



TEST REPORT

Test report no.: 1-4254/12-24-06-B



Deutsche
Akkreditierungsstelle
D-PL-12076-01-01

Testing laboratory

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Accredited Testing Laboratory:

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS). The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01
Area of Testing: Radio/Satellite Communications

Applicant

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Manufacturer

Sony Mobile Communications AB
Nya Vattentornet
22188 Lund / SWEDEN

Test standard/s

47 CFR Part 15 Title 47 of the Code of Federal Regulations; Chapter I
Part 15 - Radio frequency devices
RSS - 210 Issue 8 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.

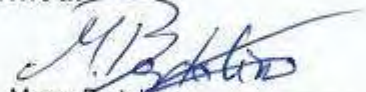
Test item

Kind of test item: GSM Mobile Phone GPRS/EGPRS 850/900/1800/1900; UMTS FDDI/FDDV/FDDVI/FDDXIX;
HSPA; LTE Band 1; BT3.1; WLAN a/b/g/n; AGPS; RFID, FM Rx
Model name: PM-0020-BV
FCC ID: PY7PM-0020
IC:
Frequency: ISM band 2400 MHz to 2483.5 MHz
Technology tested: WLAN (DSSS → b – mode; OFDM → g – mode / n – mode HT20)
Antenna: Integrated antenna
Power Supply: 3.7 V DC by Li - ion battery
Temperature Range: -20°C to +55 °C

Test report authorised:


2012-06-26 Stefan Bös
Senior Testing Manager

Test performed:


2012-06-26 Marco Bertolino
Testing Manager

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2 General information

2.1 Notes and disclaimer

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 generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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In no case this test report can be considered as a Letter of Approval.

2.2 Application details

Date of receipt of order:	2012-04-26
Date of receipt of test item:	2012-05-22
Start of test:	2012-05-24
End of test:	2012-06-01
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2010-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	2010-12	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

4 Test environment

Temperature:	T_{nom}	+22 °C during room temperature tests
	T_{max}	+55 °C during high temperature tests
	T_{min}	-20 °C during low temperature tests
Relative humidity content:		43 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.7 V DC by Li - ion battery
	V_{max}	4.1 V
	V_{min}	3.3 V

5 Test item

Kind of test item	:	GSM Mobile Phone GPRS/EGPRS 850/900/1800/1900; UMTS FDDI/FDDV/FDDVI/FDDXIX; HSPA; LTE Band 1; BT3.1; WLAN a/b/g/n; AGPS; RFID, FM Rx
Type identification	:	PM-0020-BV
S/N serial number	:	Radiated units: CB5A1K3QFR Conducted units: CB5A1K3QF1, CB5A1K3QG0
HW hardware status	:	AP1
SW software status	:	7.0.A.0.649
Frequency band [MHz]	:	ISM band 2400 MHz to 2483.5 MHz
Type of radio transmission	:	DSSS & OFDM
Use of frequency spectrum	:	
Channel access method	:	FDMA
Type of modulation	:	(BPSK, QPSK, 16 – QAM, 64 – QAM)
Number of channels	:	11
Antenna	:	Integrated antenna
Power supply	:	3.7 V DC by Li - ion battery
Temperature range	:	-20°C to +55 °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 RSS 210, Issue 8, Annex 8	Passed	2012-06-26	-/-

Test specification clause	Test case	Temperature conditions	Power source voltages	Mode	Pass	Fail	NA	NP	Remark
§15.247(b)(4) RSS 210 / A8.4(2)	Antenna gain	Nominal	Nominal	DSSS	☒	☐	☐	☐	complies
§15.247(e) RSS 210 / A8.2(b)	Power spectral density	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(a)(2) RSS 210 / A8.2(a)	Spectrum bandwidth – 6dB bandwidth	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(a)(2) RSS 210 / A8.2(a)	Spectrum bandwidth – 20dB bandwidth	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(b)(3) RSS-210 / A8.4(4)	Maximum output power	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(d) RSS-210 / A8.5	Band edge compliance conducted	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.205 RSS-210 / A8.5	Band edge compliance radiated	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(d) RSS-210 / A8.5	TX spurious emissions conducted	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(d) RSS-210 / A8.5	TX spurious emissions radiated	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.109 RSS-Gen.	RX spurious emissions radiated	Nominal	Nominal	-/-	☒	☐	☐	☐	complies
§15.209(a) RSS-Gen	TX spurious emissions radiated < 30 MHz	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.107(a)	Conducted emissions < 30 MHz	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies

Note: NA = Not Applicable; NP = Not Performed

8 RF measurements

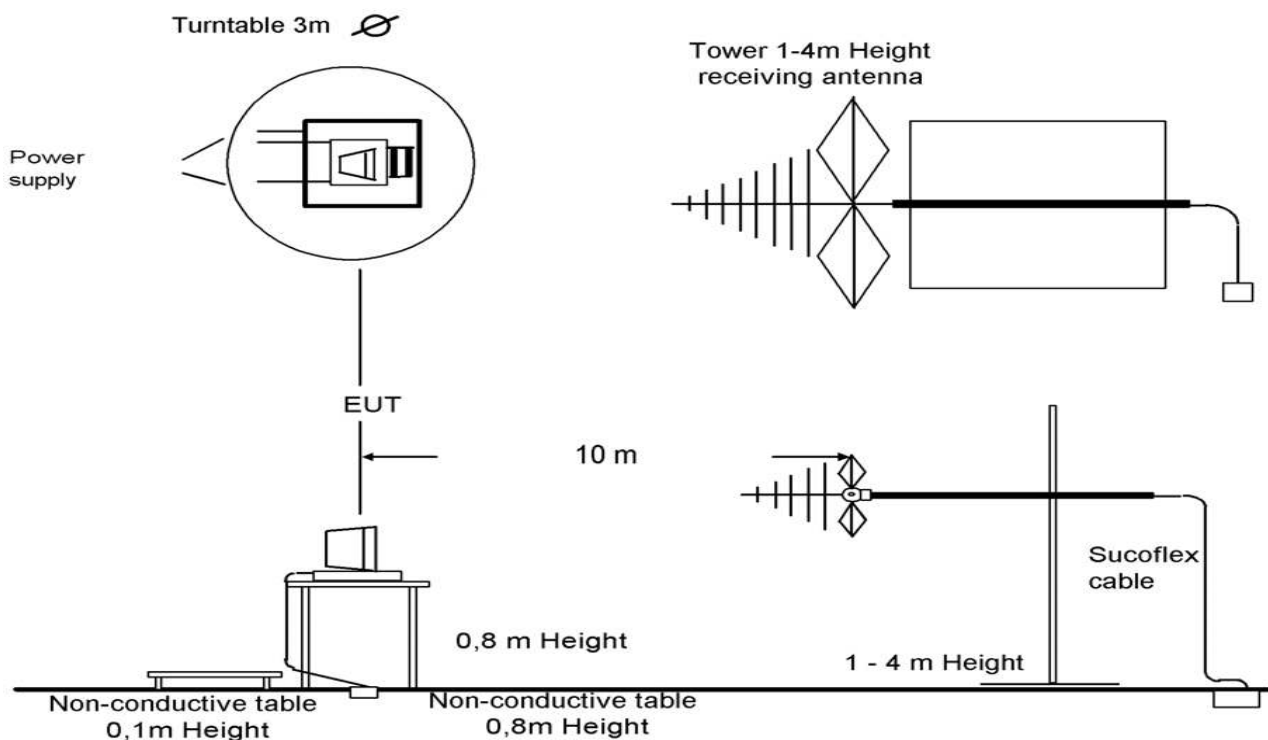
8.1 Description of test setup

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 C63.4-2009 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 C63-4-2009 clause 4.2.

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

Semi anechoic chamber



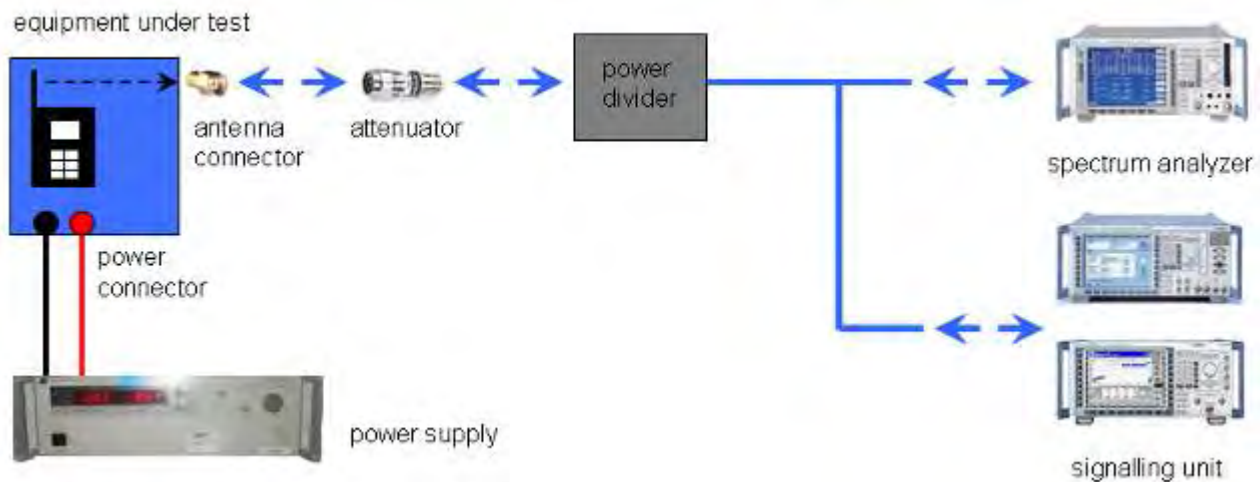
Picture 1: Diagram radiated measurements

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: Komachi_FCC_WLAN_command_20120511

Special test descriptions: None

Configuration descriptions: None

Test mode:

- ☐ No test mode available.
Iperf was used to ping another device with the largest support packet size
- ☒ Special software is used.
EUT is transmitting pseudo random data by itself

8.3 RSP100 test report cover sheet / performance test data

Test report number	:	1-4254/12-24-06-B
Equipment model number	:	PM-0020-BV
Certification number	:	
Manufacturer (complete address)	:	Sony Mobile Communications AB Nya Vattentorget 22188 Lund / SWEDEN
Tested to radio standards specification no.	:	RSS 210, Issue 8
Open area test site IC No.	:	IC 3462C-1
Frequency range	:	ISM band 2400 MHz to 2483.5 MHz (lowest channel 2412 MHz, highest channel 2462 MHz)
RF-power [W] (max.)	:	Conducted output power: 69.50 mW (DSSS / b - mode) 81.10 mW (OFDM / g - mode) 85.90 mW (OFDM / n - mode HT20) Radiated output power: 117.76 mW (DSSS / b - mode) 137.40 mW (OFDM / g - mode) 145.55 mW (OFDM / n - mode HT20)
Occupied bandwidth (99%-BW) [kHz]	:	DSSS / b - mode: 16.63 MHz OFDM / g - mode: 17.97 MHz OFDM / n - mode HT20: 18.85 MHz
Type of modulation	:	DSSS & OFDM technology with BPSK, QPSK, 16 - and 64 - QAM modulation.
Emission designator (TRC-43)	:	DSSS / b - mode: 16M6G1D OFDM / g - mode: 18M0G7D OFDM / n - mode HT20: 18M9G7D
Antenna information	:	Integrated antenna
Transmitter spurious (worst case) [dBμV/m @ 3m]:		48 @ 12.5 GHz (1 MHz / 1 MHz Peak)
Receiver spurious (worst case) [dBμV/m @ 3m]:		48 @ 12.5 GHz (1 MHz / 1 MHz Peak)

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:

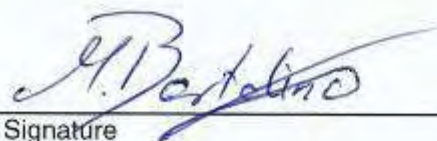
2012-06-26

Date

Marco Bertolino

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:	Peak
Sweep time:	Auto
Video bandwidth:	40 MHz
Resolution bandwidth:	40 MHz
Span:	Zero span
Trace-Mode:	Max Hold

Results:

DSSS / b – mode Data Rate [MBit/s]	Maximum Output Power Conducted [dBm]			
	1	2	5.5	11
Ch 6 - 2437 MHz	18.32	18.33	18.31	18.33
Measurement uncertainty	± 0.5 dB			

OFDM / g – mode Data Rate [MBit/s]	Maximum Output Power Conducted [dBm]							
	6	9	12	18	24	36	48	54
Ch 6 - 2437 MHz	19.04	18.84	18.49	19.04	18.50	18.36	18.34	18.38
Measurement uncertainty	± 0.5 dB							

OFDM / n – mode Data Rate [MBit/s]	Maximum Output Power Conducted [dBm]							
	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Ch 6 - 2437 MHz	18.55	18.61	19.25	19.02	18.63	18.79	18.58	18.32
Measurement uncertainty	± 0.5 dB							

Result: Selected data rate for all measurements:

DSSS / b – mode:

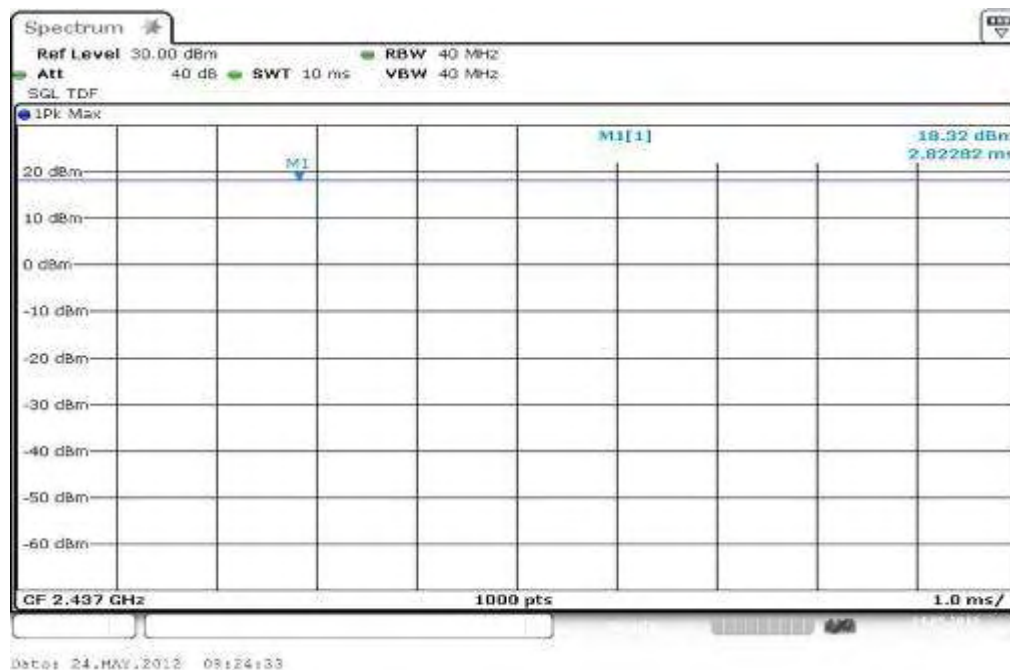
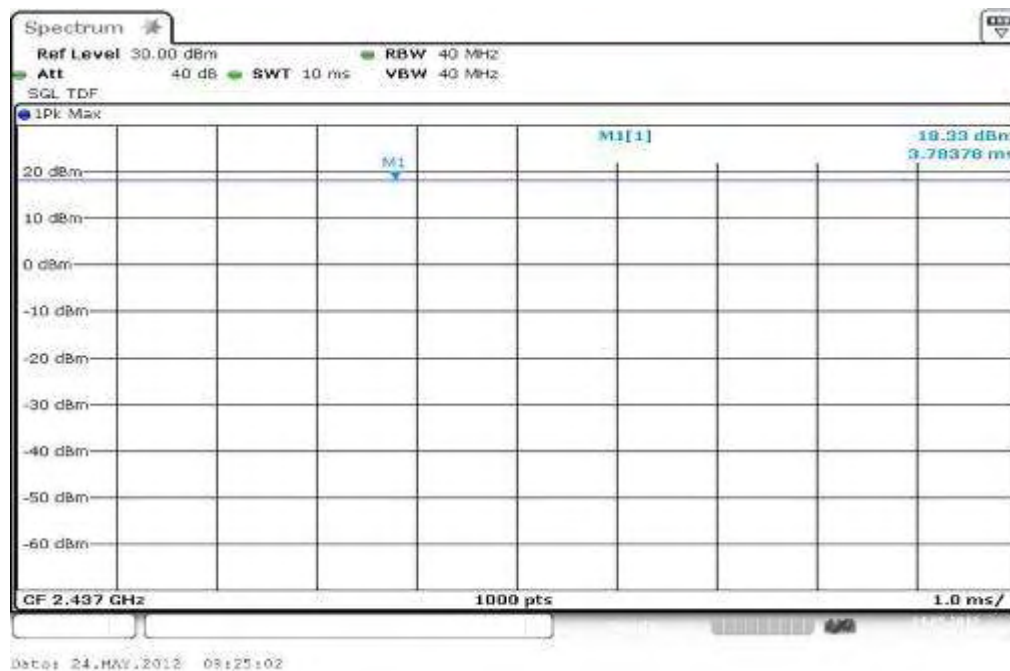
OFDM / g – mode:

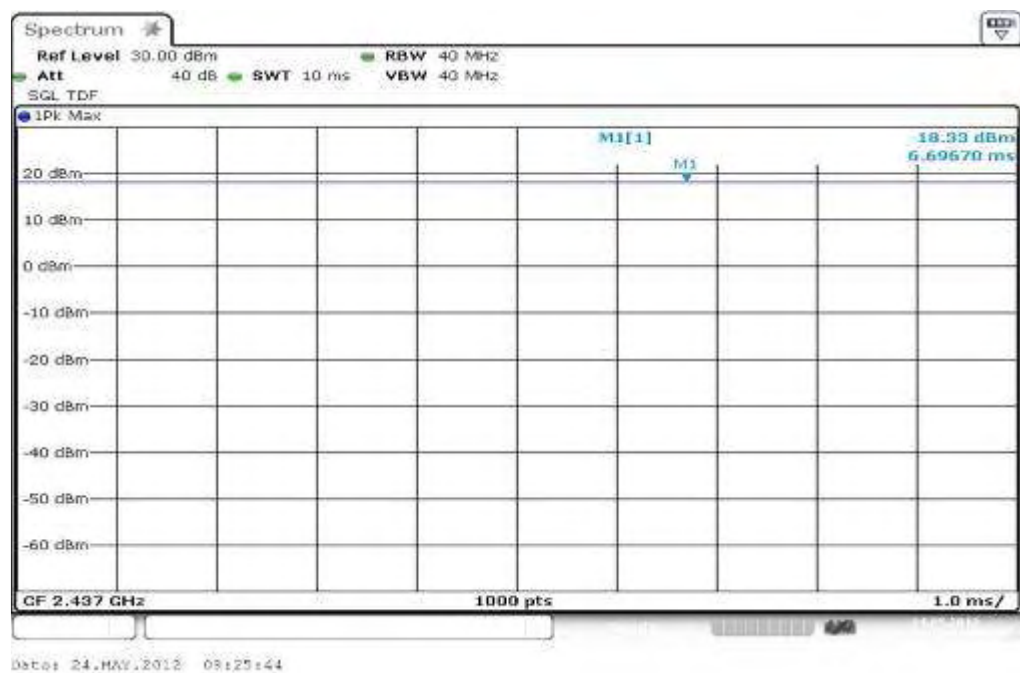
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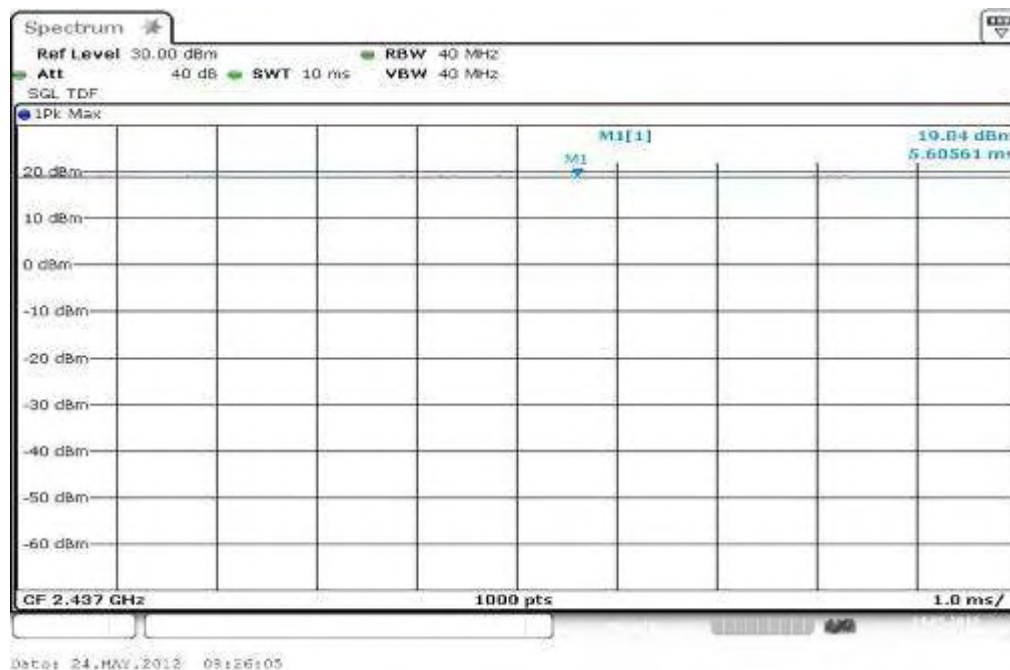
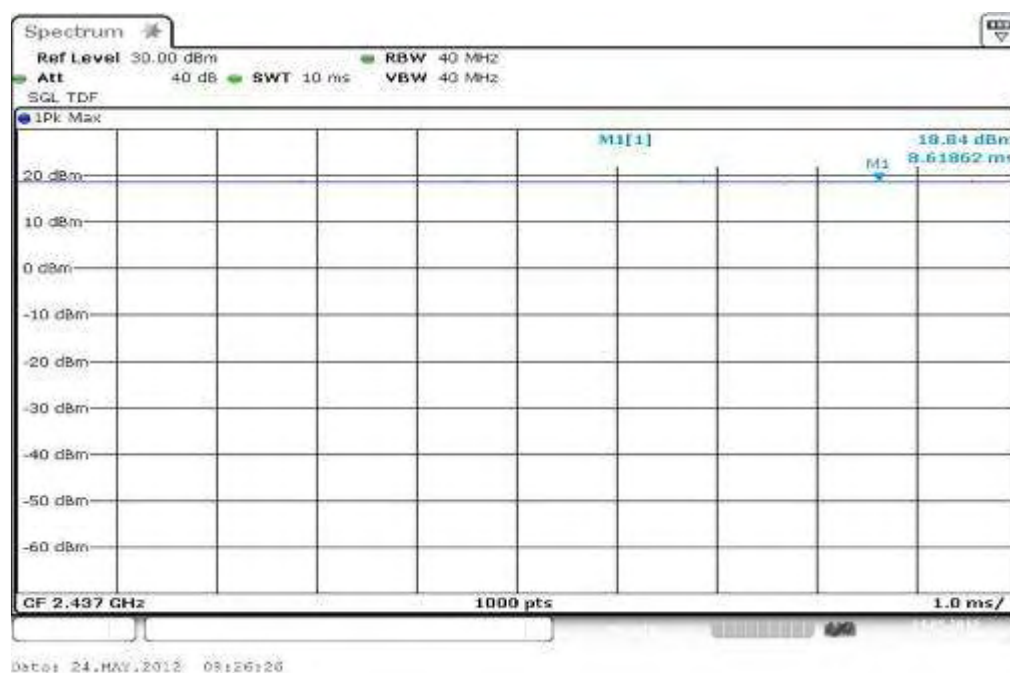
11 MBit/s

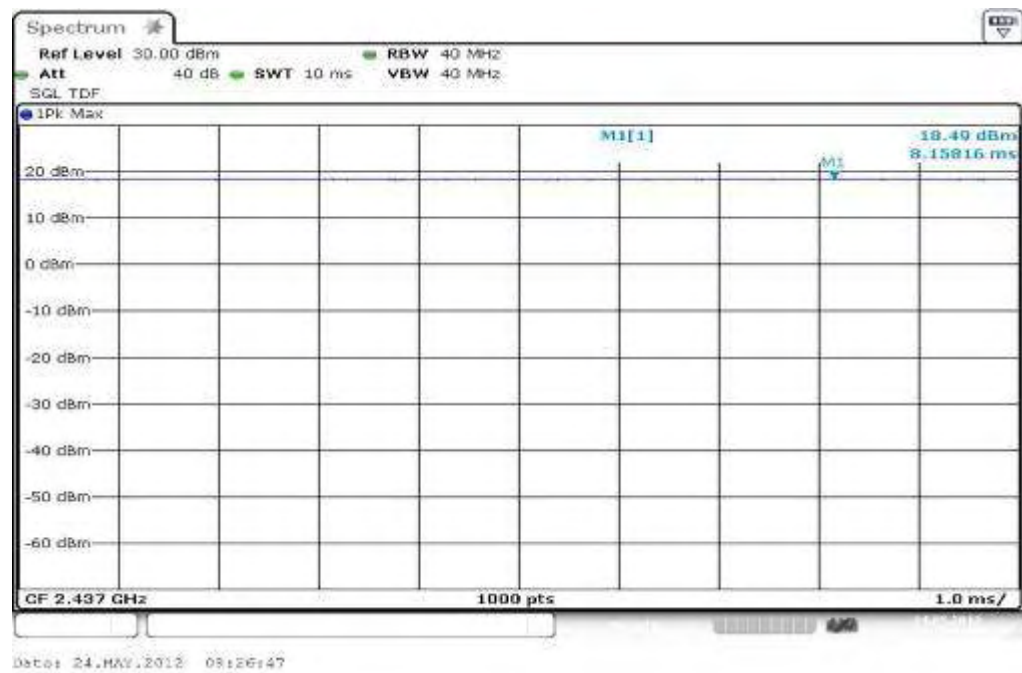
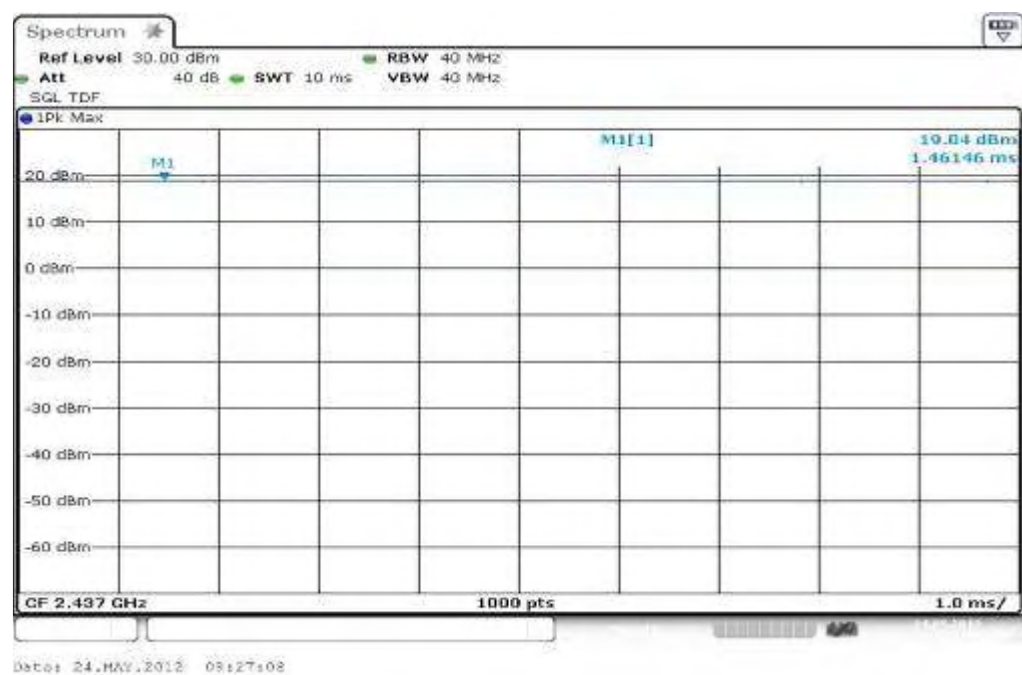
6 MBit/s

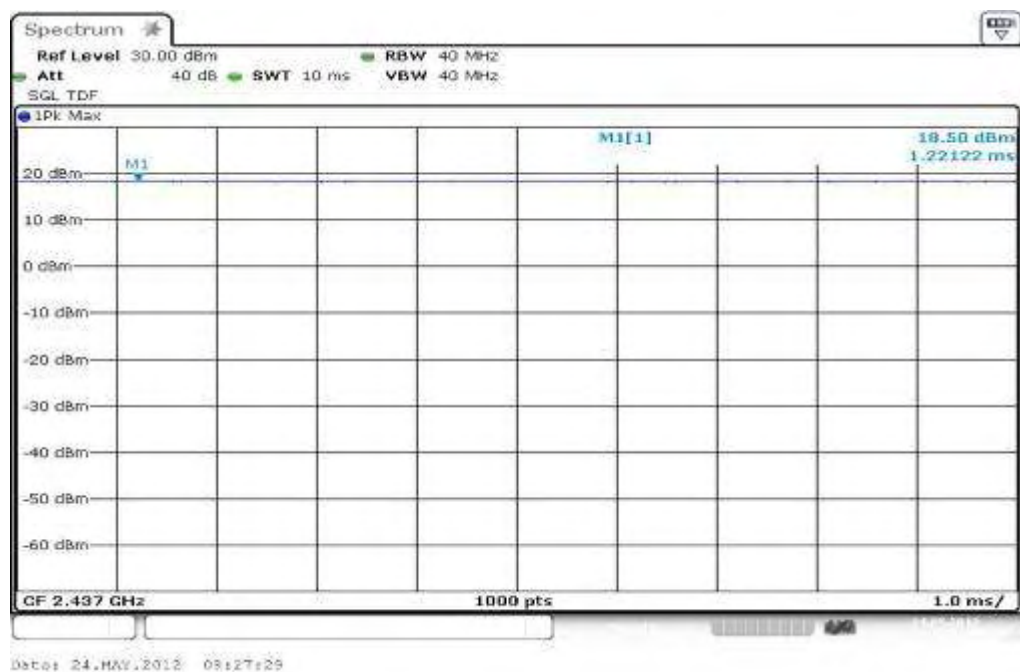
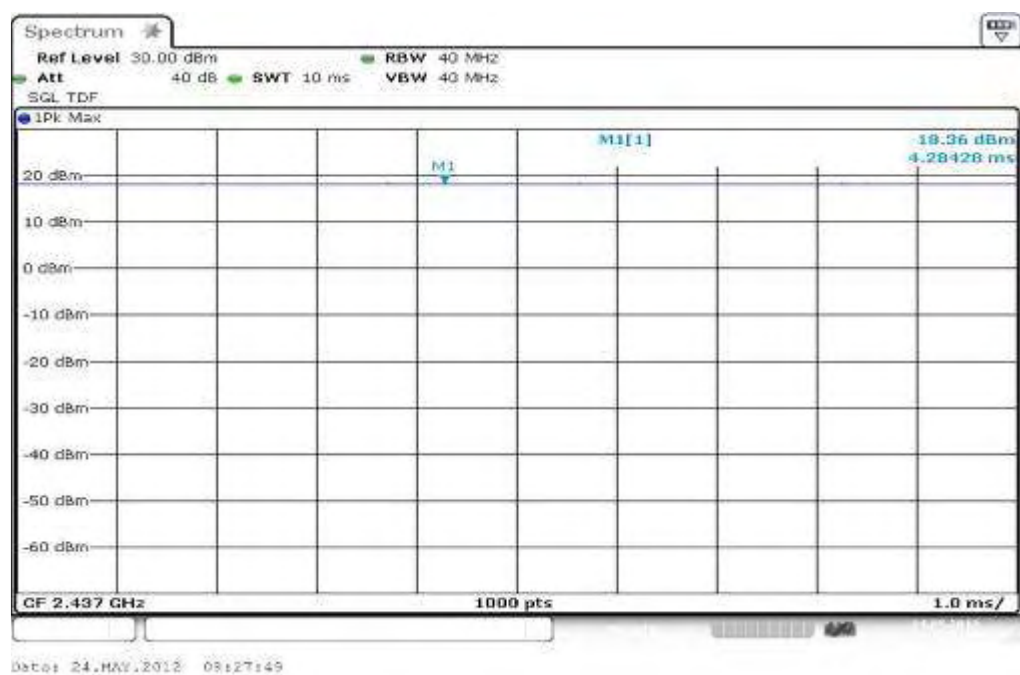
MCS2

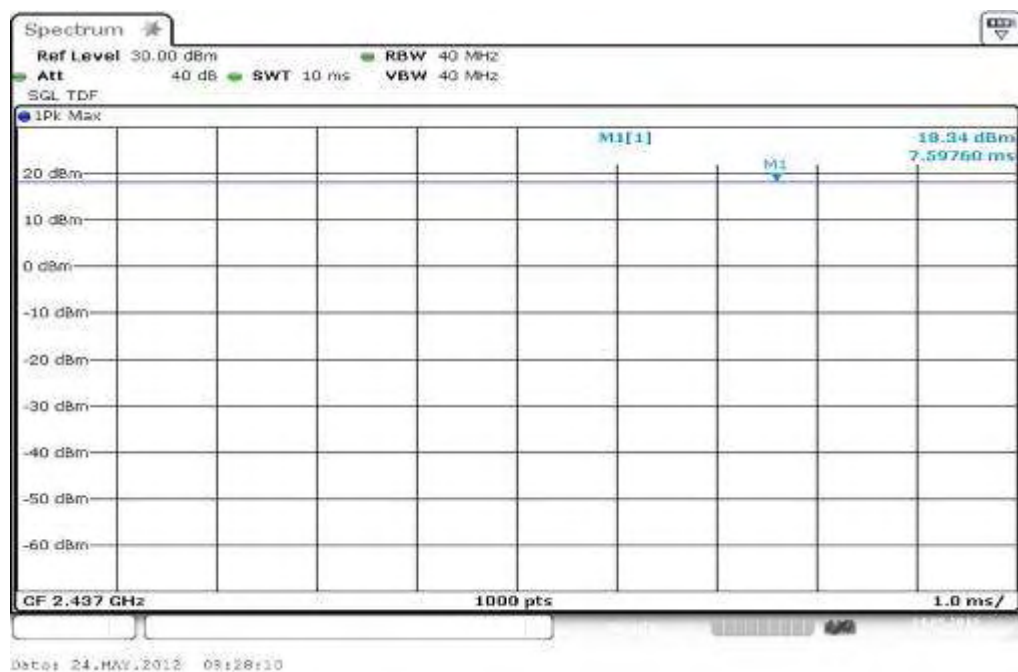
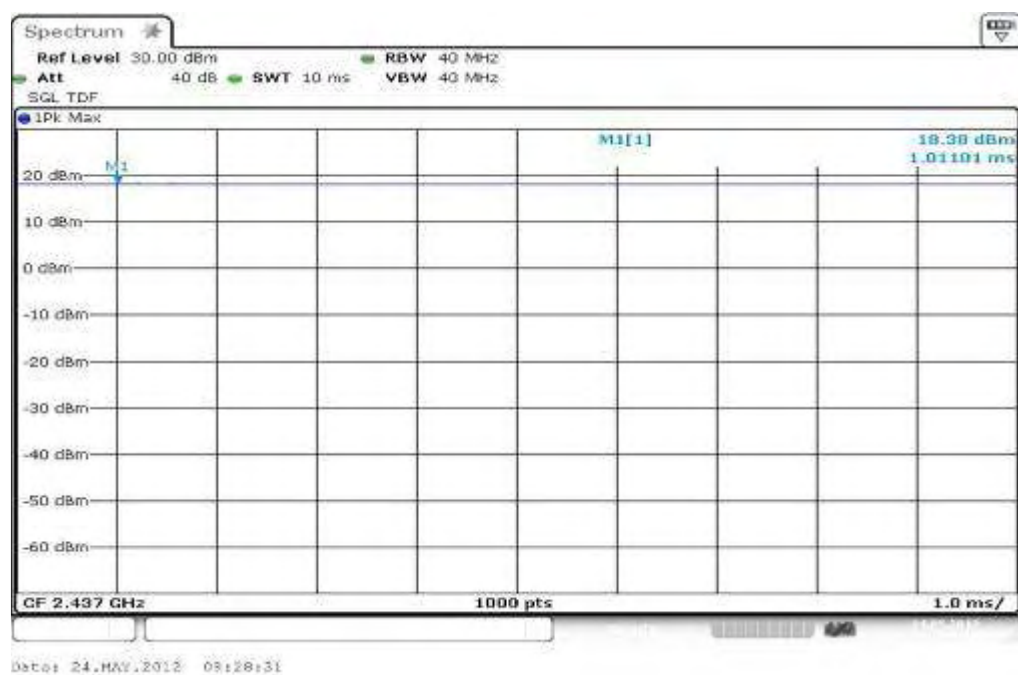
Plots: DSSS / b - mode**Plot 1: TX mode, middle channel, 1 MBit/s****Plot 2: TX mode, middle channel, 2 MBit/s**

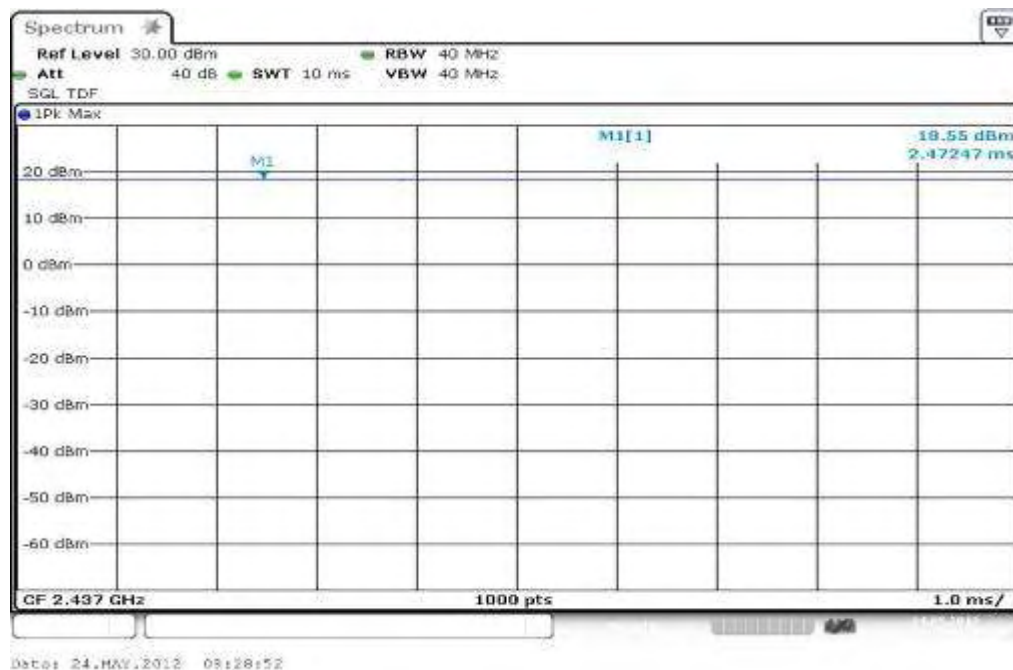
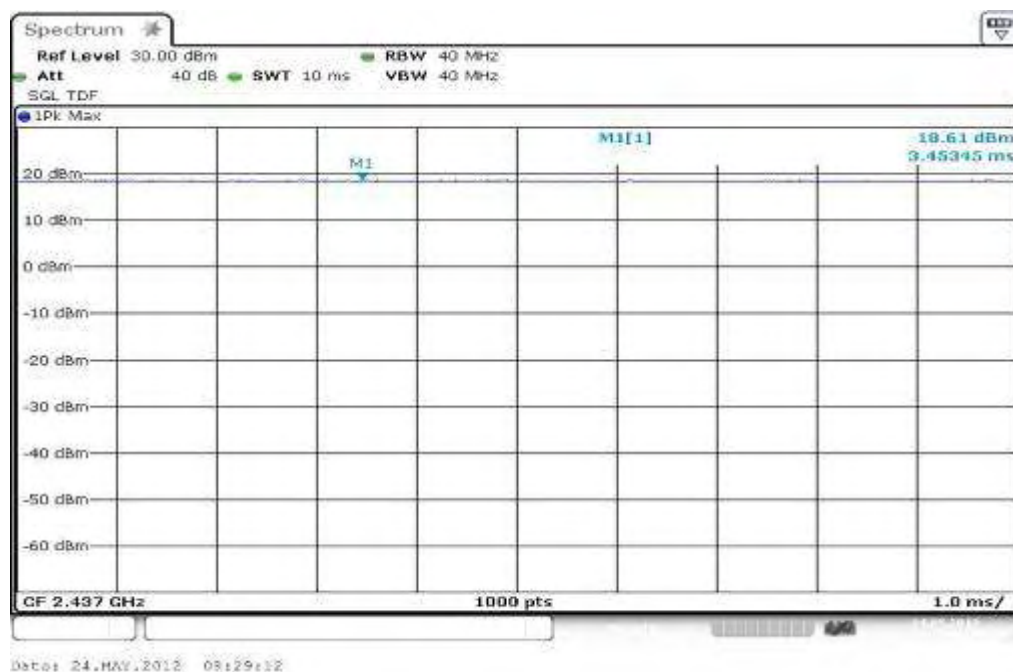
Plot 3: TX mode, middle channel, 5.5 MBit/s**Plot 4:** TX mode, middle channel, 11 MBit/s

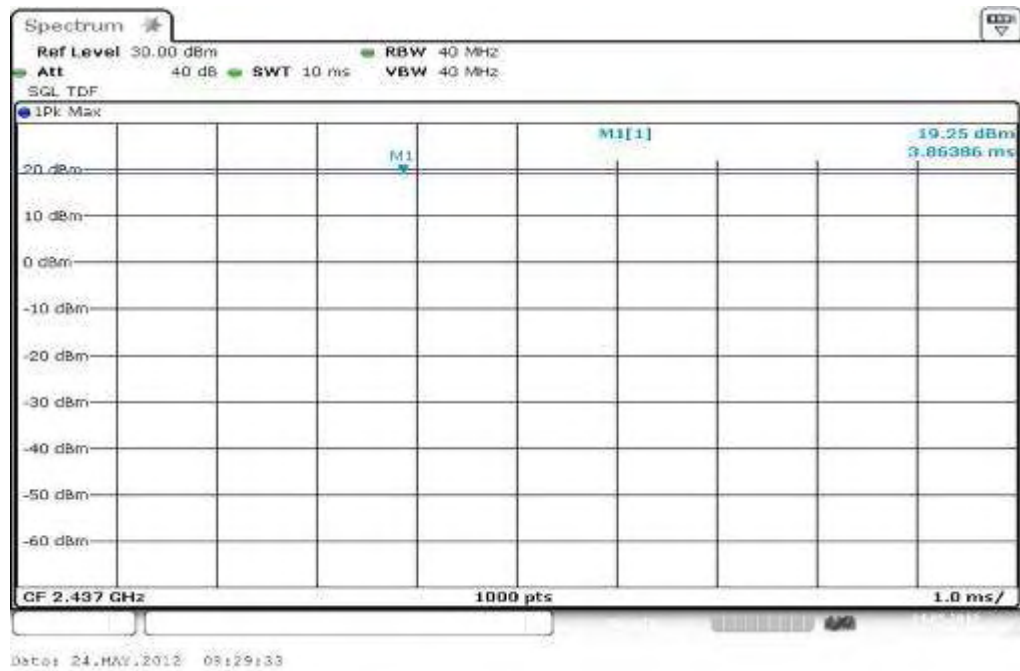
Plots: OFDM / g - mode**Plot 1:** TX mode, middle channel, 6 MBit/s**Plot 2:** TX mode, middle channel, 9 MBit/s

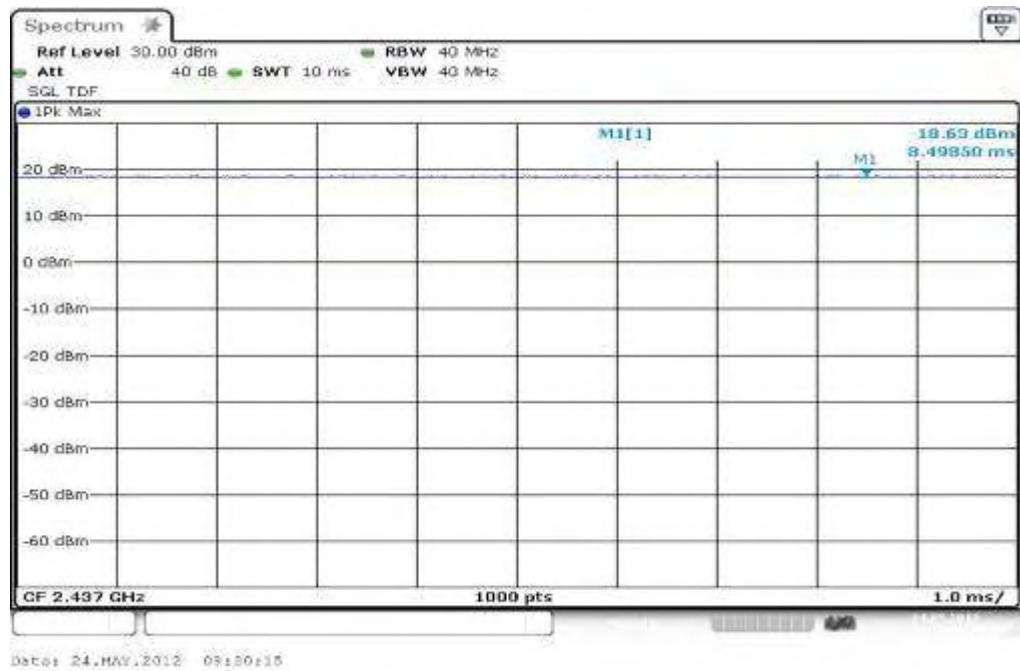
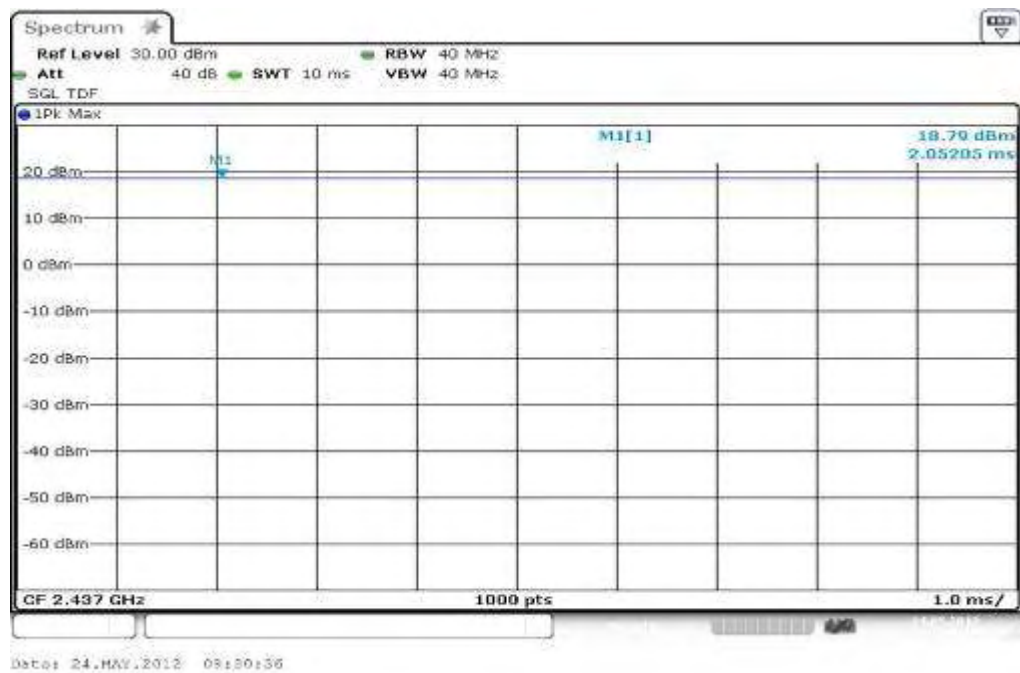
Plot 3: TX mode, middle channel, 12 MBit/s**Plot 4:** TX mode, middle channel, 18 MBit/s

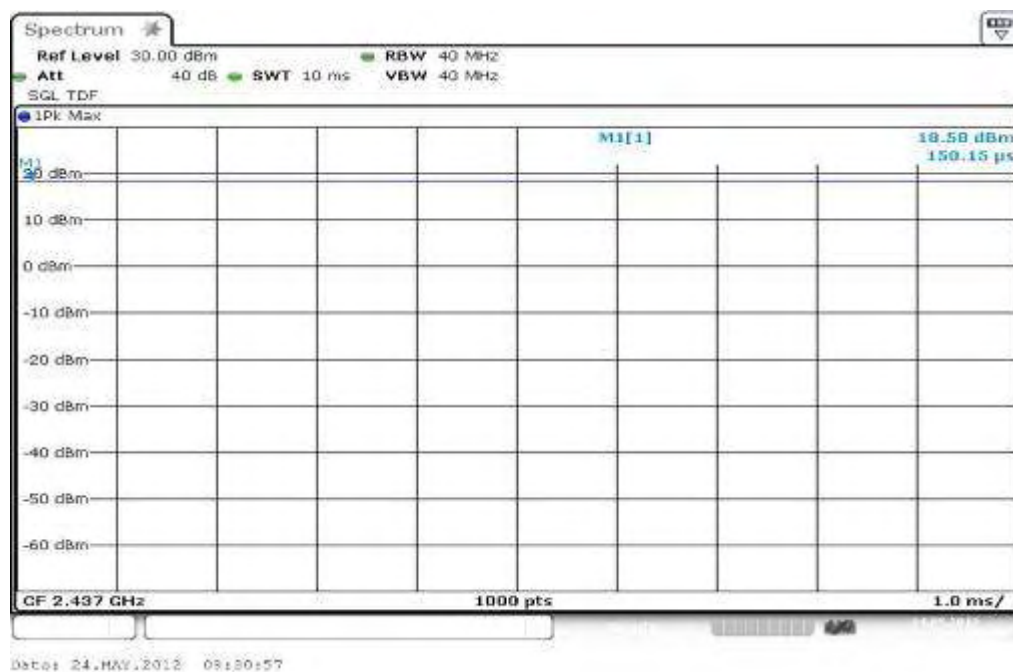
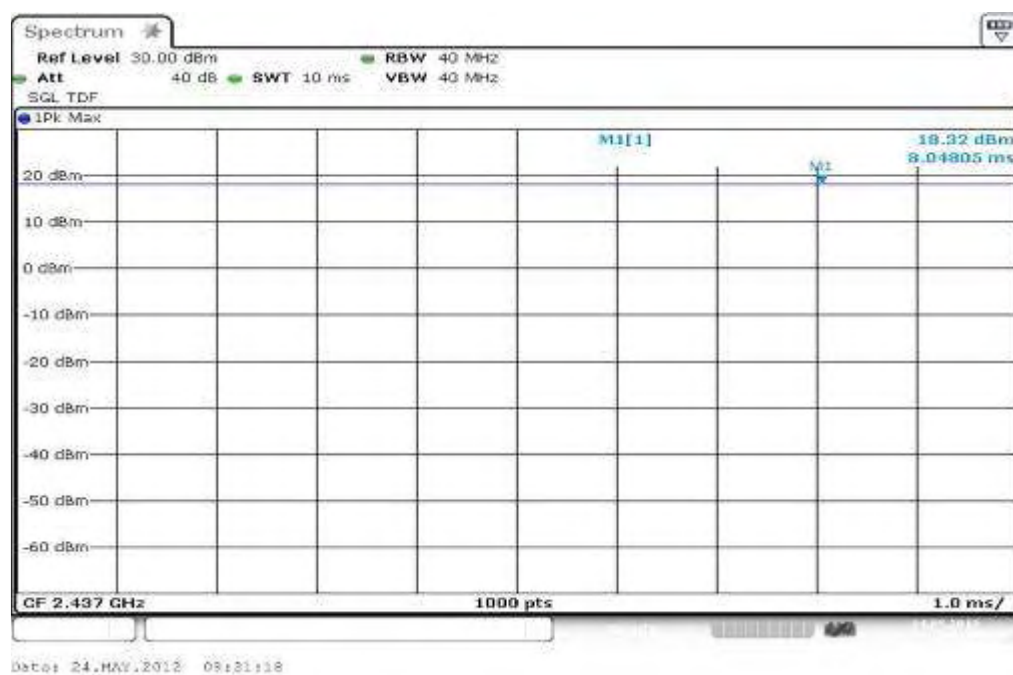
Plot 5: TX mode, middle channel, 24 MBit/s**Plot 6:** TX mode, middle channel, 36 MBit/s

Plot 7: TX mode, middle channel, 48 MBit/s**Plot 8:** TX mode, middle channel, 54 MBit/s

Plots: OFDM / n - mode**Plot 1: TX mode, middle channel, MCS0****Plot 2: TX mode, middle channel, MCS1**

Plot 3: TX mode, middle channel, MCS2**Plot 4:** TX mode, middle channel, MCS3

Plot 5: TX mode, middle channel, MCS4**Plot 6:** TX mode, middle channel, MCS5

Plot 7: TX mode, middle channel, MCS6**Plot 8:** TX mode, middle channel, MCS7

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:	Peak
Sweep time:	Auto
Video bandwidth:	3 MHz
Resolution bandwidth:	3 MHz
Trace-Mode:	Max hold

Limits:

FCC	IC
CFR Part 15.247 (b)(4)	RSS 210, Issue 8, A 8.4(2)
Antenna Gain	
6 dBi	

Results:

T _{nom}	V _{nom}	lowest channel 2412 MHz	middle channel 2437 MHz	highest channel 2462 MHz
Conducted power [dBm] Measured with DSSS modulation		15.69	15.71	16.18
Radiated power [dBm] Measured with DSSS modulation		17.91	17.40	18.47
Gain [dBi] Calculated		2.22	1.69	2.29
Measurement uncertainty			± 1.5 dB (cond.) / ± 3 dB (rad.)	

Result: **Passed**

9.3 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.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	40 MHz
Resolution bandwidth:	40 MHz
Span:	Zero span
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247 (b)(3)	RSS 210, Issue 8, A 8.4(4)
Maximum Output Power	
Conducted: 1.0 W – Antenna Gain max. 6 dBi	

Results: DSSS / b – mode

DSSS / b – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	18.11	18.30	18.42
Output Power Radiated – EIRP*)	20.33	19.99	20.71
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*) calculated with Antenna gain

Result: Passed

Results: OFDM / g – mode

OFDM / g – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	18.79	18.97	19.09
Output Power Radiated – EIRP*)	21.01	20.66	21.38
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

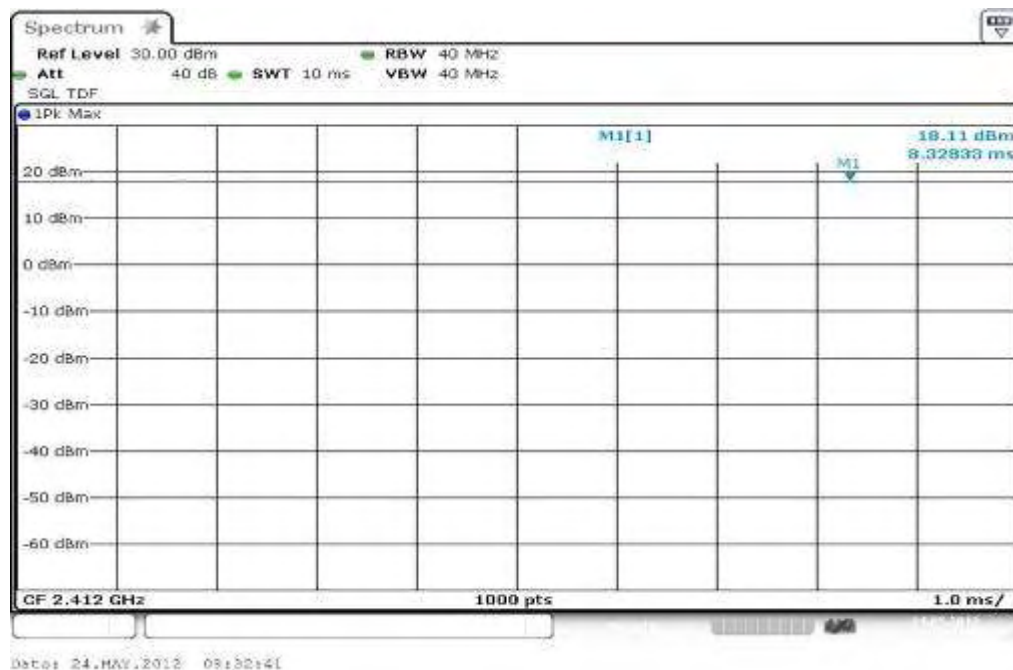
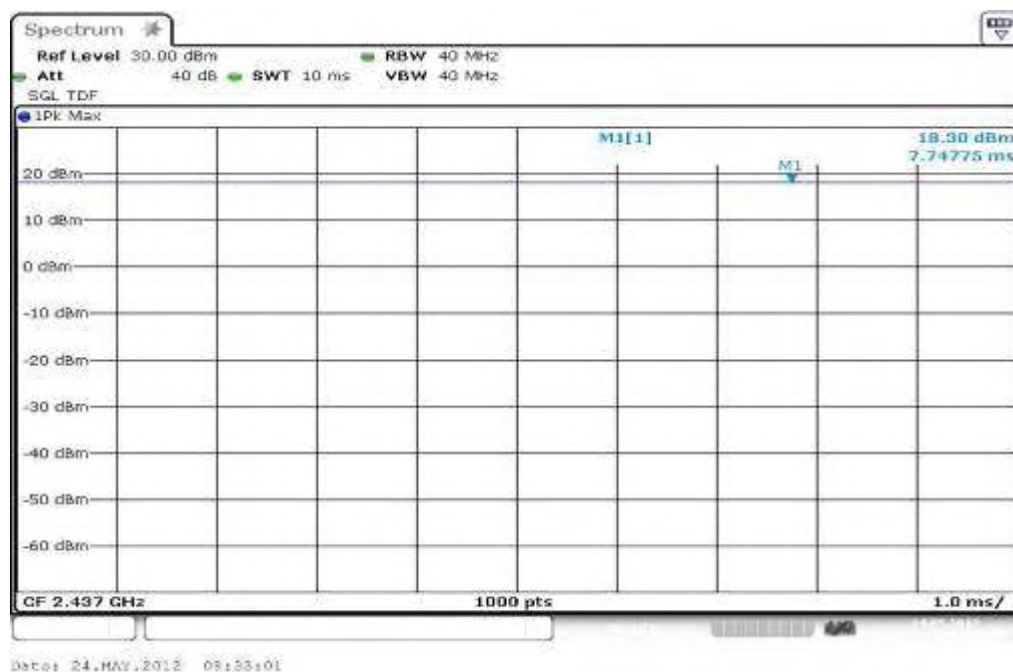
*) calculated with Antenna gain

Result: Passed**Results: OFDM / n – mode**

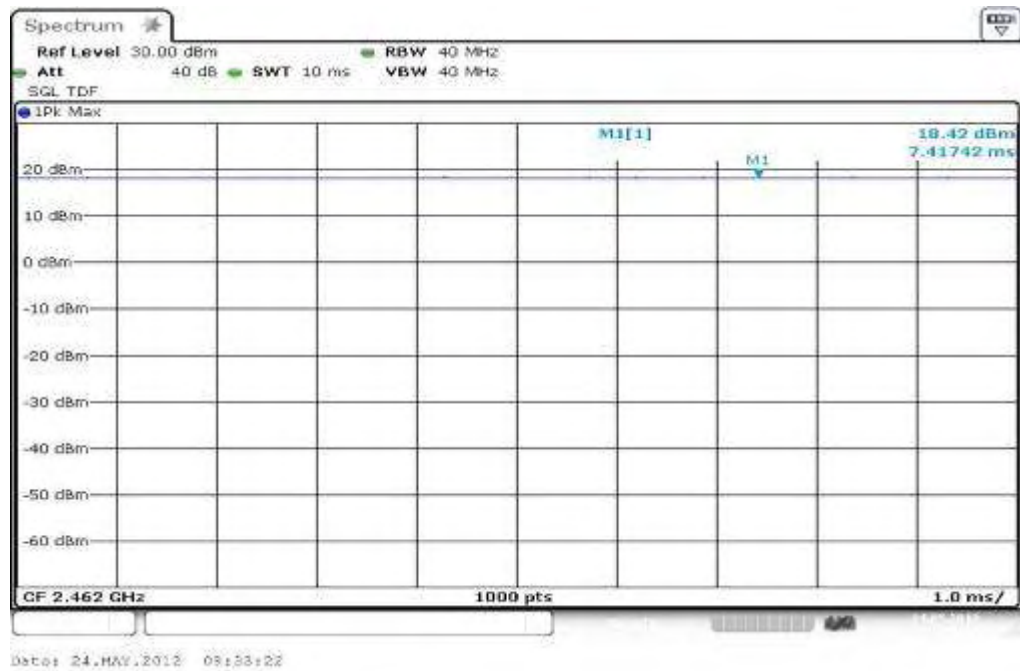
OFDM / n – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	19.04	19.23	19.34
Output Power Radiated – EIRP*)	21.26	20.92	21.63
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

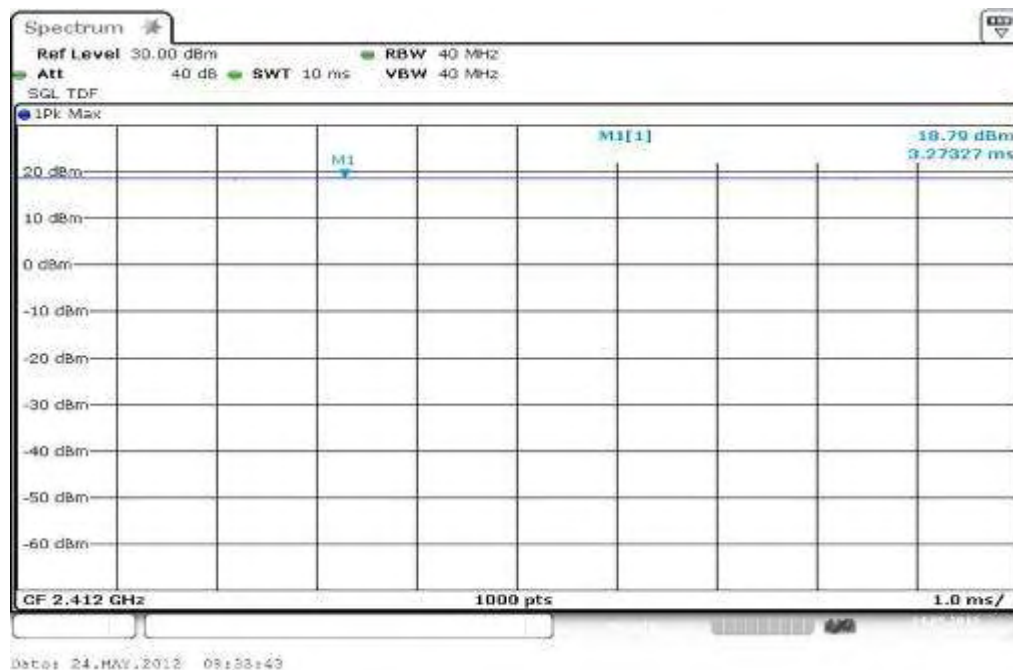
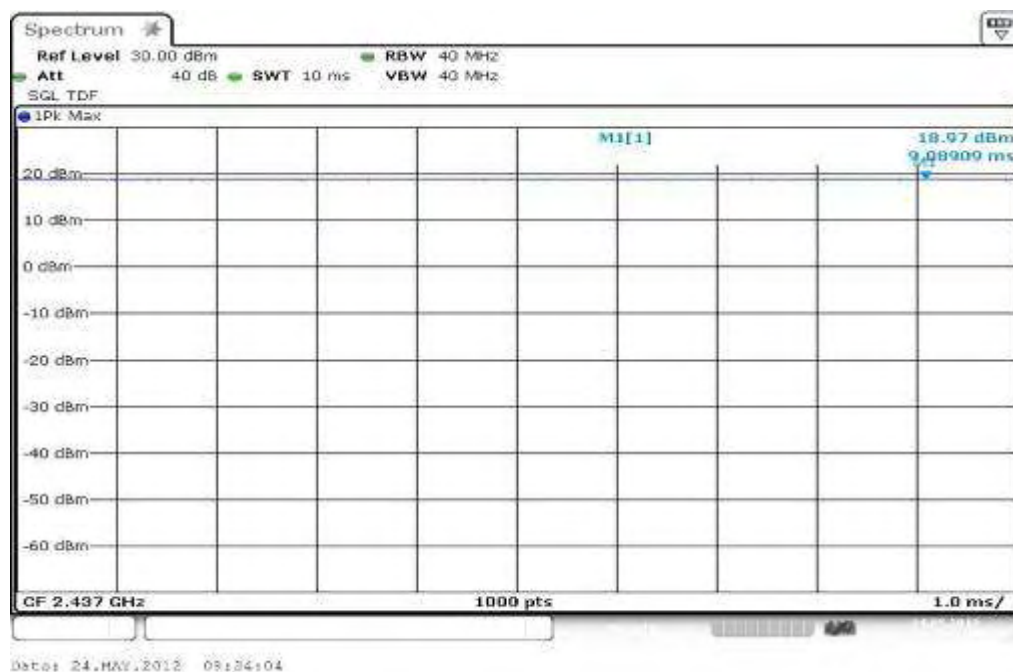
*) calculated with Antenna gain

Result: Passed

Plots: DSSS / b – mode**Plot 1: TX mode, lowest channel****Plot 2: TX mode, middle channel**

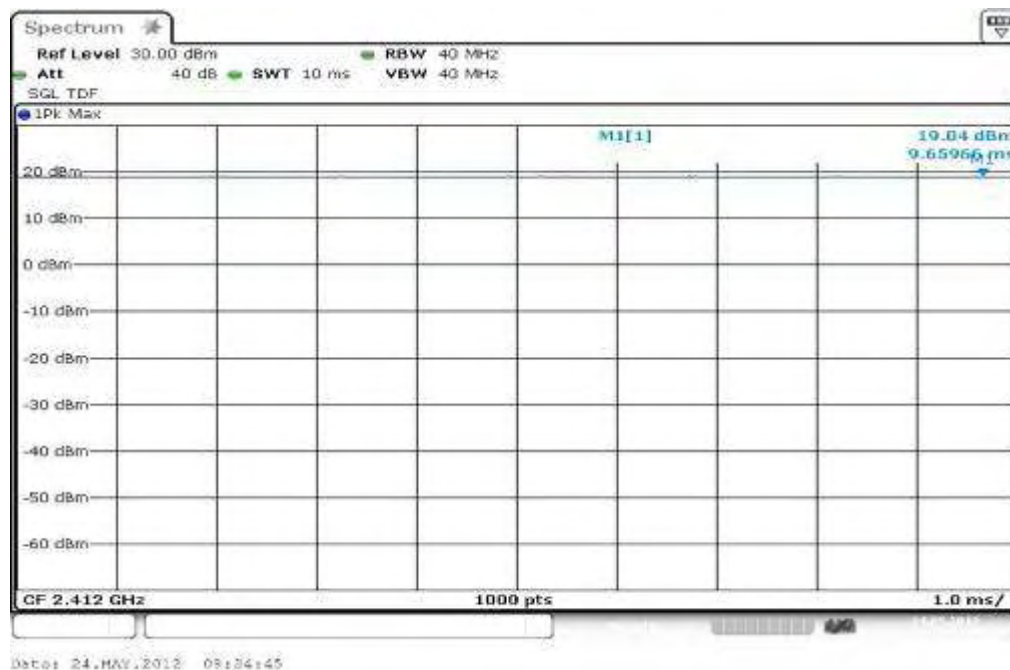
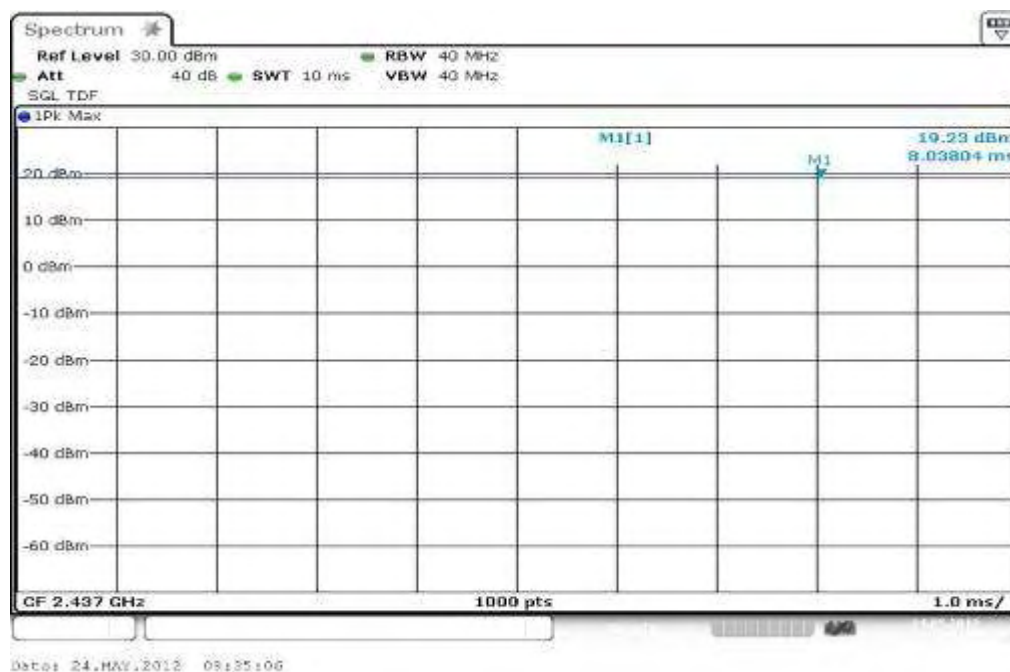
Plot 3: TX mode, highest channel



Plots: OFDM / g - mode**Plot 1: TX mode, lowest channel****Plot 2: TX mode, middle channel**

Plot 3: TX mode, highest channel



Plots: OFDM / n - mode**Plot 1: TX mode, lowest channel****Plot 2: TX mode, middle channel**

Plot 3: TX mode, highest channel



9.4 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:	Auto
Video bandwidth:	300 kHz
Resolution bandwidth:	100 kHz
Span:	20 MHz
Trace-Mode:	Max Hold

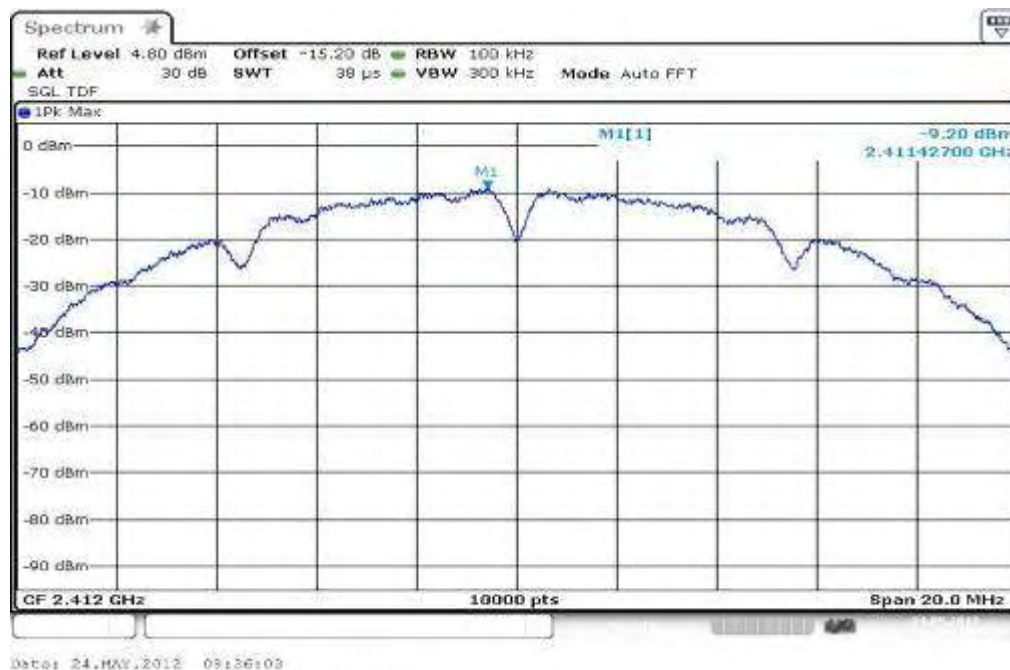
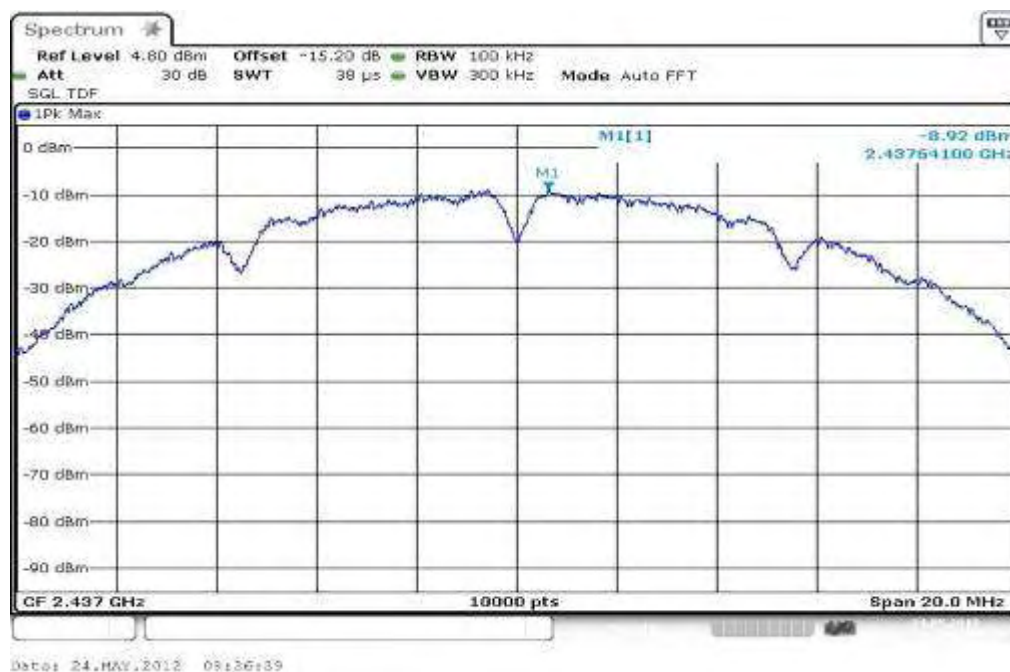
Limits:

FCC	IC
CFR Part 15.247 (e)	RSS 210, Issue 8, 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.	

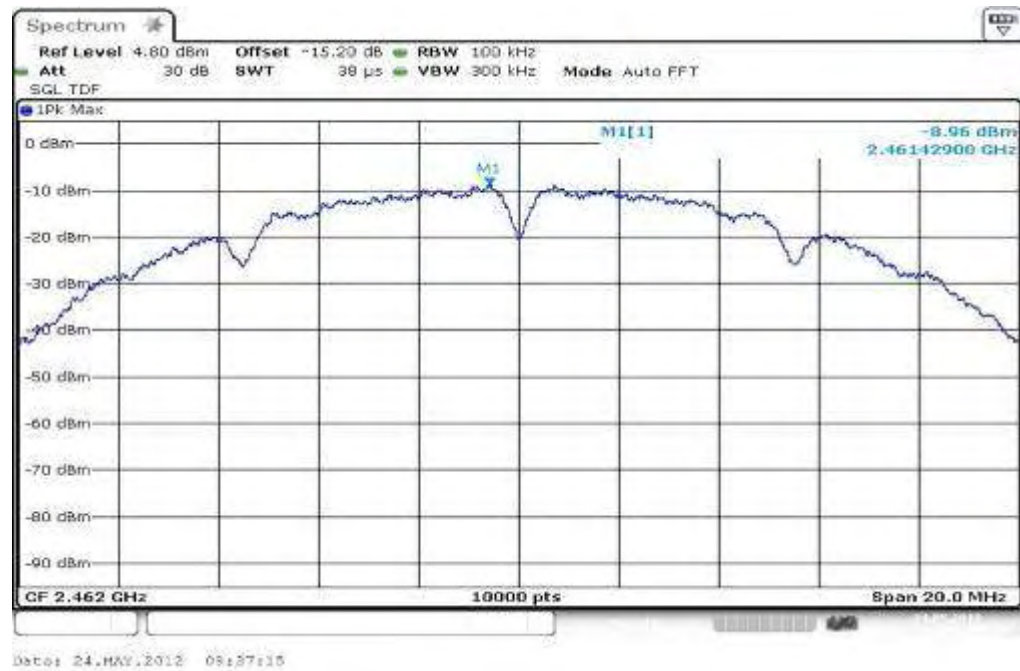
Results:

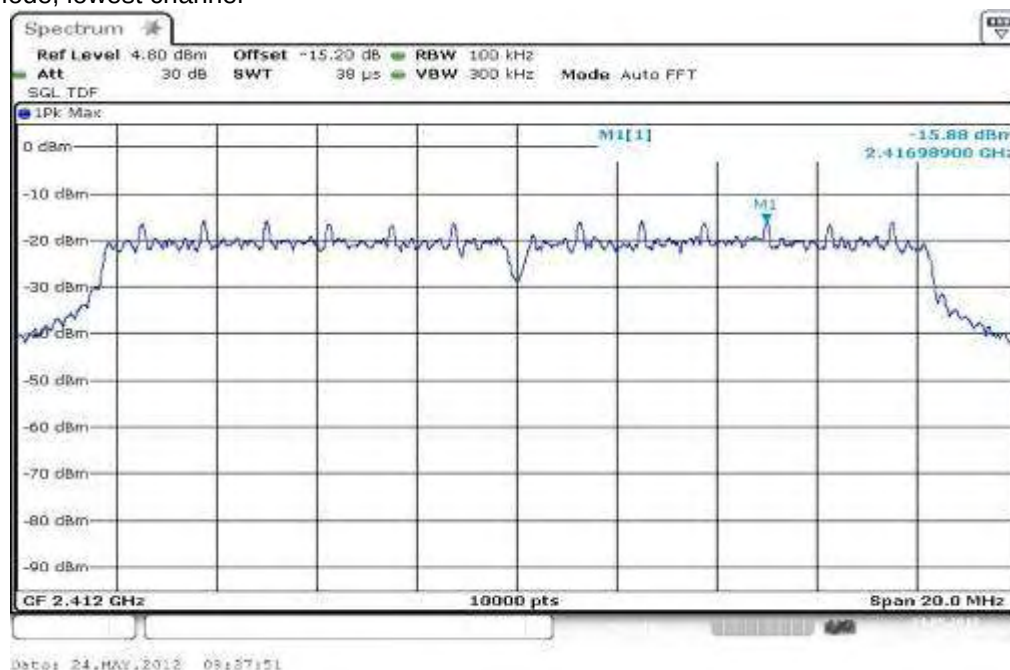
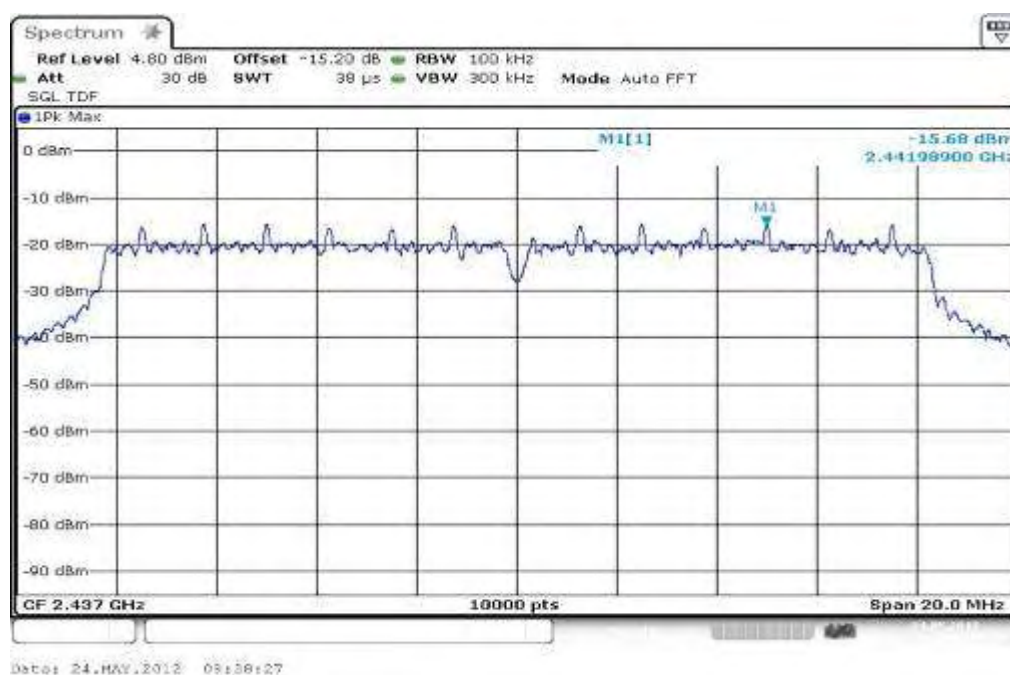
Modulation Frequency	Power Spectral density [dBm/3kHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	-9.20	-8.92	-8.96
OFDM / g – mode	-15.88	-15.68	-15.37
OFDM / n – mode	-15.78	-15.66	-15.32
Measurement uncertainty	± 1.5 dB		

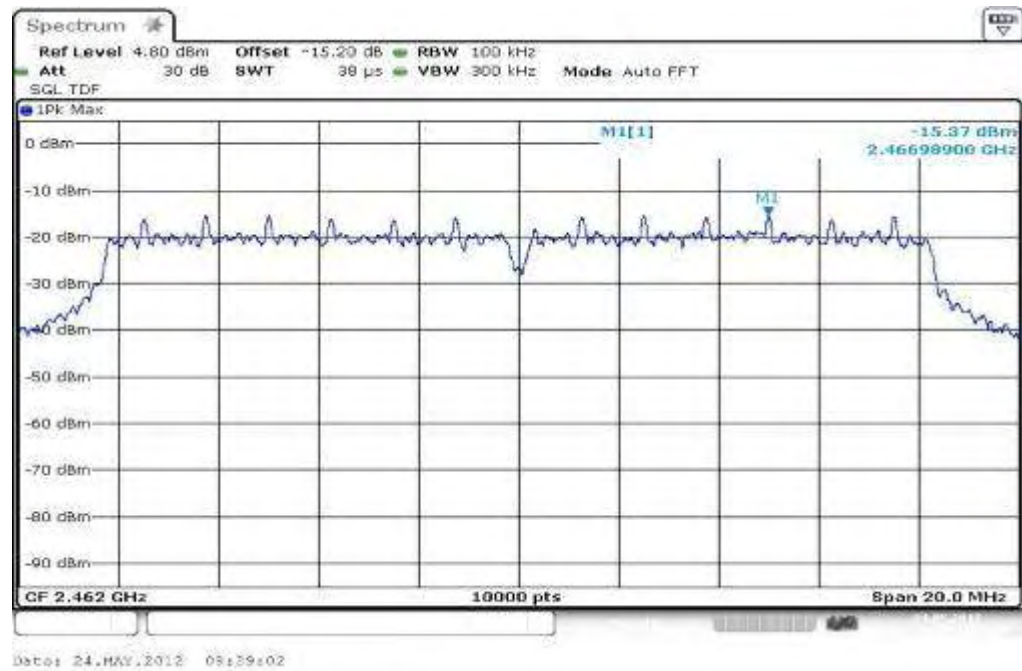
Result: **Passed**

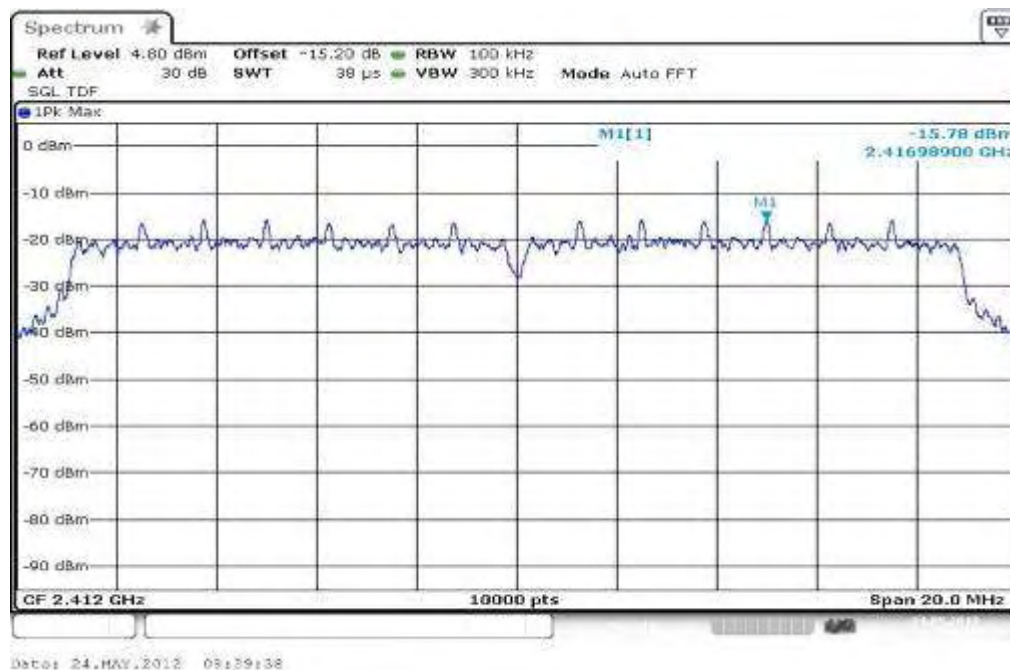
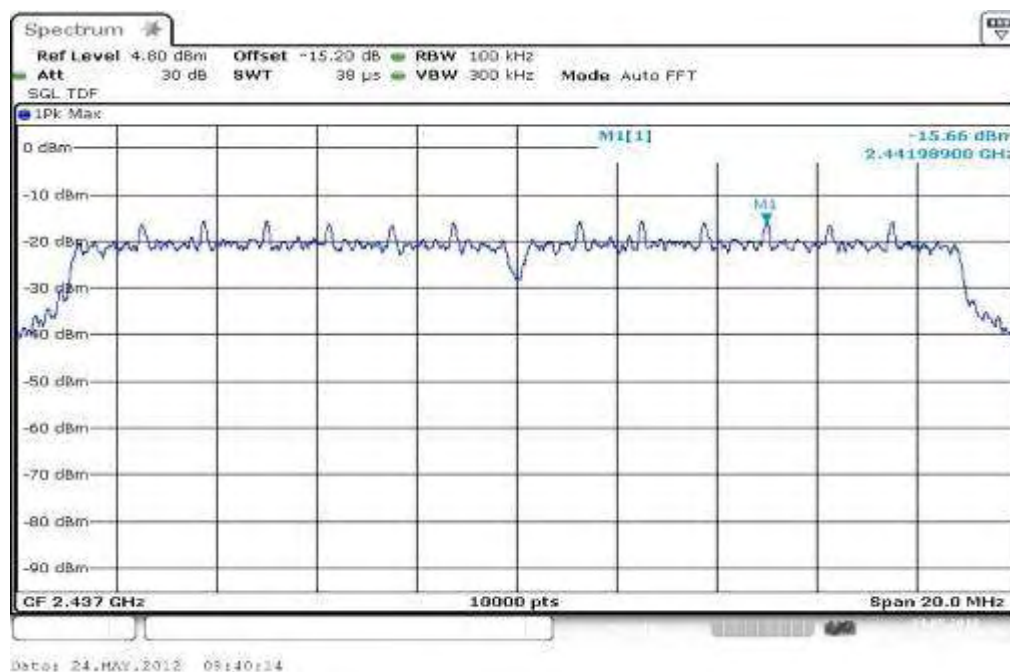
Plots: DSSS / b – mode**Plot 1: TX mode, lowest channel****Plot 2: TX mode, middle channel**

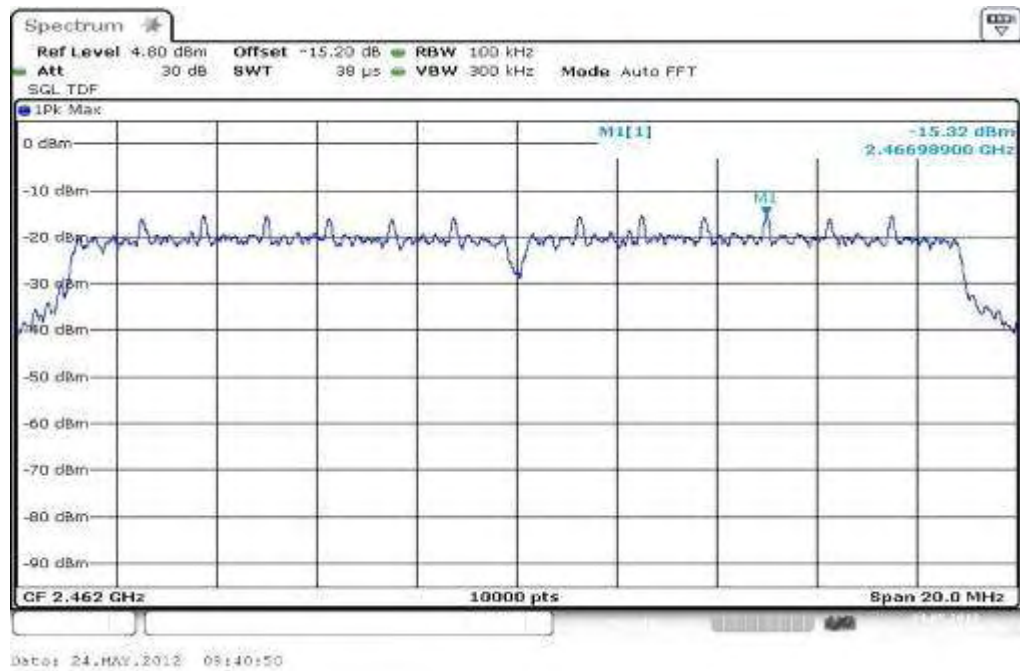
Plot 3: TX mode, highest channel



Plots: OFDM / g - mode**Plot 1: TX mode, lowest channel****Plot 2: TX mode, middle channel**

Plot 3: TX mode, highest channel

Plots: OFDM / n - mode**Plot 1: TX mode, lowest channel****Plot 2: TX mode, middle channel**

Plot 3: TX mode, highest channel

9.5 Spectrum bandwidth – 6 dB bandwidth

Description:

Measurement of the 6 dB bandwidth of the modulated signal.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	10 s
Video bandwidth:	1 MHz
Resolution bandwidth:	300 kHz
Span:	See plots
Trace-Mode:	Max Hold

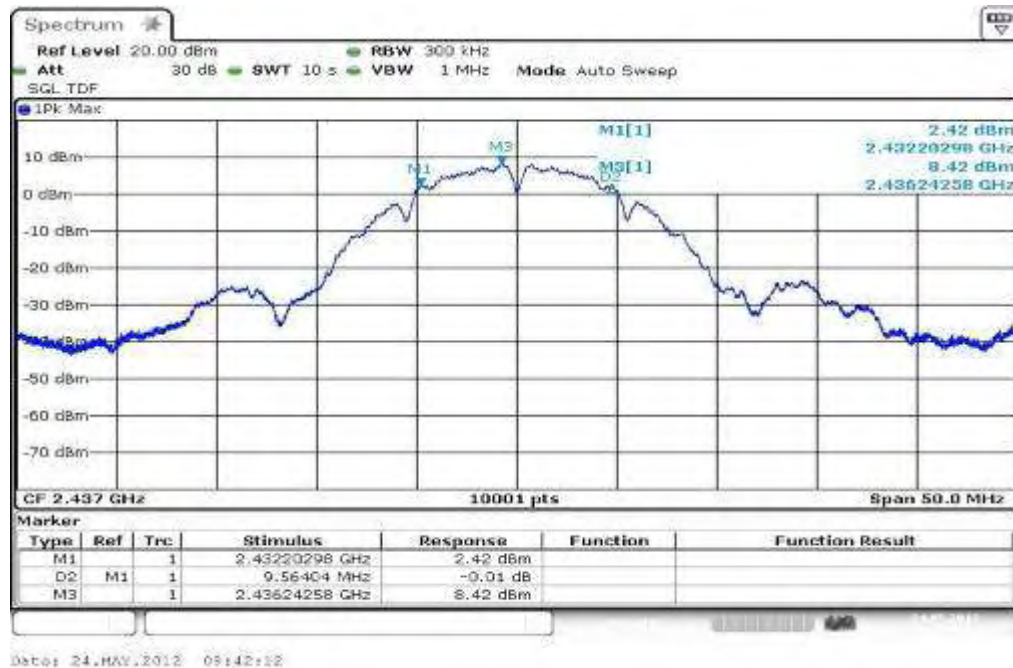
Limits:

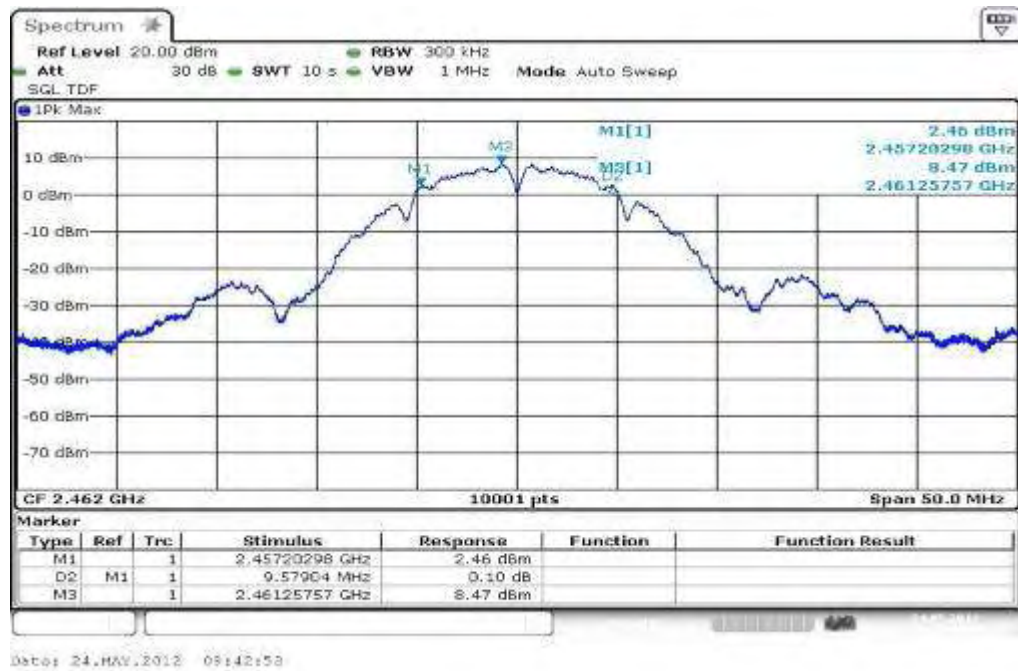
FCC	IC
CFR Part 15.247 (a)(2)	RSS 210, Issue 8, A 8.2(a)
Spectrum Bandwidth – 6 dB Bandwidth	
Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.	

Results:

Modulation Frequency	6 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	9.58	9.56	9.58
OFDM / g – mode	16.60	16.60	16.59
OFDM / n – mode	17.74	17.74	17.75
Measurement uncertainty	± 100 kHz		

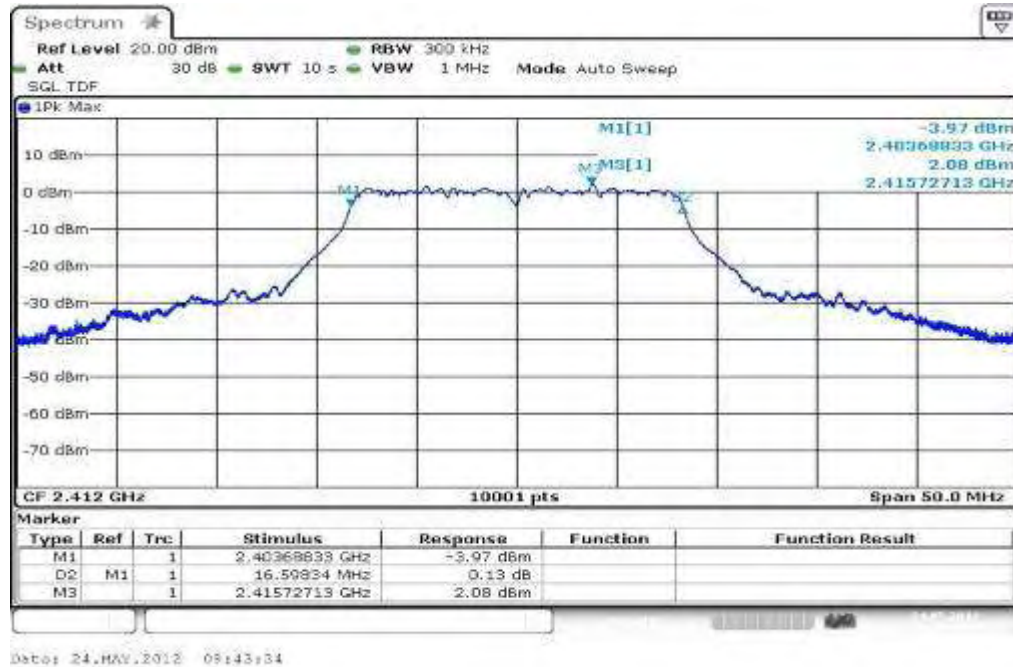
Result: **Passed**

Plots: DSSS / b – mode**Plot 1: TX mode, lowest channel, 6 dB bandwidth****Plot 2: TX mode, middle channel, 6 dB bandwidth**

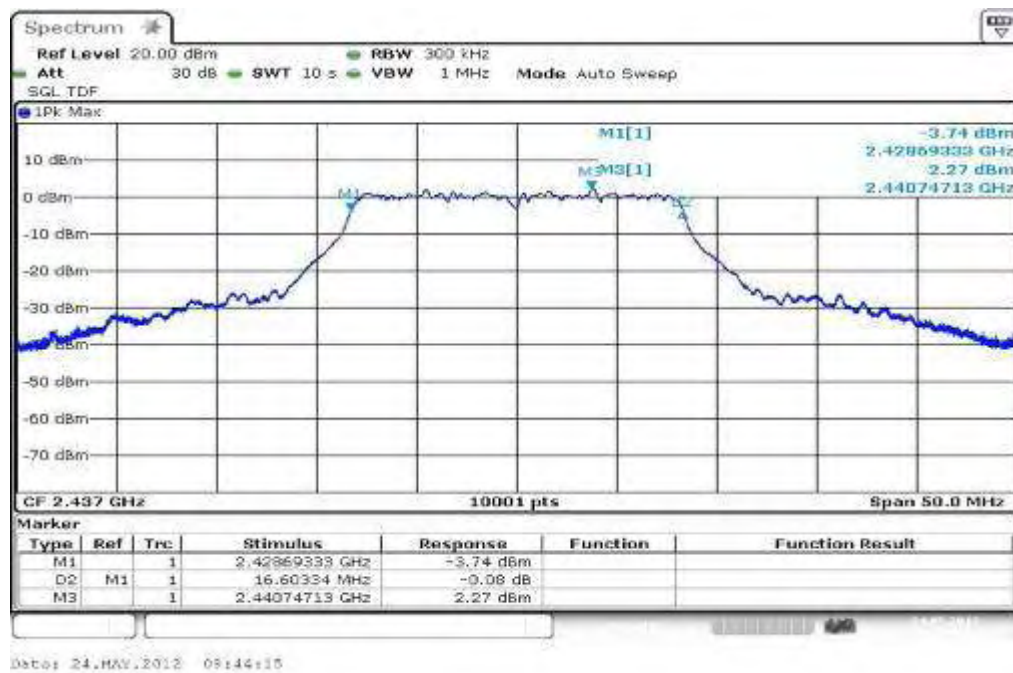
Plot 3: TX mode, highest channel, 6 dB bandwidth

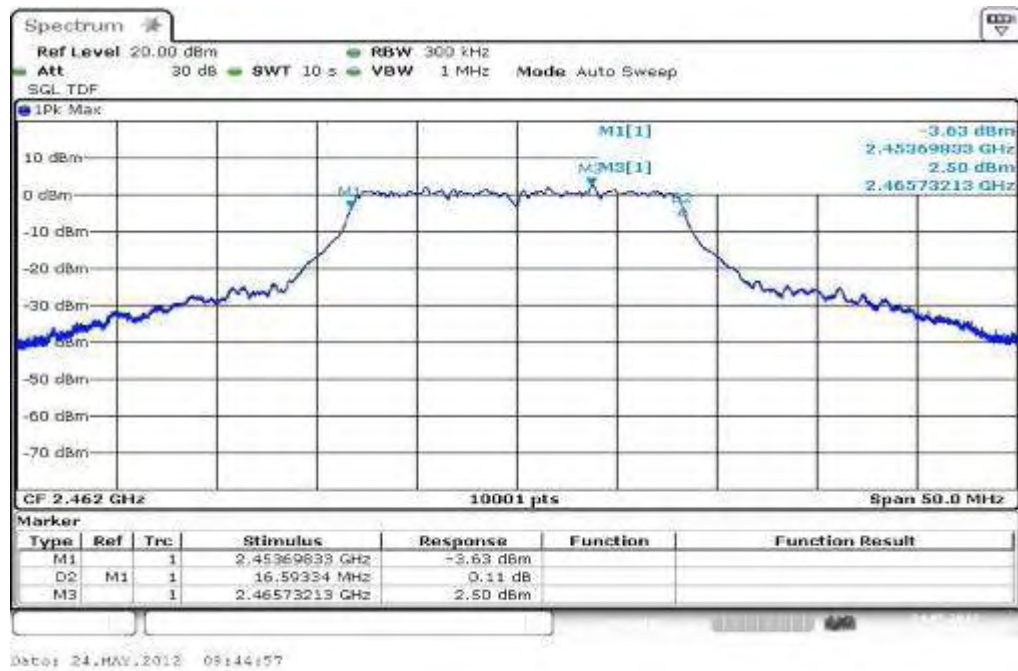
Plots: OFDM / g - mode

Plot 1: TX mode, lowest channel, 6 dB bandwidth



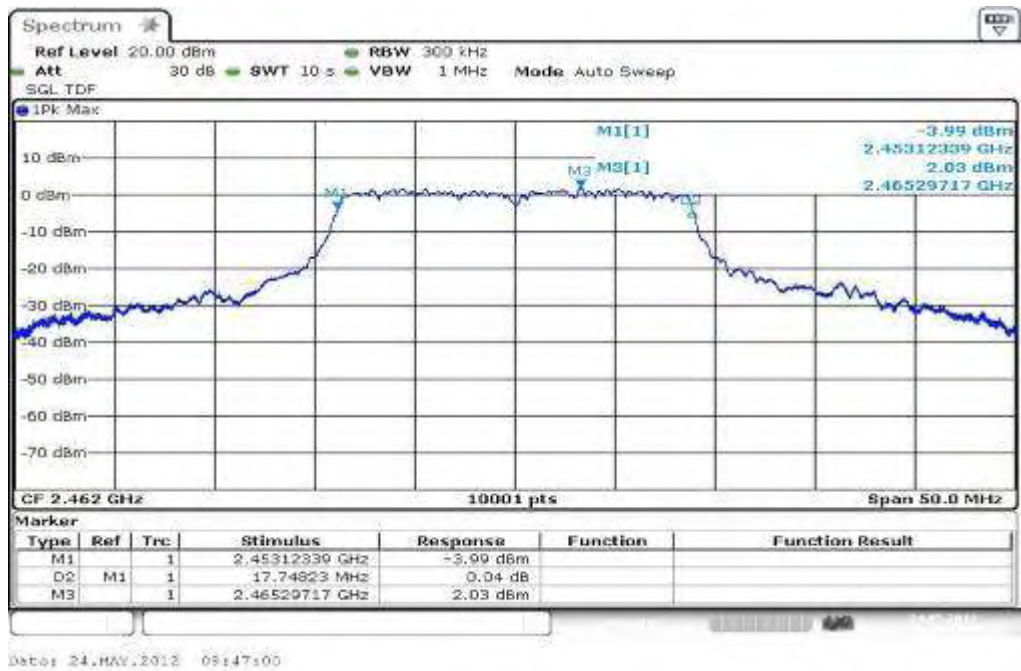
Plot 2: TX mode, middle channel, 6 dB bandwidth



Plot 3: TX mode, highest channel, 6 dB bandwidth

Plots: OFDM / n - mode**Plot 1: TX mode, lowest channel, 6 dB bandwidth****Plot 2: TX mode, middle channel, 6 dB bandwidth**

Plot 3: TX mode, highest channel, 6 dB bandwidth



9.6 Spectrum bandwidth – 20 dB bandwidth

Description:

Measurement of the 20 dB bandwidth of the modulated signal.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	10 s
Video bandwidth:	100 kHz
Resolution bandwidth:	100 kHz
Span:	See plots
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247 (a)(2)	RSS 210, Issue 8, A 8.2(a)
Spectrum Bandwidth – 20 dB Bandwidth	
Systems using digital modulation techniques may operate in the 2400–2483.5 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.	

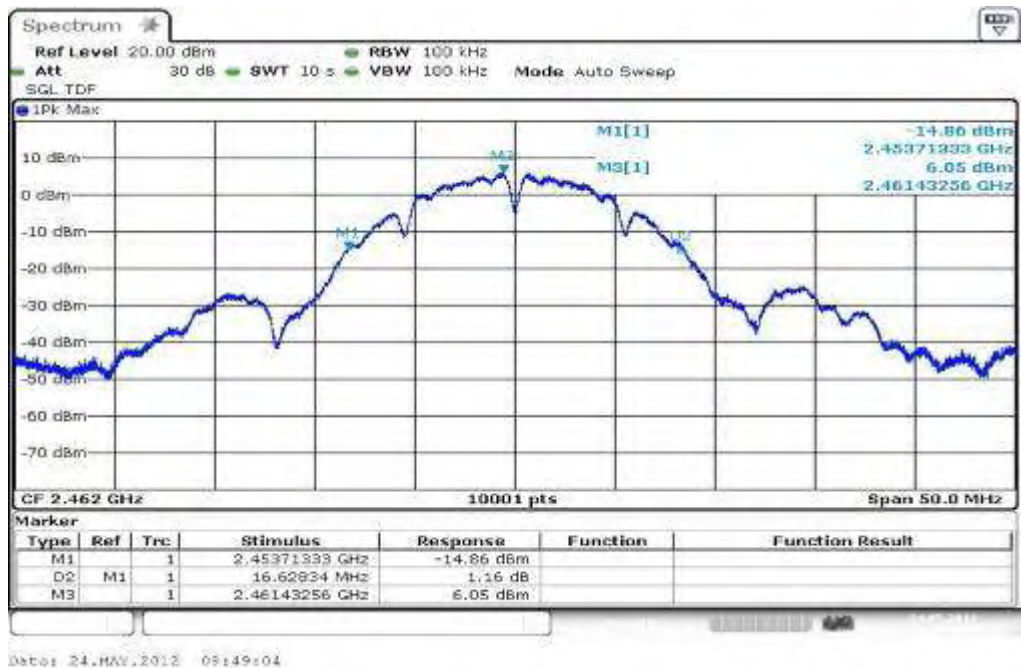
Results:

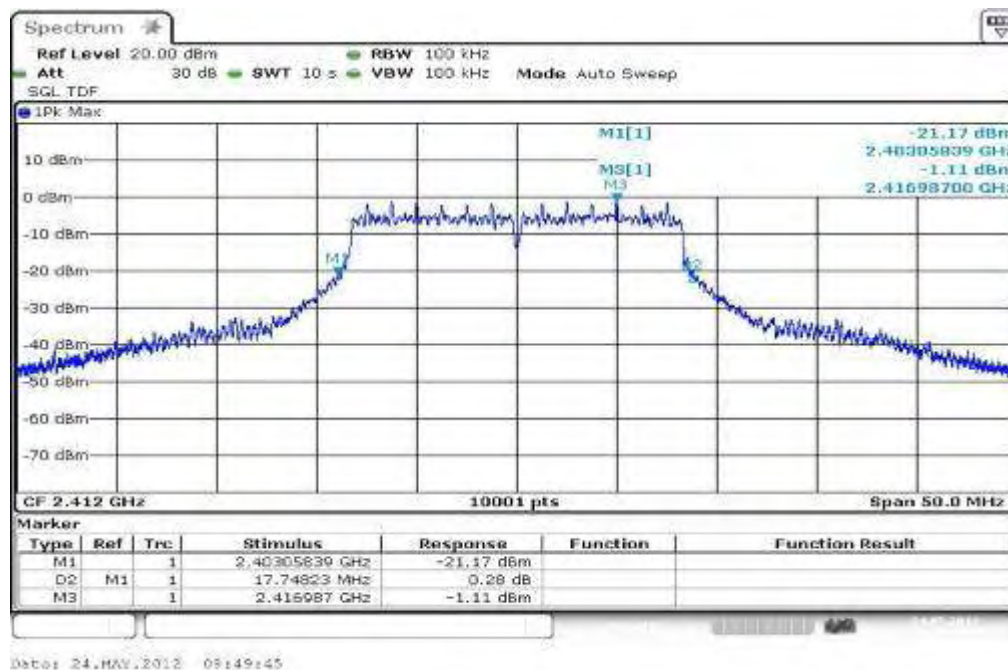
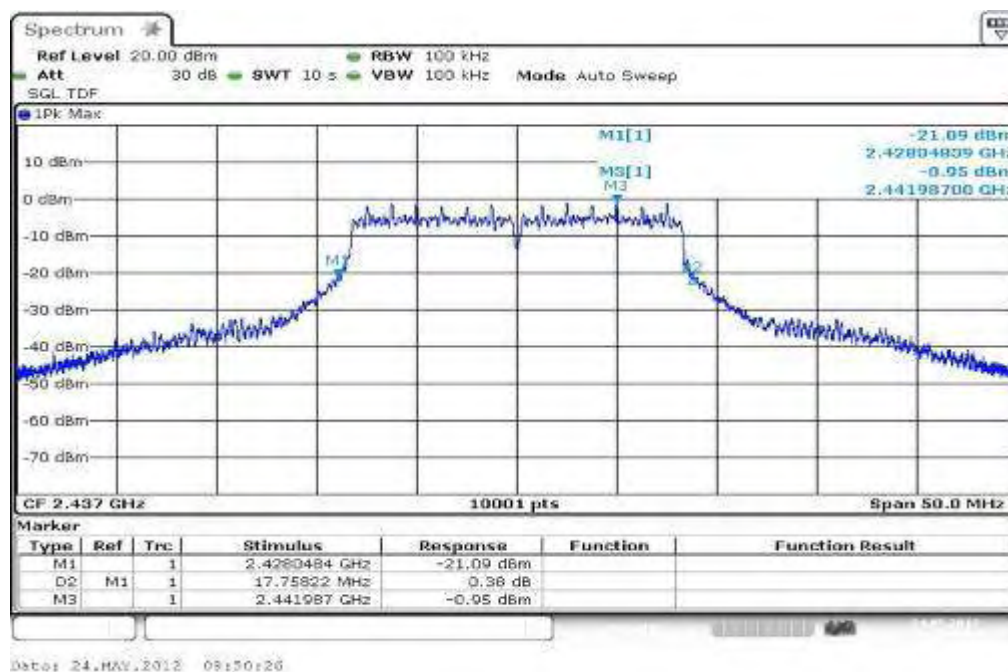
Modulation Frequency	20 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	16.42	16.42	16.63
OFDM / g – mode	17.75	17.76	17.97
OFDM / n – mode	18.85	18.85	18.85
Measurement uncertainty	± 100 kHz		

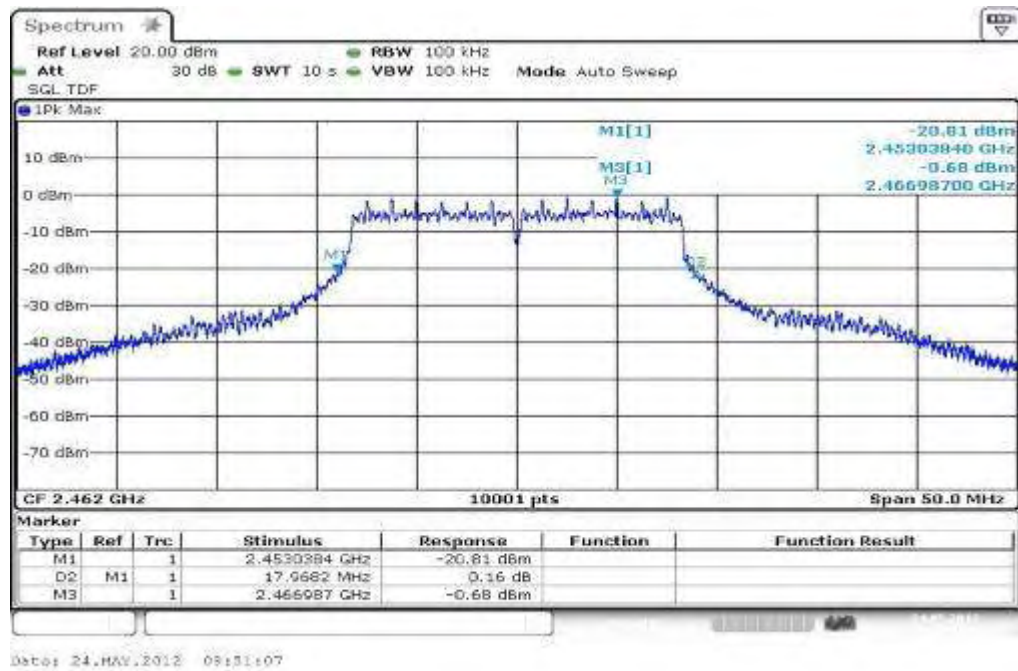
Result: **Passed**

Plots: DSSS / b – mode**Plot 1: TX mode, lowest channel, 20 dB bandwidth****Plot 2: TX mode, middle channel, 20 dB bandwidth**

Plot 3: TX mode, highest channel, 20 dB bandwidth

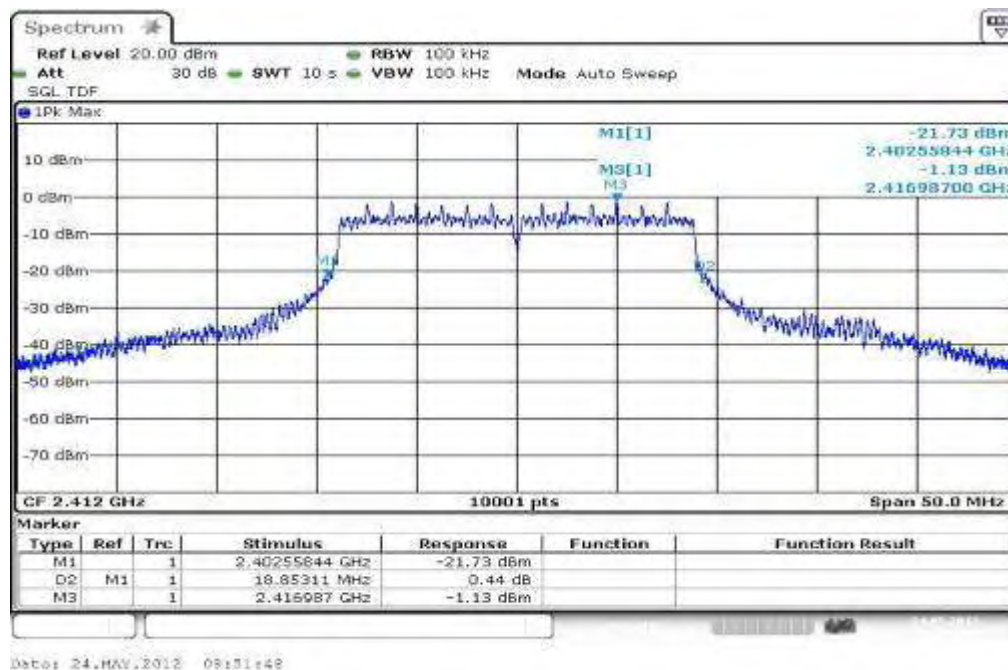


Plots: OFDM / g - mode**Plot 1: TX mode, lowest channel, 20 dB bandwidth****Plot 2: TX mode, middle channel, 20 dB bandwidth**

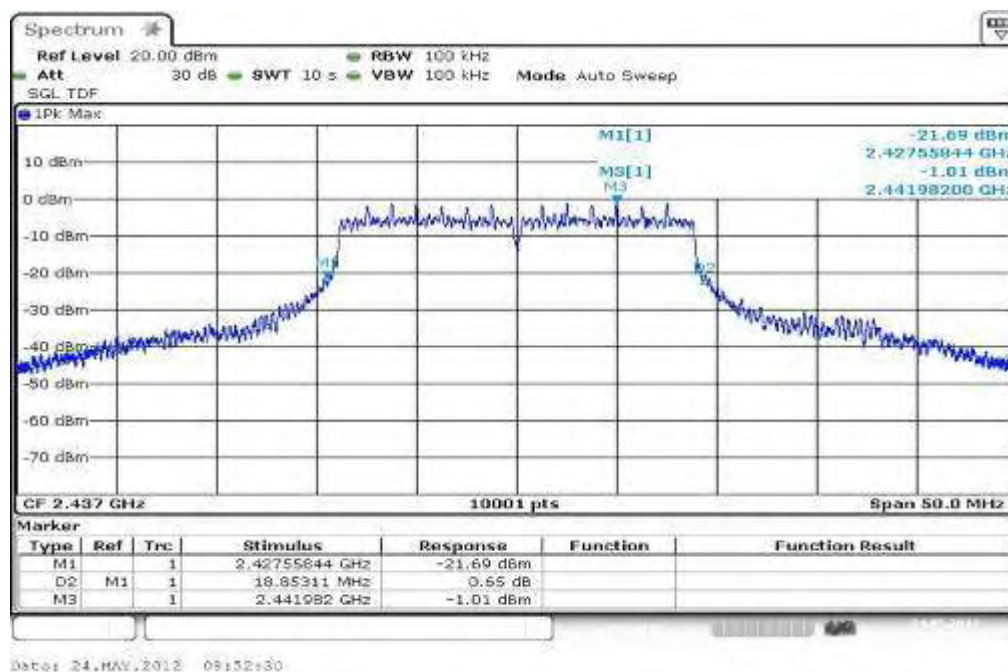
Plot 3: TX mode, highest channel, 20 dB bandwidth

Plots: OFDM / n - mode

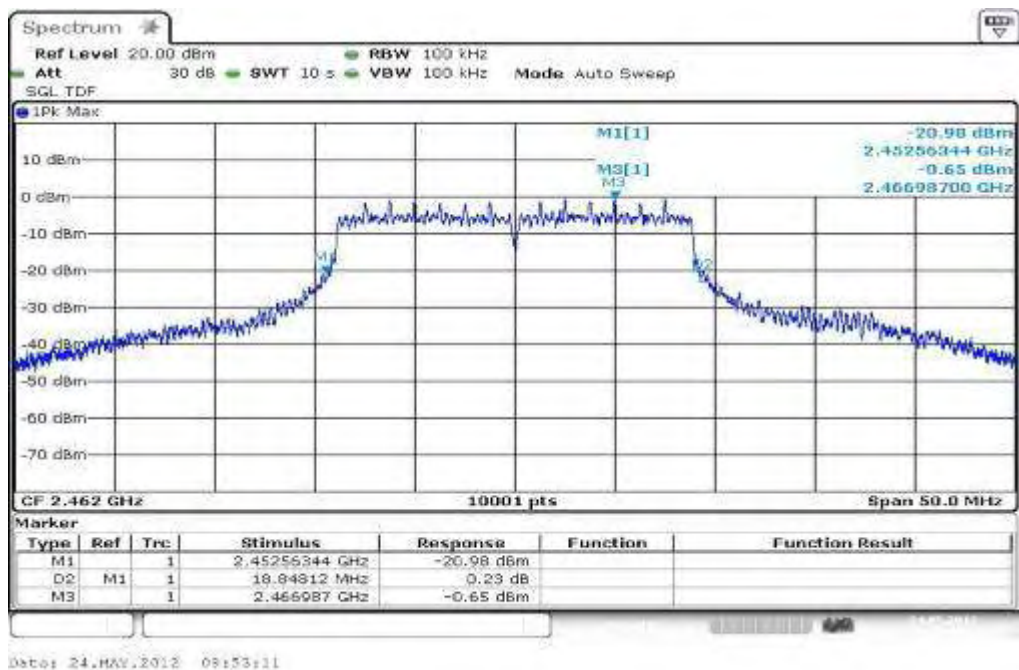
Plot 1: TX mode, lowest channel, 20 dB bandwidth



Plot 2: TX mode, middle channel, 20 dB bandwidth



Plot 3: TX mode, highest channel, 20 dB bandwidth



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:	1s
Video bandwidth:	100 kHz
Resolution bandwidth:	100 kHz
Span:	Lower Band Edge: 2300 – 2425 MHz Upper Band Edge: 2450 – 2500 MHz
Trace-Mode:	Max Hold

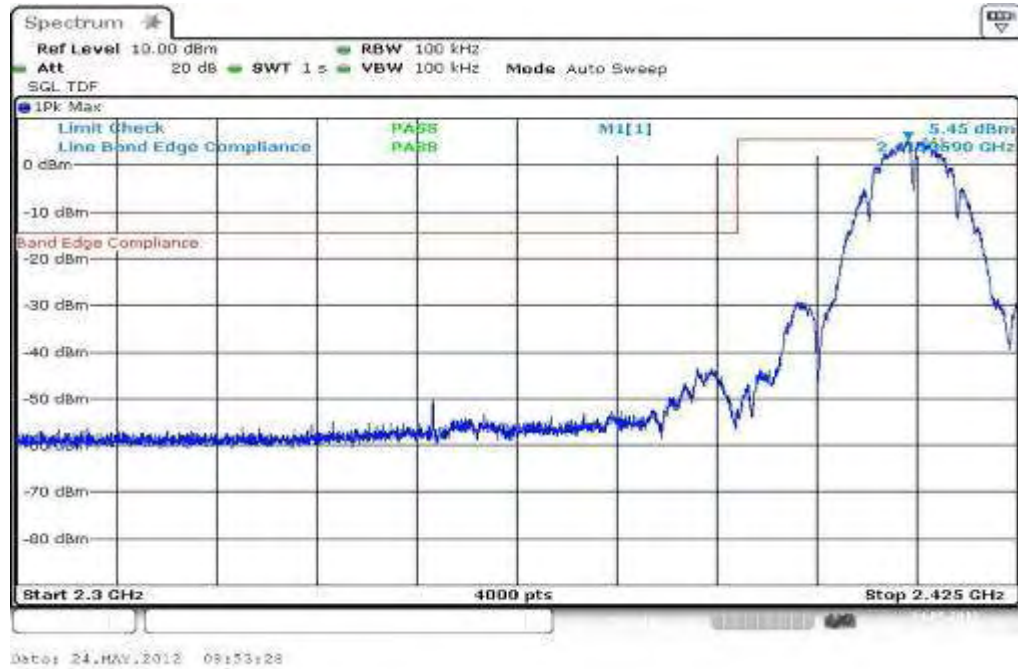
Limits:

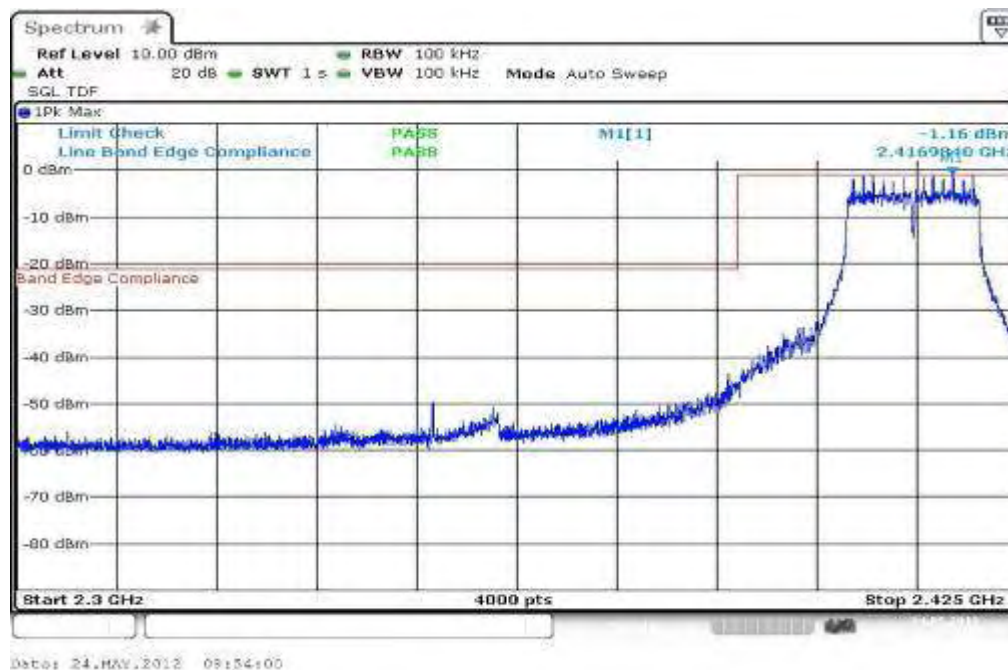
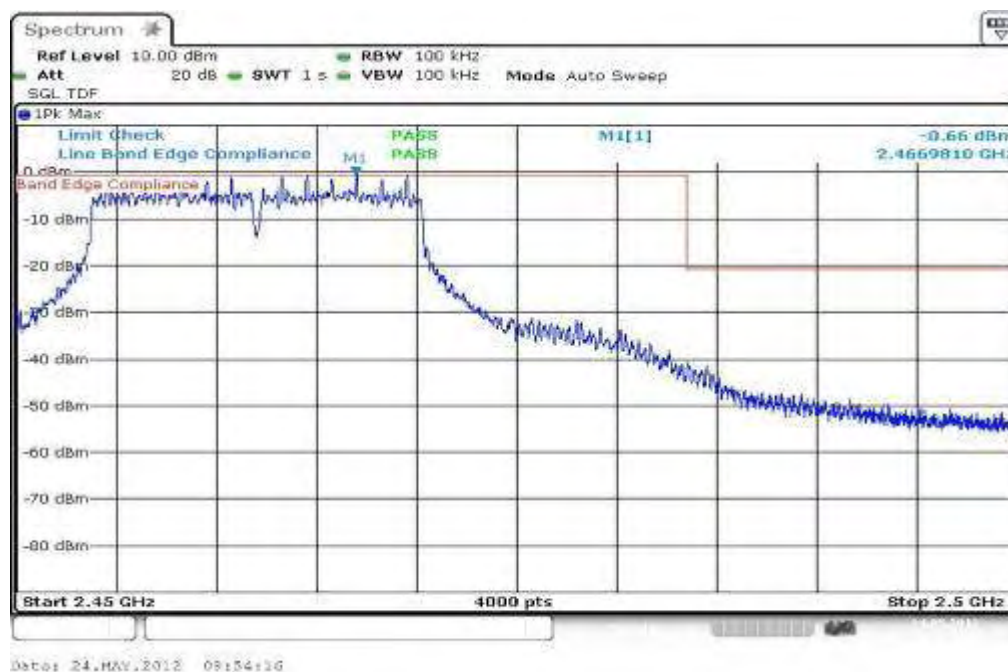
FCC	IC
CFR Part 15.247 (d)	RSS 210, Issue 8, A 8.5
Band Edge Compliance Conducted	
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be 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.	

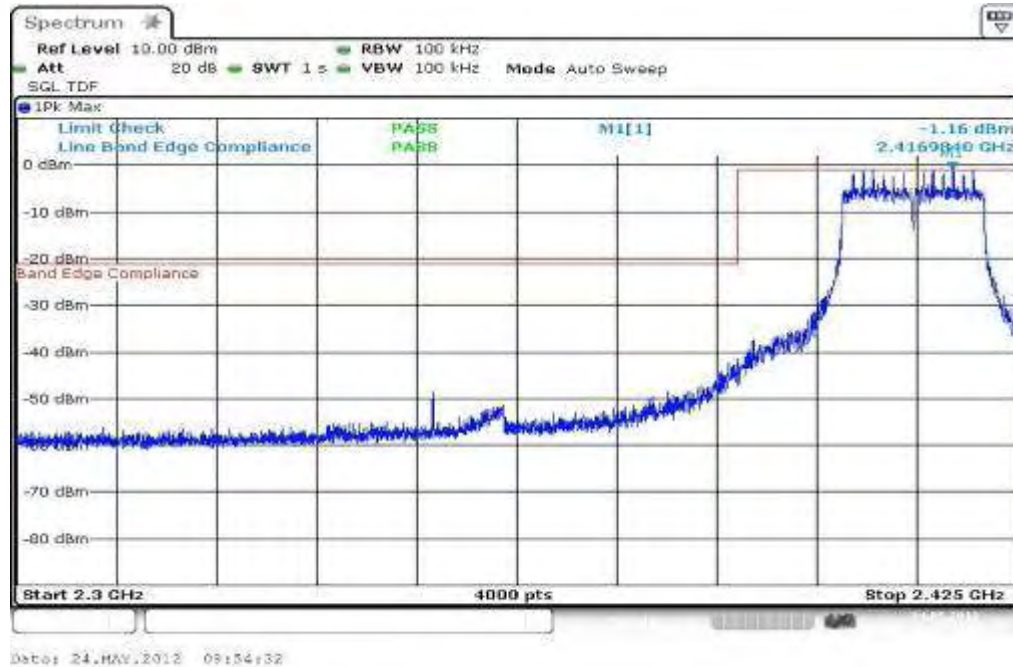
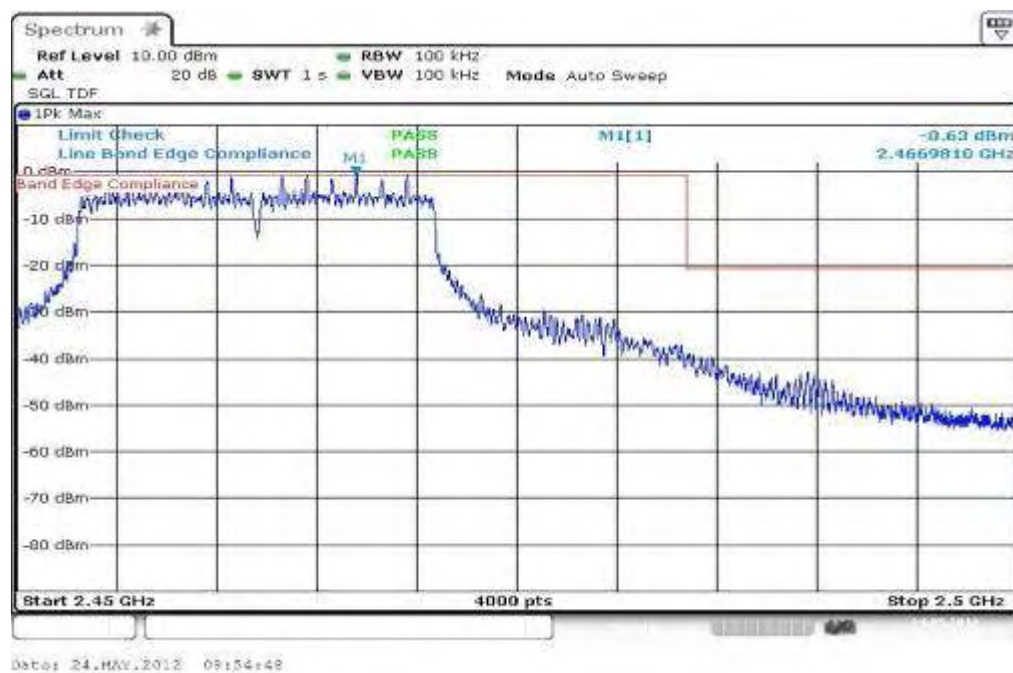
Results:

Scenario Modulation	Band Edge Compliance Conducted [dB]		
	DSSS / b – mode	OFDM / g – mode	OFDM / n – mode
Lower Band Edge – Channel 1	> 20 dB (see plot 1)	> 20 dB (see plot 3)	> 20 dB (see plot 5)
Upper Band Edge – Channel 11	> 20 dB (see plot 2)	> 20 dB (see plot 4)	> 20 dB (see plot 6)
Measurement uncertainty	± 1.5 dB		

Result: Passed

Plots: DSSS / b – mode**Plot 1: TX mode, lower band edge****Plot 2: TX mode, upper band edge**

Plots: OFDM / g - mode**Plot 1: TX mode, lower band edge****Plot 2: TX mode, upper band edge**

Plots: OFDM / n - mode**Plot 1: TX mode, lower band edge****Plot 2: TX mode, upper band edge**

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 higher Band: 2480 – 2500 MHz
Trace-Mode:	Max Hold

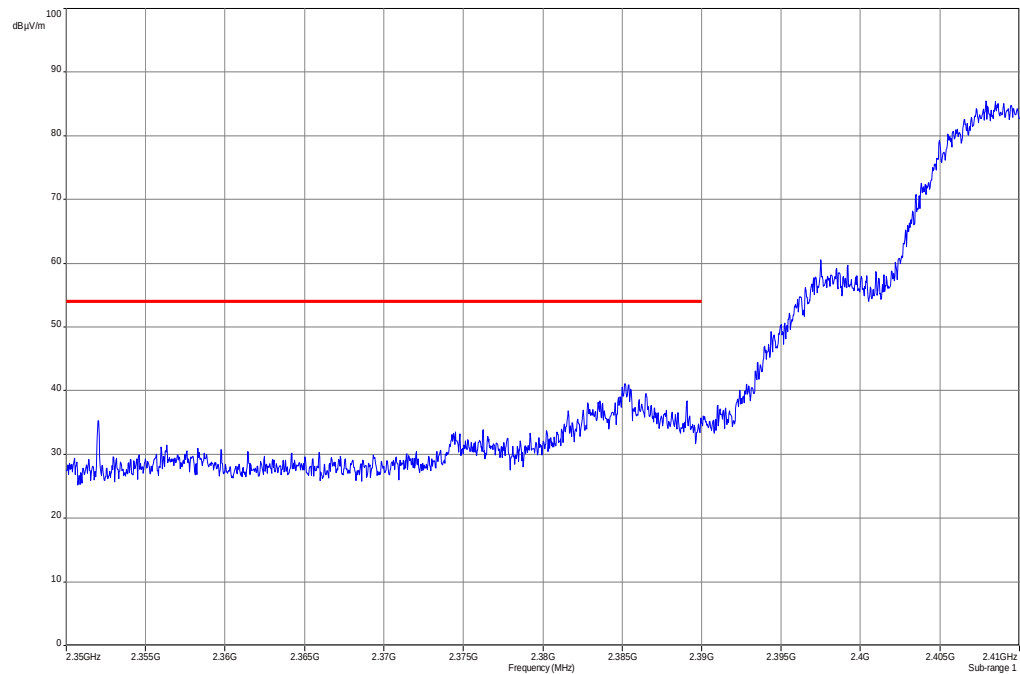
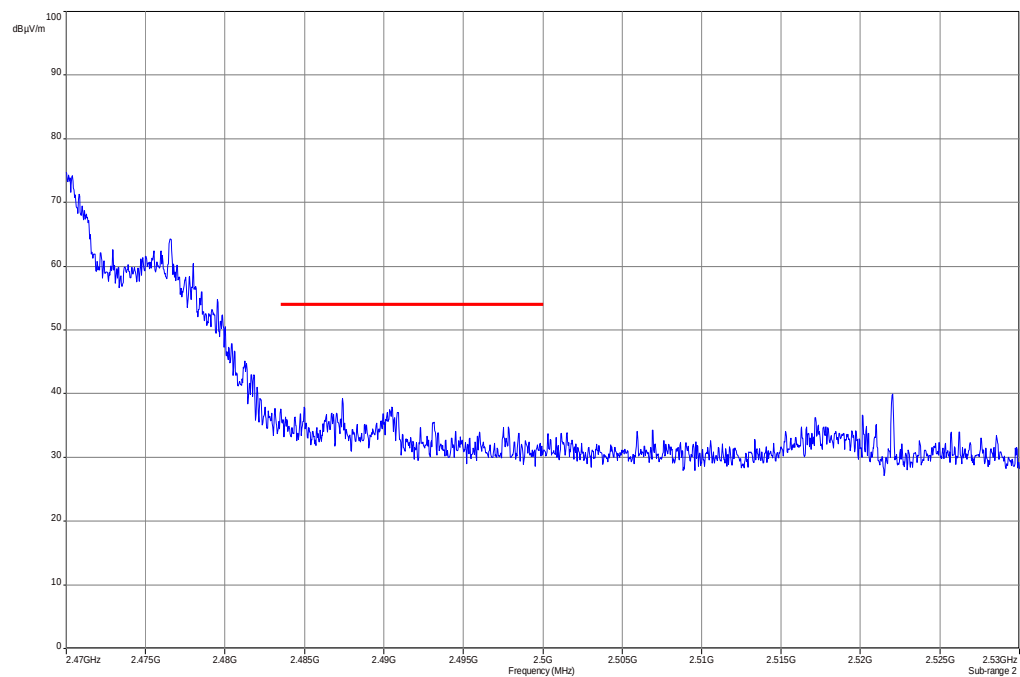
Limits:

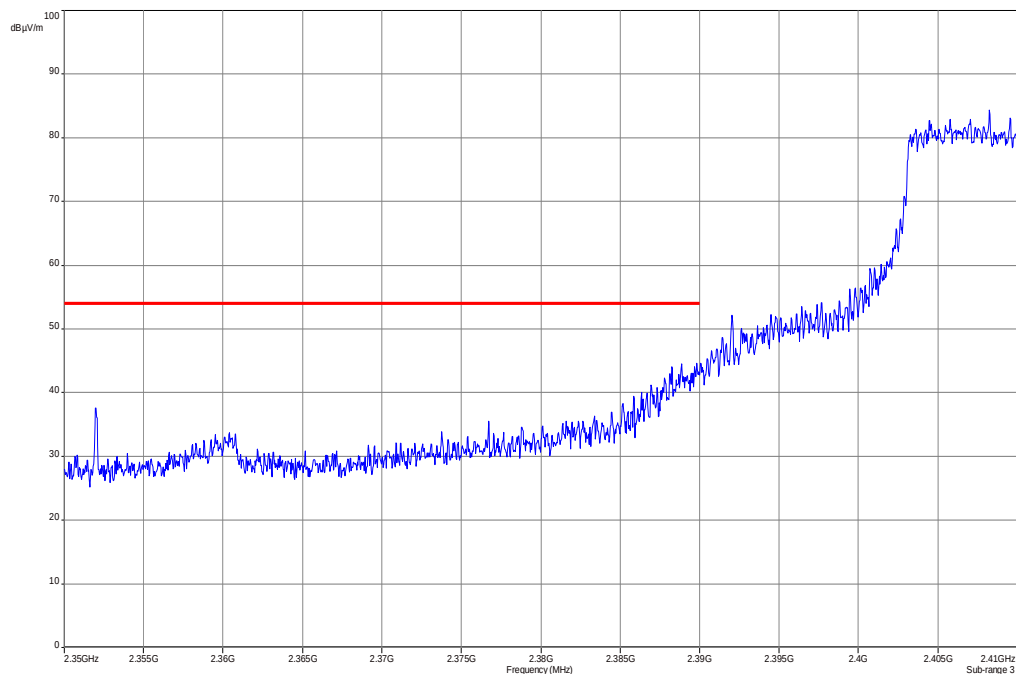
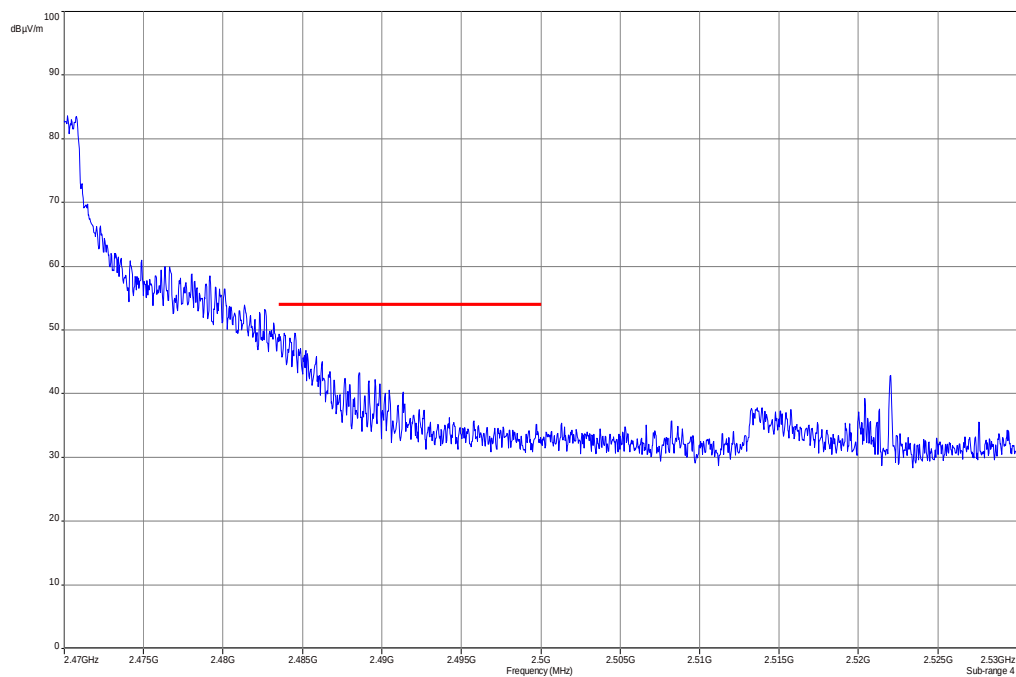
FCC	IC
CFR Part 15.205	RSS 210, Issue 8, A 8.5
Band Edge Compliance Radiated	
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 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 dB μ V/m AVG	

Results:

Scenario Modulation	Band Edge Compliance Conducted [dB]		
	DSSS / b – mode	OFDM / g – mode	OFDM / n – mode
Lower Band Edge – Channel 1	> 20 dB	> 20 dB	> 20 dB
Upper Band Edge – Channel 11	> 20 dB	> 20 dB	> 20 dB
Measurement uncertainty	± 3 dB		

Result: Passed

Plots: DSSS / b – mode**Plot 1: TX mode, lower band edge, vertical & horizontal polarization****Plot 2: TX mode, upper band edge, vertical & horizontal polarization**

Plots: OFDM / n – mode**Plot 1:** TX mode, lower band edge, vertical & horizontal polarization**Plot 2:** TX mode, upper band edge, vertical & horizontal polarization

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:	F < 1 GHz: 500 kHz F > 1 GHz: 500 kHz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 100 kHz
Span:	9 kHz to 25 GHz
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247(d)	RSS 210, Issue 8, 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	

Results: DSSS / b – mode

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		6.06	30 dBm		Operating frequency
No critical peaks detected. All detected emissions are below the -20 dBc criteria.			-20 dBc		complies
2437		6.10	30 dBm		Operating frequency
No critical peaks detected. All detected emissions are below the -20 dBc criteria.			-20 dBc		complies
2462		6.30	30 dBm		Operating frequency
No critical peaks detected. All detected emissions are below the -20 dBc criteria.			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: **Passed****Results: OFDM / g – mode**

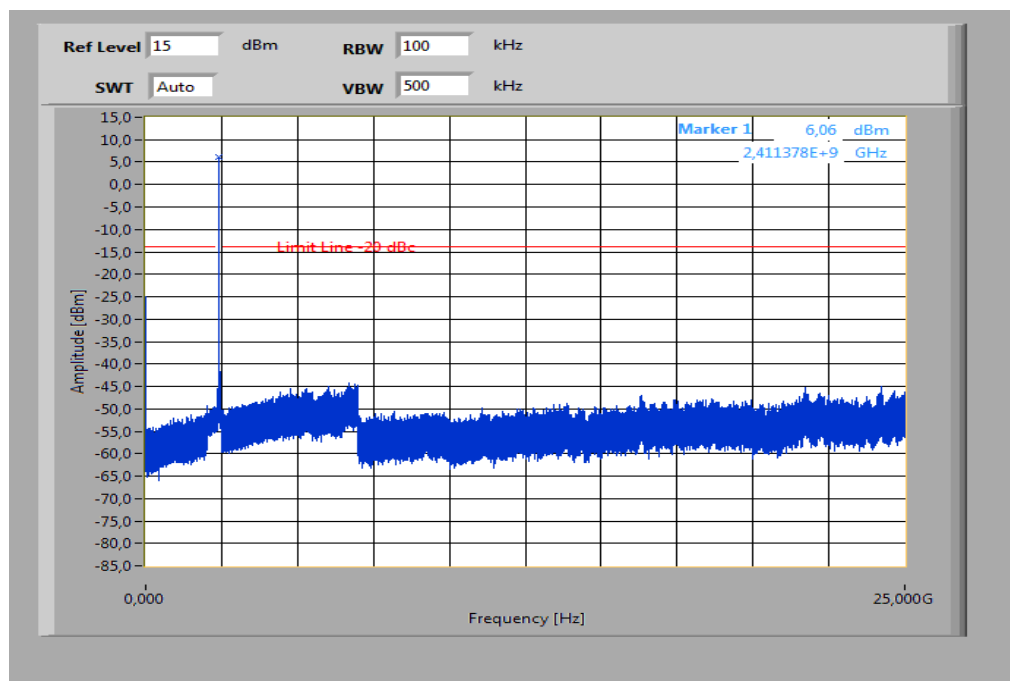
TX Spurious Emissions Conducted					
OFDM - mode					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2412		-0.77	30 dBm		Operating frequency
No critical peaks detected. All detected emissions are below the -20 dBc criteria.			-20 dBc		complies
2437		-0.49	30 dBm		Operating frequency
No critical peaks detected. All detected emissions are below the -20 dBc criteria.			-20 dBc		complies
2462		-0.13	30 dBm		Operating frequency
No critical peaks detected. All detected emissions are below the -20 dBc criteria.			-20 dBc		complies
Measurement uncertainty		± 3 dB			

Result: **Passed**

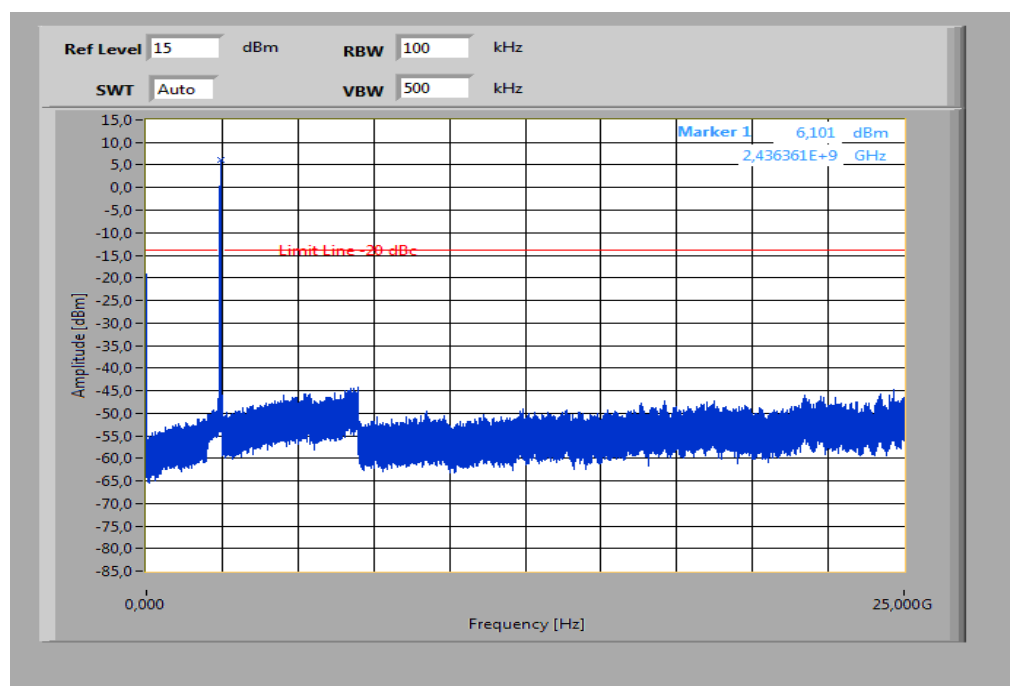
Results: OFDM / n – mode

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		-0.63	30 dBm		Operating frequency
No critical peaks detected. All detected emissions are below the -20 dBc criteria.			-20 dBc		complies
2437		-0.39	30 dBm		Operating frequency
No critical peaks detected. All detected emissions are below the -20 dBc criteria.			-20 dBc		complies
2462		-0.13	30 dBm		Operating frequency
No critical peaks detected. All detected emissions are below the -20 dBc criteria.			-20 dBc		complies
Measurement uncertainty		± 3 dB			

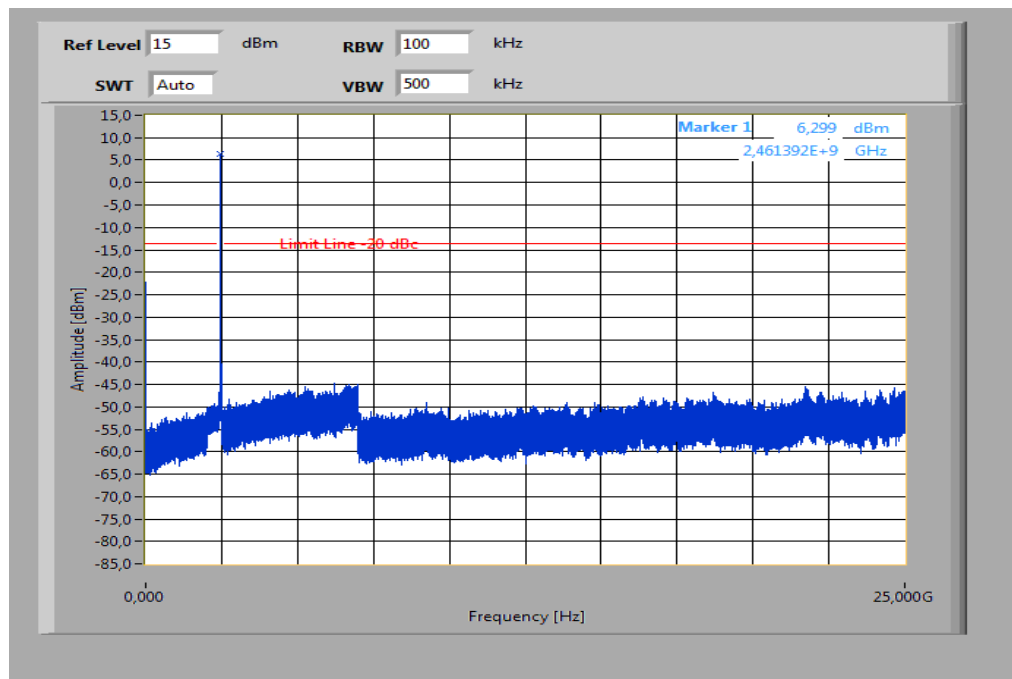
Result: Passed

Plots: DSSS / b – mode**Plot 1:** TX mode, lowest channel, up to 25 GHz

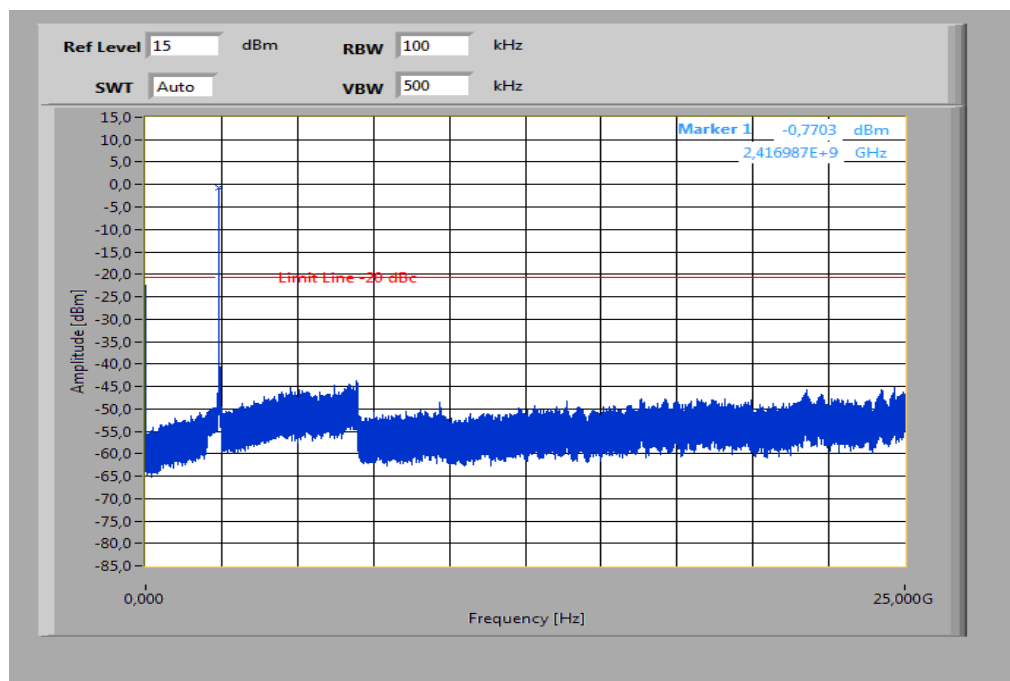
The peak at the beginning of the plot is the LO from the SA.

Plot 2: TX mode, middle channel, up to 25 GHz

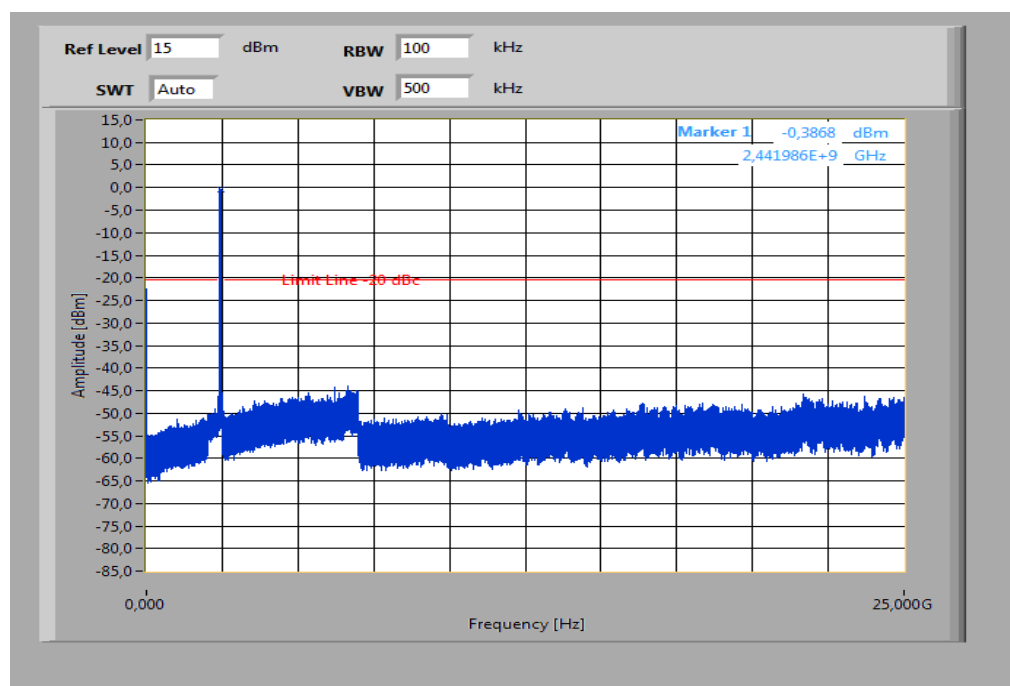
The peak at the beginning of the plot is the LO from the SA.

Plot 3: TX mode, highest channel, up to 25 GHz

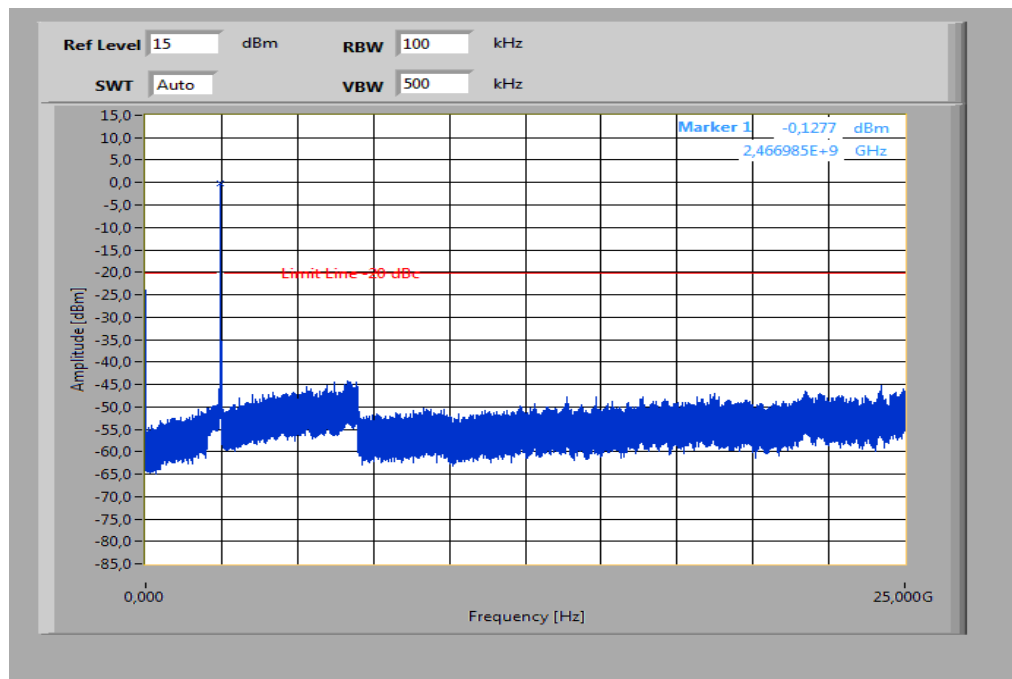
The peak at the beginning of the plot is the LO from the SA.

Plots: OFDM / g – mode**Plot 1:** TX mode, lowest channel, up to 25 GHz

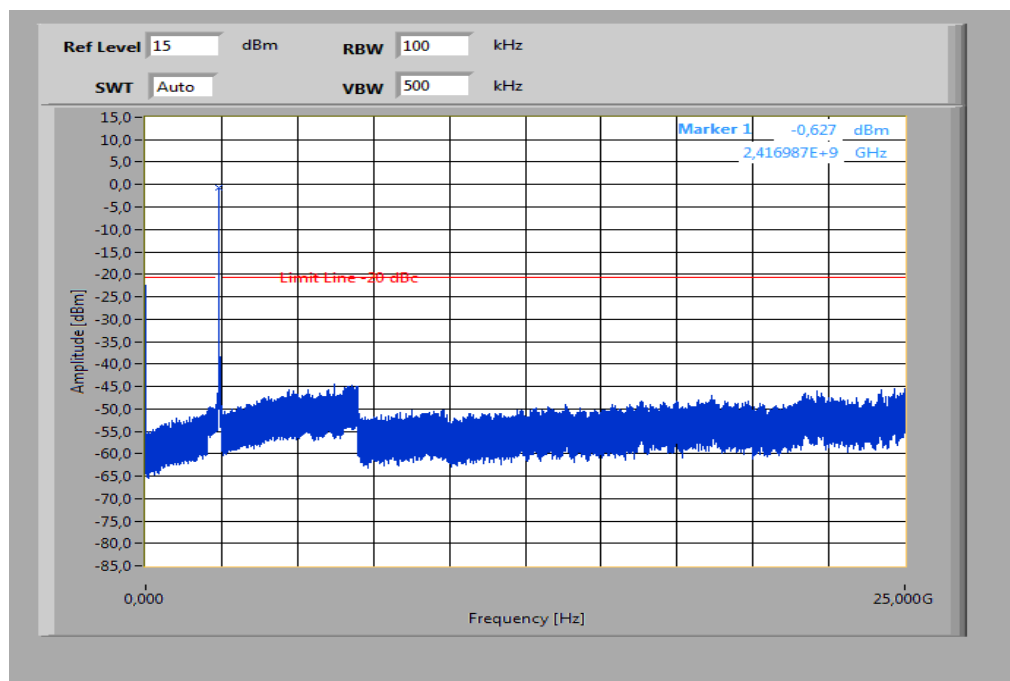
The peak at the beginning of the plot is the LO from the SA.

Plot 2: TX mode, middle channel, up to 25 GHz

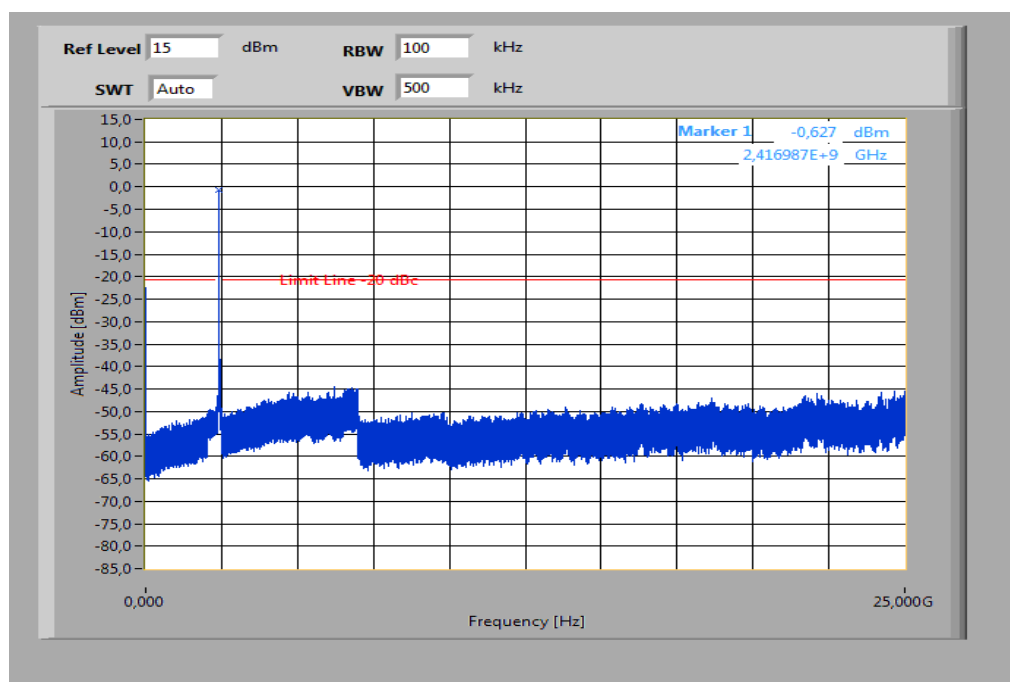
The peak at the beginning of the plot is the LO from the SA.

Plot 3: TX mode, highest channel, up to 25 GHz

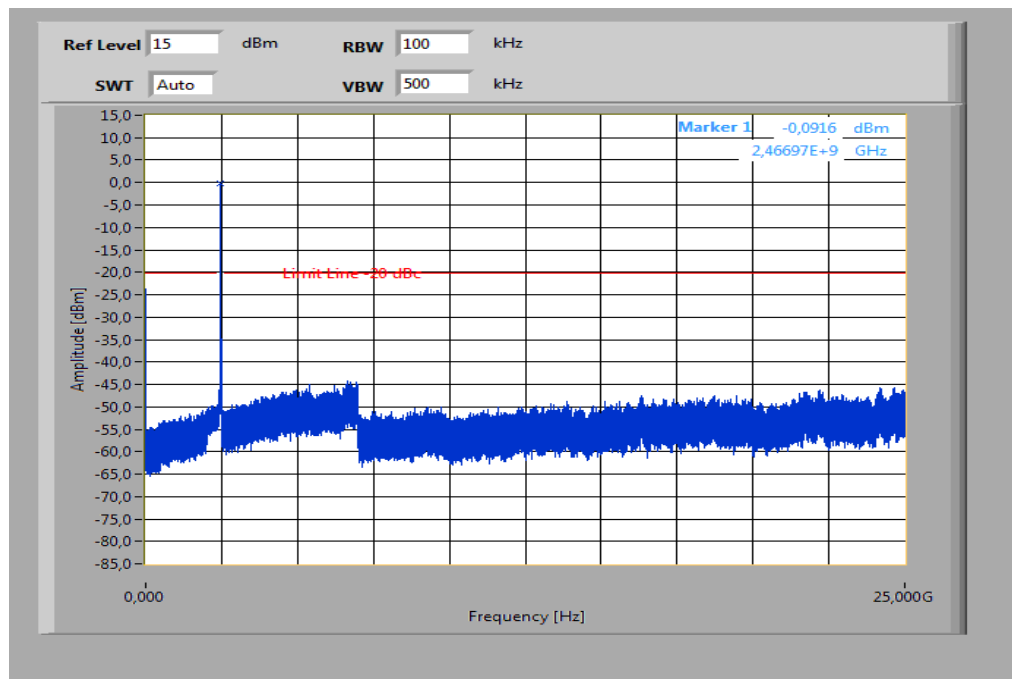
The peak at the beginning of the plot is the LO from the SA.

Plots: OFDM / n – mode**Plot 1:** TX mode, lowest channel, up to 25 GHz

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

Plot 2: TX mode, middle channel, up to 25 GHz

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

Plot 3: TX mode, highest channel, up to 25 GHz

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.

Measurement:

Measurement parameter	
Detector:	Peak / Quasi Peak
Sweep time:	Auto
Video bandwidth:	Sweep: 100 kHz Remeasurement: 10 Hz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Span:	30 MHz to 26 GHz
Trace-Mode:	Max Hold
Measured Modulation	☒ DSSS b – mode ☒ OFDM g – mode ☒ OFDM n – mode

The modulation with the highest output power was used to perform the transmitter spurious emissions. If spurious were detected a re-measurement was performed on the detected frequency with each modulation.

Limits:

FCC		IC	
CFR Part 15.247(d)		RSS 210, Issue 8, 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	

Results: DSSS / b – mode

TX Spurious Emissions Radiated [dBμV/m]								
DSSS – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBμV/m]	F [MHz]	Detector	Level [dBμV/m]	F [MHz]	Detector	Level [dBμV/m]
No critical peaks detected. All detected emissions are below the limit!			No critical peaks detected. All detected emissions are below the limit!			No critical peaks detected. All detected emissions are below the limit!		
Measurement uncertainty			± 3 dB					

Result: Passed**Results: OFDM / g – mode**

TX Spurious Emissions Radiated [dBμV/m]								
OFDM – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBμV/m]	F [MHz]	Detector	Level [dBμV/m]	F [MHz]	Detector	Level [dBμV/m]
No critical peaks detected. All detected emissions are below the limit!			No critical peaks detected. All detected emissions are below the limit!			No critical peaks detected. All detected emissions are below the limit!		
Measurement uncertainty			± 3 dB					

Result: Passed**Results: OFDM / n – mode**

TX Spurious Emissions Radiated [dBμV/m]								
OFDM – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBμV/m]	F [MHz]	Detector	Level [dBμV/m]	F [MHz]	Detector	Level [dBμV/m]
No critical peaks detected. All detected emissions are below the limit!			No critical peaks detected. All detected emissions are below the limit!			No critical peaks detected. All detected emissions are below the limit!		
Measurement uncertainty			± 3 dB					

Result: Passed**Note:**

B – mode and n – mode show the results valid for all WLAN modes.

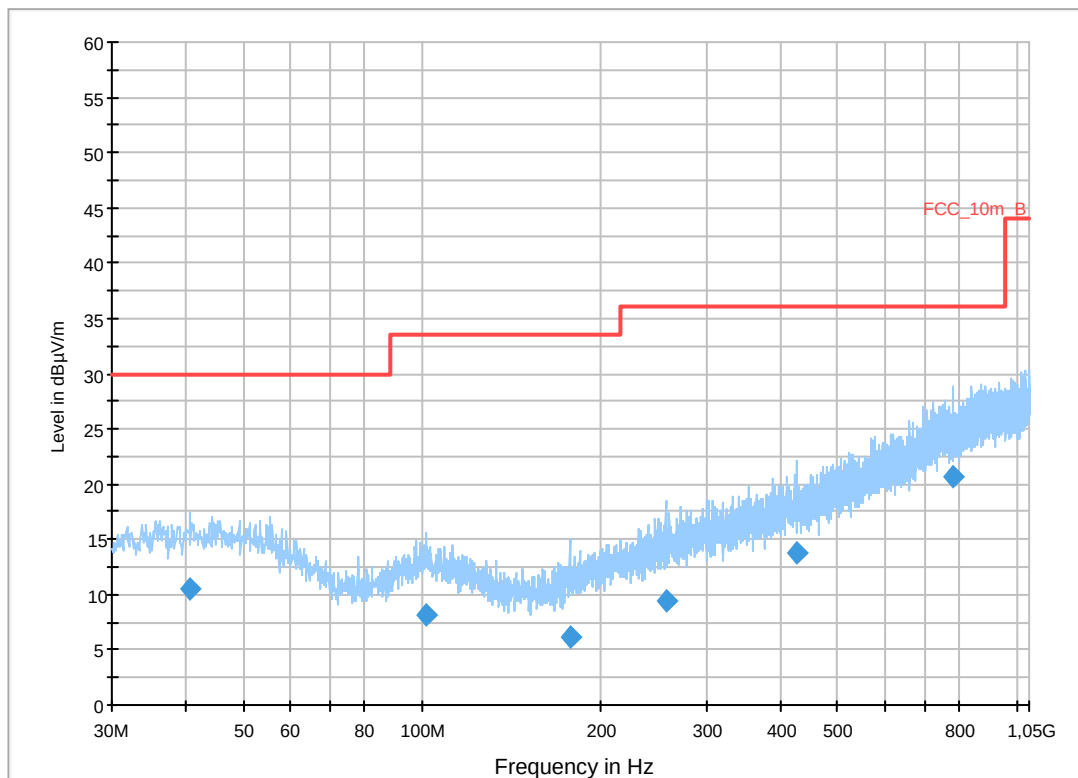
Plots: DSSS / b – mode**Plot 1:** Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: PM-0020-BV
 Serial Number: CB5A1K3QFD
 Test Description: FCC part 15 C class B @ 10m
 Operating Conditions: w-lan 2.4G DSSS ch1 + charging
 Operator Name: Wolsdorfer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

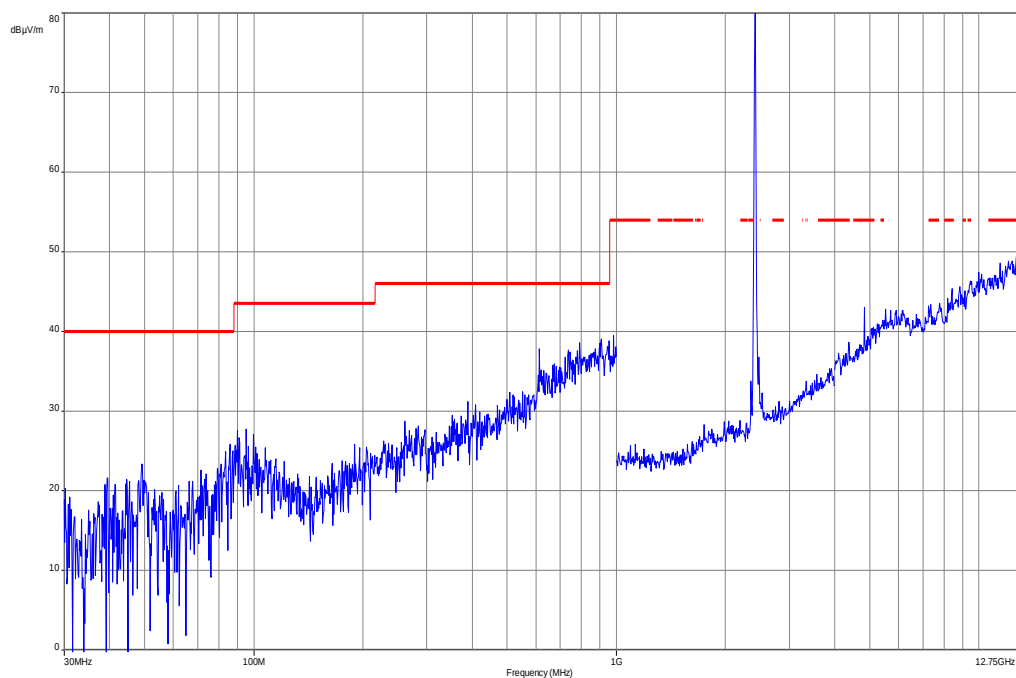
Hardware Setup: Electric Field (NOS)
 Level Unit: dBμV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB
FCC_10m(B)_3					

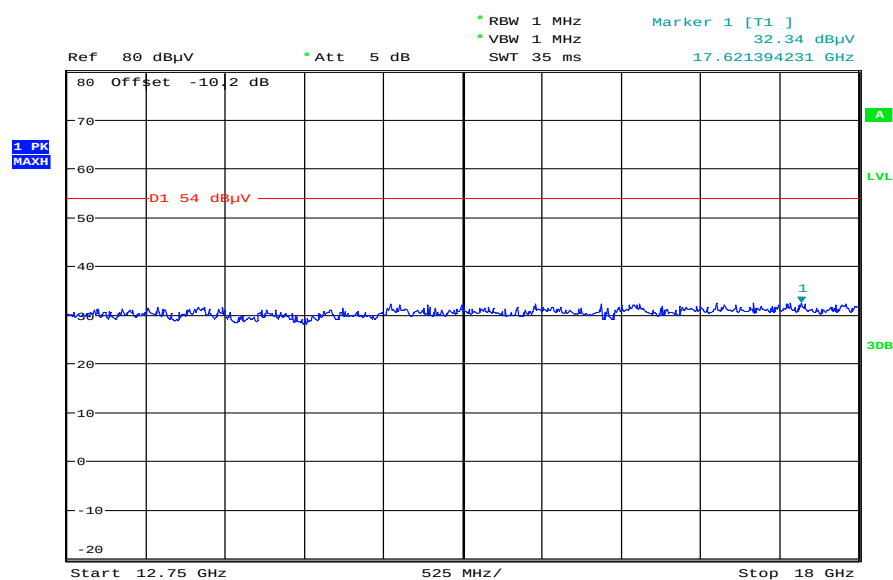
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
40.479450	10.4	1000.0	120.000	162.0	V	100.0	13.4	19.6	30.0	
101.369250	8.2	1000.0	120.000	170.0	H	81.0	11.8	25.3	33.5	
176.860650	6.3	1000.0	120.000	170.0	H	10.0	10.2	27.2	33.5	
257.218500	9.5	1000.0	120.000	170.0	H	-2.0	13.5	26.5	36.0	
426.810750	13.7	1000.0	120.000	170.0	V	177.0	17.3	22.3	36.0	
783.123000	20.7	1000.0	120.000	98.0	V	92.0	23.8	15.3	36.0	

Plot 2: Lowest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

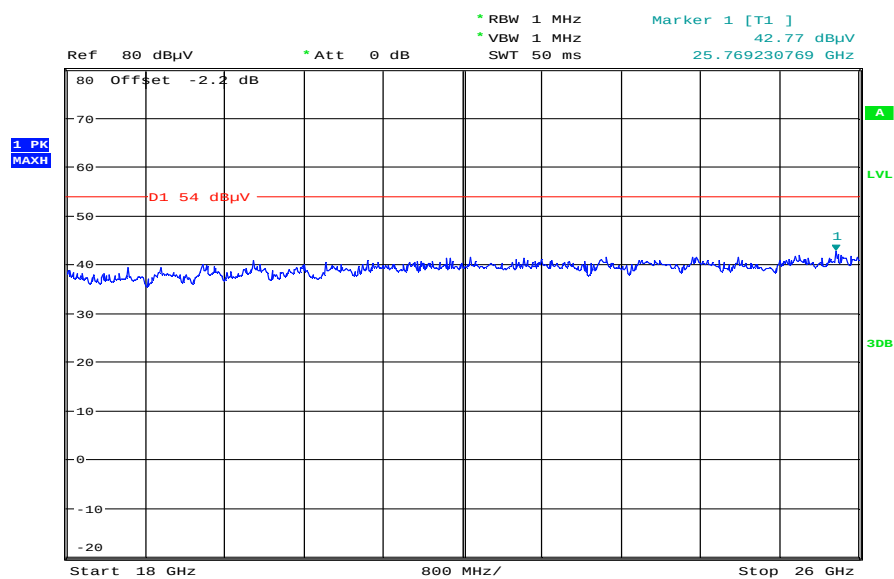


Plot 3: Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 06:58:39

Plot 4: Lowest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:10:29

Plot 5: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

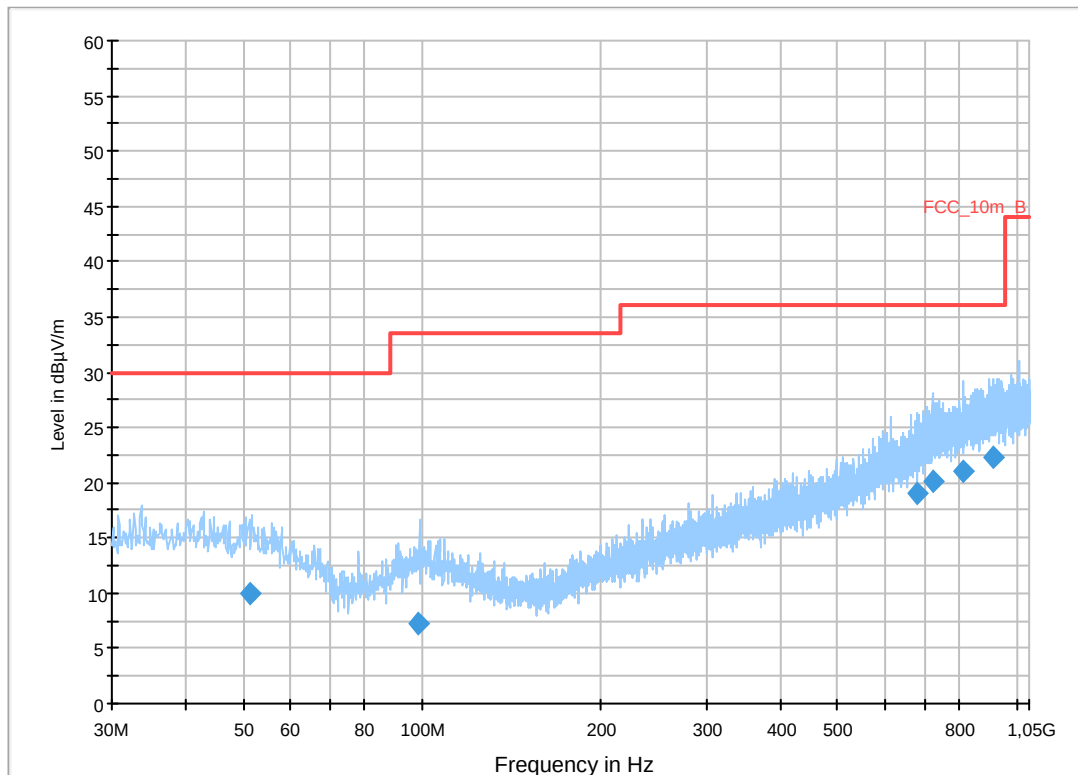
Common Information

EUT: PM-0020-BV
 Serial Number: CB5A1K3QFD
 Test Description: FCC part 15 C class B @ 10m
 Operating Conditions: w-lan 2.4G DSSS ch6 + charging
 Operator Name: Wolsdorfer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dB μ V/m

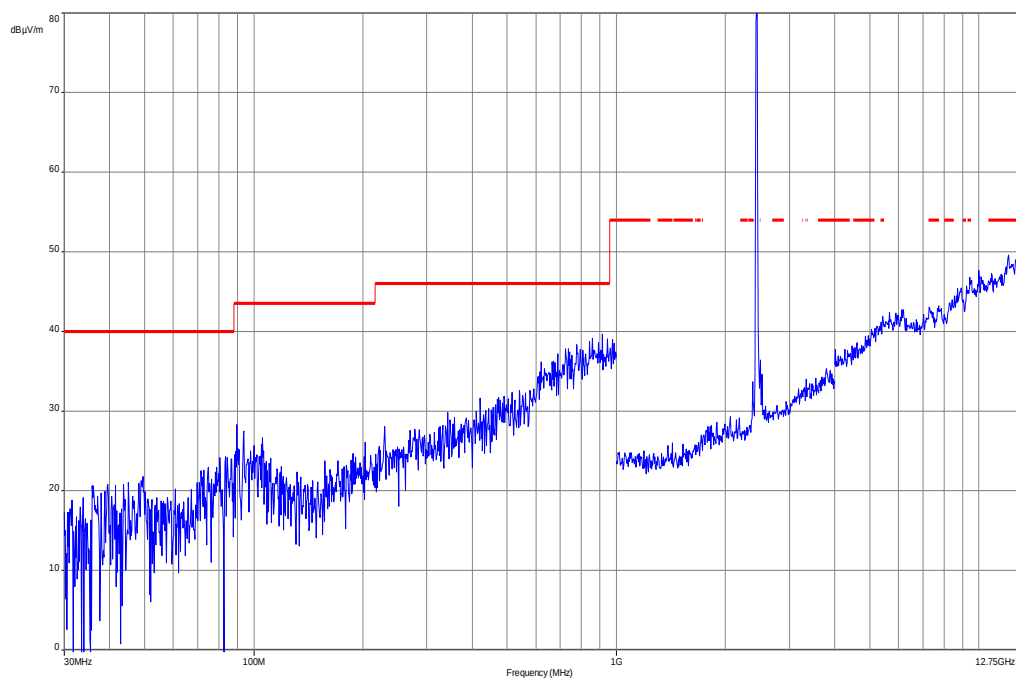
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB
FCC_10m(B)_3					



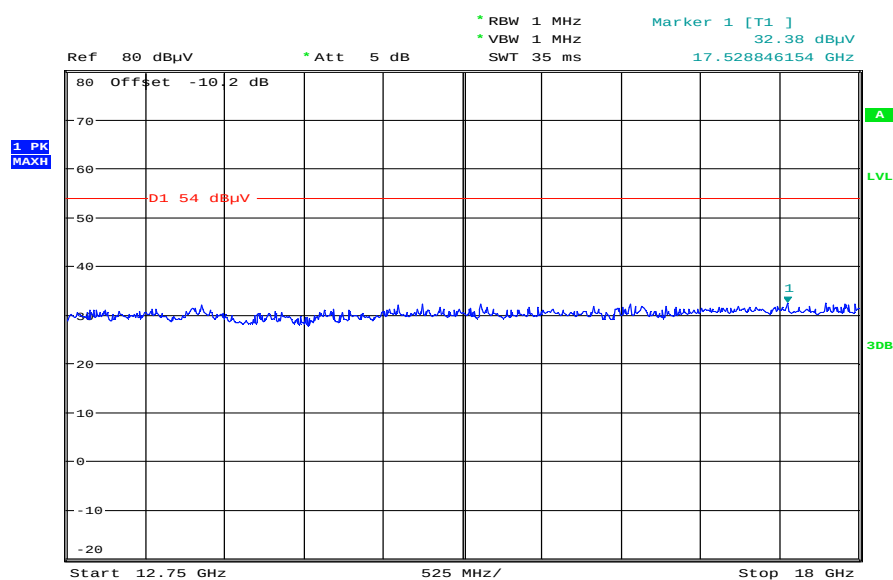
Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
51.078150	10.1	1000.0	120.000	144.0	H	-2.0	13.3	19.9	30.0	
98.533950	7.3	1000.0	120.000	122.0	H	10.0	11.7	26.2	33.5	
679.390350	19.0	1000.0	120.000	98.0	H	273.0	21.9	17.0	36.0	
720.773700	20.1	1000.0	120.000	170.0	H	273.0	23.0	15.9	36.0	
811.722150	21.0	1000.0	120.000	170.0	H	10.0	24.0	15.0	36.0	
910.796400	22.3	1000.0	120.000	155.0	H	273.0	25.2	13.7	36.0	

Plot 6: Middle channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

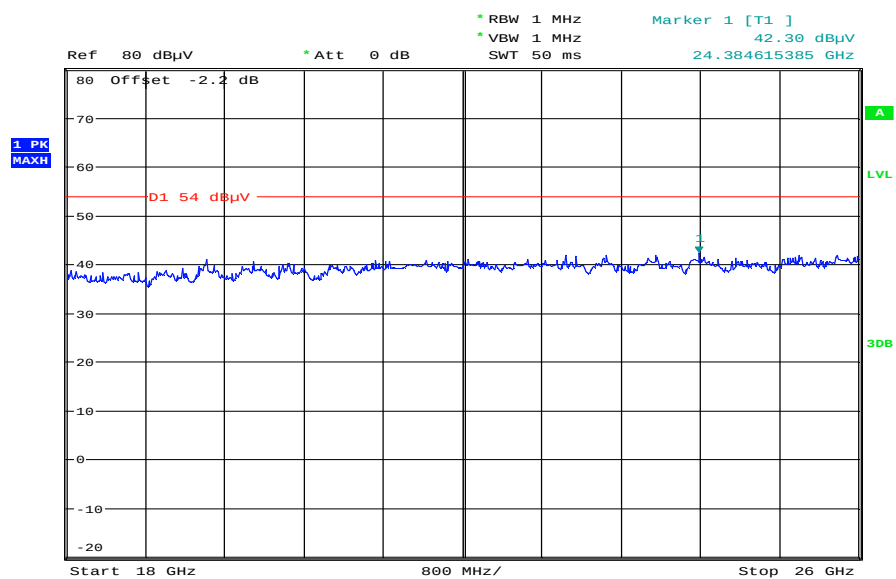


Plot 7: Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:00:04

Plot 8: Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:09:51

Plot 9: Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

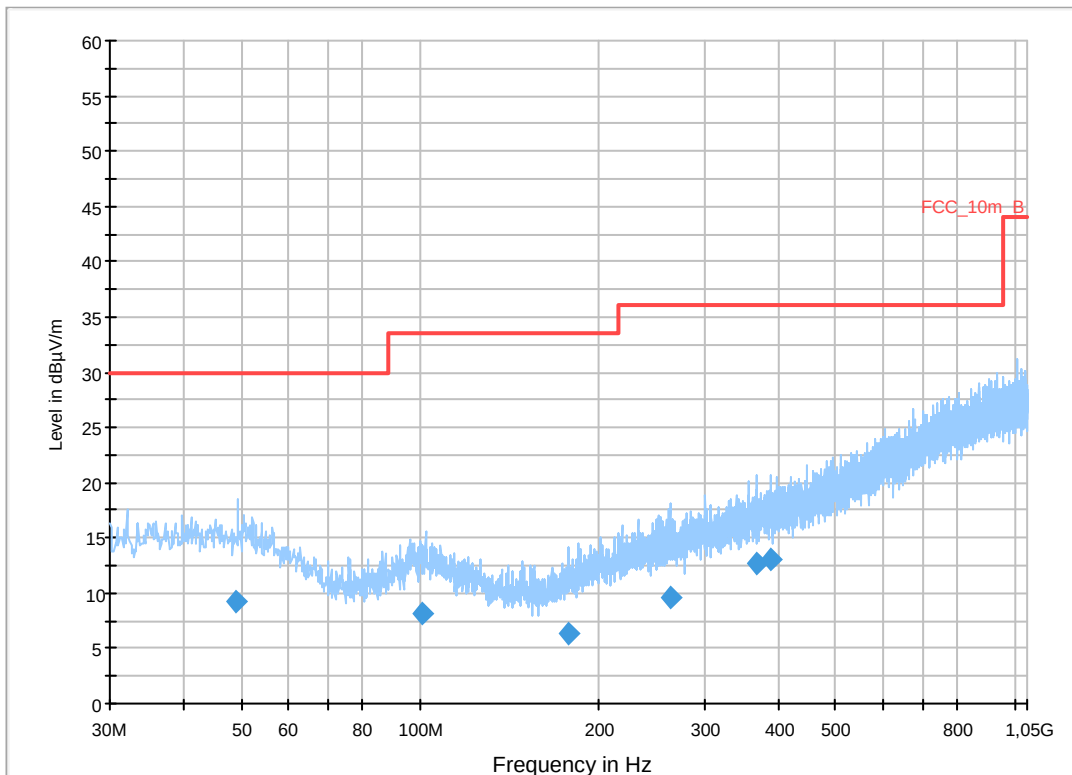
Common Information

EUT: PM-0020-BV
 Serial Number: CB5A1K3QFD
 Test Description: FCC part 15 C class B @ 10m
 Operating Conditions: w-lan 2.4G DSSS ch11 + charging
 Operator Name: Wolsdorfer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

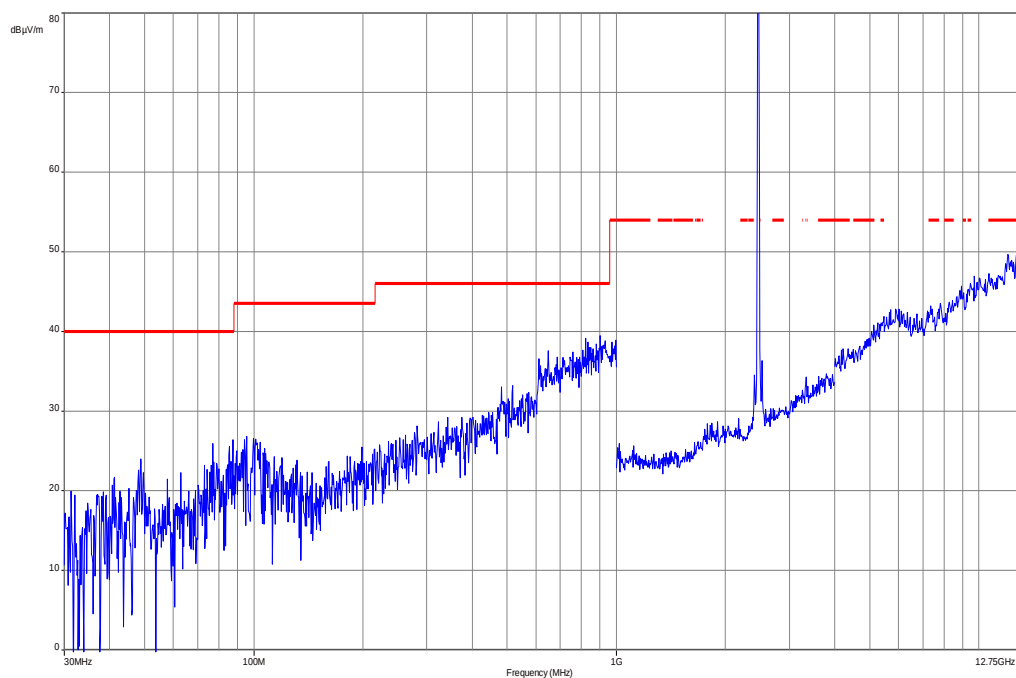
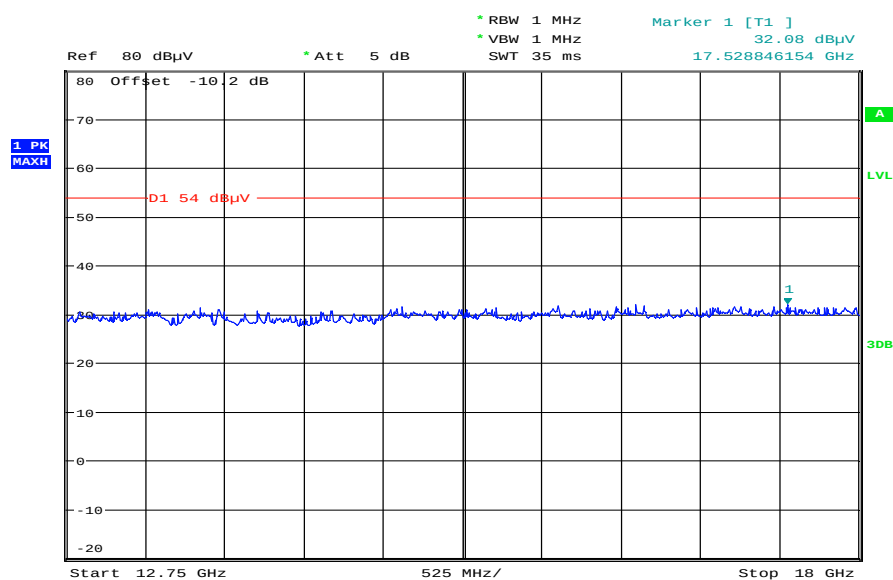
Hardware Setup: Electric Field (NOS)
 Level Unit: dB μ V/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB
FCC_10m(B)_3					



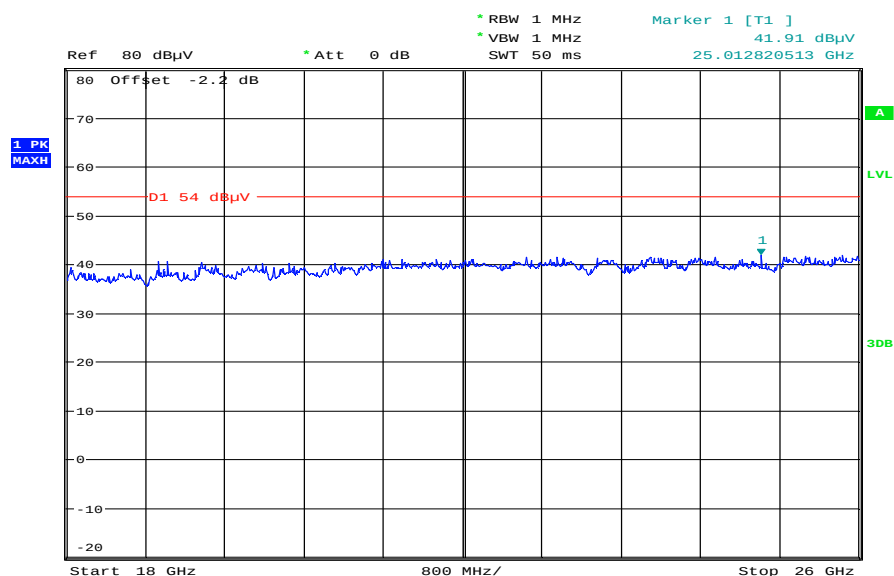
Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
48.752100	9.2	1000.0	120.000	170.0	H	-9.0	13.3	20.8	30.0	
100.903650	8.1	1000.0	120.000	135.0	V	151.0	11.8	25.4	33.5	
177.109800	6.3	1000.0	120.000	170.0	V	88.0	10.3	27.2	33.5	
263.282250	9.6	1000.0	120.000	111.0	V	163.0	13.6	26.4	36.0	
367.520100	12.7	1000.0	120.000	170.0	V	87.0	16.4	23.3	36.0	
388.207650	13.1	1000.0	120.000	170.0	V	266.0	16.7	22.9	36.0	

Plot 10: Highest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization**Plot 11:** Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

Date: 31.MAY.2012 07:00:39

Plot 12: Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:09:11

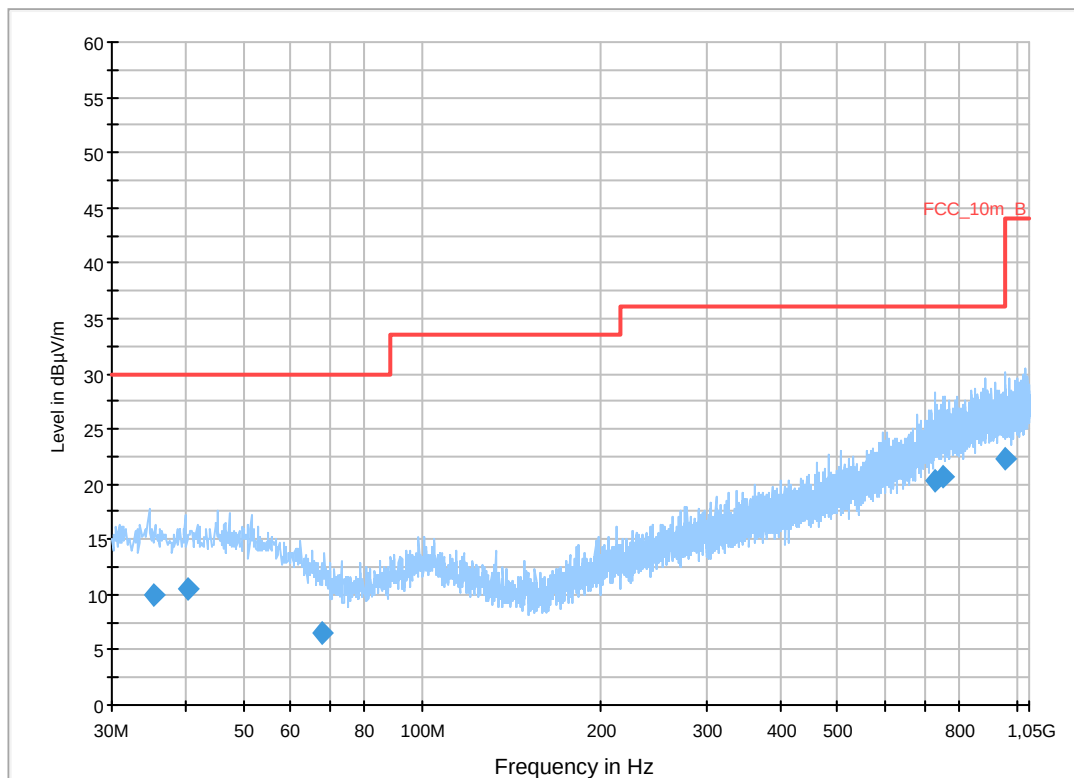
Plots: OFDM / n – mode**Plot 1:** Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: PM-0020-BV
 Serial Number: CB5A1K3QFD
 Test Description: FCC part 15 C class B @ 10m
 Operating Conditions: w-lan 2.4G OFDM ch1 + charging
 Operator Name: Wolsdorfer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

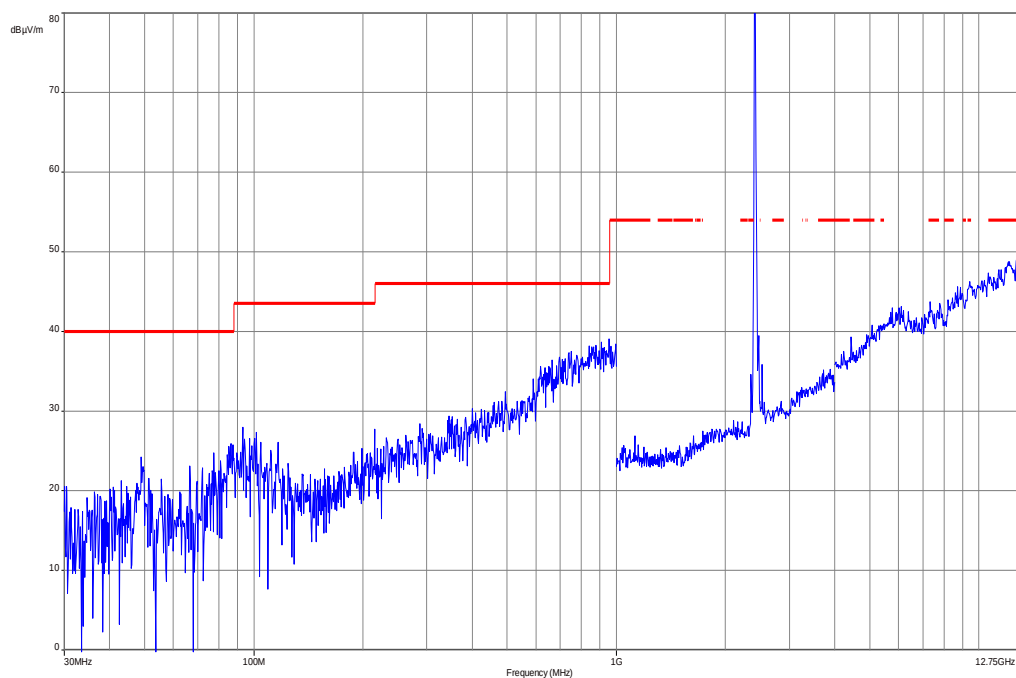
Hardware Setup: Electric Field (NOS)
 Level Unit: dBμV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB
FCC_10m(B)_3					

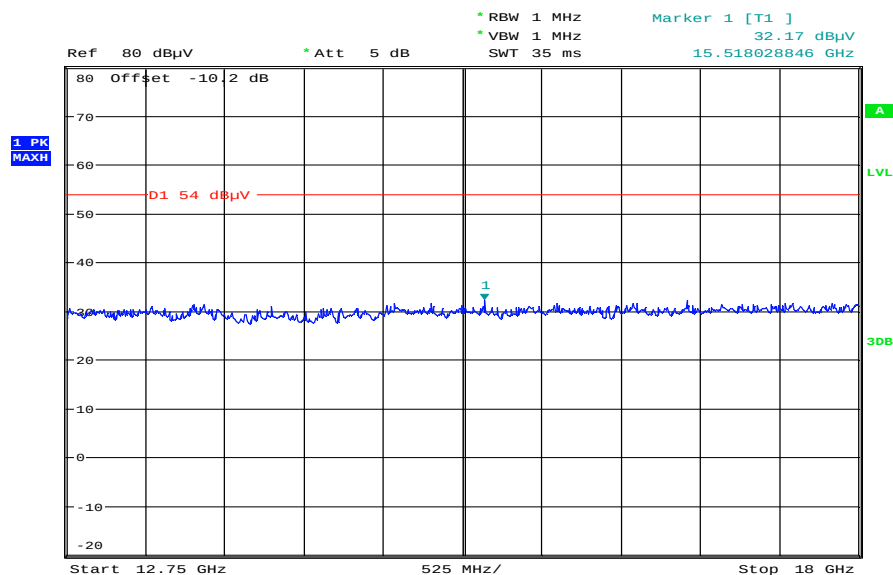
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
35.232900	9.9	1000.0	120.000	112.0	H	86.0	13.0	20.1	30.0	
40.314450	10.4	1000.0	120.000	170.0	V	178.0	13.4	19.6	30.0	
67.910250	6.6	1000.0	120.000	129.0	V	100.0	9.7	23.4	30.0	
726.436950	20.2	1000.0	120.000	120.0	V	280.0	23.1	15.8	36.0	
753.993150	20.7	1000.0	120.000	111.0	V	190.0	23.7	15.3	36.0	
956.442750	22.3	1000.0	120.000	105.0	V	85.0	25.4	13.7	36.0	

Plot 2: Lowest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

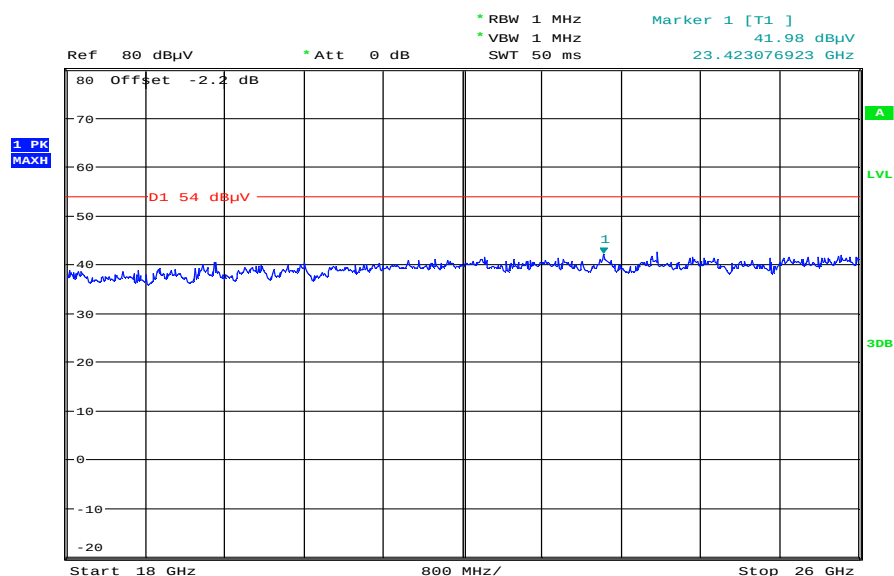


Plot 3: Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:02:49

Plot 4: Lowest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:06:43

Plot 5: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

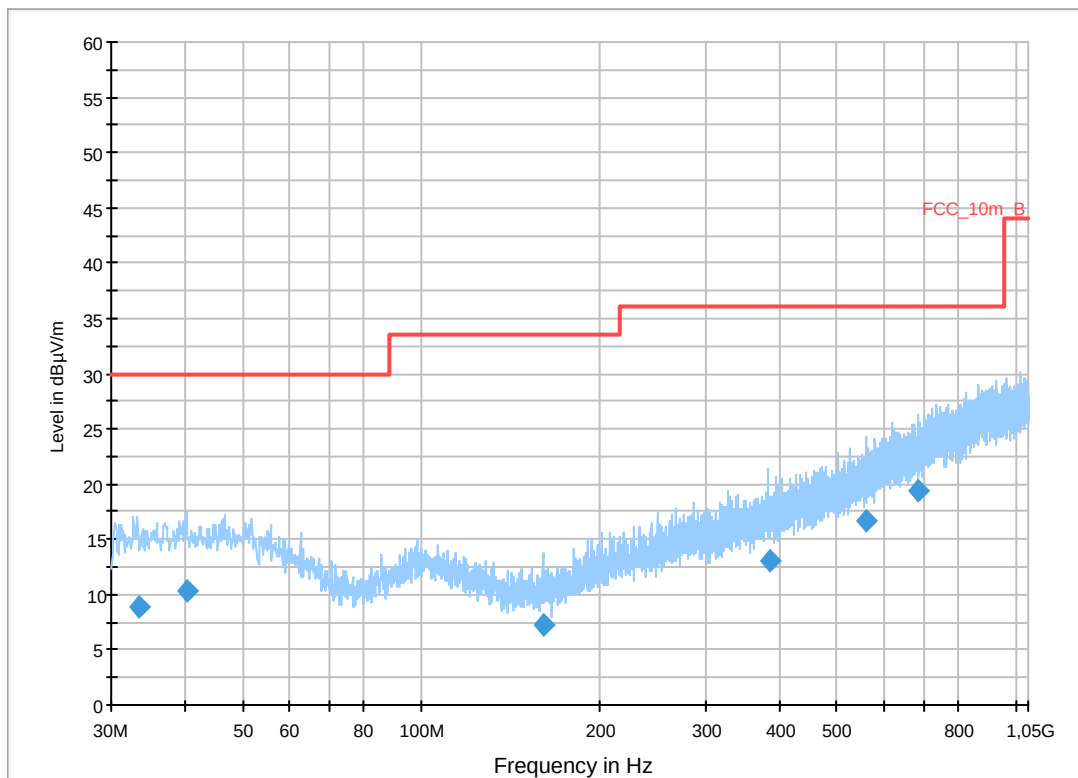
Common Information

EUT: PM-0020-BV
 Serial Number: CB5A1K3QFD
 Test Description: FCC part 15 C class B @ 10m
 Operating Conditions: w-lan 2.4G OFDM ch6 + charging
 Operator Name: Wolsdorfer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dB μ V/m

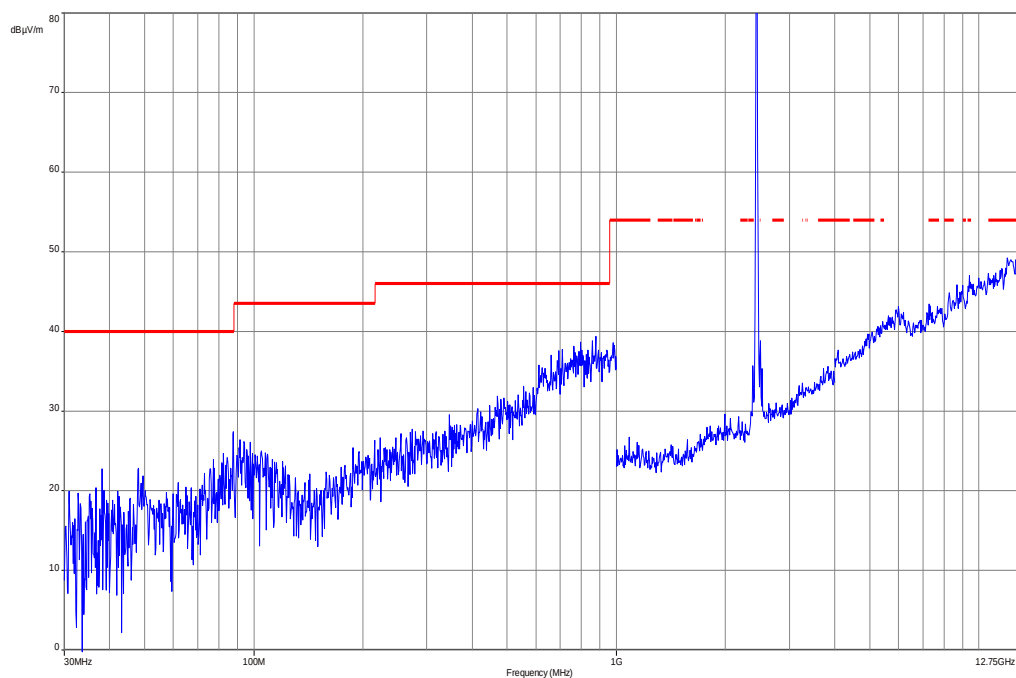
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB
FCC_10m(B)_3					



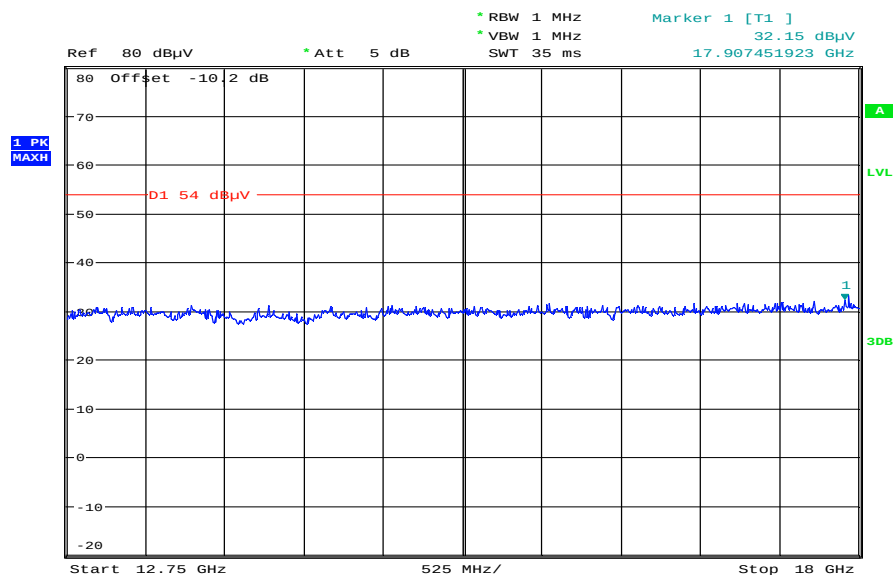
Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
33.463800	8.9	1000.0	120.000	170.0	H	260.0	12.9	21.1	30.0	
40.362900	10.4	1000.0	120.000	132.0	H	10.0	13.4	19.6	30.0	
160.025850	7.3	1000.0	120.000	170.0	V	100.0	9.2	26.2	33.5	
384.626700	13.0	1000.0	120.000	98.0	H	81.0	16.7	23.0	36.0	
558.991950	16.6	1000.0	120.000	170.0	V	100.0	19.6	19.4	36.0	
687.171750	19.3	1000.0	120.000	170.0	H	190.0	22.2	16.7	36.0	

Plot 6: Middle channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

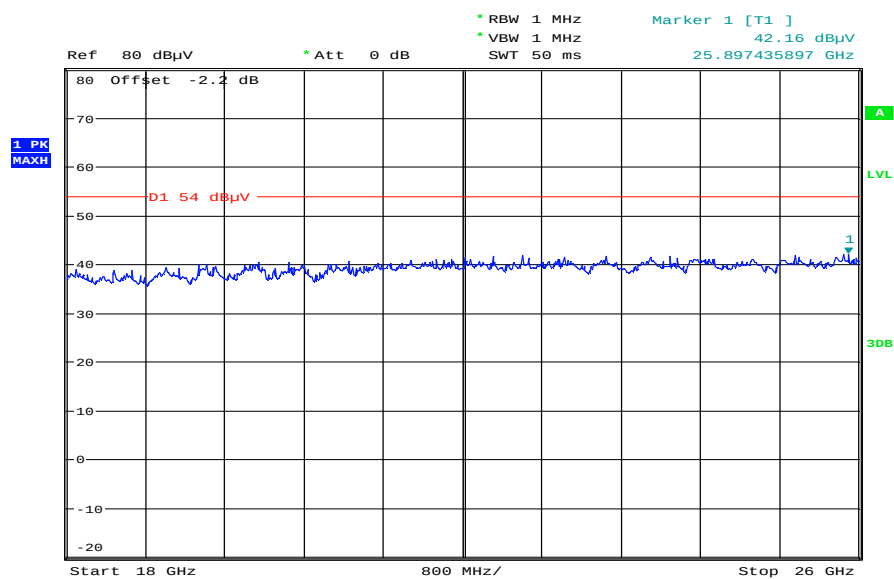


Plot 7: Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:02:07

Plot 8: Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:07:20

Plot 9: Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

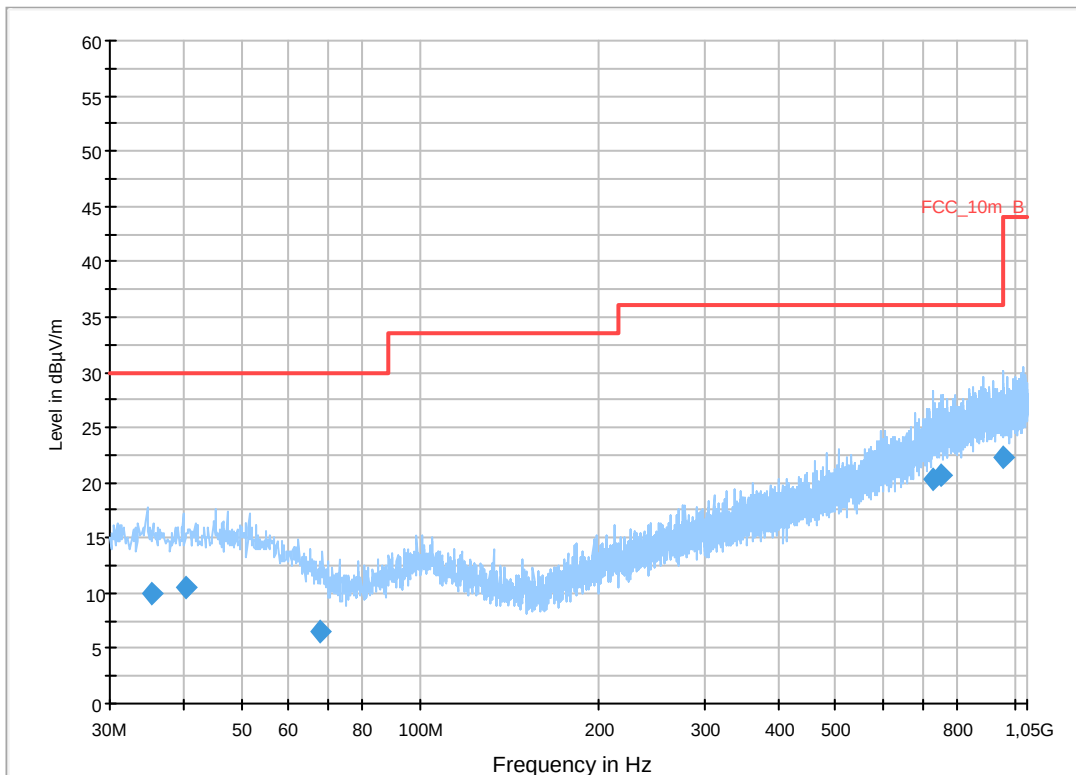
Common Information

EUT: PM-0020-BV
 Serial Number: CB5A1K3QFD
 Test Description: FCC part 15 C class B @ 10m
 Operating Conditions: w-lan 2.4G OFDM ch11 + charging
 Operator Name: Wolsdorfer
 Comment: AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

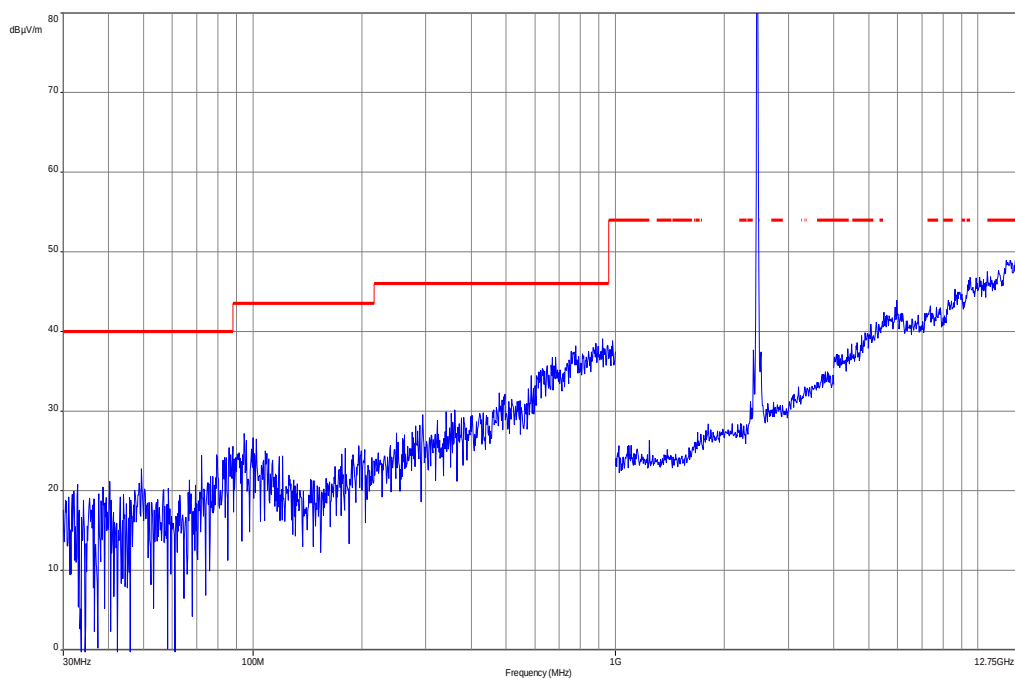
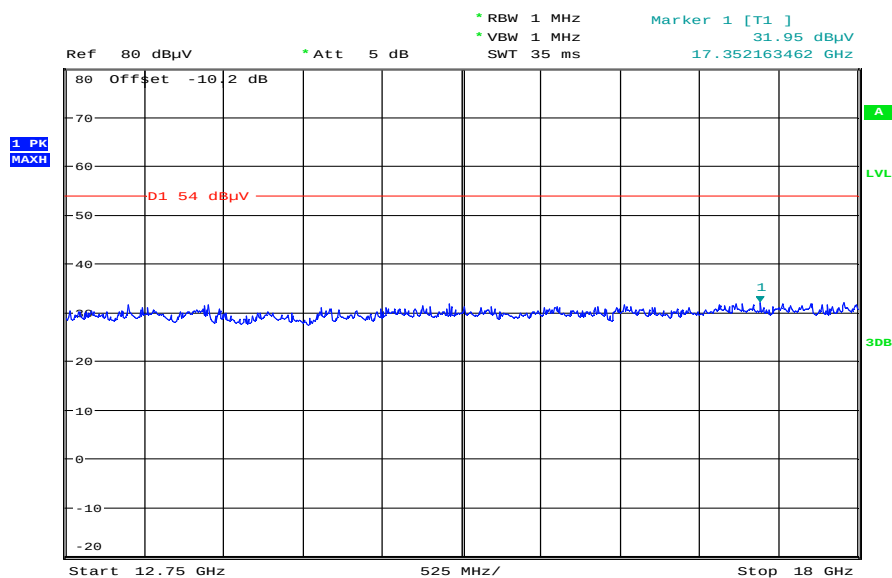
Hardware Setup: Electric Field (NOS)
 Level Unit: dB μ V/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB
FCC_10m(B)_3					



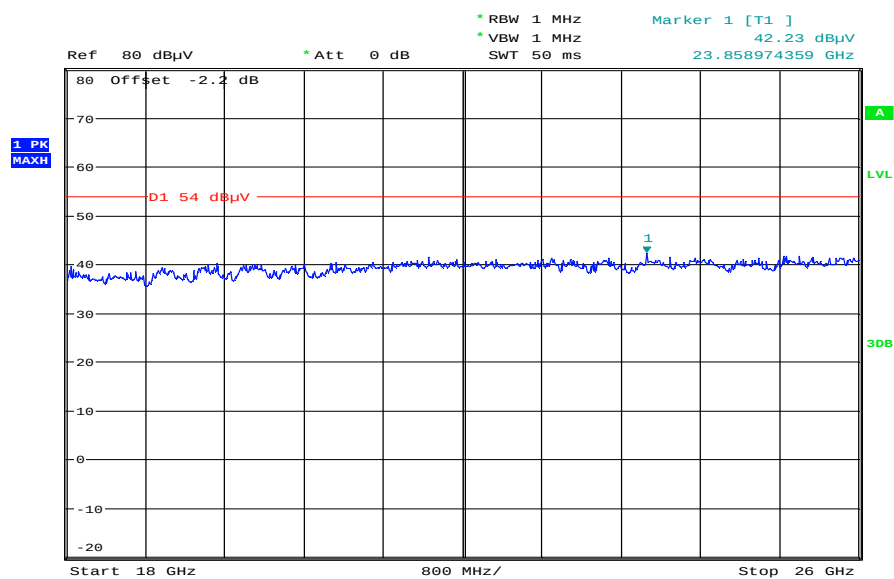
Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
35.232900	9.9	1000.0	120.000	112.0	H	86.0	13.0	20.1	30.0	
40.314450	10.4	1000.0	120.000	170.0	V	178.0	13.4	19.6	30.0	
67.910250	6.6	1000.0	120.000	129.0	V	100.0	9.7	23.4	30.0	
726.436950	20.2	1000.0	120.000	120.0	V	280.0	23.1	15.8	36.0	
753.993150	20.7	1000.0	120.000	111.0	V	190.0	23.7	15.3	36.0	
956.442750	22.3	1000.0	120.000	105.0	V	85.0	25.4	13.7	36.0	

Plot 10: Highest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization**Plot 11:** Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

Date: 31.MAY.2012 07:01:31

Plot 12: Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:08:07

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 Remeasurement: 10 Hz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Span:	30 MHz to 26 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 μ V/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Results:

RX Spurious Emissions Radiated [dB μ V/m]		
F [MHz]	Detector	Level [dB μ V/m]
No critical peaks detected. All detected emissions are below the limit!		
Measurement uncertainty	± 3 dB	

Result: Passed

Plots: RX / Idle – mode**Plot 1:** 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: PM-0020-BV
 Serial Number: CB5A1K3QFD
 Test Description: FCC part 15 C class B@10m
 Operating Conditions: w-lan 2.4Ghz Band RX mode + charging
 Operator Name: Wolsdorfer
 Comment: AC 115 V / 60 Hz

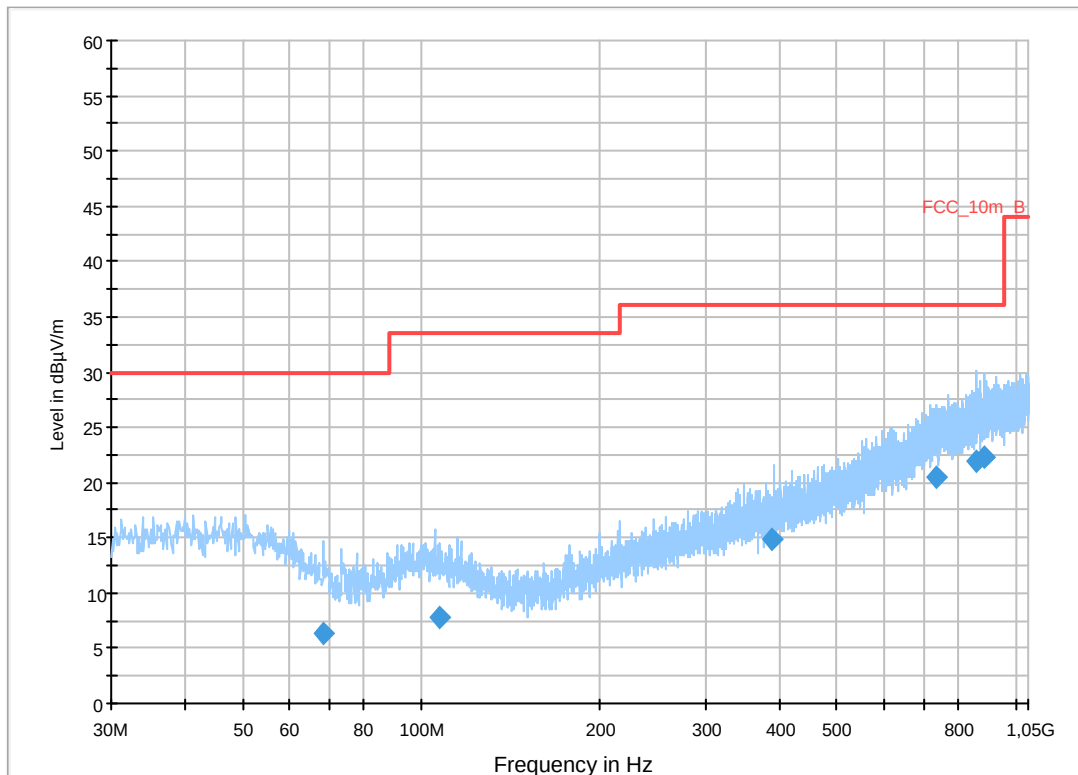
Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)

Receiver:

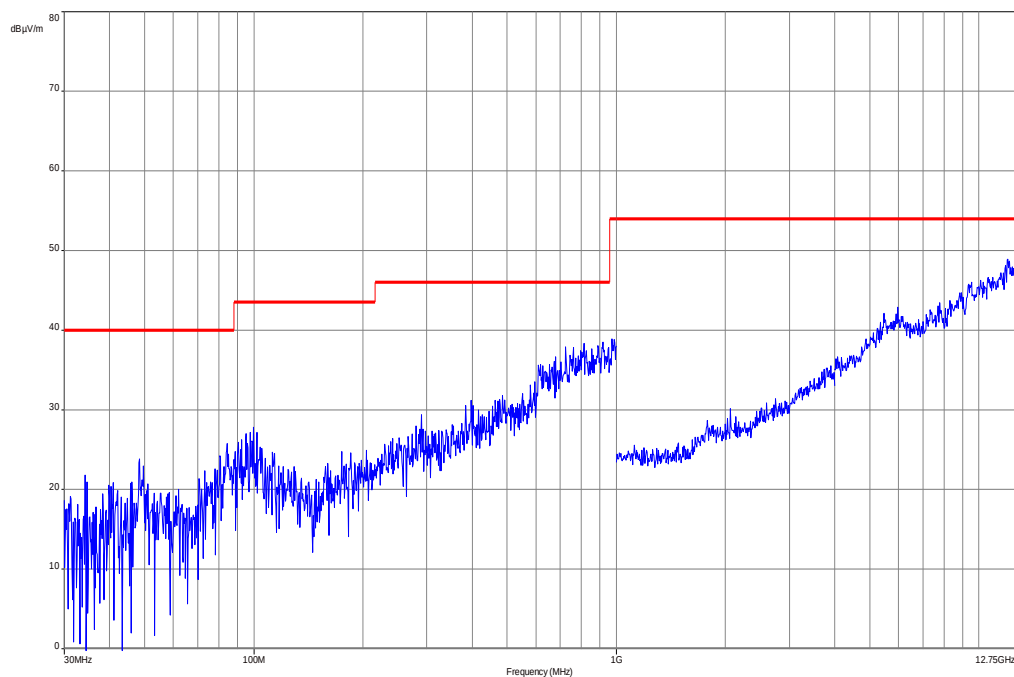
Level Unit: dB μ V/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QP	120 kHz	1 s	20 dB
FCC_10m(B)_3					

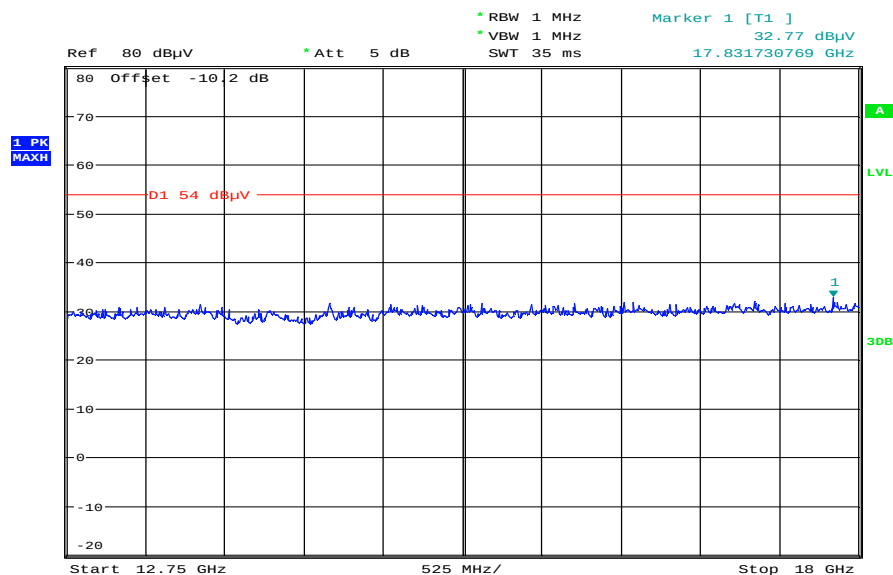
**Final Result 1**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
68.083950	6.3	1000.0	120.000	134.0	H	280.0	9.7	23.7	30.0	
106.886700	7.8	1000.0	120.000	112.0	H	10.0	11.3	25.7	33.5	
389.996700	14.9	1000.0	120.000	98.0	V	100.0	16.7	21.1	36.0	
733.873800	20.4	1000.0	120.000	143.0	H	88.0	23.3	15.6	36.0	
861.307200	22.0	1000.0	120.000	170.0	V	266.0	24.7	14.0	36.0	
883.604400	22.2	1000.0	120.000	170.0	H	190.0	25.0	13.8	36.0	

Plot 2: 1 GHz to 12.75 GHz, vertical & horizontal polarization

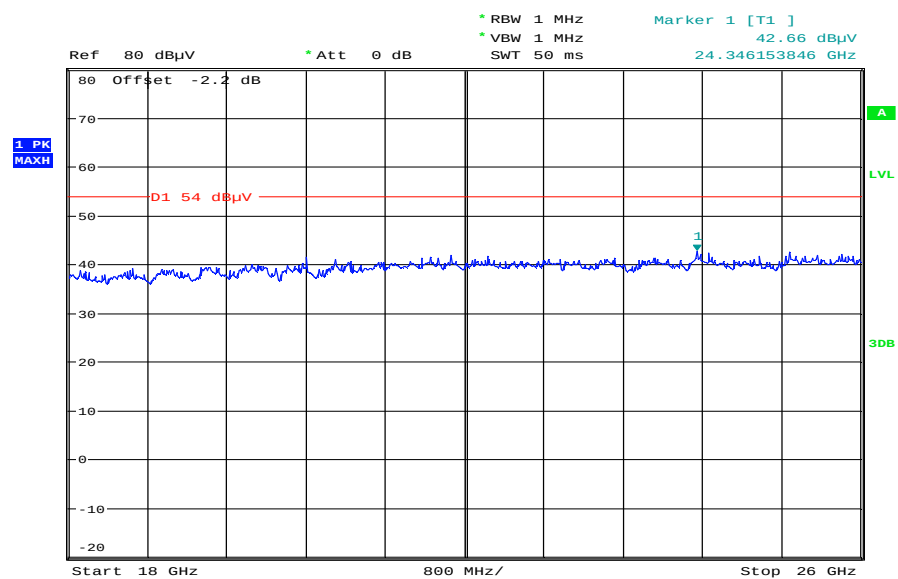


Plot 3: 12.75 GHz to 18 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:03:25

Plot 4: 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 31.MAY.2012 07:06:10

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:	Peak / Quasi Peak
Sweep time:	Auto
Video bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz 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

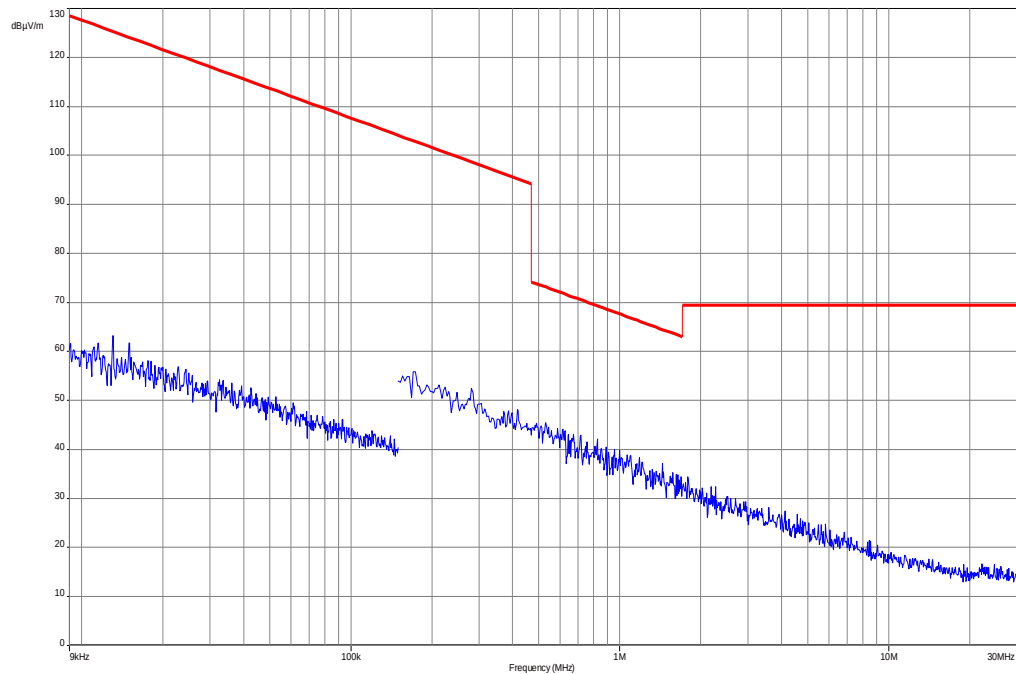
Results:

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

Result: Passed

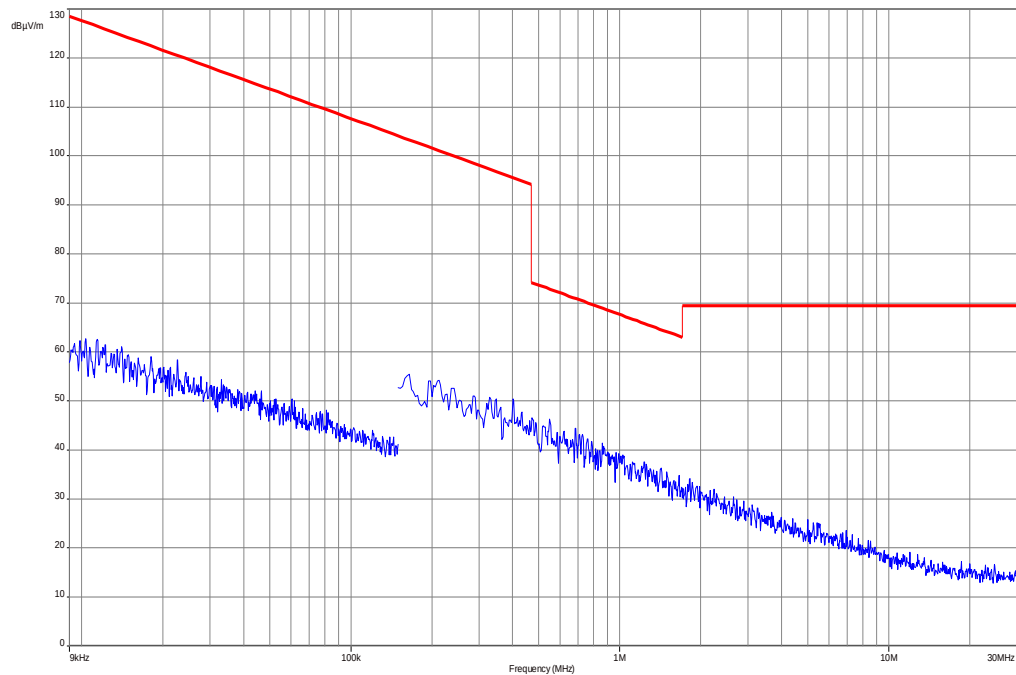
Plots: TX – mode

Plot 1: 9 kHz to 30 MHz



Plots: RX / Idle – mode

Plot 1: 9 kHz to 30 MHz



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 F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace-Mode:	Max Hold

Limits:

FCC		IC	
CFR Part 15.107(a)		ICES-003, Issue 4	
TX Spurious Emissions Conducted < 30 MHz			
Frequency (MHz)	Quasi-Peak (dBμV/m)	Average (dBμV/m)	
0.15 – 0.5	66 to 56*	56 to 46*	
0.5 – 5	56	46	
5 – 30.0	60	50	

*Decreases with the logarithm of the frequency

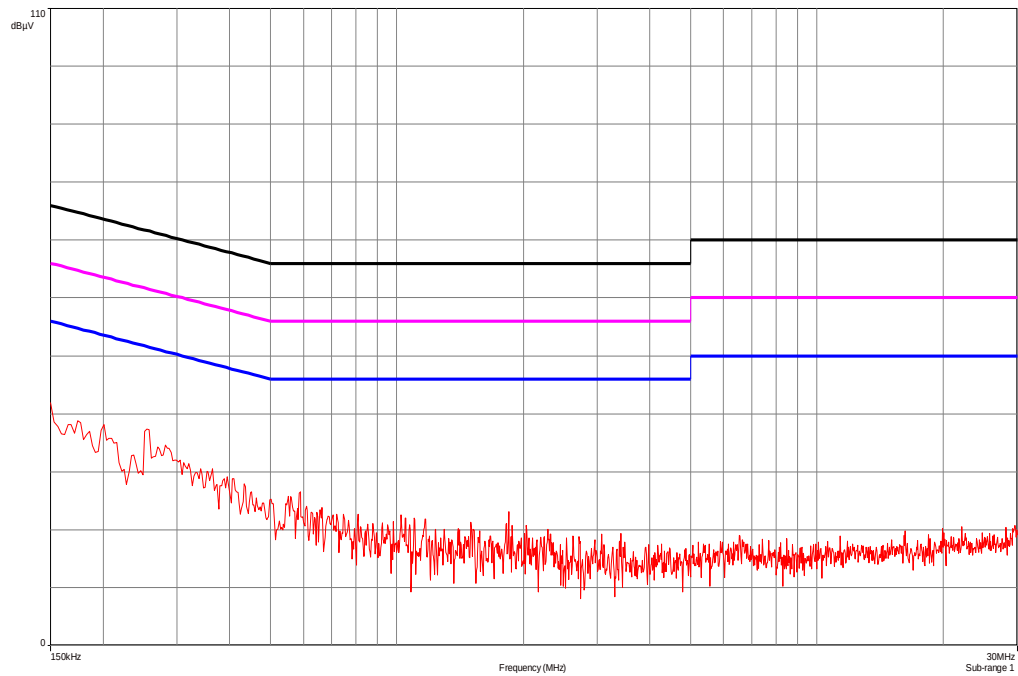
Results:

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

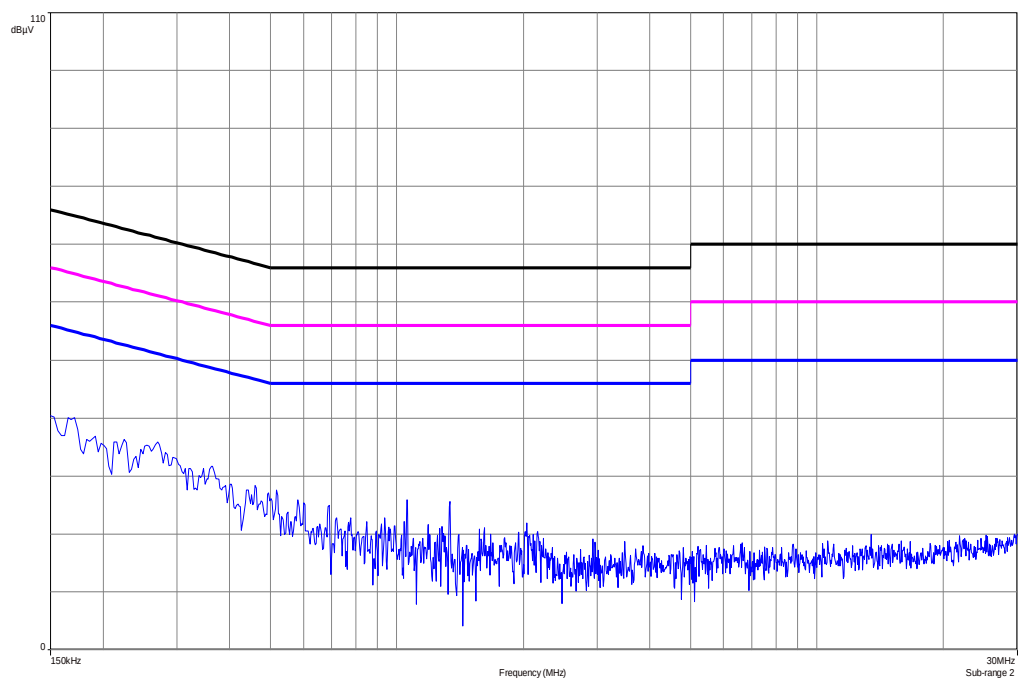
Result: Passed

Plots:

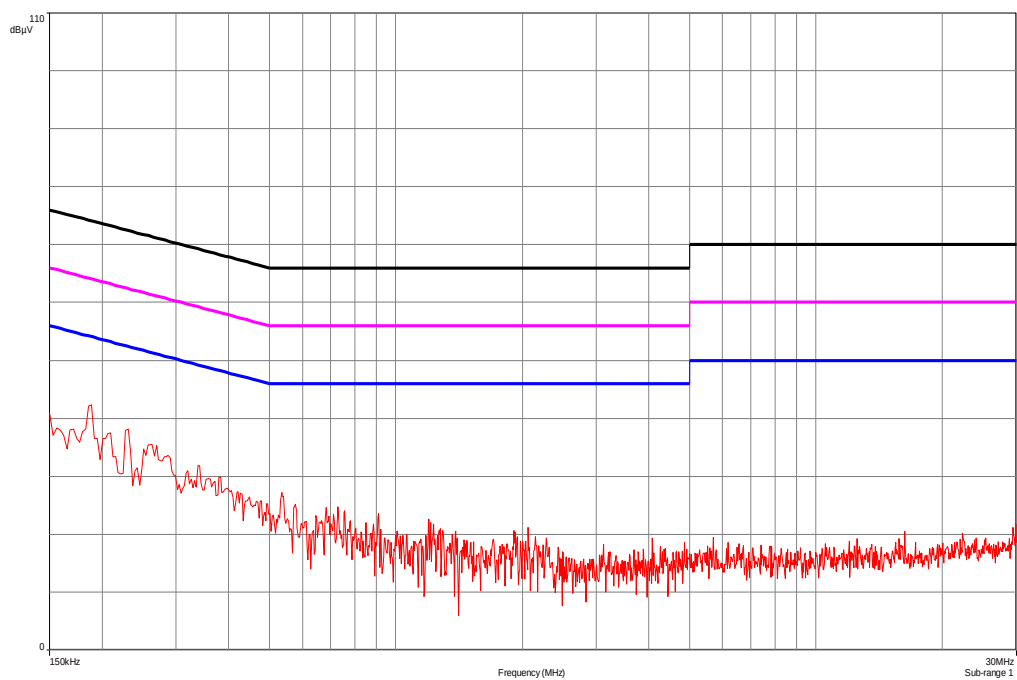
Plot 1: TX mode, 9 kHz to 30 MHz, phase line



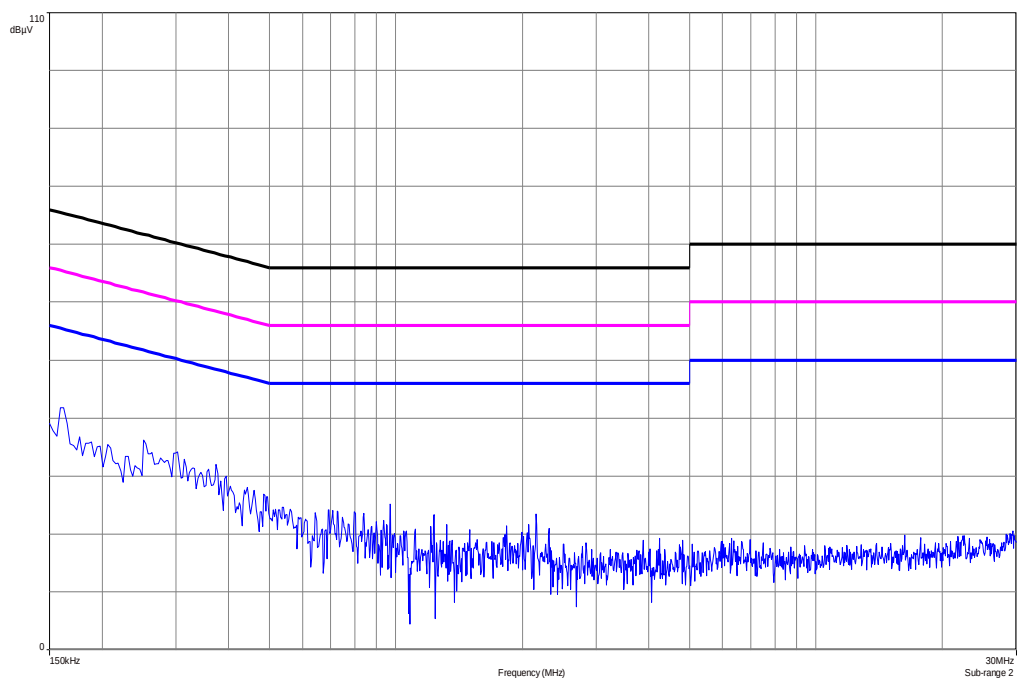
Plot 2: TX mode, 9 kHz to 30 MHz, neutral line



Plot 3: RX / Idle – mode, 9 kHz to 30 MHz, phase line



Plot 4: RX / Idle – mode, 9 kHz to 30 MHz, neutral line



10 Test equipment and ancillaries used for tests

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).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
3	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081; B5979	300000210	ne		
4	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	04.01.2012	04.01.2013
5	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	14.07.2011	14.07.2013
6	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
7	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
8	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
9	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
10	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k		
11	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	06.01.2012	06.01.2014
12	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
13	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vIKI!	11.05.2011	11.05.2013
14	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
15	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
16	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
17	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
18	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
19	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
20	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
21	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
22	n. a.	Band Reject filter	WRCG240 0/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
23	n. a.	TRILOG Broadband Test-Antenna	VULB9163	Schwarzbeck	371	300003854	vIKI!	14.10.2011	14.10.2014

		30 MHz - 3 GHz							
24	n. a.	MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	19.12.2011	19.12.2012
25	n. a.	Netzgerät	E3634A	Agilent Technologies	MY40011505	300003742	k	10.02.2012	10.02.2014
26	n. a.	Spectrumanalyz er	FSV30	R&S	100763	300003950	k	13.04.2012	13.04.2013
27	A026	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000787	ne		
28	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300002442	ne		
29	n. a.	Spectrum Analyzer 20 Hz - 50 GHz	FSU50	R&S	200012	300003443	ve	01.07.2010	01.07.2012
30	11b	Microwave System Amplifier, 0.5-26.5 GHz	83017A	HP Meßtechnik	00419	300002268	ev		

Agenda: Kind of Calibration

k calibration / calibrated
 ne not required (k, ev, izw, zw not required)
 ev periodic self verification
 Ve long-term stability recognized
 vlkl! Attention: extended calibration interval
 NK! Attention: not calibrated

EK limited calibration
 zw cyclical maintenance (external cyclical maintenance)
 izw internal cyclical maintenance
 g blocked for accredited testing
 *) next calibration ordered / currently in progress

11 Observations

No observations exceeding those reported with the single test cases have been made.

DAkkS
Deutsche
Akkreditierungsstelle

Deutsche Akkreditierungsstelle GmbH German Accreditation Body

Entered according to Section 8 subsection 1 AkrStG in connection with Section 1
subsection 1 AkrStG/BV
Signatory to the Multilateral Agreements of
EA, ILAC and IAF for Mutual Recognition

Accreditation

The Deutsche Akkreditierungsstelle GmbH (German Accreditation Body) attests that the
testing laboratory

CETECOM ICT Services GmbH
Unterrückheimer Straße 6-10
66117 Saarbrücken

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the
following field(s):

Wired communications and DECT

Access to:

Radio

Short Range Devices (SRD)

RFD

WLAN and Richtfunk

Mobile radio (GSM / GPRS), Over the Air (OTA) Performance

Electromagnetic Compatibility (EMC) incl. Automotive

Product safety

SAR and Hearing Aid Compatibility (HAC)

Environmental simulation

Smart Card Terminals

Bluetooth

Wi-Fi-Services

The accreditation certificate shall only apply in connection with the notice of accreditation of 13.04.2011
with the accreditation number D-PL-12076-01 and is valid until 03.09.2014. It comprises the cover sheet,
the reverse side of the cover sheet and the following annex with a total of 32 pages.

Registration number of the certificate: **D-PL-12076-01-01**

Hanfurt am Main, 13.04.2011

Dr. rer. jur. habil. Dr. Peter
Head of the Board

This document is a declaration. The declared version is the original version: accreditation certificate.
www.dakks.de

Deutsche Akkreditierungsstelle GmbH

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Sethstrasse 19-
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demonstrations of the cover sheet by the conformity assessment body concerned.

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accreditation defined by DAkkS.

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(Federal Law Gazette I p. 3525) and the Regulation (EC) No 765/2008 of the European Parliament and of
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EA: www.european-accreditation.org

ILAC: www.ilac.org

IAF: www.iaf.org

Back side of certificate

http://www.cetecom.com/fileadmin/de/CETECOM_D_Saarbruecken/accreditations_Jan_2010/DAKKS_Akkredi_Urk_EN17025-En_incl_Annex.pdf