

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

The test result refers exclusively to the test presented test model / sample.

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SPORTON International Inc.

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

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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.**



Wayne Hsu / Supervisor

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:

| Equipment | Model number | Ports | | | | | | |
|--------------------------|--------------------|-------|------|------|----------|------|------------|------|
| | | 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. (Note¹)
- e. Frequency range investigated: Conducted emission: 150 KHz to 30 MHz, Radiated emission: 30 MHz to 26500MHz.

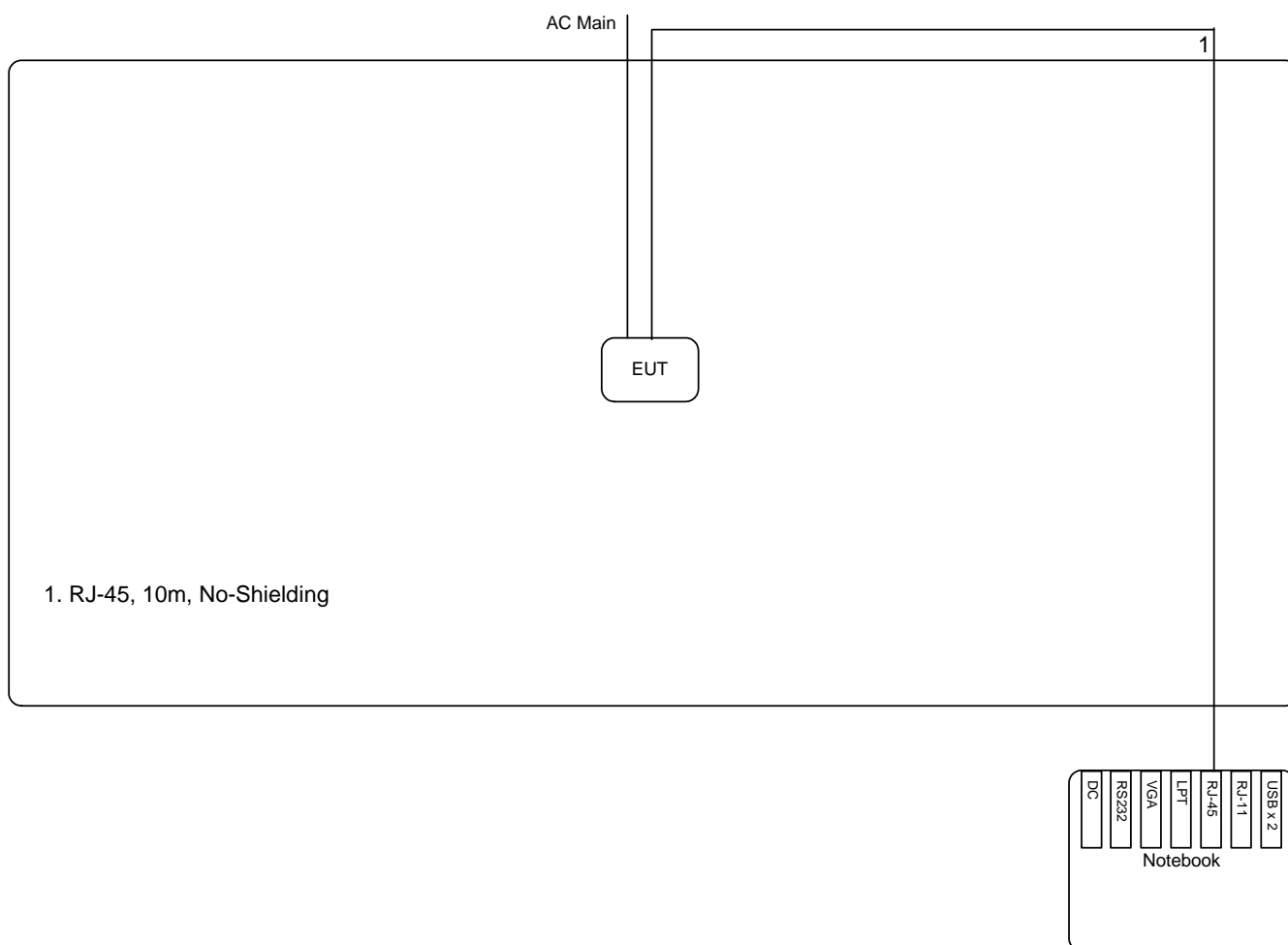
2.2 Description of Test System

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.

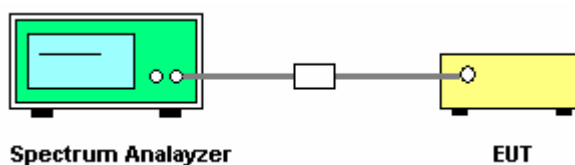
4.2.3 Detailed settings of the instrument

| | |
|-------------------|--------------------------------|
| 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

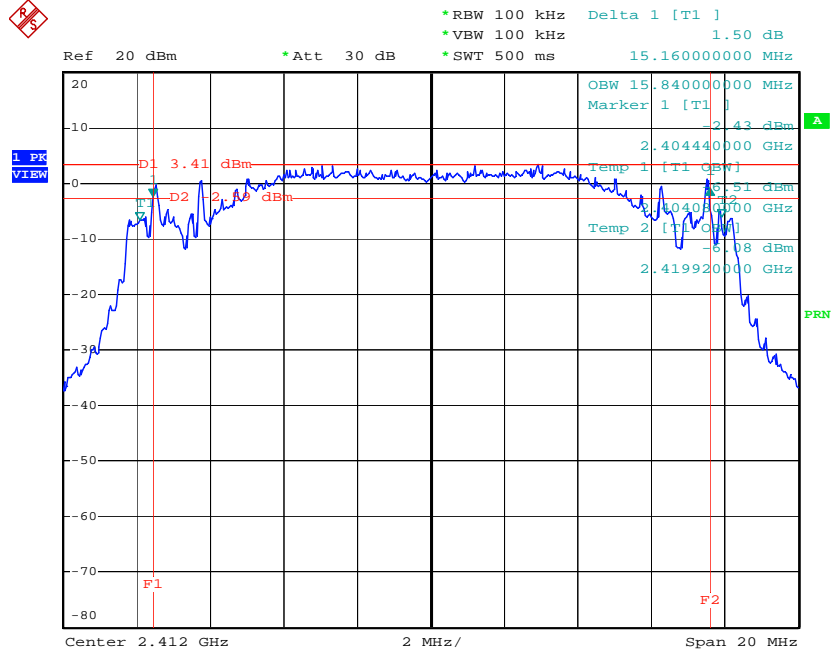
All test results complied with the requirements of 15.247(a)(2). Measurement Uncertainty is 1×10^{-5} .

4.2.7 Test Result

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

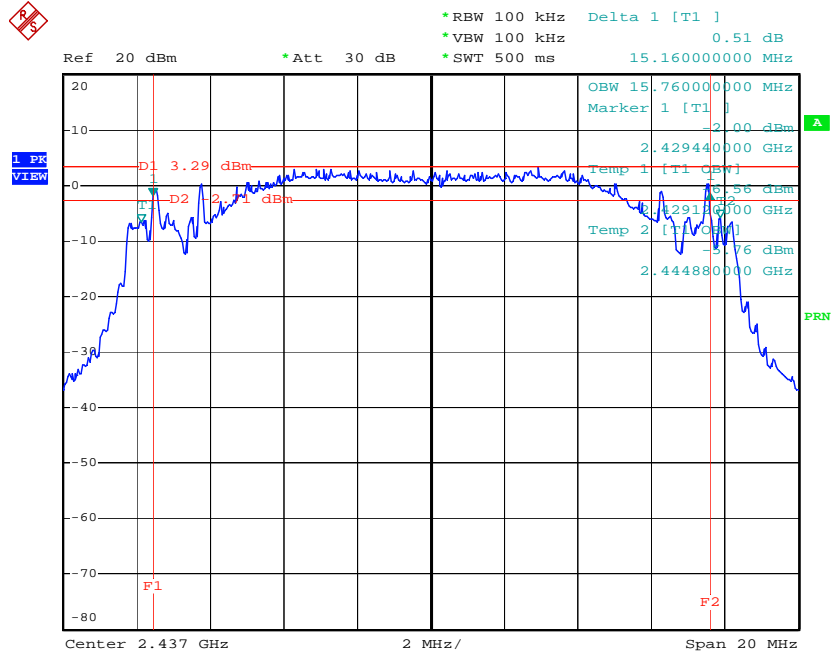
| Modulation Type | Channel No. | Frequency (MHz) | 6dB Bandwidth (MHz) | 99% Occupied BW (MHz) | Min. Limit (kHz) |
|-----------------|-------------|-----------------|---------------------|-----------------------|------------------|
| DSSS | 01 | 2412 MHz | 15.16 | 15.84 | 500 |
| DSSS | 06 | 2437 MHz | 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) :



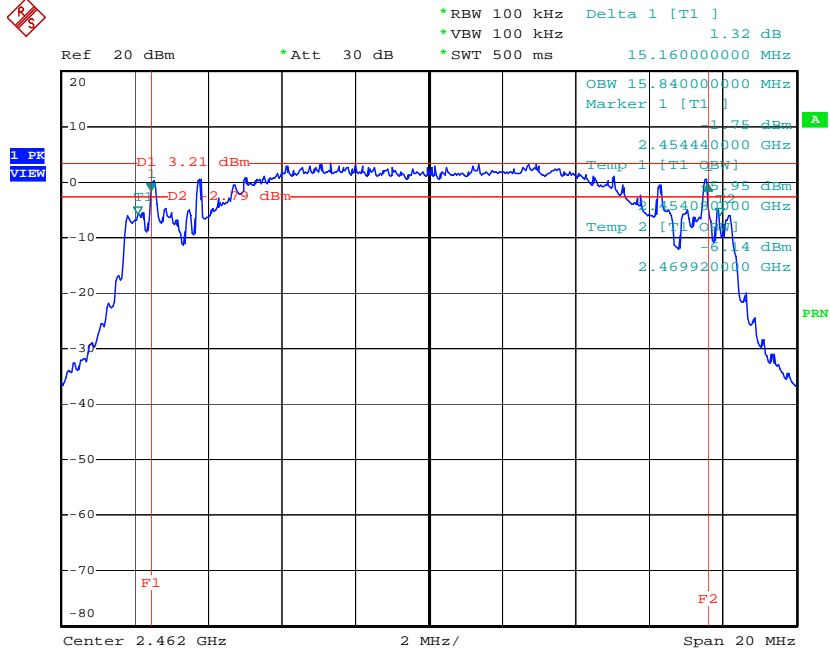
Date: 16.NOV.2005 15:14:53

Modulation Type: DSSS (Channel 06) :



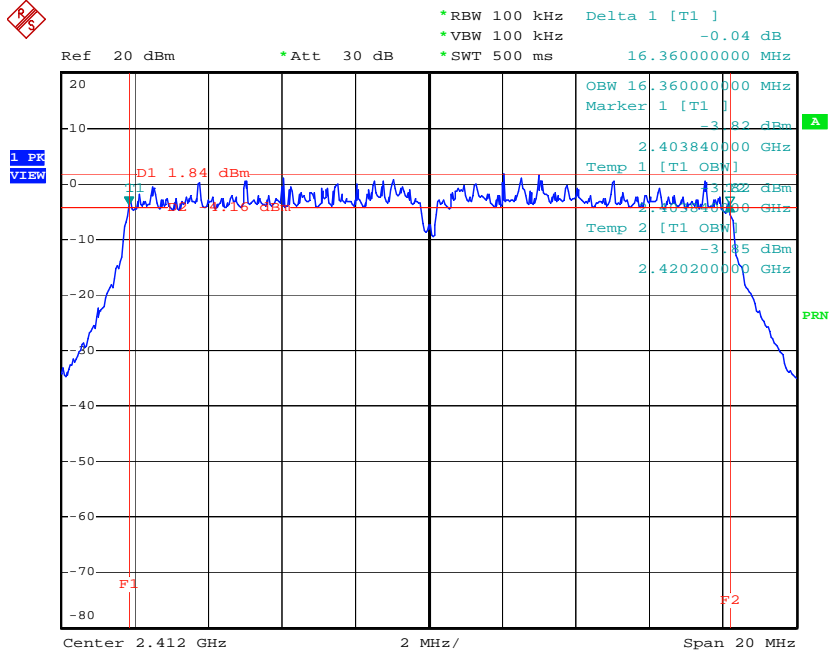
Date: 16.NOV.2005 15:20:26

Modulation Type: DSSS (Channel 11) :



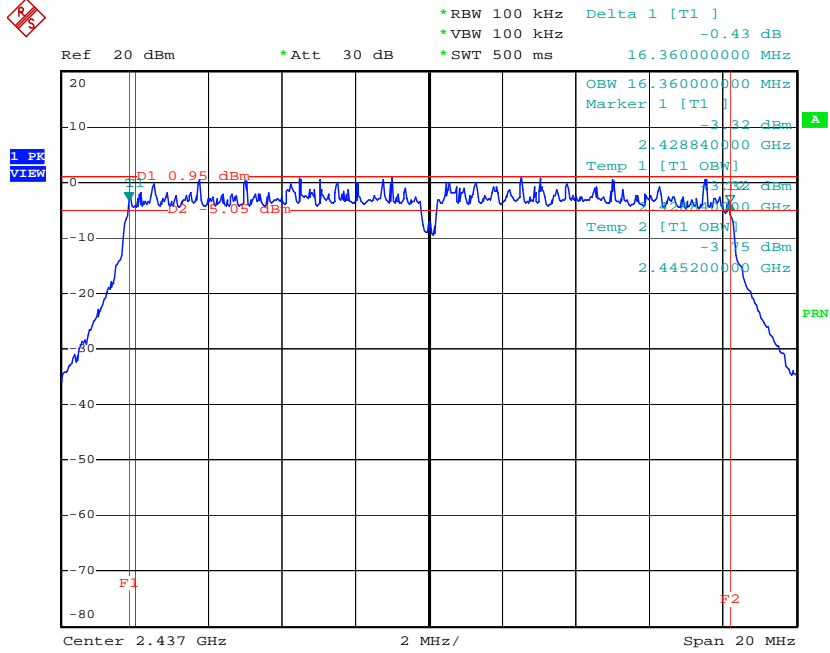
Date: 16.NOV.2005 15:25:00

Modulation Type: OFDM (Channel 01) :



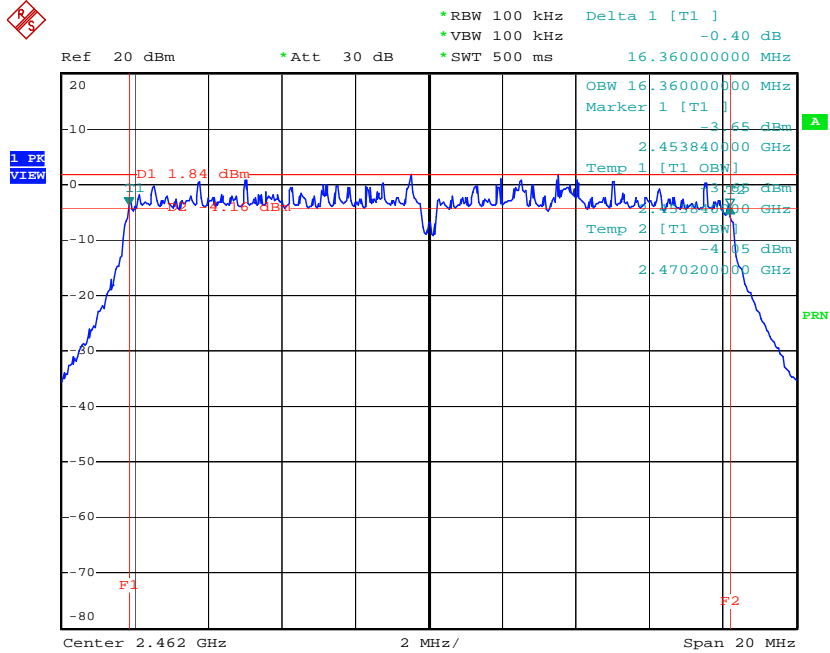
Date: 16.NOV.2005 15:47:41

Modulation Type: OFDM (Channel 06) :



Date: 16.NOV.2005 15:53:58

Modulation Type: OFDM (Channel 11) :



Date: 16.NOV.2005 15:57:22

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.

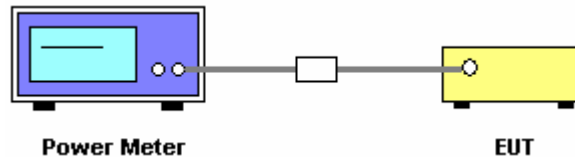
4.3.2 Instruments for the measurement

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°C
- 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.

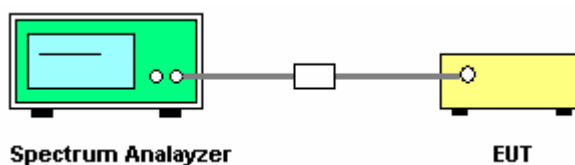
4.4.3 Detailed settings of the instrument

| | |
|-------------------|--------------------------------|
| 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

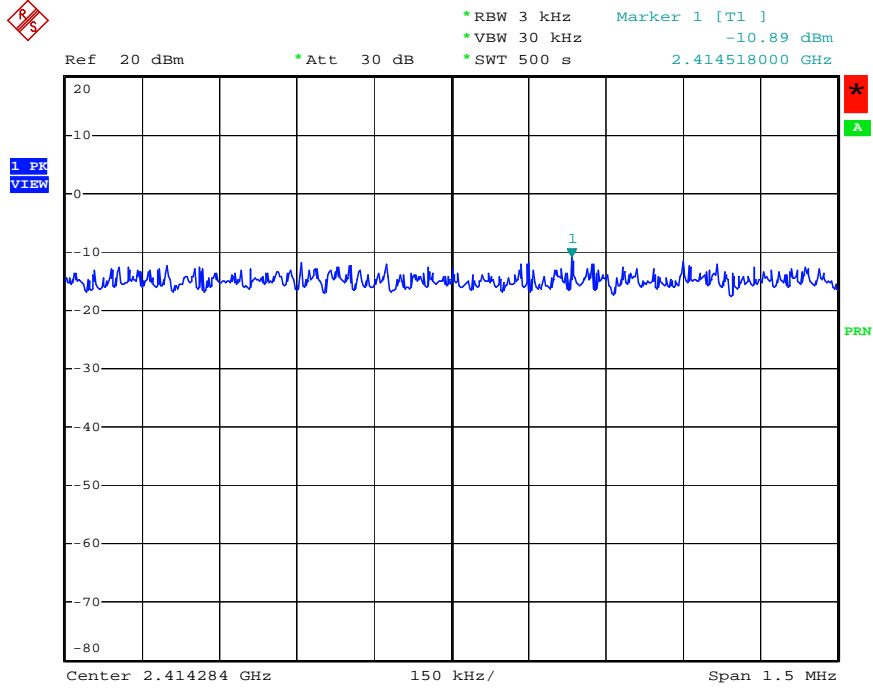
All test results complied with the requirements of 15.247(e). Measurement Uncertainty is 1.5 dB.

4.4.7 Test Result

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

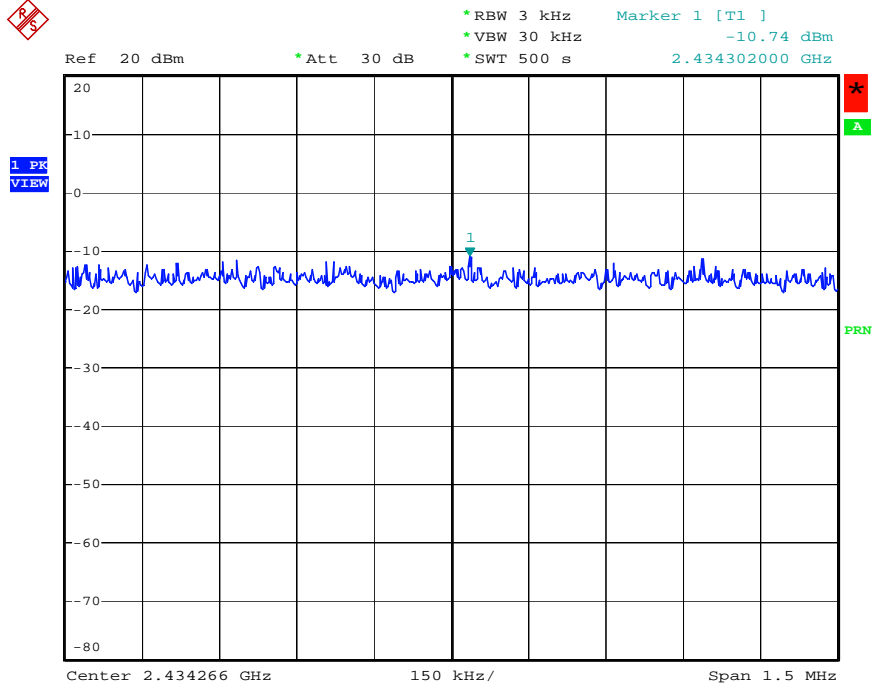
| Modulation Type | Channel No. | Frequency (MHz) | Power Density (dBm) | Limits (dBm) |
|-----------------|-------------|-----------------|---------------------|--------------|
| DSSS | 01 | 2412 MHz | -10.89 | 8 |
| DSSS | 06 | 2437 MHz | -10.74 | 8 |
| DSSS | 11 | 2462 MHz | -9.65 | 8 |
| OFDM | 01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

Modulation Type: DSSS (Channel 01) :



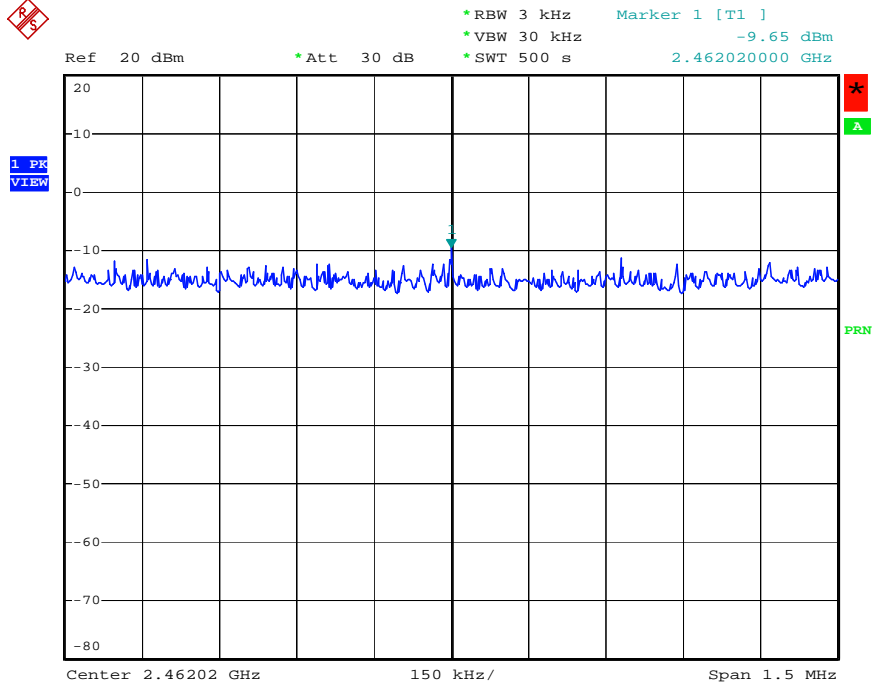
Date: 16.NOV.2005 15:18:13

Modulation Type: DSSS (Channel 06) :



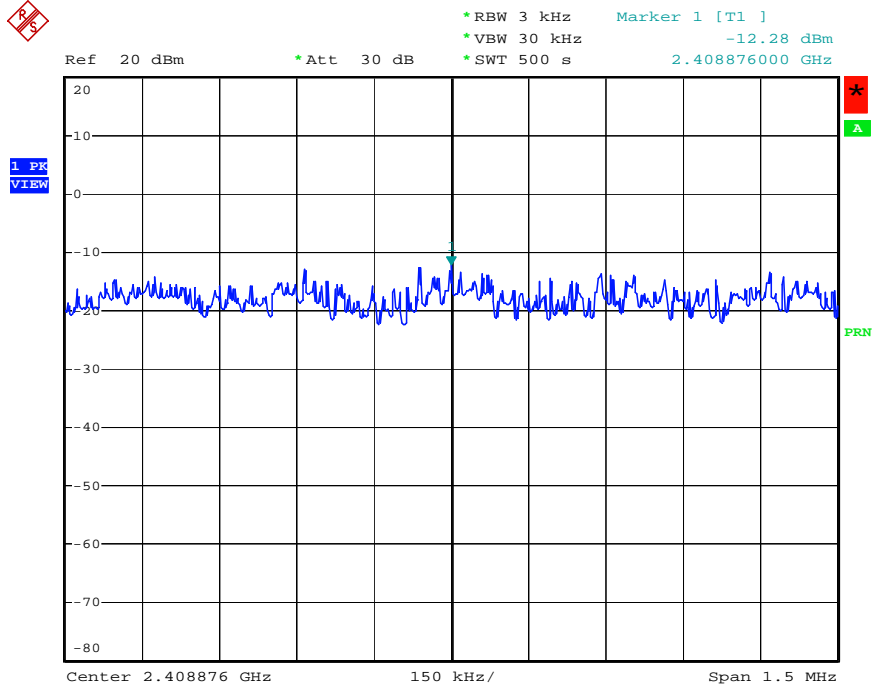
Date: 16.NOV.2005 15:22:17

Modulation Type: DSSS (Channel 11) :



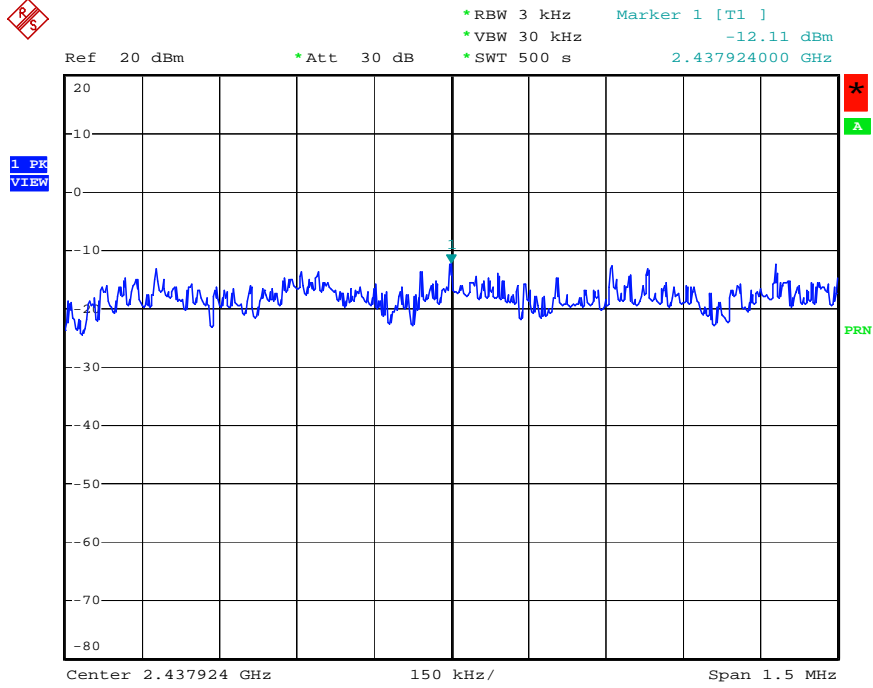
Date: 16.NOV.2005 15:28:42

Modulation Type: OFDM (Channel 01) :



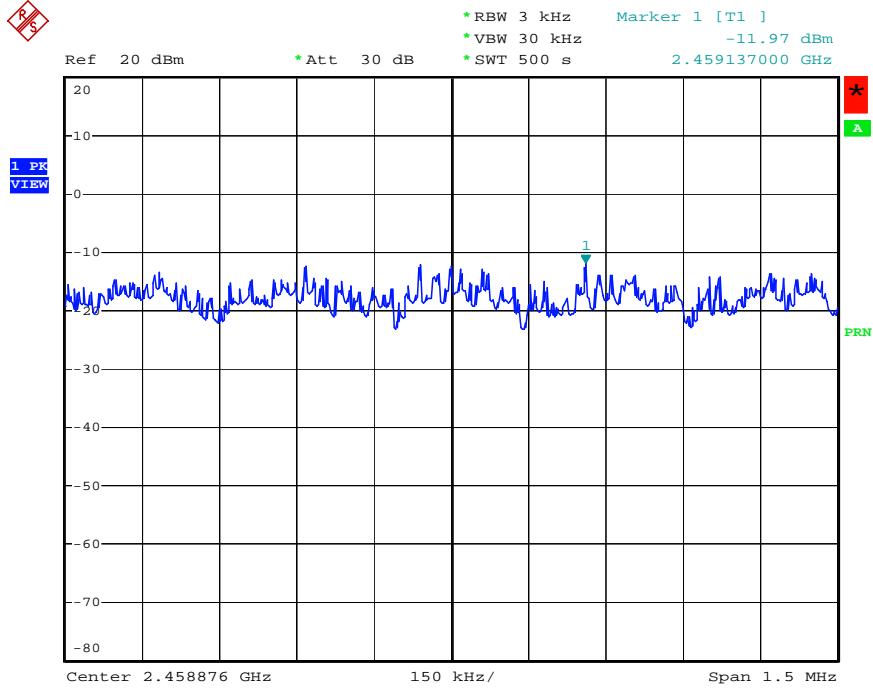
Date: 16.NOV.2005 15:50:32

Modulation Type: OFDM (Channel 06) :



Date: 16.NOV.2005 15:55:24

Modulation Type: OFDM (Channel 11) :



Date: 16.NOV.2005 16:00:05

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 |

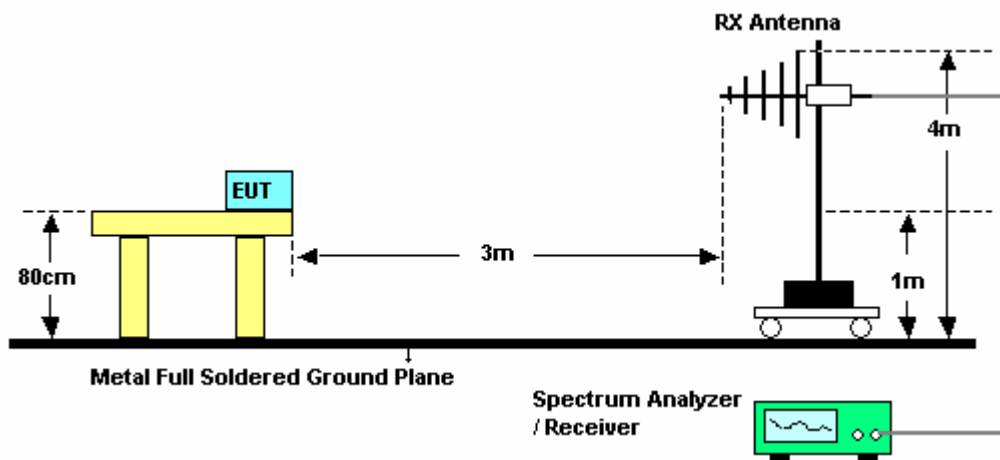
| | |
|-------------------|---|
| Spectrum Analyzer | R&S FSP40 (Radiated Measurement) |
| Attenuation | Auto |
| Center Frequency | 2412 MHz / 2462 MHz |
| Span Frequency | 100 MHz |
| RB | 1 MHz for PK value / 1 MHz for AV value |
| VB | 1 MHz for PK value / 10 Hz for AV value |
| Detector | Peak |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

4.5.4 Test Procedure

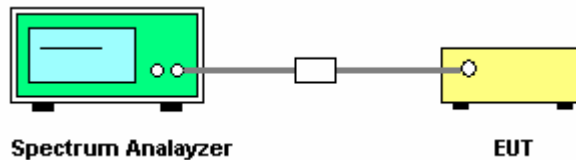
1. Only channel 01 and channel 11 were investigated.
2. Radiated Measurement
 - a. The EUT was placed on a table 0.8 meter above the ground reference plane which is constituted by a turn table.
 - b. The EUT was set 3 meters from the interference-receiving antenna which was mounted on the top of a variable 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 1×10^{-5} .

4.5.7 Results of Radiated Emission Test

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

| | Freq | Level | Over Limit | Read Level | Limit Line | CableAntenna Loss | Antenna Factor | Preamp Factor | Remark | Table Pos | Ant Pos |
|-----|----------|--------|------------|------------|------------|-------------------|----------------|---------------|---------|-----------|---------|
| | MHz | dBuV/m | dB | dBuV | dBuV/m | dB | dB/m | dB | | deg | cm |
| 1 0 | 2390.000 | 58.52 | -15.48 | 28.03 | 74.00 | 2.28 | 28.21 | 0.00 | Peak | --- | --- |
| 1 0 | 2390.000 | 47.55 | -6.45 | 17.06 | 54.00 | 2.28 | 28.21 | 0.00 | Average | --- | --- |

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

| | Freq | Level | Over Limit | Read Level | Limit Line | CableAntenna Loss | Antenna Factor | Preamp Factor | Remark | Table Pos | Ant Pos |
|-----|----------|--------|------------|------------|------------|-------------------|----------------|---------------|---------|-----------|---------|
| | MHz | dBuV/m | dB | dBuV | dBuV/m | dB | dB/m | dB | | deg | cm |
| 2 0 | 2483.500 | 57.64 | -16.36 | 26.93 | 74.00 | 2.34 | 28.37 | 0.00 | Peak | --- | --- |
| 2 0 | 2483.500 | 45.43 | -8.57 | 14.72 | 54.00 | 2.34 | 28.37 | 0.00 | Average | --- | --- |

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

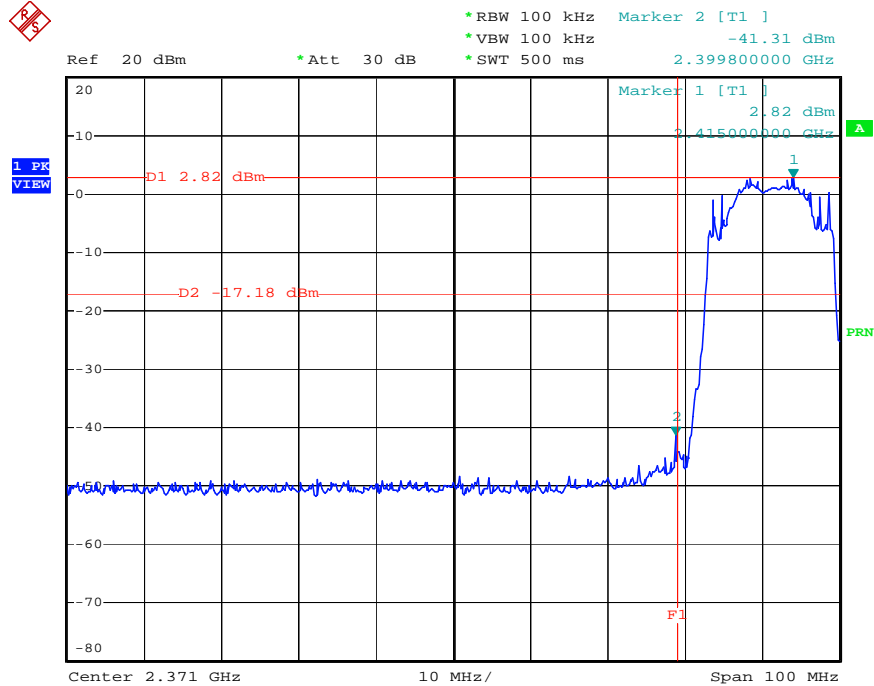
| | Freq | Level | Over Limit | Read Level | Limit Line | Cable Loss | Antenna Factor | Preamp Factor | Remark | Table Pos | Ant Pos |
|-----|----------|--------|------------|------------|------------|------------|----------------|---------------|---------|-----------|---------|
| | MHz | dBuV/m | dB | dBuV | dBuV/m | dB | dB/m | dB | | deg | cm |
| 1 0 | 2390.000 | 71.41 | -2.59 | 40.92 | 74.00 | 2.28 | 28.21 | 0.00 | Peak | --- | --- |
| 1 0 | 2390.000 | 49.53 | -4.47 | 19.04 | 54.00 | 2.28 | 28.21 | 0.00 | Average | --- | --- |

- Temperature: 28°C
- 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 0 | 2483.500 | 67.47 | -6.53 | 36.76 | 74.00 | 2.34 | 28.37 | 0.00 | Peak | --- | --- |
| 2 0 | 2483.500 | 49.41 | -4.59 | 18.70 | 54.00 | 2.34 | 28.37 | 0.00 | Average | --- | --- |

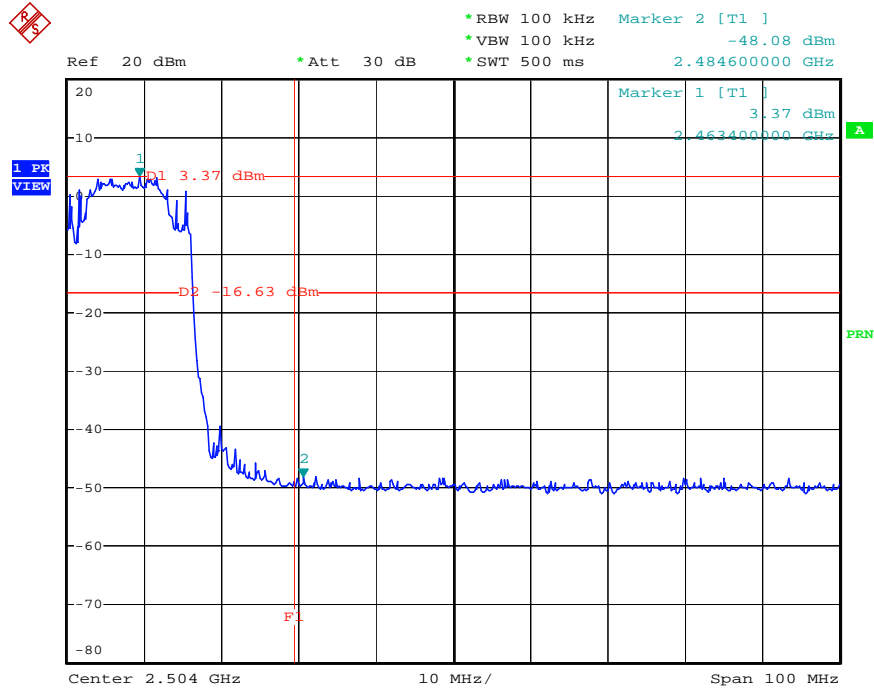
4.5.8 Results of Conducted Emission Test

Modulation Type: DSSS (Channel 01) :



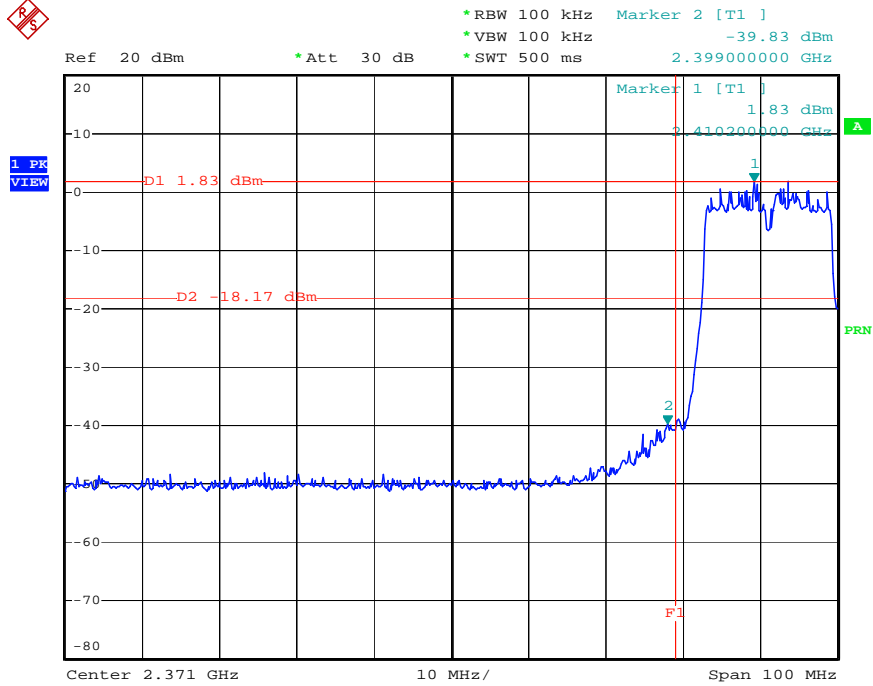
Date: 16.NOV.2005 15:16:44

Modulation Type: DSSS (Channel 11) :



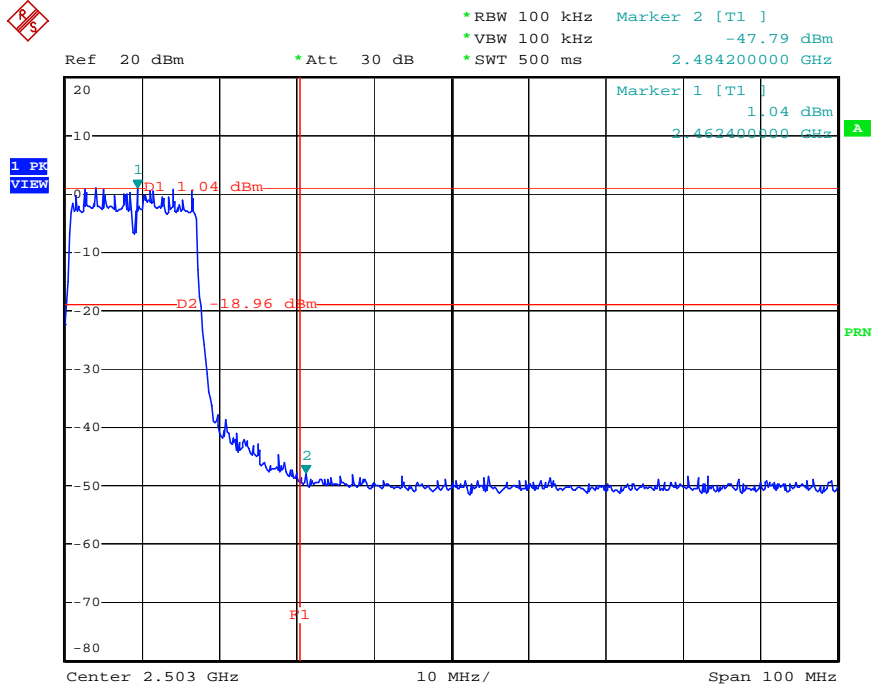
Date: 16.NOV.2005 15:26:37

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 |

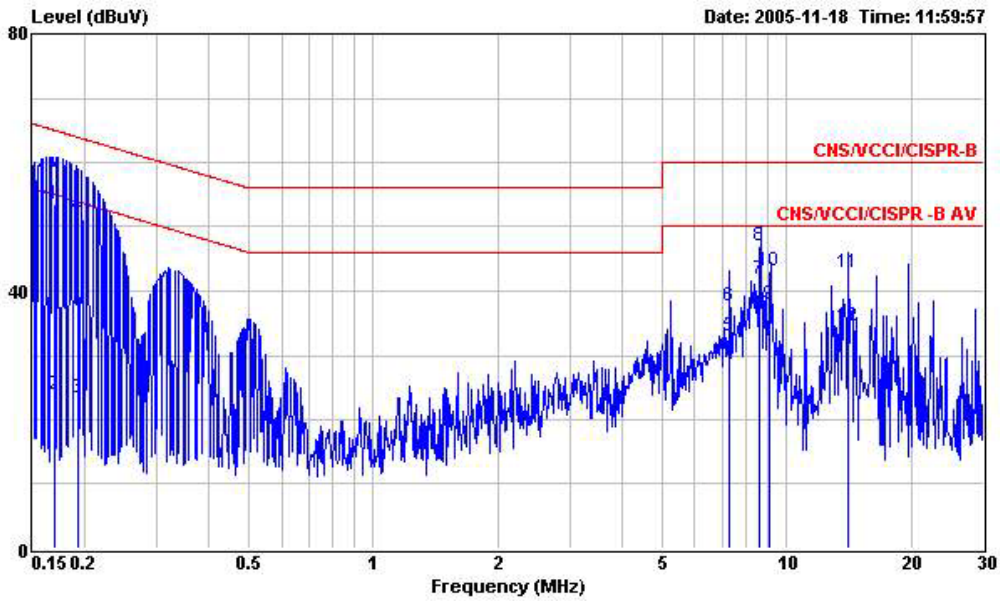
4.6.2 Test Procedure

- 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

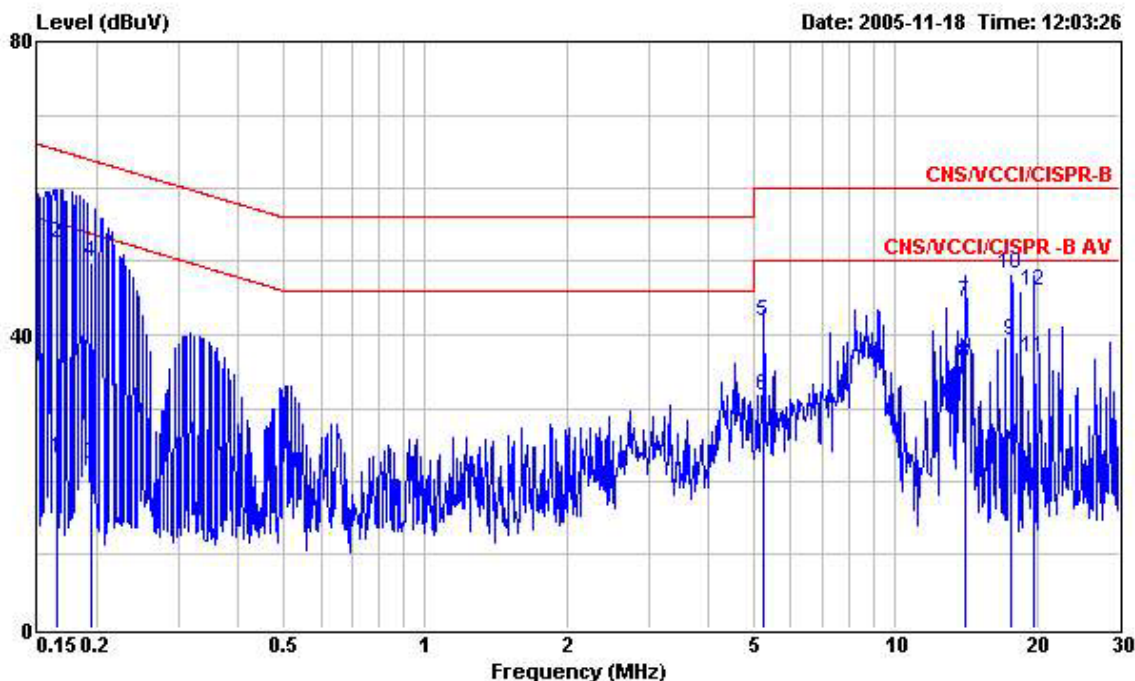
- ADSL operational Mode: ADSL2+ Annex A
- Test Model: DSLBB643 EB
- Frequency Range of Test: from 0.15 MHz to 30 MHz
- Temperature: 25°C
- Relative Humidity: 59%
- All emissions not reported here are more than 10 dB below the prescribed limit.

■ 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 : SpeedTouch 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 | Read | Probe | Cable | |
|----|--------|-------|--------|-------|-------|--------|-------|---------|
| | MHz | dBuV | Limit | Line | Level | Factor | Loss | Remark |
| | | | 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 |

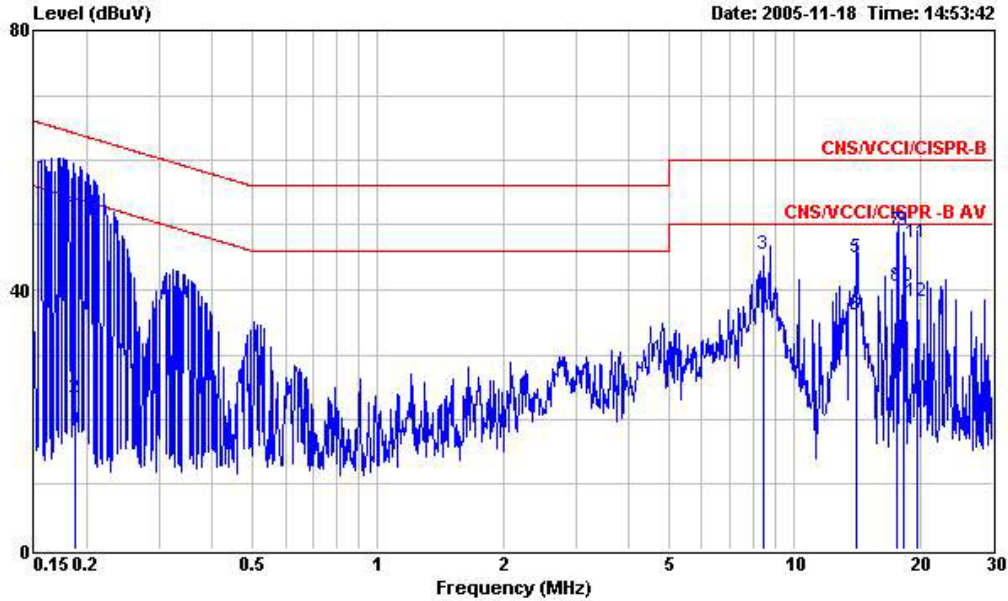


Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2001/004 200505 NEUTRAL
 EUT : Speed Touch 780 WL
 Power : 120V/60Hz
 Model : DSLBB643 EB
 Tested Port : AC
 Operational Mode : ADSL2+ Annex A
 Loop Length : 3 kfeet
 ISN :

| | Freq | Level | Over | Limit | Read | Probe | Cable | |
|----|--------|-------|--------|-------|-------|--------|-------|---------|
| | MHz | dBuV | Limit | Line | Level | Factor | Loss | Remark |
| | | | 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 |

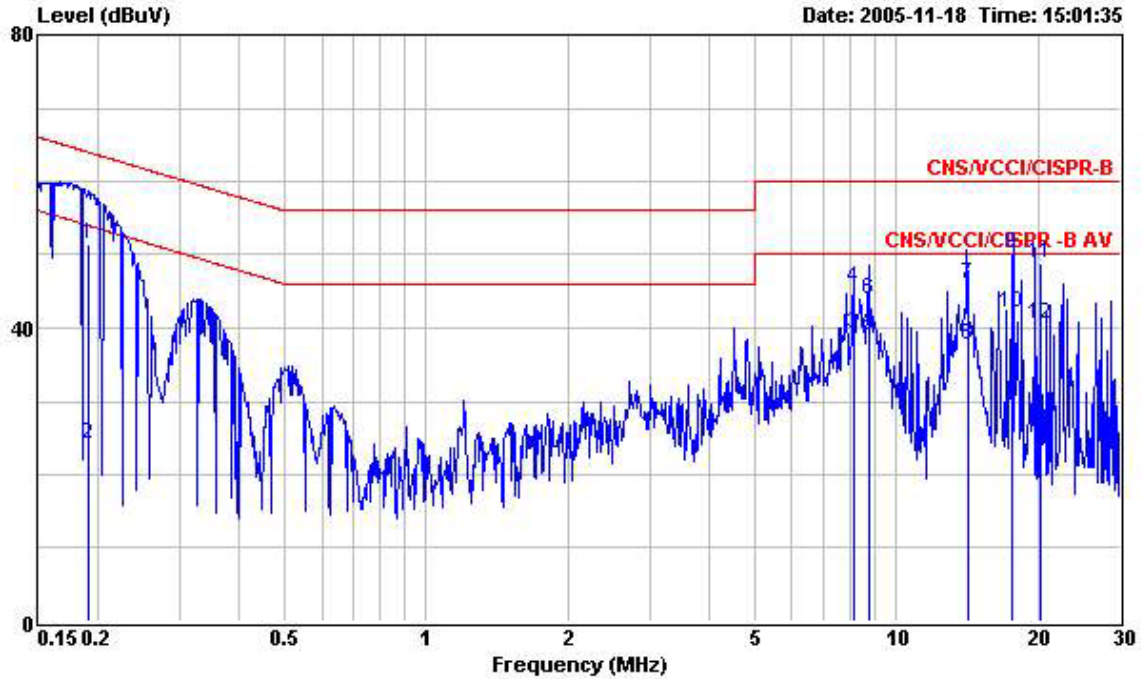
- Test Model: DSLBB643 EF
- Frequency Range of Test: from 0.15 MHz to 30 MHz
- Temperature: 25°C
- Relative Humidity: 59%
- All emissions not reported here are more than 10 dB below the prescribed limit.

■ 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 | Read | Probe | Cable | |
|----|--------|-------|--------|-------|-------|--------|-------|---------|
| | MHz | dBuV | Limit | Line | Level | Factor | Loss | Remark |
| | | | 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 |

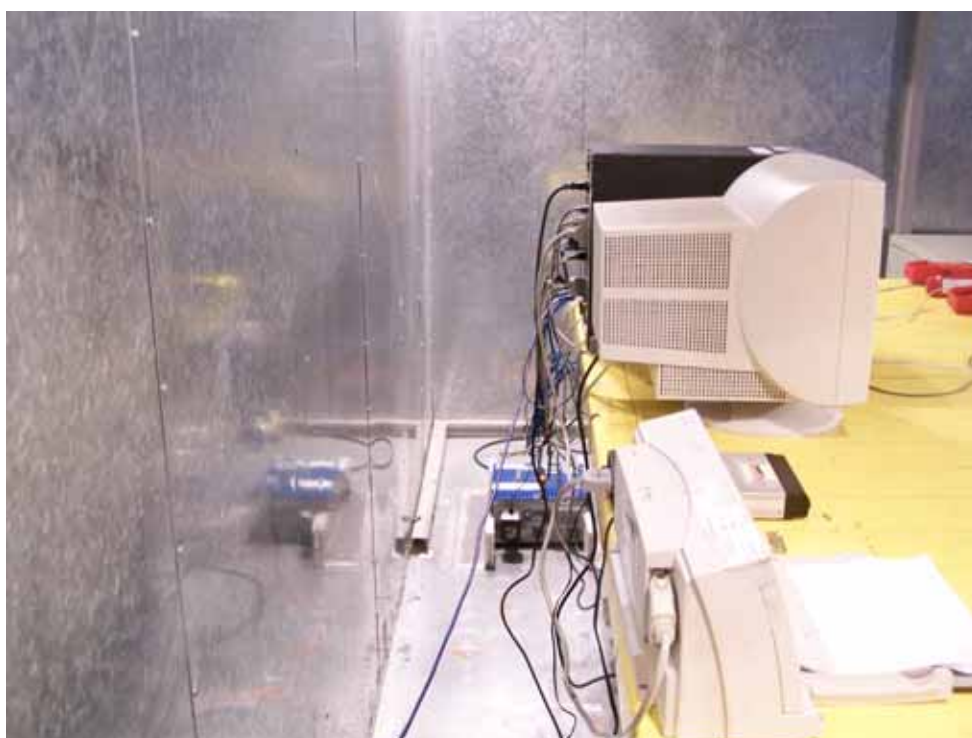
4.7 Photographs of Conducted Powerline Test Configuration

- 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 |

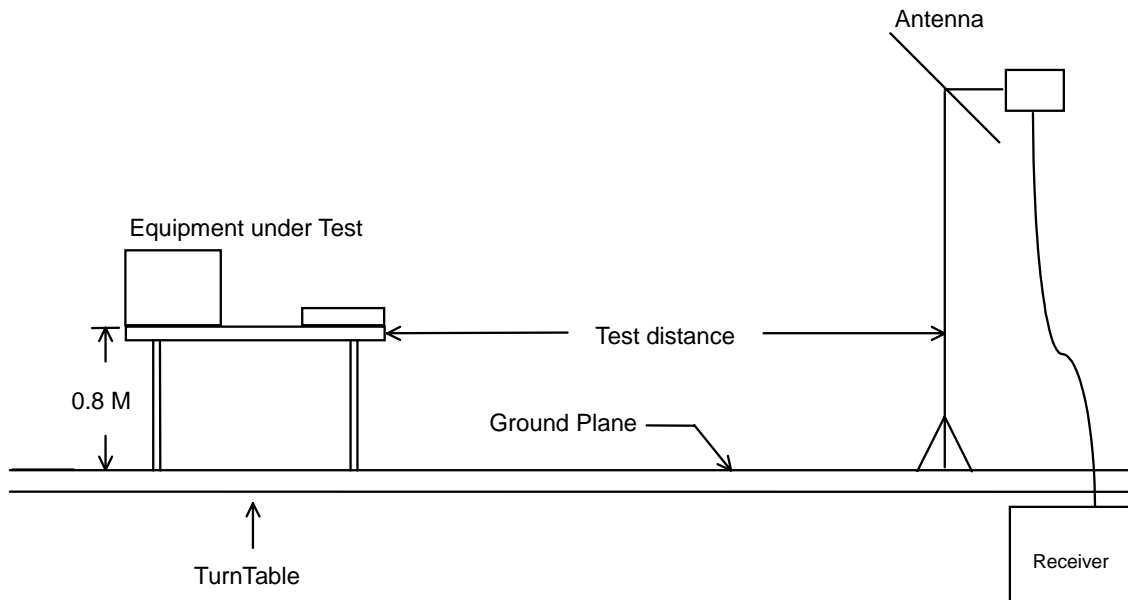
| | |
|----------------------|-----------------|
| Spectrum Analyzer | (R&S FSP40) |
| Attenuation | 10 dB |
| Start Frequency | 1 GHz |
| Stop Frequency | 18 GHz |
| Resolution Bandwidth | 1 MHz |
| Video Bandwidth | 1 MHz |
| Signal Input | 9 kHz to 40 GHz |

| | |
|--------------|-------------------|
| 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.

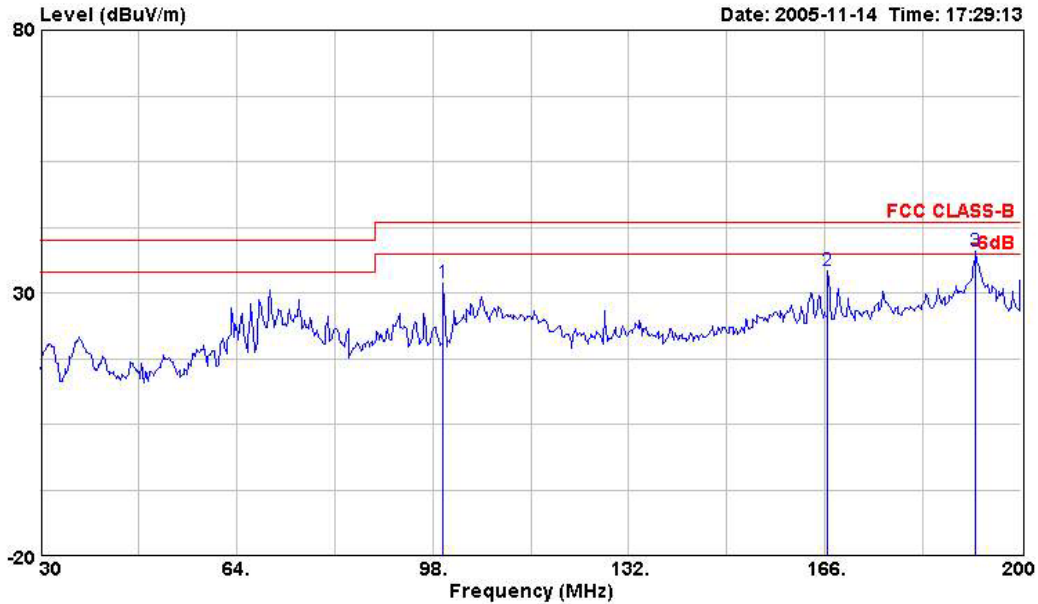
4.8.3 Typical Test Setup Layout of Radiated Emission



4.8.4 Results of Radiated Emission Test

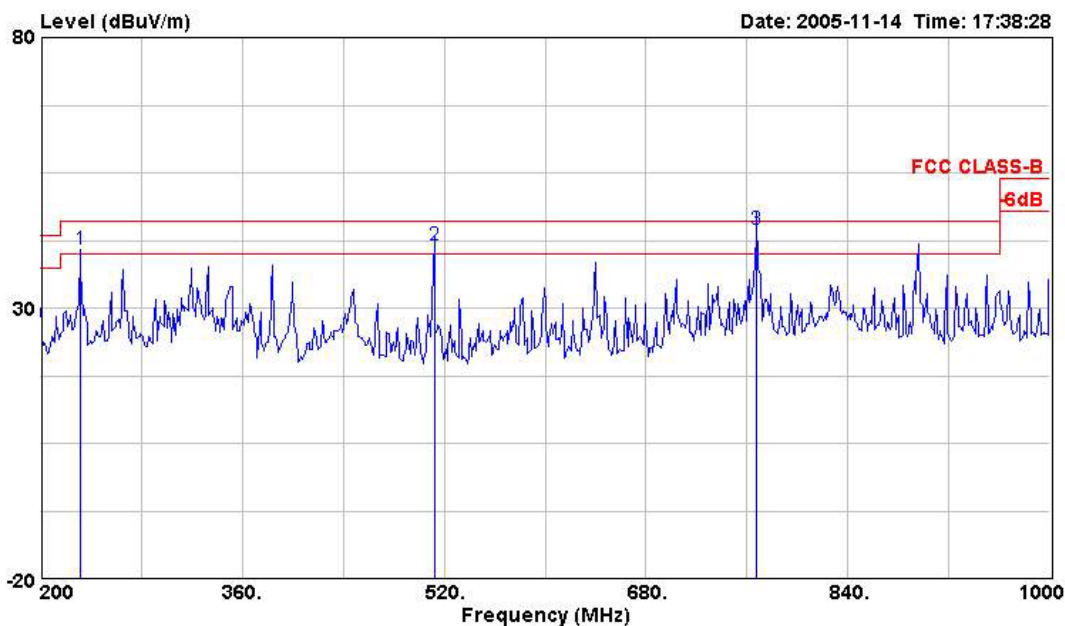
- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: OFDM CH06
- Note:
- This mode is determined as the worst-case mode from all possible combinations between the available modulations and channels.
- Test Distance: 3 M
- Temperature: 28°C
- Relative Humidity: 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



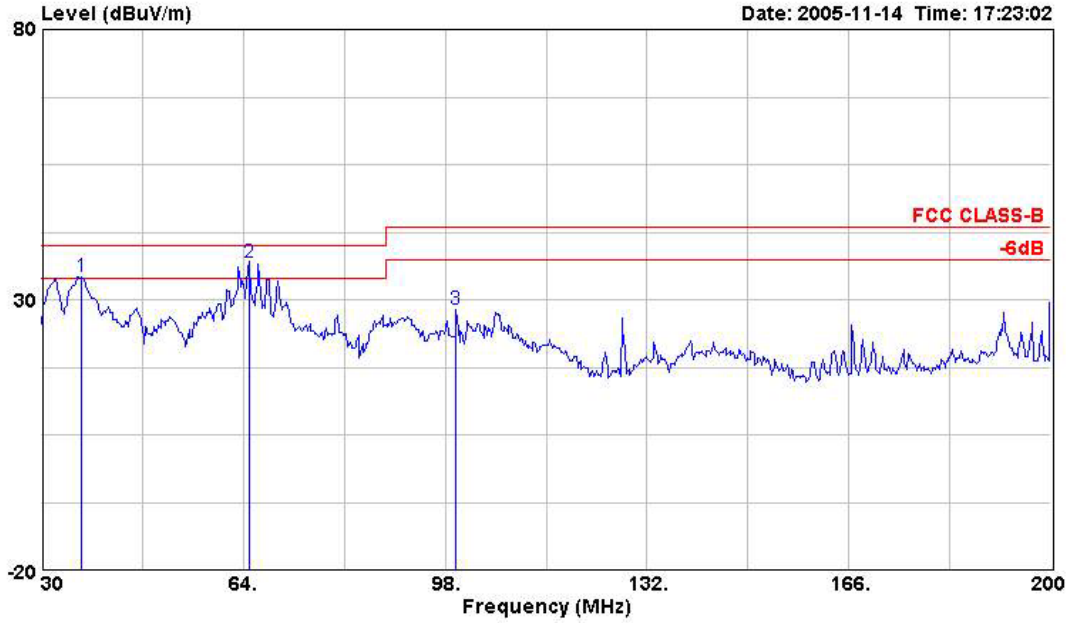
Site :03CHO3-HY
 Condition:FCC CLASS-B 3m BIC-9124--301 HORIZONTAL
 EUT :ST780_706
 Model :ST780_706
 Memo :TX CH06 2437MHz 11g
 :6Mbps

| | 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 | --- | --- |



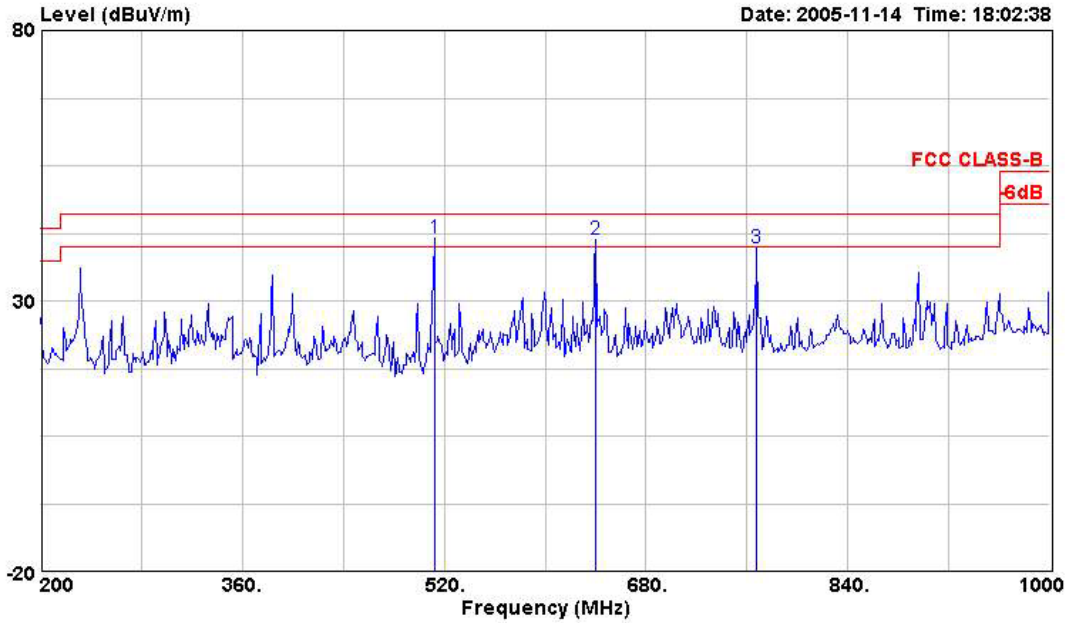
Site :03CH03-HY
 Condition:FCC CLASS-B 3m LOG-9111-221 HORIZONTAL
 EUT :ST780_706
 Model :ST780_706
 Memo :TX CH06 2437MHz 11g
 :6MBPS

| | Freq | Level | Over | Read | Limit | Cable&Antenna | Preamp | Table | Ant | | |
|-----|---------|--------|-------|-------|--------|---------------|--------|-------|------|-----|-----|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Pos | Pos | | |
| | | | dB | dBuV | dBuV/m | dB | dB/m | 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 | CableAntenna 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 | --- | --- |

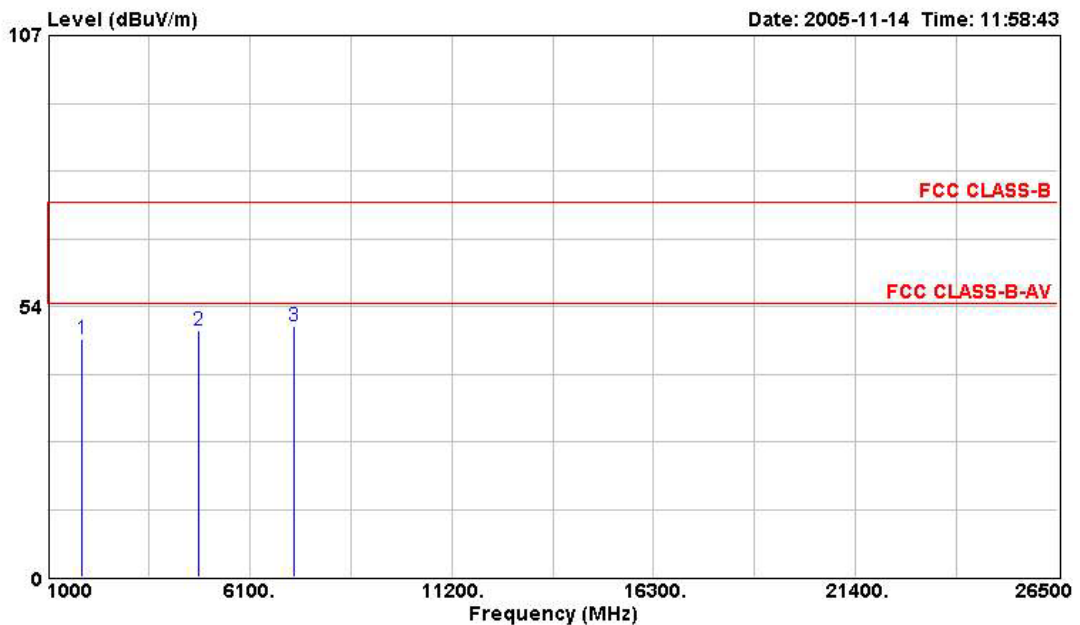


Site :03CH03-HY
 Condition:FCC CLASS-B 3m LOG-9111-221 VERTICAL
 EUT :ST780_706
 Model :ST780_706
 Memo :TX CH06 2437MHz 11g
 :6Mbps

| | Freq | Level | Over | Read | Limit | Cable | Antenna | Preamp | Remark | Table | Ant |
|---|---------|--------|-------|-------|--------|-------|---------|--------|--------|-------|-----|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Factor | | Pos | Pos |
| | | | 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 | --- | --- |

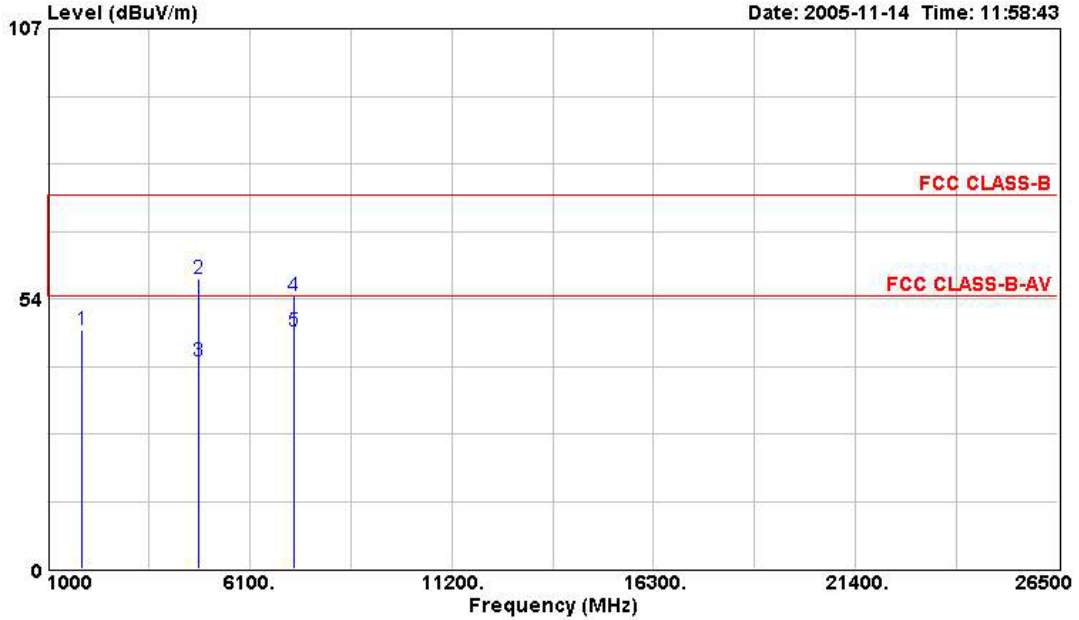
- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: DSSS CH01
- Test Distance: 3 M
- Temperature: 28°C
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp 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 | Read | Limit | Cable | Antenna | Preamp | Remark | Table | Ant |
|---|----------|--------|--------|-------|--------|-------|---------|--------|--------|-------|-----|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Factor | | Pos | Pos |
| | | | 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 | --- | --- |

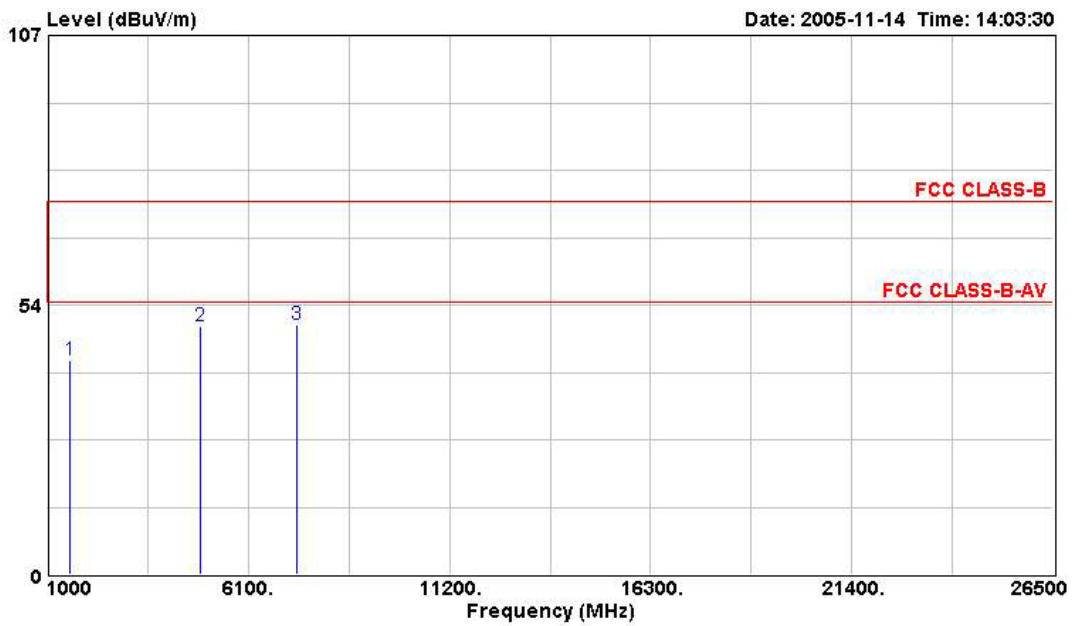


Site :03CHO3-HY
 Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
 EUT :ST780_706
 Model :ST780_706
 Memo :TX CH01 2412MHz 11b
 :11MBPS

| | 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 | --- | --- |

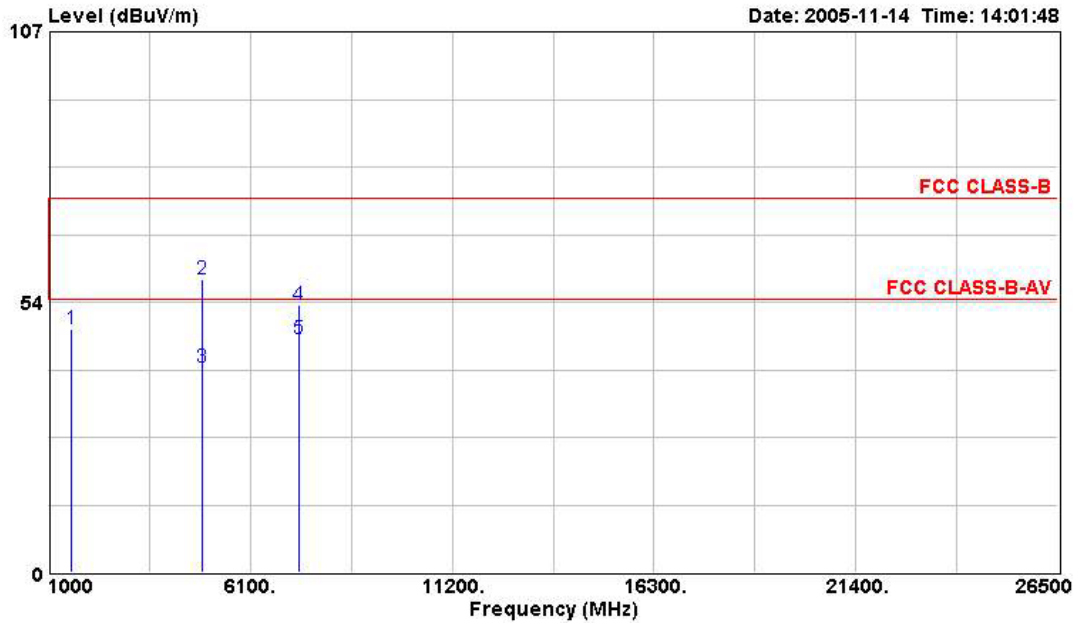
- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: DSSS CH 06
- Test Distance: 3 M
- Temperature: 28°C
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp 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 | Read | Limit | Cable | Antenna | Preamp | Remark | Table | Ant |
|---|----------|--------|--------|-------|--------|-------|---------|--------|--------|-------|-----|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Factor | | Pos | Pos |
| | | | 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 | --- | --- |

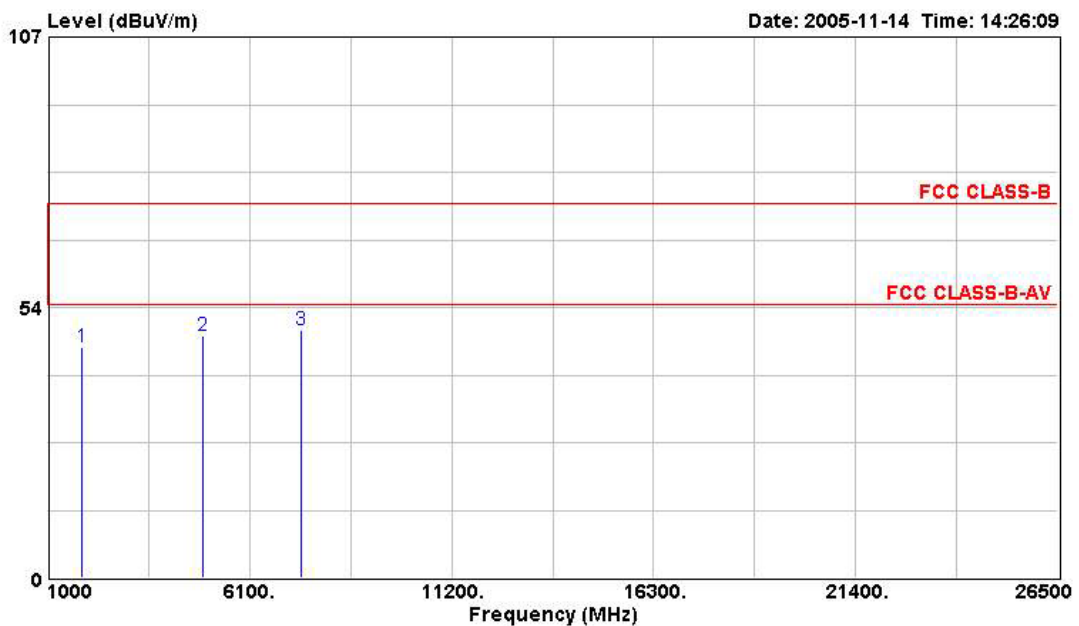


Site :O3CH03-HY
 Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
 EUT :ST780_706
 Model :ST780_706
 Memo :TX CH06 2437MHz 11b
 :11MBPS

| | Freq | Level | Over | Read | Limit | CableAntenna | Preamp | Table | Ant |
|---|----------|--------|--------|-------|--------|--------------|--------|-------|---------|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Pos | Pos |
| | | | dB | dBuV | dBuV/m | dB | dB/m | 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 |

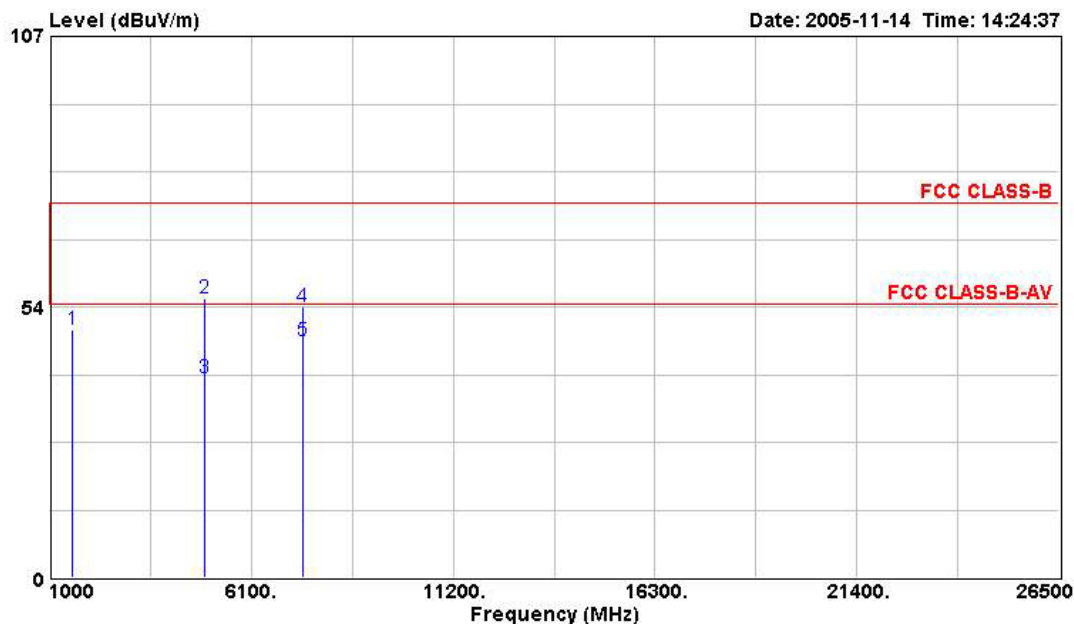
- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: DSSS CH11
- Test Distance: 3 M
- Temperature: 28°C
- Relative Humidity: 58 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp 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 | Read | Limit | Cable | Antenna | Preamp | Remark | Table | Ant |
|-----|----------|--------|--------|-------|--------|-------|---------|--------|--------|-------|-----|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Factor | | Pos | Pos |
| | | | 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 | --- | --- |

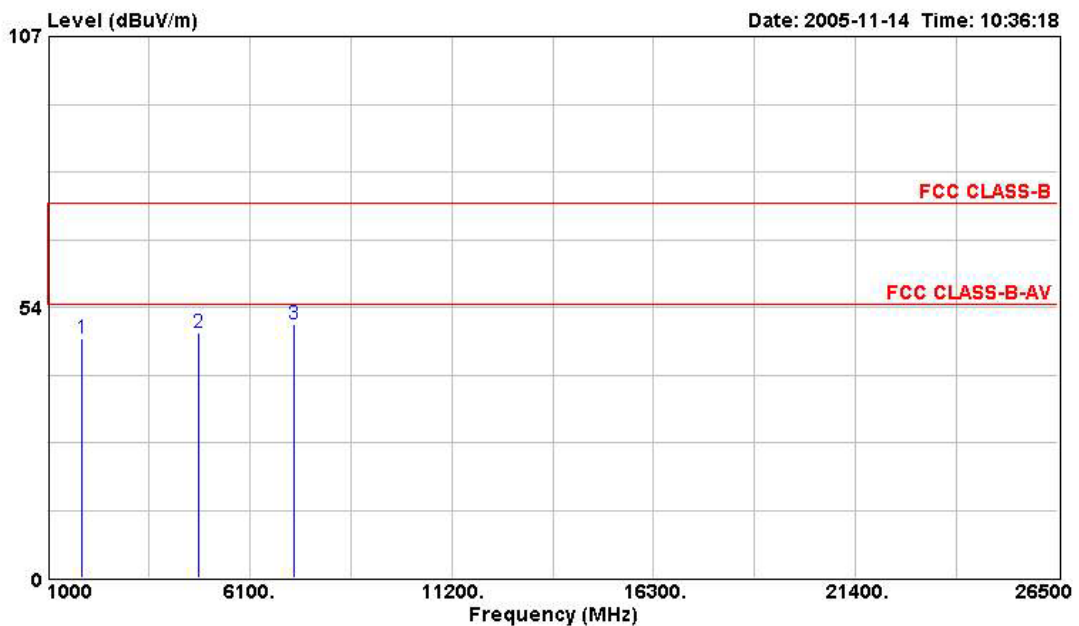


Site :03CH03-HY
 Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
 EUT :ST780_706
 Model :ST780_706
 Memo :TX CH11 2462MHz 11b
 :11MBPS

| | Freq | Level | Over | Read | Limit | Cable | Antenna | Preamp | Table | Ant |
|---|----------|--------|--------|-------|--------|-------|---------|--------|---------|-----|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Factor | Pos | Pos |
| | | | 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 | --- |

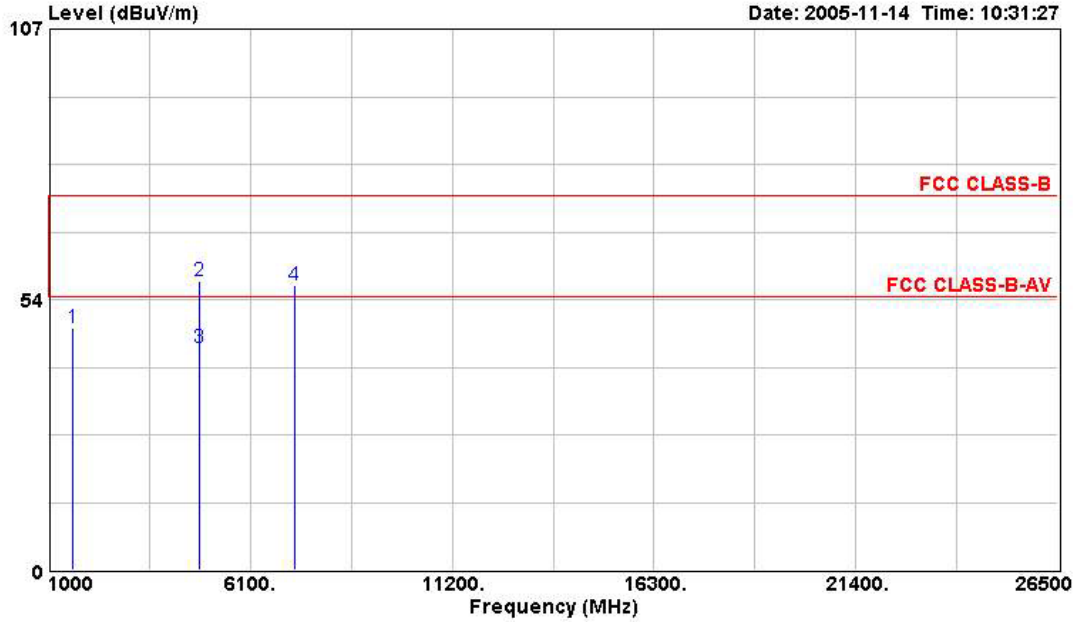
- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: OFDM CH 01
- Test Distance: 3 M
- Temperature: 28°C
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp 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 | Read | Limit | Cable | Antenna | Preamp | Remark | Table | Ant |
|---|----------|--------|--------|-------|--------|-------|---------|--------|--------|-------|-----|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Factor | | Pos | Pos |
| | | | 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 | --- | --- |

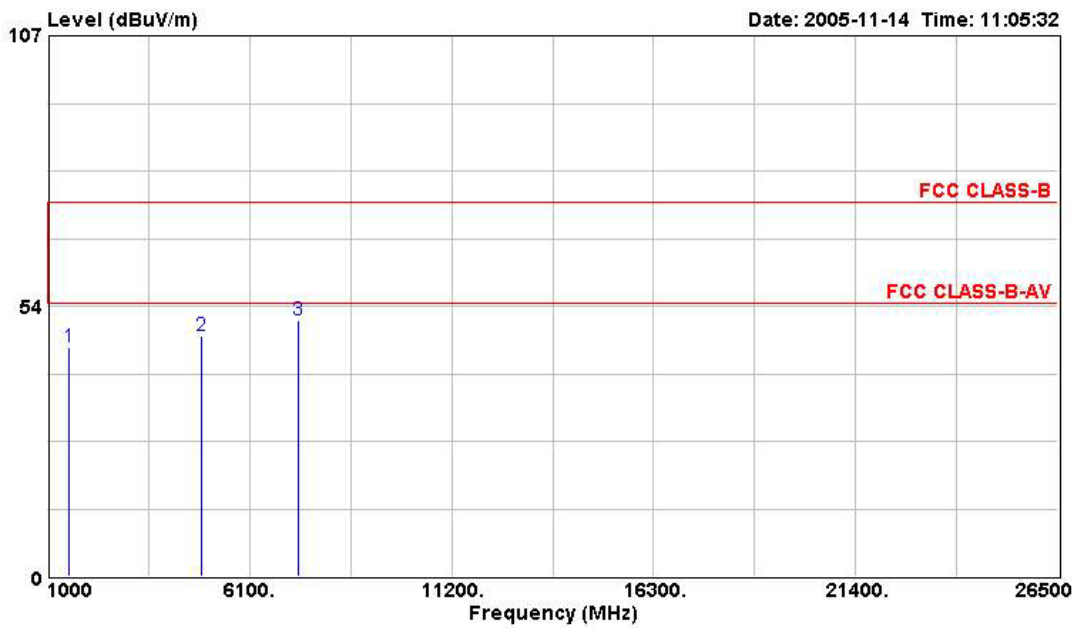


Site :D3CH03-HY
 Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
 EUT :ST780_706
 Model :ST780_706
 Memo :TX CH01 2412MHz 11g
 :6MBPS

| | Freq | Level | Over | Read | Limit | Cable | Antenna | Preamp | Remark | Table | Ant |
|---|----------|--------|--------|-------|--------|-------|---------|--------|---------|-------|-----|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Factor | | Pos | Pos |
| | | | 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 | --- | --- |

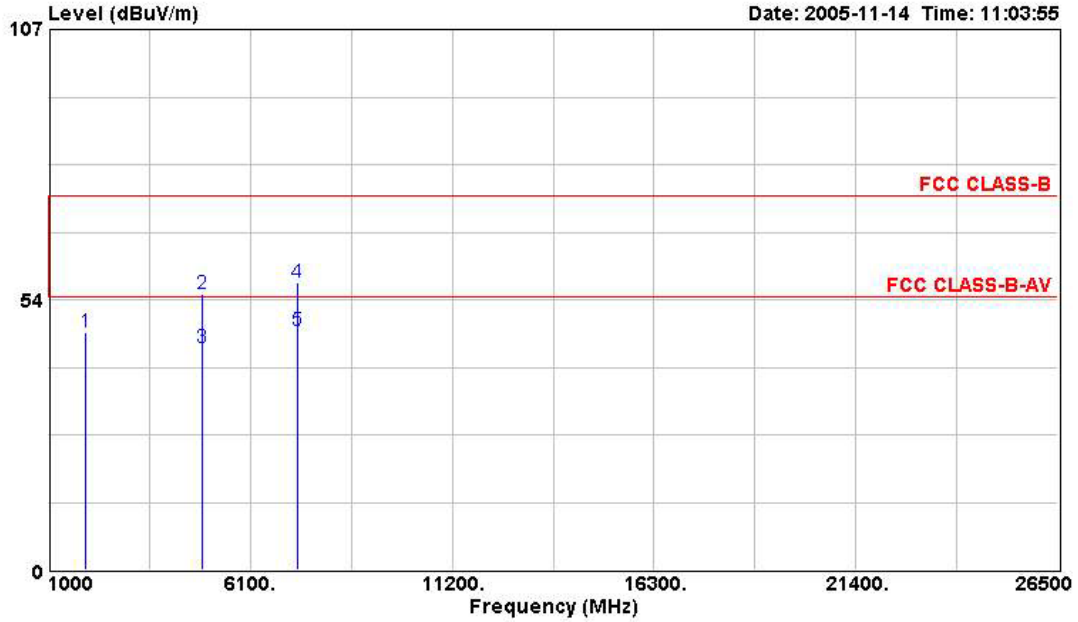
- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: OFDM CH06
- Test Distance: 3 M
- Temperature: 28°C
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp 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 | Read | Limit | Cable | Antenna | Preamp | Remark | Table | Ant |
|---|----------|--------|--------|-------|--------|-------|---------|--------|--------|-------|-----|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Factor | | Pos | Pos |
| | | | 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 | --- | --- |

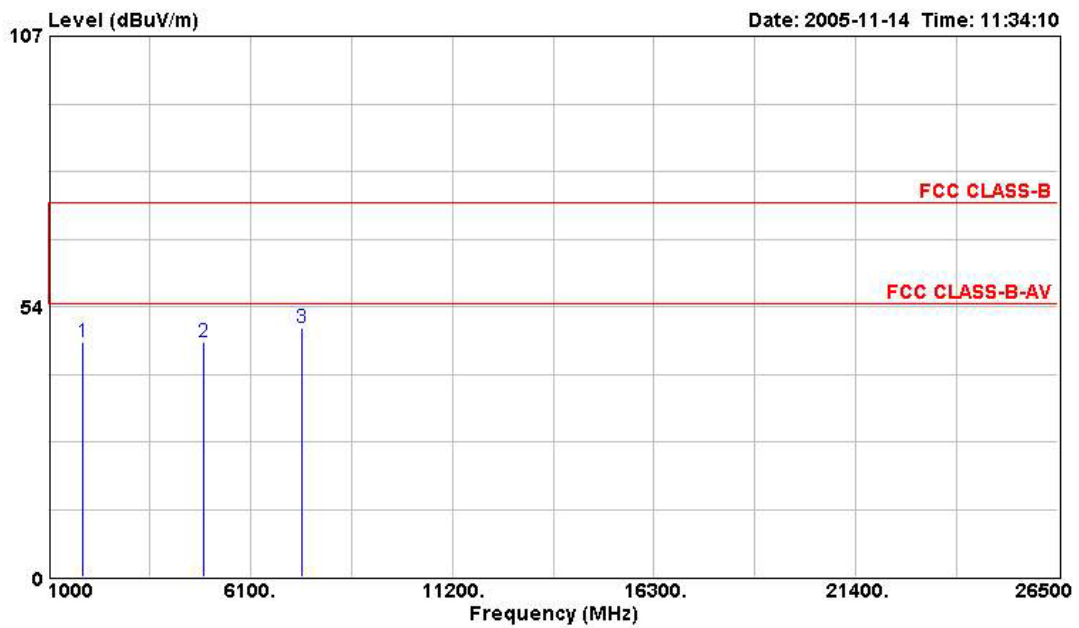


Site :O3CH03-HY
 Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
 EUT :ST780_706
 Model :ST780_706
 Memo :TX CH06 2437MHz 11g
 :6MBPS

| | 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 | --- | --- |

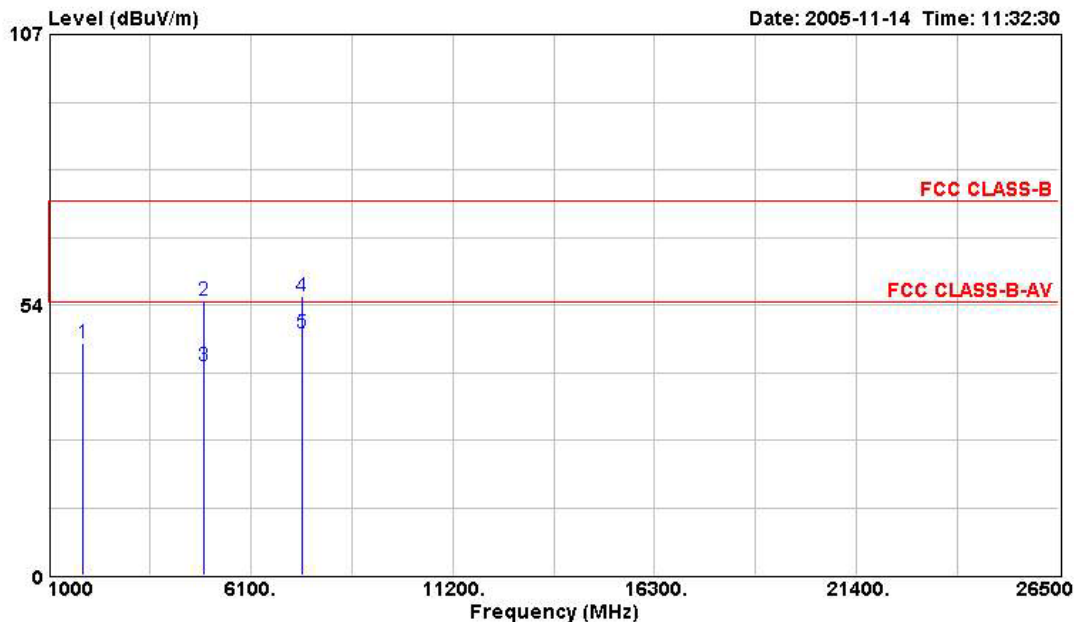
- ADSL operation mode: ADSL2+ Annex A
- Radio operation mode: Continuous transmission
- Test Mode: OFDM CH11
- Test Distance: 3 M
- Temperature: 28°C
- Relative Humidity: 58%
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp 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 | Read | Limit | Cable | Antenna | Preamp | Table | Ant |
|---|----------|--------|--------|-------|--------|-------|---------|--------|-------|-----|
| | MHz | dBuV/m | Limit | Level | Line | Loss | Factor | Factor | Pos | Pos |
| | | | 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 | --- | --- |
| 2 | 4924.000 | 46.60 | -27.40 | 42.74 | 74.00 | 3.12 | 33.29 | 32.55 | --- | --- |
| 3 | 7386.000 | 49.39 | -24.61 | 41.72 | 74.00 | 4.03 | 36.35 | 32.71 | --- | --- |



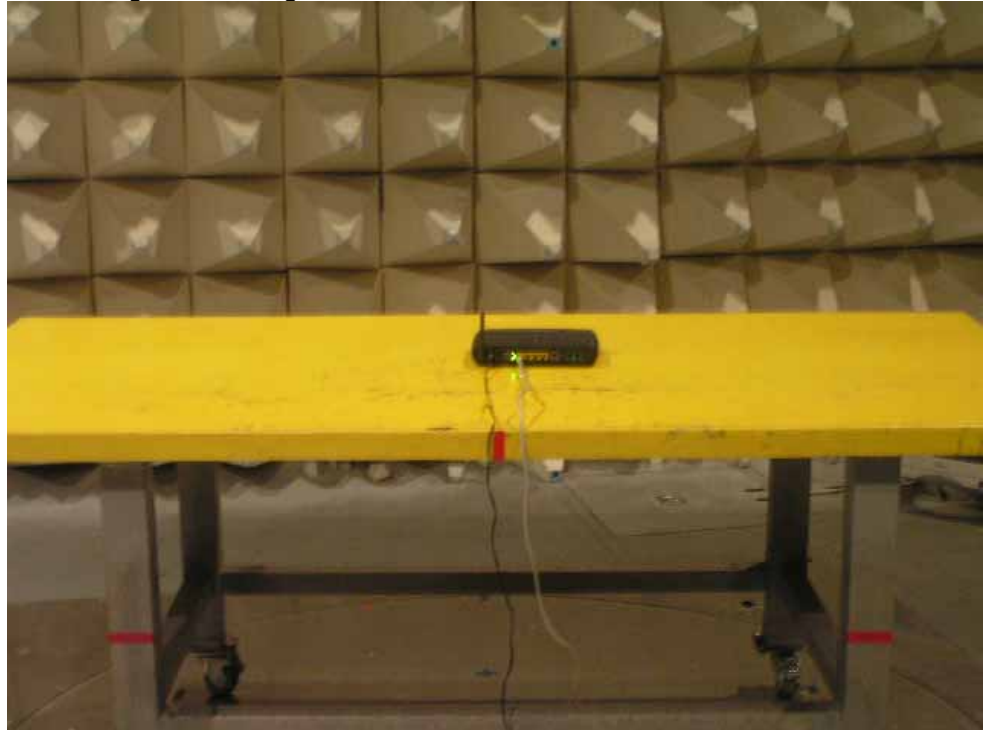
Site :03CHO3-HY
 Condition:FCC CLASS-B 3m HORN-ANT-6741-200505 VERTICAL
 EUT :ST780_706
 Model :ST780_706
 Memo :TX CH11 2462MHz 11g
 :6MBPS

| | 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 (MHz) | Range | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm ²) | 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 (MHz) | Range | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm ²) | 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

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

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 |

4.11.3 FCC 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 $U_c(y)$ | 1.13 | | |
| Measuring uncertainty for a level of confidence of 95% $U=2U_c(y)$ | 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 $U_c(y)$ | 1.27 | | |
| Measuring uncertainty for a level of confidence of 95% $U=2U_c(y)$ | 2.54 | | |