

## TEST REPORT

Test Report No.: 1-1954-31-06/10-E



### Testing Laboratory

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**Accredited Test Laboratory:**

The test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025

DAR registration number: DGA-PL-176/94-D1

Area of Testing: Radio Satellite Communications

### Applicant

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### Manufacturer

**Sony Ericsson Mobile Communications AB**

Nya Vattentorget

22188 Lund/Sweden

### Test Standard/s

47 CFR Part 15

Title 47 of the Code of Federal Regulations; Chapter I-Federal Communications Commission

subchapter A - general, Part 15-Radio frequency devices

RSS - 210 Issue 7

Spectrum Management and Telecommunications - Radio Standards Specification  
Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands):  
Category I Equipment

For further applied test standards please refer to section 3 of this test report.

### Test Item

**Kind of test item:** Mobile Phone 850/900/1800/1900/UMTS /HSDPA  
/HSUPA/ BT2.0+EDR, A-GPS, FM Rx, WLAN

**Model name:** AAD-3880091-BV

**FCC ID:** PY7A3880091

**IC:** 4170B-A3880091

**Frequency [MHz]:** 2400 MHz – 2483.50 MHz

**Power supply:** 3.70V DC by Li-Polymer Battery (EP500)

**Temperature range:** 22 °C

**Test performed:**

2010-07-20 Jakob Reschke

**Test Report authorised:**

2010-07-20 Stefan Bös

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## 2 General Information

### 2.1 Notes

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM ICT Services GmbH.

### 2.2 Application details

|                                    |            |
|------------------------------------|------------|
| Date of receipt of order:          | 2010-06-16 |
| Date of receipt of test item:      | 2010-06-24 |
| Start of test:                     | 2010-06-24 |
| End of test:                       | 2010-06-30 |
| Person(s) present during the test: | -/-        |

## 3 Test standard/s

| Test Standard     | Version | Test Standard Description                                                                                                                                                     |
|-------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 47 CFR Part 15    | 2009-10 | Title 47 of the Code of Federal Regulations; Chapter I-Federal Communications Commission<br>subchapter A - general, Part 15-Radio frequency devices                           |
| RSS - 210 Issue 7 | 2007-06 | Spectrum Management and Telecommunications - Radio Standards Specification<br>Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment |

## 4 Test Environment

|                            |                  |                                         |
|----------------------------|------------------|-----------------------------------------|
| Temperature:               | T <sub>nom</sub> | 22 °C during room temperature tests     |
|                            | T <sub>max</sub> | -/- °C during high temperature test     |
|                            | T <sub>min</sub> | -/- °C during low temperature test      |
| Relative humidity content: |                  | 53 %                                    |
| Air pressure:              |                  | not relevant for this kind of testing   |
| Power supply:              | V <sub>nom</sub> | 3.70 V DC by Li-Polymer Battery (EP500) |
|                            | V <sub>max</sub> | -/- V                                   |
|                            | V <sub>min</sub> | -/- V                                   |

**5 Test item**

|                      |   |                                                                                 |
|----------------------|---|---------------------------------------------------------------------------------|
| Kind of test item    | : | Mobile Phone 850/900/1800/1900/UMTS /HSDPA/HSUPA/ BT2.0+EDR, A-GPS, FM Rx, WLAN |
| Type identification  | : | AAD-3880091-BV                                                                  |
|                      |   |                                                                                 |
| S/N serial number    | : | Rad. CB511JVN2L<br>Cond. CB511JVN32                                             |
| HW hardware status   | : | AP1                                                                             |
| SW software status   | : | 1.2.A.0.8<br>ATP                                                                |
| Frequency Band [MHz] | : | 2400 MHz – 2483.50 MHz                                                          |
| Type of Modulation   | : | DSSS & OFDM - BPSK, QPSK, 16 QAM, 64 QAM                                        |
| Number of channels   | : | 11                                                                              |
| Antenna              | : | Integrated antenna                                                              |
| Power Supply         | : | 3.70 V DC by Li-Polymer Battery (EP500)                                         |
| Temperature Range    | : | 22 °C                                                                           |

**6 Test Laboratories sub-contracted**

None

## 7 Summary of measurement results



No deviations from the technical specifications were ascertained



There were deviations from the technical specifications ascertained

| TC Identifier | Description                              | Verdict | Date       | Remark |
|---------------|------------------------------------------|---------|------------|--------|
| RF-Testing    | CFR Part 15<br>RSS 210, Issue 7, Annex 8 | Passed  | 2010-07-20 | -/-    |

| Test Specification Clause          | Test Case                                             | Temperature Conditions | Power Source Voltages | Mode      | Pass                                                                       | Fail                                                 | NA                                                   | NP                                                   | Results (max.) |
|------------------------------------|-------------------------------------------------------|------------------------|-----------------------|-----------|----------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|----------------|
| §15.247(b)(4)<br>RSS 210 / A8.4(2) | Antenna Gain                                          | Nominal                | Nominal               | DSSS      | <input checked="" type="checkbox"/>                                        | <input type="checkbox"/>                             | <input type="checkbox"/>                             | <input type="checkbox"/>                             | complies       |
| §15.247(e)<br>RSS 210 / A8.2(b)    | Power spectral density                                | Nominal                | Nominal               | DSSS OFDM | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | complies       |
| §15.247(a)(2)<br>RSS 210 / A8.2(a) | Spectrum bandwidth of a FHSS system<br>6dB bandwidth  | Nominal                | Nominal               | DSSS OFDM | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> |                |
| §15.247(a)(2)<br>RSS 210 / A8.2(a) | Spectrum bandwidth of a FHSS system<br>20dB bandwidth | Nominal                | Nominal               | DSSS OFDM | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> |                |
| §15.247(b)(3)<br>RSS-210 / A8.4(4) | Maximum output power                                  | Nominal                | Nominal               | DSSS OFDM | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> |                |
| §15.247(d)<br>RSS-210 / A8.5       | Band edge compliance conducted                        | Nominal                | Nominal               | DSSS OFDM | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | complies       |
| §15.205<br>RSS-210 / A8.5          | Band edge compliance radiated                         | Nominal                | Nominal               | DSSS OFDM | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | complies       |
| §15.247(d)<br>RSS-210 / A8.5       | TX spurious emissions conducted                       | Nominal                | Nominal               | DSSS OFDM | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | complies       |
| §15.247(d)<br>RSS-210 / A8.5       | TX spurious emissions radiated                        | Nominal                | Nominal               | DSSS OFDM | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | complies       |
| §15.109<br>RSS-Gen.                | RX spurious emissions radiated                        | Nominal                | Nominal               | -/-       | <input checked="" type="checkbox"/>                                        | <input type="checkbox"/>                             | <input type="checkbox"/>                             | <input type="checkbox"/>                             | complies       |
| §15.209(a)<br>RSS-Gen              | TX spurious emissions radiated<br>< 30 MHz            | Nominal                | Nominal               | DSSS OFDM | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | complies       |
| §15.107(a)                         | Conducted emissions<br>< 30 MHz                       | Nominal                | Nominal               | DSSS OFDM | <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/> | complies       |

**Note:** NA = Not Applicable; NP = Not Performed

## 8 RF measurement testing

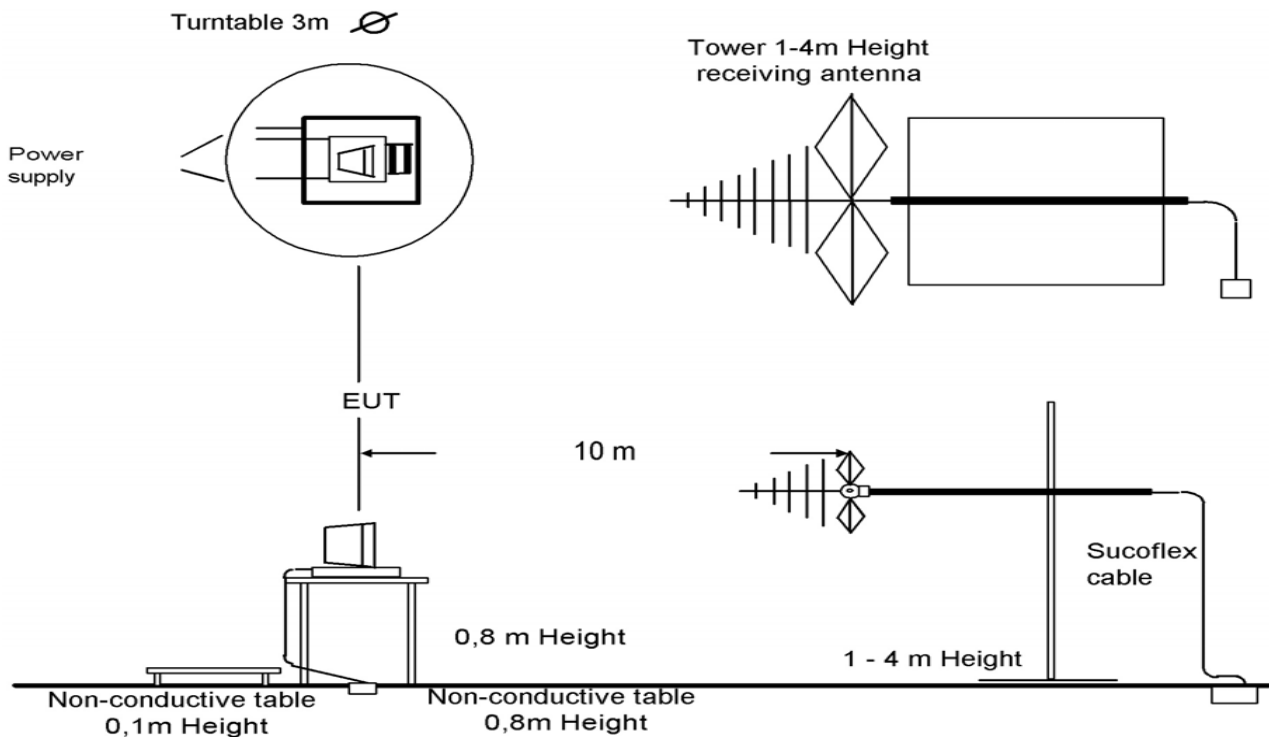
### 8.1 Description of test setup

#### 8.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2003 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2003 clause 4.2.

Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



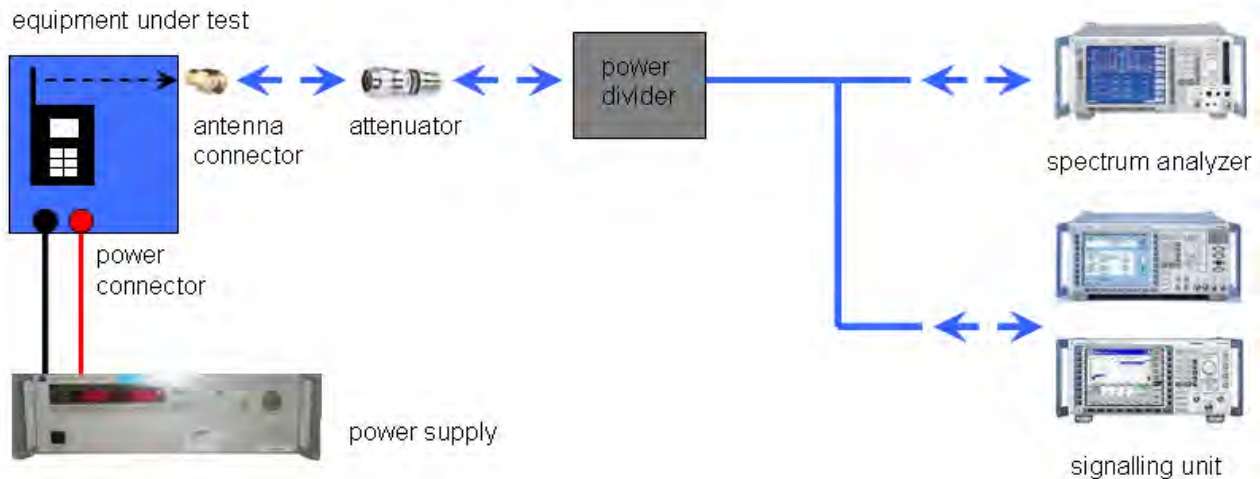
Picture 1: Diagram radiated measurements

|                 |                     |
|-----------------|---------------------|
| 9 kHz - 30 MHz: | active loop antenna |
| 30 MHz – 1 GHz: | tri-log antenna     |
| > 1 GHz:        | horn antenna        |

The EUT is powered by an external power supply with nominal voltage. The signalling is performed from outside the chamber with a signalling unit (CMU200 or other) by air link using signalling antenna.

### 8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the communication base Station (CMU200 or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

### 8.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: The EUT was programmed over the CLI, with the output power values of 18.  
The Duty cycle during the measurements was 97.60%.

### 8.3 Additional EUT information for IC Canada (Appendix 2)

|                                               |   |                                                                                     |
|-----------------------------------------------|---|-------------------------------------------------------------------------------------|
| IC Registration Number                        | : | 4170B-A3880091                                                                      |
| Kind of test item                             | : | Mobile Phone 850/900/1800/1900/UMTS /HSDPA/HSUPA/ BT2.0+EDR, A-GPS, FM Rx, WLAN     |
| Type identification                           | : | AAD-3880091-BV                                                                      |
| Manufacturer (complete Address)               | : | Sony Ericsson Mobile Communications AB<br>Nya Vattentorget<br>22188 Lund / Sweden   |
| Frequency                                     | : | 2400 – 2483.5 MHz-band (2412 – 2462 MHz)                                            |
| RF-power [W] (max.)                           | : | cond.: 103.99 mW (DSSS) 230.67 mW (OFDM)<br>EIRP: 125.03 mW (DSSS) 279.25 mW (OFDM) |
| Antenna Type                                  | : | Integrated antenna                                                                  |
| Occupied bandwidth (99%-BW) [MHz]             | : | DSSS: 16.68 MHz<br>OFDM: 18.14 MHz                                                  |
| Type of modulation                            | : | DSSS & OFDM - BPSK, QPSK, 16 QAM, 64 QAM                                            |
| Emission Designator (TRC-43)                  | : | 16M7G1D (DSSS)<br>18M1G1D (OFDM)                                                    |
| Number of channels                            | : | 11                                                                                  |
| Power supply (normal)                         | : | 3.70 V DC by Li-Polymer Battery (EP500)                                             |
| Transmitter Spurious (worst case) [µV/m @ 3m] | : | 316 µV/m (Noise floor)                                                              |
| Receiver Spurious (worst case) [µV/m @ 3m]    | : | 316 µV/m (Noise floor)                                                              |
| Open Area Test Site IC No.                    | : | IC 3462C-1                                                                          |
| IC Standards                                  | : | RSS 210, Issue 7, Annex 8                                                           |

#### ATTESTATION:

#### DECLARATION OF COMPLIANCE:

I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

#### Laboratory Manager:

2010-07-20  
Date

Jakob Reschke  
Name



Signature

## 9 Measurement Results

### 9.1 Maximum Output Power (conducted)

#### Description:

Measurement of the maximum output power conducted. This measurement is performed only at the middle channel in both modes and all data rates to determine the data rate per mode which results in the highest output power. This mode will be selected for all further measurements.

#### Measurement:

| Measurement parameter |          |
|-----------------------|----------|
| Detector:             | Max Peak |
| Sweep time:           | Auto     |
| Video bandwidth:      | 30 MHz   |
| Resolution bandwidth: | 50 MHz   |
| Span:                 | 50 MHz   |
| Trace-Mode:           | Max Hold |

#### Result:

| DSSS                    | Maximum Output Power Conducted [dBm] |       |       |       |
|-------------------------|--------------------------------------|-------|-------|-------|
|                         | 1                                    | 2     | 5.5   | 11    |
| Data Rate [MBit/s]      |                                      |       |       |       |
| Ch 6 - 2437 MHz         | 19.38                                | 19.44 | 19.75 | 19.97 |
| Measurement uncertainty | ± 0.5 dB                             |       |       |       |

| OFDM                    | Maximum Output Power Conducted [dBm] |       |       |       |       |       |       |       |
|-------------------------|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|
|                         | 6                                    | 9     | 12    | 18    | 24    | 36    | 48    | 54    |
| Data Rate [MBit/s]      |                                      |       |       |       |       |       |       |       |
| Ch 6 - 2437 MHz         | 23.31                                | 23.23 | 22.89 | 22.55 | 21.94 | 22.04 | 21.10 | 21.59 |
| Measurement uncertainty | ± 0.5 dB                             |       |       |       |       |       |       |       |

Result: Selected data rate for all measurements:

DSSS: 11 MBit/s  
OFDM: 6 MBit/s

## 9.2 Antenna Gain

### Measurement:

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal WLAN devices, the DSSS mode is used.

### Measurement parameters:

| Measurement parameter |          |
|-----------------------|----------|
| Detector:             | Max Peak |
| Sweep time:           | Auto     |
| Video bandwidth:      | 30 MHz   |
| Resolution bandwidth: | 50 MHz   |
| Span:                 | 50 MHz   |
| Trace-Mode:           | Max Hold |

### Limits:

| FCC                    | IC                         |
|------------------------|----------------------------|
| CFR Part 15.247 (b)(4) | RSS 210, Issue 7, A 8.4(2) |
| Antenna Gain           |                            |
| 6 dBi                  |                            |

### Results:

| T <sub>nom</sub>                                       | V <sub>nom</sub> | lowest<br>channel<br>2412 MHz | middle<br>channel<br>2437 MHz | highest<br>channel<br>2462 MHz |
|--------------------------------------------------------|------------------|-------------------------------|-------------------------------|--------------------------------|
| Conducted power [dBm]<br>Measured with DSSS modulation |                  | 19.76                         | 19.97                         | 20.17                          |
| Radiated power [dBm]<br>Measured with DSSS modulation  |                  | 20.59                         | 20.80                         | 20.97                          |
| Gain [dBi]<br>Calculated                               |                  | +0.83                         | +0.83                         | +0.80                          |

**Result:** The result of the measurement is passed.

### 9.3 Power Spectral Density

#### Description:

Measurement of the power spectral density of a digital modulated system. The measurement is repeated for both modulations at the lowest, middle and highest channel.

#### Measurement:

| Measurement parameter |          |
|-----------------------|----------|
| Detector:             | Peak     |
| Sweep time:           | 500 s    |
| Video bandwidth:      | 3 kHz    |
| Resolution bandwidth: | 3 kHz    |
| Span:                 | 150 kHz  |
| Trace-Mode:           | Max Hold |

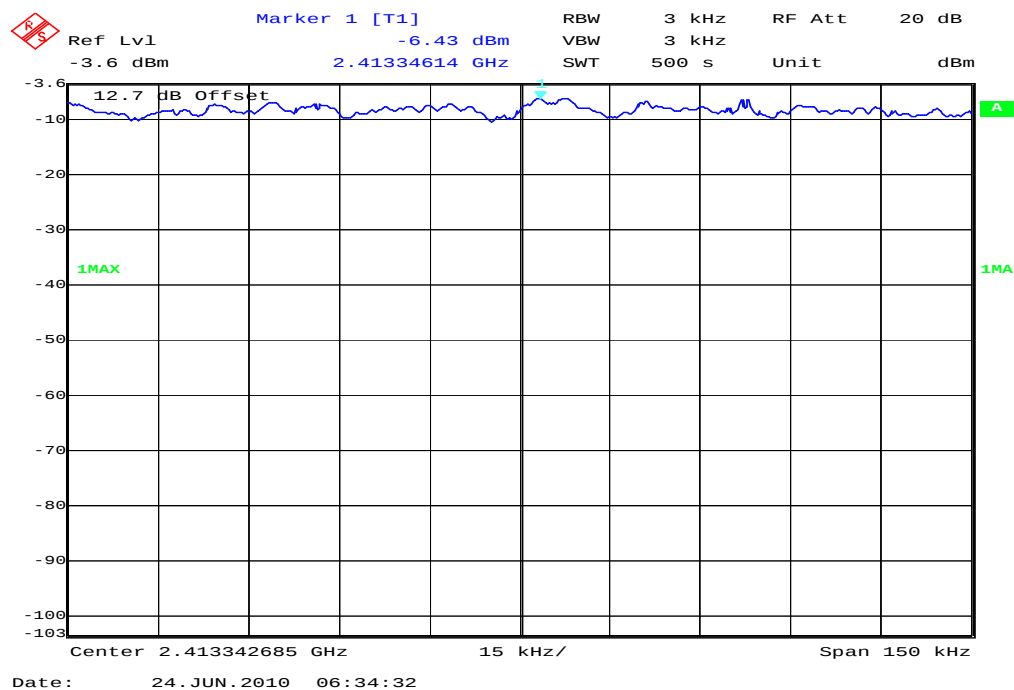
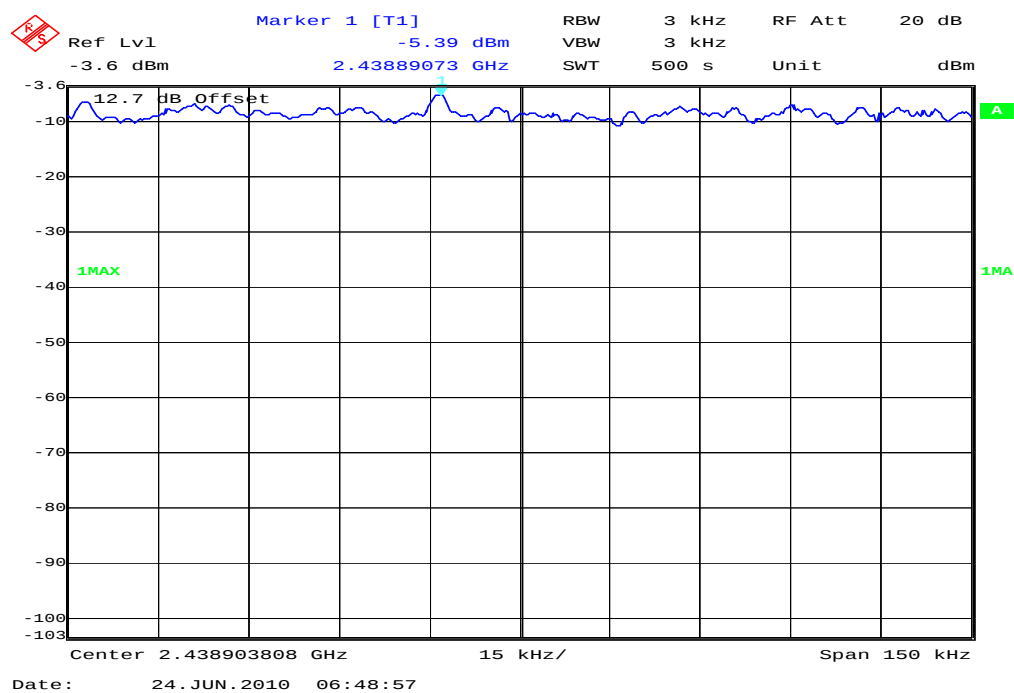
#### Limits:

| FCC                                                                                                                                                                                                                                                            | IC                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| CFR Part 15.247 (e)                                                                                                                                                                                                                                            | RSS 210, Issue 7, A 8.2(b) |
| Power Spectral Density                                                                                                                                                                                                                                         |                            |
| The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0-second duration. |                            |

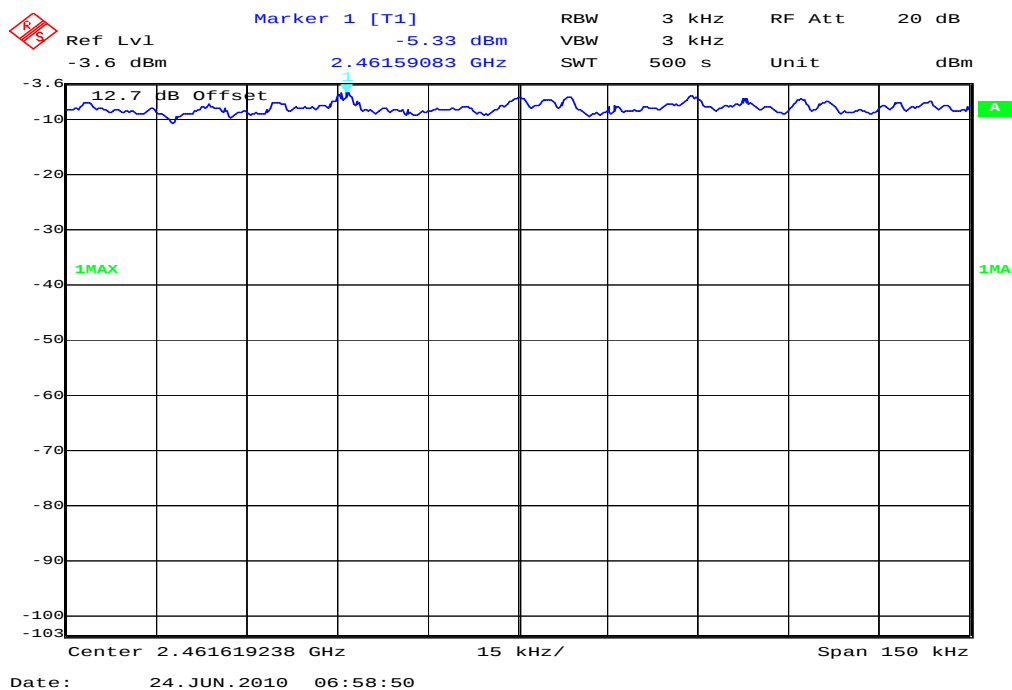
#### Result:

| Modulation<br>Frequency | Power Spectral density [dBm/3kHz] |          |          |
|-------------------------|-----------------------------------|----------|----------|
|                         | 2412 MHz                          | 2437 MHz | 2462 MHz |
| DSSS                    | -6.43                             | -5.93    | -5.33    |
| OFDM                    | -6.59                             | -6.94    | -6.42    |
| Measurement uncertainty | ± 0.5 dB                          |          |          |

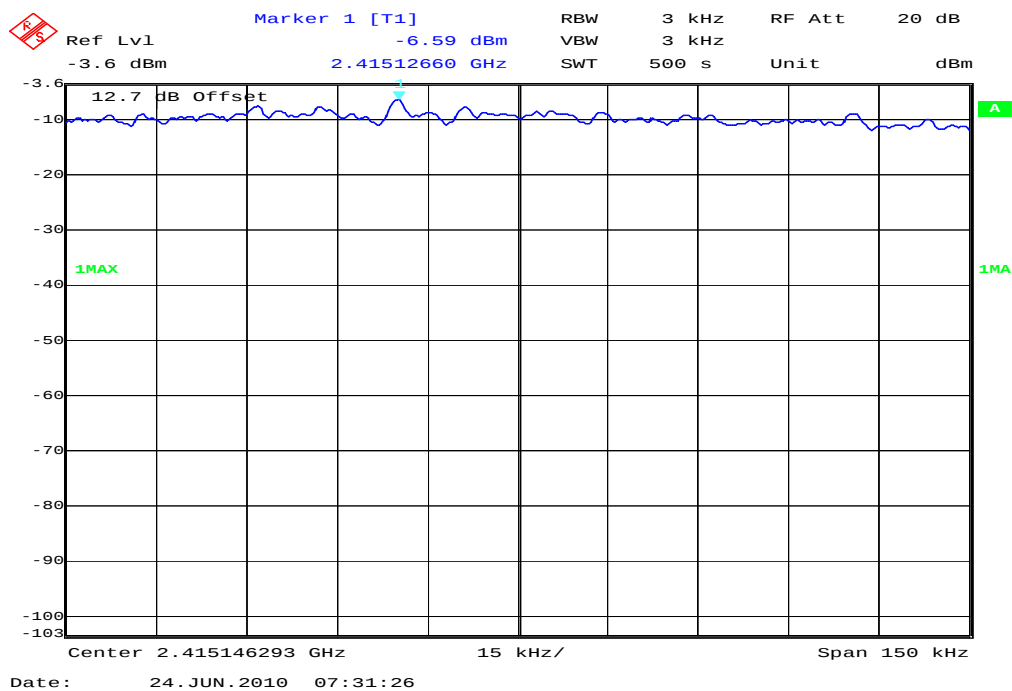
**Result:** The result of the measurement is passed.

**Plot 1: Channel 1 (DSSS)****Plot 2: Channel 6 (DSSS)**

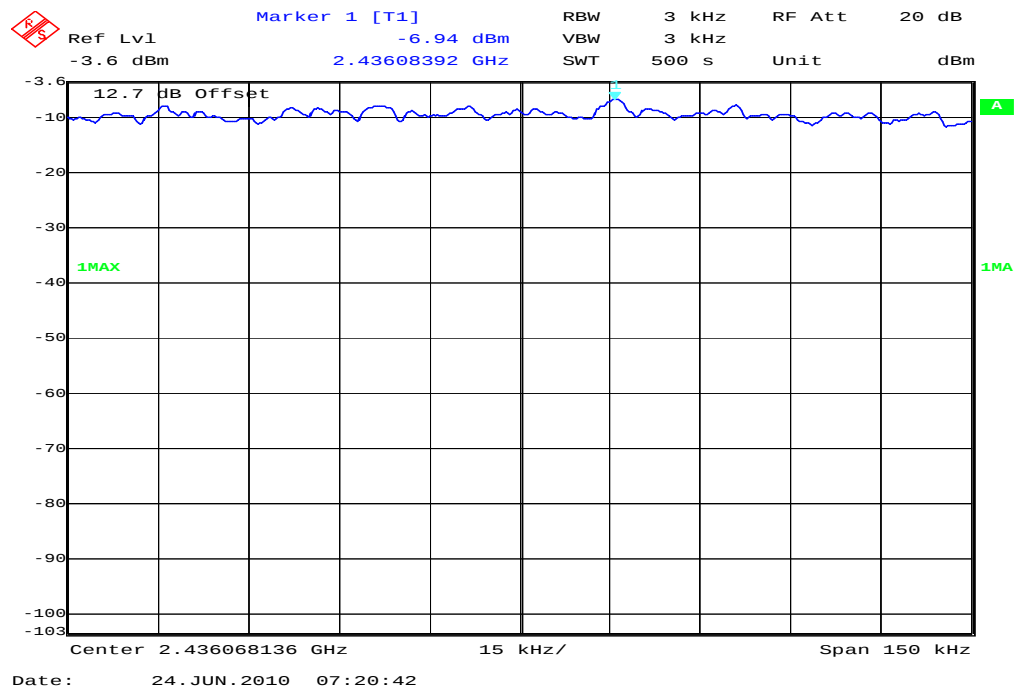
**Plot 3: Channel 11 (DSSS)**



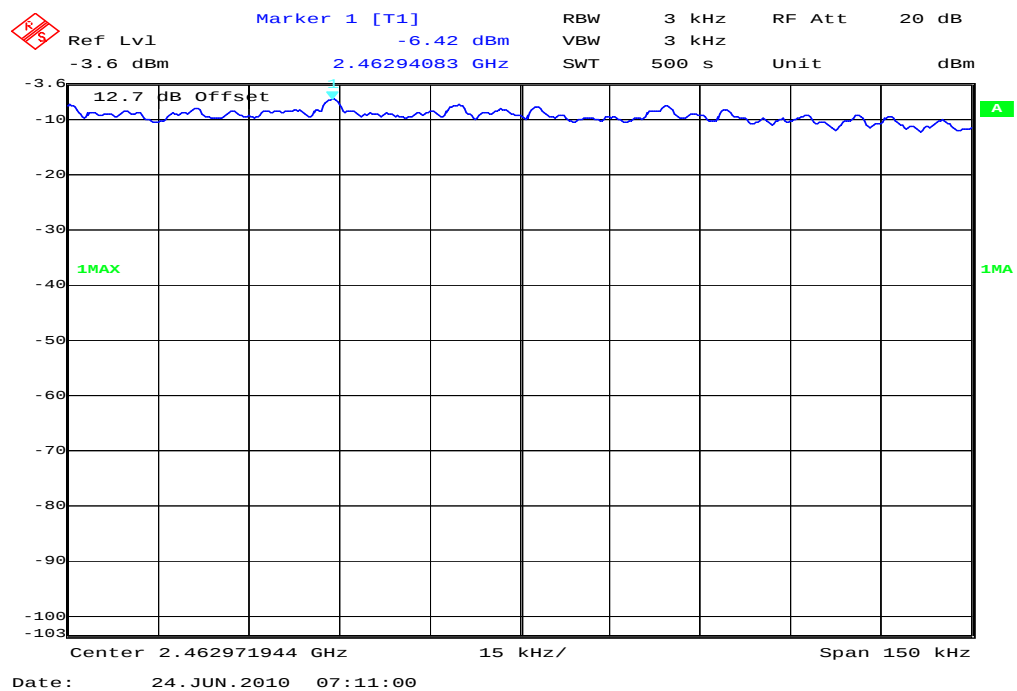
**Plot 4: Channel 1 (OFDM)**



**Plot 5: Channel 6 (OFDM)**



**Plot 6: Channel 11 (OFDM)**



#### 9.4 Spectrum Bandwidth of a FHSS System – 6 dB Bandwidth

##### Description:

Measurement of the 6 dB bandwidth of the modulated signal.

##### Measurement:

| Measurement parameter |          |
|-----------------------|----------|
| Detector:             | Peak     |
| Sweep time:           | Auto     |
| Video bandwidth:      | 100 kHz  |
| Resolution bandwidth: | 100 kHz  |
| Span:                 | 25 MHz   |
| Trace-Mode:           | Max Hold |

##### Limits:

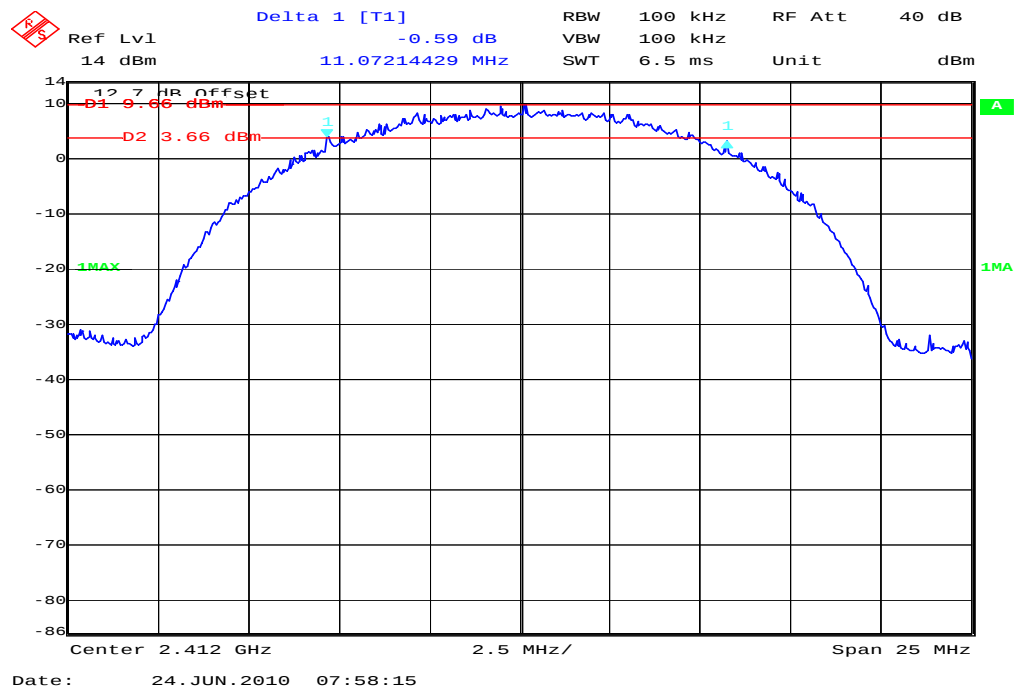
| FCC                                                                                                                                           | IC                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| CFR Part 15.247 (a)(2)                                                                                                                        | RSS 210, Issue 7, A 8.2(a) |
| Spectrum Bandwidth of a FHSS System – 6 dB Bandwidth                                                                                          |                            |
| Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band.<br>The minimum 6 dB bandwidth shall be at least 500 kHz. |                            |

##### Result:

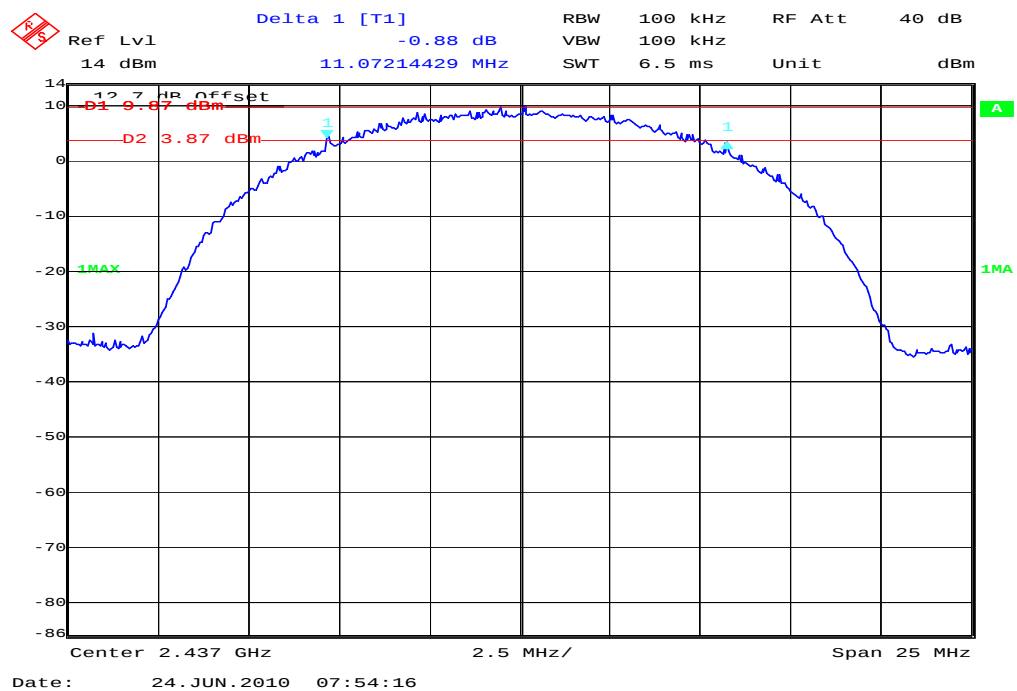
| Modulation<br>Frequency | 6 dB BANDWIDTH [MHz] |          |          |
|-------------------------|----------------------|----------|----------|
|                         | 2412 MHz             | 2437 MHz | 2462 MHz |
| DSSS                    | 11.07                | 11.07    | 11.07    |
| OFDM                    | 15.93                | 15.93    | 16.08    |
| Measurement uncertainty | ± 100 kHz            |          |          |

**Result:** The result of the measurement is passed.

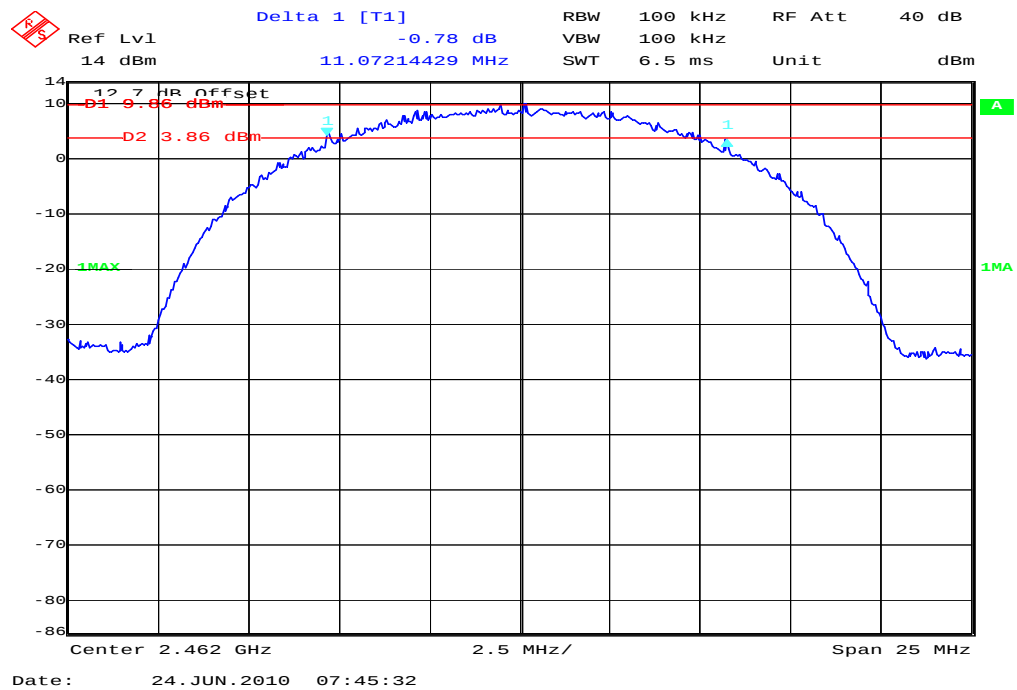
Plot 1: Channel 1 (DSSS)



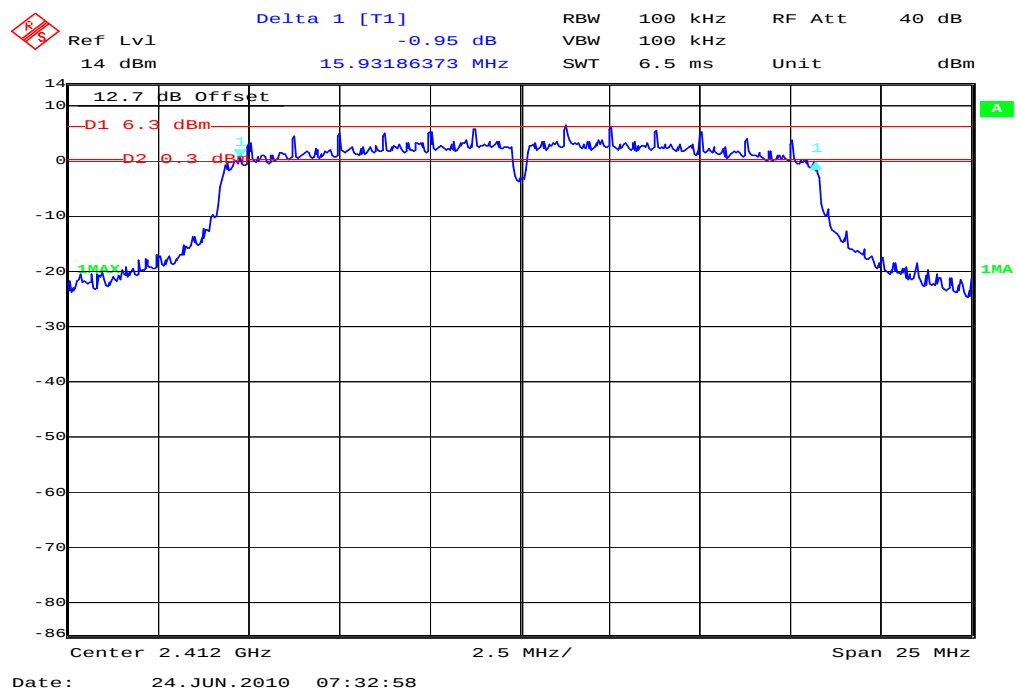
Plot 2: Channel 6 (DSSS)

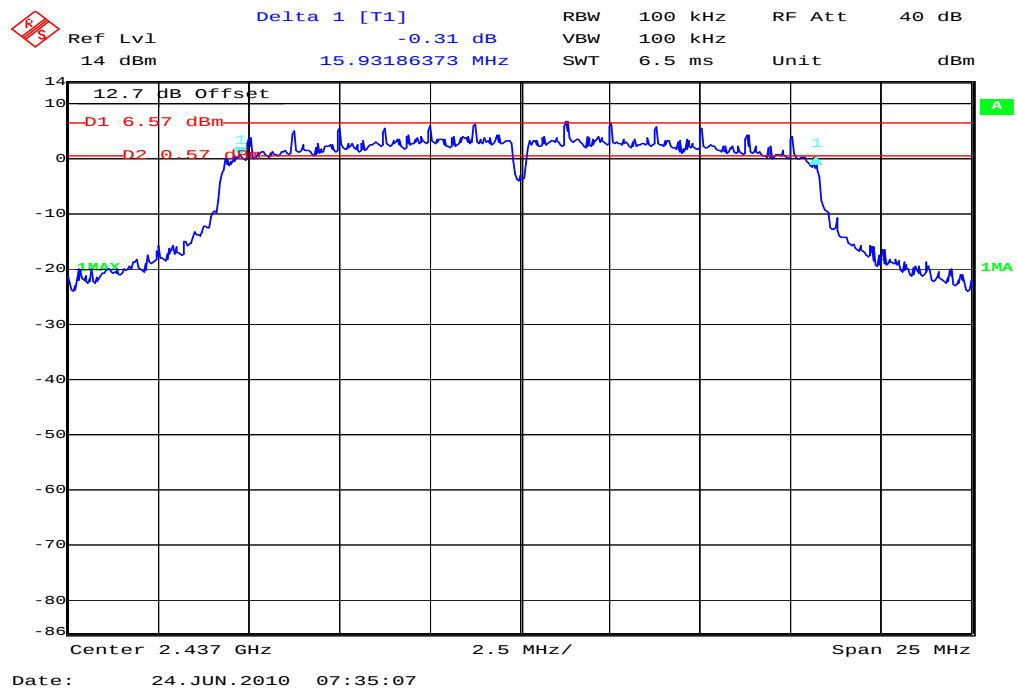
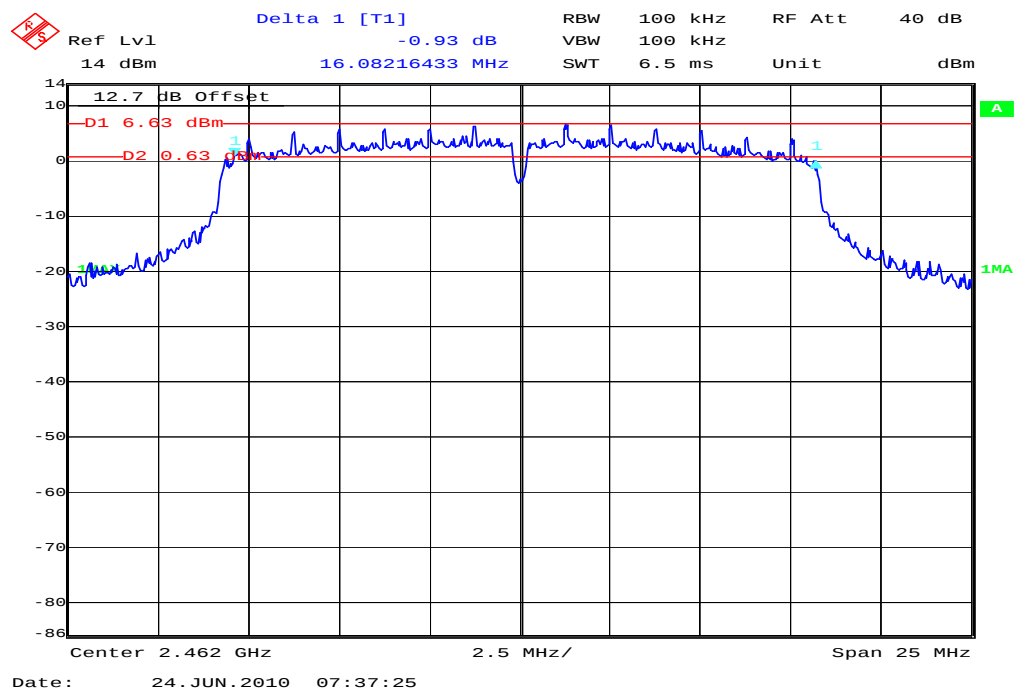


Plot 3: Channel 11 (DSSS)



Plot 4: Channel 1 (OFDM)



**Plot 5: Channel 6 (OFDM)****Plot 6: Channel 11 (OFDM)**

## 9.5 Spectrum Bandwidth of a FHSS System – 20 dB Bandwidth

### Description:

Measurement of the 20 dB bandwidth of the modulated signal.

### Measurement:

| Measurement parameter |          |
|-----------------------|----------|
| Detector:             | Peak     |
| Sweep time:           | Auto     |
| Video bandwidth:      | 100 kHz  |
| Resolution bandwidth: | 100 kHz  |
| Span:                 | 25 MHz   |
| Trace-Mode:           | Max Hold |

### Limits:

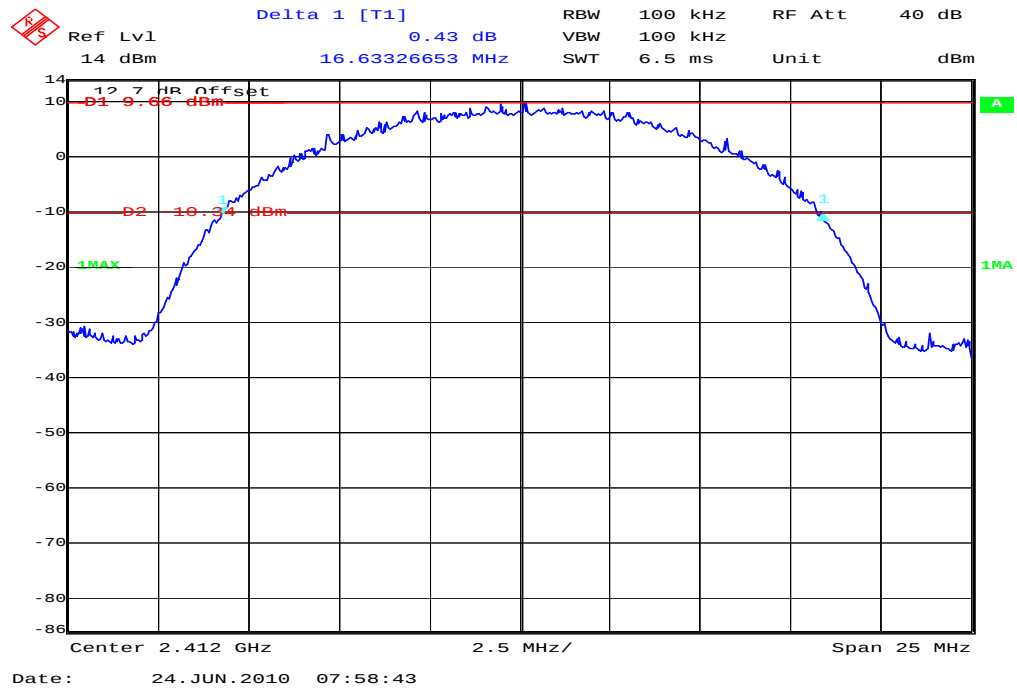
| FCC                                                                                                                                           | IC                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| CFR Part 15.247 (a)(2)                                                                                                                        | RSS 210, Issue 7, A 8.2(a) |
| Spectrum Bandwidth of a FHSS System – 20 dB Bandwidth                                                                                         |                            |
| Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band.<br>The minimum 6 dB bandwidth shall be at least 500 kHz. |                            |

### Result:

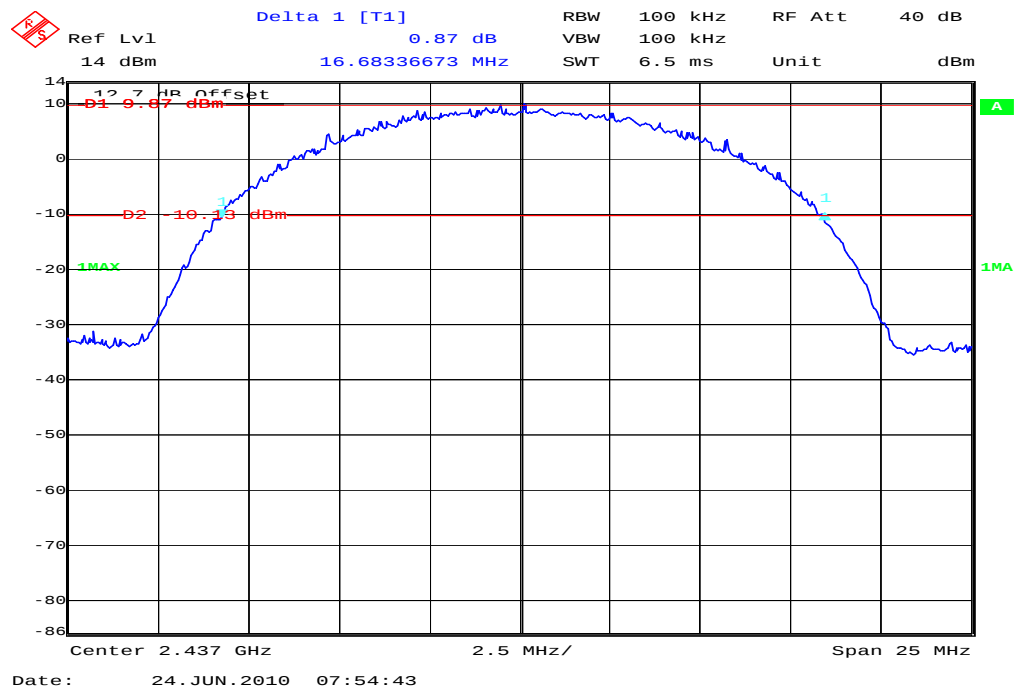
| Modulation<br>Frequency | 20 dB BANDWIDTH [MHz] |          |          |
|-------------------------|-----------------------|----------|----------|
|                         | 2412 MHz              | 2437 MHz | 2462 MHz |
| DSSS                    | 16.63                 | 16.68    | 16.68    |
| OFDM                    | 18.09                 | 17.89    | 18.14    |
| Measurement uncertainty | ± 100 kHz             |          |          |

**Result:** The result of the measurement is passed.

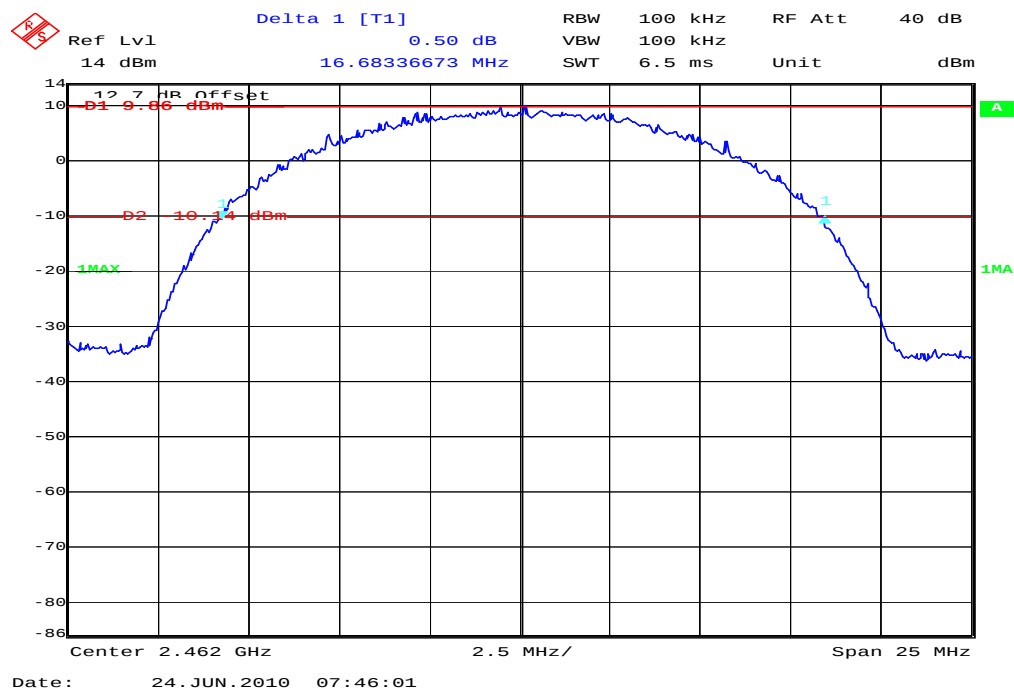
**Plot 1: Channel 1 (DSSS)**



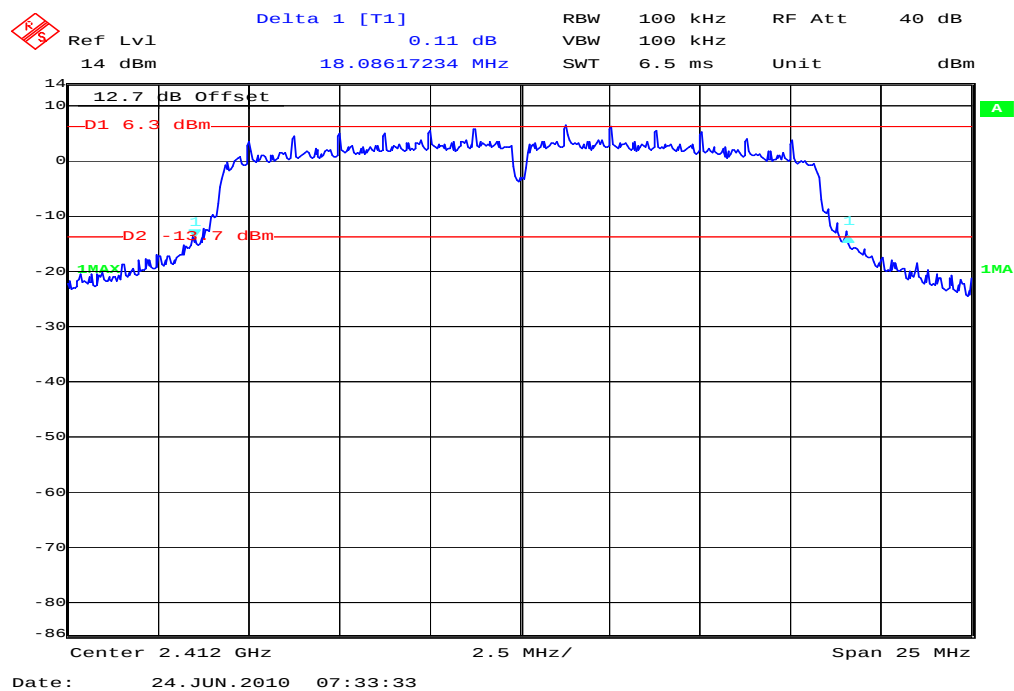
**Plot 2: Channel 6 (DSSS)**



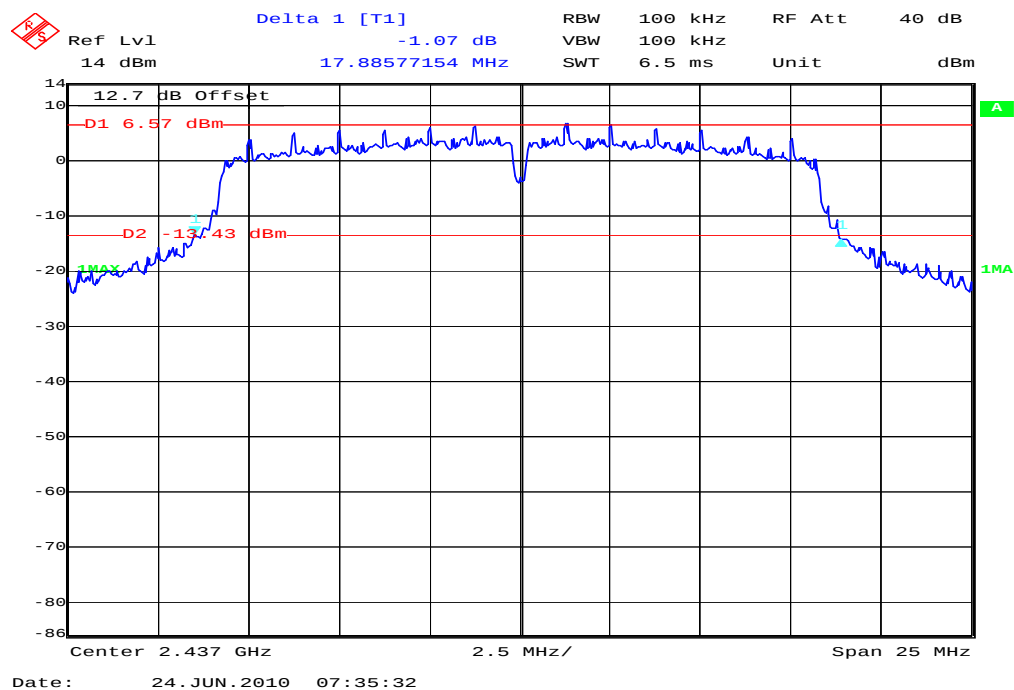
Plot 3: Channel 11 (DSSS)



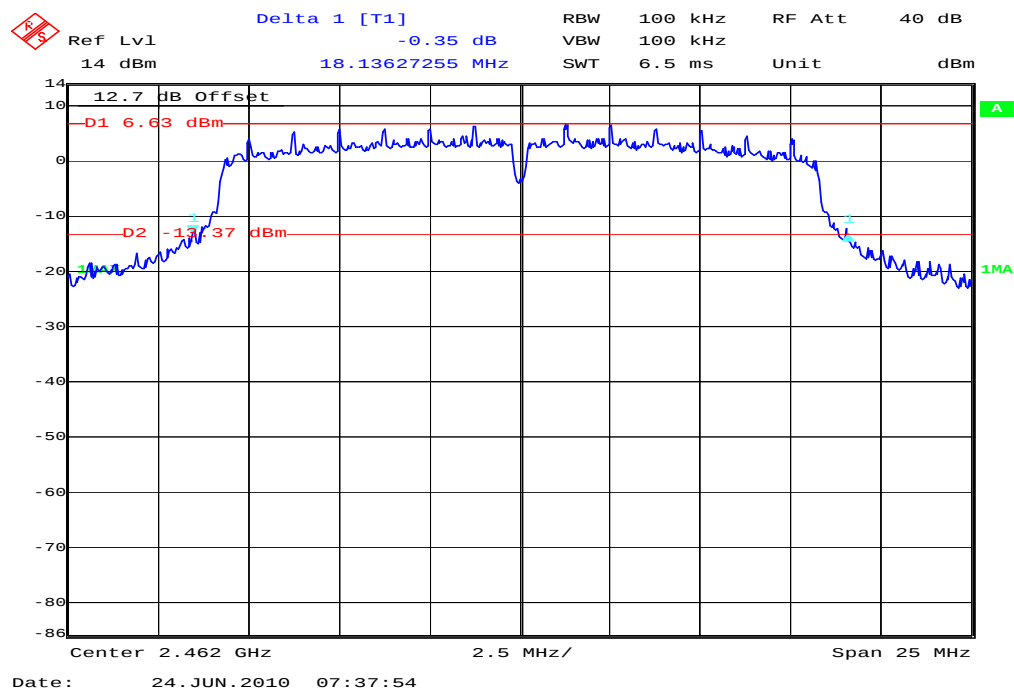
Plot 4: Channel 1 (OFDM)



**Plot 5: Channel 6 (OFDM)**



**Plot 6: Channel 11 (OFDM)**



## 9.6 Maximum Output Power

### Description:

Measurement of the maximum output power conducted and radiated. The measurements are performed using the data rate producing the highest conducted output power. The determination of these data rates was performed at the beginning of the tests. Additionally the average power is measured using a wideband power meter.

### Measurement:

| Measurement parameter |          |
|-----------------------|----------|
| Detector:             | Max Peak |
| Sweep time:           | Auto     |
| Video bandwidth:      | 30 MHz   |
| Resolution bandwidth: | 50 MHz   |
| Span:                 | 50 MHz   |
| Trace-Mode:           | Max Hold |

### Limits:

| FCC                                        | IC                         |
|--------------------------------------------|----------------------------|
| CFR Part 15.247 (b)(3)                     | RSS 210, Issue 7, A 8.4(4) |
| Maximum Output Power                       |                            |
| Conducted: 1.0 W – Antenna Gain max. 6 dBi |                            |

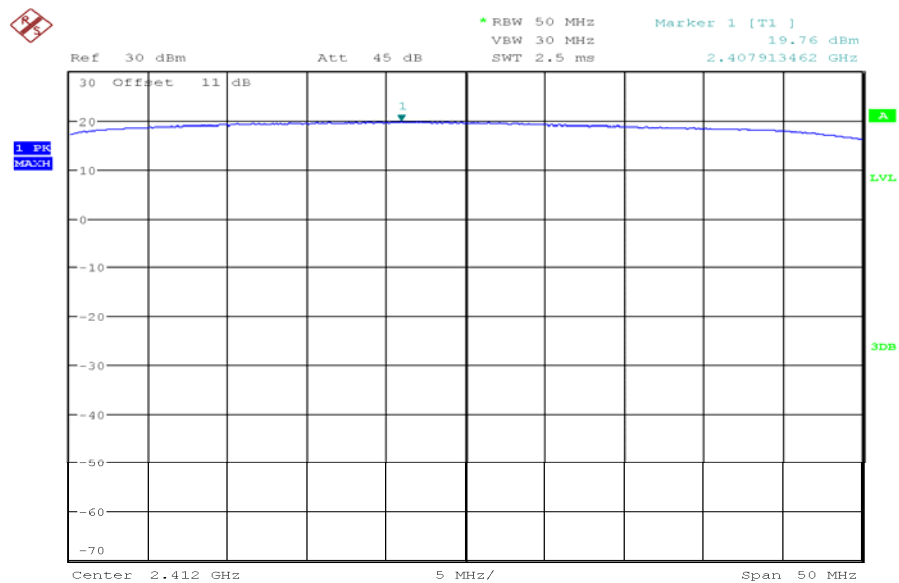
### Result:

| DSSS<br>Frequency                                                    | Maximum Output Power [dBm]       |          |          |
|----------------------------------------------------------------------|----------------------------------|----------|----------|
|                                                                      | 2412 MHz                         | 2437 MHz | 2462 MHz |
| Peak Output Power Conducted                                          | 19.76                            | 19.97    | 20.17    |
| Average Output Power Conducted<br>measured with power meter          | 16.21                            | 16.11    | 16.51    |
| Output Power Radiated - EIRP                                         | 20.59                            | 20.80    | 20.97    |
| Average Output Power Radiated - EIRP<br>calculated with antenna gain | 17.04                            | 16.94    | 17.31    |
| Measurement uncertainty                                              | ± 0.5 dB (cond.) / ± 2 dB (rad.) |          |          |

| OFDM<br>Frequency                                                    | Maximum Output Power [dBm]               |          |          |
|----------------------------------------------------------------------|------------------------------------------|----------|----------|
|                                                                      | 2412 MHz                                 | 2437 MHz | 2462 MHz |
| Peak Output Power Conducted                                          | 23.63                                    | 23.31    | 23.10    |
| Average Output Power Conducted<br>measured with power meter          | 16.06                                    | 16.11    | 16.26    |
| Output Power Radiated - EIRP                                         | 24.46                                    | 24.14    | 23.90    |
| Average Output Power Radiated - EIRP<br>calculated with antenna gain | 16.89                                    | 16.94    | 17.06    |
| Measurement uncertainty                                              | $\pm 0.5$ dB (cond.) / $\pm 2$ dB (rad.) |          |          |

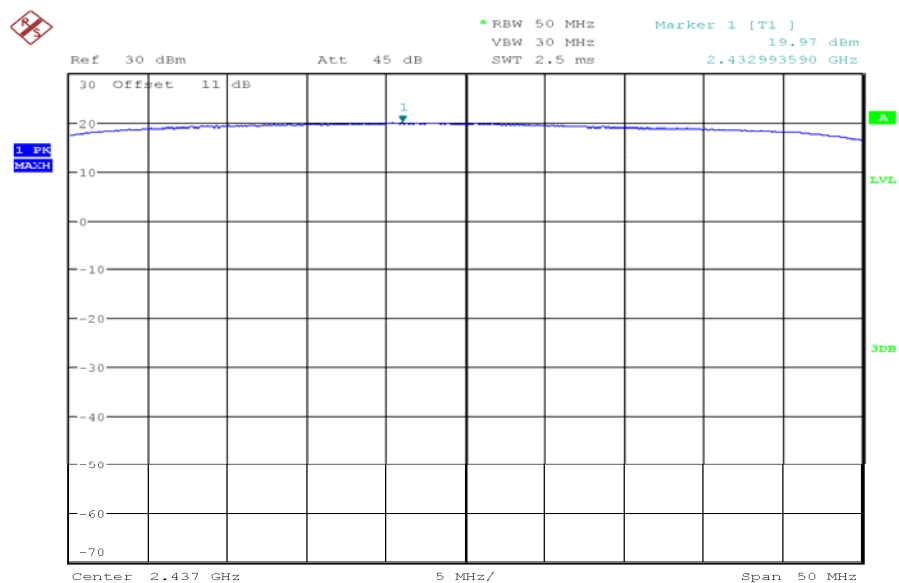
**Result:** The result of the measurement is passed.

**Plot 1: Channel 1 / DSSS (conducted)**



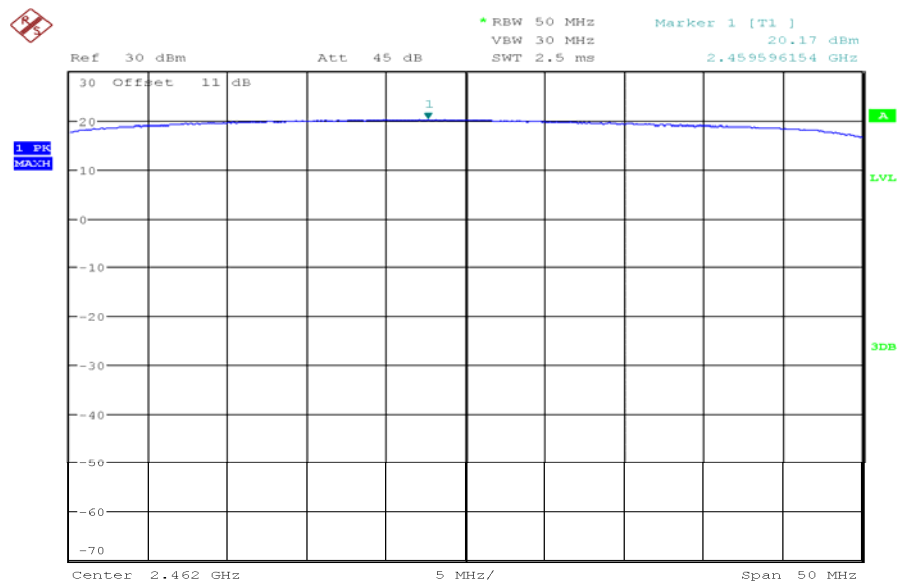
Date: 20.JUL.2010 08:30:22

**Plot 2: Channel 6 / DSSS (conducted)**



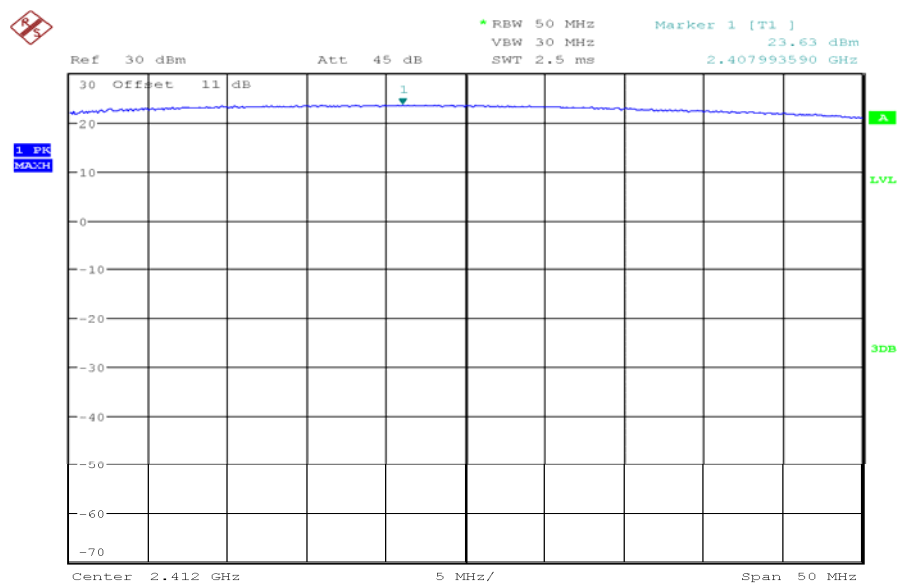
Date: 20.JUL.2010 08:32:52

**Plot 3: Channel 11 / DSSS (conducted)**



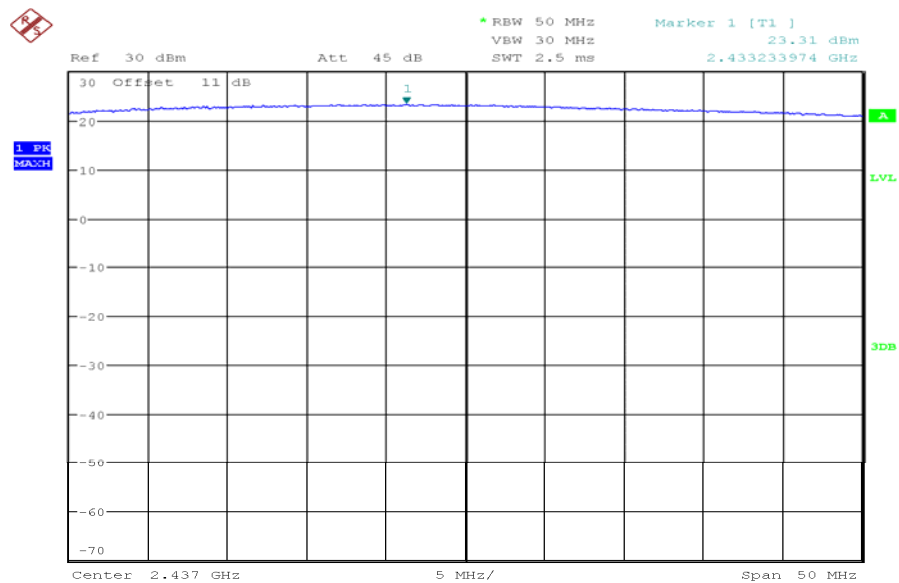
Date: 20.JUL.2010 08:34:00

**Plot 4: Channel 1 / OFDM (conducted)**



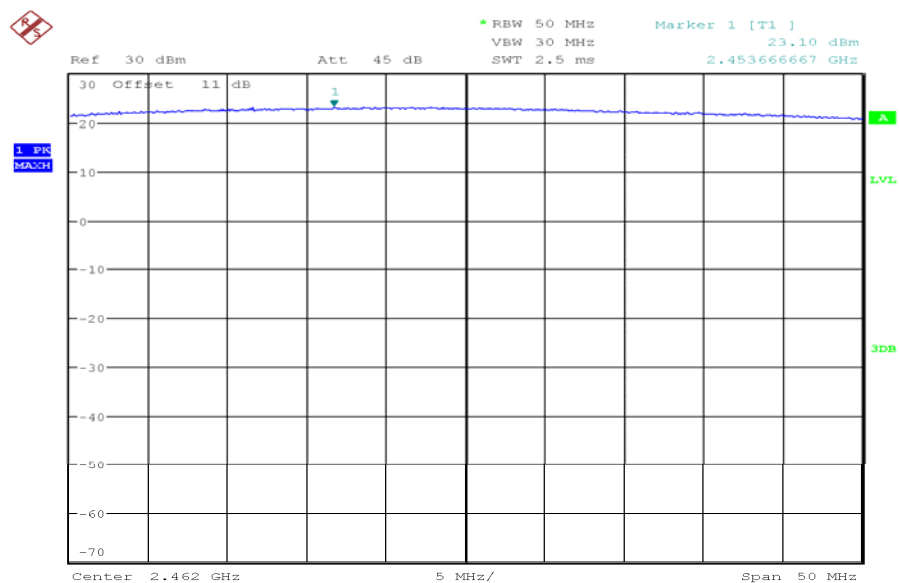
Date: 20.JUL.2010 08:35:05

**Plot 5: Channel 6 / OFDM (conducted)**



Date: 20.JUL.2010 08:35:59

**Plot 6: Channel 11 / OFDM (conducted)**



Date: 20.JUL.2010 08:36:58

## 9.7 Band Edge Compliance Conducted

### Description:

Measurement of the conducted band edge compliance. EUT is measured at the lower and upper band edge in both modes.

### Measurement:

| Measurement parameter |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| Detector:             | Peak                                                                 |
| Sweep time:           | Auto                                                                 |
| Video bandwidth:      | 100 kHz                                                              |
| Resolution bandwidth: | 100 kHz                                                              |
| Span:                 | Lower Band Edge: 2380 – 2430 MHz<br>Upper Band Edge: 2450 – 2500 MHz |
| Trace-Mode:           | Max Hold                                                             |

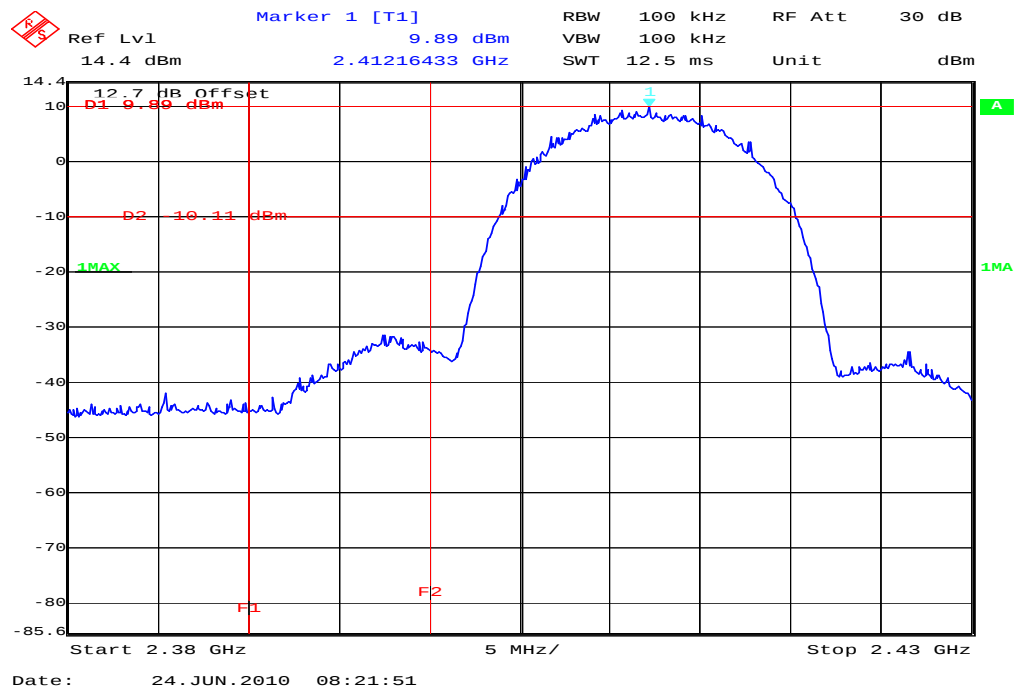
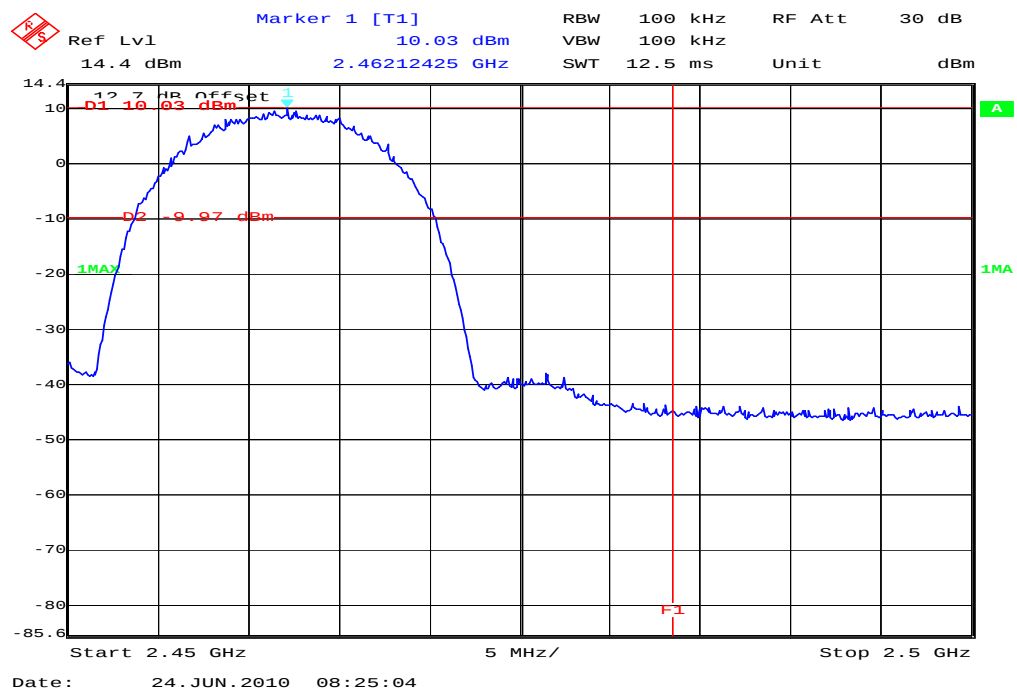
### Limits:

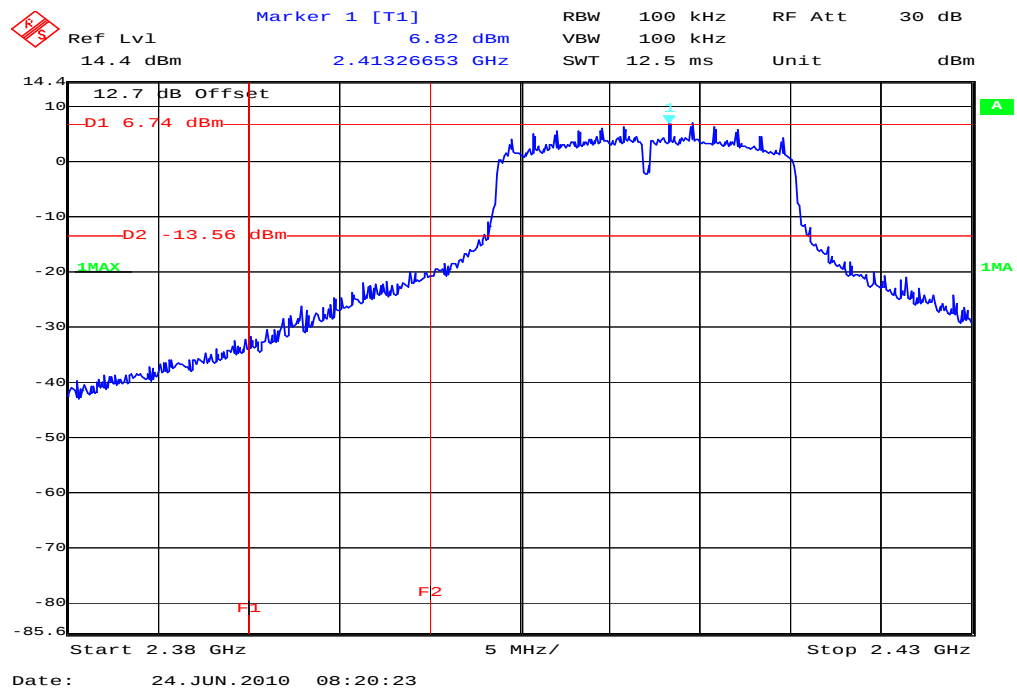
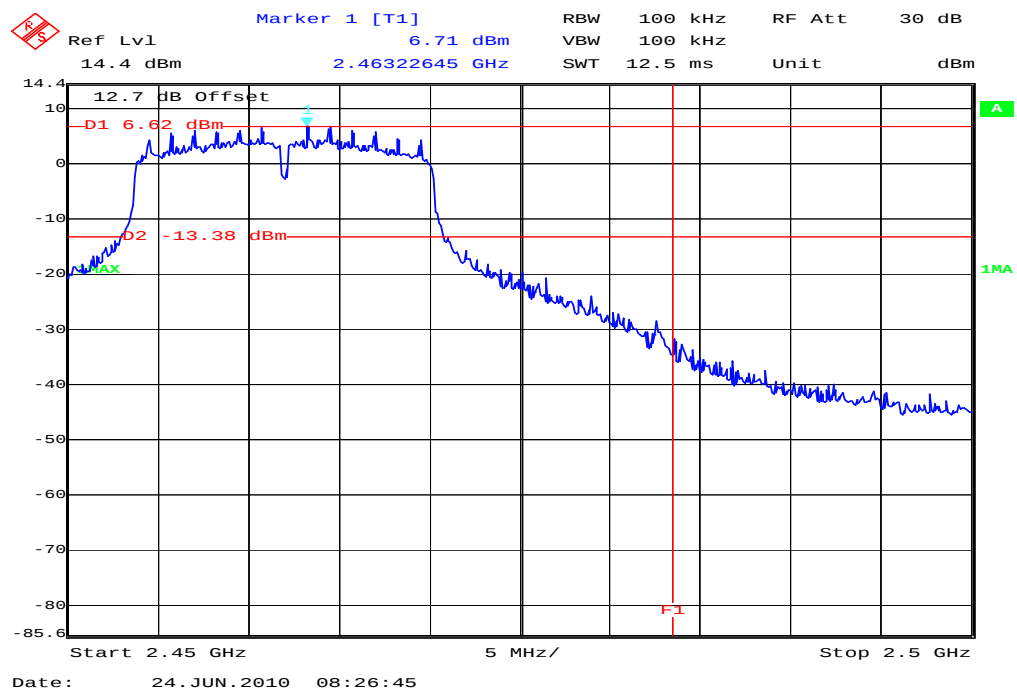
| FCC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | IC                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| CFR Part 15.247 (d)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RSS 210, Issue 7, A 8.5 |
| Band Edge Compliance Conducted                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |
| 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. Attenuation below the general limits specified in Section 15.209(a) is not required. |                         |

### Result:

| Szenario<br>Modulation       | Band Edge Compliance Conducted [dB] |                      |
|------------------------------|-------------------------------------|----------------------|
|                              | DSSS                                | OFDM                 |
| Lower Band Edge – Channel 1  | > 20 dB (see plot 1)                | > 20 dB (see plot 3) |
| Upper Band Edge – Channel 11 | > 20 dB (see plot 2)                | > 20 dB (see plot 4) |
| Measurement uncertainty      | ± 1.5 dB                            |                      |

**Result:** The result of the measurement is passed.

**Plot 1: Lower Band Edge – DSSS (conducted)****Plot 2: Upper Band Edge – DSSS (conducted)**

**Plot 3: Lower Band Edge – OFDM (conducted)****Plot 4: Upper Band Edge – OFDM (conducted)**

## 9.8 Band Edge Compliance Radiated

### Description:

Measurement of the radiated band edge compliance. The EUT is turned in the position that results in the maximum level at the band edge. Then a sweep over the corresponding restricted band is performed. The EUT is set to channel 1 for the lower restricted band and to channel 11 for the upper restricted band. The measurement is repeated for all modulations. Measurement distance is 3m.

### Measurement:

| Measurement parameter |                                                             |
|-----------------------|-------------------------------------------------------------|
| Detector:             | Peak                                                        |
| Sweep time:           | Auto                                                        |
| Video bandwidth:      | 10 Hz                                                       |
| Resolution bandwidth: | 1 MHz                                                       |
| Span:                 | Lower Band: 2300 – 2400 MHz<br>higher Band: 2480 – 2500 MHz |
| Trace-Mode:           | Max Hold                                                    |

### Limits:

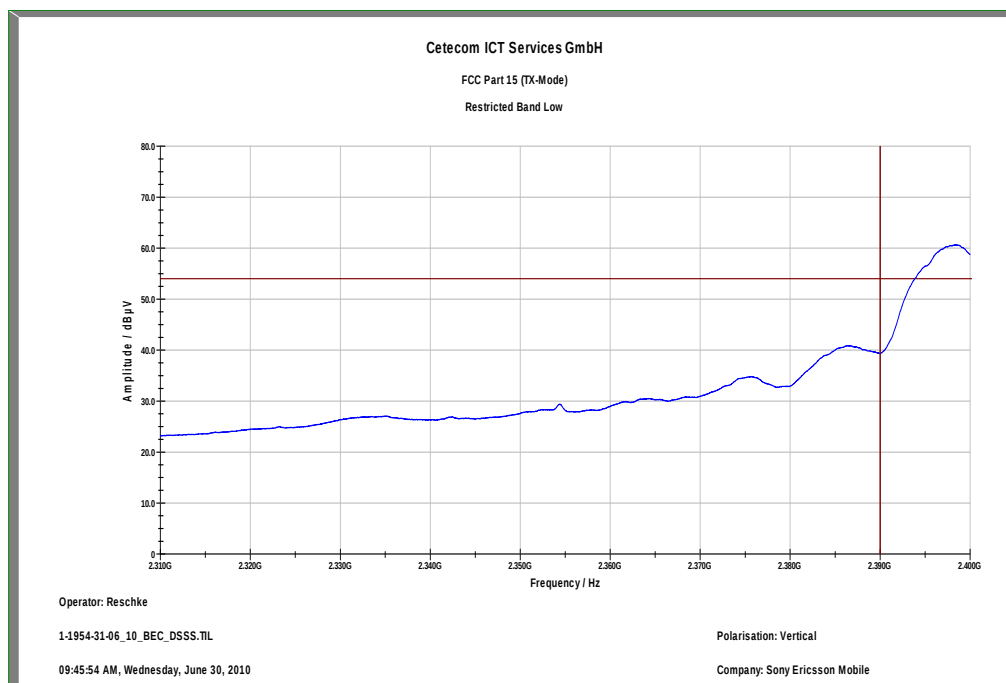
| FCC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | IC                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| CFR Part 15.205                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | RSS 210, Issue 7, A 8.5 |
| Band Edge Compliance Radiated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |
| 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)). |                         |
| 54 dBμV/m AVG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |

### Result:

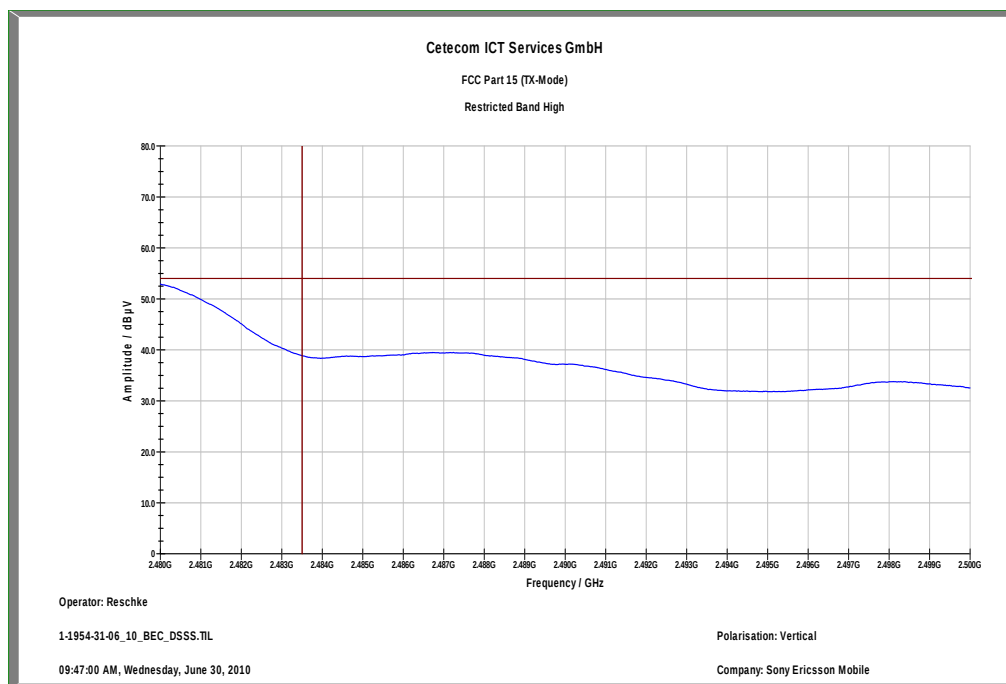
| Szenario<br>Modulation       | Band Edge Compliance Radiated [dBμV/m] |                          |
|------------------------------|----------------------------------------|--------------------------|
|                              | DSSS                                   | OFDM                     |
| Lower Band Edge – Channel 1  | < 54 dBμV/m (see plot 1)               | < 54 dBμV/m (see plot 3) |
| Upper Band Edge – Channel 11 | < 54 dBμV/m (see plot 2)               | < 54 dBμV/m (see plot 4) |
| Measurement uncertainty      | ± 3 dB                                 |                          |

**Result:** The result of the measurement is passed.

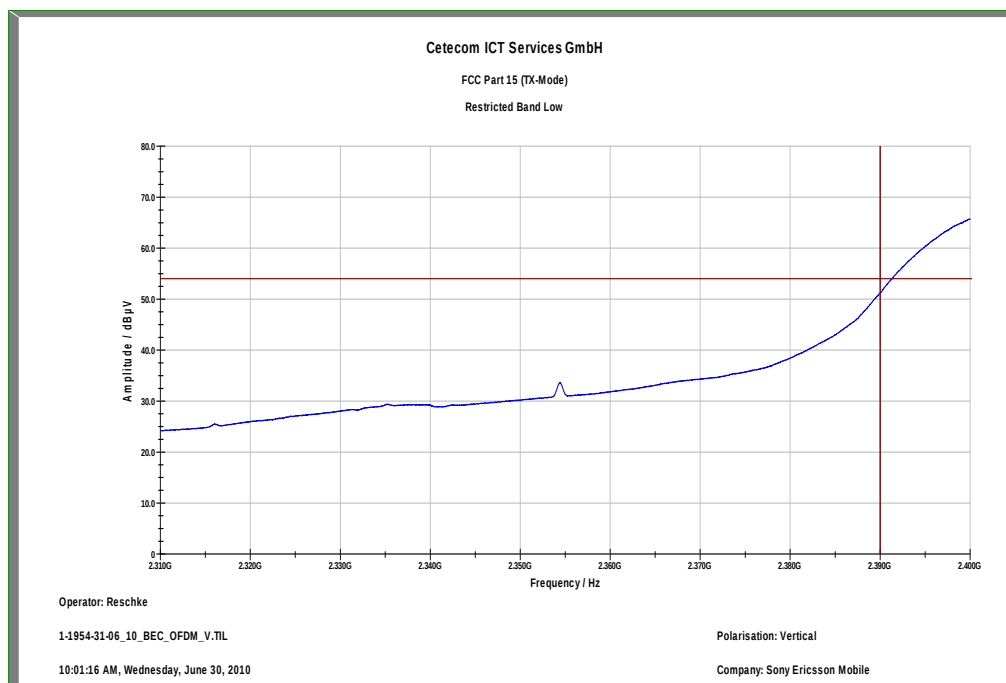
**Plot 1: Lower Band Edge – DSSS (radiated)**



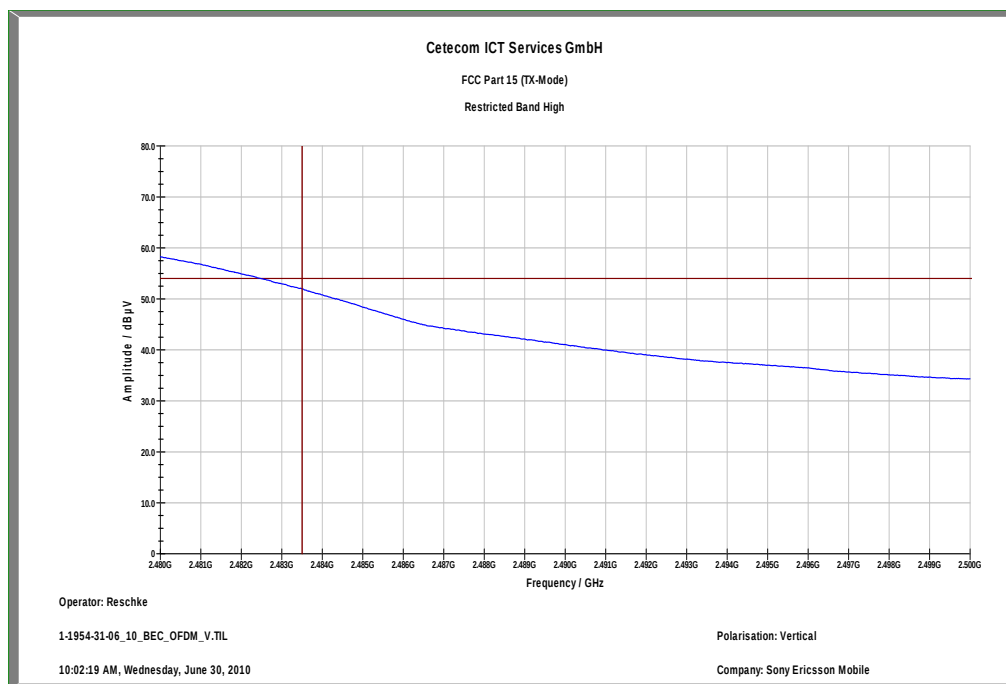
**Plot 2: Upper Band Edge – DSSS (radiated)**



**Plot 3: Lower Band Edge – OFDM (radiated)**



**Plot 4: Upper Band Edge – OFDM (radiated)**



## 9.9 TX Spurious Emissions Conducted

### Description:

Measurement of the conducted spurious emissions in transmit mode. The measurement is performed at channel 1, 6 and 11. The measurement is repeated for all modulations.

### Measurement:

| Measurement parameter |                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------|
| Detector:             | Peak                                                                                        |
| Sweep time:           | Auto                                                                                        |
| Video bandwidth:      | Pre-measurement with 100 kHz<br>On Peak Detection<br>F < 1 GHz: 100 kHz<br>F > 1 GHz: 1 MHz |
| Resolution bandwidth: | Pre-measurement with 100 kHz<br>On Peak Detection<br>F < 1 GHz: 100 kHz<br>F > 1 GHz: 1 MHz |
| Span:                 | 9 kHz to 25 GHz                                                                             |
| Trace-Mode:           | Max Hold                                                                                    |

### Limits:

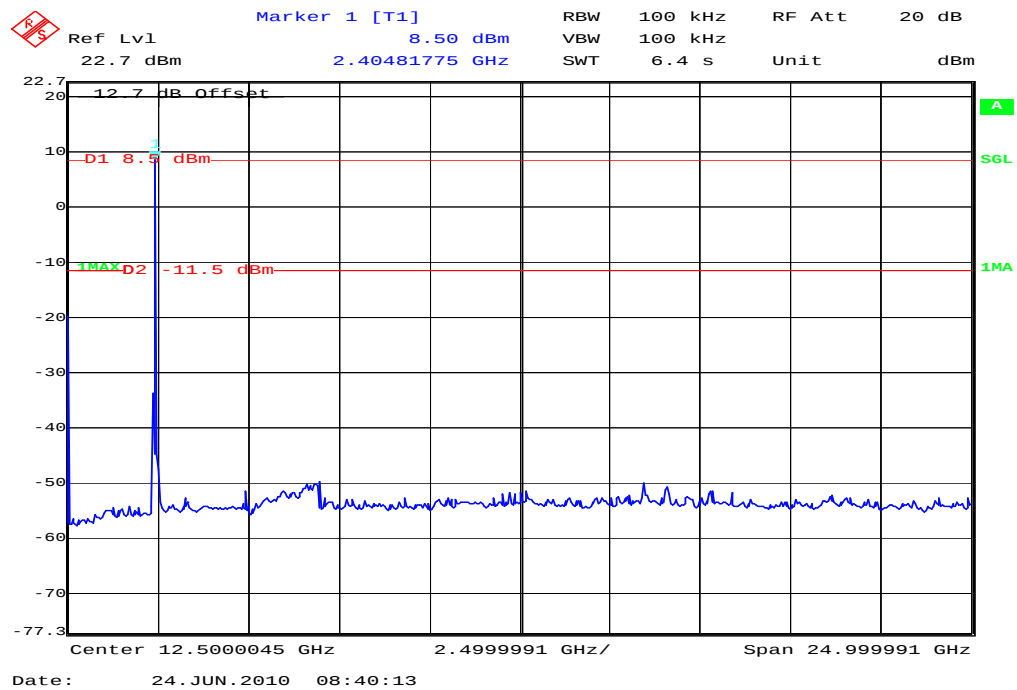
| FCC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | IC                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| CFR Part 15.247(d)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RSS 210, Issue 7, A 8.5 |
| TX Spurious Emissions Conducted                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |
| 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. Attenuation below the general limits specified in Section 15.209(a) is not required |                         |

**Result:** Also see plots

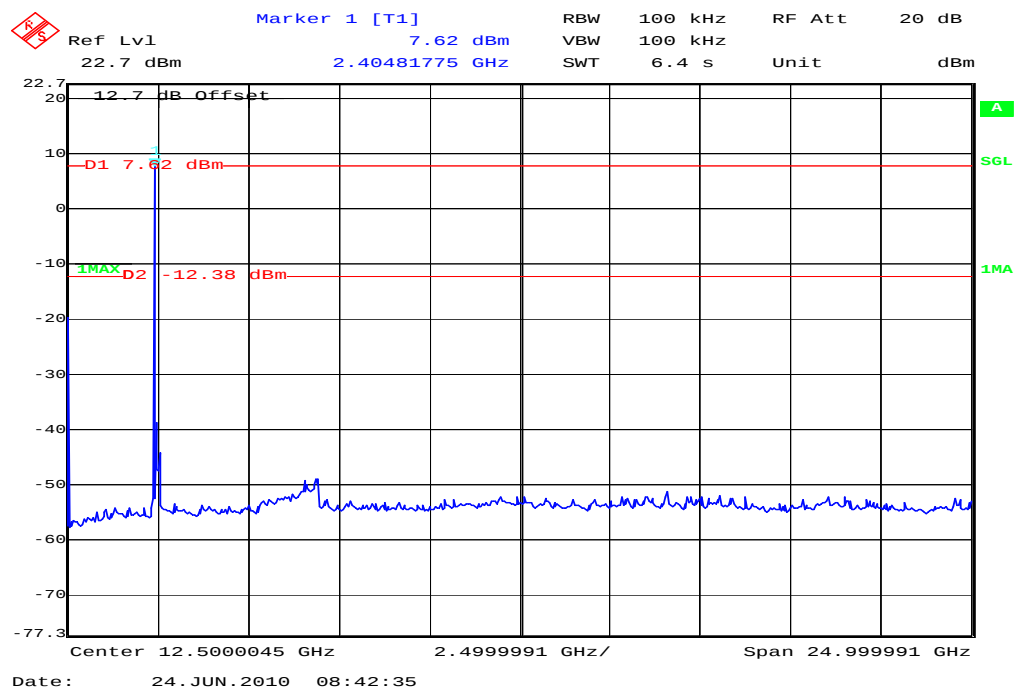
| TX Spurious Emissions Conducted |  |                             |                                   |                                                      |                     |
|---------------------------------|--|-----------------------------|-----------------------------------|------------------------------------------------------|---------------------|
| DSSS - mode                     |  |                             |                                   |                                                      |                     |
| f [MHz]                         |  | amplitude of emission [dBm] | limit max. allowed emission power | actual attenuation below frequency of operation [dB] | results             |
| 2412                            |  | 8.50                        | 30 dBm                            |                                                      | Operating frequency |
| No critical peaks found         |  |                             | -20 dBc                           |                                                      | complies            |
|                                 |  |                             |                                   |                                                      |                     |
|                                 |  |                             |                                   |                                                      |                     |
| 2437                            |  | 7.62                        | 30 dBm                            |                                                      | Operating frequency |
| No critical peaks found         |  |                             | -20 dBc                           |                                                      | complies            |
|                                 |  |                             |                                   |                                                      |                     |
|                                 |  |                             |                                   |                                                      |                     |
| 2462                            |  | 7.58                        | 30 dBm                            |                                                      | Operating frequency |
| No critical peaks found         |  |                             | -20 dBc                           |                                                      | complies            |
|                                 |  |                             |                                   |                                                      |                     |
|                                 |  |                             |                                   |                                                      |                     |
| Measurement uncertainty         |  | ± 3 dB                      |                                   |                                                      |                     |

| TX Spurious Emissions Conducted |  |                             |                                   |                                                      |                     |
|---------------------------------|--|-----------------------------|-----------------------------------|------------------------------------------------------|---------------------|
| OFDM - mode                     |  |                             |                                   |                                                      |                     |
| f [MHz]                         |  | amplitude of emission [dBm] | limit max. allowed emission power | actual attenuation below frequency of operation [dB] | results             |
| 2412                            |  | 5.23                        | 30 dBm                            |                                                      | Operating frequency |
| No critical peaks found         |  |                             | -20 dBc                           |                                                      | complies            |
|                                 |  |                             |                                   |                                                      |                     |
|                                 |  |                             |                                   |                                                      |                     |
| 2437                            |  | 6.60                        | 30 dBm                            |                                                      | Operating frequency |
| No critical peaks found         |  |                             | -20 dBc                           |                                                      | complies            |
|                                 |  |                             |                                   |                                                      |                     |
|                                 |  |                             |                                   |                                                      |                     |
| 2462                            |  | 5.58                        | 30 dBm                            |                                                      | Operating frequency |
| No critical peaks found         |  |                             | -20 dBc                           |                                                      | complies            |
|                                 |  |                             |                                   |                                                      |                     |
|                                 |  |                             |                                   |                                                      |                     |
| Measurement uncertainty         |  | ± 3 dB                      |                                   |                                                      |                     |

**Result:** The result of the measurement is passed.

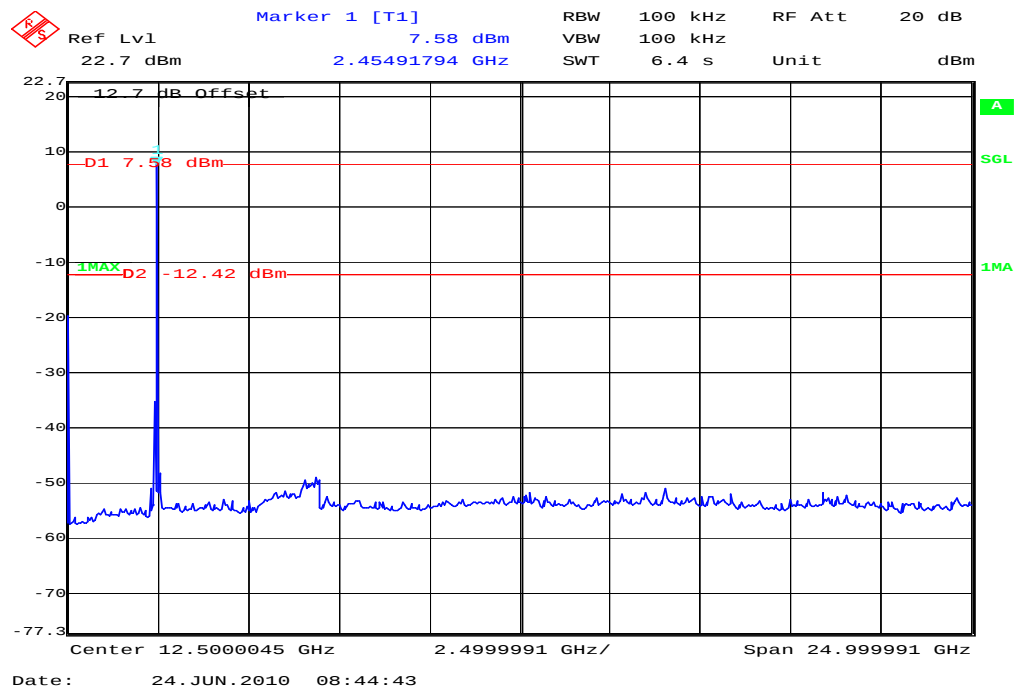
**Plot 1: Channel 1 / DSSS**

The peak at the beginning of the plot is the LO from the SA

**Plot 2: Channel 6 / DSSS**

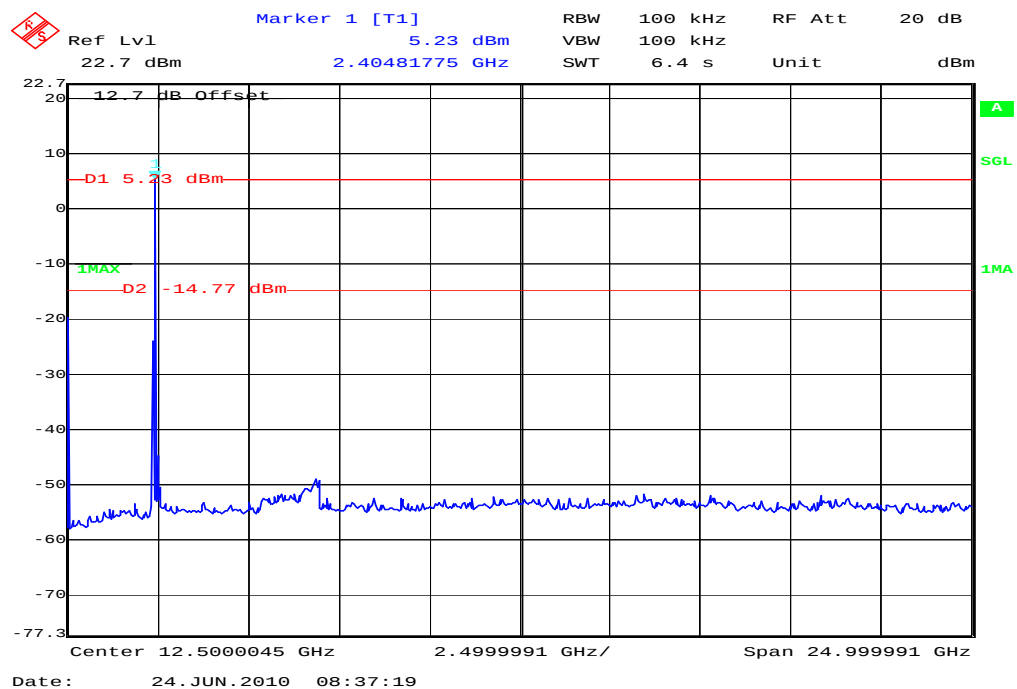
The peak at the beginning of the plot is the LO from the SA

## Plot 3: Channel 11 / DSSS



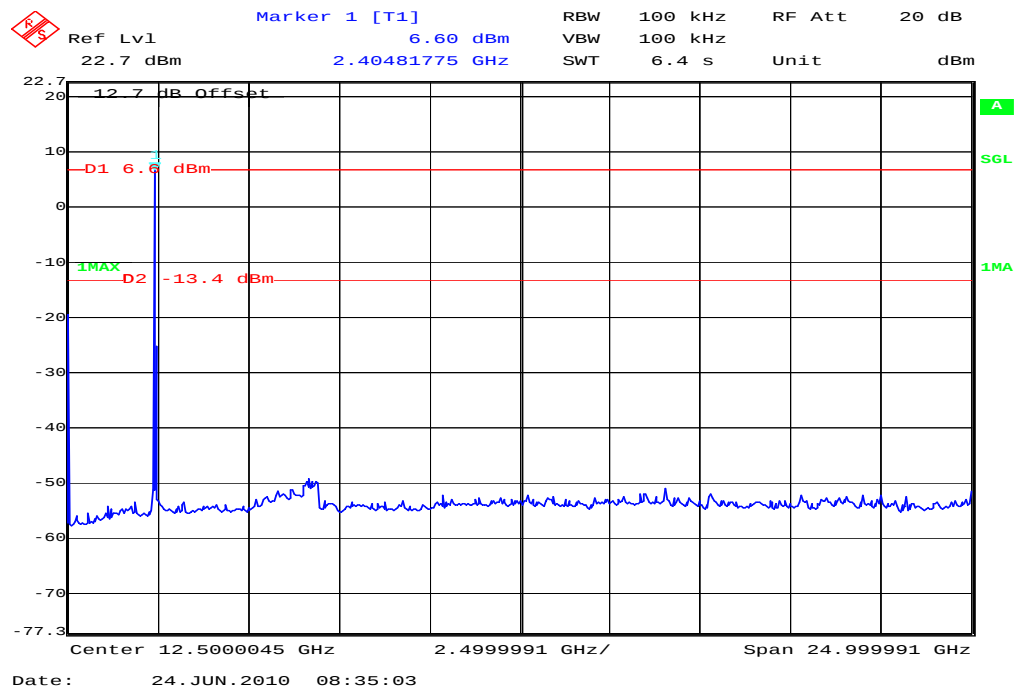
The peak at the beginning of the plot is the LO from the SA

## Plot 4: Channel 1 / OFDM



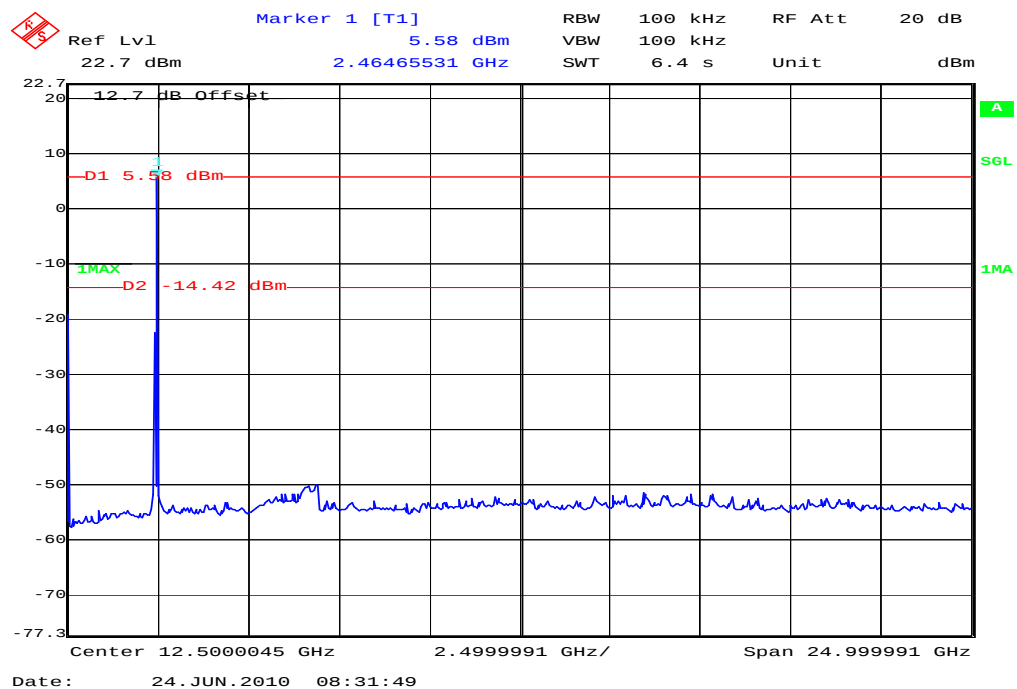
The peak at the beginning of the plot is the LO from the SA

## Plot 5: Channel 6 / OFDM



The peak at the beginning of the plot is the LO from the SA

## Plot 6: Channel 11 / OFDM



The peak at the beginning of the plot is the LO from the SA

## 9.10 TX Spurious Emissions Radiated

### Description:

Measurement of the radiated spurious emissions in transmit mode. The measurement is performed at channel 1, 6 and 11. The measurement is repeated for all modulations.

The spurious were done in vertical and horizontal polarisation and for both modulations. No differences could be detected between the modes and polarisation. Due to this, the plots below are valid for both modes and both polarisations.

### Measurement:

| Measurement parameter |                                         |
|-----------------------|-----------------------------------------|
| Detector:             | Peak / Quasi Peak                       |
| Sweep time:           | Auto                                    |
| Video bandwidth:      | Sweep: 100 kHz<br>Re-measurement: 10 Hz |
| Resolution bandwidth: | F < 1 GHz: 100 kHz<br>F > 1 GHz: 1 MHz  |
| Span:                 | 30 MHz to 25 GHz                        |
| Trace-Mode:           | Max Hold                                |

### Limits:

| FCC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | IC                      |                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------|
| CFR Part 15.247(d)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | RSS 210, Issue 7, A 8.5 |                      |
| TX Spurious Emissions Radiated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                         |                      |
| 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)). |                         |                      |
| §15.209                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |                      |
| Frequency (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Field Strength (dBµV/m) | Measurement distance |
| 30 - 88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30.0                    | 10                   |
| 88 – 216                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 33.5                    | 10                   |
| 216 – 960                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 36.0                    | 10                   |
| Above 960                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 54.0                    | 3                    |

**Result:** Also see plots

| TX Spurious Emissions Radiated [dB $\mu$ V/m] |          |                      |                         |          |                      |                         |          |                      |
|-----------------------------------------------|----------|----------------------|-------------------------|----------|----------------------|-------------------------|----------|----------------------|
| DSSS - mode                                   |          |                      |                         |          |                      |                         |          |                      |
| 2412 MHz                                      |          |                      | 2437 MHz                |          |                      | 2462 MHz                |          |                      |
| F [MHz]                                       | Detector | Level [dB $\mu$ V/m] | F [MHz]                 | Detector | Level [dB $\mu$ V/m] | F [MHz]                 | Detector | Level [dB $\mu$ V/m] |
| No critical peaks found                       |          |                      | No critical peaks found |          |                      | No critical peaks found |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
| Measurement uncertainty                       |          |                      | $\pm 3$ dB              |          |                      |                         |          |                      |

| TX Spurious Emissions Radiated [dB $\mu$ V/m] |          |                      |                         |          |                      |                         |          |                      |
|-----------------------------------------------|----------|----------------------|-------------------------|----------|----------------------|-------------------------|----------|----------------------|
| OFDM - mode                                   |          |                      |                         |          |                      |                         |          |                      |
| 2412 MHz                                      |          |                      | 2437 MHz                |          |                      | 2462 MHz                |          |                      |
| F [MHz]                                       | Detector | Level [dB $\mu$ V/m] | F [MHz]                 | Detector | Level [dB $\mu$ V/m] | F [MHz]                 | Detector | Level [dB $\mu$ V/m] |
| No critical peaks found                       |          |                      | No critical peaks found |          |                      | No critical peaks found |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
|                                               |          |                      |                         |          |                      |                         |          |                      |
| Measurement uncertainty                       |          |                      | $\pm 3$ dB              |          |                      |                         |          |                      |

**Result:** The result of the measurement is passed.

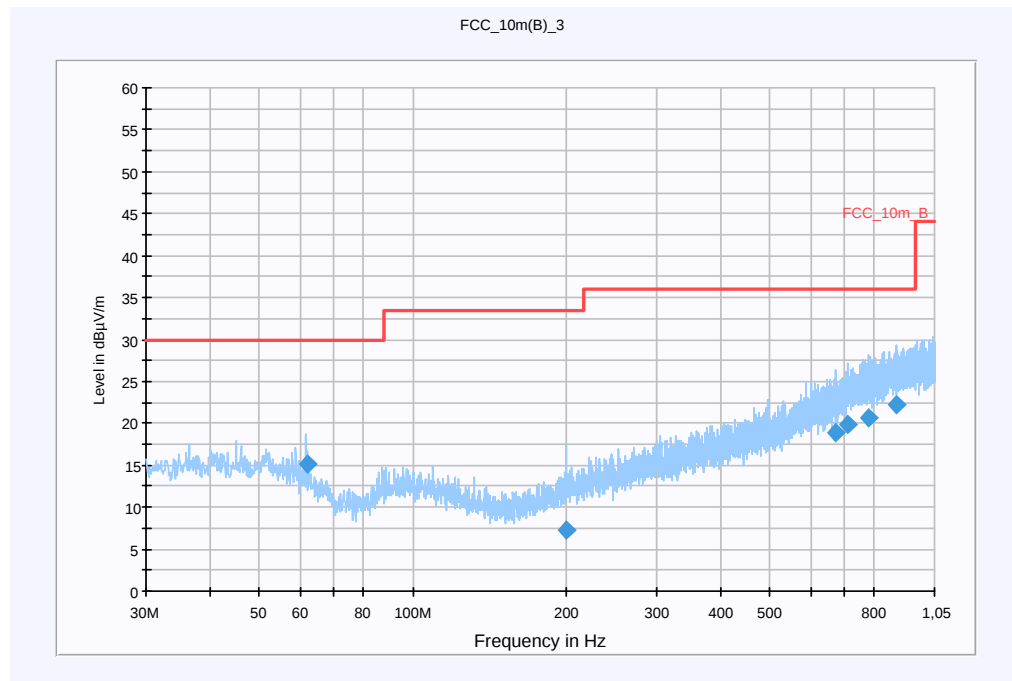
**Plot 1: 30 MHz to 1 GHz / Channel 1 - OFDM (horizontal/vertical)****Common Information**

EUT: AAD-3880091-BV + EP800  
 Serial Number: IMEI:00440214-072199-8 + 1109w50400488  
 Test Description: FCC part 15 C Class B @ 10m  
 Operating Conditions: WiFi Testmode: continuous Tx random pattern, 6 MBit/s, CH:1  
 Operator Name: LNG  
 Comment: Power: 115 V/ 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Level Unit: dB $\mu$ V/m

| Subrange          | Detectors | IF Bandwidth | Meas. Time | Receiver |
|-------------------|-----------|--------------|------------|----------|
| 30 MHz - 1,05 GHz | QuasiPeak | 120 kHz      | 15 s       | Receiver |

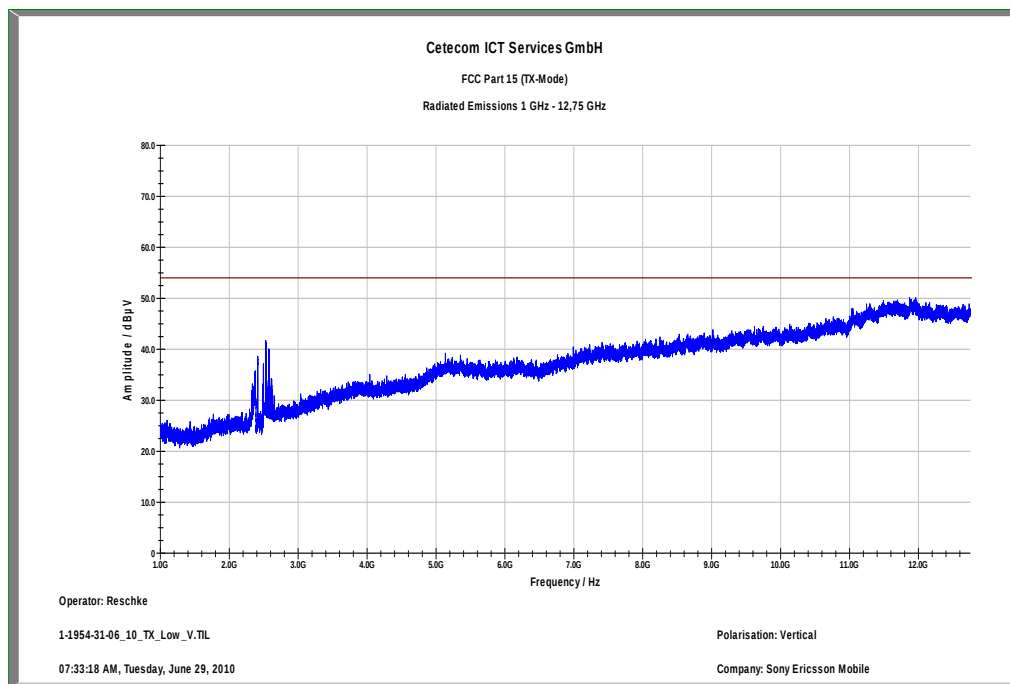
**Final Result 1**

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------|-------------|----------------------|---------|
| 61.984800       | 15.1                     | 15000.000       | 120.000         | 220.0               | V        | 190.0                    | 11.1       | 14.9        | 30.0                 |         |
| 199.686300      | 7.2                      | 15000.000       | 120.000         | 220.0               | V        | 186.0                    | 11.7       | 26.3        | 33.5                 |         |
| 673.916250      | 18.9                     | 15000.000       | 120.000         | 172.0               | V        | 5.0                      | 21.8       | 17.1        | 36.0                 |         |
| 711.180750      | 20.0                     | 15000.000       | 120.000         | 220.0               | V        | 166.0                    | 22.8       | 16.0        | 36.0                 |         |
| 779.569200      | 20.7                     | 15000.000       | 120.000         | 220.0               | V        | 95.0                     | 23.7       | 15.3        | 36.0                 |         |
| 882.532050      | 22.2                     | 15000.000       | 120.000         | 116.0               | H        | 190.0                    | 25.0       | 13.8        | 36.0                 |         |

**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

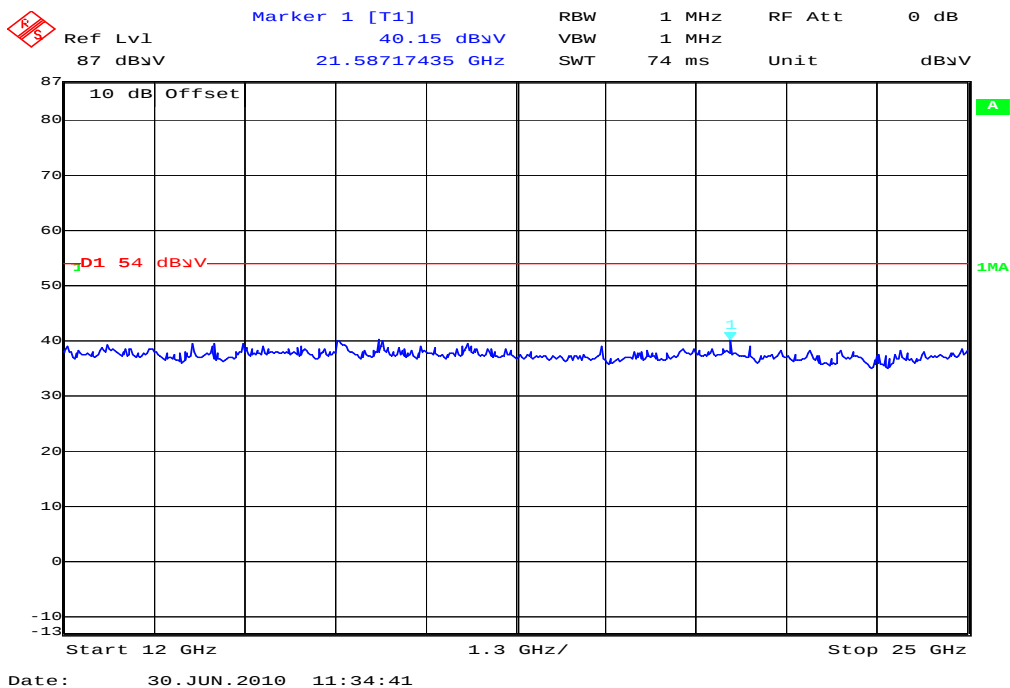
Subrange 1

Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.32Signal Path: without Notch  
FW 1.0Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table: Cable\_EN\_1GHz (1005)Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12**Plot 2: 1 GHz to 12.75 GHz / Channel 1 - OFDM (horizontal/vertical)**

Carrier suppressed with a 2.4 GHz-band rejection filter.

Plot 3: 12 GHz to 25 GHz / Channel 1 - OFDM (horizontal/vertical) – valid for all channels



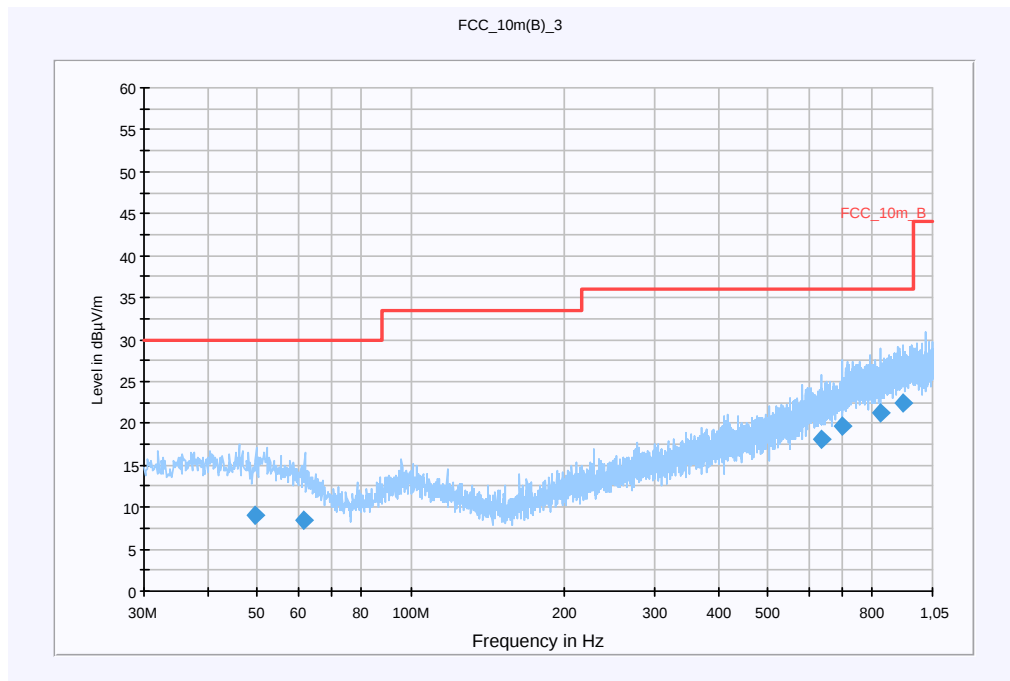
**Plot 4: 30 MHz to 1 GHz / Channel 6 - OFDM (horizontal/vertical)****Common Information**

EUT: AAD-3880091-BV + EP800  
 Serial Number: IMEI:00440214-072199-8 + 1109w50400488  
 Test Description: FCC part 15 C Class B @ 10m  
 Operating Conditions: WiFi Testmode: continuous Tx random pattern, 6 MBit/s, CH:6  
 Operator Name: LNG  
 Comment: Power: 115 V/ 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Level Unit: dB $\mu$ V/m

| Subrange          | Detectors | IF Bandwidth | Meas. Time | Receiver |
|-------------------|-----------|--------------|------------|----------|
| 30 MHz - 1,05 GHz | QuasiPeak | 120 kHz      | 15 s       | Receiver |

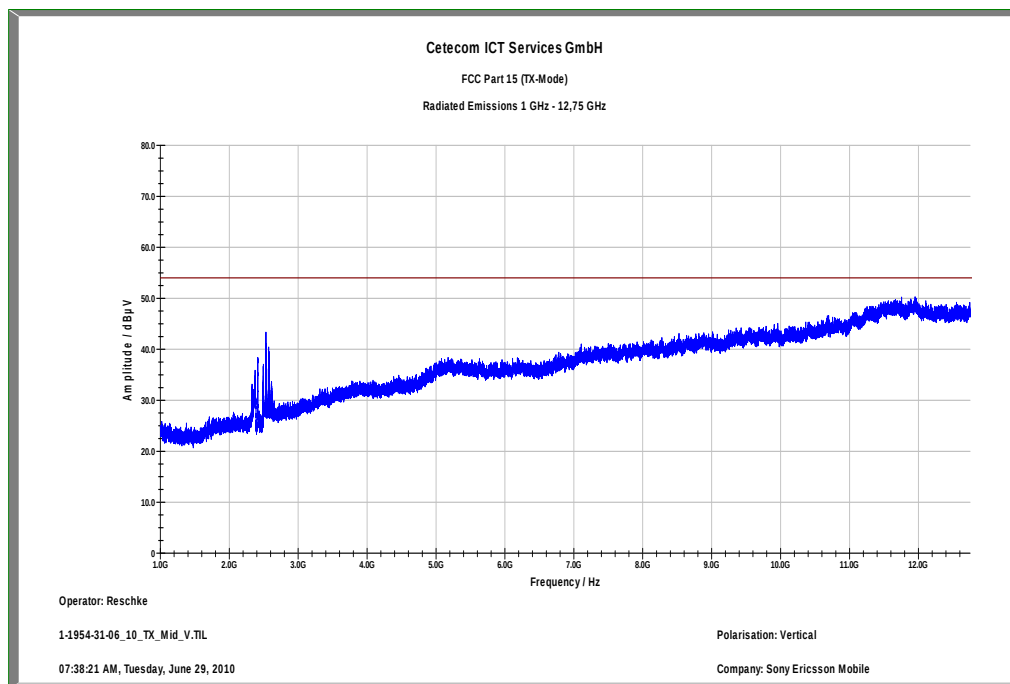
**Final Result 1**

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------|-------------|----------------------|---------|
| 49.651050       | 9.1                      | 15000.000       | 120.000         | 113.0               | V        | 110.0                    | 13.4       | 20.9        | 30.0                 |         |
| 61.711950       | 8.4                      | 15000.000       | 120.000         | 220.0               | V        | 18.0                     | 11.2       | 21.6        | 30.0                 |         |
| 636.355800      | 18.1                     | 15000.000       | 120.000         | 116.0               | H        | 18.0                     | 21.0       | 17.9        | 36.0                 |         |
| 698.327700      | 19.6                     | 15000.000       | 120.000         | 98.0                | V        | 110.0                    | 22.5       | 16.4        | 36.0                 |         |
| 828.326400      | 21.2                     | 15000.000       | 120.000         | 185.0               | V        | 168.0                    | 24.2       | 14.8        | 36.0                 |         |
| 920.275200      | 22.4                     | 15000.000       | 120.000         | 196.0               | V        | -1.0                     | 25.3       | 13.6        | 36.0                 |         |

**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

Subrange 1

Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.32Signal Path: without Notch  
FW 1.0Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table: Cable\_EN\_1GHz (1005)Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12**Plot 5: 1 GHz to 12.75 GHz / Channel 6 - OFDM (horizontal/vertical)**

Carrier suppressed with a 2.4 GHz-band rejection filter.

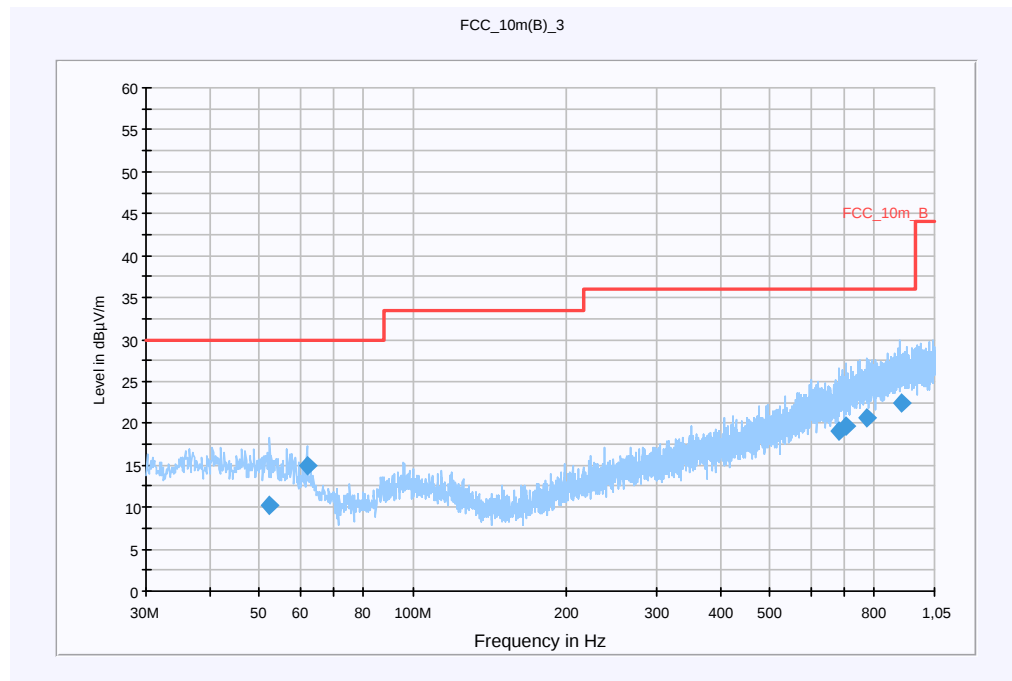
**Plot 6: 30 MHz to 1 GHz / Channel 11 - OFDM (horizontal/vertical)****Common Information**

EUT: AAD-3880091-BV + EP800  
 Serial Number: IMEI:00440214-072199-8 + 1109w50400488  
 Test Description: FCC part 15 C Class B @ 10m  
 Operating Conditions: WiFi Testmode: continuous Tx random pattern, 6 MBit/s, CH:11  
 Operator Name: LNG  
 Comment: Power: 115 V/ 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Level Unit: dB $\mu$ V/m

| Subrange          | Detectors | IF Bandwidth | Meas. Time | Receiver |
|-------------------|-----------|--------------|------------|----------|
| 30 MHz - 1,05 GHz | QuasiPeak | 120 kHz      | 15 s       | Receiver |

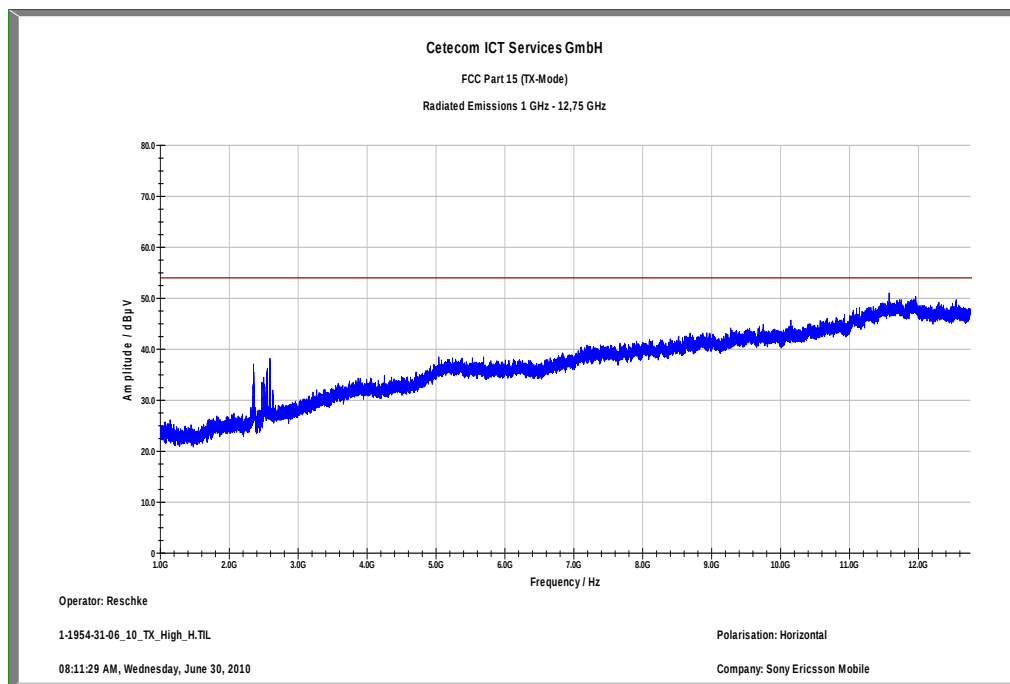
**Final Result 1**

| Frequency (MHz) | QuasiPeak (dB $\mu$ V/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) | Margin (dB) | Limit (dB $\mu$ V/m) | Comment |
|-----------------|--------------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------|-------------|----------------------|---------|
| 52.340250       | 10.2                     | 15000.000       | 120.000         | 158.0               | V        | 96.0                     | 13.1       | 19.8        | 30.0                 |         |
| 61.988700       | 15.0                     | 15000.000       | 120.000         | 220.0               | V        | 17.0                     | 11.1       | 15.0        | 30.0                 |         |
| 683.377350      | 19.1                     | 15000.000       | 120.000         | 208.0               | H        | 96.0                     | 22.0       | 16.9        | 36.0                 |         |
| 706.395600      | 19.7                     | 15000.000       | 120.000         | 220.0               | V        | 78.0                     | 22.7       | 16.3        | 36.0                 |         |
| 775.484550      | 20.7                     | 15000.000       | 120.000         | 220.0               | V        | 257.0                    | 23.7       | 15.3        | 36.0                 |         |
| 901.544100      | 22.4                     | 15000.000       | 120.000         | 136.0               | V        | 168.0                    | 25.2       | 13.6        | 36.0                 |         |

**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

Subrange 1

Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.32Signal Path: without Notch  
FW 1.0Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table: Cable\_EN\_1GHz (1005)Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12**Plot 7: 1 GHz to 12.75 GHz / Channel 11 - OFDM (horizontal/vertical)**

Carrier suppressed with a 2.4 GHz-band rejection filter.

## 9.11 RX Spurious Emissions Radiated

### Description:

Measurement of the radiated spurious emissions in idle/receive mode. The results are valid for both modes.

### Measurement:

| Measurement parameter |                                         |
|-----------------------|-----------------------------------------|
| Detector:             | Peak / Quasi Peak                       |
| Sweep time:           | Auto                                    |
| Video bandwidth:      | Sweep: 100 kHz<br>Re-measurement: 10 Hz |
| Resolution bandwidth: | F < 1 GHz: 100 kHz<br>F > 1 GHz: 1 MHz  |
| Span:                 | 30 MHz to 25 GHz                        |
| Trace-Mode:           | Max Hold                                |

### Limits:

| FCC                            |                               | IC                     |
|--------------------------------|-------------------------------|------------------------|
| CFR Part 15.109                |                               | RSS Gen, Issue 2, 4.10 |
| RX Spurious Emissions Radiated |                               |                        |
| Frequency (MHz)                | Field Strength (dB $\mu$ V/m) | Measurement distance   |
| 30 - 88                        | 30.0                          | 10                     |
| 88 – 216                       | 33.5                          | 10                     |
| 216 – 960                      | 36.0                          | 10                     |
| Above 960                      | 54.0                          | 3                      |

**Result:** Also see plots

| RX Spurious Emissions Radiated [dBμV/m] |          |                |
|-----------------------------------------|----------|----------------|
| F [MHz]                                 | Detector | Level [dBμV/m] |
| No critical peaks found                 |          |                |
|                                         |          |                |
|                                         |          |                |
|                                         |          |                |
|                                         |          |                |
|                                         |          |                |
|                                         |          |                |
|                                         |          |                |
|                                         |          |                |
|                                         |          |                |
|                                         |          |                |
| Measurement uncertainty                 | ± 3 dB   |                |

**Result:** The result of the measurement is passed.

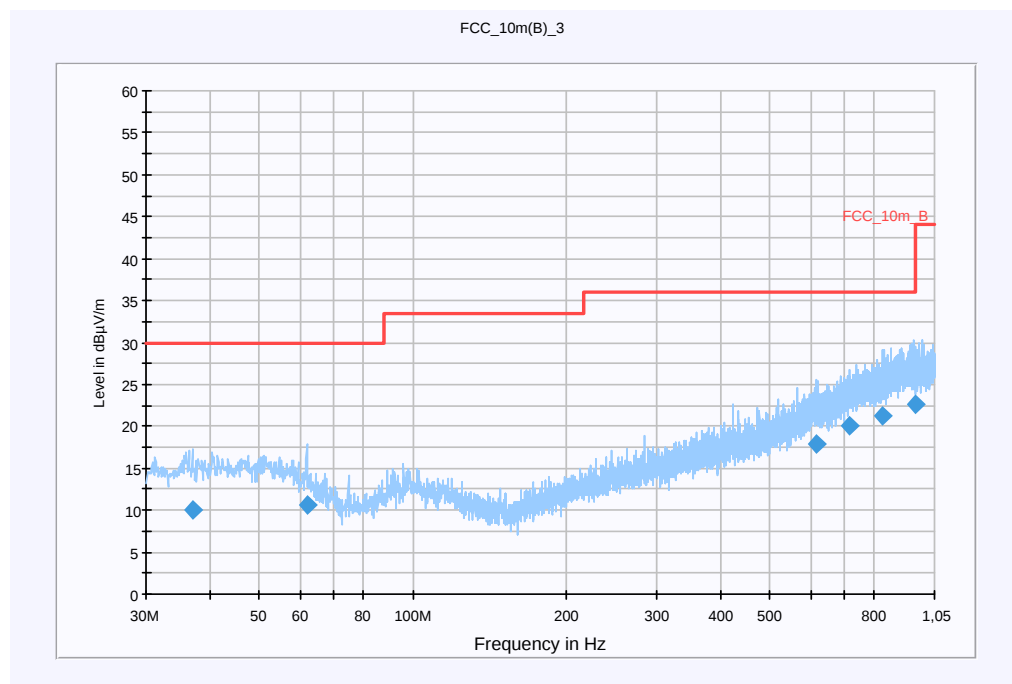
**Plot 1: 30 MHz to 1 GHz / Idle-mode (horizontal/vertical)****Common Information**

EUT: AAD-3880091-BV + EP800  
 Serial Number: IMEI:00440214-072199-8 + 1109w50400488  
 Test Description: FCC part 15 C Class B @ 10m  
 Operating Conditions: WiFi idle  
 Operator Name: LNG  
 Comment: Power: 115 V/ 60 Hz

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup: Electric Field (NOS)  
 Level Unit: dBµV/m

| Subrange          | Detectors | IF Bandwidth | Meas. Time | Receiver |
|-------------------|-----------|--------------|------------|----------|
| 30 MHz - 1,05 GHz | QuasiPeak | 120 kHz      | 15 s       | Receiver |

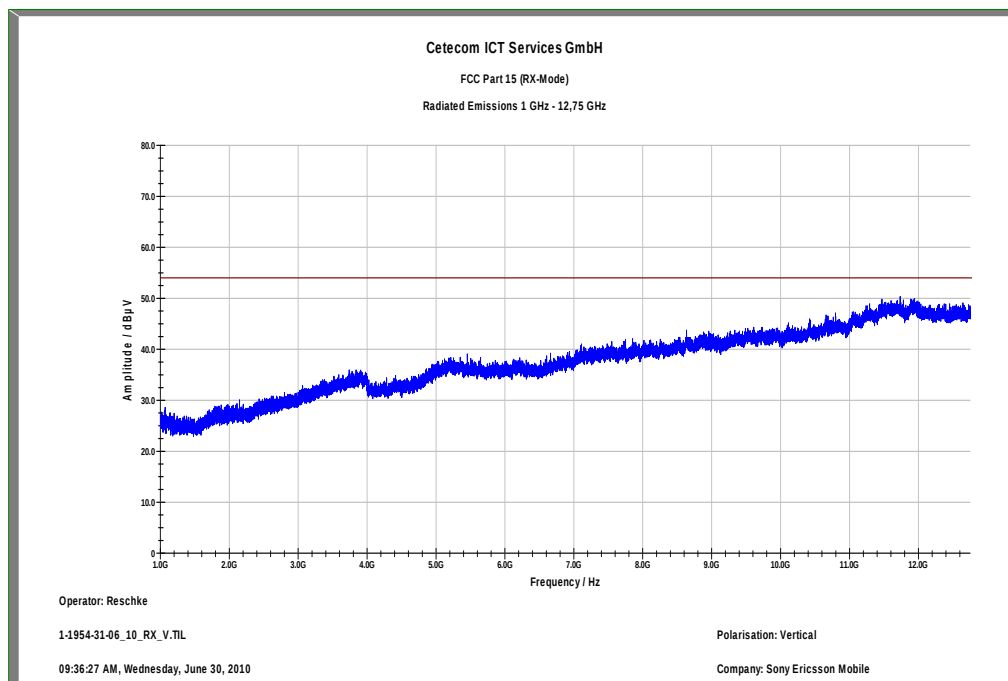
**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBµV/m) | Meas. Time (ms) | Bandwidth (kHz) | Antenna height (cm) | Polarity | Turntable position (deg) | Corr. (dB) | Margin (dB) | Limit (dBµV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|---------------------|----------|--------------------------|------------|-------------|----------------|---------|
| 37.120200       | 10.0               | 15000.000       | 120.000         | 137.0               | V        | 200.0                    | 13.2       | 20.0        | 30.0           |         |
| 62.056050       | 10.6               | 15000.000       | 120.000         | 167.0               | V        | 18.0                     | 11.1       | 19.4        | 30.0           |         |
| 617.633400      | 18.0               | 15000.000       | 120.000         | 220.0               | H        | 260.0                    | 20.9       | 18.0        | 36.0           |         |
| 716.283150      | 20.1               | 15000.000       | 120.000         | 220.0               | H        | 99.0                     | 22.9       | 15.9        | 36.0           |         |
| 832.051650      | 21.3               | 15000.000       | 120.000         | 220.0               | H        | 96.0                     | 24.3       | 14.7        | 36.0           |         |
| 959.722500      | 22.6               | 15000.000       | 120.000         | 220.0               | V        | 186.0                    | 25.4       | 13.4        | 36.0           |         |

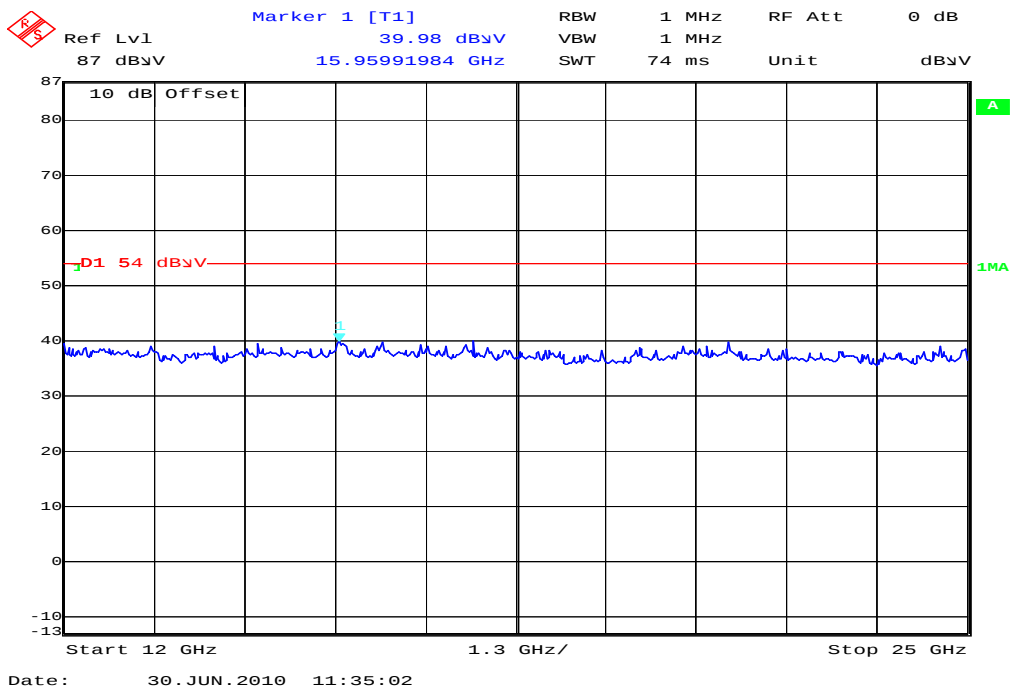
**Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]**

Subrange 1

Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.32Signal Path: without Notch  
FW 1.0Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table: Cable\_EN\_1GHz (1005)Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12**Plot 2: 1 GHz to 12.75 GHz / Idle-mode (horizontal/vertical)**

Plot 3: 12 GHz to 25 GHz / Idle-mode (horizontal/vertical)



## 9.12 TX Spurious Emissions Radiated < 30 MHz

### Description:

Measurement of the radiated spurious emissions in transmit mode below 30 MHz. The EUT is set to channel 6. This measurement is representative for all channels and modes. If critical peaks are found channel 1 and channel 11 will be measured too. The measurement is performed with the data rate producing the highest output power. The limits are recalculated to a measurement distance of 3 m with 40 dB/decade according CFR Part 2.

### Measurement:

| Measurement parameter |                                            |
|-----------------------|--------------------------------------------|
| Detector:             | Quasi Peak                                 |
| Sweep time:           | Auto                                       |
| Video bandwidth:      | F < 150 kHz: 200 Hz<br>F > 150 kHz: 9 kHz  |
| Resolution bandwidth: | F < 150 kHz: 1 kHz<br>F > 150 kHz: 100 kHz |
| Span:                 | 9 kHz to 30 MHz                            |
| Trace-Mode:           | Max Hold                                   |

### Limits:

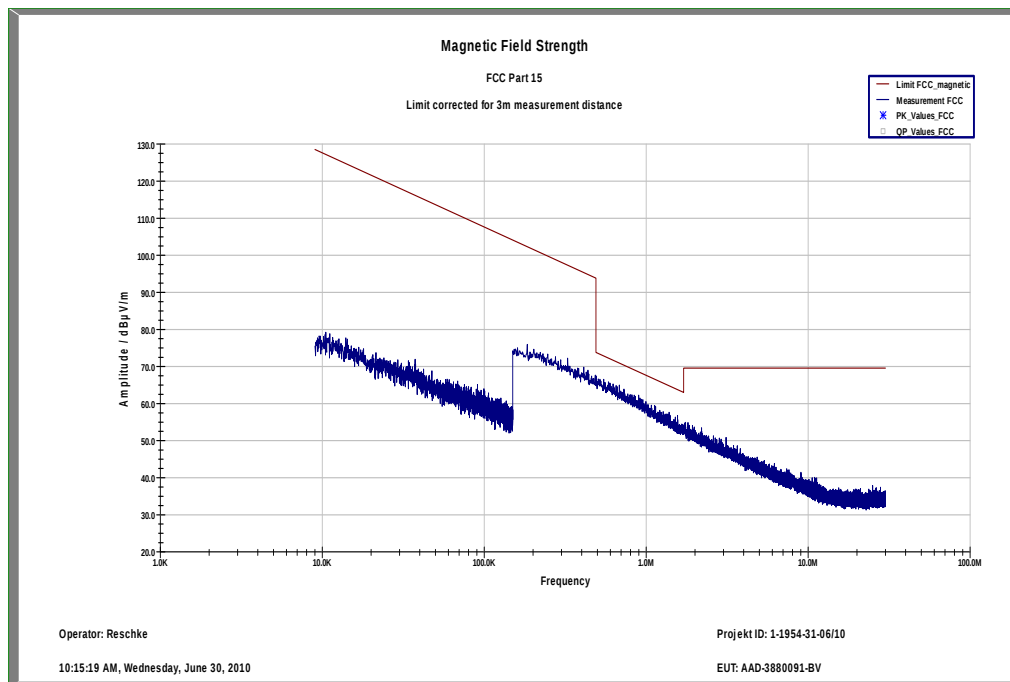
| FCC                                     |                         | IC                   |
|-----------------------------------------|-------------------------|----------------------|
| CFR Part 15.209(a)                      |                         | RSS –Gen             |
| TX Spurious Emissions Radiated < 30 MHz |                         |                      |
| Frequency (MHz)                         | Field Strength (dBμV/m) | Measurement distance |
| 0.009 – 0.490                           | 2400/F(kHz)             | 300                  |
| 0.490 – 1.705                           | 24000/F(kHz)            | 30                   |
| 1.705 – 30.0                            | 30                      | 30                   |

**Result:** Also see plots

| TX Spurious Emissions Radiated < 30 MHz [dBμV/m] |          |                |
|--------------------------------------------------|----------|----------------|
| F [MHz]                                          | Detector | Level [dBμV/m] |
| No critical peaks found                          |          |                |
|                                                  |          |                |
|                                                  |          |                |
|                                                  |          |                |
|                                                  |          |                |
|                                                  |          |                |
|                                                  |          |                |
| Measurement uncertainty                          | ± 3 dB   |                |

**Result:** The result of the measurement is passed.

Plot 1: 9 kHz to 30 MHz / DSSS / OFDM



### 9.13 TX Spurious Emissions Conducted < 30 MHz

#### Description:

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to channel 6. This measurement is repeated for DSSS and OFDM modulation. If critical peaks are found channel 1 and channel 11 will be measured too. The measurement is performed with the data rate producing the highest output power. Both power lines, phase and neutral line, are measured. Found peaks are remeasured with average and quasi peak detection to show compliance to the limits.

#### Measurement:

| Measurement parameter |                                            |
|-----------------------|--------------------------------------------|
| Detector:             | Peak - Quasi Peak / Average                |
| Sweep time:           | Auto                                       |
| Video bandwidth:      | F < 150 kHz: 200 Hz<br>F > 150 kHz: 9 kHz  |
| Resolution bandwidth: | F < 150 kHz: 1 kHz<br>F > 150 kHz: 100 kHz |
| Span:                 | 9 kHz to 30 MHz                            |
| Trace-Mode:           | Max Hold                                   |

#### Limits:

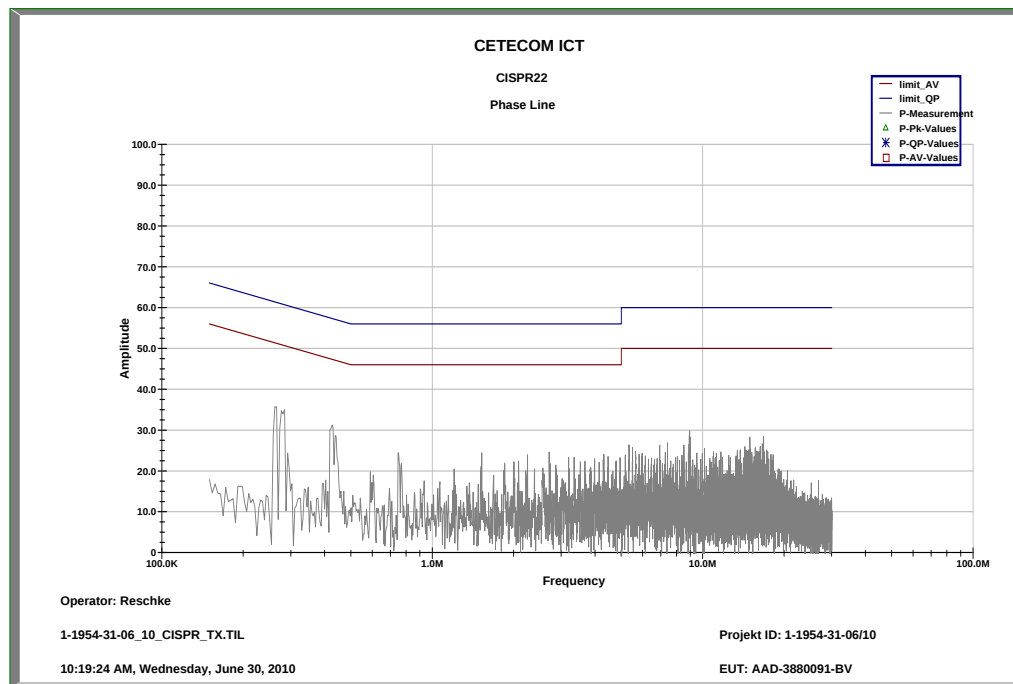
| FCC                                      |                         | IC                   |
|------------------------------------------|-------------------------|----------------------|
| CFR Part 15.107(a)                       |                         | -                    |
| TX Spurious Emissions Conducted < 30 MHz |                         |                      |
| Frequency (MHz)                          | Field Strength (dBμV/m) | Measurement distance |
| 0.009 – 0.490                            | 2400/F(kHz)             | 300                  |
| 0.490 – 1.705                            | 24000/F(kHz)            | 30                   |
| 1.705 – 30.0                             | 30                      | 30                   |

**Result:** Also see plots

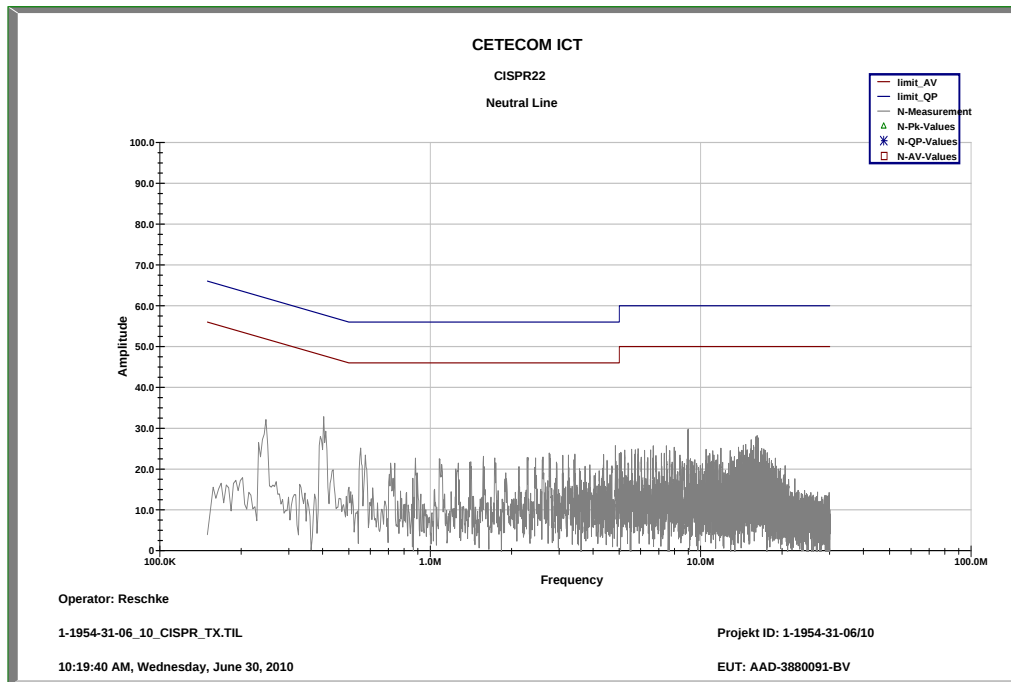
| TX Spurious Emissions Conducted < 30 MHz [dBμV/m] |          |                |
|---------------------------------------------------|----------|----------------|
| F [MHz]                                           | Detector | Level [dBμV/m] |
| No critical peaks found                           |          |                |
|                                                   |          |                |
|                                                   |          |                |
|                                                   |          |                |
|                                                   |          |                |
|                                                   |          |                |
|                                                   |          |                |
| Measurement uncertainty                           | ± 3 dB   |                |

**Result:** The result of the measurement is passed.

Plot 1: 9 kHz to 30 MHz / Phase Line – DSSS / OFDM



Plot 2: 9 kHz to 30 MHz / Neutral Line – DSSS / OFDM



## 10 Test equipment and ancillaries used for tests

In order to simplify the identification of the equipment used at each specific test, each item of test equipment and ancillaries are provided with an identifier or number in the equipment list below.

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

| No. | Labor / Item | Equipment                                       | Type                                 | Manufact.            | Serial No.      | INV. No Cetecom | Kal. Art | Last Calibration | Next Calibration |
|-----|--------------|-------------------------------------------------|--------------------------------------|----------------------|-----------------|-----------------|----------|------------------|------------------|
| 1   | n. a.        | DC Power Supply 0 – 32V                         | 1108-32                              | Heiden               | 001802          | 300001383       | Ve       |                  |                  |
| 2   | n. a.        | Temperature Test Chamber                        | VT 4002                              | Heraeus Voetsch      | 521/83761       | 300002326       | Ve       | 28.05.2009       | 28.05.2011       |
| 3   | n. a.        | Signal Analyzer 20Hz-26,5GHz-150 to + 30 DBM    | FSIQ26                               | R&S                  | 835111/0004     | 300002678       | Ve       | 06.01.2009       | 06.01.2011       |
| 4   | n. a.        | NRP Power meter Display and control unit AC sup | NRP + NRP-Z81                        | R&S                  | 100212 + 100010 | 300003780       | vKI!     | 08.01.2010       | 08.01.2012       |
| 5   | n. a.        | DC power supply, 60Vdc, 50A, 1200 W             | 6032A                                | HP Meßtechnik        | 2818A03450      | 300001040       | Ve       | 08.01.2009       | 08.01.2012       |
| 6   | n. a.        | PowerAttenuator                                 | 8325                                 | Byrd                 | 1530            | 300001595       |          |                  |                  |
| 7   | n. a.        | Double-Ridged Waveguide Horn Antenna 1-18.0GHz  | 3115                                 | EMCO                 | 8812-3088       | 300001032       | vKI!     | 05.03.2009       | 05.03.2011       |
| 8   | n. a.        | Active Loop Antenna                             | 6502                                 | EMCO                 | 2210            | 300001015       | ne       |                  |                  |
| 9   | n. a.        | Anechoic chamber                                |                                      | MWB                  | 87400/02        | 300000996       |          |                  |                  |
| 10  | Spec.A. 2_2e | System rack for EMI measurement solution        | 85900                                | HP I.V.              | *               | 300000222       | ne       |                  |                  |
| 11  | 9            | Artificial Mains 9 kHz to 30 MHz, 4 x 25 Ampere | ESH3-Z5                              | R&S                  | 828576/020      | 300001210       | Ve       | 06.01.2010       | 06.01.2012       |
| 12  | n. a.        | Relais Matrix                                   | 3488A                                | HP Meßtechnik        | 2719A15013      | 300001156       | ne       |                  |                  |
| 13  | n. a.        | Relais Matrix                                   | PSU                                  | R&S                  | 890167/024      | 300001168       | ne       |                  |                  |
| 14  | n. a.        | Isolating Transformer                           | RT5A                                 | Grundig              | 9242            | 300001263       | ne       |                  |                  |
| 15  | n. a.        | Three-Way Power Splitter, 50 Ohm                | 11850C                               | HP Meßtechnik        |                 | 300000997       | ne       |                  |                  |
| 16  | n. a.        | Switch / Control Unit                           | 3488A                                | HP                   | 2605e08770      | 300001443       | ne       |                  |                  |
| 17  | n. a.        | Band Reject filter                              | WRCG1855/1910-1835/1925-40/8SS       | Wainwright           | 7               | 300003350       | ev       |                  |                  |
| 18  | n. a.        | Band Reject filter                              | WRCG2400/2483-2375/2505-50/10SS      | Wainwright           | 11              | 300003351       | ev       |                  |                  |
| 19  | n. a.        | TILE-Software Emission                          | Quantum Change, Modell TILE-ICS/FULL | EMCO                 | none            | 300003451       | ne       |                  |                  |
| 20  | n. a.        | Highpass Filter                                 | WHKX2.9/18G-12SS                     | Wainwright           | 1               | 300003492       | ev       |                  |                  |
| 21  | n. a.        | Highpass Filter                                 | WHK1.1/15G-10SS                      | Wainwright           | 3               | 300003255       | ev       |                  |                  |
| 22  | n. a.        | Highpass Filter                                 | WHKX7.0/18G-8SS                      | Wainwright           | 18              | 300003789       | ne       |                  |                  |
| 23  | n. a.        | PSA Spectrum Analyzer 3 Hz - 26.5 GHz           | E4440A                               | Agilent Technologies | MY48250080      | 300003812       | k        | 05.08.2008       | 05.08.2010       |
| 24  | n. a.        | MXG Microwave                                   | N5183A                               | Agilent              | MY47420220      | 300003813       | k        | 06.08.2008       | 06.08.2010       |

|    |       |                                                    |                     |                      |                     |           |       |            |            |
|----|-------|----------------------------------------------------|---------------------|----------------------|---------------------|-----------|-------|------------|------------|
|    |       | Analog Signal Generator                            |                     | Technologies         |                     |           |       |            |            |
| 25 | n. a. | RF Filter Section 9kHz - 1GHz                      | N9039A              | Agilent Technologies | MY48260003          | 300003825 | vlKI! | 19.08.2008 | 19.08.2010 |
| 26 | n. a. | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz       | VULB9163            | Schwarzbeck          | 371                 | 300003854 | vlKI! | 17.12.2008 | 17.12.2010 |
| 27 | 45    | Switch-Unit                                        | 3488A               | HP Meßtechnik        | 2719A14505          | 300000368 | g     |            |            |
| 28 | 50    | DC power supply, 60Vdc, 50A, 1200 W                | 6032A               | HP Meßtechnik        | 2920A04466          | 300000580 | k     | 06.01.2009 | 06.01.2011 |
| 29 | n. a. | software                                           | SPS_PHE 1.4f        | Spitzberger & Spieß  | B5981; 5D1081;B5979 | 300000210 | ne    |            |            |
| 30 | n. a. | EMI Test Receiver                                  | ESCI 1166.5950.03   | R&S                  | 100083              | 300003312 | k     | 08.01.2010 | 08.01.2012 |
| 31 | n. a. | Analyzerr-Reference-System (Harmonics and Flicker) | ARS 16/1            | SPS                  | A3509 07/0 0205     | 300003314 | k     |            |            |
| 32 | n. a. | Amplifier                                          | JS42-00502650-28-5A | MITEQ                | 1084532             | 300003379 | ev    |            |            |
| 33 | n. a. | Antenna Tower                                      | Model 2175          | ETS-LINDGREN         | 64762               | 300003745 | izw   |            |            |
| 34 | n. a. | Positioning Controller                             | Model 2090          | ETS-LINDGREN         | 64672               | 300003746 | izw   |            |            |
| 35 | n. a. | Turntable Interface-Box                            | Model 105637        | ETS-LINDGREN         | 44583               | 300003747 | izw   |            |            |
| 36 | n. a. | TRILOG Broadband Test-Antenna 30 MHz - 3 GHz       | VULB9163            | Schwarzbeck          | 295                 | 300003787 | k     |            |            |
| 37 | n. a. | Spectrum-Analyzer                                  | FSU26               | R&S                  | 200809              | 300003874 | k     | 08.01.2010 | 08.01.2012 |

**Annex D Document history**

| Version | Applied changes                                                                                          | Date of release |
|---------|----------------------------------------------------------------------------------------------------------|-----------------|
| 1.0     | Initial release                                                                                          | 2010-07-20      |
| -A      | Typo on Page 23 (changed the RBW/VBW settings from 1 MHz to 100 kHz)                                     | 2010-07-14      |
| -B      | Wrong measurement procedure for FCC used. Output Power corrected                                         | 2010-07-15      |
| -C      | Some typos corrected.<br><br>Output Power conducted average re-measured = same result / notching changed | 2010-07-19      |
| -D      | Output Power conducted re-measured with FSU                                                              | 2010-07-20      |
| -E      | Output power on different data rates repeated with FSU                                                   | 2010-07-20      |

**Annex E Further information****Glossary**

|          |   |                                  |
|----------|---|----------------------------------|
| DUT      | - | Device under Test                |
| EMC      | - | Electromagnetic Compatibility    |
| EUT      | - | Equipment under Test             |
| FCC      | - | Federal Communication Commission |
| FCC ID   | - | Company Identifier at FCC        |
| HW       | - | Hardware                         |
| IC       | - | Industry Canada                  |
| Inv. No. | - | Inventory number                 |
| N/A      | - | not applicable                   |
| S/N      | - | Serial Number                    |
| SW       | - | Software                         |