

## Appendix B

Peak Output Power

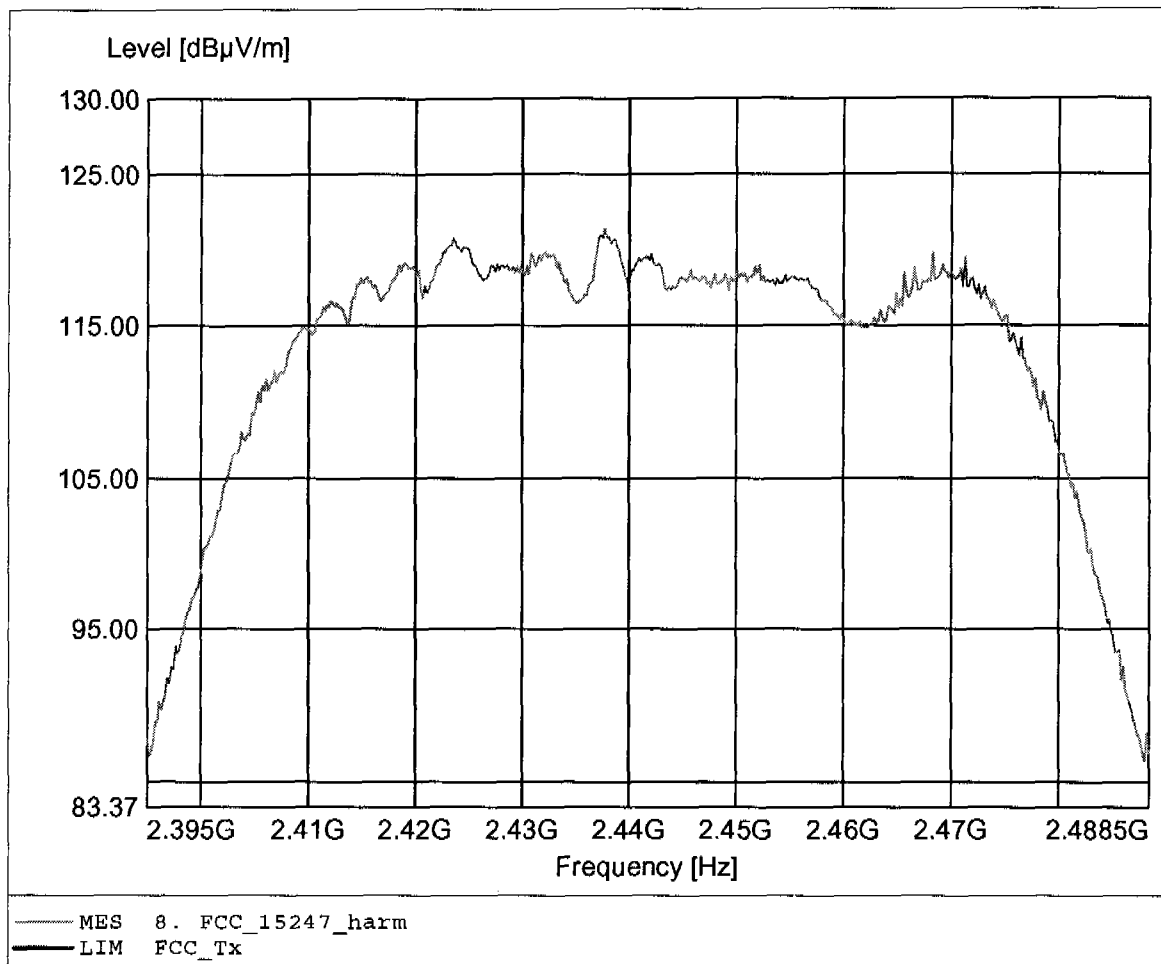
## Appendix C

Spurious Emissions radiated - Transmitter operating

## Carrier power (Field Strength)

### FCC RULES PART 15, SUBPART C

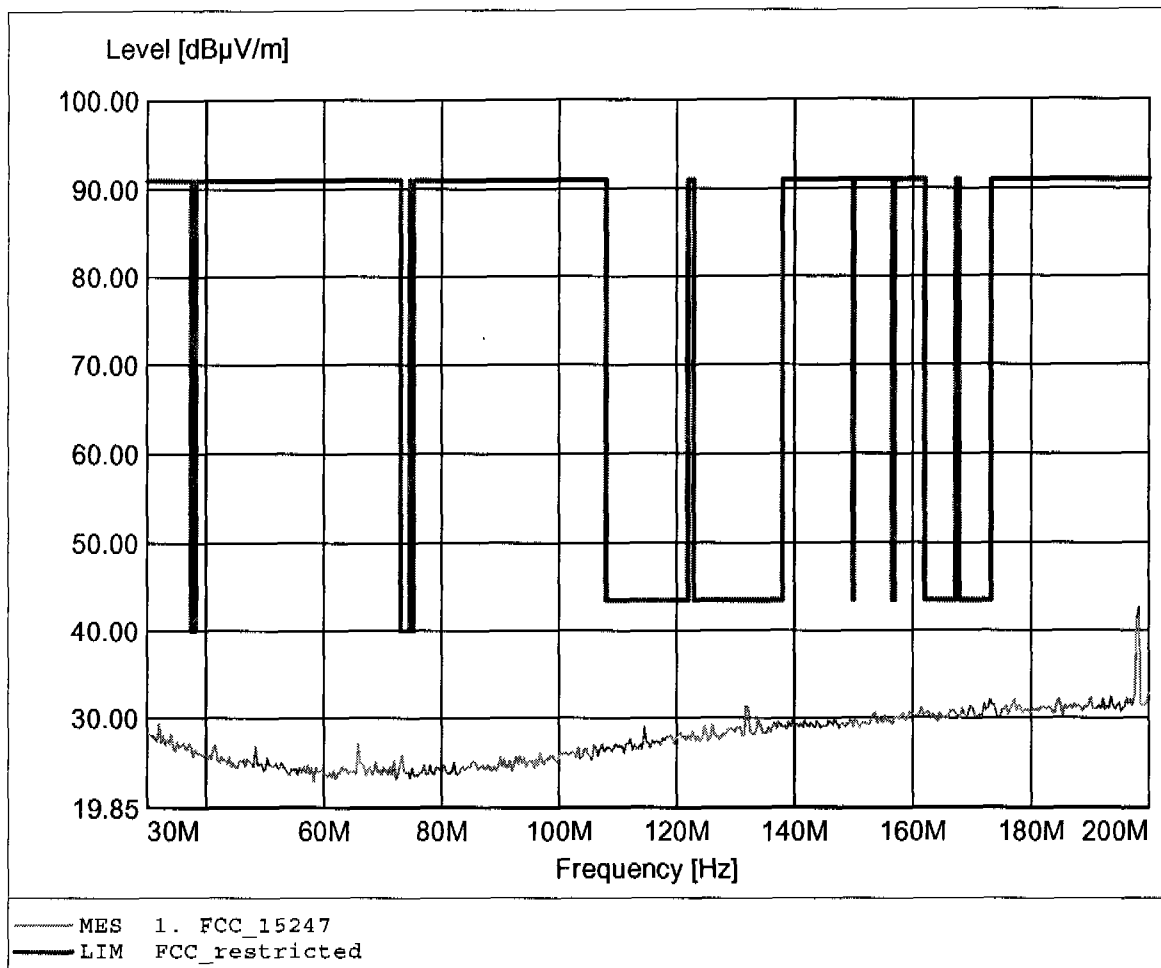
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom: 3,3 V DC  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: BBHA9120D  
Comment 2: Freq: 2.438GHz, Emax: 111.20dBµV/m, RBW: 100kHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

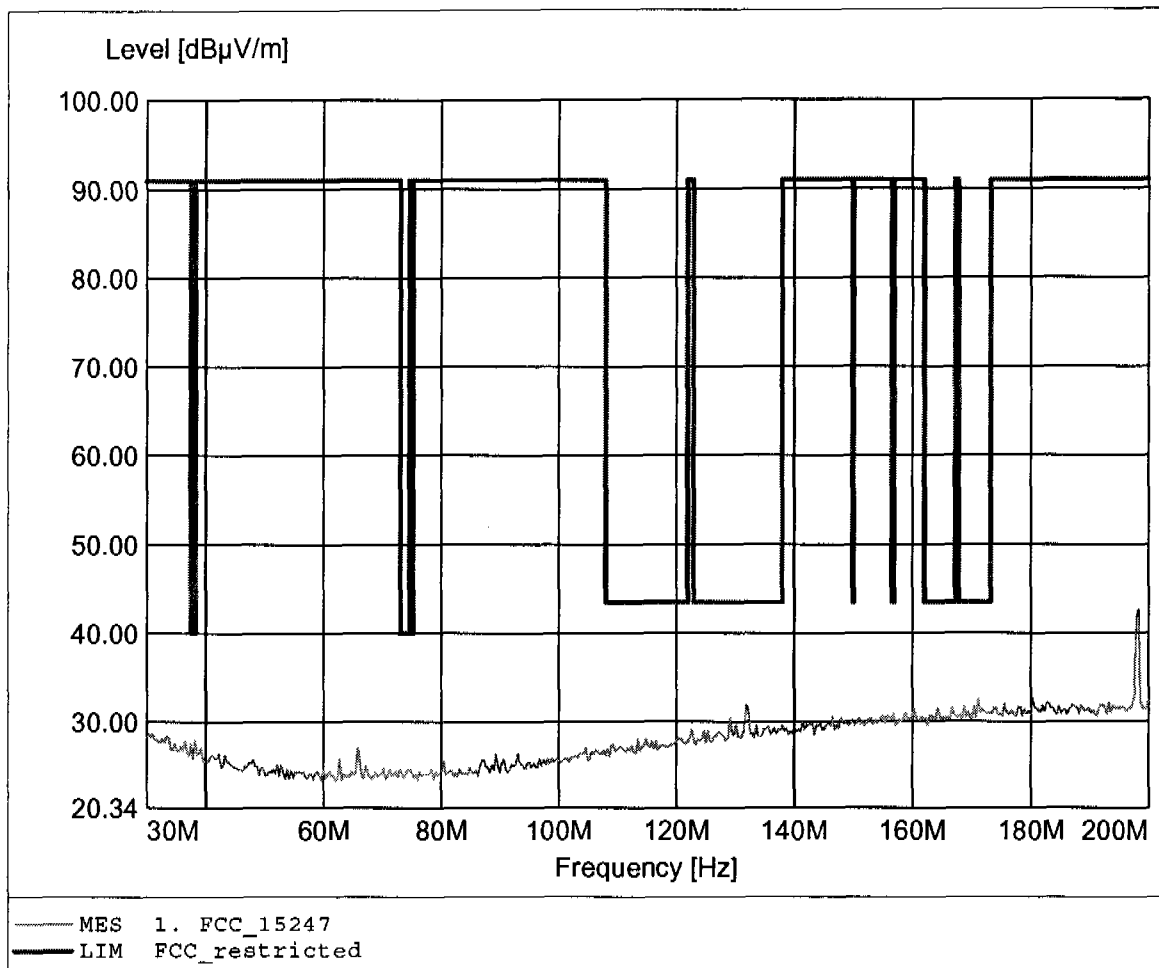
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Comment 2: Freq: 198.297MHz, Emax: 42.67dBµV/m, RBW: 100kHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

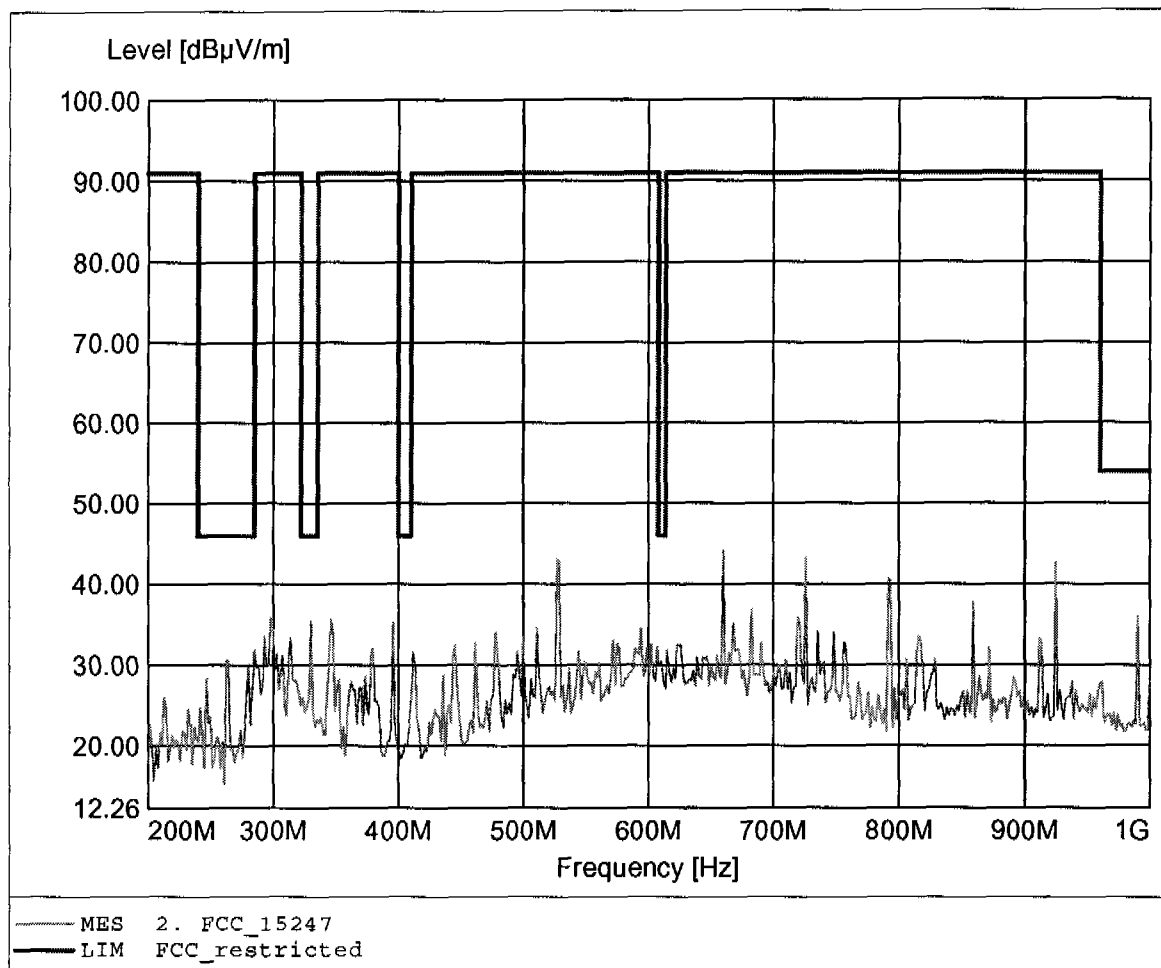
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom: 3,3 V DC  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Comment 2: Freq: 198.297MHz, Emax: 42.68dBµV/m, RBW: 100kHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

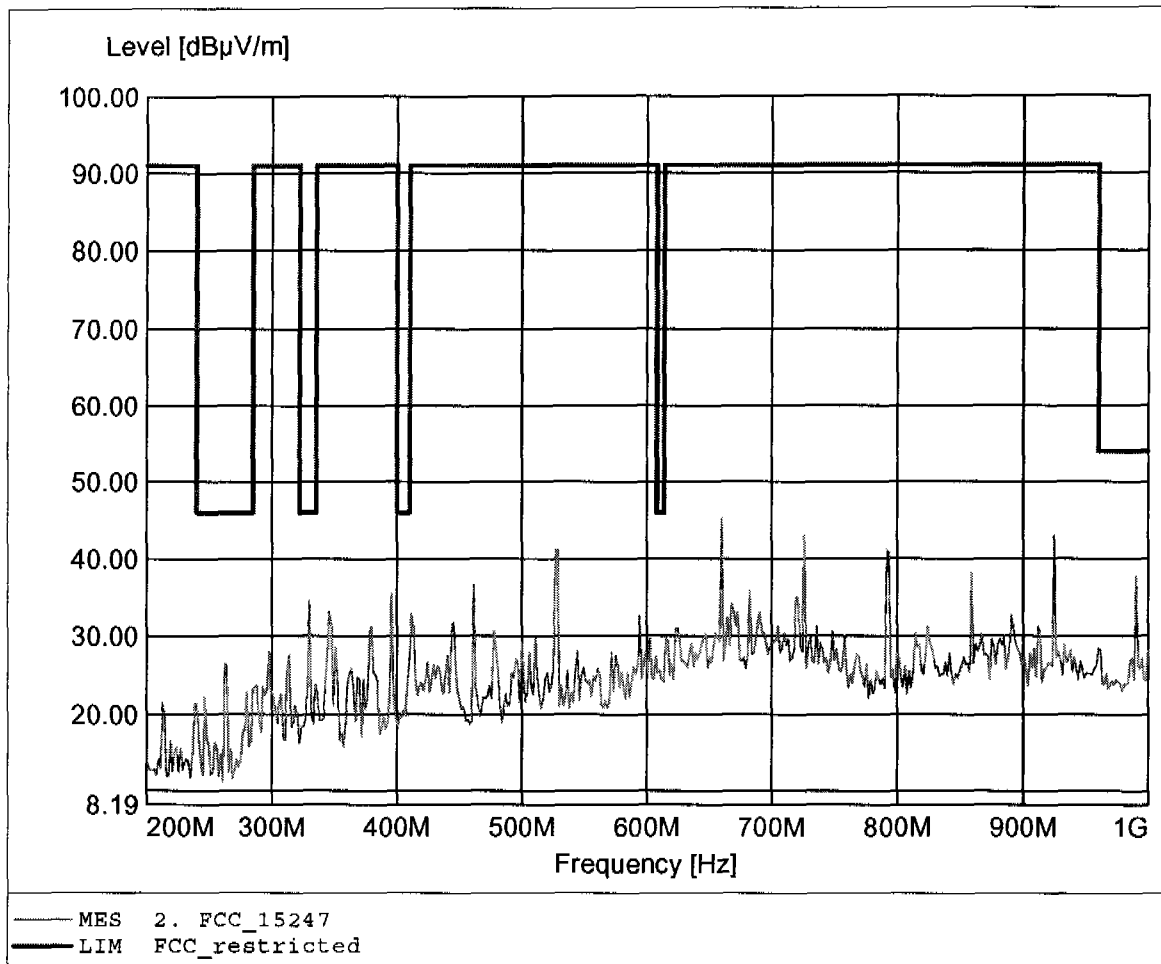
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.  
Comment 2: Freq: 660.120MHz, Emax: 44.11dBµV/m, RBW: 100kHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

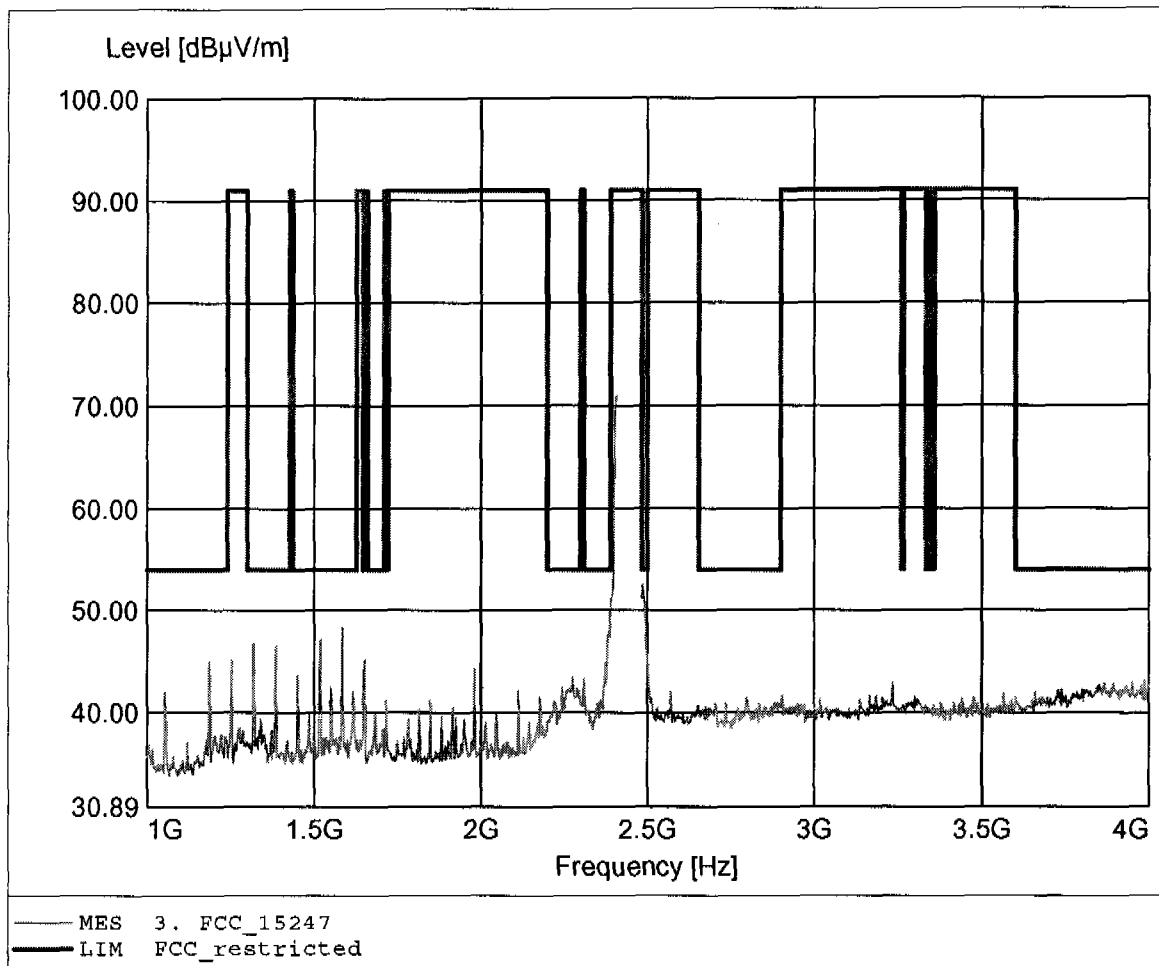
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom: 3,3 V DC  
Test Specification: according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.  
Comment 2: Freq: 660.120MHz, Emax: 45.26dBuV/m, RBW: 100kHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

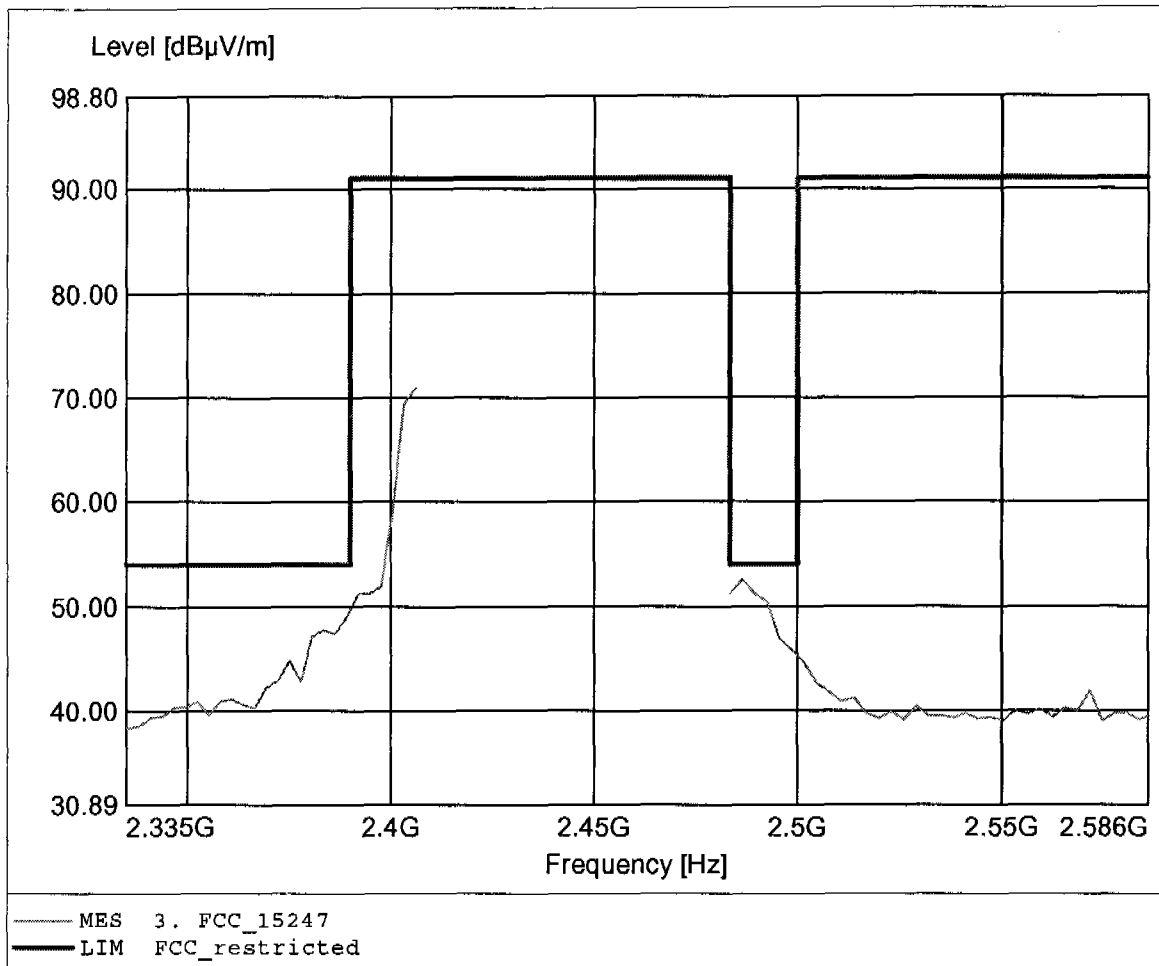
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.  
Comment 2: Freq: 2.406GHz, Emax: 71.00dBuV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

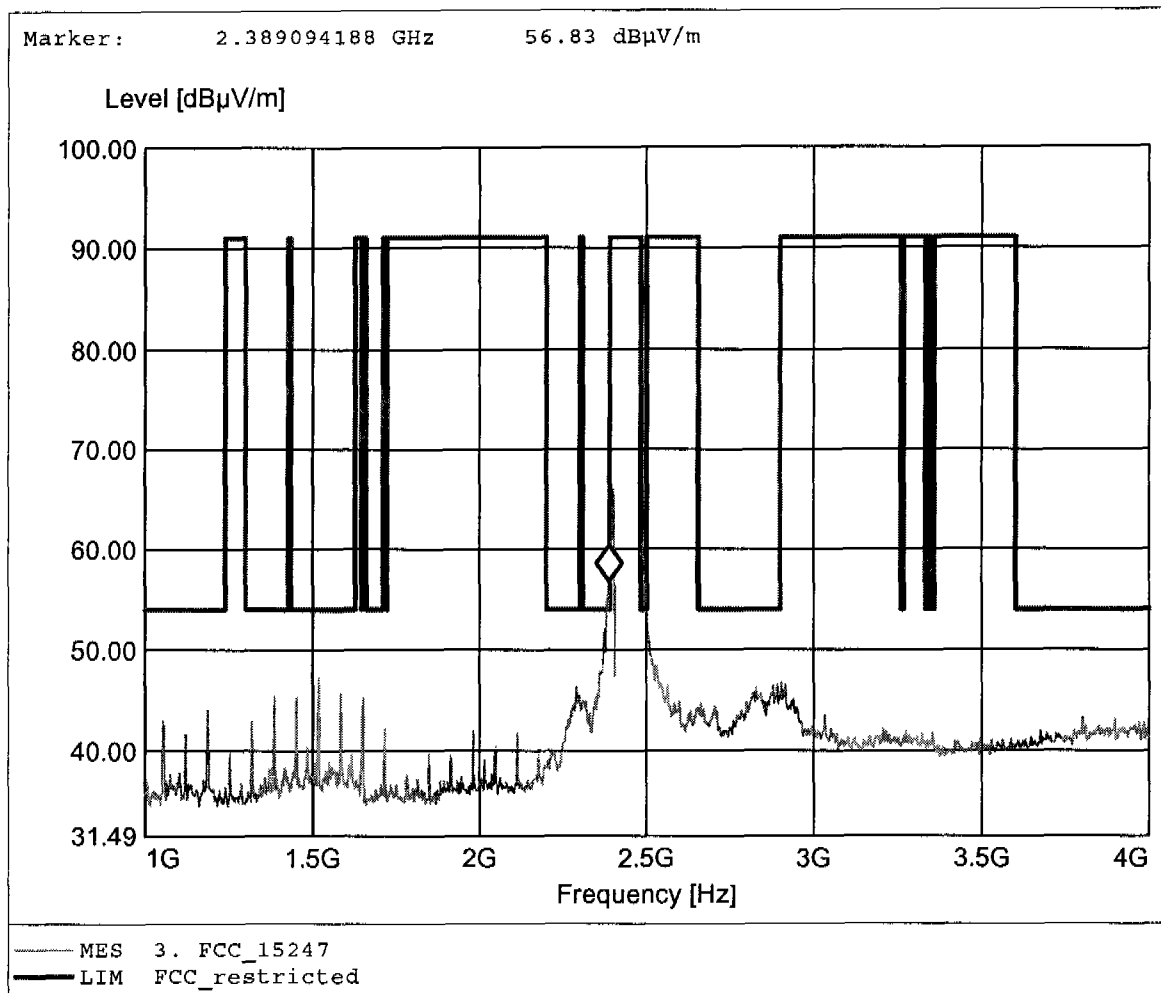
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.  
Comment 2: Freq: 2.406GHz, Emax: 71.00dBμV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

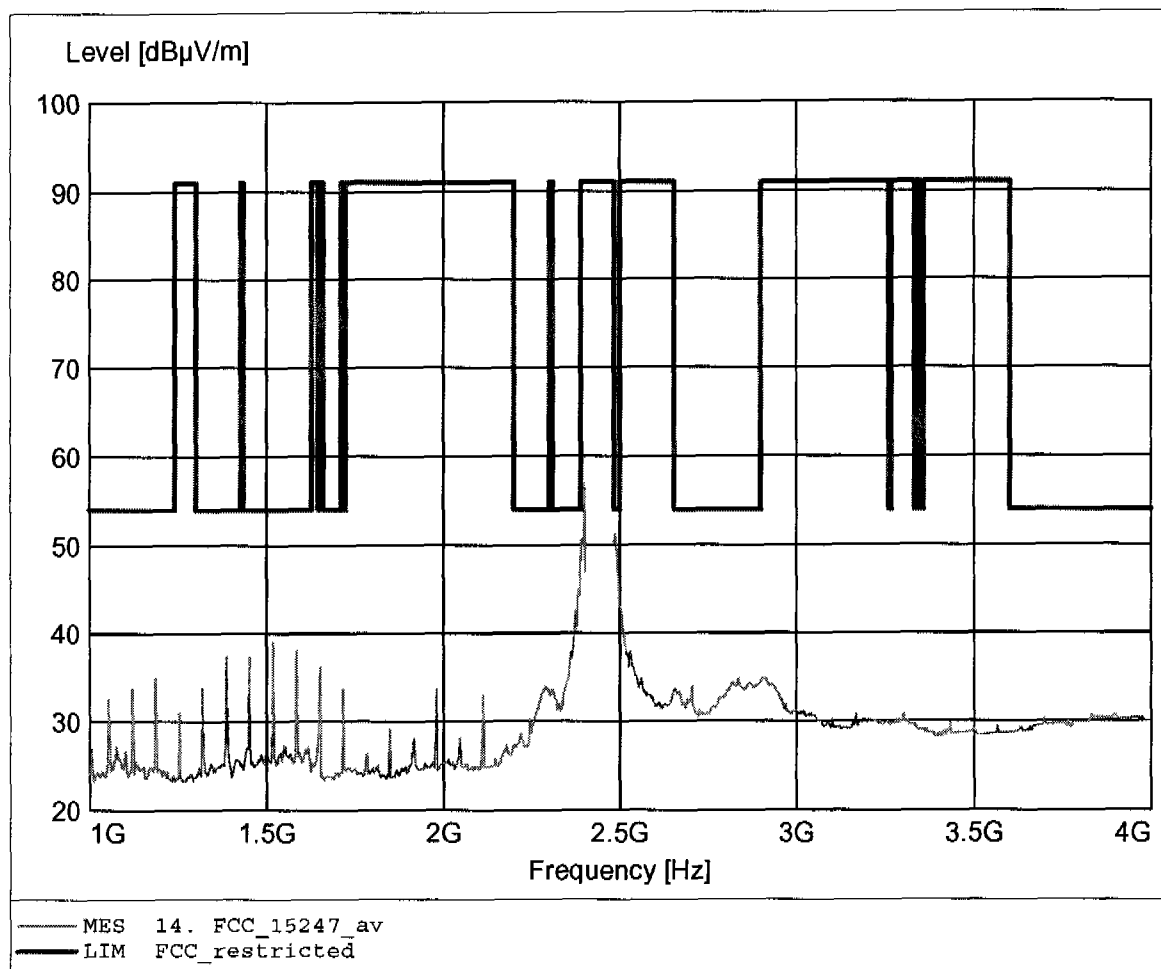
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.  
Comment 2: Freq: 2.400GHz, Emax: 65.97dBμV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

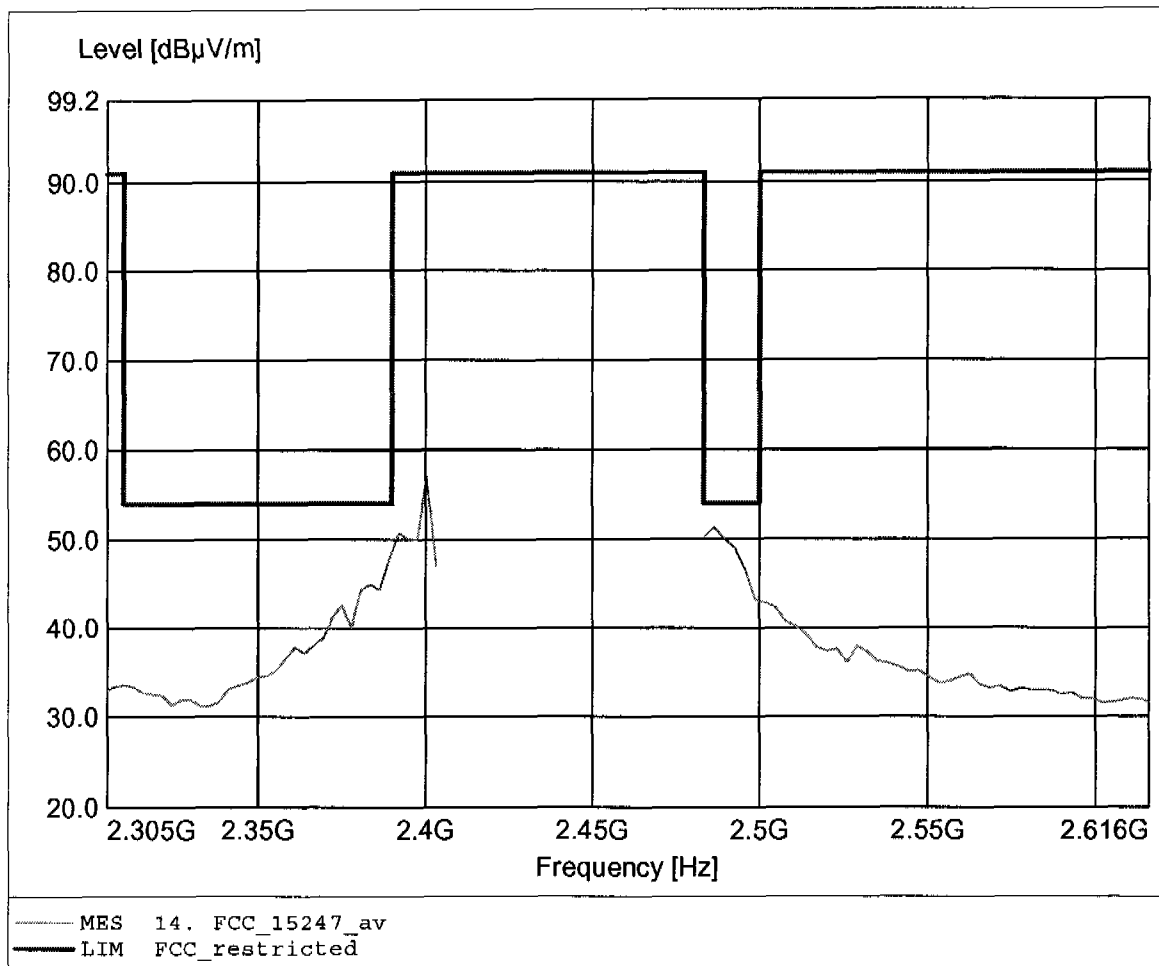
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, average detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.  
Comment 2: Freq: 2.400GHz, Emax: 57.03dBμV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

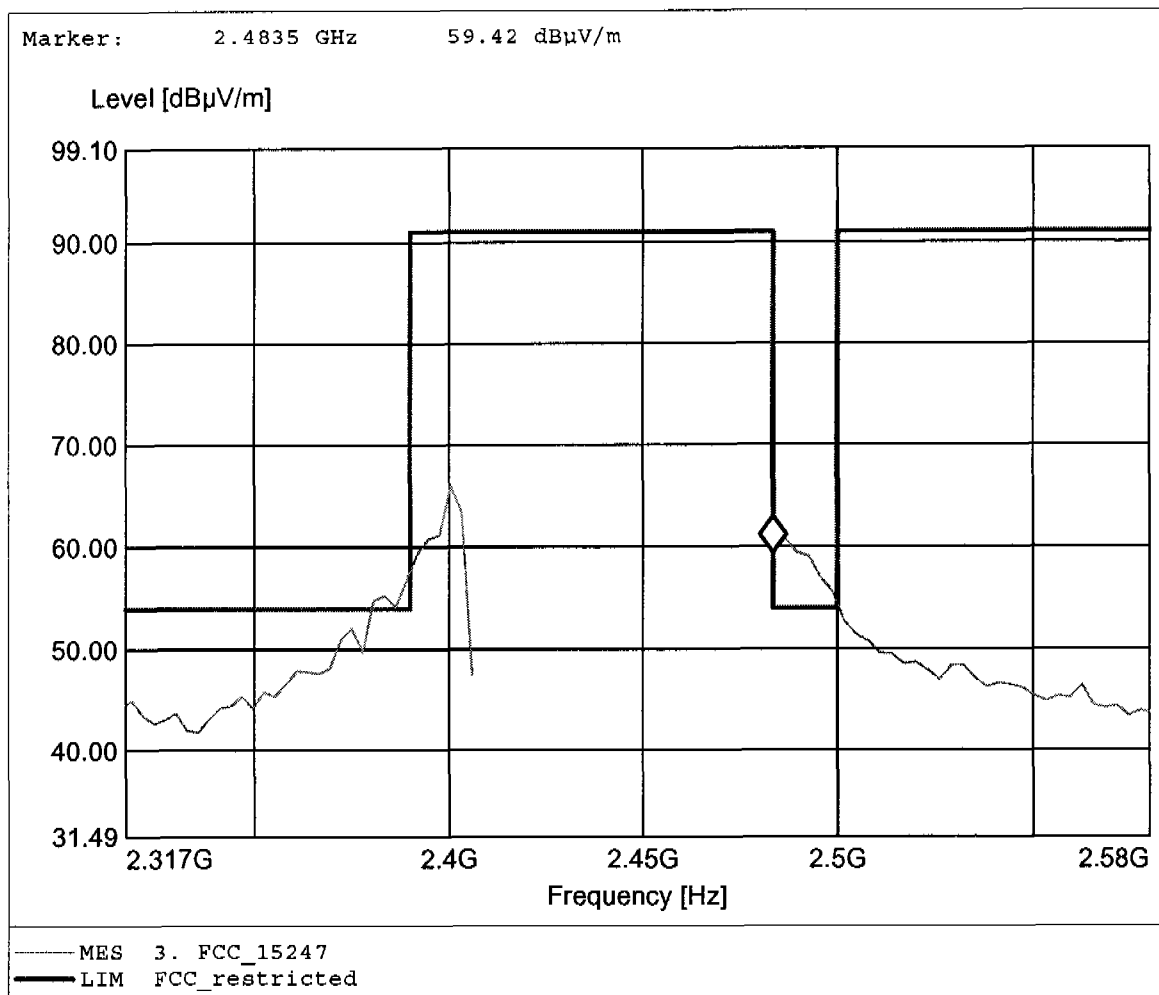
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, average detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.  
Comment 2: Freq: 2.400GHz, Emax: 57.03dBµV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

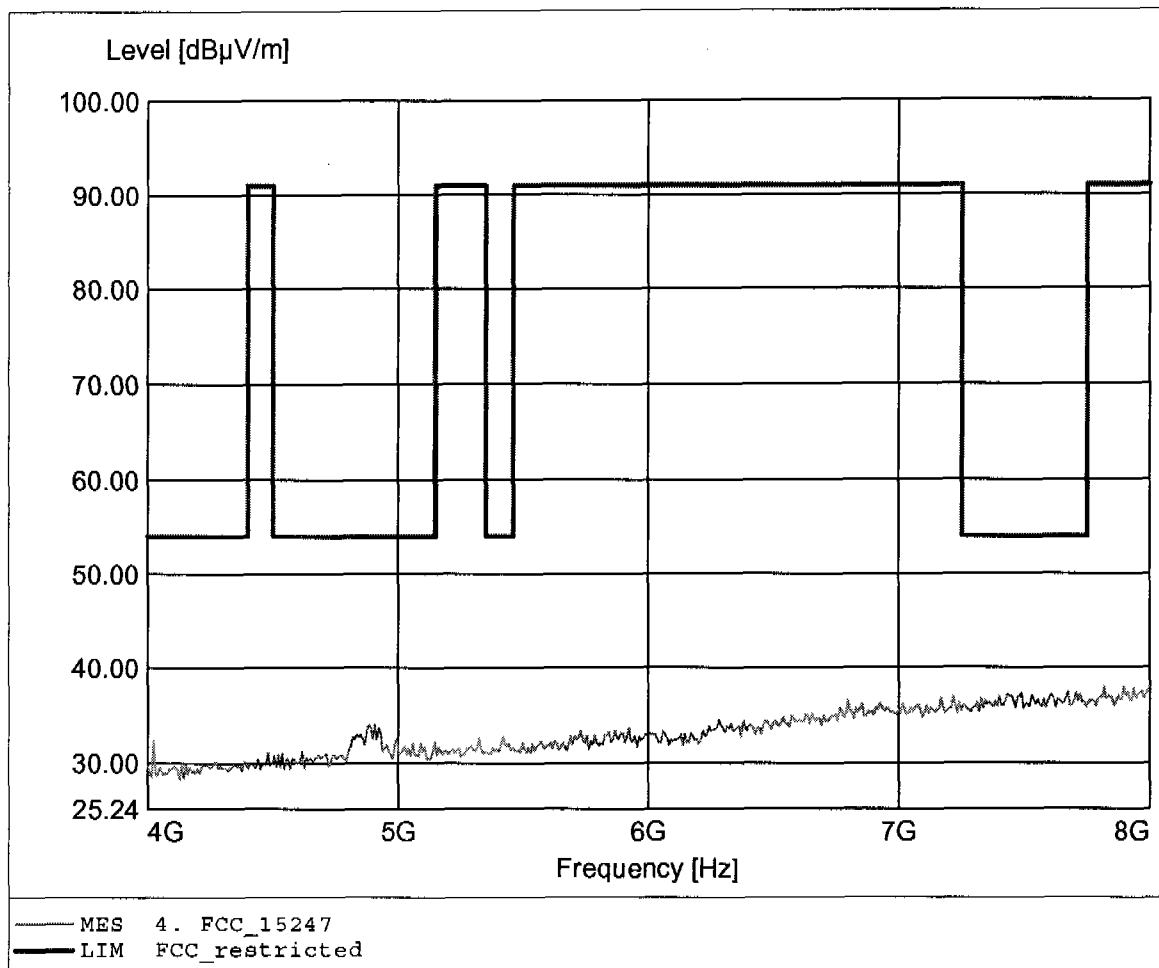
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.  
Comment 2: Freq: 2.400GHz, Emax: 65.97dBμV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

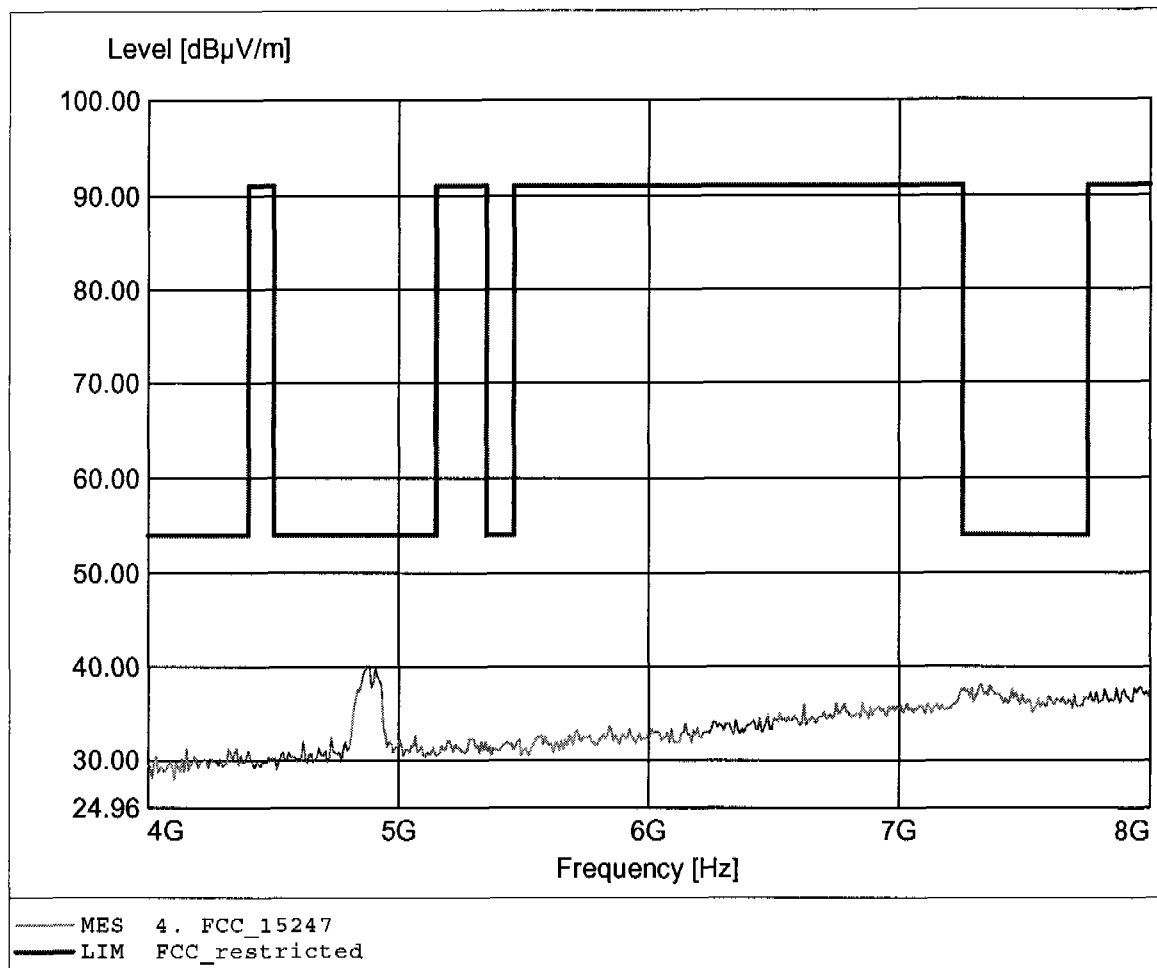
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.  
Comment 2: Freq: 7.816GHz, Emax: 37.96dBμV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

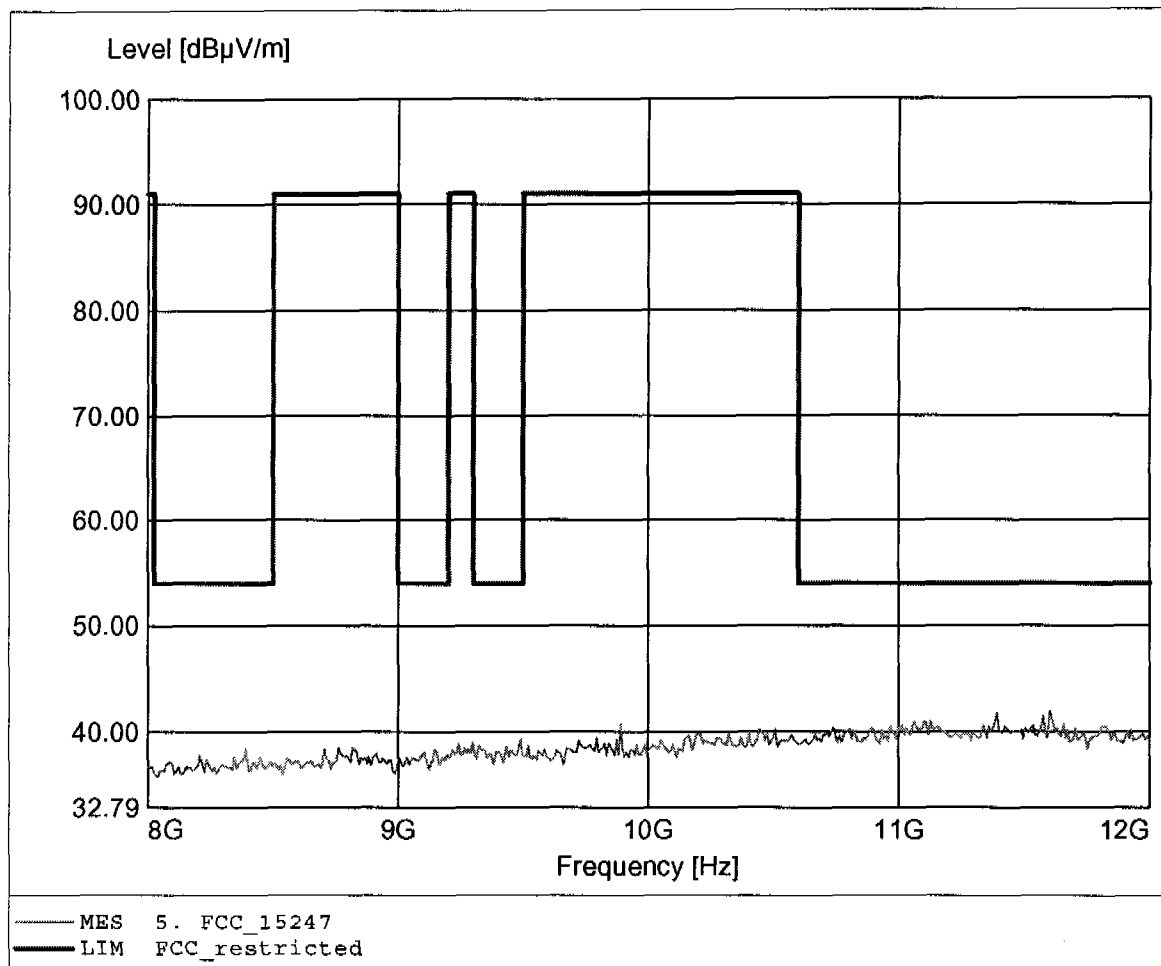
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.  
Comment 2: Freq: 4.882GHz, Emax: 40.14dBμV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

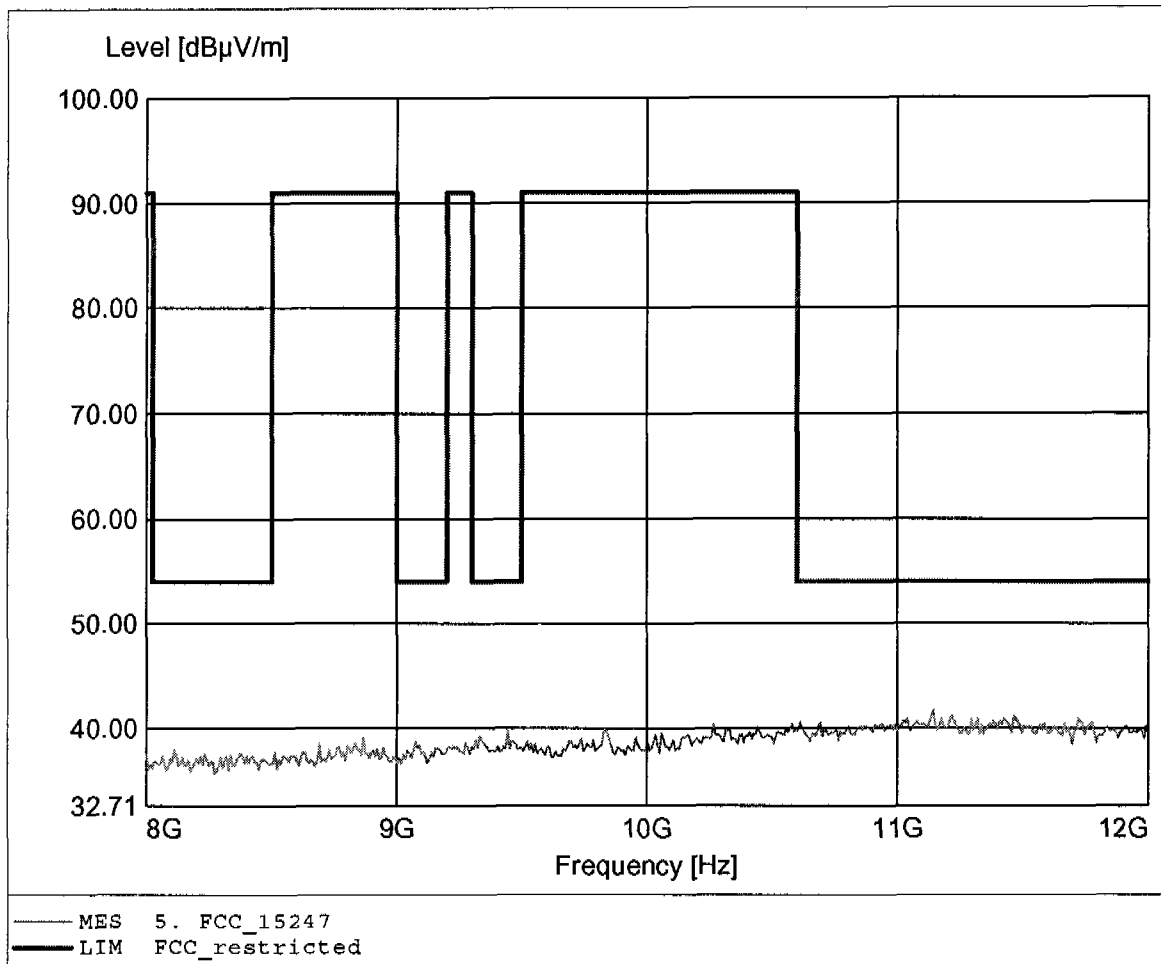
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.  
Comment 2: Freq: 11.599GHz, Emax: 41.96dBμV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

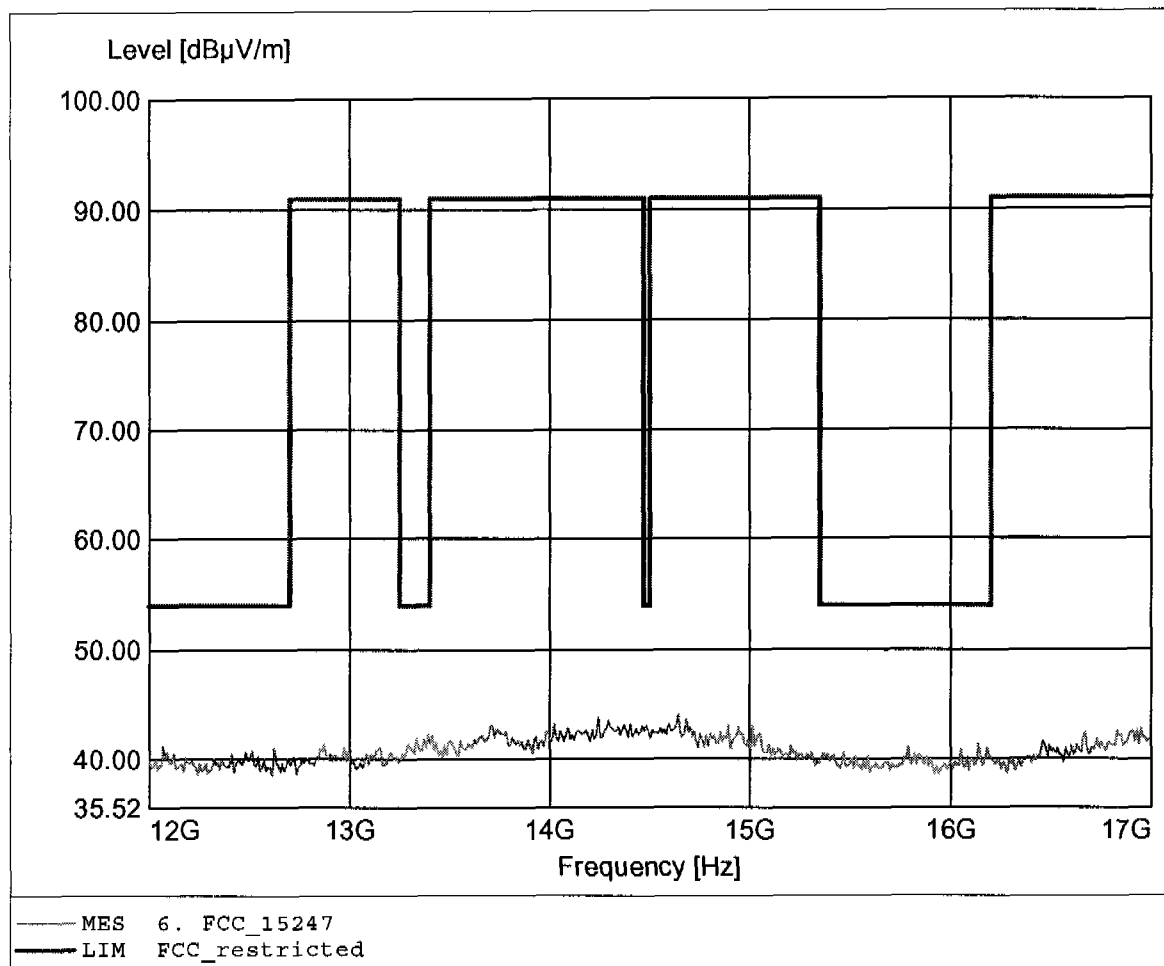
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.  
Comment 2: Freq: 11.142GHz, Emax: 41.73dBuV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

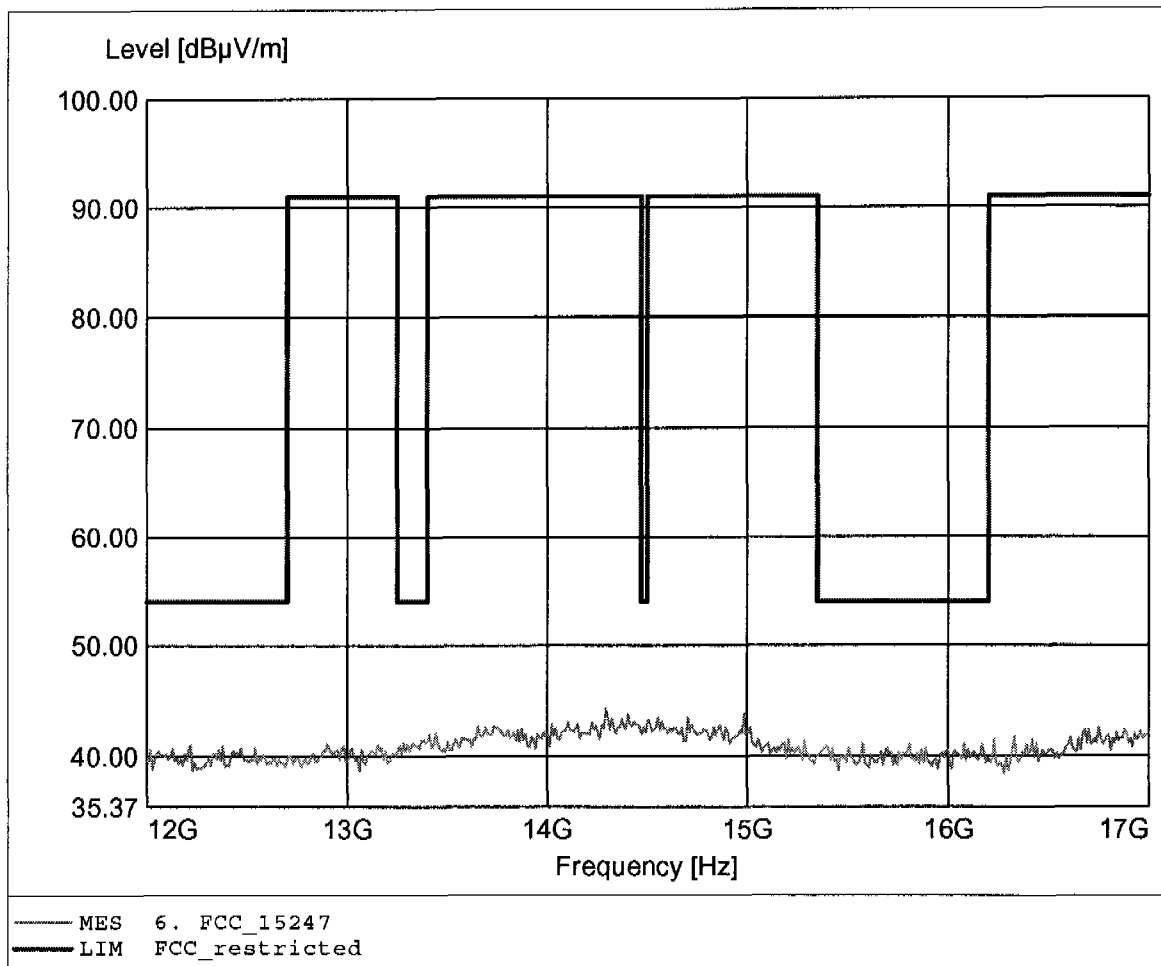
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.  
Comment 2: Freq: 14.645GHz, Emax: 44.06dBμV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

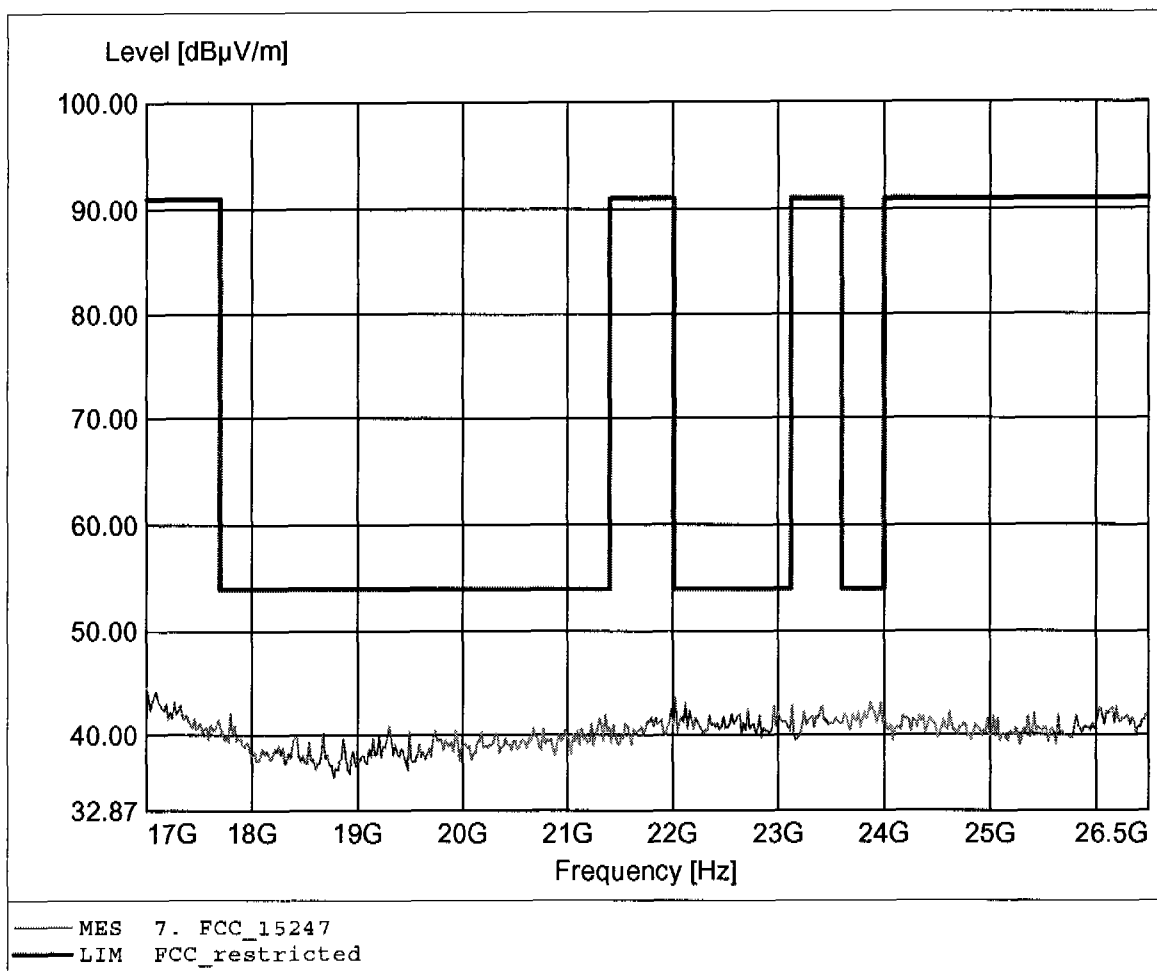
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.  
Comment 2: Freq: 14.295GHz, Emax: 44.33dBµV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

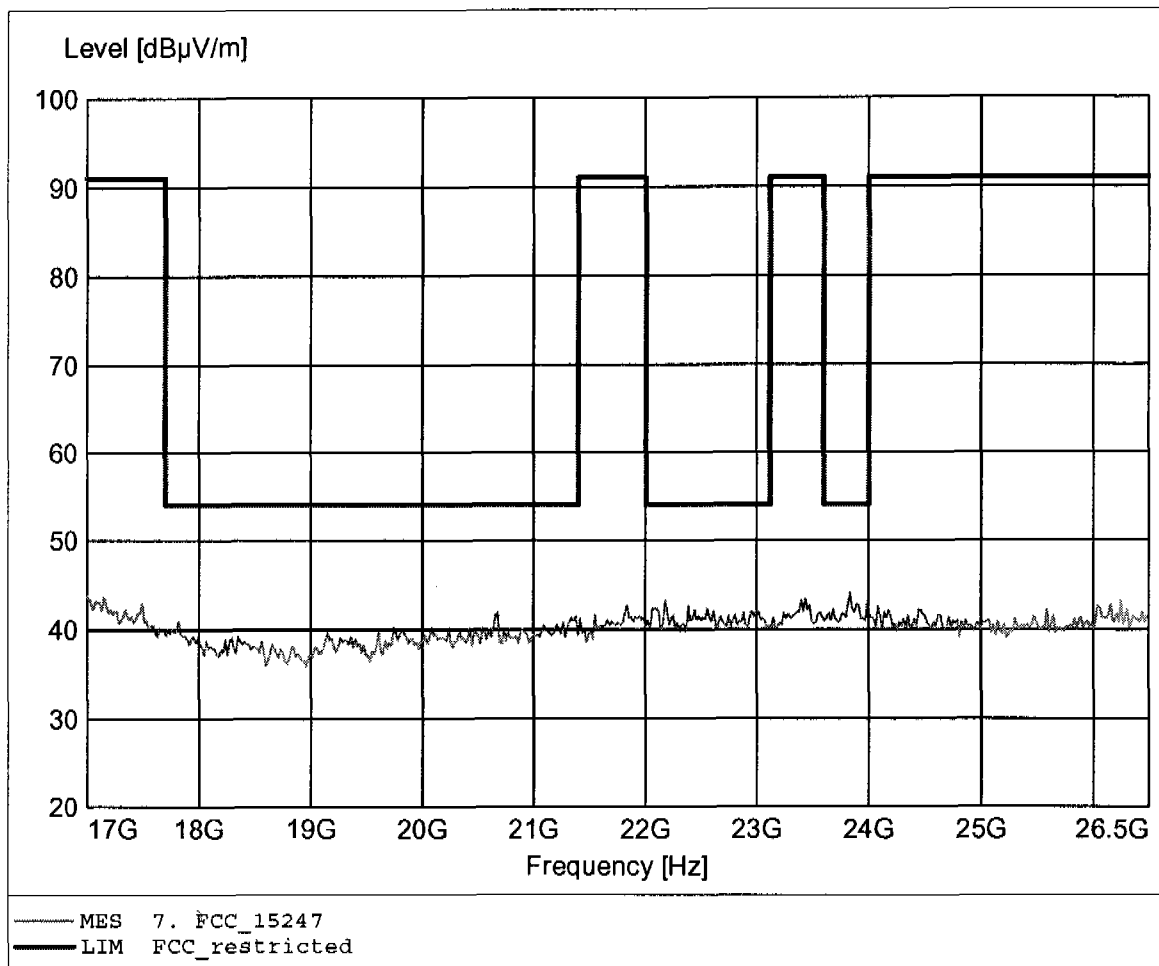
Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Comment 2: Freq: 17.000GHz, Emax: 44.69dBμV/m, RBW: 1MHz



## Spurious emissions Field Strength

### FCC RULES PART 15, SUBPART C

Approval Holder: Nanotron Technologies GmbH  
EUT : 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Model: nanoNET TRX (module#11)  
Test Site / Operator: ETS / Mr. Treffke  
Temperature/ Voltage: 25°C / Unom:3,3 V DC  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Comment 2: Freq: 23.835GHz, Emax: 44.11dBμV/m, RBW: 1MHz

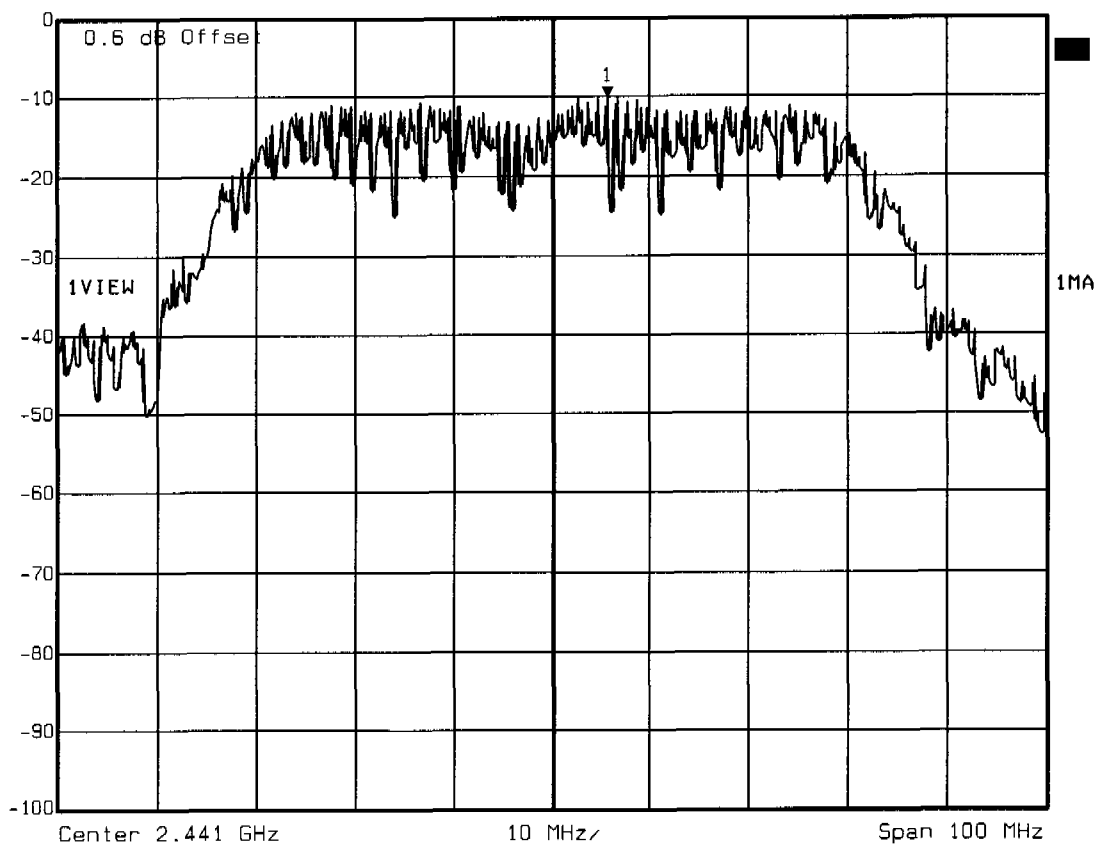


## Appendix D

Spurious Emissions conducted - Transmitter operating



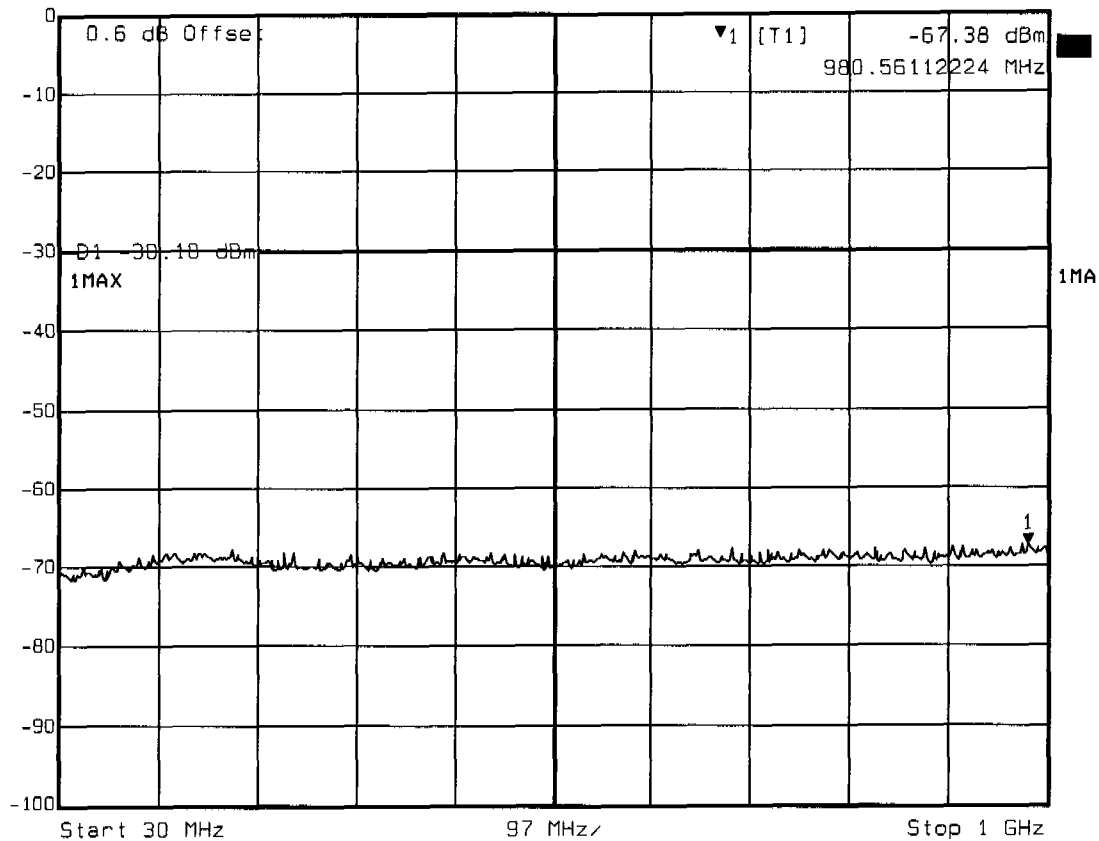
Marker 1 [T1] RBW 100 kHz RF Att 20 dB  
Ref Lvl -10.18 dBm VBW 100 kHz  
0 dBm 2.44671142 GHz SWT 25 ms Unit dBm



Title: FCC 15.247(c) Spurious emissions (conducted test)  
Comment A: Nanotron, nanoNET TRX (power for limit line)  
Date: 27.SEP.2004 13:44:20



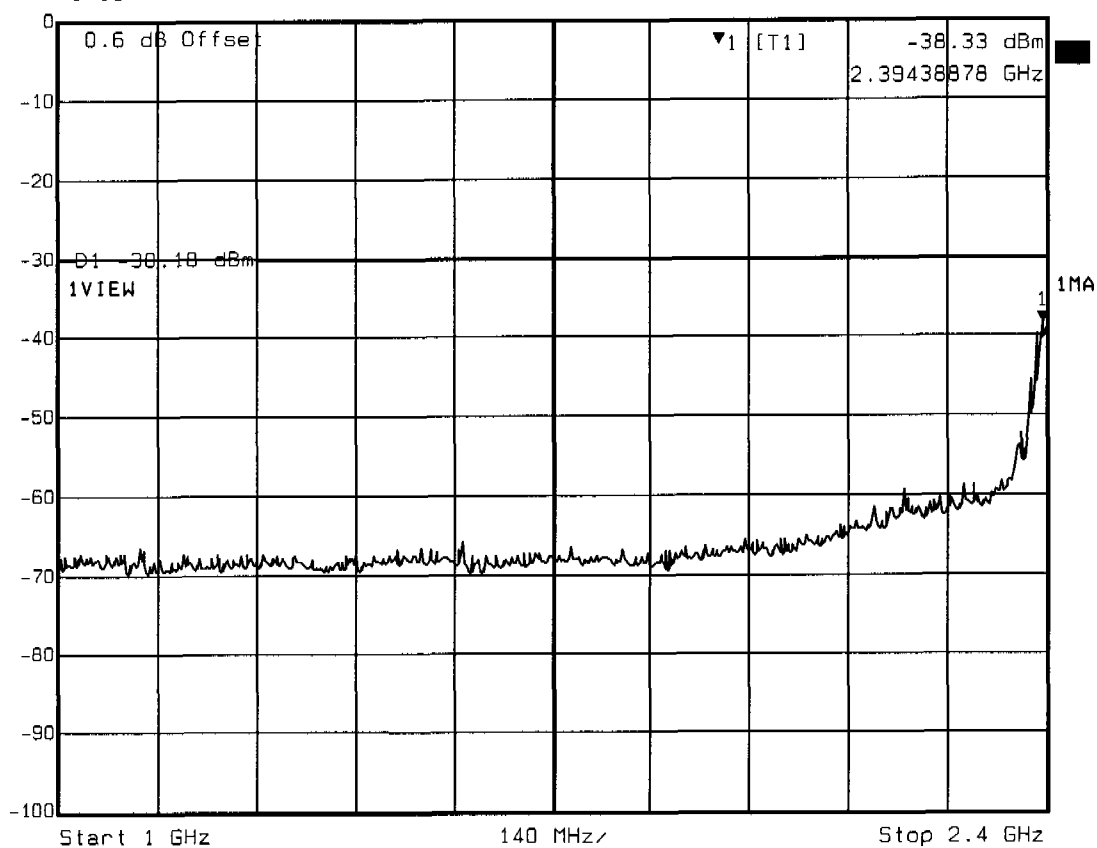
Marker 1 [T1] RBW 100 kHz RF Att 20 dB  
Ref Lvl -67.38 dBm VBW 100 kHz  
0 dBm 980.56112224 MHz SWT 245 ms Unit dBm



Title: FCC 15.247(c) Spurious emissions (conducted test)  
Comment A: Nanotron, nanoNET TRX  
Date: 27.SEP.2004 13:49:19



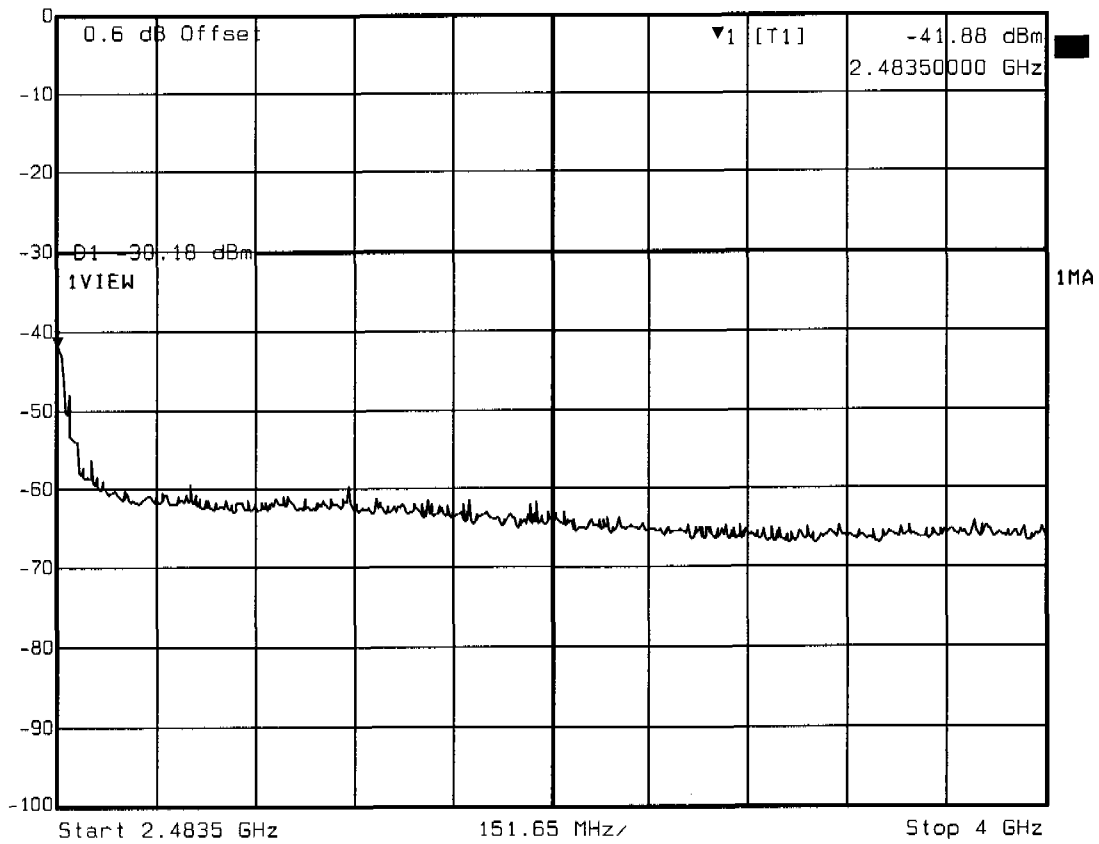
Marker 1 [T1] RBW 100 kHz RF Att 20 dB  
Ref Lvl -38.33 dBm VBW 100 kHz  
0 dBm 2.39438878 GHz SWT 350 ms Unit dBm



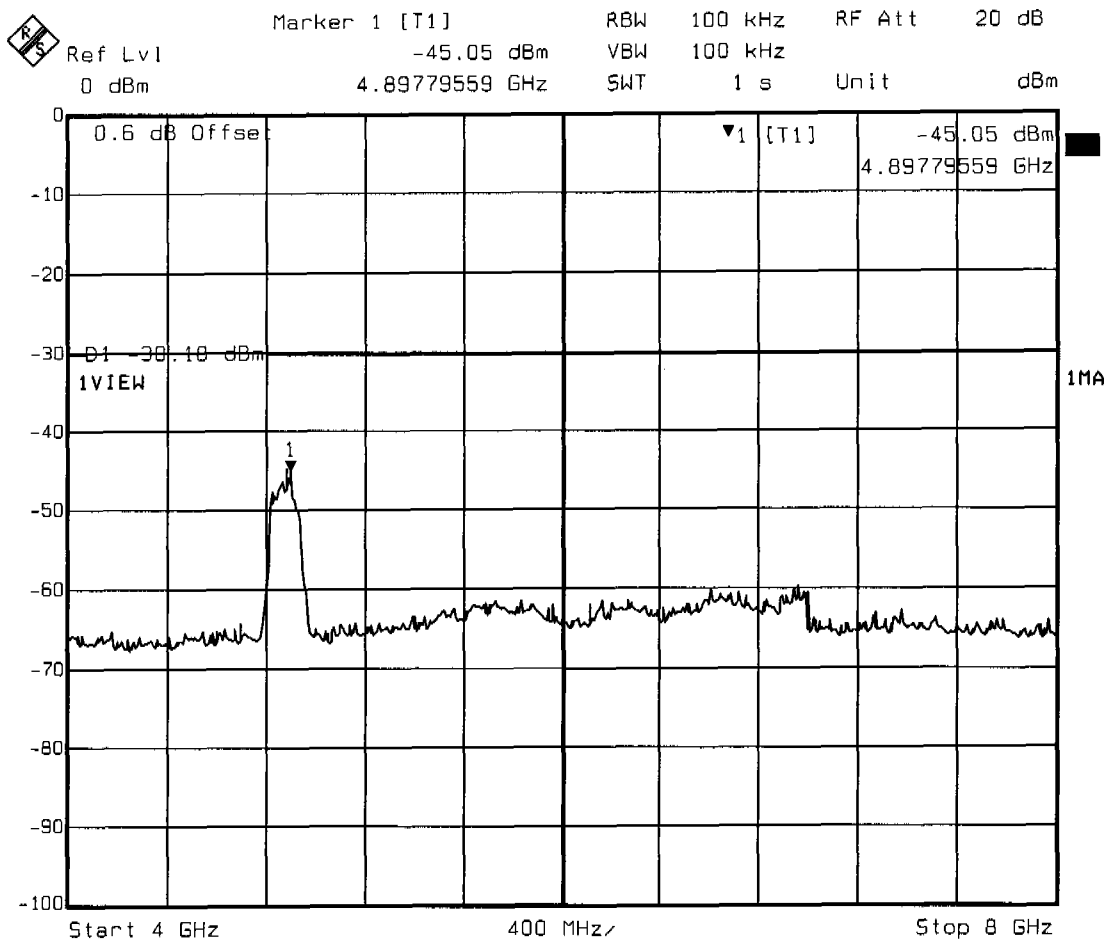
Title: FCC 15.247(c) Spurious emissions (conducted test)  
Comment A: Nanotron, nanoNET TRX  
Date: 27.SEP.2004 13:50:39



Marker 1 [T1] RBW 100 kHz RF Att 20 dB  
Ref Lvl -41.88 dBm VBW 100 kHz  
0 dBm 2.48350000 GHz SWT 380 ms Unit dBm



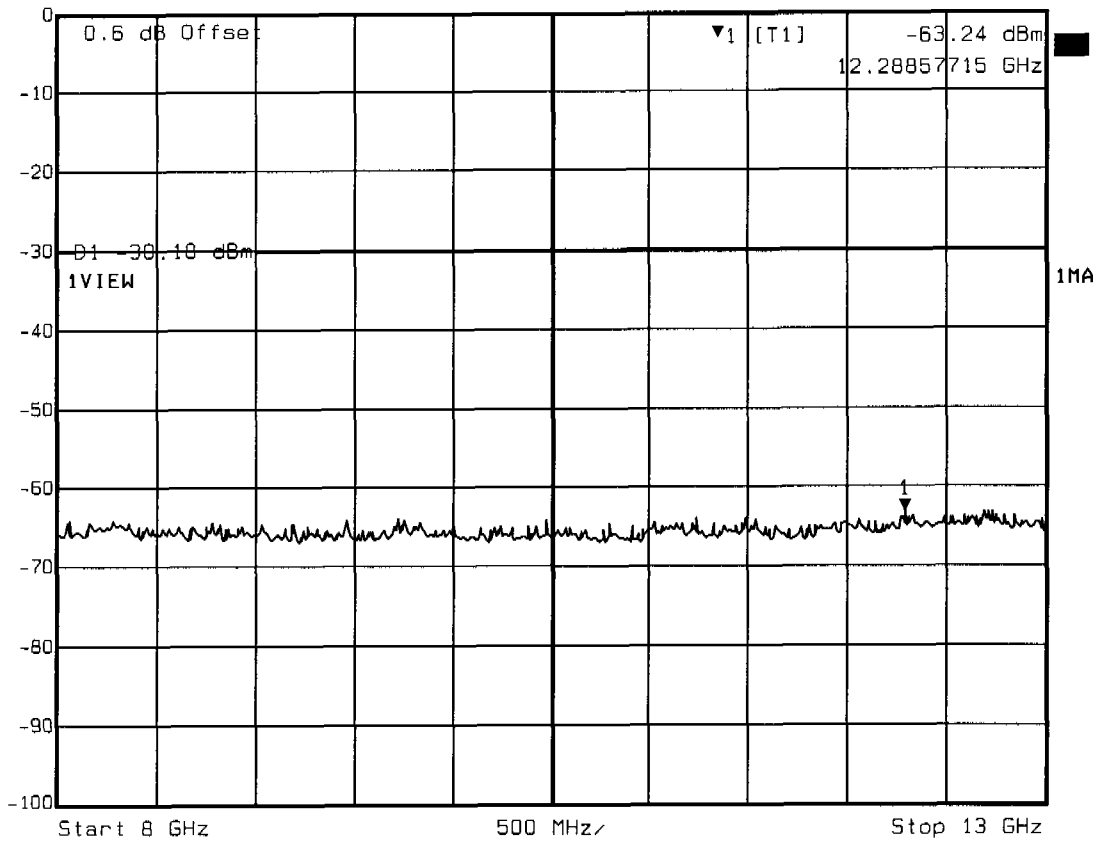
Title: FCC 15.247(c) Spurious emissions (conducted test)  
Comment A: Nanotron, nanoNET TRX  
Date: 27.SEP.2004 13:51:55



Title: FCC 15.247(c) Spurious emissions (conducted test)  
Comment A: Nanotron, nanoNET TRX  
Date: 27.SEP.2004 13:54:44



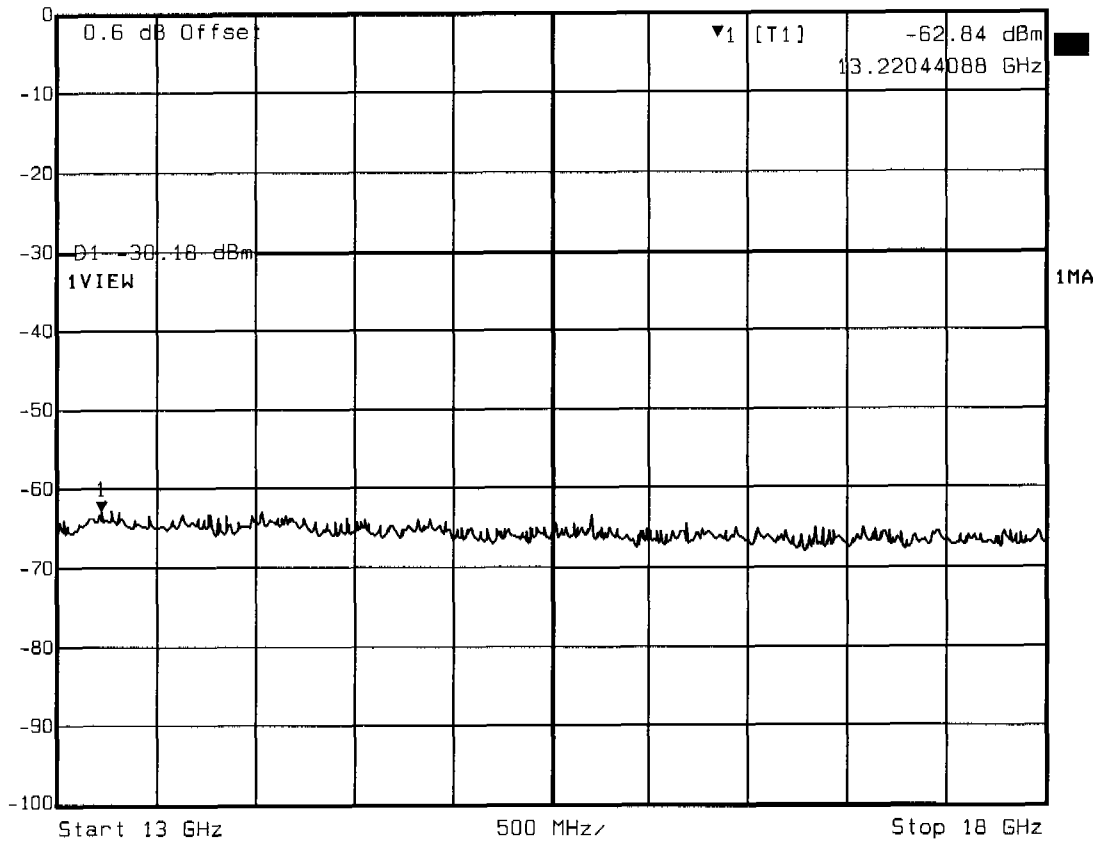
Marker 1 [T1] RBW 100 kHz RF Att 20 dB  
Ref Lvl -63.24 dBm VBW 100 kHz  
0 dBm 12.28857715 GHz SWT 1.25 s Unit dBm



Title: FCC 15.247(c) Spurious emissions (conducted test)  
Comment A: Nanotron, nanoNET TRX  
Date: 27.SEP.2004 13:55:41



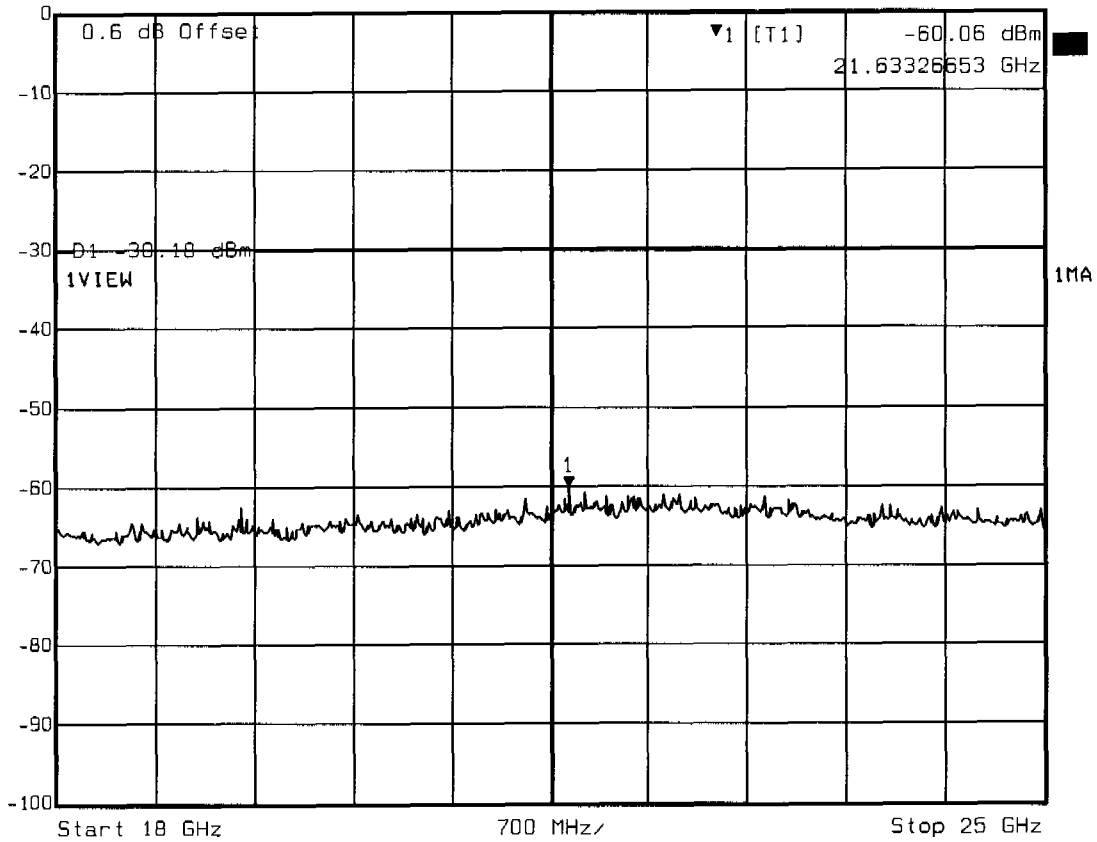
Marker 1 [T1] RBW 100 kHz RF Att 20 dB  
Ref Lvl -62.84 dBm VBW 100 kHz  
0 dBm 13.22044088 GHz SWT 1.25 s Unit dBm



Title: FCC 15.247(c) Spurious emissions (conducted test)  
Comment A: Nanotron, nanoNET TRX  
Date: 27.SEP.2004 13:57:45



Marker 1 [T1] RBW 100 kHz RF Att 20 dB  
Ref Lvl -60.06 dBm VBW 100 kHz  
0 dBm 21.63326653 GHz SWT 1.75 s Unit dBm



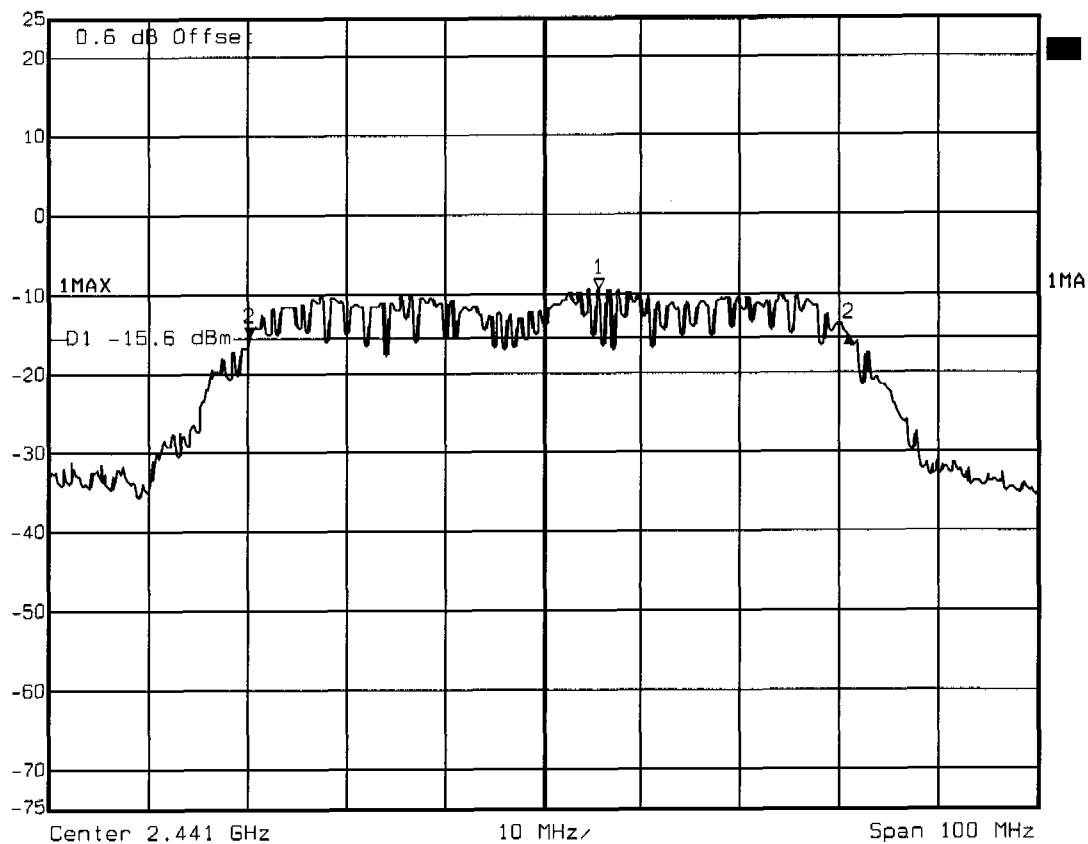
Title: FCC 15.247(c) Spurious emissions (conducted test)  
Comment A: Nanotron, nanoNET TRX  
Date: 27.SEP.2004 13:56:56

## Appendix E

Maximum 6 dB Bandwidth



Delta 2 [T1] RBW 100 kHz RF Att 50 dB  
Ref Lvl 0.17 dB VBW 1 MHz  
25 dBm 60.72144289 MHz SWT 25 ms Unit dBm



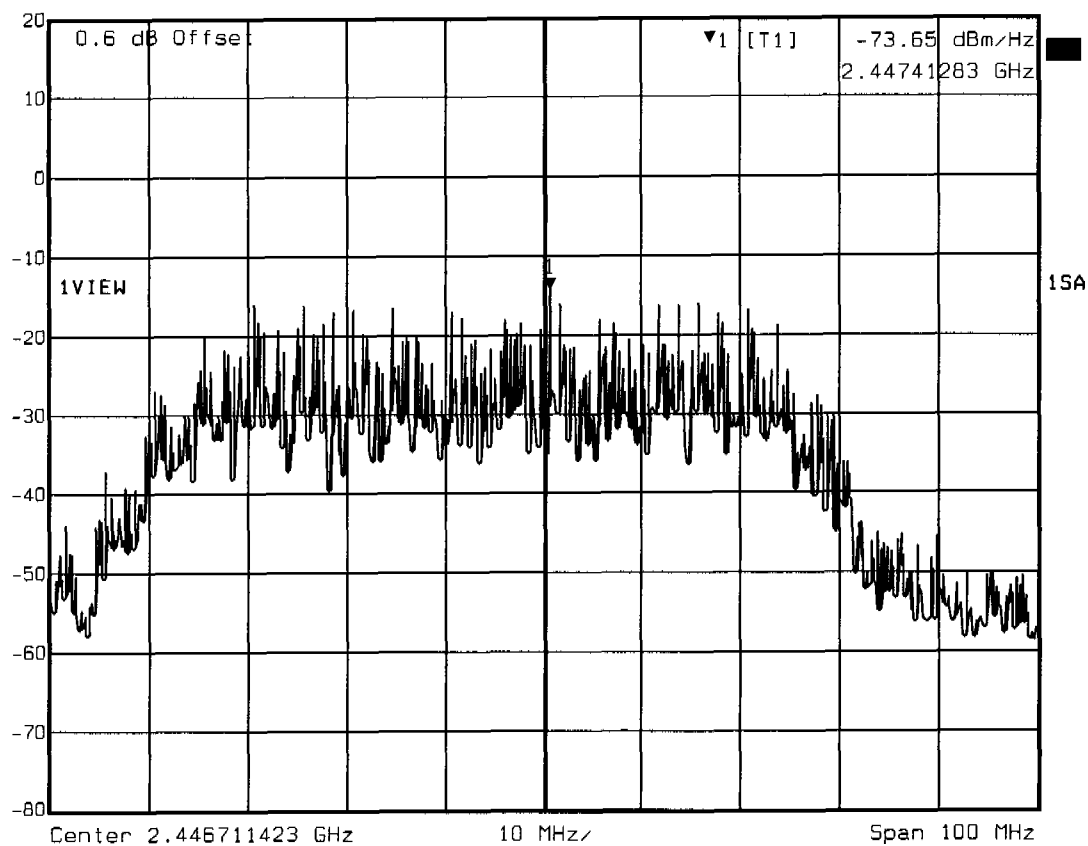
Title: FCC 15.247(a) Bandwidth  
Comment A: Nanotron nanoNET TRX (W18)  
Date: 27.SEP.2004 12:41:33

## Appendix F

Peak Power Spectral Density



Marker 1 [T1: NOI] RBW 100 kHz RF Att 40 dB  
Ref Lvl -73.65 dBm/Hz VBW 100 kHz  
20 dBm 2.44741283 GHz SWT 25 ms Unit dBm



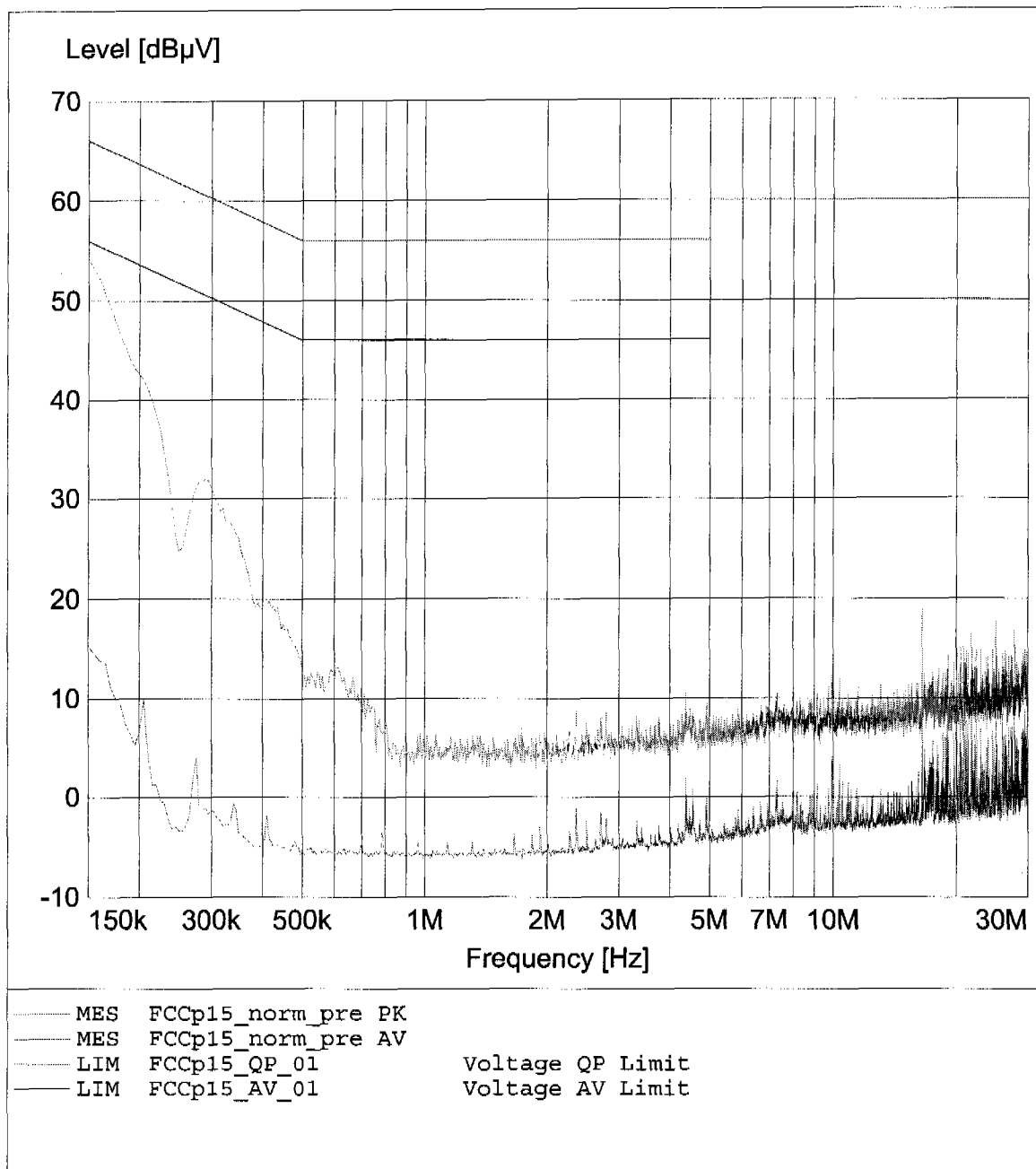
Title: 15.247(d)Power spectr. density (+35dB for 3KHz RBW)=-38.6dBm  
Comment A: Nanotron, nanoNET TRX (W18)  
Date: 27.SEP.2004 13:28:54

## Appendix G

Conducted Emission at (AC) Power Line

**EMI voltage test in the ac-mains according to FCC part 15**

EUT: 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Manufacturer: Nanotron Technologies GmbH  
Operating Condition: Unom: 120VAC(AC/DC-adaptor) , Thom: 23°C  
Test Site: ETS  
Operator: Mr. Pflug  
Test Specification: V-Network: ESH2-Z5 (N)  
Comment: model: nanoNET TRX mode: transmitting max power  
AC/DC-Adapter: RadioShack 273-1761 Chip: 226W18



# EMI voltage test in the ac-mains according to FCC part 15

EUT: 2.4GHz Chirp Spread Spectrum (CSS) Low-Power RF Transceiver  
Manufacturer: Nanotron Technologies GmbH  
Operating Condition: Unom: 120VAC(AC/DC-adaptor) , Tnom: 23°C  
Test Site: ETS  
Operator: Mr. Pflug  
Test Specification: V-Network: ESH2-Z5 (L1)  
Comment: model: nanoNET TRX mode: transmitting max power  
AC/DC-Adapter: RadioShack 273-1761 Chip: 226W18

