

**CETECOM™****CETECOM ICT Services**
consulting - testing - certification >>>**TEST REPORT**

Test report no.: 1-4254/12-04-08

DAkkS
Europäischer
Akreditierungsrat
D-PL 12074-01-01**Testing laboratory****CETECOM ICT Services GmbH**
Unterlueckheimer Strasse 6 - 10
68117 Saarbruecken / Germany
Phone: +49 681 5 98 - 0
Fax: +49 681 5 98 - 9076
Internet: <http://www.cetecom.com>
e-mail: lor@cetecom.com**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-12074-01-01
Area of Testing: Radio/Satellite Communications**Applicant****Sony Ericsson Mobile Communications AB**
Nya Vallenornet
221 88 Lund / SWEDEN
Phone: +46 46 19 30 00
Fax: +46 46 19 32 95
Contact: Håkan Sjöberg
e-mail: hakan.sjoborg@sonyericsson.com
Phone: +46 46 19 35 59**Manufacturer****Sony Ericsson Mobile Communications AB**
Nya Vallenornet
221 88 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 (A) 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 850/900/1800/1900; GPRS/EGPRS; UMTS FDD/HFDDH/FDDV; HSPA; LTE Band 4/17; BT EDR; WLAN b/g/n; ANT1; GPS; HDMI; RFID
Model name: AAL-6380001-BV
FCC ID: PY7A8880001
IC: 4170B-A8880001
Frequency [MHz]: 2400.00 MHz - 2483.50 MHz
Technology tested: WLAN
Antenna: Integrated antenna
Power Supply: 3.70 V DC by Li-Ion Battery
Temperature Range: +22°C**Test report authorised:**2012-01-26 Stefan Bös
Senior Testing Manager**Test performed:**2012-01-28 Andreas Luckenbill
Mitarbeiter

1 Table of contents

1	Table of contents	2
2	General information	3
2.1	Notes and disclaimer	3
2.2	Application details	3
3	Test standard/s	3
4	Test environment	4
5	Test item	4
6	Test laboratories sub-contracted	4
7	Summary of measurement results	5
8	RF measurements	6
8.1	Description of test setup	6
8.1.1	Radiated measurements	6
8.1.2	Conducted measurements	7
8.2	Additional comments	7
8.3	RSP100 test report cover sheet / performance test data	8
9	Measurement results	9
9.1	Maximum output power (conducted)	9
9.2	Antenna gain	20
9.3	Maximum output power	23
9.4	Power spectral density	31
9.5	Spectrum bandwidth of a FHSS system – 6 dB bandwidth	38
9.6	Spectrum bandwidth of a FHSS system – 20 dB bandwidth	45
9.7	Band edge compliance conducted	52
9.8	Band edge compliance radiated	56
9.9	TX spurious emissions conducted	63
9.10	TX spurious emissions radiated	75
9.11	RX spurious emissions radiated	104
9.12	TX spurious emissions radiated < 30 MHz	109
9.13	TX spurious emissions conducted < 30 MHz	115
10	Test equipment and ancillaries used for tests	120
11	Observations	121
Annex A	Photographs of the test setup	122
Annex B	External photographs of the EUT	124
Annex C	Internal photographs of the EUT	128
Annex D	Document history	137
Annex E	Further information	137
Annex F	Accreditation Certificate	138

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.

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.

The testing service provided by CETECOM ICT Services GmbH has been rendered under the current "General Terms and Conditions for CETECOM ICT Services GmbH".

CETECOM ICT Services GmbH will not be liable for any loss or damage resulting from false, inaccurate, inappropriate or incomplete product information provided by the customer.

Under no circumstances does the CETECOM ICT Services GmbH test report include any endorsement or warranty regarding the functionality, quality or performance of any other product or service provided.

Under no circumstances does the CETECOM ICT Services GmbH test report include or imply any product or service warranties from CETECOM ICT Services GmbH, including, without limitation, any implied warranties of merchantability, fitness for purpose, or non-infringement, all of which are expressly disclaimed by CETECOM ICT Services GmbH.

All rights and remedies regarding vendor's products and services for which CETECOM ICT Services GmbH has prepared this test report shall be provided by the party offering such products or services and not by CETECOM ICT Services GmbH.

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

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

2.2 Application details

Date of receipt of order:	2012-01-10
Date of receipt of test item:	2012-01-10
Start of test:	2012-01-10
End of test:	2012-01-25
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}	-/- °C during high temperature tests
	T_{min}	-/- °C during low temperature tests
Relative humidity content:		49 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.70 V DC by Li-Ion Battery
	V_{max}	-/- V
	V_{min}	-/- V

5 Test item

Kind of test item	: GSM Mobile Phone 850/900/1800/1900; GPRS/EGPRS; UMTS FDD/FDDII/FDDV; HSPA; LTE Band 4/17; BT EDR; WLAN b/g/n; ANT+; GPS; HDMI; RFID
Type identification	: AAL-8880001-BV
S/N serial number	: Rad. CB5A1JE2RN, CB5A1JE2R4 Cond. CB5A1JE2RU, CB5A1JENZY
HW hardware status	: AP2
SW software status	: 6.0.C.0257, 6.0.C.0.243 s_atp_aoba_0_0_22
Frequency band [MHz]	: 2400.00 – 2483.50 MHz
Type of modulation	: {BPSK, QPSK, x-QAM, FSK, ASK, ...}
Number of channels	: 11
Antenna	: Integrated antenna
Power supply	: 3.70 V DC by Li-Ion Battery
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 RSS 210, Issue 8, Annex 8	Passed	2012-01-26	-

Test specification clause	Testcase	Temperature conditions	Power source voltages	Mode	Pass	Fail	NA	NP	Remark
§15.247(b)(4) RSS 210 / A9.4(2)	Antenna gain	Nominal	Nominal	DSSS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.247(e) RSS 210 / A9.2(b)	Power spectral density	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(a)(2) RSS 210 / A9.2(a)	Spectrum bandwidth of a FHSS system edB bandwidth	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(a)(2) RSS 210 / A9.2(a)	Spectrum bandwidth of a FHSS system 20dB bandwidth	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(b)(3) RSS-210 / A9.4(4)	Maximum output power	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(d) RSS-210 / A9.5	Band edge compliance conducted	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.205 RSS-210 / A9.5	Band edge compliance radiated	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(d) RSS-210 / A9.5	TX spurious emissions conducted	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.247(d) RSS-210 / A9.5	TX spurious emissions radiated	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.109 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) RSS-Gen	TX spurious emissions radiated < 30 MHz	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies
§15.107(a)	Conducted emissions < 30 MHz	Nominal	Nominal	DSSS OFDM g & n	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	complies

Note: NA = Not Applicable; NP = Not Performed

8 RF measurements

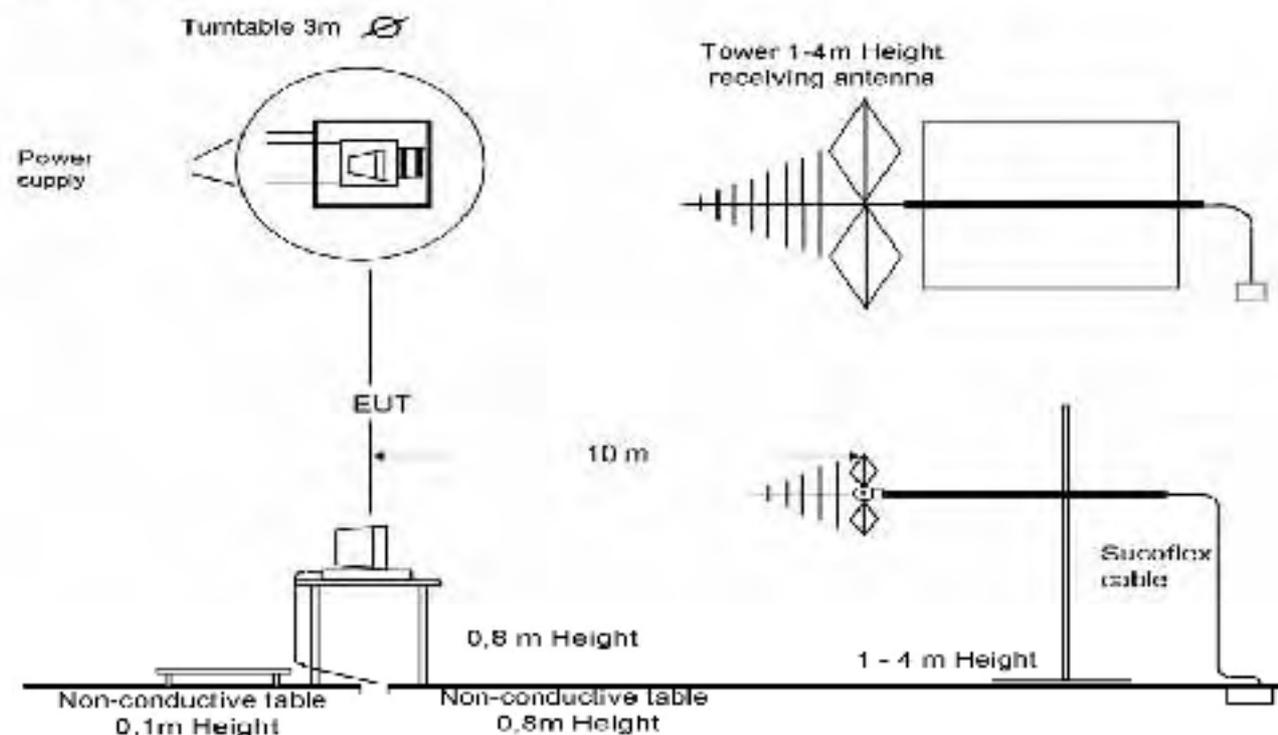
8.1 Description of test setup

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



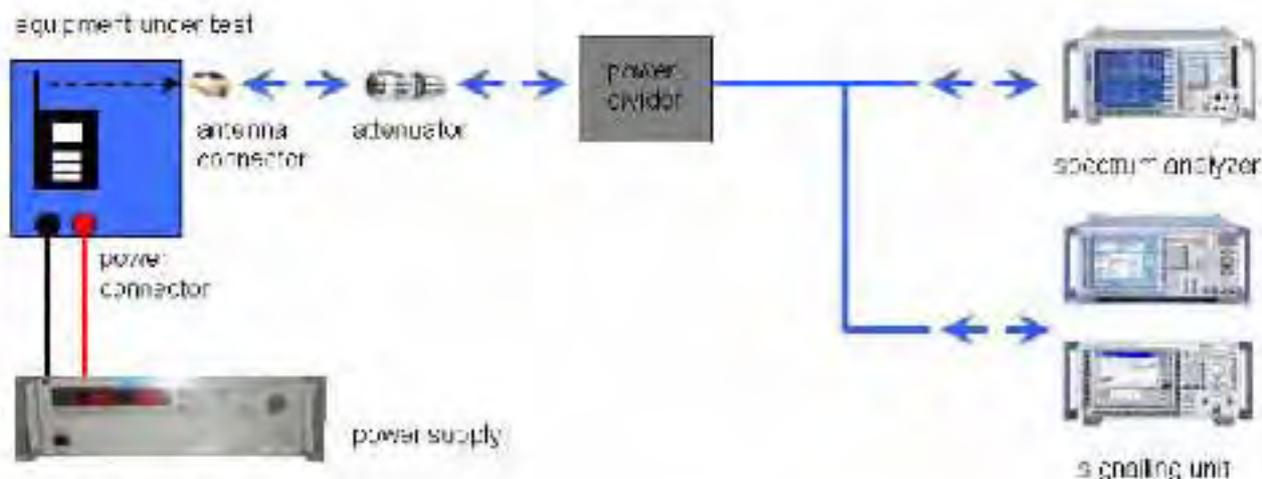
Picture 1: Diagram radiated measurements

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: None

Special test descriptions: None

Configuration descriptions: None

Test mode:

- No test mode available. perf 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	:	1-4254/12-04-08
Equipment model number	:	AA1-8880001-BV
Certification number	:	4170B-AS880001
Manufacturer (complete address)	:	Sony Ericsson Mobile Communications AB Nya Vattentornet 22188 Lund / SWEDEN
Tested to radio standards specification no.	:	RSS 210, Issue B
Open area test site IC No.	:	IC 3462G-1
Frequency range	:	ISM band 2400 MHz to 2403.5 MHz (lowest channel 2412 MHz, highest channel 2462 MHz)
RF-power [W] (max.)	:	cond.: 80.17 mW (DSSS) 152.76 mW (OFDM) EIRP: 39.99 mW (DSSS) 74.82 mW (OFDM)
Occupied bandwidth (90%-BW) [MHz]	:	DSSS: 13.42 MHz OFDM: 18.25 MHz
Type of modulation	:	DSSS & OFDM technology with BPSK, QPSK, 16- and 64 QAM modulation.
Emission designator (TRC-43)	:	13M4G1D (DSSS) 18M3G7D (OFDM)
Antenna information	:	integrated antenna
Transmitter spurious (worst case) [dBµV/m @ 3m]:	:	100 @ 4824 MHz
Receiver spurious (worst case) [dBµV/m @ 3m]:	:	80 @ 2437 MHz

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:

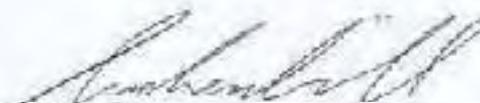
2012-01-26

Andreas Luckenbill

Date

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:	30 MHz
Resolution bandwidth:	50 MHz
Span:	30 MHz
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	18.62	18.57	18.58	18.86
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	21.74	21.41	21.18	21.17	21.22	21.18	21.14	21.20
Measurement uncertainty	± 0.5 dB							

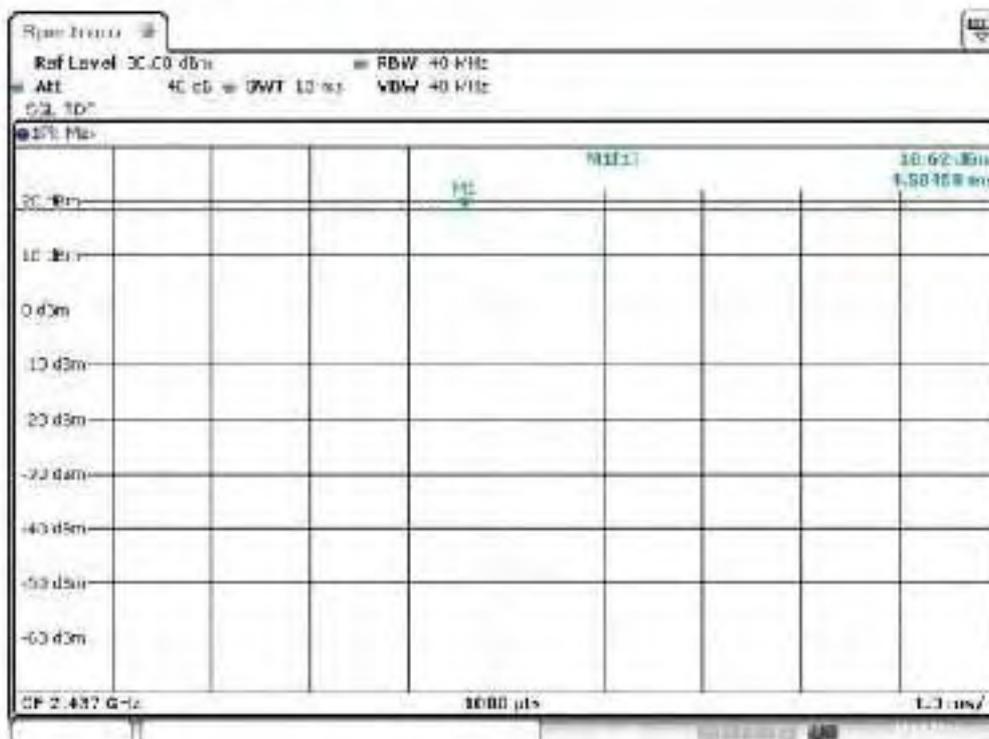
OFDM / n – mode Data Rate [MBit/s]	Maximum Output Power Conducted [dBm]							
	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Ch 6 - 2437 MHz	20.94	20.80	20.79	20.72	20.74	20.72	20.97	20.63
Measurement uncertainty	± 0.5 dB							

Result: Selected data rate for all measurements:

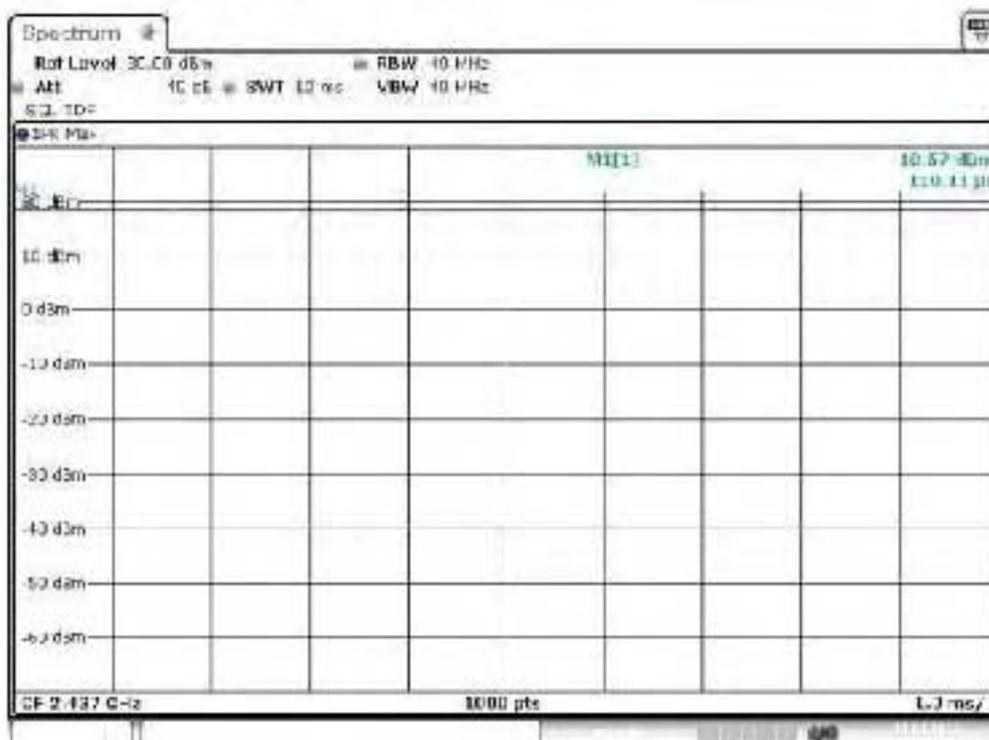
DSSS / b – mode: 11 MBit/s
 OFDM / g – mode: 6 MBit/s
 OFDM / n – mode: MCS 6

Plots: DSSS / b - mode

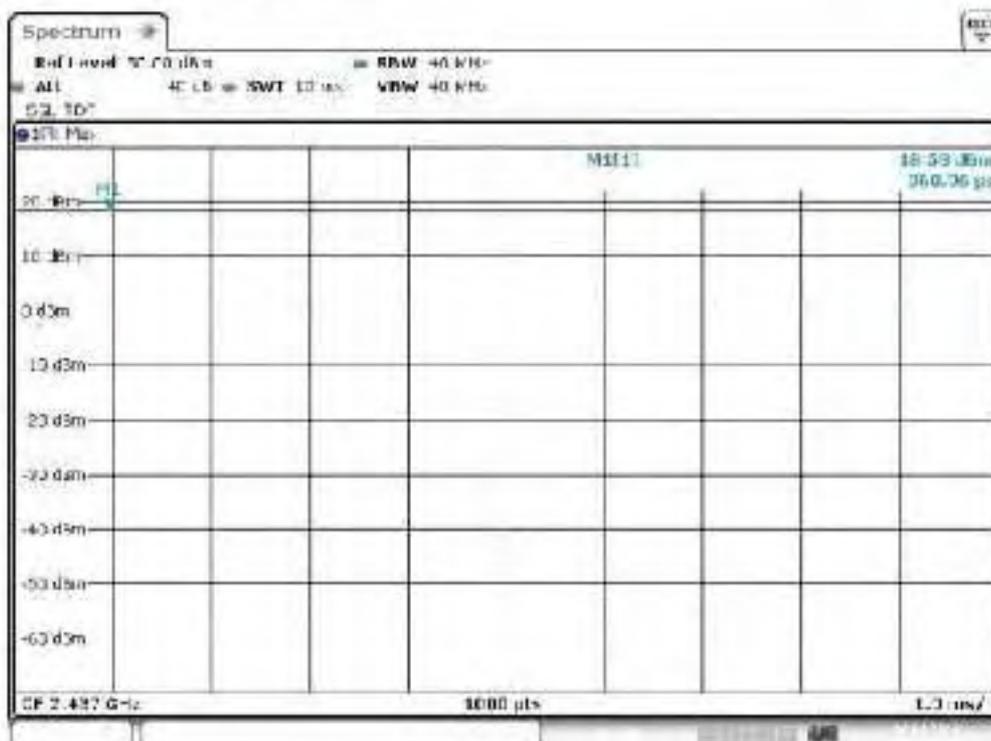
Plot 1: TX mode, middle channel, 1 MBit/s



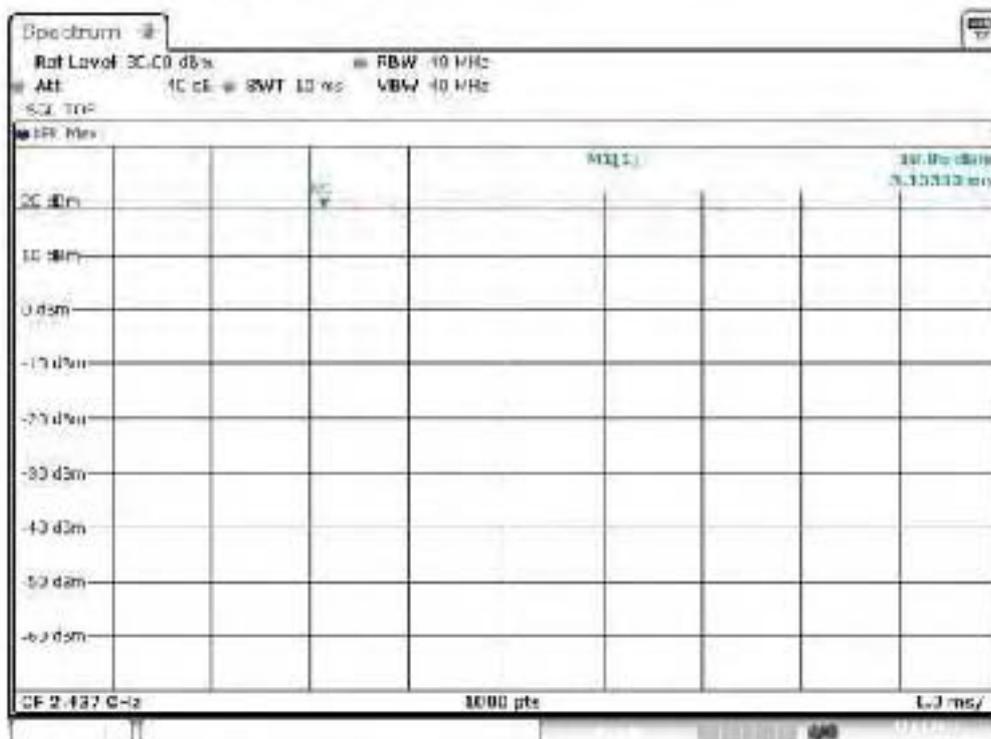
Plot 2: TX mode, middle channel, 2 MBit/s



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

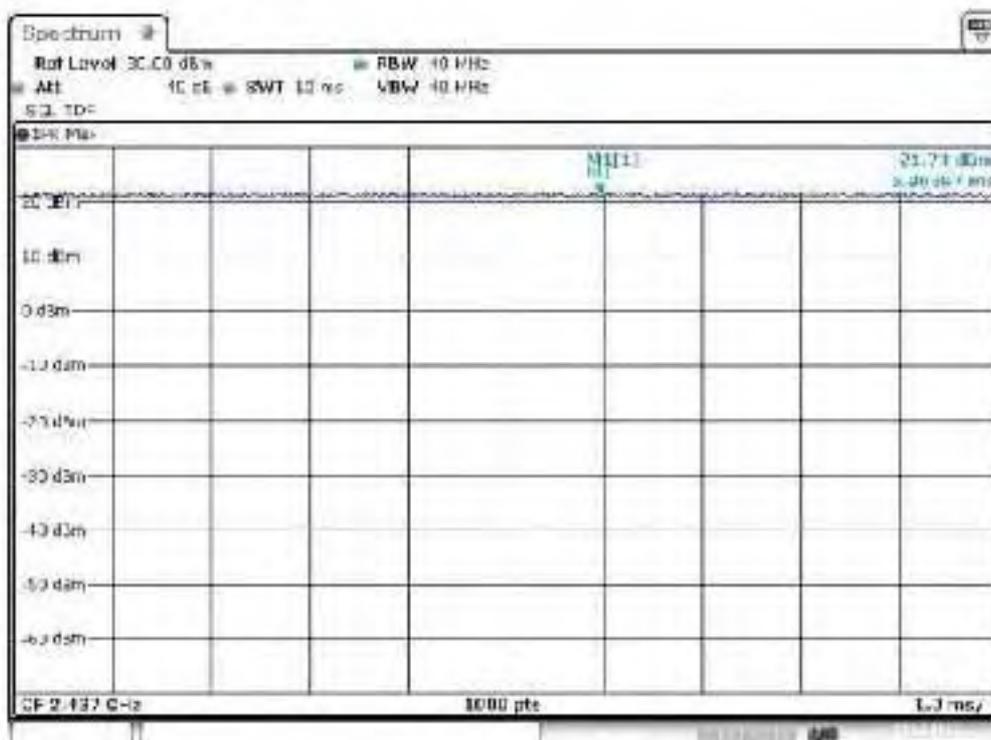


Plot 4: TX mode, middle channel, 11 MBit/s

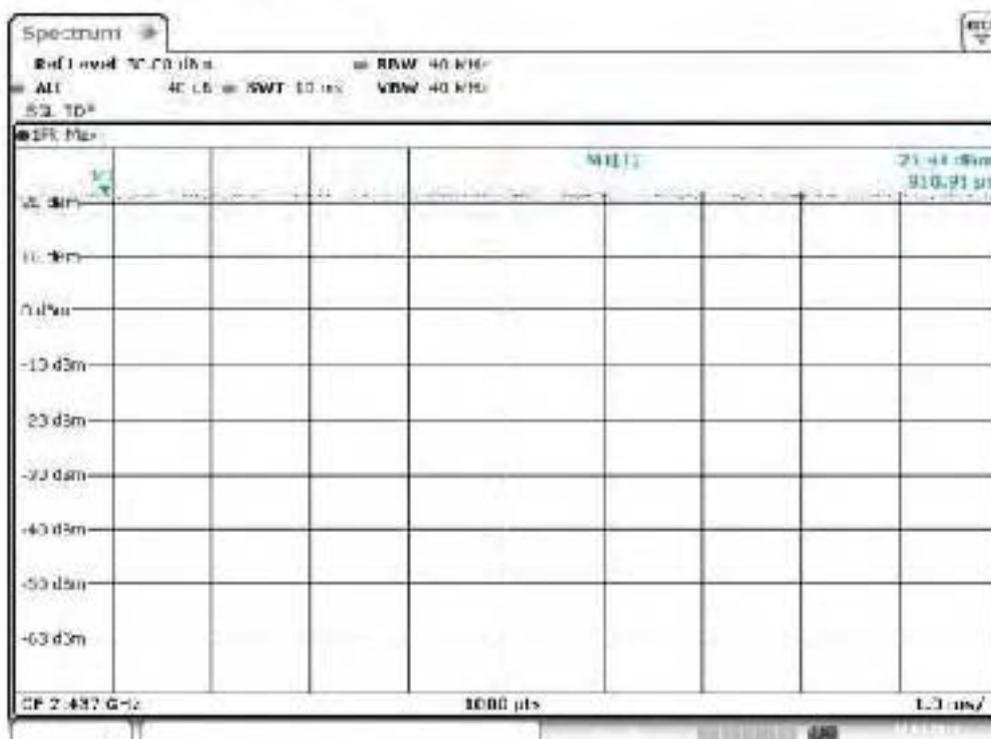


Plots: OFDM / g - mode

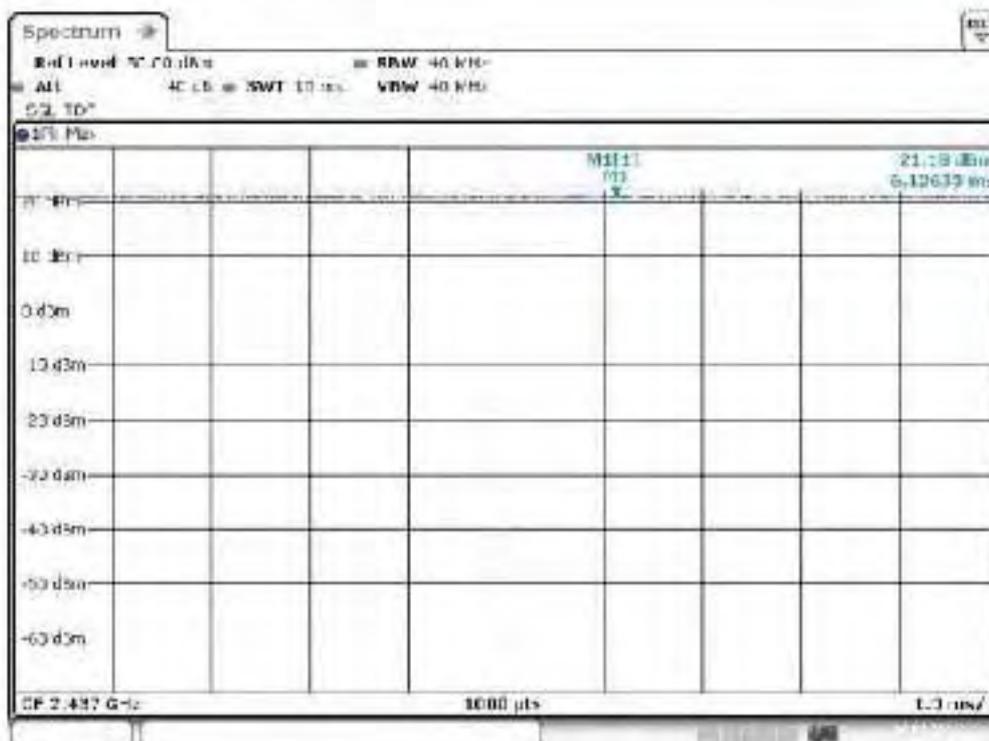
Plot 1: TX mode, middle channel, 6 MBit/s



Plot 2: TX mode, middle channel, 9 MBit/s



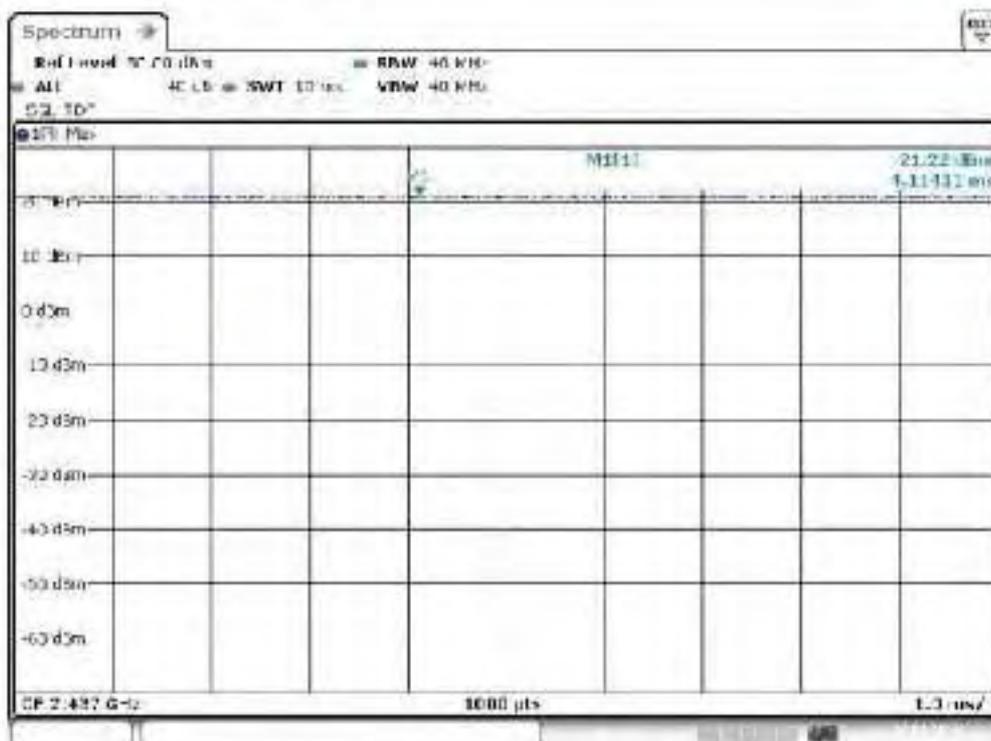
Plot 3: TX mode, middle channel, 12 MBit/s



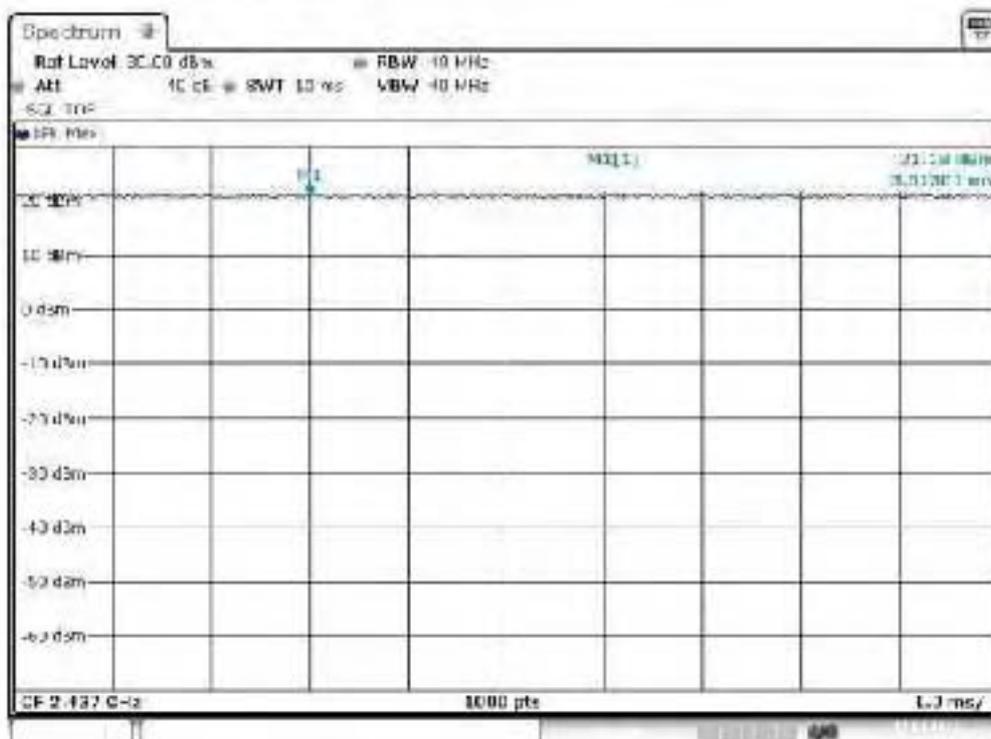
Plot 4: TX mode, middle channel, 18 MBit/s



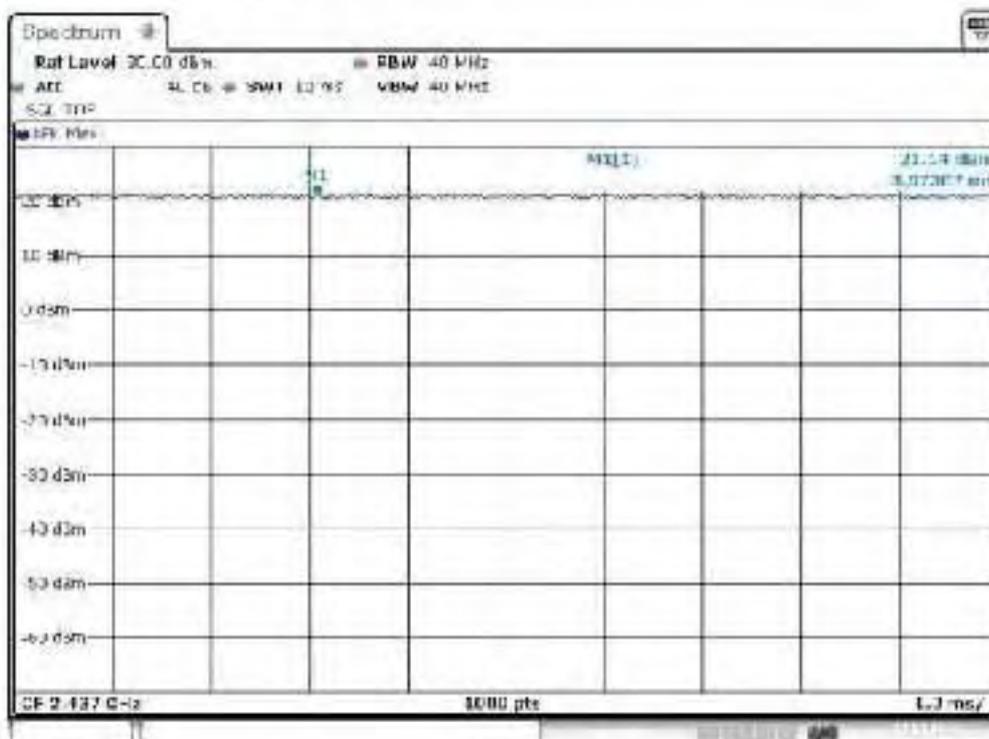
Plot 5: TX mode, middle channel, 24 MBit/s



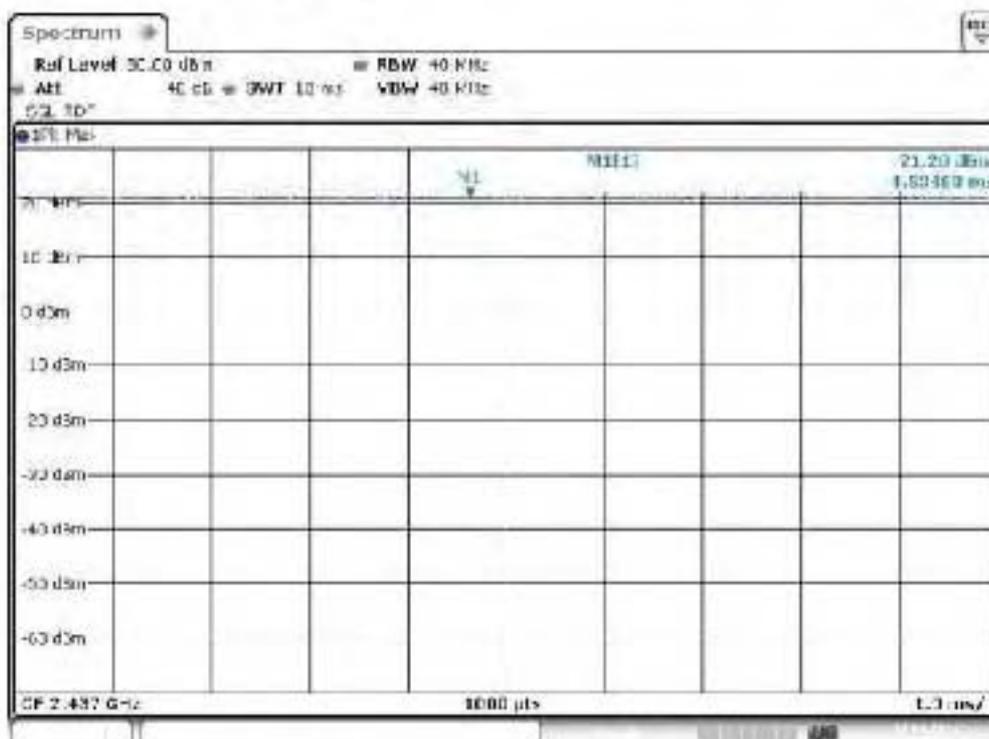
Plot 6: TX mode, middle channel, 36 MBit/s



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

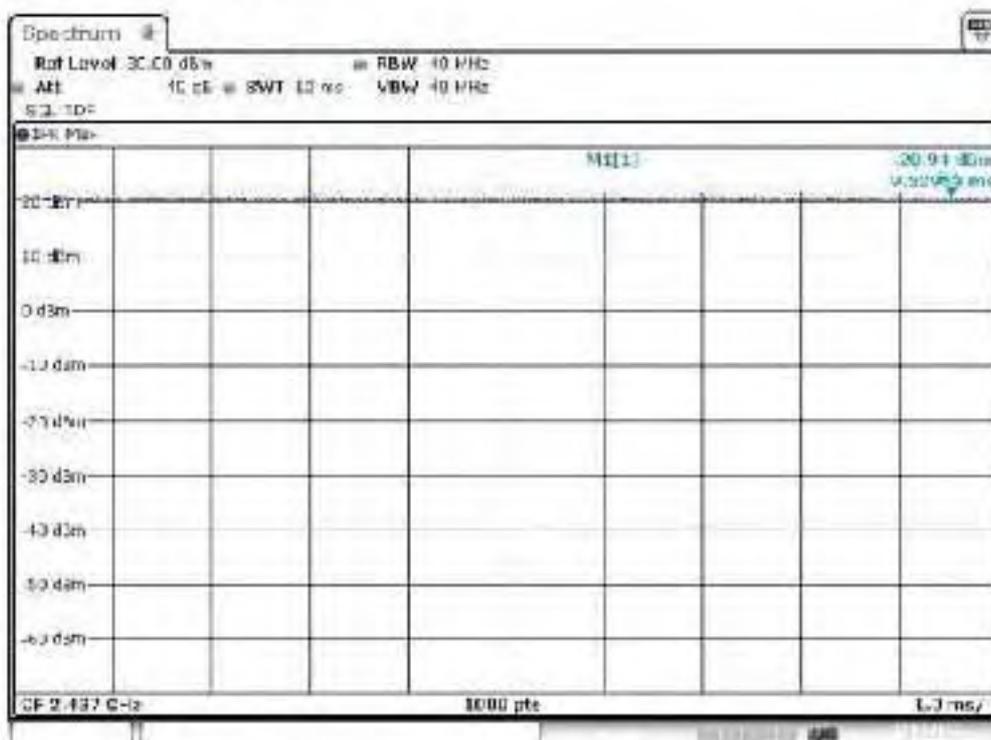


Plot 8: TX mode, middle channel, 54 MBit/s

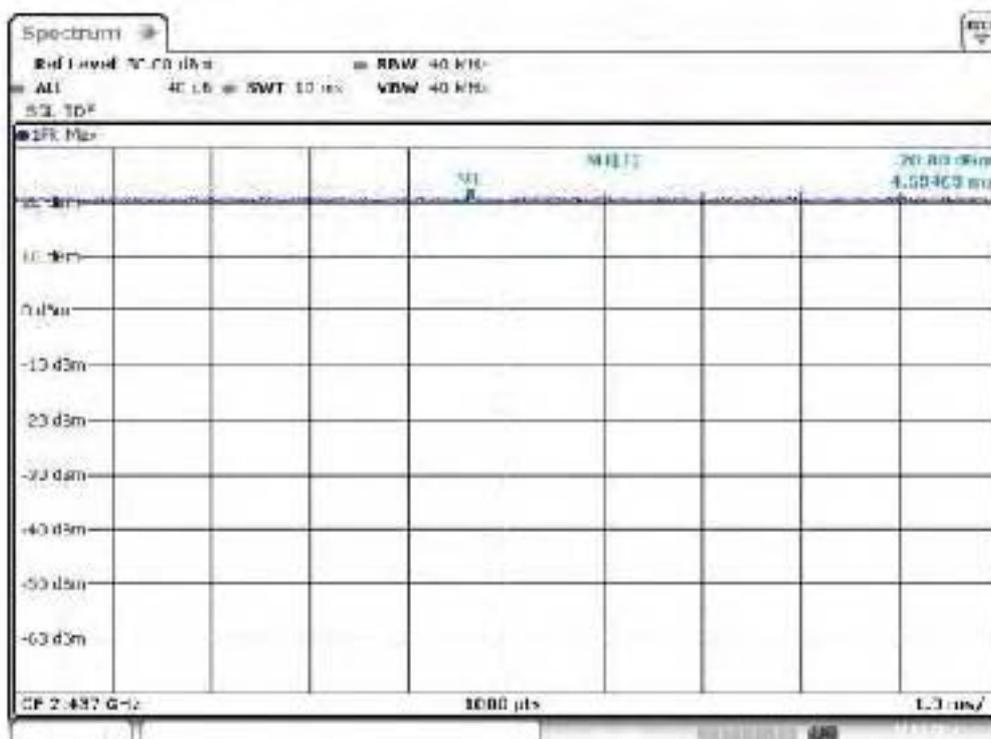


Plots: OFDM / n - mode

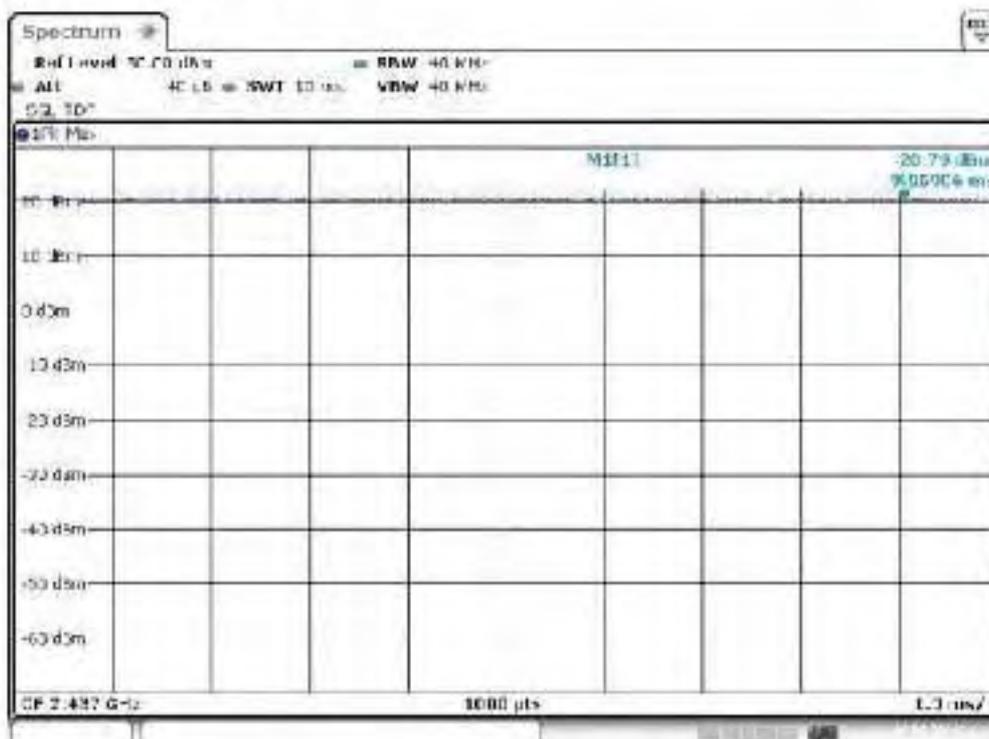
Plot 1: TX mode, middle channel, MCS0



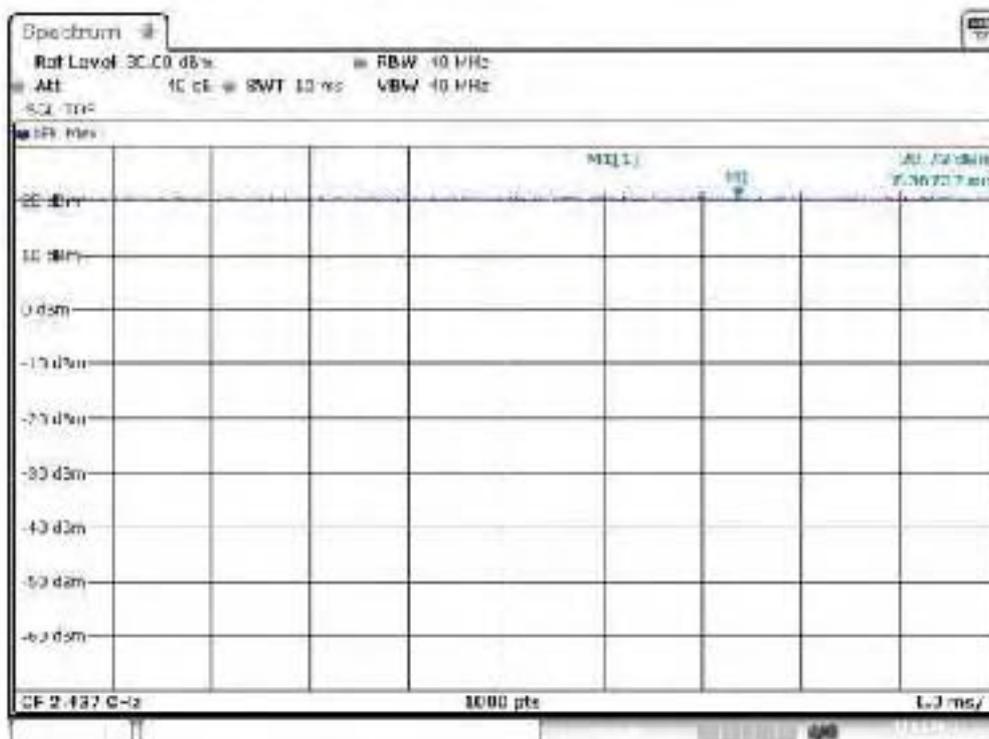
Plot 2: TX mode, middle channel, MCS 1



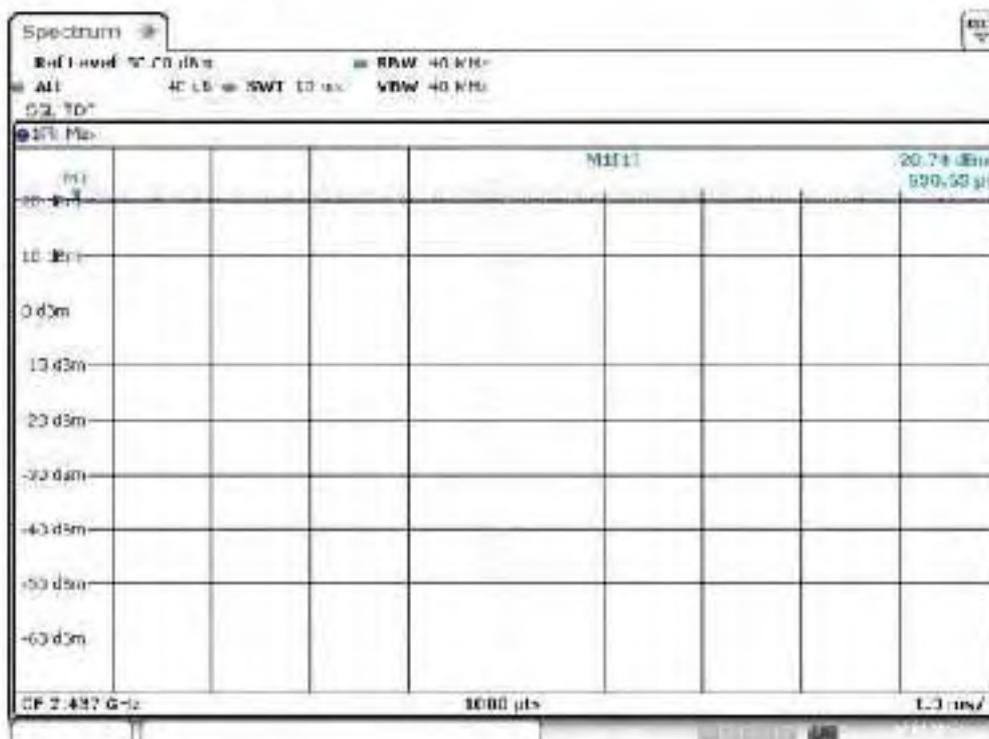
Plot 3: TX mode, middle channel, MCS2



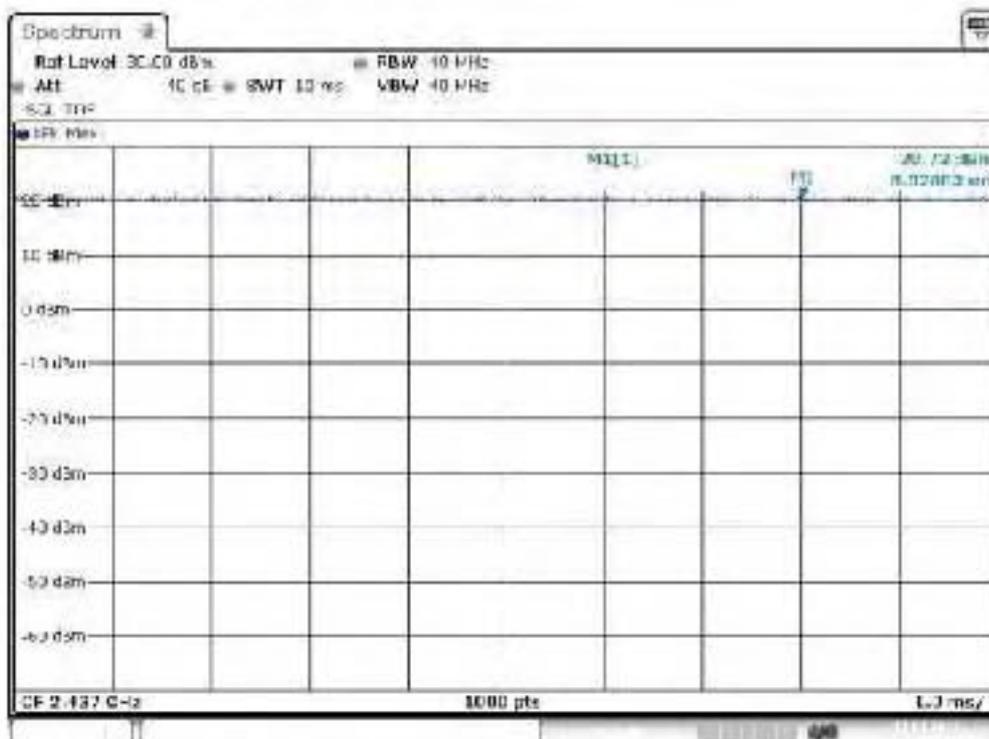
Plot 4: TX mode, middle channel, MCS3



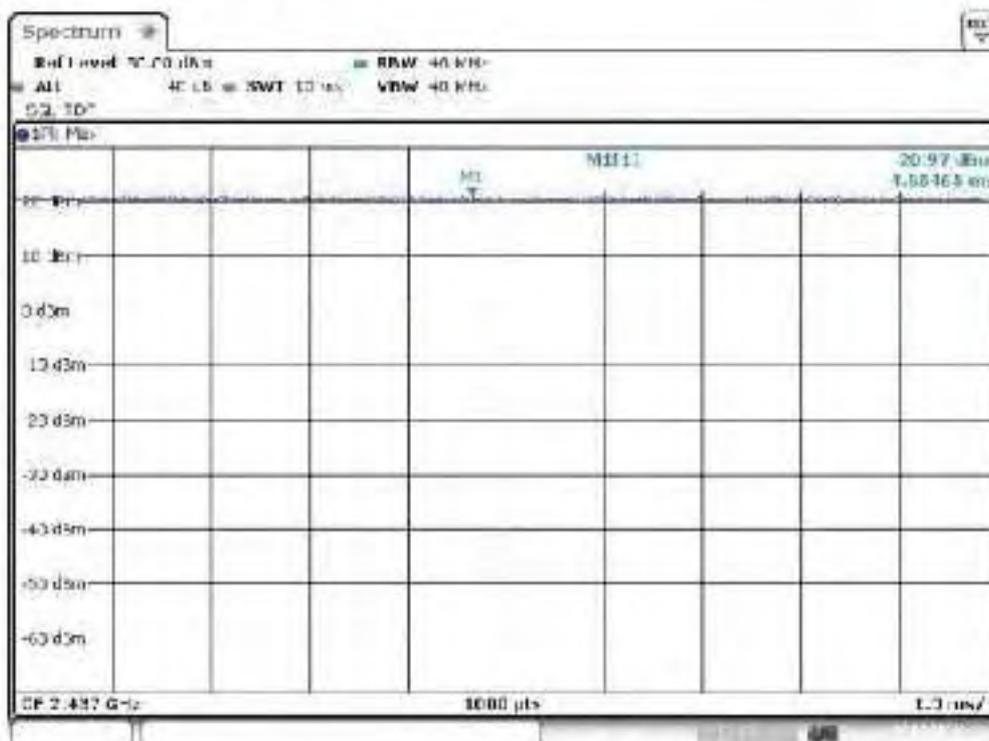
Plot 5: TX mode, middle channel, MCS4



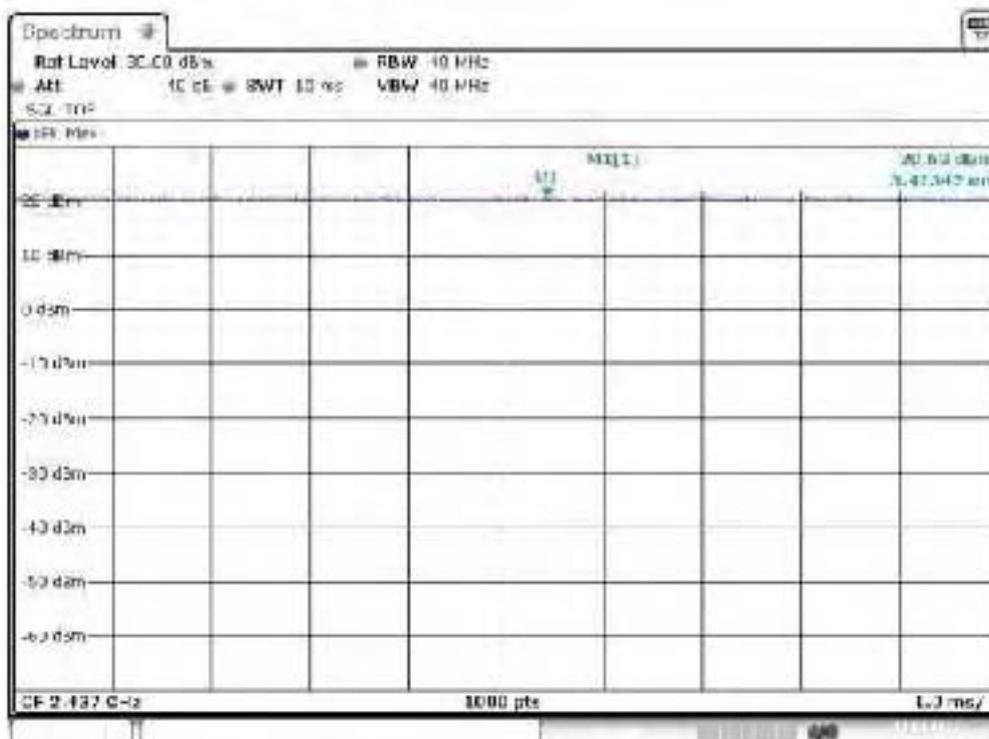
Plot 6: TX mode, middle channel, MCS5



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	

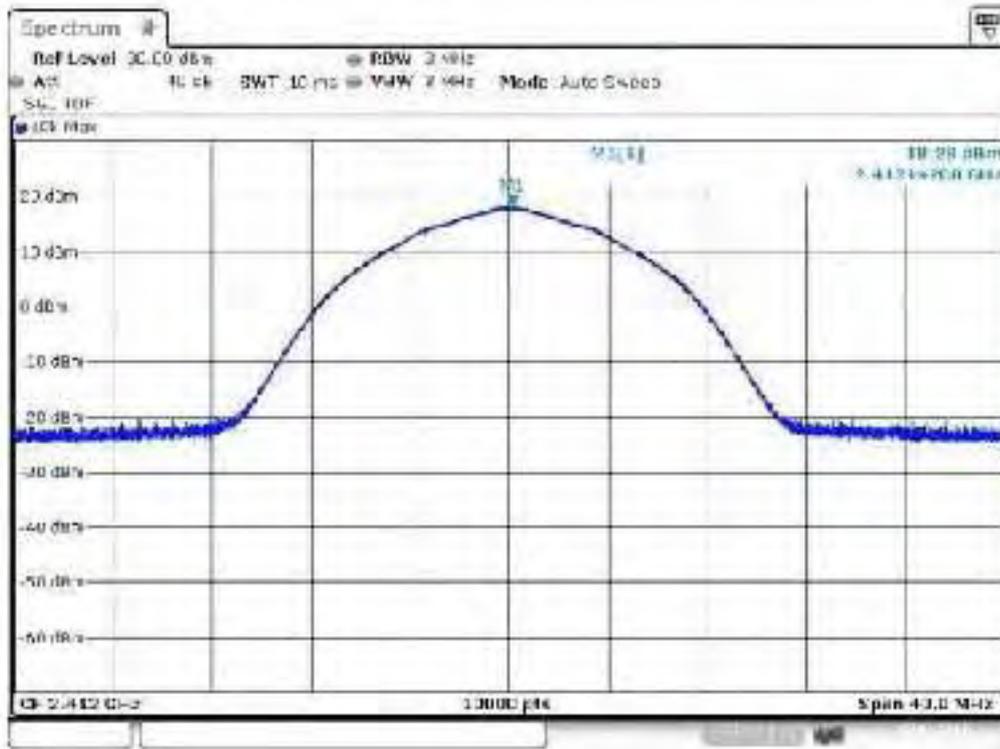
Results:

T_{nom}	V_{nom}	lowest channel 2412 MHz	middle channel 2437 MHz	highest channel 2462 MHz
Conducted power [dBm] Measured with DSSS modulation		18.28	18.13	17.08
Radiated power [dBm] Measured with DSSS modulation		14.36	15.32	13.37
Gain [dBi] Calculated		-3.92	-2.81	-3.71
Measurement uncertainty		± 1.5 dB (cond.) / ± 3 dB (rad.)		

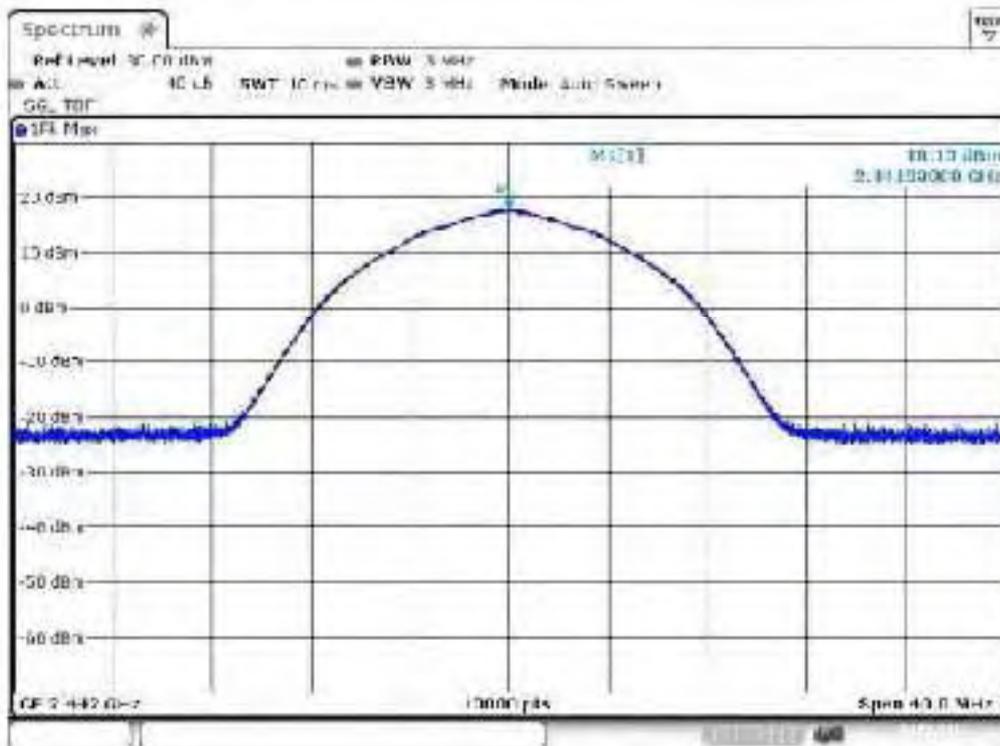
Result: [The result of the measurement is passed.](#)

Plots:

Plot 1: lowest channel, conducted



Plot 2: middle channel, conducted



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	19.04	18.83	18.28
Output Power Radiated – EIRP*)	15.12	16.02	14.57
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*) calculated with Antenna gain

Result: The result of the measurement is passed.

Results: OFDM / g – mode

OFDM / g – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	21.84	21.55	20.99
Output Power Radiated – EIRP*	17.92	18.74	17.28
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*calculated with Antenna gain

Result: The result of the measurement is passed.Results: OFDM / n – mode

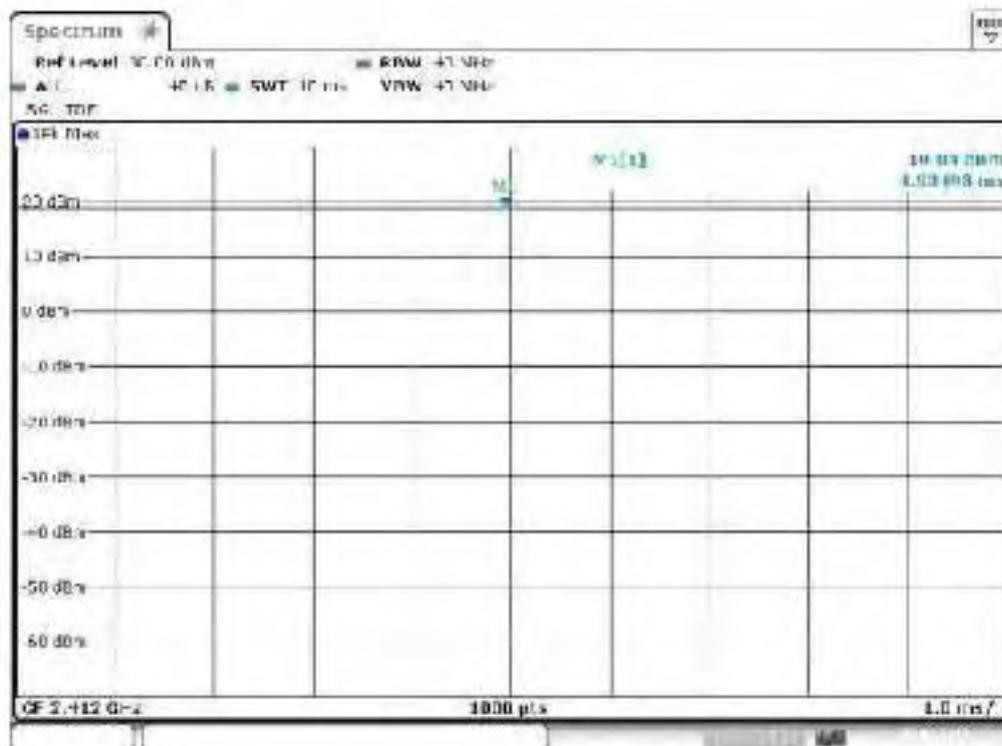
OFDM / n – mode Frequency	Maximum Output Power [dBm]		
	2412 MHz	2437 MHz	2462 MHz
Peak Output Power Conducted	21.21	21.02	20.42
Output Power Radiated – EIRP*	17.29	18.21	16.71
Measurement uncertainty	± 1.5 dB (cond.) / ± 3 dB (rad.)		

*calculated with Antenna gain

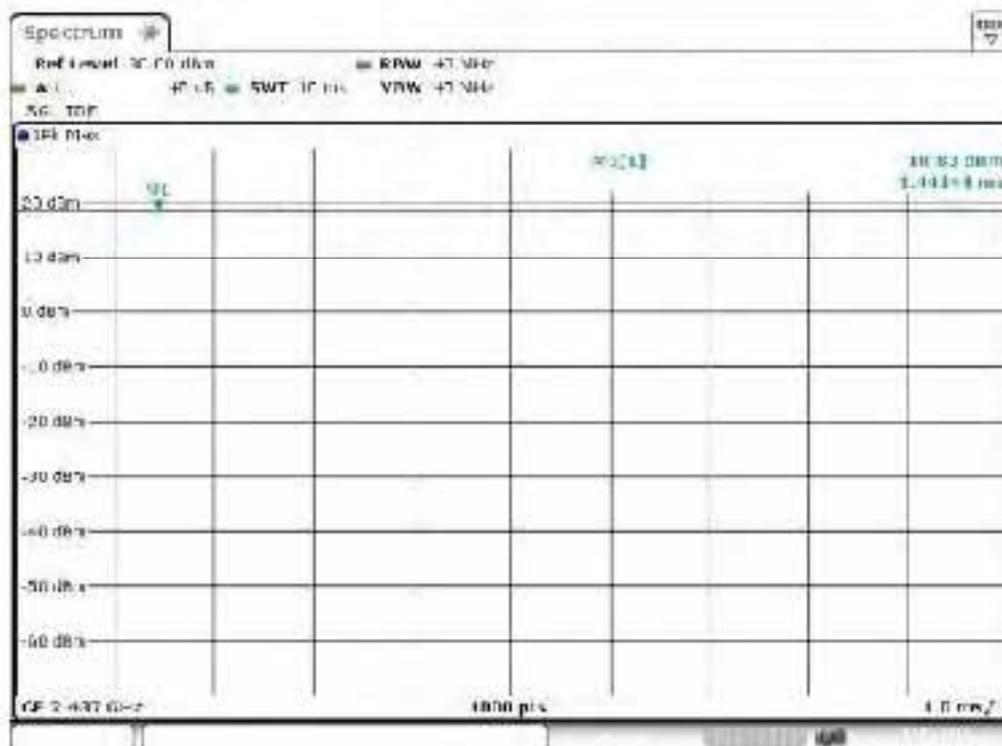
Result: The result of the measurement is passed.

Plots: DSSS / b - mode

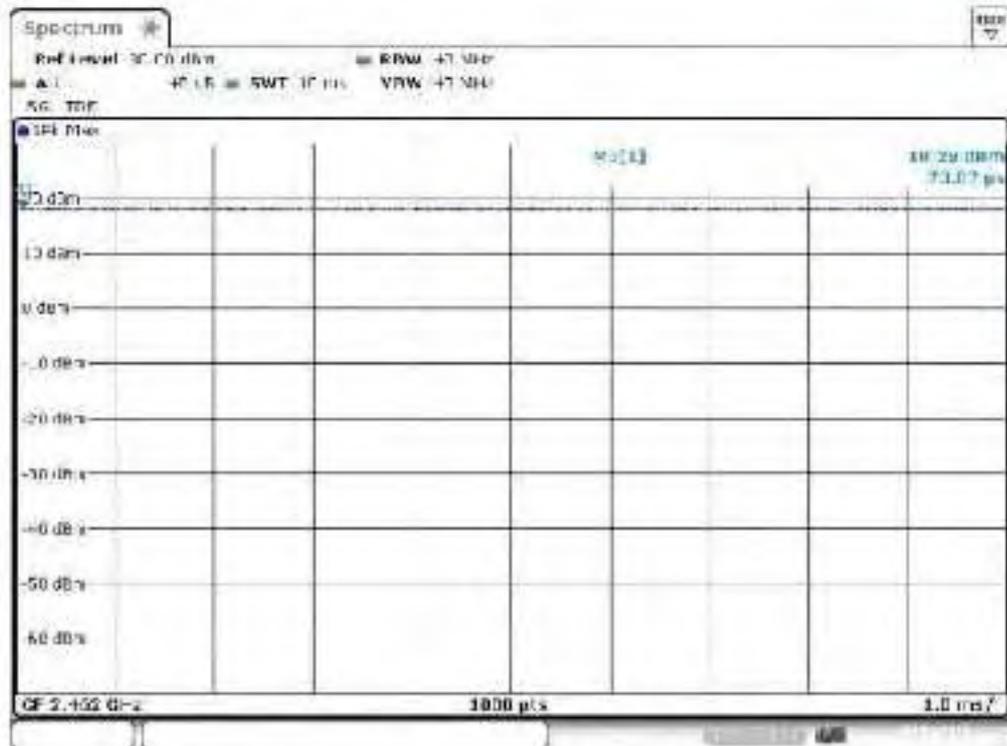
Plot 1: TX mode, lowest channel



Plot 2: TX mode, middle channel

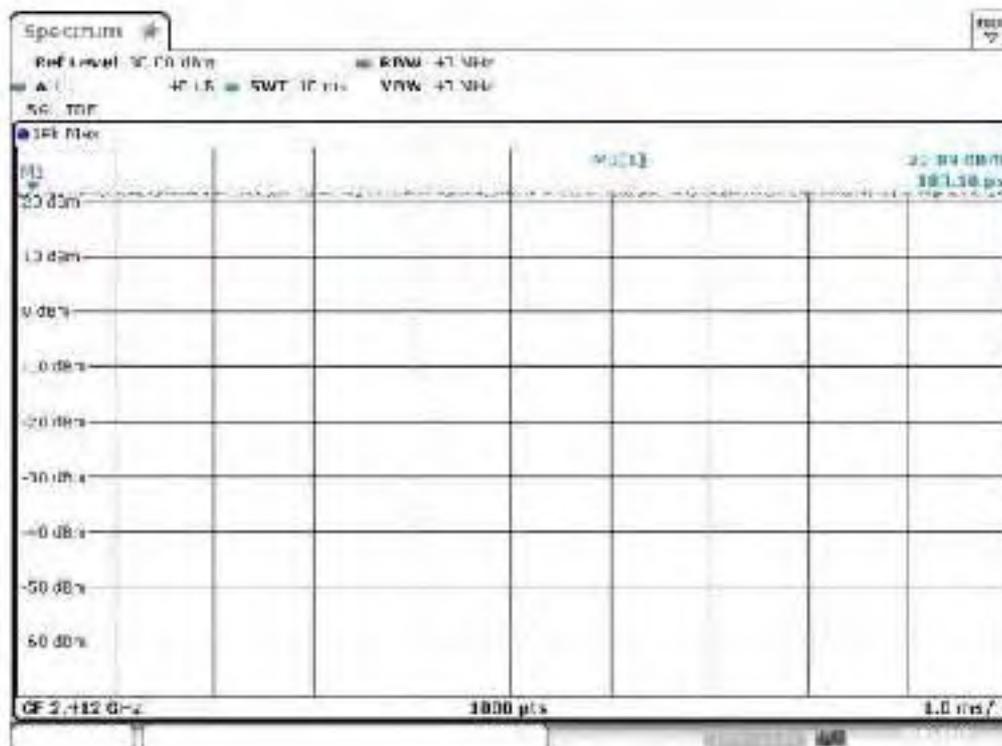


Plot 3: TX mode, highest channel



Plots: OFDM / g - mode

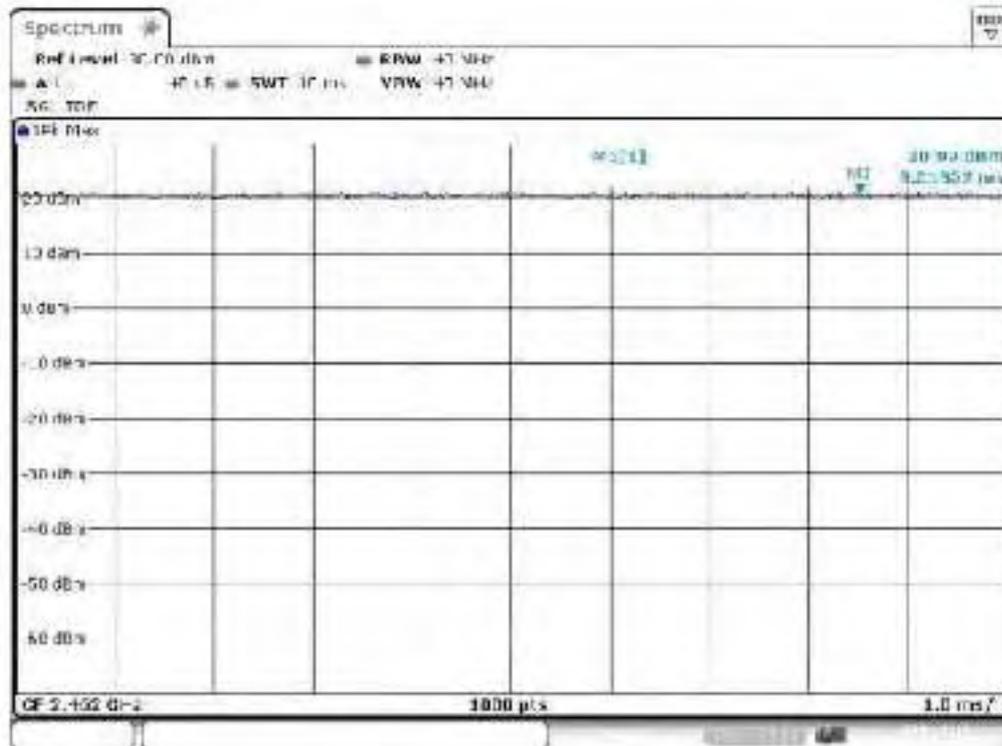
Plot 1: TX mode, lowest channel



Plot 2: TX mode, middle channel

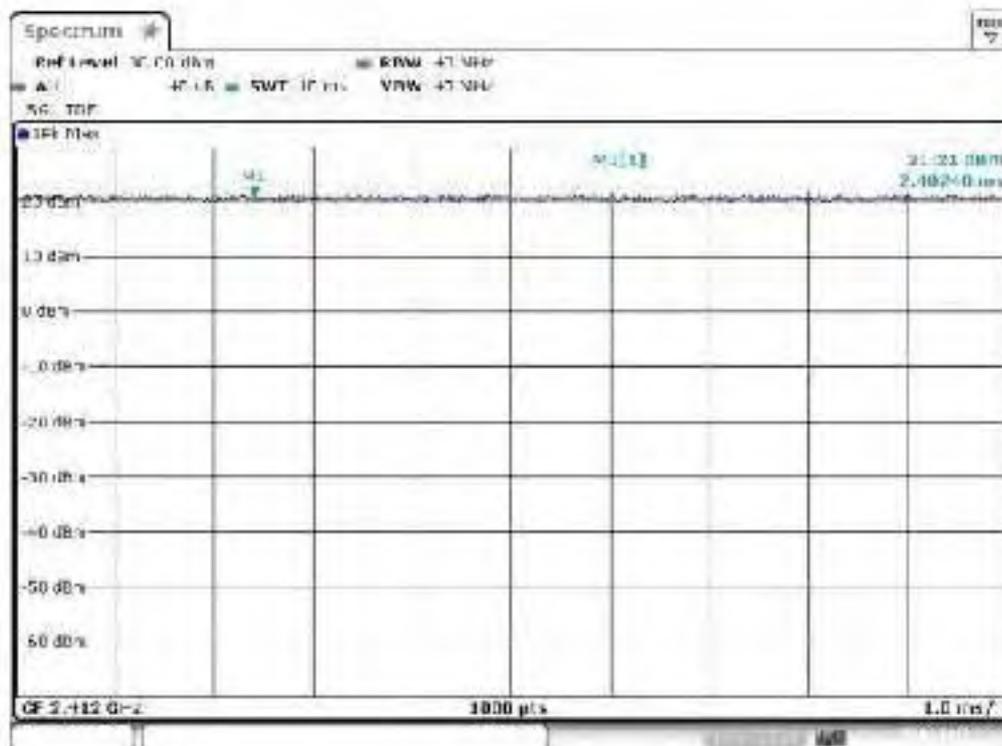


Plot 3: TX mode, highest channel

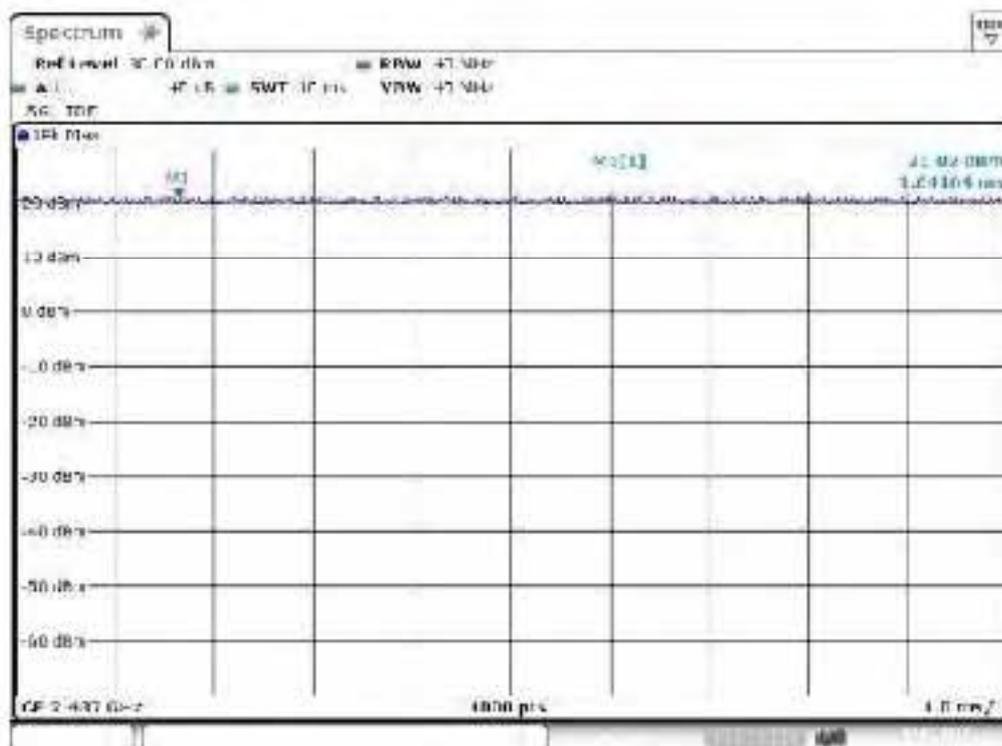


Plots: OFDM / n - mode

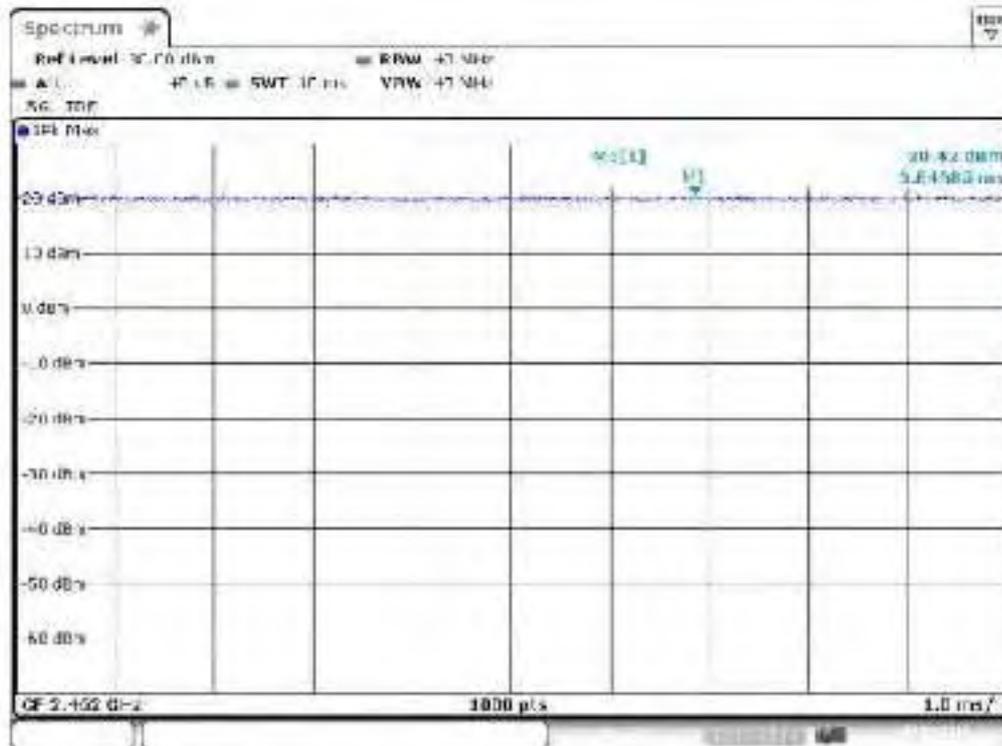
Plot 1: TX mode, lowest channel



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:	500 s
Video bandwidth:	3 kHz
Resolution bandwidth:	3 kHz
Span:	1.5 MHz
Trace-Mode:	Max Hold

Limits:

FCC	IC
CFR Part 15.247 (e)	RSS 210, Issue 8, A 8.2(p)
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.	

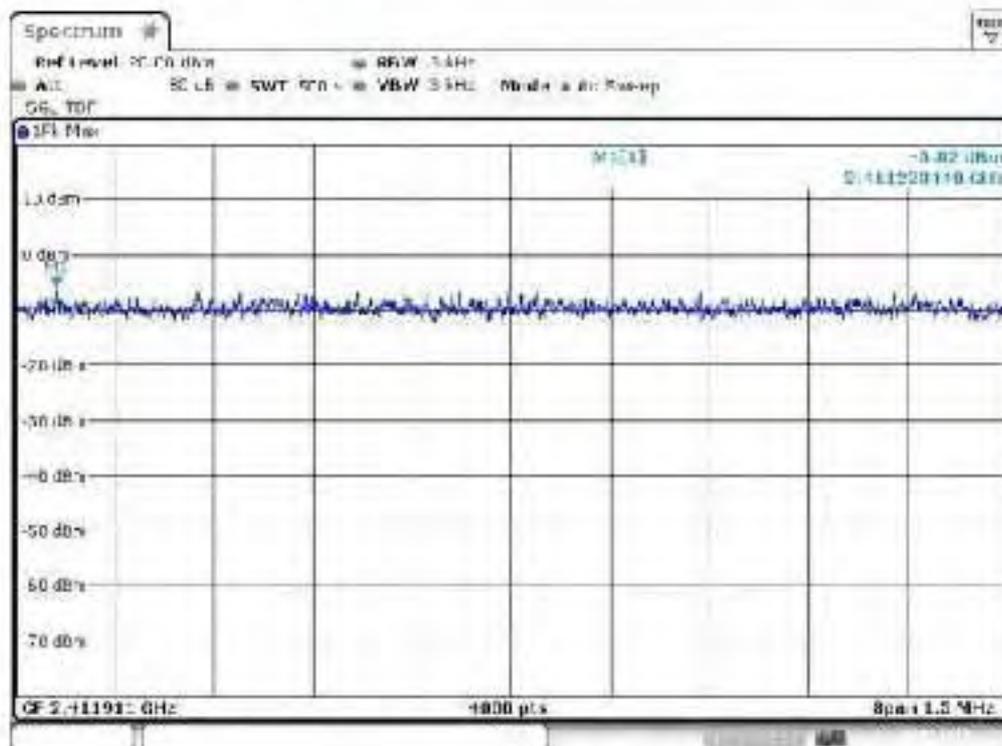
Results:

Modulation Frequency	Power Spectral density [dBm/3kHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	-5.82	-7.07	-7.83
OFDM / g – mode	-11.38	-11.66	-12.13
OFDM / n – mode	-13.00	-13.15	-15.17
Measurement uncertainty	± 1.5 dB		

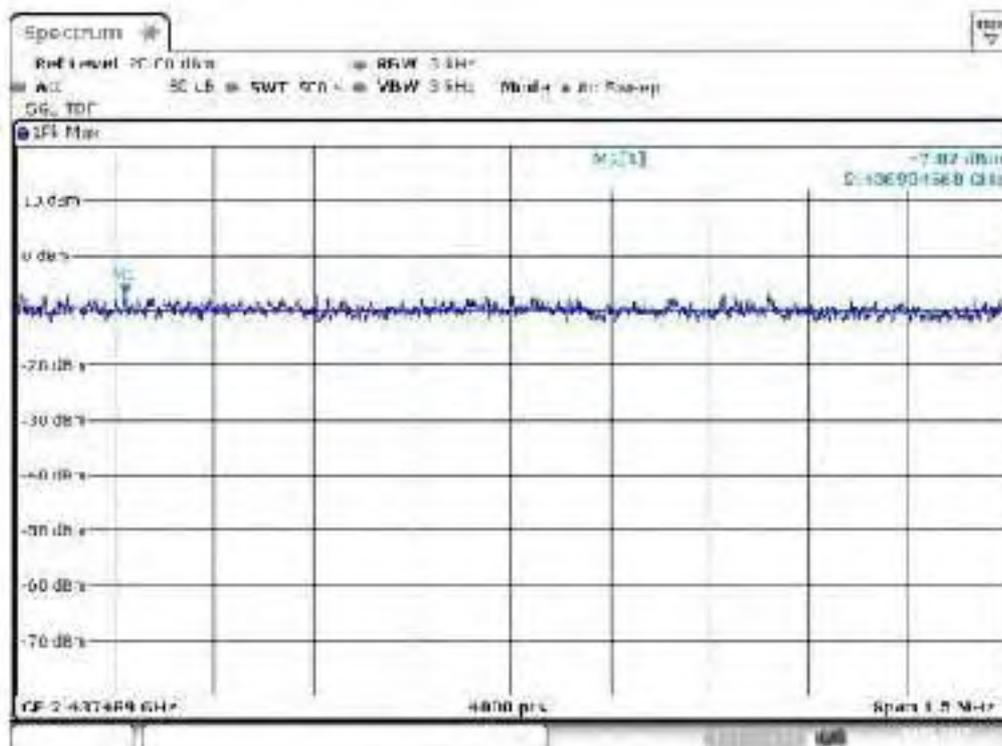
Result: The result of the measurement is passed.

Plots: DSSS / b - mode

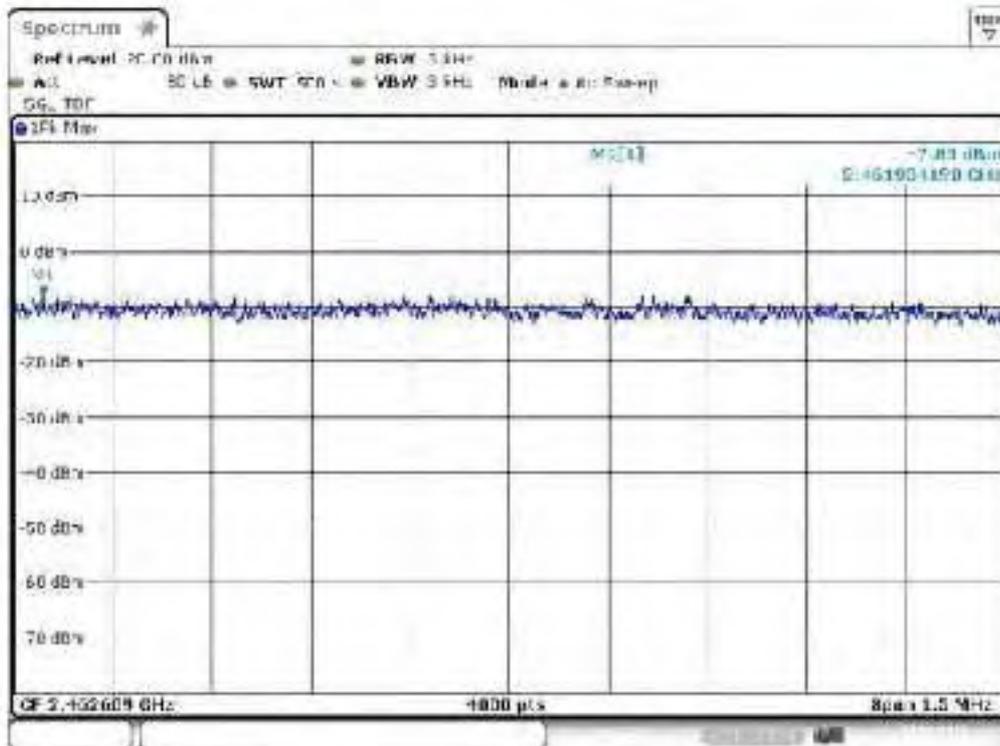
Plot 1: TX mode, lowest channel



Plot 2: TX mode, middle channel

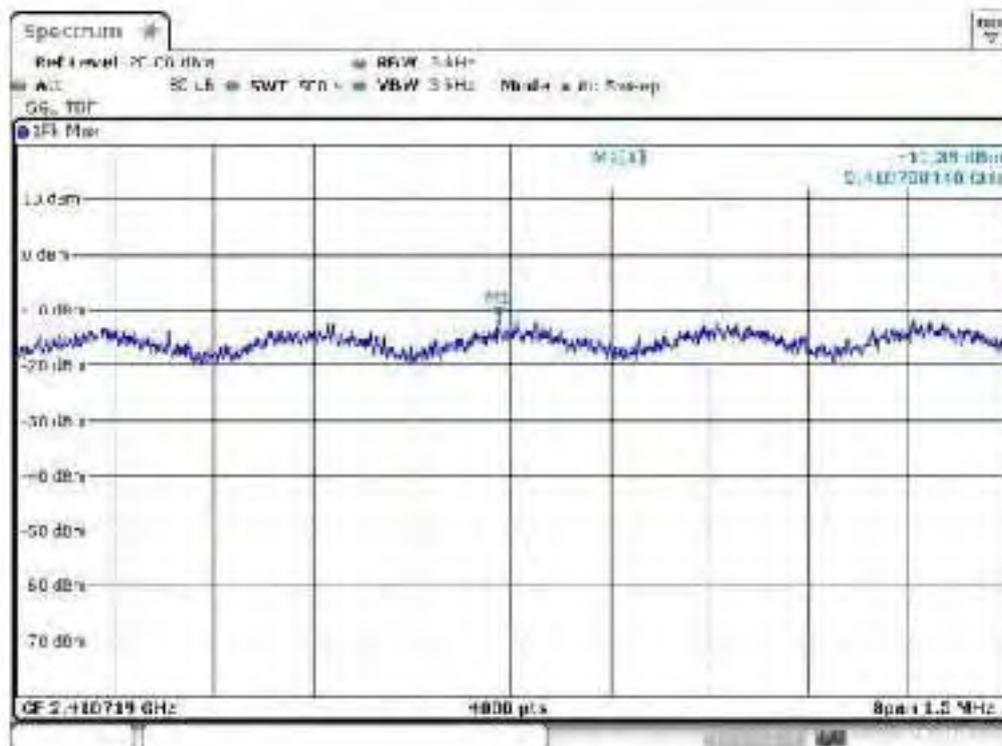


Plot 3: TX mode, highest channel

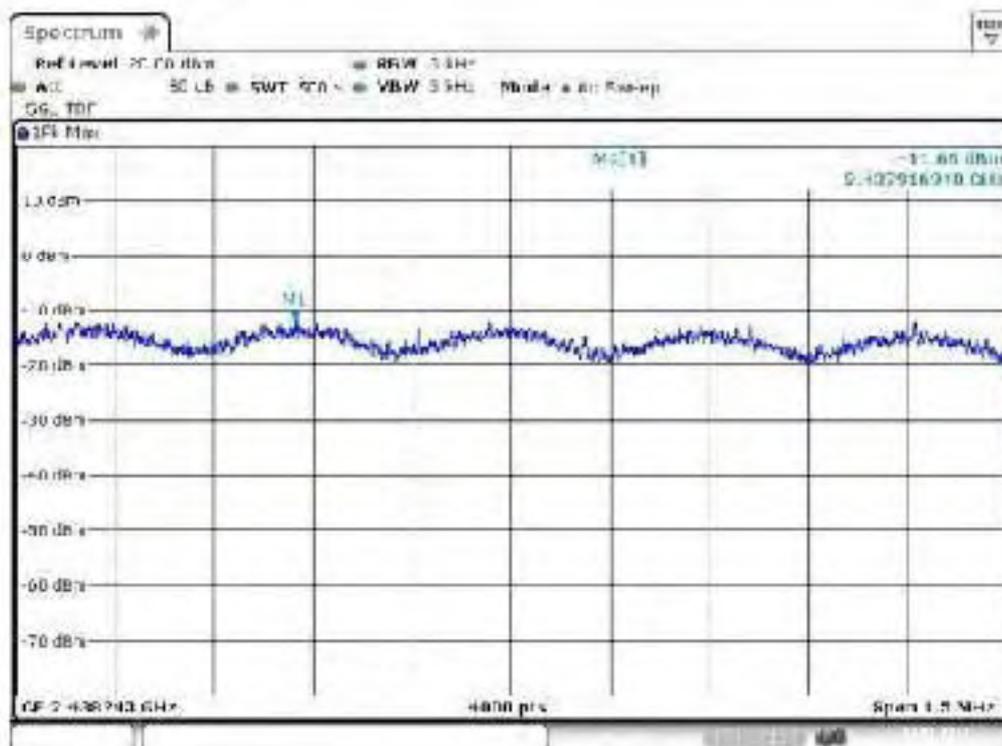


Plots: OFDM / g - mode

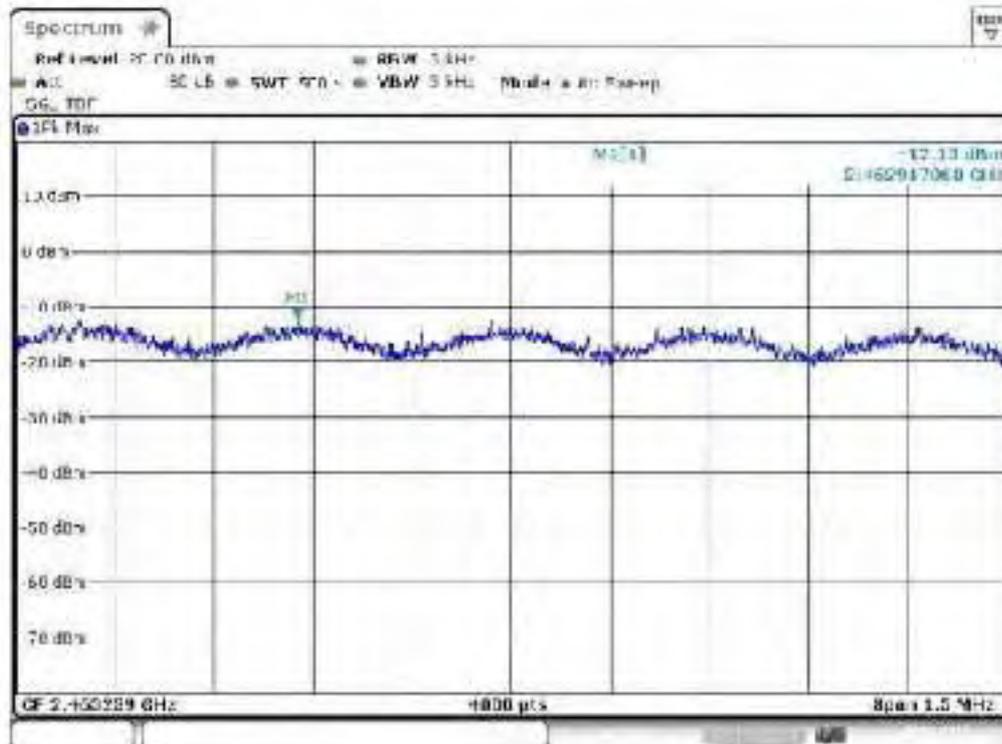
Plot 1: TX mode, lowest channel



Plot 2: TX mode, middle channel

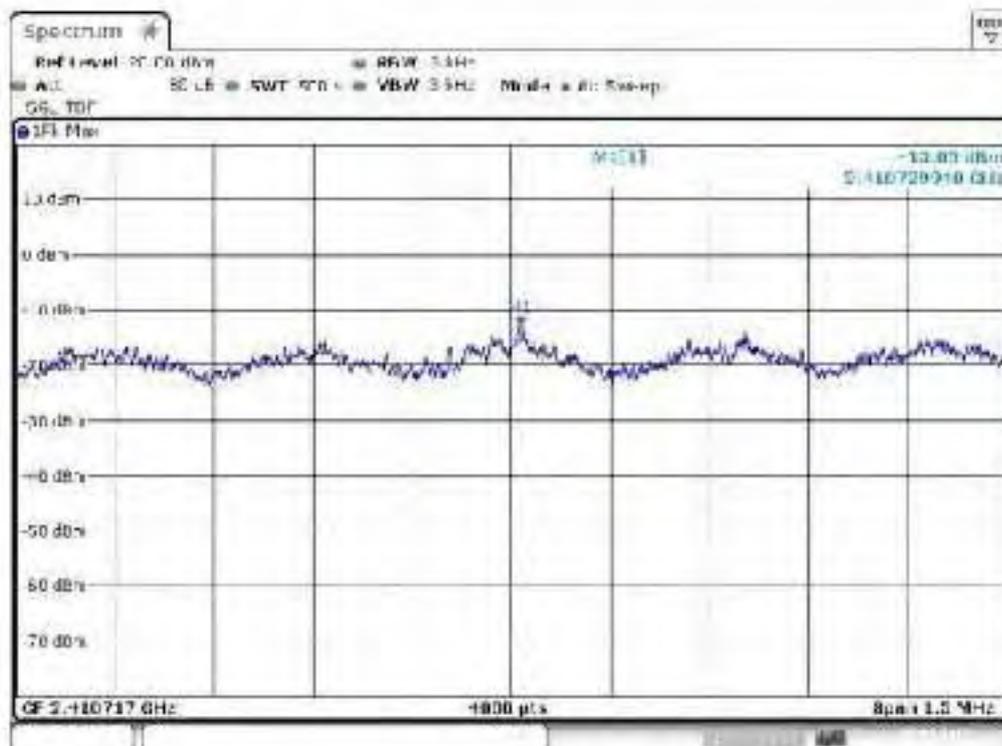


Plot 3: TX mode, highest channel

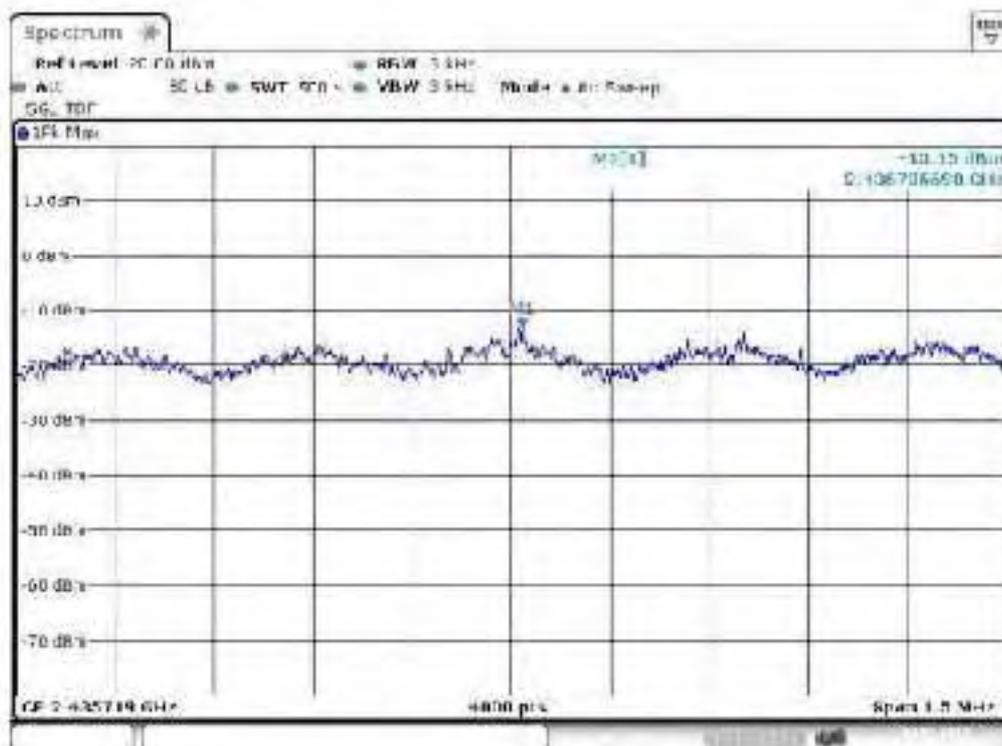


Plots: OFDM / n - mode

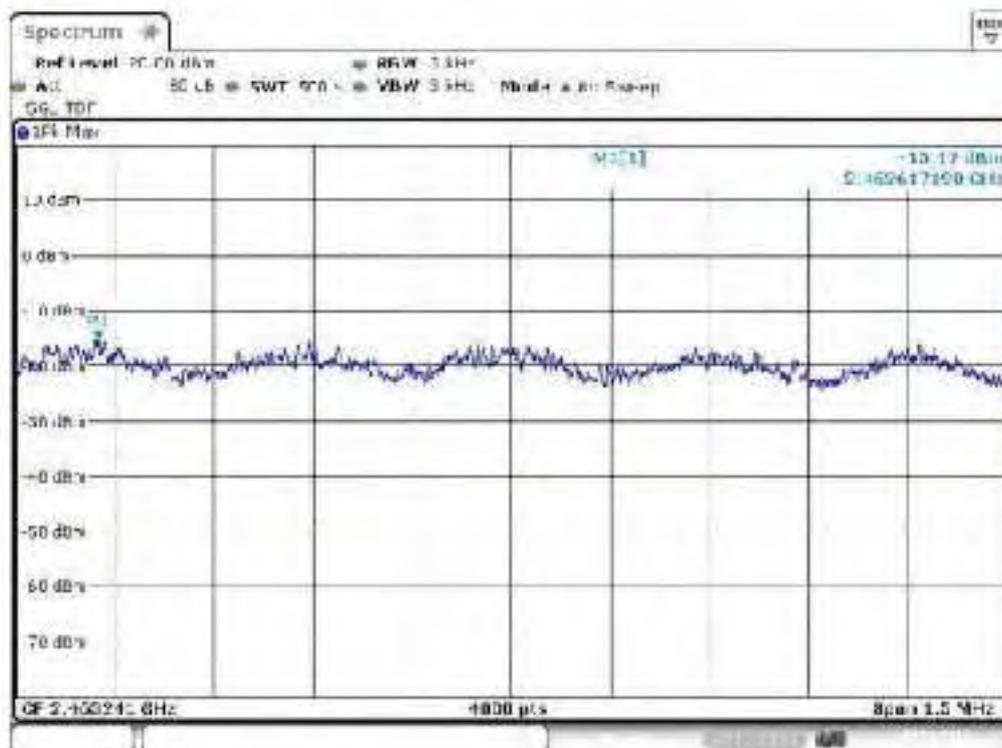
Plot 1: TX mode, lowest channel



Plot 2: TX mode, middle channel



Plot 3: TX mode, highest channel



9.5 Spectrum bandwidth 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:	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 of a FHSS System – 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.	

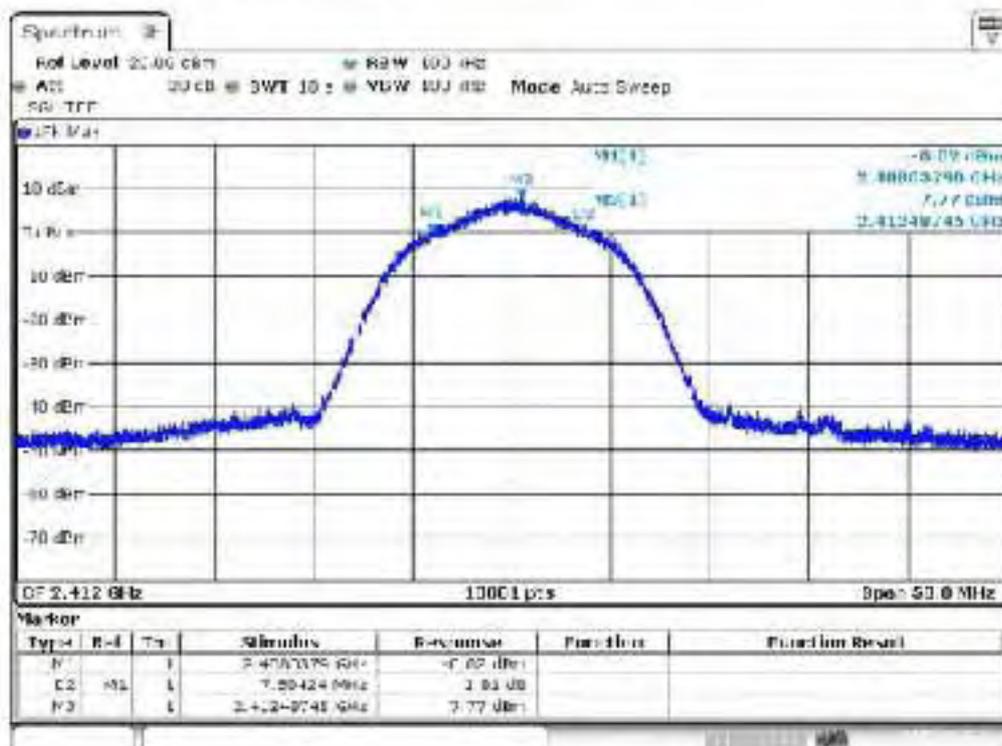
Results:

Modulation Frequency	6 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	7.60	7.54	7.54
OFDM / g – mode	15.11	15.45	15.11
OFDM / n – mode	17.58	17.54	17.62
Measurement uncertainty	± 100 kHz		

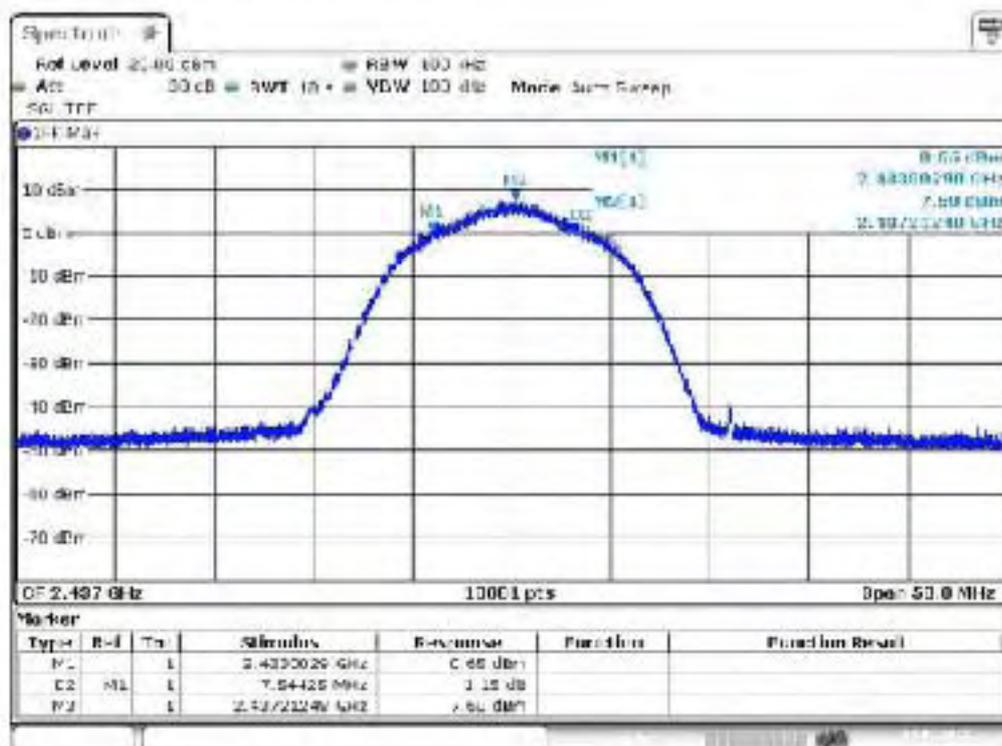
Result: The result of the measurement is passed.

Plots: DSSS / b - mode

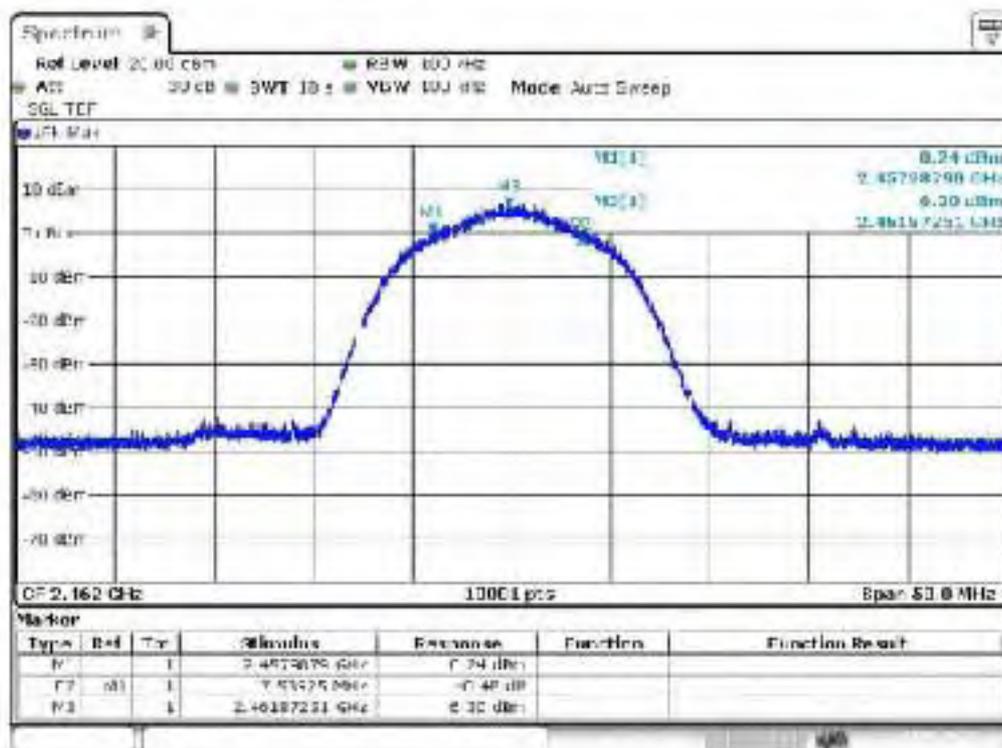
Plot 1: TX mode, lowest channel, 6 dB bandwidth



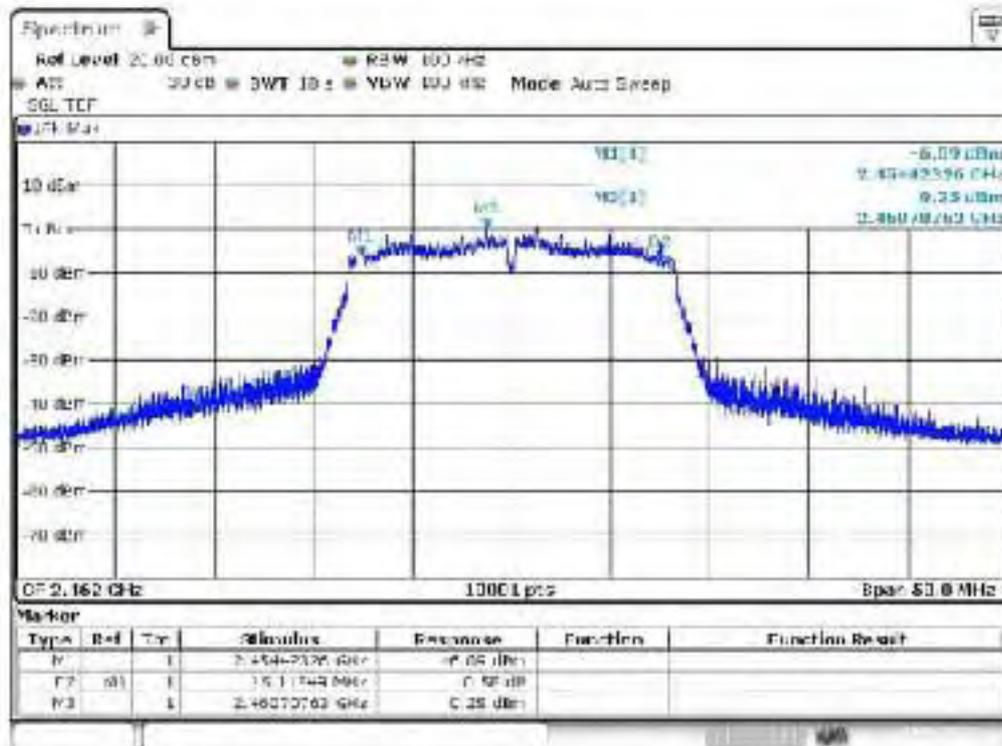
Plot 2: TX mode, middle channel, 6 dB bandwidth



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

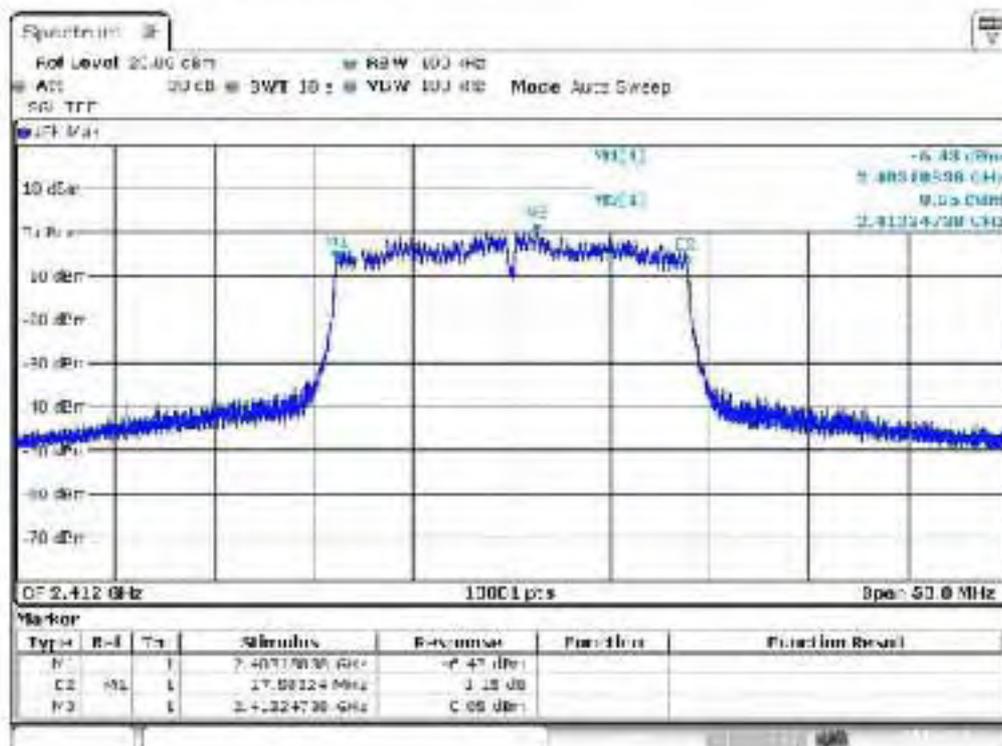


Plot 3: TX mode, highest channel, 6 dB bandwidth

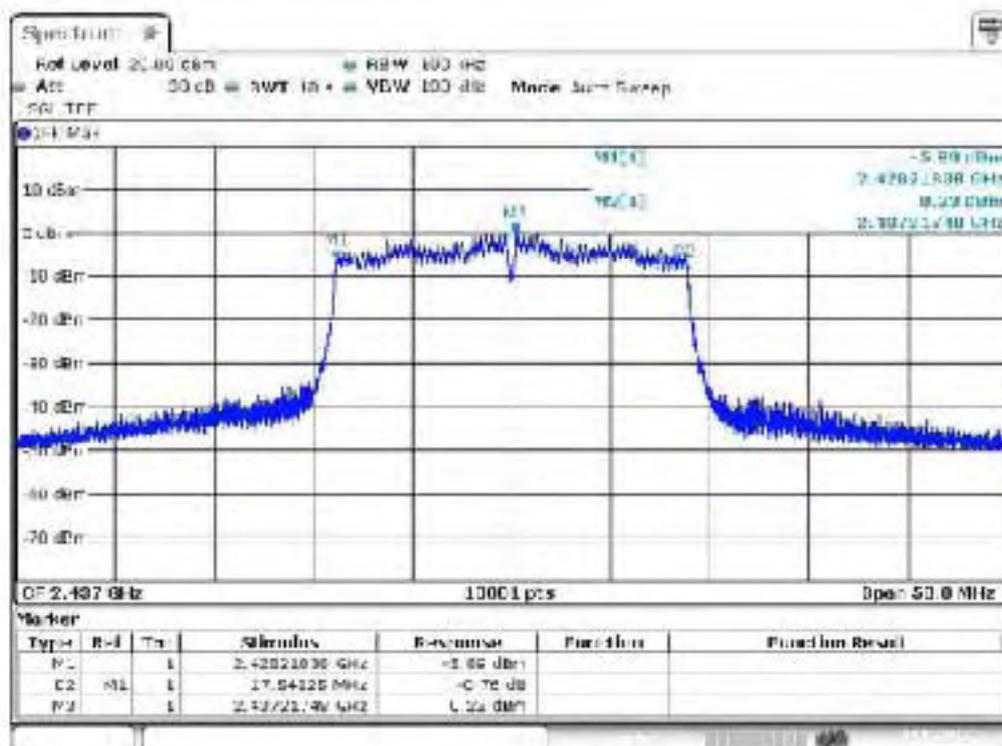


Plots: OFDM / n - mode

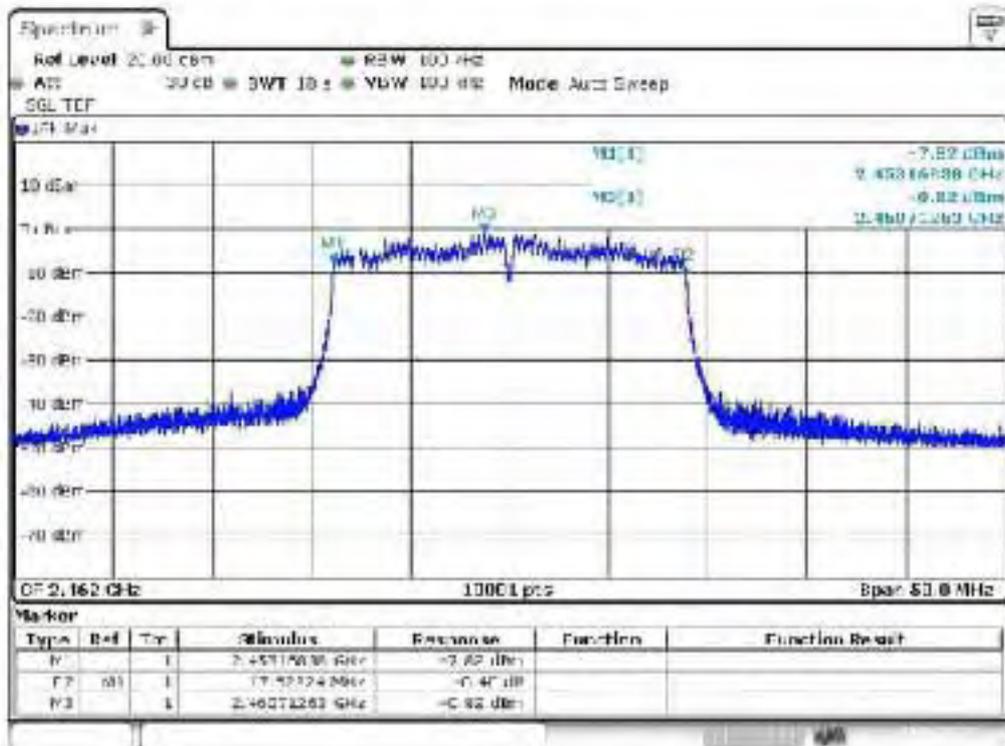
Plot 1: TX mode, lowest channel, 6 dB bandwidth



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



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



9.6 Spectrum bandwidth 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:	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 of a FHSS System – 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.	

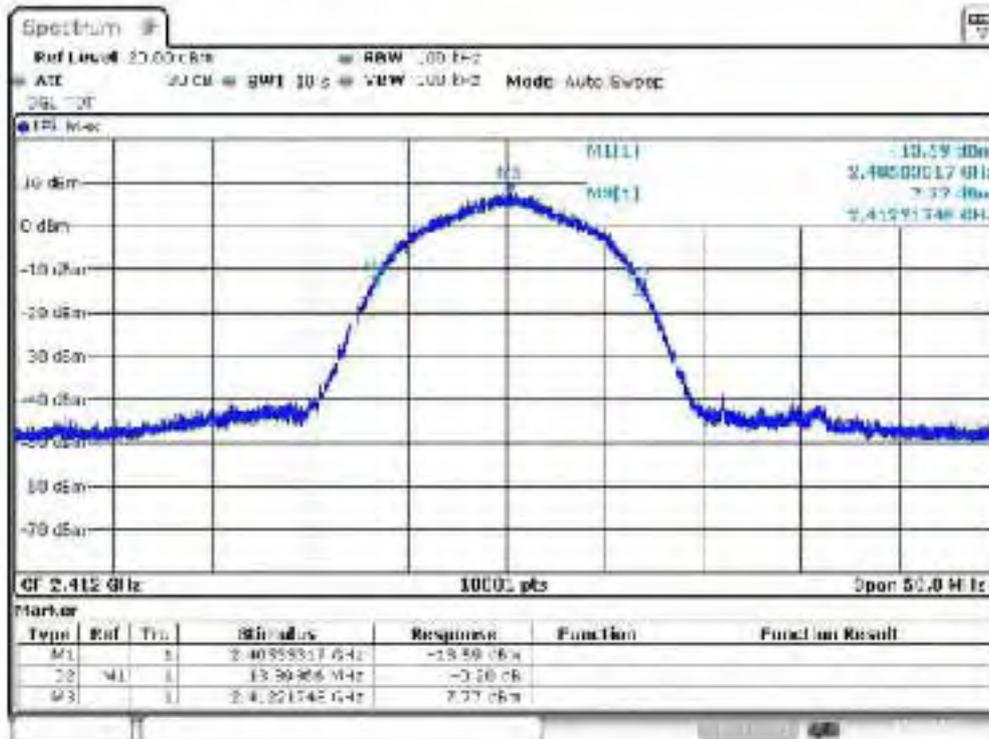
Results:

Modulation Frequency	20 dB BANDWIDTH [MHz]		
	2412 MHz	2437 MHz	2462 MHz
DSSS / b – mode	13.39	13.32	13.42
OFDM / g – mode	17.57	17.56	17.56
OFDM / n – mode	18.23	18.22	18.25
Measurement uncertainty	± 100 kHz		

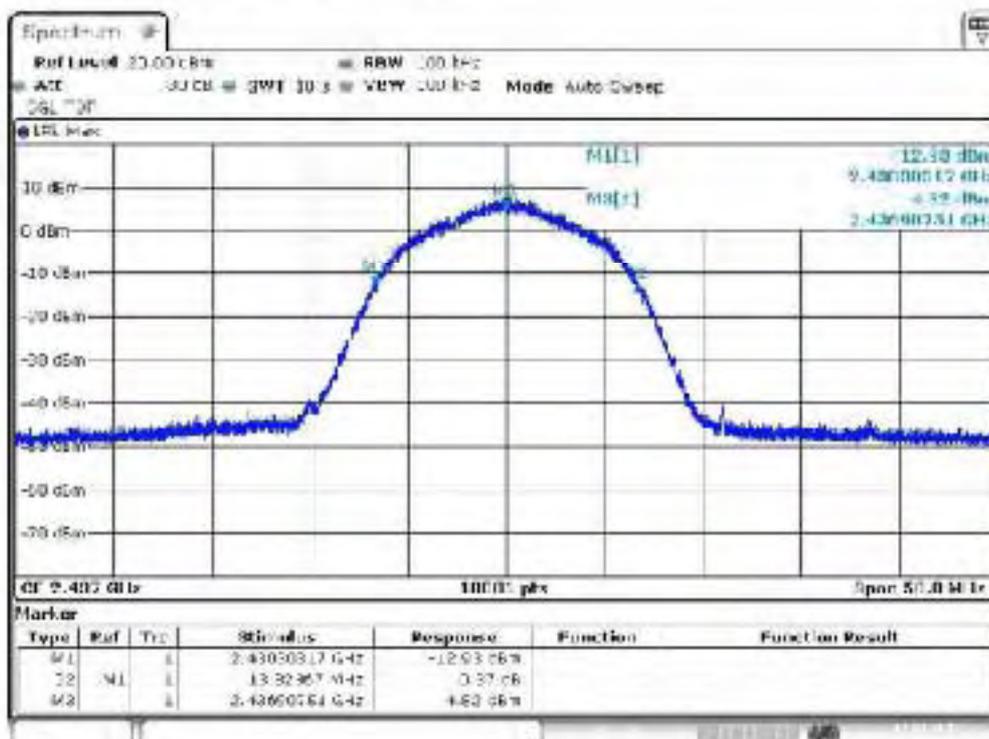
Result: The result of the measurement is passed.

Plots: DSSS / b - mode

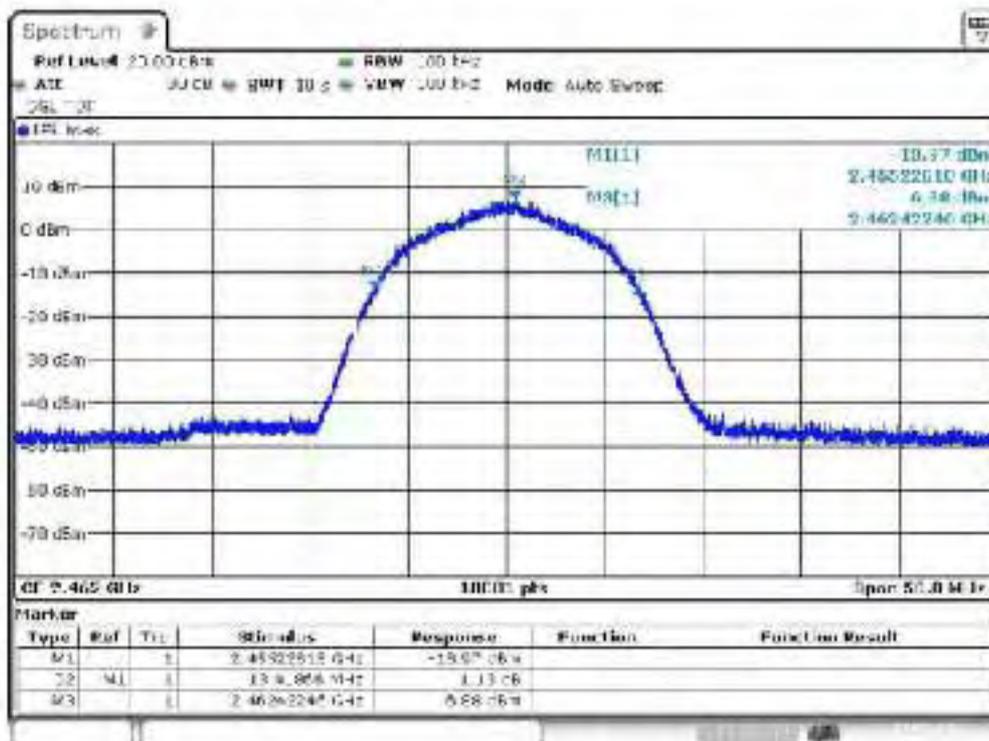
Plot 1: TX mode, lowest channel, 20 dB bandwidth



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

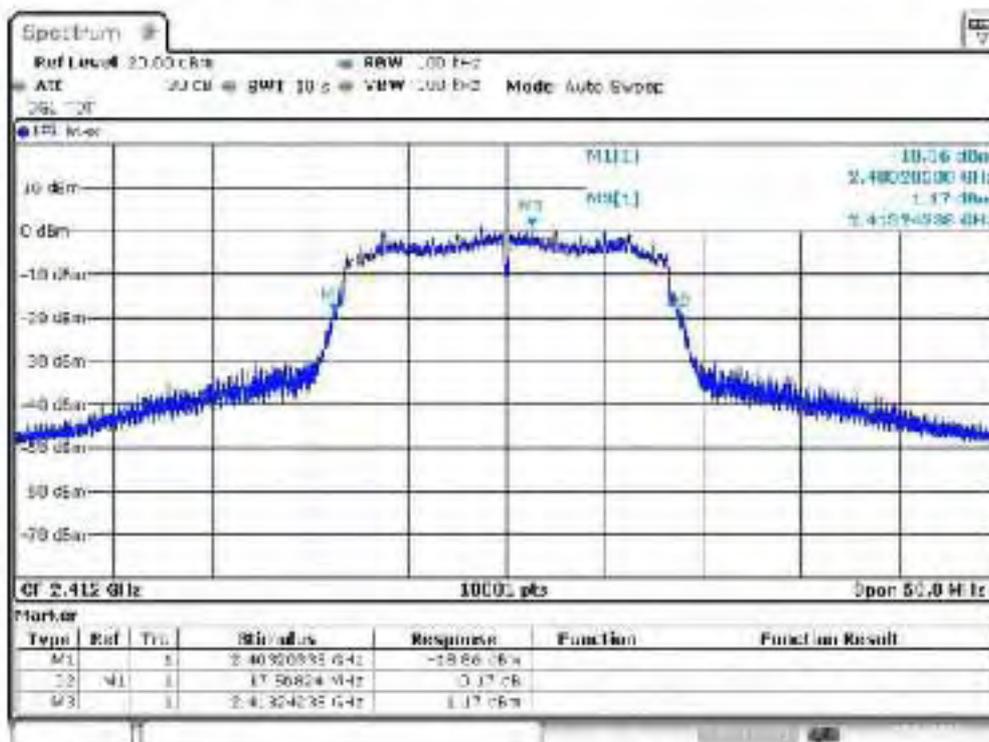


Plot 3: TX mode, highest channel, 20 dB bandwidth

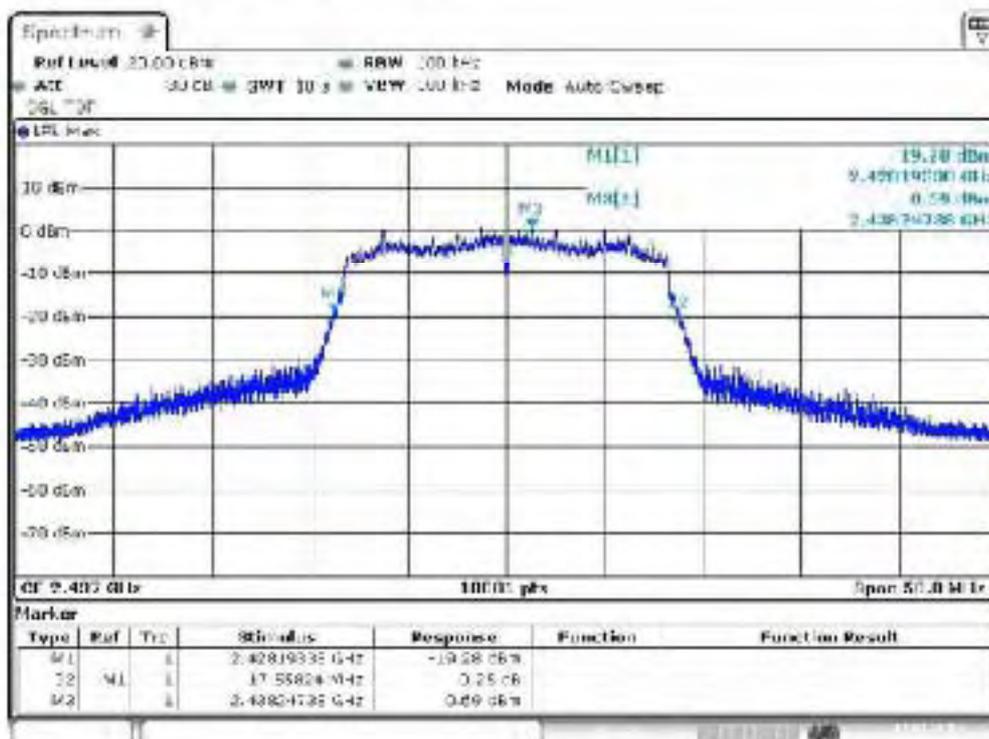


Plots: OFDM / q - mode

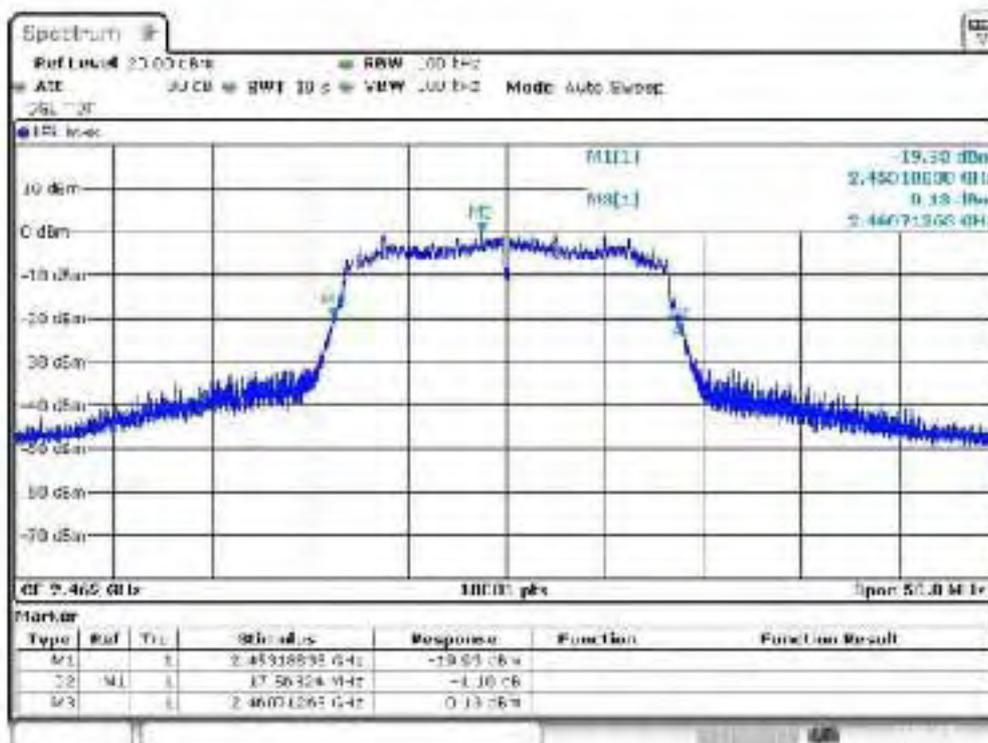
Plot 1: TX mode, lowest channel, 20 dB bandwidth



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

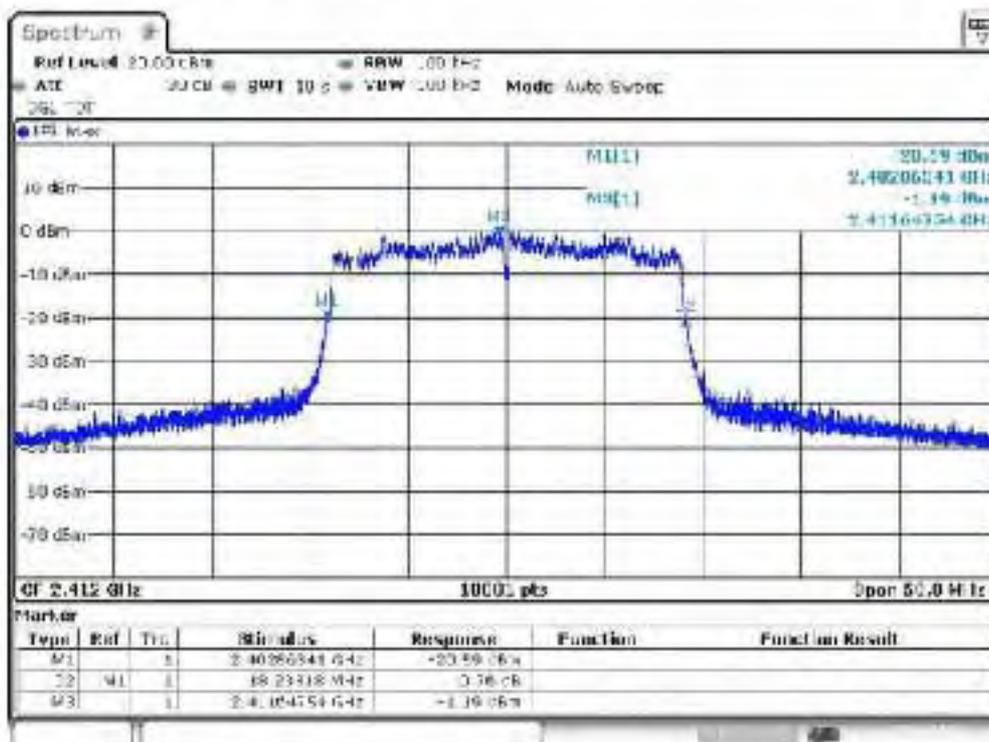


Plot 3: TX mode, highest channel, 20 dB bandwidth

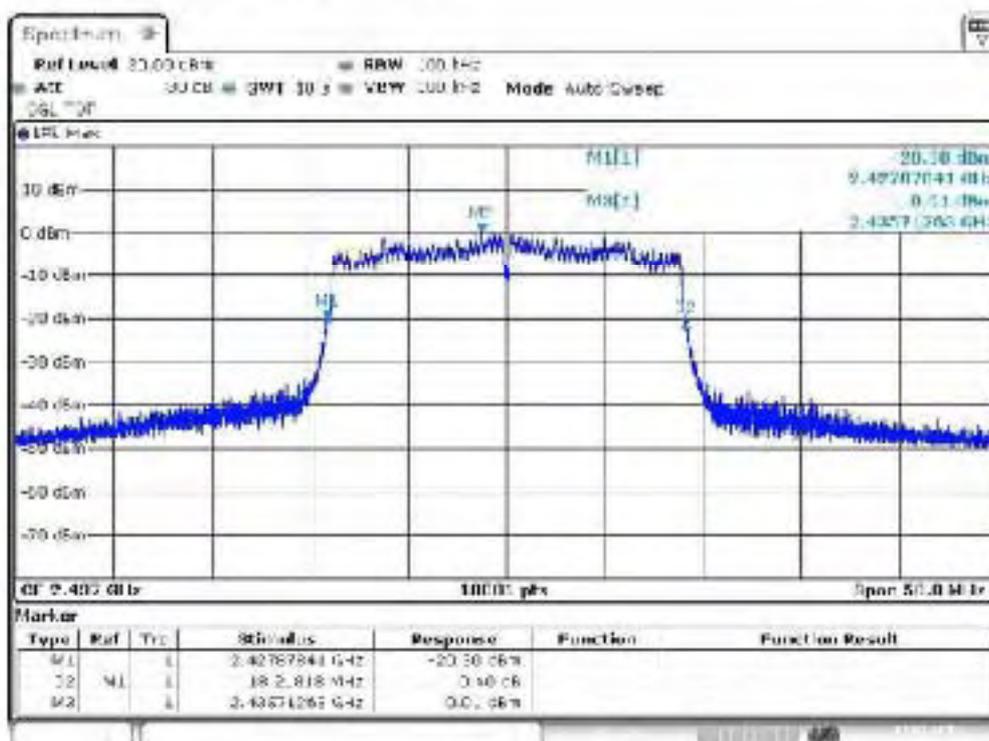


Plots: OFDM / n - mode

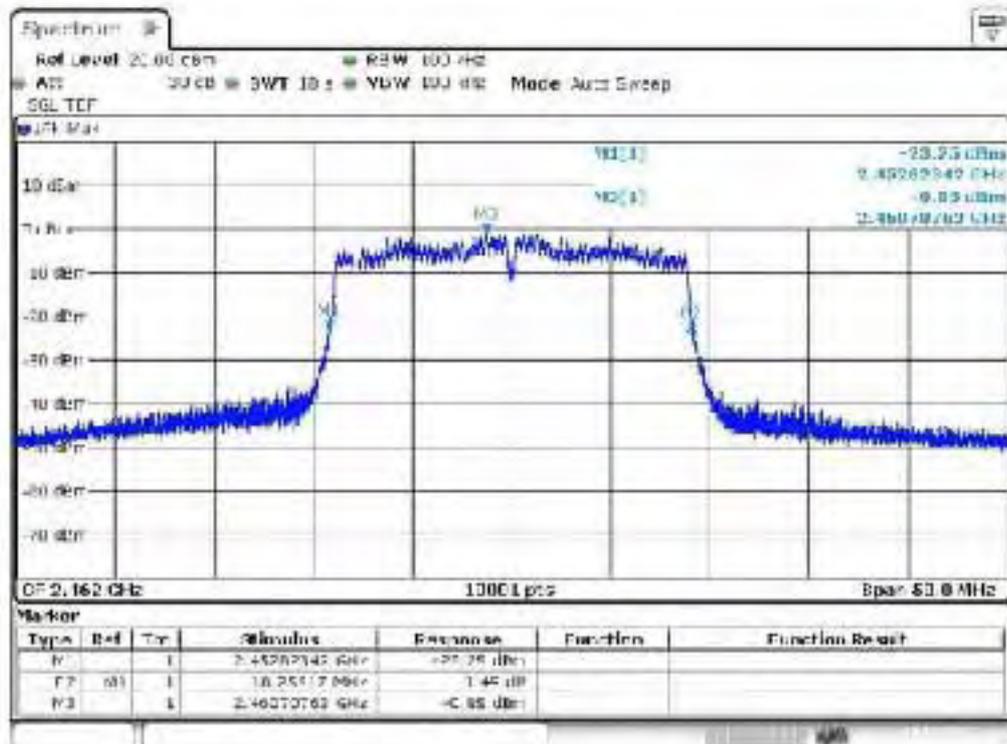
Plot 1: TX mode, lowest channel, 20 dB bandwidth



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:	Auto
Video bandwidth:	500 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, A8.5
Band Edge Compliance Conducted	
<p>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.</p>	

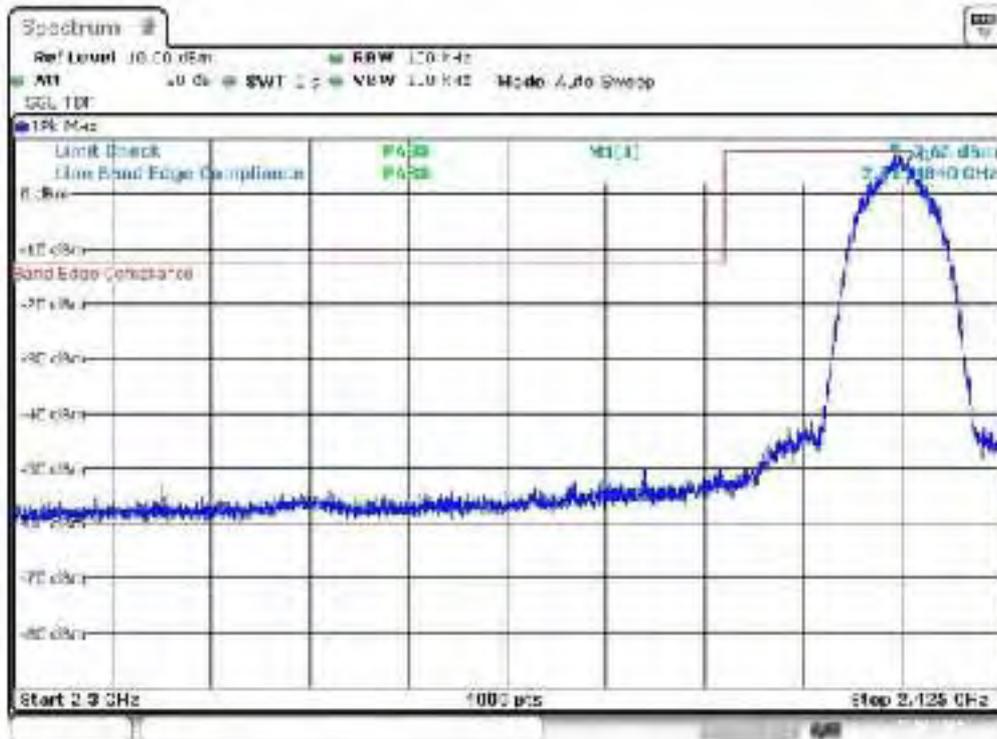
Results:

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		

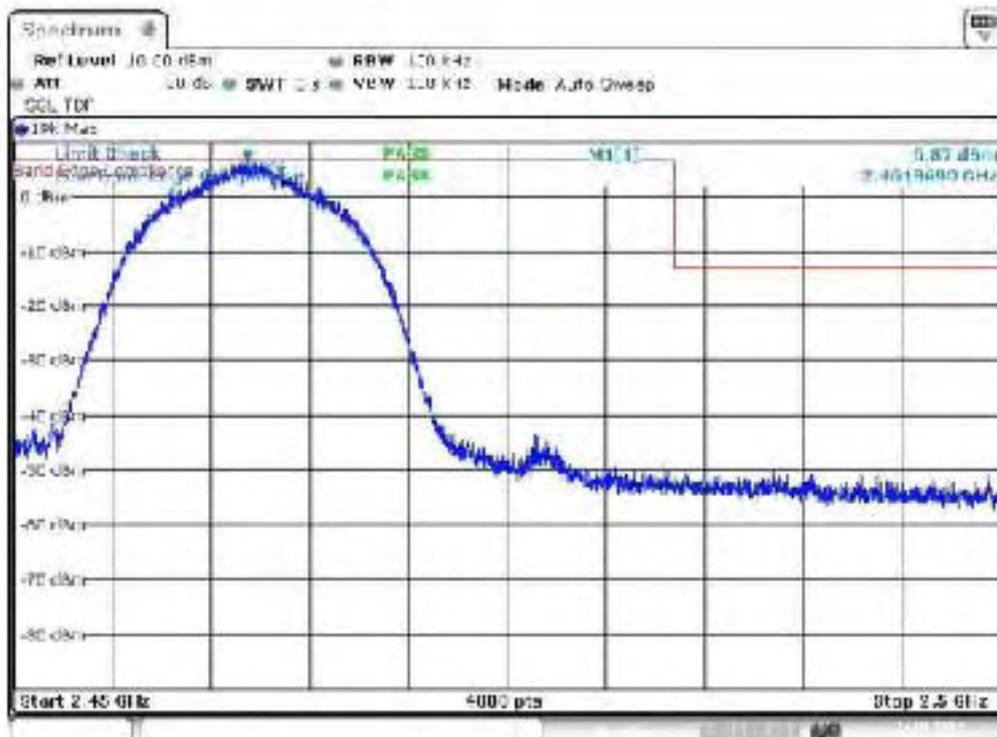
Result: [The result of the measurement is passed.](#)

Plots: DSSS / b - mode

Plot 1: TX mode, lower band edge

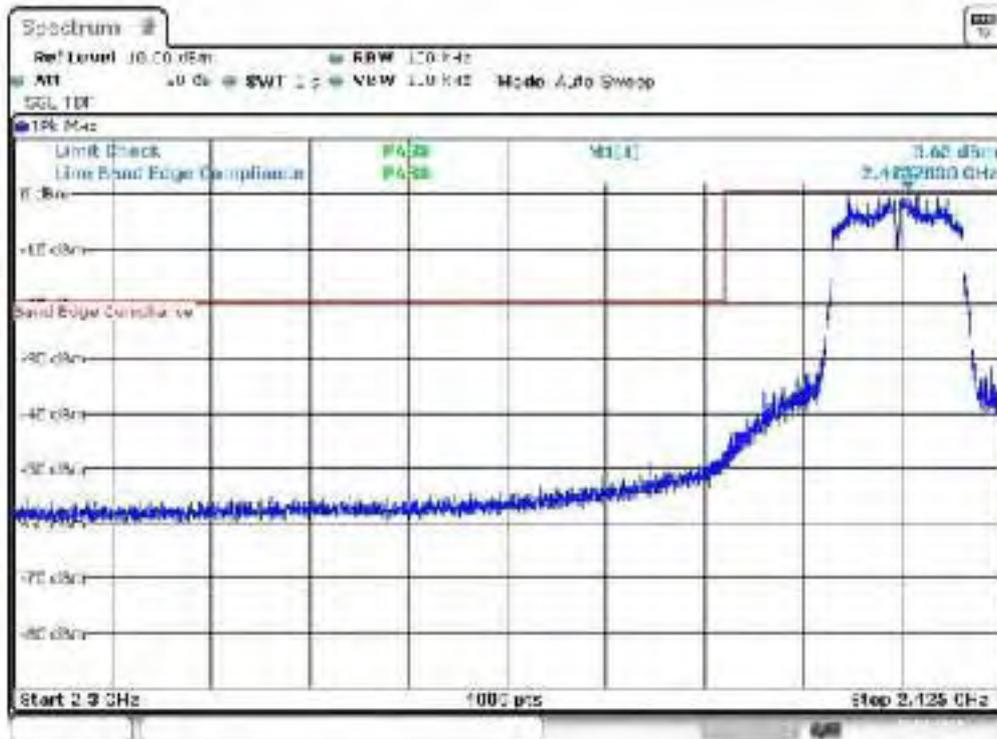


Plot 2: TX mode, upper band edge

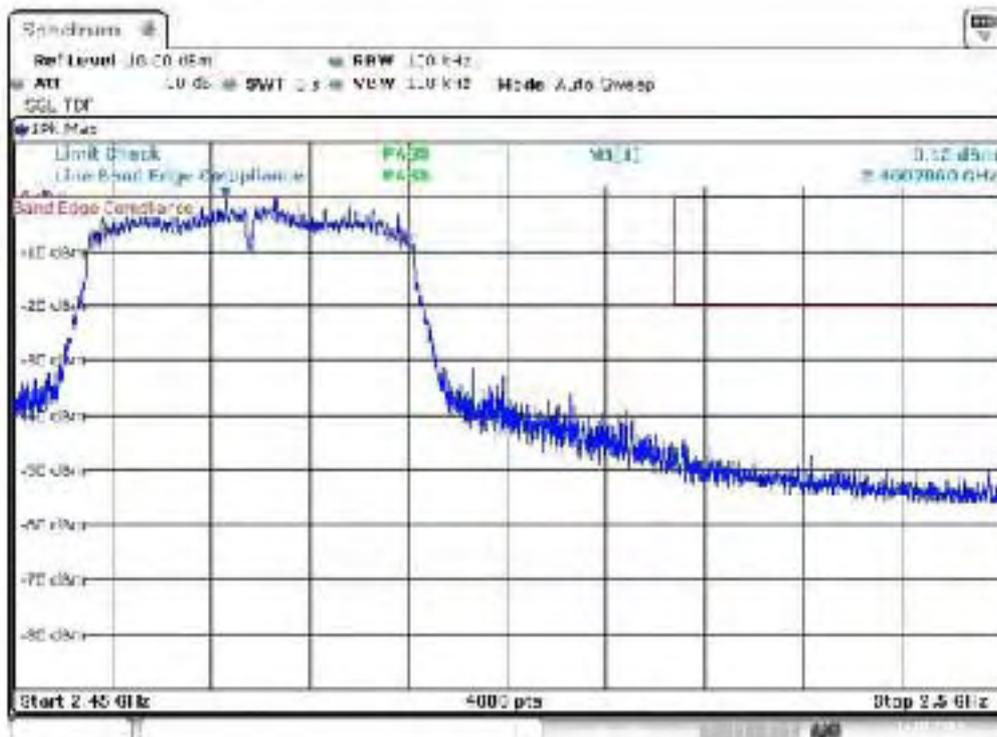


Plots: OFDM / q - mode

Plot 1: TX mode, lower band edge

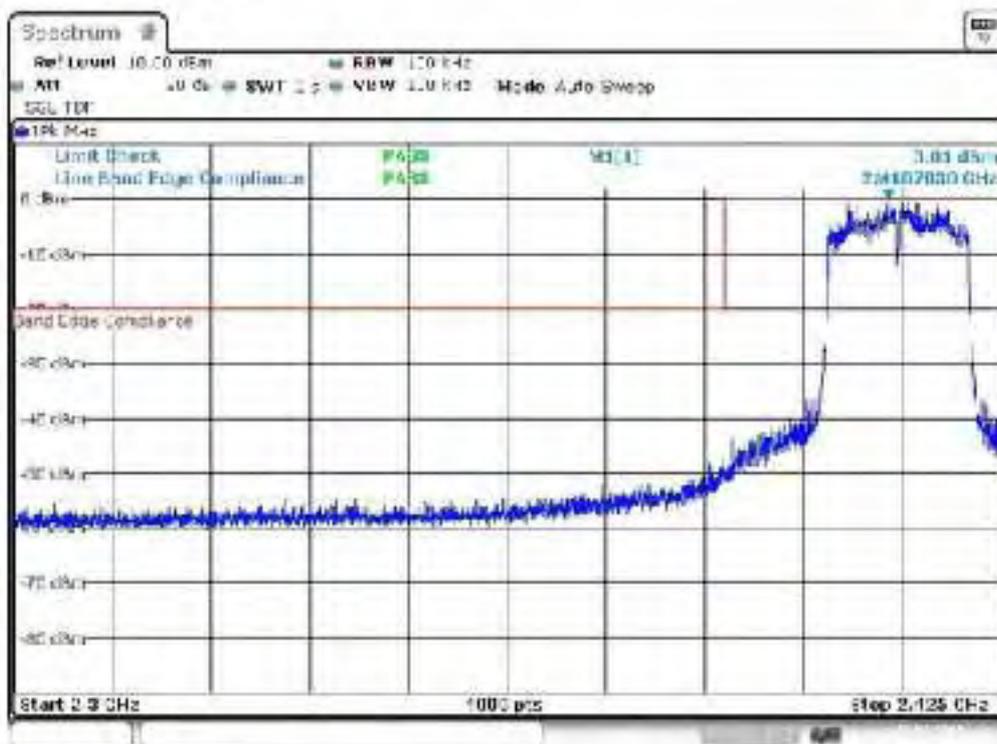


Plot 2: TX mode, upper band edge

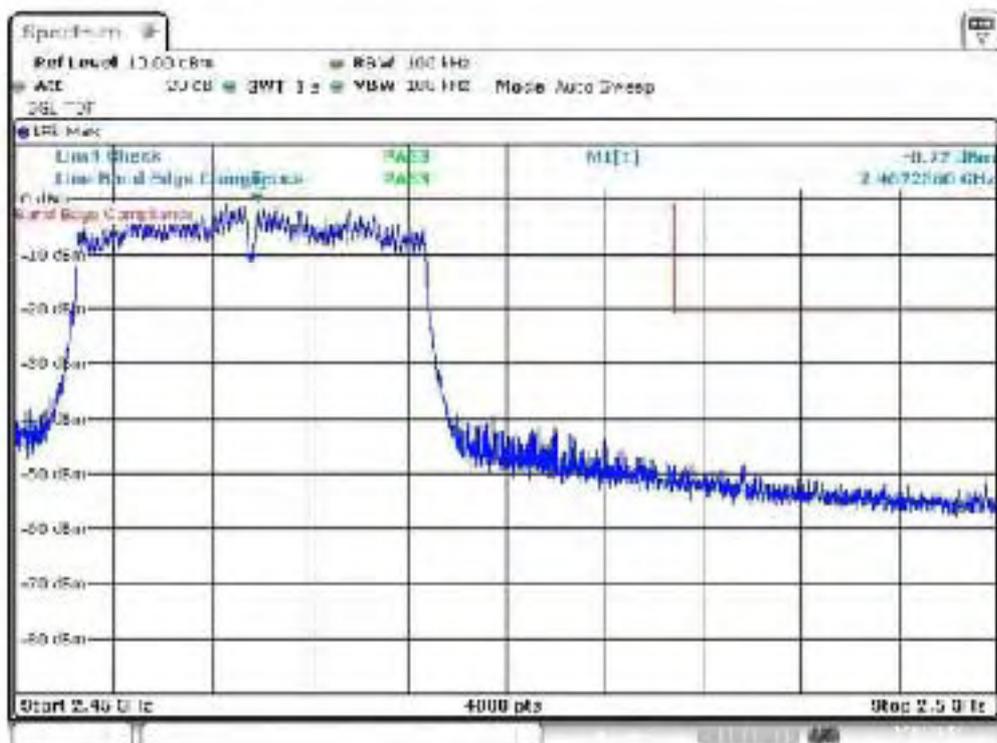


Plots: OFDM / n - mode

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 tuned 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	
<p>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)).</p>	
54 dB μ V/m AVG	

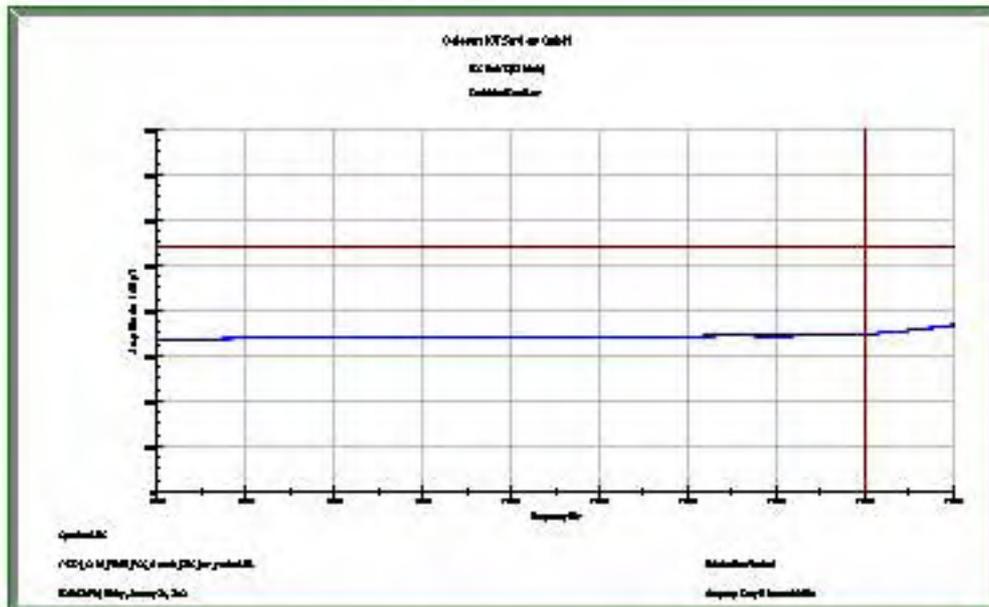
Results:

Scenario Modulation	Band Edge Compliance Conducted [dB]		
	DSSS / b – mode	OFDM / g – mode	OFDM / n – mode
Lower Band Edge – Channel 1	> 10 dB	> 10 dB	> 10 dB
Upper Band Edge – Channel 11	> 10 dB	> 10 dB	> 10 dB
Measurement uncertainty	± 3 dB		

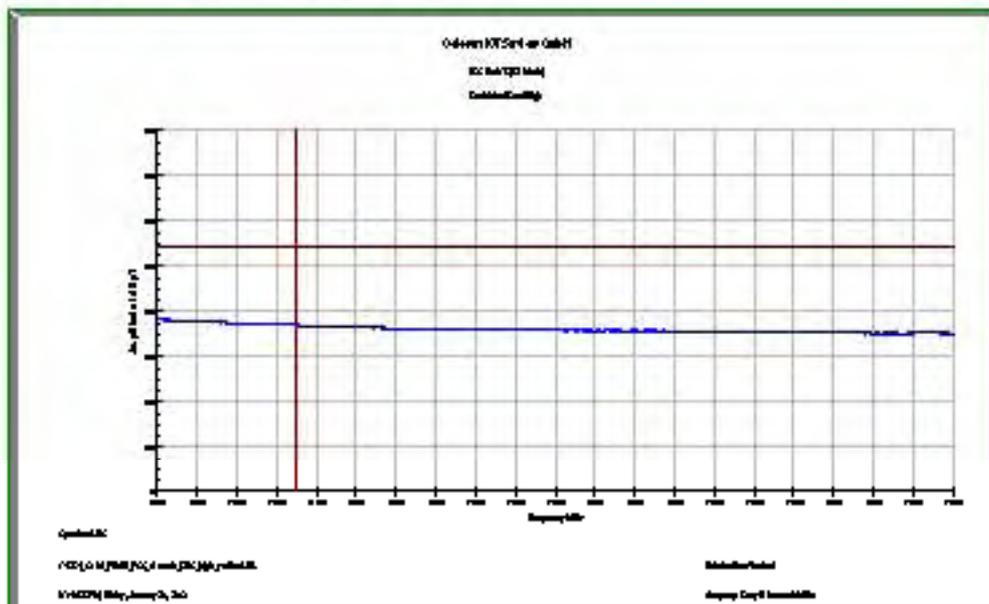
Result: [The result of the measurement is passed.](#)

Plots: OFDM / q – mode

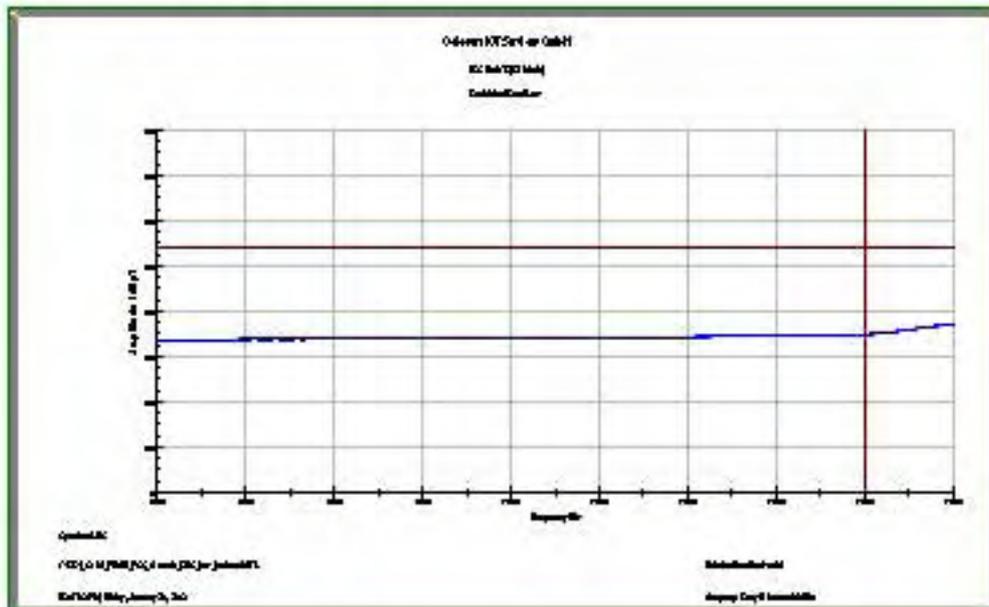
Plot 1: TX mode, lower band edge, vertical polarization



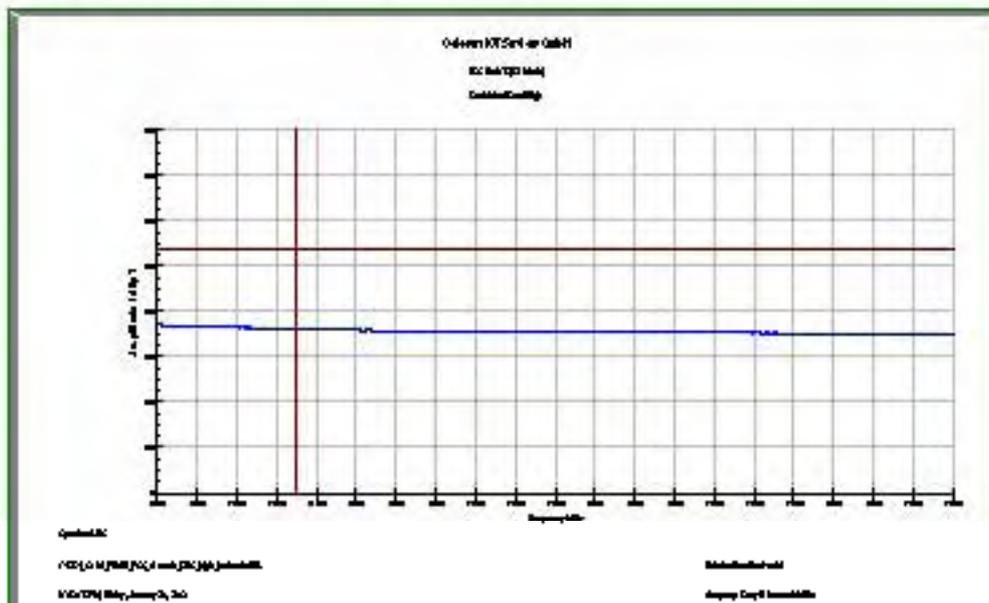
Plot 2: TX mode, upper band edge, vertical polarization



Plot 3: TX mode, lower band edge, horizontal polarization

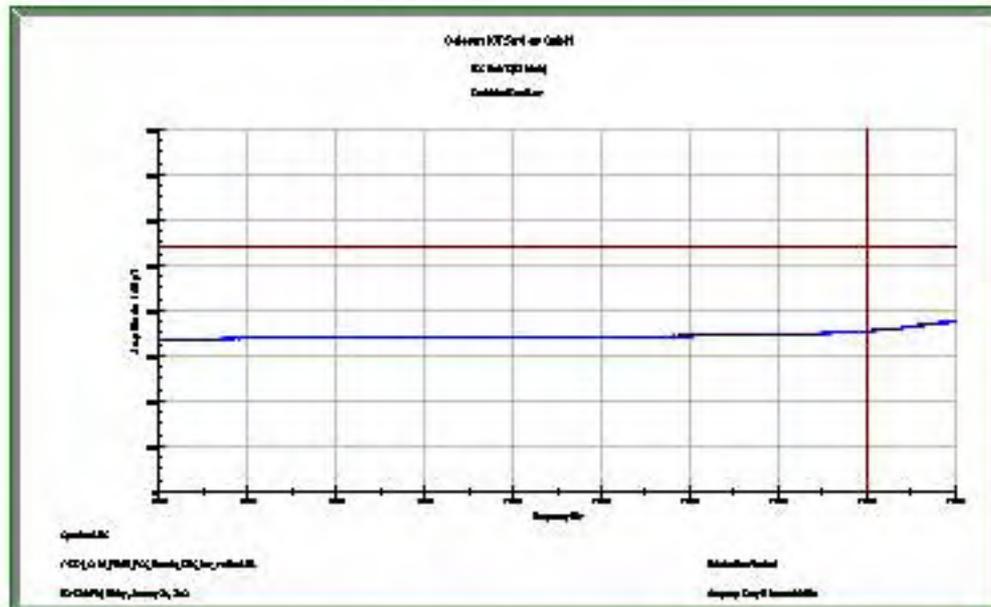


Plot 4: TX mode, upper band edge, horizontal polarization

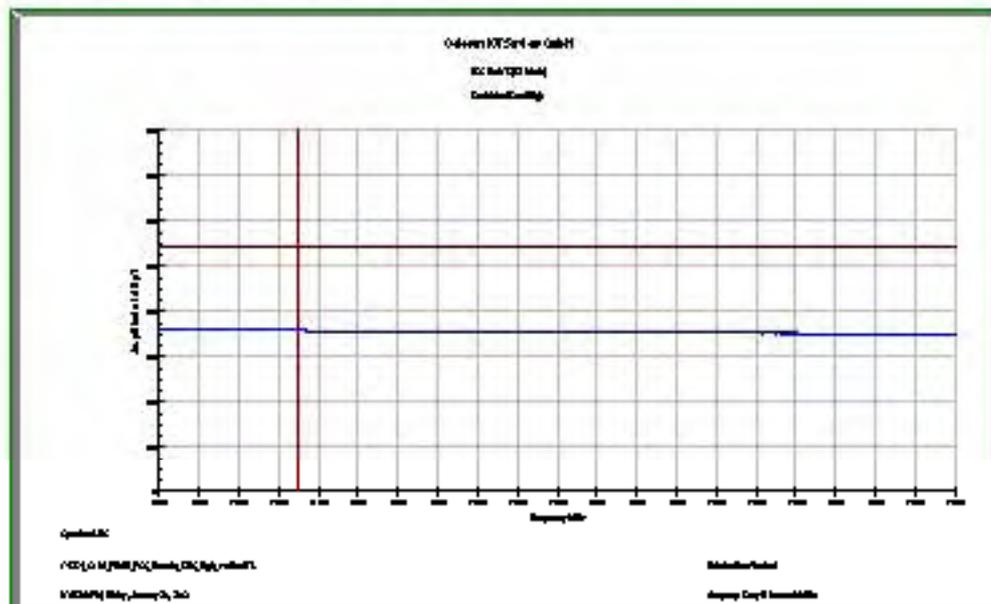


Plots: OFDM / n - mode

Plot 1: TX mode, lower band edge, vertical polarization



Plot 2: TX mode, upper band edge, vertical 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: 100 kHz F > 1 GHz: 100 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	
<p>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</p>	

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		7.57	30 dBm		Operating frequency
		<i>No critical peaks found</i>			complies
			-20 dBc		
2437		7.57	30 dBm		Operating frequency
		<i>No critical peaks found</i>			complies
			-20 dBc		
2462		7.52	30 dBm		Operating frequency
		<i>No critical peaks found</i>			complies
			-20 dBc		
Measurement uncertainty			± 3 dB		

Result: The result of the measurement is 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		1.74	30 dBm		Operating frequency
		<i>No critical peaks found</i>			complies
			-20 dBc		
2437		1.74	30 dBm		Operating frequency
		<i>No critical peaks found</i>			complies
			-20 dBc		
2462		0.82	30 dBm		Operating frequency
		<i>No critical peaks found</i>			complies
			-20 dBc		
Measurement uncertainty			± 3 dB		

Result: The result of the measurement is passed.

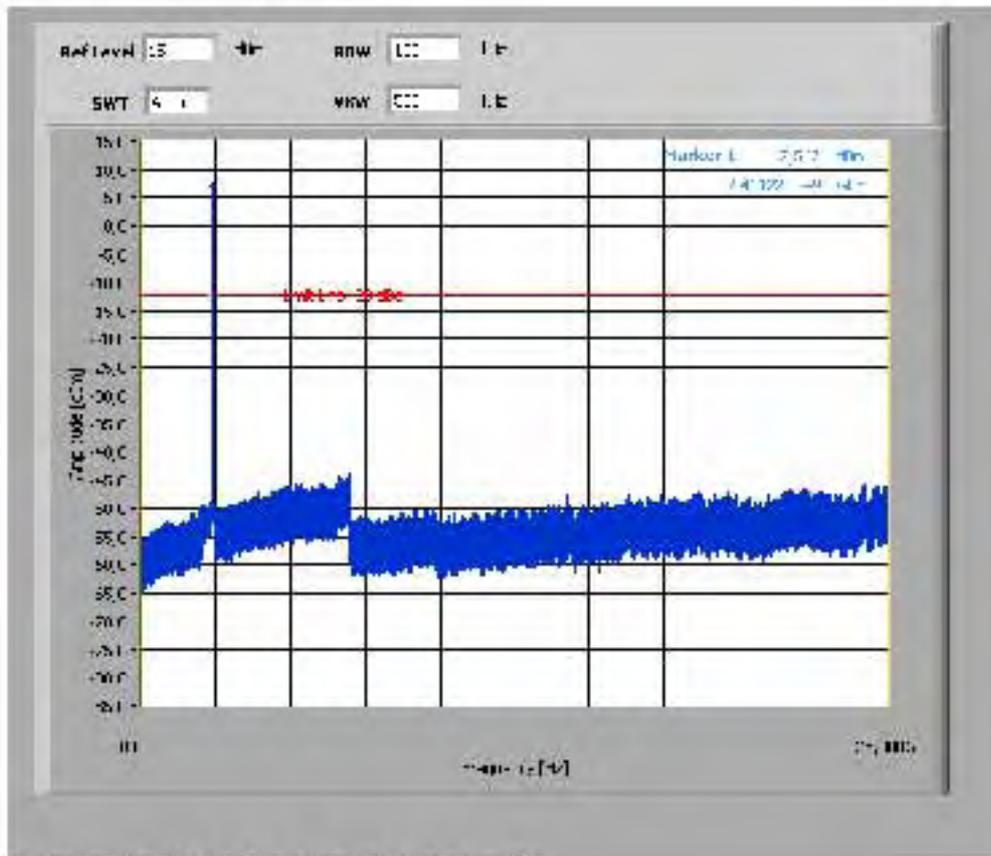
Results: OFDM / n – mode

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		0.85	30 dBm		Operating frequency
<i>No critical peaks found</i>					complies
			-20 dBc		
2437		0.85	30 dBm		Operating frequency
<i>No critical peaks found</i>					complies
			-20 dBc		
2462		0.03	30 dBm		Operating frequency
<i>No critical peaks found</i>					complies
			-20 dBc		
Measurement uncertainty			± 3 dB		

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

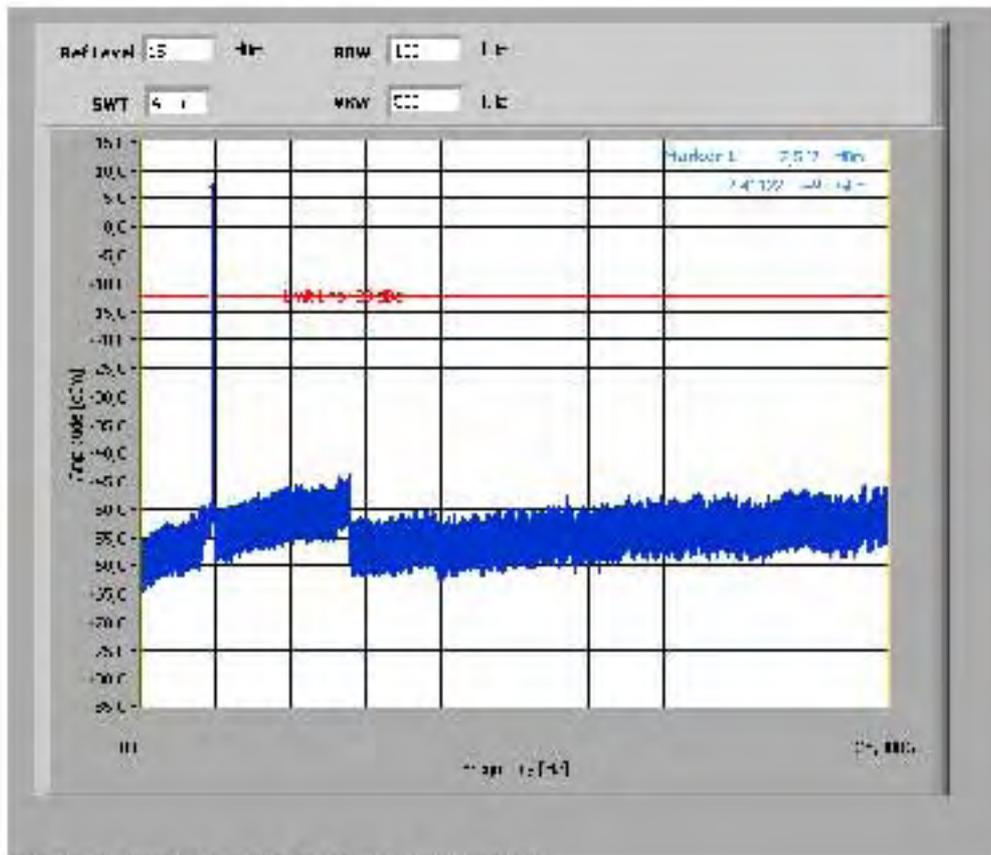
Plots: DSSS / b - mode

Plot 1: TX mode, lowest channel, up to 25 GHz



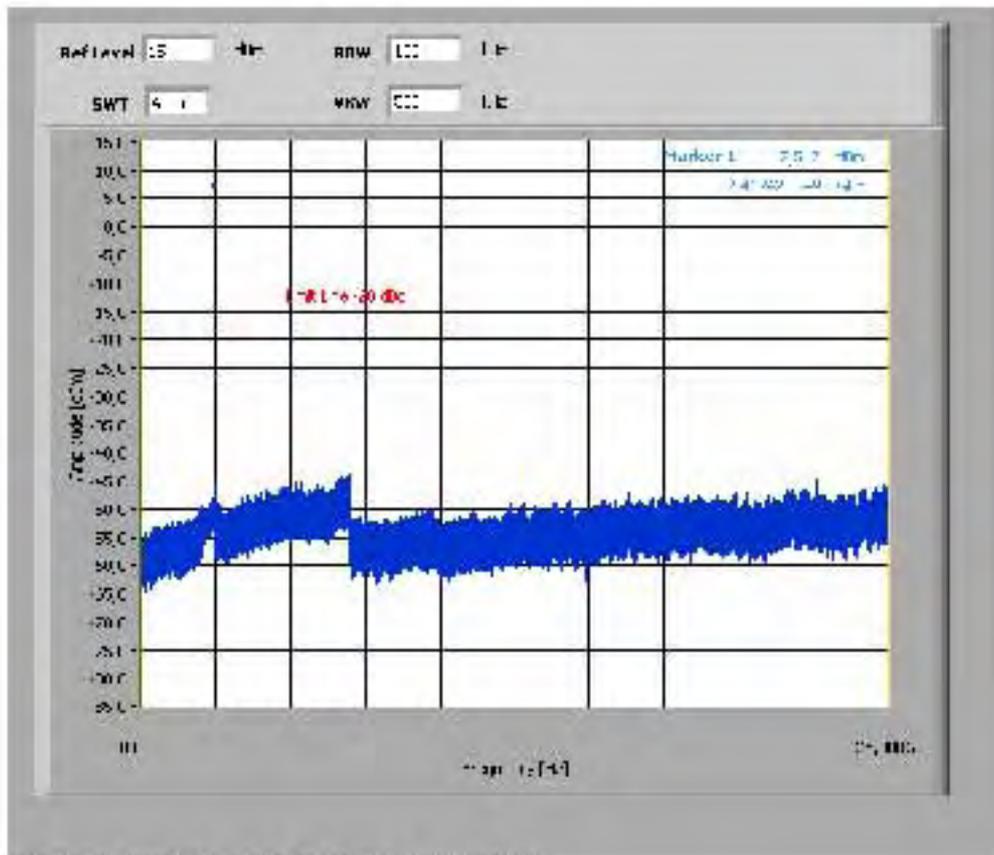
The peak at the beginning of the plot is the LO from the SA.

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



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

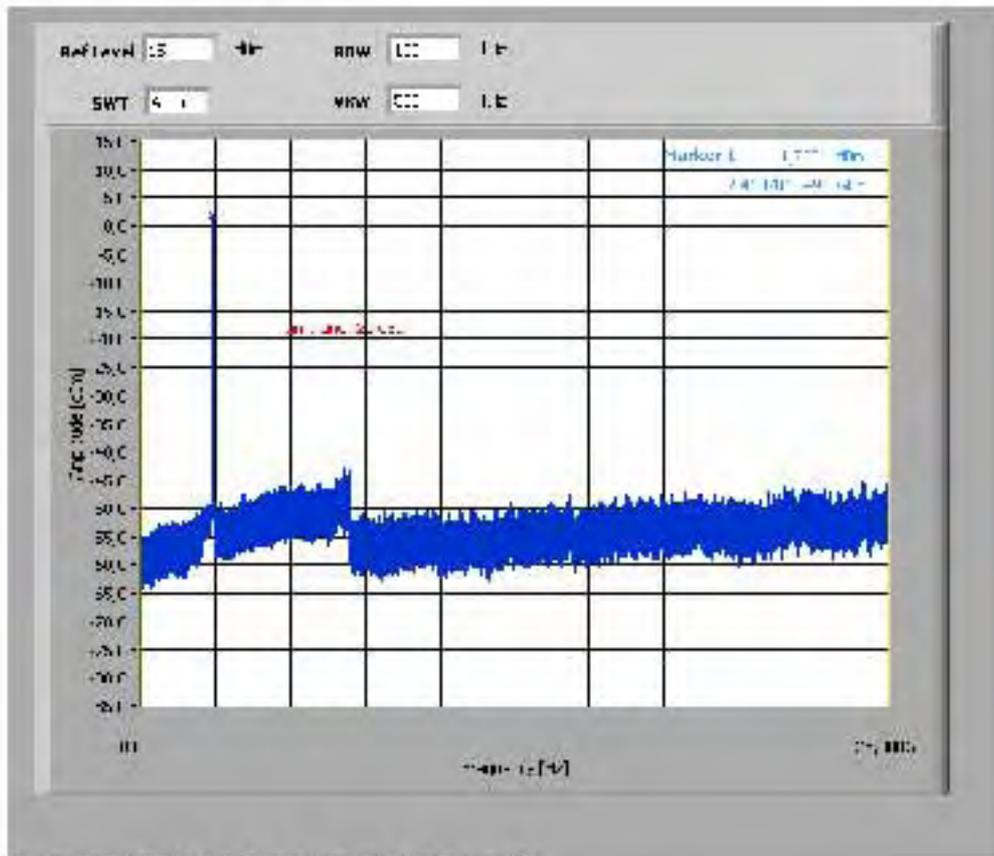
Plot 3: TX mode, highest channel, up to 25 GHz



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

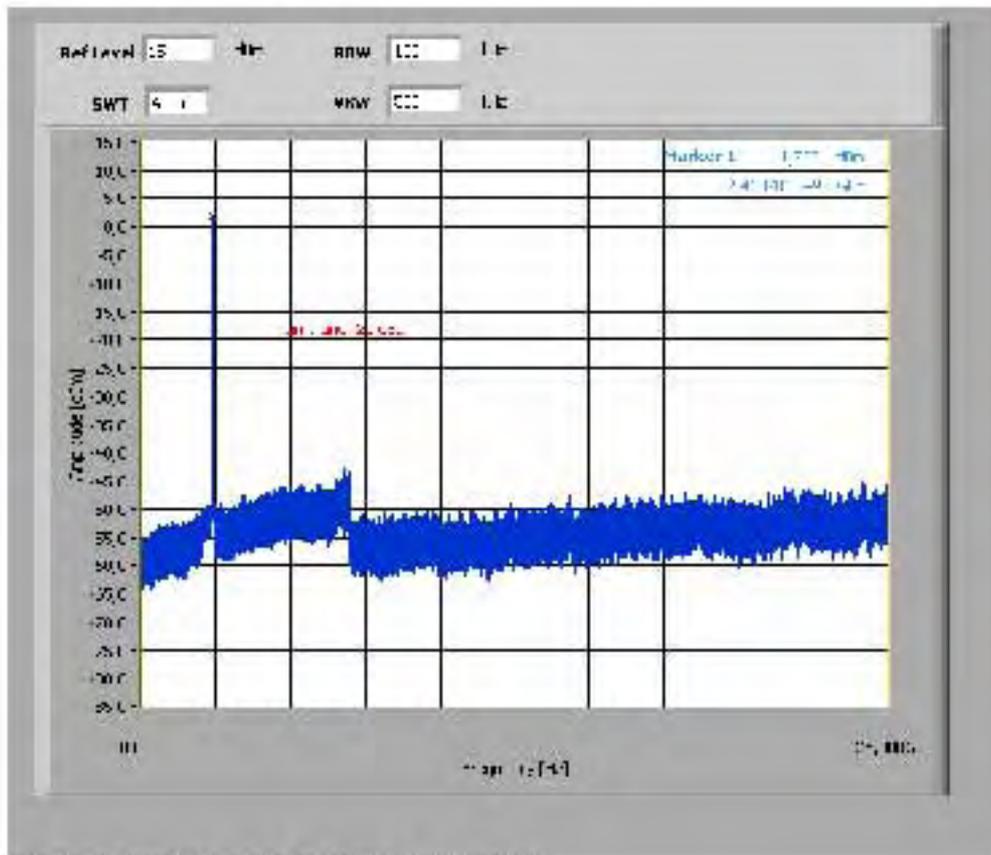
Plots: OFDM / q - mode

Plot 1: TX mode, lowest channel, up to 25 GHz



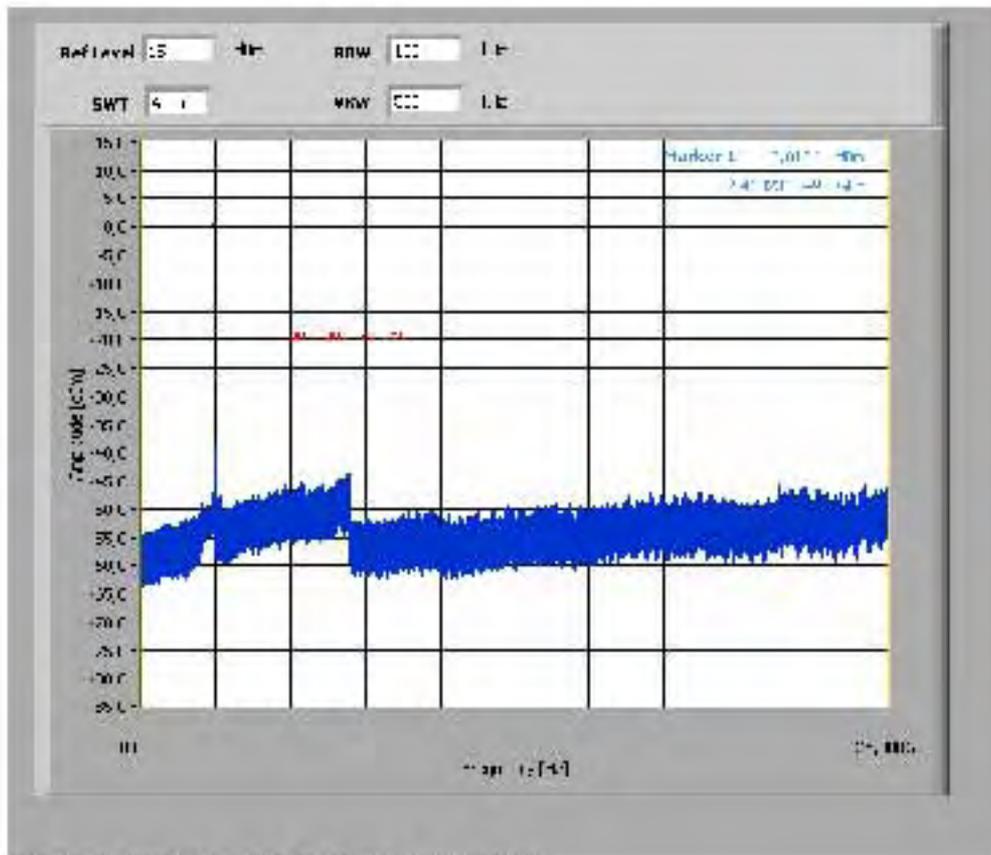
The peak at the beginning of the plot is the LO from the SA.

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



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

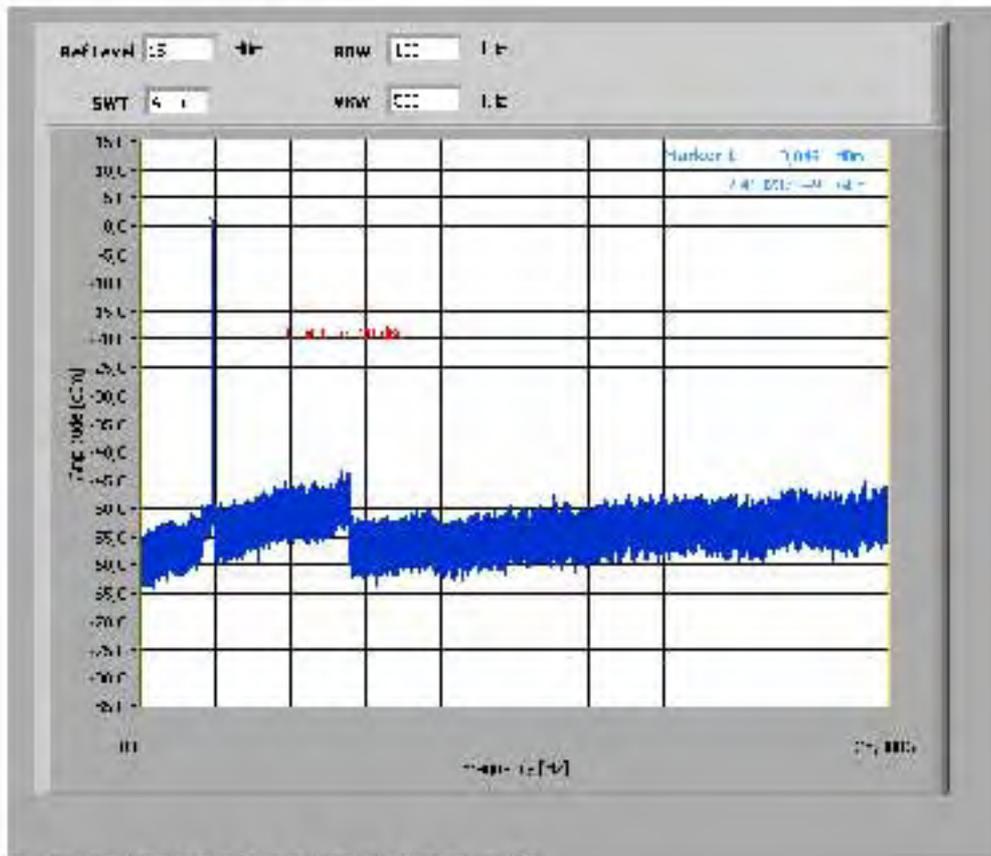
Plot 3: TX mode, highest channel, up to 25 GHz



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

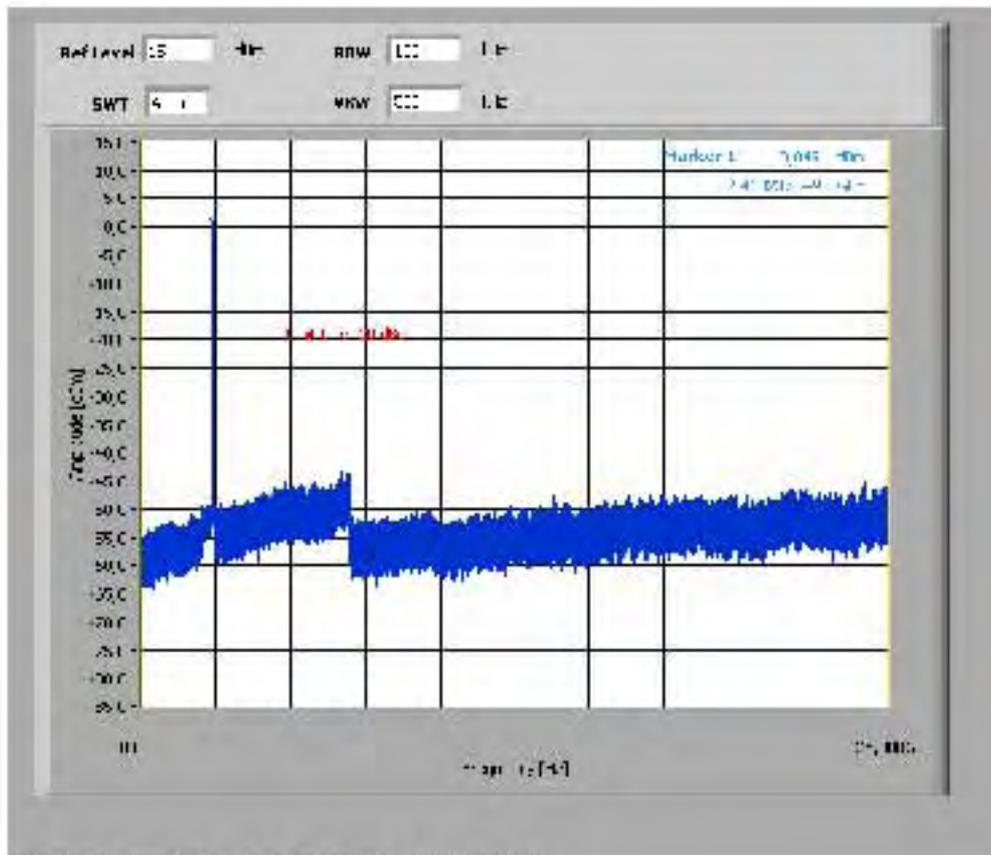
Plots: OFDM / n - mode

Plot 1: TX mode, lowest channel, up to 25 GHz



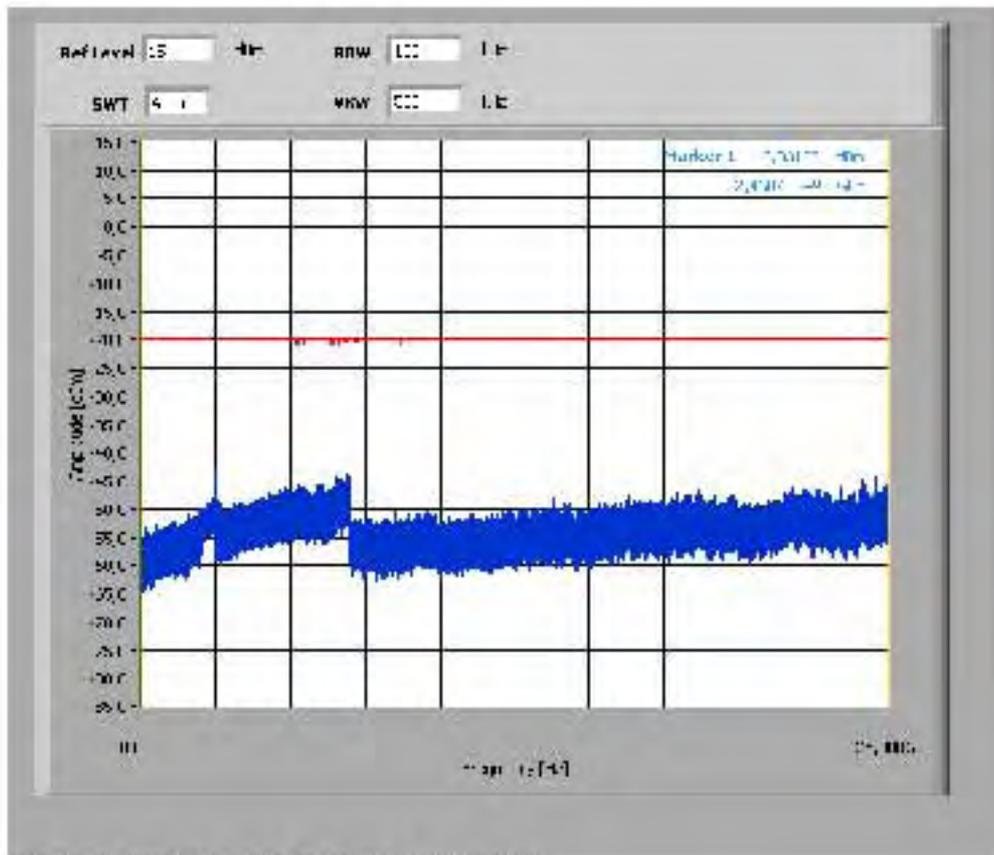
The peak at the beginning of the plot is the LO from the SA.

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	<input checked="" type="checkbox"/> DSSS b – mode <input checked="" type="checkbox"/> OFDM g – mode <input checked="" type="checkbox"/> 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			
<p>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)).</p>			
§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 [dB μ V/m]								
DSSS – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]
No critical peaks found			No critical peaks found			No critical peaks found		
Measurement uncertainty			± 3 dB					

Result: The result of the measurement is passed.

Results: OFDM / g – mode

TX Spurious Emissions Radiated [dB μ V/m]								
OFDM – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]
No critical peaks found			No critical peaks found			No critical peaks found		
Measurement uncertainty			± 3 dB					

Result: The result of the measurement is passed.

Results: OFDM / n – mode

TX Spurious Emissions Radiated [dB μ V/m]								
OFDM – mode								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]	F [MHz]	Detector	Level [dB μ V/m]
No critical peaks found			No critical peaks found			No critical peaks found		
Measurement uncertainty			± 3 dB					

Result: The result of the measurement is passed.

Plots: DSSS / b - mode

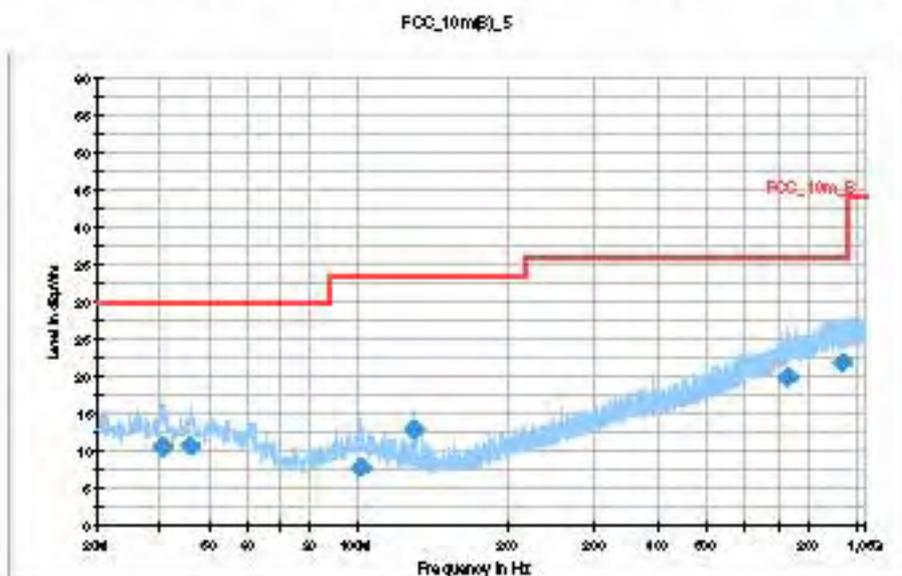
Plot 1: Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

Common Information

EUT: AAL-9980001-BV
 Serial Number: C B5A1JE2RN
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN b-mode 11Mbps TX Ch. 1 + charging
 Operator Name: Wolsdorf
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

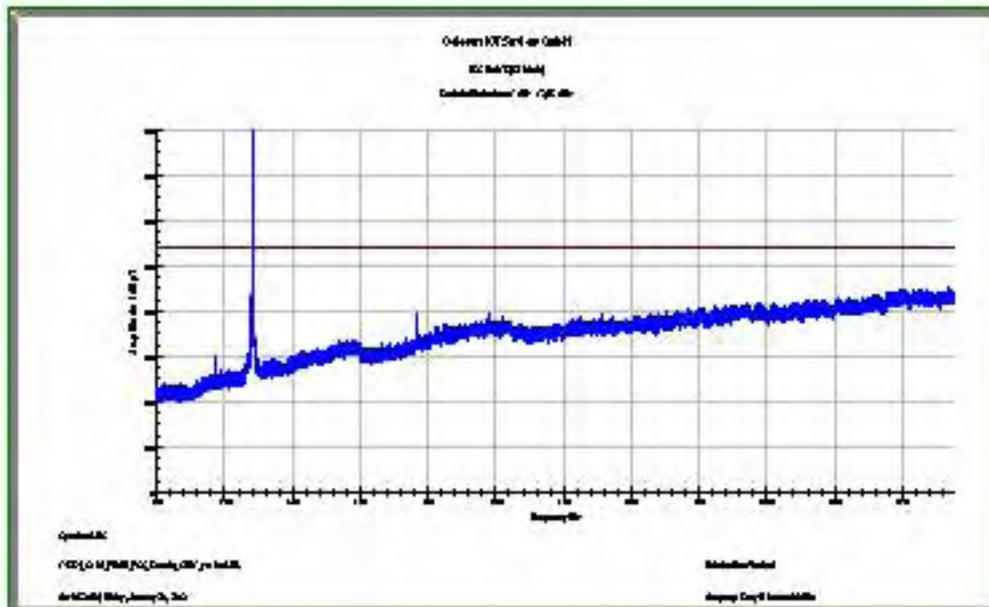
Hardware Setup: Electric Field (NOS)
 Receiver: [ESC13]
 Level Unit: dBµV/m
 Subrange: 30 MHz - 2 GHz Step Size: 60 KHz Detectors: QPK IF BW: 120 KHz Meas. Time: 1 s Preamplifier: 20 dB



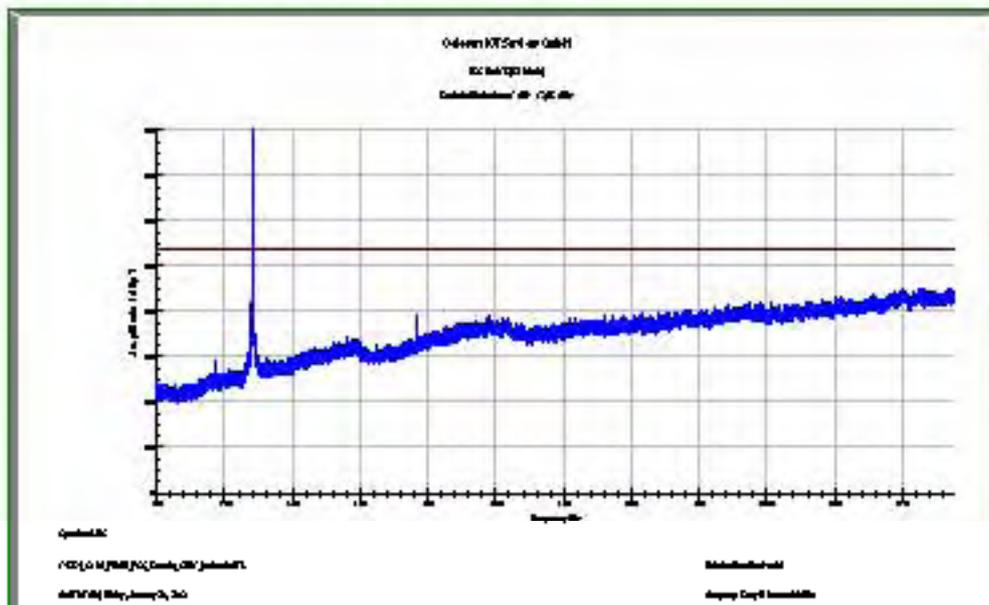
Final Result 1

Frequency (MHz)	QuadPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Marg. n (dB)	Limit (dBµV/m)	Comment
40.440000	10.5	1000.0	120.000	270.0	V	97.0	18.4	19.5	30.0	
45.030000	10.9	1000.0	120.000	270.0	V	252.0	18.8	19.1	30.0	
101.180000	7.8	1000.0	120.000	184.0	H	54.0	11.8	25.7	38.5	
129.000000	18.0	1000.0	120.000	145.0	V	128.0	9.5	20.5	38.5	
727.900000	19.9	1000.0	120.000	270.0	V	338.0	28.2	16.1	36.0	
999.720000	21.9	1000.0	120.000	270.0	V	80.0	25.8	14.1	36.0	

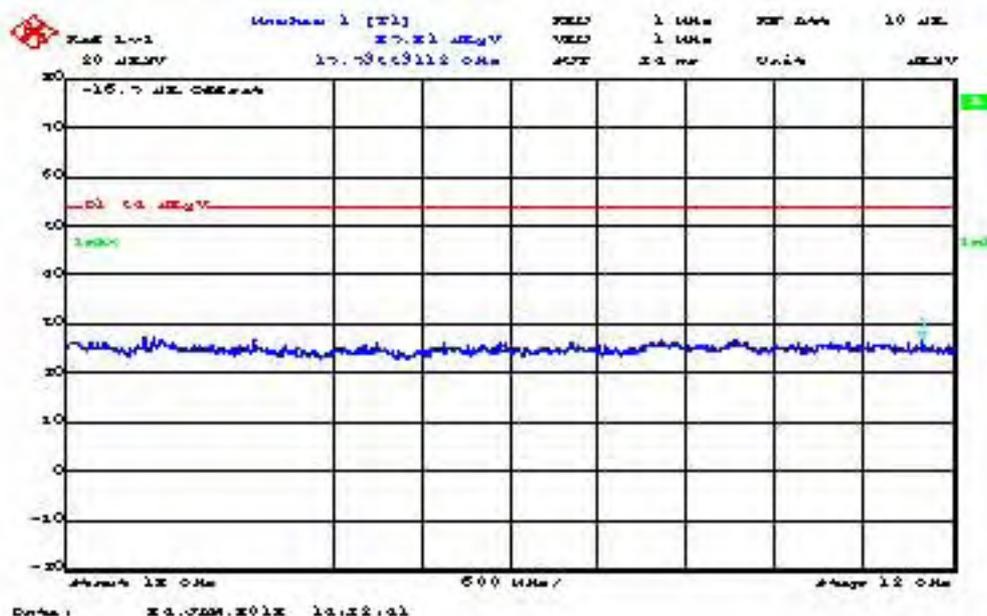
Plot 2: Lowest channel, 1 GHz to 12.75 GHz, vertical polarization



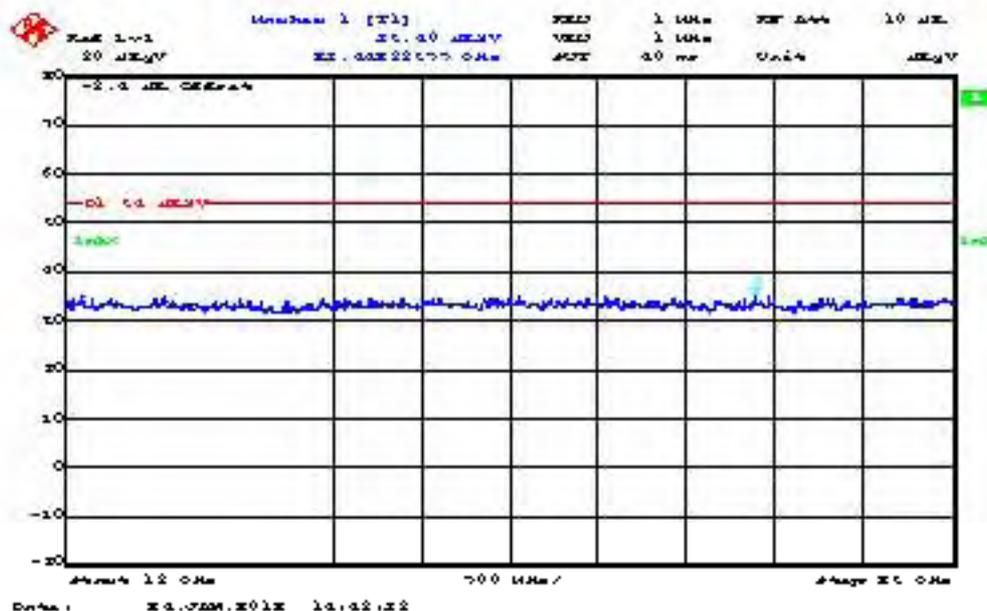
Plot 3: Lowest channel, 1 GHz to 12.75 GHz, horizontal polarization



Plot 4: Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Plot 5: Lowest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Plot 6: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

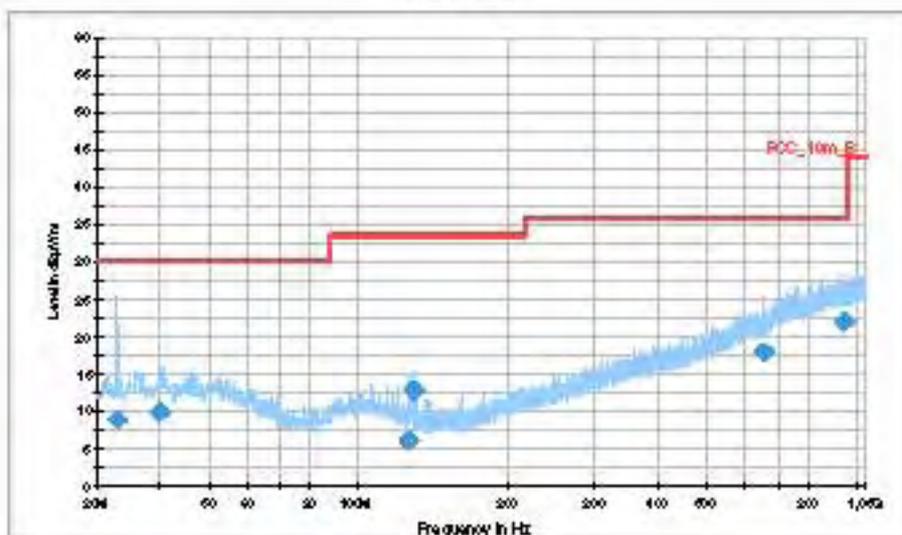
Common Information

EUT: AAL-9990001-BV
 Serial Number: C BSA1J62RN
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN b-mode 11Mbit/s TX Ch. 6 + charging
 Operator Name: Wolsdorfer
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC13]
 Level Unit: dBµV/m
 Subrange: 30 MHz - 2 GHz
 Step Size: 60 KHz
 Detectors: QPK
 IF BW: 120 KHz
 Meas. Time: 1 s
 Preamplifier: 20 dB

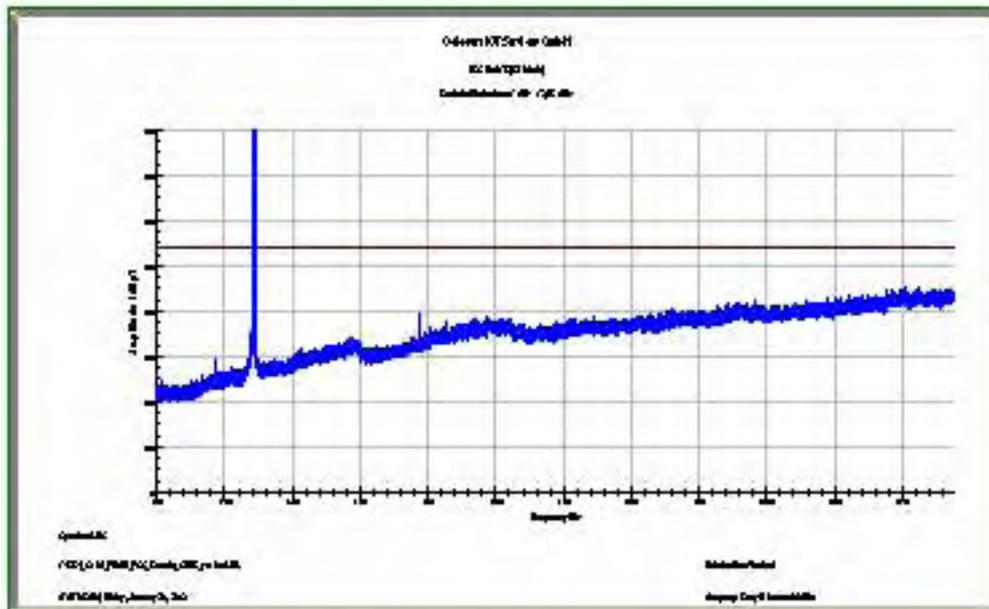
FCC_10mB_L5



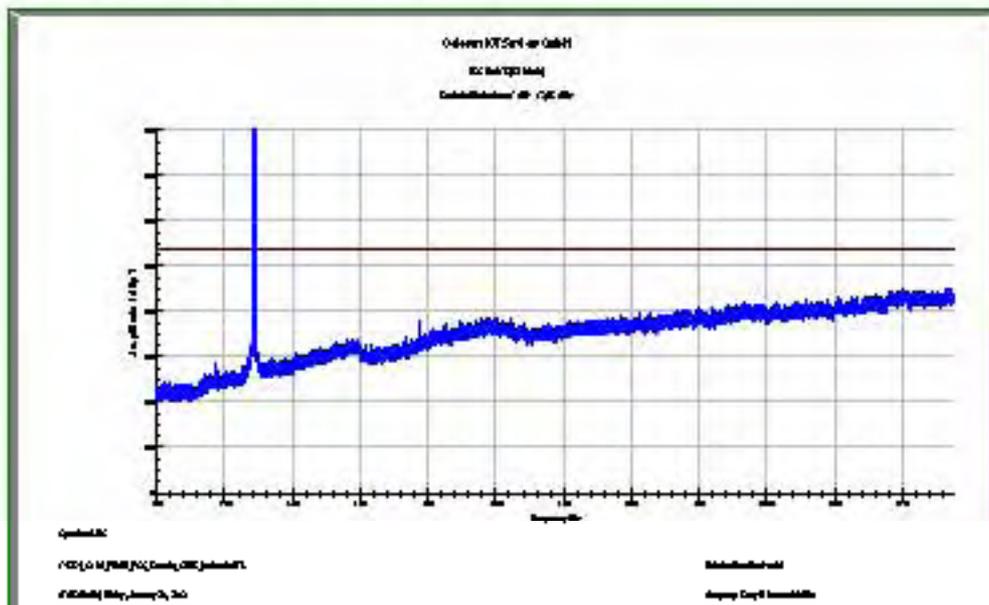
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Marg. n (dB)	Limit (dBµV/m)	Comment
32760000	8.9	1000.0	120.000	257.0	V	-2.0	128	21.1	80.0	
39.720000	9.8	1000.0	120.000	248.0	V	130.0	18.4	20.2	80.0	
128.240000	5.9	1000.0	120.000	98.0	V	271.0	-9.7	27.6	88.5	
129.000000	12.8	1000.0	120.000	165.0	V	130.0	-9.5	20.7	88.5	
852.820000	17.9	1000.0	120.000	114.0	H	219.0	21.2	18.1	86.0	
947.040000	21.9	1000.0	120.000	172.0	H	219.0	25.8	14.1	86.0	

Plot 7: Middle channel, 1 GHz to 12.75 GHz, vertical polarization



Plot 8: Middle channel, 1 GHz to 12.75 GHz, horizontal polarization



Plot 11: Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

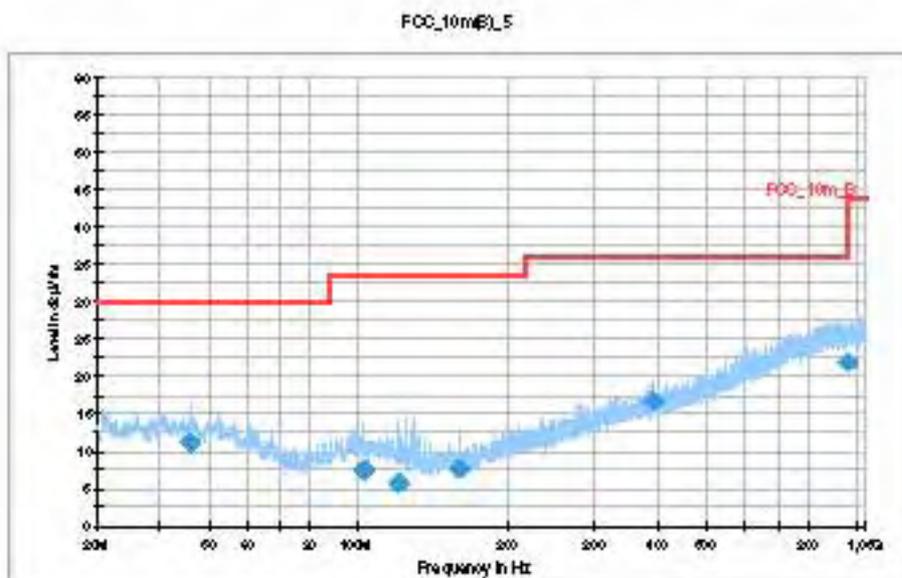
Common Information

EUT: AAL-8890001-BV
 Serial Number: C BSA1JE2RN
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN b-mode 11Mbps TX Ch. 11 + charging
 Operator Name: Wolsdorfer
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC13]
 Level Unit: dBµV/m

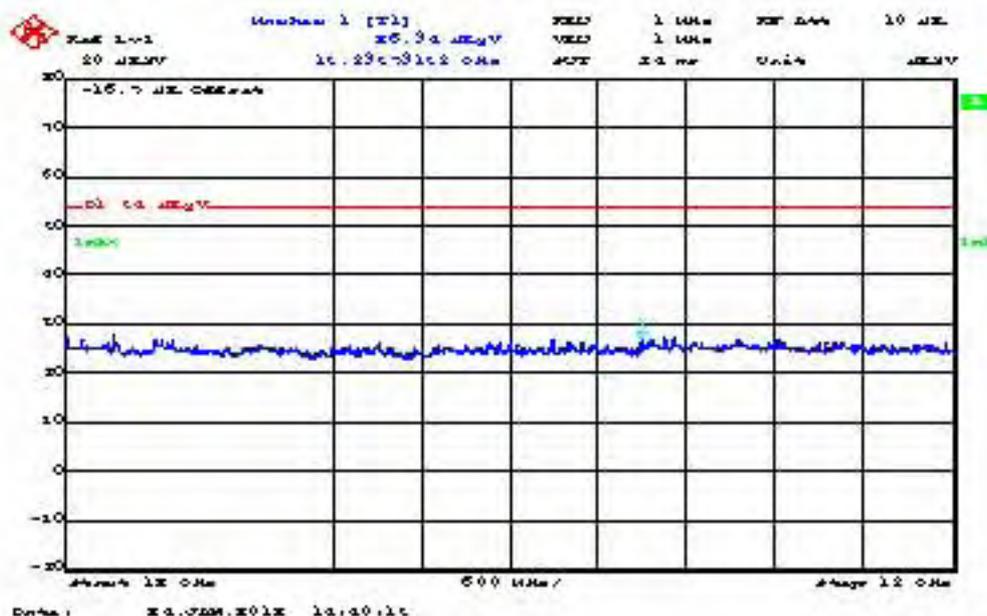
Subrange: 30 MHz - 2 GHz Step Size: 60 KHz Detectors: QPK IF BW: 120 KHz Meas. Time: 1 s Preamplifier: 20 dB



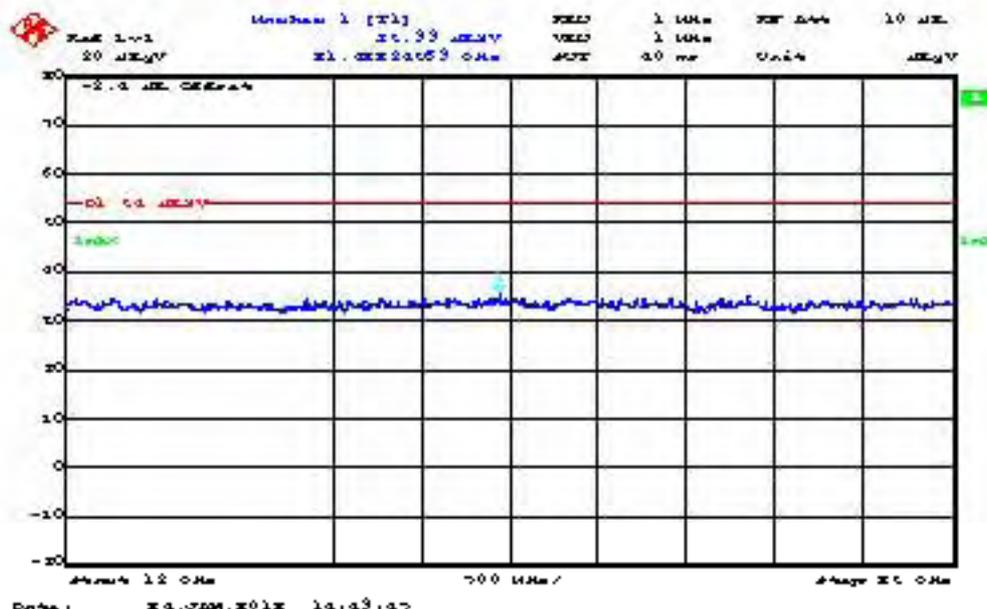
Final Result 1

Frequency (MHz)	QuadPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Marg. n (dB)	Limit (dBµV/m)	Comment
45.960000	11.1	1000.0	120.000	104.0	V	48.0	13.3	13.9	30.0	
102.720000	7.5	1000.0	120.000	270.0	H	312.0	11.7	26.0	33.5	
120.240000	5.8	1000.0	120.000	98.0	V	252.0	10.2	27.7	33.5	
159.960000	7.7	1000.0	120.000	217.0	V	178.0	9.2	25.3	33.5	
390.000000	18.7	1000.0	120.000	270.0	V	48.0	18.7	19.3	33.0	
959.280000	22.0	1000.0	120.000	130.0	V	312.0	25.4	14.0	33.0	

Plot 14: Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Plot 15: Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Plots: OFDM / g - mode

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

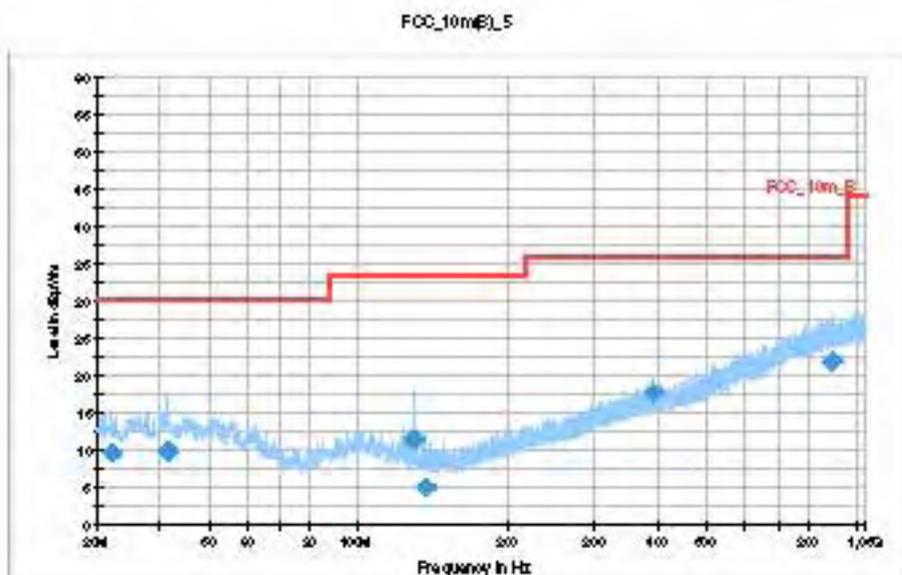
Common Information

EUT: AAL-9980001-BV
 Serial Number: C BSA1JE2RN
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN g-mode 6MHz TX Ch. 1 +charging
 Operator Name: Wolsdorf
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC13]
 Level Unit: dBµV/m

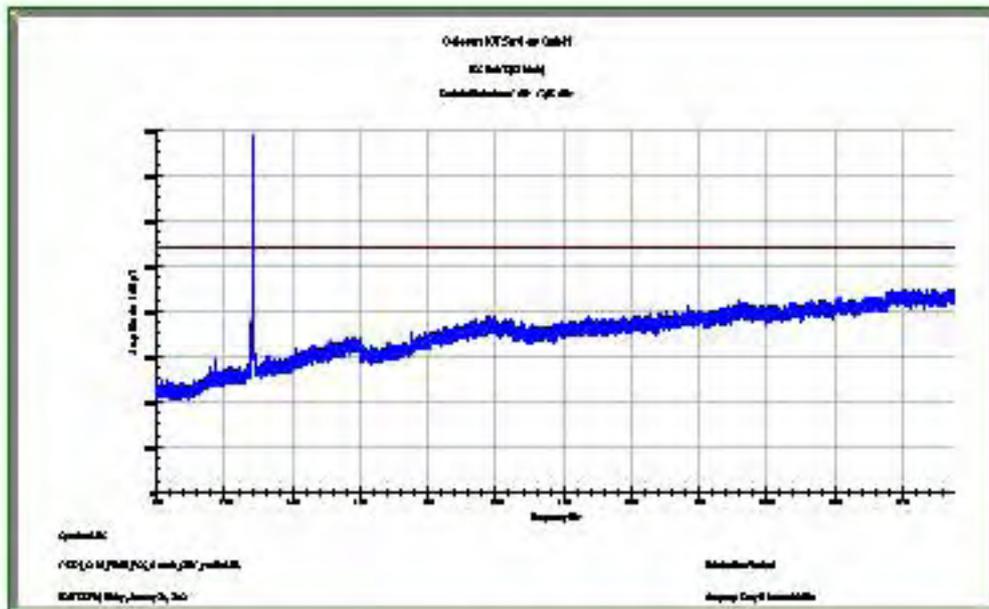
Subrange: 30 MHz - 2 GHz Step Size: 60 KHz Detectors: QPK IF BW: 120 KHz Meas. Time: 1 s Preamp: 20 dB



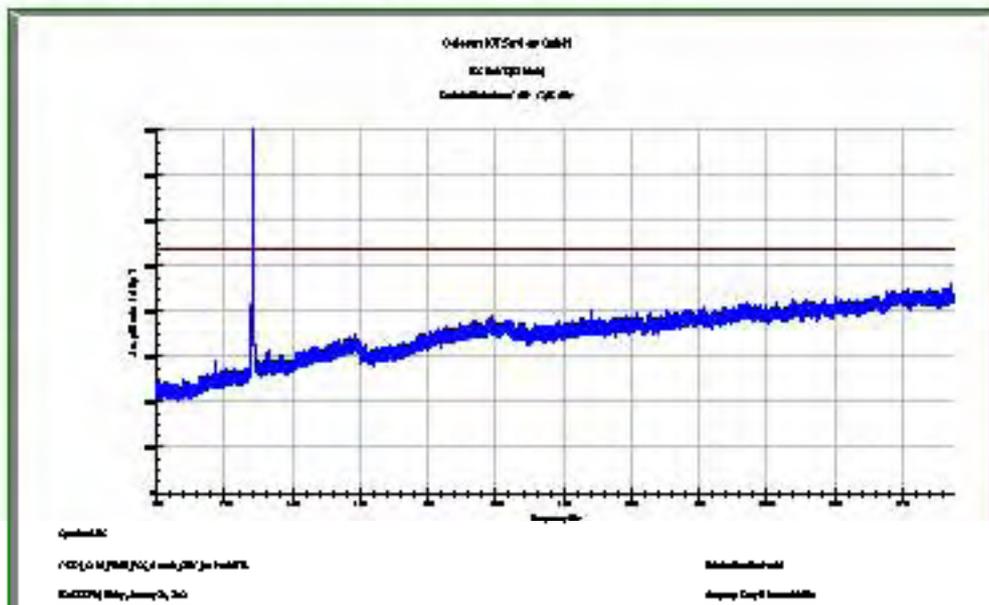
Final Result 1

Frequency (MHz)	QuadPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Marg'n (dB)	Lim (dBµV/m)	Comment
31.920000	9.5	1000.0	120.000	270.0	H	-2.0	12.7	20.5	30.0	
41.520000	9.9	1000.0	120.000	248.0	V	125.0	13.4	20.1	30.0	
129.000000	11.3	1000.0	120.000	132.0	V	279.0	9.5	22.2	33.5	
136.680000	51	1000.0	120.000	98.0	V	281.0	3.9	28.4	33.5	
390.000000	17.7	1000.0	120.000	105.0	V	98.0	16.7	13.3	36.0	
393.300000	21.9	1000.0	120.000	270.0	H	322.0	25.2	14.1	36.0	

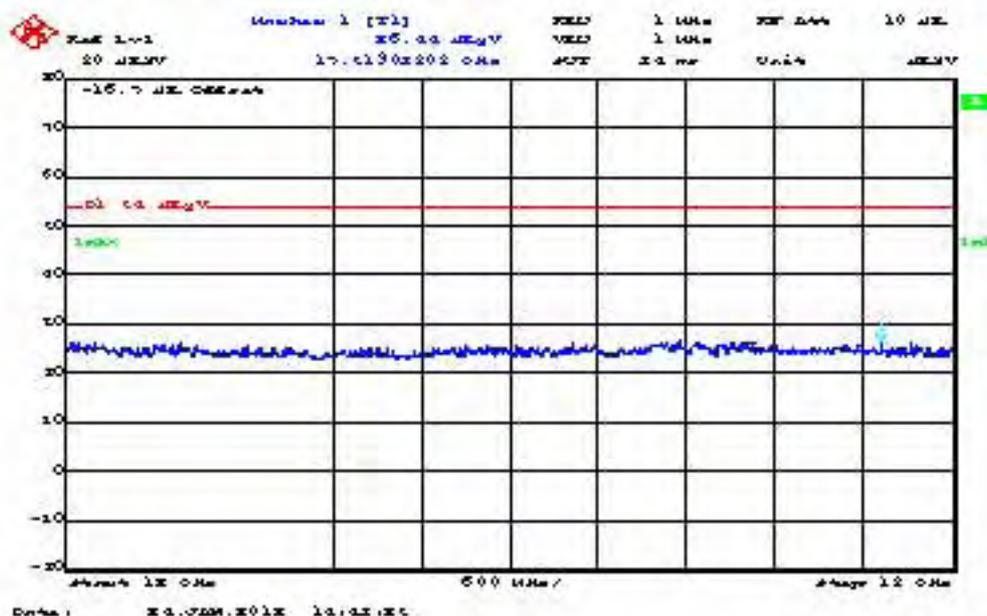
Plot 2: Lowest channel, 1 GHz to 12.75 GHz, vertical polarization



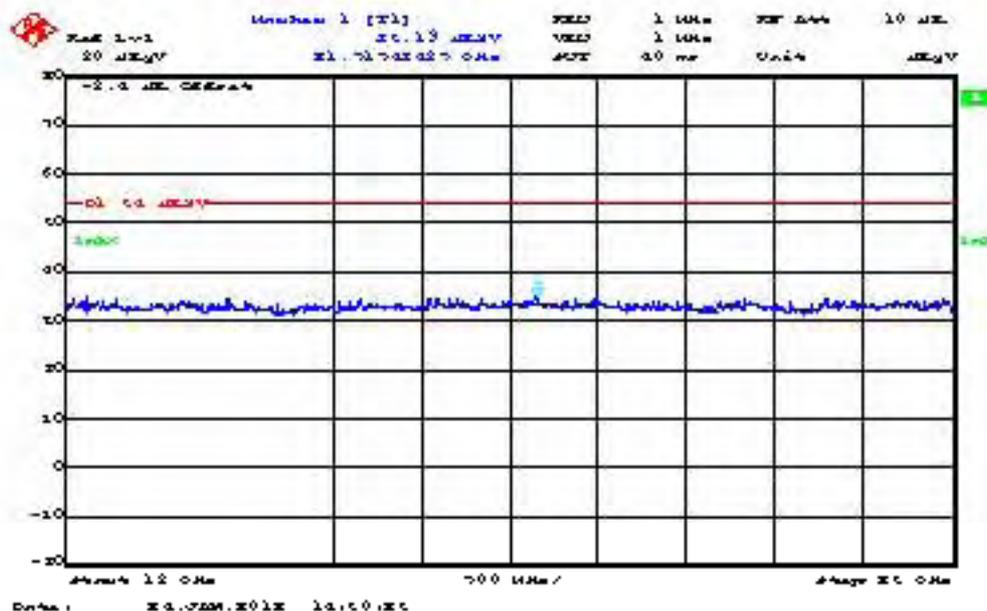
Plot 3: Lowest channel, 1 GHz to 12.75 GHz, horizontal polarization



Plot 4: Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Plot 5: Lowest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Plot 6: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

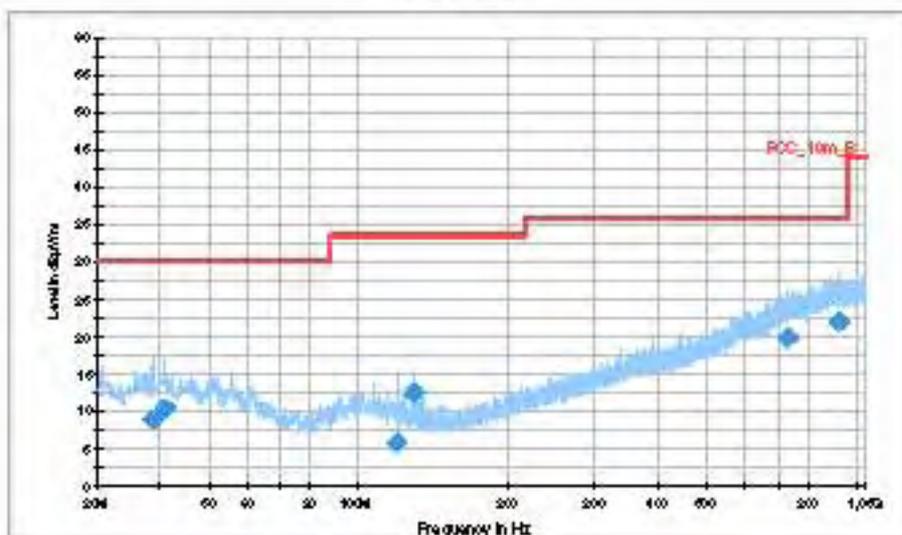
Common Information

EUT: AAL-9990001-BV
 Serial Number: C BSA1J62RN
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN g-mode 6M BWs TX Ch. 6 +charging
 Operator Name: Wolsdorfer
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC13]
 Level Unit: dBµV/m
 Subrange: 30 MHz - 2 GHz
 Step Size: 60 KHz
 Detectors: QPK
 IF BW: 120 KHz
 Meas. Time: 1 s
 Preamplifier: 20 dB

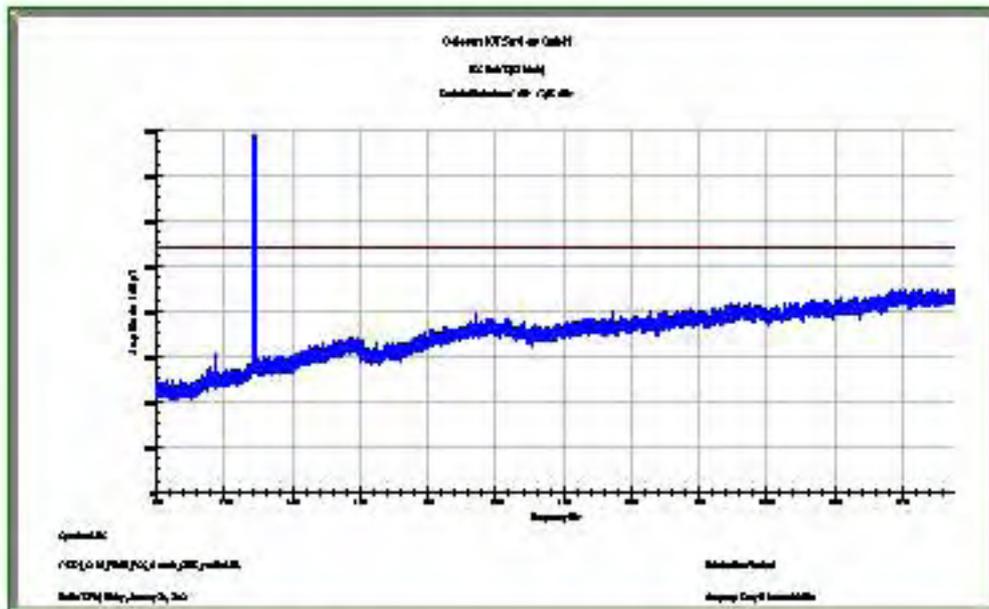
FCC_10mB_L5



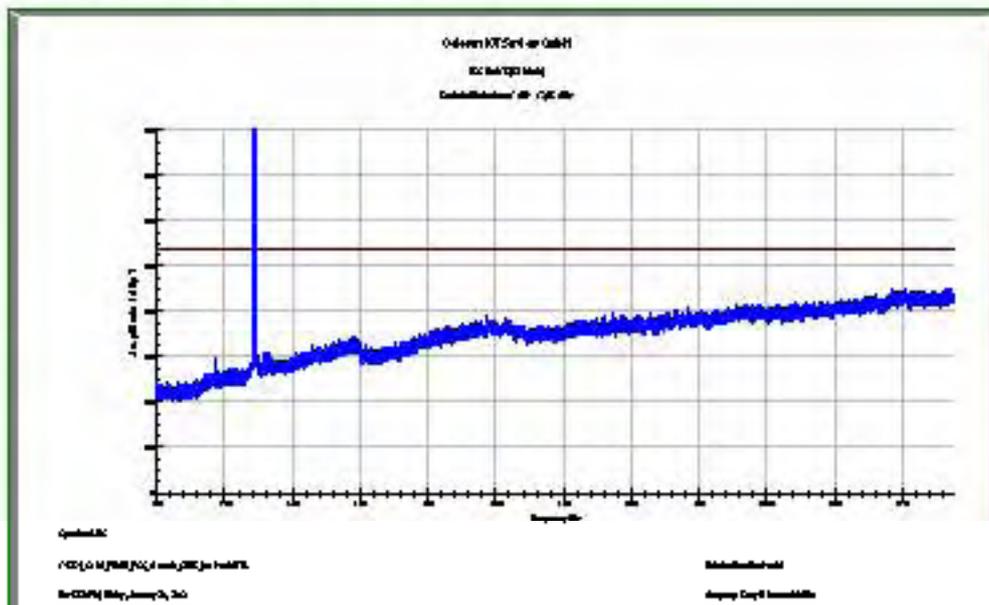
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Marg. n (dB)	Limit (dBµV/m)	Comment
33.520000	8.8	1000.0	120.000	135.0	V	89.0	13.8	21.2	80.0	
40.920000	10.4	1000.0	120.000	98.0	V	18.0	13.4	19.8	80.0	
119.400000	5.8	1000.0	120.000	270.0	V	140.0	10.8	27.7	88.5	
129.000000	12.5	1000.0	120.000	168.0	V	140.0	9.5	21.0	88.5	
727.820000	19.9	1000.0	120.000	137.0	H	89.0	28.1	18.1	88.0	
924.480000	21.9	1000.0	120.000	270.0	V	164.0	25.8	14.1	88.0	

Plot 7: Middle channel, 1 GHz to 12.75 GHz, vertical polarization



Plot 8: Middle channel, 1 GHz to 12.75 GHz, horizontal polarization



Plot 11: Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

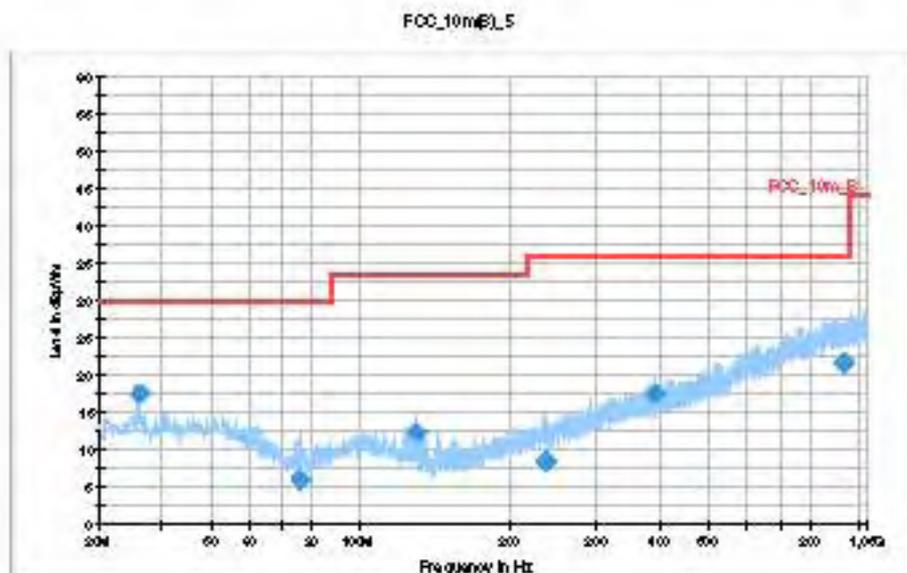
Common Information

EUT: AAL-9990001-BV
 Serial Number: CBSA1JE2RN
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN g-mode 6MBit/s TX Ch. 11 + charging
 Operator Name: Wolsdorfer
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC13]
 Level Unit: dBµV/m

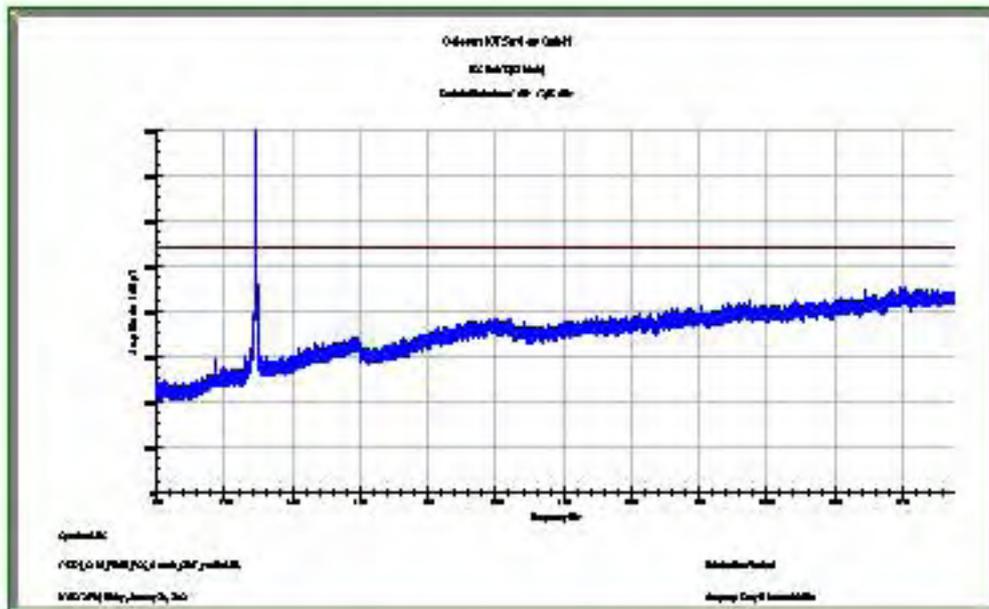
Subrange: 30 MHz - 2 GHz Step Size: 60 KHz Detectors: QPK IF BW: 120 KHz Meas. Time: 1 s Preamp: 20 dB



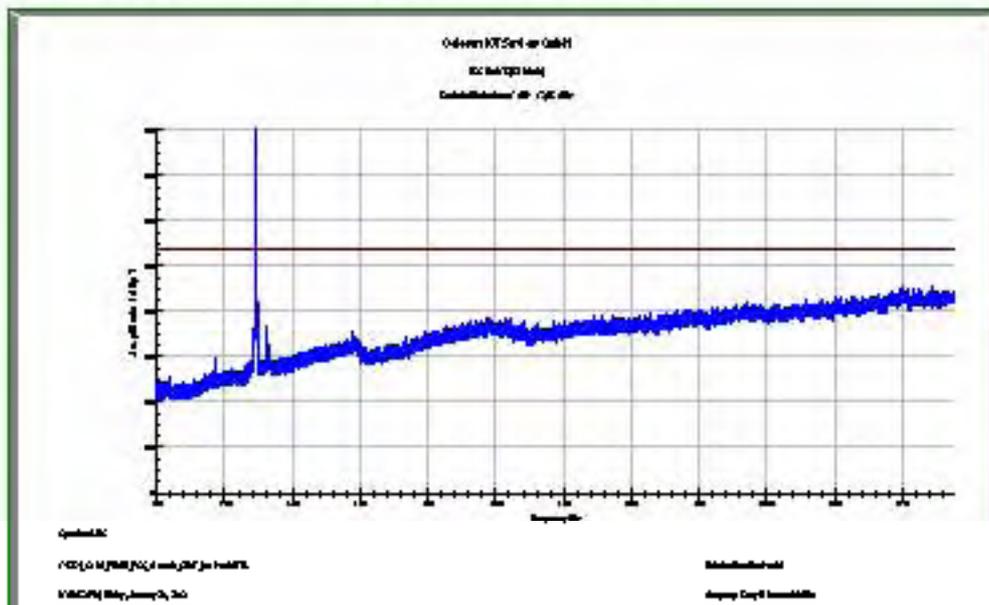
Final Result 1

Frequency (MHz)	CrestPeak (dBµV/m)	Max. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Misalign (dB)	Limit (dBµV/m)	Comment
38.000000	17.5	1000.0	120.000	98.0	V	248.0	18.1	12.5	80.0	
75.360000	60	1000.0	120.000	219.0	V	329.0	9.2	24.0	80.0	
129.000000	128	1000.0	120.000	188.0	V	169.0	9.5	21.2	88.5	
285.200000	8.5	1000.0	120.000	270.0	H	-2.0	129	27.5	860	
390.000000	17.5	1000.0	120.000	98.0	V	248.0	18.7	13.5	860	
940.200000	21.8	1000.0	120.000	115.0	H	98.0	25.8	14.2	860	

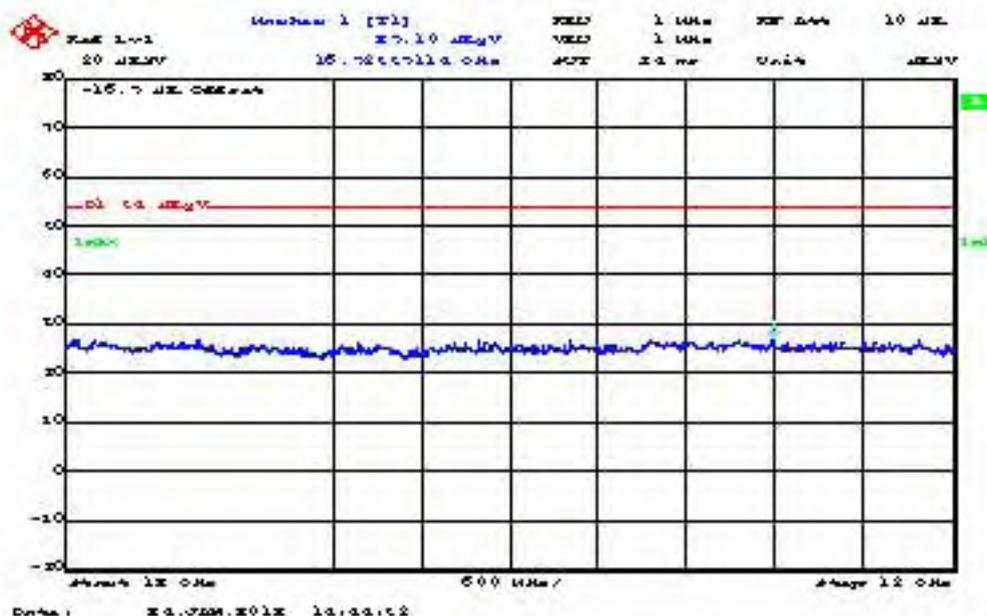
Plot 12: Highest channel, 1 GHz to 12.75 GHz, vertical polarization



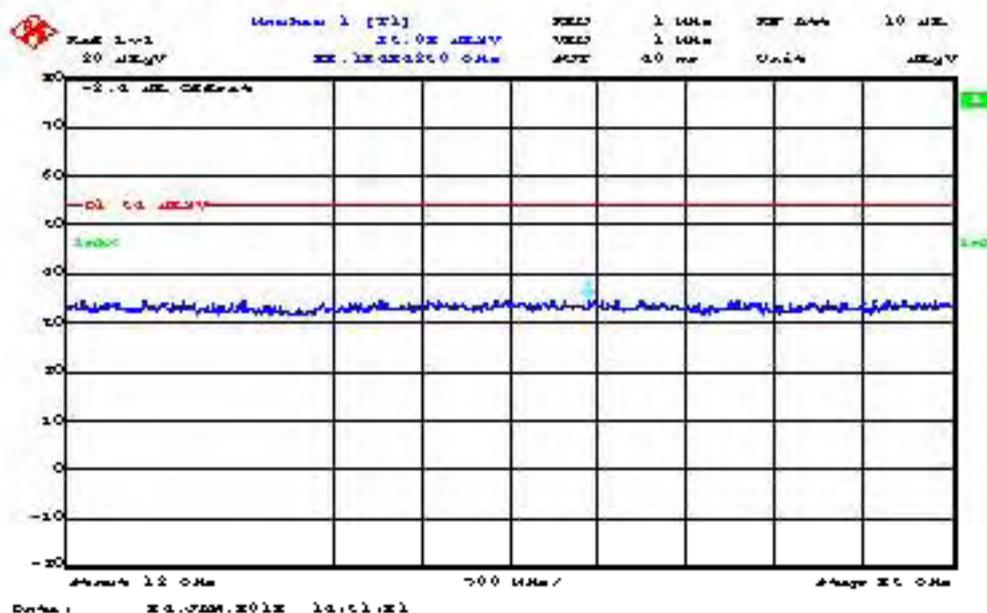
Plot 13: Highest channel, 1 GHz to 12.75 GHz, horizontal polarization



Plot 14: Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Plot 15: Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Plots: OFDM / n - mode

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

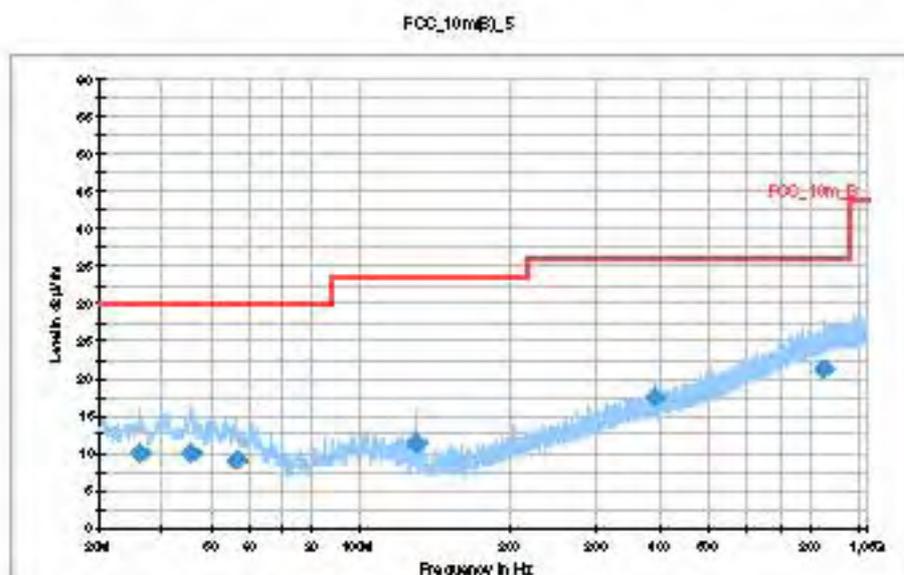
Common Information

EUT: AAL-9990001-BV
 Serial Number: CBSA1JE2RN
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN n-mode MCS 6 TX Ch. 1 + charging
 Operator Name: Wolsdorfer
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC13]
 Level Unit: dBµV/m

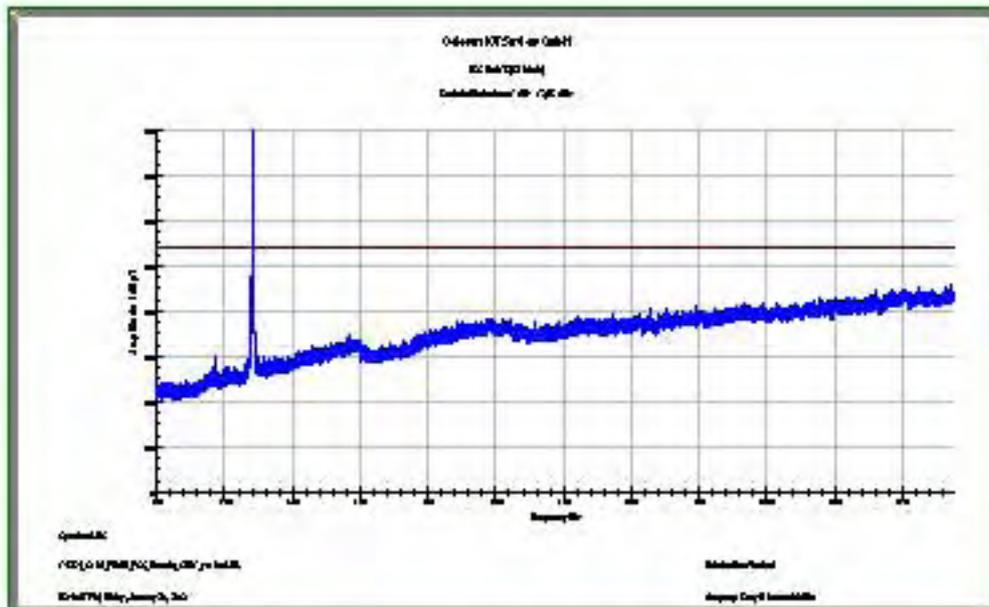
Subrange: 30 MHz - 2 GHz Step Size: 60 KHz Detectors: QPK IF BW: 120 KHz Meas. Time: 1 s Preamp: 20 dB



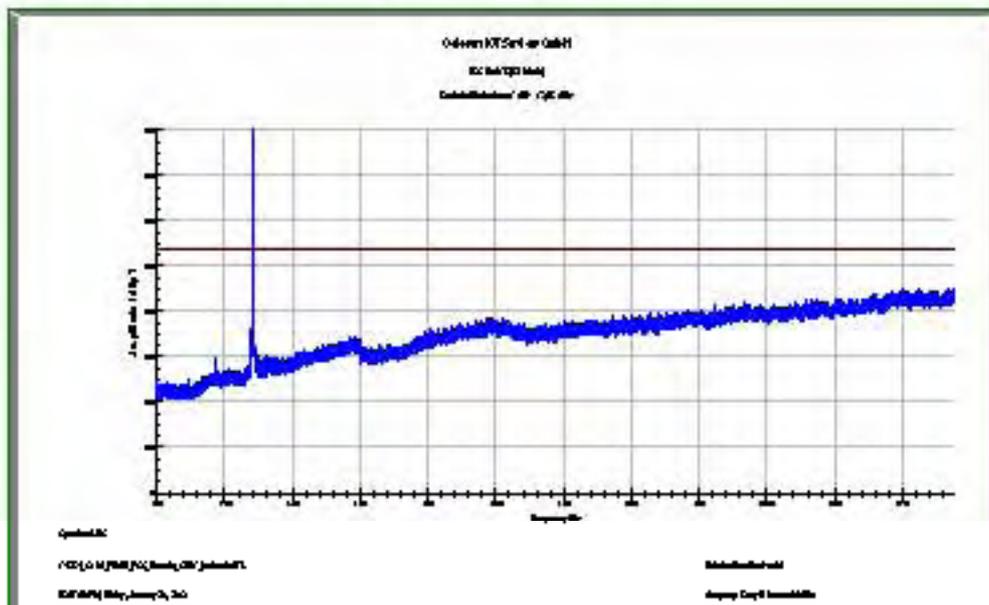
Final Result 1

Frequency (MHz)	QuadPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
381.20000	10.1	1000.0	120.000	270.0	V	125.0	18.1	19.9	30.0	
454.80000	10.0	1000.0	120.000	284.0	V	10.0	18.8	20.0	30.0	
584.00000	9.1	1000.0	120.000	240.0	V	144.0	12.5	20.9	30.0	
129.000000	11.4	1000.0	120.000	98.0	V	320.0	9.5	22.1	33.5	
390.000000	17.6	1000.0	120.000	134.0	V	307.0	16.7	13.4	36.0	
857.520000	21.4	1000.0	120.000	270.0	V	125.0	24.7	14.6	36.0	

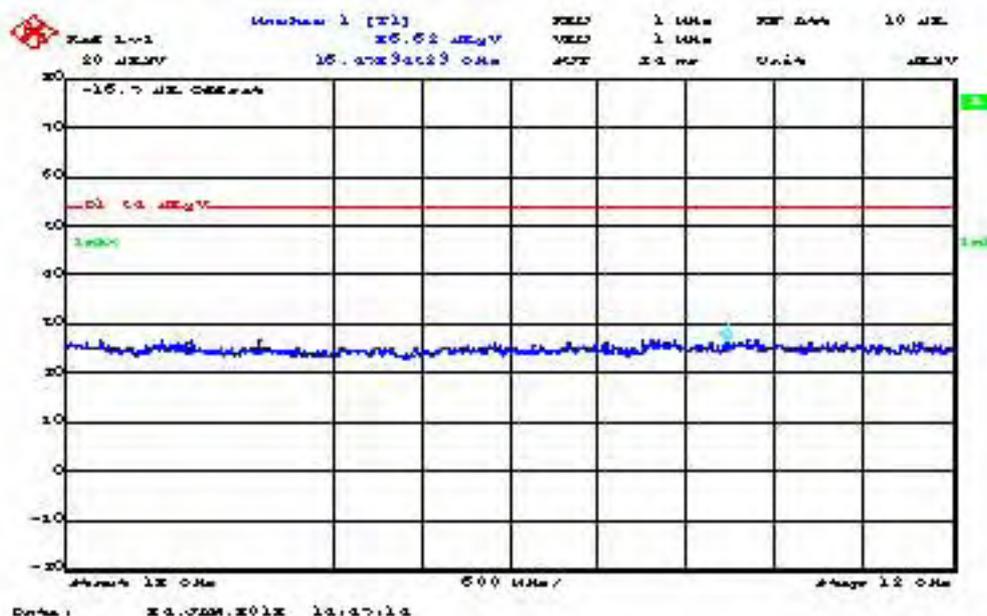
Plot 2: Lowest channel, 1 GHz to 12.75 GHz, vertical polarization



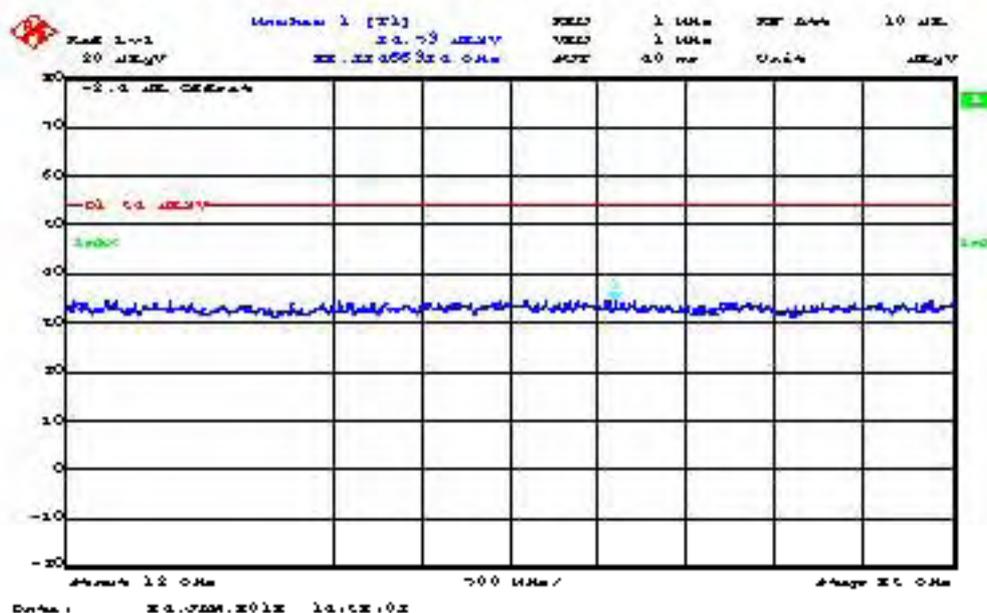
Plot 3: Lowest channel, 1 GHz to 12.75 GHz, horizontal polarization



Plot 4: Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Plot 5: Lowest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Plot 6: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

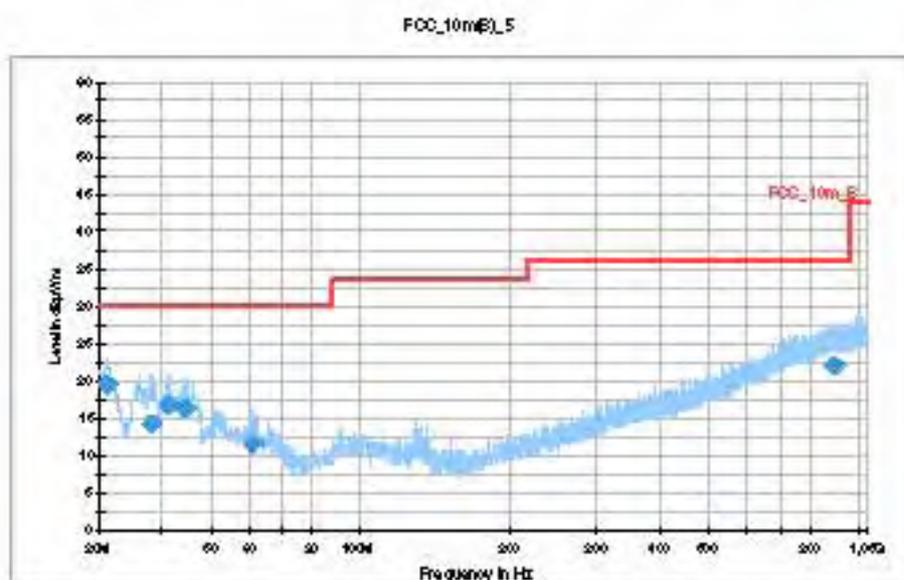
Common Information

EUT: AAL-9990001-BV
 Serial Number: CBSA1JE2RN
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN n-mode MCS 6 TX Ch. 6 + charging
 Operator Name: Wolsdorfer
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC13]
 Level Unit: dBµV/m

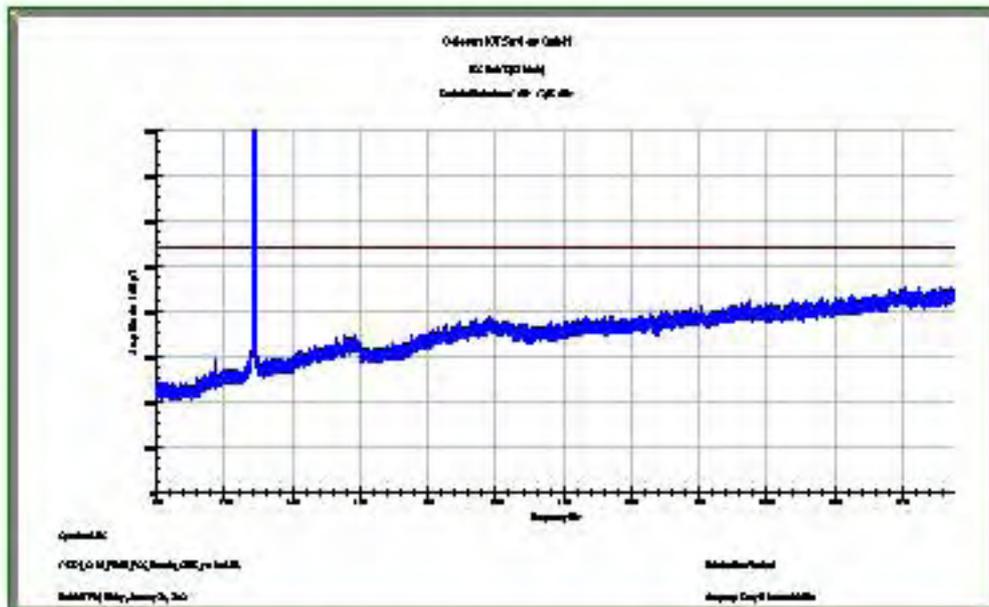
Subrange: 30 MHz - 2 GHz Step Size: 60 KHz Detector: QPK IF BW: 120 KHz Meas. Time: 1 s Preamp: 20 dB



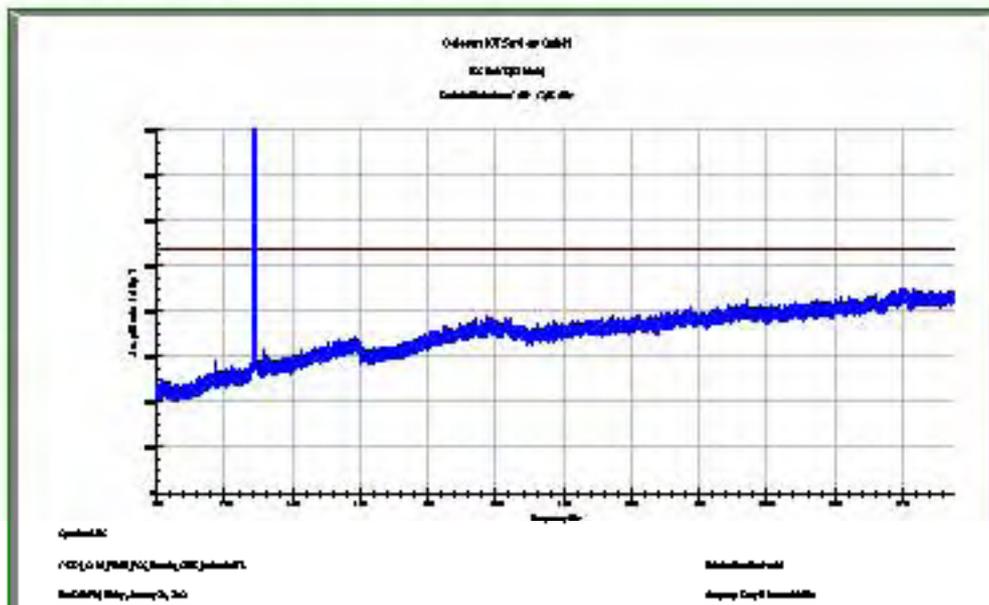
Final Result 1

Frequency (MHz)	QuadPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Marg. n (dB)	Limit (dBµV/m)	Comment
30.980000	19.5	1000.0	120.000	157.0	V	30.0	1.28	10.5	30.0	
33.160000	14.2	1000.0	120.000	270.0	V	-2.0	13.3	15.3	30.0	
41.280000	16.7	1000.0	120.000	98.0	V	-2.0	13.4	13.3	30.0	
44.400000	16.3	1000.0	120.000	98.0	V	-2.0	13.3	13.7	30.0	
60.480000	11.4	1000.0	120.000	120.0	V	-2.0	11.5	13.6	30.0	
97.720000	22.0	1000.0	120.000	195.0	H	-2.0	25.2	14.0	30.0	

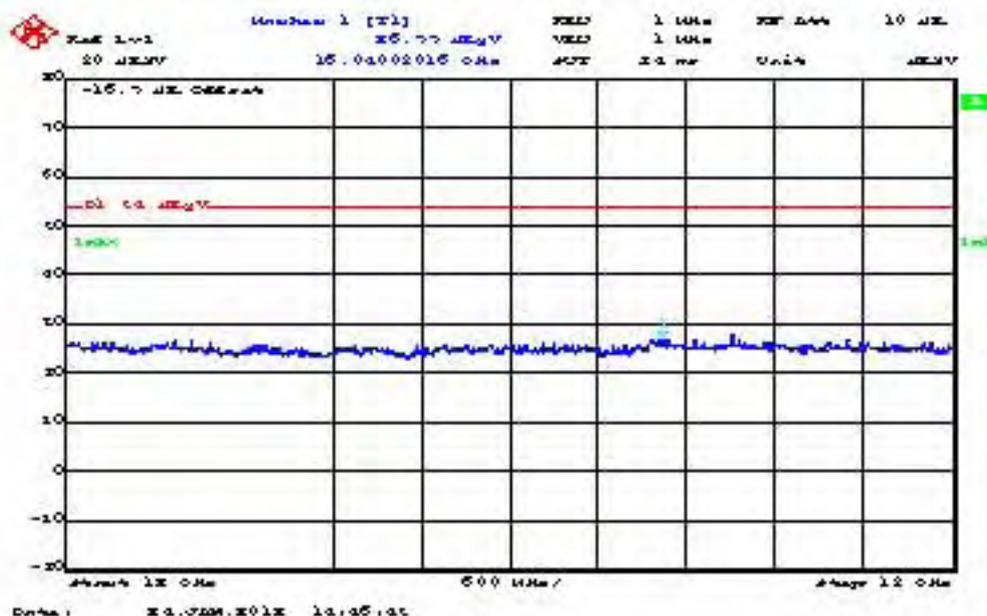
Plot 7: Middle channel, 1 GHz to 12.75 GHz, vertical polarization



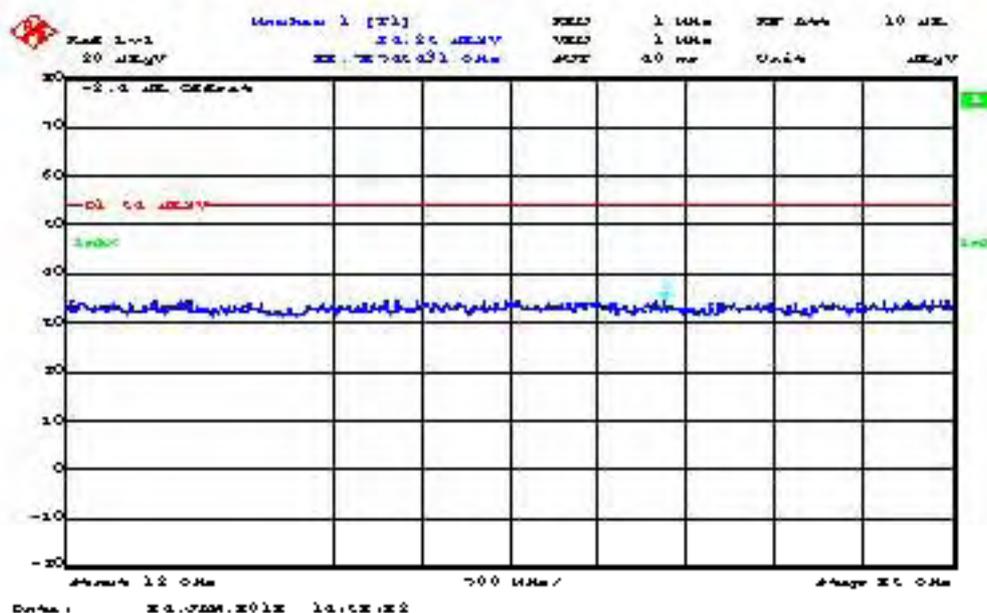
Plot 8: Middle channel, 1 GHz to 12.75 GHz, horizontal polarization



Plot 9: Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Plot 10: Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Plot 11: Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

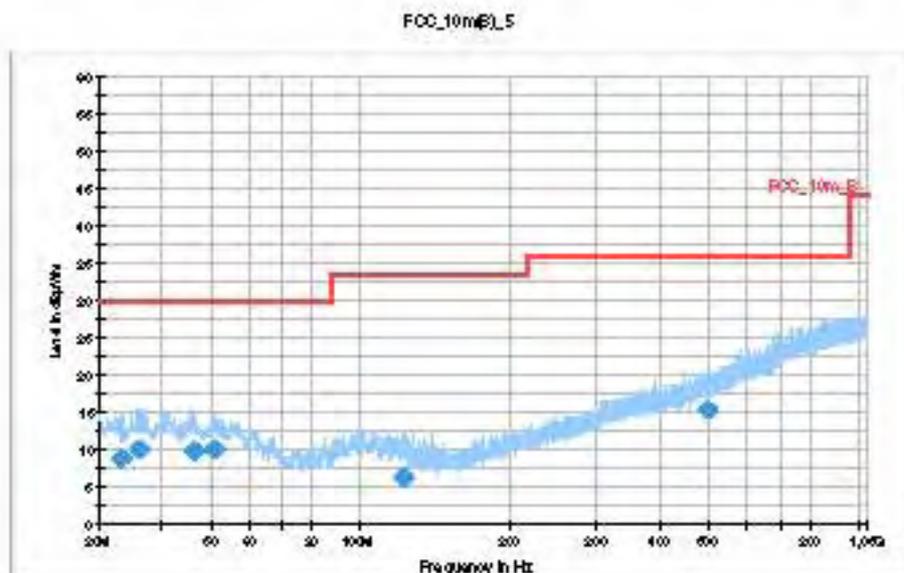
Common Information

EUT: AAL-9990001-BV
 Serial Number: CBSA1JE2RN
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN n-mode MCS 6 TX Ch. 11 + charging
 Operator Name: Wolsdorfer
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC13]
 Level Unit: dBµV/m

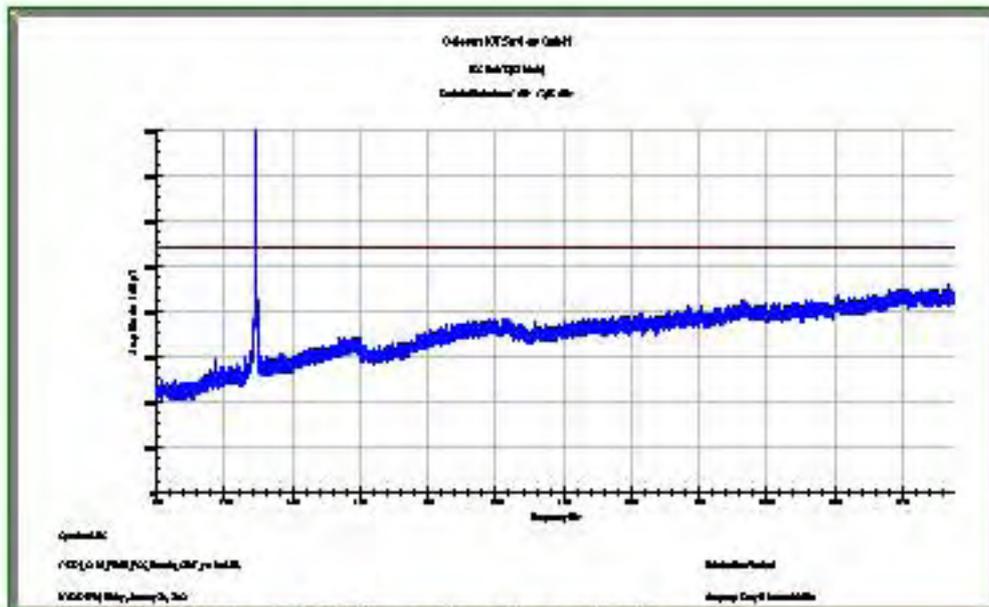
Subrange: 30 MHz - 2 GHz Step Size: 60 KHz Detectors: QPK IF BW: 120 KHz Meas. Time: 1 s Preamp: 20 dB



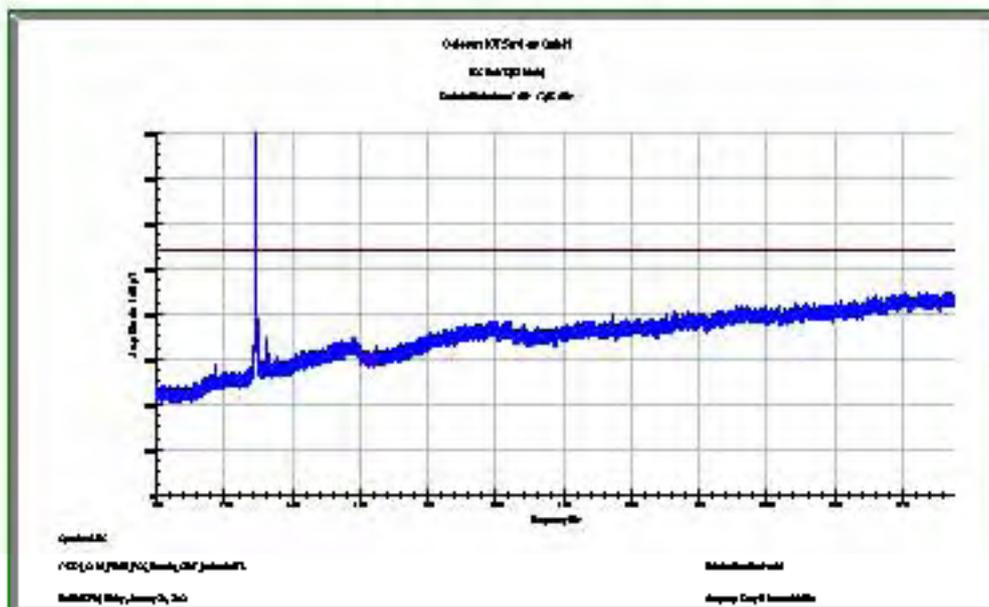
Final Result 1

Frequency (MHz)	CrestPeak (dBµV/m)	Max. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Marg. n (dB)	Lim (dBµV/m)	Comment
3230000	9.9	1000.0	120.000	270.0	H	89.0	12.8	21.1	30.0	
3530000	10.0	1000.0	120.000	270.0	H	177.0	13.1	20.0	30.0	
4620000	9.9	1000.0	120.000	124.0	H	279.0	13.3	20.1	30.0	
5112000	9.9	1000.0	120.000	120.0	H	37.0	13.3	20.1	30.0	
12204000	63	1000.0	120.000	175.0	V	248.0	10.1	27.2	33.5	
49348000	153	1000.0	120.000	270.0	V	281.0	13.7	20.7	36.0	

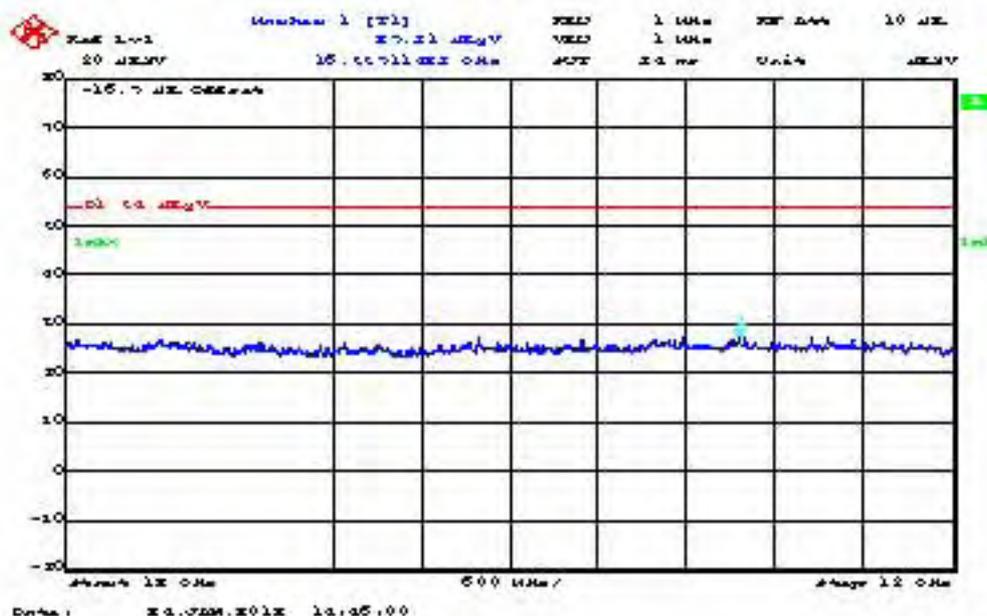
Plot 12: Highest channel, 1 GHz to 12.75 GHz, vertical polarization



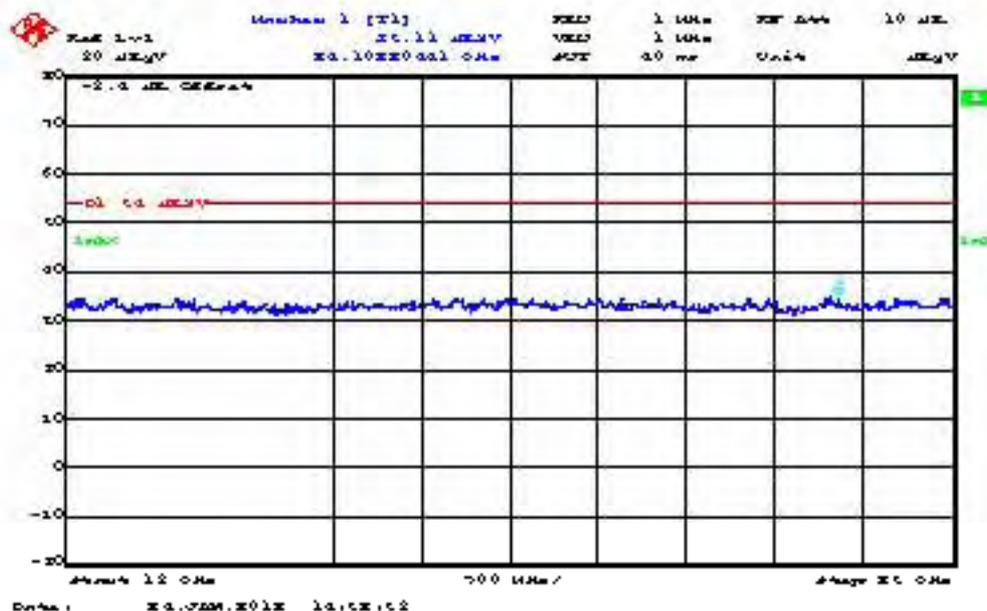
Plot 13: Highest channel, 1 GHz to 12.75 GHz, horizontal polarization



Plot 14: Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Plot 15: Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



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 found		
Measurement uncertainty	± 3 dB	

Result: The result of the measurement is passed.

Plots: RX / Idle – mode

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

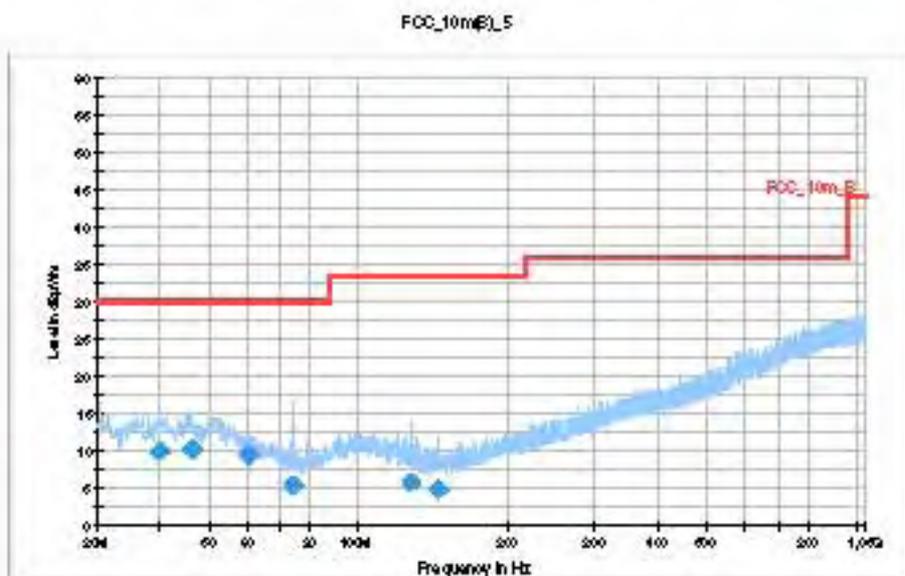
Common Information

EUT: AAL-999001-BV
 Serial Number: CBSA1JE2RN
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN RX-mode + charging
 Operator Name: Wolsdorfer
 Comment: AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESC13]
 Level Unit: dBµV/m

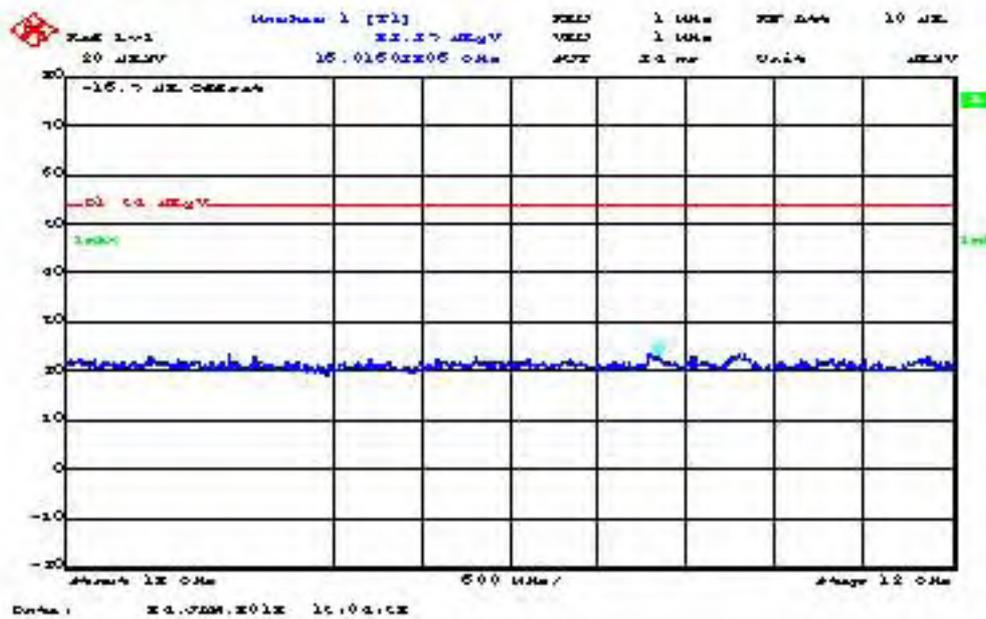
Subrange: 30 MHz - 2 GHz Step Size: 60 KHz Detectors: QPK IF BW: 120 KHz Meas. Time: 1 s Preamp: 20 dB



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Marg'n (dB)	Lim (dBµV/m)	Comment
39.340000	10.0	1000.0	120.000	225.0	V	47.0	13.4	20.0	30.0	
46.200000	10.1	1000.0	120.000	98.0	V	-1.0	13.3	19.9	30.0	
60.000000	3.3	1000.0	120.000	98.0	V	23.0	11.8	20.7	30.0	
74.040000	5.5	1000.0	120.000	287.0	V	328.0	9.2	28.5	30.0	
127.030000	5.9	1000.0	120.000	227.0	V	308.0	9.8	27.8	33.5	
144.960000	4.9	1000.0	120.000	270.0	V	328.0	3.3	28.6	33.5	

Plot 4: 12.75 GHz to 18 GHz, vertical & horizontal polarization



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 (dB μ V/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	

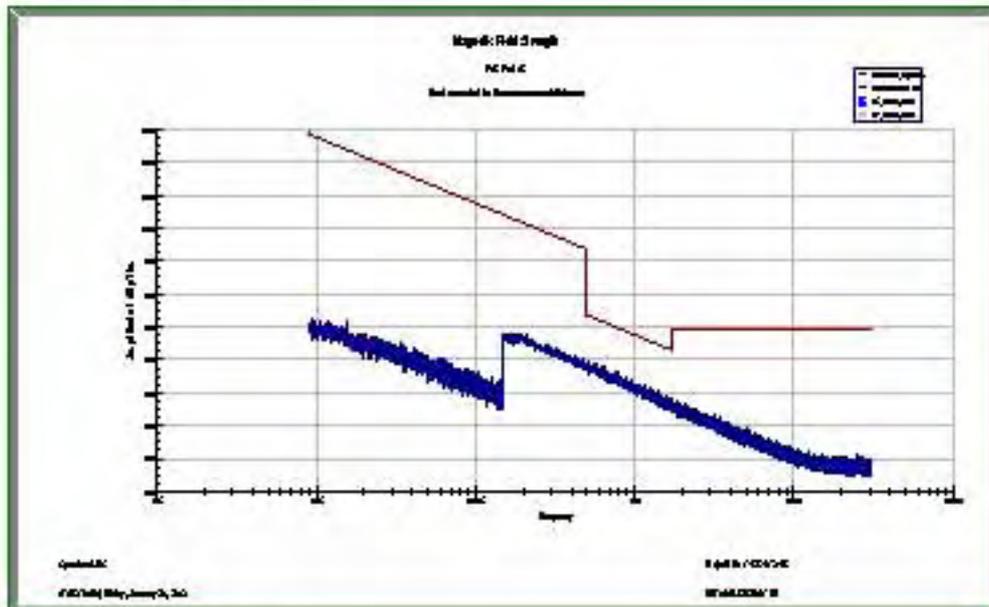
Results:

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

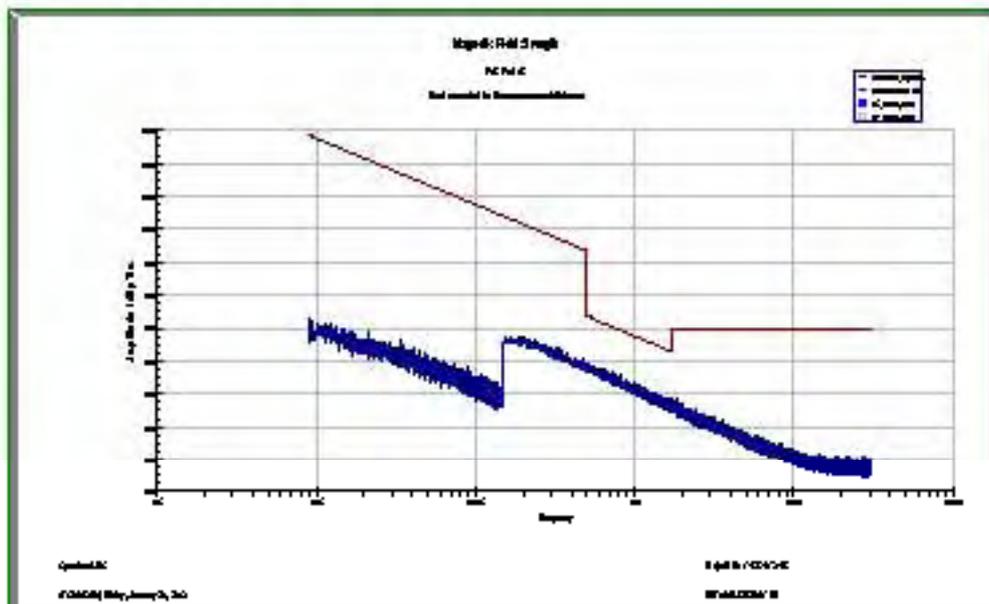
Result: [The result of the measurement is passed.](#)

Plots: DSSS / b - mode

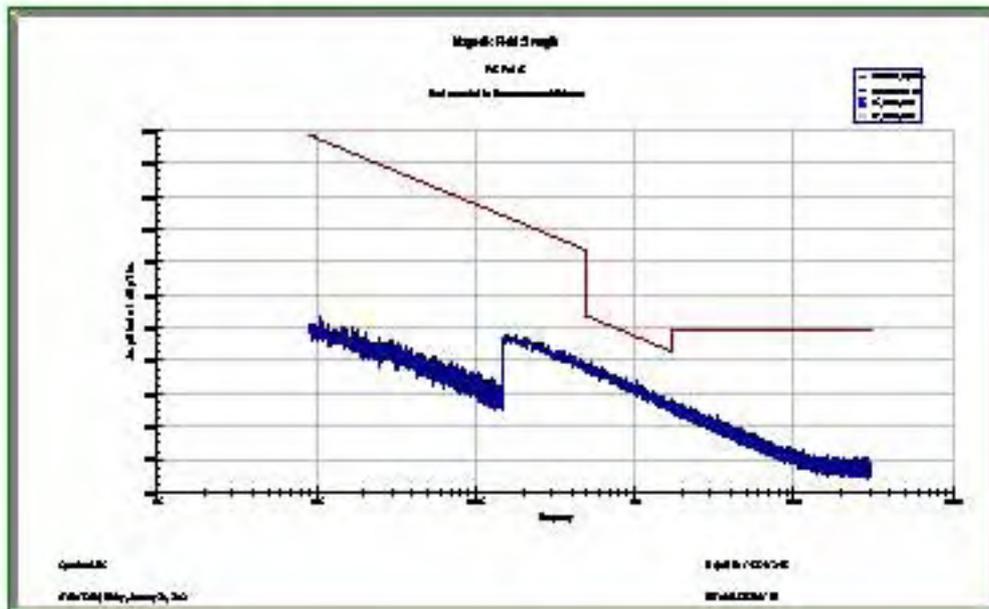
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

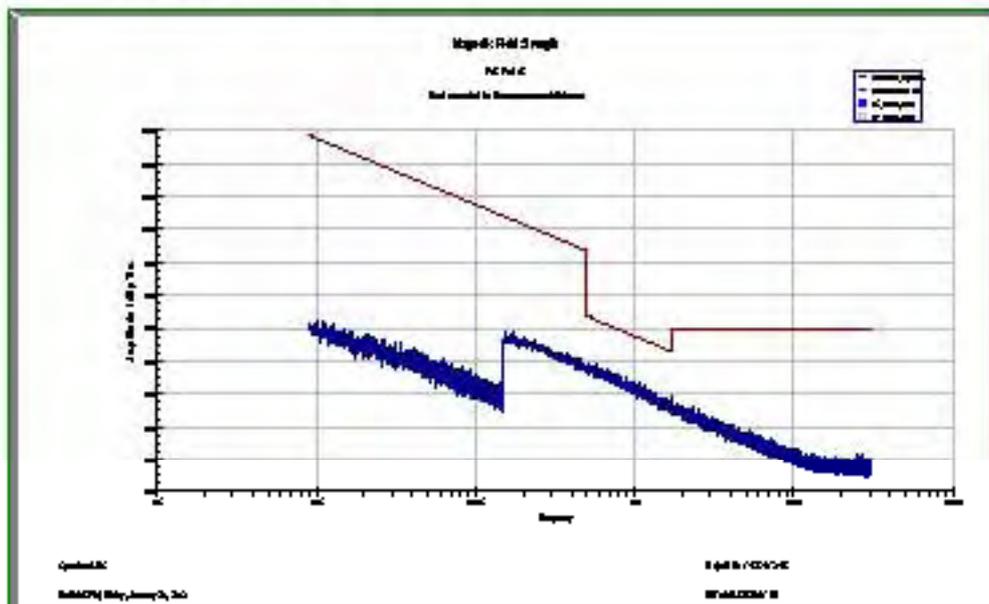


Plot 3: Highest channel, 9 kHz to 30 MHz

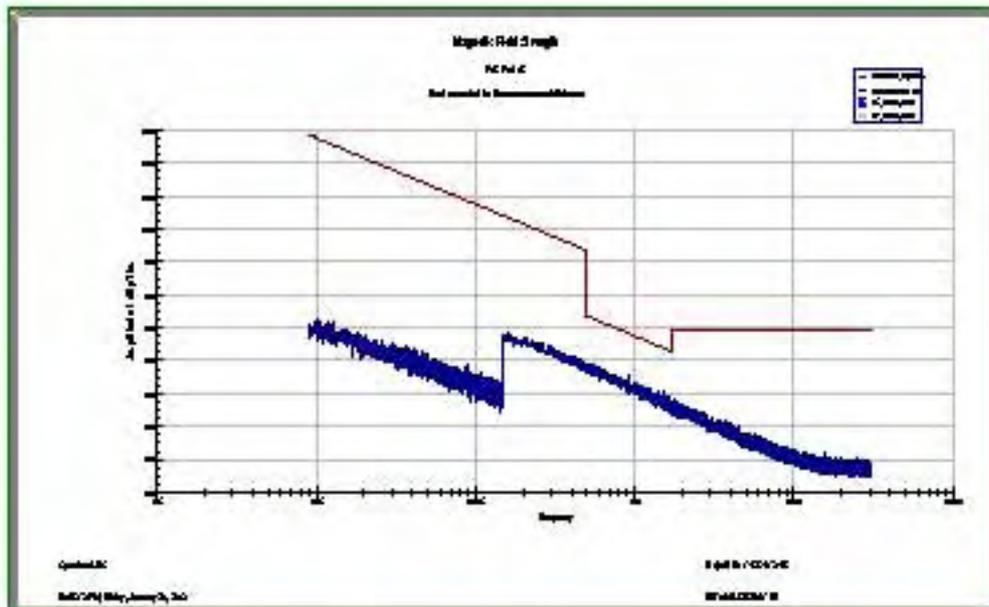


Plots: QFDM / g - mode

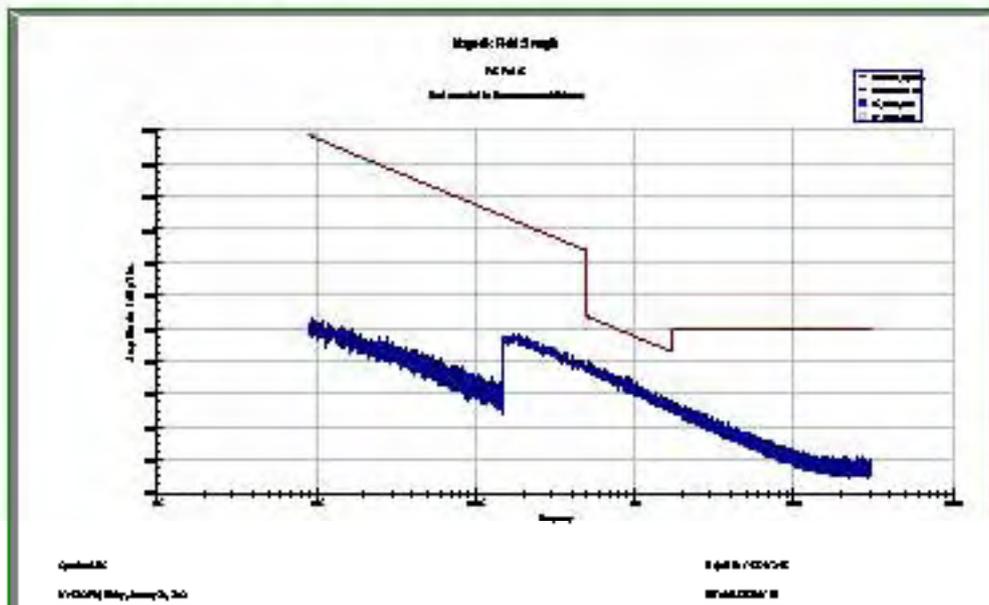
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

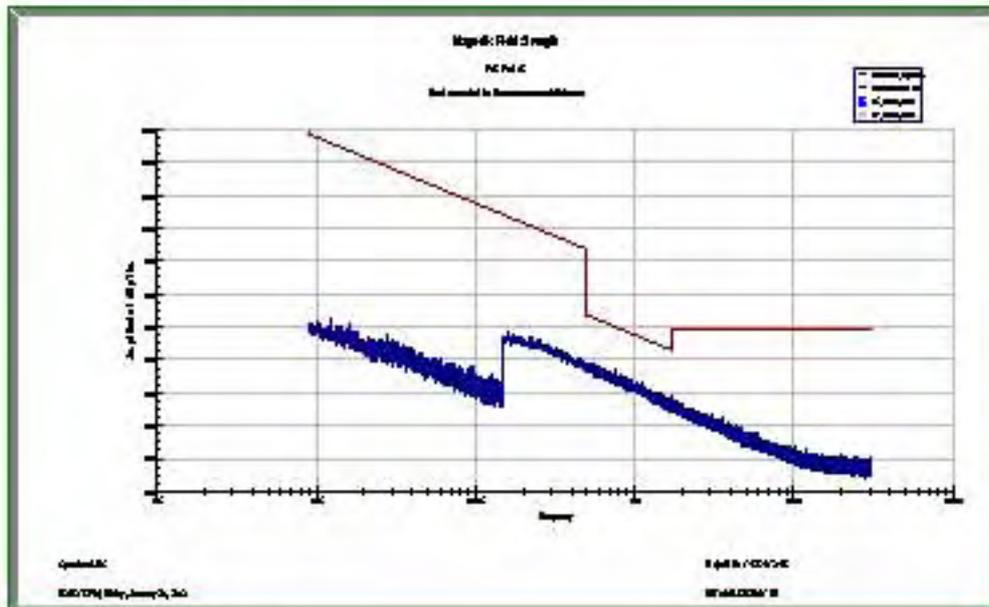


Plot 3: Highest channel, 9 kHz to 30 MHz

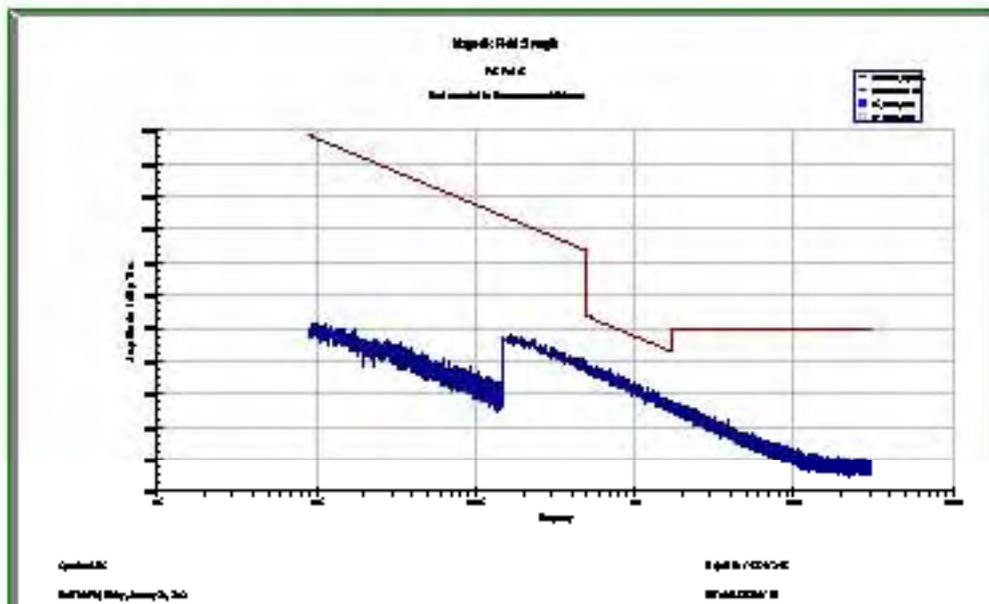


Plots: OFDM / n – mode

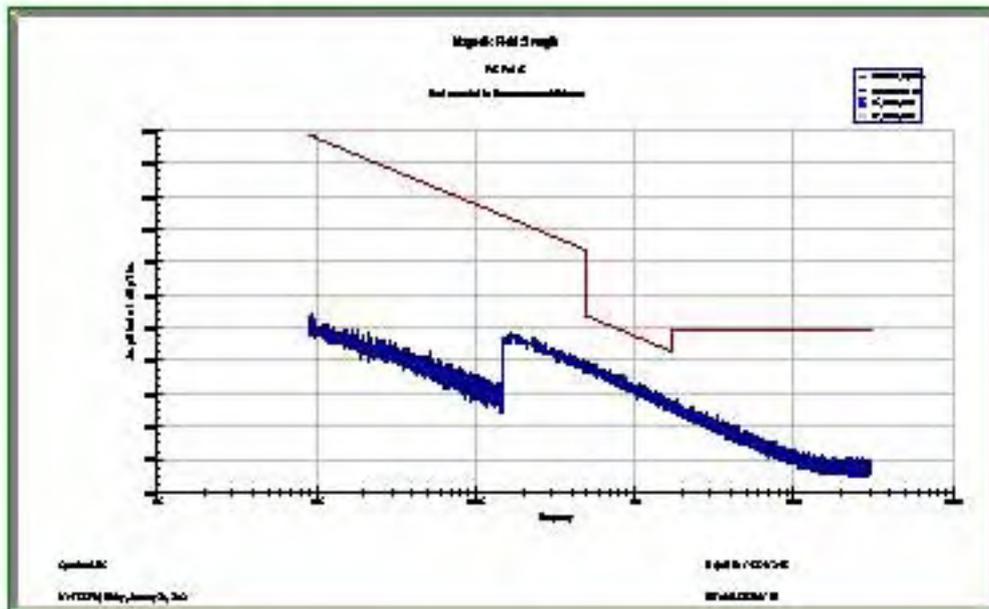
Plot 1: Lowest channel, 9 kHz to 30 MHz



Plot 2: Middle channel, 9 kHz to 30 MHz

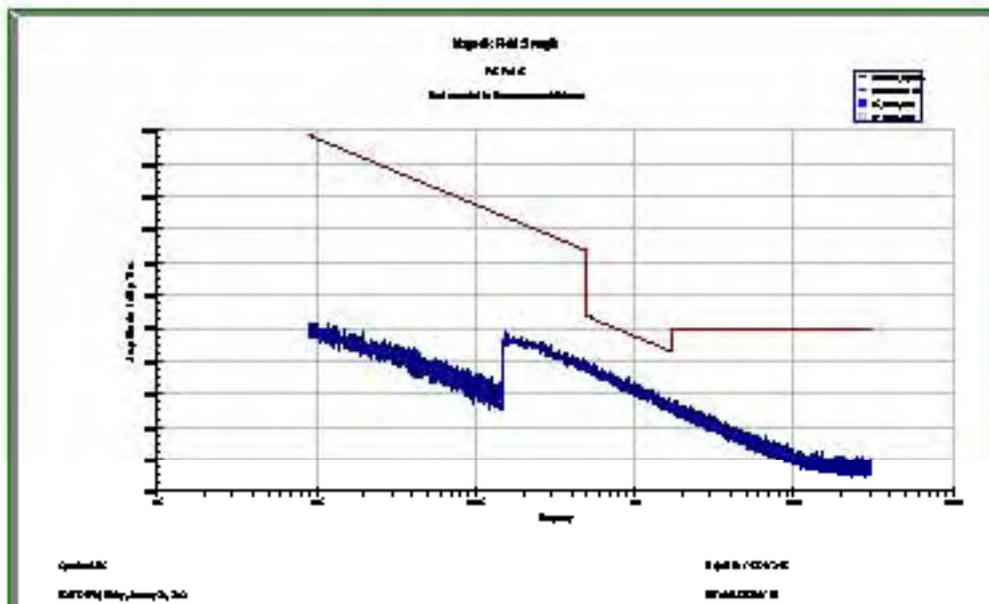


Plot 3: Highest channel, 9 kHz to 30 MHz



Plots: BX / 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 (dB μ V/m)	Average (dB μ V/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

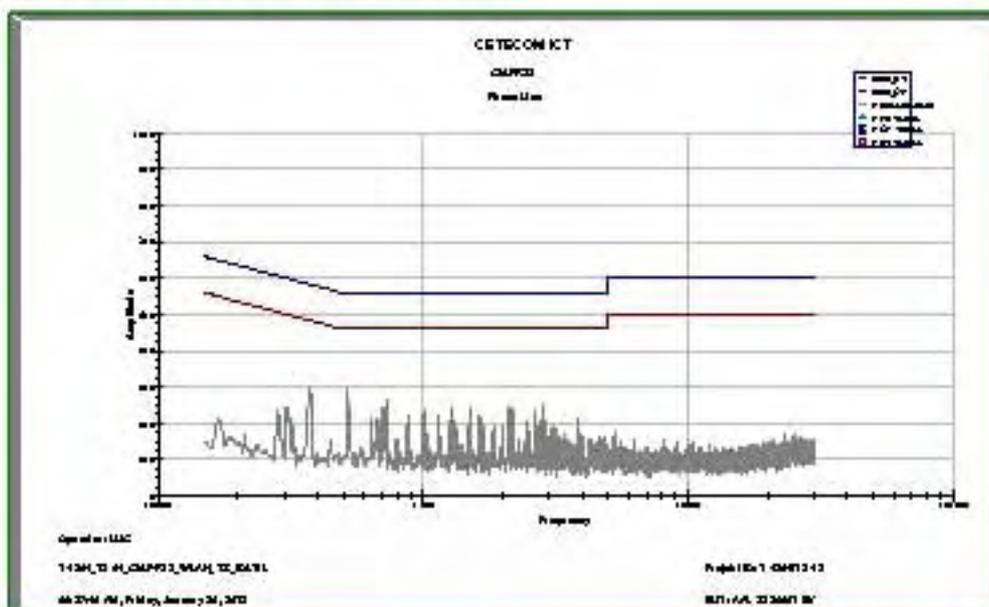
Results:

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

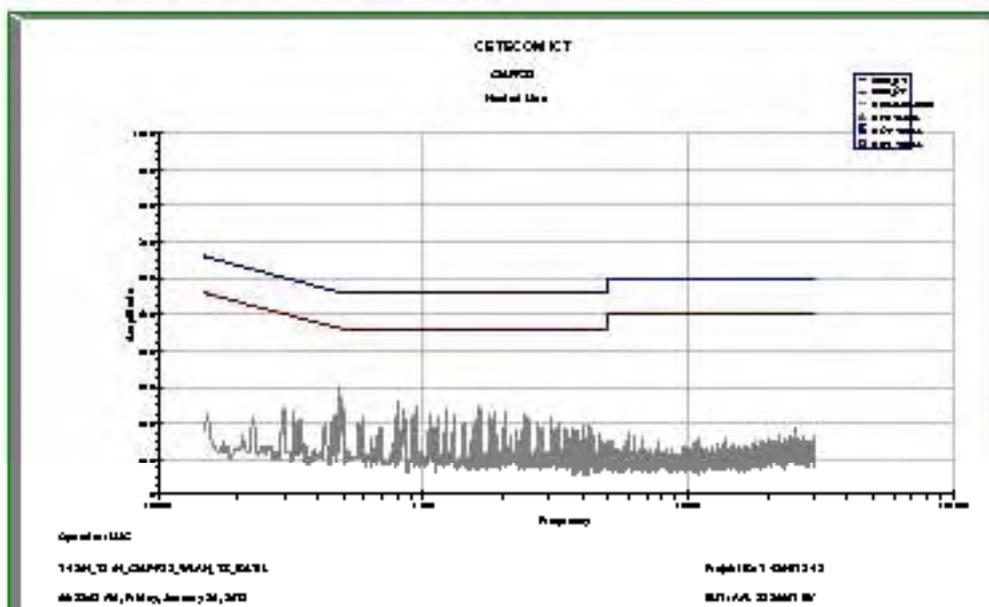
Result: The result of the measurement is passed.

Plots:

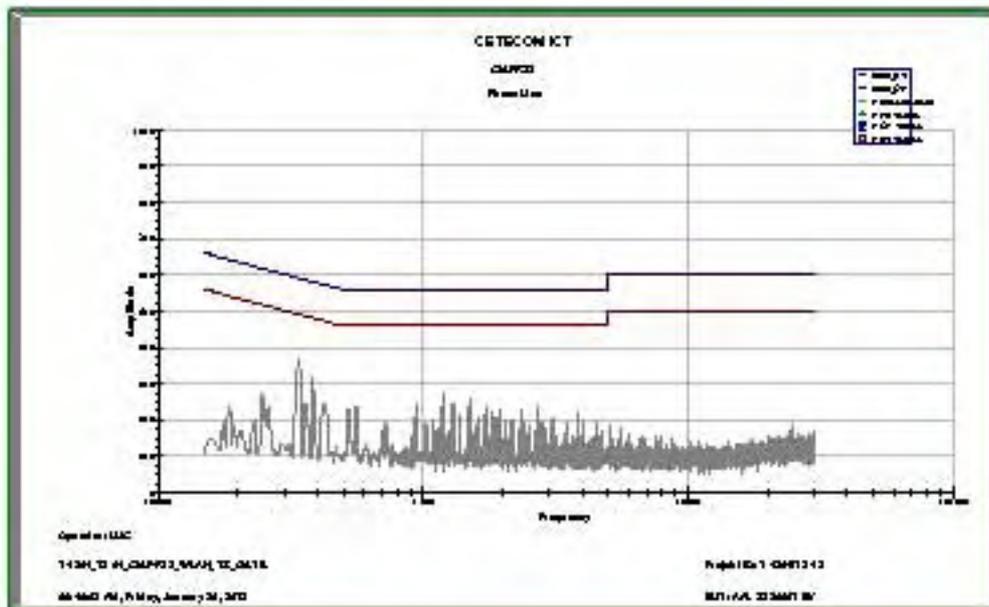
Plot 1: DSSS / b – mode, 9 kHz to 30 MHz, phase line



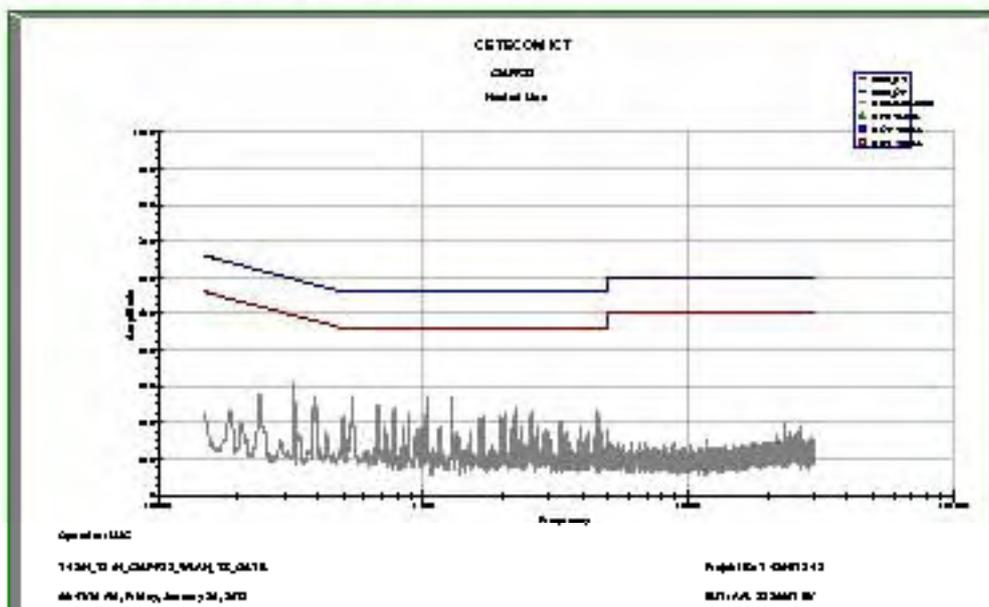
Plot 2: DSSS / b – mode, 9 kHz to 30 MHz, neutral line



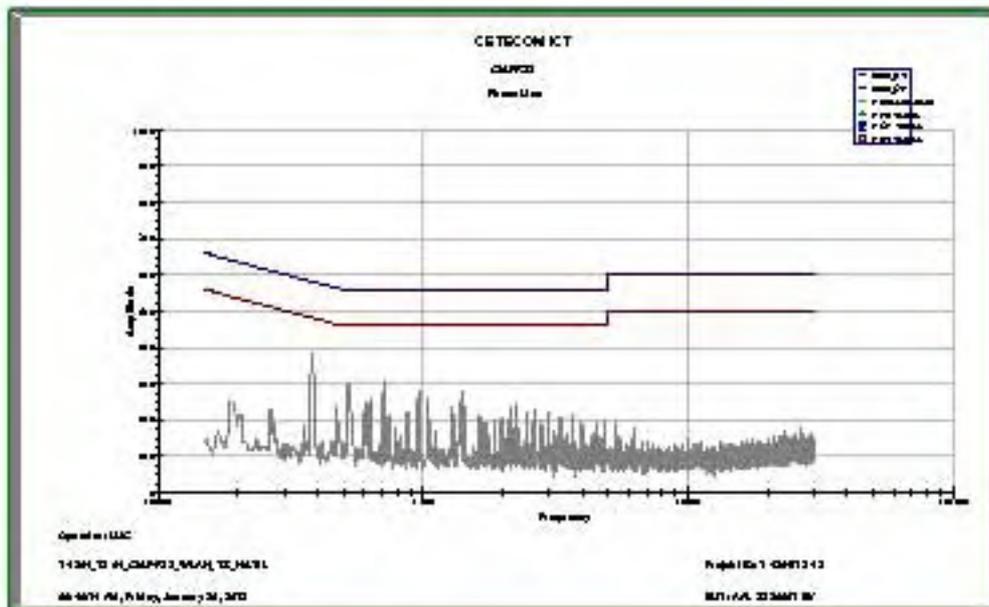
Plot 3: OFDM / g – mode, 9 kHz to 30 MHz, phase line



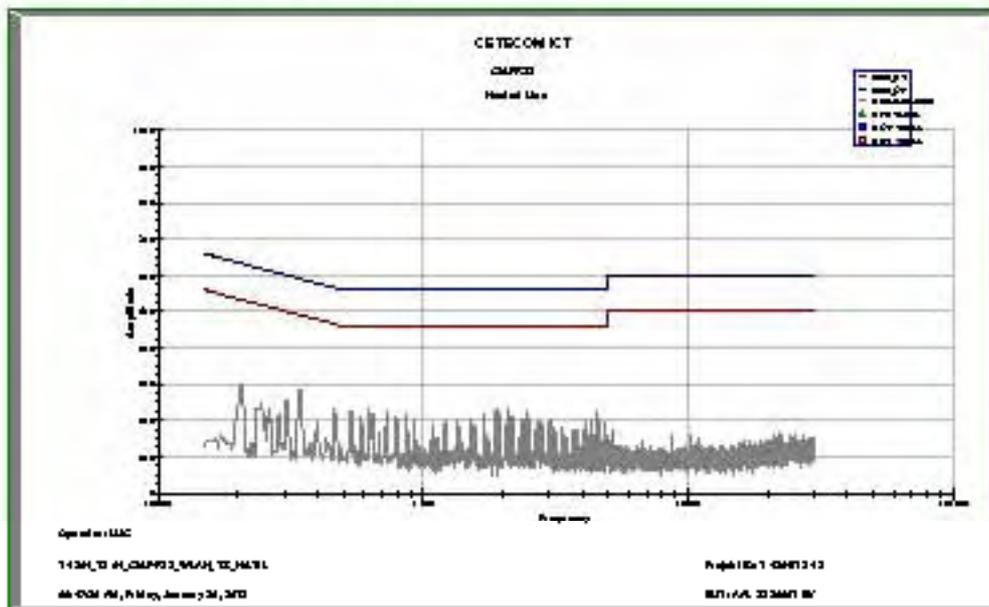
Plot 4: OFDM / g – mode, 9 kHz to 30 MHz, neutral line



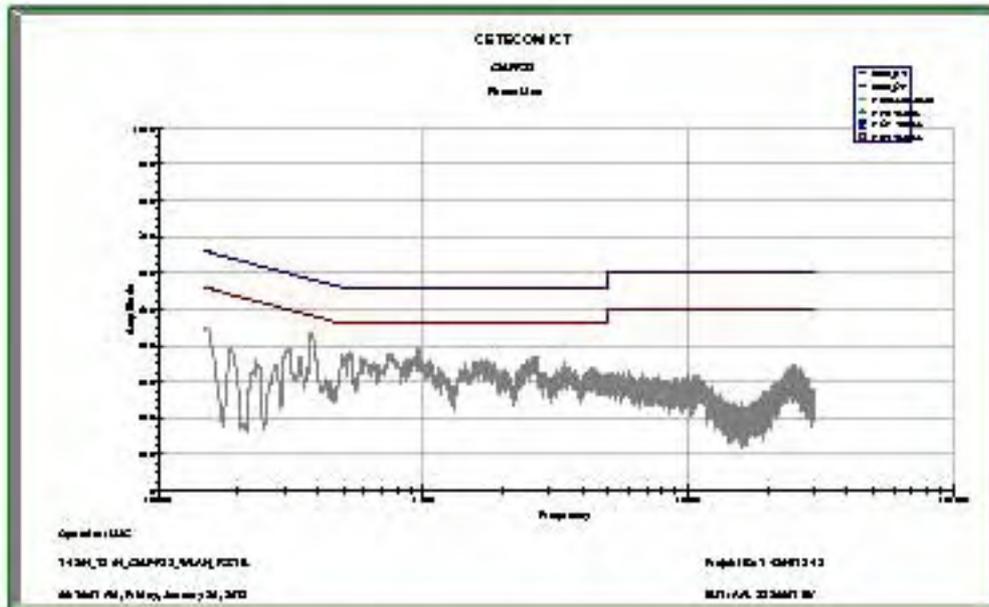
Plot 5: OFDM / n – mode, 9 kHz to 30 MHz, phase line



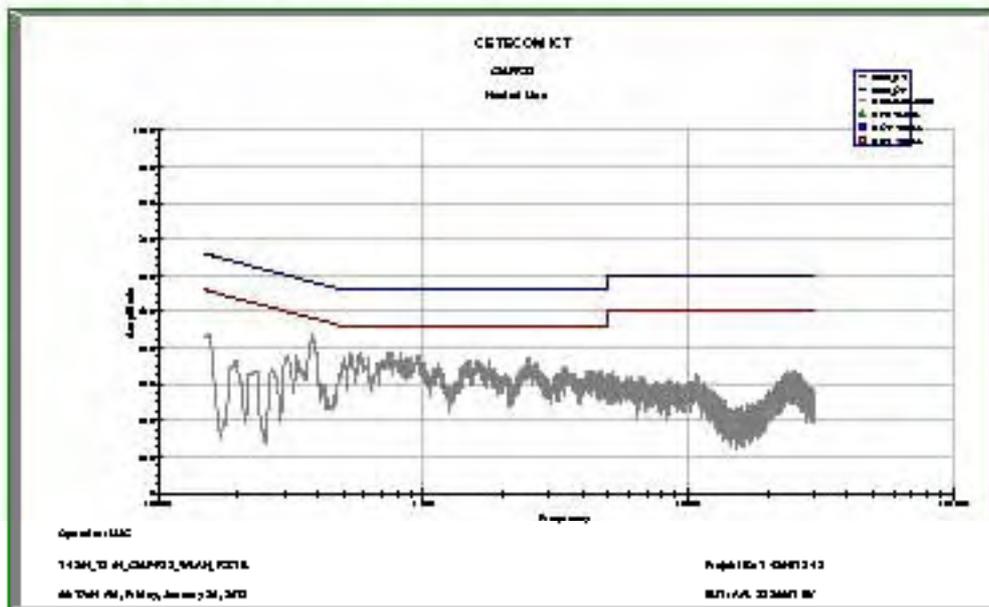
Plot 6: OFDM / n – mode, 9 kHz to 30 MHz, neutral line



Plot 7: RX / Idle – mode, 9 kHz to 30 MHz, phase line



Plot 8: 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	n. e.	Temperaturprüfschrank	T-40/50	CTS GmbH		300003632	ne		
2	n. e.	Netzgerät	E3534A	Agilent Technologies	MY40014505	300003742	k	12.01.2011	12.01.2013
3	n. e.	Spectrumanalyzer	FSU30	R&S	100763	300003850	k		
4	45	Switch Unit	3488A	HP Meßtechnik	2713A14505	300000368	g		
5	50	DC power supply 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2320A04466	300000690	ne		
6	n. e.	software	SPS_PHE 1.4f	Spitzberger & Spielf	B5981; 4D1061B5979	300000210	ne		
7	n. e.	EMI Test Receiver	ESCI 1165.5350.03	R&S	100683	300003312	k	05.01.2011	05.01.2013
8	n. e.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 070 0205	300003314	k	14.07.2011	14.07.2013
9	n. e.	Amplifier	JS42-00502550-28-5A	MITEQ	1094532	300003379	ev		
10	n. e.	Antenna Tower	Model 2175	ETS-LINDGREN	8162	300003745	izw		
11	n. e.	Positioning Controller	Model 2080	ETS-LINDGREN	81672	300003746	izw		
12	n. e.	Tunable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
13	n. e.	TRLOG Broadband Test-Antenne 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
14	n. e.	Spectrum-Analyzer	FSU25	R&S	200809	300003874	k	10.01.2011	10.01.2013
15	n. e.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
16	n. e.	DC power supply 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	12.01.2012	12.01.2015
17	n. e.	Coxial Attenuator 30dB/500W	8325	Bird	1530	300001535	ev		
18	n. e.	Double-Pridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	WKE	11.05.2011	11.05.2013
19	n. e.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
20	n. e.	Anechoic chamber	FAC 319m	MWB/ TLK	87400102	300000896		23.03.2009	
21	Spec.A 2.2a	System rack for EMI measurement solution	88300	HP LV	'	300000222	ne		
22	9	Artificial Noise 3 kHz to 30 MHz	ES43-Z5	R&S	828576/020	300001210	Ve	06.01.2012	06.01.2014
23	n. e.	Relais Matrix	3488A	HP Meßtechnik	2713A15013	300001156	ne		
24	n. e.	Relais Matrix	PSU	R&S	880167/024	300001168	ne		
25	n. e.	Isolating Transformer	RT5A	Grundig	3242	300001263	ne		
26	n. e.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000897	ne		
27	n. e.	Switch/Control Unit	3488A	HP	2605408770	300001443	ne		
28	n. e.	Amplifier	JS42-00502550-28-5A	Parich GMBH	328379	300003143	ne		
29	n. e.	BandReject filter	WFDG1355/1310-1835/1925-40/16SS	Weinwright	7	300003350	ev		
30	n. e.	BandReject filter	WFDG2400/2463-2375/2505-50/16SS	Weinwright	11	300003351	ev		
31	n. e.	TLE-Software Emission	Quantum Change Model TLE-ICSFULL	EMCO	none	300003451	ne		
32	n. e.	Highpass Filter	WPK2.918G-12SS	Weinwright	1	300003432	ev		

33	n. e.	Highpass Filter	WHR1.1/18G-10SS	Weinright	3	300003255	ev		
34	n. e.	Highpass Filter	WHR7.0/18G-8SS	Weinright	18	300003789	ne		
35	n. e.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4404A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
36	n. e.	MWG Microwave Analog Signal Generator	N5183A	Agilent Technologies	MY47420220	300003813	k	13.09.2010	13.09.2012
37	n. e.	RF Filter Section 3kHz - 1GHz	N8033A	Agilent Technologies	MY48260003	300003825	wk!	08.09.2010	08.09.2012
38	n. e.	TRLOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	wk!	14.10.2011	14.10.2014
39	11b	Microwave System Amplifier, 0.5-26.5 GHz; 25 dB gain	83017A	HP Meßtechnik	00419	300003268	ev	10.03.2011	
40	A026	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300003787	ne		
41	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300002442	ne		
42	n. e.	Spectrum Analyzer 20 Hz - 50 GHz	FSU50	R&S	200012	300003443	ve	01.07.2010	01.07.2012

Acenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
wk!	Attention: extended calibration interval	*)	next calibration ordered / currently in progress
NK!	Attention: not calibrated		

11 Observations

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

Annex D Document history

Version	Applied changes	Date of release
1.0	Initial release	2012-01-26

Annex E Further informationGlossary

AVG	-	Average
DUT	-	Device under test
EMC	-	Electromagnetic Compatibility
EN	-	European Standard
EUT	-	Equipment under test
ETSI	-	European Telecommunications Standard Institute
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	Not applicable
PP	-	Positive peak
QP	-	Quasi peak
S/N	-	Serial number
SW	-	Software

Annex F Accreditation Certificate



Deutsche Akkreditierungsstelle GmbH
German Accreditation Body

Designated according to Section 8a Abs. 1 of the Accreditation Act in connection with Section 1 subsection 1, ANMStV 08/09
Signatory to the Multilateral Agreements of EA, GAC and IAF for Mutual Recognition

Accreditation



The Deutsche Akkreditierungsstelle GmbH (German Accreditation Body) accredits the following laboratory:

CETECOM ICT Services GmbH
Unterkirchheimer Straße 6-12
66117 Saarbrücken

is accredited under the terms of DIN EN ISO/IEC 17025:2005 in terms set forth in the following table:

Wireless communications and EMC

- Accuracy
- Radio
- Short range wireless LAN
- RFID
- WLAN and Bluetooth
- Mobile phone (GSM), DCS, Over the Air (OTA) Performance
- Electromagnetic Compatibility (EMC) incl. Ausstrahlung
- Productivity
- SAR and Heating Air Compatibility (HAC)
- Environmental conditions
- Smart Card Terminal
- Bluetooth
- Wi-Fi networks

The accreditation certificate shall comply in connection with measures of implementation of DIN EN ISO/IEC 17025:2005 with the accreditation number 0112/12/01.01 and shall only contain tests of competence set forth herein. The entire text of the certificate is in the following table with a total of 42 pages.

Registration number of the certificate: 0112/12/01.01

Head of the Laboratory

The accreditation certificate shall comply in connection with measures of implementation of DIN EN ISO/IEC 17025:2005 with the accreditation number 0112/12/01.01 and shall only contain tests of competence set forth herein. The entire text of the certificate is in the following table with a total of 42 pages.

Deutsche Akkreditierungsstelle GmbH

Office Berlin
Unter den Eichen 87
10585 Berlin

Office Frankfurt am Main
Bismarckstr. 3
60334 Frankfurt am Main

Office Bonn
Bismarckstr. 3
53117 Bonn

The publication number of the accreditation certificate is subject to prior written approval of Deutsche Akkreditierungsstelle GmbH (DAKKS). Changes to the certificate shall be approved. Distribution of the certificate shall be coordinated with the accreditation body.

Legislation which is made use of in connection with the accreditation shall be approved by the accreditation body.

The accreditation certificate is valid in the scope of the Accreditation Act (Law of 10 July 2009 (Federal Law Gazette I: 2009) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council and also with regard to the Regulation on international mutual recognition being in force in the field of accreditation of the European Union (EU) of 9 September 2009, in force in a signed by the Multilateral Agreements for Mutual Recognition of European operators in Accreditation (EMR), International Cooperation Forum (ICF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements are signatories to the accreditation.

The accreditation certificate shall comply in connection with measures of implementation of DIN EN ISO/IEC 17025:2005 with the accreditation number 0112/12/01.01 and shall only contain tests of competence set forth herein. The entire text of the certificate is in the following table with a total of 42 pages.

DAKKS: www.dakks.de
ILAC: www.ilac.org
ICF: www.icf.de

Front side of certificate

Back side of certificate

Note:

The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

http://www.cetecom.com/fileadmin/de/CETECOM_D_Saarbruecken/akkreditations_Jan_2010/DAKKS_Akkred_Urk_EN17025-En_incl_Annex.pdf