

**Radio Test Report:** 99493831 (part 1 of 2)

**Applicant:** Samsung Electro-Mechanics Co., LTD.  
314, Maetan 3-Dong, Yeongtong-Gu  
Suwon City, Gyunggi-Do  
Korea


**Equipment Under Test:** SWL-2610U Direct Sequence Spread Spectrum  
**(E.U.T.)** Transceiver

**FCC ID:** E2XSWL-2610U

**In Accordance With:** **FCC Part 15, Subpart C (10-1-03 Edition)**  
Direct Sequence Transmitters  
2400 - 2483.5 MHz (IEEE 802.11b mode)

**Tested By:** Telefication bv  
Edisonstraat 12a  
6902 PK Zevenaar

**Authorized By:** J.P. van de Poll  
Co-ordinator Test Group



**Date:** 26 May 2004

**Total Number of Pages:** 43

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

## **Table of Contents**

|                   |  |           |
|-------------------|--|-----------|
| <b>Section 1</b>  | <b>Summary of Test Results</b> .....                         | <b>3</b>  |
| <b>Section 2</b>  | <b>Equipment Under Test (E.U.T.)</b> .....                   | <b>5</b>  |
| <b>Section 3</b>  | <b>Power line conducted emissions</b> .....                  | <b>9</b>  |
| <b>Section 4</b>  | <b>Minimum 6 dB bandwidth</b> .....                          | <b>12</b> |
| <b>Section 5</b>  | <b>Peak Power Output</b> .....                               | <b>16</b> |
| <b>Section 6</b>  | <b>Peak power spectral density</b> .....                     | <b>17</b> |
| <b>Section 7</b>  | <b>Spurious Emissions (radiated)</b> .....                   | <b>21</b> |
| <b>Section 8</b>  | <b>Spurious Emissions (restricted bands, radiated)</b> ..... | <b>28</b> |
| <b>Section 9</b>  | <b>Photographs</b> .....                                     | <b>33</b> |
| <b>Section 10</b> | <b>Test equipment List</b> .....                             | <b>38</b> |
| <b>ANNEX A</b>    | <b>TEST METHODOLOGIES</b> .....                              | <b>39</b> |
| <b>ANNEX B</b>    | <b>CROSS REFERENCE TABLE RSS-FCC</b> .....                   | <b>42</b> |



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

**Summary Of Test Data**

| NAME OF TEST                                    | PARA. NO.    | SPEC.                           | MEAS.                      | RESULT   |
|---|--------------|---------------------------------|----------------------------|----------|
| Power line conducted emissions                  | 15.207(a)    | 66 dBμV                         | 52.7 dBμV                  | Complies |
| Minimum 6 dB bandwidth                          | 15.247(a)(2) | 500 kHz                         | 12.7 MHz                   | Complies |
| Maximum Peak Power Output                       | 15.247(b)(3) | 36 dBm<br>E.I.R.P.              | 15.0 dBm<br>E.I.R.P.       | Complies |
| Peak Power Spectral Density                     | 15.247(d)    | 8 dBm/3 kHz                     | -9.8 dBm/3 kHz             | Complies |
| Spurious Emissions (Radiated)                   | 15.247(c)    | > 20 dB<br>below<br>fundamental | > 20 dB                    | Complies |
| Restricted band edge emission levels (radiated) | 15.205(a)    | 54 dBμV/m(av)<br>74 dBμV/m(pk)  | 47.0 dBμV/m<br>56.9 dBμV/m | Complies |

**Test Conditions:**

**Indoor**                      Temperature:   22   °C  
    Humidity:   45   %

**Test tool**                      Intersil Engineering cTxRx version 2.1.0.0  
    Power setting: 160

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

## **Section 2 Equipment Under Test (E.U.T.)**

### **General Equipment Information**

|                              |   |
|------------------------------|---|
| <b>Equipment class</b>       | Part 15 spread spectrum transmitter   |
| <b>Type of equipment</b>     | Wireless data transmission equipment in the 2.4 GHz ISM band using spread spectrum techniques |
| <b>Frequency Range:</b>      | 2412 – 2462 MHz   |
| <b>Number of Channels:</b>   | 11  |
| <b>Emissions Designator:</b> | 22M0G1D   |
| <b>Standard:</b>             | IEEE 802.11b/g  |



**Telefication**

FCC PART 15, SUBPART C  
DIRECT SEQUENCE TRANSMITTERS  
PROJECT NO.:99493831

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

**Description of Modification for Modification Filing**

**Not applicable**

**Family List Rationale**

**Not applicable**

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

## **Theory of Operation**

### **1. Transmitter Path**

Data bits coming from the USB Host interface(1) are processed by the Base Band Processor MAC (BBP/MAC), GW3887(2) on IEEE 802.11g turbo protocol level, IQ modulated and then converted to 2.4 GHz RF signal by Direct up/down converter ISL3686(3).

The ISL3686(3) operating frequency is generated by the ISL3084 VCO(4) divided by two. The 2.4GHz RF signal is then amplified by RF Power Amplifier ISL3980 (5) and then finally emitted via the antenna (6).

### **2. Receiver path**

The 2.4GHz RF signal comes in via antenna (6) and low noise amplifier (part of ISL3686) (3) to the Direct up/down converter ISL3686 (4) where it is converted to RX IQ signals.

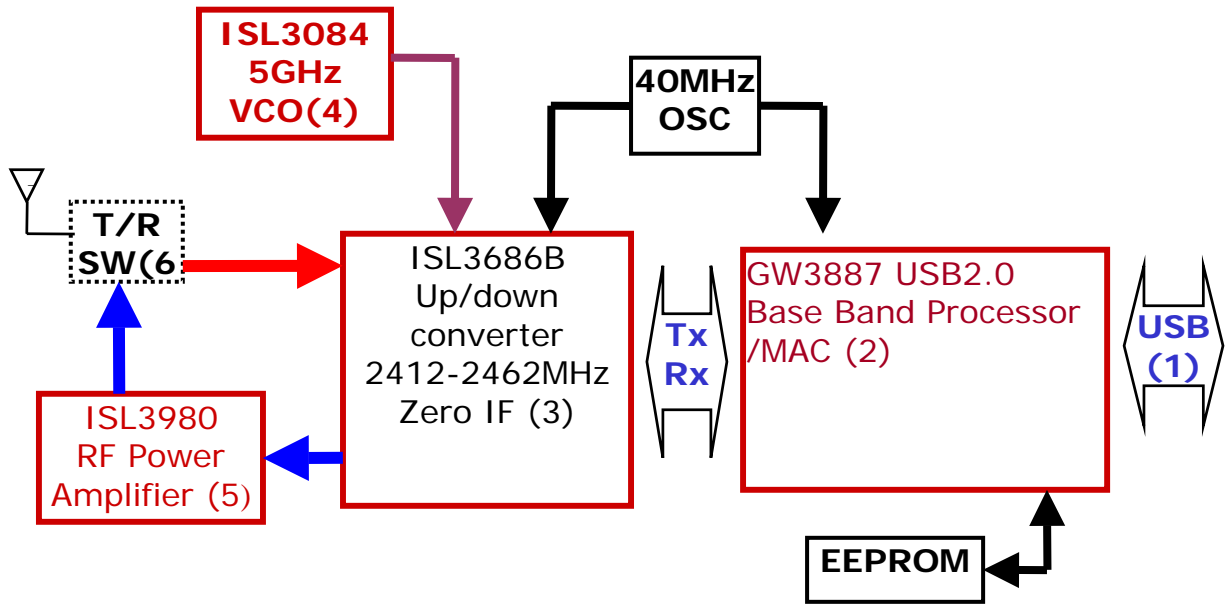
The ISL3686 (3) operating frequency is generated by the ISL3084 VCO (4) divided by two. These IQ signals are converted into data bits by the Base Band Processor MAC (BBP/MAC) GW3887 (2).

The data bits are processed by the Base Band Processor MAC (BBP/MAC) GW3887 (2) on IEEE 802.11g Turbo protocol level. This MAC controller also provides the USB interface to the Host (1).

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

**Block diagram**





*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

### **Section 3 Power line conducted emissions**

**Test Results:** Complies.

**Measurement Data:** See attached tables

**Equipment used:** MEDION<sup>®</sup> notebook computer model MD 40100 with AC adaptor model FSP120-A AC manufactured by FSP GROUP Inc.

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

Time: 12:28:19 Date: 24-05-2004

Signal measured on "Neutral".

| Measurement =><br>Range | Frequency<br>(MHz) | QPeak               |                     | Frequency<br>(MHz) | Av                  |                     |
|-------------------------|--------------------|---------------------|---------------------|--------------------|---------------------|---------------------|
|                         |                    | Level<br>dB<br>(uV) | Limit<br>dB<br>(uV) |                    | Level<br>dB<br>(uV) | Limit<br>dB<br>(uV) |
| 01                      | 0.15000            | 51.6                | 66.1                | 0.15200            | 44.3                | 55.9                |
| 02                      | 0.22690            | 44.9                | 62.6                | 0.23010            | 40.5                | 52.5                |
| 03                      | 0.30720            | 40.3                | 60.1                | 0.30720            | 32.0                | 50.1                |
| 04                      | 0.37880            | 46.7                | 58.4                | 0.37800            | 41.3                | 48.4                |
| 05                      | 0.46000            | 41.9                | 56.7                | 0.46000            | 35.2                | 46.7                |
| 06                      | 0.61640            | 41.7                | 56                  | 0.62200            | 32.4                | 46                  |
| 07                      | 0.78250            | 43.2                | 56                  | 0.77250            | 33.6                | 46                  |
| 08                      | 1.09050            | 39.0                | 56                  | 1.09050            | 25.3                | 46                  |
| 09                      | 1.45980            | 38.4                | 56                  | 1.45980            | 25.4                | 46                  |
| 10                      | 1.62400            | 36.8                | 56                  | 1.90960            | 23.7                | 46                  |
| 11                      | 2.26470            | 33.4                | 56                  | 2.16670            | 22.0                | 46                  |
| 12                      | 2.78130            | 31.0                | 56                  | 2.82870            | 19.0                | 46                  |
| 13                      | 4.30230            | 35.5                | 56                  | 4.27110            | 24.1                | 46                  |
| 14                      | 4.84570            | 30.8                | 56                  | 4.79850            | 20.4                | 46                  |
| 15                      | 7.00560            | 29.1                | 60                  | 7.33620            | 18.9                | 50                  |
| 16                      | 10.2088            | 30.7                | 60                  | 10.2088            | 21.7                | 50                  |
| 17                      | 12.6352            | 33.7                | 60                  | 12.6352            | 25.2                | 50                  |
| 18                      | 13.5794            | 30.8                | 60                  | 13.6040            | 22.5                | 50                  |
| 19                      | 18.5200            | 25.1                | 60                  | 18.5200            | 18.2                | 50                  |
| 20                      | Below              | 30.0                | 60                  | Below              | 30.0                | 50                  |

\* ==> exceeding the limit

The frequency range 0.15 - 30 MHz is divided into 20 subranges.  
 For every subrange the highest emission component is given in the table.

In ranges marked "Below" the maximum level of the components measured,  
 is below 30 dBuV. For this evaluation, peak detection is used.

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

Time: 13:39:19 Date: 24-05-2004

Signal measured on "Live".

| Measurement =><br>Range | Frequency<br>(MHz) | QPeak               |                     | Av                 |                     |                     |
|-------------------------|--------------------|---------------------|---------------------|--------------------|---------------------|---------------------|
|                         |                    | Level<br>dB<br>(uV) | Limit<br>dB<br>(uV) | Frequency<br>(MHz) | Level<br>dB<br>(uV) | Limit<br>dB<br>(uV) |
| 01                      | 0.15000            | 52.7                | 66.1                | 0.16060            | 37.8                | 55.5                |
| 02                      | 0.24890            | 40.2                | 61.8                | 0.24890            | 32.5                | 51.8                |
| 03                      | 0.32680            | 44.2                | 59.6                | 0.32680            | 38.3                | 49.6                |
| 04                      | 0.32780            | 44.3                | 59.6                | 0.32780            | 36.6                | 49.6                |
| 05                      | 0.49180            | 39.4                | 56.2                | 0.49180            | 31.6                | 46.2                |
| 06                      | 0.65740            | 44.0                | 56                  | 0.65740            | 34.0                | 46                  |
| 07                      | 0.73090            | 38.5                | 56                  | 0.74510            | 29.6                | 46                  |
| 08                      | 0.99250            | 36.1                | 56                  | 0.98450            | 24.2                | 46                  |
| 09                      | 1.32680            | 37.5                | 56                  | 1.31100            | 24.8                | 46                  |
| 10                      | 1.98400            | 35.6                | 56                  | 1.97420            | 23.7                | 46                  |
| 11                      | 2.67010            | 36.1                | 56                  | 2.63150            | 23.8                | 46                  |
| 12                      | 3.51290            | 38.7                | 56                  | 3.54270            | 26.9                | 46                  |
| 13                      | 3.99230            | 41.5                | 56                  | 3.95590            | 29.7                | 46                  |
| 14                      | 5.22050            | 31.7                | 60                  | 5.22050            | 21.7                | 50                  |
| 15                      | 6.19600            | 29.9                | 60                  | 6.19600            | 20.6                | 50                  |
| 16                      | 9.11760            | 29.4                | 60                  | 10.1350            | 20.0                | 50                  |
| 17                      | 12.9434            | 34.0                | 60                  | 12.9434            | 25.2                | 50                  |
| 18                      | 13.5808            | 32.0                | 60                  | 13.5536            | 24.3                | 50                  |
| 19                      | 19.0812            | 26.5                | 60                  | 18.3798            | 19.0                | 50                  |
| 20                      | 23.1262            | 22.9                | 60                  | 23.1262            | 14.2                | 50                  |

This product is in compliance with FCC part 15C, section 15.207(a).

\* ==> exceeding the limit

The frequency range 0.15 - 30 MHz is divided into 20 subranges.  
 For every subrange the highest emission component is given in the table.

In ranges marked "Below" the maximum level of the components measured,  
 is below 30 dBuV. For this evaluation, peak detection is used.

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

## Section 4 Minimum 6 dB bandwidth

NAME OF TEST: Occupied Bandwidth

PARA. NO.: 15.247(a)(2)

**Test Results:**

Complies. The 6 dB bandwidth is:

| Channel 1 | Channel 6 | Channel 11 |
|-----------|-----------|------------|
| 12.24 MHz | 13.24 MHz | 12.76 MHz  |

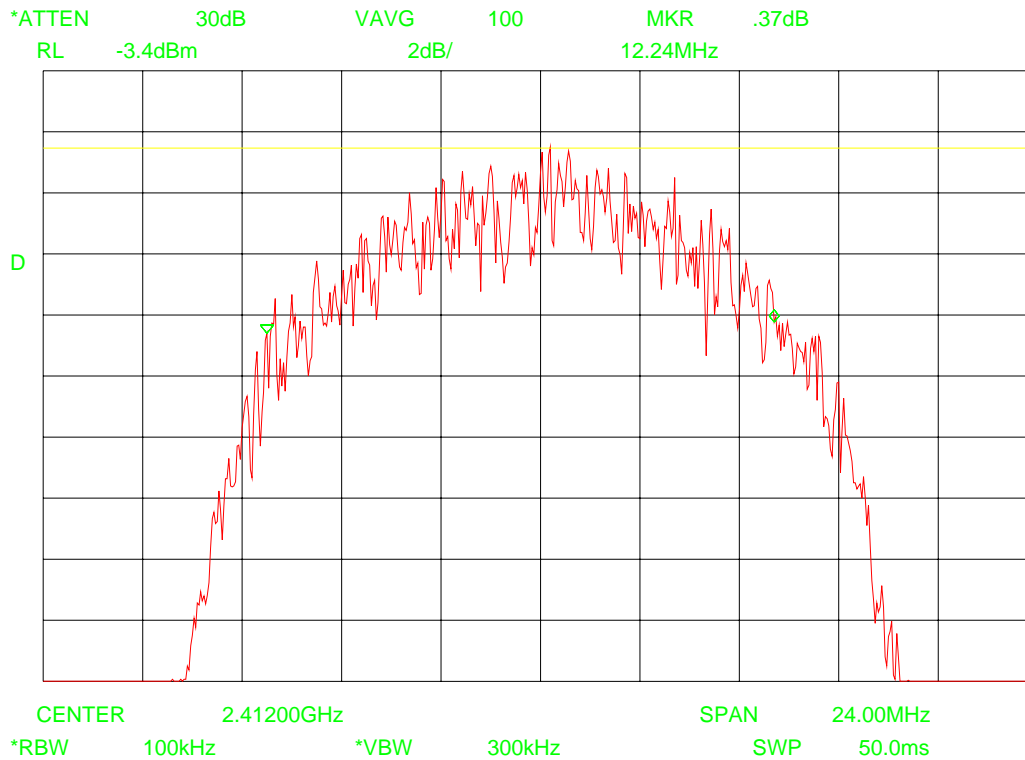
**Measurement Data:**

See attached graphs

EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver  
FCC ID: E2XSWL-2610U

---

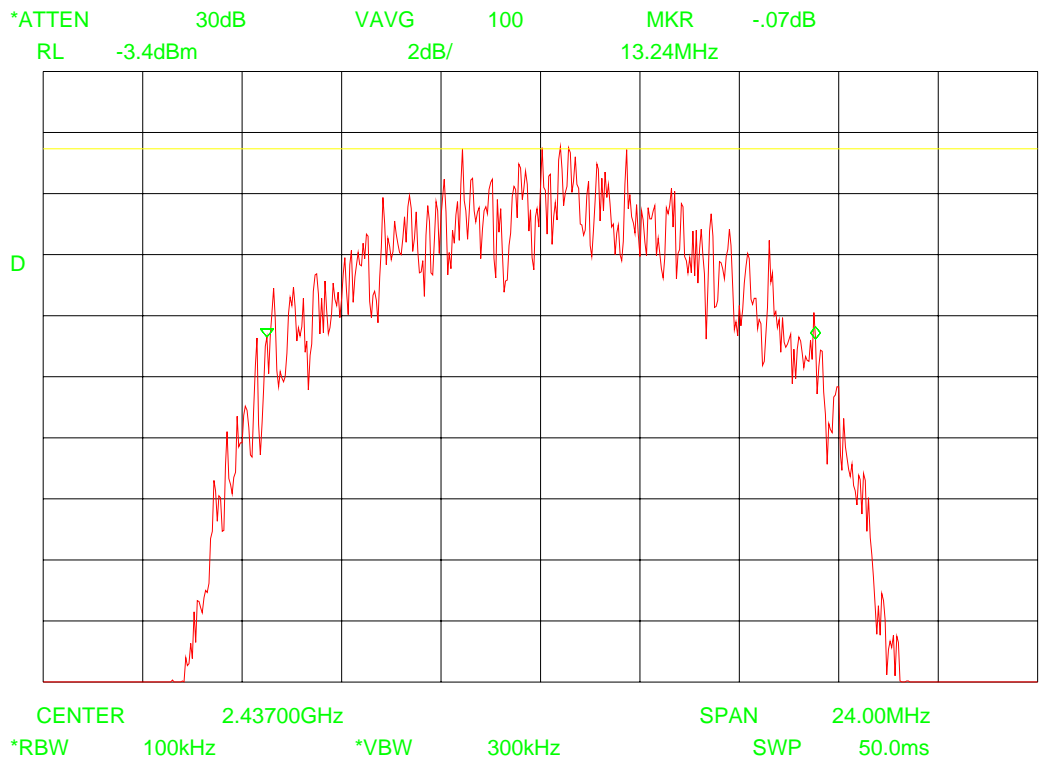
Channel 1



EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver  
FCC ID: E2XSWL-2610U

---

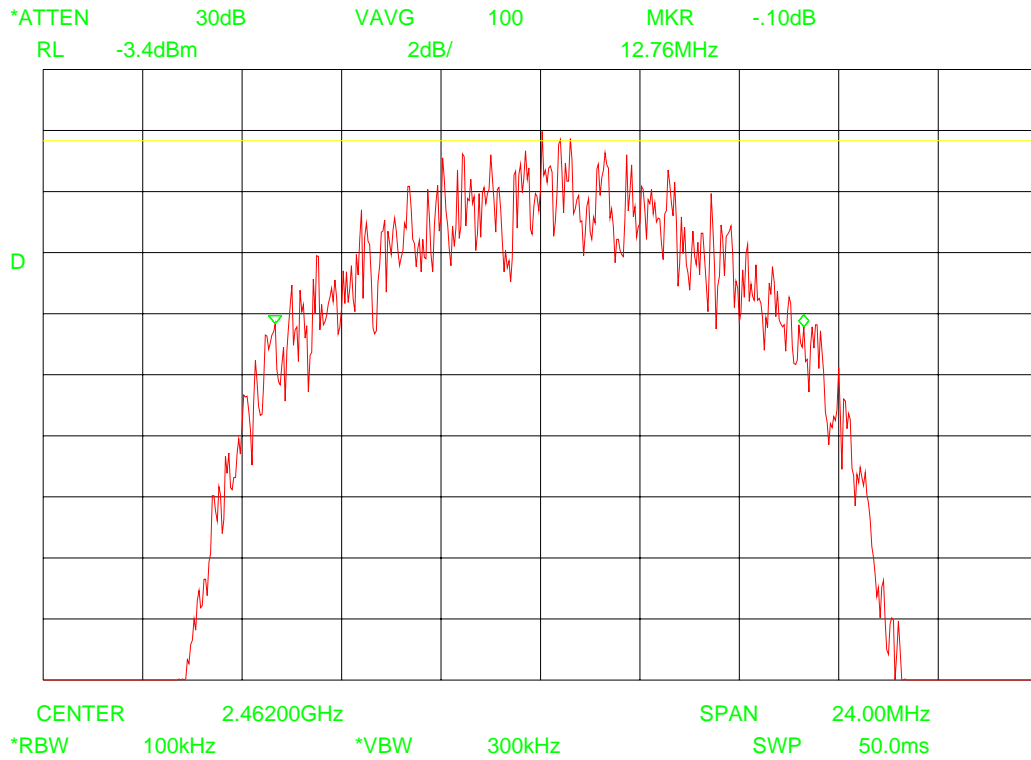
Channel 6



EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver  
FCC ID: E2XSWL-2610U

---

Channel 11



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

**Section 5 Peak Power Output**

|                                 |                           |
|---------------------------------|---------------------------|
| NAME OF TEST: Peak Power Output | PARA. NO.: 15.247 (b) (3) |
|---------------------------------|---------------------------|

**Test Results:** Complies. The maximum peak power output of the transmitter is:

| Channel 1         | Channel 6        | Channel 11       |
|-------------------|------------------|------------------|
| 15.0 dBm E.I.R.P. | 14.2 dBm E.I.R.P | 14.2 dBm E.I.R.P |

**Measurement Data:** Detachable antenna?  Yes  No  
 If yes, state the type of non-standard connector used at the antenna port:

Directional Gain of Antenna: 2.0 dBi or 1.58 Numeric.  
 Peak Power Output: 31.6 mWatts.  
 Field Strength: 110.4 (ch 1), 109.6 (ch6, 11) dBμV/m @ 3m or 0.33 (ch1), 0.30 (ch6, 11) V/m @ 3m.

**Antennas:** Not applicable

**Note:** Tests are performed with integral antenna.



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

## Section 6 Peak power spectral density

NAME OF TEST: Peak power spectral density

PARA. NO.: 15.247 (d)

**Test results:**

Complies.

| Channel 1  | Channel 6 | Channel 11 |
|------------|-----------|------------|
| -10.10 dBm | -9.77 dBm | -9.93 dBm  |

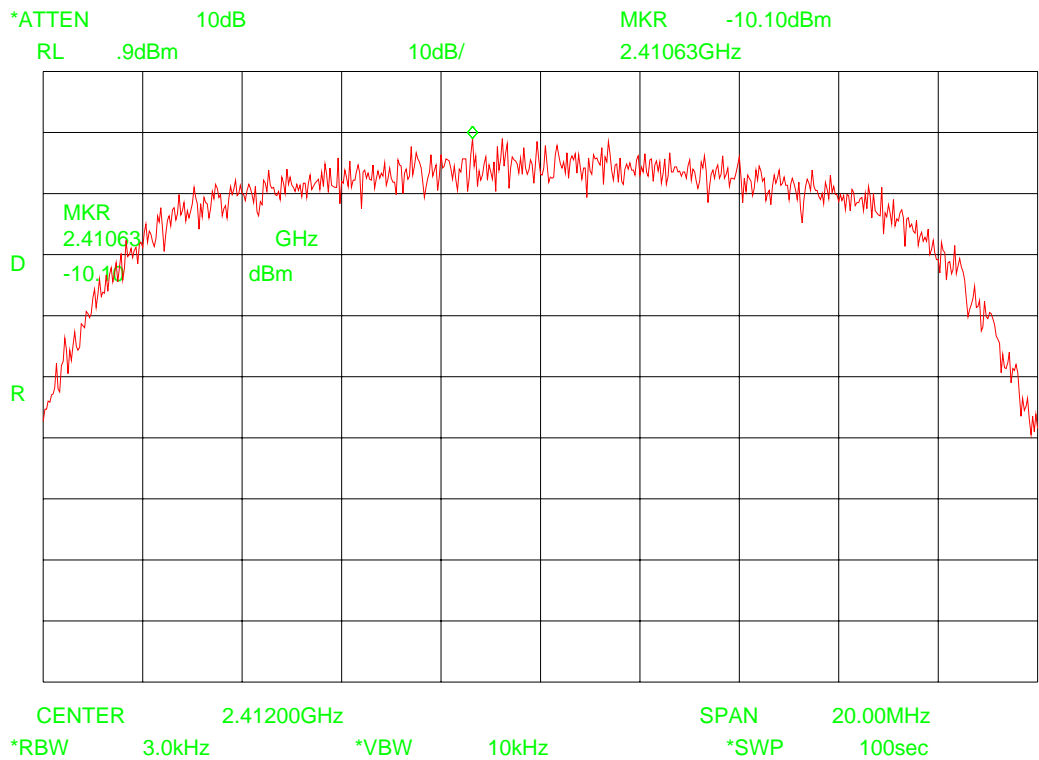
**Measurement data:**

see attached plots

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

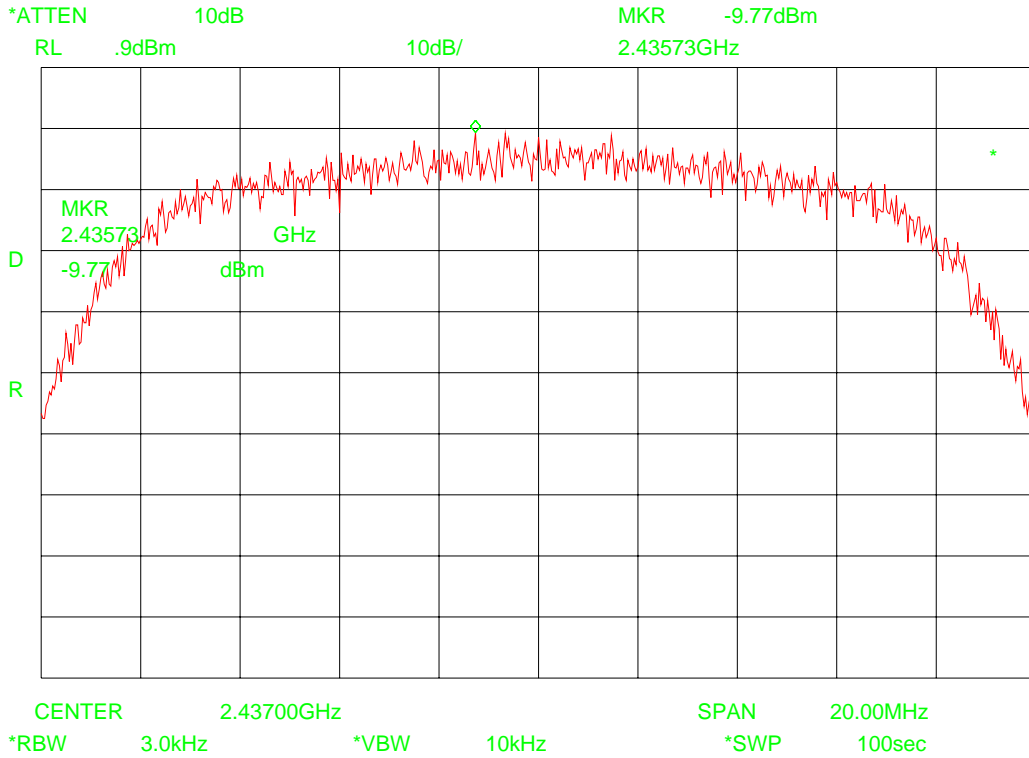
*Channel 1*



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

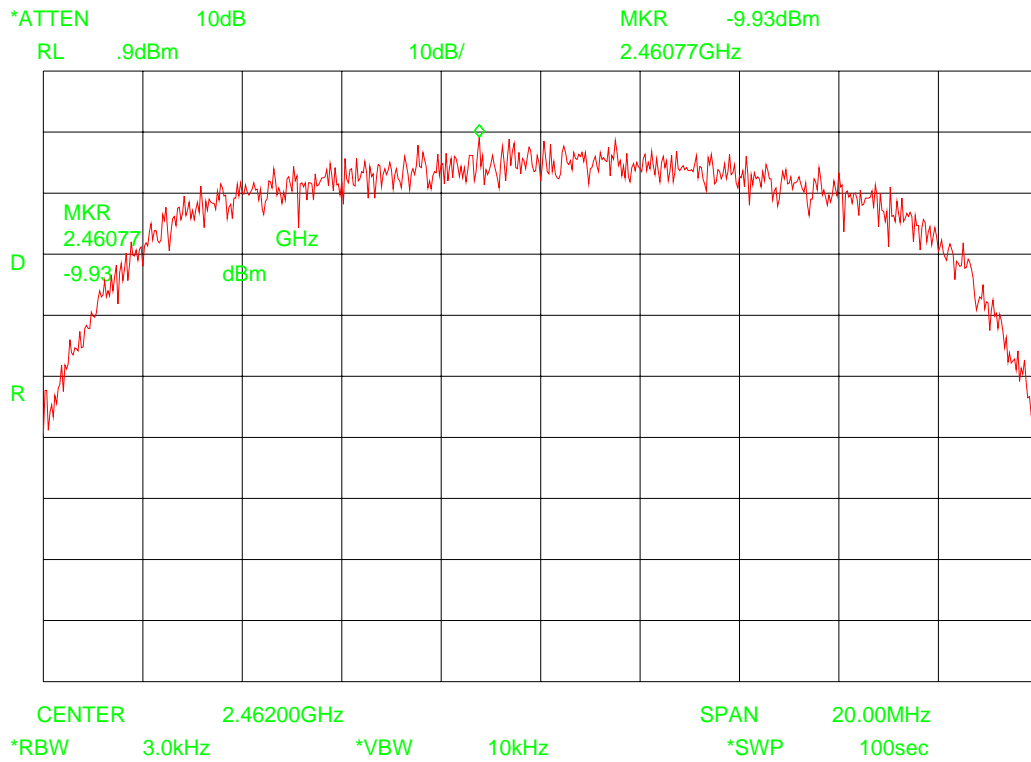
*Channel 6*



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

*Channel 11*



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

## **Section 7 Spurious Emissions (radiated)**

|   |                      |
|---|----------------------|
| NAME OF TEST: Spurious Emissions (Radiated) | PARA. NO.: 15.247(c) |
|---|----------------------|

**Test Results:** Complies.  
Spurious emissions in the frequency range 30 – 1000 MHz have proven to be radiated by the host equipment. This phenomenon was verified on the following Open Area Test Site:

TNO Electronic Products & Services (EPS) B.V  
Smidshornerweg 18  
9822 TL Niekerk  
The Netherlands

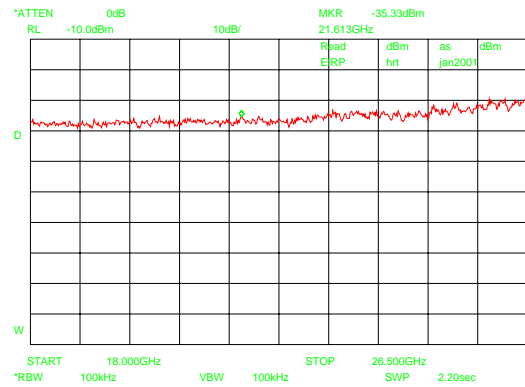
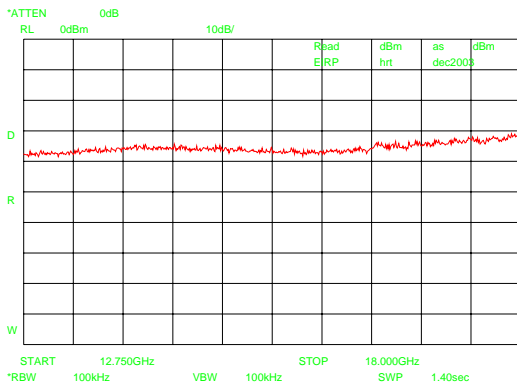
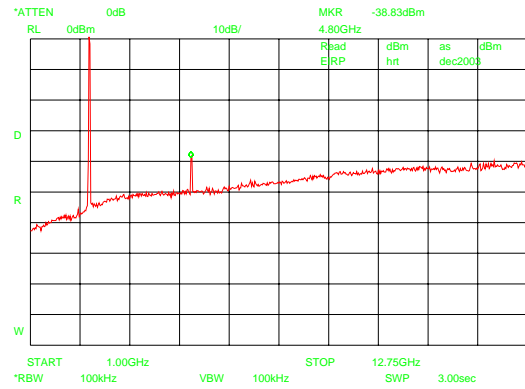
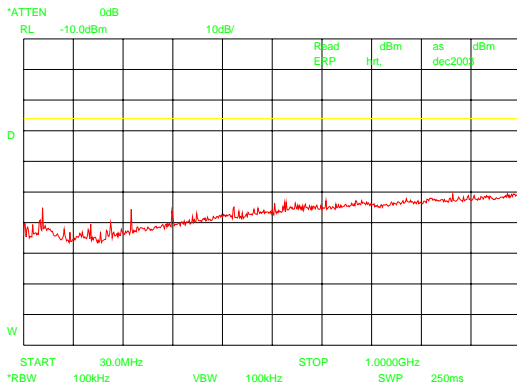
FCC listed : 90828  
Industry Canada : IC3501

**Measurement Data:** See attached graphs.

**Note:** The graphs represent effective radiated power (erp) values for frequencies below 1 GHz and equivalent isotropic radiated power (eirp) values for frequencies above 1 GHz.

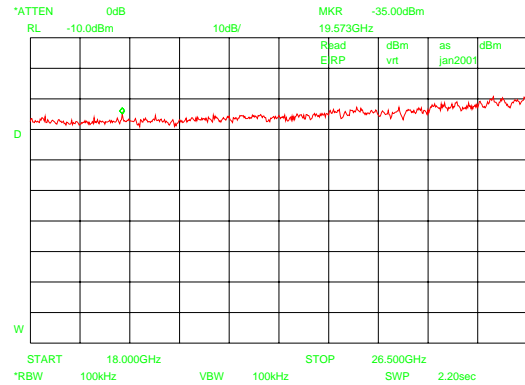
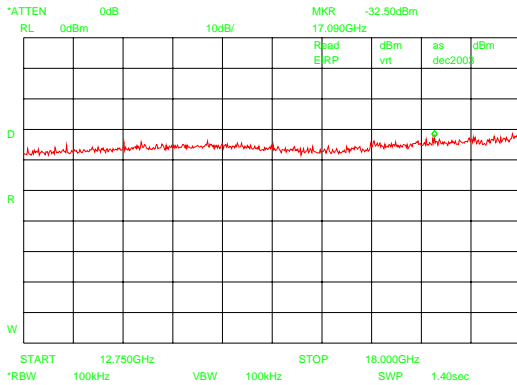
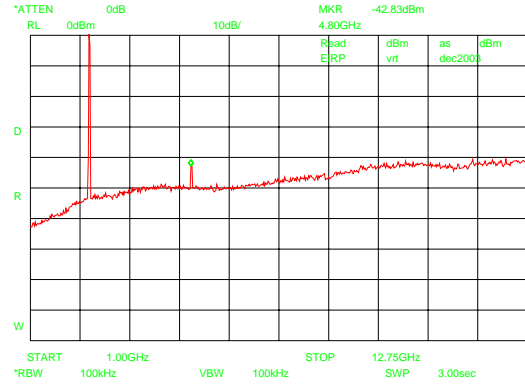
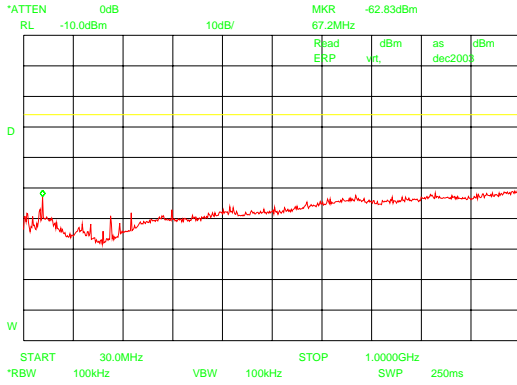
EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver  
FCC ID: E2XSWL-2610U

CH 1: horizontal polarization



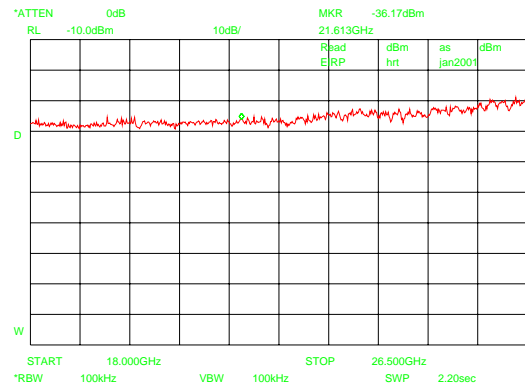
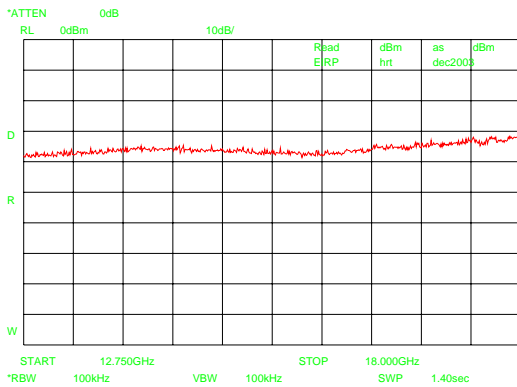
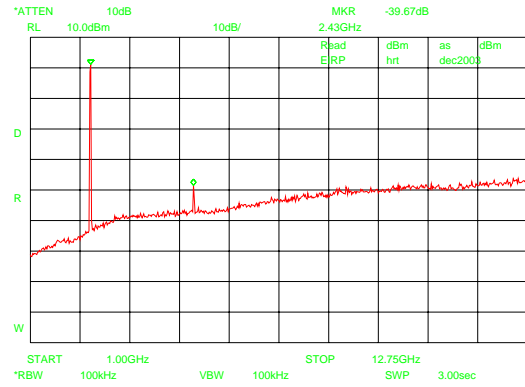
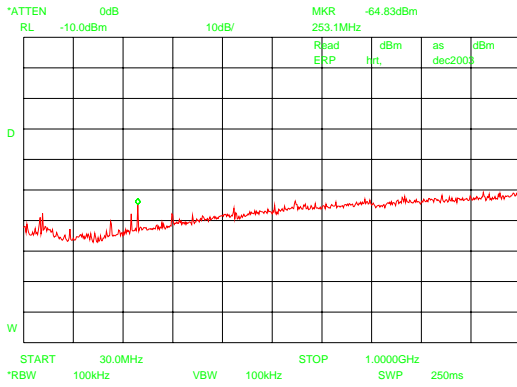
EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver  
FCC ID: E2XSWL-2610U

CH 1: vertical polarization



EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver  
 FCC ID: E2XSWL-2610U

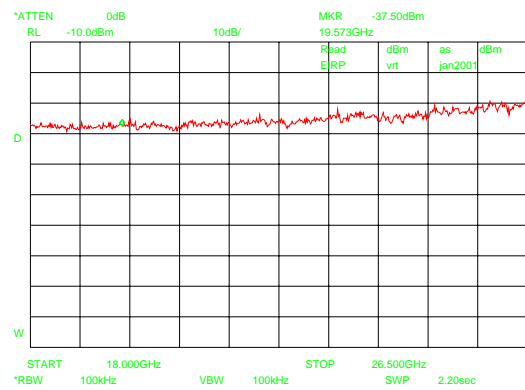
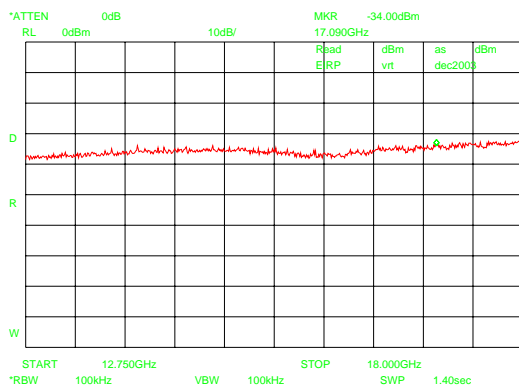
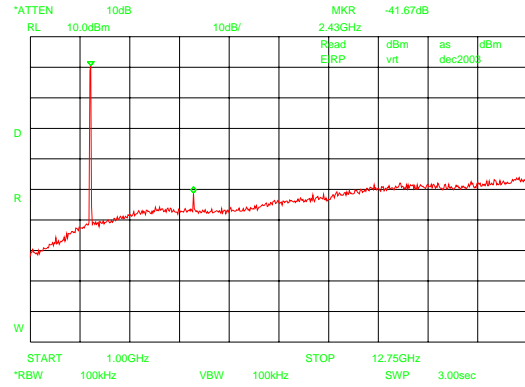
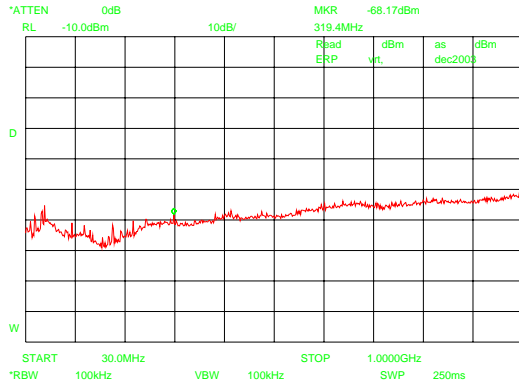
CH 6: horizontal polarization





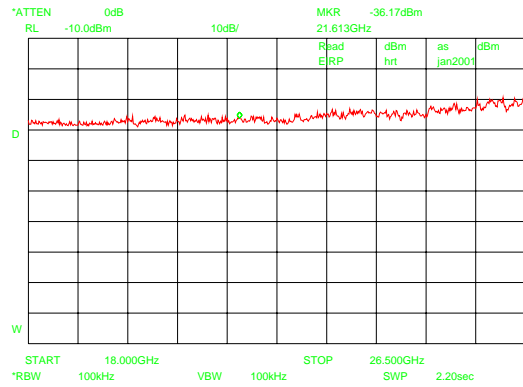
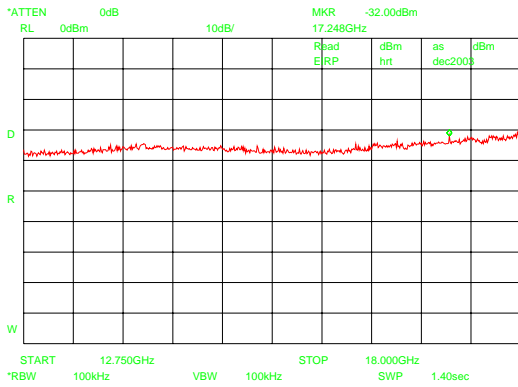
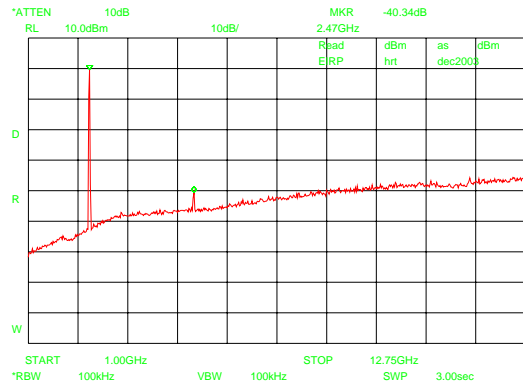
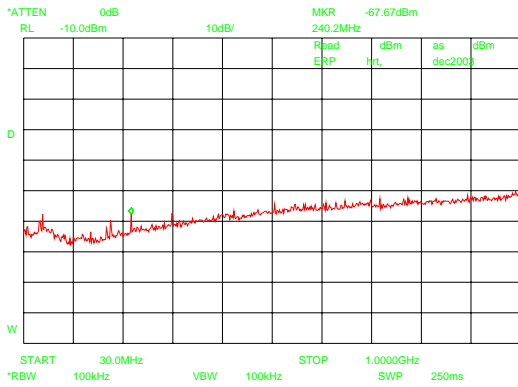
EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver  
 FCC ID: E2XSWL-2610U

CH 6: vertical polarization



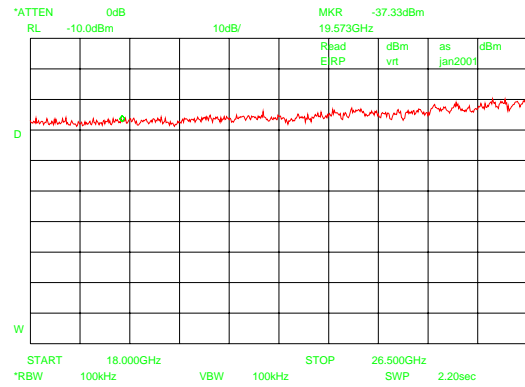
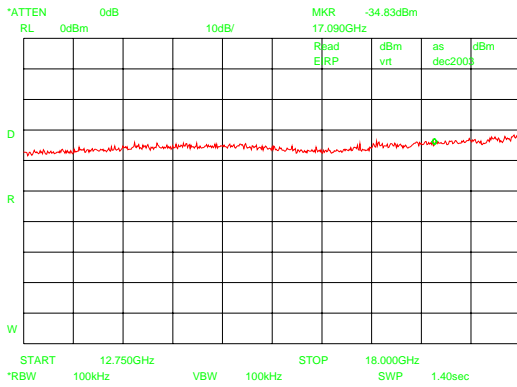
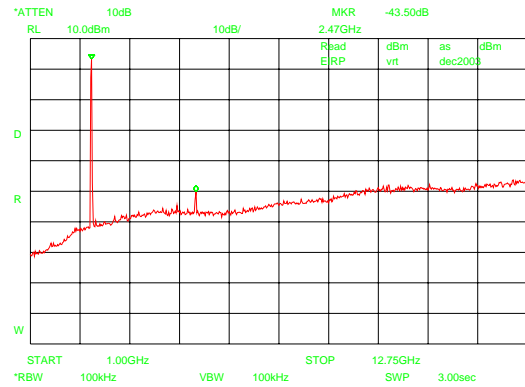
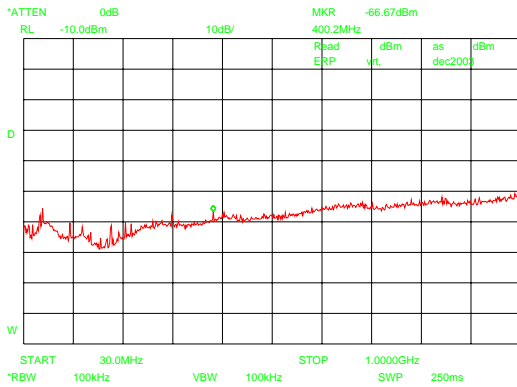
EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver  
 FCC ID: E2XSWL-2610U

CH 11: horizontal polarization



EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver  
 FCC ID: E2XSWL-2610U

CH 11: vertical polarization



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

## Section 8 Spurious Emissions (restricted bands, radiated)

|   |                      |
|---|----------------------|
| NAME OF TEST: Spurious Emissions (Radiated) | PARA. NO.: 15.247(c) |
|---|----------------------|

**Test Results:** Complies.

**Measurement Data:** See attached graphs.

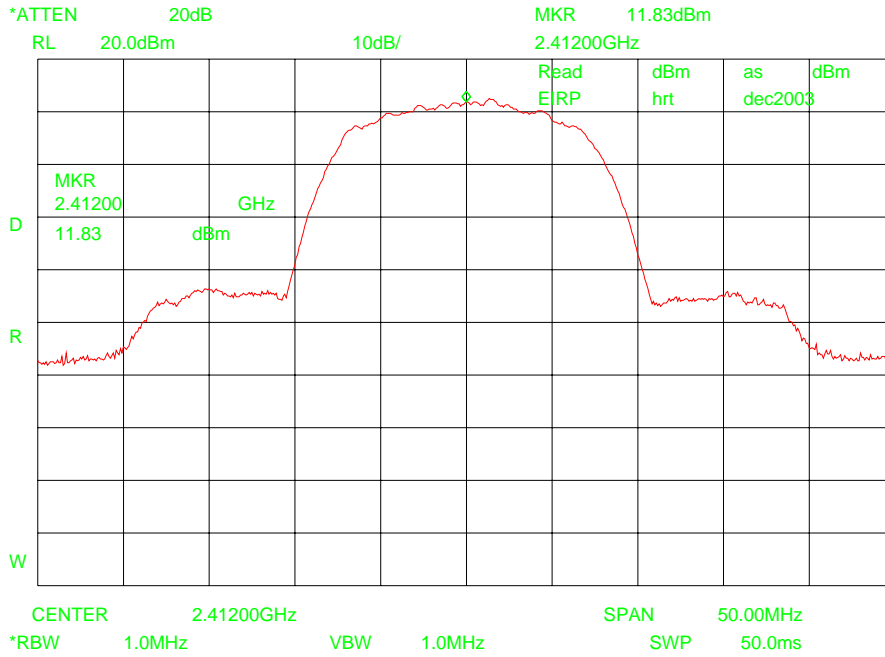
**Note:** **The graphs represent values calibrated in equivalent isotropic radiated power (eirp).**  
**The relationship:  $EIRP_{dBm} = E_{dB\mu V/m} - 95.4_{dB}$  applies.**

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

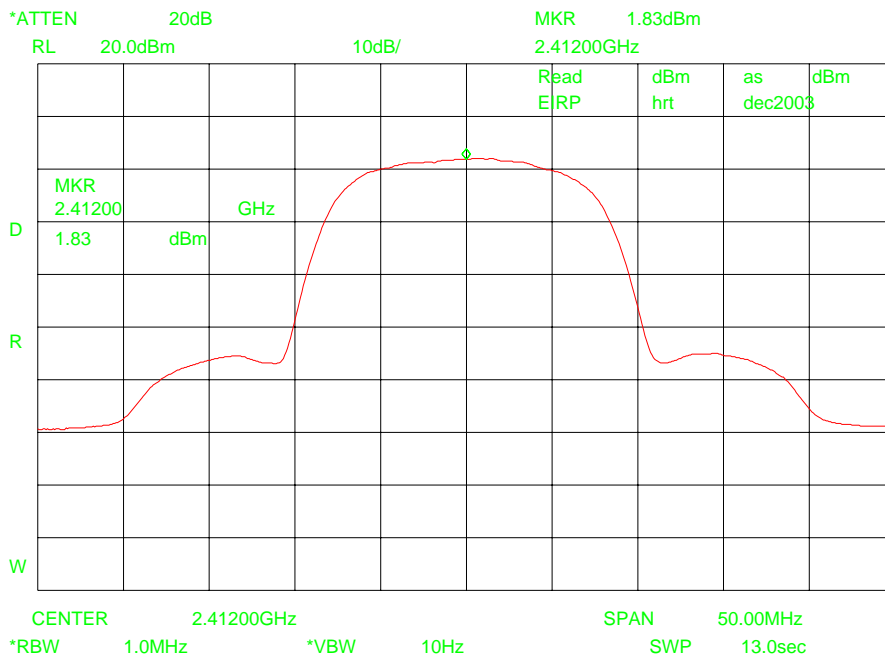
---

*Channel 1; horizontal polarization*

Peak detector measurement



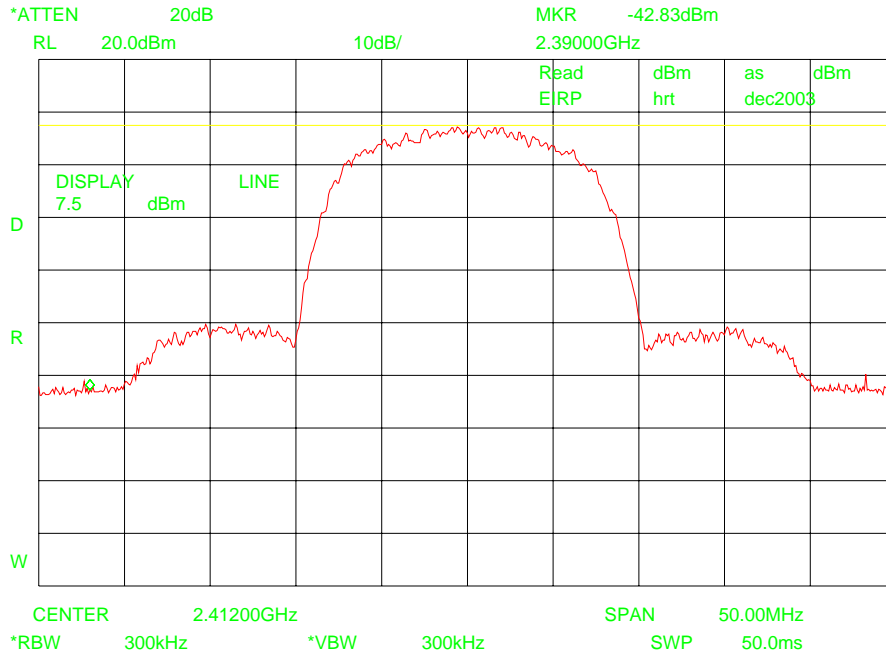
Average detector measurement



EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver  
 FCC ID: E2XSWL-2610U

---

Delta-marker measurement



Restricted band edge level (peak):  $11.83 + 95.4 - 50.33 = 56.9 \text{ dB}\mu\text{V/m}$

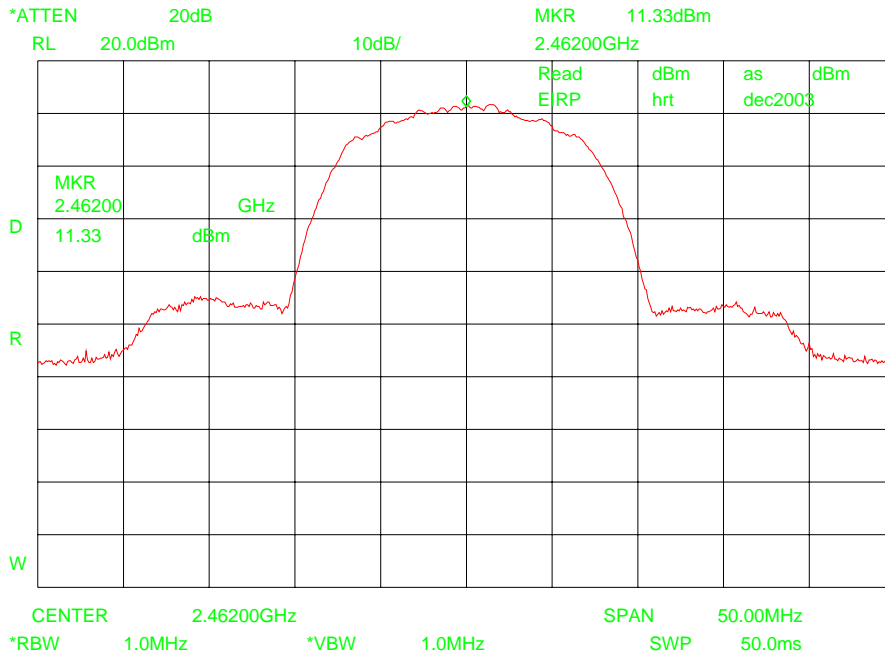
Restricted band edge level (average):  $1.83 + 95.4 - 50.33 = 46.9 \text{ dB}\mu\text{V/m}$

*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

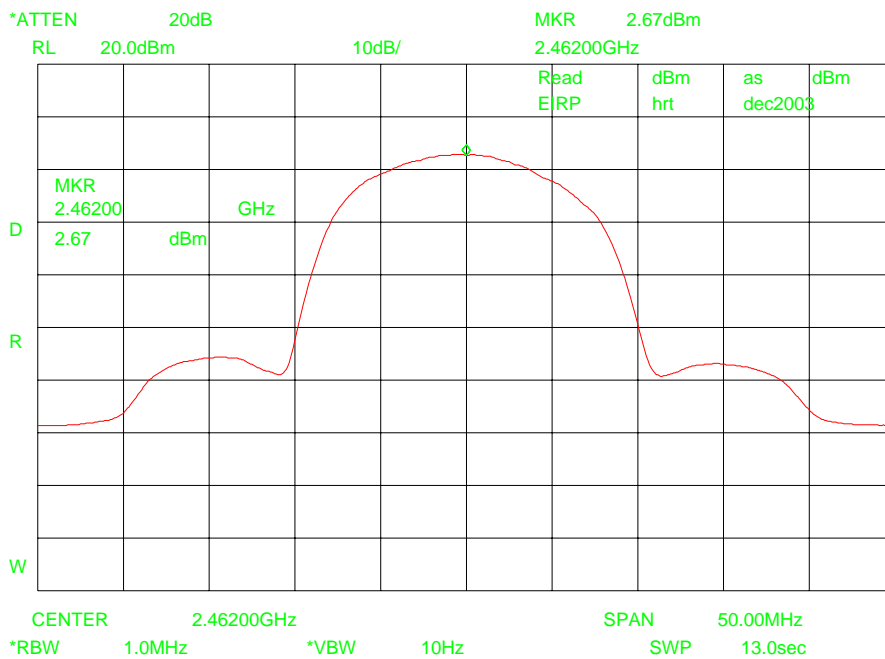
---

*Channel 11; horizontal polarization*

**Peak detector measurement**



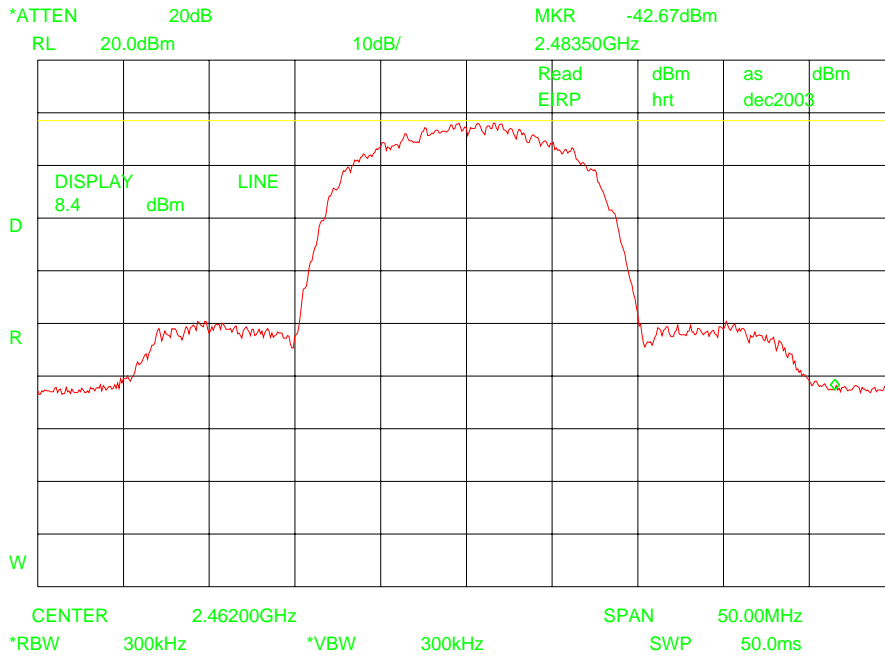
**Average detector measurement**



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

Delta-marker measurement



Restricted band edge level (peak):  $11.33 + 95.4 - 51.07 = 55.66 \text{ dB}\mu\text{V/m}$

Restricted band edge level (average):  $2.67 + 95.4 - 51.07 = 47.0 \text{ dB}\mu\text{V/m}$



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

## Section 9 Photographs

### Conducted photograph



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

## **Radiated Photographs**

**Sample on the test table in anechoic room**



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

**Set up 0.03 –1 GHz**



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

**Set up 1 – 18 GHz**



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

**Set up 18 – 26 GHz**



*EQUIPMENT: SWL-2610U Spread Spectrum Direct Sequence Transceiver*  
*FCC ID: E2XSWL-2610U*

---

**Section 10 Test equipment List**

| <b>Description</b>               | <b>Manufacturer</b> | <b>Model</b> | <b>Identification</b> | <b>Used at</b>                   |
|----------------------------------|---------------------|--------------|-----------------------|----------------------------------|
| Spectrum analyzer                | Hewlett Packard     | 8563E        | TE 00481              | 15.207(a);15.247(a)(2); (c); (d) |
| Standard gain horn               | Scientific Atlanta  | 12A-18       | TE 00608              | 15.247(c)                        |
| Double ridged guide horn antenna | EMCO                | 3115         | TE 00531              | 15.247(c)                        |
| Biconilog antenna                | EMCO                | 3143         | TE 00744              | 15.247(c)                        |
| Pre- amplifier                   | Hewlett Packard     | 8449B        | TE 00092              | 15.247(c)                        |
| Pre-amplifier                    | Rohde & Schwarz     | ESV-Z3       | TE 00098              | 15.247(c)                        |
| Power meter                      | Hewlett Packard     | 435 B        | TE 00249              | 15.247(b)(3)                     |
| Power sensor                     | Hewlett Packard     | 8484 A       | TE 00245              | 15.247(b)(3)                     |
| 40 dB fixed attenuator           | Hewlett Packard     | 8491 B       | TE 00406              | 15.247(b)(3)                     |
| Artificial Mains Network         | Rohde & Schwarz     | ESH2-Z5      | TE 00208              | 15.207(a)                        |

# ANNEX A

## TEST METHODOLOGIES

**Minimum Standard:**

The maximum peak power output shall not exceed 1 watt.

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.

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point to point operation may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceed 6 dBi.

**Direct Measurement Method For Detachable Antennas:**

If the antenna is detachable, a peak power meter is used to measure the power output with the transmitter operating into a 50 ohm load.

**Calculation Of EIRP For Integral Antenna:**

If the antenna is not detachable from the circuit then the Peak Power Output is derived from the peak radiated field strength of the fundamental emission by using the plane wave relation  $GP/4\pi R^2 = E^2/120\pi$  and proceeding as follows:

$$P = \frac{E^2 R^2}{30G} = \frac{E^2 3^2}{30G}$$

where,

P = the equivalent isotropic radiated power in watts

E = the maximum measured field strength in V/m

R = the measurement range (3 meters)

G = the numeric gain of the transmit antenna in relation to an isotropic radiator

The RBW of the spectrum analyzer shall be set to a value greater than the measured 20 dB occupied bandwidth of the E.U.T.

Number of channels tested:

| Tuning range     | Number of channels tested | Channel location in band |
|------------------|---------------------------|--------------------------|
| 1 MHz or less    | 1                         | middle                   |
| 1 to 10 MHz      | 2                         | top and bottom           |
| more than 10 MHz | 3                         | top, middle, bottom      |



NAME OF TEST: Radiated Spurious Emissions

PARA. NO.: 15.247(c)

**Minimum Standard:** In any 100kHz bandwidth outside the 902 - 928 MHz bands emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits. **Emissions falling in the restricted bands of 15.205 shall not exceed the following field strength limits:**

| Frequency (MHz) | Field Strength ( $\mu\text{V/m}$ @ 3m) | Field Strength (dB @ 3m) |
|-----------------|--|--------------------------|
| 30 - 88         | 100                                    | 40.0                     |
| 88 - 216        | 150                                    | 43.5                     |
| 216 - 960       | 200                                    | 46.0                     |
| Above 960       | 500                                    | 54.0                     |

*THE SPECTRUM WAS SEARCHED TO THE 10th HARMONIC*

**15.205 Restricted Bands**

| MHz               | MHz                 | MHz           | GHz         |
|-------------------|---------------------|---------------|-------------|
| 0.09-0.11         | 16.42-16.423        | 399.9-410     | 4.5-5.25    |
| 0.495-0.505       | 16.69475-16.69525   | 608-614       | 5.35-5.46   |
| 2.1735-2.1905     | 16.80425-16.80475   | 960-1240      | 7.25-7.75   |
| 4.125-4.128       | 25.5-25.67          | 1300-1427     | 8.025-8.5   |
| 4.17725-4.17775   | 37.5-38.25          | 1435-1626.5   | 9.0-9.2     |
| 4.20725-4.20775   | 73-74.6             | 1645.5-1646.5 | 9.3-9.5     |
| 6.125-6.218       | 74.8-75.2           | 1660-1710     | 10.6-12.7   |
| 6.26775-6.26825   | 108-121.94          | 1718.8-1722.2 | 13.25-13.4  |
| 6.31175-6.31225   | 123-138             | 2200-2300     | 14.47-14.5  |
| 8.291-8.294       | 149.9-150.05        | 2310-2390     | 15.35-16.2  |
| 8.362-8.366       | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4   |
| 8.37625-8.38675   | 156.7-156.9         | 2655-2900     | 22.01-23.12 |
| 8.41425-8.41475   | 162.0125-167.17     | 3260-3267     | 23.6-24.0   |
| 12.29-12.293      | 167.72-173.2        | 3332-3339     | 31.2-31.8   |
| 12.51975-12.52025 | 240-285             | 3345.8-3358   | 36.43-36.5  |
| 12.57675-12.57725 | 322-335.4           | 3600-4400     | Above 38.6  |
| 13.36-13.41       |                     |               |             |

Number of channels tested:

| Tuning range     | Number of channels tested | Channel location in band |
|------------------|---------------------------|--------------------------|
| 1 MHz or less    | 1                         | middle                   |
| 1 to 10 MHz      | 2                         | top and bottom           |
| more than 10 MHz | 3                         | top, middle, bottom      |

**ANNEX B**

**CROSS REFERENCE TABLE RSS-FCC**

|                              |
|------------------------------|
| <b>Cross reference table</b> |
|------------------------------|

| <b>Frequency hopping 2,4 GHz</b> |   |
|----------------------------------|---|
| <b>CNR RSS-210 Issue 5</b>       | <b>FCC 47 CFR Ch. 1 (10-1-02 Edition)</b> |
| par. 6.2.2 (o)(a)                | § 15.247                                  |
| Amendment 1(I)                   | § 15.247                                  |
| par. 6.2.1                       | § 15.209                                  |
| par. 6.3                         | § 15.205                                  |
|                                  |   |

| <b>Direct Sequence 2,4 GHz</b> |   |
|--------------------------------|---|
| <b>CNR RSS-210 Issue 5</b>     | <b>FCC 47 CFR Ch. 1 part 15 subpart C</b> |
| -                              | 15.207(a) conducted emissions             |
| Amendment 1 I (iv)             | 15.247(a)(2) minimum 6 dB bandwidth       |
| par. 6.2.2(o)(b)               | 15.247(b)(3) max. peak power output       |
| par. 6.2.2(o)(b)               | 15.247(d) peak power spectral density     |
| Par. 6.2.2(o)(e1)              | 15.247(c) spurious emissions              |
|                                |   |