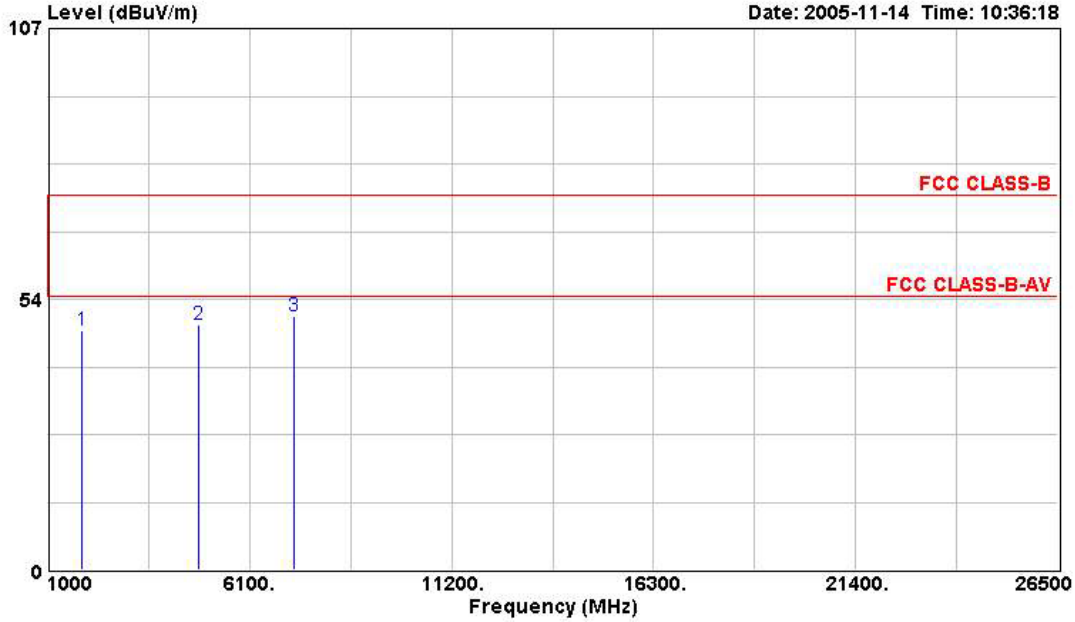
Site :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
EUT :ST780_706
Model :ST780_706
Memo :TX CH11 2462MHz 11b
:11MBPS

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1590.000	48.90	-25.10	54.52	74.00	1.62	25.74	32.98	Peak	---	---
2 @	4924.000	55.10	-18.90	51.24	74.00	3.12	33.29	32.55	PEAK	---	---
3 @	4924.000	39.49	-14.51	35.63	54.00	3.12	33.29	32.55	Average	---	---
4 @	7384.000	53.50	-20.50	45.83	74.00	4.03	36.35	32.71	PEAK	---	---
5 @	7384.000	46.62	-7.38	38.95	54.00	4.03	36.35	32.71	Average	---	---

- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: OFDM CH 01
- Test Distance: 3 M
- Temperature: 28℃
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

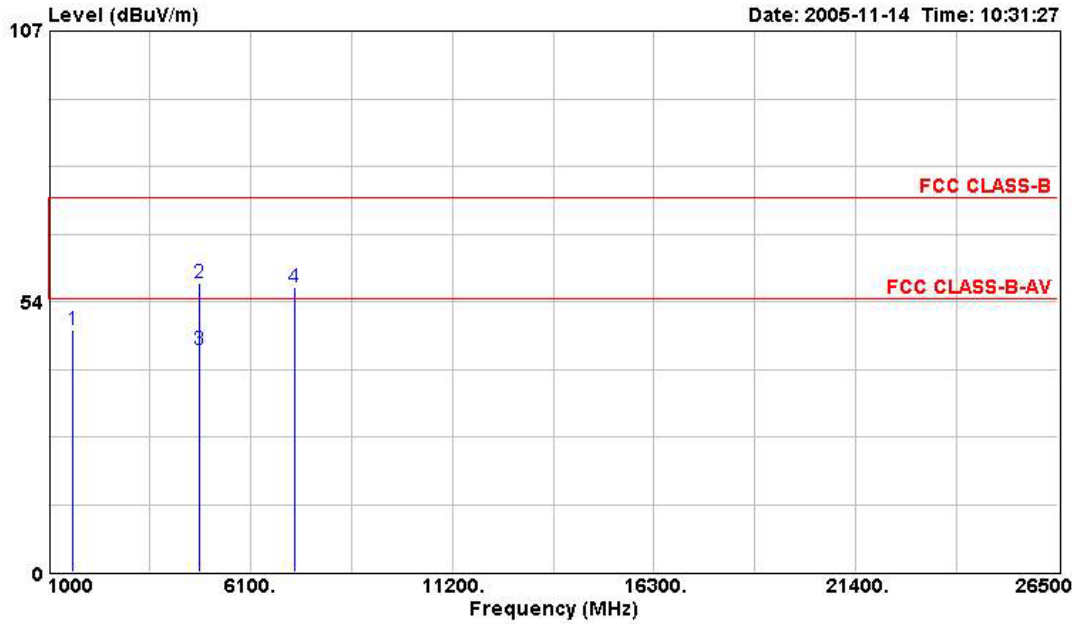
■ The test was passed at the minimum margin that marked by the frame in the following table

Spurious Emission




```
Site      :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 HORIZONTAL
EUT       :ST780_706
Model     :ST780_706
Memo      :TX CH01 2412MHz 11g
          :6MBPS
```

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1844.000	47.19	-26.81	51.24	74.00	1.90	26.84	32.79	Peak	---	---
2	4828.000	48.45	-25.55	44.77	74.00	3.10	33.12	32.54	PEAK	---	---
3 @	7236.000	50.22	-23.78	42.61	74.00	4.09	35.98	32.46	PEAK	---	---



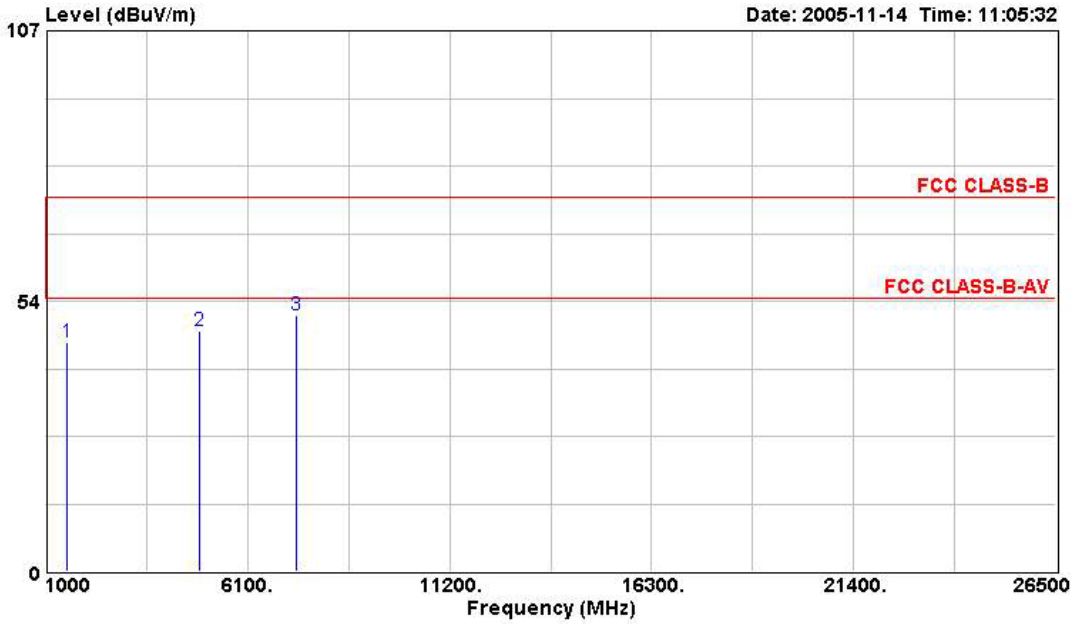
Site :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
EUT :ST780_706
Model :ST780_706
Memo :TX CH01 2412MHz 11g
:6MBPS

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1606.000	47.87	-26.13	53.36	74.00	1.66	25.81	32.96	Peak	---	---
2 @	4828.000	57.26	-16.74	53.58	74.00	3.10	33.12	32.54	PEAK	---	---
3 @	4828.000	43.80	-10.20	40.12	54.00	3.10	33.12	32.54	Average	---	---
4 @	7236.000	56.35	-17.65	48.73	74.00	4.09	35.98	32.46	PEAK	---	---

- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: OFDM CH06
- Test Distance: 3 M
- Temperature: 28℃
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

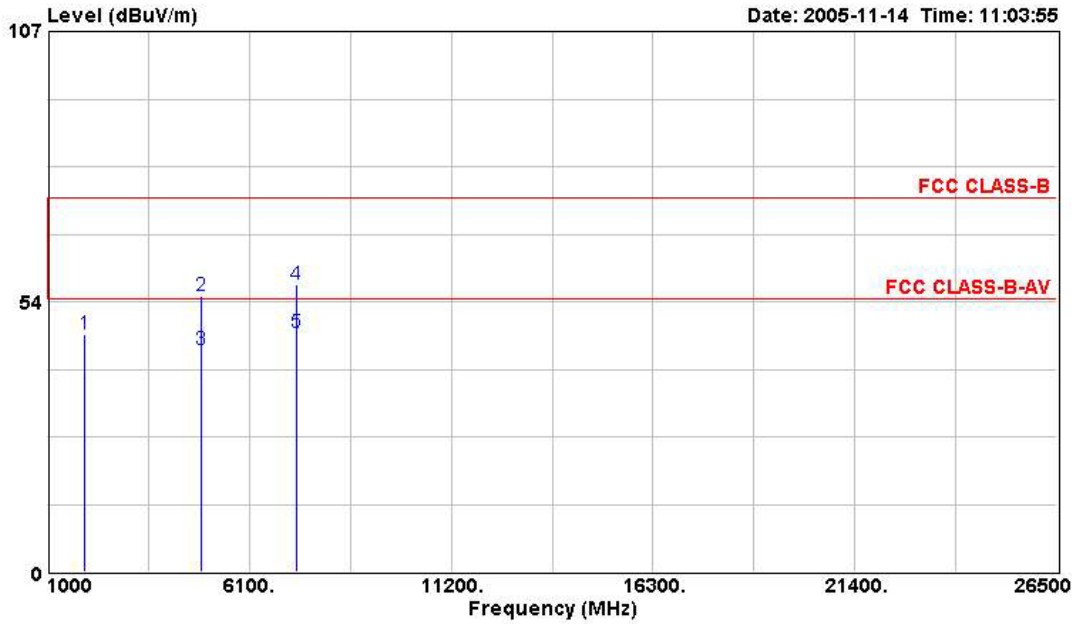
■ The test was passed at the minimum margin that marked by the frame in the following table

Spurious Emission




```
Site      :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 HORIZONTAL
EUT       :ST780_706
Model     :ST780_706
Memo      :TX CH06 2437MHz 11g
          :6MBPS
```

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1534.000	45.43	-28.57	51.42	74.00	1.58	25.45	33.02	Peak	---	---
2	4874.000	47.68	-26.32	43.90	74.00	3.11	33.21	32.55	PEAK	---	---
3 @	7311.000	50.71	-23.29	43.07	74.00	4.06	36.14	32.56	PEAK	---	---



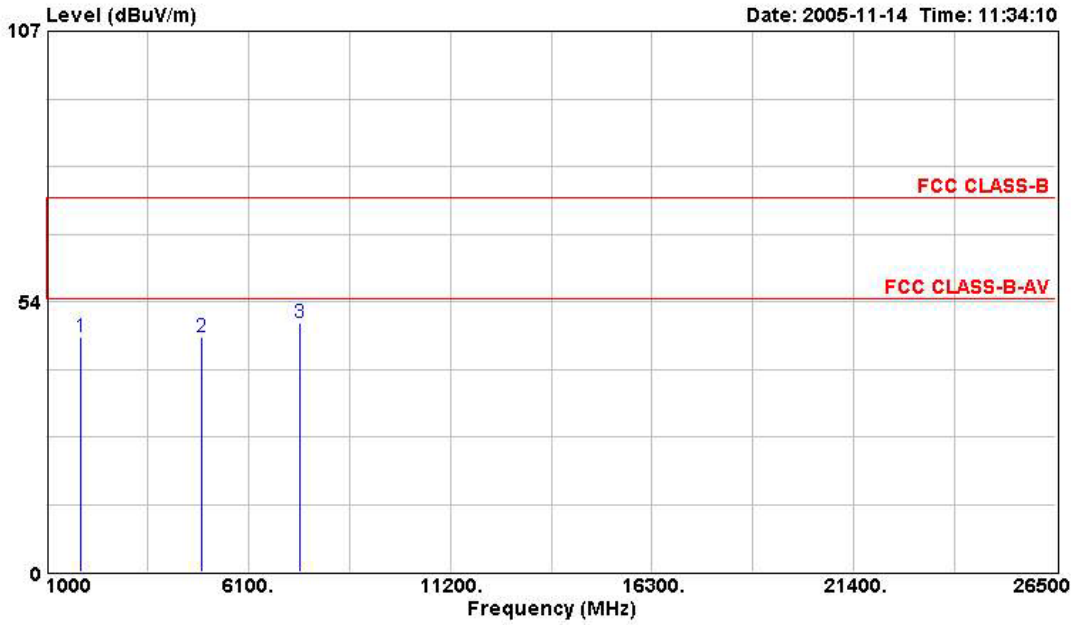
Site :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
EUT :ST780_706
Model :ST780_706
Memo :TX CH06 2437MHz 11g
:6MBPS

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1918.000	47.09	-26.91	50.71	74.00	1.98	27.13	32.74	Peak	---	---
2 @	4880.000	54.65	-19.35	50.88	74.00	3.11	33.21	32.55	PEAK	---	---
3 @	4880.000	44.05	-9.95	40.28	54.00	3.11	33.21	32.55	Average	---	---
4 @	7304.000	56.77	-17.23	49.13	74.00	4.06	36.14	32.56	PEAK	---	---
5 @	7304.000	47.21	-6.79	39.56	54.00	4.06	36.14	32.56	Average	---	---

- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: OFDM CH11
- Test Distance: 3 M
- Temperature: 28℃
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

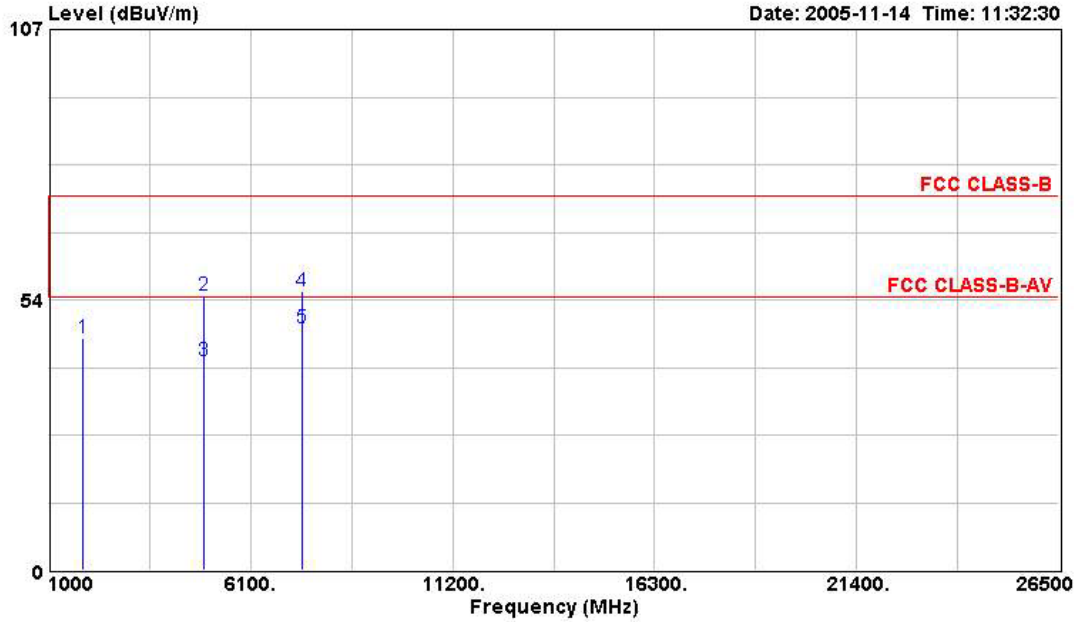
■ The test was passed at the minimum margin that marked by the frame in the following table

Spurious Emission




```
Site      :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 HORIZONTAL
EUT       :ST780_706
Model     :ST780_706
Memo      :TX CH11 2462MHz 11g
          :6MBPS
```

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1844.000	46.40	-27.60	50.45	74.00	1.90	26.84	32.79	Peak	---	---
2	4924.000	46.60	-27.40	42.74	74.00	3.12	33.29	32.55	PEAK	---	---
3 @	7386.000	49.39	-24.61	41.72	74.00	4.03	36.35	32.71	PEAK	---	---



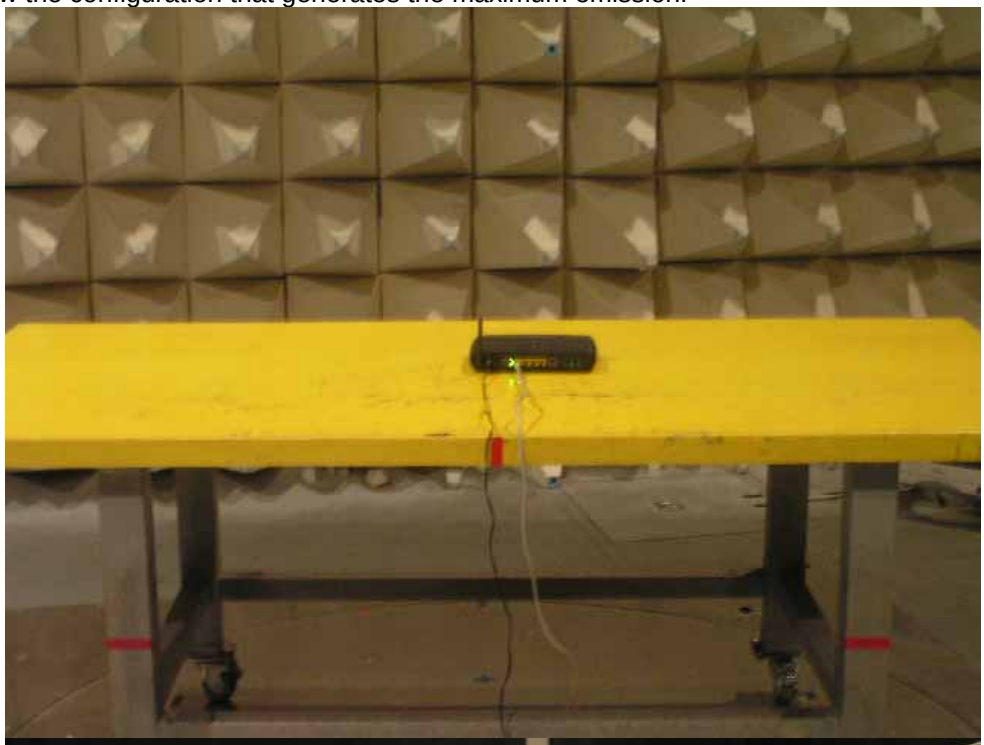
Site :03CH03-HY
Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
EUT :ST780_706
Model :ST780_706
Memo :TX CH11 2462MHz 11g
:6MBPS

	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	1844.000	45.91	-28.09	49.96	74.00	1.90	26.84	32.79	Peak	---	---
2 @	4924.000	54.43	-19.57	50.57	74.00	3.12	33.29	32.55	PEAK	---	---
3 @	4924.000	41.35	-12.65	37.49	54.00	3.12	33.29	32.55	Average	---	---
4 @	7388.000	55.18	-18.82	47.56	74.00	4.03	36.35	32.76	PEAK	---	---
5 @	7388.000	47.94	-6.06	40.32	54.00	4.03	36.35	32.76	Average	---	---

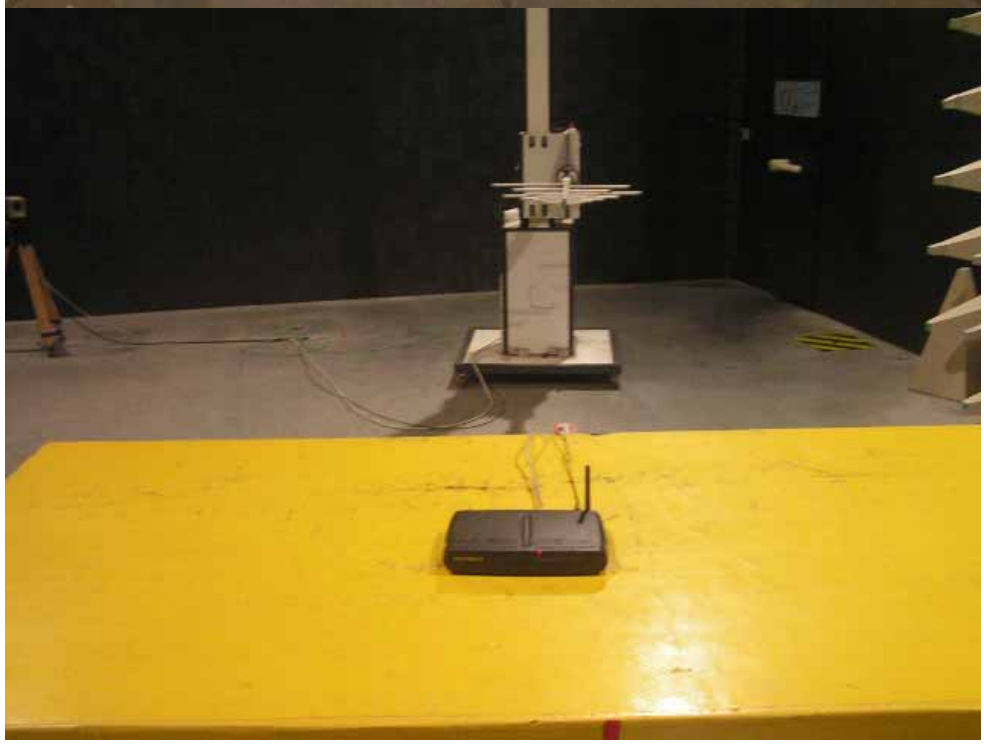
4.9 Photographs of Radiated Emission Test Configuration

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

FRONT VIEW



REAR VIEW



4.10 Antenna Requirements

4.10.1 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 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.10.2 Antenna Connected Construction

Two antennas are equipped on the EUT. The internal PIFA antenna is without any connector. The external dipole antenna connector fixed with a coaxial cable is MHF-type.

4.11 RF Exposure

FCC Rules and Regulations Part 1.1307, 1.1310, 2.1091, 2.1093:
RF Exposure Compliance

4.11.1 Limits of Maximum Permissible Exposure (MPE)

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

F=frequency in MHz *Plane-wave equivalent power density

4.11.2 MPE Calculations

E (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$ Power Density: Pd (mW/cm²) = $\frac{E^2}{377}$

E = Electric field (V/m)

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (m)

Because the EUT is belong to General Population/ Uncontrolled Exposure. So the Limit of Power Density is 1.0 mW/cm². We can change the formula to:

$$d = \sqrt{\frac{30 \times P \times G}{377}}$$

CCK

Channel NO.	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)
CH 01	2.44	1.75	17.64	58.0764	0.0203	1
CH 06	2.44	1.75	17.85	60.9537	0.0213	1
CH 11	2.44	1.75	17.54	56.7545	0.0198	1

OFDM

Channel NO.	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure Separation Distance (m)	Minimum RF Exposure Separation Distance (m)
CH 01	2.44	1.75	18.54	71.4496	0.0249	1
CH 06	2.44	1.75	18.91	77.8037	0.0272	1
CH 11	2.44	1.75	18.79	75.6833	0.0264	1

4.11.3FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation. It is proposed to include the RF exposure safety information in user manual.

5. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Oct. 19, 2005	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/009	9kHz – 30MHz	Apr. 26, 2005	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/004	9kHz – 30MHz	Apr. 20, 2005	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450Hz	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 – 60Hz	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9kHz – 30MHz	Dec. 23, 2004	Conduction (CO01-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz ~ 1 GHz 3m	Jun. 16, 2005	Radiation (03CH03-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Jun. 16, 2005	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100019	9KHZ~40GHz	Jul. 21, 2005	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	CPA9231A	18667	9KHz ~ 2GHz	Jan. 10, 2005	Radiation (03CH03-HY)
Biconical Antenna	SCHWARZBECK	VHBB 9124	301	30MHz ~ 200MHz	Jul. 22, 2005	Radiation (03CH03-HY)
Log Antenna	SCHWARZBECK	VUSLP 9111	221	200MHz ~ 1GHz	Jul. 22, 2005	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	Apr. 22, 2005	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz ~ 1GHz	Feb. 22, 2005	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Dec.01, 2004	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)
Spectrum analyzer	R&S	FSP40	100116	9kHz ~ 40GHx	Jan. 28, 2005	Conducted (TH01-HY)
Power meter	R&S	NRVS	100444	DC ~ 40GHz	Jul. 06, 2005	Conducted (TH01-HY)
Power sensor	R&S	NRV-Z55	100049	DC ~ 40GHz	Jul. 06, 2005	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Apr. 28, 2005	Conducted (TH01-HY)
AC power source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Apr. 21, 2005	Conducted (TH01-HY)
DC power source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Nov. 27, 2005	Conducted (TH01-HY)
Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2005	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Jan. 01, 2005	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Jan. 01, 2005	Conducted (TH01-HY)
Oscilloscope	Tektronix	TDS1012	CO38515	100MHz / 1GS/s	Apr. 15, 2005	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Dec. 31, 2004	Conducted (TH01-HY)

※Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Amplifier	MITEQ	AMF-6F-260400	923364	26.5GHz ~ 40GHz	Jan. 05, 2004*	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9kHz ~ 30MHz	May 24, 2004*	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jun. 09, 2004*	Radiation (03CH03-HY)
Data Generator	Tektronix	DG2030	063-2920-50	0.1Hz~400MHz	Jun. 02, 2005	Conducted (TH01-HY)

※*Calibration Interval of instruments listed above is two year.

6. Uncertainty of Test Site

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch	+0.34/-0.35	U-shape	0.24
combined standard uncertainty Uc(y)	1.13		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.26		

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch	+0.39/-0.41	U-shaped	0.28
combined standard uncertainty Uc(y)	1.27		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.54		